

CLOSING BINDER
SALE OF 490 BOSTON POST ROAD
WAYLAND, MIDDLESEX COUNTY, MASSACHUSETTS
THE TOWN OF WAYLAND (“SELLER”)
to
ALTA RIVER’S EDGE, LLC (“BUYER”)
CLOSING DATE: FEBRUARY 22, 2021¹

Closing Documents

1. Quitclaim Deed from Seller to Buyer recorded on February 25, 2021 in the Middlesex County Registry of Deeds (the “Registry”) in Book 77062 at Page 395.
2. Grant of Easements recorded on February 25, 2021 in the Registry in Book 77065 at Page 575.
3. Repurchase Agreement recorded on February 25, 2021 in the Registry in Book 77065 at Page 562.
4. Notice of Land Disposition Agreement recorded on February 25, 2021 in the Registry in Book 77066 at Page 18.
5. Grant of Easements (Wastewater Facilities) recorded on February 25, 2021 in the Registry in Book 77066 at Page 1.
6. Vote of the Wayland Board of Selectmen recorded on February 25, 2021 in the Registry in Book 77073 at Page 16.
7. Twelfth Amendment to Land Disposition Agreement.
8. WWTP Escrow Agreement (Wastewater Facilities).
9. Vote of the Wayland Board of Selectmen.
10. Closing Certificate executed by Seller.
11. Closing Certificate executed by Buyer.
12. Infrastructure Development Agreement (Wastewater Facilities).
13. Title Affidavit.
14. Letter from Seller dated February 18, 2021 re: Pro Forma Taxes.
15. Settlement Statement.
16. Closing Instructions Letter prepared by Anderson & Kreiger LLP dated February 19, 2021.
17. Disclosure Statement for Transaction with a Public Agency Concerning Real Property dated February 3, 2021.

¹ All documents dated as of February 22, 2020 unless otherwise indicated.

Middlesex South Registry of Deeds

Electronically Recorded Document

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Recording Information

Document Number	: 42408
Document Type	: DEED
Recorded Date	: February 25, 2021
Recorded Time	: 01:25:55 PM
Recorded Book and Page	: 77062 / 395
Number of Pages(including cover sheet)	: 9
Receipt Number	: 2612853
Recording Fee (including excise)	: \$155.00

 MASSACHUSETTS EXCISE TAX
 Southern Middlesex District ROD # 001
 Date: 02/25/2021 01:25 PM
 Ctrl# 333436 09967 Doc# 00042408
 Fee: \$.00 Cons: \$1,769.663.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
 208 Cambridge Street
 Cambridge, MA 02141
 617-679-6300
www.middlesexsouthregistry.com

NCS 861758

QUITCLAIM DEED

The **Town of Wayland** ("Grantor"), a Massachusetts municipal corporation, having an address of Wayland Town Building, 41 Cochituate Road, Wayland, MA 01778, acting by and through its Board of Selectmen, pursuant to the vote taken under Article 16 of the 2014 Annual Town Meeting, a certified copy of which is ~~attached hereto~~ and incorporated herein,

*recorded simultaneously herewith

For consideration paid of One Million Seven Hundred Sixty-Nine Thousand Six Hundred Sixty-Three and 00/100 Dollars (\$1,769,663.00), hereby grants and conveys to

ALTA River's Edge, LLC ("Grantee"), a Delaware limited liability company, having an address of c/o WP East Acquisitions, LLC, 91 Hartwell Avenue, Lexington, MA 02421,

with Quitclaim Covenants,

A parcel of land, with any improvements thereon, situated on the northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

The property described herein being a portion of those premises described in an Order of Taking dated January 11, 1971, recorded with the Registry of Deeds in Book 11943, Page 420 (Lot A); a portion of those premises described in an Order of Taking dated November 15, 1965, recorded with the Registry of Deeds in Book 11003, Page 389 (Lot C); and a portion of those premises described in a Confirmatory Deed dated May 22, 1978, recorded with the Registry of Deeds in Book 13448, Page 394 and an Order of Taking dated May 15, 1978, recorded with the Registry of Deeds in Book 13443, Page 177 (Lot E).

The Grantee certifies compliance with the provisions of G.L. c. 7C, §38 and G.L. c. 44, §63A.

The Grantee certifies on behalf of itself and its successors and assigns that it shall not file an application for a comprehensive permit under G.L. c. 40B, §§20-23 (as the same may be

Property address: 490 Boston Post Road, Wayland, Massachusetts

amended) for any development or project for all or any portion of the property conveyed by this deed.

The Grantee certifies that the development and construction of the premises described herein (“Grantee’s Project”) shall be devoted only to, and in accordance with, the following uses (unless otherwise agreed by Grantor and Grantee and approved by the Zoning Board of Appeals):

- a. Grantee’s Project shall not exceed 218 residential units; and
- b. One hundred percent (100%) of the units shall be rental units.

Said premises are conveyed subject to and with the benefit of (a) applicable laws, orders and regulations of any federal, state, or local governmental authority, including, without limitation, building, zoning, and environmental laws; (b) all rights, easements and restrictions of record insofar as the same are in force and applicable; (c) all matters created or caused by Grantee; (d) that certain Regulatory Agreement and Declaration of Restrictive Covenants for Rental Project, between the Grantor, Grantee, and Department of Housing and Community Development, being entered into and recorded after the date hereof; (e) that certain Regulatory Agreement and Declaration of Restrictive Covenants for Rental Project, between the Grantor, Alta River’s Edge Tenant, LLC, a Delaware limited liability company, and Department of Housing and Community Development, being entered into and recorded after the date hereof; (f) provisions of that certain Land Disposition Agreement for the Sale and Redevelopment of Land dated July 28, 2017 between Grantor and Grantee (as successor in interest to WP East Acquisitions, L.L.C.) (as amended and assigned, the “LDA”) which survive the delivery of this Deed; (g) that certain Notice of Land Disposition Agreement recorded herewith; and (h) that certain Repurchase Agreement by and between Grantor and Grantee recorded herewith.

No deed stamps are due pursuant to G.L. c. 64D, §1.

[Signature Page Follows]

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry Carlson
Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes


Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Cherry Karlson, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]
Notary Public
My Commission Expires: 10-10-2025

 Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned notary public, personally appeared David Watkins, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



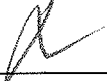
Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10 day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

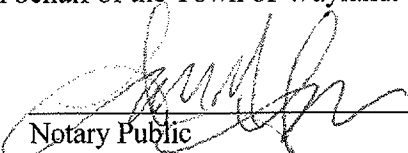
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned notary public, personally appeared Tom Fay, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Mary Antes, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson


COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Lea Anderson, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025

 Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

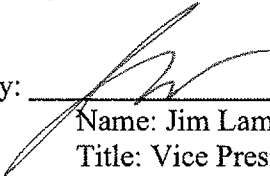
GRANTEE:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a
Delaware limited liability company, its sole
member

By: WS River's Edge, LLC, a Delaware limited
liability company, its Managing Member


By: WP Massachusetts, LLC, a Delaware
limited liability company, its sole member and
manager

By: 
Name: Jim Lambert
Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 19th day of January, 2021, before me, the undersigned
Notary Public, personally appeared Jim Lambert, Vice President of WP Massachusetts,
LLC, a Delaware limited liability company, the sole member and manager of WS River's
Edge, LLC, a Delaware limited liability company, the managing member of Alta River's
Edge Venture, LLC, a Delaware limited liability company, the sole member of Buyer, as
aforesaid, proved to me through satisfactory evidence of identification, which was
MA License 548562727, to be the person whose name is signed on the preceding
document, and acknowledged to me that he signed it voluntarily for its stated purpose on
behalf of said entities in such capacities.


Notary Public
My Commission Expires:



SILVIA E. SANTOS
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 30, 2026

Middlesex South Registry of Deeds

Electronically Recorded Document

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Recording Information

Document Number	: 42797
Document Type	: EASE
Recorded Date	: February 25, 2021
Recorded Time	: 03:28:12 PM
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Number of Pages(including cover sheet)	: 26
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Recording Fee (including excise)	: \$105.00

 MASSACHUSETTS EXCISE TAX
 Southern Middlesex District ROD # 001
 Date: 02/25/2021 03:28 PM
 Ctrl# Doc# 00042797
 Fee: \$.00 Cons: \$.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
 208 Cambridge Street
 Cambridge, MA 02141
 617-679-6300
www.middlesexsouthregistry.com

Property Address: 490 Boston Post Road,
Wayland, MA 01776
NCS 861758

GRANT OF EASEMENTS

The **TOWN OF WAYLAND** (the "Town"), a Massachusetts municipal corporation, acting by and through its Board of Selectmen pursuant to the vote taken under Article 1 of the September 12, 2020 Special Town Meeting, a certified copy of which is attached hereto, having an address of Wayland Town Building, 41 Cochituate Road, Wayland, Massachusetts 01778, for consideration paid of One Dollar (\$1.00), grants, with quitclaim covenants, to **ALTA RIVER'S EDGE, LLC**, a Delaware limited liability company ("Grantee"), having an office at c/o WP East Acquisitions, LLC, 91 Hartwell Avenue, Lexington, MA 02421, certain permanent, non-exclusive easements in, on and across parcels of land located in Wayland, Middlesex County, Massachusetts, described below, on the terms and conditions set forth herein. This Grant of Easements is sometimes referred to herein as the "Agreement" or "Easement Agreement".

WHEREAS, the Town is the owner of a parcel of land located at Boston Post Road (Route 20), Wayland, described more particularly in an Order of Taking dated November 15, 1965, recorded with the Middlesex South District Registry of Deeds ("Registry of Deeds") in Book 11003, Page 389, and legally described on Exhibit A attached hereto (the "Town Property");

WHEREAS, a private access road is located on the Town Property running from Boston Post Road to other property of the Town (the "Access Road");

WHEREAS, Grantee is, as of the date hereof and by deed of conveyance from the Town, the owner of a certain parcel or parcels of land located at 490 Boston Post Road, Wayland described more particularly on Exhibit B attached hereto (the "Benefited Property"), which Benefited Property is contiguous to the Town Property;

WHEREAS, Grantee intends to create a residential, rental housing project upon the Benefited Property (the "Project");

WHEREAS, Grantee has requested that the Town convey to Grantee a permanent, non-exclusive access easement on, over and across a portion of the Access Road for the purpose of accessing the Benefited Property;

WHEREAS, Grantee has further requested that the Town convey to Grantee a permanent, non-exclusive drainage easement on, over and across a portion of the Town Property;

WHEREAS, Grantee has further requested that the Town convey to Grantee a temporary, non-exclusive construction easement on, over and across a portion of the Town Property (as hereinafter described) in connection with the construction and installation of the Drainage Facilities (hereinafter defined); and

WHEREAS, the Town is amenable to conveying the foregoing easements to Grantee, and its successors and assigns, for the use and enjoyment of Grantee, its successors and assigns and the residents, employees, licensees, guests, contractors, and invitees of the Benefited Property and the Project (together with the Grantee, the "Benefited Parties").

NOW, THEREFORE, for consideration paid of One Dollar (\$1.00), and for other good and valuable consideration, the adequacy and sufficiency of which is hereby acknowledged, the Town and Grantee, for themselves and their respective successors and assigns, agree as follows:

1. Easement Premises; Permitted Uses. The Town hereby grants Grantee: (a) a permanent, non-exclusive access easement, containing 21,566 S.F., more or less, to use a portion of the Access Road located on the Town Property, and shown as "50' Wide Permanent Access Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA" dated December 17, 2020, prepared by Allen & Majors Associates, Inc. (the "Plan"), a reduced copy of which Plan (together with a blown up depiction of the easement areas) is attached hereto as Exhibit C, and incorporated herein (the "Access Easement Premises"), and as more particularly described in Exhibit D attached hereto and incorporated herein, for the purpose of ingress and egress for pedestrian and vehicular traffic by Grantee, its successors and assigns, including, but not limited to, the Benefited Parties; (b) a permanent, non-exclusive easement to use the western side of the Access Road, shown as "Landscape Easement" on the Plan and as more particularly described in Exhibit E attached hereto and incorporated herein (the "Landscape Easement Premises"), for the purpose of installation, modification, maintenance and removal of trees and other landscaping (the "Landscaping Easement"); (c) a permanent, non-exclusive drainage easement, containing 1,710 S.F., more or less, located on the Town Property, shown as "Permanent Drainage Easement" on the Plan and as more particularly described in Exhibit F attached hereto and incorporated herein (the "Drainage Easement Premises"), for the purpose of installing, operating, inspecting, maintaining, repairing, removing and replacing stormwater drains and any manholes, pipes, catch basins, conduits, culverts, channels and other related structures and/or facilities (collectively, "Drainage Facilities") for the drainage of stormwater from the Benefited Property onto the Drainage Easement Premises; and (d) during the construction of the Drainage Facilities, a temporary, non-exclusive access and construction easement which extends 20-feet from the perimeter boundary of the Drainage Easement Premises on all sides thereof to the extent located on the Town Property (the "Temporary Construction

Premises”, together with the Access Easement Premises, the Landscape Easement Premises, and the Drainage Easement Premises, the “Easement Premises”), for the purpose of constructing the Drainage Facilities (clauses (c) and (d) collectively, the “Drainage Easement,” together with the Access Easement and Landscaping Easement, the “Easements”).

2. Maintenance and Repair of the Access Easement. The Town shall, at its sole cost and expense, maintain and repair the Access Easement Premises in a condition similar to that of other secondary roads within the Town of Wayland (which shall include, without limitation, the obligation to remove snow and ice therefrom), except for the landscaping which is the subject of the Landscaping Easement, which Grantee will maintain at its sole cost and expense. In the event the Town does not maintain and repair the Access Easement Premises in the condition required hereunder and fails to remedy such default within a reasonable time after receipt of notice thereof from Grantee, the Grantee shall have the right to maintain and repair the Access Easement Premises and remove snow and ice therefrom, as needed, and seek reimbursement for the costs associated therewith from the Town. As part of its maintenance obligations hereunder, the Town shall remove any trees, vegetation or brush within or adjacent to the Access Easement Premises necessary to maintain the present width of the Access Easement Premises, maintain adequate sight lines at the apron of Route 20, and shall pave or re-pave the Access Easement Premises as needed to make it safe for passage.

In the event the Town is no longer using the Access Easement Premises to access the Town transfer station or any other Town facility or operation located on or being conducted on the Town Property, the Town may give written notice to Grantee, which shall specify a date no earlier than thirty (30) days after the giving of such notice after which the Town will no longer maintain the Access Easement Premises (but not any portion of the Access Road located outside of the Access Easement Premises, which shall remain the sole responsibility of the Town) (the “Maintenance Obligation Date”), whereupon the Grantee shall have the obligation, at its sole cost and expense, to maintain and repair the Access Easement Premises and maintain adequate sight lines at the apron of Route 20. Upon the Maintenance Obligation Date, and as part of its maintenance and repair obligation pursuant to the foregoing sentence, the Grantee shall have the right to perform routine removal of trees, vegetation and brush within or adjacent to the Access Easement Premises necessary to maintain the present width of the Access Easement Premises and adequate sight lines at the apron of Route 20, and shall pave or re-pave the Access Easement Premises as it deems necessary for safe travel.

3. Maintenance and Repair of the Drainage Easement. The Grantee shall have sole responsibility for maintenance, operation and repair of the Drainage Easement Premises, and shall, at its sole cost and expense, maintain the Drainage Easement Premises in good order and condition, and in a manner consistent with the stormwater operations and maintenance plan approved by the Town and/or its applicable agents, divisions or departments (the “O/M Plan”) upon completion of the drainage infrastructure. The Grantee acknowledges that the stormwater discharge is located in a critical area, and will require maintenance and treatment in accordance with the O/M

Plan. In no event shall the Town be responsible for the condition, maintenance or repair of the Drainage Easement Premises, except to the extent the Town causes damage thereto as a result of its gross negligence or willful misconduct.

4. Construction. All work done within or to the Easement Premises by Grantee shall be done in a good and workmanlike manner, using materials of good quality and, to the maximum extent feasible, at such times that the Town Property is not being used by others. Grantee shall obtain, at its sole cost, any and all permits, licenses or other approvals required to undertake any work within the Easement Premises and provide copies of the same to the Town, at the Town's request. Grantee shall, at the Town's reasonable request, place barriers and/or take other measures to protect persons and property from damage during construction or any work within the Easement Premises. Grantee shall use commercially diligent efforts to complete its work in an expeditious manner and to minimize interference with the use of the Town Property by the Town and others entitled thereto, including, without limitation, during such times as the Town is constructing improvements within the Town Property, including the Easement Premises. Grantee shall provide the Town with three business (3) days' notice of any anticipated work that will materially interfere with the Town's use of the Easement Premises. Grantee shall remove all construction debris or rubble, including any trees, vegetation or brush, which are removed as part of such construction or in connection with the Landscaping Easement from the Easement Premises on a regular basis consistent with construction industry norms during any construction period, but in no event shall Grantee leave construction debris that would interfere with the Town's use of the Easement Premises. Grantee shall forthwith repair and restore any damage or disturbance it causes to the Easement Premises (subject to any temporary damage or disturbance caused by improvements that Grantee is permitted to make pursuant to the terms hereof, including the Drainage Facilities and the landscaping which is the subject of the Landscaping Easement) and/or any improvements made thereto by the Grantee to their condition prior to such disturbance or damage, at Grantee's sole cost and expense.

5. Liens. Grantee shall not permit any mechanics' liens or similar liens to remain upon the Town Property for labor and material furnished to Grantee in connection with work of any character performed at the direction of Grantee and Grantee shall cause any such lien to be released of record (or discharged by bonding) forthwith without cost to the Town.

6. Reserved Rights, Disclaimer. The Town reserves, for itself and its successors and assigns, the right to use the Easement Premises for any and all purposes, provided such use does not interfere unreasonably with Grantee's use of the Easement Premises for the purposes set forth herein. The Town makes no representation, either express or implied, with respect to the condition of the Easement Premises. The Grantee, and on behalf of the Benefited Parties, acknowledge that the Grantee and the Benefited Parties shall use the Easement Premises at its sole risk.

7. Restrictions, Limitations. Grantee expressly acknowledges and agrees that the Easements are intended solely for the benefit of the Benefited Property and for no

other property. The Grantee and the Benefited Parties shall not, and shall not allow its contractors, representatives and agents to: (a) use the Easement Premises in a manner that interferes with the Town's right to use the same for any purpose that does not interfere with the access and other easement rights hereby granted; (b) except as expressly permitted by this Agreement, construct or place any permanent or temporary buildings, structures, or obstructions on, over, across or below the Easement Premises; (c) increase the width or other dimensions of the Easement Premises, or otherwise alter the Access Easement Premises to make it unsafe or difficult for pedestrian and vehicular traffic, without the Town's prior written consent, which consent may be withheld in the Town's sole discretion; (d) cause or allow to be caused a release or threat of release of hazardous materials or oil on the Easement Premises; or (e) store or park vehicles, equipment, or other property on the Easement Premises. Grantee shall inform Town at least three (3) days prior to making any major repairs (however in an emergency shall provide such notice as is reasonable under the circumstances), and shall install reasonable safety measures to protect the safety of others using the Easement Premises during any maintenance, and/or repair of the Easement Premises by the Grantee. The parties agree that filling potholes, grading, removing brush and other vegetation from the Easement Premises, installing and maintaining the landscape which is the subject of the Landscaping Easement, clearing pipes to allow proper drainage and clearing, and cleaning drainage ditches are general maintenance and require no prior notice to the Town.

8. Release. The Grantee, and on behalf of the Benefited Parties, hereby releases the Town, its officers, employees, representatives, contractors and agents from any responsibility for losses or damages related to the condition or use of the Easement Premises, except if caused by (i) the gross negligence or willful misconduct of the Town or its officers, employees, representatives, contractors and agents; or (ii) a material breach of this Agreement by the Town, and the Grantee, and on behalf of the Benefited Parties, agrees and covenants that it will not assert or bring, nor cause any third party to assert or bring, any claim, demand, lawsuit or cause of action against the Town (collectively, "Claims"), including, without limitation, claims for property damage, personal injury damage and any other damage relating to, or arising from, the Grantee's use or activities on or about the Easement Premises, except for any Claims arising out of (x) the gross negligence or willful misconduct of the Town or its officers, employees, representatives, contractors and agents, or (y) a material breach of this Agreement by the Town.

9. Indemnification. The Grantee, and on behalf of the Benefited Parties, agrees to indemnify, defend, and hold the Town harmless from and against all debts, expenses (including reasonable attorneys' fees), actions, causes of action, suits, dues, sums of money, damages, liabilities and any and all claims, demands and liabilities whatsoever of every name and nature, both in law and equity, arising out of or relating to: (a) the discharge, release or threatened release at or from the Benefited Property and/or the Town Property of oil or hazardous materials as defined under federal, state or local law which is caused by the Grantee, the Benefited Parties, or its agents, employees, contractors and representatives (collectively, the "Grantee Parties"); (b) any failure on the

part of the Grantee Parties to comply with this Easement Agreement; and (c) the death, injury or property damage suffered by any person on account of or based upon the negligence or misconduct of any of the Grantee Parties, except to the extent that such death, injury or property damage is caused by the gross negligence or willful misconduct of the Town. To the extent that the Grantee or anyone acting for or through the Grantee releases or is otherwise responsible for a release of oil or hazardous materials on the Town Property in quantities or concentrations requiring reporting to the Massachusetts Department of Environmental Protection (MassDEP) or any other governmental authority with jurisdiction over the Town Property or the release, the Grantee shall promptly notify the Town of the reportable condition. After consultation with and approval from the Town and the Town's Licensed Site Professional (LSP), the Grantee shall submit a release notification form to MassDEP (or other governmental authority as appropriate), designating itself as the responsible party and shall be responsible at its sole cost and expense for expeditiously achieving a Permanent Solution with no conditions, including no activities and use limitations (the "Permanent Solution"). The Grantee shall continue to consult with and obtain approval from the Town and the Town's LSP on all remedial strategies and submissions until the Permanent Solution is achieved.

10. Insurance Coverages. Before Grantee or any of the other Grantee Parties enters the Easement Premises for any reason, Grantee shall procure, at its own cost and expense, or cause to be procured, the following minimum insurance: (a) commercial general liability insurance with a minimum coverage amount of One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit. The policy shall include blanket contractual liability insurance for all written contracts in accordance with policy terms afforded under ISO CG 00 01 04 13 (or carrier equivalent), subject to such coverage being commercially available, and shall include coverage for products and completed operations liability through the time period applicable as required by the statute of repose and independent contractor's liability and coverage for property damage; (b) automobile liability insurance for owned and non-owned automobiles, trucks and all other licensed for road use vehicles, and/or hired/rented automobiles, trucks and all other licensed for road use vehicles, in the amount of One Million Dollars (\$1,000,000) combined single limit; (c) workers compensation in the minimum amount of the statutory limit and Employers Liability in the amount of One Million Dollars (\$1,000,000.00); and (d) umbrella/excess liability in the minimum amount of Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) aggregate over all other insurance required by this Agreement (except workers compensation). Required limits may be achieved via combination of primary and excess/umbrella liability policies.

11. General Insurance Requirements. All insurance required hereunder shall name the Town and its officers, employees, representatives, contractors and agents and any other party reasonably designated by the Town as an additional insured (except workers compensation/employers liability). Additional Insured afforded under the General Liability policy shall extend to ongoing and products/completed operations. All insurance required shall be issued by insurers authorized to transact insurance business in the Commonwealth of Massachusetts and having an A- or better financial rating from a

recognized insurance accreditation institution (such as A.M. Best Company). All insurance required hereunder, or with respect to any insurance carried by a party that covers the Easement Premises or the actions or omissions of that party, shall provide a waiver of subrogation in favor of the other. Where commercially available, all insurance policies and certificates shall include a provision requiring thirty (30) days' written notice to the Town of any cancellation (except only ten (10) days' written notice for cancellation due to nonpayment of premium). At least annually, and at such other times as the Town may reasonably request, Grantee shall provide the Town with a certificate evidencing the coverages required hereunder. Grantee's failure to obtain, procure and/or maintain the required insurance at all times shall constitute a material default hereunder. Grantee's obligations to the Town under this Agreement shall not be limited by the requirement for, or existence or amount of, insurance coverage. The Town and Grantee agree that (i) the failure of the Town to demand evidence of such minimum insurance coverages or failure of the Town to identify a deficiency(ies) therein will not be construed as a waiver of Grantee's obligation to maintain the minimum insurance required under this Agreement; (ii) the insurance required under this Agreement does not represent that coverage and limits will necessarily be adequate to protect the Grantee, nor be deemed as a limitation of Grantee's liability to the Town under this Agreement; and (iii) the Grantee is solely responsible for any deductible and/or self-insured retention.

12. Turn-Around Easement. In return for the Easements conveyed to the Grantee herein, the Grantee grants to the Town, and the public, a permanent, non-exclusive easement for the purpose of turning around vehicles within paved areas of the Benefited Property, at or near the gate installed by the Town on the Access Road (the "Turn-Around Easement") in the area shown as "Turn Around Easement" on the Plan and as more particularly described in Exhibit G attached hereto and incorporated herein. Notwithstanding the foregoing, the Turn-Around Easement will be effective only upon completion of the paved areas shown on the Plan and upon confirmation that same are able to accept vehicular traffic for their intended purpose, but no later than the time residents of the Project are permitted to utilize such paved areas for their intended purpose. Upon written request of the Town, the Grantee will provide notice to the Town of the effective date of the Turn-Around Easement. Grantee may not obstruct or interfere with the Turn-Around Easement, but reserves the right, to be exercised solely at the Grantee's option, to relocate the Turn-Around Easement, at its expense, to another portion of the Benefited Property, provided, however, that the relocated easement area shall be reasonably comparable to the existing easement area. The Town acknowledges that there may be periods during the construction of the Project during which Grantee will need to temporarily block or prevent the use of the Turn-Around Easement. Sections 5 and 8 hereof shall apply to the Town's Turn-Around Easement with the same force and effect as they apply to the Easements, but as if the Town and the public at large are the "Grantee" and the "Grantee Parties" thereunder, respectively, and the "Grantee" is the Town.

13. Miscellaneous:

(a) During the exercise of the rights hereby granted, the Grantee shall not, and shall not permit any of the other the Grantee Parties to interfere unreasonably with the operations of the Town in its use of the Town Property, including the Easement Premises, or the operation and/or use by others entitled thereto. During the exercise of the rights hereby granted under Section 12, the Town shall not interfere unreasonably with the operations of the Grantee in its use of the Benefited Property or the construction of the Project, including the Turn-Around Easement Area, or the operation and/or use by others entitled thereto. During the exercise of the rights granted hereunder, Grantee shall not unreasonably interfere with the Town's use and operation of the Town Property.

(b) All provisions of this Agreement, including the benefits and burdens, shall run with the land and be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns, and such provisions shall be deemed to be enforceable covenants running with the land and shall bind any person having at any time any interest or estate in all or any portion of the Town Property and Benefited Property burdened hereby as though such provisions were recited and stipulated in full in each and every deed of conveyance. The terms and provisions hereof shall be binding upon the parties hereto only with respect to the periods of time such party is the owner of title to the Town Property or the Benefited Property, as the case may be. Accordingly, from and after such time as either party hereto shall transfer title to its respective property, it shall have no further obligations hereunder except for obligations which accrued prior to the time of such transfer, it being specifically understood that from and after the date of such transfer such party shall have no further rights hereunder nor responsibility for any obligations hereunder which rights and obligations shall, thereafter, be deemed rights and obligations of the party to whom title has been transferred and such transferee shall, by virtue of its acceptance of such transfer be deemed to have assumed and agreed to perform all obligations of the transferor thereafter accruing under this Agreement.

(c) Any notice required or given under this Agreement shall be deemed duly served if hand-delivered, mailed by registered or certified mail, return receipt requested, postage prepaid, or sent by recognized overnight delivery, addressed to the parties at the addresses set forth above, which may be changed with like notice at least ten (10) days in advance of the effective date of the change.

(d) This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, and any and all legal actions brought in connection with this Agreement shall be brought in courts within the Commonwealth of Massachusetts.

(e) This Agreement contains the entire agreement of the parties and there are no other agreements or understandings between the parties regarding the subject matter of this Agreement. This Agreement may not be modified except in writing, duly executed by both parties.

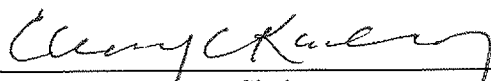
(f) The captions and headings throughout this Agreement are for convenience of reference only and the words contained therein shall in no way be held or deemed to

define, limit, explain, modify, amplify or add to the interpretation, construction or meaning of any provision of, or the scope or intent of this Agreement, nor in any way affect this Agreement, and shall have no legal effect.

[Signature Pages Follow]

WITNESS the execution hereof under seal this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen


Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

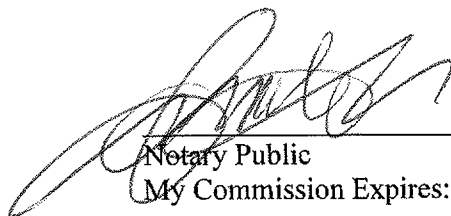
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared Cherry Karlson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025

WITNESS the execution hereof under seal this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair



David V. Watkins

Thomas J. Fay

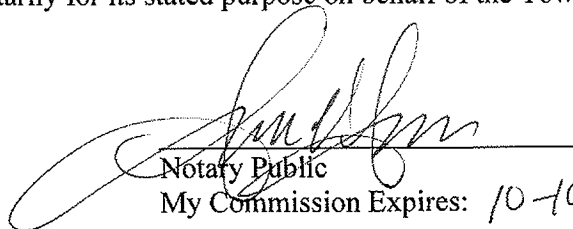
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared David Watkins, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.


Notary Public
My Commission Expires: 10-10-2025

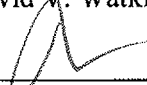
Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

WITNESS the execution hereof under seal this 10 day of Feb, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

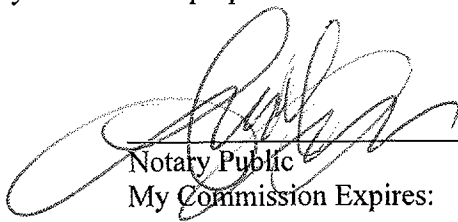
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared TOM FAY, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was LICENSE, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

WITNESS the execution hereof under seal this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared Mary Antes, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

WITNESS the execution hereof under seal this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson


COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb 2021, before me, the undersigned Notary Public, personally appeared Lea Anderson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was 110003, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025

 Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires-
10/10/2025

WITNESS the execution hereof under seal this 22 day of February, 2021.

GRANTEE:

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: [Signature]
Name: Jim Lambert
Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 19th day of January, 2021, before me, the undersigned Notary Public, personally appeared Jim Lambert, Vice President of WP Massachusetts, LLC, a Delaware limited liability company, the sole member and manager of WS River's Edge, LLC, a Delaware limited liability company, the managing member Alta River's Edge Venture, LLC, the sole member of Grantee, as aforesaid, proved to me through satisfactory evidence of identification, which was MA LICENSE 548542727 to be the person whose name is signed on the preceding document, and acknowledged to me that he signed it voluntarily for its stated purpose on behalf of said entities in such capacities.

[Signature]
Notary Public
My Commission Expires:



SILVIA E. SANTOS
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 30, 2026

Exhibit A

Town Property

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as "Map 22, Lot 5," containing 23.92 acres, on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

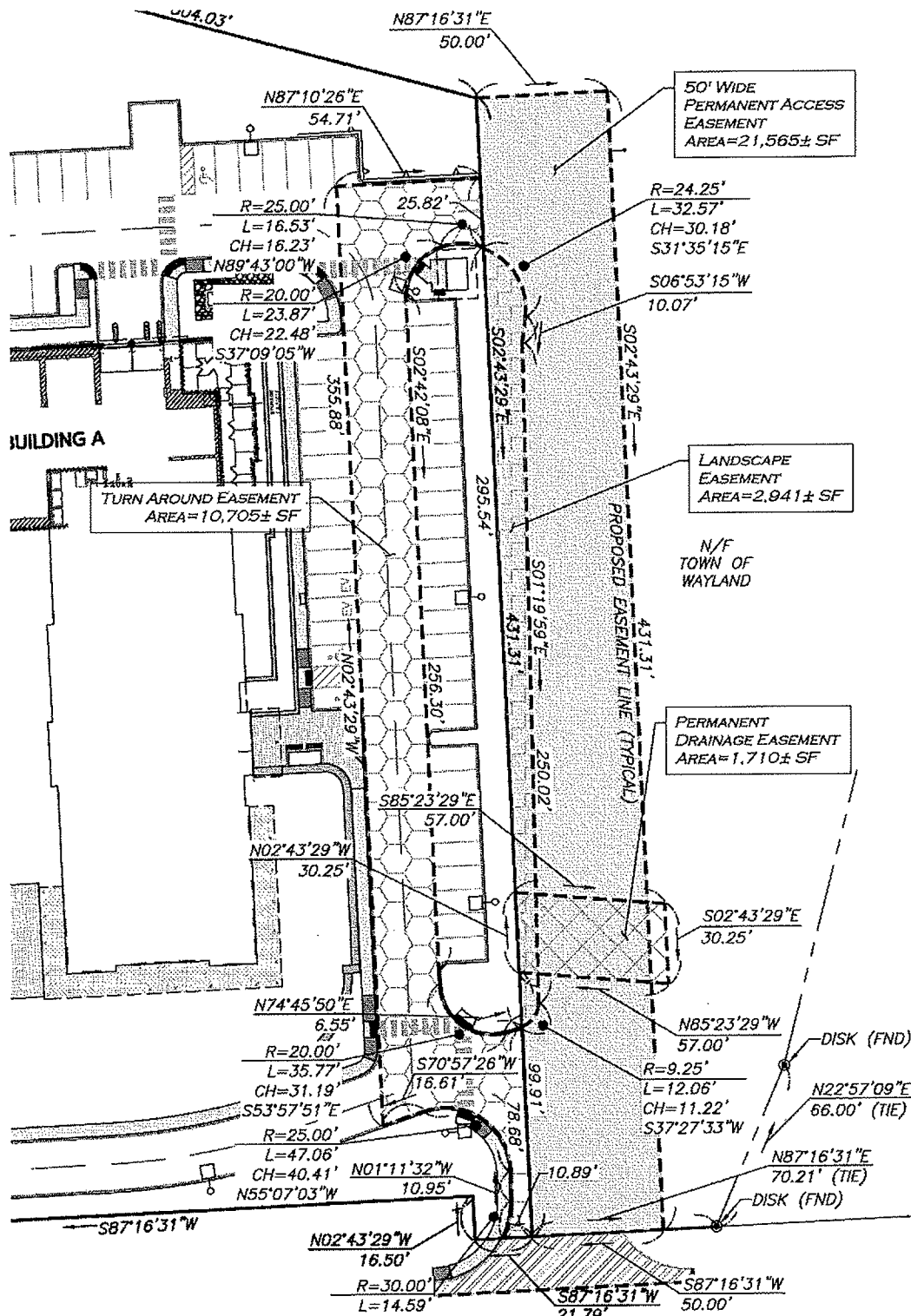
For title, see deed recorded in Book 77062, Page 395.

Exhibit B

Benefited Property

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

Plan – Blown Up Version of Plan showing Easement Areas



* Plan shown in Exhibit C does not necessarily reflect existing conditions. Current as-built conditions for the Project may be modified from time to time.

Exhibit D

Access Easement Premises

A certain easement situated along the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Northwesterly most corner of the easement to be described hereafter; thence

- | | |
|-------------|---|
| N87°16'31"E | Fifty and no hundredths feet (50.00') to a point; thence |
| S02°43'29"E | Four hundred thirty-one and thirty-one hundredths feet (431.31') to a point; thence |
| S87°16'31"W | Fifty and no hundredths feet (50.00') to a point; thence |
| N02°43'29"W | Four hundred thirty-one and thirty-one hundredths feet (431.31') to the point of beginning. |

The above described easement contains an area of 21,565 square feet, more or less, and is more particularly shown as a "50' Wide Permanent Access Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Exhibit ELandscape Easement Premises

A certain easement situated off the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Southwesterly most corner of the easement to be described hereafter; thence

- | | |
|---------------|---|
| N02°43'29"W | Two hundred ninety-five and fifty-four hundredths feet (295.54') to a point of curvature; thence |
| Southeasterly | Along an arc to the right having a radius of twenty-four and twenty-five hundredths feet (24.25'), an arc length of thirty-two and fifty-seven hundredths feet (32.57'), a chord length of thirty and eighteen hundredths feet (30.18') and a chord bearing of S31°35'15"E to a point of tangency; thence |
| S06°53'15"W | Ten and seven hundredths feet (10.07') to a point; thence |
| S01°19'59"E | Two hundred fifty and two hundredths feet (250.02') to a point of curvature; thence |
| Southwesterly | Along an arc to the right having a radius of nine and twenty-five hundredths feet (9.25'), an arc length of twelve and six hundredths feet (12.06'), a chord length of eleven and twenty-two hundredths feet (11.22') and a chord bearing of S37°27'33"W to the point of beginning. |

The above described easement contains an area of 2,941 square feet, more or less, and is more particularly shown as a "Landscape Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Exhibit F

Drainage Easement Premises

A certain easement situated off the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Northwesterly most corner of the easement to be described hereafter; thence

S85°23'29"E Fifty-seven and no hundredths feet (57.00') to a point; thence

S02°43'29"E Thirty and twenty-five hundredths feet (30.25') to a point; thence

N85°23'29"W Fifty-seven and no hundredths feet (57.00') to a point; thence

N02°43'29"W Thirty and twenty-five hundredths feet (30.25') to the point of beginning.

The above described easement contains an area of 1,710 square feet, more or less, and is more particularly shown as a "Permanent Drain Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Exhibit GTurn-Around Easement

A certain easement situated along the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Northwesterly most corner of the easement to be described hereafter; thence

- N87°10'26"E Fifty-four and seventy-one hundredths feet (54.71') to a point; thence
- S02°43'29"E Twenty-five and eighty-two hundredths feet (25.82') to a point of curvature; thence
- Northwesterly Along an arc to the left having a radius of twenty-five and no hundredths feet (25.00'), an arc length of sixteen and fifty-three hundredths feet (16.53'), a chord length of sixteen and twenty-three hundredths feet (16.23') and a chord bearing of N89°43'00"W to a point of compound curvature; thence
- Southwesterly Along an arc to the left having a radius of twenty and no hundredths feet (20.00'), an arc length of twenty-three and eighty-seven hundredths feet (23.87'), a chord length of twenty-two and forty-eight hundredths feet (22.48') and a chord bearing of S37°09'05"W to a point of non-tangency; thence
- S02°42'08"E Two hundred fifty-six and thirty hundredths feet (256.30') to a point; thence
- Southeasterly Along an arc to the left having a radius of twenty and no hundredths feet (20.00'), an arc length of thirty-five and seventy-seven hundredths feet (35.77'), a chord length of thirty-one and nineteen hundredths feet (31.19') and a chord bearing of S53°57'51"E to a point of non-tangency; thence
- N74°45'50"E Six and fifty-five hundredths feet (6.55') to a point; thence
- S02°43'29"E Seventy-eight and sixty-eight hundredths feet (78.68') to a point; thence
- S87°16'31"W Ten and eighty-nine hundredths feet (10.89') to a point of curvature; thence
- Northeasterly Along an arc to the left having a radius of thirty and no hundredths feet (30.00'), an arc length of fourteen and fifty-nine hundredths feet (14.59'), a chord length of fourteen and forty-four hundredths feet (14.44') and a chord bearing of N12°44'18"E to a point of tangency; thence
- N01°11'32"W Ten and ninety-five hundredths feet (10.95') to a point of curvature; thence
- Northwesterly Along an arc to the left having a radius of twenty-five and no hundredths feet (25.00'), an arc length of forty-seven and six hundredths feet (47.06'), a

chord length of forty and forty-one hundredths feet (40.41') and a chord bearing of N55°07'03"W to a point of tangency; thence

S70°57'26"W Sixteen and sixty-one hundredths feet (16.61') to a point; thence

N02°43'29"W Three hundred fifty-five and eighty-eight hundredths feet (355.88') to the point of beginning.

The above described easement contains an area of 10,705 square feet, more or less, and is more particularly shown as a "Turn Around Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Rescheduled 2020 Annual Town Meeting (12:30 p.m.)

&

2020 Special Town Meeting (1:00 p.m.)

Saturday, September 12, 2020

High School Football Field

**STM ARTICLE 1: RIVER'S EDGE DEVELOPMENT: ACCESS AND DRAINAGE
EASEMENT**

The Town voted to transfer from the boards having the care, custody, control and management of certain property, located to the east of 490 Boston Post Road (Route 20), and shown as a "50.00' Wide Permanent Access Easement" and a "30.00' Wide Permanent Drain Easement" on a plan entitled "ALTA at River's Edge 490 Boston Post Road Wayland, MA," dated June 20, 2019, prepared by Allen & Major Associates, Inc., a copy of which is on file in the office of the Town Clerk, to the Board of Selectmen for the purposes for which said property is currently held and for the purpose of conveyance of non-exclusive easement for the benefit of the owner of 490 Boston Post Road, and appurtenant to 490 Boston Post Road, for access, drainage and such other purposes as deemed necessary or convenient for the development of 490 Boston Post Road, and to take any and all related actions necessary or appropriate to accomplish the purposes of this Article and/or otherwise act thereon.

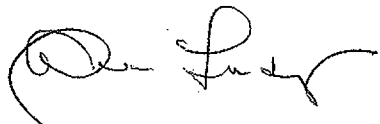
VOTE on STM Article No. 1

Votes in favor: 262

Votes in opposition: 40

Motion **PASSED** (2/3 vote required)

A TRUE COPY ATTEST



TOWN CLERK
TOWN OF WAYLAND

Middlesex South Registry of Deeds
Electronically Recorded Document

This is the first page of the document - Do not remove

Recording Information

Document Number	: 42796
Document Type	: AGR
Recorded Date	: February 25, 2021
Recorded Time	: 03:28:12 PM
Recorded Book and Page	: 77065 / 562
Number of Pages(including cover sheet)	: 13
Receipt Number	: 2613061
Recording Fee	: \$105.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
208 Cambridge Street
Cambridge, MA 02141
617-679-6300
www.middlesexsouthregistry.com

RECORD AND RETURN TO:

KP Law
101 Arch Street, 12th Floor
Boston, MA 02110
Attn: Katharine Lord Klein, Esq.

NCS 861758

~ Recording Information Area ~

REPURCHASE AGREEMENT

This Repurchase Agreement (the "Agreement") is entered into as of the 22 day of February, 2021 between the **Town of Wayland, acting by and through its Board of Selectmen**, a Massachusetts municipal corporation, having an address of 41 Cochituate Road, Wayland, MA 01778 (the "Town"), and **ALTA River's Edge LLC**, a Delaware limited liability company, having a principal place of business located at c/o WP East Acquisitions, L.L.C., 91 Hartwell Avenue, Lexington, MA 02421 ("Buyer").

RECITALS:

WHEREAS, the Town sold to Buyer and Buyer purchased from the Town, pursuant to the terms of a Land Disposition Agreement entered into between the Town and the Buyer (as successor in interest to WP East Acquisitions, L.C.C.) dated July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof, the "Disposition Agreement") and a deed recorded simultaneously herewith, land containing approximately 8.24 acres (the "Premises"), commonly known as 490 Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as "Lot A", "Lot C", and "Lot E" on that certain plan entitled "ANR Subdivision Plan Assessors Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South Registry of Deeds (the "Registry") as Plan No. 260 of 2017 (the "ANR Plan"); and

WHEREAS, Buyer intends to develop and construct 218 new rental housing units (the "Project"), including (i) at least twenty-five percent (25%) of such new rental housing units being affordable units for occupancy by persons or households whose aggregate family income does not exceed eighty percent (80%) of the median gross income for the area, as established by the United States Department of Housing and Urban Development and (ii) at least twenty-five percent (25%) of such new rental housing units being age-restricted (senior) units, and associated improvements on the Premises in accordance with those certain plans approved by the Town of Wayland Zoning Board of Appeals (the "Schematic Design Plans"); and

Property address: 490 Boston Post Road, Wayland, Middlesex County, Massachusetts

WHEREAS, the parties desire to set forth their understanding regarding Buyer's construction of the Project on the Premises and the Town's rights in connection therewith in the event Buyer fails to use commercially reasonable efforts to diligently commence construction of the Project by the date which is ninety (90) days after the closing under the Disposition Agreement (the "Commencement Deadline"), subject to the terms and conditions set forth in this Agreement.

NOW THEREFORE, in consideration of the Recitals set forth above, which are incorporated in and made a part of this Agreement, and in consideration of the mutual covenants and agreements herein contained, the Town and the Buyer agree as follows:

1. Obligation to Commence Construction of the Premises. Subject only to delays caused by Force Majeure (as such term is defined herein), Buyer shall promptly Commence (as such term is defined herein) construction of the Project in accordance with the Schematic Design Plans by the Commencement Deadline. Construction of the Project shall be deemed to "Commence" upon the date that (i) a building permit for the Project is issued by the Town of Wayland Building Inspector and (ii) the Buyer commences and diligently undertakes physical construction of the Project, which shall be evidenced by the commencement of site preparation work in furtherance of the Project.

2. The Town's Repurchase Right.

(a) The failure of the Buyer to comply with the obligations set forth in Section 1 of this Agreement shall constitute an event of default ("Default") hereunder.

(b) The Buyer shall have sixty (60) days after receipt of a written notice of default submitted to Buyer by the Town with respect to a Default under Section 1 of this Agreement (the "Cure Period") to cure such Default to the reasonable satisfaction of the Town, provided, however, that such Cure Period shall be reasonably extended for up to an additional sixty (60) days (the "Cure Period Extension Deadline") if the cure of such Default cannot be completed within the Cure Period and Buyer has timely commenced to cure such Default and thereafter diligently completes the cure.

(c) If, after the expiration of the Cure Period, or if applicable, the Cure Period Extension Deadline, the Default remains uncured, the Town shall have the option, but not the obligation, to repurchase the Premises (the "Repurchase Right"), by notifying Buyer in writing within fifteen (15) days after the expiration of the Cure Period or, if applicable, the Cure Period Extension Deadline of the Town's election to repurchase the Premises for the Repurchase Price, as hereinafter computed.

(d) In the event that the Town exercises its Repurchase Right, the closing shall occur on such a date that is no earlier than sixty (60) days and no later than one hundred eighty (180) days after the Town exercises its option to repurchase (the "Closing Date").

(e) At or prior to the Closing Date:

(i) Buyer shall convey to the Town (or its designee) by good, clear, record and marketable title to the Premises by Quitclaim Deed all of its right, title, and

interest in the Premises and all improvements thereon, free and clear of all liens and encumbrances, except those approved in writing by the Town thirty (30) days prior to the Closing Date and those in existence as of the date of Buyer's purchase of the Premises;

(ii) the Town shall pay to Buyer the Repurchase Price, in cash or by certified check or bank check or by wire transfer of funds; and

(iii) recording fees and adjustments, if any, shall be paid in accordance with Massachusetts custom.

(f) On or prior to the Closing Date, the Buyer shall assign to the Town (or its designee) all of its rights, title and interest in all plans, improvements, warranties, permits, approvals and the like (to the extent the same are assignable), with all fees and expenses related to such work due and payable for the work completed and permits issued as of the Closing Date, to be paid by Buyer in full.

(g) For purposes of this Agreement, the term "Repurchase Price" shall mean the Purchase Price paid by Buyer for the Premises, as defined in Section 2.1 of the Disposition Agreement.

3. Force Majeure. The duties of the Buyer to observe or perform any of the provisions of this Agreement (except the payment of money and the cure of a Default by the Cure Period Extension Deadline) shall be excused and extended for a period equal to the period of prevention, delay or stoppage due to strikes, civil riots, war, acts of terrorism, invasion, fire or other casualty, acts of God, adverse weather conditions not reasonably anticipated, act or failure to act of quasi-governmental or governmental authorities, unanticipated and unforeseen changes in any statute, law, or regulation applicable to the development of the Project, unanticipated and unforeseen governmental acts or orders affecting the development of the Project, adverse site conditions not uncovered by reasonable geotechnical testing or other site assessments typical of developments of this nature and location, or other causes beyond the reasonable control of the party required to make performance, but specifically excluding financial constraints of such party ("Force Majeure"). Buyer shall provide the Town with written notice promptly following the time it becomes aware of any Force Majeure event, and Buyer shall take all steps that are reasonably necessary under the circumstances to mitigate the effects of such Force Majeure. Financial inability shall not be deemed a ground of Force Majeure.

4. Termination. Upon Commencement by Buyer of the Project, this Agreement and the rights granted here under shall automatically terminate without requirement of any further actions or agreements by either Buyer or the Town. Notwithstanding the foregoing, the Town hereby agrees to execute any appropriate and reasonable documentation, in recordable form, necessary to terminate this Agreement of record.

5. Miscellaneous.

(a) Notices. All notices required or permitted to be given hereunder shall be in writing and delivered by hand, by recognized national overnight courier service, or mailed postage prepaid, by registered or certified mail, addressed as follows or when transmitted by

facsimile to the facsimile number for each party set forth below, or when transmitted by email to the email address for each party set forth below between 9:00 A.M. and 5:00 P.M Eastern Standard Time on a business day provided that an original of the transmission be sent overnight consistent with above.

If to Buyer: c/o Wood Partners
91 Hartwell Avenue
Lexington, MA 02421
Attn: Jim Lambert, Director
Email: Jim.Lambert@woodpartners.com

with a copy to: Andrew R. Allen
Alston & Bird LLP
1201 W. Peachtree Street
Atlanta, GA 30309
Email: drew.allen@alston.com

and with a copy to: c/o Wood Partners
636 W. Yale Street
Orlando, Florida 32804
Attention: Sean Reynolds
Telephone: (407) 982-2517
E-mail: sean.reynolds@woodpartners.com

If to the Town: Town of Wayland
Wayland Town Building
41 Cochituate Road
Wayland, MA 01778
Attention: Louise Miller
E-mail: lmiller@wayland.ma.us

with a copy to: David L. Wiener
Anderson & Kreiger LLP
50 Milk Street, 21st Floor
Boston, MA 02109
E-mail: dwiener@andersonkreiger.com

and KP Law, P.C.
101 Arch Street
Boston, MA 02110
Attn: Katharine Lord Klein
E-mail: kklein@k-plaw.com

Each party shall be responsible for notifying the other party of any change of address.

- (b) The provisions of this Agreement are not intended to create, nor shall they in any way be interpreted to create, a joint venture, a partnership, or any other similar relationship between the parties.
- (c) The captions heading the various sections of this Agreement are for convenience and identification purposes only, and they shall not be deemed to limit or define the contents of their respective sections.
- (d) The recitals set forth in this Agreement and all exhibits attached to this Agreement are incorporated in and made part of this Agreement.
- (e) Except as otherwise expressly provided in this Agreement, no delay or omission by either of the parties in exercising any right or power accruing upon the other party's non-compliance with or failure to perform any of the provisions of this Agreement shall impair or be construed to be a waiver of any such right or power.
- (f) The parties hereto acknowledge and agree that this Agreement has been negotiated at arm's length and between parties equally sophisticated and knowledgeable in the matters dealt with in this Agreement. Accordingly, any rule of law or legal decision that would require interpretation of any ambiguities in this Agreement against the party that has drafted it, or in favor of the non-drafting party, is not applicable and is waived. The provisions of this Agreement shall not be construed strictly or in favor of or against any party hereto but rather shall be interpreted in a reasonable manner to effect the intent of the parties as set forth in this Agreement.
- (g) This Agreement shall be binding upon and inure to the benefit of the Town and the Buyer and their respective successors and permitted assigns subject to the provisions of this Agreement. Neither party may assign its rights or obligations hereunder without the prior written consent of the other party hereto, which may be granted or withheld in such other party's sole discretion.
- (h) This Agreement may be executed in several counterparts, each of which shall be an original but all of which shall constitute one and the same instrument.
- (i) Amendments, modifications, supplements or changes to this Agreement shall be in writing, signed by both parties.
- (j) If any provision of this Agreement or application to any party or circumstances shall be determined by a final, unappealed ruling of any court of competent jurisdiction to be invalid and unenforceable to any extent, the remainder of this Agreement shall not be affected thereby, and each provision hereof shall be valid and shall be enforced to the fullest extent permitted by law. In the place of such invalid or unenforceable provision, there shall be substituted a like, but valid and enforceable provision that comports to the findings of the aforesaid court and most nearly accomplishes the original intent of the parties.
- (k) This Agreement shall be recorded in the Middlesex South District Registry of Deeds with the parties dividing the cost of such recordation equally between the parties.

(l) Each party shall, without charge, at any time and from time to time hereafter, within fifteen (15) days after receipt of written request of the other, certify by written instrument, duly executed and acknowledged, to any mortgagee or purchaser, or proposed mortgagee or proposed purchaser, or any other person, firm or corporation specified in such request:

(i) whether this Agreement has been supplemented or amended, and, if so, the substance and manner of the supplement or amendment;

(ii) whether any default exists under this Agreement, and, if so, a description of each default;

(iii) whether any offsets, counterclaims or defenses exist on the part of the responding party with respect to the obligations under this Agreement, and, if so, the nature and amount of such offsets, counterclaims or defenses; and

(iv) such other matters as may be reasonably requested.

Any such certificate may be relied upon by the addressee, and said addressee may rely on same to the extent of estopping the party providing the certificate from asserting a claim or defense inconsistent with the facts therein to the extent relied upon by the addressee without knowledge of the facts to the contrary, and the contents of such certificate shall be binding on the party executing the same to such extent.

(m) This Agreement shall be governed by the laws of the Commonwealth of Massachusetts.

[Signatures to appear on next page.]

IN WITNESS WHEREOF, the Town and Buyer have executed this Agreement as of the date first above written.

Town:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson
Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared Cherry Karlson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]
Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

IN WITNESS WHEREOF, the Town and Buyer have executed this Agreement as of the date first above written.

Town:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair



David V. Watkins

Thomas J. Fay

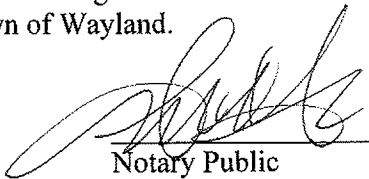
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared David Watkins, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public

My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

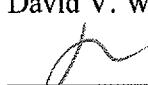
IN WITNESS WHEREOF, the Town and Buyer have executed this Agreement as of the date first above written.

Town:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

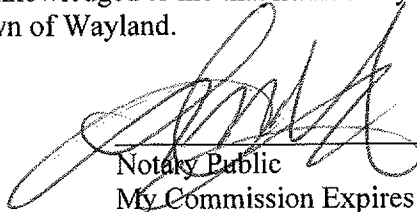
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared TOM FAY, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was LICENSE, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

IN WITNESS WHEREOF, the Town and Buyer have executed this Agreement as of the date first above written.

Town:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson


COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared Mary Antes, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025

 Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

IN WITNESS WHEREOF, the Town and Buyer have executed this Agreement as of the date first above written.

Town:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb 2021, before me, the undersigned Notary Public, personally appeared Lea Anderson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

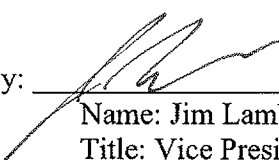
Buyer:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware
limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited
liability company, its Managing Member

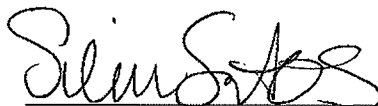
By: WP Massachusetts, LLC, a Delaware
limited liability company, its sole member and
manager

By: 
Name: Jim Lambert
Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 19th day of January, 2021, before me, the undersigned
Notary Public, personally appeared Jim Lambert, Vice President of WP Massachusetts, LLC,
a Delaware limited liability company, the sole member and manager of WS River's Edge,
LLC, a Delaware limited liability company, the managing member of Alta River's Edge
Venture, LLC, a Delaware limited liability company, the sole member of Buyer, as aforesaid,
proved to me through satisfactory evidence of identification, which was
MA License 548562727, to be the person whose name is signed on the preceding
document, and acknowledged to me that he signed it voluntarily for its stated purpose on
behalf of said entities in such capacities.



Notary Public

My Commission Expires:



SILVIA E. SANTOS
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 30, 2026

Middlesex South Registry of Deeds
Electronically Recorded Document

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Recording Information

Document Number	: 42799
Document Type	: NOT
Recorded Date	: February 25, 2021
Recorded Time	: 03:28:12 PM
Recorded Book and Page	: 77066 / 18
Number of Pages(including cover sheet)	: 10
Receipt Number	: 2613061
Recording Fee	: \$105.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
208 Cambridge Street
Cambridge, MA 02141
617-679-6300
www.middlesexsouthregistry.com

Property Address: 490 Boston Post Road, Wayland, Massachusetts

RECORD AND RETURN TO:

KP Law
101 Arch Street, 12th Floor
Boston, MA 02110
Attn: Katharine Lord Klein, Esq.

NCS 861758

Notice of Land Disposition Agreement

Dated as of February 22, 2021

Notice is hereby given of the following described Land Disposition Agreement for the Sale and Redevelopment of Land affecting certain land presently owned by the Town of Wayland, a Massachusetts municipal corporation, such land being more particularly described in Exhibit A attached hereto:

Date of Land Disposition Agreement:

Land Disposition Agreement for the Sale and Redevelopment of Land dated July 28, 2017 (as amended through a Twelfth Amendment dated on or about the date hereof, and as the same may be further amended from time to time, the "LDA")

Seller:

Town of Wayland, acting by and through its Board of Selectmen, with an address of 41 Cochituate Road, Wayland, MA 01778

Buyer:

ALTA River's Edge, LLC, a Delaware limited liability company, with an address of c/o WP East Acquisitions, L.L.C., 91 Hartwell Avenue, Lexington, MA 02421

Land Burdened by LDA:

Land in the Town of Wayland, Middlesex County, Massachusetts described in Exhibit A attached hereto (the "Property").

Notice is hereby given that the LDA contains additional terms, covenants, conditions and provisions that survive delivery of the deed conveying the Property from Seller to Buyer of even date herewith, not set forth in or referred to in this Notice of Land Disposition Agreement.

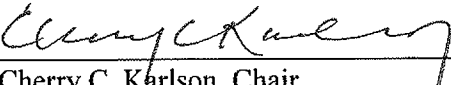
This Notice of Land Disposition Agreement is executed pursuant to the provisions contained in the LDA, and is not intended to vary the terms, conditions or other provisions of the LDA. In the event of a conflict between the terms and conditions of this Notice of Land Disposition Agreement and the terms and conditions of the LDA, the terms and conditions of the LDA will prevail.

[Signatures follow]

EXECUTED under seal as of the date first set forth above.

Seller:

TOWN OF WAYLAND,
By Its Board of Selectmen


Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

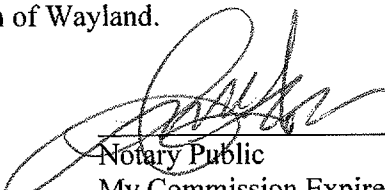
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared Cherry Karlson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

EXECUTED under seal as of the date first set forth above.

Seller:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry G. Karlson, Chair



David V. Watkins

Thomas J. Fay

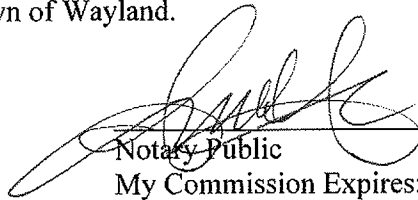
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared David Watkins, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025


EXECUTED under seal as of the date first set forth above.

Seller:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

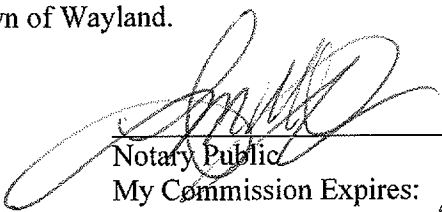
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared TOM FAY, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

EXECUTED under seal as of the date first set forth above.

Seller:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared Mary Antes, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was [Signature], to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10/10/2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

EXECUTED under seal as of the date first set forth above.

Seller:

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned Notary Public, personally appeared Lea Anderson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public

My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

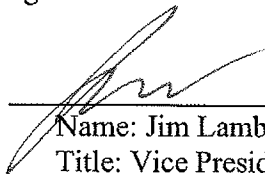
Buyer:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware
limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited
liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware
limited liability company, its sole member and
manager

By: 
Name: Jim Lambert
Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 19th day of January, 2021, before me, the undersigned
Notary Public, personally appeared Jim Lambert, Vice President of WP Massachusetts, LLC,
a Delaware limited liability company, the sole member and manager of WS River's Edge,
LLC, a Delaware limited liability company, the managing member of Alta River's Edge
Venture, LLC, a Delaware limited liability company, the sole member of Buyer, as aforesaid,
proved to me through satisfactory evidence of identification, which was
MA License 548562727, to be the person whose name is signed on the preceding
document, and acknowledged to me that he signed it voluntarily for its stated purpose on
behalf of said entities in such capacities.


Notary Public
My Commission Expires:



SILVIA E. SANTOS
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 30, 2026

Exhibit A

A certain parcel of land situated on the northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

For title, see deed recorded in Book 77062, Page 395.

Middlesex South Registry of Deeds

Electronically Recorded Document

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Recording Information

Document Number	: 42798
Document Type	: EASE
Recorded Date	: February 25, 2021
Recorded Time	: 03:28:12 PM
Recorded Book and Page	: 77066 / 1
Number of Pages(including cover sheet)	: 17
Receipt Number	: 2613061
Recording Fee (including excise)	: \$105.00

 MASSACHUSETTS EXCISE TAX
 Southern Middlesex District ROD # 001
 Date: 02/25/2021 03:28 PM
 Ctrl# Doc# 00042798
 Fee: \$.00 Cons: \$.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
 208 Cambridge Street
 Cambridge, MA 02141
 617-679-6300
www.middlesexsouthregistry.com

Property Address: 490 Boston Post Road,
Wayland, MA 01776
NCS 861758

GRANT OF EASEMENTS
(WASTEWATER FACILITIES)

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("Grantor"), having an office at c/o WP East Acquisitions, LLC, 91 Hartwell Avenue, Lexington, MA 02421, for consideration paid of One Dollar (\$1.00), grants, with quitclaim covenants, to the **TOWN OF WAYLAND** (the "Town"), a Massachusetts municipal corporation, acting by and through its Board of Selectmen and having an address of Wayland Town Building, 41 Cochituate Road, Wayland, Massachusetts 01778, permanent easements in, on and across parcels of land located in Wayland, Middlesex County, Massachusetts, described below, on the terms and conditions set forth herein. This Grant of Easements is sometimes referred to herein as the "Agreement" or "Easement Agreement".

WHEREAS, Grantor is, as of the date hereof, the owner of a parcel of land located at 490 Boston Post Road (Route 20), Wayland, Massachusetts, described more particularly in Exhibit A attached hereto and incorporated herein (the "Grantor Property");

WHEREAS, Grantor intends to develop and construct a residential, rental housing project upon the Grantor Property (the "Project");

WHEREAS, the Town has received funding for the installation, construction, improvement, alteration and modification of public wastewater treatment facilities, both sub-surface and aboveground (the "New Town Wastewater Infrastructure"), that will serve, among other properties, the Grantor Property;

WHEREAS, a portion of the New Town Wastewater Infrastructure consisting of (1) a leaching field, force main, and related lines, conduits, fixtures and equipment (the "On-Site Leaching Field Infrastructure"); and (2) a pumping station, a wastewater line, force mains, and related conduits, fixtures and equipment located on the Grantor Property (the "On-Site Pumping Station Infrastructure," together with the On-Site Leaching Field Infrastructure, the "On-Site Wastewater Infrastructure"), will be located on the Grantor Property. The current planned location of the On-Site Wastewater Infrastructure on the Grantor Property as well as the accessways required to gain access to such On-Site Wastewater Infrastructure is approximately shown on the sketch plan (the "Sketch Plan")

attached hereto as Exhibit B and incorporated herein (subject to modification as provided herein, the "Easement Premises");

WHEREAS, Grantor and the Town acknowledge and agree that the construction of the On-Site Wastewater Infrastructure and, upon completion thereof, the ongoing operation, inspection, repair, maintenance and, as necessary, replacement of the On-Site Wastewater Infrastructure, is critical to the viability of the Project;

WHEREAS, as a condition to the Town's agreement to construct the New Town Wastewater Infrastructure (except those portions that will be constructed by Grantor) and the Town's agreement to operate, inspect, maintain, repair, and, as necessary, replace the On-Site Wastewater Infrastructure (collectively, the "Wastewater O/M Work"), the Town has required that the Grantor grant to the Town permanent easements on, over, under and across portions of the Grantor Property for the purpose of access to and the right to perform the Wastewater O/M Work and to discharge treated effluent from the Town's wastewater treatment facility located at Elissa Drive, Wayland, Massachusetts (the "Town WW Facility") to the leaching field that is to be constructed as part of the On-Site Leaching Field Infrastructure; and

WHEREAS, Grantor has agreed to convey the foregoing easements to the Town, subject to the terms and conditions set forth herein.

NOW, THEREFORE, for consideration paid of One Dollar (\$1.00), and for other good and valuable consideration, the adequacy and sufficiency of which is hereby acknowledged, the Grantor and the Town, for themselves and their respective successors and assigns, agree as follows:

1. Easement Premises; Permitted Uses. Subject to the terms and conditions hereof, effective upon the WW Operation Date (hereinafter defined), the Grantor hereby grants the Town: (a) a permanent easement over, across, under and through the Easement Premises, for the purpose of performing the Wastewater O/M Work; (b) a permanent easement for pedestrian and vehicular traffic, including heavy equipment over, across and through certain roads, drives and paths located on the Grantor Property and within the Easement Premises which are required to gain access to the On-Site Wastewater Infrastructure in order to perform the Wastewater O/M Work; and (c) a permanent easement and right to discharge treated effluent from the Town WW Facility to the leaching field that is to be constructed as part of the On-Site Leaching Field Infrastructure; *provided, however*, that the Town shall in no event return treated effluent from the Town WW Facility in quantities which exceed the amount that the leaching field is designed to receive (collectively, the "Easement"). For the purposes hereof, the "WW Operation Date" shall mean the date upon which the On-Site Wastewater Infrastructure is fully completed, accepted by the Town, operational and ready to discharge and receive effluent to and from the balance of the New Town Wastewater Infrastructure.

2. Location of the Easement Premises. The Easement Premises, as shown on the Sketch Plan, are shown in their approximate location only based on the current design

plans for the On-Site Wastewater Infrastructure. During the design and construction of the Project and the On-Site Wastewater Infrastructure, the Grantor and the Town shall consult with one another relative to the final location of the Easement Premises, which final location shall be reasonably acceptable to both the Grantor and the Town, and which approval thereof shall not be unreasonably withheld, conditioned or delayed. The Easement Premises will be located substantially where shown on the Sketch Plan, however, the final location will be determined during construction of the Project and the On-Site Wastewater Infrastructure, and the Grantor, after construction thereof, at its sole cost and expense, shall prepare a plan depicting the as-built location of the On-Site Wastewater Infrastructure and the final Easement Premises, providing a copy of the same to the Town. Grantor and the Town agree to amend this Easement Agreement to reflect the final location of the Easement Premises, and record such amendment with the Registry of Deeds with a replacement plan showing the as-built Easement Premises and to make such other changes to this Easement Agreement that may be required by the Massachusetts Department of Environmental Protection.

3. Construction of the On-Site Wastewater Infrastructure. Grantor shall, at its sole cost and expense (subject to the terms of the LDA (hereinafter defined) and the Development Agreement (hereinafter defined)), install and construct all On-Site Wastewater Infrastructure on the Grantor Property, to the boundary line of the Grantor Property. The Grantor shall: (i) construct the On-Site Wastewater Infrastructure in a good and workmanlike manner, using materials of good quality, and in accordance with plans and specifications mutually agreed upon by the parties (to the extent not already approved by the Town and its applicable departments and/or divisions as of the date hereof), (ii) permit no excavation to remain open without the safeguards required by law, and (iii) perform its construction obligations in accordance with all applicable laws, by-laws and regulations and after obtaining all necessary approvals, licenses and permits from government authorities before commencement of work (collectively, the "OS Wastewater Construction Plans and Approvals"). Upon completion of the On-Site Wastewater Infrastructure in accordance with the OS Wastewater Construction Plans and Approvals and final inspection and approval thereof by the Town (or its applicable agency or department), the Grantor and the Town shall take any and all actions necessary to dedicate the On-Site Wastewater Infrastructure to the Town, whereupon it shall be and remain the property of the Town. The Town agrees to inspect (or cause the inspection of) the completed On-Site Wastewater Infrastructure as soon as practicable after receipt of notice of such completion from Grantor.

4. Maintenance and Operation of the On-Site Wastewater Infrastructure.

Subject to there being no default of Grantor under the O&M Agreement (hereinafter defined) beyond any applicable notice and cure period, the Town shall, at its sole cost and expense, have sole responsibility to perform all required Wastewater O/M Work in a good and safe condition at all times in accordance with the O&M Agreement, all applicable laws, by-laws and regulations, including without limitation all Environmental Laws, and otherwise in a manner required to keep the On-Site Wastewater Infrastructure fully-functioning and operational at all times, except to the extent Grantor,

Grantor's representatives, employees, agents, tenants, invitees, and those claiming by or through Grantor, through their negligence or willful misconduct, cause damage to the On-Site Wastewater Infrastructure. In connection with the performance of any Wastewater O/M Work, the Town shall have the right to remove any trees, vegetation or brush within or immediately adjacent to the Easement Premises necessary to perform such work. The Town shall, except in the event of an emergency, provide the Grantor with 48 hours' notice of any anticipated Wastewater O/M Work. For the purposes hereof, "Environmental Laws" means and includes any applicable present and future local, state and federal law relating to the environment and environmental conditions including without limitation, the Resource Conservation and Recovery Act of 1986 ("RCRA"), 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"). 42 U.S.C. 9601-9657, as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"); the Hazardous Materials Transportation Act, 49 U.C.S. 6901, et seq.; the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq.; the Clean Air Act, 42 U.S.C. 7410 et seq.; the Clean Water Act, 33 U.S.C. 7101, et seq.; the Toxic Substances Control Act, 15 U.S.C. 2601 et seq.; the Massachusetts Contingency Plan, 310 CMR 40.0000, et seq., and any other state and local analogs or laws regulating pollution and the environment; all as amended, and any regulations promulgated under any of the foregoing statutes, or any similar state law or local ordinance.

5. Operation and Maintenance Agreement. Prior to the commencement of operations of the On-Site Wastewater Infrastructure, the Grantor and Town shall enter into an operation and maintenance agreement (the "O&M Agreement") with respect to the maintenance and operation of the On-Site Wastewater Infrastructure, which shall provide, among other things, that Grantor shall pay a fee to the Town for the Town's maintenance and repair obligations with respect to the On-Site Wastewater Infrastructure. The timing for submission and approval of the O&M Agreement is more fully detailed in an Infrastructure Development Agreement (Wastewater Facilities) between the Grantor and the Town of even date herewith (the "Development Agreement"). A Notice of the O&M Agreement shall be recorded with the Registry of Deeds and the O&M Agreement shall bind and inure to the Grantor Property and shall be a covenant running with the land.

6. Liens. The Town shall not permit any mechanics' liens or similar liens to remain upon or attach to the Grantor Property for labor and material furnished to the Town in connection with work of any character performed by or at the direction of the Town in connection with the easement rights granted hereunder or otherwise and the Town shall cause any such lien to be released of record (or discharged by bonding) forthwith without cost to the Grantor, within thirty (30) days after the Town's receipt of written notice thereof.

7. Reserved Rights, Disclaimer. The Grantor reserves, for itself and its successors and assigns, the right to use the Easement Premises for any and all purposes, provided such use does not interfere unreasonably with the Town's use of the Easement Premises for the purposes set forth herein. The Grantor makes no representation, either

express or implied, with respect to the condition of the Easement Premises. The Town acknowledges that the Town shall use and perform the Wastewater O/M Work within the Easement Premises at its sole risk.

8. Restrictions, Limitations. The Grantor, and its contractors, representatives and agents, shall not: (a) use the Easement Premises in a manner that interferes with the Town's right to access and use the On-Site Wastewater Infrastructure for the purposes hereby granted; (b) except as expressly permitted by this Agreement or contemplated by the plans for the Project and/or the On-Site Wastewater Infrastructure, construct or place any permanent or temporary buildings, structures, or obstructions on, over, across or below the Easement Premises; (c) cause or allow to be caused a release or threat of release of hazardous materials or oil on the Easement Premises; or (d) store or park vehicles, equipment, or other property on the Easement Premises.

9. Release; Responsibility for Liabilities. The Town hereby releases the Grantor, its officers, employees, representatives, contractors, lenders, members, affiliates and agents (collectively, "Grantor Parties") from any responsibility for Liabilities (defined in Section 10 below) related to the condition or use of the Easement Premises for the purposes for which the Town is permitted or required to use the Easement Premises under this Easement Agreement, except to the extent caused by (i) the negligence or willful misconduct of the Grantor or its officers, employees, representatives, contractors and agents; or (ii) a material breach of this Easement Agreement by the Grantor. From and after the Town's approval and acceptance of the On-Site Wastewater Infrastructure as provided in Section 3 above, the Town shall be solely responsible for any and all Liabilities associated with the On-Site Wastewater Infrastructure, and hereby assumes such Liabilities at its own risk, except to the extent such Liabilities arise out of (i) the negligence or willful misconduct of the Grantor or its officers, employees, representatives, contractors and agents; or (ii) a material breach of this Easement Agreement by the Grantor.. Notwithstanding the foregoing, nothing in this Section 9 shall be deemed to be a release by the Town of Grantor for any claims or any other cause of action, cost or expense with respect to any contractual obligations that Grantor may have to the Town under the O&M Agreement or the Land Disposition Agreement between Grantor and the Town (as amended, the "LDA"); *provided, however*, that this Easement Agreement shall expressly supersede and override any conflicting provisions of Section 3.4 of the LDA as it concerns the On-Site Wastewater Infrastructure, and the Grantor's covenants and obligations thereunder (including the indemnification obligations) shall expressly exclude any Liabilities associated with the On-Site Wastewater Infrastructure from and after the WW Operation Date, which are borne exclusively by the Town except to the extent expressly set forth in this Agreement.

10. Indemnification. To the extent permitted by law, commencing from and after the date the Town accepts the On-Site Wastewater Infrastructure pursuant to Paragraph 3 above, the Town agrees to indemnify and hold Grantor and any Grantor Parties harmless of and from any and all loss, cost, liability, damage or expense (including reasonable attorneys' fees) (collectively, "Liabilities") arising from or in connection with (i) the exercise of the rights of the Town hereunder; (ii) the Town's

performance of the Wastewater O/M Work (including any liens which are filed on account of such work); or (iii) the Town's breach of this Easement Agreement, including without limitation the Town's failure to perform its obligations under Section 4 above. To the extent that the Town or anyone acting for or through the Town releases or is otherwise responsible for a release of oil or hazardous materials ("OHM") on the Grantor Property in quantities or concentrations requiring reporting to the Massachusetts Department of Environmental Protection (MassDEP) or any other governmental authority with jurisdiction over the Property or the release, the Town shall promptly notify Grantor of the reportable condition. After consultation with and approval from the Grantor the Grantor's Licensed Site Professional (LSP), the Town shall submit a release notification form to MassDEP (or other governmental authority as appropriate), designating itself as the responsible party and shall be responsible at its sole cost and expense for expeditiously achieving a Permanent Solution with no conditions, including no activities and use limitations (the "Permanent Solution"). The Town shall continue to consult with and obtain approval from Grantor and Grantor's LSP on all remedial strategies and submissions until the Permanent Solution is achieved.

11. Insurance Coverages. Before the Town or any party acting by, through or under the Town (including agents, employees, contractors or consultants thereof) enters the Easement Premises for any reason, the Town shall procure, at its own cost and expense, or cause to be procured (i.e., by the contractor the Town engages to perform Wastewater O/M Work), the following minimum insurance: (a) commercial general liability insurance with a minimum coverage amount of One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit (which policy shall include blanket contractual liability insurance for all written contracts in accordance with policy terms afforded under ISO CG 00 01 04 13 (or carrier equivalent)), subject to such coverage being commercially available, and shall include coverage for products through the time period applicable as required by the statute of repose and independent contractor's liability and coverage for property damage); (b) automobile liability insurance for owned and non-owned automobiles, trucks and all other licensed for road use vehicles, and/or hired/rented automobiles, trucks and all other licensed for road use vehicles, in the amount of One Million Dollars (\$1,000,000) combined single limit; (c) workers compensation in the minimum amount of the statutory limit and Employers Liability in the amount of One Million Dollars (\$1,000,000); (d) umbrella/excess liability in the minimum amount of Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) aggregate over all other insurance required by this Agreement (except workers compensation); and (e) contractors pollution liability in the amount of Two Million Dollars (\$2,000,000) Each Occurrence and Two Million Dollars (\$2,000,000) in the Aggregate for contractors providing Wastewater O/M Work. Required limits may be achieved via combination of primary and excess/umbrella liability policies.

12. General Insurance Requirements. All insurance required hereunder shall name the Grantor and its affiliates and their respective agents, members, managers, directors, officers, employees, successors, assigns and any other party reasonably designated by Grantor as an additional insured (except workers compensation/employers

liability). Additional Insured afforded under the General Liability policy shall extend to ongoing and products/completed operations. All insurance required shall be issued by insurers authorized to transact insurance business in the Commonwealth of Massachusetts and having an A- or better financial rating from a recognized insurance accreditation institution (such as A.M. Best Company). All insurance required hereunder, or with respect to any insurance carried by a party that covers the Easement Premises or the actions or omissions of that party, shall provide a waiver of subrogation in favor of the other. Where commercially available, all insurance policies and certificates shall include a provision requiring thirty (30) days' written notice to the Grantor of any cancellation (except only ten (10) days' written notice for cancellation due to nonpayment of premium). At least annually, and at such other times as the Grantor may reasonably request, the Town shall provide the Grantor with a certificate evidencing the coverages required hereunder. The Town's failure to obtain, procure and/or maintain the required insurance at all times shall constitute a material default hereunder. The Town's obligations to the Grantor under this Easement Agreement shall not be limited by the requirement for, or existence or amount of, insurance coverage. Grantor and the Town agree that (i) the failure of Grantor to demand evidence of such minimum insurance coverages or failure of Grantor to identify a deficiency(ies) therein will not be construed as a waiver of the Town's obligation to maintain the minimum insurance required under this Agreement; (ii) the insurance required under this Agreement does not represent that coverage and limits will necessarily be adequate to protect the Town, nor be deemed as a limitation of the Town's liability to Grantor in this Agreement; and (iii) the Town is solely responsible for any deductible and/or self-insured retention.

13. Miscellaneous:

(a) The rights and easements of the Town hereunder shall be deemed to be easements in gross, and neither the rights and easements hereunder nor the Town's obligations hereunder are assignable by the Town, except in connection with the conveyance or transfer by the Town of the New Town Wastewater Infrastructure as part of a larger conveyance or transfer of all or substantially all of the public wastewater infrastructure owned or maintained by the Town in the Town of Wayland, Massachusetts, and provided the O&M Agreement is assigned to and assumed by such successor owner. The rights and easements conferred herein shall be binding upon the Grantor, and its respective successors and assigns, and shall run with the Grantor Property and such provisions shall be deemed to be enforceable covenants running with the Grantor Property and shall bind any person having at any time any interest or estate in all or any portion of the Grantor Property as though such provisions were recited and stipulated in full in each and every deed of conveyance. The terms and provisions hereof shall be binding upon the Grantor hereto only with respect to the periods of time the Grantor is the owner of title to the Grantor Property. Accordingly, from and after such time as the Grantor shall transfer title to the Grantor Property, it shall have no further obligations hereunder except for obligations which accrued prior to the time of such transfer, it being specifically understood that from and after the date of such transfer the Grantor shall have no further rights hereunder nor responsibility for any obligations hereunder which rights and obligations shall, thereafter, be deemed rights and obligations of the party to whom

title has been transferred and such transferee shall, by virtue of its acceptance of such transfer be deemed to have assumed and agreed to perform all obligations of the transferor thereafter accruing under this Agreement.

(b) Any notice required or given under this Agreement shall be deemed duly served if hand-delivered, mailed by registered or certified mail, return receipt requested, postage prepaid, or sent by recognized overnight delivery, addressed to the party at the addresses set forth above, which may be changed with like notice at least ten (10) days in advance of the effective date of the change.

(c) This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, and any and all legal actions brought in connection with this Agreement shall be brought in courts within the Commonwealth of Massachusetts.

(d) This Agreement contains the entire agreement of the parties and, except for other written agreements between the Grantor and the Town which are not expressly superseded hereby, there are no other agreements or understandings between the parties regarding the subject matter of this Agreement. This Agreement may not be modified except in writing, duly executed by both parties.

(e) The captions and headings throughout this Agreement are for convenience of reference only and the words contained therein shall in no way be held or deemed to define, limit, explain, modify, amplify or add to the interpretation, construction or meaning of any provision of, or the scope or intent of this Agreement, nor in any way affect this Agreement, and shall have no legal effect.

(f) Notwithstanding anything to the contrary contained herein, this Agreement shall terminate and be of no further force and effect in the event that the Grantor makes a "Buyer's Self-Contained WWTP Work Election" pursuant to the Development Agreement.

[Signature Pages Follow]

WITNESS the execution hereof under seal this 22 day of ~~January~~ February, 2021.

GRANTOR:

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: [Signature]
Name: Jim Lambert
Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 19th day of January, 2021, before me, the undersigned Notary Public, personally appeared Jim Lambert, Vice President of WP Massachusetts, LLC, a Delaware limited liability company, the sole member and manager of WS River's Edge, LLC, a Delaware limited liability company, the managing member Alta River's Edge Venture, LLC, the sole member of Grantor, as aforesaid, proved to me through satisfactory evidence of identification, which was MA License 548562727, to be the person whose name is signed on the preceding document, and acknowledged to me that he signed it voluntarily for its stated purpose on behalf of said entities in such capacities.

[Signature]
Notary Public
My Commission Expires:



SILVIA E. SANTOS
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 30, 2026

Acceptance

The Wayland Board of Selectmen accepts a Grant of Easements (Wastewater Facilities) from ALTA River's Edge, LLC, at property located at 490 Boston Post Road, Wayland, pursuant to G.L. c.83, § 1, on this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson
Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared Cherry Karlson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]
Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Acceptance

The Wayland Board of Selectmen accepts a Grant of Easements (Wastewater Facilities) from ALTA River's Edge, LLC, at property located at 490 Boston Post Road, Wayland, pursuant to G.L. c.83, § 1, on this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared David Watkins, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

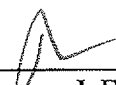
Acceptance

The Wayland Board of Selectmen accepts a Grant of Easements (Wastewater Facilities) from ALTA River's Edge, LLC, at property located at 490 Boston Post Road, Wayland, pursuant to G.L. c.83, § 1, on this 10 day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

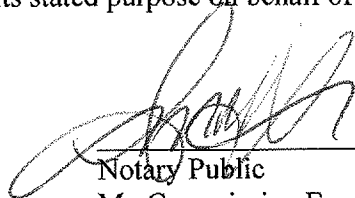
Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared Tom Fay, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Acceptance

The Wayland Board of Selectmen accepts a Grant of Easements (Wastewater Facilities) from ALTA River's Edge, LLC, at property located at 490 Boston Post Road, Wayland, pursuant to G.L. c.83, § 1, on this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared Mary Antes, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was license, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Acceptance

The Wayland Board of Selectmen accepts a Grant of Easements (Wastewater Facilities) from ALTA River's Edge, LLC, at property located at 490 Boston Post Road, Wayland, pursuant to G.L. c.83, § 1, on this 10th day of February, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned Notary Public, personally appeared Lea T. Anderson, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was [Signature], to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public

My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Exhibit A

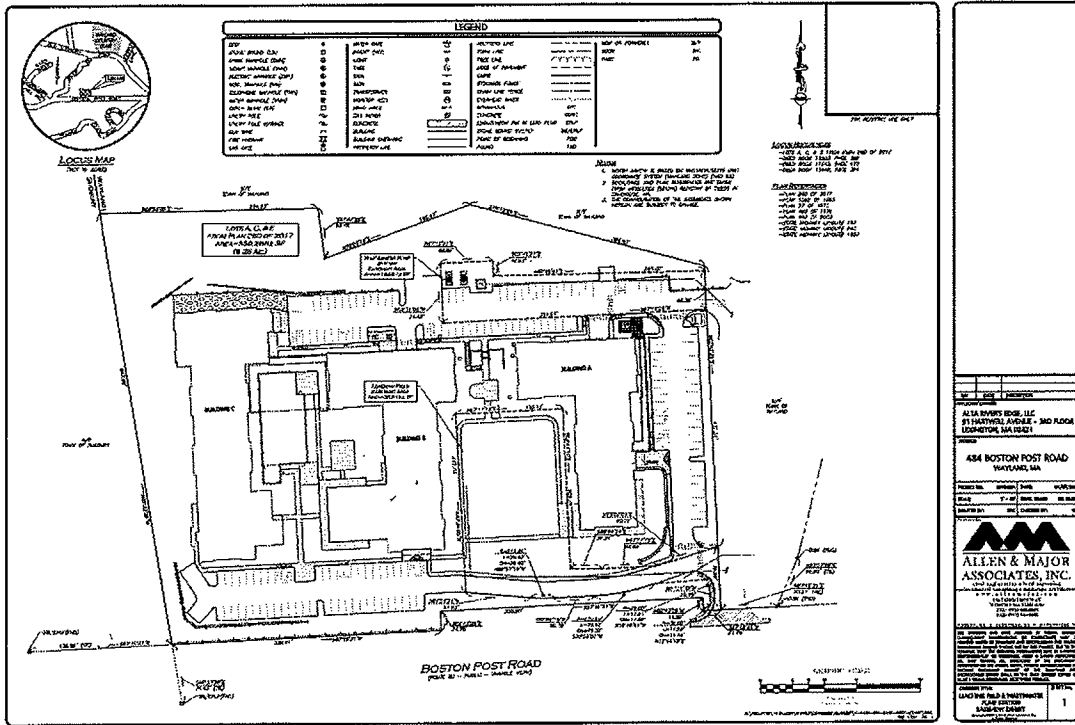
Grantor Property

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

For title, see deed recorded at Book 77062, Page 395.

Exhibit B

Sketch Plan



Middlesex South Registry of Deeds
Electronically Recorded Document

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Recording Information

Document Number	: 43378
Document Type	: CERT
Recorded Date	: February 26, 2021
Recorded Time	: 11:42:08 AM
Recorded Book and Page	: 77073 / 116
Number of Pages(including cover sheet)	: 7
Receipt Number	: 2613504
Recording Fee	: \$105.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
208 Cambridge Street
Cambridge, MA 02141
617-679-6300
www.middlesexsouthregistry.com

Property Address: 490 Boston Post Rd.
Wayland, MA

Cross Reference: Book 77062, Page 395
Book 77065, Page 575
Book 77066, Page 1
Book 77066, Page 18

VOTE OF THE WAYLAND BOARD OF SELECTMEN

This is to certify that at a duly called public meeting of the Wayland Board of Selectmen on February 4, 2021, the Board voted as follows with respect to the land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017 (the "Property"):

VOTED: To execute and deliver the following documents substantially in the forms presented at the February 4, 2021 meeting, with final changes to be made by the Town Administrator in consultation with town counsel and special town counsel: (a) Quitclaim Deed; (b) Grant of Easements with respect to the Access Road; (c) Grant of Easements (Wastewater Facilities); (d) Notice of Land Disposition Agreement; and (e) Repurchase Agreement; and

VOTED: To authorize the Town Administrator to take all actions on behalf of the Town that are reasonably necessary, in the judgment of the Town Administrator, to complete the disposition of the Property in accordance with the Land Disposition Agreement entered into between the Town and ALTA River's Edge, LLC (as successor in interest to WP East Acquisitions, L.L.C.) dated July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof, the "Disposition Agreement"), and the applicable Town Meeting vote, including without limitation executing and/or delivering closing forms, closing documents, and settlement statements.

[Signature Page Follows]

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry Carlson
Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Cherry Karlson, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was 110050, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]
Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair



David V. Watkins

Thomas J. Fay

Mary M. Antes

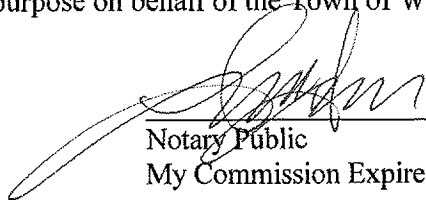
Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned notary public, personally appeared David Watkins, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was

license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025

Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10 day of Feb, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

Mary M. Antes

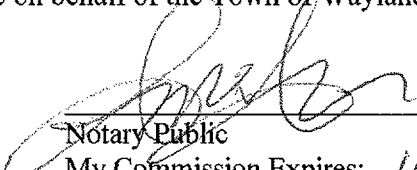
Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Tom Fay, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was

1000, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.



Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Mary Antes, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was 11cm, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of Feb, 2021, before me, the undersigned notary public, personally appeared Lea Anderson, member(s) of the Wayland Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was

license, to be the person whose name is signed on the preceding document, and who acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

[Signature]

Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025

**TWELFTH AMENDMENT TO
LAND DISPOSITION AGREEMENT**

This Twelfth Amendment to Land Disposition Agreement (this “Amendment”) is made and entered into by and between **TOWN OF WAYLAND**, acting by and through its Board of Selectmen (hereinafter “Seller”), a Massachusetts municipal corporation, and **ALTA RIVER’S EDGE, LLC**, a Delaware limited liability company (hereinafter “Buyer”). Each of Seller and Buyer is a “Party” and taken together shall be the “Parties”.

Recitals:

A. Seller and WP East Acquisitions, L.L.C. (“Contract Buyer”) previously entered into that certain Land Disposition Agreement with an effective date of July 28, 2017 (the “Original Contract”), as amended by that certain First Amendment to Land Disposition Agreement dated as of October 24, 2017, as further amended by that certain Second Amendment to Land Disposition Agreement dated as of October 31, 2017, as further amended by that certain Third Amendment to Land Disposition Agreement dated as of December 18, 2017, as further amended by that certain Fourth Amendment to Land Disposition Agreement dated as of February 26, 2018, as further amended by that certain Fifth Amendment to the Land Disposition Agreement dated May 23, 2018, as further amended by that certain Sixth Amendment to the Land Disposition Agreement dated August 29, 2018, as further amended by that certain Seventh Amendment to the Land Disposition Agreement dated February 28, 2019, as further amended by that certain Eighth Amendment to Land Disposition Agreement dated March 7, 2019 (the “Eighth Amendment”), as further amended by that certain Ninth Amendment to Land Disposition Agreement dated April 29, 2019 (the “Ninth Amendment”), as further amended by that certain Tenth Amendment to Land Disposition Agreement dated May 31, 2019 (the “Tenth Amendment”), as further amended by that certain Eleventh Amendment (the “Eleventh Amendment”) to Land Disposition Agreement dated March 30, 2020, as further amended by that certain Amendment 11-A to Land Disposition Agreement dated January 28, 2021 (“Amendment 11-A”), as further amended by that certain Amendment 11-B to Land Disposition Agreement dated February 5, 2021 (“Amendment 11-B”) (as amended, the “Contract”) for the purchase and sale of that certain parcel of land located 490 Boston Post Road, Wayland, Massachusetts (the “Property”), as is more fully described in the Contract.

B. Pursuant to an Assignment and Assumption of Purchase and Sale Agreement and Intangible Property by and between Contract Buyer and Buyer dated March 22, 2019 (the “Assignment”), Contract Buyer assigned the Contract as then constituted to Buyer, and Buyer assumed the obligations of Contract Buyer under the Contract as provided in the Assignment.

C. The Parties wish to amend the Contract to, among other things, document (i) various matters concerning the Approvals for Buyer’s Project, (ii) the Parties’ agreement as to certain Site Conditions Estimates and aspects of the Site Conditions

Work, and (iii) additional closing documentation that will be necessary to consummate the transactions contemplated by the Contract.

Terms and Conditions:

In consideration of the mutual covenants, agreements, and undertakings set forth in the Contract and in this Amendment, the sufficiency of which is hereby acknowledged, and intending to be legally bound, Seller and Buyer agree as follows:

1. Capitalized Terms; Recitals. All capitalized terms used herein but undefined (including those set forth in the Recitals) shall have the meaning as defined in the Contract. The foregoing Recitals are hereby incorporated as agreements of the parties hereto.

2. Reserved.

3. Status/Pursuit of Approvals.

(a) Municipal Approvals Obtained to Date; Gross Purchase Price Increase. The Parties acknowledge that Buyer has not yet obtained the following permits and approvals from Seller (or its boards, divisions, departments, or agencies or other permit granting authorities), which are necessary for the Buyer's Project: (i) the water connection approval; and (ii) a WWTP Discharge Permit (Phase II) from the Wayland Board of Health (but only if Buyer undertakes the Buyer's Self-Contained WWTP Improvements, as that term is defined in, and in accordance with, the WWTP Infrastructure Agreement, as hereinafter defined). Buyer has obtained from the Massachusetts Department of Environmental Protection a WWTP Groundwater Discharge Permit (Phase II); *provided, however*, that if any modifications to such permit or new or additional discharge permits are required in connection with the Alternative Wastewater Improvements, Seller will be responsible for obtaining same pursuant to the WWTP Documents (defined below). In connection with municipal Approvals already obtained by Buyer for the Buyer's Project, and notwithstanding anything to the contrary contained in the Contract (including Sections 1.3 and 5.1(a) thereof), Buyer is entitled to construct 218 rental housing units as part of Buyer's Project, which is 28 units more than the maximum number of units previously contemplated for Buyer's Project. As consideration for such unit increase, the "Gross Purchase Price" for the Premises as set forth in Section 2.1 of the Contract shall increase by \$300,000 from Eight Million Ninety-Eight Thousand Five Hundred Fifty Dollars and 00/100 (\$8,098,550.00) to Eight Million Three Hundred Ninety-Eight Thousand Five Hundred Fifty Dollars and 00/100 (\$8,398,550.00).

(b) Updated Exhibit I for Remaining Approvals. Exhibit I to the Contract is hereby deleted and replaced with Exhibit I attached hereto, which shows only the status of the Approvals for Buyer's Project that Buyer believes are outstanding.

(c) Water Main Extension. Seller has completed the Water Main Extension Work in accordance with the Water Line Extension Plans, and Buyer acknowledges that Seller has delivered to Buyer evidence of same as required by Section 4(a) of the Eighth Amendment.

4. Site Conditions Estimates; Modifications to Site Conditions Work; Final Net Purchase Price Calculations for Closing.

(a) Demolition of Wayland/Sudbury Septage Facility. The Parties agree that the final Site Conditions Estimate approved by the Parties for the Demolition of Wayland/Sudbury Septage Facility is \$560,317 (compared to the \$351,876 Site Conditions Estimate set forth in the Original Contract), and the Net Purchase Price is adjusted accordingly as provided in Section 4(d) below.

(b) On-Site Soil Removal Work. The Parties agree that the final Soil Conditions Estimate approved by the Parties for the On-Site Soil Removal Work is \$3,525,267 (the "All-In Soil Estimate") (compared to the \$2,998,110 Site Conditions Estimate set forth in the Original Contract), \$325,267 of which represents "contingency" for hard and soft costs associated with such work that are difficult for the Parties to accurately estimate at this time. The Net Purchase Price is adjusted accordingly as provided in Section 4(d) below. Notwithstanding anything in this Amendment or the Contract to the contrary: (1) nothing in this Amendment shall be deemed to modify Buyer's obligations to track, reconcile and, in some cases, escrow any A/E Differential with respect to the On-Site Soil Removal Work pursuant to the provisions of Sections 3.1(d) and 3.4 of the Contract, and (2) if the actual cost of the On-Site Soil Removal Work ("Actual Soil Cost") is less than \$3,200,000, the A/E Differential with respect to such On-Site Soil Removal Work shall only increase by \$0.50 for every \$1.00 that the Actual Soil Cost is less than \$3,200,000, and (3) if the Actual Soil Cost is less than the All-In Soil Estimate, but more than \$3,200,000, the entire amount of such A/E Differential shall be paid to Seller. By way of example, if the Actual Soil Cost is \$3,000,000, then the total A/E Differential for the On-Site Soil Removal Work shall be \$425,267 (or $(\$3,525,267 - \$3,200,000 = \$325,267) + ((\$3,200,000 - \$3,000,000 = \$200,000) \times .5)$), as Buyer will receive 50% of the benefit of each \$1.00 of savings below \$3,200,000.

(c) Wastewater Treatment Plant; WWTP Documents. Notwithstanding anything to the contrary contained in the Contract, the Parties acknowledge and agree as follows as it concerns the Site Conditions Work identified in Section 2.1 of the Original Contract as the Design and Construction of On-Site Package Treatment Plant (the "On-Site WWTP Work"):

(i) Modification of WWTP Work. Seller has applied for and obtained funding (the "Wastewater Treatment Funding") for the design and construction of (i) a wastewater line, force mains, pumping station, and related improvements and equipment to serve the Buyer's Project running from the Property to Seller's Town Center wastewater treatment facility (the "New Town WW Infrastructure") and (ii) certain

alterations or modifications to the Town Center wastewater treatment facility required to receive and treat effluent from Buyer's Project and return treated effluent (from Buyer's Project and elsewhere) from Seller's Town Center wastewater treatment facility ("Returned Effluent") to the leaching field which will be constructed by Buyer on the Property; *provided, however*, that the Town shall in no event return treated effluent from the Town WW Facility in quantities which exceed the amount that the leaching field is designed to receive (the "Town WWTP Modifications", and collectively with the New Town WW Infrastructure, the "Alternate Wastewater Improvements" or "Alternate Wastewater System"). Because Seller will construct, at its sole cost and expense, the Alternate Wastewater Improvements to serve the Buyer's Project, the On-Site WWTP Work for which Buyer is responsible shall be limited to the construction of the leaching field to receive Returned Effluent and the construction and installation of a force main, pumps, and related lines, fixtures and equipment on the Buyer's Property to effectively connect to the New Town WW Infrastructure at the boundary line of the Buyer's Property (the "Retained Buyer's On-Site WWTP Work"), except to the extent Buyer is entitled to and elects to revert to performing *all* of original On-Site WWTP Work in accordance with the WWTP Documents (hereinafter defined).

(ii) Effect of Seller's Construction of Alternative Wastewater Improvements on Net Purchase Price; WWTP Escrow Funds. As provided above, subject to the terms of the WWTP Documents, the Buyer is only performing the Retained Buyer's On-Site WWTP Work as opposed to the entirety of the original On-Site WWTP Work upon which the \$2,543,303 cost estimate set forth in Section 2.1 of the Contract is based (the "Original WWTP Work Estimate"). However, because the costs associated with the Retained Buyer's On-Site WWTP Work are not yet capable of accurate estimation, the parties have agreed that the Gross Purchase Price will be reduced by the Original WWTP Work Estimate at Closing as provided in Section 4(d) below, and once the final cost estimate for the Retained Buyer's On-Site WWTP Work is available, the following will apply:

- (A) Within sixty (60) days after the Closing, Buyer shall obtain final pricing and cost estimates for the Retained Buyer's On-Site WWTP Work, and it will deliver notice of same to the Seller together with reasonable supporting documentation therefor (the "Final On-Site WWTP Estimate"). The Final On-Site WWTP Estimate shall include all hard and soft costs associated with the Retained Buyer's On-Site WWTP Work, including without limitation any construction costs and fees, connection fees charged by the Town of Wayland (or its applicable divisions or departments, including the Wayland Wastewater Management District Commission) to connect the Buyer's on-site wastewater facilities to the Alternate Wastewater System, design (or redesign) costs associated with Retained Buyer's On-Site WWTP Work up to a maximum design/redesign cost amount of \$50,000, and legal fees associated with the negotiation of this Amendment and the WWTP Documents which would not have been

incurred in the absence of the Seller constructing the Alternative Wastewater System, up to a maximum legal fee cap of \$45,000.

- (B) Upon Seller's receipt of the Final On-Site WWTP Estimate (including without limitation all reasonable supporting documentation therefor), Seller will have ten (10) days to review and approve the Final On-Site WWTP Estimate. If Seller does not approve the Final On-Site WWTP Estimate, it shall notify Buyer, Escrow Agent and the Disbursement Dispute Arbitrator, as that term is defined in, and in accordance with, the WWTP Escrow Agreement (as hereinafter defined), and the determination of the Final On-Site WWTP Estimate shall be subject to the dispute resolution procedures set forth in the WWTP Escrow Agreement as if such disagreement over the Final On-Site WWTP Estimate constitutes a "Disbursement Dispute" thereunder. If Seller fails to so timely notify Buyer, Escrow Agent and the Disbursement Dispute Arbitrator of its objection to the Final On-Site WWTP Estimate, then Seller shall be deemed to have approved the Final On-Site WWTP Estimate submitted by Buyer, and within 10 business days after Seller's approval (or deemed approval) of the same, the Buyer will fund an amount equal to the difference between (1) the Original WWTP Work Estimate and (2) the Final On-Site WWTP Estimate (such difference, the "Final On-Site WWTP Escrow Funds") into the escrow which is the subject of the WWTP Escrow Agreement and such amount will become part of the WWTP Escrow Amount. Additionally, if Seller disputes the Final On-Site WWTP Estimate as aforesaid, Buyer shall fund the Final On-Site WWTP Escrow Funds into escrow (based on Buyer's submitted Final On-Site WWTP Estimate) within 10 business days after Seller provides its notification of objection, notwithstanding such dispute, and the parties shall proceed with the dispute resolution process as aforesaid. If, through the dispute resolution process, it is determined that Buyer overstated its Final On-Site WWTP Estimate, Buyer will fund in any additional amounts required within 10 business days after such dispute is resolved.
- (C) Other than the Buyer's obligation to fund in the Final On-Site WWTP Escrow Funds (including any amounts required by such dispute resolution process), there will be no further adjustments to the Final On-Site WWTP Estimate, and Section 3.1(d) of the Contract will not apply to the Alternative Wastewater System or the Retained Buyer's On-Site WWTP Work, and the Buyer shall bear the sole risk with respect to the cost of the Buyer's On-Site WWTP Work exceeding the Final On-Site WWTP Estimate. Seller and Buyer agree that the amount of Final On-Site WWTP Escrow Funds (including any amounts required by a dispute resolution process) shall be deemed to increase the Net Purchase Price pursuant to the Contract

on a post-Closing basis (similar to an A/E Differential) in like amount(s) of the funds so deposited or required to be deposited, but such funds shall be subject to the WWTP Infrastructure Agreement and the WWTP Escrow Agreement (as hereinafter defined).

(iii) Town Delay; Effect on Completion of Buyer's Project. In the event that completion of the Buyer's Project is delayed as a result of (A) delays in Seller's construction of the Alternative Wastewater Improvements, (B) Seller's failure to comply with Seller's WWTP Performance Obligation (defined below) or (C) Seller's construction activities related to the Alternative Wastewater Improvements (in any case, but only to the extent such delays are not attributable to acts or omissions of the Buyer or its contractor, subcontractors, vendors, or materialmen, "Town Delay"), then the Buyer's Project Completion Date as provided in the Contract will be extended by any periods of Town Delay. To the extent Buyer exercises its Self-Help Remedy (as defined in the WWTP Infrastructure Agreement), Buyer shall not be entitled to make a claim of "Town Delay" for delays which Buyer experiences in prosecuting the completion of the Alternative Wastewater Improvements from and after it exercises such Self-Help Remedy. Further, the defined term "Force Majeure" as defined in Section 7.1 of the Contract shall be modified to insert "epidemics, pandemics" before "other causes beyond the reasonable control...".

(iv) WWTP Escrow Amount. At Closing, the entirety of the Net Purchase Price (to wit, as provided in Section 4(d) below, \$1,769,663) *plus* an amount equal to \$829,275 (the "BP Fee Overage"), for a grand total of \$2,598,938 (subject to any pre-Closing adjustments thereto based on prorations and closing cost payments under Section 4.3 of the Contract as reflected on the final settlement statement, the "Closing WWTP Escrow Amount", and as may be adjusted after Closing pursuant to the terms hereof and the WWTP Documents, the "WWTP Escrow Amount"), will be deposited with the Escrow Agent and held as security for Seller's obligations to (i) timely design, permit and construct the Alternative Wastewater Improvements ("Seller's WWTP Performance Obligation"), (ii) compensate or reimburse Buyer for remedies that Buyer may elect to exercise should Seller fail to comply with the Seller's WWTP Performance Obligation, and (iii) compensate or reimburse Buyer for other damages arising out of or relating to Seller's failure to comply with the Seller's WWTP Performance Obligation, including without limitation delays in the permitting, development, completion, stabilization and effective operation of Buyer's Project, all as more particularly provided in the WWTP Documents (clauses (ii) and (iii) being referred to herein collectively as "Buyer's WWTP Damages"). Buyer covenants and agrees to fund in the BP Fee Overage to the Closing escrow prior to Closing so that same can be disbursed to the Escrow Agent along with the balance of the WWTP Escrow Amount and held and disbursed pursuant to the WWTP Documents. Buyer's funding of the BP Fee Overage at Closing and disbursement as part of the Closing WWTP Escrow Amount shall be deemed to constitute Buyer's payment in full of the building permit fee for the Project, and the Seller, which includes its building department, acknowledges and confirms that such building permit fee for the Project will have been paid in full upon the Escrow Agent's receipt of the BP Fee Overage.

(v) WWTP Documents. At Closing (or as otherwise set forth below with respect to the WWTP Maintenance Agreement), the Parties will enter into the following agreements concerning the construction and ongoing operation and maintenance of the Alternative Wastewater Improvements and the Retained Buyer's On-Site WWTP Work (collectively, the "WWTP Documents"):

- (A) an Infrastructure Development Agreement (Wastewater Facilities) in the form attached hereto as Exhibit A which addresses, among other things, the obligation of Seller to design, permit and perform all work required to complete the Alternative Wastewater Improvements, as well as Buyer's remedies with respect to Seller's failure to timely complete same (including the failure to meet certain interim milestone dates) (the "WWTP Infrastructure Agreement");
- (B) an escrow holdback agreement in the form attached hereto as Exhibit A-1 pursuant to which the WWTP Escrow Amount shall be held and disbursed during the course of Seller's construction of the Alternative Wastewater Improvements or, as applicable, the Buyer's performance of all On-Site WWTP Work (should Buyer be entitled to and elect to perform same under the WWTP Infrastructure Agreement), in order to secure Seller's WWTP Performance Obligation and potential obligations to pay Buyer's WWTP Damages (the "WWTP Escrow Agreement"); and
- (C) a maintenance agreement (the "WWTP Maintenance Agreement", which is referred to in the WWTP Infrastructure Agreement as the "Buyer's Project O/M Agreement") which, among other things, (1) requires that Seller operate, maintain and keep in good condition and repair, at its cost and expense (subject to Buyer's obligation to pay the Maintenance Fees) the improvements which are the subject of the Retained Buyer's On-Site WWTP Work, including a leaching field, force main, and related lines, conduits, fixtures and equipment, and a pumping station, a wastewater line, force mains, and related conduits, fixtures and equipment and all related equipment and facilities (collectively, the "Buyer's On-Site WWTP Improvements"), and (2) requires that Seller, to the fullest extent permitted by law, indemnify and hold Buyer harmless from and against any and all claims for personal injury or property damage arising from Seller's operation and maintenance thereof. The parties shall negotiate in good faith the WWTP Maintenance Agreement in accordance with the WWTP Documents, which shall be entered into prior to the initial operation of the Alternative Wastewater Improvements; and
- (D) a permanent easement (the "WWTP Easement") in the form attached hereto as Exhibit A-2 on and over the Buyer's On-Site WWTP Improvements and areas of the Property reasonably required

to gain access thereto in order for Seller to perform the Wastewater O/M Work (as defined in the WWTP Easement), and to discharge Returned Effluent in and to the Leaching Field Improvements.

The WWTP Documents shall be executed and delivered by the Parties at Closing (with proper notarial acknowledgments, as applicable) and, to the extent same are to be recorded, recorded immediately upon Closing.

(d) Final Purchase Price Calculation. Notwithstanding anything to the contrary contained in the Contract, the final, agreed-upon Net Purchase Price to be paid by Buyer at Closing shall be \$1,769,663, calculated as follows:

Gross Purchase Price - \$8,398,550.00

Total Purchase Price Deductions based on Final Site Conditions Estimates - \$560,317 (Demolition of Wayland/Sudbury Septage Facility, etc.) + \$3,525,267 (On-Site Soil Removal Work) + \$2,543,303 (the Original WWTP Work Estimate) = \$6,628,887

Net Purchase Price - **\$1,769,663** (or \$8,398,550.00 - \$6,628,887)

For purposes of clarification, the only Site Conditions Work to which the post-Closing adjustments set forth in Section 3.1(d) and Section 3.4 of the Contract will apply is (i) that work relating to the Demolition of Wayland/Sudbury Septage Facility (for which the Site Conditions Estimate is \$560,317) and (ii), subject to Section 4(b) above, the On-Site Soil Removal Work, and (iii) if Buyer's elects to make a Buyer's Self-Contained WWTP Work Election pursuant to the WWTP Infrastructure Agreement. Additionally, the finally-determined costs associated with the Retained Buyer's On-Site WWTP Work will operate to adjust the Net Purchase Price as provided in Section 4(c)(ii)(C) above.

5. Drainage and Access to Serve and/or Construct Buyer's Project; Sudbury License Agreement.

(a) Wayland Access and Drainage Easement. At Closing, the Parties agree to execute and deliver a recordable easement in the form attached hereto as Exhibit B (the "Access and Drainage Easement"), which addresses, among other things, Seller's grant to Buyer of: (i) a perpetual pedestrian and vehicular ingress and egress over, across and through property owned by Seller in the location identified in the Access and Drainage Easement in order for Buyer and its applicable agents, contractors, residents, invitees and licensees to gain access to the Premises and Buyer's Project; (ii) a landscaping easement along the western median of the Access Road; and (iii) the ability to drain surface and stormwater runoff from the Buyer's Project over, across, and through Seller's retained property as provided in the Access and Drainage Easement. The Access and Drainage Easement shall be a closing document executed and delivered by Parties at Closing (with proper notarial acknowledgments) and recorded immediately upon Closing.

(b) Sudbury License. Buyer hereby notifies Seller that Buyer and the Town of Sudbury have finalized the form of a temporary license to allow Buyer to demolish a certain portion of the Wayland/Sudbury Septage Facility and perform certain other work related thereto on the adjoining Town of Sudbury property (the “Temporary Demolition License”), which form is attached hereto at Exhibit C.

6. Regulatory Agreements. Seller hereby agrees to waive the requirement that the Affordable Housing Restriction described in Section 4.5(b) of the Contract be executed and delivered by Seller, Buyer and DHCD at the Time of Closing. Buyer shall, at its sole cost and expense, use commercially reasonable efforts to cause the Regulatory Agreements, in substantially the forms of Exhibit D-1 and Exhibit D-2 attached hereto, to be executed and delivered by Seller (with Seller agreeing to cooperate with the execution and delivery thereof so long as such agreements are consistent with the requirements of the Contract and substantially in the form of the Regulatory Agreements attached hereto), Buyer and DHCD and recorded at the Registry, at Buyer’s sole cost and expense, within forty-five (45) days after the Closing, or as soon as practicable thereafter. Further, Buyer acknowledges and agrees that notwithstanding anything in the Contract to the contrary, Seller shall have no obligation to approve, execute, or deliver a certificate of occupancy (temporary or otherwise) for any portion of Buyer’s Project, unless and until the Regulatory Agreements have been executed by all of the parties thereto and recorded by Buyer in the Registry.

7. Closing Date. If the Closing does not occur on or before January 29, 2021, Seller and Buyer hereby agree that the Initial Closing Date will be automatically extended to February 5, 2021 (or any such earlier date that Seller and Buyer may mutually agree on).

8. Ratification. Except as expressly amended by this Amendment, the Contract remains in full force and effect and is hereby expressly ratified and confirmed in its entirety by the parties hereto.

9. Multiple Counterparts. An executed facsimile or “PDF” of this Amendment is an acceptable form of acceptance of this Amendment and the parties may execute this Amendment in counterparts. This Amendment shall from this date forward be considered a part of the Contract.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed under seal by persons duly empowered to bind the parties to perform their respective obligations under this Amendment to be effective on the last date set forth below.

BUYER:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a
Delaware limited liability company,
its sole member

By: WS River's Edge, LLC, a Delaware
limited liability company, its
Managing Member

By: WP Massachusetts, LLC, a Delaware
limited liability company, its sole
member and manager

By: _____
Name: Jim Lambert
Title: Vice President

Date: _____

SELLER:

TOWN OF WAYLAND

By: _____


Name:

Title:

Date: _____

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen


Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Date: 02-10-2021

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair



David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

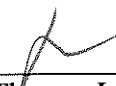
Date: February 10, 2021

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Date: 2/6/21

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes
Mary M. Antes

Lea T. Anderson

Date: February 10, 2001

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

Date: February 10, 2021

JOINDER BY CONTRACT BUYER

The undersigned Contract Buyer hereby joins in this Amendment for the purpose of acknowledging and agreeing to the provisions of Section 2 hereof.

CONTRACT BUYER:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By:  _____

Name: Jim Lambert

Title: vice president

Date: _____

REPLACEMENT EXHIBIT I TO CONTRACT (SHOWING ONLY OUTSTANDING APPROVALS)

EXHIBIT I

Approvals

Approval Type	Approval Agency	Timing of Application
Water Connection	Wayland Department of Public Works	In Process
WWTP Groundwater Discharge Permit (Phase II)	Wayland Board of Health	In Process (applicable to Buyer's Self-Contained WWTP Improvements)

EXHIBIT A
INFRASTRUCTURE AGREEMENT
[SEE ATTACHED]

INFRASTRUCTURE DEVELOPMENT AGREEMENT

(Wastewater Facilities)

THIS INFRASTRUCTURE DEVELOPMENT AGREEMENT (this “Agreement”) is entered into as of the ____ day of February, 2021 (the “Effective Date”), by and between TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter “Seller”), a Massachusetts municipal corporation having an address of 41 Cochituate Road, Wayland, MA 01778, and ALTA RIVER’S EDGE, LLC, a Delaware limited liability company having its business address c/o Wood Partners, 91 Hartwell Avenue, Lexington, MA 02421, Attn: Jim Lambert (hereinafter “Buyer”). Each of Seller and Buyer are sometimes individually referred to herein as a “Party” and collectively as the “Parties”.

RECITALS

A. Concurrently with the execution of this Agreement, Seller has conveyed to Buyer that certain property commonly known as 490 Boston Post Road in the Town of Wayland, Middlesex County, Commonwealth of Massachusetts, shown as “Lot A”, “Lot C”, and “Lot E” (the “Buyer’s Property”) on that certain plan entitled “ANR Subdivision Plan Assessors Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road Wayland, Massachusetts” prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South Registry of Deeds (the “Registry”) as Plan No. 260 of 2017 (the “ANR Plan”). The acquisition of the Buyer’s Property was consummated pursuant to a Land Disposition Agreement for the Sale and Redevelopment of Land between Seller and Buyer dated as of July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof (the “Twelfth Amendment”), the “LDA”). Capitalized Terms which are not otherwise defined herein shall have the meanings ascribed thereto in the LDA.

B. Buyer intends to construct a development of 218 multi-family apartment units on the Buyer’s Property, together with required parking, landscaping, curb cuts, street openings and related amenities, all as more particularly provided in the plans and Approvals for the Buyer’s Project (collectively, the “Buyer’s Project”).

C. Pursuant to the Twelfth Amendment, Seller has agreed, at its sole cost and expense, to design, permit and construct the Seller’s WWTP Improvements (hereinafter defined) which are required to bring sanitary sewer service to Buyer’s Project.

D. Prior to Seller agreeing to construct the Seller’s WWTP Improvements, it was contemplated under the LDA that Buyer would permit and construct an on-site wastewater treatment facility, leaching field, and associated force mains, lines, pumps, equipment and facilities which would allow for the receipt, treatment and disposal or dispersion of sewerage effluent from the Buyer’s Project on a private, self-contained basis (the “Buyer’s Self-Contained WWTP Improvements”).

E. The Seller’s WWTP Improvements will, among other things, receive and treat wastewater effluent from Buyer’s Project (“Buyer’s Project Effluent”) and return treated effluent from the Seller’s Town Center wastewater treatment facility (the “Town Wastewater Treatment Plant”) to the Buyer’s Leaching Field (hereinafter defined); *provided, however*, that the Town shall in no event return treated effluent from the Town Wastewater Treatment Plant in quantities which exceed the amount that the leaching field is designed to receive (“Returned Effluent”).

F. Buyer will be constructing the Buyer’s Retained WWTP Improvements (hereinafter defined) on the Buyer’s Property which will allow for the release and pumping of Buyer’s Project Effluent into the Seller’s WWTP Improvements at the point of connection with the Buyer’s Retained

WWTP Improvements on the Buyer's Property and the receipt of Returned Effluent after being treated at the Town Wastewater Treatment Plant.

G. This Agreement is the Infrastructure Development Agreement contemplated by the Twelfth Amendment to the LDA and addresses, among other things, Seller's obligation to timely design, permit and construct the Seller's WWTP Improvements and Buyer's remedies in the event Seller fails to comply with such obligation.

NOW, THEREFORE, in consideration of the foregoing recitals, mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Seller and Buyer agree as follows:

1. Purpose/Definitions. The purpose of this Agreement is described in the Recitals and said Recitals are incorporated herein by reference. Additionally, the following capitalized terms used in this Agreement have the respective meanings assigned to them below:

"Applicable Legal Requirements" means, collectively, all laws, rules, statutes, ordinances, regulations and codes of any governmental or quasi-governmental body, authority, department or agency, including, but not limited to, the terms of all permits and other governmental approvals required to legally carry out and complete the work which is the subject of this Agreement or any portion thereof.

"Approvals and Contracts" shall have the meaning set forth in Section 5.2(d) hereof.

"Buyer's Construction Schedule" shall mean the construction schedule for the Buyer's Project attached hereto as Exhibit D, as the same may be updated from time to time by Buyer's Contractor. Notwithstanding anything in this Agreement to the contrary, in no event shall any modifications to Buyer's Construction Schedule be deemed to accelerate any Seller's WWTP Work Milestone Deadline.

"Buyer's Contractor" shall mean River's Edge Builders LLC, a Delaware limited liability company and Buyer's general contractor for Buyer's Project, any successor or assignee thereof, or any replacement general contractor retained by Buyer for Buyer's Project.

"Buyer's Increased Project Costs" shall mean additional or incremental increases in contractor general conditions costs and related fees and expenses which Buyer incurs as a result of (i) Seller's failure to cause Seller's WWTP Work Final Completion to occur by the Seller's WWTP Work Final Completion Milestone Deadline established therefor or (ii) otherwise on account of a Seller Event of Default, provided Buyer has not made the Buyer's Self-Contained WWTP Work Election on the terms hereof, in which case other remedies and provisions of this Agreement shall control.

"Buyer's Increased Project Costs Requisition" shall have the meaning assigned thereto in the WWTP Escrow Agreement.

"Buyer's Project Completion" means that (i) applicable Governmental Authorities have issued a certificate of occupancy (which may be a temporary certificate of occupancy) for the entirety of Buyer's Project or its functional equivalent permitting the lawful use of the Buyer's Project for its intended purpose; and (ii) Buyer's Project is otherwise "Complete" as provided in the LDA.

"Buyer's Project Delay" shall mean the number of days, as determined by Buyer's Contractor in its good faith and reasonable discretion with reasonable documentation in support thereof, and as reflected on Buyer's Construction Schedule, that Buyer's Project Initial T/C/O Date is actually delayed on account of a Seller Event of Default.

“Buyer’s Project Delay LD Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Buyer’s Project Delay Liquidated Damages” shall mean \$12,000 per day for every day of Buyer’s Project Delay, which, if Buyer is entitled thereto pursuant to the provisions of this Agreement, are intended to compensate Buyer for any and all damages and losses which Buyer sustains or may sustain on account of a Buyer’s Project Delay, specifically excluding Buyer’s Increased Project Costs which, if applicable, shall be in addition to and not includable within Buyer’s Project Delay Liquidated Damages (collectively, subject to such exclusion, “Anticipated Buyer Project Delay Losses”), including without limitation lost income and revenues from the leasing and operation of Buyer’s Project (including impacts of seasonality on lease-up and stabilization of the Buyer’s Project), additional interest and other carry costs and expenses associated with the Buyer’s financing and otherwise in connection with the maintenance and operation of the Buyer’s Project prior to Buyer’s Project Completion (including insurance costs, taxes, utilities and other operational expenses), and the negative impact on investment returns for Buyer’s capital partners. The Parties acknowledge and agree that the Anticipated Buyer Project Delay Losses are uncertain and difficult to estimate, and that therefore the Buyer’s Project Delay Liquidated Damages constitute a reasonable pre-estimate and liquidation of such Anticipated Buyer Project Delay Losses and are not intended as a penalty, but as full liquidated damages associated with any Buyer’s Project Delay.

“Buyer’s Project Initial T/C/O Date” means the date upon which applicable Governmental Authorities issue (or plan to issue, as the case may be) the first temporary certificate of occupancy for Buyer’s Project (or applicable portion thereof).

“Buyer’s Project O/M Agreement” shall mean an agreement between the Seller (including its applicable divisions or departments, including the Wayland Wastewater Management District Commission (in any case, the “Wastewater Governing Authority”)) and the Buyer which addresses the ongoing operation and maintenance of the Buyer’s Retained WWTP Improvements, on terms mutually approved by the Wastewater Governing Authority and the Buyer.

“Buyer’s Project O/M Fees” shall mean any and all annual user rates and fees charged or to be charged by the Seller and/or the Wastewater Governing Authority in connection with the ongoing operation and maintenance of the Buyer’s Retained WWTP Improvements and the WWTP System in general as applied to the Buyer’s Project, taking into account any credits, discounts, or offsets which Buyer may receive based on the construction of the Buyer’s Retained WWTP Improvements or otherwise.

“Buyer’s Retained WWTP Improvements” shall mean the following improvements to be constructed by Buyer on the Buyer’s Property, as detailed or will be further detailed in Buyer’s Retained WWTP Work Plans: (i) a force main, pumps, and related lines, fixtures and equipment which will carry and pump Buyer’s Project Effluent to the point of connection with the Seller’s WWTP Improvements at the property line for Buyer’s Property; and (ii) a leaching field and related equipment and facilities (the “Buyer’s Leaching Field”) which will receive Returned Effluent from the Seller’s WWTP Improvements after being treated at the Town Wastewater Treatment Plant.

“Buyer’s Retained WWTP Work” shall mean the work to be performed by Buyer to install or construct the Buyer’s Retained WWTP Improvements.

“Buyer’s Retained WWTP Work Plans” shall mean the plans and specifications prepared by Buyer’s architect or engineer for the Buyer’s Retained WWTP Improvements.

“Buyer’s Self-Contained WWTP Improvements” shall have the meaning set forth in the Recitals hereto, and as the same are more fully detailed in the plans, specifications, permits and other Approvals therefor.

“Buyer’s Self-Contained WWTP Work” shall mean the work to be performed by Buyer to install or construct the Buyer’s Self-Contained WWTP Improvements, if Buyer is entitled to and elects to install or construct same pursuant to the provisions of this Agreement by making the Buyer’s Self-Contained WWTP Work Election.

“Buyer’s Self-Contained WWTP Work Contractor” shall mean Ricciardi Bros., Inc. (the “Chosen WWTP Work Contractor”), or such other contractor which Buyer or Buyer’s Contractor engages for the performance of the Buyer’s Self-Contained WWTP Work, if applicable on the terms hereof, which shall be subject to Seller’s prior written approval, not to be unreasonably withheld, conditioned or delayed.

“Buyer’s Self-Contained WWTP Work Costs” shall mean any and all hard and soft costs and expenses incurred by Buyer in connection with the design, permitting and construction of the Buyer’s Self-Contained WWTP Improvements should Buyer make the Buyer’s Self-Contained WWTP Work Election, which shall include without limitation all costs, expenses and damages which, but for the Buyer’s Self-Contained WWTP Work Deferral Period, Buyer would not have incurred had Buyer proceeded with the Buyer’s Self-Contained WWTP Work from and after the Effective Date, including: (i) price escalations during the Buyer’s Self-Contained WWTP Deferral Period; (ii) costs associated with Buyer’s Self-Contained WWTP Work which the Buyer is forced to perform out-of-sequence relative to other components of Buyer’s Project due to the Buyer’s Self-Contained WWTP Work Deferral Period; (iii) contractor general conditions costs; (iv) increased costs associated with engagement of a Buyer’s Self-Contained WWTP Contractor (including increased redesign costs and expenses) if the Chosen WWTP Work Contractor cannot accommodate Buyer’s Construction Schedule and Buyer must engage another Buyer’s Self-Contained WWTP Contractor; and (v) additional or incremental increases in contractor fees associated with any of the foregoing. In the event of a Buyer O/M Failure Event, Buyer shall use commercially reasonable efforts to provide its estimate of Buyer’s Self-Contained WWTP Work Costs to Seller within ninety (90) days after the Permit Deadline.

“Buyer’s Self-Contained WWTP Work Costs Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Buyer’s Self-Contained WWTP Work Costs Requisition Threshold” shall mean an amount equal to (A) \$2,543,303 (i.e. the Original WWTP Work Estimate), less (B) the amount of Final On-Site WWTP Escrow Funds actually funded into the escrow which is the subject of the WWTP Escrow Agreement pursuant to the Twelfth Amendment and Section 4 hereof.

“Buyer’s Self-Contained WWTP Work Deferral Period” shall mean the period commencing on the Effective Date and continuing until the date Buyer (i) makes a Buyer’s Self-Contained WWTP Work Election, (ii) finalizes using all reasonable due diligence all relevant design and construction contracts associated therewith and obtain all required permits and approvals therefor, and (iii) is prepared to provide a notice to proceed to Buyer’s Self-Contained WWTP Contractor for the performance of the Buyer’s Self-Contained WWTP Work promptly after obtaining all permits and approvals therefor.

“Buyer’s Self-Contained WWTP Work Election” shall have the meaning set forth in Section 5.2(a) hereof.

“Buyer’s WWTP Damages” shall collectively mean, as applicable pursuant to the terms of this Agreement and the LDA, (i) Buyer’s Project Delay Liquidated Damages, (ii) Buyer’s Increased Project Costs, (iii) Buyer’s Self-Contained WWTP Work Costs which exceed the Buyer’s Self-Contained WWTP Work Costs Requisition Threshold, and (iv) Buyer’s WWTP Self-Help Costs. Buyer’s WWTP Damages (and each component comprising such damages in the foregoing clauses (i) through (iv)) shall specifically exclude any costs, expenses, damages, liabilities or losses incurred or sustained by Buyer which are attributable to delays caused by Buyer or its applicable agents, consultants, engineers, or contractors with respect to the development, design or construction of the Buyer’s Project which are independent of and unrelated to Seller’s performance of the Seller’s WWTP Work.

“Buyer’s WWTP Damages Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Buyer’s WWTP Self-Help Costs” shall have the meaning set forth in Section 5.2(d) hereof.

“Buyer’s WWTP Self-Help Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Construction Schedule” means each of Buyer’s Construction Schedule and Seller’s Construction Schedule, as applicable.

“Escrow Agent” shall have the meaning set forth in Section 4 hereof.

“Force Majeure Delay” shall mean a delay or stoppage of each of Seller’s WWTP Work and the development of Buyer’s Project (including the Buyer’s Retained WWTP Work) caused by a state-imposed shutdown or statewide restrictions on the permitting and/or performance of construction activities. In no event shall a party’s financial condition or inability to fund or obtain funding or financing constitute a Force Majeure Delay.

“Governmental Authorities” shall mean any and all governmental or quasi-governmental authorities with jurisdiction over the Seller’s WWTP Work or any other applicable work which is the subject of this Agreement.

“Seller’s Construction Schedule” means the construction schedule for the Seller’s WWTP Work as provided on Exhibit B attached hereto, as the same may be updated by Seller’s Work Contractor from time to time, and which updates shall be promptly delivered to Buyer.

“Seller’s Groundwater Discharge Permit” shall mean the permit that Seller will require from Massachusetts Department of Environmental Protection (“DEP”) to discharge Returned Effluent into the Buyer’s Leaching Field.

“Seller’s Work Contract” means the contract(s) entered into with the Seller’s Work Contractor for the Seller’s WWTP Work, as the same may be amended from time to time.

“Seller’s Work Contractor” means the contractor(s) engaged by Seller to perform the Seller’s WWTP Work.

“Seller’s WWTP Escrow Release Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Seller’s WWTP Improvements” shall mean all utility lines, equipment, facilities, force mains, pumps, meters and related improvements which are required to effectively and legally receive, carry and treat Buyer’s Project Effluent, to return Returned Effluent to the Buyer’s Leaching Field and to otherwise bring and appropriately measure public sanitary sewer service to Buyer’s Project (collectively, “Buyer’s Project Wastewater Requirements”), as more fully (or will be more fully) detailed in the Seller’s WWTP Work Plans, including without limitation: (i) certain alterations or modifications to the Town Wastewater Treatment Plant required to receive and treat effluent from Buyer’s Project and return the Returned Effluent to Buyer’s Leaching Field (the “Town WWTP Modifications”), and (ii) force mains, meters, pumps and related fixtures, equipment and improvements which will generally run along or in close proximity to U.S. Route 20, will carry (and appropriately measure) Buyer’s Project Effluent from the boundary line of Buyer’s Property at the point of connection with the Buyer’s Retained WWTP Improvements to the Town Wastewater Treatment Plant and will carry (and appropriately measure) Returned Effluent from the Town Wastewater Treatment Plant once treated to Buyer’s Leaching Field (the “Force Main Improvements”). For avoidance of doubt, the Town WWTP Modifications shall not include those elective upgrades which Seller may make to the Town Wastewater Treatment Plant that are not necessary to satisfy the Buyer’s Project Wastewater Requirements.

“Seller’s WWTP Work” (also referred to herein sometimes as the “Seller’s Work”) means the work to be performed by Seller to install or construct the Seller’s WWTP Improvements as detailed in the Seller’s WWTP Work Plans and Seller’s WWTP Work Permits.

“Seller’s WWTP Work 50% Completion” means, collectively, Seller’s WWTP Work 50% Force Main Completion and Seller’s WWTP Work 50% Town WWTP Modifications Completion.

“Seller’s WWTP Work 50% Force Main Completion” means that 50% of the total linear feet of the force mains required to be installed as part of the Force Main Improvements, including 50% of those force mains which are to be located within Massachusetts DOT jurisdictional rights-of-way (“MA DOT ROWs”) as part of Seller’s WWTP Work (the “DOT Force Mains”), have been installed in accordance with the Seller’s WWTP Work Plans, Seller’s Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that such level of completion has been achieved, along with an updated version of Seller’s Construction Schedule evidencing same.

“Seller’s WWTP Work 50% Town WWTP Modifications Completion” means that 50% of the Town WWTP Modifications are completed in accordance with the Seller’s WWTP Work Plans, Seller’s Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that such level of completion has been achieved, along with an updated version of Seller’s Construction Schedule evidencing same.

“Seller’s WWTP Work Acceptance and Disposal Completion” shall mean that Seller’s WWTP Improvements are completed to such a level that they can legally accept and dispose of Buyer’s Project Effluent, all in accordance with the Seller’s WWTP Work Plans, Seller’s Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that such level of completion has been achieved.

“Seller’s WWTP Work Final Completion” means that (i) all Seller’s WWTP Improvements are fully completed in a lien-free manner in accordance with the Seller’s WWTP Work Plans, Seller’s WWTP Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that

such level of completion has been achieved; (ii) applicable Governmental Authorities have issued a certificate of completion respecting the Seller's WWTP Work or its functional equivalent permitting the lawful use of the Seller's WWTP Improvements for their intended purpose; (iii) the Seller's WWTP Improvements are otherwise fully functional and ready to receive, carry and treat all Buyer's Project Effluent and return the Returned Effluent to the Buyer's Project subject only to the completion of any unfinished Buyer's Retained WWTP Work; and (iv) subject to Buyer's compliance with Section 2(e) below, Seller shall have been issued a Seller's Groundwater Discharge Permit.

"Seller's WWTP Work Milestone" shall mean each of the following: (i) submission of all required applications, documents, requests or other filings for the Seller's WWTP Work Permits ("Seller's WWTP Permit Submissions"); (ii) (1) receipt of all Seller's WWTP Work Permits and (2) (y) a draft of Buyer's Project O/M Agreement shall have been provided to Buyer and (z) the consent of Seller's engineer for Seller's WWTP Work substantially in the form attached hereto as Exhibit C (or in such other form mutually agreed to by Seller, Buyer, and such engineer) shall have been provided to Buyer (collectively, clauses (y) and (z), the "Additional WWTP Documents"); (iii) the full execution and delivery of Seller's Work Contract by Seller and Seller's Work Contractor for the full scope of the Seller's WWTP Work, together with the issuance of a notice to proceed to Seller's Contractor (collectively, "Seller's Work Contract Execution"); (iv) Seller's WWTP Work 50% Completion; (v) Seller's WWTP Work Acceptance and Disposal Completion; and (vi) Seller's WWTP Work Final Completion.

"Seller's WWTP Work Milestone Achievement Evidence" shall be mean evidence in a written notification from Seller to Buyer (including all requisite supporting documentation therefor described in the definition of each applicable milestone) confirming that Seller has achieved a particular Seller's WWTP Work Milestone.

"Seller's WWTP Work Milestone Deadline" shall mean each of the following dates for each applicable Seller's WWTP Work Milestone:

- February 15, 2021** – Seller's WWTP Permit Submissions
- April 30, 2021** (the "Permit Deadline") - Receipt of all Seller's WWTP Work Permits (other than the Seller's Groundwater Discharge Permit) and Delivery of the Additional WWTP Documents
- May 15, 2021** – Seller's Work Contract Execution
- September 1, 2021** – Seller's WWTP Work 50% Completion
- October 1, 2021** – Seller's WWTP Work Acceptance and Disposal Completion
- January 15, 2022** – Seller's WWTP Work Final Completion

"Seller's WWTP Work Permits" shall mean all any and all permits, approvals, easements, licenses, right-of-way condemnation actions, and consents required from any applicable Governmental Authorities or any other third parties which are required in order to allow for the performance and completion of the Seller's WWTP Work and the effective operation of the WWTP System once completed, including without limitation (i) any and all permits or approvals required from or under the Massachusetts Department of Transportation and the Massachusetts Department of Environmental Protection; and (ii) any approvals, easements, or licenses required from third-party property owners in order to construct the Seller's WWTP Improvements.

"Seller's WWTP Work Plans" means the plans and specifications for the Seller's WWTP Work described in Exhibit A attached hereto and made a part hereof, as the same may be updated or advanced from time to time in accordance with this Agreement and are deemed to include the Final Plans once approved pursuant to the provisions hereof.

“WWTP Easement Agreement” shall mean the Grant of Easements (Wastewater Facilities) entered into between the Buyer and Seller on or about the date hereof which, among other things, includes a grant of certain easements by Buyer to Seller (and attendant covenants of Seller) for the ongoing operation and maintenance of the Buyer’s Retained WWTP Improvements once completed.

“WWTP Escrow Agreement” shall have the meaning set forth in Section 4 hereof.

“WWTP Escrow Funds” shall have the meaning set forth in Section 4 hereof.

“WWTP System” shall mean, collectively, the Buyer’s Retained WWTP Improvements and the Seller’s WWTP Improvements.

2. CONSTRUCTION PLANNING, PERMITTING AND CONSTRUCTION OF THE SELLER’S WWTP IMPROVEMENTS.

(a) Preparation and Approval of Plans for Seller’s WWTP Work.

- i. 50% Plans. Attached as Exhibit A to this Agreement are 50% complete engineered working drawings for all of the Seller’s WWTP Improvements (the “50% Plans”). Buyer shall grant or deny its approval of the 50% Plans, which shall not be unreasonably withheld, conditioned or delayed, by February 17, 2021. If Buyer fails to grant or deny its consent to the 50% Plans by February 17, 2021, it shall be deemed that Buyer has approved the 50% Plans. If Buyer withholds its consent to the 50% Plans, Buyer shall provide reasonably detailed comments setting out the specific reasons that Buyer has not approved (or is deemed to approved) the 50% Plans. This process shall continue until Buyer has approved the 50% Plans, except that Buyer shall only have five (5) business days to approve or withhold its consent to each submittal to Buyer of subsequent drafts of the 50% Plans following the initial submittal thereof, and failure of Buyer to timely approve or withhold its consent within such 5-business day period shall mean that the 50% Plans are deemed approved. Buyer’s approval of the 50% Plans hereunder will in no event constitute a representation or warranty by Buyer as to the adequacy or sufficiency of such plans, or the improvements to which they relate, for any use, purpose or condition, but such approval shall constitute Buyer’s confirmation that, among other things, the 50% Plans depict appropriate connections to and with the Buyer’s Retained WWTP Improvements at the boundary line of Buyer’s Property. During any period of time the Buyer is reviewing and commenting on the 50% Plans beyond the initial February 17, 2021 review period noted above, the period(s) of time of such review and commentary beyond the initial February 17, 2021 review period (until the 50% Plans are approved or deemed approved by Buyer) shall be added to Seller’s WWTP Work Milestone Deadline with respect to Seller’s WWTP Permit Submissions.
- ii. Final Plans. Seller shall, at its sole cost and expense, cause complete engineered working drawings for all of the Seller’s WWTP Improvements (the “Final Plans”) to be prepared by March 1, 2021.

Seller shall submit the Final Plans to Buyer for its approval, which shall not be unreasonably withheld, conditioned or delayed so long as the Final Plans are materially consistent with the Seller's 50% Plans. Buyer shall grant or deny its approval of the Final Plans within three (3) business days after Buyer's receipt of same. If Buyer fails to grant or deny its consent to the Final Plans within such 3-business day period, it shall be deemed that Buyer has approved the Final Plans. If Buyer withholds its consent to the Final Plans, Buyer shall provide reasonably detailed comments setting out the specific reasons that Buyer has not approved (or is deemed to approved) the Final Plans. This process shall continue until Buyer has approved the Final Plans. Buyer's approval of the Final Plans hereunder will in no event constitute a representation or warranty by Buyer as to the adequacy or sufficiency of such plans, or the improvements to which they relate, for any use, purpose or condition, but such approval will merely be the consent of Buyer to such plans so that Buyer can confirm, among other things, appropriate connections to and with the Buyer's Retained WWTP Improvements at the boundary line of Buyer's Property; provided, however, that if Seller constructs the Seller's WWTP Improvements in accordance with the Final Plans as approved by Buyer, the Buyer shall be precluded from later making a claim that the Seller's WWTP Improvements are not compatible for connection to and with the Buyer's Retained WWTP Improvements. Once the Final Plans are approved or deemed approved pursuant to the foregoing process, Seller will not modify such plans in a manner that would negatively impact the Buyer's Project or the Buyer's Retained WWTP Improvements (including the scope, timing or cost thereof) without again complying with the approval requirements set forth hereinabove with respect to any such proposed changes. During any period of time the Buyer is reviewing and commenting on the Final Plans beyond the initial 3-business day review period noted above, the period(s) of time of such review and commentary beyond the initial 3-business day period (until the Final Plans are approved or deemed approved by Buyer) shall be added to Seller's WWTP Work Milestone Deadline with respect to Seller's WWTP Permit Submissions.

(b) Permitting and Construction of Seller's WWTP Improvements. Once the Final Plans are approved or deemed approved pursuant to subsection (a) above, Seller will, at its sole cost and expense, diligently and expeditiously prepare all relevant Seller's WWTP Permit Submissions and otherwise pursue the procurement of all Seller's WWTP Work Permits. Upon receipt of all Seller's WWTP Work Permits, Seller shall, at its sole costs and expense, construct Seller's WWTP Improvements in compliance with all Applicable Legal Requirements, the Final Plans, the Seller's WWTP Work Permits and otherwise in a good and workmanlike manner employing new materials of good quality. Seller agrees to diligently prosecute the design, permitting, construction and completion of the Seller's WWTP Improvements, and without limiting the generality of the foregoing, agrees to cause all Seller's WWTP Work Milestones to be achieved by the applicable Seller's WWTP Work Milestones established therefor, subject to Section 8 hereof and any Gas Line Work Priority Stoppage (as hereinafter defined). Seller acknowledges and agrees that it shall be solely responsible for any and all costs associated with the design, permitting and construction of the WWTP Seller's Work Improvements, without any

compensation or remuneration due from Buyer, subject only to those Release Amounts which Seller may be entitled to receive pursuant to subsection (c) below. If, during the course of the performance of the Seller's WWTP Work, the company responsible for bringing gas service to the Buyer's Project, including applicable contractors engaged thereby, are prepared to begin installing gas lines and other infrastructure ("Gas Line Work") in MA DOT ROWs (including U.S. Route 20) to serve Buyer's Project and the Massachusetts Department of Transportation ("MassDOT") or any other applicable Governmental Authority will not allow applicable portions of the Seller's WWTP Work and the Gas Line Work to occur simultaneously within the MA DOT ROWs, the Gas Line Work will take priority over Seller's WWTP Work and Seller will cause Seller's Work Contractor to stop work in the applicable portions of the MA DOT ROWs while such Gas Line Work is being performed (a "Gas Line Work Priority Stoppage"). Upon the occurrence of any Gas Line Work Priority Stoppage, each of Seller's WWTP Work Milestone Deadlines (beginning with the Seller's WWTP Work Milestone Deadline of September 1, 2021) shall be delayed on a day-for-day basis for the duration of any Gas Line Work Priority Stoppage. Seller agrees to use reasonable efforts to coordinate its work plan for Seller's WWTP Work with MassDOT and such Gas Line Work company in an attempt to allow the Seller's WWTP Work and the Gas Line Work to occur contemporaneously so as to avoid a Gas Line Work Priority Stoppage, and Buyer agrees to use reasonable efforts to cause such Gas Line Work company to coordinate its work plan for the Gas Line Work with MassDOT and Seller accordingly.

(c) Release of WWTP Escrow Funds Upon Satisfaction of Certain Seller's WWTP Work Milestones. Provided that Buyer has not already made a Buyer's Self-Contained WWTP Work Election or exercised the Self-Help Remedy in accordance with the terms of this Agreement, Seller may deliver to Buyer and Escrow Agent a Seller's WWTP Escrow Release Requisition demanding the release of WWTP Escrow Funds in the following amounts (each, a "Release Amount"; collectively, the "Release Amounts") *after* achieving each of the following Seller's WWTP Work Milestones:

- \$829,275 (the "Building Permit Fee"), upon Seller's receipt of all Seller's WWTP Work Permits (other than the Seller's Groundwater Discharge Permit);
- \$905,725, upon Seller's WWTP Work 50% Completion; and
- The balance of the WWTP Escrow Funds

Notwithstanding the foregoing or anything herein to the contrary, subject to the last sentence of this Section 2, (w) upon the occurrence of a Seller Event of Default, no Release Amounts shall be disbursed from the WWTP Escrow Funds unless and until Seller's WWTP Work Final Completion occurs, at which time the remaining WWTP Escrow Funds will be released to Seller pursuant to a final Seller's WWTP Escrow Release Requisition, subject to the ensuing provisions of this Section 2, and the terms of the WWTP Escrow Agreement, (x) in the event Seller fails to achieve either Seller's WWTP Acceptance and Disposal Completion or Seller's WWTP Work Final Completion on or prior to the Seller's WWTP Work Milestone Deadlines established therefor, no Release Amounts shall be disbursed from the WWTP Escrow Funds until the Buyer's Project Initial T/C/O Date, so as to afford Buyer sufficient time to calculate any and all applicable Buyer's WWTP Damages and make requisition therefor under the WWTP Escrow Agreement as applicable, (y) if there are insufficient funds to satisfy any Release Amount(s) due to Buyer's exercise of remedies set forth in Section 5.2 below, the applicable Release Amount(s) shall be reduced accordingly so that it only equals the amount of WWTP Escrow Funds then remaining; and (z) if Buyer has made requisitions pursuant to the WWTP Escrow Agreement to draw down WWTP Escrow Funds to pay or reimburse Buyer for Buyer's Project Delay Liquidated Damages and/or Buyer's Increased Project Costs pursuant to Section 5(b-c) below and such draws are either (1) pending at the time of Seller's WWTP Escrow Release Requisition, or (2) requisitioned within five (5) business days after Seller's WWTP Escrow Release Requisition, Seller shall only be entitled to receive as Release Amount(s) that portion of the WWTP Escrow Funds which are not the subject of such Buyer requisition(s), and the applicable Release Amount(s) shall be reduced accordingly.

Notwithstanding the foregoing, the Building Permit Fee shall be released to Seller on the earlier to occur of (i) Seller's receipt of all Seller's WWTP Work Permits, and (ii) June 30, 2021.

(d) Buyer's Project O/M Fees and Buyer's Project O/M Agreement. Prior to the Permit Deadline, Buyer shall use commercially reasonable, good faith efforts to finalize the Buyer's Project O/M Fees and Buyer's Project O/M Agreement with the Wastewater Governing Authority on terms reasonably acceptable to Buyer. In the event that, despite its good faith efforts, Buyer is unable to reach an agreement with the Wastewater Governing Authority regarding the Buyer's Project O/M Fees by the Permit Deadline (a "Buyer O/M Failure Event"), Buyer shall have the right to make a Buyer's Self-Contained WWTP Work Election pursuant to Section 5.2(a) below, which election must be made, if at all, by the date which is 10 business days after the Permit Deadline. If Buyer fails to make such election within the foregoing 10-business day period, it will forfeit the right to make a Buyer's Self-Contained WWTP Work Election under this Section 2(d).

(e) Release of Permit for Buyer's Self-Contained WWTP Improvements. Buyer has obtained a groundwater discharge permit from DEP for Buyer's Self-Contained WWTP Improvements ("Buyer's Groundwater Discharge Permit"). DEP has informed Seller that DEP will issue Seller's Groundwater Discharge Permit only after Buyer releases Buyer's Groundwater Discharge Permit. Accordingly, at such time as DEP has indicated to Seller that it is prepared to issue to the Seller's Groundwater Discharge Permit, but in no event earlier than the date upon which Seller has achieved Seller's WWTP Work Acceptance and Disposal Completion, Seller may request that Buyer release the Buyer's Groundwater Discharge Permit to DEP (a "Discharge Permit Tender Request"), and promptly upon receipt of a timely-delivered Discharge Permit Tender Request, Buyer shall release to DEP (or as otherwise directed by DEP) Buyer's Groundwater Discharge Permit.

3. CONSTRUCTION REPRESENTATIVES. Seller appoints the following person(s) as Seller's representative ("Seller's Representative") to act for Seller in all matters covered by this Agreement, including the receipt of applicable notices hereunder:

Louise L.E. Miller, J.D.
Town Administrator
Town of Wayland
41 Cochituate Road
Wayland, MA 01778
O: (508) 358-3620
Email: lmiller@wayland.ma.us

Buyer appoints the following person(s) as Buyer's representative ("Buyer's Representative") to act for Buyer in all matters covered by this Agreement, including the receipt of applicable notices hereunder.

Jim Lambert
c/o WP East Acquisitions, L.L.C.
91 Hartwell Avenue
Lexington, MA 02421
Phone: 781.541.5822
Email: jim.lambert@woodpartners.com

All communications with respect to the matters covered by this Agreement are to be made to Seller's Representative or Buyer's Representative, as the case may be, in writing, in compliance with the notice provisions of the LDA (except that only Seller's Representative and Buyer's Representative are the only

parties that need be named in any applicable notification). Either party may change its representative and/or address under this Agreement at any time by written notice to the other party in compliance with the notice provisions of the LDA.

4. WWTP ESCROW AGREEMENT. Concurrently with the execution of this Agreement and the acquisition by Buyer of Buyer's Property, Buyer, Seller and First American Title Insurance Company ("Escrow Agent") are entering into an agreement entitled WWTP Escrow Agreement (the "WWTP Escrow Agreement") pursuant to which \$2,587,588.00 are being funded into escrow by Seller and Buyer (through a combination of Net Purchase Price proceeds and sources of funds outside of the Closing escrow) (collectively, the "WWTP Escrow Funds"), and such funds will be held and disbursed pursuant to this Agreement and the WWTP Escrow Agreement. At such time as Buyer deposits the Final On-Site WWTP Escrow Funds pursuant to Section 4(c)(ii) of the Twelfth Amendment, such funds shall become part of the WWTP Escrow Funds for all purposes under this Agreement and the WWTP Escrow Agreement.

5. SELLER DEFAULT; BUYER REMEDIES.

5.1 Seller Events of Default. Subject to Section 8 hereof, the occurrence of any one or more of the following shall constitute a "Seller Event of Default" under this Agreement:

(a) Seller or Seller's Work Contractor shall file any bankruptcy proceeding; or any proceeding under bankruptcy laws or other debtor-relief or similar laws shall be brought against Seller or Seller's Work Contractor and is not dismissed within 60 days after the filing thereof; or Seller or Seller's Work Contractor shall make an assignment for the benefit of creditors or file for any form of reorganization or arrangement under any bankruptcy law or other debtor-relief a similar law or proceeding;

(b) Once commenced, (1) any portion of the Seller's WWTP Work shall cease and not be resumed within 30 days thereafter; or (2) construction of the Seller's WWTP Work is abandoned;

(c) Seller falls behind schedule for completion of the Seller's WWTP Improvements by more than 30 days and does not, within 10 business days after receipt of notice from Buyer, deliver to Buyer a critical path recovery schedule updating Seller's Construction Schedule to reflect that Seller's WWTP Work Final Completion will still occur by the Seller's WWTP Milestone Deadline established therefor;

(d) Seller fails to deliver Seller's WWTP Work Milestone Achievement Evidence for any Seller's WWTP Work Milestone by the applicable Seller's WWTP Work Milestone Deadline established therefor. For avoidance of doubt, the Seller's WWTP Work Milestone will actually need to be satisfied or completed in order for a Seller's WWTP Work Milestone Achievement Evidence to be valid pursuant to the foregoing sentence.

5.2 Buyer Remedies. Upon a Seller Event of Default (or, in the case of a Buyer O/M Failure Event pursuant to Section 2(d) above as it concerns and is limited to a Buyer's Self-Contained WWTP Work Election), Buyer will have the following rights and remedies:

(a) Buyer's Self-Contained WWTP Work Election. Buyer shall have the right (but not the obligation), upon written notice to Seller, to elect to perform the Buyer's Self-Contained WWTP Work (the "Buyer's Self-Contained WWTP Work Election"). In the event the Buyer makes the Buyer's Self-Contained WWTP Work Election, (i) Seller will no longer be required to complete the Seller's WWTP

Improvements, (ii) Buyer shall construct the Buyer's Self-Contained WWTP Improvements in accordance with the plans, permits and other Approvals therefor and Applicable Legal Requirements, (iii) Buyer shall have the right to draw down on the WWTP Escrow Funds in order to pay for Buyer's Self-Contained WWTP Work Costs in excess of the Buyer's Self-Contained WWTP Work Costs Requisition Threshold as and when incurred pursuant to one or more Buyer's Self-Contained WWTP Work Costs Requisitions, and (iv) the WWTP Easement Agreement shall automatically terminate and be of no further force and effect, and Seller shall cooperate with Buyer in executing and recording any documentation necessary to terminate such WWTP Easement Agreement of record. Seller acknowledges and agrees that it will have no right to object to or disapprove any Buyer's Self-Contained WWTP Work Costs Requisition absent manifest error, so long as such requisition includes the Supporting Documentation required by the WWTP Escrow Agreement (and even then Seller's ability to object to the requisition will be as limited by the WWTP Escrow Agreement).

(b) Buyer's Project Delay Liquidated Damages. In the event of a Seller Event of Default with respect to Seller's failure to timely achieve the Seller's WWTP Work Milestone for Seller's WWTP Work Acceptance and Disposal Completion and such failure causes a Buyer's Project Delay with respect to delay of the issuance of a temporary certificate of occupancy for Buyer's Project by the Buyer's Project Initial T/C/O Date, Buyer will have the right to make a requisition on the WWTP Escrow Funds to pay or compensate Buyer for Buyer's Project Delay Liquidated Damages pursuant to a Buyer's Project Delay LD Requisition. At such time as the actual duration of Buyer's Project Delay is known based on when Buyer's Project Initial T/C/O Date actually occurs or is scheduled to occur, Buyer may make a Buyer's Project Delay LD Requisition within five (5) business days after the determination of such actual duration of Buyer's Project Delay.

(c) Buyer's Increased Project Costs. In the event of a Seller Event of Default which results in Buyer's Increased Project Costs, Buyer will have the right to draw down on the WWTP Escrow Funds to pay or compensate Buyer for Buyer's Increased Project Costs, as and when such Buyer's Increased Project Costs are finally determined, by making a Buyer's Project Increased Project Costs Requisition.

(d) Self-Help Remedy. Buyer shall have the right (but not the obligation) to assume control of all or a portion of the Seller's WWTP Work (the "Self-Help Remedy") upon at least 10 business days' written notice to Seller (a "Takeover Notice"). Upon issuance of a Takeover Notice, (i) Seller shall cease the performance of any Seller's WWTP Work so taken over, (ii) Buyer shall promptly and diligently prosecute and complete the Seller's WWTP Work, (iii) Buyer shall be entitled to draw down from the WWTP Escrow Funds under the WWTP Escrow Agreement pursuant to one or more Buyer's WWTP Self-Help Requisitions in accordance with the terms thereof to pay for all costs and expenses associated with the work taken over as if Buyer were Seller thereunder (collectively, "Buyer's WWTP Self-Help Costs"), (iv) [intentionally omitted]; and (v) to the extent deemed necessary by the applicable permit granting authority to complete the portion of the Seller's WWTP Work taken over, Seller hereby assigns to Buyer its interest under (A) any and all permits, licenses, variances, plans and approvals required in order to complete the work taken over and (B) any and all design, engineering, construction and development contracts related to same (collectively, "Approvals and Contracts"). Additionally, within five (5) business days after entering into Seller's Work Contract, to the extent such language is not included within the Seller's Work Contract itself, Seller will cause Seller's Work Contractor to deliver a consent document in a form reasonably agreed to by Buyer and Seller's Work Contractor which shall acknowledge Buyer's rights should it exercise the Self-Help Remedy hereunder. Seller hereby covenants that it shall, at any time and from time to time upon written request thereof, promptly execute and deliver to Buyer any new or confirmatory instruments and do and perform any other acts which Buyer may reasonably request in order to fully assign and transfer to and vest in Buyer, and protect Buyer's right, title and interest in and to each and all of the Approvals and Contracts intended to be transferred and assigned hereby. Additionally, if Buyer exercises the Self-Help Remedy, Buyer shall provide or cause

Buyer's Contractor (or, as the case may be, Seller's Work Contractor as engaged by Buyer) to provide to Seller, within a reasonable time after Seller's request for the same, all necessary documentation, in order to satisfy requirements imposed upon Seller by Seller's MassWorks's infrastructure funding grant for the Seller's WWTP Improvements so that Seller can continue to receive such funding under the terms of such grant ("Seller's Grant Funds"). Seller agrees to use commercially reasonable efforts to cause Seller's Work Contractor to provide all such necessary documentation with respect to Seller's Grant Funds, and Seller agrees that it shall be a requirement of Seller's Work Contract that Seller's Work Contractor provide such necessary documentation.

(e) Other Recourse; WWTP Escrow Funds Exhausted. Buyer may pursue any other rights and remedies at law or equity in connection with such Seller Event of Default; *provided, however*, that Buyer will first seek recourse pursuant to one or more of the remedies set forth above and through Buyer's WWTP Damages Requisitions made pursuant to the WWTP Escrow Agreement prior to resorting to this subsection (e). Without limiting the foregoing, to the extent the funds then remaining in the WWTP Escrow Agreement are not sufficient to pay for any Buyer's WWTP Damages, Buyer shall have the right to submit invoices to Seller for direct reimbursement, which shall be paid by Seller within 30 days of written demand therefor and if such amounts are not timely paid. Notwithstanding the foregoing, Seller's liability for Buyer's Project Delay Liquidated Damages shall be limited to an amount equal to (i) the WWTP Escrow Funds then being held in escrow at the time Buyer makes a Buyer's Project Delay LD Requisition, *plus* (ii) any amounts previously released to Seller as Released Amounts hereunder (excluding the Building Permit Fee).

(f) Cumulative Rights; No Election of Remedies. All rights, remedies, powers, and privileges conferred hereunder upon the Buyer will be cumulative. An exercise of one remedy by Buyer shall not be deemed an election of remedies by Buyer, and Buyer will have the right to pursue any and all other remedies available to it; *provided, however*, Buyer acknowledges and agrees that the exercise of one remedy may preclude the exercise of another, as certain remedies set forth above are mutually exclusive (e.g. Buyer cannot make a Buyer's Self-Contained WWTP Work Election and then exercise a Self-Help Remedy, as such remedies are mutually exclusive, but the Buyer may incur Buyer's Self-Contained WWTP Work Costs or Buyer's Increased Project Costs while also sustaining Buyer's Project Delay Liquidated Damages and pursue remedies with respect to same on a cumulative basis).

6. COUNTERPARTS; SEVERABILITY. This Agreement may be executed in multiple counterparts and on separate counterparts, each of which shall be deemed to be an original and all of which shall together constitute one and the same agreement. Electronic, facsimile or .pdf signatures shall have the same force and effect as original signatures. The parties hereto intend to be bound by the signatures on the electronic, facsimile or .pdf document, and hereby waive any defenses to the enforcement of the terms of this Agreement based on the use of an electronic, facsimile or .pdf signature. If any provisions of this Agreement or the application thereof to any person or circumstances shall, to any extent, be invalid or unenforceable, the remainder of this Agreement by the application of such provision or provisions to persons or circumstances other than those as to whom or which it is held invalid or unenforceable shall not be affected thereby, and every provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law; provided, however, that if any of the provisions of this Agreement or the application thereof shall to any extent be invalid or unenforceable to one or more but not all of the parties, then this Agreement shall be valid and enforceable as to the other party or parties only to the extent that the same is equitable and consistent with the overall purposes of this Agreement.

7. ATTORNEYS' FEES. If any action is brought by a party to this Agreement against another party, relating to or arising out of this Agreement, the transaction described herein or the enforcement hereof, the prevailing party shall be entitled to recover from such party reasonable attorneys'

fees, costs and expenses incurred in connection with the prosecution or defense of such action. The provisions of this Section 7 shall survive the entry of any judgment, and shall not merge, or be deemed to have merged, into any judgment.

8. FORCE MAJEURE DELAY. The duties and obligations of Seller to observe or perform any of the terms or provisions of this Agreement shall be excused and extended for a period equal to the period of any Force Majeure Delay; *provided, however*, the period for which Seller may claim a Force Majeure Delay hereunder shall only extend for the period of time that Buyer is also prohibited or restricted from performing work on Buyer's Project due to such Force Majeure Delay (the "Max FM Period"). Without limiting the foregoing, all Seller's WWTP Work Milestone Deadlines shall be extended for the duration of any Force Majeure Delay, subject to the Max FM Period. If Seller is invoking a Force Majeure Delay in order to extend any applicable deadlines hereunder, it must provide prompt notice to Buyer within 10 days after the commencement thereof and advise of its anticipated duration, and Seller shall take whatever reasonable steps are necessary to relieve the effect of such cause as rapidly as possible.

9. GOVERNING LAW; VENUE FOR LITIGATION. This Agreement shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts. Any litigation based on or arising out of this Agreement shall be brought exclusively in state or federal courts located in the Commonwealth of Massachusetts.

10. TIME. Time is of the essence of this Agreement.

11. AUTHORITY. Each Party certifies to the other that it authorized by all required corporate, limited liability company, partnership action or Board of Selectmen action, as applicable, to enter into this Agreement and the individual(s) signing this Agreement on behalf of such Party are each authorized to bind such Party. Buyer certifies to Seller that it is duly organized, validly existing and in good standing under the laws of its state of organization, and duly qualified to do business in the Commonwealth of Massachusetts.

12. ASSIGNMENT. No Party to this Agreement shall assign or in any manner sell or transfer any of its rights or interest in this Agreement without the prior written consent of the other Party, which consent may be withheld in the non-requesting Party's sole discretion; *provided, however*: (i) that Buyer shall have the right in connection with any existing or future financing secured by Buyer's Property or Buyer's Project to assign for collateral purposes its interest hereunder to any lender(s) providing such financing, and the Seller hereby agrees to execute and deliver any consent or acknowledgment to any such collateral assignment on a commercially reasonable form; and (ii) Buyer, following the issuance of the initial temporary certificate of occupancy for Buyer's Project or otherwise in connection with a permitted assignment under the LDA, will have the right to assign this Agreement to successor(s) in title to the Buyer's Property and/or Buyer's Project.

13. NO WAIVER. Neither the failure of any Party to exercise any power or right given such Party hereunder or to insist upon strict compliance by any other Party with its obligations hereunder, nor any custom or practice of the parties at variance with the terms hereof, shall constitute a waiver of any Party's right to demand exact compliance with the terms hereof.

14. WAIVER OF RIGHT TO TRIAL BY JURY. EACH PARTY HERETO HEREBY KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES THE RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION BASED HEREON OR ARISING OUT OF THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREBY, AND ANY AGREEMENT CONTEMPLATED TO BE EXECUTED IN CONJUNCTION HERewith, OR

COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PARTY. THIS PROVISION IS A MATERIAL INDUCEMENT FOR SELLER AND BUYER ENTERING INTO THIS AGREEMENT.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the undersigned Seller and Buyer have caused this Agreement to be duly executed by their duly authorized representatives as of the date hereof.

BUYER:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

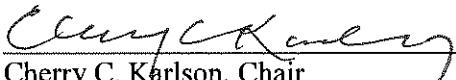
Thomas J. Fay

Mary M. Antes

Lea T. Anderson

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen



Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Date: 02-10-2021

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair



David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

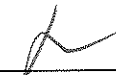
Date: February 10, 2021

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Date: 2/10/21

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes
Mary M. Antes

Lea T. Anderson

Date: February 10, 2021

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson
Lea T. Anderson

Date: February 10, 2021

EXHIBIT A

SELLER'S WWTP WORK PLANS

[SEE ATTACHED FOR 50% PLANS]

TOWN OF WAYLAND BOSTON POST ROAD (ROUTE 20) RIVER'S EDGE SEWER CONNECTION

DPW DIRECTOR

THOMAS HOLDER

TOWN ENGINEER

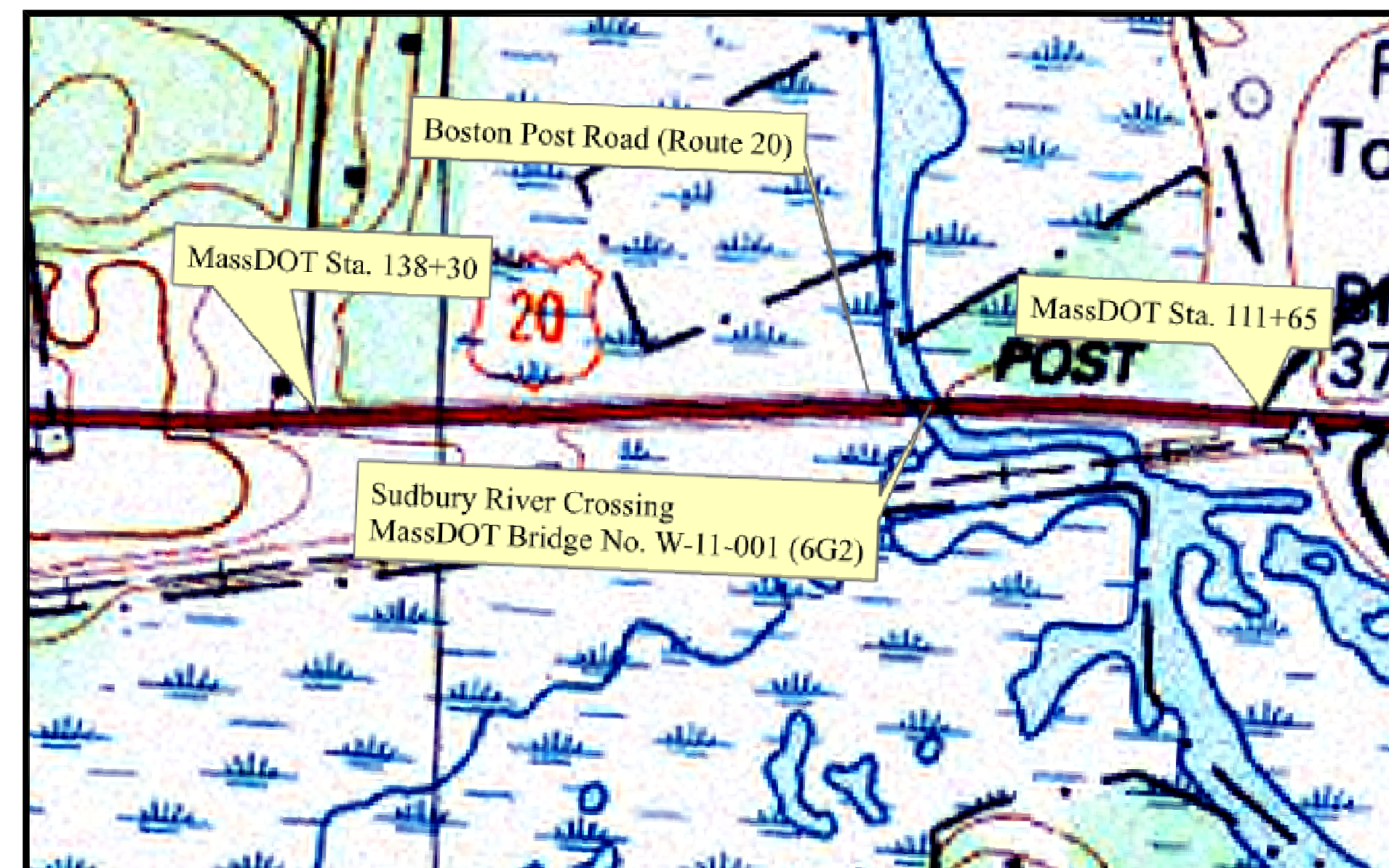
PAUL BRINKMAN, P.E.

WASTEWATER OPERATIONS MANAGER

RICHARD PEZZOLESI

SHEET INDEX

- C-1 - GENERAL NOTES, ABBREVIATIONS, LEGEND, AND PROPOSED RIVER'S EDGE DEVELOPMENT
- C-2 - MASSDOT STA. 138+30 TO MASSDOT STA. 129+93
- C-3 - MASSDOT STA. 129+93 TO MASSDOT STA. 119+59
- C-4 - MASSDOT STA. 119+59 TO MASSDOT STA. 110+91
- C-5 - DETAIL SHEET I
- C-6 - DETAIL SHEET II
- D-1 - PROPOSED PIPING PLAN
- TR-1 - TRAFFIC MANAGEMENT PLAN SHEET I
- TR-2 - TRAFFIC MANAGEMENT PLAN SHEET II



LOCATION PLAN
NO SCALE

JANUARY 2021



TATA & HOWARD

50%
DRAFT
JANUARY
2021

GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWN OF WAYLAND. ALL EXCAVATION AND RESTORATION SHALL MEET TOWN SPECIFICATIONS.
- THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- STATIONING ALONG THE LENGTH OF THE WATER MAIN IS INTENDED FOR GENERAL REFERENCE. WHERE PRECISE GROUND LOCATION IS REQUIRED, REFER TO ACTUAL FIELD MEASUREMENTS FOR ACTUAL DISTANCES FROM EXISTING GROUND FEATURES.
- AREAS WITHIN THE 100-FOOT BUFFER ZONE OF A BORDERING VEGETATED WETLAND ARE SUBJECT TO AN ORDER OF CONDITIONS ISSUED BY THE WAYLAND CONSERVATION COMMISSION.
- THE CONTRACTOR SHALL UTILIZE THE SOUTH LANDFILL LOCATED ON THE SOUTH SIDE OF BOSTON POST ROAD (NEAR MASSDOT STA. 11+30) FOR STAGING EQUIPMENT AND STOCKPILING MATERIALS. CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES AROUND THE PERIMETER OF THE STAGING AREA. ANY ADDITIONAL STAGING AREAS SHALL BE ESTABLISHED OUTSIDE OF A 100-FOOT BUFFER ZONE OR 200-FOOT RIVERFRONT AREA. FOR THE STORAGE OF EQUIPMENT AND STOCKPILING OF MATERIALS, NO STORAGE OF GASOLINE, OIL OR OTHER FUEL OR HAZARDOUS MATERIALS IS PERMITTED WITHIN THE 100-FOOT BUFFERZONE OR 200-FOOT RIVERFRONT AREA. STAGING AREA LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER.
- STOCKPILES SHALL BE LOCATED AS NEEDED, WITHIN THE LIMIT OF WORK, IN AREAS OF MINIMAL IMPACT.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH WORK DAY.
- THE CONTRACTOR AT HIS EXPENSE SHALL BRACE UTILITY POLES IF REQUIRED, AND REPAIR ANY DAMAGE TO EXISTING SIDEWALKS, CURBS, PAVING, SHRUBS, TREES, STONE WALLS, LAWNS, ETC. ALL EXCAVATED MATERIALS SHALL BE RETURNED TO EQUAL OR BETTER THAN PRIOR CONDITION BY THE CONTRACTOR.
- ALL EXISTING CONCRETE AND ASPHALT PAVEMENT SHALL BE SAW-CUT PRIOR TO EXCAVATION IN ORDER TO PROVIDE UNIFORM ASPHALT REPLACEMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PAVEMENT MARKINGS, TRAFFIC SIGN LOOPS, STRIPING, ARROWS, CROSSWALKS, ETC.
- ALL EXISTING CONCRETE STRUCTURES THAT REQUIRE CORING NEW INLET OR OUTLET PIPE PENETRATIONS SHALL HAVE A MECHANICAL LINK SEAL INSTALLED AT THE ANNULAR SURFACE BETWEEN THE PIPE OUTER DIAMETER AND THE CORING DIAMETER.
- CONTRACTOR SHALL MAINTAIN PUBLIC ACCESS TO THE BOAT RAMP AT ALL TIMES AT APPROXIMATE MASSDOT STA. 115+50.

SURVEY NOTES

- BASE PLANS AND PROPERTY LINE DETERMINATIONS WERE PREPARED BY WSP USA CORP., (155 MAIN DUNSTABLE ROAD, NASHUA, NH 03060)
- DELINEATION OF BORDERING VEGETATED WETLANDS, AND EDGE OF BANK MEAN ANNUAL HIGH WATER WERE DETERMINED BY ECOTEC, INC (102 GROVE STREET, WORCESTER, MA 01605)
- THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE INTENDED ONLY TO ADVISE THE CONTRACTOR OF THEIR PRESENCE. CALL "DIG SAFE" (1-888-344-7233) FOR FIELD LOCATIONS OF ALL EXISTING UTILITIES.
- BENCH MARKS HAVE BEEN ESTABLISHED BY THE SURVEYOR PRIOR TO THE START OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL BENCHMARKS THROUGHOUT CONSTRUCTION. ANY COST TO RE-ESTABLISH THESE ITEMS WILL BE AT NO COST TO THE OWNER.
- AS APPROPRIATE, CONTRACTOR SHALL TAKE ALL NECESSARY MESASURES, INCLUDING HAND DIGGING, TO MAINTAIN THE INTEGRITY OF THE EXISTING UTILITIES.
- HORIZONTAL DATUM REFERENCED THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD83 AND THE VERTICAL DATUM REFERENCED THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

GEOTECHNICAL NOTES

- BORINGS WERE DRILLED FOR PURPOSES OF DESIGN AND INDICATE SUBSURFACE CONDITIONS AT BORING LOCATION ONLY. SUBSURFACE CONDITIONS MAY VARY FROM THOSE SHOWN IN THE LOG.
- BORING AND TEST PIT LOCATIONS ARE SHOWN ON THE PLANS AND BORING AND TEST PIT LOGS ARE IN THE GEOTECHNICAL DATA REPORT BOUND IN APPENDIX A OF THESE SPECIFICATIONS.
- FOR EARTH EXCAVATION, BACKFILL, FILL AND GRADING, SEE SPECIFICATION 02221.
- FOR DEWATERING SEE SPECIFICATION 02140.
- FOR TEMPORARY EXCAVATION SUPPORT SYSTEM SEE SPECIFICATION 02160.
- CONTRACTOR IS REQUIRED TO SUBMIT COMPACTION REPORTS AS SPECIFIED IN SPECIFICATION SECTION 02221. THE CONTRACTOR SHALL BE STRICTLY HELD TO COMPACTION STANDARDS AS REFERENCE IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR BACKFILLING, COMPACTING, AND STABILIZING ALL WORK DAILY.

EROSION & SEDIMENT CONTROL NOTES

- THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM.
- THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF ALL EROSION CONTROL DEVICES ON-SITE. ALL EROSION CONTROL DEVICES SHALL BE REGULARLY INSPECTED. ANY SEDIMENTS REMOVED FROM THE CONTROL DEVICES SHALL BE DISPOSED OF ON THE UPLAND SIDE OF THE EROSION CONTROL LINE. THE CONTRACTOR SHALL PLACE ADDITIONAL EROSION CONTROL, REGARDLESS OF IT BEING SHOWN ON THE CONTRACT DRAWINGS, AS NECESSARY TO PREVENT SOIL EROSION THROUGHOUT THE PROJECT DURATION. NO WORK SHALL OCCUR BEYOND THE EROSION CONTROL.
- IN THE STAGING AREA, THE CONTRACTOR SHALL HAVE A STOCKPILE OF MATERIALS REQUIRED TO CONTROL EROSION ON-SITE TO BE USED TO SUPPLEMENT OR REPAIR EROSION CONTROL DEVICES. THESE MATERIALS SHALL INCLUDE, BUT ARE NOT LIMITED TO, HAY BALES, SILT FENCE AND CRUSHED STONE.
- AT NO TIME SHALL SILT-LADEN WATER BE ALLOWED TO ENTER SENSITIVE AREAS (WETLANDS, OFF-SITE AREA AND DRAINAGE SYSTEMS). ANY RUNOFF FROM DISTURBED SURFACES SHALL BE DIRECTED THROUGH SETTLING BASINS AND EROSION CONTROL BARRIERS PRIOR TO ENTERING ANY SENSITIVE AREAS.
- NO MATERIALS SHALL BE DISPOSED OF INTO ANY WETLANDS OR EXISTING OR PROPOSED DRAINAGE SYSTEMS. SILT SACKS SHALL BE USED IN ALL CATCH BASINS WITHIN PROJECT LIMITS TO MINIMIZE SILT DEPOSITS INTO DRAINAGE SYSTEM.
- ANY REFUELING OF CONSTRUCTION VEHICLES AND EQUIPMENT SHALL TAKE PLACE OUTSIDE OF ANY 100-FOOT BUFFER ZONE TO ANY WETLANDS.
- IF INTENSE RAINFALL IS ANTICIPATED, THE INSTALLATION OF SUPPLEMENTAL EROSION CONTROL DEVICES SHALL BE LOCATED WITHIN THE DISTRIBUTED AREA, TO MINIMIZE THE TRIBUTARY AREAS.

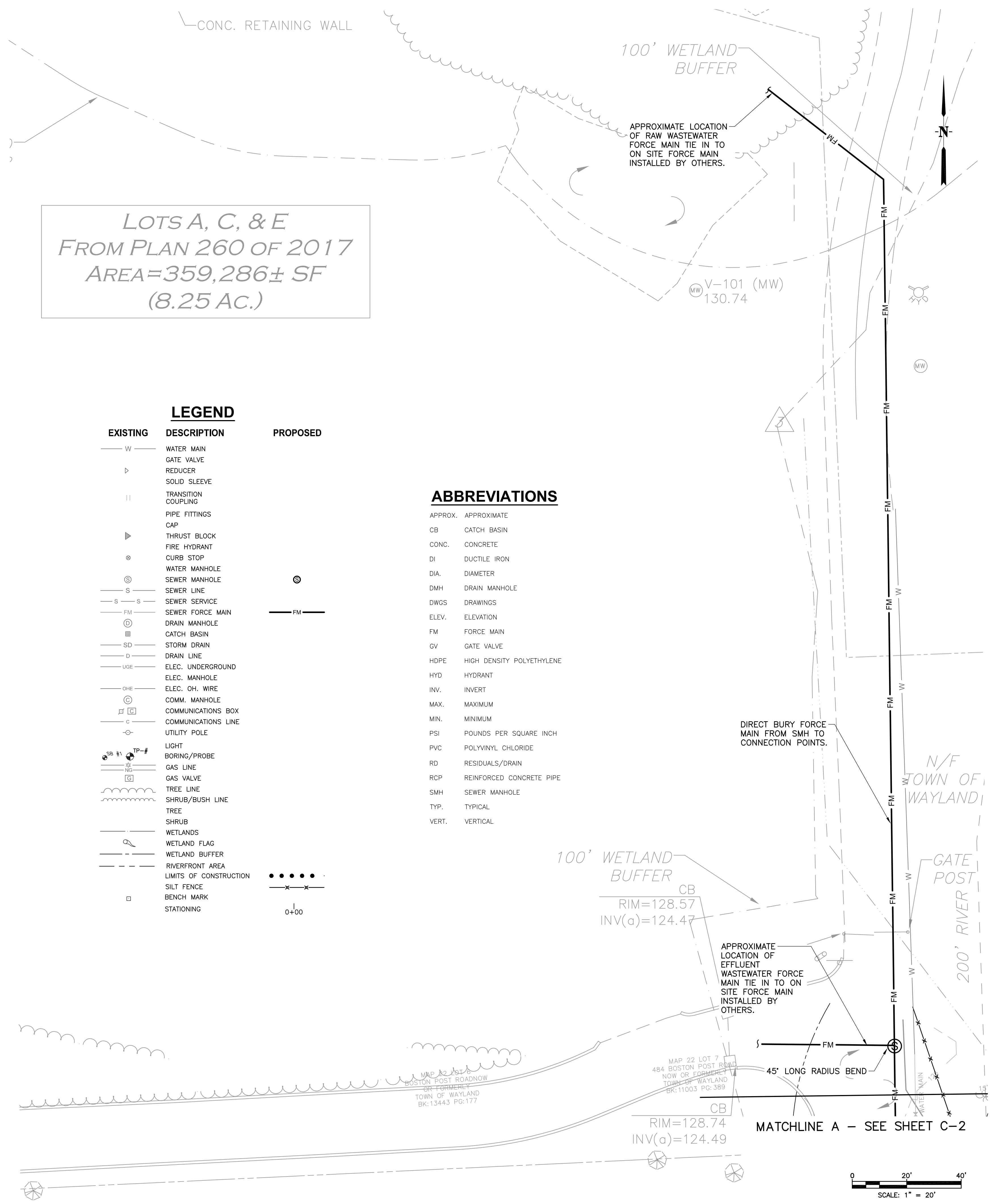
*LOTS A, C, & E
FROM PLAN 260 OF 2017
AREA=359,286± SF
(8.25 Ac.)*

LEGEND

EXISTING	DESCRIPTION	PROPOSED
— W —	WATER MAIN	
▷	GATE VALVE	
— R —	REDUCER	
— S —	SOLID SLEEVE	
	TRANSITION COUPLING	
— F —	PIPE FITTINGS	
◁	CAP	
▶	THRUST BLOCK	
⊙	FIRE HYDRANT	
⊙	CURB STOP	
⊙	WATER MANHOLE	
⊙	SEWER MANHOLE	⊙
— S —	SEWER LINE	
— S — S —	SEWER SERVICE	
— FM —	SEWER FORCE MAIN	— FM —
⊙	DRAIN MANHOLE	
⊙	CATCH BASIN	
— SD —	STORM DRAIN	
— D —	DRAIN LINE	
— UG —	ELEC. UNDERGROUND	
— OHE —	ELEC. OH. WIRE	
⊙	COMM. MANHOLE	
⊙	COMMUNICATIONS BOX	
— C —	COMMUNICATIONS LINE	
⊙	UTILITY POLE	
⊙	LIGHT BORING/PROBE	
— G —	GAS LINE	
— G —	GAS VALVE	
— T —	TREE LINE	
— S —	SHRUB/BUSH LINE	
— T —	TREE	
— S —	SHRUB	
— W —	WETLANDS	
— W —	WETLAND FLAG	
— W —	WETLAND BUFFER	
— W —	RIVERFRONT AREA	
— L —	LIMITS OF CONSTRUCTION	•••••
— S —	SILT FENCE	— x — x —
⊙	BENCH MARK	
⊙	STATIONING	0+00

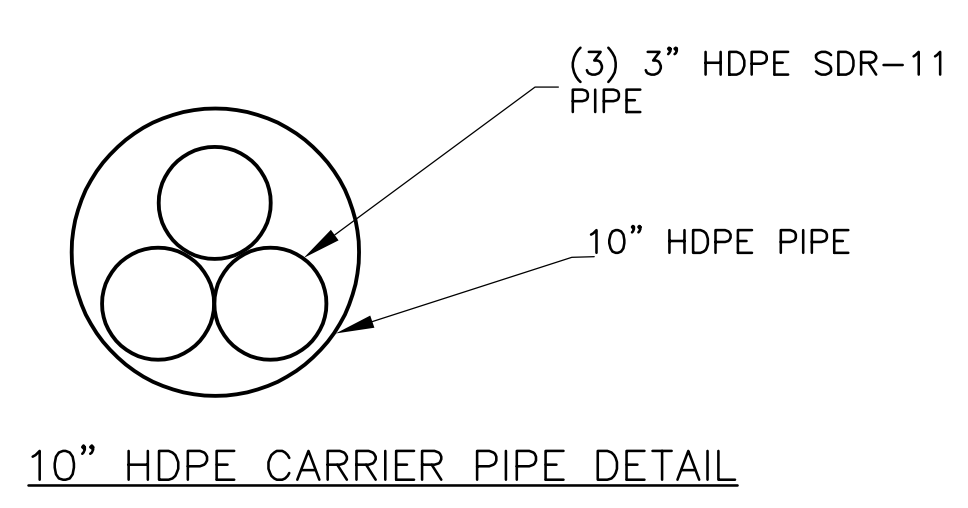
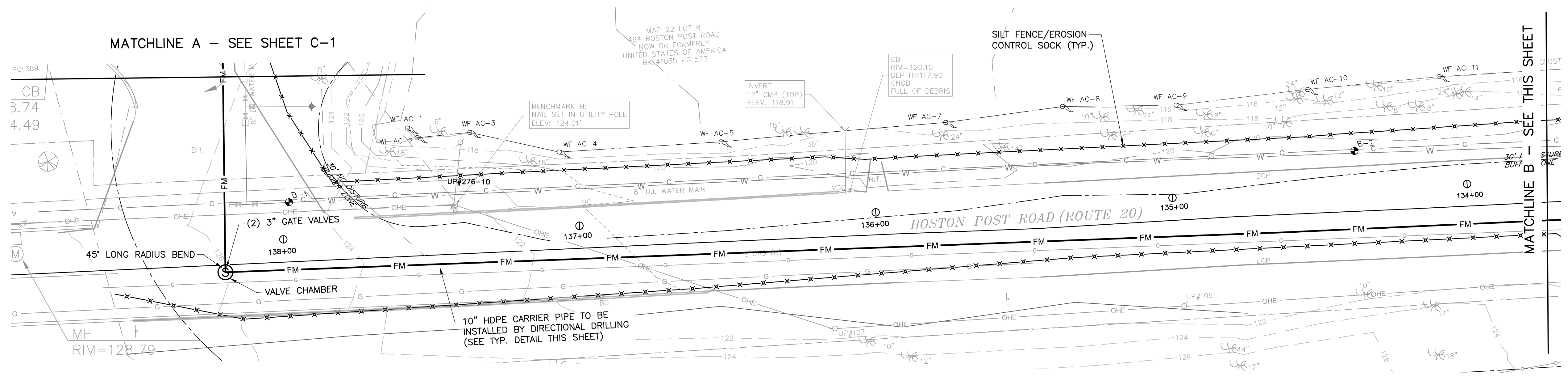
ABBREVIATIONS

APPROX.	APPROXIMATE
CB	CATCH BASIN
CONC.	CONCRETE
DI	DUCTILE IRON
DIA.	DIAMETER
DMH	DRAIN MANHOLE
DWGS	DRAWINGS
ELEV.	ELEVATION
FM	FORCE MAIN
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
INV.	INVERT
MAX.	MAXIMUM
MIN.	MINIMUM
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RD	RESIDUALS/DRAIN
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
TYP.	TYPICAL
VERT.	VERTICAL

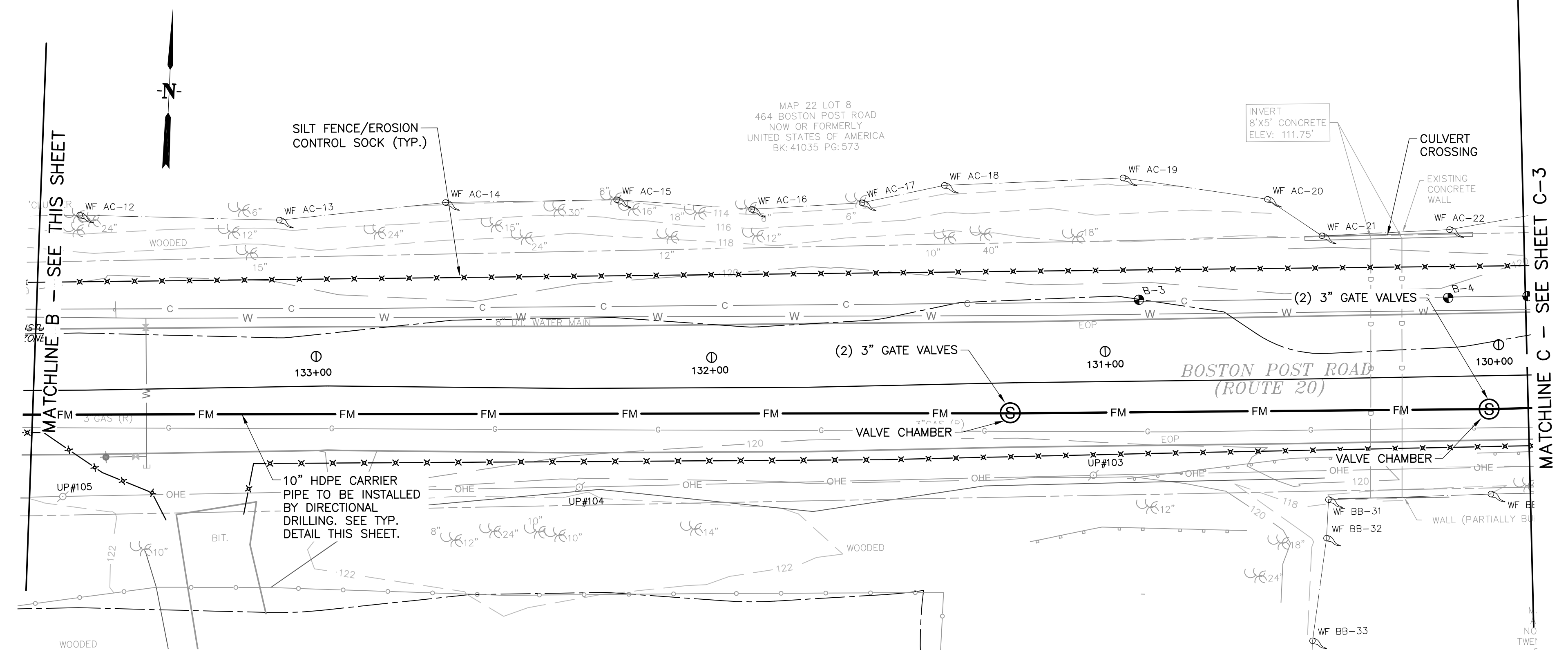
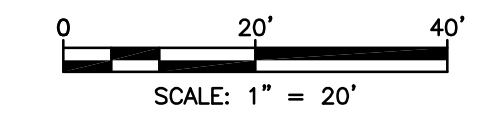


TOWN OF WAYLAND MASSACHUSETTS	RIVER'S EDGE SEWER CONNECTION	GENERAL NOTES PROPOSED RIVER'S EDGE DEVELOPMENT	50% DRAFT SUBMITTAL NOT FOR CONSTRUCTION	TATA & HOWARD
Created By: SJA	Designed By: MEC	Drawn By: CM	Reviewed By:	Date:
Approved By: JMH				
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C-1				

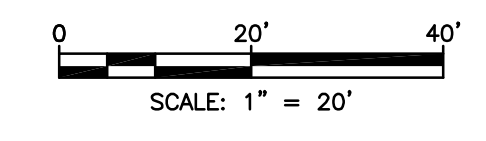
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BOSTON POST ROAD MASSDOT STA. 138+30 TO MASSDOT STA. 133+74



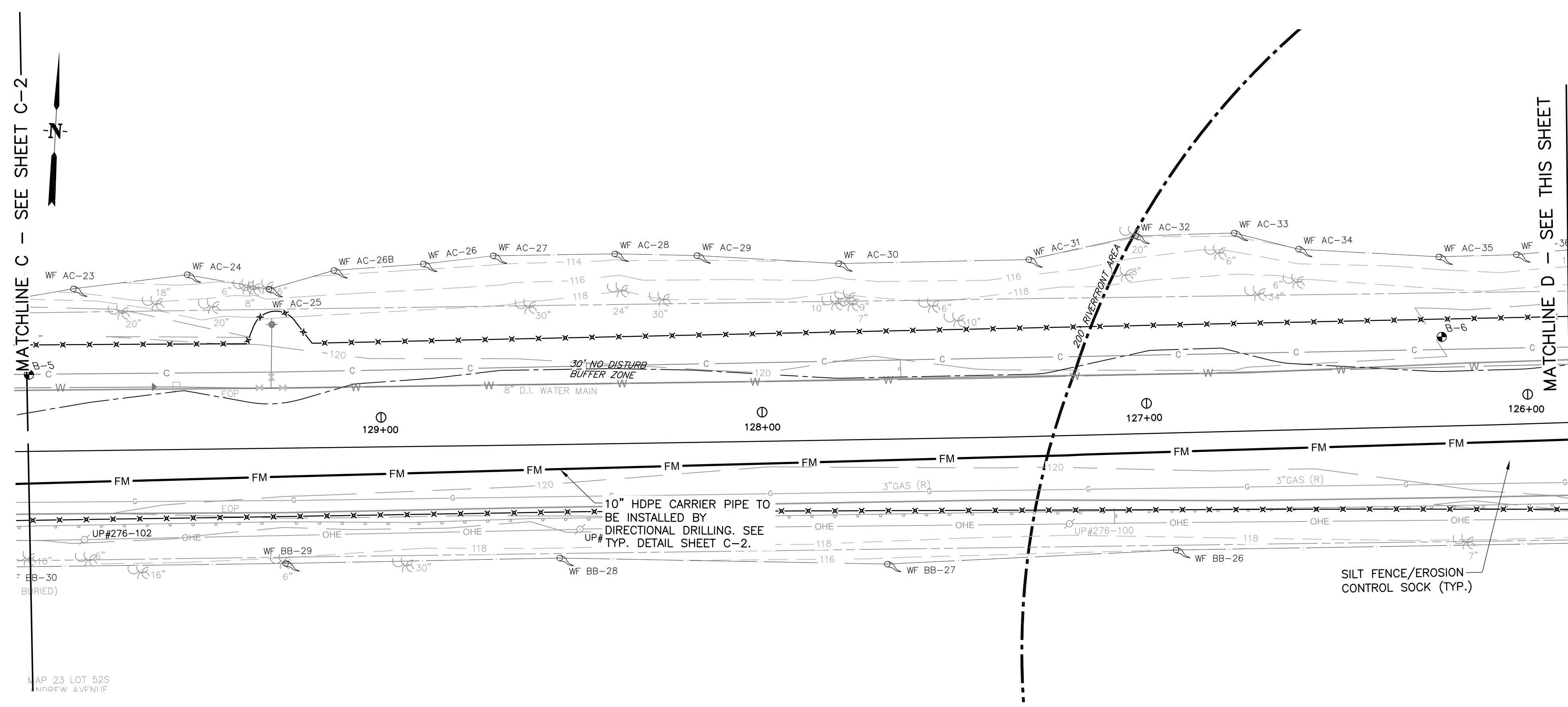
BOSTON POST ROAD MASSDOT STA. 133+74 TO MASSDOT STA. 129+93



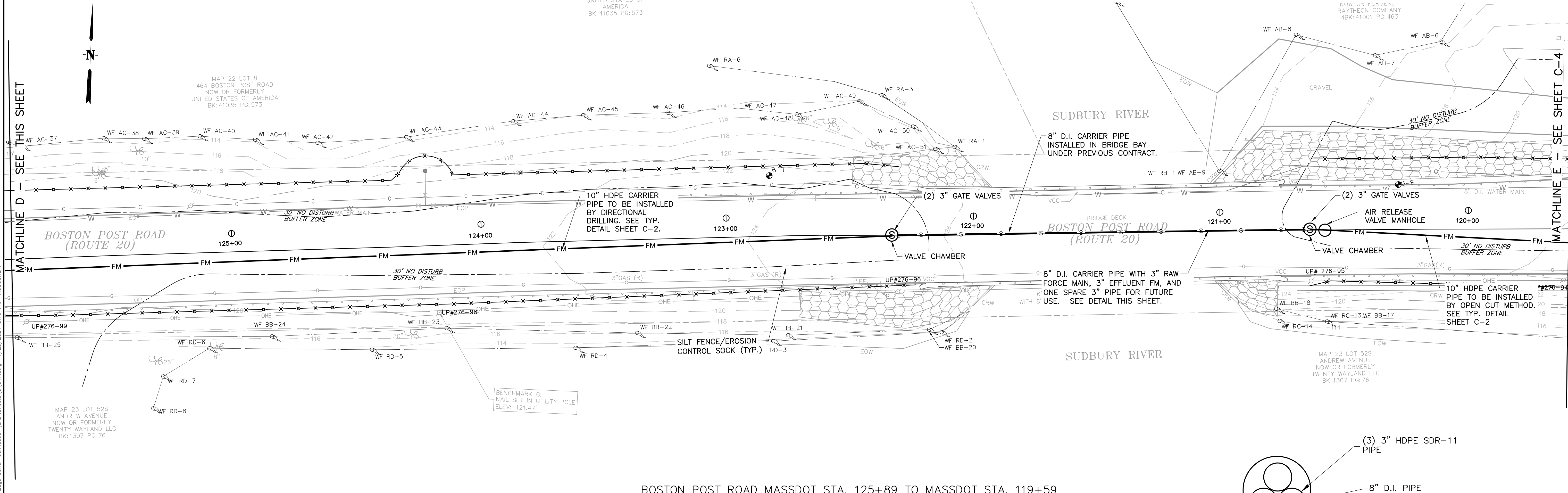
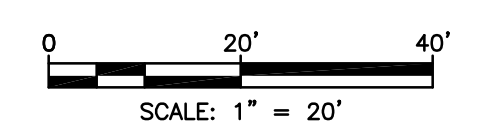
NOTE: ACCESS PITS FOR HDD SHALL BE LOCATED AT THE LOCATIONS OF PROPOSED VALVE CHAMBERS UNLESS OTHERWISE AGREED UPON BY THE ENGINEER.

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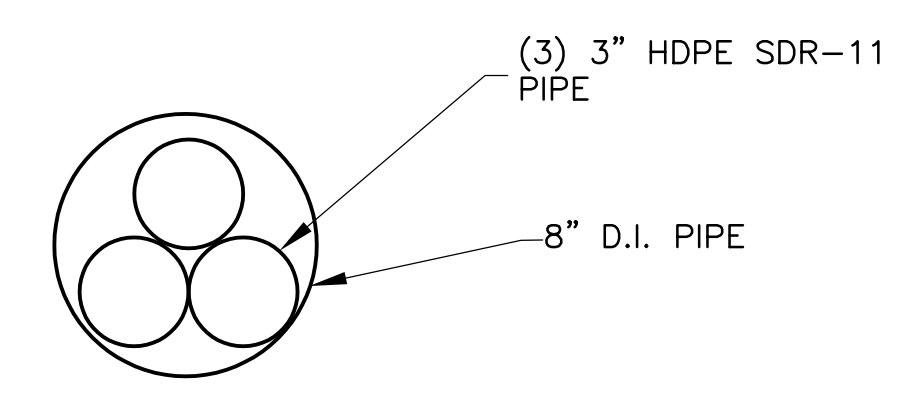
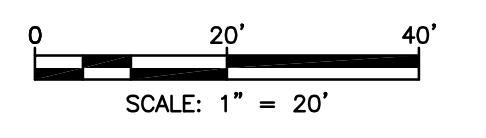
TOWN OF WAYLAND MASSACHUSETTS	RIVER'S EDGE SEWER CONNECTION
BOSTON POST ROAD MASSDOT STA. 138+30 TO MASSDOT STA. 129+93	THIS DOCUMENT IS THE PROPERTY OF TATA & HOWARD, INC. AND ITS CLIENT. REPRODUCTION OR MODIFICATION WITHOUT WRITTEN CONSENT IS PROHIBITED.
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C-2	



BOSTON POST ROAD MASSDOT STA. 129+93 TO MASSDOT STA. 125+89



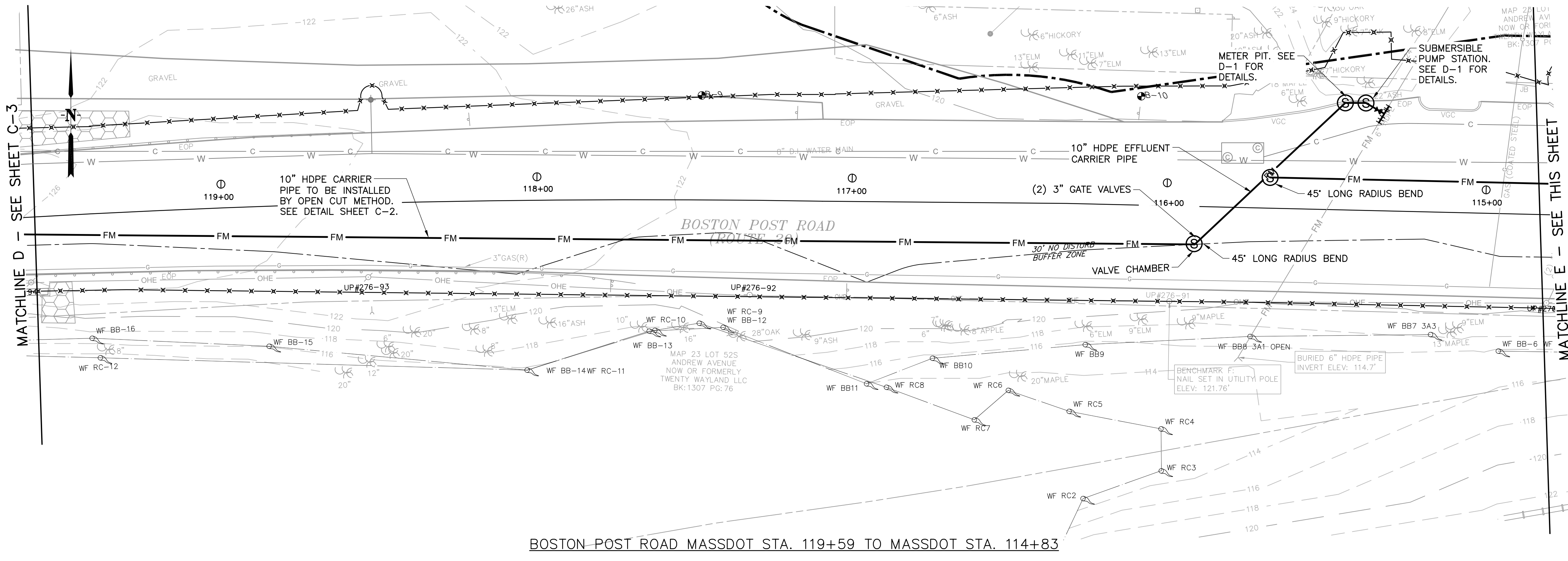
BOSTON POST ROAD MASSDOT STA. 125+89 TO MASSDOT STA. 119+59



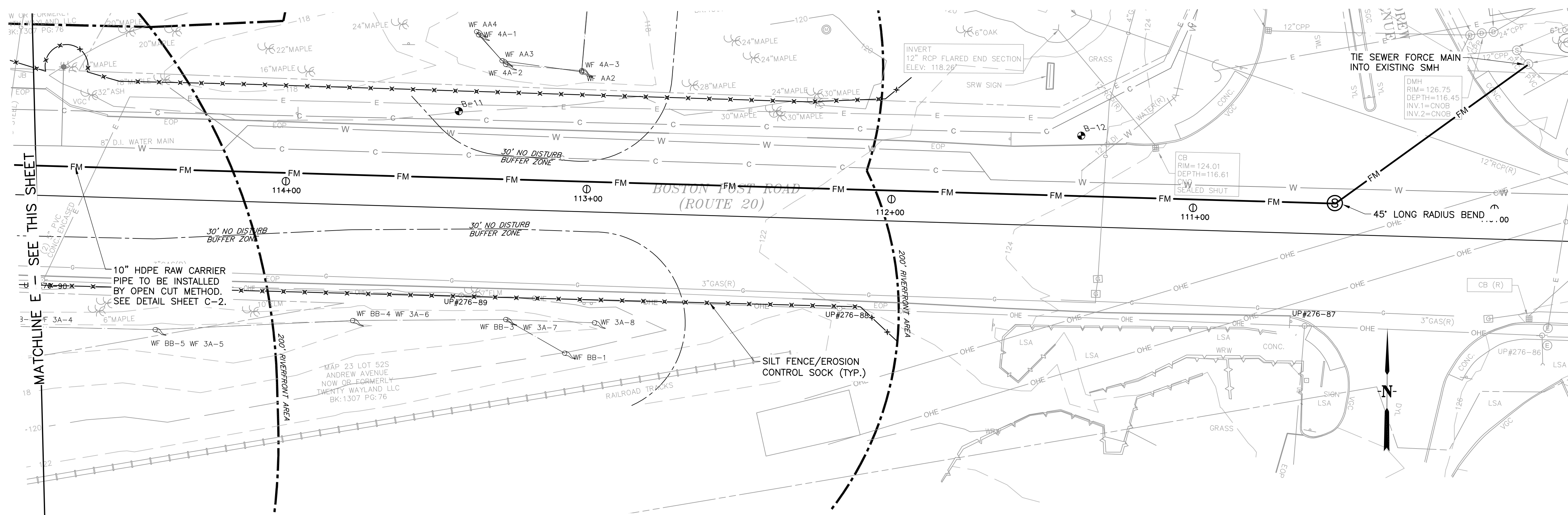
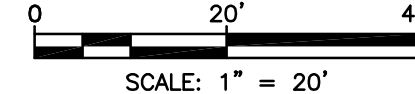
BRIDGE CROSSING 8" D.I. CARRIER PIPE DETAIL

TOWN OF WAYLAND MASSACHUSETTS	RIVER'S EDGE SEWER CONNECTION
BOSTON POST ROAD MASSDOT STA. 129+93 TO MASSDOT STA. 119+59	THE DOCUMENT IS THE PROPERTY OF TATA & HOWARD, INC. AND ITS CLIENT. REPRODUCTION OR MODIFICATION WITHOUT WRITTEN CONSENT IS PROHIBITED.
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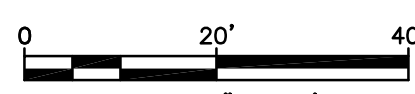
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BOSTON POST ROAD MASSDOT STA. 119+59 TO MASSDOT STA. 114+83



BOSTON POST ROAD MASSDOT STA. 114+83 TO MASSDOT STA. 110+91



TOWN OF WAYLAND
MASSACHUSETTS
RIVER'S EDGE SEWER CONNECTION

BOSTON POST ROAD
MASSDOT STA. 119+59 TO
MASSDOT STA. 110+91

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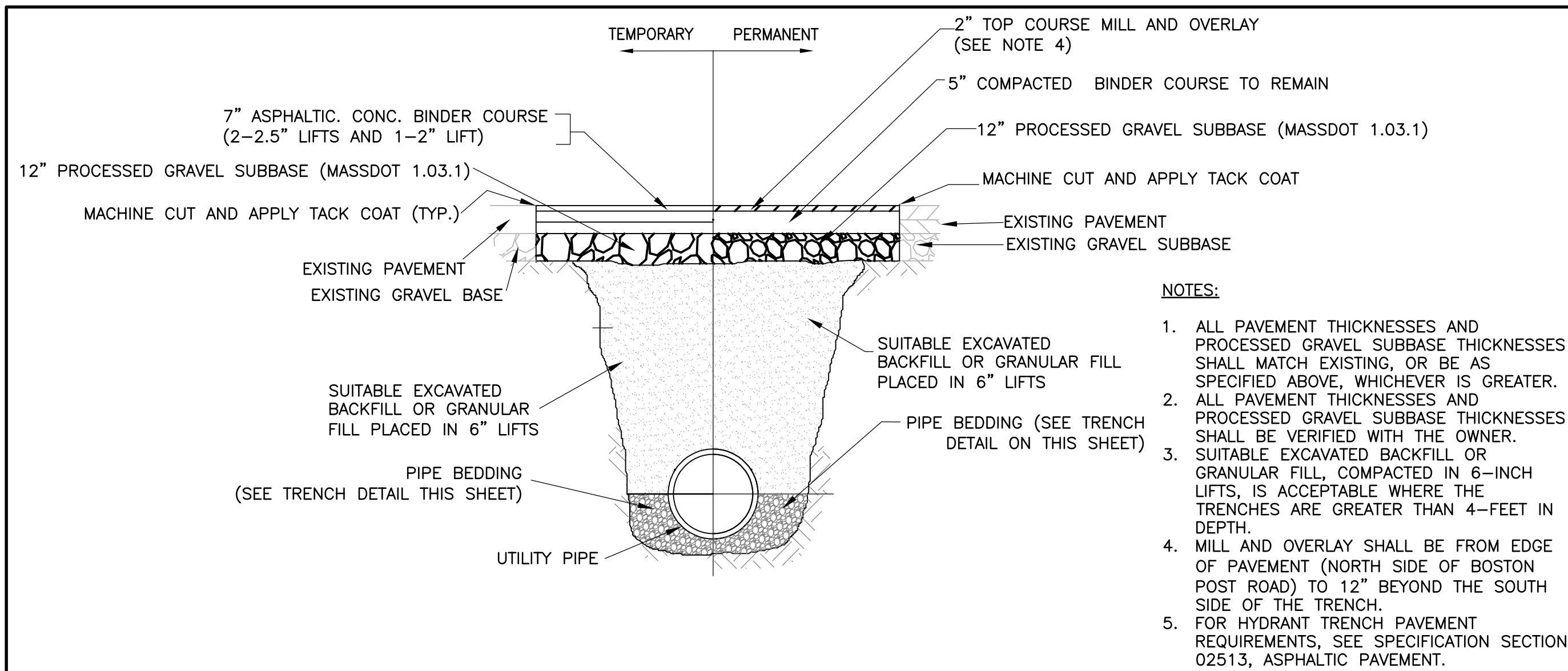


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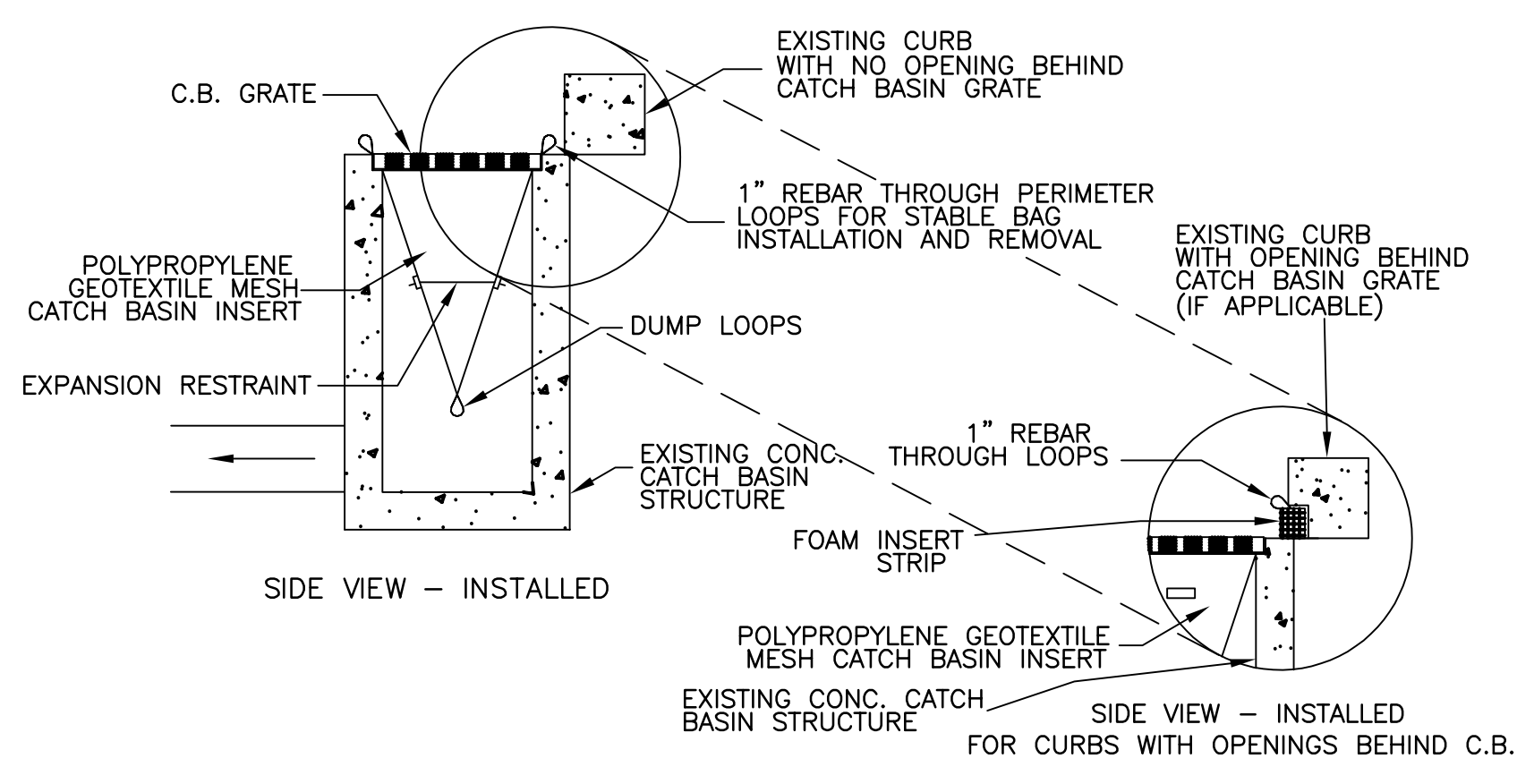
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 Approved By: JWH

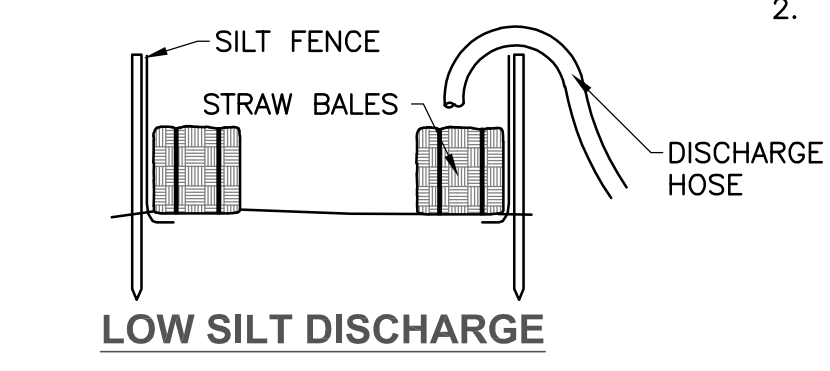
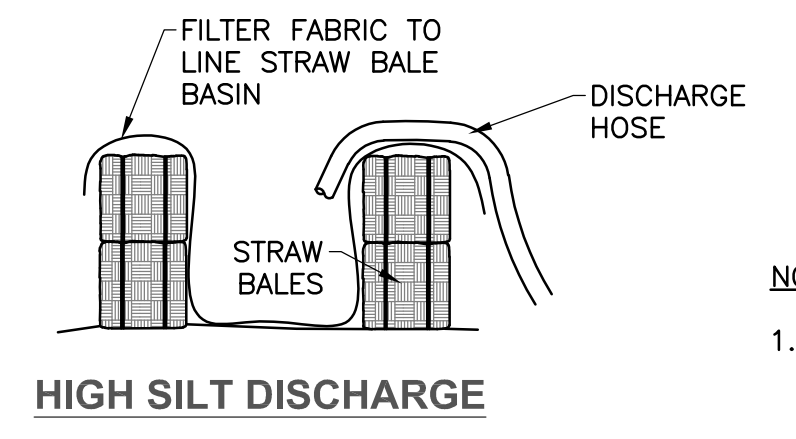


MASSDOT PAVEMENT DETAIL
SCALE: NONE

- NOTES:**
1. ALL PAVEMENT THICKNESSES AND PROCESSED GRAVEL SUBBASE THICKNESSES SHALL MATCH EXISTING, OR BE AS SPECIFIED ABOVE, WHICHEVER IS GREATER.
 2. ALL PAVEMENT THICKNESSES AND PROCESSED GRAVEL SUBBASE THICKNESSES SHALL BE VERIFIED WITH THE OWNER.
 3. SUIABLE EXCAVATED BACKFILL OR GRANULAR FILL, COMPACTED IN 6-INCH LIFTS, IS ACCEPTABLE WHERE THE TRENCHES ARE GREATER THAN 4- FEET IN DEPTH.
 4. MILL AND OVERLAY SHALL BE FROM EDGE OF PAVEMENT (NORTH SIDE OF BOSTON POST ROAD) TO 12" BEYOND THE SOUTH SIDE OF THE TRENCH.
 5. FOR HYDRANT TRENCH PAVEMENT REQUIREMENTS, SEE SPECIFICATION SECTION 02513, ASPHALTIC PAVEMENT.

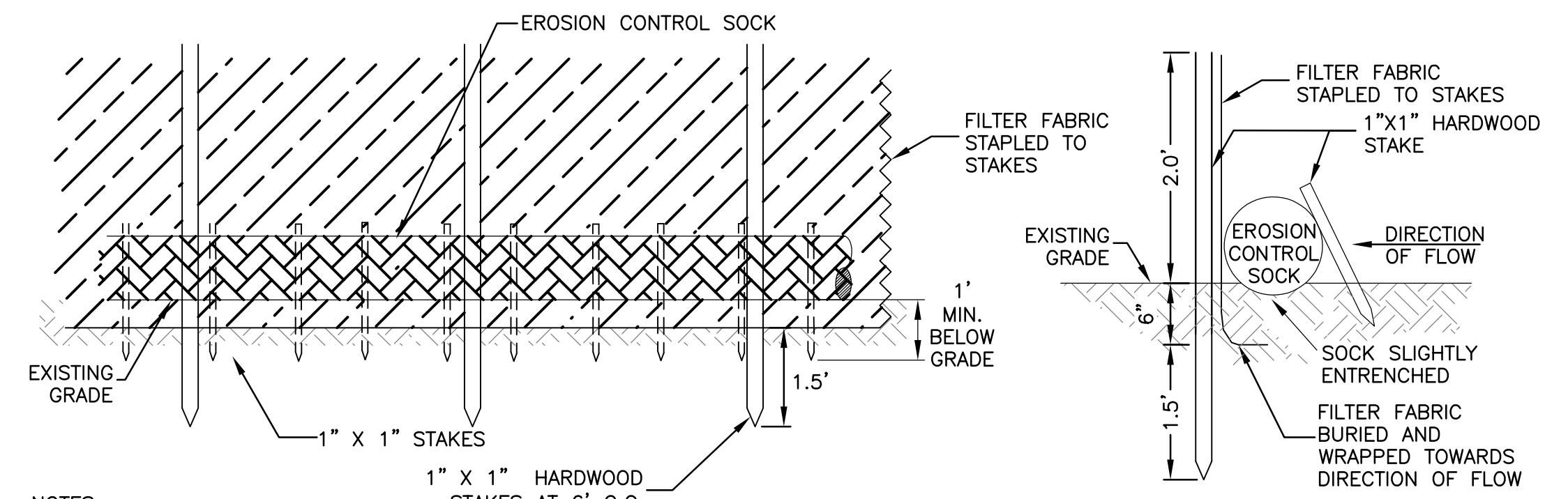


CATCH BASIN SILT FILTERING SYSTEM
SCALE: NONE



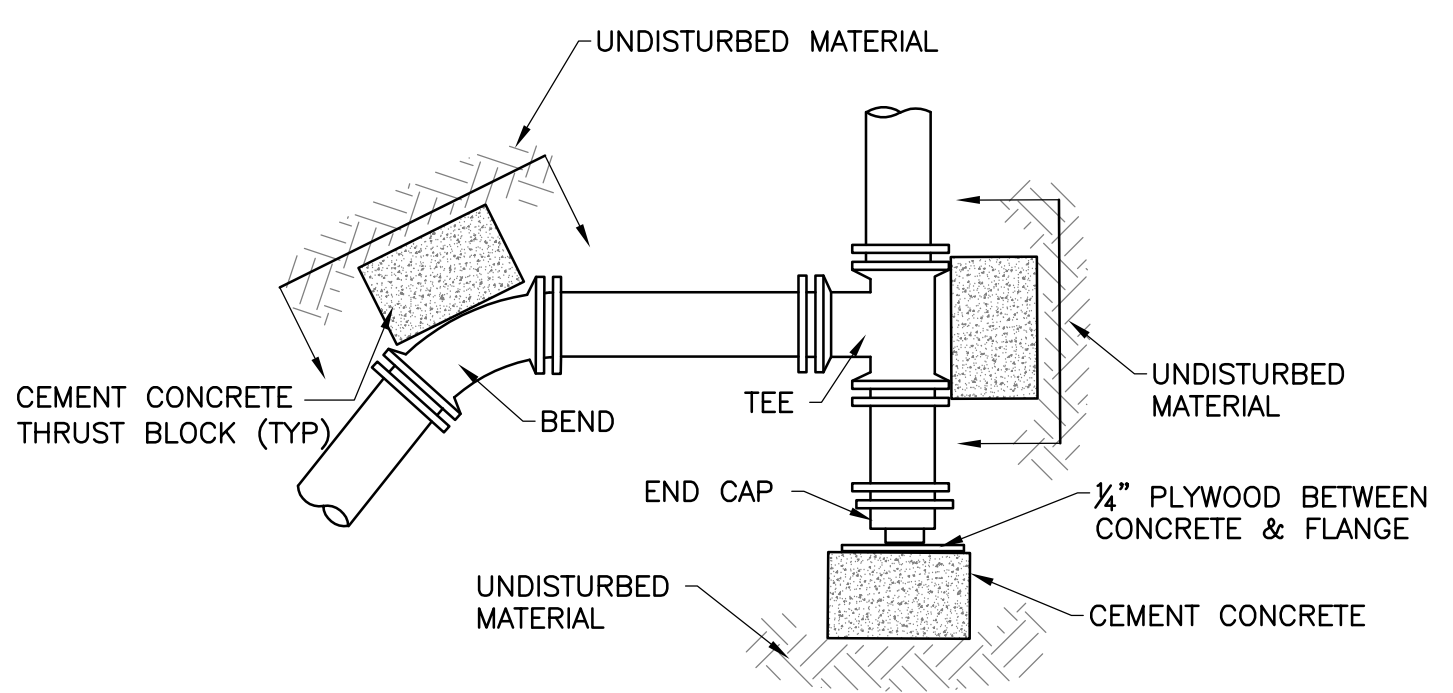
SEDIMENTATION DISCHARGE CONTROL BASIN
SCALE: NONE

- NOTES:**
1. STRAW BALES SHALL BE STACKED 1 OR 2 ROWS HIGH AS REQUIRED TO MITIGATE THE FLOW.
 2. THE BASIN SHALL BE SIZED TO FILTER THE FLOW BEING DISCHARGED TO THE BASIN.

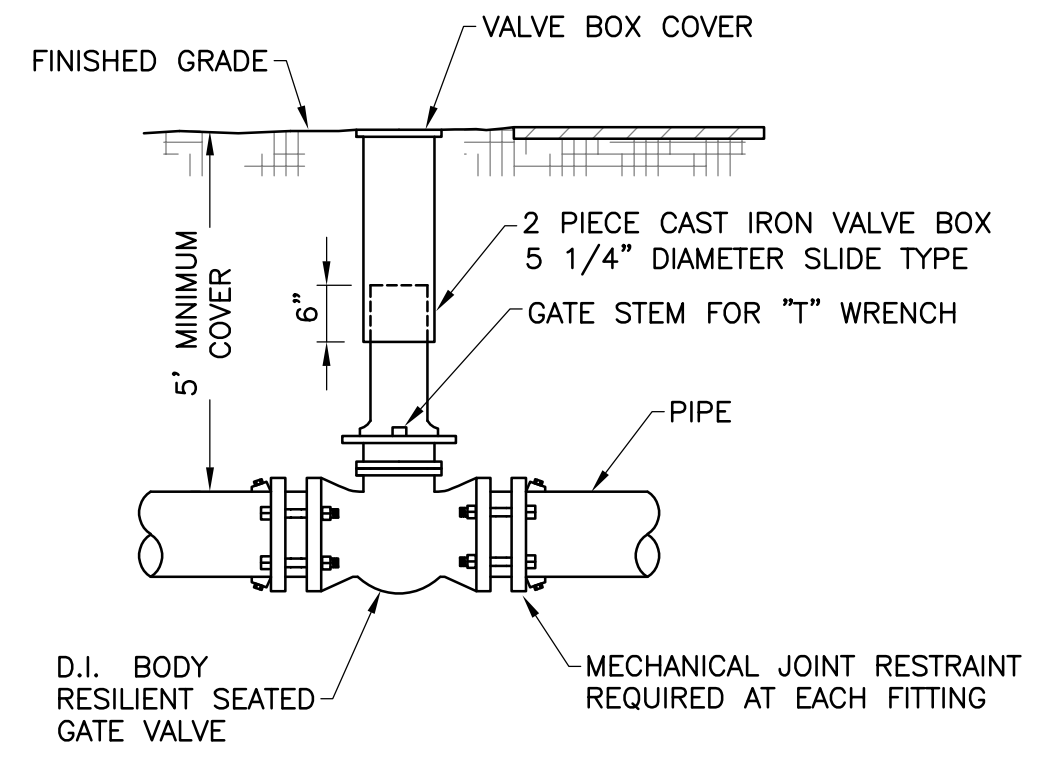


- NOTES:**
1. FINAL INSTALLATION TECHNIQUES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND AS DIRECTED BY THE ENGINEER.
 2. EROSION CONTROL SOCK SHALL BE 8-INCHES IN DIAMETER AND FILLED WITH BIODEGRADABLE MATERIAL.

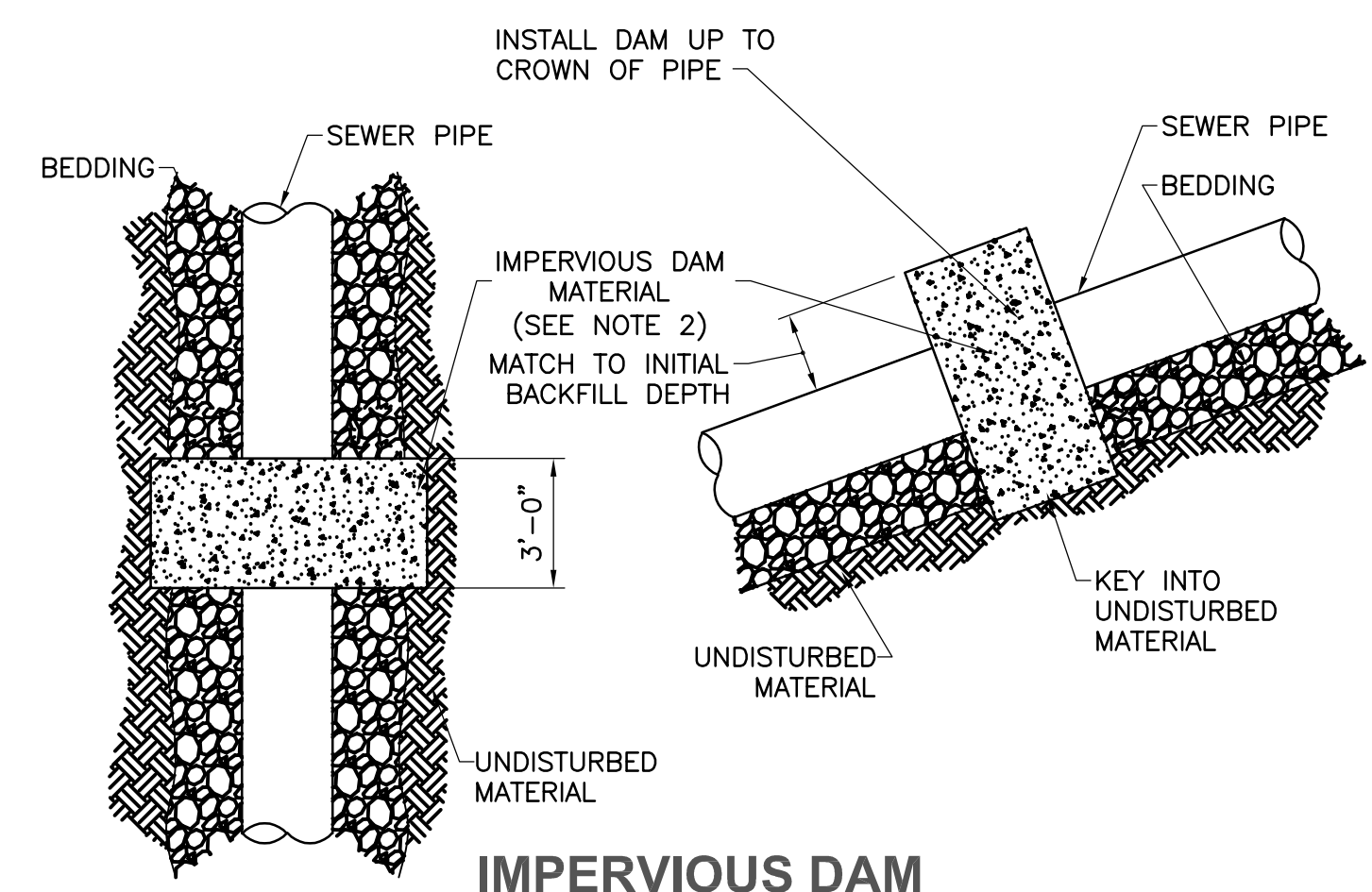
SILT FENCE/EROSION CONTROL SOCK
SCALE: NONE



CONCRETE BACKING
SCALE: NONE

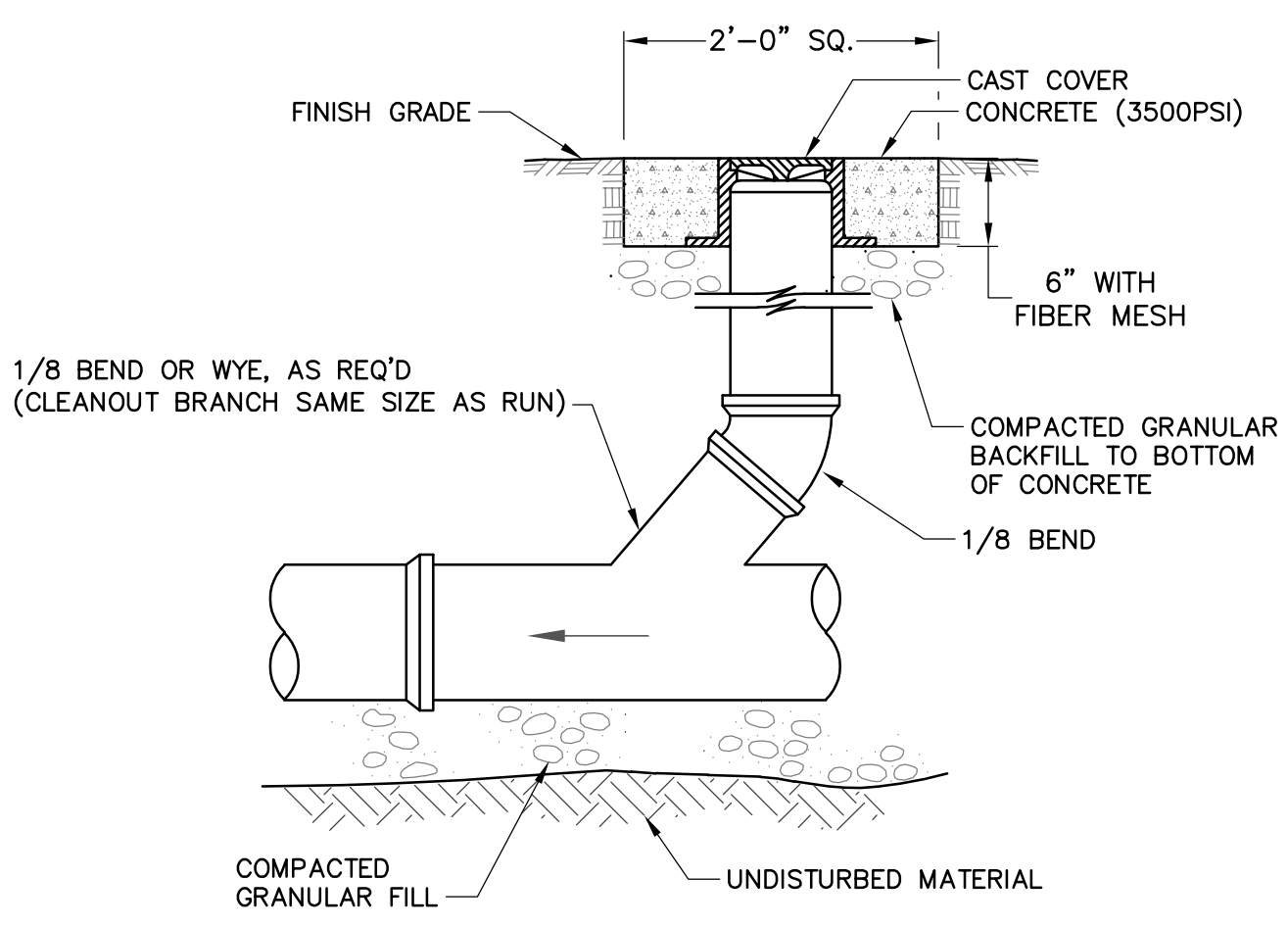


BURIED VALVE
SCALE: NONE

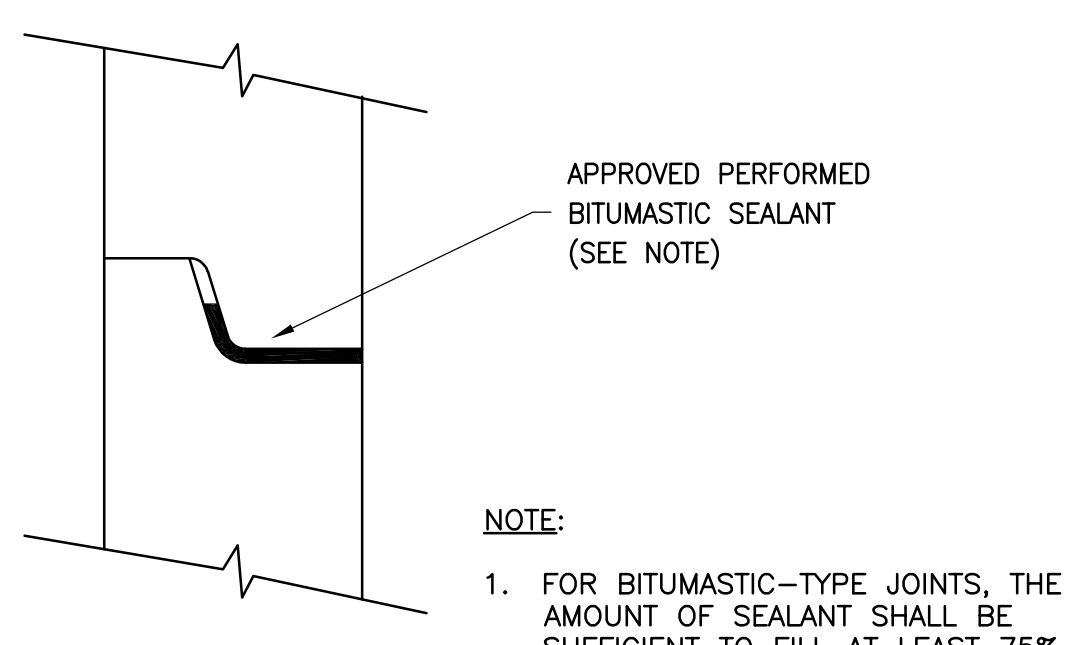


- NOTE:**
1. WHERE PIPE SLOPE EXCEED 8%, INSTALL IMPERVIOUS DAMS EVERY 100 FT AND WHERE REQUIRED BY ENGINEER.
 2. REFER TO SPEC. SECTION 02221 FOR TYPE OF MATERIAL FOR THE IMPERVIOUS DAM.

IMPERVIOUS DAM
SCALE: NONE



CLEANOUT DETAIL
NOT TO SCALE



BITUMASTIC MANHOLE SEALANT/GASKET
SCALE: NONE

- NOTE:**
1. FOR BITUMASTIC-TYPE JOINTS, THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.

TOWN OF WAYLAND MASSACHUSETTS

RIVER'S EDGE SEWER CONNECTION

DETAIL SHEET I

Rev.	Date	Description

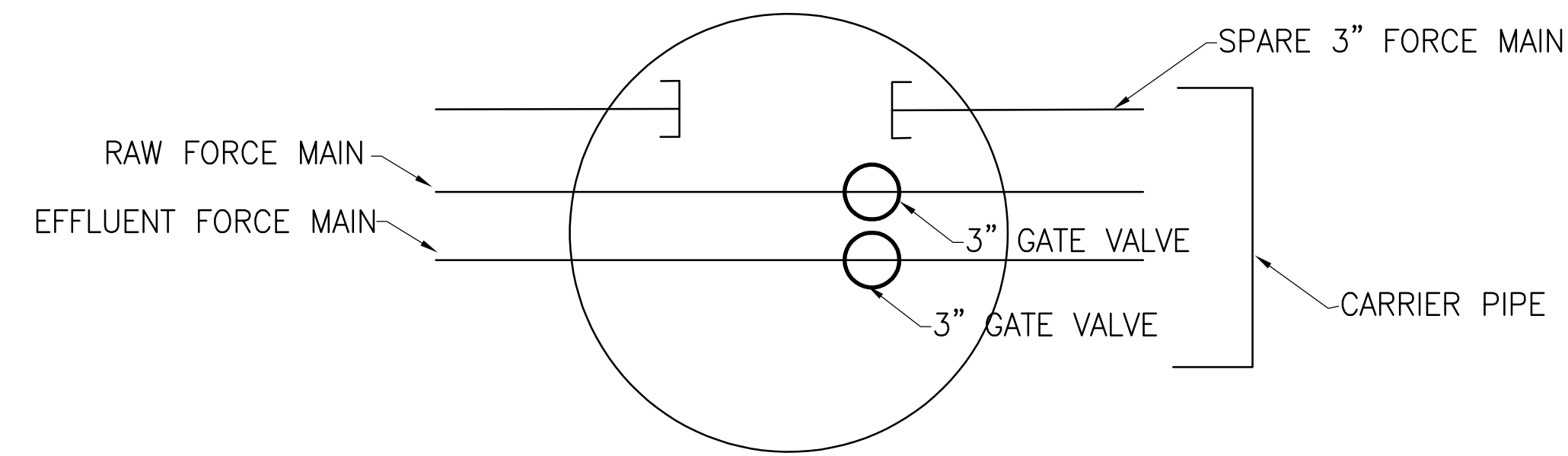
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SCALE: AS NOTED

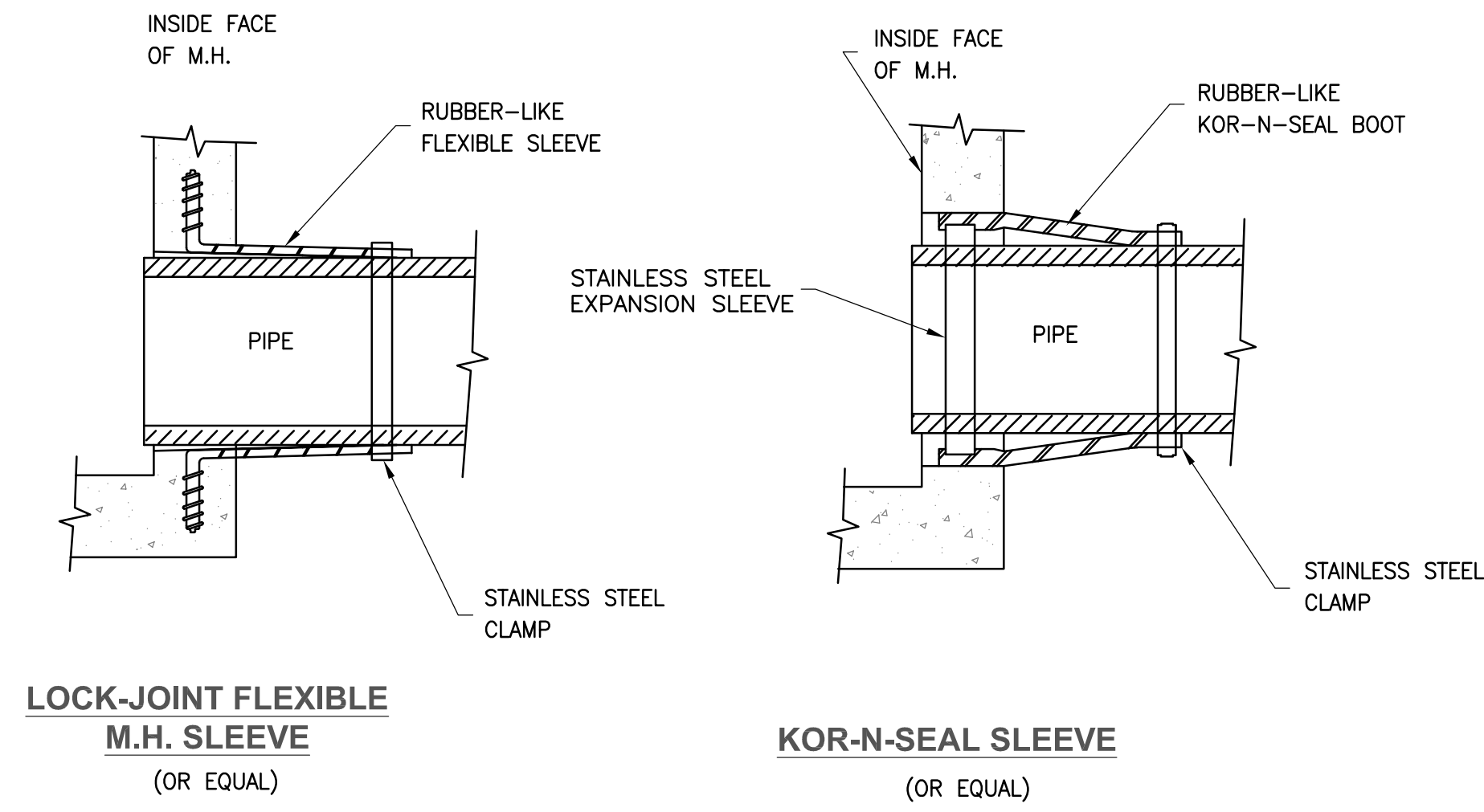
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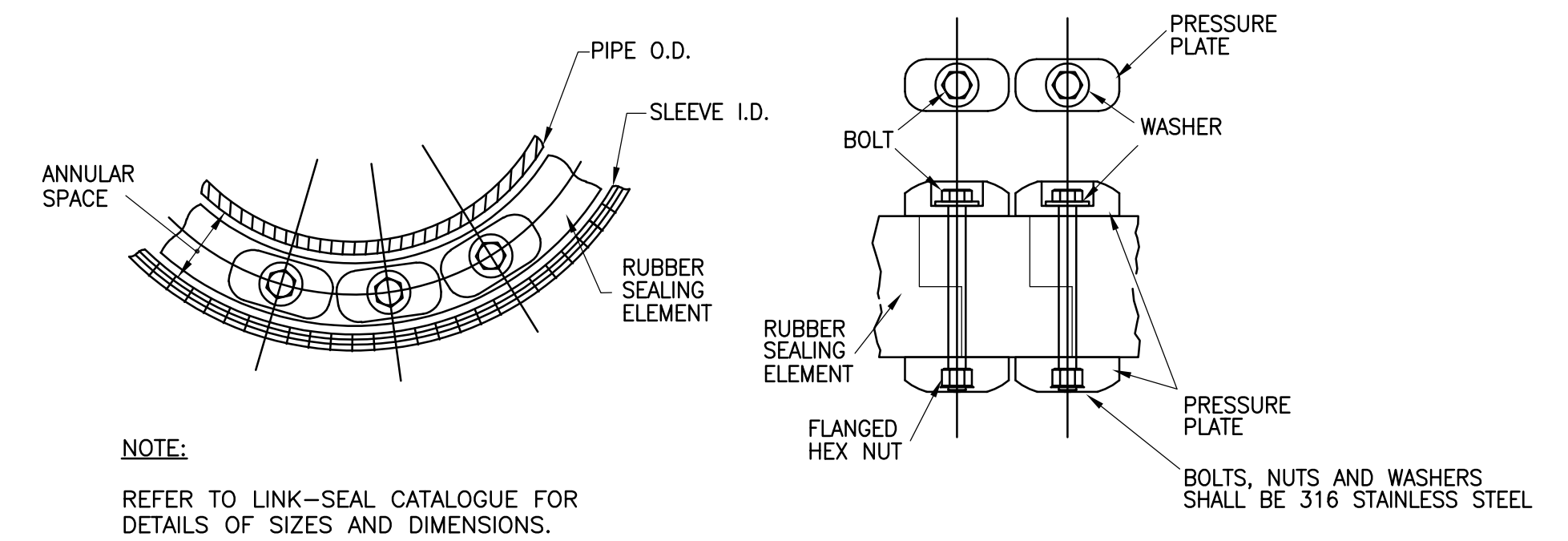
CARRIER PIPE VALVE CHAMBER SCHEMATIC

SCALE: NONE
 NOTES:
 1. PIPES ROTATED FOR CLARITY.



SLEEVE FOR MANHOLE WALL PENETRATION

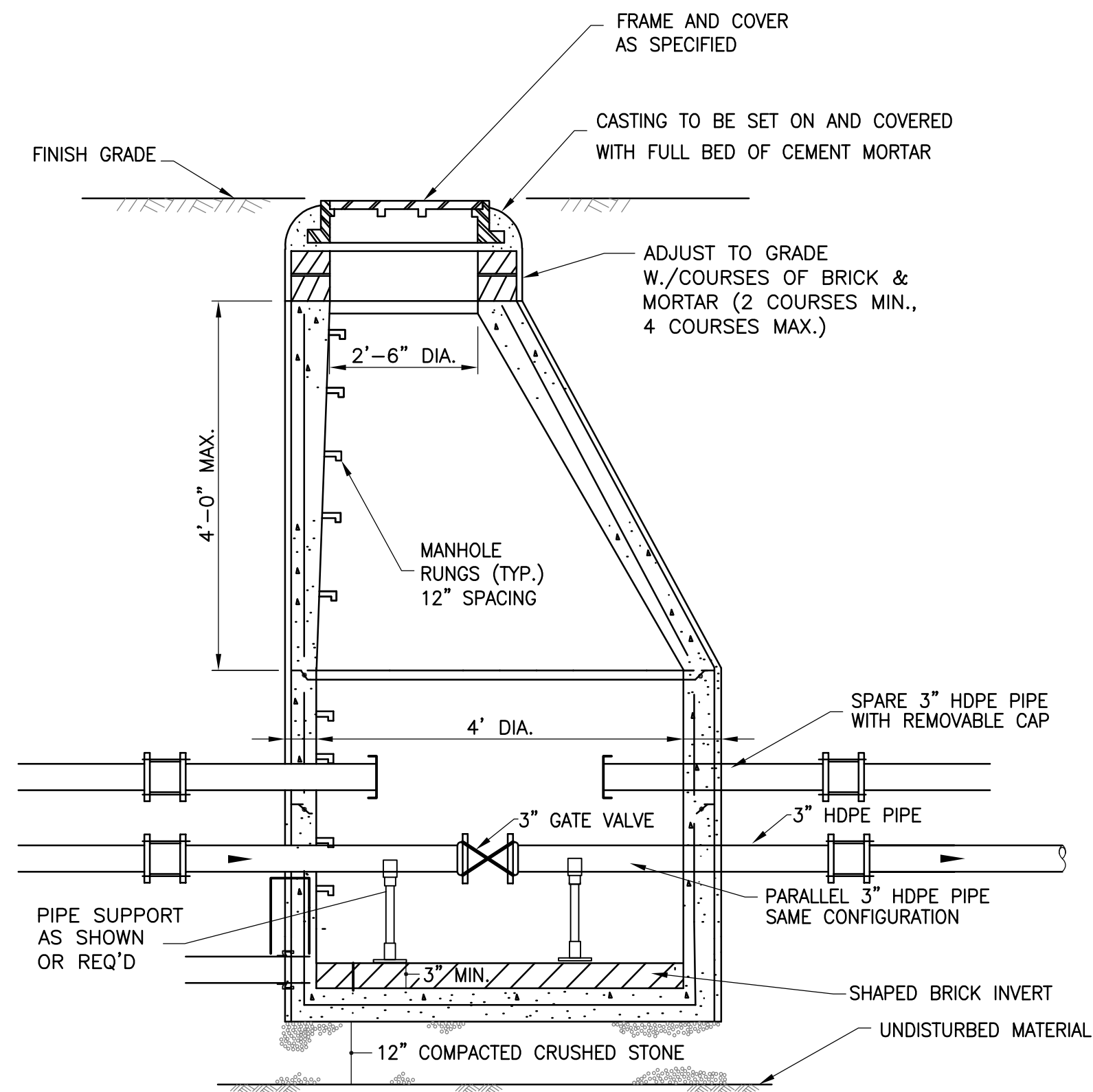
SCALE: NONE



NOTE:
 REFER TO LINK-SEAL CATALOGUE FOR DETAILS OF SIZES AND DIMENSIONS.

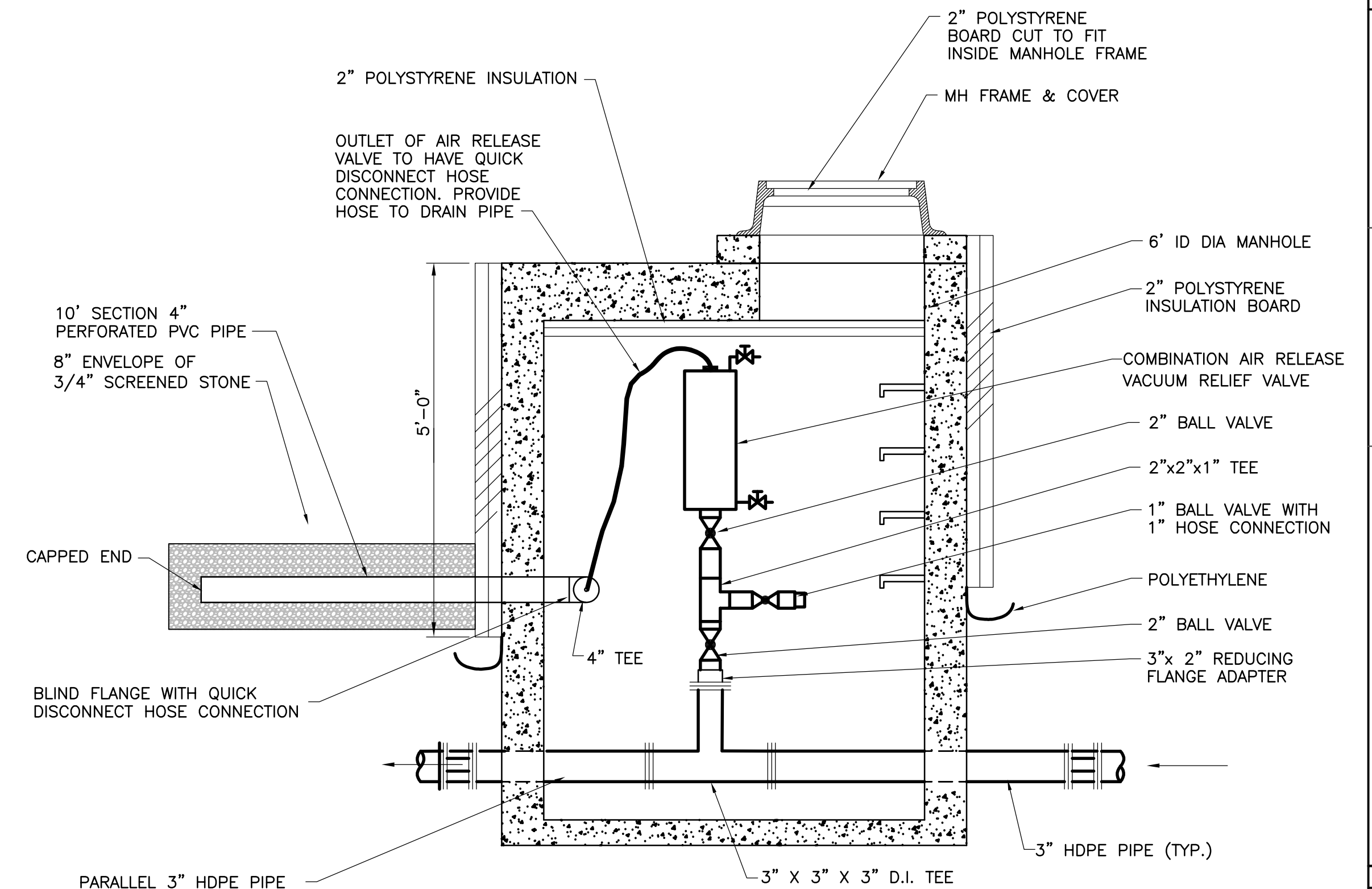
MECHANICAL LINK SEAL DETAIL

SCALE: NONE



SECTION VALVE CHAMBER

SCALE: NONE



AIR RELEASE VALVE MANHOLE

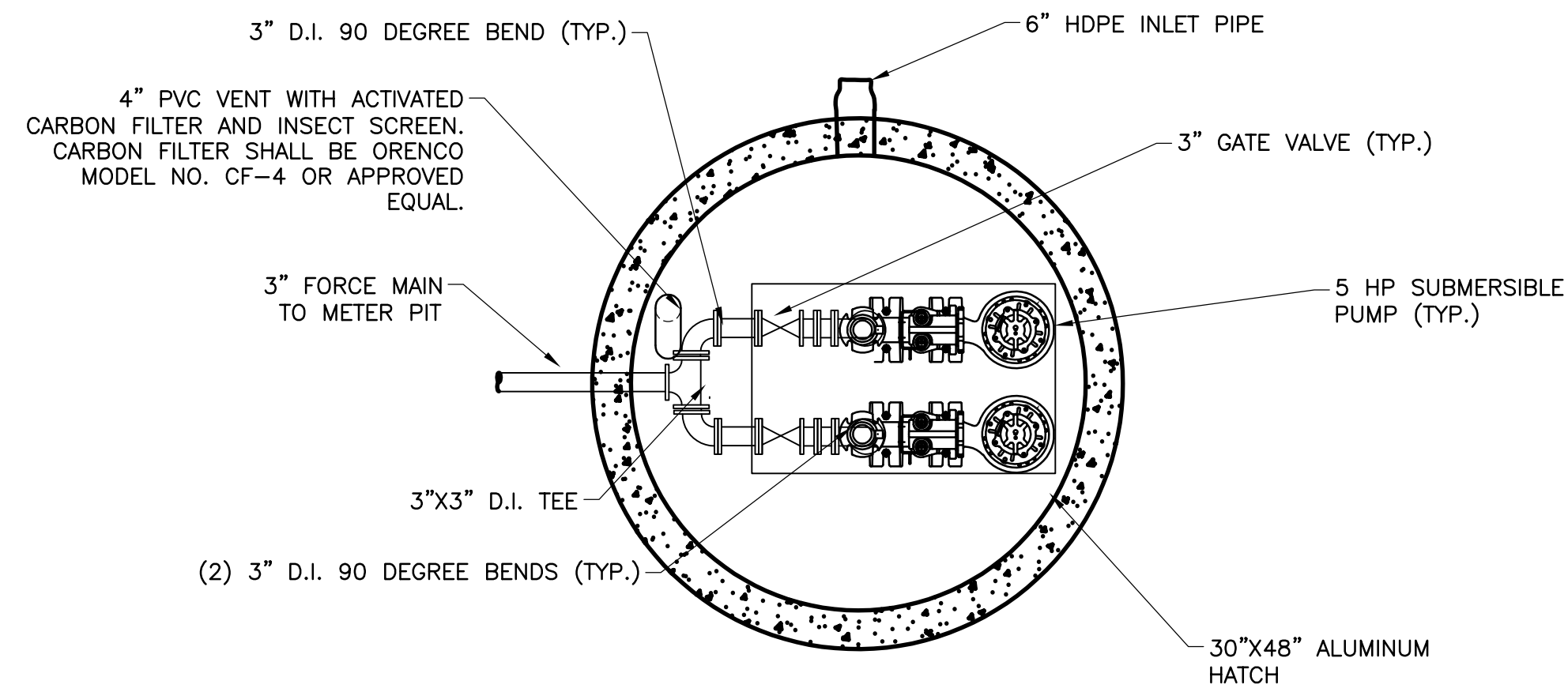
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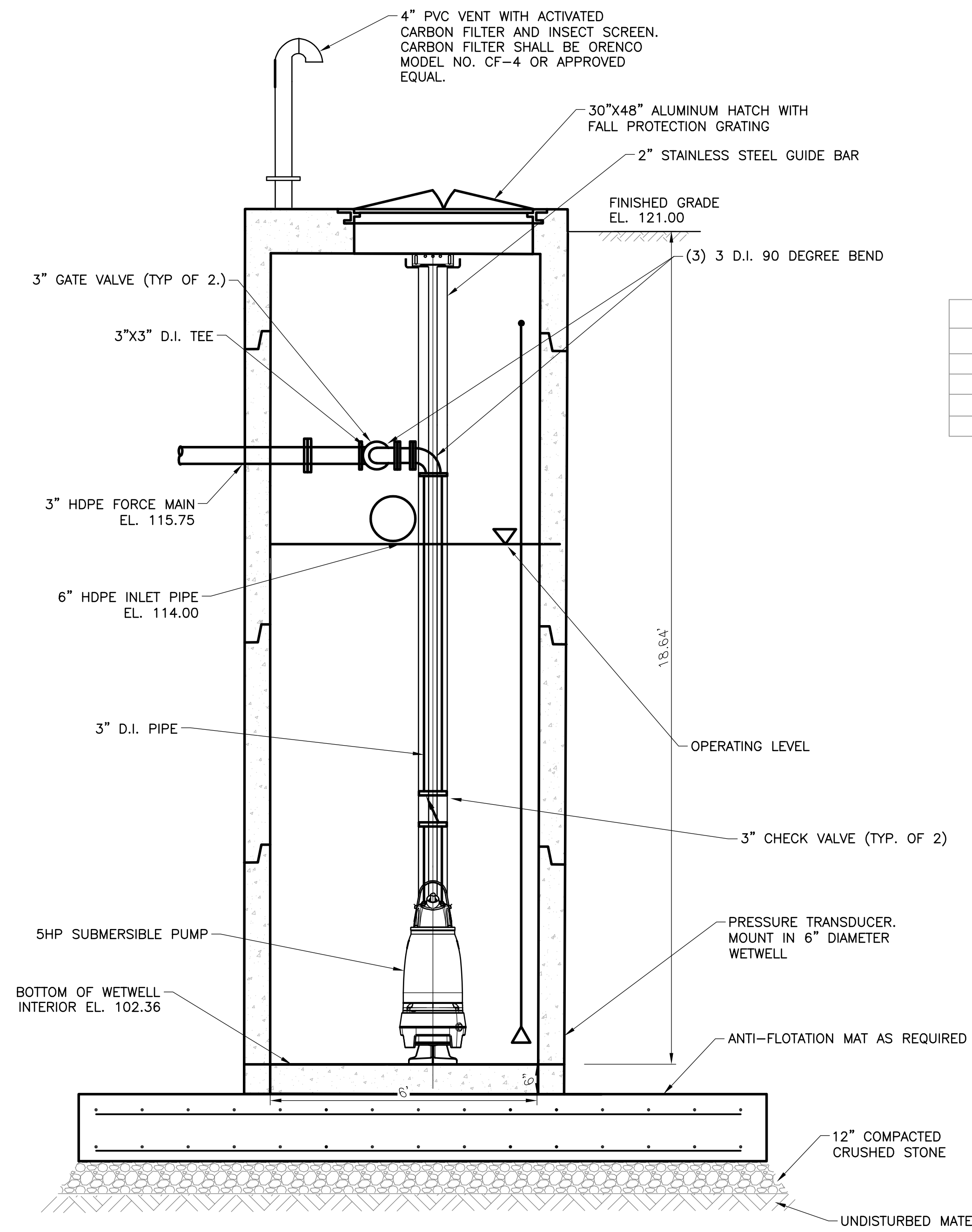
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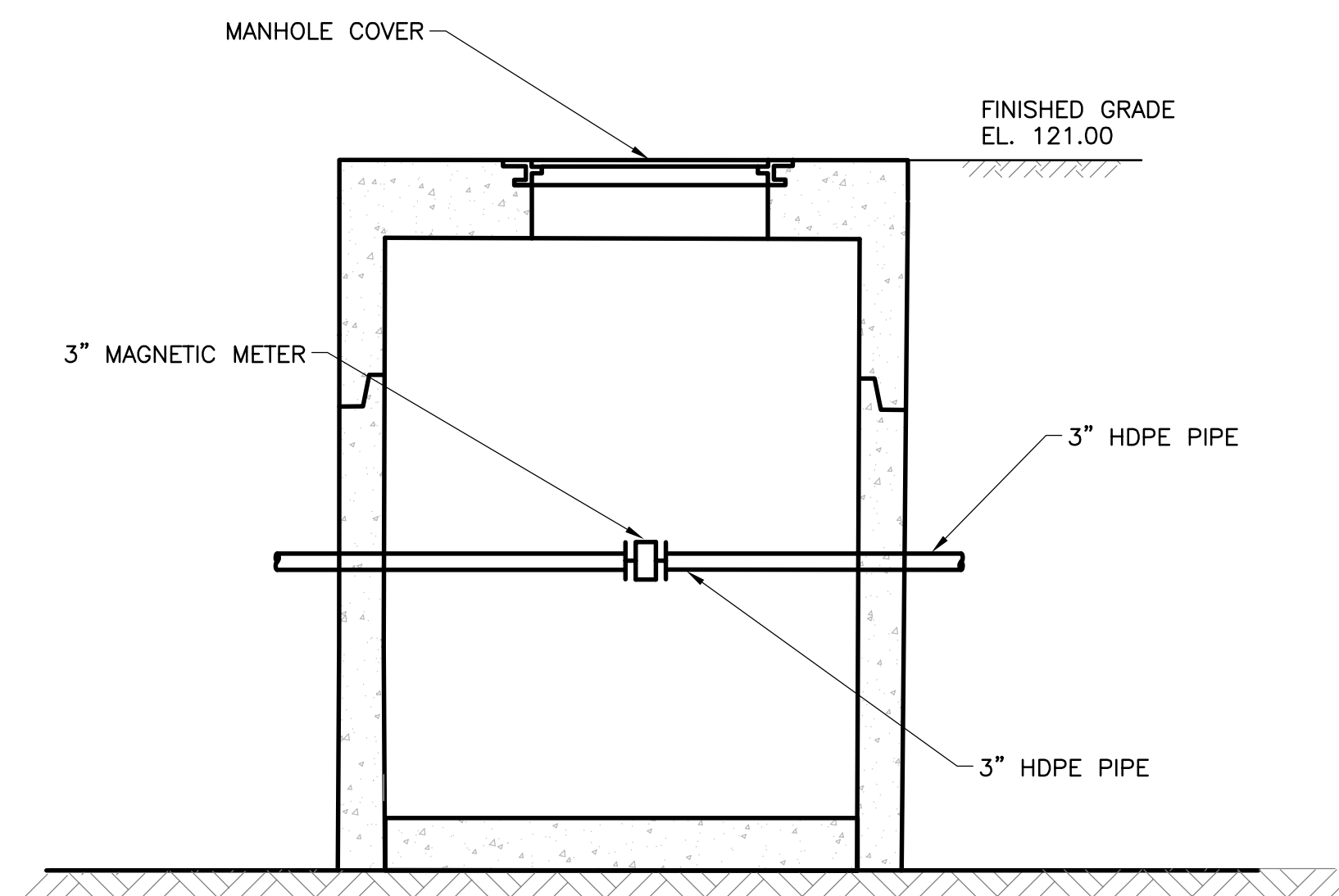


PROPOSED PUMP STATION PLAN VIEW
SCALE: 1/2" = 1'-0"



PROPOSED PUMP STATION PROFILE VIEW
SCALE: 1/2" = 1'-0"

WETWELL ELEVATIONS	
DESCRIPTION	ELEVATION (FT.)
FINISHED GRADE	121.00
INVERT OUT	115.75
INVERTS IN	114.00
BASE OF WETWELL - INTERIOR	102.36



PROPOSED METER PIT PROFILE VIEW
SCALE: 1/2" = 1'-0"

TOWN OF WAYLAND
MASSACHUSETTS
RIVER'S EDGE SEWER CONNECTION

PROPOSED PIPING PLAN

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SCALE: AS NOTED

D-1

NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN (LEDGERS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNS, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST MEET THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MSH).
6. CONTRACTORS SHALL NOTIFY EACH ADJUTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
8. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
11. MINIMUM LAKE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LAKE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIUM BARRIERS.
12. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- WORK ZONE
- WORK VEHICLE
- POLICE/FLAGGER DETAIL
- DIRECTION OF TRAFFIC
- TRUCK MOUNTED ATTENUATOR
- TYPE "B" BARRICADE
- IMPACT ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- CHANGEABLE MESSAGE SIGN
- MEDIUM BARRIERS
- ARROW BOARD
- MEDIUM BARRIERS WITH WARNING LIGHTS
- SIGN

THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

MEASURED AVERAGE WORK ZONE CAPACITIES

NORMAL CROWN (EXISTING)	NUMBER OF STUDIES (TO TRAFFIC)	NUMBER OF STUDIES	AVERAGE CAPACITY	
			VPH	SPHPL
3	1	7	1,170	1,170
4	2	8	1,340	1,340
5	2	8	2,740	1,370
6	3	9	2,960	1,450
7	3	9	2,980	1,450
8	4	4	1,560	1,530

Source: Dwyer, C. Notes on Work Zone Capacity and Level of Service. Texas Transportation Institute. Texas A&M University. College Station, Texas (1984).

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (AND COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.



Notes for Traffic Management

FIGURE GEN-1 GENERAL GUIDELINES

- CONVENTIONAL ROADWAY - A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR TOLLWAY.
- EXPRESSWAY - A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.
- FREEBAY - A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.
- LOW-VOLUME ROAD - A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IF SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 AADT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L) ¹
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.3L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN.(15 m) 100 FT(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET	SPEED LIMIT (S)	TAPER LENGTH (L) METERS
40 MPH OR LESS	L = WSP / 60	60 KM/H OR LESS	L = WSP / 150
45 MPH OR MORE	L = WS	70 KM/H OR MORE	L = WS / 1.6

WHERE: L = TAPER LENGTH IN FEET (METERS)
W = WIDTH OF OFFSET IN FEET (METERS)
S = POSTED SPEED LIMIT OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH (KM/H)

Source: Table 6C-4 MUTCD LATEST EDITION



Notes for Traffic Management

FIGURE GEN-3 NOTES ON WORK ZONE DISTANCES

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS**		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTPC SETUP. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (I.E. THE W0-1 SERIES ROAD WORK OR T1) SIGNS, AND USUALLY BEGIN FOR THE DIRECTION OF THE PROJECT. ADDITIONAL SIGNS (I.E. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10b, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Source: Table 6C-5 MUTCD LATEST EDITION

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED (MPH)	DISTANCE (FT)	SPEED (MPH)	DISTANCE (FT)
30	35	70	115
40	60	80	145
50	85	90	180
60	115	100	220
70	155	110	270
80	205	120	330
90	265	130	400
100	335	140	480
110	415	150	570
120	505	160	670
		170	780
		180	900

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

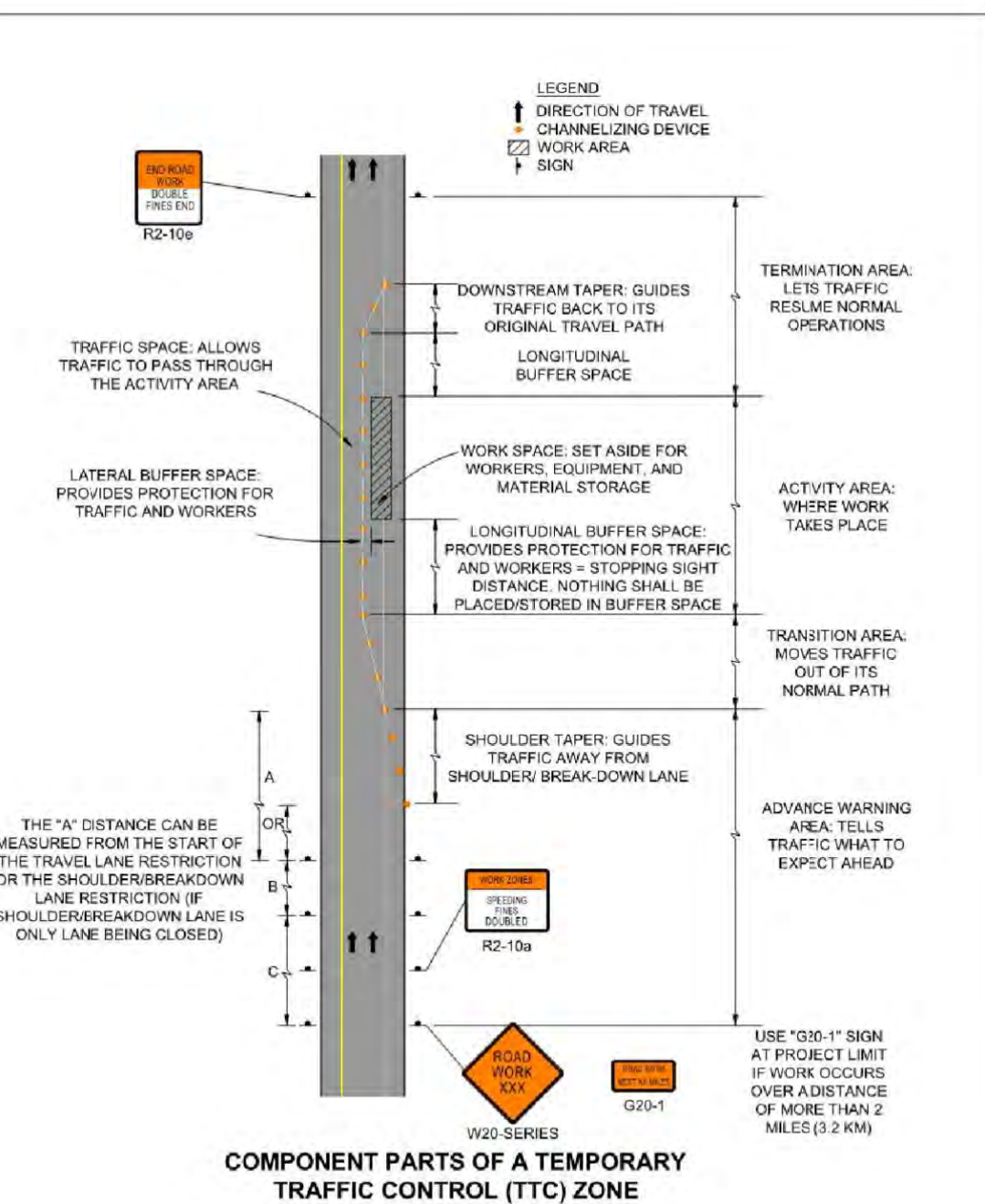
THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-3 MUTCD LATEST EDITION



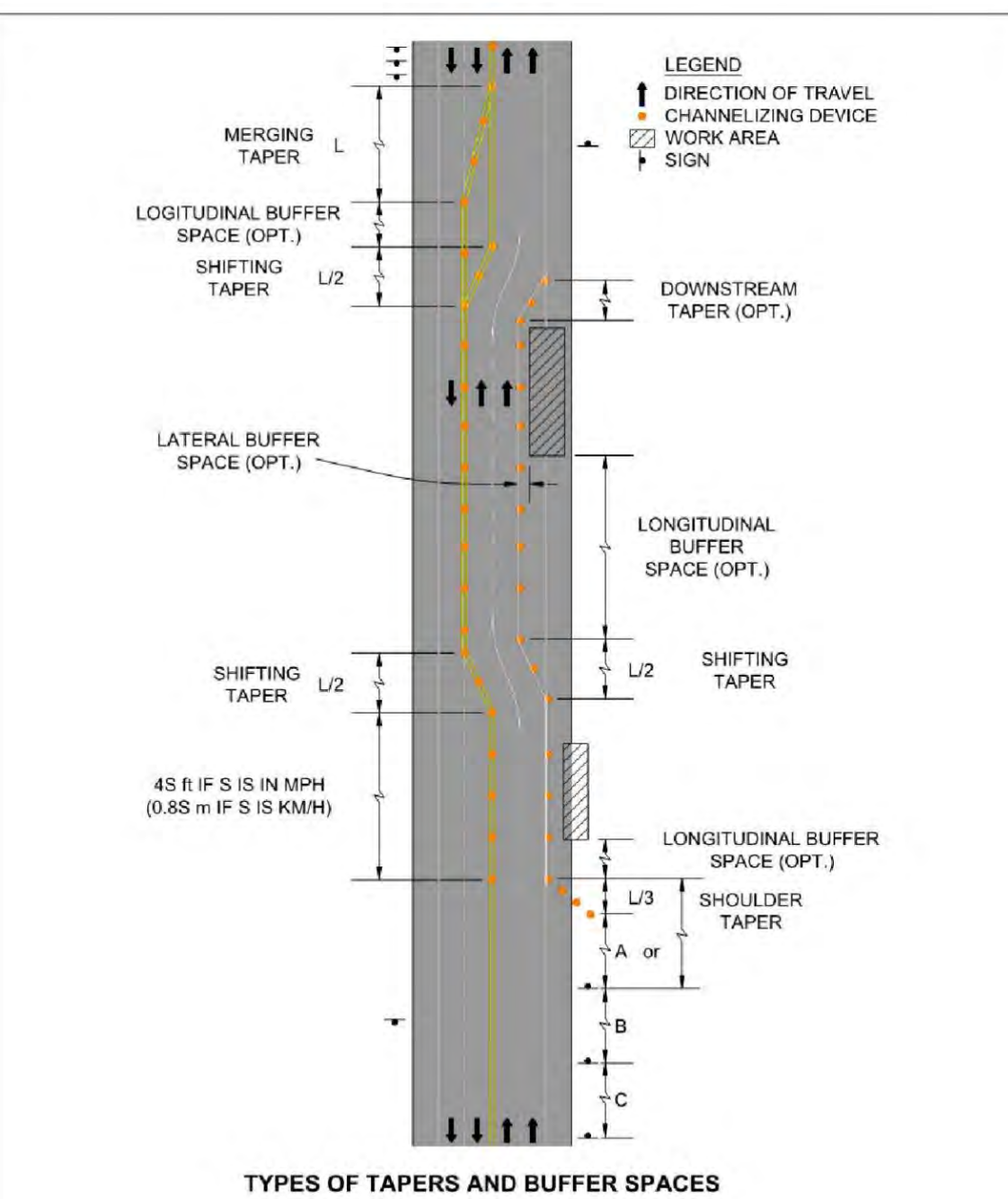
Notes for Traffic Management

FIGURE GEN-2 NOTES ON WORK ZONE DISTANCES



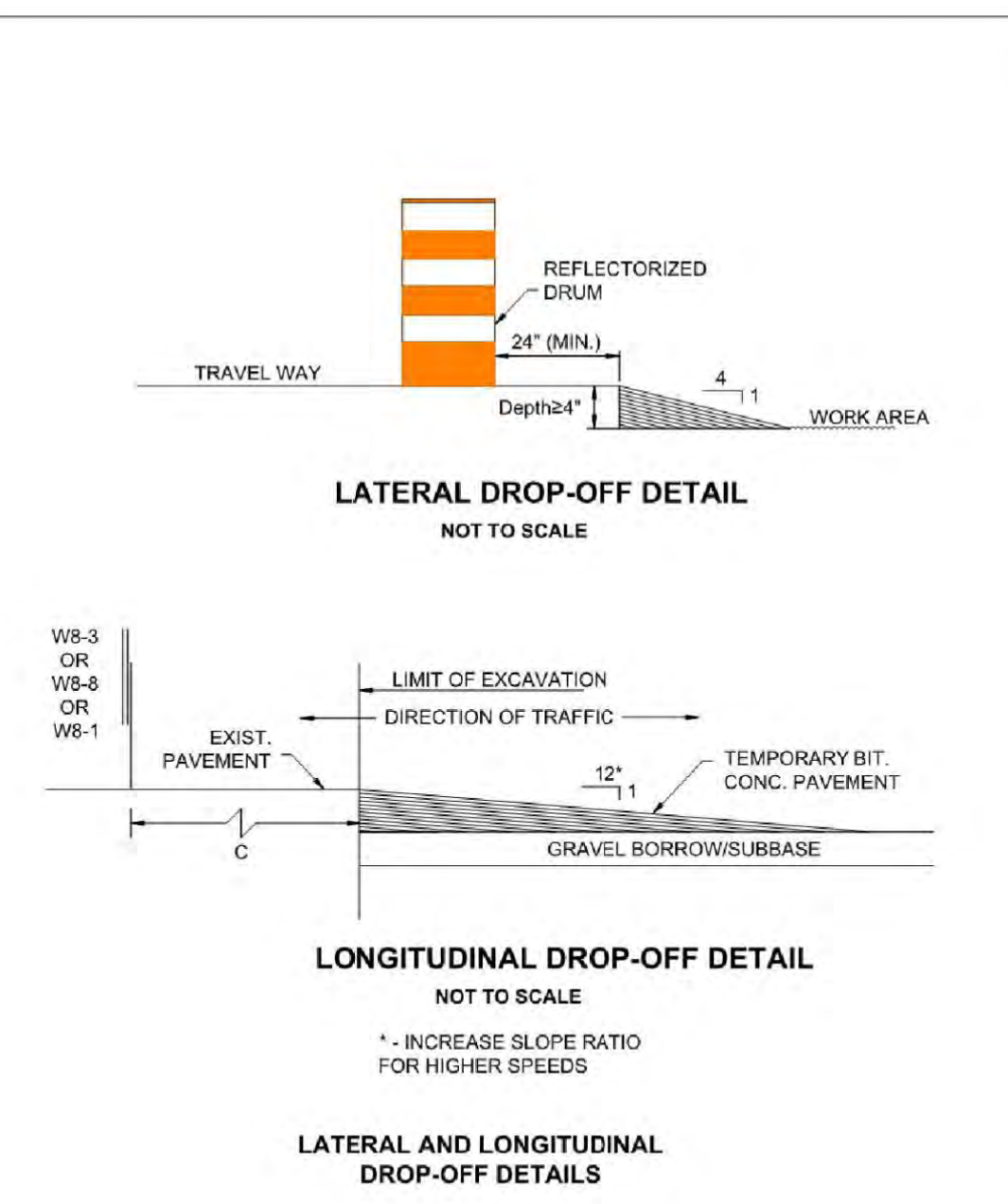
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE GEN-4 COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE NOT TO SCALE



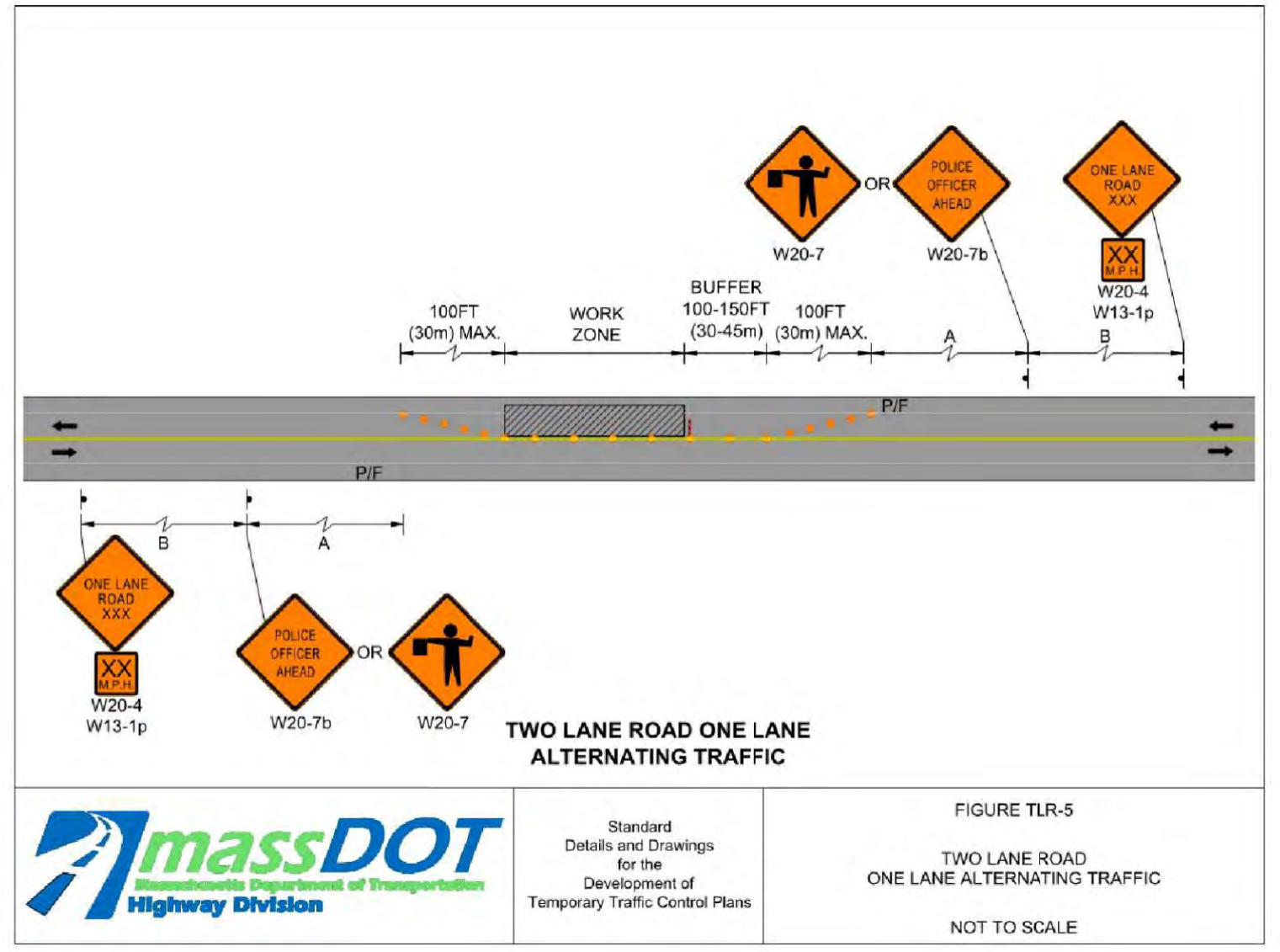
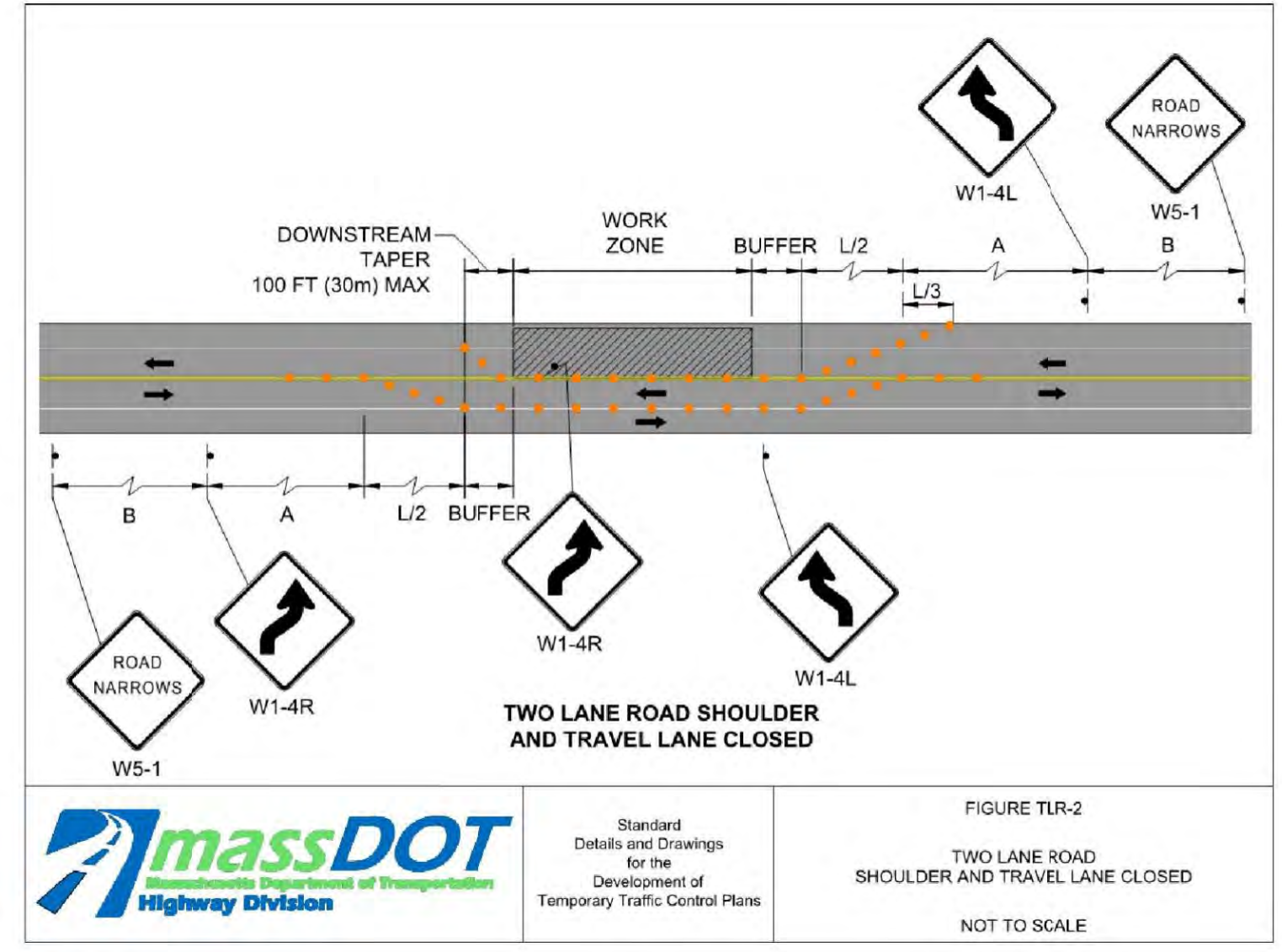
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE GEN-5 TYPES OF TAPERS AND BUFFER SPACES NOT TO SCALE



Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE GEN-6 LATERAL AND LONGITUDINAL DROP-OFF DETAILS NOT TO SCALE



TOWN OF WAYLAND MASSACHUSETTS	RIVER'S EDGE SEWER CONNECTION
TRAFFIC MANAGEMENT PLAN SHEET II	THIS DOCUMENT IS THE PROPERTY OF TATA & HOWARD, INC. AND ITS CLIENT. REPRODUCTION OR MODIFICATION WITHOUT WRITTEN CONSENT IS PROHIBITED.
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TR-2	T&H NO.: 6639 DATE: JANUARY 2021 SCALE: AS NOTED
Design By: JMC Checked By: JMH Approved By: JAC	Drawn By: CM

SECTION 02015

TEST PITS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide test pits where noted/shown on the Drawings or at locations requested by the Engineer.
 - 1. In general the work under this Section shall consist of the excavation of test pits or other miscellaneous excavations not specified for payment elsewhere, by the Contractor where it may be necessary to locate or examine soils, groundwater, drains, pipes, rock, public utilities, subsurface structures, or any other possible obstacle or condition.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02221 Earthwork for Sewer and Drainage Systems

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 COORDINATION WITH UTILITY OWNERS

- A. The Contractor shall coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the location of test pits.
 - 1. All utilities shall be informed of the necessity of work under this Section and the Contractor shall give sufficient notice to the respective utility owners to afford reasonable time for coordination.
 - 2. If so desired by respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

3.02 EXCAVATION

- A. Unless otherwise specified, the Contractor shall dig test pits as required by the Contract Documents, and the Contractor shall notify the Engineer of the results immediately and prior to the start of any underground installations within said test pit areas.
 - 1. The Owner/Utility Companies shall be notified well in advance of excavation so that they also may make the necessary measurements to locate all objects within test pits.

2. Excavation of test pits shall be accomplished by such means as are required to ensure that any underground utilities or structures that may be encountered are not damaged
3. It shall be the Contractor's responsibility for any damages incurred during the excavation operations. Any such damages shall be repaired by him (if permitted) to the satisfaction of the Responsible Agency at the Contractor's own expense. Where the repair and/or replacement must be done by the Responsible Agency, any and all costs thereof shall be borne by the Contractor.
4. The Contractor shall notify the Engineer and/or utility companies of any conflicts uncovered which may require design revisions, relocations and/or adjustment.
5. No work shall be started within these areas of conflict until so authorized by the Engineer.
6. Test pit excavation and backfill shall comply with the applicable provisions of Section 02221.
7. Hand excavation shall be performed where necessary to prevent damage to the existing utilities.

3.03 MEASUREMENT

- A. The Contractor shall measure and record the size, configuration, horizontal and vertical location of all utilities, pipes or other obstacles uncovered in the various test pits dug under this Section.
 1. Size of test pits shall be as directed by the Engineer.

3.04 RESTORATION

- A. Where an existing pavement has been removed for the test pit excavation, the surface shall be restored to grade. The top 12 inches shall be compacted gravel.
 1. In all other areas, the surface of test pit areas shall be restored to a condition equal to or better than original.

END OF SECTION

SECTION 02140

SITE DRAINAGE AND DEWATERING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide drainage and dewatering as required by the Contract Documents.
 - 1. In general the Contractor shall furnish all materials, equipment, labor and incidentals necessary to provide dewatering and drainage control during construction.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 01567 Environmental Protection
 - 2. Section 02221 Earthwork for Sewer and Drainage Systems
 - 3. Section 02731 Plastic Sewer Pipe and Fittings

1.03 SUBMITTALS

- A. None required.

PART 2 PRODUCTS

2.01 EROSION AND SEDIMENTATION CONTROL

- A. Devices for erosion and sedimentation control for effluent of dewatering operations shall be as specified in Section 01567 Environmental Protection.

PART 3 EXECUTION

3.01 INSTALLATION

- A. To insure proper conditions at all times during construction the Contractor shall provide and maintain ample means and devices with which to remove and dispose of all water entering trenches and other excavations.
 - 1. Means of water removal and disposal shall include but not be limited to wells, surface pumps, and/or well point systems, to the extent required to prevent "boils" or softening of the foundation soils.
 - 2. The Contractor shall pitch the ground around the excavation to prevent water from running into excavated areas and to prevent damage to other structures or work on adjacent property.

3. The Contractor shall remove immediately any surface or seepage water or water from sewers, drains, creeks, or other sources, which may accumulate during the excavation and construction work.
- B. Excavations shall be kept dry until the structures, pipes and appurtenances, to be built or installed therein, have been completed and backfilled to such extent that they shall not float or otherwise be damaged by water in the excavation.
 1. In no event shall water rise to cause unbalanced pressure on the pipe or other structures. The Contractor shall prevent flotation of the pipe or structures.
 2. Pipe, masonry and concrete shall not be placed in water. Water shall not submerge new masonry or concrete within four (4) hours after placement.
 - C. Sufficient stand-by pumping equipment shall be installed and mounted for immediate use in case of emergencies. The Contractor shall be responsible for the adequacy of their dewatering equipment and system in controlling the water and for protection to adjacent public and private property from damage. Any damage to permanent work or existing property resulting from the failure of the Contractor to provide an adequate dewatering system shall be repaired by the Contractor at their expense.
 1. Wells, well points and pump sumps shall be installed with adequate filters to prevent loss of fine grained soils.

3.02 DISPOSAL OF DRAINAGE WATER

- A. All water pumped or drained from the work shall be disposed of in such a manner as to not cause injury to public health, damage to public or private property, interference with other work or adverse impacts to adjacent wetlands.
 1. Effluent from dewatering operations shall not be discharged directly to wetlands or waterways and shall not be discharged to storm drain systems prior to being filtered through a siltation basin.
 2. Discharge shall be such that no erosion occurs. Erosion protection shall be as specified in Section 01567 Environmental Protection.

END OF SECTION

SECTION 02160

SUPPORT OF EXCAVATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide excavation support as required by the Contract Documents.
 - 1. In general this work shall consist of furnishing and placing timber and/or steel sheeting and shoring of the types and dimensions required for proper excavation support.

1.02 DEFINITIONS

- A. Shoring shall mean the use of a steel trench box, steel sheeting, or timber sheeting braced as required.
- B. Timber sheeting shall mean the use of tongue and groove wood sheeting or steel soldier beams with wood lagging braced as required.
- C. Steel sheeting shall mean the use of steel sheet pilings with interlocking joints, braced by steel members as required.

1.03 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02731 Plastic Sewer Pipe and Fittings
- B. As established in the General Conditions of the Contract, the Contractor is solely responsible for means and methods of construction and for the sequence and procedures to be used.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. The Contractor shall not perform excavations in unstable ground and shall employ a positive means of containing the unstable ground behind shoring, before excavation may proceed.
- B. Employ a qualified Engineer, properly permitted to provide such services at the location of the work, to design the shoring system and to inspect and report on the quality of its construction.
- C. Comply with all pertinent requirements of governmental agencies having jurisdiction.

1.05 STANDARDS

- A. The following Standards form a part of this Specification as referenced:
 - 1. ASTM A328, Specification for Steel Sheet Piling
 - 2. Massachusetts DPW Standard Specifications, Section 950 Sheeting.
 - 3. Code of Federal Regulations (CFR), 29 CFR 1926, OSHA Standards - Excavation.

1.06 SUBMITTALS

- A. Submit shoring design to Engineer for record purposes only.

PART 2 PRODUCTS

2.01 DESIGN

- A. Design a shoring system which will safely and adequately prevent collapse of adjacent materials and which will permit construction of the Work to the arrangement shown on the Drawings.
- B. All shoring systems shall be designed so as to support all vertical and lateral loads and other surcharge loads imposed on the system during construction, including earth pressures, utility loads and other surcharged loads in order to provide safe and expeditious construction of the permanent structures and prevent movement and/or damage to adjacent soil, buildings, structures and utilities.
- C. Secure all needed approvals, including those of governmental agencies having jurisdiction and of adjacent property owners if required, at no additional cost to the Owner.

2.02 MATERIALS

- A. Material shall include, but not necessarily be limited to sheet piling, soldier piles, lagging, bracing members such as wales, struts, shores and tieback anchors.
- B. Lumber for timber sheeting and shoring:
 - 1. Shall be sound Spruce, Douglas Fir, white or yellow Lodgepole, Ponderosa pine, or western hemlock plank, planed on one side and either tongue and grooved or splined.
- C. Steel sheeting:
 - 1. Shall be of approved section and quality, either new or secondhand, conforming to the requirements of ASTM A328.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Construct and install the shoring system in strict accordance with the design engineer's requirements.
 - 1. When using soldier piles and lagging, where boulders or cobbles are encountered, soldier piles shall be installed in pre-augered holes over the full depth as required to prevent misalignment and damage.
 - 2. Vibration monitoring during installation and extraction of braced excavation shall be provided wherever the excavation is within 100 feet of existing structures.

3.03 SHEETING LEFT IN PLACE

- A. Sheeting left in place, for the purpose of preventing injury to structures, utilities or other property, shall be cut-off 3 feet below finished grade.
 - 1. The right of the Engineer to order sheeting left in place shall not be construed as creating any obligation on his part to issue such orders. His failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise growing out of a failure, on the part of the Contractor, to leave in place sufficient sheeting to prevent movement of the ground.

3.04 SHEETING REMOVED

- A. All sheeting not left in place shall be carefully removed in such manner as to not endanger the construction or other structures, utilities, or property.
 - 1. All voids left or caused by withdrawal shall be immediately refilled with approved material, and compacted with tools especially adapted to that purpose.
 - 2. Vibratory extraction methods shall be used only when it can be demonstrated that settling of pipe and structures will not occur. If such settling occurs, it shall be corrected at the Contractor's expense.

3.05 TRENCH BOX OR SHIELD

- A. Use of a trench box or shield shall not relieve the Contractor of any liability for damages to persons or property growing out of a failure of the Contractor to leave in place sufficient sheeting and bracing to prevent the caving or moving of the ground or disturbance of the completed work.
 - 1. Care shall be taken, when a trench box or shield is moved ahead, so as not to pull apart the joints of pipe already placed or leave voids around the pipe wall.
 - 2. At no time shall the portable box or shield be allowed to be positioned below the spring line of the pipe.

3. The width of the trench box or shield shall be such that a minimum 6 inch horizontal clearance is maintained between the pipe and shield at all times
4. If the pipe has moved, it shall be reset to the proper line and grade.
5. Any voids between the trench box or shield and the undisturbed trenchwall within the pipe zone (bottom of trench to top of cover material) shall be filled with crushed stone, bank run gravel, or approved material, immediately after the box or shield is positioned.

END OF SECTION

SECTION 02210

SITE GRADING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Excavate, backfill, compact, and grade work associated with the pump station and associated features to the elevations shown on the Drawings, as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02110 Clearing and Grubbing
 - 2. Section 02140 Site Drainage and Dewatering
 - 3. Section 02221 Earthwork for Sewers and Drains
 - 4. Section 01050 Field Engineering

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

PART 2 PRODUCTS

2.01 SOIL

- A. Fill Material:
 - 1. The soil to be used for grading shall be obtained from the site cuts or a designated borrow area on the site.
 - 2. Do not permit rocks having a dimension greater than 8 inches in the upper 12 inches of fill or embankment.

2.02 TOPSOIL

- A. Where shown on the Drawings or otherwise required, provide topsoil consisting of friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoils, roots, heavy or stiff clay, stones larger than 2 inches in greatest dimension, noxious weeds, sticks, brush, litter and other deleterious matter.

- B. Obtain topsoil from sources within the project limits, or provide imported topsoil obtained from sources outside the project limits, or from both sources.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINISH ELEVATIONS AND LINES

- A. Comply with pertinent provisions of Section 01050, Field Engineering.

3.03 PROCEDURES

- A. Utilities:
 - 1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
 - 2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
 - 3. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer.
 - 4. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.
- B. Protection of Persons and Property:
 - 1. Barricade open holes and depressions occurring as part of this work, and post warning lights on property adjacent to or with public access.
 - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 - 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.
- C. Dewatering:
 - 1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains and other approved methods as specified in Section 02140.
 - 2. Keep excavations and site construction area free from water.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- E. Maintain access to adjacent areas at all times.

3.04 EXCAVATING

- A. Perform excavating within the limits of the Work to the lines, grades, and elevations shown on the Drawings and specified herein.
- B. Satisfactory Excavated Materials:
 - 1. Transport to, and place in, fill or embankment areas within the limits of the Work.
- C. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.
- D. Ditches and Gutters:
 - 1. Cut accurately to the cross sections, grades and elevations shown.
 - 2. Maintain excavations free from detrimental quantities of leaves, sticks, trash and other debris until completion of the Work.
 - 3. Dispose of excavated materials as shown on the Drawings or directed by the Engineer.
- E. Unauthorized Excavation:
 - 1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Engineer.
- F. Ground Surface Preparation:
 - 1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from the ground surface prior to placement of fills.
 - 2. Plow, strip, or break up surfaces steeper than one vertical to four horizontal (1:4), so that fill material will bond with existing services.
 - 3. When existing ground surface has a density less than that specified under "compacting" for the particular area, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.
 - 4. At exposed soils in areas to be paved, scarify to a minimum depth of 6 inches, and recompact at a moisture content that will permit proper compaction as specified for fill.

3.05 GRADING

- A. General:
 - 1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
 - 2. Smooth the finished surfaces within specified tolerance.
 - 3. Compact with uniform levels or slopes between points where elevations are shown on the Drawings, or between such points as existing grades.
 - 4. Where a change of slope is indicated on the Drawings, construct a rolled transition section have a minimum radius of approximately 8 feet, unless adjacent construction will not permit such a transition or if such a transition defeats positive control of drainage.
- B. Grading Outside Building Lines:
 - 1. Grade areas adjacent to buildings to achieve drainage away from the structures, and to prevent ponding.
 - 2. Finish the surfaces to be free from irregular surface changes, and:

- a. Shape the surface of areas scheduled to be under walks to line, grade and cross-section, with finished surface not more than 0.10 feet above or below the required subgrade elevation.
- b. Shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.05 feet above or below the required subgrade elevation.

3.06 COMPACTING

- A. Control soil compaction during construction to provide the minimum percentage of density specified for each area.
- B. Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place, and as approved by the soils engineer.
 - 1. Structures:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 95% of maximum density.
 - 2. Lawn and unpaved areas:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 85% of maximum density.
 - b. Compact the upper 12" of filled areas, or natural soils exposed by excavating, at 85% of maximum density.
 - 3. Walks:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 95% of maximum density.
 - 4. Pavements:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 95% of maximum density for cohesive soil material.
- C. Moisture Control:
 - 1. Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.
 - 2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
 - 3. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by dicing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the Engineer.

3.07 FIELD QUALITY CONTROL

- A. If, in the Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing under the provisions of Section 02200, of these Specifications.

3.08 MAINTENANCE

- A. Protection of Newly Graded Areas:

1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.
 2. Repair and re-establish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape and compact to the required density prior to further construction.

END OF SECTION

SECTION 02221

EARTHWORK FOR SEWERS AND DRAINS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide all earthwork as required by the Contract Documents.
- B. In general the work of this Section shall include but not necessarily be limited to, excavation, trenching, filling, backfilling, compaction and grading for sewer and drain systems.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02160 Support of Excavation
 - 3. Section 02227 Rock Removal
 - 4. Section 02700 Precast Concrete Manholes
 - 5. Section 02731 Plastic Sewer Pipe and Fittings
 - 6. Section 02930 Loam and Seed
 - 7. Section 01013 Facility Interference with Proposed Work
 - 8. Section 01300 Submittals
 - 9. Section 01567 Environmental Protection

1.03 SITE INVESTIGATION

- A. The grades and other site information have been compiled by field surveys.
 - 1. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work.
 - 2. Failure by the Contractor to acquaint himself with all available information concerning the site will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

1.05 PROTECTION OF PROPERTY AND UTILITIES

- A. Extreme care shall be exercised to prevent damage to existing trees, shrubs, utilities, walls, sidewalks, fences and private property.

1. Any damage to these items as a result of work performed by the Contractor shall be repaired by the Contractor at his own expense.
 2. Existing property boundary markers, control points and datum elevation markers or bench marks shall be preserved.
 - a. All such items which are displaced or destroyed by the Contractor shall be replaced by a registered Engineer or Land Surveyor, as required, with all expenses paid by the Contractor.
- B. Utility agencies shall be contacted and advised of proposed work prior to the start of work by the Contractor.
1. Notify Dig Safe.
 2. Obtain information from the proper sources and authorities concerning locations of all utilities within the scope of this work.
 3. If and when encountered, utilities shall be supported and protected, and the Engineer shall be notified. Ample time shall be allowed for entrance and taking such measures as may be required for the continuance of such services by the utility owner.
 4. Rules and regulations governing the respective utilities shall be observed. The Contractor's responsibilities with respect to utility locations, protection, interferences and relocations shall be as further specified in Section 01013.

1.06 REFERENCE STANDARDS

- A. The Contractor shall comply with the provisions of the following agencies as they apply to this project and as referenced:
1. Associated General Contractors of America, Inc. (AGCA) "Manual of Accident Prevention in Construction."
 2. Occupational Safety and Health Administration (OSHA), United States Department of Labor Requirements.
 3. American National Standards Institute (ANSI) "Safety Requirements for Construction and Demolition."
 4. American Water Works Association Standards.
- B. The following American Society for Testing and Materials (ASTM) standards form a part of this specification as referenced:
1. ASTM C33 Standard Specification for Concrete Aggregates
 3. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 4. ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
 5. ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- C. The following Massachusetts Department of Transportation (MassDOT) Standard Specifications for a part of the specification as referenced:
1. Section M1 Soils and Borrow Materials
 2. Section M2 Aggregates and Related Materials

1.07 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Testing and Samples:
 - 1. Test reports on backfill materials, moisture density tests, in place density tests (ASTM D1557 and D6938).
 - 2. Representative backfill and bedding samples and gradation tests (ASTM D6913).
 - 3. Tests shall be in conformance with paragraph 3.15 compaction requirements and testing as specified herein.

1.08 TRAFFIC

- A. While excavating and backfilling is in progress, traffic shall be maintained in a manner as specified in Section 01570 Traffic Regulation.

PART 2 PRODUCTS

2.01 GENERAL

- A. Except as specified for pipe bedding, pipe cover, roadway subbase and refill for rock and unsuitable materials, backfill materials may be as follows:
 - 1. Suitable materials for trench backfill shall be the material excavated during the course of construction, but excluding debris, pieces of pavement, frozen materials, organic matter, silt, top soil, ledge excavation and rocks over six inches in largest dimension.
 - 2. Gradation of material shall be generally as specified for gravel borrow except that maximum size of stone shall be 6 inches.
 - 3. The suitability of existing material for use as backfill will be determined by the Engineer.
 - 4. All unsuitable materials shall be disposed of as per paragraph 3.17.A.

2.02 PIPE BEDDING AND COVER MATERIAL

- A. Pipe Bedding and Pipe Cover Material (HDPE Pipe).
 - 1. Material for pipe bedding shall be screened gravel or crushed stone, ranging in size from 1/2 inch to 3/4 inch.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3/4 inch	90-100
1/2 inch	50-90
3/8 inch	20-40
No. 4	0-10
No. 8	0-5

2.03 CONCRETE SAND

- A. Concrete sand shall meet ASTM C33 for fine aggregate.

2.04 STRUCTURAL FILL

- A. Structural fill shall generally range from gavelly sand to gravel, free of organic material, trash, loam, ice, snow, frozen soil and other objectionable material, and shall conform to the following:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
6 inch	100
No. 4	30-80
No. 40	5-35
No. 200	0-8

2.05 GRAVEL BORROW

- A. Gravel borrow shall be a granular material, well graded from fine to coarse, with a maximum size of 3 inches, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.
1. It shall not contain vegetation, masses of roots, or individual roots.
 2. It shall be substantially free from loam and other organic matter, clay, and other fine or harmful substances.
 3. Gravel borrow shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3 inch	95-100
1/2 inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

2.06 PROCESSED GRAVEL FOR ROADWAY BASE

- A. Shall meet the requirements of the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, latest edition, M1.03.1.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3 inch	100
1 1/2 inch	70-100
3/4 inch	50-85
No. 4	30-60
No. 200	0-10

2.07 CLAY/BENTONITE

- A. Materials that will function as impervious barriers to water movement shall be a silty or clay soil material meeting the requirements of AASHTP M 145 for soil classification A2, A-6 and A-7 provided such materials do not have a Liquid Limit (LL) greater than 50.

PART 3 EXECUTION

3.01 TRENCH EXCAVATION

- A. The Contractor shall make all excavation in earth and in rock, necessary or incidental to the proposed construction under the terms of this Contract and as herein specified or indicated on the Drawings.
1. All trench excavation shall be accomplished by open cut method.
 2. All excavation shall be made in such manner and to such widths as will give ample room for properly installing, constructing and inspecting pipe lines and structures they are to contain.
 3. The width of trenches shall be sufficient to allow thorough compacting of the refill adjacent to the lower quarters of the pipe. At pipe joints such additional width and depth shall be excavated as is necessary to give ample room for properly making and inspecting the pipe joint.
 4. Bracing and support of all trench excavation shall meet all requirements of Local and State ordinances and OSHA regulations.
 - a. Sheeting and bracing, or the use of a steel support box shall be used where required to maintain a safe working condition and provide protection from collapse of the trench walls.
 5. During excavations, material determined by the Engineer to be suitable for backfilling, shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. Unsuitable material shall be disposed of as specified in paragraph 3.18 and replaced as ordered by the Engineer with surplus suitable material and gravel borrow to the extent necessary.
 6. Should conditions make it impractical or unsafe to stack material beside the trench, it shall be hauled and stored at a location provided by the Contractor. When required, it shall be re-handled and used in backfilling the trench. No additional compensation will be made for re-handling this material.
 7. Pipe trenches shall be backfilled as soon as practical after the pipes have been laid, jointed and inspected by the Engineer. The extent of excavation open at any one time shall be no more than 50 linear feet of trench during working hours and no more than 20 linear feet during non-working hours. Under no circumstances shall more than 100 feet of trench be open at any one time.

3.02 EXCAVATION CLASSIFICATION

- A. Earth excavation shall comprise all materials not classified as rock excavation and shall include clay, silt, sand, muck, gravel, hardpan, loose shale, pavement, pavement bases, loose stone in masses and boulders measuring less than one cubic yard in volume.
- B. Rock: See Section 02227 - Rock Removal.

3.03 TRENCH EXCAVATION IN PAVED ROADWAYS

- A. In excavating trenches in roadways having an improved pavement, the Contractor shall cut the pavement twice; once prior to excavation and again prior to permanent resurfacing.
1. The first cut may be made using a water cooled abrasive saw, pneumatic chisel or a wheel cutter attached to a front end loader.
 2. The second and final cut shall be made with a water cooled abrasive saw.
 3. In all cases a trial section shall be cut to indicate the performance of the equipment to be used.

4. Pavement removed shall not be mixed with other excavated materials, but shall be disposed of away from the site of the work before the remainder of the excavation is made.
5. Existing pavement and base course to remain shall be protected by the Contractor. All existing pavements and base courses which are to remain and have been damaged, shall be restored or replaced by Contractor to match existing pavements, base courses and grades, at no additional expense to the Owner.

3.04 UNSUITABLE MATERIAL

- A. All pipes and structures are to be laid on a stable foundation. If material at grade is determined to be unsuitable by the Engineer, the Contractor shall excavate a further depth and/or width, and refill with an approved material. Refill material shall be structural fill or gravel borrow as determined by the Engineer.
 1. Where fine sand and silt are encountered at the bottom of the trench, it shall be the option of the Engineer to require a 6-inch compacted depth of concrete sand meeting ASTM C33 for fine aggregate to be installed beneath the pipe bedding to the full width of trench.
 2. Payment width limits shall be the same as specified for trench excavation, unless an additional width of trench is ordered by the Engineer.
 3. Any excavation in excess of the amount ordered by the Engineer shall be backfilled and compacted with an approved granular material, at the Contractors expense.

3.05 ROCK REMOVAL

- A. See Specification Section 02227.

3.06 DEWATERING

- A. See Specification Section 02140.

3.07 BACKFILLING AND COMPACTING

- A. Backfill shall be placed in uniform layers. Each layer shall be thoroughly compacted by tamping or vibrating with mechanical compacting equipment.
 1. Care shall be taken to compact the backfill materials throughout the full width of the excavation and beneath all pipes and structures.
 2. The backfilling of trenches shall proceed as soon as the laying of the pipe(s) or installation of the structures will allow.
 3. Pipe bedding shall be required below and up to the springline of all pipe. Pipe bedding shall be placed to the full width of the trench and to a depth of 6 inches below the bottom of the pipe barrel as indicated on the Drawings
 4. Pipe bedding shall be placed 12 inches beyond the widths of a utility structure foundation (base) and to a depth of 6 inches below the foundation (base) or as indicated on the Drawings.
 5. After a pipe has been adjusted to correct line and grade, and bedded, the trench shall be filled to the centerline of the pipe with pipe bedding and compacted, except at the joint. After the joint has been inspected, that portion shall be filled in with pipe bedding and compacted. Material under and around the pipe shall be

carefully and thoroughly compacted and tamped with approved compacting equipment.

6. From the centerline of the pipe to a point 12 inches above the top of the pipe, the fill shall be pipe bedding.
7. Impervious dams of natural clay, or bentonite shall be installed in the pipe bedding, cover and below grade replacement material to a length of 12 inches and at maximum spacing of 300 feet to minimize flow of groundwater through the bedding.

B. Placement of Backfill Above the Pipe Bedding.

1. Above the pipe bedding, backfill shall be suitable material from the excavation or, if ordered by the Engineer, gravel borrow. This backfill shall be placed in layers 12 inches deep in loose measure, or greater at the discretion of the Engineer, and each layer shall be thoroughly compacted with mechanical tampers. This backfill shall be carried up to the bottom of materials specified to be placed for surfacing requirements.

C. Roadway Trench.

1. The following additions shall apply specifically to trenches within roadways:
 - a. The top eighteen (18) inches of trench refill, roadway sub-base, shall be comprised of 6 inches of processed gravel and 12 inches of gravel borrow, placed, graded and compacted by the Contractor. This material shall be placed during the backfilling operation.
 - b. The Contractor shall fine grade the surface, apply dust control treatment and maintain the surface in a condition which will allow safe vehicular traffic until resurfacing is placed.
 - c. The length of unsurfaced trench shall not exceed 500 linear feet, and shall be maintained to the Owner's satisfaction, in a condition to allow safe vehicular traffic. If the trench is not maintained in a satisfactory condition, the allowable length of unsurfaced trench shall be reduced accordingly.

3.08 TRENCH SIZE

- A. Trenches shall be excavated to the necessary width and depth for proper laying of pipe and placement of concrete and other materials and shall have vertical sides to 12 inches above the pipe. Above this point, sides shall be as near vertical as approved construction procedures and safety requirements permit.
1. Widths of trenches shall be as shown on the drawings.
 2. The depth of trench shall be a minimum 6 inches below the pipe barrel, or as shown on the Drawings.

3.09 STRIPPING TOPSOIL

- A. Topsoil shall be carefully stripped and separately stored to be used again for topsoiling and seeding on off-pavement areas within which excavations are to be made.

3.10 EXCAVATION NEAR EXISTING STRUCTURES AND UTILITIES

- A. It is called to the attention of the Contractor that there are utilities and other underground pipes along the course of the work. Information shown on the Drawings as to the

location of said utilities and pipes is from the best available sources, but no guarantee is implied, nor is it to be assumed that such information is accurate or complete. Utility lines will be crossed in the course of the work.

- B. The Contractor shall exercise special care during his operations to avoid injury to all such underground utilities and structures.
 - 1. When necessary, the Contractor shall cooperate with, and consult with representatives of the Owner and the utility companies in order to avoid damage to the structures.
 - 2. The Contractor shall arrange for or furnish and erect suitable supports and shoring or other means of protection where required to protect the utilities, all at no additional cost to the Owner.
 - 3. Hand methods of excavating shall be used around buried utilities and is included in the work to be done under this Contract, at no additional cost to the Owner.
 - 4. Interference between the proposed work and existing utilities, relocation of existing utilities, repair or damage to existing utilities, and protection and support of existing utilities during construction of the proposed work will be as specified in Section 01013.

3.11 PROTECTION OF PROPERTY

- A. The Contractor shall, at his own expense, preserve and protect from injury all property either public or private along and adjacent to the line of work, and be responsible for and repair any and all damage and injury thereto, arising out of or in consequence of any act or omission of the Contractor.
 - 1. All existing pipes, culverts, poles, wires, fences, mailboxes, stone walls, curbs, bounds, etc., shall be temporarily removed, supported in place or otherwise protected from injury, and shall be restored to at least as good condition as that in which they were found immediately prior to the start of work.
 - 2. Lawns, shrubs, bushes, planting beds and decorative trees disturbed or damaged shall be restored to a condition equal to that found prior to the start of construction, either by temporary transplant or replacement in kind, except as otherwise indicated on the Drawings.

3.12 SAFETY AND ACCOMMODATION

- A. The Contractor shall provide, at his own expense, suitable bridges over trenches where required for the accommodation and safety of the traveling public, and provide facilities for access to private driveways for vehicular use.
 - 1. He shall erect suitable barriers around the excavation to prevent accidents to the public and shall place and maintain during the night sufficient lights on or near the work.
 - 2. A space of twenty (20) feet shall be left so that free access may be had at all times to fire hydrants and proper precautions shall be taken so that the entrances to fire hydrants and fire stations shall not be blocked or obstructed.

3.13 DETOURS

- A. It is the intent of this Contract to keep the roadways open to two way traffic at all times. In order to obtain permission for the closing of the roadway, the Contractor shall satisfy

the Owner, Police Chief and Fire Chief, that his operations will allow emergency access at all times.

1. See Section 01570, Traffic Regulations.

3.14 UNIFORMED POLICE OFFICERS

- A. The Contractor shall make all arrangements with the Police Chief for the services of uniformed police officers.
 1. If, in the opinion of the Police Chief or the Owner, uniformed police officers are required for protection of persons and control of traffic, the Contractor shall be responsible for making all arrangements for said uniformed police officers as may be required.

3.15 COMPACTION REQUIREMENTS AND TESTING

- A. All backfill materials shall be thoroughly compacted by rolling, tamping or vibrating with approved mechanical or pneumatic compacting equipment so that pipe, structures, paving and other construction will not settle at the time of construction or in the future. The responsibility for thorough compaction is that of the Contractor irrespective of methods of backfill and depth of backfill layers placed.
- B. All percentages of compaction specified herein shall be of the maximum dry density at the optimum moisture content as established ASTM D1557 and verified by ASTM D6938. When the term "thoroughly compacted" is used in these specifications, it shall mean compaction to at least 95% of the maximum density of the soils at optimum moisture content.
- C. The following numbers and types of soil tests shall be made where directed by the Engineer. These tests shall be made by qualified personnel of an independent testing laboratory, acceptable to the Engineer and paid by the Contractor. Three copies of all test results shall be delivered to the Engineer.
 1. Particle-Size analysis of Soils and Backfill Materials in accordance with ASTM D6913. A minimum of one satisfactory test from each material in the field shall be submitted to the Owner and Engineer in addition to the initial shop drawings confirming material compliance with the specifications.
 2. Moisture-Density Relationship of soil in accordance with ASTM D1557, Method D. A minimum of one satisfactory test from each material in the field shall be submitted to the Owner and Engineer in addition to the initial shop drawings confirming material compliance with the specifications.
 3. In-Place Density Tests of materials in accordance with ASTM D6938. Compaction tests will be taken at random on compaction layers below and at finished surfaces. Compaction testing frequency shall occur as outlined below, or as directed by the Engineer.
 - a. Not less than one compaction test for every 300 linear feet.
 - b. Not less than one compaction test for every 5,000 sq. ft. for each lift.
 4. Failed tests shall be repeated at the Contractor's expense.
- D. The Owner reserves the right to have additional compaction tests performed by an independent laboratory with testing costs borne by the Owner, except that failed tests shall be repeated at the Contractor's expense.

- E. If any of the field density test results fail to meet the density as specified herein for the earthwork involved, then the Contractor shall remove all of the earthwork in that portion of the work involved as determined by the Engineer, and shall replace it in accordance with these Specifications to the required density. After the work is replaced, additional field density tests will be made by an independent testing laboratory retained by the Owner, and the Contractor shall reimburse the Owner for all costs for such additional testing.
- F. Compaction shall be to the following densities:

<u>Fill and Backfill Location</u>	<u>Modified Proctor Density (Percent)</u>
Under structures and pipes	95
Beside structure foundation walls	95
Top two feet under pavements	95
Under pavements below top two feet	95
Trenches through unpaved areas	90
In embankment	90

- G. Puddling and jetting of the backfill shall not be permitted except in special cases approved by the Engineer.

3.16 TRENCH EXCAVATION IN FILL

- A. Where the existing ground surface does not permit at least 4 feet of cover over the finished pipe, and where indicated on the Drawings, the Contractor shall place and compact suitable fill material to the depth necessary to provide the 4 foot minimum cover, including loam to a minimum top width of 6 feet, or as otherwise shown on the Drawings
 1. Minimum side slopes shall be two horizontal to one vertical.
 2. Fill material shall be from surplus suitable material or gravel borrow, and be clean, dry, and capable of satisfactory compaction, all as approved by the Engineer, and shall be placed in layers not exceeding 8 inches thick and compacted.
 3. The trench shall be excavated in the compacted fill and the remainder of the work shall be in accordance with other portions of these Specifications.

3.17 DISPOSAL OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL

- A. All surplus excavated material and any material unsuitable for use shall be disposed of in disposal areas provided by the Contractor.
 1. It is the Contractor's responsibility to dispose of unsuitable excavated material in an approved manner.
 2. The Contractor shall not dispose of surplus materials on wetlands or other areas prohibited by the Corps of Engineers or the Commonwealth of Massachusetts Department of Environmental Protection, or any other local authority having jurisdiction.

3.18 DUST CONTROL

- A. The Contractor shall perform dust control operations as specified in Section 01567.

3.19 CLEAN-UP

- A. The Contractor shall remove all surplus materials (earth, pipe, fittings, storage and office trailers, barricades, etc.), from the construction site.
 - 1. All paved roadways affected by the construction shall have their full width swept clean (paved edge to paved edge) using methods which control the dust.
 - 2. Before the Contractor may proceed to another roadway, clean up of the previous roadway must be complete.

END OF SECTION

SECTION 02227

ROCK REMOVAL

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Remove all rock encountered while excavating for structures, roadways, or utility trenches as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02221 Earthwork for Drains and Sewer

1.03 DEFINITIONS

- A. Rock excavation: Rock which requires explosives, wedging or impact hammer for its removal. Concrete shall be classified as rock.
- B. Boulders, slabs or other single pieces of material encountered, which are less than one (1) cubic yard shall not be considered rock.

1.04 STANDARDS

- A. All handling of explosives and blasting shall be in compliance with the pertinent sections of Commonwealth of Massachusetts Regulations (CMR) 13.00.

1.05 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Comply with all pertinent requirements of governmental agencies having jurisdiction.

1.06 SUBMITTALS

- A. Submit plans for proposed pre-blast survey (Record purposes only).

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 NOTIFICATION

- A. When rock is encountered, it shall be uncovered and the Engineer notified.
 - 1. The Contractor shall provide the Engineer with cross sections of the rock surface or a profile of the rock where trenches are concerned.
 - 2. The Engineer shall be present when the cross sections or profiles are taken.
 - 3. The average end area method shall be used in computing the volumes wherever practicable.

3.02 LIMITS OF EXCAVATION IN ROCK

- A. Excavation in rock shall be performed, so that no projection shall come within vertical planes twelve (12) inches outside of the structure being built or twelve (12) inches below the bottom of the structure base slab and footings.
- B. In trenches, the rock shall be removed to the limits shown on the typical trench section.
 - 1. Where excavation is carried beyond the above determined limits, the additional space shall be refilled at the Contractor's expense with concrete or other specified materials.

3.03 BLASTING

- A. Pre-Blast Survey: Prior to any blasting, the Contractor shall submit a pre-blast survey.
 - 1. The survey shall satisfy the insurance requirements of the Contractor and be acceptable to the Contractor's insurance carrier, as well as provide data to assess damages to personal property and real estate due to blasting operations.
 - 2. The survey shall be complete as warranted by the nature of the work.
- B. Take all precautions necessary to warn and/or protect any individuals exposed to his operations. Such precautions shall include but not be restricted to the following:
 - 1. Present written certificate of insurance showing evidence that his insurance includes coverage for blasting operations, before doing any blasting work.
 - 2. Make necessary arrangements as may be required by the applicable Federal, State, County or Municipal codes, rules, regulations and laws, and shall be responsible for compliance.
 - 3. Obtain a permit from the local authorities to perform blasting operations.
 - a. The Engineer shall be notified in writing that such permit has been obtained.
 - 4. Schedules for blasting shall be thoroughly coordinated with the proper authorities – Federal, State and Local.
 - a. No blasting shall be done unless the Contractor has notified all concerned parties that he may blast.
 - b. The Contractor shall also notify any commercial installation in the immediate area whose operations or instrumentation may be affected by blasting, at least twenty four (24) hours prior to blasting operations.
 - 5. Seismographic recordings shall be made of all blasting operations on the project by a qualified testing agency hired and coordinated by the Contractor.
 - a. A copy of these recordings shall be made available to the Engineer.
 - 6. Blasting shall be performed by persons who are licensed to use explosives.

7. The Contractor shall keep an accurate record of each blast and submit a copy to the Engineer. The record shall show the date, time, exact stationing of the blast, the depth and number of drill holes, and kind and quantity of explosive used, and any other data required for a complete record.
8. The Contractor shall be fully responsible for damages caused by his blasting operations.
9. If rock below the limits of excavation is shattered by blasting, caused by holes drilled to deep, too heavy a charge of explosives or any other circumstance due to blasting, the shattered rock shall be removed and the void refilled with gravel borrow at the expense of the Contractor.
 - a. Gravel borrow shall be as specified in Section 02221 Earthwork for Drains and Sewer.

3.04 DISPOSAL AND REPLACING OF ROCK

- A. Remove and dispose of all pieces of rock which are not suitable for use in other parts of the Work.
 1. Rock disposed of by hauling away to spoil areas shall be replaced by surplus excavation obtained elsewhere on the site, insofar as it is available.
- B. Fragments of rock approximately twenty five (25) pounds or less may be used in the fill areas of the site (roadway areas excluded).
 1. The Contractor shall place these pieces of rock in thin layers alternating them with layers of earth to be sure that all voids between the rock are completely filled with earth.
 2. If in the opinion of the Engineer the quantity is excessive, he may order the removal and disposal of the rock.
- C. Be responsible for obtaining spoil locations and the removal of all excess rock from the site.

END OF SECTION

SECTION 02513

ASPHALTIC PAVEMENT

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide asphaltic pavement and appurtenant items as required by the Contract Documents.
 - 1. In general the Contractor shall provide all labor, equipment, and materials, and perform all operations in connection with the installation of asphaltic pavement, berms, pavement markings, calcium chloride, final grade adjustments of valve boxes, manhole and catch basin castings, and preparation of the trench.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drains

1.03 STANDARDS

- A. All paving shall comply with the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, hereinafter called Standard Specifications, as referenced.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

PART 2 PRODUCTS

2.01 GRAVEL SUBBASE

- A. Shall be as specified in Section 02221, Earthwork for Sewer and Drains.

2.02 ASPHALTIC PAVEMENT

- A. Bottom and Top Course:
 - 1. Shall be Class I asphaltic pavement conforming to Sections 420, 460 and M3 of the Standard Specifications.

2.03 ASPHALT TACK COAT

- A. Shall consist of either emulsified asphalt, grade RS-1 conforming to Section M3.03.1, or cutback asphalt, grade RC-70 or RC-250 conforming to Section M3.02.0 of the Standard Specifications.

2.04 PAVEMENT MARKING PAINT

- A. Shall be High Heat Rapid Drying Traffic Marking Material conforming to Section M7.01.08 (White High Heat Rapid Drying Traffic Marking Material) and Section M7.01.09 (Yellow High Heat Rapid Drying Traffic Marking Material) of the Standard Specifications, as applicable.
- B. Shall be Thermoplastic Reflectorized Pavement Markings conforming to Section M7.01.03 (White Thermoplastic Reflectorized Pavement Markings) and Section M7.01.04 (Yellow Thermoplastic Reflectorized Pavement Markings) of the Standard Specifications, as applicable.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINAL PREPARATION OF SUBGRADES

- A. Gravel Subbase:
 - 1. Minimum compacted depth shall be shown on details, of 12 inches as measured from the bottom of the pavement.
 - 2. Spread and compacted in layers not exceeding 6 inches in depth, compacted measurement.
 - 3. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by the standard AASHTO Test Designation T99 Compaction Test Method C at optimum moisture content.

3.03 GENERAL

- A. All asphaltic pavement thickness referred to in this Section shall be compacted thickness.
- B. No asphaltic pavement shall be placed when the air temperature is below forty (40) degrees Fahrenheit, or when the material on which the mix is to be placed contains frost.
- C. Maintain asphaltic pavement under this Contract during the guarantee period of one (1) year.
 - 1. Promptly refill and re-pave all areas which have settled or are otherwise unsatisfactory for traffic.

3.04 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

- A. Massachusetts Department of Transportation Temporary Pavement Requirements
1. Place after underground facilities have been installed.
 2. Pavement shall be the type as specified in this Section except that “cold-mix” will be acceptable for repairs during seasonal closure of the asphalt concrete supplier.
 3. Within the MassDOT State Highway Layout (SHLO), the pavement profile shall consist of a compacted thickness of 7 inches of hot mix asphalt binder course Type I-1, placed in two 2.5-inch lifts and one 2-inch lift, as shown on the drawings.
 4. All trenches shall be backfilled and paved prior to the completion of work each day, and no trenches shall be left unpaved or plated in the road over the weekend in accordance with the MassDOT Permit. Millings may be allowed as temporary backfill on Sunday nights if asphalt plants are not opened, but millings shall be removed and temporary paving placed the following night.
 5. Asphalt shall be placed with a self propelled spreader.
 6. Compaction shall be accomplished with a self propelled roller, with a weight of approximately 285 pounds per inch of roller width.
- B. Massachusetts Department of Transportation Permanent Paving Requirements
1. Following the seasonal settling period, the Contractor shall, in preparation for permanent overlay in the MassDOT SHLO, mill the roadway from the nearest edge of road to 1-foot beyond the trench as required by the Drawings.
 2. The bottom 5-inches of temporary hot mix asphalt binder course Type I-1 paving shall be utilized as the base course of the permanent 2-inch mill and overlay permanent resurfacing with the MassDOT SHLO.
 3. After all loose and broken paving has been removed and replaced, the Contractor shall bring to subgrade, low or settled areas of temporary pavement and the existing pavement with a leveling course of asphaltic concrete.
 4. The surface of the remaining pavement shall be thoroughly patched, cleaned, and tack coated just prior to applying the overlay. Edges of the existing pavement shall be brushed clean and the specified tack coat applied. The surface receiving the top course shall be completely dry prior to the application of the tack coat.
 5. Tack coat shall be applied at the rate of 0.25 gallons per square yard. The contact surface of the curbing, castings and other structures shall be painted with the tack coat.
 6. All castings (frames and covers, valve boxes) shall be raised to finish grade before the top course is applied.
 7. The permanent pavement shall include a compacted 2-inch hot mix asphalt top course Type I-1 overlay.
 8. The equipment used for spreading and finishing shall be a mechanical self powered paver capable of spreading and finishing the mixture true to line, grade, width, and crown by means of fully automated controls for both longitudinal and transverse slope.
 9. Compaction shall be accomplished with a self propelled roller with a weight of approximately 285 pounds per inch of roller width.
- C. Sand Seal
1. The but edges of all permanent resurfacing and overlays shall be sealed with a six (6) inch wide continuous strip of RS-1, completely covered with sand.
- D. Infra-red Treatment

1. All trench resurfacing shall be blended with infra-red treatment.

3.05 CASTING ADJUSTMENTS

- A. Where asphaltic pavement is to be applied, manhole and catch basin frames and valve boxes are to be adjusted to the grade of the new pavement.
 1. A neat line shall be cut in the pavement around the existing frames and valve boxes.
 2. The material; gravel, pavement and concrete collar (if applicable) shall be removed down to six (6) inches below the frame.
 3. The frame shall be freed from its existing grout bed and shimmed with steel shims of the appropriate thickness, at a minimum of four (4) alternate locations, so as to insure that the frame will not rock. The frame shall then be set into a full bed of grout, and a concrete collar placed around the frame, up to within two (2) inches of finish grade.
 4. The frame shall be protected from damage from traffic until the concrete has taken a firm set.

3.06 BERMS

- A. Asphaltic Pavement Berms:
 1. Berms shall be class I asphaltic Type I-1.
 2. The mixture shall be placed and compacted with a machine acceptable and approved by the Engineer, for the type of berm required.
 3. Placing and forming of berms by hand shall not be allowed.

3.07 DUST CONTROL TREATMENT

- A. Calcium chloride shall be applied only upon direction of the Engineer.
 1. The roadway shall be swept clean and calcium chloride spread at a uniform rate over the prepared gravel trench surface.

3.08 PAVEMENT MARKINGS

- A. Pavement markings shall be applied as shown on the contract drawings or at locations directed by the Engineer.
 1. Pavements shall have been in place 48 hours prior to the application.
 2. The surface shall be prepared to accept the application in compliance with the paint manufacturer's requirements.
 3. Applied to a dry film thickness of fifteen (15) mils.
 4. The temperature of the pavement shall be between forty (40) degrees and one hundred twenty (120) degrees Fahrenheit.
 5. No thinners are to be used for the pavement markings.
 6. The equipment used for the application of pavement markings, shall be of standard commercial manufacturer. All other equipment and devices necessary for the application of pavement markings and protection thereof and for the protection of the traveling public, shall be as usually required for work of this type, and shall be furnished by the Contractor.
 7. Pavement markings shall be either a single continuous line or broken line, four (4) inches wide.
 8. If for any reason material is spilled or tracked on the pavement or any markings applied by the Contractor the Contractor shall remove such material.

- a. The material shall be removed by a method that is not injurious to the roadway surface and is acceptable to the Engineer.
- b. Clean the roadway surface and prepare the surface for a re-application of the pavement markings.

END OF SECTION

SECTION 02514

SIDEWALKS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The work of this Section shall consist of furnishing all labor, materials and equipment required for installing sidewalks to conform to lines and grades shown on the Drawings.
- B. Additional Work: The work in this Section shall consist of furnishing and installing all labor, materials and equipment required for install of either driveway or sidewalk transitions adjacent to or abutting concrete or bituminous sidewalks. In general, the Contractor shall match the material types and adjust cement or bituminous pavement for any changes in grade.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02513 Asphaltic Pavement
 - 3. Section 02516 Remove and Reset Existing Curbing
 - 4. Section 03300 Cast-In-Place Concrete

PART 2 PRODUCTS

2.01 CEMENT CONCRETE SIDEWALKS

- A. Cement concrete for sidewalks shall conform to Class A cement concrete (3500 psi) as specified in Section 03300.
- B. Curb ramps and driveway transitions shall conform to Class A concrete (3500 psi) as specified in Section 03300.

2.02 GRAVEL SUBBASE

- A. Gravel subbase shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.
- B. Gradation requirements for gravel subbase shall be as specified in Section 02221 for structural fill.

2.03 BITUMINOUS CONCRETE SIDEWALKS

- A. Bituminous concrete for bituminous sidewalks shall be as specified in Section 02513.

PART 3 EXECUTION

3.01 CEMENT CONCRETE SIDEWALKS

- A. The subgrade for the sidewalks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly compacted.
- B. After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk. The gravel shall be compacted to not less than 95% of maximum density as defined in Section 02221.
- C. Side forms and transverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk.
- D. The edge shall conform to the grade of the finished walk and shall have sufficient pitch to provide for surface drainage and shall not exceed 1/4 of an inch per foot.
- E. The cement concrete sidewalks shall be placed in alternate slabs 24 feet in length except as otherwise ordered. The slabs for sidewalks shall be separated by transverse preformed expansion joint fillers 3/8 inch in thickness. Sidewalk and driveway expansion joints shall be 3/8" x 4" preformed ethylene vinyl acetate or closed cell polyethylene foam material.
- F. Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.
- G. The cement concrete shall be placed in such quantity that after being thoroughly consolidated in place it shall be 4 inches in depth. At driveways, the sidewalks shall be 6 inches in depth. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel-troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft bristled push broom with a long handle over the surface of the cement concrete to produce a non-slip surface.
- H. The surface of all cement concrete sidewalks shall be uniformly scored into block units of areas not more than 24 square feet. The depth of the scoring shall be at least one quarter of the thickness of the sidewalk.
- I. The application of neat cement to surfaces in order to hasten hardening is prohibited.
- J. The finishing of concrete surface shall be done by experienced and competent cement finishers. When completed the walks shall be kept moist and protected from traffic and weather for at least 3 days.
- K. At driveways or street intersections the cement concrete shall be blended or tapered to cap the end of either concrete or granite curbing to form a smooth transition.

3.02 CURB RAMPS AND DRIVEWAYS

- A. The subgrade for the sidewalks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly compacted.
- B. After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk.
- C. Side forms and transverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk.
- D. The edge shall conform to the grade of the finished walk and shall have sufficient pitch to provide for surface drainage and shall not exceed 1/4 of an inch per foot.
- E. The concrete ramps and driveway transitions shall be placed in alternate slabs 24 feet in length except as otherwise ordered. The slabs for sidewalks shall be separated by transverse preformed expansion joint fillers 3/8 inch in thickness. Ramps and driveway expansion joints shall be 3/8" x 4" preformed ethylene vinyl acetate or closed cell polyethylene foam material.
- F. Handicap ramps and curb ramps at intersections shall be constructed in accordance with the Americans with Disabilities Act (ADA) Accessibility Guidelines (Jan 1998 edition) and in accordance with dimensions and minimum slopes presented in the design drawing(s) details.
- G. Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.
- H. The cement concrete in driveways shall be placed in such quantity that after being thoroughly consolidated in place it shall be 6 inches in depth. The cement concrete in sidewalk or curb ramps shall be 4 inches in depth except in conjunction with driveway areas. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel-troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft bristled push broom with a long handle over the surface of the cement concrete to produce a non-slip surface.
- I. At driveways, street intersections or sidewalk ramps the concrete shall be blended or tapered to cap the end of either concrete or granite curbing to form a smooth transition.

3.03 REMOVAL AND RELAYING OF EXISTING SIDEWALKS

- A. The Contractor shall maintain access to all abutting business for the full duration of the Contract.
- B. The Contractor shall remove and reset all existing castings in the sidewalk layout. If the existing castings are damaged as part of the Contractors sidewalk removal operations, the casting shall be replaced at the Contractor's expense. The work shall include any

coordination required with public or privately owned utilities with equipment set in the sidewalk layout.

- C. The Contractor shall make every effort to minimize damage to existing tree and root systems. In the case of excessive damage, which if determined by the OWNER will result in the death of the tree, the Contractor will be held fully responsible for replacement of the trees at no additional expense to the OWNER.
- D. All existing curbs, bituminous sidewalks, brick sidewalks, concrete sidewalks, private or public walks, fences, stone walls and other similar items removed for the construction of the services, connections, water and/or storm drain lines shall be replaced in a manner equal or better than their original condition.

3.04 TRANSITIONS TO WALKWAYS AND DRIVEWAYS

- A. The Contractor shall furnish and install a transition to the existing sidewalks and driveways to match the existing grades. The transition can vary from 6 inches to 3.0 feet wide depending on the location. The transition shall meet the Americans with Disabilities Act (ADA) requirements as specified herein under Item 3.02(F). The Contractor shall match the existing walk or driveway material type (i.e. cement concrete or asphaltic pavement). Any damage to the existing sidewalks or driveways, as a direct result of the Contractor's operations, shall be restored by the Contractor to the original conditions at no additional expense to the OWNER.
- B. All costs related to replacement, furnishing, and installing the transitions shall not be measured for separate payment.

END OF SECTION

SECTION 02515

GRANITE CURBS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The work of this Section shall consist of furnishing all labor, materials and equipment required for installing and setting curb(s), curb corners and edging on a gravel foundation, to conform with lines and grades shown on the Drawings.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02514 Concrete Sidewalks
 - 3. Section 03300 Cast-In-Place Concrete

PART 2 PRODUCTS

2.01 GRANITE CURBING

- A. Granite curbing shall type VA-4 conforming to the requirements specified in Subsection M9.04.1 of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.
- B. All granite curb and edging shall be light gray in color, free from seams and other structural imperfections or flaws which would impair its structural integrity, and of a smooth splitting appearance.
- C. Whenever curbing is sawed, all surfaces that are to be exposed shall be thoroughly cleaned and any iron rust or iron particles removed by sand blasting or other approved method and any saw mark in excess of 1/8 inch shall be removed.

2.02 CURB CORNERS (Bullnose Corners)

- A. The granite for curb corners shall conform to M9.04.0 and shall have horizontal Beds. The curbs shall match the adjacent curbing in size, color and quality. The front arris lines shall extend through $\frac{1}{4}$ of a circle having a radius of 2 feet Type A curb corners. The back arris line shall be straight. The plane of back shall be normal to top.

2.03 GRANITE CURB INLETS (Throat Stone)

- A. The granite curb inlets shall conform to Subsection M9.04.0 of the Mass Highway Department Standards. The curb inlets shall be horizontal bed with tops free from wind.

- B. The curbing shall be sawn or peen hammered on top and the front face shall be straight split, free from drill holes.
- C. The inlet curb shall be six (6) feet in length and 16-19 inches in depth. The curb shall be six (6) inches wide at the top and at least six inches wide at the bottom.
- D. The mouth of the curb inlet shall be at least three (3) inches in depth and at least two (2) feet in length. The inlet curb shall be cut in the front face of the stone and the inlets shall match the adjacent curbing in color.

2.04 GRAVEL

- A. Gravel shall conform to the requirements of Subsection M1.03.0 Type C of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

PART 3 EXECUTION

3.01 EXCAVATING TRENCH AND PREPARING FOUNDATION

- A. The trench for the curb shall be excavated to a width of 18 inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to 6 inches plus the depth of the curbstone. The trench for the curb corner shall extend 6 inches beyond the front and back of curb corner to the full depth of foundation.
- B. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be 6 inches in depth.

3.02 SETTING CURB AND EDGING

- A. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.

3.03 FILLING ABOUT TRENCH

- A. After the curb, curb corners, curb inlets and edging is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.

3.04 POINTING

- A. The joints between curbstones or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.

3.05 TRANSITION CURB FOR WHEELCHAIR RAMPS

- A. Transitions from normal curb settings to wheelchair ramps shall be accomplished with transition curb. Transitions shall be of the same type of curb and similar to that abutting and, if on a curve, of the same radius.

END OF SECTION

SECTION 02516

REMOVE AND RESET EXISTING CURB

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The work of this Section shall consist of removing the existing curb(s), edging, curb corners and curb inlets of every type and cross section and resetting them in accordance with these specifications and in conformity with the lines and grades shown on the Drawings.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02513 Asphaltic Pavement
 - 3. Section 02514 Concrete Sidewalks
 - 4. Section 03300 Cast-In-Place Concrete

PART 2 MATERIALS

2.01 CURBING

- A. Curb, edging, curb inlets and curb corners shall consist of the same as is designated to be reset.

2.02 GRAVEL

- A. Gravel shall conform to the requirements of Subsection M1.03.0 Type C of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

PART 3 EXECUTION

3.01 REMOVAL OF EXISTING CURB

- A. A trench of sufficient width or depth shall be excavated so that the existing curb, edging, curb corners and curb inlets can be removed without damage.
- B. The Contractor shall protect all curb or edging and keep it in satisfactory condition until the acceptance of the entire contract. The Contractor shall replace any existing curb, edging, curb corners and curb inlets that is to be reset, which is lost or damaged as a result of his operations, or because of his failure to store and protect it in a manner that would eliminate its loss or damage.

- C. The length of any section of curb or edging, shall be altered by cutting in order to fit closures as necessary. The ends of all stones shall be square with the planes of the top and face so that when the stones are placed end-to-end as closely as possible no space shall show in the joint at the top and face of more than $\frac{3}{4}$ inch for the full width of the top and for 8 inches down on the face.
- D. The Contractor shall accept and hold entire responsibility for the removal, handling, stacking at a convenient location for the Owner and the Contractor, and protection of all curbing and corners until final removal from the site or the resetting of the curb. Any curbing damaged through lack of protection or carelessness by the Contractor shall be replaced at the Contractors expense.
- E. Any curb or curb corners not damaged through lack of protection or carelessness by the Contractor but deemed by the Engineer as unsatisfactory for relaying or stacking will be discarded. The Contractor is responsible for proper disposal of the granite without additional compensation. The OWNER reserves the right to claim the portions of the damage granite deemed useful.

3.02 EXCAVATING TRENCH AND PREPARING FOUNDATION

- A. The trench for the curb shall be excavated to a width of 18 inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to 6 inches plus the depth of the curbstone. The trench for the curb corner shall extend 6 inches beyond the front and back of curb corner to the full depth of foundation.
- B. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be 6 inches in depth.

3.03 SETTING CURB AND EDGING

- A. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.

3.04 FILLING ABOUT TRENCH

- A. After the curb, curb corners, curb inlets and edging is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.

3.05 POINTING

- A. The joints between curbstones or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.

3.06 TRANSITION CURB FOR WHEELCHAIR RAMPS

- A. Transitions from normal curb settings to wheelchair ramps or driveways shall be accomplished with transition curb. Transitions shall be of the same type of curb and similar to that abutting and, if on a curve, of the same radius.

END OF SECTION

SECTION 02640

BURIED VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide buried valves, valve boxes, and valve accessories, as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications
 1. Section 02140 Site Drainage and Dewatering
 2. Section 02160 Support of Excavation
 3. Section 02221 Earthwork for Sewer and Drainage Systems
 4. Section 02731 Plastic Sewer Pipe and Fittings

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 3. An exploded view diagram with a materials list.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All of the types of valves and appurtenances shall be products of established firms who are experienced in the manufacture of the particular item to be furnished.
 1. All valves and their appurtenances shall be of domestic manufacture.

PART 2 PRODUCTS

2.01 VALVES

- A. Gate Valves:

1. Meet or exceed the requirements of ANSI/AWWA C515.
2. Joints: Mechanical joint conforming to ANSI/AWWA C111/A21.11.
3. Ductile iron body.
4. Bronze stem.
5. Resilient sealed wedge type:
 - a. Wedge: Fully encapsulated; no exposed iron.
6. Triple O-ring seal stuffing box.
7. Non rising stem.
8. Two (2) inch square operating nut.
9. Rated for 250 psi and tested to 500 psi.
10. Open: Counterclockwise (left).
11. All internal and external surfaces except rubber coatings shall be coated with fusion bonded epoxy to a minimum thickness of 8 mils:
 - a. Coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.

2.02 VALVE BOXES

- A. Valve boxes shall be provided for each buried valve. They shall be:
 1. Domestic manufacture.
 2. Cast iron with a cast iron cover.
 3. Cover shall have the word "SEWER" cast into the cover in raised letters.
 4. Valve box barrel shall not be less than (5-1/4) inches in diameter.
 5. Shall be two (2) piece sliding type, providing a minimum overlap of six (6) inches.
 6. The lower section shall enclose the operating nut and stuffing box/gear box of the valve and shall have a minimum diameter of 8 inches.
 7. The box shall not transmit shock or stress to the valve.

PART 3 EXECUTION

3.01 HANDLING AND INSPECTION

- A. Care shall be taken to prevent damage to valves, and appurtenances during handling and installation. All materials shall be carefully inspected for defects in workmanship and materials.
- B. All operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness. Valves which do not operate easily or are otherwise defective shall be replaced at the Contractor's expense.

3.02 INSTALLATION

- A. General:
 1. Construction methods for the work under this Section shall conform to the applicable portions of Section 02611, Buried Ductile Iron Pipe and Fittings, details as shown on the Contract Drawings, manufacturer's recommended installation procedures, and procedures specified herein.
- B. Valves and Appurtenances:

1. Generally, valves shall be set and aligned plumb, supported by a flat stone or solid concrete block, with the trench bottom being firmly compacted.
2. Valve boxes shall be set centered and plumb over the operating nuts of all, direct burial valves. The top of each valve box shall be set to finished grade with at least 10 inches of overlap remaining between the upper sections for future vertical adjustment. Minimum overlap for lower, extension pieces shall be 6 inches.
3. Valves, bolts and all other appurtenances shall be thoroughly cleaned and given a shop coat of asphaltum varnish.
4. Ferrous surfaces obviously not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating.

END OF SECTION

SECTION 02651

DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The Contractor shall provide all labor, materials, tools and equipment that are necessary to perform the installation of the sewer line utilizing the directional drilling process, all as required by the Contract Documents.
- B. Excavate and backfill access pits. Excavation includes, but is not limited to, pavement cutting and removal, topsoil stripping, excavating, rock excavation, filling and grading to obtain finish contours and elevations, and preparation of subgrade for structures.
- C. This section contains guidelines and specifications applicable to the installation of pipelines using horizontal directional drilling (HDD). It includes minimum requirements for design, materials, and equipment used for the HDD for the substantially trenchless construction of pipelines. The section also includes materials, dimensions, and other pertinent properties of pipe and required accessories.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02160 Support of Excavation
 - 3. Section 02221 Earthwork for Sewer and Drainage Systems
 - 4. Section 02676 Testing Piping Systems

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All HDPE pipe and fittings shall be of domestic manufacture.

1.04 DESCRIPTION OF SYSTEM

- A. Installation of pipelines shall be HDD where shown on the drawings, as approved by the Engineer. The bore path shall be designed by the drilling contractor to ensure that pipe joints do not deflect more than 50% of manufacturer's recommended maximum deflection.

1.05 STANDARDS

- A. The following American Society of Testing and Materials (ASTM) standards form a part of this specification as referenced:
 - 1. ASTM D3261- Butt Fusion Polyethylene Fittings for Polyethylene Plastic Pipe and Tubing.
 - 2. ASTM D3350- Polyethylene Plastic Pipe and Fittings Materials
 - 3. ASTM D790- Flexural Testing
 - 4. ASTM D638- Tensile Properties of Plastics

- B. The following American Water Works Association (AWWA) standards form a part of this specification as referenced:
 - 1. AWWA C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 65 In. for Waterworks

1.06 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.

- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Plan outlining the procedure and schedule to be used in performance of the Work.
 - 2. Specifications on the directional drilling equipment that shall be used in the performance of the Work.
 - 3. Materials list of items proposed to be provided under this Section.
 - 4. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 5. Names of field personnel that will be working on the project. and their experience resumes.
 - 6. Submit Certificates of Compliance for pipe (SDR 11 HDPE).

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. General
 - 1. Be of sufficient capacity to perform the bore and pullback of the pipe.
 - 2. Have a drilling fluid mixing and delivery system of sufficient capacity.
 - 3. Have a guidance system to accurately guide the boring operation.
 - 4. All of the equipment shall be in excellent and safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the equipment in working order for the duration of the project.

- B. Directional Drilling Machine
 - 1. Shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill head.

2. The hydraulic system shall be self-contained with sufficient pressure and volume to power the drilling operation.
3. Have a system to monitor and record maximum pullback pressures during the pullback operation.
4. The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.
5. Anchorage system to anchor drilling machine to the ground to resist thrust during operation.

2.02 APPURTENANT DRILLING EQUIPMENT

- A. Mud Motors (If required)
 1. Shall be of adequate power to turn the required drilling tools.
- B. Drill Pipe
 1. Shall be constructed of high quality 4130 seamless tubing, Grade D or better with threaded box and pins.
 2. Tool joints shall be hardened to 32-36 RC.
- C. Guidance System
 1. Shall be of a proven type and shall be set up and operated by personnel trained and experienced with this system.
- D. Pipe Rollers
 1. Pipe rollers, if required, shall be sufficient size to fully support the weight of the pipe while being hydro-tested and during pullback operations

2.03 DRILLING FLUIDS (MUD) SYSTEM

- A. Mixing System
 1. A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, water and appropriate additives.
 2. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing.
 3. Drilling fluid reservoir tank shall be of adequate size for the application.
 4. Shall continually agitate the drilling fluid during drilling operations.
- B. Drilling Fluids
 1. Composed of clean water and an appropriate additive.
 - a. Water shall have a pH of 8.5 to 10.
 - b. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal.
 - c. The water and additives shall be mixed thoroughly and be absent of any clumps or clods.
 2. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of the bore wall.
 3. No hazardous additives shall be used.
- C. Delivery System

1. The mud pumping system shall have adequate capacity and be capable of delivering the drilling fluid at a constant pressure.
2. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe.
3. Connections between the pump and drill pipe shall be relatively leak-free.
4. Drilling fluid spilled during drilling operations shall be contained and properly disposed of.
5. A berm, with a minimum height of 12-inches shall be erected and maintained around the drill rig, fluid mixing system and drilling fluid recycling system to prevent spills into the surrounding environment.

2.04 Pipe

- A. Shall be manufactured in accordance with ANSI/AWWA C906 (latest revision), be high density polyethylene pressure pipe manufactured from materials conforming to PE Code designation PE 4710.
- B. Pipe shall be 10-inch diameter SDR 11 HDPE with heat fused butt joints.
- C. Tracer wire shall be #12 hard drawn copper conforming to ASTM B1 furnished with a plastic coating.

PART 3 EXECUTION

3.01 GENERAL

- A. Excavation, backfill and compaction of access and test pits shall be in accordance with Section 02221.
- B. Directional drilled pipe (SDR 11 HDPE) shall be installed to depths as required to permit the pipe to be laid at elevations indicated in the Contract Documents.
 1. Directional drilled pipe shall be installed in one continuous pipe segment as shown on the Drawings.
- C. The Contractor shall use electronic survey instrumentation to monitor and adjust the drill head.
 1. The survey system shall measure the horizontal and vertical location of the drill head throughout the bore and provide readings at 5-foot intervals to allow for slope adjustment.
 2. If magnetic interference affects the bearing sensors of the steering tool, the Contractor shall use appropriate methods to maintain the required slope and alignment.
- D. An as-built sketch of the finished pilot hole shall be furnished for approval prior to pull-back of the pipe to be installed.
- E. The pilot hole shall be reamed to a diameter, which is sufficiently sized in order to reduce forces applied to the pipe during pull back.

- F. A swivel shall be installed between the molehead/reamer and the pipe connection to minimize torsional stress imposed on the pipe and allow the reamer to turn without rotating the pipe.
- G. If pulling equipment is not capable of monitoring tensile forces imposed on the pipe, a weak link shall be installed between the pipe and the molehead/reamer in order not to exceed the safe tensile stress as prescribed by the manufacturer.
- H. All pipe pulled through the pilot holes shall have 2 continuous tracer wires securely fixed to the pipe. If tracer wire does not traverse the entire length of pull back, the operation shall be repeated.
- I. Because of the elastic properties of the pipe, main line and service connection pipe shall be relaxed for at least one overnight period in order to return to its original pre-pull length.
 - 1. The pipe shall be installed past the exit tie-in point, according to manufacturer's recommendations, to accommodate thermal contraction as well as viscoelastic stretch recovery in the pipe.
- J. The leading edge of the pipe shall be examined for significant external damage after pull back.
 - 1. If the pipe is deemed by the Engineer to have suffered significant damage, the damaged pipe shall be cut off and additional pipe pulled through the hole prior to the relaxation period.
- K. The Contractor shall be responsible for the containment and disposal of all drilling fluids or bentonite slurry.
 - 1. The Contractor shall stockpile haybales at the drilling site to contain an inadvertent bentonite slurry return.
 - 2. Any haybales used for containment of slurry shall be removed from the site and properly disposed of at the completion of the work.
- L. The pull back shall be conducted in one continuous operation to limit the potential for binding of the pipe in the hole.
- M. Sections of the SDR11 HDPE pipe shall be connected by heat fusion of the pipe butt ends in accordance with the manufacturer's recommendations.
 - 1. Hand applied methods shall not be used.
- N. The Contractor shall provide all appurtenances and make pipe connections as required to ensure a complete working system.
- O. The access pit size shall be kept to a minimum.

3.02 PIPE TESTING AND DISINFECTION

- A. The SDR11 HDPE pipe shall be tested in accordance with Section 02676.

3.03 FINAL INSPECTION

- A. Final inspection of the work shall include a visual inspection of each section of pipe by looking from the access pipe with the aid of reflected sunlight or illumination equipment.
 - 1. The pipe shall be true to both line and grade, shall show no leaks, shall be free of cracks and from protruding joint materials and contain no deposits of sand, dirt or other material which will reduce the full cross-sectional area.
 - 2. Structural wall joints shall be tight.
 - 3. All finished work shall be neat in appearance and of high quality.
 - 4. The Contractor shall furnish laborers and illumination equipment to assist the Engineer in this inspection.

END OF SECTION

SECTION 02755

FINAL SEWER TESTING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Final sewer testing work includes the performance of testing and inspecting each and every length of sewer pipe, pipe joints and each item of appurtenant construction.
2. Perform testing at a time acceptable to the Engineer, which may be during the construction operations, after completion of a substantial and convenient section of the work, or after the completion of all pipe laying operations.
3. Provide all labor, pumps, pipe, connections, gages, measuring devices and all other necessary apparatus to conduct tests.

B. Related Work Specified Elsewhere (When Applicable):

1. Excavation, backfill, dewatering, pipe, pipe fittings and manholes are specified in the appropriate Sections in this Division and/or Division 15.
2. Manhole testing is specified in Section 02700 – Precast Concrete Manholes.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

3.01 PERFORMANCE

A. General:

1. All sewers, manholes, and appurtenant work, in order to be eligible for acceptance by the Engineer, shall be subjected to tests that will determine the degree of watertightness and horizontal and vertical alignment.
2. Thoroughly clean and/or flush all sewer lines to be tested, in a manner and to the extent acceptable to the Engineer, prior to initiating test procedures.
3. Perform all tests and inspections in the presence of the Engineer and the plumbing or building inspector in accordance with the requirements of the local and state plumbing codes.
4. Perform testing by test patterns determined by or acceptable to the Engineer.
5. Remedial Work:
 - a. Perform all work necessary to correct deficiencies discovered as a result of testing and/or inspections.
 - b. Completely retest all portions of the original construction on which remedial work has been performed.
 - c. Perform all remedial work and retesting in a manner and at a time acceptable to by the Engineer at no additional cost to the Owner.

B. Line Acceptance Tests (Gravity sewers with no active service connections):

1. Test all gravity sewer lines with no active service connections for leakage by conducting a low pressure air test.
2. Equipment:
 - a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
 - b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 - c. All air used shall pass through a single central panel.
 - d. Connect 3 individual hoses:
 - (1) From the control panel to the pneumatic plugs for inflation,
 - (2) From the control panel to the sealed sewer line for introducing the low pressure air,
 - (3) From the sealed sewer line to the control panel for continually monitoring the air pressure rise in the sealed line.
3. Testing Pneumatic Plugs:
 - a. Seal test all pneumatic plugs prior to using them in the actual test.
 - b. Lay one length of pipe on the ground and seal both ends with the pneumatic plugs to be tested.
 - c. Pressurize the sealed pipe to 5 psig.
 - d. The pneumatic plugs are acceptable if they remain in place without bracing.
4. Testing Sewer Pipeline:
 - a. After the sewer pipe has been cleaned and the pneumatic plugs checked, place the plugs in the sewer line at each manhole and inflate them.
 - b. Introduce low pressure air into the sealed sewer pipeline until the air pressure reaches 4 psig greater than the average groundwater pressure.
 - c. Allow a minimum of 2 minutes for the air pressure to stabilize to a minimum of 3.5 psig greater than the groundwater pressure. Groundwater is assumed to be at ground surface unless the Contractor can prove by otherwise by test pitting.
 - d. After the stabilization period, disconnect the air hose from the control panel to the air supply.
 - e. The pipeline will be acceptable if the pressure decrease is not greater than 1/2 psig in the time stated in the following table for the length of pipe being tested:

<u>Pipe Diameter (inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
4.....	2.0	2.0	2.0	2.0
6.....	3.0	3.0	3.0	3.0
8.....	4.0	4.0	4.0	5.0
10.....	5.0	5.0	6.0	8.0
12.....	5.5	5.5	8.5	11.5
15.....	7.0	8.5	13.0	17.0
18.....	8.5	12.0	19.0	25.0
21.....	10.0	17.5	26.0	35.0
24.....	11.5	23.0	34.0	45.5

<u>Pipe Diameter (inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
27 and larger.....	14.5	29	43.0	58.0

5. Test Results:
 - a. If the installation fails the low pressure air test, determine the source of leakage.
 - b. Repair or replace all defective materials and/or workmanship and repeat low pressure air test at no additional cost to the Owner.

- C. Line Acceptance Tests (Gravity sewers with active services):
 1. Test all new gravity sewer lines with active services by conducting a low-pressure air test on all joints using a packer after all services have been connected or capped at the property line and all trenches backfilled but before the surface course of permanent pavement is installed.
 2. Equipment:
 - a. Closed-circuit television system.
 - b. Testing devices (packer):
 - (1) Capable of isolating individual joints by creating a sealed void space around the joint being tested.
 - (2) Constructed such that low pressure air can be admitted into the void area.
 - (3) Shall contain a pressure gauge accurate to one tenth (0.1) psi in-line with the feed line to monitor the void pressure.
 - (4) Capable of performing in sewer lines where flows do not exceed 1/4 of the pipe diameter without resorting to any method of flow control.
 3. Testing Sewer Pipeline Joints:
 - a. Test all joints except those with visible infiltration.
 - b. Procedure:
 - (1) Pull television camera through sewer line in front of the packer.
 - (2) Position the packer on each joint to be tested.
 - (3) Inflate the sleeves on each end of the packer.
 - (4) Apply four (4.0) psi pressure above the existing hydrostatic pressure on the outside of the joint to the void area created around the inside perimeter of the joint.
 - (5) Shut off the supply of air once the pressure has stabilized at the required amount.
 - (6) Monitor the void pressure for thirty (30) seconds.
 - (7) Repair the joint if the pressure drops more than one half (1/2) psi in the thirty (30) seconds.
 - c. Water or chemical pressure testing may be used in lieu of air testing subject to review and approval by the Engineer.
 - d. Re-clean and re-inspect all lines not approved by the Engineer at no additional cost to the Owner.
 - e. Repairing of Joints:
 1. When a joint fails the pressure test, excavate and repair the failed joint. Repairing joints with chemical grout will not be permitted.
 - f. The Engineer may request checking of the testing equipment for accuracy.
 1. Perform standard air test on a clean continuous section of pipe.

2. Repair the equipment if the void pressure drops.
 - g. Testing Operation Inspection:
 1. Reset each joint, as specified herein, prior to acceptance and final payment for joint testing. Retest all joints that fail until the test requirements are met.
 - h. The contractor will supply a black and white photograph of every joint that fails the pressure test.
- D. Alignment Tests (Gravity Sewers):
1. Perform tests for the correctness of horizontal and vertical alignment on each and every length of gravity sewer pipeline between manholes.
 2. Alignment tests to be conducted after all pipe has been installed and backfilled.
 3. The observation test shall be conducted after all upstream work has been completed and the pipeline cleaned of debris.
 4. Notify the Engineer at least 24 hours in advance of the proposed observation testing.
 5. Introduce water into the sewer lines to be tested from the upstream manhole prior to the observation test but no more than 24 hours in advance of the test.
 6. Beam a source of light, acceptable to the Engineer, through the pipeline from both ends and the Engineer will directly observe the light in the downstream, and/or upstream manhole of each test section.
 7. The length of pipe between manholes, diameter of pipe and amount of light observed in the manhole at the end of each pipe section will determine acceptance of the alignment test by the Engineer.
 8. The amount of vertical and horizontal deflection shall not be greater than the ASTM allowance and (manufacturer's recommendations) for the pipe being tested.
 9. No standing water shall be allowed. The presence of standing water shall be cause for rejection of that pipe (including manhole) section.
 10. Improper alignment will be corrected by re-excavation and resetting of pipe at no additional cost to the Owner.
- E. Pipe Deflection: (Gravity Sewers)
1. Pipe provided under this specification shall be installed so there is no more than a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (normal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
 2. The Contractor shall wait a minimum of 30 days after completion of a section of sewer, including placement and compaction of backfill, before measuring the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.
 3. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.
- F. Television Inspection Tests (Gravity Sewers)
4. No standing water shall be allowed. The presence of standing water may be cause for rejection of that pipe.

2. Any standing water, detectable leaks, improper joints or any other unacceptable feature detected by the television inspection will be corrected by re-excavation and resetting pipe at no additional cost to the Owner.
- G. Inspection of Appurtenant Installations:
1. Completely inspect, at a time determined by the Engineer, all manholes and inlets to ascertain their compliance with the Drawings and Specifications.
 2. Provide access to each manhole and inlet and check the following characteristics:
 - a. Shape and finish of invert channels,
 - b. Watertightness and finish of masonry structures,
 - c. Location, type, and attachment of stops,
 - d. Elevation and attachment of frames, covers, and openings,
 - e. Pattern and machining of covers, and
 - f. Drop connection arrangements.
- H. Testing Pressure Sewers:
1. The section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations backfilling and taps at such points and shall plug said holes after completion of the test.
 2. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
 3. Perform pressure and leakage test at 1-½ times the maximum system pressure or 100 psi which ever is greater (based on the elevation of the lowest point of the section under test and corrected to the gage location).
 4. While maintaining this pressure, the Contractor shall make a leakage test by metering the flow of water into the pipe. If the average leakage during a two-hour period exceeds a rate of 10 gallons per inch of diameter per 24 hours per mile of pipeline the section shall be considered as having failed the test. All joints within chambers and all flanged joints shall have no visible leakage.
 5. If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test.
- I. Manhole Leakage Testing:
1. Refer to specification section 02700 Precast Concrete Manholes.

END OF SECTION

SECTION 02700

PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide precast concrete manholes as required by the Contract Documents.
 - 1. In general: Provide the precast concrete manholes.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Drains and Sewer
 - 2. Section 02726 Covers/Grates and Frames
 - 3. Section 03600 Grout

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 PRODUCT HANDLING

- A. Delivery, Storage and Handling:
 - 1. Deliver the work of this Section to the job site in such quantities and at such times as to assure the continuity of construction.
 - 2. Store units at the job site in a manner to prevent physical damage, and in a manner to keep markings visible.
 - 3. Lift and support the units only at designated lifting points or supporting points.

PART 2 PRODUCTS

2.01 DESIGN

- A. Precast concrete manhole sections shall conform to:
1. ASTM C478 Specification for Precast Reinforced Concrete Manhole Sections,
 2. PCI 116,
 3. CRSI "Manual of Standard Practice",
 4. In the event of conflict between or among standards, the more stringent provision shall govern.

2.02 PRECAST CONCRETE SECTIONS

- A. General:
1. Wall thickness shall not be less than five (5) inches for a forty eight (48) inch diameter reinforced section, six (6) inches for a sixty (60) inch diameter reinforced section, seven (7) inches for a seventy two (72) inch diameter reinforced section and nine (9) inches for a ninety six (96) inch diameter reinforced section.
 2. All sections shall have tongue and groove joints.
 3. Concrete compressive strength shall be 5000 psi after 28 days.
 4. Precast concrete barrel sections with precast top slabs and precast concrete transition sections shall be designed for a minimum of H-20 loading plus the weight of the soil above.
 5. Top sections of manholes shall be eccentric cones to provide a vertical wall from ground surface to manhole base, except that precast reinforced concrete slabs shall be used where cover over the top of the pipe is less than 5 feet.
 6. The inside clear diameter of the opening at the top of the cone or in the slab shall be 30 inches.
 7. The date of manufacture and the name and trademark of the manufacturer shall be clearly marked on the inside of each precast section.
 8. Precast concrete bases shall be constructed and installed as shown on the Drawings. The thickness of the bottom slab of the precast bases shall not be less than the manhole barrel sections or top slab, whichever is greater.

2.03 JOINTS

- A. Precast Sections:
1. Tongue and groove joints of precast sections shall be sealed with an "O"-ring conforming to ASTM C443 or a flexible joint sealant such as Kent Seal No. 2 or an approved equal.

2.04 BRICK MASONRY

- A. Bricks for leveling manhole frames inverts and tables shall comply with ASTM C62, Grade SW.

2.05 MORTAR

- A. For use in brickwork:
 - 1. Composed of one (1) part Type II Portland Cement conforming to ASTM C150, to two (2) parts sand,
 - 2. For each bag of cement a small amount (not to exceed 10% by weight) of hydrated lime may be added. Lime shall conform with ASTM C207, Type N.

2.06 COVERS/GRATES AND FRAMES

- A. Shall be furnished under Section 02726, Covers/Grates and Frames, and installed under the work of this Section.

2.07 MANHOLE STEPS

- A. Manhole steps shall be aluminum alloy 6061 T6, extruded, safety-type, or 1/2 inch diameter, grade 60 steel reinforcing bar continuous throughout the step, bent to shape and encased in a co-polymer polypropylene plastic, with a tread design.
 - 1. Steps shall be fourteen (14) inches wide,
 - 2. Steps may be cast in place or inserted after casting,
 - 3. Steps shall be set at twelve (12) inches on center.

2.08 CONNECTIONS TO MANHOLES

- A. Connection to the precast structures shall be accomplished by the following:
 - 1. "Kor-n' Seal" joint with stainless steel clamp,
 - 2. "Lock-Joint Flexible Manhole Sleeve" shall be cast into the manhole base section. Strap shall be stainless steel.
 - 3. A fixed connection at the precast structure shall not be allowed.

2.09 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor, subject to the approval of the Engineer.

PART 3 EXECUTION

3.01 CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PRECAST INSTALLATION

- A. Work shall be protected against flooding and flotation.
 - 1. Precast bases of the structure to be placed on a compacted six (6) inch layer of screened gravel.
 - 2. Precast barrel sections shall be set plumb with all sections in true alignment and joints sealed watertight.
 - 3. Grade at the top of the precast manhole shall be as such as to allow a maximum of twelve (12) inches of brickwork to bring the frame and cover to finish grade.

4. Grout all lifting holes with non-shrink grout.

3.03 MANHOLE PIPING CONNECTIONS

- A. Shall be as stated in paragraph 2.08 of this Section.

3.04 BRICKWORK

- A. Invert Table and Grade Adjustment:
 1. Brick for invert shall be laid on edge.
 2. Brick for table and grade adjustment shall be laid flat.
 3. Table shall be constructed to an elevation even with the top of the pipe.
 4. Table shall slope up from the pipe to the edge of the manhole.

3.05 COVERS/GRATES AND FRAMES

- A. Shall be set in a full bed of mortar on the grade adjusting brick course.
 1. Shall be set to the finish grade.
 2. Frames and covers which are not on the same plane as the final grade shall be reset.
 3. Maximum height allowable for grade adjustment (between manhole and frame) shall be twelve (12) inches.

3.06 TESTING

- A. Vacuum Test:
 1. Plug all openings with non-shrink grout and plug all pipes with suitable plugs.
 2. An initial vacuum of ten (10) inches Hg. shall be drawn.
 3. Test time shall be determined by the time required for the vacuum to drop from ten (10) inches Hg. to nine (9) inches Hg.
 - a. Allowance test times are listed below.

<u>Manhole Depth</u>	<u>Minimum Test Time</u>
0 to 10 feet	1 minute
10 to 15 feet	1 1/4 minutes
15 to 25 feet	1 1/2 minutes

4. Manholes which fail to meet the above minimum test times shall be repaired using methods approved by the Engineer.
5. After the manhole has been repaired it shall be re-tested using the same vacuum test procedure. Following a second vacuum test failure, the manhole shall be repaired and tested using the water exfiltration method.

- B. Exfiltration Test:
 1. All pipes and openings shall be suitably plugged and braced to prevent blowouts.
 2. Fill manhole to the top of the cone section or the opening in the flat top section if a cone section is not used.
 3. Seal all visible leaks.
 4. Allow a period of time for absorption by the concrete and refill as required.
 5. The test period shall be eight (8) hours.

6. At the end of the test period, the manhole shall be refilled to the top of the cone, measuring the volume of water added. This amount shall be extrapolated to a 24-hour rate and the leakage determined on the basis of depth.
 - a. The leakage for each manhole shall not exceed one (1) gallon per vertical foot for a twenty-four (24) hour period.
 - b. If the manhole fails this requirement, and the leakage does not exceed three (3) gallons per vertical foot per day, repairs by approved methods may be made to bring the leakage within the allowable rate of one (1) gallon per foot per day.
 - c. Leakage due to a defective section or joint or exceeding the three (3) gallon per vertical foot per day, shall be the cause for the rejection of the manhole.
 - d. It shall be the Contractors responsibility to uncover the manhole as necessary and to disassemble, reconstruct or replace it. The manhole shall then be re-tested by the vacuum test or the water exfiltration test, at the discretion of the Engineer.
7. If the groundwater table is above the highest joint in the manhole, and if there is no leakage into the manhole, such a test can be used to evaluate the watertightness of the manhole.

3.06 CLEANING

- A. All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION

SECTION 02726

COVERS/GRATES AND FRAMES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide Covers/Grates and Frames as required by the Contract Documents.
- B. Aluminum hatches are specified in Section 08306 Aluminum Hatches.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Drains and Sewer
 - 2. Section 02700 Precast Concrete Manholes
 - 3. Section 08306 Aluminum Hatches

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All castings shall be of domestic manufacture:
 - 1. Comply with ASTM A48 Gray Iron Castings.

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
 - 1. Manufacturer's catalog cuts, specifications and other data to demonstrate compliance with the specified requirements.

PART 2 PRODUCTS

2.01 COVERS/GRATES AND FRAMES

- A. Castings shall be manufactured in accordance with ASTM A48-83, Class 30B specifications with a minimum tensile strength of 30,000 psi.
 - 1. All frames covers and grates shall be of domestic manufacture.
 - 2. All frames, covers and grates, of the same pattern or catalog number, shall be interchangeable.
- B. Manhole frames and covers in the roadway right of way shall have a 22-inch clear opening, and shall be manufactured by EJ Group, Inc., Neenah Foundry Co., or Campbell Foundry Co., or approved equal.

- C. Manhole frames and covers which are to be installed off the roadway shall be medium duty frames and covers manufactured by EJ Group, Inc., or an approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. See Specification Section 02700, Precast Concrete Manholes for installation requirements.

END OF SECTION

SECTION 02731

PLASTIC SEWER PIPE AND FITTINGS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide all the plastic sewer pipe and fittings as required by the Contract Documents.
- B. In general the work of this Section shall include but not be necessarily limited to providing all plastic sewer pipe and fittings, joining materials, labor, tools, and equipment necessary to install the pipe and fittings as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02160 Support of Excavation
 - 2. Section 02227 Rock Removal
 - 3. Section 02221 Earthwork for Sewers and Drainage System

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications, installation procedures, and other data needed to prove compliance with the specified requirements;
 - 3. All pipe delivered to the jobsite shall be accompanied by test reports and notarized affidavits certifying that the pipe and fittings conform to the requirements of the Specifications.

1.04 ACCEPTABLE MANUFACTURERS.

- A. The plastic sewer pipe and fittings shall each be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the pipe to be furnished. The pipe shall be designed, constructed, and delivered in accordance with the best practices and methods.

PART 2 PRODUCTS

2.01 HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

- A. HDPE Carrier Pipe
 - 1. The high density polyethylene (HDPE) 10-inch carrier pipe shall be SDR 11 HDPE Ductile Iron Pipe Size (DIPS) and shall be manufactured from a PE 4710 resin as specified by the Plastic Pipe Institute (PPI).
 - 2. Shall conform to AWWA C906 – Polyethylene (PE) Pressure Pipe and Fittings, 4 Inch through 65 Inch for Waterworks.
- B. Sewer Force Mains
 - 1. The HDPE 3-inch sewer force mains shall be SDR 11 HDPE and shall be manufactured from a PE 4710 resin as specified by the PPI.
 - 2. Shall conform to AWWA C901 Polyethylene (PE) Pressure Pipe and Tubing, ¾-Inch through 3-Inch, for Water Service.

2.03 FITTINGS

- A. All fittings and accessories for the sewer pipe shall be as manufactured by the pipe supplier.
 - 1. Have bell and spigot configurations compatible with that of the pipe.
 - 2. Locked in rubber ring.

PART 3 EXECUTION

3.01 INSTALLATION

- A. HDPE Pipe:
 - 1. Except as otherwise specified herein or shown on the Drawings, installation of HDPE pipe shall be in accordance with ASTM D2774, "Underground Installation of Thermoplastic Pressure Piping".
- B. All trenching, backfilling, compacting and bedding and covering of the pipe shall be conducted in full accordance with the provisions of Section 02221, Earthwork For Sewers And Drains.

3.02 PIPE HANDLING

- A. The Contractor shall arrange for the delivery of the pipe sections at approved locations in the vicinity of that portion of the line in which the pipe sections are to be laid. To this end, he shall do such work as is necessary for access and for delivery of the pipe.
 - 1. Pipes shall be stored in an approved, orderly manner so that there will be a minimum of rehandling from the storage area to the final position in the trench and so that there is a minimum obstruction and inconvenience to any kind of traffic.
 - 2. All pipe is to be loaded, unloaded and stockpiled in strict conformance with the manufacturer's recommendations.

3. Deliveries shall be scheduled so that the progress of the work is at no time delayed and also so that large quantities of pipe shall not be stored for excessive lengths of time.
4. Provide slings, straps and/or other approved devices to provide satisfactory support of the pipe when it is lifted.
5. Under no circumstances shall the pipe be dropped from trucks or into the trench.

3.03 CONTROL OF ALIGNMENT AND GRADE

- A. The Contractor shall establish bench marks along the route of the pipeline at convenient intervals for his reference in checking the pipe and manhole inverts and other elevations throughout the project.
- B. The Contractor shall use a laser beam for setting the pipe.
 1. All units shall have equipment to control atmospheric conditions in the pipe that could affect the acceptable standard of construction.
 2. The laser shall be operated by competent, trained personnel.
 3. The Contractor shall establish center line and offset stakes at each manhole, plus one intermediate center line and offset stakes as a check point between manholes.
 4. Laser aligning shall not be used to establish a continuous line in excess of 600 feet.
- C. During construction, the Contractor shall provide the Engineer at his request, all reasonable and necessary materials, opportunities, and assistance for setting stakes and making measurements, taking quantities and checking location of the work.
 1. Assistance shall include the furnishing of one or two men as needed at intermittent times.
 2. The Contractor shall carefully preserve bench marks, reference points and stakes.
 - a. In cases of willful or careless destruction by his own men, he will be charged with the resulting expense and shall be responsible for any mistakes or delay that may be caused by their unnecessary loss or disturbance.

3.04 PREPARATION OF BED

- A. As soon as the excavation is completed to the normal grade of the bottom of the trench, pipe bedding, shall be placed immediately in the trench and compacted.
- B. The compacted bedding shall be shaped so that the bottom quadrant of the pipe shall rest firmly for the full length of the barrel. Suitable holes for bells or couplings shall be dug around the pipe joints to provide ample space for making tight joints.
 1. The pipe shall be firmly bedded and covered to conform accurately to the lines and grades.
- C. It shall be the Contractor's responsibility to control any water in the trench below the pipe invert and he shall place clay or other impermeable material in the bedding at intervals to prevent horizontal movement of the groundwater which might induce settling of the bed, or make it difficult to handle water in the trench.

3.05 LAYING PIPE

- A. All pipe shall be laid with extreme care as to grade and alignment.
 - 1. Each pipe shall be laid so as to form a close joint with the next adjoining pipe and to bring the inverts continuously to the required grade.
 - 2. Each pipe length shall be inspected for excessive discoloration, blisters, pitting, cracks, holes, foreign inclusions, straightness and other injurious defects before lowering in place.
 - 3. In order to insure minimum amount of movement or disturbance, no more than two lengths of pipe may be laid before backfilling to a minimum of twelve inches over the pipe.
 - 4. Pipe shall be laid in the dry and at no time shall water in the trench be permitted to flow into the sewer pipe.
 - 5. Laying and jointing shall be in accordance with the manufacturer's instructions and appropriate ASTM Standards.
 - 6. The Contractor shall have on hand for each pipe-laying crew, the necessary tools, gauges, mechanical saws, mechanical bevelers, etc., necessary to install the pipe.
 - 7. The length of the incoming and outgoing pipe at manholes shall be a maximum of 2'-0".
 - a. Measurements shall be made from the outside of the manhole wall.
 - b. Shorter lengths of pipe shall be furnished as necessary to allow proper locations for wyes and manholes.
 - c. In no case shall other than the specified joints be installed.
 - 8. Where pipe stubs are called for on the Drawings, for future connections or services, the stubs shall be closed on the exterior end of the stub with a gasketed HDPE pipe cap or plug of the same material as the pipe.
 - a. Cap or plug shall be furnished by the pipe manufacturer.

3.06 WYES AND TEES

- A. Installation
 - 1. At locations determined in the field, the Contractor shall provide six (6) inch branch, wyes or tees on the proposed sewer main for the property service connection.
 - 2. Watertight end caps shall be installed on the wye or tee branch until the service connection is installed.
- B. Measurements
 - 1. No wyes or tees shall be backfilled before location measurements have been taken.
 - 2. The depth of cover from the road surface to the top of the fitting shall be recorded.
 - 3. The distance from the down stream manhole shall be recorded.

3.07 TESTING FOR GRAVITY SEWERS

- A. Refer to Section 02767, Testing Piping Systems.

3.08. INFILTRATION

- A. Sewer Pipe:
 - 1. Ground water infiltration rate shall not exceed 50 gallons, per inch of diameter, per mile, per 24 hours.

3.09 CLEANING

- A. At the conclusion of the Work, the Contractor shall thoroughly clean all of the new pipelines by flushing with high pressure water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered during the construction period. Debris, cleaned from the lines, shall be removed from the lowest manhole.
 - 1. After the pipelines are cleaned, and if the groundwater level is above the pipe the Engineer will examine the pipe for leaks.
 - a. If defective pipes or joints are discovered at this time, they shall be repaired at the Contractor's expense.

3.10 CONNECTIONS TO EXISTING SEWERS AND MANHOLES

- A. The Contractor shall make all connections to the existing facilities as required by the Contract Documents.
 - 1. Provide all pipe, fittings, and appurtenances.
 - 2. Shall do all excavation and backfill as required.
 - 3. The pipe entrance to existing manholes shall be drill cored to the required diameter.
 - 4. Special attention shall be made to protect the existing sewers and structures.

END OF SECTION

SECTION 02930

LOAM AND SEED

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide loam and seed as required by the Contract Documents.
 - 1. Generally the Work consists of topsoiling, seeding and fertilizing all disturbed areas of the water main easements.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02015 Test Pits
 - 4. Section 02221 Earthwork for Sewers and Drains
 - 5. Section 01610 Product Handling

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- B. If the results of the hydraulic seeding operation (if utilized) are unsatisfactory, the method shall be abandoned and seeding shall be required by the sowing method.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. If hydroseeding application is to be used, a written description containing seed analysis, fertilizer and lime addition data is to be submitted for review of the Owner.

1.05 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01610.

- B. Immediately remove from the site, materials which are not true to name, and do not comply with the specified requirements, and promptly replace with materials meeting the specified requirements.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. Topsoil stripped from the site and stored, shall be approved before reuse.
 - 1. Topsoil from the site shall be treated to conform to the requirements for topsoil furnished from offsite sources.
 - 2. If the required quantity of suitable topsoil is not available from stripping of the site, or if it is not approved, topsoil from outside sources shall be furnished.
 - 3. Stockpiled topsoil used for this work shall be screened before being spread.
 - 4. Surplus topsoil not required to fulfill the requirements of the Contract shall be properly disposed of unless otherwise directed by the Owner.

2.02 TOPSOIL FURNISHED FROM OFFSITE SOURCES

- A. Topsoil shall be fertile, friable, natural topsoil typical of the locality, and obtained from a well-drained site.
 - 1. It shall be without admixture of subsoil or slag.
 - 2. Shall be screened.
 - 3. Topsoil as delivered to the site shall have an acidity range of pH 5.0 to 6.5 and shall contain not less than 5% organic matter as determined by loss on ignition of moisture-free samples dried at 100 degrees Centigrade.
 - 4. If required, limestone shall be added to the topsoil to adjust the pH, so that it complies with the required limits.

- B. Mechanical Analysis: Topsoil shall meet the following mechanical analysis

Size	% Passing	% Retained
1-1/4" screen	100	0
1/2" screen	97-100	0-3
No. 100 mesh sieve	40-60	40-60

2.03 TREATING TOPSOIL WITH LIMESTONE OR ALUMINUM SULFATE

- A. When the hydrogen-ion value is below the specified level, add ground limestone at the rate of 2-1/2 lbs. per cubic yard of topsoil to raise pH one full point.

- B. The following table shows the amount of limestone needed for various soil reactions on the basis of 1,000 sq. ft. and on the basis of one (1) acre:

pH	pH Desired	Lbs. per 1000 sq. ft.	Tons per Acre
6.0	6.5	0-46	0-1
5.5	6.5	46-92	1-2
5.0	6.5	92-138	2-3

1. Limestone shall be raw, ground agricultural limestone containing not less than 90% calcium carbonate and shall be ground to such fineness that 50% will pass through a 100-mesh sieve and 90% will pass through a 20-mesh sieve.
2. When hydrogen-ion value is above specified level, add aluminum sulfate at the rate of 2-1/2 lbs. per cubic yard of topsoil to lower the pH one full point. Aluminum sulfate shall be unadulterated and delivered in containers with the name of the material, name of the manufacturer, and net weight of contents.

2.04 LIME

- A. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates.
1. Ground to such fineness that at least 50 percent will pass through a 100-mesh sieve and at least 90 percent shall pass through a 20-mesh sieve.

2.05 GRASS SEED (UPLANDS)

- A. General: Provide grass seed which is:
1. Free from noxious weed seeds, and re-cleaned.
 2. Grade A recent crop seed.
 3. Treated with appropriate fungicide at time of mixing.
 4. Delivered to the site in sealed containers with dealers guaranteed analysis.
- B. Proportions by Weight (Level Areas):
- | | | |
|----|-----------------|-------------|
| 1. | Chewing Fescue | 60 percent. |
| 2. | Red Top | 10 percent. |
| 3. | Annual Ryegrass | 10 percent |
| 4. | Kentucky Blue | 20 percent. |
- C. Proportions by Weight (Slopes):
- | | | |
|----|---------------------|-------------|
| 1. | Creeping Red Fescue | 50 percent. |
| 2. | Perennial Rye Grass | 20 percent |
| 3. | Red Clover | 10 percent. |
| 4. | Winter Rye | 15 percent |
| 5. | Ladino Clover | 5 percent |
- D. Requirements:
1. Seed shall be furnished and delivered premixed in the proportions specified above.
 2. All seed shall comply with State and Federal seed laws.

3. A certificate of compliance with the specifications shall be submitted by the manufacturer with the shipment of the seed. The certificate shall include the guaranteed percentage of purity, weed content and germination of the seed, net weight and date of shipment.
4. No seed shall be sown until the Contractor has submitted the above mentioned certificate to the Engineer.

2.06 GRASS SEED (WETLANDS)

- A. Proportions by Weight
- | | | |
|----|---------------------|------|
| 1. | Lurid Sedge | >10% |
| 2. | Fowl Manna Grass | >10% |
| 3. | Fringed Sedge | >10% |
| 4. | Woolgrass | >10% |
| 5. | Other Wetland Seeds | <60% |
- B. Germination Minimum
- | | | |
|----|---------------------|-----|
| 1. | Lurid Sedge | 80% |
| 2. | Fowl Manna Grass | 80% |
| 3. | Fringed Sedge | 80% |
| 4. | Wool Grass | 80% |
| 5. | Other Wetland Seeds | 80% |

C. Requirements:

1. Grass seed mixture for the compensatory storage areas shall be a fresh, clean, new crop seed. Seed may be mixed by an approved method on the site or may be mixed by the dealer. All seed shall comply with State and Federal seed laws. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis. If the seed is mixed by the dealer, the dealer's guaranteed statement of the composition of the mixture and the percentage of purity, weed content, net weight, and germination of each variety shall be provided. No seed shall be sown until contractor has submitted the guaranteed statement of the composition to the Engineer.
2. Seed shall be the commercial product of an approved reputable manufacturer and shall be certified to be not more than one (1) year old and shall be composed of the following varieties, The seed mix shall be New England wetmix as manufactured by New England Wetland Plants Inc. Amherst, MA. or approved equal.
3. The application rate shall be one pound per 5,000 square feet. The seed shall be mechanical spread or broadcasted by hand works creating an even distribution. The seed mix shall be sown early spring or late fall for increased germination.

2.07 FERTILIZER

- A. Fertilizer shall be furnished in containers plainly marked with the chemical analysis of the product and showing one of the following compositions by weight.

Constituent	10-6-4	8-6-4	7-7-7
Nitrogen	10% min.	8% min.	7% min.
Available Phosphoric Acid	6% min.	6% min.	7% min.
Water Soluble Potash	4% min.	4% min.	7% min.

1. Fertilizer shall be stored so that when used it will be dry and free flowing.

2.08 HYDRAULIC SPRAY MACHINE

- A. Shall be designed specifically for seed dissemination.
- B. Shall allow materials to be mixed with water in the machine and kept in an agitated state to keep materials uniformly suspended in the water.
- C. Shall be designed to provide equal quantities of required materials over a particular spraying area.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 APPLICATION

- A. Application of Topsoil
 1. Topsoil shall be applied to the prepared subgrade specified in Section 02210, Site Grading.
 2. Topsoil shall be spread to a compacted depth of:
 - a. Four (4) inches for cross country areas.
 - b. Areas to have topsoil applied to them shall be scarified or otherwise roughened, just prior to the application.
- B. Seedbed Preparation
 1. Grade areas to be seeded to a smooth uniform grade.
 2. Roll, scarify, rake and level as necessary to obtain true, even surfaces
 3. Meet existing grades.
 4. All seeded areas shall slope to drain.
 5. All finish grades shall meet approval before grass seed is sown.
- C. Application Rates of Limestone, Aluminum Sulfate, Fertilizer and Seed
 1. Limestone or Aluminum Sulfate shall be applied and thoroughly incorporated in the layer of loam or topsoil to adjust the acidity of the material.
 2. The rate of application of the limestone will be determined by the pH value.
 3. Fertilizer shall be applied at the rate of 20 pounds per 1000 square feet.

4. The seed mixture shall be sown at the rate of 5 pounds per 1000 square feet.
- D. Fertilizing and Liming
1. Fertilizing and liming shall be done when the soil is in a moist condition and at least 24 hours before the sowing of the seed.
 2. The fertilizer and lime shall be applied to the soil by means of a mechanical spreader or other approved method capable of maintaining a uniform rate of application.
 3. Thoroughly harrowed, raked or otherwise mixed with the soil to a depth of not less than 2 inches.
 4. The fertilizer and lime shall not be applied together.
- E. Time of Seeding
1. The recommended seeding periods are from April 1 to June 1, and from August 15 to October 1.
 2. The Contractor may choose to seed at other times but regardless of the time of seeding he shall be responsible for a full growth of grass.
 3. When directed he shall re-fertilize and reseed areas on the project which do not develop a satisfactory growth of grass.
 4. Re-fertilizing and reseeding shall be incidental to the original seeding item requirements.

3.03 SEEDING METHODS

- A. Fertilizer, limestone, and mulch material, if required, and seed of the type specified may be placed by one of the following methods, provided an even distribution is obtained.
- B. Dry Method
1. Power Equipment: Mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment or attachments may be used when seed, limestone, and fertilizer are to be applied in dry form.
 2. Manual Equipment - On areas which are inaccessible to power equipment, permission may be given to use hand-operated mechanical equipment when the materials applied are in dry form. The use of hand shovels to spread the materials shall not be allowed.
 3. When the dry method is used, limestone and fertilizer shall not be mixed together prior to their application, but shall be worked into the soil together to a depth of at least 2 inches.
 4. At least 24 hours shall elapse between the time fertilizer is incorporated into the topsoil and seed is spread.
 5. Areas covered with park seed shall be raked, and, rolled with a roller weighing not more than 100 pounds per foot of roller width to firm the soil but not to pack it. The rolling shall be done the same day as the seeding unless otherwise permitted.
 6. Areas seeded in the spring after April 15 shall be covered with a 1 inch loose layer of clean wheat or oat straw. The straw shall be kept wet until a catch of grass is established. Loose straw shall be removed from the site.
 7. Grass on slopes or banks may be established by another method subject to approval. Special care shall be exercised to prevent erosion or washouts.

- C. Hydraulic Method
1. The application of grass seed, fertilizer, limestone, and a suitable mulch, if approved, may be accomplished through the use of an approved spraying machine.
 2. The materials shall be mixed with water in the machine and kept in an agitated state in order for the materials to be uniformly suspended in the water.
 3. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, and grass seed shall be equal to the required rates.
 4. Prior to the start of work, the Engineer shall be furnished with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.
 5. The hydraulic seeding and fertilizing machine shall be completely flushed and cleaned each day before seeding is started.
 6. If the results of the spray operations are unsatisfactory, the Contractor shall be required to abandon this method and apply the materials in accordance with the dry method.
 7. When the hydraulic method is used, compaction or rolling shall be required.
- D. Side Slopes Application
1. Roadway side slopes shall be seeded utilizing a hydraulic (hydro-seed) application process, to place seed and fertilizer simultaneously.
 2. A color agent shall also be within the hydraulic mix.
 3. Care shall be taken during the application to prevent coverage of poles, trees, signs, and etc.

3.04 MAINTENANCE

- A. The Contractor shall be responsible for the proper care of the seeded areas during the period when the grass is becoming established.
1. This period shall extend for two months after a successful uniform stand of grass is produced.
 2. The Contractor shall reseed all areas as necessary to obtain a uniform stand of grass, free from bare spots.
 3. Any seeded areas which fail to show a uniform stand of grass shall be reseeded until all areas are covered
 4. Any and all additional seeding shall be at the Contractor's expense.
 5. If necessary, barricades of brush or other materials and suitable signs shall be placed to protect the seeded areas.
 6. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.

3.05 GUARANTEE PERIOD

- A. All seeded areas shall be guaranteed by the Contractor for not less than one (1) full year from the date of substantial completion.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools and equipment necessary for the construction, preparation, cleaning and later removal of all concrete formwork necessary for the proper completion of the Work.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Brochures and technical data:
 - a. Form ties
 - b. Form sealers and coatings, each type
 - 2. Samples
 - a. Form ties

1.03 PRODUCT HANDLING

- A. All materials and equipment shall be shipped, stored, handled and installed in such a manner as not to degrade quality, serviceability or appearance.

1.04 TECHNICAL REQUIREMENTS

- A. The design of concrete formwork is the Contractor's responsibility. The design and construction of forms shall conform to the American Concrete Institute's "Recommended Practice for Concrete Formwork" (ACI 347) as applicable except as modified by this specification.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Forms shall conform to the shape, lines and dimensions of the parts and members of concrete work as shown on the Drawings. Forms shall be substantial and sufficiently tight to prevent leakage of mortar or liquid. Furnish panels in largest practicable sizes to minimize number of joints.
- B. Except as otherwise specified, forms shall be constructed of plywood conforming to U.S. Product Standard PS 1-74 Interior and Exterior Plyform as required.
- C. Forms may be of metal or other approved materials. Steel forms or forms made of plastic faced plywood may be used if designed to equal in strength and deflection that specified for plywood except as otherwise specified herein.

- D. Forms for round columns may be of fiber (paper), steel or plastic.
- E. Form releasing agent shall be a non-grain raising and non-staining type that will not leave residual matter on surface of concrete or adversely affect proper bonding of subsequent application of other material applied to concrete surface. For water filtration facilities, form releasing agent shall be listed in the most recent version of the National Sanitation Foundation (NSF) product listing, of a type which will not contaminate potable water. This will include the entire facility.
- F. Form Ties:
 - 1. Provide factory-fabricated, adjustable length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
 - 2. Provide ties so that portion remaining within concrete after removal of exterior parts is at least 1 inch from the outer concrete surface. Provide form ties which will not leave a hole larger than one inch in diameter in the concrete surface.
 - 3. Provide tie cones at each end.
 - 4. Ties for liquid containment structures shall have a neoprene waterstop, factory applied at the center of the tie.

PART 3 EXECUTION

3.01 CONSTRUCTION

- A. General:
 - 1. Forms shall be straight and true, mortar tight and have sufficient strength to safely support construction loads without sagging or bowing.
 - 2. Forms shall be braced, tied together and supported to maintain position and shape, and be of adequate strength to support, without deflection or distortion, the pressure and weight of the concrete, together with the movement of men and equipment.
 - 3. Support spacings for the various thickness shall be such as to limit deflection, flexural strength and shear strength to 1/270 of the span for structural concrete and 1/360 of the span for architectural concrete. Bending stress and rolling shear stress shall be limited to 1930 and 80 psi respectively for Class I Plyform and 1330 and 72 psi respectively for Class II Plyform.
- B. Tolerances: Tolerances shall be as given in Section 203.1 of ACI 347, "Recommended Practice for Concrete Formwork".
- C. Form Alignment: Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the hardened concrete surface to obtain accurate alignment of the surface, prevent leakage of mortar and to prevent formation of fins, ridges or other noticeable defects.
- D. Chamfered Edges:
 - 1. All exposed edges of concrete shall have beveled strips to provide chamfers; sizes to conform to details on the drawings. If no size is specified on drawings, a 3/4 inch chamfer shall be used, unless otherwise directed by the Engineer.

2. Where masonry walls and partitions abut columns and beams, chamfer strip shall be omitted.
 3. Grinding of chamfered corners will not be allowed.
- E. Form Panel Joints:
1. Joints between form panels shall be tightly butted to prevent leakage of grout or fines and shall be strengthened with back-up framing to maintain contact faces of adjacent panels in the same plane.
 2. Form gaskets or form tape shall be used at joinings or juncture of form panels to prevent leakage of fluids, grout or fines from concrete. Form gaskets or form tape shall be placed at the contact edge of the joint, but shall not project into the interior of the form. Where necessary, any projection shall be cut off prior to placement of the concrete. Form gaskets shall also be used between hardened concrete and form panels to prevent leakage of grout or fines from new concrete pours.
 3. Form tape shall not be used in areas where concrete is to receive a brush sandblast finish.
- F. Openings:
1. The Contractor shall form for and leave all openings in the concrete work where required for the installation of his own work and/or for the work of others. He shall carefully examine all drawings for the need of such openings and in failing to provide openings as shown on the drawings, he shall cut them at his own expense.
 2. Except as otherwise noted or specified, all such openings shall be filled with concrete after the work to be installed therein has been completed.
- G. Cleanouts and Access Panels:
1. Temporary openings shall be provided, where required, to facilitate cleaning and inspection prior to placing concrete. This is particularly required at the bottom of wall forms.
 2. Shavings, chips and all refuse shall be removed and the forms shall be broom cleaned before any concrete is placed. Cleanout openings will not be permitted in exposed concrete without the Engineer's approval.
- H. Form Releasing Agents:
1. New plyform may be used as furnished if inspection shows it to be satisfactorily oiled by the manufacturer. For reuse, forms for exposed surfaces of concrete shall be coated with a commercial form release agent or non-staining mineral oil which shall be applied before reinforcing steel is placed. After coating with a form releasing agent, surplus oil or coating on form surfaces and any oil on the reinforcing steel or other surfaces requiring a bond with the concrete shall be removed.
 2. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling immediately before the placing of concrete, except that in freezing weather, oil shall be used.

3.02 INSTALLATION OF EMBEDDED ITEMS

- A. General:

1. The Contractor shall notify all trades when construction is ready for the setting of anchor bolts, inserts, sleeves, and other built-in equipment, in order that such material shall be set at the proper time. Before placing concrete, care shall be taken to determine that all items to be embedded in concrete are accurately located, firmly secured in place and protected from damage or displacement until securely held by the concrete.
 2. All items shall be thoroughly cleaned, free from rust, scale, dirt, grease or other coating. Any wood used for removable keys shall be thoroughly dampened before concrete is placed against the wood. The Contractor shall be responsible for any displacement of the items caused by his workmen.
- B. Electrical conduit may be embedded in concrete according to the provisions of Article 6.3 of ACI 318 "Building Code Requirements for Reinforced Concrete", provided the following conditions are met:
1. Outside diameter of conduit shall not exceed 1/3 of concrete thickness.
 2. Conduit shall not be placed closer than three diameters on center.
 3. Conduit shall not be embedded in structural concrete slabs less than four inches thick.
 4. A 1-1/2 inch minimum concrete cover shall be provided for conduits in structural concrete slabs.
 5. Conduit shall not be located between bottom of reinforcing steel and bottom of concrete slab.
 6. Conduit is generally not permitted in beams or girders.
 7. Aluminum conduit shall not be embedded in concrete.

3.03 REMOVAL

- A. Form Removal:
1. Forms shall be removed in a manner to insure complete safety of the structure. In no case shall supporting forms or shoring of slabs, beams, or other suspended members be removed until members have acquired sufficient strength to support safely their weight and the load thereon.
 2. Care shall be taken to avoid spalling the concrete surface and to assure that newly unsupported portions of the structure are not subjected to heavy construction or material loading. Additional shores or reshores shall be provided, as required, to adequately support the members during the construction period.
 3. All responsibility involved in the removal of forms, shores, and bracing shall rest with the Contractor, and he shall be solely responsible for accidents to persons and property of any nature.
- B. All parts of removed forms reserved for reuse shall be inspected, cleaned and repaired. Any part or panel which has been dented, deformed or otherwise rendered unfit for reuse shall be removed from the site at once.
- C. Tie-rod clamps to be entirely removed from the wall shall be loosened 24 hours after concrete is placed, and form ties may be removed at that time. Filling of form tie holes shall be as specified in Section 03345, Concrete Placing, Curing and Finishing.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SCOPE

- A. The work of this Section includes all labor, materials, tools and equipment necessary for the fabrication, transportation and installation of all reinforcing steel necessary for the proper completion of the Work.
- B. Provide all reinforcing steel for masonry reinforcing (seismic reinforcing), as shown on the Drawings.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Certified mill reports of reinforcing steel identifying chemical and physical analysis.
 - 2. Submit fully detailed shop drawings, conforming to the Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315 showing and including, but not limited to the following:
 - a. Sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.
 - b. Bending schedules and diagrams.
 - c. Splices and laps.
 - d. Assembly diagrams.
 - e. Reinforcing steel clearances.
 - f. Class designation and details of bar supports.
 - g. Pertinent concrete details with dimensions and elevations.
 - h. Items furnished by mechanical trades or under other sections of the Specification to be cast in concrete where interference may occur.
 - i. Reinforcement of concrete walls shall be shown on wall elevations with required sections, reinforcement of beams on beam elevations with required sections and reinforcement of floor and roof slabs on plan views with required sections.

1.03 PRODUCT HANDLING

- A. Deliver reinforcement to project site in bundles bearing tags indicating size, length and identification mark. Each bundle, roll or individual bar shall be so labeled.
- B. Classify and stack materials off the ground to prevent contamination and to facilitate subsequent inspection and handling.

1.04 TECHNICAL REQUIREMENTS

- A. The concrete reinforcing work included in this contract has been designed in accordance with the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" (ACI-318).
- B. Reinforcing shall be performed in accordance with the applicable provisions of the building code of the state wherein the work is done and any local codes or ordinances having jurisdiction over the work.
- C. In addition, the various ASTM, ACI, Department of Commerce, and Federal Specifications cited throughout this section are hereby included by reference.

PART 2 PRODUCTS

2.01 STEEL REINFORCEMENT

- A. General: The term "steel reinforcement" shall include all bars, tendons, anchorage, hooks, stirrups, dowels, ties, tie-wire, chairs and spacers noted on the Drawings, and/or specified herein, and evidently required. The types and grades of reinforcing required are specified herein.
- B. Materials:
 - 1. Reinforcing Bars: Shall be formed of new billet steel conforming to ASTM A615, Grade 60 except as otherwise noted.
 - 2. Welded Wire Fabric: Shall conform to ASTM A185 of the sizes indicated. For slabs, flat sheets only shall be used, and rolls will be unacceptable.
 - 3. Tie Wire:
 - a. For Structural Concrete: FS QQ-W-461 annealed black, 16 gauge minimum.
 - 4. Bar Supports:
 - a. Chairs, bolsters spacers and other devices to properly position reinforcing steel shall conform to "Bar Support Specifications" CRSI Manual of Standard Practice and shall be of adequate strength and approved design to prevent displacement of reinforcing and to prevent discoloration of concrete.
 - b. Support devices shall be Class A, except where concrete surfaces are exposed to view, weather or moisture; support devices shall be Class C - Plastic Protected.
 - c. For slabs on grade, supports shall be precast concrete blocks. Precast concrete blocks shall be not less than 4 inches square and shall have compressive strength equal to that of the surrounding concrete.
- C. Fabrication:
 - 1. Steel reinforcement shall be fabricated to the shapes, sizes and dimensions as shown on the drawings, details and schedules. All bending of bars and stirrups shall be in accordance with the requirements set forth in the Manual of Standard Practice of the Concrete Reinforcing Steel Institute. All steel shall be bent cold and shall not be bent or straightened in a manner that will injure the metal. Bars with kinks or bends not so detailed shall not be used.

2. Bends for stirrups and ties shall be made around a pin having a diameter not less than four times the minimum thickness of the bar but in all cases the diameter of bend shall be at least large enough to accommodate the supporting bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness of the bar, except that for bars larger than one inch the pin shall be not less than eight times the minimum thickness of the bar.

PART 3 EXECUTION

3.01 INSTALLATION

A. Reinforcing Bars:

1. Placing Reinforcement:

- a. Reinforcement shall be accurately placed in accordance with the drawings and adequately secured in proper position by concrete or metal chairs or spacers which will insure accuracy of position, both horizontally and vertically and will be sufficiently rigid to prevent displacement of the reinforcement during the placing and working of the concrete.
- b. Reinforcement steel shall be securely tied at intersections with tie wire or clips and shall be supported in a manner that will keep all metal away from exposed concrete surfaces.

2. Splices:

- a. All splices in the reinforcement shall be as shown on the drawings. The lapped ends of the bars shall be either separated sufficiently to allow the embedment of the entire surface of each bar in concrete, or connected as a single continuous bar to develop the full strength of the bar.
- b. Splicing shall not be made at the points of maximum stress, nor shall adjacent bars be spliced at the same points. Splices shall be staggered.
- c. When permitted by written approval of the Engineer, welding shall be in accordance with AWS 12.1.

3. All reinforcement in any one section shall be placed, supported and secured before the beginning of concrete operations. Unless otherwise indicated on the Drawings, the details of reinforcing steel, including bending, splicing and supporting shall conform to ACI Building Code 318 and Detailing Manual 315.

4. Steel Adjustment:

- a. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits or embedded items.
- b. Do not move bars beyond allowable tolerances without approval of the Engineer.
- c. Do not heat bend or cut bars without approval of the Engineer.

B. Wire Fabric:

1. Install in longest practicable sheet.
2. Lap adjoining pieces one and one-half mesh minimum and wire securely together.
3. Offset end laps in adjacent widths to prevent continuous laps.

- C. **Cleaning:** All reinforcement, when concrete is placed shall be entirely free from flaking rust, loose mill scale, grease, dirt or other coating which would destroy or reduce its bond with the concrete. Reinforcing shall be wire brushed before placing concrete if the Engineer deems it necessary.
- D. **Relation of Bars to Concrete Surfaces:**
1. The minimum cover of concrete for all reinforcement shall conform to the dimensions shown on the Drawings, which indicate the clear distance from the edge of the reinforcement to the concrete surface.
 2. Where not otherwise shown, the minimum coverage of the concrete in inches over the steel shall be as follows:

<u>MEMBER</u>	<u>EXPOSED TO</u>			
	<u>Air</u>	<u>Weather & Air Over-Liquid</u>	<u>Earth & Liquid</u>	<u>Salt Water</u>
Footing	--	--	3	4
Wall, Column or Beam	1-1/2	2	2(b)	3(b)
Slab and Joist Top	1-1/2(c)	2	2	3
Slab and Joist Bottom	3/4	2	2(b)	3(b)

- a. Applicable to all cast in place concrete except as otherwise shown on the drawings.
- b. Increase one inch when cast against earth.
- c. Shall be 3/4 inch when membrane or wearing surface is used.

- E. **Observation of Reinforcing Steel:**
1. Notify the Engineer at least 24 hours before placing concrete. All reinforcing within limits of one day's concrete placement must be tied in place and reviewed by the Engineer prior to placing concrete.
- F. **Protection During Concreting:**
1. Keep reinforcing steel in proper position during concrete placement.
 2. Dowels, other than at footings, projecting above or adjacent to exposed concrete surfaces shall be protected by means of a waterproof cover, a thin coating or neat cement slurry, or a coating of a zinc rich compound having 95 percent zinc in the dried film.

END OF SECTION

SECTION 03250

CONCRETE ACCESSORIES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide concrete accessories as required by the Contract Documents.
 - 1. In general the work of this Section includes all labor, materials, tools and equipment necessary for furnishing and installing anchors and hardware as specified herein, as shown on the Drawings or as necessary for the proper completion of the work.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Brochures and technical data:
 - a. Adhesive anchor systems

1.03 PRODUCT HANDLING

- A. All materials and equipment shall be shipped, stored, handled and installed in such a manner as not to degrade quality, or serviceability.

PART 2 PRODUCTS

2.01 ANCHORS

- A. Cartridge Injection Adhesive Anchors: Threaded steel rod, inserts or reinforcing dowels, complete with nuts, washers, polymer or hybrid mortar adhesive injection system, and manufacturer's installation instructions. Type and size as indicated on Drawings.
 - 1. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel threaded rods conforming to ASTM A36, ASTM A 193 Type B7 or ISO 898 Class 5.8 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 - 2. Exterior Use: Unless otherwise indicated on the Drawings, provide stainless steel anchors. Stainless steel anchors shall be AISI Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 - 3. Reinforcing dowels shall be A615 Grade 60.

4. Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Engineer, provide the following:
 - a. Hilti HAS threaded rods with HIT-HY 200 Safe Set System using Hilti Hollow Drill Bit System for anchorage to concrete, ICC ESR-3187.
 - b. Hilti HIT-Z anchor rods with HIT-HY 200 Safe Set System for anchorage to concrete, ICC ESR-3187.
 - c. Hilti HAS threaded rods with RE 500 SD Injection Adhesive Anchoring System for anchorage to concrete, ICC ESR-2322.
 - d. Hilti HAS threaded rods with RE 500 Injection Adhesive Anchoring System for anchorage to concrete.
- B. Capsule Anchors: Threaded steel rod, inserts and reinforcing dowels with 45 degree chisel point, complete with nuts, washers, glass or foil capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, and manufacturer's installation instructions. Type and size as indicated on Drawings.
 1. Interior Use: Unless otherwise indicated on the Drawings, provide chisel-pointed carbon steel rods conforming to ASTM A36, ASTM A 193 Type B7 or ISO 898 Class 5.8 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 2. Exterior Use: Unless otherwise indicated on the Drawings, provide chisel-pointed stainless steel anchors. Stainless steel anchors shall be AISI Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 3. Reinforcing dowels shall be A615 Grade 60, with 45-degree chisel-points at embedded end.
 4. Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Engineer, provide the following:
 - a. Hilti HVA Adhesive System with HVU capsules.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools, and equipment required for the furnishing of all materials required for the concrete work and, where appropriate, applying or installing such materials for the various items of concrete work as shown on the Drawings, as specified herein, and evidently required.
- B. Codes and Standards:
 - 1. The concrete work included in this contract has been designed in accordance with the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" (ACI 318).
 - 2. The ACI Standards "Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete" (ACI 211.1) and "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete" (ACI 304) are also hereby made a part of this specification insofar as they apply and do not conflict with the provisions of this specification or any local codes or ordinances having jurisdiction over the work. In addition, the various ASTM, ACI, Department of Commerce, and Federal Specifications cited throughout this section are hereby included by reference. Concrete work shall be performed in accordance with the applicable provisions of the building code of the state wherein the work is done.
- C. Strength:
 - 1. All concrete shall be designed to have a minimum 28 day compressive strength of 3,000 psi except as otherwise noted on the Drawings or specified herein.
- D. Contractor may use a low shrinkage concrete mix with crack-reducing admixtures as recommended by the admixture manufacturer, if submitted and approved by the Engineer. If the alternate concrete mix is submitted for approval, and the Contractor requests greater spacing between construction joints, the Contractor shall redesign the construction joints and submit a drawing for approval stamped by a structural engineer licensed in the Commonwealth of Massachusetts, at no additional cost to the Owner.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Certified mill reports of cement.
 - 2. Fine and coarse aggregate data resulting from tests performed as specified in this section for all aggregates proposed for use.
 - 3. Samples shall be submitted for at least the following items:
 - a. Cement, each type, one vial.
 - 4. Brochures and technical data for at least the following items:

- a. Admixtures, each type.
5. Reports:
 - a. Testing laboratory reports on all tests and design mixes for each different contemplated application to the Engineer for approval within 45 days after Notice to Proceed, or at least 14 days before initial placement of concrete, whichever date is earlier.
 - b. Report shall include source of cement and aggregates.

1.03 PRODUCT HANDLING

- A. It is intended that the major portion of the concrete be supplied from a commercial ready mix plant capable of meeting the following requirements for storage and handling of materials. Where no such plant exists within a reasonable distance from the site, and for small amounts of concrete which may be site mixed, the following requirements shall apply.
 1. Cement shall be carefully stored immediately upon receipt. Cement in sacks shall be stored in a suitable weatherproof structure which shall be as airtight as practical to prevent the absorption of moisture. Sacks shall be stacked close together to reduce circulation of air but shall not be stacked against outside walls. The manner of storage shall permit easy access for inspection and identification of each shipment. Bulk cement shall be transferred to elevated airtight and weatherproof bins. At the time of use, all cement that has been in storage so long that there is doubt of its quality will be tested by standard mortar to determine its suitability for use, and such cement shall not be used without approval.
 2. Aggregates shall be stored in a manner that will preclude the inclusion of foreign material. Aggregates of different sizes shall be stored in separate piles. Stockpiles of coarse aggregate shall be built in horizontal layers not exceeding four feet in depth to avoid segregation.

1.04 TESTING AND INSPECTION

- A. General:
 1. Concrete materials and operations shall be tested and inspected as the work progresses. Failure to detect any defective work or material shall not in any way preclude later rejection when such defect is discovered nor shall it obligate the Engineer for final acceptance.
 2. The use of testing services shall in no way relieve the Contractor of the responsibility to furnish materials and construction in full compliance with the contract documents.
- B. Responsibilities and duties of General Contractor:
 1. Ingredient Tests: Prior to making design mixes, the Testing Laboratory conforming to ASTM E329 and subject to the approval of the Engineer shall conduct the following tests in accordance with the procedures referred to in the applicable Reference Standards, cited herein, to assure conformance with the applicable Specifications.
 - a. Cement: Specific gravity and brand name of cement.
 - b. Aggregates: Sieve analysis, specific gravity, soundness, percentage of voids, absorption, potential reactivity, moisture content of fine and coarse aggregate, dry-rodded weight of coarse aggregate, and fineness modulus of fine aggregate.

2. Design Of Concrete Mixes:
 - a. The testing laboratory shall recommend, as determined by trial mixes and strength curves, the design mixes to be used for each application of concrete that will produce concrete of specified strengths and finishes with slumps and workability to meet all placing conditions.
 - b. Design mixes shall indicate water-cement ratio, cement factor, water content, admixture content, cement content, aggregate content, aggregate gradations, slump, air content and strength. Design mixes and related tests shall be in accordance with the procedures referred to in the applicable reference specifications cited herein.
 - c. Reference Standards: Concrete mixes shall be designed in accordance with Article 3.9 of Chapter 3 of ACI 301 “Specifications for Structural Concrete Buildings” and references referred to therein.
 - d. Water cement ratio shall not exceed 0.45.
 - e. The maximum allowable net water content shall be 5.00 gallons per sack of cement and cement factor shall be at a minimum 6.50 sacks per cubic yard of concrete.
 - f. Limit of Changes for Pumping: If the Contractor elects to convey concrete by pumping, the established job mix may not be altered by more than the following:

Cement	plus 20 pounds per cubic yard
Fine Aggregate	plus 50 pounds per cubic yard
Coarse Aggregate	minus 50 pounds per cubic yard

- g. Any conveying method requiring a greater increase in FA/CA ratio will not be approved.
3. Sampling of Concrete:
 - a. Samples of concrete for air, slump, unit weight, and strength tests shall be taken in accordance with ASTM C172.
 - b. During the progress of the Work an independent testing agency acceptable to the Owner and Engineer shall be selected. The testing agency shall be accredited and qualified according to ASTM C1077 and ASTM E329. Testing work shall be paid for by the Contractor. The testing agency and its certified testing laboratory shall prepare test concrete cylinders. The Contractor shall assist the testing laboratory in completing concrete testing. One set of 4 cylinders each shall be taken for each 100 cubic yards, or fraction thereof, of each mixture design of concrete placed in any one day. When the total quantity of concrete with a given mixture design is less than 50 cubic yards, the strength tests may be waived by the Engineer if, in his judgement, adequate evidence of satisfactory strength is provided, such as strength test results for the same kind of concrete supplied on the same day and under comparable conditions to other work. Cylinders shall be delivered to the testing labs within 24 hours. One cylinder shall be tested at 7 days and two at 28 days. The fourth cylinder shall be saved for a 56-day break should the average of the 28-day results not achieve the specified strength. Two copies each of the test results shall be submitted to the Engineer directly by the laboratory for review. In any case where the strength of the cylinders fail to meet the criteria of ACI 318, Chapter 4, Section 4.7.2.3, the Engineer shall have the right to order the defective

- concrete removed and proper concrete put in its place or to take such other action as they deem necessary to remedy the situation.
- c. The concrete used shall have a maximum slump as herein specified unless otherwise directed by the Engineer. Slump shall be determined as per ASTM C143. Slump tests shall be taken by the testing lab for each set of cylinders taken.
 - d. Air Content: Test for air content shall be performed in accordance with ASTM C173 or ASTM C231. A minimum of one test per day shall be conducted.
4. Furnish necessary labor to assist the testing laboratory and the field observers in obtaining and handling samples at the project or other sources of materials.
 5. Advise the Engineer and the field observers at least 24 hours in advance of placing concrete to allow for completion of quality tests and for the assignment of personnel.
 6. Provide and maintain adequate facilities for safe storage and proper curing of concrete test specimens on the project site for the first 24 hours as required by ASTM C31, Article 7.2.
 7. The Contractor, at no expense to the Owner, shall have the testing laboratory conduct additional tests on concrete ingredients and make new design mixes whenever the character or source of ingredients is changed or if the placed concrete fails to meet the specified strengths.

1.05 APPROVALS

- A. Commencement of Work: Concrete work shall not begin until test results and design mixes have been approved by the Engineer.
- B. Mix Variations: The Engineer reserves the right to vary in the field any previously approved design mix so as to compensate for field variables including but not limited to weather conditions, placing conditions, variations in size, gradation or characteristics of aggregate and end use of the concrete.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. General:
 1. All concrete used in the work shall be composed of Portland Cement, fine and coarse aggregate, and admixtures as specified herein. Concrete for every part of the work shall be of a homogeneous structure which, when cured and hardened, will have the required strength and resistance to weathering.
 2. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture of the required strength which will work readily into the corners and angles of the forms and around reinforcement and that will produce finishes acceptable to the Engineer but without permitting the materials to segregate.
- B. Cement: Cement shall meet the requirements of ASTM C150, Type II. Brands of cement shall be subject to the approval of the Engineer.

- C. Aggregate:
1. All aggregates shall conform to the standard specifications for Concrete Aggregates, ASTM C33 as amended by the specification. Aggregates failing to meet these specifications but proved by special test or actual service to produce concrete of the required quality may be used under ACI 318, Section 3.3, where authorized by the Engineer.
 2. Fine Aggregates:
 - a. Fine aggregates shall consist of sand or screenings of gravel or crushed stone, well graded from fine to coarse; clean and free from soft particles, clay, loam or organic matter, with the volume removed by sedimentation not more than three percent. When tested in accordance with ASTM C40 for organic impurities, the color of the supernatant liquid above the test sample shall show not darker than organic plate No. 1.
 - b. Fine aggregate shall conform to the following grading:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
 - c. Fine aggregate shall not have more than 45 percent retained between any two consecutive sieves of those listed above, and its fineness modulus shall not be less than 2.3 nor more than 3.1. If the fineness modulus varies by more than 0.20 from the value assumed in selecting proportions for concrete, the fine aggregate shall be rejected unless suitable adjustments are made in concrete proportions to compensate for the difference in grading.
 3. Coarse Aggregates:
 - a. Coarse aggregates shall consist of crushed stone or washed gravel having clean, hard, durable, uncoated particles, free from dust, dirt, or other deleterious substances; and free from thin, flat or elongated particles. The test for organic impurities specified for fine aggregate shall also apply to coarse aggregate. Maximum size shall be 3/4-inch for all concrete 8 inches and less in thickness. For heavier walls, footings and mass concrete, the maximum size may be increased to 1-1/2 inch, provided the space between the reinforcing bars therein is 1-1/3 greater than the maximum aggregate size.
 - b. Coarse aggregate shall conform to the grading given in Table 2 of ASTM C33 for sizes No. 467, 57, 67, 7, and 8.
- D. Water: Water shall be clean, fresh and free from oil, acid, salt, alkali, sewage, organic matter, and other deleterious substances.
- E. Admixtures: Admixtures shall be used as follows. The use of products other than those named herein will be allowed only with the written approval of the Engineer.

1. Air Entraining Agent: The air entraining admixture shall be a chloride free, purified and modified salt of a sulfonated hydrocarbon resin in liquid form conforming to ASTM C260.
 2. Water Reducing Agents: Except when otherwise ordered by the Engineer or noted elsewhere herein, all normal structural concrete shall have a water reducing agent added. The admixture shall be a salt of lignosulfonic acid in liquid form conforming to ASTM C494, Type A. The air entraining action of the water reducing agent shall be taken into account and the air entraining agent limited accordingly.
 3. Water Reducing-Retarding Agents: When the ambient temperature rises above 70 degrees F., the water reducing agent shall be replaced in whole or in part with a water reducing-retarding agent conforming to ASTM C494, Type D. The admixture shall be used in such amounts as will produce concrete with a set time equal to that which it would have at 70 degrees F. without the retarder.
 4. Set Accelerator: Where a set accelerator is allowed under the provisions of Section 03345 Concrete Placing, Curing, and Finishing, it shall be non-chloride conforming to ASTM C494, Type C and Type E.
 5. Superplasticizer: Superplasticizing admixtures used to produce flowing concrete may be approved for use in concrete in any part of the structure. The dosage rate depends on the slump of the base concrete which should be kept constant and low (2-1/2 to 3 inches). Superplasticized concrete can lose slump in 60 to 90 minutes, or sooner if temperature is above 70 degrees F, therefore the admixture should be added to the mix at the project site if there is a probable combination of long concrete haul and warm temperature during placing operation. Otherwise the admixture should be added in accordance with the manufacturer's instruction.
 6. Crack-Reducing Admixture: Crack-Reducing Admixtures may be used to reduce the magnitude of drying shrinkage, minimize the potential for cracking, and reduce joint spacing between concrete pours of large structures. Apply admixture at the dosage rate recommended by the manufacturer. Crack-Reducing Admixture shall be MasterLife CRA007 by Master Builders or approved equal.
- F. Epoxy Grout: Epoxy grout shall conform to ASTM C881, Type III, Grade 2, Class C. Color shall be selected by the Engineer.

PART 3 EXECUTION

3.01 CONCRETE MIX

- A. Proportions:
1. The work has been designed for concrete having a minimum compressive strength at 28 days as specified in this section.
 2. The cement factor and water cement ratio shall be determined by consideration of the specified strength, the water reducing admixtures, the slump required for proper placement, air-entraining requirements, the available and maximum allowable aggregate size and its specific gravity and the amount of water carried on the aggregates.
 3. The slumps and maximum sizes of aggregate for various types of construction, as well as the computation of trial mixes shall be as described in ACI 211.1 "Recommended Practice for Selected Proportions for Normal and Heavyweight Concrete".

B. Water Cement Ratio: The water cement ratio shall be as determined from the approved design mixes as specified in this section.

C. Water Content:

1. In calculating the total water content in any mix, the amount of water carried on the aggregate and the effect of admixtures shall be included. The water on the aggregate shall be determined periodically by test and the amount of free water on the aggregate subtracted from the water added to the mix.
2. In all cases the amount of water to be used shall be the minimum amount required to produce a plastic mixture of the strength specified and of the required density, uniformity and workability. The consistency of any mix shall be at that required for the specific placing conditions and methods of placement.

D. Concrete Slumps:

1. The Contractor must satisfy himself that he is capable of producing, with the following slumps, concrete of satisfactory quality and strength, that will produce the specified finishes, free of voids, honey-combing, or excessive air bubbles.
2. Execution of this contract signifies that the Contractor accepts full responsibility for the production of concrete of satisfactory quality, strength and finishes within the slump limitations specified. Slump shall be determined as per ASTM C143.

<u>Types of Construction</u>	<u>Maximum (inches)</u>	<u>Minimum (inches)</u>
Reinforced Footings and Mats	3	1
Substructure Walls	4	1
Slabs, Beams and Reinforced Walls	4	1

E. Air Entrainment:

1. All concrete, except interior concrete slabs subject to abrasion, shall be air entrained. Percent of air versus aggregate size shall be added as a part of the computed mixing water requirements, and be used strictly in accordance with the manufacturer's directions and these specifications to produce a total entrained air content, by volume, to be determined in accordance with the procedure given in ASTM C173, as follows:

<u>Nominal Maximum Size Coarse Aggregate (inches)</u>	<u>Air Content By Volume (percent)</u>
3/8	6 to 10
1/2	5 to 9
3/4	4 to 8
1	3.5 to 6.5
1-1/2	3 to 6

- F. Ready Mixed Concrete: It is intended that the major portion of the concrete required for the work be ready mixed in an off site plant. Small amounts for miscellaneous purposes may be site mixed. All concrete produced in an off site plant shall be mixed and delivered in accordance with the requirements of the “Standard Specifications for Ready Mixed Concrete,” ASTM C 94 and these specifications.
- G. Mixing: Concrete shall be mixed and transported in accordance with the applicable provisions of the “Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete” (ACI 304) of the American Concrete Institute and these Specifications.

END OF SECTION

SECTION 03315

MISCELLANEOUS CONCRETE PLACEMENTS

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools and equipment necessary for the construction of concrete specialties as specified herein, as shown on the Drawings or as necessary for the proper completion of the work.

PART 2 PRODUCTS

2.01 EQUIPMENT FOUNDATIONS

- A. All floor-mounted mechanical and electrical equipment shall be installed on concrete pads constructed of 4,000 psi concrete, whether or not specifically indicated on the drawings to be pad mounted.

2.02 GROUTING

- A. General: Grouting is required for structural items and mechanical items. The materials to be used for mechanical items and base plates shall be as specified in Section 03345 Concrete Placing, Curing and Finishing.

2.03 CONCRETE FILLS

- A. All concrete fills shall be 4,000 psi.
- B. Thin Set Fills: Concrete fills two inches thick shall have a maximum size aggregate of 1/2-inch.
- C. Thick Set Fills: Concrete fills greater than two inches thick shall be structural concrete as specified in Section 03300 Cast-In-Place Concrete.

2.04 DUCTBANKS

- A. All underground electrical ductbanks shall be encased in concrete with materials as specified herein.
- B. Cement, aggregate and all other concrete components shall be as specified herein except that aggregate size shall not exceed 3/8-inch. Concrete shall have a minimum compressive strength at 28 days of 2,500 psi.
- C. Ductbanks shall be reinforced when crossing the backfill covering new pipe lines, roads, parking lots or any area subject to vehicular traffic. Beneath these areas, ductbanks shall be reinforced with a minimum of #5 @ 12" longitudinal and #4 @ 12" ties, extending 4 feet beyond area needing protection.

PART 3 EXECUTION

3.01 EQUIPMENT FOUNDATIONS

- A. All equipment foundations shall be sized to suit equipment with reinforcement as shown on the equipment pad detail on the Drawings. Pads shall not be poured until all equipment sizes have been finalized.
- B. All exposed surfaces shall be formed with smooth forms, all coarse aggregate spaded back from the forms so that all exposed surfaces shall have a smooth surface without excessive rubbing and shall be free from sandy streaks, coarse aggregate or stone pockets. All exposed surfaces shall have a smooth, even surface, with all exterior angles beveled and vertical surfaces coved to the floor.
- C. The Contractor shall build in all anchor bolts, dowels, sleeves, and other built-in fittings as required for the equipment.

3.02 PITS, SUMPS AND TRENCHES

- A. Care shall be required of the Contractor in the construction of all indicated pits, sumps and trenches to ensure provisions are made for all built-in or attached frames, embedded items, pipes and sleeves.
- B. Waterstops shall be installed in all concrete joints as indicated.
- C. Floors shall present a smooth evenly troweled surface, properly sloped to drains.

3.03 GROUTING

- A. Surface Preparation:
 - 1. The concrete surfaces shall be cleaned of all contamination and debris, chipping or roughening the surface if any laitance or poor concrete is in evidence.
 - 2. Special care shall be taken with the grout in hot or cold weather to ensure proper setting and gain of strength. Aggravating conditions of placement are to be alleviated to an extent that the temperature of the grout up until time of set will be in about the range of 60 to 80 degrees F. Shields from the sun and hot winds shall be provided when required.
 - 3. Following cleaning, the concrete shall be water-saturated for a period of six hours, the excess water then removed from the surface and non-absorbent edge forms erected.
- B. Grouting of Equipment:
 - 1. Grout shall be placed quickly and continuously, shall completely fill the space to be grouted and be thoroughly compacted and free of air pockets.
 - 2. The grout may be poured in place, pressure grouted by gravity, or pumped. Whenever practical, grout shall be poured from one side only and made to flow across to the open side to avoid air-entrapment.

3.04 CONCRETE FILLS

- A. Surface preparation for concrete fills shall conform to applicable portions of Section 03345 Concrete Placing, Curing and Finishing.

3.05 PADS AND BASES

- A. All concrete work for the equipment pads shall be as specified herein and as detailed the Drawings. The Contractor shall be responsible for the excavation, installation of this concrete work, and backfill.

3.06 DUCTBANKS

- A. Not less than three inches of concrete shall be between the outside of a duct and the earth. Not less than two inches of concrete shall be between adjacent ducts.
- B. All duct line concrete pours shall be continuous between manholes or handholes and between manholes or handholes and structures.
- C. Ductbanks shall be laid in trenches on mats of screened gravel not less than 6-inches thick and well graded.
- D. Where duct lines pass through concrete walls, concrete envelopes shall be extended through and finished flush with inside surfaces. Watertight construction joints of an approved type shall be provided.

END OF SECTION

SECTION 03345

CONCRETE PLACING, CURING AND FINISHING

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools and equipment necessary for the placing, curing and finishing of all cast-in-place concrete as shown on the Drawings, specified herein and evidently required to complete the work.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section shall include, but are not limited to the following:
 - 1. Manufacturer's Literature - including technical and installation information for:
 - a. Cement Grout (Non-Shrink)
 - b. Membrane Curing Compound
 - c. Joint Sealant
 - d. Concrete Sealer
 - f. Epoxy Bonding Compound

1.03 ENVIRONMENTAL CONDITIONS

- A. Protection:
 - 1. Fresh concrete shall be adequately protected from freezing, premature drying, heavy rains, flowing water and mechanical injury. Provisions shall be made for maintaining new concrete in a continuously moist condition for at least seven days after placement.
- B. Cold Weather Requirement:
 - 1. When placing concrete in cold weather, the recommendations of the American Concrete Institute's Publication "Cold Weather Concreting" ACI-306R shall be followed insofar as the Engineer may direct. The use of set accelerators will be at his discretion except that no calcium chloride will be allowed. After the first frost of the winter and after the mean daily temperature at the site falls below 40 degrees F. for more than one day, concrete shall be protected from freezing for not less than the first 48 hours after is placed. In the spring, concrete shall be similarly protected until the mean daily temperature rises above 40 degrees F. for more than 3 consecutive days. When the mean daily temperature falls below 40 degrees F. for more than one day, concrete shall thereafter be placed at a temperature of between 50 and 55 degrees F. and maintained at that temperature for at least three days. During the next three days, it shall be protected from freezing.
 - 2. When it is necessary to heat the materials in order that the concrete when placed will have a temperature within the allowable range, water and aggregates shall be introduced into the mixer and the temperature allowed to stabilize before the

cement is added. If heating of aggregates is not practicable, the water may be heated to any temperature required to produce a water-aggregate temperature in the 60 degrees to 80 degrees F. range. Cement should never be added to a mix having a higher temperature due to the danger of producing a flash set. When aggregate heating is required and steam in pipes is not available, steam jets may be the only practicable method. With this method the amount of free water on the aggregate will vary considerably and the mixing water will have to be adjusted for each batch. In general, there is more danger in overheating water and aggregates, and producing mix temperatures on the high side of the allowable than there is in being on the low side.

3. Regardless of materials heating or the use of admixtures, protective measures shall be taken to maintain the temperature of freshly placed concrete as recommended by the ACI for the particular condition. Data on the duration of recommended protection, safe final removal of shores and forms, and the like appears in the ACI publication "Cold Weather Concreting" (ACI-306R).
4. The methods of protecting freshly placed concrete will be subject to the approval of the Engineer. In general, external heating will not be required during the first three days if measures are taken to retain the heat of hydration. Such measures shall be commercial batt insulation, insulating board, loose fill insulation, or other material approved by the Engineer. Canvas or plastic film shall be used to protect the insulations from precipitation. After three days, if heating is required to maintain the temperature of the concrete above freezing, it shall be provided as required. Exhaust steam is the best method, is fire safe, and does not dry the surface of the concrete. Airplane heaters, located outside the structure or enclosure and blowing hot air into it are acceptable but not preferred. Open fires and salamanders without proper ventilation will not be allowed due to the fire hazard and strong carbon dioxide atmosphere which is detrimental to freshly placed concrete.

C. Hot Weather Requirements:

1. For concrete placed during extremely warm weather, the aggregate shall be cooled by frequent spraying in such manner as to utilize the cooling effect of evaporation. Temperature of the concrete when placed shall not be more than 90 degrees F. If such a temperature cannot reasonably be maintained, the Engineer shall be notified in order to permit redesign of the mix at his direction to compensate for loss of strength resulting from higher mix temperatures. Newly placed concrete shall be protected from the direct rays of the sun and the forms and reinforcement, just prior to placing, shall be sprinkled with cold water.
2. During periods of excessively hot weather (90 degrees F., or above), ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels, all in accordance with the provisions of ACI 305R, "Hot Weather Concreting".
3. Temperature records shall be maintained giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. The record shall include checks on temperature of concrete as delivered and after placing in forms. Data shall be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained. A copy of the weather data shall be included in the permanent records of the job. During excessively hot weather not more than one hour shall elapse between time of adding water to cement or cement to aggregate, and time of placing concrete.

1.04 EVALUATION OF CONCRETE

- A. The Contractor shall comply with ACI 301, Chapter 17, Evaluation and Acceptance of Concrete.
- B. Concrete test results and reports by the testing laboratory shall be the basis for evaluating concrete strength.
- C. The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements which control the strength of the structure, including but not necessarily limited to the following conditions:
 - 1. Low strength concrete as designated by ACI 301, Chapter 17.
 - 2. Reinforcing steel size, quantity, strength, position or arrangement at variance with the requirements of Section 03200, Concrete Reinforcement and/or the Drawings.
 - 3. Concrete which differs from the required dimensions or locations in such a manner as to reduce strength.
 - 4. Curing less than specified.
 - 5. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.
 - 6. Mechanical injury, construction fires, accidents or premature removal of formwork likely to result in deficient strength.
 - 7. Poor workmanship likely to result in deficient strength.
- D. Where the strength of the structure is considered potentially deficient, core tests in accordance with ASTM C42 and/or load tests evaluated in accordance with ACI 318, Chapter 20 may be ordered by the Engineer. Should the Contractor elect to make core tests of questionable concrete, all expenses incidental thereto shall be paid by the Contractor. Should the Engineer direct that core tests be made, all costs will be paid for by the Owner if such tests prove the concrete to be satisfactory. If unsatisfactory, all costs including additional testing of replaced work shall be paid for by the Contractor.
- E. Concrete work judged inadequate by results of core tests and/or load tests shall be removed and replaced if so directed by the Engineer at the Contractor's expense.
- F. Water Tightness:
 - 1. The following concrete basins shall be tested for water tightness:
 - a. Spent Washwater Wetwell.
 - b. Clearwell.
 - 2. Testing Procedure:
 - a. On completion of the tank, and prior to any specified backfill placement, the following test shall be applied individually to each basin to determine water tightness.
 - b. Fill the tank with potable water to the maximum level and let it stand for at least 24 hours.
 - c. Measure the drop in liquid level over the next 72 hours to determine the liquid volume loss for comparison with the allowable leakage. Evaporative losses shall be measured or calculated and deducted from the measured loss to determine net liquid loss (leakage). The net liquid loss for a period of 24 hours shall not exceed 0.1 of 1 percent of the tank capacity.

- d. If the leakage exceeds the maximum allowable, the leakage test shall be extended to a total of five days. If at the end of five days average daily leakage does not exceed the maximum allowable, the test shall be considered satisfactory. If the net liquid loss exceeds the maximum allowable, leakage shall be considered excessive and the tank shall be repaired, and retested until leakage falls within the appropriate limit.
- e. Damp spots on the exterior wall surface, or interior common walls, or measurable leakage of water at the wall base shall not be permitted. Damp spots are defined as spots where moisture can be picked up on a dry hand. The source of water movement through the wall shall be located and permanently sealed in an acceptable manner. Leakage through the wall-base joint shall likewise be corrected.

PART 2 PRODUCTS

2.01 CEMENT GROUT

- A. Grout shall be Embeco Pre-Mixed non-metallic non-shrink grout as made by Master Builders, Inc., Five Star Grout as made by U.S. Grout Company, Upcon Construction Grout as made by USM, Upco Chemical Division, or equal.

2.02 ROD STOCK

- A. Shall be a closed cell polyethylene foam furnished in sizes one third greater in diameter than the joint.

2.03 JOINT SEALANT

- A. Shall be a one component, polyurethane-base non-sag elastomeric sealant, Sikaflex-1A as manufactured by Sika Corporation or equal. Joint sealant shall be NSF approved for potable water contact.

2.04 CONCRETE SEALER

- A. All interior concrete floors to be exposed upon completion of this work, and for which no other surface treatment is specified, shall have an application of Dekote as produced by A.C. Horn, Inc., or equal as made by Sonneborn or Euclid. The material shall be applied and cured in accordance with manufacturer's directions at the rate of 200 to 350 sq. ft. per gallon.

2.05 MEMBRANE CURING COMPOUND

- A. May be used only on walls and slabs not subject to further treatment such as painting, chemical hardening, special topping or coatings. If used, it shall be Horncrete 30D or 30C as manufactured by A.C. Horn, Inc. or equal as made by Sonneborn or Sika Corporation, and conforming to ASTM C309, Type 1 or 1D, Class B. Compound shall be applied uniformly by spray, leaving no pinholes or gaps, at a coverage rate not to exceed 200 square feet per gallon. The curing compound shall be applied after finishing operations are completed and surface moisture has disappeared. Any compound used must be of a type which will not contaminate potable water.
- B. If forms are removed prior to eight days after placing the concrete, the uncovered surfaces shall be coated with the curing compound as specified herein.

2.06 CURING PAPER

- A. Shall be used to cure floors which are to have applied toppings or chemical hardeners. Curing paper shall also be used in other areas to protect newly poured concrete floors from damage. Material shall conform to ASTM C171, for regular or white waterproof paper.

2.07 EPOXY BONDING COMPOUNDS

- A. Shall be Uniweld as made by Permagile Industries, Inc., Sikadur 32 Hi-Mod as made by Sika Corporation, or equal.

2.08 BOND BREAKER

- A. Shall be 15 pound asphalt saturated roofing felt.

PART 3 EXECUTION

3.01 CONCRETE PLACING

- A. Placing:
 - 1. Concrete shall be placed in accordance with the applicable provisions of the "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete" (ACI 304) of the American Concrete Institute and these specifications.
 - 2. Concrete shall be handled from the mixer, or truck if ready-mixed concrete is used, to the place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients but in no case shall the time elapsed between the addition of the water to the cement or the cement to the aggregates and the placing of concrete in the forms exceed one and one-half (1-1/2) hours. In periods of excessive hot weather as previously defined in paragraph 1.04 C. of this section, this time shall be reduced to one hour.
 - 3. The concrete shall be deposited in the forms as nearly as practicable in the final position to avoid rehandling and shall be so deposited as to maintain a homogeneous plastic surface approximately horizontal. Water shall be removed from all forms, trenches, and excavations and the work shall be kept dry while

the concrete is being placed. No water shall be thrown on or allowed to flow over or rise upon the concrete until it has had time to become thoroughly set.

4. The maximum free fall of any concrete shall be limited to three feet. Accumulation of concrete on the forms or reinforcement above level of the placement shall be avoided. Concrete that is partially hardened, or has been contaminated by foreign material or that has been retempered will not be permitted on this project. A concrete placement, once started, shall be carried on as a continuous operation until the placing of the section is completed.

B. Runways:

1. Runways shall be provided for wheeled concrete handling equipment. Such equipment shall not be wheeled over reinforcement nor shall runways be supported on reinforcement.

C. Chuting:

1. When concrete is conveyed in chutes, the equipment shall be of such size and design as to insure a continuous flow in the chute. The chute shall be of steel or be steel lined, and the different sections shall have the same slope throughout. Aluminum chutes will not be allowed. The slope shall be not flatter than 3 horizontal to 1 vertical or steeper than 2 horizontal to 1 vertical and, between these limits, the slope shall be that which will prevent segregation of ingredients. The end of the chute shall be provided with a baffle to prevent segregation of ingredients. If the end of the chute is more than three feet above the surface of the concrete in the forms, a spout shall be used. The spout shall be kept full of concrete and the lower end maintained as near to the surface of deposit as practical. The chute shall be thoroughly flushed with water before and after each run. The water used shall be discharged outside the forms.

D. Bonding:

1. After a section has been completed, any laitance on the temporary top surface of construction joints shall be removed and the surface raked immediately after the initial set has taken place. If removal of the laitance is delayed until the concrete has set, so that laitance cannot be removed by shovels or scrapers, the Contractor shall remove it by power chipping tools.
2. Before depositing concrete on or against concrete which has set, the surface of the set concrete shall be roughened, thoroughly cleaned with wire brushes, air blasted, and then saturated with water. The new concrete placed in contact with hardened or partially hardened concrete shall contain an excess of cement to secure bond. The surface of the hardened concrete shall be slushed with a coating of neat cement grout against which the new concrete shall be placed before the grout has attained its initial set. Where noted or where an unplanned interruption in a concrete placement has occurred, bonding shall be with epoxy bonding compound used in accordance with the material manufacturer's recommendations.

E. Compaction:

1. Concrete shall be placed in layers not exceeding 12 inches in depth, and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding, and tamping as required.
2. Form vibrators will be considered only where internal vibration is impractical and will be allowed only with the written permission of the Engineer. When

allowed, the vibrator shall be placed so that motion is horizontal and vibration in any location shall not be continued to the extent that segregation occurs, but vibrators shall be relocated frequently. Vibrators shall not be used to transport concrete within the forms. Concrete shall be thoroughly worked around reinforcement, embedded fixtures and into the corners of the forms.

3. Compaction shall be in accordance with ACI 390, "Recommended Practice for Consolidation of Concrete" as modified by this specification.

3.02 CURING AND PROTECTION

A. Curing:

1. Shall be accomplished by the use of waterproof paper, curing compounds, "wet" methods (fog spray, damp sand or burlap) or other methods dependent upon the end use of the concrete. Provisions shall be made for maintaining new concrete in a continuously moist condition for a minimum of seven days.
2. The use of curing compound on surfaces to receive coating or bonded finished will not be allowed.

B. Concrete Slab Protection:

1. Finished concrete slabs shall be covered with curing paper as specified, laid with side joints lapped four inches and end joints lapped six inches. Paper shall be applied no sooner than 24 hours and not over 30 hours after finishing the slab and shall be left in place at least ten days. Joints shall be taped and paper shall be weighted to prevent displacement. Rips or tears appearing in the paper during the first seven days after a floor is completed shall be immediately patched. No traffic will be permitted until five days after pouring. From 5 to 15 days only light traffic will be permitted.
2. Where the use of wrenches and other heavy tools may be required, the Contractor shall provide additional protection as required.

3.03 DEFECTIVE CONCRETE

- A. Concrete work not formed as shown on the drawings, out of alignment or level, or showing a defective surface, shall be removed and completely replaced if directed by the Engineer.
- B. Slight imperfections in appearance of the structure may be patched as specified herein provided the permission of the Engineer is obtained prior to patching.

3.04 REPAIR OF SURFACE DEFECTS

A. General:

1. Immediately after the forms are removed, all form ties shall be cut off below surface of concrete, all fins and irregularities shall be removed and all defective areas, holes, honeycombs, cavities and irregularities cleaned and patched with a stiff mortar of the same composition as the mortar in the original concrete mix, all as specified herein. Exposed patchwork shall be rubbed where and as specified herein or otherwise treated to match adjacent surfaces.

B. Patching:

1. Defective areas for which patching is allowed shall be cleaned of all dust, dirt, grease, laitance, and loose or spalling concrete, and be given a brush applied coat of an epoxy bonding compound approved by the Engineer.
 2. The compound shall be mixed as directed by the manufacturer. The patching mortar shall be freshly mixed and be composed of the same materials and proportions as were used for the original concrete, including the admixture, except that the coarse aggregate shall be omitted and fine aggregate substituted therefor. The placing of mortar shall begin immediately after the bonding compound is applied and shall be completed within the contact time. The bonding compound shall be sticky to the touch during placing of mortar. The patching shall be finished to match adjoining concrete, and cured and protected as specified for concrete. The manufacturer's directions and precautions shall be followed when using such compounds.
- C. Filling Form Tie Holes:
1. Holes left by withdrawal of rods or by removal of end ties shall be filled solid with mortar, using epoxy bonding compound in the same manner as specified under "Patching" above. Holes passing entirely through the wall shall be filled using small tools that will pack the hole solidly with mortar. Excess mortar at the surface of the wall shall be struck off flush with a cloth.
- D. Rubbed Finish:
1. Surfaces requiring remedial work which are to be exposed to view whether painted or not, shall have all projections and irregularities carefully removed and all cavities filled with stiff mortar of the same composition as the mortar in the concrete. The same brand and color of cement, and the same kind and color of aggregate shall be used for filling cavities as was used in the original concrete mix. The surface film of all such pointed surfaces shall be carefully removed before setting occurs. The preceding operations shall be done within 24 hours after removal of the forms. If, after patching and smoothing, surfaces do not present a smooth surface of even texture and appearance, then the following finish shall be repeated as many times as the Engineer deems necessary. The Engineer shall be the sole judge of the amount of rubbing required.
 2. Immediately after the forms are removed, and necessary patching and smoothing is done, the surface shall be wetted with clean water, without applying any cement or other coating, and rubbed with a No. 16 carborundum brick or other abrasive of equal quality until even and smooth and of uniform appearance.
 3. The final finish shall be obtained by a thorough rubbing with a No. 30 carborundum brick or other abrasive of equal quality.
 4. After final rubbing is completed, the surface shall be thoroughly drenched and kept wet for a period of five days, unless otherwise directed. No rubbing will be permitted in cold or freezing weather, except in heated enclosures.

3.05 FINISH OF FORMED SURFACES

A. General:

1. All exposed interior and exterior concrete surfaces shall be finished as specified herein and shall have a smooth and even surface when completed. "Exposed concrete" shall be defined as submerged and non-submerged concrete exposed to view upon completion of the work whether or not a painted finish is specified.
2. Exterior concrete which will be covered by fill such as exterior faces of walls, spread footings, etc., shall have no treatment other than required for repairs as specified elsewhere in this section.

B. Grout Rubdown:

1. While the concrete is still damp, a thin coat of medium consistency neat cement slurry shall be applied to the concrete surface by means of bristle brushes to provide a bonding coat in the parent concrete. Before the slurry has dried or changed color, a dry (almost crumbly) grout comprising one volume cement, the same as used for the parent concrete, adjusted with white cement to match color where exposed, to 1-1/2 volumes of sand, shall be applied. This grout shall be applied by means of slightly damp pads of coarse burlap approximately 6 inch square used as a float. The grout shall be well scrubbed into the surface to provide a dense mortar.
2. The mortar shall be allowed partially to harden from one to two hours depending upon the weather. Work in direct hot sunlight shall be avoided, and if the air is hot and dry, the concrete shall be kept damp during this period with a fine fog spray.
3. When the grout has hardened sufficiently, all the grout that can be removed shall be removed with a trowel. Grout shall not be allowed to remain on the concrete too long since it will become difficult to remove.
4. The surface shall then be allowed to dry thoroughly and then be rubbed vigorously with clean, dry burlap to completely remove any dried grout. There should be no visible film of grout remaining after this rubbing.
5. The entire operation shall be completed in one working day. No grout shall be left on the concrete overnight. Sufficient time shall be allowed for the grout to dry after it has been cut with a trowel so that it can be wiped off clean with burlap.
6. On the day following, the concrete shall again be wiped clean with dry burlap to remove any inadvertent dust. At this time, the use of a piece of burlap containing old hardened mortar may be helpful since it will act as a mild abrasive. After this treatment no build-up film should remain on the parent surface. If however, such is present, a fine abrasive stone shall be used to remove all such material without breaking through the surface film of the parent concrete. Do not work up a lather.
7. After application of the surface grout, the surface shall be thoroughly washed down with stiff brushes and the concrete maintained in a continuously damp condition for at least three days above 50 degrees F. by the periodic application of a fine fog spray or by the use of a poultice of damp flannel covered with polyethylene taped to the concrete.

3.06 FINISHING OF RELATED UNFORMED SURFACES

- A. Tops of exposed beams, walls, parapets and tops of similar unformed surfaces occurring adjacent to formed surfaces shall be struck off smooth and be hand steel troweled by cement masons assisted by a field party to continually verify and check correct lines and elevations, so as to produce a smooth hard level surface. Line and elevation shall be pre-established by means of preset wood screeds which shall be removed during the troweling operation.
- B. After above troweling operations have been completed and after concrete has cured, the above troweled surface shall be dry honed to a smooth non-directional surface texture satisfactory to the Engineer.

3.07 CLEANING CONCRETE

- A. Cleaning Concrete:
 - 1. The Engineer may require remedial action by the Contractor to remove blemishes, rust, stains, or discolorations from the exposed concrete. General cleaning shall be done with a non-etching cleaning agent used as per manufacturer's instructions. The cleaner shall be used on all surfaces to receive a painted finish.
- B. In the event of a severe blemish or discoloration which cannot be removed with a non-etching agent, the Contractor shall notify the Engineer immediately and consider the following:
 - 1. A clean down with mild solution of detergent and water applied by scrubbing vigorously with soft bristle brushes, then flushing with water. Rust stains may be removed by applying a bleaching agent such as oxalic acid.
 - 2. Cleaning operation shall not begin until superstructure is entirely completed and then only where and as directed by the Engineer. Cleaning portions of building as work progresses is not permitted.
 - 3. Cleaning by other methods, bleaching, acid etching, sandblasting or any other procedure suggested by the Contractor and proven to be effective.

END OF SECTION

SECTION 03600

GROUT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install grout complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02700 Precast Concrete Manholes
 - 2. Section 03250 Concrete Accessories
 - 3. Section 03300 Cast-in-Place Concrete

1.03 SUBMITTALS

- A. Shop drawings and product data in accordance with Section 01300 showing materials of construction and details of mixing and installation for:
 - 1. Commercially manufactured non-shrink cementitious grout and underlayment grout. The submittal shall include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations and conformity to the specified standards.
 - 2. Cement grout: The submittal shall include the type and brand of the cement, the gradation of the fine aggregate, product data on any proposed admixtures and the proposed mix of the grout.
- B. Samples:
 - 1. Submit samples of commercially manufactured grout products when requested by Engineer.
 - 2. Submit aggregates proposed for use in mixes when requested by Engineer.
- C. Laboratory Test Reports:
 - 1. Submit laboratory test data as required under Section 03300 for concrete to be used as concrete grout.
- D. Qualifications:
 - 1. Grout manufacturers shall submit documentation that they have at least ten years experience in the production and use of the grouts which they propose to supply.

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C33 – Standard Specifications for Concrete Aggregates,
 - 2. ASTM C150 – Standard Specifications for Portland Cement,

3. ASTM C827 – Standard Test Methods for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures,
 4. ASTM C1107 – Standard Specifications for Packaged Dry, Hydraulic – Cement Grout (Non-shrink).
- B. U.S. Army Corps of Engineers Standard (CRD):
1. CRD-C 621 – Corps of Engineers Specification for Non-shrink Grout.
- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. Qualifications:
1. Grout manufacturers shall have a minimum of ten years experience in the production and use of grout proposed for the work.
- B. Pre-installation Conference:
1. Well in advance of grouting, hold a pre-installation meeting to review the requirements for surface preparation, mixing, placing, and curing procedures for each product proposed for use. Parties concerned with grouting, including Engineer, shall be notified of the meeting at least ten days prior to its scheduled date.
- C. Services of Manufacturer's Representative:
1. A qualified field technician of the non-shrink grout manufacturer, specifically trained in the installation of the products, shall attend the pre-installation conference and shall be present for the initial installation of each type of non-shrink grout and underlayment grout. Additional services shall also be provided, as required, to correct installation problems.
- D. Field Testing:
1. All field testing and inspection services required shall be provided by Owner. Contractor shall assist in the sampling of materials and shall provide any ladders, platforms, etc. for access to the work. The methods of testing shall comply in detail with the applicable ASTM Standards.
 2. The field testing of concrete grout shall be as specified for concrete in Section 03300.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions.
- B. Store materials in full compliance with the manufacturer's recommendations. Total storage time from date of manufacture to date of installation shall be limited to six months or the manufacturer's recommended storage time, whichever is less.
- C. Material which becomes damp or otherwise unacceptable shall be immediately removed from the site and replaced with acceptable material at no additional expense to Owner.

1.07 DEFINITIONS

- A. Non-shrink Grout: A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state and bonds to a clean base plate.

PART 2 PRODUCTS

2.01 GENERAL

- A. The use of a manufacturer's name and product or catalog number is for the purpose of establishing the standard of quality desired.
- B. Like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.
- C. Grout shall be applied where needed or at the discretion of the engineer.

2.02 MATERIALS

- A. Non-shrink Cementitious Grout:
 - 1. Non-shrink cementitious grouts shall meet or exceed the requirements of ASTM C1107 Grades B or C and CRD-C 621. Grouts shall be portland cement based, contain a pre-proportioned blend of selected aggregates and shrinkage compensating agents and shall require only the addition of water. Non-shrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827.
 - a. General purpose non-shrink cementitious grout shall conform to the standards stated above and shall be SikaGrout 212 by Sika Corp.; Set Grout by Master Builders, Inc.; Euco NS by The Euclid Chemical Co.; NBEC Grout by Five Star Products, Inc. or equal.
 - b. Flowable (Precision) non-shrink cementitious grout shall conform to the standards stated above and shall be Masterflow 928 by Master Builders, Inc.; Hi-Flow Grout by the Euclid Chemical Co.; SikaGrout 212 by Sika Corp.; Five Star Grout by Five Star Products, Inc. or equal.
- B. Cement Grout:
 - 1. Cement grout shall be a mixture of one part portland cement conforming to ASTM C150 types I, II, or III and one to two parts sand conforming to ASTM C33 with sufficient water to place the grout. The water content shall be sufficient to impart workability to the grout but not to the degree that it will allow the grout to flow.
- C. Water:
 - 1. Potable water, free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances.

PART 3 EXECUTION

3.01 PREPARATION

- A. Grout shall be placed over cured concrete which has attained its full design strength unless otherwise approved by Engineer.
- B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, grease, oil, curing compounds, laitance and paints and free of all loose material or foreign matter which may effect the bond or performance of the grout.
- C. Roughen concrete surfaces by chipping, sandblasting, or other mechanical means to ensure bond of the grout to the concrete. Remove loose or broken concrete. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance and firmly embedded into the parent concrete.
 - 1. Air compressors used to clean surfaces in contact with grout shall be the oil less type or equipped with an oil trap in the air line to prevent oil from being blown onto the surface.
- D. Remove all loose rust, oil or other deleterious substances which may affect the bond or performance of the grout from metal embedments or bottom of baseplates prior to the installation of the grout.
- E. Concrete surfaces shall be washed clean and then kept moist for at least 24 hours prior to the placement of cementitious or cement grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, flooding the surface, or other method acceptable to Engineer. Upon completion of the 24 hour period, visible water shall be removed from the surface prior to grouting.
- F. Construct grout forms or other leak-proof containment as required. Forms shall be lined or coated with release agents recommended by the grout manufacturer. Forms shall be of adequate strength, securely anchored in place and shored to resist the forces imposed by the grout and its placement.
- G. Level and align the structural or equipment bearing plates in accordance with the structural requirements and the recommendations of the equipment manufacturer.
- H. Equipment shall be supported during alignment and installation of grout by shims, wedges, blocks, or other approved means. The shims, wedges, and blocking devices shall be prevented from bonding to the grout by appropriate bond breaking coatings and removed after grouting unless otherwise approved by Engineer. Grout voids created by the removal of shims, wedges and block.

3.02 INSTALLATION – GENERAL

- A. Mix, apply and cure products in strict compliance with the manufacturer's recommendations and these specifications.

- B. Have sufficient manpower and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.
- C. Maintain temperatures of the foundation plate, supporting concrete, and grout between 40 degrees F and 90 degrees F during grouting and for at least 24 hours thereafter or as recommended by the grout manufacturer, whichever is longer. Take precautions to minimize differential heating or cooling of baseplates and grout during the curing period.
- D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 60 degrees F and 90 degrees F range.
- E. Install grout in a manner which will preserve the isolation between the elements on either side of the joint where grout is placed in the vicinity of an expansion or control joint.
- F. Inspect all existing underlying expansion, control and construction joints through the grout.

3.03 INSTALLATION – CEMENT GROUTS AND NON-SHRINK CEMENTITIOUS GROUTS

- A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel or admixtures without prior approval by Engineer.
- B. Do not mix by hand. Mix in a mortar mixer (with moving blades). Pre-wet the mixer and empty excess water. Add premeasured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.
- C. Placements greater than 3-in in depth shall include the addition of clean, washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added.
- D. Provide forms where and as required. Place grout into the designated areas in a manner which will avoid segregation or entrapment of air. Do not vibrate grout to release air or to consolidate the material. Placement shall proceed in a manner which will ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes as necessary.
- E. Place grout rapidly and continuously to avoid cold joints. Do not place cement grouts in layers. Do not add additional water to the mix (retemper) after initial stiffening.
- F. Just before the grout reaches its final set, cut back the grout to the substrate at a 45 degree angle from the lower edge of bearing plate unless otherwise ordered and approved by Engineer. Finish this surface with a wood float or brush finish.
- G. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement or longer if recommended by the manufacturer. Saturate the grout surface by use of wet burlap, soaker hoses, ponding or other approved means. Provide sunshades as

necessary. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

END OF SECTION

SECTION 08306
ALUMINUM FLOOR HATCHES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide floor hatches as required by the Contract Documents.
 - 1. In general provide aluminum and floor hatches for the wetwell at the River's Edge Effluent pump station shown on the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02700 Precast Concrete Manholes
 - 2. Section 03300 Cast in Place Concrete

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. For purposes of designating type and quality for work in this Section, Drawings and Specifications are based on floor hatches as manufactured by The Bilco Company, New Haven, CT.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop Drawings showing details of each frame type, details of openings, and details of construction, installation and anchorage.
 - 4. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.
- C. The equipment to be furnished under this section shall be coordinated with all applicable structural and mechanical process drawings, including addenda.
 - 1. If no changes are required, provide a statement that no changes are required.
 - 2. If changes are required, furnish marked up drawings or statement detailing the modifications necessary for the equipment proposed.

Failure to include all drawings or a statement applicable to the equipment specified in this section will result in submittal return without review until a complete package is submitted.

- D. A copy of this specification section with addenda, with each paragraph check-marked to indicate specification compliance or marked and indexed to indicate requested deviations and clarifications from the specified requirements.
1. If deviations and clarifications from the specifications are indicated, therefore requested by the Contractor, provide a detailed written justification for each deviation and clarification.

Failure to include a copy of the marked-up specification sections and or the detailed justifications for any requested deviation or clarification will result in submittal return without review until marked up specifications and justifications are submitted in a complete package.

1.05 PRODUCT HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
1. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
 2. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 ALUMINUM HATCHES

- B. Floor hatch be type "JD-AL" (double door) as manufactured by the Bilco Co., New Haven, CT and shall have the following attributes:
1. Shall have 1/4-inch aluminum diamond pattern plate to withstand a live load of 300 lbs. per square foot with a maximum deflection of 1/50th of the span.
 2. Channel frame shall be 1/4-inch aluminum with an anchor flange around the perimeter.
 3. Equipped with stainless steel hardware throughout.
 4. Automatically lock in the vertical position by means of a heavy hold-open arm with grip handle release.
 5. Cover shall pivot so that it does not protrude into the channel frame.
 6. Channel frame shall have a 1-1/2 inch drainage coupling.
 7. Lock shall be of the slam lock design with removable key wrench.
 - a. Latch release protected by a flush gasketed, removable screw plug.
 - b. Frame and door shall be fabricated to include a recessed padlock hasp covered by a flush hinged lid.
 8. Compression spring operators enclosed in telescopic tubes.
 9. EPDM gasket mechanically attached to the frame to reduce the amount of dirt and debris that may enter the channel frame.
 10. Size as shown on the Drawings.
 11. Add fall protection grating with hatch

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Access hatches to well shall be installed per manufacturer's installation instructions.

END OF SECTION

SECTION 11310

SUBMERSIBLE CENTRIFUGAL WASTEWATER PUMPS

PART 1 GENERAL

1.01 SUMMARY

- A. The work under this section shall consist of furnishing all equipment, materials and labor for the installation of the submersible centrifugal pumps, motors, and appurtenances, complete.
- B. The pumps and motors shall be centrifugal end suction pumps with constant speed motors. Pumps shall be manufactured by ITT Flygt, KSB, Inc., Zoeller, Flowserve (Ingersoll Dresser), or approved equivalent.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02700 Precast Concrete Manholes
 - 2. Section 03250 Concrete Accessories
 - 3. Section 03600 Grout
 - 4. Section 13100 Instrumentation and Controls
 - 5. Section 15100 Ductile Iron Pipe, Fittings, and Appurt.
 - 6. Division 16 Electrical

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Shop Drawings: Include illustrations, dimensions, materials, performance and wiring diagrams, and certified factory pump curves.
- C. Operating and Maintenance Manuals: Include manufacturer's instructions for equipment installation, start-up, operation, and maintenance, including parts lists for operation and maintenance manuals specified in Division 1.
- D. Certified Performance Test Reports: Submit certified report performance test. Perform factory tests to certify that pumps meet the specified requirements for head and capacity, and meet or exceed all applicable National Hydraulic Institute standards.

1.04 SYSTEM DESCRIPTION

- A. Pumping equipment shall comply with Section 2.01.
- B. Equipment shall be suitable for pumping municipal wastewater and for service specified in Section 2.01

- C. Equipment shall be suitable for continuous operation at maximum fluid temperature of 104°F at all operating speeds specified and without external cooling fluid.
- D. Adequately size motor hp so each pump is non-overloading throughout entire pump performance curve.
- E. Design motor for up to 15 evenly spaced starts per hr for motors less than 125 hp and up to 10 evenly spaced starts per hr for motors 125 hp and larger.
- F. Equipment shall be free from shock, vibration, cavitation, overheating, and noise while operating at specified conditions.
- G. Equipment shall be capable of continuous operation without damage while operating under load and unsubmerged.
- H. Design equipment for continuous submergence under water without loss of watertight integrity to depth of 65 ft.
- I. Design equipment for removal and reinstallation of pumps without need to enter wet well and without removal of fasteners.
- J. Design pump removal guide mechanism and permanently mounted discharge connection elbow so no part of pump bears on wet well structure.
- K. Connection of pump to permanently mounted discharge elbow shall not leak.
- L. Design equipment so parts readily accessible for inspection and repair, easily duplicated and replaced, and suitable for service specified

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment on site according to manufacturer's recommendations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Suitable for application specified:
 - 1. Pump Case: Cast iron, ASTM A48, minimum Class 30.
 - 2. Motor Housing: Cast iron, ASTM A48, minimum Class 30.
 - 3. Impeller: Cast iron, ASTM A48, minimum Class 30.
 - 4. Intermediate Housing: Cast iron, ASTM A48, minimum Class 30.
 - 5. Discharge Base Elbow: Cast iron, ASTM A48, minimum Class 30.
 - 6. Pump/motor Shaft:
 - a. Shafts not directly exposed to pumped fluid or shafts provided with protective sleeve: Carbon steel, ASTM A576, minimum Grade 1035.
 - b. Shafts directly exposed to pumped fluid: Stainless steel, ASTM A276, Type 420 or ASTM A182, Grade F XM-19.
 - 7. Shaft Sleeve: Stainless steel, ASTM A276, Type 420.
 - 8. Wear Ring; Case:

- a. Pumps with motor nameplate less than 15 hp: Brass, nitrile rubber, or cast iron.
- b. Pumps with motor nameplate 15 hp and larger: Cast iron, ASTM A48, minimum 200 Brinnel hardness.
9. Wear Ring; Impeller: Stainless steel, ASTM A276 - 400 Series, minimum 300 Brinnel hardness.
10. O-Rings: Nitrile or viton.
11. Fasteners: Stainless steel, ASTM A276, Type 316Ti.
12. Lower Seal Faces: Tungsten carbide vs. tungsten carbide or silicon carbide vs. silicon carbide.
13. Upper Seal Faces: Tungsten or silicon carbide vs. carbon (rotating seal ring) or tungsten carbide vs. tungsten carbide, or silicon carbide vs. silicon carbide.
14. Guide Rails and Brackets: Stainless steel, ASTM A276, Type 316.
15. Guide Cables and Brackets: Stainless steel, ASTM A276, Type 316.
16. Oil for all uses: Ecologically safe, paraffin based.
17. Power/control Cable: chloroprene rubber or neoprene.
18. Anchor Bolts: Stainless steel, ASTM A276, Type 316.
19. Cutter: 440 Stainless Steel

A. Each pump shall be designed for the conditions of service tabulated below:

Effluent to River's Edge Pump Station – 2 Pumps

1.	Design Capacity (gpm):	63
2.	Design TDH (ft):	77
3.	Shut Off Head (min) (ft):	110
4.	Solids Capacity (min) (in):	2
5.	Motor Speed (max) (rpm):	3600
6.	Motor Horsepower (max):	5
7.	System Voltage:	460
8.	Minimum Efficiency (%):	30%

2.02 PUMP FABRICATION

A. General:

1. Provide metal-to-metal contact between machined surfaces.
2. Machine and fit mating surfaces with O-rings where watertight sealing is required. Provide sealing by compression of O-rings without specific torque limits.
3. Do not use rectangular cross-sectioned gaskets, elliptical O-rings, grease, or secondary sealing compounds.
4. Any equipment installed in the wet well area shall meet Class 1, Division 1, Group C and D, to comply with the National Electric Code.

B. Impellers:

1. Non-clog or vortex type, capable of passing minimum spherical solid size specified.
2. Balance statically and dynamically.

C. Wear rings:

1. Provide case wear ring on all pumps. Pumps with motor nameplate 15 hp and smaller may be provided with wear ring plate as alternate to case wear ring. Plate shall be adjustable and have outward spiraling groove.

2. Provide impeller wear ring on pumps with motor nameplate 15 hp and larger. Impeller wear rings on pumps with motor nameplate horsepower less than 15 hp is optional.
- D. Shaft and shaft sleeve:
1. Provide common pump/motor shaft. Pump shaft shall be extension of motor shaft. Pump shaft and motor shaft with connection coupling is not acceptable.
 2. Provide shaft sleeve for carbon steel shafts that would otherwise be directly exposed to pumped fluid. Shaft sleeve is not required for stainless steel shaft.
- E. Shaft seals:
1. Provide 2 totally independent mechanical shaft seals, installed in tandem, each with its own independent spring system.
 2. Provide one stationary and 1 positively driven rotating seal ring for each seal.
 3. Easily inspected and replaced.
 4. Shall not require maintenance or adjustment.
 5. Shall not depend on direction of rotation for sealing.
 6. Shall not rely on pumped media for sealing.
 7. At minimum, install upper seal in oil-filled chamber. Provide drain and inspection plug with positive anti-leak seal easily accessible external to pump.
- F. Bearings:
1. Provide upper and lower bearings.
 2. Single or double row to provide minimum B-10 life of 40,000 hrs at axial and radial loadings while operating at specified operating conditions.
 3. Sealed/shielded-non-regreasable or open regreasable type. Provide re-lubrication ports with positive anti-leak plugs external to pump for open regreasable bearings.
 4. Switch installed in separate leakage collection chamber to indicate seal leakage prior to penetration of lower bearing may be provided at pump manufacturer's option. Wire switch for connection to control panel. Switch, wiring and associated controls shall be provided at no cost to OWNER.
- G. Motor:
1. Manufactures standard UL listed or labeled definite purpose motor.
 2. 460-v, 3-ph, 60-Hz.
 3. Environment as noted in Schedule 1.
 4. Horsepower: As specified in Schedule 1.
 5. Housed in air-filled, watertight casing.
 6. Moisture resistant, minimum Class F insulation rated for 155°C.
 7. Embed 3 thermal switches in windings, 1 per phase, to provide high temperature shutdown protection. Wire switches in series for connection to control panel.
 8. Provide leakage sensor to detect fluid in stator chamber and provide signal for motor shutdown. Wire sensor for connection to control panel.
 9. Provide thermal switch and leakage sensor alarm relay panels for each pump supplied.

- H. Cooling system:
 - 1. Provide motor cooling to comply with design and performance requirements and with sufficient surface area for ambient only cooling.
- I. Power/control cable:
 - 1. Size in conformance with National Electric Code (NEC) standards. Provide sufficient length, and supports, to connect to junction box as shown on Electrical Drawings without splicing. Provide watertight cable entry seal to comply with design and performance requirements.

2.03 PUMP REMOVAL SYSTEM

- A. Provide guide rail or guide cable system, and discharge base elbow. Provide anchor bolts and accessories for complete system. System shall comply with design and performance requirements and as specified.
- B. Guide rail system: Provide 2 guide rails, upper and intermediate guide brackets for connecting rails to structure, and slide bracket for connecting pump to guide rails.
- C. Discharge base elbow:
 - 1. Provide for automatic, leak-tight connection to pump discharge.
 - 2. ANSI B16.1 Class 125 flange for connection to piping.
 - 3. Provide for connection of guide rails or guide cables.
- D. Anchor bolts: Comply with pump manufacturer's requirements.

2.04 CONTROL EQUIPMENT

- A. Pump controls shall be provided by others under Division 13.
- B. Constant speed motor starters shall be provided by others in Division 16.

2.05 COATING

- A. Manufacturer is responsible for surface preparation, priming, and finish coating of ferrous metal components in plant prior to shipment.

2.06 SPARE PARTS

- A. For each pump type furnished, provide one spare set of mechanical seals

PART 3 EXECUTION

3.01 INSTALLATION

- A. Construct concrete base as required. Imbed anchor bolts. Set anchor bolts with pump manufacturer's templates.
- B. Install all pump baseplates on a concrete pad as detailed in the drawings and anchor with bolts per the manufacturer's requirements. Grout baseplate to pad.

3.02 TESTING AND ADJUSTING

- A. Retain the services of a factory-authorized service representative to inspect installation, supervise pre-start-up and final performance tests as specified in Section 01650, Facility Start-up.
- B. During the tests, observe head, capacity, motor input, pump vibration, and general performance and fitness. Repair or replace defective equipment and repeat tests until satisfactory results are achieved.
- C. Adjust or replace equipment to achieve indicated performance.
- D. After 3 months of facility operation, a factory-authorized service representative shall return to check and readjust, if necessary, the pump alignments at no additional cost to the Owner.

3.03 DEMONSTRATION

- A. Provide the services of a factory-authorized service representative for training of Owner's maintenance personnel in proper operation, servicing, and maintenance of equipment. Allow 4 hours for training. Conduct training separate from, and after the start-up tests.

END OF SECTION

SECTION 15060
PIPE HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide pipe hangers and supports as required by the Contract Documents.
 - 1. In general provide all hanging and supporting devices for hanging or supporting piping systems throughout the Work.
 - 2. The contractor shall be responsible for providing all piping supports required to conform with the requirements of this Section whether or not indicated on the drawings.
 - a. Additional supports may be required to be provided by the contractor to restrain pipe movement noted during systems operations.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 15100 Ductile Iron Pipe, Fittings and Appurtenances

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Hangers and supports shall be of an approved standard design capable of supporting the load under all operating conditions.
 - 1. All hangers, supports, and appurtenance shall conform to the latest applicable requirements of ANSI 31.1.0.
 - 2. The minimum working factor of safety for all supporting equipment, with the exception of springs, shall be five times the ultimate tensile strength of the material, assuming 10-foot of waterfilled pipe being supported.
- C. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment.
 - 1. When manufacturers have indicated requirements that piping loads shall not be transmitted to their equipment, submit certification stating that such requirements have been complied with.
- D. Codes and Regulations:
 - 1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.
 - 2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement shall govern.
- E. The Contractor shall submit drawings and calculations stamped by a structural engineer registered in the State of Massachusetts detailing piping supports for all long runs of

pipng that are not supported from the floor, and are not specifically called out in the support/spacing schedules included herein.

- F. Coordinate the work of this Section with the work of other Sections.

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop drawings and other data as required to indicate method of installing the pipe hangers and supports, except where such details are fully shown on the Drawings.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GENERAL

- A. All of the equipment specified herein is intended to support the various types of pipe and piping systems.
 - 1. The details shown on the drawings are intended to indicate the generally desired methods of support under normal conditions.
 - 2. It shall be the responsibility of the Contractor to develop final details and any details associated with special conditions not already covered to meet the system conditions specified in the piping specifications.
- B. All pipe and tubing shall be supported as required to prevent significant stresses in the pipe or tubing material, valves, fittings, and other pipe appurtenances and to support and secure the pipe in the intended position and alignment.
 - 1. All supports shall be designed to adequately secure the pipe against excessive dislocation due to thermal expansion and contraction, internal flow forces, and all probable external forces such as equipment, pipe and personnel contact.
 - 2. Any structural steel members required to brace any piping from excessive dislocation shall conform to the applicable requirements of Section 05500 and shall be furnished and installed under this section.
- C. Hangers and supports shall be spaced in accordance with ANSI B31.1 except that the maximum unsupported span shall not exceed 10 feet unless otherwise specified herein.
- D. Where flexible couplings are required at equipment, tanks, etc. the opposite to the piece of equipment, tank, etc. shall be rigidly supported.
- E. All pipe and appurtenances connected to the equipment shall be supported in a manner to prevent any strain from being imposed on the equipment or piping system.

- F. All rods, clamps, hangers, inserts, anchor bolts, brackets, and components for interior pipe supports shall be furnished with galvanized finish, hot dipped or electro-galvanized coated, except where field welding is required.
1. Interior clamps on plastic pipe shall be plastic coated.
 2. Supports for copper pipe shall be copper plated or shall have a 1/16-inch plastic coating.
 3. All rods, clamps, hangers, inserts, anchor bolts, brackets, and components for exterior pipe, submerged pipe and pipe within outdoor structures shall be Type 316 Stainless Steel.
- G. Supports shall be sufficiently close together such that the sag of the pipe is within limits that will permit drainage and avoid excessive bending stresses from concentrated load between supports.
- H. All uninsulated non-metallic piping shall be protected from local stress concentration at each support point.
1. Protection shall be provided by galvanized steel protection shields or other method as approved by the Engineer.
 2. Where pipes are bottom supported, 180 degree arc shields shall be furnished.
 3. Where 360 degree arc support is required, such as U-bolts, protection shields shall be provided for the entire pipe circumference.
 4. Protection shields shall have an 18 gauge minimum thickness, not be less than 12-inch in length and be securely fastened to pipe with stainless steel or galvanized metal straps not less than ½-inch wide.
- I. All insulated pipe shall be furnished with a rigid foam insulating saddle at each pipe support location.
1. Provide galvanized protection shields as specified above at each location.
- J. Where pipe hangers and supports come in contact with copper piping, provide protection from galvanic corrosion by; wrapping pipe with 1/16-inch thick neoprene sheet material and galvanized protection shield; isolators similar to ELCEN figure No. 228; or copper plated or PVC coated hangers and supports.
- K. Pipe supports shall be provided as follows:
1. Support spacing for steel and stainless steel piping two inch and smaller in diameter and copper tubing shall not exceed five feet.
 2. Supports for multiple PVC plastic piping shall be continuous wherever possible.
 - a. Individually supported PVC pipes shall be supported as recommended by the manufacturer except that support-spacing shall not exceed three feet.
 - b. Multiple, suspended, horizontal plastic PVC pipe runs, where possible, shall be supported by ladder type cable trays such as the Electray Ladder by Husky/Burndy, the Globetray by the Metal Products Division of United States Gypsum, or approved equal.
 - 1) Ladder shall be of mild steel construction.
 - 2) Rung spacing shall be 12-inch.
 - 3) Tray width shall be approximately 6-inch for single rungs and 12-inch for double runs.
 - 4) Ladder type cable trays shall be furnished complete with all hanger rods, rod couplings, concrete inserts, hanger clips, etc. required for a complete support system.
 - 5) Individual plastic pipes shall be secured to the rungs of the cable tray by strap clamps or fasteners equal to Globe Model M-CAC; Husky/Burndy Model SCR; or approved equal.

- 6) Spacing between clamps shall not exceed 9-feet.
 - 7) The cable trays shall provide continuous support along the length of the pipe.
 - 8) Individual clamps, hangers, and supports in contact with plastic PVC pipe shall provide firm support but not so firm as to prevent longitudinal movement due to thermal expansion and contraction.
3. Pipe supports shall not induce point loadings but shall distribute pipe loads evenly along the pipe circumference.
 4. Supports shall be provided at changes in direction and elsewhere as shown in the drawings or specified herein.
 - a. No piping shall be supported from other piping unless specifically directed or authorized by the Engineer.
 5. Pipe supports shall be provided to minimize lateral forces through valves, both sides of a split type couplings, and sleeve type couplings, and to minimize all pipe forces on pump housings.
 - a. Pump housings shall not be utilized to support connecting pipes.
 6. Effects of thermal expansion and contraction of the pipe shall be accounted for in the pipe support selection and installation.
- L. Unless otherwise specified herein, pipe hangers and supports shall be as manufactured by Grinnell Co. Providence R.I.; Carpenter and Patterson, Inc Woburn MA; F & S Central Brooklyn NY; Elcen Metal Products Co. Franklin Park IL; Unistrut Northeast Cambridge MA; or approved equal.
1. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary in this specification.
 2. Any item comparable in type, style, quality, design, and performance, shall be considered as equal.
- M. Any required pipe supports for which the supports specified in this section are not applicable shall be fabricated or constructed from standard structural steel shapes, concrete, and anchor hardware similar to items previously specified herein and shall be subject to the approval of the Engineer.
- N. Anchor bolts shall be equal to Kwik-Bolt as manufactured by the McCulloch Industries Minneapolis MN; Wej-It manufactured by Wej-It Expansion Products Bloomfield CO; or approved equal.
1. The length of expansion bolts shall be sufficient to place the wedge portion of the bolt a minimum of 1-inch behind the steel reinforcement.

2.02 SINGLE AND MULTIPLE PIPE SUPPORTS

- A. Single pipes located in a horizontal plane close to the floor shall be supported by one of the methods specified herein or as shown on the drawings.
- B. Pipes 3-inch in diameter and larger shall be supported by adjustable stanchions similar to F&S Figure 427, constructed of galvanized steel.
 - 1. Stanchions shall provide at least 4-inch adjustment and be flange mounted to floor.
- C. Pipes less than 3-inch in diameter shall be held in positions by supports fabricated from steel C channel, welded post base similar to Unistrut figure P2072A and pipe clamps similar to Unistrut figure P1109 through P1126.
 - 1. Where required to assure adequate support, fabricate supports using two vertical members and post bases connected together by horizontal member of sufficient load capacity to support pipe.
 - 2. Wherever possible, supports shall be fastened to nearby walls or other structural members to provide horizontal rigidity.
 - 3. More than one pipe may be supported from a common fabricated support.
 - 4. All supports unless specified otherwise shall be galvanized.
- C. Where shown on the drawings, pipe shall be supported using concrete anchor posts.
 - 1. Pipe shall be securely fastened to concrete anchor posts using suitable metal straps as required and approved by the Engineer.

2.03 WALL SUPPORTED PIPES

- A. Single or multiple pipes located adjacent to walls, columns or other structural members, whenever deemed necessary, shall be supported using welded steel wall brackets similar to Carpenter and Patterson Figures 69-78, 84, or 134; or C channel with steel brackets similar to Unistrut pipe clamps.
 - 1. All members shall be securely fastened to wall, column, etc. using double expansion shield or other method as approved by the Engineer.
 - 2. Additional wall bearing plates shall be provided where required.
- B. Pipe shall be attached to supports using methods hereinbefore specified to meet the intent of this specification.
- C. All supports shall be galvanized.

2.04 VERTICAL PIPE SUPPORTS

- A. Where vertical pipes are not supported by a Unistrut system as specified above, they shall be supported in one of the following methods.
 - 1. For pipes 1/4-inch to 2-inch in diameter, an extension hanger ring shall be provided with an extensions rod and hangers flange.
 - a. The rod diameter shall be as recommended by the manufacturer for the type of pipe supported.
 - b. The hanger ring shall be galvanized steel or PVC clad depending on the supported pipe.
 - c. The hanger ring shall be equal to Carpenter & Patterson Figure 81 or 81 ct.
 - d. The anchor flange shall be galvanized malleable iron similar to Carpenter and Patterson 85.

2. For pipes equal to or greater than ½-inch in diameter extended pipe clamps similar to Carpenter and Patterson figure 26 may be used.
 - a. The hanger shall be attached to concrete structures using double expansion shields, or to steel support members using welding lugs similar to Carpenter and Patterson figure 220.
3. Pipe riser clamps shall be used to support all vertical pipes extending through floor slabs.
 1. Riser clamps shall be galvanized steel similar to Carpenter and Patterson figure 126.
 2. Copper clad or PVC coated clamps shall be used on copper pipes.
 3. Insulation shall be removed from insulated pipes prior to installing riser clamps.
4. Unless otherwise specified, shown, or specifically approved by the Engineer, vertical runs exceeding twelve (12) feet shall be supported by approved pipe collars, clamps, brackets or wall rests at all points required insure a rigid installation.

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE

- A. All supports and hangers shall be crated, delivered and uncrated so as to protect against any damage.
- B. All parts shall be properly protected so that no damage or deterioration shall occur during a prolonged delay from the time of shipment until installation is completed.
- C. Finished iron or steel surfaces not galvanized or painted shall be properly protected to prevent rust and corrosion.

3.02 INSTALLATION

- A. All pipes, horizontal and vertical, requiring rigid support shall be supported from the building structure by approved methods.
 1. Supports shall be provided at changes in direction and elsewhere as shown in the drawings and specified herein.
 2. No piping shall be supported from metal stairs, ladders and walkways unless specifically directed or authorized by the Engineer.
- B. All pipe supports shall be designed with liberal strength and stiffness to support the respective pipes under the maximum combination of peak loading conditions to include pipe weight, liquid weight, liquid movement, and pressure forces, thermal expansion and contraction, vibrations, and all probable externally applied forces.
 1. Prior to installation, all pipe supports shall be approved by the Engineer.
- C. Pipe supports shall be provided to minimize lateral forces through valves, both sides of split type couplings and sleeve type couplings, and to minimize all pipe forces on pump housings.
 1. Pump housing shall not be utilized to support connecting pipes.
- D. Inserts for pipe hangers and supports shall be installed on forms before concrete is placed.

1. Before setting these items, all drawings and figures shall be checked which have a direct bearing on the pipe location.
 2. Responsibility for the proper location of pipe supports is included under this section.
- E. Continuous metal inserts shall be embedded flush with the concrete surface.

3.03 TESTING

- A. All pipe support systems shall be tested for compliance with the specifications.
1. After installation, each pipe support system shall be tested in conjunction with the respective piping pressure tests.
 2. If any part of the pipe support system proves to be defective or inadequate, it shall be repaired or augmented under this section to the satisfaction of the Engineer.

END OF SECTION

SECTION 15100
DUCTILE IRON PIPE, FITTINGS AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide all the interior ductile iron pipe, fittings and appurtenances as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 2. Section 15060 Pipe Hangers and Supports
 - 3. Section 15110 Valves and Appurtenances
 - 4. Section 15120 Piping Specialties

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All ductile iron pipe and fittings shall be of domestic manufacture.
- C. Coordinate the work of this Section with the work of other related Sections.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop Drawings showing piping layouts, dimensions, location of supports and braces, and interfacing with piping and equipment furnished under other Sections of this Specification.

1.05 PRODUCT HANDLING

- A. Comply with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 PIPE

A. Interior Use:

1. Have dimensional wall thickness in accordance with ANSI/AWWA C115/A21.15.
2. Pipe shall be ductile iron, Class 53, with a maximum working pressure of 250 psi.
3. Cement lined meeting the requirements of ANSI/AWWA C104/A21.4.
4. Thickness of cement lining:
 - a. 1/8-inch for pipes 12-inches and smaller.
 - b. 3/16-inch for pipe 14-inches and larger.
5. Exterior Coating
 - a. All exposed piping not within tanks containing water shall be red primer.
 - b. All exposed piping and fittings within tanks containing water whether submerged or not, shall be pre-finished at the factory before shipment.
 - 1) Exterior coating shall be a high solids, solvent free, epoxy incorporating ceramic pigment and amine cured epoxy formulated especially to coat the exterior of ductile iron pipe for aggressive atmospheres or liquids, applied at 20-25 mils.
 - 2) Coating shall be NSF 61 approved.
 - 3) Coating shall be Ceramawrap as manufactured by Induron Protective Coatings, or approved equal.
6. At the Contractor's option, exposed piping within tanks containing potable water may be furnished without cement lining, and coated inside and out with an NSF-approved fusion bonded epoxy, Skotchkote 134 or approved equal.

B. Pipe Flanges: Conform to ANSI/AWWA C115/A21.15.

1. Faced and drilled to American 125 Standard,
2. Long hubs.

2.02 FITTINGS

A. Interior Use:

1. Manufactured of ductile iron or gray iron, flanged joint design rated for 250 psi,
2. Meet or exceed the requirements of ANSI/AWWA C110/A21.10,
3. Tapping bosses on both sides of each branch and in the center of the fitting on both sides,
4. Interior and exterior coatings shall be as specified in paragraph 2.01,
5. Base bends and tees shall have machined and drilled bases.

2.03 GASKETS

A. Made from vulcanized styrene butadiene (SBR) rubber:

1. Shall meet ANSI/AWWA C111/A21.11,
2. Reclaimed rubber shall not be used.
3. Thickness: 1/8-inch.

2.04 FASTENERS

A. Bolts and Studs:

1. Shall conform to ASTM A307, Grade B.

- B. Nuts:
 - 1. Shall conform to ASTM A563, Grade A, heavy hex.

2.05 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FIELD MEASUREMENTS

- A. Make necessary measurements to assure precise fit of the piping system.

3.03 COORDINATION

- A. Coordinate the work of this Section with equipment suppliers to insure all dimensions and elevations are compatible.

3.04 INSTALLATION

- A. Interior Ductile Iron Pipe, Fittings and Appurtenances:
 - 1. During handling protect pipe and fittings from damage.
 - 2. Pipe and fittings cleaned out before assembly,
 - 3. Installed in accordance with the approved piping layout,
 - 4. Installed true to alignment and rigidly supported,
 - 5. Pipe, fittings and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain or loading being imposed upon the equipment.
- B. All flange-mounted in-line instrumentation (i.e.: flow meters) shall be installed in a manner that will allow for removal/servicing. Unless specifically called out on the drawings, the Contractor may opt for either of the following jointing methods:
 - 1. Utilize a plain-end section of pipe with adaptor flange connected to the instrumentation device.
 - 2. Utilize a flexible sleeve and tie rods where flanges for connection of tie rod ends are no more than 3 feet apart.
- C. Tapped Connections
 - 1. Tapped connections in pipe and fittings shall be made in such manner as to provide a watertight joint and adequate strength against pullout.
 - 2. All drilling and tapping of ductile iron pipe shall be done normal to the longitudinal axis of the pipe; fittings shall be drilled and tapped similarly, as appropriate.
 - 3. Drilling and tapping shall be done only by skilled mechanics.
 - 4. Tools shall be adapted to the work and in good condition so as to produce good, clean cut threads of the correct size, pitch, and taper.

3.05 TESTING

- A. Pressure Piping Systems:
1. Provide material and bracing required to isolate the piping system from equipment during the test.
 2. Test at a hydrostatic pressure of 150 psi for one (1) hour.
 3. Leaks shall be repaired under this Section and the test repeated.

END OF SECTION

SECTION 15110
VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide valves and appurtenances as required by the Contract Documents.
- B. The items of this Section include but are not necessarily limited to:
 - 1. Gate Valves
 - 2. Check Valves
 - 3. Ball Valves
 - 4. Air and Combination Air/Vacuum Valves
- C. Work Not Included:
 - 1. Direct burial valves which are specified in Section 02640, Valves and Appurtenances.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 15100 Ductile Iron Pipe, Fittings and Appurtenances

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All of the types of valves and appurtenances shall be products of established firms who are experienced in the manufacture of the particular item to be furnished.
 - 1. All valves and their appurtenances shall be of domestic manufacture

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications catalog cuts, and other data needed to prove compliance with the specified requirements.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. General:

1. All valves and appurtenances shall be of the size shown on the Drawings and as far as possible all equipment of the same type shall be from one manufacturer.
2. All valves and appurtenances shall have the name of the manufacturer, flow directional arrows and the working pressure for which they are designed, cast in raised letters upon some appropriate part of the valve body.
3. All valves shall open counter clockwise. Operators shall have arrows cast thereon to indicate direction of rotation to operate the valve.
4. All iron valves shall have:
 - a. An exterior coating of red oxide primer FDA approved for potable water use.
 - b. An interior coating of an NSF/ANSI 61 certified fusion bonded epoxy.
 - 1) The interior of valves with seats that are bonded to the valve body, with the exception of disc edge, rubber seat and finished portions, shall be evenly coated with an NSF61 approved 2-part liquid epoxy. Minimum dry film thickness shall be 8 Mils minimum.
 - c. All submerged valves shall have all wetted interior and exterior iron surfaces coated with an NSF 61 epoxy coating as specified above.

2.02 GATE VALVES

A. Less than Three (3) Inches:

1. Solid wedge,
2. Non-rising stem,
3. Union bonnet,
4. Bronze construction,
5. WOG rating: 300 psi.

B. Three (3) Inches and Larger (Resilient Seated):

1. Comply with ANSI/AWWA C515.
2. Flanges conform to ANSI B16.1, Class 125 cast iron flange.
3. Ductile iron body in compliance with ASTM A126, Class B.
4. Ductile iron waterway surfaces shall be epoxy coated at the factory.
 - a. Coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.
5. Bronze stem,
6. Resilient sealed wedge type:
 - a. Wedge: Fully encapsulated; no exposed iron,
7. Triple O-ring seal stuffing box,
8. Non rising stem,
9. Handwheel operator.
10. Rated for 250 psi and tested to 500 psi,

C. Three (3) Inches and Smaller (Stainless Piping):

1. Solid wedge,
2. Non-rising stem,

3. Union bonnet,
4. 316L Stainless Steel construction,
5. WOG rating: 300 psi.

2.03 CHECK VALVES/FOOT VALVES

- A. Check Valves (Silent Check)/Foot Valves:
 1. Body: Cast iron with flanged ends conforming to ANSI Class 125.
 2. Seat: Bronze,
 3. Plug: Bronze,
 4. Bushing Bronze,
 5. Spring: Stainless Steel,
 6. Globe style,
 7. Drip tight seating at 150 psi.
 8. Foot valve strainer shall be T302 stainless steel.

- B. Swing Check Valves:
 1. Conforming to AWWA C508
 2. Body: Cast iron with flanged ends conforming to ANSI Class 125,
 3. Seat: Bronze,
 4. Disk: Resilient seat with cast iron holder and bronze plate,
 5. Hinge pin Stainless steel,
 6. Bearings Bronze,
 7. Lever (None) (Lever and weight) (Lever and spring) (left (right)-side mounted),
 8. Full port opening,
 9. All working parts to be accessible from top.

- C. Rubber Flapper Check Valves:
 1. Body: Cast iron (ASTM A126) or ductile iron (ASTM A536) with flanged ends conforming to ANSI Class 125,
 2. Seat: "O" ring, steel reinforced internally,
 3. Flapper: Buna-N (70 Durometer) fully encapsulating the steel plate (ASTM A36),
 4. 45-degree seating surface.
 5. Full pipe size flow area requiring only 35-degree flapper travel.
 6. All working parts to be accessible from top.
 7. Bubble-tight shutoff at low pressures.

- D. Check Valves (2 Inch and Smaller):
 1. Bronze construction,
 2. Disc. seat: Teflon,
 3. "Y" pattern,
 4. Horizontal swing,
 5. WOG rating: 200 psi.

- E. Check Valves (PVC/CPVC Piping):
 1. Ball Type:
 - a. Type 1, Grade 1 PVC (cell classification 12454-B) or Type IV, Grade 1 CPVC (cell classification 23447-B), conforming to ASTM D1784.
 - b. True union with EPDM "O" rings.
 - c. Socket or flanged ends as required.
 - d. Rated for 150 psi working pressure at 75 degrees F.

2. Swing Check Type:
 - a. Heavy-duty PVC/CPVC construction.
 - b. EPDM seals.
 - c. Dual drain plugs.
 - d. Built-in O-ring flange seals
 - e. Furnish PVC counterweight
3. Wafer-Style Swing Check Type:
 - a. Heavy-duty PVC/CPVC construction.
 - b. EPDM gasket and face seals.
 - c. One-piece disc and shaft design.
 - d. Contoured inlet port
 - e. 316 stainless steel Spring
 - e. Pressure Rated to 150PSI at 70F

2.04 BALL VALVES

- A. Ball Valves (2-inches and Smaller):
 1. Metallic Piping (does not include stainless steel):
 - a. Two piece bronze body,
 - b. WOG pressure rating: 600 psi,
 - c. Teflon seats and seals,
 - d. Full port design,
 - e. Adjustable packing gland,
 - f. Screwed or soldered ends.
 2. Stainless Piping:
 - a. All 316L stainless steel construction,
 - b. Teflon seats, packing and "O" rings,
 - c. Swing-out design,
 - d. Full port design,
 - e. Joint: As required,
 - f. Locking stainless steel handle.
- B. Plastic Piping:
 1. PVC Type 1, Grade 1, or CPVC Type IV, Grade 1.
 2. Comply with ASTM D1784
 3. Double entry true union with EPDM "O" rings.
 4. Teflon seats and EPDM packing.
 5. Socket or flanged ends, as required.
 6. Working pressure 150 psi at 75 degrees F.

2.05 AIR AND COMBINATION AIR/VACUUM RELIEF VALVES

- A. The relief valves shall be shall be the equal of APCO Valve and Primer Corporation models indicated below for the various usages.
- B. Air Release Valves (Model #50):
 1. Size: ½-inch
 2. Body: Cast iron
 3. Stem: Stainless Steel
 4. Float: Stainless Steel
 5. Seat: Buna-N
- C. Combination Air and Vacuum Valves:

1. Size: To accommodate turbine pump capacity:
2. Body: Cast iron
3. Baffle: Delrin
4. Float: Stainless Steel
5. Seat: Buna-N
6. Diffuser: Brass

D. Provide double acting throttling device on combination air and vacuum valves installed on vertical turbine pumps, which allows throttling of air out of the valve, full air flow back in to prevent vacuum and water column separation in the pump.

1. Housing: Malleable iron
2. Adj. screw and nut: Stainless steel
3. Spring: Stainless steel
4. Plug: Teflon

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 COORDINATION

- A. Coordinate the work of this Section with equipment suppliers, that the piping system shall be connected to, to insure that all dimensions and elevations are compatible.
- B. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.03 VALVE INSTALLATION

- A. The valves and appurtenances shall be installed at the locations shown on the Drawings.
 - 1. Valve operators shall be easily accessible and rigidly supported.
 - 2. After installation check valve operation. Valve shall operate smoothly through its entire operating range.
 - 3. Valve tags shall be installed on all valves with designations specifically labeled on the on the process or instrumentation drawings.
- B. Swing and flapper-type check valves shall be installed horizontally, or vertically if direction of normal flow is upwards.
- C. Air release valve assemblies shall be equipped with a line size ball valve for isolation.
 - 1. A copper drain line shall extend from the top of all air release valves to within 2 inches above a floor drain or drain channel.
 - 2. A ½-inch air release valve shall be installed on all high points of the process piping system where air can accumulate, whether or not indicated on the drawings, and as approved or directed by the Engineer. Air release valves are not required where other provisions for releasing air are indicated on the drawings.
- D. Solenoid valves shall be installed with unions on both sides of the valve to facilitate removal.
 - 1. A line size ball valve shall be installed upstream of the union if necessary to facilitate solenoid valve removal without affecting water feed to branches off the common feed line.

END OF SECTION

SECTION 15120

PIPING SPECIALTIES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide expansion joints, wall pipes, wall sleeves, filler rings, flexible mechanical pipe couplings, cam and groove couplings, and tapped connections for the piping systems all as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 15060 Ductile Iron Pipe, Fittings and Appurtenances

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Coordinate the work of this Section with the work of other Sections.

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 EXPANSION JOINTS

- A. Expansion joints shall be Redflex Type J-1 as manufactured by Red Valve Co. Inc., Carnegie, PA. The expansion joint shall have the following attributes:
 - 1. Redflex Model:

- a. Type J-1 for “straight thru” joints.
 - b. Type J-10 for concentric reducers
 - c. Type J-11 for eccentric reducers
 2. Size as shown on the Drawings,
 3. Materials of construction: Buna-N,
 4. Single “filled” arch, open configuration,
 5. Flanges shall be 125 lb. conforming to ANSI Standards:
 - a. Constructed integral with body.
 6. Pressure rating: 140 lb standard, 190 lb high,
 7. Retaining rings.
- B. Control Units:
1. Gusset plate thickness: 1/2-inch,
 2. Rod diameter: 5/8-inch,
 3. Number of rods: 3,
 4. Materials: Galvanized steel.

2.02 WALL PIPES

- A. Ductile iron wall pipes shall have an integrally cast thrust collar as manufactured by American Cast Iron Pipe Co.
1. Wall pipe shall be used where indicated on the drawings, and shall conform to ANSI/AWWA C110/A21.10.
 2. Ends of wall pipes shall be flanged or flange by mechanical joint. Flanges shall be of same class as that of pipe being connected.
 3. The wall pipes shall be of the dimensions required with ends flush with both faces of the wall or as shown on the Drawings.
 4. Ductile iron wall pipes shall be of approved type, dimension and wall thickness.
 5. Ductile iron wall pipes shall be provided for all pipes passing through reinforced concrete walls.
- B. At the Contractor’s option, if approved by the Engineer, wall sleeves for concrete floor and wall penetrations may be made by means of a sleeve capable of being bolted directly to the formwork to prevent misalignment.
1. Seal of the annular space between the carrier pipe and the sleeve shall be by means of a confined rubber gasket and capable of withstanding 350 psi.
 2. Manufactured from Ductile Iron with an integrally cast waterstop of ½” minimum thickness and 2 ½” minimum height.
 3. Shall be “Omni Sleeve” or an approved equal

2.03 WALL SLEEVES

- A. The annular space created by the wall sleeve and the pipe shall be positively sealed with “Link Seal” manufactured by GPT Industries or an approved equal.
1. Seals shall be the modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall opening.
 2. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut.

- a. After the seal assemblies positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely watertight seal between the pipe and wall opening.
3. The seal shall be constructed so as to provide electrical insulation between the pipe and wall, thus reducing chances of cathodic reaction between these two members.
4. All wall sleeves of which any portion is below main floor slab and penetrates an exterior wall, or where the wall sleeve penetrates a wall between a tank and an interior room shall have link seals on both the interior and exterior faces of the wall. All wall sleeves above this elevation shall have link seals on the interior wall only.
5. The Contractor shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabricating or installing the seals.
 - a. The inside diameter of each wall opening shall be sized as recommended by the manufacturer to fit the pipe and Link-Seal to assure a water-tight joint.
6. The Contractor shall familiarize himself with the installation of the seals through the manufacturer's instruction bulletin which illustrates the proper procedure for installing and tightening the seal to provide a water-tight pipe penetration.

2.04 FLEXIBLE MECHANICAL PIPE COUPLINGS

- A. Flexible mechanical cast iron pipe couplings for jointing of plain ends of ductile iron pipe shall be suitable for a 200 psi water working pressure and shall be of the proper size and suitable for use on the piping on which it is installed.
 1. Couplings shall be of ductile iron construction and shall be provided with middle ring not less than 12-inches in length.
 2. Tee head alloy steel bolts with heavy hex nuts, molded rubber gaskets, follower rings and accessories as required for the complete installation.
 3. Where indicated, the coupling shall be provided with not less than two tie rods extended from flange connections on each side of the couplings.
 4. Follower rings shall be amply proportioned to take, without deformation, the strains imposed on the coupling by the installation.

2.05 FLANGE ADAPTERS

- A. Ductile iron flange adapters as manufactured by Uni-Flange shall be provided where indicated on the drawings to allow for equipment removal, or approved by the Engineer for use in joining flanged piping with slight misalignment.
 1. Flange: Ductile iron, ASTM A536, Grade 65-45-12, drilled to ANSI B16.1 or ANSI B16.2.
 2. Gasket: SBR Buna-N
 3. Set Screw: AISI 4140 steel with break-away head

2.06 FILLER RINGS

- A. Filler rings of the same materials, facing and drilling as the flanges they are used with shall be provided in flanged piping where necessary and approved for the proper fitting and layout of the piping.

2.07 CAM AND GROOVE FITTINGS

- A. Cam and groove adapters for the chemical storage tanks fill lines shall be:
 - 1. Size: 2 inch.
 - 2. Material: Polypropylene.
 - 3. Style: Male adapter by male NPT.
 - 4. Interchange with all products produced to MIL-C-27487E.
- B. Cam and groove dust cap shall:
 - 1. Size: 2 inch.
 - 2. Material: Polypropylene.
 - 3. Handles: Locking.
 - 4. Security chain: 12 inches long; stainless steel.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Expansion Joint: The expansion joints and appurtenances shall be installed at the locations shown on the Drawings.
 - 1. Misalignment of piping shall not exceed 1/8-inch.
 - 2. Install control unit per manufacturer's requirements.
- B. Wall Pipes
 - 1. The Contractor shall be responsible for having wall pipes readily available.
 - 2. Shall be tightly secured in the formwork at time of concrete placement.
 - 3. Thrust collars shall be located in the center of the wall in which the wall pipe is to be installed.
- C. Wall Sleeves
 - 1. Securely anchor to formwork as required by the manufacturer.

END OF SECTION

EXHIBIT B

SELLER'S CONSTRUCTION SCHEDULE

Estimated Project Schedule
River's Edge Sewer Connection
Wayland, MA

<u>Task</u>	<u>Deadline</u>	<u>Notes</u>
Client Design Meeting	1/6/2021	
Submit 50% Design Package to Town	1/25/2021	50% Design to include plans, select specifications sections, and 50% cost estimate
Submit 90% Design Package to Town	2/23/2021	90% Design to include plans, all specifications, and 90% cost estimate
90% Comments back from Town	3/1/2021	
Plans and Specifications Available to Bidders	3/10/2021	Assume 2 week turn around time from 90% submittal to Town to incorporate edits and finalize.
Bid Opening	3/24/2021	2 week bid period

EXHIBIT C

FORM OF ENGINEER/ARCHITECT CONSENT

Engineer/Architect Consent

ARCHITECT'S/ENGINEER'S CONSENT, CERTIFICATE AND AGREEMENT

(LETTERHEAD OF ARCHITECTURAL/ENGINEERING FIRM)

_____, 2021

ALTA RIVER'S EDGE, LLC
c/o WP East Acquisitions, LLC
91 Hartwell Avenue
Lexington, Massachusetts 02421
Attention: Jim Lambert
Phone No.: (781) 541-5822
Email: Jim.Lambert@woodpartners.com

Re: Infrastructure Development Agreement ("**Agreement**") dated _____ by and among TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation having an address of 41 Cochituate Road, Wayland, MA 01778, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company having its business address c/o Wood Partners, 91 Hartwell Avenue, Lexington, MA 02421, Attn: Jim Lambert (hereinafter "**Buyer**") for the completion of the Seller's WWTP Work (as defined in the Agreement, and also referred to herein as the "**Project**"), and [describe contract/agreement] dated __, 202__ between Seller and [contractor] ("**Contractor**" or "**we**") regarding the Project (together with any assignments and amendments thereof, the "**Contract**") attached as **Exhibit "A"** hereto.

Ladies and Gentlemen:

We understand that the Contract and the plans and specifications for the Project (as may be amended from time to time and including all drawings and related papers, the "**Plans**") have been or will be collaterally assigned by Seller to Buyer in connection with the Agreement. In consideration of the Agreement and as an inducement thereto, we hereby (a) consent to such assignment and (b) agree that in the event (i) of a default by Seller under the terms of any of the Agreement or the Contract or any other circumstances thereunder whereby which it is reasonably likely that Seller will be in default under the terms of any of the Agreement or the Contract or (ii) we receive a copy of Buyer's Takeover Notice (as defined in the Agreement), (1) we shall, at Buyer's request, provide to Buyer the services as required of us under the Contract, provided that we are compensated as provided in the Contract for all such services rendered at Buyer's request, and (2) whether or not you request our continued services under the Contract, you shall be entitled to use the Plans in accordance with and as provided in the Contract in connection with the Project, without payment of additional fees or charges to us (provided that if we are due any amounts under the Contract for any services rendered in connection with changes to the initial Plans ("**Plan Changes**"), you shall not be entitled to use the Plan Changes until we are compensated therefor.

As the architectural or engineering firm responsible for performing the work regarding the Project described in the Contract, the undersigned is duly licensed and in good standing under the laws of the State in which the Project is located.

If Seller defaults in payment or performance of the Contract or if the Contract is terminated for any reason, the undersigned will give Buyer prompt written notice thereof and prior to exercising any remedy as a result thereof, will afford Buyer the same opportunity to cure such default to which Seller is entitled, but at least thirty (30) days in any event (it being acknowledged that Buyer shall have no obligation to cure any such default). Any notice of default or termination will be delivered by personal delivery, by nationally recognized overnight courier service or by certified mail, return receipt requested, to the address set forth above, and be effective upon receipt or when the attempted initial delivery is refused or cannot be made because of a change of address of which the sending party has not been notified. Any curative act done by Buyer shall be as effective as if done by Seller.

This letter shall bind and benefit Buyer and the undersigned and their respective heirs, successors and assigns, and shall be governed by the laws of the state where the Land is located. "Buyer" as used in this letter includes Buyer's successors or assigns, any receiver in possession of the Buyer's Property, any purchaser upon foreclosure of Buyer's Property, or any corporation or other nominee formed by or on Buyer's behalf. Time is of the essence of this letter agreement.

Sincerely,

[ARCHITECT'S/ENGINEERS SIGNATURE BLOCK]

By: _____
Name: _____
Title: _____

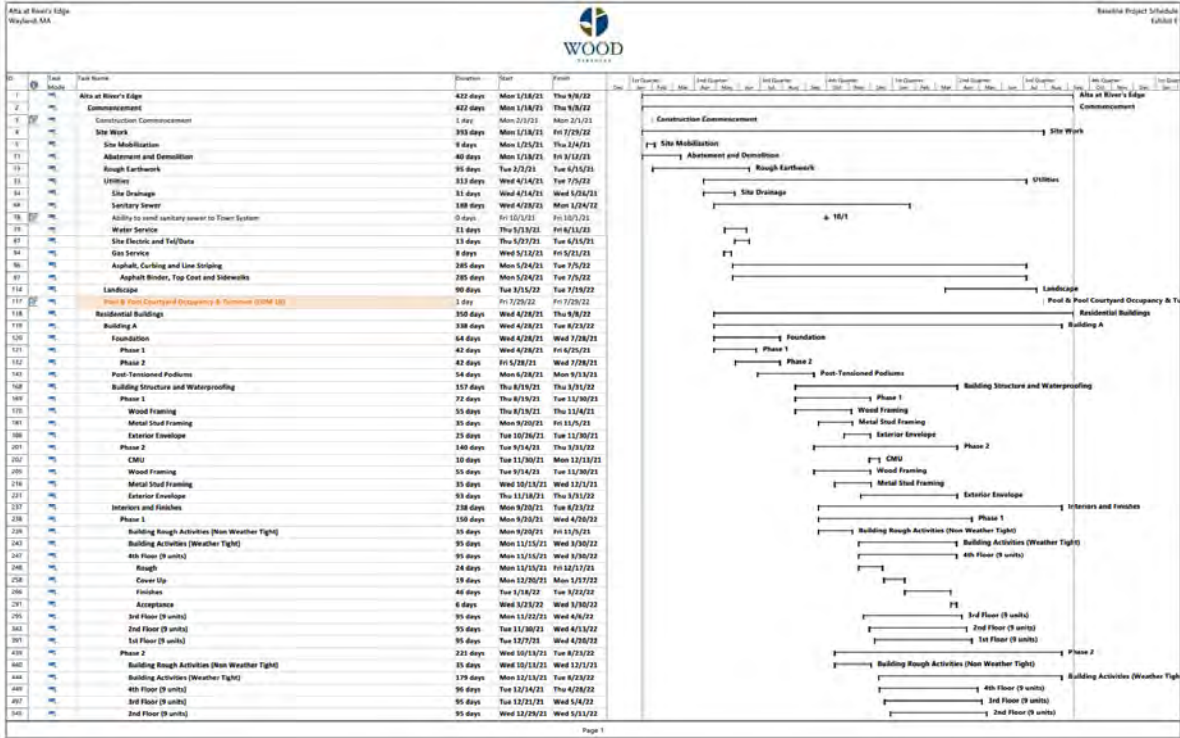
Exhibit "A"

CONTRACT

(Attach Contract, including assignments, amendments and supplements)

EXHIBIT D

BUYER'S CONSTRUCTION SCHEDULE



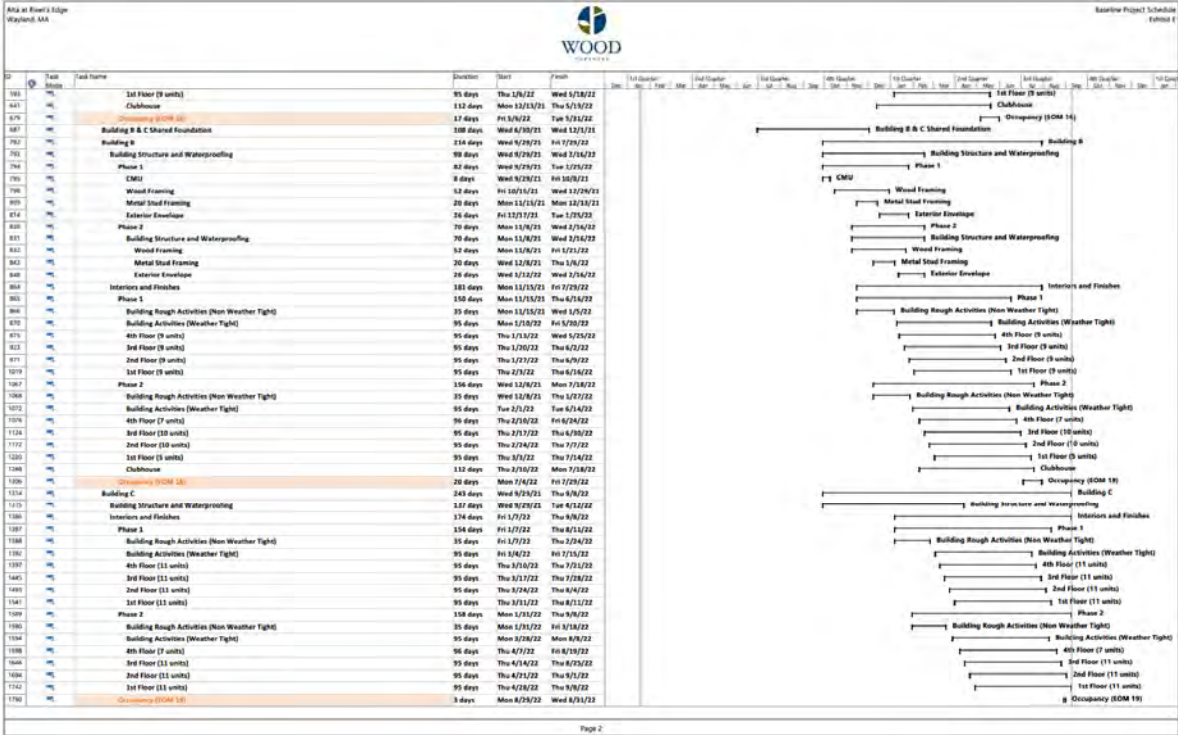


EXHIBIT A-1

WWTP ESCROW AGREEMENT

[SEE ATTACHED]

EXHIBIT A-1

WWTP ESCROW AGREEMENT

(Wastewater Facilities)

THIS WWTP ESCROW AGREEMENT (the “Agreement”) is made and entered into this ___ day of February, 2021 (the “Effective Date”), by and among TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter “Seller”), a Massachusetts municipal corporation having an address of 41 Cochituate Road, Wayland, MA 01778, and ALTA RIVER’S EDGE, LLC, a Delaware limited liability company having its business address c/o Wood Partners, 91 Hartwell Avenue, Lexington, MA 02421, Attn: Jim Lambert (hereinafter “Buyer”), and FIRST AMERICAN TITLE INSURANCE COMPANY (hereinafter referred to as “Escrow Agent”).

RECITALS:

A. Concurrently with the execution of this Agreement, Seller has conveyed to Buyer that certain property commonly known as 490 Boston Post Road in the Town of Wayland, Middlesex County, Commonwealth of Massachusetts, shown as “Lot A”, “Lot C”, and “Lot E” (the “Buyer’s Property”) on that certain plan entitled “ANR Subdivision Plan Assessors Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road Wayland, Massachusetts” prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South Registry of Deeds (the “Registry”) as Plan No. 260 of 2017 (the “ANR Plan”). The acquisition of the Buyer’s Property was consummated pursuant to a Land Disposition Agreement for the Sale and Redevelopment of Land between Seller and Buyer dated as of July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof (the “Twelfth Amendment”), the “LDA”).

B. Pursuant to the Twelfth Amendment, at closing under the LDA, Seller and Buyer agreed to enter into an Infrastructure Development Agreement (the “Development Agreement”) and this Agreement to among other things, address and secure Seller’s obligations to (i) timely design permit and construct the Seller’s WWTP Improvements (as defined in the Development Agreement), and (ii) compensate or reimburse Buyer for Buyer’s WWTP Damages sustained on account of (A) Seller’s failure to remain on schedule in performing such work, (B) Seller otherwise triggering a “Seller Event of Default” under the Development Agreement, and/or (C) a Buyer’s O/M Failure Event.

C. In order to secure the aforesaid obligations of Seller and provide Buyer with recourse when and if it is entitled to pursue Buyer’s WWTP Damages pursuant to the Development Agreement, Seller is depositing with Escrow Agent simultaneously with the execution and delivery hereof the sum of \$2,587,588.00 (the “WWTP Escrow Amount”).

D. This Agreement is the WWTP Escrow Agreement referred to in the LDA and the Development Agreement.

NOW, THEREFORE, the parties agree as follows:

1. Recitals; Capitalized Terms. The above Recitals are true and correct and are incorporated herein by reference. Capitalized terms which are not otherwise defined herein shall have the meanings assigned thereto in the Development Agreement. Additionally, the following capitalized terms used in this Agreement have the respective meanings assigned to them below:

“Buyer’s Increased Project Costs Requisition” shall mean a disbursement request for Buyer’s Increased Project Costs in the form attached hereto as Exhibit A and incorporated herein by reference.

“Buyer’s Project Delay LD Requisition” shall mean a disbursement request for Buyer’s Project Delay Liquidated Damages in the form attached hereto as Exhibit C and incorporated herein by reference.

“Buyer’s Self-Contained WWTP Work Costs Requisition” shall mean a disbursement request for Buyer’s Self-Contained WWTP Work Costs which exceed the Buyer’s Self-Contained WWTP Work Costs Requisition Threshold in the form attached hereto as Exhibit D and incorporated herein by reference.

“Buyer’s WWTP Damages Requisition” shall mean, as applicable based on the nature of the Buyer’s WWTP Damages which are the subject of a particular request for disbursement of the WWTP Escrow Funds pursuant to Section 4(a) below, any one of a Buyer’s Increased Project Costs Requisition, Buyer’s Project Delay LD Requisition, Buyer’s Self-Contained WWTP Work Costs Requisition and/or Buyer’s WWTP Self-Help Requisition.

“Buyer’s WWTP Self-Help Requisition” shall mean a disbursement request to compensate Buyer for Buyer’s WWTP Self-Help Costs incurred on account of Buyer exercising the Self-Help Remedy (as defined in Section 5.2(d) of the Development Agreement) in the form attached hereto as Exhibit E and incorporated herein by reference.

“Objection Notice” shall mean each of a Seller Objection Notice and Buyer Objection Notice, as applicable.

“Seller’s WWTP Escrow Release Requisition” shall mean a disbursement request for a Release Amount in the form attached hereto as Exhibit F and incorporated herein by reference.

2. Appointment and Acceptance of Escrow Agent. By execution of this Agreement, Seller and Buyer hereby appoint and engage Escrow Agent, and Escrow Agent hereby accepts such appointment and engagement, to serve as Escrow Agent and to perform the duties set forth herein, subject to the terms and conditions of this Agreement.

3. WWTP Escrow Funds. Seller agrees to deliver to Escrow Agent at Closing the sum of the WWTP Escrow Amount, which shall be held and distributed by Escrow Agent subject to the conditions set forth herein. The monies held by Escrow Agent pursuant to this Agreement from time to time are sometimes referred to as the “WWTP Escrow Funds”. At such time(s) as Buyer deposits the Final On-Site WWTP Escrow Funds pursuant to Section 4(c)(ii) of the Twelfth Amendment (including any amounts determined through the dispute resolution process concerning the Final On-Site WWTP Estimate referenced therein and Section 5(d) hereof), such funds shall become part of the WWTP Escrow Funds for all purposes under this Agreement and the Development Agreement.

4. Disbursement of the WWTP Escrow Funds. The WWTP Escrow Funds shall be released to, and upon the following:

(a) Disbursement to Buyer. The WWTP Escrow Funds shall be disbursed to Buyer, in whole or in part, at any time and from time to time, in accordance with the following procedures:

(i) Buyer’s WWTP Damages Requisitions; Seller Objection Notices. Buyer may, from time to time and in accordance with applicable terms of the Development Agreement, submit to Escrow Agent and Seller a written request for disbursement of the WWTP Escrow Funds in the form of a Buyer’s WWTP Damages Requisition for the payment of Buyer’s WWTP Damages actually incurred or sustained by Buyer pursuant to the terms of the Development Agreement. Buyer shall provide to Seller and Escrow Agent copies of any and all supporting documentation (if

any) contemplated by the applicable Buyer's WWTP Damages Requisition form attached hereto (such supporting documentation, along with any supporting documentation contemplated by Exhibit H attached hereto in connection with a Seller's WWTP Escrow Release Requisition made pursuant to Section 4(b) below, as applicable, "Supporting Documentation"). Seller shall have ten (10) business days after receipt of a Buyer's WWTP Damages Requisition to object to any Buyer's WWTP Damages Requisition by written notice to Escrow Agent and Buyer in substantially the form of Exhibit G attached hereto (a "Seller Objection Notice"); *provided, however*, that Seller acknowledges and agrees that Seller shall only have the right to object to a particular Buyer's WWTP Damages Requisition (i) if the requisition does not contain sufficient Supporting Documentation (it being acknowledged by Seller that its objection right under this clause (i) is limited only to the existence (or lack thereof) of the Supporting Documentation), or (ii) Seller, in good faith, reasonably believes that the Buyer's WWTP Damages Requisition (or the Buyer's WWTP Damages that are the subject to the Buyer's WWTP Damages Requisition) are inaccurate, erroneous, or not consistent with the terms and provisions of the Development Agreement, or (iii) if Seller in good faith disputes the allegation of the occurrence (or the extent of the occurrence) of a Seller Event of Default or Buyer's Project Delay, if alleged in Buyer's WWTP Damages Requisition. If a Seller Objection Notice is not received by Escrow Agent within such 10-business day period, then Escrow Agent shall disburse promptly the portion of the WWTP Escrow Funds requested in accordance with Buyer's payment instructions contained in the Buyer's WWTP Damages Requisition. If, however, Seller timely serves a Seller Objection Notice to Escrow Agent and Buyer with respect to a Buyer's WWTP Damages Requisition, then Section 5 hereof shall apply.

(ii) Escrow Agent Review. Escrow Agent shall not be required to review any documentation provided in connection with any Buyer's WWTP Damages Requisition provided hereunder. Escrow Agent shall rely only on the objection of Seller or absence of objection. In fact, Escrow Agent shall not withhold a disbursement based on a belief that the disbursement requested is incomplete.

(iii) Joint Disbursement Instructions. If Seller and Buyer jointly submit a Buyer's WWTP Damages Requisition, Escrow Agent shall disburse the requested amounts promptly from the WWTP Escrow Funds pursuant to the directions set forth in such joint Buyer's WWTP Damages Requisition.

(b) Disbursement to Seller. The WWTP Escrow Funds (or applicable portions thereof) shall be disbursed to Seller in accordance with the following procedures:

(i) Seller's WWTP Escrow Release Requisitions; Buyer Objection Notices. Upon achievement of an applicable Seller's WWTP Work Milestone, but subject to the terms of Section 2(c) of the Development Agreement, Seller may submit to Escrow Agent and Buyer a Seller's WWTP Escrow Release Requisition for disbursement to Seller of the applicable Release Amount pursuant to the terms of the Development Agreement. Seller shall provide to Buyer and Escrow Agent copies of any and all Supporting Documentation contemplated by the applicable Seller's WWTP Escrow Release Requisition. Buyer shall have ten (10) business days after receipt of a Seller's WWTP Escrow Release Requisition to object to any Seller's WWTP Escrow Release Requisition by written notice to Escrow Agent and Seller in substantially the form of Exhibit H attached hereto (a "Buyer Objection Notice"). Buyer shall only have the right to object to a particular Seller's WWTP Escrow Release Requisition (i) if the requisition does not contain the applicable Supporting Documentation (it being acknowledged by Buyer that its objection right under this clause (i) is limited only to the existence (or lack thereof) of the Supporting Documentation), or (ii) Buyer, in good faith, reasonably believes that Seller's WWTP Escrow

Release Requisition is inaccurate, erroneous, and/or not consistent with the terms and provisions of the Development Agreement. If a Buyer Objection Notice is not received by Escrow Agent within such ten (10) business day period, then Escrow Agent shall disburse promptly the portion of the WWTP Escrow Funds requested in accordance with Seller's payment instructions contained in the Seller's WWTP Escrow Release Requisition. If, however, Buyer timely serves a Buyer Objection Notice to Escrow Agent and Seller with respect to a Seller's WWTP Escrow Release Requisition, then Section 5 hereof shall apply. For the avoidance of doubt, and notwithstanding anything in this Agreement to the contrary, Escrow Agent shall release to Seller, and Buyer shall not have the right to interpose any objection or dispute with respect to the release of, the Building Permit Fee from escrow, upon Escrow Agent's receipt of a Seller's WWTP Escrow Release Requisition for such Building Permit Fee on or after June 24, 2021.

(ii) Escrow Agent Review. Escrow Agent shall not be required to review any documentation provided in connection with any Seller's WWTP Escrow Release Requisition provided hereunder. Escrow Agent shall rely only on the objection of Buyer or absence of objection. In fact, Escrow Agent shall not withhold a disbursement based on a belief that the disbursement requested is incomplete.

(iii) Joint Disbursement Instructions. If Seller and Buyer jointly submit a Seller's WWTP Escrow Release Requisition, Escrow Agent shall disburse the requested amounts promptly from the WWTP Escrow Funds pursuant to the directions set forth in such joint Seller's WWTP Escrow Release Requisition.

(iv) Final Disbursement. The remaining portion of the WWTP Escrow Funds, if any, that has not been disbursed to Buyer and is not the subject of a pending claim for disbursement to Buyer pursuant to Section 4(a) above shall be released by Escrow Agent to Seller within two (2) business days after the expiration of the Escrow Period.

5. Objection Notice Procedure; Expedited Dispute Resolution. If either party provides an Objection Notice in accordance with Section 4 above (such objecting party being referred to for the purposes of this Section 5 as the "Objecting Party," and each party receiving the objection being referred to for the purposes of this Section 5 as the "Non-Objecting Party"), then the following shall apply:

(a) Escrow Agent shall not disburse the portion of the WWTP Escrow Funds in dispute until either (i) Seller and Buyer (or their respective counsel) jointly instruct Escrow Agent to disburse funds in accordance with the applicable request for disbursement from the Non-Objecting Party, or (ii) the dispute has been resolved (including pursuant to the terms of Section 5(c) below).

(b) Seller and Buyer shall direct Escrow Agent to disburse any portion of the proposed disbursement as to which no objection is made. For example, if Buyer requests in a Buyer's WWTP Damages Requisition that \$50,000 be disbursed to Buyer, but Seller claims in a Seller Objection Notice that Buyer is only entitled to \$40,000, then Escrow Agent shall disburse \$40,000 to Buyer pursuant to the instructions set forth in the Buyer's WWTP Damages Requisition (without prejudice to the rights of Buyer as to the remaining unfunded WWTP Escrow Funds), and the remaining \$10,000 shall be subject to Section 5(a) above.

(c) In the event the Parties cannot resolve a dispute over a particular disbursement hereunder within ten (10) business days after delivery of an Objection Notice (as evidenced by a joint instruction to the Escrow Agent to disburse or hold the applicable WWTP Escrow Funds as instructed by Seller and Buyer), either Seller or Buyer shall thereafter have the right, in lieu of pursuing recourse through the courts,

to assert that a “Disbursement Dispute” exists on the terms hereof, in which case the following provisions shall apply:

(1) If Seller or Buyer asserts that a Disbursement Dispute has arisen, such asserting party shall give prompt written notice thereof to the other party, the Escrow Agent and to the Disbursement Dispute Arbitrator (defined in subsection (4) below). The Disbursement Dispute Arbitrator shall, no later than five (5) business days after receipt of such notice, hold a preliminary, informal mediation meeting with both Buyer and Seller in an attempt to mediate such Disbursement Dispute. The Disbursement Dispute Arbitrator shall be instructed to give due regard to the language of this Agreement, the LDA, and the Development Agreement when determining the merits of the applicable Objection Notice which is the subject of a Disbursement Dispute. If such Disbursement Dispute shall not be resolved at that mediation meeting, the Disbursement Dispute Arbitrator shall, at such informal mediation meeting, establish a date, not earlier than ten (10) business days after such informal mediation meeting nor later than thirty (30) days after such informal mediation meeting, for a hearing (a “Hearing”) to be held in accordance with this Agreement to resolve such Disbursement Dispute. Notwithstanding the foregoing, upon the existence of a prior commitment on the part of the Disbursement Dispute Arbitrator, or upon reasonable cause shown by Buyer or Seller (or both), the Disbursement Dispute Arbitrator may make a reasonable extension to one or both time periods set forth in this Section 5(c).

(2) Buyer and Seller shall have the right to make one (1) written submission to the Disbursement Dispute Arbitrator prior to the Hearing. Such submission shall be received by the Disbursement Dispute Arbitrator and the other party not later than two (2) Business days prior to the Hearing date. Buyer and Seller hereby agree that all Hearings shall have a mutually agreeable scope of discovery and exchange of information reasonably necessary for the parties to evaluate and resolve the Disbursement Dispute. The Hearing shall be conducted by the Disbursement Dispute Arbitrator. It is the intention of the parties hereto that the Hearing shall be conducted in an informal and expeditious manner. No transcript or recording shall be made. Buyer and Seller shall have the opportunity to make a brief statement and to present documentary and other support for its position, which may include the testimony of not more than two (2) individuals, one (1) of whom may be outside experts. There shall be no presumption in favor of either party’s position.

(3) The Disbursement Dispute Arbitrator shall render a decision, in writing, as to any Disbursement Dispute not later than five (5) business days following the conclusion of the Hearing regarding such Disbursement Dispute (the “DD Decision”) and shall provide a brief written basis for its decision not later than five (5) business days after the issuance of the DD Decision. The Disbursement Dispute Arbitrator may not award any other or different relief. The DD Decision shall be final and binding on Seller and Buyer for all purposes and may be entered in any court of competent jurisdiction. Seller and Buyer hereby authorize and direct Escrow Agent to disburse (or hold) the WWTP Escrow Funds which are the subject of a particular Disbursement Dispute in accordance with the DD Decision.

(4) Following the Closing, Buyer and Seller hereby agree to work expeditiously to engage Wally McDonough of ELK Consulting Services LLC as the Disbursement Dispute Arbitrator with regard to all Disbursement Disputes that may arise. If for any reason, within thirty (30) days after Closing, (a) such individual shall be unwilling or unable to act as Disbursement Dispute Arbitrator and the parties cannot agree on a replacement or (b) the parties are unable to agree on the engagement terms of the Disbursement Dispute Arbitrator, and the parties, within forty-five (45) days after the Closing, are unable to agree on a mutually acceptable Disbursement Dispute Arbitrator as an alternative to Mr. McDonough, then any party may ask the AAA Boston, Massachusetts office to select a substitute with such qualifications and experience who will act as Disbursement Dispute Arbitrator. The actual party designated pursuant to this Section 5(c) shall be the “Disbursement Dispute Arbitrator”. The fees and costs of the Disbursement

Dispute Arbitrator and the AAA shall be borne by the non-prevailing party in the applicable Disbursement Dispute at issue.

(d) In addition to its role adjudicating Disbursement Disputes, the Disbursement Dispute Arbitrator shall also act in accordance with the rules and procedures set forth in this Section 5 with respect to any dispute between Seller and Buyer regarding the Final On-Site WWTP Estimate, as more particularly described in Section 4(c)(ii) of the Twelfth Amendment

6. Dispute and Litigation Generally. If prior to the delivery of all or any part of the WWTP Escrow Funds described herein, Seller or Buyer shall have brought a suit to enjoin said delivery or for declaratory judgment with respect to an alleged breach and have served Escrow Agent with a summons making it a party to such action (provided that neither party shall be entitled to bring such a suit with respect to WWTP Escrow Funds that are the subject of a Disbursement Dispute pursuant to Section 5(c) above, in which case the terms of Section 5(c) shall govern the treatment of the applicable WWTP Escrow Funds upon the resolution of such Disbursement Dispute), Escrow Agent shall have the right in its sole discretion to either retain the money until the court directs the proper disposition thereof, or to deposit the same with the court. Further, if prior to the delivery of the WWTP Escrow Funds, Escrow Agent has been notified in writing by Seller or Buyer that a dispute exists with respect to the disposition of the WWTP Escrow Funds, then Escrow Agent shall retain such funds until the dispute is resolved. If Seller and Buyer do not notify Escrow Agent in writing within ten (10) business days from the notice of such dispute that such dispute has been resolved, then the Escrow Agent may file a bill of interpleader and deposit the WWTP Escrow Funds with the court; *provided, however*, if Escrow Agent shall have received notice of a Disbursement Dispute with respect to such dispute pursuant to Section 5(c) above, Escrow Agent shall hold and disburse the WWTP Escrow Funds which are the subject of such dispute in accordance with said Section 5(c). Seller and Buyer shall be jointly and severally liable to Escrow Agent for all reasonable expenses of any such suit for injunctive relief, declaratory judgment, or interpleader, including but not limited to reasonable attorneys' fees and costs. As between Seller and Buyer, such expenses shall be the responsibility of the non-prevailing party, excluding the Escrow Agent. The parties agree that if Escrow Agent is made a party to any litigation under this Agreement (other than a suit against Escrow Agent for willful neglect, intentional misconduct or breach of trust), upon the deposit by Escrow Agent of the WWTP Escrow Funds in the registry of the court, it shall be dropped from the litigation as a party and both parties shall agree that Escrow Agent has, in so doing, fully discharged its obligations under this Agreement and this Agreement shall be terminated as to Escrow Agent. In the event of any litigation between the Seller and Buyer to enforce any provision and right hereunder, the unsuccessful party to such litigation covenants and agrees to pay the successful party therein all costs and expenses, expressly including, but not limited to, reasonable attorneys' fees actually incurred therein by such successful party (including through any appeal), which costs, expenses and reasonable attorneys' fees shall be included in and as a part of any judgment rendered in such litigation.

7. Liability of Escrow Agent. Escrow Agent shall not be liable for the failure of any of the conditions of this escrow, or for damages caused or omission done in good faith, or for any claim or loss, claimed or suffered by any party hereto by the exercise of Escrow Agent's discretion, or for any reason whatsoever, except for intentional misconduct or willful neglect or breach of trust. Escrow Agent shall not be deemed to have notice or knowledge of any fact hereunder unless written notice thereof has been given to it pursuant to Section 10 below. Further, Escrow Agent shall not incur liability to any party for damages, losses or expenses, except for such arising out of its intentional misconduct or willful neglect or breach of trust. Seller's federal taxpayer identification (FEIN) number is 046001341 for purposes of tax reporting requirements.

8. Miscellaneous.

(a) Escrow Agent may act in reliance upon any instruction or signature reasonably believed by it to be genuine and may assume that any person purporting to give any writing, notice, instruction or direction in accordance with the provisions hereof has been duly authorized to do so.

(b) Escrow Agent may consult with and obtain advice from legal counsel, auditors and other experts in connection with this Agreement or its duties hereunder, and it shall incur no liability and shall be fully protected in acting in good faith in accordance with the written opinions and instructions of such counsel, auditors or other experts rendered within the areas of their respective expertise.

(c) Escrow Agent may execute any of its powers or responsibilities hereunder and exercise any rights hereunder either directly or by or through its agents or attorneys.

9. Investment of Escrow Funds. Escrow Agent shall invest the WWTP Escrow Funds in an interest-bearing account maintained by Escrow Agent in a bank or savings and loan association, or in some other financial institution or brokerage house, that is FDIC insured. Interest, dividends, capital gains and other earnings (collectively "Earnings") on the WWTP Escrow Funds shall be added to and become a part of the WWTP Escrow Funds. Seller shall be responsible for all income taxes, if any, imposed upon the Earnings.

10. Notices. Wherever in this Agreement it shall be required or permitted that notice, request, consent, or demand be given by any party to this Agreement to or on the other (hereafter collectively "Notice" for the purpose of this paragraph), such Notice shall not be deemed to have been duly given unless in writing, and either personally delivered, mailed by certified mail, return receipt requested, e-mail of a letter in "pdf" format (with Request for Delivery Receipt (or similar function) activated) or sent via commonly accepted overnight delivery service as follows:

Buyer: c/o Wood Partners
91 Hartwell Avenue
Lexington, MA 02421
Attn: Jim Lambert, Director
Email: Jim.Lambert@woodpartners.com

With copies to: c/o Wood Partners
636 W. Yale Street
Orlando, Florida 32804
Attention: Sean Reynolds
Telephone: (407) 982-2517
E-mail: sean.reynolds@woodpartners.com

And

Alston & Bird LLP
One Atlantic Center
1201 W. Peachtree Street
Atlanta, Georgia 30309
Attention: Drew Allen
Telephone: (404) 881-4522
E-mail: drew.allen@alston.com

SELLER:

Louise L.E. Miller, J.D.
Town Administrator
Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Email: lmiller@wayland.ma.us

With copies to:

Katharine Lord Klein
KP | LAW
101 Arch Street, 12TH Floor
Boston, MA 02110
Telephone: (617) 654 1834
Email: kklein@k-plaw.com

And

David L. Wiener
Anderson & Kreiger LLP
50 Milk Street, 21st floor
Boston, MA 02109
Telephone: (617) 621-6570
Email: dwiener@andersonkreiger.com

Escrow Agent:

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhlir@firstam.com

Counsel for the parties set forth herein may deliver notice on behalf of the parties.

All Notices shall be deemed delivered only upon actual delivery at the address (or e-mail address) set forth herein. Notices delivered after 5:00 p.m. (at the place of delivery) or on a non-business day shall be regarded as delivered on the next business day. Saturdays, Sundays and legal holidays of the United States government shall not be regarded as business days.

If any time for giving Notice or other time period contained in this Agreement would otherwise expire on a non-business day, the Notice period or time period shall be extended to the next succeeding business day. Any party or other person to whom Notices are to be sent or copied may notify the other parties and addressees of any change in address or addresses by written Notice in accordance herewith to the parties and addressees set forth herein.

11. Severability. The invalidity or unenforceability of a specific provision of this Agreement shall not affect the other provisions hereof, and this Agreement shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

12. Modification. No additions, alterations or variations to the terms of this Agreement shall be valid nor can the provisions or the terms of this Agreement be waived by either party unless such additions, alterations, variations or waivers are expressly set forth in writing and signed by the parties hereto.

13. Waiver. The failure of any party hereto in one or more instances to insist upon strict performance or observance of one or more of the covenants or conditions hereof, or to exercise any remedy, privilege, or option herein conferred upon or served to such party, shall not operate and not be construed as a relinquishment or waiver for the future of such covenant or condition of or the right to enforce the same or to exercise such privilege, option, or remedy, but the same shall continue in full force and effect.

14. Venue and Applicable Law. In the event that legal action is instituted under, or to enforce any provision of, this agreement, the parties hereto submit themselves to the jurisdiction of the courts of the Commonwealth of Massachusetts, and, notwithstanding the place of residence of any of them or the place of execution of this instrument, such litigation shall be brought in Middlesex County, Massachusetts. This Agreement shall be controlled, construed and interpreted according to the laws of the Commonwealth of Massachusetts, without regard to the conflict of laws rules of such State.

15. Persons Bound; Permitted Assignments. The covenants herein contained shall bind and the benefits and advantages shall inure to the respective heirs, executors, administrators, successors and assigns of the parties hereto. This Agreement shall not be assigned by Seller, Escrow Agent or Buyer without the written consent of the other parties to this Agreement; *provided, however*, that Seller or Buyer may assign this Agreement in connection with an assignment permitted under the Development Agreement (including any permitted collateral assignments in connection with Buyer's financing of the Buyer's Project as set forth therein).

16. Entire Agreement. This Agreement contains the entire agreement among the parties with respect to the matters contained herein, and supersedes all previous agreements or representations, either verbal or written heretofore in effect between the parties made with respect to the matters contained herein.

17. Term/Termination. The "Escrow Period" for the purposes hereof shall mean the period commencing on the Effective Date and continuing until the date which is the earlier to occur of (i) the five (5) year anniversary of the Effective Date, provided that if Buyer has delivered a Buyer's WWTP Damages Requisition or Seller has delivered a Seller's WWTP Escrow Release Requisition prior to such anniversary, the Escrow Period shall continue until payment is made on such requisition and/or any disputes surrounding such requisition are resolved pursuant to this Agreement; (ii) full disbursement of the WWTP Escrow Funds in accordance with the provisions of this Agreement; and (iii) Buyer providing notice to Escrow Agent and Seller that Seller's WWTP Improvements are completed and all applicable Buyer's WWTP Damages (if any) have been accounted for and paid. Upon expiration of the Escrow Period, this Agreement will terminate and be of no further force and effect.

18. Counterparts. This Agreement may be executed in any number of counterparts each of which shall be deemed an original and all such counterparts shall constitute one instrument. Signatures to this Agreement transmitted by e-mail or .pdf file shall be valid and effective to bind the party so signing.

19. WAIVER OF RIGHT TO TRIAL BY JURY. EACH PARTY HERETO HEREBY KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES THE RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION BASED HEREON OR ARISING OUT OF THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREBY, AND ANY AGREEMENT CONTEMPLATED TO BE EXECUTED IN CONJUNCTION HEREWITH, OR COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PARTY. THIS PROVISION IS A MATERIAL INDUCEMENT FOR SELLER AND BUYER ENTERING INTO THIS AGREEMENT.

[Signatures appear on following page]

IN WITNESS WHEREOF, Seller, Buyer and Escrow Agent have entered into this Agreement on the Effective Date.

BUYER:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

[signatures continue on following page]

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

[signatures continue on following page]

ESCROW AGENT:

**FIRST AMERICAN TITLE INSURANCE
COMPANY**

By: _____
Name: _____
Title: _____

EXHIBIT A
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S INCREASED PROJECT COSTS REQUISITION

BUYER'S INCREASED PROJECT COSTS REQUISITION

REQUISITION NOTICE #[___]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhlir@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a Seller Event of Default exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT];
- (ii) encloses invoices and/or other supporting documents relating to Buyer's Increased Project Costs on account of the Seller Event of Default [ENCLOSE SUPPORTING DOCUMENTATION];
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for Buyer's Increased Project Costs on account of such Seller Event of Default; and

- (iv) certifies to Seller and Escrow Agent that the Disbursement Amount is being used to pay for Buyer's Increased Project Costs pursuant to the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT B

Reserved

EXHIBIT C
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S PROJECT DELAY LD REQUISITION

BUYER'S PROJECT DELAY LD REQUISITION

REQUISITION NOTICE #[___]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhler
Email: juhler@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a Seller Event of Default exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT];
- (ii) claims a period of ___ days of Buyer's Project Delay on account of the Seller Event of Default, based on the updated Buyer's Construction Schedule enclosed with this Buyer's Project Delay LD Requisition [ENCLOSE UPDATED BUYER'S CONSTRUCTION SCHEDULE]; and
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for Buyer's Project Delay Liquidated Damages on account of the Buyer's Project Delay.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware
limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited
liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited
liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT D
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S SELF-CONTAINED WWTP WORK COSTS REQUISITION

BUYER'S SELF-CONTAINED WWTP WORK COSTS REQUISITION

REQUISITION NOTICE #[___]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhler
Email: juhler@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a [Seller Event of Default][Buyer O/M Failure Event] exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT OR BUYER O/M FAILURE EVENT];
- (ii) encloses invoices and/or other supporting documents relating to Buyer's Self-Contained WWTP Work Costs on account of the [Seller Event of Default] [Buyer O/M Failure Event] which exceed the Buyer's Self-Contained WWTP Work Costs Requisition Threshold [ENCLOSE SUPPORTING DOCUMENTATION];
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for Buyer's Self-Contained WWTP Work Costs on

account of such [Seller Event of Default][Buyer O/M Failure Event] which exceed the Buyer's Self-Contained WWTP Work Costs Requisition Threshold; and

- (iv) certifies to Seller and Escrow Agent that the Disbursement Amount is being used to pay for Buyer's Self-Contained WWTP Work Costs which exceed the Buyer's Self-Contained WWTP Work Costs Requisition Threshold pursuant to the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT E
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S WWTP SELF-HELP REQUISITION

BUYER'S WWTP SELF-HELP REQUISITION

REQUISITION NOTICE #[___]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhler
Email: juhler@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a Seller Event of Default exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT];
- (ii) encloses invoices and/or other supporting documents relating to Buyer's WWTP Self-Help Costs incurred in connection with Buyer's exercise of the Self-Help Remedy pursuant to Section 5.2(d) of the Development Agreement [ENCLOSE SUPPORTING DOCUMENTATION];
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for such Buyer's WWTP Self-Help Costs; and

- (iv) certifies to Seller and Escrow Agent that the Disbursement Amount is being used to pay for Buyer's WWTP Self-Help Costs pursuant to the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT F
TO
WWTP ESCROW AGREEMENT

FORM OF SELLER'S WWTP ESCROW RELEASE REQUISITION

SELLER'S WWTP ESCROW RELEASE REQUISITION

REQUISITION NOTICE #[___]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhler
Email: juhler@firstam.com

Alta River's Edge, LLC
91 Hartwell Avenue
Lexington, MA 02421
Attn: Jim Lambert, Director
Email: Jim.Lambert@woodpartners.com

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Buyer and Escrow Agent:

Pursuant to Section 2(c) of the Development Agreement and Section 4(b) of the Escrow Agreement, Seller hereby:

- (i) encloses the Seller's WWTP Work Milestone Achievement Evidence relating to the following Seller's WWTP Work Milestone(s) (the "**Applicable Seller Milestone**"): [SELLER TO INSERT APPLICABLE MILESTONE(S) FROM DEVELOPMENT AGREEMENT AND ENCLOSE EVIDENCE OF MILESTONE ACHIEVEMENT];
- (ii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds, which is the Release Amount(s) for the Applicable Seller Milestone(s) as provided in Section 2(c) of the Development Agreement; and
- (iii) certifies to Buyer and Escrow Agent that the Disbursement Amount constitutes the correct Release Amount pursuant to the terms of the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

TOWN OF WAYLAND

By: _____

Name:

Title: Town Administrator

EXHIBIT G
TO
WWTP ESCROW AGREEMENT

FORM OF SELLER OBJECTION NOTICE

[Date]

[INSERT CONTACT INFO FOR BUYER AND TITLE COMPANY FROM ESCROW AGREEMENT]

Dear Buyer and Escrow Agent:

Reference is made to that certain WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the “**Escrow Agreement**”) by and among First American Title Insurance Company (“**Escrow Agent**”), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter “**Seller**”), a Massachusetts municipal corporation, and ALTA RIVER’S EDGE, LLC, a Delaware limited liability company (“**Buyer**”). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

We have received and reviewed the Buyer’s WWTP Damages Requisition, dated _____ (the “**Subject Buyer’s WWTP Damages Requisition**”), submitted by Buyer under the Escrow Agreement. We hereby take the following action:

- Object to the disbursement in the amount of \$ _____ requested by Buyer in the Subject Buyer’s WWTP Damages Requisition, Seller hereby certifying that it is entitled to object to such amount pursuant to the Development Agreement and Escrow Agreement based on the following:
_____.

- Approve disbursement of \$ _____ of the amount requested in the Subject Buyer’s WWTP Damages Requisition and object to disbursement of the remaining \$ _____ so requested, Seller hereby certifying that it is entitled to object to such amount pursuant to the Development Agreement and Escrow Agreement based on the following: _____..

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

TOWN OF WAYLAND

By: _____

Name:

Title: Town Administrator

EXHIBIT H
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER OBJECTION NOTICE

[Date]

[INSERT CONTACT INFO FOR SELLER AND TITLE COMPANY FROM ESCROW AGREEMENT]

Dear Seller and Escrow Agent:

Reference is made to that certain WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

We have received and reviewed the Seller's WWTP Escrow Release Requisition, dated _____ (the "**Subject Seller's WWTP Escrow Release Requisition**"), submitted by Seller under the Escrow Agreement. We hereby take the following action:

- Object to the disbursement in the amount of \$ _____ requested by Seller in the Subject Seller's WWTP Escrow Release Requisition based on the following facts:
_____.
- Approve disbursement of \$ _____ of the amount requested in the Subject Seller's WWTP Escrow Release Requisition and object to disbursement of the remaining \$ _____ so requested.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

[signature on following page]

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware
limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited
liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited
liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT A-2
WWTP EASEMENT
[SEE ATTACHED]

GRANT OF EASEMENTS
(WASTEWATER FACILITIES)

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company (“Grantor”), having an office at c/o WP East Acquisitions, LLC, 91 Hartwell Avenue, Lexington, MA 02421, for consideration paid of One Dollar (\$1.00), grants, with quitclaim covenants, to the **TOWN OF WAYLAND** (the “Town”), a Massachusetts municipal corporation, acting by and through its Board of Selectmen and having an address of Wayland Town Building, 41 Cochituate Road, Wayland, Massachusetts 01778, permanent easements in, on and across parcels of land located in Wayland, Middlesex County, Massachusetts, described below, on the terms and conditions set forth herein. This Grant of Easements is sometimes referred to herein as the “Agreement” or “Easement Agreement”.

WHEREAS, Grantor is, as of the date hereof, the owner of a parcel of land located at 490 Boston Post Road (Route 20), Wayland, Massachusetts, described more particularly in Exhibit A attached hereto and incorporated herein (the “Grantor Property”);

WHEREAS, Grantor intends to develop and construct a residential, rental housing project upon the Grantor Property (the “Project”);

WHEREAS, the Town has received funding for the installation, construction, improvement, alteration and modification of public wastewater treatment facilities, both sub-surface and aboveground (the “New Town Wastewater Infrastructure”), that will serve, among other properties, the Grantor Property;

WHEREAS, a portion of the New Town Wastewater Infrastructure consisting of (1) a leaching field, force main, and related lines, conduits, fixtures and equipment (the “On-Site Leaching Field Infrastructure”); and (2) a pumping station, a wastewater line, force mains, and related conduits, fixtures and equipment located on the Grantor Property (the “On-Site Pumping Station Infrastructure,” together with the On-Site Leaching Field Infrastructure, the “On-Site Wastewater Infrastructure”), will be located on the Grantor Property. The current planned location of the On-Site Wastewater Infrastructure on the Grantor Property as well as the accessways required to gain access to such On-Site Wastewater Infrastructure is approximately shown on the sketch plan (the “Sketch Plan”)

attached hereto as Exhibit B and incorporated herein (subject to modification as provided herein, the “Easement Premises”);

WHEREAS, Grantor and the Town acknowledge and agree that the construction of the On-Site Wastewater Infrastructure and, upon completion thereof, the ongoing operation, inspection, repair, maintenance and, as necessary, replacement of the On-Site Wastewater Infrastructure, is critical to the viability of the Project;

WHEREAS, as a condition to the Town’s agreement to construct the New Town Wastewater Infrastructure (except those portions that will be constructed by Grantor) and the Town’s agreement to operate, inspect, maintain, repair, and, as necessary, replace the On-Site Wastewater Infrastructure (collectively, the “Wastewater O/M Work”), the Town has required that the Grantor grant to the Town permanent easements on, over, under and across portions of the Grantor Property for the purpose of access to and the right to perform the Wastewater O/M Work and to discharge treated effluent from the Town’s wastewater treatment facility located at Elissa Drive, Wayland, Massachusetts (the “Town WW Facility”) to the leaching field that is to be constructed as part of the On-Site Leaching Field Infrastructure; and

WHEREAS, Grantor has agreed to convey the foregoing easements to the Town, subject to the terms and conditions set forth herein.

NOW, THEREFORE, for consideration paid of One Dollar (\$1.00), and for other good and valuable consideration, the adequacy and sufficiency of which is hereby acknowledged, the Grantor and the Town, for themselves and their respective successors and assigns, agree as follows:

1. Easement Premises; Permitted Uses. Subject to the terms and conditions hereof, effective upon the WW Operation Date (hereinafter defined), the Grantor hereby grants the Town: (a) a permanent easement over, across, under and through the Easement Premises, for the purpose of performing the Wastewater O/M Work; (b) a permanent easement for pedestrian and vehicular traffic, including heavy equipment over, across and through certain roads, drives and paths located on the Grantor Property and within the Easement Premises which are required to gain access to the On-Site Wastewater Infrastructure in order to perform the Wastewater O/M Work; and (c) a permanent easement and right to discharge treated effluent from the Town WW Facility to the leaching field that is to be constructed as part of the On-Site Leaching Field Infrastructure; *provided, however,* that the Town shall in no event return treated effluent from the Town WW Facility in quantities which exceed the amount that the leaching field is designed to receive (collectively, the “Easement”). For the purposes hereof, the “WW Operation Date” shall mean the date upon which the On-Site Wastewater Infrastructure is fully completed, accepted by the Town, operational and ready to discharge and receive effluent to and from the balance of the New Town Wastewater Infrastructure.

2. Location of the Easement Premises. The Easement Premises, as shown on the Sketch Plan, are shown in their approximate location only based on the current design

plans for the On-Site Wastewater Infrastructure. During the design and construction of the Project and the On-Site Wastewater Infrastructure, the Grantor and the Town shall consult with one another relative to the final location of the Easement Premises, which final location shall be reasonably acceptable to both the Grantor and the Town, and which approval thereof shall not be unreasonably withheld, conditioned or delayed. The Easement Premises will be located substantially where shown on the Sketch Plan, however, the final location will be determined during construction of the Project and the On-Site Wastewater Infrastructure, and the Grantor, after construction thereof, at its sole cost and expense, shall prepare a plan depicting the as-built location of the On-Site Wastewater Infrastructure and the final Easement Premises, providing a copy of the same to the Town. Grantor and the Town agree to amend this Easement Agreement to reflect the final location of the Easement Premises, and record such amendment with the Registry of Deeds with a replacement plan showing the as-built Easement Premises and to make such other changes to this Easement Agreement that may be required by the Massachusetts Department of Environmental Protection.

3. Construction of the On-Site Wastewater Infrastructure. Grantor shall, at its sole cost and expense (subject to the terms of the LDA (hereinafter defined) and the Development Agreement (hereinafter defined)), install and construct all On-Site Wastewater Infrastructure on the Grantor Property, to the boundary line of the Grantor Property. The Grantor shall: (i) construct the On-Site Wastewater Infrastructure in a good and workmanlike manner, using materials of good quality, and in accordance with plans and specifications mutually agreed upon by the parties (to the extent not already approved by the Town and its applicable departments and/or divisions as of the date hereof), (ii) permit no excavation to remain open without the safeguards required by law, and (iii) perform its construction obligations in accordance with all applicable laws, by-laws and regulations and after obtaining all necessary approvals, licenses and permits from government authorities before commencement of work (collectively, the “OS Wastewater Construction Plans and Approvals”). Upon completion of the On-Site Wastewater Infrastructure in accordance with the OS Wastewater Construction Plans and Approvals and final inspection and approval thereof by the Town (or its applicable agency or department), the Grantor and the Town shall take any and all actions necessary to dedicate the On-Site Wastewater Infrastructure to the Town, whereupon it shall be and remain the property of the Town. The Town agrees to inspect (or cause the inspection of) the completed On-Site Wastewater Infrastructure as soon as practicable after receipt of notice of such completion from Grantor.

4. Maintenance and Operation of the On-Site Wastewater Infrastructure.

Subject to there being no default of Grantor under the O&M Agreement (hereinafter defined) beyond any applicable notice and cure period, the Town shall, at its sole cost and expense, have sole responsibility to perform all required Wastewater O/M Work in a good and safe condition at all times in accordance with the O&M Agreement, all applicable laws, by-laws and regulations, including without limitation all Environmental Laws, and otherwise in a manner required to keep the On-Site Wastewater Infrastructure fully-functioning and operational at all times, except to the extent Grantor,

Grantor's representatives, employees, agents, tenants, invitees, and those claiming by or through Grantor, through their negligence or willful misconduct, cause damage to the On-Site Wastewater Infrastructure. In connection with the performance of any Wastewater O/M Work, the Town shall have the right to remove any trees, vegetation or brush within or immediately adjacent to the Easement Premises necessary to perform such work. The Town shall, except in the event of an emergency, provide the Grantor with 48 hours' notice of any anticipated Wastewater O/M Work. For the purposes hereof, "Environmental Laws" means and includes any applicable present and future local, state and federal law relating to the environment and environmental conditions including without limitation, the Resource Conservation and Recovery Act of 1986 ("RCRA"), 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"). 42 U.S.C. 9601-9657, as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"); the Hazardous Materials Transportation Act, 49 U.C.S. 6901, et seq.; the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq.; the Clean Air Act, 42 U.S.C. 7410 et seq.; the Clean Water Act, 33 U.S.C. 7101, et seq.; the Toxic Substances Control Act, 15 U.S.C. 2601 et seq.; the Massachusetts Contingency Plan, 310 CMR 40.0000, et seq., and any other state and local analogs or laws regulating pollution and the environment; all as amended, and any regulations promulgated under any of the foregoing statutes, or any similar state law or local ordinance.

5. Operation and Maintenance Agreement. Prior to the commencement of operations of the On-Site Wastewater Infrastructure, the Grantor and Town shall enter into an operation and maintenance agreement (the "O&M Agreement") with respect to the maintenance and operation of the On-Site Wastewater Infrastructure, which shall provide, among other things, that Grantor shall pay a fee to the Town for the Town's maintenance and repair obligations with respect to the On-Site Wastewater Infrastructure. The timing for submission and approval of the O&M Agreement is more fully detailed in an Infrastructure Development Agreement (Wastewater Facilities) between the Grantor and the Town of even date herewith (the "Development Agreement"). A Notice of the O&M Agreement shall be recorded with the Registry of Deeds and the O&M Agreement shall bind and inure to the Grantor Property and shall be a covenant running with the land.

6. Liens. The Town shall not permit any mechanics' liens or similar liens to remain upon or attach to the Grantor Property for labor and material furnished to the Town in connection with work of any character performed by or at the direction of the Town in connection with the easement rights granted hereunder or otherwise and the Town shall cause any such lien to be released of record (or discharged by bonding) forthwith without cost to the Grantor, within thirty (30) days after the Town's receipt of written notice thereof.

7. Reserved Rights, Disclaimer. The Grantor reserves, for itself and its successors and assigns, the right to use the Easement Premises for any and all purposes, provided such use does not interfere unreasonably with the Town's use of the Easement Premises for the purposes set forth herein. The Grantor makes no representation, either

express or implied, with respect to the condition of the Easement Premises. The Town acknowledges that the Town shall use and perform the Wastewater O/M Work within the Easement Premises at its sole risk.

8. Restrictions, Limitations. The Grantor, and its contractors, representatives and agents, shall not: (a) use the Easement Premises in a manner that interferes with the Town's right to access and use the On-Site Wastewater Infrastructure for the purposes hereby granted; (b) except as expressly permitted by this Agreement or contemplated by the plans for the Project and/or the On-Site Wastewater Infrastructure, construct or place any permanent or temporary buildings, structures, or obstructions on, over, across or below the Easement Premises; (c) cause or allow to be caused a release or threat of release of hazardous materials or oil on the Easement Premises; or (d) store or park vehicles, equipment, or other property on the Easement Premises.

9. Release; Responsibility for Liabilities. The Town hereby releases the Grantor, its officers, employees, representatives, contractors, lenders, members, affiliates and agents (collectively, "Grantor Parties") from any responsibility for Liabilities (defined in Section 10 below) related to the condition or use of the Easement Premises for the purposes for which the Town is permitted or required to use the Easement Premises under this Easement Agreement, except to the extent caused by (i) the negligence or willful misconduct of the Grantor or its officers, employees, representatives, contractors and agents; or (ii) a material breach of this Easement Agreement by the Grantor. From and after the Town's approval and acceptance of the On-Site Wastewater Infrastructure as provided in Section 3 above, the Town shall be solely responsible for any and all Liabilities associated with the On-Site Wastewater Infrastructure, and hereby assumes such Liabilities at its own risk, except to the extent such Liabilities arise out of (i) the negligence or willful misconduct of the Grantor or its officers, employees, representatives, contractors and agents; or (ii) a material breach of this Easement Agreement by the Grantor.. Notwithstanding the foregoing, nothing in this Section 9 shall be deemed to be a release by the Town of Grantor for any claims or any other cause of action, cost or expense with respect to any contractual obligations that Grantor may have to the Town under the O&M Agreement or the Land Disposition Agreement between Grantor and the Town (as amended, the "LDA"); provided, however, that this Easement Agreement shall expressly supersede and override any conflicting provisions of Section 3.4 of the LDA as it concerns the On-Site Wastewater Infrastructure, and the Grantor's covenants and obligations thereunder (including the indemnification obligations) shall expressly exclude any Liabilities associated with the On-Site Wastewater Infrastructure from and after the WW Operation Date, which are borne exclusively by the Town except to the extent expressly set forth in this Agreement.

10. Indemnification. To the extent permitted by law, commencing from and after the date the Town accepts the On-Site Wastewater Infrastructure pursuant to Paragraph 3 above, the Town agrees to indemnify and hold Grantor and any Grantor Parties harmless of and from any and all loss, cost, liability, damage or expense (including reasonable attorneys' fees) (collectively, "Liabilities") arising from or in connection with (i) the exercise of the rights of the Town hereunder; (ii) the Town's

performance of the Wastewater O/M Work (including any liens which are filed on account of such work); or (iii) the Town's breach of this Easement Agreement, including without limitation the Town's failure to perform its obligations under Section 4 above. To the extent that the Town or anyone acting for or through the Town releases or is otherwise responsible for a release of oil or hazardous materials ("OHM") on the Grantor Property in quantities or concentrations requiring reporting to the Massachusetts Department of Environmental Protection (MassDEP) or any other governmental authority with jurisdiction over the Property or the release, the Town shall promptly notify Grantor of the reportable condition. After consultation with and approval from the Grantor the Grantor's Licensed Site Professional (LSP), the Town shall submit a release notification form to MassDEP (or other governmental authority as appropriate), designating itself as the responsible party and shall be responsible at its sole cost and expense for expeditiously achieving a Permanent Solution with no conditions, including no activities and use limitations (the "Permanent Solution"). The Town shall continue to consult with and obtain approval from Grantor and Grantor's LSP on all remedial strategies and submissions until the Permanent Solution is achieved.

11. Insurance Coverages. Before the Town or any party acting by, through or under the Town (including agents, employees, contractors or consultants thereof) enters the Easement Premises for any reason, the Town shall procure, at its own cost and expense, or cause to be procured (i.e., by the contractor the Town engages to perform Wastewater O/M Work), the following minimum insurance: (a) commercial general liability insurance with a minimum coverage amount of One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit (which policy shall include blanket contractual liability insurance for all written contracts in accordance with policy terms afforded under ISO CG 00 01 04 13 (or carrier equivalent), subject to such coverage being commercially available, and shall include coverage for products through the time period applicable as required by the statute of repose and independent contractor's liability and coverage for property damage); (b) automobile liability insurance for owned and non-owned automobiles, trucks and all other licensed for road use vehicles, and/or hired/rented automobiles, trucks and all other licensed for road use vehicles, in the amount of One Million Dollars (\$1,000,000) combined single limit; (c) workers compensation in the minimum amount of the statutory limit and Employers Liability in the amount of One Million Dollars (\$1,000,000); (d) umbrella/excess liability in the minimum amount of Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) aggregate over all other insurance required by this Agreement (except workers compensation); and (e) contractors pollution liability in the amount of Two Million Dollars (\$2,000,000) Each Occurrence and Two Million Dollars (\$2,000,000) in the Aggregate for contractors providing Wastewater O/M Work. Required limits may be achieved via combination of primary and excess/umbrella liability policies.

12. General Insurance Requirements. All insurance required hereunder shall name the Grantor and its affiliates and their respective agents, members, managers, directors, officers, employees, successors, assigns and any other party reasonably designated by Grantor as an additional insured (except workers compensation/employers

liability). Additional Insured afforded under the General Liability policy shall extend to ongoing and products/completed operations. All insurance required shall be issued by insurers authorized to transact insurance business in the Commonwealth of Massachusetts and having an A- or better financial rating from a recognized insurance accreditation institution (such as A.M. Best Company). All insurance required hereunder, or with respect to any insurance carried by a party that covers the Easement Premises or the actions or omissions of that party, shall provide a waiver of subrogation in favor of the other. Where commercially available, all insurance policies and certificates shall include a provision requiring thirty (30) days' written notice to the Grantor of any cancellation (except only ten (10) days' written notice for cancellation due to nonpayment of premium). At least annually, and at such other times as the Grantor may reasonably request, the Town shall provide the Grantor with a certificate evidencing the coverages required hereunder. The Town's failure to obtain, procure and/or maintain the required insurance at all times shall constitute a material default hereunder. The Town's obligations to the Grantor under this Easement Agreement shall not be limited by the requirement for, or existence or amount of, insurance coverage. Grantor and the Town agree that (i) the failure of Grantor to demand evidence of such minimum insurance coverages or failure of Grantor to identify a deficiency(ies) therein will not be construed as a waiver of the Town's obligation to maintain the minimum insurance required under this Agreement; (ii) the insurance required under this Agreement does not represent that coverage and limits will necessarily be adequate to protect the Town, nor be deemed as a limitation of the Town's liability to Grantor in this Agreement; and (iii) the Town is solely responsible for any deductible and/or self-insured retention.

13. Miscellaneous:

(a) The rights and easements of the Town hereunder shall be deemed to be easements in gross, and neither the rights and easements hereunder nor the Town's obligations hereunder are assignable by the Town, except in connection with the conveyance or transfer by the Town of the New Town Wastewater Infrastructure as part of a larger conveyance or transfer of all or substantially all of the public wastewater infrastructure owned or maintained by the Town in the Town of Wayland, Massachusetts, and provided the O&M Agreement is assigned to and assumed by such successor owner. The rights and easements conferred herein shall be binding upon the Grantor, and its respective successors and assigns, and shall run with the Grantor Property and such provisions shall be deemed to be enforceable covenants running with the Grantor Property and shall bind any person having at any time any interest or estate in all or any portion of the Grantor Property as though such provisions were recited and stipulated in full in each and every deed of conveyance. The terms and provisions hereof shall be binding upon the Grantor hereto only with respect to the periods of time the Grantor is the owner of title to the Grantor Property. Accordingly, from and after such time as the Grantor shall transfer title to the Grantor Property, it shall have no further obligations hereunder except for obligations which accrued prior to the time of such transfer, it being specifically understood that from and after the date of such transfer the Grantor shall have no further rights hereunder nor responsibility for any obligations hereunder which rights and obligations shall, thereafter, be deemed rights and obligations of the party to whom

title has been transferred and such transferee shall, by virtue of its acceptance of such transfer be deemed to have assumed and agreed to perform all obligations of the transferor thereafter accruing under this Agreement.

(b) Any notice required or given under this Agreement shall be deemed duly served if hand-delivered, mailed by registered or certified mail, return receipt requested, postage prepaid, or sent by recognized overnight delivery, addressed to the party at the addresses set forth above, which may be changed with like notice at least ten (10) days in advance of the effective date of the change.

(c) This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, and any and all legal actions brought in connection with this Agreement shall be brought in courts within the Commonwealth of Massachusetts.

(d) This Agreement contains the entire agreement of the parties and, except for other written agreements between the Grantor and the Town which are not expressly superseded hereby, there are no other agreements or understandings between the parties regarding the subject matter of this Agreement. This Agreement may not be modified except in writing, duly executed by both parties.

(e) The captions and headings throughout this Agreement are for convenience of reference only and the words contained therein shall in no way be held or deemed to define, limit, explain, modify, amplify or add to the interpretation, construction or meaning of any provision of, or the scope or intent of this Agreement, nor in any way affect this Agreement, and shall have no legal effect.

(f) Notwithstanding anything to the contrary contained herein, this Agreement shall terminate and be of no further force and effect in the event that the Grantor makes a "Buyer's Self-Contained WWTP Work Election" pursuant to the Development Agreement.

[Signature Pages Follow]

WITNESS the execution hereof under seal this ____ day of _____, 2021.

GRANTOR:

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: James Lambert
Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

_____, ss.

On this ____ day of _____, 2021, before me, the undersigned Notary Public, personally appeared James Lambert, Vice President of WP Massachusetts, LLC, a Delaware limited liability company, the sole member and manager of WS River's Edge, LLC, a Delaware limited liability company, the managing member Alta River's Edge Venture, LLC, a Delaware limited liability company, the sole member of Grantor, as aforesaid, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he signed it voluntarily for its stated purpose on behalf of said entities in such capacities.

Notary Public
My Commission Expires:

Acceptance

The Wayland Board of Selectmen accepts a Grant of Easements (Wastewater Facilities) from ALTA River's Edge, LLC, at property located at 490 Boston Post Road, Wayland, pursuant to G.L. c.83, § 1, on this _____ day of _____, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this _____ day of _____, 2021, before me, the undersigned Notary Public, personally appeared _____, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

Notary Public
My Commission Expires:

Exhibit A

Grantor Property

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

EXHIBIT B
ACCESS AND DRAINAGE EASEMENT
[SEE ATTACHED]

GRANT OF EASEMENTS

The **TOWN OF WAYLAND** (the "Town"), a Massachusetts municipal corporation, acting by and through its Board of Selectmen pursuant to the vote taken under Article 1 of the September 12, 2020 Special Town Meeting, a certified copy of which is attached hereto, having an address of Wayland Town Building, 41 Cochituate Road, Wayland, Massachusetts 01778, for consideration paid of One Dollar (\$1.00), grants, with quitclaim covenants, to **ALTA RIVER'S EDGE, LLC**, a Delaware limited liability company ("Grantee"), having an office at c/o WP East Acquisitions, LLC, 91 Hartwell Avenue, Lexington, MA 02421, certain permanent, non-exclusive easements in, on and across parcels of land located in Wayland, Middlesex County, Massachusetts, described below, on the terms and conditions set forth herein. This Grant of Easements is sometimes referred to herein as the "Agreement" or "Easement Agreement".

WHEREAS, the Town is the owner of a parcel of land located at Boston Post Road (Route 20), Wayland, described more particularly in an Order of Taking dated November 15, 1965, recorded with the Middlesex South District Registry of Deeds ("Registry of Deeds") in Book 11003, Page 389, and legally described on Exhibit A attached hereto (the "Town Property");

WHEREAS, a private access road is located on the Town Property running from Boston Post Road to other property of the Town (the "Access Road");

WHEREAS, Grantee is, as of the date hereof and by deed of conveyance from the Town, the owner of a certain parcel or parcels of land located at 490 Boston Post Road, Wayland described more particularly on Exhibit B attached hereto (the "Benefited Property"), which Benefited Property is contiguous to the Town Property;

WHEREAS, Grantee intends to create a residential, rental housing project upon the Benefited Property (the "Project");

WHEREAS, Grantee has requested that the Town convey to Grantee a permanent, non-exclusive access easement on, over and across a portion of the Access Road for the purpose of accessing the Benefited Property;

WHEREAS, Grantee has further requested that the Town convey to Grantee a permanent, non-exclusive drainage easement on, over and across a portion of the Town Property;

WHEREAS, Grantee has further requested that the Town convey to Grantee a temporary, non-exclusive construction easement on, over and across a portion of the Town Property (as hereinafter described) in connection with the construction and installation of the Drainage Facilities (hereinafter defined); and

WHEREAS, the Town is amenable to conveying the foregoing easements to Grantee, and its successors and assigns, for the use and enjoyment of Grantee, its successors and assigns and the residents, employees, licensees, guests, contractors, and invitees of the Benefited Property and the Project (together with the Grantee, the "Benefited Parties").

NOW, THEREFORE, for consideration paid of One Dollar (\$1.00), and for other good and valuable consideration, the adequacy and sufficiency of which is hereby acknowledged, the Town and Grantee, for themselves and their respective successors and assigns, agree as follows:

1. Easement Premises; Permitted Uses. The Town hereby grants Grantee: (a) a permanent, non-exclusive access easement, containing 21,566 S.F., more or less, to use a portion of the Access Road located on the Town Property, and shown as "50' Wide Permanent Access Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA" dated December 17, 2020, prepared by Allen & Majors Associates, Inc. (the "Plan"), a reduced copy of which Plan (together with a blown up depiction of the easement areas) is attached hereto as Exhibit C, and incorporated herein (the "Access Easement Premises"), and as more particularly described in Exhibit D attached hereto and incorporated herein, for the purpose of ingress and egress for pedestrian and vehicular traffic by Grantee, its successors and assigns, including, but not limited to, the Benefited Parties; (b) a permanent, non-exclusive easement to use the western side of the Access Road, shown as "Landscape Easement" on the Plan and as more particularly described in Exhibit E attached hereto and incorporated herein (the "Landscape Easement Premises"), for the purpose of installation, modification, maintenance and removal of trees and other landscaping (the "Landscaping Easement"); (c) a permanent, non-exclusive drainage easement, containing 1,710 S.F., more or less, located on the Town Property, shown as "Permanent Drainage Easement" on the Plan and as more particularly described in Exhibit F attached hereto and incorporated herein (the "Drainage Easement Premises"), for the purpose of installing, operating, inspecting, maintaining, repairing, removing and replacing stormwater drains and any manholes, pipes, catch basins, conduits, culverts, channels and other related structures and/or facilities (collectively, "Drainage Facilities") for the drainage of stormwater from the Benefited Property onto the Drainage Easement Premises; and (d) during the construction of the Drainage Facilities, a temporary, non-exclusive access and construction easement which extends 20-feet from the perimeter boundary of the Drainage Easement Premises on all sides thereof to the extent located on the Town Property (the "Temporary Construction

Premises”, together with the Access Easement Premises, the Landscape Easement Premises, and the Drainage Easement Premises, the “Easement Premises”), for the purpose of constructing the Drainage Facilities (clauses (c) and (d) collectively, the “Drainage Easement,” together with the Access Easement and Landscaping Easement, the “Easements”).

2. Maintenance and Repair of the Access Easement. The Town shall, at its sole cost and expense, maintain and repair the Access Easement Premises in a condition similar to that of other secondary roads within the Town of Wayland (which shall include, without limitation, the obligation to remove snow and ice therefrom), except for the landscaping which is the subject of the Landscaping Easement, which Grantee will maintain at its sole cost and expense. In the event the Town does not maintain and repair the Access Easement Premises in the condition required hereunder and fails to remedy such default within a reasonable time after receipt of notice thereof from Grantee, the Grantee shall have the right to maintain and repair the Access Easement Premises and remove snow and ice therefrom, as needed, and seek reimbursement for the costs associated therewith from the Town. As part of its maintenance obligations hereunder, the Town shall remove any trees, vegetation or brush within or adjacent to the Access Easement Premises necessary to maintain the present width of the Access Easement Premises, maintain adequate sight lines at the apron of Route 20, and shall pave or re-pave the Access Easement Premises as needed to make it safe for passage.

In the event the Town is no longer using the Access Easement Premises to access the Town transfer station or any other Town facility or operation located on or being conducted on the Town Property, the Town may give written notice to Grantee, which shall specify a date no earlier than thirty (30) days after the giving of such notice after which the Town will no longer maintain the Access Easement Premises (but not any portion of the Access Road located outside of the Access Easement Premises, which shall remain the sole responsibility of the Town) (the “Maintenance Obligation Date”), whereupon the Grantee shall have the obligation, at its sole cost and expense, to maintain and repair the Access Easement Premises and maintain adequate sight lines at the apron of Route 20. Upon the Maintenance Obligation Date, and as part of its maintenance and repair obligation pursuant to the foregoing sentence, the Grantee shall have the right to perform routine removal of trees, vegetation and brush within or adjacent to the Access Easement Premises necessary to maintain the present width of the Access Easement Premises and adequate sight lines at the apron of Route 20, and shall pave or re-pave the Access Easement Premises as it deems necessary for safe travel.

3. Maintenance and Repair of the Drainage Easement. The Grantee shall have sole responsibility for maintenance, operation and repair of the Drainage Easement Premises, and shall, at its sole cost and expense, maintain the Drainage Easement Premises in good order and condition, and in a manner consistent with the stormwater operations and maintenance plan approved by the Town and/or its applicable agents, divisions or departments (the “O/M Plan”) upon completion of the drainage infrastructure. The Grantee acknowledges that the stormwater discharge is located in a critical area, and will require maintenance and treatment in accordance with the O/M

Plan. In no event shall the Town be responsible for the condition, maintenance or repair of the Drainage Easement Premises, except to the extent the Town causes damage thereto as a result of its gross negligence or willful misconduct.

4. Construction. All work done within or to the Easement Premises by Grantee shall be done in a good and workmanlike manner, using materials of good quality and, to the maximum extent feasible, at such times that the Town Property is not being used by others. Grantee shall obtain, at its sole cost, any and all permits, licenses or other approvals required to undertake any work within the Easement Premises and provide copies of the same to the Town, at the Town's request. Grantee shall, at the Town's reasonable request, place barriers and/or take other measures to protect persons and property from damage during construction or any work within the Easement Premises. Grantee shall use commercially diligent efforts to complete its work in an expeditious manner and to minimize interference with the use of the Town Property by the Town and others entitled thereto, including, without limitation, during such times as the Town is constructing improvements within the Town Property, including the Easement Premises. Grantee shall provide the Town with three business (3) days' notice of any anticipated work that will materially interfere with the Town's use of the Easement Premises. Grantee shall remove all construction debris or rubble, including any trees, vegetation or brush, which are removed as part of such construction or in connection with the Landscaping Easement from the Easement Premises on a regular basis consistent with construction industry norms during any construction period, but in no event shall Grantee leave construction debris that would interfere with the Town's use of the Easement Premises. Grantee shall forthwith repair and restore any damage or disturbance it causes to the Easement Premises (subject to any temporary damage or disturbance caused by improvements that Grantee is permitted to make pursuant to the terms hereof, including the Drainage Facilities and the landscaping which is the subject of the Landscaping Easement) and/or any improvements made thereto by the Grantee to their condition prior to such disturbance or damage, at Grantee's sole cost and expense.

5. Liens. Grantee shall not permit any mechanics' liens or similar liens to remain upon the Town Property for labor and material furnished to Grantee in connection with work of any character performed at the direction of Grantee and Grantee shall cause any such lien to be released of record (or discharged by bonding) forthwith without cost to the Town.

6. Reserved Rights, Disclaimer. The Town reserves, for itself and its successors and assigns, the right to use the Easement Premises for any and all purposes, provided such use does not interfere unreasonably with Grantee's use of the Easement Premises for the purposes set forth herein. The Town makes no representation, either express or implied, with respect to the condition of the Easement Premises. The Grantee, and on behalf of the Benefited Parties, acknowledge that the Grantee and the Benefited Parties shall use the Easement Premises at its sole risk.

7. Restrictions, Limitations. Grantee expressly acknowledges and agrees that the Easements are intended solely for the benefit of the Benefited Property and for no

other property. The Grantee and the Benefited Parties shall not, and shall not allow its contractors, representatives and agents to: (a) use the Easement Premises in a manner that interferes with the Town's right to use the same for any purpose that does not interfere with the access and other easement rights hereby granted; (b) except as expressly permitted by this Agreement, construct or place any permanent or temporary buildings, structures, or obstructions on, over, across or below the Easement Premises; (c) increase the width or other dimensions of the Easement Premises, or otherwise alter the Access Easement Premises to make it unsafe or difficult for pedestrian and vehicular traffic, without the Town's prior written consent, which consent may be withheld in the Town's sole discretion; (d) cause or allow to be caused a release or threat of release of hazardous materials or oil on the Easement Premises; or (e) store or park vehicles, equipment, or other property on the Easement Premises. Grantee shall inform Town at least three (3) days prior to making any major repairs (however in an emergency shall provide such notice as is reasonable under the circumstances), and shall install reasonable safety measures to protect the safety of others using the Easement Premises during any maintenance, and/or repair of the Easement Premises by the Grantee. The parties agree that filling potholes, grading, removing brush and other vegetation from the Easement Premises, installing and maintaining the landscape which is the subject of the Landscaping Easement, clearing pipes to allow proper drainage and clearing, and cleaning drainage ditches are general maintenance and require no prior notice to the Town.

8. Release. The Grantee, and on behalf of the Benefited Parties, hereby releases the Town, its officers, employees, representatives, contractors and agents from any responsibility for losses or damages related to the condition or use of the Easement Premises, except if caused by (i) the gross negligence or willful misconduct of the Town or its officers, employees, representatives, contractors and agents; or (ii) a material breach of this Agreement by the Town, and the Grantee, and on behalf of the Benefited Parties, agrees and covenants that it will not assert or bring, nor cause any third party to assert or bring, any claim, demand, lawsuit or cause of action against the Town (collectively, "Claims"), including, without limitation, claims for property damage, personal injury damage and any other damage relating to, or arising from, the Grantee's use or activities on or about the Easement Premises, except for any Claims arising out of (x) the gross negligence or willful misconduct of the Town or its officers, employees, representatives, contractors and agents, or (y) a material breach of this Agreement by the Town.

9. Indemnification. The Grantee, and on behalf of the Benefited Parties, agrees to indemnify, defend, and hold the Town harmless from and against all debts, expenses (including reasonable attorneys' fees), actions, causes of action, suits, dues, sums of money, damages, liabilities and any and all claims, demands and liabilities whatsoever of every name and nature, both in law and equity, arising out of or relating to: (a) the discharge, release or threatened release at or from the Benefited Property and/or the Town Property of oil or hazardous materials as defined under federal, state or local law which is caused by the Grantee, the Benefited Parties, or its agents, employees, contractors and representatives (collectively, the "Grantee Parties"); (b) any failure on the

part of the Grantee Parties to comply with this Easement Agreement; and (c) the death, injury or property damage suffered by any person on account of or based upon the negligence or misconduct of any of the Grantee Parties, except to the extent that such death, injury or property damage is caused by the gross negligence or willful misconduct of the Town. To the extent that the Grantee or anyone acting for or through the Grantee releases or is otherwise responsible for a release of oil or hazardous materials on the Town Property in quantities or concentrations requiring reporting to the Massachusetts Department of Environmental Protection (MassDEP) or any other governmental authority with jurisdiction over the Town Property or the release, the Grantee shall promptly notify the Town of the reportable condition. After consultation with and approval from the Town and the Town's Licensed Site Professional (LSP), the Grantee shall submit a release notification form to MassDEP (or other governmental authority as appropriate), designating itself as the responsible party and shall be responsible at its sole cost and expense for expeditiously achieving a Permanent Solution with no conditions, including no activities and use limitations (the "Permanent Solution"). The Grantee shall continue to consult with and obtain approval from the Town and the Town's LSP on all remedial strategies and submissions until the Permanent Solution is achieved.

10. Insurance Coverages. Before Grantee or any of the other Grantee Parties enters the Easement Premises for any reason, Grantee shall procure, at its own cost and expense, or cause to be procured, the following minimum insurance: (a) commercial general liability insurance with a minimum coverage amount of One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit. The policy shall include blanket contractual liability insurance for all written contracts in accordance with policy terms afforded under ISO CG 00 01 04 13 (or carrier equivalent), subject to such coverage being commercially available, and shall include coverage for products and completed operations liability through the time period applicable as required by the statute of repose and independent contractor's liability and coverage for property damage; (b) automobile liability insurance for owned and non-owned automobiles, trucks and all other licensed for road use vehicles, and/or hired/rented automobiles, trucks and all other licensed for road use vehicles, in the amount of One Million Dollars (\$1,000,000) combined single limit; (c) workers compensation in the minimum amount of the statutory limit and Employers Liability in the amount of One Million Dollars (\$1,000,000.00); and (d) umbrella/excess liability in the minimum amount of Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) aggregate over all other insurance required by this Agreement (except workers compensation). Required limits may be achieved via combination of primary and excess/umbrella liability policies.

11. General Insurance Requirements. All insurance required hereunder shall name the Town and its officers, employees, representatives, contractors and agents and any other party reasonably designated by the Town as an additional insured (except workers compensation/employers liability). Additional Insured afforded under the General Liability policy shall extend to ongoing and products/completed operations. All insurance required shall be issued by insurers authorized to transact insurance business in the Commonwealth of Massachusetts and having an A- or better financial rating from a

recognized insurance accreditation institution (such as A.M. Best Company). All insurance required hereunder, or with respect to any insurance carried by a party that covers the Easement Premises or the actions or omissions of that party, shall provide a waiver of subrogation in favor of the other. Where commercially available, all insurance policies and certificates shall include a provision requiring thirty (30) days' written notice to the Town of any cancellation (except only ten (10) days' written notice for cancellation due to nonpayment of premium). At least annually, and at such other times as the Town may reasonably request, Grantee shall provide the Town with a certificate evidencing the coverages required hereunder. Grantee's failure to obtain, procure and/or maintain the required insurance at all times shall constitute a material default hereunder. Grantee's obligations to the Town under this Agreement shall not be limited by the requirement for, or existence or amount of, insurance coverage. The Town and Grantee agree that (i) the failure of the Town to demand evidence of such minimum insurance coverages or failure of the Town to identify a deficiency(ies) therein will not be construed as a waiver of Grantee's obligation to maintain the minimum insurance required under this Agreement; (ii) the insurance required under this Agreement does not represent that coverage and limits will necessarily be adequate to protect the Grantee, nor be deemed as a limitation of Grantee's liability to the Town under this Agreement; and (iii) the Grantee is solely responsible for any deductible and/or self-insured retention.

12. Turn-Around Easement. In return for the Easements conveyed to the Grantee herein, the Grantee grants to the Town, and the public, a permanent, non-exclusive easement for the purpose of turning around vehicles within paved areas of the Benefited Property, at or near the gate installed by the Town on the Access Road (the "Turn-Around Easement") in the area shown as "Turn Around Easement" on the Plan and as more particularly described in Exhibit G attached hereto and incorporated herein. Notwithstanding the foregoing, the Turn-Around Easement will be effective only upon completion of the paved areas shown on the Plan and upon confirmation that same are able to accept vehicular traffic for their intended purpose, but no later than the time residents of the Project are permitted to utilize such paved areas for their intended purpose. Upon written request of the Town, the Grantee will provide notice to the Town of the effective date of the Turn-Around Easement. Grantee may not obstruct or interfere with the Turn-Around Easement, but reserves the right, to be exercised solely at the Grantee's option, to relocate the Turn-Around Easement, at its expense, to another portion of the Benefited Property, provided, however, that the relocated easement area shall be reasonably comparable to the existing easement area. The Town acknowledges that there may be periods during the construction of the Project during which Grantee will need to temporarily block or prevent the use of the Turn-Around Easement. Sections 5 and 8 hereof shall apply to the Town's Turn-Around Easement with the same force and effect as they apply to the Easements, but as if the Town and the public at large are the "Grantee" and the "Grantee Parties" thereunder, respectively, and the "Grantee" is the Town.

13. Miscellaneous:

(a) During the exercise of the rights hereby granted, the Grantee shall not, and shall not permit any of the other the Grantee Parties to interfere unreasonably with the operations of the Town in its use of the Town Property, including the Easement Premises, or the operation and/or use by others entitled thereto. During the exercise of the rights hereby granted under Section 12, the Town shall not interfere unreasonably with the operations of the Grantee in its use of the Benefited Property or the construction of the Project, including the Turn-Around Easement Area, or the operation and/or use by others entitled thereto. During the exercise of the rights granted hereunder, Grantee shall not unreasonably interfere with the Town's use and operation of the Town Property.

(b) All provisions of this Agreement, including the benefits and burdens, shall run with the land and be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns, and such provisions shall be deemed to be enforceable covenants running with the land and shall bind any person having at any time any interest or estate in all or any portion of the Town Property and Benefited Property burdened hereby as though such provisions were recited and stipulated in full in each and every deed of conveyance. The terms and provisions hereof shall be binding upon the parties hereto only with respect to the periods of time such party is the owner of title to the Town Property or the Benefited Property, as the case may be. Accordingly, from and after such time as either party hereto shall transfer title to its respective property, it shall have no further obligations hereunder except for obligations which accrued prior to the time of such transfer, it being specifically understood that from and after the date of such transfer such party shall have no further rights hereunder nor responsibility for any obligations hereunder which rights and obligations shall, thereafter, be deemed rights and obligations of the party to whom title has been transferred and such transferee shall, by virtue of its acceptance of such transfer be deemed to have assumed and agreed to perform all obligations of the transferor thereafter accruing under this Agreement.

(c) Any notice required or given under this Agreement shall be deemed duly served if hand-delivered, mailed by registered or certified mail, return receipt requested, postage prepaid, or sent by recognized overnight delivery, addressed to the parties at the addresses set forth above, which may be changed with like notice at least ten (10) days in advance of the effective date of the change.

(d) This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, and any and all legal actions brought in connection with this Agreement shall be brought in courts within the Commonwealth of Massachusetts.

(e) This Agreement contains the entire agreement of the parties and there are no other agreements or understandings between the parties regarding the subject matter of this Agreement. This Agreement may not be modified except in writing, duly executed by both parties.

(f) The captions and headings throughout this Agreement are for convenience of reference only and the words contained therein shall in no way be held or deemed to

define, limit, explain, modify, amplify or add to the interpretation, construction or meaning of any provision of, or the scope or intent of this Agreement, nor in any way affect this Agreement, and shall have no legal effect.

[Signature Pages Follow]

WITNESS the execution hereof under seal this ____ day of _____, 2021.

TOWN OF WAYLAND,
By Its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this ____ day of _____, 2021, before me, the undersigned Notary Public, personally appeared _____, member of the Wayland Board of Selectmen, as aforesaid, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she/they signed it voluntarily for its stated purpose on behalf of the Town of Wayland.

Notary Public
My Commission Expires:

746074/WAYL/0103

WITNESS the execution hereof under seal this ____ day of _____, 2021.

GRANTEE:

ALTA RIVER’S EDGE, LLC, a Delaware limited liability company

By: Alta River’s Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River’s Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____

Name: James Lambert

Title: Vice President

COMMONWEALTH OF MASSACHUSETTS

_____, ss.

On this ____ day of _____, 2021, before me, the undersigned Notary Public, personally appeared James Lambert, Vice President of WP Massachusetts, LLC, a Delaware limited liability company, the sole member and manager of WS River’s Edge, LLC, a Delaware limited liability company, the managing member Alta River’s Edge Venture, LLC, a Delaware limited liability company, the sole member of Grantee, as aforesaid, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he signed it voluntarily for its stated purpose on behalf of said entities in such capacities.

Notary Public

My Commission Expires:

Exhibit A

Town Property

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as "Map 22, Lot 5," containing 23.92 acres, on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

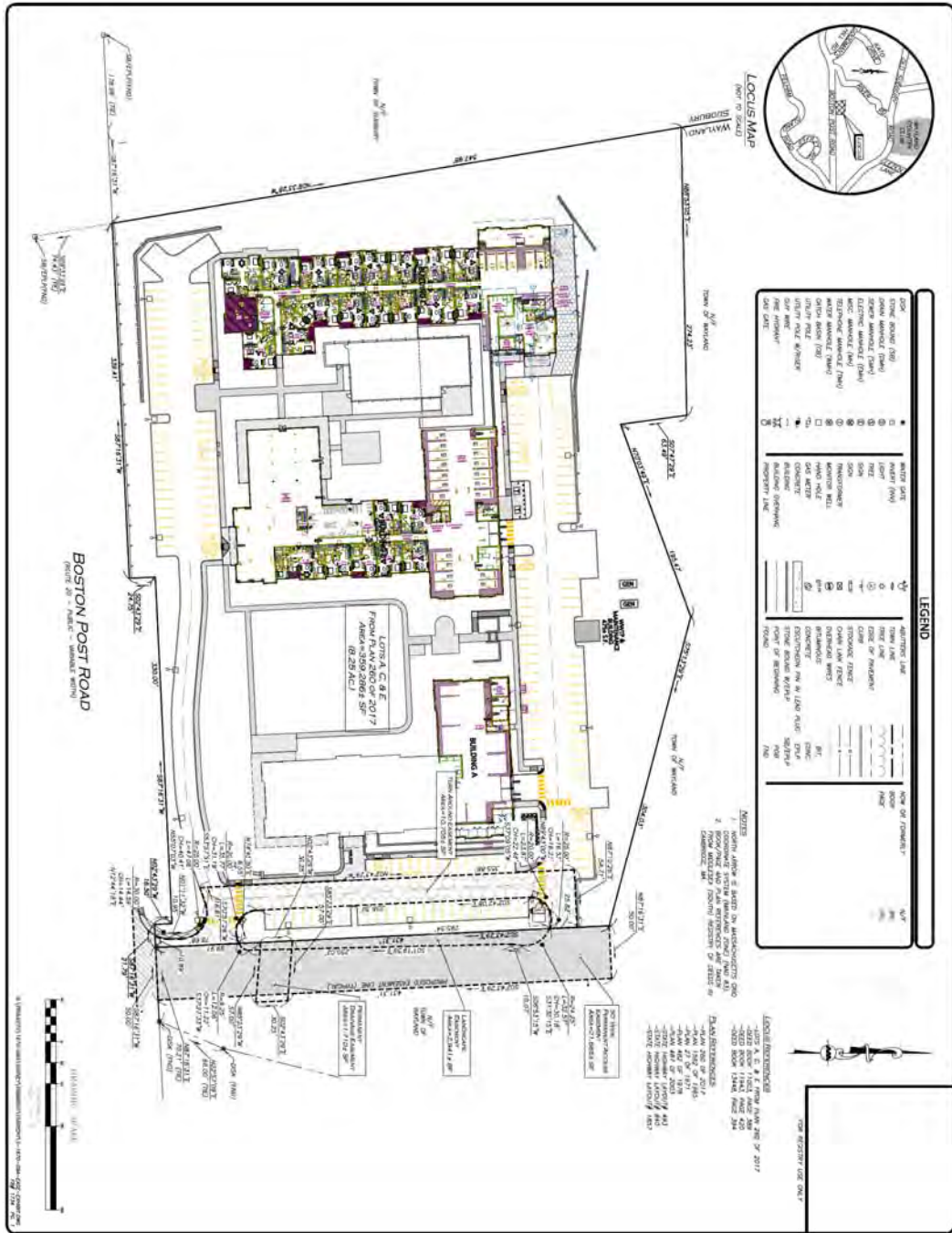
Exhibit B

Benefited Property

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

Exhibit C*

Plan



<p>484 BOSTON POST ROAD WANTHOEN, MA</p>	
<p>ALTA RIVERS EDGE, LLC 91 HARTWELL AVENUE - 3RD FLOOR LEXINGTON, MA 02421</p>	<p>ALLEN & MAJOR ASSOCIATES, INC. 100 STATE STREET, SUITE 200 WANTHOEN, MA 01885 TEL: 978.251.1111</p>
<p>PROJECT NO: 1000000001 SCALE: 1"=40' (SHEET SCALE: 3/16"=100') DATE: 01/20/17</p>	<p>DATE: 01/20/17 BY: [Signature]</p>
<p>EASIMENT SHEET 1</p>	

Exhibit D

Access Easement Premises

A certain easement situated along the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Northwesterly most corner of the easement to be described hereafter; thence

N87°16'31"E Fifty and no hundredths feet (50.00') to a point; thence

S02°43'29"E Four hundred thirty-one and thirty-one hundredths feet (431.31') to a point; thence

S87°16'31"W Fifty and no hundredths feet (50.00') to a point; thence

N02°43'29"W Four hundred thirty-one and thirty-one hundredths feet (431.31') to the point of beginning.

The above described easement contains an area of 21,565 square feet, more or less, and is more particularly shown as a "50' Wide Permanent Access Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Exhibit E

Landscape Easement Premises

A certain easement situated off the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Southwesterly most corner of the easement to be described hereafter; thence

N02°43'29"W Two hundred ninety-five and fifty-four hundredths feet (295.54') to a point of curvature; thence

Southeasterly Along an arc to the right having a radius of twenty-four and twenty-five hundredths feet (24.25'), an arc length of thirty-two and fifty-seven hundredths feet (32.57'), a chord length of thirty and eighteen hundredths feet (30.18') and a chord bearing of S31°35'15"E to a point of tangency; thence

S06°53'15"W Ten and seven hundredths feet (10.07') to a point; thence

S01°19'59"E Two hundred fifty and two hundredths feet (250.02') to a point of curvature; thence

Southwesterly Along an arc to the right having a radius of nine and twenty-five hundredths feet (9.25'), an arc length of twelve and six hundredths feet (12.06'), a chord length of eleven and twenty-two hundredths feet (11.22') and a chord bearing of S37°27'33"W to the point of beginning.

The above described easement contains an area of 2,941 square feet, more or less, and is more particularly shown as a "Landscape Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Exhibit F

Drainage Easement Premises

A certain easement situated off the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Northwesterly most corner of the easement to be described hereafter; thence

S85°23'29"E Fifty-seven and no hundredths feet (57.00') to a point; thence

S02°43'29"E Thirty and twenty-five hundredths feet (30.25') to a point; thence

N85°23'29"W Fifty-seven and no hundredths feet (57.00') to a point; thence

N02°43'29"W Thirty and twenty-five hundredths feet (30.25') to the point of beginning.

The above described easement contains an area of 1,710 square feet, more or less, and is more particularly shown as a "Permanent Drain Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

Exhibit G

Turn-Around Easement

A certain easement situated along the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Northwesterly most corner of the easement to be described hereafter; thence

- N87°10'26"E Fifty-four and seventy-one hundredths feet (54.71') to a point; thence
- S02°43'29"E Twenty-five and eighty-two hundredths feet (25.82') to a point of curvature; thence
- Northwesterly Along an arc to the left having a radius of twenty-five and no hundredths feet (25.00'), an arc length of sixteen and fifty-three hundredths feet (16.53'), a chord length of sixteen and twenty-three hundredths feet (16.23') and a chord bearing of N89°43'00"W to a point of compound curvature; thence
- Southwesterly Along an arc to the left having a radius of twenty and no hundredths feet (20.00'), an arc length of twenty-three and eighty-seven hundredths feet (23.87'), a chord length of twenty-two and forty-eight hundredths feet (22.48') and a chord bearing of S37°09'05"W to a point of non-tangency; thence
- S02°42'08"E Two hundred fifty-six and thirty hundredths feet (256.30') to a point; thence
- Southeasterly Along an arc to the left having a radius of twenty and no hundredths feet (20.00'), an arc length of thirty-five and seventy-seven hundredths feet (35.77'), a chord length of thirty-one and nineteen hundredths feet (31.19') and a chord bearing of S53°57'51"E to a point of non-tangency; thence
- N74°45'50"E Six and fifty-five hundredths feet (6.55') to a point; thence
- S02°43'29"E Seventy-eight and sixty-eight hundredths feet (78.68') to a point; thence
- S87°16'31"W Ten and eighty-nine hundredths feet (10.89') to a point of curvature; thence
- Northeasterly Along an arc to the left having a radius of thirty and no hundredths feet (30.00'), an arc length of fourteen and fifty-nine hundredths feet (14.59'), a chord length of fourteen and forty-four hundredths feet (14.44') and a chord bearing of N12°44'18"E to a point of tangency; thence
- N01°11'32"W Ten and ninety-five hundredths feet (10.95') to a point of curvature; thence
- Northwesterly Along an arc to the left having a radius of twenty-five and no hundredths feet (25.00'), an arc length of forty-seven and six hundredths feet (47.06'), a

chord length of forty and forty-one hundredths feet (40.41') and a chord bearing of N55°07'03"W to a point of tangency; thence

S70°57'26"W Sixteen and sixty-one hundredths feet (16.61') to a point; thence

N02°43'29"W Three hundred fifty-five and eighty-eight hundredths feet (355.88') to the point of beginning.

The above described easement contains an area of 10,705 square feet, more or less, and is more particularly shown as a "Turn Around Easement" on a plan entitled "Easement Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 17, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

EXHIBIT C
TEMPORARY DEMOLITION LICENSE
[SEE ATTACHED]

TEMPORARY CONSTRUCTION LICENSE

THIS TEMPORARY CONSTRUCTION LICENSE ("Agreement") is made and entered into this ____ day of _____, 2021 ("License Date") by and between the TOWN OF SUDBURY, acting by and through its Town Manager, a Massachusetts municipal corporation ("Licensor") and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("Licensee").

RECITALS

WHEREAS, Licensor is the owner of real property more particularly described on Exhibit A hereto (the "Town Property");

WHEREAS, Licensee intends on developing the property adjoining the Town Property and more particularly described on Exhibit B hereto (the "Licensee Property") as a multi-family housing project with related amenities and common areas (the "Project");

WHEREAS, Licensee needs to access a portion of the Town Property in order to perform the Work (defined below); and

WHEREAS, Licensor has agreed to grant Licensee and its Permittees (defined below) the right and license to perform the Work on the terms hereinafter set forth.

NOW, THEREFORE, for and in consideration of the mutual covenants herein contained, and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, the parties hereby agree to the following terms and conditions:

AGREEMENTS

1. Temporary Construction License. Licensor hereby grants a non-exclusive, temporary license ("License") to Licensee and its agents, employees, representatives and contractors (collectively, "Permittees"), for a period of nine (9) months from the date upon which Licensee commences construction activities relating to the Project (the "Term"), to enter upon the 70 foot-wide area on the Town Property shown as "License Area" on a plan entitled "License Area Exhibit—484 Boston Post Road, Wayland, MA" dated December 22, 2020, prepared by Allen & Majors Associates, Inc., attached hereto and incorporated herein as Exhibit C ("License Area"), and as more particularly described in Exhibit D attached hereto and incorporated herein, to (a) demolish and remove in its entirety the above-ground structures of the septage facility located within the License Area and all related above-ground fixtures, improvements, utilities and equipment, including without limitation, removal and proper disposal of any and all hazardous materials that are required to be removed based on the Work; (b) locate, cut and cap, as may be necessary, a water line serving the septage facility at the Licensee Property's property line, (c) perform grading activities within the License Area, excluding soil excavation on the Town Property, required in connection with the development of the Project, including filling and blending the grade on the Town Property with the Licensee Property, seeding and restoring the area to the condition it was in prior to the commencement of the Work, except to the extent the condition of the Town Property is modified in connection with the grading and other Work

permitted hereunder, and (d) perform any incidental activities related to such demolition, grading, and construction activities (collectively, the “Work”), all at Licensee’s sole cost and expense. The License shall include the right of Licensee to temporarily remove any fencing and any other above-ground improvements in the License Area which are not permanently demolished and/or removed as part of the Work (collectively, such improvements that are not permanently demolished and/or removed, the “Restorable Improvements”) necessary for Licensee to perform the Work, and locate its equipment, materials and workers in the License Area. The Licensee shall advise the Town no less than twenty-four (24) hours prior to entering the License Area of its intent to conduct the Work in the License Area and shall permit the Town or its representative(s) to observe any and all Work conducted under this License.

2. Restoration and Repair. Upon the completion of the Work, Licensee shall, at its sole cost and expense, (a) re-install any Restorable Improvements removed by Licensee to substantially the condition that existed prior to commencement of the Work, (b) repair any damage to the License Area and the Restorable Improvements located therein caused by Licensee or its Permittees and (c) remove all personal property, materials and equipment not belonging to the Town, trash and debris related to the Work from the License Area. Licensee shall pay in full for all Work and satisfy any mechanic’s liens related thereto.
3. No Representations or Warranties: Licensor makes no representations or warranties whatsoever regarding the condition of the License Area or the content of any materials located thereon, and Licensee agrees to enter the License Area and to undertake the Work at its sole risk, cost and expense. The provisions of this section shall survive the termination of this Agreement.
4. Indemnification. Licensee hereby agrees to defend, indemnify and hold Licensor harmless for, from and against all claims, actions, liabilities, liens or proceedings, including, without limitation, reasonable attorneys' fees and court costs actually incurred, resulting from any failure on the part of Licensee to comply with any provision or term of this License, and any personal injury, death or property damage (including, without limitation, hazardous materials identified in performance of the Work or caused or introduced at or to the License Area by the Licensee or any of its Permittees), suffered or incurred by Licensor or any person, firm or entity and arising out of the exercise by Licensee or its Permittees of rights under this Agreement, except to the extent arising from the negligent, intentional or willful acts or omissions of Licensor, its agents, contractors or invitees. The obligations of this Section shall survive the expiration or termination of this License.
5. Insurance. Throughout the Term, Licensee shall procure and maintain (or cause its applicable contractors performing the work to procure and maintain):
 - (a) commercial general liability and property damage insurance against claims for personal injury (including contractual liability arising under the indemnity contained in Section 3 above), death, or property damage occurring upon the Town Property, with limit of not less than One Million Dollars (\$1,000,000.00) per occurrence and Two Million Dollars (\$2,000,000) aggregate limit;

(b) automobile liability insurance for owned and non-owned automobiles and trucks, and/or rented automobiles and trucks, in the amount of One Million Dollars (\$1,000,000) combined single limit; and

(c) workers compensation coverage in the minimum amount of the statutory limit.

Before any Work shall commence, Licensee and its Permittees shall provide Licensor with a certificate of insurance naming the Town as an additional insured for each of the policies described above, except workers compensation.

6. Restrictions. The License Area shall be used for lawful purposes in conformance with all restrictions imposed by all applicable governmental laws, ordinances, codes, and regulations, and no use or operation by Licensee or its Permittees shall be made, conducted, or permitted on or with respect to all or any portion of the License Area that is illegal.
7. Licensed Contractor: All of the Work will be done by or under the supervision of a licensed contractor.
8. Termination and Revocation: This License may be revoked by the Licensor for “cause,” if not cured within ten (10) days after written notice to Licensee. If Licensee cannot reasonably cure the breach or default within ten (10) days, Licensee shall be allowed additional time (not to exceed thirty (30) additional days) as is reasonably necessary to cure such breach or default so long as: (a) Licensee commences the cure within ten (10) days of written notice by Licensor; and (b) Licensee diligently pursues a course of action that will cure such breach or default and bring Licensee back into compliance with the terms of this License. “Cause” shall mean any material breach or default of the terms of this Agreement. Except as stated herein, this License shall be irrevocable for the Term hereof. At the expiration of the Term of this License or its prior termination, the Licensee shall forthwith remove all equipment, materials, and any other personal property from the License Area.
9. Not A Right-Of-Way Dedication: Nothing contained in this License shall create or be deemed to create any rights in the general public, nor be deemed to be a gift or a dedication of any portion of any of the Town Property to or for the general public or for any public purpose whatsoever, it being the intention that this License shall be strictly limited to and for the purposes herein expressed.
10. License, Not Lease. This License and the rights granted to Licensee herein are intended and shall be deemed to constitute merely a license to occupy the License Area upon the terms and conditions set forth herein, and shall not be deemed to constitute a lease, an estate passing out of Licensor or any other interest in real property, and, therefore, Licensee shall not be entitled to any statutory right or benefit afforded to tenants of real property.
11. Entire Agreement. This Agreement contains the complete understanding and agreement of the parties hereto with respect to all matters referred to herein, and all prior representations, negotiations, and understandings related to the matters referred to herein are superseded hereby. Any modification of this Agreement shall be in writing duly executed by both parties hereto before it shall become effective.

12. Notices. Notices or other communication hereunder shall be in writing and shall be sent certified or registered mail, return receipt requested, by other national overnight courier company, personal delivery, or by email transmission. Notice shall be deemed given upon receipt or refusal to accept delivery. Each party may change from time to time their respective address for notice hereunder by like notice to the other. The notice addresses of the parties are as follows:

Licensee: Alta River's Edge, LLC
c/o Wood Partners
91 Hartwell Avenue
Lexington, MA 02421
Attn: Jim Lambert, Director
Email: jim.lambert@woodpartners.com

with a copy to: Andrew R. Allen
Alston & Bird LLP
1201 W. Peachtree Street
Atlanta, GA 3039
Email: drew.allen@alston.com

Licensor Town of Sudbury
Flynn Building
278 Old Sudbury Road
Sudbury, MA 01776
Attn: Henry Hayes, Town Manager
Email: HayesH@sudbury.ma.us

10. Governing Law. The laws of the Commonwealth of Massachusetts shall govern the interpretation, validity; performance, and enforcement of this License.
11. Counterparts. This Agreement may be executed in multiple counterparts, each of which will constitute an original, but all of which taken together will constitute one and the same agreement.

[Remainder of page left intentionally blank]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

LICENSOR:

TOWN OF SUDBURY, a Massachusetts municipal corporation

By: _____
Henry L. Hayes, Jr.,
Town Manager

LICENSEE:

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

EXHIBIT A

TOWN PROPERTY

The land on Route 20, a/k/a Boston Post Road, Sudbury, Middlesex County, Massachusetts, as more specifically described in Book 11789, Page 569 and Plan No. 540 of 1983, recorded with the Middlesex South District Registry of Deeds.

EXHIBIT B

LICENSEE PROPERTY

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure", dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

EXHIBIT D

LICENSE AREA – LEGAL DESCRIPTION

A certain license area situated along the Northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The Point of Beginning being the Southeasterly most corner of the easement to be described hereafter; thence

S87°16'31"W Seventy and fifty hundredths feet (70.50') to a point of; thence

N09°33'28"W Three hundred five and thirty-seven hundredths feet (305.37') to a point; thence

N80°26'32"E Seventy and no hundredths feet (70.00') to a point of curvature; thence

S09°33'28"E Three hundred thirteen and seventy-five hundredths feet (313.75') to the point of beginning.

The above described license area contains an area of 21,669 square feet, more or less, and is more particularly shown as a "License Area" on a plan entitled "License Area Exhibit – 484 Boston Post Road, Wayland, MA". Scale: 1" = 40'. Dated December 22, 2020. Prepared for ALTA River's Edge, LLC. Prepared by Allen & Major Associates, Inc.

EXHIBIT D-1

REGULATORY AGREEMENT [NON-AGE RESTRICTED BUILDING]

[SEE ATTACHED]

LOCAL INITIATIVE PROGRAM

**REGULATORY AGREEMENT
AND
DECLARATION OF RESTRICTIVE COVENANTS
FOR
RENTAL PROJECT
Local Action Units**

This Regulatory Agreement and Declaration of Restrictive Covenants (the "Agreement") is made this _____ day of _____, 20__ by and among the Commonwealth of Massachusetts, acting by and through the Department of Housing and Community Development ("DHCD") pursuant to G.L. c.23B §1 as amended by Chapter 19 of the Acts of 2007, the Town of Wayland ("the Municipality"), and Alta River's Edge, LLC, a Delaware limited liability company, authorized to do business in Massachusetts, having an address at 3715 Northside Pkwy NW Ste 4-600, Atlanta, GA 30327, and its successors and assigns ("Developer").

WITNESSETH:

WHEREAS, pursuant to G.L. c. 40B, §§ 20-23 (the "Act") and the final report of the Special Legislative Commission Relative to Low and Moderate Income Housing Provisions issued in April 1989, regulations have been promulgated at 760 CMR 56.00 (the "Regulations") which establish the Local Initiative Program ("LIP") and *Comprehensive Permit Guidelines: M.G.L. Chapter 40B Comprehensive Permit Projects - Subsidized Housing Inventory* have been issued thereunder (the "Guidelines");

WHEREAS, the Developer intends to construct or cause the construction of a rental housing development known as River's Edge, 490 Boston Post Road, Buildings B and C on a 5.17+/- portion of a 8.25+/- acre site in the Municipality, more particularly described in Exhibit A attached hereto and as shown as "Parcel Two" on the plan attached hereto as Exhibit A-1 (the "Project");

WHEREAS, such Project is to consist of a total number of one hundred fifty-two (152) rental dwellings (the "Units") and thirty-eight (38) of the Units will be rented at rents specified in this Agreement to Eligible Tenants as specified in paragraph two of this Agreement (the "Low and Moderate Income Units");

WHEREAS, the Chief Executive Officer of the Municipality (as that term is defined in the Regulations) and the Developer have made application to DHCD to certify that the units in the Project are Local Action Units (as that term is defined in the Guidelines) within the LIP Program; and

WHEREAS, in partial consideration of the execution of this Agreement, DHCD has issued or will issue its final approval of the Project within the LIP Program and has given and will give technical and other assistance to the Project;

September 2, 2016

NOW, THEREFORE, in consideration of the agreements and covenants hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which each of the parties hereto hereby acknowledge to the other, DHCD, the Municipality, and the Developer hereby agree and covenant as follows:

1. Construction. The Developer agrees to construct or cause the construction of the Project in accordance with plans and specifications approved by the Municipality (the "Plans and Specifications"). In addition, all Low and Moderate Income Units to be constructed as part of the Project must be indistinguishable from other Units in the Project from the exterior (unless the Project has an approved "Alternative Development Plan" as set forth in the Guidelines) and must contain complete living facilities including but not limited to a stove, refrigerator, kitchen cabinets, plumbing fixtures, and washer/dryer hookup, all as more fully shown in the Plans and Specifications.

<u>19</u>	of the Low and Moderate Income Units shall be one bedroom units;
<u>19</u>	of the Low and Moderate Income Units shall be two bedroom units;
<u>0</u>	of the Low and Moderate Income Units shall be three bedroom units; and,
<u>0</u>	of the Low and Moderate Income Units shall be four bedroom units.

All Low and Moderate Income Units to be occupied by families must contain two or more bedrooms. Low and Moderate Income Units must have the following minimum areas:

studio units	-	250 square feet
one bedroom units	-	700 square feet
two bedroom units	-	900 square feet
three bedroom units	-	1200 square feet
four bedroom units	-	1400 square feet

During the term of this Agreement, the Developer covenants, agrees, and warrants that the Project and each Low and Moderate Income Unit will remain suitable for occupancy (subject to casualty events and other events of force majeure) and in compliance with all federal, state, and local health, safety, building, sanitary, environmental, and other laws, codes, rules, and regulations, including without limitation laws relating to the operation of adaptable and accessible housing for persons with disabilities. The Project must comply with all similar local codes, ordinances, and by-laws.

2. Affordability.

(a) Throughout the term of this Agreement, each Low and Moderate Income Unit will be rented for no more than the rental rates set forth herein to an Eligible Tenant. An Eligible Tenant is a Family whose annual income does not exceed eighty percent (80%) of the Area median income adjusted for family size as determined by the U.S. Department of Housing and Urban Development ("HUD"). A "Family" shall mean two or more persons who will live regularly in the Low and Moderate Income Unit as their primary residence and who are related by blood, marriage, or operation of law or who have otherwise evidenced a stable inter-dependent relationship; or an individual. The "Area" is defined as the Boston-Cambridge-Quincy, MA MSA.

(b) The monthly rents charged to tenants of Low and Moderate Income Units shall not exceed an amount equal to thirty percent (30%) of the monthly adjusted income of a Family whose gross income equals eighty percent (80%) of the median income for the Area, with adjustment for the number of bedrooms in the Unit, as provided by HUD. In determining the maximum monthly rent that may be charged for a Low and Moderate Income Unit under this clause, the Developer shall include an allowance for any utilities and services (excluding telephone) to be paid by the resident. Annual income shall be as defined in 24 C.F.R. 5.609 (or any successor regulation) using assumptions provided by HUD. The initial maximum monthly rents and utility allowances for the Low and Moderate Income Units are set forth in Exhibit B attached hereto. If the rent for a Low and Moderate Income Unit is subsidized by a state or federal rental subsidy program, then the rent applicable to the Low and Moderate Income Unit may be limited to that permitted by such rental subsidy program, provided that the tenant's share of rent does not exceed the maximum annual rental expense as provided in this Agreement.

Annually as part of the annual report required under Subsection 2(e) below, the Developer shall submit to the Municipality and DHCD a proposed schedule of monthly rents and utility allowances for all Low and Moderate Income Units in the Project. Such schedule shall be subject to the approval of the Municipality and DHCD for compliance with the requirements of this Section. Rents for Low and Moderate Income Units shall not be increased without the Municipality's and DHCD's prior approval of either (i) a specific request by Developer for a rent increase or (ii) the next annual schedule of rents and allowances. Notwithstanding the foregoing, rent increases shall be subject to the provisions of outstanding leases and shall not be implemented without at least 30 days' prior written notice by Developer to all affected tenants. If an annual request for a new schedule of rents for the Low and Moderate Income Units as set forth above is based on a change in the Area median income figures published by HUD, and the Municipality and DHCD fail to respond to such a submission within thirty (30) days of the Municipality's and DHCD's receipt thereof, the Municipality and DHCD shall be deemed to have approved the submission. If an annual request for a new schedule of rents for the Low and Moderate Income Units is made for any other reason, and the Municipality and DHCD fail to respond within thirty (30) days of the Municipality's and DHCD's receipt thereof, the Developer may send DHCD and the Municipality a notice of reminder, and if the Municipality and DHCD fail to respond within thirty (30) days from receipt of such notice of reminder, the Municipality and DHCD shall be deemed to have approved the submission.

Without limiting the foregoing, the Developer may request a rent increase for the Low and Moderate Units to reflect an increase in the Area median income published by HUD between the date of this Agreement and the date that the Units begin to be marketed or otherwise made available for rental pursuant to Section 4 below; if the Municipality and DHCD approve such rent increase in accordance with this subsection, the Initial Maximum Rents and Utility Allowances for Low and Moderate Income Units in Exhibit B of the Agreement shall be deemed to be modified accordingly.

(c) If, after initial occupancy, the income of a tenant of a Low and Moderate Income Unit increases and, as a result of such increase, exceeds the maximum income permitted hereunder for such a tenant, the Developer shall not be in default hereunder so long as either (i) the tenant income does not exceed one hundred forty percent (140%) of the maximum income permitted or (ii) the Developer rents the next available unit at the Development as a Low and

Moderate Income Unit in conformance with Section 2(a) of this Agreement, or otherwise demonstrates compliance with Section 2(a) of this Agreement.

(d) If, after initial occupancy, the income of a tenant in a Low and Moderate Income Unit increases, and as a result of such increase, exceeds one hundred forty percent (140%) of the maximum income permitted hereunder for such a tenant, at the expiration of the applicable lease term, the rent restrictions shall no longer apply to such tenant.

(e) Throughout the term of this Agreement, the Developer shall annually determine whether the tenant of each Low and Moderate Income Unit remains an Eligible Tenant. This determination shall be reviewed by the Municipality and certified to DHCD as provided in section 2(g), below.

(f) The Developer shall enter into a written lease with each tenant of a Low and Moderate Income Unit which shall be for a minimum period of one year and which provides that the tenant shall not be evicted for any reason other than a substantial breach of a material provision of such lease.

(g) Throughout the term of this Agreement, the Chief Executive Officer shall annually certify in writing to DHCD that each of the Low and Moderate Income Units continues to be Low and Moderate Income Unit as provided in sections 2 (a) and(c), above; and that the Project and the Low and Moderate Income Units have been maintained in a manner consistent with the Regulations and Guidelines and this Agreement.

3. Subsidized Housing Inventory.

(a) The Project will be included in the Subsidized Housing Inventory upon the occurrence of one of the events described in 760 CMR 56.03(2). All of the Units will be deemed low and moderate income housing to be included in the Subsidized Housing Inventory.

(b) Units included in the Subsidized Housing Inventory will continue to be included in the Subsidized Housing Inventory in accordance with 760 CMR 56.03(2) for as long as the following three conditions are met: (1) this Agreement remains in full force and effect and neither the Municipality nor the Developer are in default hereunder; (2) the Project and each of the Low and Moderate Income Units continue to comply with the Regulations and the Guidelines as the same may be amended from time to time and (3) each Low and Moderate Income Unit remains a Low and Moderate Income Unit as provided in section 2(c), above.

4. Marketing. Prior to marketing or otherwise making available for rental any of the Units, the Developer must obtain DHCD's approval of a marketing plan (the "Marketing Plan") for the Low and Moderate Income Units. Such Marketing Plan must describe the tenant selection process for the Low and Moderate Income Units and must set forth a plan for affirmative fair marketing of Low and Moderate Income Units to protected groups underrepresented in the Municipality, including provisions for a lottery, as more particularly described in the Regulations and Guidelines. At the option of the Municipality, and provided that the Marketing Plan demonstrates (i) the need for the local preference (e.g., a disproportionately low rental or ownership affordable housing stock relative to need in comparison to the regional area), and (ii)

that the proposed local preference will not have a disparate impact on protected classes, the Marketing Plan may also include a preference for local residents for up to seventy percent (70%) of the Low and Moderate Income Units, subject to all provisions of the Regulations and Guidelines and applicable to the initial rent-up only. When submitted to DHCD for approval, the Marketing Plan should be accompanied by a letter from the Chief Executive Officer of the Municipality (as that term is defined in the Regulations) which states that the tenant selection and local preference (if any) aspects of the Marketing Plan have been approved by the Municipality and which states that the Municipality will perform any aspects of the Marketing Plan which are set forth as responsibilities of the Municipality in the Marketing Plan. The Marketing Plan must comply with the Regulations and Guidelines and with all other applicable statutes, regulations and executive orders, and DHCD directives reflecting the agreement between DHCD and the U.S. Department of Housing and Urban Development in the case of NAACP, Boston Chapter v. Kemp. **If the Project is located in the Boston-Cambridge-Quincy MA-NH Metropolitan Statistical Area, the Developer must list all Low and Moderate Income Units with the City of Boston's MetroList (Metropolitan Housing Opportunity Clearing Center), at Boston City Hall, Fair Housing Commission, Suite 966, One City Hall Plaza, Boston, MA 02201 (671-635-3321).** All costs of carrying out the Marketing Plan shall be paid by the Developer. A failure to comply with the Marketing Plan by the Developer or by the Municipality shall be deemed to be a default of this Agreement. The Developer agrees to maintain for five years following the initial rental of the last Low and Moderate Income Unit and for five years following all future rentals, a record of all newspaper advertisements, outreach letters, translations, leaflets, and any other outreach efforts (collectively "Marketing Documentation") as described in the Marketing Plan as approved by DHCD which may be inspected at any time by DHCD. All Marketing Documentation must be approved by DHCD prior to its use by the Developer or the Municipality. The Developer and the Municipality agree that if at any time prior to or during the process of marketing the Low and Moderate Income Units, DHCD determines that the Developer, or the Municipality with respect to aspects of the Marketing Plan that the Municipality has agreed to be responsible for, has not adequately complied with the approved Marketing Plan, that the Developer or Municipality as the case may be, shall conduct such additional outreach or marketing efforts as shall be determined by DHCD.

5. Non-discrimination. Neither the Developer nor the Municipality shall discriminate on the basis of race, creed, color, sex, age, disability, marital status, national origin, sexual orientation, familial status, genetic information, ancestry, children, receipt of public assistance, or any other basis prohibited by law in the selection of tenants; and the Developer shall not so discriminate in connection with the employment or application for employment of persons for the construction, operation or management of the Project.

6. Inspection. The Developer agrees to comply and to cause the Project to comply with all requirements of the Regulations and Guidelines and all other applicable laws, rules, regulations, and executive orders. DHCD and the Chief Executive Officer of the municipality shall have access during normal business hours to all books and records of the Developer and the Project in order to monitor the Developer's compliance with the terms of this Agreement.

7. Recording. Upon execution, the Developer shall immediately cause this Agreement and any amendments hereto to be recorded with the Registry of Deeds for the County where the Project is located or, if the Project consists in whole or in part of registered land, file

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this Agreement and any amendments hereto with the Registry District of the Land Court for the County where the Project is located (collectively hereinafter, the "Registry of Deeds"), and the Developer shall pay all fees and charges incurred in connection therewith. Upon recording or filing, as applicable, the Developer shall immediately transmit to DHCD and the Municipality evidence of such recording or filing including the date and instrument, book and page or registration number of the Agreement.

8. Representations. The Developer hereby represents, covenants and warrants as follows:

(a) The Developer (i) is a duly organized Delaware limited liability company duly authorized to conduct business under the laws of the Commonwealth of Massachusetts, and is qualified to transact business under the laws of this State, (ii) has the power and authority to own its properties and assets and to carry on its business as now being conducted, and (iii) has the full legal right, power and authority to execute and deliver this Agreement.

(b) The execution and performance of this Agreement by the Developer (i) will not violate or, as applicable, has not violated any provision of law, rule or regulation, or any order of any court or other agency or governmental body, and (ii) will not violate or, as applicable, has not violated any provision of any indenture, agreement, mortgage, mortgage note, or other instrument to which the Developer is a party or by which it or the Project is bound, and (iii) will not result in the creation or imposition of any prohibited encumbrance of any nature.

(c) The Developer will, at the time of execution and delivery of this Agreement, have good and marketable title to the premises constituting the Project free and clear of any lien or encumbrance (subject to encumbrances created pursuant to this Agreement, any loan documents relating to the Project the terms of which are approved by DHCD, or other permitted encumbrances which do not materially, adversely affect the marketability of title to the premises and/or the obligations of Developer hereunder, including mortgages referred to in paragraph 17, below).

(d) There is no action, suit or proceeding at law or in equity or by or before any governmental instrumentality or other agency now pending, or, to the knowledge of the Developer, threatened against or affecting it, or any of its properties or rights, which, if adversely determined, would materially impair its right to carry on business substantially as now conducted (and as now contemplated by this Agreement) or would materially adversely affect its financial condition.

9. Transfer Restrictions.

(a) Except for rental of Units to Low or Moderate Income Tenants and market rate units in the ordinary course of business as permitted by the terms of this Agreement, the Developer will not sell, transfer, lease, or exchange the Project or any portion thereof or interest therein (collectively, a "Sale") or (except as permitted under Section (d) below) mortgage the Property without the prior written consent of DHCD and the Municipality.

(b) A request for consent to a Sale shall include:

- A signed agreement stating that the transferee will assume in full the

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Developer's obligations and duties under this Agreement, together with a certification by the attorney or title company that it will be held in escrow and, in the case of any transfer other than a transfer of Beneficial Interests, recorded in the Registry of Deeds with the deed and/or other recorded documents effecting the Sale;

- The name of the proposed transferee and any other entity controlled by or controlling or under common control with the transferee, and names of any affordable housing developments in the Commonwealth owned by such entities;
- A certification from the Municipality that the Development is in compliance with the affordability requirements of this Agreement.

(c) Consent to the proposed Sale shall be deemed to be given unless DHCD or the Municipality notifies the Developer within thirty (days) after receipt of the request that either

- The package requesting consent is incomplete, or
- The proposed transferee (or any entity controlled by or controlling or under common control with the proposed transferee) has a documented history of serious or repeated failures to abide by agreements of affordable housing funding or regulatory agencies of the Commonwealth or the federal government or is currently in violation of any agreements with such agencies beyond the time permitted to cure the violation, or
- The Project is not being operated in compliance with the affordability requirements of this Agreement at the time of the proposed Sale.

(d) The Developer shall provide DHCD and the Municipality with thirty (30) day's prior written notice of the following:

- (i) any change, substitution or withdrawal of any general partner, manager, or agent of Developer; or
- (ii) the conveyance, assignment, transfer, or relinquishment of a majority of the Beneficial Interests (herein defined) in Developer (except for such a conveyance, assignment, transfer or relinquishment among holders of Beneficial Interests as of the date of this Agreement).
- (iii) the sale, mortgage, conveyance, transfer, ground lease, or exchange of Developer's interest in the Project or any party of the Project.

For purposes hereof, the term "Beneficial Interest" shall mean: (i) with respect to a partnership, any partnership interests or other rights to receive income, losses, or a return on equity contributions made to such partnership; (ii) with respect to a limited liability company, any interests as a member of such company or other rights to receive income, losses, or a return on

equity contributions made to such company; or (iii) with respect to a company or corporation, any interests as an officer, board member or stockholder of such company or corporation to receive income, losses, or a return on equity contributions made to such company or corporation.

Notwithstanding the above, DHCD's consent under this Section 9 shall not be required with respect to the grant by the Developer of any mortgage or other security interest in or with respect to the Project to a state or national bank, state or federal savings and loan association, cooperative bank, mortgage company, trust company, insurance company or other institutional lender made at no greater than the prevailing rate of interest or any exercise by any such mortgagee of any of its rights and remedies (including without limitation, by foreclosure or by taking title to the Project by deed in lieu of foreclosure), subject, however to the provisions of Section 14 hereof.

Developer hereby agrees that it shall provide copies of any and all written notices received by Developer from a mortgagee exercising or threatening to exercise its foreclosure rights under the mortgage.

10. Casualty; Demolition; Change of Use.

(a) The Developer represents, warrants, and agrees that if the Project, or any part thereof, shall be damaged or destroyed or shall be condemned or acquired for public use, the Developer (subject to the approval of the lender(s) which has provided financing) will use its best efforts to repair and restore the Project to substantially the same condition as existed prior to the event causing such damage or destruction, or to relieve the condemnation, and thereafter to operate the Project in accordance with this Agreement.

(b) The Developer shall not, without prior written approval of DHCD and the Municipality and an amendment to this Agreement, change the type or number of Low and Moderate Income Units. The Developer shall not demolish any part of the Project or substantially subtract from any real or personal property of the Project, or permit the use of the dwelling accommodations of the Project for any purpose except residences and any other uses permitted by the applicable zoning then in effect;

11. Governing Law. This Agreement shall be governed by the laws of the Commonwealth of Massachusetts. Any amendments to this Agreement must be in writing and executed by all of the parties hereto. The invalidity of any clause, part, or provision of this Agreement shall not affect the validity of the remaining portions hereof.

12. Notices. All notices to be given pursuant to this Agreement shall be in writing and shall be deemed given when delivered by hand or when mailed by certified or registered mail, postage prepaid, return receipt requested, to the parties hereto at the addresses set forth below, or to such other place as a party may from time to time designate by written notice:

DHCD: Department of Housing and Community Development
Attention: Local Initiative Program Director
100 Cambridge Street, 3rd Floor
Boston, MA 02114

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Municipality: Louise Miller, Town Administrator
41 Cochichuate Road
Wayland, MA 01778

Developer: Jim Lambert
c/o WP East Acquisition, LLC
91 Hartwell Avenue
Lexington, MA 02421

13. Term.

(a) This Agreement and all of the covenants, agreements and restrictions contained herein shall be deemed to be an affordable housing restriction as that term is defined in G.L. c. 184, § 31 and as that term is used in G.L. c.184, § 26, 31, 32 and 33. This Agreement shall bind, and the benefits shall inure to, respectively, Developer and its successors and assigns, and DHCD and its successors and assigns and the Municipality and its successors and assigns. DHCD has determined that the acquiring of such affordable housing restriction is in the public interest. The term of this Agreement, the rental restrictions, and other requirements provided herein shall be perpetual.

(b) The Developer intends, declares and covenants on behalf of itself and its successors and assigns (i) that this Agreement and the covenants, agreements and restrictions contained herein shall be and are covenants running with the land, encumbering the Project for the term of this Agreement, and are binding upon the Developer's successors in title, (ii) are not merely personal covenants of the Developer, and (iii) shall bind the Developer, its successors and assigns and enure to the benefit of DHCD and the Municipality and their successors and assigns for the term of the Agreement. Developer hereby agrees that any and all requirements of the laws of the Commonwealth of Massachusetts to be satisfied in order for the provisions of this Agreement to constitute restrictions and covenants running with the land shall be deemed to be satisfied in full and that any requirements of privity of estate are also deemed to be satisfied in full.

14. Lender Foreclosure. The rights and restrictions contained in this Agreement shall not lapse if the Project is acquired through foreclosure or deed in lieu of foreclosure or similar action, and the provisions hereof shall continue to run with and bind the Project.

15. Further Assurances. The Developer and the Municipality each agree to submit any information, documents, or certifications requested by DHCD which DHCD shall deem necessary or appropriate to evidence the continuing compliance of the Project Sponsor and the Municipality with the terms of this Agreement.

16. Default.

(a) The Developer and the Municipality each covenant and agree to give DHCD written notice of any default, violation or breach of the obligations of the Developer or the Municipality hereunder, (with a copy to the other party to this Agreement) within seven (7) days of first discovering such default, violation or breach (a "Default Notice"). If DHCD becomes

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aware of a default, violation, or breach of obligations of the Developer or the Municipality hereunder without receiving a Default Notice from Developer or the Municipality, DHCD shall give a notice of such default, breach or violation to the offending party (with a copy to the other party to this Agreement) (the "DHCD Default Notice"). If any such default, violation, or breach is not cured to the satisfaction of DHCD within thirty (30) days after the giving of the Default notice by the Developer or the Municipality, or if no Default Notice is given, then within thirty (30) days after the giving of the DHCD Default Notice, then at DHCD's option, and without further notice, DHCD may either terminate this Agreement, or DHCD may apply to any state or federal court for specific performance of this Agreement, or DHCD may exercise any other remedy at law or in equity or take any other action as may be necessary or desirable to correct non-compliance with this Agreement.

The Municipality and the DHCD agree that if and so long as the Project is encumbered by any first or second mortgages, to give to the holder of such mortgages copies of any Default Notice or DHCD Default Notice, as applicable, simultaneously with the delivery thereof to the Developer, and the holder of any such mortgages shall have the right, within the same period afforded the Developer hereunder plus an additional period of thirty (30) days, to cure such default on behalf of the Developer, it being the intention of the parties hereto that the DHCD shall not exercise its rights and remedies under this subsection (a) without affording to the holder of any such mortgages the same rights and the same notices with respect to any such default, and the same period or periods of time within which to cure the same, as are afforded to the Developer hereunder, plus the aforesaid additional period thereafter. The obligation herein imposed upon the Municipality and DHCD to give written notice of the existence of any default by the Developer to the holder of any mortgage, shall be limited to such first and second mortgagees who shall have given to the Municipality and DHCD written notice of the existence of such mortgages, and the address to which notices hereunder are to be sent to it. The Municipality and the DHCD acknowledge receipt of the identity of the mortgagee executing the Consent and Subordination attached hereto, as well as the notice address specified therein.

(b) If DHCD elects to terminate this Agreement as the result of a breach, violation, or default hereof, which breach, violation, or default continues beyond the cure period set forth in this Section 16, then the Low and Moderate Income Units and any other Units at the Project which have been included in the Subsidized Housing Inventory shall from the date of such termination no longer be deemed low and moderate income housing for the purposes of the Act and shall be deleted from the Subsidized Housing Inventory.

(c) The Developer acknowledges that the primary purpose for requiring compliance by the Developer with the restrictions provided herein is to create and maintain long-term affordable rental housing, and by reason thereof the Developer agrees that DHCD or the Municipality or any prospective, present, or former tenant shall be entitled for any breach of the provisions hereof, and in addition to all other remedies provided by law or in equity, to enforce the specific performance by the Developer of its obligations under this Agreement in a state court of competent jurisdiction. The Developer further specifically acknowledges that the beneficiaries of its obligations hereunder cannot be adequately compensated by monetary damages in the event of any default hereunder. In the event of a breach of this Agreement, the Developer shall reimburse DHCD for all costs and attorney's fees associated with such breach.

17. Mortgagee Consents. The Developer represents and warrants that it has obtained the consent of all existing mortgagees of the Project to the execution and recording of this Agreement and to the terms and conditions hereof and that all such mortgagees have executed the Consent and Subordination of Mortgage to Regulatory Agreement attached hereto and made a part hereof.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

September 2, 2016

Executed as a sealed instrument as of the date first above written.

DEVELOPER

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its manager

By: _____

Name: James Lambert

Its: _____

DEPARTMENT OF HOUSING AND
COMMUNITY DEVELOPMENT

By: _____

Its:

MUNICIPALITY

By: _____

Its Chief Executive Officer

Attachments: Exhibit A - Legal Property Description
Exhibit A-1 - Plan of Land
Exhibit B - Rents for Low and Moderate Income Units

September 2, 2016

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss.

_____, 2020

On this _____ day of _____, 2020, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ of the _____, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public

Print Name:

My Commission Expires:

September 2, 2016

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss. _____, 20__

On this _____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ for the Commonwealth of Massachusetts acting by and through the Department of Housing and Community Development, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public
Print Name:
My Commission Expires:

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss. _____, 20__

On this _____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ for the City/Town of _____, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public
Print Name:
My Commission Expires:

**CONSENT AND SUBORDINATION OF MORTGAGE
TO REGULATORY AGREEMENT**

Reference is hereby made to a certain Mortgage dated _____ given by _____ to _____, recorded with the _____ Registry of Deeds at Book _____, Page _____ (“Mortgage”).

The Undersigned, present holder of said Mortgage, hereby recognizes and consents to the execution and recording of this Agreement and agrees that the aforesaid Mortgage shall be subject and subordinate to the provisions of this Agreement, to the same extent as if said Mortgage had been registered subsequent thereto. The Undersigned further agrees that in the event of any foreclosure or exercise of remedies under said Mortgage it shall comply with the terms and conditions hereof.

[NAME OF LENDER]

By: _____
Its: _____

(If the Development has more than one mortgagee, add additional consent forms.)

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss. _____, 20__

On this _____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ of _____ Bank, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public
Print Name:
My Commission Expires:

September 2, 2016

EXHIBIT A

Re: River's Edge, 490 Boston Post Road
(Project name)

Wayland
(City/Town)

Alta River's Edge, LLC
(Developer)

Property Description

Parcel Two

A certain parcel of land situated on the Northerly side of Boston Post Road, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The point of beginning being the Northeasterly most point at of the lot to be described hereafter; thence

S02°43'29"E Five hundred six and twenty-three hundredths feet (506.23') to a point; thence

S87°16'31"W Sixty-one and eighty-three hundredths feet (61.83') to a point; thence

S02°43'29"E Twenty-four and seventy-five hundredths feet (24.75') to a point; thence

S87°16'31"W Three hundred thirty-nine and forty-one hundredths feet (339.41') to a point; thence

N09°33'28"W Five hundred forty-seven and ninety-eight hundredths feet (547.98') to a point;
thence

N88°53'05"E Two hundred seventy-four and twenty-three hundredths feet (274.23') to a point;
thence

S07°47'29"E Sixty-three and forty-nine hundredths feet (63.49') to a point; thence

N70°03'49"E One hundred ninety-five and forty-seven hundredths feet (195.47') to the point of
beginning.

The above described parcel contains an area of 225,394 square feet, more or less, and is more particularly shown as "Parcel Two" on a plan entitled "Building Exhibit – ALTA at River's Edge, 490 Boston Post Road, Wayland, MA". Dated 02/26/20. Prepared for WP East Acquisitions, LLC. Prepared by Allen & Major Associates, Inc.

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EXHIBIT A-1

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EXHIBIT B

Re: River's Edge, 490 Boston Post Road
(Project name)

Wayland
(City/Town)

Alta River's Edge, LLC
(Developer)

Initial Maximum Rents and Utility Allowances for Low and Moderate Income Units

	<u>Rents</u>	<u>Utility Allowance</u>
Studio units	<u>N/A</u>	<u>N/A</u>
One bedroom units	\$1,785	\$142
Two bedroom units	\$2,007	\$173
Three bedroom units	N/A	N/A
Four bedroom units	N/A	N/A

4686310.10

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EXHIBIT D-2

REGULATORY AGREEMENT [AGE-RESTRICTED BUILDING]

[SEE ATTACHED]

LOCAL INITIATIVE PROGRAM

**REGULATORY AGREEMENT
AND
DECLARATION OF RESTRICTIVE COVENANTS
FOR
RENTAL PROJECT
Local Action Units**

This Regulatory Agreement and Declaration of Restrictive Covenants (the "Agreement") is made this _____ day of _____, 20__ by and among the Commonwealth of Massachusetts, acting by and through the Department of Housing and Community Development ("DHCD") pursuant to G.L. c.23B §1 as amended by Chapter 19 of the Acts of 2007, the Town of Wayland ("the Municipality"), and Alta River's Edge Tenant, LLC, a Delaware limited liability company, authorized to do business in Massachusetts, having an address at 3715 Northside Pkwy NW Ste 4-600, Atlanta, GA 30327, as the holder of a ground lease interest in the real estate associated with the Project (as defined below), and its successors and assigns ("Developer").

WITNESSETH:

WHEREAS, pursuant to G.L. c. 40B, §§ 20-23 (the "Act") and the final report of the Special Legislative Commission Relative to Low and Moderate Income Housing Provisions issued in April 1989, regulations have been promulgated at 760 CMR 56.00 (the "Regulations") which establish the Local Initiative Program ("LIP") and *Comprehensive Permit Guidelines: M.G.L. Chapter 40B Comprehensive Permit Projects - Subsidized Housing Inventory* have been issued thereunder (the "Guidelines");

WHEREAS, the Developer intends to construct or cause the construction of a community of 55+ rental housing development known as Senior Living at River's Edge, 490 Boston Post Road, Building A on a 3.07+/- acre portion of a 8.25+/- acre site in the Municipality, more particularly described in Exhibit A attached hereto and as shown as "Parcel One" on the plan attached hereto as Exhibit A-1 (the "Project");

WHEREAS, the Developer desires to own and operate the Project as a rental housing project for persons 55 years of age or over, in compliance with Federal Fair Housing Act, 42 USC §3601 *et seq.* and the Massachusetts Fair Housing Act, M.G.L. c. 151B, and its implementing regulations, and the DHCD's "Local Initiative Program Policy Restriction on children in Age Restricted 55+ Housing;"

WHEREAS, such Project is to consist of a total number of sixty-six (66) rental dwellings (the "Units") and seventeen (17) of the Units will be rented at rents specified in this Agreement to Eligible Tenants as specified in paragraph two of this Agreement (the "Low and Moderate Income Units");

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WHEREAS, the Chief Executive Officer of the Municipality (as that term is defined in the Regulations) and the Developer have made application to DHCD to certify that the units in the Project are Local Action Units (as that term is defined in the Guidelines) within the LIP Program; and

WHEREAS, in partial consideration of the execution of this Agreement, DHCD has issued or will issue its final approval of the Project within the LIP Program and has given and will give technical and other assistance to the Project;

NOW, THEREFORE, in consideration of the agreements and covenants hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which each of the parties hereto hereby acknowledge to the other, DHCD, the Municipality, and the Developer hereby agree and covenant as follows:

1. Construction. The Developer agrees to construct or cause the construction of the Project in accordance with plans and specifications approved by the Municipality (the "Plans and Specifications"). In addition, all Low and Moderate Income Units to be constructed as part of the Project must be indistinguishable from other Units in the Project from the exterior (unless the Project has an approved "Alternative Development Plan" as set forth in the Guidelines) and must contain complete living facilities including but not limited to a stove, refrigerator, kitchen cabinets, plumbing fixtures, and washer/dryer hookup, all as more fully shown in the Plans and Specifications.

<u>8</u>	of the Low and Moderate Income Units shall be one bedroom units;
<u>9</u>	of the Low and Moderate Income Units shall be two bedroom units;
<u>0</u>	of the Low and Moderate Income Units shall be three bedroom units; and,
<u>0</u>	of the Low and Moderate Income Units shall be four bedroom units.

All Low and Moderate Income Units to be occupied by families must contain two or more bedrooms. Low and Moderate Income Units must have the following minimum areas:

studio units	-	250 square feet
one bedroom units	-	700 square feet
two bedroom units	-	900 square feet
three bedroom units	-	1200 square feet
four bedroom units	-	1400 square feet

During the term of this Agreement, the Developer covenants, agrees, and warrants that the Project and each Low and Moderate Income Unit will remain suitable for occupancy (subject to casualty events and other events of force majeure) and in compliance with all federal, state, and local health, safety, building, sanitary, environmental, and other laws, codes, rules, and regulations, including without limitation laws relating to the operation of adaptable and accessible housing for persons with disabilities. The Project must comply with all similar local codes, ordinances, and by-laws.

2. Affordability.

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(a) Throughout the term of this Agreement, each Low and Moderate Income Unit will be rented for no more than the rental rates set forth herein to an Eligible Tenant. An Eligible Tenant is a Family whose annual income does not exceed eighty percent (80%) of the Area median income adjusted for family size as determined by the U.S. Department of Housing and Urban Development (“HUD”). A “Family” shall mean two or more persons who will live regularly in the Low and Moderate Income Unit as their primary residence and who are related by blood, marriage, or operation of law or who have otherwise evidenced a stable inter-dependent relationship; or an individual. The “Area” is defined as the Boston-Cambridge-Quincy, MA MSA.

(b) The monthly rents charged to tenants of Low and Moderate Income Units shall not exceed an amount equal to thirty percent (30%) of the monthly adjusted income of a Family whose gross income equals eighty percent (80%) of the median income for the Area, with adjustment for the number of bedrooms in the Unit, as provided by HUD. In determining the maximum monthly rent that may be charged for a Low and Moderate Income Unit under this clause, the Developer shall include an allowance for any utilities and services (excluding telephone) to be paid by the resident. Annual income shall be as defined in 24 C.F.R. 5.609 (or any successor regulation) using assumptions provided by HUD. The initial maximum monthly rents and utility allowances for the Low and Moderate Income Units are set forth in Exhibit B attached hereto. If the rent for a Low and Moderate Income Unit is subsidized by a state or federal rental subsidy program, then the rent applicable to the Low and Moderate Income Unit may be limited to that permitted by such rental subsidy program, provided that the tenant’s share of rent does not exceed the maximum annual rental expense as provided in this Agreement.

Annually as part of the annual report required under Subsection 2(e) below, the Developer shall submit to the Municipality and DHCD a proposed schedule of monthly rents and utility allowances for all Low and Moderate Income Units in the Project. Such schedule shall be subject to the approval of the Municipality and DHCD for compliance with the requirements of this Section. Rents for Low and Moderate Income Units shall not be increased without the Municipality’s and DHCD’s prior approval of either (i) a specific request by Developer for a rent increase or (ii) the next annual schedule of rents and allowances. Notwithstanding the foregoing, rent increases shall be subject to the provisions of outstanding leases and shall not be implemented without at least 30 days’ prior written notice by Developer to all affected tenants. If an annual request for a new schedule of rents for the Low and Moderate Income Units as set forth above is based on a change in the Area median income figures published by HUD, and the Municipality and DHCD fail to respond to such a submission within thirty (30) days of the Municipality’s and DHCD’s receipt thereof, the Municipality and DHCD shall be deemed to have approved the submission. If an annual request for a new schedule of rents for the Low and Moderate Income Units is made for any other reason, and the Municipality and DHCD fail to respond within thirty (30) days of the Municipality’s and DHCD’s receipt thereof, the Developer may send DHCD and the Municipality a notice of reminder, and if the Municipality and DHCD fail to respond within thirty (30) days from receipt of such notice of reminder, the Municipality and DHCD shall be deemed to have approved the submission.

Without limiting the foregoing, the Developer may request a rent increase for the Low and Moderate Units to reflect an increase in the Area median income published by HUD between the date of this Agreement and the date that the Units begin to be marketed or otherwise made available for rental pursuant to Section 4 below; if the Municipality and DHCD approve such rent increase

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in accordance with this subsection, the Initial Maximum Rents and Utility Allowances for Low and Moderate Income Units in Exhibit B of the Agreement shall be deemed to be modified accordingly.

(c) If, after initial occupancy, the income of a tenant of a Low and Moderate Income Unit increases and, as a result of such increase, exceeds the maximum income permitted hereunder for such a tenant, the Developer shall not be in default hereunder so long as either (i) the tenant income does not exceed one hundred forty percent (140%) of the maximum income permitted or (ii) the Developer rents the next available unit at the Development as a Low and Moderate Income Unit in conformance with Section 2(a) of this Agreement, or otherwise demonstrates compliance with Section 2(a) of this Agreement.

(d) If, after initial occupancy, the income of a tenant in a Low and Moderate Income Unit increases, and as a result of such increase, exceeds one hundred forty percent (140%) of the maximum income permitted hereunder for such a tenant, at the expiration of the applicable lease term, the rent restrictions shall no longer apply to such tenant.

(e) Throughout the term of this Agreement, the Developer shall annually determine whether the tenant of each Low and Moderate Income Unit remains an Eligible Tenant. This determination shall be reviewed by the Municipality and certified to DHCD as provided in section 2(g), below.

(f) The Developer shall enter into a written lease with each tenant of a Low and Moderate Income Unit which shall be for a minimum period of one year and which provides that the tenant shall not be evicted for any reason other than a substantial breach of a material provision of such lease.

(g) Throughout the term of this Agreement, the Chief Executive Officer shall annually certify in writing to DHCD that each of the Low and Moderate Income Units continues to be Low and Moderate Income Unit as provided in sections 2 (a) and(c), above; and that the Project and the Low and Moderate Income Units have been maintained in a manner consistent with the Regulations and Guidelines and this Agreement.

3. Subsidized Housing Inventory.

(a) The Project will be included in the Subsidized Housing Inventory upon the occurrence of one of the events described in 760 CMR 56.03(2). All of the Units will be deemed low and moderate income housing to be included in the Subsidized Housing Inventory.

(b) Units included in the Subsidized Housing Inventory will continue to be included in the Subsidized Housing Inventory in accordance with 760 CMR 56.03(2) for as long as the following three conditions are met: (1) this Agreement remains in full force and effect and neither the Municipality nor the Developer are in default hereunder; (2) the Project and each of the Low and Moderate Income Units continue to comply with the Regulations and the Guidelines as the same may be amended from time to time and (3) each Low and Moderate Income Unit remains a Low and Moderate Income Unit as provided in section 2(c), above.

4. Marketing. Prior to marketing or otherwise making available for rental any of the Units, the Developer must obtain DHCD's approval of a marketing plan (the "Marketing Plan") for the Low and Moderate Income Units. Such Marketing Plan must describe the tenant selection process for the Low and Moderate Income Units and must set forth a plan for affirmative fair marketing of Low and Moderate Income Units to protected groups underrepresented in the Municipality, including provisions for a lottery, as more particularly described in the Regulations and Guidelines. At the option of the Municipality, and provided that the Marketing Plan demonstrates (i) the need for the local preference (e.g., a disproportionately low rental or ownership affordable housing stock relative to need in comparison to the regional area), and (ii) that the proposed local preference will not have a disparate impact on protected classes, the Marketing Plan may also include a preference for local residents for up to seventy percent (70%) of the Low and Moderate Income Units, subject to all provisions of the Regulations and Guidelines and applicable to the initial rent-up only. When submitted to DHCD for approval, the Marketing Plan should be accompanied by a letter from the Chief Executive Officer of the Municipality (as that term is defined in the Regulations) which states that the tenant selection and local preference (if any) aspects of the Marketing Plan have been approved by the Municipality and which states that the Municipality will perform any aspects of the Marketing Plan which are set forth as responsibilities of the Municipality in the Marketing Plan. The Marketing Plan must comply with the Regulations and Guidelines and with all other applicable statutes, regulations and executive orders, and DHCD directives reflecting the agreement between DHCD and the U.S. Department of Housing and Urban Development in the case of NAACP, Boston Chapter v. Kemp. **If the Project is located in the Boston-Cambridge-Quincy MA-NH Metropolitan Statistical Area, the Developer must list all Low and Moderate Income Units with the City of Boston's MetroList (Metropolitan Housing Opportunity Clearing Center), at Boston City Hall, Fair Housing Commission, Suite 966, One City Hall Plaza, Boston, MA 02201 (671-635-3321).** All costs of carrying out the Marketing Plan shall be paid by the Developer. A failure to comply with the Marketing Plan by the Developer or by the Municipality shall be deemed to be a default of this Agreement. The Developer agrees to maintain for five years following the initial rental of the last Low and Moderate Income Unit and for five years following all future rentals, a record of all newspaper advertisements, outreach letters, translations, leaflets, and any other outreach efforts (collectively "Marketing Documentation") as described in the Marketing Plan as approved by DHCD which may be inspected at any time by DHCD. All Marketing Documentation must be approved by DHCD prior to its use by the Developer or the Municipality. The Developer and the Municipality agree that if at any time prior to or during the process of marketing the Low and Moderate Income Units, DHCD determines that the Developer, or the Municipality with respect to aspects of the Marketing Plan that the Municipality has agreed to be responsible for, has not adequately complied with the approved Marketing Plan, that the Developer or Municipality as the case may be, shall conduct such additional outreach or marketing efforts as shall be determined by DHCD.

5. Non-discrimination. Neither the Developer nor the Municipality shall discriminate on the basis of race, creed, color, sex, age, disability, marital status, national origin, sexual orientation, familial status, genetic information, ancestry, children, receipt of public assistance, or any other basis prohibited by law in the selection of tenants except as permitted to develop and operate as housing for persons who are 55 years of age or older by 42 U.S.C. § 3607(b)(2)(C), 24 C.F.R. §§ 100.304-306 and any relevant federal or state laws, statutes and regulations; and the

Developer shall not so discriminate in connection with the employment or application for employment of persons for the construction, operation or management of the Project.

6. Inspection. The Developer agrees to comply and to cause the Project to comply with all requirements of the Regulations and Guidelines and all other applicable laws, rules, regulations, and executive orders. DHCD and the Chief Executive Officer of the municipality shall have access during normal business hours to all books and records of the Developer and the Project in order to monitor the Developer's compliance with the terms of this Agreement.

7. Recording. Upon execution, the Developer shall immediately cause this Agreement and any amendments hereto to be recorded with the Registry of Deeds for the County where the Project is located or, if the Project consists in whole or in part of registered land, file this Agreement and any amendments hereto with the Registry District of the Land Court for the County where the Project is located (collectively hereinafter, the "Registry of Deeds"), and the Developer shall pay all fees and charges incurred in connection therewith. Upon recording or filing, as applicable, the Developer shall immediately transmit to DHCD and the Municipality evidence of such recording or filing including the date and instrument, book and page or registration number of the Agreement.

8. Representations. The Developer hereby represents, covenants and warrants as follows:

(a) The Developer (i) is a duly organized Delaware limited liability company duly authorized to conduct business under the laws of the Commonwealth of Massachusetts, and is qualified to transact business under the laws of this State, (ii) has the power and authority to own its properties and assets and to carry on its business as now being conducted, and (iii) has the full legal right, power and authority to execute and deliver this Agreement.

(b) The execution and performance of this Agreement by the Developer (i) will not violate or, as applicable, has not violated any provision of law, rule or regulation, or any order of any court or other agency or governmental body, and (ii) will not violate or, as applicable, has not violated any provision of any indenture, agreement, mortgage, mortgage note, or other instrument to which the Developer is a party or by which it or the Project is bound, and (iii) will not result in the creation or imposition of any prohibited encumbrance of any nature.

(c) The Developer will, at the time of execution and delivery of this Agreement, have good and marketable leasehold title to the premises constituting the Project free and clear of any lien or encumbrance (subject to encumbrances created pursuant to this Agreement, any loan documents relating to the Project the terms of which are approved by DHCD, any resident leases, the ground lease or other permitted encumbrances which do not materially, adversely affect the marketability of title to the premises and/or the obligations of the Developer hereunder, including mortgages referred to in paragraph 17, below).

(d) There is no action, suit or proceeding at law or in equity or by or before any governmental instrumentality or other agency now pending, or, to the knowledge of the Developer, threatened against or affecting it, or any of its properties or rights, which, if adversely determined,

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would materially impair its right to carry on business substantially as now conducted (and as now contemplated by this Agreement) or would materially adversely affect its financial condition.

9. Transfer Restrictions.

(a) Except for rental of Units to Low or Moderate Income Tenants and market rate units in the ordinary course of business as permitted by the terms of this Agreement, the Developer will not sell, transfer, lease, or exchange the Project or any portion thereof or interest therein (collectively, a “Sale”) or (except as permitted under Section (d) below) mortgage the Property without the prior written consent of DHCD and the Municipality.

(b) A request for consent to a Sale shall include:

- A signed agreement stating that the transferee will assume in full the Developer’s obligations and duties under this Agreement, together with a certification by the attorney or title company that it will be held in escrow and, in the case of any transfer other than a transfer of Beneficial Interests, recorded in the Registry of Deeds with the deed and/or other recorded documents effecting the Sale;
- The name of the proposed transferee and any other entity controlled by or controlling or under common control with the transferee, and names of any affordable housing developments in the Commonwealth owned by such entities;
- A certification from the Municipality that the Development is in compliance with the affordability requirements of this Agreement.

(c) Consent to the proposed Sale shall be deemed to be given unless DHCD or the Municipality notifies the Developer within thirty (days) after receipt of the request that either

- The package requesting consent is incomplete, or
- The proposed transferee (or any entity controlled by or controlling or under common control with the proposed transferee) has a documented history of serious or repeated failures to abide by agreements of affordable housing funding or regulatory agencies of the Commonwealth or the federal government or is currently in violation of any agreements with such agencies beyond the time permitted to cure the violation, or
- The Project is not being operated in compliance with the affordability requirements of this Agreement at the time of the proposed Sale.

(d) The Developer shall provide DHCD and the Municipality with thirty (30) day’s prior written notice of the following:

- (i) any change, substitution or withdrawal of any general partner, manager, or

agent of Developer; or

- (ii) the conveyance, assignment, transfer, or relinquishment of a majority of the Beneficial Interests (herein defined) in Developer (except for such a conveyance, assignment, transfer or relinquishment among holders of Beneficial Interests as of the date of this Agreement).
- (iii) the sale, mortgage, conveyance, transfer, ground lease, or exchange of Developer's interest in the Project or any party of the Project.

For purposes hereof, the term "Beneficial Interest" shall mean: (i) with respect to a partnership, any partnership interests or other rights to receive income, losses, or a return on equity contributions made to such partnership; (ii) with respect to a limited liability company, any interests as a member of such company or other rights to receive income, losses, or a return on equity contributions made to such company; or (iii) with respect to a company or corporation, any interests as an officer, board member or stockholder of such company or corporation to receive income, losses, or a return on equity contributions made to such company or corporation.

Notwithstanding the above, DHCD's consent under this Section 9 shall not be required with respect to the grant by the Developer of any mortgage or other security interest in or with respect to the Project to a state or national bank, state or federal savings and loan association, cooperative bank, mortgage company, trust company, insurance company or other institutional lender made at no greater than the prevailing rate of interest or any exercise by any such mortgagee of any of its rights and remedies (including without limitation, by foreclosure or by taking title to the Project by deed in lieu of foreclosure), subject, however to the provisions of Section 14 hereof.

Developer hereby agrees that it shall provide copies of any and all written notices received by Developer from a mortgagee exercising or threatening to exercise its foreclosure rights under the mortgage.

10. Casualty; Demolition; Change of Use.

(a) The Developer represents, warrants, and agrees that if the Project, or any part thereof, shall be damaged or destroyed or shall be condemned or acquired for public use, the Developer (subject to the approval of the lender(s) which has provided financing) will use its best efforts to repair and restore the Project to substantially the same condition as existed prior to the event causing such damage or destruction, or to relieve the condemnation, and thereafter to operate the Project in accordance with this Agreement.

(b) The Developer shall not, without prior written approval of DHCD and the Municipality and an amendment to this Agreement, change the type or number of Low and Moderate Income Units. The Developer shall not demolish any part of the Project or substantially subtract from any real or personal property of the Project, or permit the use of the dwelling accommodations of the Project for any purpose except residences and any other uses permitted by the applicable zoning then in effect;

11. Governing Law. This Agreement shall be governed by the laws of the Commonwealth of Massachusetts. Any amendments to this Agreement must be in writing and executed by all of the parties hereto. The invalidity of any clause, part, or provision of this Agreement shall not affect the validity of the remaining portions hereof.

12. Notices. All notices to be given pursuant to this Agreement shall be in writing and shall be deemed given when delivered by hand or when mailed by certified or registered mail, postage prepaid, return receipt requested, to the parties hereto at the addresses set forth below, or to such other place as a party may from time to time designate by written notice:

DHCD: Department of Housing and Community Development
Attention: Local Initiative Program Director
100 Cambridge Street, 3rd Floor
Boston, MA 02114

Municipality: Louise Miller, Town Administrator
41 Cochichuate Road
Wayland, MA 01778

Developer: Jim Lambert
c/o WP East Acquisition, LLC
91 Hartwell Avenue
Lexington, MA 02421

13. Term.

(a) This Agreement and all of the covenants, agreements and restrictions contained herein shall be deemed to be an affordable housing restriction as that term is defined in G.L. c. 184, § 31 and as that term is used in G.L. c.184, § 26, 31, 32 and 33. This Agreement shall bind, and the benefits shall inure to, respectively, Developer and its successors and assigns, and DHCD and its successors and assigns and the Municipality and its successors and assigns. DHCD has determined that the acquiring of such affordable housing restriction is in the public interest. The term of this Agreement, the rental restrictions, and other requirements provided herein shall be perpetual.

(b) The Developer intends, declares and covenants on behalf of itself and its successors and assigns (i) that this Agreement and the covenants, agreements and restrictions contained herein shall be and are covenants running with the land, encumbering the Project for the term of this Agreement, and are binding upon the Developer's successors in title, (ii) are not merely personal covenants of the Developer, and (iii) shall bind the Developer, its successors and assigns and enure to the benefit of DHCD and the Municipality and their successors and assigns for the term of the Agreement. Developer hereby agrees that any and all requirements of the laws of the Commonwealth of Massachusetts to be satisfied in order for the provisions of this Agreement to constitute restrictions and covenants running with the land shall be deemed to be satisfied in full and that any requirements of privity of estate are also deemed to be satisfied in full.

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14. Lender Foreclosure. The rights and restrictions contained in this Agreement shall not lapse if the Project is acquired through foreclosure or deed in lieu of foreclosure or similar action, and the provisions hereof shall continue to run with and bind the Project.

15. Further Assurances. The Developer and the Municipality each agree to submit any information, documents, or certifications requested by DHCD which DHCD shall deem necessary or appropriate to evidence the continuing compliance of the Project Sponsor and the Municipality with the terms of this Agreement.

16. Default.

(a) The Developer and the Municipality each covenant and agree to give DHCD written notice of any default, violation or breach of the obligations of the Developer or the Municipality hereunder, (with a copy to the other party to this Agreement) within seven (7) days of first discovering such default, violation or breach (a "Default Notice"). If DHCD becomes aware of a default, violation, or breach of obligations of the Developer or the Municipality hereunder without receiving a Default Notice from Developer or the Municipality, DHCD shall give a notice of such default, breach or violation to the offending party (with a copy to the other party to this Agreement) (the "DHCD Default Notice"). If any such default, violation, or breach is not cured to the satisfaction of DHCD within thirty (30) days after the giving of the Default notice by the Developer or the Municipality, or if no Default Notice is given, then within thirty (30) days after the giving of the DHCD Default Notice, then at DHCD's option, and without further notice, DHCD may either terminate this Agreement, or DHCD may apply to any state or federal court for specific performance of this Agreement, or DHCD may exercise any other remedy at law or in equity or take any other action as may be necessary or desirable to correct non-compliance with this Agreement.

The Municipality and the DHCD agree that if and so long as the Project is encumbered by any first or second mortgages, to give to the holder of such mortgages copies of any Default Notice or DHCD Default Notice, as applicable, simultaneously with the delivery thereof to the Developer, and the holder of any such mortgages shall have the right, within the same period afforded the Developer hereunder plus an additional period of thirty (30) days, to cure such default on behalf of the Developer, it being the intention of the parties hereto that the DHCD shall not exercise its rights and remedies under this subsection (a) without affording to the holder of any such mortgages the same rights and the same notices with respect to any such default, and the same period or periods of time within which to cure the same, as are afforded to the Developer hereunder, plus the aforesaid additional period thereafter. The obligation herein imposed upon the Municipality and DHCD to give written notice of the existence of any default by the Developer to the holder of any mortgage, shall be limited to such first and second mortgagees who shall have given to the Municipality and DHCD written notice of the existence of such mortgages, and the address to which notices hereunder are to be sent to it. The Municipality and the DHCD acknowledge receipt of the identity of the mortgagee executing the Consent and Subordination attached hereto, as well as the notice address specified therein.

(b) If DHCD elects to terminate this Agreement as the result of a breach, violation, or default hereof, which breach, violation, or default continues beyond the cure period set forth in this Section 16, then the Low and Moderate Income Units and any other Units at the

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Project which have been included in the Subsidized Housing Inventory shall from the date of such termination no longer be deemed low and moderate income housing for the purposes of the Act and shall be deleted from the Subsidized Housing Inventory.

(c) The Developer acknowledges that the primary purpose for requiring compliance by the Developer with the restrictions provided herein is to create and maintain long-term affordable rental housing, and by reason thereof the Developer agrees that DHCD or the Municipality or any prospective, present, or former tenant shall be entitled for any breach of the provisions hereof, and in addition to all other remedies provided by law or in equity, to enforce the specific performance by the Developer of its obligations under this Agreement in a state court of competent jurisdiction. The Developer further specifically acknowledges that the beneficiaries of its obligations hereunder cannot be adequately compensated by monetary damages in the event of any default hereunder. In the event of a breach of this Agreement, the Developer shall reimburse DHCD for all costs and attorney's fees associated with such breach.

17. Mortgagee Consents. The Developer represents and warrants that it has obtained the consent of all existing mortgagees of the Project to the execution and recording of this Agreement and to the terms and conditions hereof and that all such mortgagees have executed the Consent and Subordination of Mortgage to Regulatory Agreement attached hereto and made a part hereof.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

Executed as a sealed instrument as of the date first above written.

DEVELOPER

ALTA RIVER'S EDGE TENANT, LLC,
a Delaware limited liability company

By: Alta River's Edge, LLC, a Delaware limited liability company, its sole member

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: James Lambert
Title: Vice President

DEPARTMENT OF HOUSING AND
COMMUNITY DEVELOPMENT

By: _____
Its:

MUNICIPALITY

By: _____
Its Chief Executive Officer

Attachments: Exhibit A - Legal Property Description
Exhibit A-1 - Plan of Land
Exhibit B - Rents for Low and Moderate Income Units

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COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss.

_____, 2020

On this _____ day of _____, 2020, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ of the _____, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public

Print Name:

My Commission Expires:

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COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss. _____, 20__

On this _____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ for the Commonwealth of Massachusetts acting by and through the Department of Housing and Community Development, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public
Print Name:
My Commission Expires:

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss. _____, 20__

On this _____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ for the City/Town of _____, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public
Print Name:
My Commission Expires:

**CONSENT AND SUBORDINATION OF MORTGAGE
TO REGULATORY AGREEMENT**

Reference is hereby made to a certain Mortgage dated _____ given by _____ to _____, recorded with the _____ Registry of Deeds at Book _____, Page _____ (“Mortgage”).

The Undersigned, present holder of said Mortgage, hereby recognizes and consents to the execution and recording of this Agreement and agrees that the aforesaid Mortgage shall be subject and subordinate to the provisions of this Agreement, to the same extent as if said Mortgage had been registered subsequent thereto. The Undersigned further agrees that in the event of any foreclosure or exercise of remedies under said Mortgage it shall comply with the terms and conditions hereof.

[NAME OF LENDER]

By: _____
Its: _____

(If the Development has more than one mortgagee, add additional consent forms.)

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF _____, ss. _____, 20__

On this _____ day of _____, 20__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding document, as _____ of _____ Bank, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public
Print Name:
My Commission Expires:

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EXHIBIT A

Re: River's Edge, 490 Boston Post Road
(Project name)

Wayland
(City/Town)

Alta River's Edge Tenant, LLC
(Developer)

Property Description

Parcel One

A certain parcel of land situated on the Northerly side of Boston Post Road, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The point of beginning being the Northeasterly most point of the lot to be described hereafter; thence

S02°43'29"E Four hundred thirty-one and thirty-one hundredths feet (431.31') to a point; thence

S87°16'31"W Twenty-one and seventy-nine hundredths feet (21.79') to a point; thence

N02°43'29"W Sixteen and fifty hundredths feet (16.50') to a point; thence

S87°16'31"W Two hundred sixty-eight and seventeen hundredths feet (268.17') to a point; thence

N02°43'29"W Five hundred six and twenty-three hundredths feet (506.23') to a point; thence

S75°13'29"E Three hundred four and three hundredths feet (304.03') to the point of beginning.

The above described parcel is a portion of the property shown as Lots A, C , and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation and Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds in Plan 260 or 2017, and more particularly is all of Lot C, and the easterly portion of Lot A.

The above described parcel contains an area of 133,892 square feet, more or less, and is more particularly shown as "Parcel One" on a plan entitled "Building Exhibit – ALTA at River's Edge, 490 Boston Post Road, Wayland, MA", dated 02/26/20, prepared for WP East Acquisitions, LLC and prepared by Allen & Major Associates, Inc.

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EXHIBIT A-1

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EXHIBIT B

Re: River's Edge, 490 Boston Post Road
(Project name)

Wayland
(City/Town)

Alta River's Edge Tenant, LLC
(Developer)

Initial Maximum Rents and Utility Allowances for Low and Moderate Income Units

	<u>Rents</u>	<u>Utility Allowance</u>
Studio units	<u>N/A</u>	<u>N/A</u>
One bedroom units	\$1,785	\$142
Two bedroom units	\$2,007	\$173
Three bedroom units	N/A	N/A
Four bedroom units	N/A	N/A

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WWTP ESCROW AGREEMENT

(Wastewater Facilities)

THIS WWTP ESCROW AGREEMENT (the "Agreement") is made and entered into this 22 day of February, 2021 (the "Effective Date"), by and among TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "Seller"), a Massachusetts municipal corporation having an address of 41 Cochituate Road, Wayland, MA 01778, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company having its business address c/o Wood Partners, 91 Hartwell Avenue, Lexington, MA 02421, Attn: Jim Lambert (hereinafter "Buyer"), and FIRST AMERICAN TITLE INSURANCE COMPANY (hereinafter referred to as "Escrow Agent").

RECITALS:

A. Concurrently with the execution of this Agreement, Seller has conveyed to Buyer that certain property commonly known as 490 Boston Post Road in the Town of Wayland, Middlesex County, Commonwealth of Massachusetts, shown as "Lot A", "Lot C", and "Lot E" (the "Buyer's Property") on that certain plan entitled "ANR Subdivision Plan Assessors Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South Registry of Deeds (the "Registry") as Plan No. 260 of 2017 (the "ANR Plan"). The acquisition of the Buyer's Property was consummated pursuant to a Land Disposition Agreement for the Sale and Redevelopment of Land between Seller and Buyer dated as of July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof (the "Twelfth Amendment"), the "LDA").

B. Pursuant to the Twelfth Amendment, at closing under the LDA, Seller and Buyer agreed to enter into an Infrastructure Development Agreement (the "Development Agreement") and this Agreement to among other things, address and secure Seller's obligations to (i) timely design permit and construct the Seller's WWTP Improvements (as defined in the Development Agreement), and (ii) compensate or reimburse Buyer for Buyer's WWTP Damages sustained on account of (A) Seller's failure to remain on schedule in performing such work, (B) Seller otherwise triggering a "Seller Event of Default" under the Development Agreement, and/or (C) a Buyer's O/M Failure Event.

C. In order to secure the aforesaid obligations of Seller and provide Buyer with recourse when and if it is entitled to pursue Buyer's WWTP Damages pursuant to the Development Agreement, Seller is depositing with Escrow Agent simultaneously with the execution and delivery hereof the sum of \$2,587,588.00 (the "WWTP Escrow Amount").

D. This Agreement is the WWTP Escrow Agreement referred to in the LDA and the Development Agreement.

NOW, THEREFORE, the parties agree as follows:

1. Recitals; Capitalized Terms. The above Recitals are true and correct and are incorporated herein by reference. Capitalized terms which are not otherwise defined herein shall have the meanings assigned thereto in the Development Agreement. Additionally, the following capitalized terms used in this Agreement have the respective meanings assigned to them below:

"Buyer's Increased Project Costs Requisition" shall mean a disbursement request for Buyer's Increased Project Costs in the form attached hereto as Exhibit A and incorporated herein by reference.

“Buyer’s Project Delay LD Requisition” shall mean a disbursement request for Buyer’s Project Delay Liquidated Damages in the form attached hereto as Exhibit C and incorporated herein by reference.

“Buyer’s Self-Contained WWTP Work Costs Requisition” shall mean a disbursement request for Buyer’s Self-Contained WWTP Work Costs which exceed the Buyer’s Self-Contained WWTP Work Costs Requisition Threshold in the form attached hereto as Exhibit D and incorporated herein by reference.

“Buyer’s WWTP Damages Requisition” shall mean, as applicable based on the nature of the Buyer’s WWTP Damages which are the subject of a particular request for disbursement of the WWTP Escrow Funds pursuant to Section 4(a) below, any one of a Buyer’s Increased Project Costs Requisition, Buyer’s Project Delay LD Requisition, Buyer’s Self-Contained WWTP Work Costs Requisition and/or Buyer’s WWTP Self-Help Requisition.

“Buyer’s WWTP Self-Help Requisition” shall mean a disbursement request to compensate Buyer for Buyer’s WWTP Self-Help Costs incurred on account of Buyer exercising the Self-Help Remedy (as defined in Section 5.2(d) of the Development Agreement) in the form attached hereto as Exhibit E and incorporated herein by reference.

“Objection Notice” shall mean each of a Seller Objection Notice and Buyer Objection Notice, as applicable.

“Seller’s WWTP Escrow Release Requisition” shall mean a disbursement request for a Release Amount in the form attached hereto as Exhibit F and incorporated herein by reference.

2. Appointment and Acceptance of Escrow Agent. By execution of this Agreement, Seller and Buyer hereby appoint and engage Escrow Agent, and Escrow Agent hereby accepts such appointment and engagement, to serve as Escrow Agent and to perform the duties set forth herein, subject to the terms and conditions of this Agreement.

3. WWTP Escrow Funds. Seller agrees to deliver to Escrow Agent at Closing the sum of the WWTP Escrow Amount, which shall be held and distributed by Escrow Agent subject to the conditions set forth herein. The monies held by Escrow Agent pursuant to this Agreement from time to time are sometimes referred to as the “WWTP Escrow Funds”. At such time(s) as Buyer deposits the Final On-Site WWTP Escrow Funds pursuant to Section 4(c)(ii) of the Twelfth Amendment (including any amounts determined through the dispute resolution process concerning the Final On-Site WWTP Estimate referenced therein and Section 5(d) hereof), such funds shall become part of the WWTP Escrow Funds for all purposes under this Agreement and the Development Agreement.

4. Disbursement of the WWTP Escrow Funds. The WWTP Escrow Funds shall be released to, and upon the following:

(a) Disbursement to Buyer. The WWTP Escrow Funds shall be disbursed to Buyer, in whole or in part, at any time and from time to time, in accordance with the following procedures:

(i) Buyer’s WWTP Damages Requisitions; Seller Objection Notices. Buyer may, from time to time and in accordance with applicable terms of the Development Agreement, submit to Escrow Agent and Seller a written request for disbursement of the WWTP Escrow Funds in the form of a Buyer’s WWTP Damages Requisition for the payment of Buyer’s WWTP Damages actually incurred or sustained by Buyer pursuant to the terms of the Development Agreement. Buyer shall provide to Seller and Escrow Agent copies of any and all supporting documentation (if any) contemplated by the applicable Buyer’s WWTP Damages Requisition form attached hereto

(such supporting documentation, along with any supporting documentation contemplated by Exhibit H attached hereto in connection with a Seller's WWTP Escrow Release Requisition made pursuant to Section 4(b) below, as applicable, "Supporting Documentation"). Seller shall have ten (10) business days after receipt of a Buyer's WWTP Damages Requisition to object to any Buyer's WWTP Damages Requisition by written notice to Escrow Agent and Buyer in substantially the form of Exhibit G attached hereto (a "Seller Objection Notice"); *provided, however*, that Seller acknowledges and agrees that Seller shall only have the right to object to a particular Buyer's WWTP Damages Requisition (i) if the requisition does not contain sufficient Supporting Documentation (it being acknowledged by Seller that its objection right under this clause (i) is limited only to the existence (or lack thereof) of the Supporting Documentation), or (ii) Seller, in good faith, reasonably believes that the Buyer's WWTP Damages Requisition (or the Buyer's WWTP Damages that are the subject to the Buyer's WWTP Damages Requisition) are inaccurate, erroneous, or not consistent with the terms and provisions of the Development Agreement, or (iii) if Seller in good faith disputes the allegation of the occurrence (or the extent of the occurrence) of a Seller Event of Default or Buyer's Project Delay, if alleged in Buyer's WWTP Damages Requisition. If a Seller Objection Notice is not received by Escrow Agent within such 10-business day period, then Escrow Agent shall disburse promptly the portion of the WWTP Escrow Funds requested in accordance with Buyer's payment instructions contained in the Buyer's WWTP Damages Requisition. If, however, Seller timely serves a Seller Objection Notice to Escrow Agent and Buyer with respect to a Buyer's WWTP Damages Requisition, then Section 5 hereof shall apply.

(ii) Escrow Agent Review. Escrow Agent shall not be required to review any documentation provided in connection with any Buyer's WWTP Damages Requisition provided hereunder. Escrow Agent shall rely only on the objection of Seller or absence of objection. In fact, Escrow Agent shall not withhold a disbursement based on a belief that the disbursement requested is incomplete.

(iii) Joint Disbursement Instructions. If Seller and Buyer jointly submit a Buyer's WWTP Damages Requisition, Escrow Agent shall disburse the requested amounts promptly from the WWTP Escrow Funds pursuant to the directions set forth in such joint Buyer's WWTP Damages Requisition.

(b) Disbursement to Seller. The WWTP Escrow Funds (or applicable portions thereof) shall be disbursed to Seller in accordance with the following procedures:

(i) Seller's WWTP Escrow Release Requisitions; Buyer Objection Notices. Upon achievement of an applicable Seller's WWTP Work Milestone, but subject to the terms of Section 2(c) of the Development Agreement, Seller may submit to Escrow Agent and Buyer a Seller's WWTP Escrow Release Requisition for disbursement to Seller of the applicable Release Amount pursuant to the terms of the Development Agreement. Seller shall provide to Buyer and Escrow Agent copies of any and all Supporting Documentation contemplated by the applicable Seller's WWTP Escrow Release Requisition. Buyer shall have ten (10) business days after receipt of a Seller's WWTP Escrow Release Requisition to object to any Seller's WWTP Escrow Release Requisition by written notice to Escrow Agent and Seller in substantially the form of Exhibit H attached hereto (a "Buyer Objection Notice"). Buyer shall only have the right to object to a particular Seller's WWTP Escrow Release Requisition (i) if the requisition does not contain the applicable Supporting Documentation (it being acknowledged by Buyer that its objection right under this clause (i) is limited only to the existence (or lack thereof) of the Supporting Documentation), or (ii) Buyer, in good faith, reasonably believes that Seller's WWTP Escrow Release Requisition is inaccurate, erroneous, and/or not consistent with the terms and provisions

of the Development Agreement. If a Buyer Objection Notice is not received by Escrow Agent within such ten (10) business day period, then Escrow Agent shall disburse promptly the portion of the WWTP Escrow Funds requested in accordance with Seller's payment instructions contained in the Seller's WWTP Escrow Release Requisition. If, however, Buyer timely serves a Buyer Objection Notice to Escrow Agent and Seller with respect to a Seller's WWTP Escrow Release Requisition, then Section 5 hereof shall apply. For the avoidance of doubt, and notwithstanding anything in this Agreement to the contrary, Escrow Agent shall release to Seller, and Buyer shall not have the right to interpose any objection or dispute with respect to the release of, the Building Permit Fee from escrow, upon Escrow Agent's receipt of a Seller's WWTP Escrow Release Requisition for such Building Permit Fee on or after June 24, 2021.

(ii) Escrow Agent Review. Escrow Agent shall not be required to review any documentation provided in connection with any Seller's WWTP Escrow Release Requisition provided hereunder. Escrow Agent shall rely only on the objection of Buyer or absence of objection. In fact, Escrow Agent shall not withhold a disbursement based on a belief that the disbursement requested is incomplete.

(iii) Joint Disbursement Instructions. If Seller and Buyer jointly submit a Seller's WWTP Escrow Release Requisition, Escrow Agent shall disburse the requested amounts promptly from the WWTP Escrow Funds pursuant to the directions set forth in such joint Seller's WWTP Escrow Release Requisition.

(iv) Final Disbursement. The remaining portion of the WWTP Escrow Funds, if any, that has not been disbursed to Buyer and is not the subject of a pending claim for disbursement to Buyer pursuant to Section 4(a) above shall be released by Escrow Agent to Seller within two (2) business days after the expiration of the Escrow Period.

5. Objection Notice Procedure; Expedited Dispute Resolution. If either party provides an Objection Notice in accordance with Section 4 above (such objecting party being referred to for the purposes of this Section 5 as the "Objecting Party," and each party receiving the objection being referred to for the purposes of this Section 5 as the "Non-Objecting Party"), then the following shall apply:

(a) Escrow Agent shall not disburse the portion of the WWTP Escrow Funds in dispute until either (i) Seller and Buyer (or their respective counsel) jointly instruct Escrow Agent to disburse funds in accordance with the applicable request for disbursement from the Non-Objecting Party, or (ii) the dispute has been resolved (including pursuant to the terms of Section 5(c) below).

(b) Seller and Buyer shall direct Escrow Agent to disburse any portion of the proposed disbursement as to which no objection is made. For example, if Buyer requests in a Buyer's WWTP Damages Requisition that \$50,000 be disbursed to Buyer, but Seller claims in a Seller Objection Notice that Buyer is only entitled to \$40,000, then Escrow Agent shall disburse \$40,000 to Buyer pursuant to the instructions set forth in the Buyer's WWTP Damages Requisition (without prejudice to the rights of Buyer as to the remaining unfunded WWTP Escrow Funds), and the remaining \$10,000 shall be subject to Section 5(a) above.

(c) In the event the Parties cannot resolve a dispute over a particular disbursement hereunder within ten (10) business days after delivery of an Objection Notice (as evidenced by a joint instruction to the Escrow Agent to disburse or hold the applicable WWTP Escrow Funds as instructed by Seller and Buyer), either Seller or Buyer shall thereafter have the right, in lieu of pursuing recourse through the courts, to assert that a "Disbursement Dispute" exists on the terms hereof, in which case the following provisions shall apply:

(1) If Seller or Buyer asserts that a Disbursement Dispute has arisen, such asserting party shall give prompt written notice thereof to the other party, the Escrow Agent and to the Disbursement Dispute Arbitrator (defined in subsection (4) below). The Disbursement Dispute Arbitrator shall, no later than five (5) business days after receipt of such notice, hold a preliminary, informal mediation meeting with both Buyer and Seller in an attempt to mediate such Disbursement Dispute. The Disbursement Dispute Arbitrator shall be instructed to give due regard to the language of this Agreement, the LDA, and the Development Agreement when determining the merits of the applicable Objection Notice which is the subject of a Disbursement Dispute. If such Disbursement Dispute shall not be resolved at that mediation meeting, the Disbursement Dispute Arbitrator shall, at such informal mediation meeting, establish a date, not earlier than ten (10) business days after such informal mediation meeting nor later than thirty (30) days after such informal mediation meeting, for a hearing (a "Hearing") to be held in accordance with this Agreement to resolve such Disbursement Dispute. Notwithstanding the foregoing, upon the existence of a prior commitment on the part of the Disbursement Dispute Arbitrator, or upon reasonable cause shown by Buyer or Seller (or both), the Disbursement Dispute Arbitrator may make a reasonable extension to one or both time periods set forth in this Section 5(c).

(2) Buyer and Seller shall have the right to make one (1) written submission to the Disbursement Dispute Arbitrator prior to the Hearing. Such submission shall be received by the Disbursement Dispute Arbitrator and the other party not later than two (2) Business days prior to the Hearing date. Buyer and Seller hereby agree that all Hearings shall have a mutually agreeable scope of discovery and exchange of information reasonably necessary for the parties to evaluate and resolve the Disbursement Dispute. The Hearing shall be conducted by the Disbursement Dispute Arbitrator. It is the intention of the parties hereto that the Hearing shall be conducted in an informal and expeditious manner. No transcript or recording shall be made. Buyer and Seller shall have the opportunity to make a brief statement and to present documentary and other support for its position, which may include the testimony of not more than two (2) individuals, one (1) of whom may be outside experts. There shall be no presumption in favor of either party's position.

(3) The Disbursement Dispute Arbitrator shall render a decision, in writing, as to any Disbursement Dispute not later than five (5) business days following the conclusion of the Hearing regarding such Disbursement Dispute (the "DD Decision") and shall provide a brief written basis for its decision not later than five (5) business days after the issuance of the DD Decision. The Disbursement Dispute Arbitrator may not award any other or different relief. The DD Decision shall be final and binding on Seller and Buyer for all purposes and may be entered in any court of competent jurisdiction. Seller and Buyer hereby authorize and direct Escrow Agent to disburse (or hold) the WWTP Escrow Funds which are the subject of a particular Disbursement Dispute in accordance with the DD Decision.

(4) Following the Closing, Buyer and Seller hereby agree to work expeditiously to engage Wally McDonough of ELK Consulting Services LLC as the Disbursement Dispute Arbitrator with regard to all Disbursement Disputes that may arise. If for any reason, within thirty (30) days after Closing, (a) such individual shall be unwilling or unable to act as Disbursement Dispute Arbitrator and the parties cannot agree on a replacement or (b) the parties are unable to agree on the engagement terms of the Disbursement Dispute Arbitrator, and the parties, within forty-five (45) days after the Closing, are unable to agree on a mutually acceptable Disbursement Dispute Arbitrator as an alternative to Mr. McDonough, then any party may ask the AAA Boston, Massachusetts office to select a substitute with such qualifications and experience who will act as Disbursement Dispute Arbitrator. The actual party designated pursuant to this Section 5(c) shall be the "Disbursement Dispute Arbitrator". The fees and costs of the Disbursement Dispute Arbitrator and the AAA shall be borne by the non-prevailing party in the applicable Disbursement Dispute at issue.

(d) In addition to its role adjudicating Disbursement Disputes, the Disbursement Dispute Arbitrator shall also act in accordance with the rules and procedures set forth in this Section 5 with respect to any dispute between Seller and Buyer regarding the Final On-Site WWTP Estimate, as more particularly described in Section 4(c)(ii) of the Twelfth Amendment

6. Dispute and Litigation Generally. If prior to the delivery of all or any part of the WWTP Escrow Funds described herein, Seller or Buyer shall have brought a suit to enjoin said delivery or for declaratory judgment with respect to an alleged breach and have served Escrow Agent with a summons making it a party to such action (provided that neither party shall be entitled to bring such a suit with respect to WWTP Escrow Funds that are the subject of a Disbursement Dispute pursuant to Section 5(c) above, in which case the terms of Section 5(c) shall govern the treatment of the applicable WWTP Escrow Funds upon the resolution of such Disbursement Dispute), Escrow Agent shall have the right in its sole discretion to either retain the money until the court directs the proper disposition thereof, or to deposit the same with the court. Further, if prior to the delivery of the WWTP Escrow Funds, Escrow Agent has been notified in writing by Seller or Buyer that a dispute exists with respect to the disposition of the WWTP Escrow Funds, then Escrow Agent shall retain such funds until the dispute is resolved. If Seller and Buyer do not notify Escrow Agent in writing within ten (10) business days from the notice of such dispute that such dispute has been resolved, then the Escrow Agent may file a bill of interpleader and deposit the WWTP Escrow Funds with the court; *provided, however,* if Escrow Agent shall have received notice of a Disbursement Dispute with respect to such dispute pursuant to Section 5(c) above, Escrow Agent shall hold and disburse the WWTP Escrow Funds which are the subject of such dispute in accordance with said Section 5(c). Seller and Buyer shall be jointly and severally liable to Escrow Agent for all reasonable expenses of any such suit for injunctive relief, declaratory judgment, or interpleader, including but not limited to reasonable attorneys' fees and costs. As between Seller and Buyer, such expenses shall be the responsibility of the non-prevailing party, excluding the Escrow Agent. The parties agree that if Escrow Agent is made a party to any litigation under this Agreement (other than a suit against Escrow Agent for willful neglect, intentional misconduct or breach of trust), upon the deposit by Escrow Agent of the WWTP Escrow Funds in the registry of the court, it shall be dropped from the litigation as a party and both parties shall agree that Escrow Agent has, in so doing, fully discharged its obligations under this Agreement and this Agreement shall be terminated as to Escrow Agent. In the event of any litigation between the Seller and Buyer to enforce any provision and right hereunder, the unsuccessful party to such litigation covenants and agrees to pay the successful party therein all costs and expenses, expressly including, but not limited to, reasonable attorneys' fees actually incurred therein by such successful party (including through any appeal), which costs, expenses and reasonable attorneys' fees shall be included in and as a part of any judgment rendered in such litigation.

7. Liability of Escrow Agent. Escrow Agent shall not be liable for the failure of any of the conditions of this escrow, or for damages caused or omission done in good faith, or for any claim or loss, claimed or suffered by any party hereto by the exercise of Escrow Agent's discretion, or for any reason whatsoever, except for intentional misconduct or willful neglect or breach of trust. Escrow Agent shall not be deemed to have notice or knowledge of any fact hereunder unless written notice thereof has been given to it pursuant to Section 10 below. Further, Escrow Agent shall not incur liability to any party for damages, losses or expenses, except for such arising out of its intentional misconduct or willful neglect or breach of trust. Seller's federal taxpayer identification (FEIN) number is 046001341 for purposes of tax reporting requirements.

8. Miscellaneous.

(a) Escrow Agent may act in reliance upon any instruction or signature reasonably believed by it to be genuine and may assume that any person purporting to give any writing, notice, instruction or direction in accordance with the provisions hereof has been duly authorized to do so.

(b) Escrow Agent may consult with and obtain advice from legal counsel, auditors and other experts in connection with this Agreement or its duties hereunder, and it shall incur no liability and shall be fully protected in acting in good faith in accordance with the written opinions and instructions of such counsel, auditors or other experts rendered within the areas of their respective expertise.

(c) Escrow Agent may execute any of its powers or responsibilities hereunder and exercise any rights hereunder either directly or by or through its agents or attorneys.

9. Investment of Escrow Funds. Escrow Agent shall invest the WWTP Escrow Funds in an interest-bearing account maintained by Escrow Agent in a bank or savings and loan association, or in some other financial institution or brokerage house, that is FDIC insured. Interest, dividends, capital gains and other earnings (collectively "Earnings") on the WWTP Escrow Funds shall be added to and become a part of the WWTP Escrow Funds. Seller shall be responsible for all income taxes, if any, imposed upon the Earnings.

10. Notices. Wherever in this Agreement it shall be required or permitted that notice, request, consent, or demand be given by any party to this Agreement to or on the other (hereafter collectively "Notice" for the purpose of this paragraph), such Notice shall not be deemed to have been duly given unless in writing, and either personally delivered, mailed by certified mail, return receipt requested, e-mail of a letter in "pdf" format (with Request for Delivery Receipt (or similar function) activated) or sent via commonly accepted overnight delivery service as follows:

Buyer: c/o Wood Partners
91 Hartwell Avenue
Lexington, MA 02421
Attn: Jim Lambert, Director
Email: Jim.Lambert@woodpartners.com

With copies to: c/o Wood Partners
636 W. Yale Street
Orlando, Florida 32804
Attention: Sean Reynolds
Telephone: (407) 982-2517
E-mail: sean.reynolds@woodpartners.com

And

Alston & Bird LLP
One Atlantic Center
1201 W. Peachtree Street
Atlanta, Georgia 30309
Attention: Drew Allen
Telephone: (404) 881-4522
E-mail: drew.allen@alston.com

SELLER:

Louise L.E. Miller, J.D.
Town Administrator
Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Email: lmiller@wayland.ma.us

With copies to:

Katharine Lord Klein
KP | LAW
101 Arch Street, 12TH Floor
Boston, MA 02110
Telephone: (617) 654 1834
Email: kklein@k-plaw.com

And

David L. Wiener
Anderson & Kreiger LLP
50 Milk Street, 21st floor
Boston, MA 02109
Telephone: (617) 621-6570
Email: dwiener@andersonkreiger.com

Escrow Agent:

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhlir@firstam.com

Counsel for the parties set forth herein may deliver notice on behalf of the parties.

All Notices shall be deemed delivered only upon actual delivery at the address (or e-mail address) set forth herein. Notices delivered after 5:00 p.m. (at the place of delivery) or on a non-business day shall be regarded as delivered on the next business day. Saturdays, Sundays and legal holidays of the United States government shall not be regarded as business days.

If any time for giving Notice or other time period contained in this Agreement would otherwise expire on a non-business day, the Notice period or time period shall be extended to the next succeeding business day. Any party or other person to whom Notices are to be sent or copied may notify the other parties and addressees of any change in address or addresses by written Notice in accordance herewith to the parties and addressees set forth herein.

11. Severability. The invalidity or unenforceability of a specific provision of this Agreement shall not affect the other provisions hereof, and this Agreement shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

12. Modification. No additions, alterations or variations to the terms of this Agreement shall be valid nor can the provisions or the terms of this Agreement be waived by either party unless such additions, alterations, variations or waivers are expressly set forth in writing and signed by the parties hereto.

13. Waiver. The failure of any party hereto in one or more instances to insist upon strict performance or observance of one or more of the covenants or conditions hereof, or to exercise any remedy, privilege, or option herein conferred upon or served to such party, shall not operate and not be construed as a relinquishment or waiver for the future of such covenant or condition of or the right to enforce the same or to exercise such privilege, option, or remedy, but the same shall continue in full force and effect.

14. Venue and Applicable Law. In the event that legal action is instituted under, or to enforce any provision of, this agreement, the parties hereto submit themselves to the jurisdiction of the courts of the Commonwealth of Massachusetts, and, notwithstanding the place of residence of any of them or the place of execution of this instrument, such litigation shall be brought in Middlesex County, Massachusetts. This Agreement shall be controlled, construed and interpreted according to the laws of the Commonwealth of Massachusetts, without regard to the conflict of laws rules of such State.

15. Persons Bound; Permitted Assignments. The covenants herein contained shall bind and the benefits and advantages shall inure to the respective heirs, executors, administrators, successors and assigns of the parties hereto. This Agreement shall not be assigned by Seller, Escrow Agent or Buyer without the written consent of the other parties to this Agreement; *provided, however*, that Seller or Buyer may assign this Agreement in connection with an assignment permitted under the Development Agreement (including any permitted collateral assignments in connection with Buyer's financing of the Buyer's Project as set forth therein).

16. Entire Agreement. This Agreement contains the entire agreement among the parties with respect to the matters contained herein, and supersedes all previous agreements or representations, either verbal or written heretofore in effect between the parties made with respect to the matters contained herein.

17. Term/Termination. The "Escrow Period" for the purposes hereof shall mean the period commencing on the Effective Date and continuing until the date which is the earlier to occur of (i) the five (5) year anniversary of the Effective Date, provided that if Buyer has delivered a Buyer's WWTP Damages Requisition or Seller has delivered a Seller's WWTP Escrow Release Requisition prior to such anniversary, the Escrow Period shall continue until payment is made on such requisition and/or any disputes surrounding such requisition are resolved pursuant to this Agreement; (ii) full disbursement of the WWTP Escrow Funds in accordance with the provisions of this Agreement; and (iii) Buyer providing notice to Escrow Agent and Seller that Seller's WWTP Improvements are completed and all applicable Buyer's WWTP Damages (if any) have been accounted for and paid. Upon expiration of the Escrow Period, this Agreement will terminate and be of no further force and effect.

18. Counterparts. This Agreement may be executed in any number of counterparts each of which shall be deemed an original and all such counterparts shall constitute one instrument. Signatures to this Agreement transmitted by e-mail or .pdf file shall be valid and effective to bind the party so signing.

19. WAIVER OF RIGHT TO TRIAL BY JURY. EACH PARTY HERETO HEREBY KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES THE RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION BASED HEREON OR ARISING OUT OF THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREBY, AND ANY AGREEMENT CONTEMPLATED TO BE EXECUTED IN CONJUNCTION HERewith, OR COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PARTY. THIS PROVISION IS A MATERIAL INDUCEMENT FOR SELLER AND BUYER ENTERING INTO THIS AGREEMENT.

[Signatures appear on following page]

IN WITNESS WHEREOF, Seller, Buyer and Escrow Agent have entered into this Agreement on the Effective Date.

BUYER:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

SELLER:

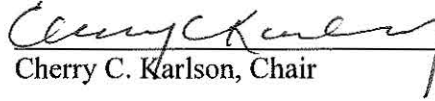
TOWN OF WAYLAND

By: _____
Name:
Title:

[signatures continue on following page]

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen


Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

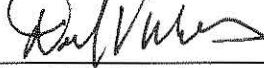
Lea T. Anderson

[signatures continue on following page]

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair



David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

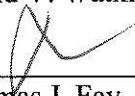
[signatures continue on following page]

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

Mary M. Antes

Lea T. Anderson

[signatures continue on following page]

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Mary M. Antes

Lea T. Anderson

[signatures continue on following page]

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

[signatures continue on following page]

ESCROW AGENT:

**FIRST AMERICAN TITLE INSURANCE
COMPANY**


By: 
Name: Carmen Rice
Title: Sr. Title Officer

EXHIBIT A
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S INCREASED PROJECT COSTS REQUISITION

BUYER'S INCREASED PROJECT COSTS REQUISITION

REQUISITION NOTICE #[]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhlir@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a Seller Event of Default exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT];
- (ii) encloses invoices and/or other supporting documents relating to Buyer's Increased Project Costs on account of the Seller Event of Default [ENCLOSE SUPPORTING DOCUMENTATION];
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for Buyer's Increased Project Costs on account of such Seller Event of Default; and

- (iv) certifies to Seller and Escrow Agent that the Disbursement Amount is being used to pay for Buyer's Increased Project Costs pursuant to the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT B

Reserved

EXHIBIT C
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S PROJECT DELAY LD REQUISITION

BUYER'S PROJECT DELAY LD REQUISITION

REQUISITION NOTICE # []

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhkir@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a Seller Event of Default exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT];
- (ii) claims a period of ____ days of Buyer's Project Delay on account of the Seller Event of Default, based on the updated Buyer's Construction Schedule enclosed with this Buyer's Project Delay LD Requisition [ENCLOSE UPDATED BUYER'S CONSTRUCTION SCHEDULE]; and
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for Buyer's Project Delay Liquidated Damages on account of the Buyer's Project Delay.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT D
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S SELF-CONTAINED WWTP WORK COSTS REQUISITION

BUYER'S SELF-CONTAINED WWTP WORK COSTS REQUISITION

REQUISITION NOTICE #[]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhkir@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a [Seller Event of Default][Buyer O/M Failure Event] exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT OR BUYER O/M FAILURE EVENT];
- (ii) encloses invoices and/or other supporting documents relating to Buyer's Self-Contained WWTP Work Costs on account of the [Seller Event of Default] [Buyer O/M Failure Event] which exceed the Buyer's Self-Contained WWTP Work Costs Requisition Threshold [ENCLOSE SUPPORTING DOCUMENTATION];
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for Buyer's Self-Contained WWTP Work Costs on

account of such [Seller Event of Default][Buyer O/M Failure Event] which exceed the Buyer's Self-Contained WWTP Work Costs Requisition Threshold; and

- (iv) certifies to Seller and Escrow Agent that the Disbursement Amount is being used to pay for Buyer's Self-Contained WWTP Work Costs which exceed the Buyer's Self-Contained WWTP Work Costs Requisition Threshold pursuant to the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT E
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER'S WWTP SELF-HELP REQUISITION

BUYER'S WWTP SELF-HELP REQUISITION

REQUISITION NOTICE #[]

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhlir@firstam.com

Town of Wayland
41 Cochituate Road
Wayland, MA 01778
Telephone: (508) 358-3620
Attn: Town Administrator
Email: lmiller@wayland.ma.us

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Seller and Escrow Agent:

Pursuant to Section 5.2 of the Development Agreement and Section 4 of the Escrow Agreement, Buyer hereby:

- (i) asserts that a Seller Event of Default exists under the Development Agreement, which is characterized by the following: [DESCRIBE SELLER EVENT OF DEFAULT];
- (ii) encloses invoices and/or other supporting documents relating to Buyer's WWTP Self-Help Costs incurred in connection with Buyer's exercise of the Self-Help Remedy pursuant to Section 5.2(d) of the Development Agreement [ENCLOSE SUPPORTING DOCUMENTATION];
- (iii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds to pay for such Buyer's WWTP Self-Help Costs; and

- (iv) certifies to Seller and Escrow Agent that the Disbursement Amount is being used to pay for Buyer's WWTP Self-Help Costs pursuant to the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

EXHIBIT F
TO
WWTP ESCROW AGREEMENT

FORM OF SELLER'S WWTP ESCROW RELEASE REQUISITION

SELLER'S WWTP ESCROW RELEASE REQUISITION

REQUISITION NOTICE # []

_____, 20__

First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Suite 675
Atlanta, Georgia 30326
Attn: Jon Uhlir
Email: juhlir@firstam.com

Alta River's Edge, LLC
91 Hartwell Avenue
Lexington, MA 02421
Attn: Jim Lambert, Director
Email: Jim.Lambert@woodpartners.com

Re: WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

Dear Buyer and Escrow Agent:

Pursuant to Section 2(c) of the Development Agreement and Section 4(b) of the Escrow Agreement, Seller hereby:

- (i) encloses the Seller's WWTP Work Milestone Achievement Evidence relating to the following Seller's WWTP Work Milestone(s) (the "**Applicable Seller Milestone**"): [SELLER TO INSERT APPLICABLE MILESTONE(S) FROM DEVELOPMENT AGREEMENT AND ENCLOSE EVIDENCE OF MILESTONE ACHIEVEMENT];
- (ii) directs Escrow Agent to disburse \$ _____ (the "**Disbursement Amount**") from the WWTP Escrow Funds, which is the Release Amount(s) for the Applicable Seller Milestone(s) as provided in Section 2(c) of the Development Agreement; and
- (iii) certifies to Buyer and Escrow Agent that the Disbursement Amount constitutes the correct Release Amount pursuant to the terms of the Development Agreement.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

TOWN OF WAYLAND

By: _____

Name:

Title: Town Administrator

EXHIBIT G
TO
WWTP ESCROW AGREEMENT

FORM OF SELLER OBJECTION NOTICE

[Date]

[INSERT CONTACT INFO FOR BUYER AND TITLE COMPANY FROM ESCROW AGREEMENT]

Dear Buyer and Escrow Agent:

Reference is made to that certain WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

We have received and reviewed the Buyer's WWTP Damages Requisition, dated _____ (the "**Subject Buyer's WWTP Damages Requisition**"), submitted by Buyer under the Escrow Agreement. We hereby take the following action:

- Object to the disbursement in the amount of \$ _____ requested by Buyer in the Subject Buyer's WWTP Damages Requisition, Seller hereby certifying that it is entitled to object to such amount pursuant to the Development Agreement and Escrow Agreement based on the following:
_____.
- Approve disbursement of \$ _____ of the amount requested in the Subject Buyer's WWTP Damages Requisition and object to disbursement of the remaining \$ _____ so requested, Seller hereby certifying that it is entitled to object to such amount pursuant to the Development Agreement and Escrow Agreement based on the following: _____.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

Very truly yours,

TOWN OF WAYLAND

By: _____

Name:

Title: Town Administrator

EXHIBIT H
TO
WWTP ESCROW AGREEMENT

FORM OF BUYER OBJECTION NOTICE

[Date]

[INSERT CONTACT INFO FOR SELLER AND TITLE COMPANY FROM ESCROW AGREEMENT]

Dear Seller and Escrow Agent:

Reference is made to that certain WWTP Escrow Agreement dated _____, 2021 (as the same may be amended from time to time, the "**Escrow Agreement**") by and among First American Title Insurance Company ("**Escrow Agent**"), TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company ("**Buyer**"). Capitalized terms used herein shall have the meanings ascribed thereto in the Escrow Agreement.

We have received and reviewed the Seller's WWTP Escrow Release Requisition, dated _____ (the "**Subject Seller's WWTP Escrow Release Requisition**"), submitted by Seller under the Escrow Agreement. We hereby take the following action:

- Object to the disbursement in the amount of \$ _____ requested by Seller in the Subject Seller's WWTP Escrow Release Requisition based on the following facts:
_____.
- Approve disbursement of \$ _____ of the amount requested in the Subject Seller's WWTP Escrow Release Requisition and object to disbursement of the remaining \$ _____ so requested.

This letter may be executed in several counterparts, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Furthermore, an electronically transmitted signature of any of the parties hereto on any counterpart may be relied upon as an original signature.

[signature on following page]

Very truly yours,

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware
limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited
liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited
liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

cc:

[SEND COPY TO SANTANDER PURSUANT TO LOAN DOCUMENTS]

VOTE OF THE WAYLAND BOARD OF SELECTMEN

This is to certify that at a duly called public meeting of the Wayland Board of Selectmen on February 4, 2021, the Board voted as follows with respect to the land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017 (the "Property"):

VOTED: To execute and deliver the following documents substantially in the forms presented at the February 4, 2021 meeting, with final changes to be made by the Town Administrator in consultation with town counsel and special town counsel: (a) Twelfth Amendment to Land Disposition Agreement; (b) Infrastructure Development Agreement (Wastewater Facilities); and (c) WWTP Escrow Agreement; and

VOTED: To authorize the Town Administrator to take all actions on behalf of the Town that are reasonably necessary, in the judgment of the Town Administrator, to complete the disposition of the Property in accordance with the Land Disposition Agreement entered into between the Town and ALTA River's Edge, LLC (as successor in interest to WP East Acquisitions, L.L.C.) dated July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof, the "Disposition Agreement"), and the applicable Town Meeting vote, including without limitation executing and/or delivering closing forms, closing documents, and settlement statements, including, but not limited to, the following documents substantially in the forms presented at the February 4, 2021 meeting, with final changes to be made by the Town Administrator in consultation with town counsel and special town counsel: (a) Closing Certificate, (b) two (2) Regulatory Agreement and Declaration of Restrictive Covenants for Rental Projects; (c) Collateral Assignment of Infrastructure Development Agreement; (d) Title Affidavit; and (e) Letter Agreement regarding pro forma taxes.

[Signature Page Follows]

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen


Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry G. Karlson, Chair



David V. Watkins

Thomas J. Fay

Mary M. Antes

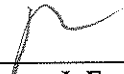
Lea T. Anderson

Executed under seal on this 14 day of Feb, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins



Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes
Mary M. Antes

Lea T. Anderson

Executed under seal on this 10th day of February, 2021.

TOWN OF WAYLAND,
By its Board of Selectmen

Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

Lea T. Anderson

CLOSING CERTIFICATE

TOWN OF WAYLAND

February 22, 2021

Pursuant to that certain Land Disposition Agreement entered into between the Town of Wayland, acting by and through its Board of Selectmen, a Massachusetts municipal corporation (the "Town") and ALTA River's Edge LLC, a Delaware limited liability company (as successor in interest to WP East Acquisitions, L.L.C.) (the "Buyer") dated July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof, the "Disposition Agreement"), the Town hereby certifies as of the date hereof, all of the representations and warranties made by the Town in the Disposition Agreement remain true and accurate in all material respects.

[Signature to follow on next page]

IN WITNESS WHEREOF, the Town has executed this Certificate as of the date set forth above.

TOWN OF WAYLAND,
a Massachusetts municipal corporation

By: 
Name: Louise L.E. Miller
Title: Town Administrator

[Signature Page to Closing Certificate]

CLOSING CERTIFICATE

ALTA RIVER'S EDGE, LLC

February 22, 2021

Pursuant to that certain Land Disposition Agreement entered into between the Town of Wayland, acting by and through its Board of Selectmen, a Massachusetts municipal corporation (the "Town") and ALTA River's Edge LLC, a Delaware limited liability company (as successor in interest to WP East Acquisitions, L.L.C.) (the "Buyer") dated July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof, the "Disposition Agreement"), the Buyer hereby certifies as of the date hereof, all of the representations and warranties made by the Buyer in the Disposition Agreement remain true and accurate in all material respects.

[Signature to follow on next page]


IN WITNESS WHEREOF, the Buyer has executed this Certificate as of the date set forth above.

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: 
Name: Jim Lambert
Title: Vice President

INFRASTRUCTURE DEVELOPMENT AGREEMENT

(Wastewater Facilities)

THIS INFRASTRUCTURE DEVELOPMENT AGREEMENT (this “Agreement”) is entered into as of the 22 day of February, 2021 (the “Effective Date”), by and between TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter “Seller”), a Massachusetts municipal corporation having an address of 41 Cochituate Road, Wayland, MA 01778, and ALTA RIVER’S EDGE, LLC, a Delaware limited liability company having its business address c/o Wood Partners, 91 Hartwell Avenue, Lexington, MA 02421, Attn: Jim Lambert (hereinafter “Buyer”). Each of Seller and Buyer are sometimes individually referred to herein as a “Party” and collectively as the “Parties”.

RECITALS

A. Concurrently with the execution of this Agreement, Seller has conveyed to Buyer that certain property commonly known as 490 Boston Post Road in the Town of Wayland, Middlesex County, Commonwealth of Massachusetts, shown as “Lot A”, “Lot C”, and “Lot E” (the “Buyer’s Property”) on that certain plan entitled “ANR Subdivision Plan Assessors Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road Wayland, Massachusetts” prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South Registry of Deeds (the “Registry”) as Plan No. 260 of 2017 (the “ANR Plan”). The acquisition of the Buyer’s Property was consummated pursuant to a Land Disposition Agreement for the Sale and Redevelopment of Land between Seller and Buyer dated as of July 28, 2017 (as amended from time to time, most recently by a Twelfth Amendment dated on or about the date hereof (the “Twelfth Amendment”), the “LDA”). Capitalized Terms which are not otherwise defined herein shall have the meanings ascribed thereto in the LDA.

B. Buyer intends to construct a development of 218 multi-family apartment units on the Buyer’s Property, together with required parking, landscaping, curb cuts, street openings and related amenities, all as more particularly provided in the plans and Approvals for the Buyer’s Project (collectively, the “Buyer’s Project”).

C. Pursuant to the Twelfth Amendment, Seller has agreed, at its sole cost and expense, to design, permit and construct the Seller’s WWTP Improvements (hereinafter defined) which are required to bring sanitary sewer service to Buyer’s Project.

D. Prior to Seller agreeing to construct the Seller’s WWTP Improvements, it was contemplated under the LDA that Buyer would permit and construct an on-site wastewater treatment facility, leaching field, and associated force mains, lines, pumps, equipment and facilities which would allow for the receipt, treatment and disposal or dispersion of sewerage effluent from the Buyer’s Project on a private, self-contained basis (the “Buyer’s Self-Contained WWTP Improvements”).

E. The Seller’s WWTP Improvements will, among other things, receive and treat wastewater effluent from Buyer’s Project (“Buyer’s Project Effluent”) and return treated effluent from the Seller’s Town Center wastewater treatment facility (the “Town Wastewater Treatment Plant”) to the Buyer’s Leaching Field (hereinafter defined); *provided, however*, that the Town shall in no event return treated effluent from the Town Wastewater Treatment Plant in quantities which exceed the amount that the leaching field is designed to receive (“Returned Effluent”).

F. Buyer will be constructing the Buyer’s Retained WWTP Improvements (hereinafter defined) on the Buyer’s Property which will allow for the release and pumping of Buyer’s Project Effluent into the Seller’s WWTP Improvements at the point of connection with the Buyer’s Retained

WWTP Improvements on the Buyer's Property and the receipt of Returned Effluent after being treated at the Town Wastewater Treatment Plant.

G. This Agreement is the Infrastructure Development Agreement contemplated by the Twelfth Amendment to the LDA and addresses, among other things, Seller's obligation to timely design, permit and construct the Seller's WWTP Improvements and Buyer's remedies in the event Seller fails to comply with such obligation.

NOW, THEREFORE, in consideration of the foregoing recitals, mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Seller and Buyer agree as follows:

1. Purpose/Definitions. The purpose of this Agreement is described in the Recitals and said Recitals are incorporated herein by reference. Additionally, the following capitalized terms used in this Agreement have the respective meanings assigned to them below:

"Applicable Legal Requirements" means, collectively, all laws, rules, statutes, ordinances, regulations and codes of any governmental or quasi-governmental body, authority, department or agency, including, but not limited to, the terms of all permits and other governmental approvals required to legally carry out and complete the work which is the subject of this Agreement or any portion thereof.

"Approvals and Contracts" shall have the meaning set forth in Section 5.2(d) hereof.

"Buyer's Construction Schedule" shall mean the construction schedule for the Buyer's Project attached hereto as Exhibit D, as the same may be updated from time to time by Buyer's Contractor. Notwithstanding anything in this Agreement to the contrary, in no event shall any modifications to Buyer's Construction Schedule be deemed to accelerate any Seller's WWTP Work Milestone Deadline.

"Buyer's Contractor" shall mean River's Edge Builders LLC, a Delaware limited liability company and Buyer's general contractor for Buyer's Project, any successor or assignee thereof, or any replacement general contractor retained by Buyer for Buyer's Project.

"Buyer's Increased Project Costs" shall mean additional or incremental increases in contractor general conditions costs and related fees and expenses which Buyer incurs as a result of (i) Seller's failure to cause Seller's WWTP Work Final Completion to occur by the Seller's WWTP Work Final Completion Milestone Deadline established therefor or (ii) otherwise on account of a Seller Event of Default, provided Buyer has not made the Buyer's Self-Contained WWTP Work Election on the terms hereof, in which case other remedies and provisions of this Agreement shall control.

"Buyer's Increased Project Costs Requisition" shall have the meaning assigned thereto in the WWTP Escrow Agreement.

"Buyer's Project Completion" means that (i) applicable Governmental Authorities have issued a certificate of occupancy (which may be a temporary certificate of occupancy) for the entirety of Buyer's Project or its functional equivalent permitting the lawful use of the Buyer's Project for its intended purpose; and (ii) Buyer's Project is otherwise "Complete" as provided in the LDA.

"Buyer's Project Delay" shall mean the number of days, as determined by Buyer's Contractor in its good faith and reasonable discretion with reasonable documentation in support thereof, and as reflected on Buyer's Construction Schedule, that Buyer's Project Initial T/C/O Date is actually delayed on account of a Seller Event of Default.

“Buyer’s Project Delay LD Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Buyer’s Project Delay Liquidated Damages” shall mean \$12,000 per day for every day of Buyer’s Project Delay, which, if Buyer is entitled thereto pursuant to the provisions of this Agreement, are intended to compensate Buyer for any and all damages and losses which Buyer sustains or may sustain on account of a Buyer’s Project Delay, specifically excluding Buyer’s Increased Project Costs which, if applicable, shall be in addition to and not includable within Buyer’s Project Delay Liquidated Damages (collectively, subject to such exclusion, “Anticipated Buyer Project Delay Losses”), including without limitation lost income and revenues from the leasing and operation of Buyer’s Project (including impacts of seasonality on lease-up and stabilization of the Buyer’s Project), additional interest and other carry costs and expenses associated with the Buyer’s financing and otherwise in connection with the maintenance and operation of the Buyer’s Project prior to Buyer’s Project Completion (including insurance costs, taxes, utilities and other operational expenses), and the negative impact on investment returns for Buyer’s capital partners. The Parties acknowledge and agree that the Anticipated Buyer Project Delay Losses are uncertain and difficult to estimate, and that therefore the Buyer’s Project Delay Liquidated Damages constitute a reasonable pre-estimate and liquidation of such Anticipated Buyer Project Delay Losses and are not intended as a penalty, but as full liquidated damages associated with any Buyer’s Project Delay.

“Buyer’s Project Initial T/C/O Date” means the date upon which applicable Governmental Authorities issue (or plan to issue, as the case may be) the first temporary certificate of occupancy for Buyer’s Project (or applicable portion thereof).

“Buyer’s Project O/M Agreement” shall mean an agreement between the Seller (including its applicable divisions or departments, including the Wayland Wastewater Management District Commission (in any case, the “Wastewater Governing Authority”)) and the Buyer which addresses the ongoing operation and maintenance of the Buyer’s Retained WWTP Improvements, on terms mutually approved by the Wastewater Governing Authority and the Buyer.

“Buyer’s Project O/M Fees” shall mean any and all annual user rates and fees charged or to be charged by the Seller and/or the Wastewater Governing Authority in connection with the ongoing operation and maintenance of the Buyer’s Retained WWTP Improvements and the WWTP System in general as applied to the Buyer’s Project, taking into account any credits, discounts, or offsets which Buyer may receive based on the construction of the Buyer’s Retained WWTP Improvements or otherwise.

“Buyer’s Retained WWTP Improvements” shall mean the following improvements to be constructed by Buyer on the Buyer’s Property, as detailed or will be further detailed in Buyer’s Retained WWTP Work Plans: (i) a force main, pumps, and related lines, fixtures and equipment which will carry and pump Buyer’s Project Effluent to the point of connection with the Seller’s WWTP Improvements at the property line for Buyer’s Property; and (ii) a leaching field and related equipment and facilities (the “Buyer’s Leaching Field”) which will receive Returned Effluent from the Seller’s WWTP Improvements after being treated at the Town Wastewater Treatment Plant.

“Buyer’s Retained WWTP Work” shall mean the work to be performed by Buyer to install or construct the Buyer’s Retained WWTP Improvements.

“Buyer’s Retained WWTP Work Plans” shall mean the plans and specifications prepared by Buyer’s architect or engineer for the Buyer’s Retained WWTP Improvements.

“Buyer’s Self-Contained WWTP Improvements” shall have the meaning set forth in the Recitals hereto, and as the same are more fully detailed in the plans, specifications, permits and other Approvals therefor.

“Buyer’s Self-Contained WWTP Work” shall mean the work to be performed by Buyer to install or construct the Buyer’s Self-Contained WWTP Improvements, if Buyer is entitled to and elects to install or construct same pursuant to the provisions of this Agreement by making the Buyer’s Self-Contained WWTP Work Election.

“Buyer’s Self-Contained WWTP Work Contractor” shall mean Ricciardi Bros., Inc. (the “Chosen WWTP Work Contractor”), or such other contractor which Buyer or Buyer’s Contractor engages for the performance of the Buyer’s Self-Contained WWTP Work, if applicable on the terms hereof, which shall be subject to Seller’s prior written approval, not to be unreasonably withheld, conditioned or delayed.

“Buyer’s Self-Contained WWTP Work Costs” shall mean any and all hard and soft costs and expenses incurred by Buyer in connection with the design, permitting and construction of the Buyer’s Self-Contained WWTP Improvements should Buyer make the Buyer’s Self-Contained WWTP Work Election, which shall include without limitation all costs, expenses and damages which, but for the Buyer’s Self-Contained WWTP Work Deferral Period, Buyer would not have incurred had Buyer proceeded with the Buyer’s Self-Contained WWTP Work from and after the Effective Date, including: (i) price escalations during the Buyer’s Self-Contained WWTP Deferral Period; (ii) costs associated with Buyer’s Self-Contained WWTP Work which the Buyer is forced to perform out-of-sequence relative to other components of Buyer’s Project due to the Buyer’s Self-Contained WWTP Work Deferral Period; (iii) contractor general conditions costs; (iv) increased costs associated with engagement of a Buyer’s Self-Contained WWTP Contractor (including increased redesign costs and expenses) if the Chosen WWTP Work Contractor cannot accommodate Buyer’s Construction Schedule and Buyer must engage another Buyer’s Self-Contained WWTP Contractor; and (v) additional or incremental increases in contractor fees associated with any of the foregoing. In the event of a Buyer O/M Failure Event, Buyer shall use commercially reasonable efforts to provide its estimate of Buyer’s Self-Contained WWTP Work Costs to Seller within ninety (90) days after the Permit Deadline.

“Buyer’s Self-Contained WWTP Work Costs Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Buyer’s Self-Contained WWTP Work Costs Requisition Threshold” shall mean an amount equal to (A) \$2,543,303 (i.e. the Original WWTP Work Estimate), less (B) the amount of Final On-Site WWTP Escrow Funds actually funded into the escrow which is the subject of the WWTP Escrow Agreement pursuant to the Twelfth Amendment and Section 4 hereof.

“Buyer’s Self-Contained WWTP Work Deferral Period” shall mean the period commencing on the Effective Date and continuing until the date Buyer (i) makes a Buyer’s Self-Contained WWTP Work Election, (ii) finalizes using all reasonable due diligence all relevant design and construction contracts associated therewith and obtain all required permits and approvals therefor, and (iii) is prepared to provide a notice to proceed to Buyer’s Self-Contained WWTP Contractor for the performance of the Buyer’s Self-Contained WWTP Work promptly after obtaining all permits and approvals therefor.

“Buyer’s Self-Contained WWTP Work Election” shall have the meaning set forth in Section 5.2(a) hereof.

“Buyer’s WWTP Damages” shall collectively mean, as applicable pursuant to the terms of this Agreement and the LDA, (i) Buyer’s Project Delay Liquidated Damages, (ii) Buyer’s Increased Project Costs, (iii) Buyer’s Self-Contained WWTP Work Costs which exceed the Buyer’s Self-Contained WWTP Work Costs Requisition Threshold, and (iv) Buyer’s WWTP Self-Help Costs. Buyer’s WWTP Damages (and each component comprising such damages in the foregoing clauses (i) through (iv)) shall specifically exclude any costs, expenses, damages, liabilities or losses incurred or sustained by Buyer which are attributable to delays caused by Buyer or its applicable agents, consultants, engineers, or contractors with respect to the development, design or construction of the Buyer’s Project which are independent of and unrelated to Seller’s performance of the Seller’s WWTP Work.

“Buyer’s WWTP Damages Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Buyer’s WWTP Self-Help Costs” shall have the meaning set forth in Section 5.2(d) hereof.

“Buyer’s WWTP Self-Help Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Construction Schedule” means each of Buyer’s Construction Schedule and Seller’s Construction Schedule, as applicable.

“Escrow Agent” shall have the meaning set forth in Section 4 hereof.

“Force Majeure Delay” shall mean a delay or stoppage of each of Seller’s WWTP Work and the development of Buyer’s Project (including the Buyer’s Retained WWTP Work) caused by a state-imposed shutdown or statewide restrictions on the permitting and/or performance of construction activities. In no event shall a party’s financial condition or inability to fund or obtain funding or financing constitute a Force Majeure Delay.

“Governmental Authorities” shall mean any and all governmental or quasi-governmental authorities with jurisdiction over the Seller’s WWTP Work or any other applicable work which is the subject of this Agreement.

“Seller’s Construction Schedule” means the construction schedule for the Seller’s WWTP Work as provided on Exhibit B attached hereto, as the same may be updated by Seller’s Work Contractor from time to time, and which updates shall be promptly delivered to Buyer.

“Seller’s Groundwater Discharge Permit” shall mean the permit that Seller will require from Massachusetts Department of Environmental Protection (“DEP”) to discharge Returned Effluent into the Buyer’s Leaching Field.

“Seller’s Work Contract” means the contract(s) entered into with the Seller’s Work Contractor for the Seller’s WWTP Work, as the same may be amended from time to time.

“Seller’s Work Contractor” means the contractor(s) engaged by Seller to perform the Seller’s WWTP Work.

“Seller’s WWTP Escrow Release Requisition” shall have the meaning assigned thereto in the WWTP Escrow Agreement.

“Seller’s WWTP Improvements” shall mean all utility lines, equipment, facilities, force mains, pumps, meters and related improvements which are required to effectively and legally receive, carry and treat Buyer’s Project Effluent, to return Returned Effluent to the Buyer’s Leaching Field and to otherwise bring and appropriately measure public sanitary sewer service to Buyer’s Project (collectively, “Buyer’s Project Wastewater Requirements”), as more fully (or will be more fully) detailed in the Seller’s WWTP Work Plans, including without limitation: (i) certain alterations or modifications to the Town Wastewater Treatment Plant required to receive and treat effluent from Buyer’s Project and return the Returned Effluent to Buyer’s Leaching Field (the “Town WWTP Modifications”), and (ii) force mains, meters, pumps and related fixtures, equipment and improvements which will generally run along or in close proximity to U.S. Route 20, will carry (and appropriately measure) Buyer’s Project Effluent from the boundary line of Buyer’s Property at the point of connection with the Buyer’s Retained WWTP Improvements to the Town Wastewater Treatment Plant and will carry (and appropriately measure) Returned Effluent from the Town Wastewater Treatment Plant once treated to Buyer’s Leaching Field (the “Force Main Improvements”). For avoidance of doubt, the Town WWTP Modifications shall not include those elective upgrades which Seller may make to the Town Wastewater Treatment Plant that are not necessary to satisfy the Buyer’s Project Wastewater Requirements.

“Seller’s WWTP Work” (also referred to herein sometimes as the “Seller’s Work”) means the work to be performed by Seller to install or construct the Seller’s WWTP Improvements as detailed in the Seller’s WWTP Work Plans and Seller’s WWTP Work Permits.

“Seller’s WWTP Work 50% Completion” means, collectively, Seller’s WWTP Work 50% Force Main Completion and Seller’s WWTP Work 50% Town WWTP Modifications Completion.

“Seller’s WWTP Work 50% Force Main Completion” means that 50% of the total linear feet of the force mains required to be installed as part of the Force Main Improvements, including 50% of those force mains which are to be located within Massachusetts DOT jurisdictional rights-of-way (“MA DOT ROWs”) as part of Seller’s WWTP Work (the “DOT Force Mains”), have been installed in accordance with the Seller’s WWTP Work Plans, Seller’s Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that such level of completion has been achieved, along with an updated version of Seller’s Construction Schedule evidencing same.

“Seller’s WWTP Work 50% Town WWTP Modifications Completion” means that 50% of the Town WWTP Modifications are completed in accordance with the Seller’s WWTP Work Plans, Seller’s Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that such level of completion has been achieved, along with an updated version of Seller’s Construction Schedule evidencing same.

“Seller’s WWTP Work Acceptance and Disposal Completion” shall mean that Seller’s WWTP Improvements are completed to such a level that they can legally accept and dispose of Buyer’s Project Effluent, all in accordance with the Seller’s WWTP Work Plans, Seller’s Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that such level of completion has been achieved.

“Seller’s WWTP Work Final Completion” means that (i) all Seller’s WWTP Improvements are fully completed in a lien-free manner in accordance with the Seller’s WWTP Work Plans, Seller’s WWTP Work Permits and all Applicable Legal Requirements, as confirmed by receipt and delivery to Buyer of a certification by the Seller’s architect or engineer of record and Seller’s Work Contractor that

such level of completion has been achieved; (ii) applicable Governmental Authorities have issued a certificate of completion respecting the Seller's WWTP Work or its functional equivalent permitting the lawful use of the Seller's WWTP Improvements for their intended purpose; (iii) the Seller's WWTP Improvements are otherwise fully functional and ready to receive, carry and treat all Buyer's Project Effluent and return the Returned Effluent to the Buyer's Project subject only to the completion of any unfinished Buyer's Retained WWTP Work; and (iv) subject to Buyer's compliance with Section 2(e) below, Seller shall have been issued a Seller's Groundwater Discharge Permit.

"Seller's WWTP Work Milestone" shall mean each of the following: (i) submission of all required applications, documents, requests or other filings for the Seller's WWTP Work Permits ("Seller's WWTP Permit Submissions"); (ii) (1) receipt of all Seller's WWTP Work Permits and (2) (y) a draft of Buyer's Project O/M Agreement shall have been provided to Buyer and (z) the consent of Seller's engineer for Seller's WWTP Work substantially in the form attached hereto as Exhibit C (or in such other form mutually agreed to by Seller, Buyer, and such engineer) shall have been provided to Buyer (collectively, clauses (y) and (z), the "Additional WWTP Documents"); (iii) the full execution and delivery of Seller's Work Contract by Seller and Seller's Work Contractor for the full scope of the Seller's WWTP Work, together with the issuance of a notice to proceed to Seller's Contractor (collectively, "Seller's Work Contract Execution"); (iv) Seller's WWTP Work 50% Completion; (v) Seller's WWTP Work Acceptance and Disposal Completion; and (vi) Seller's WWTP Work Final Completion.

"Seller's WWTP Work Milestone Achievement Evidence" shall be mean evidence in a written notification from Seller to Buyer (including all requisite supporting documentation therefor described in the definition of each applicable milestone) confirming that Seller has achieved a particular Seller's WWTP Work Milestone.

"Seller's WWTP Work Milestone Deadline" shall mean each of the following dates for each applicable Seller's WWTP Work Milestone:

- February 15, 2021** – Seller's WWTP Permit Submissions
- April 30, 2021** (the "Permit Deadline") - Receipt of all Seller's WWTP Work Permits (other than the Seller's Groundwater Discharge Permit) and Delivery of the Additional WWTP Documents
- May 15, 2021** – Seller's Work Contract Execution
- September 1, 2021** – Seller's WWTP Work 50% Completion
- October 1, 2021** – Seller's WWTP Work Acceptance and Disposal Completion
- January 15, 2022** – Seller's WWTP Work Final Completion

"Seller's WWTP Work Permits" shall mean all any and all permits, approvals, easements, licenses, right-of-way condemnation actions, and consents required from any applicable Governmental Authorities or any other third parties which are required in order to allow for the performance and completion of the Seller's WWTP Work and the effective operation of the WWTP System once completed, including without limitation (i) any and all permits or approvals required from or under the Massachusetts Department of Transportation and the Massachusetts Department of Environmental Protection; and (ii) any approvals, easements, or licenses required from third-party property owners in order to construct the Seller's WWTP Improvements.

"Seller's WWTP Work Plans" means the plans and specifications for the Seller's WWTP Work described in Exhibit A attached hereto and made a part hereof, as the same may be updated or advanced from time to time in accordance with this Agreement and are deemed to include the Final Plans once approved pursuant to the provisions hereof.

“WWTP Easement Agreement” shall mean the Grant of Easements (Wastewater Facilities) entered into between the Buyer and Seller on or about the date hereof which, among other things, includes a grant of certain easements by Buyer to Seller (and attendant covenants of Seller) for the ongoing operation and maintenance of the Buyer’s Retained WWTP Improvements once completed.

“WWTP Escrow Agreement” shall have the meaning set forth in Section 4 hereof.

“WWTP Escrow Funds” shall have the meaning set forth in Section 4 hereof.

“WWTP System” shall mean, collectively, the Buyer’s Retained WWTP Improvements and the Seller’s WWTP Improvements.

2. CONSTRUCTION PLANNING, PERMITTING AND CONSTRUCTION OF THE SELLER’S WWTP IMPROVEMENTS.

(a) Preparation and Approval of Plans for Seller’s WWTP Work.

- i. 50% Plans. Attached as Exhibit A to this Agreement are 50% complete engineered working drawings for all of the Seller’s WWTP Improvements (the “50% Plans”). Buyer shall grant or deny its approval of the 50% Plans, which shall not be unreasonably withheld, conditioned or delayed, by February 17, 2021. If Buyer fails to grant or deny its consent to the 50% Plans by February 17, 2021, it shall be deemed that Buyer has approved the 50% Plans. If Buyer withholds its consent to the 50% Plans, Buyer shall provide reasonably detailed comments setting out the specific reasons that Buyer has not approved (or is deemed to approved) the 50% Plans. This process shall continue until Buyer has approved the 50% Plans, except that Buyer shall only have five (5) business days to approve or withhold its consent to each submittal to Buyer of subsequent drafts of the 50% Plans following the initial submittal thereof, and failure of Buyer to timely approve or withhold its consent within such 5-business day period shall mean that the 50% Plans are deemed approved. Buyer’s approval of the 50% Plans hereunder will in no event constitute a representation or warranty by Buyer as to the adequacy or sufficiency of such plans, or the improvements to which they relate, for any use, purpose or condition, but such approval shall constitute Buyer’s confirmation that, among other things, the 50% Plans depict appropriate connections to and with the Buyer’s Retained WWTP Improvements at the boundary line of Buyer’s Property. During any period of time the Buyer is reviewing and commenting on the 50% Plans beyond the initial February 17, 2021 review period noted above, the period(s) of time of such review and commentary beyond the initial February 17, 2021 review period (until the 50% Plans are approved or deemed approved by Buyer) shall be added to Seller’s WWTP Work Milestone Deadline with respect to Seller’s WWTP Permit Submissions.
- ii. Final Plans. Seller shall, at its sole cost and expense, cause complete engineered working drawings for all of the Seller’s WWTP Improvements (the “Final Plans”) to be prepared by March 1, 2021.

Seller shall submit the Final Plans to Buyer for its approval, which shall not be unreasonably withheld, conditioned or delayed so long as the Final Plans are materially consistent with the Seller's 50% Plans. Buyer shall grant or deny its approval of the Final Plans within three (3) business days after Buyer's receipt of same. If Buyer fails to grant or deny its consent to the Final Plans within such 3-business day period, it shall be deemed that Buyer has approved the Final Plans. If Buyer withholds its consent to the Final Plans, Buyer shall provide reasonably detailed comments setting out the specific reasons that Buyer has not approved (or is deemed to approved) the Final Plans. This process shall continue until Buyer has approved the Final Plans. Buyer's approval of the Final Plans hereunder will in no event constitute a representation or warranty by Buyer as to the adequacy or sufficiency of such plans, or the improvements to which they relate, for any use, purpose or condition, but such approval will merely be the consent of Buyer to such plans so that Buyer can confirm, among other things, appropriate connections to and with the Buyer's Retained WWTP Improvements at the boundary line of Buyer's Property; provided, however, that if Seller constructs the Seller's WWTP Improvements in accordance with the Final Plans as approved by Buyer, the Buyer shall be precluded from later making a claim that the Seller's WWTP Improvements are not compatible for connection to and with the Buyer's Retained WWTP Improvements. Once the Final Plans are approved or deemed approved pursuant to the foregoing process, Seller will not modify such plans in a manner that would negatively impact the Buyer's Project or the Buyer's Retained WWTP Improvements (including the scope, timing or cost thereof) without again complying with the approval requirements set forth hereinabove with respect to any such proposed changes. During any period of time the Buyer is reviewing and commenting on the Final Plans beyond the initial 3-business day review period noted above, the period(s) of time of such review and commentary beyond the initial 3-business day period (until the Final Plans are approved or deemed approved by Buyer) shall be added to Seller's WWTP Work Milestone Deadline with respect to Seller's WWTP Permit Submissions.

(b) Permitting and Construction of Seller's WWTP Improvements. Once the Final Plans are approved or deemed approved pursuant to subsection (a) above, Seller will, at its sole cost and expense, diligently and expeditiously prepare all relevant Seller's WWTP Permit Submissions and otherwise pursue the procurement of all Seller's WWTP Work Permits. Upon receipt of all Seller's WWTP Work Permits, Seller shall, at its sole costs and expense, construct Seller's WWTP Improvements in compliance with all Applicable Legal Requirements, the Final Plans, the Seller's WWTP Work Permits and otherwise in a good and workmanlike manner employing new materials of good quality. Seller agrees to diligently prosecute the design, permitting, construction and completion of the Seller's WWTP Improvements, and without limiting the generality of the foregoing, agrees to cause all Seller's WWTP Work Milestones to be achieved by the applicable Seller's WWTP Work Milestones established therefor, subject to Section 8 hereof and any Gas Line Work Priority Stoppage (as hereinafter defined). Seller acknowledges and agrees that it shall be solely responsible for any and all costs associated with the design, permitting and construction of the WWTP Seller's Work Improvements, without any

compensation or remuneration due from Buyer, subject only to those Release Amounts which Seller may be entitled to receive pursuant to subsection (c) below. If, during the course of the performance of the Seller's WWTP Work, the company responsible for bringing gas service to the Buyer's Project, including applicable contractors engaged thereby, are prepared to begin installing gas lines and other infrastructure ("Gas Line Work") in MA DOT ROWs (including U.S. Route 20) to serve Buyer's Project and the Massachusetts Department of Transportation ("MassDOT") or any other applicable Governmental Authority will not allow applicable portions of the Seller's WWTP Work and the Gas Line Work to occur simultaneously within the MA DOT ROWs, the Gas Line Work will take priority over Seller's WWTP Work and Seller will cause Seller's Work Contractor to stop work in the applicable portions of the MA DOT ROWs while such Gas Line Work is being performed (a "Gas Line Work Priority Stoppage"). Upon the occurrence of any Gas Line Work Priority Stoppage, each of Seller's WWTP Work Milestone Deadlines (beginning with the Seller's WWTP Work Milestone Deadline of September 1, 2021) shall be delayed on a day-for-day basis for the duration of any Gas Line Work Priority Stoppage. Seller agrees to use reasonable efforts to coordinate its work plan for Seller's WWTP Work with MassDOT and such Gas Line Work company in an attempt to allow the Seller's WWTP Work and the Gas Line Work to occur contemporaneously so as to avoid a Gas Line Work Priority Stoppage, and Buyer agrees to use reasonable efforts to cause such Gas Line Work company to coordinate its work plan for the Gas Line Work with MassDOT and Seller accordingly.

(c) Release of WWTP Escrow Funds Upon Satisfaction of Certain Seller's WWTP Work Milestones. Provided that Buyer has not already made a Buyer's Self-Contained WWTP Work Election or exercised the Self-Help Remedy in accordance with the terms of this Agreement, Seller may deliver to Buyer and Escrow Agent a Seller's WWTP Escrow Release Requisition demanding the release of WWTP Escrow Funds in the following amounts (each, a "Release Amount"; collectively, the "Release Amounts") *after* achieving each of the following Seller's WWTP Work Milestones:

- \$829,275 (the "Building Permit Fee"), upon Seller's receipt of all Seller's WWTP Work Permits (other than the Seller's Groundwater Discharge Permit);
- \$905,725, upon Seller's WWTP Work 50% Completion; and
- The balance of the WWTP Escrow Funds

Notwithstanding the foregoing or anything herein to the contrary, subject to the last sentence of this Section 2, (w) upon the occurrence of a Seller Event of Default, no Release Amounts shall be disbursed from the WWTP Escrow Funds unless and until Seller's WWTP Work Final Completion occurs, at which time the remaining WWTP Escrow Funds will be released to Seller pursuant to a final Seller's WWTP Escrow Release Requisition, subject to the ensuing provisions of this Section 2, and the terms of the WWTP Escrow Agreement, (x) in the event Seller fails to achieve either Seller's WWTP Acceptance and Disposal Completion or Seller's WWTP Work Final Completion on or prior to the Seller's WWTP Work Milestone Deadlines established therefor, no Release Amounts shall be disbursed from the WWTP Escrow Funds until the Buyer's Project Initial T/C/O Date, so as to afford Buyer sufficient time to calculate any and all applicable Buyer's WWTP Damages and make requisition therefor under the WWTP Escrow Agreement as applicable, (y) if there are insufficient funds to satisfy any Release Amount(s) due to Buyer's exercise of remedies set forth in Section 5.2 below, the applicable Release Amount(s) shall be reduced accordingly so that it only equals the amount of WWTP Escrow Funds then remaining; and (z) if Buyer has made requisitions pursuant to the WWTP Escrow Agreement to draw down WWTP Escrow Funds to pay or reimburse Buyer for Buyer's Project Delay Liquidated Damages and/or Buyer's Increased Project Costs pursuant to Section 5(b-c) below and such draws are either (1) pending at the time of Seller's WWTP Escrow Release Requisition, or (2) requisitioned within five (5) business days after Seller's WWTP Escrow Release Requisition, Seller shall only be entitled to receive as Release Amount(s) that portion of the WWTP Escrow Funds which are not the subject of such Buyer requisition(s), and the applicable Release Amount(s) shall be reduced accordingly.

Notwithstanding the foregoing, the Building Permit Fee shall be released to Seller on the earlier to occur of (i) Seller's receipt of all Seller's WWTP Work Permits, and (ii) June 30, 2021.

(d) Buyer's Project O/M Fees and Buyer's Project O/M Agreement. Prior to the Permit Deadline, Buyer shall use commercially reasonable, good faith efforts to finalize the Buyer's Project O/M Fees and Buyer's Project O/M Agreement with the Wastewater Governing Authority on terms reasonably acceptable to Buyer. In the event that, despite its good faith efforts, Buyer is unable to reach an agreement with the Wastewater Governing Authority regarding the Buyer's Project O/M Fees by the Permit Deadline (a "Buyer O/M Failure Event"), Buyer shall have the right to make a Buyer's Self-Contained WWTP Work Election pursuant to Section 5.2(a) below, which election must be made, if at all, by the date which is 10 business days after the Permit Deadline. If Buyer fails to make such election within the foregoing 10-business day period, it will forfeit the right to make a Buyer's Self-Contained WWTP Work Election under this Section 2(d).

(e) Release of Permit for Buyer's Self-Contained WWTP Improvements. Buyer has obtained a groundwater discharge permit from DEP for Buyer's Self-Contained WWTP Improvements ("Buyer's Groundwater Discharge Permit"). DEP has informed Seller that DEP will issue Seller's Groundwater Discharge Permit only after Buyer releases Buyer's Groundwater Discharge Permit. Accordingly, at such time as DEP has indicated to Seller that it is prepared to issue to the Seller's Groundwater Discharge Permit, but in no event earlier than the date upon which Seller has achieved Seller's WWTP Work Acceptance and Disposal Completion, Seller may request that Buyer release the Buyer's Groundwater Discharge Permit to DEP (a "Discharge Permit Tender Request"), and promptly upon receipt of a timely-delivered Discharge Permit Tender Request, Buyer shall release to DEP (or as otherwise directed by DEP) Buyer's Groundwater Discharge Permit.

3. CONSTRUCTION REPRESENTATIVES. Seller appoints the following person(s) as Seller's representative ("Seller's Representative") to act for Seller in all matters covered by this Agreement, including the receipt of applicable notices hereunder:

Louise L.E. Miller, J.D.
Town Administrator
Town of Wayland
41 Cochituate Road
Wayland, MA 01778
O: (508) 358-3620
Email: lmiller@wayland.ma.us

Buyer appoints the following person(s) as Buyer's representative ("Buyer's Representative") to act for Buyer in all matters covered by this Agreement, including the receipt of applicable notices hereunder.

Jim Lambert
c/o WP East Acquisitions, L.L.C.
91 Hartwell Avenue
Lexington, MA 02421
Phone: 781.541.5822
Email: jim.lambert@woodpartners.com

All communications with respect to the matters covered by this Agreement are to be made to Seller's Representative or Buyer's Representative, as the case may be, in writing, in compliance with the notice provisions of the LDA (except that only Seller's Representative and Buyer's Representative are the only

parties that need be named in any applicable notification). Either party may change its representative and/or address under this Agreement at any time by written notice to the other party in compliance with the notice provisions of the LDA.

4. WWTP ESCROW AGREEMENT. Concurrently with the execution of this Agreement and the acquisition by Buyer of Buyer's Property, Buyer, Seller and First American Title Insurance Company ("Escrow Agent") are entering into an agreement entitled WWTP Escrow Agreement (the "WWTP Escrow Agreement") pursuant to which \$2,587,588.00 are being funded into escrow by Seller and Buyer (through a combination of Net Purchase Price proceeds and sources of funds outside of the Closing escrow) (collectively, the "WWTP Escrow Funds"), and such funds will be held and disbursed pursuant to this Agreement and the WWTP Escrow Agreement. At such time as Buyer deposits the Final On-Site WWTP Escrow Funds pursuant to Section 4(c)(ii) of the Twelfth Amendment, such funds shall become part of the WWTP Escrow Funds for all purposes under this Agreement and the WWTP Escrow Agreement.

5. SELLER DEFAULT; BUYER REMEDIES.

5.1 Seller Events of Default. Subject to Section 8 hereof, the occurrence of any one or more of the following shall constitute a "Seller Event of Default" under this Agreement:

(a) Seller or Seller's Work Contractor shall file any bankruptcy proceeding; or any proceeding under bankruptcy laws or other debtor-relief or similar laws shall be brought against Seller or Seller's Work Contractor and is not dismissed within 60 days after the filing thereof; or Seller or Seller's Work Contractor shall make an assignment for the benefit of creditors or file for any form of reorganization or arrangement under any bankruptcy law or other debtor-relief a similar law or proceeding;

(b) Once commenced, (1) any portion of the Seller's WWTP Work shall cease and not be resumed within 30 days thereafter; or (2) construction of the Seller's WWTP Work is abandoned;

(c) Seller falls behind schedule for completion of the Seller's WWTP Improvements by more than 30 days and does not, within 10 business days after receipt of notice from Buyer, deliver to Buyer a critical path recovery schedule updating Seller's Construction Schedule to reflect that Seller's WWTP Work Final Completion will still occur by the Seller's WWTP Milestone Deadline established therefor;

(d) Seller fails to deliver Seller's WWTP Work Milestone Achievement Evidence for any Seller's WWTP Work Milestone by the applicable Seller's WWTP Work Milestone Deadline established therefor. For avoidance of doubt, the Seller's WWTP Work Milestone will actually need to be satisfied or completed in order for a Seller's WWTP Work Milestone Achievement Evidence to be valid pursuant to the foregoing sentence.

5.2 Buyer Remedies. Upon a Seller Event of Default (or, in the case of a Buyer O/M Failure Event pursuant to Section 2(d) above as it concerns and is limited to a Buyer's Self-Contained WWTP Work Election), Buyer will have the following rights and remedies:

(a) Buyer's Self-Contained WWTP Work Election. Buyer shall have the right (but not the obligation), upon written notice to Seller, to elect to perform the Buyer's Self-Contained WWTP Work (the "Buyer's Self-Contained WWTP Work Election"). In the event the Buyer makes the Buyer's Self-Contained WWTP Work Election, (i) Seller will no longer be required to complete the Seller's WWTP

Improvements, (ii) Buyer shall construct the Buyer's Self-Contained WWTP Improvements in accordance with the plans, permits and other Approvals therefor and Applicable Legal Requirements, (iii) Buyer shall have the right to draw down on the WWTP Escrow Funds in order to pay for Buyer's Self-Contained WWTP Work Costs in excess of the Buyer's Self-Contained WWTP Work Costs Requisition Threshold as and when incurred pursuant to one or more Buyer's Self-Contained WWTP Work Costs Requisitions, and (iv) the WWTP Easement Agreement shall automatically terminate and be of no further force and effect, and Seller shall cooperate with Buyer in executing and recording any documentation necessary to terminate such WWTP Easement Agreement of record. Seller acknowledges and agrees that it will have no right to object to or disapprove any Buyer's Self-Contained WWTP Work Costs Requisition absent manifest error, so long as such requisition includes the Supporting Documentation required by the WWTP Escrow Agreement (and even then Seller's ability to object to the requisition will be as limited by the WWTP Escrow Agreement).

(b) Buyer's Project Delay Liquidated Damages. In the event of a Seller Event of Default with respect to Seller's failure to timely achieve the Seller's WWTP Work Milestone for Seller's WWTP Work Acceptance and Disposal Completion and such failure causes a Buyer's Project Delay with respect to delay of the issuance of a temporary certificate of occupancy for Buyer's Project by the Buyer's Project Initial T/C/O Date, Buyer will have the right to make a requisition on the WWTP Escrow Funds to pay or compensate Buyer for Buyer's Project Delay Liquidated Damages pursuant to a Buyer's Project Delay LD Requisition. At such time as the actual duration of Buyer's Project Delay is known based on when Buyer's Project Initial T/C/O Date actually occurs or is scheduled to occur, Buyer may make a Buyer's Project Delay LD Requisition within five (5) business days after the determination of such actual duration of Buyer's Project Delay.

(c) Buyer's Increased Project Costs. In the event of a Seller Event of Default which results in Buyer's Increased Project Costs, Buyer will have the right to draw down on the WWTP Escrow Funds to pay or compensate Buyer for Buyer's Increased Project Costs, as and when such Buyer's Increased Project Costs are finally determined, by making a Buyer's Project Increased Project Costs Requisition.

(d) Self-Help Remedy. Buyer shall have the right (but not the obligation) to assume control of all or a portion of the Seller's WWTP Work (the "Self-Help Remedy") upon at least 10 business days' written notice to Seller (a "Takeover Notice"). Upon issuance of a Takeover Notice, (i) Seller shall cease the performance of any Seller's WWTP Work so taken over, (ii) Buyer shall promptly and diligently prosecute and complete the Seller's WWTP Work, (iii) Buyer shall be entitled to draw down from the WWTP Escrow Funds under the WWTP Escrow Agreement pursuant to one or more Buyer's WWTP Self-Help Requisitions in accordance with the terms thereof to pay for all costs and expenses associated with the work taken over as if Buyer were Seller thereunder (collectively, "Buyer's WWTP Self-Help Costs"), (iv) [intentionally omitted]; and (v) to the extent deemed necessary by the applicable permit granting authority to complete the portion of the Seller's WWTP Work taken over, Seller hereby assigns to Buyer its interest under (A) any and all permits, licenses, variances, plans and approvals required in order to complete the work taken over and (B) any and all design, engineering, construction and development contracts related to same (collectively, "Approvals and Contracts"). Additionally, within five (5) business days after entering into Seller's Work Contract, to the extent such language is not included within the Seller's Work Contract itself, Seller will cause Seller's Work Contractor to deliver a consent document in a form reasonably agreed to by Buyer and Seller's Work Contractor which shall acknowledge Buyer's rights should it exercise the Self-Help Remedy hereunder. Seller hereby covenants that it shall, at any time and from time to time upon written request thereof, promptly execute and deliver to Buyer any new or confirmatory instruments and do and perform any other acts which Buyer may reasonably request in order to fully assign and transfer to and vest in Buyer, and protect Buyer's right, title and interest in and to each and all of the Approvals and Contracts intended to be transferred and assigned hereby. Additionally, if Buyer exercises the Self-Help Remedy, Buyer shall provide or cause

Buyer's Contractor (or, as the case may be, Seller's Work Contractor as engaged by Buyer) to provide to Seller, within a reasonable time after Seller's request for the same, all necessary documentation, in order to satisfy requirements imposed upon Seller by Seller's MassWorks's infrastructure funding grant for the Seller's WWTP Improvements so that Seller can continue to receive such funding under the terms of such grant ("Seller's Grant Funds"). Seller agrees to use commercially reasonable efforts to cause Seller's Work Contractor to provide all such necessary documentation with respect to Seller's Grant Funds, and Seller agrees that it shall be a requirement of Seller's Work Contract that Seller's Work Contractor provide such necessary documentation.

(e) Other Recourse; WWTP Escrow Funds Exhausted. Buyer may pursue any other rights and remedies at law or equity in connection with such Seller Event of Default; *provided, however*, that Buyer will first seek recourse pursuant to one or more of the remedies set forth above and through Buyer's WWTP Damages Requisitions made pursuant to the WWTP Escrow Agreement prior to resorting to this subsection (e). Without limiting the foregoing, to the extent the funds then remaining in the WWTP Escrow Agreement are not sufficient to pay for any Buyer's WWTP Damages, Buyer shall have the right to submit invoices to Seller for direct reimbursement, which shall be paid by Seller within 30 days of written demand therefor and if such amounts are not timely paid. Notwithstanding the foregoing, Seller's liability for Buyer's Project Delay Liquidated Damages shall be limited to an amount equal to (i) the WWTP Escrow Funds then being held in escrow at the time Buyer makes a Buyer's Project Delay LD Requisition, *plus* (ii) any amounts previously released to Seller as Released Amounts hereunder (excluding the Building Permit Fee).

(f) Cumulative Rights; No Election of Remedies. All rights, remedies, powers, and privileges conferred hereunder upon the Buyer will be cumulative. An exercise of one remedy by Buyer shall not be deemed an election of remedies by Buyer, and Buyer will have the right to pursue any and all other remedies available to it; *provided, however*, Buyer acknowledges and agrees that the exercise of one remedy may preclude the exercise of another, as certain remedies set forth above are mutually exclusive (e.g. Buyer cannot make a Buyer's Self-Contained WWTP Work Election and then exercise a Self-Help Remedy, as such remedies are mutually exclusive, but the Buyer may incur Buyer's Self-Contained WWTP Work Costs or Buyer's Increased Project Costs while also sustaining Buyer's Project Delay Liquidated Damages and pursue remedies with respect to same on a cumulative basis).

6. COUNTERPARTS; SEVERABILITY. This Agreement may be executed in multiple counterparts and on separate counterparts, each of which shall be deemed to be an original and all of which shall together constitute one and the same agreement. Electronic, facsimile or .pdf signatures shall have the same force and effect as original signatures. The parties hereto intend to be bound by the signatures on the electronic, facsimile or .pdf document, and hereby waive any defenses to the enforcement of the terms of this Agreement based on the use of an electronic, facsimile or .pdf signature. If any provisions of this Agreement or the application thereof to any person or circumstances shall, to any extent, be invalid or unenforceable, the remainder of this Agreement by the application of such provision or provisions to persons or circumstances other than those as to whom or which it is held invalid or unenforceable shall not be affected thereby, and every provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law; provided, however, that if any of the provisions of this Agreement or the application thereof shall to any extent be invalid or unenforceable to one or more but not all of the parties, then this Agreement shall be valid and enforceable as to the other party or parties only to the extent that the same is equitable and consistent with the overall purposes of this Agreement.

7. ATTORNEYS' FEES. If any action is brought by a party to this Agreement against another party, relating to or arising out of this Agreement, the transaction described herein or the enforcement hereof, the prevailing party shall be entitled to recover from such party reasonable attorneys'

fees, costs and expenses incurred in connection with the prosecution or defense of such action. The provisions of this Section 7 shall survive the entry of any judgment, and shall not merge, or be deemed to have merged, into any judgment.

8. FORCE MAJEURE DELAY. The duties and obligations of Seller to observe or perform any of the terms or provisions of this Agreement shall be excused and extended for a period equal to the period of any Force Majeure Delay; *provided, however*, the period for which Seller may claim a Force Majeure Delay hereunder shall only extend for the period of time that Buyer is also prohibited or restricted from performing work on Buyer's Project due to such Force Majeure Delay (the "Max FM Period"). Without limiting the foregoing, all Seller's WWTP Work Milestone Deadlines shall be extended for the duration of any Force Majeure Delay, subject to the Max FM Period. If Seller is invoking a Force Majeure Delay in order to extend any applicable deadlines hereunder, it must provide prompt notice to Buyer within 10 days after the commencement thereof and advise of its anticipated duration, and Seller shall take whatever reasonable steps are necessary to relieve the effect of such cause as rapidly as possible.

9. GOVERNING LAW; VENUE FOR LITIGATION. This Agreement shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts. Any litigation based on or arising out of this Agreement shall be brought exclusively in state or federal courts located in the Commonwealth of Massachusetts.

10. TIME. Time is of the essence of this Agreement.

11. AUTHORITY. Each Party certifies to the other that it authorized by all required corporate, limited liability company, partnership action or Board of Selectmen action, as applicable, to enter into this Agreement and the individual(s) signing this Agreement on behalf of such Party are each authorized to bind such Party. Buyer certifies to Seller that it is duly organized, validly existing and in good standing under the laws of its state of organization, and duly qualified to do business in the Commonwealth of Massachusetts.

12. ASSIGNMENT. No Party to this Agreement shall assign or in any manner sell or transfer any of its rights or interest in this Agreement without the prior written consent of the other Party, which consent may be withheld in the non-requesting Party's sole discretion; *provided, however*: (i) that Buyer shall have the right in connection with any existing or future financing secured by Buyer's Property or Buyer's Project to assign for collateral purposes its interest hereunder to any lender(s) providing such financing, and the Seller hereby agrees to execute and deliver any consent or acknowledgment to any such collateral assignment on a commercially reasonable form; and (ii) Buyer, following the issuance of the initial temporary certificate of occupancy for Buyer's Project or otherwise in connection with a permitted assignment under the LDA, will have the right to assign this Agreement to successor(s) in title to the Buyer's Property and/or Buyer's Project.

13. NO WAIVER. Neither the failure of any Party to exercise any power or right given such Party hereunder or to insist upon strict compliance by any other Party with its obligations hereunder, nor any custom or practice of the parties at variance with the terms hereof, shall constitute a waiver of any Party's right to demand exact compliance with the terms hereof.

14. WAIVER OF RIGHT TO TRIAL BY JURY. EACH PARTY HERETO HEREBY KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES THE RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION BASED HEREON OR ARISING OUT OF THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREBY, AND ANY AGREEMENT CONTEMPLATED TO BE EXECUTED IN CONJUNCTION HEREWITH, OR

COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PARTY. THIS PROVISION IS A MATERIAL INDUCEMENT FOR SELLER AND BUYER ENTERING INTO THIS AGREEMENT.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the undersigned Seller and Buyer have caused this Agreement to be duly executed by their duly authorized representatives as of the date hereof.

BUYER:

ALTA RIVER'S EDGE, LLC,
a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its Managing Member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: _____
Name: Jim Lambert
Title: Vice President

SELLER:

TOWN OF WAYLAND

By: _____
Name:
Title:

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By: _____
Name: James Lambert
Title: Vice President

SELLER:

TOWN OF WAYLAND,
By its Board of Selectmen



Cherry C. Karlson, Chair

David V. Watkins

Thomas J. Fay

Mary M. Antes

Lea T. Anderson

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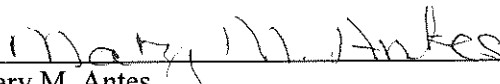
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Lea T. Anderson

:

EXHIBIT A

SELLER'S WWTP WORK PLANS

[SEE ATTACHED FOR 50% PLANS]

TOWN OF WAYLAND BOSTON POST ROAD (ROUTE 20) RIVER'S EDGE SEWER CONNECTION

DPW DIRECTOR

THOMAS HOLDER

TOWN ENGINEER

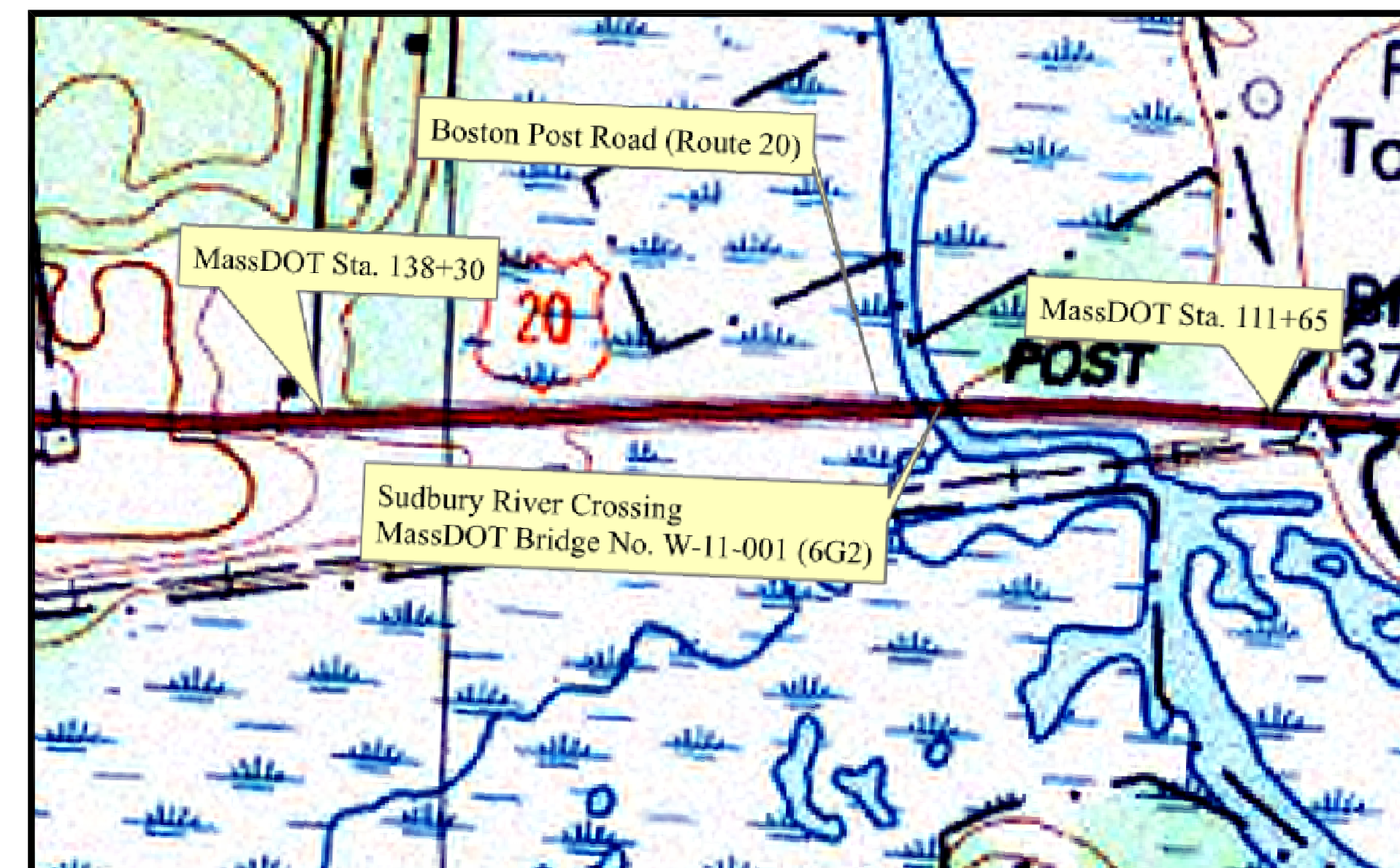
PAUL BRINKMAN, P.E.

WASTEWATER OPERATIONS MANAGER

RICHARD PEZZOLESI

SHEET INDEX

- C-1 - GENERAL NOTES, ABBREVIATIONS, LEGEND, AND PROPOSED RIVER'S EDGE DEVELOPMENT
- C-2 - MASSDOT STA. 138+30 TO MASSDOT STA. 129+93
- C-3 - MASSDOT STA. 129+93 TO MASSDOT STA. 119+59
- C-4 - MASSDOT STA. 119+59 TO MASSDOT STA. 110+91
- C-5 - DETAIL SHEET I
- C-6 - DETAIL SHEET II
- D-1 - PROPOSED PIPING PLAN
- TR-1 - TRAFFIC MANAGEMENT PLAN SHEET I
- TR-2 - TRAFFIC MANAGEMENT PLAN SHEET II



LOCATION PLAN
NO SCALE

JANUARY 2021



TATA & HOWARD

50%
DRAFT
JANUARY
2021

GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWN OF WAYLAND. ALL EXCAVATION AND RESTORATION SHALL MEET TOWN SPECIFICATIONS.
- THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- STATIONING ALONG THE LENGTH OF THE WATER MAIN IS INTENDED FOR GENERAL REFERENCE. WHERE PRECISE GROUND LOCATION IS REQUIRED, REFER TO ACTUAL FIELD MEASUREMENTS FOR ACTUAL DISTANCES FROM EXISTING GROUND FEATURES.
- AREAS WITHIN THE 100-FOOT BUFFER ZONE OF A BORDERING VEGETATED WETLAND ARE SUBJECT TO AN ORDER OF CONDITIONS ISSUED BY THE WAYLAND CONSERVATION COMMISSION.
- THE CONTRACTOR SHALL UTILIZE THE SOUTH LANDFILL LOCATED ON THE SOUTH SIDE OF BOSTON POST ROAD (NEAR MASSDOT STA. 11+30) FOR STAGING EQUIPMENT AND STOCKPILING MATERIALS. CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES AROUND THE PERIMETER OF THE STAGING AREA. ANY ADDITIONAL STAGING AREAS SHALL BE ESTABLISHED OUTSIDE OF A 100-FOOT BUFFER ZONE OR 200-FOOT RIVERFRONT AREA. FOR THE STORAGE OF EQUIPMENT AND STOCKPILING OF MATERIALS, NO STORAGE OF GASOLINE, OIL OR OTHER FUEL OR HAZARDOUS MATERIALS IS PERMITTED WITHIN THE 100-FOOT BUFFERZONE OR 200-FOOT RIVERFRONT AREA. STAGING AREA LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER.
- STOCKPILES SHALL BE LOCATED AS NEEDED, WITHIN THE LIMIT OF WORK, IN AREAS OF MINIMAL IMPACT.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH WORK DAY.
- THE CONTRACTOR AT HIS EXPENSE SHALL BRACE UTILITY POLES IF REQUIRED, AND REPAIR ANY DAMAGE TO EXISTING SIDEWALKS, CURBS, PAVING, SHRUBS, TREES, STONE WALLS, LAWNS, ETC. ALL EXCAVATED MATERIALS SHALL BE RETURNED TO EQUAL OR BETTER THAN PRIOR CONDITION BY THE CONTRACTOR.
- ALL EXISTING CONCRETE AND ASPHALT PAVEMENT SHALL BE SAW-CUT PRIOR TO EXCAVATION IN ORDER TO PROVIDE UNIFORM ASPHALT REPLACEMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PAVEMENT MARKINGS, TRAFFIC SIGN LOOPS, STRIPING, ARROWS, CROSSWALKS, ETC.
- ALL EXISTING CONCRETE STRUCTURES THAT REQUIRE CORING NEW INLET OR OUTLET PIPE PENETRATIONS SHALL HAVE A MECHANICAL LINK SEAL INSTALLED AT THE ANNULAR SURFACE BETWEEN THE PIPE OUTER DIAMETER AND THE CORING DIAMETER.
- CONTRACTOR SHALL MAINTAIN PUBLIC ACCESS TO THE BOAT RAMP AT ALL TIMES AT APPROXIMATE MASSDOT STA. 115+50.

SURVEY NOTES

- BASE PLANS AND PROPERTY LINE DETERMINATIONS WERE PREPARED BY WSP USA CORP., (155 MAIN DUNSTABLE ROAD, NASHUA, NH 03060)
- DELINEATION OF BORDERING VEGETATED WETLANDS, AND EDGE OF BANK MEAN ANNUAL HIGH WATER WERE DETERMINED BY ECOTEC, INC (102 GROVE STREET, WORCESTER, MA 01605)
- THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE INTENDED ONLY TO ADVISE THE CONTRACTOR OF THEIR PRESENCE. CALL "DIG SAFE" (1-888-344-7233) FOR FIELD LOCATIONS OF ALL EXISTING UTILITIES.
- BENCH MARKS HAVE BEEN ESTABLISHED BY THE SURVEYOR PRIOR TO THE START OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL BENCHMARKS THROUGHOUT CONSTRUCTION. ANY COST TO RE-ESTABLISH THESE ITEMS WILL BE AT NO COST TO THE OWNER.
- AS APPROPRIATE, CONTRACTOR SHALL TAKE ALL NECESSARY MESASURES, INCLUDING HAND DIGGING, TO MAINTAIN THE INTEGRITY OF THE EXISTING UTILITIES.
- HORIZONTAL DATUM REFERENCED THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD83 AND THE VERTICAL DATUM REFERENCED THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

GEOTECHNICAL NOTES

- BORINGS WERE DRILLED FOR PURPOSES OF DESIGN AND INDICATE SUBSURFACE CONDITIONS AT BORING LOCATION ONLY. SUBSURFACE CONDITIONS MAY VARY FROM THOSE SHOWN IN THE LOG.
- BORING AND TEST PIT LOCATIONS ARE SHOWN ON THE PLANS AND BORING AND TEST PIT LOGS ARE IN THE GEOTECHNICAL DATA REPORT BOUND IN APPENDIX A OF THESE SPECIFICATIONS.
- FOR EARTH EXCAVATION, BACKFILL, FILL AND GRADING, SEE SPECIFICATION 02221.
- FOR DEWATERING SEE SPECIFICATION 02140.
- FOR TEMPORARY EXCAVATION SUPPORT SYSTEM SEE SPECIFICATION 02160.
- CONTRACTOR IS REQUIRED TO SUBMIT COMPACTION REPORTS AS SPECIFIED IN SPECIFICATION SECTION 02221. THE CONTRACTOR SHALL BE STRICTLY HELD TO COMPACTION STANDARDS AS REFERENCE IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR BACKFILLING, COMPACTING, AND STABILIZING ALL WORK DAILY.

EROSION & SEDIMENT CONTROL NOTES

- THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM.
- THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF ALL EROSION CONTROL DEVICES ON-SITE. ALL EROSION CONTROL DEVICES SHALL BE REGULARLY INSPECTED. ANY SEDIMENTS REMOVED FROM THE CONTROL DEVICES SHALL BE DISPOSED OF ON THE UPLAND SIDE OF THE EROSION CONTROL LINE. THE CONTRACTOR SHALL PLACE ADDITIONAL EROSION CONTROL, REGARDLESS OF IT BEING SHOWN ON THE CONTRACT DRAWINGS, AS NECESSARY TO PREVENT SOIL EROSION THROUGHOUT THE PROJECT DURATION. NO WORK SHALL OCCUR BEYOND THE EROSION CONTROL.
- IN THE STAGING AREA, THE CONTRACTOR SHALL HAVE A STOCKPILE OF MATERIALS REQUIRED TO CONTROL EROSION ON-SITE TO BE USED TO SUPPLEMENT OR REPAIR EROSION CONTROL DEVICES. THESE MATERIALS SHALL INCLUDE, BUT ARE NOT LIMITED TO, HAY BALES, SILT FENCE AND CRUSHED STONE.
- AT NO TIME SHALL SILT-LADEN WATER BE ALLOWED TO ENTER SENSITIVE AREAS (WETLANDS, OFF-SITE AREA AND DRAINAGE SYSTEMS). ANY RUNOFF FROM DISTURBED SURFACES SHALL BE DIRECTED THROUGH SETTLING BASINS AND EROSION CONTROL BARRIERS PRIOR TO ENTERING ANY SENSITIVE AREAS.
- NO MATERIALS SHALL BE DISPOSED OF INTO ANY WETLANDS OR EXISTING OR PROPOSED DRAINAGE SYSTEMS. SILT SACKS SHALL BE USED IN ALL CATCH BASINS WITHIN PROJECT LIMITS TO MINIMIZE SILT DEPOSITS INTO DRAINAGE SYSTEM.
- ANY REFUELING OF CONSTRUCTION VEHICLES AND EQUIPMENT SHALL TAKE PLACE OUTSIDE OF ANY 100-FOOT BUFFER ZONE TO ANY WETLANDS.
- IF INTENSE RAINFALL IS ANTICIPATED, THE INSTALLATION OF SUPPLEMENTAL EROSION CONTROL DEVICES SHALL BE LOCATED WITHIN THE DISTRIBUTED AREA, TO MINIMIZE THE TRIBUTARY AREAS.

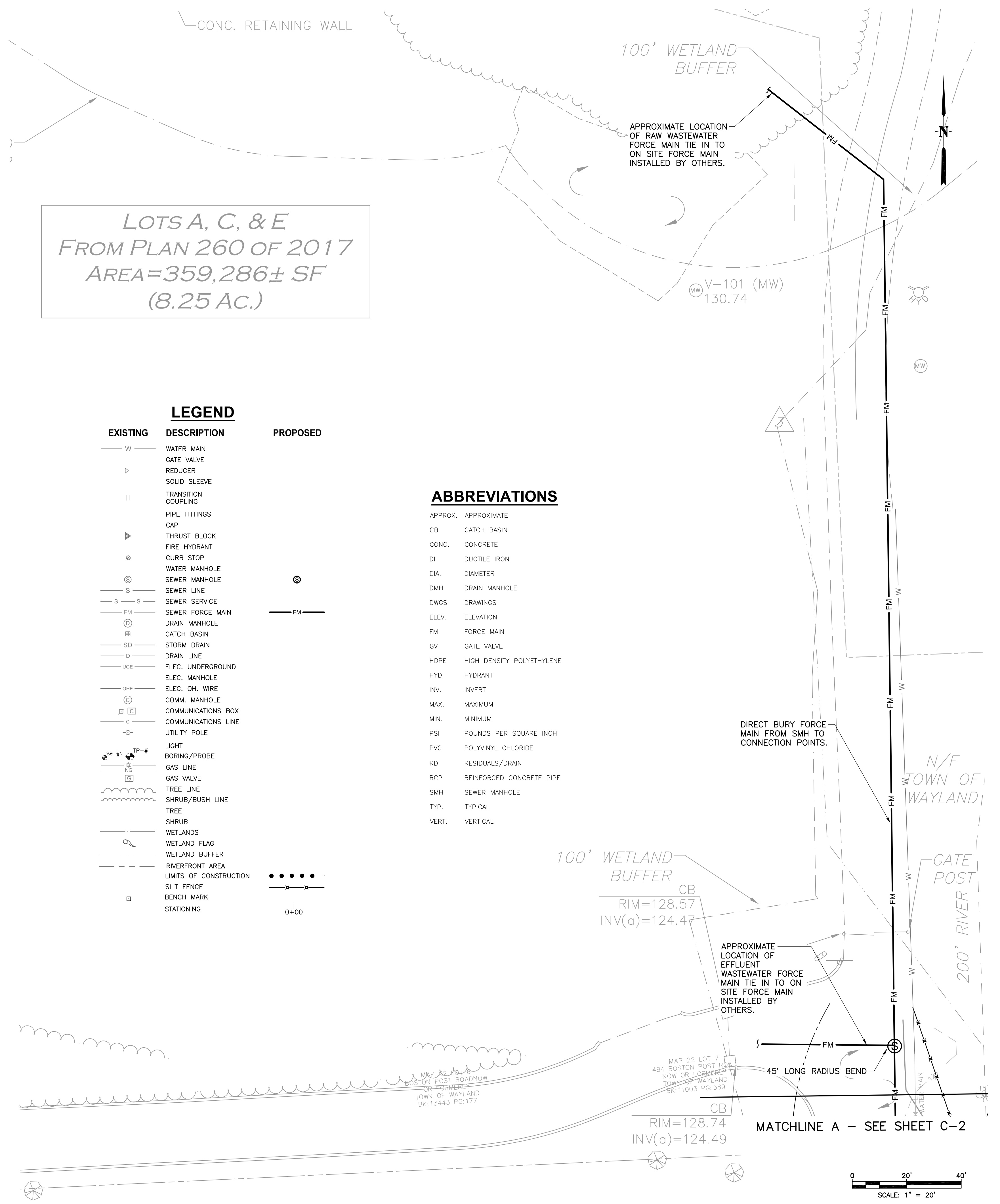
*LOTS A, C, & E
FROM PLAN 260 OF 2017
AREA=359,286± SF
(8.25 Ac.)*

LEGEND

EXISTING	DESCRIPTION	PROPOSED
— W —	WATER MAIN	
▷	GATE VALVE	
— R —	REDUCER	
— S —	SOLID SLEEVE	
	TRANSITION COUPLING	
— F —	PIPE FITTINGS	
◁	CAP	
▶	THRUST BLOCK	
⊙	FIRE HYDRANT	
⊙	CURB STOP	
⊙	WATER MANHOLE	
⊙	SEWER MANHOLE	⊙
— S —	SEWER LINE	
— S — S —	SEWER SERVICE	
— FM —	SEWER FORCE MAIN	— FM —
⊙	DRAIN MANHOLE	
⊙	CATCH BASIN	
— SD —	STORM DRAIN	
— D —	DRAIN LINE	
— UG —	ELEC. UNDERGROUND	
— OHE —	ELEC. OH. WIRE	
⊙	COMM. MANHOLE	
⊙	COMMUNICATIONS BOX	
— C —	COMMUNICATIONS LINE	
⊙	UTILITY POLE	
⊙	LIGHT BORING/PROBE	
— G —	GAS LINE	
— G —	GAS VALVE	
— T —	TREE LINE	
— S —	SHRUB/BUSH LINE	
— T —	TREE	
— S —	SHRUB	
— W —	WETLANDS	
— W —	WETLAND FLAG	
— W —	WETLAND BUFFER	
— W —	RIVERFRONT AREA	
— L —	LIMITS OF CONSTRUCTION	•••••
— S —	SILT FENCE	— x — x —
⊙	BENCH MARK	
⊙	STATIONING	0+00

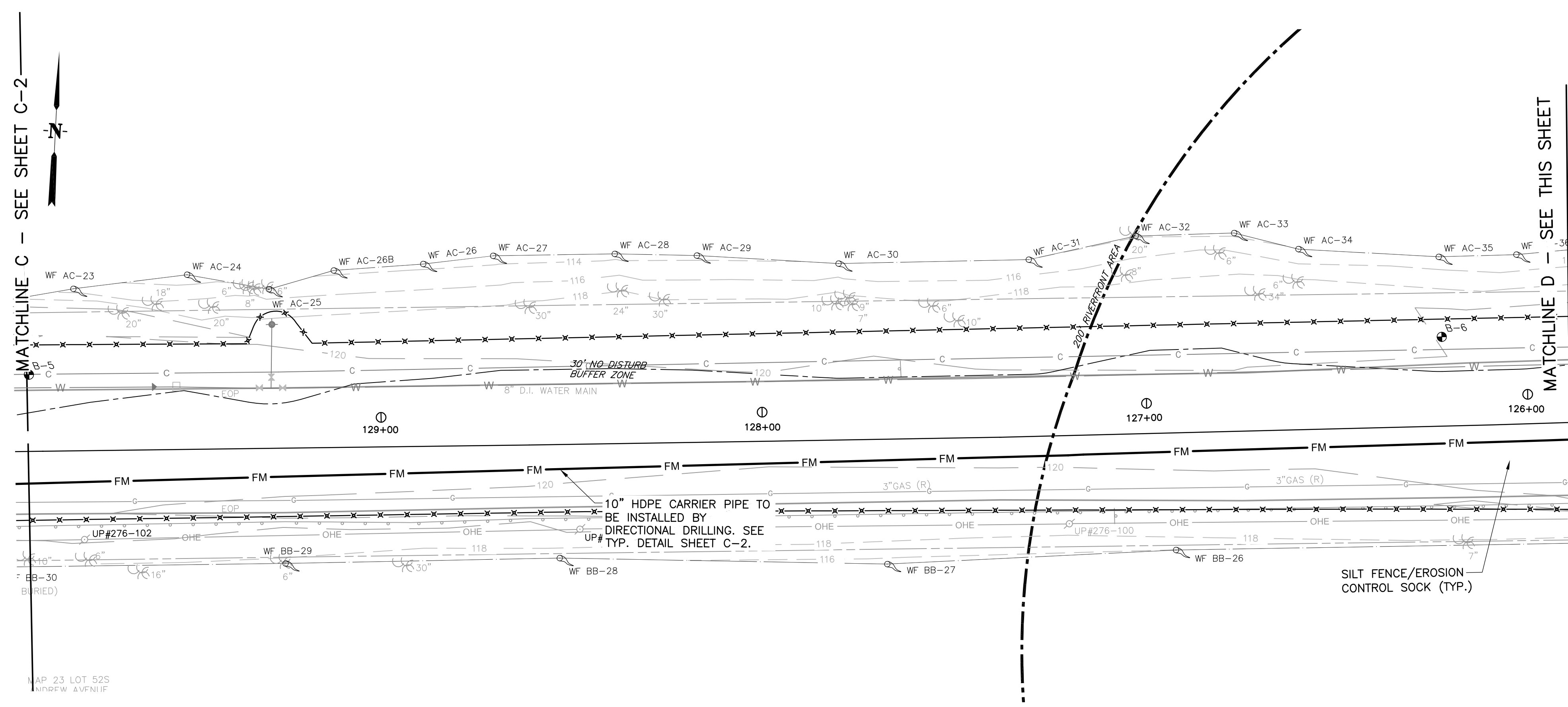
ABBREVIATIONS

APPROX.	APPROXIMATE
CB	CATCH BASIN
CONC.	CONCRETE
DI	DUCTILE IRON
DIA.	DIAMETER
DMH	DRAIN MANHOLE
DWGS	DRAWINGS
ELEV.	ELEVATION
FM	FORCE MAIN
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
INV.	INVERT
MAX.	MAXIMUM
MIN.	MINIMUM
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RD	RESIDUALS/DRAIN
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
TYP.	TYPICAL
VERT.	VERTICAL

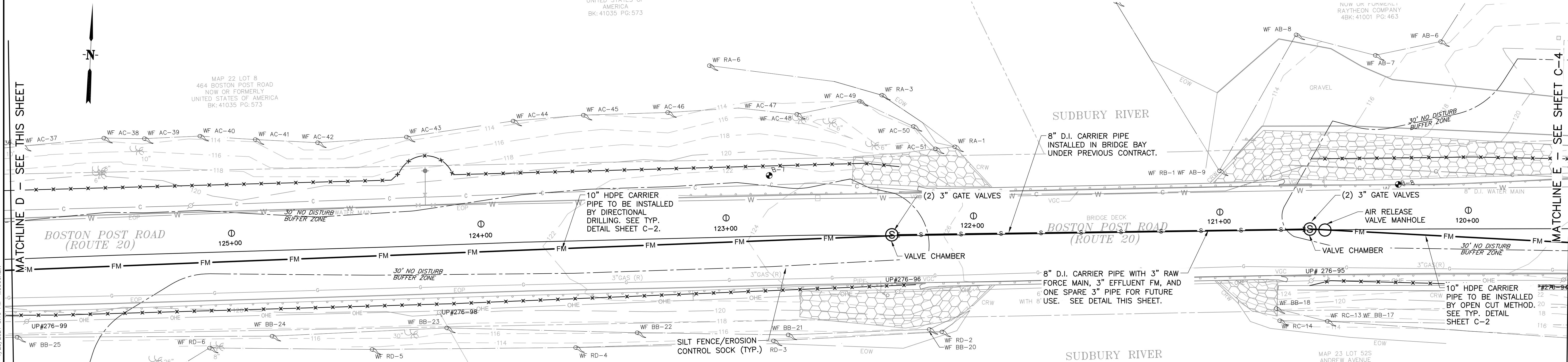
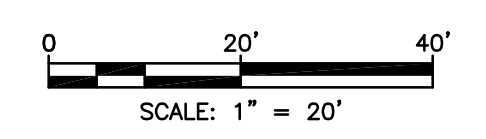


<p>TOWN OF WAYLAND MASSACHUSETTS</p>	<p>RIVER'S EDGE SEWER CONNECTION</p>
<p>GENERAL NOTES PROPOSED RIVER'S EDGE DEVELOPMENT</p>	<p>50% DRAFT SUBMITTAL NOT FOR CONSTRUCTION</p>
<p>TATA & HOWARD</p>	<p>C-1</p>
<p>DESIGNED BY: MEC CHECKED BY: SJA DRAWN BY: CM APPROVED BY: JMH</p>	<p>DATE: JANUARY 2021 SCALE: AS NOTED</p>

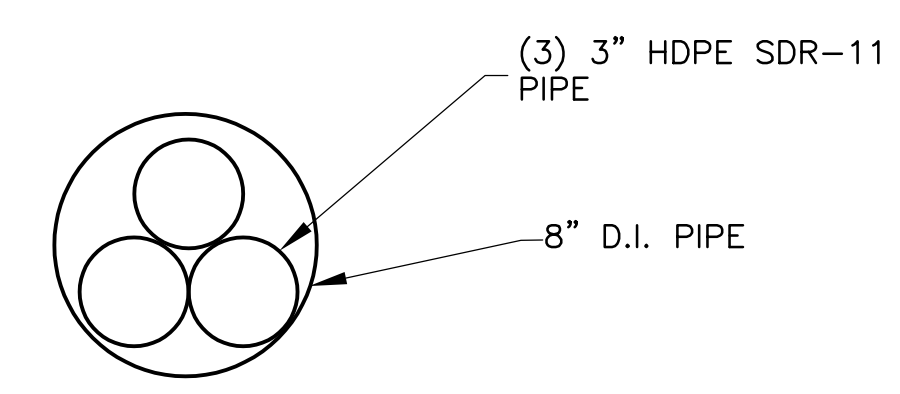
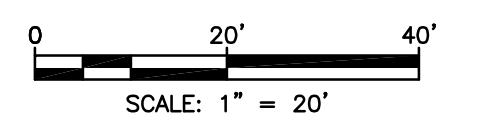
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BOSTON POST ROAD MASSDOT STA. 129+93 TO MASSDOT STA. 125+89



BOSTON POST ROAD MASSDOT STA. 125+89 TO MASSDOT STA. 119+59



BRIDGE CROSSING 8" D.I. CARRIER PIPE DETAIL

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**TOWN OF WAYLAND
MASSACHUSETTS**

**BOSTON POST ROAD
MASSDOT STA. 129+93
TO MASSDOT STA. 119+59**

RIVER'S EDGE SEWER CONNECTION

Approved By: JNH
 Checked By: SLL
 Designed By: MEC
 Drawn By: CM

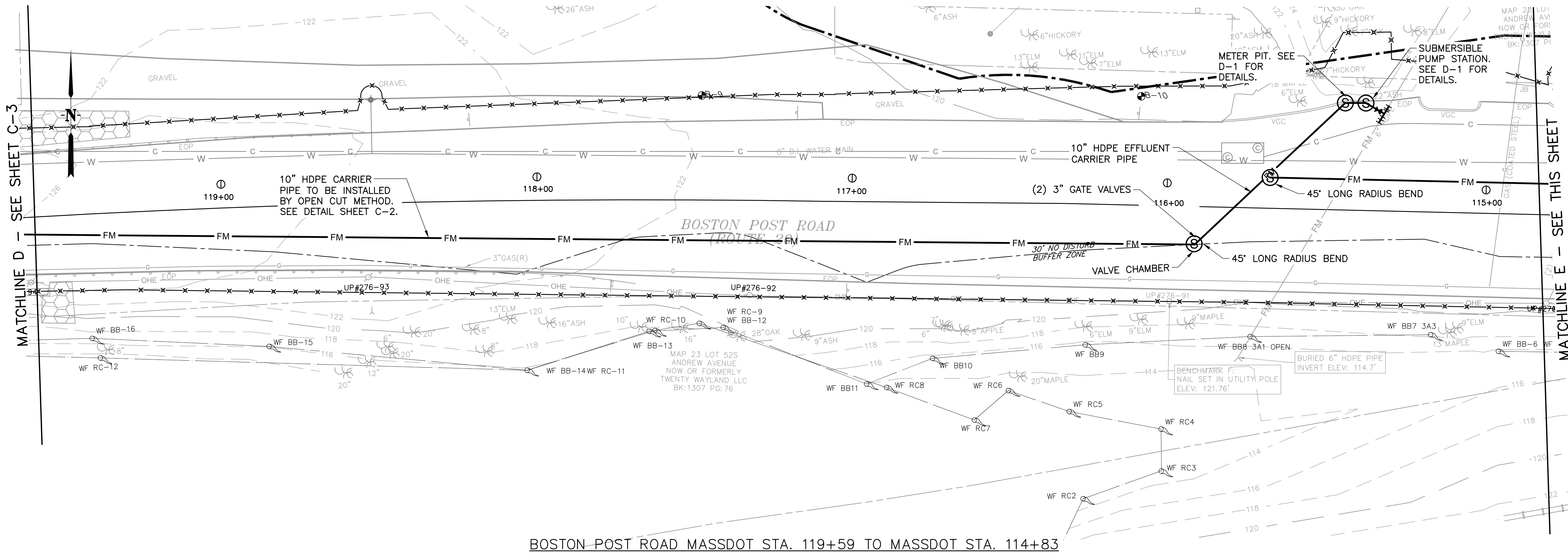
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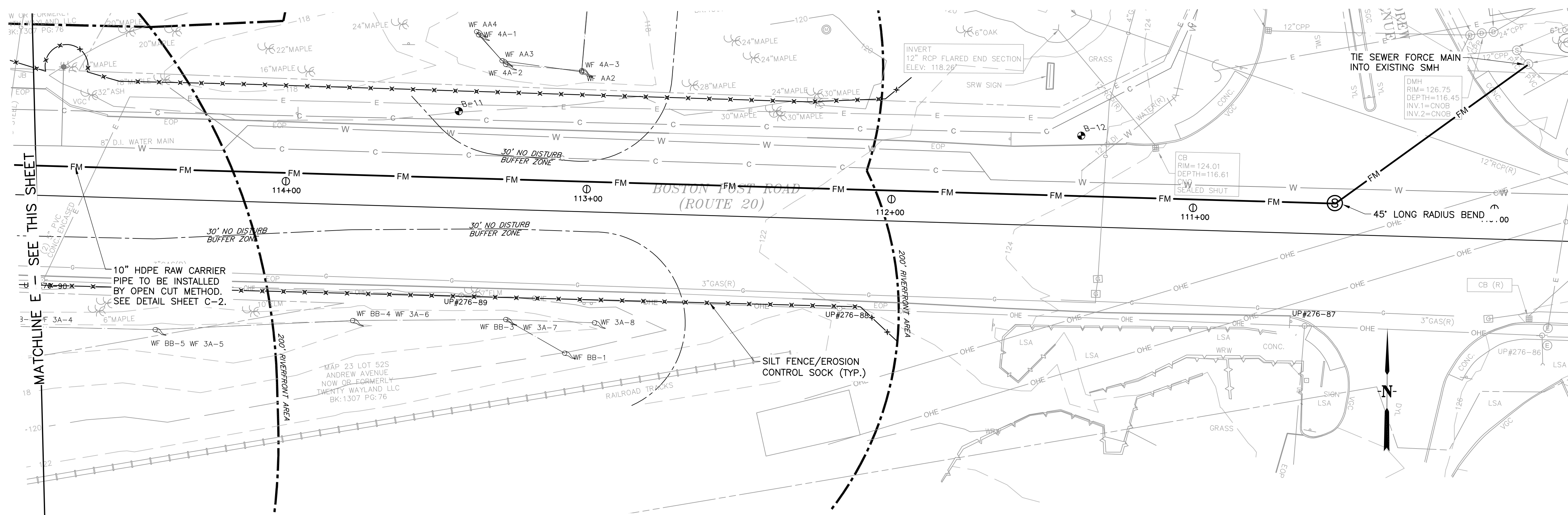
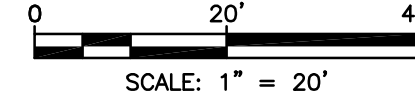
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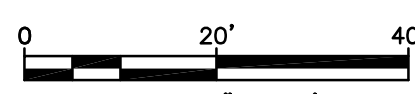
C-3



BOSTON POST ROAD MASSDOT STA. 119+59 TO MASSDOT STA. 114+83



BOSTON POST ROAD MASSDOT STA. 114+83 TO MASSDOT STA. 110+91



MATCHLINE D - SEE SHEET C-3

MATCHLINE E - SEE THIS SHEET

TOWN OF WAYLAND
MASSACHUSETTS
RIVER'S EDGE SEWER CONNECTION

BOSTON POST ROAD
MASSDOT STA. 119+59 TO
MASSDOT STA. 110+91

Rev.	Date	Description

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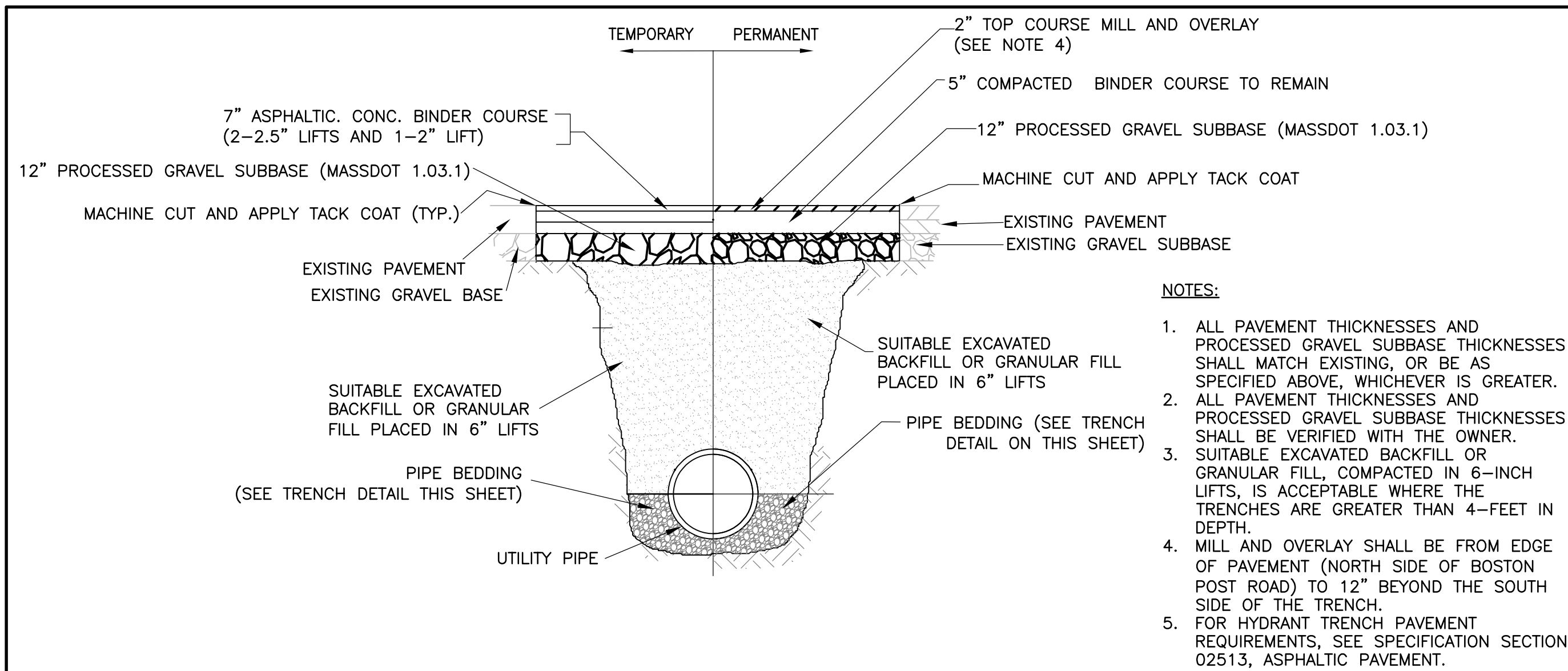


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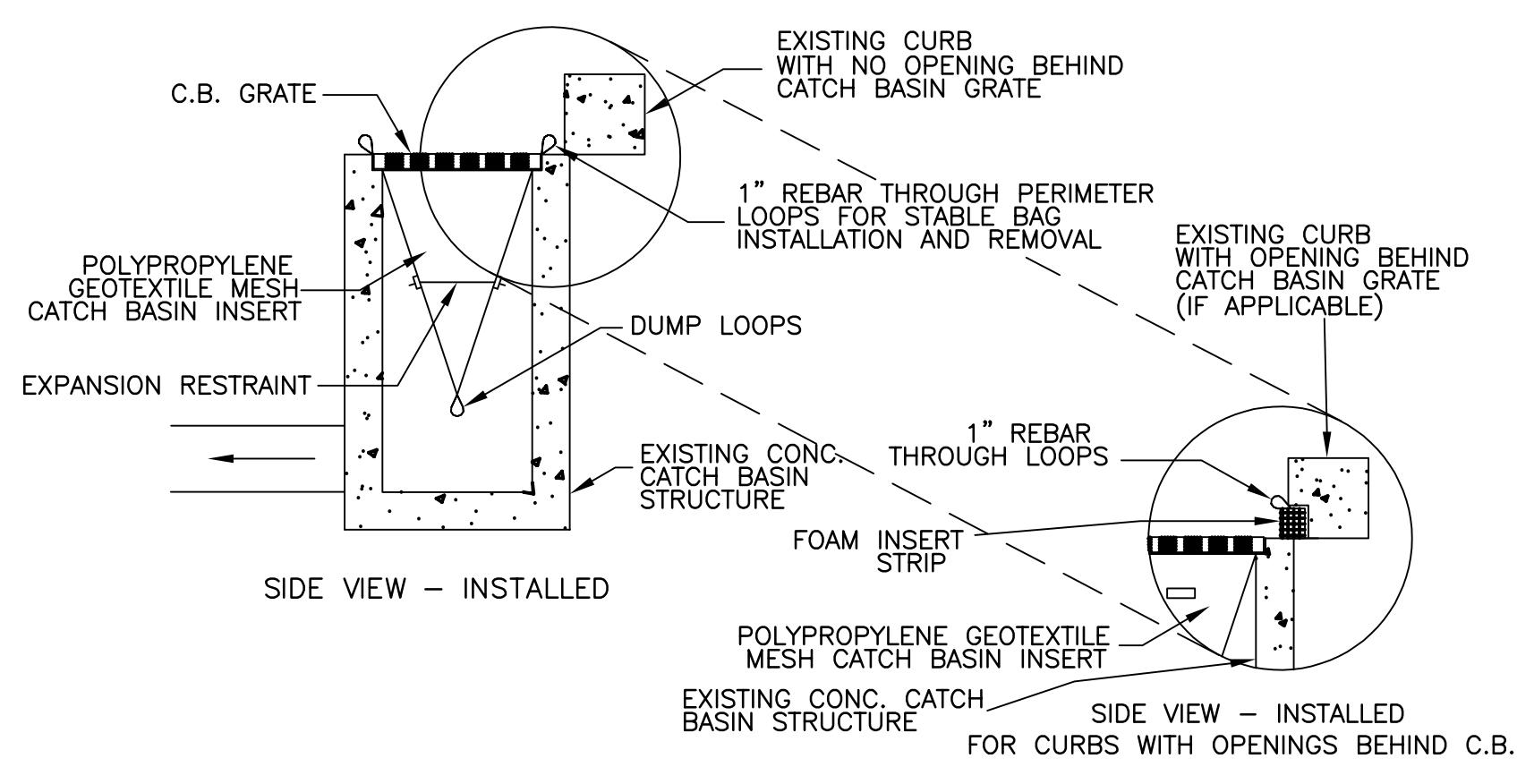
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DESIGNED BY: CM
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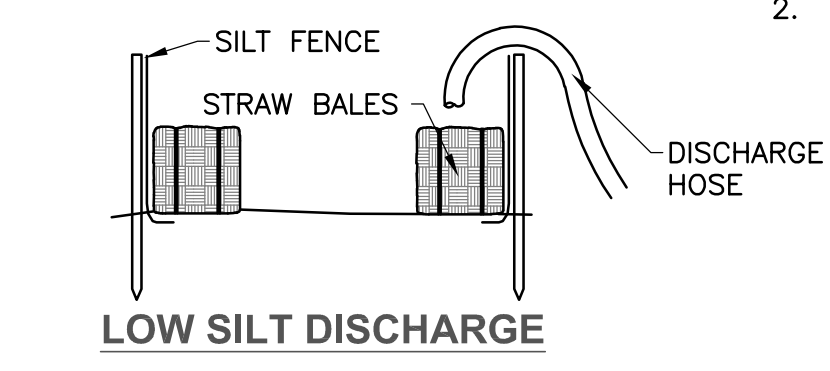
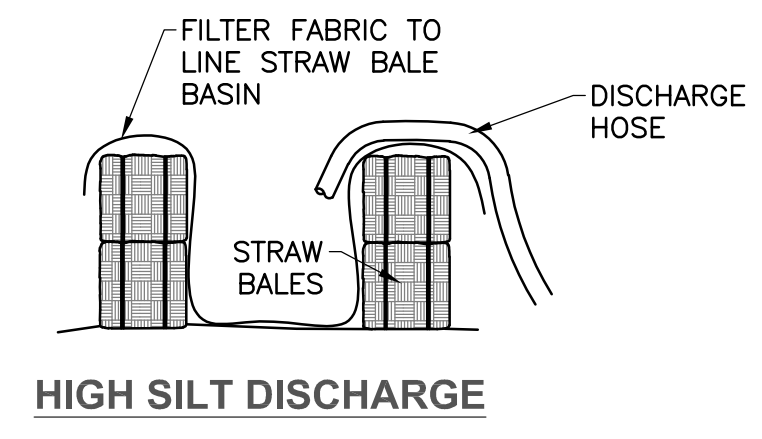


MASSDOT PAVEMENT DETAIL
SCALE: NONE

- NOTES:**
1. ALL PAVEMENT THICKNESSES AND PROCESSED GRAVEL SUBBASE THICKNESSES SHALL MATCH EXISTING, OR BE AS SPECIFIED ABOVE, WHICHEVER IS GREATER.
 2. ALL PAVEMENT THICKNESSES AND PROCESSED GRAVEL SUBBASE THICKNESSES SHALL BE VERIFIED WITH THE OWNER.
 3. SUIABLE EXCAVATED BACKFILL OR GRANULAR FILL, COMPACTED IN 6-INCH LIFTS, IS ACCEPTABLE WHERE THE TRENCHES ARE GREATER THAN 4- FEET IN DEPTH.
 4. MILL AND OVERLAY SHALL BE FROM EDGE OF PAVEMENT (NORTH SIDE OF BOSTON POST ROAD) TO 12" BEYOND THE SOUTH SIDE OF THE TRENCH.
 5. FOR HYDRANT TRENCH PAVEMENT REQUIREMENTS, SEE SPECIFICATION SECTION 02513, ASPHALTIC PAVEMENT.

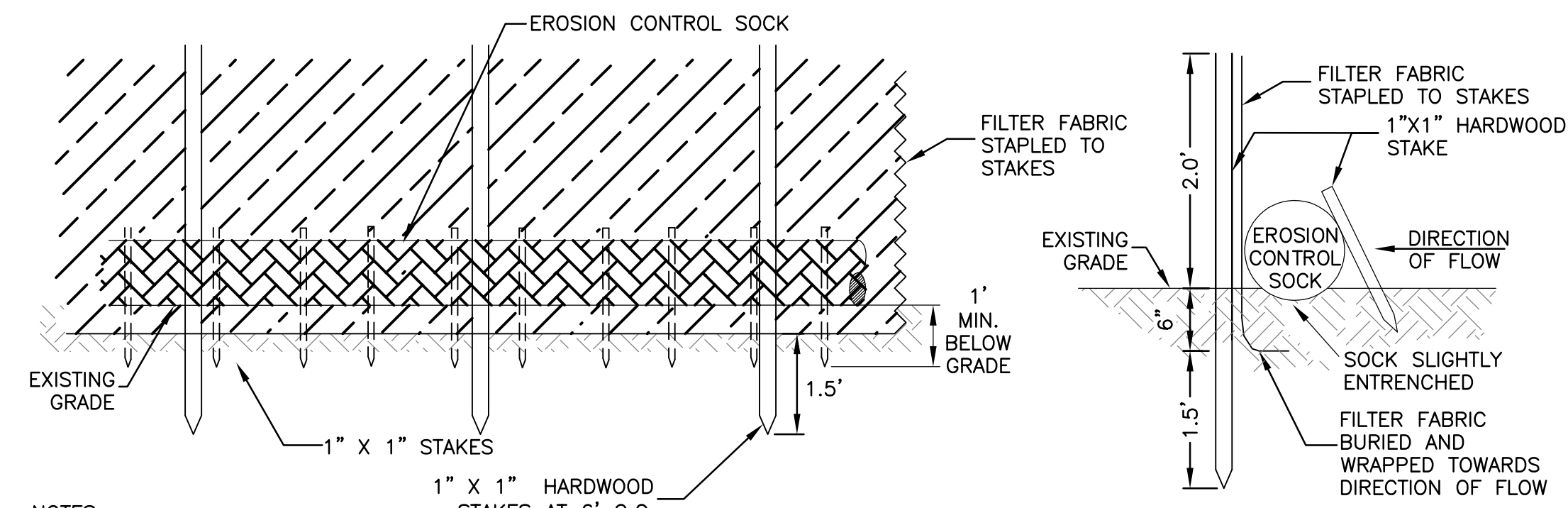


CATCH BASIN SILT FILTERING SYSTEM
SCALE: NONE



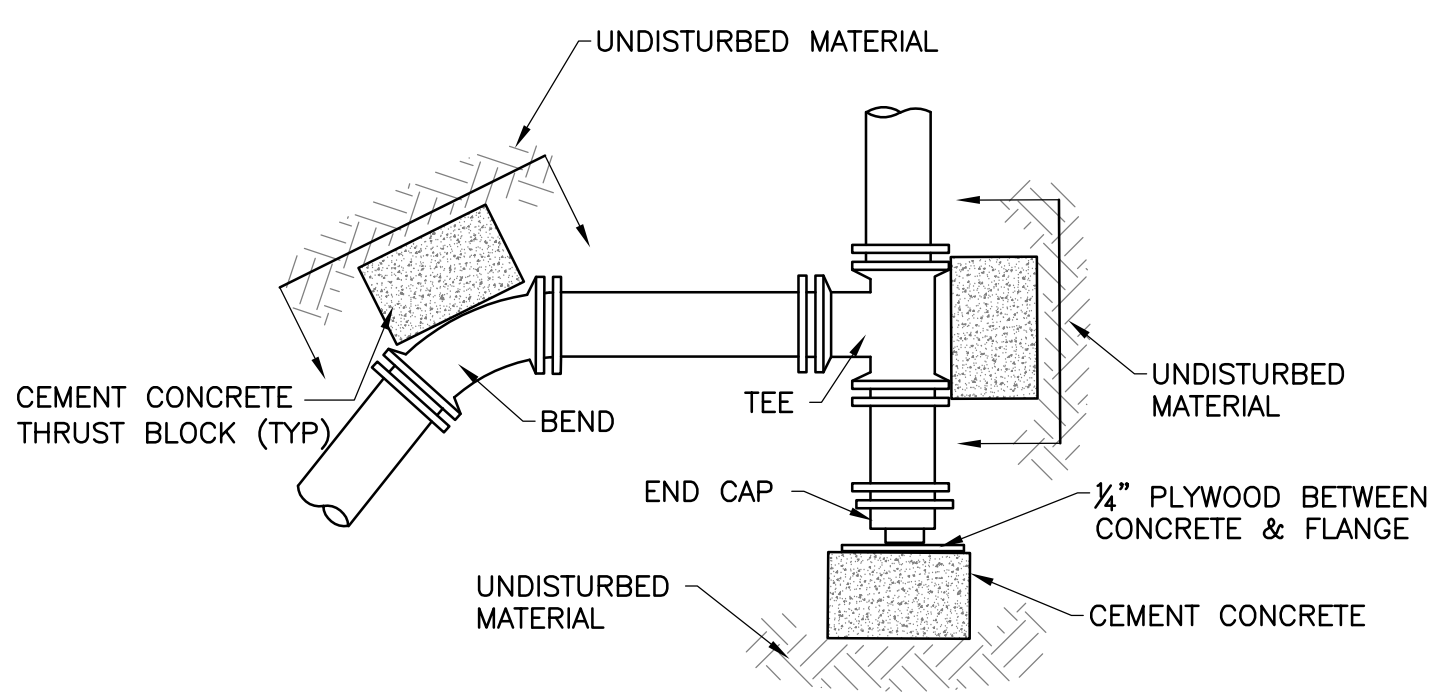
SEDIMENTATION DISCHARGE CONTROL BASIN
SCALE: NONE

- NOTES:**
1. STRAW BALES SHALL BE STACKED 1 OR 2 ROWS HIGH AS REQUIRED TO MITIGATE THE FLOW.
 2. THE BASIN SHALL BE SIZED TO FILTER THE FLOW BEING DISCHARGED TO THE BASIN.

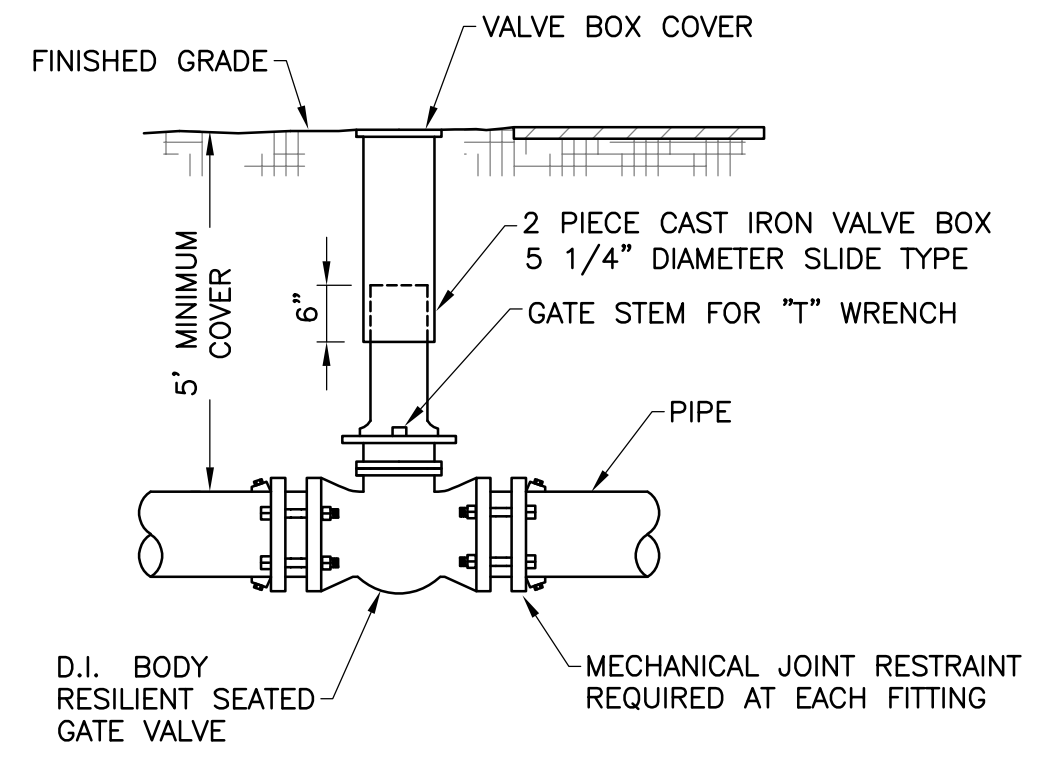


- NOTES:**
1. FINAL INSTALLATION TECHNIQUES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND AS DIRECTED BY THE ENGINEER.
 2. EROSION CONTROL SOCK SHALL BE 8-INCHES IN DIAMETER AND FILLED WITH BIODEGRADABLE MATERIAL.

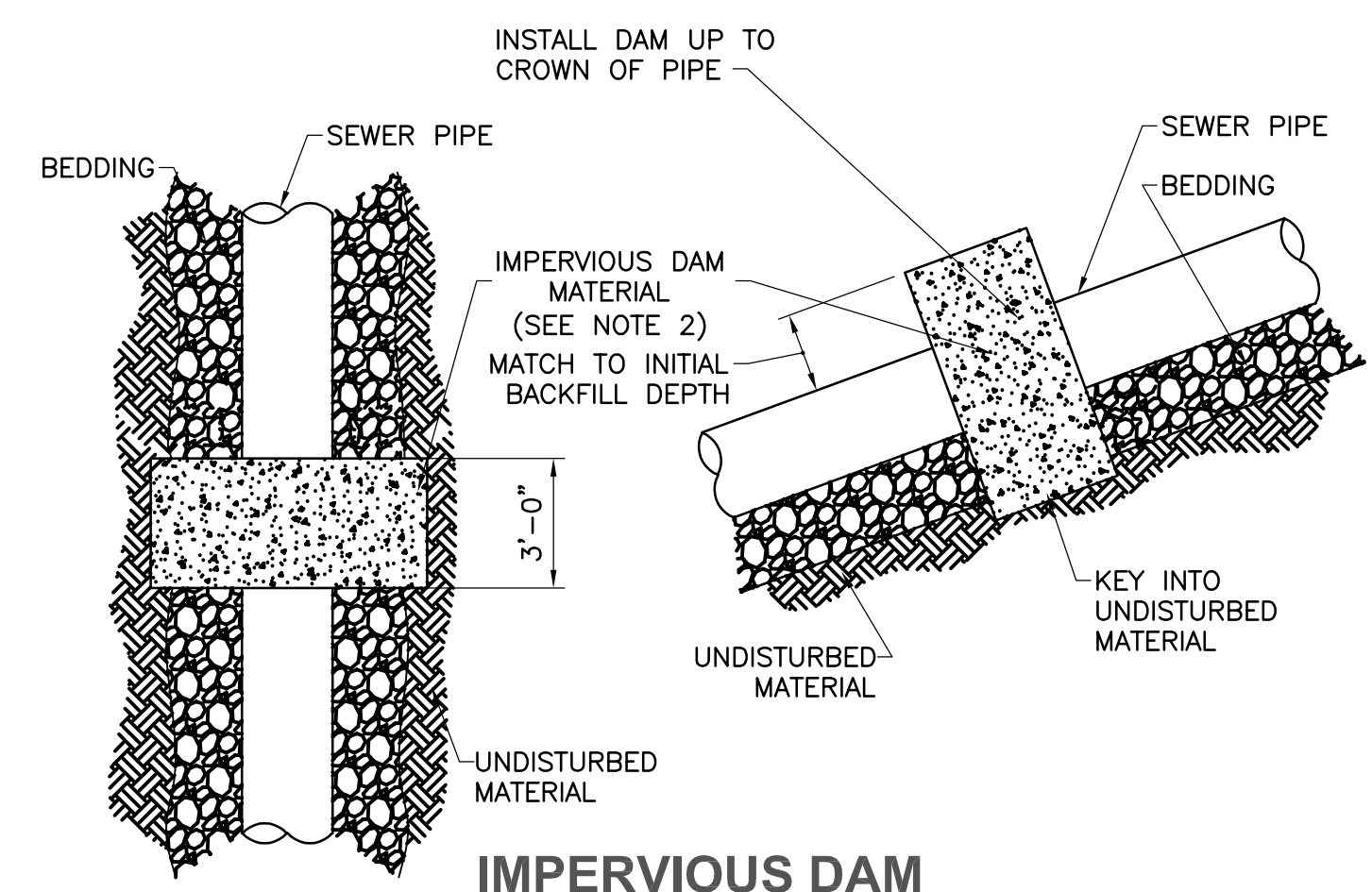
SILT FENCE/EROSION CONTROL SOCK
SCALE: NONE



CONCRETE BACKING
SCALE: NONE

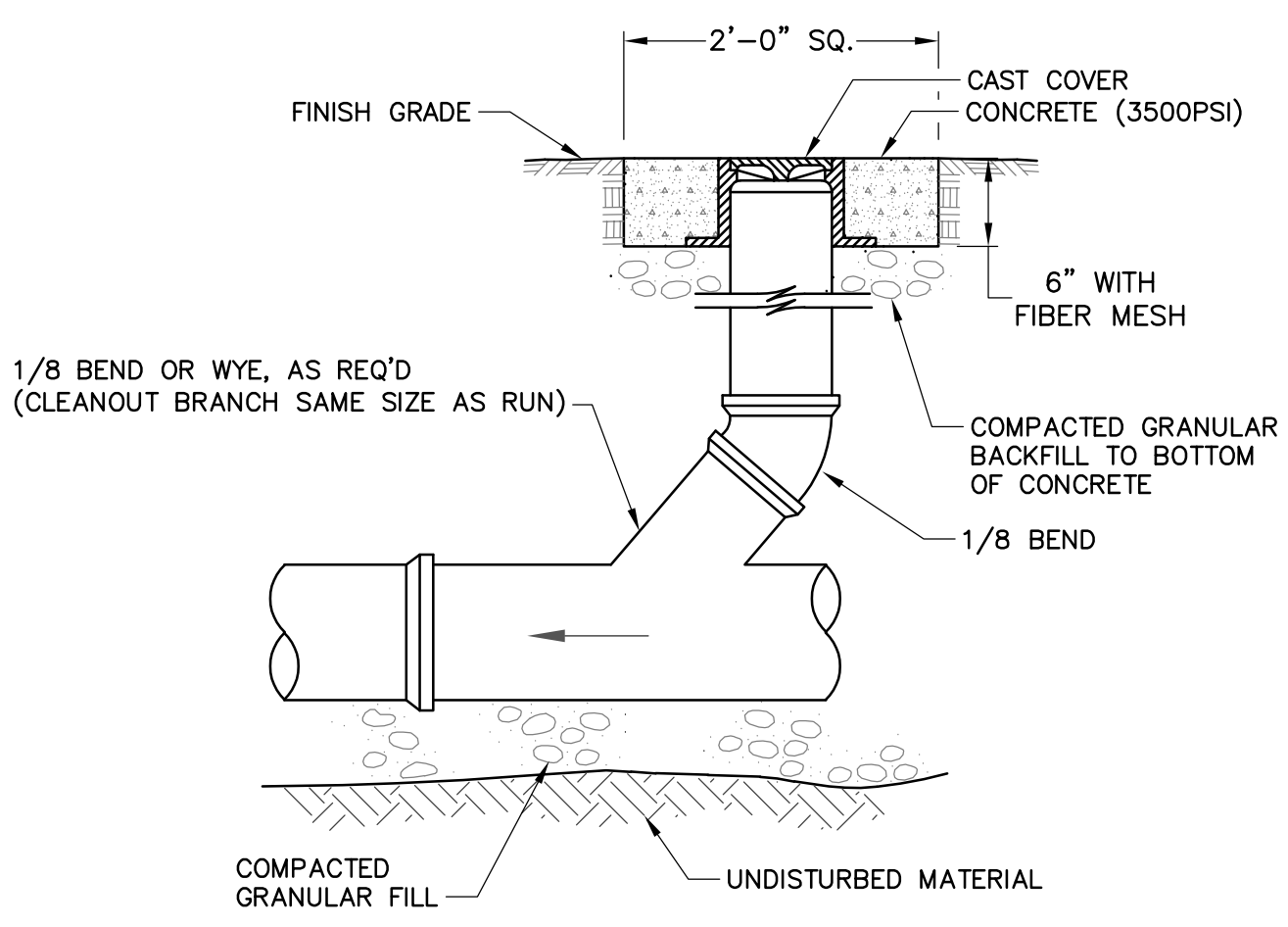


BURIED VALVE
SCALE: NONE

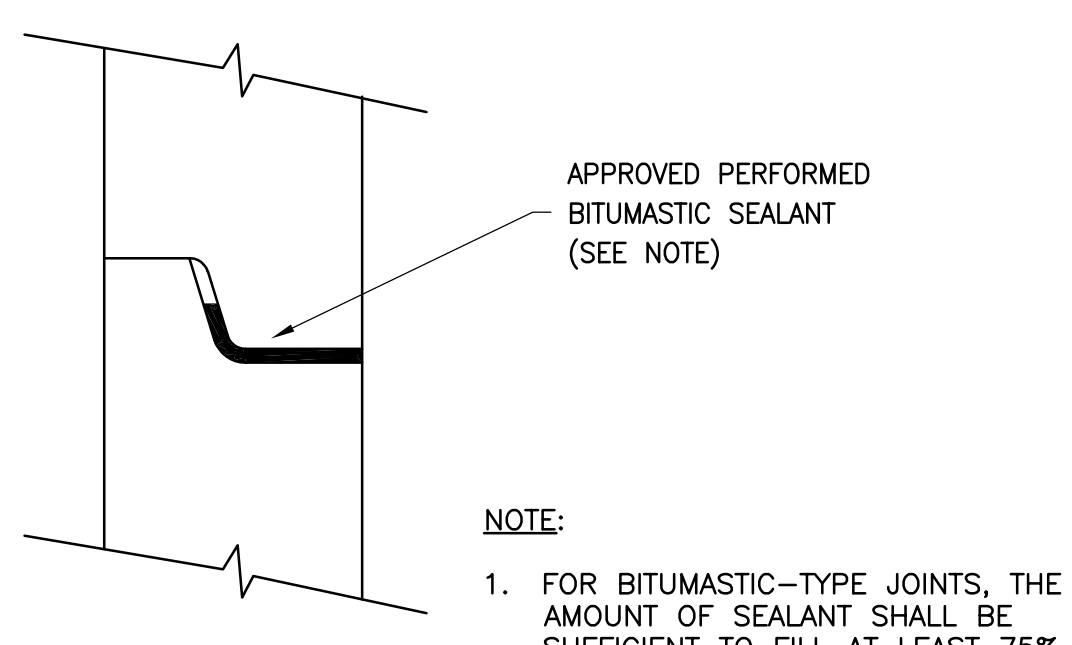


- NOTE:**
1. WHERE PIPE SLOPE EXCEED 8%, INSTALL IMPERVIOUS DAMS EVERY 100 FT AND WHERE REQUIRED BY ENGINEER.
 2. REFER TO SPEC. SECTION 02221 FOR TYPE OF MATERIAL FOR THE IMPERVIOUS DAM.

IMPERVIOUS DAM
SCALE: NONE



CLEANOUT DETAIL
NOT TO SCALE



BITUMASTIC MANHOLE SEALANT/GASKET
SCALE: NONE

- NOTE:**
1. FOR BITUMASTIC-TYPE JOINTS, THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.

TOWN OF WAYLAND MASSACHUSETTS

RIVER'S EDGE SEWER CONNECTION

DETAIL SHEET I

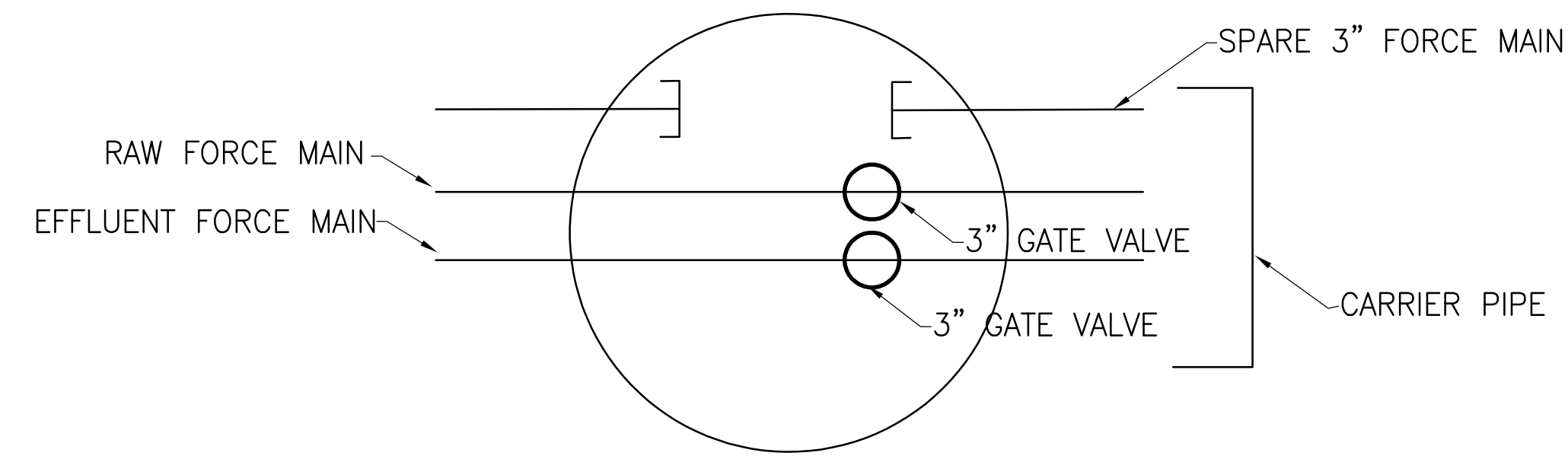
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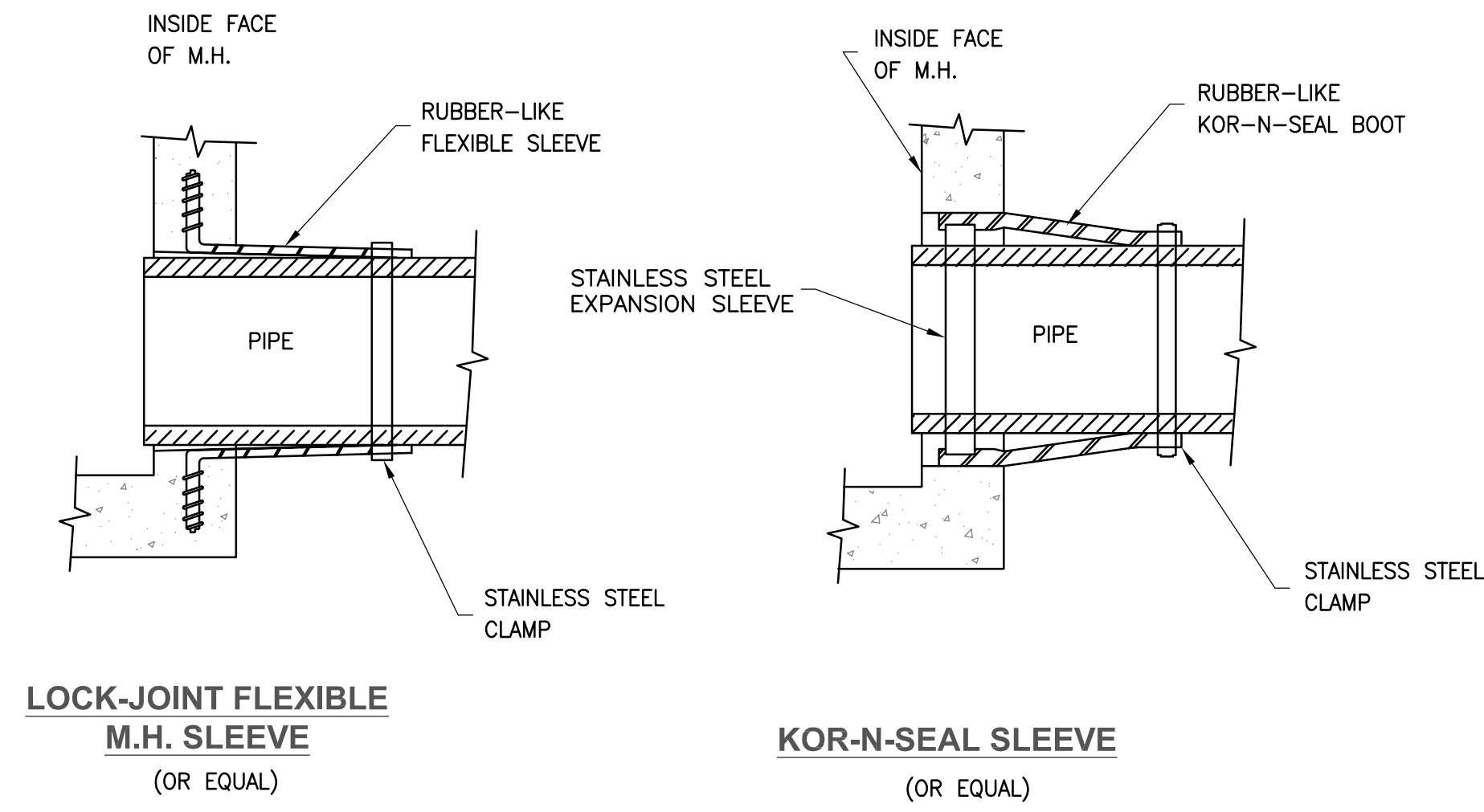
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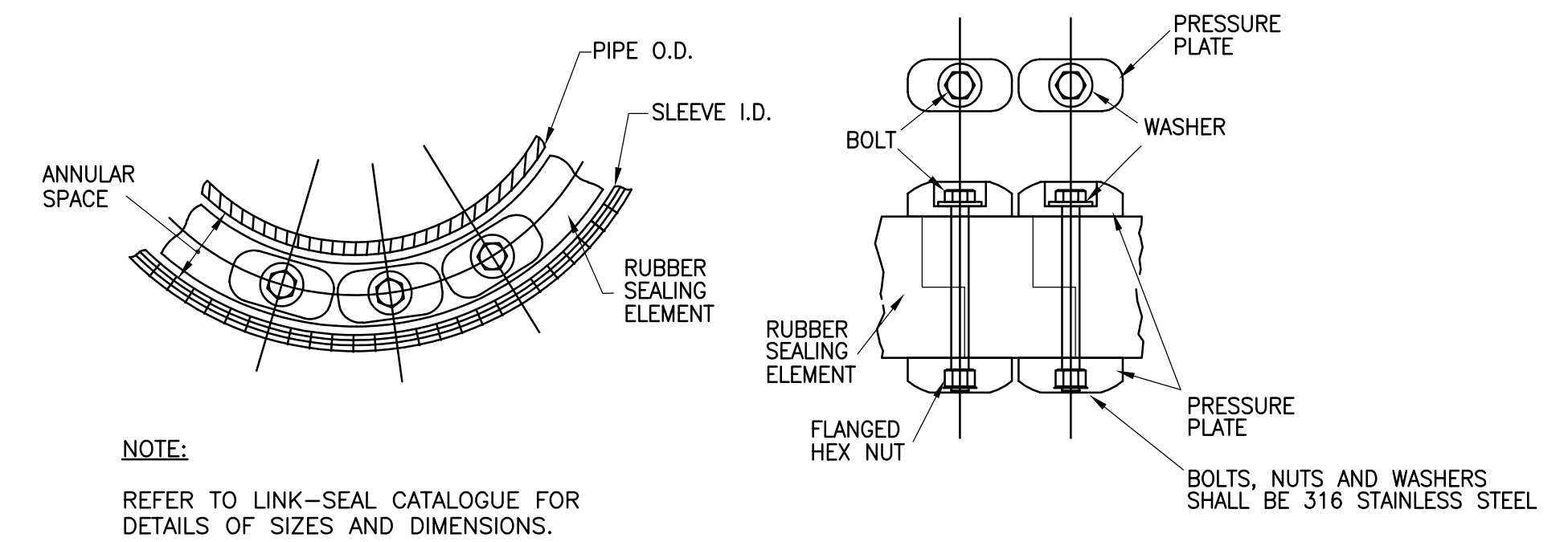
CARRIER PIPE VALVE CHAMBER SCHEMATIC

SCALE: NONE
 NOTES:
 1. PIPES ROTATED FOR CLARITY.



SLEEVE FOR MANHOLE WALL PENETRATION

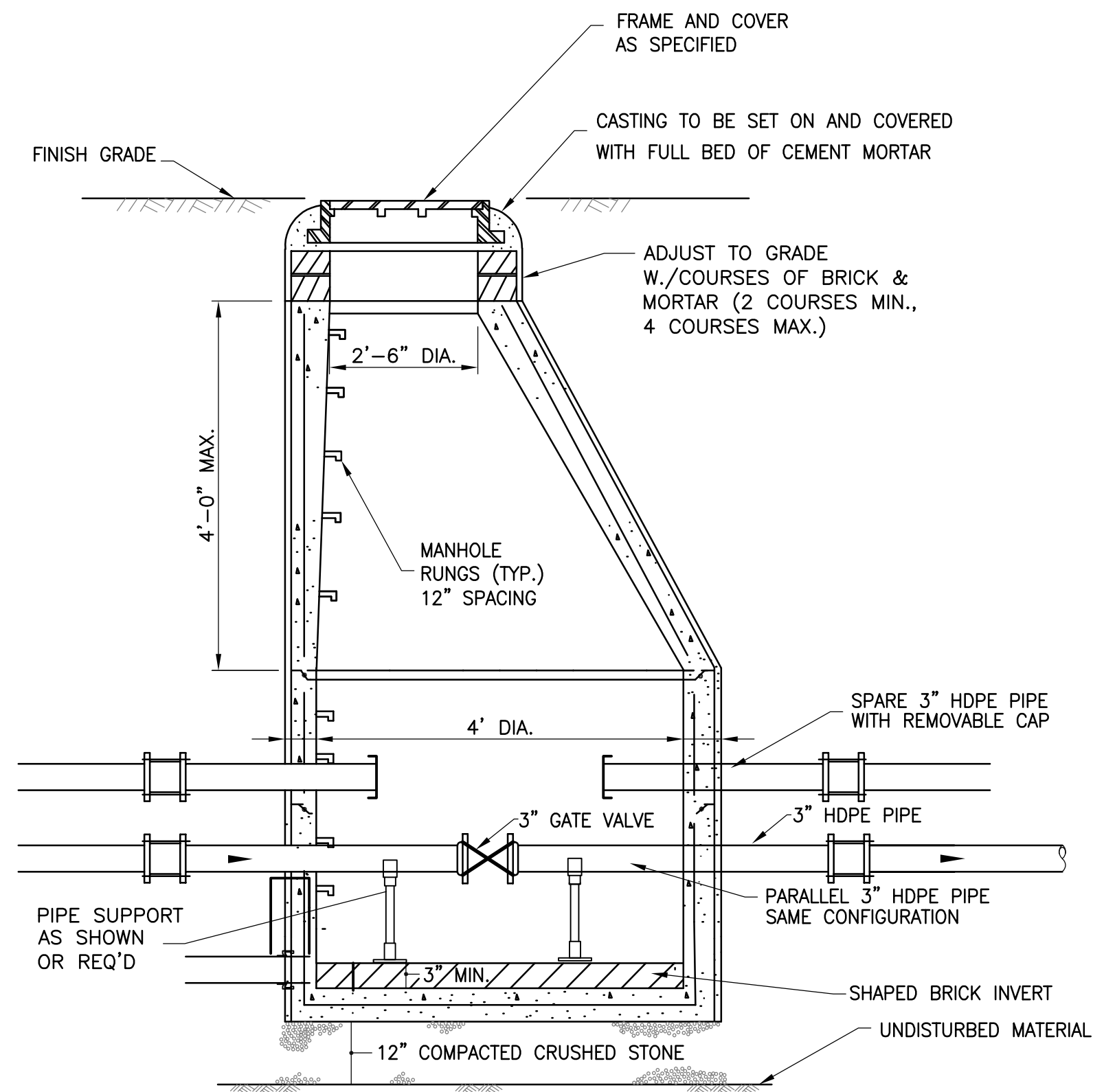
SCALE: NONE



NOTE:
 REFER TO LINK-SEAL CATALOGUE FOR DETAILS OF SIZES AND DIMENSIONS.

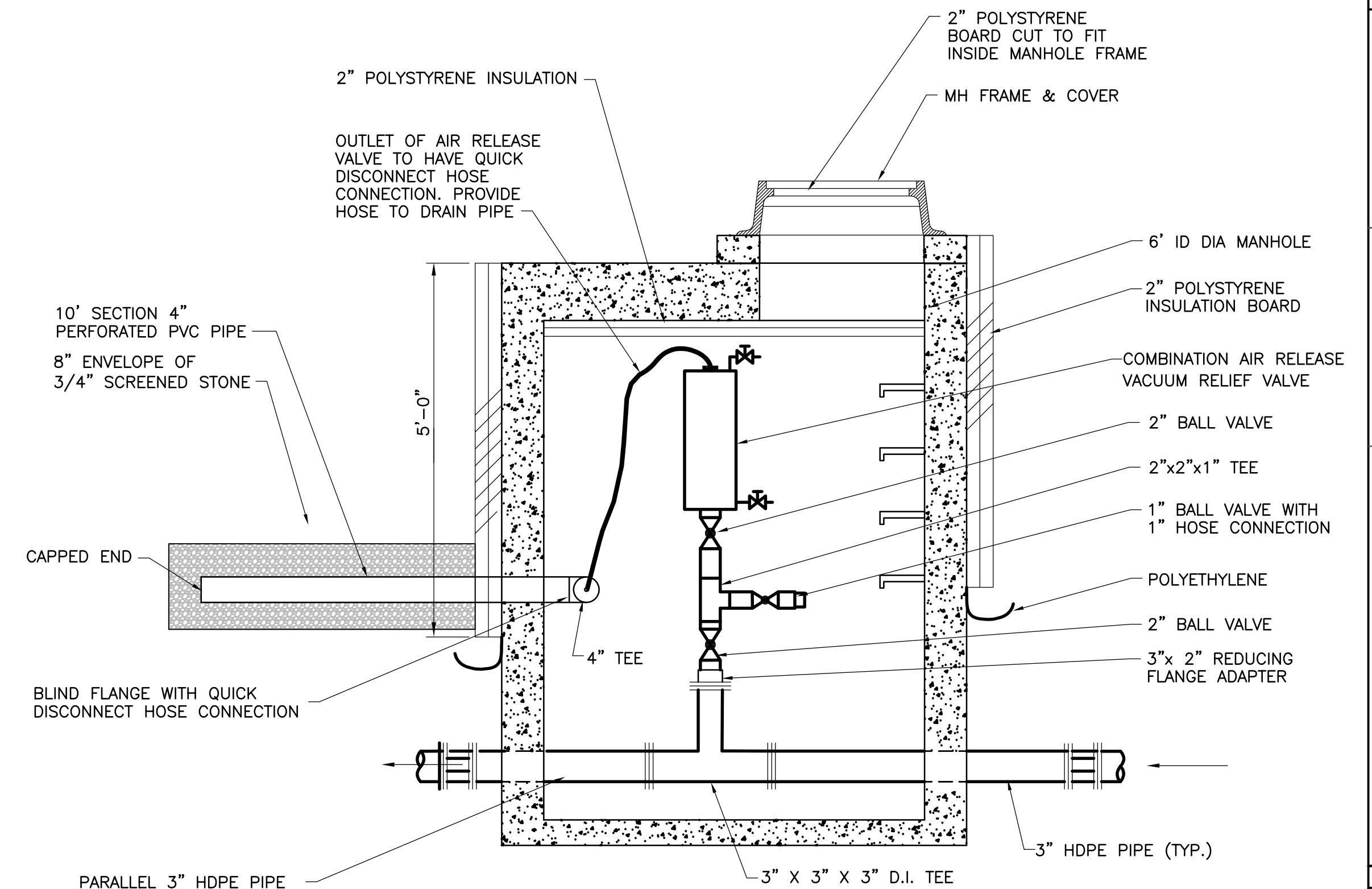
MECHANICAL LINK SEAL DETAIL

SCALE: NONE



SECTION VALVE CHAMBER

SCALE: NONE

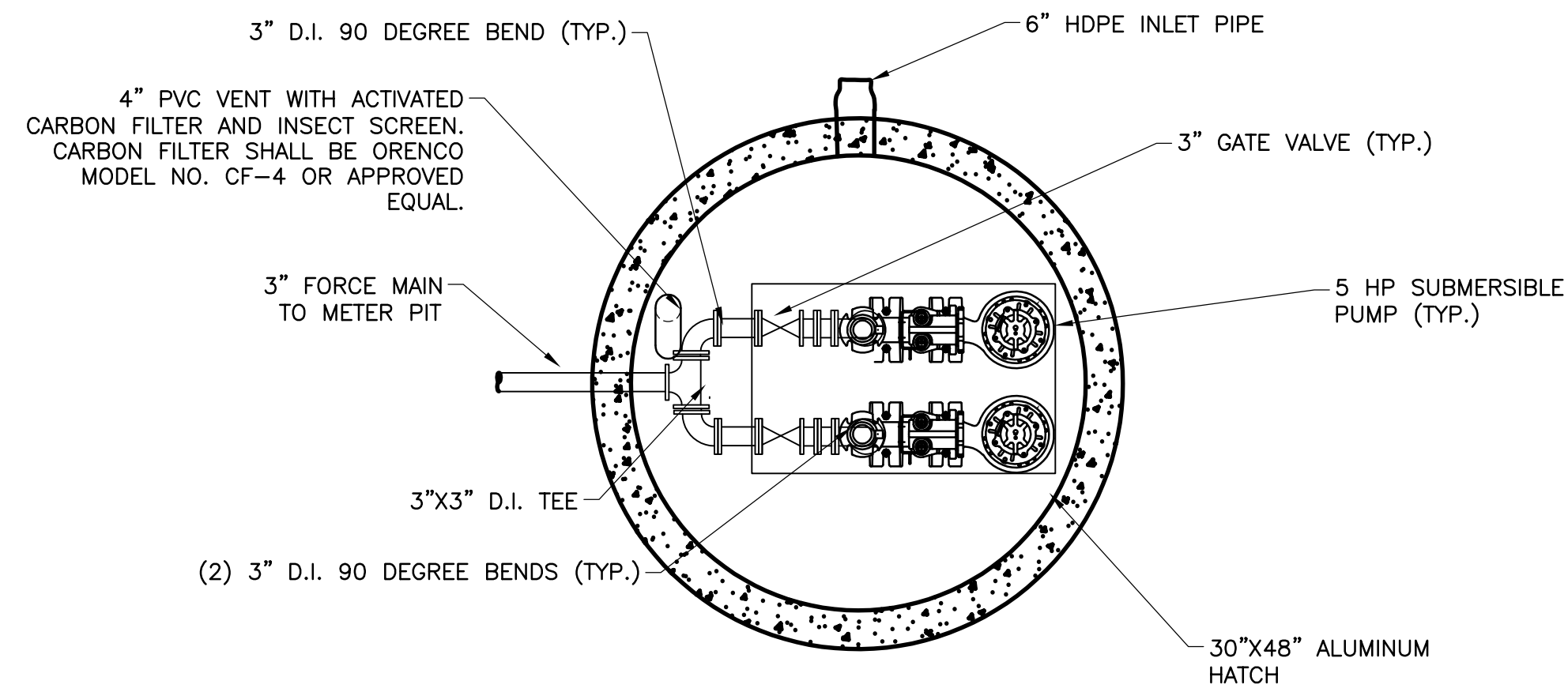


AIR RELEASE VALVE MANHOLE

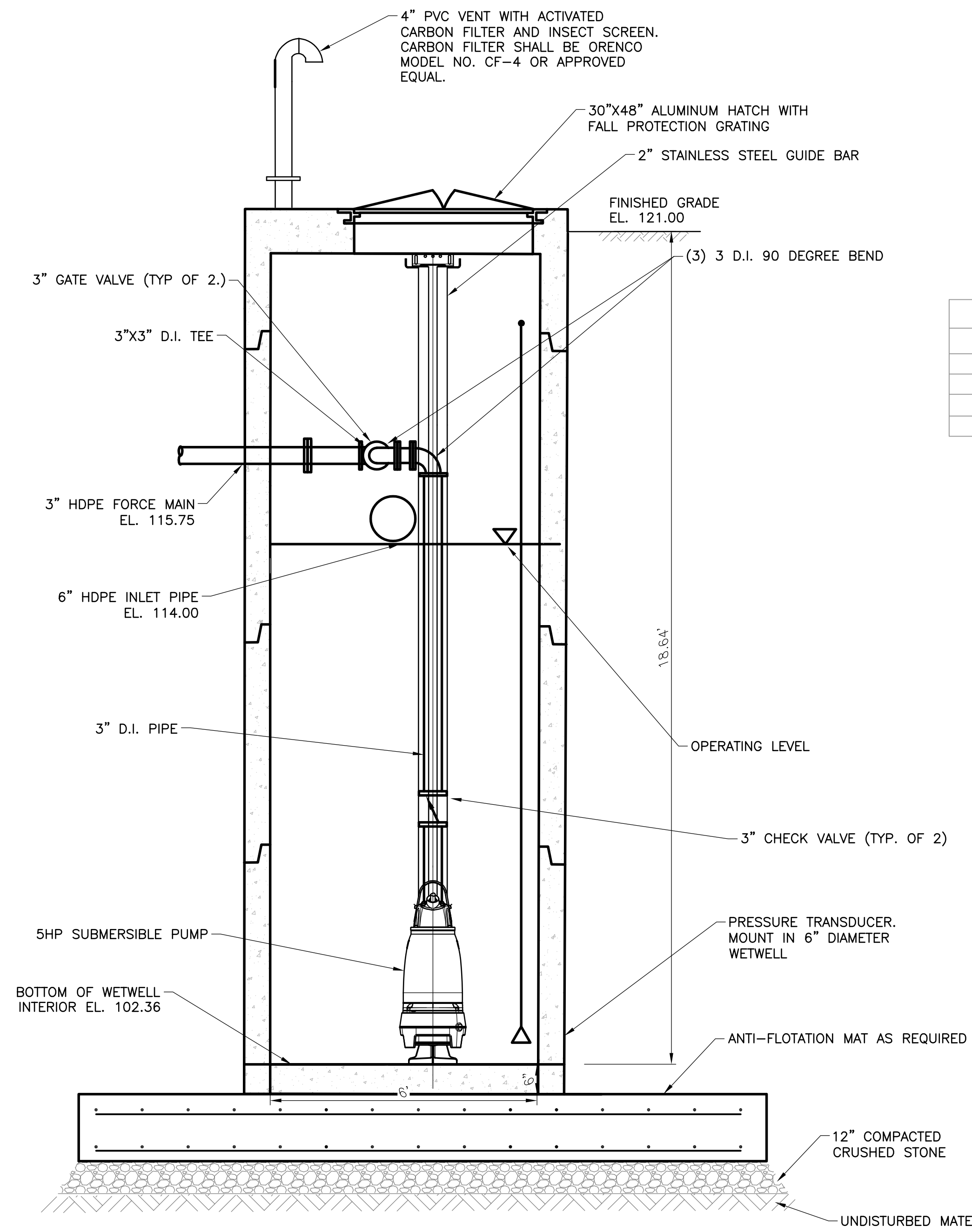
SCALE: NONE

DETAIL SHEET II	TOWN OF WAYLAND MASSACHUSETTS RIVER'S EDGE SEWER CONNECTION
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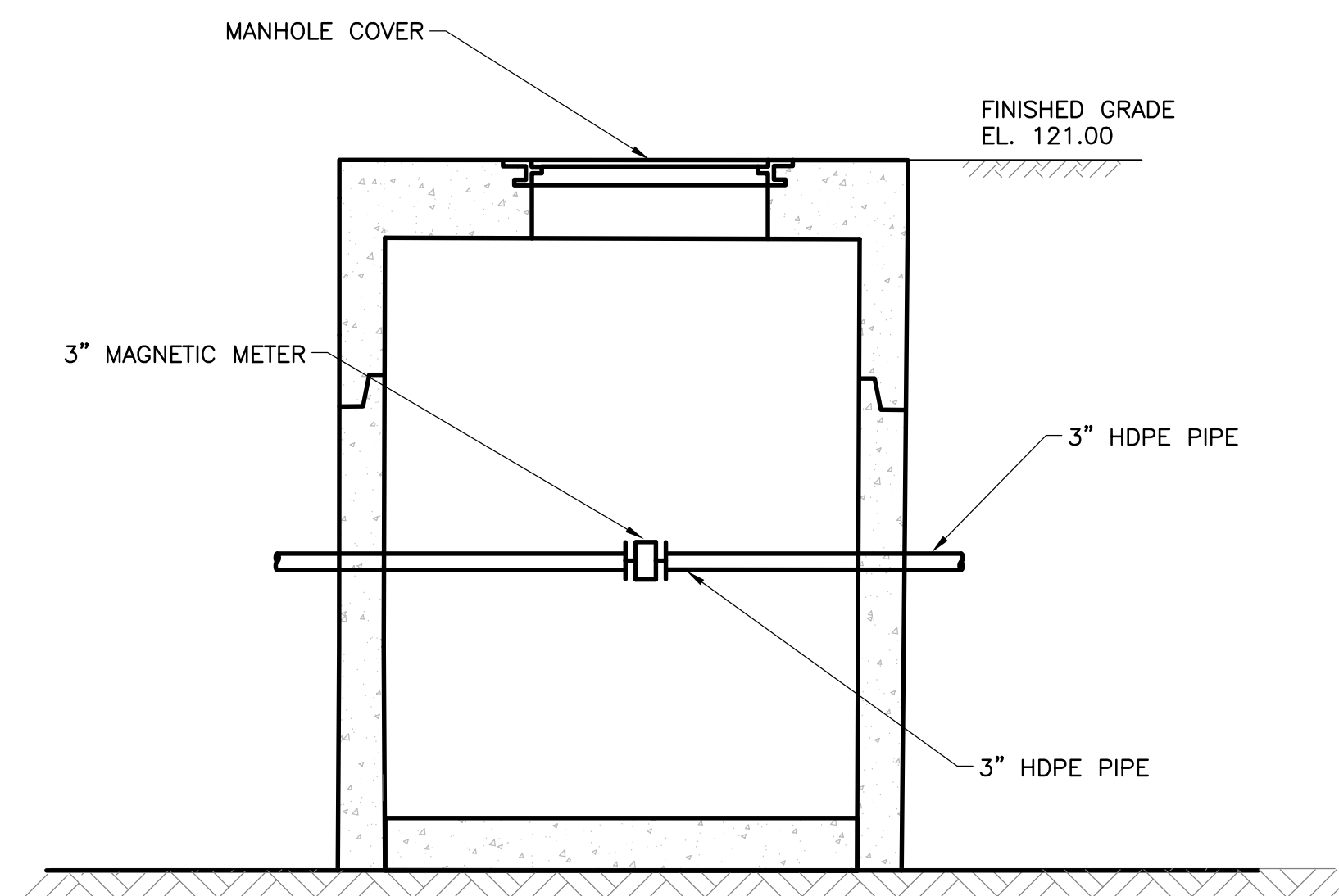


PROPOSED PUMP STATION PLAN VIEW
SCALE: 1/2" = 1'-0"



PROPOSED PUMP STATION PROFILE VIEW
SCALE: 1/2" = 1'-0"

WETWELL ELEVATIONS	
DESCRIPTION	ELEVATION (FT.)
FINISHED GRADE	121.00
INVERT OUT	115.75
INVERTS IN	114.00
BASE OF WETWELL - INTERIOR	102.36



PROPOSED METER PIT PROFILE VIEW
SCALE: 1/2" = 1'-0"

TOWN OF WAYLAND
MASSACHUSETTS
RIVER'S EDGE SEWER CONNECTION

PROPOSED PIPING PLAN

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D-1

NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN (LEDGERS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNS, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MSH).
6. CONTRACTORS SHALL NOTIFY EACH ADJUTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
8. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
11. MINIMUM LAKE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LAKE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIUM BARRIERS.
12. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- POLICE/FLAGGER DETAIL
- TYPE "B" BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIUM BARRIER
- MEDIUM BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

MEASURED AVERAGE WORK ZONE CAPACITIES

NORMAL OPEN (EXISTING)	CLOSED (TO TRAFFIC)	NUMBER OF STUDIES	AVERAGE CAPACITY	
			VPH	SPHPL
3	1	7	1,170	1,170
4	2	8	1,340	1,340
5	3	8	2,740	1,370
6	4	6	2,960	1,450
7	5	6	2,580	1,450
8	6	4	1,560	1,530

Source: Dwyer, C. "Notes on Work Zone Capacity and Level of Service - Texas Transportation Institute, Texas A&M University, College Station, Texas (1984).
BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (AND COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.

FIGURE GEN-1
GENERAL GUIDELINES
Notes for Traffic Management

- CONVENTIONAL ROADWAY - A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR TOLLWAY.
- EXPRESSWAY - A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.
- FREEDWAY - A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.
- LOW-VOLUME ROAD - A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IF SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 AADT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L) ¹
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.3L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN.(15 m) 100 FT(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET	SPEED LIMIT (S)	TAPER LENGTH (L) METERS
40 MPH OR LESS	L = WS ² / 60	60 KM/H OR LESS	L = WS ² / 150
45 MPH OR MORE	L = WS	70 KM/H OR MORE	L = WS / 1.6

WHERE: L = TAPER LENGTH IN FEET (METERS)
W = WIDTH OF OFFSET IN FEET (METERS)
S = POSTED SPEED LIMIT OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH (KM/H)

Source: Table 6C-4 MUTCD LATEST EDITION

FIGURE GEN-3
NOTES ON WORK ZONE DISTANCES
Notes for Traffic Management

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS**		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEDWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTPC SETUP. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (I.E. THE W8-1 SERIES ROAD WORK OR T3 SIGNS) AND USUALLY BEGIN FOR THE DIRECTION OF THE PROJECT. ADDITIONAL SIGNS (I.E. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10b, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED (mph)	DISTANCE (ft)	SPEED (km/h)	DISTANCE (m)
30	35	20	115
40	60	25	158
50	85	32	200
60	110	40	250
70	135	45	300
80	160	50	425
90	185	55	475
100	210	60	570
110	235	65	645
120	260	70	750

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 MUTCD LATEST EDITION

FIGURE GEN-2
NOTES ON WORK ZONE DISTANCES
Notes for Traffic Management

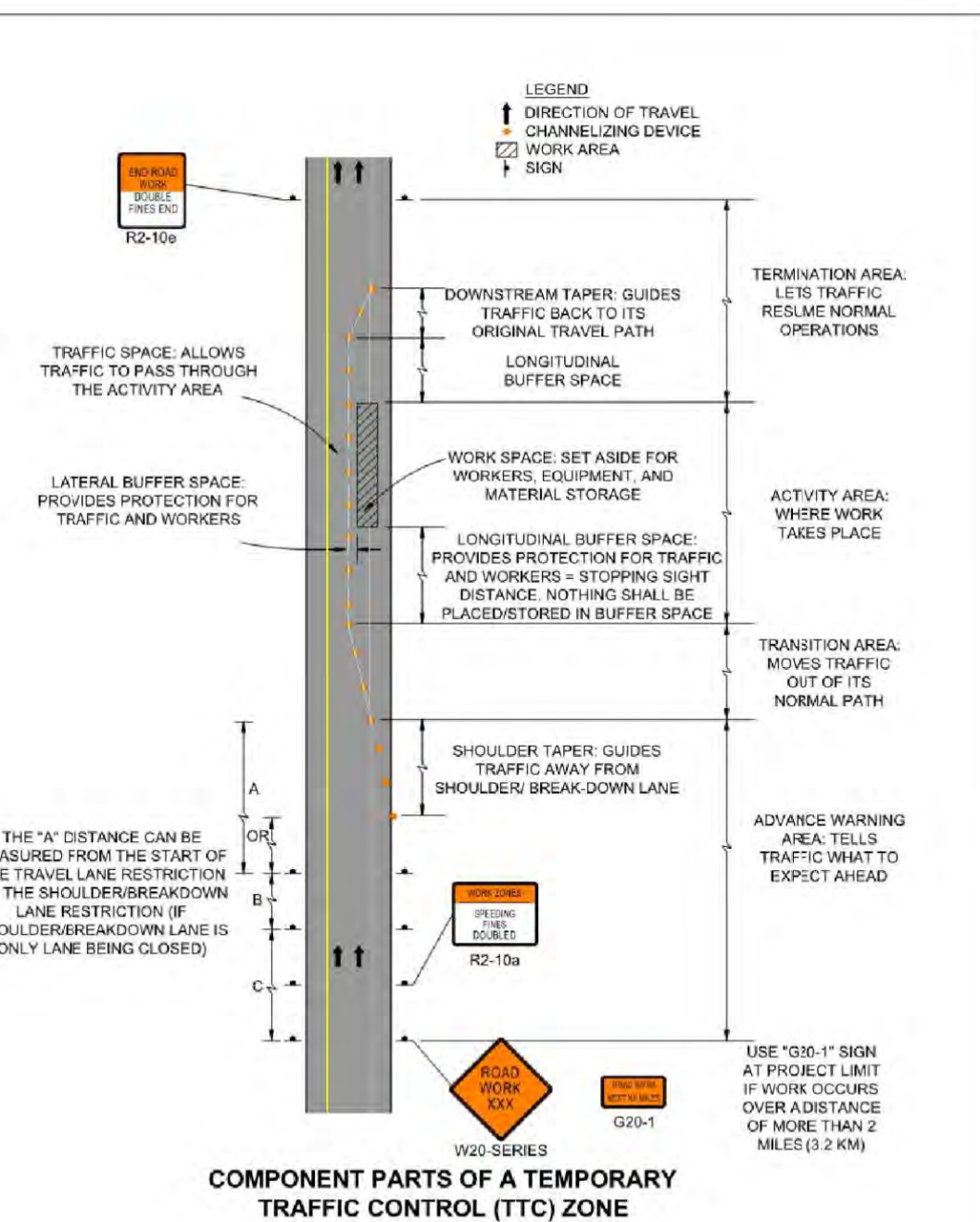


FIGURE GEN-4
COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE
NOT TO SCALE
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

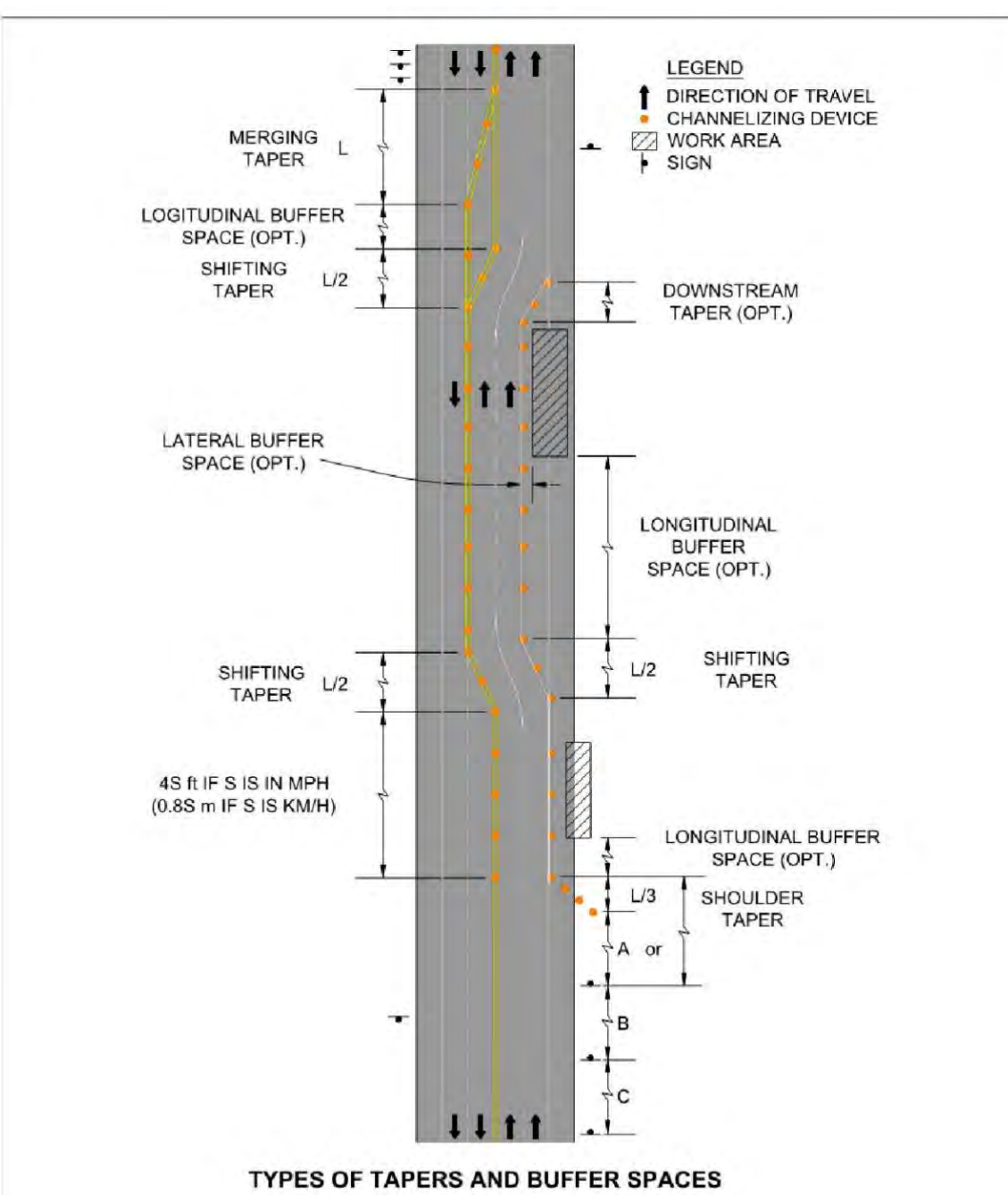


FIGURE GEN-5
TYPES OF TAPERS AND BUFFER SPACES
NOT TO SCALE
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

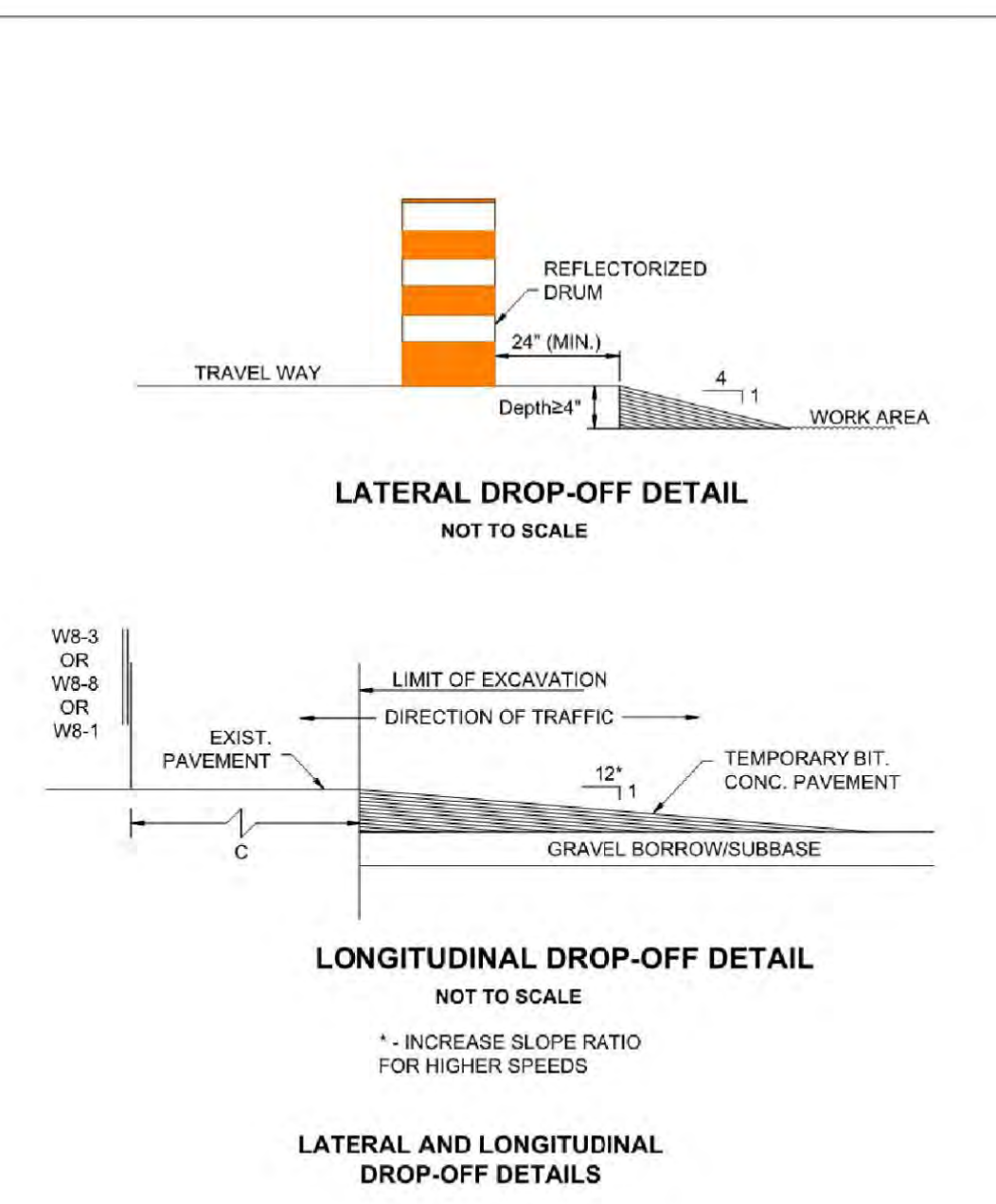
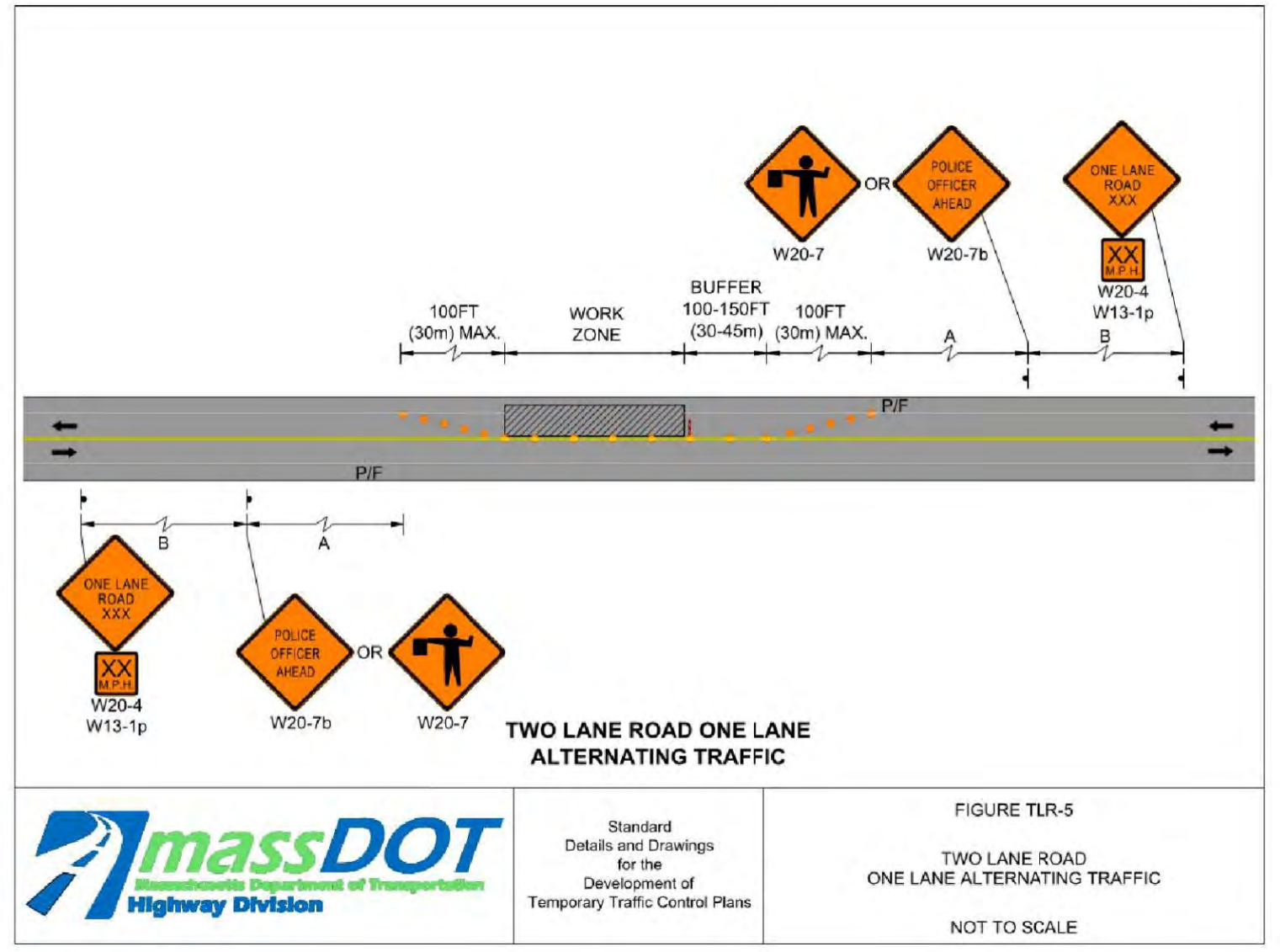
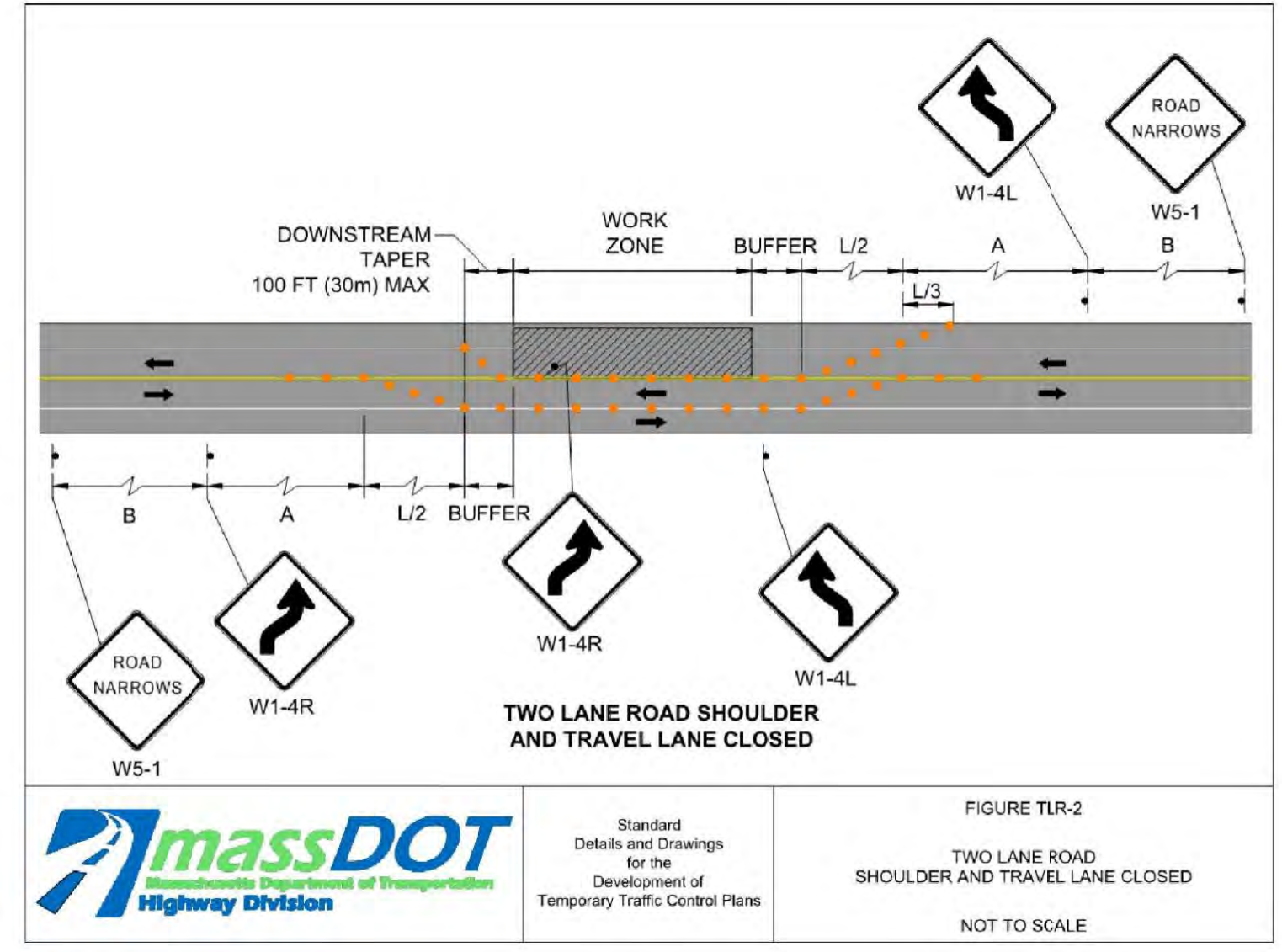


FIGURE GEN-6
LATERAL AND LONGITUDINAL DROP-OFF DETAILS
NOT TO SCALE
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

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SECTION 02015

TEST PITS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide test pits where noted/shown on the Drawings or at locations requested by the Engineer.
 - 1. In general the work under this Section shall consist of the excavation of test pits or other miscellaneous excavations not specified for payment elsewhere, by the Contractor where it may be necessary to locate or examine soils, groundwater, drains, pipes, rock, public utilities, subsurface structures, or any other possible obstacle or condition.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02221 Earthwork for Sewer and Drainage Systems

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 COORDINATION WITH UTILITY OWNERS

- A. The Contractor shall coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the location of test pits.
 - 1. All utilities shall be informed of the necessity of work under this Section and the Contractor shall give sufficient notice to the respective utility owners to afford reasonable time for coordination.
 - 2. If so desired by respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

3.02 EXCAVATION

- A. Unless otherwise specified, the Contractor shall dig test pits as required by the Contract Documents, and the Contractor shall notify the Engineer of the results immediately and prior to the start of any underground installations within said test pit areas.
 - 1. The Owner/Utility Companies shall be notified well in advance of excavation so that they also may make the necessary measurements to locate all objects within test pits.

2. Excavation of test pits shall be accomplished by such means as are required to ensure that any underground utilities or structures that may be encountered are not damaged
3. It shall be the Contractor's responsibility for any damages incurred during the excavation operations. Any such damages shall be repaired by him (if permitted) to the satisfaction of the Responsible Agency at the Contractor's own expense. Where the repair and/or replacement must be done by the Responsible Agency, any and all costs thereof shall be borne by the Contractor.
4. The Contractor shall notify the Engineer and/or utility companies of any conflicts uncovered which may require design revisions, relocations and/or adjustment.
5. No work shall be started within these areas of conflict until so authorized by the Engineer.
6. Test pit excavation and backfill shall comply with the applicable provisions of Section 02221.
7. Hand excavation shall be performed where necessary to prevent damage to the existing utilities.

3.03 MEASUREMENT

- A. The Contractor shall measure and record the size, configuration, horizontal and vertical location of all utilities, pipes or other obstacles uncovered in the various test pits dug under this Section.
 1. Size of test pits shall be as directed by the Engineer.

3.04 RESTORATION

- A. Where an existing pavement has been removed for the test pit excavation, the surface shall be restored to grade. The top 12 inches shall be compacted gravel.
 1. In all other areas, the surface of test pit areas shall be restored to a condition equal to or better than original.

END OF SECTION

SECTION 02140

SITE DRAINAGE AND DEWATERING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide drainage and dewatering as required by the Contract Documents.
 - 1. In general the Contractor shall furnish all materials, equipment, labor and incidentals necessary to provide dewatering and drainage control during construction.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 01567 Environmental Protection
 - 2. Section 02221 Earthwork for Sewer and Drainage Systems
 - 3. Section 02731 Plastic Sewer Pipe and Fittings

1.03 SUBMITTALS

- A. None required.

PART 2 PRODUCTS

2.01 EROSION AND SEDIMENTATION CONTROL

- A. Devices for erosion and sedimentation control for effluent of dewatering operations shall be as specified in Section 01567 Environmental Protection.

PART 3 EXECUTION

3.01 INSTALLATION

- A. To insure proper conditions at all times during construction the Contractor shall provide and maintain ample means and devices with which to remove and dispose of all water entering trenches and other excavations.
 - 1. Means of water removal and disposal shall include but not be limited to wells, surface pumps, and/or well point systems, to the extent required to prevent "boils" or softening of the foundation soils.
 - 2. The Contractor shall pitch the ground around the excavation to prevent water from running into excavated areas and to prevent damage to other structures or work on adjacent property.

3. The Contractor shall remove immediately any surface or seepage water or water from sewers, drains, creeks, or other sources, which may accumulate during the excavation and construction work.
- B. Excavations shall be kept dry until the structures, pipes and appurtenances, to be built or installed therein, have been completed and backfilled to such extent that they shall not float or otherwise be damaged by water in the excavation.
 1. In no event shall water rise to cause unbalanced pressure on the pipe or other structures. The Contractor shall prevent flotation of the pipe or structures.
 2. Pipe, masonry and concrete shall not be placed in water. Water shall not submerge new masonry or concrete within four (4) hours after placement.
 - C. Sufficient stand-by pumping equipment shall be installed and mounted for immediate use in case of emergencies. The Contractor shall be responsible for the adequacy of their dewatering equipment and system in controlling the water and for protection to adjacent public and private property from damage. Any damage to permanent work or existing property resulting from the failure of the Contractor to provide an adequate dewatering system shall be repaired by the Contractor at their expense.
 1. Wells, well points and pump sumps shall be installed with adequate filters to prevent loss of fine grained soils.

3.02 DISPOSAL OF DRAINAGE WATER

- A. All water pumped or drained from the work shall be disposed of in such a manner as to not cause injury to public health, damage to public or private property, interference with other work or adverse impacts to adjacent wetlands.
 1. Effluent from dewatering operations shall not be discharged directly to wetlands or waterways and shall not be discharged to storm drain systems prior to being filtered through a siltation basin.
 2. Discharge shall be such that no erosion occurs. Erosion protection shall be as specified in Section 01567 Environmental Protection.

END OF SECTION

SECTION 02160

SUPPORT OF EXCAVATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide excavation support as required by the Contract Documents.
 - 1. In general this work shall consist of furnishing and placing timber and/or steel sheeting and shoring of the types and dimensions required for proper excavation support.

1.02 DEFINITIONS

- A. Shoring shall mean the use of a steel trench box, steel sheeting, or timber sheeting braced as required.
- B. Timber sheeting shall mean the use of tongue and groove wood sheeting or steel soldier beams with wood lagging braced as required.
- C. Steel sheeting shall mean the use of steel sheet pilings with interlocking joints, braced by steel members as required.

1.03 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02731 Plastic Sewer Pipe and Fittings
- B. As established in the General Conditions of the Contract, the Contractor is solely responsible for means and methods of construction and for the sequence and procedures to be used.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. The Contractor shall not perform excavations in unstable ground and shall employ a positive means of containing the unstable ground behind shoring, before excavation may proceed.
- B. Employ a qualified Engineer, properly permitted to provide such services at the location of the work, to design the shoring system and to inspect and report on the quality of its construction.
- C. Comply with all pertinent requirements of governmental agencies having jurisdiction.

1.05 STANDARDS

- A. The following Standards form a part of this Specification as referenced:
 - 1. ASTM A328, Specification for Steel Sheet Piling
 - 2. Massachusetts DPW Standard Specifications, Section 950 Sheeting.
 - 3. Code of Federal Regulations (CFR), 29 CFR 1926, OSHA Standards - Excavation.

1.06 SUBMITTALS

- A. Submit shoring design to Engineer for record purposes only.

PART 2 PRODUCTS

2.01 DESIGN

- A. Design a shoring system which will safely and adequately prevent collapse of adjacent materials and which will permit construction of the Work to the arrangement shown on the Drawings.
- B. All shoring systems shall be designed so as to support all vertical and lateral loads and other surcharge loads imposed on the system during construction, including earth pressures, utility loads and other surcharged loads in order to provide safe and expeditious construction of the permanent structures and prevent movement and/or damage to adjacent soil, buildings, structures and utilities.
- C. Secure all needed approvals, including those of governmental agencies having jurisdiction and of adjacent property owners if required, at no additional cost to the Owner.

2.02 MATERIALS

- A. Material shall include, but not necessarily be limited to sheet piling, soldier piles, lagging, bracing members such as wales, struts, shores and tieback anchors.
- B. Lumber for timber sheeting and shoring:
 - 1. Shall be sound Spruce, Douglas Fir, white or yellow Lodgepole, Ponderosa pine, or western hemlock plank, planed on one side and either tongue and grooved or splined.
- C. Steel sheeting:
 - 1. Shall be of approved section and quality, either new or secondhand, conforming to the requirements of ASTM A328.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Construct and install the shoring system in strict accordance with the design engineer's requirements.
 - 1. When using soldier piles and lagging, where boulders or cobbles are encountered, soldier piles shall be installed in pre-augered holes over the full depth as required to prevent misalignment and damage.
 - 2. Vibration monitoring during installation and extraction of braced excavation shall be provided wherever the excavation is within 100 feet of existing structures.

3.03 SHEETING LEFT IN PLACE

- A. Sheeting left in place, for the purpose of preventing injury to structures, utilities or other property, shall be cut-off 3 feet below finished grade.
 - 1. The right of the Engineer to order sheeting left in place shall not be construed as creating any obligation on his part to issue such orders. His failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise growing out of a failure, on the part of the Contractor, to leave in place sufficient sheeting to prevent movement of the ground.

3.04 SHEETING REMOVED

- A. All sheeting not left in place shall be carefully removed in such manner as to not endanger the construction or other structures, utilities, or property.
 - 1. All voids left or caused by withdrawal shall be immediately refilled with approved material, and compacted with tools especially adapted to that purpose.
 - 2. Vibratory extraction methods shall be used only when it can be demonstrated that settling of pipe and structures will not occur. If such settling occurs, it shall be corrected at the Contractor's expense.

3.05 TRENCH BOX OR SHIELD

- A. Use of a trench box or shield shall not relieve the Contractor of any liability for damages to persons or property growing out of a failure of the Contractor to leave in place sufficient sheeting and bracing to prevent the caving or moving of the ground or disturbance of the completed work.
 - 1. Care shall be taken, when a trench box or shield is moved ahead, so as not to pull apart the joints of pipe already placed or leave voids around the pipe wall.
 - 2. At no time shall the portable box or shield be allowed to be positioned below the spring line of the pipe.

3. The width of the trench box or shield shall be such that a minimum 6 inch horizontal clearance is maintained between the pipe and shield at all times
4. If the pipe has moved, it shall be reset to the proper line and grade.
5. Any voids between the trench box or shield and the undisturbed trenchwall within the pipe zone (bottom of trench to top of cover material) shall be filled with crushed stone, bank run gravel, or approved material, immediately after the box or shield is positioned.

END OF SECTION

SECTION 02210

SITE GRADING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Excavate, backfill, compact, and grade work associated with the pump station and associated features to the elevations shown on the Drawings, as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02110 Clearing and Grubbing
 - 2. Section 02140 Site Drainage and Dewatering
 - 3. Section 02221 Earthwork for Sewers and Drains
 - 4. Section 01050 Field Engineering

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

PART 2 PRODUCTS

2.01 SOIL

- A. Fill Material:
 - 1. The soil to be used for grading shall be obtained from the site cuts or a designated borrow area on the site.
 - 2. Do not permit rocks having a dimension greater than 8 inches in the upper 12 inches of fill or embankment.

2.02 TOPSOIL

- A. Where shown on the Drawings or otherwise required, provide topsoil consisting of friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoils, roots, heavy or stiff clay, stones larger than 2 inches in greatest dimension, noxious weeds, sticks, brush, litter and other deleterious matter.

- B. Obtain topsoil from sources within the project limits, or provide imported topsoil obtained from sources outside the project limits, or from both sources.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINISH ELEVATIONS AND LINES

- A. Comply with pertinent provisions of Section 01050, Field Engineering.

3.03 PROCEDURES

- A. Utilities:
 - 1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
 - 2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
 - 3. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer.
 - 4. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.
- B. Protection of Persons and Property:
 - 1. Barricade open holes and depressions occurring as part of this work, and post warning lights on property adjacent to or with public access.
 - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 - 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.
- C. Dewatering:
 - 1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains and other approved methods as specified in Section 02140.
 - 2. Keep excavations and site construction area free from water.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- E. Maintain access to adjacent areas at all times.

3.04 EXCAVATING

- A. Perform excavating within the limits of the Work to the lines, grades, and elevations shown on the Drawings and specified herein.
- B. Satisfactory Excavated Materials:
 - 1. Transport to, and place in, fill or embankment areas within the limits of the Work.
- C. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.
- D. Ditches and Gutters:
 - 1. Cut accurately to the cross sections, grades and elevations shown.
 - 2. Maintain excavations free from detrimental quantities of leaves, sticks, trash and other debris until completion of the Work.
 - 3. Dispose of excavated materials as shown on the Drawings or directed by the Engineer.
- E. Unauthorized Excavation:
 - 1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Engineer.
- F. Ground Surface Preparation:
 - 1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from the ground surface prior to placement of fills.
 - 2. Plow, strip, or break up surfaces steeper than one vertical to four horizontal (1:4), so that fill material will bond with existing services.
 - 3. When existing ground surface has a density less than that specified under "compacting" for the particular area, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.
 - 4. At exposed soils in areas to be paved, scarify to a minimum depth of 6 inches, and recompact at a moisture content that will permit proper compaction as specified for fill.

3.05 GRADING

- A. General:
 - 1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
 - 2. Smooth the finished surfaces within specified tolerance.
 - 3. Compact with uniform levels or slopes between points where elevations are shown on the Drawings, or between such points as existing grades.
 - 4. Where a change of slope is indicated on the Drawings, construct a rolled transition section have a minimum radius of approximately 8 feet, unless adjacent construction will not permit such a transition or if such a transition defeats positive control of drainage.
- B. Grading Outside Building Lines:
 - 1. Grade areas adjacent to buildings to achieve drainage away from the structures, and to prevent ponding.
 - 2. Finish the surfaces to be free from irregular surface changes, and:

- a. Shape the surface of areas scheduled to be under walks to line, grade and cross-section, with finished surface not more than 0.10 feet above or below the required subgrade elevation.
- b. Shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.05 feet above or below the required subgrade elevation.

3.06 COMPACTING

- A. Control soil compaction during construction to provide the minimum percentage of density specified for each area.
- B. Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place, and as approved by the soils engineer.
 - 1. Structures:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 95% of maximum density.
 - 2. Lawn and unpaved areas:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 85% of maximum density.
 - b. Compact the upper 12" of filled areas, or natural soils exposed by excavating, at 85% of maximum density.
 - 3. Walks:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 95% of maximum density.
 - 4. Pavements:
 - a. Compact the top 8" of subgrade and each layer of fill material or backfill material to 95% of maximum density for cohesive soil material.
- C. Moisture Control:
 - 1. Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.
 - 2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
 - 3. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by dicing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the Engineer.

3.07 FIELD QUALITY CONTROL

- A. If, in the Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing under the provisions of Section 02200, of these Specifications.

3.08 MAINTENANCE

- A. Protection of Newly Graded Areas:

1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.
 2. Repair and re-establish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape and compact to the required density prior to further construction.

END OF SECTION

SECTION 02221

EARTHWORK FOR SEWERS AND DRAINS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide all earthwork as required by the Contract Documents.
- B. In general the work of this Section shall include but not necessarily be limited to, excavation, trenching, filling, backfilling, compaction and grading for sewer and drain systems.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02160 Support of Excavation
 - 3. Section 02227 Rock Removal
 - 4. Section 02700 Precast Concrete Manholes
 - 5. Section 02731 Plastic Sewer Pipe and Fittings
 - 6. Section 02930 Loam and Seed
 - 7. Section 01013 Facility Interference with Proposed Work
 - 8. Section 01300 Submittals
 - 9. Section 01567 Environmental Protection

1.03 SITE INVESTIGATION

- A. The grades and other site information have been compiled by field surveys.
 - 1. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work.
 - 2. Failure by the Contractor to acquaint himself with all available information concerning the site will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

1.05 PROTECTION OF PROPERTY AND UTILITIES

- A. Extreme care shall be exercised to prevent damage to existing trees, shrubs, utilities, walls, sidewalks, fences and private property.

1. Any damage to these items as a result of work performed by the Contractor shall be repaired by the Contractor at his own expense.
 2. Existing property boundary markers, control points and datum elevation markers or bench marks shall be preserved.
 - a. All such items which are displaced or destroyed by the Contractor shall be replaced by a registered Engineer or Land Surveyor, as required, with all expenses paid by the Contractor.
- B. Utility agencies shall be contacted and advised of proposed work prior to the start of work by the Contractor.
1. Notify Dig Safe.
 2. Obtain information from the proper sources and authorities concerning locations of all utilities within the scope of this work.
 3. If and when encountered, utilities shall be supported and protected, and the Engineer shall be notified. Ample time shall be allowed for entrance and taking such measures as may be required for the continuance of such services by the utility owner.
 4. Rules and regulations governing the respective utilities shall be observed. The Contractor's responsibilities with respect to utility locations, protection, interferences and relocations shall be as further specified in Section 01013.

1.06 REFERENCE STANDARDS

- A. The Contractor shall comply with the provisions of the following agencies as they apply to this project and as referenced:
1. Associated General Contractors of America, Inc. (AGCA) "Manual of Accident Prevention in Construction."
 2. Occupational Safety and Health Administration (OSHA), United States Department of Labor Requirements.
 3. American National Standards Institute (ANSI) "Safety Requirements for Construction and Demolition."
 4. American Water Works Association Standards.
- B. The following American Society for Testing and Materials (ASTM) standards form a part of this specification as referenced:
1. ASTM C33 Standard Specification for Concrete Aggregates
 3. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 4. ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
 5. ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- C. The following Massachusetts Department of Transportation (MassDOT) Standard Specifications for a part of the specification as referenced:
1. Section M1 Soils and Borrow Materials
 2. Section M2 Aggregates and Related Materials

1.07 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Testing and Samples:
 - 1. Test reports on backfill materials, moisture density tests, in place density tests (ASTM D1557 and D6938).
 - 2. Representative backfill and bedding samples and gradation tests (ASTM D6913).
 - 3. Tests shall be in conformance with paragraph 3.15 compaction requirements and testing as specified herein.

1.08 TRAFFIC

- A. While excavating and backfilling is in progress, traffic shall be maintained in a manner as specified in Section 01570 Traffic Regulation.

PART 2 PRODUCTS

2.01 GENERAL

- A. Except as specified for pipe bedding, pipe cover, roadway subbase and refill for rock and unsuitable materials, backfill materials may be as follows:
 - 1. Suitable materials for trench backfill shall be the material excavated during the course of construction, but excluding debris, pieces of pavement, frozen materials, organic matter, silt, top soil, ledge excavation and rocks over six inches in largest dimension.
 - 2. Gradation of material shall be generally as specified for gravel borrow except that maximum size of stone shall be 6 inches.
 - 3. The suitability of existing material for use as backfill will be determined by the Engineer.
 - 4. All unsuitable materials shall be disposed of as per paragraph 3.17.A.

2.02 PIPE BEDDING AND COVER MATERIAL

- A. Pipe Bedding and Pipe Cover Material (HDPE Pipe).
 - 1. Material for pipe bedding shall be screened gravel or crushed stone, ranging in size from 1/2 inch to 3/4 inch.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3/4 inch	90-100
1/2 inch	50-90
3/8 inch	20-40
No. 4	0-10
No. 8	0-5

2.03 CONCRETE SAND

- A. Concrete sand shall meet ASTM C33 for fine aggregate.

2.04 STRUCTURAL FILL

- A. Structural fill shall generally range from gavelly sand to gravel, free of organic material, trash, loam, ice, snow, frozen soil and other objectionable material, and shall conform to the following:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
6 inch	100
No. 4	30-80
No. 40	5-35
No. 200	0-8

2.05 GRAVEL BORROW

- A. Gravel borrow shall be a granular material, well graded from fine to coarse, with a maximum size of 3 inches, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.
1. It shall not contain vegetation, masses of roots, or individual roots.
 2. It shall be substantially free from loam and other organic matter, clay, and other fine or harmful substances.
 3. Gravel borrow shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3 inch	95-100
1/2 inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

2.06 PROCESSED GRAVEL FOR ROADWAY BASE

- A. Shall meet the requirements of the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, latest edition, M1.03.1.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3 inch	100
1 1/2 inch	70-100
3/4 inch	50-85
No. 4	30-60
No. 200	0-10

2.07 CLAY/BENTONITE

- A. Materials that will function as impervious barriers to water movement shall be a silty or clay soil material meeting the requirements of AASHTP M 145 for soil classification A2, A-6 and A-7 provided such materials do not have a Liquid Limit (LL) greater than 50.

PART 3 EXECUTION

3.01 TRENCH EXCAVATION

- A. The Contractor shall make all excavation in earth and in rock, necessary or incidental to the proposed construction under the terms of this Contract and as herein specified or indicated on the Drawings.
1. All trench excavation shall be accomplished by open cut method.
 2. All excavation shall be made in such manner and to such widths as will give ample room for properly installing, constructing and inspecting pipe lines and structures they are to contain.
 3. The width of trenches shall be sufficient to allow thorough compacting of the refill adjacent to the lower quarters of the pipe. At pipe joints such additional width and depth shall be excavated as is necessary to give ample room for properly making and inspecting the pipe joint.
 4. Bracing and support of all trench excavation shall meet all requirements of Local and State ordinances and OSHA regulations.
 - a. Sheeting and bracing, or the use of a steel support box shall be used where required to maintain a safe working condition and provide protection from collapse of the trench walls.
 5. During excavations, material determined by the Engineer to be suitable for backfilling, shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. Unsuitable material shall be disposed of as specified in paragraph 3.18 and replaced as ordered by the Engineer with surplus suitable material and gravel borrow to the extent necessary.
 6. Should conditions make it impractical or unsafe to stack material beside the trench, it shall be hauled and stored at a location provided by the Contractor. When required, it shall be re-handled and used in backfilling the trench. No additional compensation will be made for re-handling this material.
 7. Pipe trenches shall be backfilled as soon as practical after the pipes have been laid, jointed and inspected by the Engineer. The extent of excavation open at any one time shall be no more than 50 linear feet of trench during working hours and no more than 20 linear feet during non-working hours. Under no circumstances shall more than 100 feet of trench be open at any one time.

3.02 EXCAVATION CLASSIFICATION

- A. Earth excavation shall comprise all materials not classified as rock excavation and shall include clay, silt, sand, muck, gravel, hardpan, loose shale, pavement, pavement bases, loose stone in masses and boulders measuring less than one cubic yard in volume.
- B. Rock: See Section 02227 - Rock Removal.

3.03 TRENCH EXCAVATION IN PAVED ROADWAYS

- A. In excavating trenches in roadways having an improved pavement, the Contractor shall cut the pavement twice; once prior to excavation and again prior to permanent resurfacing.
1. The first cut may be made using a water cooled abrasive saw, pneumatic chisel or a wheel cutter attached to a front end loader.
 2. The second and final cut shall be made with a water cooled abrasive saw.
 3. In all cases a trial section shall be cut to indicate the performance of the equipment to be used.

4. Pavement removed shall not be mixed with other excavated materials, but shall be disposed of away from the site of the work before the remainder of the excavation is made.
5. Existing pavement and base course to remain shall be protected by the Contractor. All existing pavements and base courses which are to remain and have been damaged, shall be restored or replaced by Contractor to match existing pavements, base courses and grades, at no additional expense to the Owner.

3.04 UNSUITABLE MATERIAL

- A. All pipes and structures are to be laid on a stable foundation. If material at grade is determined to be unsuitable by the Engineer, the Contractor shall excavate a further depth and/or width, and refill with an approved material. Refill material shall be structural fill or gravel borrow as determined by the Engineer.
 1. Where fine sand and silt are encountered at the bottom of the trench, it shall be the option of the Engineer to require a 6-inch compacted depth of concrete sand meeting ASTM C33 for fine aggregate to be installed beneath the pipe bedding to the full width of trench.
 2. Payment width limits shall be the same as specified for trench excavation, unless an additional width of trench is ordered by the Engineer.
 3. Any excavation in excess of the amount ordered by the Engineer shall be backfilled and compacted with an approved granular material, at the Contractors expense.

3.05 ROCK REMOVAL

- A. See Specification Section 02227.

3.06 DEWATERING

- A. See Specification Section 02140.

3.07 BACKFILLING AND COMPACTING

- A. Backfill shall be placed in uniform layers. Each layer shall be thoroughly compacted by tamping or vibrating with mechanical compacting equipment.
 1. Care shall be taken to compact the backfill materials throughout the full width of the excavation and beneath all pipes and structures.
 2. The backfilling of trenches shall proceed as soon as the laying of the pipe(s) or installation of the structures will allow.
 3. Pipe bedding shall be required below and up to the springline of all pipe. Pipe bedding shall be placed to the full width of the trench and to a depth of 6 inches below the bottom of the pipe barrel as indicated on the Drawings
 4. Pipe bedding shall be placed 12 inches beyond the widths of a utility structure foundation (base) and to a depth of 6 inches below the foundation (base) or as indicated on the Drawings.
 5. After a pipe has been adjusted to correct line and grade, and bedded, the trench shall be filled to the centerline of the pipe with pipe bedding and compacted, except at the joint. After the joint has been inspected, that portion shall be filled in with pipe bedding and compacted. Material under and around the pipe shall be

carefully and thoroughly compacted and tamped with approved compacting equipment.

6. From the centerline of the pipe to a point 12 inches above the top of the pipe, the fill shall be pipe bedding.
7. Impervious dams of natural clay, or bentonite shall be installed in the pipe bedding, cover and below grade replacement material to a length of 12 inches and at maximum spacing of 300 feet to minimize flow of groundwater through the bedding.

B. Placement of Backfill Above the Pipe Bedding.

1. Above the pipe bedding, backfill shall be suitable material from the excavation or, if ordered by the Engineer, gravel borrow. This backfill shall be placed in layers 12 inches deep in loose measure, or greater at the discretion of the Engineer, and each layer shall be thoroughly compacted with mechanical tampers. This backfill shall be carried up to the bottom of materials specified to be placed for surfacing requirements.

C. Roadway Trench.

1. The following additions shall apply specifically to trenches within roadways:
 - a. The top eighteen (18) inches of trench refill, roadway sub-base, shall be comprised of 6 inches of processed gravel and 12 inches of gravel borrow, placed, graded and compacted by the Contractor. This material shall be placed during the backfilling operation.
 - b. The Contractor shall fine grade the surface, apply dust control treatment and maintain the surface in a condition which will allow safe vehicular traffic until resurfacing is placed.
 - c. The length of unsurfaced trench shall not exceed 500 linear feet, and shall be maintained to the Owner's satisfaction, in a condition to allow safe vehicular traffic. If the trench is not maintained in a satisfactory condition, the allowable length of unsurfaced trench shall be reduced accordingly.

3.08 TRENCH SIZE

- A. Trenches shall be excavated to the necessary width and depth for proper laying of pipe and placement of concrete and other materials and shall have vertical sides to 12 inches above the pipe. Above this point, sides shall be as near vertical as approved construction procedures and safety requirements permit.
1. Widths of trenches shall be as shown on the drawings.
 2. The depth of trench shall be a minimum 6 inches below the pipe barrel, or as shown on the Drawings.

3.09 STRIPPING TOPSOIL

- A. Topsoil shall be carefully stripped and separately stored to be used again for topsoiling and seeding on off-pavement areas within which excavations are to be made.

3.10 EXCAVATION NEAR EXISTING STRUCTURES AND UTILITIES

- A. It is called to the attention of the Contractor that there are utilities and other underground pipes along the course of the work. Information shown on the Drawings as to the

location of said utilities and pipes is from the best available sources, but no guarantee is implied, nor is it to be assumed that such information is accurate or complete. Utility lines will be crossed in the course of the work.

- B. The Contractor shall exercise special care during his operations to avoid injury to all such underground utilities and structures.
 - 1. When necessary, the Contractor shall cooperate with, and consult with representatives of the Owner and the utility companies in order to avoid damage to the structures.
 - 2. The Contractor shall arrange for or furnish and erect suitable supports and shoring or other means of protection where required to protect the utilities, all at no additional cost to the Owner.
 - 3. Hand methods of excavating shall be used around buried utilities and is included in the work to be done under this Contract, at no additional cost to the Owner.
 - 4. Interference between the proposed work and existing utilities, relocation of existing utilities, repair or damage to existing utilities, and protection and support of existing utilities during construction of the proposed work will be as specified in Section 01013.

3.11 PROTECTION OF PROPERTY

- A. The Contractor shall, at his own expense, preserve and protect from injury all property either public or private along and adjacent to the line of work, and be responsible for and repair any and all damage and injury thereto, arising out of or in consequence of any act or omission of the Contractor.
 - 1. All existing pipes, culverts, poles, wires, fences, mailboxes, stone walls, curbs, bounds, etc., shall be temporarily removed, supported in place or otherwise protected from injury, and shall be restored to at least as good condition as that in which they were found immediately prior to the start of work.
 - 2. Lawns, shrubs, bushes, planting beds and decorative trees disturbed or damaged shall be restored to a condition equal to that found prior to the start of construction, either by temporary transplant or replacement in kind, except as otherwise indicated on the Drawings.

3.12 SAFETY AND ACCOMMODATION

- A. The Contractor shall provide, at his own expense, suitable bridges over trenches where required for the accommodation and safety of the traveling public, and provide facilities for access to private driveways for vehicular use.
 - 1. He shall erect suitable barriers around the excavation to prevent accidents to the public and shall place and maintain during the night sufficient lights on or near the work.
 - 2. A space of twenty (20) feet shall be left so that free access may be had at all times to fire hydrants and proper precautions shall be taken so that the entrances to fire hydrants and fire stations shall not be blocked or obstructed.

3.13 DETOURS

- A. It is the intent of this Contract to keep the roadways open to two way traffic at all times. In order to obtain permission for the closing of the roadway, the Contractor shall satisfy

the Owner, Police Chief and Fire Chief, that his operations will allow emergency access at all times.

1. See Section 01570, Traffic Regulations.

3.14 UNIFORMED POLICE OFFICERS

- A. The Contractor shall make all arrangements with the Police Chief for the services of uniformed police officers.
 1. If, in the opinion of the Police Chief or the Owner, uniformed police officers are required for protection of persons and control of traffic, the Contractor shall be responsible for making all arrangements for said uniformed police officers as may be required.

3.15 COMPACTION REQUIREMENTS AND TESTING

- A. All backfill materials shall be thoroughly compacted by rolling, tamping or vibrating with approved mechanical or pneumatic compacting equipment so that pipe, structures, paving and other construction will not settle at the time of construction or in the future. The responsibility for thorough compaction is that of the Contractor irrespective of methods of backfill and depth of backfill layers placed.
- B. All percentages of compaction specified herein shall be of the maximum dry density at the optimum moisture content as established ASTM D1557 and verified by ASTM D6938. When the term "thoroughly compacted" is used in these specifications, it shall mean compaction to at least 95% of the maximum density of the soils at optimum moisture content.
- C. The following numbers and types of soil tests shall be made where directed by the Engineer. These tests shall be made by qualified personnel of an independent testing laboratory, acceptable to the Engineer and paid by the Contractor. Three copies of all test results shall be delivered to the Engineer.
 1. Particle-Size analysis of Soils and Backfill Materials in accordance with ASTM D6913. A minimum of one satisfactory test from each material in the field shall be submitted to the Owner and Engineer in addition to the initial shop drawings confirming material compliance with the specifications.
 2. Moisture-Density Relationship of soil in accordance with ASTM D1557, Method D. A minimum of one satisfactory test from each material in the field shall be submitted to the Owner and Engineer in addition to the initial shop drawings confirming material compliance with the specifications.
 3. In-Place Density Tests of materials in accordance with ASTM D6938. Compaction tests will be taken at random on compaction layers below and at finished surfaces. Compaction testing frequency shall occur as outlined below, or as directed by the Engineer.
 - a. Not less than one compaction test for every 300 linear feet.
 - b. Not less than one compaction test for every 5,000 sq. ft. for each lift.
 4. Failed tests shall be repeated at the Contractor's expense.
- D. The Owner reserves the right to have additional compaction tests performed by an independent laboratory with testing costs borne by the Owner, except that failed tests shall be repeated at the Contractor's expense.

- E. If any of the field density test results fail to meet the density as specified herein for the earthwork involved, then the Contractor shall remove all of the earthwork in that portion of the work involved as determined by the Engineer, and shall replace it in accordance with these Specifications to the required density. After the work is replaced, additional field density tests will be made by an independent testing laboratory retained by the Owner, and the Contractor shall reimburse the Owner for all costs for such additional testing.
- F. Compaction shall be to the following densities:

<u>Fill and Backfill Location</u>	<u>Modified Proctor Density (Percent)</u>
Under structures and pipes	95
Beside structure foundation walls	95
Top two feet under pavements	95
Under pavements below top two feet	95
Trenches through unpaved areas	90
In embankment	90

- G. Puddling and jetting of the backfill shall not be permitted except in special cases approved by the Engineer.

3.16 TRENCH EXCAVATION IN FILL

- A. Where the existing ground surface does not permit at least 4 feet of cover over the finished pipe, and where indicated on the Drawings, the Contractor shall place and compact suitable fill material to the depth necessary to provide the 4 foot minimum cover, including loam to a minimum top width of 6 feet, or as otherwise shown on the Drawings
 1. Minimum side slopes shall be two horizontal to one vertical.
 2. Fill material shall be from surplus suitable material or gravel borrow, and be clean, dry, and capable of satisfactory compaction, all as approved by the Engineer, and shall be placed in layers not exceeding 8 inches thick and compacted.
 3. The trench shall be excavated in the compacted fill and the remainder of the work shall be in accordance with other portions of these Specifications.

3.17 DISPOSAL OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL

- A. All surplus excavated material and any material unsuitable for use shall be disposed of in disposal areas provided by the Contractor.
 1. It is the Contractor's responsibility to dispose of unsuitable excavated material in an approved manner.
 2. The Contractor shall not dispose of surplus materials on wetlands or other areas prohibited by the Corps of Engineers or the Commonwealth of Massachusetts Department of Environmental Protection, or any other local authority having jurisdiction.

3.18 DUST CONTROL

- A. The Contractor shall perform dust control operations as specified in Section 01567.

3.19 CLEAN-UP

- A. The Contractor shall remove all surplus materials (earth, pipe, fittings, storage and office trailers, barricades, etc.), from the construction site.
 - 1. All paved roadways affected by the construction shall have their full width swept clean (paved edge to paved edge) using methods which control the dust.
 - 2. Before the Contractor may proceed to another roadway, clean up of the previous roadway must be complete.

END OF SECTION

SECTION 02227

ROCK REMOVAL

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Remove all rock encountered while excavating for structures, roadways, or utility trenches as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02221 Earthwork for Drains and Sewer

1.03 DEFINITIONS

- A. Rock excavation: Rock which requires explosives, wedging or impact hammer for its removal. Concrete shall be classified as rock.
- B. Boulders, slabs or other single pieces of material encountered, which are less than one (1) cubic yard shall not be considered rock.

1.04 STANDARDS

- A. All handling of explosives and blasting shall be in compliance with the pertinent sections of Commonwealth of Massachusetts Regulations (CMR) 13.00.

1.05 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Comply with all pertinent requirements of governmental agencies having jurisdiction.

1.06 SUBMITTALS

- A. Submit plans for proposed pre-blast survey (Record purposes only).

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 NOTIFICATION

- A. When rock is encountered, it shall be uncovered and the Engineer notified.
 - 1. The Contractor shall provide the Engineer with cross sections of the rock surface or a profile of the rock where trenches are concerned.
 - 2. The Engineer shall be present when the cross sections or profiles are taken.
 - 3. The average end area method shall be used in computing the volumes wherever practicable.

3.02 LIMITS OF EXCAVATION IN ROCK

- A. Excavation in rock shall be performed, so that no projection shall come within vertical planes twelve (12) inches outside of the structure being built or twelve (12) inches below the bottom of the structure base slab and footings.
- B. In trenches, the rock shall be removed to the limits shown on the typical trench section.
 - 1. Where excavation is carried beyond the above determined limits, the additional space shall be refilled at the Contractor's expense with concrete or other specified materials.

3.03 BLASTING

- A. Pre-Blast Survey: Prior to any blasting, the Contractor shall submit a pre-blast survey.
 - 1. The survey shall satisfy the insurance requirements of the Contractor and be acceptable to the Contractor's insurance carrier, as well as provide data to assess damages to personal property and real estate due to blasting operations.
 - 2. The survey shall be complete as warranted by the nature of the work.
- B. Take all precautions necessary to warn and/or protect any individuals exposed to his operations. Such precautions shall include but not be restricted to the following:
 - 1. Present written certificate of insurance showing evidence that his insurance includes coverage for blasting operations, before doing any blasting work.
 - 2. Make necessary arrangements as may be required by the applicable Federal, State, County or Municipal codes, rules, regulations and laws, and shall be responsible for compliance.
 - 3. Obtain a permit from the local authorities to perform blasting operations.
 - a. The Engineer shall be notified in writing that such permit has been obtained.
 - 4. Schedules for blasting shall be thoroughly coordinated with the proper authorities – Federal, State and Local.
 - a. No blasting shall be done unless the Contractor has notified all concerned parties that he may blast.
 - b. The Contractor shall also notify any commercial installation in the immediate area whose operations or instrumentation may be affected by blasting, at least twenty four (24) hours prior to blasting operations.
 - 5. Seismographic recordings shall be made of all blasting operations on the project by a qualified testing agency hired and coordinated by the Contractor.
 - a. A copy of these recordings shall be made available to the Engineer.
 - 6. Blasting shall be performed by persons who are licensed to use explosives.

7. The Contractor shall keep an accurate record of each blast and submit a copy to the Engineer. The record shall show the date, time, exact stationing of the blast, the depth and number of drill holes, and kind and quantity of explosive used, and any other data required for a complete record.
8. The Contractor shall be fully responsible for damages caused by his blasting operations.
9. If rock below the limits of excavation is shattered by blasting, caused by holes drilled to deep, too heavy a charge of explosives or any other circumstance due to blasting, the shattered rock shall be removed and the void refilled with gravel borrow at the expense of the Contractor.
 - a. Gravel borrow shall be as specified in Section 02221 Earthwork for Drains and Sewer.

3.04 DISPOSAL AND REPLACING OF ROCK

- A. Remove and dispose of all pieces of rock which are not suitable for use in other parts of the Work.
 1. Rock disposed of by hauling away to spoil areas shall be replaced by surplus excavation obtained elsewhere on the site, insofar as it is available.
- B. Fragments of rock approximately twenty five (25) pounds or less may be used in the fill areas of the site (roadway areas excluded).
 1. The Contractor shall place these pieces of rock in thin layers alternating them with layers of earth to be sure that all voids between the rock are completely filled with earth.
 2. If in the opinion of the Engineer the quantity is excessive, he may order the removal and disposal of the rock.
- C. Be responsible for obtaining spoil locations and the removal of all excess rock from the site.

END OF SECTION

SECTION 02513

ASPHALTIC PAVEMENT

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide asphaltic pavement and appurtenant items as required by the Contract Documents.
 - 1. In general the Contractor shall provide all labor, equipment, and materials, and perform all operations in connection with the installation of asphaltic pavement, berms, pavement markings, calcium chloride, final grade adjustments of valve boxes, manhole and catch basin castings, and preparation of the trench.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drains

1.03 STANDARDS

- A. All paving shall comply with the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, hereinafter called Standard Specifications, as referenced.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

PART 2 PRODUCTS

2.01 GRAVEL SUBBASE

- A. Shall be as specified in Section 02221, Earthwork for Sewer and Drains.

2.02 ASPHALTIC PAVEMENT

- A. Bottom and Top Course:
 - 1. Shall be Class I asphaltic pavement conforming to Sections 420, 460 and M3 of the Standard Specifications.

2.03 ASPHALT TACK COAT

- A. Shall consist of either emulsified asphalt, grade RS-1 conforming to Section M3.03.1, or cutback asphalt, grade RC-70 or RC-250 conforming to Section M3.02.0 of the Standard Specifications.

2.04 PAVEMENT MARKING PAINT

- A. Shall be High Heat Rapid Drying Traffic Marking Material conforming to Section M7.01.08 (White High Heat Rapid Drying Traffic Marking Material) and Section M7.01.09 (Yellow High Heat Rapid Drying Traffic Marking Material) of the Standard Specifications, as applicable.
- B. Shall be Thermoplastic Reflectorized Pavement Markings conforming to Section M7.01.03 (White Thermoplastic Reflectorized Pavement Markings) and Section M7.01.04 (Yellow Thermoplastic Reflectorized Pavement Markings) of the Standard Specifications, as applicable.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINAL PREPARATION OF SUBGRADES

- A. Gravel Subbase:
 - 1. Minimum compacted depth shall be shown on details, of 12 inches as measured from the bottom of the pavement.
 - 2. Spread and compacted in layers not exceeding 6 inches in depth, compacted measurement.
 - 3. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by the standard AASHTO Test Designation T99 Compaction Test Method C at optimum moisture content.

3.03 GENERAL

- A. All asphaltic pavement thickness referred to in this Section shall be compacted thickness.
- B. No asphaltic pavement shall be placed when the air temperature is below forty (40) degrees Fahrenheit, or when the material on which the mix is to be placed contains frost.
- C. Maintain asphaltic pavement under this Contract during the guarantee period of one (1) year.
 - 1. Promptly refill and re-pave all areas which have settled or are otherwise unsatisfactory for traffic.

3.04 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

- A. Massachusetts Department of Transportation Temporary Pavement Requirements
1. Place after underground facilities have been installed.
 2. Pavement shall be the type as specified in this Section except that “cold-mix” will be acceptable for repairs during seasonal closure of the asphalt concrete supplier.
 3. Within the MassDOT State Highway Layout (SHLO), the pavement profile shall consist of a compacted thickness of 7 inches of hot mix asphalt binder course Type I-1, placed in two 2.5-inch lifts and one 2-inch lift, as shown on the drawings.
 4. All trenches shall be backfilled and paved prior to the completion of work each day, and no trenches shall be left unpaved or plated in the road over the weekend in accordance with the MassDOT Permit. Millings may be allowed as temporary backfill on Sunday nights if asphalt plants are not opened, but millings shall be removed and temporary paving placed the following night.
 5. Asphalt shall be placed with a self propelled spreader.
 6. Compaction shall be accomplished with a self propelled roller, with a weight of approximately 285 pounds per inch of roller width.
- B. Massachusetts Department of Transportation Permanent Paving Requirements
1. Following the seasonal settling period, the Contractor shall, in preparation for permanent overlay in the MassDOT SHLO, mill the roadway from the nearest edge of road to 1-foot beyond the trench as required by the Drawings.
 2. The bottom 5-inches of temporary hot mix asphalt binder course Type I-1 paving shall be utilized as the base course of the permanent 2-inch mill and overlay permanent resurfacing with the MassDOT SHLO.
 3. After all loose and broken paving has been removed and replaced, the Contractor shall bring to subgrade, low or settled areas of temporary pavement and the existing pavement with a leveling course of asphaltic concrete.
 4. The surface of the remaining pavement shall be thoroughly patched, cleaned, and tack coated just prior to applying the overlay. Edges of the existing pavement shall be brushed clean and the specified tack coat applied. The surface receiving the top course shall be completely dry prior to the application of the tack coat.
 5. Tack coat shall be applied at the rate of 0.25 gallons per square yard. The contact surface of the curbing, castings and other structures shall be painted with the tack coat.
 6. All castings (frames and covers, valve boxes) shall be raised to finish grade before the top course is applied.
 7. The permanent pavement shall include a compacted 2-inch hot mix asphalt top course Type I-1 overlay.
 8. The equipment used for spreading and finishing shall be a mechanical self powered paver capable of spreading and finishing the mixture true to line, grade, width, and crown by means of fully automated controls for both longitudinal and transverse slope.
 9. Compaction shall be accomplished with a self propelled roller with a weight of approximately 285 pounds per inch of roller width.
- C. Sand Seal
1. The but edges of all permanent resurfacing and overlays shall be sealed with a six (6) inch wide continuous strip of RS-1, completely covered with sand.
- D. Infra-red Treatment

1. All trench resurfacing shall be blended with infra-red treatment.

3.05 CASTING ADJUSTMENTS

- A. Where asphaltic pavement is to be applied, manhole and catch basin frames and valve boxes are to be adjusted to the grade of the new pavement.
 1. A neat line shall be cut in the pavement around the existing frames and valve boxes.
 2. The material; gravel, pavement and concrete collar (if applicable) shall be removed down to six (6) inches below the frame.
 3. The frame shall be freed from its existing grout bed and shimmed with steel shims of the appropriate thickness, at a minimum of four (4) alternate locations, so as to insure that the frame will not rock. The frame shall then be set into a full bed of grout, and a concrete collar placed around the frame, up to within two (2) inches of finish grade.
 4. The frame shall be protected from damage from traffic until the concrete has taken a firm set.

3.06 BERMS

- A. Asphaltic Pavement Berms:
 1. Berms shall be class I asphaltic Type I-1.
 2. The mixture shall be placed and compacted with a machine acceptable and approved by the Engineer, for the type of berm required.
 3. Placing and forming of berms by hand shall not be allowed.

3.07 DUST CONTROL TREATMENT

- A. Calcium chloride shall be applied only upon direction of the Engineer.
 1. The roadway shall be swept clean and calcium chloride spread at a uniform rate over the prepared gravel trench surface.

3.08 PAVEMENT MARKINGS

- A. Pavement markings shall be applied as shown on the contract drawings or at locations directed by the Engineer.
 1. Pavements shall have been in place 48 hours prior to the application.
 2. The surface shall be prepared to accept the application in compliance with the paint manufacturer's requirements.
 3. Applied to a dry film thickness of fifteen (15) mils.
 4. The temperature of the pavement shall be between forty (40) degrees and one hundred twenty (120) degrees Fahrenheit.
 5. No thinners are to be used for the pavement markings.
 6. The equipment used for the application of pavement markings, shall be of standard commercial manufacturer. All other equipment and devices necessary for the application of pavement markings and protection thereof and for the protection of the traveling public, shall be as usually required for work of this type, and shall be furnished by the Contractor.
 7. Pavement markings shall be either a single continuous line or broken line, four (4) inches wide.
 8. If for any reason material is spilled or tracked on the pavement or any markings applied by the Contractor the Contractor shall remove such material.

- a. The material shall be removed by a method that is not injurious to the roadway surface and is acceptable to the Engineer.
- b. Clean the roadway surface and prepare the surface for a re-application of the pavement markings.

END OF SECTION

SECTION 02514

SIDEWALKS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The work of this Section shall consist of furnishing all labor, materials and equipment required for installing sidewalks to conform to lines and grades shown on the Drawings.
- B. Additional Work: The work in this Section shall consist of furnishing and installing all labor, materials and equipment required for install of either driveway or sidewalk transitions adjacent to or abutting concrete or bituminous sidewalks. In general, the Contractor shall match the material types and adjust cement or bituminous pavement for any changes in grade.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02513 Asphaltic Pavement
 - 3. Section 02516 Remove and Reset Existing Curbing
 - 4. Section 03300 Cast-In-Place Concrete

PART 2 PRODUCTS

2.01 CEMENT CONCRETE SIDEWALKS

- A. Cement concrete for sidewalks shall conform to Class A cement concrete (3500 psi) as specified in Section 03300.
- B. Curb ramps and driveway transitions shall conform to Class A concrete (3500 psi) as specified in Section 03300.

2.02 GRAVEL SUBBASE

- A. Gravel subbase shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.
- B. Gradation requirements for gravel subbase shall be as specified in Section 02221 for structural fill.

2.03 BITUMINOUS CONCRETE SIDEWALKS

- A. Bituminous concrete for bituminous sidewalks shall be as specified in Section 02513.

PART 3 EXECUTION

3.01 CEMENT CONCRETE SIDEWALKS

- A. The subgrade for the sidewalks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly compacted.
- B. After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk. The gravel shall be compacted to not less than 95% of maximum density as defined in Section 02221.
- C. Side forms and transverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk.
- D. The edge shall conform to the grade of the finished walk and shall have sufficient pitch to provide for surface drainage and shall not exceed 1/4 of an inch per foot.
- E. The cement concrete sidewalks shall be placed in alternate slabs 24 feet in length except as otherwise ordered. The slabs for sidewalks shall be separated by transverse preformed expansion joint fillers 3/8 inch in thickness. Sidewalk and driveway expansion joints shall be 3/8" x 4" preformed ethylene vinyl acetate or closed cell polyethylene foam material.
- F. Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.
- G. The cement concrete shall be placed in such quantity that after being thoroughly consolidated in place it shall be 4 inches in depth. At driveways, the sidewalks shall be 6 inches in depth. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel-troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft bristled push broom with a long handle over the surface of the cement concrete to produce a non-slip surface.
- H. The surface of all cement concrete sidewalks shall be uniformly scored into block units of areas not more than 24 square feet. The depth of the scoring shall be at least one quarter of the thickness of the sidewalk.
- I. The application of neat cement to surfaces in order to hasten hardening is prohibited.
- J. The finishing of concrete surface shall be done by experienced and competent cement finishers. When completed the walks shall be kept moist and protected from traffic and weather for at least 3 days.
- K. At driveways or street intersections the cement concrete shall be blended or tapered to cap the end of either concrete or granite curbing to form a smooth transition.

3.02 CURB RAMPS AND DRIVEWAYS

- A. The subgrade for the sidewalks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly compacted.
- B. After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk.
- C. Side forms and transverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk.
- D. The edge shall conform to the grade of the finished walk and shall have sufficient pitch to provide for surface drainage and shall not exceed 1/4 of an inch per foot.
- E. The concrete ramps and driveway transitions shall be placed in alternate slabs 24 feet in length except as otherwise ordered. The slabs for sidewalks shall be separated by transverse preformed expansion joint fillers 3/8 inch in thickness. Ramps and driveway expansion joints shall be 3/8" x 4" preformed ethylene vinyl acetate or closed cell polyethylene foam material.
- F. Handicap ramps and curb ramps at intersections shall be constructed in accordance with the Americans with Disabilities Act (ADA) Accessibility Guidelines (Jan 1998 edition) and in accordance with dimensions and minimum slopes presented in the design drawing(s) details.
- G. Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.
- H. The cement concrete in driveways shall be placed in such quantity that after being thoroughly consolidated in place it shall be 6 inches in depth. The cement concrete in sidewalk or curb ramps shall be 4 inches in depth except in conjunction with driveway areas. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel-troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft bristled push broom with a long handle over the surface of the cement concrete to produce a non-slip surface.
- I. At driveways, street intersections or sidewalk ramps the concrete shall be blended or tapered to cap the end of either concrete or granite curbing to form a smooth transition.

3.03 REMOVAL AND RELAYING OF EXISTING SIDEWALKS

- A. The Contractor shall maintain access to all abutting business for the full duration of the Contract.
- B. The Contractor shall remove and reset all existing castings in the sidewalk layout. If the existing castings are damaged as part of the Contractors sidewalk removal operations, the casting shall be replaced at the Contractor's expense. The work shall include any

coordination required with public or privately owned utilities with equipment set in the sidewalk layout.

- C. The Contractor shall make every effort to minimize damage to existing tree and root systems. In the case of excessive damage, which if determined by the OWNER will result in the death of the tree, the Contractor will be held fully responsible for replacement of the trees at no additional expense to the OWNER.
- D. All existing curbs, bituminous sidewalks, brick sidewalks, concrete sidewalks, private or public walks, fences, stone walls and other similar items removed for the construction of the services, connections, water and/or storm drain lines shall be replaced in a manner equal or better than their original condition.

3.04 TRANSITIONS TO WALKWAYS AND DRIVEWAYS

- A. The Contractor shall furnish and install a transition to the existing sidewalks and driveways to match the existing grades. The transition can vary from 6 inches to 3.0 feet wide depending on the location. The transition shall meet the Americans with Disabilities Act (ADA) requirements as specified herein under Item 3.02(F). The Contractor shall match the existing walk or driveway material type (i.e. cement concrete or asphaltic pavement). Any damage to the existing sidewalks or driveways, as a direct result of the Contractor's operations, shall be restored by the Contractor to the original conditions at no additional expense to the OWNER.
- B. All costs related to replacement, furnishing, and installing the transitions shall not be measured for separate payment.

END OF SECTION

SECTION 02515

GRANITE CURBS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The work of this Section shall consist of furnishing all labor, materials and equipment required for installing and setting curb(s), curb corners and edging on a gravel foundation, to conform with lines and grades shown on the Drawings.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02514 Concrete Sidewalks
 - 3. Section 03300 Cast-In-Place Concrete

PART 2 PRODUCTS

2.01 GRANITE CURBING

- A. Granite curbing shall type VA-4 conforming to the requirements specified in Subsection M9.04.1 of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.
- B. All granite curb and edging shall be light gray in color, free from seams and other structural imperfections or flaws which would impair its structural integrity, and of a smooth splitting appearance.
- C. Whenever curbing is sawed, all surfaces that are to be exposed shall be thoroughly cleaned and any iron rust or iron particles removed by sand blasting or other approved method and any saw mark in excess of 1/8 inch shall be removed.

2.02 CURB CORNERS (Bullnose Corners)

- A. The granite for curb corners shall conform to M9.04.0 and shall have horizontal Beds. The curbs shall match the adjacent curbing in size, color and quality. The front arris lines shall extend through $\frac{1}{4}$ of a circle having a radius of 2 feet Type A curb corners. The back arris line shall be straight. The plane of back shall be normal to top.

2.03 GRANITE CURB INLETS (Throat Stone)

- A. The granite curb inlets shall conform to Subsection M9.04.0 of the Mass Highway Department Standards. The curb inlets shall be horizontal bed with tops free from wind.

- B. The curbing shall be sawn or peen hammered on top and the front face shall be straight split, free from drill holes.
- C. The inlet curb shall be six (6) feet in length and 16-19 inches in depth. The curb shall be six (6) inches wide at the top and at least six inches wide at the bottom.
- D. The mouth of the curb inlet shall be at least three (3) inches in depth and at least two (2) feet in length. The inlet curb shall be cut in the front face of the stone and the inlets shall match the adjacent curbing in color.

2.04 GRAVEL

- A. Gravel shall conform to the requirements of Subsection M1.03.0 Type C of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

PART 3 EXECUTION

3.01 EXCAVATING TRENCH AND PREPARING FOUNDATION

- A. The trench for the curb shall be excavated to a width of 18 inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to 6 inches plus the depth of the curbstone. The trench for the curb corner shall extend 6 inches beyond the front and back of curb corner to the full depth of foundation.
- B. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be 6 inches in depth.

3.02 SETTING CURB AND EDGING

- A. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.

3.03 FILLING ABOUT TRENCH

- A. After the curb, curb corners, curb inlets and edging is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.

3.04 POINTING

- A. The joints between curbstones or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.

3.05 TRANSITION CURB FOR WHEELCHAIR RAMPS

- A. Transitions from normal curb settings to wheelchair ramps shall be accomplished with transition curb. Transitions shall be of the same type of curb and similar to that abutting and, if on a curve, of the same radius.

END OF SECTION

SECTION 02516

REMOVE AND RESET EXISTING CURB

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The work of this Section shall consist of removing the existing curb(s), edging, curb corners and curb inlets of every type and cross section and resetting them in accordance with these specifications and in conformity with the lines and grades shown on the Drawings.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Sewer and Drainage Systems
 - 2. Section 02513 Asphaltic Pavement
 - 3. Section 02514 Concrete Sidewalks
 - 4. Section 03300 Cast-In-Place Concrete

PART 2 MATERIALS

2.01 CURBING

- A. Curb, edging, curb inlets and curb corners shall consist of the same as is designated to be reset.

2.02 GRAVEL

- A. Gravel shall conform to the requirements of Subsection M1.03.0 Type C of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

PART 3 EXECUTION

3.01 REMOVAL OF EXISTING CURB

- A. A trench of sufficient width or depth shall be excavated so that the existing curb, edging, curb corners and curb inlets can be removed without damage.
- B. The Contractor shall protect all curb or edging and keep it in satisfactory condition until the acceptance of the entire contract. The Contractor shall replace any existing curb, edging, curb corners and curb inlets that is to be reset, which is lost or damaged as a result of his operations, or because of his failure to store and protect it in a manner that would eliminate its loss or damage.

- C. The length of any section of curb or edging, shall be altered by cutting in order to fit closures as necessary. The ends of all stones shall be square with the planes of the top and face so that when the stones are placed end-to-end as closely as possible no space shall show in the joint at the top and face of more than $\frac{3}{4}$ inch for the full width of the top and for 8 inches down on the face.
- D. The Contractor shall accept and hold entire responsibility for the removal, handling, stacking at a convenient location for the Owner and the Contractor, and protection of all curbing and corners until final removal from the site or the resetting of the curb. Any curbing damaged through lack of protection or carelessness by the Contractor shall be replaced at the Contractors expense.
- E. Any curb or curb corners not damaged through lack of protection or carelessness by the Contractor but deemed by the Engineer as unsatisfactory for relaying or stacking will be discarded. The Contractor is responsible for proper disposal of the granite without additional compensation. The OWNER reserves the right to claim the portions of the damage granite deemed useful.

3.02 EXCAVATING TRENCH AND PREPARING FOUNDATION

- A. The trench for the curb shall be excavated to a width of 18 inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to 6 inches plus the depth of the curbstone. The trench for the curb corner shall extend 6 inches beyond the front and back of curb corner to the full depth of foundation.
- B. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be 6 inches in depth.

3.03 SETTING CURB AND EDGING

- A. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.

3.04 FILLING ABOUT TRENCH

- A. After the curb, curb corners, curb inlets and edging is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.

3.05 POINTING

- A. The joints between curbstones or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.

3.06 TRANSITION CURB FOR WHEELCHAIR RAMPS

- A. Transitions from normal curb settings to wheelchair ramps or driveways shall be accomplished with transition curb. Transitions shall be of the same type of curb and similar to that abutting and, if on a curve, of the same radius.

END OF SECTION

SECTION 02640

BURIED VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide buried valves, valve boxes, and valve accessories, as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications
 1. Section 02140 Site Drainage and Dewatering
 2. Section 02160 Support of Excavation
 3. Section 02221 Earthwork for Sewer and Drainage Systems
 4. Section 02731 Plastic Sewer Pipe and Fittings

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 3. An exploded view diagram with a materials list.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All of the types of valves and appurtenances shall be products of established firms who are experienced in the manufacture of the particular item to be furnished.
 1. All valves and their appurtenances shall be of domestic manufacture.

PART 2 PRODUCTS

2.01 VALVES

- A. Gate Valves:

1. Meet or exceed the requirements of ANSI/AWWA C515.
2. Joints: Mechanical joint conforming to ANSI/AWWA C111/A21.11.
3. Ductile iron body.
4. Bronze stem.
5. Resilient sealed wedge type:
 - a. Wedge: Fully encapsulated; no exposed iron.
6. Triple O-ring seal stuffing box.
7. Non rising stem.
8. Two (2) inch square operating nut.
9. Rated for 250 psi and tested to 500 psi.
10. Open: Counterclockwise (left).
11. All internal and external surfaces except rubber coatings shall be coated with fusion bonded epoxy to a minimum thickness of 8 mils:
 - a. Coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.

2.02 VALVE BOXES

- A. Valve boxes shall be provided for each buried valve. They shall be:
 1. Domestic manufacture.
 2. Cast iron with a cast iron cover.
 3. Cover shall have the word "SEWER" cast into the cover in raised letters.
 4. Valve box barrel shall not be less than (5-1/4) inches in diameter.
 5. Shall be two (2) piece sliding type, providing a minimum overlap of six (6) inches.
 6. The lower section shall enclose the operating nut and stuffing box/gear box of the valve and shall have a minimum diameter of 8 inches.
 7. The box shall not transmit shock or stress to the valve.

PART 3 EXECUTION

3.01 HANDLING AND INSPECTION

- A. Care shall be taken to prevent damage to valves, and appurtenances during handling and installation. All materials shall be carefully inspected for defects in workmanship and materials.
- B. All operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness. Valves which do not operate easily or are otherwise defective shall be replaced at the Contractor's expense.

3.02 INSTALLATION

- A. General:
 1. Construction methods for the work under this Section shall conform to the applicable portions of Section 02611, Buried Ductile Iron Pipe and Fittings, details as shown on the Contract Drawings, manufacturer's recommended installation procedures, and procedures specified herein.
- B. Valves and Appurtenances:

1. Generally, valves shall be set and aligned plumb, supported by a flat stone or solid concrete block, with the trench bottom being firmly compacted.
2. Valve boxes shall be set centered and plumb over the operating nuts of all, direct burial valves. The top of each valve box shall be set to finished grade with at least 10 inches of overlap remaining between the upper sections for future vertical adjustment. Minimum overlap for lower, extension pieces shall be 6 inches.
3. Valves, bolts and all other appurtenances shall be thoroughly cleaned and given a shop coat of asphaltum varnish.
4. Ferrous surfaces obviously not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating.

END OF SECTION

SECTION 02651

DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The Contractor shall provide all labor, materials, tools and equipment that are necessary to perform the installation of the sewer line utilizing the directional drilling process, all as required by the Contract Documents.
- B. Excavate and backfill access pits. Excavation includes, but is not limited to, pavement cutting and removal, topsoil stripping, excavating, rock excavation, filling and grading to obtain finish contours and elevations, and preparation of subgrade for structures.
- C. This section contains guidelines and specifications applicable to the installation of pipelines using horizontal directional drilling (HDD). It includes minimum requirements for design, materials, and equipment used for the HDD for the substantially trenchless construction of pipelines. The section also includes materials, dimensions, and other pertinent properties of pipe and required accessories.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02160 Support of Excavation
 - 3. Section 02221 Earthwork for Sewer and Drainage Systems
 - 4. Section 02676 Testing Piping Systems

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All HDPE pipe and fittings shall be of domestic manufacture.

1.04 DESCRIPTION OF SYSTEM

- A. Installation of pipelines shall be HDD where shown on the drawings, as approved by the Engineer. The bore path shall be designed by the drilling contractor to ensure that pipe joints do not deflect more than 50% of manufacturer's recommended maximum deflection.

1.05 STANDARDS

- A. The following American Society of Testing and Materials (ASTM) standards form a part of this specification as referenced:
 - 1. ASTM D3261- Butt Fusion Polyethylene Fittings for Polyethylene Plastic Pipe and Tubing.
 - 2. ASTM D3350- Polyethylene Plastic Pipe and Fittings Materials
 - 3. ASTM D790- Flexural Testing
 - 4. ASTM D638- Tensile Properties of Plastics
- B. The following American Water Works Association (AWWA) standards form a part of this specification as referenced:
 - 1. AWWA C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 65 In. for Waterworks

1.06 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Plan outlining the procedure and schedule to be used in performance of the Work.
 - 2. Specifications on the directional drilling equipment that shall be used in the performance of the Work.
 - 3. Materials list of items proposed to be provided under this Section.
 - 4. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 5. Names of field personnel that will be working on the project. and their experience resumes.
 - 6. Submit Certificates of Compliance for pipe (SDR 11 HDPE).

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. General
 - 1. Be of sufficient capacity to perform the bore and pullback of the pipe.
 - 2. Have a drilling fluid mixing and delivery system of sufficient capacity.
 - 3. Have a guidance system to accurately guide the boring operation.
 - 4. All of the equipment shall be in excellent and safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the equipment in working order for the duration of the project.
- B. Directional Drilling Machine
 - 1. Shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill head.

2. The hydraulic system shall be self-contained with sufficient pressure and volume to power the drilling operation.
3. Have a system to monitor and record maximum pullback pressures during the pullback operation.
4. The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.
5. Anchorage system to anchor drilling machine to the ground to resist thrust during operation.

2.02 APPURTENANT DRILLING EQUIPMENT

- A. Mud Motors (If required)
 1. Shall be of adequate power to turn the required drilling tools.
- B. Drill Pipe
 1. Shall be constructed of high quality 4130 seamless tubing, Grade D or better with threaded box and pins.
 2. Tool joints shall be hardened to 32-36 RC.
- C. Guidance System
 1. Shall be of a proven type and shall be set up and operated by personnel trained and experienced with this system.
- D. Pipe Rollers
 1. Pipe rollers, if required, shall be sufficient size to fully support the weight of the pipe while being hydro-tested and during pullback operations

2.03 DRILLING FLUIDS (MUD) SYSTEM

- A. Mixing System
 1. A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, water and appropriate additives.
 2. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing.
 3. Drilling fluid reservoir tank shall be of adequate size for the application.
 4. Shall continually agitate the drilling fluid during drilling operations.
- B. Drilling Fluids
 1. Composed of clean water and an appropriate additive.
 - a. Water shall have a pH of 8.5 to 10.
 - b. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal.
 - c. The water and additives shall be mixed thoroughly and be absent of any clumps or clods.
 2. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of the bore wall.
 3. No hazardous additives shall be used.
- C. Delivery System

1. The mud pumping system shall have adequate capacity and be capable of delivering the drilling fluid at a constant pressure.
2. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe.
3. Connections between the pump and drill pipe shall be relatively leak-free.
4. Drilling fluid spilled during drilling operations shall be contained and properly disposed of.
5. A berm, with a minimum height of 12-inches shall be erected and maintained around the drill rig, fluid mixing system and drilling fluid recycling system to prevent spills into the surrounding environment.

2.04 Pipe

- A. Shall be manufactured in accordance with ANSI/AWWA C906 (latest revision), be high density polyethylene pressure pipe manufactured from materials conforming to PE Code designation PE 4710.
- B. Pipe shall be 10-inch diameter SDR 11 HDPE with heat fused butt joints.
- C. Tracer wire shall be #12 hard drawn copper conforming to ASTM B1 furnished with a plastic coating.

PART 3 EXECUTION

3.01 GENERAL

- A. Excavation, backfill and compaction of access and test pits shall be in accordance with Section 02221.
- B. Directional drilled pipe (SDR 11 HDPE) shall be installed to depths as required to permit the pipe to be laid at elevations indicated in the Contract Documents.
 1. Directional drilled pipe shall be installed in one continuous pipe segment as shown on the Drawings.
- C. The Contractor shall use electronic survey instrumentation to monitor and adjust the drill head.
 1. The survey system shall measure the horizontal and vertical location of the drill head throughout the bore and provide readings at 5-foot intervals to allow for slope adjustment.
 2. If magnetic interference affects the bearing sensors of the steering tool, the Contractor shall use appropriate methods to maintain the required slope and alignment.
- D. An as-built sketch of the finished pilot hole shall be furnished for approval prior to pull-back of the pipe to be installed.
- E. The pilot hole shall be reamed to a diameter, which is sufficiently sized in order to reduce forces applied to the pipe during pull back.

- F. A swivel shall be installed between the molehead/reamer and the pipe connection to minimize torsional stress imposed on the pipe and allow the reamer to turn without rotating the pipe.
- G. If pulling equipment is not capable of monitoring tensile forces imposed on the pipe, a weak link shall be installed between the pipe and the molehead/reamer in order not to exceed the safe tensile stress as prescribed by the manufacturer.
- H. All pipe pulled through the pilot holes shall have 2 continuous tracer wires securely fixed to the pipe. If tracer wire does not traverse the entire length of pull back, the operation shall be repeated.
- I. Because of the elastic properties of the pipe, main line and service connection pipe shall be relaxed for at least one overnight period in order to return to its original pre-pull length.
 - 1. The pipe shall be installed past the exit tie-in point, according to manufacturer's recommendations, to accommodate thermal contraction as well as viscoelastic stretch recovery in the pipe.
- J. The leading edge of the pipe shall be examined for significant external damage after pull back.
 - 1. If the pipe is deemed by the Engineer to have suffered significant damage, the damaged pipe shall be cut off and additional pipe pulled through the hole prior to the relaxation period.
- K. The Contractor shall be responsible for the containment and disposal of all drilling fluids or bentonite slurry.
 - 1. The Contractor shall stockpile haybales at the drilling site to contain an inadvertent bentonite slurry return.
 - 2. Any haybales used for containment of slurry shall be removed from the site and properly disposed of at the completion of the work.
- L. The pull back shall be conducted in one continuous operation to limit the potential for binding of the pipe in the hole.
- M. Sections of the SDR11 HDPE pipe shall be connected by heat fusion of the pipe butt ends in accordance with the manufacturer's recommendations.
 - 1. Hand applied methods shall not be used.
- N. The Contractor shall provide all appurtenances and make pipe connections as required to ensure a complete working system.
- O. The access pit size shall be kept to a minimum.

3.02 PIPE TESTING AND DISINFECTION

- A. The SDR11 HDPE pipe shall be tested in accordance with Section 02676.

3.03 FINAL INSPECTION

- A. Final inspection of the work shall include a visual inspection of each section of pipe by looking from the access pipe with the aid of reflected sunlight or illumination equipment.
 - 1. The pipe shall be true to both line and grade, shall show no leaks, shall be free of cracks and from protruding joint materials and contain no deposits of sand, dirt or other material which will reduce the full cross-sectional area.
 - 2. Structural wall joints shall be tight.
 - 3. All finished work shall be neat in appearance and of high quality.
 - 4. The Contractor shall furnish laborers and illumination equipment to assist the Engineer in this inspection.

END OF SECTION

SECTION 02755

FINAL SEWER TESTING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Final sewer testing work includes the performance of testing and inspecting each and every length of sewer pipe, pipe joints and each item of appurtenant construction.
2. Perform testing at a time acceptable to the Engineer, which may be during the construction operations, after completion of a substantial and convenient section of the work, or after the completion of all pipe laying operations.
3. Provide all labor, pumps, pipe, connections, gages, measuring devices and all other necessary apparatus to conduct tests.

B. Related Work Specified Elsewhere (When Applicable):

1. Excavation, backfill, dewatering, pipe, pipe fittings and manholes are specified in the appropriate Sections in this Division and/or Division 15.
2. Manhole testing is specified in Section 02700 – Precast Concrete Manholes.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

3.01 PERFORMANCE

A. General:

1. All sewers, manholes, and appurtenant work, in order to be eligible for acceptance by the Engineer, shall be subjected to tests that will determine the degree of watertightness and horizontal and vertical alignment.
2. Thoroughly clean and/or flush all sewer lines to be tested, in a manner and to the extent acceptable to the Engineer, prior to initiating test procedures.
3. Perform all tests and inspections in the presence of the Engineer and the plumbing or building inspector in accordance with the requirements of the local and state plumbing codes.
4. Perform testing by test patterns determined by or acceptable to the Engineer.
5. Remedial Work:
 - a. Perform all work necessary to correct deficiencies discovered as a result of testing and/or inspections.
 - b. Completely retest all portions of the original construction on which remedial work has been performed.
 - c. Perform all remedial work and retesting in a manner and at a time acceptable to by the Engineer at no additional cost to the Owner.

B. Line Acceptance Tests (Gravity sewers with no active service connections):

1. Test all gravity sewer lines with no active service connections for leakage by conducting a low pressure air test.
2. Equipment:
 - a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
 - b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 - c. All air used shall pass through a single central panel.
 - d. Connect 3 individual hoses:
 - (1) From the control panel to the pneumatic plugs for inflation,
 - (2) From the control panel to the sealed sewer line for introducing the low pressure air,
 - (3) From the sealed sewer line to the control panel for continually monitoring the air pressure rise in the sealed line.
3. Testing Pneumatic Plugs:
 - a. Seal test all pneumatic plugs prior to using them in the actual test.
 - b. Lay one length of pipe on the ground and seal both ends with the pneumatic plugs to be tested.
 - c. Pressurize the sealed pipe to 5 psig.
 - d. The pneumatic plugs are acceptable if they remain in place without bracing.
4. Testing Sewer Pipeline:
 - a. After the sewer pipe has been cleaned and the pneumatic plugs checked, place the plugs in the sewer line at each manhole and inflate them.
 - b. Introduce low pressure air into the sealed sewer pipeline until the air pressure reaches 4 psig greater than the average groundwater pressure.
 - c. Allow a minimum of 2 minutes for the air pressure to stabilize to a minimum of 3.5 psig greater than the groundwater pressure. Groundwater is assumed to be at ground surface unless the Contractor can prove by otherwise by test pitting.
 - d. After the stabilization period, disconnect the air hose from the control panel to the air supply.
 - e. The pipeline will be acceptable if the pressure decrease is not greater than 1/2 psig in the time stated in the following table for the length of pipe being tested:

<u>Pipe Diameter (inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
4.....	2.0	2.0	2.0	2.0
6.....	3.0	3.0	3.0	3.0
8.....	4.0	4.0	4.0	5.0
10.....	5.0	5.0	6.0	8.0
12.....	5.5	5.5	8.5	11.5
15.....	7.0	8.5	13.0	17.0
18.....	8.5	12.0	19.0	25.0
21.....	10.0	17.5	26.0	35.0
24.....	11.5	23.0	34.0	45.5

<u>Pipe Diameter (inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
27 and larger.....	14.5	29	43.0	58.0

5. Test Results:
 - a. If the installation fails the low pressure air test, determine the source of leakage.
 - b. Repair or replace all defective materials and/or workmanship and repeat low pressure air test at no additional cost to the Owner.

- C. Line Acceptance Tests (Gravity sewers with active services):
 1. Test all new gravity sewer lines with active services by conducting a low-pressure air test on all joints using a packer after all services have been connected or capped at the property line and all trenches backfilled but before the surface course of permanent pavement is installed.
 2. Equipment:
 - a. Closed-circuit television system.
 - b. Testing devices (packer):
 - (1) Capable of isolating individual joints by creating a sealed void space around the joint being tested.
 - (2) Constructed such that low pressure air can be admitted into the void area.
 - (3) Shall contain a pressure gauge accurate to one tenth (0.1) psi in-line with the feed line to monitor the void pressure.
 - (4) Capable of performing in sewer lines where flows do not exceed 1/4 of the pipe diameter without resorting to any method of flow control.
 3. Testing Sewer Pipeline Joints:
 - a. Test all joints except those with visible infiltration.
 - b. Procedure:
 - (1) Pull television camera through sewer line in front of the packer.
 - (2) Position the packer on each joint to be tested.
 - (3) Inflate the sleeves on each end of the packer.
 - (4) Apply four (4.0) psi pressure above the existing hydrostatic pressure on the outside of the joint to the void area created around the inside perimeter of the joint.
 - (5) Shut off the supply of air once the pressure has stabilized at the required amount.
 - (6) Monitor the void pressure for thirty (30) seconds.
 - (7) Repair the joint if the pressure drops more than one half (1/2) psi in the thirty (30) seconds.
 - c. Water or chemical pressure testing may be used in lieu of air testing subject to review and approval by the Engineer.
 - d. Re-clean and re-inspect all lines not approved by the Engineer at no additional cost to the Owner.
 - e. Repairing of Joints:
 1. When a joint fails the pressure test, excavate and repair the failed joint. Repairing joints with chemical grout will not be permitted.
 - f. The Engineer may request checking of the testing equipment for accuracy.
 1. Perform standard air test on a clean continuous section of pipe.

2. Repair the equipment if the void pressure drops.
 - g. Testing Operation Inspection:
 1. Reset each joint, as specified herein, prior to acceptance and final payment for joint testing. Retest all joints that fail until the test requirements are met.
 - h. The contractor will supply a black and white photograph of every joint that fails the pressure test.
- D. Alignment Tests (Gravity Sewers):
1. Perform tests for the correctness of horizontal and vertical alignment on each and every length of gravity sewer pipeline between manholes.
 2. Alignment tests to be conducted after all pipe has been installed and backfilled.
 3. The observation test shall be conducted after all upstream work has been completed and the pipeline cleaned of debris.
 4. Notify the Engineer at least 24 hours in advance of the proposed observation testing.
 5. Introduce water into the sewer lines to be tested from the upstream manhole prior to the observation test but no more than 24 hours in advance of the test.
 6. Beam a source of light, acceptable to the Engineer, through the pipeline from both ends and the Engineer will directly observe the light in the downstream, and/or upstream manhole of each test section.
 7. The length of pipe between manholes, diameter of pipe and amount of light observed in the manhole at the end of each pipe section will determine acceptance of the alignment test by the Engineer.
 8. The amount of vertical and horizontal deflection shall not be greater than the ASTM allowance and (manufacturer's recommendations) for the pipe being tested.
 9. No standing water shall be allowed. The presence of standing water shall be cause for rejection of that pipe (including manhole) section.
 10. Improper alignment will be corrected by re-excavation and resetting of pipe at no additional cost to the Owner.
- E. Pipe Deflection: (Gravity Sewers)
1. Pipe provided under this specification shall be installed so there is no more than a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (normal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
 2. The Contractor shall wait a minimum of 30 days after completion of a section of sewer, including placement and compaction of backfill, before measuring the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.
 3. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.
- F. Television Inspection Tests (Gravity Sewers)
4. No standing water shall be allowed. The presence of standing water may be cause for rejection of that pipe.

2. Any standing water, detectable leaks, improper joints or any other unacceptable feature detected by the television inspection will be corrected by re-excavation and resetting pipe at no additional cost to the Owner.
- G. Inspection of Appurtenant Installations:
1. Completely inspect, at a time determined by the Engineer, all manholes and inlets to ascertain their compliance with the Drawings and Specifications.
 2. Provide access to each manhole and inlet and check the following characteristics:
 - a. Shape and finish of invert channels,
 - b. Watertightness and finish of masonry structures,
 - c. Location, type, and attachment of stops,
 - d. Elevation and attachment of frames, covers, and openings,
 - e. Pattern and machining of covers, and
 - f. Drop connection arrangements.
- H. Testing Pressure Sewers:
1. The section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations backfilling and taps at such points and shall plug said holes after completion of the test.
 2. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
 3. Perform pressure and leakage test at 1-½ times the maximum system pressure or 100 psi which ever is greater (based on the elevation of the lowest point of the section under test and corrected to the gage location).
 4. While maintaining this pressure, the Contractor shall make a leakage test by metering the flow of water into the pipe. If the average leakage during a two-hour period exceeds a rate of 10 gallons per inch of diameter per 24 hours per mile of pipeline the section shall be considered as having failed the test. All joints within chambers and all flanged joints shall have no visible leakage.
 5. If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test.
- I. Manhole Leakage Testing:
1. Refer to specification section 02700 Precast Concrete Manholes.

END OF SECTION

SECTION 02700

PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide precast concrete manholes as required by the Contract Documents.
 - 1. In general: Provide the precast concrete manholes.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Drains and Sewer
 - 2. Section 02726 Covers/Grates and Frames
 - 3. Section 03600 Grout

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 PRODUCT HANDLING

- A. Delivery, Storage and Handling:
 - 1. Deliver the work of this Section to the job site in such quantities and at such times as to assure the continuity of construction.
 - 2. Store units at the job site in a manner to prevent physical damage, and in a manner to keep markings visible.
 - 3. Lift and support the units only at designated lifting points or supporting points.

PART 2 PRODUCTS

2.01 DESIGN

- A. Precast concrete manhole sections shall conform to:
1. ASTM C478 Specification for Precast Reinforced Concrete Manhole Sections,
 2. PCI 116,
 3. CRSI "Manual of Standard Practice",
 4. In the event of conflict between or among standards, the more stringent provision shall govern.

2.02 PRECAST CONCRETE SECTIONS

- A. General:
1. Wall thickness shall not be less than five (5) inches for a forty eight (48) inch diameter reinforced section, six (6) inches for a sixty (60) inch diameter reinforced section, seven (7) inches for a seventy two (72) inch diameter reinforced section and nine (9) inches for a ninety six (96) inch diameter reinforced section.
 2. All sections shall have tongue and groove joints.
 3. Concrete compressive strength shall be 5000 psi after 28 days.
 4. Precast concrete barrel sections with precast top slabs and precast concrete transition sections shall be designed for a minimum of H-20 loading plus the weight of the soil above.
 5. Top sections of manholes shall be eccentric cones to provide a vertical wall from ground surface to manhole base, except that precast reinforced concrete slabs shall be used where cover over the top of the pipe is less than 5 feet.
 6. The inside clear diameter of the opening at the top of the cone or in the slab shall be 30 inches.
 7. The date of manufacture and the name and trademark of the manufacturer shall be clearly marked on the inside of each precast section.
 8. Precast concrete bases shall be constructed and installed as shown on the Drawings. The thickness of the bottom slab of the precast bases shall not be less than the manhole barrel sections or top slab, whichever is greater.

2.03 JOINTS

- A. Precast Sections:
1. Tongue and groove joints of precast sections shall be sealed with an "O"-ring conforming to ASTM C443 or a flexible joint sealant such as Kent Seal No. 2 or an approved equal.

2.04 BRICK MASONRY

- A. Bricks for leveling manhole frames inverts and tables shall comply with ASTM C62, Grade SW.

2.05 MORTAR

- A. For use in brickwork:
 - 1. Composed of one (1) part Type II Portland Cement conforming to ASTM C150, to two (2) parts sand,
 - 2. For each bag of cement a small amount (not to exceed 10% by weight) of hydrated lime may be added. Lime shall conform with ASTM C207, Type N.

2.06 COVERS/GRATES AND FRAMES

- A. Shall be furnished under Section 02726, Covers/Grates and Frames, and installed under the work of this Section.

2.07 MANHOLE STEPS

- A. Manhole steps shall be aluminum alloy 6061 T6, extruded, safety-type, or 1/2 inch diameter, grade 60 steel reinforcing bar continuous throughout the step, bent to shape and encased in a co-polymer polypropylene plastic, with a tread design.
 - 1. Steps shall be fourteen (14) inches wide,
 - 2. Steps may be cast in place or inserted after casting,
 - 3. Steps shall be set at twelve (12) inches on center.

2.08 CONNECTIONS TO MANHOLES

- A. Connection to the precast structures shall be accomplished by the following:
 - 1. "Kor-n' Seal" joint with stainless steel clamp,
 - 2. "Lock-Joint Flexible Manhole Sleeve" shall be cast into the manhole base section. Strap shall be stainless steel.
 - 3. A fixed connection at the precast structure shall not be allowed.

2.09 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor, subject to the approval of the Engineer.

PART 3 EXECUTION

3.01 CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PRECAST INSTALLATION

- A. Work shall be protected against flooding and flotation.
 - 1. Precast bases of the structure to be placed on a compacted six (6) inch layer of screened gravel.
 - 2. Precast barrel sections shall be set plumb with all sections in true alignment and joints sealed watertight.
 - 3. Grade at the top of the precast manhole shall be as such as to allow a maximum of twelve (12) inches of brickwork to bring the frame and cover to finish grade.

4. Grout all lifting holes with non-shrink grout.

3.03 MANHOLE PIPING CONNECTIONS

- A. Shall be as stated in paragraph 2.08 of this Section.

3.04 BRICKWORK

- A. Invert Table and Grade Adjustment:
 1. Brick for invert shall be laid on edge.
 2. Brick for table and grade adjustment shall be laid flat.
 3. Table shall be constructed to an elevation even with the top of the pipe.
 4. Table shall slope up from the pipe to the edge of the manhole.

3.05 COVERS/GRATES AND FRAMES

- A. Shall be set in a full bed of mortar on the grade adjusting brick course.
 1. Shall be set to the finish grade.
 2. Frames and covers which are not on the same plane as the final grade shall be reset.
 3. Maximum height allowable for grade adjustment (between manhole and frame) shall be twelve (12) inches.

3.06 TESTING

- A. Vacuum Test:
 1. Plug all openings with non-shrink grout and plug all pipes with suitable plugs.
 2. An initial vacuum of ten (10) inches Hg. shall be drawn.
 3. Test time shall be determined by the time required for the vacuum to drop from ten (10) inches Hg. to nine (9) inches Hg.
 - a. Allowance test times are listed below.

<u>Manhole Depth</u>	<u>Minimum Test Time</u>
0 to 10 feet	1 minute
10 to 15 feet	1 1/4 minutes
15 to 25 feet	1 1/2 minutes

4. Manholes which fail to meet the above minimum test times shall be repaired using methods approved by the Engineer.
5. After the manhole has been repaired it shall be re-tested using the same vacuum test procedure. Following a second vacuum test failure, the manhole shall be repaired and tested using the water exfiltration method.

- B. Exfiltration Test:
 1. All pipes and openings shall be suitably plugged and braced to prevent blowouts.
 2. Fill manhole to the top of the cone section or the opening in the flat top section if a cone section is not used.
 3. Seal all visible leaks.
 4. Allow a period of time for absorption by the concrete and refill as required.
 5. The test period shall be eight (8) hours.

6. At the end of the test period, the manhole shall be refilled to the top of the cone, measuring the volume of water added. This amount shall be extrapolated to a 24-hour rate and the leakage determined on the basis of depth.
 - a. The leakage for each manhole shall not exceed one (1) gallon per vertical foot for a twenty-four (24) hour period.
 - b. If the manhole fails this requirement, and the leakage does not exceed three (3) gallons per vertical foot per day, repairs by approved methods may be made to bring the leakage within the allowable rate of one (1) gallon per foot per day.
 - c. Leakage due to a defective section or joint or exceeding the three (3) gallon per vertical foot per day, shall be the cause for the rejection of the manhole.
 - d. It shall be the Contractors responsibility to uncover the manhole as necessary and to disassemble, reconstruct or replace it. The manhole shall then be re-tested by the vacuum test or the water exfiltration test, at the discretion of the Engineer.
7. If the groundwater table is above the highest joint in the manhole, and if there is no leakage into the manhole, such a test can be used to evaluate the watertightness of the manhole.

3.06 CLEANING

- A. All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION

SECTION 02726

COVERS/GRATES AND FRAMES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide Covers/Grates and Frames as required by the Contract Documents.
- B. Aluminum hatches are specified in Section 08306 Aluminum Hatches.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02221 Earthwork for Drains and Sewer
 - 2. Section 02700 Precast Concrete Manholes
 - 3. Section 08306 Aluminum Hatches

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All castings shall be of domestic manufacture:
 - 1. Comply with ASTM A48 Gray Iron Castings.

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
 - 1. Manufacturer's catalog cuts, specifications and other data to demonstrate compliance with the specified requirements.

PART 2 PRODUCTS

2.01 COVERS/GRATES AND FRAMES

- A. Castings shall be manufactured in accordance with ASTM A48-83, Class 30B specifications with a minimum tensile strength of 30,000 psi.
 - 1. All frames covers and grates shall be of domestic manufacture.
 - 2. All frames, covers and grates, of the same pattern or catalog number, shall be interchangeable.
- B. Manhole frames and covers in the roadway right of way shall have a 22-inch clear opening, and shall be manufactured by EJ Group, Inc., Neenah Foundry Co., or Campbell Foundry Co., or approved equal.

- C. Manhole frames and covers which are to be installed off the roadway shall be medium duty frames and covers manufactured by EJ Group, Inc., or an approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. See Specification Section 02700, Precast Concrete Manholes for installation requirements.

END OF SECTION

SECTION 02731

PLASTIC SEWER PIPE AND FITTINGS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide all the plastic sewer pipe and fittings as required by the Contract Documents.
- B. In general the work of this Section shall include but not be necessarily limited to providing all plastic sewer pipe and fittings, joining materials, labor, tools, and equipment necessary to install the pipe and fittings as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02160 Support of Excavation
 - 2. Section 02227 Rock Removal
 - 3. Section 02221 Earthwork for Sewers and Drainage System

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications, installation procedures, and other data needed to prove compliance with the specified requirements;
 - 3. All pipe delivered to the jobsite shall be accompanied by test reports and notarized affidavits certifying that the pipe and fittings conform to the requirements of the Specifications.

1.04 ACCEPTABLE MANUFACTURERS.

- A. The plastic sewer pipe and fittings shall each be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the pipe to be furnished. The pipe shall be designed, constructed, and delivered in accordance with the best practices and methods.

PART 2 PRODUCTS

2.01 HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

- A. HDPE Carrier Pipe
 - 1. The high density polyethylene (HDPE) 10-inch carrier pipe shall be SDR 11 HDPE Ductile Iron Pipe Size (DIPS) and shall be manufactured from a PE 4710 resin as specified by the Plastic Pipe Institute (PPI).
 - 2. Shall conform to AWWA C906 – Polyethylene (PE) Pressure Pipe and Fittings, 4 Inch through 65 Inch for Waterworks.
- B. Sewer Force Mains
 - 1. The HDPE 3-inch sewer force mains shall be SDR 11 HDPE and shall be manufactured from a PE 4710 resin as specified by the PPI.
 - 2. Shall conform to AWWA C901 Polyethylene (PE) Pressure Pipe and Tubing, ¾-Inch through 3-Inch, for Water Service.

2.03 FITTINGS

- A. All fittings and accessories for the sewer pipe shall be as manufactured by the pipe supplier.
 - 1. Have bell and spigot configurations compatible with that of the pipe.
 - 2. Locked in rubber ring.

PART 3 EXECUTION

3.01 INSTALLATION

- A. HDPE Pipe:
 - 1. Except as otherwise specified herein or shown on the Drawings, installation of HDPE pipe shall be in accordance with ASTM D2774, "Underground Installation of Thermoplastic Pressure Piping".
- B. All trenching, backfilling, compacting and bedding and covering of the pipe shall be conducted in full accordance with the provisions of Section 02221, Earthwork For Sewers And Drains.

3.02 PIPE HANDLING

- A. The Contractor shall arrange for the delivery of the pipe sections at approved locations in the vicinity of that portion of the line in which the pipe sections are to be laid. To this end, he shall do such work as is necessary for access and for delivery of the pipe.
 - 1. Pipes shall be stored in an approved, orderly manner so that there will be a minimum of rehandling from the storage area to the final position in the trench and so that there is a minimum obstruction and inconvenience to any kind of traffic.
 - 2. All pipe is to be loaded, unloaded and stockpiled in strict conformance with the manufacturer's recommendations.

3. Deliveries shall be scheduled so that the progress of the work is at no time delayed and also so that large quantities of pipe shall not be stored for excessive lengths of time.
4. Provide slings, straps and/or other approved devices to provide satisfactory support of the pipe when it is lifted.
5. Under no circumstances shall the pipe be dropped from trucks or into the trench.

3.03 CONTROL OF ALIGNMENT AND GRADE

- A. The Contractor shall establish bench marks along the route of the pipeline at convenient intervals for his reference in checking the pipe and manhole inverts and other elevations throughout the project.
- B. The Contractor shall use a laser beam for setting the pipe.
 1. All units shall have equipment to control atmospheric conditions in the pipe that could affect the acceptable standard of construction.
 2. The laser shall be operated by competent, trained personnel.
 3. The Contractor shall establish center line and offset stakes at each manhole, plus one intermediate center line and offset stakes as a check point between manholes.
 4. Laser aligning shall not be used to establish a continuous line in excess of 600 feet.
- C. During construction, the Contractor shall provide the Engineer at his request, all reasonable and necessary materials, opportunities, and assistance for setting stakes and making measurements, taking quantities and checking location of the work.
 1. Assistance shall include the furnishing of one or two men as needed at intermittent times.
 2. The Contractor shall carefully preserve bench marks, reference points and stakes.
 - a. In cases of willful or careless destruction by his own men, he will be charged with the resulting expense and shall be responsible for any mistakes or delay that may be caused by their unnecessary loss or disturbance.

3.04 PREPARATION OF BED

- A. As soon as the excavation is completed to the normal grade of the bottom of the trench, pipe bedding, shall be placed immediately in the trench and compacted.
- B. The compacted bedding shall be shaped so that the bottom quadrant of the pipe shall rest firmly for the full length of the barrel. Suitable holes for bells or couplings shall be dug around the pipe joints to provide ample space for making tight joints.
 1. The pipe shall be firmly bedded and covered to conform accurately to the lines and grades.
- C. It shall be the Contractor's responsibility to control any water in the trench below the pipe invert and he shall place clay or other impermeable material in the bedding at intervals to prevent horizontal movement of the groundwater which might induce settling of the bed, or make it difficult to handle water in the trench.

3.05 LAYING PIPE

- A. All pipe shall be laid with extreme care as to grade and alignment.
 - 1. Each pipe shall be laid so as to form a close joint with the next adjoining pipe and to bring the inverts continuously to the required grade.
 - 2. Each pipe length shall be inspected for excessive discoloration, blisters, pitting, cracks, holes, foreign inclusions, straightness and other injurious defects before lowering in place.
 - 3. In order to insure minimum amount of movement or disturbance, no more than two lengths of pipe may be laid before backfilling to a minimum of twelve inches over the pipe.
 - 4. Pipe shall be laid in the dry and at no time shall water in the trench be permitted to flow into the sewer pipe.
 - 5. Laying and jointing shall be in accordance with the manufacturer's instructions and appropriate ASTM Standards.
 - 6. The Contractor shall have on hand for each pipe-laying crew, the necessary tools, gauges, mechanical saws, mechanical bevelers, etc., necessary to install the pipe.
 - 7. The length of the incoming and outgoing pipe at manholes shall be a maximum of 2'-0".
 - a. Measurements shall be made from the outside of the manhole wall.
 - b. Shorter lengths of pipe shall be furnished as necessary to allow proper locations for wyes and manholes.
 - c. In no case shall other than the specified joints be installed.
 - 8. Where pipe stubs are called for on the Drawings, for future connections or services, the stubs shall be closed on the exterior end of the stub with a gasketed HDPE pipe cap or plug of the same material as the pipe.
 - a. Cap or plug shall be furnished by the pipe manufacturer.

3.06 WYES AND TEES

- A. Installation
 - 1. At locations determined in the field, the Contractor shall provide six (6) inch branch, wyes or tees on the proposed sewer main for the property service connection.
 - 2. Watertight end caps shall be installed on the wye or tee branch until the service connection is installed.
- B. Measurements
 - 1. No wyes or tees shall be backfilled before location measurements have been taken.
 - 2. The depth of cover from the road surface to the top of the fitting shall be recorded.
 - 3. The distance from the down stream manhole shall be recorded.

3.07 TESTING FOR GRAVITY SEWERS

- A. Refer to Section 02767, Testing Piping Systems.

3.08. INFILTRATION

- A. Sewer Pipe:
 - 1. Ground water infiltration rate shall not exceed 50 gallons, per inch of diameter, per mile, per 24 hours.

3.09 CLEANING

- A. At the conclusion of the Work, the Contractor shall thoroughly clean all of the new pipelines by flushing with high pressure water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered during the construction period. Debris, cleaned from the lines, shall be removed from the lowest manhole.
 - 1. After the pipelines are cleaned, and if the groundwater level is above the pipe the Engineer will examine the pipe for leaks.
 - a. If defective pipes or joints are discovered at this time, they shall be repaired at the Contractor's expense.

3.10 CONNECTIONS TO EXISTING SEWERS AND MANHOLES

- A. The Contractor shall make all connections to the existing facilities as required by the Contract Documents.
 - 1. Provide all pipe, fittings, and appurtenances.
 - 2. Shall do all excavation and backfill as required.
 - 3. The pipe entrance to existing manholes shall be drill cored to the required diameter.
 - 4. Special attention shall be made to protect the existing sewers and structures.

END OF SECTION

SECTION 02930

LOAM AND SEED

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide loam and seed as required by the Contract Documents.
 - 1. Generally the Work consists of topsoiling, seeding and fertilizing all disturbed areas of the water main easements.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02015 Test Pits
 - 4. Section 02221 Earthwork for Sewers and Drains
 - 5. Section 01610 Product Handling

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- B. If the results of the hydraulic seeding operation (if utilized) are unsatisfactory, the method shall be abandoned and seeding shall be required by the sowing method.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. If hydroseeding application is to be used, a written description containing seed analysis, fertilizer and lime addition data is to be submitted for review of the Owner.

1.05 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01610.

- B. Immediately remove from the site, materials which are not true to name, and do not comply with the specified requirements, and promptly replace with materials meeting the specified requirements.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. Topsoil stripped from the site and stored, shall be approved before reuse.
 - 1. Topsoil from the site shall be treated to conform to the requirements for topsoil furnished from offsite sources.
 - 2. If the required quantity of suitable topsoil is not available from stripping of the site, or if it is not approved, topsoil from outside sources shall be furnished.
 - 3. Stockpiled topsoil used for this work shall be screened before being spread.
 - 4. Surplus topsoil not required to fulfill the requirements of the Contract shall be properly disposed of unless otherwise directed by the Owner.

2.02 TOPSOIL FURNISHED FROM OFFSITE SOURCES

- A. Topsoil shall be fertile, friable, natural topsoil typical of the locality, and obtained from a well-drained site.
 - 1. It shall be without admixture of subsoil or slag.
 - 2. Shall be screened.
 - 3. Topsoil as delivered to the site shall have an acidity range of pH 5.0 to 6.5 and shall contain not less than 5% organic matter as determined by loss on ignition of moisture-free samples dried at 100 degrees Centigrade.
 - 4. If required, limestone shall be added to the topsoil to adjust the pH, so that it complies with the required limits.
- B. Mechanical Analysis: Topsoil shall meet the following mechanical analysis

Size	% Passing	% Retained
1-1/4" screen	100	0
1/2" screen	97-100	0-3
No. 100 mesh sieve	40-60	40-60

2.03 TREATING TOPSOIL WITH LIMESTONE OR ALUMINUM SULFATE

- A. When the hydrogen-ion value is below the specified level, add ground limestone at the rate of 2-1/2 lbs. per cubic yard of topsoil to raise pH one full point.

- B. The following table shows the amount of limestone needed for various soil reactions on the basis of 1,000 sq. ft. and on the basis of one (1) acre:

pH	pH Desired	Lbs. per 1000 sq. ft.	Tons per Acre
6.0	6.5	0-46	0-1
5.5	6.5	46-92	1-2
5.0	6.5	92-138	2-3

1. Limestone shall be raw, ground agricultural limestone containing not less than 90% calcium carbonate and shall be ground to such fineness that 50% will pass through a 100-mesh sieve and 90% will pass through a 20-mesh sieve.
2. When hydrogen-ion value is above specified level, add aluminum sulfate at the rate of 2-1/2 lbs. per cubic yard of topsoil to lower the pH one full point. Aluminum sulfate shall be unadulterated and delivered in containers with the name of the material, name of the manufacturer, and net weight of contents.

2.04 LIME

- A. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates.
1. Ground to such fineness that at least 50 percent will pass through a 100-mesh sieve and at least 90 percent shall pass through a 20-mesh sieve.

2.05 GRASS SEED (UPLANDS)

- A. General: Provide grass seed which is:
1. Free from noxious weed seeds, and re-cleaned.
 2. Grade A recent crop seed.
 3. Treated with appropriate fungicide at time of mixing.
 4. Delivered to the site in sealed containers with dealers guaranteed analysis.
- B. Proportions by Weight (Level Areas):
- | | |
|--------------------|-------------|
| 1. Chewing Fescue | 60 percent. |
| 2. Red Top | 10 percent. |
| 3. Annual Ryegrass | 10 percent |
| 4. Kentucky Blue | 20 percent. |
- C. Proportions by Weight (Slopes):
- | | |
|------------------------|-------------|
| 1. Creeping Red Fescue | 50 percent. |
| 2. Perennial Rye Grass | 20 percent |
| 3. Red Clover | 10 percent. |
| 4. Winter Rye | 15 percent |
| 5. Ladino Clover | 5 percent |
- D. Requirements:
1. Seed shall be furnished and delivered premixed in the proportions specified above.
 2. All seed shall comply with State and Federal seed laws.

3. A certificate of compliance with the specifications shall be submitted by the manufacturer with the shipment of the seed. The certificate shall include the guaranteed percentage of purity, weed content and germination of the seed, net weight and date of shipment.
4. No seed shall be sown until the Contractor has submitted the above mentioned certificate to the Engineer.

2.06 GRASS SEED (WETLANDS)

- A. Proportions by Weight
- | | | |
|----|---------------------|------|
| 1. | Lurid Sedge | >10% |
| 2. | Fowl Manna Grass | >10% |
| 3. | Fringed Sedge | >10% |
| 4. | Woolgrass | >10% |
| 5. | Other Wetland Seeds | <60% |
- B. Germination Minimum
- | | | |
|----|---------------------|-----|
| 1. | Lurid Sedge | 80% |
| 2. | Fowl Manna Grass | 80% |
| 3. | Fringed Sedge | 80% |
| 4. | Wool Grass | 80% |
| 5. | Other Wetland Seeds | 80% |

C. Requirements:

1. Grass seed mixture for the compensatory storage areas shall be a fresh, clean, new crop seed. Seed may be mixed by an approved method on the site or may be mixed by the dealer. All seed shall comply with State and Federal seed laws. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis. If the seed is mixed by the dealer, the dealer's guaranteed statement of the composition of the mixture and the percentage of purity, weed content, net weight, and germination of each variety shall be provided. No seed shall be sown until contractor has submitted the guaranteed statement of the composition to the Engineer.
2. Seed shall be the commercial product of an approved reputable manufacturer and shall be certified to be not more than one (1) year old and shall be composed of the following varieties, The seed mix shall be New England wetmix as manufactured by New England Wetland Plants Inc. Amherst, MA. or approved equal.
3. The application rate shall be one pound per 5,000 square feet. The seed shall be mechanical spread or broadcasted by hand works creating an even distribution. The seed mix shall be sown early spring or late fall for increased germination.

2.07 FERTILIZER

- A. Fertilizer shall be furnished in containers plainly marked with the chemical analysis of the product and showing one of the following compositions by weight.

Constituent	10-6-4	8-6-4	7-7-7
Nitrogen	10% min.	8% min.	7% min.
Available Phosphoric Acid	6% min.	6% min.	7% min.
Water Soluble Potash	4% min.	4% min.	7% min.

1. Fertilizer shall be stored so that when used it will be dry and free flowing.

2.08 HYDRAULIC SPRAY MACHINE

- A. Shall be designed specifically for seed dissemination.
- B. Shall allow materials to be mixed with water in the machine and kept in an agitated state to keep materials uniformly suspended in the water.
- C. Shall be designed to provide equal quantities of required materials over a particular spraying area.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 APPLICATION

- A. Application of Topsoil
 1. Topsoil shall be applied to the prepared subgrade specified in Section 02210, Site Grading.
 2. Topsoil shall be spread to a compacted depth of:
 - a. Four (4) inches for cross country areas.
 - b. Areas to have topsoil applied to them shall be scarified or otherwise roughened, just prior to the application.
- B. Seedbed Preparation
 1. Grade areas to be seeded to a smooth uniform grade.
 2. Roll, scarify, rake and level as necessary to obtain true, even surfaces
 3. Meet existing grades.
 4. All seeded areas shall slope to drain.
 5. All finish grades shall meet approval before grass seed is sown.
- C. Application Rates of Limestone, Aluminum Sulfate, Fertilizer and Seed
 1. Limestone or Aluminum Sulfate shall be applied and thoroughly incorporated in the layer of loam or topsoil to adjust the acidity of the material.
 2. The rate of application of the limestone will be determined by the pH value.
 3. Fertilizer shall be applied at the rate of 20 pounds per 1000 square feet.

4. The seed mixture shall be sown at the rate of 5 pounds per 1000 square feet.
- D. Fertilizing and Liming
1. Fertilizing and liming shall be done when the soil is in a moist condition and at least 24 hours before the sowing of the seed.
 2. The fertilizer and lime shall be applied to the soil by means of a mechanical spreader or other approved method capable of maintaining a uniform rate of application.
 3. Thoroughly harrowed, raked or otherwise mixed with the soil to a depth of not less than 2 inches.
 4. The fertilizer and lime shall not be applied together.
- E. Time of Seeding
1. The recommended seeding periods are from April 1 to June 1, and from August 15 to October 1.
 2. The Contractor may choose to seed at other times but regardless of the time of seeding he shall be responsible for a full growth of grass.
 3. When directed he shall re-fertilize and reseed areas on the project which do not develop a satisfactory growth of grass.
 4. Re-fertilizing and reseeding shall be incidental to the original seeding item requirements.

3.03 SEEDING METHODS

- A. Fertilizer, limestone, and mulch material, if required, and seed of the type specified may be placed by one of the following methods, provided an even distribution is obtained.
- B. Dry Method
1. Power Equipment: Mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment or attachments may be used when seed, limestone, and fertilizer are to be applied in dry form.
 2. Manual Equipment - On areas which are inaccessible to power equipment, permission may be given to use hand-operated mechanical equipment when the materials applied are in dry form. The use of hand shovels to spread the materials shall not be allowed.
 3. When the dry method is used, limestone and fertilizer shall not be mixed together prior to their application, but shall be worked into the soil together to a depth of at least 2 inches.
 4. At least 24 hours shall elapse between the time fertilizer is incorporated into the topsoil and seed is spread.
 5. Areas covered with park seed shall be raked, and, rolled with a roller weighing not more than 100 pounds per foot of roller width to firm the soil but not to pack it. The rolling shall be done the same day as the seeding unless otherwise permitted.
 6. Areas seeded in the spring after April 15 shall be covered with a 1 inch loose layer of clean wheat or oat straw. The straw shall be kept wet until a catch of grass is established. Loose straw shall be removed from the site.
 7. Grass on slopes or banks may be established by another method subject to approval. Special care shall be exercised to prevent erosion or washouts.

- C. Hydraulic Method
 - 1. The application of grass seed, fertilizer, limestone, and a suitable mulch, if approved, may be accomplished through the use of an approved spraying machine.
 - 2. The materials shall be mixed with water in the machine and kept in an agitated state in order for the materials to be uniformly suspended in the water.
 - 3. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, and grass seed shall be equal to the required rates.
 - 4. Prior to the start of work, the Engineer shall be furnished with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.
 - 5. The hydraulic seeding and fertilizing machine shall be completely flushed and cleaned each day before seeding is started.
 - 6. If the results of the spray operations are unsatisfactory, the Contractor shall be required to abandon this method and apply the materials in accordance with the dry method.
 - 7. When the hydraulic method is used, compaction or rolling shall be required.

- D. Side Slopes Application
 - 1. Roadway side slopes shall be seeded utilizing a hydraulic (hydro-seed) application process, to place seed and fertilizer simultaneously.
 - 2. A color agent shall also be within the hydraulic mix.
 - 3. Care shall be taken during the application to prevent coverage of poles, trees, signs, and etc.

3.04 MAINTENANCE

- A. The Contractor shall be responsible for the proper care of the seeded areas during the period when the grass is becoming established.
 - 1. This period shall extend for two months after a successful uniform stand of grass is produced.
 - 2. The Contractor shall reseed all areas as necessary to obtain a uniform stand of grass, free from bare spots.
 - 3. Any seeded areas which fail to show a uniform stand of grass shall be reseeded until all areas are covered
 - 4. Any and all additional seeding shall be at the Contractor's expense.
 - 5. If necessary, barricades of brush or other materials and suitable signs shall be placed to protect the seeded areas.
 - 6. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.

3.05 GUARANTEE PERIOD

- A. All seeded areas shall be guaranteed by the Contractor for not less than one (1) full year from the date of substantial completion.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools and equipment necessary for the construction, preparation, cleaning and later removal of all concrete formwork necessary for the proper completion of the Work.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Brochures and technical data:
 - a. Form ties
 - b. Form sealers and coatings, each type
 - 2. Samples
 - a. Form ties

1.03 PRODUCT HANDLING

- A. All materials and equipment shall be shipped, stored, handled and installed in such a manner as not to degrade quality, serviceability or appearance.

1.04 TECHNICAL REQUIREMENTS

- A. The design of concrete formwork is the Contractor's responsibility. The design and construction of forms shall conform to the American Concrete Institute's "Recommended Practice for Concrete Formwork" (ACI 347) as applicable except as modified by this specification.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Forms shall conform to the shape, lines and dimensions of the parts and members of concrete work as shown on the Drawings. Forms shall be substantial and sufficiently tight to prevent leakage of mortar or liquid. Furnish panels in largest practicable sizes to minimize number of joints.
- B. Except as otherwise specified, forms shall be constructed of plywood conforming to U.S. Product Standard PS 1-74 Interior and Exterior Plyform as required.
- C. Forms may be of metal or other approved materials. Steel forms or forms made of plastic faced plywood may be used if designed to equal in strength and deflection that specified for plywood except as otherwise specified herein.

- D. Forms for round columns may be of fiber (paper), steel or plastic.
- E. Form releasing agent shall be a non-grain raising and non-staining type that will not leave residual matter on surface of concrete or adversely affect proper bonding of subsequent application of other material applied to concrete surface. For water filtration facilities, form releasing agent shall be listed in the most recent version of the National Sanitation Foundation (NSF) product listing, of a type which will not contaminate potable water. This will include the entire facility.
- F. Form Ties:
 - 1. Provide factory-fabricated, adjustable length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
 - 2. Provide ties so that portion remaining within concrete after removal of exterior parts is at least 1 inch from the outer concrete surface. Provide form ties which will not leave a hole larger than one inch in diameter in the concrete surface.
 - 3. Provide tie cones at each end.
 - 4. Ties for liquid containment structures shall have a neoprene waterstop, factory applied at the center of the tie.

PART 3 EXECUTION

3.01 CONSTRUCTION

- A. General:
 - 1. Forms shall be straight and true, mortar tight and have sufficient strength to safely support construction loads without sagging or bowing.
 - 2. Forms shall be braced, tied together and supported to maintain position and shape, and be of adequate strength to support, without deflection or distortion, the pressure and weight of the concrete, together with the movement of men and equipment.
 - 3. Support spacings for the various thickness shall be such as to limit deflection, flexural strength and shear strength to 1/270 of the span for structural concrete and 1/360 of the span for architectural concrete. Bending stress and rolling shear stress shall be limited to 1930 and 80 psi respectively for Class I Plyform and 1330 and 72 psi respectively for Class II Plyform.
- B. Tolerances: Tolerances shall be as given in Section 203.1 of ACI 347, "Recommended Practice for Concrete Formwork".
- C. Form Alignment: Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the hardened concrete surface to obtain accurate alignment of the surface, prevent leakage of mortar and to prevent formation of fins, ridges or other noticeable defects.
- D. Chamfered Edges:
 - 1. All exposed edges of concrete shall have beveled strips to provide chamfers; sizes to conform to details on the drawings. If no size is specified on drawings, a 3/4 inch chamfer shall be used, unless otherwise directed by the Engineer.

2. Where masonry walls and partitions abut columns and beams, chamfer strip shall be omitted.
 3. Grinding of chamfered corners will not be allowed.
- E. Form Panel Joints:
1. Joints between form panels shall be tightly butted to prevent leakage of grout or fines and shall be strengthened with back-up framing to maintain contact faces of adjacent panels in the same plane.
 2. Form gaskets or form tape shall be used at joinings or juncture of form panels to prevent leakage of fluids, grout or fines from concrete. Form gaskets or form tape shall be placed at the contact edge of the joint, but shall not project into the interior of the form. Where necessary, any projection shall be cut off prior to placement of the concrete. Form gaskets shall also be used between hardened concrete and form panels to prevent leakage of grout or fines from new concrete pours.
 3. Form tape shall not be used in areas where concrete is to receive a brush sandblast finish.
- F. Openings:
1. The Contractor shall form for and leave all openings in the concrete work where required for the installation of his own work and/or for the work of others. He shall carefully examine all drawings for the need of such openings and in failing to provide openings as shown on the drawings, he shall cut them at his own expense.
 2. Except as otherwise noted or specified, all such openings shall be filled with concrete after the work to be installed therein has been completed.
- G. Cleanouts and Access Panels:
1. Temporary openings shall be provided, where required, to facilitate cleaning and inspection prior to placing concrete. This is particularly required at the bottom of wall forms.
 2. Shavings, chips and all refuse shall be removed and the forms shall be broom cleaned before any concrete is placed. Cleanout openings will not be permitted in exposed concrete without the Engineer's approval.
- H. Form Releasing Agents:
1. New plyform may be used as furnished if inspection shows it to be satisfactorily oiled by the manufacturer. For reuse, forms for exposed surfaces of concrete shall be coated with a commercial form release agent or non-staining mineral oil which shall be applied before reinforcing steel is placed. After coating with a form releasing agent, surplus oil or coating on form surfaces and any oil on the reinforcing steel or other surfaces requiring a bond with the concrete shall be removed.
 2. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling immediately before the placing of concrete, except that in freezing weather, oil shall be used.

3.02 INSTALLATION OF EMBEDDED ITEMS

- A. General:

1. The Contractor shall notify all trades when construction is ready for the setting of anchor bolts, inserts, sleeves, and other built-in equipment, in order that such material shall be set at the proper time. Before placing concrete, care shall be taken to determine that all items to be embedded in concrete are accurately located, firmly secured in place and protected from damage or displacement until securely held by the concrete.
 2. All items shall be thoroughly cleaned, free from rust, scale, dirt, grease or other coating. Any wood used for removable keys shall be thoroughly dampened before concrete is placed against the wood. The Contractor shall be responsible for any displacement of the items caused by his workmen.
- B. Electrical conduit may be embedded in concrete according to the provisions of Article 6.3 of ACI 318 "Building Code Requirements for Reinforced Concrete", provided the following conditions are met:
1. Outside diameter of conduit shall not exceed 1/3 of concrete thickness.
 2. Conduit shall not be placed closer than three diameters on center.
 3. Conduit shall not be embedded in structural concrete slabs less than four inches thick.
 4. A 1-1/2 inch minimum concrete cover shall be provided for conduits in structural concrete slabs.
 5. Conduit shall not be located between bottom of reinforcing steel and bottom of concrete slab.
 6. Conduit is generally not permitted in beams or girders.
 7. Aluminum conduit shall not be embedded in concrete.

3.03 REMOVAL

- A. Form Removal:
1. Forms shall be removed in a manner to insure complete safety of the structure. In no case shall supporting forms or shoring of slabs, beams, or other suspended members be removed until members have acquired sufficient strength to support safely their weight and the load thereon.
 2. Care shall be taken to avoid spalling the concrete surface and to assure that newly unsupported portions of the structure are not subjected to heavy construction or material loading. Additional shores or reshores shall be provided, as required, to adequately support the members during the construction period.
 3. All responsibility involved in the removal of forms, shores, and bracing shall rest with the Contractor, and he shall be solely responsible for accidents to persons and property of any nature.
- B. All parts of removed forms reserved for reuse shall be inspected, cleaned and repaired. Any part or panel which has been dented, deformed or otherwise rendered unfit for reuse shall be removed from the site at once.
- C. Tie-rod clamps to be entirely removed from the wall shall be loosened 24 hours after concrete is placed, and form ties may be removed at that time. Filling of form tie holes shall be as specified in Section 03345, Concrete Placing, Curing and Finishing.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SCOPE

- A. The work of this Section includes all labor, materials, tools and equipment necessary for the fabrication, transportation and installation of all reinforcing steel necessary for the proper completion of the Work.
- B. Provide all reinforcing steel for masonry reinforcing (seismic reinforcing), as shown on the Drawings.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Certified mill reports of reinforcing steel identifying chemical and physical analysis.
 - 2. Submit fully detailed shop drawings, conforming to the Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315 showing and including, but not limited to the following:
 - a. Sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.
 - b. Bending schedules and diagrams.
 - c. Splices and laps.
 - d. Assembly diagrams.
 - e. Reinforcing steel clearances.
 - f. Class designation and details of bar supports.
 - g. Pertinent concrete details with dimensions and elevations.
 - h. Items furnished by mechanical trades or under other sections of the Specification to be cast in concrete where interference may occur.
 - i. Reinforcement of concrete walls shall be shown on wall elevations with required sections, reinforcement of beams on beam elevations with required sections and reinforcement of floor and roof slabs on plan views with required sections.

1.03 PRODUCT HANDLING

- A. Deliver reinforcement to project site in bundles bearing tags indicating size, length and identification mark. Each bundle, roll or individual bar shall be so labeled.
- B. Classify and stack materials off the ground to prevent contamination and to facilitate subsequent inspection and handling.

1.04 TECHNICAL REQUIREMENTS

- A. The concrete reinforcing work included in this contract has been designed in accordance with the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" (ACI-318).
- B. Reinforcing shall be performed in accordance with the applicable provisions of the building code of the state wherein the work is done and any local codes or ordinances having jurisdiction over the work.
- C. In addition, the various ASTM, ACI, Department of Commerce, and Federal Specifications cited throughout this section are hereby included by reference.

PART 2 PRODUCTS

2.01 STEEL REINFORCEMENT

- A. General: The term "steel reinforcement" shall include all bars, tendons, anchorage, hooks, stirrups, dowels, ties, tie-wire, chairs and spacers noted on the Drawings, and/or specified herein, and evidently required. The types and grades of reinforcing required are specified herein.
- B. Materials:
 - 1. Reinforcing Bars: Shall be formed of new billet steel conforming to ASTM A615, Grade 60 except as otherwise noted.
 - 2. Welded Wire Fabric: Shall conform to ASTM A185 of the sizes indicated. For slabs, flat sheets only shall be used, and rolls will be unacceptable.
 - 3. Tie Wire:
 - a. For Structural Concrete: FS QQ-W-461 annealed black, 16 gauge minimum.
 - 4. Bar Supports:
 - a. Chairs, bolsters spacers and other devices to properly position reinforcing steel shall conform to "Bar Support Specifications" CRSI Manual of Standard Practice and shall be of adequate strength and approved design to prevent displacement of reinforcing and to prevent discoloration of concrete.
 - b. Support devices shall be Class A, except where concrete surfaces are exposed to view, weather or moisture; support devices shall be Class C - Plastic Protected.
 - c. For slabs on grade, supports shall be precast concrete blocks. Precast concrete blocks shall be not less than 4 inches square and shall have compressive strength equal to that of the surrounding concrete.
- C. Fabrication:
 - 1. Steel reinforcement shall be fabricated to the shapes, sizes and dimensions as shown on the drawings, details and schedules. All bending of bars and stirrups shall be in accordance with the requirements set forth in the Manual of Standard Practice of the Concrete Reinforcing Steel Institute. All steel shall be bent cold and shall not be bent or straightened in a manner that will injure the metal. Bars with kinks or bends not so detailed shall not be used.

2. Bends for stirrups and ties shall be made around a pin having a diameter not less than four times the minimum thickness of the bar but in all cases the diameter of bend shall be at least large enough to accommodate the supporting bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness of the bar, except that for bars larger than one inch the pin shall be not less than eight times the minimum thickness of the bar.

PART 3 EXECUTION

3.01 INSTALLATION

A. Reinforcing Bars:

1. Placing Reinforcement:

- a. Reinforcement shall be accurately placed in accordance with the drawings and adequately secured in proper position by concrete or metal chairs or spacers which will insure accuracy of position, both horizontally and vertically and will be sufficiently rigid to prevent displacement of the reinforcement during the placing and working of the concrete.
- b. Reinforcement steel shall be securely tied at intersections with tie wire or clips and shall be supported in a manner that will keep all metal away from exposed concrete surfaces.

2. Splices:

- a. All splices in the reinforcement shall be as shown on the drawings. The lapped ends of the bars shall be either separated sufficiently to allow the embedment of the entire surface of each bar in concrete, or connected as a single continuous bar to develop the full strength of the bar.
- b. Splicing shall not be made at the points of maximum stress, nor shall adjacent bars be spliced at the same points. Splices shall be staggered.
- c. When permitted by written approval of the Engineer, welding shall be in accordance with AWS 12.1.

3. All reinforcement in any one section shall be placed, supported and secured before the beginning of concrete operations. Unless otherwise indicated on the Drawings, the details of reinforcing steel, including bending, splicing and supporting shall conform to ACI Building Code 318 and Detailing Manual 315.

4. Steel Adjustment:

- a. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits or embedded items.
- b. Do not move bars beyond allowable tolerances without approval of the Engineer.
- c. Do not heat bend or cut bars without approval of the Engineer.

B. Wire Fabric:

1. Install in longest practicable sheet.
2. Lap adjoining pieces one and one-half mesh minimum and wire securely together.
3. Offset end laps in adjacent widths to prevent continuous laps.

- C. **Cleaning:** All reinforcement, when concrete is placed shall be entirely free from flaking rust, loose mill scale, grease, dirt or other coating which would destroy or reduce its bond with the concrete. Reinforcing shall be wire brushed before placing concrete if the Engineer deems it necessary.
- D. **Relation of Bars to Concrete Surfaces:**
1. The minimum cover of concrete for all reinforcement shall conform to the dimensions shown on the Drawings, which indicate the clear distance from the edge of the reinforcement to the concrete surface.
 2. Where not otherwise shown, the minimum coverage of the concrete in inches over the steel shall be as follows:

<u>MEMBER</u>	<u>EXPOSED TO</u>			
	<u>Air</u>	<u>Weather & Air Over-Liquid</u>	<u>Earth & Liquid</u>	<u>Salt Water</u>
Footing	--	--	3	4
Wall, Column or Beam	1-1/2	2	2(b)	3(b)
Slab and Joist Top	1-1/2(c)	2	2	3
Slab and Joist Bottom	3/4	2	2(b)	3(b)

- a. Applicable to all cast in place concrete except as otherwise shown on the drawings.
- b. Increase one inch when cast against earth.
- c. Shall be 3/4 inch when membrane or wearing surface is used.

- E. **Observation of Reinforcing Steel:**
1. Notify the Engineer at least 24 hours before placing concrete. All reinforcing within limits of one day's concrete placement must be tied in place and reviewed by the Engineer prior to placing concrete.
- F. **Protection During Concreting:**
1. Keep reinforcing steel in proper position during concrete placement.
 2. Dowels, other than at footings, projecting above or adjacent to exposed concrete surfaces shall be protected by means of a waterproof cover, a thin coating or neat cement slurry, or a coating of a zinc rich compound having 95 percent zinc in the dried film.

END OF SECTION

SECTION 03250

CONCRETE ACCESSORIES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide concrete accessories as required by the Contract Documents.
 - 1. In general the work of this Section includes all labor, materials, tools and equipment necessary for furnishing and installing anchors and hardware as specified herein, as shown on the Drawings or as necessary for the proper completion of the work.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Brochures and technical data:
 - a. Adhesive anchor systems

1.03 PRODUCT HANDLING

- A. All materials and equipment shall be shipped, stored, handled and installed in such a manner as not to degrade quality, or serviceability.

PART 2 PRODUCTS

2.01 ANCHORS

- A. Cartridge Injection Adhesive Anchors: Threaded steel rod, inserts or reinforcing dowels, complete with nuts, washers, polymer or hybrid mortar adhesive injection system, and manufacturer's installation instructions. Type and size as indicated on Drawings.
 - 1. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel threaded rods conforming to ASTM A36, ASTM A 193 Type B7 or ISO 898 Class 5.8 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 - 2. Exterior Use: Unless otherwise indicated on the Drawings, provide stainless steel anchors. Stainless steel anchors shall be AISI Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 - 3. Reinforcing dowels shall be A615 Grade 60.

4. Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Engineer, provide the following:
 - a. Hilti HAS threaded rods with HIT-HY 200 Safe Set System using Hilti Hollow Drill Bit System for anchorage to concrete, ICC ESR-3187.
 - b. Hilti HIT-Z anchor rods with HIT-HY 200 Safe Set System for anchorage to concrete, ICC ESR-3187.
 - c. Hilti HAS threaded rods with RE 500 SD Injection Adhesive Anchoring System for anchorage to concrete, ICC ESR-2322.
 - d. Hilti HAS threaded rods with RE 500 Injection Adhesive Anchoring System for anchorage to concrete.
- B. Capsule Anchors: Threaded steel rod, inserts and reinforcing dowels with 45 degree chisel point, complete with nuts, washers, glass or foil capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, and manufacturer's installation instructions. Type and size as indicated on Drawings.
 1. Interior Use: Unless otherwise indicated on the Drawings, provide chisel-pointed carbon steel rods conforming to ASTM A36, ASTM A 193 Type B7 or ISO 898 Class 5.8 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 2. Exterior Use: Unless otherwise indicated on the Drawings, provide chisel-pointed stainless steel anchors. Stainless steel anchors shall be AISI Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 3. Reinforcing dowels shall be A615 Grade 60, with 45-degree chisel-points at embedded end.
 4. Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Engineer, provide the following:
 - a. Hilti HVA Adhesive System with HVU capsules.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools, and equipment required for the furnishing of all materials required for the concrete work and, where appropriate, applying or installing such materials for the various items of concrete work as shown on the Drawings, as specified herein, and evidently required.
- B. Codes and Standards:
 - 1. The concrete work included in this contract has been designed in accordance with the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" (ACI 318).
 - 2. The ACI Standards "Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete" (ACI 211.1) and "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete" (ACI 304) are also hereby made a part of this specification insofar as they apply and do not conflict with the provisions of this specification or any local codes or ordinances having jurisdiction over the work. In addition, the various ASTM, ACI, Department of Commerce, and Federal Specifications cited throughout this section are hereby included by reference. Concrete work shall be performed in accordance with the applicable provisions of the building code of the state wherein the work is done.
- C. Strength:
 - 1. All concrete shall be designed to have a minimum 28 day compressive strength of 3,000 psi except as otherwise noted on the Drawings or specified herein.
- D. Contractor may use a low shrinkage concrete mix with crack-reducing admixtures as recommended by the admixture manufacturer, if submitted and approved by the Engineer. If the alternate concrete mix is submitted for approval, and the Contractor requests greater spacing between construction joints, the Contractor shall redesign the construction joints and submit a drawing for approval stamped by a structural engineer licensed in the Commonwealth of Massachusetts, at no additional cost to the Owner.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section include, but are not limited to the following:
 - 1. Certified mill reports of cement.
 - 2. Fine and coarse aggregate data resulting from tests performed as specified in this section for all aggregates proposed for use.
 - 3. Samples shall be submitted for at least the following items:
 - a. Cement, each type, one vial.
 - 4. Brochures and technical data for at least the following items:

- a. Admixtures, each type.
5. Reports:
 - a. Testing laboratory reports on all tests and design mixes for each different contemplated application to the Engineer for approval within 45 days after Notice to Proceed, or at least 14 days before initial placement of concrete, whichever date is earlier.
 - b. Report shall include source of cement and aggregates.

1.03 PRODUCT HANDLING

- A. It is intended that the major portion of the concrete be supplied from a commercial ready mix plant capable of meeting the following requirements for storage and handling of materials. Where no such plant exists within a reasonable distance from the site, and for small amounts of concrete which may be site mixed, the following requirements shall apply.
 1. Cement shall be carefully stored immediately upon receipt. Cement in sacks shall be stored in a suitable weatherproof structure which shall be as airtight as practical to prevent the absorption of moisture. Sacks shall be stacked close together to reduce circulation of air but shall not be stacked against outside walls. The manner of storage shall permit easy access for inspection and identification of each shipment. Bulk cement shall be transferred to elevated airtight and weatherproof bins. At the time of use, all cement that has been in storage so long that there is doubt of its quality will be tested by standard mortar to determine its suitability for use, and such cement shall not be used without approval.
 2. Aggregates shall be stored in a manner that will preclude the inclusion of foreign material. Aggregates of different sizes shall be stored in separate piles. Stockpiles of coarse aggregate shall be built in horizontal layers not exceeding four feet in depth to avoid segregation.

1.04 TESTING AND INSPECTION

- A. General:
 1. Concrete materials and operations shall be tested and inspected as the work progresses. Failure to detect any defective work or material shall not in any way preclude later rejection when such defect is discovered nor shall it obligate the Engineer for final acceptance.
 2. The use of testing services shall in no way relieve the Contractor of the responsibility to furnish materials and construction in full compliance with the contract documents.
- B. Responsibilities and duties of General Contractor:
 1. Ingredient Tests: Prior to making design mixes, the Testing Laboratory conforming to ASTM E329 and subject to the approval of the Engineer shall conduct the following tests in accordance with the procedures referred to in the applicable Reference Standards, cited herein, to assure conformance with the applicable Specifications.
 - a. Cement: Specific gravity and brand name of cement.
 - b. Aggregates: Sieve analysis, specific gravity, soundness, percentage of voids, absorption, potential reactivity, moisture content of fine and coarse aggregate, dry-rodded weight of coarse aggregate, and fineness modulus of fine aggregate.

2. Design Of Concrete Mixes:
 - a. The testing laboratory shall recommend, as determined by trial mixes and strength curves, the design mixes to be used for each application of concrete that will produce concrete of specified strengths and finishes with slumps and workability to meet all placing conditions.
 - b. Design mixes shall indicate water-cement ratio, cement factor, water content, admixture content, cement content, aggregate content, aggregate gradations, slump, air content and strength. Design mixes and related tests shall be in accordance with the procedures referred to in the applicable reference specifications cited herein.
 - c. Reference Standards: Concrete mixes shall be designed in accordance with Article 3.9 of Chapter 3 of ACI 301 “Specifications for Structural Concrete Buildings” and references referred to therein.
 - d. Water cement ratio shall not exceed 0.45.
 - e. The maximum allowable net water content shall be 5.00 gallons per sack of cement and cement factor shall be at a minimum 6.50 sacks per cubic yard of concrete.
 - f. Limit of Changes for Pumping: If the Contractor elects to convey concrete by pumping, the established job mix may not be altered by more than the following:

Cement	plus 20 pounds per cubic yard
Fine Aggregate	plus 50 pounds per cubic yard
Coarse Aggregate	minus 50 pounds per cubic yard

- g. Any conveying method requiring a greater increase in FA/CA ratio will not be approved.
3. Sampling of Concrete:
 - a. Samples of concrete for air, slump, unit weight, and strength tests shall be taken in accordance with ASTM C172.
 - b. During the progress of the Work an independent testing agency acceptable to the Owner and Engineer shall be selected. The testing agency shall be accredited and qualified according to ASTM C1077 and ASTM E329. Testing work shall be paid for by the Contractor. The testing agency and its certified testing laboratory shall prepare test concrete cylinders. The Contractor shall assist the testing laboratory in completing concrete testing. One set of 4 cylinders each shall be taken for each 100 cubic yards, or fraction thereof, of each mixture design of concrete placed in any one day. When the total quantity of concrete with a given mixture design is less than 50 cubic yards, the strength tests may be waived by the Engineer if, in his judgement, adequate evidence of satisfactory strength is provided, such as strength test results for the same kind of concrete supplied on the same day and under comparable conditions to other work. Cylinders shall be delivered to the testing labs within 24 hours. One cylinder shall be tested at 7 days and two at 28 days. The fourth cylinder shall be saved for a 56-day break should the average of the 28-day results not achieve the specified strength. Two copies each of the test results shall be submitted to the Engineer directly by the laboratory for review. In any case where the strength of the cylinders fail to meet the criteria of ACI 318, Chapter 4, Section 4.7.2.3, the Engineer shall have the right to order the defective

- concrete removed and proper concrete put in its place or to take such other action as they deem necessary to remedy the situation.
- c. The concrete used shall have a maximum slump as herein specified unless otherwise directed by the Engineer. Slump shall be determined as per ASTM C143. Slump tests shall be taken by the testing lab for each set of cylinders taken.
 - d. Air Content: Test for air content shall be performed in accordance with ASTM C173 or ASTM C231. A minimum of one test per day shall be conducted.
4. Furnish necessary labor to assist the testing laboratory and the field observers in obtaining and handling samples at the project or other sources of materials.
 5. Advise the Engineer and the field observers at least 24 hours in advance of placing concrete to allow for completion of quality tests and for the assignment of personnel.
 6. Provide and maintain adequate facilities for safe storage and proper curing of concrete test specimens on the project site for the first 24 hours as required by ASTM C31, Article 7.2.
 7. The Contractor, at no expense to the Owner, shall have the testing laboratory conduct additional tests on concrete ingredients and make new design mixes whenever the character or source of ingredients is changed or if the placed concrete fails to meet the specified strengths.

1.05 APPROVALS

- A. Commencement of Work: Concrete work shall not begin until test results and design mixes have been approved by the Engineer.
- B. Mix Variations: The Engineer reserves the right to vary in the field any previously approved design mix so as to compensate for field variables including but not limited to weather conditions, placing conditions, variations in size, gradation or characteristics of aggregate and end use of the concrete.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. General:
 1. All concrete used in the work shall be composed of Portland Cement, fine and coarse aggregate, and admixtures as specified herein. Concrete for every part of the work shall be of a homogeneous structure which, when cured and hardened, will have the required strength and resistance to weathering.
 2. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture of the required strength which will work readily into the corners and angles of the forms and around reinforcement and that will produce finishes acceptable to the Engineer but without permitting the materials to segregate.
- B. Cement: Cement shall meet the requirements of ASTM C150, Type II. Brands of cement shall be subject to the approval of the Engineer.

- C. Aggregate:
1. All aggregates shall conform to the standard specifications for Concrete Aggregates, ASTM C33 as amended by the specification. Aggregates failing to meet these specifications but proved by special test or actual service to produce concrete of the required quality may be used under ACI 318, Section 3.3, where authorized by the Engineer.
 2. Fine Aggregates:
 - a. Fine aggregates shall consist of sand or screenings of gravel or crushed stone, well graded from fine to coarse; clean and free from soft particles, clay, loam or organic matter, with the volume removed by sedimentation not more than three percent. When tested in accordance with ASTM C40 for organic impurities, the color of the supernatant liquid above the test sample shall show not darker than organic plate No. 1.
 - b. Fine aggregate shall conform to the following grading:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
 - c. Fine aggregate shall not have more than 45 percent retained between any two consecutive sieves of those listed above, and its fineness modulus shall not be less than 2.3 nor more than 3.1. If the fineness modulus varies by more than 0.20 from the value assumed in selecting proportions for concrete, the fine aggregate shall be rejected unless suitable adjustments are made in concrete proportions to compensate for the difference in grading.
 3. Coarse Aggregates:
 - a. Coarse aggregates shall consist of crushed stone or washed gravel having clean, hard, durable, uncoated particles, free from dust, dirt, or other deleterious substances; and free from thin, flat or elongated particles. The test for organic impurities specified for fine aggregate shall also apply to coarse aggregate. Maximum size shall be 3/4-inch for all concrete 8 inches and less in thickness. For heavier walls, footings and mass concrete, the maximum size may be increased to 1-1/2 inch, provided the space between the reinforcing bars therein is 1-1/3 greater than the maximum aggregate size.
 - b. Coarse aggregate shall conform to the grading given in Table 2 of ASTM C33 for sizes No. 467, 57, 67, 7, and 8.
- D. Water: Water shall be clean, fresh and free from oil, acid, salt, alkali, sewage, organic matter, and other deleterious substances.
- E. Admixtures: Admixtures shall be used as follows. The use of products other than those named herein will be allowed only with the written approval of the Engineer.

1. Air Entraining Agent: The air entraining admixture shall be a chloride free, purified and modified salt of a sulfonated hydrocarbon resin in liquid form conforming to ASTM C260.
 2. Water Reducing Agents: Except when otherwise ordered by the Engineer or noted elsewhere herein, all normal structural concrete shall have a water reducing agent added. The admixture shall be a salt of lignosulfonic acid in liquid form conforming to ASTM C494, Type A. The air entraining action of the water reducing agent shall be taken into account and the air entraining agent limited accordingly.
 3. Water Reducing-Retarding Agents: When the ambient temperature rises above 70 degrees F., the water reducing agent shall be replaced in whole or in part with a water reducing-retarding agent conforming to ASTM C494, Type D. The admixture shall be used in such amounts as will produce concrete with a set time equal to that which it would have at 70 degrees F. without the retarder.
 4. Set Accelerator: Where a set accelerator is allowed under the provisions of Section 03345 Concrete Placing, Curing, and Finishing, it shall be non-chloride conforming to ASTM C494, Type C and Type E.
 5. Superplasticizer: Superplasticizing admixtures used to produce flowing concrete may be approved for use in concrete in any part of the structure. The dosage rate depends on the slump of the base concrete which should be kept constant and low (2-1/2 to 3 inches). Superplasticized concrete can lose slump in 60 to 90 minutes, or sooner if temperature is above 70 degrees F, therefore the admixture should be added to the mix at the project site if there is a probable combination of long concrete haul and warm temperature during placing operation. Otherwise the admixture should be added in accordance with the manufacturer's instruction.
 6. Crack-Reducing Admixture: Crack-Reducing Admixtures may be used to reduce the magnitude of drying shrinkage, minimize the potential for cracking, and reduce joint spacing between concrete pours of large structures. Apply admixture at the dosage rate recommended by the manufacturer. Crack-Reducing Admixture shall be MasterLife CRA007 by Master Builders or approved equal.
- F. Epoxy Grout: Epoxy grout shall conform to ASTM C881, Type III, Grade 2, Class C. Color shall be selected by the Engineer.

PART 3 EXECUTION

3.01 CONCRETE MIX

- A. Proportions:
1. The work has been designed for concrete having a minimum compressive strength at 28 days as specified in this section.
 2. The cement factor and water cement ratio shall be determined by consideration of the specified strength, the water reducing admixtures, the slump required for proper placement, air-entraining requirements, the available and maximum allowable aggregate size and its specific gravity and the amount of water carried on the aggregates.
 3. The slumps and maximum sizes of aggregate for various types of construction, as well as the computation of trial mixes shall be as described in ACI 211.1 "Recommended Practice for Selected Proportions for Normal and Heavyweight Concrete".

B. Water Cement Ratio: The water cement ratio shall be as determined from the approved design mixes as specified in this section.

C. Water Content:

1. In calculating the total water content in any mix, the amount of water carried on the aggregate and the effect of admixtures shall be included. The water on the aggregate shall be determined periodically by test and the amount of free water on the aggregate subtracted from the water added to the mix.
2. In all cases the amount of water to be used shall be the minimum amount required to produce a plastic mixture of the strength specified and of the required density, uniformity and workability. The consistency of any mix shall be at that required for the specific placing conditions and methods of placement.

D. Concrete Slumps:

1. The Contractor must satisfy himself that he is capable of producing, with the following slumps, concrete of satisfactory quality and strength, that will produce the specified finishes, free of voids, honey-combing, or excessive air bubbles.
2. Execution of this contract signifies that the Contractor accepts full responsibility for the production of concrete of satisfactory quality, strength and finishes within the slump limitations specified. Slump shall be determined as per ASTM C143.

<u>Types of Construction</u>	<u>Maximum (inches)</u>	<u>Minimum (inches)</u>
Reinforced Footings and Mats	3	1
Substructure Walls	4	1
Slabs, Beams and Reinforced Walls	4	1

E. Air Entrainment:

1. All concrete, except interior concrete slabs subject to abrasion, shall be air entrained. Percent of air versus aggregate size shall be added as a part of the computed mixing water requirements, and be used strictly in accordance with the manufacturer's directions and these specifications to produce a total entrained air content, by volume, to be determined in accordance with the procedure given in ASTM C173, as follows:

<u>Nominal Maximum Size Coarse Aggregate (inches)</u>	<u>Air Content By Volume (percent)</u>
3/8	6 to 10
1/2	5 to 9
3/4	4 to 8
1	3.5 to 6.5
1-1/2	3 to 6

- F. Ready Mixed Concrete: It is intended that the major portion of the concrete required for the work be ready mixed in an off site plant. Small amounts for miscellaneous purposes may be site mixed. All concrete produced in an off site plant shall be mixed and delivered in accordance with the requirements of the “Standard Specifications for Ready Mixed Concrete,” ASTM C 94 and these specifications.
- G. Mixing: Concrete shall be mixed and transported in accordance with the applicable provisions of the “Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete” (ACI 304) of the American Concrete Institute and these Specifications.

END OF SECTION

SECTION 03315

MISCELLANEOUS CONCRETE PLACEMENTS

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools and equipment necessary for the construction of concrete specialties as specified herein, as shown on the Drawings or as necessary for the proper completion of the work.

PART 2 PRODUCTS

2.01 EQUIPMENT FOUNDATIONS

- A. All floor-mounted mechanical and electrical equipment shall be installed on concrete pads constructed of 4,000 psi concrete, whether or not specifically indicated on the drawings to be pad mounted.

2.02 GROUTING

- A. General: Grouting is required for structural items and mechanical items. The materials to be used for mechanical items and base plates shall be as specified in Section 03345 Concrete Placing, Curing and Finishing.

2.03 CONCRETE FILLS

- A. All concrete fills shall be 4,000 psi.
- B. Thin Set Fills: Concrete fills two inches thick shall have a maximum size aggregate of 1/2-inch.
- C. Thick Set Fills: Concrete fills greater than two inches thick shall be structural concrete as specified in Section 03300 Cast-In-Place Concrete.

2.04 DUCTBANKS

- A. All underground electrical ductbanks shall be encased in concrete with materials as specified herein.
- B. Cement, aggregate and all other concrete components shall be as specified herein except that aggregate size shall not exceed 3/8-inch. Concrete shall have a minimum compressive strength at 28 days of 2,500 psi.
- C. Ductbanks shall be reinforced when crossing the backfill covering new pipe lines, roads, parking lots or any area subject to vehicular traffic. Beneath these areas, ductbanks shall be reinforced with a minimum of #5 @ 12" longitudinal and #4 @ 12" ties, extending 4 feet beyond area needing protection.

PART 3 EXECUTION

3.01 EQUIPMENT FOUNDATIONS

- A. All equipment foundations shall be sized to suit equipment with reinforcement as shown on the equipment pad detail on the Drawings. Pads shall not be poured until all equipment sizes have been finalized.
- B. All exposed surfaces shall be formed with smooth forms, all coarse aggregate spaded back from the forms so that all exposed surfaces shall have a smooth surface without excessive rubbing and shall be free from sandy streaks, coarse aggregate or stone pockets. All exposed surfaces shall have a smooth, even surface, with all exterior angles beveled and vertical surfaces coved to the floor.
- C. The Contractor shall build in all anchor bolts, dowels, sleeves, and other built-in fittings as required for the equipment.

3.02 PITS, SUMPS AND TRENCHES

- A. Care shall be required of the Contractor in the construction of all indicated pits, sumps and trenches to ensure provisions are made for all built-in or attached frames, embedded items, pipes and sleeves.
- B. Waterstops shall be installed in all concrete joints as indicated.
- C. Floors shall present a smooth evenly troweled surface, properly sloped to drains.

3.03 GROUTING

- A. Surface Preparation:
 - 1. The concrete surfaces shall be cleaned of all contamination and debris, chipping or roughening the surface if any laitance or poor concrete is in evidence.
 - 2. Special care shall be taken with the grout in hot or cold weather to ensure proper setting and gain of strength. Aggravating conditions of placement are to be alleviated to an extent that the temperature of the grout up until time of set will be in about the range of 60 to 80 degrees F. Shields from the sun and hot winds shall be provided when required.
 - 3. Following cleaning, the concrete shall be water-saturated for a period of six hours, the excess water then removed from the surface and non-absorbent edge forms erected.
- B. Grouting of Equipment:
 - 1. Grout shall be placed quickly and continuously, shall completely fill the space to be grouted and be thoroughly compacted and free of air pockets.
 - 2. The grout may be poured in place, pressure grouted by gravity, or pumped. Whenever practical, grout shall be poured from one side only and made to flow across to the open side to avoid air-entrapment.

3.04 CONCRETE FILLS

- A. Surface preparation for concrete fills shall conform to applicable portions of Section 03345 Concrete Placing, Curing and Finishing.

3.05 PADS AND BASES

- A. All concrete work for the equipment pads shall be as specified herein and as detailed the Drawings. The Contractor shall be responsible for the excavation, installation of this concrete work, and backfill.

3.06 DUCTBANKS

- A. Not less than three inches of concrete shall be between the outside of a duct and the earth. Not less than two inches of concrete shall be between adjacent ducts.
- B. All duct line concrete pours shall be continuous between manholes or handholes and between manholes or handholes and structures.
- C. Ductbanks shall be laid in trenches on mats of screened gravel not less than 6-inches thick and well graded.
- D. Where duct lines pass through concrete walls, concrete envelopes shall be extended through and finished flush with inside surfaces. Watertight construction joints of an approved type shall be provided.

END OF SECTION

SECTION 03345

CONCRETE PLACING, CURING AND FINISHING

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes all labor, materials, tools and equipment necessary for the placing, curing and finishing of all cast-in-place concrete as shown on the Drawings, specified herein and evidently required to complete the work.

1.02 SUBMITTALS

- A. Shop drawings, brochures and samples shall be submitted for all items to be furnished in accordance with the provisions of Section 01300.
- B. Submittals required under this section shall include, but are not limited to the following:
 - 1. Manufacturer's Literature - including technical and installation information for:
 - a. Cement Grout (Non-Shrink)
 - b. Membrane Curing Compound
 - c. Joint Sealant
 - d. Concrete Sealer
 - f. Epoxy Bonding Compound

1.03 ENVIRONMENTAL CONDITIONS

- A. Protection:
 - 1. Fresh concrete shall be adequately protected from freezing, premature drying, heavy rains, flowing water and mechanical injury. Provisions shall be made for maintaining new concrete in a continuously moist condition for at least seven days after placement.
- B. Cold Weather Requirement:
 - 1. When placing concrete in cold weather, the recommendations of the American Concrete Institute's Publication "Cold Weather Concreting" ACI-306R shall be followed insofar as the Engineer may direct. The use of set accelerators will be at his discretion except that no calcium chloride will be allowed. After the first frost of the winter and after the mean daily temperature at the site falls below 40 degrees F. for more than one day, concrete shall be protected from freezing for not less than the first 48 hours after is placed. In the spring, concrete shall be similarly protected until the mean daily temperature rises above 40 degrees F. for more than 3 consecutive days. When the mean daily temperature falls below 40 degrees F. for more than one day, concrete shall thereafter be placed at a temperature of between 50 and 55 degrees F. and maintained at that temperature for at least three days. During the next three days, it shall be protected from freezing.
 - 2. When it is necessary to heat the materials in order that the concrete when placed will have a temperature within the allowable range, water and aggregates shall be introduced into the mixer and the temperature allowed to stabilize before the

cement is added. If heating of aggregates is not practicable, the water may be heated to any temperature required to produce a water-aggregate temperature in the 60 degrees to 80 degrees F. range. Cement should never be added to a mix having a higher temperature due to the danger of producing a flash set. When aggregate heating is required and steam in pipes is not available, steam jets may be the only practicable method. With this method the amount of free water on the aggregate will vary considerably and the mixing water will have to be adjusted for each batch. In general, there is more danger in overheating water and aggregates, and producing mix temperatures on the high side of the allowable than there is in being on the low side.

3. Regardless of materials heating or the use of admixtures, protective measures shall be taken to maintain the temperature of freshly placed concrete as recommended by the ACI for the particular condition. Data on the duration of recommended protection, safe final removal of shores and forms, and the like appears in the ACI publication "Cold Weather Concreting" (ACI-306R).
4. The methods of protecting freshly placed concrete will be subject to the approval of the Engineer. In general, external heating will not be required during the first three days if measures are taken to retain the heat of hydration. Such measures shall be commercial batt insulation, insulating board, loose fill insulation, or other material approved by the Engineer. Canvas or plastic film shall be used to protect the insulations from precipitation. After three days, if heating is required to maintain the temperature of the concrete above freezing, it shall be provided as required. Exhaust steam is the best method, is fire safe, and does not dry the surface of the concrete. Airplane heaters, located outside the structure or enclosure and blowing hot air into it are acceptable but not preferred. Open fires and salamanders without proper ventilation will not be allowed due to the fire hazard and strong carbon dioxide atmosphere which is detrimental to freshly placed concrete.

C. Hot Weather Requirements:

1. For concrete placed during extremely warm weather, the aggregate shall be cooled by frequent spraying in such manner as to utilize the cooling effect of evaporation. Temperature of the concrete when placed shall not be more than 90 degrees F. If such a temperature cannot reasonably be maintained, the Engineer shall be notified in order to permit redesign of the mix at his direction to compensate for loss of strength resulting from higher mix temperatures. Newly placed concrete shall be protected from the direct rays of the sun and the forms and reinforcement, just prior to placing, shall be sprinkled with cold water.
2. During periods of excessively hot weather (90 degrees F., or above), ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels, all in accordance with the provisions of ACI 305R, "Hot Weather Concreting".
3. Temperature records shall be maintained giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. The record shall include checks on temperature of concrete as delivered and after placing in forms. Data shall be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained. A copy of the weather data shall be included in the permanent records of the job. During excessively hot weather not more than one hour shall elapse between time of adding water to cement or cement to aggregate, and time of placing concrete.

1.04 EVALUATION OF CONCRETE

- A. The Contractor shall comply with ACI 301, Chapter 17, Evaluation and Acceptance of Concrete.
- B. Concrete test results and reports by the testing laboratory shall be the basis for evaluating concrete strength.
- C. The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements which control the strength of the structure, including but not necessarily limited to the following conditions:
 - 1. Low strength concrete as designated by ACI 301, Chapter 17.
 - 2. Reinforcing steel size, quantity, strength, position or arrangement at variance with the requirements of Section 03200, Concrete Reinforcement and/or the Drawings.
 - 3. Concrete which differs from the required dimensions or locations in such a manner as to reduce strength.
 - 4. Curing less than specified.
 - 5. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.
 - 6. Mechanical injury, construction fires, accidents or premature removal of formwork likely to result in deficient strength.
 - 7. Poor workmanship likely to result in deficient strength.
- D. Where the strength of the structure is considered potentially deficient, core tests in accordance with ASTM C42 and/or load tests evaluated in accordance with ACI 318, Chapter 20 may be ordered by the Engineer. Should the Contractor elect to make core tests of questionable concrete, all expenses incidental thereto shall be paid by the Contractor. Should the Engineer direct that core tests be made, all costs will be paid for by the Owner if such tests prove the concrete to be satisfactory. If unsatisfactory, all costs including additional testing of replaced work shall be paid for by the Contractor.
- E. Concrete work judged inadequate by results of core tests and/or load tests shall be removed and replaced if so directed by the Engineer at the Contractor's expense.
- F. Water Tightness:
 - 1. The following concrete basins shall be tested for water tightness:
 - a. Spent Washwater Wetwell.
 - b. Clearwell.
 - 2. Testing Procedure:
 - a. On completion of the tank, and prior to any specified backfill placement, the following test shall be applied individually to each basin to determine water tightness.
 - b. Fill the tank with potable water to the maximum level and let it stand for at least 24 hours.
 - c. Measure the drop in liquid level over the next 72 hours to determine the liquid volume loss for comparison with the allowable leakage. Evaporative losses shall be measured or calculated and deducted from the measured loss to determine net liquid loss (leakage). The net liquid loss for a period of 24 hours shall not exceed 0.1 of 1 percent of the tank capacity.

- d. If the leakage exceeds the maximum allowable, the leakage test shall be extended to a total of five days. If at the end of five days average daily leakage does not exceed the maximum allowable, the test shall be considered satisfactory. If the net liquid loss exceeds the maximum allowable, leakage shall be considered excessive and the tank shall be repaired, and retested until leakage falls within the appropriate limit.
- e. Damp spots on the exterior wall surface, or interior common walls, or measurable leakage of water at the wall base shall not be permitted. Damp spots are defined as spots where moisture can be picked up on a dry hand. The source of water movement through the wall shall be located and permanently sealed in an acceptable manner. Leakage through the wall-base joint shall likewise be corrected.

PART 2 PRODUCTS

2.01 CEMENT GROUT

- A. Grout shall be Embeco Pre-Mixed non-metallic non-shrink grout as made by Master Builders, Inc., Five Star Grout as made by U.S. Grout Company, Upcon Construction Grout as made by USM, Upco Chemical Division, or equal.

2.02 ROD STOCK

- A. Shall be a closed cell polyethylene foam furnished in sizes one third greater in diameter than the joint.

2.03 JOINT SEALANT

- A. Shall be a one component, polyurethane-base non-sag elastomeric sealant, Sikaflex-1A as manufactured by Sika Corporation or equal. Joint sealant shall be NSF approved for potable water contact.

2.04 CONCRETE SEALER

- A. All interior concrete floors to be exposed upon completion of this work, and for which no other surface treatment is specified, shall have an application of Dekote as produced by A.C. Horn, Inc., or equal as made by Sonneborn or Euclid. The material shall be applied and cured in accordance with manufacturer's directions at the rate of 200 to 350 sq. ft. per gallon.

2.05 MEMBRANE CURING COMPOUND

- A. May be used only on walls and slabs not subject to further treatment such as painting, chemical hardening, special topping or coatings. If used, it shall be Horncrete 30D or 30C as manufactured by A.C. Horn, Inc. or equal as made by Sonneborn or Sika Corporation, and conforming to ASTM C309, Type 1 or 1D, Class B. Compound shall be applied uniformly by spray, leaving no pinholes or gaps, at a coverage rate not to exceed 200 square feet per gallon. The curing compound shall be applied after finishing operations are completed and surface moisture has disappeared. Any compound used must be of a type which will not contaminate potable water.
- B. If forms are removed prior to eight days after placing the concrete, the uncovered surfaces shall be coated with the curing compound as specified herein.

2.06 CURING PAPER

- A. Shall be used to cure floors which are to have applied toppings or chemical hardeners. Curing paper shall also be used in other areas to protect newly poured concrete floors from damage. Material shall conform to ASTM C171, for regular or white waterproof paper.

2.07 EPOXY BONDING COMPOUNDS

- A. Shall be Uniweld as made by Permagile Industries, Inc., Sikadur 32 Hi-Mod as made by Sika Corporation, or equal.

2.08 BOND BREAKER

- A. Shall be 15 pound asphalt saturated roofing felt.

PART 3 EXECUTION

3.01 CONCRETE PLACING

- A. Placing:
 - 1. Concrete shall be placed in accordance with the applicable provisions of the "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete" (ACI 304) of the American Concrete Institute and these specifications.
 - 2. Concrete shall be handled from the mixer, or truck if ready-mixed concrete is used, to the place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients but in no case shall the time elapsed between the addition of the water to the cement or the cement to the aggregates and the placing of concrete in the forms exceed one and one-half (1-1/2) hours. In periods of excessive hot weather as previously defined in paragraph 1.04 C. of this section, this time shall be reduced to one hour.
 - 3. The concrete shall be deposited in the forms as nearly as practicable in the final position to avoid rehandling and shall be so deposited as to maintain a homogeneous plastic surface approximately horizontal. Water shall be removed from all forms, trenches, and excavations and the work shall be kept dry while

the concrete is being placed. No water shall be thrown on or allowed to flow over or rise upon the concrete until it has had time to become thoroughly set.

4. The maximum free fall of any concrete shall be limited to three feet. Accumulation of concrete on the forms or reinforcement above level of the placement shall be avoided. Concrete that is partially hardened, or has been contaminated by foreign material or that has been retempered will not be permitted on this project. A concrete placement, once started, shall be carried on as a continuous operation until the placing of the section is completed.

B. Runways:

1. Runways shall be provided for wheeled concrete handling equipment. Such equipment shall not be wheeled over reinforcement nor shall runways be supported on reinforcement.

C. Chuting:

1. When concrete is conveyed in chutes, the equipment shall be of such size and design as to insure a continuous flow in the chute. The chute shall be of steel or be steel lined, and the different sections shall have the same slope throughout. Aluminum chutes will not be allowed. The slope shall be not flatter than 3 horizontal to 1 vertical or steeper than 2 horizontal to 1 vertical and, between these limits, the slope shall be that which will prevent segregation of ingredients. The end of the chute shall be provided with a baffle to prevent segregation of ingredients. If the end of the chute is more than three feet above the surface of the concrete in the forms, a spout shall be used. The spout shall be kept full of concrete and the lower end maintained as near to the surface of deposit as practical. The chute shall be thoroughly flushed with water before and after each run. The water used shall be discharged outside the forms.

D. Bonding:

1. After a section has been completed, any laitance on the temporary top surface of construction joints shall be removed and the surface raked immediately after the initial set has taken place. If removal of the laitance is delayed until the concrete has set, so that laitance cannot be removed by shovels or scrapers, the Contractor shall remove it by power chipping tools.
2. Before depositing concrete on or against concrete which has set, the surface of the set concrete shall be roughened, thoroughly cleaned with wire brushes, air blasted, and then saturated with water. The new concrete placed in contact with hardened or partially hardened concrete shall contain an excess of cement to secure bond. The surface of the hardened concrete shall be slushed with a coating of neat cement grout against which the new concrete shall be placed before the grout has attained its initial set. Where noted or where an unplanned interruption in a concrete placement has occurred, bonding shall be with epoxy bonding compound used in accordance with the material manufacturer's recommendations.

E. Compaction:

1. Concrete shall be placed in layers not exceeding 12 inches in depth, and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding, and tamping as required.
2. Form vibrators will be considered only where internal vibration is impractical and will be allowed only with the written permission of the Engineer. When

allowed, the vibrator shall be placed so that motion is horizontal and vibration in any location shall not be continued to the extent that segregation occurs, but vibrators shall be relocated frequently. Vibrators shall not be used to transport concrete within the forms. Concrete shall be thoroughly worked around reinforcement, embedded fixtures and into the corners of the forms.

3. Compaction shall be in accordance with ACI 390, "Recommended Practice for Consolidation of Concrete" as modified by this specification.

3.02 CURING AND PROTECTION

A. Curing:

1. Shall be accomplished by the use of waterproof paper, curing compounds, "wet" methods (fog spray, damp sand or burlap) or other methods dependent upon the end use of the concrete. Provisions shall be made for maintaining new concrete in a continuously moist condition for a minimum of seven days.
2. The use of curing compound on surfaces to receive coating or bonded finished will not be allowed.

B. Concrete Slab Protection:

1. Finished concrete slabs shall be covered with curing paper as specified, laid with side joints lapped four inches and end joints lapped six inches. Paper shall be applied no sooner than 24 hours and not over 30 hours after finishing the slab and shall be left in place at least ten days. Joints shall be taped and paper shall be weighted to prevent displacement. Rips or tears appearing in the paper during the first seven days after a floor is completed shall be immediately patched. No traffic will be permitted until five days after pouring. From 5 to 15 days only light traffic will be permitted.
2. Where the use of wrenches and other heavy tools may be required, the Contractor shall provide additional protection as required.

3.03 DEFECTIVE CONCRETE

- A. Concrete work not formed as shown on the drawings, out of alignment or level, or showing a defective surface, shall be removed and completely replaced if directed by the Engineer.
- B. Slight imperfections in appearance of the structure may be patched as specified herein provided the permission of the Engineer is obtained prior to patching.

3.04 REPAIR OF SURFACE DEFECTS

A. General:

1. Immediately after the forms are removed, all form ties shall be cut off below surface of concrete, all fins and irregularities shall be removed and all defective areas, holes, honeycombs, cavities and irregularities cleaned and patched with a stiff mortar of the same composition as the mortar in the original concrete mix, all as specified herein. Exposed patchwork shall be rubbed where and as specified herein or otherwise treated to match adjacent surfaces.

B. Patching:

1. Defective areas for which patching is allowed shall be cleaned of all dust, dirt, grease, laitance, and loose or spalling concrete, and be given a brush applied coat of an epoxy bonding compound approved by the Engineer.
 2. The compound shall be mixed as directed by the manufacturer. The patching mortar shall be freshly mixed and be composed of the same materials and proportions as were used for the original concrete, including the admixture, except that the coarse aggregate shall be omitted and fine aggregate substituted therefor. The placing of mortar shall begin immediately after the bonding compound is applied and shall be completed within the contact time. The bonding compound shall be sticky to the touch during placing of mortar. The patching shall be finished to match adjoining concrete, and cured and protected as specified for concrete. The manufacturer's directions and precautions shall be followed when using such compounds.
- C. Filling Form Tie Holes:
1. Holes left by withdrawal of rods or by removal of end ties shall be filled solid with mortar, using epoxy bonding compound in the same manner as specified under "Patching" above. Holes passing entirely through the wall shall be filled using small tools that will pack the hole solidly with mortar. Excess mortar at the surface of the wall shall be struck off flush with a cloth.
- D. Rubbed Finish:
1. Surfaces requiring remedial work which are to be exposed to view whether painted or not, shall have all projections and irregularities carefully removed and all cavities filled with stiff mortar of the same composition as the mortar in the concrete. The same brand and color of cement, and the same kind and color of aggregate shall be used for filling cavities as was used in the original concrete mix. The surface film of all such pointed surfaces shall be carefully removed before setting occurs. The preceding operations shall be done within 24 hours after removal of the forms. If, after patching and smoothing, surfaces do not present a smooth surface of even texture and appearance, then the following finish shall be repeated as many times as the Engineer deems necessary. The Engineer shall be the sole judge of the amount of rubbing required.
 2. Immediately after the forms are removed, and necessary patching and smoothing is done, the surface shall be wetted with clean water, without applying any cement or other coating, and rubbed with a No. 16 carborundum brick or other abrasive of equal quality until even and smooth and of uniform appearance.
 3. The final finish shall be obtained by a thorough rubbing with a No. 30 carborundum brick or other abrasive of equal quality.
 4. After final rubbing is completed, the surface shall be thoroughly drenched and kept wet for a period of five days, unless otherwise directed. No rubbing will be permitted in cold or freezing weather, except in heated enclosures.

3.05 FINISH OF FORMED SURFACES

A. General:

1. All exposed interior and exterior concrete surfaces shall be finished as specified herein and shall have a smooth and even surface when completed. "Exposed concrete" shall be defined as submerged and non-submerged concrete exposed to view upon completion of the work whether or not a painted finish is specified.
2. Exterior concrete which will be covered by fill such as exterior faces of walls, spread footings, etc., shall have no treatment other than required for repairs as specified elsewhere in this section.

B. Grout Rubdown:

1. While the concrete is still damp, a thin coat of medium consistency neat cement slurry shall be applied to the concrete surface by means of bristle brushes to provide a bonding coat in the parent concrete. Before the slurry has dried or changed color, a dry (almost crumbly) grout comprising one volume cement, the same as used for the parent concrete, adjusted with white cement to match color where exposed, to 1-1/2 volumes of sand, shall be applied. This grout shall be applied by means of slightly damp pads of coarse burlap approximately 6 inch square used as a float. The grout shall be well scrubbed into the surface to provide a dense mortar.
2. The mortar shall be allowed partially to harden from one to two hours depending upon the weather. Work in direct hot sunlight shall be avoided, and if the air is hot and dry, the concrete shall be kept damp during this period with a fine fog spray.
3. When the grout has hardened sufficiently, all the grout that can be removed shall be removed with a trowel. Grout shall not be allowed to remain on the concrete too long since it will become difficult to remove.
4. The surface shall then be allowed to dry thoroughly and then be rubbed vigorously with clean, dry burlap to completely remove any dried grout. There should be no visible film of grout remaining after this rubbing.
5. The entire operation shall be completed in one working day. No grout shall be left on the concrete overnight. Sufficient time shall be allowed for the grout to dry after it has been cut with a trowel so that it can be wiped off clean with burlap.
6. On the day following, the concrete shall again be wiped clean with dry burlap to remove any inadvertent dust. At this time, the use of a piece of burlap containing old hardened mortar may be helpful since it will act as a mild abrasive. After this treatment no build-up film should remain on the parent surface. If however, such is present, a fine abrasive stone shall be used to remove all such material without breaking through the surface film of the parent concrete. Do not work up a lather.
7. After application of the surface grout, the surface shall be thoroughly washed down with stiff brushes and the concrete maintained in a continuously damp condition for at least three days above 50 degrees F. by the periodic application of a fine fog spray or by the use of a poultice of damp flannel covered with polyethylene taped to the concrete.

3.06 FINISHING OF RELATED UNFORMED SURFACES

- A. Tops of exposed beams, walls, parapets and tops of similar unformed surfaces occurring adjacent to formed surfaces shall be struck off smooth and be hand steel troweled by cement masons assisted by a field party to continually verify and check correct lines and elevations, so as to produce a smooth hard level surface. Line and elevation shall be pre-established by means of preset wood screeds which shall be removed during the troweling operation.
- B. After above troweling operations have been completed and after concrete has cured, the above troweled surface shall be dry honed to a smooth non-directional surface texture satisfactory to the Engineer.

3.07 CLEANING CONCRETE

- A. Cleaning Concrete:
 - 1. The Engineer may require remedial action by the Contractor to remove blemishes, rust, stains, or discolorations from the exposed concrete. General cleaning shall be done with a non-etching cleaning agent used as per manufacturer's instructions. The cleaner shall be used on all surfaces to receive a painted finish.
- B. In the event of a severe blemish or discoloration which cannot be removed with a non-etching agent, the Contractor shall notify the Engineer immediately and consider the following:
 - 1. A clean down with mild solution of detergent and water applied by scrubbing vigorously with soft bristle brushes, then flushing with water. Rust stains may be removed by applying a bleaching agent such as oxalic acid.
 - 2. Cleaning operation shall not begin until superstructure is entirely completed and then only where and as directed by the Engineer. Cleaning portions of building as work progresses is not permitted.
 - 3. Cleaning by other methods, bleaching, acid etching, sandblasting or any other procedure suggested by the Contractor and proven to be effective.

END OF SECTION

SECTION 03600

GROUT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install grout complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02700 Precast Concrete Manholes
 - 2. Section 03250 Concrete Accessories
 - 3. Section 03300 Cast-in-Place Concrete

1.03 SUBMITTALS

- A. Shop drawings and product data in accordance with Section 01300 showing materials of construction and details of mixing and installation for:
 - 1. Commercially manufactured non-shrink cementitious grout and underlayment grout. The submittal shall include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations and conformity to the specified standards.
 - 2. Cement grout: The submittal shall include the type and brand of the cement, the gradation of the fine aggregate, product data on any proposed admixtures and the proposed mix of the grout.
- B. Samples:
 - 1. Submit samples of commercially manufactured grout products when requested by Engineer.
 - 2. Submit aggregates proposed for use in mixes when requested by Engineer.
- C. Laboratory Test Reports:
 - 1. Submit laboratory test data as required under Section 03300 for concrete to be used as concrete grout.
- D. Qualifications:
 - 1. Grout manufacturers shall submit documentation that they have at least ten years experience in the production and use of the grouts which they propose to supply.

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C33 – Standard Specifications for Concrete Aggregates,
 - 2. ASTM C150 – Standard Specifications for Portland Cement,

3. ASTM C827 – Standard Test Methods for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures,
 4. ASTM C1107 – Standard Specifications for Packaged Dry, Hydraulic – Cement Grout (Non-shrink).
- B. U.S. Army Corps of Engineers Standard (CRD):
1. CRD-C 621 – Corps of Engineers Specification for Non-shrink Grout.
- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. Qualifications:
1. Grout manufacturers shall have a minimum of ten years experience in the production and use of grout proposed for the work.
- B. Pre-installation Conference:
1. Well in advance of grouting, hold a pre-installation meeting to review the requirements for surface preparation, mixing, placing, and curing procedures for each product proposed for use. Parties concerned with grouting, including Engineer, shall be notified of the meeting at least ten days prior to its scheduled date.
- C. Services of Manufacturer's Representative:
1. A qualified field technician of the non-shrink grout manufacturer, specifically trained in the installation of the products, shall attend the pre-installation conference and shall be present for the initial installation of each type of non-shrink grout and underlayment grout. Additional services shall also be provided, as required, to correct installation problems.
- D. Field Testing:
1. All field testing and inspection services required shall be provided by Owner. Contractor shall assist in the sampling of materials and shall provide any ladders, platforms, etc. for access to the work. The methods of testing shall comply in detail with the applicable ASTM Standards.
 2. The field testing of concrete grout shall be as specified for concrete in Section 03300.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions.
- B. Store materials in full compliance with the manufacturer's recommendations. Total storage time from date of manufacture to date of installation shall be limited to six months or the manufacturer's recommended storage time, whichever is less.
- C. Material which becomes damp or otherwise unacceptable shall be immediately removed from the site and replaced with acceptable material at no additional expense to Owner.

1.07 DEFINITIONS

- A. Non-shrink Grout: A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state and bonds to a clean base plate.

PART 2 PRODUCTS

2.01 GENERAL

- A. The use of a manufacturer's name and product or catalog number is for the purpose of establishing the standard of quality desired.
- B. Like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.
- C. Grout shall be applied where needed or at the discretion of the engineer.

2.02 MATERIALS

- A. Non-shrink Cementitious Grout:
 - 1. Non-shrink cementitious grouts shall meet or exceed the requirements of ASTM C1107 Grades B or C and CRD-C 621. Grouts shall be portland cement based, contain a pre-proportioned blend of selected aggregates and shrinkage compensating agents and shall require only the addition of water. Non-shrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827.
 - a. General purpose non-shrink cementitious grout shall conform to the standards stated above and shall be SikaGrout 212 by Sika Corp.; Set Grout by Master Builders, Inc.; Euco NS by The Euclid Chemical Co.; NBEC Grout by Five Star Products, Inc. or equal.
 - b. Flowable (Precision) non-shrink cementitious grout shall conform to the standards stated above and shall be Masterflow 928 by Master Builders, Inc.; Hi-Flow Grout by the Euclid Chemical Co.; SikaGrout 212 by Sika Corp.; Five Star Grout by Five Star Products, Inc. or equal.
- B. Cement Grout:
 - 1. Cement grout shall be a mixture of one part portland cement conforming to ASTM C150 types I, II, or III and one to two parts sand conforming to ASTM C33 with sufficient water to place the grout. The water content shall be sufficient to impart workability to the grout but not to the degree that it will allow the grout to flow.
- C. Water:
 - 1. Potable water, free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances.

PART 3 EXECUTION

3.01 PREPARATION

- A. Grout shall be placed over cured concrete which has attained its full design strength unless otherwise approved by Engineer.
- B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, grease, oil, curing compounds, laitance and paints and free of all loose material or foreign matter which may effect the bond or performance of the grout.
- C. Roughen concrete surfaces by chipping, sandblasting, or other mechanical means to ensure bond of the grout to the concrete. Remove loose or broken concrete. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance and firmly embedded into the parent concrete.
 - 1. Air compressors used to clean surfaces in contact with grout shall be the oil less type or equipped with an oil trap in the air line to prevent oil from being blown onto the surface.
- D. Remove all loose rust, oil or other deleterious substances which may affect the bond or performance of the grout from metal embedments or bottom of baseplates prior to the installation of the grout.
- E. Concrete surfaces shall be washed clean and then kept moist for at least 24 hours prior to the placement of cementitious or cement grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, flooding the surface, or other method acceptable to Engineer. Upon completion of the 24 hour period, visible water shall be removed from the surface prior to grouting.
- F. Construct grout forms or other leak-proof containment as required. Forms shall be lined or coated with release agents recommended by the grout manufacturer. Forms shall be of adequate strength, securely anchored in place and shored to resist the forces imposed by the grout and its placement.
- G. Level and align the structural or equipment bearing plates in accordance with the structural requirements and the recommendations of the equipment manufacturer.
- H. Equipment shall be supported during alignment and installation of grout by shims, wedges, blocks, or other approved means. The shims, wedges, and blocking devices shall be prevented from bonding to the grout by appropriate bond breaking coatings and removed after grouting unless otherwise approved by Engineer. Grout voids created by the removal of shims, wedges and block.

3.02 INSTALLATION – GENERAL

- A. Mix, apply and cure products in strict compliance with the manufacturer's recommendations and these specifications.

- B. Have sufficient manpower and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.
- C. Maintain temperatures of the foundation plate, supporting concrete, and grout between 40 degrees F and 90 degrees F during grouting and for at least 24 hours thereafter or as recommended by the grout manufacturer, whichever is longer. Take precautions to minimize differential heating or cooling of baseplates and grout during the curing period.
- D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 60 degrees F and 90 degrees F range.
- E. Install grout in a manner which will preserve the isolation between the elements on either side of the joint where grout is placed in the vicinity of an expansion or control joint.
- F. Inspect all existing underlying expansion, control and construction joints through the grout.

3.03 INSTALLATION – CEMENT GROUTS AND NON-SHRINK CEMENTITIOUS GROUTS

- A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel or admixtures without prior approval by Engineer.
- B. Do not mix by hand. Mix in a mortar mixer (with moving blades). Pre-wet the mixer and empty excess water. Add premeasured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.
- C. Placements greater than 3-in in depth shall include the addition of clean, washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added.
- D. Provide forms where and as required. Place grout into the designated areas in a manner which will avoid segregation or entrapment of air. Do not vibrate grout to release air or to consolidate the material. Placement shall proceed in a manner which will ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes as necessary.
- E. Place grout rapidly and continuously to avoid cold joints. Do not place cement grouts in layers. Do not add additional water to the mix (retemper) after initial stiffening.
- F. Just before the grout reaches its final set, cut back the grout to the substrate at a 45 degree angle from the lower edge of bearing plate unless otherwise ordered and approved by Engineer. Finish this surface with a wood float or brush finish.
- G. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement or longer if recommended by the manufacturer. Saturate the grout surface by use of wet burlap, soaker hoses, ponding or other approved means. Provide sunshades as

necessary. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

END OF SECTION

SECTION 08306
ALUMINUM FLOOR HATCHES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide floor hatches as required by the Contract Documents.
 - 1. In general provide aluminum and floor hatches for the wetwell at the River's Edge Effluent pump station shown on the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02700 Precast Concrete Manholes
 - 2. Section 03300 Cast in Place Concrete

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. For purposes of designating type and quality for work in this Section, Drawings and Specifications are based on floor hatches as manufactured by The Bilco Company, New Haven, CT.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop Drawings showing details of each frame type, details of openings, and details of construction, installation and anchorage.
 - 4. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.
- C. The equipment to be furnished under this section shall be coordinated with all applicable structural and mechanical process drawings, including addenda.
 - 1. If no changes are required, provide a statement that no changes are required.
 - 2. If changes are required, furnish marked up drawings or statement detailing the modifications necessary for the equipment proposed.

Failure to include all drawings or a statement applicable to the equipment specified in this section will result in submittal return without review until a complete package is submitted.

- D. A copy of this specification section with addenda, with each paragraph check-marked to indicate specification compliance or marked and indexed to indicate requested deviations and clarifications from the specified requirements.
1. If deviations and clarifications from the specifications are indicated, therefore requested by the Contractor, provide a detailed written justification for each deviation and clarification.

Failure to include a copy of the marked-up specification sections and or the detailed justifications for any requested deviation or clarification will result in submittal return without review until marked up specifications and justifications are submitted in a complete package.

1.05 PRODUCT HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
1. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
 2. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 ALUMINUM HATCHES

- B. Floor hatch be type "JD-AL" (double door) as manufactured by the Bilco Co., New Haven, CT and shall have the following attributes:
1. Shall have 1/4-inch aluminum diamond pattern plate to withstand a live load of 300 lbs. per square foot with a maximum deflection of 1/50th of the span.
 2. Channel frame shall be 1/4-inch aluminum with an anchor flange around the perimeter.
 3. Equipped with stainless steel hardware throughout.
 4. Automatically lock in the vertical position by means of a heavy hold-open arm with grip handle release.
 5. Cover shall pivot so that it does not protrude into the channel frame.
 6. Channel frame shall have a 1-1/2 inch drainage coupling.
 7. Lock shall be of the slam lock design with removable key wrench.
 - a. Latch release protected by a flush gasketed, removable screw plug.
 - b. Frame and door shall be fabricated to include a recessed padlock hasp covered by a flush hinged lid.
 8. Compression spring operators enclosed in telescopic tubes.
 9. EPDM gasket mechanically attached to the frame to reduce the amount of dirt and debris that may enter the channel frame.
 10. Size as shown on the Drawings.
 11. Add fall protection grating with hatch

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Access hatches to well shall be installed per manufacturer's installation instructions.

END OF SECTION

SECTION 11310

SUBMERSIBLE CENTRIFUGAL WASTEWATER PUMPS

PART 1 GENERAL

1.01 SUMMARY

- A. The work under this section shall consist of furnishing all equipment, materials and labor for the installation of the submersible centrifugal pumps, motors, and appurtenances, complete.
- B. The pumps and motors shall be centrifugal end suction pumps with constant speed motors. Pumps shall be manufactured by ITT Flygt, KSB, Inc., Zoeller, Flowserve (Ingersoll Dresser), or approved equivalent.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02700 Precast Concrete Manholes
 - 2. Section 03250 Concrete Accessories
 - 3. Section 03600 Grout
 - 4. Section 13100 Instrumentation and Controls
 - 5. Section 15100 Ductile Iron Pipe, Fittings, and Appurt.
 - 6. Division 16 Electrical

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Shop Drawings: Include illustrations, dimensions, materials, performance and wiring diagrams, and certified factory pump curves.
- C. Operating and Maintenance Manuals: Include manufacturer's instructions for equipment installation, start-up, operation, and maintenance, including parts lists for operation and maintenance manuals specified in Division 1.
- D. Certified Performance Test Reports: Submit certified report performance test. Perform factory tests to certify that pumps meet the specified requirements for head and capacity, and meet or exceed all applicable National Hydraulic Institute standards.

1.04 SYSTEM DESCRIPTION

- A. Pumping equipment shall comply with Section 2.01.
- B. Equipment shall be suitable for pumping municipal wastewater and for service specified in Section 2.01

- C. Equipment shall be suitable for continuous operation at maximum fluid temperature of 104°F at all operating speeds specified and without external cooling fluid.
- D. Adequately size motor hp so each pump is non-overloading throughout entire pump performance curve.
- E. Design motor for up to 15 evenly spaced starts per hr for motors less than 125 hp and up to 10 evenly spaced starts per hr for motors 125 hp and larger.
- F. Equipment shall be free from shock, vibration, cavitation, overheating, and noise while operating at specified conditions.
- G. Equipment shall be capable of continuous operation without damage while operating under load and unsubmerged.
- H. Design equipment for continuous submergence under water without loss of watertight integrity to depth of 65 ft.
- I. Design equipment for removal and reinstallation of pumps without need to enter wet well and without removal of fasteners.
- J. Design pump removal guide mechanism and permanently mounted discharge connection elbow so no part of pump bears on wet well structure.
- K. Connection of pump to permanently mounted discharge elbow shall not leak.
- L. Design equipment so parts readily accessible for inspection and repair, easily duplicated and replaced, and suitable for service specified

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment on site according to manufacturer's recommendations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Suitable for application specified:
 - 1. Pump Case: Cast iron, ASTM A48, minimum Class 30.
 - 2. Motor Housing: Cast iron, ASTM A48, minimum Class 30.
 - 3. Impeller: Cast iron, ASTM A48, minimum Class 30.
 - 4. Intermediate Housing: Cast iron, ASTM A48, minimum Class 30.
 - 5. Discharge Base Elbow: Cast iron, ASTM A48, minimum Class 30.
 - 6. Pump/motor Shaft:
 - a. Shafts not directly exposed to pumped fluid or shafts provided with protective sleeve: Carbon steel, ASTM A576, minimum Grade 1035.
 - b. Shafts directly exposed to pumped fluid: Stainless steel, ASTM A276, Type 420 or ASTM A182, Grade F XM-19.
 - 7. Shaft Sleeve: Stainless steel, ASTM A276, Type 420.
 - 8. Wear Ring; Case:

- a. Pumps with motor nameplate less than 15 hp: Brass, nitrile rubber, or cast iron.
- b. Pumps with motor nameplate 15 hp and larger: Cast iron, ASTM A48, minimum 200 Brinnel hardness.
9. Wear Ring; Impeller: Stainless steel, ASTM A276 - 400 Series, minimum 300 Brinnel hardness.
10. O-Rings: Nitrile or viton.
11. Fasteners: Stainless steel, ASTM A276, Type 316Ti.
12. Lower Seal Faces: Tungsten carbide vs. tungsten carbide or silicon carbide vs. silicon carbide.
13. Upper Seal Faces: Tungsten or silicon carbide vs. carbon (rotating seal ring) or tungsten carbide vs. tungsten carbide, or silicon carbide vs. silicon carbide.
14. Guide Rails and Brackets: Stainless steel, ASTM A276, Type 316.
15. Guide Cables and Brackets: Stainless steel, ASTM A276, Type 316.
16. Oil for all uses: Ecologically safe, paraffin based.
17. Power/control Cable: chloroprene rubber or neoprene.
18. Anchor Bolts: Stainless steel, ASTM A276, Type 316.
19. Cutter: 440 Stainless Steel

A. Each pump shall be designed for the conditions of service tabulated below:

Effluent to River's Edge Pump Station – 2 Pumps

1.	Design Capacity (gpm):	63
2.	Design TDH (ft):	77
3.	Shut Off Head (min) (ft):	110
4.	Solids Capacity (min) (in):	2
5.	Motor Speed (max) (rpm):	3600
6.	Motor Horsepower (max):	5
7.	System Voltage:	460
8.	Minimum Efficiency (%):	30%

2.02 PUMP FABRICATION

A. General:

1. Provide metal-to-metal contact between machined surfaces.
2. Machine and fit mating surfaces with O-rings where watertight sealing is required. Provide sealing by compression of O-rings without specific torque limits.
3. Do not use rectangular cross-sectioned gaskets, elliptical O-rings, grease, or secondary sealing compounds.
4. Any equipment installed in the wet well area shall meet Class 1, Division 1, Group C and D, to comply with the National Electric Code.

B. Impellers:

1. Non-clog or vortex type, capable of passing minimum spherical solid size specified.
2. Balance statically and dynamically.

C. Wear rings:

1. Provide case wear ring on all pumps. Pumps with motor nameplate 15 hp and smaller may be provided with wear ring plate as alternate to case wear ring. Plate shall be adjustable and have outward spiraling groove.

2. Provide impeller wear ring on pumps with motor nameplate 15 hp and larger. Impeller wear rings on pumps with motor nameplate horsepower less than 15 hp is optional.
- D. Shaft and shaft sleeve:
1. Provide common pump/motor shaft. Pump shaft shall be extension of motor shaft. Pump shaft and motor shaft with connection coupling is not acceptable.
 2. Provide shaft sleeve for carbon steel shafts that would otherwise be directly exposed to pumped fluid. Shaft sleeve is not required for stainless steel shaft.
- E. Shaft seals:
1. Provide 2 totally independent mechanical shaft seals, installed in tandem, each with its own independent spring system.
 2. Provide one stationary and 1 positively driven rotating seal ring for each seal.
 3. Easily inspected and replaced.
 4. Shall not require maintenance or adjustment.
 5. Shall not depend on direction of rotation for sealing.
 6. Shall not rely on pumped media for sealing.
 7. At minimum, install upper seal in oil-filled chamber. Provide drain and inspection plug with positive anti-leak seal easily accessible external to pump.
- F. Bearings:
1. Provide upper and lower bearings.
 2. Single or double row to provide minimum B-10 life of 40,000 hrs at axial and radial loadings while operating at specified operating conditions.
 3. Sealed/shielded-non-regreasable or open regreasable type. Provide re-lubrication ports with positive anti-leak plugs external to pump for open regreasable bearings.
 4. Switch installed in separate leakage collection chamber to indicate seal leakage prior to penetration of lower bearing may be provided at pump manufacturer's option. Wire switch for connection to control panel. Switch, wiring and associated controls shall be provided at no cost to OWNER.
- G. Motor:
1. Manufactures standard UL listed or labeled definite purpose motor.
 2. 460-v, 3-ph, 60-Hz.
 3. Environment as noted in Schedule 1.
 4. Horsepower: As specified in Schedule 1.
 5. Housed in air-filled, watertight casing.
 6. Moisture resistant, minimum Class F insulation rated for 155°C.
 7. Embed 3 thermal switches in windings, 1 per phase, to provide high temperature shutdown protection. Wire switches in series for connection to control panel.
 8. Provide leakage sensor to detect fluid in stator chamber and provide signal for motor shutdown. Wire sensor for connection to control panel.
 9. Provide thermal switch and leakage sensor alarm relay panels for each pump supplied.

- H. Cooling system:
 - 1. Provide motor cooling to comply with design and performance requirements and with sufficient surface area for ambient only cooling.
- I. Power/control cable:
 - 1. Size in conformance with National Electric Code (NEC) standards. Provide sufficient length, and supports, to connect to junction box as shown on Electrical Drawings without splicing. Provide watertight cable entry seal to comply with design and performance requirements.

2.03 PUMP REMOVAL SYSTEM

- A. Provide guide rail or guide cable system, and discharge base elbow. Provide anchor bolts and accessories for complete system. System shall comply with design and performance requirements and as specified.
- B. Guide rail system: Provide 2 guide rails, upper and intermediate guide brackets for connecting rails to structure, and slide bracket for connecting pump to guide rails.
- C. Discharge base elbow:
 - 1. Provide for automatic, leak-tight connection to pump discharge.
 - 2. ANSI B16.1 Class 125 flange for connection to piping.
 - 3. Provide for connection of guide rails or guide cables.
- D. Anchor bolts: Comply with pump manufacturer's requirements.

2.04 CONTROL EQUIPMENT

- A. Pump controls shall be provided by others under Division 13.
- B. Constant speed motor starters shall be provided by others in Division 16.

2.05 COATING

- A. Manufacturer is responsible for surface preparation, priming, and finish coating of ferrous metal components in plant prior to shipment.

2.06 SPARE PARTS

- A. For each pump type furnished, provide one spare set of mechanical seals

PART 3 EXECUTION

3.01 INSTALLATION

- A. Construct concrete base as required. Imbed anchor bolts. Set anchor bolts with pump manufacturer's templates.
- B. Install all pump baseplates on a concrete pad as detailed in the drawings and anchor with bolts per the manufacturer's requirements. Grout baseplate to pad.

3.02 TESTING AND ADJUSTING

- A. Retain the services of a factory-authorized service representative to inspect installation, supervise pre-start-up and final performance tests as specified in Section 01650, Facility Start-up.
- B. During the tests, observe head, capacity, motor input, pump vibration, and general performance and fitness. Repair or replace defective equipment and repeat tests until satisfactory results are achieved.
- C. Adjust or replace equipment to achieve indicated performance.
- D. After 3 months of facility operation, a factory-authorized service representative shall return to check and readjust, if necessary, the pump alignments at no additional cost to the Owner.

3.03 DEMONSTRATION

- A. Provide the services of a factory-authorized service representative for training of Owner's maintenance personnel in proper operation, servicing, and maintenance of equipment. Allow 4 hours for training. Conduct training separate from, and after the start-up tests.

END OF SECTION

SECTION 15060
PIPE HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide pipe hangers and supports as required by the Contract Documents.
 - 1. In general provide all hanging and supporting devices for hanging or supporting piping systems throughout the Work.
 - 2. The contractor shall be responsible for providing all piping supports required to conform with the requirements of this Section whether or not indicated on the drawings.
 - a. Additional supports may be required to be provided by the contractor to restrain pipe movement noted during systems operations.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 15100 Ductile Iron Pipe, Fittings and Appurtenances

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Hangers and supports shall be of an approved standard design capable of supporting the load under all operating conditions.
 - 1. All hangers, supports, and appurtenance shall conform to the latest applicable requirements of ANSI 31.1.0.
 - 2. The minimum working factor of safety for all supporting equipment, with the exception of springs, shall be five times the ultimate tensile strength of the material, assuming 10-foot of waterfilled pipe being supported.
- C. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment.
 - 1. When manufacturers have indicated requirements that piping loads shall not be transmitted to their equipment, submit certification stating that such requirements have been complied with.
- D. Codes and Regulations:
 - 1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.
 - 2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement shall govern.
- E. The Contractor shall submit drawings and calculations stamped by a structural engineer registered in the State of Massachusetts detailing piping supports for all long runs of

pipng that are not supported from the floor, and are not specifically called out in the support/spacing schedules included herein.

- F. Coordinate the work of this Section with the work of other Sections.

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop drawings and other data as required to indicate method of installing the pipe hangers and supports, except where such details are fully shown on the Drawings.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GENERAL

- A. All of the equipment specified herein is intended to support the various types of pipe and piping systems.
 - 1. The details shown on the drawings are intended to indicate the generally desired methods of support under normal conditions.
 - 2. It shall be the responsibility of the Contractor to develop final details and any details associated with special conditions not already covered to meet the system conditions specified in the piping specifications.
- B. All pipe and tubing shall be supported as required to prevent significant stresses in the pipe or tubing material, valves, fittings, and other pipe appurtenances and to support and secure the pipe in the intended position and alignment.
 - 1. All supports shall be designed to adequately secure the pipe against excessive dislocation due to thermal expansion and contraction, internal flow forces, and all probable external forces such as equipment, pipe and personnel contact.
 - 2. Any structural steel members required to brace any piping from excessive dislocation shall conform to the applicable requirements of Section 05500 and shall be furnished and installed under this section.
- C. Hangers and supports shall be spaced in accordance with ANSI B31.1 except that the maximum unsupported span shall not exceed 10 feet unless otherwise specified herein.
- D. Where flexible couplings are required at equipment, tanks, etc. the opposite to the piece of equipment, tank, etc. shall be rigidly supported.
- E. All pipe and appurtenances connected to the equipment shall be supported in a manner to prevent any strain from being imposed on the equipment or piping system.

- F. All rods, clamps, hangers, inserts, anchor bolts, brackets, and components for interior pipe supports shall be furnished with galvanized finish, hot dipped or electro-galvanized coated, except where field welding is required.
1. Interior clamps on plastic pipe shall be plastic coated.
 2. Supports for copper pipe shall be copper plated or shall have a 1/16-inch plastic coating.
 3. All rods, clamps, hangers, inserts, anchor bolts, brackets, and components for exterior pipe, submerged pipe and pipe within outdoor structures shall be Type 316 Stainless Steel.
- G. Supports shall be sufficiently close together such that the sag of the pipe is within limits that will permit drainage and avoid excessive bending stresses from concentrated load between supports.
- H. All uninsulated non-metallic piping shall be protected from local stress concentration at each support point.
1. Protection shall be provided by galvanized steel protection shields or other method as approved by the Engineer.
 2. Where pipes are bottom supported, 180 degree arc shields shall be furnished.
 3. Where 360 degree arc support is required, such as U-bolts, protection shields shall be provided for the entire pipe circumference.
 4. Protection shields shall have an 18 gauge minimum thickness, not be less than 12-inch in length and be securely fastened to pipe with stainless steel or galvanized metal straps not less than ½-inch wide.
- I. All insulated pipe shall be furnished with a rigid foam insulating saddle at each pipe support location.
1. Provide galvanized protection shields as specified above at each location.
- J. Where pipe hangers and supports come in contact with copper piping, provide protection from galvanic corrosion by; wrapping pipe with 1/16-inch thick neoprene sheet material and galvanized protection shield; isolators similar to ELCEN figure No. 228; or copper plated or PVC coated hangers and supports.
- K. Pipe supports shall be provided as follows:
1. Support spacing for steel and stainless steel piping two inch and smaller in diameter and copper tubing shall not exceed five feet.
 2. Supports for multiple PVC plastic piping shall be continuous wherever possible.
 - a. Individually supported PVC pipes shall be supported as recommended by the manufacturer except that support-spacing shall not exceed three feet.
 - b. Multiple, suspended, horizontal plastic PVC pipe runs, where possible, shall be supported by ladder type cable trays such as the Electray Ladder by Husky/Burndy, the Globetray by the Metal Products Division of United States Gypsum, or approved equal.
 - 1) Ladder shall be of mild steel construction.
 - 2) Rung spacing shall be 12-inch.
 - 3) Tray width shall be approximately 6-inch for single rungs and 12-inch for double runs.
 - 4) Ladder type cable trays shall be furnished complete with all hanger rods, rod couplings, concrete inserts, hanger clips, etc. required for a complete support system.
 - 5) Individual plastic pipes shall be secured to the rungs of the cable tray by strap clamps or fasteners equal to Globe Model M-CAC; Husky/Burndy Model SCR; or approved equal.

- 6) Spacing between clamps shall not exceed 9-feet.
 - 7) The cable trays shall provide continuous support along the length of the pipe.
 - 8) Individual clamps, hangers, and supports in contact with plastic PVC pipe shall provide firm support but not so firm as to prevent longitudinal movement due to thermal expansion and contraction.
3. Pipe supports shall not induce point loadings but shall distribute pipe loads evenly along the pipe circumference.
 4. Supports shall be provided at changes in direction and elsewhere as shown in the drawings or specified herein.
 - a. No piping shall be supported from other piping unless specifically directed or authorized by the Engineer.
 5. Pipe supports shall be provided to minimize lateral forces through valves, both sides of a split type couplings, and sleeve type couplings, and to minimize all pipe forces on pump housings.
 - a. Pump housings shall not be utilized to support connecting pipes.
 6. Effects of thermal expansion and contraction of the pipe shall be accounted for in the pipe support selection and installation.
- L. Unless otherwise specified herein, pipe hangers and supports shall be as manufactured by Grinnell Co. Providence R.I.; Carpenter and Patterson, Inc Woburn MA; F & S Central Brooklyn NY; Elcen Metal Products Co. Franklin Park IL; Unistrut Northeast Cambridge MA; or approved equal.
1. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary in this specification.
 2. Any item comparable in type, style, quality, design, and performance, shall be considered as equal.
- M. Any required pipe supports for which the supports specified in this section are not applicable shall be fabricated or constructed from standard structural steel shapes, concrete, and anchor hardware similar to items previously specified herein and shall be subject to the approval of the Engineer.
- N. Anchor bolts shall be equal to Kwik-Bolt as manufactured by the McCulloch Industries Minneapolis MN; Wej-It manufactured by Wej-It Expansion Products Bloomfield CO; or approved equal.
1. The length of expansion bolts shall be sufficient to place the wedge portion of the bolt a minimum of 1-inch behind the steel reinforcement.

2.02 SINGLE AND MULTIPLE PIPE SUPPORTS

- A. Single pipes located in a horizontal plane close to the floor shall be supported by one of the methods specified herein or as shown on the drawings.
- B. Pipes 3-inch in diameter and larger shall be supported by adjustable stanchions similar to F&S Figure 427, constructed of galvanized steel.
 - 1. Stanchions shall provide at least 4-inch adjustment and be flange mounted to floor.
- C. Pipes less than 3-inch in diameter shall be held in positions by supports fabricated from steel C channel, welded post base similar to Unistrut figure P2072A and pipe clamps similar to Unistrut figure P1109 through P1126.
 - 1. Where required to assure adequate support, fabricate supports using two vertical members and post bases connected together by horizontal member of sufficient load capacity to support pipe.
 - 2. Wherever possible, supports shall be fastened to nearby walls or other structural members to provide horizontal rigidity.
 - 3. More than one pipe may be supported from a common fabricated support.
 - 4. All supports unless specified otherwise shall be galvanized.
- C. Where shown on the drawings, pipe shall be supported using concrete anchor posts.
 - 1. Pipe shall be securely fastened to concrete anchor posts using suitable metal straps as required and approved by the Engineer.

2.03 WALL SUPPORTED PIPES

- A. Single or multiple pipes located adjacent to walls, columns or other structural members, whenever deemed necessary, shall be supported using welded steel wall brackets similar to Carpenter and Patterson Figures 69-78, 84, or 134; or C channel with steel brackets similar to Unistrut pipe clamps.
 - 1. All members shall be securely fastened to wall, column, etc. using double expansion shield or other method as approved by the Engineer.
 - 2. Additional wall bearing plates shall be provided where required.
- B. Pipe shall be attached to supports using methods hereinbefore specified to meet the intent of this specification.
- C. All supports shall be galvanized.

2.04 VERTICAL PIPE SUPPORTS

- A. Where vertical pipes are not supported by a Unistrut system as specified above, they shall be supported in one of the following methods.
 - 1. For pipes 1/4-inch to 2-inch in diameter, an extension hanger ring shall be provided with an extensions rod and hangers flange.
 - a. The rod diameter shall be as recommended by the manufacturer for the type of pipe supported.
 - b. The hanger ring shall be galvanized steel or PVC clad depending on the supported pipe.
 - c. The hanger ring shall be equal to Carpenter & Patterson Figure 81 or 81 ct.
 - d. The anchor flange shall be galvanized malleable iron similar to Carpenter and Patterson 85.

2. For pipes equal to or greater than ½-inch in diameter extended pipe clamps similar to Carpenter and Patterson figure 26 may be used.
 - a. The hanger shall be attached to concrete structures using double expansion shields, or to steel support members using welding lugs similar to Carpenter and Patterson figure 220.
3. Pipe riser clamps shall be used to support all vertical pipes extending through floor slabs.
 1. Riser clamps shall be galvanized steel similar to Carpenter and Patterson figure 126.
 2. Copper clad or PVC coated clamps shall be used on copper pipes.
 3. Insulation shall be removed from insulated pipes prior to installing riser clamps.
4. Unless otherwise specified, shown, or specifically approved by the Engineer, vertical runs exceeding twelve (12) feet shall be supported by approved pipe collars, clamps, brackets or wall rests at all points required insure a rigid installation.

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE

- A. All supports and hangers shall be crated, delivered and uncrated so as to protect against any damage.
- B. All parts shall be properly protected so that no damage or deterioration shall occur during a prolonged delay from the time of shipment until installation is completed.
- C. Finished iron or steel surfaces not galvanized or painted shall be properly protected to prevent rust and corrosion.

3.02 INSTALLATION

- A. All pipes, horizontal and vertical, requiring rigid support shall be supported from the building structure by approved methods.
 1. Supports shall be provided at changes in direction and elsewhere as shown in the drawings and specified herein.
 2. No piping shall be supported from metal stairs, ladders and walkways unless specifically directed or authorized by the Engineer.
- B. All pipe supports shall be designed with liberal strength and stiffness to support the respective pipes under the maximum combination of peak loading conditions to include pipe weight, liquid weight, liquid movement, and pressure forces, thermal expansion and contraction, vibrations, and all probable externally applied forces.
 1. Prior to installation, all pipe supports shall be approved by the Engineer.
- C. Pipe supports shall be provided to minimize lateral forces through valves, both sides of split type couplings and sleeve type couplings, and to minimize all pipe forces on pump housings.
 1. Pump housing shall not be utilized to support connecting pipes.
- D. Inserts for pipe hangers and supports shall be installed on forms before concrete is placed.

1. Before setting these items, all drawings and figures shall be checked which have a direct bearing on the pipe location.
2. Responsibility for the proper location of pipe supports is included under this section.

E. Continuous metal inserts shall be embedded flush with the concrete surface.

3.03 TESTING

- A. All pipe support systems shall be tested for compliance with the specifications.
1. After installation, each pipe support system shall be tested in conjunction with the respective piping pressure tests.
 2. If any part of the pipe support system proves to be defective or inadequate, it shall be repaired or augmented under this section to the satisfaction of the Engineer.

END OF SECTION

SECTION 15100
DUCTILE IRON PIPE, FITTINGS AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide all the interior ductile iron pipe, fittings and appurtenances as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 2. Section 15060 Pipe Hangers and Supports
 - 3. Section 15110 Valves and Appurtenances
 - 4. Section 15120 Piping Specialties

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All ductile iron pipe and fittings shall be of domestic manufacture.
- C. Coordinate the work of this Section with the work of other related Sections.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop Drawings showing piping layouts, dimensions, location of supports and braces, and interfacing with piping and equipment furnished under other Sections of this Specification.

1.05 PRODUCT HANDLING

- A. Comply with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 PIPE

- A. Interior Use:
1. Have dimensional wall thickness in accordance with ANSI/AWWA C115/A21.15.
 2. Pipe shall be ductile iron, Class 53, with a maximum working pressure of 250 psi.
 3. Cement lined meeting the requirements of ANSI/AWWA C104/A21.4.
 4. Thickness of cement lining:
 - a. 1/8-inch for pipes 12-inches and smaller.
 - b. 3/16-inch for pipe 14-inches and larger.
 5. Exterior Coating
 - a. All exposed piping not within tanks containing water shall be red primer.
 - b. All exposed piping and fittings within tanks containing water whether submerged or not, shall be pre-finished at the factory before shipment.
 - 1) Exterior coating shall be a high solids, solvent free, epoxy incorporating ceramic pigment and amine cured epoxy formulated especially to coat the exterior of ductile iron pipe for aggressive atmospheres or liquids, applied at 20-25 mils.
 - 2) Coating shall be NSF 61 approved.
 - 3) Coating shall be Ceramawrap as manufactured by Induron Protective Coatings, or approved equal.
 6. At the Contractor's option, exposed piping within tanks containing potable water may be furnished without cement lining, and coated inside and out with an NSF-approved fusion bonded epoxy, Skotchkote 134 or approved equal.
- B. Pipe Flanges: Conform to ANSI/AWWA C115/A21.15.
1. Faced and drilled to American 125 Standard,
 2. Long hubs.

2.02 FITTINGS

- A. Interior Use:
1. Manufactured of ductile iron or gray iron, flanged joint design rated for 250 psi,
 2. Meet or exceed the requirements of ANSI/AWWA C110/A21.10,
 3. Tapping bosses on both sides of each branch and in the center of the fitting on both sides,
 4. Interior and exterior coatings shall be as specified in paragraph 2.01,
 5. Base bends and tees shall have machined and drilled bases.

2.03 GASKETS

- A. Made from vulcanized styrene butadiene (SBR) rubber:
1. Shall meet ANSI/AWWA C111/A21.11,
 2. Reclaimed rubber shall not be used.
 3. Thickness: 1/8-inch.

2.04 FASTENERS

- A. Bolts and Studs:
1. Shall conform to ASTM A307, Grade B.

- B. Nuts:
 - 1. Shall conform to ASTM A563, Grade A, heavy hex.

2.05 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FIELD MEASUREMENTS

- A. Make necessary measurements to assure precise fit of the piping system.

3.03 COORDINATION

- A. Coordinate the work of this Section with equipment suppliers to insure all dimensions and elevations are compatible.

3.04 INSTALLATION

- A. Interior Ductile Iron Pipe, Fittings and Appurtenances:
 - 1. During handling protect pipe and fittings from damage.
 - 2. Pipe and fittings cleaned out before assembly,
 - 3. Installed in accordance with the approved piping layout,
 - 4. Installed true to alignment and rigidly supported,
 - 5. Pipe, fittings and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain or loading being imposed upon the equipment.
- B. All flange-mounted in-line instrumentation (i.e.: flow meters) shall be installed in a manner that will allow for removal/servicing. Unless specifically called out on the drawings, the Contractor may opt for either of the following jointing methods:
 - 1. Utilize a plain-end section of pipe with adaptor flange connected to the instrumentation device.
 - 2. Utilize a flexible sleeve and tie rods where flanges for connection of tie rod ends are no more than 3 feet apart.
- C. Tapped Connections
 - 1. Tapped connections in pipe and fittings shall be made in such manner as to provide a watertight joint and adequate strength against pullout.
 - 2. All drilling and tapping of ductile iron pipe shall be done normal to the longitudinal axis of the pipe; fittings shall be drilled and tapped similarly, as appropriate.
 - 3. Drilling and tapping shall be done only by skilled mechanics.
 - 4. Tools shall be adapted to the work and in good condition so as to produce good, clean cut threads of the correct size, pitch, and taper.

3.05 TESTING

- A. Pressure Piping Systems:
1. Provide material and bracing required to isolate the piping system from equipment during the test.
 2. Test at a hydrostatic pressure of 150 psi for one (1) hour.
 3. Leaks shall be repaired under this Section and the test repeated.

END OF SECTION

SECTION 15110
VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide valves and appurtenances as required by the Contract Documents.
- B. The items of this Section include but are not necessarily limited to:
 - 1. Gate Valves
 - 2. Check Valves
 - 3. Ball Valves
 - 4. Air and Combination Air/Vacuum Valves
- C. Work Not Included:
 - 1. Direct burial valves which are specified in Section 02640, Valves and Appurtenances.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 15100 Ductile Iron Pipe, Fittings and Appurtenances

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All of the types of valves and appurtenances shall be products of established firms who are experienced in the manufacture of the particular item to be furnished.
 - 1. All valves and their appurtenances shall be of domestic manufacture

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications catalog cuts, and other data needed to prove compliance with the specified requirements.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. General:

1. All valves and appurtenances shall be of the size shown on the Drawings and as far as possible all equipment of the same type shall be from one manufacturer.
2. All valves and appurtenances shall have the name of the manufacturer, flow directional arrows and the working pressure for which they are designed, cast in raised letters upon some appropriate part of the valve body.
3. All valves shall open counter clockwise. Operators shall have arrows cast thereon to indicate direction of rotation to operate the valve.
4. All iron valves shall have:
 - a. An exterior coating of red oxide primer FDA approved for potable water use.
 - b. An interior coating of an NSF/ANSI 61 certified fusion bonded epoxy.
 - 1) The interior of valves with seats that are bonded to the valve body, with the exception of disc edge, rubber seat and finished portions, shall be evenly coated with an NSF61 approved 2-part liquid epoxy. Minimum dry film thickness shall be 8 Mils minimum.
 - c. All submerged valves shall have all wetted interior and exterior iron surfaces coated with an NSF 61 epoxy coating as specified above.

2.02 GATE VALVES

A. Less than Three (3) Inches:

1. Solid wedge,
2. Non-rising stem,
3. Union bonnet,
4. Bronze construction,
5. WOG rating: 300 psi.

B. Three (3) Inches and Larger (Resilient Seated):

1. Comply with ANSI/AWWA C515.
2. Flanges conform to ANSI B16.1, Class 125 cast iron flange.
3. Ductile iron body in compliance with ASTM A126, Class B.
4. Ductile iron waterway surfaces shall be epoxy coated at the factory.
 - a. Coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.
5. Bronze stem,
6. Resilient sealed wedge type:
 - a. Wedge: Fully encapsulated; no exposed iron,
7. Triple O-ring seal stuffing box,
8. Non rising stem,
9. Handwheel operator.
10. Rated for 250 psi and tested to 500 psi,

C. Three (3) Inches and Smaller (Stainless Piping):

1. Solid wedge,
2. Non-rising stem,

3. Union bonnet,
4. 316L Stainless Steel construction,
5. WOG rating: 300 psi.

2.03 CHECK VALVES/FOOT VALVES

- A. Check Valves (Silent Check)/Foot Valves:
1. Body: Cast iron with flanged ends conforming to ANSI Class 125.
 2. Seat: Bronze,
 3. Plug: Bronze,
 4. Bushing Bronze,
 5. Spring: Stainless Steel,
 6. Globe style,
 7. Drip tight seating at 150 psi.
 8. Foot valve strainer shall be T302 stainless steel.
- B. Swing Check Valves:
1. Conforming to AWWA C508
 2. Body: Cast iron with flanged ends conforming to ANSI Class 125,
 3. Seat: Bronze,
 4. Disk: Resilient seat with cast iron holder and bronze plate,
 5. Hinge pin Stainless steel,
 6. Bearings Bronze,
 7. Lever (None) (Lever and weight) (Lever and spring) (left (right)-side mounted),
 8. Full port opening,
 9. All working parts to be accessible from top.
- C. Rubber Flapper Check Valves:
1. Body: Cast iron (ASTM A126) or ductile iron (ASTM A536) with flanged ends conforming to ANSI Class 125,
 2. Seat: "O" ring, steel reinforced internally,
 3. Flapper: Buna-N (70 Durometer) fully encapsulating the steel plate (ASTM A36),
 4. 45-degree seating surface.
 5. Full pipe size flow area requiring only 35-degree flapper travel.
 6. All working parts to be accessible from top.
 7. Bubble-tight shutoff at low pressures.
- D. Check Valves (2 Inch and Smaller):
1. Bronze construction,
 2. Disc. seat: Teflon,
 3. "Y" pattern,
 4. Horizontal swing,
 5. WOG rating: 200 psi.
- E. Check Valves (PVC/CPVC Piping):
1. Ball Type:
 - a. Type 1, Grade 1 PVC (cell classification 12454-B) or Type IV, Grade 1 CPVC (cell classification 23447-B), conforming to ASTM D1784.
 - b. True union with EPDM "O" rings.
 - c. Socket or flanged ends as required.
 - d. Rated for 150 psi working pressure at 75 degrees F.

2. Swing Check Type:
 - a. Heavy-duty PVC/CPVC construction.
 - b. EPDM seals.
 - c. Dual drain plugs.
 - d. Built-in O-ring flange seals
 - e. Furnish PVC counterweight
3. Wafer-Style Swing Check Type:
 - a. Heavy-duty PVC/CPVC construction.
 - b. EPDM gasket and face seals.
 - c. One-piece disc and shaft design.
 - d. Contoured inlet port
 - e. 316 stainless steel Spring
 - e. Pressure Rated to 150PSI at 70F

2.04 BALL VALVES

- A. Ball Valves (2-inches and Smaller):
 1. Metallic Piping (does not include stainless steel):
 - a. Two piece bronze body,
 - b. WOG pressure rating: 600 psi,
 - c. Teflon seats and seals,
 - d. Full port design,
 - e. Adjustable packing gland,
 - f. Screwed or soldered ends.
 2. Stainless Piping:
 - a. All 316L stainless steel construction,
 - b. Teflon seats, packing and "O" rings,
 - c. Swing-out design,
 - d. Full port design,
 - e. Joint: As required,
 - f. Locking stainless steel handle.
- B. Plastic Piping:
 1. PVC Type 1, Grade 1, or CPVC Type IV, Grade 1.
 2. Comply with ASTM D1784
 3. Double entry true union with EPDM "O" rings.
 4. Teflon seats and EPDM packing.
 5. Socket or flanged ends, as required.
 6. Working pressure 150 psi at 75 degrees F.

2.05 AIR AND COMBINATION AIR/VACUUM RELIEF VALVES

- A. The relief valves shall be shall be the equal of APCO Valve and Primer Corporation models indicated below for the various usages.
- B. Air Release Valves (Model #50):
 1. Size: ½-inch
 2. Body: Cast iron
 3. Stem: Stainless Steel
 4. Float: Stainless Steel
 5. Seat: Buna-N
- C. Combination Air and Vacuum Valves:

1. Size: To accommodate turbine pump capacity:
2. Body: Cast iron
3. Baffle: Delrin
4. Float: Stainless Steel
5. Seat: Buna-N
6. Diffuser: Brass

D. Provide double acting throttling device on combination air and vacuum valves installed on vertical turbine pumps, which allows throttling of air out of the valve, full air flow back in to prevent vacuum and water column separation in the pump.

1. Housing: Malleable iron
2. Adj. screw and nut: Stainless steel
3. Spring: Stainless steel
4. Plug: Teflon

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 COORDINATION

- A. Coordinate the work of this Section with equipment suppliers, that the piping system shall be connected to, to insure that all dimensions and elevations are compatible.
- B. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.03 VALVE INSTALLATION

- A. The valves and appurtenances shall be installed at the locations shown on the Drawings.
 - 1. Valve operators shall be easily accessible and rigidly supported.
 - 2. After installation check valve operation. Valve shall operate smoothly through its entire operating range.
 - 3. Valve tags shall be installed on all valves with designations specifically labeled on the on the process or instrumentation drawings.
- B. Swing and flapper-type check valves shall be installed horizontally, or vertically if direction of normal flow is upwards.
- C. Air release valve assemblies shall be equipped with a line size ball valve for isolation.
 - 1. A copper drain line shall extend from the top of all air release valves to within 2 inches above a floor drain or drain channel.
 - 2. A ½-inch air release valve shall be installed on all high points of the process piping system where air can accumulate, whether or not indicated on the drawings, and as approved or directed by the Engineer. Air release valves are not required where other provisions for releasing air are indicated on the drawings.
- D. Solenoid valves shall be installed with unions on both sides of the valve to facilitate removal.
 - 1. A line size ball valve shall be installed upstream of the union if necessary to facilitate solenoid valve removal without affecting water feed to branches off the common feed line.

END OF SECTION

SECTION 15120

PIPING SPECIALTIES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide expansion joints, wall pipes, wall sleeves, filler rings, flexible mechanical pipe couplings, cam and groove couplings, and tapped connections for the piping systems all as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 15060 Ductile Iron Pipe, Fittings and Appurtenances

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Coordinate the work of this Section with the work of other Sections.

1.04 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01300.
- B. Product Data:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.05 PRODUCT HANDLING

- A. Handle in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 EXPANSION JOINTS

- A. Expansion joints shall be Redflex Type J-1 as manufactured by Red Valve Co. Inc., Carnegie, PA. The expansion joint shall have the following attributes:
 - 1. Redflex Model:

- a. Type J-1 for “straight thru” joints.
 - b. Type J-10 for concentric reducers
 - c. Type J-11 for eccentric reducers
 2. Size as shown on the Drawings,
 3. Materials of construction: Buna-N,
 4. Single “filled” arch, open configuration,
 5. Flanges shall be 125 lb. conforming to ANSI Standards:
 - a. Constructed integral with body.
 6. Pressure rating: 140 lb standard, 190 lb high,
 7. Retaining rings.
- B. Control Units:
1. Gusset plate thickness: 1/2-inch,
 2. Rod diameter: 5/8-inch,
 3. Number of rods: 3,
 4. Materials: Galvanized steel.

2.02 WALL PIPES

- A. Ductile iron wall pipes shall have an integrally cast thrust collar as manufactured by American Cast Iron Pipe Co.
1. Wall pipe shall be used where indicated on the drawings, and shall conform to ANSI/AWWA C110/A21.10.
 2. Ends of wall pipes shall be flanged or flange by mechanical joint. Flanges shall be of same class as that of pipe being connected.
 3. The wall pipes shall be of the dimensions required with ends flush with both faces of the wall or as shown on the Drawings.
 4. Ductile iron wall pipes shall be of approved type, dimension and wall thickness.
 5. Ductile iron wall pipes shall be provided for all pipes passing through reinforced concrete walls.
- B. At the Contractor’s option, if approved by the Engineer, wall sleeves for concrete floor and wall penetrations may be made by means of a sleeve capable of being bolted directly to the formwork to prevent misalignment.
1. Seal of the annular space between the carrier pipe and the sleeve shall be by means of a confined rubber gasket and capable of withstanding 350 psi.
 2. Manufactured from Ductile Iron with an integrally cast waterstop of ½” minimum thickness and 2 ½” minimum height.
 3. Shall be “Omni Sleeve” or an approved equal

2.03 WALL SLEEVES

- A. The annular space created by the wall sleeve and the pipe shall be positively sealed with “Link Seal” manufactured by GPT Industries or an approved equal.
1. Seals shall be the modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall opening.
 2. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut.

- a. After the seal assemblies positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely watertight seal between the pipe and wall opening.
3. The seal shall be constructed so as to provide electrical insulation between the pipe and wall, thus reducing chances of cathodic reaction between these two members.
4. All wall sleeves of which any portion is below main floor slab and penetrates an exterior wall, or where the wall sleeve penetrates a wall between a tank and an interior room shall have link seals on both the interior and exterior faces of the wall. All wall sleeves above this elevation shall have link seals on the interior wall only.
5. The Contractor shall determine the required inside diameter of each individual wall opening or sleeve before ordering, fabricating or installing the seals.
 - a. The inside diameter of each wall opening shall be sized as recommended by the manufacturer to fit the pipe and Link-Seal to assure a water-tight joint.
6. The Contractor shall familiarize himself with the installation of the seals through the manufacturer's instruction bulletin which illustrates the proper procedure for installing and tightening the seal to provide a water-tight pipe penetration.

2.04 FLEXIBLE MECHANICAL PIPE COUPLINGS

- A. Flexible mechanical cast iron pipe couplings for jointing of plain ends of ductile iron pipe shall be suitable for a 200 psi water working pressure and shall be of the proper size and suitable for use on the piping on which it is installed.
 1. Couplings shall be of ductile iron construction and shall be provided with middle ring not less than 12-inches in length.
 2. Tee head alloy steel bolts with heavy hex nuts, molded rubber gaskets, follower rings and accessories as required for the complete installation.
 3. Where indicated, the coupling shall be provided with not less than two tie rods extended from flange connections on each side of the couplings.
 4. Follower rings shall be amply proportioned to take, without deformation, the strains imposed on the coupling by the installation.

2.05 FLANGE ADAPTERS

- A. Ductile iron flange adapters as manufactured by Uni-Flange shall be provided where indicated on the drawings to allow for equipment removal, or approved by the Engineer for use in joining flanged piping with slight misalignment.
 1. Flange: Ductile iron, ASTM A536, Grade 65-45-12, drilled to ANSI B16.1 or ANSI B16.2.
 2. Gasket: SBR Buna-N
 3. Set Screw: AISI 4140 steel with break-away head

2.06 FILLER RINGS

- A. Filler rings of the same materials, facing and drilling as the flanges they are used with shall be provided in flanged piping where necessary and approved for the proper fitting and layout of the piping.

2.07 CAM AND GROOVE FITTINGS

- A. Cam and groove adapters for the chemical storage tanks fill lines shall be:
 - 1. Size: 2 inch.
 - 2. Material: Polypropylene.
 - 3. Style: Male adapter by male NPT.
 - 4. Interchange with all products produced to MIL-C-27487E.
- B. Cam and groove dust cap shall:
 - 1. Size: 2 inch.
 - 2. Material: Polypropylene.
 - 3. Handles: Locking.
 - 4. Security chain: 12 inches long; stainless steel.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Expansion Joint: The expansion joints and appurtenances shall be installed at the locations shown on the Drawings.
 - 1. Misalignment of piping shall not exceed 1/8-inch.
 - 2. Install control unit per manufacturer's requirements.
- B. Wall Pipes
 - 1. The Contractor shall be responsible for having wall pipes readily available.
 - 2. Shall be tightly secured in the formwork at time of concrete placement.
 - 3. Thrust collars shall be located in the center of the wall in which the wall pipe is to be installed.
- C. Wall Sleeves
 - 1. Securely anchor to formwork as required by the manufacturer.

END OF SECTION

EXHIBIT B

SELLER'S CONSTRUCTION SCHEDULE

Estimated Project Schedule
River's Edge Sewer Connection
Wayland, MA

<u>Task</u>	<u>Deadline</u>	<u>Notes</u>
Client Design Meeting	1/6/2021	
Submit 50% Design Package to Town	1/25/2021	50% Design to include plans, select specifications sections, and 50% cost estimate
Submit 90% Design Package to Town	2/23/2021	90% Design to include plans, all specifications, and 90% cost estimate
90% Comments back from Town	3/1/2021	
Plans and Specifications Available to Bidders	3/10/2021	Assume 2 week turn around time from 90% submittal to Town to incorporate edits and finalize.
Bid Opening	3/24/2021	2 week bid period

EXHIBIT C

FORM OF ENGINEER/ARCHITECT CONSENT

Engineer/Architect Consent

ARCHITECT'S/ENGINEER'S CONSENT, CERTIFICATE AND AGREEMENT

(LETTERHEAD OF ARCHITECTURAL/ENGINEERING FIRM)

_____, 2021

ALTA RIVER'S EDGE, LLC
c/o WP East Acquisitions, LLC
91 Hartwell Avenue
Lexington, Massachusetts 02421
Attention: Jim Lambert
Phone No.: (781) 541-5822
Email: Jim.Lambert@woodpartners.com

Re: Infrastructure Development Agreement ("**Agreement**") dated _____ by and among TOWN OF WAYLAND, acting by and through its Board of Selectmen (hereinafter "**Seller**"), a Massachusetts municipal corporation having an address of 41 Cochituate Road, Wayland, MA 01778, and ALTA RIVER'S EDGE, LLC, a Delaware limited liability company having its business address c/o Wood Partners, 91 Hartwell Avenue, Lexington, MA 02421, Attn: Jim Lambert (hereinafter "**Buyer**") for the completion of the Seller's WWTP Work (as defined in the Agreement, and also referred to herein as the "**Project**"), and [describe contract/agreement] dated __, 202__ between Seller and [contractor] ("**Contractor**" or "**we**") regarding the Project (together with any assignments and amendments thereof, the "**Contract**") attached as **Exhibit "A"** hereto.

Ladies and Gentlemen:

We understand that the Contract and the plans and specifications for the Project (as may be amended from time to time and including all drawings and related papers, the "**Plans**") have been or will be collaterally assigned by Seller to Buyer in connection with the Agreement. In consideration of the Agreement and as an inducement thereto, we hereby (a) consent to such assignment and (b) agree that in the event (i) of a default by Seller under the terms of any of the Agreement or the Contract or any other circumstances thereunder whereby which it is reasonably likely that Seller will be in default under the terms of any of the Agreement or the Contract or (ii) we receive a copy of Buyer's Takeover Notice (as defined in the Agreement), (1) we shall, at Buyer's request, provide to Buyer the services as required of us under the Contract, provided that we are compensated as provided in the Contract for all such services rendered at Buyer's request, and (2) whether or not you request our continued services under the Contract, you shall be entitled to use the Plans in accordance with and as provided in the Contract in connection with the Project, without payment of additional fees or charges to us (provided that if we are due any amounts under the Contract for any services rendered in connection with changes to the initial Plans ("**Plan Changes**"), you shall not be entitled to use the Plan Changes until we are compensated therefor.

As the architectural or engineering firm responsible for performing the work regarding the Project described in the Contract, the undersigned is duly licensed and in good standing under the laws of the State in which the Project is located.

If Seller defaults in payment or performance of the Contract or if the Contract is terminated for any reason, the undersigned will give Buyer prompt written notice thereof and prior to exercising any remedy as a result thereof, will afford Buyer the same opportunity to cure such default to which Seller is entitled, but at least thirty (30) days in any event (it being acknowledged that Buyer shall have no obligation to cure any such default). Any notice of default or termination will be delivered by personal delivery, by nationally recognized overnight courier service or by certified mail, return receipt requested, to the address set forth above, and be effective upon receipt or when the attempted initial delivery is refused or cannot be made because of a change of address of which the sending party has not been notified. Any curative act done by Buyer shall be as effective as if done by Seller.

This letter shall bind and benefit Buyer and the undersigned and their respective heirs, successors and assigns, and shall be governed by the laws of the state where the Land is located. "Buyer" as used in this letter includes Buyer's successors or assigns, any receiver in possession of the Buyer's Property, any purchaser upon foreclosure of Buyer's Property, or any corporation or other nominee formed by or on Buyer's behalf. Time is of the essence of this letter agreement.

Sincerely,

[ARCHITECT'S/ENGINEERS SIGNATURE BLOCK]

By: _____
Name: _____
Title: _____

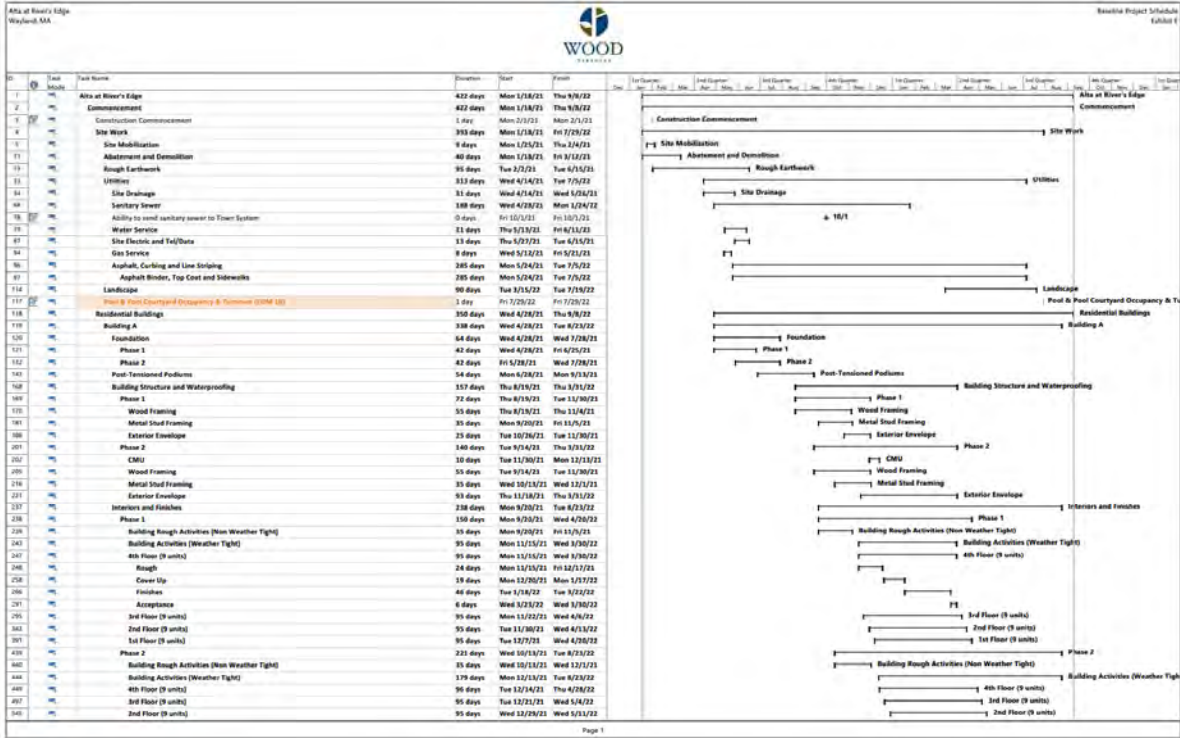
Exhibit "A"

CONTRACT

(Attach Contract, including assignments, amendments and supplements)

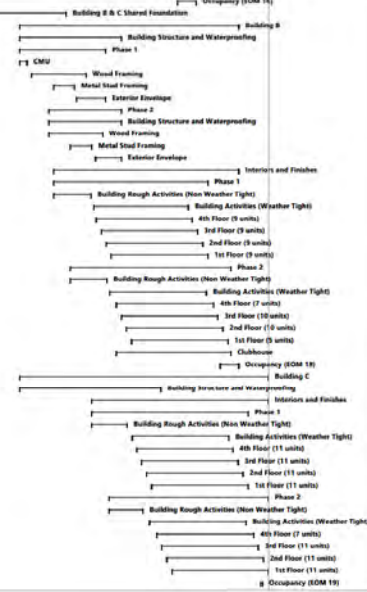
EXHIBIT D

BUYER'S CONSTRUCTION SCHEDULE





ID	Task Name	Duration	Start	Finish	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1001	1st Floor (9 units)	95 days	Thu 1/26/22	Wed 5/18/22								
1002	Clubhouse	112 days	Mon 1/23/22	Thu 5/19/22								
1003	Occupancy (DOM 10)	17 days	Fri 5/20/22	Tue 5/23/22								
1004	Building B & C Shared Foundations	108 days	Wed 4/20/21	Wed 12/17/21								
1005	Building B	154 days	Wed 4/29/21	Fri 7/30/21								
1006	Building Structure and Waterproofing	98 days	Wed 4/29/21	Wed 5/19/22								
1007	Phase 1	8 days	Wed 4/29/21	Tue 5/18/22								
1008	CMU	8 days	Wed 4/29/21	Fri 5/14/21								
1009	Wood Framing	12 days	Fri 5/14/21	Wed 5/26/21								
1010	Metal Stud Framing	20 days	Mon 5/17/21	Mon 5/24/21								
1011	Exterior Envelope	24 days	Fri 5/21/21	Tue 5/25/22								
1012	Phase 2	70 days	Mon 5/24/21	Wed 2/16/22								
1013	Building Structure and Waterproofing	70 days	Mon 5/24/21	Wed 2/16/22								
1014	Wood Framing	12 days	Mon 5/24/21	Fri 5/21/21								
1015	Metal Stud Framing	20 days	Wed 5/26/21	Thu 5/26/22								
1016	Exterior Envelope	24 days	Wed 5/26/21	Wed 2/16/22								
1017	Interiors and Finishes	181 days	Mon 5/17/21	Fri 7/29/22								
1018	Phase 1	150 days	Mon 5/17/21	Thu 6/16/22								
1019	Building Rough Activities (Non Weather Tight)	35 days	Mon 5/24/21	Wed 5/26/22								
1020	Building Activities (Weather Tight)	95 days	Mon 5/24/21	Fri 5/20/22								
1021	4th Floor (9 units)	95 days	Thu 5/20/22	Wed 5/25/22								
1022	3rd Floor (9 units)	95 days	Thu 5/20/22	Thu 6/2/22								
1023	2nd Floor (9 units)	95 days	Thu 5/20/22	Thu 6/9/22								
1024	1st Floor (9 units)	95 days	Thu 5/20/22	Thu 6/16/22								
1025	Phase 2	154 days	Wed 5/26/21	Mon 7/18/22								
1026	Building Rough Activities (Non Weather Tight)	35 days	Wed 5/26/21	Thu 5/27/22								
1027	Building Activities (Weather Tight)	95 days	Tue 5/23/22	Tue 6/7/22								
1028	4th Floor (7 units)	95 days	Thu 5/26/22	Fri 6/24/22								
1029	3rd Floor (10 units)	95 days	Thu 5/26/22	Thu 6/16/22								
1030	2nd Floor (10 units)	95 days	Thu 5/26/22	Thu 7/7/22								
1031	1st Floor (10 units)	95 days	Thu 5/26/22	Thu 7/14/22								
1032	Clubhouse	112 days	Thu 5/26/22	Mon 7/18/22								
1033	Occupancy (DOM 10)	20 days	Mon 7/18/22	Fri 7/29/22								
1034	Building C	243 days	Wed 4/29/21	Thu 9/8/22								
1035	Building Structure and Waterproofing	125 days	Wed 4/29/21	Tue 4/13/22								
1036	Interiors and Finishes	174 days	Fri 5/7/22	Thu 9/8/22								
1037	Phase 1	154 days	Fri 5/7/22	Thu 8/11/22								
1038	Building Rough Activities (Non Weather Tight)	35 days	Fri 5/7/22	Thu 3/24/22								
1039	Building Activities (Weather Tight)	95 days	Fri 5/21/22	Fri 7/15/22								
1040	4th Floor (11 units)	95 days	Thu 5/26/22	Thu 7/21/22								
1041	3rd Floor (11 units)	95 days	Thu 5/26/22	Thu 7/28/22								
1042	2nd Floor (11 units)	95 days	Thu 5/26/22	Thu 8/4/22								
1043	1st Floor (11 units)	95 days	Thu 5/26/22	Thu 8/11/22								
1044	Phase 2	154 days	Mon 5/23/22	Thu 9/8/22								
1045	Building Rough Activities (Non Weather Tight)	35 days	Mon 5/23/22	Fri 5/13/22								
1046	Building Activities (Weather Tight)	95 days	Mon 5/23/22	Mon 9/8/22								
1047	4th Floor (7 units)	95 days	Thu 4/7/22	Fri 8/19/22								
1048	3rd Floor (11 units)	95 days	Thu 4/14/22	Thu 8/25/22								
1049	2nd Floor (11 units)	95 days	Thu 4/21/22	Thu 9/1/22								
1050	1st Floor (11 units)	95 days	Thu 4/28/22	Thu 9/8/22								
1051	Occupancy (DOM 10)	9 days	Mon 8/29/22	Wed 8/31/22								



AFFIDAVIT

Commitment No.: NCS-861758-ATL (the "Commitment")

TO: FIRST AMERICAN TITLE INSURANCE COMPANY (the "Company")

PREMISES: 490 Boston Post Road, Wayland, Massachusetts

Dated: February 22, 2021

The Town of Wayland, a Massachusetts municipal corporation, acting by and through its Board of Selectmen (the "Undersigned"), being first duly sworn, deposes and says as follows:

1. There is no person, firm or corporation to whom a debt is due for labor, services or materials in connection with the construction or repair of any improvements in the Premises by the Seller, during the preceding ninety-three (93) days, which could give rise to a mechanics' lien.
2. There are no present tenants, lessees or other parties in possession of said Premises, and no tenants, lessees or other parties in possession have an option to purchase the Premises or a right of refusal with respect to the Premises.
3. There are no bankruptcy or insolvency proceedings, pending by or against the Undersigned in any state or federal court.

The undersigned makes this affidavit for the purpose of inducing the Company to issue a policy (or policies) of title insurance.

[Signature Page Follows]

Executed under seal on this 10th day of February, 2021.

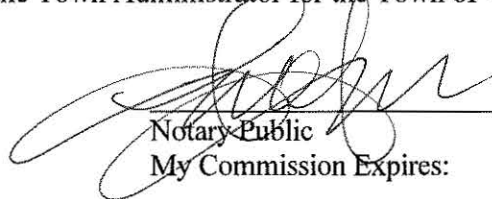
TOWN OF WAYLAND,

By: 
Louise L.E. Miller, Town Administrator

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this 10 day of February, 2021, before me, the undersigned notary public, personally appeared Louise L.E. Miller, as aforesaid, who proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding document, and who acknowledged to me that she signed it voluntarily for its stated purpose as the Town Administrator for the Town of Wayland.


Notary Public
My Commission Expires: 10-10-2025



Sarkis M. Sarkisian II
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
10/10/2025



TOWN OF WAYLAND

41 COCHITUATE ROAD
WAYLAND, MASSACHUSETTS 01778

LOUISE L. E. MILLER
TOWN ADMINISTRATOR
TEL. (508) 358-3620
www.wayland.ma.us

BOARD OF SELECTMEN
LEA T. ANDERSON
MARY M. ANTES
THOMAS J. FAY
CHERRY C. KARLSON
DAVID V. WATKINS

February 18, 2021

ALTA River's Edge, LLC
c/ WP East Acquisitions, LLC
91 Hartwell Avenue
Lexington, MA 02421
Attention: James Lambert

Re: Wayland - Acquisition of 490 Boston Post Road

Dear Mr. Lambert:

In connection with the sale by the Town of Wayland (the "Town") to ALTA River's Edge, LLC ("ALTA") of the property at 490 Boston Post Road (the "Property"), ALTA is obligated to pay pro forma taxes to the Town in accordance with G.L. c. 44, §63A. Pro forma taxes are calculated based on the purchase price and the current tax rate. Pro forma taxes in this case will be based on the tax rate of \$18.52 and the consideration stated in the deed from the Town to ALTA, or \$1,769,663.00. Pro forma taxes are calculated as follows:

Purchase Price: \$1,769,663.00
Tax Rate: \$18.52 per \$1,000.00
Per Diem: \$89.79 (\$1,769,663.00 multiplied by \$.01825 divided by 365 days)
Number of Days from February 22, 2021 to June 30, 2022 = 493 days
Pro Forma Tax: \$44,266.47 (493 days multiplied by \$89.79)

Assuming a closing on February 22, 2021, the pro forma taxes paid at the closing will be \$44,266.47. The pro forma tax payable will be reduced by \$89.79 for each day closing is delayed beyond February 22, 2021.

Under the Land Disposition Agreement between the Town and ALTA (the "Agreement"), the purchase price for the property may increase after the closing of the sale of the property due to costs incurred by ALTA for soil removal, the leaching field/pump house work, the wastewater connection, and the expenses attributable to the Sudbury septage facility demolition (the "Post-Closing Adjustments"). Because any funds payable to the Town subsequent to the closing under the Agreement will be part of the purchase price, ALTA may owe additional pro forma taxes. The Town will issue an invoice to ALTA within thirty (30) days

of determination of the final purchase price, and will expect payment within thirty (30) days. Subject to any additional payment of pro forma taxes due to Post-Closing Adjustments, the Town agrees the pro forma taxes paid at closing are deemed payment in full of pro forma property taxes owed on the Property through June 30, 2022. In no event will the Town be obligated to reimburse ALTA any portion of the pro forma taxes paid at the closing.

Please signify your assent by signing this letter, and returning it to the Town with the closing documents.

TOWN OF WAYLAND,

A handwritten signature in cursive script, appearing to read "Louise L.E. Miller", written over a horizontal line.

Name: Louise L.E. Miller
Title: Town Administrator

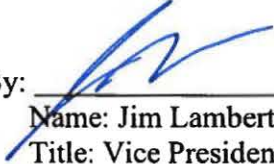
[Signatures continue on next page]

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

By: 
Name: Jim Lambert
Title: Vice President



**First American Title Insurance Company
National Commercial Services**

3455 Peachtree Road NE, Suite 675 • Atlanta, GA 30326

Office Phone:(404)720-3020 Office Fax:(404)720-3053

Settlement Statement

File No: NCS-861758-ATL
Escrow Officer: Myra Kellner/MK
Estimated Settlement Date: 02/22/2021
Disbursement Date:

Property:
 484-490 Boston Post Road, Wayland, MA

Buyer:
 Alta River's Edge, LLC

Seller:
 Town of Wayland

Buyer Charge	Buyer Credit	Description	Seller Charge	Seller Credit
		Adjustments		
1,769,663.00		Net Purchase Price		1,769,663.00
	10,000.00	Buyer Deposit Directly to Seller	10,000.00	
	65,000.00	Earnest Money		
		New Loan(s)		
		Lender: Santander Bank, N.A. a national banking association		
		Loan Amount - \$44,794,770.00		
291,166.00		Commitment Fee		
600.00		Environmental		
4,800.00		Appraisal		
		Title/Escrow Charges		
750.00		Closing-Escrow Fee to First American Title Insurance Company National Commercial Services	750.00	
500.00		Closing-Post Closing Escrow Fee to First American Title Insurance Company National Commercial Services	500.00	
1,300.00		Search and Exam to First American Title Insurance Company National Commercial Services		
150.00		Recording Service Fee to First American Title Insurance Company National Commercial Services		
250.00		Policy-Extended ALTA 2006 Lender's to First American Title Insurance Company National Commercial Services		
500.00		PA Owner's Policy Only Leasehold to First American Title Insurance Company National Commercial Services		
40,723.00		Policy-Extended ALTA 2006 Owner's to First American Title Insurance Company National Commercial Services		
8,145.00		Endorsement (O) to First American Title Insurance Company National Commercial Services		
4,072.30		Endorsement (L) to First American Title Insurance Company National Commercial Services		
650.00		Estimated Recording Fees		
		Disbursements Paid		

Settlement Statement

Settlement Date:

File No: NCS-861758-ATL

Officer: Myra Kellner/MK

Buyer Charge	Buyer Credit	Description	Seller Charge	Seller Credit
		Miscellaneous Disbursement		
829,275.00		Escrow Holdback (WWTP) to First American Title	1,758,313.00	
		Municipal Lien Certificate to Town of Wayland	100.00	
2,675.00		Invoice to CogencyGlobal		
1,165,658.23		JV Estimates to Alta River's Edge, LLC		
959,107.00		AIA #1 to River's Edge Builders, LLC		
25,000.00		Legal Fees to Wood Real Estate Investors, LLC		
44,266.47		Pro Forma Taxes to Town of Wayland		
6,500.00		Invoice to The Debt Exchange, Inc		
5,950.00		Invoice to Newbanks		
4,468.00		Invoice to Omega Risk Management		
294,700.04		Invoice to Alston & Bird LLP		
50,000.00		Invoice to Property Search Inc		
151,245.00		Invoice to Riemer & Braunstein LLP		
	5,587,114.04	Cash (X From) (To) Buyer		
		Cash (To) (From) Seller		
5,662,114.04	5,662,114.04	Totals	1,769,663.00	1,769,663.00

PLEASE NOTE: A modification of money-transfer or disbursement instructions can be a red flag for Online Banking Fraud and could be a trap for the unwary. Should we knowingly receive such a modification, in the interest of prudence, we may consider it suspect and call a known and trusted phone number to verify its authenticity and accuracy. Your awareness and cooperation in taking appropriate steps to prevent fraud is greatly appreciated.

ALTA RIVER'S EDGE, LLC, a Delaware limited liability company

By: Alta River's Edge Venture, LLC, a Delaware limited liability company, its sole member

By: WS River's Edge, LLC, a Delaware limited liability company, its managing member

By: WP Massachusetts, LLC, a Delaware limited liability company, its sole member and manager

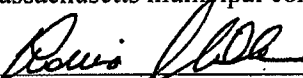
By: 

Name: Jim Lambert

Title: Vice President

[Signature Page – Closing Statement]

TOWN OF WAYLAND,
a Massachusetts municipal corporation

By:  _____

Name: Louise L.E. Miller

Title: Town Administrator

ANDERSON KREIGER

Eliana D. Vivier

evivier@andersonkreiger.com

T: 617-621-6518

F: 617-621-6618

February 19, 2021

BY EMAIL

Myra A. Kellner
First American Title Insurance Company
National Commercial Services
3455 Peachtree Road NE, Ste. 675
Atlanta, GA 30326

Re: 490 Boston Post Road, Wayland, Massachusetts (the "Property")

Dear Myra:

As you know, we are counsel to the Town of Wayland (the "Town").

In connection with the sale of the Property to ALTA River's Edge LLC ("Buyer") scheduled for Monday, February 22, 2021, you will be receiving from the Town copies of the following documents (collectively, the "Town's Closing Documents"), which you are to hold in escrow in accordance with the terms and conditions of this letter:

1. Quitclaim Deed (the "Deed") executed by the Board of Selectmen (the "BOS");
2. Twelfth Amendment to Land Disposition Agreement executed by the BOS;
3. Grant of Easements (Wastewater Facilities) executed by the BOS (the "Wastewater Easement");
4. Access and Drainage Easement executed by the BOS (the "Access Easement");
5. Notice of Land Disposition Agreement executed by the BOS (the "Notice of LDA");
6. Repurchase Agreement executed by the BOS (the "Repurchase Agreement");

7. WWTP Escrow Agreement executed by the BOS;
8. Closing Certificate executed by Louise L. E. Miller as Town Administrator (the "TA");
9. Infrastructure Development Agreement (Wastewater Facilities) executed by the BOS;
10. Title Affidavit executed by the TA;
11. Side Letter re: Pro Forma Taxes executed by the TA;
12. Vote of the BOS (the "Vote");
13. Certified Town Meeting Vote re: Access and Drainage Easement ("Access TM Vote"); and
14. Certified Town Meeting Vote re: Transfer and Dispose of Septage Facility Land and Adjacent Town-Owned Land on Boston Post Road ("Transfer TM Vote").

Please note that the Town's Closing Documents remain undated and we ask that you insert the date immediately prior to recording. We will email the Town's counterpart of the Settlement Statement to you separately.

You are hereby directed to hold the Town's Closing Documents in escrow and not to release, disburse and/or record, as applicable, any of the Town's Closing Documents until I have received the following:

- A. Confirmation that you are in receipt of executed originals of all documents to be signed by Buyer;
- B. You have confirmed receipt all of the funds that are necessary to close the transaction as set forth in the Settlement Statement (the "Closing Funds") and agreed to arrange for (i) the recording of the Recording Documents (as defined below) and (ii) the transfer of the "Cash to Seller" on the Settlement Statement on Monday, February 22, 2021; and
- C. You have confirmed receipt of all of the Recording Documents and Closing Funds and are prepared to wire the "Cash to Seller" immediately upon recording/filing of the Closing Documents and make the other distributions set forth on the Settlement Statement.

Upon my, Katharine L. Klein and David Wiener's receipt of confirmation of the foregoing requirements, either Katharine L. Klein, David Wiener or I will email you with confirmation that you are authorized to proceed to record with the Middlesex County Registry of Deeds the Deed, Wastewater Easement, Access Easement, Notice of LDA, Repurchase Agreement, Vote; Access TM Vote; Transfer TM Vote (collectively, the "Recording Documents") and to disburse into escrow the amount of \$2,587,588 and otherwise disburse the closing proceeds in accordance with the Settlement Statement.

In the event that the you have not released the closing funds by 4:30 PM on Monday, February 22, 2021, you are to return the Town's Closing Documents to me unless I instruct you otherwise in writing.

After the closing, please forward copies of all recorded documents and fully assembled Closing Documents directly to my attention.

Please indicate your agreement to, and acceptance of, the foregoing instructions by signing this letter in the space provided below and returning a copy to me by email. If you should have any questions with respect to these instructions, please contact me.

Very truly yours,



Eliana D. Vivier

Enclosures

cc: Louise Miller (via electronic delivery)
Cherry Karlson (via electronic delivery)
Drew Allen (via electronic delivery)
Katharine L. Klein (via electronic delivery)
David Wiener (via electronic delivery)

AGREED AND ACCEPTED this 22 day of February, 2021

First American Title Insurance Company

By:  _____

Name: Carmen Rice

Title: Sr. Title Officer

RFP # 16-28 – RIVER’S EDGE, WAYLAND, MA

**DISCLOSURE STATEMENT FOR
TRANSACTION WITH A PUBLIC AGENCY CONCERNING REAL PROPERTY
M.G.L. c. 7C, s. 38 (formerly M.G.L. c. 7, s. 403)**

The undersigned party to a real property transaction with a public agency hereby discloses and certifies, under pains and penalties of perjury, the following information as required by law:

- (1) REAL PROPERTY: See Exhibit A
- (2) TYPE OF TRANSACTION, AGREEMENT, or DOCUMENT: Sale
- (3) PUBLIC AGENCY PARTICIPATING in TRANSACTION: Town of Wayland
- (4) DISCLOSING PARTY'S NAME AND TYPE OF ENTITY (IF NOT AN INDIVIDUAL): Alta River’s Edge, LLC
- (5) ROLE OF DISCLOSING PARTY (Check appropriate role):

_____	Lessor/Landlord	_____	Lessee/Tenant
_____	Seller/Grantor	<u> X </u>	Buyer/Grantee
	Other (Please Describe): _____		

- (6) The names and addresses of all persons and individuals who have or will have a direct or indirect beneficial interest in the real property excluding only 1) a stockholder of a corporation the stock of which is listed for sale to the general public with the securities and exchange commission, if such stockholder holds less than ten per cent of the outstanding stock entitled to vote at the annual meeting of such corporation or 2) an owner of a time share that has an interest in a leasehold condominium meeting all of the conditions specified in M.G.L. c. 7C, s. 38, are hereby disclosed as follows (attach additional pages if necessary):

NAME

RESIDENCE

See Exhibit B

- (7) None of the above- named persons is an employee of the Division of Capital Asset Management and Maintenance or an official elected to public office in the Commonwealth of Massachusetts, except as listed below (insert "none" if none): None
- (8) The individual signing this statement on behalf of the above-named party acknowledges that he/she has read the following provisions of Chapter 7C, Section 38 (formerly Chapter 7, Section 40J) of the General Laws of Massachusetts:

No agreement to rent or to sell real property to or to rent or purchase real property from a public agency, and no renewal or extension of such agreement, shall be valid and no payment shall

RFP # 16-28 – RIVER’S EDGE, WAYLAND, MA

be made to the lessor or seller of such property unless a statement, signed, under the penalties of perjury, has been filed by the lessor, lessee, seller or purchaser, and in the case of a corporation by a duly authorized officer thereof giving the true names and addresses of all persons who have or will have a direct or indirect beneficial interest in said property with the commissioner of capital asset management and maintenance. The provisions of this section shall not apply to any stockholder of a corporation the stock of which is listed for sale to the general public with the securities and exchange commission, if such stockholder holds less than ten per cent of the outstanding stock entitled to vote at the annual meeting of such corporation. In the case of an agreement to rent property from a public agency where the lessee 's interest is held by the organization of unit owners of a leasehold condominium created under chapter one hundred and eighty-three A, and time- shares are created in the leasehold condominium under chapter one hundred and eighty-three B, the provisions of this section shall not apply to an owner of a time-share in the leasehold condominium who (i) acquires the time-share on or after a bona fide arms length transfer of such time-share made after the rental agreement with the public agency is executed and (ii) who holds less than three percent of the votes entitled to vote at the annual meeting of such organization of unit owners. A disclosure statement shall also be made in writing, under penalty of perjury, during the term of a rental agreement in case of any change of interest in such property, as provided for above, within thirty days of such change.

Any official elected to public office in the commonwealth, or any employee of the division of capital asset management and maintenance disclosing beneficial interest in real property pursuant to this section, shall identify his position as part of the disclosure statement. The commissioner shall notify the state ethics commission of such names, and shall make copies of any and all disclosure statements received available to the state ethics commission upon request.

The commissioner shall keep a copy of each disclosure statement received available for public inspection during regular business hours.

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(9) This Disclosure Statement is hereby signed under penalties of perjury.

Alta River’s Edge, LLC

PRINT NAME OF DISCLOSING PARTY (from section 4, above)



2 / 3 / 21

AUTHORIZED SIGNATURE of DISCLOSING PARTY DATE (MM/ DD/ YYYY)

James Lambert - Vice President

PRINT NAME & TITLE of AUTHORIZED SIGNER

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EXHIBIT A

LEGAL DESCRIPTION OF THE REAL PROPERTY

A parcel of land, with any improvements thereon, situated on the northerly side of Boston Post Road in the Town of Wayland, County of Middlesex, Commonwealth of Massachusetts, bounded and described as follows:

The land on Route 20, a/k/a Boston Post Road, Wayland, Middlesex County, Massachusetts, shown as Lots A, C, and E on a plan entitled "ANR Subdivision Plan Assessor's Map 22, Lot 3, Lot 6 & Lot 7 Boston Post Road, Wayland, Massachusetts" prepared by WSP Transportation & Infrastructure, dated June 1, 2015, endorsed by the Wayland Planning Board on June 2, 2015, and recorded with the Middlesex South District Registry of Deeds as Plan No. 260 of 2017.

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EXHIBIT B

THE NAMES AND ADDRESSES OF ALL PERSONS AND INDIVIDUALS WHO HAVE OR WILL HAVE A DIRECT OR INDIRECT BENEFICIAL INTEREST IN THE REAL PROPERTY

ENTITY NAME	DESCRIPTION OF INTEREST	% INTEREST
<u>Ownership of</u> <u>Alta River’s Edge, LLC</u>		
Alta River’s Edge Venture, LLC, a Delaware limited liability company Alta River’s Edge Venture, LLC c/o Wood Partners 636 W. Yale Street Orlando, FL 32804	Sole Member and Sole Manager	100%
<u>Ownership of</u> <u>Alta River’s Edge Venture, LLC</u>		
WS River’s Edge, LLC, a Delaware limited liability company WS River’s Edge, LLC c/o Wood Partners 636 W. Yale Street Orlando, FL 32804	Managing Member	10%
HGC Boston Post Road, LLC, a Delaware limited liability company HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Member	90%
<u>Ownership of</u> <u>WS River’s Edge, LLC</u>		
WP Massachusetts, LLC, a Delaware limited liability company WP Massachusetts, LLC c/o Wood Real Partners 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327	Sole Member and Sole Manager	100%

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<u>Ownership of WP Massachusetts, LLC</u>		
Wood Sarofim Holdings, LLC , a Delaware limited liability company Wood Sarofim Holdings, LLC c/o Wood Real Estate Investors, LLC 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327	Member	37.5%
WP East Development Company, L.L.C. , a Georgia limited liability company WP East Development Company, LLC c/o Wood Real Estate Investors, LLC 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327	Member	62.5%
<u>Ownership of Wood Sarofim Holdings, LLC</u>		
WREI Holdings, LLC , a Delaware limited liability company WREI Holdings, LLC c/o Wood Real Estate Investors, LLC 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327	Member	13.33%
Sarofim WP Investment, LLC , a Delaware limited liability company 909 Fannin Suite 2907 Houston, TX 77010	Member	86.67%
<u>Ownership of WREI Holdings, LLC</u>		
WPFH WP Holdings, LLC , a Delaware limited liability company WPFH WP Holdings, LLC c/o Wood Real Estate Investors, LLC 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327	Member	100%

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<u>Ownership of WPF WP Holdings, LLC</u>		
Individual members, none of whom is elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance c/o WPF WP Holdings, LLC c/o Wood Real Estate Investors, LLC 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327	Members	100%
<u>Ownership of Sarofim WP Investment, LLC</u>		
FSI No. 2 Corporation , a Delaware corporation FSI No. 2 Corporation 909 Fannin Suite 2907 Houston, TX 77010	Member	87%
Individual members, none of whom is elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance c/o FSI No. 2 Corporation 909 Fannin Suite 2907 Houston, TX 77010	Members	13%
<u>Ownership of FSI No. 2 Corporation</u>		
Fayez Sarofim & Co. , a Delaware corporation Fayez Sarofim & Co. 909 Fannin Suite 2907 Houston, TX 77010	Shareholder	100%

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<u>Ownership of Favez Sarofim & Co.</u>		
<p>The Sarofim Group, Inc., a Texas corporation</p> <p>The Sarofim Group, Inc. 909 Fannin Suite 2907 Houston, TX 77010</p>	Shareholder	100%
<u>Ownership of The Sarofim Group, Inc.</u>		
<p>Individual shareholders, none of whom is elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance</p> <p>c/o The Sarofim Group, Inc. 909 Fannin Suite 2907 Houston, TX 77010</p>	Shareholders	100%
<u>Ownership of WP East Development Company, L.L.C.</u>		
<p>Individual members, none of whom is elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance</p> <p>c/o WP East Development Company, L.L.C. c/o Wood Real Estate Investors, LLC 3715 Northside Pkwy NW, Suite 4-600 Atlanta, GA 30327</p>	Members	100%
<u>Ownership of HGC Boston Post Road, LLC</u>		
<p>Infinite Astral Limited, a British Virgin Island limited liability company</p> <p>c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210</p>	Sole Member	100%

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<u>Ownership of Infinite Astral Limited</u>		
HMZ Capital Holding Limited , a British Virgin Island limited liability company c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Sole Member	100%
<u>Ownership of HMZ Capital Holding Limited</u>		
Zillon Reserve Capital Holding Limited , a British Virgin Island limited liability company c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Member	49%
MWM Global Investment Holding Limited , a British Virgin Island limited liability company c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Member	49%
ZM Capital Products, Ltd , a British Virgin Island limited liability company c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Member	2%

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<u>Ownership of Zillon Reserve Capital Holding Limited</u>		
Individual member who is not elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Member	100%
<u>Ownership of MWM Global Investment Holding Limited</u>		
Individual members who are not elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Members	100%
<u>Ownership of ZM Capital Products, Ltd</u>		
Individual member who is not elected to public office in the Commonwealth of Massachusetts or is an employee of the division of capital asset management and maintenance c/o HGC Boston Post Road, LLC 101 Seaport Boulevard Suite 602 Boston, MA 02210	Member	100%