Notice of Intent

Wayland High School Athletic Facilities
Wayland, MA

July 2018

Prepared for:
Town of Wayland

Submitted to:
Wayland Conservation Commission

Weston & Sampson
Five Centennial Drive
Peabody, MA 01960-7985
www.westonandsampson.com
Tel: 978-532-1900
Fax: 978-977-0100

5 Centennial Drive, Peabody, MA 01960 (HQ)
Tel: 978.532.1900

Wayland- High School Athletic Facilities
WSE Project No. 2180076.A.02

July 18, 2018

Wayland Conservation Commission
41 Cochituate Road
Wayland, MA 01778

Re: NOI Filing
Wayland High School Athletic Facilities
Wayland, MA

Dear Members of the Commission:

On behalf of the Town of Wayland, Weston & Sampson Engineers, Inc. is hereby enclosing two (2) copies (including original) of the Notice of Intent submittal (including plans) to fulfill the requirements of the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40 submittal requirements and the Town of Wayland submittal requirements. This submittal is a formal Notice of Intent for the improvements to the Wayland High School Athletic Facilities.

As part of the filing, we have attached the following:

Appendix A: Project Description
Appendix B: Alternatives Analysis
Appendix C: Stormwater Report
Appendix D: Project Maps
Appendix E: Contract Specifications
Appendix F: Abutters List / Notice to Abutters
Appendix G: Wetlands Memorandum

If you have any questions regarding this submittal, please contact me at (978) 532-1900.

Very truly yours,

WESTON & SAMPSON

Mel Higgins, PWS
Senior Environmental Scientist

PROJECT DESCRIPTION

Background

The Town of Wayland High School is seeking approval of funds at the November 2018 Town Meeting to renovate and improve its existing athletic field facilities and associated amenities located at 264 Old Connecticut Path. The costs associated with the improvement of the athletic fields were deferred until the building project (renovation and improvement of the school building) was completed. The existing athletic facilities associated with this project are in dire need of improvements. Wayland High School is proposing the renovation and replacement of the current synthetic turf field and track with a new synthetic turf field and track as well as the relocation of the tennis courts and softball field. Additional improvements will include, but are not limited to, the replacement of the existing bleachers and press box, ticket and concessions building and restroom building.

Scope of Work

The Wayland High School property is considered to be altered land with existing athletic facilities currently in place. The high school campus consists of existing academic buildings, athletic fields, courts and parking lots. The campus is bordered by the Sudbury River and associated wetlands on the Northwest property limits, Old Connecticut Path to the Southeast, the Weston Aqueduct to the South and residences to the Northeast. The Happy Hallow well heads are nestled between the Weston Aqueduct and the high school campus. The proposed project will include improvements to existing athletic fields and courts at the High School. The improvements will include, but are not limited to, the following:

- Replacement and relocation of the existing stadium including replacement of the existing synthetic turf field and competition track
- Replacement of existing home and visitor bleachers with new ADA accessible bleachers with a seating capacity of 1,400 total occupants
- New energy efficient lighting and sound system
- Reducing the number of tennis courts from ten to six and relocating them towards the property entrance along Old Connecticut Path.
- Relocating the softball field
- Additional parking for twenty-eight vehicles
- Construction of covered storage, a ticket and concessions building, and a restroom building
- General site re-grading
- General utility improvements, including the stormwater drainage system and water

The construction of this project is anticipated to be completed within a (1) one-year time span with anticipated completion no later than Spring 2020. Sequencing of work will be centered on the installation of the new synthetic turf field, track and bleachers. This work will take the highest priority. The improved softball field, tennis and basketball courts and parking will be sequenced closely behind. The site will be accessed from the existing school drive and service lane adjacent to the field house. Throughout the duration of construction, this access will be comprised of a construction vehicle tracking pad, located at the entrance. Access to the site will be restricted to the public with a gated entrance at the limits of construction. The limits of construction will be delineated by six-foot height

construction fence to restrict all access to the site. During school hours and associated extracurricular activities and events, special considerations will be made to allow unimpeded access to and from the school buildings and field house while the remainder of the construction on the site takes place.

Prior to any work beginning, engineer-approved sedimentation and erosion control devices will be placed at the site to prevent sediment migration off-site into any neighboring resource areas. This will include, but is not limited to, straw wattles and or siltation barriers that will be placed between the limit of work and resource areas. Additionally, catch basin filter bags, erosion control blankets, and tire tracking area(s) will be used to minimize sediment migration off site. Additional environmental protection measures will include minimizing the generation of on-site dust during work activities. Dust control activities will not add any additional stormwater runoff at the site, as dust control measures will not be used during storm events. Wet suppression shall be used to provide temporary control of dust. At a minimum, wet suppression shall be applied to demolition debris, excavated material, aggregate piles, and exposed soils and dirt. Dust suppression wetting agents shall be water soluble, non-toxic, non-reactive, non-volatile, and non-foaming and will not result in ponding of water. Demolition debris will be transported in covered container vehicles for off-site disposal or recycling.

For any dewatering required as a result of foundation installation and/or general earthwork excavation, the water will be disbursed into an area lined with straw bales; filter fabric will be located on top of the straw bales and the ground surface. Sediment will be removed by the filter fabric before infiltrating into the ground. Special considerations will be made to control runoff during these construction activities should they be encountered.

Environmental Considerations

Both the wetlands and Sudbury River bank were delineated to the Northeast of the site. No work will occur within the wetlands themselves or any other environmental resource area protected under the Massachusetts Wetlands Protection Act, but only within the buffer zone by way of demolition of existing facilities and construction of new improvements. While work will occur within the 100-foot wetlands buffer zone, it will not breach the No Disturb Zone specific to the Town of Wayland. There will be a reduction in new impervious area compared to existing conditions and an increase in pervious areas for stormwater infiltration.

As noted above, to ensure the protection of nearby environmental resources, sedimentation and erosion controls will be used at the site. These will include straw wattles, catch basin filter bags, erosion control blankets, and tire tracking area(s).

Alternatives Analysis

Basis for Alternatives Analysis

Weston & Sampson, on behalf of the Town of Wayland, explored the following presentation of alternatives for the improvements at the Wayland High School athletic fields. The primary objective is to provide a design strategy that minimizes the amount of disturbance and environmental impact to the site while also providing sufficient facilities and amenities that meet the needs of the town and high school. This includes investigating alternative field surfaces, locations, and orientations for fields, courts, and parking areas with the aim of minimizing the amount of disturbance and environmental impact.

Alternative Analysis

During the master planning efforts conducted by Weston & Sampson in 2016 and the subsequent Phase 1 and Phase 2 design process, several locations and orientations of field and court footprints were investigated in effort to achieve both minimal impacts to surrounding environmental resources and financial costs. It is important to note the property has several constraints including resource areas to the northwest and south of the work area as well as a Zone 1 well head protection buffer to the south. The type of field surfacing, natural grass or synthetic turf, at the high school stadium was thoroughly considered and debated prior to arriving at a preferred athletic field surface. A summary of the analysis process is as follows.

Alternatives Investigation 1 – Field Surface

The Town of Wayland considered two surfacing options, evaluated the use of different field surfacing options, natural grass and synthetic turf. It is important to note the existing stadium has had a synthetic turf field in place since 2007. The primary reasons for this evaluation is the field's proximity to resource areas (including the Sudbury River to the Northwest) and the Happy Hollow water well locations to the south. A portion of the existing synthetic turf field lies within a 100' wetland buffer.

<u>Natural Grass Fields:</u>
While a natural grass field may have a lower initial cost to construct as compared to a synthetic turf field, however, given the anticipated demand by programmed sports for both the high school and recreation department, the hours of playing time would have to be strictly enforced to allow the grass field to "rest" between heavy uses in order to allow the grass to recover. While easily damaged by heavy use or poor weather conditions, natural grass fields are inexpensive and may be easier to replace. If a field is overused, it will be skinned and bare of grass, particularly in areas that see heavy use. At a minimum, natural grass fields require weekly, if not daily, maintenance such as mowing, fertilizing, and marking. Should the weather not be conducive, regular irrigation is required in order to maintain a healthy and safe playing surface. Additionally, native soils may contain elevated levels of various metals, carcinogens, etc.

<u>Synthetic Turf Fields:</u>
Synthetic turf does not grow; therefore it does not need mowing. (It will be permanently marked for multiple sports). In areas where there is frequent and/or heavy rain, a well-built

synthetic turf field will drain quickly and be immediately usable versus a natural grass field. The subsurface drainage system is designed to retain a much larger volume of water, allowing for infiltration, while providing a controlled release. A synthetic turf field can handle significantly more hours of play and does not have to be "rested" between uses. Typically, a synthetic field has a high initial installation cost while having a limited lifespan between 12 and 15 years.

Conclusion:
Given the projected demands by the high school sport programs, it was determined following several public forums and school board deliberation, it was concluded that a synthetic turf field was preferred to replace the existing synthetic turf field at the high school. Additionally, proposed location shifts the new field closer to the high school Field House building and further away from the resource area.

Alternatives Investigation 2 – Field and Court Layout, Location, and Footprint Sizes

Alternative layouts and locations to the proposed fields and courts were thoroughly investigated. It is important to note that the existing conditions of the high school and adjacent properties were critical to the evaluation of viable configurations.

Advantages:
Shifting the synthetic turf field, track and bleachers to the northern-most area of the property would allow the existing stadium to remain in place while the new facility is constructed. This would enable the property to continue hosting home sporting events rather than having to seek alternative venues for multiple sports seasons. This would also shift the stadium further from the Zone 1 well head protection buffer.

Disadvantages:
A new stadium location would result in the baseball fields being out of use during Phase 1 and Phase 2 construction. Additionally, part of the baseball footprint would encroach within the Zone 1 well head protection buffer. The new stadium location would be within the Zone 2 area of the Happy Hollow wells.

Conclusion:
Through a public process and the high school user group, it was determined to keep the new track and field generally in the same general location. However, it will be closer to the high school Field House to allow for better pedestrian circulation while reducing the square footage of the facility that falls within the buffer zone. Additionally, relocating the tennis courts near the property entrance removes a significant amount of impervious surfacing from resource areas and the Zone 1 well head protection buffer. One of the key considerations of the proposed layout allows is the remediation and naturalization of significant portions of the property that are in, or near, resource areas and the Zone 1 well head protection buffer.

Stormwater Report

Conservation Commission
Wayland, Massachusetts

Wayland High School Athletic Facilities Improvements

Notice of Intent
Massachusetts Wetland Protection Act
M.G.L. c. 131 § 40

July 11, 2018

JOB NO: 2180076

Weston & Sampson
5 Centennial Drive
Peabody, MA 01960

www.westonandsampson.com
Tel: 978-532-1900 Fax: 978-977-0100

Table of Contents

Checklist for Stormwater Report

Stormwater Report Summary

Attachment A - Locus Map

Attachment B - NRCS Soils Map, Soils Report, and HSG Classifications

Attachment C - Test Pit Summary and Logs

Attachment D - Stormwater Modeling

1. HydroCAD model output

Attachment E - Calculations

1. Required Recharge Calculation
2. Water Quality Volume Calculation
3. TSS Removal Worksheet

Attachment F - Long Term Pollution Prevention Plan

Attachment G - Construction Period Pollution and Erosion and Sedimentation Control Plan

Attachment H - Operations and Maintenance Plan

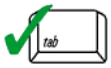
Attachment I - Illicit Discharge Compliance Statement

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

---

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

7/12/2018

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☐ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

---

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Stormwater Report

To Be Submitted with the Notice of Intent

Applicant/Project Name: Town of Wayland – High School Athletic Facilities Improvements

Project Address: 264 Old Connecticut Path, Wayland MA 01778

Application Prepared by:
Firm: Weston & Sampson, Inc.
Registered PE: James Pearson

Below is an explanation concerning Standards 1-10 as they apply to the Town of Wayland High School Athletic Facilities Improvement project, located on Old Connecticut Path:

General:

Due to need for updated athletic facilities, the proponent (Wayland High School) is proposing the replacement of their current turf field, and their existing tennis courts. They are also proposing the addition of a girls softball field and basketball courts. These major renovations will be accompanied by more minor additions such as bleachers, parking areas, a ticket booth, and additional bathroom facilities.

The goal of this project is to both improve the existing athletic facilities as well as install new facilities at Wayland High School. The existing track and synthetic turf field is located on the northwest portion of the property. The track will be moved slightly closer to the high school and replaced. The renovation of the athletic field will include the addition of 400-person visitor bleachers, 1,000-person grand stand bleachers, ticket booth/concession stand, and new bathroom facilities. Abutting the field currently are two tennis courts. These will be relocated to the south campus, taking the place of the existing softball field. Included with the tennis courts will be a new parking lot, as well as basketball courts. The existing softball field will then be moved to the north campus, next to the track and synthetic turf field.

Standard 1: No New Untreated Discharges

The proposed project will create no new untreated discharges. Total impervious area post-development will increase in comparison with existing conditions at the new parking lot and tennis court areas, but will remain unchanged at the track and turf field.

Standard 2: Peak Rate Attenuation

Since there will be no net change to impervious area the proposed track and turf field at the northwest portion of the High School Site, this area does not require analysis. An analysis was performed for the proposed tennis court and parking lot areas to the southeast of the site. For the latter areas, both existing and proposed conditions were modeled using HydroCAD computer software.

Table 1: Total Peak Runoff Rate

Point of Interest	Storm Frequency	Storm Depth (in)	Peak Flow (cfs) Existing Conditions	Post-Development
P1	2 Year	3.00	0.00	0
	10 Year	4.60	0.29	0
	25 Year	5.30	1.21	0.28
	100 Year	6.50	5.27	3.88

The proposed design is such that peak runoff rates do not exceed rates of runoff under existing conditions even in the 100-year storm scenario. For regulatory purposes the existing site condition serves as the benchmark for peak discharges that must not be exceeded under the re-developed condition. Peak discharges are mitigated by using the proposed underground chambers to provide stormwater detention benefit. Please refer to existing and proposed conditions in HydroCAD model printouts included in Attachment D for additional details.

To ensure that the work incorporates the performance standards recommended in the DEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction. These measures will include compost filter tubes, catch basin protection, and a stabilized construction entrance.

Standard 3: Recharge

The proposed improvements will result in an increase to the impervious areas of the site. Runoff from all impervious areas is directed to an underground stormwater chamber system that will provide the required recharge volume (Attachment E). Test pits (Attachment C) indicate gravelly substratum which will allow for favorable infiltration characteristics.

Standard 4: Water Quality

All of the stormwater from impervious areas on the site will undergo treatment to bring TSS levels within regulated limits (>80% removal). Treatment will occur via deep sump hooded catch basins and an underground stormwater chamber system with built-in pretreatment. During the project, appropriate BMPs will be used to minimize sedimentation and soil erosion.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The proposed improvements will not constitute a land use with higher potential pollutant load.

Standard 6: Critical Areas

There will be no new discharge to critical areas.

Standard 7: Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable

The project is a mix of new development and redevelopment, however the standards have been fully met.

Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control

A detailed Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan is included in Attachment G. To ensure that the work incorporates the performance standards recommended in the DEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction. These measures will include compost filter tubes, silt fence, catch basin protection, and a stabilized construction entrance.

Standard 9: Operation and Maintenance Plan

An operations and maintenance plan is included in Attachment H.

Standard 10: Prohibition of Illicit Discharges

An illicit discharge compliance statement has been included in Attachment I.

Registered Professional Engineer's Certification

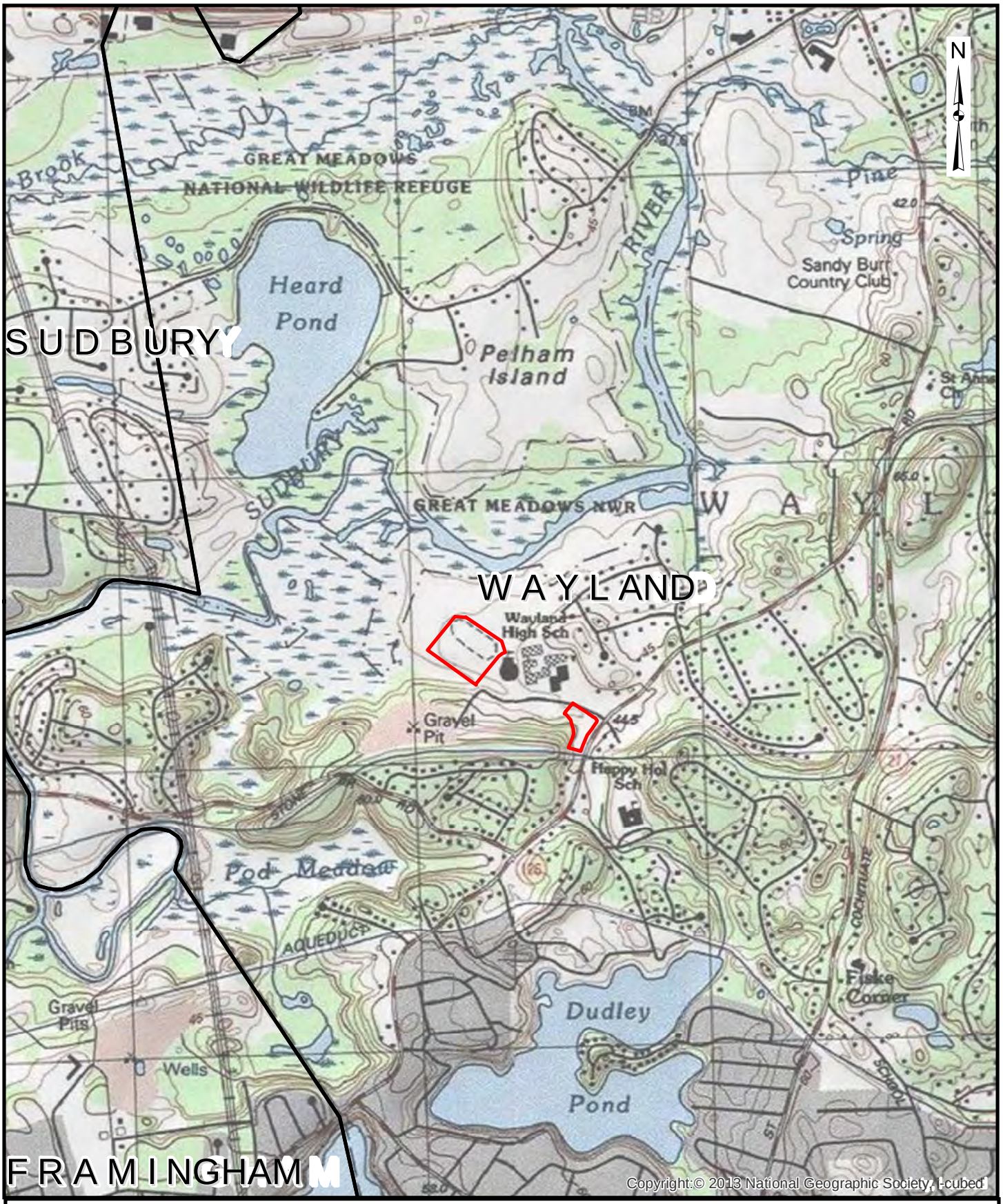
I have reviewed the Stormwater Report, including any relevant soil evaluations, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan, the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

7/12/2018

Signature and Date

Attachment A - Locus Map



Attachment A

Wayland Highschool Athletic Facilities
Wayland, Massachusetts

Locus Map

Work Area

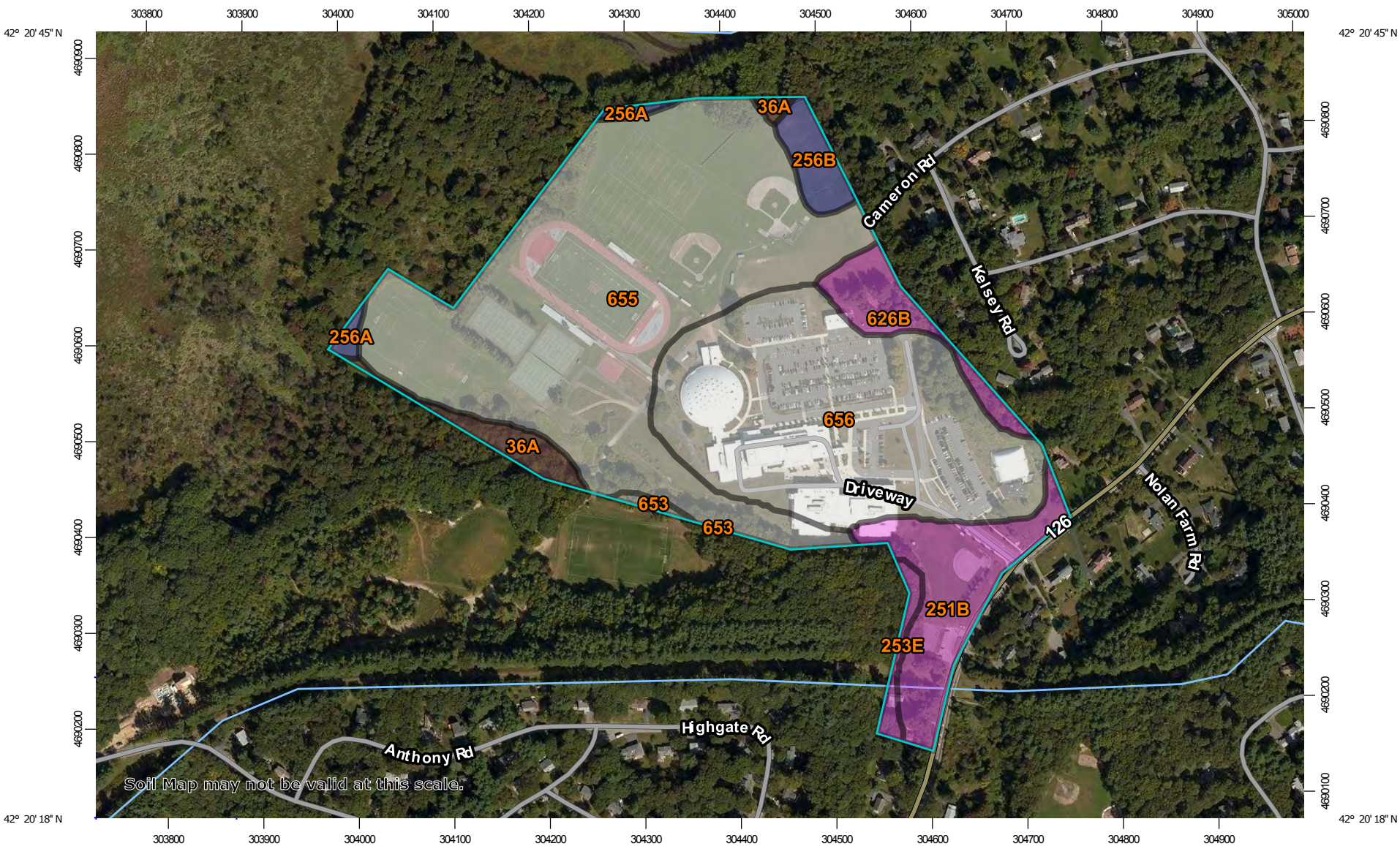
1,200 0 1,200
Scale In Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\GIS\Wayland HS Athletic Facilities\Figure 1- Locus.mxd User: GasparA Saved: 7/5/2018 2:58:02 PM Opened: 7/5/2018 2:58:17 PM

Attachment B - NRCS Soils Map, Soils Report, and HSG Classifications

Hydrologic Soil Group—Middlesex County, Massachusetts



Map Scale: 1:5,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 17, Oct 6, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
36A	Saco mucky silt loam, 0 to 1 percent slopes	B/D	1.4	2.5%
251B	Haven silt loam, 3 to 8 percent slopes	A	5.1	8.9%
253E	Hinckley loamy sand, 25 to 35 percent slopes	A	0.6	1.1%
256A	Deerfield loamy sand, 0 to 3 percent slopes	B	0.5	0.8%
256B	Deerfield loamy sand, 3 to 8 percent slopes	B	1.3	2.3%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	2.1	3.7%
653	Udorthents, sandy		0.2	0.4%
655	Udorthents, wet substratum		28.2	49.3%
656	Udorthents-Urban land complex		17.8	31.1%
Totals for Area of Interest			**57.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment C - Test Pit Summary and Logs

NOTES:

1. THIS FIGURE IS BASED ON AN EXISTING AND PROPOSED CONDITIONS PLAN PREPARED BY WESTON & SAMPSON ENGINEERS, INC. DATED MARCH 2018.
2. ELEVATIONS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. BORINGS WERE COMPLETED BY TECHNICAL DRILLING SERVICES, INC. OF STERLING, MA AND OBSERVED BY WESTON & SAMPSON ENGINEERS, INC. ON MARCH 14 AND 22, 2018.
4. BORING LOCATIONS SHOWN ARE APPROXIMATE AND WERE LOCATED IN THE FIELD BY WESTON & SAMPSON ENGINEERS, INC. USING TIE-OFFS TO EXISTING SITE FEATURES.

LEGEND:

B-1-HS
BORING DESIGNATION AND APPROXIMATE LOCATION.

150 75 0 150 300
SCALE: 1"=150'

FIGURE 2
HIGH SCHOOL SITE PLAN

WAYLAND HIGH SCHOOL ATHLETIC FACILITIES
WAYLAND, MA

DESIGNED BY: MJZ	CHECKED BY:	DATE: APRIL 2018

Weston & Sampson

P:\MA\Wayland MA\Wayland High School Athletic Facilities\Geotech\Plan\High School Site Plan.dwg

Weston & Sampson

BORING NUMBER: **B-1-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/14/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/14/2018	1.2 ft. +/-	Observed in hand excavation.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0										8" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
	S-1	0.7	/						SAND & GRAVEL	Medium dense, light brown, fine to coarse SAND, some fine gravel, trace silt; wet. ▼	
	S-2	2.0	18/24	6 7 8 9	15					Top 8" - Light brown, fine to coarse SAND, some fine gravel, trace silt; wet.	
									SILT & SAND	Bottom 10" - Medium dense, light brown, fine to medium SAND, little silt; wet.	
5	S-3	4.0	7/24	3 6 7 6	13					Medium dense, brown, sandy SILT; wet.	
10	S-4	10.0	16/24	3 5 5 7	10					Stiff, brown, sandy SILT; wet. - Bottom 2" is gray	
15	S-5	15.0	14/24	3 3 4 5	7					Loose, gray, silty fine SAND; wet.	
20	S-6	19.0	21/24	5 6 7 7	13					Stiff, gray, SILT, some fine sand; wet.	

End of boring at 21 ft.

MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)

Mineral Soil	Organic Soil
GRAVEL, SAND, SILT, CLAY: >50%	PEAT: 50-100%
gravelly, sandy, silty, clayey: 35-50%	organic (soil): 15-50%
some: 20-35%	with some organics: 5-15%
little: 10-20%	
trace: 0-10%	

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 12:30 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-2-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/14/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/14/2018	2 ft. +/-	Observed in hand excavation.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	/							12" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
									FILL	Dark brown, SILT, little fine to coarse sand, trace fine gravel, trace roots; moist. [FILL] ▼	
	S-2	2.0	10/24	9 12 14 18	26				SAND & GRAVEL	Medium dense, light brown, gravelly fine to coarse SAND, trace silt; wet.	
5	S-3	4.0	12/24	9 15 21 20	36					Top 5" - Light brown, gravelly fine to coarse SAND, trace silt; wet. Bottom 7" - Dense, orange-brown, sandy fine to coarse GRAVEL, trace silt; wet. - Iron oxide staining	
10	S-4	10.0	10/24	5 7 7 6	14					Top 5" - Medium dense, light brown, fine to coarse SAND, little fine gravel, trace silt; wet.	
									SILT & SAND	Bottom 5" - Stiff, gray-brown, SILT, some fine to medium sand, trace fine gravel; wet.	
15	S-5	15.0	13/24	9 7 9 11	16					Very stiff, gray, SILT, little fine sand; wet.	
20	S-6	19.0	17/24	6 7 8 7	15					Very stiff, gray, sandy SILT; wet.	

End of boring at 21 ft.

MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)

Mineral Soil	Organic Soil
GRAVEL, SAND, SILT, CLAY: >50%	PEAT: 50-100%
gravelly, sandy, silty, clayey: 35-50%	organic (soil): 15-50%
some: 20-35%	with some organics: 5-15%
little: 10-20%	
trace: 0-10%	

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

BORING NUMBER: **B-2-HS**

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-3-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/14/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/14/2018	2 ft. +/-	Observed in hand excavation.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	/							7" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
									SAND & GRAVEL	Brown, fine to coarse SAND, little fine to coarse gravel, little silt; moist.	
	S-2	2.0	16/24	9 10 10 11	20					Medium dense, brown, gravelly fine to coarse SAND, trace silt; wet.	
5	S-3	4.0	14/24	17 18 17 16	35					Dense, brown, fine to coarse GRAVEL, little fine to coarse sand, trace silt; wet.	
10									SILT & SAND		
	S-4	10.0	15/24	7 6 7 9	13					Stiff, brown, SILT, some fine sand; wet. - varves of silt and fine sand	
15	S-5	15.0	13/24	3 3 5 5	8					Stiff, gray, SILT, some fine sand; wet.	
20	S-6	19.0	23/24	3 4 4 4	8					Medium stiff, gray, SILT, some fine sand; wet.	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

End of boring at 21 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

BORING NUMBER: **B-4-HS**

Weston & Sampson

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	4 ft. +/-	Based on wet samples.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	/							10" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
									FILL	Dark brown, SILT, some fine to coarse sand, trace fine gravel, trace roots; moist. [FILL]	
	S-2	2.0	15/24	10 11 14 18	25				SAND & GRAVEL	Medium dense, brown, fine to coarse SAND, some fine to coarse gravel, trace silt; moist.	
5	S-3	4.0	7/24	4 9 16 17	25					Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, trace silt; wet. - coarse gravel fragment in tip of spoon.	
10									SILT & SAND		
	S-4	10.0	14/24	3 5 5 6	10					Stiff, gray, SILT, some fine sand; wet.	
15											
	S-5	15.0	19/24	3 4 5 6	9					Stiff, gray, SILT, some fine sand; wet.	
20	S-6	19.0	17/24	6 7 7 8	14					Stiff, gray, SILT, some fine sand; wet.	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

End of boring at 22 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

BORING NUMBER: **B-4-HS**

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:20 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-5A-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	Not observed	

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0											
	S-1	0.0	16/24	5 6 6 7	12					10" Topsoil	
									FILL	Medium dense, brown, fine to coarse SAND, little fine gravel, little silt; moist. [FILL]	
	S-2	2.0	14/24	12 18 24 12	42					Dense, brown, fine to coarse SAND, some fine gravel, trace silt; moist. [FILL]	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

Approximately 4 in. diameter plastic gas line encountered at 4 ft. End of boring at 4 ft.
Offset boring approximately 24 ft. south to B-5B-HS.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

BORING NUMBER: **B-5A-HS**

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

BORING NUMBER: **B-5B-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	9 ft. +/-	Measured in borehole.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0										See log for B-5A-HS for upper 4 ft. descriptions.	- B-5B is offset approximately 24 ft. south of B-5A-HS.
5	S-3	4.0	12/24	14 15 21 18	36				SAND & GRAVEL	Dense, brown, fine to coarse GRAVEL, little fine to coarse sand, trace silt; moist.	- Auger grinding and rig chatter from approximately 5 - 15 ft. Coarse gravel and cobbles in auger spoils.
10	S-4	10.0	18/24	53 117 54 40	171					Very dense, gray, sandy fine to coarse GRAVEL, trace silt; wet.	
15	S-5	15.0	18/24	6 10 15 36	25					Medium dense, brown, fine GRAVEL, some medium to coarse sand, trace silt; wet.	- Blow-in observed in augers after sampling 15 - 17 ft. Unable to continue boring.

End of boring at 17 ft.

MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)

Mineral Soil	Organic Soil
GRAVEL, SAND, SILT, CLAY: >50%	PEAT: 50-100%
gravelly, sandy, silty, clayey: 35-50%	organic (soil): 15-50%
some: 20-35%	with some organics: 5-15%
little: 10-20%	
trace: 0-10%	

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-6-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	15 ft. +/-	Measured in borehole.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0										11" Topsoil	
	S-1	0.0	20/24	2 2 8 14	10				FILL	Medium dense, gray-brown, silty SAND, little fine gravel; moist. [FILL]	
	S-2	2.0	12/24	5 7 13 22	20				FILL	Medium dense, brown, fine to coarse SAND, little fine gravel, little silt; moist. [FILL]	
5	S-3	4.0	15/24	14 23 35 22	58				SAND & GRAVEL	Top 6" - Brown, fine to coarse SAND, some silt, little fine gravel; moist. Bottom 9" - Very dense, gray-brown, fine to coarse GRAVEL, little fine to coarse sand, trace silt; moist.	- Auger grinding at approximately 5 ft.
10	S-4	10.0	3/24	19 15 16 16	31				SAND & GRAVEL	Dense, brown, fine to coarse GRAVEL, little fine to coarse sand, little silt; moist.	- Coarse gravel fragment stuck in tip of spoon.
15	S-5	15.0	10/24	9 9 7 6	16				SAND & GRAVEL	Medium dense, brown, fine to coarse SAND, trace fine gravel, trace silt; wet.	
20	S-6	20.0	18/24	11 10 12 20	22				SAND & GRAVEL	Medium dense, tan, fine to coarse GRAVEL, little medium to coarse sand, trace silt; wet.	

End of boring at 22 ft.

Mineral Soil
GRAVEL, SAND, SILT, CLAY: >50%
gravelly, sandy, silty, clayey: 35-50%
some: 20-35%
little: 10-20%
trace: 0-10%

Organic Soil
PEAT: 50-100%
organic (soil): 15-50%
with some organics: 5-15%

SAMPLE SYMBOL	SAMPLE TYPE	GRANULAR SOILS N-Value	GRANULAR SOILS Density	COHESIVE SOILS N-VALUE	COHESIVE SOILS CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-7-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	15 ft. +/-	Based on wet samples.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	14/24	3 5 6 5	11					Stiff, dark brown, SILT, little fine to coarse gravel, little fine to coarse sand; moist. [TOPSOIL]	
	S-2	2.0	12/24	11 17 12 25	29				SAND & GRAVEL	Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, trace silt; moist.	
5	S-3	4.0	14/24	50 35 40 53	75					Very dense, brown, sandy fine to coarse GRAVEL, trace silt; moist.	
10	S-4	10.0	14/24	13 11 11 10	22				SAND	Medium dense, brown, fine to coarse SAND, little fine to coarse gravel, trace silt; moist.	
15	S-5	15.0	12/24	9 8 8 8	16					Medium dense, brown, fine to medium SAND, trace silt; wet. ▼	
20	S-6	20.0	24/24	5 7 7 8	14					Medium dense, brown, fine to medium SAND, little silt; wet.	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

End of boring at 22 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

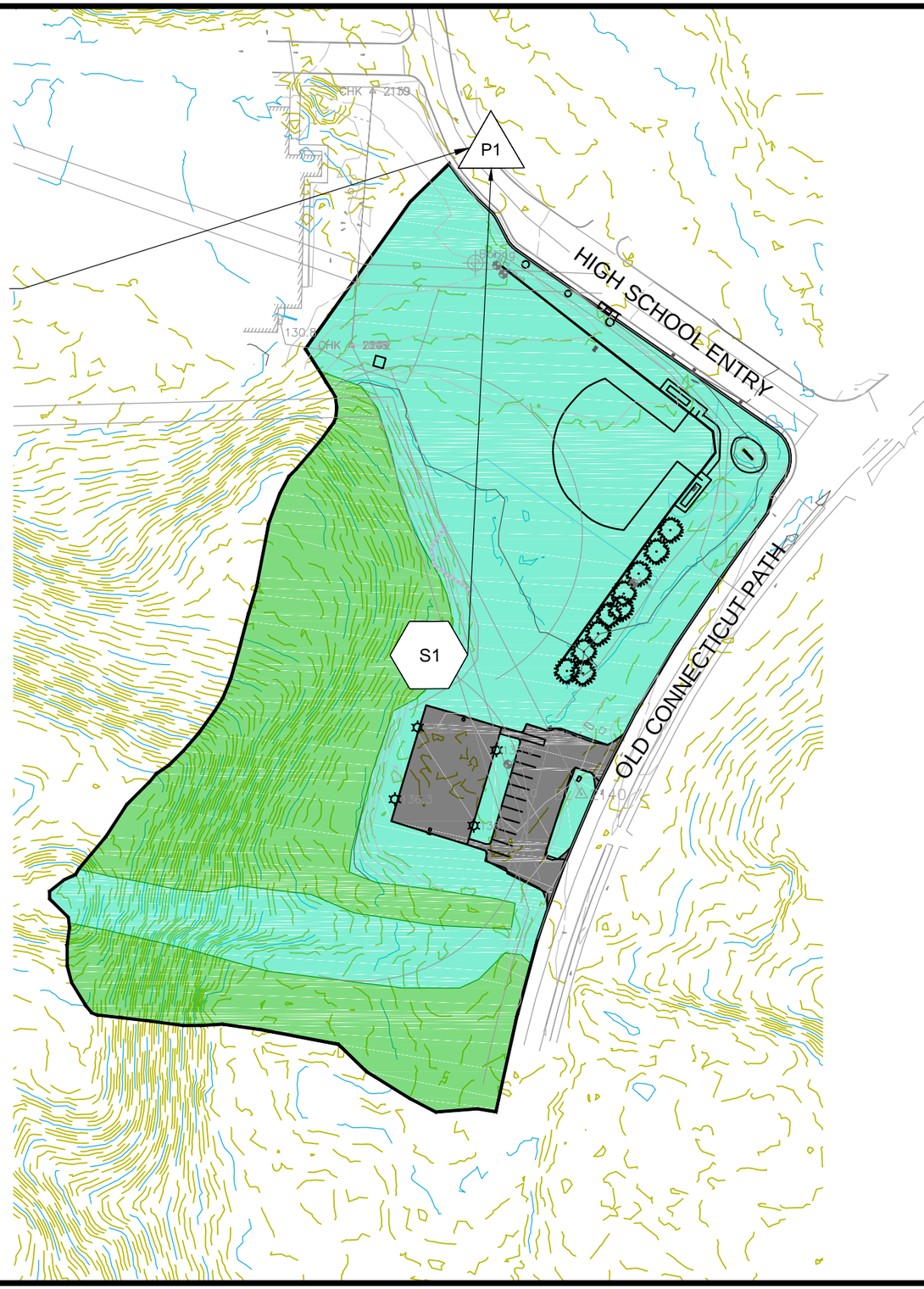
W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Attachment D - Stormwater Modeling

LEGEND

- IMPERVIOUS
- WOODLAND
- GRASSED/LANDSCAPE AREAS

ANALYSIS POINT OF INTEREST (TYP.)



N

PLAN

SCALE: 1" = 100'

FIGURE 1

TOWN OF WAYLAND, MA
HIGH SCHOOL ATHLETIC FACILITIES

HYDROLOGY MAP
PROPOSED CONDITIONS

DESIGNED BY: JIP	CHECKED BY: JIP	DATE: JULY 13, 2018

Weston & Sampson

\\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\CAD\0_Current_HIGH SCHOOL\Figures\Hydro-EX.dwg

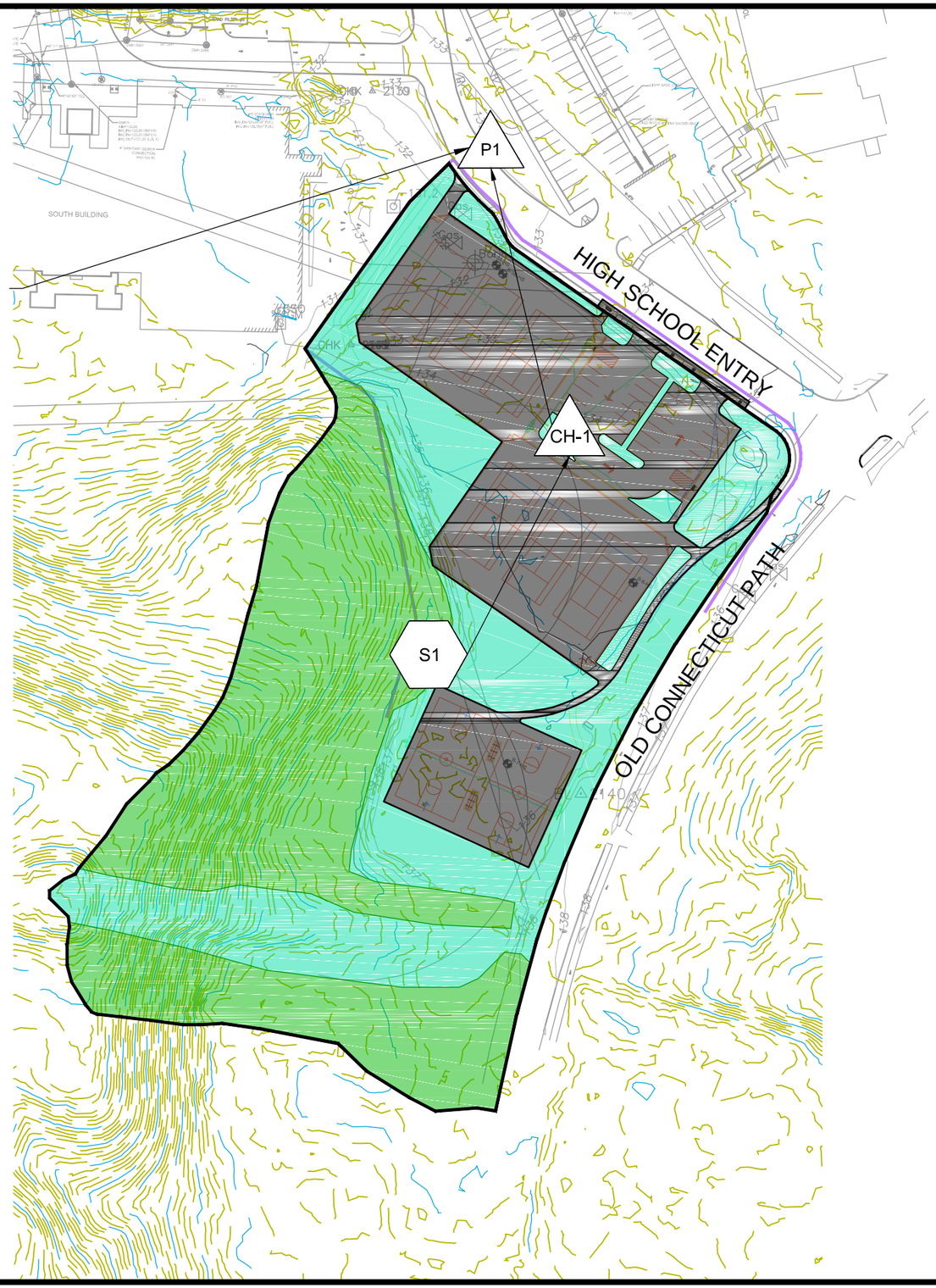
LEGEND

IMPERVIOUS

WOODLAND

GRASSED/LANDSCAPE AREAS

ANALYSIS POINT OF INTEREST (TYP.)



PLAN

SCALE: 1" = 100'

FIGURE 2

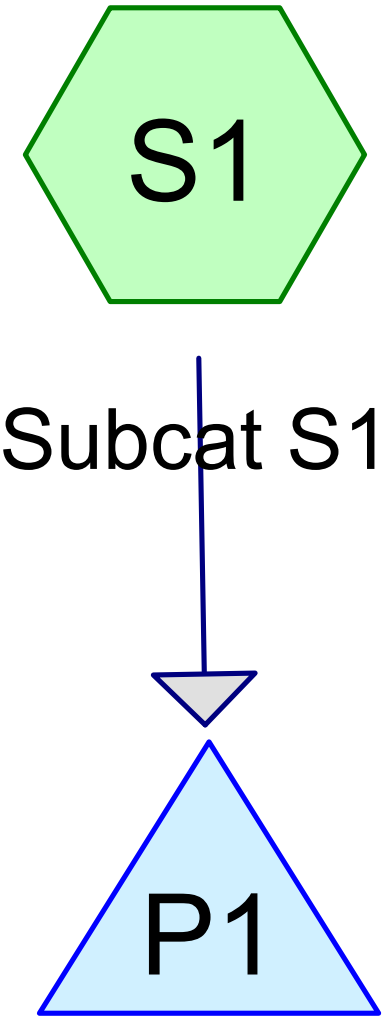
TOWN OF WAYLAND, MA
HIGH SCHOOL ATHLETIC FACILITIES

HYDROLOGY MAP
PROPOSED CONDITIONS

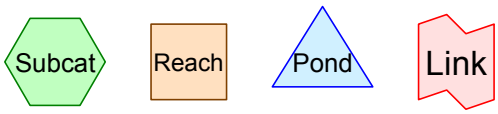
DESIGNED BY: JIP	CHECKED BY: JIP	DATE: JULY 13, 2018

Weston & Sampson

\\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\CAD\0_Current_HIGH SCHOOL\Figures\Hydro-PR.dwg



Analysis Pt. 1



Routing Diagram for HydroCAD-EX
Prepared by Hewlett-Packard Company, Printed 7/13/2018
HydroCAD® 10.00-15 s/n 00455 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
118,483	39	Pasture/grassland/range, Good, HSG A (S1)
12,377	98	Paved parking, HSG A (S1)
80,197	30	Woods, Good, HSG A (S1)
211,057	**39**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
211,057	HSG A	S1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
211,057		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
118,483	0	0	0	0	118,483	Pasture/grassland/range, Good
12,377	0	0	0	0	12,377	Paved parking
80,197	0	0	0	0	80,197	Woods, Good
211,057	**0**	**0**	**0**	**0**	**211,057**	**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=39 Runoff=0.00 cfs 37 cf

Pond P1: Analysis Pt. 1 Inflow=0.00 cfs 37 cf
Primary=0.00 cfs 37 cf

Total Runoff Area = 211,057 sf Runoff Volume = 37 cf Average Runoff Depth = 0.00"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

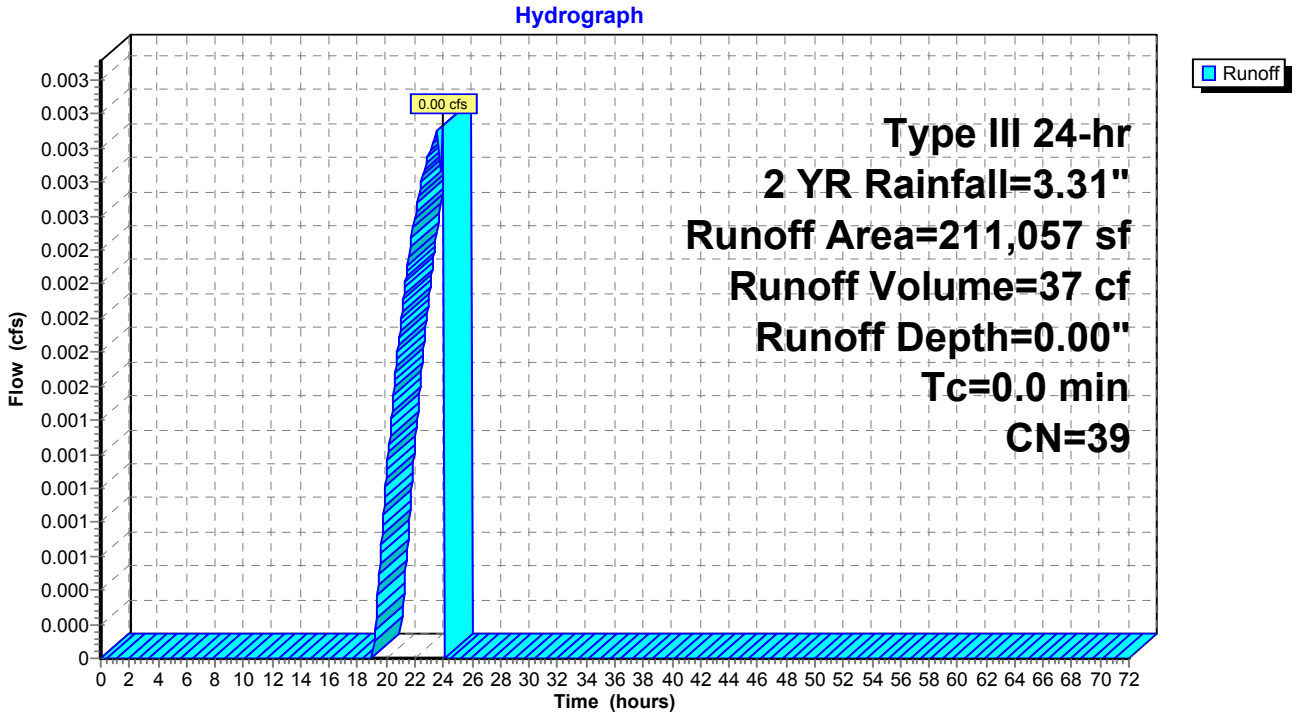
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.00 cfs @ 23.95 hrs, Volume= 37 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.31"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



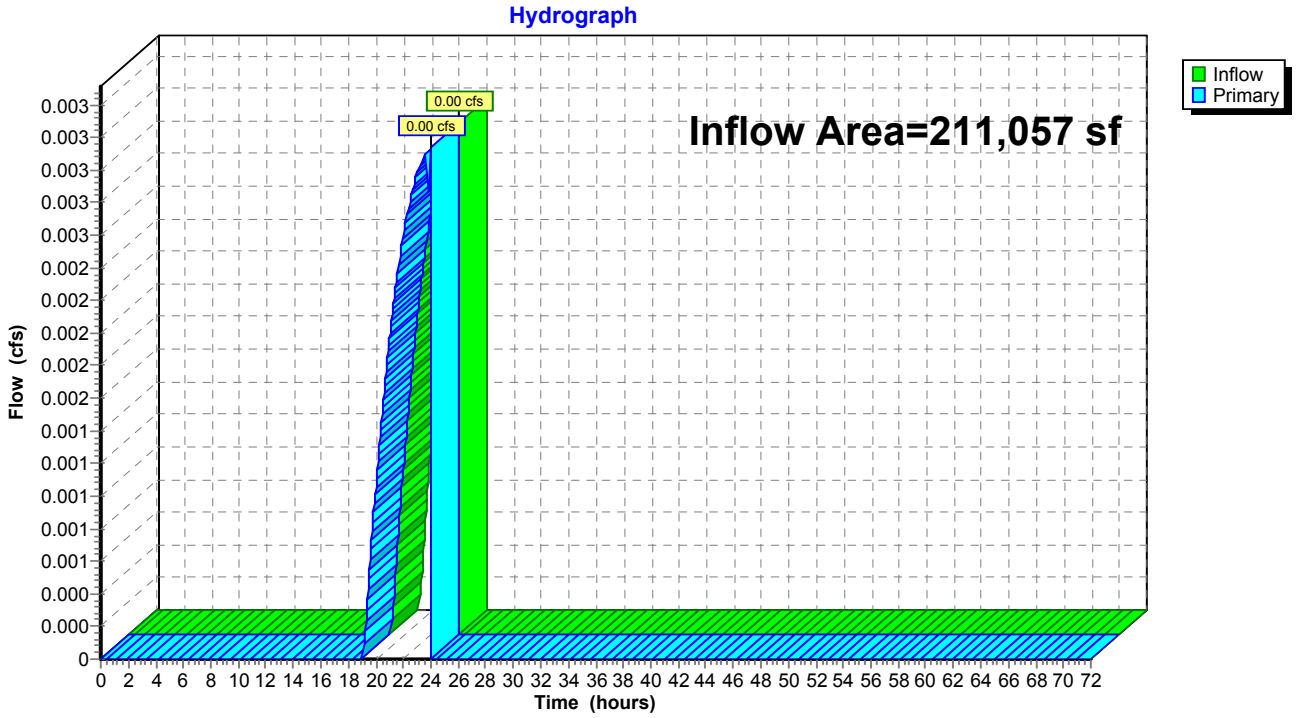
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 23.95 hrs, Volume= 37 cf
Primary = 0.00 cfs @ 23.95 hrs, Volume= 37 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=0.24"
Tc=0.0 min CN=39 Runoff=0.29 cfs 4,223 cf

Pond P1: Analysis Pt. 1 Inflow=0.29 cfs 4,223 cf
Primary=0.29 cfs 4,223 cf

Total Runoff Area = 211,057 sf Runoff Volume = 4,223 cf Average Runoff Depth = 0.24"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

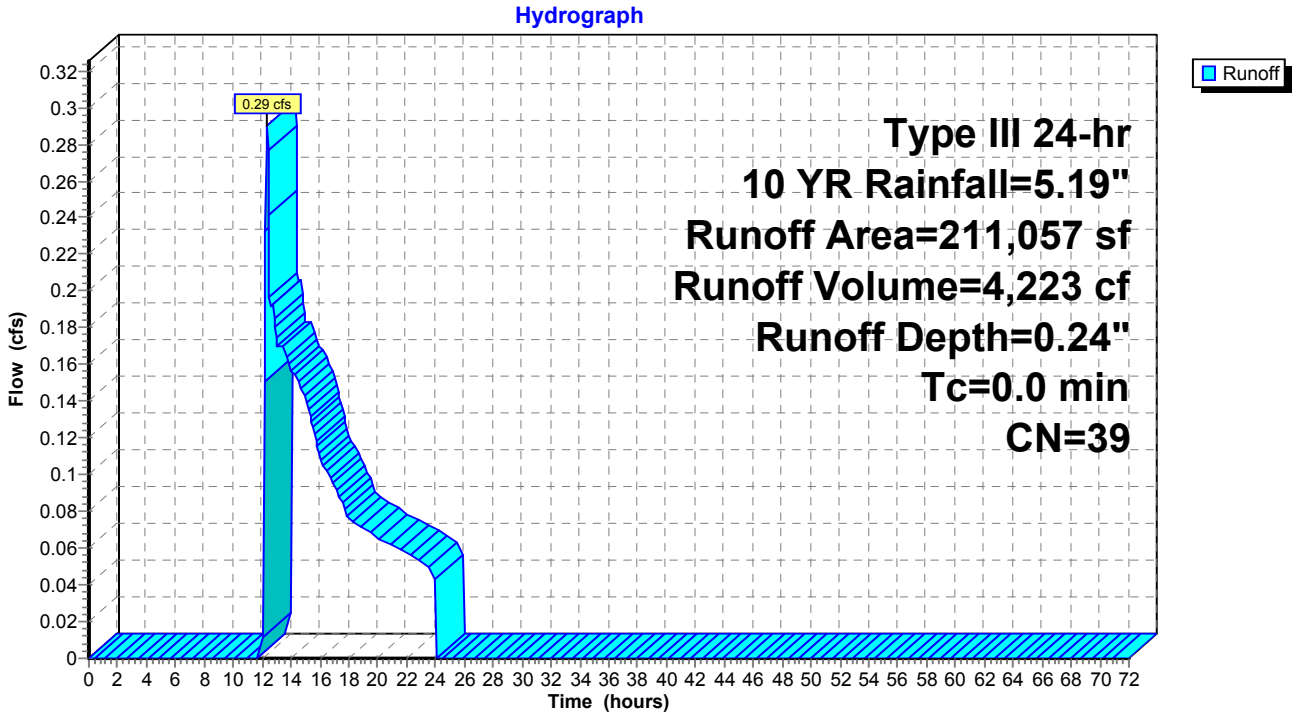
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.29 cfs @ 12.35 hrs, Volume= 4,223 cf, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.19"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



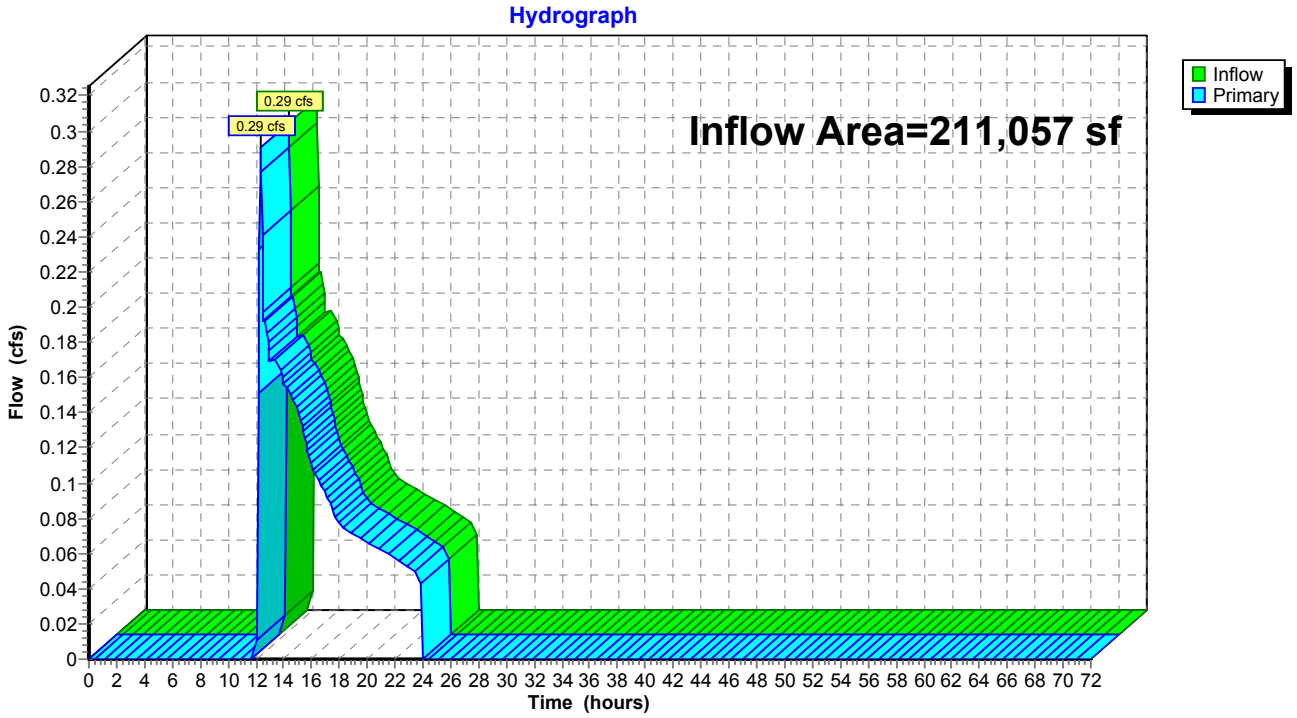
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 0.24" for 10 YR event
Inflow = 0.29 cfs @ 12.35 hrs, Volume= 4,223 cf
Primary = 0.29 cfs @ 12.35 hrs, Volume= 4,223 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=0.55"
Tc=0.0 min CN=39 Runoff=1.21 cfs 9,734 cf

Pond P1: Analysis Pt. 1 Inflow=1.21 cfs 9,734 cf
Primary=1.21 cfs 9,734 cf

Total Runoff Area = 211,057 sf Runoff Volume = 9,734 cf Average Runoff Depth = 0.55"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

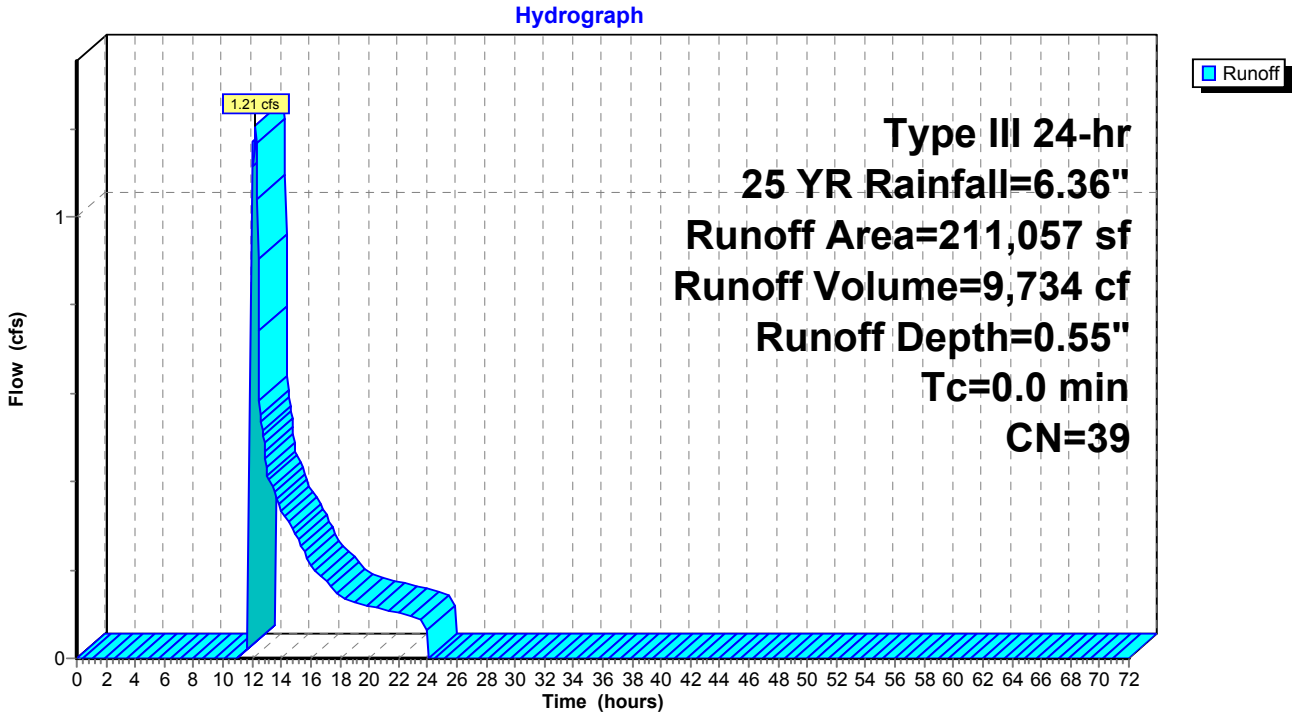
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.21 cfs @ 12.22 hrs, Volume= 9,734 cf, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.36"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



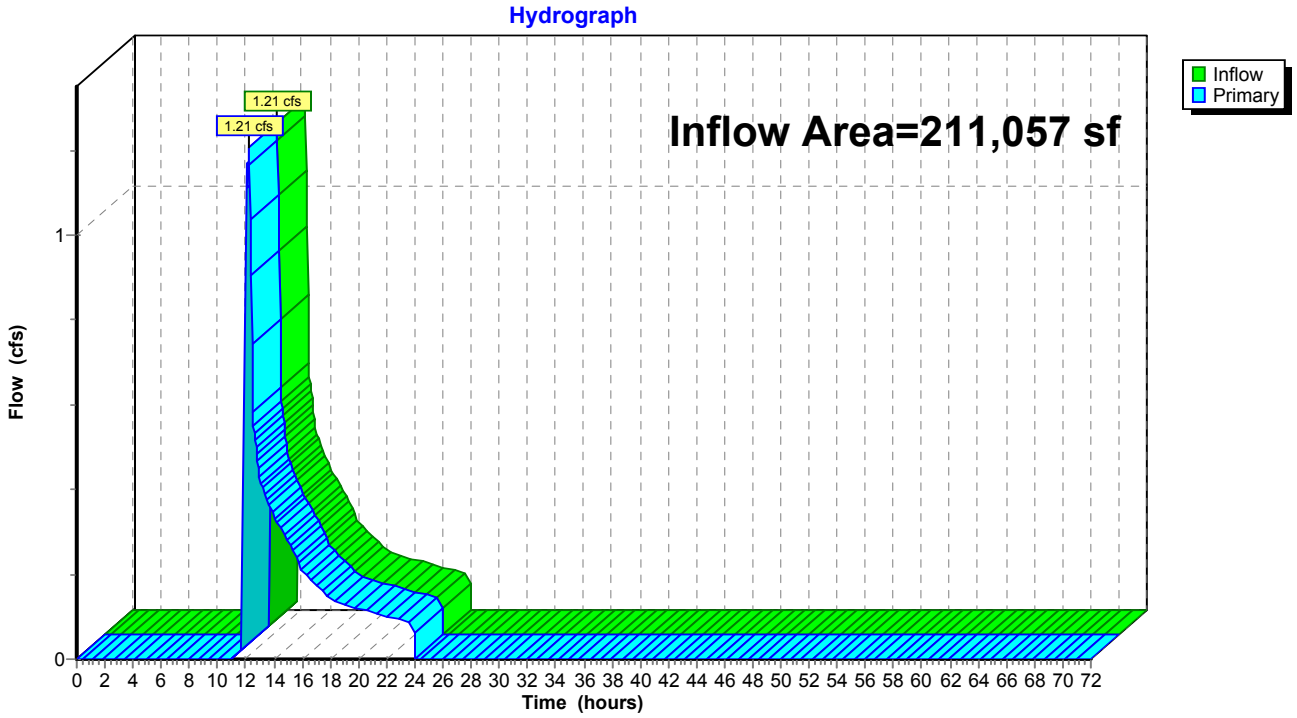
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 0.55" for 25 YR event
Inflow = 1.21 cfs @ 12.22 hrs, Volume= 9,734 cf
Primary = 1.21 cfs @ 12.22 hrs, Volume= 9,734 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=1.23"
Tc=0.0 min CN=39 Runoff=5.27 cfs 21,616 cf

Pond P1: Analysis Pt. 1 Inflow=5.27 cfs 21,616 cf
Primary=5.27 cfs 21,616 cf

Total Runoff Area = 211,057 sf Runoff Volume = 21,616 cf Average Runoff Depth = 1.23"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

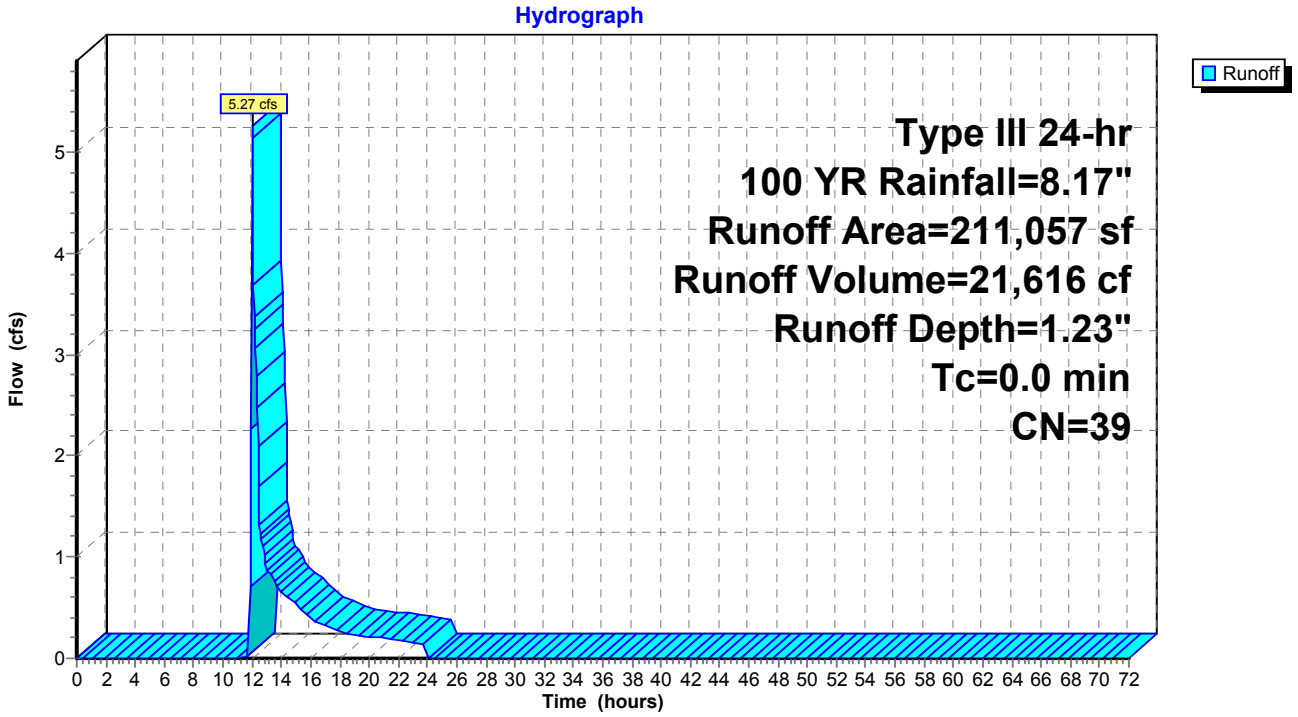
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 5.27 cfs @ 12.03 hrs, Volume= 21,616 cf, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.17"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



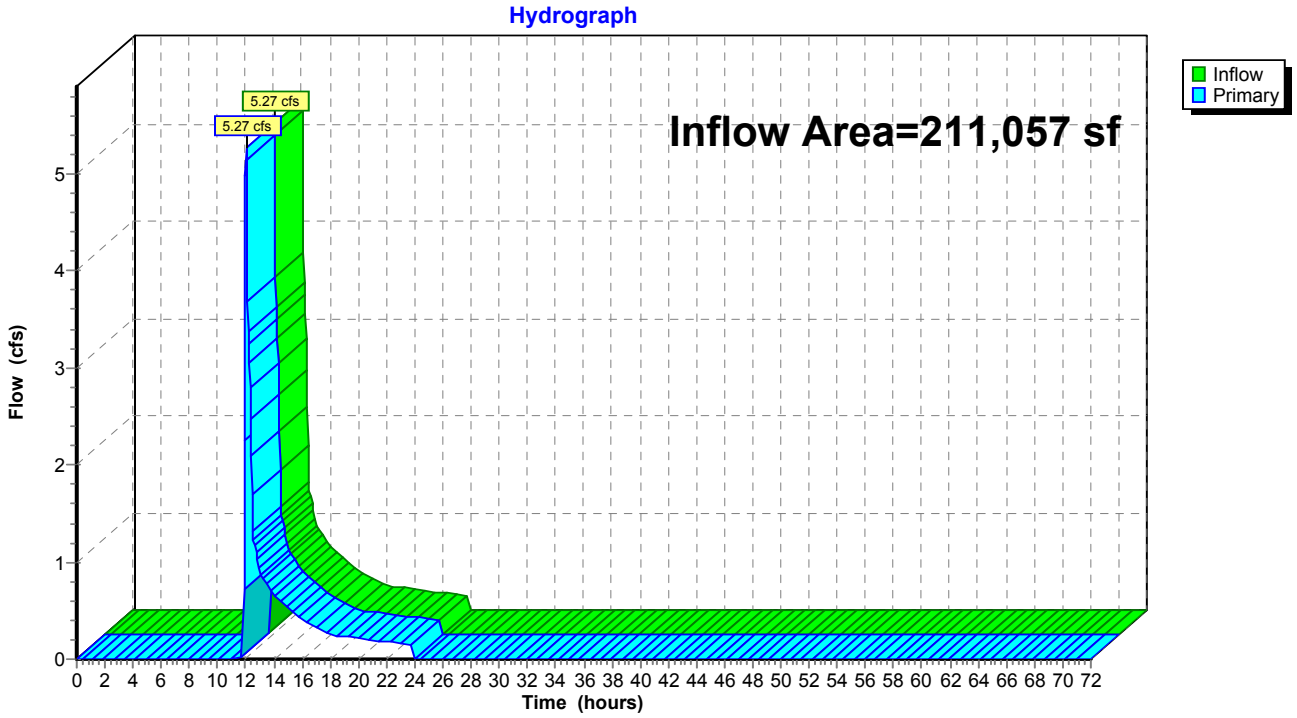
Summary for Pond P1: Analysis Pt. 1

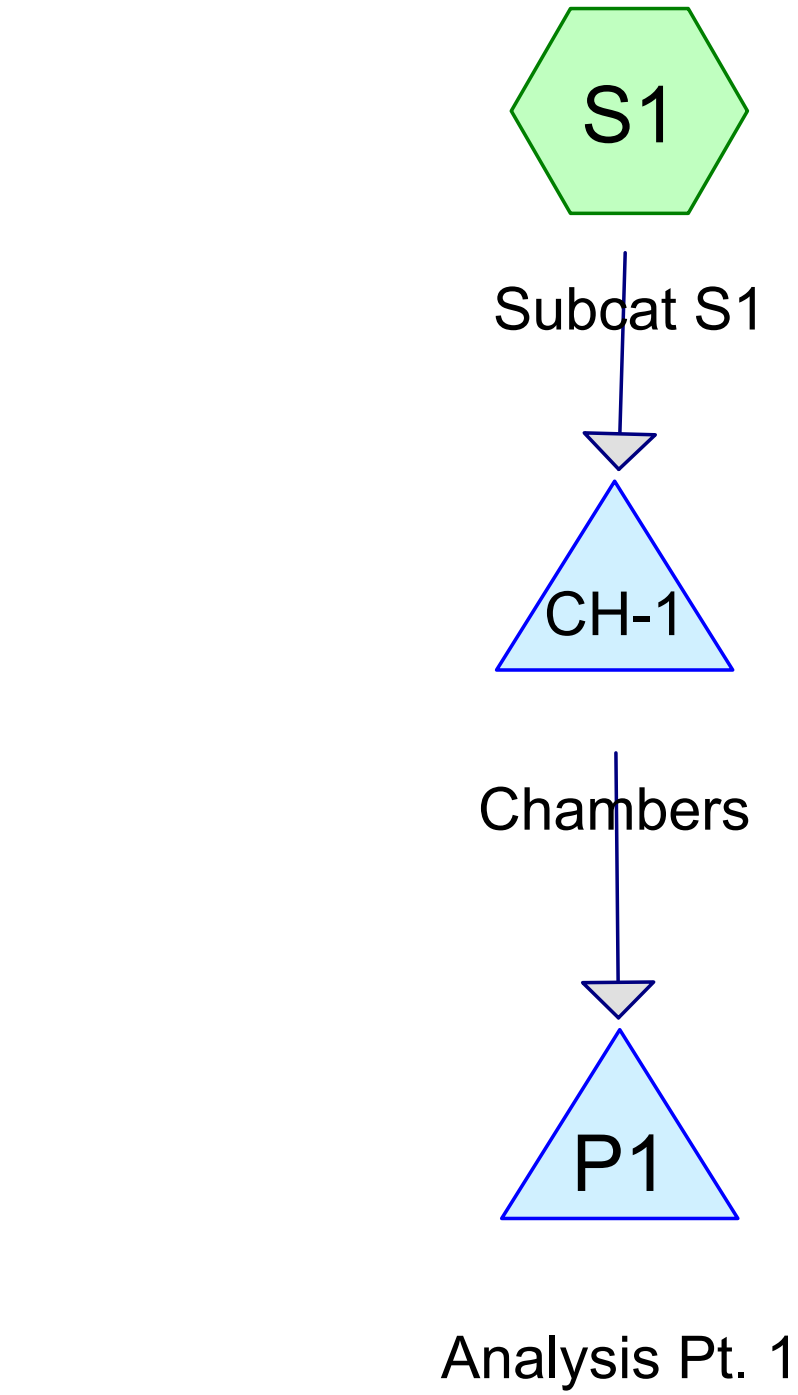
[40] Hint: Not Described (Outflow=Inflow)

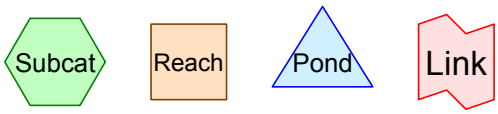
Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 1.23" for 100 YR event
Inflow = 5.27 cfs @ 12.03 hrs, Volume= 21,616 cf
Primary = 5.27 cfs @ 12.03 hrs, Volume= 21,616 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1







Routing Diagram for HydroCAD-PR
Prepared by Hewlett-Packard Company, Printed 7/13/2018
HydroCAD® 10.00-15 s/n 00455 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
65,197	39	Pasture/grassland/range, Good, HSG A (S1)
65,663	98	Paved parking, HSG A (S1)
80,197	30	Woods, Good, HSG A (S1)
211,057	**54**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
211,057	HSG A	S1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
211,057		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
65,197	0	0	0	0	65,197	Pasture/grassland/range, Good
65,663	0	0	0	0	65,663	Paved parking
80,197	0	0	0	0	80,197	Woods, Good
211,057	**0**	**0**	**0**	**0**	**211,057**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	CH-1	128.50	127.60	220.0	0.0041	0.012	12.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=0.25"
Tc=0.0 min CN=54 Runoff=0.51 cfs 4,482 cf

Pond CH-1: Chambers Peak Elev=128.02' Storage=64 cf Inflow=0.51 cfs 4,482 cf
Discarded=0.51 cfs 4,482 cf Primary=0.00 cfs 0 cf Outflow=0.51 cfs 4,482 cf

Pond P1: Analysis Pt. 1 Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 211,057 sf Runoff Volume = 4,482 cf Average Runoff Depth = 0.25"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

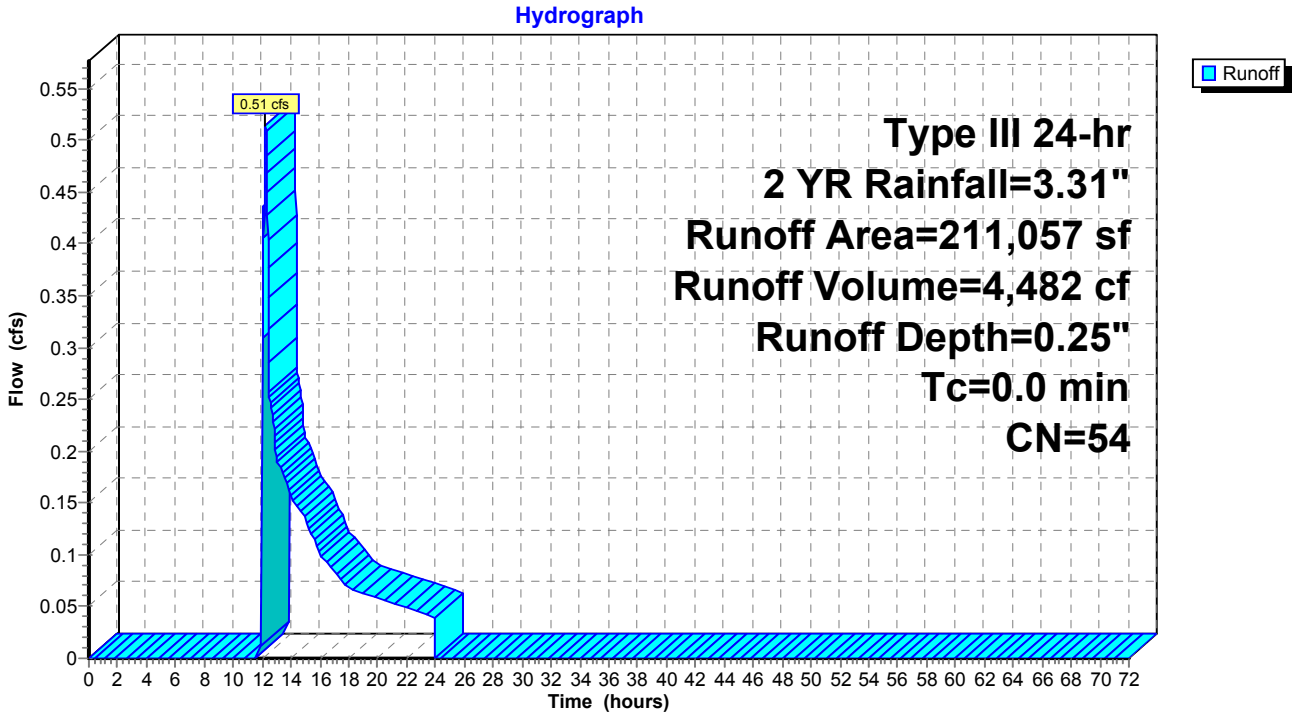
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.51 cfs @ 12.24 hrs, Volume= 4,482 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2 YR Rainfall=3.31"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.25" for 2 YR event
Inflow = 0.51 cfs @ 12.24 hrs, Volume= 4,482 cf
Outflow = 0.51 cfs @ 12.28 hrs, Volume= 4,482 cf, Atten= 1%, Lag= 2.2 min
Discarded = 0.51 cfs @ 12.28 hrs, Volume= 4,482 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 128.02' @ 12.28 hrs Surf.Area= 6,820 sf Storage= 64 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 2.1 min calculated for 4,481 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (953.3 - 951.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.31 cfs @ 12.28 hrs HW=128.02' (Free Discharge)
└─**4=Exfiltration** (Controls 1.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=128.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

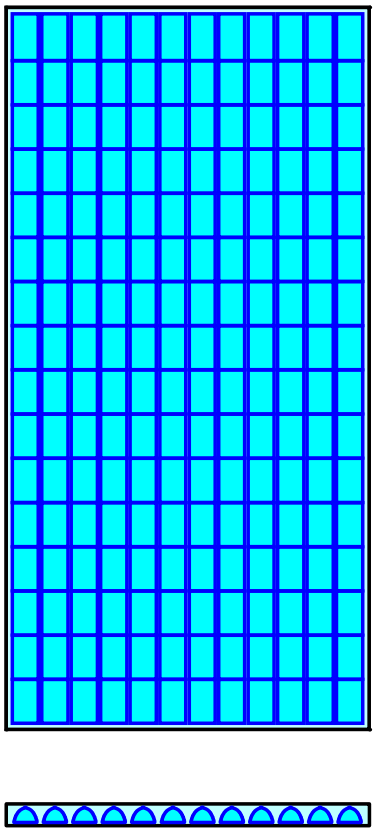
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

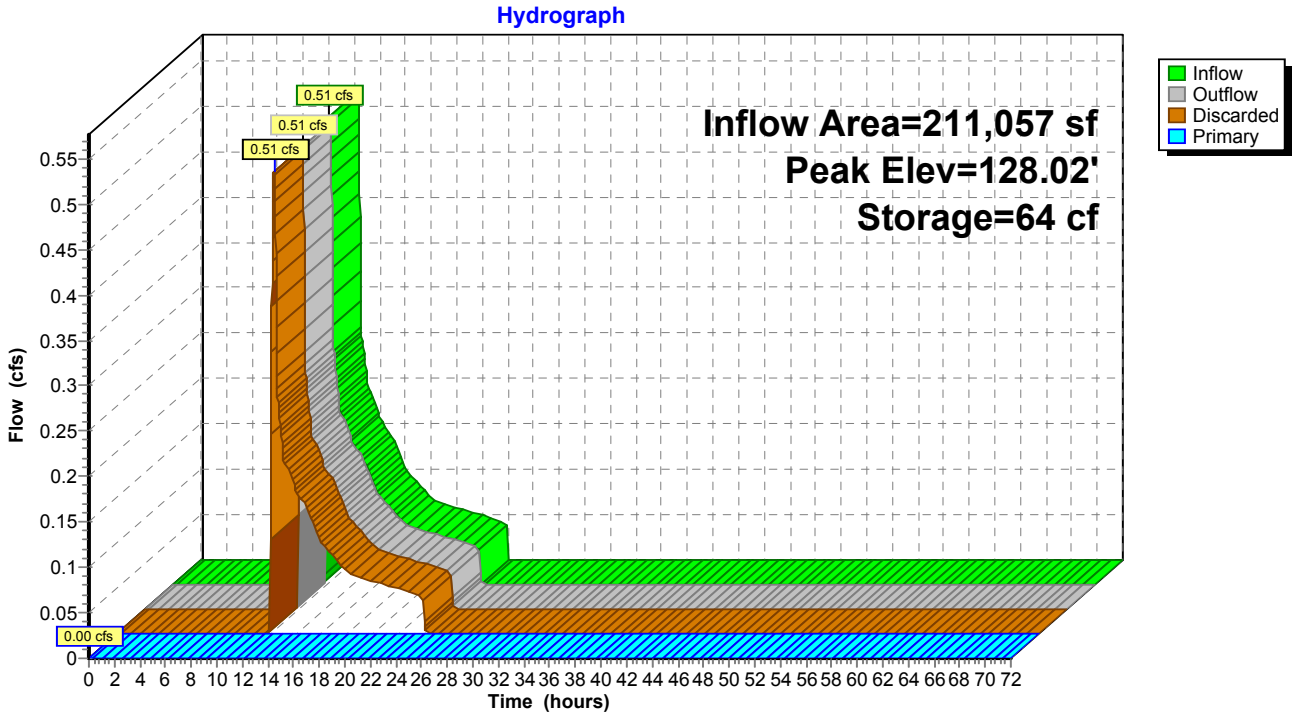
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



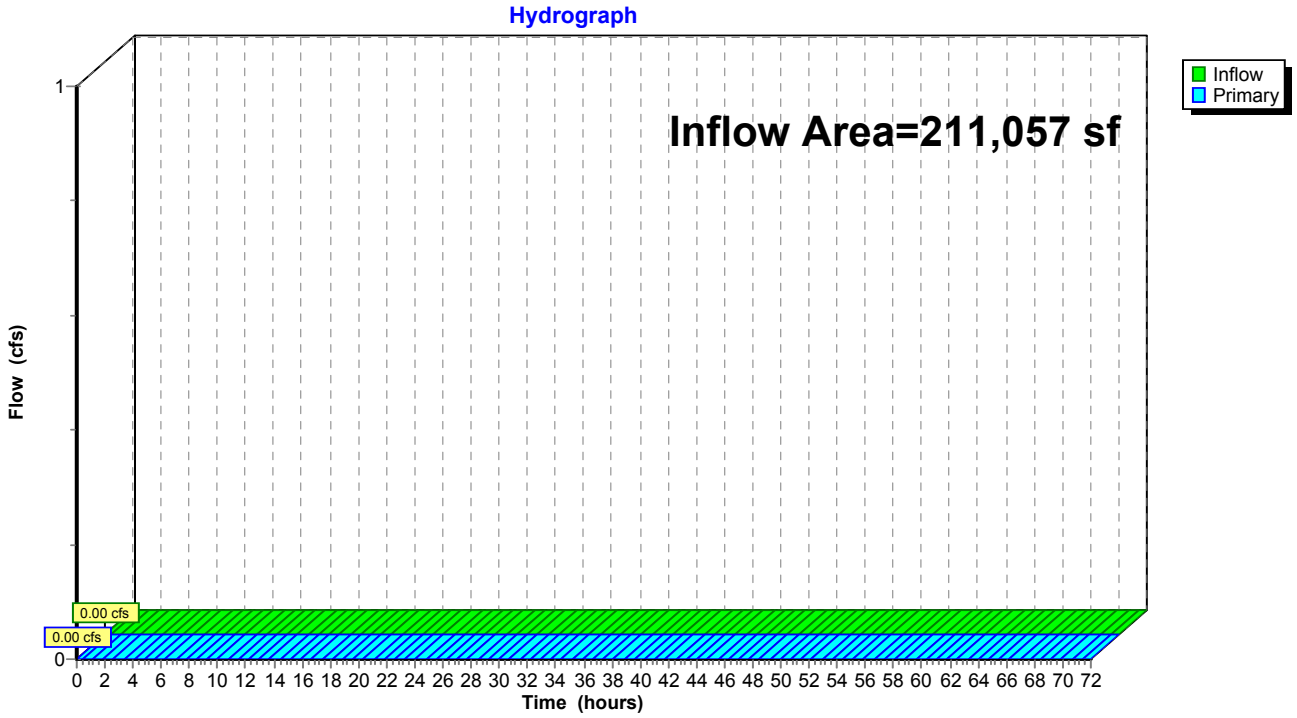
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=1.01"
Tc=0.0 min CN=54 Runoff=5.43 cfs 17,807 cf

Pond CH-1: Chambers Peak Elev=128.83' Storage=3,246 cf Inflow=5.43 cfs 17,807 cf
Discarded=1.31 cfs 17,807 cf Primary=0.00 cfs 0 cf Outflow=1.31 cfs 17,807 cf

Pond P1: Analysis Pt. 1 Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 211,057 sf Runoff Volume = 17,807 cf Average Runoff Depth = 1.01"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

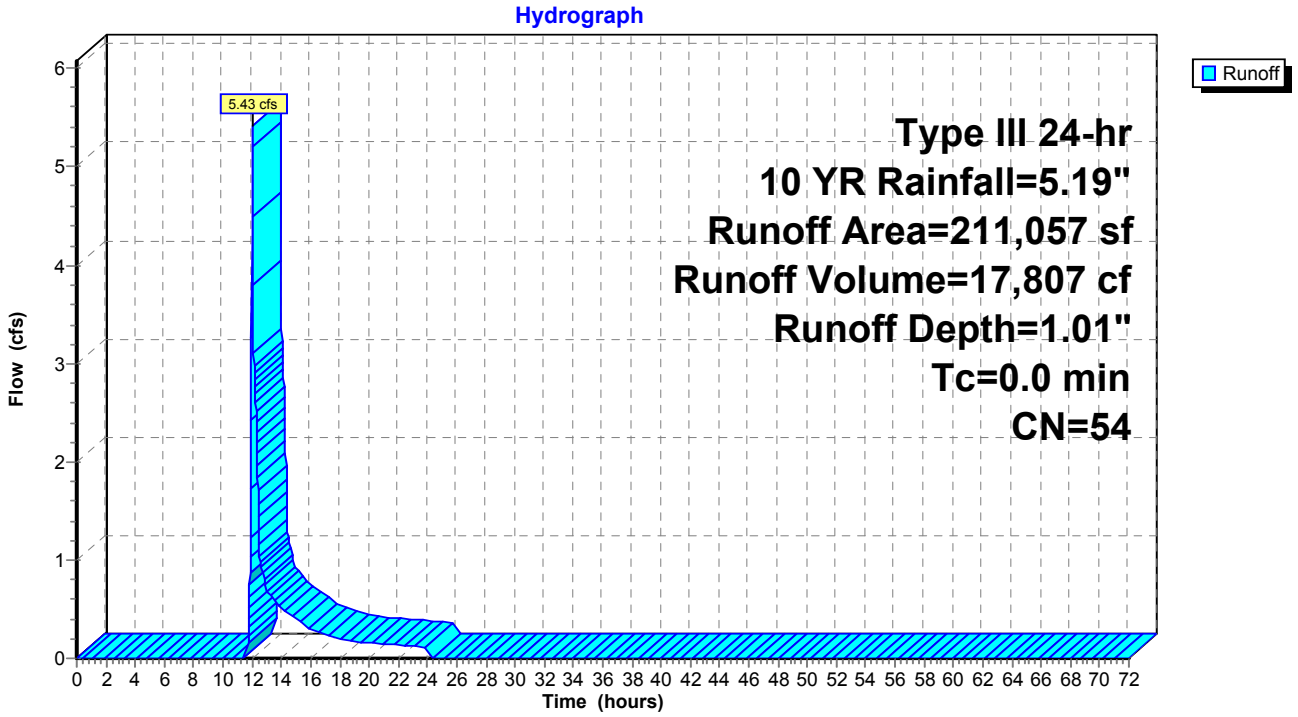
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 5.43 cfs @ 12.01 hrs, Volume= 17,807 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 YR Rainfall=5.19"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

Inflow Area =	211,057 sf, 31.11% Impervious, Inflow Depth = 1.01" for 10 YR event				
Inflow =	5.43 cfs @	12.01 hrs,	Volume=	17,807 cf	
Outflow =	1.31 cfs @	12.46 hrs,	Volume=	17,807 cf,	Atten= 76%, Lag= 26.8 min
Discarded =	1.31 cfs @	12.46 hrs,	Volume=	17,807 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 128.83' @ 12.46 hrs Surf.Area= 6,820 sf Storage= 3,246 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 14.2 min calculated for 17,802 cf (100% of inflow)
Center-of-Mass det. time= 14.2 min (901.5 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.31 cfs @ 12.46 hrs HW=128.83' (Free Discharge)
└─**4=Exfiltration** (Controls 1.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=128.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

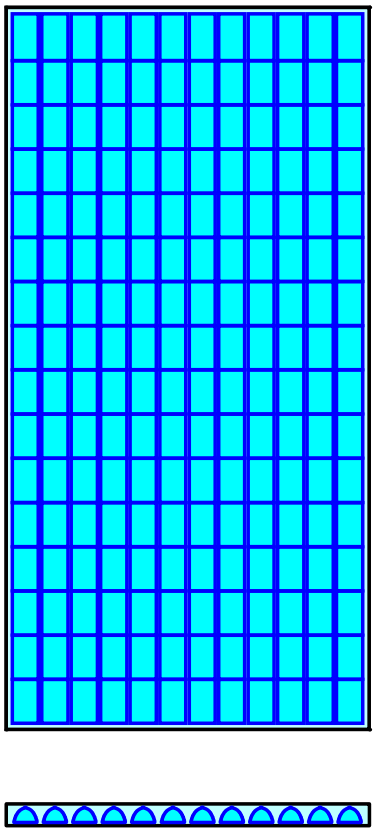
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

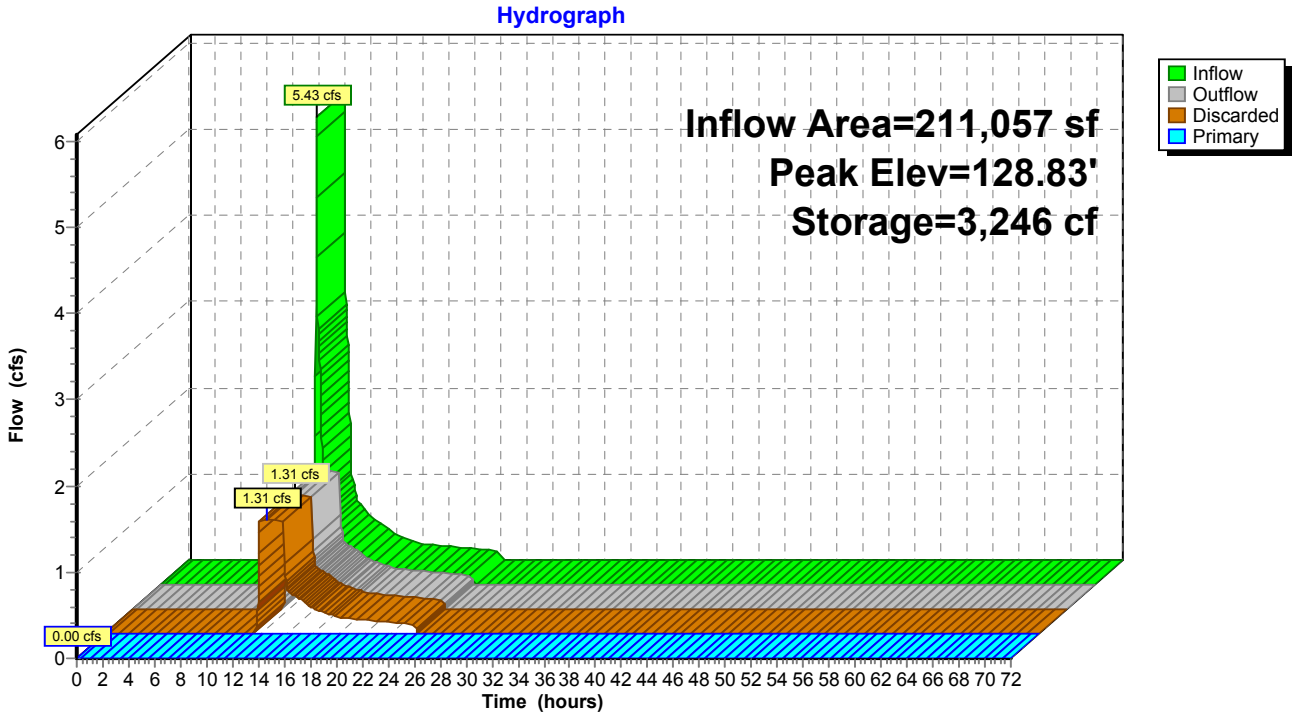
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



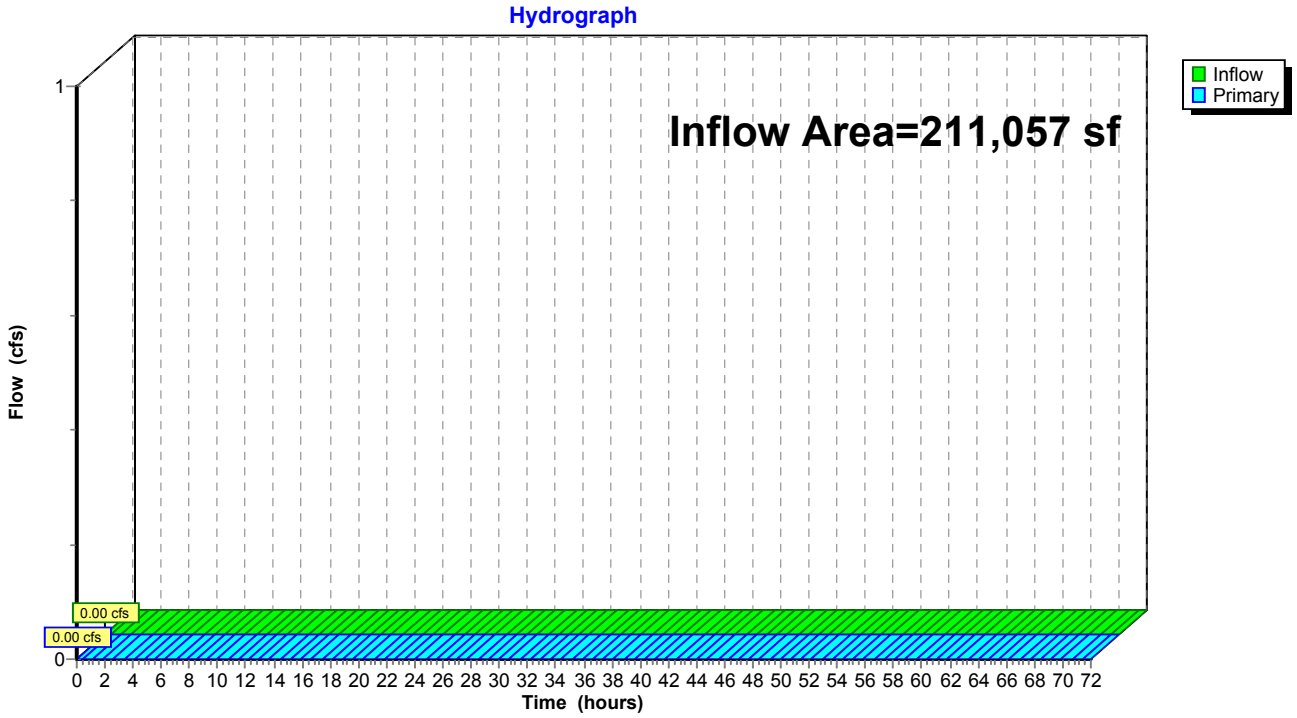
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	211,057 sf,	31.11% Impervious,	Inflow Depth =	0.00"	for 10 YR event
Inflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=1.65"
Tc=0.0 min CN=54 Runoff=10.08 cfs 28,944 cf

Pond CH-1: Chambers Peak Elev=129.64' Storage=7,718 cf Inflow=10.08 cfs 28,944 cf
Discarded=1.32 cfs 28,143 cf Primary=0.28 cfs 801 cf Outflow=1.60 cfs 28,944 cf

Pond P1: Analysis Pt. 1 Inflow=0.28 cfs 801 cf
Primary=0.28 cfs 801 cf

Total Runoff Area = 211,057 sf Runoff Volume = 28,944 cf Average Runoff Depth = 1.65"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

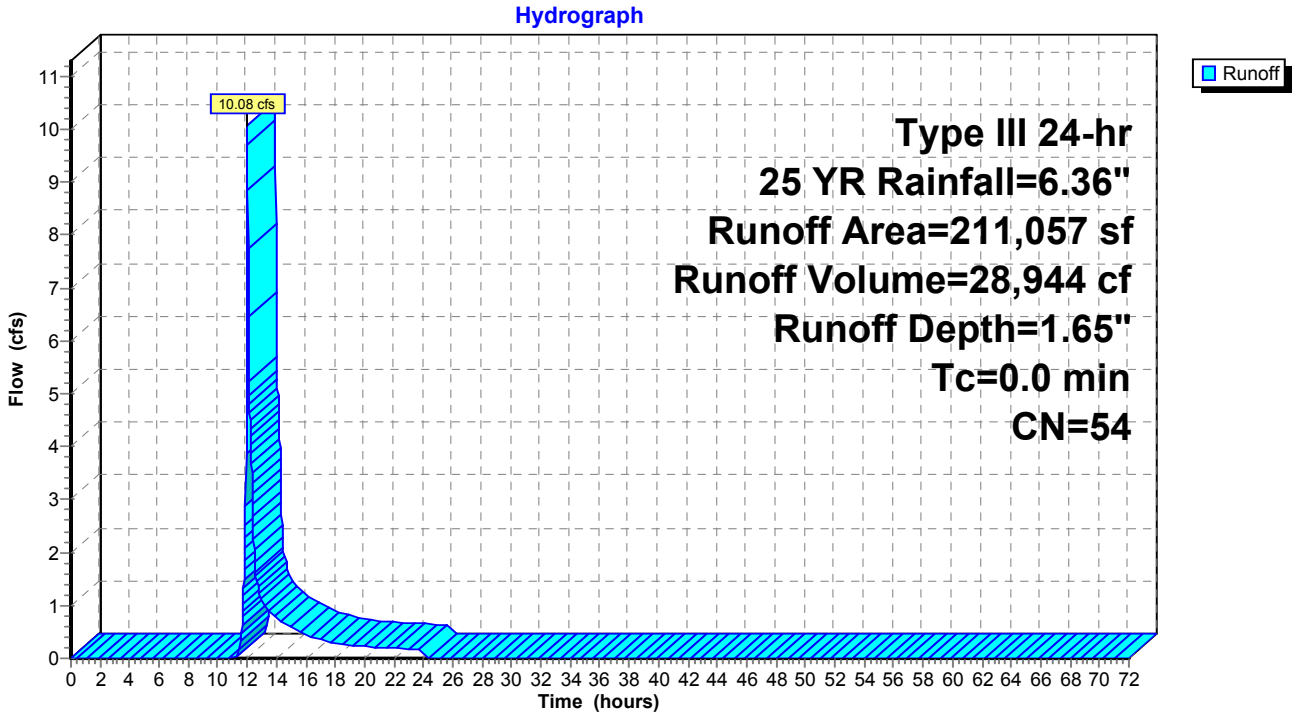
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 10.08 cfs @ 12.01 hrs, Volume= 28,944 cf, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25 YR Rainfall=6.36"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 1.65" for 25 YR event
Inflow = 10.08 cfs @ 12.01 hrs, Volume= 28,944 cf
Outflow = 1.60 cfs @ 12.51 hrs, Volume= 28,944 cf, Atten= 84%, Lag= 30.1 min
Discarded = 1.32 cfs @ 12.51 hrs, Volume= 28,143 cf
Primary = 0.28 cfs @ 12.51 hrs, Volume= 801 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 129.64' @ 12.51 hrs Surf.Area= 6,820 sf Storage= 7,718 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 41.7 min calculated for 28,944 cf (100% of inflow)
Center-of-Mass det. time= 41.7 min (911.9 - 870.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.32 cfs @ 12.51 hrs HW=129.64' (Free Discharge)
└─**4=Exfiltration** (Controls 1.32 cfs)

Primary OutFlow Max=0.28 cfs @ 12.51 hrs HW=129.64' (Free Discharge)
└─**1=Culvert** (Passes 0.28 cfs of 2.54 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.98 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

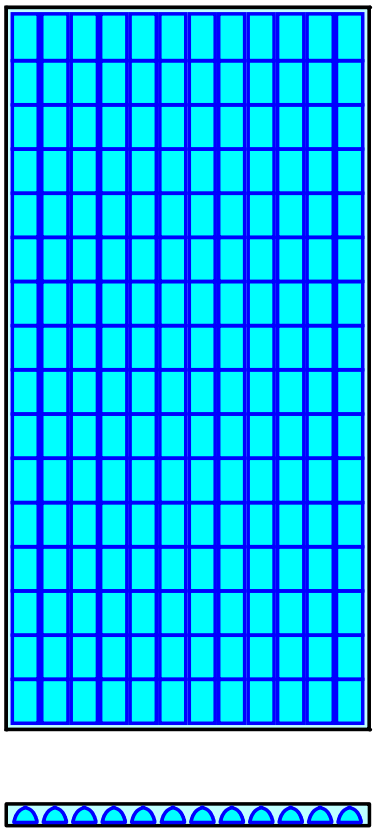
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

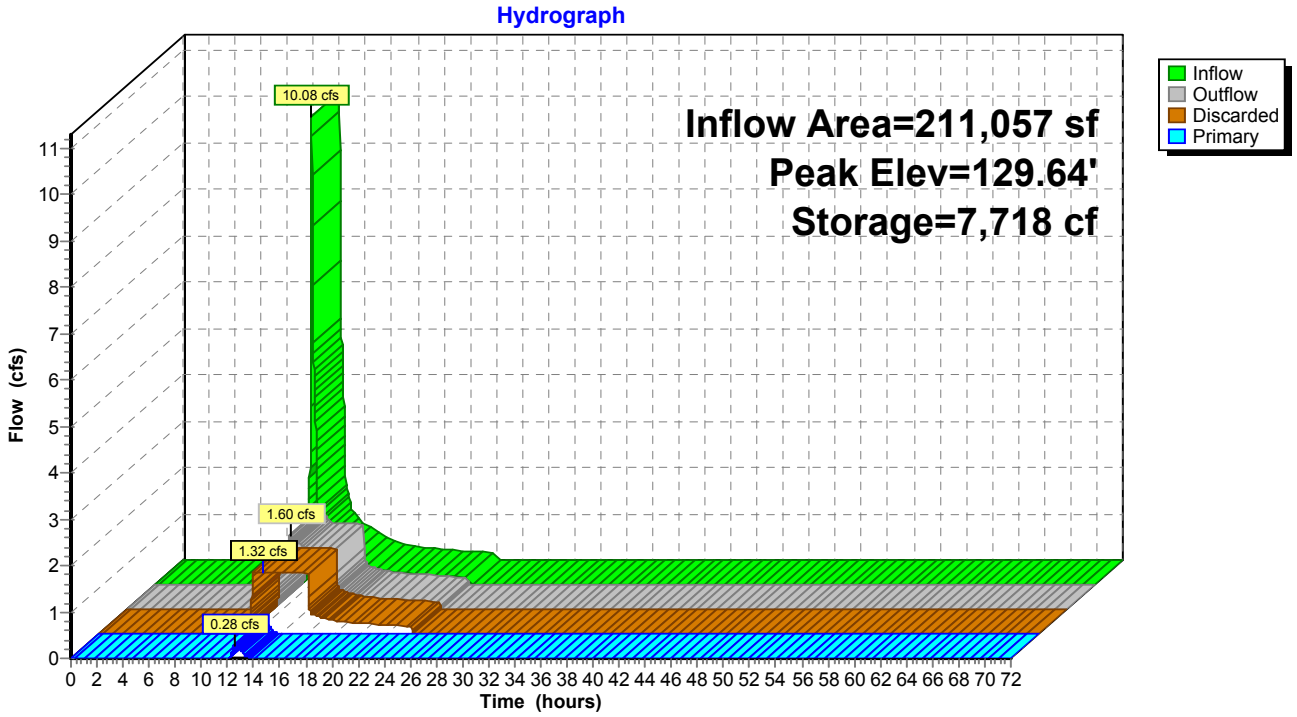
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



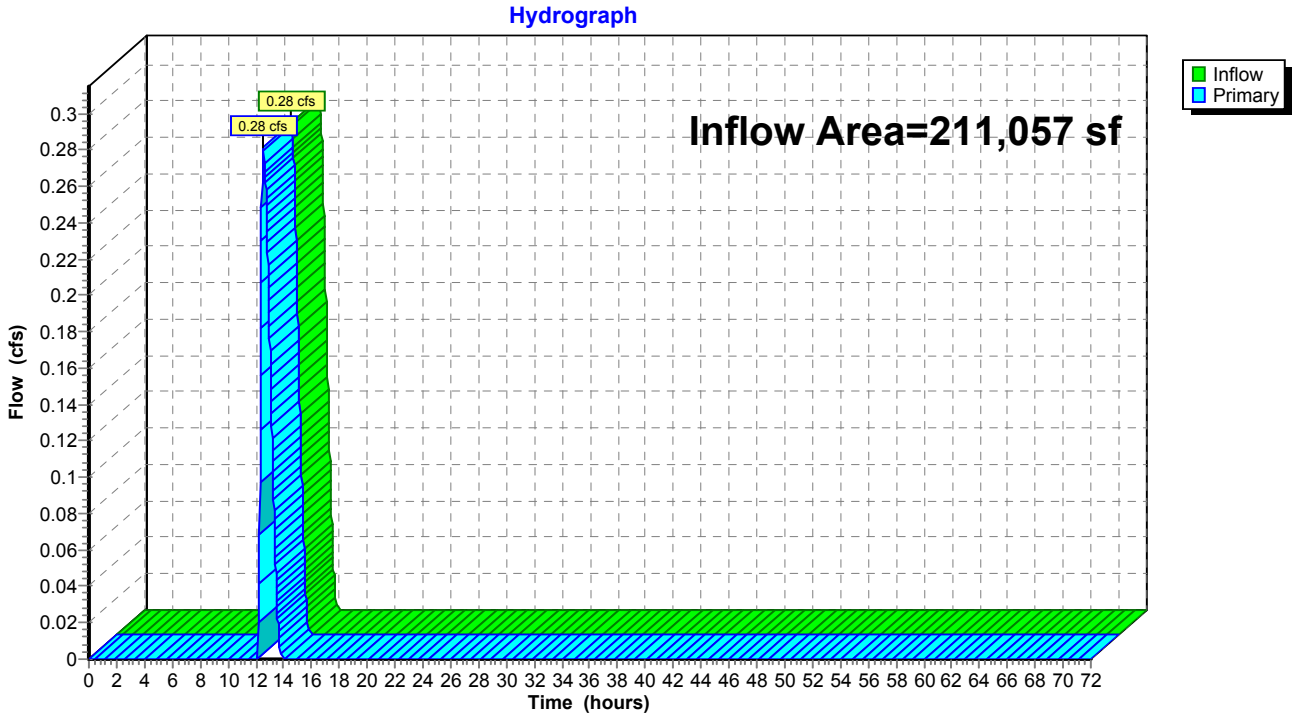
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.05" for 25 YR event
Inflow = 0.28 cfs @ 12.51 hrs, Volume= 801 cf
Primary = 0.28 cfs @ 12.51 hrs, Volume= 801 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=2.79"
Tc=0.0 min CN=54 Runoff=18.31 cfs 49,077 cf

Pond CH-1: Chambers Peak Elev=131.84' Storage=14,891 cf Inflow=18.31 cfs 49,077 cf
Discarded=1.34 cfs 38,535 cf Primary=3.88 cfs 10,542 cf Outflow=5.22 cfs 49,077 cf

Pond P1: Analysis Pt. 1 Inflow=3.88 cfs 10,542 cf
Primary=3.88 cfs 10,542 cf

Total Runoff Area = 211,057 sf Runoff Volume = 49,077 cf Average Runoff Depth = 2.79"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

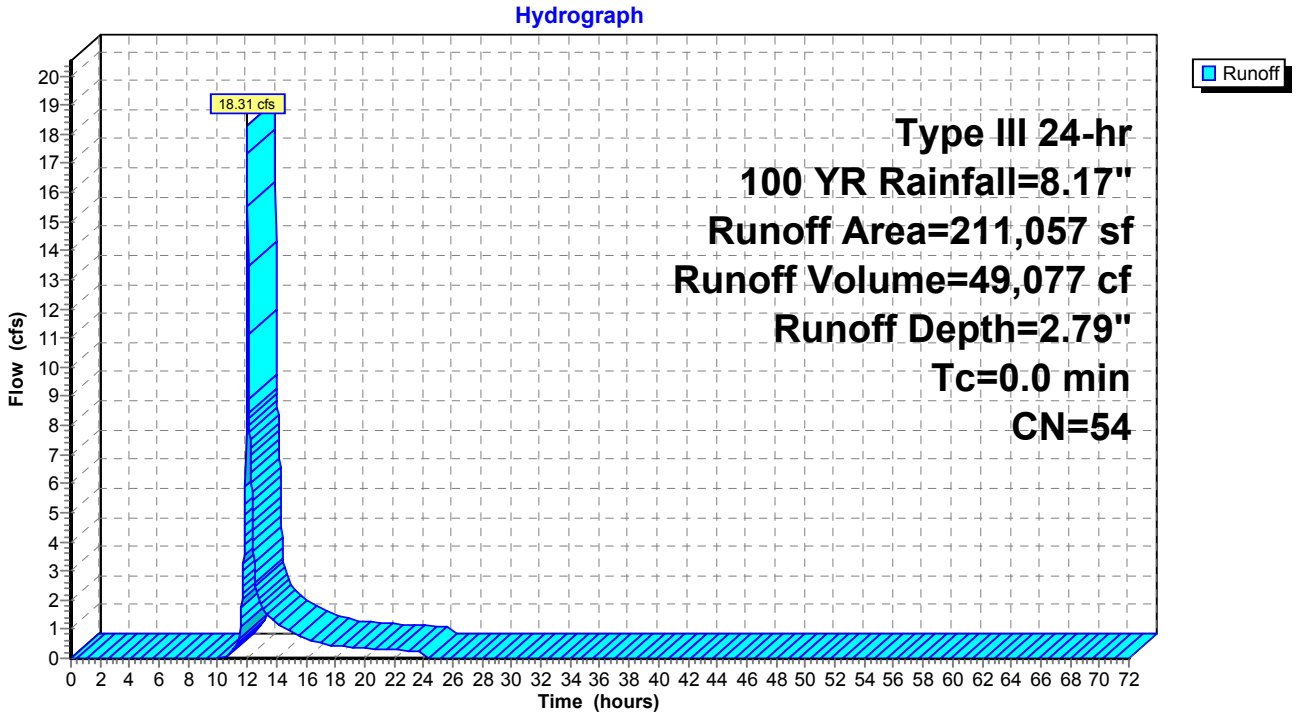
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 18.31 cfs @ 12.00 hrs, Volume= 49,077 cf, Depth= 2.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100 YR Rainfall=8.17"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area =	211,057 sf,	31.11% Impervious,	Inflow Depth =	2.79"	for 100 YR event
Inflow =	18.31 cfs @	12.00 hrs,	Volume=	49,077 cf	
Outflow =	5.22 cfs @	12.38 hrs,	Volume=	49,077 cf,	Atten= 71%, Lag= 22.7 min
Discarded =	1.34 cfs @	12.39 hrs,	Volume=	38,535 cf	
Primary =	3.88 cfs @	12.38 hrs,	Volume=	10,542 cf	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.84' @ 12.39 hrs Surf.Area= 6,820 sf Storage= 14,891 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 59.2 min calculated for 49,063 cf (100% of inflow)
Center-of-Mass det. time= 59.2 min (912.5 - 853.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.34 cfs @ 12.39 hrs HW=131.80' (Free Discharge)
└─**4=Exfiltration** (Controls 1.34 cfs)

Primary OutFlow Max=3.58 cfs @ 12.38 hrs HW=131.80' (Free Discharge)
└─**1=Culvert** (Passes 3.58 cfs of 4.15 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.42 cfs @ 7.23 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.16 cfs @ 1.80 fps)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

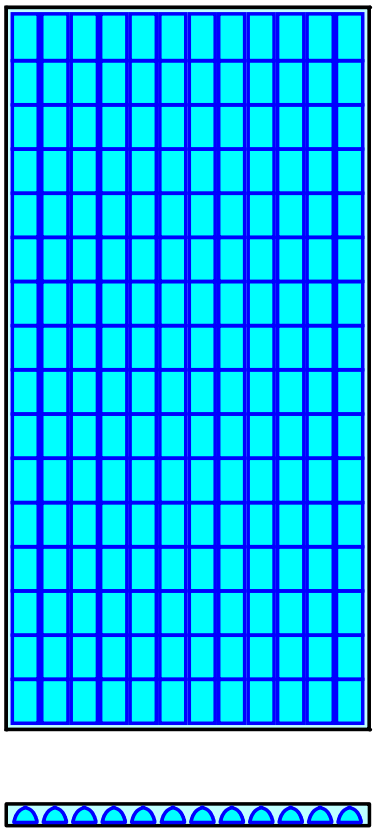
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

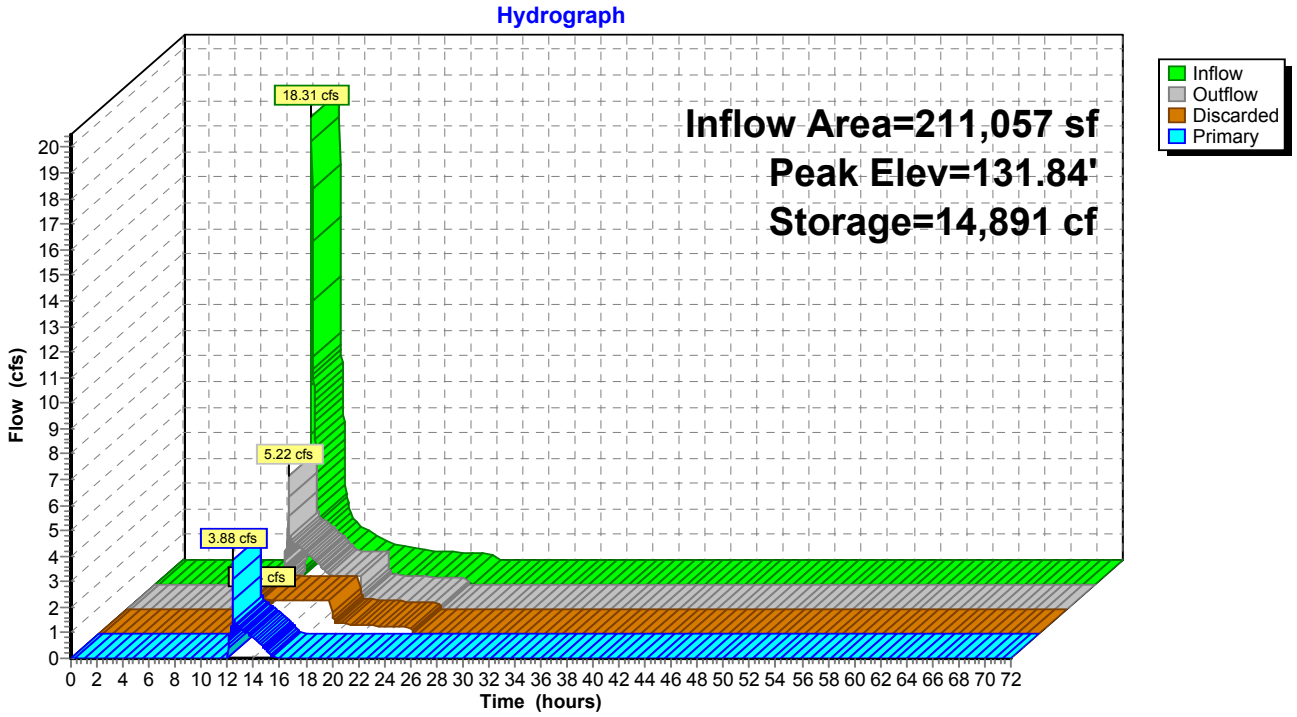
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



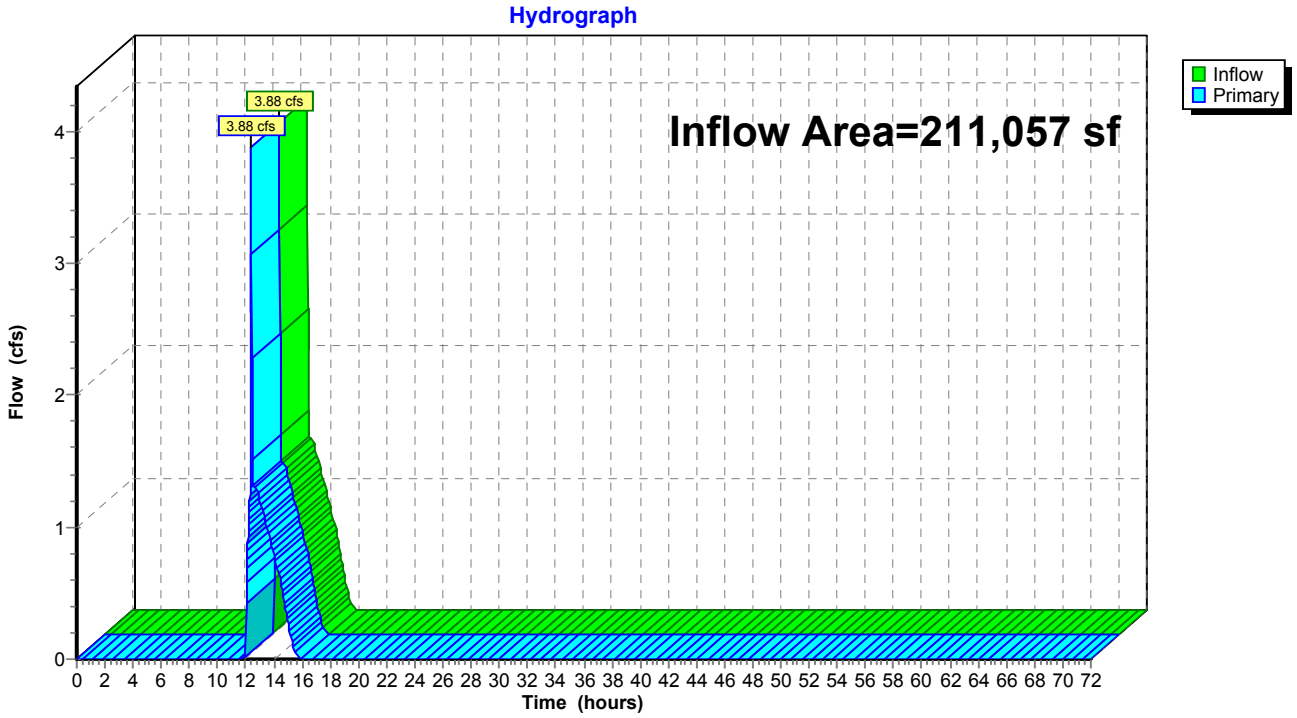
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.60" for 100 YR event
Inflow = 3.88 cfs @ 12.38 hrs, Volume= 10,542 cf
Primary = 3.88 cfs @ 12.38 hrs, Volume= 10,542 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Attachment E - Calculations

Wayland - High School Athletic Facilities
Recharge Calculation

Required Recharge

Area Summary	
	Area (SF)*
Existing Impervious	0
Proposed Impervious	65,663
Required Recharge Area *(Proposed - Existing)*	65,663

* Areas calculated in HydroCAD

Note: Site consists of HSG A soils.

Hydrologic Soil Group Summary		
Group	Target Depth Factor (in)	Area (SF)
A	0.6	65,663
B	0.35	0
C	0.25	0
D	0.1	0

Required Recharge (*Rv*) Calculation:

Rv = Target Depth Factor x Δ Impervious Area
Rv = 0.6 x (1/12) x 65,663
Rv = 3,283 CF

Proposed Recharge Summary

Location	Volume (CF)*	Description
Underground Chambers	5,564	Chamber Field
Total	5,564	

Rv = 3,283 CF
Provided recharge = 5,564 CF

Recharge Requirement is met.

*Note: Volume numbers listed above reflect static volume available in recharge systems. Actual volume of recharged water will be much higher due to dynamic action reflected in the HydroCAD analysis.

Wayland-Loker Field
Water Quality Volume Calculation
Jul-18

Required Water Quality Storage
Proposed Paved Area sf x 1" x 1'/12"= Required WQ Storage CF

Location	Proposed Impervious Area (sqft)	Required WQ Storage (cf)	Provided WQ Storage (cf)	Description
Facility Site	65,663	5,472	5,564	Chamber Field (Volume below lowest outlet)

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Wayland High School Athletic Fields - Parking Lot

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Subsurface Infiltration Structure	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **Wayland HS Athletic Fields**
Prepared By: **JIP**
Date: **7/11/2018**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

Attachment F - Long Term Pollution Prevention Plan

Long Term Pollution Prevention Plan
Wayland High School Athletic Facilities Improvements
Wayland, MA

To meet the requirements of Standard 4 of the Massachusetts Stormwater Handbook, this Long Term Pollution Prevention Plan is provided to identify the proper procedures of practices for source control and pollution prevention.

Storage and Handling of Oil and other Hazardous Materials

There will be no oil or other hazardous materials stored onsite.

Salt Storage

There will be no salt storage onsite.

Vehicle Storage and Washing

Vehicles will only park on a temporary basis during use of the field. Vehicles will not be stored or washed onsite.

Operation and Maintenance of Stormwater Control Structures

Included in Attachment H of this appendix is the Operation and Maintenance plan for this site, which includes street sweeping of the paved areas and periodic removal of sediment from catch basins and other stormwater structures. The Town will be responsible for implementing the plan.

Landscaping

The landscaped areas will be maintained by the Town. Fertilizers will not be stored onsite.

De-icing & Snow Disposal

The Town intends to utilize salt and sand to treat the paved surfaces of the driveways and main circulation areas during snow and ice events.

Attachment G - Construction Period Pollution and Erosion and Sedimentation Control Plan

Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

SECTION 1: Introduction

The project applicant, Wayland High School is proposing the replacement of their current turf field, and their existing tennis courts. They are also proposing the addition of a girls softball field and basketball courts. These major renovations will be accompanied by more minor additions such as bleachers, parking areas, a ticket booth, and additional bathroom facilities.

As part of this project, this "Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan" has been created to insure that no further disturbance to the wetland resource is created during the construction of these improvements.

SECTION 2: Construction Period Pollution Prevention Measures

Best Management Practices (BMPs) will be utilized as Construction Period Pollution Prevention Measures to reduce potential pollutants and prevent any off-site discharge. The objectives of the BMPs for construction activity are to minimize the disturbed areas, stabilize any disturbed areas, control the site perimeter and retain sediment. Both erosion and sedimentation controls and non-stormwater best management measures will be used to minimize site disturbance and ensure compliance with the performance standards of the WPA and Stormwater Standards. Measures will be taken to minimize the area disturbed by construction activities to reduce the potential for soil erosion and stormwater pollution problems. In addition, good housekeeping measures will be followed for the day-to-day operation of the construction site under the control of the contractor to minimize the impact of construction. This section describes the control practices that will be in place during construction activities. All recommended control practices will comply with the standards set in the MA DEP Stormwater Policy Handbook.

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

In order to minimize disturbed areas all work will be completed within well-defined work limits. These work limits are shown on the construction plans. The Contractor shall not disturb native vegetation in the undisturbed wetland area without prior approval from the Engineer. The Contractor will be responsible to make sure that all workers know the proper work limits and do not extend their work into the undisturbed areas. The protective measures are described in more detail in the following sections.

2.2 Control Stormwater Flowing onto and through the project

All construction areas adjacent to wetlands will be lined with compost filter tubes and silt fence. The tubes and silt fence will be inspected daily and accumulated silt will be removed as appropriate. In addition, any storage of material will require a second level of

protection by surrounding the areas with another row of compost filter tubes. A stabilized truck entrance/exit is proposed so that equipment visiting the site can remove any accumulated dirt and mud from vehicles to prevent tracking the mud onto public roads.

2.3 Stabilize Soils

The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, mulching, the use of erosion control mats, or other protective measures shall be provided as specified.

The Contractor shall take account of the conditions of the soil where erosion control seeding will take place to insure that materials used for re-vegetation are adaptive to the sediment control.

2.4 Proper storage and cover of any stockpiles

The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer.

No excavated materials or materials used in backfill operations shall be stored within a minimum distance of fifty (50) feet of any watercourse or any wetlands. Adequate measures for erosion and sediment control such as the placement of compost filter tubes around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.

There shall be no storage of equipment or materials in areas designated as wetlands.

The Engineer may designate a particular area or areas where the Contractor may store materials used in his operations.

2.5 Perimeter Controls and Sediment Barriers

Erosion control lines as described in Section 5 will be utilized to ensure that no sedimentation occurs outside the perimeter of the work area.

2.6 Storm Drain Inlet Protection

Storm Drain inlets (catch basins) will be fitted with a protective insert.

2.7 Retain Sediment On-Site

The Contractor will be responsible to monitor all erosion control measures. Whenever

necessary the Contractor will clear all sediment from the compost filter tubes and silt fence that have been silted up during construction. Daily monitoring should be conducted using the attached Monitoring Form.

The following good housekeeping practices will be followed on-site during the construction project.

2.8 Material Handling and Waste Management

All materials stored on-site will be stored in a neat, orderly manner in appropriate containers. All materials will be kept in their original containers with the original manufacturer's label. Substances will not be mixed with one another unless recommended by the manufacturer.

All waste materials will be collected and stored in a securely lidded metal container from a licensed management company. The waste and any construction debris from the site will be hauled off-site daily and disposed of properly. The contractor will be responsible for all waste removal. Manufacturer's recommendations for proper use and disposal will be followed for all materials. Sanitary waste will be collected from the portable units a minimum of once a week, by a licensed sanitary waste management contractor.

2.9 Designated Washout Areas

The Contractor shall use washout facilities at their own facilities, unless otherwise directed by the Engineer.

2.10 Proper Equipment/Vehicle Fueling and Maintenance Practices

On-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. To ensure that leaks on stored equipment do not contaminate the site, oil-absorbing mats will be placed under all equipment during storage. Regular fueling and service of the equipment may be performed using approved methods and with care taken to minimize chance of spills. Repair of equipment or machinery within the 100' water resources area shall not be allowed without the prior approval of the Engineer. Any petroleum products will be stored in tightly sealed containers that are clearly labeled.

2.11 Equipment/Vehicle Washing

The Contractor will be responsible to ensure that no equipment is washed on-site.

SECTION 3: Spill Prevention and Control Plan

The Contractor will be responsible for preventing spills in accordance with the project

specifications and applicable federal, state and local regulations. The Contractor will identify a properly trained site employee, involved with the day-to-day site operations to be the spill prevention and cleanup coordinator. The name(s) of the responsible spill personnel will be posted on-site. Each employee will be instructed that all spills are to be reported to the spill prevention and cleanup coordinator.

3.1 Spill Control Equipment

Spill control/containment equipment will be kept in the Work Area. Materials and equipment necessary for spill cleanup will be kept either in the Work Area or in an otherwise accessible on-site location. Equipment and materials will include, but not be limited to, absorbent booms/mats, brooms, dust pans, mops, rags, gloves, goggles, sand, plastic and metal containers specifically for this purpose. It is the responsibility of the Contractor to ensure the inventory will be readily accessible and maintained.

3.2 Notification

All workers will be directed to inform the on-site supervisor of a spill event. The supervisor will assess the incident and initiate proper containment and response procedures immediately upon notification. Workers should avoid direct contact with spilled materials during the containment procedures. Primary notification of a spill should be made to the local Fire Department and Police Departments. Secondary Notification will be to the certified cleanup contractor if deemed necessary by Fire and/or Police personnel. The third level of notification is to the DEP. The specific cleanup contractor to be used will be identified by the Contractor prior to commencement of construction activities.

3.3 Spill Containment and Clean-Up Measures

Spills will be contained with granular sorbent material, sand, sorbent pads, booms or all of the above to prevent spreading. Certified cleanup contractors should complete spill cleanup. The material manufacturer's recommended methods for spill cleanup will be clearly posted and on-site personnel will be made aware of the procedures and the location of the information and cleanup supplies.

3.4 Hazardous Materials Spill Report

The Contractor will report and record any spill. The spill report will present a description of the release, including the quantity and type of material, date of the spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

40 CFR Part 117, 40 CFR Part 302 and the State requirements specified under the Massachusetts Contingency Plan (M.C.P) relating to spills or other releases of oils or hazardous substances. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117 or 40 CFR Part 302, occurs during a twenty-four (24) hour period, the Contractor is required to comply with the response requirements of the above mentioned regulations. Spills of oil or hazardous material in excess of the reportable quantity will be reported to the National Response Center (NRC).

SECTION 4: Contact Information/Responsible Parties

Owner/Operator:
Town of Wayland
41 Cochituate Road
Wayland, MA 01778

Engineer:
James Pearson, P.E.
Weston & Sampson, Inc.
5 Centennial Drive
Peabody, MA 01960
978-532-1900

Site Inspector:
TBD

Contractor:
TBD

SECTION 5: Erosion and Sedimentation Control

Erosion and Sedimentation Controls are shown on the project plans. In addition a technical specification (***Section 01570 Environmental Protection***) has been included as part of Appendix D, which details all Erosion and Sedimentation controls.

SECTION 6: Site Development Plans

A full set of site development plans are included with this submittal.

SECTION 7: Operation and Maintenance of Erosion Control

The erosion control measures will be installed as detailed in the technical specification ***01570 Environmental Protection***. If there is a failure to the controls the Contractor, under the supervision of the Engineer, will be required to stop work until the failure is repaired.

Periodically throughout the work, whenever the Engineer deems it necessary, the sediment that has been deposited against the controls will be removed to ensure that the controls are working properly.

SECTION 8: Inspection Schedule

During construction the erosion and sedimentation controls will be inspected daily. Once the Contractor is selected, an on site inspector will be selected to work closely with the Engineer to insure that all erosion and sedimentation controls are in place and working properly. An Inspection Form is included.

Inspection Form

Inspected By: _____ Date: _____Time:_____

YES	NO	DOES NOT APPLY	ITEM
			Do any erosion/siltation control measures require repair or clean out to maintain adequate function?
			Is there any evidence that sediment is leaving the site and entering the wetlands?
			Are any temporary soil stockpiles or construction materials located in non-approved areas?
			Are on-site construction traffic routes, parking, and storage of equipment and supplies located in areas not specifically designed for them?

Specific location, current weather conditions, and action to be taken:

_____

_____

_____

_____

_____

Other Comments:

_____

_____

Pending the actions noted above I certify that the site is in compliance with the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan.

Signature: _____ Date: _____

Attachment H - Operations and Maintenance Plan

Attachment H –
Long-Term Operation and Maintenance Plan

1.0 Introduction

The following document has been written to comply with the stormwater guidelines set forth by the Massachusetts Department of Environmental Protection (MassDEP). The intent of these guidelines is to encourage Low Impact Development techniques to improve the quality of the stormwater runoff. These techniques, also known as Best Management Practices (BMPs) collect, store, and treat the runoff before discharging to adjacent environmental resources.

2.0 Purpose

This Operation and Maintenance Plan (O&M Plan) is intended to provide a mechanism for the consistent inspection and maintenance of each BMP installed on the project site. Included in this O&M Plan is a description of each BMP type and an inspection form for each BMP. The Town of Wayland is the owner and operator of the system and is responsible for its upkeep and maintenance.

This work will be funded on an annual basis through the town's operating budget. The estimated budget to maintain these BMPs utilizing the Municipal Services Department workforce and equipment is approximately $2,000 per year. This budget assumes that Town equipment will be utilized and no additional equipment rental is required.

In the event the Town sells the property, it is the Town's responsibility to transfer this plan as well as the past three years of operation and maintenance records to the new property owner.

3.0 BMP Description and Locations

3.1 Street Sweeping

Street sweeping consists of using a street sweeping machine to clean impervious areas of accumulated sediment, debris, and trash at parking areas.

3.2 Deep Sump Catch Basins

Deep sump catch basins will be located throughout the site and used as pre-treatment before entering the stormwater detention/infiltration basin. The deep sump catch basins are designed to remove trash, debris, and coarse sediment from the stormwater runoff.

3.4 Stormwater Infiltration Chambers

There is one underground infiltration chamber field in the facility that will receive stormwater. A stormwater infiltration chamber field will be built beneath the

parking lot area of the site. This structure also significantly mitigates TSS and provides for stormwater detention to mitigate peak discharges from the site.

4.0 Inspection, Maintenance Checklist and Schedule

4.1 Street Sweeping

Street sweeping shall be performed on the proposed parking lot areas at least twice per year, primarily in the spring and fall. Street sweeping shall be performed using an appropriate street sweeping machine.

In the event of contamination by a spill or other means, all street sweeping cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, street sweeping cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids. Also see attached operations and maintenance standards (reproduced from the Massachusetts Stormwater Handbook) at the end of this section

4.2 Deep Sump Catch Basins

Inspect and/or clean catch basin at least four times per year and at the end of foliage and snow removal seasons. Sediments must be removed whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. The catch basin and oil-grit separators should be cleaned a minimum of four times per year regardless of the amount of sediment in the basin. Catch basins shall be cleaned with clamshell buckets or vacuum trucks.

In the event of contamination by a spill or other means, all cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids. Also see attached operations and maintenance standards (reproduced from the Massachusetts Stormwater Handbook) at the end of this section

4.3 Stormwater Infiltration Chambers

The stormwater infiltration chamber field shall be inspected every six months during the first year, and annually thereafter. All accumulated sediment and debris in the isolation row(s) shall be removed using water jetting and vacuum truck equipment as described in manufacturer literature for the chamber system.

4.4 Inspections and Record Keeping

- An inspection form should be filled out each and every time maintenance work is performed.
- A binder should be kept by the owner that contains all of the completed inspection forms and any other related materials.
- A review of all Operation & Maintenance actions should take place annually to ensure that these Stormwater BMPs are being taken care of in the manner illustrated in this Operation & Maintenance Plan.
- All operation and maintenance log forms for the last three years, at a minimum, shall be kept on site at the owner.
- The inspection and maintenance schedule may be refined in the future based on the findings and results of this operation and maintenance program or policy.

5.0 Public Safety Features

Underground stormwater system measures are protected from access via manhole covers and grates.

6.0 Stormwater Management System Owner/Responsible Party

Town of Wayland
41 Cochituate Road
Wayland, MA 01778

This operation and Maintenance Plan will be recorded with the registry of deeds so that current and future owners are aware of the requirement for proper operation and maintenance of the onsite stormwater system.

Town of Wayland
High School Athletic Facilities
Permanent BMP Inspection Checklist

Street Sweeping

Frequency: Monthly, primarily in the spring and fall.

Location: Parking Lots and Driveways

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Sweep parking lot using street sweeping machine. All trash, debris, and sediments should be disposed of in accordance with local, state, and federal regulations.

Deep Sump Catch Basins

Frequency: Inspect and clean deep sump catch basins in March, June, September and December.

Structure Number: _____

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Clean units four times per year or whenever the depth of the deposits is greater than or equal to one half the depth from the bottom of the invert to the lowest pipe in the structure.

Stormwater Detention/Infiltration Chambers

Frequency: The detention/infiltration chambers should be inspected every six months during the first year and annually thereafter.

Structure No.: _____

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Inspect isolation rows. If visible sediment deposition has occurred, insert reverse water jet into isolation row via access manhole and jet sediment backward into manhole. Remove sediment with vacuum truck and dispose of sediment as required.

Attachment I - Illicit Discharge Compliance Statement

Illicit Discharge Compliance Statement

Section I – Purpose/Intent

The purpose of this document is to provide for the health, safety, and general welfare of the citizens of Wayland, Massachusetts through the regulation of non-stormwater discharges into existing outstanding resource areas near the Wayland Public Works Facility to the maximum extent practicable, as required by federal and state law. This document establishes methods for controlling the introduction of pollutants into existing outstanding resource areas to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

Section II - Definitions

For the purposes of this statement, the following shall mean:

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity: Activities subject to the Massachusetts Erosion and Sedimentation Control Act or NPDES Construction Permits. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous Materials: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Connection: An illegal connection is defined as either of the following:

a. Any pipe, open channel, drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the outstanding resource area including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water, regardless of whether said drain or connection has been previously allowed, permitted, or approved by an authorized enforcement agency; or
b. Any pipe, open channel, drain or conveyance connected to the Town of Wayland storm water treatment system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Illicit Discharge: Any direct or indirect non-stormwater discharge to the Town of Wayland stormwater treatment system, except as exempted in Section II of this ordinance.

Industrial Activity: Activities subject to NPDES Industrial Permits as defined in 40CFR, Section 122.26 (b) (14).

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit: A permit issued by MassDEP under authority delegated pursuant to 33 USC § 1342 (b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Town of Wayland Stormwater Treatment System: Any facility, owned or maintained by the town, designed or used for collecting and/or conveying stormwater, including but not limited to roads with drainage systems, Town of Wayland streets, curbs, gutters, inlets, catch basins, piped storm drains, pumping facilities, infiltration, retention and detention basins, natural and man-made or altered drainage channels, reservoirs, and other drainage structures.

Non-Stormwater Discharge: Any discharge to the storm drain system that is not composed entirely of stormwater.

Person: Any individual, association, organization, partnership, firm, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, interstate body, or any other legal entity.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; petroleum hydrocarbons; automotive fluids; cooking grease; detergents (biodegradable or otherwise); degreasers; cleaning chemicals; non-hazardous liquid and solid wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; liquid and solid wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; concrete and cement; and noxious or offensive matter of any kind.

Pollution: Contamination or other alteration of any water's physical, chemical, or biological properties by addition of any constituent including but not limited to a change in temperature, taste, color, turbidity, or odor of such waters, or the discharge of any liquid, gaseous, solid, radioactive, or other substance into any such waters as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to the public health, safety, welfare, or environment, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Stormwater: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Wastewater: Any water or other liquid discharged from a facility, that has been used, as for washing, flushing, or in a manufacturing process, and so contains waste products.

Section III - Prohibitions

Prohibition of Illicit Discharges:

No person shall throw, drain, or otherwise discharge, cause or allow others under its control to throw, drain, or otherwise discharge into the Town of Wayland stormwater treatment system or watercourses any materials, including but not limited to, any pollutants or waters containing any pollutants, other than stormwater. The commencement, conduct or continuance of any illicit discharge to the storm drain system is prohibited except as described as follows:

1. Water line flushing performed by a government agency, other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, natural riparian habitat or wetland flows, and any other water source not containing pollutants;

2. Discharges or flows from fire fighting, and other discharges specified in writing by the Town of Wayland as being necessary to protect public health and safety;

3. Dye testing is an allowable discharge, but requires a verbal notification to the Town of Wayland prior to the time of the test;

4. Any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for a discharge to the Town of Wayland stormwater treatment system.

Section IV - Industrial or Construction Activity Discharges

Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the Town of Wayland Department of Public Works prior to allowing discharges to the Wayland stormwater treatment system.

Section V - Notification of Spills and Accidental Discharges

Notwithstanding other requirements of law, as soon as any person responsible for a facility, activity or operation, or responsible for emergency response for a facility, activity or operation has information of any known or suspected release of pollutants or non-stormwater discharges from that facility, activity, or operation which are resulting or may result in illicit discharges or pollutants discharging into stormwater, the Town of Londmeadow stormwater treatment system, State Waters, or Waters of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release so as to minimize the effects of the discharge. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the Town of Wayland Department Public Works in person or by phone no later than the next business day, including the nature, quantity and time of occurrence of the discharge. Notifications in person or by phone shall be confirmed by written notice, via certified mail return receipt requested addressed to the Town of Wayland Department of Public Works within three (3) business days of the initial notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

IN WITNESS WHEREOF the parties hereto have executed copies of this Agreement on the _____ day of _____, _____.

_____
Town of Wayland

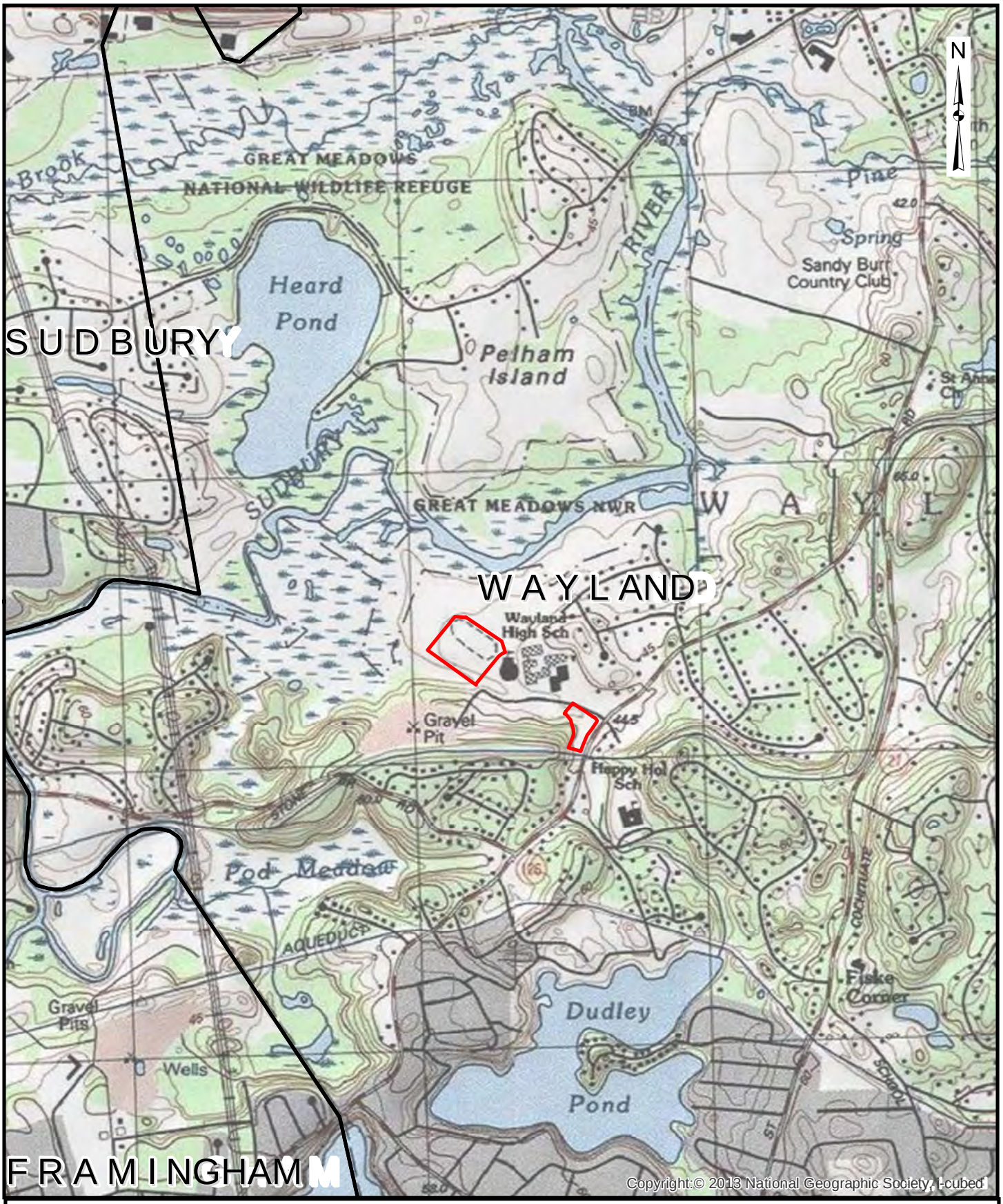


FIGURE 1
Wayland Highschool Athletic Facilities
Wayland, Massachusetts

Locus Map

Work Area

1,200 0 1,200
Scale In Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\GIS\Wayland HS Athletic Facilities\Figure 1- Locus.mxd User: GasparA Saved: 7/5/2018 2:58:02 PM Opened: 7/5/2018 2:58:17 PM

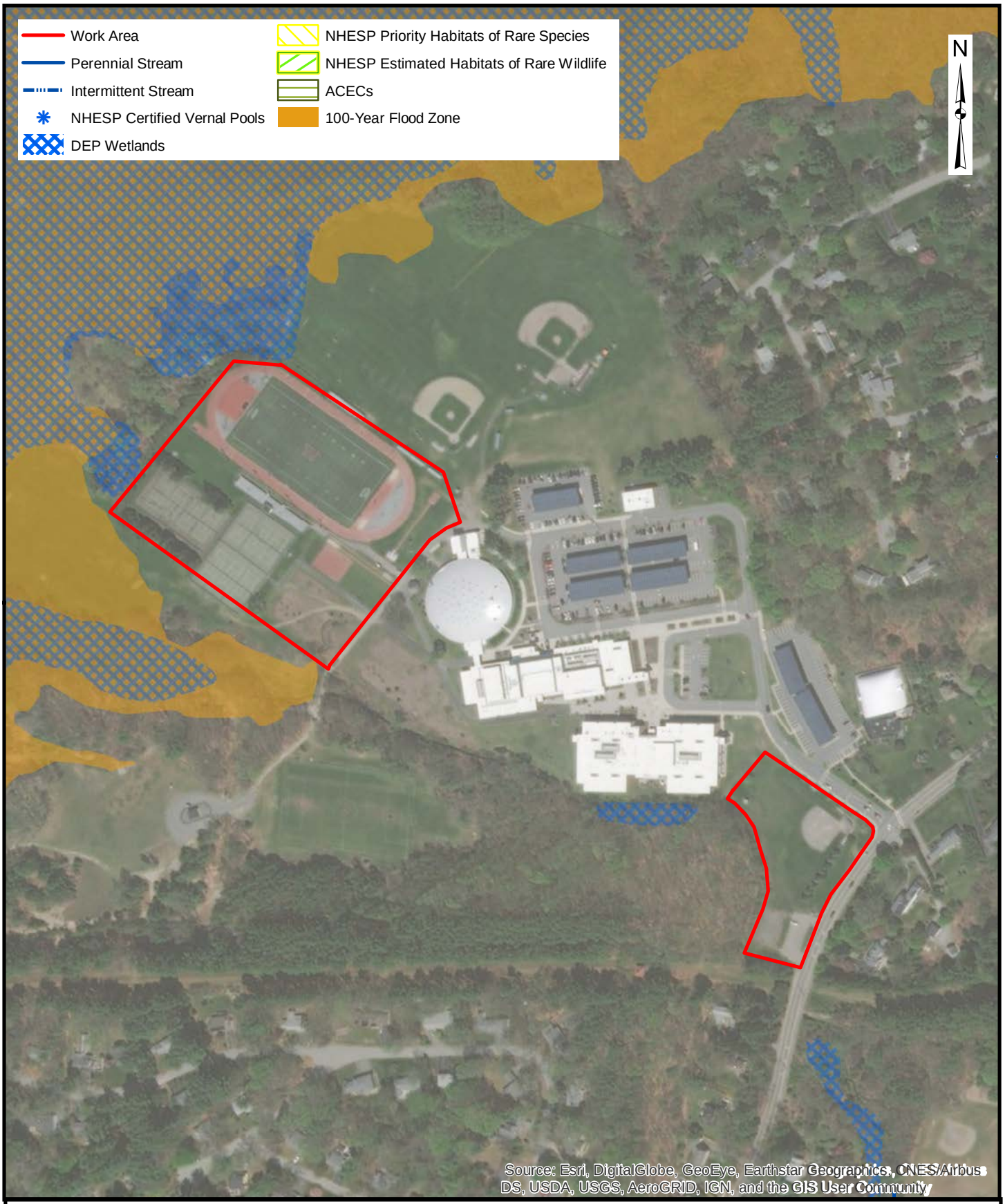


FIGURE 2
Wayland Highschool Athletic Facilities
Wayland, Massachusetts

ENVIRONMENTAL RECEPTORS

200 0 200
Scale In Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\GIS\Wayland HS Athletic Facilities\Figure 1 - Env Receptor.mxd User: GasparA Saved: 7/5/2018 2:46:33 PM Opened: 7/5/2018 2:46:55 PM

National Flood Hazard Layer FIRMette

FEMA

42°20'44.46"N

71°22'44.96"W

71°22'17.50"W

42°20'17.87"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/6/2018 at 2:17:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

SECTION 01562

DUST CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION:

This section of the specification covers the control of dust via calcium chloride and water, complete.

PART 2 - PRODUCTS

2.01 CALCIUM CHLORIDE:

A. Calcium chloride shall conform to the requirements of AASHTO-M 144, Type I or Type II and Specification for Calcium Chloride, ASTM D98. The calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.

B. Calcium chloride failing to meet the requirements of the aforementioned specifications or that which has become caked or sticky in shipment, may be rejected by the Engineer.

2.02 WATER:

A. Water shall not be brackish and shall be free from oil, acid, and injurious alkali or vegetable matter.

PART 3 - EXECUTION

3.01 APPLICATION:

A. Calcium chloride shall be applied when ordered by the Engineer and only in areas which will not be adversely affected by the application. See Section 01570, ENVIRONMENTAL PROTECTION.

B. Calcium chloride shall be uniformly applied at the rate of 1-1/2 pounds per square yard or at any other rate as required by the Engineer. Application shall be by means of a

mechanical spreader, or other approved methods. The number and frequency of applications shall be determined by the Engineer.

C. Water may be sprinkler applied with equipment including a tank with gauge-equipped pressure pump and a nozzle-equipped spray bar.

D. Water shall be dispersed through the nozzle under a minimum pressure of 20 pounds per square inch, gauge pressure.

END OF SECTION

Document1291

SECTION 01570

ENVIRONMENTAL PROTECTION

PART 1 – GENERAL

1.01 DESCRIPTION:

A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.

B. The requirements set forth in this section of the specifications apply to construction in and adjacent to wetlands, unless otherwise specifically stated.

C. All work under this Contract shall be in accordance with the Conservation Commissions' Orders of Conditions as well as any conditional requirements applied.

D. Prior to commencement of work, the Contractor shall meet with representatives of the Engineer to develop mutual understandings relative to compliance of the environmental protection program.

1.02 SUBMITTALS:

A. The Contractor shall submit for approval six sets of details and literature fully describing environmental protection methods to be employed in carrying out construction activities within 100 feet of wetlands or across areas designated as wetlands.

PART 2 - PRODUCTS

2.01 STRAW BALES:

A. Straw bales shall consist of certified seed free stems of agricultural grain and cereal crops and shall be free of grasses and legumes. Standard bales shall be 14-inches high, 18- inches wide and 36- to 40-inches long tied with polypropylene twine and weigh within 5 percent of 7 lbs. per cubic ft.

2.02 CATCH BASIN PROTECTION:

A. To trap sediment and to prevent sediment from clogging drainage systems, catch basin protection in the form of a siltation sack (Siltsack as manufactured by ACF Environmental, Inc. or approved equal) shall be provided as approved by the Engineer.

2.03 COMPOST FILTER TUBES:

A. Silt socks shall be a tubular filter sock of mesh fabric. The fabric will have openings of between 1/8" to ¼" diameter. The mesh material will either photo degrade within one

year or be made of nylon with a life expectancy of 24 months. The sock shall be filled with a mix of composted leaf mulch, bark mulch and wood chips that have been composted for at least one year. The sock will have a minimum diameter of 12-inches.

PART 3- EXECUTION

3.01 NOTIFICATION AND STOPPAGE OF WORK:

A. The Engineer will notify the Contractor in writing of any non-compliance with the provisions of the Order of Conditions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work through the Engineer until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.

3.02 AREA OF CONSTRUCTION ACTIVITY:

A. Insofar as possible, the Contractor shall confine his construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

3.03 PROTECTION OF WATER RESOURCES:

A. The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.

B. Special measures should be taken to insure against spillage of any pollutants into public waters.

3.04 CONSTRUCTION IN AREAS DESIGNATED AS WETLANDS ON THE DRAWINGS:

A. Insofar as possible, the Contractor shall make every effort to minimize disturbance within areas designated as wetlands or within 100-feet of wetland resource areas.

B. The Contractor shall perform his work in such a way that these areas are left in the condition existing prior to construction.

3.05 PROTECTING AND MINIMIZING EXPOSED AREAS:

A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided

as specified.

B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to insure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Engineer.

3.06 LOCATION OF STORAGE AREAS:

A. The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Engineer.

B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control such as the placement of straw wattles around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.

C. There shall be no storage of equipment or materials in areas designated as wetlands.

D. The Engineer may designate a particular area or areas where the Contractor may store materials used in his operations.

3.07 PROTECTION OF LANDSCAPE:

A. The Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without written authority from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Engineer. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees which are not to be removed, particularly overhanging branches and limbs. The Contractor shall, in any event, be responsible for any damage resulting from such use.

B. Branches, limbs, and roots shall not be cut except by permission of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. When there is unavoidable injury to branches, limbs and trunks of trees, the injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.

C. Where, in the opinion of the Engineer, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his blasting or other operations, the Engineer may require the Contractor to adequately protect such trees by placing boards, planks, poles or fencing around them. Any trees or landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the expense of the Contractor. The Engineer will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of.

D. Cultivated hedges, shrubs, and plants which could be injured by the Contractor's operations shall be protected by suitable means or shall be dug up, balled and temporarily replanted and maintained. After construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of a kind and quality at least equal to that existing at the start of the work.

3.08 CLEARING AND GRUBBING:

A. The Contractor shall clear and grub only on the Owner's land or the Owner's easements, and only the area required for construction operations, as approved by the Engineer.

3.09 DISCHARGE OF DEWATERING OPERATIONS:

A. Any water that is pumped and discharged from the trench and/or excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.

B. Under no circumstances shall the Contractor discharge water to the areas designated as wetlands. When constructing in a wetlands area, the Contractor shall discharge water from dewatering operations directly to the nearest drainage system, stream, or waterway after filtering by an approved method.

C. The pumped water shall be filtered through filter fabric and baled straw, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.

3.10 DUST CONTROL:

A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust. If the Engineer decides it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed.

B. Calcium Chloride shall not be used for dust control within a drainage basin or in the vicinity of any source of potable water.

3.11 BALED STRAW:

A. To trap sediment during any dewatering process, baled straw shall be used where shown on the drawings. Care shall be taken to keep the bales from breaking apart. All deposited sediment shall be removed periodically. Straw bales shall not be placed within a waterway during construction.

3.12 CATCH BASIN PROTECTION:

A. Catch basin protection shall be used for every catch basin, shown on the plans or as required by the Engineer, to trap sediment and prevent it from clogging drainage systems and entering wetlands. Siltation sacks shall be securely installed under the catch basin grate. Care shall be taken to keep the siltation sacks from breaking apart or clogging. All deposited sediment shall be removed periodically and at times prior to predicted precipitation to allow free drainage flow. Prior to working in areas where catch basins are to be protected, each catch basin sump shall be cleaned of all debris and protected. The contractor shall properly dispose of all debris at no additional cost to the Owner.

3.13 COMPOST FILTER TUBES:

A. The silt socks will be staked in the ground using wooden stakes driven at 4-foot intervals. The wooden stakes will be placed at a minimum depth of 24-inches into the ground.

END OF SECTION

SECTION 01740

CLEANING UP

PART 1 - GENERAL

1.01 DESCRIPTION:

The Contractor must employ at all times during the progress of its work adequate cleanup measures and safety precautions to prevent injuries to persons or damage to property. The Contractor shall immediately, upon request by the Engineer provide adequate material, equipment and labor to cleanup and make safe any and all areas deemed necessary by the Engineer.

PART 2 - PRODUCTS

Not applicable

PART 3 - EXECUTION

3.01 DAILY CLEANUP:

A. The Contractor shall clean up, at least daily, all refuse, rubbish, scrap and surplus material, debris and unneeded construction equipment resulting from the construction operations and sweep the area. The site of the work and the adjacent areas affected thereby shall at all times present a neat, orderly and workmanlike appearance.

B. Upon written notification by the Engineer, the Contractor shall within 24 hours clean up those areas, which in the Engineer's opinion are in violation of this section and the above referenced sections of the specifications.

C. If in the opinion of the Engineer, the referenced areas are not satisfactorily cleaned up, all other work on the project shall stop until the cleanup is satisfactory.

3.02 MATERIAL OR DEBRIS IN DRAINAGE FACILITIES:

A. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, gutters, drains, pipes, structures, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

3.03 REMOVAL OF TEMPORARY BUILDINGS, STRUCTURES AND EQUIPMENT:

A. On or before completion of the work, the Contractor shall, unless otherwise specifically required or permitted in writing, tear down and remove all temporary buildings and

structures it built; shall remove all temporary works, tools and machinery or other construction equipment it furnished; shall remove all rubbish from any grounds which it has occupied; shall remove silt fences and hay bales used for trapping sediment; and shall leave the roads and all parts of the property and adjacent property affected by its operations in a neat and satisfactory condition.

3.04 RESTORATION OF DAMAGED PROPERTY:

A. The Contractor shall restore or replace, when and as required, any property damaged by its work, equipment or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk and landscaping work. Materials, equipment, and methods for such restoration shall be as approved by the Engineer.

3.05 FINAL CLEANUP:

A. Before acceptance by the Owner, the Contractor shall perform a final cleanup to bring the construction site to its original or specified condition. This cleanup shall include removing all trash and debris off of the premises. Before acceptance, the Engineer shall approve the condition of the site.

END OF SECTION

\\Wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\Permitting\Con Comm\NOI - HS 2018\Appendix E Specs\SECTION 01740-Cleaning Up.docx

SECTION 02677

WETLANDS PROTECTION AND REPLICATION

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section consists of providing all plants, labor, equipment, materials, tools, and required professional services in connection with the protection, replication, and provision of specific mitigation measures to minimize and compensate for impacts to existing wetland areas.

1.02 RELATED WORK:

A. Section 01570, ENVIRONMENTAL PROTECTION

B. Section 02930, TREES, PLANTS, AND GROUND COVERS

1.03 QUALITY ASSURANCE:

A. This Contract requires construction adjacent to environmentally sensitive resource areas including flood plains and wetlands. The Wetlands Protection Act ("Act") G.L. Chapter 131 Sec. 40 governs work in these areas and the Contractor shall be required to comply with this and all other applicable Federal, State and local statutes, regulations, and ordinances, and with the Order of Conditions issued by the Conservation Commission.

B. The Contract Drawings show the extent of the Bordering Vegetated Wetlands (BVW) and Buffer Zone (BZ). Work within the BVW or BZ shall also comply with the requirements of this section.

PART 2 - PRODUCTS

2.01 BACKFILL:

Loam and Organic Mixture - This section describes the specification for preparing a loam and organic mixture to be used as suitable backfill within the wetlands restoration and enhancement areas.

1. Loam shall be a natural, fertile, friable soil, typical of productive soils in the vicinity. Loam shall be free of admixture of subsoil and foreign matter or objects (gravel, roots, debris) larger than 2-inches in diameter.

2. Loam shall be uncontaminated and free of toxic substances or any materials harmful to plant growth, regeneration or reproduction. The pH of the loam shall range between 6.0 and 8.0.

3. Peat (if used) shall be supplied from an authorized peat supplier or nursery. Peat shall have an organic content ranging from 75 to 100%. Peat shall be uncontaminated and free of toxic substances or any materials harmful to plant growth, regeneration or reproduction.

4. The loam and organic mixture shall be mixed onsite to achieve a 5% organic content. This will be determined through laboratory analysis or organic content by the loss of weight by ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230 degrees F. The final pH of the loam-peat mixture shall range from 5.8 to 8.0.

2.02 FERTILIZER:

Fertilizer shall be 10-6-8 controlled release, commercial grade granular free flowing, and uniform in composition and shall conform to applicable state and federal regulations. Fertilizer shall be delivered in manufacturer's standard container printed within manufacturer's name, material, weight, and guaranteed analysis.

2.03 MOISTURE ENHANCER:

A suitable moisture enhancer containing at least 99% Copolymer Acrylamide Acrylate shall be obtained and used for each planted shrub and sapling. This moisture enhancer shall be SuperSorb-C, TerraSorb or approved equal.

2.04 MULCH:

A. Hay Mulch - Hay mulch shall consist of mowed and properly cured grass, clover and other acceptable plants. Hay mulch shall be free of weeds, twigs, debris or other deleterious material.

B. Straw Mulch - Straw mulch shall consist of stalks or stems of grain after threshing.

C. Wood Fiber Mulch - Wood fiber mulch shall consist of wood fiber produced from clean, whole, uncooked wood, formed into resilient bundles having a high degree of internal friction and shall be dry when delivered to the project.

2.05 PROPAGULES:

A. The wetlands restoration and enhancement areas shall be vegetated with indigenous wetlands shrubs, saplings, and emergent species. Individual species to be planted are indicated on the final design plans.

B. Propagules shall be nursery or plantation stock and shall be supplied from a bonded source. Nursery stock shall conform to the requirements and recommendations of American National Standards Institute (ANSI) Z60.1.

C. Plants, propagules or cultivars other than those listed in this section will not be accepted unless specifically approved by the wetlands restoration specialist and accepted by the U.S. Environmental Protection Agency.

D. Propagules shall be dug and prepared for shipment in a manner that will not cause significant damage to branches, roots, shape and future growth and development after planting.

E. Balled and burlapped plants shall have ball sizes and ratios conforming to ANSI Z60.1. Plants shall be balled with firm, natural balls of soil. Balled and burlapped plants shall be wrapped firmly with burlap, strong cloth, or plastic and tied.

F. Planting stock shall be well-branched and well-formed, sound, vigorous, healthy, and free from disease, sun-scald, windburn, abrasion and harmful insect eggs and shall have healthy normal and unbroken root systems.

G. Plants shall have been grown under climactic conditions similar to those in the vicinity of the site. Plants budding into leaf or having soft growth shall be sprayed with an antidesiccant at the nursery prior to delivery.

H. Sapling minimum and maximum heights are as follows: a minimum of 3 feet and a maximum of 5 feet.

I. Shrub minimum and maximum heights are as follows: a minimum of 18-inches and a maximum of 36-inches.

J. Emergent propagules shall be rootstock.

2.06 HYDROSEED:

A. Hydroseed shall be supplied by an authorized hydroseed contractor. The Hydroseed mixture shall include annual grasses and seed stock from *Juncus spp*. and *Carex spp*. The wetlands restoration specialist shall approve the final hydroseed mixture.

2.07 WATER:

Water shall not contain elements toxic to plant life.

PART 3 - EXECUTION

3.01 GENERAL:

A. Every effort shall be made to use existing wetland species. At the discretion of the Engineer, the Contractor may, at his option, dig up, store and maintain existing wetland species trees, shrubs and plants from the excavation area for use in the replication area. Trees shall be a minimum of 1-inch caliper and shrubs shall be a minimum of 24-inches in spread or height. All plants shall be vigorous and well formed specimens.

B. All plant materials dug for this purpose shall be dug by hand, hydraulic tree spade specifically designed for this purpose or other suitable equipment of sufficient size to remove an adequate rootball.

C. American Association of Nurserymen, Inc., American Standard for Nursery Stock (latest edition) for each species. For hand dug plants, a suitable burlap or other wrap or container shall be provided to keep the rootball intact.

D. All plants dug for reuse shall be immediately moved to a protected storage area approved by the Engineer. Plants shall be set plumb on grade or in prepared holes and guyed as necessary. The area or holes shall be backfilled with suitable topsoil to cover rootballs entirely and mulched to prevent erosion. All stored vegetation shall be maintained in a damp condition by regular watering. Contractor shall utilize all cultural measures necessary for survival of collected plants.

E. When work has been completed, stockpiled plants shall be replanted in prepared pits in locations in the replication area designated on the Contract Drawings. Planting, backfilling, fertilizing, staking, mulching, watering and all other cultural methods, including season for planting, maintenance and warranties shall be as per Section 02930.

F. Costs for digging, moving, storage, maintenance and transplanting shall be considered part of the wetland replication item.

G. In order to protect the wetlands from siltation caused by excavation in the replication area and by roadway construction, a silt fence and a continuous line of staked hay bales shall be placed as detailed in the Contract Drawings. Hay bales and silt fence are specified in Section 01570.

H. The organic, top layer of wetlands soils (generally, the top 12-inches) contains the rootstock and seeds for many wetland plant species. As excavation in the wetlands areas commences, the Contractor shall separate the top 12-inch layer of wetland soils (topsoil) within the delineated wetland areas (flagged wetlands) from other soil types and stockpile the wetland soils within an upland area adjacent to the replication area. At no time will stockpiling of excavated soils within wetland areas be allowed. The wetland soil shall be carefully maintained in a wet condition by adequate watering and shall be protected by installing a siltation fence around the entire stockpiled area. Stockpiles shall be completely covered with a filter fabric and whenever possible, located in the shade.

I. Suitable soil which is excavated, not including the top layer referred to in the paragraph above, shall be carefully removed for use as subgrade material beneath wetland topsoil and if it is not immediately used, shall be stored in a designated stockpile area, to be reused. All soils to be reused shall be carefully stockpiled and protected with appropriate drainage and erosion control.

J. Once the replication area has been excavated, backfilling of the excavation with wetland soil can occur. Prior to the spreading of the wetland soil, the subsoil within the replication

area shall be inspected and approved by the Engineer. The elevation and slope of the backfilled subgrade are critical elements in assuring proper replacement of wetlands soils and the function of the wetland. When backfilled with the soil discussed in the paragraph above, elevation and slopes of backfilled areas shall be consistent with the Contract Drawings minus 1-foot to allow for replacement of wetlands (BVW) soils.

3.02 WETLANDS (BVW) SOILS:

A. Wetlands topsoil shall be deposited to a minimum depth of twelve (12) inches. Wetlands topsoil shall be deposited so as to minimize travel and subsequent compression of the underlying material and the replaced wetland topsoil. In the event that the Contractor fails to remove and stockpile sufficient wetlands topsoil to cover the replication area, or in the event sufficient wetlands topsoil is not present, the Contractor shall provide, at no additional cost to the Owner, replacement wetlands topsoil. Replacement wetlands topsoil, if required, shall be provided by a licensed nursery and shall be similar in composition, texture, fertility, and as described in Section 2.01 BACKFILL. The final grading of the replacement wetlands topsoil shall be completed so as to result in no discontinuities in elevation upon removal of any siltation barrier or erosion control materials.

B. Upon completion of final grading, the surface of the new wetlands topsoil shall be shallowly harrowed (depth 3-inches), prior to planting.

C. Upon completion of grading, a final condition survey of the wetlands restoration and enhancement areas shall be performed by a licensed surveyor. Elevations shall be checked in numerous random locations, and shall be within 0.1 feet of the final planned surface elevation. Areas that do not meet the 0.1 foot criteria shall be regraded.

3.03 PLANTING SCHEDULE:

A. Spring planting of saplings and shrubs shall occur between 30 April and 15 June. Fall planting shall occur as dormant planting between 15 September and 30 October for saplings, and 15 September and 15 November for shrubs. If special conditions warrant a variance from the above planting schedules or conditions, and if in concurrence with the wetlands restoration specialist, the above dates can be modified only if recommended by the nursery and if all warranties still apply.

B. Planting and hydroseeding shall not occur when the ground is frozen, snow covered or in an unsuitable condition for planting.

C. All saplings, shrubs and emergent propagules shall be planted in the wetlands restoration and enhancement areas in accordance with a planting plan and schedule as indicated on the Final Plans. All saplings and shrub mixtures (within the wetlands restoration and enhancement areas) shall be planted randomly as indicated on the Final Plans. Sapling and shrub mixtures shall be planted randomly under the direction of the wetlands restoration specialist, with all planting locations no closer than 10 feet on center. Saplings and shrubs shall not be planted within ponds or standing water areas. No machinery or

vehicles shall be allowed within the existing adjacent wetlands. Soil disturbances shall be kept to the minimum necessary to accommodate planting. Any extra soil (from pits) shall be removed from the wetland.

D. All balled and burlapped and container grown plants shall be handled and moved only by the root ball or container.

E. Pits for planting shall be dug to produce vertical sides and flat bottoms. The depth of pits shall be 6-inches deeper than the root ball. The diameter of the pits shall allow a minimum distance between the ball and the sides of the hole of 6-inches for shrubs and 10-inches for saplings. The bottom 4-inches of the pit shall be loosened with a shovel prior to planting.

F. Saplings and shrubs shall be set plumb and manually held in position until sufficient soil has been firmly placed around roots or ball. Saplings and shrubs shall be set at the same depth at which they were grown in the nursery or container.

G. Balled and burlapped stock shall be backfilled with soil to approximately half the depth of the ball and watered. Burlap and tying materials shall be carefully removed or folded back at the recommendation of the nursery. Plastic wrap shall be completely removed before placement of backfill. The remainder of backfill shall be tamped and watered.

H. Emergent plantings shall be planted by hand in random locations under the direction of the wetlands restoration specialist in locations designated by the Final Plans. Plantings shall be planted no closer than 2 feet on center.

I. Guying and staking of saplings shall only be required on taller individuals (5 feet), if recommended by the nursery.

3.04 HYDROSEEDING:

Hydroseeding shall accomplish seeding, fertilizing and mulching. Hydroseeded areas shall be seeded at a rate of 400 pounds per acre. Hydroseed application shall be conducted between 15 April and 15 June or 15 September to 30 October, or as recommended by the hydroseed contractor.

3.05 FERTILIZER APPLICATION:

Saplings and trees shall be fertilized at a rate of 0.25 pound of fertilizer per plant, or as recommended by the nursery. Fertilizer shall be worked 2- to 3-inches into the soil.

3.06 MOISTURE ENHANCER:

The moisture enhancer specified in Section 2.03 of this specification shall be applied to each planted shrub and sapling at a rate of 8 ounces per propagule and shall be broadcast around the root ball 3- to 4-inches below the surface.

3.07 MULCH:

Saplings and shrubs shall be mulched to a depth of 2-inches around the base of the pit, at the discretion of the wetlands restoration specialist.

3.08 WATERING:

All saplings and shrubs shall be watered by flooding the backfilled hole within the same working day of planting. Additional soil shall be added around each plant as required to compensate for settling.

3.09 PROTECTION:

Upon completion of construction activities within the wetlands restoration and enhancement areas, barricades or snow fencing shall be erected along upland areas adjacent to the wetland to prevent unauthorized access.

3.10 REPLANTING OF WETLANDS VEGETATION IN THE REPLICATION AREA:

A. In all wetlands, replication of the disturbed areas shall require replanting with indigenous wetland species. The Contractor shall have the option of digging, storing, and replanting existing trees, shrubs and groundcover and respreading stockpiled wetlands soil from the reservoir excavation area or, alternatively, providing and planting new wetland species at no additional cost to the Owner. The intent of this Section is to insure that at least 75 percent of the surface area of all disturbed wetlands is reestablished with indigenous wetland plant species within two growing seasons of their planting in accordance with the Massachusetts DEP Wetlands Protection Act Regulations. The growing season for wetlands revegetation areas shall be April 15 to October 15. Attention is called to the fact that wetlands to be replicated within the project site have been identified as shrub-scrub or shrub-sapling swamps. The wetland planting zones are schematically shown on the plans. Purple Loosestrife and Phragmites species shall not be planted in any wetland. If after 180 growing season days it is evident in the opinion of the Engineer that it is unlikely that the 75 percent reestablishment requirement will be achieved, the Contractor shall supplement the plantings as necessary to achieve the required coverage at no additional cost to the Owner. If at the end of two growing seasons, 75 percent reestablishment has not been achieved, the Contractor shall provide and plant additional new plant material to achieve 75 percent reestablishment at no additional cost to the Owner.

B. Wetland species are divided into planting groups (designated below) according to their moisture requirements during the growing season. Plantings are done at specified elevations based on the assumed mean water table. (These elevations to be adjusted by the Engineer based on the mean water table as determined during one growing season April 15 to October 15).

C. Wetland plantings shall be performed as designated on the Contract plans.

D. On average, for each 100 square feet of replication area, provide and plant a total of 2 shrubs, and for each 625 square feet of replication area to be revegetated, provide and plant one tree. Shrubs and trees will be spaced according to the Contract Plans.

E. New trees and shrubs shall be balled and burlapped or container grown Nursery Stock.

F. New trees shall be 1- to 1-1/2-inch caliper minimum. All plants selected for replanting shall be of the size specified on the Contract Drawings.

G. New shrubs shall be 24-inches in spread, minimum.

H. For each 100 square feet of replication area to be revegetated with replacement soil, provide and plant a total of 45 plants. New plants shall be a minimum size of 1-3/4-inch peat potted nursery stock, dormant rhizome, dormant tuber, dormant bulb, or bare root plant, as appropriate for the species and planting season. Plants shall be spaced according to Contract Plans.

I. All planting shall be supervised by a licensed nurseryman, qualified to do this work. At least four weeks prior to any wetland planting, the Contractor shall submit details of proposed planting methods, plant layout, and personnel qualifications for approval by the Engineer.

J. Wetland planting materials, operations, maintenance, inspection, and preliminary acceptance shall be as specified in Section 02930. Warranty and final inspection of all wetland plantings shall be a minimum of one year from the date of preliminary acceptance.

K. Maintenance shall be provided until final acceptance. Final acceptance shall be obtained as stipulated in the attached Order of Conditions.

3.11 EROSION CONTROL SEEDING FOR WETLANDS:

A. After wetland soil is respread, no further preparation for seeding is required or allowed. No fertilizer, limestone, superphosphate or other amendment shall be added to wetland soils. Seed mixture and application rates for this work shall follow the contract plans.

B. A wetland seed mixture containing a wide variety of seeds native to New England and which do not include any invasive plant species prohibited in the latest edition of the "Performance Guidelines and Supplemental Information on the Checklist for Review of Mitigation Plan", published by the U.S. Army Corps of Engineers New England Division. Application rates shall be one pound per 5000 square feet when used in an understory seeding and two pounds per 5000 square feet when used in a wet meadow seeding.

C. Where required by the Engineer, for reasons of excessive soil moisture, the wetland seed mixture shall be modified by the addition of an approved portion by weight of Winter Rye seed to provide soil stabilization cover in the fall.

3.12 WORK IN THE BUFFER ZONE (BZ):

A. When any work occurs in the Buffer Zone (BZ) within 100 feet of bordering vegetated wetlands (BVW), certain measures, as indicated on the Contract Drawings, shall be taken to protect the integrity of the wetlands.

B. A siltation barrier consisting of a continuous row of staked hay bales and a silt fence shall be placed between the BVW and the work area to prevent soil materials from entering the BVW from the BZ as shown on the Contract Drawings. This siltation barrier shall be inspected and maintained on a daily basis. Hay bales and silt fence are specified in Section 01570.

C. In general, storage of equipment or materials in BVW or BZ areas shall not be permitted. Storage of oil products or the repairing of vehicles and/or maintenance operations shall not be permitted in the BVW or BZ areas. Should the Engineer deem that the Contractor's activities are unnecessarily detrimental to the wetlands, the Engineer reserves the right to order the Contractor to immediately cease all activities on-site until the situation is resolved to the satisfaction of the Engineer.

END OF SECTION

Document1262

ABUTTERS LIST EXPLANATION

Typically, we would require abutters within 100 feet of the entire high school parcel. However, per the Massachusetts Wetland Protection Act, “An applicant who proposes work solely within a Lot with an area greater than 50 acres, is required to provide notification only to Abutters whose Lot is within one hundred feet from the Project Site.” (310 CMR 10.04 (4)(a)). For this reason, we are including abutters only within 100 feet of our specific work areas.

We used ArcMap software to locate parcels 100 feet from our project sites (See Figure 1). However, the Wayland Assessors Department was only able to generate a list that shows all abutters 100 feet from the entire High School parcel. We have highlighted the abutters on this list that are 100 feet from the specific project site, and who will be receiving Project Notification letters.

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

I, Mel Higgins, hereby certify under the Pains and Penalties of Perjury that on July 18, 2018 I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws, Chapter 131, Section 40, and the DEP Guide to Abutter Notification dated, April 8, 1994, in connection with the following matter:

> A Notice of Intent has been filed under the Massachusetts Wetlands Protection Act by the Town of Wayland with the Wayland Conservation Commission on July 18, 2018 for property located at Wayland High School at 264 Old Connecticut Path in Wayland.

The completed notification and a list of the abutters to whom it was given and their addresses are attached to this Affidavit of Service.

July 18, 2018
DATE

Name: Mel Higgins
Title: Senior Environmental Scientist
Organization: Weston & Sampson Engineers, Inc

Notification to Abutters Under the Massachusetts Wetlands Protection Act

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following:

A. The name of the applicant is: Ben Keefe - Town of Wayland
41 Cochituate Road
Wayland, MA 01778

B. The name of the owner is: same as above

C. The applicant has filed a Notice of Intent with the Wayland Conservation Commission seeking permission to alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, Section 40). The Work includes the improvements to existing athletic fields at Wayland High School.

D. The address of the lot(s) where the activity is proposed: 264 Old Connecticut Path

E. Copies of the Notice of Intent may be examined at 41 Cochituate Road between the hours of 8:00 AM and 5:00 PM on Monday – Friday. For more information call the Shrewsbury Conservation Commission at (508) 358-3669

F. Information regarding the project, date, time and place of the public hearing may be obtained from Weston & Sampson Engineers, by contacting Mel Higgins at 978-532-1900 ext. 2332 between the hours of 8:00 – 5:00 on the following days of the week: Monday – Friday or the Wayland Conservation Commission at (508) 358-3669 between the hours of 8:00 AM and 5:00 PM on Monday – Friday.

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days prior to the hearing date in the local paper.

NOTE: Notice of the meeting of the Conservation Commission, including its date, time and place will be posted in the Town Hall not less than forty-eight (48) hours in advance of the meeting.

NOTE: You also may contact your local Conservation Commission or the Department of Environmental Protection Regional Office for more information about this application or the Wetlands Protection Act.

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender

Weston & Sampson
5 Centennial Drive
Peabody, MA 01960

TOTAL NO. of Pieces Listed by Sender: 6

TOTAL NO. of Pieces Received at Post Office™:

Postmaster, per *(name of receiving employee)*

2180076.A
(highschool)

UNITED STATES POSTAL SERVICE
0000

U.S. POSTAGE
PAID
PEABODY, MA
01960
JUL 18, 18
AMOUNT
$2.40
R2305K137533-23

OFFICE OF THE TOWN CLERK
JUL 18 2018

USPS® Tracking Number / Firm-specific Identifier	Address	Postage	Fee	Special Handling	Parcel Airlift
1.	TOWN OF WAYLAND HAPPY HOLLOW WELL SITE 41 COCHITUATE ROAD WAYLAND MA 01778	$0.47			
2.	DONG KONG BO YUAN T/E 261 OLD CONNECTICUT PATH WAYLAND MA 01778	$0.47			
3.	CLIFFORD BENJAMIN B 265 OLD CONNECTICUT PATH WAYLAND MA 01778	$0.47			
4.	CADDOO WILLIAM H 269 OLD CONNECTICUT PATH WAYLAND MA 01778	$0.47			
5.	TOWN OF WAYLAND PUBLIC WORKS 95 MAIN STREET WAYLAND MA 01778	$0.47			
6.	TOWN OF WAYLAND PARK & RECREATION 41 COCHITUATE ROAD WAYLAND MA 01778	$0.47			

PS Form **3665**, January 2017 (Page 1 of 1) PSN 7530-17-

See Reverse for Instructions

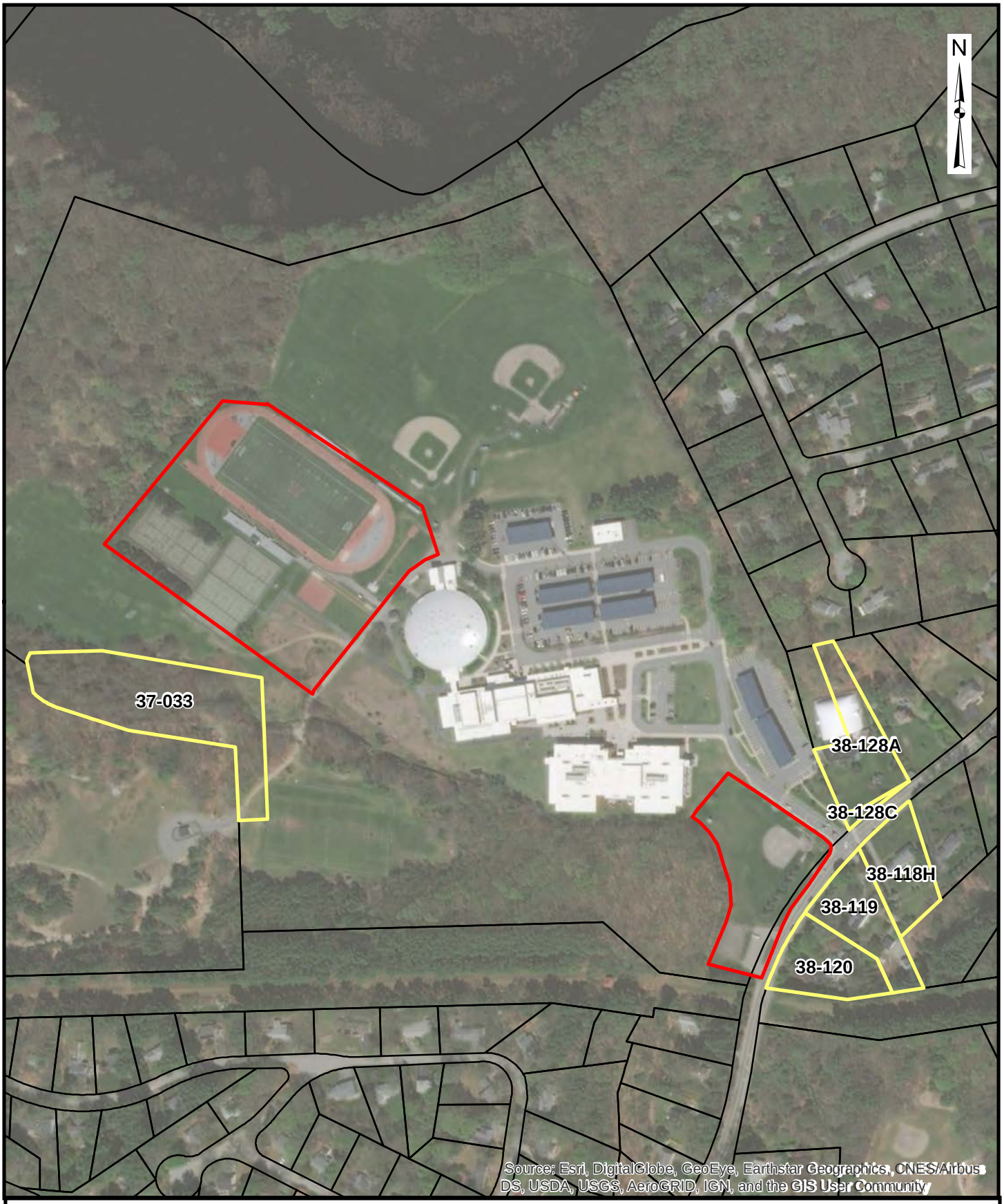


FIGURE 1
Wayland Highschool Athletic Facilities
Wayland, Massachusetts

Abutters Within 100ft

Work Area

AbuttersWithin100ft

200 0 200
Scale In Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\GIS\Wayland HS Atheltic Facilities\Figure 3 - abutters.mxd User: GasparA Saved: 7/6/2018 9:08:24 AM Opened: 7/6/2018 9:18:12 AM

Town of Wayland
Assessing Department

41 COCHITUATE ROAD
WAYLAND MASSACHUSETTS 01778
www.wayland.ma.us - TEL. 508-358-3788

2018 JUL -6 PM 12: 26

OFFICE STAFF
Ellen M. Brideau, MAA, Director of Assessing
Denise Ellis, MAA, Assistant Assessor
Jessica Marchant, MAA, Administrative Assessor
Savitri Ramgoolam, Department Assistant

BOARD OF ASSESSORS
Susan M. Rufo, Chair
Jeyson Brodie, Vice Chair
Zachariah L. Ventress
David Hill
Cheryl Kane

Certification of Abutters

Date of request 7/6/2018

Please plan your submission accordingly. The Assessors' office has 10 business days to certify an abutters list Per MGL Ch. 66, S.10

Address to be certified 260 Old Connecticut Path (Wayland Highschool) Parcel ID 37/034 (Map/Lot)

Owner's Name (PLEASE PRINT) Town of Wayland

Owner's Mailing Address 41 Cochituate Road

Name of Applicant (PLEASE PRINT) Alexandra Gaspar Telephone: 978-532-1900 x2422

5 Centennial Drive (Mailing Address of Applicant) Peabody (City/Town) MA (State) 01960 (Zip)

Signature of Applicant A Gaspar

Reason for List (check one) ☒ Conservation ☐ Health ☐ Planning ☐ Zoning

**Please check with the Board/Commission for their guidelines regarding the number of feet required for notification. Each Board/Commission has its own regulations for their abutters listing. There's no fee for certification, however the list/s of abutters must be provided by the person or company requesting certification. Please submit by mail, in person or fax to 508 358 0061.

For use by Assessors

This is to certify that at the time of the last assessment for taxation made by the Town of Wayland, the names and addresses are the assessed owners to these parcels.

Certified By: [signature] Date: 7/6/18

CC: ☒ Conservation ☐ Health ☐ Planning ☐ Zoning

Abuttersrequestform.doc

100 foot Abutters List Report

Wayland, MA
July 06, 2018

Subject Property:

Parcel Number:	37-034	Mailing Address:	TOWN OF WAYLAND HIGH SCHOOL 41 COCHITUATE ROAD WAYLAND, MA 01778
CAMA Number:	37-034		
Property Address:	260 OLD CONNECTICUT PATH		

Abutters:

Parcel Number:	37-032	Mailing Address:	TOWN OF WAYLAND HIGHWAY DEPT 197 MAIN ST WAYLAND, MA 01778
CAMA Number:	37-032		
Property Address:	89 STONEBRIDGE RD		
Parcel Number:	37-033	Mailing Address:	TOWN OF WAYLAND HAPPY HOLLOW WELL SITE 41 COCHITUATE RD WAYLAND, MA 01778
CAMA Number:	37-033		
Property Address:	266 OLD CONNECTICUT PATH		
Parcel Number:	37-035	Mailing Address:	UNITED STATES OF AMERICA FISH & WILDLIFE SERVICES 300 WESTGATE CENTER DR HADLEY, MA 01035-9589
CAMA Number:	37-035		
Property Address:	0 OLD CONNECTICUT PATH		
Parcel Number:	38-018H	Mailing Address:	DONG KONG BO YUAN T/E 261 OLD CONNECTICUT PATH WAYLAND, MA 01778
CAMA Number:	38-118H		
Property Address:	261 OLD CONNECTICUT PATH		
Parcel Number:	38-119	Mailing Address:	CLIFFORD BENJAMIN B CLIFFORD TRICIA T T/E 265 OLD CONNECTICUT PATH WAYLAND, MA 01778
CAMA Number:	38-119		
Property Address:	265 OLD CONNECTICUT PATH		
Parcel Number:	38-120	Mailing Address:	CADDOO WILLIAM H CADDOO LORI T/E 269 OLD CONNECTICUT PATH WAYLAND, MA 01778
CAMA Number:	38-120		
Property Address:	269 OLD CONNECTICUT PATH		
Parcel Number:	38-128	Mailing Address:	MORAN DONALD F LEONARDI SANDRA J/T 274 OLD CONNECTICUT PATH WAYLAND, MA 01778
CAMA Number:	38-128		
Property Address:	274 OLD CONNECTICUT PATH		
Parcel Number:	38-028A	Mailing Address:	TOWN OF WAYLAND PARK & RECREATION 41 COCHITUATE RD WAYLAND, MA 01778
CAMA Number:	38-128A		
Property Address:	258 OLD CONNECTICUT PATH		
Parcel Number:	38-028B	Mailing Address:	TOWN OF WAYLAND PARK & RECREATION 41 COCHITUATE RD WAYLAND, MA 01778
CAMA Number:	38-128B		
Property Address:	258 OLD CONNECTICUT PATH		
Parcel Number:	38-028C	Mailing Address:	TOWN OF WAYLAND PUBLIC WORKS 95 MAIN ST WAYLAND, MA 01778
CAMA Number:	38-128C		
Property Address:	0 OLD CONNECTICUT PATH		

www.cai-tech.com
Data shown on this report is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this report.

100 foot Abutters List Report

Wayland, MA
July 06, 2018

Parcel Number:	38-141	Mailing Address:	GERALDINE V DISAVINO 15 KELSEY RD WAYLAND, MA 01778
CAMA Number:	38-141		
Property Address:	15 KELSEY RD		
Parcel Number:	38-142	Mailing Address:	HARDING THEODORE S T/R HARDING JENNIFER W 11 KELSEY RD WAYLAND, MA 01778
CAMA Number:	38-142		
Property Address:	11 KELSEY RD		
Parcel Number:	38-143	Mailing Address:	FRIEDMAN ARNOLD M & JANIS M TRSTS FRIEDMAN REALTY TRUST 7 KELSEY RD WAYLAND, MA 01778
CAMA Number:	38-143		
Property Address:	7 KELSEY RD		
Parcel Number:	38-144	Mailing Address:	JACOBSEN PAROOHY G 3 KELSEY RD WAYLAND, MA 01778
CAMA Number:	38-144		
Property Address:	3 KELSEY RD		
Parcel Number:	38-145	Mailing Address:	WONG JAMES LORINDA Y. WONG 25 CAMERON RD. WAYLAND, MA 01778
CAMA Number:	38-145		
Property Address:	25 CAMERON RD		
Parcel Number:	38-045A	Mailing Address:	UNITED STATES OF AMERICA FISH & WILDLIFE SERVICES 300 WESTGATE CENTER DR HADLEY, MA 01035-9589
CAMA Number:	38-145A		
Property Address:	0 CHARENA RD		

www.cai-tech.com
Data shown on this report is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this report.

TOWN OF WAYLAND HAPPY HOLLOW
WELL SITE
41 COCHITUATE ROAD
WAYLAND MA 01778

TOWN OF WAYLAND HAPPY HOLLOW
WELL SITE
41 COCHITUATE ROAD
WAYLAND MA 01778

DONG KONG BO YUAN T/E
261 OLD CONNECTICUT PATH
WAYLAND MA 01778

DONG KONG BO YUAN T/E
261 OLD CONNECTICUT PATH
WAYLAND MA 01778

CLIFFORD BENJAMIN B
265 OLD CONNECTICUT PATH
WAYLAND MA 01778

CLIFFORD BENJAMIN B
265 OLD CONNECTICUT PATH
WAYLAND MA 01778

CADDOO WILLIAM H
269 OLD CONNECTICUT PATH
WAYLAND MA 01778

CADDOO WILLIAM H
269 OLD CONNECTICUT PATH
WAYLAND MA 01778

TOWN OF WAYLAND PARK &
RECREATION
41 COCHITUATE ROAD
WAYLAND MA 01778

TOWN OF WAYLAND PARK &
RECREATION
41 COCHITUATE ROAD
WAYLAND MA 01778

TOWN OF WAYLAND PUBLIC WORKS
95 MAIN STREET
WAYLAND MA 01778

TOWN OF WAYLAND PUBLIC WORKS
95 MAIN STREET
WAYLAND MA 01778

TOWN OF WAYLAND
MASSACHUSETTS
01778

CONSERVATION COMMISSION

TOWN BUILDING
41 C0CHITUATE ROAD
TELEPHONE: (508) 358-3669
FAX: (508) 358-3606

CHAPTER 193 APPLICATION
Stormwater Management and Land Disturbance Bylaw

A. General Information

1. Project Location

264 Old Connecticut Path — a. Street Address
Wayland — b. City/Town
01778 — c. Zip code
37-034 — d. Parcel/ Lot Number

2. Applicant:

Ben — a. First Name
Keefe — b. Last Name
41 Cochituate Road, Facilities Dept 2nd Floor — c. Street Address
Wayland — d.City
MA — e. State
01778 — f. Zip Code
(508) 358-3786 — g. Work/ Cell Phone #
bkeefe@wayland.ma.us — h. Email Address

3. Property Owner (required if different from applicant):

Town of Wayland — a. First Name
b. Last Name
41 Cochituate Road — c. Street Address
Wayland — d.City
MA — e. State
01778 — f. Zip Code
(508) 358-7701 — g. Work/ Cell Phone #
bkeefe@wayland.ma.us — h. Email Address

4. Representative (if any):

Brandon	Kunkel
a. First Name	b. Last Name

Weston & Sampson Engineers

c. Company

5 Centennial Drive

c. Street Address

Peabody	MA	01960	978-562-1900 x7705
d.City	e. State	f. Zip Code	g. Work/ Cell Phone #

kunkelb@wseinc.com

h. Email Address

5a. Project Type Checklist (check all that applies):

1. ☒ Creation of new or increasing existing impervious surface of 500 sq. ft. or more.

   Impervious Surface: Is any material or structure on or above the ground that prevents water infiltration to the underlying soils. Impervious surface includes without limitation roads, paved parking lots, sidewalks, stone patios, decking, and rooftops.

2. ☒ Alteration and/or land disturbance of at least 5,000 sq. ft. or 10% of the parcel; whichever is less.

   Alteration and/or land disturbance as defined in Chapter 193 Bylaw.

5b. General Project Description:

Improvements to the high school athletic facilities including a new track and field, bleachers, tennis courts, softball field and basketball courts.

B. Additional Information

By submitting an application for coverage under the Stormwater Management and Land Disturbance Permit, the Applicant agrees to the following:

1. At a minimum, the proposed project complies with the performance standards of the most recent version of the Massachusetts Stormwater Management Handbook including but not limited to:

   a. Employing environmentally sensitive site design
   b. Evaluation of Low Impact Development practices
   c. Incorporation of source controls of contaminants and employing BMPs to minimize stormwater pollution
   d. Sizing of water quality volume of BMPs are based on 1-inch of runoff
   e. Methodology for hydrologic analyses (if necessary) is based on TR-55/TR-20 methodology
   f. Designing redevelopment of existing sites must provide a net improvement to stormwater conditions at the site.

2. The activity shall not increase either the rate or volume of stormwater runoff leaving the site, nor shall it alter stormwater flow to any adjoining properties, public ways, or any wetland resource areas, unless otherwise permitted based on improvements over existing conditions.

Please check all that apply to this project:

- [X] Roof drains emptying into dry wells/recharge basins
- [X] Grassed swales constructed
- [ ] Porous pavement installed; _____ sq. ft.
- [ ] Water quality swale
- [ ] Rain barrels/cisterns for irrigation
- [X] Other methods (please list/describe): Detention and infiltration at synthetic turf field and subsurface stormwater chambers

3. The Applicant shall provide and maintain Erosion and Sedimentation controls as necessary until the site is permanently stabilized. BMP's selected for erosion controls shall be chosen to minimize site disturbance from erosion control installation. As soon as the site is stabilized, such measures shall be removed.

   Please check all that apply to this project:

   - [X] Sediment filter fence with either hay bales or straw wattles
   - [X] Mulch filled fabric sock
   - [X] Construction entrance
   - [ ] Temporary vegetative cover – mulch, netting
   - [X] Permanent vegetative cover – hydro seeding, seeding, sodding
   - [ ] Slope stabilization
   - [X] Retaining Walls
   - [ ] Slope drains
   - [ ] Other methods (please list/describe): _____

4. The Applicant shall ensure that the site and stormwater management systems are perpetually inspected and maintained to function as designed.

   Please check all that apply to this project:

   - [X] Visual inspections by contractor
   - [X] Visual inspections by homeowner
   - [X] Operation and Maintenance Plan
   - [ ] Maintenance contract for stormwater components
   - [X] Other methods (please list/describe): Continued maintenance by DPW

5. Other Jurisdiction

- [X] Massachusetts Wetlands Protection Act (310 CMR 10.00) and it's implementing Regulations
- [X] Wayland's Wetlands and Water Resource Protection Bylaw – Chapter 194
- [ ] Subdivision Approval

☐ Board of Health Permit

☒ Special Permit or Site Plan Review

☐ Building Permit

C. Fees

Applicants must submit a $100 application fee.

D. Signatures and Submittal Requirements

I certify that I have reviewed the design standards above and the information contained herein, including all attachments, is true, accurate, and complete to the best of my knowledge. Further, I grant the Wayland Conservation Commission and its authorized Agents permission to enter the property to review this application and make inspections before, during and after construction. **I have included a check for the application fee of $100.**

Signature of Applicant	Date
Signature of Property Owner (if different)	Date
Signature of Representative (if any)	Date

For Conservation Commission:
Eight copies of the completed Stormwater Management and Land Disturbance Bylaw (Chapter 193), including plans and documents, and the bylaw fee payment, to the Conservation Commission by mail or hand delivery.

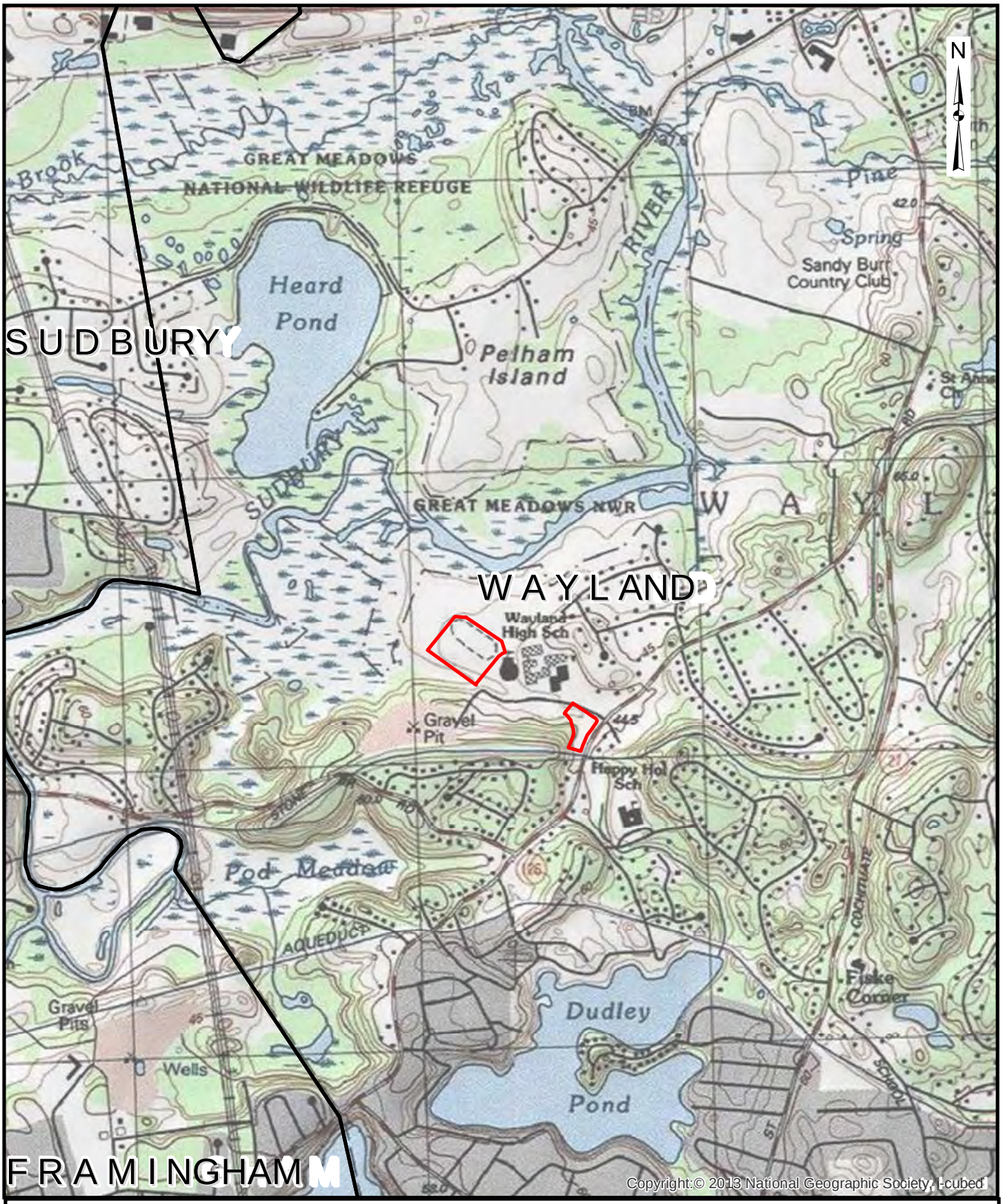


FIGURE 1
Wayland Highschool Athletic Facilities
Wayland, Massachusetts

Locus Map

Work Area

1,200 0 1,200
Scale In Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\GIS\Wayland HS Athletic Facilities\Figure 1- Locus.mxd User: GasparA Saved: 7/5/2018 2:58:02 PM Opened: 7/5/2018 2:58:17 PM

Stormwater Report

Conservation Commission
Wayland, Massachusetts

Wayland High School Athletic Facilities Improvements

Notice of Intent
Massachusetts Wetland Protection Act
M.G.L. c. 131 § 40

July 11, 2018

JOB NO: 2180076

Weston & Sampson
5 Centennial Drive
Peabody, MA 01960

www.westonandsampson.com
Tel: 978-532-1900 Fax: 978-977-0100

Table of Contents

Checklist for Stormwater Report

Stormwater Report Summary

Attachment A - Locus Map

Attachment B - NRCS Soils Map, Soils Report, and HSG Classifications

Attachment C - Test Pit Summary and Logs

Attachment D - Stormwater Modeling

1. HydroCAD model output

Attachment E - Calculations

1. Required Recharge Calculation
2. Water Quality Volume Calculation
3. TSS Removal Worksheet

Attachment F - Long Term Pollution Prevention Plan

Attachment G - Construction Period Pollution and Erosion and Sedimentation Control Plan

Attachment H - Operations and Maintenance Plan

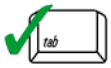
Attachment I - Illicit Discharge Compliance Statement

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

---

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

7/12/2018

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☐ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

---

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Stormwater Report

To Be Submitted with the Notice of Intent

Applicant/Project Name: Town of Wayland – High School Athletic Facilities Improvements

Project Address: 264 Old Connecticut Path, Wayland MA 01778

Application Prepared by:
Firm: Weston & Sampson, Inc.
Registered PE: James Pearson

Below is an explanation concerning Standards 1-10 as they apply to the Town of Wayland High School Athletic Facilities Improvement project, located on Old Connecticut Path:

General:

Due to need for updated athletic facilities, the proponent (Wayland High School) is proposing the replacement of their current turf field, and their existing tennis courts. They are also proposing the addition of a girls softball field and basketball courts. These major renovations will be accompanied by more minor additions such as bleachers, parking areas, a ticket booth, and additional bathroom facilities.

The goal of this project is to both improve the existing athletic facilities as well as install new facilities at Wayland High School. The existing track and synthetic turf field is located on the northwest portion of the property. The track will be moved slightly closer to the high school and replaced. The renovation of the athletic field will include the addition of 400-person visitor bleachers, 1,000-person grand stand bleachers, ticket booth/concession stand, and new bathroom facilities. Abutting the field currently are two tennis courts. These will be relocated to the south campus, taking the place of the existing softball field. Included with the tennis courts will be a new parking lot, as well as basketball courts. The existing softball field will then be moved to the north campus, next to the track and synthetic turf field.

Standard 1: No New Untreated Discharges

The proposed project will create no new untreated discharges. Total impervious area post-development will increase in comparison with existing conditions at the new parking lot and tennis court areas, but will remain unchanged at the track and turf field.

Standard 2: Peak Rate Attenuation

Since there will be no net change to impervious area the proposed track and turf field at the northwest portion of the High School Site, this area does not require analysis. An analysis was performed for the proposed tennis court and parking lot areas to the southeast of the site. For the latter areas, both existing and proposed conditions were modeled using HydroCAD computer software.

Table 1: Total Peak Runoff Rate

Point of Interest	Storm Frequency	Storm Depth (in)	Peak Flow (cfs) Existing Conditions	Post-Development
P1	2 Year	3.00	0.00	0
	10 Year	4.60	0.29	0
	25 Year	5.30	1.21	0.28
	100 Year	6.50	5.27	3.88

The proposed design is such that peak runoff rates do not exceed rates of runoff under existing conditions even in the 100-year storm scenario. For regulatory purposes the existing site condition serves as the benchmark for peak discharges that must not be exceeded under the re-developed condition. Peak discharges are mitigated by using the proposed underground chambers to provide stormwater detention benefit. Please refer to existing and proposed conditions in HydroCAD model printouts included in Attachment D for additional details.

To ensure that the work incorporates the performance standards recommended in the DEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction. These measures will include compost filter tubes, catch basin protection, and a stabilized construction entrance.

Standard 3: Recharge

The proposed improvements will result in an increase to the impervious areas of the site. Runoff from all impervious areas is directed to an underground stormwater chamber system that will provide the required recharge volume (Attachment E). Test pits (Attachment C) indicate gravelly substratum which will allow for favorable infiltration characteristics.

Standard 4: Water Quality

All of the stormwater from impervious areas on the site will undergo treatment to bring TSS levels within regulated limits (>80% removal). Treatment will occur via deep sump hooded catch basins and an underground stormwater chamber system with built-in pretreatment. During the project, appropriate BMPs will be used to minimize sedimentation and soil erosion.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The proposed improvements will not constitute a land use with higher potential pollutant load.

Standard 6: Critical Areas

There will be no new discharge to critical areas.

Standard 7: Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable

The project is a mix of new development and redevelopment, however the standards have been fully met.

Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control

A detailed Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan is included in Attachment G. To ensure that the work incorporates the performance standards recommended in the DEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction. These measures will include compost filter tubes, silt fence, catch basin protection, and a stabilized construction entrance.

Standard 9: Operation and Maintenance Plan

An operations and maintenance plan is included in Attachment H.

Standard 10: Prohibition of Illicit Discharges

An illicit discharge compliance statement has been included in Attachment I.

Registered Professional Engineer's Certification

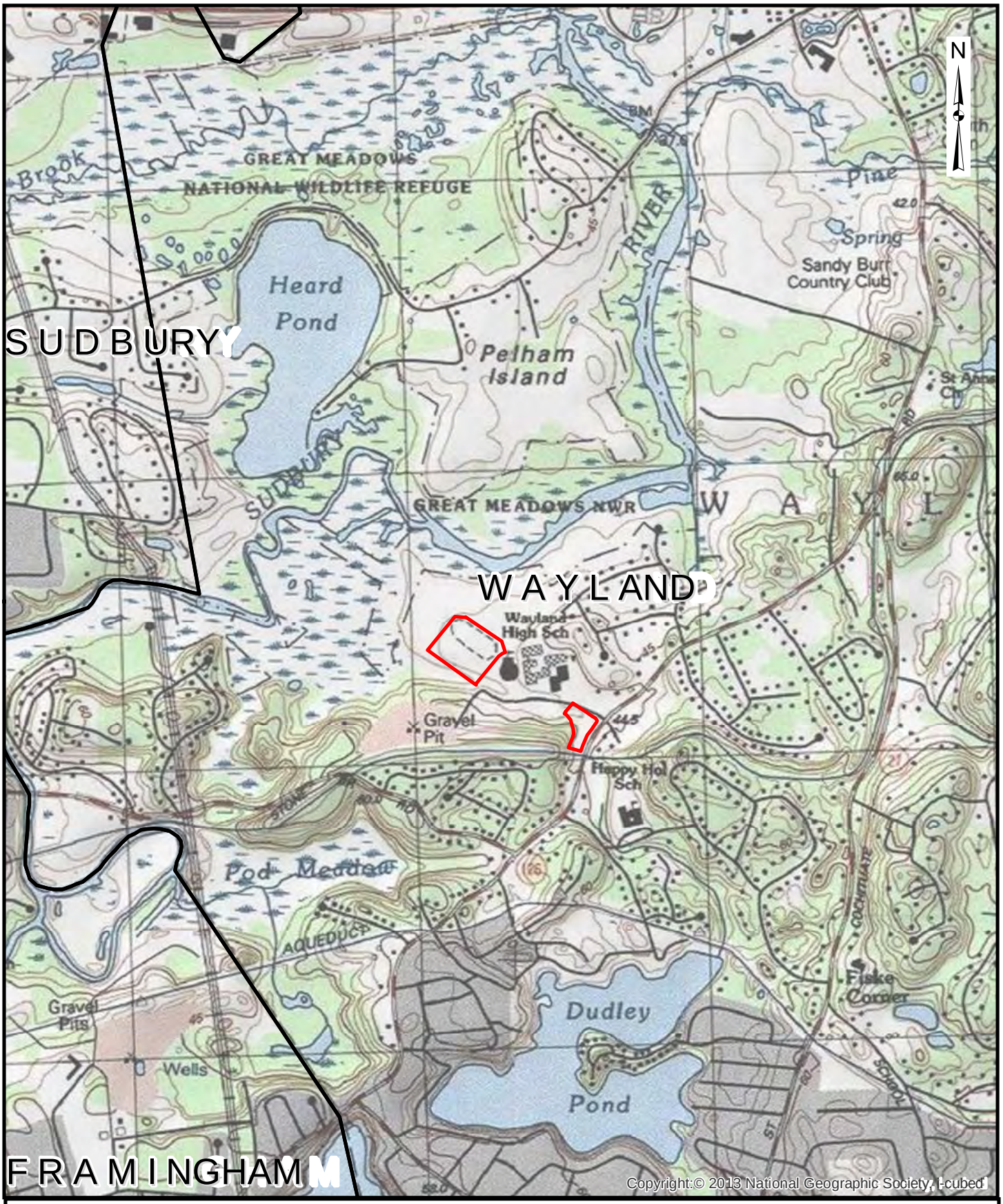
I have reviewed the Stormwater Report, including any relevant soil evaluations, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan, the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

7/12/2018

Signature and Date

Attachment A - Locus Map



Attachment A

Wayland Highschool Athletic Facilities
Wayland, Massachusetts

Locus Map

Work Area

1,200 0 1,200

Scale In Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\GIS\Wayland HS Athletic Facilities\Figure 1- Locus.mxd User: GasparA Saved: 7/5/2018 2:58:02 PM Opened: 7/5/2018 2:58:17 PM

Attachment B - NRCS Soils Map, Soils Report, and HSG Classifications

Hydrologic Soil Group—Middlesex County, Massachusetts

Map Scale: 1:5,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 17, Oct 6, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
36A	Saco mucky silt loam, 0 to 1 percent slopes	B/D	1.4	2.5%
251B	Haven silt loam, 3 to 8 percent slopes	A	5.1	8.9%
253E	Hinckley loamy sand, 25 to 35 percent slopes	A	0.6	1.1%
256A	Deerfield loamy sand, 0 to 3 percent slopes	B	0.5	0.8%
256B	Deerfield loamy sand, 3 to 8 percent slopes	B	1.3	2.3%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	2.1	3.7%
653	Udorthents, sandy		0.2	0.4%
655	Udorthents, wet substratum		28.2	49.3%
656	Udorthents-Urban land complex		17.8	31.1%
Totals for Area of Interest			**57.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment C - Test Pit Summary and Logs

NOTES:

1. THIS FIGURE IS BASED ON AN EXISTING AND PROPOSED CONDITIONS PLAN PREPARED BY WESTON & SAMPSON ENGINEERS, INC. DATED MARCH 2018.
2. ELEVATIONS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. BORINGS WERE COMPLETED BY TECHNICAL DRILLING SERVICES, INC. OF STERLING, MA AND OBSERVED BY WESTON & SAMPSON ENGINEERS, INC. ON MARCH 14 AND 22, 2018.
4. BORING LOCATIONS SHOWN ARE APPROXIMATE AND WERE LOCATED IN THE FIELD BY WESTON & SAMPSON ENGINEERS, INC. USING TIE-OFFS TO EXISTING SITE FEATURES.

LEGEND:

B-1-HS
BORING DESIGNATION AND APPROXIMATE LOCATION.

150 75 0 150 300
SCALE: 1"=150'

FIGURE 2
HIGH SCHOOL SITE PLAN

WAYLAND HIGH SCHOOL ATHLETIC FACILITIES
WAYLAND, MA

DESIGNED BY: MJZ	CHECKED BY:	DATE: APRIL 2018

Weston & Sampson

P:\MA\Wayland MA\Wayland High School Athletic Facilities\Geotech\Plan\High School Site Plan.dwg

Weston & Sampson

BORING NUMBER: **B-1-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/14/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/14/2018	1.2 ft. +/-	Observed in hand excavation.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0										8" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
	S-1	0.7	/						SAND & GRAVEL	Medium dense, light brown, fine to coarse SAND, some fine gravel, trace silt; wet. ▼	
	S-2	2.0	18/24	6 7 8 9	15					Top 8" - Light brown, fine to coarse SAND, some fine gravel, trace silt; wet.	
									SILT & SAND	Bottom 10" - Medium dense, light brown, fine to medium SAND, little silt; wet.	
5	S-3	4.0	7/24	3 6 7 6	13					Medium dense, brown, sandy SILT; wet.	
10	S-4	10.0	16/24	3 5 5 7	10					Stiff, brown, sandy SILT; wet. - Bottom 2" is gray	
15	S-5	15.0	14/24	3 3 4 5	7					Loose, gray, silty fine SAND; wet.	
20	S-6	19.0	21/24	5 6 7 7	13					Stiff, gray, SILT, some fine sand; wet.	

End of boring at 21 ft.

MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)

Mineral Soil	Organic Soil
GRAVEL, SAND, SILT, CLAY: >50%	PEAT: 50-100%
gravelly, sandy, silty, clayey: 35-50%	organic (soil): 15-50%
some: 20-35%	with some organics: 5-15%
little: 10-20%	
trace: 0-10%	

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 12:30 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-2-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/14/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/14/2018	2 ft. +/-	Observed in hand excavation.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	/							12" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
									FILL	Dark brown, SILT, little fine to coarse sand, trace fine gravel, trace roots; moist. [FILL] ▼	
	S-2	2.0	10/24	9 12 14 18	26				SAND & GRAVEL	Medium dense, light brown, gravelly fine to coarse SAND, trace silt; wet.	
5	S-3	4.0	12/24	9 15 21 20	36					Top 5" - Light brown, gravelly fine to coarse SAND, trace silt; wet. Bottom 7" - Dense, orange-brown, sandy fine to coarse GRAVEL, trace silt; wet. - Iron oxide staining	
10	S-4	10.0	10/24	5 7 7 6	14					Top 5" - Medium dense, light brown, fine to coarse SAND, little fine gravel, trace silt; wet.	
									SILT & SAND	Bottom 5" - Stiff, gray-brown, SILT, some fine to medium sand, trace fine gravel; wet.	
15	S-5	15.0	13/24	9 7 9 11	16					Very stiff, gray, SILT, little fine sand; wet.	
20	S-6	19.0	17/24	6 7 8 7	15					Very stiff, gray, sandy SILT; wet.	

End of boring at 21 ft.

MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)

Mineral Soil	Organic Soil
GRAVEL, SAND, SILT, CLAY: >50%	PEAT: 50-100%
gravelly, sandy, silty, clayey: 35-50%	organic (soil): 15-50%
some: 20-35%	with some organics: 5-15%
little: 10-20%	
trace: 0-10%	

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

BORING NUMBER: **B-2-HS**

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-3-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/14/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/14/2018	2 ft. +/-	Observed in hand excavation.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	/							7" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
									SAND & GRAVEL	Brown, fine to coarse SAND, little fine to coarse gravel, little silt; moist.	
	S-2	2.0	16/24	9 10 10 11	20					Medium dense, brown, gravelly fine to coarse SAND, trace silt; wet.	
5	S-3	4.0	14/24	17 18 17 16	35					Dense, brown, fine to coarse GRAVEL, little fine to coarse sand, trace silt; wet.	
10									SILT & SAND		
	S-4	10.0	15/24	7 6 7 9	13					Stiff, brown, SILT, some fine sand; wet. - varves of silt and fine sand	
15	S-5	15.0	13/24	3 3 5 5	8					Stiff, gray, SILT, some fine sand; wet.	
20	S-6	19.0	23/24	3 4 4 4	8					Medium stiff, gray, SILT, some fine sand; wet.	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

End of boring at 21 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

BORING NUMBER: **B-4-HS**

Weston & Sampson

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	4 ft. +/-	Based on wet samples.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	/							10" Topsoil	Hand excavate to 2 ft. due to possible electric lines.
									FILL	Dark brown, SILT, some fine to coarse sand, trace fine gravel, trace roots; moist. [FILL]	
	S-2	2.0	15/24	10 11 14 18	25				SAND & GRAVEL	Medium dense, brown, fine to coarse SAND, some fine to coarse gravel, trace silt; moist.	
5	S-3	4.0	7/24	4 9 16 17	25					Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, trace silt; wet. - coarse gravel fragment in tip of spoon.	
10									SILT & SAND		
	S-4	10.0	14/24	3 5 5 6	10					Stiff, gray, SILT, some fine sand; wet.	
15											
	S-5	15.0	19/24	3 4 5 6	9					Stiff, gray, SILT, some fine sand; wet.	
20	S-6	19.0	17/24	6 7 7 8	14					Stiff, gray, SILT, some fine sand; wet.	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

End of boring at 22 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

BORING NUMBER: **B-4-HS**

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:20 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-5A-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	Not observed	

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0											
	S-1	0.0	16/24	5 6 6 7	12					10" Topsoil	
									FILL	Medium dense, brown, fine to coarse SAND, little fine gravel, little silt; moist. [FILL]	
	S-2	2.0	14/24	12 18 24 12	42					Dense, brown, fine to coarse SAND, some fine gravel, trace silt; moist. [FILL]	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

Approximately 4 in. diameter plastic gas line encountered at 4 ft. End of boring at 4 ft.
Offset boring approximately 24 ft. south to B-5B-HS.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

BORING NUMBER: **B-5A-HS**

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

BORING NUMBER: **B-5B-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	9 ft. +/-	Measured in borehole.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0										See log for B-5A-HS for upper 4 ft. descriptions.	- B-5B is offset approximately 24 ft. south of B-5A-HS.
5	S-3	4.0	12/24	14 15 21 18	36				SAND & GRAVEL	Dense, brown, fine to coarse GRAVEL, little fine to coarse sand, trace silt; moist.	- Auger grinding and rig chatter from approximately 5 - 15 ft. Coarse gravel and cobbles in auger spoils.
10	S-4	10.0	18/24	53 117 54 40	171					Very dense, gray, sandy fine to coarse GRAVEL, trace silt; wet.	
15	S-5	15.0	18/24	6 10 15 36	25					Medium dense, brown, fine GRAVEL, some medium to coarse sand, trace silt; wet.	- Blow-in observed in augers after sampling 15 - 17 ft. Unable to continue boring.

End of boring at 17 ft.

MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)

Mineral Soil	Organic Soil
GRAVEL, SAND, SILT, CLAY: >50%	PEAT: 50-100%
gravelly, sandy, silty, clayey: 35-50%	organic (soil): 15-50%
some: 20-35%	with some organics: 5-15%
little: 10-20%	
trace: 0-10%	

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-6-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/22/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	15 ft. +/-	Measured in borehole.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0										11" Topsoil	
	S-1	0.0	20/24	2 2 8 14	10				FILL	Medium dense, gray-brown, silty SAND, little fine gravel; moist. [FILL]	
	S-2	2.0	12/24	5 7 13 22	20				FILL	Medium dense, brown, fine to coarse SAND, little fine gravel, little silt; moist. [FILL]	
5	S-3	4.0	15/24	14 23 35 22	58				SAND & GRAVEL	Top 6" - Brown, fine to coarse SAND, some silt, little fine gravel; moist. Bottom 9" - Very dense, gray-brown, fine to coarse GRAVEL, little fine to coarse sand, trace silt; moist.	- Auger grinding at approximately 5 ft.
10	S-4	10.0	3/24	19 15 16 16	31				SAND & GRAVEL	Dense, brown, fine to coarse GRAVEL, little fine to coarse sand, little silt; moist.	- Coarse gravel fragment stuck in tip of spoon.
15	S-5	15.0	10/24	9 9 7 6	16				SAND & GRAVEL	Medium dense, brown, fine to coarse SAND, trace fine gravel, trace silt; wet.	
20	S-6	20.0	18/24	11 10 12 20	22				SAND & GRAVEL	Medium dense, tan, fine to coarse GRAVEL, little medium to coarse sand, trace silt; wet.	

End of boring at 22 ft.

Mineral Soil
GRAVEL, SAND, SILT, CLAY: >50%
gravelly, sandy, silty, clayey: 35-50%
some: 20-35%
little: 10-20%
trace: 0-10%

Organic Soil
PEAT: 50-100%
organic (soil): 15-50%
with some organics: 5-15%

SAMPLE SYMBOL	SAMPLE TYPE	GRANULAR SOILS N-Value	GRANULAR SOILS Density	COHESIVE SOILS N-VALUE	COHESIVE SOILS CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Weston & Sampson

BORING NUMBER: **B-7-HS**

CLIENT: Town of Wayland
PROJECT NUMBER: 2180076
PROJECT NAME: Wayland High School Athletic Facilities
PROJECT LOCATION: Wayland, Massachusetts

DRILLER: Brett Balyk - Technical Drilling Services
LOGGED / CHECKED BY: M. Zanchi, EIT /
RIG TYPE / DRILLING METHODS: ATV / hollow-stem auger (HSA)
CASING DIAMETER: 4-1/4" ID
SAMPLING METHODS: Standard penetration test (SPT)
SAMPLER TYPE: Standard 24" long x 2" OD (1-3/8" ID) split-spoon
SAMPLER HAMMER: 140-lb. automatic hammer
OTHER:

BORING LOCATION: See attached plan.
GROUND ELEVATION: Not available **DATUM:** Unknown
DRILLING START DATE: 3/14/2018 **END DATE:** 3/22/2018

GROUNDWATER OBSERVATIONS

DATE	DEPTH	COMMENTS
3/22/2018	15 ft. +/-	Based on wet samples.

DEPTH (ft.) *Elevation*	TYPE - NO.	DEPTH (ft.)	REC./PEN. (in.)	SPT BLOWS/6"	SPT N-VALUE	% MOISTURE	% FINES (P200)	GRAPHIC LOG	STRATA NAME	MATERIAL DESCRIPTION (see guide below for soil classification based on constituent percentage)	COMMENTS
0	S-1	0.0	14/24	3 5 6 5	11					Stiff, dark brown, SILT, little fine to coarse gravel, little fine to coarse sand; moist. [TOPSOIL]	
	S-2	2.0	12/24	11 17 12 25	29				SAND & GRAVEL	Medium dense, brown, fine to coarse GRAVEL, some fine to coarse sand, trace silt; moist.	
5	S-3	4.0	14/24	50 35 40 53	75					Very dense, brown, sandy fine to coarse GRAVEL, trace silt; moist.	
10	S-4	10.0	14/24	13 11 11 10	22				SAND	Medium dense, brown, fine to coarse SAND, little fine to coarse gravel, trace silt; moist.	
15	S-5	15.0	12/24	9 8 8 8	16					Medium dense, brown, fine to medium SAND, trace silt; wet. ▼	
20	S-6	20.0	24/24	5 7 7 8	14					Medium dense, brown, fine to medium SAND, little silt; wet.	

Mineral Soil: GRAVEL, SAND, SILT, CLAY: >50%; gravelly, sandy, silty, clayey: 35-50%; some: 20-35%; little: 10-20%; trace: 0-10%

Organic Soil: PEAT: 50-100%; organic (soil): 15-50%; with some organics: 5-15%

End of boring at 22 ft.

SAMPLE		GRANULAR SOILS		COHESIVE SOILS	
SYMBOL	TYPE	N-Value	Density	N-VALUE	CONSISTENCY
S	Split spoon	0-4	Very Loose	< 2	Very Soft
ST	Shelby tube	4-10	Loose	2-4	Soft
AG	Auger grab	10-30	Med. Dense	4-8	Med. Stiff
NX	Rock core	30-50	Dense	8-15	Stiff
GP	Direct push	> 50	Very Dense	15-30	Very Stiff
				> 30	Hard

GENERAL NOTES:

1. The stratification lines represent the approximate boundary between soil types; actual transitions may be gradual.

2. Water level readings have been made in the drill holes at the times and conditions stated on the boring log. Fluctuations in the level of groundwater may occur due to other factors than those presented at the time measurements are made.

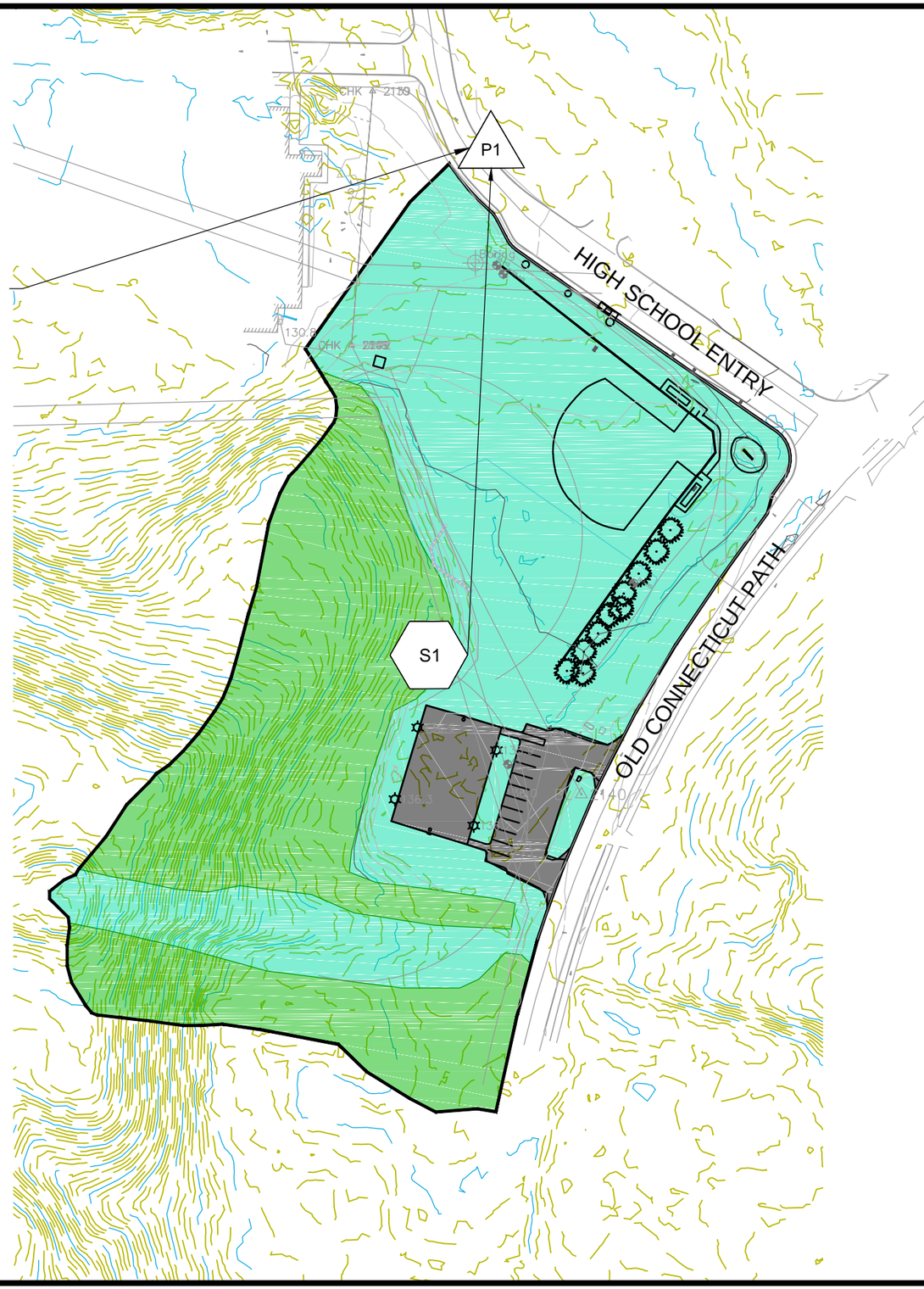
W&S BORING LOG - DATA TEMPLATE - WSE STANDARD LOGS.GDT - 3/30/18 10:11 - P:\MA\WAYLAND MA\WAYLAND HIGH SCHOOL ATHLETIC FACILITIES\GEOTECH\FIELD\BORING & TEST PIT LOGS\GINT LOGS - WAYLAND H.S. ATHLETIC FACILITIES.GPJ

Attachment D - Stormwater Modeling

LEGEND

- IMPERVIOUS
- WOODLAND
- GRASSED/LANDSCAPE AREAS

ANALYSIS POINT OF INTEREST (TYP.)



N

PLAN

SCALE: 1" = 100'

FIGURE 1

TOWN OF WAYLAND, MA
HIGH SCHOOL ATHLETIC FACILITIES

HYDROLOGY MAP
PROPOSED CONDITIONS

DESIGNED BY: JIP	CHECKED BY: JIP	DATE: JULY 13, 2018

Weston & Sampson

\\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\CAD\0_Current_HIGH SCHOOL\Figures\Hydro-EX.dwg

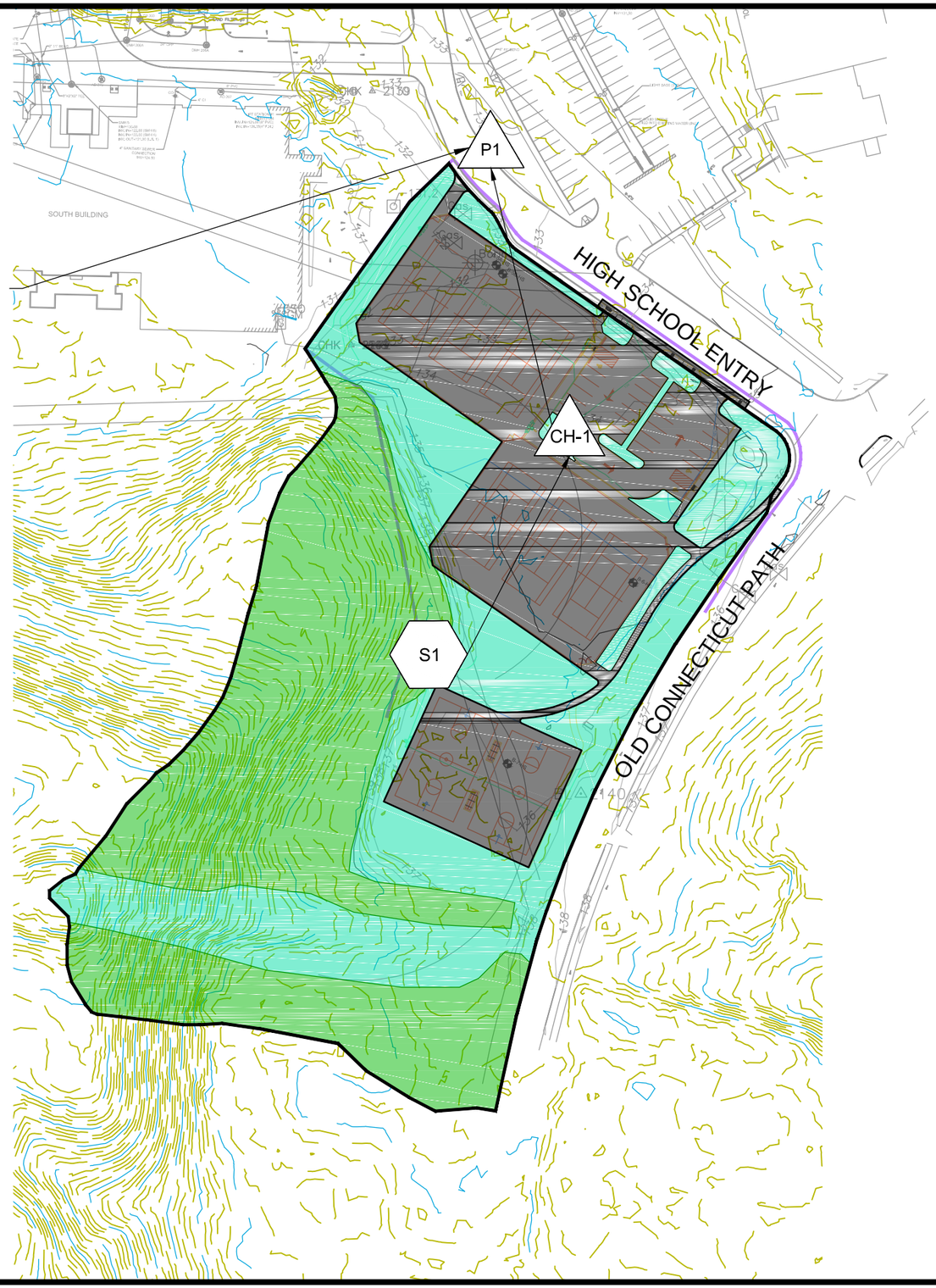
LEGEND

IMPERVIOUS

WOODLAND

GRASSED/LANDSCAPE AREAS

ANALYSIS POINT OF INTEREST (TYP.)



PLAN

SCALE: 1" = 100'

FIGURE 2

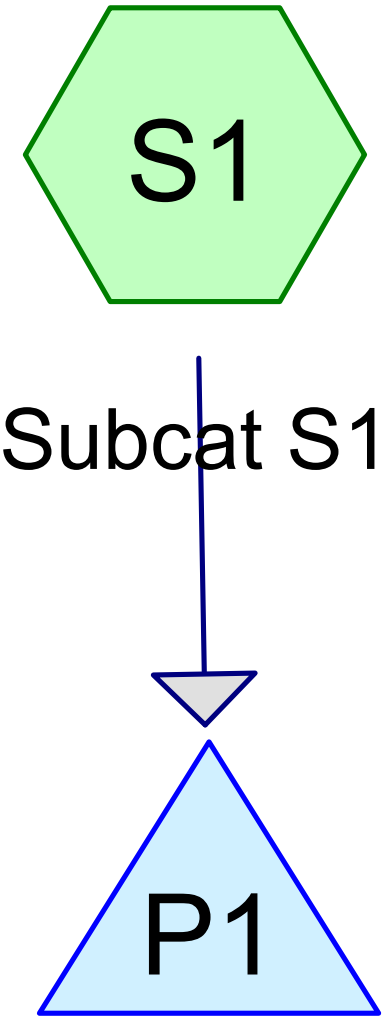
TOWN OF WAYLAND, MA
HIGH SCHOOL ATHLETIC FACILITIES

HYDROLOGY MAP
PROPOSED CONDITIONS

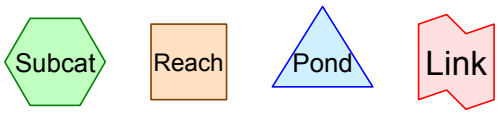
DESIGNED BY: JIP	CHECKED BY: JIP	DATE: JULY 13, 2018

Weston & Sampson

\\wse03.local\WSE\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\CAD\0_Current_HIGH SCHOOL\Figures\Hydro-PR.dwg



Analysis Pt. 1



Routing Diagram for HydroCAD-EX
Prepared by Hewlett-Packard Company, Printed 7/13/2018
HydroCAD® 10.00-15 s/n 00455 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
118,483	39	Pasture/grassland/range, Good, HSG A (S1)
12,377	98	Paved parking, HSG A (S1)
80,197	30	Woods, Good, HSG A (S1)
211,057	**39**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
211,057	HSG A	S1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
211,057		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
118,483	0	0	0	0	118,483	Pasture/grassland/range, Good
12,377	0	0	0	0	12,377	Paved parking
80,197	0	0	0	0	80,197	Woods, Good
211,057	**0**	**0**	**0**	**0**	**211,057**	**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=0.00"
Tc=0.0 min CN=39 Runoff=0.00 cfs 37 cf

Pond P1: Analysis Pt. 1 Inflow=0.00 cfs 37 cf
Primary=0.00 cfs 37 cf

Total Runoff Area = 211,057 sf Runoff Volume = 37 cf Average Runoff Depth = 0.00"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

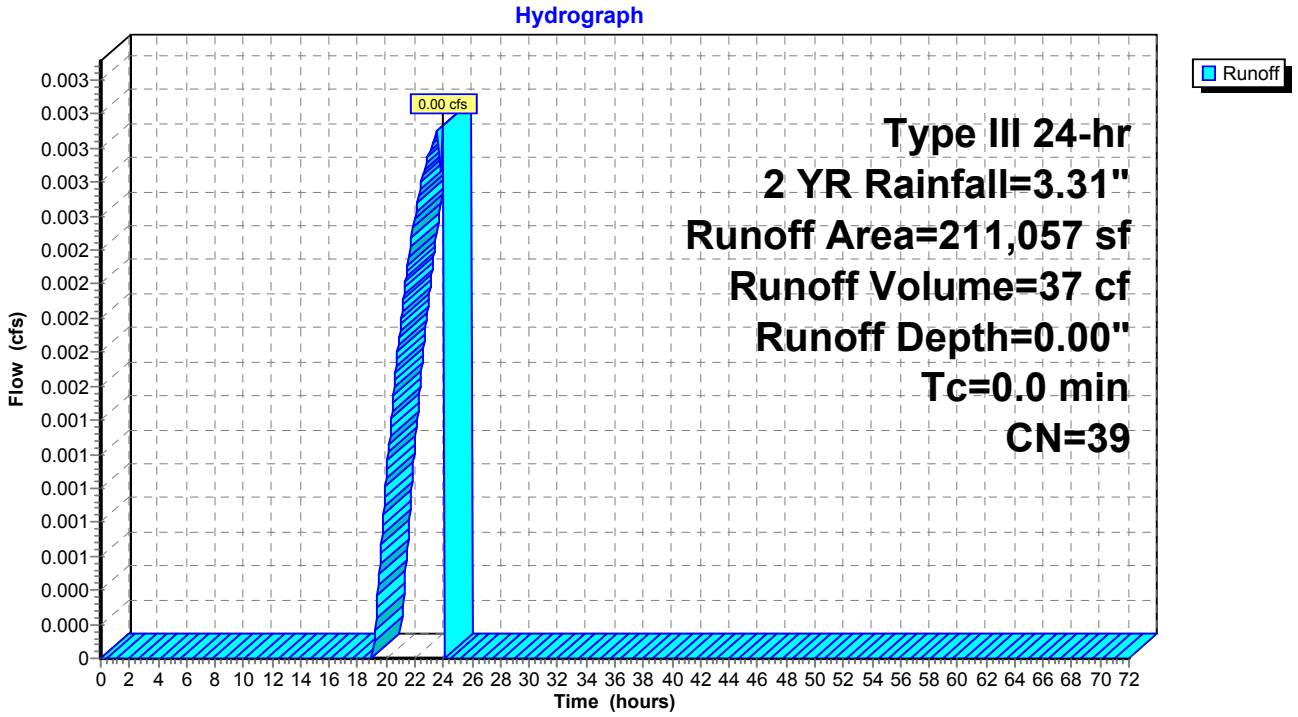
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.00 cfs @ 23.95 hrs, Volume= 37 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.31"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



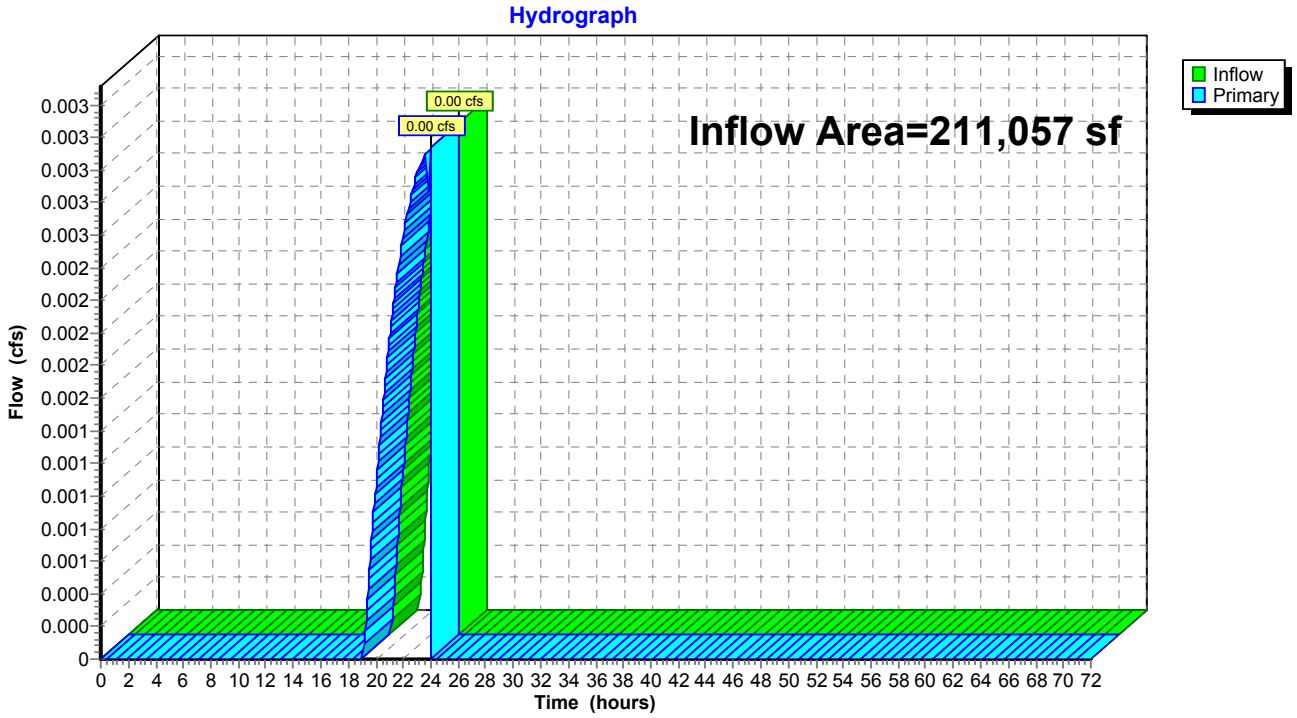
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 23.95 hrs, Volume= 37 cf
Primary = 0.00 cfs @ 23.95 hrs, Volume= 37 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=0.24"
Tc=0.0 min CN=39 Runoff=0.29 cfs 4,223 cf

Pond P1: Analysis Pt. 1 Inflow=0.29 cfs 4,223 cf
Primary=0.29 cfs 4,223 cf

Total Runoff Area = 211,057 sf Runoff Volume = 4,223 cf Average Runoff Depth = 0.24"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

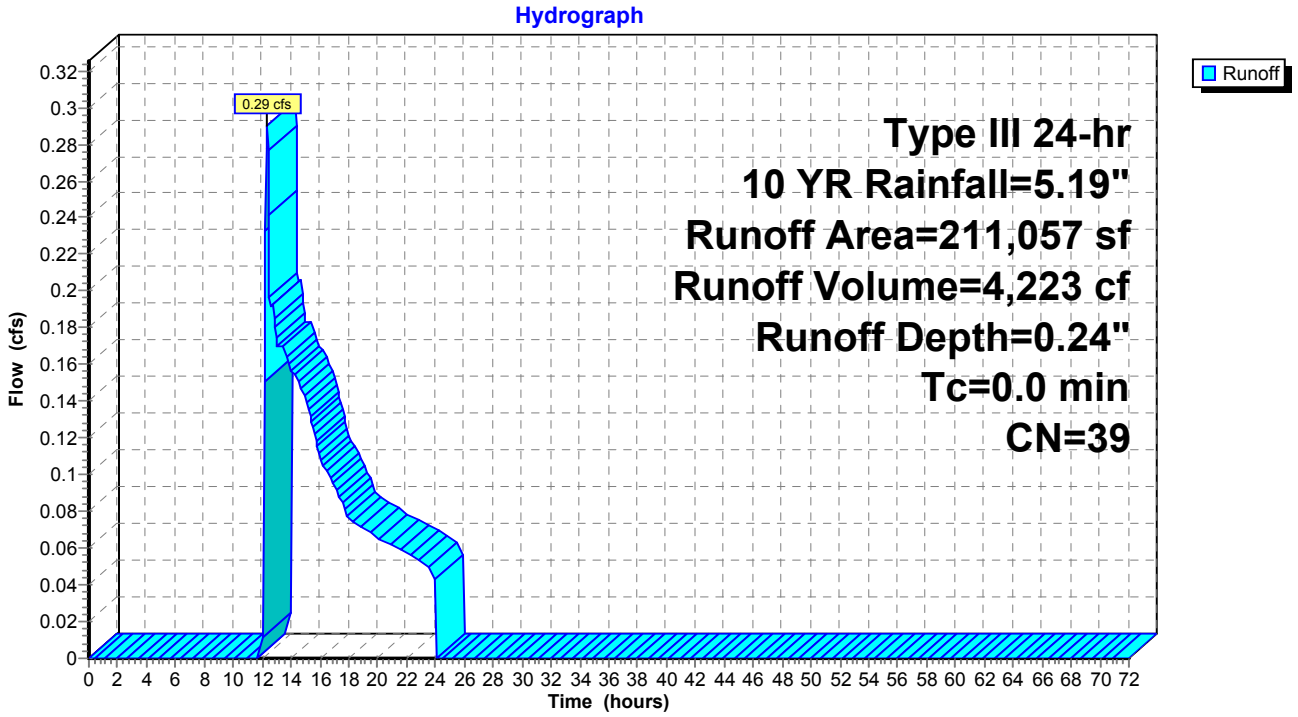
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.29 cfs @ 12.35 hrs, Volume= 4,223 cf, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.19"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



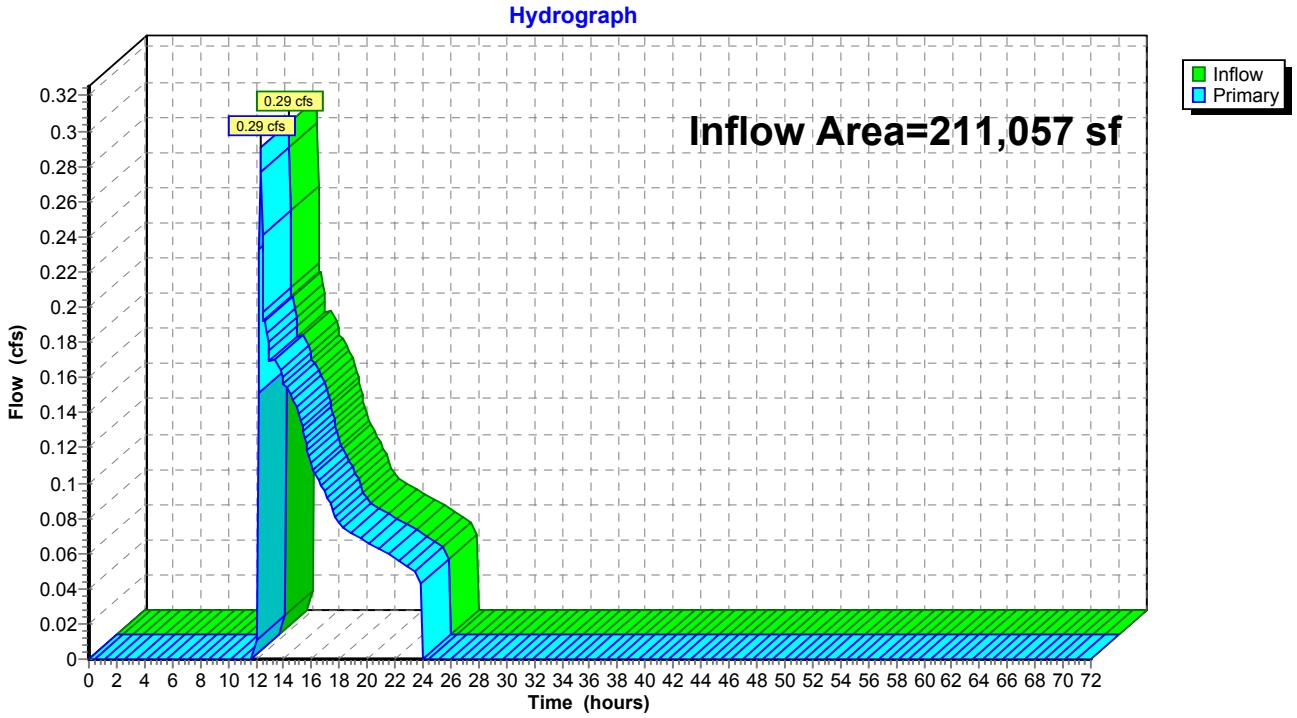
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 0.24" for 10 YR event
Inflow = 0.29 cfs @ 12.35 hrs, Volume= 4,223 cf
Primary = 0.29 cfs @ 12.35 hrs, Volume= 4,223 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=0.55"
Tc=0.0 min CN=39 Runoff=1.21 cfs 9,734 cf

Pond P1: Analysis Pt. 1 Inflow=1.21 cfs 9,734 cf
Primary=1.21 cfs 9,734 cf

Total Runoff Area = 211,057 sf Runoff Volume = 9,734 cf Average Runoff Depth = 0.55"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

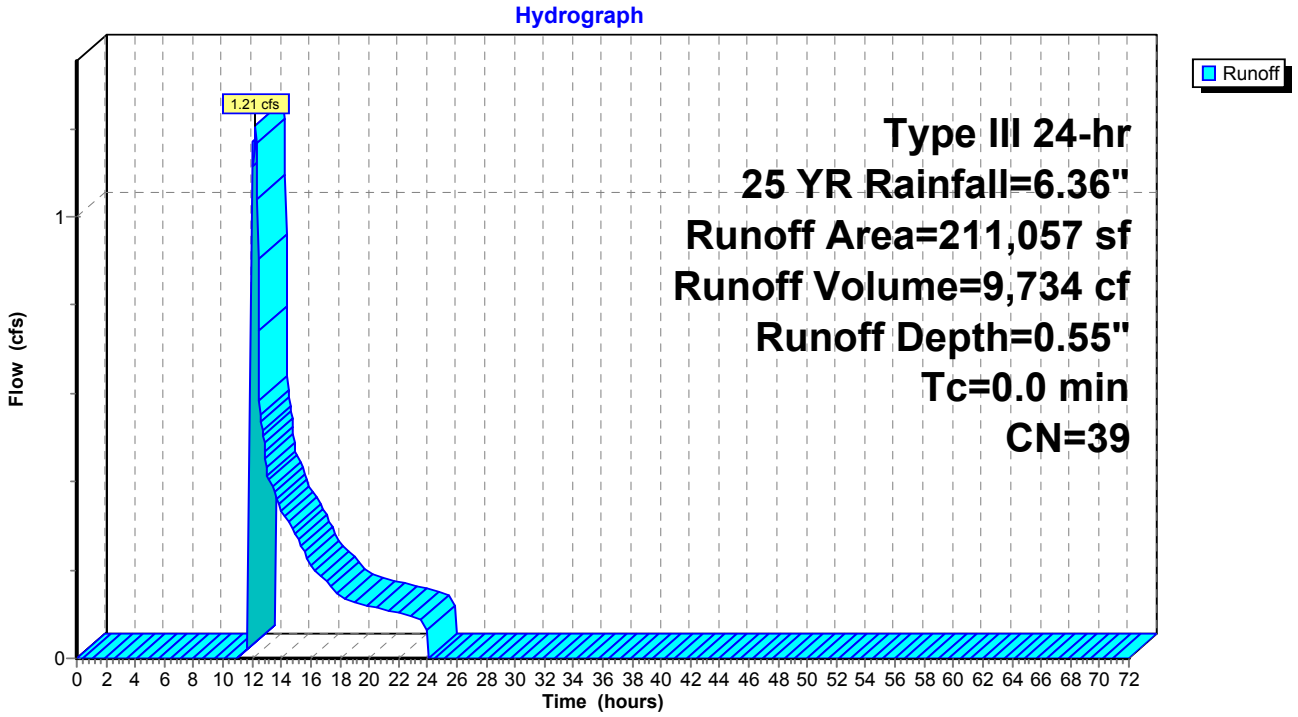
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.21 cfs @ 12.22 hrs, Volume= 9,734 cf, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.36"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



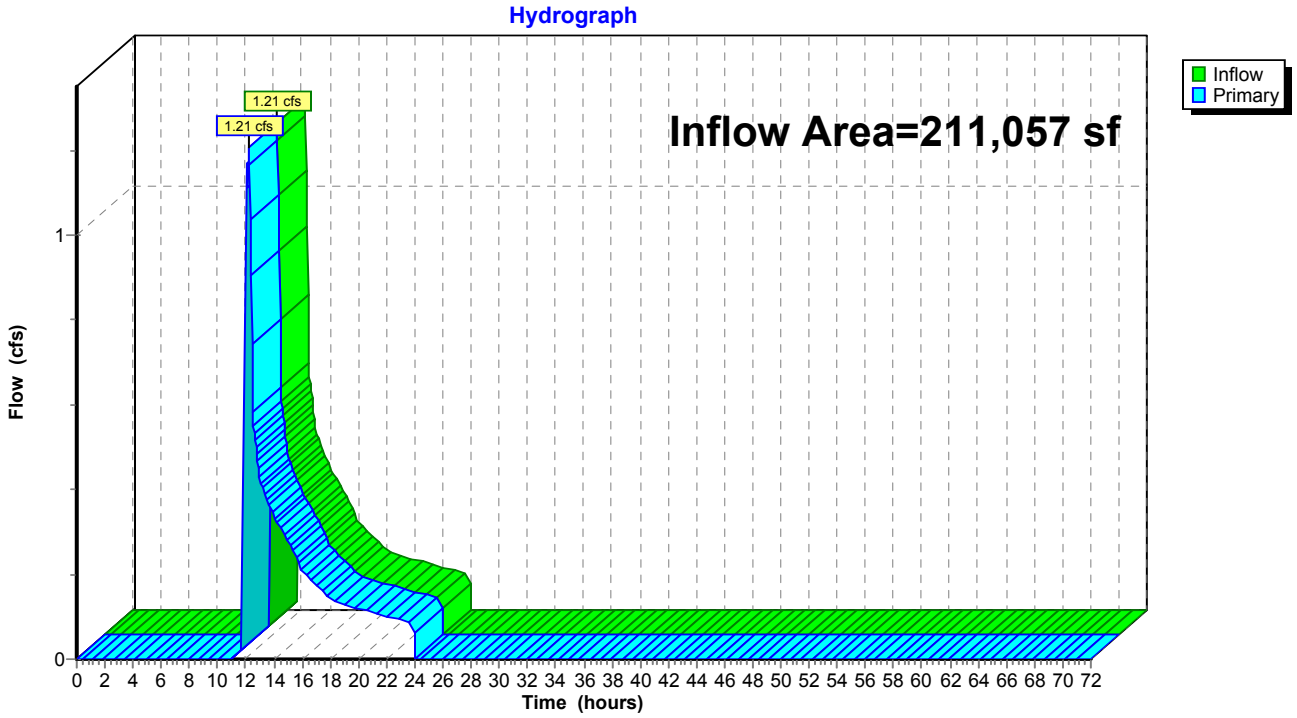
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 0.55" for 25 YR event
Inflow = 1.21 cfs @ 12.22 hrs, Volume= 9,734 cf
Primary = 1.21 cfs @ 12.22 hrs, Volume= 9,734 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 5.86% Impervious Runoff Depth=1.23"
Tc=0.0 min CN=39 Runoff=5.27 cfs 21,616 cf

Pond P1: Analysis Pt. 1 Inflow=5.27 cfs 21,616 cf
Primary=5.27 cfs 21,616 cf

Total Runoff Area = 211,057 sf Runoff Volume = 21,616 cf Average Runoff Depth = 1.23"
94.14% Pervious = 198,680 sf 5.86% Impervious = 12,377 sf

Summary for Subcatchment S1: Subcat S1

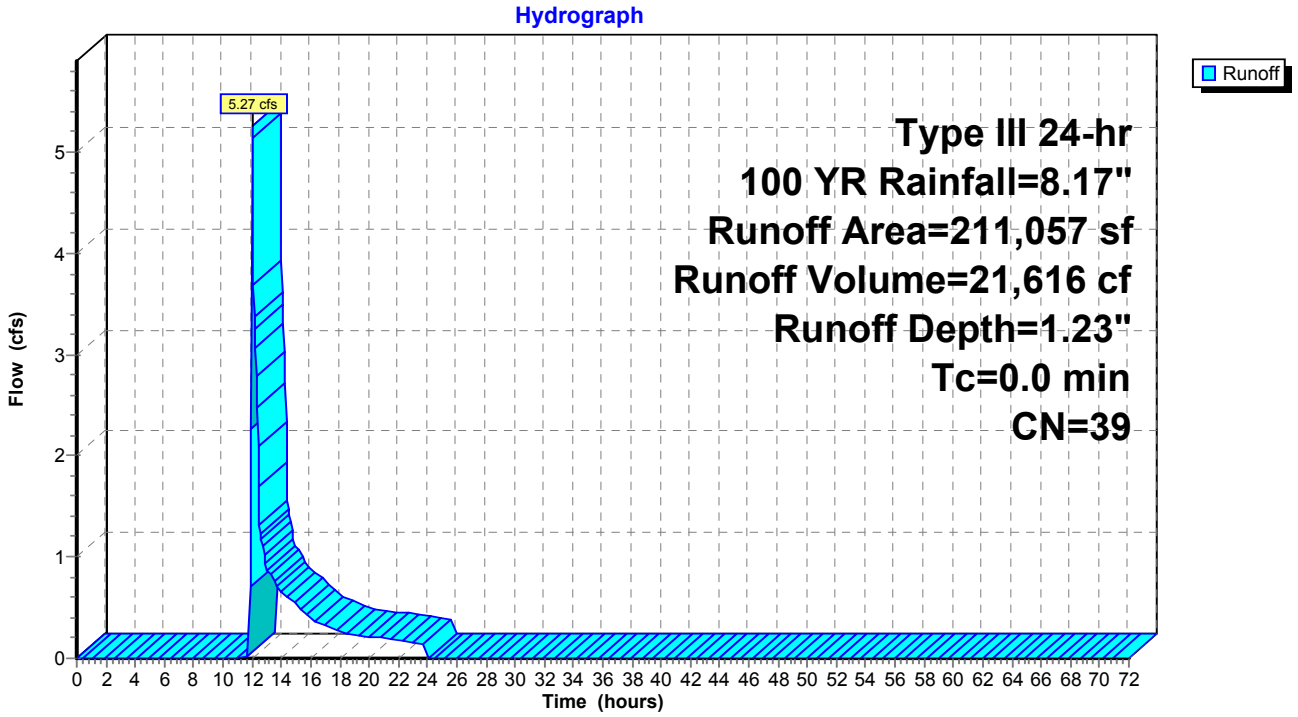
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 5.27 cfs @ 12.03 hrs, Volume= 21,616 cf, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.17"

Area (sf)	CN	Description
1,446	39	Pasture/grassland/range, Good, HSG A
12,377	98	Paved parking, HSG A
1,358	39	Pasture/grassland/range, Good, HSG A
100,451	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
9,134	39	Pasture/grassland/range, Good, HSG A
4,620	39	Pasture/grassland/range, Good, HSG A
211,057	39	Weighted Average
198,680		94.14% Pervious Area
12,377		5.86% Impervious Area

Subcatchment S1: Subcat S1



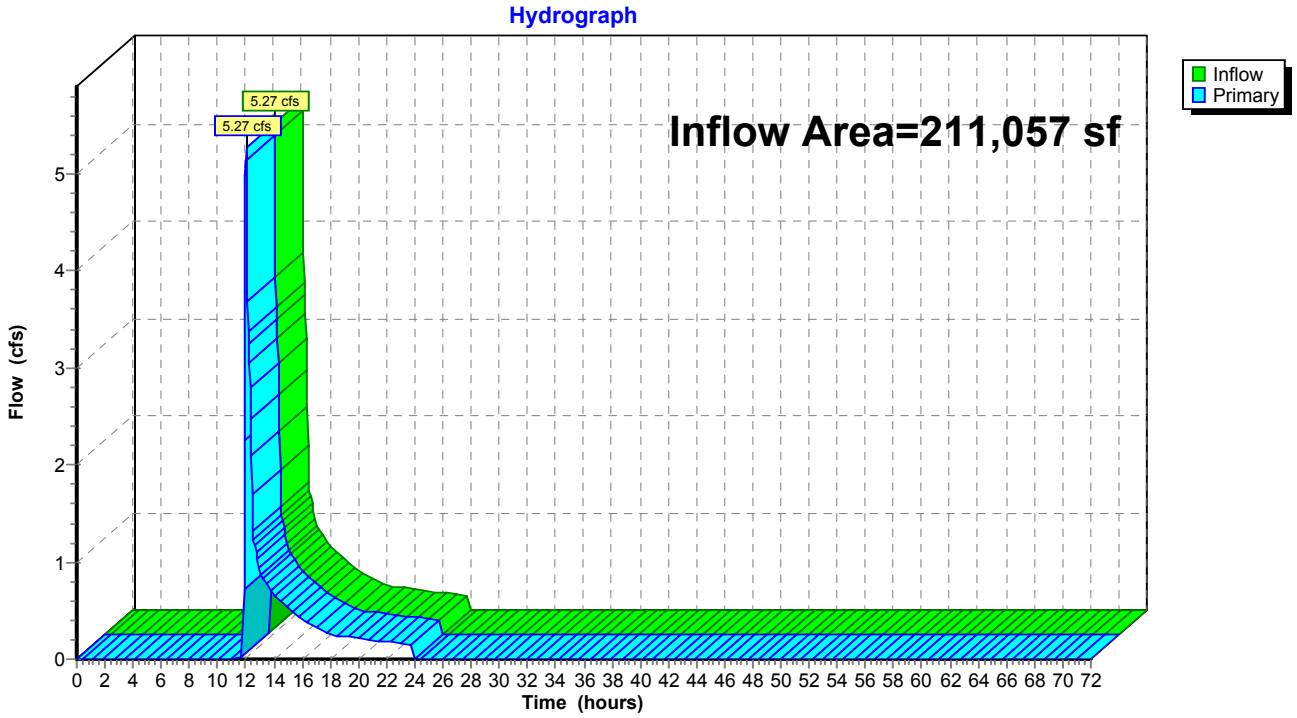
Summary for Pond P1: Analysis Pt. 1

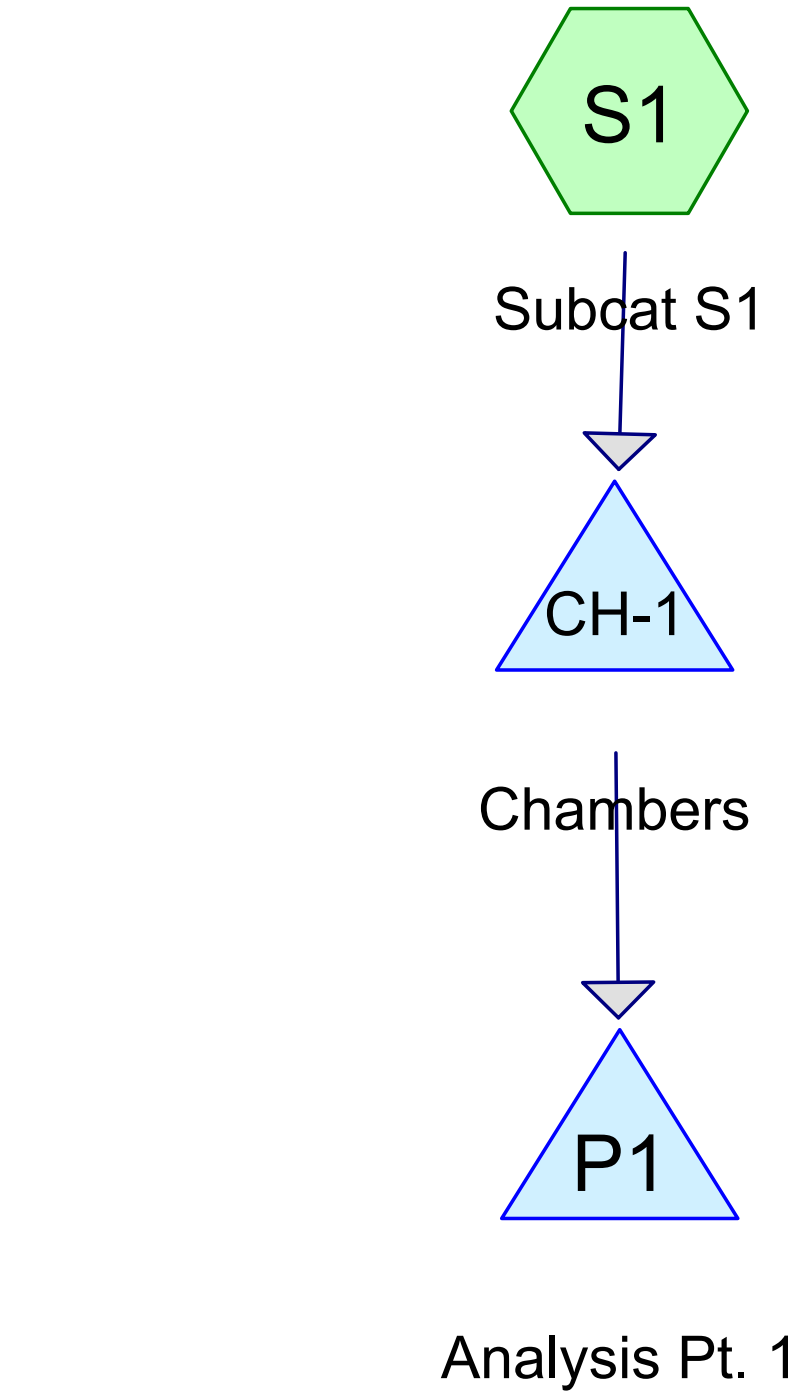
[40] Hint: Not Described (Outflow=Inflow)

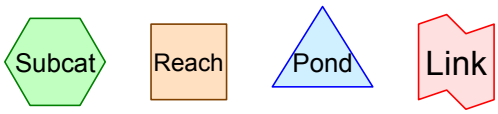
Inflow Area = 211,057 sf, 5.86% Impervious, Inflow Depth = 1.23" for 100 YR event
Inflow = 5.27 cfs @ 12.03 hrs, Volume= 21,616 cf
Primary = 5.27 cfs @ 12.03 hrs, Volume= 21,616 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Pond P1: Analysis Pt. 1







Routing Diagram for HydroCAD-PR
Prepared by Hewlett-Packard Company, Printed 7/13/2018
HydroCAD® 10.00-15 s/n 00455 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
65,197	39	Pasture/grassland/range, Good, HSG A (S1)
65,663	98	Paved parking, HSG A (S1)
80,197	30	Woods, Good, HSG A (S1)
211,057	**54**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
211,057	HSG A	S1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
211,057		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
65,197	0	0	0	0	65,197	Pasture/grassland/range, Good
65,663	0	0	0	0	65,663	Paved parking
80,197	0	0	0	0	80,197	Woods, Good
211,057	**0**	**0**	**0**	**0**	**211,057**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	CH-1	128.50	127.60	220.0	0.0041	0.012	12.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=0.25"
Tc=0.0 min CN=54 Runoff=0.51 cfs 4,482 cf

Pond CH-1: Chambers Peak Elev=128.02' Storage=64 cf Inflow=0.51 cfs 4,482 cf
Discarded=0.51 cfs 4,482 cf Primary=0.00 cfs 0 cf Outflow=0.51 cfs 4,482 cf

Pond P1: Analysis Pt. 1 Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 211,057 sf Runoff Volume = 4,482 cf Average Runoff Depth = 0.25"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

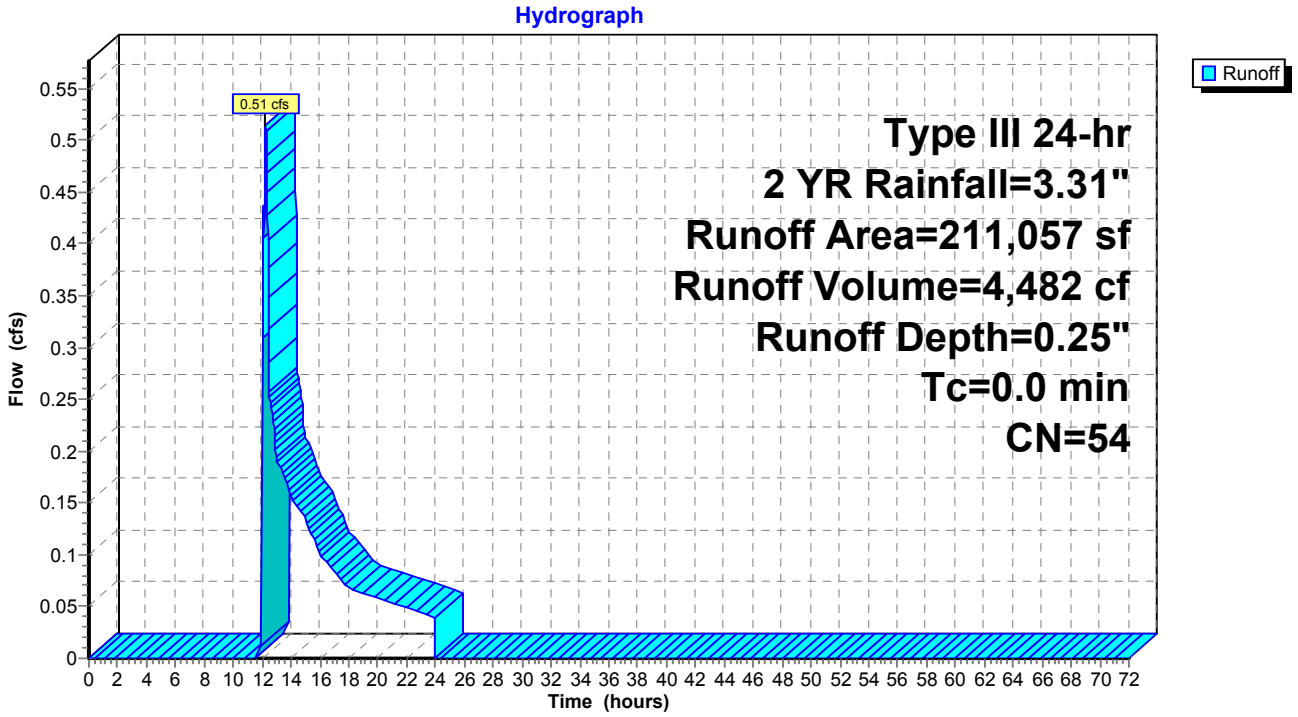
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.51 cfs @ 12.24 hrs, Volume= 4,482 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2 YR Rainfall=3.31"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.25" for 2 YR event
Inflow = 0.51 cfs @ 12.24 hrs, Volume= 4,482 cf
Outflow = 0.51 cfs @ 12.28 hrs, Volume= 4,482 cf, Atten= 1%, Lag= 2.2 min
Discarded = 0.51 cfs @ 12.28 hrs, Volume= 4,482 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 128.02' @ 12.28 hrs Surf.Area= 6,820 sf Storage= 64 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 2.1 min calculated for 4,481 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (953.3 - 951.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.31 cfs @ 12.28 hrs HW=128.02' (Free Discharge)
└─**4=Exfiltration** (Controls 1.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=128.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

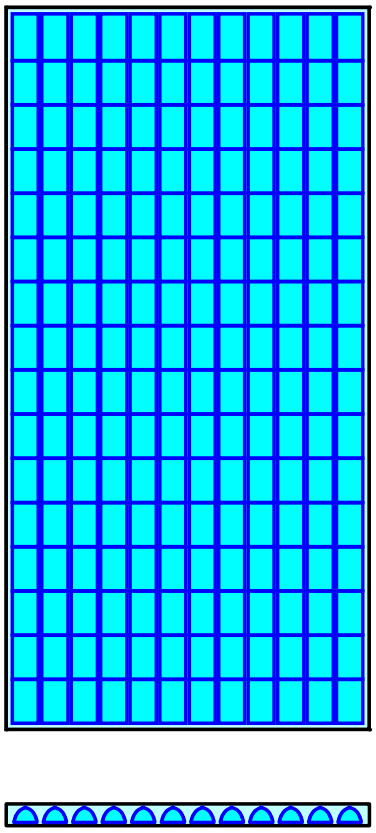
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

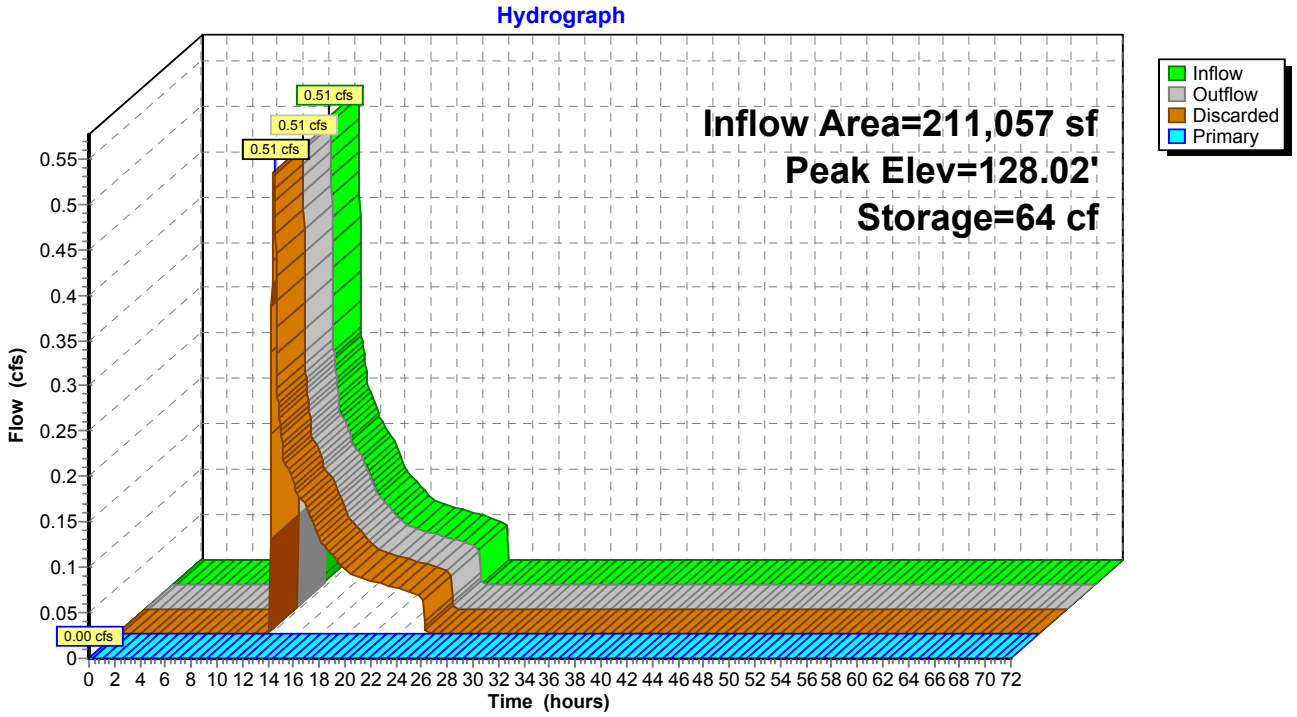
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



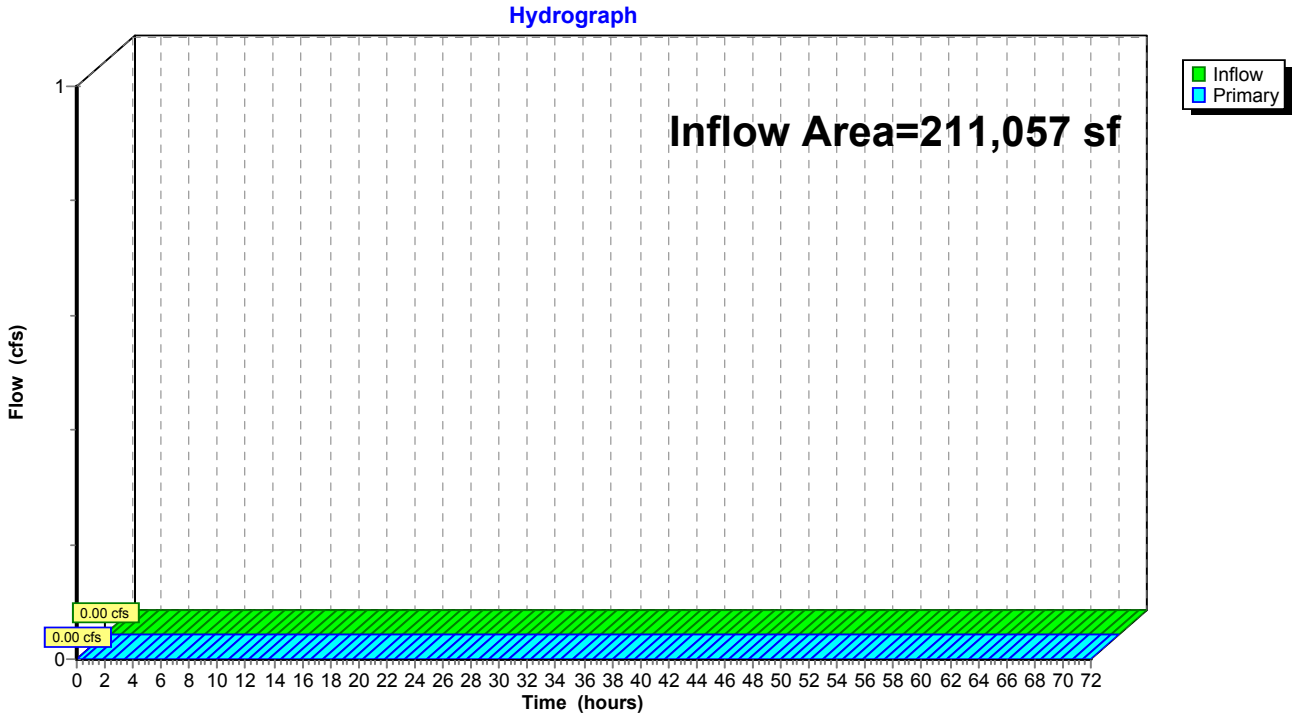
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=1.01"
Tc=0.0 min CN=54 Runoff=5.43 cfs 17,807 cf

Pond CH-1: Chambers Peak Elev=128.83' Storage=3,246 cf Inflow=5.43 cfs 17,807 cf
Discarded=1.31 cfs 17,807 cf Primary=0.00 cfs 0 cf Outflow=1.31 cfs 17,807 cf

Pond P1: Analysis Pt. 1 Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 211,057 sf Runoff Volume = 17,807 cf Average Runoff Depth = 1.01"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

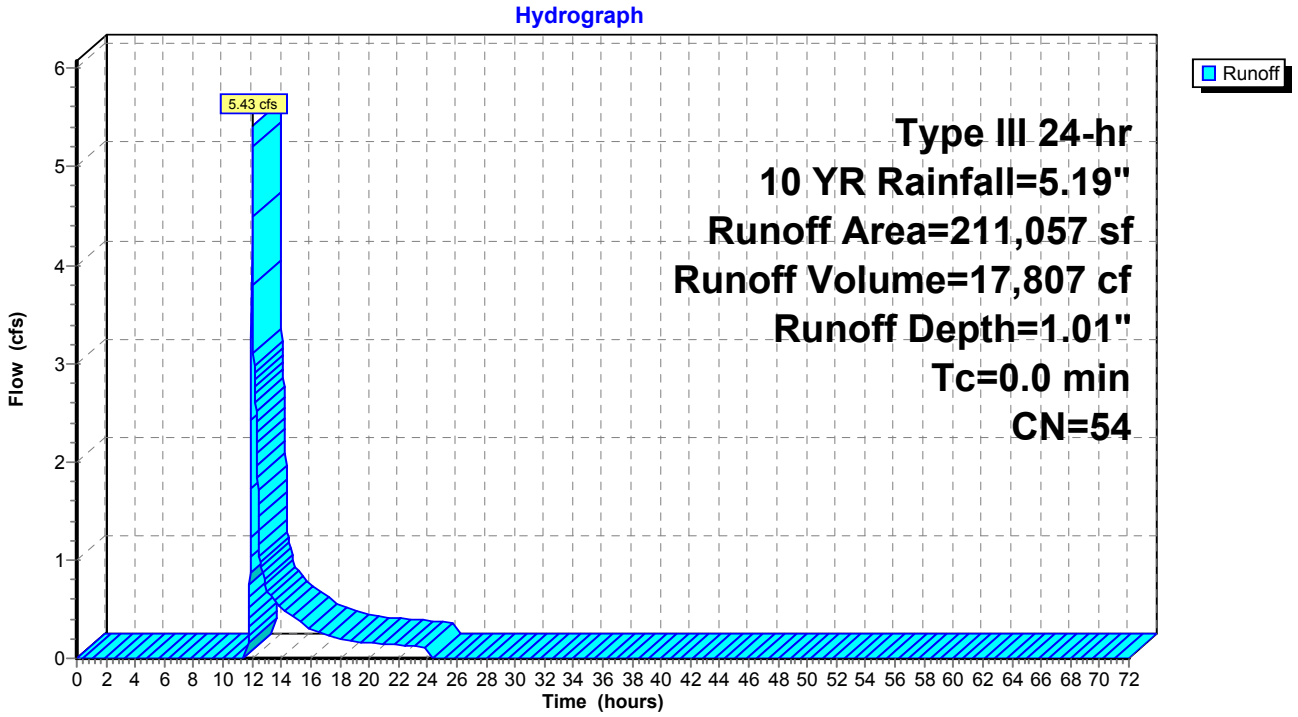
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 5.43 cfs @ 12.01 hrs, Volume= 17,807 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 YR Rainfall=5.19"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

Inflow Area =	211,057 sf, 31.11% Impervious, Inflow Depth = 1.01" for 10 YR event				
Inflow =	5.43 cfs @	12.01 hrs,	Volume=	17,807 cf	
Outflow =	1.31 cfs @	12.46 hrs,	Volume=	17,807 cf,	Atten= 76%, Lag= 26.8 min
Discarded =	1.31 cfs @	12.46 hrs,	Volume=	17,807 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 128.83' @ 12.46 hrs Surf.Area= 6,820 sf Storage= 3,246 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 14.2 min calculated for 17,802 cf (100% of inflow)
Center-of-Mass det. time= 14.2 min (901.5 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.31 cfs @ 12.46 hrs HW=128.83' (Free Discharge)
└─**4=Exfiltration** (Controls 1.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=128.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

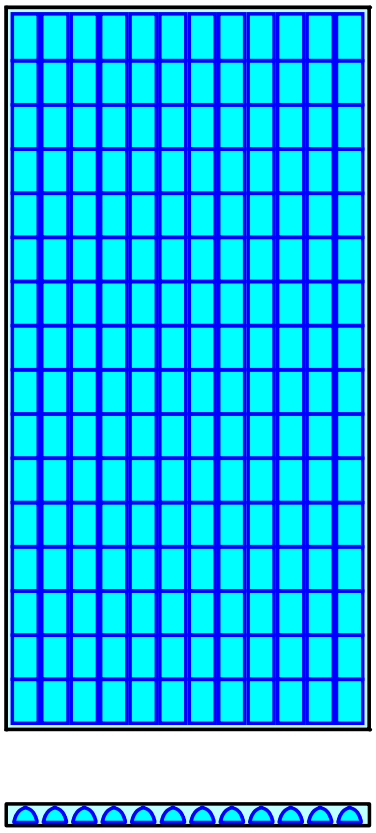
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

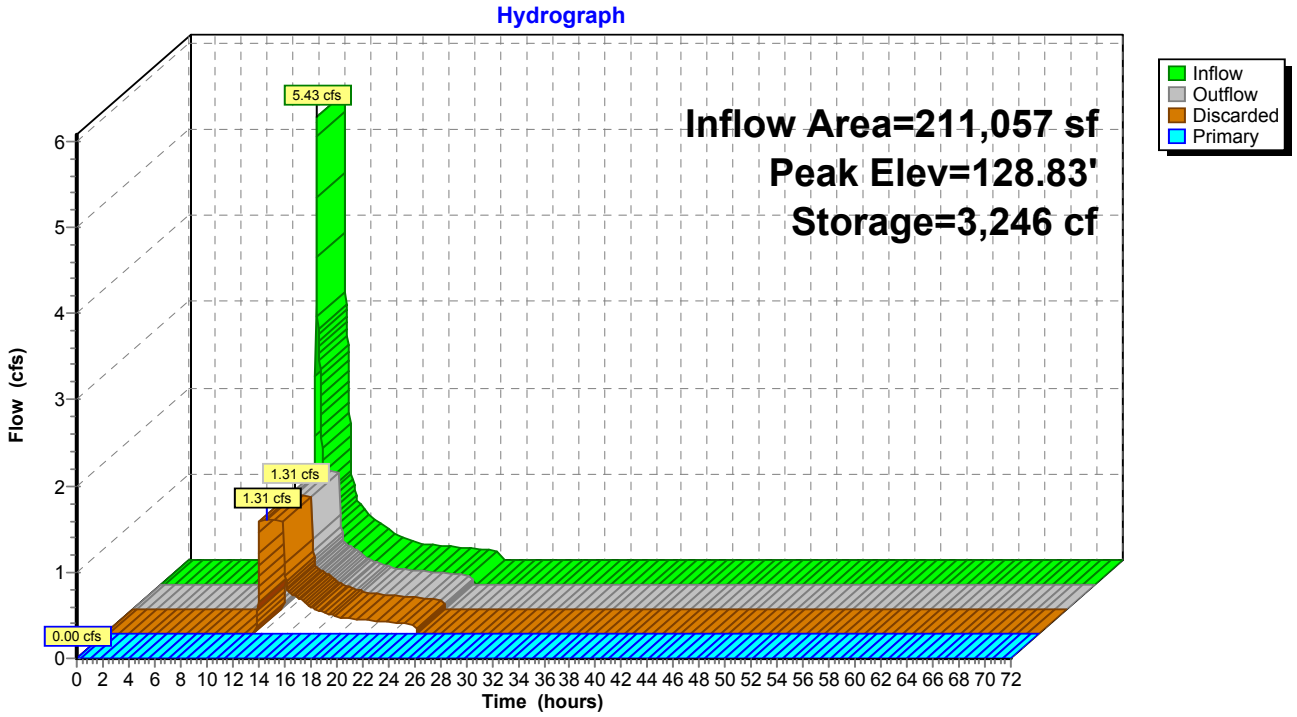
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



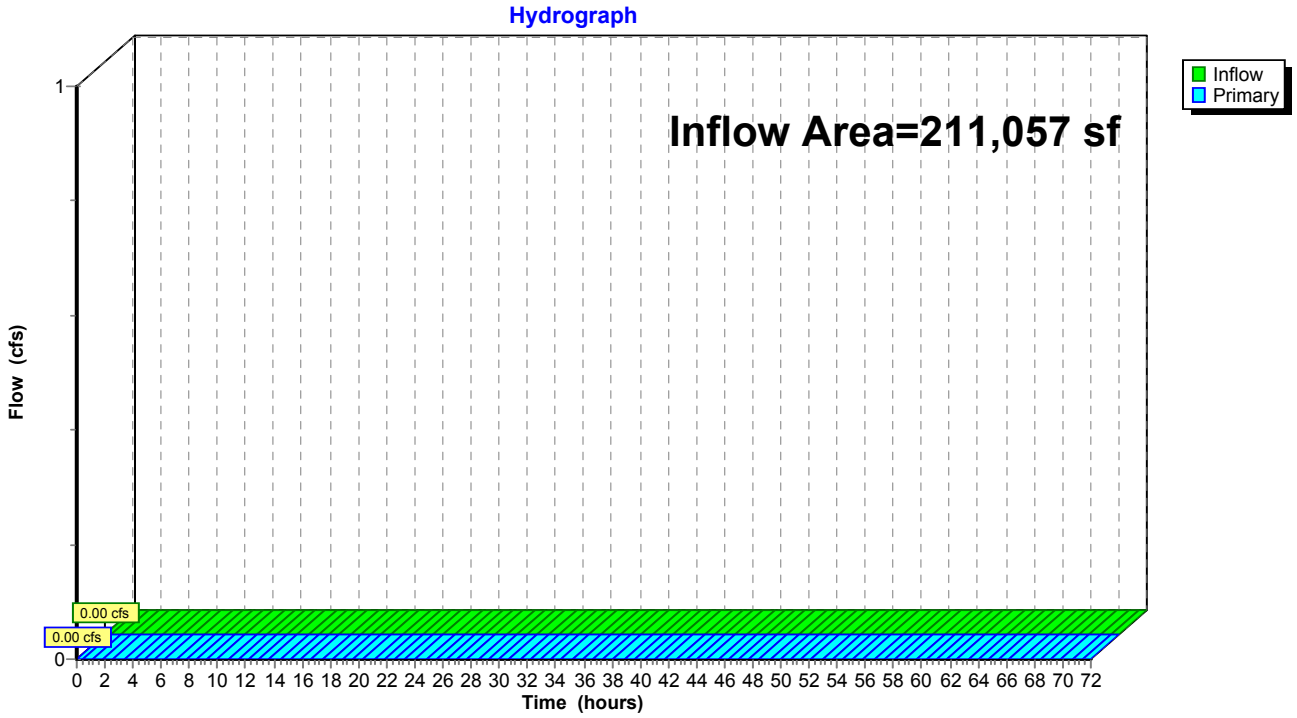
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	211,057 sf,	31.11% Impervious,	Inflow Depth =	0.00"	for 10 YR event
Inflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=1.65"
Tc=0.0 min CN=54 Runoff=10.08 cfs 28,944 cf

Pond CH-1: Chambers Peak Elev=129.64' Storage=7,718 cf Inflow=10.08 cfs 28,944 cf
Discarded=1.32 cfs 28,143 cf Primary=0.28 cfs 801 cf Outflow=1.60 cfs 28,944 cf

Pond P1: Analysis Pt. 1 Inflow=0.28 cfs 801 cf
Primary=0.28 cfs 801 cf

Total Runoff Area = 211,057 sf Runoff Volume = 28,944 cf Average Runoff Depth = 1.65"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

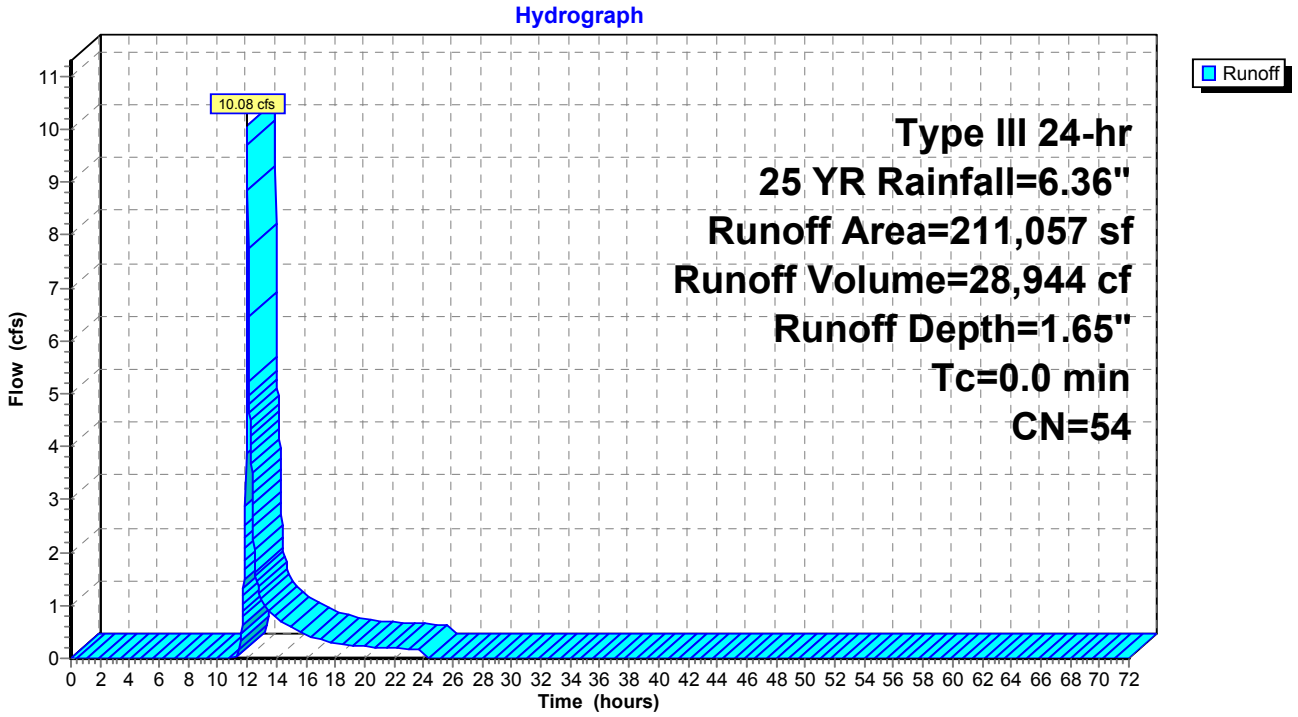
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 10.08 cfs @ 12.01 hrs, Volume= 28,944 cf, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25 YR Rainfall=6.36"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 1.65" for 25 YR event
Inflow = 10.08 cfs @ 12.01 hrs, Volume= 28,944 cf
Outflow = 1.60 cfs @ 12.51 hrs, Volume= 28,944 cf, Atten= 84%, Lag= 30.1 min
Discarded = 1.32 cfs @ 12.51 hrs, Volume= 28,143 cf
Primary = 0.28 cfs @ 12.51 hrs, Volume= 801 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 129.64' @ 12.51 hrs Surf.Area= 6,820 sf Storage= 7,718 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 41.7 min calculated for 28,944 cf (100% of inflow)
Center-of-Mass det. time= 41.7 min (911.9 - 870.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.32 cfs @ 12.51 hrs HW=129.64' (Free Discharge)
└─**4=Exfiltration** (Controls 1.32 cfs)

Primary OutFlow Max=0.28 cfs @ 12.51 hrs HW=129.64' (Free Discharge)
└─**1=Culvert** (Passes 0.28 cfs of 2.54 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.98 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

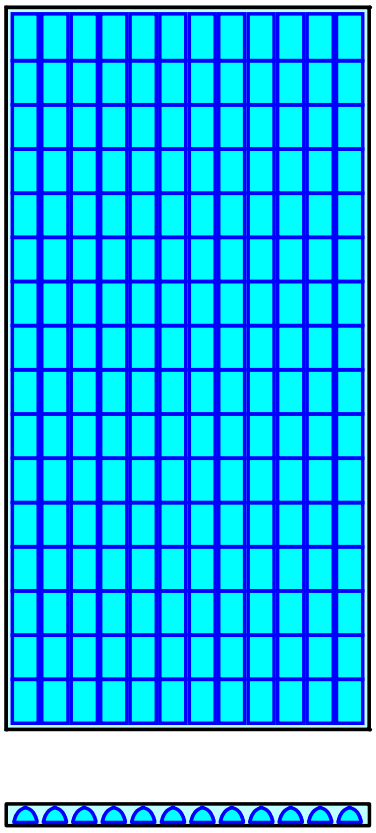
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

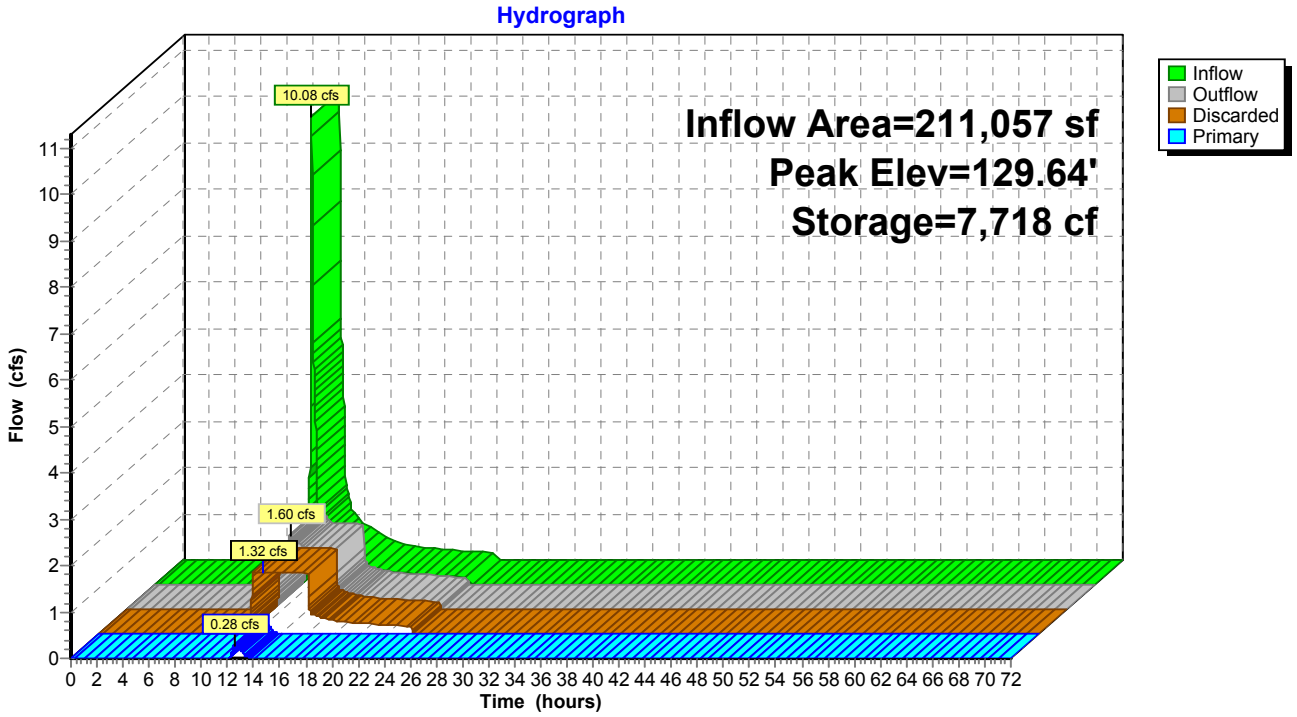
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



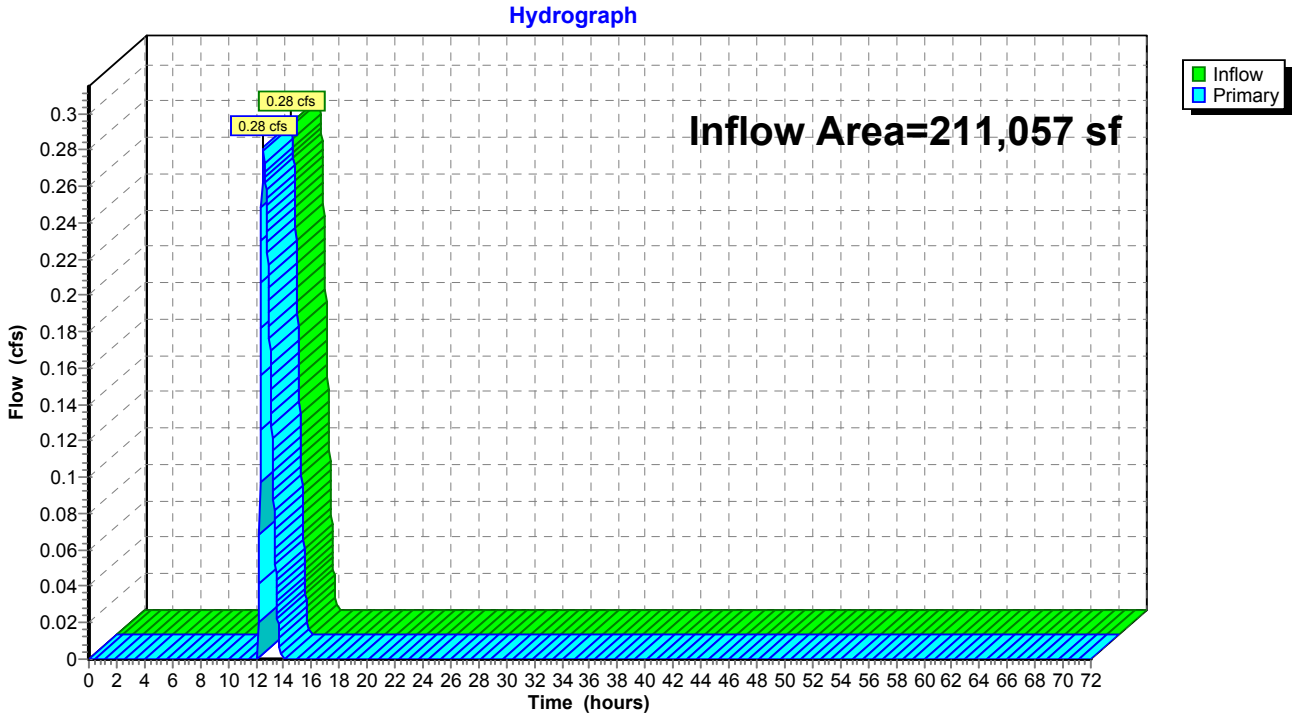
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.05" for 25 YR event
Inflow = 0.28 cfs @ 12.51 hrs, Volume= 801 cf
Primary = 0.28 cfs @ 12.51 hrs, Volume= 801 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Subcat S1 Runoff Area=211,057 sf 31.11% Impervious Runoff Depth=2.79"
Tc=0.0 min CN=54 Runoff=18.31 cfs 49,077 cf

Pond CH-1: Chambers Peak Elev=131.84' Storage=14,891 cf Inflow=18.31 cfs 49,077 cf
Discarded=1.34 cfs 38,535 cf Primary=3.88 cfs 10,542 cf Outflow=5.22 cfs 49,077 cf

Pond P1: Analysis Pt. 1 Inflow=3.88 cfs 10,542 cf
Primary=3.88 cfs 10,542 cf

Total Runoff Area = 211,057 sf Runoff Volume = 49,077 cf Average Runoff Depth = 2.79"
68.89% Pervious = 145,394 sf 31.11% Impervious = 65,663 sf

Summary for Subcatchment S1: Subcat S1

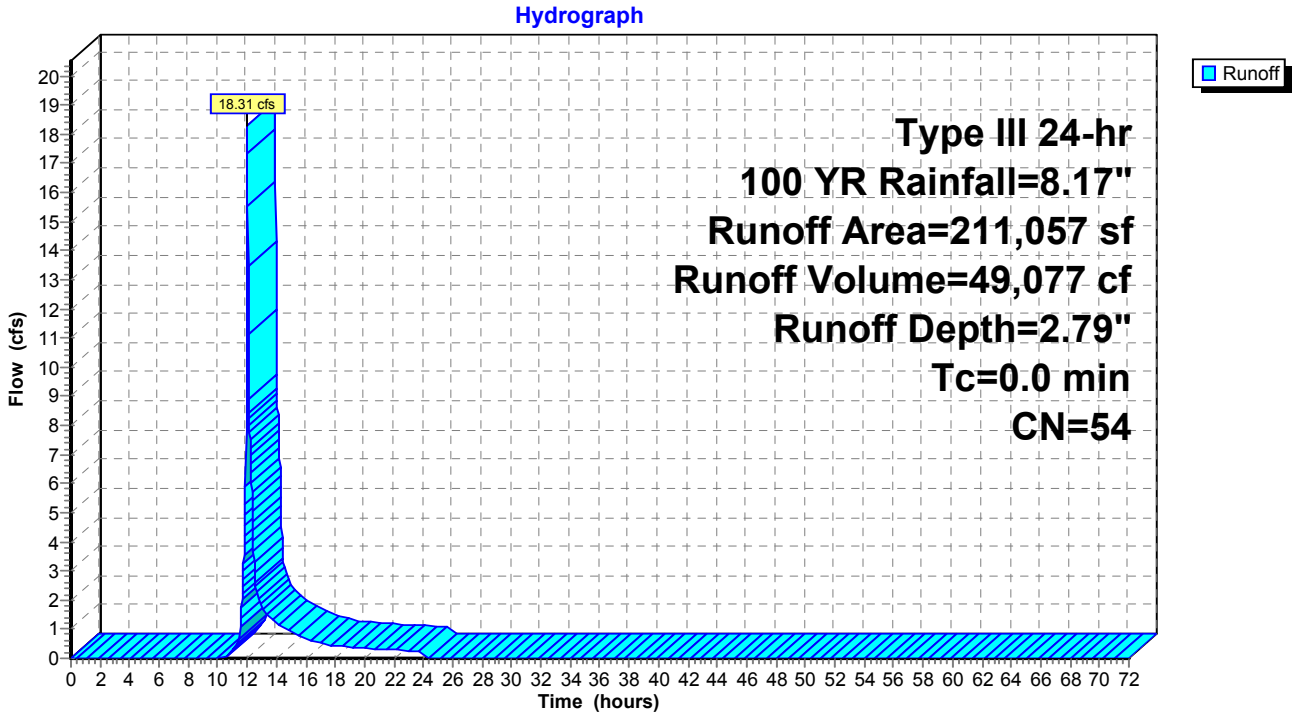
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 18.31 cfs @ 12.00 hrs, Volume= 49,077 cf, Depth= 2.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100 YR Rainfall=8.17"

Area (sf)	CN	Description
1,259	39	Pasture/grassland/range, Good, HSG A
1,202	39	Pasture/grassland/range, Good, HSG A
530	39	Pasture/grassland/range, Good, HSG A
531	39	Pasture/grassland/range, Good, HSG A
336	39	Pasture/grassland/range, Good, HSG A
63,478	98	Paved parking, HSG A
4,885	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
0	39	Pasture/grassland/range, Good, HSG A
1	39	Pasture/grassland/range, Good, HSG A
443	39	Pasture/grassland/range, Good, HSG A
10,285	39	Pasture/grassland/range, Good, HSG A
32,682	39	Pasture/grassland/range, Good, HSG A
2,033	30	Woods, Good, HSG A
8,196	30	Woods, Good, HSG A
12,995	30	Woods, Good, HSG A
1,474	39	Pasture/grassland/range, Good, HSG A
148	30	Woods, Good, HSG A
1,392	30	Woods, Good, HSG A
9,331	30	Woods, Good, HSG A
46,101	30	Woods, Good, HSG A
449	39	Pasture/grassland/range, Good, HSG A
8,685	39	Pasture/grassland/range, Good, HSG A
2,185	98	Paved parking, HSG A
1,103	39	Pasture/grassland/range, Good, HSG A
1,331	39	Pasture/grassland/range, Good, HSG A
211,057	54	Weighted Average
145,394		68.89% Pervious Area
65,663		31.11% Impervious Area

Subcatchment S1: Subcat S1



Summary for Pond CH-1: Chambers

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area =	211,057 sf,	31.11% Impervious,	Inflow Depth =	2.79"	for 100 YR event
Inflow =	18.31 cfs @	12.00 hrs,	Volume=	49,077 cf	
Outflow =	5.22 cfs @	12.38 hrs,	Volume=	49,077 cf,	Atten= 71%, Lag= 22.7 min
Discarded =	1.34 cfs @	12.39 hrs,	Volume=	38,535 cf	
Primary =	3.88 cfs @	12.38 hrs,	Volume=	10,542 cf	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.84' @ 12.39 hrs Surf.Area= 6,820 sf Storage= 14,891 cf
Flood Elev= 134.00' Surf.Area= 6,820 sf Storage= 14,913 cf

Plug-Flow detention time= 59.2 min calculated for 49,063 cf (100% of inflow)
Center-of-Mass det. time= 59.2 min (912.5 - 853.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	5,988 cf	**58.50'W x 116.36'L x 3.50'H Field A** 23,825 cf Overall - 8,855 cf Embedded = 14,970 cf x 40.0% Voids
#2A	128.50'	8,855 cf	**ADS_StormTech SC-740** x 192 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 12 rows
#3	128.00'	70 cf	**4.00'D x 5.60'H Vertical Cone/Cylinder**
		14,913 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	128.50'	**12.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.50' / 127.60' S= 0.0041 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	129.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	131.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	128.00'	**8.270 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=1.34 cfs @ 12.39 hrs HW=131.80' (Free Discharge)
└─**4=Exfiltration** (Controls 1.34 cfs)

Primary OutFlow Max=3.58 cfs @ 12.38 hrs HW=131.80' (Free Discharge)
└─**1=Culvert** (Passes 3.58 cfs of 4.15 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.42 cfs @ 7.23 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.16 cfs @ 1.80 fps)

Pond CH-1: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 (ADS StormTech®SC-740)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 12 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

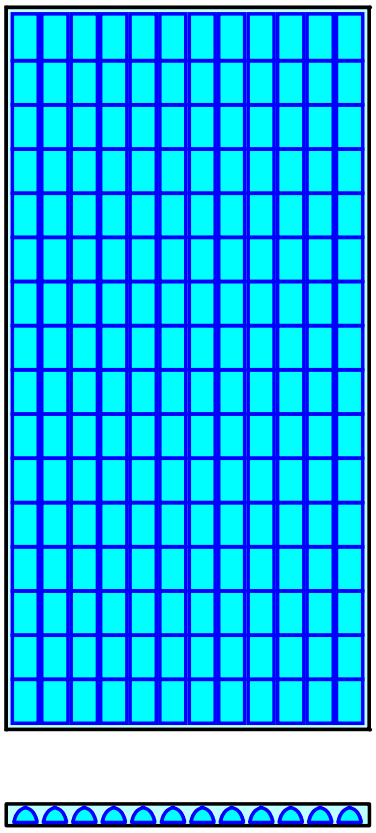
16 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 114.36' Row Length +12.0" End Stone x 2 = 116.36' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

192 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 12 Rows = 8,854.6 cf Chamber Storage

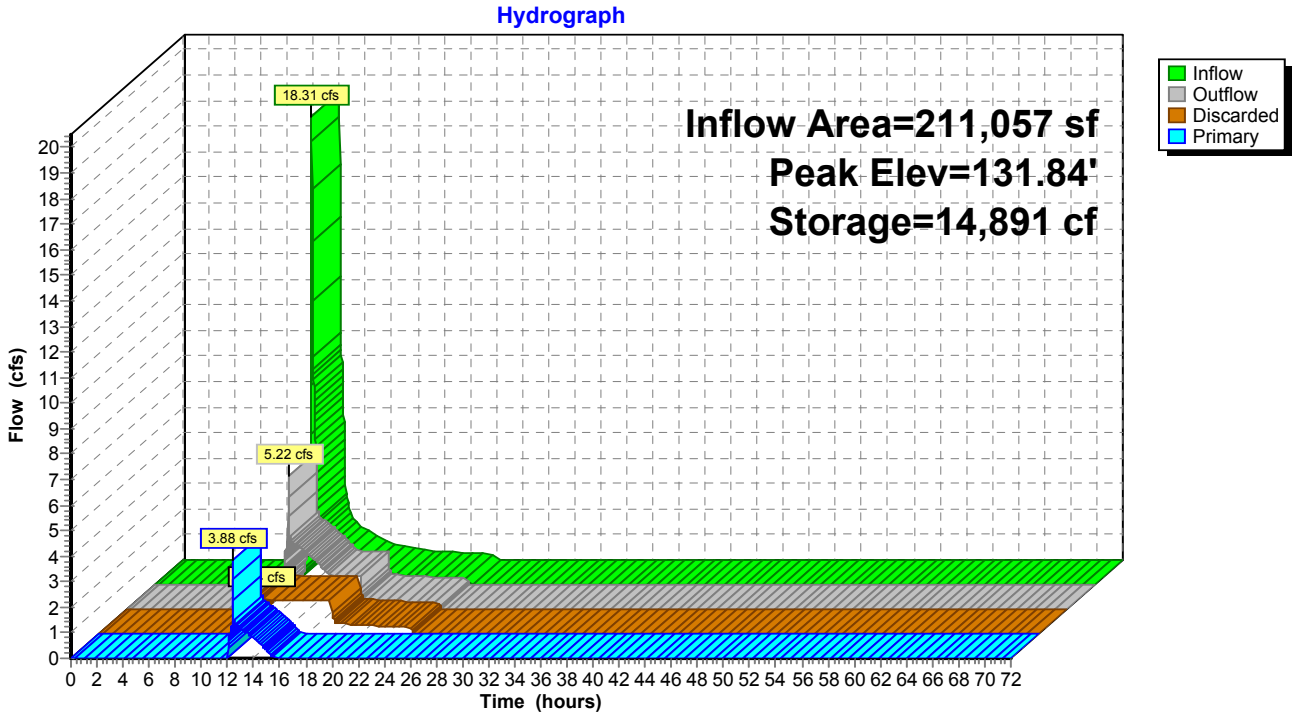
23,824.7 cf Field - 8,854.6 cf Chambers = 14,970.2 cf Stone x 40.0% Voids = 5,988.1 cf Stone Storage

Chamber Storage + Stone Storage = 14,842.6 cf = 0.341 af
Overall Storage Efficiency = 62.3%

192 Chambers
882.4 cy Field
554.5 cy Stone



Pond CH-1: Chambers



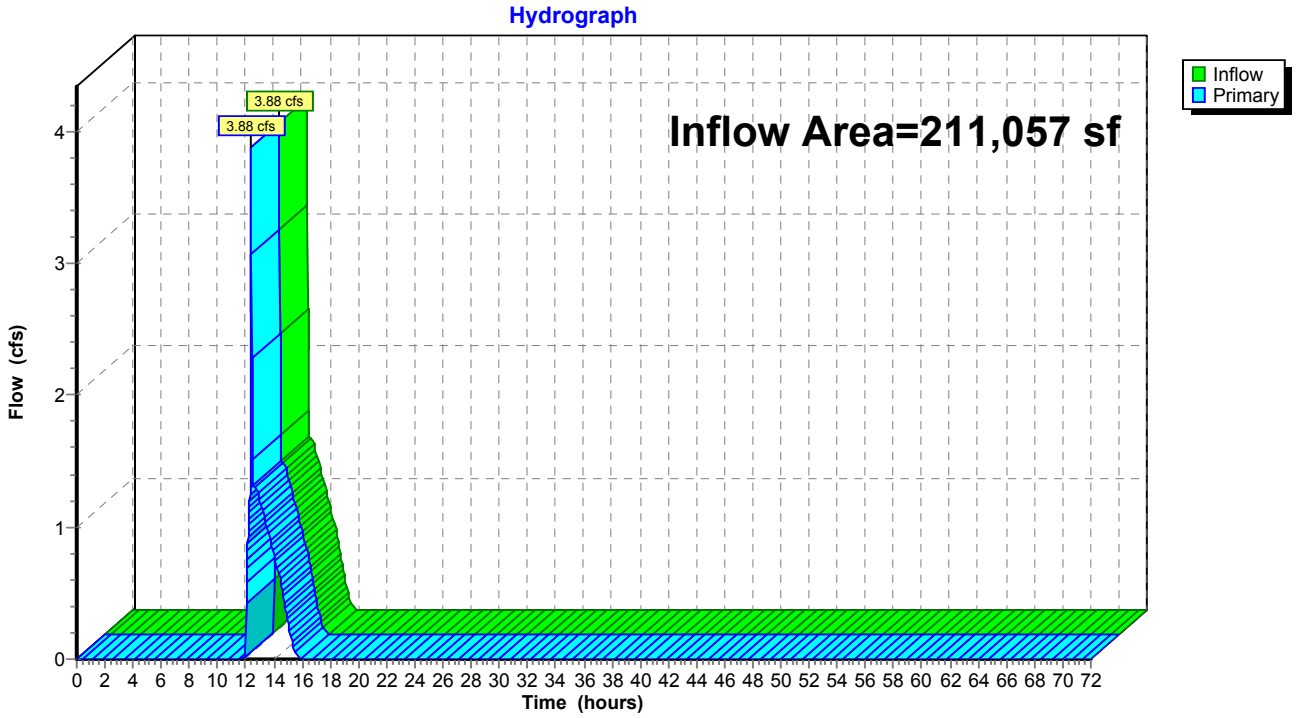
Summary for Pond P1: Analysis Pt. 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 211,057 sf, 31.11% Impervious, Inflow Depth = 0.60" for 100 YR event
Inflow = 3.88 cfs @ 12.38 hrs, Volume= 10,542 cf
Primary = 3.88 cfs @ 12.38 hrs, Volume= 10,542 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Pond P1: Analysis Pt. 1



Attachment E - Calculations

Wayland - High School Athletic Facilities
Recharge Calculation

Required Recharge

Area Summary	
	Area (SF)*
Existing Impervious	0
Proposed Impervious	65,663
Required Recharge Area *(Proposed - Existing)*	65,663

* Areas calculated in HydroCAD

Note: Site consists of HSG A soils.

Hydrologic Soil Group Summary		
Group	Target Depth Factor (in)	Area (SF)
A	0.6	65,663
B	0.35	0
C	0.25	0
D	0.1	0

Required Recharge (*Rv*) Calculation:

Rv = Target Depth Factor x Δ Impervious Area
Rv = 0.6 x (1/12) x 65,663
Rv = 3,283 CF

Proposed Recharge Summary

Location	Volume (CF)*	Description
Underground Chambers	5,564	Chamber Field
Total	5,564	

Rv = 3,283 CF
Provided recharge = 5,564 CF

Recharge Requirement is met.

*Note: Volume numbers listed above reflect static volume available in recharge systems. Actual volume of recharged water will be much higher due to dynamic action reflected in the HydroCAD analysis.

Wayland-Loker Field
Water Quality Volume Calculation
Jul-18

Required Water Quality Storage
Proposed Paved Area sf x 1" x 1'/12"= Required WQ Storage CF

Location	Proposed Impervious Area (sqft)	Required WQ Storage (cf)	Provided WQ Storage (cf)	Description
Facility Site	65,663	5,472	5,564	Chamber Field (Volume below lowest outlet)

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Wayland High School Athletic Fields - Parking Lot

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Subsurface Infiltration Structure	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **Wayland HS Athletic Fields**
Prepared By: **JIP**
Date: **7/11/2018**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

Attachment F - Long Term Pollution Prevention Plan

Long Term Pollution Prevention Plan
Wayland High School Athletic Facilities Improvements
Wayland, MA

To meet the requirements of Standard 4 of the Massachusetts Stormwater Handbook, this Long Term Pollution Prevention Plan is provided to identify the proper procedures of practices for source control and pollution prevention.

Storage and Handling of Oil and other Hazardous Materials

There will be no oil or other hazardous materials stored onsite.

Salt Storage

There will be no salt storage onsite.

Vehicle Storage and Washing

Vehicles will only park on a temporary basis during use of the field. Vehicles will not be stored or washed onsite.

Operation and Maintenance of Stormwater Control Structures

Included in Attachment H of this appendix is the Operation and Maintenance plan for this site, which includes street sweeping of the paved areas and periodic removal of sediment from catch basins and other stormwater structures. The Town will be responsible for implementing the plan.

Landscaping

The landscaped areas will be maintained by the Town. Fertilizers will not be stored onsite.

De-icing & Snow Disposal

The Town intends to utilize salt and sand to treat the paved surfaces of the driveways and main circulation areas during snow and ice events.

Attachment G - Construction Period Pollution and Erosion and Sedimentation Control Plan

Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

SECTION 1: Introduction

The project applicant, Wayland High School is proposing the replacement of their current turf field, and their existing tennis courts. They are also proposing the addition of a girls softball field and basketball courts. These major renovations will be accompanied by more minor additions such as bleachers, parking areas, a ticket booth, and additional bathroom facilities.

As part of this project, this "Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan" has been created to insure that no further disturbance to the wetland resource is created during the construction of these improvements.

SECTION 2: Construction Period Pollution Prevention Measures

Best Management Practices (BMPs) will be utilized as Construction Period Pollution Prevention Measures to reduce potential pollutants and prevent any off-site discharge. The objectives of the BMPs for construction activity are to minimize the disturbed areas, stabilize any disturbed areas, control the site perimeter and retain sediment. Both erosion and sedimentation controls and non-stormwater best management measures will be used to minimize site disturbance and ensure compliance with the performance standards of the WPA and Stormwater Standards. Measures will be taken to minimize the area disturbed by construction activities to reduce the potential for soil erosion and stormwater pollution problems. In addition, good housekeeping measures will be followed for the day-to-day operation of the construction site under the control of the contractor to minimize the impact of construction. This section describes the control practices that will be in place during construction activities. All recommended control practices will comply with the standards set in the MA DEP Stormwater Policy Handbook.

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

In order to minimize disturbed areas all work will be completed within well-defined work limits. These work limits are shown on the construction plans. The Contractor shall not disturb native vegetation in the undisturbed wetland area without prior approval from the Engineer. The Contractor will be responsible to make sure that all workers know the proper work limits and do not extend their work into the undisturbed areas. The protective measures are described in more detail in the following sections.

2.2 Control Stormwater Flowing onto and through the project

All construction areas adjacent to wetlands will be lined with compost filter tubes and silt fence. The tubes and silt fence will be inspected daily and accumulated silt will be removed as appropriate. In addition, any storage of material will require a second level of

protection by surrounding the areas with another row of compost filter tubes. A stabilized truck entrance/exit is proposed so that equipment visiting the site can remove any accumulated dirt and mud from vehicles to prevent tracking the mud onto public roads.

2.3 Stabilize Soils

The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, mulching, the use of erosion control mats, or other protective measures shall be provided as specified.

The Contractor shall take account of the conditions of the soil where erosion control seeding will take place to insure that materials used for re-vegetation are adaptive to the sediment control.

2.4 Proper storage and cover of any stockpiles

The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer.

No excavated materials or materials used in backfill operations shall be stored within a minimum distance of fifty (50) feet of any watercourse or any wetlands. Adequate measures for erosion and sediment control such as the placement of compost filter tubes around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.

There shall be no storage of equipment or materials in areas designated as wetlands.

The Engineer may designate a particular area or areas where the Contractor may store materials used in his operations.

2.5 Perimeter Controls and Sediment Barriers

Erosion control lines as described in Section 5 will be utilized to ensure that no sedimentation occurs outside the perimeter of the work area.

2.6 Storm Drain Inlet Protection

Storm Drain inlets (catch basins) will be fitted with a protective insert.

2.7 Retain Sediment On-Site

The Contractor will be responsible to monitor all erosion control measures. Whenever

necessary the Contractor will clear all sediment from the compost filter tubes and silt fence that have been silted up during construction. Daily monitoring should be conducted using the attached Monitoring Form.

The following good housekeeping practices will be followed on-site during the construction project.

2.8 Material Handling and Waste Management

All materials stored on-site will be stored in a neat, orderly manner in appropriate containers. All materials will be kept in their original containers with the original manufacturer's label. Substances will not be mixed with one another unless recommended by the manufacturer.

All waste materials will be collected and stored in a securely lidded metal container from a licensed management company. The waste and any construction debris from the site will be hauled off-site daily and disposed of properly. The contractor will be responsible for all waste removal. Manufacturer's recommendations for proper use and disposal will be followed for all materials. Sanitary waste will be collected from the portable units a minimum of once a week, by a licensed sanitary waste management contractor.

2.9 Designated Washout Areas

The Contractor shall use washout facilities at their own facilities, unless otherwise directed by the Engineer.

2.10 Proper Equipment/Vehicle Fueling and Maintenance Practices

On-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. To ensure that leaks on stored equipment do not contaminate the site, oil-absorbing mats will be placed under all equipment during storage. Regular fueling and service of the equipment may be performed using approved methods and with care taken to minimize chance of spills. Repair of equipment or machinery within the 100' water resources area shall not be allowed without the prior approval of the Engineer. Any petroleum products will be stored in tightly sealed containers that are clearly labeled.

2.11 Equipment/Vehicle Washing

The Contractor will be responsible to ensure that no equipment is washed on-site.

SECTION 3: Spill Prevention and Control Plan

The Contractor will be responsible for preventing spills in accordance with the project

specifications and applicable federal, state and local regulations. The Contractor will identify a properly trained site employee, involved with the day-to-day site operations to be the spill prevention and cleanup coordinator. The name(s) of the responsible spill personnel will be posted on-site. Each employee will be instructed that all spills are to be reported to the spill prevention and cleanup coordinator.

3.1 Spill Control Equipment

Spill control/containment equipment will be kept in the Work Area. Materials and equipment necessary for spill cleanup will be kept either in the Work Area or in an otherwise accessible on-site location. Equipment and materials will include, but not be limited to, absorbent booms/mats, brooms, dust pans, mops, rags, gloves, goggles, sand, plastic and metal containers specifically for this purpose. It is the responsibility of the Contractor to ensure the inventory will be readily accessible and maintained.

3.2 Notification

All workers will be directed to inform the on-site supervisor of a spill event. The supervisor will assess the incident and initiate proper containment and response procedures immediately upon notification. Workers should avoid direct contact with spilled materials during the containment procedures. Primary notification of a spill should be made to the local Fire Department and Police Departments. Secondary Notification will be to the certified cleanup contractor if deemed necessary by Fire and/or Police personnel. The third level of notification is to the DEP. The specific cleanup contractor to be used will be identified by the Contractor prior to commencement of construction activities.

3.3 Spill Containment and Clean-Up Measures

Spills will be contained with granular sorbent material, sand, sorbent pads, booms or all of the above to prevent spreading. Certified cleanup contractors should complete spill cleanup. The material manufacturer's recommended methods for spill cleanup will be clearly posted and on-site personnel will be made aware of the procedures and the location of the information and cleanup supplies.

3.4 Hazardous Materials Spill Report

The Contractor will report and record any spill. The spill report will present a description of the release, including the quantity and type of material, date of the spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

40 CFR Part 117, 40 CFR Part 302 and the State requirements specified under the Massachusetts Contingency Plan (M.C.P) relating to spills or other releases of oils or hazardous substances. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117 or 40 CFR Part 302, occurs during a twenty-four (24) hour period, the Contractor is required to comply with the response requirements of the above mentioned regulations. Spills of oil or hazardous material in excess of the reportable quantity will be reported to the National Response Center (NRC).

SECTION 4: Contact Information/Responsible Parties

Owner/Operator:
Town of Wayland
41 Cochituate Road
Wayland, MA 01778

Engineer:
James Pearson, P.E.
Weston & Sampson, Inc.
5 Centennial Drive
Peabody, MA 01960
978-532-1900

Site Inspector:
TBD

Contractor:
TBD

SECTION 5: Erosion and Sedimentation Control

Erosion and Sedimentation Controls are shown on the project plans. In addition a technical specification (***Section 01570 Environmental Protection***) has been included as part of Appendix D, which details all Erosion and Sedimentation controls.

SECTION 6: Site Development Plans

A full set of site development plans are included with this submittal.

SECTION 7: Operation and Maintenance of Erosion Control

The erosion control measures will be installed as detailed in the technical specification ***01570 Environmental Protection***. If there is a failure to the controls the Contractor, under the supervision of the Engineer, will be required to stop work until the failure is repaired.

Periodically throughout the work, whenever the Engineer deems it necessary, the sediment that has been deposited against the controls will be removed to ensure that the controls are working properly.

SECTION 8: Inspection Schedule

During construction the erosion and sedimentation controls will be inspected daily. Once the Contractor is selected, an on site inspector will be selected to work closely with the Engineer to insure that all erosion and sedimentation controls are in place and working properly. An Inspection Form is included.

Inspection Form

Inspected By: _____ Date: _____Time:_____

YES	NO	DOES NOT APPLY	ITEM
			Do any erosion/siltation control measures require repair or clean out to maintain adequate function?
			Is there any evidence that sediment is leaving the site and entering the wetlands?
			Are any temporary soil stockpiles or construction materials located in non-approved areas?
			Are on-site construction traffic routes, parking, and storage of equipment and supplies located in areas not specifically designed for them?

Specific location, current weather conditions, and action to be taken:

_____

_____

_____

_____

_____

Other Comments:

_____

_____

Pending the actions noted above I certify that the site is in compliance with the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan.

Signature: _____ Date: _____

Attachment H - Operations and Maintenance Plan

Attachment H –
Long-Term Operation and Maintenance Plan

1.0 Introduction

The following document has been written to comply with the stormwater guidelines set forth by the Massachusetts Department of Environmental Protection (MassDEP). The intent of these guidelines is to encourage Low Impact Development techniques to improve the quality of the stormwater runoff. These techniques, also known as Best Management Practices (BMPs) collect, store, and treat the runoff before discharging to adjacent environmental resources.

2.0 Purpose

This Operation and Maintenance Plan (O&M Plan) is intended to provide a mechanism for the consistent inspection and maintenance of each BMP installed on the project site. Included in this O&M Plan is a description of each BMP type and an inspection form for each BMP. The Town of Wayland is the owner and operator of the system and is responsible for its upkeep and maintenance.

This work will be funded on an annual basis through the town's operating budget. The estimated budget to maintain these BMPs utilizing the Municipal Services Department workforce and equipment is approximately $2,000 per year. This budget assumes that Town equipment will be utilized and no additional equipment rental is required.

In the event the Town sells the property, it is the Town's responsibility to transfer this plan as well as the past three years of operation and maintenance records to the new property owner.

3.0 BMP Description and Locations

3.1 Street Sweeping

Street sweeping consists of using a street sweeping machine to clean impervious areas of accumulated sediment, debris, and trash at parking areas.

3.2 Deep Sump Catch Basins

Deep sump catch basins will be located throughout the site and used as pre-treatment before entering the stormwater detention/infiltration basin. The deep sump catch basins are designed to remove trash, debris, and coarse sediment from the stormwater runoff.

3.4 Stormwater Infiltration Chambers

There is one underground infiltration chamber field in the facility that will receive stormwater. A stormwater infiltration chamber field will be built beneath the

parking lot area of the site. This structure also significantly mitigates TSS and provides for stormwater detention to mitigate peak discharges from the site.

4.0 Inspection, Maintenance Checklist and Schedule

4.1 Street Sweeping

Street sweeping shall be performed on the proposed parking lot areas at least twice per year, primarily in the spring and fall. Street sweeping shall be performed using an appropriate street sweeping machine.

In the event of contamination by a spill or other means, all street sweeping cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, street sweeping cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids. Also see attached operations and maintenance standards (reproduced from the Massachusetts Stormwater Handbook) at the end of this section

4.2 Deep Sump Catch Basins

Inspect and/or clean catch basin at least four times per year and at the end of foliage and snow removal seasons. Sediments must be removed whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. The catch basin and oil-grit separators should be cleaned a minimum of four times per year regardless of the amount of sediment in the basin. Catch basins shall be cleaned with clamshell buckets or vacuum trucks.

In the event of contamination by a spill or other means, all cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids. Also see attached operations and maintenance standards (reproduced from the Massachusetts Stormwater Handbook) at the end of this section

4.3 Stormwater Infiltration Chambers

The stormwater infiltration chamber field shall be inspected every six months during the first year, and annually thereafter. All accumulated sediment and debris in the isolation row(s) shall be removed using water jetting and vacuum truck equipment as described in manufacturer literature for the chamber system.

4.4 Inspections and Record Keeping

- An inspection form should be filled out each and every time maintenance work is performed.
- A binder should be kept by the owner that contains all of the completed inspection forms and any other related materials.
- A review of all Operation & Maintenance actions should take place annually to ensure that these Stormwater BMPs are being taken care of in the manner illustrated in this Operation & Maintenance Plan.
- All operation and maintenance log forms for the last three years, at a minimum, shall be kept on site at the owner.
- The inspection and maintenance schedule may be refined in the future based on the findings and results of this operation and maintenance program or policy.

5.0 Public Safety Features

Underground stormwater system measures are protected from access via manhole covers and grates.

6.0 Stormwater Management System Owner/Responsible Party

Town of Wayland
41 Cochituate Road
Wayland, MA 01778

This operation and Maintenance Plan will be recorded with the registry of deeds so that current and future owners are aware of the requirement for proper operation and maintenance of the onsite stormwater system.

Town of Wayland
High School Athletic Facilities
Permanent BMP Inspection Checklist

Street Sweeping

Frequency: Monthly, primarily in the spring and fall.

Location: Parking Lots and Driveways

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Sweep parking lot using street sweeping machine. All trash, debris, and sediments should be disposed of in accordance with local, state, and federal regulations.

Deep Sump Catch Basins

Frequency: Inspect and clean deep sump catch basins in March, June, September and December.

Structure Number: _____

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Clean units four times per year or whenever the depth of the deposits is greater than or equal to one half the depth from the bottom of the invert to the lowest pipe in the structure.

Stormwater Detention/Infiltration Chambers

Frequency: The detention/infiltration chambers should be inspected every six months during the first year and annually thereafter.

Structure No.: _____

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Inspect isolation rows. If visible sediment deposition has occurred, insert reverse water jet into isolation row via access manhole and jet sediment backward into manhole. Remove sediment with vacuum truck and dispose of sediment as required.

Attachment I - Illicit Discharge Compliance Statement

Illicit Discharge Compliance Statement

Section I – Purpose/Intent

The purpose of this document is to provide for the health, safety, and general welfare of the citizens of Wayland, Massachusetts through the regulation of non-stormwater discharges into existing outstanding resource areas near the Wayland Public Works Facility to the maximum extent practicable, as required by federal and state law. This document establishes methods for controlling the introduction of pollutants into existing outstanding resource areas to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

Section II - Definitions

For the purposes of this statement, the following shall mean:

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity: Activities subject to the Massachusetts Erosion and Sedimentation Control Act or NPDES Construction Permits. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous Materials: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Connection: An illegal connection is defined as either of the following:

a. Any pipe, open channel, drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the outstanding resource area including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water, regardless of whether said drain or connection has been previously allowed, permitted, or approved by an authorized enforcement agency; or
b. Any pipe, open channel, drain or conveyance connected to the Town of Wayland storm water treatment system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Illicit Discharge: Any direct or indirect non-stormwater discharge to the Town of Wayland stormwater treatment system, except as exempted in Section II of this ordinance.

Industrial Activity: Activities subject to NPDES Industrial Permits as defined in 40CFR, Section 122.26 (b) (14).

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit: A permit issued by MassDEP under authority delegated pursuant to 33 USC § 1342 (b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Town of Wayland Stormwater Treatment System: Any facility, owned or maintained by the town, designed or used for collecting and/or conveying stormwater, including but not limited to roads with drainage systems, Town of Wayland streets, curbs, gutters, inlets, catch basins, piped storm drains, pumping facilities, infiltration, retention and detention basins, natural and man-made or altered drainage channels, reservoirs, and other drainage structures.

Non-Stormwater Discharge: Any discharge to the storm drain system that is not composed entirely of stormwater.

Person: Any individual, association, organization, partnership, firm, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, interstate body, or any other legal entity.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; petroleum hydrocarbons; automotive fluids; cooking grease; detergents (biodegradable or otherwise); degreasers; cleaning chemicals; non-hazardous liquid and solid wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; liquid and solid wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; concrete and cement; and noxious or offensive matter of any kind.

Pollution: Contamination or other alteration of any water's physical, chemical, or biological properties by addition of any constituent including but not limited to a change in temperature, taste, color, turbidity, or odor of such waters, or the discharge of any liquid, gaseous, solid, radioactive, or other substance into any such waters as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to the public health, safety, welfare, or environment, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Stormwater: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Wastewater: Any water or other liquid discharged from a facility, that has been used, as for washing, flushing, or in a manufacturing process, and so contains waste products.

Section III - Prohibitions

Prohibition of Illicit Discharges:

No person shall throw, drain, or otherwise discharge, cause or allow others under its control to throw, drain, or otherwise discharge into the Town of Wayland stormwater treatment system or watercourses any materials, including but not limited to, any pollutants or waters containing any pollutants, other than stormwater. The commencement, conduct or continuance of any illicit discharge to the storm drain system is prohibited except as described as follows:

1. Water line flushing performed by a government agency, other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, natural riparian habitat or wetland flows, and any other water source not containing pollutants;

2. Discharges or flows from fire fighting, and other discharges specified in writing by the Town of Wayland as being necessary to protect public health and safety;

3. Dye testing is an allowable discharge, but requires a verbal notification to the Town of Wayland prior to the time of the test;

4. Any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for a discharge to the Town of Wayland stormwater treatment system.

Section IV - Industrial or Construction Activity Discharges

Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the Town of Wayland Department of Public Works prior to allowing discharges to the Wayland stormwater treatment system.

Section V - Notification of Spills and Accidental Discharges

Notwithstanding other requirements of law, as soon as any person responsible for a facility, activity or operation, or responsible for emergency response for a facility, activity or operation has information of any known or suspected release of pollutants or non-stormwater discharges from that facility, activity, or operation which are resulting or may result in illicit discharges or pollutants discharging into stormwater, the Town of Londmeadow stormwater treatment system, State Waters, or Waters of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release so as to minimize the effects of the discharge. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the Town of Wayland Department Public Works in person or by phone no later than the next business day, including the nature, quantity and time of occurrence of the discharge. Notifications in person or by phone shall be confirmed by written notice, via certified mail return receipt requested addressed to the Town of Wayland Department of Public Works within three (3) business days of the initial notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

IN WITNESS WHEREOF the parties hereto have executed copies of this Agreement on the _____ day of _____, _____.

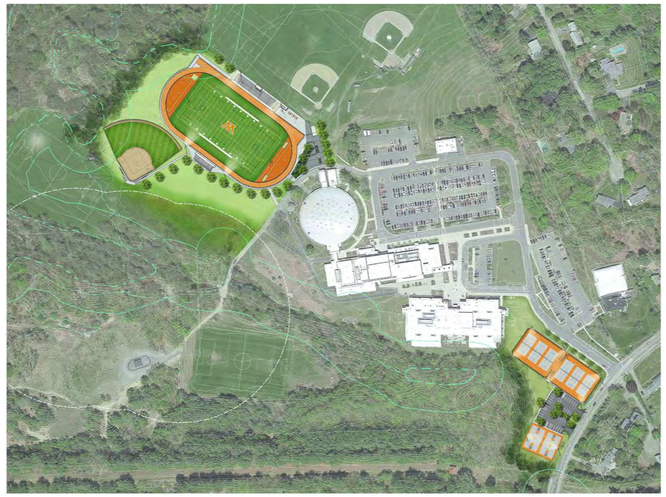
_____
Town of Wayland

TOWN OF WAYLAND

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

TOWN OF WAYLAND, MASSACHUSETTS

TOWN BUILDING
41 COCHITUATE RD, WAYLAND, MA 01778



WAYLAND HIGH SCHOOL
264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

SHEET INDEX

L1.00..... OVERALL EXISTING CONDITIONS PLAN
L1.01..... EXISTING CONDITIONS PLAN ENLARGEMENT
L1.02..... EXISTING CONDITIONS PLAN ENLARGEMENT
L2.00..... OVERALL SITE PREPARATION AND DEMOLITION PLAN
L2.01..... SITE PREPARATION & DEMOLITION PLAN ENLARGEMENT
L2.02..... SITE PREPARATION & DEMOLITION PLAN ENLARGEMENT
L3.00..... OVERALL MATERIALS PLAN
L3.01-L3.03..... MATERIALS PLAN ENLARGEMENT
L3.04..... MATERIALS PLAN ENLARGEMENT
L4.00..... OVERALL LAYOUT PLAN
L4.01-L4.03..... LAYOUT PLAN ENLARGEMENT
L4.04..... LAYOUT PLAN ENLARGEMENT
L5.00..... OVERALL GRADING AND DRAINAGE PLAN
L5.01-L5.03..... GRADING AND DRAINAGE PLAN ENLARGEMENT
L5.04..... GRADING AND DRAINAGE PLAN ENLARGEMENT
L6.00..... OVERALL PLANTING PLAN
L6.01-L6.02..... PLANTING PLAN ENLARGEMENT
L6.03..... PLANTING PLAN ENLARGEMENT
L7.00-L7.14..... CONSTRUCTION DETAILS
A1.01..... RESTROOM ROOF & FLOOR PLAN,ELEVATIONS AND SECTIONS
A1.02..... CONCESSION STAND ROOF & FLOOR PLANS, ELEVATIONS AND SECTIONS
P-000..... PLUMBING LEGEND
P-1.01..... PLUMBING PART PLANS
S0.01-S3.02..... STRUCTURAL PLANS & DETAILS
E0.01..... ELECTRICAL LEGEND, ABBREVIATIONS, AND GENERAL NOTES
E1.00-E1.02..... ELECTRICAL PLANS
E3.00..... ELECTRICAL LINE AND SCHEDULES
E4.00..... ELECTRICAL & DETAILS

Locus Map

WAYLAND HIGH SCHOOL

WAYLAND HIGH SCHOOL

PERMITTING SET
- NOT FOR CONSTRUCTION -

JULY 2018

Prepared By

Weston & Sampson℠

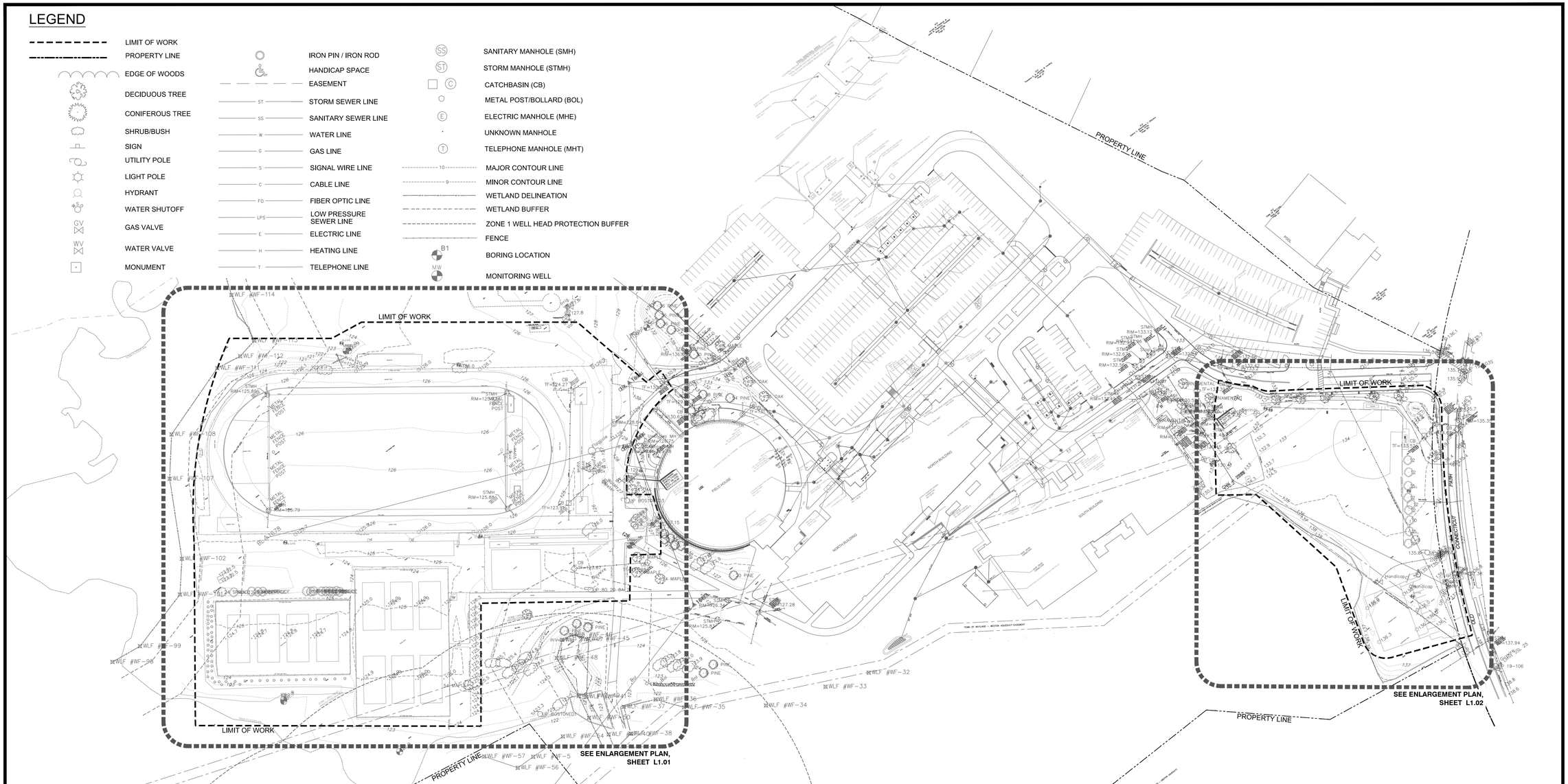
85 Devonshire St, 3rd Floor, Boston, MA 02109
(617) 412-4480 (800) Sampson
www.westonandsampson.com

COPYRIGHT 2017 WESTON & SAMPSON

\\wse03.local\WSI\Projects\MA\Wayland MA\Wayland High School Athletic Facilities\040\0_Current_HIGH SCHOOL\Cover.dwg

LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- EDGE OF WOODS
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB/BUSH
- SIGN
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- WATER SHUTOFF
- GAS VALVE
- WATER VALVE
- MONUMENT
- IRON PIN / IRON ROD
- HANDICAP SPACE
- EASEMENT
- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
- GAS LINE
- SIGNAL WIRE LINE
- CABLE LINE
- FIBER OPTIC LINE
- LOW PRESSURE SEWER LINE
- ELECTRIC LINE
- HEATING LINE
- TELEPHONE LINE
- SANITARY MANHOLE (SMH)
- STORM MANHOLE (STMH)
- CATCHBASIN (CB)
- METAL POST/BOLLARD (BOL)
- ELECTRIC MANHOLE (MHE)
- UNKNOWN MANHOLE
- TELEPHONE MANHOLE (MHT)
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- WETLAND DELINEATION
- WETLAND BUFFER
- ZONE 1 WELL HEAD PROTECTION BUFFER
- FENCE
- BORING LOCATION
- MONITORING WELL



GENERAL NOTES

1. PROPERTY LINES, SITE SURVEY AND TOPOGRAPHICAL INFORMATION BASED FROM A COMPILATION OF THE TOWN OF WAYLAND GIS, RECORD DRAWINGS AND ON THE GROUND SURVEYS PERFORMED BY WESTON & SAMPSON IN APRIL 2018.
2. CONTOURS AND ELEVATIONS SHOWN ON NAVD88 VERTICAL DATUM BASED ON GPS OBSERVATIONS.
3. NORTH ORIENTATION IS TRUE NORTH BASED ON GPS OBSERVATIONS TAKEN AT THE TIME OF THE FIELD SURVEY. MAPPING PREPARED ON NADV83 STATE PLANE COORDINATE SYSTEM-MASSACHUSETTS MAINLAND ZONE.
4. FOR DETAILED NOTES REGARDING TEST PITS AND BORINGS AT BOTH SITE LOCATIONS (HIGH SCHOOL AND LOKER), REFER TO MEMO TITLED "GEOTECH LETTER REPORT WAYLAND ATHLETIC FACILITIES."
5. REFER TO GENERAL SYMBOLS FOR SURVEY LEGEND. ALL BIDDERS ARE REQUIRED TO INSPECT THE PROJECT SITE IN ITS ENTIRETY PRIOR TO SUBMITTING THEIR BID, AND BECOME FAMILIAR WITH ALL CONDITIONS AS THEY MAY AFFECT THEIR BID. CONTRACTOR AND SUB-CONTRACTOR SHALL BE FAMILIAR WITH ALL DRAWINGS AND SPECIFICATIONS PRIOR TO COMMENCING THE CONSTRUCTION.
6. LOCATIONS OF ANY UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF SUCH UTILITIES, PROTECTING ALL EXISTING UTILITIES AND REPAIRING ANY DAMAGE DONE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE COORDINATION WITH UTILITY COMPANIES AND PUBLIC AGENCIES AND FOR OBTAINING ALL REQUIRED PERMITS AND PAYING ALL REQUIRED FEES. IN ACCORDANCE WITH M.G.L. CHAPTER 82, SECTION 40, INCLUDING AMENDMENTS, CONTRACTORS SHALL NOTIFY ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING PRIOR TO EXCAVATION. CONTRACTOR SHALL ALSO CALL "DIG SAFE" AT (888) 344-7233 NO LESS THAN 72 HOURS, (EXCLUSIVE OF WEEKENDS AND HOLIDAYS), PRIOR TO SUCH EXCAVATION. DOCUMENTATION OF REQUESTS SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO EXCAVATION WORK.
7. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
8. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER AT NO ADDITIONAL COST TO THE TOWN OF WAYLAND.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ALL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE EXTENT OF EXCAVATION AND DEMOLITION REQUIRED TO RECEIVE SITE IMPROVEMENTS.
10. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE DRAWINGS AND EXISTING CONDITIONS, EXISTING CONDITIONS TO REMAIN, TEMPORARY CONSTRUCTION, PERMANENT CONSTRUCTION AND WORK OF ADJACENT CONTRACTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE BEFORE PROCEEDING. ITEMS ENCOUNTERED IN AREAS OF EXCAVATION THAT ARE NOT INDICATED ON THE DRAWINGS, BUT ARE VISIBLE ON SURFACE, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER.
11. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE GENERAL CONTRACTOR ON "AS BUILT" DRAWINGS.
12. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS OUTSIDE THE PROJECT LIMITS, SHALL BE RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.
13. ALL WORK SHOWN ON THE PLANS AS BOLD SHALL REPRESENT PROPOSED WORK. THE TERM "PROPOSED (PROP)" INDICATES WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET (R&R)" OR "REMOVE AND SALVAGE (R&S).
14. ALL KNOWN EXISTING STATE, COUNTY AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND ARE INDICATED ON THE PLANS.
15. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT HIS EMPLOYEES, AS WELL AS PUBLIC USERS FROM INJURY DURING THE ENTIRE CONSTRUCTION PERIOD USING ALL NECESSARY SAFEGUARDS, INCLUDING BUT NOT LIMITED TO, THE ERECTION OF TEMPORARY WALKS, STRUCTURES, PROTECTIVE BARRIERS, COVERING, OR FENCES AS NEEDED.
16. THE CONTRACTOR SHALL SUPPLY THE OWNER WITH THE NAME OF THE OSHA "COMPETENT PERSON" PRIOR TO CONSTRUCTION.
17. FILLING OF EXCAVATED AREAS SHALL NOT TAKE PLACE WITHOUT THE PRESENCE OR PERMISSION OF THE OWNER.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES. NO STOCKPILING OF MATERIAL, EQUIPMENT OR VEHICULAR TRAFFIC SHALL BE ALLOWED WITHIN THE DRIP LINE OF TREES TO REMAIN. NO GUYS SHALL BE ATTACHED TO ANY TREE TO REMAIN. WHEN NECESSARY OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE, THE CONTRACTOR SHALL ERECT TEMPORARY BARRIERS FOR THE PROTECTION OF EXISTING TREES DURING CONSTRUCTION.
19. TREES AND SHRUBS WITHIN THE LIMITS OF WORK SHALL BE REMOVED ONLY UPON THE APPROVAL OF THE OWNER'S REPRESENTATIVE OR AS NOTED ON THE PLANS.
20. NO FILLING SHALL OCCUR AROUND EXISTING TREES TO REMAIN WITHOUT THE APPROVAL OF THE OWNER OR OWNER REPRESENTATIVE.
21. THE CONTRACTOR SHALL REMOVE ALL SURFACE VEGETATION PRIOR TO GRADING THE SITE. TREES AND STUMPS SHALL BE REMOVED AND DISPOSED COMPLETE BY CONTRACTOR. TEMPORARY EROSION CONTROL MEASURES SHOWN ON THE DRAWINGS (INCLUDING SILT FENCE, STRAW WATTLES, OR SILT SOCKS) SHALL BE INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THESE TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE PROJECT WHICH COST SHALL BE INCIDENTAL TO THE PROJECT.
22. ALL UNSUITABLE UNCONTAMINATED EXCESS SOIL FROM CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE TOWN. REMOVAL ACTIVITIES SHALL BE ACCORDANCE WITH STATE AND LOCAL REGULATIONS AT NO ADDITIONAL COST TO THE TOWN. REFER TO WAYLAND TOWN BY-LAW §198-504 EARTH MOVEMENT. SUITABLE SOIL EXCAVATION AS PART OF THE PROJECT MUST MEET ONE OR MORE OF THE MATERIAL REQUIREMENTS SPECIFIED IN XX XX XX-EARTHWORK. ON-SITE FILL MATERIALS, WHICH DO NOT CONFORM TO SPECIFICATION XX XX XX, SHALL NOT BE USED BELOW ANY STRUCTURES. IF THE CONTRACTOR PROPOSES TO USE THE EXISTING FILL ON SITE BELOW PAVEMENT AREAS, HE MUST DEMONSTRATE THAT THE FILL MEETS THE REQUIREMENTS PER XX XX XX. ALL EXCAVATED FILL MATERIAL WHICH DOES NOT MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT NO ADDITIONAL COST.
23. CONTRACTOR IS RESPONSIBLE FOR STAKING CONSTRUCTION BASELINES IN FIELD WITH A MA. REGISTERED PROFESSIONAL LAND SURVEYOR. NO CONSTRUCTION WILL BE PERFORMED WITHOUT THE PROPOSED BASELINES AND LAYOUTS APPROVED BY THE ENGINEER.
24. NO FILL SHALL CONTAIN HAZARDOUS MATERIALS.
25. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION FENCING AROUND PERIMETER OF WORK AREA (LIMIT OF WORK). FENCE SHALL NOT IMPEDE TRAVEL WAYS.
26. ANY QUANTITIES SHOWN ON PLANS ARE FOR COMPARATIVE BIDDING PURPOSES ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE PROJECT SITE TO VERIFY ALL QUANTITIES AND CONDITIONS PRIOR TO SUBMITTING BID.
27. ALL EXISTING DRAINAGE FACILITIES TO REMAIN SHALL BE MAINTAINED FREE OF DEBRIS, SOIL, SEDIMENT, AND FOREIGN MATERIAL AND OPERATIONAL THROUGHOUT THE LIFE OF THE CONTRACT. REMOVE ALL SOIL, SEDIMENT, DEBRIS AND FOREIGN MATERIAL FROM ALL DRAINAGE STRUCTURES, INCLUDING BUT NOT LIMITED TO, DRAINAGE INLETS, MANHOLES AND CATCH BASINS WITHIN THE LIMIT OF WORK AND DRAINAGE STRUCTURES OUTSIDE THE LIMIT OF WORK THAT ARE IMPACTED BY THE WORK FOR THE ENTIRE DURATION OF CONSTRUCTION.
28. CONTRACTOR'S STAGING AREA MUST BE WITHIN THE CONTRACT LIMIT LINE AND IN AREAS APPROVED BY OWNER. ANY OTHER AREAS THAT THE CONTRACTOR MAY WISH TO USE FOR STAGING MUST BE COORDINATED WITH THE OWNER.
29. THE CONTRACTOR SHALL KEEP ALL STREETS, PARKING LOTS AND WALKS THAT ARE NOT RESTRICTED FROM PUBLIC USE DURING CONSTRUCTION BROOM CLEAN AT ALL TIMES. THE CONTRACTOR SHALL USE ACCEPTABLE METHODS AND MATERIALS TO MAINTAIN ADEQUATE DUST CONTROL THROUGHOUT CONSTRUCTION.
30. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER.
31. THE LIMIT OF WORK SHALL BE DELINEATED IN THE FIELD PRIOR TO THE START OF SITE CLEARING OR CONSTRUCTION AND AGREED UPON WITH THE OWNER'S REPRESENTATIVE.
32. DEEP SUMP CATCH BASINS AND STORMWATER BASIN SHALL BE CLEANED FOLLOWING CONSTRUCTION AND SHALL FOLLOW THE OPERATION AND MAINTENANCE PLAN THEREAFTER.
33. HAULING OF EARTH MATERIALS TO AND FROM THE SITE SHALL BE RESTRICTED TO THE HOURS OF 7 AM TO 5 PM.
34. ANY BOULDERS 3 CY OR SMALLER SHALL BE CONSIDERED UNDOCUMENTED FILL AND SHALL BE DISPOSED OF AT NO ADDITIONAL COST TO THE TOWN.
35. WORK ON WEEKENDS SHALL ONLY BE CONDUCTED IF PRIOR WRITTEN PERMISSION IS PROVIDED BY THE TOWN.
36. NO TRUCKS LEFT IDLING ON TOWN STREETS DURING CONSTRUCTION. CONSTRUCTION TRAFFIC AT NO TIME SHALL IMPEDE FLOW OF RESIDENT TRAFFIC.

SCALE: 1" = 80'-0"

0 80 160 240

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

OVERALL EXISTING CONDITIONS PLAN

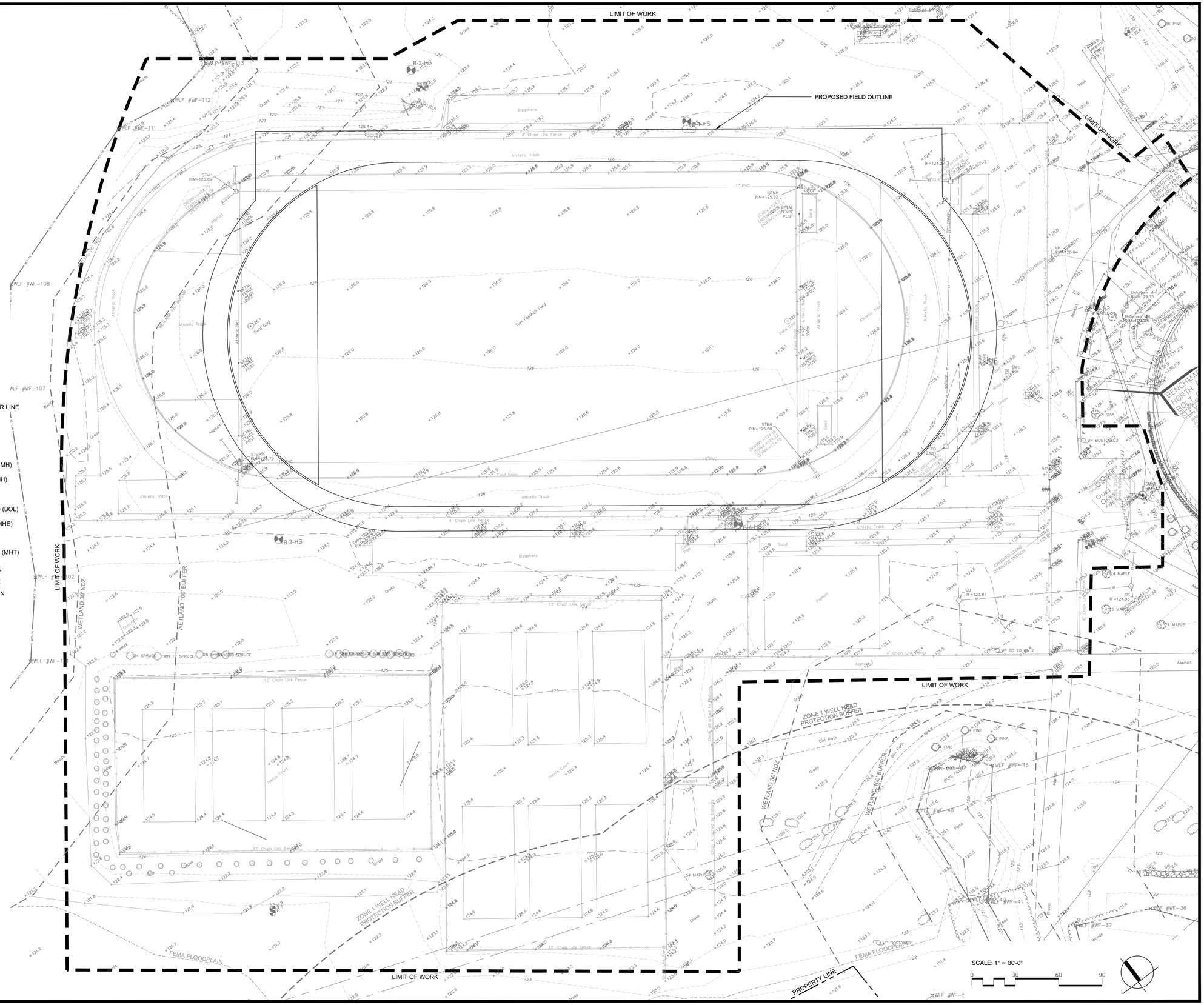
Sheet Number:

L1.00

COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

- PROPERTY LINE
- EDGE OF WOODS
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB/BUSH
- SIGN
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- WATER SHUTOFF
- GAS VALVE
- WATER VALVE
- MONUMENT
- IRON PIN / IRON ROD
- HANDICAP SPACE
- EASEMENT
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- G — GAS LINE
- S — SIGNAL WIRE LINE
- C — CABLE LINE
- FO — FIBER OPTIC LINE
- LPS — LOW PRESSURE SEWER LINE
- E — ELECTRIC LINE
- H — HEATING LINE
- T — TELEPHONE LINE
- SANITARY MANHOLE (SMH)
- STORM MANHOLE (STMH)
- CATCHBASIN (CB)
- METAL POST/BOLLARD (BOL)
- ELECTRIC MANHOLE (MHE)
- UNKNOWN MANHOLE
- TELEPHONE MANHOLE (MHT)
- 10 — MAJOR CONTOUR LINE
- 9 — MINOR CONTOUR LINE
- WETLAND DELINEATION
- WETLAND BUFFER
- FENCE
- B1 — BORING LOCATION
- MW — MONITORING WELL



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

EXISTING CONDITIONS PLAN ENLARGEMENT

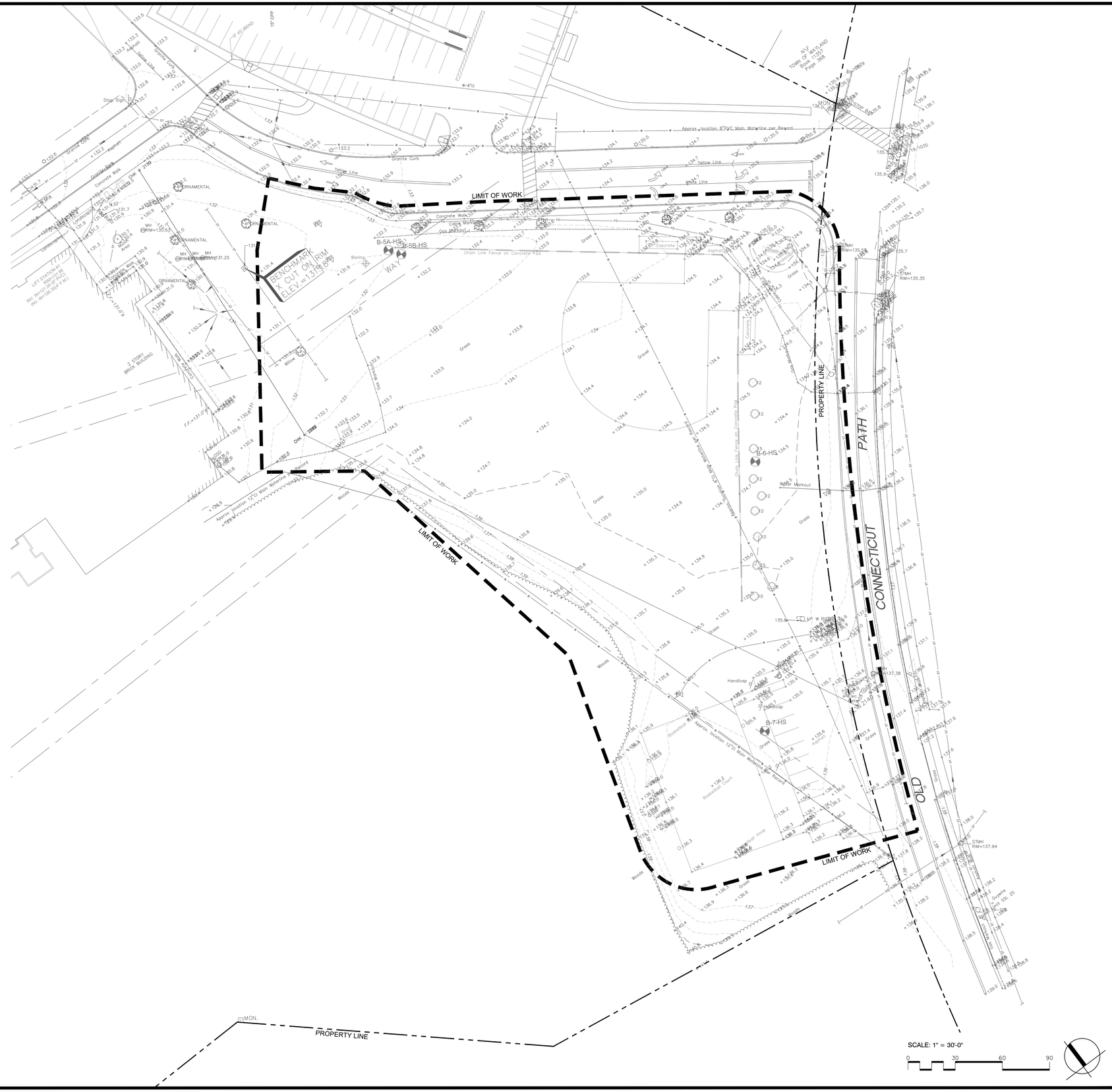
Sheet Number:

L1.01

COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

- PROPERTY LINE
- EDGE OF WOODS
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB/BUSH
- SIGN
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- WATER SHUTOFF
- GV — GAS VALVE
- WV — WATER VALVE
- MONUMENT
- IRON PIN / IRON ROD
- HANDICAP SPACE
- EASEMENT
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- G — GAS LINE
- S — SIGNAL WIRE LINE
- C — CABLE LINE
- FO — FIBER OPTIC LINE
- LPS — LOW PRESSURE SEWER LINE
- E — ELECTRIC LINE
- H — HEATING LINE
- T — TELEPHONE LINE
- SS — SANITARY MANHOLE (SMH)
- ST — STORM MANHOLE (STMH)
- C — CATCHBASIN (CB)
- METAL POST/BOLLARD (BOL)
- E — ELECTRIC MANHOLE (MHE)
- UNKNOWN MANHOLE
- T — TELEPHONE MANHOLE (MHT)
- 10 — MAJOR CONTOUR LINE
- 9 — MINOR CONTOUR LINE
- WETLAND DELINEATION
- WETLAND BUFFER
- FENCE
- B1 — BORING LOCATION
- MW — MONITORING WELL



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

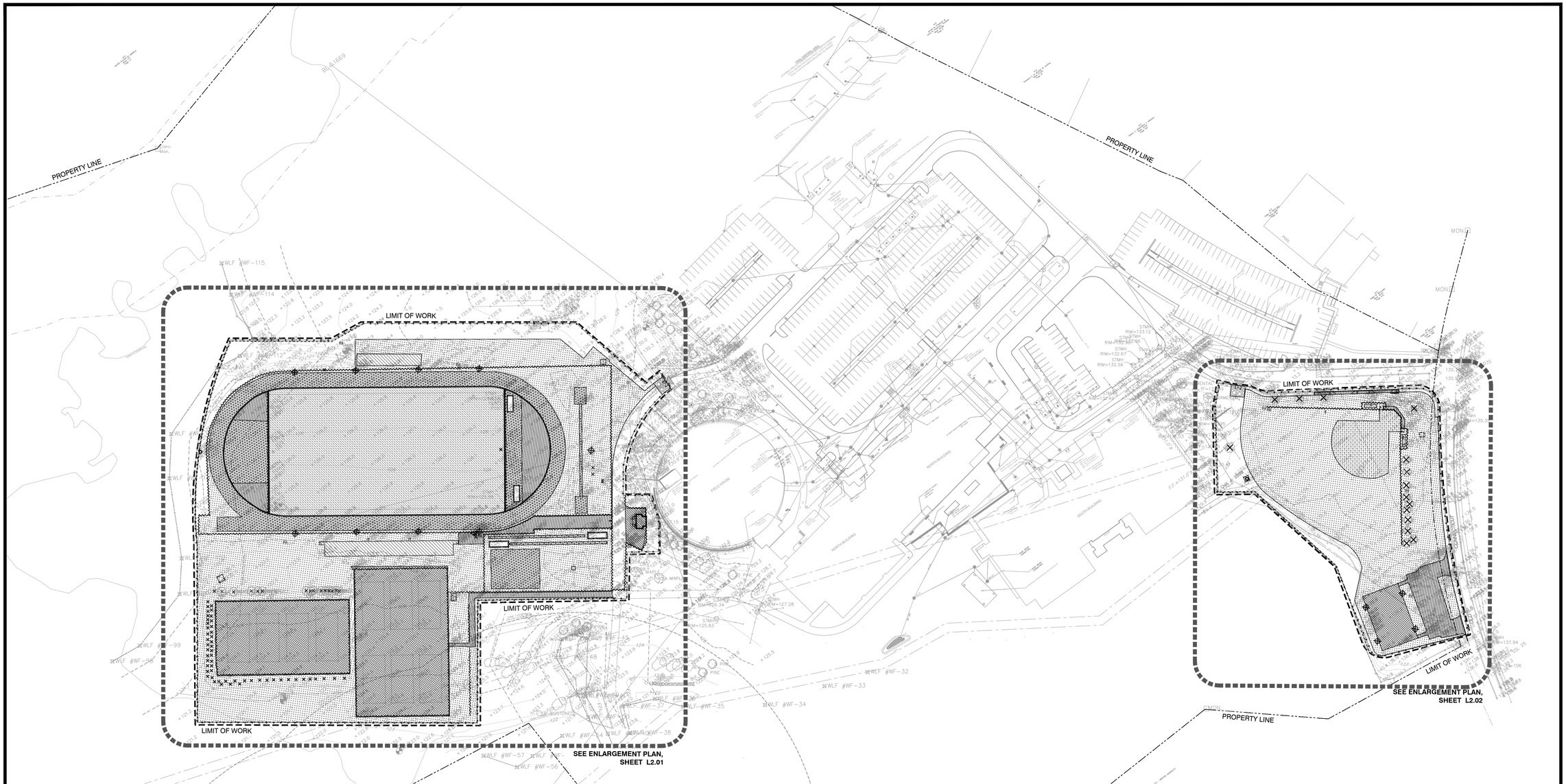
Drawing Title:

EXISTING CONDITIONS PLAN ENLARGEMENT

Sheet Number:

L1.02

COPYRIGHT 2017 WESTON & SAMPSON



LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- EROSION AND SEDIMENT CONTROL
- 6' HT. CONSTRUCTION FENCE
- CONSTRUCTION ENTRANCE
- CONSTRUCTION ENTRANCE STONE PAD
- R&D EXISTING ARTIFICIAL TURF, R&S TOPSOIL
- R&D CEMENT CONCRETE PAVING, COMPLETE.
- R&D RUNNING TRACK, COMPLETE
- STRIP & STOCKPILE TOPSOIL
- R&D BITUMINOUS CONCRETE PAVING, COMPLETE
- R&D EXISTING BLEACHER
- R&D SKINNED INFIELD MIX, COMPLETE
- R&D SEALCOAT BITUMINOUS CONCRETE PAVING, COMPLETE
- R&D EXISTING FENCE
- SAW CUT
- R&D SPORTS LIGHTING, COMPLETE
- R&D SITE AMENITIES, TYP.
- TREE PROTECTION, TYP.

TYP.	TYPICAL
EX.	EXISTING
R&D	REMOVE AND DISPOSE
R&S	REMOVE AND STOCKPILE
R&R	REMOVE AND RELOCATE

DEMOLITION & SITE PREPARATION NOTES

1. THE CONTRACTOR SHALL INCLUDE IN THE BID THE COST OF REMOVING ANY EXISTING SITE FEATURES AND APPURTENANCES NECESSARY TO ACCOMPLISH THE CONSTRUCTION OF THE PROPOSED SITE IMPROVEMENTS. THE CONTRACTOR SHALL ALSO INCLUDE IN THE BID THE COST NECESSARY TO RESTORE SUCH ITEMS IF THEY ARE SCHEDULED TO REMAIN AS PART OF THE FINAL SITE IMPROVEMENTS. REFER TO PLANS TO DETERMINE EXCAVATION AND DEMOLITION REQUIREMENTS AND TO DETERMINE THE LOCATION OF THE PROPOSED SITE IMPROVEMENTS.
2. THE OWNER RESERVES THE RIGHT TO REVIEW ALL MATERIALS DESIGNATED FOR REMOVAL AND TO RETAIN OWNERSHIP OF SUCH MATERIALS. IF THE OWNER RETAINS ANY MATERIAL THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OWNER TO HAVE THOSE MATERIALS REMOVED OFF SITE TO A DESIGNATED MUNICIPAL PROPERTY AT NO ADDITIONAL COST. ALL GEOTECHNICALLY OR UNSUITABLE UNCONTAMINATED EXCESS SOIL FROM CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE TOWN. REMOVAL ACTIVITIES SHALL BE ACCORDANCE WITH STATE AND LOCAL REGULATIONS AT NO ADDITIONAL COST TO THE TOWN. REFER TO WAYLAND TOWN BY-LAW §198-504 EARTH MOVEMENT.
3. UNLESS SPECIFICALLY NOTED TO BE REMOVED AND STOCKPILED (R&S) OR REUSED AND RELOCATED (R&R), ALL SITE FEATURES CALLED TO BE REMOVED AND DEMOLISHED (R&D) SHALL BE REMOVED WITH THEIR FOOTINGS, ATTACHMENTS, BASE MATERIAL, ETC, TRANSPORTED FROM THE SITE TO BE DISPOSED OF IN A LAWFUL MANNER AT AN ACCEPTABLE DISPOSAL SITE AND AT NO ADDITIONAL COST TO THE OWNER.
4. ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AND/OR OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
5. DURING EARTHWORK OPERATIONS, CONTRACTOR SHALL TAKE CARE TO NOT DISTURB EXISTING MATERIALS TO REMAIN, OUTSIDE THE LIMITS OF EXCAVATION AND BACKFILL AND SHALL TAKE WHATEVER MEASURES NECESSARY, AT THE CONTRACTOR'S EXPENSE, TO PREVENT ANY EXCAVATED MATERIAL FROM COLLAPSING. ALL BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED AS SPECIFIED TO THE SUBGRADE REQUIRED FOR THE INSTALLATION OF THE REMAINDER OF THE CONTRACT WORK.
6. IT SHALL BE THE CONTRACTOR'S OPTION, WITH CONCURRENCE OF THE OWNER'S REPRESENTATIVE, TO REUSE EXISTING GRAVEL PAVEMENT BASE COURSE IF IT MEETS THE REQUIREMENTS OF THE SPECIFICATIONS FOR GRAVEL BORROW.
7. STRIP & STOCKPILE EXISTING TOPSOIL FOR LATER REUSE AS REQUIRED. STOCKPILE SHALL HAVE APPROPRIATE EROSION AND SEDIMENT CONTROLS. THE CONTRACTOR SHALL CONFIRM THAT THE TOPSOIL IS SUITABLE FOR REUSE AND IT MEETS THE REQUIREMENTS OF THE SPECIFICATIONS FOR LOAM BORROW.
8. CLEAR AND GRUB VEGETATION SHALL INCLUDE REMOVAL OF ALL GRASS/LAWN, SHRUBS, AND UNDERBRUSH, REMOVAL OF ROOTS, ROUGH GRADING, INSTALLATION OF LOAM (IF APPLICABLE), FINE GRADING, SEEDING AND TURF OR VEGETATION ESTABLISHMENT BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROTECT EXISTING TREES TO REMAIN. CONTRACTOR SHALL INSTALL TREE PROTECTION BARRIERS AFTER CLEARING TURF AND UNDERBRUSH BY HAND AND TAKE DUE CARE TO PREVENT INJURY TO TREES DURING CLEARING OPERATIONS.
10. THE STORAGE OF MATERIALS AND EQUIPMENT WILL BE PERMITTED AT LOCATIONS DESIGNATED BY OWNER OR OWNER'S REPRESENTATIVE. PROTECTION OF STORED MATERIALS AND EQUIPMENT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. EXISTING STORAGE SHEDS SHALL BE RELOCATED ON SITE PER DIRECTION OF OWNER.

SCALE: 1" = 80'-0"

0 80 160 240

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

OVERALL SITE PREPARATION AND DEMOLITION PLAN

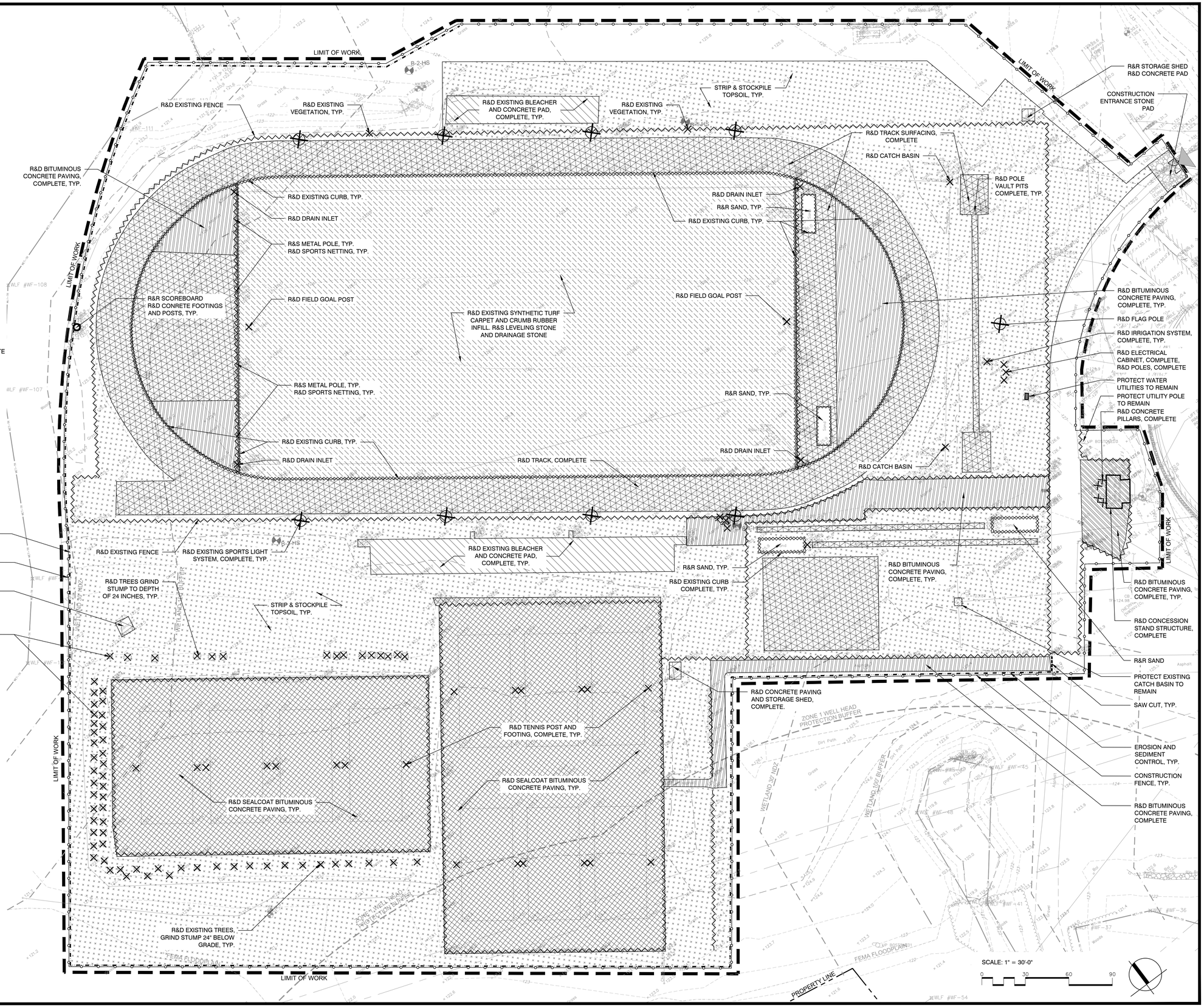
Sheet Number:

L2.00

COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- EROSION AND SEDIMENT CONTROL
- CONSTRUCTION FENCE
- CONSTRUCTION ENTRANCE
- CONSTRUCTION ENTRANCE STONE PAD
- STRIP & REMOVE SYNTHETIC TURF
- R&D CEMENT CONCRETE PAVING, COMPLETE.
- R&D TRACK, COMPLETE
- STRIP & STOCKPILE TOPSOIL
- R&D BITUMINOUS CONCRETE PAVING, COMPLETE
- R&D EXISTING BLEACHER, COMPLETE
- R&D SEALCOAT BITUMINOUS CONCRETE PAVING, COMPLETE
- R&D EXISTING FENCE
- R&D EXISTING CURB
- SAW CUT
- R&D SITE AMENITIES, TYP.
- R&R SITE AMENITIES
- R&D EXISTING SPORTS LIGHT



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

SITE PREPARATION AND DEMOLITION PLAN ENLARGEMENT

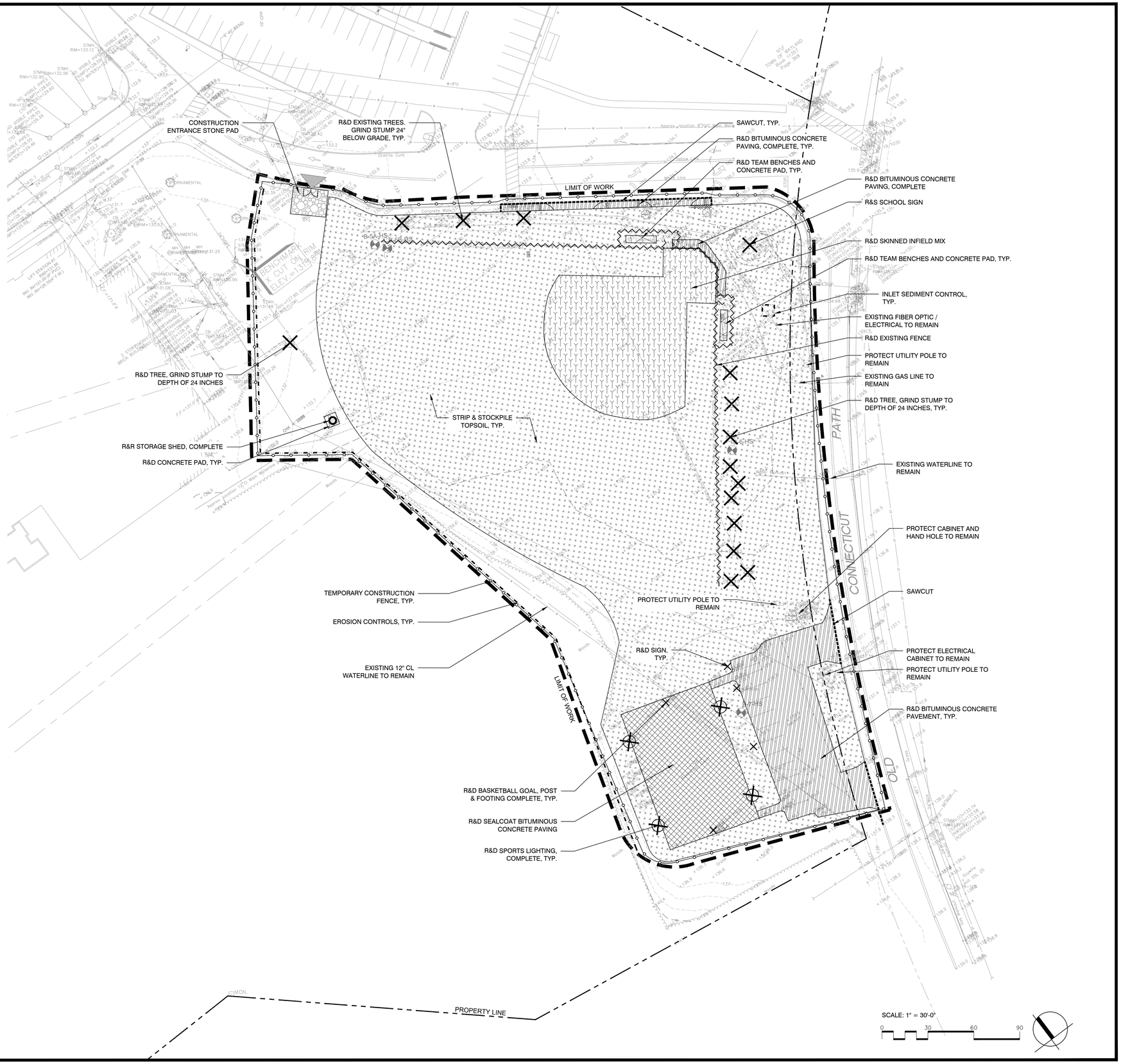
Sheet Number:

L2.01

COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- EROSION AND SEDIMENT CONTROL
- CONSTRUCTION FENCE
- CONSTRUCTION ENTRANCE
- R&D PAVING, COMPLETE
- CONSTRUCTION ENTRANCE STONE PAD
- R&D CEMENT CONCRETE PAVING, COMPLETE.
- STRIP & STOCKPILE TOPSOIL
- R&D BITUMINOUS CONCRETE PAVING, COMPLETE
- R&D SEALCOAT BITUMINOUS CONCRETE PAVING, COMPLETE
- R&D SKINNED INFIELD MIX
- R&D EXISTING FENCE
- R&D EXISTING CURB
- SAW CUT
- R&D SITE AMMENITIES, TYP.
- R&R SITE AMENITIES
- R&D EXISTING SPORTS LIGHT



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

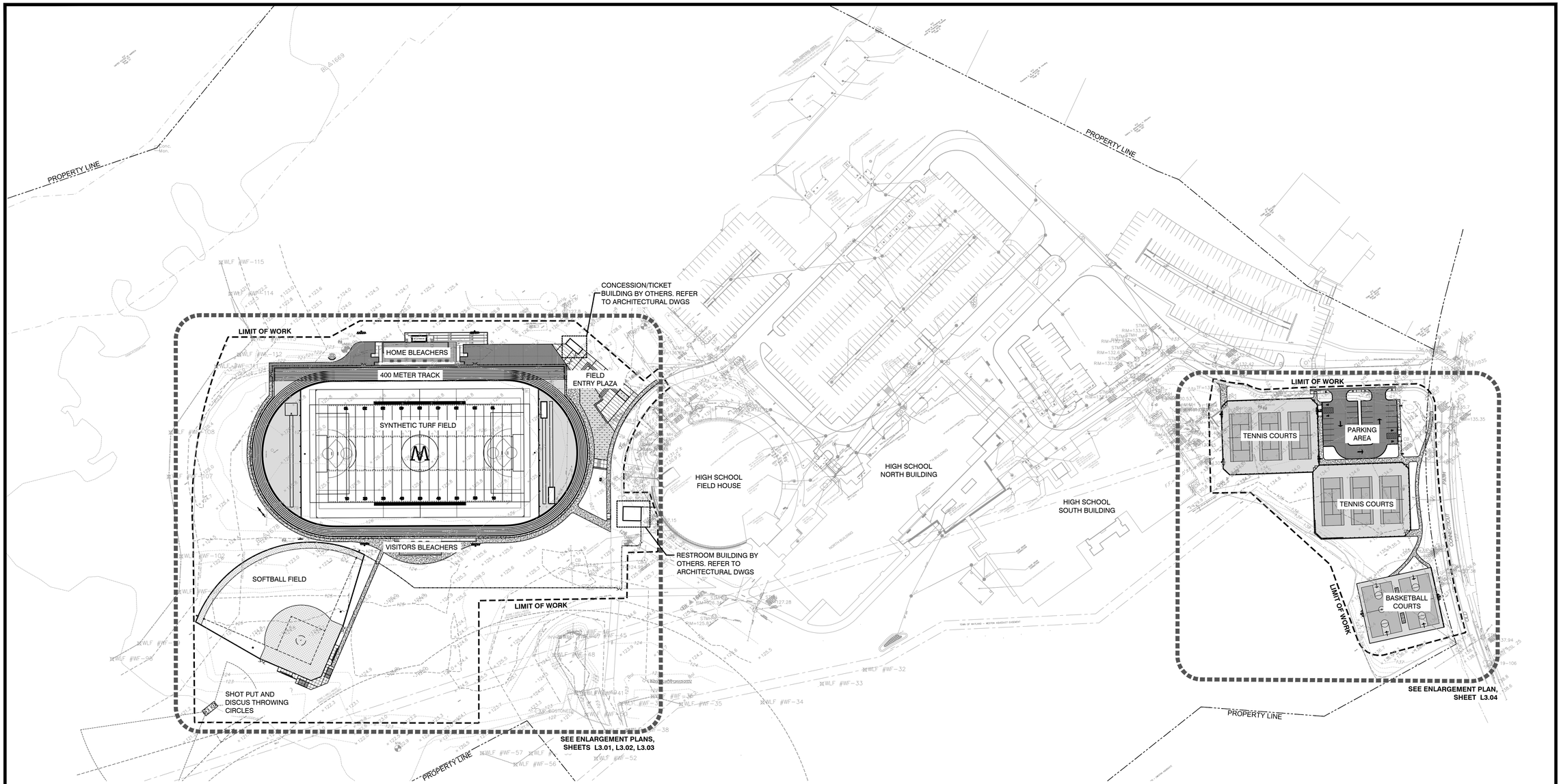
Drawing Title:

SITE PREPARATION AND DEMOLITION PLAN

Sheet Number:

L2.02

COPYRIGHT 2017 WESTON & SAMPSON



MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- WETLAND DELINEATION
- WETLAND 30' NDZ & WETLAND 100' BUFFER
- ZONE 1 WELL HEAD PROTECTION BUFFER
- FEMA FLOOD BOUNDARY

SCALE: 1" = 80'-0"

0 80 160 240

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

OVERALL MATERIALS PLAN

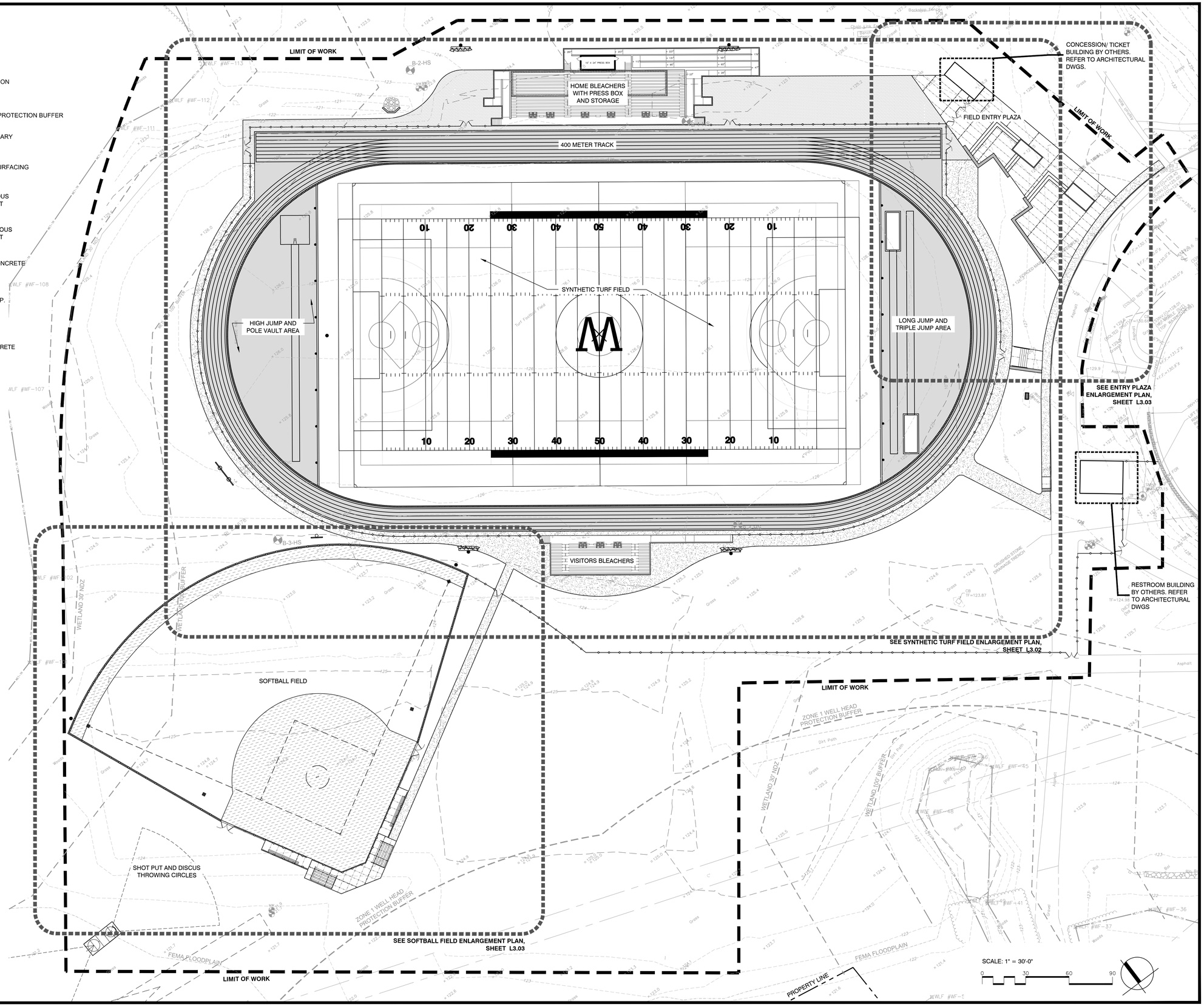
Sheet Number:

L3.00

COPYRIGHT 2017 WESTON & SAMPSON

MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- WETLAND DELINEATION
- WETLAND BUFFER
- ZONE 1 WELL HEAD PROTECTION BUFFER
- FEMA FLOOD BOUNDARY
- RESILIENT TRACK SURFACING
- VEHICULAR BITUMINOUS CONCRETE PAVEMENT
- PEDESTRIAN BITUMINOUS CONCRETE PAVEMENT
- INTEGRAL COLOR CONCRETE PAVEMENT, TYP.
- SKINNED INFIELD, TYP.
- BVCL FENCE
- CAST IN PLACE CONCRETE RETAINING WALL



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

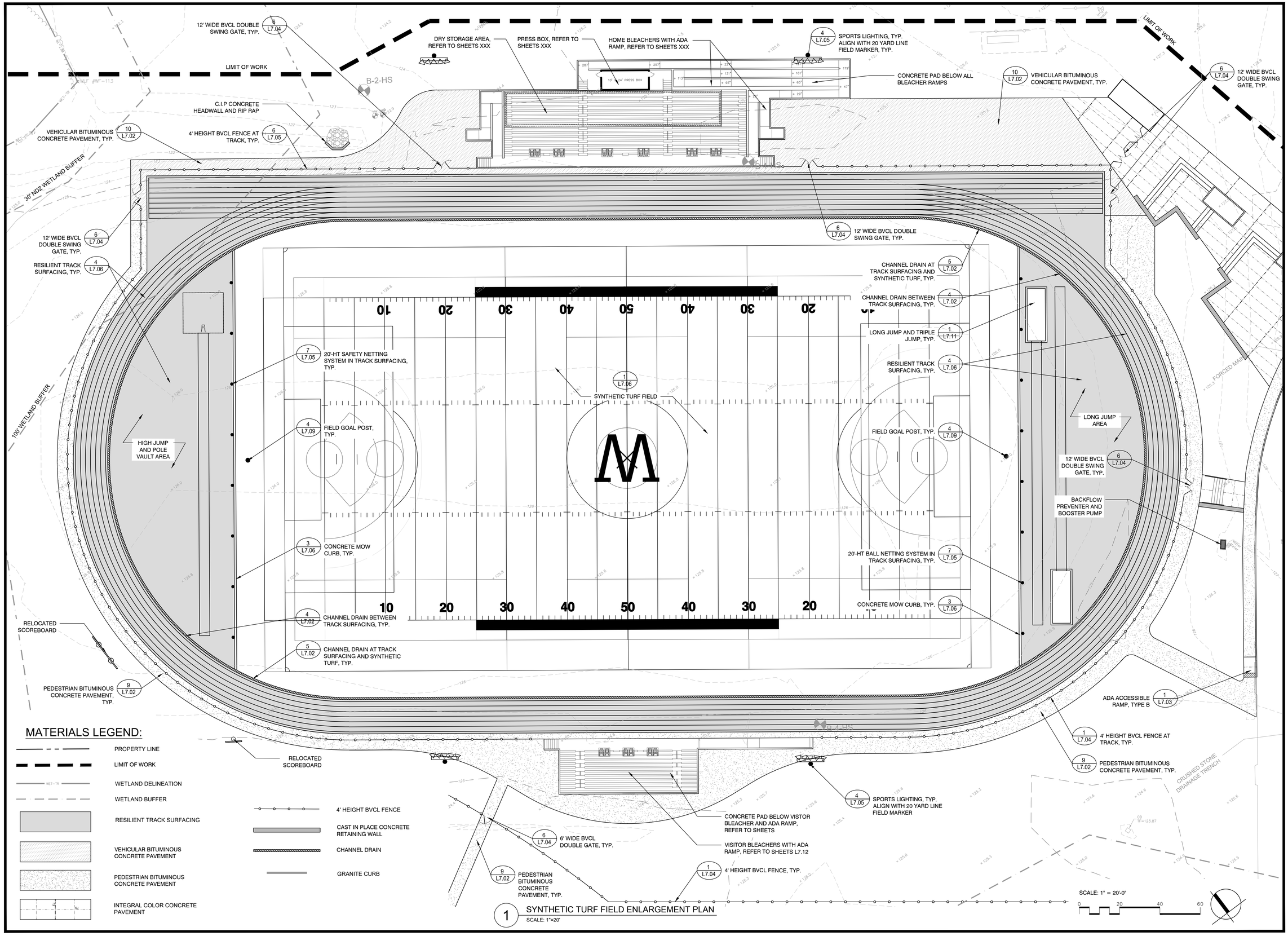
Drawing Title:

MATERIALS PLAN ENLARGEMENT

Sheet Number:

L3.01

COPYRIGHT 2017 WESTON & SAMPSON



MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- WETLAND DELINEATION
- WETLAND BUFFER
- RESILIENT TRACK SURFACING
- VEHICULAR BITUMINOUS CONCRETE PAVEMENT
- PEDESTRIAN BITUMINOUS CONCRETE PAVEMENT
- INTEGRAL COLOR CONCRETE PAVEMENT
- 4' HEIGHT BVCL FENCE
- CAST IN PLACE CONCRETE RETAINING WALL
- CHANNEL DRAIN
- GRANITE CURB

1 SYNTHETIC TURF FIELD ENLARGEMENT PLAN
SCALE: 1"=20'

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street, 3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

MATERIALS PLAN ENLARGEMENT

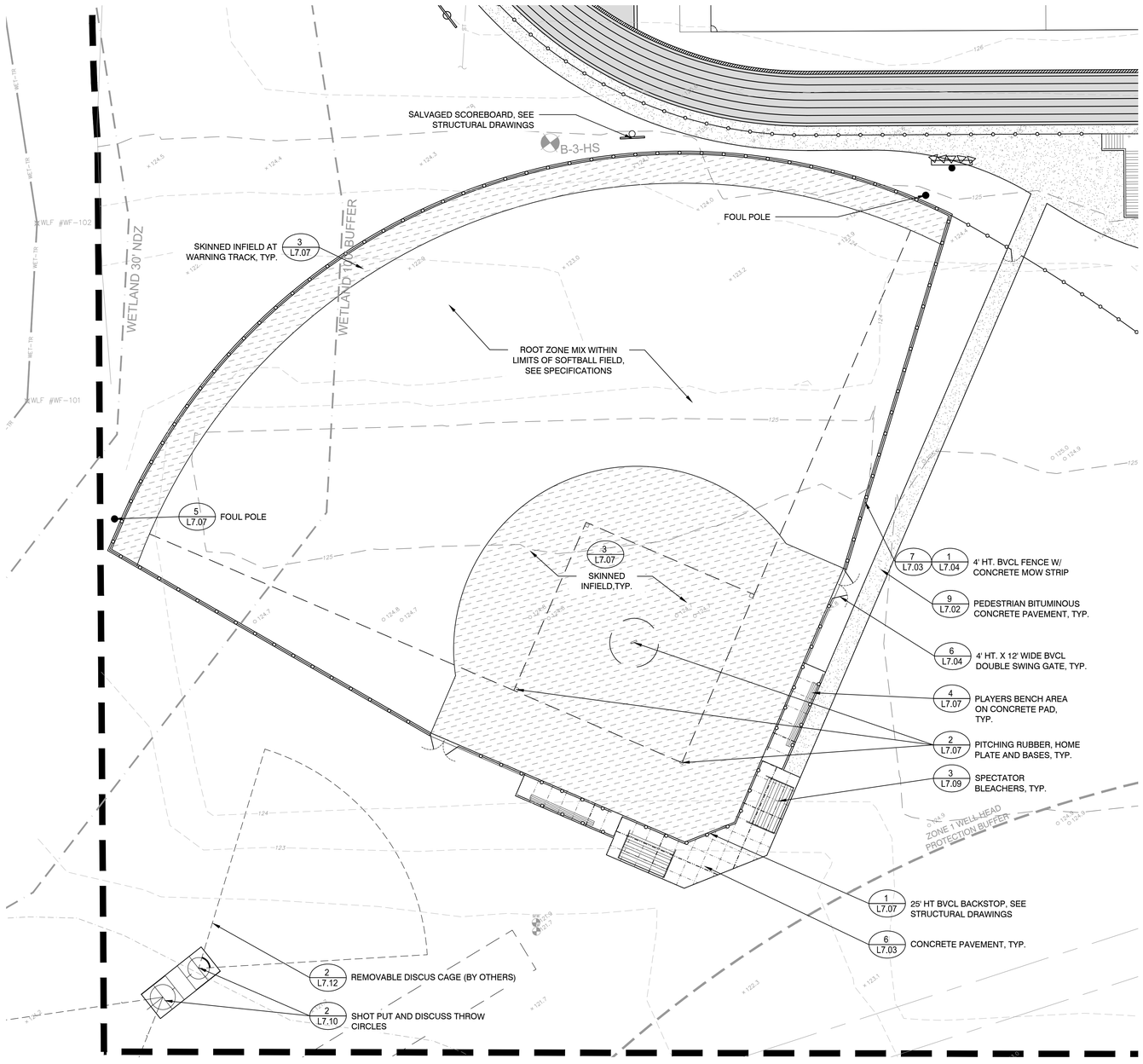
Sheet Number:

L3.02

COPYRIGHT 2017 WESTON & SAMPSON

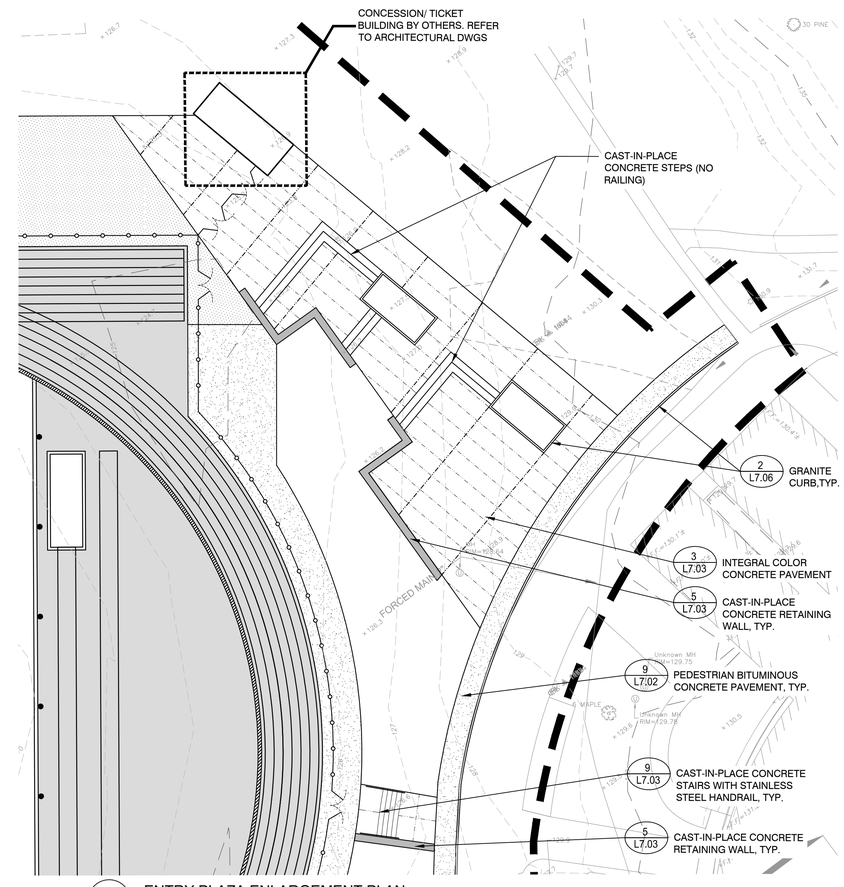
MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- WETLAND DELINEATION
- WETLAND BUFFER
- ZONE 1 WELL HEAD PROTECTION BUFFER
- VEHICULAR BITUMINOUS CONCRETE PAVEMENT
- PEDESTRIAN BITUMINOUS CONCRETE PAVEMENT
- CONCRETE PAVEMENT
- SKINNED INFIELD, TYP.
- 4' HEIGHT BVCL FENCE
- CAST IN PLACE CONCRETE RETAINING WALL
- CHANNEL DRAIN
- GRANITE CURB



1 SOFTBALL FIELD ENLARGEMENT PLAN

SCALE: 1"=20'



2 ENTRY PLAZA ENLARGEMENT PLAN

SCALE: 1"=20'

SCALE: 1" = 20'-0"

0 20 40 60

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

MATERIALS PLAN ENLARGEMENT

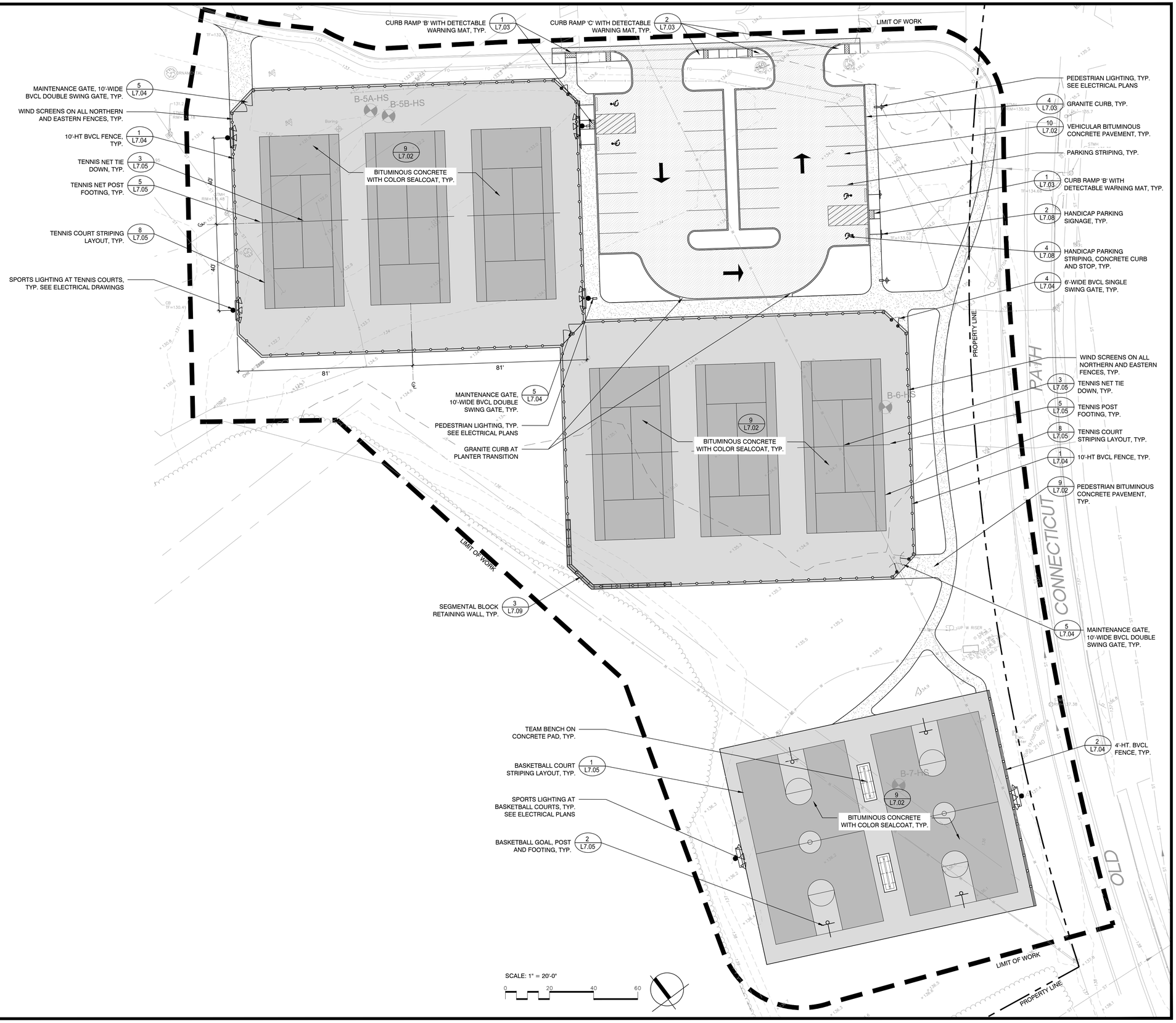
Sheet Number:

L3.03

COPYRIGHT 2017 WESTON & SAMPSON

MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- BITUMINOUS CONCRETE WITH COLOR SEALCOAT
- VEHICULAR BITUMINOUS CONCRETE PAVEMENT
- PEDESTRIAN BITUMINOUS CONCRETE PAVEMENT
- INTEGRAL COLOR CONCRETE PAVEMENT, TYP.
- BVCL FENCE
- GRANITE CURB, TYP.
- SEGMENTAL BLOCK RETAINING WALL



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

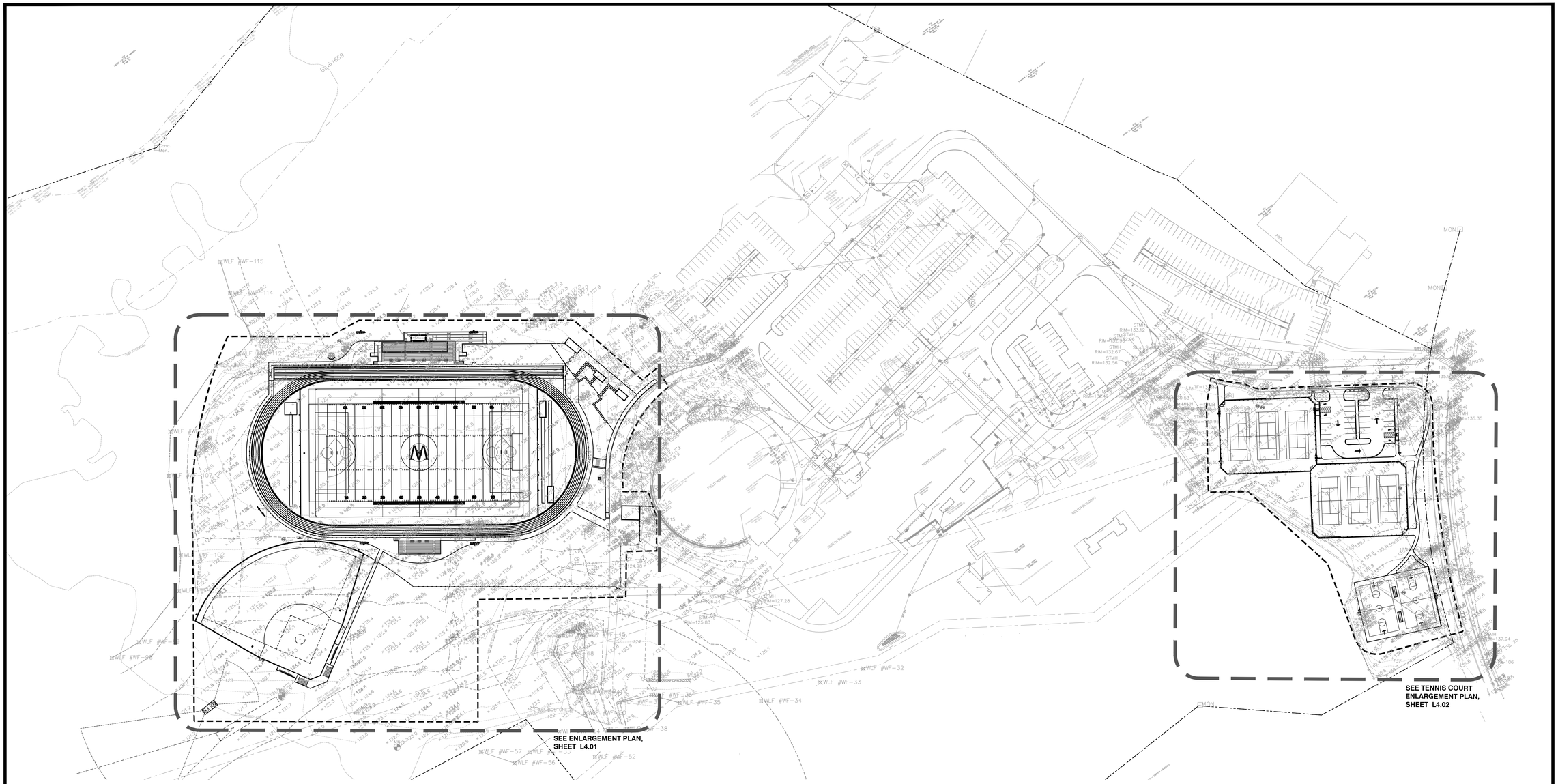
Drawing Title:

MATERIALS ENLARGEMENT PLAN

Sheet Number:

L3.04

COPYRIGHT 2017 WESTON & SAMPSON



LEGEND

	PROPERTY LINE
	LIMIT OF WORK
RXX'	RADIUS DIMENSION
XX'	TYP. DIMENSION
X'-X"	TYP. ARC DIMENSION
+	CENTER POINT
⊙	50' ALIGNMENT INCREMENT
C.P.C.	CENTER POINT OF CIRCLE
BP	BEGINNING POINT
PC	POINT OF CURVATURE
MID	MID POINT OF CURVE
PRC	POINT OF REVERSE CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PT	POINT OF TANGENCY

LAYOUT NOTES

1. COORDINATE ALL LAYOUT ACTIVITIES WITH THE SCOPE OF WORK CALLED FOR BY DEMOLITION, GRADING AND UTILITIES OPERATIONS ENCOMPASSED BY THIS CONTRACT. SET, PROTECT AND REPLACE REFERENCE STAKES AS NECESSARY OR AS REQUIRED BY THE OWNER'S REPRESENTATIVE.
2. ALL WORK SHALL BE PERFORMED BY CONTRACTOR UNLESS SPECIFICALLY INDICATED THAT THE WORK WILL BE PERFORMED "BY TOWN".
3. THE LAYOUT OF SITE AMENITIES AND FENCES MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
4. ALL PROPOSED SITE FEATURES SHALL BE LAID OUT AND STAKED FOR REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF INSTALLATION. ANY REQUIRED ADJUSTMENTS TO THE LAYOUT SHALL BE UNDERTAKEN AS DIRECTED, AT NO ADDITIONAL COST TO THE OWNER.
5. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES AND SHALL BE TREATED WITH AN RS-1 TACK COAT AT POINT OF CONNECTION. ALL PATHWAY WIDTHS SHALL BE AS NOTED ON THE LAYOUT AND MATERIALS PLAN.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASUREMENTS OF ALL PROPOSED FENCES.
8. REFER TO DETAIL DRAWINGS FOR SITE CONSTRUCTION DETAILS.

0 40 80 120

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

OVERALL LAYOUT PLAN

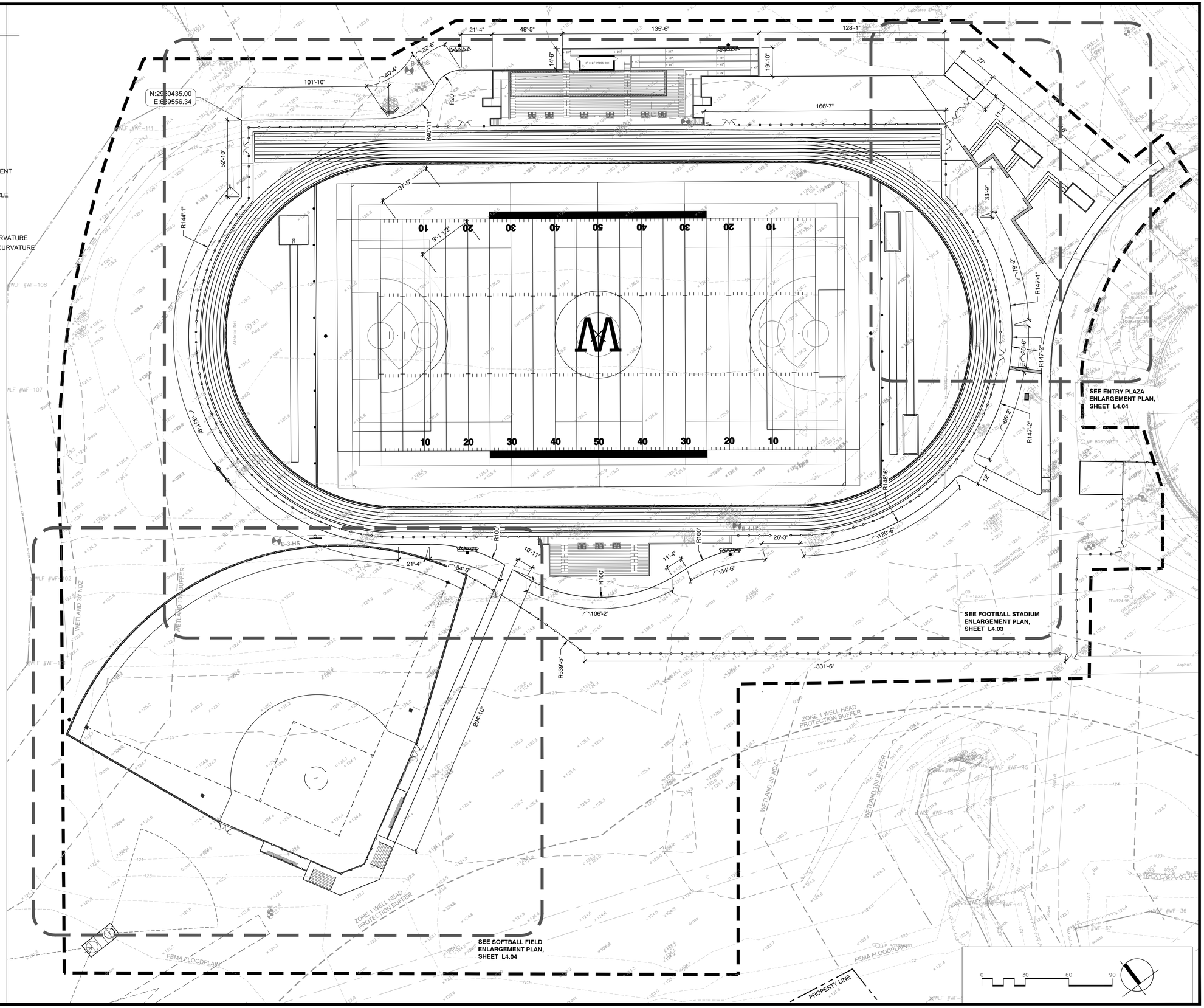
Sheet Number:

L4.00

COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

	PROPERTY LINE
	LIMIT OF WORK
RXX'	RADIUS DIMENSION
XX'	TYP. DIMENSION
X'-X'	TYP. ARC DIMENSION
+	CENTER POINT
⊙	50' ALIGNMENT INCREMENT
C.P.C.	CENTER POINT OF CIRCLE
BP	BEGINNING POINT
PC	POINT OF CURVATURE
MID	MID POINT OF CURVE
PRC	POINT OF REVERSE CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PT	POINT OF TANGENCY



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

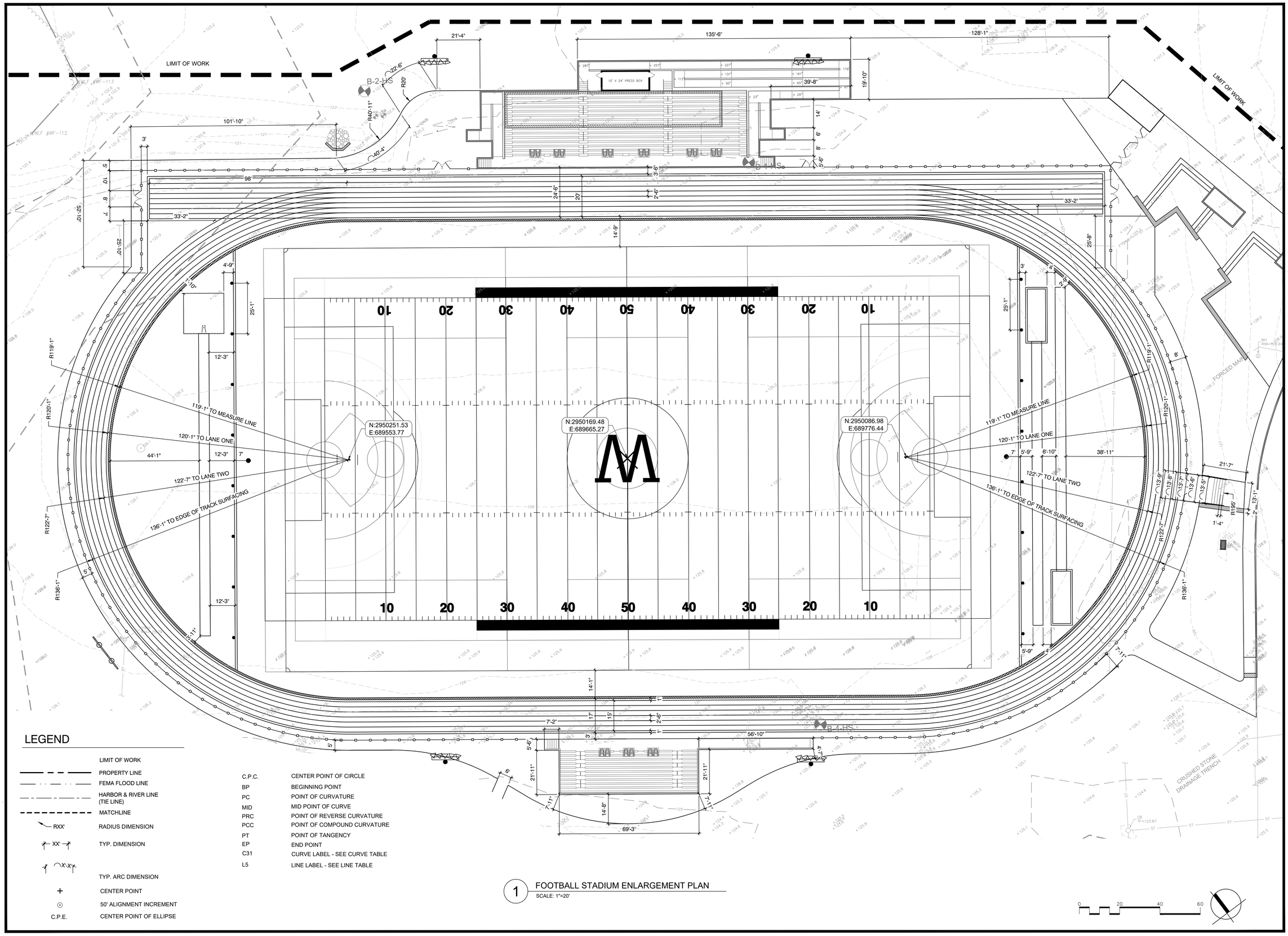
Drawing Title:

LAYOUT PLAN ENLARGEMENT

Sheet Number:

L4.01

COPYRIGHT 2017 WESTON & SAMPSON



LEGEND

	LIMIT OF WORK
	PROPERTY LINE
	FEMA FLOOD LINE
	HARBOR & RIVER LINE (TIE LINE)
	MATCHLINE
RXX'	RADIUS DIMENSION
XX'	TYP. DIMENSION
X'-X"	TYP. ARC DIMENSION
+	CENTER POINT
⊙	50' ALIGNMENT INCREMENT
C.P.E.	CENTER POINT OF ELLIPSE

C.P.C.	CENTER POINT OF CIRCLE
BP	BEGINNING POINT
PC	POINT OF CURVATURE
MID	MID POINT OF CURVE
PRC	POINT OF REVERSE CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PT	POINT OF TANGENCY
EP	END POINT
C31	CURVE LABEL - SEE CURVE TABLE
L5	LINE LABEL - SEE LINE TABLE

1 FOOTBALL STADIUM ENLARGEMENT PLAN
SCALE: 1"=20'

0 20 40 60

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

LAYOUT PLAN
ENLARGEMENT -
ADD ALTERNATE #1

Sheet Number:

L4.02

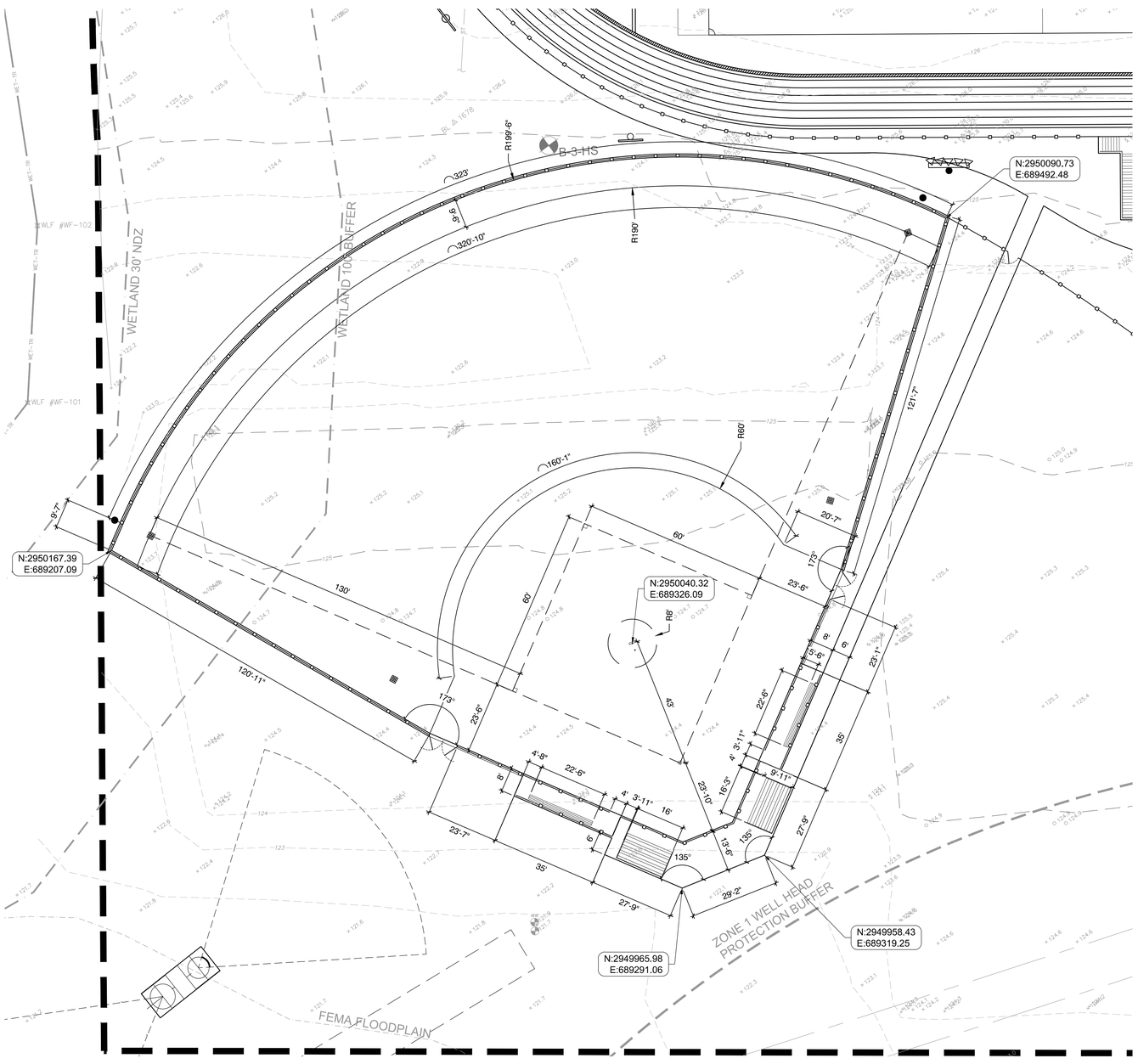
COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

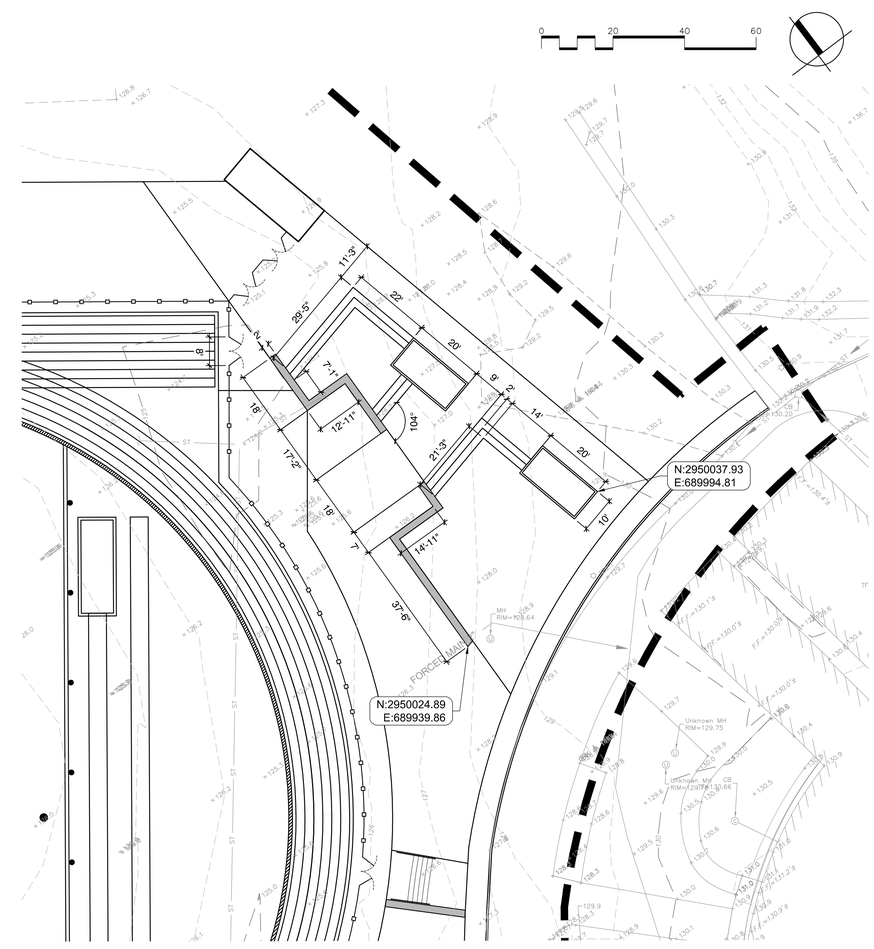
	LIMIT OF WORK
	PROPERTY LINE
	FEMA FLOOD LINE
	HARBOR & RIVER LINE (TIE LINE)
	MATCHLINE
RXX'	RADIUS DIMENSION
XX'	TYP. DIMENSION
X'-X"	TYP. ARC DIMENSION
+	CENTER POINT
⊙	50' ALIGNMENT INCREMENT
C.P.E.	CENTER POINT OF ELLIPSE
C.P.C.	CENTER POINT OF CIRCLE
BP	BEGINNING POINT
PC	POINT OF CURVATURE
MID	MID POINT OF CURVE
PRC	POINT OF REVERSE CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PT	POINT OF TANGENCY

LAYOUT NOTES

1. COORDINATE ALL LAYOUT ACTIVITIES WITH THE SCOPE OF WORK CALLED FOR BY DEMOLITION, GRADING AND UTILITIES OPERATIONS ENCOMPASSED BY THIS CONTRACT. SET, PROTECT AND REPLACE REFERENCE STAKES AS NECESSARY OR AS REQUIRED BY THE OWNER'S REPRESENTATIVE.
2. ALL WORK SHALL BE PERFORMED BY CONTRACTOR UNLESS SPECIFICALLY INDICATED THAT THE WORK WILL BE PERFORMED "BY CITY".
3. THE LAYOUT OF SITE AMENITIES AND FENCES MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
4. ALL PROPOSED SITE FEATURES SHALL BE LAID OUT AND STAKED FOR REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF INSTALLATION. ANY REQUIRED ADJUSTMENTS TO THE LAYOUT SHALL BE UNDERTAKEN AS DIRECTED, AT NO ADDITIONAL COST TO THE OWNER.
5. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES AND SHALL BE TREATED WITH AN RS-1 TACK COAT AT POINT OF CONNECTION. ALL PATHWAY WIDTHS SHALL BE AS NOTED ON THE LAYOUT AND MATERIALS PLAN.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASUREMENTS OF ALL PROPOSED FENCES.
8. REFER TO DETAIL DRAWINGS FOR SITE CONSTRUCTION DETAILS.



1 SOFTBALL FIELD ENLARGEMENT PLAN
SCALE: 1"=20'



2 ENTRY PLAZA ENLARGEMENT PLAN
SCALE: 1"=20'

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

LAYOUT PLAN ENLARGEMENT

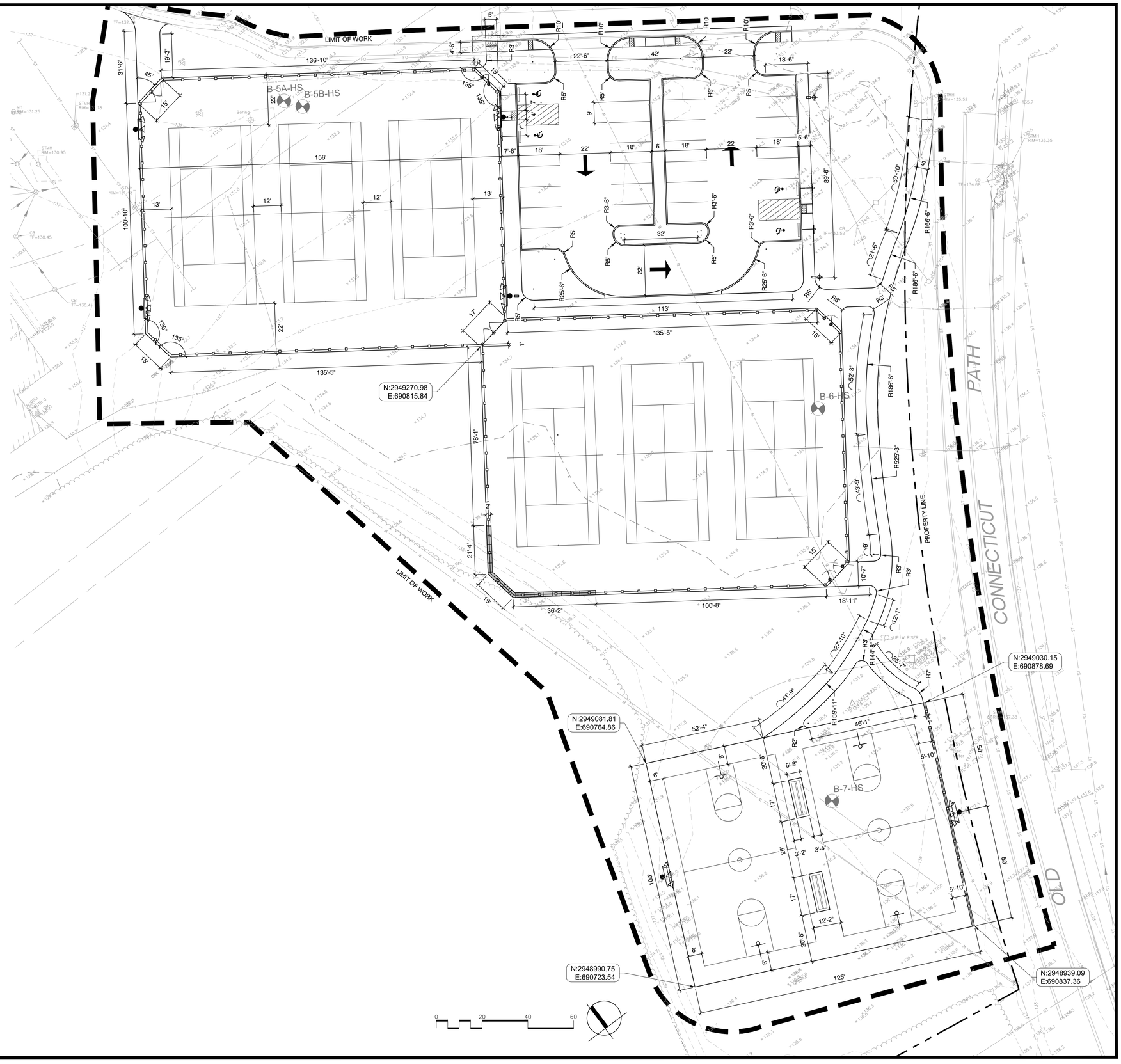
Sheet Number:

L4.03

COPYRIGHT 2017 WESTON & SAMPSON

LEGEND

	LIMIT OF WORK
	PROPERTY LINE
	FEMA FLOOD LINE
	HARBOR & RIVER LINE (TIE LINE)
	MATCHLINE
RXX'	RADIUS DIMENSION
XX'	TYP. DIMENSION
X'-X"	TYP. ARC DIMENSION
+	CENTER POINT
⊙	50' ALIGNMENT INCREMENT
C.P.E.	CENTER POINT OF ELLIPSE
C.P.C.	CENTER POINT OF CIRCLE
BP	BEGINNING POINT
PC	POINT OF CURVATURE
MID	MID POINT OF CURVE
PRC	POINT OF REVERSE CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PT	POINT OF TANGENCY
EP	END POINT
C31	CURVE LABEL - SEE CURVE TABLE
L5	LINE LABEL - SEE LINE TABLE



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

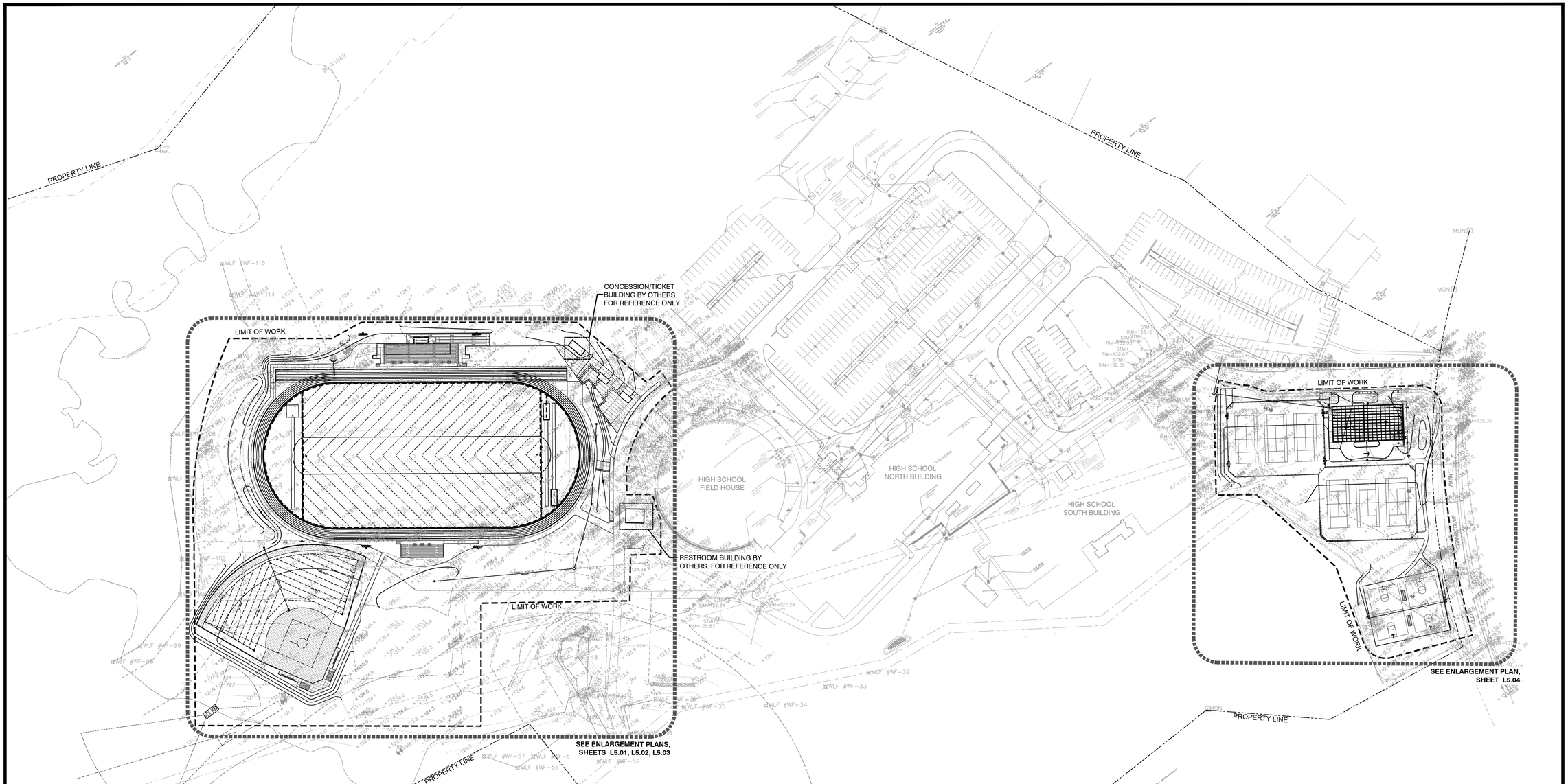
Drawing Title:

LAYOUT PLAN ENLARGEMENT

Sheet Number:

L4.04

COPYRIGHT 2017 WESTON & SAMPSON



GRADING, DRAINAGE & UTILITIES LEGEND

LIMIT OF WORK	
PROPERTY LINE	
EXISTING DRAINAGE STRUCTURE. SEE UTILITIES PLAN	
12	EXISTING CONTOURS
95.10	EXISTING SPOT ELEVATION
14	PROPOSED CONTOURS
15	
1.5%	PROPOSED SLOPE
8.25	PROPOSED SPOT ELEVATION
	CATCH BASIN
	AREA DRAIN
CO	CLEAN OUT
D	DRAINAGE MAN HOLE
S	SEWER MAN HOLE
HDPE PERF. DRAIN PIPE	HDPE PERFORATED DRAIN PIPE, DIAMETER VARIES
HDPE SOLID DRAIN PIPE	HDPE SOLID DRAIN PIPE, DIAMETER VARIES
2% MAX.	SWALE LINE
	GRADE BREAK
FFE	FINISHED FLOOR ELEVATION
HP	HIGH POINT
LP	LOW POINT
TW	TOP OF WALL
BW	BOTTOM OF WALL
TS	TOP OF STEP
BS	BOTTOM OF STEP

GRADING, DRAINAGE & UTILITY NOTES

1. ALL WORK RELATING TO INSTALLATION, RENOVATION OR MODIFICATION OF WATER, DRAINAGE AND/OR SEWER SERVICES SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS OF THE TOWN OF WAYLAND.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.
3. ALL GRADING IS TO BE SMOOTH AND CONTINUOUS WHERE PROPOSED GRAVEL SURFACE MEETS EXISTING SURFACE, BLEND THE TWO PAVEMENTS AND ELIMINATE ROUGH SPOTS AND ABRUPT GRADE CHANGES AND MEET LINE AND GRADE OF EXISTING CONDITIONS WITH NEW IMPROVEMENTS.
4. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE (1.5% MINIMUM) AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.
5. CONTRACTOR SHALL ENSURE ALL AREAS ARE PROPERLY PITCHED TO DRAIN, WITH NO SURFACE WATER PONDING OR PUDDLING.
6. ALL NEW WALKWAYS / ACCESS PATHS MUST CONFORM TO CURRENT AMERICANS WITH DISABILITIES ACT (ADA) REGULATIONS: WALKWAYS SHALL MAINTAIN A CROSS PITCH OF NOT MORE THAN ONE AND A HALF (1.5%) PERCENT AND THE RUNNING SLOPE (PARALLEL TO THE DIRECTION OF TRAVEL) BETWEEN 1% MIN. AND 5% MAX. ANY DISCREPANCIES NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE OWNER PRIOR TO CONTINUING WORK.
7. ALL UTILITY GRATES, COVERS OR OTHER SURFACE ELEMENTS INTENDED TO BE EXPOSED AT GRADE SHALL BE FLUSH WITH THE ADJACENT FINISHED GRADE AND ADJUSTED TO PROVIDE A SMOOTH TRANSITION AT ALL EDGES.
8. THE CONTRACTOR SHALL SET SUBGRADE ELEVATIONS TO ALLOW FOR POSITIVE DRAINAGE AND PROVIDE EROSION CONTROL DEVICES, STRUCTURES, MATERIALS AND CONSTRUCTION METHODS TO DIRECT SILT MIGRATION AWAY FROM DRAINAGE AND OTHER UTILITY SYSTEMS, PUBLIC/PRIVATE STREETS AND WORK AREAS. CLEAN BASINS REGULARLY AND AT THE END OF THE PROJECT.
9. EXCAVATION REQUIRED WITHIN PROXIMITY OF KNOWN EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.

0 40 80 120

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

GRADING, DRAINAGE, AND UTILITIES PLAN

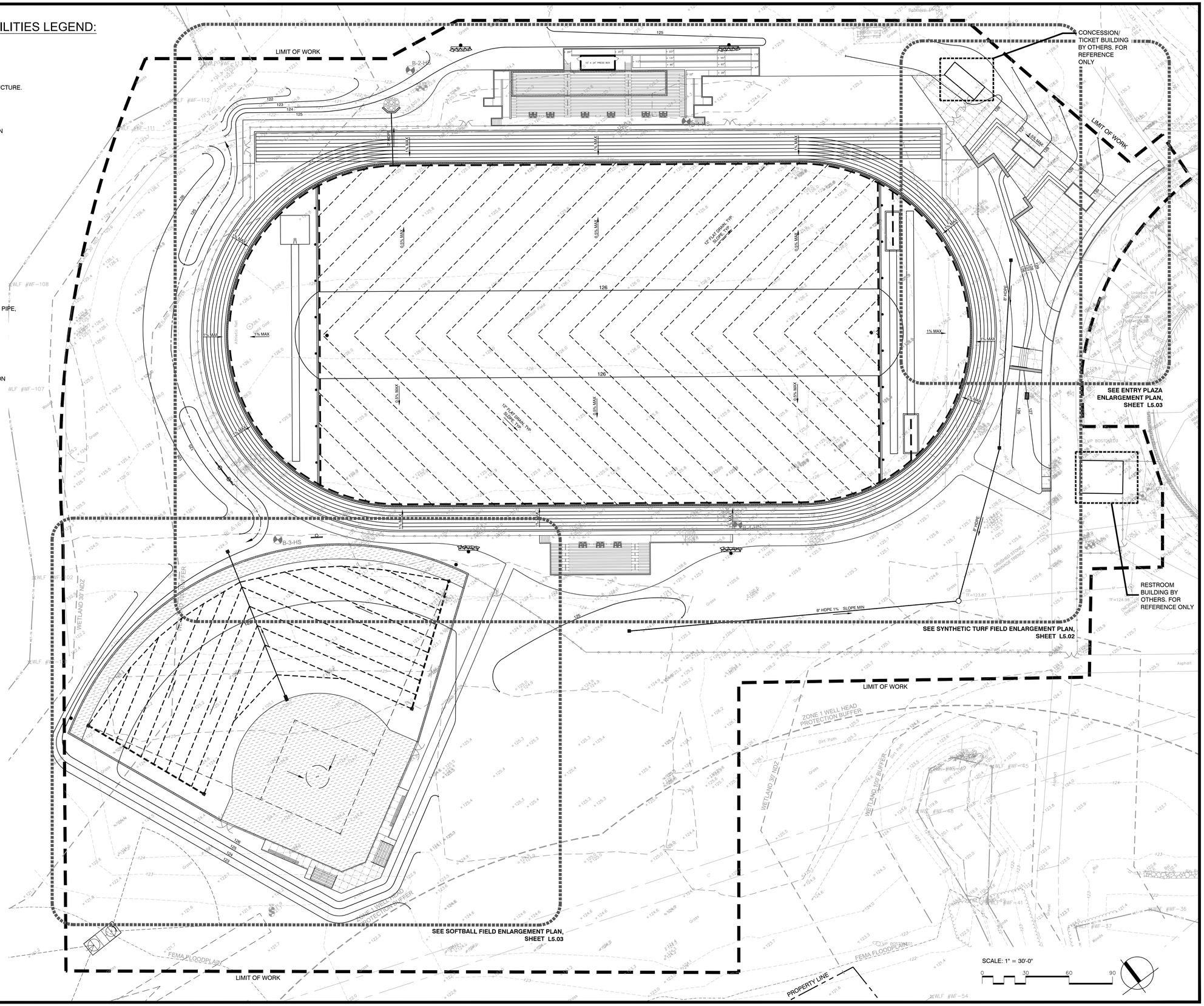
Sheet Number:

L5.00

COPYRIGHT 2017 WESTON & SAMPSON

GRADING, DRAINAGE & UTILITIES LEGEND:

	LIMIT OF WORK
	PROPERTY LINE
	EXISTING DRAINAGE STRUCTURE. SEE UTILITIES PLAN
12	EXISTING CONTOURS
95.10	EXISTING SPOT ELEVATION
14	PROPOSED CONTOURS
15	PROPOSED SLOPE
1.5%	PROPOSED SPOT ELEVATION
8.25	CATCH BASIN
	AREA DRAIN
CO	CLEAN OUT
D	DRAINAGE MAN HOLE
S	SEWER MAN HOLE
HDPE PERF. DRAIN PIPE	HDPE PERFORATED DRAIN PIPE, DIAMETER VARIES
HDPE SOLID DRAIN PIPE	HDPE SOLID DRAIN PIPE, DIAMETER VARIES
2% MAX.	SWALE LINE
	GRADE BREAK
FFE	FINISHED FLOOR ELEVATION
HP	HIGH POINT
LP	LOW POINT
TW	TOP OF WALL
BW	BOTTOM OF WALL
TS	TOP OF STEP
BS	BOTTOM OF STEP



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street, 3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

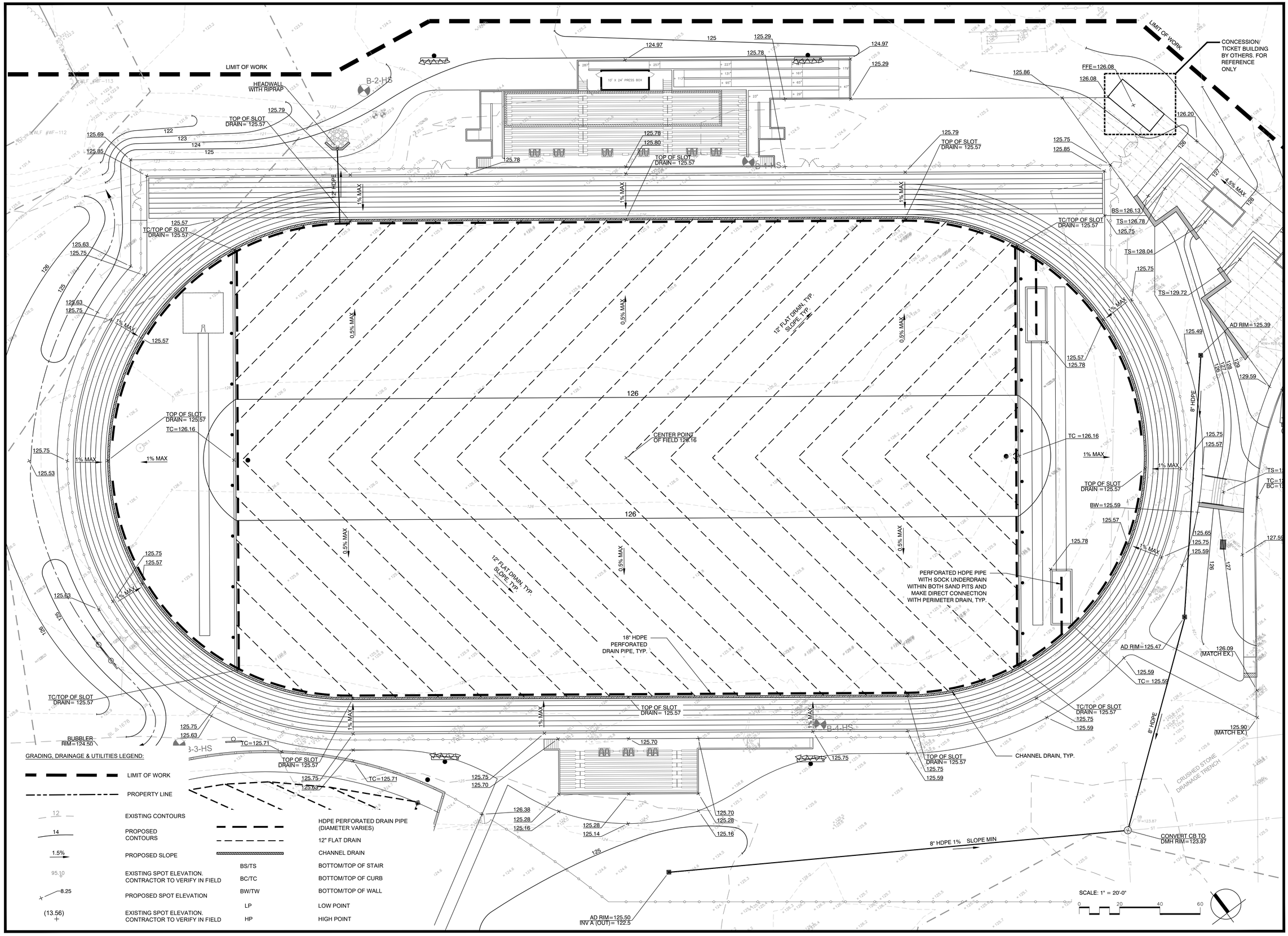
Drawing Title:

GRADING, DRAINAGE, AND UTILITIES PLAN

Sheet Number:

L5.01

COPYRIGHT 2017 WESTON & SAMPSON



GRADING, DRAINAGE & UTILITIES LEGEND:

	LIMIT OF WORK		HDPE PERFORATED DRAIN PIPE (DIAMETER VARIES)
	PROPERTY LINE		12" FLAT DRAIN
12	EXISTING CONTOURS		CHANNEL DRAIN
14	PROPOSED CONTOURS	BS/TS	BOTTOM/TOP OF STAIR
1.5%	PROPOSED SLOPE	BC/TC	BOTTOM/TOP OF CURB
95.10	EXISTING SPOT ELEVATION. CONTRACTOR TO VERIFY IN FIELD	BW/TW	BOTTOM/TOP OF WALL
8.25	PROPOSED SPOT ELEVATION	LP	LOW POINT
(13.56)	EXISTING SPOT ELEVATION. CONTRACTOR TO VERIFY IN FIELD	HP	HIGH POINT

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

GRADING, DRAINAGE, AND UTILITIES PLAN

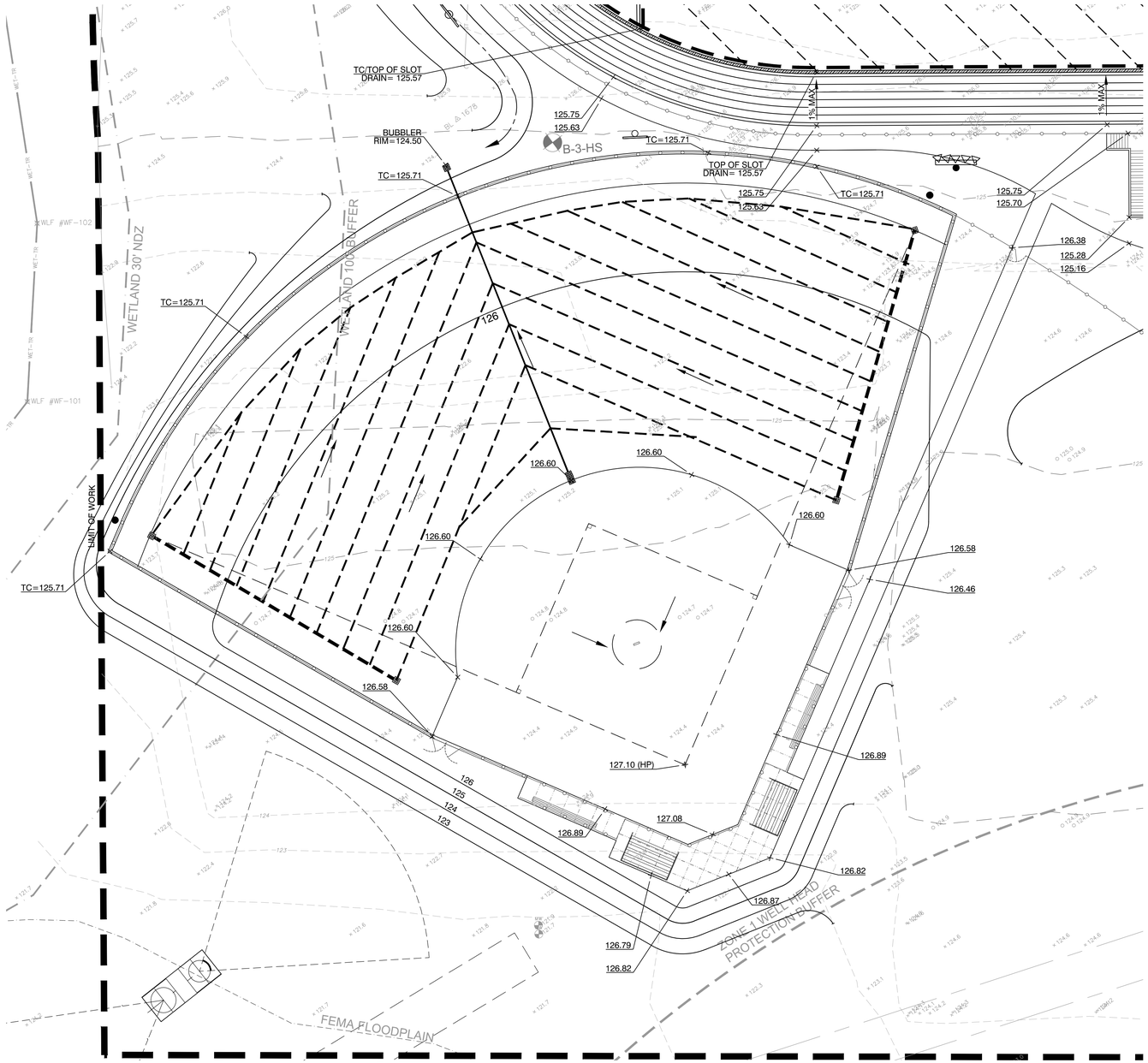
Sheet Number:

L5.02

COPYRIGHT 2017 WESTON & SAMPSON

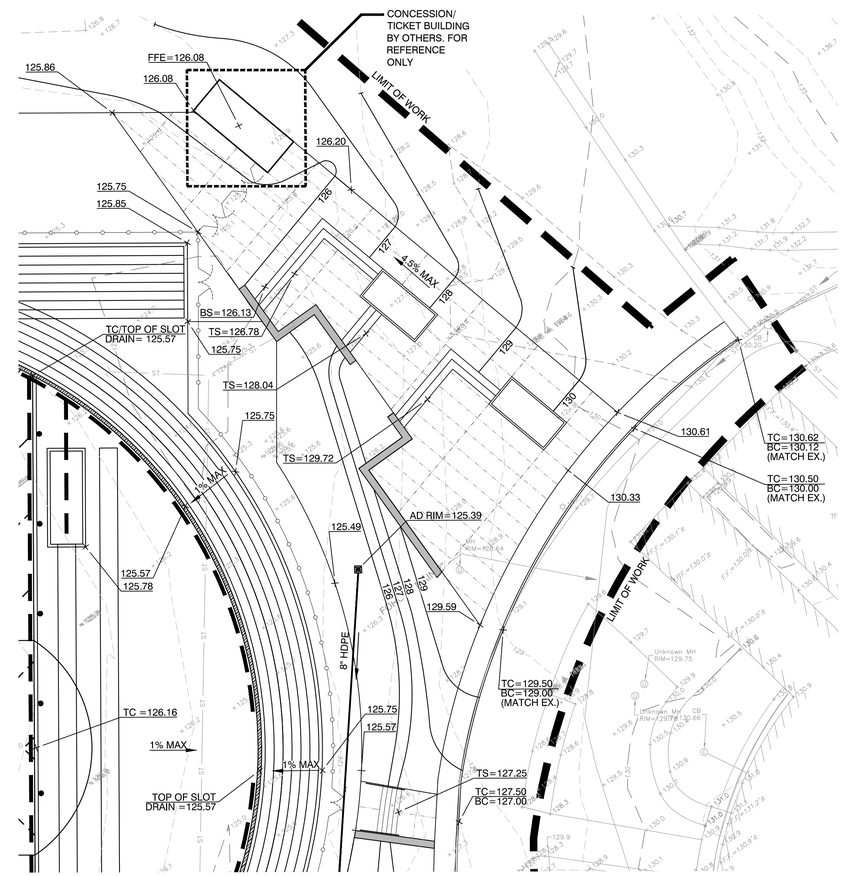
GRADING, DRAINAGE & UTILITIES LEGEND

	LIMIT OF WORK	HDPE PERF. DRAIN PIPE	HDPE PERFORATED DRAIN PIPE, DIAMETER VARIES
	EXISTING DRAINAGE STRUCTURE. SEE UTILITIES PLAN	HDPE SOLID DRAIN PIPE	HDPE SOLID DRAIN PIPE, DIAMETER VARIES
12	EXISTING CONTOURS	2% MAX.	SWALE LINE
			GRADE BREAK
95.10	EXISTING SPOT ELEVATION	FFE	FINISHED FLOOR ELEVATION
14	PROPOSED CONTOURS	HP	HIGH POINT
15		LP	LOW POINT
1.5%	PROPOSED SLOPE	TW	TOP OF WALL
8.25	PROPOSED SPOT ELEVATION	BW	BOTTOM OF WALL
		TS	TOP OF STEP
	CATCH BASIN	BS	BOTTOM OF STEP
	AREA DRAIN		
CO	CLEAN OUT		
D	DRAINAGE MAN HOLE		
S	SEWER MAN HOLE		



1 SOFTBALL FIELD ENLARGEMENT PLAN

SCALE: 1"=20'



2 ENTRY PLAZA ENLARGEMENT PLAN

SCALE: 1"=20'

SCALE: 1" = 20'-0"

0 20 40 60

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

GRADING, DRAINAGE, AND UTILITIES ENLARGEMENT PLAN

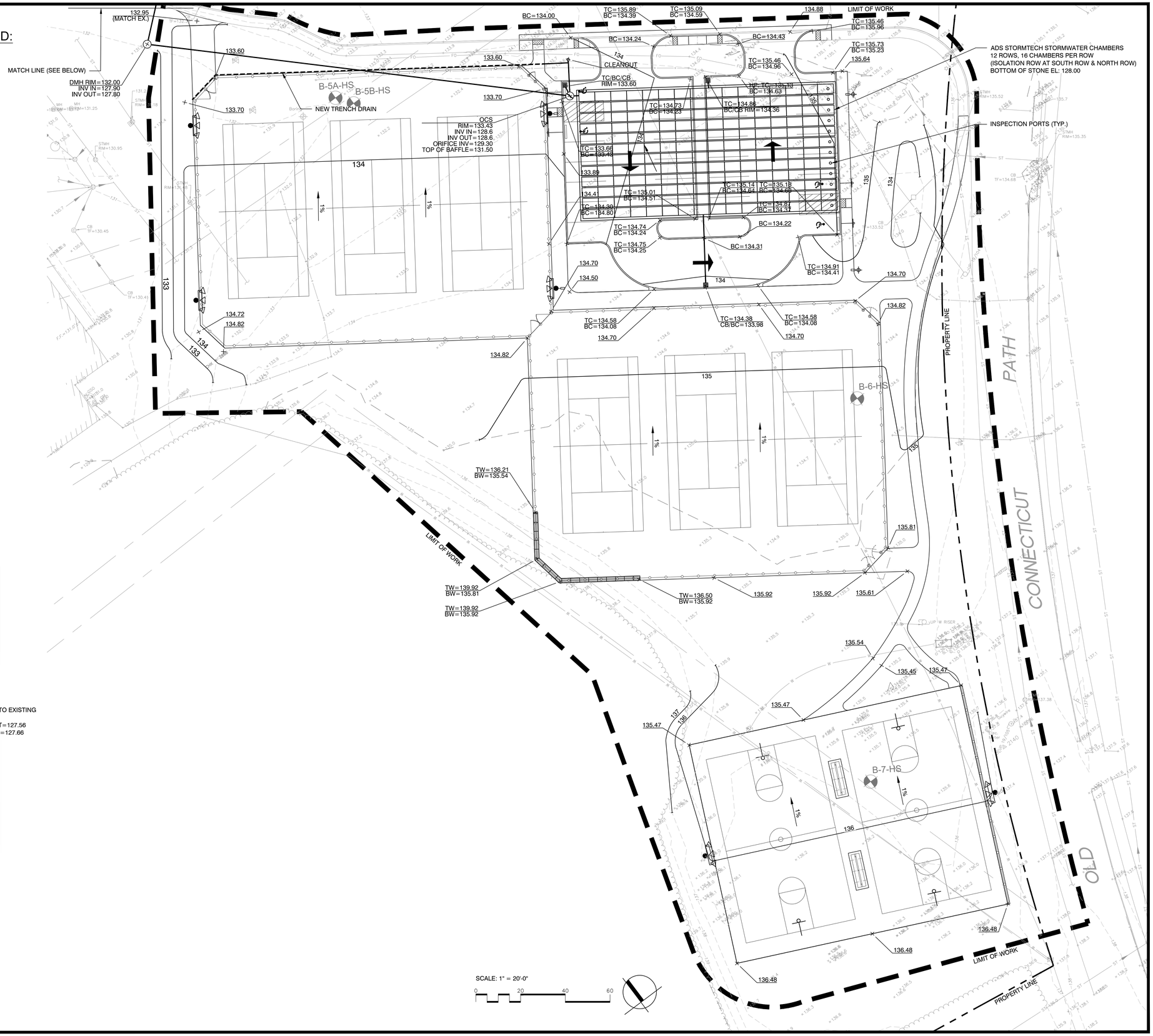
Sheet Number:

L5.03

COPYRIGHT 2017 WESTON & SAMPSON

GRADING, DRAINAGE & UTILITIES LEGEND:

	LIMIT OF WORK
	PROPERTY LINE
	EXISTING DRAINAGE STRUCTURE. SEE UTILITIES PLAN
12	EXISTING CONTOURS
95.10	EXISTING SPOT ELEVATION
14	PROPOSED CONTOURS
15	
1.5%	PROPOSED SLOPE
8.25	PROPOSED SPOT ELEVATION
	CATCH BASIN
	AREA DRAIN
CO	CLEAN OUT
D	DRAINAGE MAN HOLE
S	SEWER MAN HOLE
HDPE PERF. DRAIN PIPE	HDPE PERFORATED DRAIN PIPE, DIAMETER VARIES
HDPE SOLID DRAIN PIPE	HDPE SOLID DRAIN PIPE, DIAMETER VARIES
2% MAX.	SWALE LINE
	GRADE BREAK
FFE	FINISHED FLOOR ELEVATION
HP	HIGH POINT
LP	LOW POINT
TW	TOP OF WALL
BW	BOTTOM OF WALL
TS	TOP OF STEP
BS	BOTTOM OF STEP



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

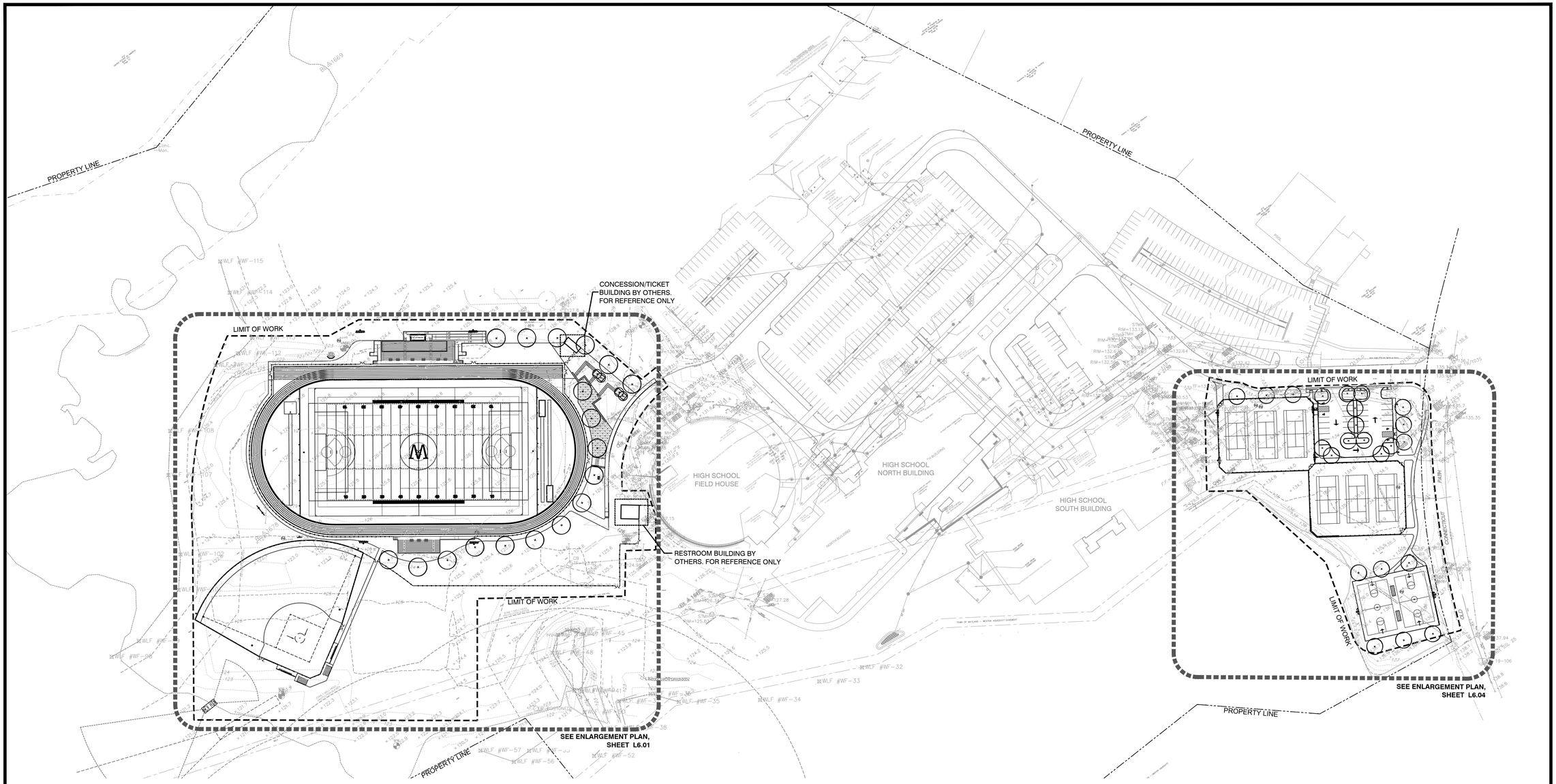
Drawing Title:

GRADING, DRAINAGE, AND UTILITIES ENLARGEMENT PLAN

Sheet Number:

L5.04

COPYRIGHT 2017 WESTON & SAMPSON



MATERIALS LEGEND:

PROPERTY LINE

LIMIT OF WORK

PLANTING NOTES

1. THE DEPTH OF LOAM BORROW FOR ALL PROPOSED LAWN AREAS SHALL BE 6" MINIMUM. ALL DISTURBED AREAS SHALL BE RESTORED WITH LOAM AND SEED UNLESS OTHERWISE NOTED
2. ALL REFERENCES TO LOAM AND SEED (L&S) REFER TO HYDROMULCH SEEDED LAWN.

SCALE: 1" = 80'-0"

0 40 80 120

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

OVERALL PLANTING PLAN

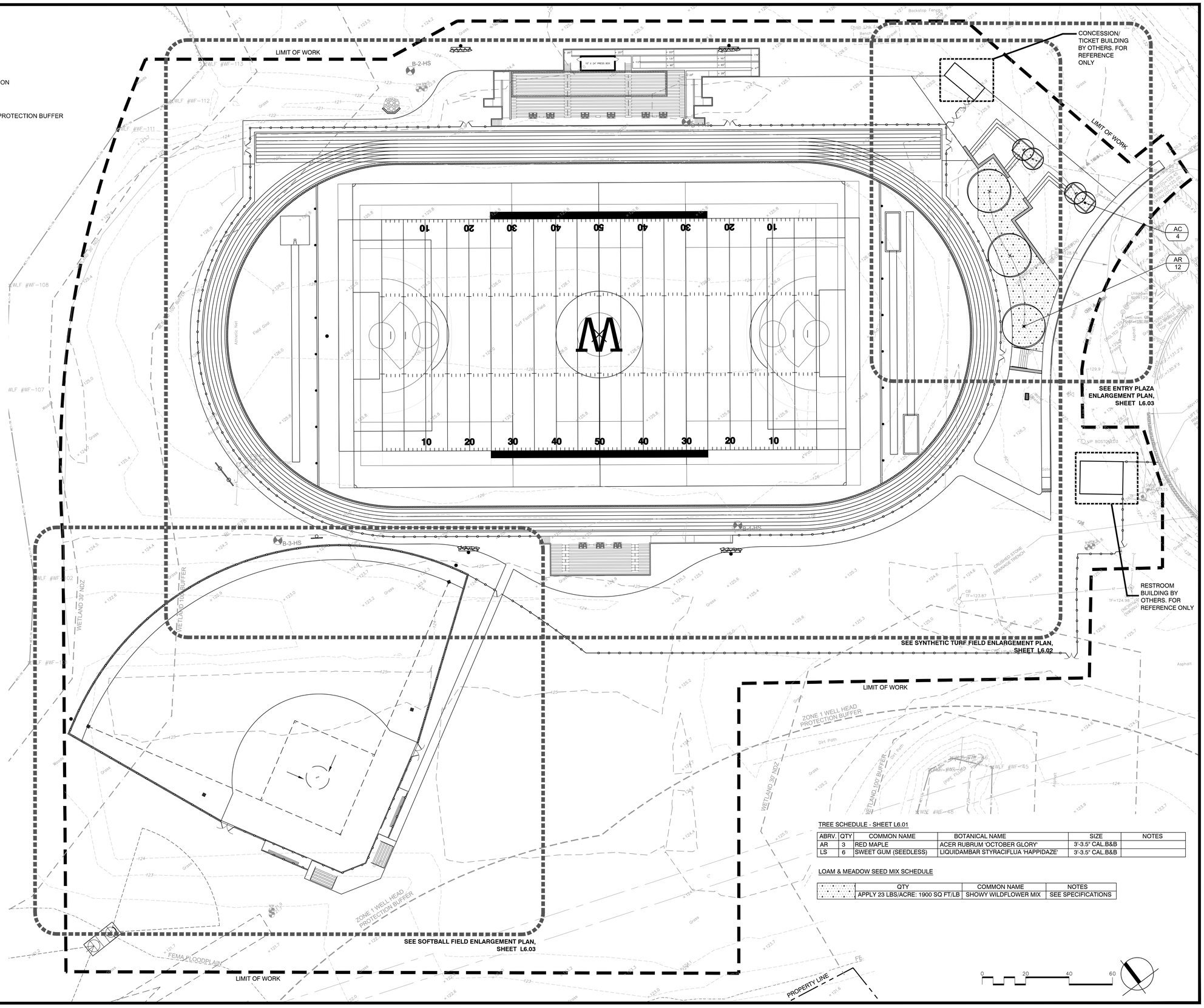
Sheet Number:

L6.00

COPYRIGHT 2017 WESTON & SAMPSON

MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- WETLAND DELINEATION
- WETLAND BUFFER
- ZONE 1 WELL HEAD PROTECTION BUFFER
- LOAM & SEED, TYP.
- PLANTING BED, TYP.
- PROPOSED TREES
- EXISTING TREES TO REMAIN



TREE SCHEDULE - SHEET L6.01

ABRV.	QTY	COMMON NAME	BOTANICAL NAME	SIZE	NOTES
AR	3	RED MAPLE	ACER RUBRUM 'OCTOBER GLORY'	3"-3.5" CAL.B&B	
LS	6	SWEET GUM (SEEDLESS)	LIQUIDAMBAR STYRACIFLUA 'HAPPIDAZE'	3"-3.5" CAL.B&B	

LOAM & MEADOW SEED MIX SCHEDULE

	QTY	COMMON NAME	NOTES
	APPLY 23 LBS/ACRE: 1900 SQ FT/LB	SHOWY WILDFLOWER MIX	SEE SPECIFICATIONS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

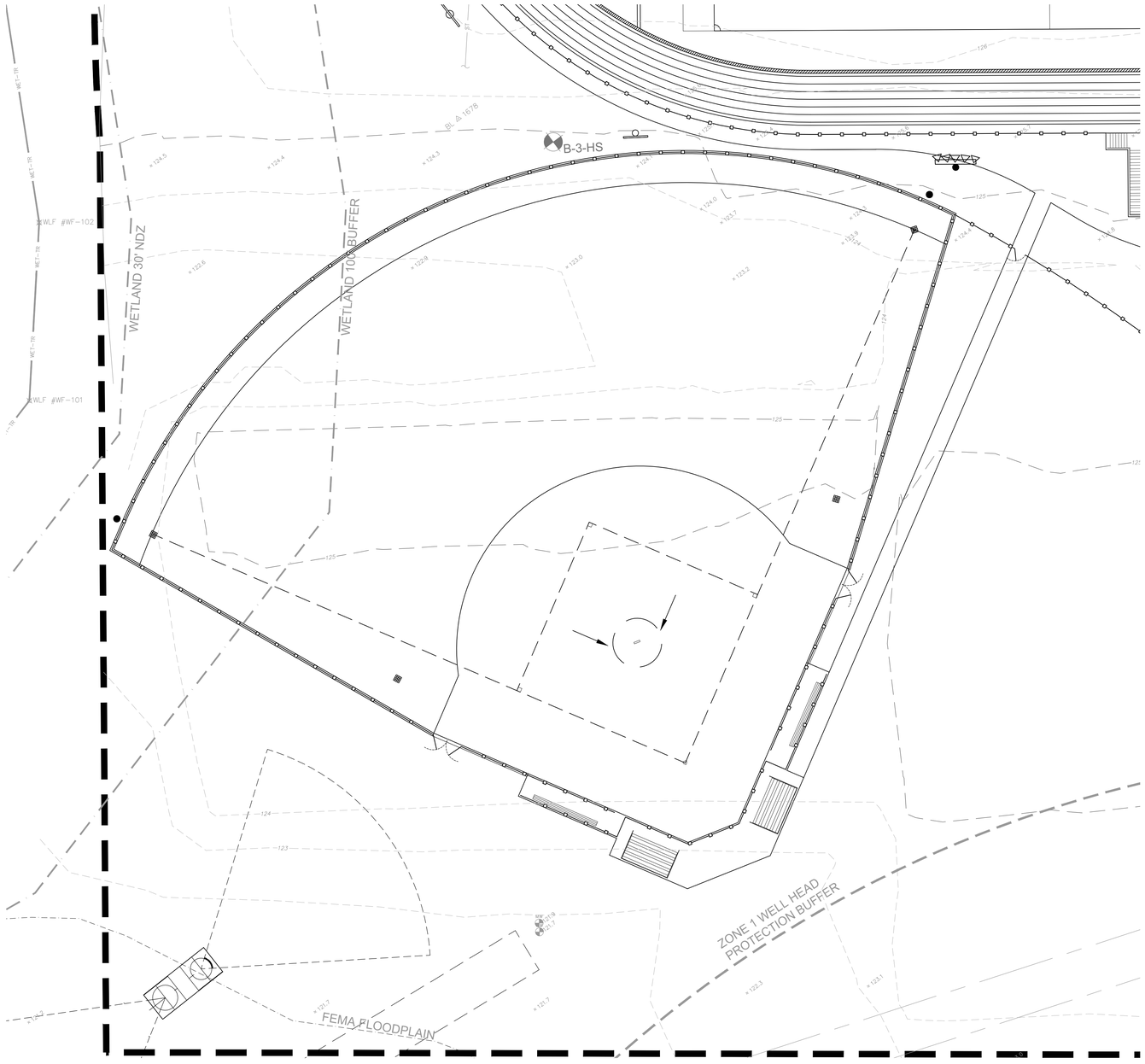
Drawing Title:

PLANTING PLAN ENLARGEMENT

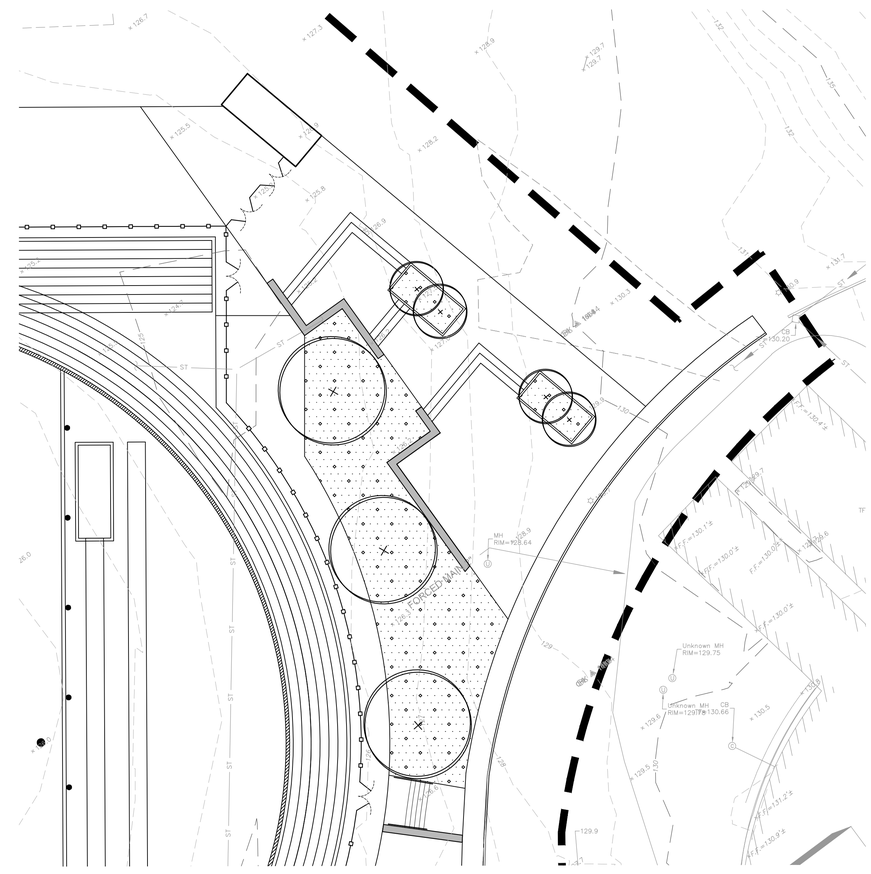
Sheet Number:

L6.01

COPYRIGHT 2017 WESTON & SAMPSON



1 SOFTBALL FIELD ENLARGEMENT PLAN
SCALE: 1"=20'



2 ENTRY PLAZA ENLARGEMENT PLAN
SCALE: 1"=20'

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:

PLANTING ENLARGEMENT PLAN

Sheet Number:

L6.02

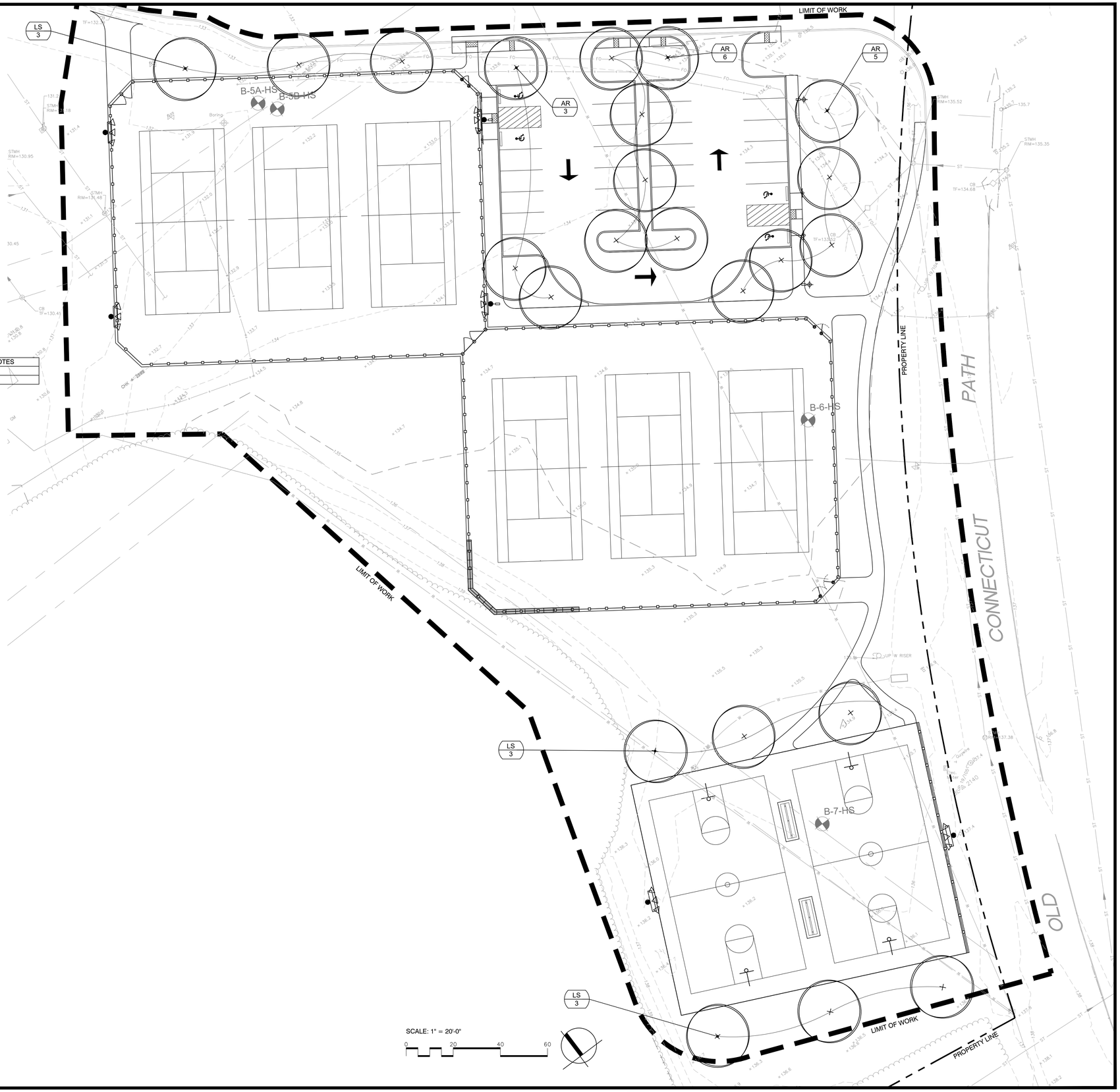
COPYRIGHT 2017 WESTON & SAMPSON

MATERIALS LEGEND:

- PROPERTY LINE
- LIMIT OF WORK
- WETLAND DELINEATION
- WETLAND BUFFER
- ZONE 1 WELL HEAD PROTECTION BUFFER
- LOAM & SEED, TYP.
- PROPOSED TREES
- EXISTING TREES TO REMAIN

TREE SCHEDULE - SHEET L6.03

ABRV.	QTY	COMMON NAME	BOTANICAL NAME	SIZE	NOTES
AR	14	RED MAPLE	ACER RUBRUM 'OCTOBER GLORY'	3"-3.5" CAL.B&B	
LS	9	SWEET GUM (SEEDLESS)	LIQUIDAMBAR STYRACIFLUA 'HAPPIDAZE'	3"-3.5" CAL.B&B	



Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

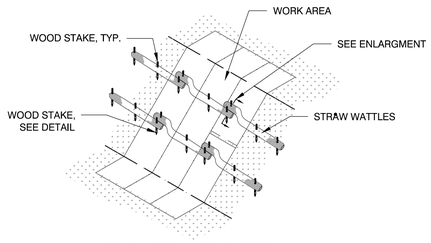
Drawing Title:

PLANTING ENLARGEMENT PLAN

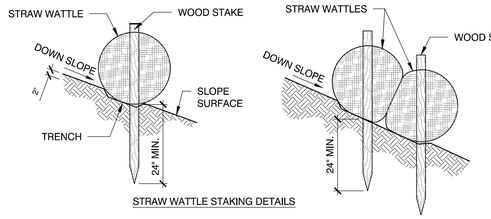
Sheet Number:

L6.03

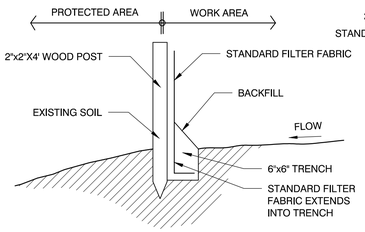
COPYRIGHT 2017 WESTON & SAMPSON



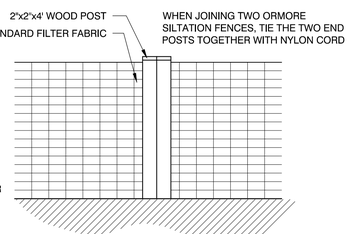
STRAW WATTLE LAYOUT ON SLOPE



STRAW WATTLE STAKING DETAILS



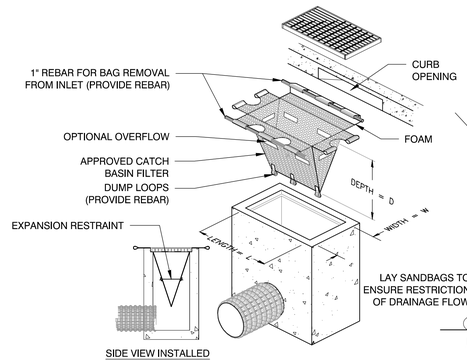
SLOPE DETAIL



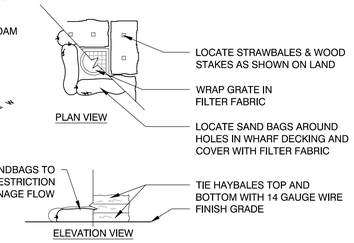
JOINING FENCE

1 SILTATION - EROSION CONTROLS

SCALE: NTS

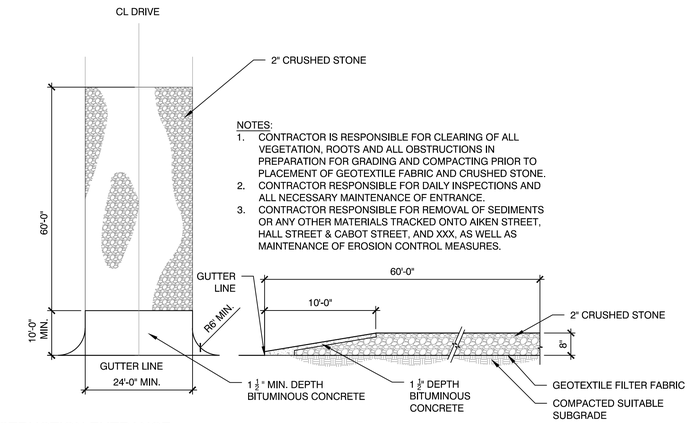


NOTE:
1. HAYBALE/SANDBAG PROTECTION OR CATCH BASIN FILTER FOR PAVED AREAS SHALL BE PROVIDED FOR ALL DRAINAGE STRUCTURES WITHIN THE LIMIT OF WORK AND ANY STRUCTURES OUTSIDE THE PROJECT TERMINII THAT ARE AFFECTED BY CONSTRUCTION.



3 INLET SEDIMENT CONTROL

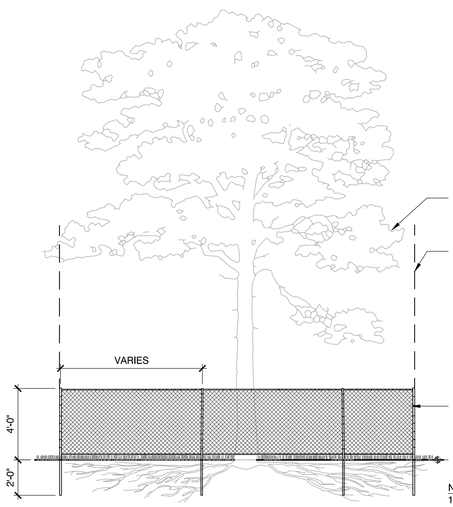
SCALE: NTS



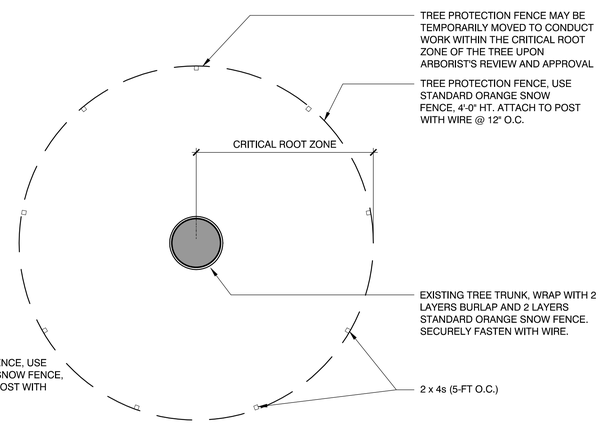
NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR CLEARING OF ALL VEGETATION, ROOTS AND ALL OBSTRUCTIONS IN PREPARATION FOR GRADING AND COMPACTING PRIOR TO PLACEMENT OF GEOTEXTILE FABRIC AND CRUSHED STONE.
2. CONTRACTOR RESPONSIBLE FOR DAILY INSPECTIONS AND ALL NECESSARY MAINTENANCE OF ENTRANCE.
3. CONTRACTOR RESPONSIBLE FOR REMOVAL OF SEDIMENTS OR ANY OTHER MATERIALS TRACKED ONTO AIKEN STREET, HALL STREET & CABOT STREET, AND XXX, AS WELL AS MAINTENANCE OF EROSION CONTROL MEASURES.

4 CONSTRUCTION ENTRANCE

SCALE: NTS



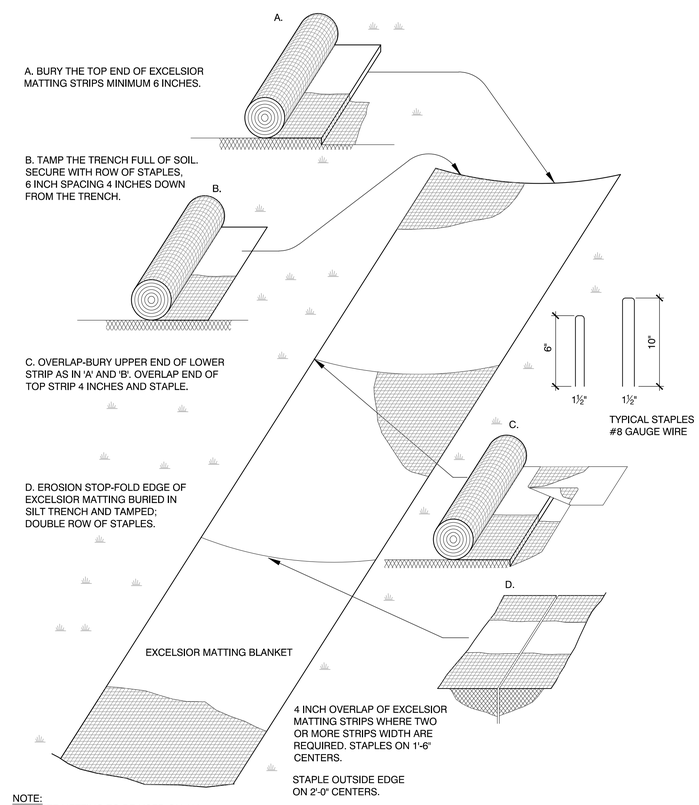
CRITICAL ROOT ZONE TO BE PROTECTED. ALL WORK NECESSARY WITHIN THE CRITICAL ROOT ZONE SHALL BE PERFORMED BY HAND.



NOTE:
1. WHERE SPACE IS AVAILABLE, TREE PROTECTION FENCE TO BE PLACED A MINIMUM OF 10' FROM BASE OF TREE PLUS AN ADDITIONAL 1' FOR EACH ADDITIONAL DBH FOR TREES GREATER THAN 10" DBH (DIA. AT BREAST HT.)
2. ALL WORK DONE WITHIN TREE PROTECTION FENCE IS TO BE DONE BY HAND AND LIGHT EQUIPMENT.
3. ROOTS EXPOSED DURING EXCAVATION SHALL BE NEATLY CUT AND COVERED WITH SOIL IMMEDIATELY.
4. FOR TREES THAT OCCUR IN GROUPS PROVIDE TREE PROTECTION FENCE AROUND ENTIRE AREA. SEE PLAN FOR LOCATIONS.
5. MAINTAIN FENCE PROTECTION IN SOUND CONDITION UNTIL FENCE COMPLETION
6. A CERTIFIED ARBORIST SHALL DELINEATE LIMIT OF TREE PROTECTION FENCE AS THEY RELATE TO THE LIMITS OF THE CRITICAL ROOT ZONE.

2 TREE PROTECTION

SCALE: NTS



NOTE:
1. JUTE NETTING TO BE USED ON ALL SLOPES GREATER THAN 4H:1VAS INDICATED ON GRADING PLANS

5 EROSION CONTROL BLANKET

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

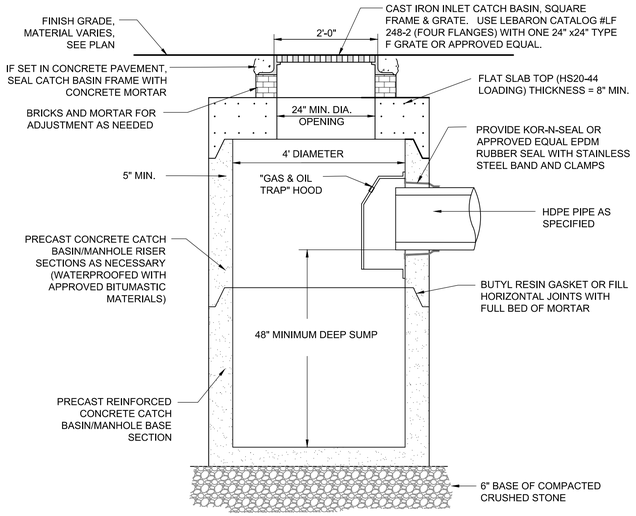
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

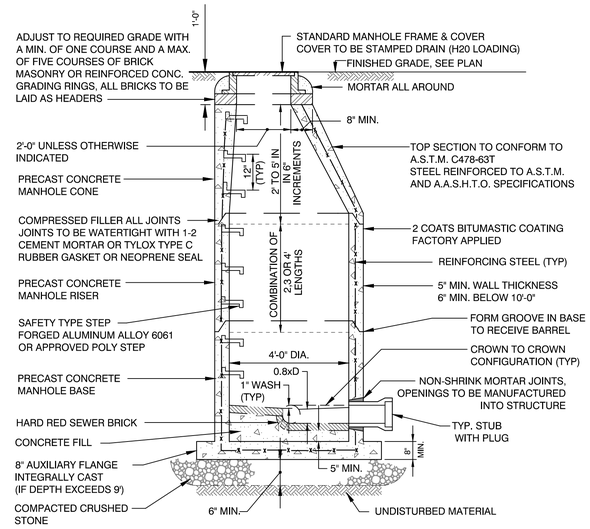
L7.00

COPYRIGHT 2017 WESTON & SAMPSON



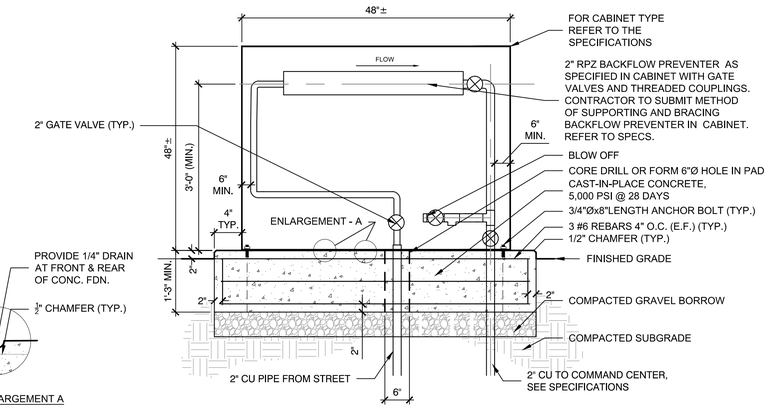
1 CATCH BASIN

SCALE: NTS



3 DRAINAGE MANHOLE

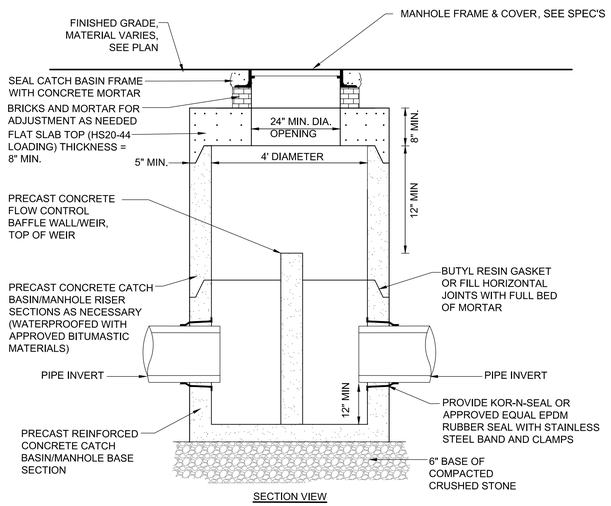
SCALE: NTS



NOTES:
1. INSTALL A BRASS BLOWOFF FITTING AND VALVE ON THE OUTFLOW SIDE OF THE BACKFLOW PREVENTION DEVICE TO WINTERIZE THE SYSTEM AS REQUIRED.
2. THE BACKFLOW PREVENTER & METER SHALL BE INSTALLED WITH UNIONS, HANGERS, SUPPORTS AND ALL OTHER APPROPRIATE FITTINGS, IN ORDER TO EASILY REMOVE THE DEVICE FOR SERVICE AND TO MEET ALL APPLICABLE PLUMBING CODES.
3. BACKFLOW PREVENTER SHALL BE INSTALLED A MINIMUM 6" FROM THE WALLS OF THE METER CABINET.
4. CONFIRM LAYOUT AND ALIGNMENT REQUIREMENTS FOR ALL PIPING, FITTINGS, VALVES, METER, AND BACKFLOW PREVENTER WITH TOWN OF WAYLAND PLUMBING INSPECTOR PRIOR TO INSTALLATION.
5. SEE SPECIFICATIONS FOR EQUIPMENT INFORMATION
6. 2" PIPING WITHIN METER CABINET TO BE COPPER TUBING (TYPE L).

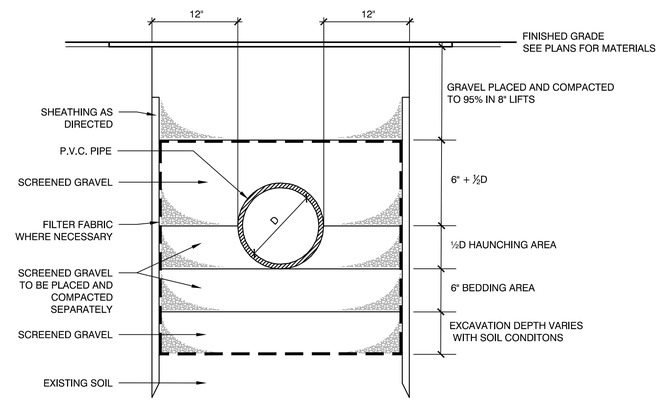
6 BACKFLOW PREVENTER AND CABINET

SCALE: NTS



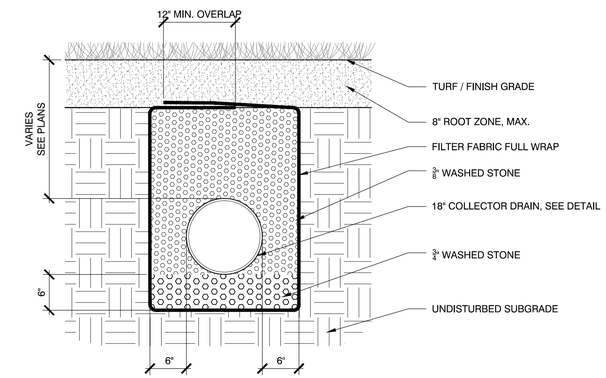
2 OUTLET CONTROL STRUCTURE MANHOLE

SCALE: NTS



4 DRAINAGE TRENCH

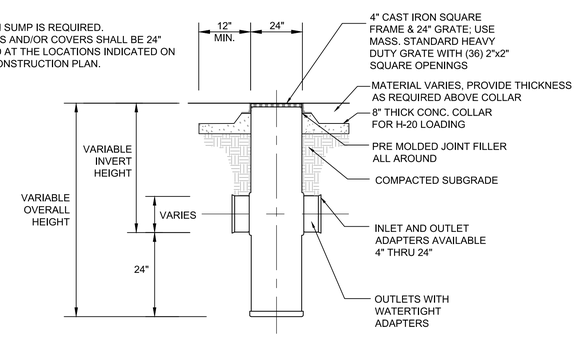
SCALE: NTS



7 PERIMETER COLLECTOR DRAIN AT SOFTBALL FIELD

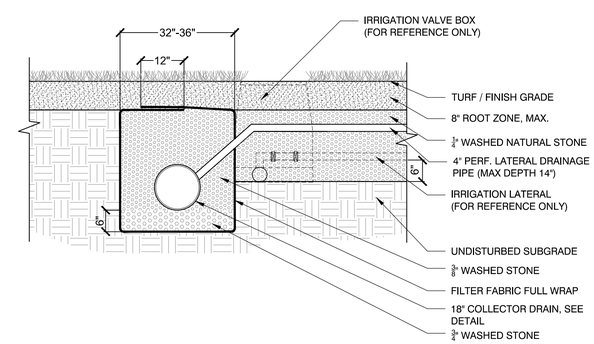
SCALE: NTS

NOTES:
1. 24" MIN SUMP IS REQUIRED.
2. GRATES AND/OR COVERS SHALL BE 24" ROUND AT THE LOCATIONS INDICATED ON THE CONSTRUCTION PLAN.



5 PVC AREA DRAIN

SCALE: NTS



NOTES:
1. IRRIGATION SHOWN FOR REFERENCE ONLY, REFER TO IRRIGATION DETAILS.
2. 3/4" PEASTONE IN VALVE BOX CAVITY.

SEQUENCE OF WORK:
1. INSTALL MAINLINE DRAINAGE
2. INSTALL IRRIGATION LINES COMPLETE
3. INSTALL LATERAL DRAINAGE

8 COLLECTOR DRAIN - LATERAL CONNECTION AT SOFTBALL FIELD

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

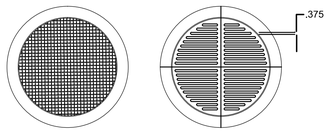
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

L7.01

COPYRIGHT 2017 WESTON & SAMPSON



SOLID GRATE

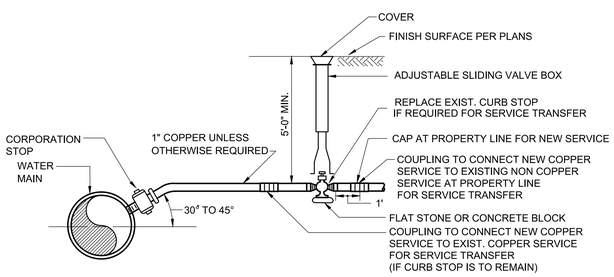
PEDESTRIAN GRATE (H-20) RATED

MATERIAL: DUCTILE IRON
QUALITY: MATERIAL SHALL

CONFORM TO ASTM A48 - CLASS 30B
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

1 MANHOLE / CATCH BASIN IRON GRATE COVER

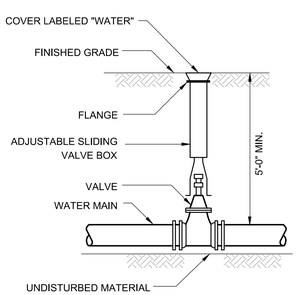
SCALE: NTS



NOTES:
1. PROVIDE SADDLE FOR ALL AC AND PVC MAINS AND ALL 2" OR LARGER STOPS

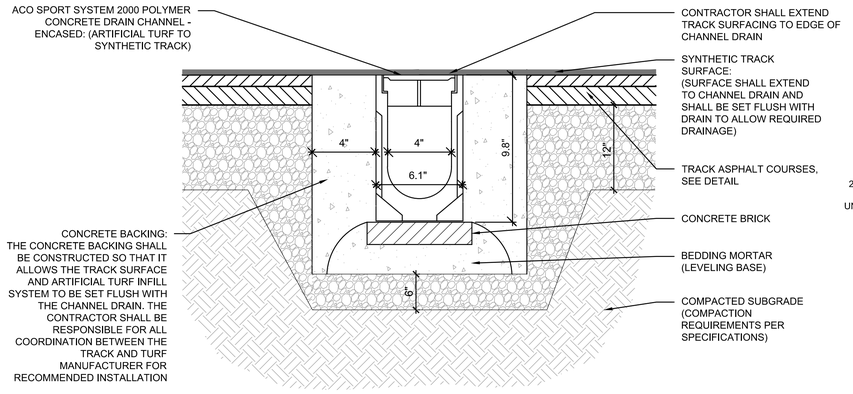
2 WATER SERVICE CONNECTION

SCALE: NTS



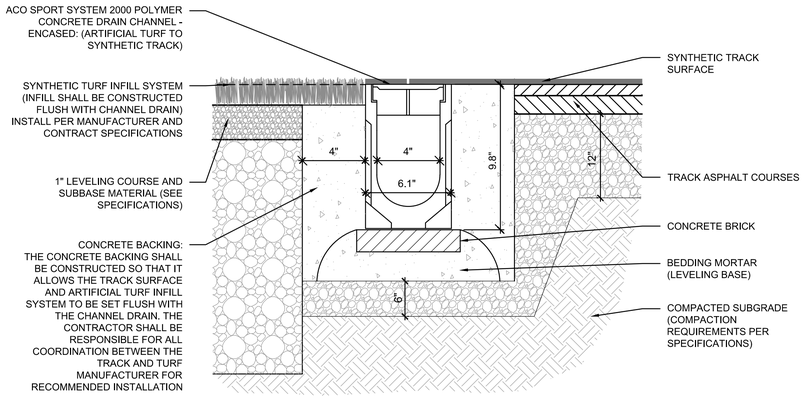
3 VALVE BOX

SCALE: NTS



4 SYNTHETIC TRACK TO SYNTHETIC TRACK PERIMETER CHANNEL DRAIN

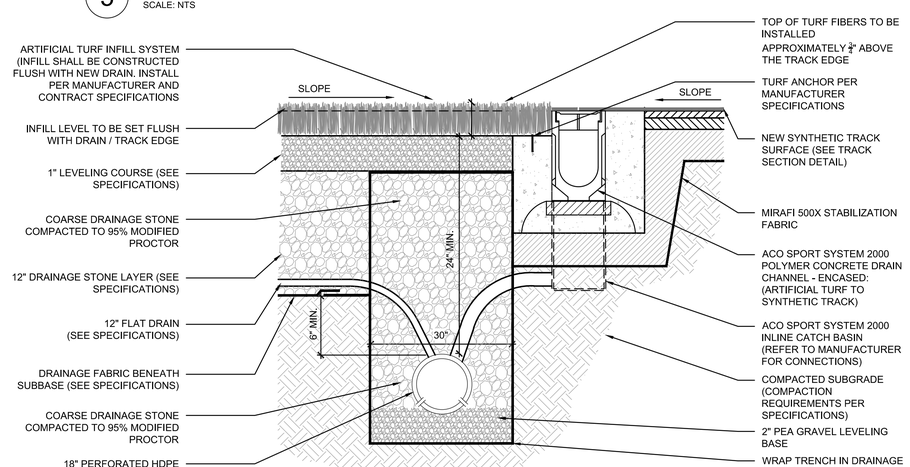
SCALE: NTS



NOTES:
1. LOCATION OF CHANNEL DRAIN AND ALL COMPONENTS AS INDICATED ON THE CONSTRUCTION DRAWINGS. INSTALL IN STRICT ACCORDANCE WITH ALL MANUFACTURER WRITTEN RECOMMENDATIONS AND SPECIFICATIONS.

5 SYNTHETIC TURF TO SYNTHETIC TRACK PERIMETER CHANNEL DRAIN

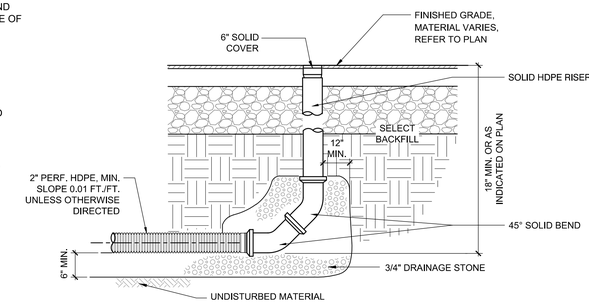
SCALE: NTS



NOTES:
1. FLAT DRAIN TO BE DIRECTLY CONNECTED TO PERIMETER DRAIN. PROVIDE MANUFACTURED FITTINGS TO MAKE THE CONNECTION AS REQUIRED AND APPROVED BY THE ENGINEER.
2. CONCRETE TO BE 4,500 PSI AT 28 DAYS (AIR CONTENT 6% +/- 1%) (COARSE AGGREGATE ASTM C-33 SIZE #57)

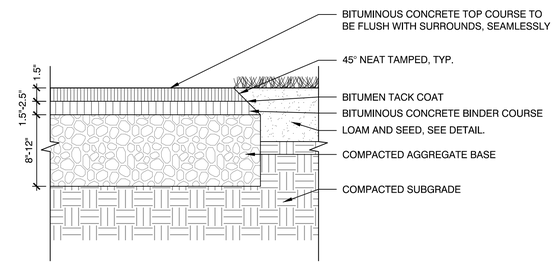
6 PERIMETER DRAINAGE TRENCH AT SYNTHETIC TURF

SCALE: NTS



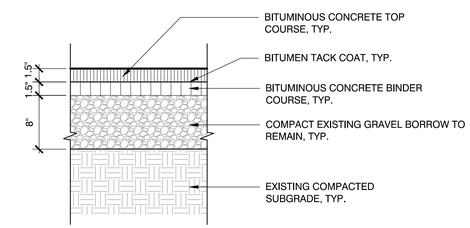
7 CLEANOUT

SCALE: NTS



8 BITUMINOUS CONCRETE AT LAWN

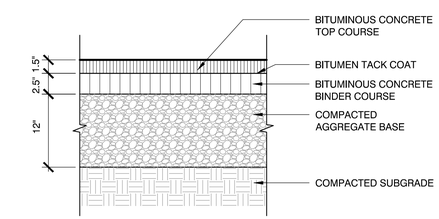
SCALE: NTS



NOTES:
1. CONTRACTOR TO PROVIDE SMOOTH TRANSITION WHERE NEW PAVEMENT ABUTS EXISTING PAVEMENT, TYP.

9 PEDESTRIAN BITUMINOUS CONCRETE

SCALE:NTS



NOTES:
1. CONTRACTOR TO PROVIDE SMOOTH TRANSITION WHERE NEW PAVEMENT ABUTS EXISTING PAVEMENT, TYP.

10 VEHICULAR BITUMINOUS CONCRETE

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

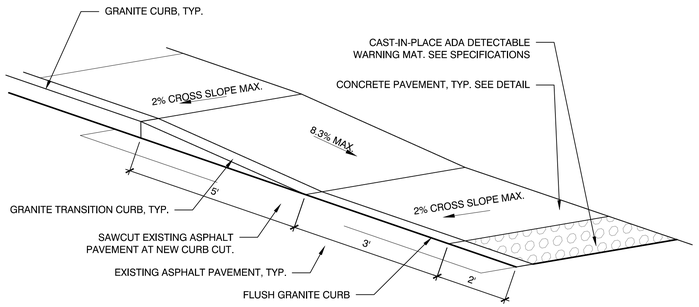
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

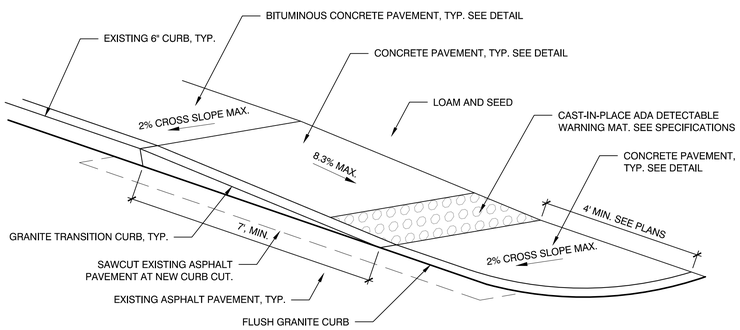
L7.02

COPYRIGHT 2017 WESTON & SAMPSON



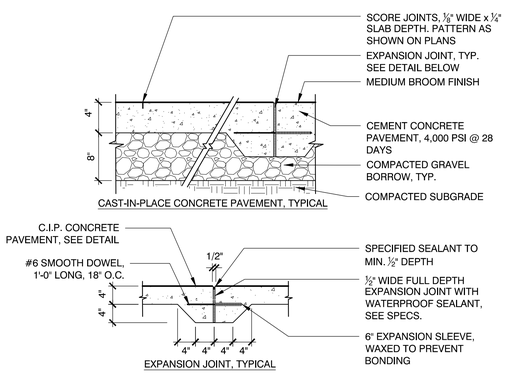
NOTES:
1. CONTRACTOR SHALL PROVIDE CLEAN AND STRAIGHT SAWCUT LINES AT LIMIT OF REMOVAL OF EXISTING ASPHALT PAVEMENT TO REMAIN. CONTRACTOR SHALL VERIFY LIMITS OF EXISTING ASPHALT PAVEMENT REMOVAL PRIOR TO COMMENCING DEMOLITION.
2. CONTRACTOR SHALL REMOVE AND REPLACE ASPHALT PAVEMENT, GRAVEL BORROW, AND SUBGRADE NECESSARY TO CONSTRUCT A CLEAN, SMOOTH TRANSITION AT ADA CURB CUT.

1 ADA CURB CUT 'B'
SCALE: NTS



NOTES:
1. CONTRACTOR SHALL PROVIDE CLEAN AND STRAIGHT SAWCUT LINES AT LIMIT OF REMOVAL OF EXISTING ASPHALT PAVEMENT TO REMAIN. CONTRACTOR SHALL VERIFY LIMITS OF EXISTING ASPHALT PAVEMENT REMOVAL PRIOR TO COMMENCING DEMOLITION.
2. CONTRACTOR SHALL REMOVE AND REPLACE ASPHALT PAVEMENT, GRAVEL BORROW, AND SUBGRADE NECESSARY TO CONSTRUCT A CLEAN, SMOOTH TRANSITION AT ADA CURB CUT.

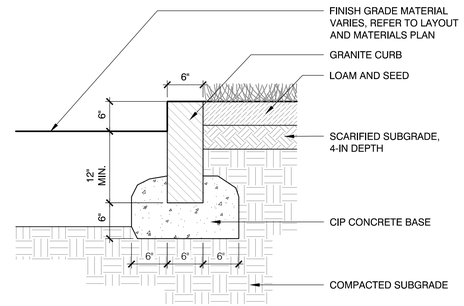
2 ADA CURB CUT 'C'
SCALE: NTS



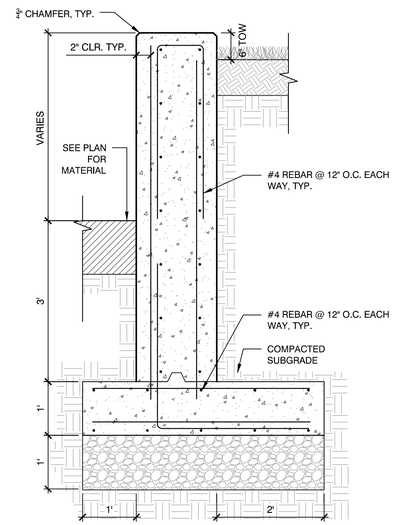
EXPANSION JOINT INSTALLATION NOTES:

1. DOWEL IS TYPICAL AT ALL EXPANSION JOINTS (18" O.C.) WITHIN CONCRETE PAVING AND BETWEEN NEW CONCRETE PAVING AND EXISTING CONCRETE PAVING TO REMAIN.
2. DELETE EXPANSION SLEEVE AND DOWEL WHERE JOINT ABUTS WALL, CURBS, OR OTHER VERTICAL SURFACES, UNLESS OTHERWISE NOTED.
3. EXPANSION JOINTS MAX. 25'-0" O.C. UNLESS SHOWN OTHERWISE.
4. EXPANSIONS JOINTS SHALL BE PLACED WHERE NEW CEMENT CONCRETE PAVEMENT MEETS EXISTING PAVEMENT OR WALLS TO REMAIN.
5. ALL EXPANSION JOINTS SHALL BE SAW CUT.

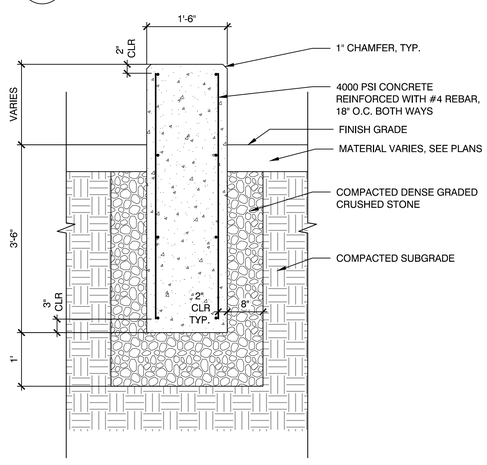
3 CONCRETE PAVEMENT
SCALE: NTS



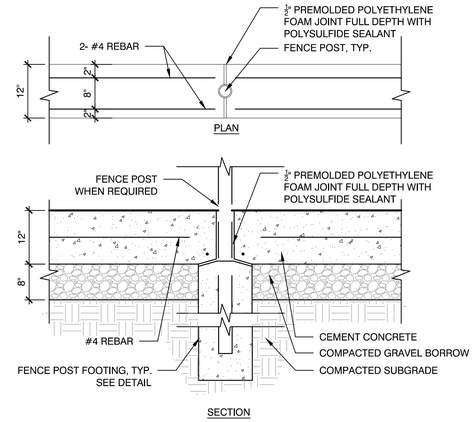
4 GRANITE CURB
SCALE: NTS



5 CONCRETE RETAINING WALL
SCALE: NTS

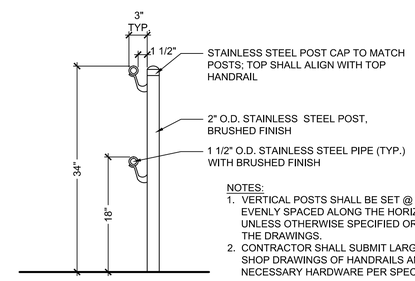


6 CAST IN PLACE CONCRETE SEATWALL
SCALE: NTS



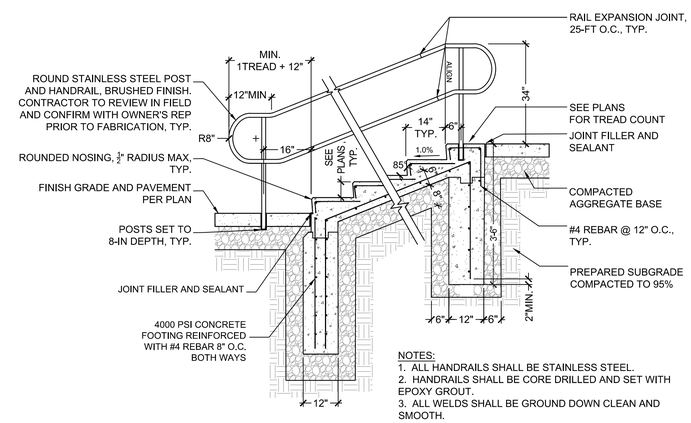
NOTES:
1. MOW STRIP CORNERS SHALL BE SQUARE AT ADJACENT SURFACE MATERIAL TO ENSURE SMOOTH INTERFACE BETWEEN MATERIALS.
2. MOW STRIP CORNERS ADJACENT TO PLANTING BED OR LAWN AREAS WILL HAVE ¾" CHAMFER.
3. CONTRACTOR SHALL PROVIDE ¾" PREMOLDED POLYETHYLENE FOAM EXPANSION JOIN, FULL DEPTH WITH SILICONE SEALANT EVERY 30' O.C. UNLESS OTHERWISE NOTED.

7 CONCRETE MOW STRIP AT FENCE
SCALE: NTS



NOTES:
1. VERTICAL POSTS SHALL BE SET @ 6' MAXIMUM, EVENLY SPACED ALONG THE HORIZONTAL RAIL, UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS.
2. CONTRACTOR SHALL SUBMIT LARGE SCALE SHOP DRAWINGS OF HANDRAILS AND ALL NECESSARY HARDWARE PER SPECIFICATIONS.

8 CAST IN PLACE CONCRETE STAIRS AND HANDRAIL
SCALE: NTS



NOTES:
1. ALL HANDRAILS SHALL BE STAINLESS STEEL.
2. HANDRAILS SHALL BE CORE DRILLED AND SET WITH EPOXY GROUT.
3. ALL WELDS SHALL BE GROUND DOWN CLEAN AND SMOOTH.
4. ALL DIMENSIONS SHALL BE FIELD VERIFIED AND ADJUSTED AS NEEDED.

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

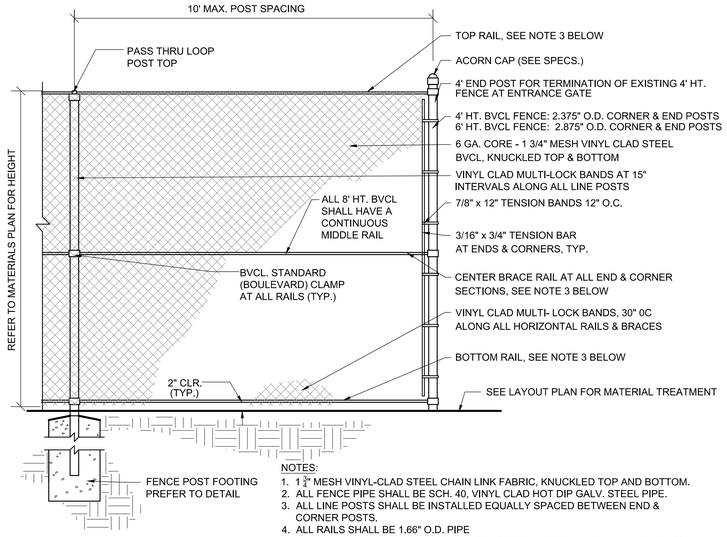
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

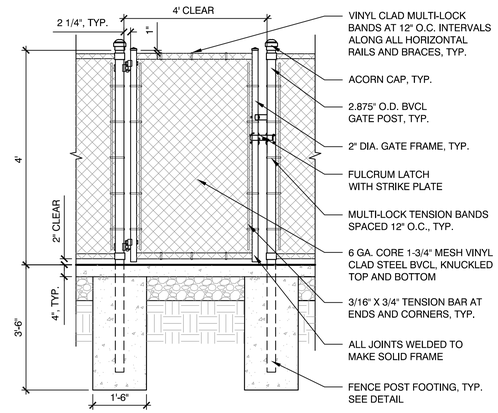
L7.03

COPYRIGHT 2017 WESTON & SAMPSON

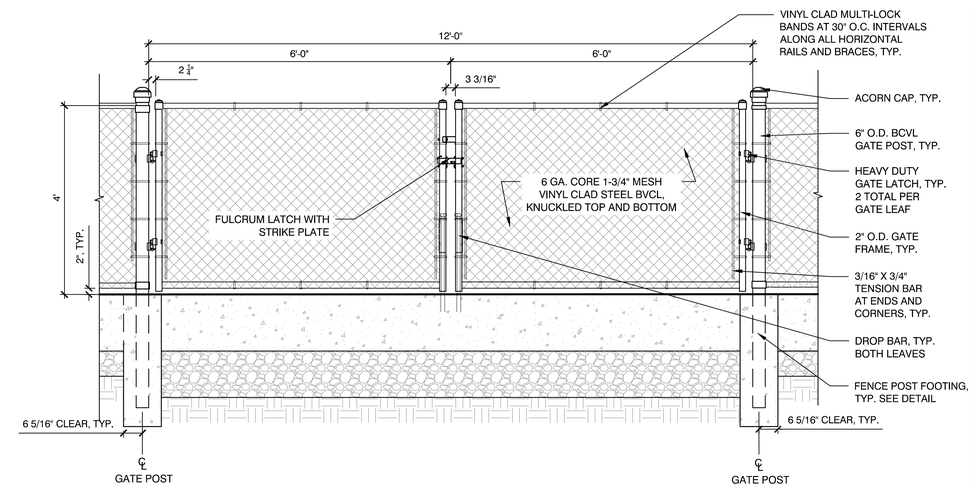


NOTES:
1. 1 3/4" MESH VINYL-CLAD STEEL CHAIN LINK FABRIC, KNUCKLED TOP AND BOTTOM.
2. ALL FENCE PIPE SHALL BE SCH. 40, VINYL CLAD HOT DIP GALV. STEEL PIPE.
3. ALL LINE POSTS SHALL BE INSTALLED EQUALLY SPACED BETWEEN END & CORNER POSTS.
4. ALL RAILS SHALL BE 1.66" O.D. PIPE
5. ALL CLAMPS, TIES, POST TOPS, BANDS, POSTS, ETC. SHALL BE VINYL CLAD TO MATCH FABRIC.
6. REFER TO SPECIFICATIONS FOR GATE REQUIREMENTS.

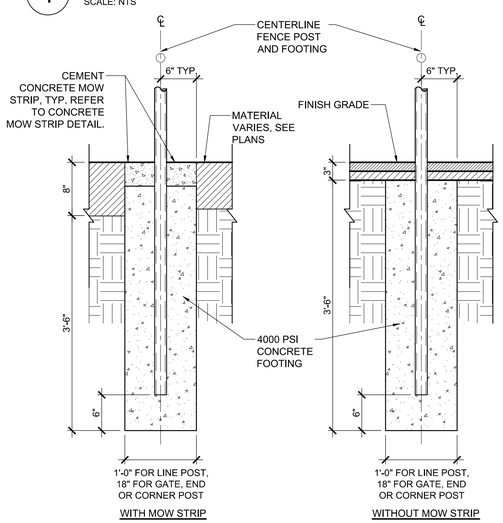
1 BLACK VINYL CHAIN LINK (BVCL) FENCE
SCALE: NTS



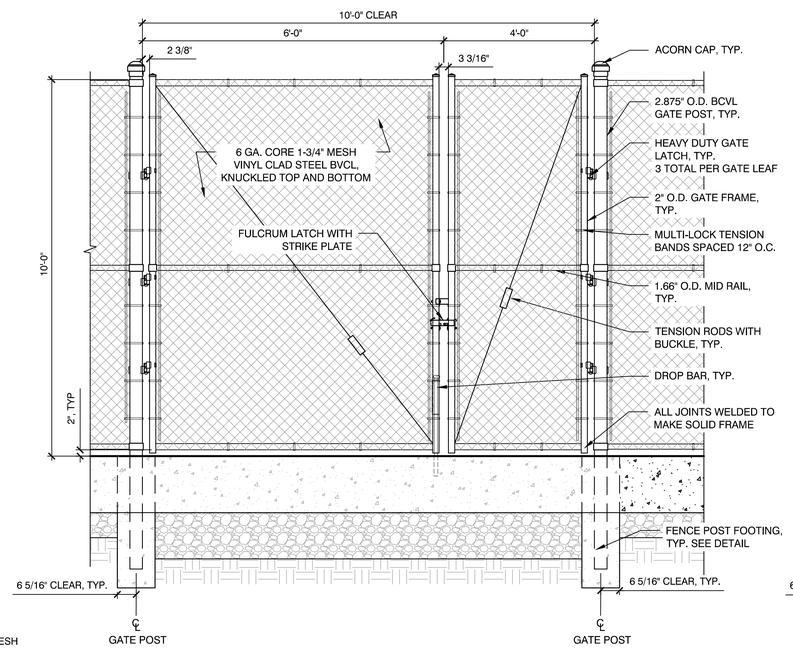
4 BLACK VINYL CHAIN LINK (BVCL) FENCE SINGLE SWING GATE
SCALE: NTS



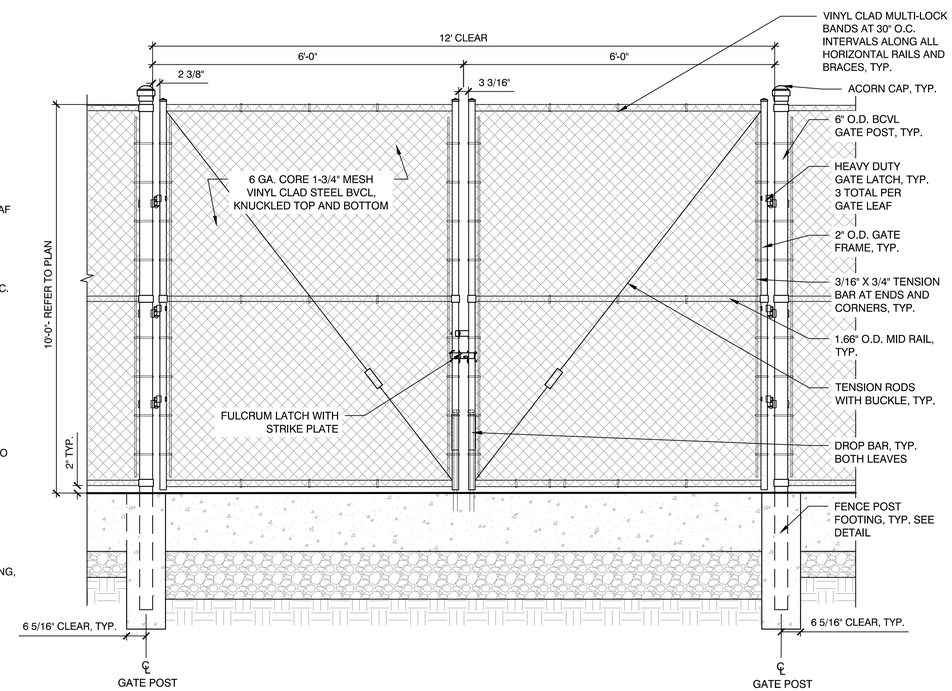
6 BLACK VINYL CHAIN LINK (BVCL) FENCE DOUBLE SWING GATE
SCALE: NTS



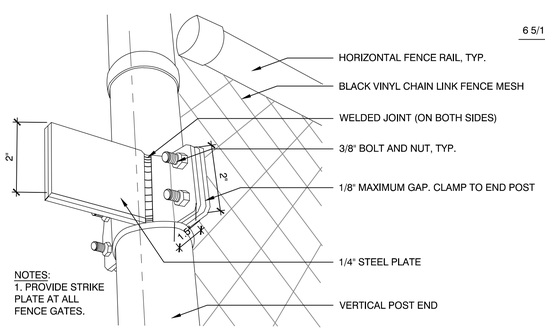
2 FENCE POST FOOTING
SCALE: NTS



5 10' HT. BLACK VINYL CHAIN LINK DOUBLE SWING GATE WITH PEDESTRIAN ACCESS
SCALE: NTS



7 10' HT. BLACK VINYL CHAIN LINK DOUBLE SWING GATE
SCALE: NTS



NOTES:
1. PROVIDE STRIKE PLATE AT ALL FENCE GATES.

3 STRIKE PLATE
SCALE: NTS

Project:
IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES
264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson
85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

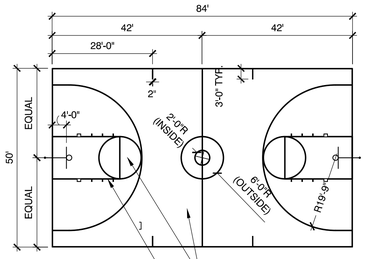
Issued For:
PERMITTING SET
- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 24, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:
CONSTRUCTION DETAILS

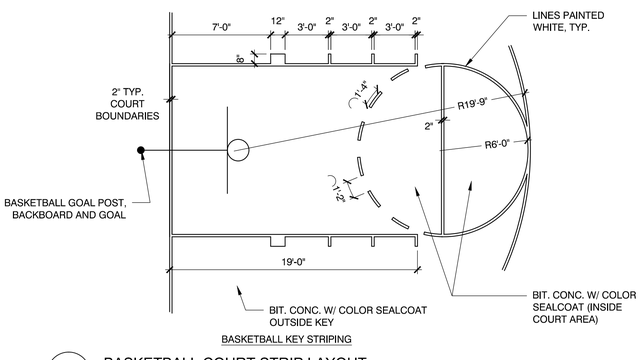
Sheet Number:
L7.04

COPYRIGHT 2017 WESTON & SAMPSON



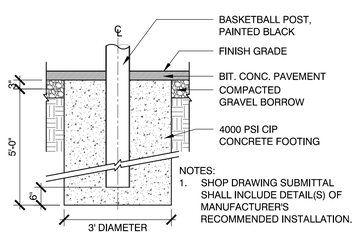
NOTES:
1. ALL DIMENSIONS ARE TO INSIDE EDGE OF LINES EXCEPT AS NOTED.
2. SEALCOAT COLORS SHALL BE SELECTED BY OWNER'S REPRESENTATIVE.
3. ALL LINES SHALL BE PAINTED WHITE.

BASKETBALL COURT STRIPING



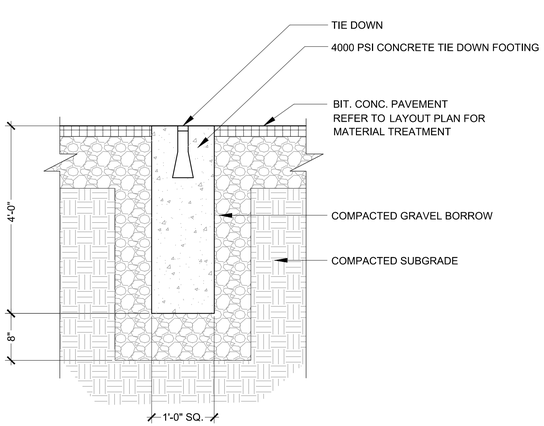
BASKETBALL KEY STRIPING

1 BASKETBALL COURT STRIP LAYOUT
SCALE: NTS

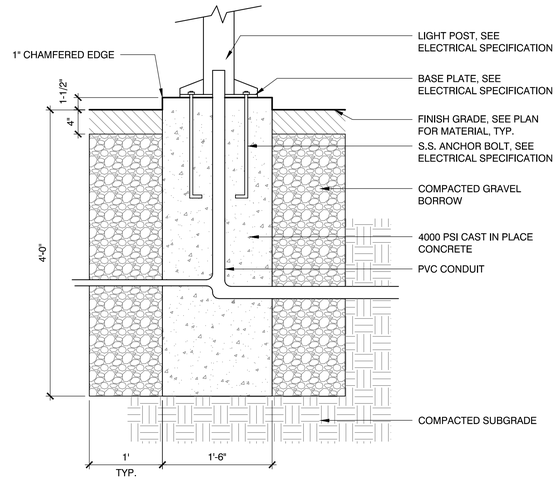


NOTES:
1. SHOP DRAWING SUBMITTAL SHALL INCLUDE DETAIL(S) OF MANUFACTURER'S RECOMMENDED INSTALLATION.

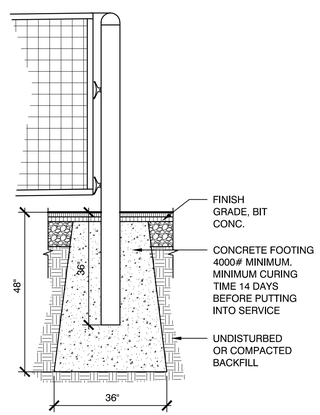
2 BASKETBALL GOAL POST
SCALE: NTS



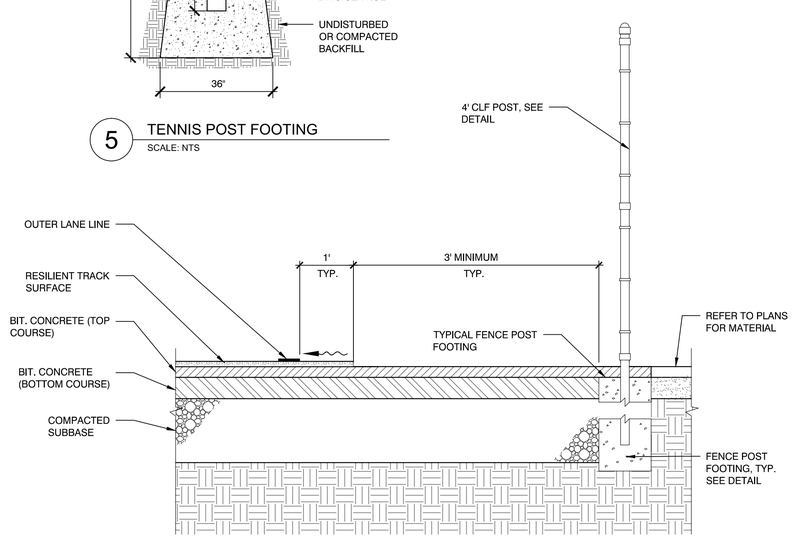
3 TENNIS NET TIE DOWN
SCALE: NTS



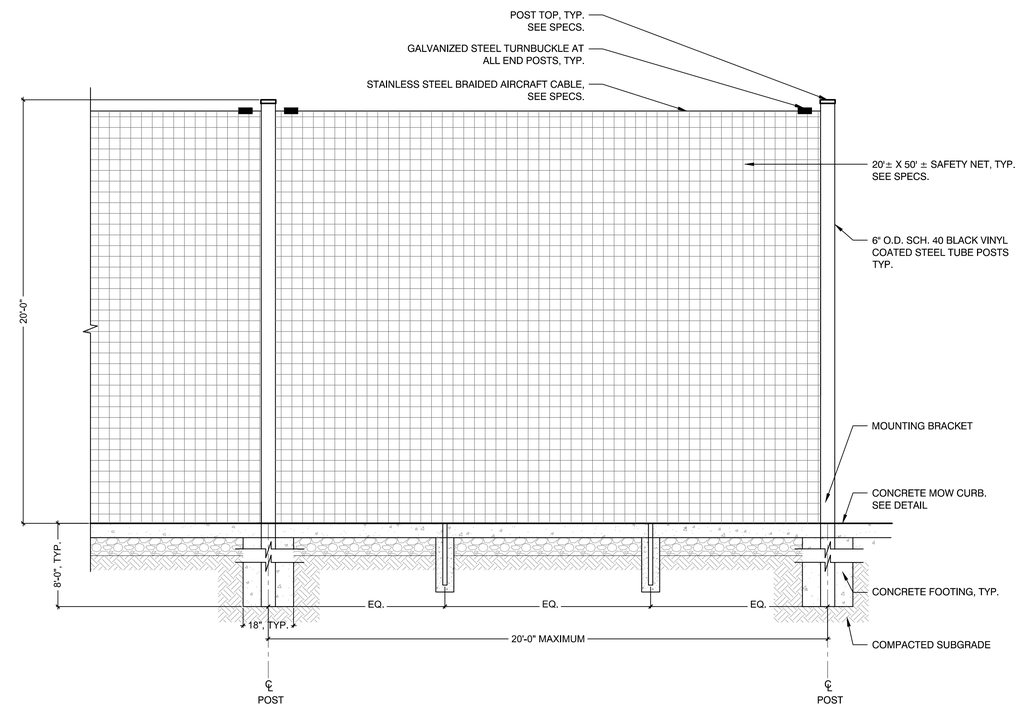
4 LIGHT POST FOOTING
SCALE: NTS



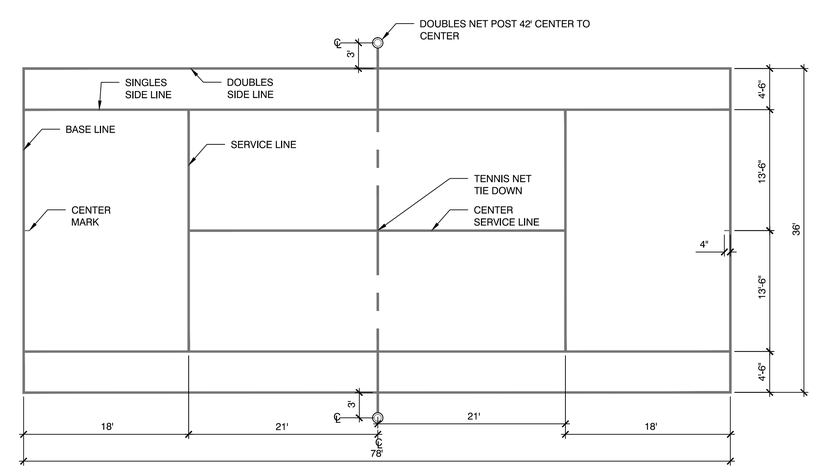
5 TENNIS POST FOOTING
SCALE: NTS



6 BLACK VINYL CHAIN LINK (BVCL) FENCE AT EDGE OF TRACK
SCALE: NTS



7 20' BALL NETTING
SCALE: NTS



NOTES:
1. ALL DIMENSIONS ARE TO THE OUTSIDE EDGE OF LINES.
2. ALL LINES SHALL BE 2 INCHES WIDE.

8 TENNIS COURT STRIP LAYOUT
SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson
85 Devonshire Street, 3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

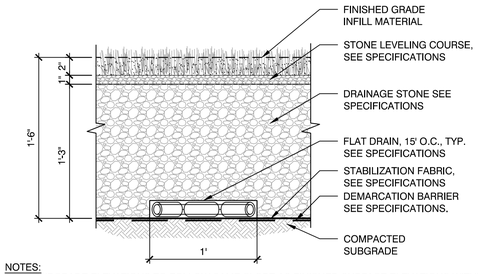
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

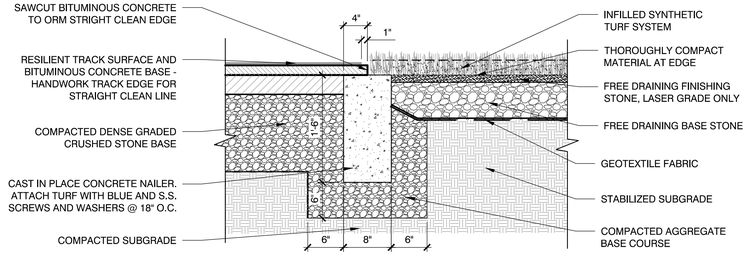
L7.05

COPYRIGHT 2017 WESTON & SAMPSON

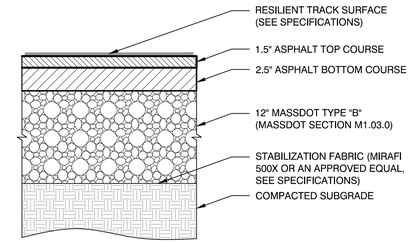


NOTES:
1. SUBGRADE ELEVATIONS TO FOLLOW SAME SLOPE AS FINISHED SURFACE ELEVATIONS WITHIN TURF LIMITS.
2. ABSOLUTELY NO SUBSTITUTIONS SHALL BE ALLOWED FOR BOTH THE STONE LEVELING COURSE AND DRAINAGE STONE WITHOUT A WRITTEN AND SIGNED DOCUMENT DIRECTLY FROM THE TURF MANUFACTURER. DOCUMENT SHALL STATE: THE MATERIAL IS AN ACCEPTABLE MATERIAL TO BE USED DIRECTLY UNDER THEIR TURF FIELD FABRIC AND THAT THE SUBSTITUTION MATERIAL PROVIDES THE SAME CHARACTERISTICS (DRAINAGE, STRUCTURAL INTEGRITY, PLAYABILITY, ETC.) AS THE MATERIALS SPECIFIED. FAILURE TO PROVIDE SUCH A DOCUMENT SHALL BE AT THE RISK AND COST OF THE CONTRACTOR.

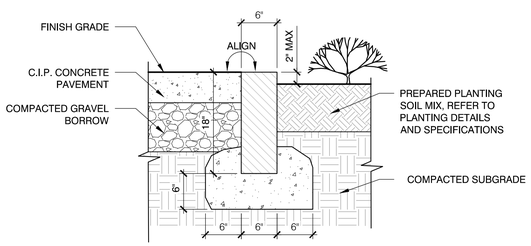
1 SYNTHETIC TURF
SCALE: NTS



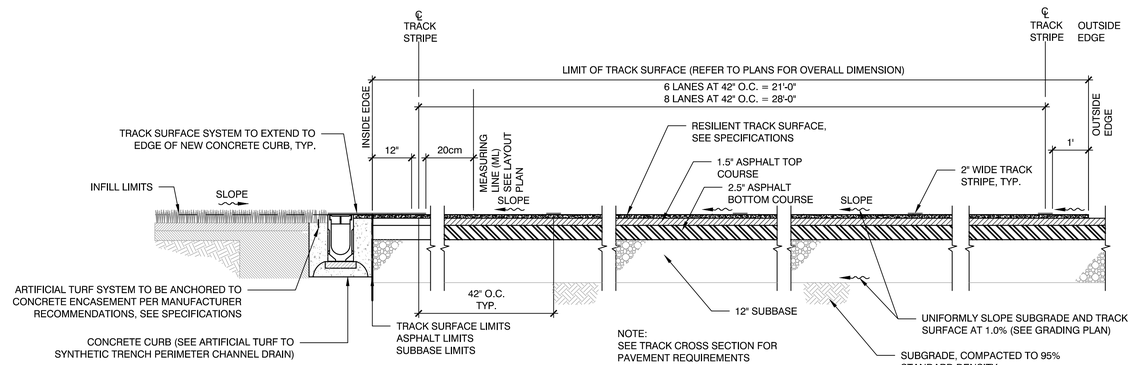
3 CONCRETE SYNTHETIC TURF ANCHOR AT D AREA
SCALE: NTS



4 RESILIENT TRACK SURFACE
SCALE: NTS



2 GRANITE CURB AT PLANTER
SCALE: NTS



NOTES:
1. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE LAYOUT AND INSTALLATION OF THE TRACK SYSTEM INCLUDING, BUT NOT LIMITED TO ALL TRACK COMPONENTS, EVENTS, SURFACING, CHANNEL DRAIN, CURBING, SURVEY, ETC. THE TRACK SHALL BE FIELD STAKED AND LOCATED BY A PROFESSIONAL LICENSED SURVEYOR EXPERIENCED IN TRACK LAYOUT AND DESIGN.
2. SEE TRACK CROSS SECTION FOR PAVEMENT REQUIREMENTS.

5 TRACK SECTION
SCALE: NTS

Project:
IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES
264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson
85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

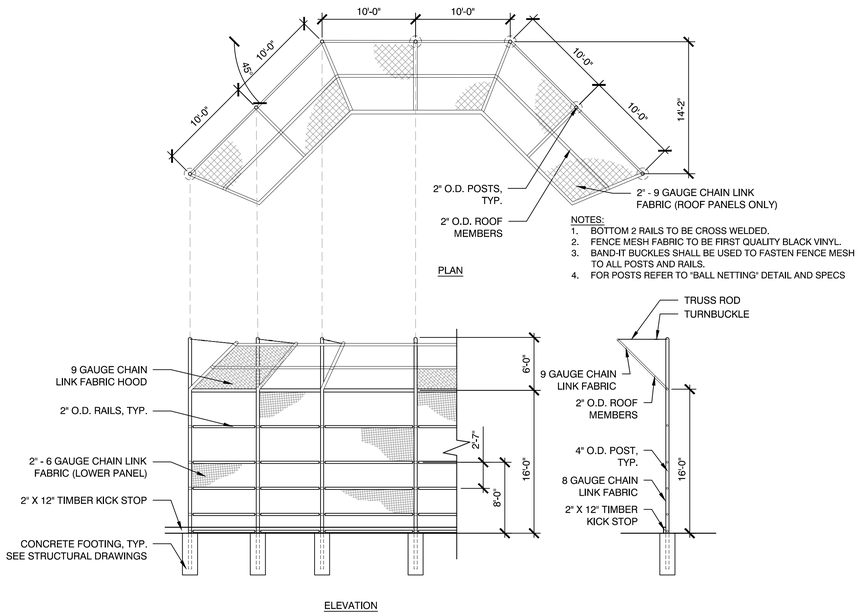
Issued For:
PERMITTING SET
- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

Drawing Title:
CONSTRUCTION DETAILS

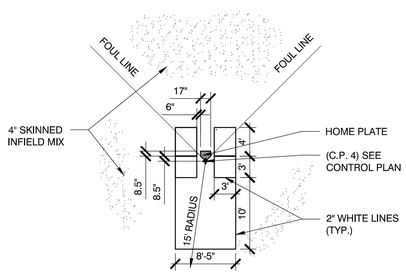
Sheet Number:
L7.06

COPYRIGHT 2017 WESTON & SAMPSON



1 BACKSTOP LAYOUT

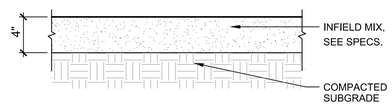
SCALE: NTS



NOTES:
1. ALL DIMENSIONS ARE GIVEN TO OUTSIDE OF WHITE LINES

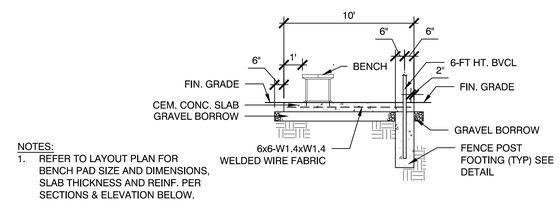
2 HOMEPLATE LAYOUT

SCALE: NTS



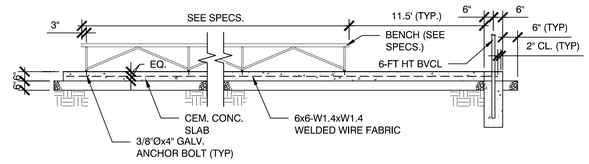
3 SKINNED INFIELD

SCALE: NTS

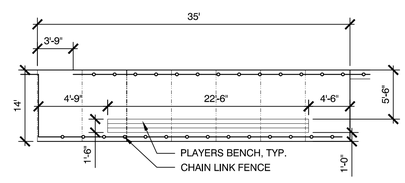


NOTES:
1. REFER TO LAYOUT PLAN FOR BENCH PAD SIZE AND DIMENSIONS, SLAB THICKNESS AND REINF. PER SECTIONS & ELEVATION BELOW.

SECTION PAD



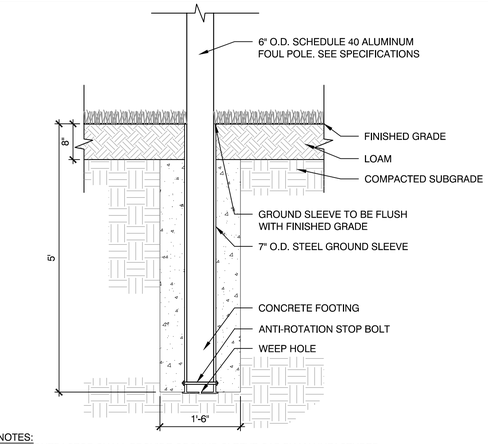
ELEVATION



PLAN VIEW

4 DUGOUT LAYOUT WITH TEAM BENCH

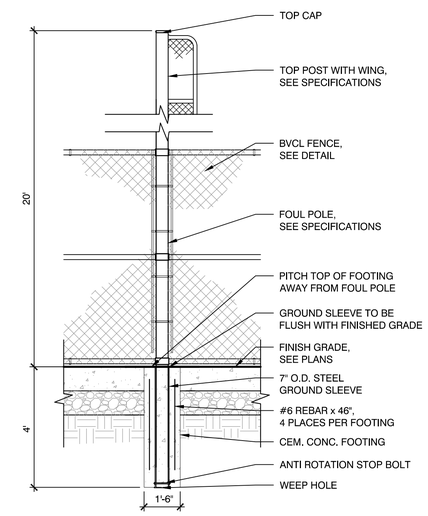
SCALE: NTS



NOTES:
1. CONTRACTOR SHALL PROVIDE GROUND SLEEVE CAP BY MANUFACTURER.
2. ANTI-ROTATION STOP BOLT SHALL BE 1.2"x 8" LONG HEX BOLT AND ANTI-ROTATION STOP MUST BE PARALLEL WITH SLOT AT BOTTOM OF FOUL POLE.

5 FOUL POLE FOOTING

SCALE: NTS



6 FOUL POLE AT BVCL FENCE

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

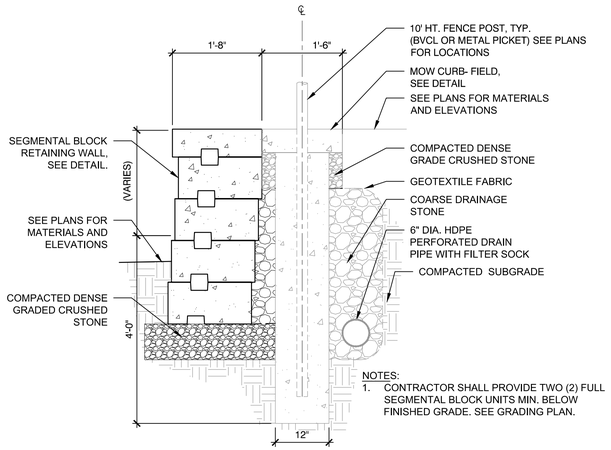
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

L7.07

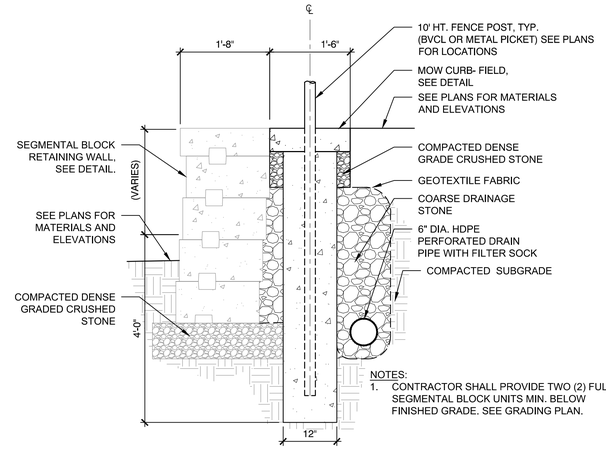
COPYRIGHT 2017 WESTON & SAMPSON



NOTES:
1. CONTRACTOR SHALL PROVIDE TWO (2) FULL SEGMENTAL BLOCK UNITS MIN. BELOW FINISHED GRADE. SEE GRADING PLAN.

1 SEGMENTAL BLOCK RETAINING WALL

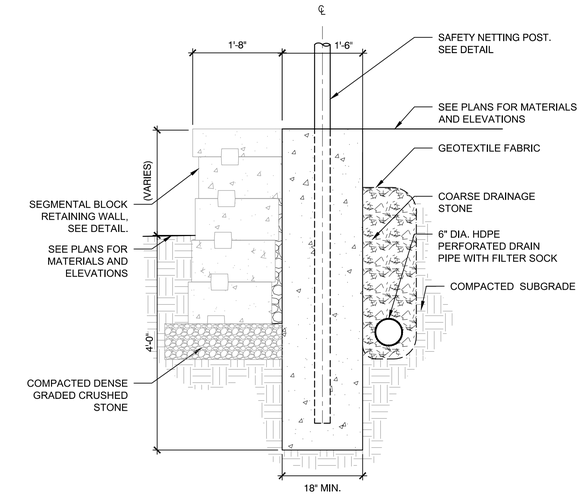
SCALE: NTS



NOTES:
1. CONTRACTOR SHALL PROVIDE TWO (2) FULL SEGMENTAL BLOCK UNITS MIN. BELOW FINISHED GRADE. SEE GRADING PLAN.

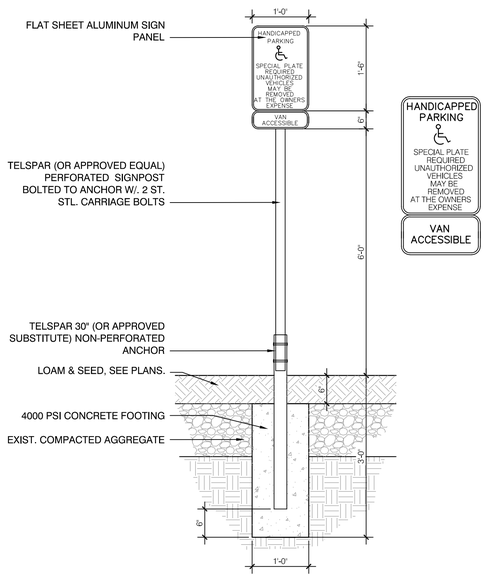
3 FENCE POST AT SEGMENTAL BLOCK RETAINING WALL

SCALE: NTS



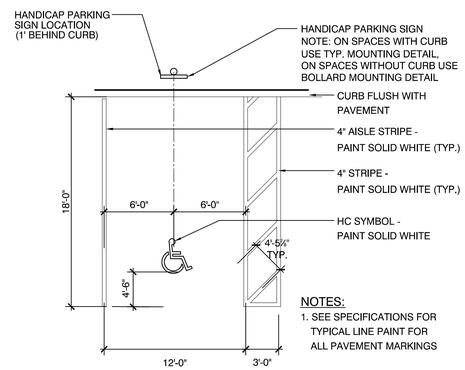
5 SPORTS NETTING POST AT SEGMENTAL BLOCK RETAINING WALL

SCALE: NTS



2 HANDICAP PARKING SIGN FOOTING

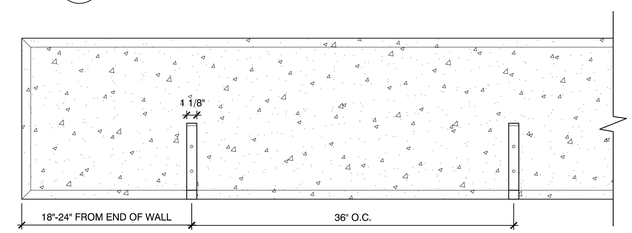
SCALE: NTS



NOTES:
1. SEE SPECIFICATIONS FOR TYPICAL LINE PAINT FOR ALL PAVEMENT MARKINGS

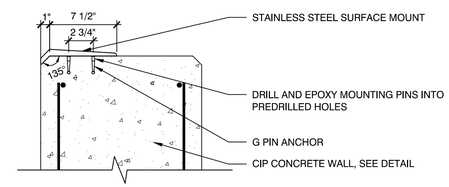
4 HANDICAP PARKING SPACE MARKING

SCALE: NTS



PLAN

NOTES:
1. DO NOT INSTALL SKATE STOP AT ANY JOINT LOCATIONS IN WALL.
2. THERE SHALL BE A MINIMUM DISTANCE OF 4" FROM ANY JOINT IN WALL.
3. SKATE STOPS SHALL BE INSTALLED ONLY ON WALLS WITH ABUTTING PAVEMENT, ON THE PAVEMENT SIDE



SECTION

6 SKATE STOP DETAIL

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

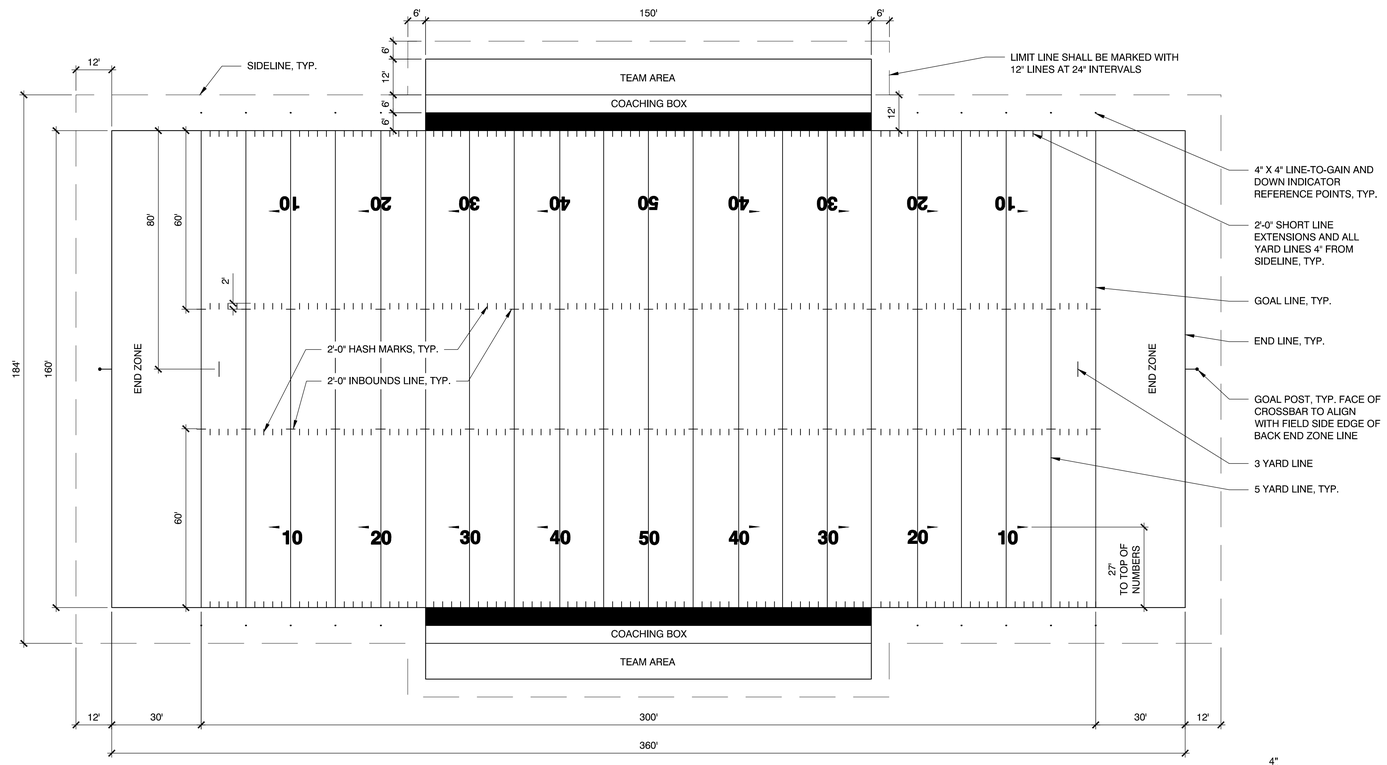
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

L7.08

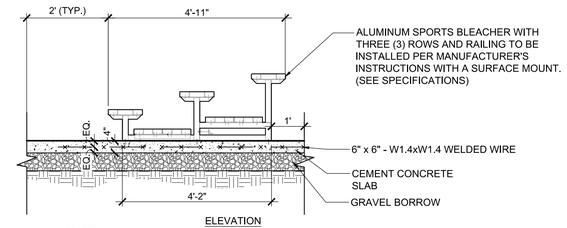
COPYRIGHT 2017 WESTON & SAMPSON



NOTE:
1. ALL FOOTBALL FIELD LINES ARE 4" WIDE AND WHITE UNLESS OTHERWISE NOTED.
2. END LINES AND SIDELINES ARE CONSIDERED OUT-OF-BOUNDS.
3. TAKE MEASUREMENT FROM CENTER OF 50 YD LINE TO CENTER OF 5 YARD LINES, AND FROM CENTER OF 50 YARD LINE TO INSIDE OF GOAL GOAL LINES, SIDE LINES, AND END LINES.

1 SYNTHETIC TURF STRIPING LAYOUT

SCALE: NTS

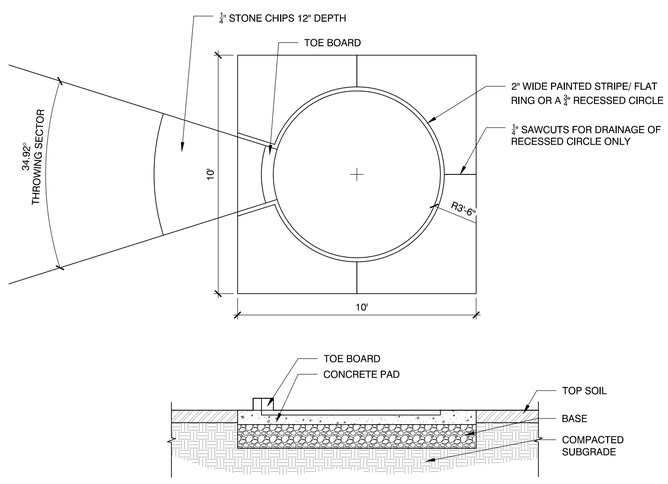


ELEVATION

NOTE:
1. MAINTAIN 1'-0" CLEARANCE BETWEEN EDGE OF PAD AND OUTSIDE PERIMETER OF OBJECT ON PAD.

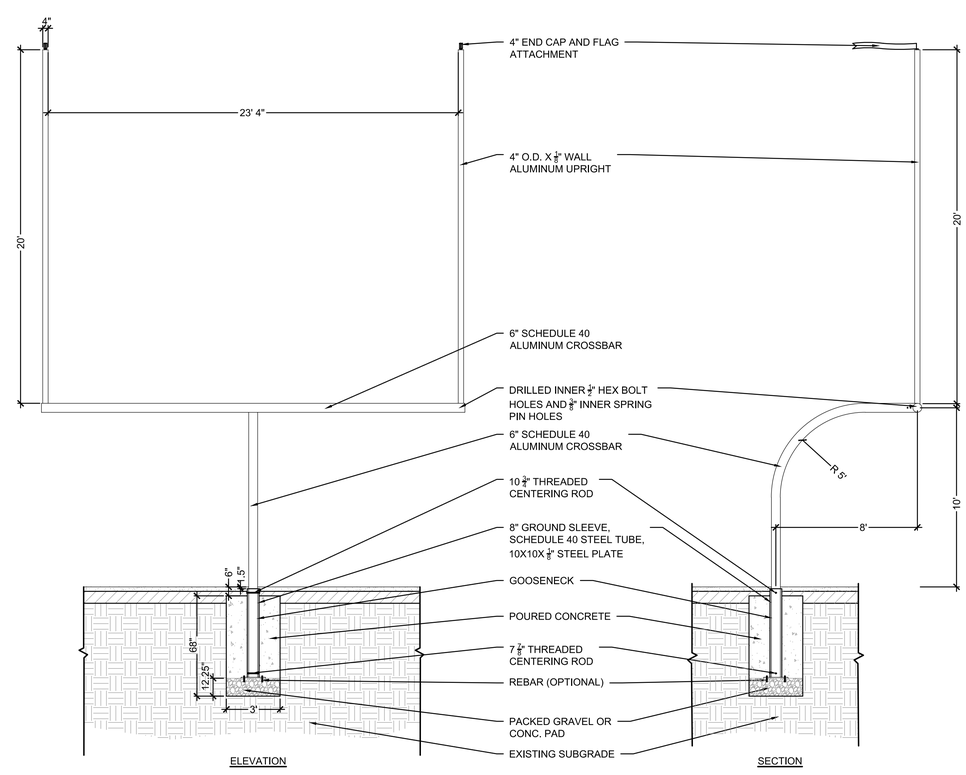
3 ALUMINUM SPORTS BLEACHERS

SCALE: NTS



2 SHOT PUT PAD

SCALE: NTS



4 FOOTBALL GOAL POST & FOOTING

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

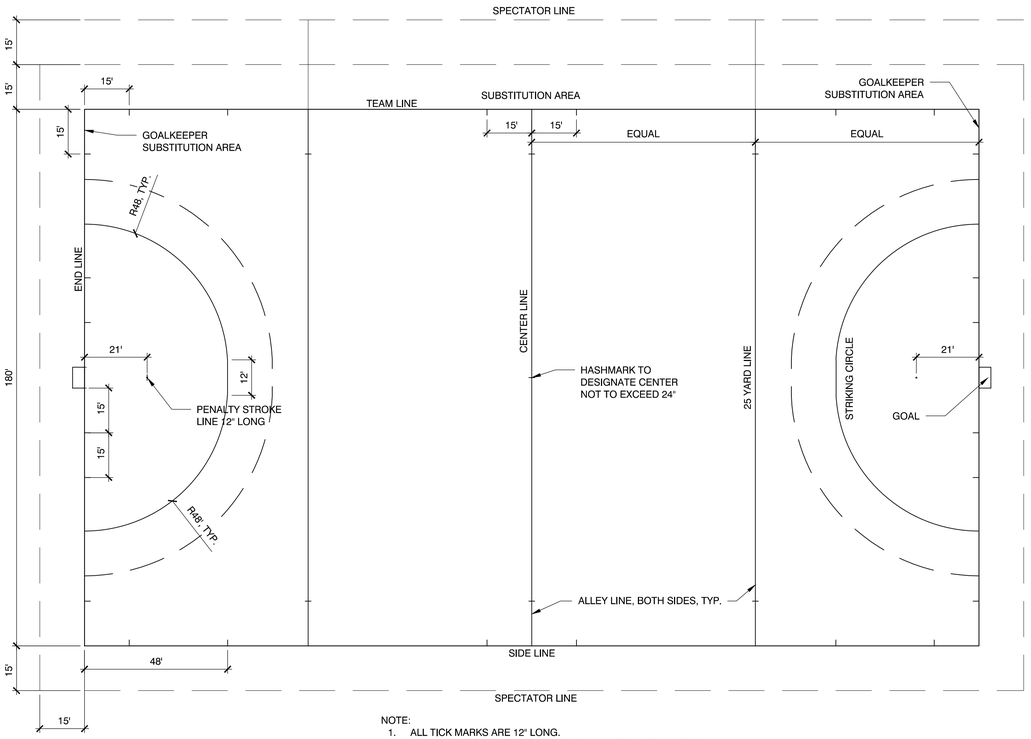
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

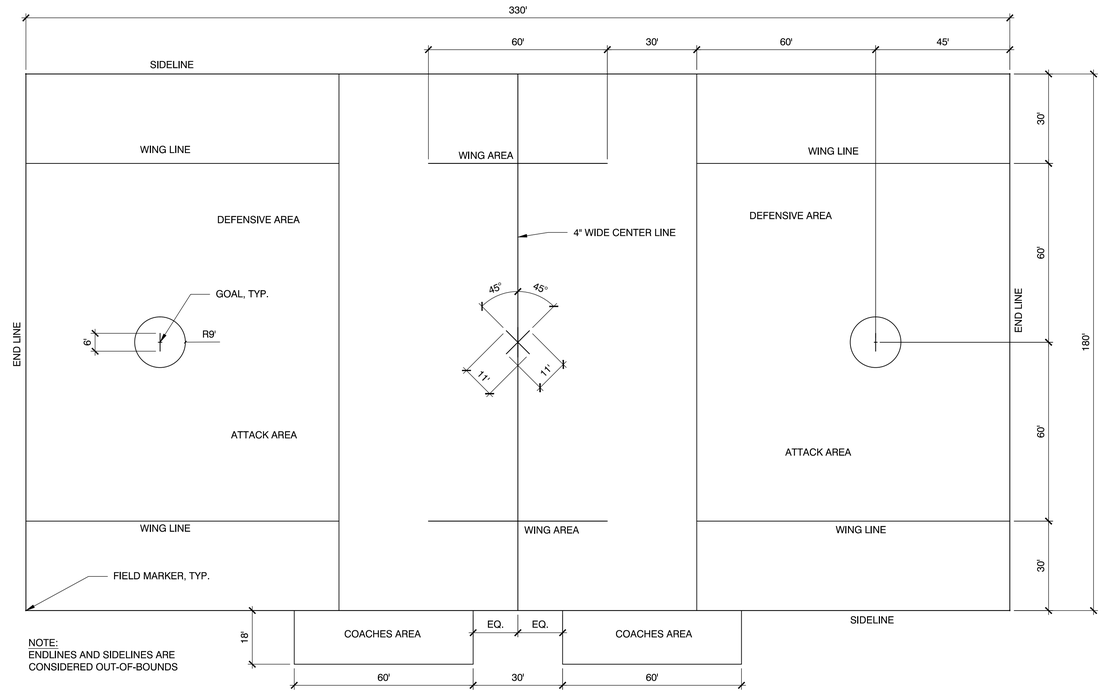
L7.09

COPYRIGHT 2017 WESTON & SAMPSON



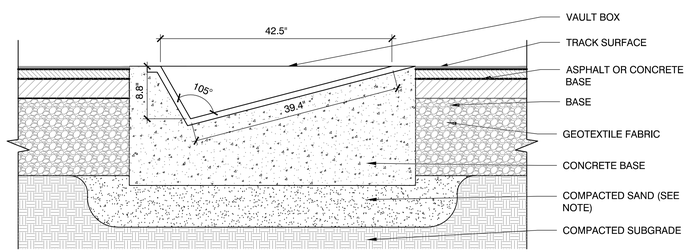
NOTE:
1. ALL TICK MARKS ARE 12" LONG.
2. ALL LINES ARE TO BE MEASURED FROM OUTSIDE TO OUTSIDE.

1 HIGH SCHOOL FIELD HOCKEY FIELD LAYOUT
SCALE: NTS



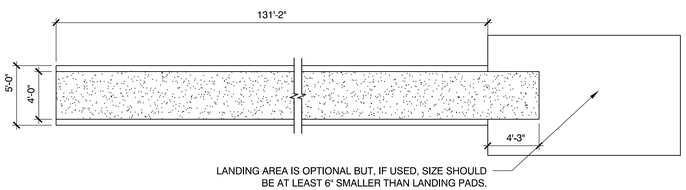
NOTE:
ENDLINES AND SIDELINES ARE CONSIDERED OUT-OF-BOUNDS

4 HIGH SCHOOL BOY'S LACROSSE FIELD LAYOUT
SCALE: NTS

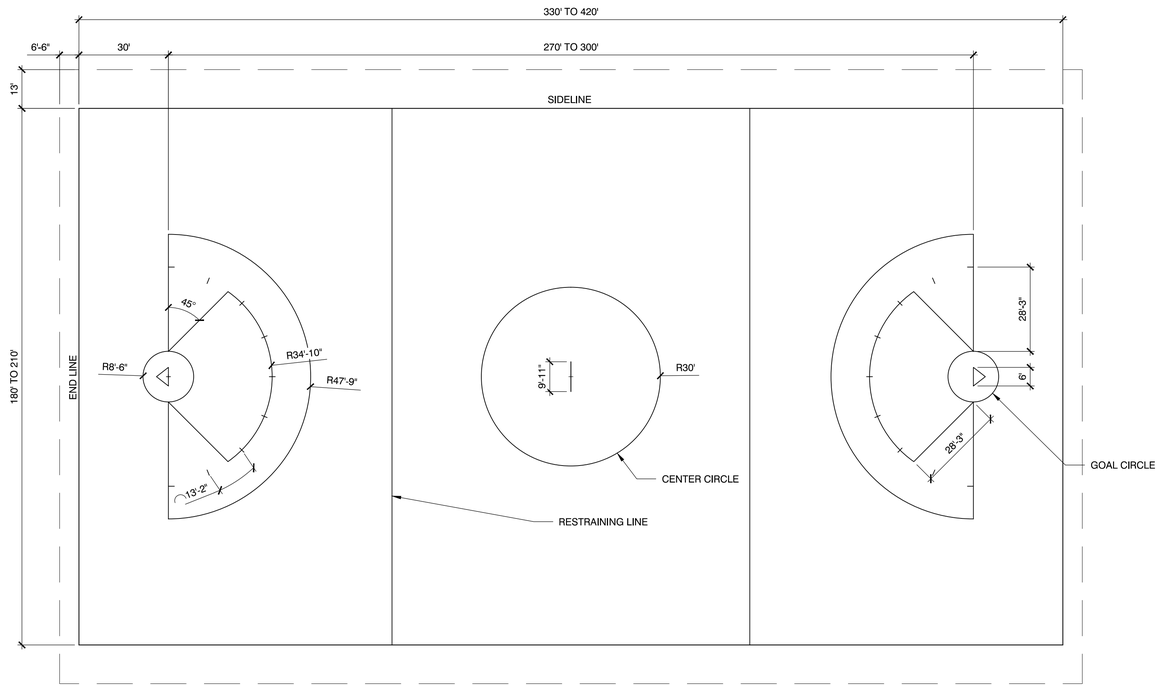


NOTE:
COMPACTED SAND MAY BE NECESSARY IN CERTAIN

2 POLE VAULT BOX SECTION
SCALE: NTS



3 POLE VAULT BOX PLAN
SCALE: NTS



NOTE:
1. ENDLINES AND SIDELINES ARE CONSIDERED OUT-OF-BOUNDS

5 WOMEN LACROSSE FIELD LAYOUT
SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson
85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

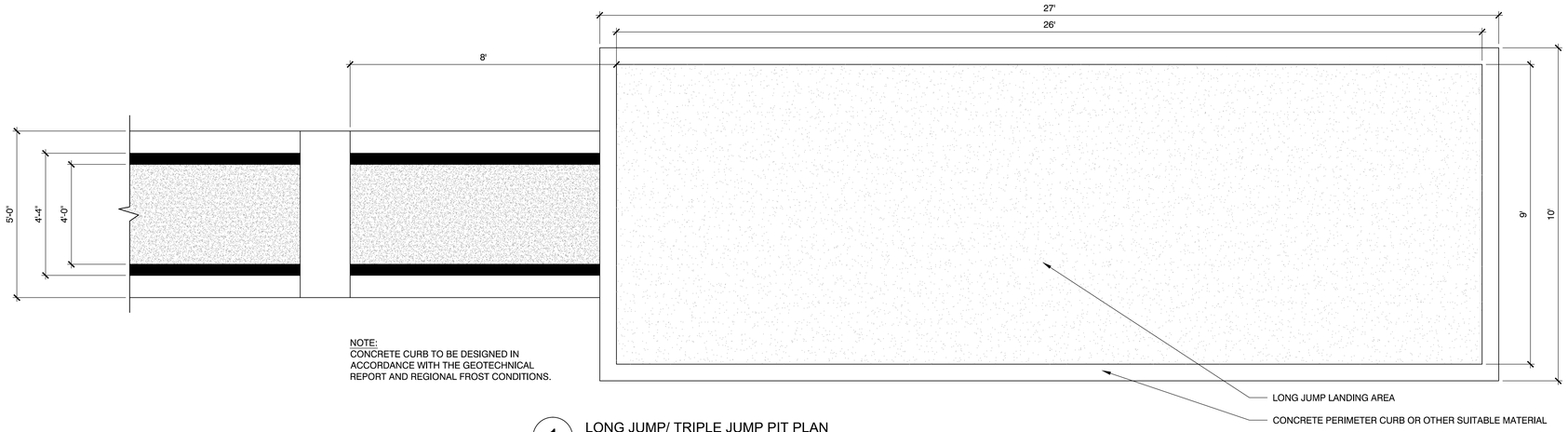
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

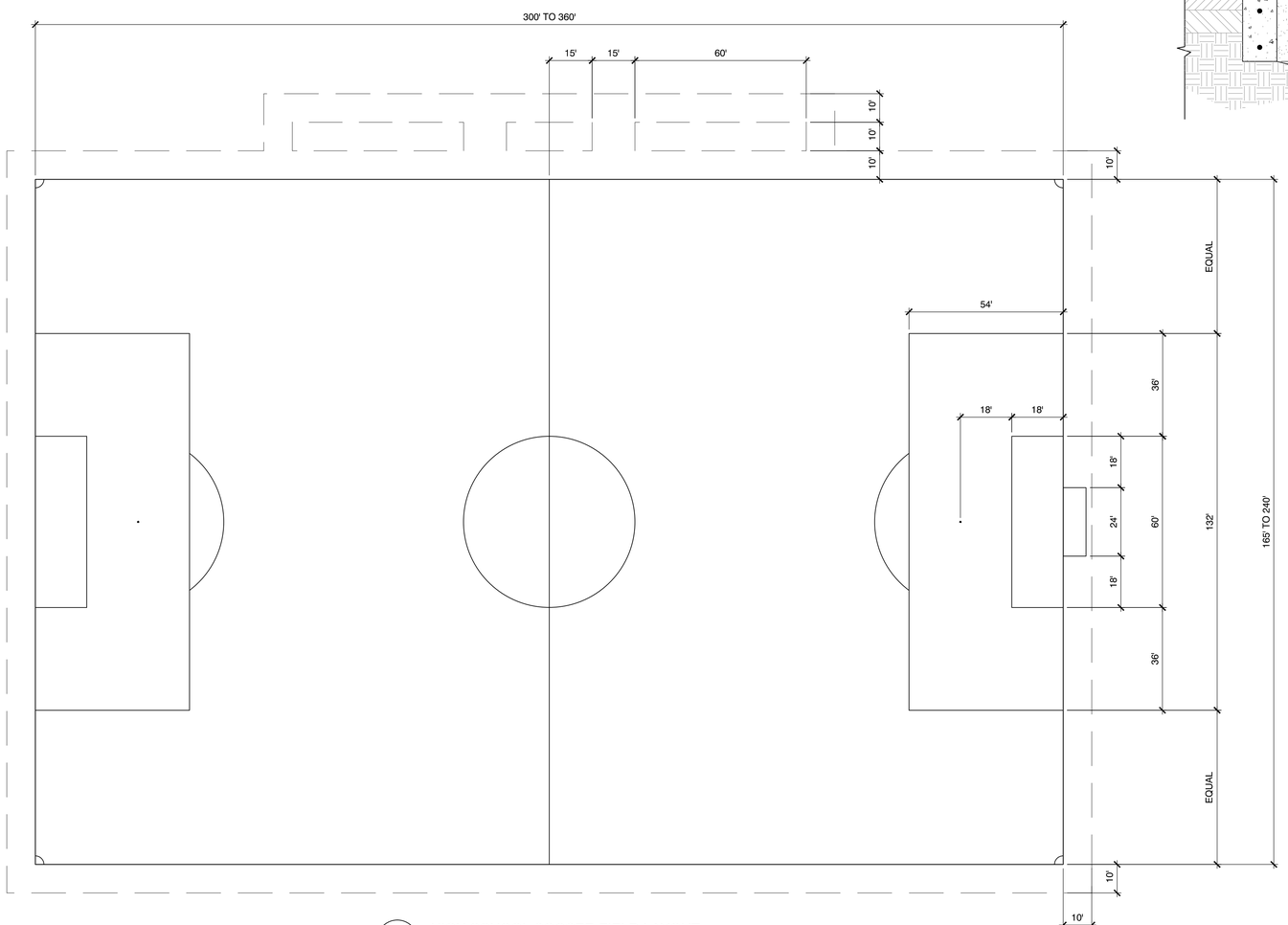
L7.10

COPYRIGHT 2017 WESTON & SAMPSON

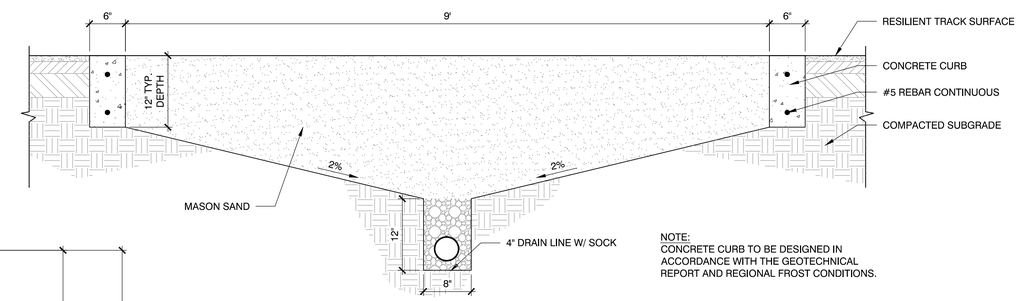


NOTE:
CONCRETE CURB TO BE DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND REGIONAL FROST CONDITIONS.

1 LONG JUMP/ TRIPLE JUMP PIT PLAN
SCALE: NTS

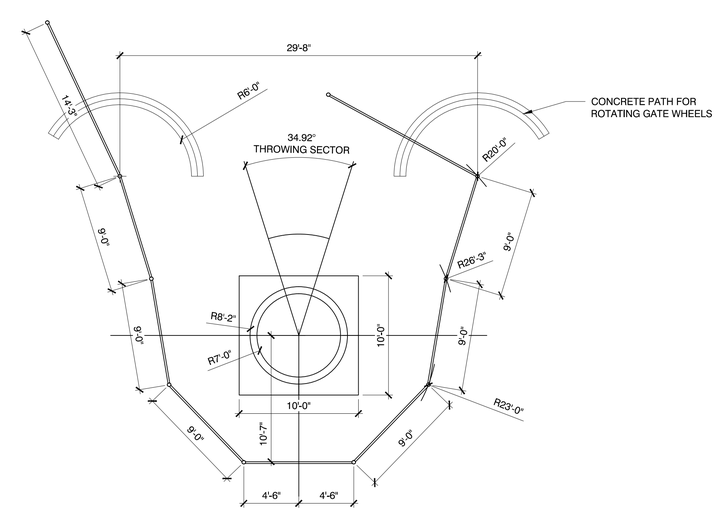


2 HIGH SCHOOL SOCCER FIELD LAYOUT
SCALE: NTS



NOTE:
CONCRETE CURB TO BE DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND REGIONAL FROST CONDITIONS.

3 LONG JUMP/ TRIPLE JUMP PIT SECTION
SCALE: NTS



4 DISCUSS/ HAMMER CAGE LAYOUT
SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

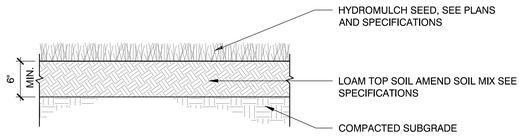
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

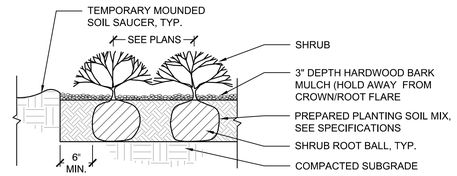
L7.11

COPYRIGHT 2017 WESTON & SAMPSON



1 LOAM AND SEED

SCALE: NTS



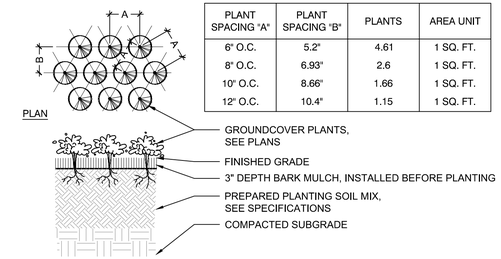
NOTES:
1. ALL MULCH MUST BE DARK IN COLOR. PROVIDE SAMPLE PRIOR TO INSTALLATION TO BE APPROVED BY OWNER'S REPRESENTATIVE.

3 SHRUB PLANTING

SCALE: NTS

GROUNDCOVER SPACING TABLE

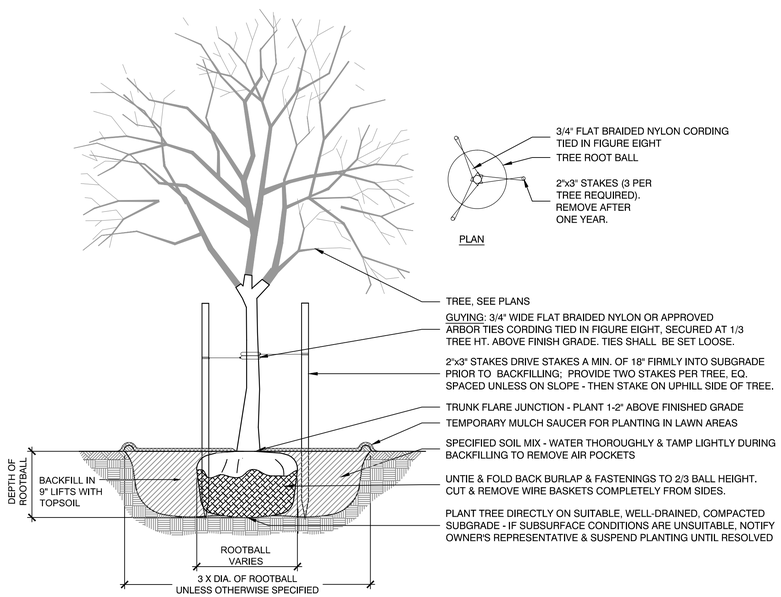
PLANT SPACING "A"	PLANT SPACING "B"	PLANTS	AREA UNIT
6" O.C.	5.2"	4.61	1 SQ. FT.
8" O.C.	6.93"	2.6	1 SQ. FT.
10" O.C.	8.66"	1.66	1 SQ. FT.
12" O.C.	10.4"	1.15	1 SQ. FT.



NOTES:
1. ALL GROUND COVERS TO BE PLANTED IN TRIANGULAR PATTERN. SEE PLANTING SCHEDULE FOR SPACING.
2. JUTE EROSION CONTROL MAT TO BE USED ON ALL SLOPES 3:1 OR GREATER. SEE SPECIFICATIONS

4 GROUND COVER PLANTING

SCALE: NTS



2 TREE STAKING AND PLANTING

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

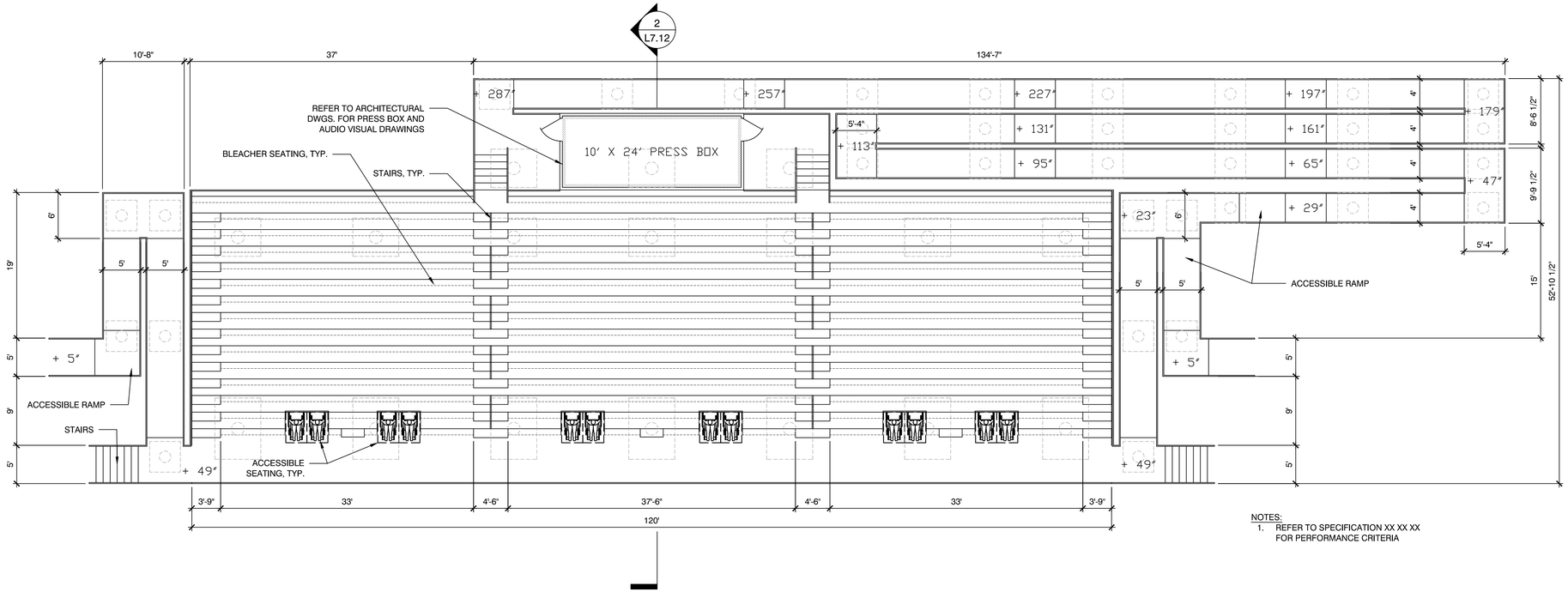
Drawing Title:

CONSTRUCTION DETAILS

Sheet Number:

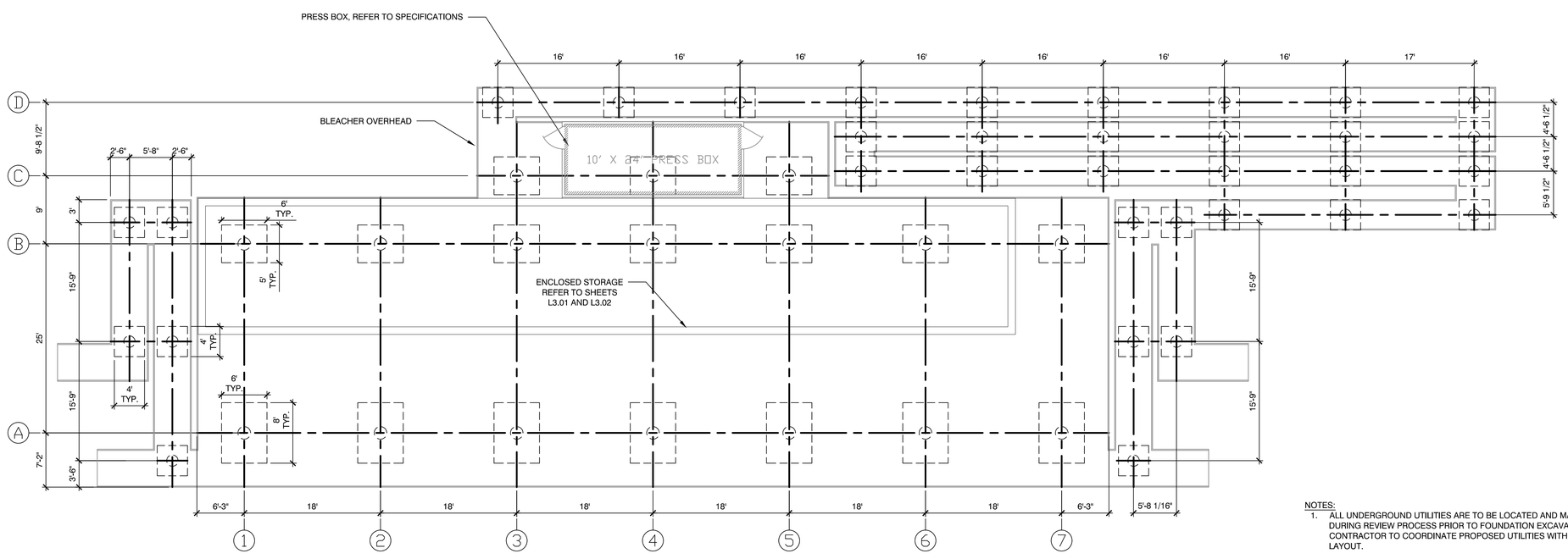
L7.12

COPYRIGHT 2017 WESTON & SAMPSON



NOTES:
1. REFER TO SPECIFICATION XX XX XX FOR PERFORMANCE CRITERIA

1 HOME BLEACHER LAYOUT
SCALE: 1/8" = 1'-0"



NOTES:
1. ALL UNDERGROUND UTILITIES ARE TO BE LOCATED AND MARKED DURING REVIEW PROCESS PRIOR TO FOUNDATION EXCAVATION. CONTRACTOR TO COORDINATE PROPOSED UTILITIES WITH FOOTING LAYOUT.

2 HOME BLEACHER FOUNDATION LAYOUT
SCALE: 1/8" = 1'-0"

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

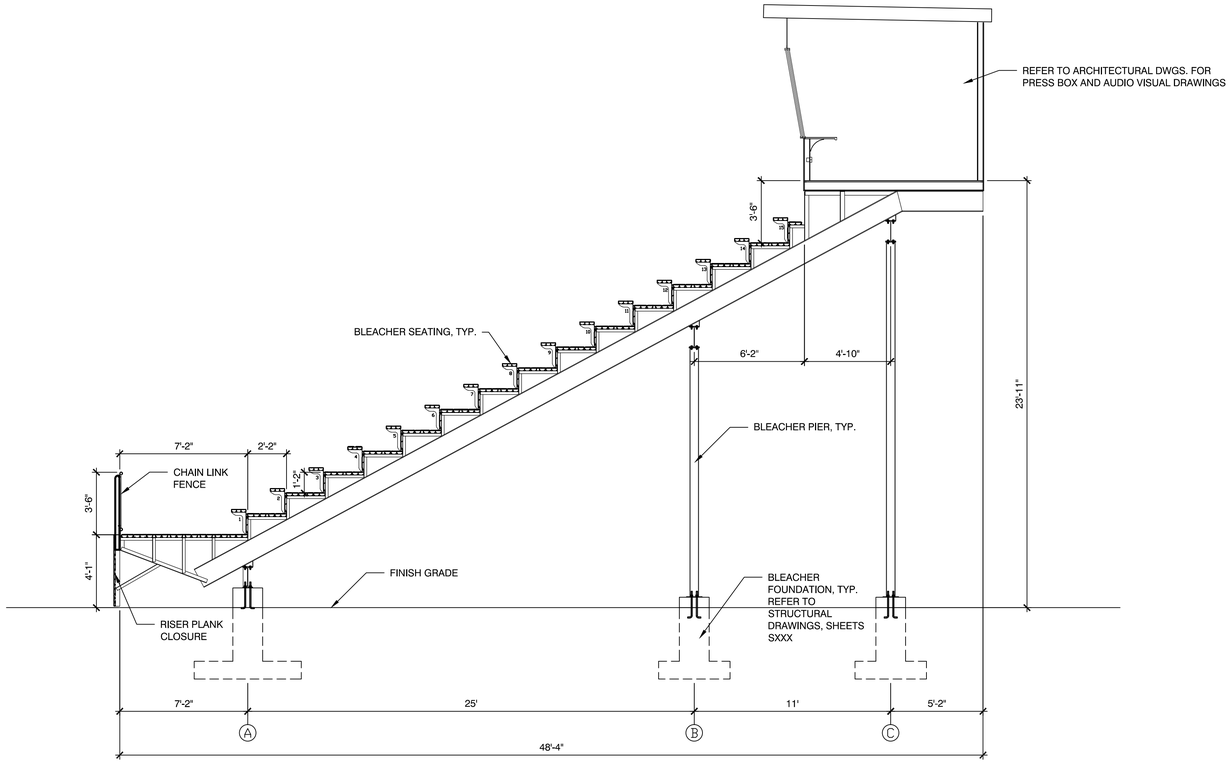
Drawing Title:

CONSTRUCTION DETAILS- BLEACHER PLANS AND SECTIONS

Sheet Number:

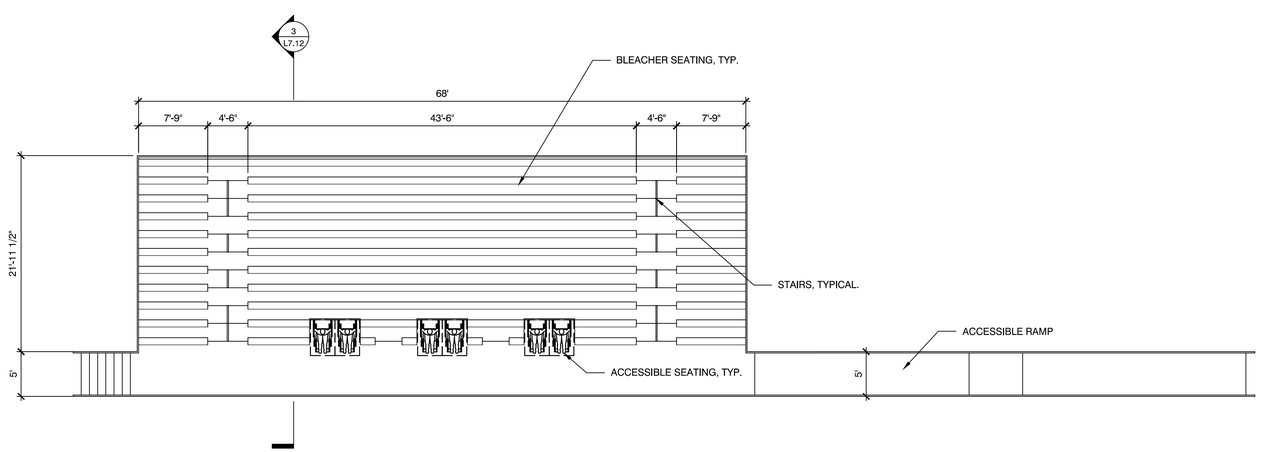
L7.13

COPYRIGHT 2017 WESTON & SAMPSON



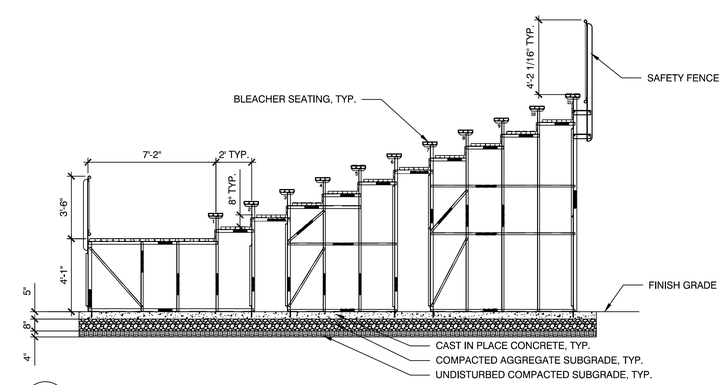
1 HOME BLEACHER SECTION 1

SCALE: NTS



2 AWAY BLEACHER LAYOUT PLAN

SCALE: NTS



3 AWAY BLEACHER SECTION 1

SCALE: NTS

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	CCC, DYF
Reviewed By:	BMK
Approved By:	ERB
W&S Project No:	2180076
W&S File No:	

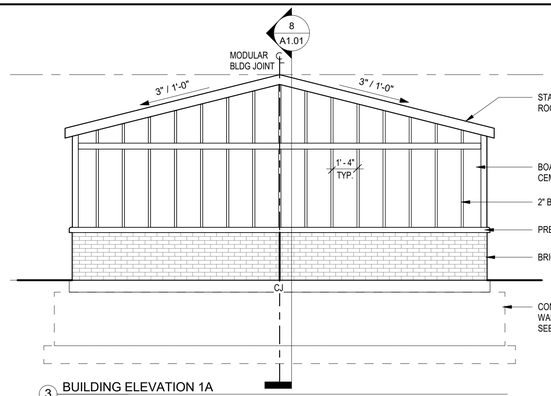
Drawing Title:

CONSTRUCTION DETAILS- BLEACHER PLANS AND SECTIONS

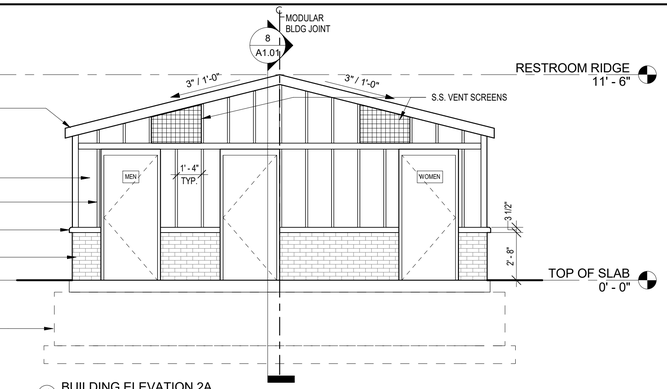
Sheet Number:

L7.14

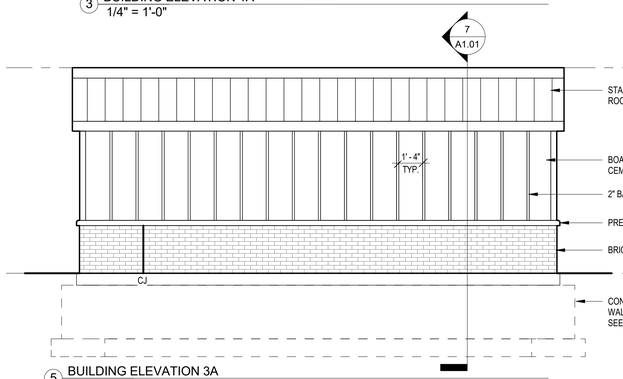
COPYRIGHT 2017 WESTON & SAMPSON



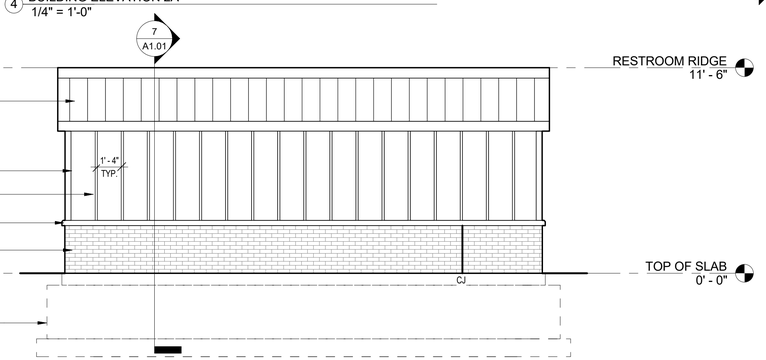
3 BUILDING ELEVATION 1A
1/4" = 1'-0"



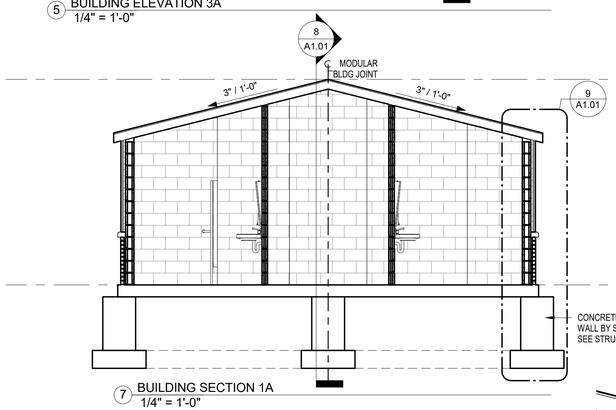
4 BUILDING ELEVATION 2A
1/4" = 1'-0"



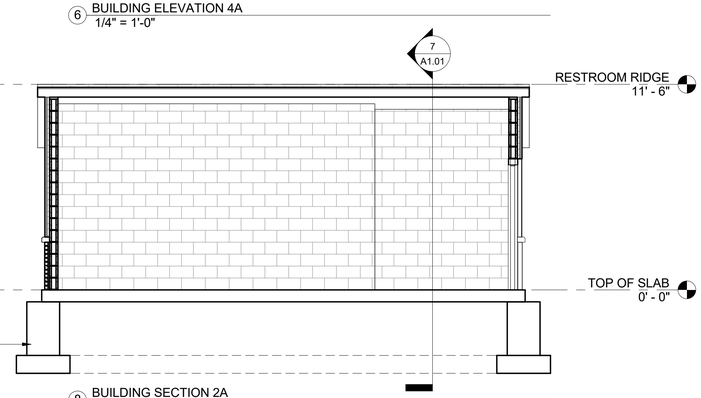
5 BUILDING ELEVATION 3A
1/4" = 1'-0"



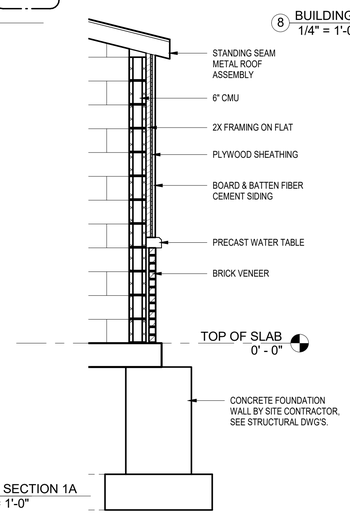
6 BUILDING ELEVATION 4A
1/4" = 1'-0"



7 BUILDING SECTION 1A
1/4" = 1'-0"

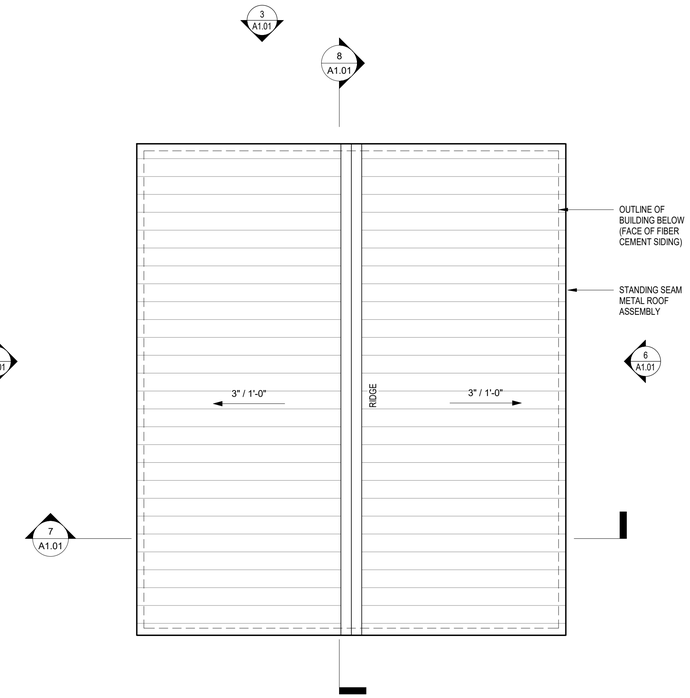


8 BUILDING SECTION 2A
1/4" = 1'-0"

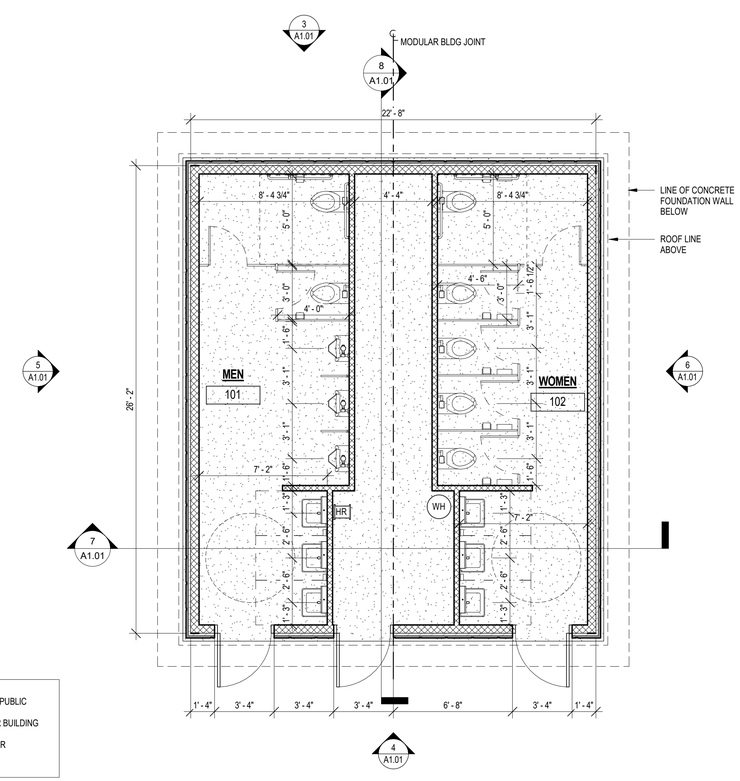


9 WALL SECTION 1A
1/2" = 1'-0"

NOTES:
- MODULAR RESTROOM BUILDING BASED ON "PUBLIC RESTROOM COMPANY" MODEL # SS-396
- STRUCTURAL CONCRETE SLAB BY MODULAR BUILDING MANUFACTURER
- CONCRETE FOUNDATION BY SITE DEVELOPER
- DIMENSIONS AND FIXTURES TO MEET ADA REQUIREMENTS



1 ROOF PLAN - RESTROOM
1/4" = 1'-0"



2 TOP OF SLAB - RESTROOMS
1/4" = 1'-0"

Project:

IMPROVEMENTS TO
WAYLAND HIGH SCHOOL
ATHLETIC FACILITIES

264 OLD CONNECTICUT
PATH, WAYLAND, MA 01778

Weston & Sampson Engineers, Inc.
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 (800) SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

SCALE: AS NOTED

Date:	JULY 26 2018
Drawn By:	MMS
Reviewed By:	JRC
Approved By:	DGT
W&S Project No:	2180076
W&S File No:	

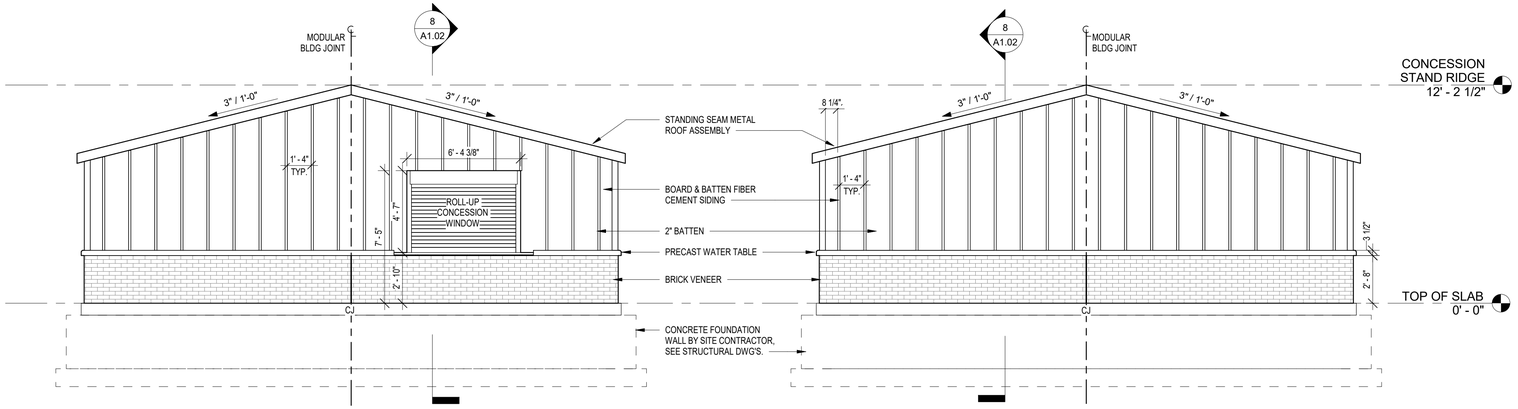
Drawing Title:

RESTROOM ROOF
& FLOOR PLAN,
ELEVATIONS AND
SECTIONS

Sheet Number:

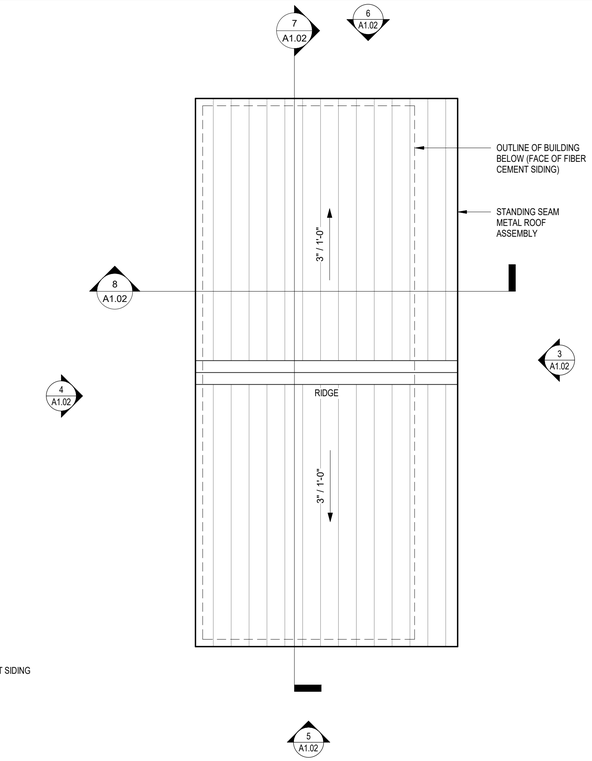
A1.01

WESTON & SAMPSON COPYRIGHT 2018

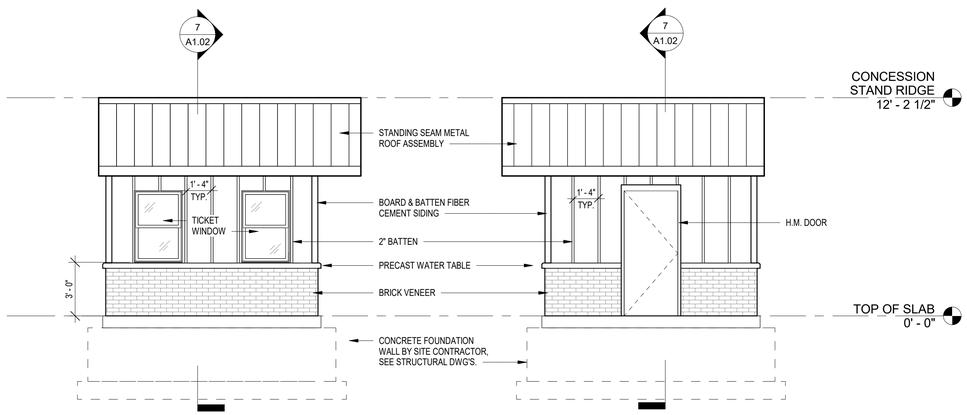


3 BUILDING ELEVATION 3B
1/4" = 1'-0"

4 BUILDING ELEVATION 4B
1/4" = 1'-0"

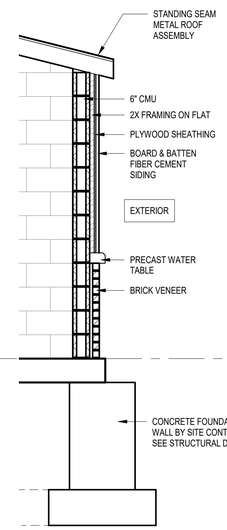


2 ROOF PLAN - CONCESSION STAND
1/4" = 1'-0"

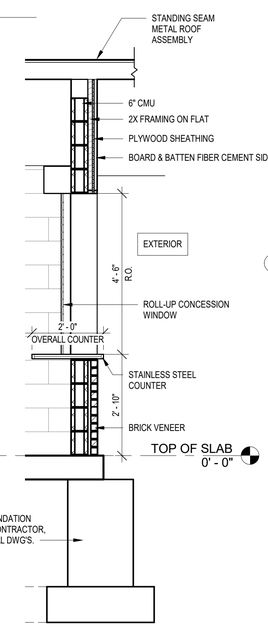


5 BUILDING ELEVATION 1B
1/4" = 1'-0"

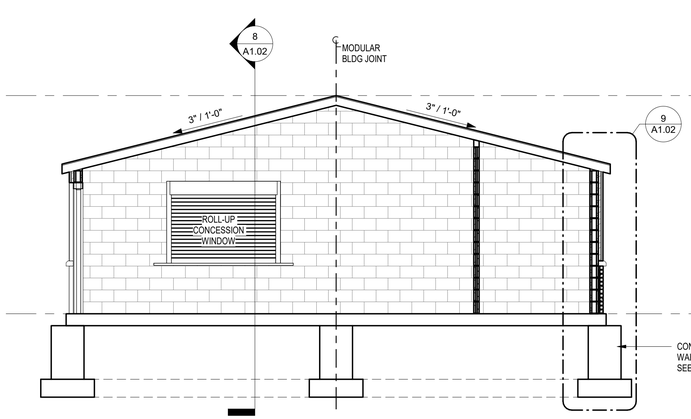
6 BUILDING ELEVATION 2B
1/4" = 1'-0"



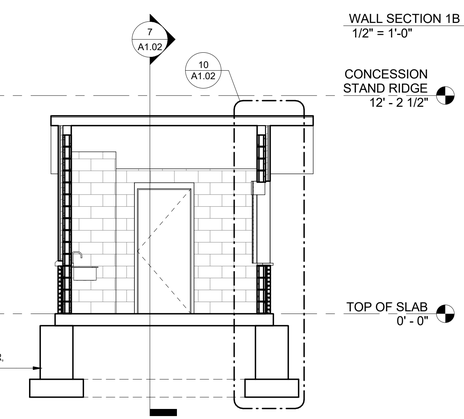
WALL SECTION 1B
1/2" = 1'-0"



10 WALL SECTION 2B
1/2" = 1'-0"

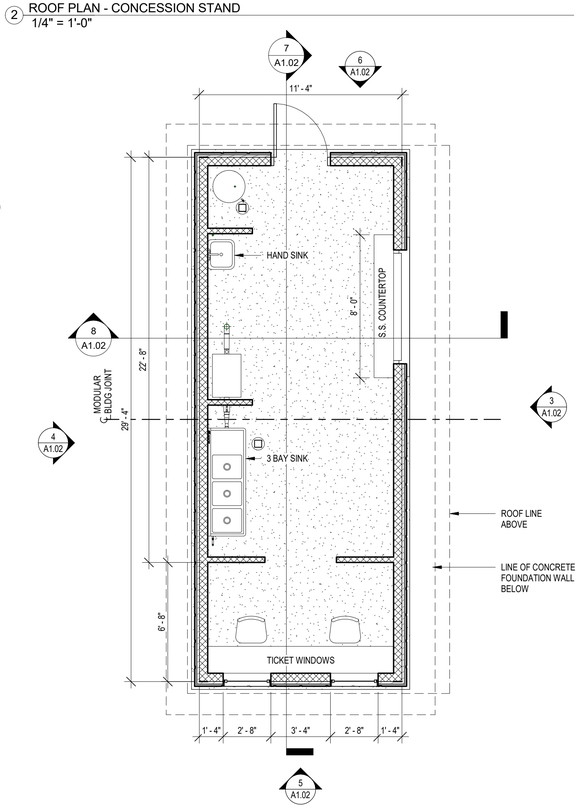


7 BUILDING SECTION 1B
1/4" = 1'-0"



8 BUILDING SECTION 2B
1/4" = 1'-0"

NOTES:
- MODULAR RESTROOM BUILDING BASED ON "PUBLIC RESTROOM COMPANY" MODEL # CN-2
- STRUCTURAL CONCRETE SLAB BY MODULAR BUILDING MANUFACTURER
- CONCRETE FOUNDATION BY SITE DEVELOPER



1 TOP OF SLAB - CONCESSION STAND
1/4" = 1'-0"

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson Engineers, Inc.
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 (800) SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

SCALE: AS NOTED

Date:	JULY 26 2018
Drawn By:	MMS
Reviewed By:	JRC
Approved By:	DGT
W&S Project No:	2180076
W&S File No:	

Drawing Title:

CONCESSION STAND ROOF & FLOOR PLANS, ELEVATIONS AND SECTIONS

Sheet Number:

A1.02

WESTON & SAMPSON COPYRIGHT 2018

LEGEND

SYMBOL	ABBREV	DESCRPTION
		TEE LOOKING UP
		TEE LOOKING DOWN
		UNION
	VIV	VALVE IN VERTICAL
		STRAINER
	WHA/SA	WATER HAMMER ARRESTOR/SHOCK ABSORBER
		FLOW IN DIRECTION OF ARROW
		DIRECTION OF SLOPE
		PIPE SLEEVE
	FD	FLOOR DRAIN
	CO	CLEANOUT
	FCO	FLOOR CLEANOUT
		P-TRAP
		ELBOW UP OR RISE
		ELBOW DOWN OR DROP
		CAP OR END OF PIPE
HB	HB	HOSE BIBB
	CW	COLD WATER
	HW	HOT WATER
	HWR	HOT WATER RETURN
	S or W	SOIL OR WASTE ABOVE GROUND
TP	TP	TRAP PRIMER
	V	VENT ABOVE GROUND
NCW	NCW	NON POTABLE COLD WATER
		BALL VALVE
		CHECK VALVE
	MV	MIXING VALVE
		BALANCING VALVE
	T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
		VACUUM RELIEF VALVE
		AQUASTAT
		THERMOMETER
	PRV	PRESSURE REDUCING/REGULATING VALVE
	PG	PRESSURE GAUGE
CA	CA	COMPRESSED AIR
GW	GW	GARAGE WASTE
GV	GV	GARAGE VENT
SV	SV	SEPARATOR VENT
CV	CV	CHAMBER VENT
S	S/W	SOIL OR WASTE PIPING BELOW FLOR
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR

ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AP	ACCESS PANEL
ARCH	ARCHITECT
BLDG	BUILDING
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CO	CLEANOUT
CONT	CONTINUATION
CP	CHROME PLATED
CW	COLD WATER
DF	DRINKING FOUNTAIN
DN	DOWN
DWG	DRAWING
ELEC	ELECTRICAL
EL/ELEV	ELEVATION
FCO	FLOOR CLEANOUT
FFE	FINISH FLOOR ELEVATION
FLR	FLOOR
GC	GENERAL CONTRACTOR
GPC	GALLONS PER CYCLE
GPF	GALLONS PER FLUSH
GPM	GALLONS PER MINUTE
GWH	GAS PIPED WATER HEATER
HW	HOT WATER
HWR	HOT WATER RETURN
INV	INVERT
IW	INDIRECT WASTE
LPC	LIMIT OF PLUMBING CONTRACTOR
MECH	MECHANICAL
MSB	MOP SERVICE BASIN-FIXTURE IDENTIFICATION
NTS	NOT TO SCALE
OED	OPEN END DRAIN
PC	PLUMBING CONTRACTOR
PLBG	PLUMBING
PSI	POUNDS PER SQUARE INCH
RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
SA	SHOCK ABSORBER
SH	SHOWER-FIXTURE IDENTIFICATION
SK	SINK-FIXTURE IDENTIFICATION
SPEC	SPECIFICATION
TMW	TEMPERED WATER
TP	TRAP PRIMER
TYP	TYPICAL
UR	URINAL
V	VENT
VIV	VALVE IN VERTICAL
VS	VENT STACK
VTR	VENT THRU ROOF
W	WASTE
WC	WATER CLOSET
WH	WALL HYDRANT
WM	WASHING MACHINE
WTS	WATER TIGHT SEAL

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard Suite 250
Foxborough, MA 02035
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

PROJECT TRUE

SCALE: AS NOTED

Date:	JULY 26 2018
Drawn By:	RJH
Reviewed By:	SEH
Approved By:	SEH
W&S Project No:	2180076

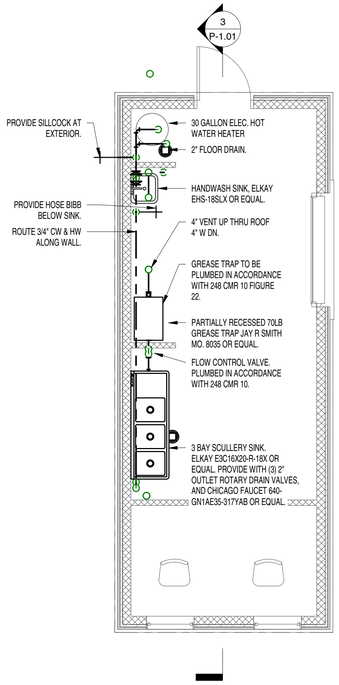
Drawing Title:

PLUMBING LEGEND

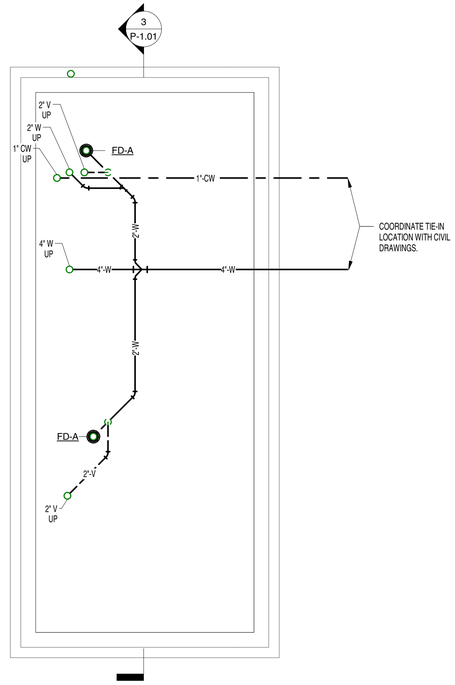
Sheet Number:

P-000

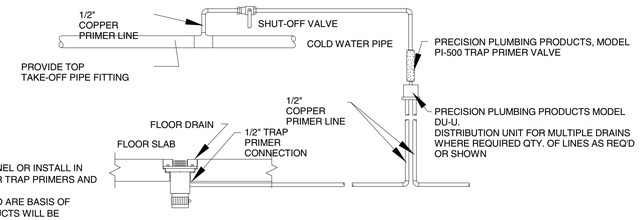
WESTON & SAMPSON COPYRIGHT 2018



1 CONCESSION STAND PLUMBING PART PLAN
1/4" = 1'-0"

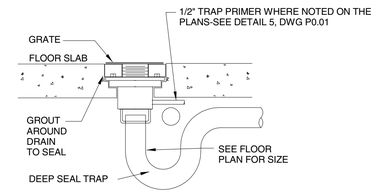


2 UNDERSLAB PLUMBING PART PLAN
1/4" = 1'-0"

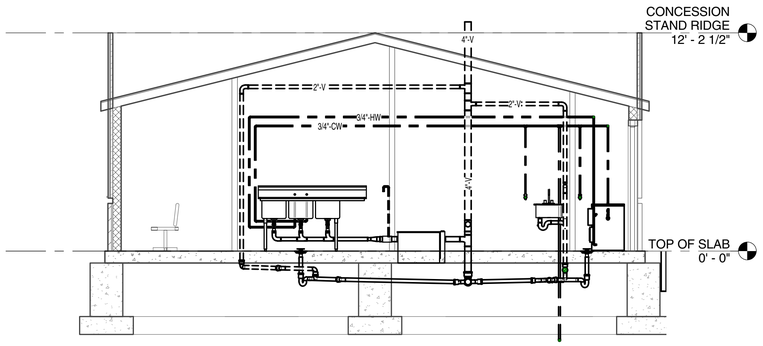


NOTE:
1. PROVIDE ACCESS PANEL OR INSTALL IN ACCESSIBLE SPACE FOR TRAP PRIMERS AND DISTRIBUTION UNITS
2. PRODUCTS INDICATED ARE BASIS OF DESIGN, EQUAL PRODUCTS WILL BE CONSIDERED.

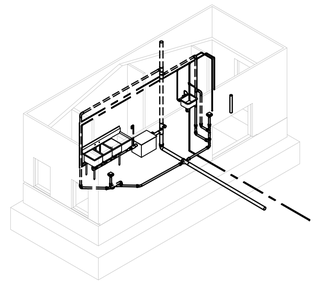
FLOOR DRAIN TRAP PRIMER DETAIL NTS 1



FLOOR DRAIN DETAIL NTS 2



3 SECTION - CONCESSION STAND PLUMBING
1/4" = 1'-0"



4 CONCESSION PLUMBING ISOMETRIC

Project:
IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES
264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson
Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard Suite 250
Foxborough, MA 02035
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

Seal:

Revisions:

Rev	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

PROJECT TRUE

SCALE: AS NOTED

Date:	JULY 26 2018
Drawn By:	RJH
Reviewed By:	SEH
Approved By:	SEH
W&S Project No:	2180076

Drawing Title:
PLUMBING PART PLANS

Sheet Number:
P-1.01

WESTON & SAMPSON COPYRIGHT 2018

1.0 - GENERAL

1.01 THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND SPECIFICATIONS. REFER TO CIVIL, ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR LOCATION, DIMENSIONS, AND DETAILS OF OPENINGS, SLEEVES, EMBEDMENTS, INSERTS, PADS, CURBS, DEPRESSIONS, ANCHOR BOLTS, AND OTHER PROJECT REQUIREMENTS NOT SHOWN ON STRUCTURAL DRAWINGS.

1.02 THE CONTRACTOR IS RESPONSIBLE FOR CHECKING, COORDINATING AND VERIFYING ALL DIMENSIONS IN THE FIELD PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY DISCREPANCY TO THE ARCHITECT AND ENGINEER AS A REQUEST FOR INFORMATION (RFI) BEFORE PROCEEDING WITH WORK.

1.03 THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING IN THE FIELD THE EXISTENCE AND LOCATION OF OVERHEAD, BURIED AND/OR EMBEDDED UTILITIES, AND DETERMINING LOCATIONS OF ALL EMBEDDED MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS AFFECTED BY THE WORK OF THIS CONTRACT.

1.04 ALL WORK IS TO CONFORM WITH THE FOLLOWING CODES AND STANDARDS:

(A) "780 CMR: MASSACHUSETTS AMENDMENTS MASSACHUSETTS STATE BUILDING CODE" - 9TH EDITION (MSBC)
(B) INTERNATIONAL BUILDING CODE, (IBC 2015)
(C) "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" - AMERICAN CONCRETE INSTITUTE (ACI 318)
(D) "MANUAL OF STEEL CONSTRUCTION" - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC 360)
(E) "STRUCTURAL WELDING CODE - STEEL" - AMERICAN WELDING SOCIETY (AWS D1.1)
(F) "SEISMIC PROVISION FOR STRUCTURAL STEEL BUILDINGS" -AMERICAN INSTITUTE OF STEEL CONSTRUCTION, (AISC)
(G) "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" - AMERICAN SOCIETY OF CIVIL ENGINEERS, (ASCE 7-10)

FOR ADDITIONAL CODES AND STANDARDS REFER TO SPECIFICATIONS.

1.05 THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER OF UNFORSEEN CONDITIONS THAT MAY BE UNCOVERED DURING DEMOLITION AND CONSTRUCTION AS A REQUEST FOR INFORMATION (RFI) BEFORE PROCEEDING WITH WORK.

1.06 PERMANENT STRUCTURAL ELEMENTS TO BE DESIGNED IN ACCORDANCE WITH PERFORMANCE SPECIFICATIONS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

(A) PRE-ENGINEERED METAL BUILDING
(B) MISC. ARCH COMPONENT SEISMIC SUPPORTS
(C) MISC. MECHANICAL AND ELECTRICAL COMPONENT AND SYSTEM SEISMIC SUPPORTS
(D) LIGHT GAUGE COLD FORMED STEEL FRAMING

FOR PERFORMANCE DESIGN REQUIREMENTS OF ELEMENTS LISTED ABOVE, REFER TO ADDITIONAL NOTES ON THESE SHEETS AND IN THE TECHNICAL SPECIFICATIONS. ALL DESIGN SUBMITTAL DRAWINGS AND CALCULATIONS SHALL BE CERTIFIED, SIGNED AND SEALED BY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE STATE OF MASSACHUSETTS.

1.07 STRUCTURAL REQUIREMENTS TO ACCOMMODATE FIXED EQUIPMENT, INCLUDING BUT NOT LIMITED TO ROOF TOP UNITS ARE INCIDENTAL TO THE REQUIREMENTS OF A SPECIFIC EQUIPMENT MANUFACTURER. ALL WORK SHALL CONFORM TO APPROVED EQUIPMENT MANUFACTURER'S SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ANY REQUIRED MODIFICATIONS TO ACCOMMODATE APPROVED EQUIPMENT DRAWINGS. SUCH MODIFICATIONS SHALL BE MADE AT NO COST TO THE OWNER.

1.08 DETAILS AND NOTES SHOWN ON STRUCTURAL DRAWINGS SHALL BE APPLICABLE TO ALL PARTS OF THE STRUCTURAL WORK EXCEPT WHERE SPECIFICALLY REQUIRED OTHERWISE BY CONTRACT DOCUMENTS. CONDITIONS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR LIKE CONDITIONS AS DETERMINED BY THE ENGINEER.

1.09 IN ACCORDANCE WITH SPECIFICATION SECTION 01 45 00, TESTING AND INSPECTION OF STRUCTURAL WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE COSTS FOR TESTING AND INSPECTIONS WILL BE PAID BY THE CONTRACTOR. PROVIDE TEST RESULTS TO THE ENGINEER IN A TIMELY MANNER.

1.10 THE CONTRACTOR SHALL DESIGN AND PROVIDE ALL REQUIRED SHORING AND TEMPORARY BRACING TO RESIST FORCES ON THE STRUCTURE THROUGHOUT THE CONSTRUCTION PERIOD.

2.0 - CAST IN PLACE CONCRETE

2.01 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318) AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301).

2.02 CONCRETE SHALL BE CONTROLLED CONCRETE, PROPORTIONED, MIXED AND PLACED IN THE PRESENCE OF A REPRESENTATIVE OF AN APPROVED TESTING AGENCY.

2.03 UNLESS NOTED OTHERWISE, CONCRETE SHALL BE NORMAL WEIGHT AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH AS FOLLOWS:

(A) ALL STRUCTURAL CONCRETE: 4500 PSI
(B) EXTERIOR WALKS AND SLABS: 4500 PSI

2.04 ALL PERMANENTLY EXPOSED VERTICAL AND HORIZONTAL CONCRETE SURFACES SHALL BE TREATED OR SEALED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

2.05 CONCRETE WORK SHALL BE COORDINATED WITH ALL METAL BUILDINGS, ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL WORK, AND ALL EQUIPMENT. THE CONTRACTOR SHALL VERIFY INSTALLATION AND LOCATIONS OF ALL EMBEDDED ITEMS INCLUDING BUT NOT LIMITED TO INSERTS, ANCHOR BOLTS, DOWELS, BLOCKOUTS, SLEEVES, EMBEDDED PIPING, AND EMBEDDED CONDUIT PRIOR TO CONCRETE PLACEMENT.

2.06 SEALANT FOR CONTROL/CONTRACTION JOINTS AND SAW CUT JOINTS SHALL BE SIKADUR 51 MANUFACTURED BY SIKA OR AN APPROVED EQUAL.

2.07 CONCRETE EXPOSED TO WEATHER (FREEZE-THAW CONDITIONS) IN THE FINISHED PROJECT SHALL BE AIR ENTRAINED PER SPECIFICATIONS REQUIREMENTS.

2.08 A MINIMUM OF 72 HOURS SHALL ELAPSE BETWEEN ADJACENT CONCRETE PLACEMENTS.

2.09 CONCRETE SLABS SHALL BE PLACED SO THAT THE SLAB THICKNESS IS AT NO POINT LESS THAN THAT INDICATED ON THE DRAWINGS.

2.10 PROVIDE A 3/4" CHAMFER ON ALL VERTICAL AND HORIZONTAL CORNERS EXPOSED TO VIEW UNLESS NOTED OTHERWISE.

2.11 ALL CONCRETE SHALL BE WATER CURED UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

2.12 NON-SHRINK, NON-METALLIC, GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 7,500 PSI (ASTM C942) AND A MINIMUM BOND STRENGTH OF 2,000 PSI AT 28-DAYS (ASTM C882). GROUT MAY BE EXTENDED WITH COARSE AGGREGATE PER THE MANUFACTURER'S RECOMMENDATIONS.

3.0 - CAST IN PLACE CONCRETE REINFORCEMENT

3.01 REINFORCEMENT DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO "ACI DETAILING MANUAL" - SP-66, "CRSI MANUAL OF STANDARD PRACTICE".

3.02 STEEL REINFORCEMENT, UNLESS NOTED OTHERWISE, SHALL CONFORM TO THE FOLLOWING:

(A) BARS, TIES, AND STIRRUPS___ASTM A615 GRADE 60
(B) WELDED WIRE FABRIC__ASTM A185, FLAT SHEETS

3.03 REINFORCING STEEL SHALL BE UNCOATED AND DEFORMED.

3.04 MINIMUM CONCRETE PROTECTIVE COVERING FOR REINFORCEMENT, UNLESS REQUIRED FOR FIRE PROTECTION OR NOTED OTHERWISE, SHALL BE AS FOLLOWS:

(A) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:____3"
(B) CONCRETE EXPOSED TO EARTH OR WEATHER:
(1) NO. 6 THRU NO. 18 BARS____2"
(2) NO. 5 BAR, W31 OR D31 WIRE AND SMALLER____2"
(C) SURFACES NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
(1) SLABS, WALLS, JOISTS:
(a) NO. 14 AND NO 18 BARS____2"
(b) NO. 11 BARS AND SMALLER____2"
(2) BEAMS, COLUMNS:
(a) PRIMARY REINFORCEMENT____2-1/2"
(b) TIES, STIRRUPS, SPIRALS____2"

3.05 REINFORCING STEEL SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS, CORNERS, AND INTERSECTIONS UNLESS OTHERWISE NOTED. REINFORCING SHALL BE LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS, UNLESS OTHERWISE NOTED.

3.06 FOR REINFORCING STEEL SPLICE LAP LENGTHS REFER TO THE TABLE PROVIDED UNLESS OTHERWISE INDICATED.

3.07 MECHANICAL SPLICES SHALL BE PERMITTED SUBJECT TO APPROVAL BY THE ENGINEER. MECHANICAL SPLICES SHALL DEVELOP AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE BAR. NO WELDED CONNECTIONS ARE PERMITTED.

3.08 WELDED WIRE FABRIC SHALL BE LAPPED (1) SQUARE PLUS (2) INCHES WHERE REQUIRED AND SHALL BE WIRED TOGETHER AT ALL LAPS. WWF SHALL BE SUPPORTED BY CHAIRS AND/OR CARRYING BARS PRIOR TO CONCRETE PLACEMENT.

3.09 REINFORCEMENT SHALL NOT BE TACK WELDED.

3.10 NOTIFY THE TESTING LAB AND ENGINEER A MINIMUM OF 48 HOURS PRIOR TO SCHEDULED CONCRETE PLACEMENT IN ORDER TO ACCOMMODATE INSPECTION OF REINFORCEMENT AND CONCRETE TESTING. NO CONCRETE SHALL BE PLACED WITHIN 48 HOURS OF SUCH NOTIFICATION.

3.11 WHERE REINFORCEMENT IS NOT SHOWN ON DRAWINGS, PROVIDE REINFORCEMENT IN ACCORDANCE WITH APPLICABLE DETAILS AS DETERMINED BY THE ARCHITECT AND ENGINEER. IN NO CASE SHALL REINFORCEMENT BE LESS THAN THE MINIMUM REINFORCEMENT PERMITTED BY THE CODES, NOR LESS THAN THE FOLLOWING:

(E) CONCRETE WALLS: 0.0025 x GROSS CONCRETE AREA IN EACH DIRECTION

3.12 WHERE REINFORCEMENT IS REQUIRED IN SECTION, REINFORCEMENT IS CONSIDERED TYPICAL WHEREVER THE SECTIONS APPLIES.

3.13 WHERE THERE IS CONFLICT BETWEEN LOCATIONS OF COLUMN VERTICAL BARS AND BEAM HORIZONTAL BARS, THE COLUMN BARS SHALL REMAIN IN THEIR DESIGNATED POSITIONS AND BEAM BAR LOCATIONS SHALL BE ADJUSTED.

3.14 DOWELS SHALL MATCH BAR SIZE, NUMBER AND SPACING, UNLESS NOTED OTHERWISE.

4.0 - PRE-ENGINEERED METAL BUILDING

4.01 THE PRE-ENGINEERED METAL BUILDING STRUCTURAL SYSTEMS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PRIMARY, SECONDARY, AND SUPPLEMENTAL FRAMING.

4.02 FOR FRAMED OPENINGS AND OTHER INFORMATION NOT SHOWN ON STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL, EQUIPMENT, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS.

4.03 FOR ROOF-SUSPENDED AND WALL HUNG HVAC UNITS AND OTHER SUSPENDED MECHANICAL EQUIPMENT, REFER TO MECHANICAL AND EQUIPMENT DRAWINGS.

4.04 THE METAL BUILDING SYSTEMS SHALL INCLUDE ROOF CURBS, SUPPLEMENTAL FRAMING AND/OR SPECIAL PURLIN AND GIRT DESIGNS TO ACCOMMODATE LOCATIONS, DETAILS, AND CONCENTRATED DEAD LOADS OF ALL ROOF-TOP, ROOF-SUSPENDED, LIGHTING AND WALL HUNG EQUIPMENT AND SYSTEMS. THE CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS, ATTACHMENT REQUIREMENTS, AND ACTUAL WEIGHTS WITH THE METAL BUILDING MANUFACTURER. THE CONTRACTOR (OR THE INSTALLING SUBCONTRACTOR) SHALL PROVIDE ALL HANGERS AND SUPPORTS FOR EQUIPMENT AND SYSTEMS INSTALLATION. HANGERS AND SUPPORTS SHALL COMPLY WITH THE PRE-ENGINEERED METAL BUILDING MANUFACTURERS RECOMMENDATIONS AND SUGGESTED DETAILS. IF THE ROOF PURLINS CANNOT SUPPORT THE WEIGHT OF THE BUILDING SYSTEMS AND EQUIPMENT SHOWN IN THESE CONTRACT DOCUMENTS, THEN THE METAL BUILDING MANUFACTURER SHALL PROVIDE SUPPLEMENTAL FRAMING TO SUPPORT THE REQUIRED BUILDING SYSTEMS AND EQUIPMENT LOADS AT NO ADDITIONAL COST TO THE OWNER.

4.05 THE PRE-ENGINEERED METAL BUILDING SHALL BE ERECTED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S ERECTION DRAWINGS AND INSTALLATION INSTRUCTIONS .

4.06 THE PRE-ENGINEERED METAL BUILDING MANUFACTURER, PRIOR TO SUBMITTING FOUNDATION REINFORCING SHOP DRAWINGS, SHALL SUBMIT ANCHOR BOLT PLANS, COLUMN BASE PLATE DETAILS, AND FOUNDATION REACTIONS TO THE ENGINEER FOR APPROVAL. FOUNDATIONS FOR THE PRE-ENGINEERED METAL BUILDING SHALL NOT BE CONSTRUCTED UNTIL THE ANCHOR BOLT PLANS, COLUMN BASE PLATE DETAILS, AND FOUNDATION REACTIONS SHOP DRAWINGS HAVE BEEN APPROVED BY THE ENGINEER.

4.07 THE CONTRACTOR SHALL FURNISH ALL ANCHOR BOLTS FOR THE PRE-ENGINEERED METAL BUILDING. THE ANCHOR BOLT LAYOUT, QUANTITY, SIZE, AND PROJECTION SHALL BE IN ACCORDANCE WITH THE PRE-ENGINEERED METAL BUILDING MANUFACTURER'S APPROVED ANCHOR BOLT PLANS. THE ANCHOR BOLT DETAILS AND EMBEDMENT LENGTH SHALL BE IN ACCORDANCE WITH THE STRUCTURAL DRAWINGS.

4.08 ALL WORK SHALL CONFORM WITH THE APPROVED SHOP DRAWINGS. NO MODIFICATIONS TO THE PRE-ENGINEERED METAL BUILDING SHALL BE MADE WITHOUT AUTHORIZATION BY THE PRE-ENGINEERED METAL BUILDING MANUFACTURER AND APPROVAL OF THE ARCHITECT AND ENGINEER.

4.09 THE PRE-ENGINEERED METAL BUILDING FOUNDATIONS HAVE BEEN DESIGNED AND DETAILED TO ACCOMMODATE THE TYPICAL REQUIREMENTS OF A PRE-ENGINEERED METAL BUILDING. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ANY REQUIRED MODIFICATIONS TO ACCOMMODATE ANY SPECIFIC REQUIREMENTS OF THE APPROVED PRE-ENGINEERED METAL BUILDING MANUFACTURER. THE COSTS OF SUCH MODIFICATION SHALL BE BORNE BY THE CONTRACTOR.

4.10 ALL PRIMARY, SECONDARY, AND SUPPLEMENTAL FRAMING EXPOSED TO THE WEATHER OR CORROSIVE CONDITIONS (WITHIN LIMITS OF THE WASH BAY AND CANOPIES REGARDLESS OF EXPOSURE) SHALL BE HOT-DIPPED GALVANIZED. THIS INCLUDES BUT IS NOT LIMITED TO SECONDARY FRAMING FOR OVERHEAD DOORS, PERSONNEL DOORS, WINDOWS, AND TRANSLUCENT PANELS AND ALL FASTENERS. ALL OTHER STEEL FRAMING SHALL BE SHOP PRIMED GRAY.

4.11 PROTECT PRE-ENGINEERED METAL BUILDING COMPONENTS FROM WEATHER. REPAIR DAMAGED COATINGS AND AREAS OF RUST.

4.12 METAL BUILDING DESIGN DRIFT LIMITS FOR FRAMING SUPPORTING MEZZANINES SHALL BE LIMITED TO H/200 FOR A 10 YEAR WIND.

4.13 BUILDING DEFLECTION LIMITS SHALL CONFORM TO THE REQUIREMENTS LISTED IN THE NINTH EDITION OF THE MASSACHUSETTS STATE BUILDING CODE, AND THE TABLE ON THIS SHEET, WHICHEVER IS MORE STRINGENT.

5.0 - FOUNDATIONS

5.01 CONTRACTOR DURING BIDDING AND SUBSEQUENT CONSTRUCTION AND REPRESENT CONDITIONS ONLY AT THESE SPECIFIC LOCATIONS AT THE TIME THEY ARE MADE.

5.02 THE CONTRACTOR SHALL DESIGN AND PROVIDE ALL TEMPORARY EARTH SUPPORT, SHORING AND BRACING REQUIRED TO PERFORM THE WORK IN ACCORDANCE WITH OSHA, STATE AND LOCAL REQUIREMENTS.

5.03 THE CONTRACTOR SHALL DESIGN AND PROVIDE SHEETING, SHORING, BRACING, AND/OR UNDERPINNING IN ORDER TO PROTECT EXISTING UTILITIES FROM EXCESSIVE MOVEMENTS DURING THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH OSHA, STATE & LOCAL REQUIREMENTS.

5.04 THE CONTRACTOR SHALL CARRY OUT CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER. DEWATER ANY AREAS REQUIRING EXCAVATION IN ADVANCE OF PERFORMING EXCAVATION. MAINTAIN GROUNDWATER LEVELS AT LEAST 2 FEET BELOW PLANNED SUBGRADES.

5.05 ALL SUBGRADES TO RECEIVE FILL MATERIALS. FOUNDATIONS, SLABS OR OTHER CONSTRUCTION SHALL BE FREE OF RUNNING OR STANDING WATER PRIOR TO PLACMENT.

5.06 SPREAD FOOTINGS AND PIERS AS SHOWN ARE DESIGNED FOR ESTIMATED METAL BUILDING REACTIONS AND ARE APPROXIMATE IN SIZE. THESE ELEMENTS ARE SUBJECT TO CHANGE IN DIMENSION (IF REQUIRED) WITH THE APPROVED METAL BUILDING SUBMITTAL. ANY CHANGES SHALL COME AT NO ADDITIONAL COST TO THE OWNER.

5.07 FOUNDATIONS SHALL BE INSTALLED IN THE GEOMETRY SHOWN IN THE PLANS, ANY ROCK ENCOUNTERED DURING EXCAVATION SHALL BE REMOVED TO CLEAR THE REQUIRED FOUNDATION GEOMETRY.

5.08 SPREAD FOOTING BEARING SURFACES SHALL BE EXCAVATED BY EQUIPMENT WITH A SMOOTH, TOOTHLESS CUTTING EDGE.

5.09 REFER TO THE GEOTECHNICAL REPORT PREPARED BY WESTON & SAMPSON DATED 04/13/2018 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

6.0 DESIGN LOADS

LOADS, LOADING CONDITIONS AND COMBINATIONS SHALL BE IN ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING CODE 9TH EDITION, IBC 2015 AND ASCE 7-10 AS APPLICABLE. LOADS DESIGNATED BY "PSF" ARE UNIFORM LOADS, THOSE DESIGNATED BY "LB" ARE CONCENTRATED LOADINGS AND SHALL BE APPLIED AS REQUIRED BY THE MSBC.

BUILDING OCCUPANCY CATEGORY___II

6.01 DEAD LOADS
(A) SELF-WEIGHT OF ALL ATTACHED AND SUSPENDED ELEMENTS, CONSULT APPLICABLE DRAWINGS AND TRADES FOR FURTHER INFORMATION

6.02 LIVE LOADS
(A) FLOOR LIVE LOADS
(1) ASSUMED MINIMUM ___100 PSF
(B) ROOF LIVE LOADS
(1) CONSTRUCTION___20 PSF, 300 LB

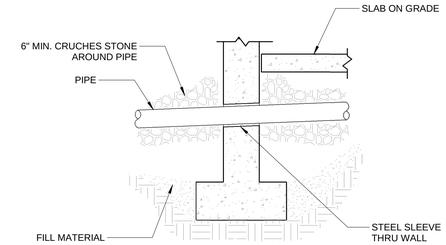
6.03 ROOF SNOW LOAD
(A) GROUND SNOW LOAD, PG___40 PSF
(B) MIN. FLAT ROOF SNOW LOAD, PF___35 PSF + DRIFT
(C) SNOW EXPOSURE FACTOR, CE___1.0
(D) SNOW LOAD IMPORTANCE FACTOR, I___1.0, II
(E) THERMAL FACTOR, CT___1.0

6.04 WIND DESIGN DATA
(A) BASIC WIND SPEED, V___126 MPH
(B) WIND IMPORTANCE FACTOR, I__1.0, II
(C) WIND EXPOSURE____B

6.05 EARTHQUAKE DESIGN DATA
(A) SEISMIC IMPORTANCE FACTOR, I____1.0, II
(B) MAPPED SPECTRAL RESPONSE ACCELERATIONS, SS, S1____0.201G, 0.068G
(C) SITE CLASS___B
(D) SPECTRAL RESPONSE COEFFICIENTS, SDS AND SD1____0.214G, 0.109G
(E) DESIGN CATEGORY____B

6.06 GEOTECHNICAL INFORMATION
(A) REFER TO WESTON & SAMPSON REPORT DATED 04/13/2018 FOR RECOMMENDATIONS.
THE ENGINEER SHALL VERIFY CONDITIONS OF EXISTING SUBGRADE PRIOR TO PLACING CONCRETE.

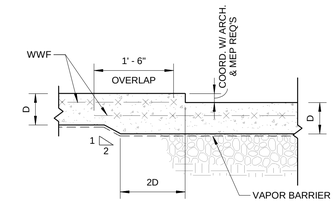
6.07 HAZARDOUS MATERIALS
(A) REFER TO WESTON & SAMPSON MEMO DATED MARCH 2018 FOR INFORMATION.



NOTE(S):

1. PIPE SHALL NOT PASS UNDER OR THRU WALL FOOTING. LOWER FOOTING BY STEPPING TO AVOID INTERFERENCE.

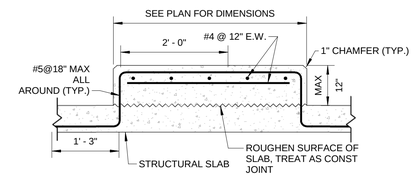
1 PIPE THROUGH FOUNDATION WALL
SCALE: 3/4" = 1'-0"



NOTE(S):

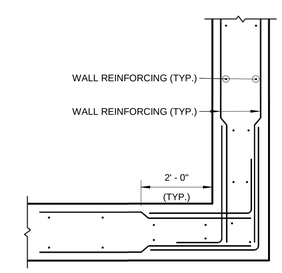
1. CORRDINATE LOCATIONS WITH ARCH. DWGS.

2 SLAB AT DEPRESSIONS
SCALE: 3/4" = 1'-0"

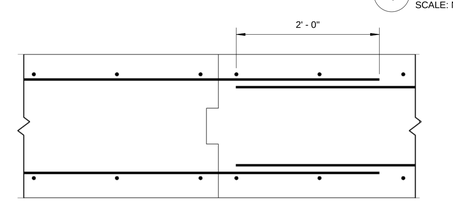


THE EXACT SIZE, SHAPE AND LOCATION OF EQUIPMENT (HOUSEKEEPING) PAD(S) SHALL BE DETERMINED BY THE CONTRACTOR AFTER APPROVAL OF SHOP DRAWINGS FOR EQUIPMENT. ANCHOR BOLTS WHERE REQUIRED SHALL BE SIZED AND LOCATED ACCORDING TO MANUFACTURER'S REQUIREMENTS.

3 CONCRETE EQUIPMENT PAD
SCALE: 3/4" = 1'-0"



4 PLAN OF TYPICAL CORNER
SCALE: NOT TO SCALE



5 TYPICAL WALL CONSTRUCTION JOINT
SCALE: NOT TO SCALE

NOTE(S):
1. JOINT SPACING TO BE A MAXIMUM OF 30 FEET

Project:
IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson Engineers, Inc.
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 (800) SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

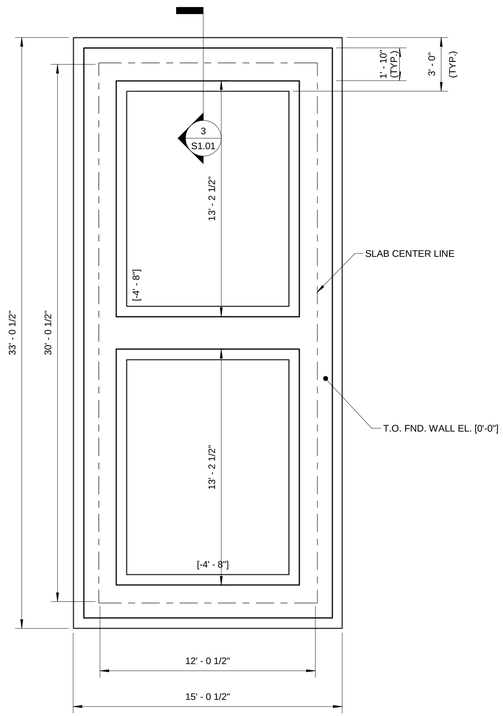
SCALE: AS NOTED

Date:	JULY 26 2018
Drawn By:	SAC
Reviewed By:	Checker
Approved By:	Approver
W&S Project No:	2180076
W&S File No:	

Drawing Title:
GENERAL NOTES / TYP. DETAILS

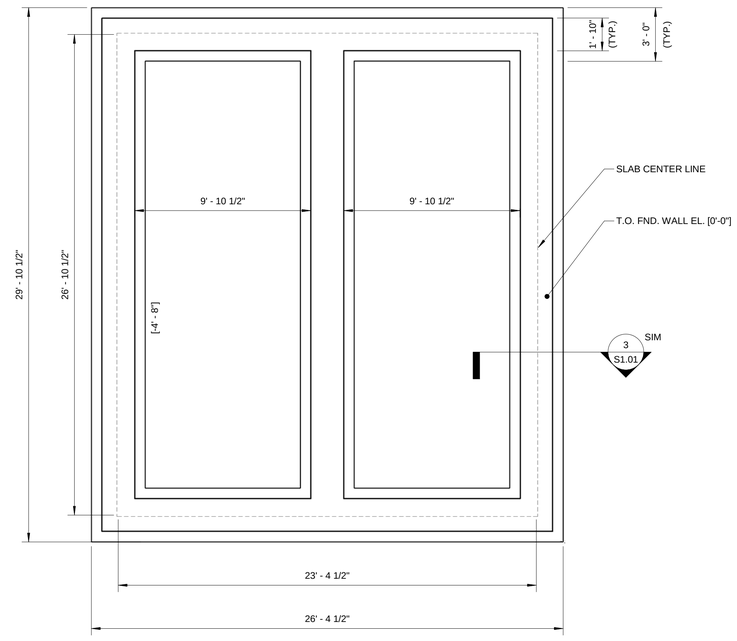
Sheet Number:
S0.01

WESTON & SAMPSON COPYRIGHT 2018



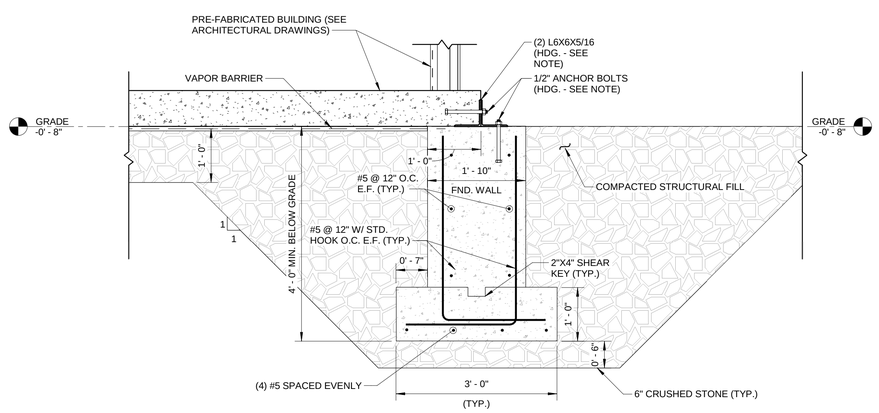
1 CONCESSION FOUNDATION PLAN

SCALE: 1/4" = 1'-0"



2 RESTROOM FOUNDATION PLAN

SCALE: 1/4" = 1'-0"



NOTE:
COORDINATE FOUNDATION CONNECTION WITH PRE-FABRICATED BUILDING MANUFACTURER.

3 TYPICAL FOUNDATION WALL SECTION

SCALE: 3/4" = 1'-0"

NOTES:
1. COORDINATE ALL WORK (INCLUDING DIMENSIONS, FINISH DETAILS, ETC.) WITH THE PRE-FABRICATED BUILDING MANUFACTURER
2. [XX'-XX"] INDICATES BOTTOM OF FOOTING ELEVATION. ALL EXTERIOR FOOTINGS SHALL BE LOCATED A MINIMUM 4'-0" BELOW FINISH GRADE.
3. A RELATIVE ELEVATION OF 0'-0" CORRELATES WITH A PROJECT ELEVATION OF 126.5'

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson Engineers, Inc.
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 (800) SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

SCALE: AS NOTED

Date:	JULY 26, 2018
Drawn By:	SAC
Reviewed By:	NMS
Approved By:	
W&S Project No:	2180076
W&S File No:	

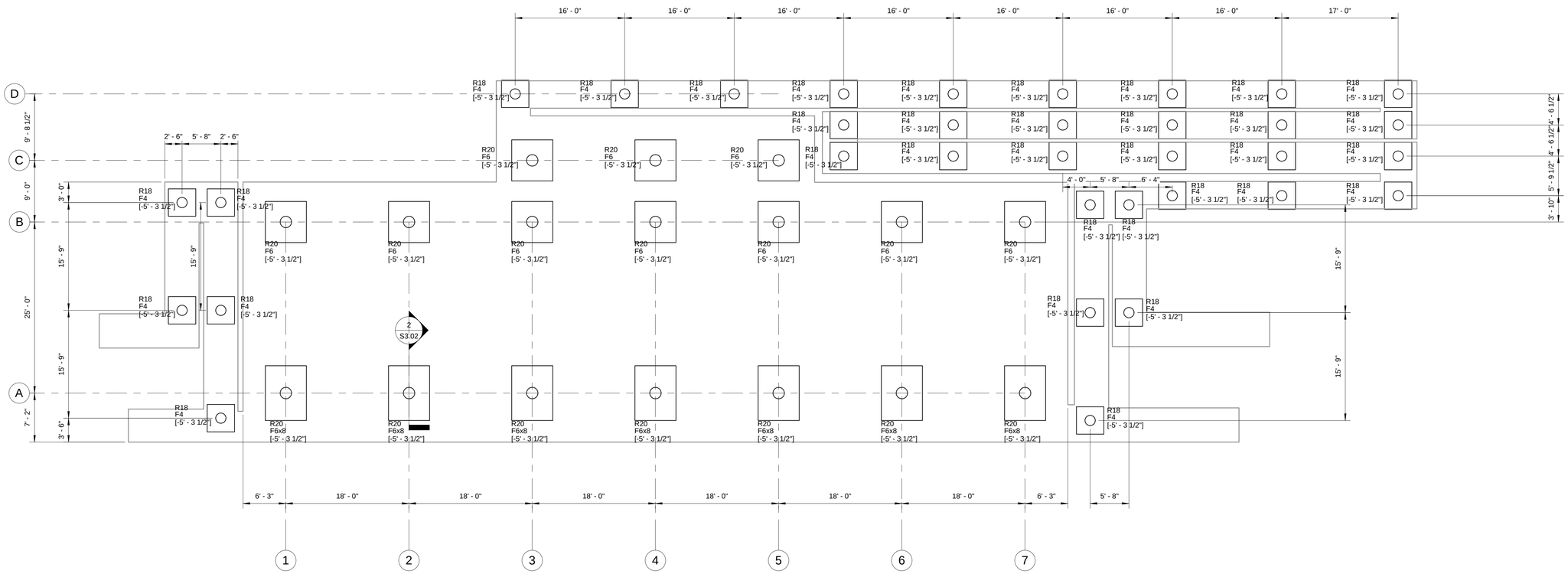
Drawing Title:

BUILDING PLANS AND SECTIONS

Sheet Number:

S1.01

WESTON & SAMPSON COPYRIGHT 2018



NOTE:
1. BLEACHER MANUFACTURER TO PROVIDE FRAMING REACTIONS PRIOR TO CONSTRUCTING FOUNDATIONS.
2. COORDINATE ALL DIMENSIONS WITH BLEACHER SHOP DRAWINGS.

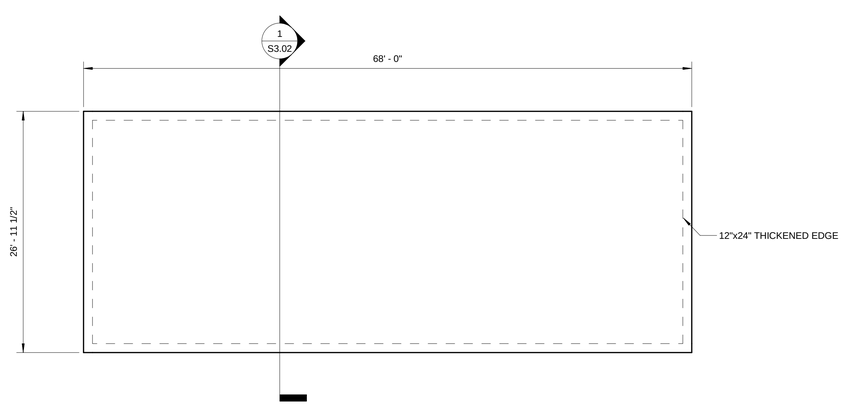
1 HOME BLEACHER FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOOTING SCHEDULE						
MARK	DIMENSIONS			REINFORCEMENT		COMMENTS
	WIDTH [FT.]	LENGTH [FT.]	THICKNESS [IN.]	LONG WAY	SHORT WAY	
F4	4.0	4.0	18	(4) #6	(4) #6	#5 @ 12" E.W. TOP
F6	6.0	6.0	18	(6) #6	(6) #8	#5 @ 12" E.W. TOP
F6x8	6.0	8.0	18	(9) #6	(6) #8	#5 @ 12" E.W. TOP

PIER SCHEDULE						
MARK	DIAMETER	T.O. PIER ELEVATION	REINFORCEMENT		COMMENTS	Length
			VERTICAL	TIES		
R18	1' - 6"	+0' - 0"	(8) #6	#3 @ 12"	(3) #3 TIES IN TOP 5"	3' - 0"
R20	1' - 8"	+0' - 0"	(10) #6	#3 @ 12"	(3) #3 TIES IN TOP 5"	3' - 0"

NOTES:
1. F# - INDICATES NEW CONCRETE FOOTIING TYPE. SEE "FOOTING SCHEDULE".
2. R# - INDICATES NEW CONCRETE ROUND PIER TYPE. SEE "PIER SCHEDULE".



2 AWAY BLEACHER FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson Engineers, Inc.
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 (800) SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Issued For:
PERMITTING SET
-NOT FOR CONSTRUCTION-

SCALE: AS NOTED

Date: JULY 26, 2018
Drawn By: SAC
Reviewed By: NMS
Approved By:

W&S Project No: 2180076
W&S File No:

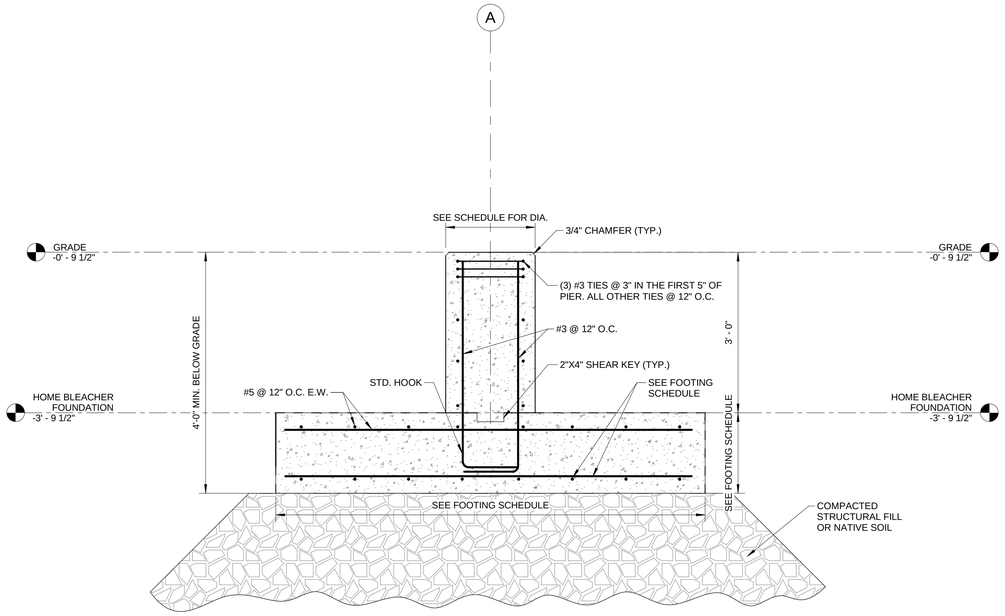
Drawing Title:

BLEACHER FOUNDATION PLANS

Sheet Number:

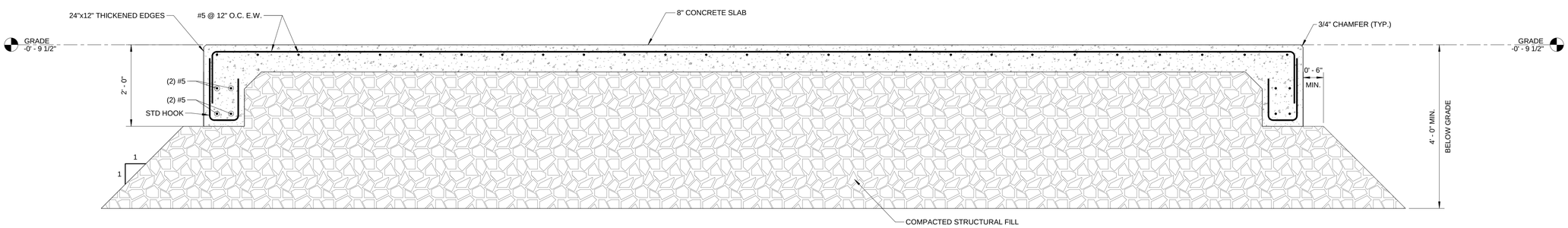
S3.01

WESTON & SAMPSON COPYRIGHT 2018



2 HOME BLEACHER SECTION

SCALE: 3/4" = 1'-0"



1 AWAY BLEACHER SECTION

SCALE: 3/4" = 1'-0"

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson Engineers, Inc.
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 (800) SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Issued For:

PERMITTING SET
-NOT FOR CONSTRUCTION-

SCALE: AS NOTED

Date:	JULY 26, 2018
Drawn By:	SAC
Reviewed By:	NMS
Approved By:	Approver
W&S Project No:	2180076
W&S File No:	

Drawing Title:

BLEACHER FOUNDATION SECTIONS

Sheet Number:

S3.02

WESTON & SAMPSON COPYRIGHT 2018

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AC	ALTERNATING CURRENT
A	AMPERE
ATC	AUTOMATIC TEMPERATURE CONTROLS
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER
C	CONDUIT
CKT	CIRCUIT
CB	CIRCUIT BREAKER
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRIC METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EF	EXHAUST FAN
FL	FLOOR
FLA	FULL LOAD AMPERE
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
IG	ISOLATED GROUND
JB	JUNCTION BOX
KVA	KILOVOLT AMPERES
KW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
MC	MECHANICAL CONTRACTOR
MTD	MOUNTED
MTG	MOUNTING
NMC	NON-METALLIC CONDUIT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PNL	PANELBOARD
PH	PHASE
PVC	POLYVINYL CHLORIDE CONDUIT
RSC	RIGID GALVANIZED STEEL CONDUIT
SF	SUPPLY FAN
SS	SAFETY SWITCH
TEL	TELEPHONE
TRF	TRANSFORMER
V	VOLTS
W	WATTS OR WIRE
WP	WEATHERPROOF
4WSN	4-WIRE SOLID NEUTRAL

RECEPTACLE ABBREVIATIONS

GFI	GROUND FAULT CIRCUIT INTERUPTER, PERSONAL PROTECTION
WP	WEATHERPROOF RECEPTACLE WITH COVERPLATE LISTED FOR WET LOCATION WITH AN ATTACHMENT PLUG INSERTED.

ELECTRICAL LEGEND

1,3 LP1B	HOMERUN TO PANELBOARD, NUMBER OF TICKS INDICATES NUMBER OF #12 AWG CONDUCTORS CONTAINED IN RACEWAY. TWO (2) #12 AWG SHALL NOT BE INDICATED BY TICKS, NUMERALS 1 AND 3 INDICATE CIRCUITS IN PANELBOARD. RACEWAYS LARGER THAN 1/2" AND CONDUCTORS LARGER THAN #12 AWG SHALL BE INDICATED ON THE DRAWINGS. PROVIDE AN INSULATED GREEN GROUND WIRE IN ALL RACEWAYS MINIMUM SIZE TO BE #12AWG.
	RACEWAY RUN ABOVE GROUND
	RACEWAY RUN UNDERGROUND
	PANELBOARD-SURFACE MOUNTED
T	DRY TYPE TRANSFORMER
PB	PULL BOX. TYPE AS NOTED ON THE DRAWINGS OR AS REQUIRED BY N.E.C.
	DUPLEX CONVENIENCE OUTLET RATED 20A, 125V, U-SLOT GROUNDED TYPE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER LINE. ALL OTHER MOUNTING HEIGHTS SHALL BE AS NOTED ADJACENT TO THE SYMBOL. REFER TO RECEPTACLE ABBREVIATIONS FOR SPECIAL PURPOSE RECEPTACLES.
	DOUBLE DUPLEX CONVENIENCE OUTLET RATED 20A, 125V, U-SLOT GROUNDED TYPE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER LINE. ALL OTHER MOUNTING HEIGHTS SHALL BE AS NOTED ADJACENT TO THE SYMBOL. REFER TO RECEPTACLE ABBREVIATIONS FOR SPECIAL PURPOSE RECEPTACLES.
S_a	SINGLE POLE SWITCH (120/277V) MOUNTED 4'-0" ABOVE FINISHED FLOOR. ALL OTHER MOUNTING HEIGHTS SHALL BE AS NOTED ON THE DRAWINGS. "a" SUBSCRIPT DENOTES CIRCUITS CONTROLLED.
T1	SPORTS LIGHT POLE - 'T1' INDICATES POLE NUMBER
	PEDESTRIAN LIGHT FIXTURE
PHH	HAND HOLE "PHH" POWER HAND HOLE "CHH" COMMUNICATIONS HAND HOLE

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC ONLY. THE EXACT LOCATION, MOUNTING HEIGHTS, SIZE OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE COORDINATED AND DETERMINED IN THE FIELD.
2. ALL STRAIGHT FEEDER, BRANCH CIRCUIT AND AUXILIARY SYSTEM CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 150 FEET. EXACT SIZES OF PULL BOXES AND LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ELECTRICAL CONTRACTOR.
3. SLEEVES ARE TO BE UTILIZED FOR PASSAGE OF CONDUITS THROUGH FLOORS OR WALLS. CONDUITS AND BOXES ARE TO BE SUPPORTED BY THE USE OF PRESET FASTENERS INSTALLED IN FLOORS, WALLS OR COLUMNS. CONDUITS AND BOXES ARE TO BE INSTALLED CONCEALED IN MASONRY WALLS AND ABOVE HUNG CEILINGS. ALL SLEEVES ARE TO BE SEALED WITH APPROVED FIRE STOPPING SEALANT.
4. WORK SHALL CONFORM TO THE MASSACHUSETTS ELECTRICAL CODE, MASSACHUSETTS BUILDING CODE, NFPA AND REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION.
5. THE WORD "CONTRACTOR" AS USED IN THE "ELECTRICAL WORK" SHALL MEAN THE ELECTRICAL SUBCONTRACTOR.
6. CONTRACTOR SHALL PAY FOR ALL PERMITS, INSURANCE AND TESTS, AND SHALL PROVIDE LABOR AND MATERIAL TO COMPLETE THE ELECTRICAL WORK SHOWN.
7. CONTRACTOR SHALL PAY ELECTRIC UTILITY COMPANY BACKCHARGES AND PROVIDED COORDINATION WITH SAME.
8. EXCEPT AS OTHERWISE NOTED, THE ELECTRICAL WORK SHALL INCLUDE DEMOLITION, PANELBOARDS, CIRCUIT BREAKERS, FEEDERS, WIRING, RACEWAYS, LIGHTING FIXTURES, DEVICES, TELEPHONE AND DATA OUTLETS, SAFETY SWITCHES, FIRE ALARM AND NURSE CALL SYSTEMS, TRANSFORMERS AND CONNECTION NECESSARY TO OPERATE MOTORS AND OTHER EQUIPMENT.
9. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY LIGHTING AND POWER AND PAY ALL ENERGY CHARGES.
10. DURING CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL KEEP HIS PORTION OF THE WORK NEAT, CLEAN AND ORDERLY.
11. ALL SYSTEMS SHALL BE TESTED FOR SHORT CIRCUIT AND GROUNDS PRIOR TO ENERGIZING AND ANY DEFECTS SHALL BE CORRECTED.
12. ALL CUTTING AND PATCHING REQUIRED FOR ELECTRICAL WORK SHALL BE INCLUDED AS PART OF THIS SECTION.
13. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED FOR ELECTRICAL EQUIPMENT. WHERE SPECIFIED ELECTRICAL EQUIPMENT IS SUBSTITUTED, THE ELECTRICAL CONTRACTOR SHALL SUBMIT COMPLETE SPECIFICATIONS ON THE SUBSTITUTE AS WELL AS THE ITEM ORIGINALLY SPECIFIED.
14. MATERIALS SHALL BE SPECIFICATION GRADE AND UL LISTED.
15. WHERE MATERIAL IS CALLED OUT IN THE LEGEND BY MANUFACTURER, TYPE OR CATALOG NUMBER, SUCH DESIGNATIONS ARE TO ESTABLISH STANDARDS OR DESIRED QUALITY. ACCEPTANCE OR REJECTIONS OF PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER.
16. WORK SHALL BE COORDINATED WITH THAT OF OTHER TRADES TO ELIMINATE INTERFERENCES.
17. EXACT LOCATIONS OF MECHANICAL EQUIPMENT, DEVICES, ETC. SHALL BE VERIFIED WITH THE GENERAL CONTRACTOR PRIOR TO ROUGHING FOR SAME.
18. ELECTRICAL CONTRACTOR SHALL OBTAIN SHOP DRAWINGS/SPECIFICATIONS OF ALL EQUIPMENT FROM THE GENERAL CONTRACTOR PRIOR TO PURCHASING AND INSTALLING ELECTRICAL EQUIPMENT FOR SAME. NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN ACTUAL EQUIPMENT INSTALLED AND CONTRACT DOCUMENTS.
19. ELECTRICAL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF WHICH SYSTEM IS PUT INTO SERVICE.
20. WORK SHALL BE GROUNDED IN ACCORDANCE WITH CODE REQUIREMENTS. COMPLETE EQUIPMENT (INSULATED GREEN WIRE) GROUNDING SYSTEM SHALL BE INSTALLED.
21. PANELBOARDS SHALL BE DEAD FRONT, THERMAL MAGNETIC BOLT-ON CIRCUIT BREAKER TYPE, DESIGNED FOR SURFACE OR FLUSH MOUNTING AS INDICATED ON PLAN, AND HAVING CONNECTIONS TO 120/208 OR 277/480 VOLT, 3 PHASE, 4 WIRE SERVICE. ALL BUS BARS SHALL BE COPPER. CABINETS SHALL BE MADE OF CODE GAUGE GALVANIZED SHEET STEEL, WITH A MINIMUM OF 4 INCH GUTTERS, DOOR IN DOOR CONSTRUCTION, LOCKED DOOR, AND FLUSH HINGES. TYPEWRITTEN INDEX SHALL BE MOUNTED ON DOOR INSIDE TRANSPARENT COVER INDICATING LOAD SERVED. PANELS SHALL INCLUDE SEPARATE EQUIPMENT GROUND BUS.
22. PANELBOARDS, DISCONNECT SWITCHES, AND CONTROLLERS SHALL HAVE NAMEPLATES OF BLACK LAMINATED PLASTIC WITH ENGRAVED WHITE LETTERS, SECURED WITH SELF-TAPPING SCREWS.
23. CONNECTIONS AT MOTORS SHALL BE MADE WITH 18" LENGTH OF 1/2 INCH FLEXIBLE LIQUID TIGHT CONDUIT.
24. CONTRACTOR SHALL PHASE BALANCE PANELBOARDS IN THE FIELD. LOAD ON EACH PHASE SHALL BE BALANCED WITHIN 10% OF EACH OTHER.
25. TOGGLE SWITCHES SHALL BE OF THE SINGLE POLE A.C. QUIET TOGGLE TYPE FOR MOUNTING IN A SINGLE-GANG SPACING. TOGGLE SWITCHES SHALL BE FULLY RATED 20 AMPERES AT 120/277 VOLT.
26. DUPLEX WALL RECEPTACLES SHALL BE 2 POLE, 3 WIRE, GROUNDING TYPE 20 AMPERE, 125 VOLT WITH METAL PLASTER EARS. RECEPTACLES SHALL BE NEMA STANDARD CONFIGURATION 5-20R.
27. FUSED OR UNFUSED SAFETY SWITCHES SHALL BE TOTALLY ENCLOSED, HEAVY DUTY TYPE. SWITCHES SHALL HAVE VOLTAGE, HORSEPOWER AND AMPERE RATING SUITABLE FOR THE APPLICATION. PROVIDE NUMBER OF POLES AS REQUIRED. SWITCHES LOCATED EXTERIOR TO THE BUILDING OR IN DAMP/WET LOCATIONS SHALL BE IN A NEMA 3R ENCLOSURE.
28. FUSES SHALL BE DUAL ELEMENT, TIME DELAY TYPE, AS MANUFACURED BY BUSSMAN, RELIANCE OR APPROVED EQUAL.
29. FURNISH AND INSTALL SLEEVES IN FLOORS, BEAMS, WALLS, ETC. REQUIRED FOR INSTALLING THIS WORK.
30. CONDUIT PASSING THROUGH FIRE RATED WALLS AND FLOORS SHALL BE PROVIDED WITH ALL NECESSARY MATERIALS TO ENSURE THAT THE FIRE RATED INTEGRITY IS MAINTAINED.
31. LFEEDER TAPS WILL NOT BE ALLOWED IN PANELBOARD GUTTERS.
32. CONTRACTOR SHALL CHECK EXISTING CONDITIONS TO DETERMINE EXACT EXTENT OF WORK TO BE PERFORMED PRIOR TO BIDDING. DIMENSIONS RELEVANT TO EXISTING WORK SHALL BE VERIFIED IN THE FIELD.
33. IN AREAS NOT AFFECTED BY THIS RENOVATION, THIS SUBCONTRACTOR SHALL MAINTAIN CONTINUITY OF ELECTRIC SERVICE.
34. WHERE CONNECTIONS ARE MADE IN EXISTING PANELS, THE PANEL INDEX SHALL BE REVISED TO INDICATE THE NEW LOADS SERVED. NEW CIRCUIT BREAKERS ADDED TO EXISTING PANELS SHALL BE THE SAME FRAME SIZE, VOLTAGE RATING AND INTERRUPTING CAPACITY AS EXISTING PANEL AND CIRCUIT BREAKERS.
35. ELECTRICAL SHUTDOWN SHALL BE AT A TIME AND DATE APPROVED BY THE OWNER.
36. PROVIDE AS-BUILT "CADD" DRAWINGS AT THE COMPLETION OF THE PROJECT.

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	DNM
Reviewed By:	RFM
Approved By:	RFM
W&S Project No:	2180076
W&S File No:	

Drawing Title:

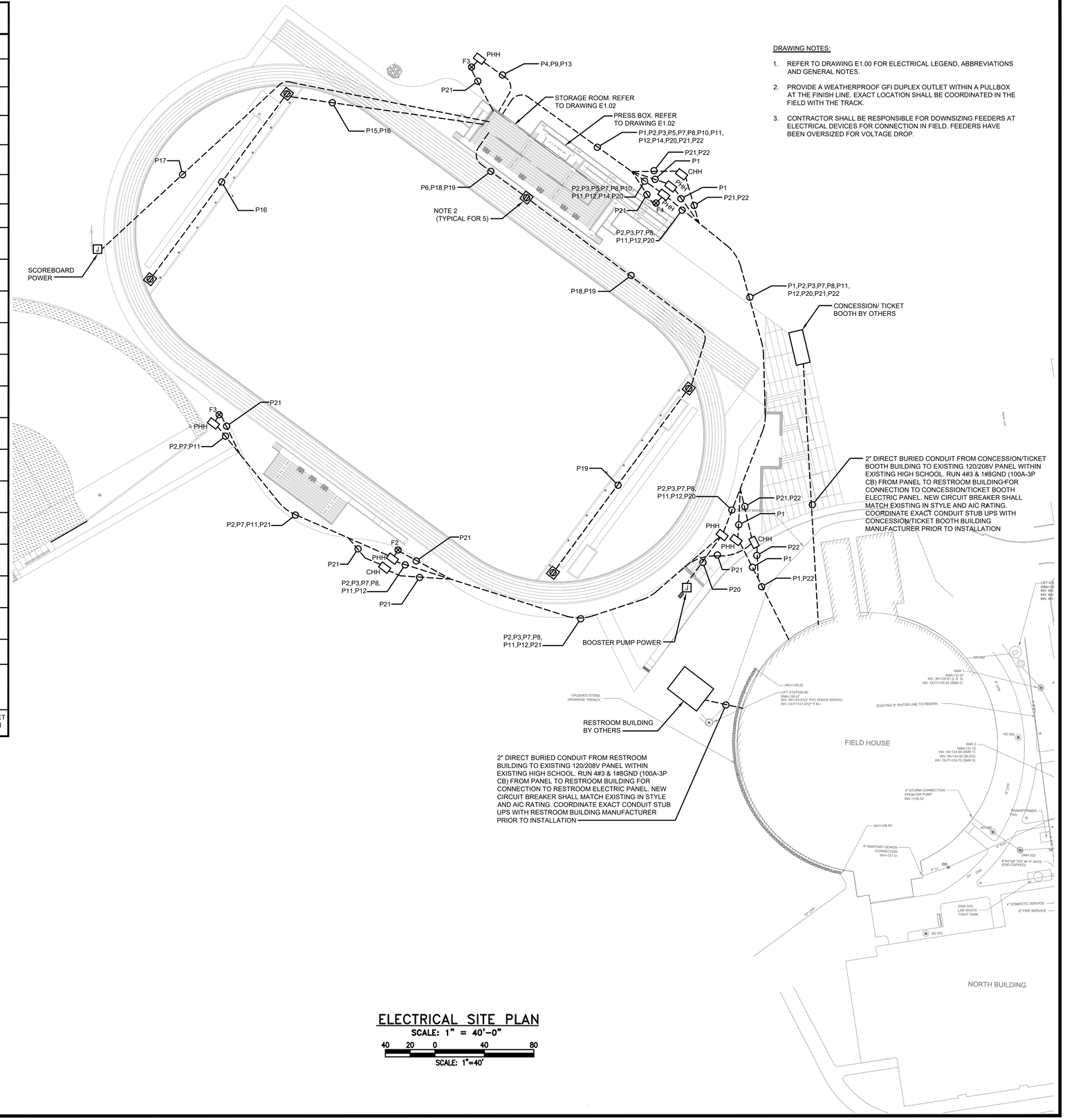
ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES

Sheet Number:

E0.01

CONDUIT & WIRING SCHEDULE

CONDUIT	FEEDER	FROM	CONTACTOR NUMBER	TO	FIXTURES	LOAD	CONTACTOR SIZE	REMARKS
P1	2"C., 4#3/0 & 1#6GND	EXISTING PANEL LOCATED IN THE HIGH SCHOOL MAIN ELECTRICAL ROOM	-	PANEL PPH1	-	200A	-	
P2	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C1	FIXTURE F1	13 LED	21.7A	30A	
P3	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C2	FIXTURE F2	13 LED	21.7A	30A	
P4	1"C., 3#10 & 1#10GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C3	FIXTURE F3	13 LED	21.7A	30A	
P5	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C4	FIXTURE F4	13 LED	21.7A	30A	
P6	1"C., 2#12 & 1#12GND	PPL1-5	-	FINISH LINE RECEPTACLE	-	180 WATTS	-	
P7	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C5	FIXTURE F1	2 LED	5.1A	30A	
P8	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C6	FIXTURE F2	2 LED	5.1A	30A	
P9	1"C., 3#10 & 1#10GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C7	FIXTURE F3	2 LED	5.1A	30A	
P10	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C8	FIXTURE F4	2 LED	5.1A	30A	
P11	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C9	FIXTURE F1	1 LED	0.9A	30A	
P12	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C10	FIXTURE F2	1 LED	0.9A	30A	
P13	1"C., 3#10 & 1#10GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C11	FIXTURE F3	1 LED	0.9A	30A	
P14	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.1 IN STORAGE ROOM	C12	FIXTURE F4	1 LED	0.9A	30A	
P15	1"C., 2#10 & 1#10GND	PPL1-6	-	END ZONE RECEPTACLE	-	180 WATTS	-	
P16	1"C., 2#10 & 1#10GND	PPL1-8	-	END ZONE RECEPTACLE	-	180 WATTS	-	
P17	1"C., 2#10 & 1#10GND	PPL1-7	-	SCOREBOARD	-	-	-	
P18	1"C., 2#10 & 1#10GND	PPL1-10	-	END ZONE RECEPTACLE	-	180 WATTS	-	
P19	1"C., 2#10 & 1#10GND	PPL1-12	-	END ZONE RECEPTACLE	-	180 WATTS	-	
P20	1"C., 2#10 & 1#10GND	PPL1-XX	-	BOOSTER PUMP	-	-	-	
P21	1"C., EMPTY CONDUIT WITH PULL STRING	STORAGE ROOM	-	FUTURE CAMERA MOUNTED ON LIGHT POLE	-	-	-	
P22	1"C., EMPTY CONDUIT WITH PULL STRING	HIGH SCHOOL SERVER ROOM	-	PRESS BOX	-	-	-	FOR INTERNET CONNECTION



ELECTRICAL SITE PLAN

SCALE: 1" = 40'-0"

40 20 0 40 80

SCALE: 1"=40'

DRAWING NOTES:

1. REFER TO DRAWING E1.00 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. PROVIDE A WEATHERPROOF GFI DUPLEX OUTLET WITHIN A PULLBOX AT THE FINISH LINE. EXACT LOCATION SHALL BE COORDINATED IN THE FIELD WITH THE TRACK.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR DOWNSIZING FEEDERS AT ELECTRICAL DEVICES FOR CONNECTION IN FIELD. FEEDERS HAVE BEEN OVERSIZED FOR VOLTAGE DROP.

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

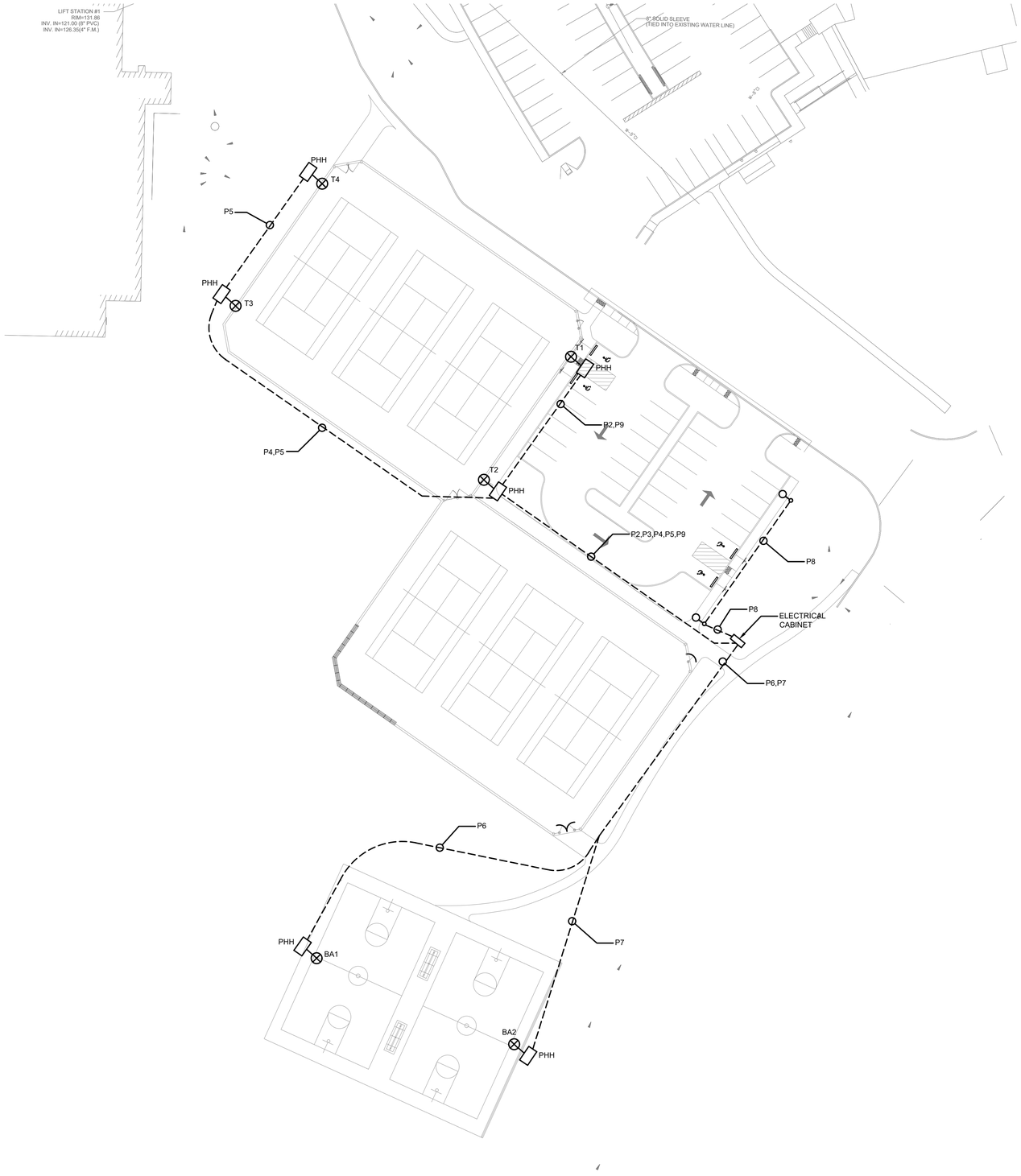
Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	DNM
Reviewed By:	RFM
Approved By:	RFM
W&S Project No:	2180076
W&S File No:	

Drawing Title:

ELECTRICAL SITE PLAN - HIGH SCHOOL

Sheet Number:

E1.00



ELECTRICAL SITE PLAN

SCALE: 1" = 30'-0"

30 15 0 30 60

SCALE: 1"=30'

CONDUIT & WIRING SCHEDULE

CONDUIT	FEEDER	FROM	CONTACTOR NUMBER	TO	FIXTURES	LOAD	CONTACTOR SIZE	REMARKS
P1	2"C., 4#3/0 & 1#6GND	UTILITY TRANSFORMER	-	PANEL PPH2	-	100A	-	
P2	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.2 IN ELECTRICAL CABINET	C1	FIXTURE T1	2 @ 1150W	2.3 KW	30A	
P3	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.2 IN ELECTRICAL CABINET	C2	FIXTURE T2	2 @ 1150W	2.3 KW	30A	
P4	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.2 IN ELECTRICAL CABINET	C3	FIXTURE T3	2 @ 1150W	2.3 KW	30A	
P5	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.2 IN ELECTRICAL CABINET	C4	FIXTURE T4	2 @ 1150W	2.3 KW	30A	
P6	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.2 IN ELECTRICAL CABINET	C5	FIXTURE BA1	4 @ 400W	1.6 KW	30A	
P7	2"C., 3#4 & 1#6GND	MUSCO LIGHTING CONTROL CABINET NO.2 IN ELECTRICAL CABINET	C6	FIXTURE BA2	4 @ 400W	1.6 KW	30A	
P8	2"C., 2#8 & 1#10GND	PANEL PPL2 IN ELECTRICAL CABINET	-	PARKING LOT LIGHTING	-	-	-	VIA NEW TIME CLOCK ELECTRICAL CABINET. CONNECTED TO SAME CIRCUIT AS P9
P9	2"C., 2#8 & 1#10GND	PANEL PPL2 IN ELECTRICAL CABINET	-	PARKING LOT LIGHTING ON POLES T1 AND T2	-	-	-	VIA NEW TIME CLOCK ELECTRICAL CABINET. CONNECTED TO SAME CIRCUIT AS P8

DRAWING NOTES:

1. REFER TO DRAWING E1.00 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DOWNSIZING FEEDERS AT ELECTRICAL DEVICES FOR CONNECTION IN FIELD. FEEDERS HAVE BEEN OVERSIZED FOR VOLTAGE DROP.

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

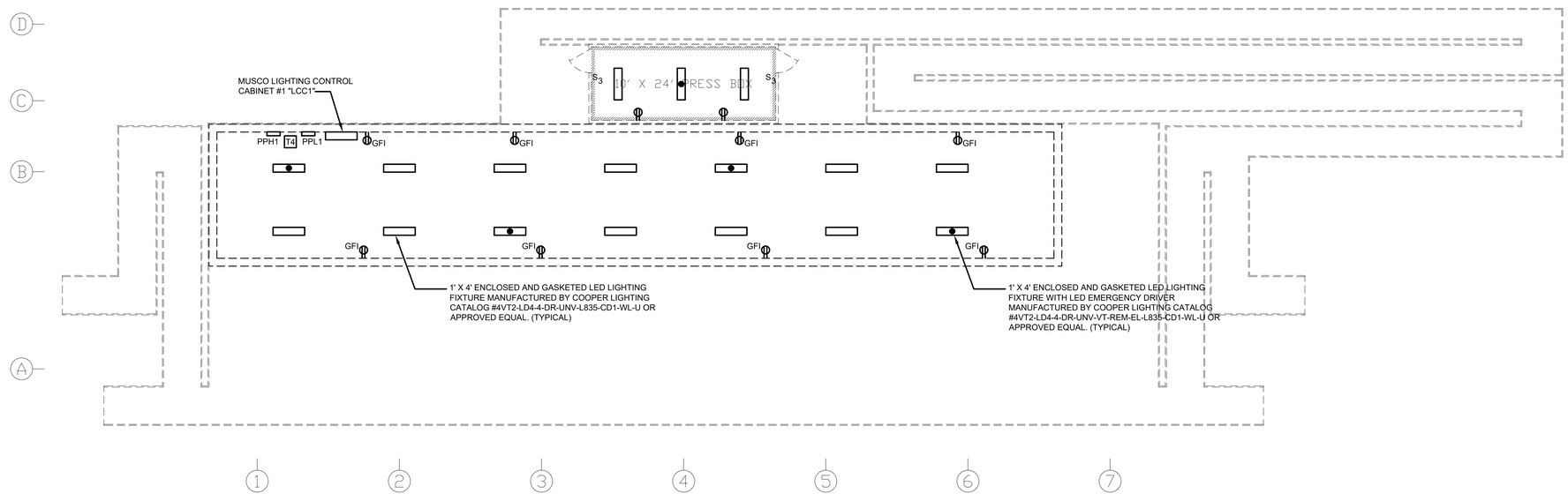
Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	DNM
Reviewed By:	RFM
Approved By:	RFM
W&S Project No:	2180076
W&S File No:	

Drawing Title:

ELECTRICAL SITE PLAN - HIGH SCHOOL - ADD ALTERNATE #1

Sheet Number:

E1.01



Project:

IMPROVEMENTS TO
WAYLAND HIGH SCHOOL
ATHLETIC FACILITIES

264 OLD CONNECTICUT
PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

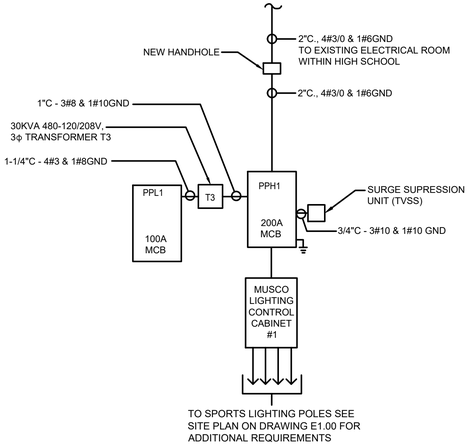
Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	DNM
Reviewed By:	RFM
Approved By:	RFM
W&S Project No:	2180076
W&S File No:	

Drawing Title:

ELECTRICAL
PRESS BOX AND
STORAGE ROOM
PLANS

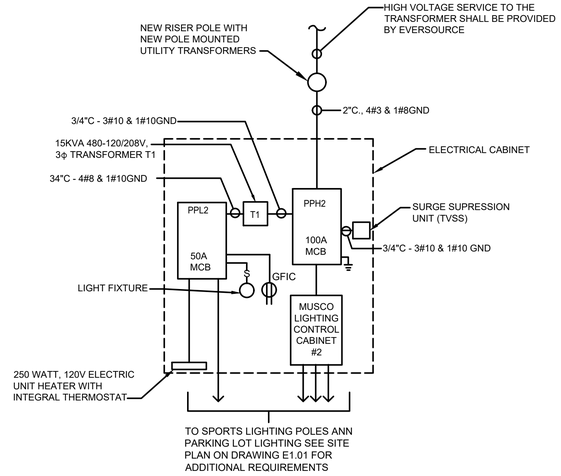
Sheet Number:

E1.02



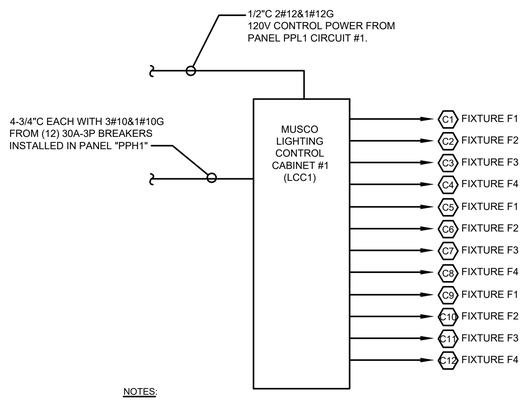
ELECTRICAL ONE LINE DIAGRAM – HIGH SCHOOL FOOTBALL FIELD AREA

NOT TO SCALE



ELECTRICAL ONE LINE DIAGRAM – HIGH SCHOOL TENNIS COURT AREA – ADD ALTERNATE #1

NOT TO SCALE

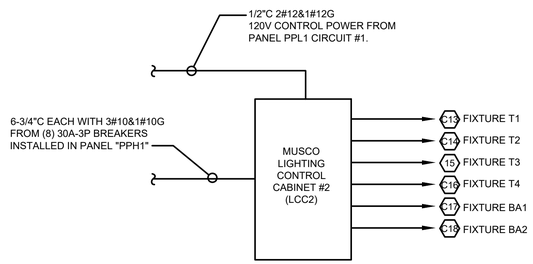


NOTES:

1. TYPICAL FOR CONTACTORS C1 THROUGH C12, CONTRACTOR SHALL RUN CONDUIT AND WIRING AS INDICATED IN SCHEDULE FROM EACH CONTACTOR TO DESIGNATED LIGHTING POLE. CONTRACTOR SHALL RUN CONDUIT TO 10'-0" AFG FOR CONNECTION TO POLE MOUNTED LIGHTING CONNECTION BOX.

SPORTS LIGHTING CONTROL CABINET DIAGRAM – HIGH SCHOOL FOOTBALL FIELD AREA

NOT TO SCALE



NOTES:

1. TYPICAL FOR CONTACTORS C13 THROUGH C18 CONTRACTOR SHALL RUN CONDUIT AND WIRING AS INDICATED IN SCHEDULE FROM EACH CONTACTOR TO DESIGNATED LIGHTING POLE. CONTRACTOR SHALL RUN CONDUIT TO 10'-0" AFG FOR CONNECTION TO POLE MOUNTED LIGHTING CONNECTION BOX.

SPORTS LIGHTING CONTROL CABINET DIAGRAM – HIGH SCHOOL TENNIS COURT AREA – ADD ALTERNATE #1

NOT TO SCALE

PANELBOARD SCHEDULE - HIGH SCHOOL FOOTBALL FIELD

DESIGNATION: PPH1 | S.C. RATING: 22,000A RMS SYM. | REMARKS:
LOCATION: STORAGE AREA | SERVICE: 277/480V, 3Ø, 4W
RATING: 250 AMPS | MOUNTING: SURFACE
MAIN: 200 MCB

CKT. NO.	LOAD DESIGNATION	BREAKER TRIP	BREAKER POLE	PHASE A	PHASE B	PHASE C	BREAKER POLE	BREAKER TRIP	LOAD DESIGNATION	CKT. NO.
1	-	-						-	-	2
3	FIXTURE POLE F1/CONTACTOR C1	30						30	FIXTURE POLE F2/CONTACTOR C2	4
5	-	-						-	-	6
7	-	-						-	-	8
9	FIXTURE POLE F3/CONTACTOR C3	30						30	FIXTURE POLE F4/CONTACTOR C4	10
11	-	-						-	-	12
13	-	-						-	-	14
15	FIXTURE POLE F1/CONTACTOR C5	30						30	FIXTURE POLE F2/CONTACTOR C6	16
17	-	-						-	-	18
19	-	-						-	-	20
21	FIXTURE POLE F3/CONTACTOR C7	30						30	FIXTURE POLE F4/CONTACTOR C8	22
23	-	-						-	-	24
25	-	-						-	-	26
27	FIXTURE POLE F1/CONTACTOR C9	30						30	FIXTURE POLE F2/CONTACTOR C10	28
29	-	-						-	-	30
31	-	-						-	-	32
33	FIXTURE POLE F3/CONTACTOR C11	30						30	FIXTURE POLE F4/CONTACTOR C12	34
35	-	-						-	-	36
37	-	-						20	SPARE	38
39	30KVA CABINET TRANSFORMER	50						20	SPARE	40
41	-	-						20	SPARE	42

PANELBOARD SCHEDULE - HIGH SCHOOL FOOTBALL FIELD

DESIGNATION: PPL1 | S.C. RATING: 10,000A RMS SYM. | REMARKS:
LOCATION: STORAGE AREA | SERVICE: 120/208V, 3Ø, 4W
RATING: 100 AMPS | MOUNTING: SURFACE
MAIN: 100A MCB

CKT. NO.	LOAD DESIGNATION	BREAKER TRIP	BREAKER POLE	PHASE A	PHASE B	PHASE C	BREAKER POLE	BREAKER TRIP	LOAD DESIGNATION	CKT. NO.
1	STORAGE AREA/PRESS BOX LIGHTING	20						20	STORAGE AREA RECEPTACLES	2
3	STORAGE AREA RECEPTACLES	20						20	PRESS BOX RECEPTACLES	4
5	FINISH LINE RECEPTACLE	20						20	END ZONE RECEPTACLE	6
7	SCOREBOARD POWER	20						20	END ZONE RECEPTACLE	8
9	SPARE	20						20	END ZONE RECEPTACLE	10
11	SPARE	20						20	END ZONE RECEPTACLE	12
13	SPARE	20						20	SPARE	14
15	SPARE	20						20	SPARE	16
17	SPARE	20						20	SPARE	18
19	SPARE	20						20	SPARE	20
21	SPARE	20						20	SPARE	22
23	SPARE	20						20	SPARE	24
25	SPARE	20						20	SPARE	26
27	SPARE	20						20	SPARE	28
29	SPARE	20						20	SPARE	30
31	SPARE	20						20	SPARE	32
33	SPARE	20						20	SPARE	34
35	SPARE	20						20	SPARE	36
37	SPARE	20						20	SPARE	38
39	SPARE	20						20	SPARE	40
41	SPARE	20						20	SPARE	42

PANELBOARD SCHEDULE - TENNIS/BASKETBALL COURTS (ADD ALTERNATE #1)

DESIGNATION: PPH2 | S.C. RATING: 22,000A RMS SYM. | REMARKS:
LOCATION: ELECTRICAL CABINET | SERVICE: 277/480V, 3Ø, 4W
RATING: 100 AMPS | MOUNTING: SURFACE
MAIN: 100 MCB

CKT. NO.	LOAD DESIGNATION	BREAKER TRIP	BREAKER POLE	PHASE A	PHASE B	PHASE C	BREAKER POLE	BREAKER TRIP	LOAD DESIGNATION	CKT. NO.
1	-	-						-	-	2
3	FIXTURE POLE T1/CONTACTOR C13	30						30	FIXTURE POLE T2/CONTACTOR C14	4
5	-	-						-	-	6
7	-	-						-	-	8
9	FIXTURE POLE T3/CONTACTOR C15	30						30	FIXTURE POLE T4/CONTACTOR C16	10
11	-	-						-	-	12
13	-	-						-	-	14
15	FIXTURE POLE BA1/CONTACTOR C17	30						30	FIXTURE POLE BA2CONTACTOR C18	16
17	-	-						-	-	18
19	-	-						-	-	20
21	SPARE	30						30	SPARE	22
23	-	-						-	-	24
25	-	-						-	-	26
27	SPARE	30						30	SPARE	28
29	-	-						-	-	30
31	-	-						20	SPARE	32
33	15KVA CABINET TRANSFORMER	50						20	SPARE	34
35	-	-						20	SPARE	36
37	SPARE	20						20	SPARE	38
39	SPARE	20						20	SPARE	40
41	SPARE	20						20	SPARE	42

PANELBOARD SCHEDULE - TENNIS/BASKETBALL COURTS (ADD ALTERNATE #1)

DESIGNATION: PPL2 | S.C. RATING: 10,000A RMS SYM. | REMARKS:
LOCATION: ELECTRICAL CABINET | SERVICE: 120/208V, 3Ø, 4W
RATING: 100 AMPS | MOUNTING: SURFACE
MAIN: 50A MCB

CKT. NO.	LOAD DESIGNATION	BREAKER TRIP	BREAKER POLE	PHASE A	PHASE B	PHASE C	BREAKER POLE	BREAKER TRIP	LOAD DESIGNATION	CKT. NO.
1	LIGHTING IN ELECTRICAL CABINET	20						20	ELECTRIC HEATER IN ELECTRICAL CABINET	2
3	RECEPTACLE IN ELECTRICAL CABINET	20						20	PARKING LOT LIGHTING	4
5	SPARE	20						20	SPARE	6
7	SPARE	20						20	SPARE	8
9	SPARE	20						20	SPARE	10
11	SPARE	20						20	SPARE	12

Project:

IMPROVEMENTS TO
WAYLAND HIGH SCHOOL
ATHLETIC FACILITIES

264 OLD CONNECTICUT
PATH, WAYLAND, MA 01778

Weston & Sampson
85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

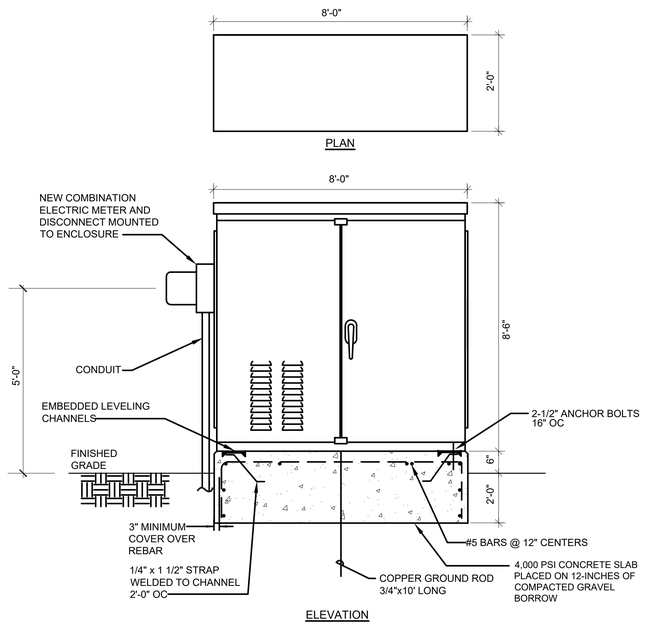
Scale: AS SHOWN
Date: JULY 26, 2018
Drawn By: DNM
Reviewed By: RFM
Approved By: RFM
W&S Project No: 2180076
W&S File No:

Drawing Title:

ELECTRICAL ONE LINE DIAGRAMS AND SCHEDULES - HIGH SCHOOL

Sheet Number:

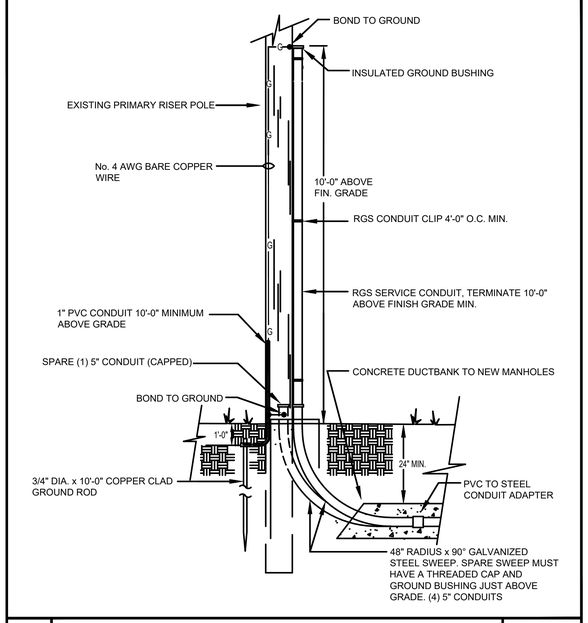
E3.00



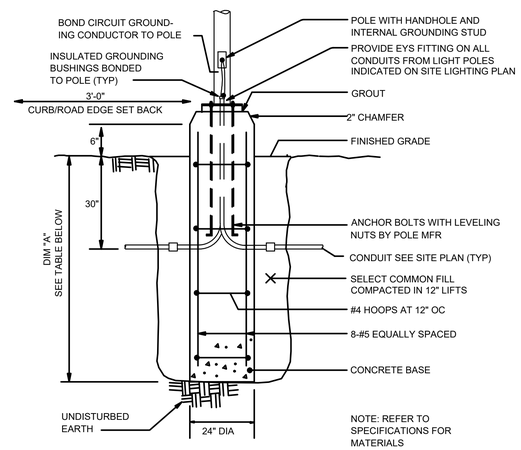
NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE EXACT CABINET SIZE WITH ALL MANUFACTURER EQUIPMENT SIZES PRIOR TO SUBMITTING THE CABINET FOR APPROVAL. PROVIDE A SCALED DRAWING SHOWING ALL EQUIPMENT.

1	PAD MOUNTED ELECTRICAL CABINET DETAIL	NO SCALE



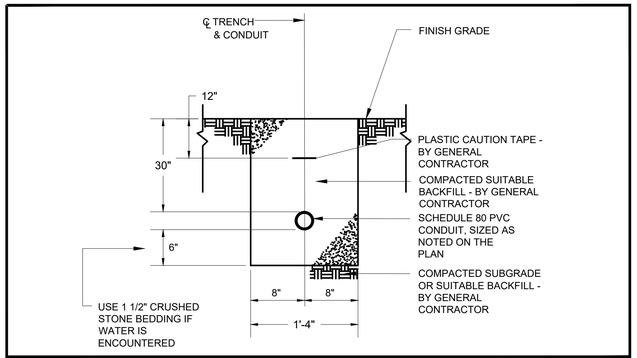
2	TYPICAL RISER POLE DETAIL	NO SCALE



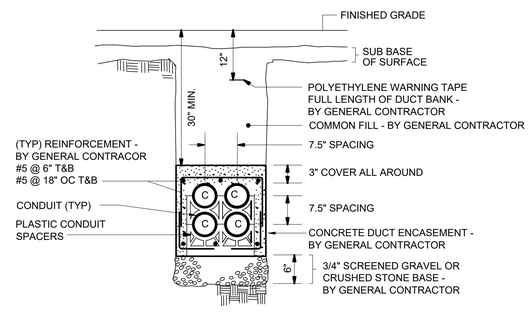
POLE HEIGHT	DIMENSION "A"
10'-0"	4'-6"
20'-0"	4'-6"
30'-0"	6'-6"
40'-0"	6'-6"

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR. ALL EXCAVATION, BACKFILL & CONCRETE SHALL BE BY GENERAL CONTRACTOR

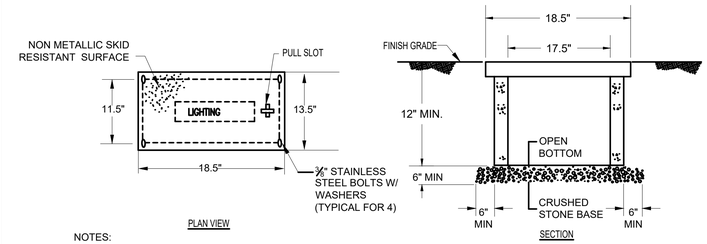
3	TYPICAL LIGHT POLE BASE DETAIL	NO SCALE



4	TYPICAL DIRECT BURIED DUCTBANK DETAIL	NO SCALE



5	TYPICAL CONCRETE ENCASED DUCTBANK DETAIL	NO SCALE

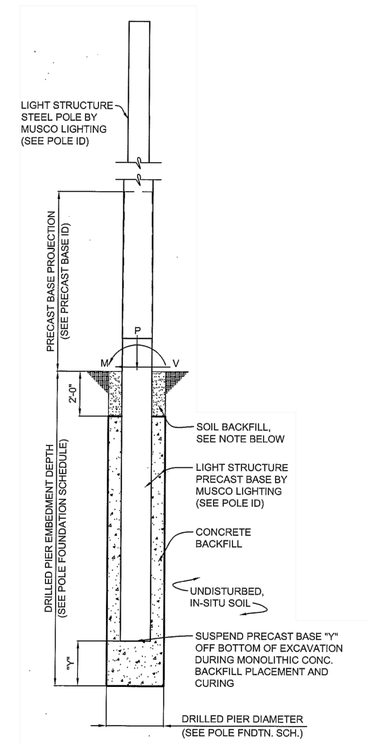


NOTES:

1. THIS HANDHOLE IS INTENDED FOR NON-DELIBERATE VEHICULAR TRAFFIC ONLY.

2. HANDHOLE SHALL BE PREFABRICATED POLYMER CONCRETE AGGREGATE EQUAL TO QUAZITE OR EQUAL PRE CAST CONCRETE CONSTRUCTION.

6	PREFABRICATED HANDHOLE "HH" DETAIL	NO SCALE



POLE FOUNDATION ELEV.

SCALE: NOT TO SCALE

SOIL BACKFILL NOTE:
THE TOP TWO FEET OF ANNULUS SHALL BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 5 (TABLE 1806.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 98% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).

7	SPORTS LIGHT POLE BASE DETAIL	NO SCALE

Project:

IMPROVEMENTS TO WAYLAND HIGH SCHOOL ATHLETIC FACILITIES

264 OLD CONNECTICUT PATH, WAYLAND, MA 01778

Weston & Sampson

85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

Issued For:

PERMITTING SET

- NOT FOR CONSTRUCTION -

Scale:	AS SHOWN
Date:	JULY 26, 2018
Drawn By:	DNM
Reviewed By:	RFM
Approved By:	RFM
W&S Project No:	2180076
W&S File No:	

Drawing Title:

ELECTRICAL DETAILS

Sheet Number:

E4.00