Crocker Design Group

July 23, 2021

Lori Capone
Conservation Coordinator
Town of Sudbury Conservation Commission
Department of Public Works Building
275 Old Lancaster Road
Sudbury, MA 01776
Phone: (978) 440-5471

RE: **Updated Site Development Plans and Stormwater Report**
Herb Chambers- 105 Boston Post Rd

Dear Ms. Capone and Commission Members;

On behalf of the Applicant, Herb Chambers of Sudbury, Inc. (HC), we respectfully submit this enclosed revised Site Plans and supporting documentation for the above referenced property detailing the changes made since the June 16, 2021, Conservation Commission meeting. Enclosed are the following supporting documents:

- One (1) 24"x36" Copy of Proposed Site Development Plans revised 7/23/2021
- One (1) Revised Stormwater Report dated 7/7/2021
- Long-Term Stormwater Operation & Maintenance Plan
- One (1) Horsley Witten Peer Review Satisfaction Email
- Electronic Copy of Submittal Package

The following is a summary of the changes that have been incorporated since the June 16, 2021, meeting that are within the Conservation Commission's Jurisdiction.

1. Revised Layout Plan to incorporate additional signage to provide additional visual notification that one is entering onto porous pavement. This includes eight additional signs (on both sides of the two driveway connections to the porous pavement and both sides of the two driveway entrances to 105 Boston Post Road) being added to the Layout Plan. The signs added at the driveway connection between 83 Boston Post Road and 105 Boston Post Road and the connection between 105 Boston Post Road and Boston Post Road state "Entering Porous Pavement Area: No De-Icing Salts or Chemicals Allowed". Additionally, two signs stating "Porous Pavement" were added at each transition from bituminous concrete to porous pavement to further re-enforce the presence of porous pavement.

2. Revised Lighting Plan to lower light levels from the parking lot lights. The plan also reflects retaining the existing building security lighting instead of new, brighter fixtures that were previously proposed. Revised Lighting Plan to include the correct images of the fixtures that were

previously proposed, which are dark sky compliant. Also, a note was added to the Lighting Plan stating, “All light levels are to be reduced to 50% during non-business hours.”

3. Revised Long-Term Stormwater Operations and Maintenance Plan to include further clarification on how to treat porous pavement and snow removal during snow events. All snow plowing is handled in-house by The Herb Chambers team. The entire site will be treated consistently using only anti-icing techniques instead of de-icing techniques like road salt and other chemicals. Also, The Herb Chambers team has already been in contact with companies who vacuum porous pavement to ensure proper maintenance is done.

4. Revised Demolition Plan to include how the 12-inch RCP will be removed and the area will be stabilized if necessary. Demolition Plan (C-1) calls for the removal of the 12” RCP and stabilization of the area. The note also identifies 9± sf of temporary wetland impact to be hand raked, seeded with a New England wetland seed mix and stabilized within the same day. All stabilization will be completed by hand.

We appreciate the feedback received at our last public hearing with the Board and trust you’ll find the enclosed revised materials responsive to the comments received. Also, as indicated above, a supplemental vehicle trip generation memo will be submitted shortly as well.

Should you have any questions or require any further information, please do not hesitate to contact us at gabecrocker@crockerdesigngroup.com or 781-919-0808.

Sincerely,
Crocker Design Group LLC

Gabe Crocker P.E.
President

SECTION 5 – LONG TERM OPERATION & MAINTENANCE

LONG-TERM STORMWATER OPERATION & MAINTENANCE PLAN

HERB CHAMBERS OF SUDBURY, INC.

105 BOSTON POST ROAD
SUDBURY, MA 01776

REVISED July 23, 2021

PROJECT OVERVIEW:

The proposed project consists of the construction of an inventory lot for the Herb Chambers of Sudbury, Inc. at the former MA DOT site in Sudbury, Massachusetts. Proposed work also includes the renovation of the existing 2-story metal structure to a vehicle service building, as well as designated parking for employees and vehicle service customers. The project has been designed to comply with the Massachusetts Stormwater Management Regulations.

Appended to this document is a sample maintenance form and a chart describing the anticipated frequency of tasks.

OWNER AND RESPONSIBLE PARTY:

Current Land Owners:
Herb Chambers 83 Boston Post
83 Boston Post Road
Sudbury, MA 01776

Proposed Site Contractor:
TBD

For any service beyond the service ability of staff on site for Herb Chambers, there will be subcontracting to the appropriate vendors such as street sweeping, catch basin and water quality unit cleaning, etc.

CONSTRUCTION MANAGEMENT:

A construction manager with adequate knowledge and experience on projects of similar size and scope shall be employed to oversee all site work related construction. The contractor shall incorporate the appropriate techniques to control sediment and erosion pollution during construction in accordance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas* and any conditions of approval from the local conservation commission.

Care should be taken when constructing stormwater control structures. Light earth-moving equipment shall be used to excavate in the vicinity of the infiltration areas. Use of heavy-equipment causes excessive compaction of the soils beneath the basin resulting in reduced infiltration capacity. At no time shall temporary infiltration areas or settling basins be constructed in the vicinity of the proposed infiltration basins in order to prevent the soils from becoming clogged with sediment.

ON-GOING MAINTENANCE CONTRACT

The non-structural and structural approaches recommended below, as well as the required BMP maintenance, will be completed by the selected contractor. In Adequate personnel with appropriate training and access to proper equipment will be available to complete the tasks. Future responsible parties must be notified of their responsibility to operate and maintain the system in perpetuity.

MAINTENANCE LOG

The Responsible Party shall develop and maintain a log of inspections, maintenance, repairs, and disposal (including location of disposal) during the life of the project. Records will be maintained for at least 3 years and be made available to the Massachusetts Department of Environmental Protection or the Town of Sudbury in accordance with the provisions of the Massachusetts Stormwater Handbook. A sample of such a maintenance log is provided.

STORMWATER BMP MAINTENANCE

The proposed stormwater management system has been designed with appropriate BMPs aimed at reducing the pollutants discharge based upon the intended use of the property. All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements; others are more involved. The Responsible Party must have all BMPs regularly inspected to ensure they are operating properly on an as needed basis, including during runoff events exceeding 0.5 inches of rainfall.

A description of the non-structural and structural approaches to be incorporated is indicated below. The following best management practices are proposed to be incorporated into the stormwater management design to reduce source runoff and improve stormwater runoff discharge quality. The Responsible Party will regularly inspect all BMPs to ensure they are operating properly. If any deficiencies are identified during these inspections, action to resolve it will be initiated and documented on the maintenance log.

STRUCTURAL BMPs

Deep Sump Hooded Catch Basins and Area/Yard Drains

On a regular basis the inlet pipe and outlet pipe shall be checked for debris and removed as necessary to ensure unobstructed flow of water. Inspections shall occur at least four times per year, and at the end of the foliage and snow removal seasons. Inspections shall verify the tees are secure and free flowing. Sediments must also be removed four times per year or 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. Basins shall be cleaned using a vacuum pump. All liquid shall be pumped from the sump of each basin at least once per year. All sediments and hydrocarbons should be properly handled and disposed of in accordance with local, state and federal guidelines and regulations.

Oil/Grit Separators

At a minimum, oil grit separators should be inspected monthly and sediment, trash and pollutants shall be cleaned out at least twice per year. In areas of high sediment loading, inspect and clean inlets and outlets after every major storm. Basins shall be cleaned using a vacuum pump. All sediments and hydrocarbons should be properly handled and disposed of in accordance with local, state and federal guidelines and regulations.

Subsurface Detention System

The subsurface system (retain-it, 3.5' tall) has been designed with an access manhole to aid in the removal of sediment and debris. Preventative maintenance shall be performed in accordance with manufacturer's instructions, which is enclosed in this section. Retain-it suggests periodic inspections with a greater number occurring during the systems start-up to identify any issues of concern as they may arise. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections. Retain-it recommends use of a vacuum truck to suction the accumulated sediment, oils and greases, and trash and debris from the system. Oils and greases may additionally be handled by on-site staff utilizing absorbent products to soak up the oils. Refer to the enclosed "retain-it Owners Maintenance Manual."

Proprietary Water Quality Units

Hydrodynamic Separators shall be maintained in accordance with the manufacturer's recommendations. Refer to the enclosed "SciClone Operation & Maintenance" guide. Typically, a vacuum truck removes accumulated sediment and oil most efficiently. See maintenance documentation from the manufacturer. Inspection should occur at least twice annually, once in the fall and then in the spring after the snow melts. Ideally the unit should be checked frequently throughout the first year, and that will dictate the schedule going forward. All sediment and hydrocarbons should be properly handled and

disposed of in accordance with local, state and federal guidelines and regulations. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections and manufacturer's requirements.

Porous Pavement

Porous pavement sections on site shall be monitored annually and following any storms to ensure proper drainage and note any deterioration. Maintenance of the porous asphalt is performed four (4) times per year using a regenerative air vacuum truck that picks up large particles such as leaves and debris, as well as smaller particles such as sand and sediments. Exfiltration capability shall be assessed minimum once a year and as needed if capacity is found to decline. If ponding water is observed during precipitation cleaning is recommended. Signage will be installed to clearly demarcate the limits of the porous surface. Snow removal protocols for the porous surface is discussed in more detail, below.

NON-STRUCTURAL BMPs

Pavement Sweeping

As street sweeping is a BMP under DEP guidelines, this non-structural BMP is an effective removal of Total Suspended Solids (TSS) in a comprehensive stormwater management program. Litter and debris is to be regularly picked up and removed from the pavement and porous pavers. Paved areas are to be swept a minimum of quarterly per year.

Pervious Areas and Slopes

Runoff from pervious areas and slopes shall be directed over vegetated areas to promote settlement of suspended solids before entering a wetland or resource area. Steep pervious slopes will be permanently vegetated to dissipate energy and reduce potential erosion. No constructed vegetated slopes should exceed 2H:1V. Slopes exceeding 2:1 shall be stabilized with rip-rap, jute netting or other similar measures to minimize the potential for future erosion.

Drainage Control Structures, Flared End Sections, Trash Racks, Riprap Pads, Swales, and Level Spreader Splash Pads

Basin control structures and flared end sections shall be inspected and any debris or growth surrounding or within these structures shall be removed. Any/all debris or vegetation encroaching on the control structures our outfall components shall be removed or appropriately trimmed back to maintain the designed control elevation and flow patterns/cross section without impediment. Inspection should occur twice annually, once in the fall and then in the spring after the snow melts. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections and manufacturer's requirements.

Pest and Insect Control

- As a first-line defense against pests/insects and weeds (the "First-Line Defense"), the party responsible for maintenance shall avoid the use of non-organic pesticides, herbicides, fungicides and insecticides unless spot treatment is required for a specific control application. The owner shall not be required to undertake extraordinary measures or incur unreasonable cost to locate, purchase or apply non-organic products.

- If the First-Line Defense fails, as determined by the owner or party responsible for maintenance, in its sole but reasonable discretion, non-organic approaches to pest/insect control may be used, the same to be applied by a professional licensed in the Commonwealth of Massachusetts, where required. But in no event shall such non-organic approaches be used within the 100ft. buffer zone to the wetlands, unless approved by the Sudbury Conservation Commission.

Waste Management

Solid waste and recycling will be contained in dumpsters for routine and regular trash pickup. The maintenance staff is directed to place their trash and recyclables in the appropriate bins at the trash/recycling facility provided on site.

Snow Removal

Snow removal is handled by Herb Chambers of Sudbury's own in-house facility maintenance personnel. The drive aisles are plowed to maintain access through the site and around the building. The Chambers team will tightly arrange the vehicles together in one part of the lot, then plow the open section of the lot toward the islands, then move the cars back into their spaces and plow the remainder. The Chambers team anticipates they can typically handle between 1 to 1.5 feet of snow accumulation before having to switch to hauling off site. The chambers team will contract to have the snow hauled from the site.

Snow on porous asphalt can be plowed the same as standard pavement, however, sunshine acts quickly to melt snow and ice sooner than on frozen standard pavement, and the melting snow infiltrates from the surface directly through the open graded porous asphalt to the stone subbase, which significantly reduces the potential for black ice. UNH (the region's experts on permeable pavement specifications and maintenance) advises to use an anti-icing treatment on the permeable pavement surface (typically a brine solution which reduces the freezing point of water) prior to storms. Salt brine is typically a 23% salt/water mixture that can be applied to the surface which prevents snow and ice from bonding, and accumulated snow can be easily removed down to the pavement. Sand application is not recommended and should be avoided if possible

because it will increase the need for vacuuming and reduce the efficiency of the pavement due to clogging.

The On-Site Property Manager who will be responsible for implementing the Stormwater Management Operations and Maintenance Plan and posted signage will ensure that snowplow operators on this property apply the proper anti-icing treatment and do not apply sand as part of the winter maintenance. The on-site snow removal will be performed by employees of Herb Chambers and the same team members will oversee and perform snow removal from storm-to-storm, ensuring a consistent treatment of the porous pavement using anti-icing techniques. No outside contractors will be used to plow or perform anti-icing on site. The only outside contractors during a snow removal event will be those hired to conduct the snow hauling in large storm events. The snow will be loaded on to all hauling trucks by The Chambers Team. This site will use consistent anti-icing techniques throughout the site to ensure no salt or sand will be applied on this site or within the proximity of the porous pavement.

Hazardous Waste and Spill Control Containment

In the event of a discharge or spill of oil or another hazardous material, outlets to stormwater management facilities immediately downstream of the spill shall be plugged so that hazardous materials do not enter the system. In the event of a discharge of oil or other hazardous material, responsible facility personnel shall notify the appropriate state agencies, the Town of Sudbury DPW and the EPA National Response Center 1-800-424-8802 shall be notified. All hazardous waste materials will be disposed of in a manner specified by local, state and/or federal regulations and by the manufacturer of such products.

Stormwater BMP Inspection and Maintenance Log

Facility Name	
Address	
Begin Date	End Date

Date	BMP ID#	BMP Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

Instructions: Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the annual independent inspectors' report to the municipality and start a new log at that time.

BMP ID# — Always use ID# from the Operation and Maintenance Manual.

Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.

Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.

Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.

Comments and actions taken — Describe any maintenance done and need for follow-up.

Stormwater BMP Inspection Matrix

Conventional & LID Best Management Practices	**Inspection & Maint. Frequency**	**Erosion& Scour**	**Obstructions**	**Trash & Debris**	**Sediment Build-Up Removal**	**Vegetation Cover**	**Remove/Reset Filter Fabric & Stone As Required**	**Vac Truck Sediment & Contaminants**	**Remove/Reset Riprap as Required**
Catch Basins/Area & Yard Drains	Four times per year								
Pavement Sweeping	Four times per year								
Oil Grit Separators	Monthly								
Proprietary Water Quality Units	Twice-Annually (Spring and Fall)								
Subsurface Detention Structure	Annually								
Outlets (FES, Rip Rap Pad, Level Spreaders) Permeable Pavement Vacuuming	Twice-Annually (Spring and Fall) Four times per year								

N

WQ

SCICLONE WATER QUALITY UNIT

SUBSURFACE DETENTION SYSTEM

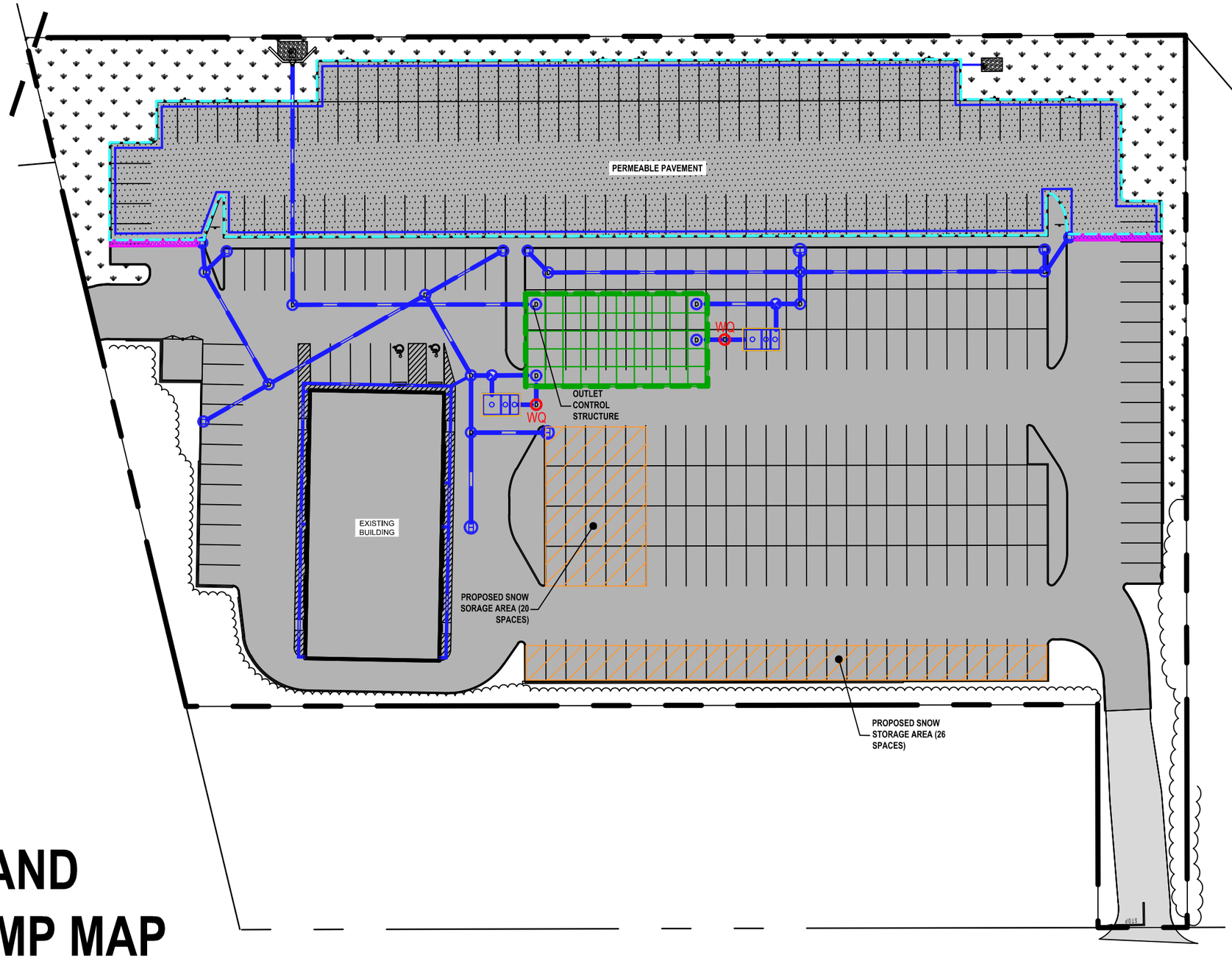
DRAINAGE SYSTEM

OIL/GRIT SEPARATOR

TRENCH DRAIN

SNOW STORAGE

PERMEABLE PAVEMENT



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OPERATION AND MAINTENANCE BMP MAP

HERB CHAMBERS OF SUDBURY, INC.

105 BOSTON POST ROAD,
SUDBURY, MA

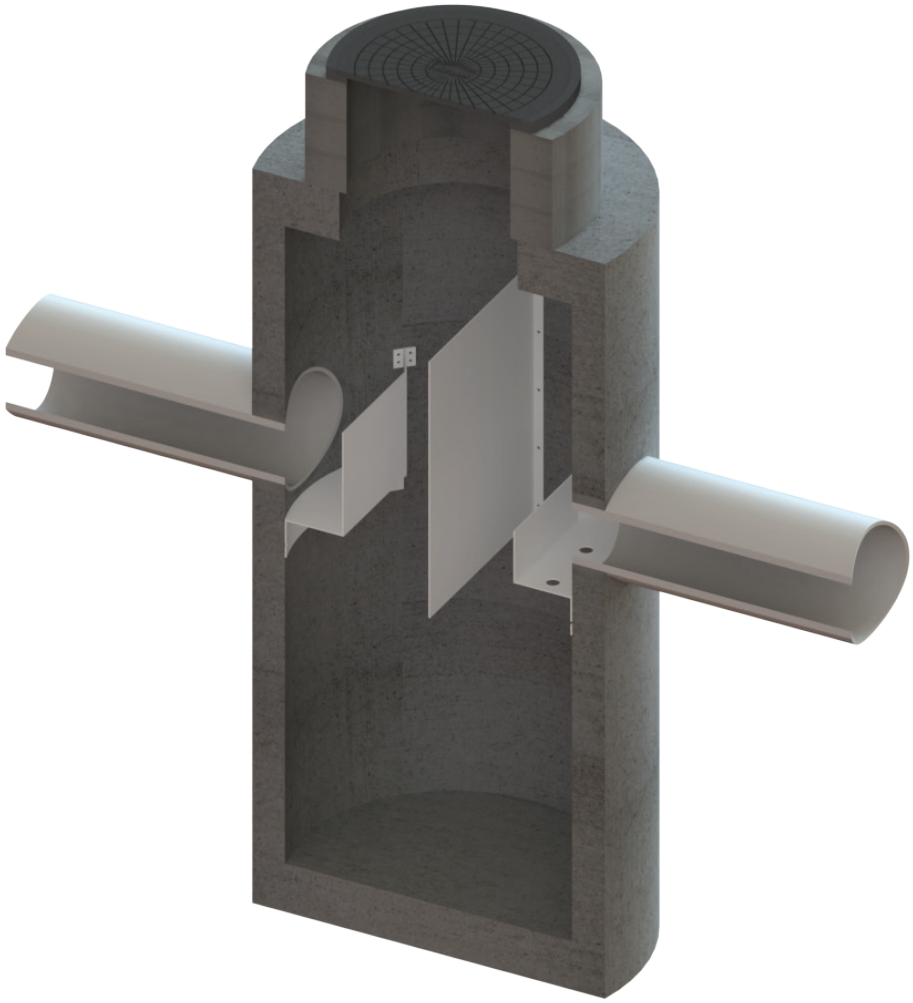
SciCLONE™

Hydrodynamic Separation

Bio Clean

A Forterra Company

OPERATION & MAINTENANCE



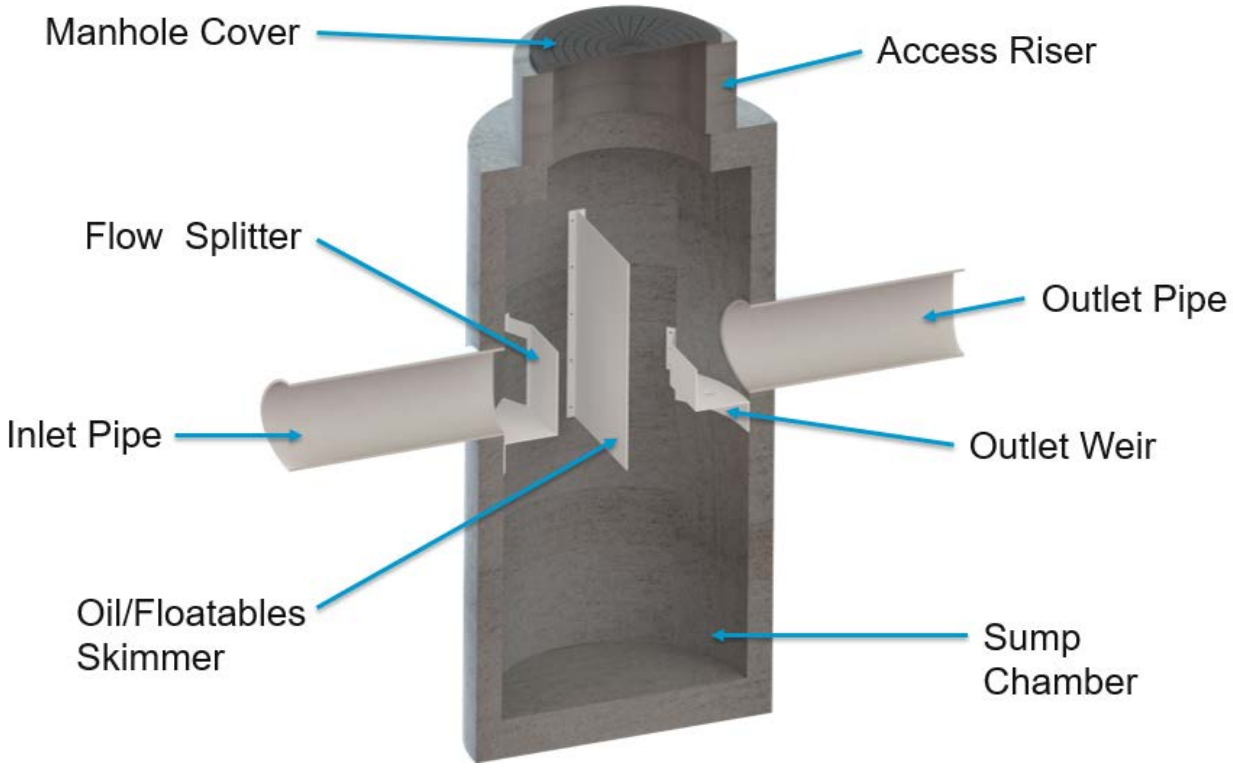
Bio Clean Environmental Services, Inc.
398 Via El Centro
Oceanside, CA 92058

www.BioCleanEnvironmental.com
p: 760.433.7640
f: 760.433.3176

OPERATION & MAINTENANCE

The SciCLONE™ Hydrodynamic Separator is designed to remove high levels of trash, debris, sediments and hydrocarbons. Its efficient design and construction maximize longevity and minimize maintenance requirements. The simple design of the system allows for unimpeded access for quick and easy maintenance. The SciCLONE™ is able to effectively capture and store sediment with no maintenance or loss of treatment capacity for a several years based on annual average loading in most regions.

Yet, as with all stormwater BMPs inspection and maintenance on the SciCLONE™ Hydrodynamic Separator is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess site-specific loading conditions. This is recommended because pollutant loading can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding of roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years. Without appropriate maintenance a BMP can exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.



System Diagram:

Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the SciCLONE™ Separator:

- Bio Clean Environmental Inspection Form (contained within this manual).
- Flashlight.
- Manhole hook or appropriate tools to remove access hatches and covers.
- Appropriate traffic control signage and procedures.
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections or maintenance of the system.

Inspection Steps

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the SciCLONE™ Separator are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long-term inspection and maintenance interval requirements.

The SciCLONE™ Separator can be inspected though visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened the inspection process can proceed:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system.
- Look for any out of the ordinary obstructions in the inflow pipe, sump chamber, or outflow pipe. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of floatable debris accumulated on the influent side of the oil/floatables skimmer. Record this information on the inspection form. Next utilizing a tape measure or measuring stick estimate the amount of sediment accumulated in the sump. Record this depth on the inspection form.

- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components.
- Obstructions in the system or its inlet or outlet.
- Excessive accumulation of floatable in the sump chambers in which the length and width of the chambers behind oil/floatables skimmer is fully impacted extending down more than 9".
- Excessive accumulation of sediment in the sump chamber of more than 18" in depth.

Maintenance Equipment

It is recommended that a vacuum truck be utilized to minimize the time required to maintain the SciCLONE™ Separator:

- Bio Clean Environmental Maintenance Form (contained in O&M Manual).
- Flashlight.
- Manhole hook or appropriate tools to access hatches and covers.
- Appropriate traffic control signage and procedures.
- Protective clothing and eye protection.
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine maintenance of the system.
- Vacuum truck (with pressure washer attachment preferred).

Maintenance Procedures

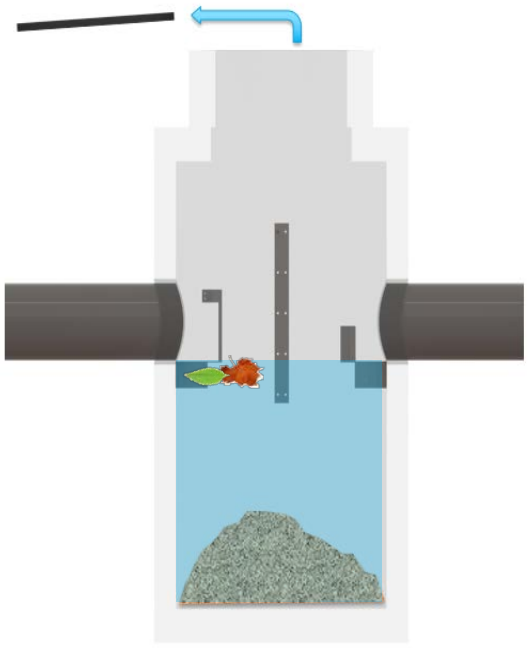
It is recommended that maintenance occurs at least three days after the most recent rain event to allow for drain down of any associated upstream detention systems. Maintaining the system while flows are still entering it will increase the time and complexity required for maintenance. Cleaning of the sump chamber can be performed from finish surface without entry into the vault utilizing a vacuum truck. Once all safety measures have been set up cleaning of the sump chamber can proceed as followed:

- Remove all access hatches (requires traffic control and safety measures to be completed prior).
- Using an extension on a vacuum truck position the hose over the opened access hatch and lower into the center of the sump chamber on the inlet side of the oil/floatables skimmer.

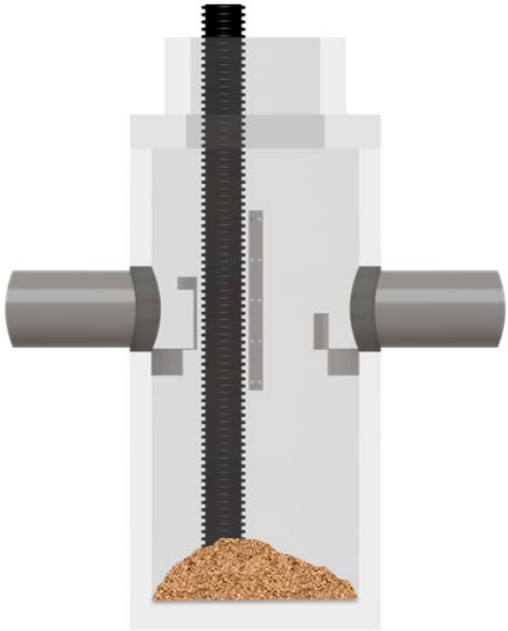
Remove all floating debris, standing water and sediment from the sump chamber. Access to the bottom of the sump chamber is unimpeded. The vac hose can be moved from side-to-side to fully remove sediments at the corners. A power washer can be used to assist if sediments have become hardened and stuck to the walls or the floor of the chamber. Repeat the same procedure on the effluent side of the oil/floatables skimmer to remove any remaining sediment. This completes the maintenance procedure required on the sump chamber and the SciCLONE™ Separator.

- The last step is to close up and replace all access hatches and remove all traffic control.
- All removed debris and pollutants shall be disposed of following local and state requirements.
- Disposal requirements for recovered pollutants may vary depending on local guidelines. In most areas the sediment, once dewatered, can be disposed of in a sanitary landfill. It is not anticipated that the sediment would be classified as hazardous waste.
- In the case of damaged components, replacement parts can be ordered by the manufacture.

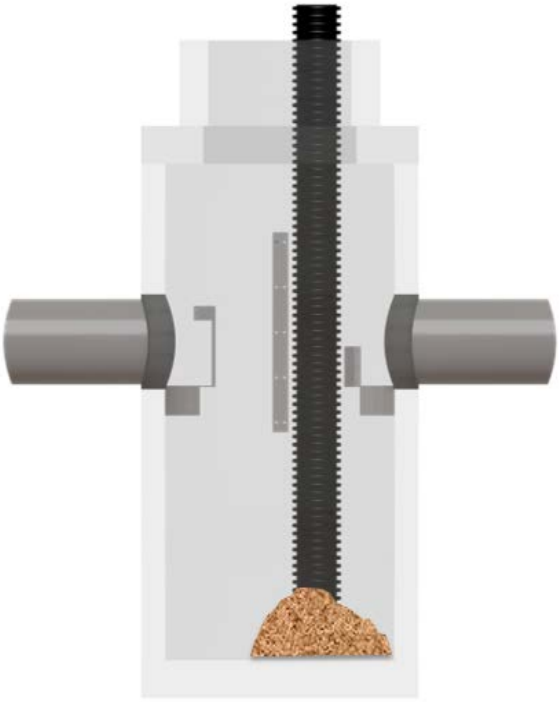
Maintenance Sequence



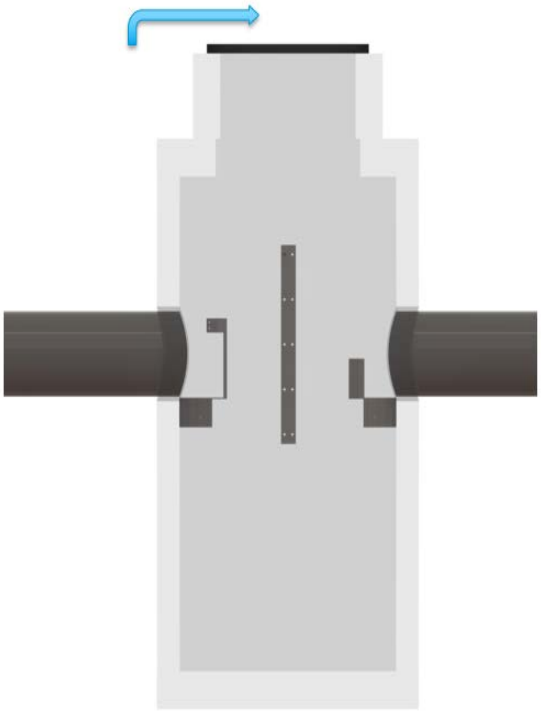
Remove Access Hatches Set Up Vacuum Truck to Clean the Sump Chamber.



Insert Vacuum Hose On the Inlet Side of the Oil/Floatables Skimmer and Vacuum Out All Trash, Sediment and Standing Water.



Insert Vacuum Hose On the Outlet Side of the Oil/Floatables Skimmer and Vacuum Out Any Remaining Sediment.



Replace Access Hatches and Remove Traffic Control and Safety Equipment.

For Maintenance Services or Information Please Contact Us At:
760-433-7640
Or Email: info@biocleanenvironmental.com

Inspection and Maintenance Report
Bio Clean SciCLONE™ Separator

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____ / ____ / _____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Stor Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Vault	Model #	Oils and Floatables Accumilation on Inlet Side of Oil/Floatables Skimmers (lbs)	Sediment Accumulation In Sump Chamber (lbs) & Depth (inches)	Structural Notes	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:					
	Lat: Long:					
	Lat: Long:					

Comments:

retain-it®
Stormwater Management Systems

OWNERS MAINTENANCE MANUAL

retain-it, LLC
560 Salmon Brook Street
Granby, CT 06035
(860) 413-3050

retain-it ®

Owners Maintenance Manual

Table of Contents

Description

retain-it ® is a subsurface Storm Water Management system constructed of precast concrete structures. They are installed in a side by side configuration creating a continuous internal flow channel integrated throughout the system. Systems are constructed with designated inlet and outlet modules, some with multiple inlets and outlets depending on the site storm water system layout. Infiltration systems typically have an inlet and sidewalls/ base constructed on a stone infiltration blanket with geofabric installed at the native soil interface. Other systems incorporate outlet flow control devices. Detention systems are typically lined with a watertight membrane and have inlet and outlet control devices.

The retain-it ® system can consist of multiple varying layouts, with no two the same. Given this, it should be noted that the operation and maintenance requirements are very similar regardless of the intended layout. It is important that the end user know the specific elements of each system so as to understand how best to optimize it's operation.

Installation per Design: Operation is simple to follow where the installation was performed in accordance with the design specifications, drawings and calculations. Specifics shall be identified in the design drawings. As-built drawings will benefit the locating of specific design modules where the system has been buried below a parking lot area. Optional access manholes or removable grates may be installed above every inlet/outlet pipe and at critical design elements designated by the design.

Daily Operation and Long Term Maintenance: In general, daily usage of the system is self sufficient and will operate without requiring any outside assistance, except for periodic inspection to verify optimal performance and maintenance for removal of collected pollutants. A longer term maintenance program should incorporate a more thorough inspection of the all elements of the system to verify proper operating condition. This is more important with the infiltration type of systems where the soil infiltration surface may become restricted due to fine particle build up. Long term maintenance should include provisions for cleaning and removal of collected solids, oils and debris from the system.

System Operation: The system operational function is initiated according to rainfall runoff flows entering the structure. Internally, the runoff flows in a set pattern or sequence throughout the module layout in accordance with the hydraulic design conditions. The flows primarily operate on system head derived from the changes in

elevation from the internal water surface and the outlet invert elevation. Some designs incorporate internal flow controls to satisfy hydraulic conditions that enhance water quality treatment or other intended purposes. Modified systems may incorporate a pump, but in general there are no mechanical apparatus required.

End user operations primarily consist of inspection and maintenance of the system over time.

Periodic Inspection: Important note - All storm water management systems react differently depending on the conditions that are characteristic to the contributing water shed. Variables such as storm intensity, runoff flow rates, site geology, surface stabilization and pollution load will affect the system operation. As does the inspection and maintenance frequency to ensure optimum effectiveness.

Inspections should be done periodically, with a greater number scheduled during the system start up and less frequently as the operator becomes familiar with the system performance characteristics. It is recommended that the end user keep records of the performance using the inspection log record sheet found in the back of this manual. These records shall identify the cycle of maintenance “system calibration” required for the specific applications based on the contributing water shed variables operating under “normal” conditions.

Please note that immediate maintenance may be required during “non-normal” events such as during adverse weather conditions or emergency fuel spills. See information on emergency spills in this manual.

Visual inspection of all assessable components shall be performed throughout the lifetime of the system. Access has been supplied at critical points to monitor hydraulic performance and removed pollutants buildup.

Standard Maintenance:

After construction has been completed and all disturbed surfaces have been stabilized by means of vegetation, asphalt or concrete surfaces, and all drainage system components have been constructed and are free of construction debris and sediments; then the storm water management system can be considered in an operational status.

Periodic visual inspections will help to identify issues of concern.The usual indicators are signs of slow flows, backed up water, visible oil, trash and debris or an excessive amount of sediment in the storage area.

Normal operational flows can be observed to flow freely at the predicted design elevations, from the inlet to the outlet module, following a serpintine path thru the storage and attenuation modules. Note that some modules are designed to permanently

retain water where others may hold water and slowly release it over a typical 24 hour period. During a storm water event, the flows and water surface elevations will fluctuate from a low flow to a high flow/ storage status. The storage modules should fill during the event and drain down within a 24 hour period after the event has stopped. All pipes, orifices, weirs and standpipes should pass flows freely and at optimum capacity.

Standard maintenance is performed using a vacuum truck to suction the accumulated sediments, oils and greases and trash and debris from the system. Whereas an on-site maintenance staff can remove these items by hand, it is preferred that the vacuum truck be used as dictated by specific system conditions. When a specialized module designed to have a permanent water level is used, the vacuum truck should pump the liquid level down to inspect the below water elevation structures and sump storage areas.

Oils and greases can be handled by on-site staff by utilizing absorbent products that soak up the oils (and not) converting the oils from a liquid into a manageable solid form. These oil soaked absorbent materials should be disposed of in an approved manner.

Sediments, trash and debris shall be removed and disposed of in an approved manner.

Any indications of hazardous material, determined by visual inspection, testing, smell or abnormality, should be reported and handled per appropriate regulations.

Flow Conditions

System operators should familiarize themselves with proper hydraulic flow condition indicators, acceptable depths of sedimentation, debris and trash build up, and concentrations of oils and greases.

Hydraulic flow conditions are those that are established by the design as either a flow/storage or as a water quality treatment function. Both have performance characteristics that can be visually identified so as to determine the effective and efficient operation of the system.

The engineering design drawings should note the various expected water surface level elevations that are achieved during different design storms within the various modules. Since it is difficult for a visual inspection to coincide with the exact time given water elevations are predicted, the following guidelines are given for evaluation.

Visual Inspection Guide:

<u>Internal Flow Evaluation</u>

Low flow: water should flow freely from the inlet to the outlet, travelling the intended attenuation path thru the system with the water surface elevation below the structure

beam height (12” deep), the system should drain completely 24 hours after a storm event,

Medium flow: the system should hold and maintain a water level during the 24 hour storm event and yet continually fill as the storm increases or drain downward as the event recedes. Flow within the system should occur freely from inlet to outlet only being restricted when a flow control structure has been integrally designed in place. Flow control devices may result in a water level backing up either temporarily or permanently; noting devices such as water quality modules may require a permanent water level to operate properly (see water quality treatment). Other system applications should drain completely 24 hours after a storm event.

High flow: the system should fill to the maximum design storm water level elevation (hydraulic grade line) per design. In most cases, that is the highest storage elevation available in the system, at the underside of the module top slab, or the invert of the overflow pipe. As the storm event recedes, the water level should begin to drain down via flow thru the system and discharge. The system should drain completely within 24 hours after a storm event.

Pollutant Storage Capacities

<u>Oil and Grease</u>

Oil and Grease Collection (with optional Oil water separator module specified) - Oil and grease accumulation is generally a function related to vehicle parking lot and drive areas, oil generating land uses or emergency spill conditions. It is important to maintain the system from accumulating excessive volumes of oils in that they may wash over into other sections of the system potentially clogging and reducing the infiltration capacity, blocking control devices and contaminating the overall system. The following standards apply.

Oil should not accumulate more than a visible sheen on the water surface in the oil water separation module only. A sheen is described as a fine, thin oil layer on the water surface identified by the glossy rainbow colors. A dipstick (dry wooden stick) can be used as a probe to determine the thickness of oil on the surface.

Accumulated oils could be associated with insufficient maintenance or a potential large volume oil resource. Any accumulation of oil should be promptly maintained by an experienced waste handler. Emergency spills such as those generated by an accidental spill shall be contained and removed immediately before the next storm event. Spills shall be handled in accordance with local environmental regulations. See spill and accumulated oil maintenance procedures.

Sediments

Sediments (with optional primary grit module or sedimentation modules specified) - Sediments shall be periodically removed from the system as they accumulate within the designated storage modules. The inlet modules are generally equipped with a sediment storage sump located in the base of the inlet structure. Inspection should be performed after major storm events or a minimum of annually, unless a different inspection cycle has been determined to be sufficient. Inspection shall consist of using a probe to determine the presence of and depth of the accumulated solids. Access is via the 24" manhole.

Note that excessive volumes of sediments will reduce the performance and efficiency of the system. Regional accumulations of solids such as those associated with ice and snow, may result in large springtime volumes of sand and gravels used for traction and ice control.

Trash and Debris

Trash and Debris (with optional trash and debris module specified) - Trash and debris accumulates in the inlet module in three forms; floating debris, neutrally buoyant, and heavy material. The floating debris is visible from the access manhole floating on the water surface in the form of but not limited to wood, paper, plastic, foam, bottles and cans. The neutrally buoyant material resides below the surface and combines with the natural flow regime of the system. It is hard to detect and can only be recognized when at a high concentration appears as a thickening of the water viscosity. Heavier material will simply settle to the sump base and combine with the sediments.

Note that trash and debris typically cause the most problems when they become lodged in a flow control device such as an outlet elbow, riser pipe, and orifice or weir structure. This can be detected visibly when the system is pumped down during maintenance. It can also be evaluated as a condition when flow is impeded and the water level backs up higher than the design elevations.

Emergency Spill Conditions (with optional emergency spill control module specified):

Emergency spill conditions are defined as an excessive accumulation of hydrocarbons such as oil, gasoline, diesel fuel, transmission oil or antifreeze usually resulting from an accidental discharge. Excessive accumulation is described as any amount larger than a thin "sheen" visible on the water surface.

Care should be given in handling these types of fluids. The incident should be reported to the appropriate authorities and should be mitigated by a hazardous waste consultant approved for such matters.

retain-it ®

Maintenance Log

Storm Water Management System

Location: ID #:

Date	Inspection Notes	Inspector

Note the following conditions:

Inlet Module

Outlet Module

Water Quality Module

Oil Elbow

Oil Accumulation

Sedimentation Accumulation

Trash and Debris Quantity

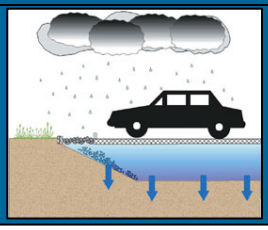
Flow Conditions

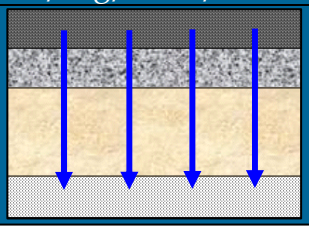
Flow Control Outlet Structure

Overflow Pipe

Porous Asphalt Pavement for Stormwater Management

The UNH Stormwater Center Web: www.unh.edu/erg/cstev/





Benefits and Uses

Porous Asphalt can be used in replace of traditional stormwater management measures given the proper conditions. Porous Asphalt's primary advantages are:

1. Quantity and Flood Control
2. Water Quality Treatment
3. Recharges Groundwater to Underlying Aquifers
4. Allows for Reduction of Stormwater Infrastructure (Piping, Catch-Basins, Retention Ponds, Curbing, etc.)
5. Suitable for Cold-Climate Applications, Maintains Recharge Capacity When Frozen
6. Allows for Reduced Salt and Sand Usage Due to Low/No Black Ice Development
7. Maintains Traction While Wet
8. Reduced Spray from Traveling Vehicles, Reduced Roadway Noise
9. Extended Pavement Life Due to Well Drained Base and Reduced Freeze-Thaw

Disadvantages

- Requires Routine (Quarterly) Vacuum Sweeping (Vac-Assisted Dry Sweeper Only)
- Proper Construction Stabilization and Erosion Control are Required to Prevent Clogging
- Quality Control for Material Production and Installation are Essential for Success
- Accidental Seal-Coating or Similar Surface Treatment Will Cause Failure

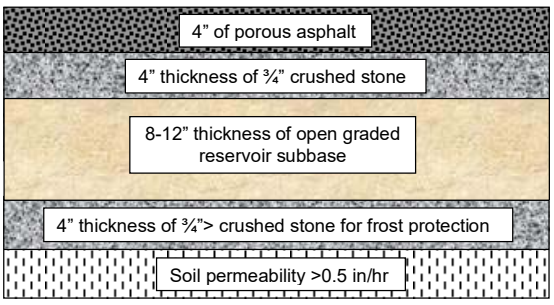
Cost & Maintenance

- Total Project Cost is Comparable for Porous Asphalt with Reduced Stormwater Infrastructure VS. Standard Pavement Applications where Stormwater Infrastructure is Required
- Materials Cost is ~20-25% More Than Traditional Asphalt
- Long-term Maintenance is Required by Routine Quarterly Vacuum Sweeping
- Sweeping Cost May Be Off-set by Reduced Deicing Costs
- Repairs Can be Made with Standard Asphalt Not to Exceed 10% of Surface Area

Design Criteria

- Soil Permeability is Recommended Between 0.25-3.0 Inches Per Hour
- Recommended Drainage Time of 24-48 Hours
- Sub-Drains Should be Used Where Proper Drainage May be an Issue to Minimize Frost Damage
- Most Appropriate for use with Low-Use Roadways and Parking Lots—Without a Modified Asphalt Binder
- 3-5 Feet of Vertical Separation is Needed from Seasonal High Groundwater

TYPICAL POROUS ASPHALT CROSS-SECTION



Additional Resources

- The UNH Stormwater Center, Porous Asphalt Specs - General Porous Bituminous Paving and Groundwater Infiltration Beds, http://www.unh.edu/erg/cstev/
- Federal Highway Administration (2006) Porous Pavement Fact Sheet http://www.fhwa.dot.gov/environment/ultraurb/3fs15.htm
- Ferguson, B. (2005), Porous Pavements, CRC Press.
- Porous Asphalt Pavements (2004) Information Series 131. The National Asphalt Pavement Association, Lanham, MD.

Winter Maintenance Guidelines for Porous Pavements





Maintenance Guidelines

- Road surfaces, porous and non-porous, are commonly not treated and plowed until 2 or more inches of snow accumulation.
- Plow after every storm. If possible plow with a slightly raised blade, while not necessary, this will help prevent pavement scarring.
- Up to ~75% salt reduction for porous asphalt can be achieved. Salt reduction amounts are site specific and are affected by degree of shading.

  USE SALT REDUCTION NUMBERS WITH CAUTION!!!
- Pervious concrete salt reduction will vary and is heavily dependent upon shading. For shaded areas, pervious concrete may not achieve salt reduction.
- Apply anti-icing treatments prior to storms. Anti-icing has the potential to provide the benefit of increased traffic safety at the lowest cost and with less environmental impact.
- Deicing is NOT required for black ice development. Meltwater readily drains through porous surfaces thereby preventing black ice.
- Apply deicing treatments during, and after storms as necessary to control compact snow and ice not removed by plowing.
- Sand application should be limited since its use will increase the need for vacuuming
- Vacuum porous areas a minimum of 2-4 times per year, especially after winter and fall seasons when debris accumulation and deposition is greatest.
- If ponding water is observed during precipitation cleaning is recommended.

Winter Maintenance Challenges

- Mixed precipitation and compact snow or ice is problematic for all paved surfaces, but is particularly problematic for porous surfaces. This is corrected by application of excess deicing chemicals.
- De-icing chemicals work by lowering the freezing point of water. Generally, the longer a de-icing chemical has to react, the greater the amount of melting. Meltwater readily drains through porous surfaces thereby reducing chemical contact time. This is corrected by excess salt application.
- Excess salt application in these instances is offset by the overall reduced salt during routine winter maintenance and salt reduction.

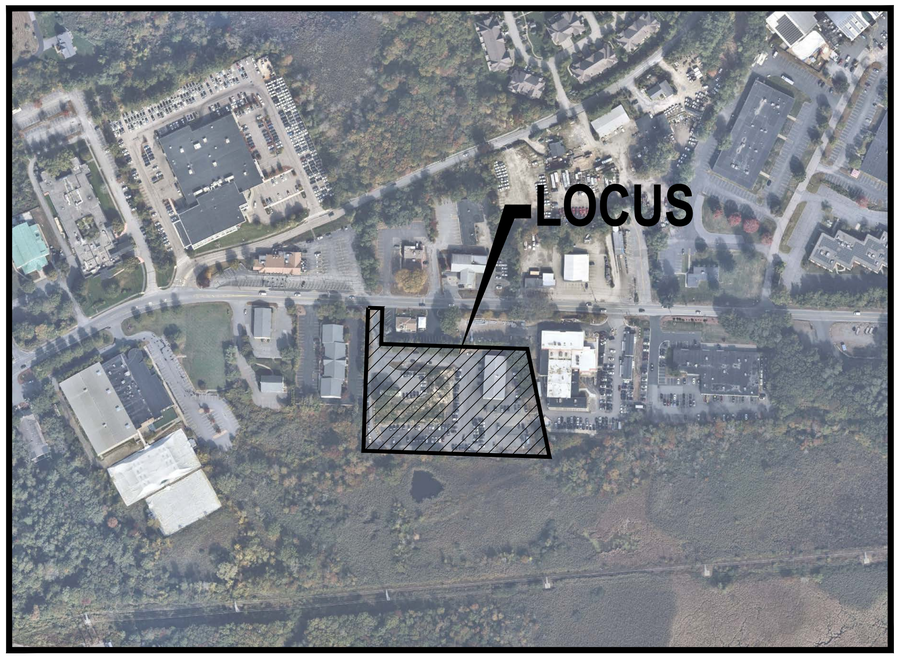
Additional Resources

- The UNH Stormwater Center: http://www.unh.edu/erg/cstev/
- Pennsylvania Asphalt Pavement Association (PAPA) Porous Asphalt Pavements Guide: http://www.pahotmix.org/PDF/porous1.pdf
- National Asphalt Pavement Association (NAPA) Porous Asphalt Pavements for Stormwater Management Revised 11/2008, Information Series 131

PROPOSED SITE DEVELOPMENT PLANS

HERB CHAMBERS OF SUDBURY, INC.

105 BOSTON POST ROAD, SUDBURY, MA 01776

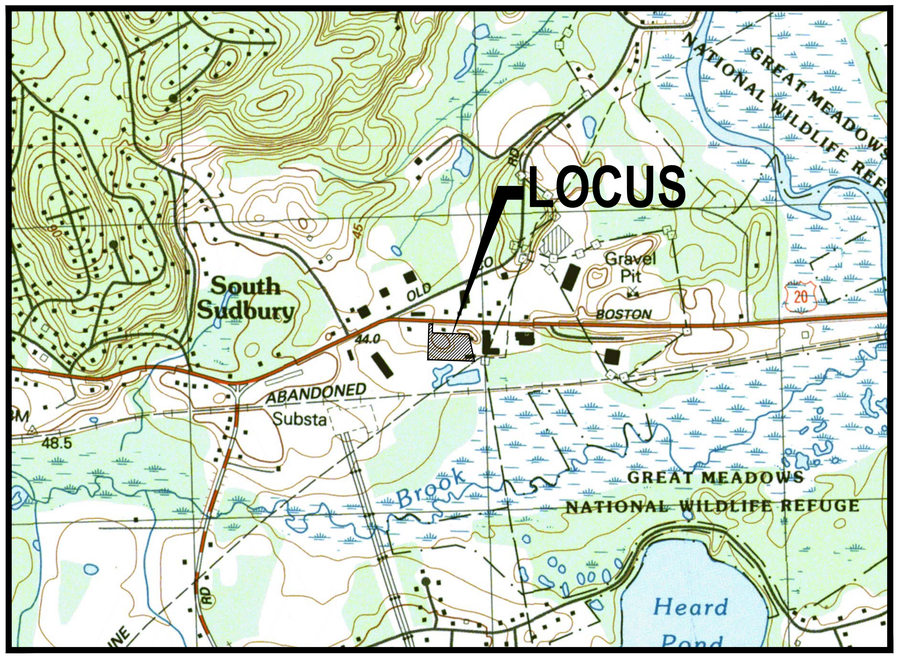


NORTH

AERIAL MAP

SCALE: 1" = 200'

200 100 0 200 4000



NORTH

USGS MAP

SCALE: 1" = 800'

800 400 0 800 1600

APPLICANT:

HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HIGHWAY,
SOMERVILLE, MA 02143

SURVEYOR

CHA CONSULTING, INC.
141 LONGWATER DRIVE-SUITE 104
NORWELL, MA 02061

ENGINEER/PERMITTING:

CROCKER DESIGN GROUP, LLC.
2 SHARP STREET, UNIT B,
HINGHAM, MA 02043
781-919-0808

DRAWING INDEX:

SUPPLEMENTAL PLANS:

FT-1 FIRE TRUCK TURNING EXHIBIT
EXISTING CONDITIONS PLAN (PREPARED BY CHA CONSULTING, LLC.)

No.	Description	Date
	Revisions	
4.	RESPONSE TO PLANNING BOARD COMMENTS	7.23.21
3.	RESPONSE TO PEER REVIEW COMMENTS	6.28.21
2.	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	4.28.21
1.	REV. PER POROUS PAVEMENT SIGNAGE	4.19.21

7-23-2021

COMMONWEALTH OF MASSACHUSETTS
GABRIEL R. CROCKER
CIVIL
No. 47917
REGISTERED PROFESSIONAL ENGINEER

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
2 SHARP STREET, UNIT B
HINGHAM, MA 02043
P: 781-919-0808

Project

105 BOSTON POST ROAD

SUDBURY, MA

Prepared for

HERB CHAMBERS OF SUDBURY, INC.

259 MCGRATH HWY
SOMERVILLE, MA 02143

Drawing Title

COVER SHEET

Project No.	100-108
Date	3/22/2021
Scale	AS NOTED
Drawn By	DJN
Approved By	GC

Drawing No.

C-0

12" RCP TO BE REMOVED AND THE AREA IS TO BE HAND RAKED, SEEDED WITH NEW ENGLAND WETLAND SEED MIX AND STABILIZED THE SAME DAY. (9 SF OF TEMPORARY DISTURBANCE)

EXISTING RIP RAP TO BE KEPT IN PLACE BY CONTRACTOR UNTIL CONSTRUCTION SEQUENCING DICTATES REMOVAL FOR INSTALLATION OF FINAL SITE CONDITIONS

FEMA ZONE X (AREA OF 0.2% ANNUAL CHANCE FLOOD, LAND ABOVE EL 121 NAVD88)(ENTIRE SITE IS ABOVE EL 121)

EXISTING CHAINLINK FENCE TO REMAIN

PROPOSED LIMIT OF WORK

BEGIN DOUBLE 12" SILT SOCK
END SINGLE 12" SILT SOCK
BEGIN SILT FENCE

EXISTING GRASS AREAS TO BE STRIPPED, REMOVED, STABILIZED AND PLANTED IN ACCORDANCE WITH LANDSCAPING PLAN C-6

LIMIT OF NHESP PRIORITY HABITATS OF RARE WILDLIFE

100' WETLAND BUFFER

BEGIN SINGLE 12" SILT SOCK

PROPOSED LIMIT OF WORK

EXISTING WOODS TO REMAIN

APPROXIMATE LOCATION OF AN EXISTING HOLDING TANK. CONTRACTOR TO VERIFY LOCATION AND STRUCTURAL INTEGRITY PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT SYSTEM DURING CONSTRUCTION. ANY ISSUES THAT ARISE BEFORE OR DURING CONSTRUCTION, THE CONTRACTOR IS INSTRUCTED TO CONTACT CROCKER DESIGN GROUP, LLC (CDG) AND OWNER.

EXISTING WOODS TO REMAIN

EXISTING CHAINLINK FENCE TO REMAIN

BEGINNING OF EXISTING CHAINLINK FENCE TO REMAIN

EXISTING BUILDING TO BE PROTECTED AND MAINTAINED

TO BE REMOVED (TBR)

END DOUBLE 12" SILT SOCK
BEGIN SINGLE 12" SILT SOCK
END SILT FENCE

PROPOSED LIMIT OF WORK

N/F
VILLAGE EAST CONDOMINIUM
MAP K11 LOT 100
MASTER DEED
BK 18597 PG 406

PROPOSED 12" SILT SOCK

END SINGLE 12" SILT SOCK

N/F
ND ROVER METROWEST, LLC
MAP K11 LOT 15
BOOK 35798 PAGE 182

ALL EXISTING SITE IMPROVEMENTS (EXCEPT THOSE NOTED TO REMAIN) SHALL BE PROPERLY STRIPPED, REMOVED, AND DISPOSED OF OFF-SITE BY CONTRACTOR. SITE SHALL THEN BE EXCAVATED AND GRADED TO SUBGRADE THROUGHOUT IN PREPARATION FOR THE PROPOSED SITE IMPROVEMENTS

APPROXIMATE LOCATION OF EXISTING SUBSURFACE SEWAGE DISPOSAL SYSTEM. CONTRACTOR TO PROTECT SYSTEM DURING CONSTRUCTION. ANY ISSUES THAT ARISE BEFORE OR DURING CONSTRUCTION, THE CONTRACTOR IS INSTRUCTED TO CONTACT CROCKER DESIGN GROUP AND OWNER OF PROPERTY IMMEDIATELY.

EXISTING GAS SERVICE TO BE REMOVED AND RELOCATED TO ACCOMMODATE PROPOSED SITE IMPROVEMENTS. CONTRACTOR TO COORDINATE WITH GAS COMPANY AND CARRY COSTS FOR EXCAVATION AND BACKFILL WITH GAS COMPANY LAYING THE PIPE AND PERFORMING INSPECTIONS.

EXISTING PAVEMENT TO BE REMOVED

EXISTING WOODS TO BE STRIPPED AND GRADED TO PROPOSED SUBGRADE

EXISTING CHAINLINK FENCE, FENCE POSTS, AND CONCRETE FOUNDATIONS TO BE REMOVED

CONTRACTOR TO VERIFY EXISTING WATER SERVICE LOCATION PRIOR TO THE COMMENCEMENT OF ANY WORK. CONTRACTOR TO REMOVE AND RELOCATE EXISTING WATER SERVICE TO ACCOMMODATE PROPOSED SITE IMPROVEMENTS. CONTRACTOR TO COORDINATE WITH SUDBURY WATER DISTRICT AND CARRY COSTS FOR EXCAVATION AND BACKFILL WITH SUDBURY WATER DISTRICT LAYING THE PIPE AND PERFORMING INSPECTIONS.

EXISTING WATER SERVICE TO BE DISCONNECTED AND REMOVED IN ACCORDANCE WITH MASSDOT AND SUDBURY WATER DEPARTMENT

EXISTING WATER LINE EXHIBIT

PROTECT EXISTING UTILITY POLE

END SINGLE 12" SILT SOCK

PROPOSED LIMIT OF WORK

BEGIN SINGLE 12" SILT SOCK

MASS HIGHWAY DEPARTMENT(TBR)

OVERHEAD WIRES TO BE REMOVED

PROPOSED TEMPORARY CONSTRUCTION ENTRANCE

END OF EXISTING CHAINLINK FENCE TO REMAIN

PROPOSED SAW CUT LINE

BEGIN SINGLE 12" SILT SOCK

EXISTING GAS SERVICE TO BE CUT AND CAPPED IN ACCORDANCE WITH THE GAS COMPANY'S RULES, REGULATIONS, AND REQUIREMENTS.

EXISTING PAVEMENT TO BE MILLED AND OVERLAYED

PROPOSED LIMIT OF WORK

END SINGLE 12" SILT SOCK

20 10 0 20 40

GENERAL NOTES

1) PROTECTIONS

A.) PROVIDE PROTECTION NECESSARY TO PREVENT DAMAGE TO EXISTING IMPROVEMENTS, TREES OR VEGETATION.

B.) PROTECT IMPROVEMENTS ON ADJOINING PROPERTIES AND ON OWNER'S PROPERTY.

C.) RESTORE DAMAGED IMPROVEMENTS TO ORIGINAL CONDITION AS ACCEPTABLE TO PARTIES HAVING JURISDICTION.

D.) CONDUCT OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH OPERATIONS, STREETS, WALKS, AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION. STREETS AND ROADWAYS SHALL BE THOROUGHLY CLEANED AND/OR SWEPT ON A DAILY BASIS OR MORE FREQUENTLY AS REQUIRED BY THE GOVERNING AUTHORITY.

2.) UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MASSACHUSETTS HIGHWAY DEPARTMENT SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND/OR THE APPROPRIATE LOCAL AUTHORITIES.

3.) ALL SLOPES, UNLESS OTHERWISE SPECIFIED, SHALL BE LOAMED AND SEEDED FOR STABILIZATION AS SOON AS POSSIBLE TO PREVENT EROSION INTO WETLAND RESOURCE AREAS, ABUTTING PROPERTIES, OR PUBLIC WAYS. EROSION CONTROL BLANKETS ARE REQUIRED FOR ALL 2H:1V SLOPES. SLOPES MAY NOT EXCEED 2H:1V. SEE "SEEDING" NOTE 3.

4.) ANY DEVIATIONS, I.E. "FIELD CHANGES" FROM THE DESIGN PLAN(S) MUST BE APPROVED BY THE DESIGN ENGINEER IN WRITING. CONTRACTOR SHOULD BE AWARE THAT LOCAL AND

STATE AUTHORITIES HAVE JURISDICTION AND APPROVALS MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY PRIOR TO THE IMPLEMENTATION OF THE "FIELD CHANGE." CROCKER DESIGN GROUP, LLC. ASSUMES NO LIABILITY OR RESPONSIBILITY FOR WORK ASSOCIATED WITH FIELD CHANGES COMPLETED WITHOUT REGARD TO THE "FIELD CHANGE" PROCEDURE.

5.) RELOCATION OF ANY UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY.

6.) * * * DIG SAFE NOTE * * *
IN ACCORDANCE WITH MGL. CH. 82, SEC. 40 INCLUDING AMENDMENTS, ALL CONTRACTORS SHALL NOTIFY UTILITY COMPANIES AND GOVERNMENT AGENCIES, IN WRITING, OF THE INTENT TO EXCAVATE, BLAST, DEMOLISH, BORE, OR PERFORM OTHER EARTH MOVING OPERATIONS NO LESS THAN 72 HOURS AND NO MORE THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF SUCH WORK (EXCLUSIVE OF SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS) OR CALL "DIG SAFE" AT 1-888-DIG-SAFE.

7.) LOCATION OF UNDERGROUND UTILITIES ON THIS PLAN ARE APPROXIMATE ONLY AND ARE BASED ON ACTUAL FIELD LOCATIONS OF VISIBLE STRUCTURES AND PLAN COMPILATIONS. EXISTING UTILITY LOCATIONS AND ELEVATIONS SHOWN SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. TEST PITS SHALL BE PERFORMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO THE START OF ANY CONSTRUCTION.

8.) USE OF EXPLOSIVES

A.) COMPLY WITH ALL LAWS, RULES AND REGULATIONS OF FEDERAL, STATE, AND LOCAL AUTHORITIES AND INSURERS WHICH GOVERN STORAGE, USE, MANUFACTURE, SALE, HANDLING, TRANSPORTATION, LICENSING, OR OTHER DISPOSITION OF

EXPLOSIVES. UTILIZE SPECIAL PRECAUTIONS FOR PROPER USE OF EXPLOSIVES TO PREVENT HARM TO HUMAN LIFE AND DAMAGE TO SURFACE STRUCTURES, ALL UTILITY LINES OR OTHER SUBSURFACE STRUCTURES. DO NOT CONDUCT BLASTING OPERATIONS UNTIL PERSONS IN VICINITY HAVE HAD AMPLE NOTICE AND HAVE REACHED POSITIONS OF SAFETY.

B.) BLASTING OF ANY ROCK SHALL REQUIRE APPROPRIATE APPROVALS FROM THE LOCAL FIRE DEPARTMENT, PLANNING BOARD, BUILDING INSPECTOR AND OTHER PERTINENT AGENCIES, PRIOR TO COMMENCEMENT OF WORK. ALL BLASTED ROCK OR OTHER EXCESS MATERIALS MUST BE REMOVED FROM THE SITE AND DISPOSED OF AT THE EXPENSE OF THE CONTRACTOR.

9.) ADDITIONAL BENCHMARKS TO BE SET BY CONTRACTOR PRIOR TO CONSTRUCTION TO ENSURE QUALITY WORKMANSHIP.

Date	Description	No.
	Revisions	
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.

7-23-2021

COMMONWEALTH OF MASSACHUSETTS
GABRIEL R. CROCKER
CIVIL
No. 47917
REGISTERED PROFESSIONAL ENGINEER

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
2 SHARP STREET, UNIT B
HINGHAM, MA 02043
P: 781-919-0808

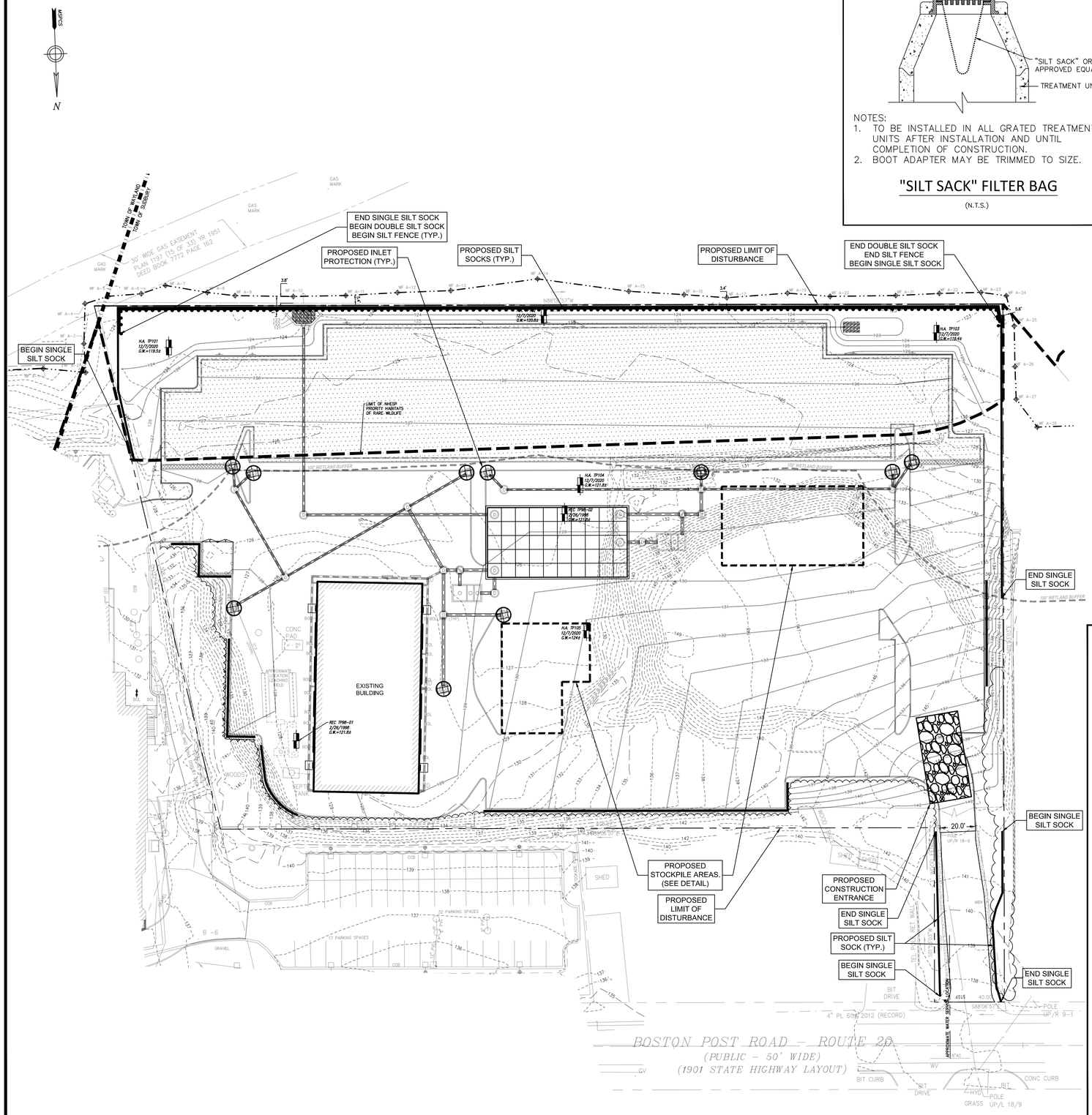
Project
105 BOSTON POST ROAD
SUDBURY, MA

Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILLE, MA 02143

Drawing Title
DEMOLITION PLAN

Project No.	100-108
Date	3/22/2021
Scale	1"=20'
Drawn By	DJN
Approved By	GC

Drawing No.
C-1



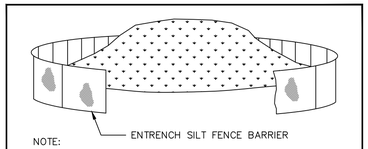
NOTES:
1. TO BE INSTALLED IN ALL GRATED TREATMENT UNITS AFTER INSTALLATION AND UNTIL COMPLETION OF CONSTRUCTION.
2. BOOT ADAPTER MAY BE TRIMMED TO SIZE.

"SILT SACK" FILTER BAG

(N.T.S.)

LEGEND

- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED HAY-BALES ROW
- PROPOSED SILT FENCE
- PROPOSED CONSTRUCTION ENTRANCE
- PROPOSED INLET PROTECTION (SILT SACK OR APPROVED EQUAL)

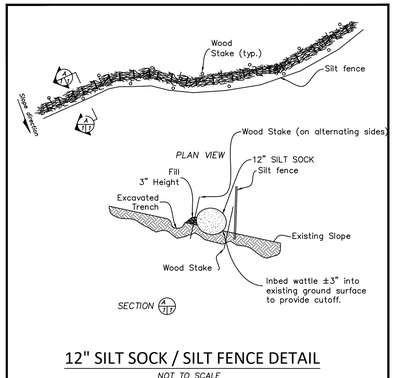


NOTE:

STABILIZE STOCKPILE WITH ANNUAL RYEGRASS, MULCH OR EROSION CONTROL BLANKETS.

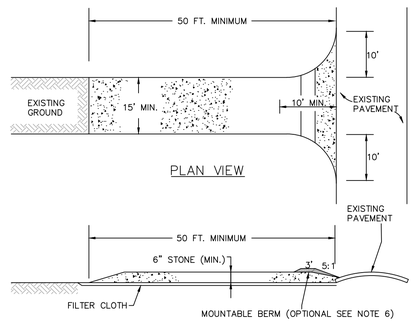
SOIL STOCKPILE

NOT TO SCALE



12" SILT SOCK / SILT FENCE DETAIL

NOT TO SCALE



CROSS SECTION

CONSTRUCTION SPECIFICATIONS:
1. STONE SIZE–USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH–RECOMMEND GREATER THAN OR EQUAL TO 50 FEET WHERE SOILS ARE SANDS AND GRAVELS AND 100 FEET IN SILTS AND CLAYS.
3. THICKNESS–NOT LESS THAN SIX (6) INCHES.
4. WIDTH–FIFTEEN (15) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OF EGRESS OCCURS.
5. FILTER CLOTH–SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SUFACE WATER–ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHALL BE INSTALLED.
7. MAINTENANCE– THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OF FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. PERIODIC INSPECTION AND NEEDED MAINTENCE SHALL BE PROVIDED.

CONSTRUCTION ENTRANCE

NOT TO SCALE

GENERAL NOTES

1. CONTRACTOR TO ABIDE BY PROVISIONS OF EPA NOI NPDES STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND BY STORMWATER MANAGEMENT OPERATION AND MAINTENANCE PLAN AS PREPARED BY CROCKER DESIGN GROUP, LLC.

2. ALL TEMPORARY STOCKPILE AREAS SHALL HAVE EROSION CONTROLS (SILT SOCK AND SILT FENCE) AROUND THE PERIMETER.

3. UNDERGROUND UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN. DIG SAFE MUST BE NOTIFIED (1–800–344–7233) AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION.

4. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IN PLACE AND OBSERVED PRIOR TO ANY WORK STARTING ON THE PROJECT.

5. SITE ENTRY AND EXIT LOCATIONS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON A PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY. WHEN WASHING IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE TO A PUBLIC ROADWAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR.

6. TEMPORARY SEEDING OR OTHER METHOD OF STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE ON ANY AREA OF THE SITE, UNLESS ADDITIONAL CONSTRUCTION OF THE AREAS IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE.

7. UPON COMPLETION OF FINE GRADING, ALL AREAS NOT OTHERWISE PERMANENTLY STABILIZED SHALL BE SEEDED AND MAINTAINED UNTIL A UNIFORM COVERAGE OF 75%± MINIMUM DENSITY, AS DETERMINED BY THE OWNER'S REPRESENTATIVE, IS ACHIEVED. SEE LANDSCAPING SHEET C–6

8. MAINTENANCE – EROSION CONTROLS SHALL BE REPAIRED OR REPLACED AS INSPECTION DEEMS NECESSARY OR AS DIRECTED BY THE ENGINEER OR ARCHITECT. ACCUMULATED SILT AT ANY EROSION CONTROL DEVICE SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 0.25 OR 0.50 TIMES THE HEIGHT OF THE EROSION CONTROL DEVICE. FOR SILT FENCE, PLEASE REFER TO LOAD BEARING CAPACITY. SILT SHALL BE DISTRIBUTED ON–SITE IN A MANNER NOT CONTRIBUTING TO ADDITIONAL SILTATION.

CONSTRUCTION PHASING

1. BELOW IS A GENERAL CONSTRUCTION PHASING. A MORE DETAILED SCHEDULE IS PRESENTED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP).

2. EXTENTS OF CONSTRUCTION TO BE DELINEATED BY CONTRACTOR.

3. EROSION AND SEDIMENTATION CONTROL MEASURES INCLUDING SILT SOCK AND SILT FENCE (OR OPTIONAL FILTER SACK IN LIEU OF SILT SOCK AND SILT FENCE) WILL BE INSTALLED. CONTRACTOR SHALL INSPECT CONTROL MEASURES MONTHLY AND AFTER RAIN EVENTS OF 0.5" OR GREATER.

4. THE PROJECT AREA WILL BE CLEARED OF DEBRIS AND BOULDERS. MATERIAL REMOVED FROM THE SITE WILL BE TRANSPORTED TO AN APPROPRIATE FACILITY OR WILL BE DISPOSED OF ELSEWHERE ACCORDING TO FEDERAL, STATE, AND LOCAL GUIDELINES. INACTIVE STOCKPILES OR AREAS OF GRANULAR MATERIAL OR TOPSOIL SHALL BE TEMPORARILY SEEDED OR MULCHED IN ORDER TO CONTROL SEDIMENT LADEN RUNOFF.

5. CONTRACTOR IS RESPONSIBLE TO SET OUT UTILITIES AND ANY NECESSARY GRADES.

6. GRADING OF SITE INCLUDING , PARKING AREAS, AND UNDERGROUND DETENTION CHAMBERS AND DIGGING OF UTILITY TRENCHES TO DEFINED INVERT LEVELS. MATERIAL TO BE STORED ON AN UNUSED SITE AREA FOR FILL OR PROPERLY REMOVED FROM THE JOB SITE. IF SUITABLE TOPSOIL IS FOUND, IT WILL BE REMOVED AND STOCKPILED IN AN UPLAND AREA AT LEAST 100' FROM WETLANDS TO BE REUSED AS TOPSOIL ON THE PROJECT.

7. LAYING OF ALL UTILITIES INCLUDING DRAINAGE PIPES AND STRUCTURES FOLLOWED BY BACK–FILL, TAKING CARE TO LEAVE ONLY TRENCHES BEING WORKED ON OPEN.

8. FINE GRADING FOR THE PARKING AREAS AND DRAINAGE CHAMBERS TO BE COMPLETED.

9. ONCE THE DRAINAGE STRUCTURES ARE INSTALLED, PROVIDE PROTECTION AT ALL CATCH BASINS AND INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.

10. INSTALL BINDER COURSE AND SPREAD TOPSOIL AS NEEDED.

11. LIGHT POLES, SIGNAGE, ETC. WILL BE INSTALLED.

12. INSTALL TOP COURSE OF PAVING AND SIDEWALK.

13. THE FINAL PHASE OF CONSTRUCTION IS RESTORATION AND STABILIZATION OF ALL EXPOSED SURFACES. DISTURBED AREAS SHALL BE LANDSCAPED OR SEEDED (SEE ADDITIONAL DISCUSSION IN SWPPP). IN THE EVENT THAT WEATHER CONDITIONS PREVENT FINAL STABILIZATION, TEMPORARY EROSION AND SEDIMENTATION MEASURES WILL BE EMPLOYED UNTIL THE TEMPERATURE AND WEATHER IS SUITABLE FOR GRASS GROWING. A FINAL INSPECTION WILL ENSURE THAT THE SITE IS CLEARED OF ALL PROJECT DEBRIS AND THAT EROSION AND SEDIMENTATION CONTROLS ARE FUNCTIONING PROPERLY. SILT SOCK AND SILT FENCE WILL REMAIN IN PLACE UNTIL THE SITE IS FULLY STABILIZED AND THE SITE HAS PASSED FINAL INSPECTION. VEGETATION IS TO BE OF A UNIFORM DENSITY OF AT LEAST 75% FOR ACCEPTANCE.

(CONTINUATION OF GENERAL NOTES)

9. ANY CONTRACTOR IS RESPONSIBLE FOR REESTABLISHING ANY EROSION CONTROL DEVICE WHICH HE DISTURBS. EACH CONTRACTOR SHALL NOTIFY THE ENGINEER/ARCHITECT OF ANY DEFICIENCIES IN THE ESTABLISHED EROSION CONTROL MEASURES WHICH MAY LEAD TO UNAUTHORIZED DISCHARGE OR STORM WATER POLLUTION, SEDIMENTATION OR OTHER POLLUTANTS. UNAUTHORIZED POLLUTANTS INCLUDE, BUT ARE NOT LIMITED TO, EXCESS CONCRETE DUMPING OR CONCRETE RESIDUE, PAINTS, SOLVENTS, GREASE, FUEL AND LUBE OIL, PESTICIDES, ANY SOLID WASTE MATERIALS.

10. ALL SIDE SLOPES SHALL BE SEEDED WITH GRASS OR INSTALL JUTE NETTING TO PREVENT EROSION.

11. INSPECTIONS: INSPECTIONS ARE TO BE PERFORMED BY QUALIFIED PERSONNEL. DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED, AREAS USED FOR STORAGE, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE, MUST BE INSPECTED ONCE EVERY 7 DAYS AND WITHIN 24 HOURS OF A STORM EVEN OF 0.5 INCHES OR GREATER. STABILIZED AREAS ARE TO BE INSPECTED ONCE PER MONTH DISTURBED AREAS AND STORAGE AREAS EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE DRAINAGE SYSTEM. CONTROL MEASURES SHALL BE OBSERVED TO ENSURE THEY ARE WORKING PROPERLY. DISCHARGE LOCATIONS AND POINTS SHALL BE INSPECTED TO ASCERTAIN WHETHER CONTROLS ARE PREVENTING SIGNIFICANT IMPACT. BASED ON THE RESULTS OF THE ABOVE INSPECTIONS, ANY NECESSARY CHANGES TO THE PLAN WILL BE MADE WITHIN 7 DAYS OF THE INSPECTION AND SUBMITTED TO THE TOWN OF SUDBURY PLANNING BOARD. THE CHANGES MUST BE IMPLEMENTED IN THE FIELD BEFORE THE NEXT STORM EVEN IF PRACTICABLE, OTHERWISE AS SOON AS POSSIBLE.

12. INSTALL AND MAINTAIN CATCH BASIN INSERTS IN ALL PROPOSED AND EXISTING CATCH BASINS.

13. PROVIDE TEMPORARY SEDIMENTATION BASINS, SILT SOCK, ETC. AS NECESSARY.

14. STOCKPILES ARE TO BE AT LEAST 100 FEET FROM WETLAND AREAS, STOCKPILES NOT TO BE REUSED WITHIN 30 DAYS ARE TO BE STABILIZED WITH SEED OR MULCH.

15. POTENTIAL STOCK PILE AREA TO BE PROTECTED WITH EROSION CONTROL MEASURES.

16. THE CONTRACTOR SHALL HAVE A WATER TRUCK ON–SITE AT ALL TIMES AND SHALL PROVIDE TEMPORARY PLANTINGS OR OTHER COVERINGS, SUCH AS WOOD CHIPS, TO MINIMIZE THE AMOUNT OF DUST LEAVING THE PREMISES.

30 15 0 30 60

7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.
Date	Description	No.
Revisions		

GABRIEL R. CROCKER CIVIL No.47917 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

7-23-2021

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

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Project

105 BOSTON POST ROAD

SUDBURY, MA

Prepared for

HERB CHAMBERS OF SUDBURY, INC.

259 MCGRATH HWY
SOMERVILE, MA 02143

Drawing Title

SOIL EROSION AND SEDIMENT CONTROL PLAN

Project No.	100-108
Date	3/22/2021
Scale	1"=30'
Drawn By	DJN
Approved By	GC

Drawing No.

C-2

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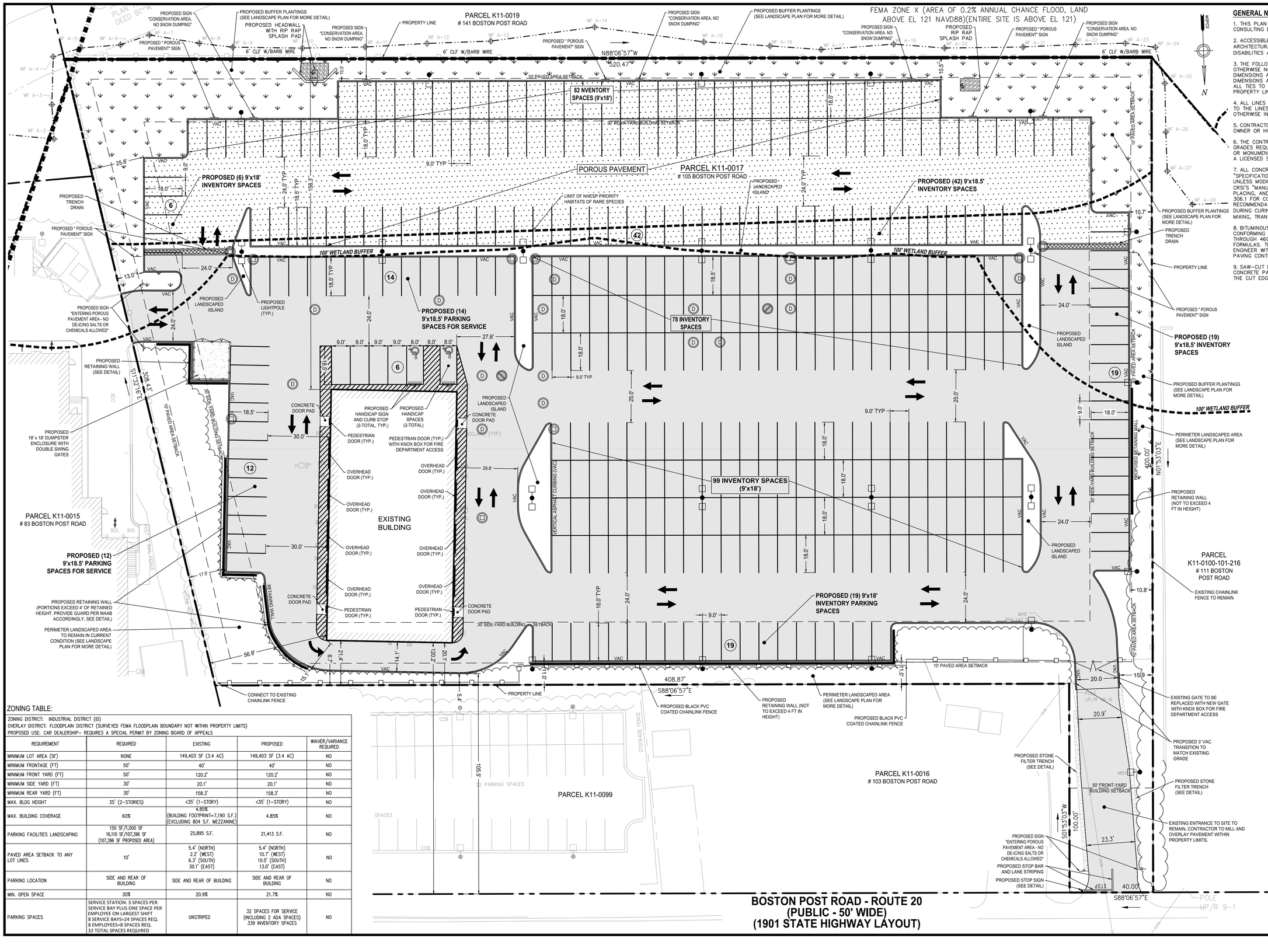

GENERAL NOTES:

1. THIS PLAN REFERENCES A SURVEY PLAN PREPARED BY CHA CONSULTING DATED NOVEMBER 12, 2019.
2. ACCESSIBLE CURB RAMPS SHALL BE PER THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICANS WITH DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES.
3. THE FOLLOWING LAYOUT CRITERIA SHALL CONTROL UNLESS OTHERWISE NOTED ON THE PLAN: DIMENSIONS ARE TO FACE OF CURB AT GUTTER LINE. DIMENSIONS ARE TO THE CENTER OF PAVEMENT MARKINGS. ALL TIES TO PROPERTY LINES ARE PERPENDICULAR TO THE PROPERTY LINE UNLESS OTHERWISE NOTED.
4. ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
5. CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS TO THE OWNER OR HIS REPRESENTATIVE FOR RESOLUTION.
6. THE CONTRACTOR SHALL FURNISH AND SET ALL LINES AND GRADES REQUIRED AND PROTECT ALL PERMANENT BENCHMARKS OR MONUMENTS. DAMAGED MONUMENTS SHALL BE REPLACED BY A LICENSED SURVEYOR AT NO COST TO THE OWNER.
7. ALL CONCRETE WORK SHALL COMPLY WITH ACI301, "SPECIFICATION FOR STRUCTURAL CONCRETE," AND ACI 316R, UNLESS MODIFIED BY THE CONTRACT DOCUMENTS. COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR FABRICATING, PLACING, AND SUPPORTING REINFORCEMENT. COMPLY WITH ACI 306.1 FOR COLD WEATHER PROTECTION, AND FOLLOW RECOMMENDATIONS IN ACI 350R FOR HOT WEATHER PROTECTION DURING CURING. COMPLY WITH ACI 304 "GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE."
8. BITUMINOUS CONCRETE PAVEMENT: CLASS I, TYPE I–1 CONFORMING TO THE STANDARD SPECIFICATIONS, SECTIONS 460 THROUGH 460.02 FOR BINDER COURSE AND TOP COURSE JOB MIX FORMULAS. THE GENERAL CONTRACTOR SHALL SUPPLY THE ENGINEER WITH A CERTIFICATE OF COMPLIANCE SUPPLIED BY THE PAVING CONTRACTOR.
9. SAW–CUT EXISTING PAVEMENT WHERE NEW BITUMINOUS CONCRETE PAVEMENT IS TO COME IN CONTACT. PRIME COAT THE CUT EDGE PRIOR TO PLACEMENT.

ZONING TABLE:

ZONING DISTRICT: INDUSTRIAL DISTRICT (ID)
OVERLAY DISTRICT: FLOODPLAIN DISTRICT (SURVEYED FEMA FLOODPLAIN BOUNDARY NOT WITHIN PROPERTY LIMITS)
PROPOSED USE: CAR DEALERSHIP– REQUIRES A SPECIAL PERMIT BY ZONING BOARD OF APPEALS

REQUIREMENT	REQUIRED	EXISTING	PROPOSED	WAIVER/VARIANCE REQUIRED
MINIMUM LOT AREA (SF)	NONE	149,403 SF (3.4 AC)	149,403 SF (3.4 AC)	NO
MINIMUM FRONTAGE (FT)	50'	40'	40'	NO
MINIMUM FRONT YARD (FT)	50'	120.2'	120.2'	NO
MINIMUM SIDE YARD (FT)	30'	20.1'	20.1'	NO
MINIMUM REAR YARD (FT)	30'	158.3'	158.3'	NO
MAX. BLDG HEIGHT	35' (2–STORIES)	<35' (1–STORY)	<35' (1–STORY)	NO
MAX. BUILDING COVERAGE	60%	4.85% (BUILDING FOOTPRINT=7,190 S.F.) (EXCLUDING 804 S.F. MEZZANINE)	4.85%	NO
PARKING FACILITIES LANDSCAPING	150 SF/1,000 SF 16,110 SF/107,396 SF (107,396 SF PROPOSED AREA)	25,895 S.F.	21,413 S.F.	NO
PAVED AREA SETBACK TO ANY LOT LINES	10'	5.4' (NORTH) 2.2' (WEST) 6.3' (SOUTH) 30.1' (EAST)	5.4' (NORTH) 10.7' (WEST) 10.5' (SOUTH) 13.0' (EAST)	NO
PARKING LOCATION	SIDE AND REAR OF BUILDING	SIDE AND REAR OF BUILDING	SIDE AND REAR OF BUILDING	NO
MIN. OPEN SPACE	30%	20.9%	21.7%	NO
PARKING SPACES	SERVICE STATION: 3 SPACES PER SERVICE BAY PLUS ONE SPACE PER EMPLOYEE ON LARGEST SHIFT 8 SERVICE BAYS=24 SPACES REQ. 8 EMPLOYEES=8 SPACES REQ. 32 TOTAL SPACES REQUIRED	UNSTRIPED	32 SPACES FOR SERVICE (INCLUDING 2 ADA SPACES) 339 INVENTORY SPACES	NO

No.	Description	Date
4.	RESPONSE TO PLANNING BOARD COMMENTS	7.23.21
3.	RESPONSE TO PEER REVIEW COMMENTS	6.28.21
2.	SITE PLAN REVEW / SW MANAGEMENT PERMIT	4.28.21
1.	REV. PER POROUS PAVEMENT SIGNAGE	4.19.21

Revisions

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917
7-23-2021

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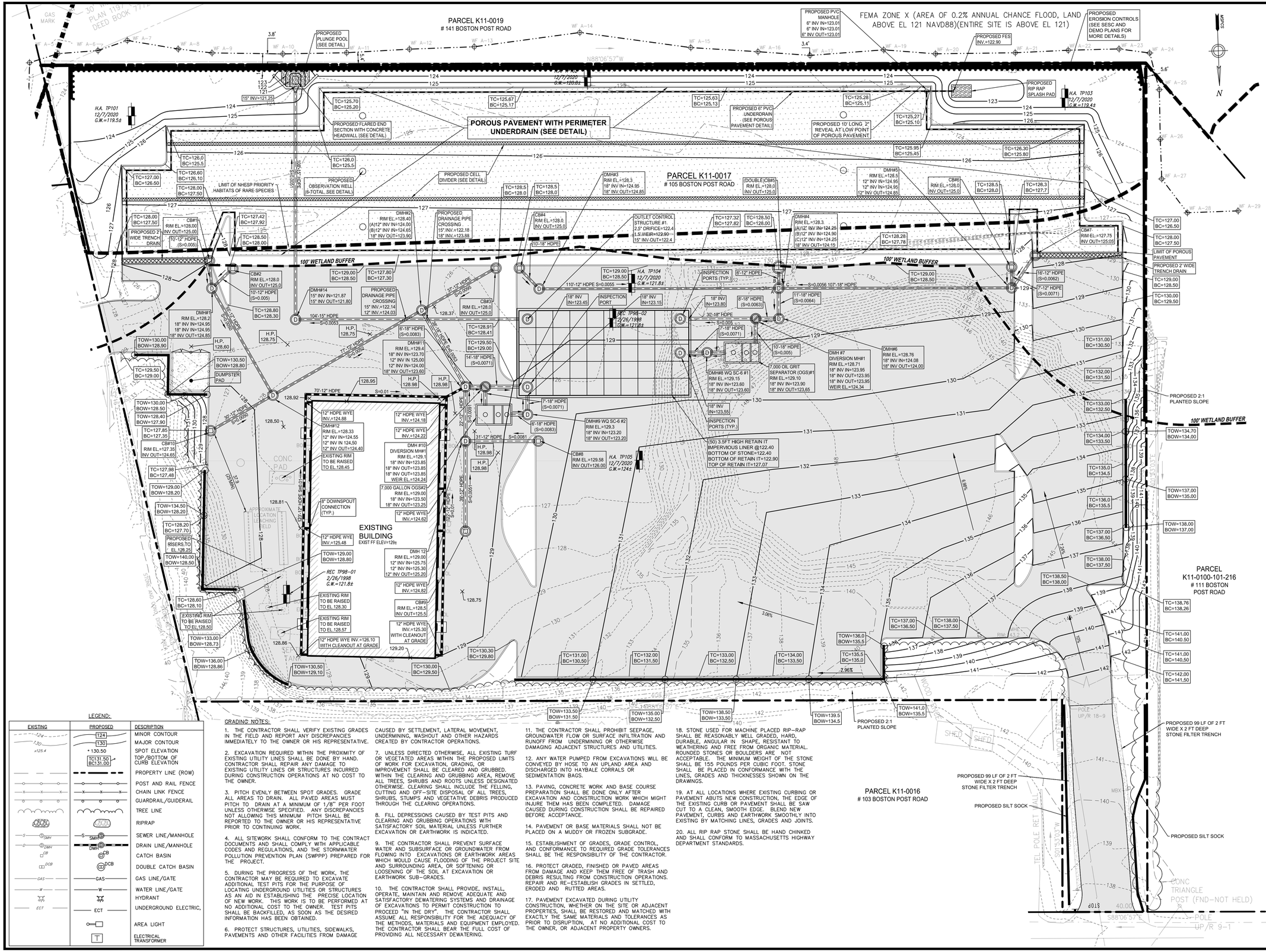
Project
105 BOSTON POST ROAD
SUDBURY, MA

Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY SOMERVILE, MA 02143

Drawing Title
SITE PLAN

Project No.	100-108
Date	3/22/2021
Scale	1"=20'
Drawn By	DJN
Approved By	GC

Drawing No. **C-3**



LEGEND:

EXISTING	PROPOSED	DESCRIPTION
124	124	MINOR CONTOUR
130	130	MAJOR CONTOUR
x125.4	+ 130.50	SPOT ELEVATION
	TC=131.50 BC=131.00	TOP/BOTTOM OF CURB ELEVATION
		PROPERTY LINE (ROW)
		POST AND RAIL FENCE
		CHAIN LINK FENCE
		GUARDRAIL/GUIDERAIL
		TREE LINE
		RIPRAP
S SMH	S SMH	SEWER LINE/MANHOLE
D DMH	D DMH	DRAIN LINE/MANHOLE
CB	CB	CATCH BASIN
DCB	DCB	DOUBLE CATCH BASIN
GAS	GAS	GAS LINE/GATE
W	W	WATER LINE/GATE
		HYDRANT
ECT	ECT	UNDERGROUND ELECTRIC,
		AREA LIGHT
	T	ELECTRICAL TRANSFORMER

GRADING NOTES:

1. THE CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER OR HIS REPRESENTATIVE.

2. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF 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.

3. PITCH EVENLY BETWEEN SPOT GRADES. GRADE ALL AREAS TO DRAIN. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM OF 1/8" PER FOOT UNLESS OTHERWISE SPECIFIED. ANY DISCREPANCIES NOT ALLOWING THIS MINIMUM PITCH SHALL BE REPORTED TO THE OWNER OR HIS REPRESENTATIVE PRIOR TO CONTINUING WORK.

4. ALL SITEWORK SHALL CONFORM TO THE CONTRACT DOCUMENTS AND SHALL COMPLY WITH APPLICABLE CODES AND REGULATIONS, AND THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THE PROJECT.

5. DURING THE PROGRESS OF THE WORK, THE CONTRACTOR MAY BE REQUIRED TO EXCAVATE ADDITIONAL TEST PITS FOR THE PURPOSE OF LOCATING UNDERGROUND UTILITIES OR STRUCTURES AS AN AID IN ESTABLISHING THE PRECISE LOCATION OF NEW WORK. THIS WORK IS TO BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER. TEST PITS SHALL BE BACKFILLED, AS SOON AS THE DESIRED INFORMATION HAS BEEN OBTAINED.

6. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT AND OTHER HAZARDS CREATED BY CONTRACTOR OPERATIONS.

7. UNLESS DIRECTED OTHERWISE, ALL EXISTING TURF OR VEGETATED AREAS WITHIN THE PROPOSED LIMITS OF WORK FOR EXCAVATION, GRADING, OR IMPROVEMENT SHALL BE CLEARED AND GRUBBED. WITHIN THE CLEARING AND GRUBBING AREA, REMOVE ALL TREES, SHRUBS AND ROOTS UNLESS DESIGNATED OTHERWISE. CLEARING SHALL INCLUDE THE FELLING, CUTTING AND OFF-SITE DISPOSAL OF ALL TREES, SHRUBS, STUMPS AND VEGETATIVE DEBRIS PRODUCED THROUGH THE CLEARING OPERATIONS.

8. FILL DEPRESSIONS CAUSED BY TEST PITS AND CLEARING AND GRUBBING OPERATIONS WITH SATISFACTORY SOIL MATERIAL UNLESS FURTHER EXCAVATION OR EARTHWORK IS INDICATED.

9. THE CONTRACTOR SHALL PREVENT SURFACE WATER AND SUBSURFACE OR GROUNDWATER FROM FLOWING INTO EXCAVATIONS OR EARTHWORK AREAS WHICH WOULD CAUSE FLOODING OF THE PROJECT SITE AND SURROUNDING AREA, OR SOFTENING OR LOOSENING OF THE SOIL AT EXCAVATION OR EARTHWORK SUB-GRADES.

10. THE CONTRACTOR SHALL PROVIDE, INSTALL, OPERATE, MAINTAIN AND REMOVE ADEQUATE AND SATISFACTORY DEWATERING SYSTEMS AND DRAINAGE OF EXCAVATIONS TO PERMIT CONSTRUCTION TO PROCEED "IN THE DRY". THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR THE ADEQUACY OF THE METHODS, MATERIALS AND EQUIPMENT EMPLOYED. THE CONTRACTOR SHALL BEAR THE FULL COST OF PROVIDING ALL NECESSARY DEWATERING.

11. THE CONTRACTOR SHALL PROHIBIT SEEPAGE, GROUNDWATER FLOW OR SURFACE INFILTRATION AND RUNOFF FROM UNDERMINING OR OTHERWISE DAMAGING ADJACENT STRUCTURES AND UTILITIES.

12. ANY WATER PUMPED FROM EXCAVATIONS WILL BE CONVEYED BY HOSE TO AN UPLAND AREA AND DISCHARGED INTO HAYBALE CORRALS OR SEDIMENTATION BAGS.

13. PAVING, CONCRETE WORK AND BASE COURSE PREPARATION SHALL BE DONE ONLY AFTER EXCAVATION AND CONSTRUCTION WORK WHICH MIGHT INJURE THEM HAS BEEN COMPLETED. DAMAGE CAUSED DURING CONSTRUCTION SHALL BE REPAIRED BEFORE ACCEPTANCE.

14. PAVEMENT OR BASE MATERIALS SHALL NOT BE PLACED ON A MUDDY OR FROZEN SUBGRADE.

15. ESTABLISHMENT OF GRADES, GRADE CONTROL, AND CONFORMANCE TO REQUIRED GRADE TOLERANCES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

16. PROTECT GRADED, FINISHED OR PAVED AREAS FROM DAMAGE AND KEEP THEM FREE OF TRASH AND DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS. REPAIR AND RE-ESTABLISH GRADES IN SETTLED, ERODED AND RUTTED AREAS.

17. PAVEMENT EXCAVATED DURING UTILITY CONSTRUCTION, WHETHER ON THE SITE OR ADJACENT PROPERTIES, SHALL BE RESTORED AND MATCHED WITH EXACTLY THE SAME MATERIALS AND TOLERANCES AS PRIOR TO DISRUPTION, AT NO ADDITIONAL COST TO THE OWNER, OR ADJACENT PROPERTY OWNERS.

18. STONE USED FOR MACHINE PLACED RIP-RAP SHALL BE REASONABLY WELL GRADED, HARD, DURABLE, ANGULAR IN SHAPE, RESISTANT TO WEATHERING AND FREE FROM ORGANIC MATERIAL. ROUNDED STONES OR BOULDERS ARE NOT ACCEPTABLE. THE MINIMUM WEIGHT OF THE STONE SHALL BE 155 POUNDS PER CUBIC FOOT. STONE SHALL BE PLACED IN CONFORMANCE WITH THE LINES, GRADES AND THICKNESSES SHOWN ON THE DRAWINGS.

19. AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT, CURBS AND EARTHWORK SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES AND JOINTS.

20. ALL RIP RAP STONE SHALL BE HAND CHINKED AND SHALL CONFORM TO MASSACHUSETTS HIGHWAY DEPARTMENT STANDARDS.

DRAINAGE NOTES:

1. MANHOLES SHALL BE 48-INCH DIAMETER (UNLESS OTHERWISE SPECIFIED). CAST-IN-PLACE BASES SHALL BE USED WHERE MANHOLES ARE CONSTRUCTED OVER EXISTING PIPES.

2. THE CONTRACTOR SHALL FILL ALL PRE-CAST TANKS WITH WATER FOR LEAKAGE OBSERVATIONS BY THE ENGINEER OVER A PERIOD OF 24-HOURS. ANY LEAKS SHALL BE REPAIRED BY THE CONTRACTOR.

3. FOR SPECIFIC INFORMATION OF FRAMES AND COVER FOR DRAINAGE STRUCTURES SEE DETAIL SHEET

4. DRAINAGE STRUCTURE COVERS SHALL HAVE THE WORD "DRAIN" CENTERED ON THE COVER IN 3-INCH HIGH LETTERS.

5. FRAMES, GRATES AND COVERS SHALL BE SET FIRM AND TRUE TO GRADE, ADJUST FOR GRADE WITH BRICK MASONRY.

6. ALL ON-SITE DRAIN LINES SHALL BE SMOOTH INT. WALLED CPE PIPE UNLESS OTHERWISE NOTED.

7. FLARED END SECTIONS SHALL BE PIPE MANUFACTURER STANDARD CONSTRUCTED FROM THE SAME MATERIAL AS THE PIPE.

8. INSTALL PIPE AND FLARED ENDS IN STRICT ACCORDANCE WITH PIPE MANUFACTURER INSTRUCTIONS.

9. PROTECT PROPOSED INFILTRATION BASINS FROM SEDIMENTATION THROUGHOUT CONSTRUCTION OPERATIONS. INFILTRATION BASINS ARE NOT TO BE USED UNTIL DRAINAGE SYSTEM IS INSTALLED AN FUNCTIONAL.

Date	Description	No.
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.

Revisions

GABRIEL R. CROCKER CIVIL No. 47917 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
7-23-2021

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

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Project

105 BOSTON POST ROAD

SUDBURY, MA

Prepared for

HERB CHAMBERS OF SUDBURY, INC.

259 MCGRATH HWY
SOMERVILE, MA 02143

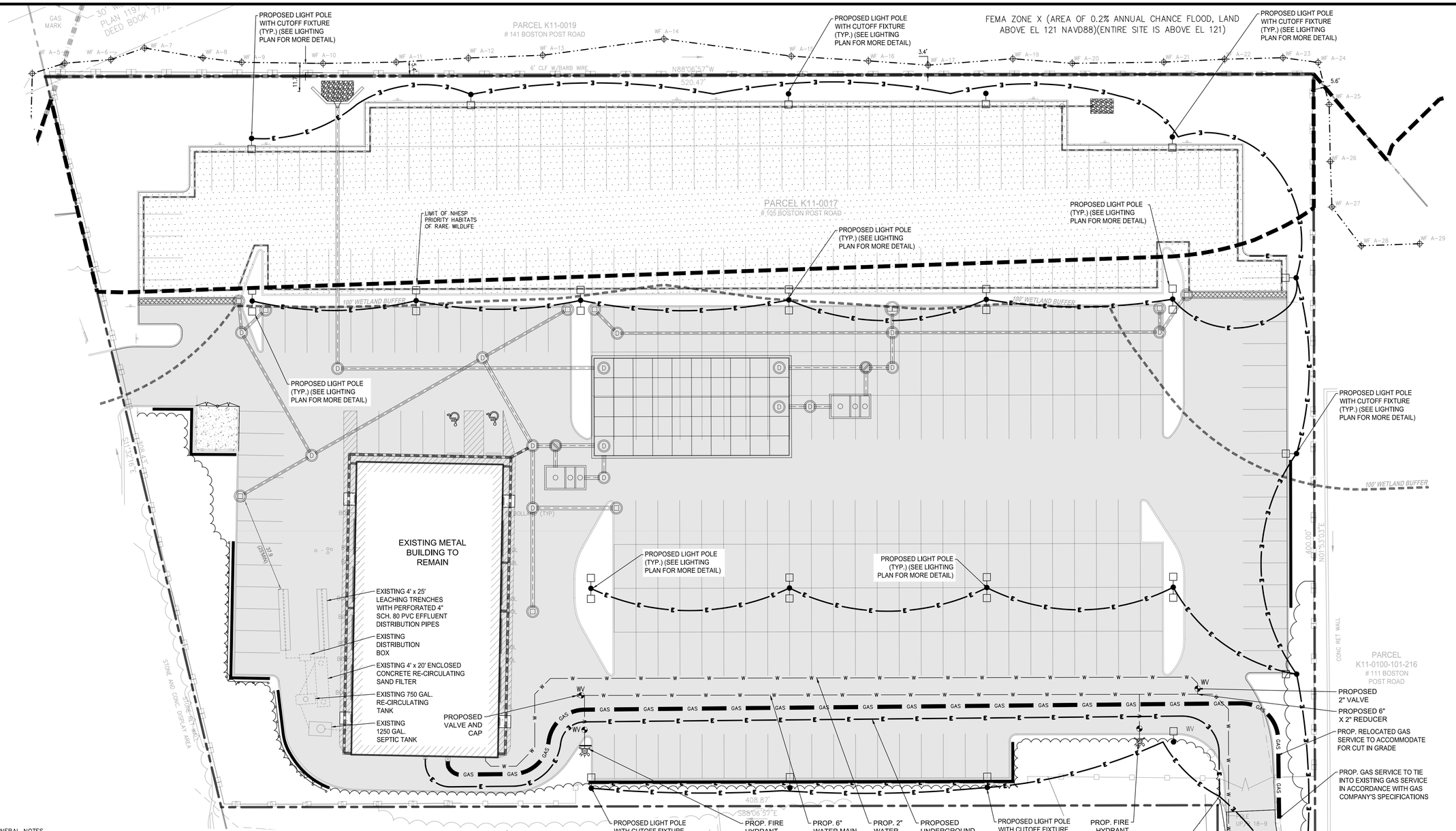
Drawing Title

GRADING AND DRAINAGE PLAN

Project No.	100-108
Date	3/22/2021
Scale	1"=20'
Drawn By	DJN
Approved By	GC

Drawing No.

C-4



GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.

2. AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT, CURBS AND EARTHWORK SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES AND JOINTS.

3. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED. 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 AND ARCHITECT FOR RESOLUTION.

4. ALL UTILITY COVERS, GRATES, ETC. SHALL BE ADJUSTED TO BE FLUSH WITH THE PAVEMENT FINISH GRADE UNLESS OTHERWISE NOTED. RIM ELEVATIONS OF DRAINAGE STRUCTURES AND MANHOLES ARE APPROXIMATE.

5. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS, STRUCTURES AND PLANTING BEDS. PITCH EVENLY BETWEEN SPOT GRADES.

6. THE CONTRACTOR SHALL PRESERVE FROM DAMAGE ALL VEGETATION DESIGNATED TO REMAIN AS SHOWN ON THE DRAWINGS, FLAGGED IN THE FIELD OR AS DIRECTED BY THE LANDSCAPE ARCHITECT. THE LIMIT OF CLEARING SHALL BE IN ACCORDANCE WITH LIMIT OF WORK AS SHOWN ON THE DRAWINGS, UNLESS OTHERWISE SPECIFIED. NO TREES SHALL BE CUT, REMOVED, DESTROYED OR TRIMMED OUTSIDE THE LIMIT OF WORK WITHOUT APPROVAL OF THE OWNER AND THE TOWN OF SUDBURY PLANNING BOARD.

7. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE.

8. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES AND ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA, CONTACT "DIG SAFE" AT 1-888-344-7233 TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE DONE UNTIL UTILITY COMPANIES ARE PROPERLY NOTIFIED IN ADVANCE.

9. ALL SITEWORK SHALL CONFORM TO THE CONTRACT DOCUMENTS AND SHALL COMPLY WITH APPLICABLE CODES AND REGULATIONS, AND THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THE PROJECT. THE CONTRACTOR SHALL MAKE ALL NOTIFICATIONS REQUIRED FOR INSPECTIONS AND TESTING ASSOCIATED WITH SUCH.

10. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND CONSTRUCTION SHALL COMPLY WITH ALL TOWN OF SUDBURY DEPARTMENT OF PUBLIC WORKS FOR PAVING, PAVEMENT CUTTING, EXCAVATION, UTILITY CONNECTIONS, BACKFILLING, AND PATCHING.

11. ALL RIP RAP STONE SHALL BE HAND CHINKED AND SHALL CONFORM TO MASSACHUSETTS HIGHWAY DEPARTMENT STANDARDS.

12. SIZES OF DOMESTIC AND FIRE WATER SERVICES TO BE DETERMINED BY PROJECT MEP ENGINEER AND FIRE PROTECTION ENGINEER.

13. REFER TO PROPOSED SUBSURFACE DISPOSAL PLAN FOR SEPTIC SYSTEM DETAILS.

14. CONTRACTOR IS CAUTIONED THAT NOT EVERY FITTING ON THE WATER AND FIRE SERVICE ARE LABELED. TYPICAL FITTINGS ARE LABELED FROM TIME TO TIME, HOWEVER THE INTENT OF THESE DRAWINGS IS THAT THE CONTRACTOR PROVIDE A COMPLETE WORKING SYSTEM, INCLUSIVE OF ALL COMPONENTS NECESSARY TO CONSTRUCT, OPERATE AND MAINTAIN BOTH THE FIRE AND WATER SYSTEMS.

15. LOCATION OF ELECTRICAL AND TELECOM SYSTEMS ARE APPROXIMATE. REFER TO FINAL ELECTRICAL SITE PLANS FOR DETAIL INFORMATION AND LOCATION OF ALL ELECTRIC, TELECOM, CABLE AND EQUIPMENTS.

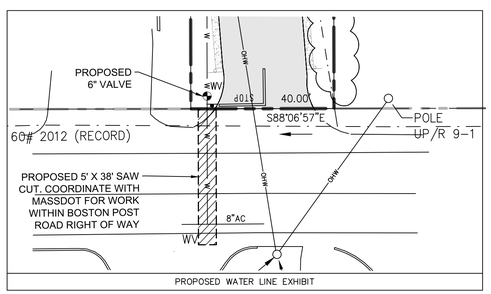
TITLE 5 ANALYSIS

DESIGN FLOW:

SERVICE: 15 GPD PER EMPLOYEE
8 EMPLOYEES x (15 GPD ÷ 1 EMPLOYEE)
= 120 GPD

120 GPD ÷ .74 GPD/SF = 162 SF

FLOW PROVIDED:
2 x 25 x (2 x 1.5 + 4) x .74 GPD/SF
=259 GPD PROVIDED



PROPOSED WATER LINE EXHIBIT

Date	Description	No.
	Revisions	
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.

GABRIEL R. CROCKER
CIVIL
No. 47917
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

7-23-2021

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
2 SHARP STREET, UNIT B
HINGHAM, MA 02043
P: 781-919-0808

Project

105 BOSTON POST ROAD

SUDBURY, MA

Prepared for

HERB CHAMBERS OF SUDBURY, INC.

259 MCGRATH HWY
SOMERVILLE, MA 02143

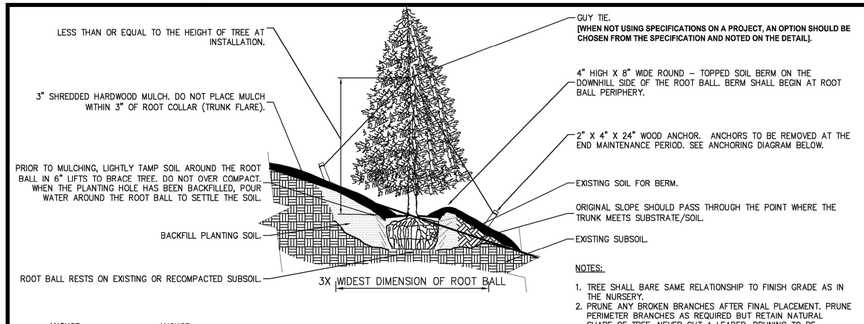
Drawing Title

UTILITIES PLAN

Project No.	100-108
Date	3/22/2021
Scale	1"=20'
Drawn By	DJN
Approved By	GC

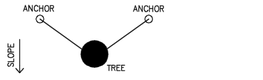
Drawing No.

C-5



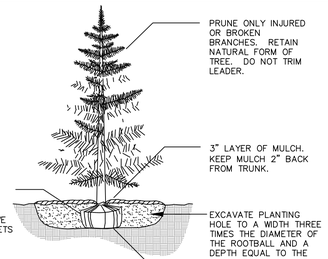
NOTES:

1. TREE SHALL BARE SAME RELATIONSHIP TO FINISH GRADE AS IN THE NURSERY.
2. PRUNE ANY BROKEN BRANCHES AFTER FINAL PLACEMENT. PRUNE PERIMETER BRANCHES AS REQUIRED BUT RETAIN NATURAL SHAPE OF TREE. NEVER CUT A LEADER. PRUNING TO BE PERFORMED BY A QUALIFIED LANDSCAPE PROFESSIONAL.
3. TREE SHALL BE PLUMB AND STRAIGHT.
4. AFTER PLACEMENT AND ROTATION OF TREE, REMOVE ALL ROPES FROM ROOT BALL AND CUT AND REMOVE TOP HALF OF BURLAP.



ANCHORING DIAGRAM
NOT TO SCALE

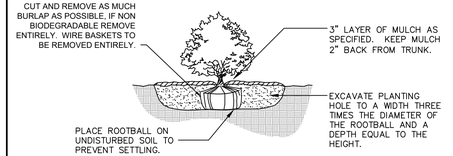
CONIFEROUS TREE PLANTING & STAKING DETAIL ON SLOPE (5% TO 50%)
NOT TO SCALE



NOTES:

1. BACKFILL PLANTING HOLE WITH PLANTING MIX AS SPECIFIED.
2. BACKFILL HALF THE SOIL AND WATER TO SETTLE OUT AIR POCKETS, COMPLETE BACKFILLING AND REPEAT WATERING.
3. IF ROOTS ARE CIRCLING THE ROOTBALL EXTERIOR, CUT ROOTS VERTICALLY IN SEVERAL PLACES PRIOR TO PLANTING.

EVERGREEN TREE PLANTING
NOT TO SCALE



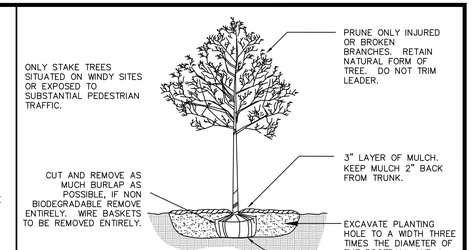
NOTES:

BACKFILL PLANTING HOLE WITH PLANTING MIX AS SPECIFIED.

BACKFILL HALF THE SOIL AND WATER TO SETTLE OUT AIR POCKETS, COMPLETE BACKFILLING AND REPEAT WATERING.

IF ROOTS ARE CIRCLING THE ROOTBALL EXTERIOR, CUT ROOTS VERTICALLY IN SEVERAL PLACES PRIOR TO PLANTING.

SHRUB PLANTING DETAIL
(NOT TO SCALE)



NOTES:

BACKFILL PLANTING HOLE WITH PLANTING MIX AS SPECIFIED.

BACKFILL HALF THE SOIL AND WATER TO SETTLE OUT AIR POCKETS, COMPLETE BACKFILLING AND REPEAT WATERING.

IF ROOTS ARE CIRCLING THE ROOTBALL EXTERIOR, CUT ROOTS VERTICALLY IN SEVERAL PLACES PRIOR TO PLANTING.

TREE PLANTING
(NOT TO SCALE)

PLANT SCHEDULE

SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE*
AR	1	ACER RUBRUM	RED MAPLE	2.5–3" CAL.
QA	19	QUERCUS ALBA	WHITE OAK	3" CAL
WH	46	CORYLUS AMERICANA	WITCH HAZEL	18–24" HT
VA	78	PRUNUS SEROTINA	WLD BLACK CHERRY	18–24" HT.
CA	107	CORNUS ALTERNIFOLIA	ALTERNATE LEAF DOGWOOD	18–24" HT
CR	92	CORNUS RACEMOSA	GREY DOGWOOD	18–24" HT
AM	69	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18–24" HT
TD	78	TAXUS X MEDIA 'DENSIFORMIS'	DENSE YEW	18–24" HT
AH	12	LLEX OPACA	AMERICAN HOLLY	5' HT
EA	54	THUJA OCCIDENTALIS	EASTERN ARBORVITAE	5' HT

GENERAL NOTES

1. ALL PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
2. ALL PLANTING BEDS TO BE FILLED WITH SOIL AND CROWNED ABOVE ADJACENT LAWN OR IMPROVED AREAS.
3. ALL PLANTING BEDS TO BE MULCHED WITH AGED HARDWOOD BARK MULCH TO A DEPTH OF THREE (3) INCHES. PROVIDE FIVE (5) FOOT DIAMETER MULCH CIRCLE AROUND ALL INDIVIDUAL TREE PLANTINGS AND CONTINUOUS MULCH BED AROUND SHRUB PLANTINGS.
4. PLANT MATERIALS SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS THEY BORE TO GRADE IN THE NURSERY.
5. SPACE PLANTS AT SCALED DISTANCES SHOWN ON DRAWINGS UNLESS OTHERWISE DETERMINED IN FIELD FOR SCREENING PURPOSES.
6. ANY PROPOSED SUBSTITUTION OF PLANT MATERIAL SHALL ONLY BE MADE AFTER PRIOR APPROVAL OF LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
7. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL WRITTEN ACCEPTANCE FROM THE OWNER OR HIS REPRESENTATIVE.
8. WARM SEASON GRASS MIX AREAS DEPICTED HEREIN SHALL NOT BE CONSTRUED AS THE FULL EXTENT REQUIRED; IN ADDITION TO AREAS INDICATED HEREIN, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING WARM SEASON GRASS MIX FOR ALL STRIPPED AREAS AND ALL AREAS DISTURBED DURING CONSTRUCTION WHICH MAY BE BEYOND THOSE INDICATED HEREIN.
9. PERMANENT SEEDING SHALL BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND/OR LATE SUMMER AND EARLY FALL FROM AUGUST TO OCTOBER 15. DURING PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15, WHEN SEEDING IS FOUND TO BE IMPRACTICAL, APPROPRIATE TEMPORARY MULCH SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.

SOIL NOTES:

1. ALL AREAS DISTURBED BY CONSTRUCTION NOT DESIGNATED TO RECEIVE OTHER TREATMENT SHALL BE LOAMED A MINIMUM DEPTH AS SPECIFIED BELOW. TOPSOIL FOR THIS PURPOSE SHALL BE TESTED BY AN APPROVED SOIL TESTING LABORATORY AND SHALL MEET THE FOLLOWING MINIMUM STANDARDS:
   a)TEXTURE: FINE SANDY LOAM OR SANDY LOAM, AS DETERMINED BY MECHANICAL ANALYSIS AND BASED ON THE USDA STANDARD SOIL CLASSIFICATION SYSTEM.
   b)ACIDITY: SOIL REACTION SHALL BE IN THE RANGE OF 5.5 TO 7.6, OR SHALL BE AMENDED TO MEET THIS RANGE.
   c)ORGANIC MATTER: TOPSOIL SHALL HAVE A RANGE BETWEEN 10% AND 20% ORGANIC MATTER CONTENT BASED ON THE LOSS ON IGNITION OF OVEN-DRIED SAMPLES.

TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF SIX (6) INCHES AFTER SETTLING ON ALL TURFGRASS LAWN AREAS ADJACENT TO THE BUILDING, AS INDICATED IN THE PROJECT LEGEND. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF FOUR (4) INCHES AFTER SETTLING ON ALL GRAVEL PIT RECLAMATION AREAS, WARM SEASON GRASS MIX AREAS AND OTHER DISTURBED AREAS.

PLANTING MIX: MIX THE SPECIFIED MATERIALS ON-SITE IN THE FOLLOWING PROPORTIONS:
3 PARTS TOPSOIL AS SPECIFIED ABOVE, 1 PART PEAT MOSS, 1 PART SAND, WITH 5 POUNDS OF SUPERPHOSPHATE/CUBIC YARD OF MIXTURE (ONLY IF PLANTS ARE INSTALLED IN SPRING). ALL AMENDMENTS SHALL BE THOROUGHLY INCORPORATED INTO MIXTURE TO ASSURE UNIFORM DISTRIBUTION. PLANTING MIX SHALL BE USED TO BACKFILL ALL TREE AND SHRUB PLANTING HOLES, AS INDICATED IN THE PLANTING DETAILS, AND SHALL BE SPREAD TO A MINIMUM DEPTH OF FOUR (4) INCHES.

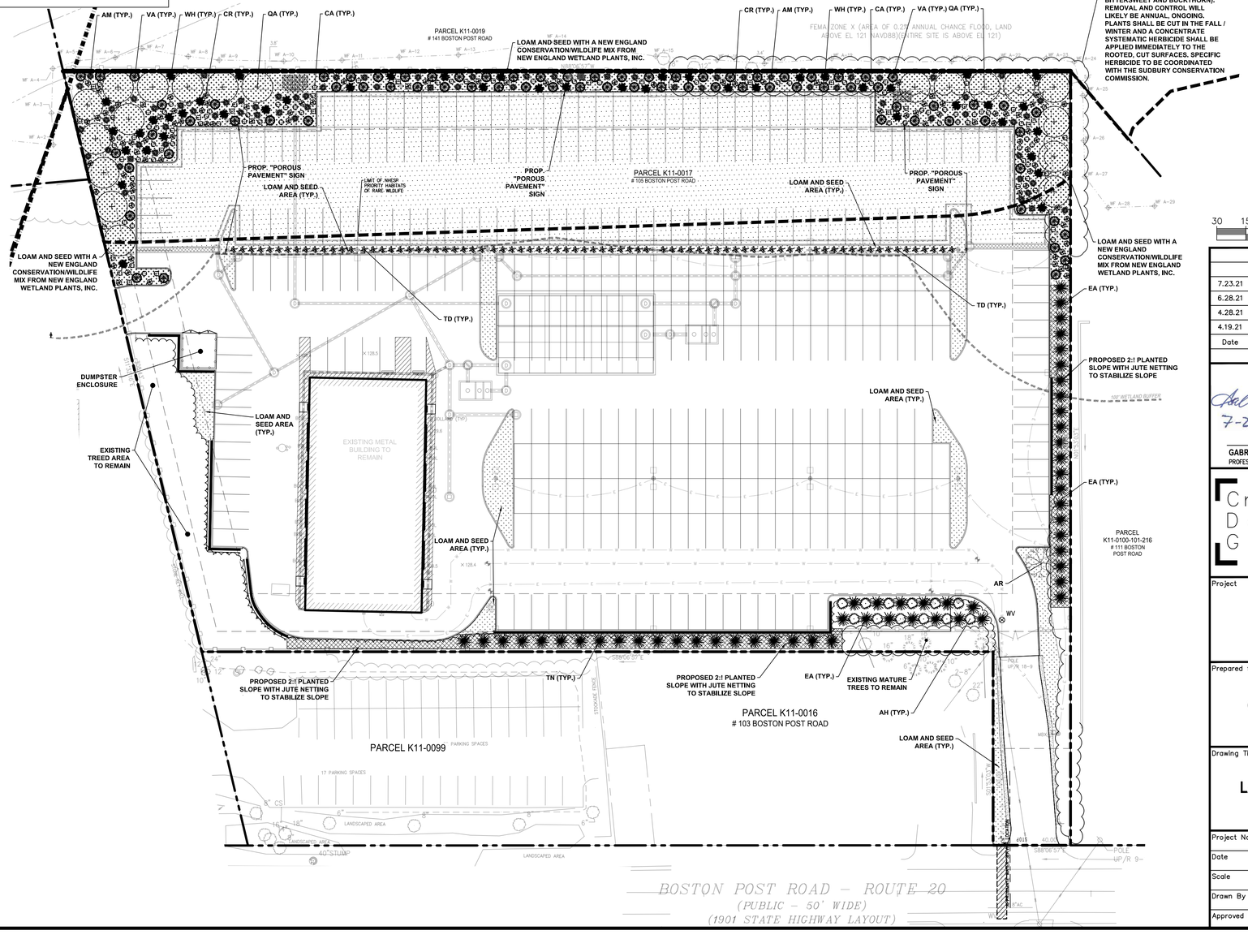
IF PLANTS ARE INSTALLED IN SPRING). ALL AMENDMENTS SHALL BE THOROUGHLY INCORPORATED INTO MIXTURE TO ASSURE UNIFORM DISTRIBUTION.

SEED MIX NOTES:

1. SEED ALL TURFGRASS LAWN AREAS, AS INDICATED IN THE PROJECT LEGEND, WITH A DROUGHT TOLERANT, HIGH-FESCUE TURFGRASS SEED MIX SUCH AS PEARL'S PREMIUM GRASS SEED BY PEARL'S PREMIUM, WAYLAND, MA; ENVIROTURF BY BLUESTEM NURSERY, LAURIER, WA; ECO-LAWN BY WILDFLOWER FARM, COLDWATER, ONT., CAN; OR APPROVED EQUAL, APPLIED AT SEED PRODUCER'S RECOMMENDED RATE.
2. SEED ALL OTHER DISTURBED AREAS WITH "NEW ENGLAND NATIVE WARM SEASON GRASS MIX" BY NEW ENGLAND WETLAND PLANTS, AMHERST, MA, OR APPROVED EQUAL, PER MANUFACTURER'S RECOMMENDATIONS. WARM SEASON SEEDING PROGRAM WILL LIKELY TAKE 2–3 GROWING SEASONS UNTIL GOOD GROWTH IS ESTABLISHED.
3. MULCH ALL SEEDED AREAS WITH 500–700 LBS. OF SALTMARSH HAY OR WEED-FREE STRAW PER ACRE, SPREAD EVENLY. ALL SLOPES OF 3:1 OR GREATER, AFTER BEING LOAMED, SEEDED, AND MULCHED, SHALL BE COVERED WITH JUTE OR BIODEGRADABLE TOBACCO NETTING SECURELY ANCHORED TO THE SLOPE. OVERLAP A NETTING JOINTS A MINIMUM OF 4" AND SECURE WITH A DOUBLE ROW OF STAPLES.*
4. MAINTENANCE OF SEED AREAS SHALL CONSIST OF WATERING, WEEDING, CURING, REPAIR OF ALL EROSION, AND RESEEDING AS NECESSARY TO ESTABLISH A UNIFORM STAND OF GRASS. LAWNS SHALL BE WATERED IN A SATISFACTORY MANNER DURING AND IMMEDIATELY AFTER PLANTING, AND NOT LESS THAN TWICE PER WEEK UNTIL FINAL ACCEPTANCE. ALL AREAS WHICH FAIL TO SHOW A UNIFORM STAND OF GRASS FOR ANY REASON SHALL BE RESEEDED REPEATEDLY UNTIL A UNIFORM STAND IS ATTAINED.
5. HYDROSEEDING IS AN ACCEPTABLE ALTERNATE METHOD OF SEEDING, IF UNDERTAKEN IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

–MATERIALS FOR HYDROSEEDING SHALL INCLUDE TACKIFIER, WOOD CELLULOSE FIBER MULCH, FERTILIZER, GROUND LIMESTONE AND WATER.
–PROVIDE JUTE MATTING OR BIODEGRADABLE TOBACCO NETTING ON ALL SLOPES EQUAL TO OR GREATER THAN 3:1. JUTE MATTING SHALL BE C–JUTE BY CONTECH CONSTRUCTION PRODUCTS, INC, GEOJUTE BY BELTON INDUSTRIES OR APPROVED EQUAL.*
–IF PROJECT SCHEDULE REQUIRES SEEDING TO BE PERFORMED AFTER OCTOBER 15 UNTIL MARCH 31, THE FOLLOWING IS REQUIRED: AFTER HYDROSEEDING/SEEDING, THOSE VEGETATED AREAS WHICH HAVE A SLOPE EQUAL TO OR STEEPER THAN 4:1 SHALL BE COVERED WITH JUTE MATTING AND STAPLED IN PLACE PER MANUFACTURERS REQUIREMENTS. PRECAUTIONS SHALL BE TAKEN TO MINIMIZE DISTURBANCE OF THE HYDROSEED/SEED WHEN INSTALLING THE JUTE.*
–HYDROSEEDING/ SEEDING MIXTURE:
–TACKIFER:
APPLY AT A RATE OF 60 GALLONS PER ACRE.
–WOOD CELLULOSE FIBER MULCH:
APPLY AT A RATE OF 2,000 POUNDS PER ACRE.
–APPLY FERTILIZER AND LIMESTONE AT RATES DETERMINED BY SOIL ANALYSIS

*STRAW MULCH AND NETTING ON SLOPES 3:1 OR GREATER IS NOT REQUIRED
ON HYDROSEEDING OPERATIONS IF SLOPES ARE SPRAYED WITH A BONDED
FIBER MATRIX MULCH, SUCH AS FLEXTERRA BY PROFILE PRODUCTS, LLC,
HYDROSTRAW BFM BY HYDROSTATION, INC., OR APPROVED EQUAL, INSTALLED
IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



Date	Description	No.
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.

Revisions

7-23-2021

COMMONWEALTH OF MASSACHUSETTS GABRIEL R. CROCKER CIVIL No. 47917 REGISTERED PROFESSIONAL ENGINEER

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
2 SHARP STREET, UNIT B
HINGHAM, MA 02043
P: 781–919–0808

Project
105 BOSTON POST ROAD
SUDBURY, MA

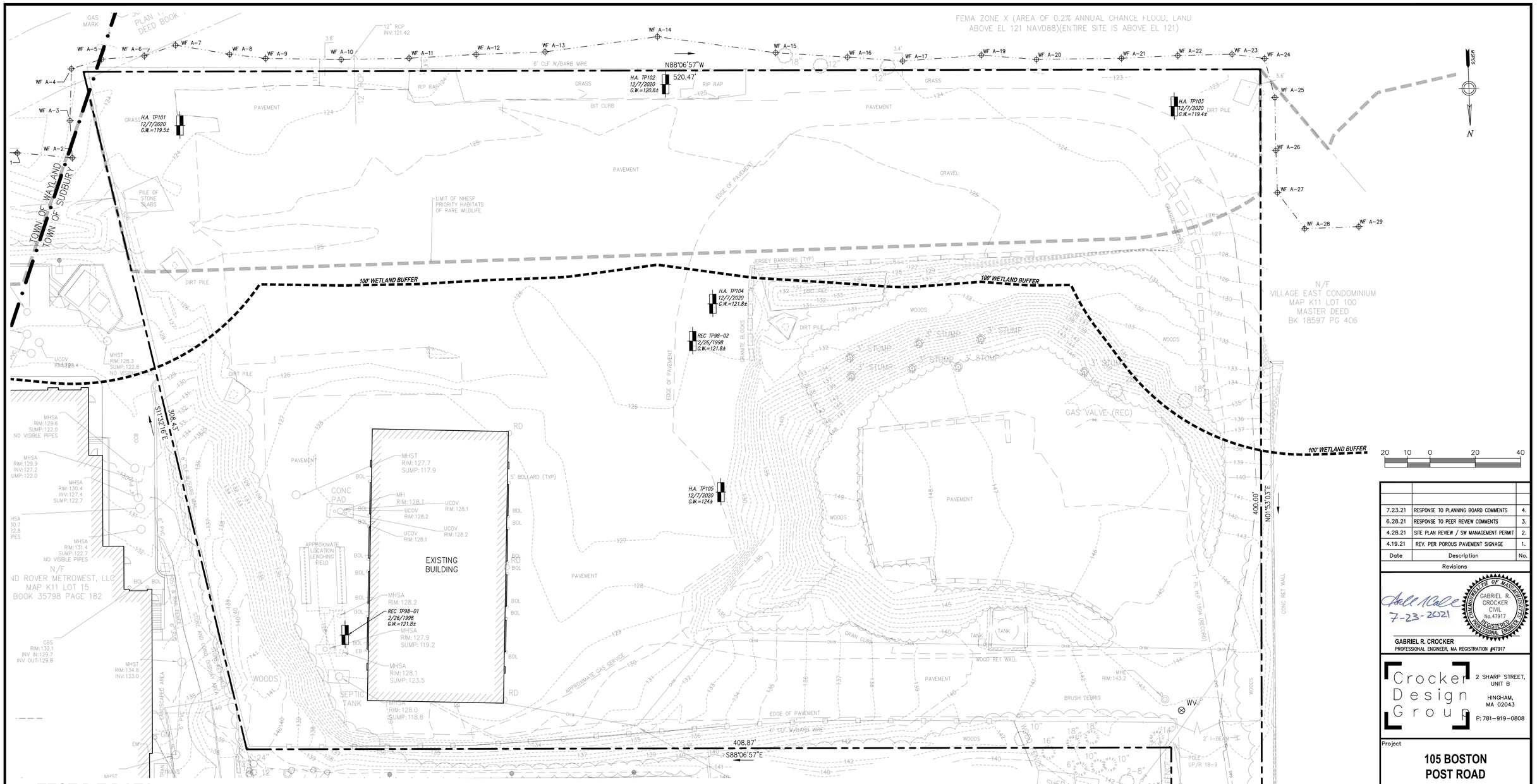
Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILLE, MA 02143

Drawing Title
LANDSCAPING PLAN

Project No.	100-108
Date	3/22/2021
Scale	1"=30'
Drawn By	DJN
Approved By	GC

Drawing No.
C-6

C:\CDG\Crocker Design Group, LLC\Gabriel Crocker – Projects\100-108 Sudbury – Herb Chambers Mass DOT\dwg\Plot Sheets\Site Plan Applications\07 LANDSCAPE PLAN.dwg, C-6 LANDSCAPE PLAN, Jul 23, 2021 10:57



TEST PIT DATA

PERFORMED BY: RANSOM ENVIRONMENTAL CONSULTANTS
DATE: FEBRUARY 26, 1998

TP-98-01

EL. = 128.34

PAVEMENT	EL. = 127.68
FILL	EL. = 125.34
C- COARSE SAND	EL. = 121.34

DEPTH = 7'
ESHGW = 121.8

TP-98-02

EL. = 126.17

A	EL. = 125.59
B-LOAMY SAND	EL. = 124.84
C1-SANDY SILT	EL. = 123.59
C2-SILT LOAM	EL. = 121.17

DEPTH = 5'
ESHGW = 121.8

PERFORMED BY: SCOTT G. SHAY - HALEY & ALDRICH INC
DATE: DECEMBER 7, 2020

TP-101

EL. = 123.8

FILL-SANDY LOAM	EL. = 122.8
FILL-SAND	EL. = 119.3
O-LOAM	EL. = 118.0
SANDY LOAM	EL. = 116.3

DEPTH = 7.5'
ESHGW = 119.5

TP-102

EL. = 124.6

FILL-SANDY LOAM	EL. = 123.6
ASPHALT	EL. = 123.4
O-LOAM	EL. = 120.0
O-SILT LOAM	EL. = 118.4
E-SILT	EL. = 117.1

DEPTH = 7.5'
ESHGW = 120.8

TP-103

EL. = 123.2

FILL-SANDY LOAM	EL. = 122.4
FILL-SAND	EL. = 119.6
O-LOAM	EL. = 118.4
E-SILT	EL. = 117.7

DEPTH = 5.5'
ESHGW = 119.4

TP-104

EL. = 125.7

FILL-SILT LOAM	EL. = 124.9
FILL-LOAMY SAND	EL. = 123.4
O-SILT CLAY LOAM	EL. = 122.7
B-SANDY LOAM	EL. = 121.7
E-SILTY CLAY	EL. = 120.7

DEPTH = 5'
ESHGW = 121.8

TP-105

EL. = 126.9

FILL-SANDY LOAM	EL. = 124.9
C-SAND	EL. = 120.9

DEPTH = 6'
ESHGW = 124.0

Date	Description	No.
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
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Revisions

7-23-2021

COMMONWEALTH OF MASSACHUSETTS
GABRIEL R CROCKER
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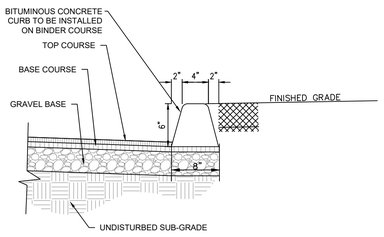
Project
105 BOSTON POST ROAD
SUDBURY, MA

Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILLE, MA 02143

Drawing Title
TEST PIT PLAN

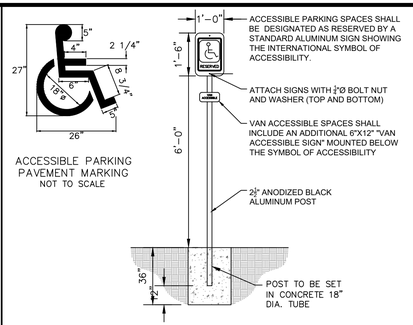
Project No.	100-108
Date	3/22/2021
Scale	1"=20'
Drawn By	DJN
Approved By	GC

Drawing No.
C-7



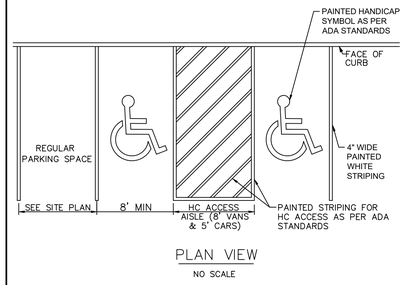
VERTICAL ASPHALT CURB

NOT TO SCALE



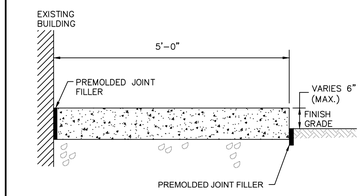
ACCESSIBLE PARKING SIGN

NOT TO SCALE



HANDICAP PARKING LOT STRIPING AND HC STALLS

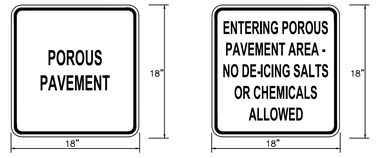
NOT TO SCALE



NOTE:
1. PADS AT DOORWAYS TO BE AT LEAST 5' DEEP AND EXTEND 1' BEYOND DOORWAY EACH SIDE. FINAL DIMENSIONS SHALL BE PER THE ARCHITECTURAL DOORS.
2. REFER TO STRUCTURAL DRAWINGS FOR THICKNESS, FOOTING DESIGN AND REINFORCING DETAILS.
3. MATCH WALK TO DOOR PAD GRADE WHERE NEW OR RECONSTRUCTED WALK IS PROPOSED.

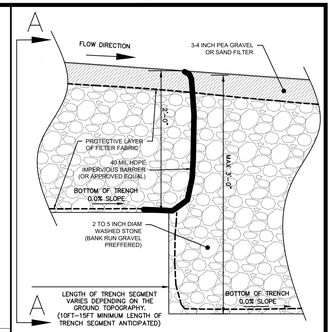
DOOR PAD

NOT TO SCALE



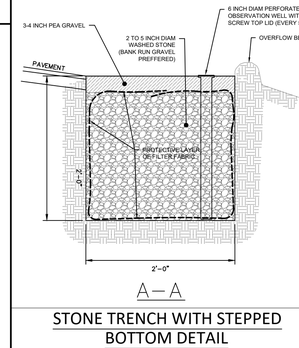
POROUS PAVEMENT SIGN DETAILS

NOT TO SCALE



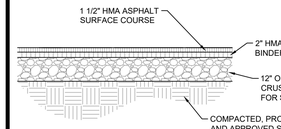
STONE TRENCH WITH STEPPED BOTTOM DETAIL

NOT TO SCALE



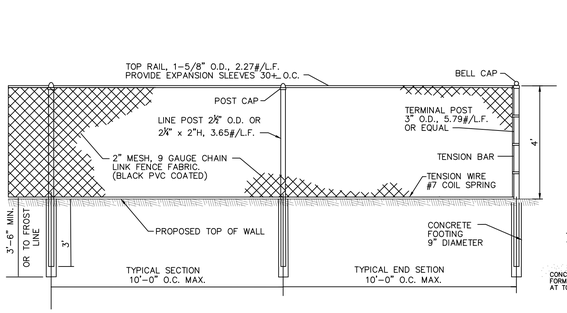
CONSERVATION SIGN DETAIL

NOT TO SCALE

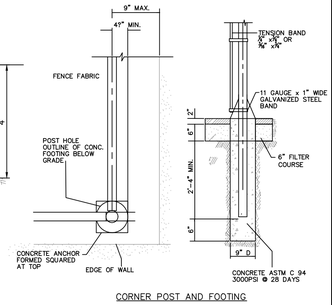


BITUMINOUS PAVEMENT SECTION

NOT TO SCALE



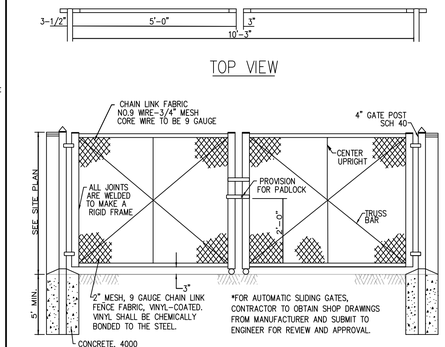
NOTE:
1. BLACK PVC COATED CHAIN LINK FENCE
2. FENCING ALONG THREE SIDES OF CONCRETE PAD



CORNER POST AND FOOTING

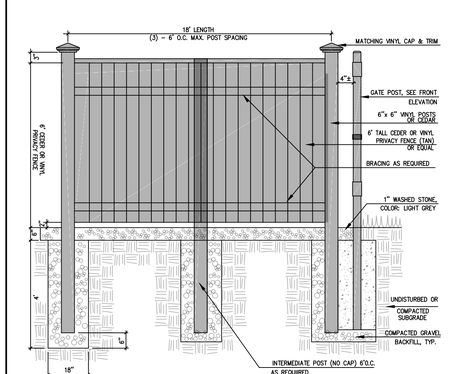
PVC COATED CHAIN LINK FENCE DETAIL

NOT TO SCALE



DRIVEWAY ENTRY GATE DETAIL (CHAIN LINK FENCE)

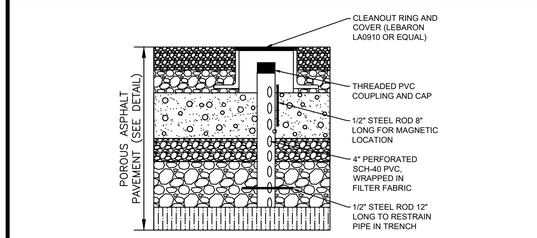
NOT TO SCALE



NOTE:
CONTRACTOR TO COORDINATE FENCE CONSTRUCTION WITH MANUFACTURER'S RECOMMENDATION.

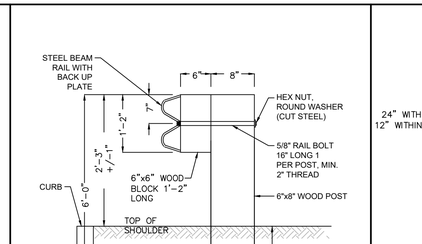
DUMPSTER PAD AND ENCLOSURE

NOT TO SCALE



POROUS PAVEMENT OBSERVATION WELL DETAIL

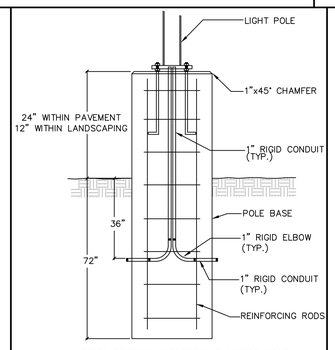
NOT TO SCALE



NOTES:
1. POSTS SPACED 6'-3" CENTER TO CENTER
2. PROVIDE TERMINAL SECTION AT ENDS

WOOD POST GUARD RAIL

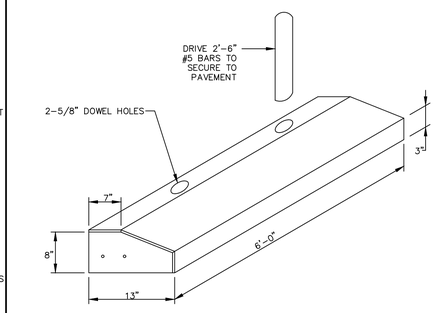
NOT TO SCALE



1. REFER TO FINAL ELECTRICAL PLAN FOR MORE SPECIFIC INFORMATION RELATED TO LIGHTS, LIGHT POLES, AND BASES

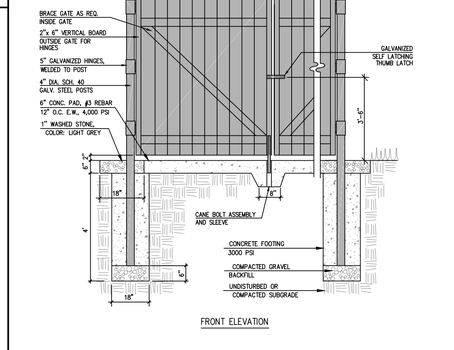
LIGHT POLE EXPOSED BASE DETAIL

NOT TO SCALE



CONCRETE WHEEL STOP FOR HANDICAP PARKING SPACES

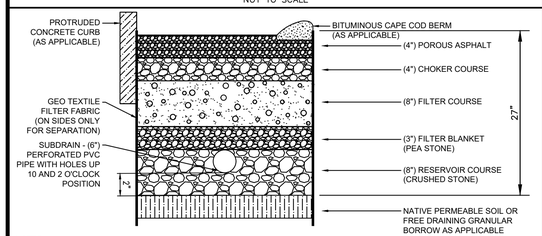
NOT TO SCALE



NOTE:
CONTRACTOR TO COORDINATE FENCE CONSTRUCTION WITH MANUFACTURER'S RECOMMENDATION.

DUMPSTER PAD AND ENCLOSURE

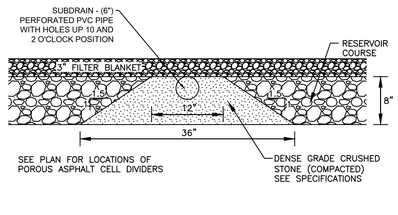
NOT TO SCALE



NOTES:
1. CHOKER COURSE: GRADED CRUSHED STONE (AASHTO NO. 57 STONE).
2. FILTER COURSE: POORLY GRADED SAND (MANUFACTURED) TO MEET NHDOT 304.1 WITH LESS THAN 4 PERCENT FINES.
3. FILTER BLANKET: 3/8" PEA GRAVEL.
4. RESERVOIR COURSE: 3/4" TO 2" WASHED STONE (AASHTO NO. 3).
5. EXCAVATION AND BACKFILL
   - ALL TOPSOIL, SUBSOIL AND DELETERIOUS MATERIAL, IF ANY, MUST BE EXCAVATED AND REMOVED FROM WITHIN FIVE (5) FEET FROM ALL SIDES OF THE INFILTRATION SYSTEM AND TO A DEPTH OF SIX (6) INCHES BELOW THE SURFACE OF THE NATURAL SAND/GRAVEL SOIL (C HORIZON). (NOTE THAT THIS WAS TO BE DONE DURING THE ESP PHASE)
   - GRANULAR FILL: FILL MATERIAL BELOW THE BOTTOM OF THE SYSTEM AND WITHIN FIVE (5) FEET OF THE SIDES OF THE SYSTEM SHALL BE FREE DRAINING GRANULAR FILL CONSISTING OF CLEAN SANDY GRAVELLY MATERIAL FROM NATURAL ON-SITE SOIL, FREE FROM ORGANIC MATTER AND DELETERIOUS MATTER APPROVED BY THE ENGINEER OR IMPORTED SAND MATERIAL MEETING THE SPECIFICATIONS FOR FREE DRAINING GRANULAR FILL. FILL MATERIAL SHALL BE COMPACTED TO 90% DENSITY. NOTE THAT THIS IS TO BE DONE DURING THE ESP PHASE. THE CONTRACTOR SHALL REMOVE AND DELETERIOUS MATERIAL, AND/OR ANY COMPACTED SOIL, IF ANY, AND INSTALL FILL MATERIAL AS DESCRIBED ABOVE AND PER THIS DETAIL.

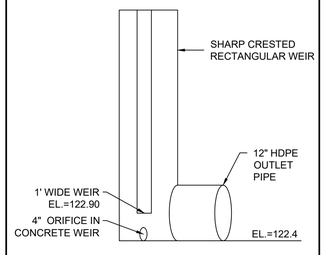
POROUS PAVEMENT DETAIL

NOT TO SCALE



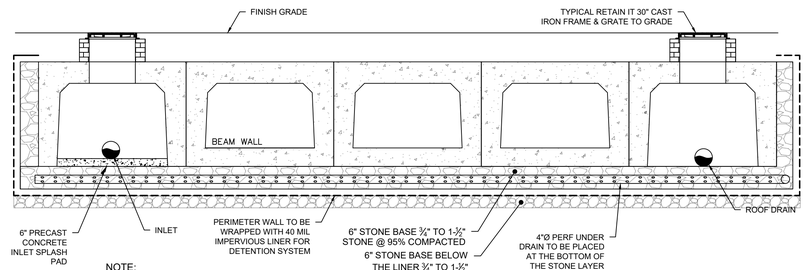
POROUS ASPHALT PAVEMENT CELL DIVIDER

NOT TO SCALE



RETAIN IT OUTLET CONTROL STRUCTURE

NOT TO SCALE



NOTE:
REFER TO SYSTEM SPECIFIC CROSS SECTION

TYPICAL 3.5 FT RETAIN-IT DETENTION SYSTEM

NOT TO SCALE

Date	Description	No.
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.

Revisions

7-23-2021

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

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P: 781-919-0808

Project

105 BOSTON POST ROAD

SUDBURY, MA

Prepared for

HERB CHAMBERS OF SUDBURY, INC.

259 MCGRATH HWY
SOMERVILLE, MA 02143

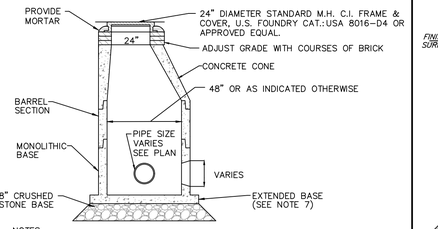
Drawing Title

DETAIL SHEET

Project No.	100-108
Date	3/22/2021
Scale	AS NOTED
Drawn By	DJN
Approved By	GC

Drawing No.

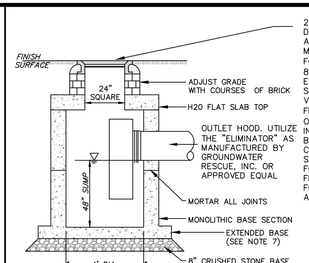
C-8.1



NOTES:
1. MANHOLE DESIGN SHALL CONFORM TO LATEST ASTM C478.
2. REINFORCING STEEL SHALL CONFORM TO LATEST ASTM A 185.
3. CONCRETE COMPRESSIVE STRENGTH – 4,000 PSI @ 28 DAYS.
4. ONE POUR MONOLITHIC BASE.
5. BITUMASTIC BUTYL RUBBER FOR JOINTS SHALL CONFORM TO LATEST ASTM C443 AND FED SS-S-201A SPEC.
6. COVERS TO BE STAMPED "DRAIN"
7. CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.

PRECAST CONCRETE DRAIN MANHOLE

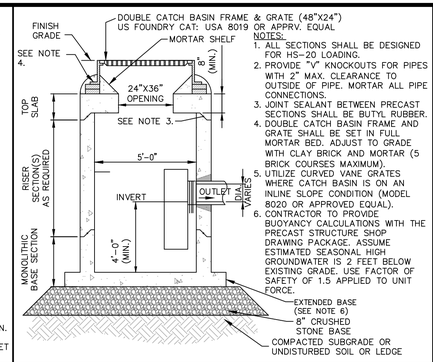
NOT TO SCALE



NOTES:
1. STRUCTURE DESIGN TO LATEST ASTM C478.
2. REINFORCING STEEL CONFORMS TO LATEST ASTM A 185.
3. CONCRETE COMPRESSIVE STRENGTH – 4,000 PSI @ 28 DAYS.
4. LAT SLAB TOP AASHTO H-20
5. ONE POUR MONOLITHIC BASE.
6. UTILIZE CURVED VANE GRATES WHERE CATCH BASIN IS ON AN INLINE SLOPE CONDITION.
7. CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.

SINGLE GRATE CATCH BASIN

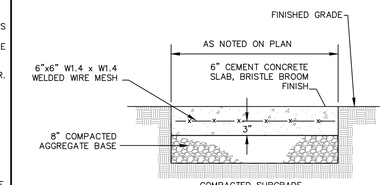
NOT TO SCALE



NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
4. DOUBLE CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (5 BRICK COURSES MAXIMUM).
5. UTILIZE CURVED VANE GRATES WHERE CATCH BASIN IS ON AN INLINE SLOPE CONDITION (MODEL 8020 OR APPROVED EQUAL).
6. CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.

DOUBLE GRATE CATCH BASIN

NOT TO SCALE

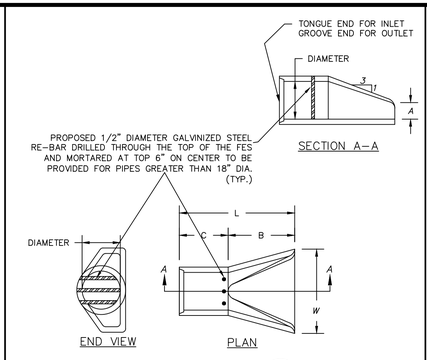


NOTES:
COORDINATE ALL PAD OPENINGS WITH EQUIPMENT MANUFACTURER END MESH 3" FROM WALKWAY EDGE

COORDINATE ALL PAD DIMENSIONS, THICKNESS, REINFORCING REQUIREMENTS WITH EQUIPMENT MANUFACTURER AND THE ASSOCIATED ENGINEER FOR THAT TRADE PRIOR TO CONSTRUCTION.

CONCRETE TRANSFORMER/ MECHANICAL PAD

NOT TO SCALE



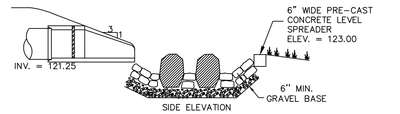
TIE BACKS SHALL CONSIST OF #4 REBAR WITH EPOXY COATING (40 KSI MIN.) BENT TO SHAPE BELOW. PIPE SHALL BE DRILLED WITH 9/16" BIT TO A DEPTH OF 1 1/2"

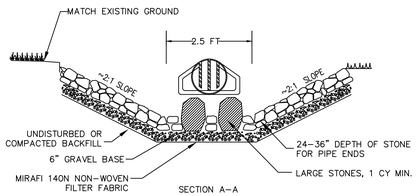
DIAMETER	WEIGHT	A	B	C	L	W
12"	340	4"	1'-10"	2'-0"	3'-10"	2'-0"
18"	670	9"	2'-1"	2'-1"	4'-3"	3'-0"
21"	1300	9 1/2"	3'-6"	2'-6"	6'-0"	4'-0"
24"	1300	9 1/2"	3'-6"	2'-6"	6'-0"	4'-0"
30"	1850	1'-0"	4'-5"	1'-8"	6'-1"	5'-0"
36"	3500	1'-3"	5'-2"	2'-11"	8'-1"	6'-0"
42"	4930	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	6700	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	7150	2'-3"	5'-6"	2'-9"	8'-3"	6'-10"

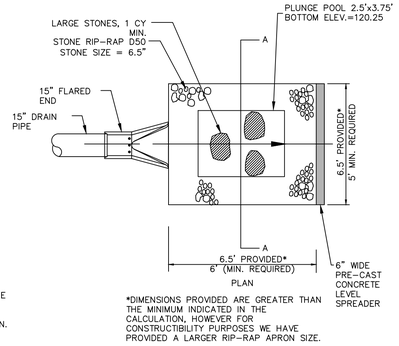
NOTES:
1. CLASS AND TYPE OF CONCRETE SHALL BE AS SPECIFIED FOR REINFORCED CONCRETE PIPE.
2. STRUCTURAL DESIGN OF END SECTION SHALL CONFORM TO THAT OF STANDARD REINFORCED CONCRETE CULVERT PIPE.
3. LENGTH OF PIPE SHOWN ON THE PLANS DOES NOT INCLUDE CONNECTOR SECTION (LENGTH C).
4. SECURITY BARS REQUIRED FOR ALL DISCHARGE PIPES 18" IN DIAM. OR GREATER.

CONCRETE FLARED END SECTION WITH SECURITY BARS

NOT TO SCALE







*DIMENSIONS PROVIDED ARE GREATER THAN THE MINIMUM INDICATED IN THE CALCULATION, HOWEVER FOR CONSTRUCTIBILITY PURPOSES WE HAVE PROVIDED A LARGER RIP-RAP APRON SIZE.

LEVEL SPREADER/PLUNGE POOL/ENERGY DISSIPATER

NOT TO SCALE

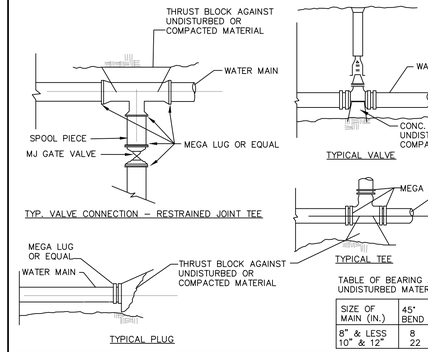
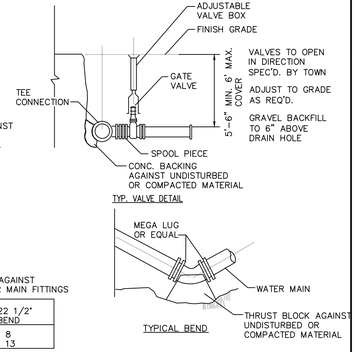


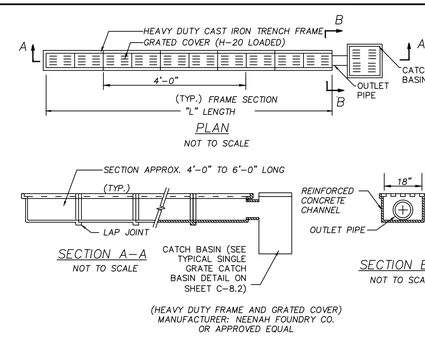
TABLE OF BEARING AREAS IN S.F. AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS

SIZE OF MAIN (IN.)	45° BEND	TEES & PLUGS	22 1/2° BEND
8" & LESS	8	10	8
10" & 12"	22	16	13



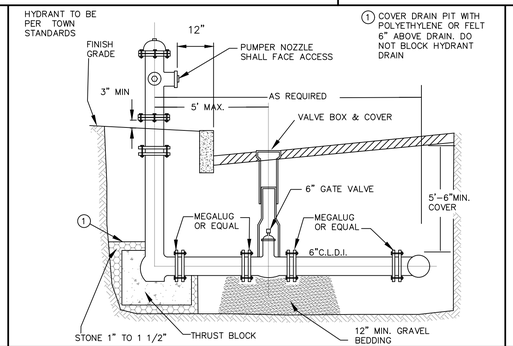
TYPICAL WATER MAIN SUPPLY CONNECTIONS

NOT TO SCALE



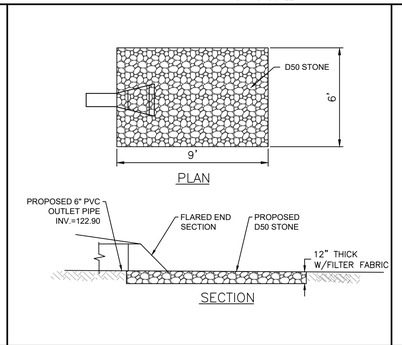
TRENCH DRAIN

NOT TO SCALE



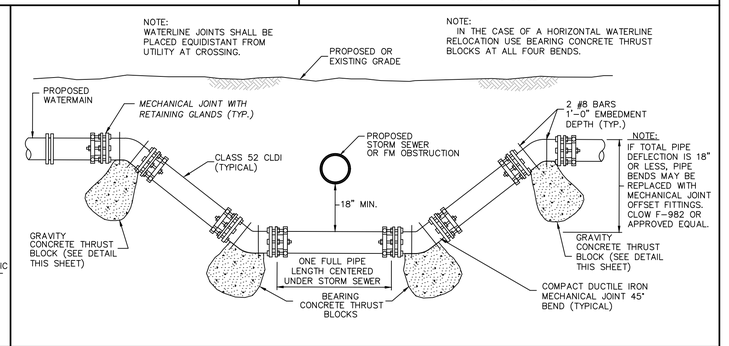
TYPICAL HYDRANT BRANCH ASSEMBLY

NOT TO SCALE



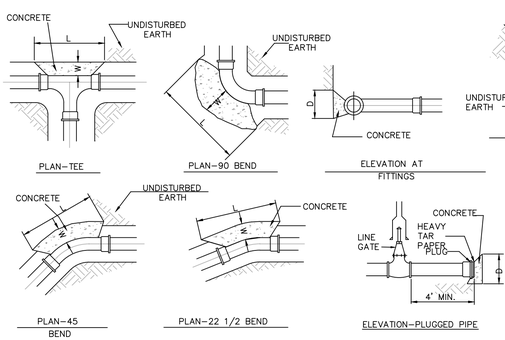
RIP RAP SPLASH PAD DETAIL

NOT TO SCALE



WATERLINE OBSTRUCTION DETAIL

NOT TO SCALE



BASIS:
2,000 LB/SQ.FT. SOIL RESISTANCE 250 PSI WATER PRESSURE CORRECTION FACTORS FOR OTHER SOILS:

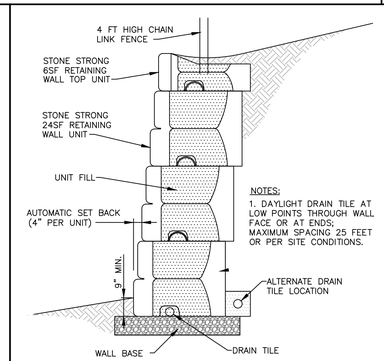
SOFT CLAY	4
SAND	2
SAND & GRAVEL	1.33
SHALE	0.4

NOTE:
1. IF SOFT MATERIALS ARE ENCOUNTERED, THE THRUST BLOCKS SIZES SHALL BE ADJUSTED ACCORDINGLY.
2. CONCRETE TO BE 3000 PSI.

PIPE SIZE	THRUST BLOCK SCHEDULE								
	TEE		22 1/2		45		90		
	L	D	L	D	L	D	L	D	W
6"	18"	15"	15"	12"	15"	12"	15"	15"	21"
8"	2'	18"	18"	12"	18"	12"	2'	18"	2'
12"	3'	2'	2'	12"	2'	12"	3'	2'	28"
16"	4'	2.5'	2'	12"	2.33'	15"	4'	2.5'	31"
20"	5.25'	3'	2'	18"	3'	2'	5.25'	3'	33"
24"	7.5'	3'	3'	18"	4'	2.5'	7.5'	3'	3'

CONCRETE THRUST BLOCK

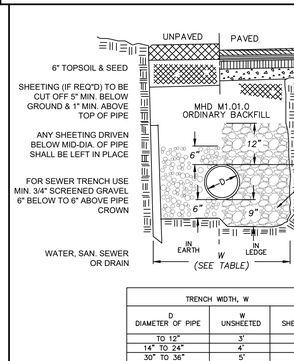
NOT TO SCALE



NOTES:
1. DAYLIGHT DRAIN TILE AT LOW POINTS THROUGH WALL FACE OR AT ENDS; MAXIMUM SPACING 25 FEET OR PER SITE CONDITIONS.

"STONE STRONG" RETAINING WALL CROSS SECTION

NOT TO SCALE



TRENCH WIDTH, W			
D DIAMETER OF PIPE	W UNSHEETED	W SHEETED
TO 12"	3'	4'
14" TO 24"	4'	5'
30" TO 36"	5'	6'

COMMON FILL TO CONSIST OF GRANULAR MATERIAL CONTAINING NO STONES LARGER THAN 6" IN GREATEST DIMENSION.

BACKFILL WATER OR DRAIN TRENCH WITH SELECT MATERIAL (M.H.D. M1.03.0 TYPE C OR EQUAL) CONTAINING NO STONES LARGER THAN 2" IN GREATEST DIMENSION TO 12" OVER PIPE.

PROVIDE SCREENED GRAVEL (CONFORMING TO M.H.D. M2.01.4) BEDDING TO MID-PIPE DIAMETER IN SEWER APPLICATIONS OR WHERE GROUNDWATER IS ENCOUNTERED AS DIRECTED BY THE ENGINEER.

REMOVE UNSUITABLE MATERIAL BELOW GRADE, IF ENCOUNTERED, TO SUITABLE DEPTHS AS DIRECTED BY ENGINEER AND REPLACE WITH CLEAN GRANULAR FILL.

NOTES:
1. ALL TRENCH CONSTRUCTION TO CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
2. COMPACT FILL AND TAMP PIPE TO 95% MAX. DRY DENSITY IN 6" LIFTS UNLESS OTHERWISE SPECIFIED.
3. INSTALL DUCTILE IRON WATER PIPE IN ACCORDANCE WITH ANSI A21.51 (AWWA C151) LAYING CONDITION TYPE 2. BACKFILL TO CONFORM TO MHD M1.03.0 GRAVEL BURROW TYPE c (2" MINUS) TO 12" ABOVE PIPE CROWN OR AS DIRECTED BY MANUFACTURER OR ENGINEER.
4. MATERIALS FOR SEWER BEDDING, HAUNCHING, AND BACKFILL TO CONFORM TO CLASSES I, II, OR III AS DESCRIBED IN ASTM D 2321 AND TR-16 GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS.
5. BACKFILL RCP CLASS V ADS N-12 HDPE, AND/OR PVC DRAIN PIPE WITH MHD M1.03.0 GRAVEL BURROW TYPE c TO 12" ABOVE PIPE CROWN OR AS DIRECTED BY MANUFACTURER OR ENGINEER.
6. PROVIDE MINIMUM 5 FT. COVER OVER WATER MAIN AS MEASURED FROM BOTTOM OF CURB LINE. INSULATE WATERMAIN IN ACCORDANCE WITH M.H.D. SECTION 301 WATER SYSTEMS IN AREAS PRONE TO FROST ACTION AND/OR LESS THAN 5' MIN. COVER.

TYPICAL TRENCH SECTION

NOT TO SCALE

No.	Revisions	Date
4.	RESPONSE TO PLANNING BOARD COMMENTS	7.23.21
3.	RESPONSE TO PEER REVIEW COMMENTS	6.28.21
2.	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	4.28.21
1.	REV. PER POROUS PAVEMENT SIGNAGE	4.19.21

7-23-2021

COMMONWEALTH OF MASSACHUSETTS GABRIEL R. CROCKER CIVIL No. 47917 REGISTERED PROFESSIONAL ENGINEER

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
2 SHARP STREET, UNIT B
HINGHAM, MA 02043
P: 781-919-0808

Project
105 BOSTON POST ROAD
SUDBURY, MA

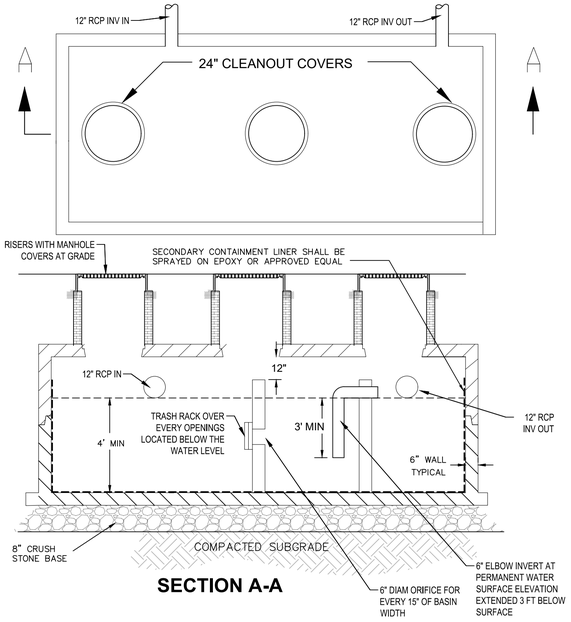
Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILE, MA 02143

Drawing Title
DETAIL SHEET

Project No. 100-108
Date 3/22/2021
Scale AS NOTED
Drawn By DJN
Approved By GC

Drawing No.
C-8.2

NOTES:
1. MANHOLE DESIGN SHALL CONFORM TO LATEST ASTM C478.
2. REINFORCING STEEL SHALL CONFORM TO LATEST ASTM A 185.
3. CONCRETE COMPRESSIVE STRENGTH – 4,000 PSI @ 28 DAYS.
4. ONE POUR MONOLITHIC BASE.
5. BITUMASTIC BUTYL RUBBER FOR JOINTS SHALL CONFORM TO LATEST ASTM C443 AND FED SS–S–201A SPEC.
6. COVERS TO BE STAMPED "DRAIN"
7. CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.



SECTION A-A

TYPICAL OIL/GRIT SEPARATOR DETAIL
NOT TO SCALE

SITE SPECIFIC DATA*		
PROJECT NUMBER	100-108	
PROJECT NAME	JLR - SUDBURY	
PROJECT LOCATION	105 BOSTON POST ROAD	
STRUCTURE ID	N/A	
WATER QUALITY FLOW RATE (CFS)		1.57
PEAK FLOW RATE (CFS)		
PEAK STORM DURATION (YEARS)		

PIPE DATA	I.E. (#1/#2)	MATERIAL	DIAMETER
INLET PIPE 1	123.6/123.2	HDPE	12"
OUTLET PIPE 1	123.6/123.2	HDPE	12"
RIM ELEVATION	129.15/129.3		
SUMP ELEVATION	118.6/118.2		
SURFACE LOADING REQUIREMENT			HS-20
FRAME AND COVER			Ø30"
SKIMMER WALL HEIGHT			STANDARD
KNOWN GROUNDWATER ELEVATION			

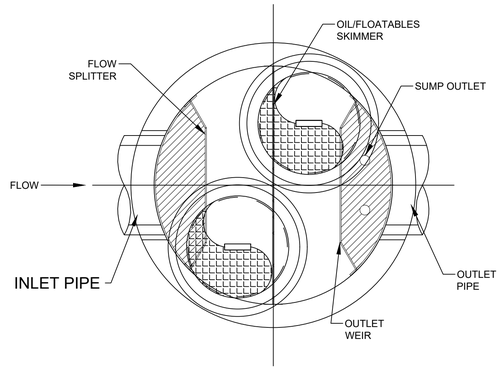
NOTES:

*PER ENGINEER OF RECORD

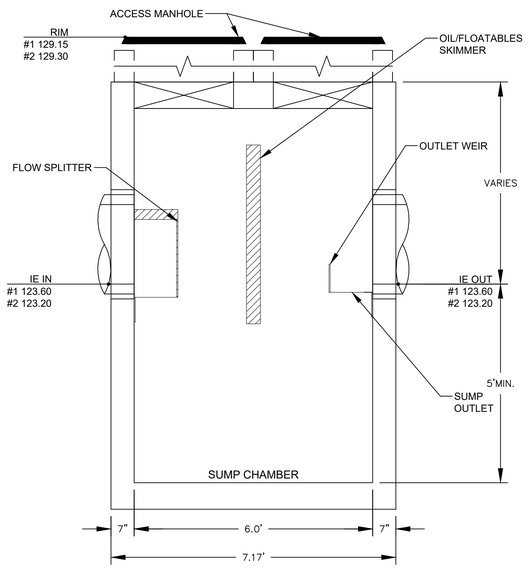
PERFORMANCE DATA	
TREATMENT FLOW RATE PER LOCAL REQUIREMENTS	1.57
SETTLING AREA (SF)	28.2600
LOADING RATE (GPM/SF)	24.9350
SEDIMENT STORAGE CAPACITY (CF)	141.3000

STORAGE CAPACITIES				
SUMP CHAMBER CAPACITY				
	DIAMETER (FT)	AREA (SF)	HEIGHT (FT)	TOTAL (CF)
CHAMBER 1	6.00	28.2600	5.00	141.30

GENERAL NOTES
1. BIO CLEAN TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS, AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS, AND ACCESSORIES PLEASE CONTACT BIO CLEAN.
3. ALTERNATIVE HATCHES OR MANHOLES AVAILABLE UPON REQUEST.



PLAN VIEW
NTS



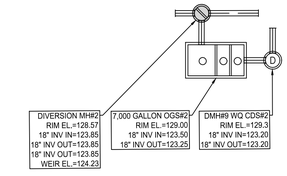
ELEVATION VIEW
NTS

INSTALLATION NOTES
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE UNIT AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. MANUFACTURER RECOMMENDS A 6"-12" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH).
4. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. ALL COVERS SHALL BE SHIPPED LOOSE. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.

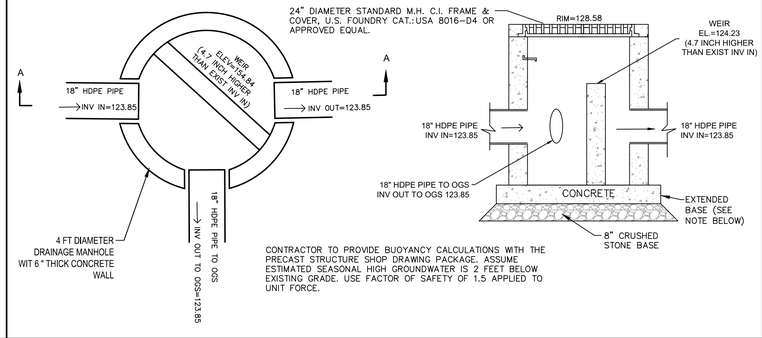
SciCLONE SC-6 WATER QUALITY STRUCTURE DETAILS
NOT TO SCALE

Bio Clean ™ A Forterra Company

SC-6
HYDRODYNAMIC SEPARATOR

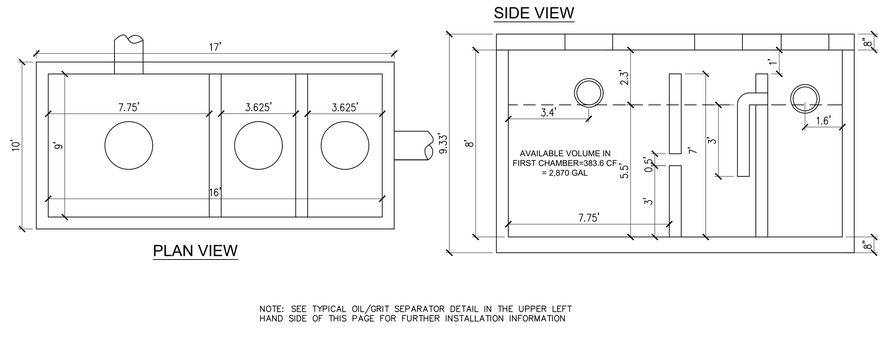


PLAN VIEW OGS-2
NOT TO SCALE



CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.

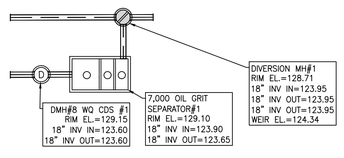
DIVERSION MANHOLE DVM OGS-2 DETAIL
NOT TO SCALE



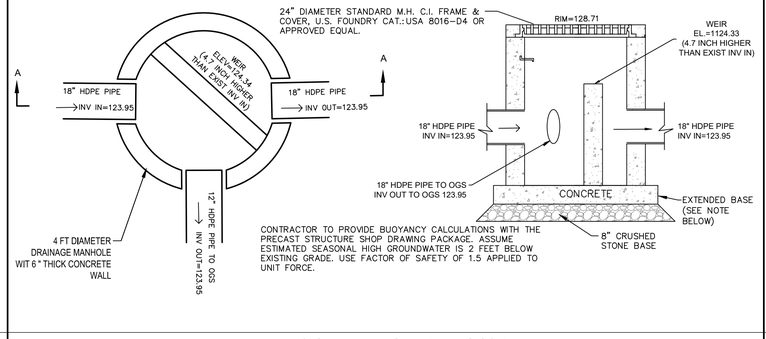
PLAN VIEW

NOTE: SEE TYPICAL OIL/GRIT SEPARATOR DETAIL IN THE UPPER LEFT HAND SIDE OF THIS PAGE FOR FURTHER INSTALLATION INFORMATION

OGS-1 7,000 GAS OIL/GRIT SEPARATOR DETAIL
NOT TO SCALE

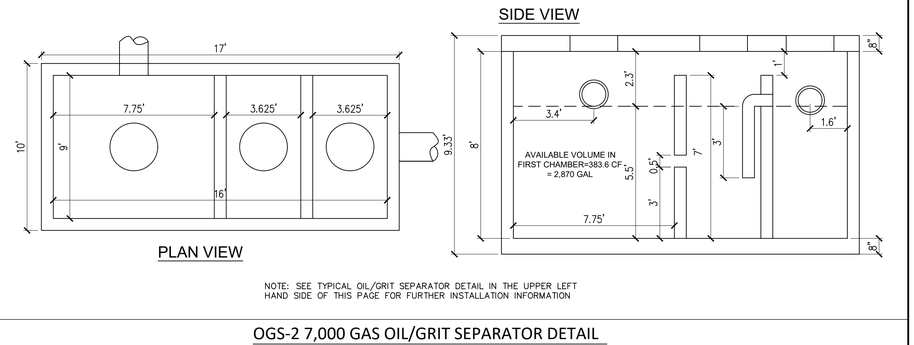


PLAN VIEW OGS-1
NOT TO SCALE



CONTRACTOR TO PROVIDE BUOYANCY CALCULATIONS WITH THE PRECAST STRUCTURE SHOP DRAWING PACKAGE. ASSUME ESTIMATED SEASONAL HIGH GROUNDWATER IS 2 FEET BELOW EXISTING GRADE. USE FACTOR OF SAFETY OF 1.5 APPLIED TO UNIT FORCE.

DIVERSION MANHOLE DVM OGS-1 DETAIL
NOT TO SCALE



PLAN VIEW

NOTE: SEE TYPICAL OIL/GRIT SEPARATOR DETAIL IN THE UPPER LEFT HAND SIDE OF THIS PAGE FOR FURTHER INSTALLATION INFORMATION

OGS-2 7,000 GAS OIL/GRIT SEPARATOR DETAIL
NOT TO SCALE

No.	Description	Date
	Revisions	
4.	RESPONSE TO PLANNING BOARD COMMENTS	7.23.21
3.	RESPONSE TO PEER REVIEW COMMENTS	6.28.21
2.	SITE PLAN REVEW / SW MANAGEMENT PERMIT	4.28.21
1.	REV. PER POROUS PAVEMENT SIGNAGE	4.19.21

7-23-2021

COMMONWEALTH OF MASSACHUSETTS — GABRIEL R. CROCKER — CIVIL — No. 47917 — REGISTERED PROFESSIONAL ENGINEER

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
2 SHARP STREET, UNIT B
HINGHAM, MA 02043
P: 781-919-0808

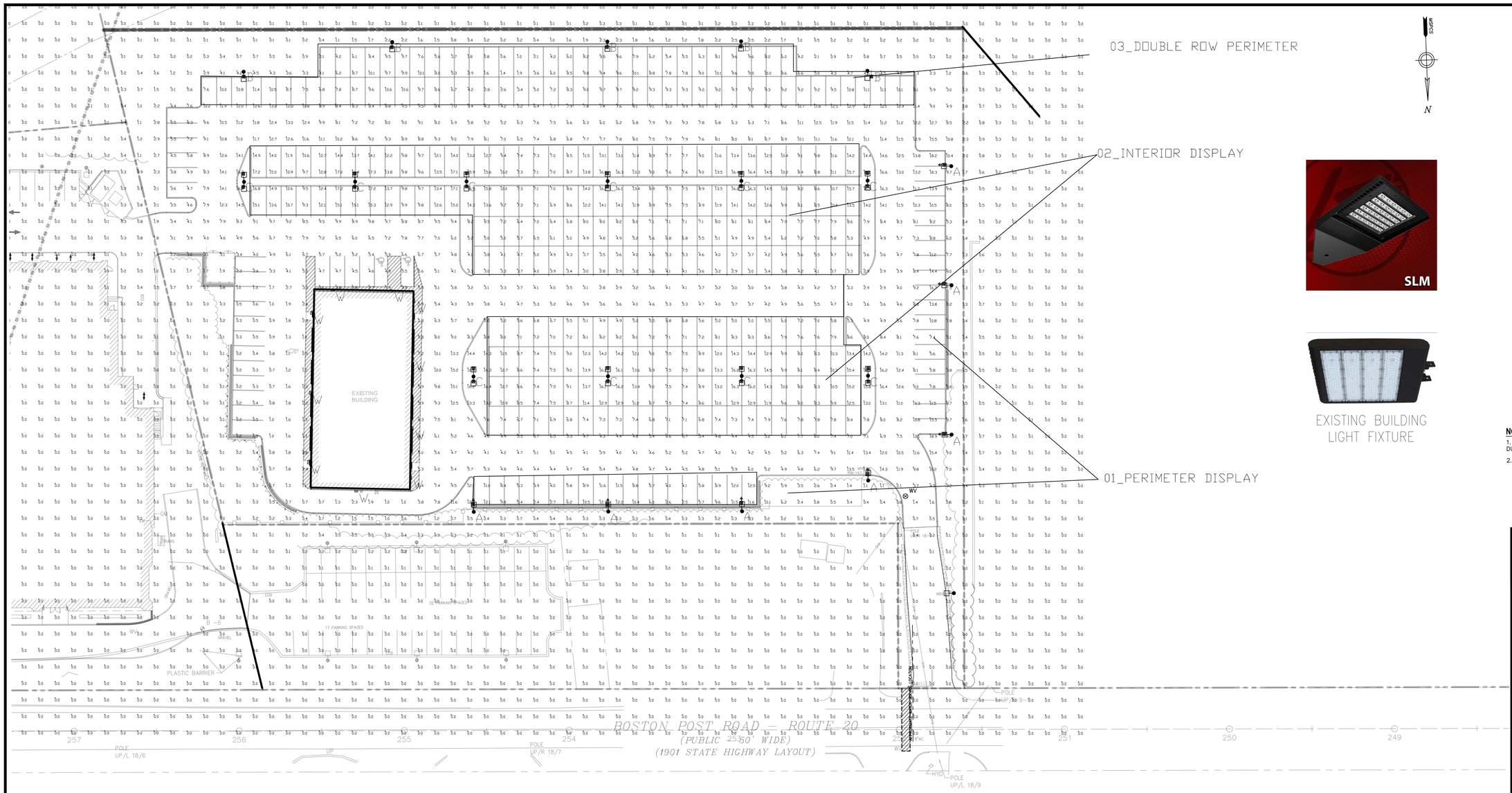
Project
105 BOSTON POST ROAD
SUDBURY, MA

Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILE, MA 02143

Drawing Title
DETAIL SHEET

Project No.	100-108
Date	3/22/2021
Scale	AS NOTED
Drawn By	DJN
Approved By	GC

Drawing No.
C-8.3



EXISTING BUILDING
LIGHT FIXTURE

NOTE:

1. ALL LIGHT LEVELS ARE TO BE REDUCED TO 50% DURING NON-BUSINESS HOURS.
2. ALL LIGHTS ARE DARK SKY COMPLIANT

20 10 0 20 40

7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.
Date	Description	No.

Revisions

7-23-2021

COMMONWEALTH OF MASSACHUSETTS
GABRIEL R CROCKER
CIVIL
No. 47917
REGISTERED PROFESSIONAL ENGINEER

GABRIEL R. CROCKER
PROFESSIONAL ENGINEER, MA REGISTRATION #47917

Crocker Design Group
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Project

105 BOSTON POST ROAD
SUDBURY, MA

Prepared for

HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILLE, MA 02143

Drawing Title

LIGHTING PLAN

Project No. 100-108	Drawing No. C-9
Date 3/22/2021	
Scale 1"=20'	
Drawn By DJN	
Approved By GC	

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL CALCS @ 4' ABOVE GRADE	Illuminance	Fc	2.84	18.9	0.0	N.A.	N.A.
01_PERIMETER DISPLAY	Illuminance	Fc	7.81	12.5	2.4	3.25	5.21
03_DOUBLE ROW PERIMETER	Illuminance	Fc	8.07	13.2	0.6	13.45	22.00
02_INTERIOR DISPLAY	Illuminance	Fc	9.11	17.4	2.8	3.25	6.21

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine the applicability of the layout to existing or future field conditions.

This lighting plan represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with The Illuminating Engineering Society (IES) approved methods. Actual performance of any manufacturer's luminaires may vary due to changes in electrical voltage, tolerance in lamps/LED's and other variable field conditions. Calculations do not include obstructions such as buildings, curbs, landscaping, or any other architectural elements unless noted. Fixture nomenclature noted does not include mounting hardware or poles. This drawing is for photometric evaluation purposes only and should not be used as a construction document or as a final document for ordering product.

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLD	UDF	LLF	Arr. Lum. Lumens	Arr. Watts
	7	A	SINGLE	SLM-LED-42L-SIL-FTA-50-70CRI-IL-SINGLE-24' POLE+6'' BASE	1.000	1.000	0.500	29671	393.4
	5	B	SINGLE	SLM-LED-42L-SIL-FT-50-70CRI-IL-SINGLE-24' POLE_6'' BASE	1.000	1.000	1.000	27038	393.4
	10	C	D180°	SLM-LED-42L-SIL-5W-50-70CRI-D180-24' POLE+2' BASE	1.000	1.000	0.800	85598	704
	10	W	SINGLE	FLATPANEL-GEN2-100W-277-480V-5000K-TYPE IV	1.000	1.000	0.500	5936	44.7

GENERAL NOTES:

1. THIS PLAN REFERENCES A SURVEY PLAN PREPARED BY...

2. ACCESSIBLE CURB RAMPS SHALL BE PER THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICANS WITH DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES.

3. THE FOLLOWING LAYOUT CRITERIA SHALL CONTROL UNLESS OTHERWISE NOTED ON THE PLAN:
DIMENSIONS ARE TO FACE OF CURB AT GUTTER LINE.
DIMENSIONS ARE TO THE CENTER OF PAVEMENT MARKINGS.
ALL TIES TO PROPERTY LINES ARE PERPENDICULAR TO THE PROPERTY LINE UNLESS OTHERWISE NOTED.

4. ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.

5. CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS TO THE OWNER OR HIS REPRESENTATIVE FOR RESOLUTION.

6. THE CONTRACTOR SHALL FURNISH AND SET ALL LINES AND GRADES REQUIRED AND PROTECT ALL PERMANENT BENCHMARKS OR MONUMENTS. DAMAGED MONUMENTS SHALL BE REPLACED BY A LICENSED SURVEYOR AT NO COST TO THE OWNER.

7. ALL CONCRETE WORK SHALL COMPLY WITH ACI301, "SPECIFICATION FOR STRUCTURAL CONCRETE," AND ACI 316R, UNLESS MODIFIED BY THE CONTRACT DOCUMENTS. COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR FABRICATING, PLACING, AND SUPPORTING REINFORCEMENT. COMPLY WITH ACI 306.1 FOR COLD WEATHER PROTECTION, AND FOLLOW RECOMMENDATIONS IN ACI 350R FOR HOT WEATHER PROTECTION DURING CURING. COMPLY WITH ACI 304 "GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE."

8. BITUMINOUS CONCRETE PAVEMENT: CLASS I, TYPE I–1 CONFORMING TO THE STANDARD SPECIFICATIONS, SECTIONS 460 THROUGH 460.02 FOR BINDER COURSE AND TOP COURSE JOB MIX FORMULAS. THE GENERAL CONTRACTOR SHALL SUPPLY THE ENGINEER WITH A CERTIFICATE OF COMPLIANCE SUPPLIED BY THE PAVING CONTRACTOR.

9. SAW–CUT EXISTING PAVEMENT WHERE NEW BITUMINOUS CONCRETE PAVEMENT IS TO COME IN CONTACT. PRIME COAT THE CUT EDGE PRIOR TO PLACEMENT.

20 10 0 20 40

Date	Description	No.
	Revisions	
7.23.21	RESPONSE TO PLANNING BOARD COMMENTS	4.
6.28.21	RESPONSE TO PEER REVIEW COMMENTS	3.
4.28.21	SITE PLAN REVIEW / SW MANAGEMENT PERMIT	2.
4.19.21	REV. PER POROUS PAVEMENT SIGNAGE	1.

7-23-2021

COMMONWEALTH OF MASSACHUSETTS
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Project
105 BOSTON POST ROAD
SUDBURY, MA

Prepared for
HERB CHAMBERS OF SUDBURY, INC.
259 MCGRATH HWY
SOMERVILLE, MA 02143

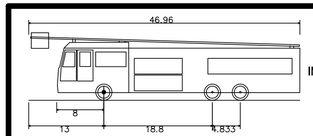
Drawing Title
FIRE TRUCK TURNING EXHIBIT

Project No.	100-108
Date	3/22/2021
Scale	1"=20'
Drawn By	DJN
Approved By	GC

Drawing No. **FT-1**

FIRE TRUCK DETAIL NTS

NOTE: AERIAL LADDER IN THE HORIZONTAL POSITION WAS INCLUDED IN TOTAL LENGTH OF THE FIRE TRUCK



PIERCE 100 Aerial	
Overall Length	46.960ft
Overall Width	8.000ft
Overall Body Height	11.000ft
Min Body Ground Clearance	1.335ft
Track Width	8.000ft
Lock–to–lock time	6.00s
Max Steering Angle (Virtual)	35.20°