NOTICE OF INTENT

FOR

Proposed Logan Convenience and Filling Center

Logan Airport
Tomahawk Drive & Jeffries Street
Parcel ID: 0104126000
City of Boston
Suffolk County, Massachusetts

Prepared For:

Nouria Energy Corporation
326 Clark Street
Worcester, MA 01606

Prepared By:

352 Turnpike Road
Southborough, MA 01772
(508) 480-9900

August 30, 2018

BE #W171153

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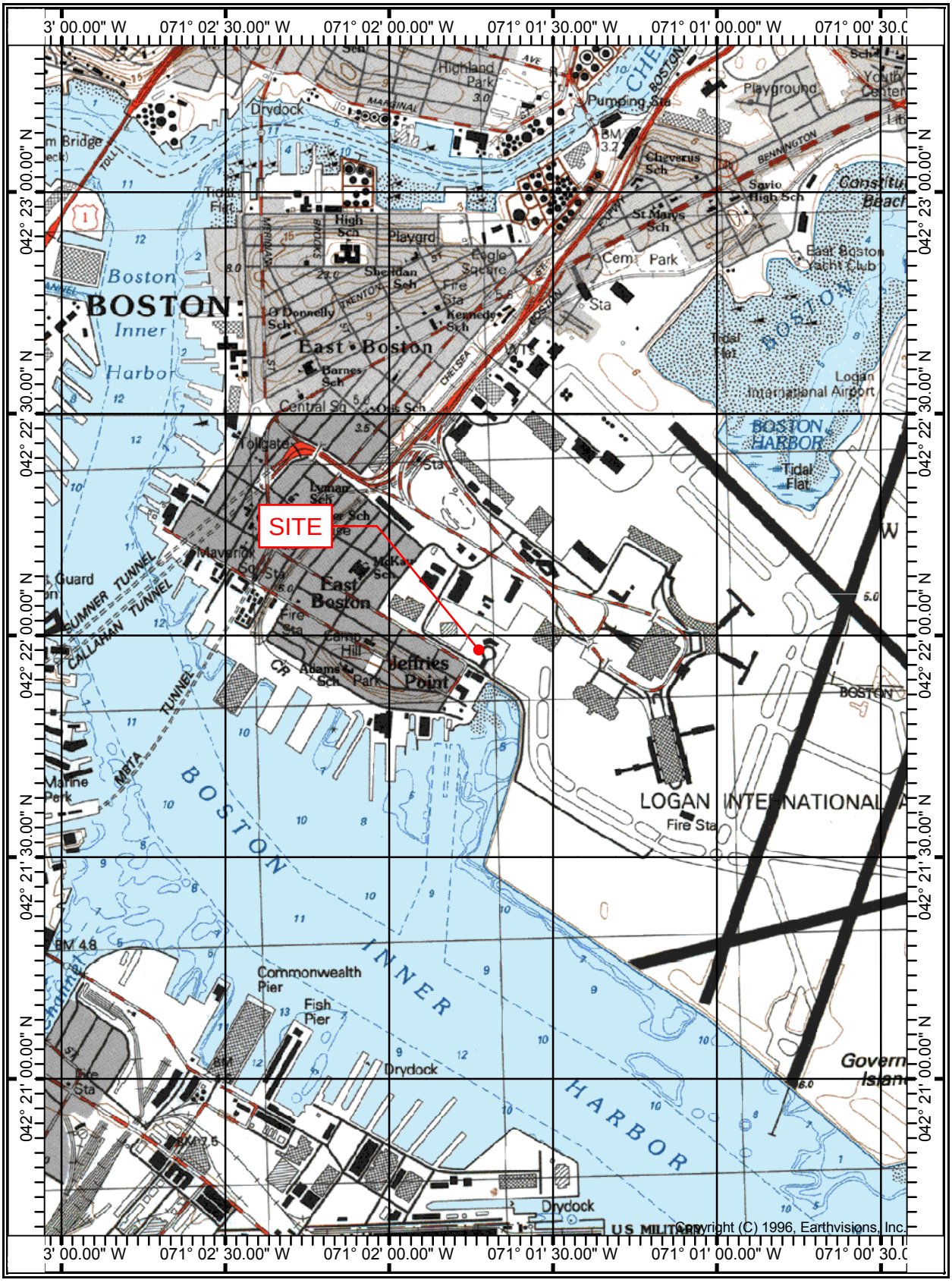
USGS LOCUS MAP



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FEET

PROJECT DESCRIPTION

1. Introduction

The Notice of Intent contained herein is filed pursuant to G.L. Chapter 131, Section 40, the Massachusetts Wetlands Protection Act (WPA) and its implementing regulations 310 CMR 10.00 for proposed activities within an area of Land Subject to Coastal Storm Flowage (FEMA Special Hazard Flood Area, Zone AE).

The subject property is the Logan International Airport property in the City of Boston, Massachusetts. The portion of the overall property proposed to be developed, the "site", consists of approximately 1.18 acres of land located at the corner of Tomahawk Drive, Jeffries Street, and Transportation Way (AKA Harborside Drive) in the southwest corner of the airport property. The site is entirely paved and is currently in use as a parking lot.

The project consists of the construction of a 4,842 square convenience store building with a Starbucks drive-thru and Meridian Market within the overall footprint, and a self-service gas station with associated driveways, parking areas, electric vehicle charging stations, utilities, and landscaping. This facility is proposed as a replacement for the existing airport gas station which will be demolished at the completion of this project. The proposed project also includes the installation of a new, state-of-the-art stormwater management system designed in accordance with the Massachusetts Department of Environmental Protection (MassDEP) Standards which will connect to the Airport's existing drainage system which discharges to the Maverick Street Outfall identified as Outfall 004 in the Massachusetts Port Authority's (Massport) NPDES Permit No. MA0000787.

The project includes numerous Soil Erosion and Sediment Control measures to be utilized during the construction period, as shown on the Site Development Plans included with this filing as Appendix D (bound separately). These measures include the installation of perimeter siltation fencing, a crushed-stone construction exit, temporary catch basin filter sacks, and temporary seeding/mulching of disturbed areas. The project will result in an overall reduction in impervious surfaces from the existing conditions. Due to the limited nature of the development, the construction project will not be phased.

2. Coastal Resource Areas (FEMA Special Flood Hazard Area – Zone AE)

The southern portion of the development site contains an area of Land Subject to Coastal Storm Flowage, identified as a Special Flood Hazard Area, Zone AE, with Base Flood Elevation (BFE) El. 11 feet (El. 17.45 on the Boston City Base vertical datum) on the latest FEMA Flood Insurance Rate Map (included as Appendix A with this NOI). The site is not located within the Velocity Zone or Coastal High Hazard Area, and is not a Regulatory Floodway as identified on the Flood Insurance Rate Map. The development proposes to disturb approximately 12,750 square feet of the Zone AE flood plain area. Work within the area of Land Subject to Coastal Storm Flowage includes a portion of the proposed convenience store building, driveways, parking areas, landscaping, and utilities.

The project has been designed to keep the building finished floor and mechanical utilities above the Base Flood Elevation. Additionally, the project was designed to locate the proposed transformer, generator, electric vehicle charging stations, and gasoline service station outside of the Special Flood Hazard Area. The proposed work within the Resource Area is shown on the Resource Area Plan included in Appendix C of this NOI.

The existing site is completely developed and entirely consists of impervious surfaces. All surrounding parcels are also fully developed, and consist of buildings, roadways, and paved areas. The site is not located in an Area of Critical Environmental Concern (ACEC), and a review of the latest Natural Heritage Endangered Species Program data indicates that the site does not contain and is not located near any

vernal pools, estimated habitats of rare wildlife, or priority habitats of rare species. The proposed work will not adversely affect wave action, sediment transport, or adjacent coastal banks, coastal beaches, coastal dunes, salt marshes or barrier beaches.

The development project has been designed to minimize hydrological changes to resource areas, and best management practices shall be used to minimize adverse impacts during construction.

3. Stormwater Management

The proposed project was designed in accordance with the Department of Environmental Protection Stormwater Standards at 310 CMR 10.05 (6)(k). A description of how this project complies with these standards is below. A full Drainage Report (including calculations) detailing compliance with the ten (10) Stormwater Management Standards has been included with this filing as Appendix E (bound separately).

Standard #1: No New Untreated Discharges:
The project has been designed so that stormwater runoff from the development project area will be captured and pre-treated by deep-sump, catch basins equipped with oil-water separator hoods and by a proposed Stormceptor water quality unit prior to discharge into the existing Massport closed drainage system. Existing drainage patterns will be maintained, additional treatment beyond the existing conditions will be provided, and the project will not result in any new untreated discharges.

Standard 2: Peak Rate Attenuation:
The proposed stormwater system has been designed to provide peak rate attenuation with no increases in peak runoff rate at the project boundaries for the 2-, 10-, 25- and 100-year storm events.

Standard 3: Recharge:
Recharge for redevelopment projects is required to the greatest extent practicable. This requirement has not been fully met, however, the quantity of impervious area within the project site area is proposed to be reduced. The removal of approximately 0.13 acres of impervious pavement and replacement with pervious landscaped areas will promote infiltration on the site, where none currently exists. Additional (structural) infiltration practices were determined to not be practical for this location, due to the presence of extensive existing underground utilities and structures. Additionally, the site also has poor soil structural characteristics which will require extensive ground treatments (i.e. piers, geotextile pavement sections, proof rolling, etc.) to support the proposed structures and pavement areas which would prevent reasonable infiltration practices.

Standard #4 Water Quality:
The proposed stormwater management system has been designed to provide at least eighty percent (80%) removal of Total Suspended Solids (TSS) through the use of several Best Management Practices (BMPs), including deep-sump, hooded catch basins, and a proprietary water quality unit before runoff leaves the project site. The site discharges to the existing Logan Airport closed drainage system in Tomahawk Drive, which includes additional water quality treatment structures prior to discharging stormwater to Boston Harbor at the "Maverick Street Outfall" identified as Outfall 004 in the Massachusetts Port Authority's (Massport) NPDES Permit No. MA0000787.

Standard #5 Land Uses with Higher Potential Pollutant Loads:
The proposed project involves "Land Uses with Higher Potential Pollutant Loads". Accordingly, the stormwater management system include an oil-grit separator (proprietary water quality unit) to achieve the required 44% TSS removal prior to infiltration. Detailed TSS removal calculations are contained within the Drainage Report, included with this Notice of Intent as Appendix E (bound separately).

Standard 6: Critical Areas:
Not applicable for this project.

Standard 7: Redevelopment:
The project meets the definition of a redevelopment project as it proposes to redevelop an existing parking lot. As such, the project is only required to meet the MassDEP Stormwater Standards #2, 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6 to the maximum extent practicable. The project fully complies with all of the Stormwater Standards except Standard #3: Recharge, which is met to the maximum extent practicable due to the existing site conditions and poor quality soils as discussed above.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control:
The proposed project will provide construction period erosion and sedimentation controls as indicated on the Site Development Plans for this project which are included with this Notice of Intent as Appendix D (bound separately). This includes implementation of a perimeter erosion control barrier, as well as a proposed construction entrance, and protection for catch basin inlets as outlined in the plan set.

Standard 9: Operation and Maintenance (O&M) Plan:
An O&M Plan for this site has been prepared and is included within the Drainage Report (Appendix E, bound separately). The O&M Plan outlines procedures and time tables for the long term operation and maintenance of the proposed site stormwater management system, including initial inspections upon completion of construction, and periodic monitoring of the system components in accordance with established practices and manufacturer's recommendations. The O&M Plan includes a list of responsible parties and an estimated budget associated with inspections and maintenance. In addition to the O&M Plan, a Spill Prevention & Countermeasures Control Plan has also been prepared for the long-term operation of the gasoline station and is also included within the Drainage Report.

Standard 10: Prohibition of Illicit Discharges:
A no Illicit Discharge Statement is included in the Operations and Maintenance Plan within the Drainage Report (Appendix E, bound separately).

4. Erosion and Sediment Control

The Site Development Plans (bound separately) include a detailed erosion and sediment control plan which was designed in accordance with the Massachusetts Erosion and Sediment Control Guidelines. The plan includes erosion controls consisting of silt fence along the proposed limits of work to prevent migration of sediment into resource areas, a stabilized stone construction exit, and catch basin inlet protection.

Since the proposed area of disturbance is more than one acre, the project will require the filing of a Notice of Intent with the US EPA and implement a Stormwater Pollution Prevention Plan (SWPPP) during construction. The contractor will be required to maintain erosion controls during construction and prevent erosion or sediment discharges to the resource areas and onto abutting properties or roadways. The Applicant shall perform periodic inspection of erosion controls during the construction period, or designate an individual to perform such tasks on their behalf.

NOTICE OF INTENT APPLICATION

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Boston
City/Town

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

Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Tomahawk Drive & Jeffries Street — a. Street Address
Boston — b. City/Town
02128 — c. Zip Code

Latitude and Longitude:
42°21'58" N — d. Latitude
71° 1'41" W — e. Longitude

f. Assessors Map/Plat Number
Parcel ID: 0104126000 — g. Parcel /Lot Number

2. Applicant:

a. First Name
b. Last Name
Nouria Energy Corporation — c. Organization
326 Clark Street — d. Street Address
Worcester — e. City/Town
MA — f. State
01606 — g. Zip Code
(508) 762-3727 — h. Phone Number
i. Fax Number
Tom.Healey@nouriaenergy.com — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

James — a. First Name
Stolecki — b. Last Name
Massachusetts Port Authority — c. Organization
1 Harborside Drive #200S — d. Street Address
Boston — e. City/Town
MA — f. State
02128 — g. Zip Code
(617) 568-3552 — h. Phone Number
i. Fax Number
JStolecki@massport.com — j. Email address

4. Representative (if any):

James — a. First Name
Bernardino — b. Last Name
Bohler Engineering — c. Company
352 Turnpike Road — d. Street Address
Southborough — e. City/Town
MA — f. State
01772 — g. Zip Code
(508) 480-9900 — h. Phone Number
i. Fax Number
jbernardino@bohlereng.com — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

$2,012.50* — a. Total Fee Paid
$512.50 — b. State Fee Paid
$1,500.00* — c. City/Town Fee Paid

*Boston Conservation Commission fee of $1,500.00 paid in lieu of City portion of WPA fee.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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A. General Information (continued)

6. General Project Description:

Redevelopment of an existing parking lot with construction of one (1) convenience store building and self-serve fueling facility with drive-through, parking areas, landscaping, associated utilities, and stormwater management features. Work will occur within an area of Land Subject to Coastal Storm Flowage (FEMA Special Flood Hazard Area - Zone AE).

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☒ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

N/A
2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

a. County

b. Certificate # (if registered land)

c. Book

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☐ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Massachusetts Department of Environmental Protection
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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☐ Riverfront Area	1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

   ☐ 25 ft. - Designated Densely Developed Areas only

   ☐ 100 ft. - New agricultural projects only

   ☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

   a. total square feet _____ b. square feet within 100 ft. _____ c. square feet between 100 ft. and 200 ft. _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☒ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☒ Land Subject to Coastal Storm Flowage	12,750 1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

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C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   August 1, 2017
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

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C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing.
a. NHESP Tracking # _____ b. Date submitted to NHESP _____

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☐ Not applicable – project is in inland resource area only b. ☐ Yes ☒ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

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C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☒ A portion of the site constitutes redevelopment

      3. ☒ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

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D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Site Development Plans for proposed Nouria Energy Convenience Store & Fuel Station
a. Plan Title

Bohler Engineering
b. Prepared By

James A. Bernardino, P.E.
c. Signed and Stamped by

August 14, 2018
d. Final Revision Date

1" = 20'
e. Scale

Drainage Report
f. Additional Plan or Document Title

August 30, 2018
g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

020869
2. Municipal Check Number

08/30/18
3. Check date

020868
4. State Check Number

08/30/18
5. Check date

Bohler Engineering MA, LLC
6. Payor name on check: First Name

7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

2. Date 8/31/18

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date 8/31/18

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Boston
City/Town

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant James Stolecki	2. Date 9/4/2018
3. Signature of Property Owner (if different) James Macmillan	4. Date 9/4/18
5. Signature of Representative (if any)	6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

FILING FEE DOCUMENTATION

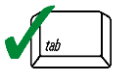
- **Wetland Fee Transmittal Form**
- **Copies of Application Fee Checks**

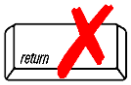
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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





A. Applicant Information

1. Location of Project:

Tomahawk Drive & Jeffries Street	Boston
a. Street Address	b. City/Town
020868	$512.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

a. First Name	b. Last Name
Nouria Energy Corporation	
c. Organization	
326 Clark Street	
d. Mailing Address	
Worcester	MA / 01606
e. City/Town	f. State / g. Zip Code
(508) 762-3727	Tom.Healey@nouriaenergy.com
h. Phone Number / i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name	b. Last Name
Massachusetts Port Authority	
c. Organization	
1 Harborside Drive #200S	
d. Mailing Address	
Boston	MA / 02128
e. City/Town	f. State / g. Zip Code
(617) 568-3352	JStolecki@massport.com
h. Phone Number / i. Fax Number	j. Email Address

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Cat 3b (construction of 1 convenience store building and site)	1	$1,050.00	$1,050.00

Step 5/Total Project Fee:

Step 6/Fee Payments:

*Boston Conservation Commission fee of $1,500.00 paid in lieu of City portion of WPA fee.

Total Project Fee:	$1,050.00 (a. Total Fee from Step 5)
State share of filing Fee:	$512.50 (b. 1/2 Total Fee **less $**12.50)
City/Town share of filling Fee:	$1,500.00* (c. 1/2 Total Fee **plus** $12.50)

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

THIS DOCUMENT IS PROTECTED BY A MICRO-PRINT SIGNATURE LINE, FLUORESCENT PAPER FIBERS, TONE ADHESION, AND IS REACTIVE TO CHEMICAL ALTERATION

BOHLER ENGINEERING MA, LLC
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772

TD Bank
America's Most Convenient Bank®
55-136/312

08/30/18

NO. 020868

PAY FIVE HUNDRED TWELVE DOLLARS AND 50 CENTS $ 512.50

TO THE ORDER OF COMMONWEALTH OF MASSACHUSETTS

VOID AFTER 180 DAYS

PER

MP

⑈020868⑈ ⑆031201360⑆ 4341578461⑈

THIS DOCUMENT IS PROTECTED BY A MICRO-PRINT SIGNATURE LINE, FLUORESCENT PAPER FIBERS, TONE ADHESION, AND IS REACTIVE TO CHEMICAL ALTERATION

BOHLER ENGINEERING MA, LLC
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772

TD Bank
America's Most Convenient Bank®
55-136/312

08/30/18

NO. 020869

PAY ONE THOUSAND FIVE HUNDRED DOLLARS AND 00 CENTS $ 1,500.00

TO THE ORDER OF CITY OF BOSTON, MA

VOID AFTER 180 DAYS

PER

MP

⑈020869⑈ ⑆031201360⑆ 4341578461⑈

BOHLER ENGINEERING MA, LLC

$1,500.00

ABUTTER INFORMATION

- **Affidavit of Service**
- **Abutter Notification**
- **Abutter List**
- **Abutter Exhibit**

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

(To be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, James A. Bernardino, P.E., hereby certify under the pains and penalties of perjury that on or before September 5, 2018, I gave notification to abutters within 100 feet of the project boundary in compliance with the second paragraph of Massachusetts General Laws, Chapter 131, Section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, and the 2012 Wetlands Protection Act Statutory Change for Abutter Notification in connection with the following matter:

A Notice of Intent, filed under the Massachusetts Wetlands Protection Act by Nouria Energy Corporation, to the City of Boston Conservation Commission on or before September 5, 2018 for a portion of the Logan Airport property located at Tomahawk Drive and Jeffries Street identified as parcel ID 0104126000 on the City of Boston's Tax Parcel Data.

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

James A Bernardino 9/5/18

Name Date

Notification to Abutters under the Massachusetts Wetlands Protection Act

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 you are hereby notified of the following public hearing on the matter described below.

A. The name of the applicant is Nouria Energy Corporation

B. The address of the lot where the activity is proposed is:

Tomahawk Drive and Jeffries Street on the Logan Airport property, Parcel ID: 0104126000

C. The work proposed is in the jurisdiction of the Wetlands Protection Act is as follows:

Redevelopment of an existing parking lot with construction of one (1) convenience store building and self-serve fueling facility with drive-through, parking areas, landscaping, associated utilities, and stormwater management features. Work will occur within an area of Land Subject to Coastal Storm Flowage.

D. Copies of the Notice of Intent or the Request to Amend an Existing Order of Conditions may be examined at Boston City Hall, Environment Department, Room 709, between the hours of 9:00 a.m. to 5:00 p.m., Monday through Friday.

E. Copies of the Notice of Intent or the Request to Amend an Existing Order of Conditions may be obtained from the applicant's representative Bohler Engineering, by calling this telephone number (508) 480-9900 between the hours of 9:00am and 5:00pm, Monday through Friday.

F. The Public Hearing will be held on September 19, 2018 at 6:00 pm at Boston City Hall, Piemonte Room, One City Hall Plaza, Floor 5.

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least seven (7) days in advance in the Boston Herald.

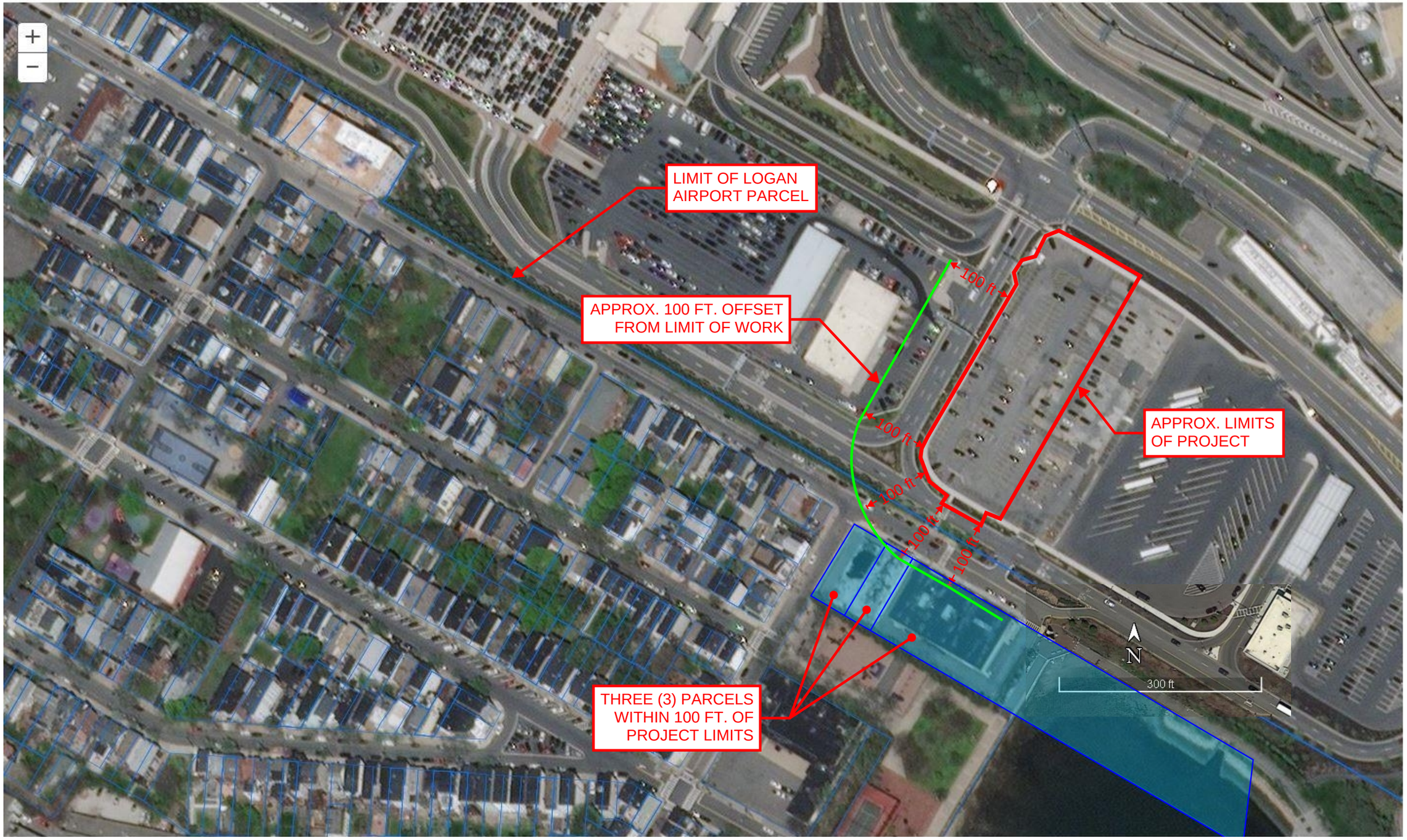
NOTE: You also may contact the Boston Conservation Commission at (617) 635-3850, or the Department of Environmental Protection Northeast Regional Office at (781) 935-2160 for more information about this application.

PARCEL ID: 0104413000
MASSACHUSETTS PORT AUTHORITY
1 HARBORSIDE DRIVE, #200S
EAST BOSTON, MA 02128

PARCEL ID: 0104414000
LANDRIGAN GEORGE TRST
2 JEFFRIES STREET
EAST BOSTON, MA 02128

PARCEL ID: 0104415000
LANDRIGAN GEORGE TS
2 JEFFRIES ST, BOX 444
EAST BOSTON, MA 02128

Boston Tax Parcel Viewer



APPENDIX A - FEMA FLOOD INSURANCE RATE MAP

National Flood Hazard Layer FIRMette

FEMA

Legend

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

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

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

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

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

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

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

N

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

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

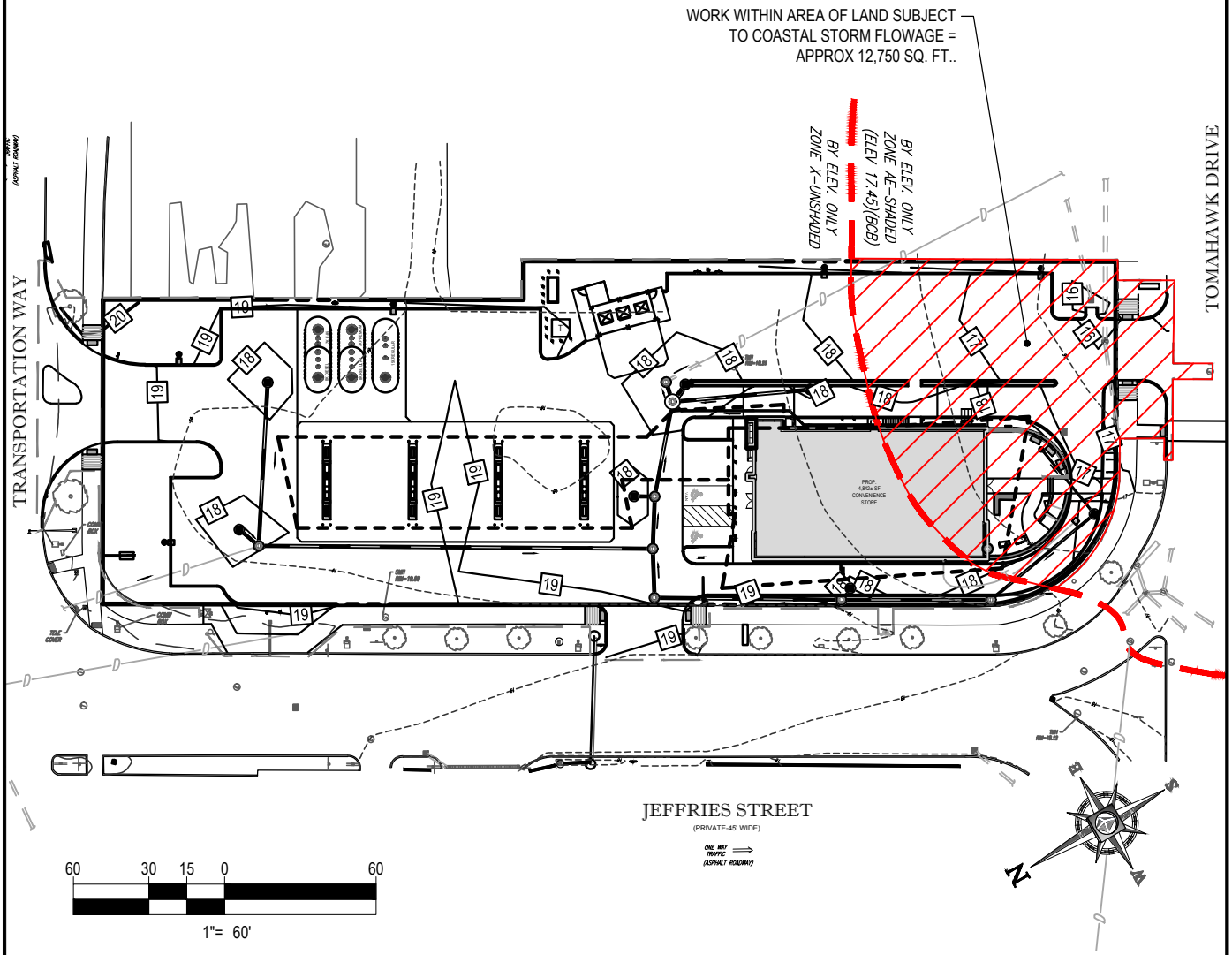
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/29/2018 at 12:43:22 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

APPENDIX B – NATURAL HERITAGE MAP

Nouria Energy - Massport: Natural Heritage Map

APPENDIX C – RESOURCE AREA PLAN



PROJECT:

RESOURCE AREA PLAN

FOR

LOGAN CONVENIENCE & FILLING CENTER

LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES STREET
EAST BOSTON, MASSACHUSETTS

BOHLER™
ENGINEERING

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING PROGRAM MANAGEMENT LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN PERMITTING SERVICES TRANSPORTATION SERVICES

- UPSTATE NEW YORK
- NEW ENGLAND
- BOSTON, MA
- NEW YORK, NY
- NEW YORK METRO
- NORTHERN NEW JERSEY
- SOUTHERN NEW JERSEY
- PHILADELPHIA, PA
- PITTSBURGH, PA
- LEHIGH VALLEY, PA
- SOUTHEASTERN, PA
- REHOBOTH BEACH, DE
- BALTIMORE, MD
- SOUTHERN MARYLAND
- NORTHERN VIRGINIA
- CENTRAL VIRGINIA
- RALEIGH, NC
- WASHINGTON, DC
- CHARLOTTE, NC
- ATLANTA, GA
- TAMPA, FL
- SOUTH FLORIDA
- DALLAS, TX

boston planning & development agency

Climate Resiliency Checklist

NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

A.1 - Project Information

This DRAFT Climate Resiliency Checklist is being submitted to the Boston Conservation Commission for MA Wetland Protection Act informational purposes only and is subject to review and change by the Massachusetts Port Authority

Project Name:	Logan Convenience and Filling Center
Project Address:	Tomahawk Drive and Jeffries Street
Project Address Additional:	
Filing Type (*select*)	*Initial (PNF, EPNF, NPC or other substantial filing)* N/A, for informational purposes only *Design / Building Permit (prior to final design approval), or* *Construction / Certificate of Occupancy (post construction completion)*
Filing Contact	Jim Bernardino, Bohler Engineering,jbernardino@bohlereng.com,508-480-9900
Is MEPA approval required	*Yes / no* — *Date*

A.3 - Project Team

Owner / Developer:	Owner: Mass Port Authority Applicant: Nouria Energy Corp.
Architect:	Phase Zero, John Selle
Engineer:	Bohler Engineering, Jim Bernardino
Sustainability / LEED:	Entegra Development and Investment, Brian Salazar
Permitting:	Bohler Engineering and Phase Zero
Construction Management:	LaMountain Brother

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Mercantile, Filling Center, Convenience Store, Coffee/Deli
List the First Floor Uses:	Same
List any Critical Site Infrastructure and or Building Uses:	The site is not defined as a critical area by FEMA.

Site and Building:

Site Area:	51,381 *SF*	Building Area:	6,646 *SF*
Building Height:	35 *Ft*	Building Height:	2 *Stories*
Existing Site Elevation – Low:	15.8 *Ft BCB*	Existing Site Elevation – High:	19.6 *Ft BCB*
Proposed Site Elevation – Low:	15.8 *Ft BCB*	Proposed Site Elevation – High:	19.6 *Ft BCB*
Proposed First Floor Elevation:	18.70 *Ft BCB*	Below grade levels:	0 *Stories*

Article 37 Green Building:

LEED Version - Rating System :	V4 BD+C RETAIL	LEED Certification:	*Yes / No*
Proposed LEED rating:	*Certified/Silver/ Gold/Platinum*	Proposed LEED point score:	52 *Pts.*

Building Envelope

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	R40CI (R)	Exposed Floor:	N/A (R)
Foundation Wall:	R15CI (R)	Slab Edge (at or below grade):	R15 FOR 24" (R)

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:	1 (%)	Wall & Spandrel Assembly Value:	0.37 (U)
Area of Framed & Insulated / Standard Wall:	77 (%)	Wall Value	21CI (R)
Area of Vision Window:	20 %	Window Glazing Assembly Value:	0.37 (U)
		Window Glazing SHGC:	0.38 (SHGC)
Area of Doors:	2 %	Door Assembly Value:	0.5 (U)

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	The project developed an eQuest energy model for comparison of the design case vs. a base building under ASHRAE 90.1 - 2010 as req'd by LEED v4.		
Annual Electric:	1,085,593 (kWh)	Peak Electric:	51.9 (kW)
Annual Heating:	175.2 (MMbtu/hr)	Peak Heating:	0.212 (MMbtu)
Annual Cooling:	3,305 (Tons/hr)	Peak Cooling:	2.96 (Tons)
Energy Use - Below ASHRAE 90.1 - 2013:	+/- 27 %	Have the local utilities reviewed the building energy performance?:	Yes / no
Energy Use - Below Mass. Code:	+/- 27 %	Energy Use Intensity:	163 (kBtu/SF)

Back-up / Emergency Power System

Electrical Generation Output:	230 (kW)	Number of Power Units:	1
System Type:	230 (kW)	Fuel Source:	Diesel

Emergency and Critical System Loads (in the event of a service interruption)

Electric:	51.9 (kW)	Heating:	0.212 (MMbtu/hr)
		Cooling:	2.96 (Tons/hr)

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing GHG emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon neutrality by 2050 new buildings performance will need to progressively improve to net carbon zero and positive.

B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions: 139.4 *(Tons)*

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

This project is targeting LEED Silver rating and focused on energy efficiency as a specific goal of the building and systems design.

Describe building specific passive energy efficiency measures including orientation, massing, envelop, and systems:

The building is oriented long dimension running E/W and deep overhangs and sunshades help to reduce unwanted heat gain. Roofs and walls are designed with continuous insulation to reduce loads.

Describe building specific active energy efficiency measures including equipment, controls, fixtures, and systems:

Efficient VRF system with air source heat pumps, heat recovery on ventilation, high efficiency water heaters, and led lighting throughout.

Describe building specific load reduction strategies including on-site renewable, clean, and energy storage systems:

PV array on gas station canopy provides 12% of annual energy needs.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

None utilized.

Describe any energy efficiency assistance or support provided or to be provided to the project:

Design team utilized an energy modeler

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The canopy roof and the portion of the building roof that faces southwest have capacity to support additional PV in future.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low:	12.4 *Deg.*	Temperature Range - High:	87.6 *Deg.*
Annual Heating Degree Days:	5621	Annual Cooling Degree Days	750

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90°:	11 #	Days – Above 100°:	5 #
Number of Heatwaves / Year:	2 #	Average Duration of Heatwave (Days):	3 #

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

White roof, photovoltaic panels on gas station canopy.

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

Building has been designed to reduce heat gain. Central heat-pump systems have greater cooling capacity than required (necessary to meet heat demand) & modulate output in all zones as needed (up to max capacity) via variable refrigerant flow.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

Generator is sized to handle full site load in times of interruption. In major event, this site will shut down. It is not critical per FEMA definition.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm: 10 *In.*

Describe all building and site measures for reducing storm water run-off:

Site Impervious surfaces will be reduced from its existing condition.

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

Site Impervious surfaces will be reduced from its existing condition.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, sea levels in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA SFHA?	(Yes) / No	What Zone:	A, AE, AH, AO, AR, A99, V, VE
		Current FEMA SFHA Zone Base Flood Elevation:	17.45 Ft BCB

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online BPDA SLR-FHA Mapping Tool to assess the susceptibility of the project site.	[Yes] / No

If you answered YES to either of the above questions, please complete the following questions. Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented on the BPDA Sea Level Rise - Flood Hazard Area (SLR-FHA) map, which depicts a modeled 1% annual chance coastal flood event with 40 inches of sea level rise (SLR). Use the online BPDA SLR-FHA Mapping Tool to identify the highest Sea Level Rise - Base Flood Elevation for the site. The Sea Level Rise - Design Flood Elevation is determined by adding either 24" of freeboard for critical facilities and infrastructure and any ground floor residential units OR 12" of freeboard for other buildings and uses.

Sea Level Rise - Base Flood Elevation:	19.6 Ft BCB		
Sea Level Rise - Design Flood Elevation:	20.6 Ft BCB	First Floor Elevation:	18.70 Ft BCB
Site Elevations at Building:	16.8-18.3 Ft BCB	Accessible Route Elevation:	18.6-18.7 Ft BCB

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Design considerations are currently being reviewed and discussed with the Mass Port Authority.

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Design considerations are currently being reviewed and discussed with the Mass Port Authority.

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

No full time occupants. In major weather event, the site will shut down. No one will shelter in place at this facility.

Describe any strategies that would support rapid recovery after a weather event:

Building electrical switchgear and HVAC units are located on level 2, above the DFE.

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Design considerations are currently being reviewed and discussed with the Mass Port Authority.

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

Design considerations are currently being reviewed and discussed with the Mass Port Authority.

A pdf and word version of the Climate Resiliency Checklist is provided for informational use and off-line preparation of a project submission. NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

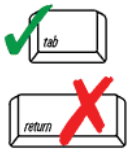
For questions or comments about this checklist or Climate Change best practices, please contact:
John.Dalzell@boston.gov

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

Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

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

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

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

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

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

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

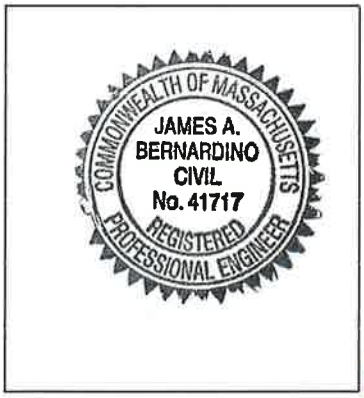
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Signature and Date 8/30/18

Checklist

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

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

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

Standard 1: No New Untreated Discharges

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

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

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

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

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

DRAINAGE REPORT

FOR

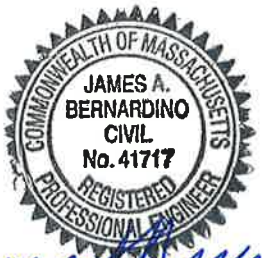
Logan Convenience and Filling Center
Logan Airport

Site Location:
Tomahawk Drive and Jeffries Street
East Boston, MA

Prepared for Applicant:
Nouria Energy Corporation
326 Clark Street
Worcester, MA 01606

Owner:
Massachusetts Port Authority
1 Harborside Drive #200S
Boston, MA 012128

Prepared by:
BOHLER ENGINEERING
352 Turnpike Road
Southborough, MA 01772
Tel: (508) 480-9900
Fax: (508) 480-9080



James A. Bernardino, P.E.
Massachusetts P.E. License #41717

August 30, 2018
BE #W171153

INTRODUCTION

The subject property consists of a lease area of approximately 1.18 acres of land located at the corner of Tomahawk Drive, Jeffries Street, and Transportation Way (AKA Harborside Drive) within the Logan International Airport, currently owned and operated by the Massachusetts Port Authority (MassPort). The site is further classified as Parcel 0104126000 on the City of Boston Assessor's mapping. The subject lease area is currently developed as a parking lot.

The project consists of the construction of a 4,842 square convenience store building with a Starbucks drive-thru within the overall footprint, and a self-service gas station with associated driveways, parking areas, utilities, and landscaping. The proposed project also includes the installation of a new stormwater management system designed to connect to the Airport's existing drainage system which discharges to the Maverick Street Outfall identified as Outfall 004 in the Massachusetts Port Authority's (Massport) NPDES Permit No. MA0000787.

As the development is proposing to reduce the overall impervious area on the site, stormwater runoff flows and volumes to the existing drainage system have been reduced as well. The proposed drainage system also includes the installation of a new "Stormceptor" water quality treatment unit designed to capture flows from the paved surfaces of the development area and upstream drainage system prior to the connection to the existing drainage system downstream of the proposed development. The existing drainage system downstream of the site also has an existing water quality unit which currently treats the flows from the site as well. Therefore the proposed stormwater treatment unit is an additional layer of treatment.

The proposed project will result in a decrease in impervious lot coverage totaling approximately 0.13 acres and falls completely within previously developed areas. Therefore, the project is classified as redevelopment in the current MassDEP Stormwater Handbook.

Summary of Project Impacts	
Total Project Area (limits of work)	1.35 Acres
Existing impervious area (project area)	1.28 Acres
Proposed impervious area (project area)	1.15 Acres
Overall site runoff decrease in impervious areas	0.13 Acres

Additionally, the proposed project meets or exceeds the MADEP Stormwater Management Guidelines based on the following information:

1. ***MADEP Standard #1: No New Untreated Discharges*** – Flows from the project area will include pre-treatment via deep sump hooded catch basins and new Stormceptor water quality units prior to discharge into the existing site drainage system. The existing drainage patterns will be maintained and an increase in treatment will be provided.

2. ***MADEP Standard #2: Peak Rate Attenuation*** – A reduction in runoff to surrounding areas will be accomplished by an overall reduction in impervious coverage, and the increase in total pervious (landscaped) areas.

3. ***MADEP Standard #3: Recharge*** – Recharge for redevelopment projects is required to the greatest extent practicable. This requirement has not been fully met, however, impervious area has been removed (0.13 Acres) promoting additional infiltration through the new landscape areas. Additional (mechanical) infiltration practices are not practical for this location, due to the limited areas not encumbered by utilities and structures. The site also has unique geotechnical characteristics which require extensive ground treatments (i.e. piers, geotextile pavement sections, proof rolling, etc.) to support structures and pavement areas which would prevent reasonable infiltration practices.

4. ***MADEP Standard #4: Water Quality*** – Water quality BMPs will include new deep sump hooded catch basins and a new Stormceptor water quality units prior to discharge into the existing site drainage system. The existing drainage system downstream of the site also has an existing water quality unit which currently treats the flows from the site as well.

5. ***MADEP Standard #5: Land Uses with Higher Potential Pollutant Loads*** – The proposed fueling facility is classified as a Land Use with Higher Potential Pollutant Loads. All runoff flows from the proposed fueling facility area will be directed through the proposed stormwater quality units (Stormceptor Model STC 2400), designed to treat the 1" WQV. Note that there is one existing catch basin that will remain on site, and this has been designed such that none of the stormwater flow from the fueling facility area will enter this catchment. The existing drainage system downstream of the site also has an existing water quality unit which currently treats the flows from the site as well.

6. ***MADEP Standard #6: Critical Areas*** – Not applicable for this site.

7. ***MADEP Standard #7: Redevelopments*** – The project consists of the redevelopment of an existing parking lot and therefore is subject to the MADEP standards only to the maximum extent practicable.

8. ***MADEP Standard #8: Construction Period Pollution Prevention and Erosion and Sedimentation Control*** – The proposed project will provide construction period erosion and sedimentation controls as indicated on sheets C7.0 and C7.1 of the site plan set provided for this project. This includes implementation of perimeter erosion control barriers, as well as a proposed construction entrance, protection for catch basin inlets, protection around temporary material stock piles and various other techniques as outlined on the sheet noted above.

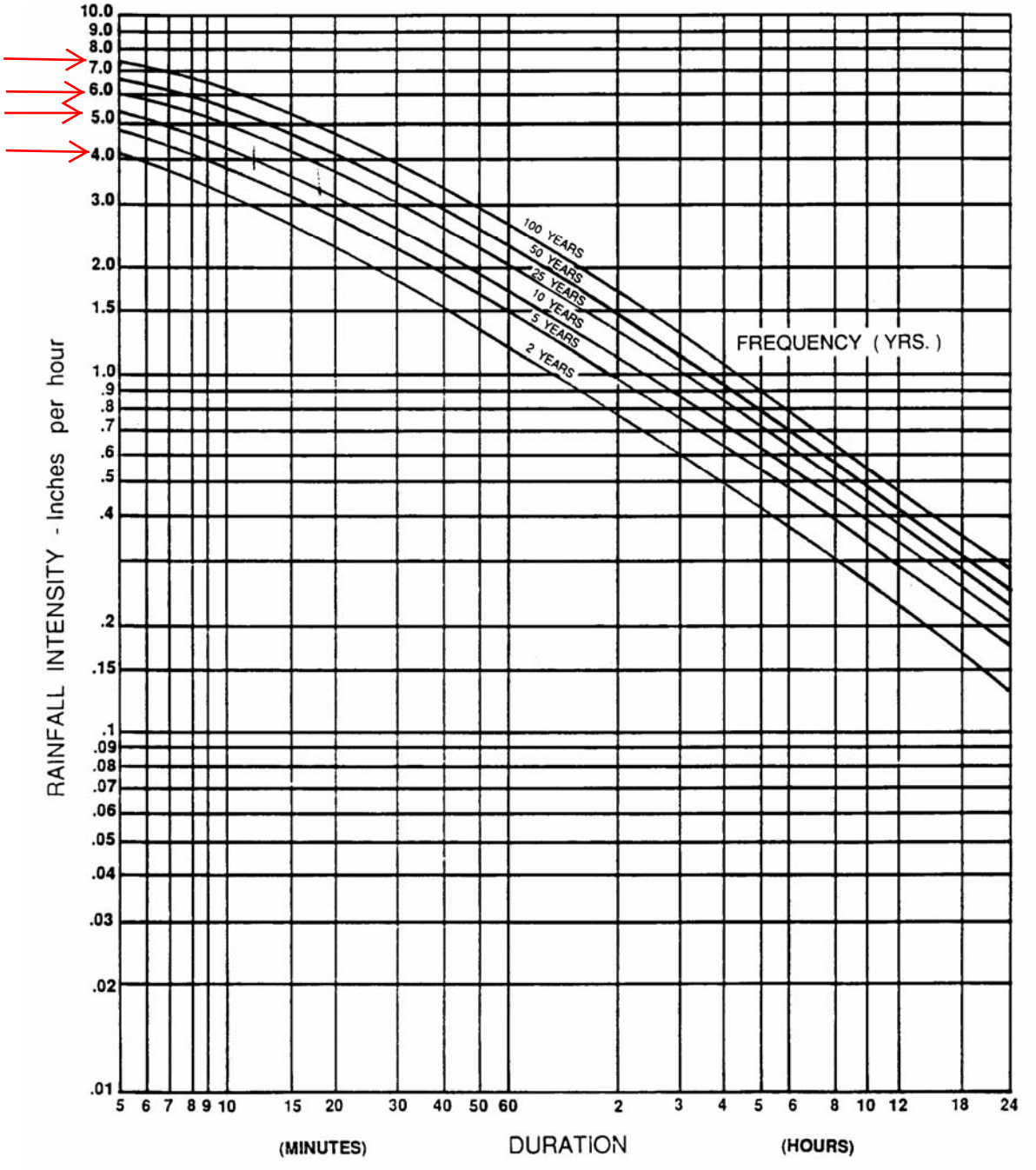
   Since the proposed area of disturbance is more than one acre, the project will also require the filing of a Notice of Intent with the US EPA and the implementation of a Stormwater Pollution Prevention Plan (SWPPP) during the construction. The contractor will still be required to maintain erosion controls during construction and prevent erosion or sediment discharges onto abutting properties or roadways, and maintain records per the SWPPP, which will be prepared and submitted to the EPA prior to construction.

9. ***MADEP Standard #9: Operation and Maintenance (O&M) Plan*** – An O&M Plan for this site has been prepared and is included within this report. The O&M Plan outlines procedures and time tables for the long term operation and maintenance of the proposed site stormwater management system, including initial inspections upon completion of construction, and periodic monitoring of the system components in accordance with established practices and manufacturer's recommendations. The O&M Plan includes a list of responsible parties and an estimated budget associated with inspections and maintenance.

10. ***MADEP Standard #10: Prohibition of Illicit Discharges*** – Specifically for the use, the Long-Term Pollution Prevention Plan will consist of the following:
    a) No outdoor maintenance or washing of vehicles will be allowed.
    b) The property owner shall be responsible for "good housekeeping" including proper periodic maintenance of building and pavement areas, curbing, landscaping, etc.
    c) Regular sweeping of the parking lot pavement areas.
    d) Regular inspections and maintenance of Stormwater Management System as noted in Standard #9.

Exhibit 8-12

Intensity – Duration – Frequency Curve for Boston, MA



Source: TR55 - Urban Hydrology for Small Wetlands, NRCS

Rational Method Drainage Calculations (within limit of work)

EXISTING CONDITIONS

Coverage type	acres	pct.	"C"	frac.	
Impervious	1.28	0.95	0.95	0.9	
Landscape / Grass	0.07	0.05	0.30	0.02	
Total	1.35			0.92	(Composite "C")

PROPOSED CONDITIONS

Coverage type	acres	pct.	"C"	frac.	
Impervious	1.15	0.85	0.95	0.81	
Landscape / Grass	0.20	0.15	0.30	0.04	
Total	1.35			0.85	(Composite "C")

Time of Concentration 5 MIN

IDF Chart	"I"
2-yr storm	4.2
10-yr storm	5.3
25-yr storm	6.0
100-yr storm	7.4

RUNOFF CALCULATIONS "Q" = C x I x A

Existing Conditions	C	I	A	Q	
2-yr storm	0.92	4.2	1.35	5.20	cfs
10-yr storm	0.92	5.3	1.35	6.56	cfs
25-yr storm	0.92	6.0	1.35	7.42	cfs
100-yr storm	0.92	7.4	1.35	9.15	cfs

Proposed Conditions	C	I	A	Q	
2-yr storm	0.85	4.2	1.35	4.84	cfs
10-yr storm	0.85	5.3	1.35	6.11	cfs
25-yr storm	0.85	6.0	1.35	6.92	cfs
100-yr storm	0.85	7.4	1.35	8.53	cfs

Difference (Existing vs. Proposed)			
2-yr storm	-0.35	cfs	-7%
10-yr storm	-0.45	cfs	-7%
25-yr storm	-0.51	cfs	-7%
100-yr storm	-0.63	cfs	-7%

Version 1, Automated: Mar. 4, 2008

TSS Removal Calculation Worksheet

Location: Outflow from Proposed Drainage System

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

Total TSS Removal = **85%**

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

Project: **Logan Convenience and Filling**

Prepared By: **Bohler Engineering**

Date: **8/30/2018**

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

To STC-2400

MassDEP Water Quality Conversion for Proprietary Best Management Practices		
Drainage area, impervious cover only in acres	0.92	Acres
Time of concentration, in minutes	6	Minutes
Calculate the Water Quality Volume (WQV)	3,340	Cubic Feet
Watershed Inches for Conversion	1	inch
Determine the unit peak discharge (qu)	774	csm/in
Calculate Water Quality Flow (WQF) WQF = (qu)(A)(WQV)	1.11	cfs

Stormceptor® STC

Stormceptor® is an underground stormwater quality treatment device that is unparalleled in its effectiveness for pollutant capture and retention. With thousands of systems operating worldwide, Stormceptor delivers protection every day in every storm.

With patented technology, optimal treatment occurs by allowing free oil to rise and sediment to settle. The Stormceptor design prohibits scour and release of previously captured pollutants, ensuring superior treatment and protection during even the most extreme storm events.

Stormceptor is very easy to design and provides flexibility under varying site constraints such as tight right-of-ways, zero lot lines and retrofit projects. Design flexibility allows for a cost-effective approach to stormwater treatment. Stormceptor has proven performance backed by the longest record of lab and field verification in the industry.

Tested Performance

- Fine particle capture
- Prevents scour or release
- 95%+ Oil removal

Massachusetts – Water Quality (Q) Flow Rate

Stormceptor STC Model	Inside Diameter	Typical Depth Below Inlet Pipe Invert [1]	Water Quality Flow Rate Q [2]	Peak Conveyance Flow Rate [3]	Hydrocarbon Capacity [4]	Maximum Sediment Capacity [4]
	(ft)	(in)	(cfs)	(cfs)	(Gallons)	(ft^3)
STC 450i	4	68	0.40	5.5	86	46
STC 900	6	63	0.89	22	251	89
STC 2400	8	104	1.58	22	840	205
STC 4800	10	140	2.47	22	909	543
STC 7200	12	148	3.56	22	1,059	839
STC 11000	2 x 10	142	4.94	48	2,792	1,086
STC 16000	2 x 12	148	7.12	48	3,055	1,677

[1] Depth Below Pipe Inlet Invert to the Bottom of Base Slab, and Maximum Sediment Capacity can vary to accommodate specific site designs and pollutant loads. Depths can vary to accommodate special designs or site conditions. Contact your local representative for assistance.
[2] Water Quality Flow Rate (Q) is based on 80% annual average TSS removal of the OK110 particle size distribution.
[3] Peak Conveyance Flow Rate is based upon ideal velocity of 3 feet per second and outlet pipe diameters of 18-inch, 36-inch, and 54-inch diameters.
[4] Hydrocarbon & Sediment capacities can be modified to accommodate specific site design requirements, contact your local representative for assistance.

Rinker MATERIALS™
www.rinkerstormceptor.com
Manufacturing Plant: Westfield, MA
Phone: (413) 562-3647
11-22-13-R13-802 MDEP

Stormceptor®

TECHNICAL SHEET

Stormceptor has TARP covered

TARP Tier I Approval Verifies Stormceptor's Superior Performance

What is TARP?

TARP (Technology Acceptance and Reciprocity Partnership) was established in 2000 as a standardized method of evaluating the performance of stormwater treatment technologies.

The TARP program is a three-tiered process that includes rigorous laboratory testing, field tests and regulatory permits. TARP standards are currently recognized by eight participating states - New Jersey, California, Illinois, Maryland, Massachusetts, New York, Pennsylvania and Virginia.

What does TARP do?

TARP's certification program provides scientific data on stormwater technologies and related performance claims, which helps:

- Regulators and engineers make sound decisions when addressing stormwater treatment needs.
- Spread technology performance data quickly, giving jurisdictions an opportunity to better meet their water quality objectives.

How was Stormceptor recognized by TARP?

In February 2005, Stormceptor received TARP Tier I interim certification from the New Jersey Department of Environmental Protection (NJDEP), verifying Stormceptor's ability to perform beyond normal operational capacity during extreme rainfall.

What does TARP test for?

TARP Tier I focused on the removal of total suspended solids (TSS) and scour testing under various operating rates and sediment loadings. Seven stormwater treatment technologies were tested, including the Stormceptor System.

Particle Size Distribution (PSD) testing

Stormceptor was one of only two units tested to utilize the NJDEP PSD testing – treating a sample of particles between one and 1,000 microns. Instead of following TARP standards, the other technologies opted to test a preferred particle size range that best suited their unit's performance (see TARP Tier I – Hydrodynamic Comparison Results) – testing coarser, larger particles that are easier to remove.

Of the devices tested, Stormceptor removed the broadest range of pollutants.

Total Suspended Solids (TSS) removal efficiency

TARP protocol required testing at varying TSS concentrations – 100 mg/L, 200 mg/L, 300 mg/L, with the unit filled to 50% of the recommended capacity before maintenance.

How did Stormceptor perform?

Of all the technologies tested, Stormceptor recorded the highest TSS removal while removing a significant portion of clay and fine silts (NJDEP PSD).

Stormceptor:	75% TSS removal, tested with NJDEP fine PSD
High Efficiency CDS:	73.7%, tested with a much coarser PSD than NJDEP PSD
Downstream Defender:	70%, tested with sand particles
VortSentry:	69%, tested with sand particles
Vortechs:	64%, tested with a much coarser PSD than NJDEP PSD
Aquaswirl:	60%, tested with sand particles
BaySaver:	51%, tested with NJDEP fine PSD

Not only did Stormceptor record the highest TSS removal, it did so removing NJDEP's specified PSD, meaning it removed both a higher percentage as well as a broader range of particles than the other technologies.

Scour test results

Stormceptor was one of only two technologies that completed the scour test as mandated by NJDEP. **Tests demonstrated Stormceptor did not scour with the unit loaded to design capacity.**

The calm *during* the storm

Stormceptor removes more pollutants from stormwater than any other separator. Stormceptor does not scour as the flow rate increases, maintaining a continuous positive treatment of suspended solids. Stormceptor is designed to remove a wide range of particles, as well as free oils, heavy metals and nutrients that attach to fine sediment. Units can also be designed to remove a specific particle size distribution.

With over 18,000 units operating worldwide, Stormceptor protects waterways every day in every storm.

To learn more, please visit **www.imbriumsystems.com**

TARP TIER I - Hydrodynamic Comparison Results[1]

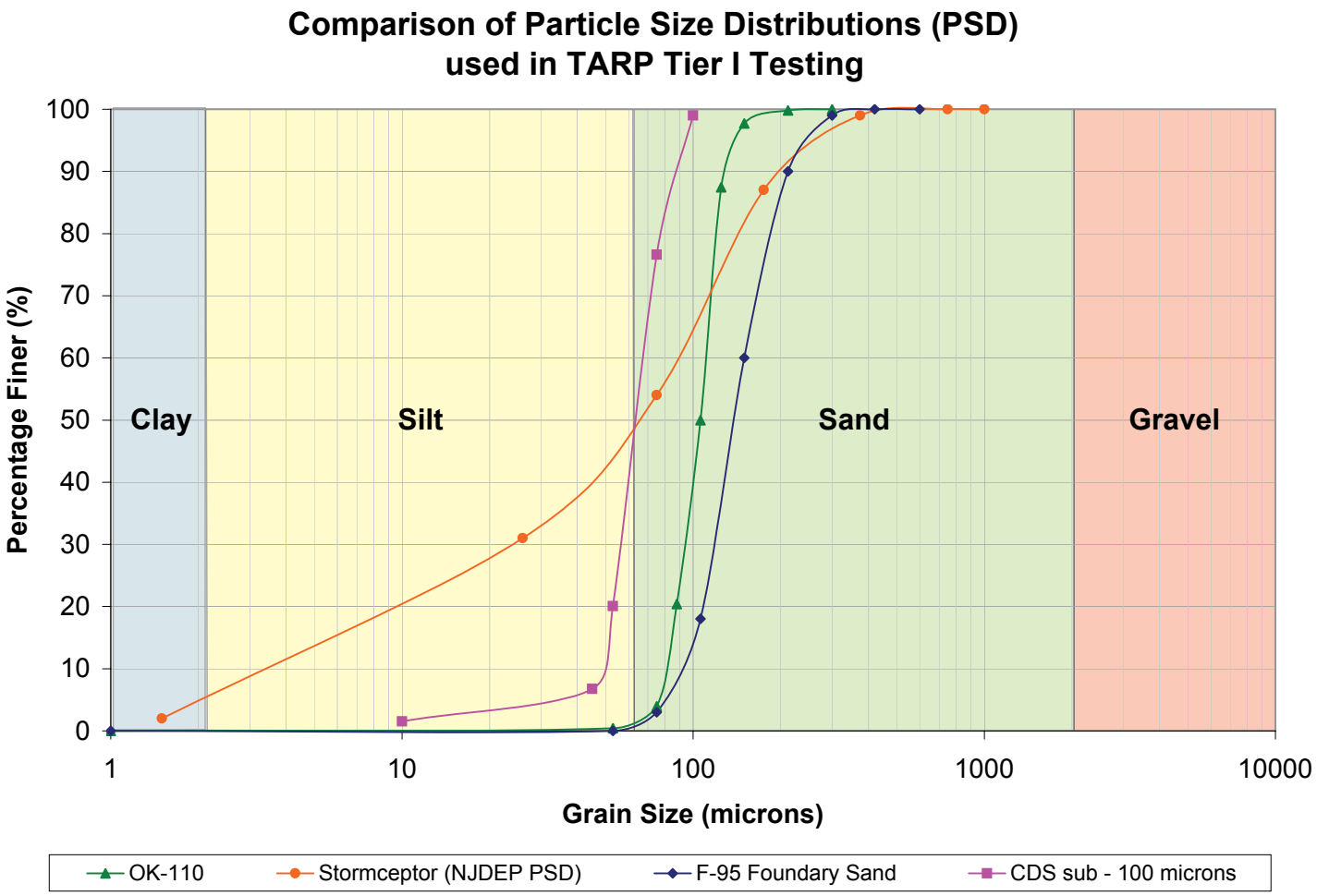
DESCRIPTION			HYDRODYNAMIC DEVICES						
			Stormceptor	High Efficiency CDS	Downstream Defender	VortSentry	Vortechs	Aquaswirl	Baysaver System
MODEL TESTED		Model ID	**STC 900**	New Design: PMSU20_20_6 (tank diameter incr. by 1 foot, diff. baffle arrangement)	4-FT	VS40	Model 2000	AS-3	1K
		Treatment Chamber Diameter (ID)	**6 ft**	6 ft	4 ft	4 ft	4 ft	2.5 ft	2 ft
		Marketed Water Quality Peak Flow Treatment Capacity	**n/a** [2]	1.1 cfs (31.1 L/s)	3.0 cfs (85 L/s)	1.1 cfs (31.1 L/s)	2.8 cfs (79.3 L/s)	1.8 cfs (51 L/s)	2.4 cfs (68 L/s)
		100% Operating Rate Tested	**0.64 cfs (18 L/s)**	1.1 cfs (31.1 L/s)	1.1 cfs (31.1 L/s)	1.1 cfs (31.1 L/s)	1.12 cfs (32 L/s) **(40 % of Original)**	0.9 cfs (30.6 L/s) **(60 % of Original)**	1.1 cfs (31 L/s) **(46 % of Original)**
		Original Physical Design Tested	**YES**	**NO** (New Design: Increased Tank Volume & Changed Baffle Arrangement)	YES	YES	YES	YES	YES
NJCAT VERIFICATION	PARTICLE SIZE USED	Used NJCAT Specified PSD	**YES**	**NO**	**NO**	**NO**	**NO**	**NO**	YES
		PSD Range	**NJCAT PSD Tested**	10-100 µm (i.e. fines washed out of sediment samples used via plankton nets)	53 - 300 µm	53 - 300 µm	38 - 75 µm	50 - 150 µm	NJCAT PSD Tested
		PSD Name		**sub-100 PSD**	**F-95 Sand**	**F-95 Sand**		**OK-110**	
			Refer to Particle Size Distribution (PSD) Chart for details & differences between the distributions used						
	TSS REMOVAL RESULTS	100% Operating Rate Tested	**YES**	YES	YES	YES	**NO** (Up to **40%** of operating rate tested)	**NO** (Up to **60%** of operating rate tested)	**NO** (Up to **46%** of operating rate tested)
		125% Operating Rate Tested	**YES**	**NO**	YES	YES	**NO**	**NO**	**NO**
		Pre-loaded unit at 50% Sediment Capacity prior to evaluating performance	**YES**	**NO**	**NO**	YES	**NO**	**NO**	YES
		NJCAT Verification For TSS Removal	**75 % TSS** (up to 125% of operating rate)	**73.7 % TSS** (up to 100% of operating rate)	**70 % TSS** (up to 125% of operating rate)	**69 % TSS** (up to 125% of operating rate)	**64 % TSS** (up to **40%** of operating rate)	**60 % TSS** (up to **60%** of operating rate)	**51 % TSS** (up to **46%** of operating rate)
	SCOUR TEST RESULTS	Scour Test Performed	**YES**	**NO**	**NO**	YES	**NO**	**NO**	Yes - in second chamber only
		50% Sediment Loading Capacity at 125% Operating Rate	**NO SCOUR** **0 ppm**	**Not Tested**	**Not Tested**	NO SCOUR 0 ppm	**Not Tested**	**Not Tested**	SCOUR 11 ppm
		100% Sediment Loading Capacity at 125% Operating Rate (Level were maintenance is recommended)	**NO SCOUR** [3] **3 ppm**	**Not Tested**	**Not Tested**	SCOUR 8 ppm	**Not Tested**	**Not Tested**	SCOUR 16 ppm
TARP TIER I NJDEP INTERIM APPROVAL		NJDEP Accepted NJCAT Verified Value for TSS Removal	**Interim Approval set at 50% TSS**	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS
		Original Design Approved by NJDEP	**YES**	**NO** Only the "new" high efficiency design can be used. Original CDS design not approved.	YES	YES	**NO** Must reduce original flow capacity marketed in literature by 60%.	**NO** Must reduce original flow capacity marketed in literature by 50%.	**NO** Must reduce original flow capacity marketed in literature by 54%; Must increase tank surface area by 44% to 79% for design safety.

1. The Technology Acceptance and Reciprocity Partnership (TARP) is a workgroup of the Environmental Council of States (ECOS) that was originally made up of California, Illinois, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Virginia. Source of all NJDEP & TARP documented information: www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm .

2. Stormceptor is marketed and designed to achieve water quality objectives, rather than sizing primarily for flow-based criteria.

3. Indicated in the NJDEP interim-certification letter (Feb. 15, 2005) which can be obtained from the below web link, Stormceptor did not scour at a 125% operating rate and 100% unit sediment loading. 3 ppm is considered to be within the tolerance of the testing error.

For NJDEP Interim Certified Stormwater Technologies go to: **http://www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm**



TIER I - Lab Testing Protocol

1. Measure TSS Removal Efficiency

- Influent concentrations: 100, 200, 300 mg/L
- Five operating rates (25, 50, 75, 100, 125%)
- 50% pre-loaded with sediment

2. Measure Scouring / Re-suspension

- 50% and 100% pre-loaded at 125% operating rate

3. Utilize Pre-defined NJDEP Particle Size Distribution

- 5% clay / 40% silt / 55% sand

Source of all NJDEP and TARP documented information, go to: http://www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm

Inspection and Maintenance. Easy. Convenient.

When it rains, oils, sediment and other contaminants are captured and contained by over 20,000 Stormceptor units operating worldwide. While Stormceptor's patented scour prevention technology ensures captured pollutants remain in the unit during all rainfall events, the accumulated pollutants must eventually be removed as part of a regular maintenance program.

If neglected, oil and sediment gradually build up and diminish any BMP's efficiency, harming the environment and leaving owners and operators vulnerable to fines, surcharges and bad publicity.

Maintenance is a must

Ease, frequency and cost of maintenance are often overlooked by specifiers when considering the merits of a stormwater treatment system. In reality, maintenance is fundamental to the long-term performance of any stormwater quality treatment device.

While regular maintenance is crucial, it shouldn't be complicated. An ongoing maintenance program with Stormceptor is convenient and practically effortless. With virtually no disruptions, you can concentrate on your core business.

Quick inspections

Inspections are easily carried out above ground from any standard surface access cover through a visual inspection of the orifice and drop tee components. A sludge judge and oil dip-stick are all that are needed for sediment and oil depth measurements.

Easy unit access

Maintenance is typically conducted from the same surface access cover, eliminating the need for confined space entry into the unit. Your site remains undisturbed, saving you time and money.

No muss, no fuss and fast

Maintenance is performed quickly and inexpensively with a standard vacuum truck. Servicing usually takes less than two hours, with no disruption to your site.

A complete stormwater management plan for Stormceptor extends beyond installation and performance to regular maintenance. It's the smart, cost-effective way to ensure your unit continues to remove more pollutants than any other separator for decades to come.

Stormceptor maintenance recommendations

- Units should be inspected post-construction, prior to being put into service.
- Inspect every six months for the first year of operation to determine the oil and sediment accumulation rate.
- In subsequent years, inspections can be based on first-year observations or local requirements.
- Cleaning is required once the sediment depth reaches 15% of storage capacity, (generally taking one year or longer). Local regulations for maintenance frequency may vary.
- Inspect the unit immediately after an oil, fuel or chemical spill.
- A licensed waste management company should remove captured petroleum waste products from any oil, chemical or fuel spills and dispose responsibly.

With over 20,000 units operating worldwide, Stormceptor performs and protects every day, in every storm.

imbrium

www.imbriumsystems.com

USA: (888) 279 8826
CANADA: (800) 565 4801

STORMWATER OPERATION & MAINTENANCE PLAN

Logan Convenience and Filling Center
Tomahawk Drive and Jeffries Street
Logan Airport
East Boston, MA

RESPONSIBLE PARTY:

Nouria Energy Corporation
326 Clark Street
Worcester, MA 01606

Construction Phase

Maintenance of the Storm Water Management System will be the responsibility of the property owner or their designee (Owner). During construction, the General Contractor (to be hired by the Owner or their designee) will appoint the Project Manager who will be directly responsible for these tasks. Once construction is complete, the Owner will be responsible for coordinating operation and maintenance of the system.

A Facility Manager, hired by the owner or their designee, will be responsible once construction is complete. It is the intent of this plan to minimize impacts during construction. Therefore, a comprehensive soil and erosion control plan will be implemented prior to any project construction activities. The primary elements of the Soil and Erosion Control Plan are outlined below.

- A stabilized construction exit will be constructed at the site entrance. This BMP will be utilized to reduce silt from exiting the project boundaries and also prevent trucks from tracking of silt and mud onto adjoining streets.

- The installation of silt fence will be completed along the perimeter of the proposed work area. In addition to providing for sediment deposition and reducing run-off during storm events, the siltation barriers will assist to delineate the limit of work areas for equipment operators.

- Temporary soil stockpile areas will be installed and enclosed by straw bales and silt fence to reduce sediment runoff during storm events from soil stockpiles. Soil stockpiles shall have a maximum slope of 1:3 ft/ft to reduce erosion and sediment runoff.

- Filter sacks will be installed at grated inlets down gradient of the proposed disturbance area in order to reduce collection and conveyance of sediment in the existing and proposed drainage systems.

- Inspection of erosion and sediment control devices will occur after every rainfall event during periods of active construction and weekly otherwise. During construction activities, erosion control devices will be placed at catch basins to prevent sediment from reaching discharge points.

- During construction, disturbed areas will be kept to a minimum, and vegetative stabilization of these areas will occur as soon as possible. Areas that cannot be restored or stabilized immediately will be mulched to prevent potential erosion or sedimentation.

- Temporary seeding, mulching, or other suitable stabilization measures will be used to protect exposed critical areas, should unprotected soils remain exposed for prolonged periods. Following construction, and once disturbed areas have been stabilized, erosion controls will be removed.

Schedule for inspection and maintenance during and after construction is described below.

Schedule for Inspection and Maintenance during Construction:

- Erosion Control Barrier: The erosion control barrier (silt fence) will be installed prior to commencement of construction, inspected weekly, and immediately after storm events to ensure its integrity. The erosion control barrier will be repaired as necessary to prevent erosion.

- Construction Exit Aprons: The construction exit aprons will be installed prior to commencement of construction and inspected weekly. The construction exist aprons will be replaced when debris becomes noticeable on the existing pavement surfaces opposite the construction site.

- Slope Stabilization: Slope stabilization controls will be installed immediately upon obtaining final grades as shown on the project plans. Areas in failure will be re-graded to final grade and stabilized.

- Silt Barriers around Catch Basins: The catch basin barriers will be installed immediately after installation of catch basin grates and will be inspected weekly, prior to storm events and immediately after storm events.

- Construction Completion: The entire stormwater management system will be inspected upon completion of construction. Sediment will be removed from the system at this time.

Post Development Controls

Once construction is completed, the post development stormwater controls are to be operated and maintained in compliance with the following permanent procedures (note that the continued implementation of these procedures shall be the responsibility of the property owner, or its assignee):

1. Parking lots and on-site driveways shall be swept at least twice per year and on a more frequent basis depending on sanding operations. All resulting sweepings shall be collected and properly disposed of off site in accordance with MADEP and other applicable requirements. BUDGET: $2000/yr

2. All catch basins, manholes, and piping shall be inspected four times per year. These features shall be cleaned 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 catch basin. Accumulated sediment and hydrocarbons present must be removed and properly disposed of off site in accordance with MADEP and other applicable requirements. BUDGET $500/yr per structure.

3. Stormceptor Water Quality Unit: Follow manufacturer’s recommendations (attached). Budget: $1000/yr.

LONG-TERM POLLUTION PREVENTION PLAN

Logan Convenience and Filling Center
Tomahawk Drive and Jeffries Street
Logan Airport
East Boston, MA

RESPONSIBLE PARTY:

Nouria Energy Corporation
326 Clark Street
Worcester, MA 01606

For this site, the Long-Term Pollution Prevention Plan will consist of the following:

1. No outdoor maintenance or washing of vehicles allowed.
2. The property owner shall be responsible for "good housekeeping" including proper periodic maintenance of building and pavement areas, curbing, landscaping, etc.
3. Proper storage and removal of solid waste (dumpsters).
4. Regular sweeping of the parking lot pavement areas, as indicated in the "O&M Plan".
5. Regular inspections and maintenance of Stormwater Management System as noted in the "O&M Plan".

ILLICIT DISCHARGE STATEMENT

Certain types of non-stormwater discharges listed below are allowed under the U.S. Environmental Protection Agency Construction General Permit. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this LTPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. Any existing illicit discharges, if discovered during the course of the work, will be reported to MassDEP and the local DPW, as applicable, to be addressed in accordance with their respective policies. No illicit discharges will be allowed in conjunction with the proposed improvements.

Type of Allowable Non-Stormwater Discharge	**Likely to be Present at Your Site?**
Discharges from emergency fire-fighting activities	☐ YES ☒ NO
Fire hydrant flushings	☐ YES ☒ NO
Landscape irrigation	☒ YES ☐ NO
Waters used to wash vehicles and equipment	☐ YES ☒ NO
Water used to control dust	☒ YES ☐ NO
Potable water including uncontaminated water line flushings	☒ YES ☐ NO
Routine external building wash down	☐ YES ☒ NO
Pavement wash waters	☐ YES ☒ NO
Uncontaminated air conditioning or compressor condensate	☒ YES ☐ NO
Uncontaminated, non-turbid discharges of ground water or spring water	☐ YES ☒ NO
Foundation or footing drains	☐ YES ☒ NO
Construction dewatering water	☒ YES ☐ NO

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN (POST CONSTRUCTION)

Bohler Engineering has prepared this Spill Prevention Control & Countermeasures Plan (SPCCP) for the proposed Nouria Energy Convenience Store & Fuel Station located at Logan International Airport, 1 Harborside Drive, Boston, MA, in accordance with 40 CFR 112 and Section 311 of the Clean Waters Act (CWA) and the requirements of the NPDES Permit No. MA0000787 for the Massachusetts Port Authority and the Co-Permittees of Logan International Airport. This Plan will provide general facility information and information related to potential spills, including emergency contacts, procedures for notification and spill prevention measures for the ongoing operation of the facility. Construction-period spill prevention measures and responses are discussed in the Stormwater Pollution Prevention Plan (SWPPP) prepared for the site.

1. General Facility Information:

Facility Name: Nouria Energy Convenience Store & Fuel Station

Facility Address: Logan International Airport, 1 Harborside Drive, Boston, MA

Latitude / Longitude: 42º 21' 58" N / 71º 01' 42" W

Property Owner / Operator: Nouria Energy Corp.
326 Clark Street
Worcester, MA 01606

Facility Contact Information: John Collins, Compliance Manager

Mobile phone: (774) 314-5358

Underground Storage Tanks (USTs): Three (3) – 15,000-gallon double-walled fiberglass tanks

1.1. Site Description:

The facility consists of a convenience store building and self-serve fueling station on a 1.18-acre leased portion of land (the "site") located at the corners of Tomahawk Drive, Jeffries Street, and Harborside Drive on the Logan International Airport property owned by the Massachusetts Port Authority (Massport). The site contains a 4,842 square foot convenience store building with drive-thru, eight (8) multi-product dispensers (MPDs), and an overhead fuel canopy. The site is also developed with associated driveways, parking areas, utilities, stormwater management system, and landscaping.

The site is accessible by three (3) curb cuts, one on each of Tomahawk Drive, Jeffries Street, and Harborside Drive. The stormwater management system collects surface runoff and discharges to the Maverick Street Outfall identified as Outfall 004 in the Massachusetts Port Authority's NPDES Permit No. MA0000787.

2. Potential sources of spills and leaks

This section will describe potential sources of spills and leaks that could potentially occur at the subject site. Also discussed are potential causes of spills and predictions of spill migration routes associated with any potential release. Most spills are likely to occur on areas of concrete or bituminous concrete pavement and migrate towards catch basins located at the northern portion of the site near the fueling operations.

2.1. Tanker truck refueling operations

A release of product could occur during filling of the underground fuel storage tanks from the tanker truck. This could be caused by a tank overfill, hose failure or catastrophic failure of the tanker integrity due to equipment failure or a vehicle accident. The amount released could vary from a minimal amount to the total capacity of the tanker compartment; however, a catastrophic failure is highly unlikely. Minor overfills and drips that occur as a result of transfer operations would be contained by UST drip pans located around the fill pipes or released to the concrete pad surrounding the tank fill. A release resulting from a major overfill, hose failure or catastrophic failure would be released to the concrete pad and paved areas and flow to Catch Basin 1. In the event of a catastrophic release, such as a tanker compartment failure, the spilled product could potentially be released to other catch basins or ultimately to Tomahawk Drive.

2.2. Fueling of vehicles

Spills during vehicle fueling are a potential source of release as well. Tank overfills, any drips associated with filling operations and spills resulting from vehicles leaving the dispensing island prior to returning the dispensing hose back to the cradle of the dispenser are a few examples of potential spills. Generally, these types of releases would be less than 20 gallons due to automatic shut-offs within the fueling system. Any spills on the concrete fueling pad would flow in a northerly direction for the northern half of the dispensing island and in a southerly direction for the southern half of the dispensing island. The entire fueling area will be surrounded by positive limiting barriers (PLB's). PLB's are small grooves cut into the concrete mat surrounding the dispensing area and are designed to catch and retain any product that may be released onto the island mat. However, if a release migrated from the concrete pad, it would flow toward Catch Basin 1, 2 or 5 which are located in the vicinity of the dispensing island depending on the source of the spill.

2.3. Vehicle accidents

A collision on-site with a fuel dispenser could cause a potential release of product. Generally, the amount released would be less than 20 gallons since the pumps are fitted with impact safety valves. The release would follow the same path as that of a spill for fueling vehicles.

2.4. Product Delivery

Another potential source of spills are those associated with the delivery of materials such as oil and other automotive fluids. Generally, these types of materials are shipped in small containers, individually packaged, and would therefore have a low level of potential release. Any spill of this sort would flow to Catch Basin 3, 4 or 5 which are located in the vicinity of the convenience store.

2.5. UST or Product piping leak

Any leak in the product piping system or within the underground fuel storage tanks (UST's) could cause the potential for a product release to the subsurface. Any leaks to subsurface areas are extremely unlikely due to the state-of-the-art systems associated with modern Gasoline service stations.

2.6. Vulnerable receptors

Vulnerable receptors to potential release of spills into the environment include both surface water and groundwater resources in the vicinity of the site. Due to the existence of a municipal water system in the area, drinking water supply wells are not located within the area. Two potential migration routes for spill flows exist. A catastrophic large spill could overtop the proposed Catch Basins located near the site entrances and enter the roadway system. This is not likely, due to the proposed site grading which create ridges between the existing street and the locations of the catch basins.

The second migration route for a spill would travel toward any one of the proposed catch basins on-site and enter the subsurface drainage system. The catch basins are equipped with deep sumps and oil/water separator hoods which will contain a smaller release of material. In addition, a stormwater quality unit is designed into the system which could store up to 251 gallons of hydrocarbons (petroleum products).

2.7. Spill Hazards

Types of materials which could be spilled on-site generally include gasoline, diesel E-85 ethanol, oil and other fluids such as antifreeze or windshield washer fluid. The primary hazard associated with gasoline is the potential for fire or explosions, and any health hazard associated with vapor inhalation, absorption through the skin or ingestion of the material. Several types of oils may be considered combustible as well, and can also be a health hazard through skin absorption and ingestion.

All of these products stored and sold at the facility come with Material Safety Data Sheets (MSDS) which are kept on the premises. These MSDS sheets contain information regarding product components, procedures for spill responses and any recommended personnel protective equipment.

3. Spill Response and Notification Procedures

3.1. Employee Spill Response Procedures:

In the unlikely event of a product spill at the facility, the following procedures should be followed by the site employees:

1. Activate the Emergency Shut-Off
2. Take any actions necessary to protect the life and/or health of any persons that may be endangered by the spill.
3. Dial 911 if necessary.
4. Turn off all vehicle engines. Do not attempt to restart engines or move any vehicles.
5. Evacuate any and all customers from the spill area and if necessary, EVACUATE the site.

6. Stop the source of the spill, if it can be done in a safe manner.
7. Contain the spilled material on-site using methods such as absorbent materials and constructing temporary dikes (sand, pads, "speedi-dry"). Try to prevent released material from entering into catch basins or flowing off of paved areas.
8. Be sure to use appropriate personal protective equipment (gloves, etc.)
9. Recover and place any used absorbent in the designated waste drums.
10. IN THE CASE OF A FIRE, CALL 911 AND EVACUATE CUSTOMERS FROM THE SITE. Use the on-site fire extinguisher for small, controllable fires. Do not attempt to extinguish any fire associated with gasoline or any other flammable material.
11. Notify the Store Manager immediately.

3.2. Manager / Assistant Manager Spill Response Procedures:

In the event of a product release or spill at the facility, the Store Manager or Assistant Store Manager should take the following actions:

1. Follow through with the above employee procedures to make sure all appropriate measures have been taken.
2. Notify the Nouria Compliance Manager.
3. Coordinate with the Fire Department.
4. Take an inventory of all employees on duty and their whereabouts.
5. Document the Spill. Follow procedures in Section 8.

Once appropriately notified, the Compliance Manager will assess the situation and provide notifications to the proper authorities, including all State and Federal regulatory authorities and Massport officials.

The Nouria Compliance Manager will also be responsible for mobilizing any outside emergency spill cleanup contractors if necessary.

4. Emergency Response Equipment

Emergency Response Equipment shall be kept on-site at the facility in good working order. This equipment shall include, but not be limited to: a spill kit containing granular absorbent, absorbent booms and personnel protective equipment. Also, hand-held fire extinguishers and fire suppression systems for the building and the dispenser islands must also be kept at the facility. A waste drum, specifically designated for use with disposal of waste materials such as used absorbent and used personnel protective equipment must be made available at the site.

5. Spill Containment and Cleanup

All spill containment and cleanup procedures must be done using available materials on-site including absorbent pads and / or granular absorbent ("speedy-dry"). Initial efforts must be made to contain the spill.

For small spills, this may consist of spreading "speedy-dry" over the affected area for absorption. For larger spills, where the possibility exists for migration of material, "speedy-dry" or other

materials shall be used in order to create dikes or berms around the area. Once the area is contained, absorbent pads, or speedy dry should be used over the spill area to fully absorb the spill.

Next, all absorbent materials should be recovered using a shovel and broom and placed in a 55 gallon drum for storage. A second application of the materials may be necessary to redeploy absorbent and recover any residual spilled material.

6. Emergency Response Telephone Numbers

Fire, Police, Emergency Medical:		9-1-1
Store Manager:		_____
Nouria Compliance Manager	Cell:	(774) 314-5358
MassDEP Emergency Phone Number:		1 (888) 304-1133
EPA National Response Center:		(800) 424-8802

7. Spill Prevention Measures

Spill prevention on-site involves the use of built-in site controls and preventive procedural measures as outlined below.

7.1. Underground Storage Tanks (USTs):

The proposed underground storage tanks at this location will consist of three (3) 15,000-gallon, double walled fiberglass tanks resulting in a total of 45,000 gallons of underground storage. Each underground storage tank will be of double wall construction resulting in a void space (or interstitial space) between the inner and outer tank walls. The interstitial space between the tank walls is filled with a brine solution which is continuously monitored by an electronic hydrostatic sensor (a component of the UST's electronic monitoring system) designed to detect changes in the brine levels. Should a breach occur in either of the inner and/or outer tanks, the brine level within the brine reservoir (set at a predetermined level and calibrated to the hydrostatic sensor) will rise or fall. Consequently, any fluctuation within the reservoir will be detected by the hydrostatic sensor and an audible alarm, within the gasoline facility, will be sounded. Even in areas of high groundwater, where groundwater levels may exceed the height of the underground storage tank, fractures occurring in the outer tank wall would be detected due to increases in brine levels.

In addition to the double wall construction of the underground storage tanks and the presence of the electronic hydrostatic sensor, the UST's being proposed are also equipped with other safety features designed to protect against the release of gasoline, diesel, and/or E-85 ethanol product. Additional safety equipment designed to help reduce the likelihood of a release include an electronic tank/inventory gauge, overfill valves/alarms, overfill buckets, spill buckets and sump sensors.

7.2. Electronic Tank/Inventory Gauge System

The electronic tank/inventory gauge (another component of the electronic monitoring system) is a gauge inserted directly into the UST. The gauge, which is housed inside a galvanized steel pipe inserted into the UST allows the facility operator to monitor the amount of product within a UST with great accuracy while also monitoring the amount of product removed from and/or delivered

into the tank. The gauging system is ultimately tied into a state-of-the-art computer located within the gasoline facility that continuously monitors the inventory within a specific tank while providing assurance that product is neither exiting the tank or groundwater entering the tank.

7.3. Overfill Protection System

In addition to the general tank construction and the presence of electronic monitoring systems, many precautions are also taken in order to prevent overfilling of the UST's and/or spillage occurring during the transfer of product from the fuel delivery vehicle to the UST. During a typical fuel delivery, the fuel delivery driver is required to first manually gauge (this is done by using a large "dipstick" resembling a large yardstick) the amount of product within each UST to verify the current amount of product before commencing the filling operation. Once it has been determined that the UST can receive additional product, the delivery hose is affixed to a drop tube situated within a 5-gallon overfill containment bucket. This watertight device is designed to hold the contents of the fuel delivery hose should product be released from the hose during delivery while also catching any residual spillage associated with the connection and disconnection of the delivery hose. In addition to the overfill bucket, each tank is also equipped with an overfill valve. This valve is designed to prevent additional product from being delivered to the UST when the capacity within the tank reaches 90 percent. Once a tank has reached 90 percent capacity, the valve is activated which prevents air/vapors from escaping the tank that ultimately keeps additional product from being delivered and eliminating potential overfilling of the UST. For added protection, an overfill alarm sensor is also installed which audibly and visually alerts the fuel delivery person that the tank is at 90 percent capacity.

7.4. Spill Buckets

In conjunction with the overfill/spill bucket located on the fill tube, additional spill buckets are located on the vapor recovery ports for each tank. These 5-gallon watertight buckets are designed to collect any minimal product encountered at the vapor recovery port. During fuel delivery, vapors escaping the UST are collected at the vapor recovery port and transported back to the fuel delivery vehicle via a vapor recovery hose. The 5-gallon spill bucket is designed to collect any product that may be present upon the completion of the fueling process and the disconnection of the vapor recovery hose.

7.5. Sump Sensors

Each UST is also equipped with a sump sensor (another component of the electronic monitoring system). These sensors are located within the watertight enclosures that house the submersible turbine pumps (STPs) used to pump product from the USTs to the fuel dispensers. Each sump sensor is located at the bottom of each tank sump and is designed to detect the presence of unwanted fuel within the tank sump. Due to the many working parts associated with the STPs and the fact that the product piping is typically sloped from the dispensers to the tank sumps, the sump sensors can detect product releases that may occur outside of the limits of the USTs themselves. Like the hydrostatic sensor and the electronic inventory gauges, these sump sensors are connected to the main leak detection/inventory control computer located within the facility and will alert the operator if product is detected within the tank sump.

7.6. Underground Product Piping:

Similar to the UST construction, the underground product lines are of double-walled fiberglass construction. These product lines are installed so that they are sloped either back to the underground storage tank sump or towards the underground dispenser sump. By sloping the piping towards the sumps, any product released from the inner piping wall will be contained by the outer piping wall and transferred to the sumps. Once transferred to the sumps, the presence of product within the sumps will trigger the sump sensors alerting the operator of the breach. As an added safeguard, an "in-line" leak detector will monitor each of the proposed product lines. These leak detectors, located within the tank sump, are designed to detect changes in pressure within the product lines resulting from a breach in the piping system. In-line leak detectors perform tests in order to gauge pressure within the product lines and will alert the operator to any anomalies found during these tests. Also, radical drops in pressure (typically associated with a massive breach or break in product lines) are addressed by the ability of the leak detectors to trigger shut off valves within the piping system which prevent continued amounts of product to be pumped into the broken line.

7.7. Multi-Product Gasoline Dispensers (MPD's)/Dispensing Area:

The gasoline dispensers at this facility contain several devices designed to help prevent the spillage or loss of product. Each dispenser is situated on top of a watertight dispenser sump designed to contain any product that may be released at the dispenser. Like the tank sumps, each dispenser sump is equipped with a sump sensor deigned to detect the presence of product within the dispenser sump. In addition to the sumps and sump sensors, each dispenser is equipped with an impact (shear) valve. In the unlikely event that a dispenser is knocked off of the dispensing island, these impact valves are designed to cap the product lines and prevent unwanted product from escaping through the displaced product line. Each dispenser is also fit with state of the art dispensing hoses designed to prevent spillage. Similar to the impact valves located at the bottom of each dispenser, each fuel dispensing hose is fit with shear valves. Again, in the unlikely event that a hose is ripped from the dispenser, these valves will shut, preventing product from exiting the dispenser. Lastly, the entire fueling area is surrounded by positive limiting barriers (PLB's). Although PLB's are not part of the gasoline dispenser themselves, they act in conjunction with all of the spill prevention devices to help prevent spillage from migrating from the fuel dispensing area into the surrounding site area and ultimately into the site's stormwater management system. The PLB's are small grooves cut into the concrete mat surrounding the dispensing area and are designed to catch and retain any product that may be released onto the island mat. Should a small release of product occur within the dispensing area, the released product would be contained within the PLB's until being collected and properly disposed of. It is also important to note that an overhead canopy will cover a majority of the fuel dispensing area. In addition to providing consumers with protection from the elements making the fuel dispensing process less hazardous, the canopy will help eliminate stormwater from traversing across the mat reducing the potential for the conveyance of possible contaminants into the stormwater management system.

7.8. Drainage Controls

The proposed drainage system consists of catch basins equipped with deep sumps and oil/water separator hoods which will contain a smaller release of material. In addition, a stormwater quality unit is designed into the system which could store up to 251 gallons of hydrocarbons (petroleum products).

7.9. Signage and labeling

In accordance with Massachusetts State Regulations, all appropriate signs must be posted at the dispenser islands relating to vehicle fueling operations. All containers containing oil or hazardous materials must also be properly labeled to aid in identification. Spill response and notification procedures shall be posted for reference by all employees. Also, signs are posted in the rest rooms to provide notification of the illegal discharging of contaminants into the sanitary system.

7.10. Best Management Practices

7.10.1. Bulk Transfer Operations

All fuel deliveries are to be conducted in such a manner so as to minimize the potential for any spill to occur. Both employees and drivers must receive proper training and be instructed to deploy traffic cones to alert drivers and minimize the potential for a vehicular accident. Drivers are trained to monitor the tank's capacity before initiating fuel transfer operations and constantly monitor transfer progress.

7.10.2. Dispenser Island Operations

All dispensing of fuel at the dispenser islands must be supervised by the employees on duty and monitored via a closed circuit television system. This system aids in minimizing the potential for any tank overfills and vehicle "drive-aways". In addition, appropriate signs must be posted for instructing customers in the safe operation of the fuel dispensers.

7.10.3. Equipment Maintenance

All equipment associated with the transfer and storage of petroleum product must be maintained and tested in accordance with manufacturers guidelines. In addition, all applicable City, State and Federal requirements are to be followed. Any equipment which is worn or malfunctioning must be repaired and/or replaced immediately.

7.10.4. Good Housekeeping

This facility is managed in such a way as to minimize any potential spill occurrence and all spills will be cleaned up promptly and completely. Specific procedures include the inspection of bulk delivery items and vehicle fueling areas for any signs of spillage, proper storage of oil and hazardous materials in order to prevent accidental spills and general cleanliness of the operation.

7.10.5. Security

All fuel dispensing equipment must be disabled during non-store hours of operation. Sufficient light levels during these hours will allow police and/or Massport security to inspect the premises on a periodic basis. The main power shutoff and all pumping equipment controls are located within the convenience store which must be locked when the store is closed.

7.11. Employee Training

Employee training is extensive for self-serve gasoline facilities and all employees are instructed in proper equipment operation procedures and the action measures to take in the unlikely event of any spill occurrence.

- Training in fuel delivery procedures and vehicle fueling operations employees are trained in the appropriate system alarms and emergency shutoffs, UST gauging procedures, fuel delivery and bulk transfer deliveries and operations for vehicles fueling.
- Training in Spill Response Procedures: employees are trained in the proper response and notification procedures for spill containment and cleanup of spills. Training involves the location and education on spill response equipment and materials.
- Spill Hazard Training: All employees are trained in any potential hazards of materials being stored or sold at the facility and the location of all Material Safety Data Sheets.
- Spill Reporting procedures: employees are trained in the reportable quantities and reportable conditions for materials used or sold at the facility.
- Training in Spill Prevention and Response Plan: All employees are trained and required to become familiar with the Spill Prevention and Response Plan and receive proper training in the prevention and spill response procedures.

7.12. Inspection and Testing Procedures

Employees conduct daily inspections of the facility to assess, identify and respond to unreported spills.

Monthly inspections are conducted at the facility to ensure proper equipment operation and in order to identify the location of any potential leaks. This monthly inspection includes the following:

- General overview of the facility to include pump dispensing islands and the UST area for any signs of spills.
- Equipment is inspected for any signs of wear or need of repair.

Annual inspections of the catch basins and stormwater quality unit will be conducted for contamination and sediment accumulation in order to ensure proper working order of the drainage system. As warranted, sediment accumulation will be removed and properly disposed of. Monthly and annual inspections shall be documented and files shall be maintained at the facility of said inspections.

All UST's and product piping at the facility are tested/inspected by certified personnel in order to assess the integrity of the overall system and to help alleviate the potential for any leak. All testing is performed annually in accordance with Massachusetts State Regulations. The following system components are tested/inspected annually:

- valve operation
- fill pipes
- visible pipe and tank joints
- leak monitoring systems
- containment systems

All records of annual inspections and tests are filed and maintained at the facility.

8. Spill Documentation

Following any spill on-site, the following information must be documented on the form provided with this SPCCP (or similar) and maintained on file at the site:

- Date and time of release
- The cause of said release
- The type, quantity, extent and location of the spill
- Any persons involved with the spill
- Notification to authorities, time recorded
- Any catch basins or storm drain lines impacted
- Any response actions taken
- Results of the spill response with any necessary modifications or improvements to the procedures in place in order to better equip the facility and its staff in response to any future potential spills.

SPILL PREVENTION CONTROL AND COUNTERMEASURE FORM

Nouria Energy Convenience Store & Fuel Station
Logan International Airport
1 Harborside Drive
Boston, Massachusetts

When a release containing a hazardous substance occurs, the following steps shall be taken by the Store Manager and/or supervisor:

1. Immediately notify The Boston Fire Department at (**9-1-1**)
2. All measures must be taken to contain and abate the spill and to prevent the discharge of the pollutant(s) to off-site locations, receiving waters, and Boston Harbor.
3. Notify the Nouria Compliance Manager at **(774) 314-5358** and the Massachusetts Port Authority (Massport) at **(617) 568-3352**.
4. Provide documentation from licensed contractor showing disposal and cleanup procedures were completed as well as details on chemicals that were spilled to Massport

Date of spill:_____ Time:_____ Reported By:_____

Weather Conditions:_____

Material Spilled: _____

Location of Spill: _____

Approx. Quantity of Spill (gallons): _____

Agency(s) Notified: _____

Date of Notification: _____

Cause of Spill:_____

_____

Measures Taken to Clean up Spill:_____

_____

Type of equipment: _____ Make: _____ Size:_____

License or S/N: _____

Location and Method of Disposal_____

_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring:

_____

_____

Additional Contact Numbers:

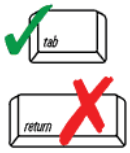
- MASSDEP EMERGENCY PHONE: 1 (888) 304-1133
- EPA NATIONAL RESPONSE CENTER PHONE: (800) 424-8802
- U.S. ENVIRONMENTAL PROTECTION AGENCY PHONE: (888) 372-7341

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

Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

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

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

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

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

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

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

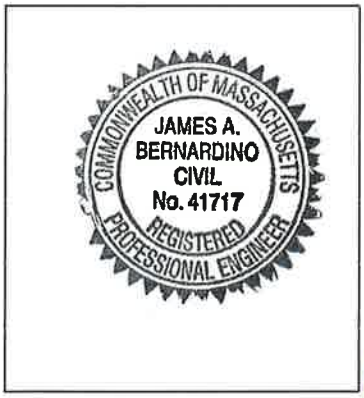
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Signature and Date 8/30/18

Checklist

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

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

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

Standard 1: No New Untreated Discharges

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

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

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

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

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

SITE DEVELOPMENT PLANS

FOR:

PROPOSED

NOURIA ENERGY
CONVENIENCE STORE & FUEL STATION

WITH DRIVE-THRU

LOCATION OF SITE:

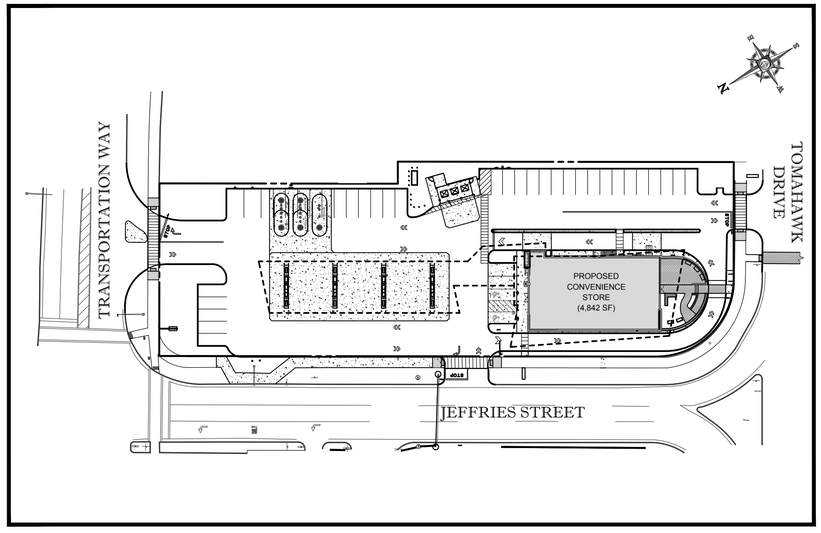
LOGAN INTERNATIONAL AIRPORT, CITY OF BOSTON
SUFFOLK COUNTY, MASSACHUSETTS

PARCEL ID #0104126000

LOCATION MAP

SCALE: 1"=1000'

PLAN REFERENCE: BOSTON SOUTH MASSACHUSETTS USGS QUADRANGLE



AREA PLAN

SCALE: 1"=50'

SHEET TITLE	SHEET NUMBER
COVER SHEET	C1.0
GENERAL NOTES SHEET	C2.0
DEMOLITION PLAN	C3.0
SITE PLAN	C4.0
GRADING & DRAINAGE PLAN	C5.0
UTILITY PLAN	C6.0
SOIL EROSION & SEDIMENT CONTROL PLAN	C7.0
SOIL EROSION CONTROL NOTES & DETAILS SHEET	C7.1
CONSTRUCTION DETAIL SHEET I	C10.0
CONSTRUCTION DETAIL SHEET II	C10.1
CONSTRUCTION DETAIL SHEET III	C10.2
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PROJECT

LOGAN CONVENIENCE & FILLING CENTER

LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT

ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD

CHECKED BY: JAB

PROJECT NUMBER: 2118051

DRAWING NAME

COVER SHEET

DRAWING NO.

C1.0

Plot Date: 8/28/2018 11:46:03 AM, Dwg Filename: P:\17\W171153\Drawings\Plan Sets\REV1\W171153as1.dwg
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GENERAL NOTES

CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE NOTES AND SPECIFICATIONS CONTAINED HEREIN. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS.

1. THE FOLLOWING DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THIS SITE PLAN:

   - "TOPOGRAPHIC SURVEY", PREPARED BY CONTROL POINT ASSOCIATES, INC., DATED 03/22/18.
   - GEOTECHNICAL REPORT LETTER BY GEOINSIGHT ENVIRONMENTAL STRATEGY & ENGINEERING, DATED APRIL 13, 2018

   PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST VERIFY THAT HE/SHE HAS THE LATEST EDITION OF THE DOCUMENTS REFERENCED ABOVE. THIS IS CONTRACTOR'S RESPONSIBILITY.

2. ALL ACCESSIBLE (A/K/A ADA) PARKING SPACES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 et seq. AND 42 U.S.C. § 4151 et seq.) OR THE REQUIREMENTS OF THE JURISDICTION WHERE THE PROJECT IS TO BE CONSTRUCTED, AND ANY AND ALL AMENDMENTS TO BOTH WHICH ARE IN EFFECT WHEN THESE PLANS ARE COMPLETED.
3. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE COMMENTS TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND CONFIRMED THAT ALL NECESSARY OR REQUIRED PERMITS HAVE BEEN OBTAINED. CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.
4. THE OWNER/CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
5. ALL WORK MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND CONDITIONS OF APPROVAL, AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT.
6. THE GEOTECHNICAL REPORT AND RECOMMENDATIONS SET FORTH HEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN THE PLANS AND THE GEOTECHNICAL REPORT AND RECOMMENDATIONS SHALL TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE ENGINEER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORTS AND PLANS AND SPECIFICATIONS PRIOR TO PROCEEDING WITH ANY FURTHER WORK.
7. THESE PLANS ARE BASED ON INFORMATION PROVIDED TO BOHLER ENGINEERING BY THE OWNER AND OTHERS PRIOR TO THE TIME OF PLAN PREPARATION. CONTRACTOR MUST FIELD VERIFY EXISTING CONDITIONS AND NOTIFY BOHLER ENGINEERING, IN WRITING, IMMEDIATELY IF ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
8. ALL DIMENSIONS SHOWN ON THE PLANS MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE REDONE OR REPAIRED DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO CONTRACTOR GIVING ENGINEER WRITTEN NOTIFICATION OF SAME AND ENGINEER, THEREAFTER, PROVIDING CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.
9. CONTRACTOR MUST REFER TO THE ARCHITECTURAL/BUILDING PLANS "OF RECORD" FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.
10. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFUL REVIEW OF THE ENTIRE SITE PLAN AND THE LATEST ARCHITECTURAL PLANS (INCLUDING, BUT NOT LIMITED TO, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLAN, WHERE APPLICABLE). CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND SITE ENGINEER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST.
11. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE AND ALL UNSUITABLE EXCAVATED MATERIAL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL GOVERNMENTAL AUTHORITIES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER CONTRACTOR.
12. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES.
13. THE CONTRACTOR IS TO EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA FOR THIRD PARTIES, PEDESTRIANS AND ANYONE INVOLVED WITH THE PROJECT.
14. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND SHALL BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND TO NOTIFY THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
15. ALL CONCRETE MUST BE AIR ENTRAINED AND HAVE THE MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS UNLESS OTHERWISE NOTED ON THE PLANS, DETAILS AND/OR GEOTECHNICAL REPORT.
16. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS/SCOPE REVISIONS WHICH RESULT FROM SAME. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE METHODS/MEANS FOR COMPLETION OF THE WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
17. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY. THE ENGINEER OF RECORD HAS NOT BEEN RETAINED TO PERFORM OR BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF ENGINEER'S SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD IS NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES, AT ANY TIME.
18. ALL CONTRACTORS MUST CARRY THE SPECIFIED STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE (CGL). ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER ENGINEERING, AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSURED AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE THIS HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED BY THE CONTRACTORS. ALL CONTRACTORS MUST FURNISH BOHLER ENGINEERING WITH CERTIFICATIONS OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE PRIOR TO COMMENCING WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR ONE YEAR AFTER THE COMPLETION OF CONSTRUCTION. IN ADDITION, ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER ENGINEERING AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER.
19. BOHLER ENGINEERING WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND/OR METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME HEREUNDER. BOHLER ENGINEERING'S SHOP DRAWING REVIEW WILL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC ITEM MUST NOT INDICATE THAT BOHLER ENGINEERING HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT PROMPTLY AND IMMEDIATELY BROUGHT TO ITS ATTENTION, IN WRITING, BY THE CONTRACTOR. BOHLER ENGINEERING WILL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
20. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER ENGINEERING, NOR THE PRESENCE OF BOHLER ENGINEERING AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER ENGINEERING AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES. THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. BOHLER ENGINEERING SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND MUST BE NAMED AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE IN NOTE 19 FOR JOB SITE SAFETY.
21. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER FOR SUCH DEVIATIONS, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE ENGINEER, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, IN ACCORDANCE WITH PARAGRAPH 19 HEREIN, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, PENALTIES AND THE LIKE RELATED TO SAME.
22. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE R.O.W. OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE.
23. ALL SIGNING AND PAVEMENT STRIPING MUST CONFORM TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES OR LOCALLY APPROVED SUPPLEMENT.
24. ENGINEER IS NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS. IF CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, THEY AGREE TO JOINTLY AND SEVERALLY INDEMNIFY AND HOLD ENGINEER HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS.
25. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN AND, FURTHER ENGINEER IS NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD ENGINEER HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.
26. ALL DIMENSIONS MUST BE TO FACE OF CURB, EDGE OF PAVEMENT, OR EDGE OF BUILDING, UNLESS NOTED OTHERWISE.
27. ALL CONSTRUCTION AND MATERIALS MUST COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, LAWS, ORDINANCES, RULES AND CODES, AND ALL APPLICABLE OSHA REQUIREMENTS.
28. CONTRACTOR AND OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY AND SEVERALLY INDEMNIFY AND HOLD ENGINEER HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.
29. CONTRACTOR IS RESPONSIBLE TO MAINTAIN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH EPA REQUIREMENTS FOR SITES WHERE ONE (1) ACRE OR MORE (UNLESS THE LOCAL JURISDICTION REQUIRES FEWER) IS DISTURBED BY CONSTRUCTION ACTIVITIES. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE.
30. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED APPLICATION DOCUMENTS PREPARED BY THE SIGNATORY PROFESSIONAL ENGINEER, THE USE OF THE WORDS CERTIFY OR CERTIFICATION CONSTITUTES AN EXPRESSION OF "PROFESSIONAL OPINION" REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE UNDERSIGNED PROFESSIONAL'S KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

GENERAL GRADING & UTILITY PLAN NOTES

1. LOCATIONS OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE INDEPENDENTLY CONFIRMED WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. SANITARY SEWER AND ALL OTHER UTILITY SERVICE CONNECTION POINTS MUST BE INDEPENDENTLY CONFIRMED BY THE CONTRACTOR IN THE FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES MUST IMMEDIATELY BE REPORTED, IN WRITING, TO THE ENGINEER. CONSTRUCTION MUST COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CONTRACTOR MUST VERTICALLY AND HORIZONTALLY LOCATE ALL UTILITIES AND SERVICES INCLUDING, BUT NOT LIMITED TO, GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE OR WORK SPACE, WHICHEVER IS GREATER. THE CONTRACTOR MUST USE, REFER TO, AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION, AT NO COST TO THE OWNER. CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT AND/OR DISCREPANCY BETWEEN THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR THE RELATIVE OR APPLICABLE CODES, REGULATIONS, LAWS, RULES, STATUTES AND/OR ORDINANCES, IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD, IN WRITING, OF SAID CONFLICT AND/OR DISCREPANCY PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR'S FAILURE TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE CONTRACTOR'S FULL AND COMPLETE ACCEPTANCE OF ALL RESPONSIBILITY TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND IN FULL COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, LAWS, STATUTES, ORDINANCES AND CODES AND, FURTHER, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SAME.
4. THE CONTRACTOR MUST LOCATE AND CLEARLY AND UNAMBIGUOUSLY DEFINE VERTICALLY AND HORIZONTALLY ALL ACTIVE AND INACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE AND INACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.
5. THE CONTRACTOR MUST FAMILIARIZE ITSELF WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH THE JURISDICTION AND UTILITY COMPANY REQUIREMENTS AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
6. THE CONTRACTOR MUST INSTALL ALL STORM SEWER AND SANITARY SEWER COMPONENTS WHICH FUNCTION BY GRAVITY PRIOR TO THE INSTALLATION OF ALL OTHER UTILITIES.
7. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF SITE PLAN DOCUMENTS AND ARCHITECTURAL DESIGN FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS, GREASE TRAP REQUIREMENTS/DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE ARCHITECT WILL DETERMINE THE UTILITY SERVICE SIZES. THE CONTRACTOR MUST COORDINATE INSTALLATION OF UTILITIES/SERVICES WITH THE INDIVIDUAL COMPANIES, TO AVOID CONFLICTS AND TO ENSURE THAT PROPER DEPTHS ARE ACHIEVED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT INSTALLATION OF ALL IMPROVEMENTS COMPLIES WITH ALL UTILITY REQUIREMENTS WITH JURISDICTION AND/OR CONTROL OF THE SITE, AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES AND, FURTHER, IS RESPONSIBLE FOR COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE A CONFLICT(S) EXISTS BETWEEN THESE SITE PLANS AND THE ARCHITECTURAL PLANS, OR WHERE ARCHITECTURAL PLAN UTILITY CONNECTION POINTS DIFFER, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER, IN WRITING, AND PRIOR TO CONSTRUCTION, RESOLVE SAME.
8. WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS MUST BE SPECIFIED BY THE LOCAL UTILITY COMPANY. CONTRACTOR'S PRICE FOR WATER SERVICE MUST INCLUDE ALL FEES, COSTS AND APPURTENANCES REQUIRED BY THE UTILITY TO PROVIDE FULL AND COMPLETE WORKING SERVICE. CONTRACTOR MUST CONTACT THE APPLICABLE MUNICIPALITY TO CONFIRM THE PROPER WATER METER AND VAULT, PRIOR TO COMMENCING CONSTRUCTION.
9. ALL NEW UTILITIES/SERVICES, INCLUDING ELECTRIC, TELEPHONE, CABLE TV, ETC. ARE TO BE INSTALLED UNDERGROUND. ALL NEW UTILITIES/SERVICES MUST BE INSTALLED IN ACCORDANCE WITH THE UTILITY/SERVICE PROVIDER INSTALLATION SPECIFICATIONS AND STANDARDS.
10. SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT REFERENCED IN THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING UNSUITABLE MATERIALS WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL EXCAVATED OR FILLED AREAS MUST BE COMPACTED AS OUTLINED IN THE GEOTECHNICAL REPORT. MOISTURE CONTENT AT TIME OF PLACEMENT MUST BE SUBMITTED IN A COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT MUST BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER/DEVELOPER, OR OWNER/DEVELOPER'S REPRESENTATIVE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED AS DIRECTED BY THE GEOTECHNICAL REPORT. EARTHWORK ACTIVITIES INCLUDING, BUT NOT LIMITED TO, EXCAVATION, BACKFILL, AND COMPACTING MUST COMPLY WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. EARTHWORK ACTIVITIES MUST COMPLY WITH THE STANDARD STATE DOT SPECIFICATIONS FOR ROADWAY CONSTRUCTION (LATEST EDITION) AND ANY AMENDMENTS OR REVISIONS THERETO.
11. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION MUST BE AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND MUST BE COORDINATED WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS. WHEN THE PROJECT DOES NOT HAVE GEOTECHNICAL RECOMMENDATIONS, FILL AND COMPACTION MUST, AT A MINIMUM, COMPLY WITH THE STATE DOT REQUIREMENTS AND SPECIFICATIONS AND CONSULTANT SHALL HAVE NO LIABILITY OR RESPONSIBILITY FOR OR AS RELATED TO FILL, COMPACTION AND BACKFILL. FURTHER, CONTRACTOR IS FULLY RESPONSIBLE FOR EARTHWORK BALANCE.
12. THE CONTRACTOR MUST COMPLY, TO THE FULLEST EXTENT, WITH THE LATEST OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE "MEANS AND METHODS" REQUIRED TO MEET THE INTENT AND PERFORMANCE CRITERIA OF OSHA, AS WELL AS ANY OTHER ENTITY THAT HAS JURISDICTION FOR EXCAVATION AND/OR TRENCHING PROCEDURES AND CONSULTANT SHALL HAVE NO RESPONSIBILITY FOR OR AS RELATED FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES.
13. PAVEMENT MUST BE SAW CUT IN STRAIGHT LINES, AND EXCEPT FOR EDGE OF BUTT JOINTS, MUST EXTEND TO THE FULL DEPTH OF THE EXISTING PAVEMENT. ALL DEBRIS FROM REMOVAL OPERATIONS MUST BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS WILL NOT BE PERMITTED.
14. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT TOPS MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
15. DURING THE INSTALLATION OF SANITARY SEWER, STORM SEWER, AND ALL UTILITIES, THE CONTRACTOR MUST MAINTAIN A CONTEMPORANEOUS AND THOROUGH RECORD OF CONSTRUCTION TO IDENTIFY THE AS-INSTALLED LOCATIONS OF ALL UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR MUST CAREFULLY NOTE ANY INSTALLATIONS THAT DEVIATE FROM THE INFORMATION CONTAINED IN THE UTILITY PLAN. THIS RECORD MUST BE KEPT ON A CLEAN COPY OF THE DRAINAGE OR UTILITY PLAN, WHICH CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER AT THE COMPLETION OF WORK.
16. WHEN THE SITE IMPROVEMENT PLANS INVOLVE MULTIPLE BUILDINGS, SOME OF WHICH MAY BE BUILT AT A LATER DATE, THE CONTRACTOR MUST EXTEND ALL LINES, INCLUDING BUT NOT LIMITED TO STORM SEWER, SANITARY SEWER, UTILITIES, AND IRRIGATION LINE, TO A POINT AT LEAST FIVE (5) FEET BEYOND THE PAVED AREAS FOR WHICH THE CONTRACTOR IS RESPONSIBLE. CONTRACTOR MUST CAP ENDS AS APPROPRIATE, MARK LOCATIONS WITH A 2X4, AND MUST NOTE THE LOCATION OF ALL OF THE ABOVE ON A CLEAN COPY OF THE DRAINAGE OR UTILITY PLAN, WHICH CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER UPON COMPLETION OF THE WORK.
17. THE CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCING ANY CONSTRUCTION. CONTRACTOR MUST CONFIRM AND ENSURE 0.75% MINIMUM SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS; 1.0% ON ALL CONCRETE SURFACES; AND 1.5% MINIMUM ON ASPHALT (EXCEPT WHERE ADA REQUIREMENTS OR EXISTING TOPOGRAPHY LIMIT GRADES), TO PREVENT PONDING. CONTRACTOR MUST IMMEDIATELY IDENTIFY, IN WRITING TO THE ENGINEER, ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER NOTIFICATION, MUST BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS THE DESIGN ENGINEER FOR ANY DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM SAME.
18. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE EXISTING LOCAL ASPHALT GRADE UNLESS OTHERWISE NOTED. FIELD ADJUST TO CREATE A MINIMUM OF 0.75% GUTTER GRADE ALONG CURB FACE. IT IS CONTRACTOR'S OBLIGATION TO ENSURE THAT DESIGN ENGINEER APPROVES FINAL CURBING CUT SHEETS PRIOR TO INSTALLATION OF SAME.
19. REFER TO THIS SHEET FOR ADDITIONAL NOTES.
20. IN THE EVENT OF DISCREPANCIES AND/OR CONFLICTS BETWEEN PLANS OR RELATIVE TO OTHER PLANS, THE SITE PLAN WILL TAKE PRECEDENCE AND CONTROL. CONTRACTOR MUST IMMEDIATELY NOTIFY THE DESIGN ENGINEER, IN WRITING, OF ANY DISCREPANCIES AND/OR CONFLICTS.
21. CONTRACTOR IS REQUIRED TO SECURE ALL NECESSARY AND/OR REQUIRED PERMITS AND APPROVALS FOR ALL OFF SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. CONTRACTOR MUST SUPPLY A COPY OF APPROVALS TO ENGINEER AND OWNER PRIOR TO INITIATING ANY WORK.
22. WHERE RETAINING WALLS (WHETHER OR NOT THEY MEET THE JURISDICTIONAL DEFINITION) ARE IDENTIFIED ON PLANS, ELEVATIONS IDENTIFIED ARE FOR THE EXPOSED PORTION OF THE WALL. WALL FOOTINGS/FOUNDATION ELEVATIONS ARE NOT IDENTIFIED HEREIN AND ARE TO BE SET/DETERMINED BY THE CONTRACTOR BASED ON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS.
23. STORM DRAINAGE PIPE:UNLESS INDICATED OTHERWISE, ALL STORM SEWER PIPE MUST BE REINFORCED CONCRETE PIPE (RCP) CLASS III WITH SILT TIGHT JOINTS. WHEN HIGH-DENSITY POLYETHYLENE PIPE (HDPE) IS CALLED FOR ON THE PLANS, IT MUST CONFORM TO AASHTO M294 AND TYPE S (SMOOTH INTERIOR WITH ANGULAR CORRUGATIONS) WITH GASKET FOR SILT TIGHT JOINT. PVC PIPE FOR ROOF DRAIN CONNECTION MUST BE SDR 26 OR SCHEDULE 40 UNLESS INDICATED OTHERWISE.
24. UNLESS INDICATED OTHERWISE ON THE DRAWINGS, SANITARY SEWER PIPE SHALL BE AS FOLLOWS:
    - FOR PIPES LESS THAN 12 FT. DEEP: POLYVINYL CHLORIDE (PVC) SDR 35 PER ASTM D3034
    - FOR PIPES MORE THAN 12 FT. DEEP: POLYVINYL CHLORIDE (PVC) SDR 26 PER ASTM D3034
    - FOR PIPE WITHIN 10 FT. OF BUILDING, PIPE MATERIAL SHALL COMPLY WITH APPLICABLE BUILDING AND PLUMBING CODES. CONTRACTOR TO VERIFY WITH LOCAL OFFICIALS.
25. STORM AND SANITARY SEWER PIPE LENGTHS INDICATED ARE NOMINAL AND MEASURED CENTER OF INLET AND/OR MANHOLES STRUCTURE TO CENTER OF STRUCTURE.
26. STORMWATER ROOF DRAIN LOCATIONS ARE BASED ON PRELIMINARY ARCHITECTURAL PLANS. CONTRACTOR IS RESPONSIBLE TO AND FOR VERIFYING LOCATIONS OF SAME BASED ON FINAL ARCHITECTURAL PLANS.
27. SEWERS CROSSING STREAMS AND/OR LOCATION WITHIN 10 FEET OF THE STREAM EMBANKMENT, OR WHERE SITE CONDITIONS SO INDICATE, MUST BE CONSTRUCTED OF STEEL, REINFORCED CONCRETE, DUCTILE IRON OR OTHER SUITABLE MATERIAL. SEWERS CONVEYING SANITARY FLOW COMBINED SANITARY AND STORMWATER FLOW OR INDUSTRIAL FLOW MUST BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY. IF SUCH LATERAL SEPARATION IS NOT POSSIBLE, THE PIPES MUST BE IN SEPARATE TRENCHES WITH THE SEWER AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN, OR SUCH OTHER SEPARATION AS APPROVED BY THE GOVERNMENT AGENCY WITH JURISDICTION OVER SAME.
    - WHERE APPROPRIATE SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER MUST BE ENCASED IN CONCRETE, OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER MUST BE PROVIDED.
28. WATER MAIN PIPING MUST BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL WATER PURVEYOR. IN THE ABSENCE OF SUCH REQUIREMENTS, WATER MAIN PIPING MUST BE CEMENT-LINED DUCTILE IRON (DIP) MINIMUM CLASS 52 THICKNESS. ALL PIPE AND APPURTENANCES MUST COMPLY WITH THE APPLICABLE AWWA STANDARDS IN EFFECT AT THE TIME OF APPLICATION.
29. CONTRACTOR MUST ENSURE THAT ALL UTILITY TRENCHES LOCATED IN EXISTING PAVED ROADWAYS INCLUDING SEWER, WATER AND STORM SYSTEMS, MUST BE REPAIRED IN ACCORDANCE WITH REFERENCED MUNICIPAL, COUNTY AND/OR DOT DETAILS AS APPLICABLE. CONTRACTOR MUST COORDINATE INSPECTION AND APPROVAL OF COMPLETED WORK WITH THE AGENCY WITH JURISDICTION OVER SAME.
30. LOCATION OF PROPOSED UTILITY POLE RELOCATION IS AT THE SOLE DISCRETION OF UTILITY COMPANY.
31. CONSULTANT IS NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, SHALL HAVE NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.

GENERAL DEMOLITION NOTES

1. THIS PLAN REFERENCES DOCUMENTS AND INFORMATION BY:
   - "TOPOGRAPHIC SURVEY", PREPARED BY CONTROL POINT ASSOCIATES, INC., DATED 03/22/18.
2. CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 et seq.), AS AMENDED AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.
3. BOHLER ENGINEERING HAS NO CONTRACTUAL, LEGAL, OR OTHER RESPONSIBILITY FOR JOB SITE SAFETY OR JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME.
4. THE DEMOLITION PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION, ONLY, REGARDING ITEMS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR MUST ALSO REVIEW THE OTHER SITE PLAN DRAWINGS AND INCLUDE IN DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY FOR THE CONSTRUCTION OF THE NEW SITE IMPROVEMENTS.
5. CONTRACTOR MUST RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS OR SPECIFICATIONS, CONCERNS REGARDING THE APPLICABLE SAFETY STANDARDS, OR THE SAFETY OF THE CONTRACTOR OR THIRD PARTIES IN PERFORMING THE WORK ON THIS PROJECT, WITH BOHLER ENGINEERING, IN WRITING, AND RESPONDED TO BY BOHLER, IN WRITING, PRIOR TO THE INITIATION OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY. ALL DEMOLITION ACTIVITIES MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS, STATUTES, ORDINANCES AND CODES.
6. PRIOR TO STARTING ANY DEMOLITION, CONTRACTOR IS RESPONSIBLE FOR/TO:

   A. OBTAINING ALL REQUIRED PERMITS AND MAINTAINING THE SAME ON SITE FOR REVIEW BY THE ENGINEER AND OTHER PUBLIC AGENCIES WITH JURISDICTION THROUGHOUT THE DURATION OF THE PROJECT, SITE WORK, AND DEMOLITION WORK.

   B. NOTIFYING, AT A MINIMUM, THE MUNICIPAL ENGINEER, DESIGN ENGINEER, AND LOCAL SOIL CONSERVATION DISTRICT, 72 HOURS PRIOR TO THE START OF WORK.

   C. INSTALLING THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO SITE DISTURBANCE.

   D. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR MUST CALL THE STATE ONE-CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARKOUT, IN ADVANCE OF ANY EXCAVATION.

   E. LOCATING AND PROTECTING ALL UTILITIES AND SERVICES, INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN AND ADJACENT TO THE LIMITS OF PROJECT ACTIVITIES. THE CONTRACTOR MUST USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES.

   F. PROTECTING AND MAINTAINING IN OPERATION, ALL ACTIVE UTILITIES AND SYSTEMS THAT ARE NOT BEING REMOVED DURING ALL DEMOLITION ACTIVITIES.

   G. ARRANGING FOR AND COORDINATING WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) FOR THE TEMPORARY OR PERMANENT TERMINATION OF SERVICE REQUIRED BY THE PROJECT PLANS AND SPECIFICATIONS. THE CONTRACTOR MUST PROVIDE THE UTILITY ENGINEER AND OWNER WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTIONAL AND UTILITY COMPANY REQUIREMENTS.

   H. COORDINATION WITH UTILITY COMPANIES REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS MAY BE REQUIRED TO MINIMIZE THE IMPACT ON THE AFFECTED PARTIES. WORK REQUIRED TO BE DONE "OFF-PEAK" IS TO BE DONE AT NO ADDITIONAL COST TO THE OWNER.

   I. IN THE EVENT THE CONTRACTOR DISCOVERS ANY HAZARDOUS MATERIAL, THE REMOVAL OF WHICH IS NOT ADDRESSED IN THE PROJECT PLANS AND SPECIFICATIONS, THE CONTRACTOR MUST IMMEDIATELY CEASE ALL WORK AND IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF THE DISCOVERY OF SUCH MATERIALS.
7. THE FIRM OR ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. CONTRACTOR MUST PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, FOLLOWING ALL THE OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY.
8. THE CONTRACTOR MUST PROVIDE ALL "MEANS AND METHODS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS OF DAMAGE TO ALL ITEMS THAT ARE TO REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS. CONTRACTOR'S REPAIR MUST INCLUDE THE RESTORATION OF ANY ITEMS REPAIRED TO THE PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR SHALL PERFORM ALL REPAIRS AT THE CONTRACTOR'S SOLE EXPENSE.
9. THE CONTRACTOR MUST NOT PERFORM ANY EARTH MOVEMENT ACTIVITIES, DEMOLITION OR REMOVAL OF FOUNDATION WALLS, FOOTINGS, OR OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE UNLESS SAME IS IN STRICT ACCORDANCE AND CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, AND/OR UNDER THE WRITTEN DIRECTION OF THE OWNER'S STRUCTURAL OR GEOTECHNICAL ENGINEER.
10. CONTRACTOR MUST BACKFILL ALL EXCAVATION RESULTING FROM, OR INCIDENTAL TO, DEMOLITION ACTIVITIES. BACKFILL MUST BE ACCOMPLISHED WITH APPROVED BACKFILL MATERIALS, AND MUST BE SUFFICIENTLY COMPACTED TO SUPPORT NEW IMPROVEMENTS AND PERFORMED IN COMPLIANCE WITH THE RECOMMENDATIONS AND GUIDANCE IN THE GEOTECHNICAL REPORT. BACKFILLING MUST OCCUR IMMEDIATELY AFTER DEMOLITION ACTIVITIES, AND MUST BE DONE SO AS TO PREVENT WATER ENTERING THE EXCAVATION. FINISHED SURFACES MUST BE GRADED TO PROMOTE POSITIVE DRAINAGE.
11. EXPLOSIVES MUST NOT BE USED WITHOUT PRIOR WRITTEN CONSENT OF BOTH THE OWNER AND ALL APPLICABLE GOVERNMENTAL AUTHORITIES. ALL THE REQUIRED PERMITS AND EXPLOSIVE CONTROL MEASURES THAT ARE REQUIRED BY THE FEDERAL, STATE, AND LOCAL GOVERNMENTS MUST BE IN PLACE PRIOR TO CONTRACTOR STARTING AN EXPLOSIVE PROGRAM AND/OR ANY DEMOLITION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES.
12. CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH THE CURRENT FHWA "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS WHEN DEMOLITION RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY.
13. CONTRACTOR MUST CONDUCT DEMOLITION ACTIVITIES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND OTHER ADJACENT FACILITIES. STREET CLOSURE PERMITS MUST BE RECEIVED FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY ROAD OPENING OR DEMOLITION ACTIVITIES IN OR ADJACENT TO THE RIGHT-OF-WAY.
14. DEMOLITION ACTIVITIES AND EQUIPMENT MUST NOT USE AREAS OUTSIDE THE DEFINED PROJECT LIMIT LINE, WITHOUT WRITTEN PERMISSION OF THE OWNER AND ALL GOVERNMENTAL AGENCIES WITH JURISDICTION.
15. THE CONTRACTOR MUST USE DUST CONTROL MEASURES TO LIMIT AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR IN ACCORDANCE WITH FEDERAL, STATE, AND/OR LOCAL STANDARDS. AFTER THE DEMOLITION IS COMPLETE, CONTRACTOR MUST CLEAN ALL ADJACENT STRUCTURES AND IMPROVEMENTS TO REMOVE ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR "PRE-DEMOLITION" CONDITION.
16. CONTRACTOR IS RESPONSIBLE TO SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF UNAUTHORIZED PERSONS AT ANY TIME.
17. CONTRACTOR IS RESPONSIBLE FOR SITE JOB SAFETY, WHICH MUST INCLUDE, BUT NOT BE LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING AND OTHER APPROPRIATE SAFETY ITEMS NECESSARY TO PROTECT THE PUBLIC FROM AREAS OF CONSTRUCTION AND CONSTRUCTION ACTIVITY.
18. THIS DEMOLITION PLAN IS INTENDED TO IDENTIFY THOSE EXISTING ITEMS/CONDITIONS WHICH ARE TO BE REMOVED. IT IS NOT INTENDED TO PROVIDE DIRECTION AS TO THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE USED TO ACCOMPLISH THAT WORK. ALL MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE USED MUST BE IN STRICT ACCORDANCE WITH ALL STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE.
19. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION WASTES AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES. THE CONTRACTOR MUST MAINTAIN RECORDS TO DEMONSTRATE PROPER DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.
20. CONTRACTOR MUST MAINTAIN A RECORD SET OF PLANS UPON WHICH IS INDICATED THE LOCATION OF EXISTING UTILITIES THAT ARE CAPPED, ABANDONED IN PLACE, OR RELOCATED DUE TO DEMOLITION ACTIVITIES. THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER, AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK.

ADA INSTRUCTIONS TO CONTRACTOR:

CONTRACTORS MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ADA (ACCESSIBLE) ACCESSIBLE COMPONENTS AND ACCESS ROUTES FOR THE SITE. THESE COMPONENTS, AS CONSTRUCTED, MUST COMPLY WITH ALL APPLICABLE STATE AND LOCAL ACCESSIBILITY LAWS AND REGULATIONS AND THE CURRENT ADA AND/OR STATE ARCHITECTURAL ACCESS BOARD STANDARDS AND REGULATIONS' BARRIER FREE ACCESS AND ANY MODIFICATIONS, REVISIONS OR UPDATES TO SAME. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACE, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT, MUST COMPLY WITH THESE ADA AND/OR ARCHITECTURAL ACCESS BOARD CODE REQUIREMENTS. THESE INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- PARKING SPACES AND PARKING AISLES - SLOPE SHALL NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
- CURB RAMPS - SLOPE MUST NOT EXCEED 1:12 (8.3%) FOR A MAXIMUM OF SIX (6) FEET.
- LANDINGS - MUST BE PROVIDED AT EACH END OF RAMPS, MUST PROVIDE POSITIVE DRAINAGE, AND MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
- PATH OF TRAVEL ALONG ACCESSIBLE ROUTE - MUST PROVIDE A 36-INCH OR GREATER UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS CANNOT REDUCE THIS MINIMUM WIDTH). THE SLOPE MUST BE NO GREATER THAN 1:20 (5.0%) IN THE DIRECTION OF TRAVEL, AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE PATH OF TRAVEL WILL BE GREATER THAN 1:20 (5.0%), ADA RAMP MUST BE ADHERED TO. A MAXIMUM SLOPE OF 1:12 (8.3%), FOR A MAXIMUM RISE OF 2.5 FEET, MUST BE PROVIDED. THE RAMP MUST HAVE ADA HAND RAILS AND "LEVEL" LANDINGS ON EACH END THAT ARE CROSS SLOPED NO MORE THAN 1:50 IN ANY DIRECTION (2.0%) FOR POSITIVE DRAINAGE.
- DOORWAYS - MUST HAVE A "LEVEL" LANDING AREA ON THE EXTERIOR SIDE OF THE DOOR THAT IS SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA MUST BE NO LESS THAN 60 INCHES (5 FEET) LONG, EXCEPT WHERE OTHERWISE PERMITTED BY ADA STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2003 AND OTHER REFERENCED INCORPORATED BY CODE.)
- WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO ADA COMPONENTS FROM EXISTING DOORWAYS OR SURFACES, CONTRACTOR MUST VERIFY EXISTING ELEVATIONS SHOWN ON THE PLAN. NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES, IN RARE CIRCUMSTANCES. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS, IN WRITING, BEFORE COMMENCEMENT OF WORK. CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ADA REQUIREMENTS.
- THE CONTRACTOR MUST VERIFY THE SLOPES OF CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE IS OBSERVED OR EXISTS, CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER PRIOR TO POURING CONCRETE. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS TO REMOVE, REPAIR AND REPLACE NON-CONFORMING CONCRETE.

IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

TYPICAL ABBREVIATIONS

KEY	DESCRIPTION	KEY	DESCRIPTION
BC	BOTTOM CURB	PROP.	PROPOSED
TC	TOP CURB	TBR/R	TO BE REMOVED AND REPLACED
BOC	BACK OF CURB	TBR	TO BE REMOVED
BW	BOTTOM OF WALL GRADE	TPF	TREE PROTECTION FENCE
TW	TOP OF WALL	BLDG.	BUILDING
EXIST.	EXISTING	SF	SQUARE FEET
BM.	BENCHMARK	SMH	SEWER MANHOLE
EOP	EDGE OF PAVEMENT	DMH	DRAIN MANHOLE
℄	CENTERLINE	STM.	STORM
FF	FINISHED FLOOR	SAN.	SANITARY
V.I.F.	VERIFY IN FIELD	CONC.	CONCRETE
GC	GENERAL CONTRACTOR	ARCH.	ARCHITECTURAL
HP	HIGH POINT	DEP.	DEPRESSED
LP	LOW POINT	R	RADIUS
TYP.	TYPICAL	MIN.	MINIMUM
INT.	INTERSECTION	MAX.	MAXIMUM
PC.	POINT OF CURVATURE	No. / #	NUMBER
PT.	POINT OF TANGENCY	W.	WIDE
PI.	POINT OF INTERSECTION	DEC.	DECORATIVE
PVI.	POINT OF VERTICAL INTERSECTION	ELEV.	ELEVATION
STA.	STATION	UNG.	UNDERGROUND
GRT	GRATE	R.O.W.	RIGHT OF WAY
INV.	INVERT	LF	LINEAR FOOT
DIP	DUCTILE IRON PIPE	LOD	LIMIT OF DISTURBANCE
PVC	POLYVINYL CHLORIDE PIPE	LOW	LIMIT OF WORK
HDPE	HIGH DENSITY POLYETHYLENE PIPE	L.S.A.	LANDSCAPED AREA
RCP	REINFORCED CONCRETE PIPE	±	PLUS OR MINUS
S	SLOPE	°	DEGREE
ME	MEET EXISTING	Ø / DIA.	DIAMETER

TYPICAL LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	SETBACK	
	EASEMENT	
	CURB	
	STORM MANHOLE	
	SEWER MANHOLE	
	CATCH BASIN	
WF#5	WETLAND FLAG	
	WETLAND LINE	
× 54.83	SPOT ELEVATION	53.52
× TC 54.58 G 53.78	TOP & BOTTOM OF CURB	TC=54.32 BC=53.82
53	CONTOUR	50
	FLOW ARROW	5%
	PAINTED ARROW	
	RIDGE LINE	
G G	GAS LINE	G G
T T	TELEPHONE LINE	T T
E E	ELECTRIC LINE	E E
W W	WATER LINE	W W
OH OH	OVERHEAD WIRE	OH OH
	STORM PIPE	
	SANITARY LINE	S S
10	PARKING COUNT	4
	SIGN	
	LIGHT POLE	
	GUIDE RAIL	
	UTILITY POLE	

REFER TO SOIL EROSION CONTROL NOTES & DETAILS SHEET FOR TYPICAL EROSION NOTES AND DETAILS

REFER TO LANDSCAPE NOTES & DETAILS SHEET FOR TYPICAL LANDSCAPE NOTES AND DETAILS

REFER TO LIGHTING PLAN FOR TYPICAL LIGHTING NOTES AND TABLES

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NOURIA ENERGY CORPORATION
326 CLARK STREET
WORCESTER, MA 01606

CONSULTANT:

BOHLER ENGINEERING
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
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PROJECT

LOGAN CONVENIENCE & FILLING CENTER

LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT

ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD

CHECKED BY: JAB

PROJECT NUMBER: 2118051

DRAWING NAME

GENERAL NOTES SHEET

DRAWING NO.

C2.0

UTILITY RELOCATION PHASING NOTE:
FOR UTILITIES TO BE RELOCATED, THE PROPOSED RELOCATION SHALL BE IN PLACE PRIOR TO REMOVING THE EXISTING UTILITY SO THAT DISRUPTIONS TO SERVICES WILL BE MINIMIZED. CONTRACTOR IS TO NOTIFY MASSPORT AT LEAST 48 HOURS PRIOR TO REMOVING ANY UTILITY TO BE RELOCATED.

UTILITY REMOVAL / RELOCATION NOTE:
FOR ALL EXISTING UTILITY LINES SHOWN TO BE REMOVED, CONTRACTOR SHALL LOCATE THE UTILITY AND VERIFY THROUGH INSPECTION AND WITH THE MASSPORT FACILITIES MANAGER THAT THE LINE IS NO LONGER IN USE. IF NO LONGER IN USE, THEN THE LINE SHALL BE REMOVED TO THE EXTENTS SHOWN. IF IN USE, THEN RELOCATE AS SHOWN ON THE UTILITY PLAN. ALL LINES TO BE RELOCATED / REMOVED / ABANDONED IN ACCORDANCE WITH ALL APPLICABLE UTILITY COMPANY, LOCAL, AND MASSPORT REQUIREMENTS

TRANSPORTATION WAY
(AKA HARBORSIDE DRIVE)
(PRIVATE-VARIABLE WIDTH)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

TOMAHAWK DRIVE
(PRIVATE-VARIABLE WIDTH)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

JEFFRIES STREET
(PRIVATE-45' WIDE)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

APPROX. LOCATION OF EXISTING GRANITE CURB (TO REMAIN)
TREE (TO REMAIN)
GRANITE CURB (TO REMAIN)
LIMIT OF GRANITE CURB (TBR)
TREE (TBR)
PROP. SAWCUT LINE (TYP.)
GRANITE CURB (TBR)
METAL COVER TO REMAIN AND BE ADJUSTED TO FINISHED GRADE (REFER TO GRADING PLAN)
TREE (TBR)
TREE (TO REMAIN)
LIMIT OF GRANITE CURB (TBR)
TRAFFIC LIGHT POLE (TO REMAIN)
LIGHT (TO REMAIN)
GRANITE CURB
CONC WALK
CONC. MAT (TO REMAIN)
EDP
EOC
CONC WALK
LSA
LIMIT OF GRANITE CURB (TBR)
PROP. CONC. SAWCUT LINE (TYP.)
PORTION OF CONC. WALK (TBR)
PROP. PAVEMENT SAWCUT LINE (TYP.)
APPROXIMATE LOCATION OF BURIED BUILDING FOUNDATION. CONCRETE TO BE REMOVED AS NECESSARY WITHIN PROJECT LIMITS (TYP.)
ASPHALT PAVEMENT (TBR-TYP.)
CONC. WALK TO REMAIN AND BE PROTECTED
GRANITE CURB (TBR-TYP.)
LIMIT OF EXISTING DRAIN PIPE TO BE REMOVED. REFER TO GRADING PLAN.
DRAIN LINE (TO REMAIN-TYP.)
LIGHT (TO REMAIN)
HYDRANT (TO REMAIN)
GRANITE CURB (TO REMAIN)
METAL COVER (TO REMAIN)
PROP. CONC. SAWCUT LINE (TYP.)
EXISTING WATER LINE TO BE REMOVED. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
CONC. MAT (TO REMAIN)
ASPHALT PAVEMENT (TO REMAIN)
CAP EXISTING WATER LINE
LIMIT OF EXISTING UNDERGROUND COMMUNICATION LINES REMOVAL
APPROX LOC OF UG GAS LINE (TO REMAIN)
LIMIT OF EXIST. GAS LINE REMOVAL. REFER TO UTILITY PLAN
CUT AND CAP WATER SERVICE AT LIMIT OF EASEMENT AREA
APPROX. LIMIT OF WORK LINE (TYP.)
APPROX. LOCATION OF EXISTING DRAIN LINE (TO REMAIN)
EXISTING WATER LINES (TBR)
APPROX. LOC OF UG GAS LINES (TBR)
EXISTING ELECTRIC LINES TO BE REMOVED. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
EXISTING DRAIN LINE TO BE RELOCATED. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
LINES TO BE REMOVED. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
LIMIT OF DRAIN PIPE REMOVAL. REFER TO GRADING PLAN.
EXISTING CB (TBR)
DRAIN LINE TO BE RELOCATED. SEE UTILITY REMOVAL/ RELOCATION NOTE ON THIS PAGE
EXISTING CB (TBR)
CLEARANCE POLE (TO REMAIN-TYP.)
SEWER LINES TO BE REMOVED. SEE UTILITY REMOVAL/ RELOCATION NOTE ON THIS PAGE
BOLLARD (TO REMAIN-TYP.)
SEWER MANHOLE AND LINE (TO REMAIN-TYP.)
C.O. (TBR)
OPENINGS IN MANHOLE TO BE PLUGGED WITH BRICK AND MORTAR
LIMIT OF EXISTING 20" WATER LINE TO BE RELOCATED
SEWER LINE (TBR)
ELECTRIC SERVICE (TBR)
GRANITE CURB (TBR-TYP.)
PORTION OF CONC. WALK (TBR)
LINE TO BE RELOCATED AFTER NEW WATER LINE IS IN PLACE. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
APPROX LOC OF UG SEWER LINE (TBR)
SEWER MANHOLE AND LINES (TBR)
ELEC BOX (TBR)
12" RCP
APPROX LOC OF UG SEWER LINE (TBR)
PURPOSE OF UTILITY BOX AND ASSOCIATED UTILITIES TO BE VERIFIED AND REMOVED IF NOT NEEDED. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING SIDEWALKS OCCURRING DURING CONSTRUCTION
LIMIT OF SEWER PIPE REMOVAL. REFER TO UTILITY PLAN.
CONC. WALK (TO REMAIN & BE PROTECTED)
PORTION OF CONC. WALK (TBR)
EXISTING DRAIN PIPE (TO REMAIN)
PROP. PAVEMENT SAWCUT LINE (TYP.)
APPROX. LIMIT OF CURB REMOVAL
EXISTING CB (TO REMAIN)
EXISTING DMH TO REMAIN AND BE ADJUSTED TO FINISHED GRADE (REFER TO GRADING PLAN)
APPROX. LOCATION OF UG ELECTRICAL LINES (TO REMAIN)
PORTION OF CONC. WALK (TBR)
EXIST. UNDERGROUND COMMUNICATION LINES (TBR). CONTRACTOR TO CONFIRM THESE LINES ARE NO LONGER IN USE. SEE UTILITY REMOVAL NOTE ON THIS PAGE.
ASPHALT PAVEMENT (TBR-TYP.)
EXISTING ELECTRIC COVER (TBR)
CONC. (TBR)
SIGN (TO REMAIN)
LIGHT (TO REMAIN)
TREE (TBR)
GRANITE CURB (TBR-TYP.)
APPROX. LOCATION OF EXISTING ELECTRICAL MANHOLE (NOT FIELD SURVEYED, TO REMAIN)
PROP. SAWCUT LINE (TYP.)
CUT & CAP EXISTING GAS LINE (SEE UTILITY REMOVAL NOTE ON THIS PAGE)
LIMIT OF GRANITE CURB (TBR)
METAL COVER (TO REMAIN)
GRANITE CURB (TO REMAIN)
CUT & CAP EXISTING COMMUNICATION LINES (SEE UTILITY REMOVAL NOTE ON THIS PAGE)
APPROX LOC UG GAS LINE
EXIST. TELEPHONE MANHOLE (TO REMAIN)
GAS LINE TO BE REMOVED. SEE UTILITY REMOVAL/RELOCATION NOTE ON THIS PAGE
EXISTING HYDRANT (TO BE RELOCATED) REFER TO UTIL. PLAN
PROP. SAWCUT LINE (TYP.)
LIMIT OF GRANITE CURB (TBR)
GRANITE CURB (TBR)
METAL COVER (TO REMAIN)
COVER/ELECTRIC BOX TO BE RE-SET AS NECESSARY TO ACCOMMODATE NEW DRIVEWAY CONSTRUCTION
EXIST. OVERHEAD SIGN POLE TO REMAIN
TRASH CAN (TYP)
TBM-A
TBM-B
GRASS AREA
JERSEY BARRIER
APPROX LOC OF UG GAS LINE

REFER TO GENERAL NOTES SHEET FOR DEMOLITION NOTES

THIS PLAN TO BE UTILIZED FOR DEMOLITION/ REMOVAL PURPOSES ONLY

20 10 5 0 20
1"= 20'

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PROJECT
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LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL
COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
DEMOLITION PLAN

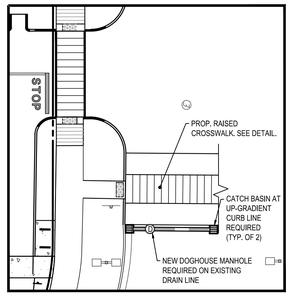
DRAWING NO.
C3.0

LAND USE NOTES

1. APPLICANT:
   NOURIA ENERGY CORP.
   326 CLARK STREET
   WORCESTER, MA 01606

2. OWNER:
   MASSACHUSETTS PORT AUTHORITY

3. PARCEL:
   PARCEL ID #0104126000
   LOGAN INTERNATIONAL AIRPORT
   CITY OF BOSTON
   SUFFOLK COUNTY, MA



INSET "A" ALTERNATIVE

SCALE: 1" = 20'

REFER TO GENERAL NOTES SHEET FOR NOTES

THIS PLAN TO BE UTILIZED FOR SITE LAYOUT PURPOSES ONLY

20 10 5 0 20
1"= 20'

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REVISIONS

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SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT

ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD

CHECKED BY: JAB

PROJECT NUMBER: 2118051

DRAWING NAME

SITE PLAN

DRAWING NO.

C4.0

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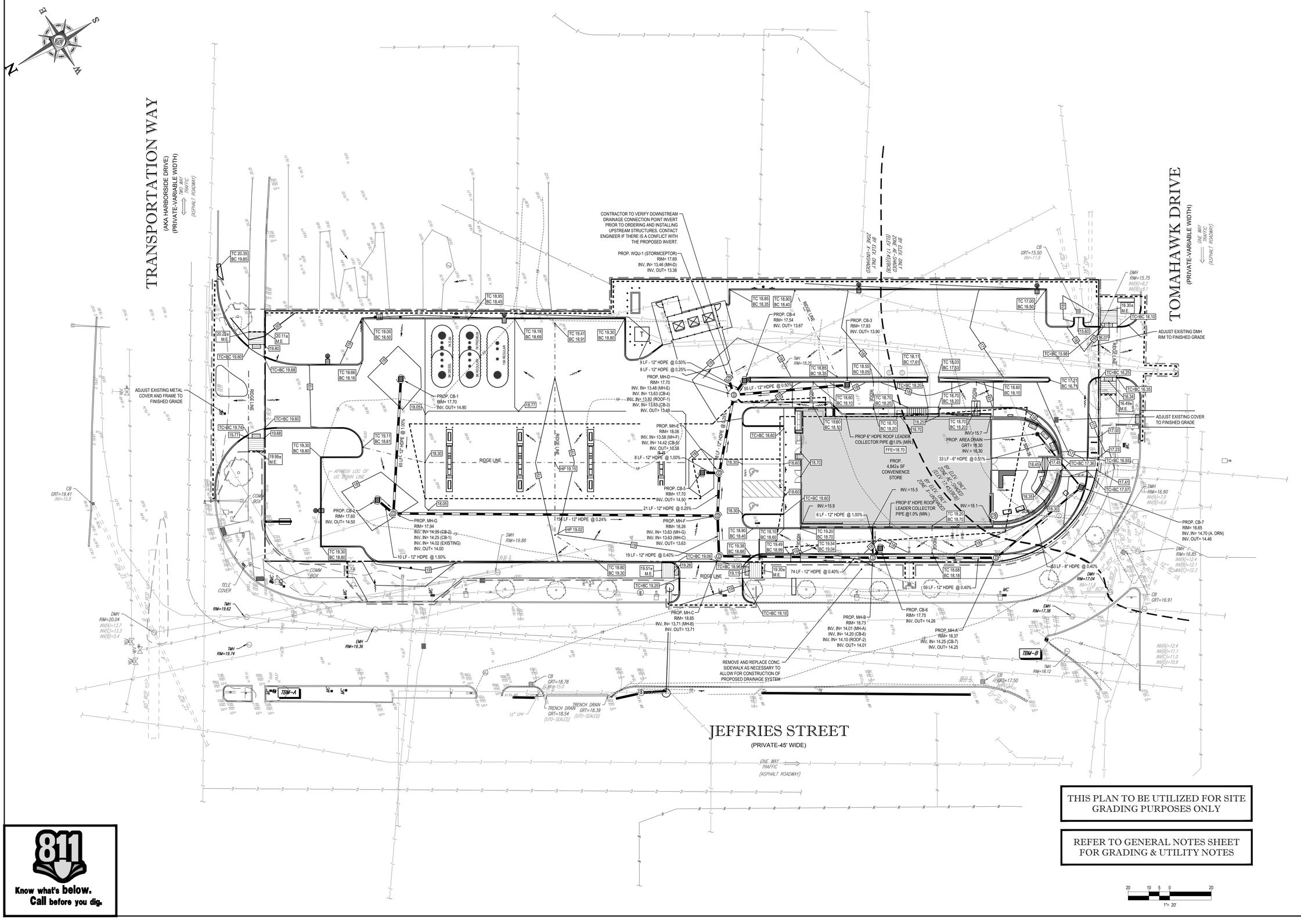

THIS PLAN TO BE UTILIZED FOR SITE GRADING PURPOSES ONLY

REFER TO GENERAL NOTES SHEET FOR GRADING & UTILITY NOTES

20 10 5 0 20
1"= 20'

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PROJECT

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REVISIONS

REV	DATE	DESCRIPTION / COMMENTS

SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
NO. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:CONSTRUCTION
ISSUED DATE: 08.28.2018
DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
GRADING & DRAINAGE PLAN

DRAWING NO.
C5.0

UTILITY RELOCATION PHASING NOTE:
FOR UTILITIES TO BE RELOCATED, THE PROPOSED RELOCATION SHALL BE IN PLACE PRIOR TO REMOVING THE EXISTING UTILITY SO THAT DISRUPTIONS TO SERVICES WILL BE MINIMIZED. CONTRACTOR IS TO NOTIFY MASSPORT AT LEAST 48 HOURS PRIOR TO REMOVING ANY UTILITY TO BE RELOCATED.

UTILITY REMOVAL / RELOCATION NOTE:
FOR ALL EXISTING UTILITY LINES SHOWN TO BE REMOVED, CONTRACTOR SHALL LOCATE THE UTILITY AND VERIFY THROUGH INSPECTION AND WITH THE MASSPORT FACILITIES MANAGER THAT THE LINE IS NO LONGER IN USE. IF NO LONGER IN USE, THEN THE LINE SHALL BE REMOVED TO THE EXTENTS SHOWN. IF IN USE, THEN RELOCATE AS SHOWN ON THE UTILITY PLAN. ALL LINES TO BE RELOCATED / REMOVED / ABANDONED IN ACCORDANCE WITH ALL APPLICABLE UTILITY COMPANY, LOCAL, AND MASSPORT REQUIREMENTS

UPON COMPLETION OF THE SANITARY SEWER WORK, THE CONTRACTOR SHALL PERFORM A DYE TEST TO CONFIRM THE BUILDING IS CONNECTED TO THE MAIN SEWER LINE WITH A REPRESENTATIVE OF MASSPORT PRESENT TO WITNESS THE TEST.

TRANSPORTATION WAY
(AKA HARBORSIDE DRIVE)
(PRIVATE-VARIABLE WIDTH)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

TOMAHAWK DRIVE
(PRIVATE-VARIABLE WIDTH)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

JEFFRIES STREET
(PRIVATE-45' WIDE)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

PROP. GENERATOR ON CONCRETE PAD. REFER TO MEP PLANS FOR REQUIREMENTS.
PROP. TWO (2)- 4" DIA. PVC CONDUITS ENCASED IN CONCRETE WITH PULL ROPES FOR ELECTRICAL SERVICE. REFER TO MEP PLANS FOR DETAILS.
PROP. ELECTRICAL SECONDARY. REFER TO MEP PLANS FOR REQUIREMENTS
PROP. TRANSFORMER ON CONC. PAD WITH BOLLARD PROTECTION IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS
PROP. GAS LINE & CONNECTION TO EXISTING GAS LINE. CONTRACTOR TO COORDINATE INSTALLATION WITH GAS COMPANY
PROP. 45 LF - 6" SDR-35 PVC PIPE @ S=2.0%
PROP. 18 LF - 4" DIP @ S=2.0% INV.=13.70
PROP. 74 LF - 6" SDR-35 PVC PIPE @ S=2.0%
PROP. GAS ENTRY WITH METER AND BOLLARDS AS REQUIRED BY GAS COMPANY
PROP. INV.= 13.70
PROP. GREASE TRAP SIZE TBD BY MEP RIMS= 17.9±, INV. IN= 13.34 INV. OUT= 13.09
PROP. 4,842± SF CONVENIENCE STORE
FFE=18.70
PROP. TRAFFIC-RATED HANDHOLE IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS
SMH-2 RIM=17.15 INV. IN=10.60 (SMH-1) INV. IN=13.08 (BLDG) INV. OUT=10.50
PROP. FIRE DEPT. CONNECTION
PROP. INV.= 13.70
PROP. CONNECTION OF RELOCATED WATER LINE TO EXISTING WATER LINE
PROP. ISOLATION VALVE AS MAY BE REQUIRED TO ACCOMMODATE WATER LINE RELOCATION AND TESTING. CONTRACTOR TO COORDINATE EXACT LOCATION WITH MASSPORT.
PROP. THRUST BLOCK (TYP.)
EXIST. 20" WATER LINE
PROP. 31 LF - 6" SDR-35 PVC PIPE @ S=2.0%
PROP. 8" GATE VALVE
PROP. 6" CLDIP FIRE SERVICE WITH GATE VALVE
PROP. 6" CLDIP HYDRANT SERVICE
PROP. 2" DIP WATER SERVICE WITH SHUT-OFF VALVE
PROP. RELOCATED HYDRANT
PROP. 4" PVC CONDUIT ENCASED IN CONCRETE WITH PULL ROPE FOR COMMUNICATIONS SERVICES
PROP. 20" WATER LINE TO BE INSTALLED, CHLORINATED, TESTED AND READY FOR CONNECTION TO THE EXISTING WATER MAIN BEFORE REMOVING EXISTING MAIN. MEANS AND METHODS OF PROPOSED CONNECTION BY CONTRACTOR AND SHALL BE COORDINATED WITH MASSPORT.
METAL COVER (TO REMAIN) COVER/ELECTRIC BOX TO BE RE-SET AS NECESSARY TO ACCOMMODATE NEW DRIVEWAY CONSTRUCTION
APPROX. LOCATION OF EXISTING ELECTRICAL MANHOLE (NOT FIELD SURVEYED)

APPROX LOC OF UG CABLE LINE
APPROX LOC OF UG GAS LINE (TO REMAIN)
APPROX LOC OF UG DRAIN LINE
APPROX LOC OF UG GAS LINE
APPROX LOC OF UG CABLE LINE
APPROX LOC OF UG DRAIN LINE
APPROX LOC OF UG SEWER LINE
APPROX LOC OF UG GAS LINE
APPROX LOC OF UG CABLE LINE

EMH RIM=19.54
DMH RIM=20.04 INV(A)=13.7 INV(C)=13.3 INV(B)=5.4
TMH RIM=19.62
TMH RIM=19.74
EMH RIM=19.36
EMH RIM=18.96
TMH RIM=18.25
SMH RIM=19.88 INV=6.8
CB GRT=19.41 INV=15.8
CB GRT=15.50 INV=11.8
DMH RIM=15.75 INV(A)=8.2 INV(B)=8.1
DMH RIM=16.90 INV(A)=7.0 INV(B)=6.6
DMH RIM=16.85 INV(A)=12.4 INV(B)=12.1 INV(C)=12.3
DMH RIM=17.04 INV=11.6
CB GRT=16.91
EMH RIM=17.38
EMH RIM=17.04 INV(A)=12.4 INV(B)=11.1 INV(C)=11.0 INV(D)=10.9
TMH RIM=18.12
CB GRT=18.78 INV=15.0
CB GRT=17.50 INV=13.7
TRENCH DRAIN GRT=18.54 (UTD-SEALED)
TRENCH DRAIN GRT=18.39 (UTD-SEALED)

TBM-A
TBM-B

COMM BOX
ELEC BOX
ELEC COVER
TELE COVER
MC

12" RCP
18" RCP
24" RCP
60" RCP
12" CPP

THIS PLAN TO BE UTILIZED FOR UTILITIES PURPOSES ONLY

REFER TO GENERAL NOTES SHEET FOR GRADING & UTILITY NOTES

20 10 5 0 20
1"= 20'

811 Know what's below. Call before you dig.

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REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL
COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018
DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
UTILITY PLAN

DRAWING NO.
C6.0

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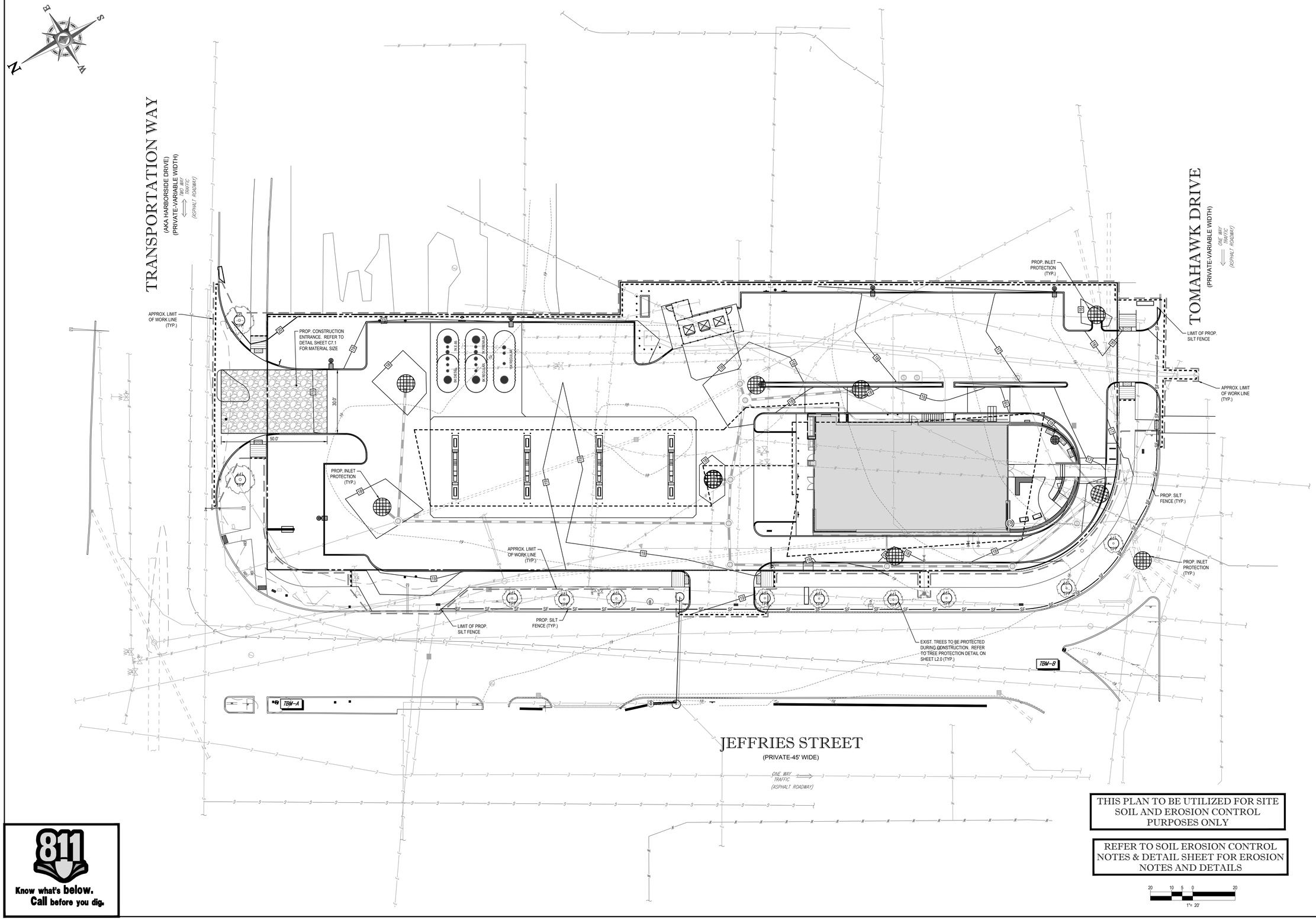

THIS PLAN TO BE UTILIZED FOR SITE SOIL AND EROSION CONTROL PURPOSES ONLY

REFER TO SOIL EROSION CONTROL NOTES & DETAIL SHEET FOR EROSION NOTES AND DETAILS

20 10 5 0 20
1"= 20'

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REVISIONS

REV	DATE	DESCRIPTION / COMMENTS

SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:CONSTRUCTION
ISSUED DATE: 08.28.2018

DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME

SOIL EROSION & SEDIMENT CONTROL PLAN

DRAWING NO.

C7.0

EROSION & SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE AS SET FORTH IN THE MOST CURRENT STATE SEDIMENT AND EROSION CONTROL MANUAL.

2. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).

3. SEDIMENT BARRIERS (SILT FENCE, STRAW BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15% AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.

4. INSTALL SILTATION BARRIER AT TOE OF SLOPE TO FILTER SILT FROM RUNOFF. SEE SILTATION BARRIER DETAILS FOR PROPER INSTALLATION. SILTATION BARRIER WILL REMAIN IN PLACE PER NOTE #5.

5. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE STABILIZED BY TURF.

6. NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2:1).

7. IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCH (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

8. TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST TO PROTECT FROM SPRING RUNOFF PROBLEMS.

9. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO THE SITE AND REGRADED ONTO OPEN AREAS.

10. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:

10.1. SIX INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.

10.2. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 LB PER ACRE OR 18.4 LB PER 1,000 SF USING 10-20-20 OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER1,000 SF).

10.3. FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUE-GRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS 1.03 LBS PER 1,000 SF LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED.

10.4. STRAW MULCH AT THE RATE OF 70-90 LBS PER 1,000 SF. A HYDRO-APPLICATION OF WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SUCH AS CURASOL OR RMB PLUS WILL BE USED ON STRAW MULCH FOR WIND CONTROL.

11. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS STABILIZED.

12. WETLANDS WILL BE PROTECTED W/strawBALES AND/OR SILT FENCE INSTALLED AT THE EDGE OF THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE.

13. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL HAVE AN EXPOSURE WINDOW OF NOT MORE THAN 7 DAYS.

14. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED,

MULCH

LOCATION	MULCH	RATE (1000 SF)
PROTECT AREA	STRAW	100 POUNDS
WINDY AREA	SHREDDED OR CHOPPED CORNSTALKS	185-275 POUNDS
	STRAW (ANCHORED)*	100 POUNDS
MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES GREATER THAN 3:1	JUTE MESH OR EXCELSIOR MAT	AS REQUIRED
GREATER THAN 3:1	(REFER TO GEOTECHNICAL REPORT FOR FINAL DESIGN REQUIREMENT)	

* A HYDRO-APPLICATION OF WOOD, OR PAPER FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SUCH AS CURASOL OR RMB PLUS SHALL BE USED ON STRAW MULCH FOR WIND CONTROL.

MULCH ANCHORING
ANCHOR MULCH WITH PEG AND TWINE (1 SQ. YD/BLOCK); MULCH NETTING (AS PER MANUFACTURER); WOOD CELLULOSE FIBER (750 LBS/ACRE); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); USE OF A SERRATED STRAIGHT DISK. WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

EROSION CONTROL NOTES DURING WINTER CONSTRUCTION

1. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.

2. WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.

3. EXPOSED AREA SHOULD BE LIMITED TO THAT WHICH CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.

4. CONTINUATION OF EARTHWORK OPERATION ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.

5. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR straw AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE.

6. BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 200 -300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE CONTINUOUSLY GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT UNEXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF straw OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.

7. MULCHING REQUIREMENTS:

7.1. BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING OR WOOD CELLULOSE FIBER.

7.2. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPE EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.

7.3. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15% AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.

8. AFTER NOVEMBER 1ST THE CONTRACTOR SHALL APPLY DORMANT SEEDING OR MULCH AND ANCHORING ON ALL BARE EARTH AT THE END OF EACH WORKING DAY.

9. DURING THE WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

10. STOCKPILING OF MATERIALS (DIRT, WOOD, CONSTRUCTION MATERIALS, ETC.) MUST REMAIN COVERED AT ALL TIMES TO MINIMIZE ANY DUST PROBLEMS THAT MAY OCCUR WITH ADJACENT PROPERTIES AND TO PROVIDE MAXIMUM PROTECTION AGAINST EROSION RUNOFF.

11. EXISTING CATCH BASIN STRUCTURES SHALL BE PROTECTED UNTIL SUCH TIME AS THEY ARE REMOVED.

811 Know what's below. Call before you dig.

CONSTRUCTION SEQUENCE

THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:

-INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE/EXIT (AS SHOWN)

-INSTALLATION OF EROSION CONTROL BARRIER AS SHOWN

-DEMOLITION OF EXISTING SITE PAVEMENT AND AMENITIES (SEE DEMOLITION PLAN)

-EARTHWORK AND EXCAVATION/FILLING AS NECESSARY

-CONSTRUCTION OF UTILITIES

-STABILIZE PERMANENT LAWN AREAS AND SLOPES WITH TEMPORARY SEEDING

-INSTALLATION OF INLET PROTECTION OF ON-SITE UTILITIES (AS SHOWN)

-CONSTRUCTION OF BUILDING AND FUEL SERVICES

-CONSTRUCTION OF ALL CURBING AND LANDSCAPE ISLANDS AS INDICATED ON THE PLANS

-SPREAD TOPSOIL ON SLOPED AREAS AND SEED AND MULCH

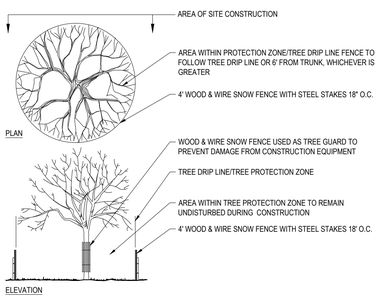
-FINAL GRADING OF ALL SLOPED AREAS

-PLACE 6" TOPSOIL ON SLOPES AFTER FINAL GRADING COMPLETED. FERTILIZE, SEED, AND MULCH SEED MIXTURE TO BE INSTALLED AS REQUIRED.

-PAVE PARKING LOT

-LANDSCAPING PER LANDSCAPING PLAN

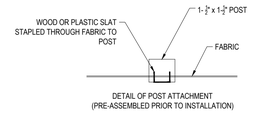
-REMOVE EROSION CONTROLS AS DISTURBED AREAS BECOME STABILIZED TO 70% STABILIZATION OR GREATER.



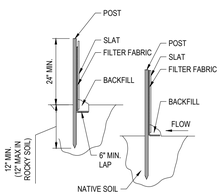
TREE PROTECTION DURING CONSTRUCTION

N.T.S.

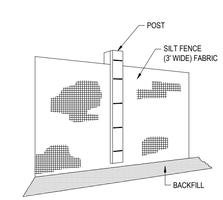
INSTALLATION:
1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF EROSION CONTROL OF THE SITE.
2. UNROLL SILTATION FENCE AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM FLOW DIRECTION).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS LAYING ACROSS THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF THE FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING FABRIC FLAP ON UNDISTURBED GROUND AND PILING & TAMP- ING FILL AT THE BASE.



DETAIL OF POST ATTACHMENT
(PRE-ASSEMBLED PRIOR TO INSTALLATION)



TOE-IN METHODS



PERSPECTIVE OF FENCE

TYP. SILTATION FENCE DETAIL

N.T.S.

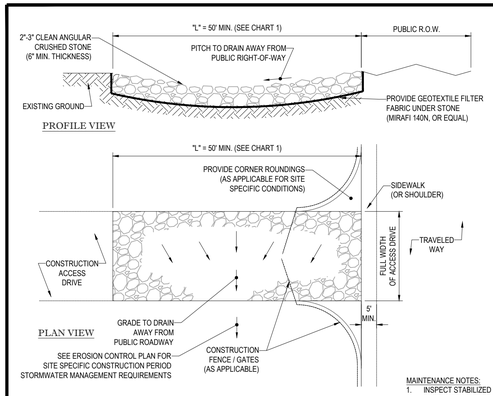


CHART 1

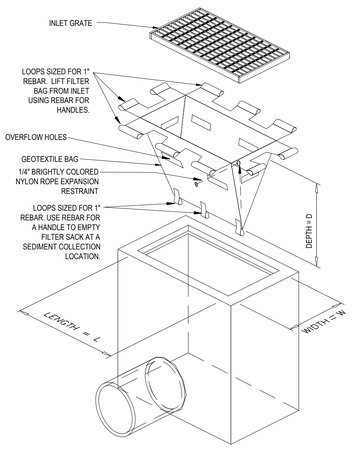
PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2% TO 5%	100 FT	200FT
>5%	ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1)	

(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

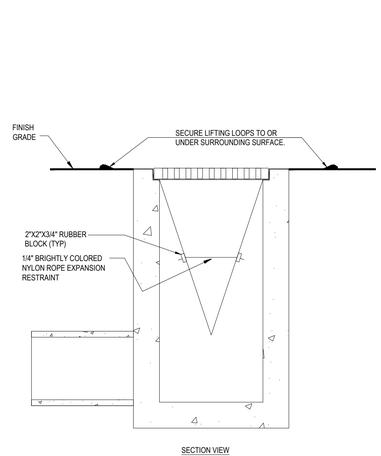
MAINTENANCE NOTES:
1. INSPECT STABILIZED CONSTRUCTION ENTRANCE / ANTI-TRACKING PAD AND SEDIMENT DISPOSAL AREA WEEKLY OR AFTER EVERY MAJOR RAIN STORM EVENT.
2. WASH WATER (IF USED) SHALL BE DIRECTED TOWARD A SEDIMENT TRAP, SUFFICIENTLY SIZED FOR SPECIFIC SITE CONDITIONS.
3. EXCESSIVELY MUD-CLOGGED STONE SHALL BE REMOVED AND REPLACED, AS NEEDED.

STABILIZED CONSTRUCTION EXIT

N.T.S.



ISOMETRIC VIEW



SECTION VIEW

PROFILE VIEW OF INSTALLED FILTER SACK

LOW TO MODERATE FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

MODERATE TO HIGH FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

1. REMOVE TRAPPED SEDIMENT WHEN BRIGHTLY COLORED EXPANSION RESTRAINT CAN NO LONGER BE SEEN.
2. GEOTEXTILE SHALL BE A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS REQUIREMENTS IN THE SPECIFICATIONS TABLE.
3. FILTER SACK SHALL BE CAPABLE OF OIL REMOVAL, EITHER BY THE BASE UNIT OR BY ADDITION OF AN OIL ABSORBENT PAD.
4. INSPECT PER REGULATORY REQUIREMENTS.
5. THE WIDTH, "W", OF THE FILTER SACK SHALL MATCH THE INSIDE WIDTH OF THE GRATED INLET BOX.
6. THE DEPTH, "D", OF THE FILTER SACK SHALL BE BETWEEN 18 INCHES AND 36 INCHES
7. THE LENGTH, "L", OF THE FILTER SACK SHALL MATCH THE INSIDE LENGTH OF THE GRATED INLET BOX.

DO NOT USE IN PAVED AREAS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

TO BE USED IN EXISTING RIGHT OF WAY

FILTER SACKS (GRATED INLETS)

N.T.S.

ARCHITECT
PHASE ZERO DESIGN
35 POND PARK ROAD, BAY 16
HINGHAM, MA 02043
PHONE: (781) 452-7121
FAX: (781) 875-3039
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352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
Fax: (508) 480-9080
www.BohlerEngineering.com

PROJECT
LOGAN CONVENIENCE & FILLING CENTER
LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL
COMMONWEALTH OF MASSACHUSETTS
JAMES A. RAMARINO
NO. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018
DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
SOIL EROSION CONTROL NOTES & DETAILS SHEET

DRAWING NO.
C7.1

Plot Date: 8/28/2018 11:46:22 AM, Dwg Filename: P:\17W171153\Drawings\Plan Sets\REV1\W171153ss1.dwg, 8/28/2018 11:46:27 AM, AutoCAD PDF (General Documentation).pc3
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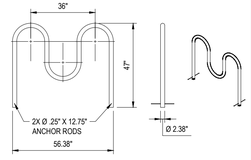
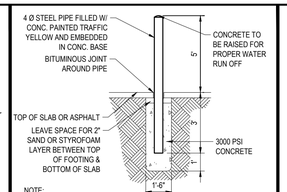


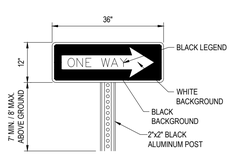
NOTE:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

BIKE RACK DETAIL — N.T.S.



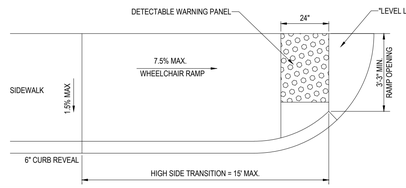
NOTE:
BOLLARDS REQ'D AT BLDG. CORNERS. FIRE HYDRANTS, WATER METER, GAS METER, SPRINKLER RISER, TRANSFORMER & ALL UTILITIES AT LOCATIONS SHOWN ON THESE DRAWINGS INTERIOR & EXTERIOR.

BOLLARD DETAIL — N.T.S.

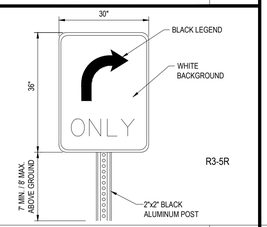


R6-1R

'ONE WAY' SIGN DETAIL — N.T.S.

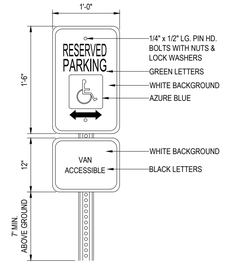


TYPICAL WHEELCHAIR RAMP — N.T.S.

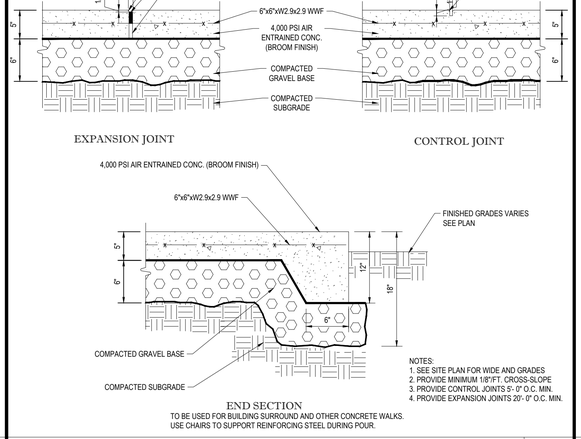


R3-5R

'RIGHT TURN ONLY' SIGN DETAIL — N.T.S.



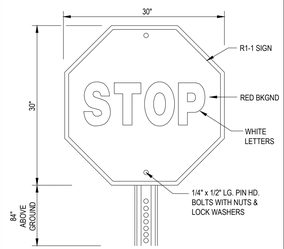
ACCESSIBLE PARKING SIGN DETAIL — N.T.S.



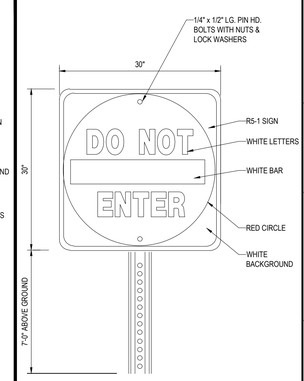
END SECTION
TO BE USED FOR BUILDING SURROUND AND OTHER CONCRETE WALKS. USE CHAIRS TO SUPPORT REINFORCING STEEL DURING POUR.

NOTES:
1. SEE SITE PLAN FOR WIDE AND GRADES
2. PROVIDE MINIMUM 1/8"/FT. CROSS-SLOPE
3. PROVIDE CONTROL JOINTS 5'- 0" O.C. MIN.
4. PROVIDE EXPANSION JOINTS 20'- 0" O.C. MIN.

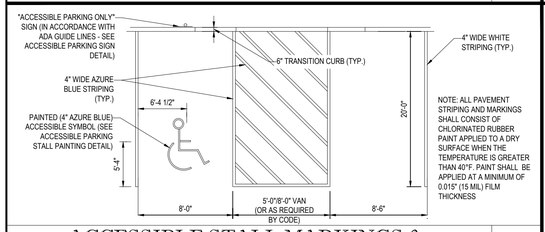
MONOLITHIC CONC. SIDEWALK DETAILS — N.T.S.



'STOP' SIGN — N.T.S.

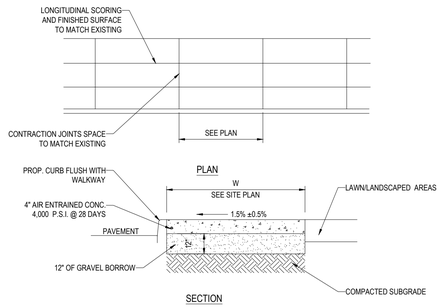


"DO NOT ENTER" SIGN — N.T.S.



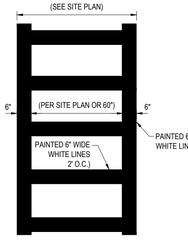
NOTE: ALL PAVEMENT STRIPING AND MARKINGS SHALL CONSIST OF CHLORINATED RUBBER PAINT APPLIED TO A DRY SURFACE WHEN THE TEMPERATURE IS GREATER THAN 40°F. PAINT SHALL BE APPLIED AT A MINIMUM OF 0.015" (15 MIL) FILM THICKNESS

ACCESSIBLE STALL MARKINGS & PARKING LOT STRIPING DETAIL — N.T.S.

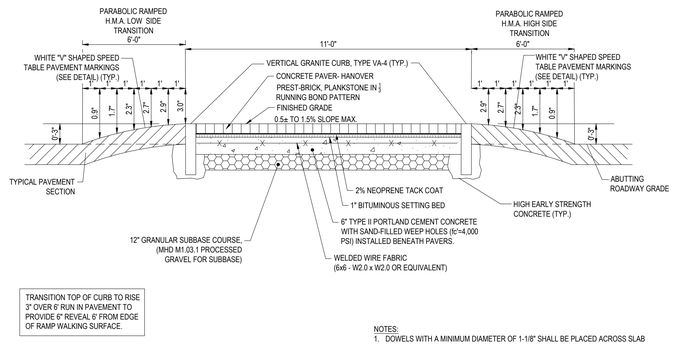


NOTE:
1. PROVIDE 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT AT 20' O.C.
2. ALL JOINTS SEALED PER SPECIFICATIONS.

SIDEWALK DETAIL WITHIN ROW — N.T.S.



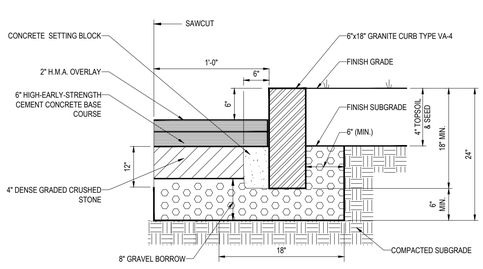
CROSSWALK DETAIL — N.T.S.



TRANSITION TOP OF CURB TO RISE 3" OVER 6' RUN IN PAVEMENT TO PROVIDE 6" REVEAL 6' FROM EDGE OF RAMP WALKING SURFACE.

NOTES:
1. DOWELS WITH A MINIMUM DIAMETER OF 1-1/8" SHALL BE PLACED ACROSS SLAB EXPANSION JOINTS TO LIMIT DIFFERENTIAL SETTLEMENTS.
2. MAXIMUM SAW CUT JOINT SPACING SHALL NOT EXCEED 12 FEET WITH SEALED EXPANSION JOINTS AT 36 FEET ON CENTER.
3. CONCRETE FOR RIGID PAVEMENTS SHOULD BE AIR-ENTRAINED AND PLACED WITH A MAXIMUM SLUMP OF 4 INCHES.

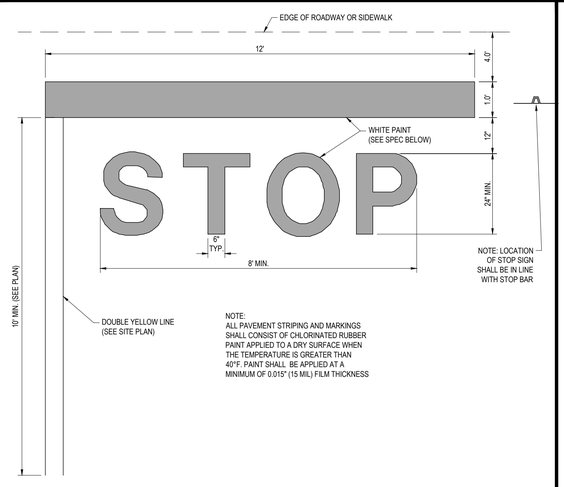
RAISED CROSSWALK — N.T.S.



TRANSITION CURB DETAIL — N.T.S.

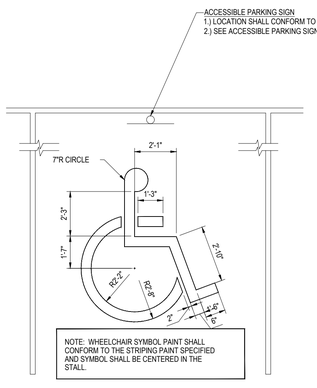
GC TO REFER TO GEOTECHNICAL REPORT PREPARED BY TERRACON CONSULTANTS, INV. DATED 10/22/10 FOR PAVEMENT SPECIFICATIONS.

VERTICAL GRANITE CURB DETAIL — N.T.S.



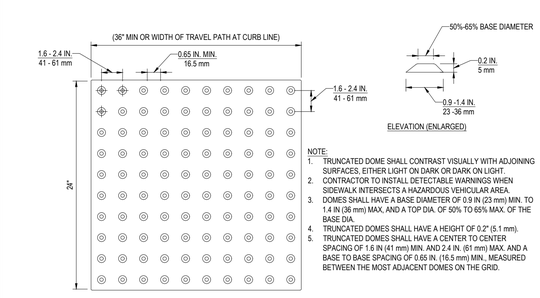
NOTE:
ALL PAVEMENT STRIPING AND MARKINGS SHALL CONSIST OF CHLORINATED RUBBER PAINT APPLIED TO A DRY SURFACE WHEN THE TEMPERATURE IS GREATER THAN 40°F. PAINT SHALL BE APPLIED AT A MINIMUM OF 0.015" (15 MIL) FILM THICKNESS

'STOP' BAR DETAIL — N.T.S.



NOTE: WHEELCHAIR SYMBOL PAINT SHALL CONFORM TO THE STRIPING PAINT SPECIFIED AND SYMBOL SHALL BE CENTERED IN THE STALL

ACCESSIBLE PARKING STALL PAINTING DETAIL — N.T.S.



NOTE:
1. TRUNCATED DOME SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT ON DARK OR DARK ON LIGHT.
2. CONTRACTOR TO INSTALL DETECTABLE WARNINGS WHEN SIDEWALK INTERSECTS A HAZARDOUS VEHICULAR AREA.
3. DOMES SHALL HAVE A BASE DIAMETER OF 0.9 IN (23 mm) MIN. TO 1.4 IN (36 mm) MAX, AND A TOP DIA. OF 50% TO 65% MAX. OF THE BASE DIA.
4. TRUNCATED DOMES SHALL HAVE A HEIGHT OF 0.2" (5.1 mm).
5. TRUNCATED DOMES SHALL HAVE A CENTER TO CENTER SPACING OF 1.6 IN (41 mm) MIN. AND 2.4 IN. (61 mm) MAX. AND A BASE TO BASE SPACING OF 0.65 IN. (16.5 mm) MIN., MEASURED BETWEEN THE MOST ADJACENT DOMES ON THE GRID.

NOTE TO DESIGNER:
IF A WALK CROSSES OR ADJOINS A VEHICULAR WAY WHERE THE WALKING SURFACE AND PAVEMENT ARE NOT SEPARATED BY CURBS, RAILING OR OTHER ELEMENTS, THE BOUNDARY BETWEEN THE AREA SHALL BE DEFINED BY A CONTINUOUS DETECTABLE WARNING WHICH IS MIN. 36" WIDE (ADA ACCESSIBLE GUIDELINES PRINTED 11-4-06) AND MIN. 24" DEPTH.

TRUNCATED DOME PATTERN — N.T.S.

ARCHITECT
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CONSULTANT:
BOHLER ENGINEERING
352 TURNPIKE ROAD
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Phone: (508) 480-9900
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www.BohlerEngineering.com

LOGAN CONVENIENCE & FILLING CENTER

LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

PROJECT

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL

COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
NO. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT

ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD

CHECKED BY: JAB

PROJECT NUMBER: 2118051

DRAWING NAME

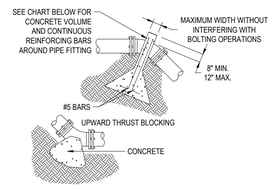
CONSTRUCTION DETAIL SHEET I

DRAWING NO.

C10.0

Plot Date: 8/28/2018 11:46:23 AM, Dwg Filename: P:\17\W171153\Drawings\Plan Sets\REV1\W171153ss1.dwg, 8/28/2018 11:46:22 AM, AutoCAD PDF (General Documentation).pc3

P:\17\W171153\Drawings\Plan Sets\REV1\W171153ss1.dwg, 8/28/2018 11:46:23 AM, AutoCAD PDF (General Documentation).pc3



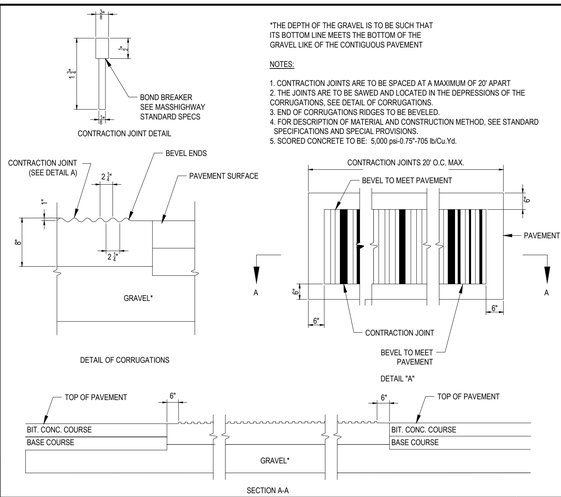
DOWNWARD THRUST BLOCKING
(SEE HORIZONTAL BLOCKING DETAIL)
(ALL BENDS SIMILAR)

UPWARD THRUST BLOCKING (REQUIRED REINFORCING BARS & CUBIC YARDS OF P.C. CONCRETE)											
	90° BEND			45° BEND			22 1/2° BEND			11 1/4°BEND	
PIPE SIZE	CONC. C.Y.	REINF QTY	REINF SIZE	CONC. C.Y.	REINF QTY	REINF SIZE	CONC. C.Y.	REINF QTY	REINF SIZE	CONC. C.Y.	REINF QTY	REINF SIZE
6"	1.5	3	5	1.5	3	5	1.25	2	5	1.25	2	5
8"	2	3	5	2	3	5	1.5	2	5	1.5	2	5
10"	2.5	3	5	2.5	3	5	2	3	5	2	3	5
12"	3	3	5	3	3	5	2.5	3	5	2.5	3	5

NOTES:
1. DO NOT COVER BELLS OR FLANGES WITH CONCRETE
2. WRAP ALL FITTINGS WITH VISQUEEN.
3. BACK ALL TEES ACCORDING TO SIZE OF BRANCH.
4. BACKING FUTURE LINE EXTENSIONS SHALL BE SUCH THAT LATER REMOVAL IS POSSIBLE.
5. ALL BENDS WHERE FITTINGS ARE USED, BOTH HORIZONTAL OR VERTICAL SHALL BE BACKED.
6. REACTION BACKING TABLE IS BASED ON 100 P.S.I. AND SOIL BEARING PRESSURE OF 2000 LB./SQ.FT. ADDITIONAL BACKING MAY BE REQUIRED IN SOME AREAS AS DIRECTED BY ENGINEERS.
7. ALL CONCRETE SHALL BE 2500 P.S.I.
8. 18" AND LARGER REQUIRES SPECIFIC ANTI-THRUST DESIGN.

VERTICAL THRUST BLOCKING

N.T.S.

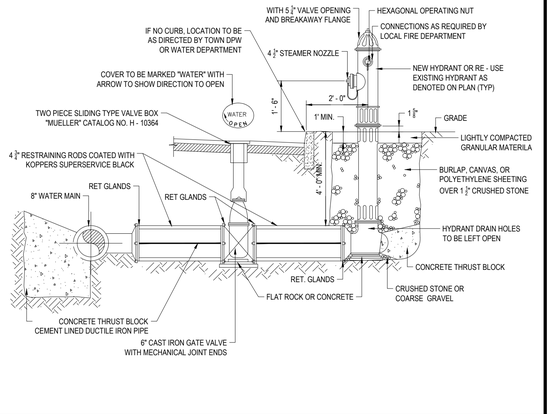


*THE DEPTH OF THE GRAVEL IS TO BE SUCH THAT ITS BOTTOM LINE MEETS THE BOTTOM OF THE GRAVEL LIKE OF THE CONTIGUOUS PAVEMENT

NOTES:
1. CONTRACTION JOINTS ARE TO BE SPACED AT A MAXIMUM OF 20' APART
2. THE JOINTS ARE TO BE SAWED AND LOCATED IN THE DEPRESSIONS OF THE CORRUGATIONS, SEE DETAIL OF CORRUGATIONS.
3. END OF CORRUGATIONS RIDGES TO BE BEVELED.
4. FOR DESCRIPTION OF MATERIAL AND CONSTRUCTION METHOD, SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
5. SCORED CONCRETE TO BE: 5,000 psi-0.75"-705 lb/Cu.Yd.

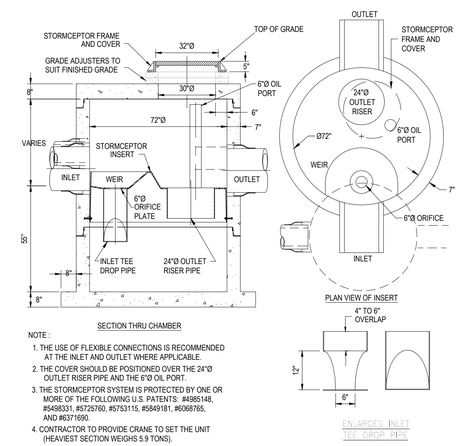
SCORED CONCRETE ISLAND DETAIL

N.T.S.



HYDRANT & VALVE INSTALLATION

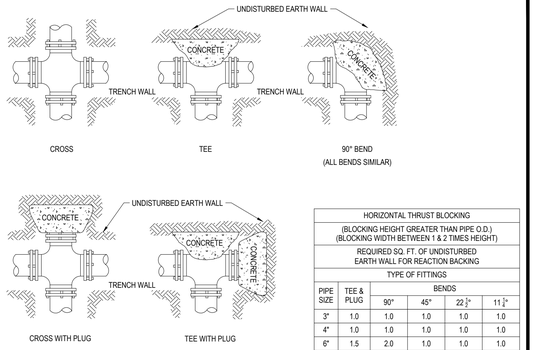
N.T.S.



NOTE :
1. THE USE OF FLEXIBLE CONNECTIONS IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE 24"Ø OUTLET RISER PIPE AND THE 6"Ø OIL PORT.
3. THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, AND #6371690.
4. CONTRACTOR TO PROVIDE CRANE TO SET THE UNIT (HEAVIEST SECTION WEIGHS 5.9 TONS).

STORMCEPTOR 900

N.T.S.

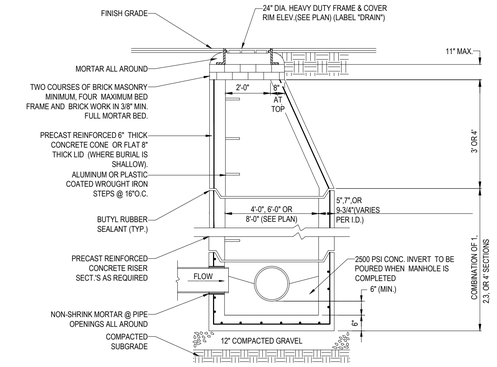


HORIZONTAL THRUST BLOCKING					
(BLOCKING HEIGHT GREATER THAN PIPE O.D.) (BLOCKING WIDTH BETWEEN 1 & 2 TIMES HEIGHT)					
REQUIRED SQ. FT. OF UNDISTURBED EARTH WALL FOR REACTION BACKING					
TYPE OF FITTINGS					
PIPE SIZE	TEE & PLUG	BENDS 90°	45°	22 1/2°	11 1/4°
3"	1.0	1.0	1.0	1.0	1.0
4"	1.0	1.0	1.0	1.0	1.0
6"	1.5	2.0	1.0	1.0	1.0
8"	2.5	3.5	1.8	1.0	1.0
10"	4.0	5.5	2.8	1.5	1.0
12"	6.0	8.0	4.0	2.0	1.5

NOTE:
1. DO NOT COVER BELLS OR FLANGES WITH CONCRETE
2. WRAP ALL FITTINGS WITH VISQUEEN.
3. BACK ALL TEES ACCORDING TO SIZE OF BRANCH.
4. BACKING FUTURE LINE EXTENSIONS SHALL BE SUCH THAT LATER REMOVAL IS POSSIBLE.
5. ALL BENDS WHERE FITTINGS ARE USED, BOTH HORIZONTAL OR VERTICAL SHALL BE BACKED.
6. REACTION BACKING TABLE IS BASED ON 100 P.S.I. AND SOIL BEARING PRESSURE OF 2000 lb./sq.ft. ADDITIONAL BACKING MAY BE REQUIRED IN SOME AREAS AS DIRECTED BY ENGINEERS.
7. ALL CONCRETE SHALL BE 2500 P.S.I.
8. 18" AND LARGER REQUIRES SPECIFIC ANTI-THRUST DESIGN.

HORIZONTAL THRUST BLOCKING

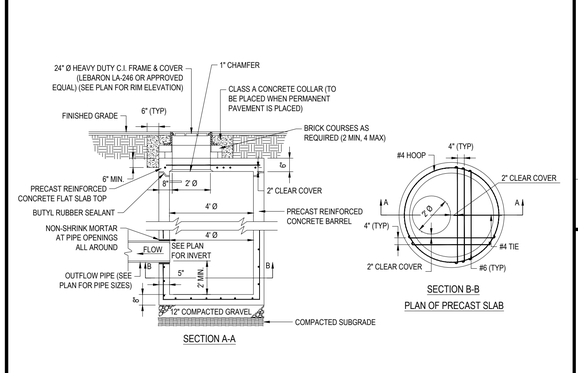
N.T.S.



NOTE:
ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.

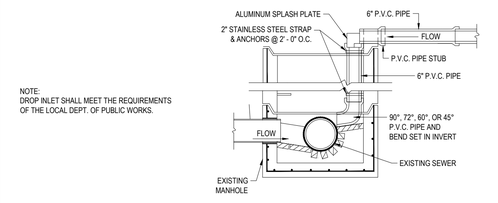
TYP. PRECAST CONCRETE MANHOLE STORM DRAIN

N.T.S.



PRECAST FLAT SLAB TOP FOR CATCH BASIN

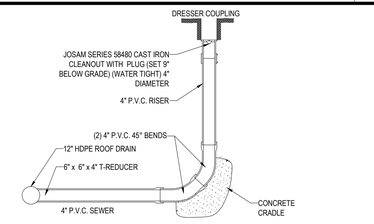
N.T.S.



NOTE:
DROP INLET SHALL MEET THE REQUIREMENTS OF THE LOCAL DEPT. OF PUBLIC WORKS.

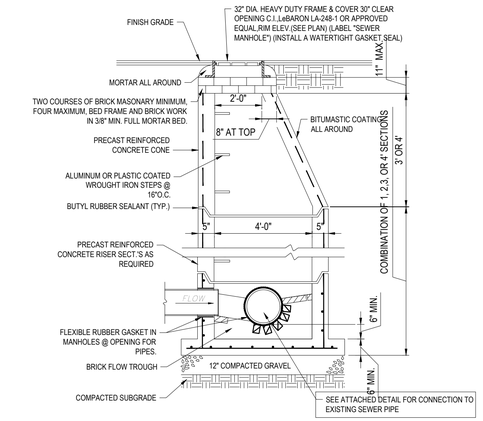
SEWER DROP INLET

N.T.S.



CLEANOUT DETAIL

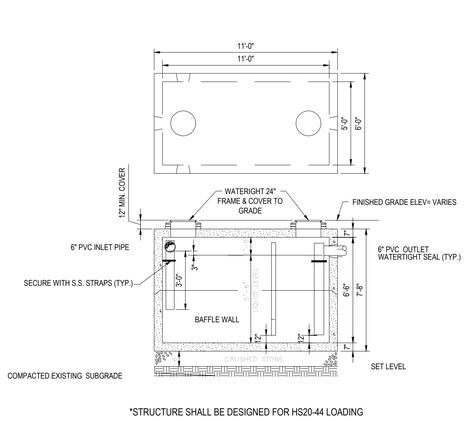
N.T.S.



NOTE: ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.

PRECAST CONCRETE SEWER MANHOLE

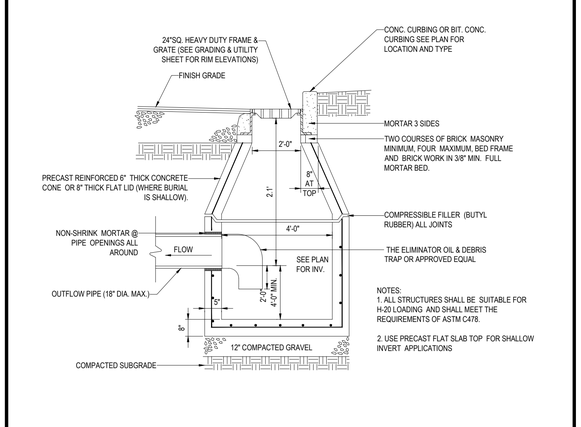
N.T.S.



*STRUCTURE SHALL BE DESIGNED FOR HS20-44 LOADING

PRECAST GREASE TRAP 2,000 GAL./H.D.

N.T.S.

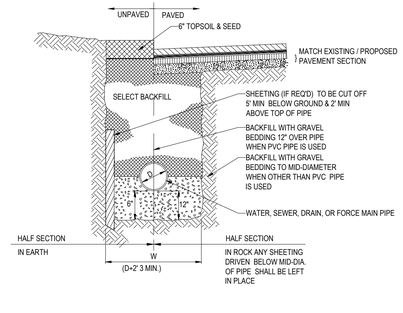


NOTES:
1. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.

2. USE PRECAST FLAT SLAB TOP FOR SHALLOW INVERT APPLICATIONS

PRECAST CONCRETE DEEP SUMP CATCH BASIN DETAIL

N.T.S.



TYPICAL UTILITY TRENCH

N.T.S.

ARCHITECT
PHASE ZERO DESIGN
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LOGAN CONVENIENCE & FILLING CENTER

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EAST BOSTON, MA

PROJECT

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL
COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
CONSTRUCTION DETAIL SHEET II

DRAWING NO.
C10.1

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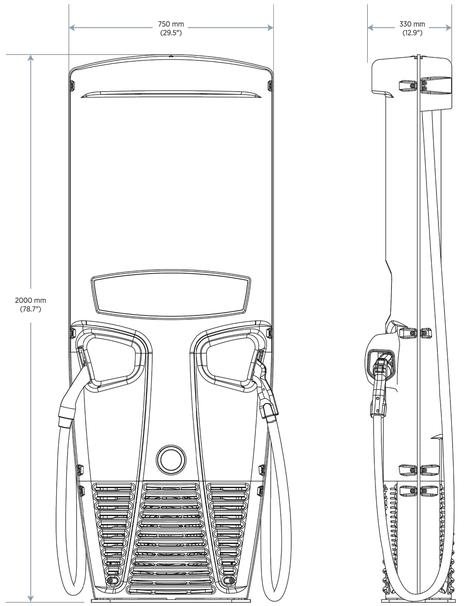
P:\17W171153\Drawings\Plan Sets\REV1\W171153ss1.dwg, 8/28/2018 11:46:23 AM, AutoCAD PDF (General Documentation).pc3

Express 200



Express 200

Express 200 Specifications

Safety and Operational Ratings

Enclosure Rating	Type 3R, IP 65
Safety Compliance	UL Listed for USA cUL certified for Canada: complies with UL 2202, UL 2231-1, UL 2231-2
Surge Protection	6kV @ 3,000A. In geographic areas subject to frequent thunder storms, supplemental surge protection at the service panel is recommended.
EMC Compliance	FCC part 15 subpart B
Efficiency	>92%
Power Factor	0.99
Cooling	Liquid Cooled
Operational Altitude	<1800 m (6000')
Operating Temperature	-35°C to 50°C (-31°F to 122°F)
High Altitude Operating Temperature	1800 – 2400 m (6000 – 8000'): -35°C to 40°C (-31°F to 104°F) . Output power derating may apply.
Storage Temperature	-35°C to 50°C (-31°F to 122°F)
Operating Humidity	Up to 95% @ 50°C (122°F) non-condensing
Terminal Block Specifications	480V Terminal Block — Temperature rating: -5 to 40°C (23 to 104°F); Tightening torque: 4 N-m (36 in – lbs); Wire size: 21 mm² (4 AWG) 120V Terminal Block — Temperature rating: 120°C (248°F); Tightening torque: 16 N-m (14 in – lbs); Wire size: 2 – 6mm² (14 – 10 AWG)

Generic Specifications

Dimensions	2,000 mm H x 750 mm W x 330 mm D (79"H x 30"W x 13"D)
Installation Footprint	580 mm W x 270 mm D (23"W x 11"D)
Weight	165 kg (364 lb)
Shipping Weight	330kg (728 lb)

Express 200 Specifications

Electrical Input

Input Power	52kW @ 3 phase and 250W @ 1 phase
Input Voltage, Charging	480V AC 3 phase
Input Voltage, Control & Communication	120V AC 1 phase
Input Current	63A @ 480V AC, 2A @ 120V AC
Input Frequency	50/60Hz ±5%
Wiring	3 phase, 4 wire (L1, L2, L3, Ground) and 1 phase (L1, N, Ground)

Electrical Output

Nominal Output Power	50kW (@ 400 – 500 V)
Output Voltage	200 – 500V DC
Output Current	125A max

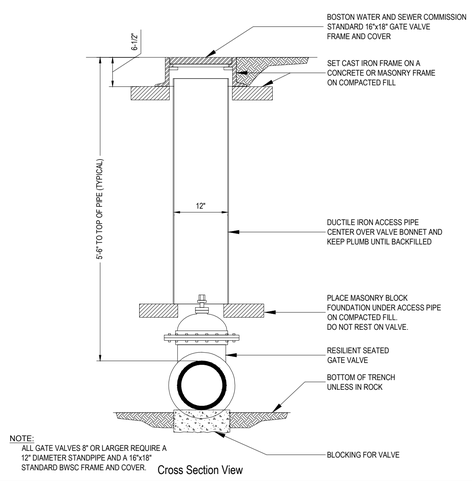
Functional Interfaces

Connector Types	CHAdeMO, CCS1 (SAE J1772™ Combo)
Cable Length	3.8 m (12.5')
LCD Display	2 line OLED display
Card Reader	ISO 15693, ISO 14443, NFC
Plug-In Detection	No selection of plug required. Auto detects which plug is connected.

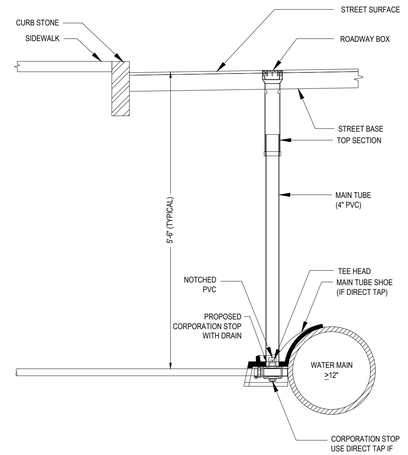
Safety and Connectivity Features

Vehicle Safety Communication	CHAdeMO – JEVS G104 over CAN CCS1 – SAE J1772 over PLC
Plug-Out Detection	Power terminated per JEVS G104 (CHAdeMO) and SAE J2931 (CCS1) specification
Power Measurement Accuracy	+/- 2% from 10% to full scale
Power Report/Store Interval	15 minute, aligned to hour
Wide Area Network	3G GSM, 3G CDMA

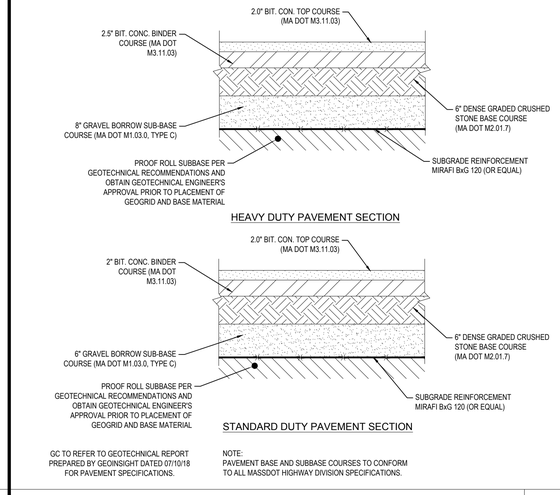
EXPRESS 200 DC COMMERCIAL CHARGING STATION DETAIL — N.T.S.



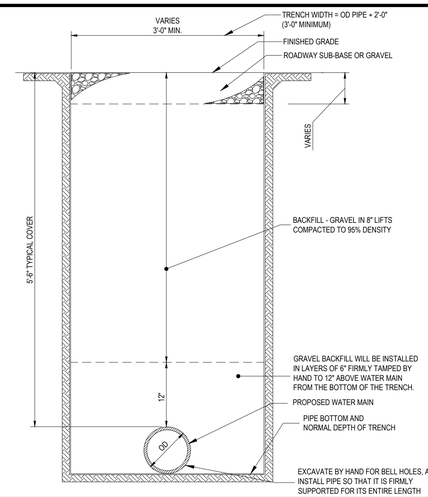
TYPICAL GATE VALVE INSTALLATION — N.T.S.



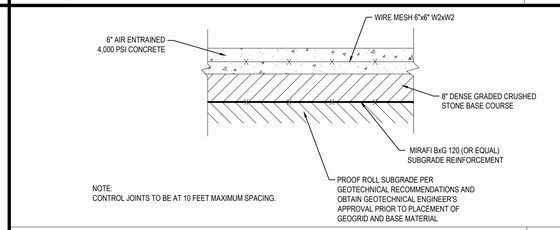
SERVICE CONNECTION DETAIL — N.T.S.



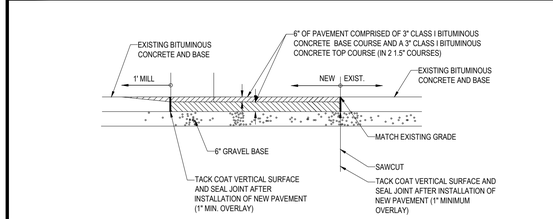
PAVEMENT SECTIONS — N.T.S.



WATER TRENCH DETAIL — N.T.S.



CONCRETE PAD SECTION — N.T.S.



ROADWAY PATCHING DETAIL — N.T.S.

ARCHITECT
PHASE ZERO DESIGN
35 POND PARK ROAD, BAY 16
HINGHAM, MA 02043
PHONE: (781) 452-7121
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LOGAN CONVENIENCE & FILLING CENTER

LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

PROJECT

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL

COMMONWEALTH OF MASSACHUSETTS — JAMES A. BERNARDINO — NO. 41717 — REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT

ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD

CHECKED BY: JAB

PROJECT NUMBER: 2118051

DRAWING NAME

CONSTRUCTION DETAIL SHEET III

DRAWING NO.

C10.2

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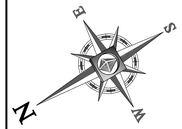


AREA LIGHT

CANOPY LIGHT

LIGHTING NOTES:

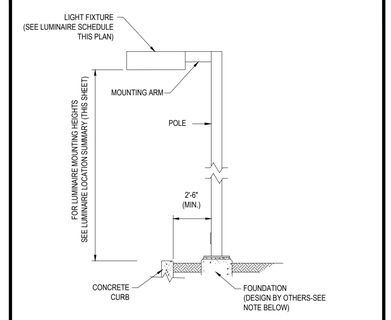
1. THIS LIGHTING PLAN DEPICTS PROPOSED SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER(S). ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
2. THE LIGHT LOSS FACTORS USED IN THESE LIGHTING CALCULATIONS ARE 0.90 FOR ALL LED LUMINAIRES, 0.80 FOR ALL HIGH PRESSURE SODIUM LUMINAIRES OR 0.72 FOR ALL METAL HALIDE LUMINAIRES UNLESS OTHERWISE SPECIFIED. THESE FACTORS ARE INDICATIVE OF TYPICAL LIGHTING INDUSTRY MODELING STANDARDS.
3. THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ALL ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT ELEVATION ZERO (GROUND LEVEL) UNLESS OTHERWISE NOTED. THE VALUES DEPICTED ON THIS PLAN ARE IN FOOTCANDLES.
4. THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT NOT BE LIMITED TO, FREQUENT VISUAL INSPECTIONS, CLEANING OF LENSES, AND RELAMPING (IF NECESSARY) AT LEAST ONCE EVERY SIX (6) MONTHS. FAILURE TO FOLLOW THE ABOVE STEPS COULD CAUSE THE LUMINAIRES, LAMPS AND LENSES TO FAIL PROPERLY TO FUNCTION.
5. WHERE APPLICABLE, THE EXISTING CONDITION LIGHT LEVELS ILLUSTRATED ARE REPRESENTATIVE OF AN APPROXIMATION UTILIZING LABORATORY DATA FOR SIMILAR FIXTURES, UNLESS ACTUAL FIELD MEASUREMENTS ARE TAKEN WITH A LIGHT METER AND ARE, CONSEQUENTLY, APPROXIMATIONS ONLY. DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC, ACTUAL LIGHT LEVELS MAY DIFFER. EXISTING LIGHT LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
6. THIS LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES, ONLY. POWER SYSTEM CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS ARE THE RESPONSIBILITY OF THE ARCHITECT, MEP AND/OR LIGHTING CONTRACTOR, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. LIGHT POLE BASES ARE THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES AND ALL OTHER APPLICABLE RULES, REGULATIONS, LAWS AND STATUTES.
7. CONTRACTOR MUST BRING TO DESIGNER'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURES.
8. IT IS LIGHTING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROJECT ARCHITECT OR OWNER REGARDING THE POWER SOURCE(S) FROM WITHIN THE BUILDING, AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT.
9. THE LIGHTING CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE SITE PLAN, INCLUDING BUT NOT LIMITED TO, GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL GOVERNMENTAL RULES, LAWS, ORDINANCES, REGULATIONS AND THE LIKE.
10. THE CONTRACTOR MUST VERIFY THAT INSTALLATION OF LIGHTING FIXTURES COMPLIES WITH THE REQUIREMENTS FOR SEPARATION FROM OVERHEAD ELECTRICAL WIRES PER STATE REGULATIONS.
11. UPON OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT, THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE, SERVICING, REPAIR AND INSPECTION OF THE LIGHTING SYSTEM AND ALL OF ITS COMPONENTS AND RELATED SYSTEMS, TO ENSURE ADEQUATE LIGHTING LEVELS ARE PRESENT AND FUNCTIONING AT ALL TIMES.

NUMERIC SUMMARY

LABEL	CALCTYPE	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
PAVEMENT AREA SUMMARY	ILLUMINANCE	FC	7.33	34.7	0.3	24.43	115.67

LUMINAIRE SCHEDULE

SYMBOL	QTY	ARRANGEMENT	LUMENS	LLF	DESCRIPTION
A	4	SINGLE	10430	0.90	CREE EDGE SERIES LED AREA LIGHT ARE-EHO-3M-HV-12-E-UL-BK-700 MOUNTED @ 25'
B	1	SINGLE	10430	0.90	CREE EDGE SERIES LED AREA LIGHT ARE-EHO-3M-HV-12-E-UL-BK-700 MOUNTED @ 15'
C	39	CANOPY	N/A	0.90	CREE CPY SERIES - VERSION A LED CANOPY LIGHT CPY250-A-DM-D-A-UL-BK MOUNTED @ 14'-9"



AREA LIGHT DETAIL — N.T.S.

NOTE: THIS DETAIL IS FOR BID AND BUDGETARY PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A FOUNDATION DESIGN PREPARED BY A QUALIFIED STRUCTURAL ENGINEER CONSIDERING LIGHTING MANUFACTURER REQUIREMENTS, LOCAL WIND LOADS AND SITE SPECIFIC SOIL PARAMETERS.

- SOME SITE CONDITIONS AND/OR LOCATIONS MAY REQUIRE VIBRATION DAMPENING MEASURES AS DETERMINED BY A STRUCTURAL ENGINEER.
- THE STRUCTURAL ENGINEER SHALL BE NOTIFIED OF THE INTENT TO MOUNT ANYTHING TO THE POLE, ASIDE FROM THE LIGHT FIXTURES, INCLUDING BUT NOT LIMITED TO CAMERAS, BANNERS, FLAGS, SIGNAGE, ETC. AS IT WILL IMPACT THE POLE AND FOUNDATION DESIGN.

THIS PLAN TO BE UTILIZED FOR LIGHTING PURPOSES ONLY

20 10 5 0 20
1"= 20'

TOMAHAWK DRIVE
(PRIVATE-VARIABLE WIDTH)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

JEFFRIES STREET
(PRIVATE-45' WIDE)
ONE WAY TRAFFIC
(ASPHALT ROADWAY)

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BOHLER ENGINEERING
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www.BohlerEngineering.com

PROJECT
LOGAN CONVENIENCE & FILLING CENTER
LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

REVISIONS

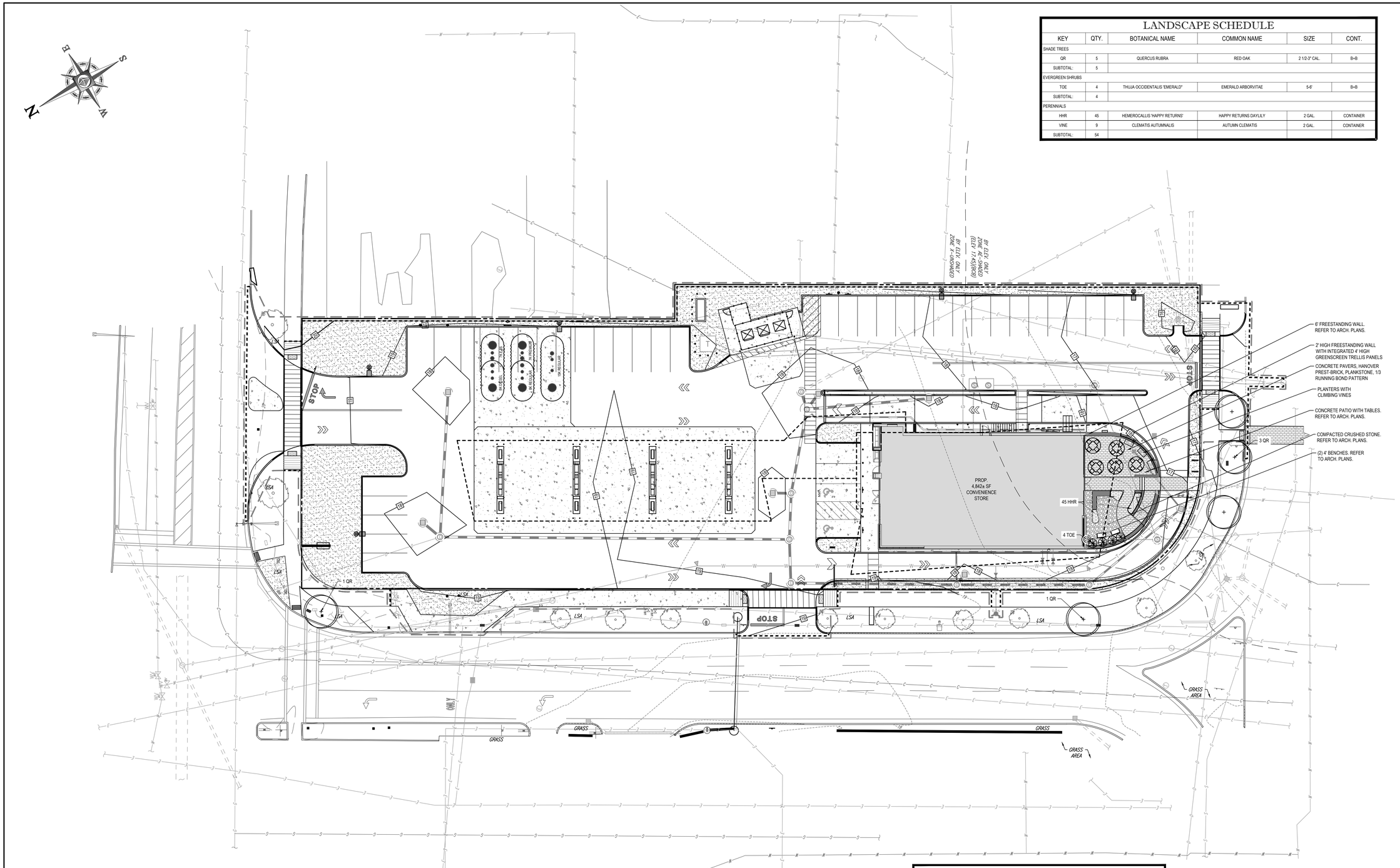
REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL
COMMONWEALTH OF MASSACHUSETTS
JAMES A. BUONFORNO
NO. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018
DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
LIGHTING PLAN

DRAWING NO.
LT1.0



LANDSCAPE SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONT.
SHADE TREES					
QR	5	QUERCUS RUBRA	RED OAK	2 1/2-3" CAL.	B+B
SUBTOTAL:	5				
EVERGREEN SHRUBS					
TOE	4	THUJA OCCIDENTALIS 'EMERALD'	EMERALD ARBORVITAE	5-6'	B+B
SUBTOTAL:	4				
PERENNIALS					
HHR	45	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	2 GAL.	CONTAINER
VINE	9	CLEMATIS AUTUMNALIS	AUTUMN CLEMATIS	2 GAL.	CONTAINER
SUBTOTAL:	54				

OWNER MAINTENANCE RESPONSIBILITIES

UPON OWNER'S (OR OWNER CONTRACTOR'S) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREE, BUSHES, SHRUBS, GRASSES, GRASS, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PEDESTRIAN SURFACES) OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
- TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVELED SURFACES), OR AS OTHERWISE INDICATED ON THE PLANS.
- VEGETATIVE GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVEL SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS-EGRESS WAYS.
- FALLEN PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.

THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEES THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

REFER LANDSCAPE NOTES & DETAILS SHEET FOR LANDSCAPE NOTES AND DETAILS

20 10 5 0 20
1"= 20'

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REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL
COMMONWEALTH OF MASSACHUSETTS
JAMES A. BERNARDINO
No. 41717
REGISTERED PROFESSIONAL ENGINEER

ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018

DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

DRAWING NAME
LANDSCAPE PLAN

DRAWING NO.
L1.0

LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS
A. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM 6" THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED ON THE LANDSCAPE PLAN
I. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
II. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN AND/OR LANDSCAPE PLAN NOTES /DETAILS.

E. FERTILIZER
I. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
II. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
I. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN).
II. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
III. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
IV. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
V. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
VI. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
VII. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
VIII. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES
A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS
A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION
A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS
A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
I. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
II. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
III. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING
A. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING
A. CONTRACTOR SHALL PROVIDE A 6" THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.
B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.
C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.
D. ALL LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY [SEE SPECIFICATION 6.A.]):
I. 20 POUNDS 'GRO-POWER' OR APPROVED SOIL CONDITIONER/FERTILIZER
II. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING
A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
I. PLANTS: MARCH 15 TO DECEMBER 15
II. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

G. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

H. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
I. 1 PART PEAT MOSS
II. 1 PART COMPOSTED COW MANURE BY VOLUME
III. 3 PARTS TOPSOIL BY VOLUME
IV. 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
A) 2 TABLETS PER 1 GALLON PLANT
B) 3 TABLETS PER 5 GALLON PLANT
C) 4 TABLETS PER 15 GALLON PLANT
D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

I. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

J. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

K. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

L. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

M. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

N. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

O. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)
A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING
A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE
A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF 1 YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

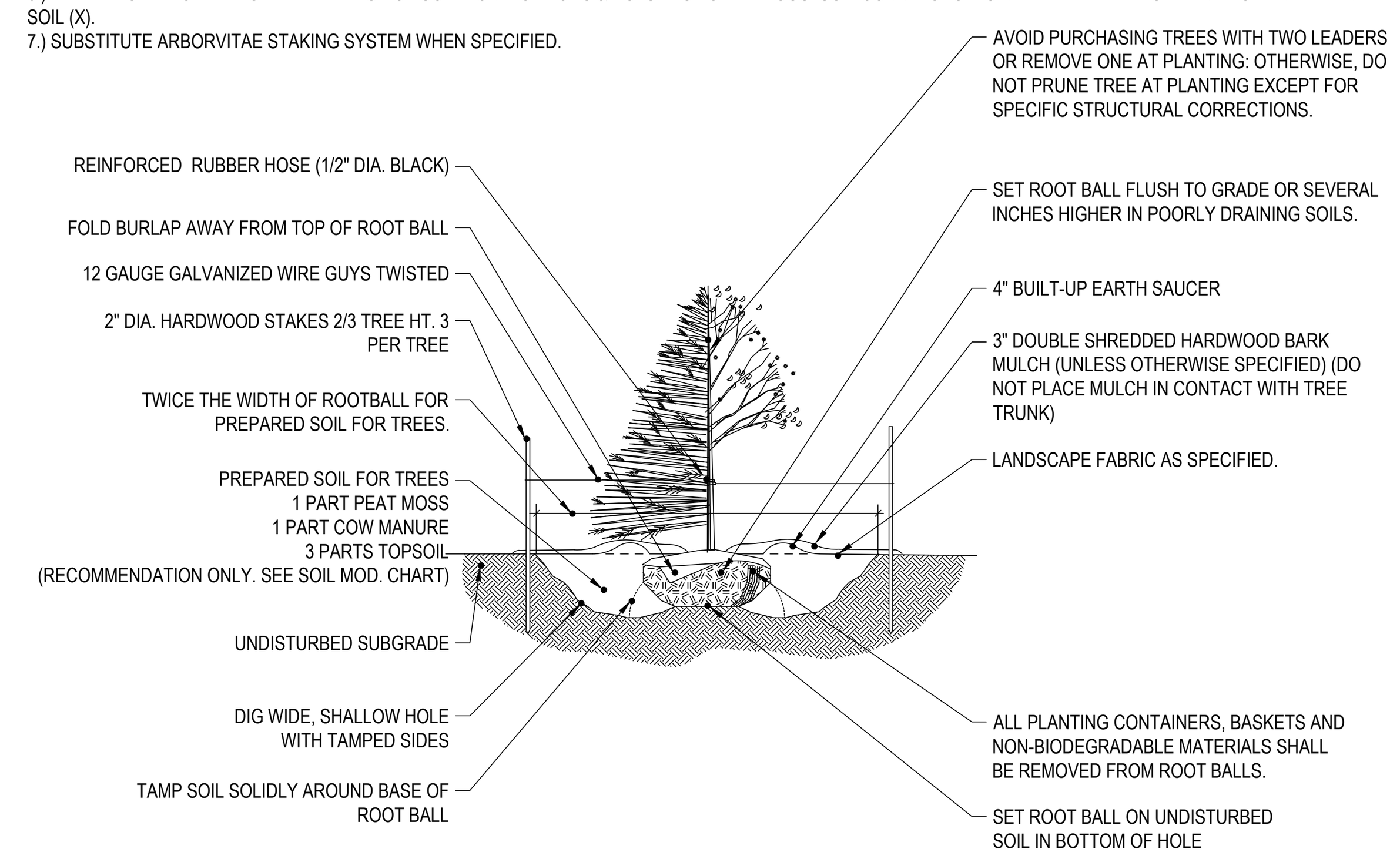
D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP
A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

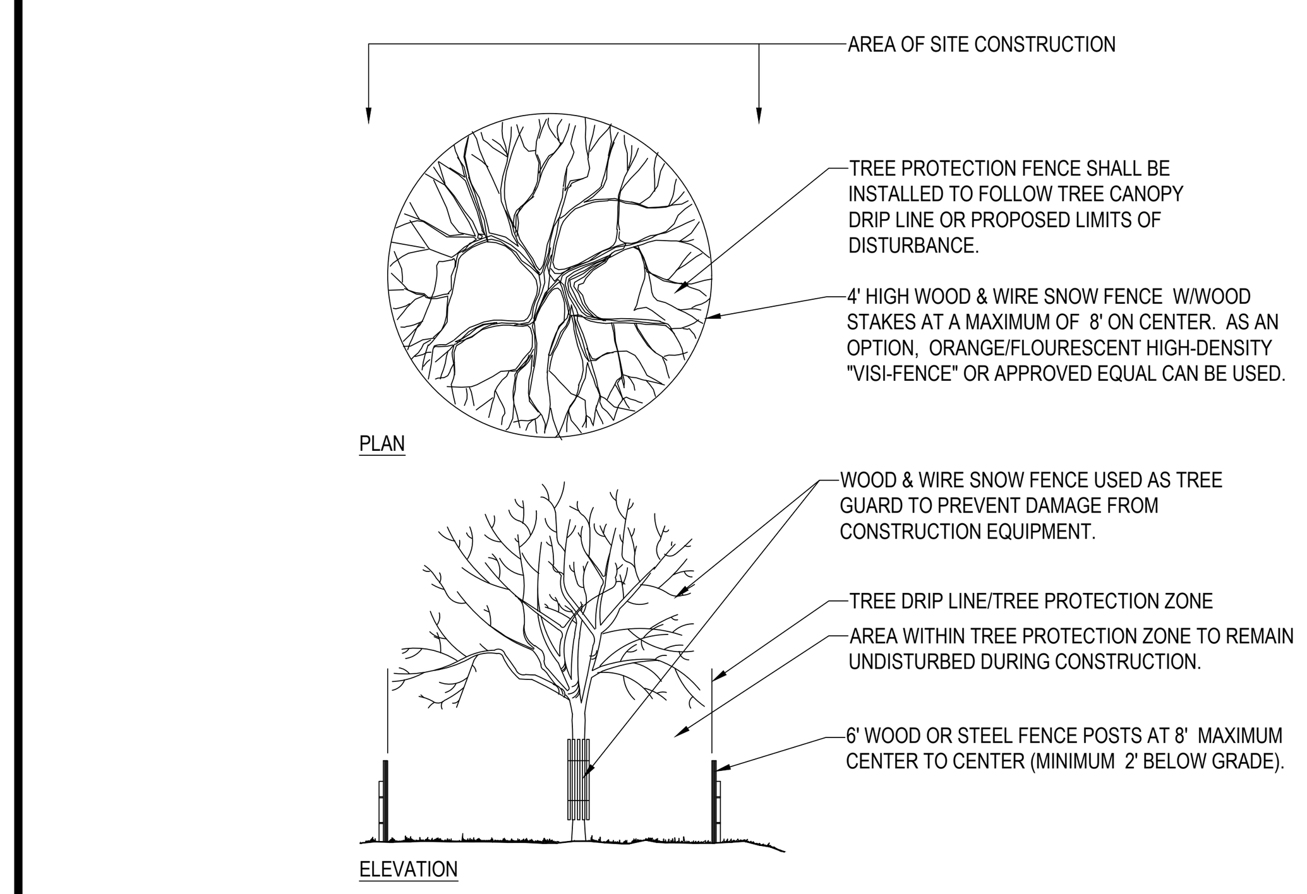
B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

14. MAINTENANCE (ALTERNATIVE BID):
A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.

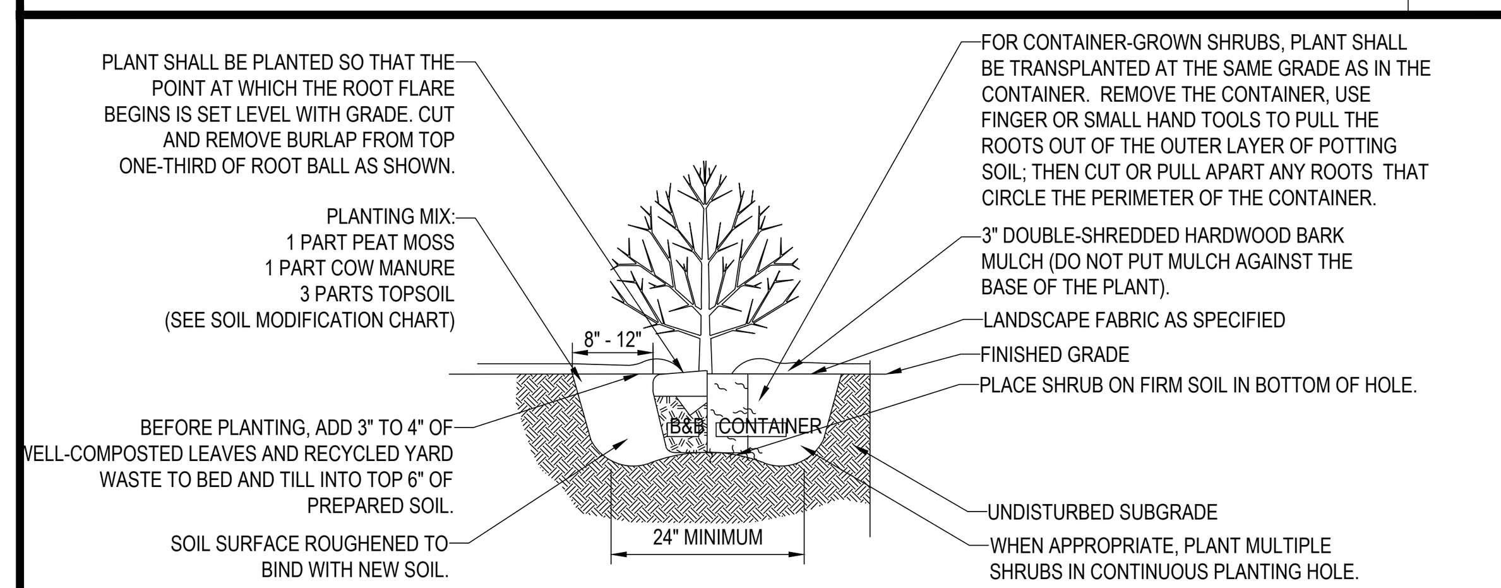
NOTES:
1.) NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2.) REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK 1/3 FROM ROOT BALL.
3.) PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4.) THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5.) THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.
6.) REFER TO THE CHART "GENERAL RANGE OF SOIL MODIFICATIONS & VOLUMES FOR VARIOUS SOIL CONDITIONS" TO DETERMINE MINIMUM WIDTH OF PREPARED SOIL (X).
7.) SUBSTITUTE ARBORVITAE STAKING SYSTEM WHEN SPECIFIED.



TREE PLANTING DETAIL
N.T.S.

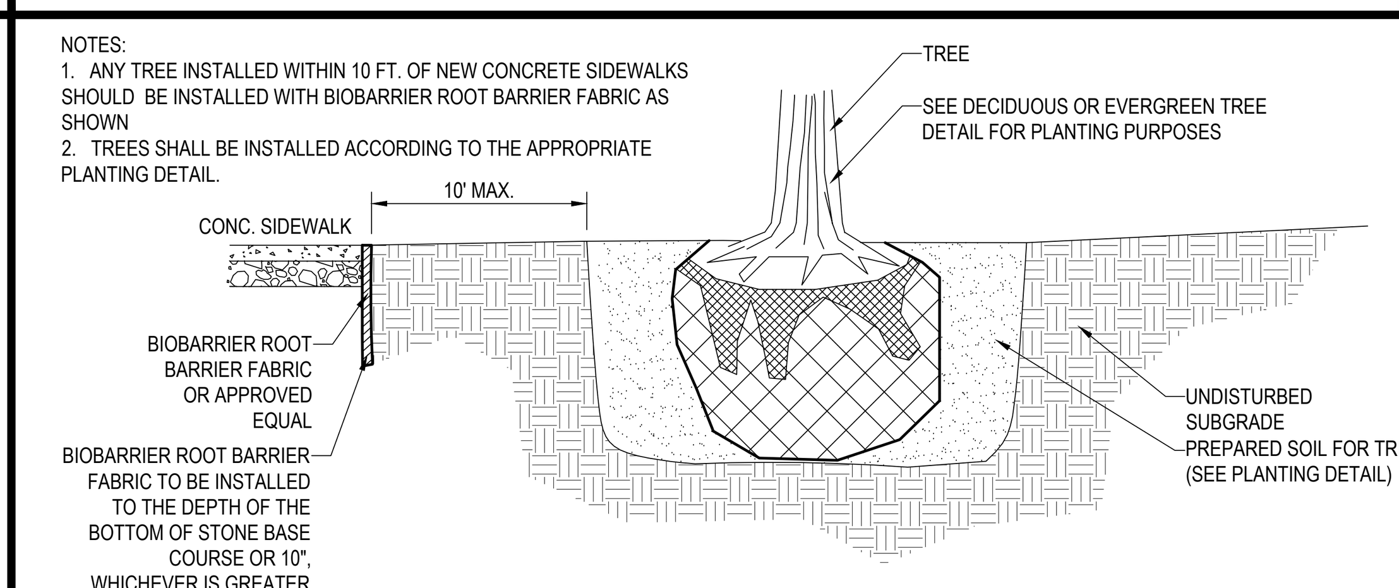


TREE PROTECTION DURING SITE CONSTRUCTION
N.T.S.

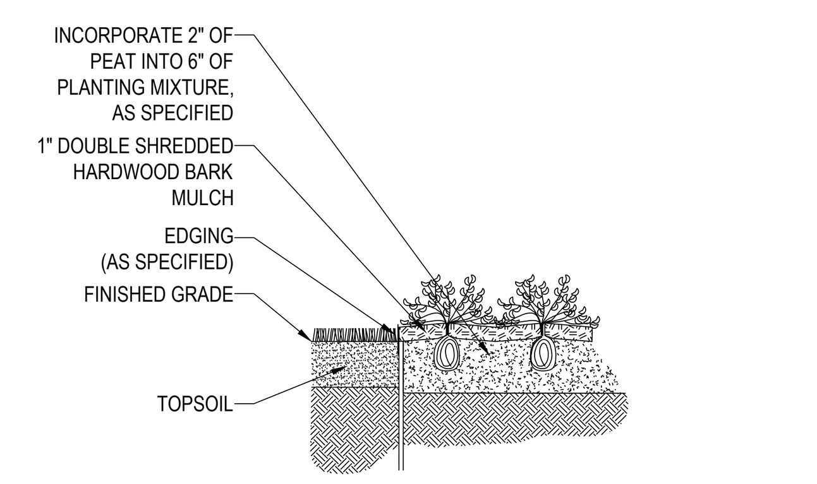


SHRUB PLANTING DETAIL
N.T.S.

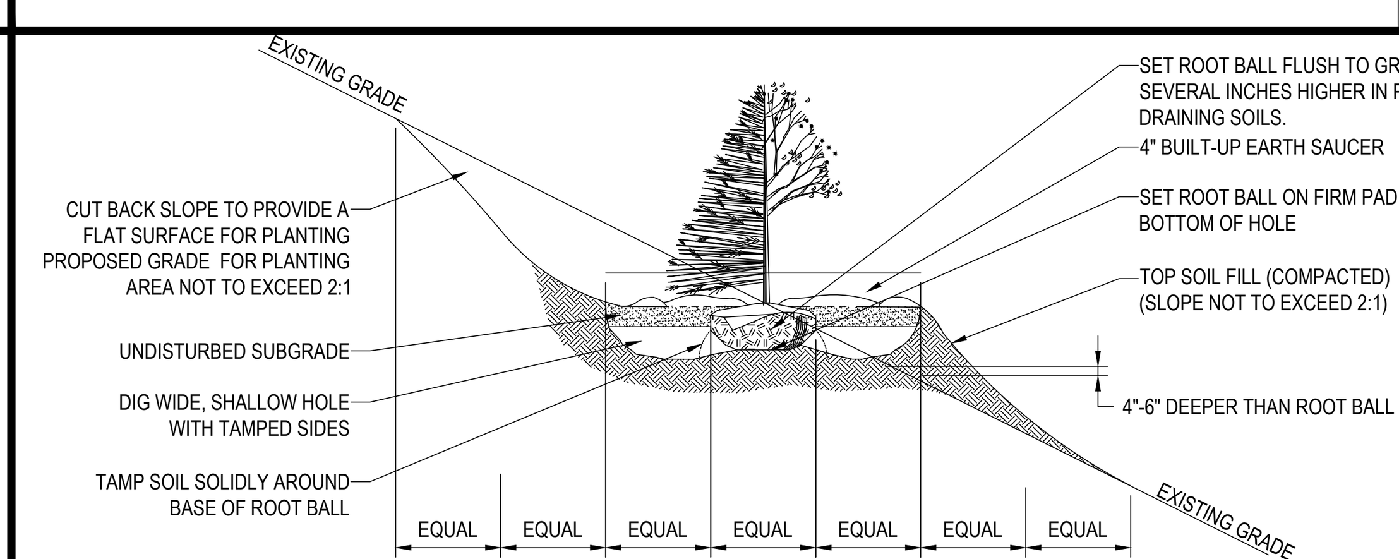
NOTES:
1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.



BIOBARRIER ROOT BARRIER DETAIL
N.T.S.



GROUNDCOVER PLANTING
N.T.S.



REFER TO TREE PLANTING DETAIL FOR GENERAL PLANTING SPECIFICATIONS

TREE PLANTING DETAIL - ON SLOPE
N.T.S.

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.

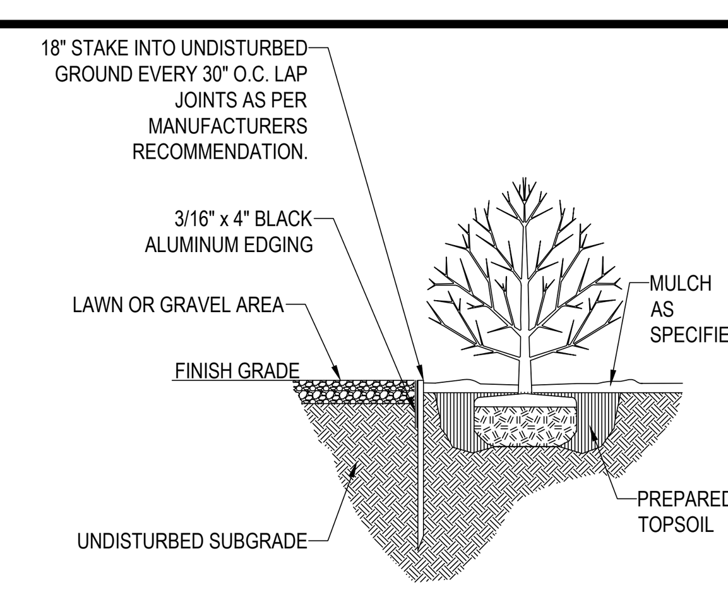
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.

3. SEEDING RATES:

• PERENNIAL RYEGRASS	1/2 LB/1000 SQ FT
• KENTUCKY BLUEGRASS	1 LB/1000 SQ FT
• RED FESCUE	1/2 LB/1000 SQ FT
• SPREADING FESCUE	1/2 LB/1000 SQ FT
• FERTILIZER (16.32.16)	2 LB/1000 SQ FT
• LIQUID LIME	1 GAL/800 GAL.
• TANK TACKIFIER	35 LB/800 GAL.
• TANK FIBER MULCH	30 LB/1000 SQ FT

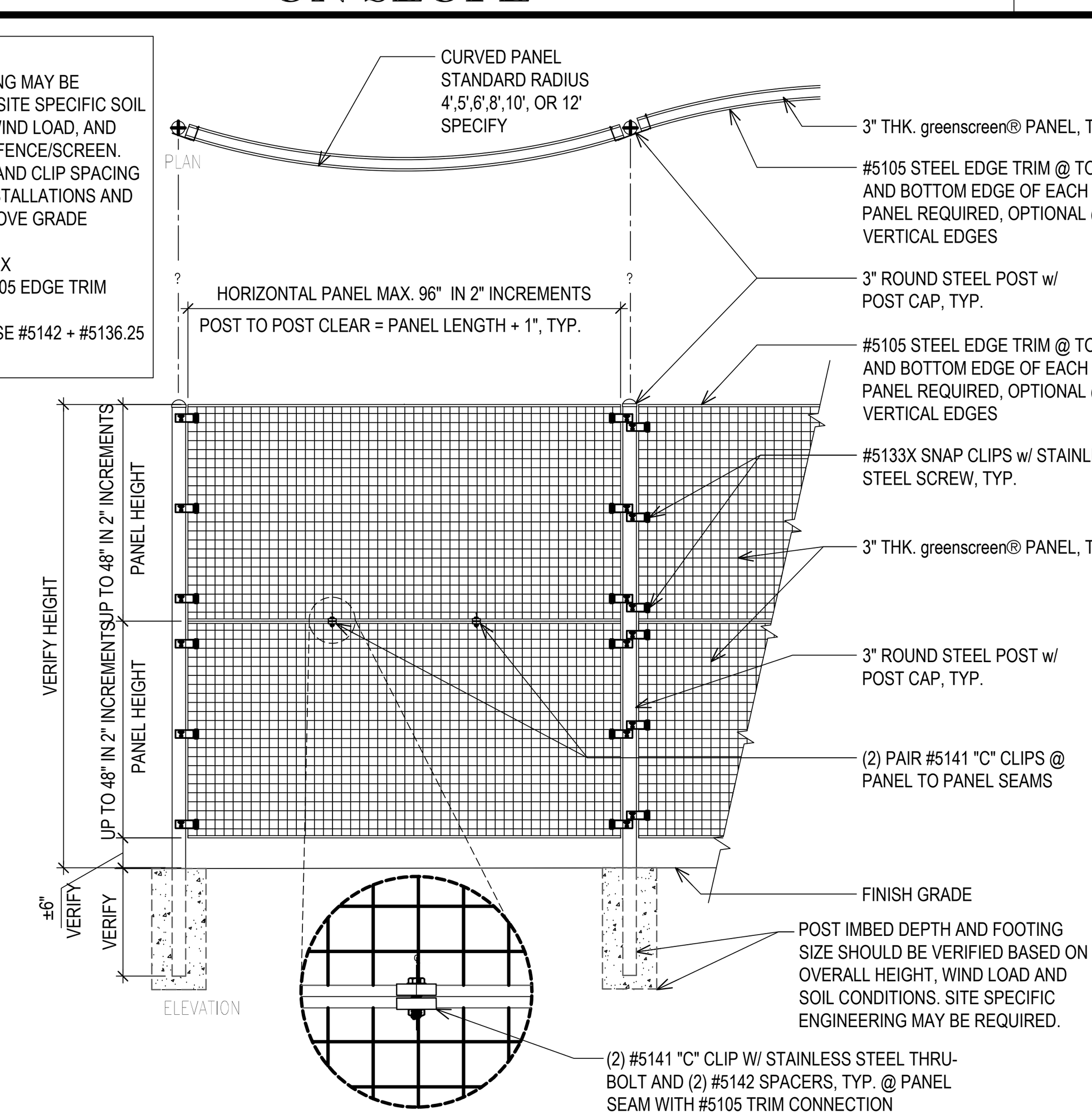
4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

HYDROSEED SPECIFICATIONS



BLACK ALUMINUM EDGING
N.T.S.

NOTE:
*SPECIFIC ENGINEERING MAY BE REQUIRED BASED ON SITE SPECIFIC SOIL CONDITIONS, LOCAL WIND LOAD, AND VERTICAL HEIGHT OF FENCE/SCREEN.
*VERIFY PANEL SPAN AND CLIP SPACING FOR ALL ROOFTOP INSTALLATIONS AND INSTALLATIONS 20' ABOVE GRADE
*OPTIONAL:
- PANEL TRIM w/ #5133X
- #5141 "C" CLIP w/ #5105 EDGE TRIM REQUIRED @ VERTICAL EDGES, USE #5142 + #5136.25 SPACER



FREESTANDING CURVED - FENCE/SCREEN
N.T.S.

ARCHITECT
PHASE ZERO DESIGN
35 POND PARK ROAD, BAY 16
HINGHAM, MA 02043
PHONE: (781) 452-7121
FAX: (781) 875-3039
www.phasezerodesign.com

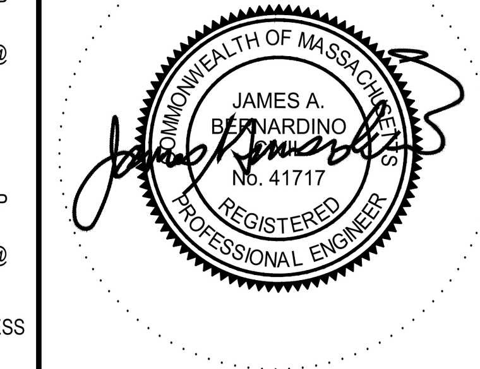
CLIENT
NOURIA ENERGY CORPORATION
326 CLARK STREET
WORCESTER, MA 01606

CONSULTANT:
BOHLER ENGINEERING
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
Fax: (508) 480-9080
www.BohlerEngineering.com

PROJECT
LOGAN CONVENIENCE & FILLING CENTER
LOGAN AIRPORT
TOMAHAWK DRIVE & JEFFRIES ST
EAST BOSTON, MA

REVISIONS

REV	DATE	DESCRIPTION / COMMENTS
1	8/14/18	MASSPORT COMMENTS

SEAL


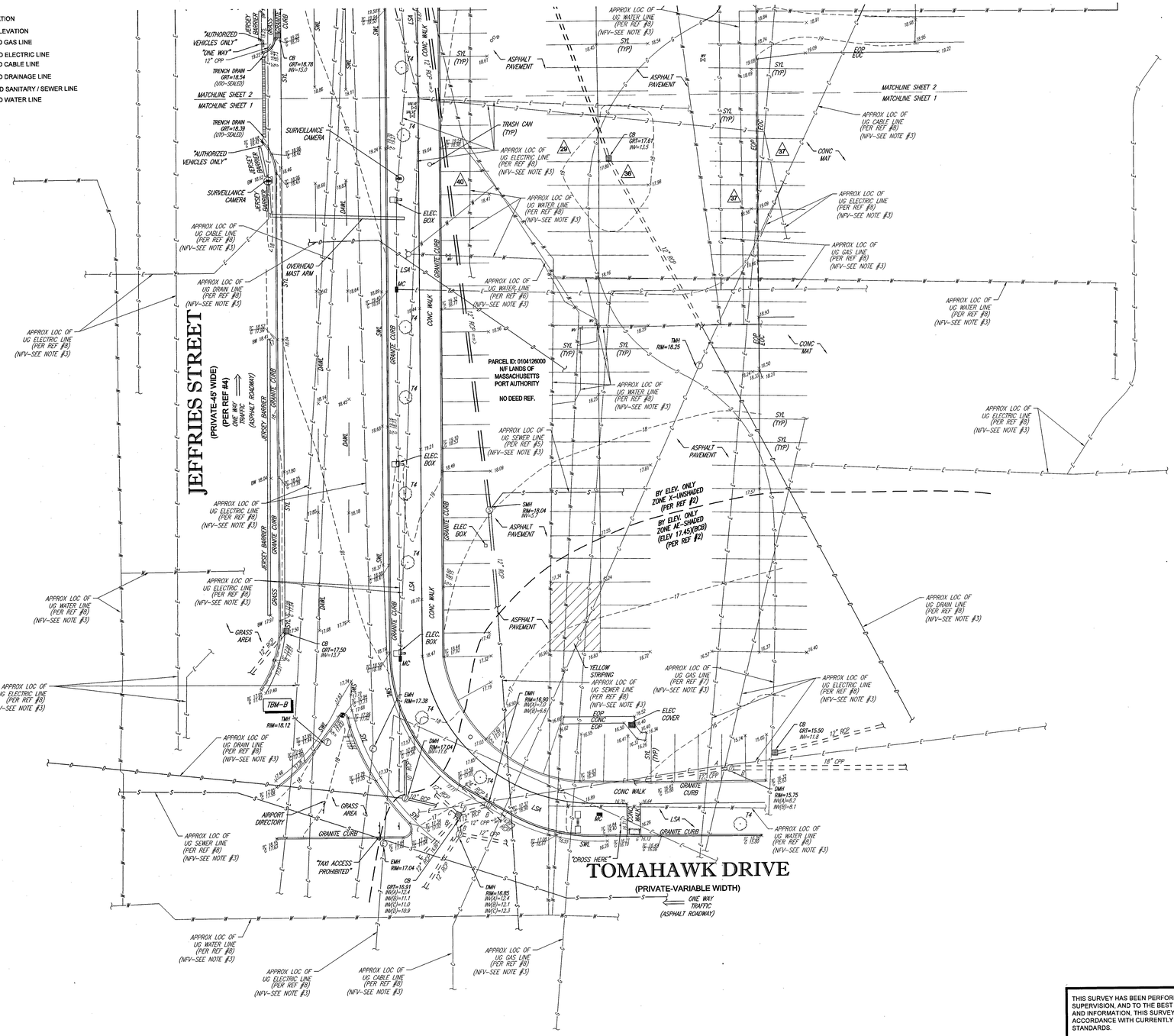
ISSUED FOR:PERMIT
ISSUED DATE: 06.29.2018
DRAWN BY: AWP/CFD
CHECKED BY: JAB
PROJECT NUMBER: 2118051

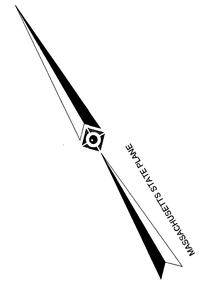
DRAWING NAME
LANDSCAPE NOTES & DETAILS SHEET

DRAWING NO.
L2.0

LEGEND

- 124 — EXISTING CONTOUR
- 125 — EXISTING TOP OF CURB ELEVATION
- × 123.45 EXISTING SPOT ELEVATION
- × TC 123.45 EXISTING TOP OF CURB ELEVATION
- × G 122.95 EXISTING GUTTER ELEVATION
- ×TW 123.45 EXISTING TOP OF WALL ELEVATION
- ×BW 122.95 EXISTING BOTTOM OF WALL ELEVATION
- G APPROX. LOC. UNDERGROUND GAS LINE
- E APPROX. LOC. UNDERGROUND ELECTRIC LINE
- C APPROX. LOC. UNDERGROUND CABLE LINE
- D APPROX. LOC. UNDERGROUND DRAINAGE LINE
- S APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
- W APPROX. LOC. UNDERGROUND WATER LINE
- HYDRANT
- WV WATER VALVE
- VALVE UNKNOWN VALVE
- AREA LIGHT
- C/O CLEAN OUT
- SIGN
- BOLLARD
- PAINTED ARROWS
- EOC EDGE OF CONCRETE
- EOP EDGE OF PAVEMENT
- LSA LANDSCAPED AREA
- MC METAL COVER
- (TYP) TYPICAL
- (D) DMH DRAINAGE/STORM MANHOLE
- (E) EMH ELECTRIC MANHOLE
- (S) SMH SANITARY/SEWER MANHOLE
- (T) TMH TELEPHONE MANHOLE
- (M) MH UNKNOWN MANHOLE
- CB CATCH BASIN OR INLET
- TREE & TRUNK SIZE
- 10 PARKING SPACE COUNT
- DWP DETECTABLE WARNING PAD
- SWL SOLID WHITE LINE
- SYL SOLID YELLOW LINE
- HT HEIGHT
- DAYL DASHED YELLOW LINE
- INV INVERT ELEVATION
- GRT GRATE ELEVATION
- BCB BOSTON CITY BASE





LOCUS MAP
©2013 ESRI WORLD STREET MAPS

NOTES:

1. PROPERTY KNOWN AS PARCEL 0104126000 AS SHOWN ON THE CITY OF BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS TAX MAP.
2. AREA = NOT CALCULATED
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE (AREAS -) PER REF. #2
7. ELEVATIONS REFER TO THE BOSTON CITY BASE (BCB), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).

   TEMPORARY BENCH MARKS SET.
   TBM-A: MAG NAIL SET IN CONCRETE ISLAND ON WESTERN SIDE OF JEFFRIES STREET. ELEVATION = 20.05'
   TBM-B: MAG NAIL SET IN BACK OF GRANITE CURB. ELEVATION = 18.03'

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
8. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
9. THIS SURVEY DOES NOT SHOW THE EXISTENCE OF WETLANDS, IF ANY.
10. PER CONTRACTUAL AGREEMENT WITH CLIENT, CONTROL POINT ASSOCIATES, INC. HAS NOT PERFORMED A BOUNDARY SURVEY.
11. PARTIAL TOPOGRAPHY SHOWN HEREON PER CONTRACTUAL AGREEMENT WITH CLIENT.
12. ALL UTILITIES SHOWN HEREON IN GRAY SCALE PER REFERENCE #8.

REFERENCES:

1. THE TAX ASSESSOR'S MAP OF CITY OF BOSTON, SUFFOLK COUNTY, MASSACHUSETTS.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, SUFFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS) PANEL 82 OF 176," MAP NUMBER 25025C0082J, MAP REVISED: MARCH 16, 2016.
3. MAP ENTITLED "PLAN OF ROAD IN THE CITY OF BOSTON, SUFFOLK COUNTY, ALTERED AND LAID OUT AS A STATE HIGHWAY AND SHOWING LIMITS OF RIGHTS AND ROADWAYS TRANSFERRED BY THE MASSACHUSETTS TURNPIKE AUTHORITY AND THE DEPARTMENT OF HIGHWAYS TO THE MASSACHUSETTS PORT AUTHORITY," PREPARED BY THE COMMONWEALTH OF MASSACHUSETTS, DATED OCTOBER 15, 2009. LAYOUT NO. 7683, SHEET 3 OF 9.
4. MAP ENTITLED "PLAN OF ROAD IN THE CITY OF BOSTON, SUFFOLK COUNTY, LAID OUT AS A STATE HIGHWAY BY THE DEPARTMENT OF HIGHWAYS," PREPARED BY THE COMMONWEALTH OF MASSACHUSETTS, DATED AUGUST 11, 1993. LAYOUT NO 6969, SHEET 5 OF 15.
5. UNDERGROUND SEWER FACILITY MAPPING PROVIDED BY BOSTON WATER AND SEWER.
6. UNDERGROUND WATER FACILITY MAPPING PROVIDED BY BOSTON WATER AND SEWER.
7. UNDERGROUND GAS FACILITY MAPPING PROVIDED BY NATIONAL GRID.
8. MAP ENTITLED "BOSTON LOGAN INTERNATIONAL AIRPORT, EAST BOSTON, MASSACHUSETTS, DP #2-LOGAN CONRAC, SOUTHWEST SERVICE AREA DEVELOPMENT, CIVIL-SWSA, GAS AND WATER PLAN (3 OF 3)," PREPARED BY PARSONS BRINCKERHOFF, DATED SEPTEMBER 16, 2011. SHEET C-409.

UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY MASSACHUSETTS ONE-CALL SYSTEM (1-888-344-7233) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST.
SERIAL NUMBER(S): 20181204415

UTILITY COMPANY	PHONE NUMBER
AT&T TRANSMISSION	800-331-0500
VERIZON	800-922-0204
COMCAST-PEMBROKE	800-934-6489
CROWN CASTLE NG NETWORKS	855-913-4237
EVERSOURCE-ELECTRIC	800-592-2000
NATIONAL GRID GAS-BOSTON	800-233-5325
ON TARGET LOCATING	800-922-0204

THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL

GERRY L. HOLDRIGHT, PLS
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

COMMONWEALTH OF MASSACHUSETTS GERRY L. HOLDRIGHT NO. 49211 REGISTERED PROFESSIONAL LAND SURVEYOR

3-22-18
DATE

FIELD DATE	2-23-18
FIELD BOOK NO.	18-01 MA
FIELD BOOK PG.	51
FIELD CREW	S.B.H.
DRAWN:	R.J.K.
REVIEWED:	J.M.R.

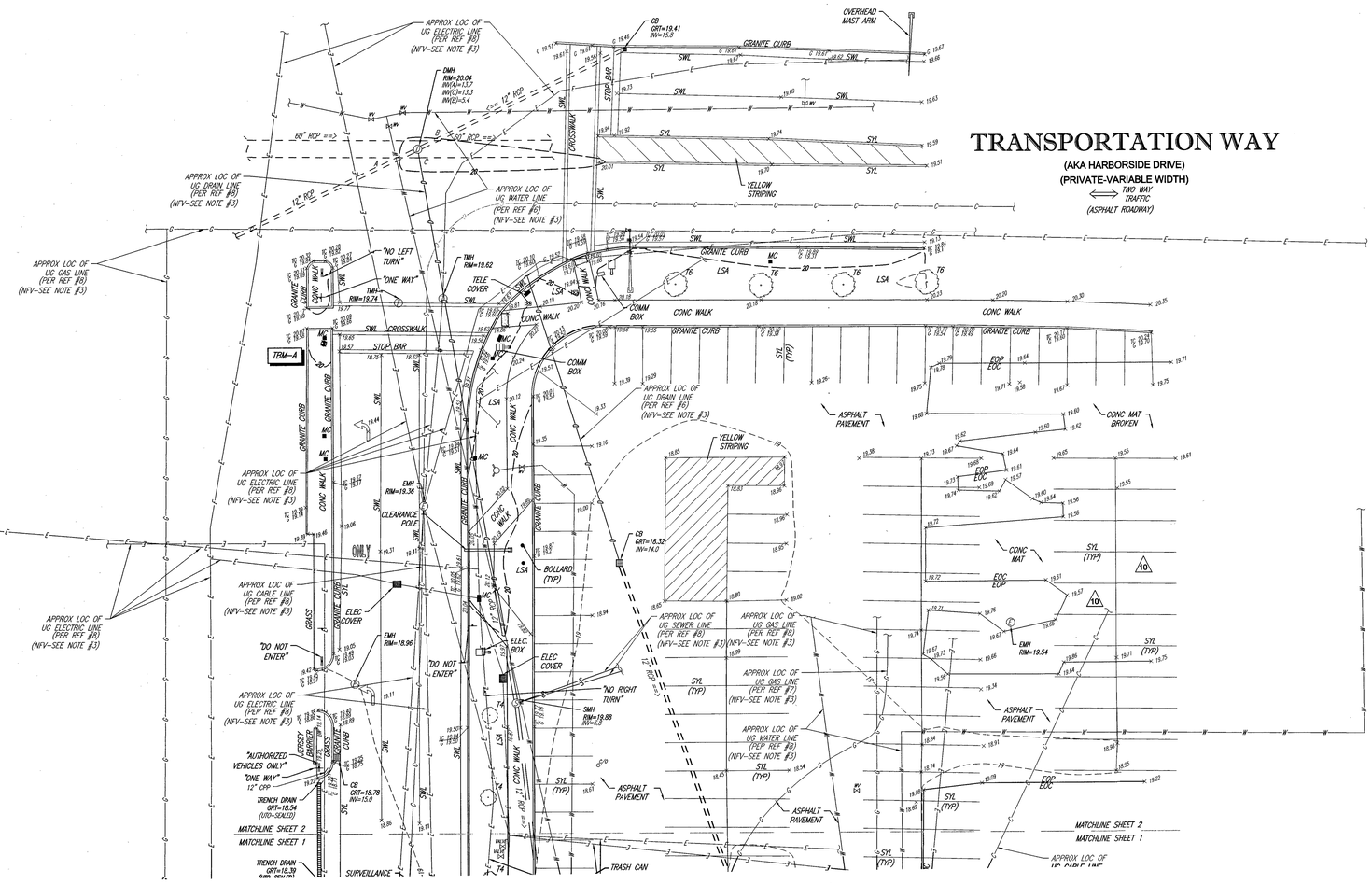
TOPOGRAPHIC SURVEY
NOURIA ENERGY
LOGAN INTERNATIONAL AIRPORT
PARCEL ID: 0104126000
CITY OF BOSTON, SUFFOLK COUNTY
COMMONWEALTH OF MASSACHUSETTS

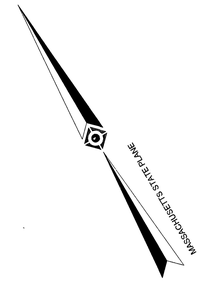
CONTROL POINT ASSOCIATES, INC.
45 FRANKLIN STREET, 5TH FLOOR
BOSTON, MA 02110
508.948.3000 - 508.948.3003 FAX
ALBANY, NY 5182175010
CHALFONT, PA 2157129800
MANHATTAN, NY 6467800411
MT LAUREL, NJ 6098572099
WARREN, NJ 9086680099
SOUTHBOROUGH, MA 5089483000

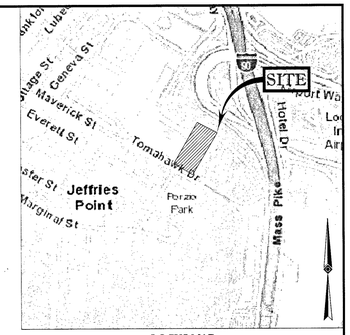
APPROVED:	DATE	SCALE:	FILE NO.	DWG. NO.
G.L.H.	3-22-18	1"=20'	06-180012	1 OF 2

LEGEND

124 / 125	EXISTING CONTOUR
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXISTING TOP OF CURB ELEVATION
× G 122.95	EXISTING GUTTER ELEVATION
× TW 123.45	EXISTING TOP OF WALL ELEVATION
× BW 122.95	EXISTING BOTTOM OF WALL ELEVATION
G	APPROX. LOC. UNDERGROUND GAS LINE
E	APPROX. LOC. UNDERGROUND ELECTRIC LINE
C	APPROX. LOC. UNDERGROUND CABLE LINE
D	APPROX. LOC. UNDERGROUND DRAINAGE LINE
S	APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
W	APPROX. LOC. UNDERGROUND WATER LINE
	HYDRANT
WV	WATER VALVE
VALVE	UNKNOWN VALVE
	AREA LIGHT
C/O	CLEAN OUT
	SIGN
	BOLLARD
	PAINTED ARROWS
EOC	EDGE OF CONCRETE
EOP	EDGE OF PAVEMENT
LSA	LANDSCAPED AREA
MC	METAL COVER
(TYP)	TYPICAL
DMH	DRAINAGE/STORM MANHOLE
EMH	ELECTRIC MANHOLE
SMH	SANITARY/SEWER MANHOLE
TMH	TELEPHONE MANHOLE
MH	UNKNOWN MANHOLE
CB	CATCH BASIN OR INLET
T#	TREE & TRUNK SIZE
10	PARKING SPACE COUNT
DWP	DETECTABLE WARNING PAD
SWL	SOLID WHITE LINE
SYL	SOLID YELLOW LINE
HT	HEIGHT
DAYL	DASHED YELLOW LINE
INV	INVERT ELEVATION
GRT	GRATE ELEVATION
BCB	BOSTON CITY BASE







LOCUS MAP

NOTES:

1. PROPERTY KNOWN AS PARCEL 0104126000 AS SHOWN ON THE CITY OF BOSTON, SUFFOLK COUNTY, COMMONWEALTH OF MASSACHUSETTS TAX MAP.
2. AREA = NOT CALCULATED
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE (AREAS -) PER REF. #2
7. ELEVATIONS REFER TO THE BOSTON CITY BASE (BCB), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).

   TEMPORARY BENCH MARKS SET:
   TBM-A: MAG NAIL SET IN CONCRETE ISLAND ON WESTERN SIDE OF JEFFRIES STREET. ELEVATION = 20.06'

   TBM-B: MAG NAIL SET IN BACK OF GRANITE CURB. ELEVATION = 18.03'

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
8. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
9. THIS SURVEY DOES NOT SHOW THE EXISTENCE OF WETLANDS, IF ANY.
10. PER CONTRACTUAL AGREEMENT WITH CLIENT, CONTROL POINT ASSOCIATES, INC. HAS NOT PERFORMED A BOUNDARY SURVEY.
11. PARTIAL TOPOGRAPHY SHOWN HEREON PER CONTRACTUAL AGREEMENT WITH CLIENT.
12. ALL UTILITIES SHOWN HEREON IN GRAY SCALE PER REFERENCE #8.

REFERENCES:

1. THE TAX ASSESSOR'S MAP OF CITY OF BOSTON, SUFFOLK COUNTY, MASSACHUSETTS.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, SUFFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS) PANEL 82 OF 176," MAP NUMBER 25025C0082J, MAP REVISED: MARCH 16, 2016.
3. MAP ENTITLED "PLAN OF ROAD IN THE CITY OF BOSTON, SUFFOLK COUNTY, ALTERED AND LAID OUT AS A STATE HIGHWAY AND SHOWING LIMITS OF RIGHTS AND ROADWAYS TRANSFERRED BY THE MASSACHUSETTS TURNPIKE AUTHORITY AND THE DEPARTMENT OF HIGHWAYS TO THE MASSACHUSETTS PORT AUTHORITY," PREPARED BY THE COMMONWEALTH OF MASSACHUSETTS, DATED OCTOBER 15, 2009. LAYOUT NO. 7883, SHEET 3 OF 9.
4. MAP ENTITLED "PLAN OF ROAD IN THE CITY OF BOSTON, SUFFOLK COUNTY, LAID OUT AS A STATE HIGHWAY BY THE DEPARTMENT OF HIGHWAYS," PREPARED BY THE COMMONWEALTH OF MASSACHUSETTS, DATED AUGUST 11, 1993. LAYOUT NO 6969, SHEET 5 OF 15.
5. UNDERGROUND SEWER FACILITY MAPPING PROVIDED BY BOSTON WATER AND SEWER.
6. UNDERGROUND WATER FACILITY MAPPING PROVIDED BY BOSTON WATER AND SEWER.
7. UNDERGROUND GAS FACILITY MAPPING PROVIDED BY NATIONAL GRID.
8. MAP ENTITLED "BOSTON LOGAN INTERNATIONAL AIRPORT, EAST BOSTON, MASSACHUSETTS, DP #2-LOGAN CONRAC, SOUTHWEST SERVICE AREA DEVELOPMENT, CIVIL-SWSA, GAS AND WATER PLAN (3 OF 3)," PREPARED BY PARSONS BRINCKERHOFF, DATED SEPTEMBER 16, 2011. SHEET C-409.

UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY MASSACHUSETTS ONE-CALL SYSTEM (1-888-344-7233) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST.
SERIAL NUMBER(S): 20181204415

UTILITY COMPANY	PHONE NUMBER
AT&T TRANSMISSION	800-331-0500
VERIZON	800-922-0204
COMCAST-PEMBROKE	800-934-6489
CROWN CASTLE NG NETWORKS	855-913-4237
EVERSOURCE-ELECTRIC	800-592-2000
NATIONAL GRID GAS-BOSTON	800-233-5325
ON TARGET LOCATING	800-922-0204

THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL

COMMONWEALTH OF MASSACHUSETTS — GERRY L. HOLDRIGHT NO. 49211 — REGISTERED PROFESSIONAL LAND SURVEYOR

3-22-18
DATE

GERRY L. HOLDRIGHT, PLS
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

FIELD DATE	2-23-18
FIELD BOOK NO.	18-01 MA
FIELD BOOK PG.	51
FIELD CREW	S.B.H.
DRAWN:	R.J.K.
REVIEWED:	J.M.R.

TOPOGRAPHIC SURVEY
NOURIA ENERGY
LOGAN INTERNATIONAL AIRPORT
PARCEL ID: 0104126000
CITY OF BOSTON, SUFFOLK COUNTY
COMMONWEALTH OF MASSACHUSETTS

CONTROL POINT ASSOCIATES, INC.
45 FRANKLIN STREET, 5TH FLOOR
BOSTON, MA 02110
508.948.3000 - 508.948.3003 FAX
ALBANY, NY 5182175010
CHALFONT, PA 2157129800
MANHATTAN, NY 6467804411
MT LAUREL, NJ 6098572099
WARREN, NJ 9086080099
SOUTHBOROUGH, MA 5089483000

APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
G.L.H.	3-22-18	1"=20'	06-180012	2 OF 2