

**SINGLE
ENVIRONMENTAL
IMPACT REPORT
(EIR)**

**Littleton's Sewer System
Expansion Project, Phases
1A, 1B, and 2 (formerly
Phase 3)**

Littleton Water Department,
Massachusetts

June 2022





75 State Street, Suite 701
Boston, Massachusetts 02109
tel: 617 452-6000

June 15, 2022

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs (EEA)
MEPA Unit
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Subject: Single Environmental Impact Report (SEIR)
Littleton Sewer Expansion Project, Phases 1A, 1B, and 2 (formerly Phase 3)
Applicant: Littleton Water Department (LWD)

Dear Secretary Theoharides:

On behalf of our client, the Littleton Water Department (LWD), CDM Smith Inc. (CDM Smith) is pleased to submit this SEIR for the Littleton Sewer Expansion Project, Phases 1A, 1B, and 2 (formerly Phase 3). The proposed project consists of a phased sewer expansion plan with a new centralized Water Resources Recovery Facility (WRRF) consisting of a Membrane Bioreactor (MBR) treatment system located at 242 King Street and expansion of the existing effluent recharge site at the Littleton High School (56 King Street) to be constructed under Phase 1A and a hybrid collection system comprising of gravity sewers, supplemented with pumping stations and force mains at low points (Phases 1A, 1B, and 2). The proposed wastewater expansion collection system will consist of approximately 49,226 linear feet (9.32 miles) of gravity, force main, and pressure sewers, four new submersible sewerage pump stations, and upgrades to the existing Middle School and High School pump stations.

This SEIR has been prepared in accordance with the Certificate of the Secretary of Energy and Environmental Affairs dated April 29, 2022. LWD is respectfully requesting a MEPA Certificate stating that no further review under is required 301 CMR 11.00.

If you have any questions, please call me at (617) 452-6621. Thank you for your consideration of the Application.

Sincerely,

A handwritten signature in black ink that reads "Kara M. Johnston".

Kara M. Johnston, PE, PMP
Project Manager
CDM Smith Inc.

cc: Corey Godfrey, LWD



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Single Environmental Impact Report (SEIR)

1.0 Introduction

This Single Environmental Impact Report (SEIR) is being filed by the Littleton Water Department (LWD) for the proposed Littleton Sewer Expansion Project, Phases 1A, 1B, and 2 (formerly Phase 3 in the Wastewater Needs Assessment).

The proposed project exceeds the following MEPA review thresholds under wastewater and wetlands:

- Construction of a new wastewater treatment and/or disposal facility by the greater of 100,000 gpd or 10% of existing Capacity [301 CMR 11.03 (5)(b)(1)].
- Construction of one or more new sewer mains five or more miles in length [301 CMR 11.03(5)(b)3. b].
- Alteration of ½ or more of any other wetlands [301 CMR 11.03 (3)(b)1. f].

The proposed project is within 1 mile of an Environmental Justice (EJ) population and therefore requires an Environmental Impact Report (EIR) per 301 CMR 11.06(7)(b). An Expanded Environmental Notification Form (EENF)/Proposed EIR was filed with MEPA on February 28, 2022, seeking a rollover EIR under 301 CMR 11.06(13). MEPA issued a Certificate on the EENF/Proposed EIR on April 29, 2022, denying the request for a rollover EIR due to comments submitted by Agencies identifying the need for additional information and analyses. MEPA is however allowing a Single EIR in accordance with 301 CMR 11.06(8) in lieu of the usual two-stage Draft and Final EIR process. This SEIR has been prepared in accordance with the Certificate of the Secretary of Energy and Environmental Affairs dated April 29, 2022, with exception for Phases 3 and 4 analysis (see Section 1.1 below).

1.1 Background

In March 2020, CDM Smith was contracted by the LWD to perform a Wastewater Needs Assessment for the entire Town of Littleton, including the following tasks:

- Review and Confirm Wastewater Needs
- Review Collection and Treatment System Technologies
- Siting of Wastewater Treatment Facility
- Develop Recommended Plan

The Wastewater Needs Assessment reviewed environmental concerns including impact to drinking water Zone II areas, nitrate in wells, impaired water bodies, poor soils for infiltration, small lots that may inhibit the size of a septic system, high groundwater, flood zones, and wetland proximity. Additionally, the Wastewater Needs Assessment reviewed the Town's planning areas and historic sites.

The Wastewater Needs Assessment recommended areas to be serviced by sewer to be phased (Phases 1A, 1B, and 2 through 4), however Phases 3 (formerly Phase 2 in the Needs Assessment) and 4 which involve a combination of new sewer and pumping stations will no longer be constructed due to increased demand for sewerage in the Littleton Common (Phase 1A area). The WRRF will not have capacity to treat wastewater from the previously identified Phases 3 and 4 areas. These areas will continue to be monitored via the Board of Health's management of septic systems, and MassDEP's management for on-site treatment systems with groundwater discharge permits.

The proposed project will have a phased approach with a new centralized Water Resources Recovery Facility (WRRF) consisting of a Membrane Bioreactor (MBR) treatment system located at 242 King Street and expansion of the existing effluent recharge site at the Littleton High School (56 King Street) to be constructed under Phase 1A and a hybrid collection system comprising of gravity sewers, supplemented with pumping stations and force mains at low points (Phases 1A, 1B, and 2). The proposed wastewater expansion collection system will consist of approximately 49,226 linear feet (9.32 miles) of gravity, force main, and pressure sewers, four new submersible wastewater pump stations, and upgrades to the existing Middle School pump station (further described below in Section 1.2 by phase).

1.2 Project Purpose

The project purpose is for the Town of Littleton to expand its wastewater treatment to include a collection system designed to convey wastewater flow to one centralized water reclamation facility to be located at 242 King Street. The wastewater expansion will allow the Town of Littleton to meet its water and land resource management needs while achieving desired smart economic growth and improve impaired water resources. The Wastewater Needs Assessment included an analysis of buildout flows that has been incorporated into this project.

1.3 Project Description by Phase

1.3.1 Phase 1A

Water Resources Recovery Facility (WRRF) and Effluent Recharge Site

Phase 1A includes the construction of a new centralized WRRF consisting of a MBR treatment system located at 242 King Street. An MBR system is an activated sludge reactor with membrane filtration downstream of anoxic and aerobic bioreactors. The MBR option is cost-effective, easily expandable, and able to treat to stringent permit limits. The treated effluent would then be pumped to the proposed recharge site at Littleton High School, to be recharged in a subsurface leaching system below the athletic fields. The initial construction of the WRRF is proposed for 208,000 gpd. Littleton is proposing a future expansion to 290,000. The hydrogeologic analysis determined that the effluent recharge site at Littleton High School could receive up to 244,784 gpd of effluent. The proposed site is currently being permitted through Massachusetts Department of Environmental Protection (MassDEP)'s groundwater discharge program. Littleton is aware that the effluent recharge site will need to be re-rated in the future and/or an additional recharge site will need to be located and constructed in order to increase the plant's capacity above the groundwater discharge permit.

The Town currently maintains a groundwater discharge permit for a package style water resource recovery facility (WRRF) with a capacity of 17,600 gpd at Littleton High School (56 King Street). The current effluent recharge site is permitted through Massachusetts Department of Environmental Protection (MassDEP)'s groundwater discharge program. It will be decommissioned and abandoned in place once the new WRRF and effluent recharge site are constructed and operating.

Phase 1A Collection System

The proposed Phase 1A collection system consists of a total of approximately 23,000 linear feet of gravity, low pressure, and force main piping ranging in diameter from 4 to 18 inches (see Figure 2 and design plans in Attachment G). Two new wastewater pumping stations will be constructed, and the existing Middle School Pumping Stations will be upgraded. The proposed Great Road Pumping Station will pump flow from the Phase 1A parcels north of King Street along Great Road and White Street to an 18-inch PVC gravity sewer at the intersection of Great Road and King Street. The 18-inch gravity sewer will run within King Street and Shattuck Street up to Littleton Town Hall where it will run cross country to the Middle School pumping station within existing paved areas and gravel driveway. Wastewater flows from the Middle School pumping station will be pumped via a new 6-inch PVC force main within Russell Street and King Street to the new centralized WRRF MBR treatment system at 242 King Street. Each property on Russell Street will have a grinder pump station installed that pumps the flow from the building to the 6-inch force main in the Russell Street. Each property on Highland Lane will also have small grinder pump station that pumps the flow from the building to a 1.5-inch PVC low pressure sewer in Highland Lane which then flows to the 6-inch force main on Russell Street. The existing 4-inch PVC force main that flows from the Middle School pumping station to the current effluent recharge site will be partially reused with the flow direction reversed. Wastewater flows from the new High School pumping station will be pumped through this 4-inch force main to the WRRF at 242 King Street.

Wastewater Pumping Stations

The Great Road Pumping Station will be located in an easement within Concord Lumber Corporation's property. The station will be located to avoid the wetlands in this area as well as the existing leaching system for 410 Great Road. This pumping station will be owned, operated, and maintained by LWD.

The existing Middle School Pumping Station will be upgraded to accommodate wastewater flow from the portion of Phase 1A south of I-495 as well as Phase 1B. The station will remain in its current location behind the Middle School. This pumping station will be owned, operated, and maintained by the LWD.

A new High School Pumping Station will be constructed to convey wastewater flow from the High School building to 242 King Street for treatment at the centralized WRRF via an existing force main. The new station will be located next to the existing package plant which currently treats wastewater from the High School. Note, the existing package plant and effluent recharge site will be decommissioned following the construction of the proposed WRRF and pumping station. This pumping station will be owned, operated, and maintained by the LWD.

The proposed pumping stations, including the upgraded Middle School Pumping Station, will all meet TR-16 standards. Each station will have an underground 6-ft diameter concrete wet well containing two submersible pumps. Above ground at each station will be an electrical pedestal containing the pump controls, similar in size to a traffic signal control box. The existing pedestal cabinet at the Middle School pumping station will continue to be used and new pedestal cabinets will be installed at the Great Road and High School pumping stations. Standby electrical power will be provided by a small onsite electrical generator at the Great Road Pumping Station. The existing generator at the Middle School Pumping Station will continue to be used for standby electrical power. The High School Pumping Station will utilize the onsite electrical generator at Littleton High School.

1.3.2 Phase 1B

The proposed Phase 1B collection system consists of a total of approximately 18,200 linear feet of new gravity and force main piping to be installed within Beaver Brook Road, Great Road, Russell Street, and side streets (see Figure 2). The gravity sewer will convey flow to a proposed pumping station on Russell Street. The new force main will pump the flow to the Middle School pumping station and from there it would get pumped to 242 King Street for treatment at the new centralized WRRF. Design plans have not been developed for the Phase 1B collection system.

1.3.3 Phase 2 (formerly Phase 3)

The proposed Phase 2 (formerly Phase 3) collection system consists of a total of approximately 14,000 linear feet of new gravity, force main, and low-pressure sewer piping to be installed within Goldsmith Street, Shaker Lane, and Town Road (see Figure 2). This collection system phase would tie into the Phase 1A collection system via the gravity sewer in King Street. Design plans have not been developed for the Phase 2 collection system.

1.4 Estimated Design Flows by Phase

The new centralized WRRF will allow for wastewater to be collected, treated, and recharged during Phases 1A, 1B, and 2. Estimated design flows for each phase are shown in Table 1-1. The implementation of this plan will allow the Town to meet its water and land resource management needs while achieving desired smart economic growth.

Table 1-1 Estimated Design Flows by Phase

Phase	Estimated Existing Wastewater Flow (gpd)	Estimated Additional Buildout Wastewater Flow (gpd)	I/I (gpd)	Total Project Flow (gpd) (ADF)
1A	32,000	57,000	4,000	93,000
550 King St. - 1	-	69,000	-	69,000
550 King St. - 2	-	34,000	-	34,000
1B	27,000	5,000	2,000	34,000
550 King St. - 3	-	7,000	-	7,000
410 Great Road & other Littleton Common/Great Road Development	-	35,000	3,000	38,000
2	12,000	2,000	1,000	15,000
Total	71,000	209,000	10,000	290,000

1.5 Project Changes since Filing the EENF/Proposed EIR

The project has undergone minor changes since the EENF/Proposed EIR was submitted. The layout of the proposed WRRF at 242 King Street has been revised, as shown on design plans enclosed in Attachment G, with the intent of avoiding impacts to the 50-foot No Disturb Zone per requirements of the Littleton Conservation Commission. However, based on peer review comments from Green International Affiliates on the stormwater report as part of the Site Plan/Special Permit application filed with the Littleton Planning Board, there has been some minor modification to the grading for the riprap pad downstream of the proposed culvert beneath the access road into the WRRF in order to have a constant slope down to the Beaver Brook wetlands. This regrading resulted in an approximate 560 sf encroachment into the 50-ft No Disturb Zone (see Section 3.4.1 below). LWD will seek a variance from the Town of Littleton Wetlands Protection Bylaw (Chapt. 171)(local Bylaw) and Wetlands Protection Regulations for this encroachment.

As discussed in the original EENF/Proposed EIR, the previously identified former Phase 2 (now Phase 3) and Phase 4 from the Littleton Wastewater Needs Assessment will no longer be sewered by the Littleton Water Department. The Littleton Needs Assessment was completed in 2020 and identified four phases recommended for sewerage. During the COVID-19 pandemic, there was a significant shift in development in the Littleton Common District (Phase 1A). The largest parcel in the Common, the former IBM campus, was sold to a private development and has spurred a large amount of redevelopment requests in the Littleton Common area. Because of this redevelopment, the LWD will provide additional wastewater service for increased flow in the Common District. Phases 3 (formerly Phase 2) and 4 from the Needs Assessment will continue to rely on septic systems and package treatment systems as their wastewater solutions. The new Littleton Phasing Plan (as shown in Figure 2) includes Phases 1A, 1B, and 2 (described above in Section 1.3).

2.0 Effluent Recharge

2.1 Existing Effluent Recharge Area

LWD currently owns and operates a wastewater system comprising 3,900-ft of gravity sewer, 10,350-ft of force main, one pumping station, and a package style water resource recovery facility with a capacity of 17,600 gpd located at Littleton High School, with a groundwater effluent recharge site located beneath the athletic fields at Littleton High School. The current system serves several Town-owned buildings including the Fire Station, Town Offices, Town Library, Alumni Field, Littleton High School, Littleton Middle School, and Russell Street Elementary School. The existing effluent recharge area will remain online until the existing package style water resource recovery facility is decommissioned.

There are seven private package wastewater treatment plants in the Town of Littleton. The plants range in size and are limited to the amount of wastewater they can treat based on each specific discharge permit. The remaining parcels in the Town not currently connected to the existing system or a private package wastewater treatment plant have Title 5 Septic systems on each individual parcel. These systems are designed to remove organics, solids, and pathogens, however, they do very little to reduce nutrients in the liquid waste. The nitrogen levels in the liquid waste infiltrate into the groundwater resulting in degraded water quality. In addition, phosphorus remaining in the effluent, if not absorbed in the surrounding soils, can cause water quality issues in the Town's freshwater ponds and streams.

2.2 Proposed Effluent Recharge Area

The recommended technology for recharging effluent at the Littleton High School site is a subsurface leaching system below the athletic fields. This system will rely primarily on a valve system to distribute the clean effluent throughout the leaching system. Hydrogeologic studies have been conducted to determine the feasibility of the site in recharging treated effluent. The studies assume a soil absorption system would be implemented consisting of two subsurface leaching fields. An individual groundwater discharge permit (GWDP) application was submitted to MassDEP on August 6, 2021, in order to receive approval for expanding the effluent recharge site.

The initial construction of the WRRF is proposed for approximately 208,000 gpd. Littleton is proposing a future WRRF expansion to 290,000. The hydrogeologic analysis determined that the effluent recharge site at Littleton High School could receive up to 244,784 gpd of effluent. Littleton is aware that the effluent recharge site will need to be re-rated in the future and/or an additional recharge site will need to be located and constructed in order to increase the plant's capacity above the GWDP.

The recharge area will consist of a below ground infiltration system, a distribution box, and a force main conveying the effluent from the plant site to the facility. The proposed soil adsorption system will consist of four subsurface leaching fields. Each field will be 180 feet long by 81 feet wide and consist of 60 rows of infiltration chambers, each 13 chambers long, placed in 75" lengths in a field or bed configuration. The four fields will have a separation between them ranging from 45-feet to 60-ft. The new recharge area will be accessed from the existing High School driveway. The area will be final graded with loam and seeded with lawn mixture and

maintained as an athletic field. The existing effluent recharge site adjacent to the proposed site will not be utilized as part of this new system.

Environmental impacts associated with constructing an effluent recharge facility below the High School facility is limited to short term construction impacts controlling erosion and sedimentation from exposed spoil piles and tracking sediments onto adjacent paved street. A stormwater pollution prevention plan (SWPPP) will be developed as part of the under U.S. EPA's NPDES Construction General Permit (CGP) and implemented to control and mitigate construction related impacts.

2.3 Potential Wastewater Reuse

The proposed WRRF will include MBR technology as the heart of the wastewater treatment system. The MBR system treats wastewater to a high-quality effluent. LWD is leaving adequate space in the WRRF to install a future ultraviolet (UV) system that would provide disinfection, further increasing the effluent quality for reuse consideration. Littleton is taking a significant step forward and financial investment to construct the WRRF at this time, along with the expanded sewer collection system and effluent recharge site. LWD intends to evaluate reuse options in the future as funding allows. As the effluent recharge site is proposed to be located below the Littleton High School fields, reuse for irrigation could be considered at this site.

3.0 Wetlands Impacts and Mitigation

3.1 Massachusetts Wetlands Protection Act Jurisdiction

The following exemptions in the Massachusetts Wetlands Protection Act (MGL c. 131, §40) (MWPA) and Regulations (310 CMR 10.00) applies to the proposed project.

The construction of the new sewer collection system and replacement of existing water mains within existing paved streets within Buffer Zone and Riverfront Area is exempt from review per 310 CMR 10.02(2) (b.2.j) and 1.3(3) of the Littleton Wetlands Bylaw Regulations (the Bylaw). *“Installation and repair of underground sewer lines within existing paved or unpaved roadways and private roadways/driveways, provided that all work is conducted within the roadway or driveway and that all trenches are closed at the end of completion of each workday.”*

The project is also exempt from the requirements of the Riverfront Area (RFA) per 310 CMR 10.58 (6) h, which includes *“construction, expansion, repair, restoration, alteration, replacement, operation and maintenance of public or private local or regional wastewater treatment plants and their related structures, conveyance systems, and facilities, including utility lines.”* No further discussion is included in this NOI on Riverfront Area impacts.

The proposed wastewater expansion project qualifies as a Limited Project in accordance with Section 310 CMR 10.53(3) (d) of the Wetlands Protection Regulations, which includes *“The construction, reconstruction, operation and maintenance of underground and overhead public utilities, such as electrical distribution or transmission lines, or communication, sewer, water and natural gas lines”*. Limited projects may be issued an Order of Conditions notwithstanding the provisions of 310 CMR 10.54 through 10.58 and 10.60.

3.2 Existing Wetland Resource Areas

Wetland resource areas in the vicinity of the project area are shown on Figure 3. Wetland delineations have only been completed for Phase 1A and were conducted on June 2 and 4, 2021 by CDM Smith Inc. wetland scientists. Delineated wetland resource areas and buffer zones for 242 King Street are shown on the design plans in Attachments G and for the Phase 1A Sewer Collection System in Attachment H.

3.2.1 Proposed WRRF Site - 242 King Street

A bordering vegetated wetland (BVW) associated with Beaver Brook is located on the eastern portion of the parcel of land identified as 242 King Street. An Abbreviated Notice of Resource Area Delineation (ANRAD) (DEP File No. 204-0949) was filed with the Littleton Conservation Commission in November 2021 requesting concurrence of the BVW, Riverfront (RFA), Bordering Land Subject to Flooding (BLSF), 100-ft and 50-ft Buffer Zone boundaries. An Order of Resource Determination (ORAD) was issued by the Littleton Conservation Commission confirming the delineated wetland resource areas.

3.2.2 Phase 1A Sewer Collection System

BVW characteristic of Palustrine Forested Wetlands (PFO1) were delineated on both sides of the access drive between Town Hall and Littleton Middle School and also behind the existing Middle School Pump Station (see Sheets C-11 and C-12 in Attachment H).

BVW was also delineated adjacent to Great Road and White Street on Parcel IDs U09 29 0 and U09 29 1 owned by Concord Lumber Corporation and extends from the driveway into the lumber yard to the east, along Great Road, to White Street to the west. The wetland community can be characterized as an emergent marsh (PEM) with a shrub swamp (PSS1) along the eastern wetland boundary. A roadside ditch along Great Road is culverted beneath the driveway into the lumber yard. The inlet of a 40-inch reinforced concrete pipe (RCP) beneath Great Road is located at the northwest corner of the BVW, by the intersection of Great Road and White Street. The BVW is hydrologically connected to Beaver Brook via intermittent channelized flow.

Note that the following wetland resource areas within Phase 1A were not field delineated as work at these locations are limited to within the existing paved streets and exempt from review under the MWPA and local Bylaw.

- Beaver Brook crossing at King Street (except on 242 King Street property)
- Bordering Vegetated Wetland east of 220 Great Road.

These wetland resource areas will be protected during installation of the new sewer by staked compost logs (see Sheets C-7 and C-21 in Attachment H).

There is a 200-ft Riverfront Area associated with Beaver Brook as shown on Sheet C-7: King Street in Attachment H. The RFA was offset from the mean annual high-water lines (AHW) flags AHW-1 to AHW-26.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) of the project area (25017C0236F) identifies the 100-year floodplain (Zone AE) in the project area at

elevation 211 feet NAVD 88 at King Street and at elevation 218 feet along the intermittent tributary to Beaver Brook that flows between the Middle School and Town Offices, see Figure 4 and Sheets C-7, C-11, and C-12 in Attachment H.

In order to comply with the MWPA exemption for installation of underground sewer lines in existing paved and unpaved roads, LWD is committed to having trenches closed at end of the workday (also a requirement of the MassDOT permit).

3.3 Wetland Resource Area Impacts

The proposed site for the new WRRF at 242 King Street will require permanent alteration to BLSF, Riverfront Area, and the 100-ft Buffer Zone, further discussed in Section 3.2.1 below and shown on Figure 5. Installation of new sewer collection pipe in existing street and parking lots in Phases 1A, 1B, and 2 will temporarily alter BLSF, Riverfront Area, 100-foot Buffer Zone, and local 50-ft No Disturb Zone. Upgrades to the existing Middle School pumping station will permanently alter 100 square feet of the 100-ft Buffer Zone. Table 3-1 shows permanent and temporary impacts for all phases of the project (note that Phases 3 and 4 are no longer being proposed).

Table 3-1 Wetland Resource Area Impacts, Phases 1A, 1B, and 2

Phase	Wetland Resource Areas	Permanent Impacts (sf)	Temporary Impacts (sf)	Total Impacts (sf)	Proposed Mitigation (sf)
1A					
	Bordering Land Subject to Flooding (BLSF)	28,368	2,390	30,758	Net gain of 831 cubic feet*
	Riverfront Area (RFA)	64,435	2,365	66,800	Exempt per 310 CMR 10.58 (6) h
	Buffer Zone	100	16,040	17,040	***
1B**					
	Bordering Land Subject to Flooding (BLSF)	0	200	200	Restored in kind in place
	Riverfront Area (RFA)	0	1,600	1,600	Exempt per 310 CMR 10.58 (6) h
	Buffer Zone	0	6,500	6,500	Restored in kind in place
2**	No Impacts to Wetland Resource Areas or Buffer Zone				

*See Cut/Fill Table on Sheet C-5 in Attachment G

**Impacts based on MassGIS Wetlands Layer since wetland delineations have not been completed and design plans not developed.

*** The MWPA has no performance standards for work within the Buffer Zone

3.3.1 Phase 1A

The environmental impacts associated with Phase 1A is primarily related to the construction of the new WRRF at 242 King Street. The property is an approximate 9-acre parcel bounded by King Street to the south, Route 495 to the west and north, and Beaver Brook to the east. The parcel contains a former residence and warehouse/shed adjacent to King Street, a former agricultural field in the center of the parcel, the remainder of the parcel is wooded except for the eastern side of the parcel which contains the Beaver Brook and associated emergent marsh wetlands. An existing stormwater basin dominated by common reed (*Phragmites australis*), jurisdictional as BLSF, is located at the southwestern corner of the parcel and collects stormwater from King Street and a small portion of Route 495 and exit ramps. A small diameter pipe conveys stormwater flows from the existing stormwater basin into the BVW. This pipe is non-functional; it is collapsed and has buried inlet and outlet (may be an older type clay pipe).

The major building/structure components associated with the proposed MBR water reclamation facility consist of the process building, bioreactor tanks, equalization tanks, and concrete pads for emergency generator and electrical equipment (see Sheet C-4: Civil Layout and Materials Plan in Attachment G).

The construction of the above MBR WRRF components, new paved access road into the site from King Street, and infiltration basins to meet peak attenuation, water quality and groundwater recharge requirements (see Section 4.0 below) will alter wetland resource areas and the 100-ft Buffer Zone as summarized in Table 2 above and shown on Figure 5: Wetland Resource Area Impacts, 242 King Street. Installation of the new gravity, force main, and pressure sewers using open cut will result in additional temporary alterations to wetland resource areas as shown in Table 2 above. All temporary BLSF, Riverfront, and Buffer Zone alterations from installation of the new collection system within existing roads and parking lots will be restored to preconstruction conditions with no loss in wetland resource area.

3.3.2 Phase 1B

Installation of the new gravity, force main, and pressure sewers using open cut within Beaver Brook Road, Great Road, Russell Street, and side streets will result in temporary alterations to BLSF, Riverfront Area, and Buffer Zone as shown in Table 2 above. All temporary alterations within wetland resource areas and Buffer Zone from installation of the new collection system within existing roads and parking lots will be restored to preconstruction conditions with no loss of wetland resource area.

3.3.3 Phase 2

The installation of the proposed Phase 2 (formerly Phase 3) collection system within Goldsmith Street, Shaker Lane and Town Road would not result in any impacts to wetland resource areas or buffer zone.

3.4 Compliance with MWPA Performance Standards

Work proposed herein and shown on the attached project plans (see Attachments G and H) was designed to comply with the MWPA and Regulations (310 CMR 10.00 et seq.) and the local Bylaw and the Wetland Protection Regulations. Work is proposed within BLSF, RFA, the 100-foot Buffer Zone, and the 50-ft No Disturb Zone. Work within the 50-ft No Disturb Zone is limited to temporary impacts for sewer installation within existing paved streets and parking lots.

3.4.1 Phase 1A

Bordering Land Subject to Flooding

The FEMA Flood Insurance Rate Maps (FIRM) for the Project area depicts the 100-year flood plain regulated as BLSF under the MWPA and Regulations. Permanent impacts to BLSF are from the placement of clean fill for the new access road into the WRRF. The proposed project fully complies with the performance standards for work in BLSF [310 CMR 10.57(4)a] as described below (performance standards noted in italics followed by a description how the design meets the standard). Temporary impacts to BLSF from sewer and water main pipe installation within existing streets will be restored to preconstruction grades and conditions.

(1) Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.

Compensatory flood storage is being provided adjacent and contiguous with the existing BLSF adjacent to the low-lying area, see Sheet C-5 in Attachment G. As shown in the Cut/Fill Volume Table on Sheet C-5, there will be a net gain of 832 cubic feet of compensatory flood storage volume. There is a slight net increase between elevation 209 and 210 of 35 cubic feet from adding a forebay to the existing low-lying area to allow for water quality treatment to the off-site highway stormwater runoff before it enters the low-lying area.

Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream, or creek.

The design of the compensatory flood storage area fully complies with this standard. Under existing conditions, as flow rises from Beaver Brook and the water surface elevation reaches approximately 210.5 feet, water starts flowing into the low-lying area. To maintain hydraulic conductivity and keep the low-lying area as BLSF with the construction of the new driveway, a 6-ft wide by 3-ft high box culvert embedded 18 inches with natural stream substrate will be installed beneath the high point of the proposed driveway. The upstream invert at the top of the embedment would be 210.5 ft and the downstream invert 209.5 ft. The proposed embedded box culvert will have 85 cubic feet per second (cfs) of capacity which is more than the volume that flows into the low-lying area under existing conditions (estimated at 64 cfs assuming that the

connection between Beaver Brook and the low-lying area to be a broad-crested weir with a weir elevation of 210.5 feet).

(2) Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.

As described above, the compensatory flood storage area with a net increase of 832 cubic feet of flood storage and the 6-ft wide by 3-ft high box culvert will ensure that there will be no restriction of flood flows nor increases in flood stage or velocity under proposed conditions.

(3) Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.

The proposed wastewater expansion project qualifies as a Limited Project in accordance with Section 310 CMR 10.53(3) (d) of the Wetlands Protection Regulations. Limited projects may be issued an Order of Conditions notwithstanding the provisions of 310 CMR 10.54 through 10.58 and 10.60. LWD requested in the Notice of Intent for Phase 1A that an OOC be issued notwithstanding the provision of 310 CMR 10.57(4)a(3).

Approximately 13,840 square feet of the BLSF to be altered (49% of the total) is the Phragmites dominated stormwater basin that collects stormwater from King Street and a small portion of Route 495 and exit ramps. The remaining 51% of BLSF altered consists of fallow field. A number of box elder (*Acer negundo*) have established within the fallow field (refer to tree survey in Attachment C). Other than providing cover for small mammals and songbirds, monospecific stands of Phragmites is of little value to wildlife as it excludes native vegetation that would serve as food source. Therefore, prior to start of work the Phragmites within the existing stormwater basin will be treated according to the Invasive Species Removal and Control Plan presented in Section 3.5.2. Upon completion of the Phragmites removal, the stormwater basin and adjacent flood storage compensation area will be seeded and planted to improve wildlife habitat value. The basin floor will be seeded with cattails (*Typha latifolia*) which is a native species however an aggressive colonizer and may outcompete the reestablishment of common reed. Cattail stands provide important food cover for wildlife and birds. Cattails also take up heavy metals and other pollutants, improving water quality. Furthermore, an overstory of black willows (*Salix nigra*) and swamp white oak (*Quercus bicolor*) will be established along the perimeter of the stormwater basin and compensatory flood storage area to establish shade which will also help in preventing the reestablishment of common reed. To further shade the ground, 47 #3 containers of buttonbush (*Cephalanthus occidentalis*) will be planted in clusters throughout these two areas. The acorns of the oak trees and nutlets of the buttonbush will provide good food sources for

wildlife. The black willow trees will also be a good food source for wildlife as both the buds and catkins are eaten by birds, and twigs and leaves consumed by deer.

The proposed Invasive Species Removal and Control Plan and seeding/planting plan as described above is expected to improve the wildlife habitat functions of the site.

Riverfront Area

Note that wastewater projects are exempt from the Riverfront Protection Act per 310 CMR 10.58(6)h therefore no discussion is provided how the proposed design complies with the performance standards for work in Riverfront Area. Figure 3 shows the permanent (i.e., new impervious) and temporary impacts to the Riverfront Area.

Buffer Zone

The MWPA has no performance standards for work within the Buffer Zone.

3.4.2 Phases 1B and 2

Phases 1B and 2 consists of installation of sewer collection piping within existing streets and parking lots using open cut trench installation. Alterations to BLSF, RFA, and 100-ft Buffer Zone would be temporary and restored to preconstruction grades and contours upon completion of construction. The proposed sewer collection pipe installation will fully comply with the performance standards for BLSF since temporarily altered areas will be restored to preconstruction grades and there will be no loss of flood storage capacity.

3.5 Proposed Mitigation

The proposed mitigation for environmental project impacts consists of creating compensatory flood storage, invasive species (*Phragmites australis*) removal and control, replanting the WRRF site with native trees and shrubs and seeding with a seed mix containing wildflower species native to Middlesex County, Massachusetts, as presented below.

3.5.1 Compensatory Flood Storage

Compensatory flood storage with an unrestricted hydraulic connection to the existing BLSF will be provided in accordance with the requirements of 310 CMR 10.57(2). Design sheets in Attachment G shows the location of the proposed compensatory flood storage area adjacent to the existing stormwater basin at the southwestern corner of the parcel. The hydraulic conductivity between BLSF downstream of the proposed access road and the stormwater basin is maintained with an embedded culvert. The proposed culvert was sized to convey the volume of flood waters coming up from the Beaver Brook wetlands into the stormwater basin during a 100-yr storm event (refer to Section 4.1 below for detailed discussion). The area below the proposed culvert will be lowered from elevation 210.6 ft to 210.2 feet in order to have a constant slope down to the wetlands, which have an elevation of 210.0. This design change was made as maintaining the 210.6 elevation may cause water to back up between the culvert and the high point of 210.6 with potential to erode the driveway.

3.5.2 Invasive Species Removal and Control Plan

There is sediment accumulation within the existing stormwater basin resulting in a near monolithic stand of common reed (*Phragmites australis*). Common reed is a highly competitive plant that is capable of rapid growth and spread, displaces native species, reduces biodiversity, offers little value for wildlife and chokes resource areas. Common reed forms very dense impenetrable monospecific stands that exclude native vegetation and has low wildlife habitat quality. Common reed stems can trap sediments, causing a basin to become increasingly shallow. Given the invasive nature of common reed to dominate ecosystems and upset natural habitat, it is important to curtail their colonization. However, controlling common reed can be difficult as their rhizomes (underground roots) can extend down over 2 meters and they readily regenerate from their root systems after cutting. The objective of the treatment program would be to control *Phragmites* within the existing stormwater basins allowing for a recolonization of the area by more desirable, native plants such as narrow-leaved cattails, which would increase species diversity and richness and the overall habitat value of the proposed BLSF adjacent to the stormwater basin.

Invasive species removal and control consists of removal and management of common reed (*Phragmites australis*) within the existing stormwater basin prior to commencement of work. Any growth of common reed within the stormwater basin will be treated through the application of Glyphosate, stems will be cut at ground level and treated in late August or September. Low-volume backpack type sprayers with cone-shaped nozzles will be used to apply the herbicide. These types of low-volume backpack type sprayers deliver fine spray droplets with very little mist or “drift.” A licensed herbicide applicator will be subcontracted to apply the treatment as well as any follow up treatment required. The Notice of Intent filed with the Littleton Conservation Commission (DEP File No. 204-0959) is requesting the approval of this plan.

Reestablishment of common reed within the stormwater basin will be closely monitored for any growth for a minimum of two years following herbicide treatment. An estimated 85-95% of the targeted vegetation is expected to be controlled following the initial application. Treatment in 2nd consecutive year will be required to control remaining common reed and any regrowth. A similar approach will be used as in the first year with the same licensed herbicide applicator completing the application and removal. In subsequent years, the stormwater basin will need to be monitored for any growth. Any additional removal and management of the patches will be managed by hand cutting and removal by the Town (or their contractor).

The stormwater basin and adjacent flood storage compensation area will be seeded with cattails (*Typha latifolia*) which is a native species and may outcompete the reestablishment of common reed. Cattail stands provide important food cover for wildlife and birds. They establish habitats for waterfowl and especially valuable in attracting nesting red-winged blackbird. Furthermore, an overstory of black willows (*Salix nigra*) and swamp white oak (*Quercus bicolor*) will be established along the perimeter of the stormwater basin and compensatory flood storage area to establish shade which will help in preventing the reestablishment of common reed. To further shade the ground, 47 #3 containers of buttonbush (*Cephalanthus occidentalis*) will be planted in clusters throughout these two areas.

In addition, construction period invasive species control measures will be implemented, and will include proper off-site disposal of any vegetation cleared from the site. Construction vehicles and equipment are recommended to be clean and free of any plant or soil debris prior to entering the project site and are recommended to be cleaned prior to leaving the site to prevent the introduction or off-site transport of invasive plant fragments or seed.

3.5.3 Landscaping and Replanting Plan

CDM Smith Wetland Scientists performed a tree inventory within the area of disturbance for the new WRRF facilities at 242 King Street. Trees 6 inches diameter at breast height (DBH) were included in the inventory and identified to genus and species (see Attachment C). A planting plan using native tree and shrub species has been developed and is included as Sheet C-7 in Attachment G.

In response to a comment from the Natural Heritage & Endangered Species Program (NHESP) that all areas not maintained as lawn/grass should be seeded with a native restoration seed mix composed of species native to Middlesex County in accordance with *"The Vascular Plants of Massachusetts: A County Checklist First Revision"* (Dow Cullina, M, B. Connolly, B. Sorrie, and P. Somers. 2011 MA NHESP DFW) we are using the following native to Middlesex County showy wildflower mix (developed for this particular project by New England Wetland Plants Inc.):

Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass
Elymus canadensis	Canada Wild Rye
Chamaecrista fasciculata	Partridge Pea
Elymus virginicus	Virginia Wild Rye
Vernonia noveboracensis	New York Ironweed
Oenothera biennis	Evening Primrose
Aster novae-angliae (Symphotrichum novae-angliae)	New England Aster
Eupatorium fistulosum (Eutrochium fistulosum)	Hollow-Stem Joe Pye Weed
Solidago nemoralis	Gray Goldenrod
Asclepias tuberosa	Butterfly Milkweed
Aster laevis (Symphyotrichum laevis)	Smooth Blue Aster

A total of 121 trees over 6 inches DBH are proposed to be removed and replaced with 72 new trees (replacement ratio of 0.6:1) with 8"-10" caliper (other than white fur which will be 10 ft in height) and 47 #3 containers of buttonbush. The buttonbush will be planted in clusters throughout the existing stormwater basin and the proposed compensatory flood storage area. The proposed landscaping and replanting plan will minimize the amount of landscape maintenance at the site and will return the site to a condition more similar to its pre-construction condition.

4.0 Stormwater

4.1 Proposed Stormwater Management Design

Currently, stormwater runoff from a portion of I-495, the southeast access ramp and the clover leaf within the southeast access ramp discharges to the proposed site through a 36-inch culvert that crosses King Street. Stormwater runoff from King Street also discharges to the proposed site through a 12-inch pipe. Flow from these outfalls is conveyed through a man-made ditch to an existing stormwater basin that overtops towards Beaver Brook. All stormwater runoff from the site discharges to Beaver Brook. Most of that impervious area is associated with the off-site drainage; approximately 0.35 ac of impervious area is at the proposed site.

Under proposed conditions stormwater runoff from the I-495 southeast access ramp and King Street will continue to discharge on-site as it does under existing conditions and flow into the existing stormwater basin. This stormwater basin will be reconfigured to provide peak attenuation at the site. A sediment forebay will be added to the downstream end of the existing man-made ditch prior to flow entering the stormwater basin to provide water quality treatment to the off-site highway stormwater runoff. All stormwater runoff will continue to discharge to Beaver Brook. Construction of the Littleton WRRF will increase the impervious area by 0.53 ac (23,100 sf).

This project is considered a new development project per the 2008 *Massachusetts Stormwater Handbook* because there will be an increase in impervious area. Stormwater runoff from the WRRF will be directed to one of three proposed infiltration basins that will provide groundwater recharge and water quality treatment. Two of the three proposed infiltration basins will overtop into the reconfigured stormwater detention basin where peak attenuation will be provided.

Minimum Control Measure #5, "Stormwater Management in New Development and Redevelopment", in the NPDES Phase II MS4 General Permit (MS4 Permit) requires compliance with the MA Stormwater Management Standards for projects that result in total earth disturbance equal to or greater than 1 acre, which applies to this project. Based on the MS4 permit, the Littleton WRRF is considered a new development project because it will be constructed on land that is currently undeveloped. As a project subject to the requirements of the MS4 permit, the project must meet an average annual pollutant removal of 60% of the average annual load of total phosphorus related to the total post-construction impervious surface area, in addition to 90% total suspended solids. This requirement will be met by retaining the volume of runoff equivalent to 1.0 inch times the total impervious area via the infiltration basins.

4.2 Drainage Analysis

CDM Smith performed drainage analyses for the Littleton WRRF under existing and proposed conditions. The drainage analyses determined peak rates of runoff during 2-, 10-, and 100-year, 24-hour storm events using precipitation data taken from NOAA Atlas 14, Volume 10. In addition, to evaluate future resiliency at the Littleton WRRF, the RMA2 Climate Resilience Design Standards Tool (Tool) was used. With regard to extreme precipitation, the Tool indicated that the 2070, 50-year, 24-hour storm should be considered. Using the RMA2 Total Precipitation Depth and Peak Intensity Design Criteria, Tier 2 Methodology, the percent increase for a late century (2070/2090) more frequent design storm is 20 percent. Thus, this percent increase was applied

to the e NOAA Atlas 14, Volume 10 present day 50-year, 24-hour precipitation depth. The NRCS Web Soil Survey was consulted to determine the hydrologic soil groups (HSG) at the project site and off-site areas. For the project site, the NRCS has classified the soils as a mixture of HSG "A", "C" and "D" soils.

HydroCAD was used to generate peak discharge rates and runoff volumes for existing and proposed conditions. Assuming a free-discharge condition from the stormwater detention basin, peak discharge rates for proposed conditions are equal to or less than those for existing conditions during the 10- and 100-year storm events, with a minor increase in the peak discharge rate over existing conditions during the 2-year storm event.

The modeling results for the 2070, 50-year storm event also indicate that peak discharge rates are attenuated under proposed conditions. The peak water surface elevation in the stormwater detention basin is elevation 211.4 ft during this storm, which is less than the elevations of the proposed entrance driveway and WRRF facilities.

Since the stormwater basin fills to elevation 211.0 ft during a 100-year flood, a model scenario assuming a starting water surface elevation of 211.0 ft in the stormwater basin and a tailwater elevation of 211.0 ft was considered for existing and proposed conditions. For this scenario, peak discharge rates for proposed conditions are equal to or less than those for existing conditions during all storm events at the Beaver Brook design point, including the 2070, 50-year storm. Thus, the proposed conditions modeling results demonstrate that there is sufficient storage in the stormwater detention basin above 100-year flood elevation of 211.0 ft to provide peak discharge rate attenuation. Peak water surface elevations for proposed conditions do not exceed elevation 212.0 ft.

Since most of the soils in the impervious areas are located on HSG "A" soils, the recharge target depth factor of 0.6 inches was applied to all impervious areas within the Littleton WRRF. The total corresponding R_v for the WRRF is 1,680 cf. The project site is located within a Zone II public water supply; therefore, the water quality volume is based on 1-inch times the total impervious area, with a total corresponding WQ_v of 2,820 cf. The three proposed infiltration basins provide the total required recharge volume and water quality volume for the site.

The drawdown times of the water in the proposed infiltration basins were calculated using the total storage volume provided below the outlet and the total bottom surface area of the infiltration basin. The drawdown calculations indicate that stormwater will infiltrate within the required 72 hours.

Stormwater management systems must be designed to remove 80 percent of the average annual load (post-construction conditions) of Total Suspended Solids (TSS). All impervious areas at the Littleton WRRF are tributary to one of the three infiltration basins, where stormwater runoff from the impervious area will receive 80% TSS removal. Stormwater runoff will receive pretreatment in sediment forebays located just upstream of the infiltration basins.

Compliance with the MS4 is met with the retention of 1 inch of runoff from impervious areas within the infiltration basins.

4.3 Floodplain Culvert

Under existing conditions, the stormwater basin serves as part of the 100-year floodplain. As water rises from Beaver Brook, once the water surface elevation reaches approximately elevation 210.5 ft, water starts to flow into the stormwater basin. The proposed entrance driveway cuts through this area and would prevent the flow of water from Beaver Brook into the stormwater detention basin. To maintain this hydraulic connectivity and keep this area as part of the floodplain, which will be expanded to provided floodplain compensation, a culvert is proposed under the entrance driveway. The culvert is designed to equal or exceed the estimated existing flow into the stormwater basin.

For existing conditions, the natural topography between Beaver Brook and the stormwater detention basin was represented as a broad-crested weir with a weir elevation set at 210.5 ft in calculations to determine the flow between the two areas. Since the 100-year flood elevation is 211.0 ft, it was assumed the head of the weir is 0.5 ft. The length of the weir between the 211.0 ft contours was estimated to be 67 ft. Using these variables, the flow capacity of the weir was calculated to be 64 cfs. The high point of the entrance driveway was set at the location of the culvert. Culvert options were considered that minimized the vertical profile of the entrance driveway, while also providing the required flow at an elevation close to existing weir elevation. A 7-ft-wide by 3-ft-high box culvert embedded 18 inches into the subgrade was selected. The invert at the top of the embedment is elevation 210.75 ft. The length of the culvert is 52 ft, with a downstream elevation of 210.2 ft. The 7-ft-wide by 1.5-ft-high culvert has a capacity of 69 cfs. To mitigate potential erosion downstream of the culvert, a riprap apron is proposed. This apron will extend 30 ft beyond the culvert downstream invert. The downstream width of the apron is 37 ft.

4.4 Low-Impact Development (LID) Measures

The proposed stormwater management at the Littleton WRRF incorporates Low Impact Design (LID) and integrated management practices. All of the stormwater runoff from the Littleton WRRF will be directed to one of three proposed infiltration basins. Infiltration basins provide groundwater recharge, preserve the natural water balance on the site, and provide water quality treatment. Retention of one inch of runoff from the total impervious area within the proposed infiltration basins will provide an average annual pollutant removal of 60% of the average annual load of total phosphorus and 90% of total suspended solids. In addition, infiltration basins provide 90% removal of pathogens. Fecal coliform and TSS are listed as impairments for Beaver Brook requiring a TMDL. Thus, the infiltration basins will address some of the impairments in Beaver Brook.

Stormwater runoff will sheet flow to the sediment forebays, which discharge into the proposed infiltration basins. No closed drainage piping is used at the Littleton WRRF. Stormwater from the sediment forebays will discharge to the proposed infiltration basins through a riprap spillway. Similarly, stormwater from the proposed infiltration basins will discharge either to the reconfigured stormwater basin or towards Beaver Brook through a spillway. The sediment forebays and infiltration basins will be vegetated with infiltration basin seed mix.

The proposed stormwater management mimics the predevelopment hydrology. Most of the stormwater runoff is collected in a large stormwater basin prior to discharge to Beaver Brook.

The hydraulic conductivity between Beaver Brook and the stormwater basin is maintained with a culvert. Hydraulic modeling indicates that the proposed stormwater management provides peak discharge rate attenuation for the 10- and 100-year, 24-hour storms, as well as the 2070, 50-year, 24-hour storm. There is a minor increase in the peak discharge rate over existing conditions during the 2-year storm event.

The site was designed to minimize disturbance to wetland resource areas and remains outside of the 50-ft no-disturb zone with the exception of the riprap pad downstream of the proposed culvert. The post-construction site will be revegetated with a natural area seed mix, 72 trees and 47 shrubs, which will minimize the amount of landscape maintenance at the site. The proposed trees will replace the trees that are being removed as part of the construction and will return the site to a condition more similar to its pre-construction condition.

5.0 Historical and Archeological Resources

A Project Notification Form (PNF) was submitted to Mass Historical Commission (MHC) on Feb. 24, 2022. MHC provided issued a written response on April 1, 2022, stating that an updated MHC Form B be prepared by a qualified architectural preservation planner to evaluate the historic significance of the property at 242 King Street. The Elizabeth and Jonathan Hartwell House, office, and New England-style barn on 242 King Street are included in the MHC's Inventory of Historic and Archeological Assets of the Commonwealth (MHC #LIT.224) (see Figure 6: Historical Resources). Furthermore, portions of the parcel at 242 King Street proposed for the WRRF are archeologically sensitive and may contain archeological features and deposits that date from ancient to historical periods. MHC requests that an intensive (locational) archeological survey (950 CMR 70) be conducted for the WRRF aspect of the project. The goal of the survey is to locate and identify any significant historic or archaeological resources that may affect the project and to provide sufficient information to consult to avoid, minimize, or mitigate adverse effect to the resources.

LWD has contracted with The Public Archaeology Laboratory, Inc. (PAL) directly to conduct the updates MHC Form B for the inventoried Elizabeth and Jonathan Hartwell House, office, and New England-style barn. PAL will also complete the intensive archeological survey of the undisturbed portions of where the WRRF is proposed to be located on 242 King Street. PAL is expected to begin their field portion of the intensive survey in June 2022. LWD will continue to coordinate with MHC to avoid, minimize, and mitigate any adverse effects to historical or archeological resources.

MHC's letter response also requested that a copy of the PNF and EENF/Proposed EIR be provided to the Littleton Historical Commission and that any comments from the Littleton Historical Commission be sent to MHC. Representatives LWD and from CDM Smith Inc. attended a public meeting with the Littleton Historical Commission on April 13, 2022, to present the project and take questions from the Commission. At that meeting, the Commission requested a site visit which was subsequently also held in April 2022. Removal of any of the buildings on 242 King Street requires permit approval from the Littleton Historical Commission under their local Demolition By-Law.

6.0 Environmental Justice Populations

This section includes the required SEIR assessment per the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice (EJ) Populations. The MEPA Interim Protocol for Analysis of Impacts on Environmental Justice addresses new requirements for MEPA project filings as set forth in: (i) Section 58 of Chapter 8 of the Acts of 2021: An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy (“the Act”); and the 2021 update to the Executive Office of Energy and Environmental Affairs (EEA) Environmental Justice Policy (the “2021 EJ Policy”). This protocol accompanies the MEPA Public Involvement for Environmental Justice Populations which implements public involvement requirements set forth in Section 60 of the Act.

Environmental Justice (EJ) seeks to address disproportionate and adverse human health or environmental impacts that projects funded by the Commonwealth may have on minority and low-income populations.

6.1 EJ Populations within 1 and 5 miles

It should be noted that the proposed Littleton Wastewater expansion project will not meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b), nor generate 150 or more new average daily trips (adt) of diesel vehicle traffic over a duration of 1 year or more, and therefore the Designated Geographical Area (DGA) is 1-mile around the project site. The scope of the SEIR as defined in the MEPA Certificate on the EENF/Proposed EIR however asked for an updated map from the EEA EJ mapper showing the boundaries for the 1-mile and 5-mile radius from the outer limits of all phases of the project work, this requested figure is being included as Figure 7.

The proposed Project is subject to a mandatory EIR under Section 58 of Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy*, since the new wastewater collection system piping (i.e., gravity sewer) within King Street (Phase 1A) and within Beaver Brook Road (Phase 1B) is within 1 mile of an EJ population in the neighboring Westford. This EJ Population is listed as Block Group 3, Census Tract 3181, and has an EJ characteristic of Minority. This EJ population is located downstream of the proposed WWRF as Beaver Brook flows northeast through the western part of Westford and into Forges Pond. The “Languages Spoken in Massachusetts” tab of the EJ Maps Viewer does not identify any languages spoken by 5 percent or more of the EJ population within this block group.

The MEPA Certificate mentioned that there are two additional EJ populations located within 1 mile radius in Boxborough (Porter Road and Taylor Street) and in Ayer (northern end of Ayer Road). Figure 7 in the EENF/Proposed EIR showed collection piping within 1 mile radius of EJ populations in Boxborough and Ayer for Phases 3 and 4 which are no longer being constructed (refer to Section 1.4).

6.2 Potential Pollutants and Proximity to Identified EJ Populations

Under Section 58 of the Act, and consistent with *new* 301 CMR 11.07(6)(n), each project to which the new EIR requirement applies under Part I must submit an EIR that contains “*statements about the results of an assessment of any existing unfair or inequitable environmental burden and related public health consequences impacting the environmental justice population from any prior or*

current private, industrial, commercial, state, or municipal operation or project that has damaged the environment”.

This assessment describes using the publicly available mapping tools past and current polluting activities that may have contributed to an “existing environmental burden” impacting the EJ population Block Group 3, Census Tract 3181 in Westford to determine if there is an existing “unfair and inequitable” impact compared to the general population.

New Traffic

The estimated number of average daily trips (adt) to and from the new WRRF by trucks is less than 1 adt. It is anticipated that truck delivery will be from Route 495 which is located adjacent to the preferred site at 242 King Street (see Figure 8). The new very minor traffic associated with operation of the new WRRF will not disproportionately affect the identified or other EJ populations.

Truck Purpose	Rate	Total Truck Trips/year
Sludge Disposal:	4 trucks/week * 52 weeks/yr	208
KOH:	1 truck/2 weeks * 52 weeks/yr	26
Supplemental Carbon:	1 truck/1.5 weeks * 52 weeks/yr	35
Sodium Hypochlorite:	1 truck/2 weeks *52 weeks/yr	26
Citric Acid:	1 truck/26 weeks *52 weeks/yr	2
TOTAL		297

Average Daily Trips: 297 truck trips/year *1 year/365 days = ~ 1 truck trip per day

Potential Sources of Pollution within the Boundaries of the EJ Population

The following additional data layers of the Massachusetts Department of Public Health (DPH) EJ Mapping Tool were evaluated to assess other potential sources of pollution within the boundaries of the EJ population: MassDEP major air and waste facilities, M.G.L. c. 21E sites, “Tier II” toxics use reporting facilities, MassDEP sites with AULs, MassDEP groundwater discharge permits, wastewater treatment plants, MassDEP public water suppliers, underground storage tanks, and EPA facilities.

Based on the mapping layers available in the DPH EJ Tool, the following sources of potential pollution exist within the identified EJ population:

- The Hitchin’ Post Green Condo Association on Greenbriar Drive in Westford is authorized to discharge into the ground from their wastewater treatment facilities 80,500 gpd of treated effluent (MassDEP Groundwater Discharge Permit BWR Nos. 386 and 386-5).

Based on the mapping layers available in the DPH EJ Tool, the following sources of potential pollution exist approximately 1,300 feet from the identified EJ population:

- The last Annual Tier II Report for the Littleton Electric Light and Water Department – Substation (Facility ID: 8117) located at 48 Beaver Brook Road was filed on February 15, 2022. A Tier II annual federal report is mandatory for facilities that store hazardous materials. This site is not listed as having EHS above TPQ and is not considered a Tier II facility.

Through the groundwater discharge permit, MassDEP sets discharge limitations for numerous effluent characteristics to protect public health in the immediate vicinity of the discharge site as well as the surrounding community, including protection of the EJ population in Westford. The permittee is required to conduct daily, monthly, and annual monitoring to record the quality of the influent and the quality and quantity of the effluent prior to discharge to the leaching facilities. The discharge permit also has monthly and quarterly monitoring and reporting requirements for one upgradient and four downgradient monitoring wells. The effluent requirements set and monitored by MassDEP to protect public health (including EJ populations) are listed in Table 6-1.

Table 6-1 Groundwater Recharge Permit Effluent Limits Summary – Not to Exceed

Parameter	Permit
Flow	208,000 gpd
BOD ₅	30 mg/L
TSS	10 mg/L
Nitrate Nitrogen	10 mg/L
Total Nitrogen (NO ₂ + NO ₃ + TKN)	10 mg/L
Oil & Grease	15 mg/L

In addition to the limitations listed in Table 6-1, the following criteria must also be met to protect public health.

- The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time or not more than 0.2 standard units outside the naturally occurring range.
- The discharge of the effluent shall not result in any demonstrable adverse effect on the groundwater or violate any water quality standards that have been promulgated.
- The monthly average concentration of BOD and TSS in the discharge shall not exceed 15 percent of the monthly average concentrations of BOD and TSS in the influent into the permittee’s wastewater treatment facility.
- When the average annual flow exceeds 80 percent of the permitted flow limitations, the permittee shall submit a report to MassDEP describing what steps the permittee will take in order to remain in compliance with the permit limitations and conditions, inclusive of the flow limitations established in the permit.

The Town of Littleton is required to file Tier II Emergency and Hazardous Chemical Inventory Reports annually for the Littleton Electric Light and Water Department – Substation (Facility ID: 8117). The last Tier II report filed on February 15, 2022, was for vehicle batteries stored in battery racks at the facility and for mineral oil stored in transformers. Based on the annual Tier II Reports, this facility does not have any pollutants emitted that would constitute an inequitable environmental burden on the identified EJ population.

Furthermore, the EJ population would not be unfairly impacted or carry an inequitable environmental burden due to the project location having “High” risk rating for extreme precipitation (urban or riverine flooding) since the work that is within 1 mile of the EJ population

Block Group 3, Census Tract 3181 consist of installation of gravity sewer within Beaver Brook Road. The temporarily disturbed areas for pipe installation will be restored to preconstruction conditions with no increase in impervious area or change to the existing street stormwater system. The EJ population may experience some short-term construction related impacts such as traffic detours but that would affect the general population the same way. Traffic management plans will be generated during the design phase to mitigate traffic impacts, and the project will comply with the requirements of the MassDOT Permit.

An GHG emissions analysis is not required for this project since it will not generate 2,000 or more tpy of GHG (CO₂) emissions from conditioned spaces that are likely to be used or occupied by EJ populations will not be generated.

Based on review of the DPH EJ Mapping Tool, the identified EJ population Block Group 3, Census Tract 3181 does not appear to have been impacted by an existing “unfair or inequitable” environmental burden and related public health consequences as compared to the general population.

6.3 Environmental Benefits to EJ Populations

The proposed WRRF and collection system will reduce public health impacts by removing Title 5 systems from Littleton and treating wastewater at a centralized facility. This promotes the removal of nitrogen in groundwater and protects potential impacts to drinking water. There are no anticipated public health impacts from the construction of the WRRF and sewer system.

Installing sanitary sewers benefits the EJ populations in the same way as the general public by improving drinking and surface water and providing nitrate control as improperly treated sewage can lead to increased nitrates in local water supplies.

7.0 Public Health

7.1 Existing Public Health Conditions within Project Proximity

Public health conditions in the immediate vicinity of the project site were evaluated according to 301 CMR 11.07(6)(g)10). The DPH EJ Mapping Tool layers for Vulnerable Health EJ by Community and Census Tract shows that the Town of Littleton does not meet any of the four “vulnerable health EJ criteria” which include childhood blood lead levels, low birth weight, heart attack hospitalizations, and childhood asthma (see Table 7-1).

Westford is identified using the DPH EJ Tool as a municipality that meets the Vulnerable Health EJ criteria for heart attack, see Table 7-1.

Table 7-1 Existing Vulnerable Health EJ Criteria

Public Health Conditions	Littleton	Westford	State-wide Rate per 10,000	80% of State-wide Average in EPA's EJ Screen
Rate of Heart Attack per 10,000 (2013-2017)	19.9	29.2	26.423	21.138
Pediatric Asthma ED Visits per 10,000 (2013-2017)	33.1	29.9	83.1	66.48
Elevated Blood Lead Prevalence per 1,000 (2016-2020)	11.6	13.3	14.985	11.988
Low Birth Weight per 1,000 (2011-2015)	313.4	138.9	216.8	173.44

EPA EJ Screen Tool was used to determine the proximity to wastewater discharge locations of the EJ population in Westford (Block Group 3, Census Tract 3181) identified as being within the DGA. The EJ Screen Tool Report (see Attachment D) shows that this EJ population does not have potential exposure to wastewater discharge locations at a rate of 80th percentile or higher.

7.2 Potential Project Impact and Effect on Public Health

One of the potential public health impacts from the proposed project would be pollutants discharged into groundwater from the effluent recharge site. A groundwater discharge permit is required from MassDEP’s groundwater discharge permit program. Through the groundwater discharge permit, MassDEP sets discharge limitations for numerous effluent characteristics to protect public health in the immediate vicinity of the discharge site as well as the surrounding community. The Littleton Water Department has applied for a new groundwater discharge permit (WP, GW#989) for the proposed site under the Littleton High School athletic fields that is currently under review by MassDEP. The effluent requirements anticipated to be set and monitored by MassDEP to protect public health would be similar to those listed above for the Hitchin’ Post Green Condo Association (see Section 6.2). The strict monitoring and reporting requirements set by MassDEP have been established for early detection of any increase in pollutants that would potentially impact public health. The EJ population would not be unfairly impacted or carry an inequitable environmental burden due to the project.

8.0 Climate Change

Governor Baker’s Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth was issued on September 16, 2016. The Order recognizes the serious threat presented by climate change and direct Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. The urgent need to address climate change was again recognized by Governor Baker and the Massachusetts Legislature with the recent passage of St. 2021, c. 8, An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy, which sets a goal of Net Zero emissions by 2050. The MEPA statute directs all Agencies to consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level

rise, when issuing permits, licenses and other administrative approvals and decisions (M.G.L. c. 30, § 61).

The Town of Littleton is a participant in the Commonwealth's Municipal Vulnerability Preparedness (MVP) program, which is a community-driven process to define natural and climate-related hazards, identify existing and future vulnerabilities and strengths of infrastructure, environmental resources, and vulnerable populations, and develop, prioritize, and implement specific actions the town can take to reduce risk and build resilience. The Littleton MVP Community Resilience Building Report dated April 2018 identified heavy precipitation, drought, extreme heat and cold, and wind as the most significant climate hazards facing the Town.

Consistent with the MVP findings, the revised RMA Climate Resilience Design Standards Tool Output Report (see Attachment E) indicates a "High" risk rating for extreme precipitation (urban or riverine flooding) for the project location. The proposed project proposes an increase in impervious area and tree removal at the WRRF site at 242 King Street. These impacts will be mitigated for by the construction of stormwater management facilities designed to handle the 100-yr storm event and the 2070, 50-yr storm event as required by the RMA Climate Resilience Design Standards Tool Output Report. Today, the 50-yr, 24-hour storm is 6.79 inches. The current 100-yr, 24-hour storm is 7.65 inches. With the SWMM-CAT tool the 2070, 50-yr, 24-hour rainfall ranges between 7.18 and 7.47 inches. Since this is less than today's 100-yr storm, the stormwater system can handle the future 50-yr storm since it can handle today's 100-yr storm.

Infiltration basins will be used to meet peak attenuation, water quality and groundwater recharge requirements. Compensatory flood storage will also be provided to ensure that there will be no downstream flooding impacts from the proposed alteration of existing 100-year floodplain regulated as BLSF under the MWPA. Furthermore, native trees and shrubs will be planted at the WRRF site to replace existing trees.

Additionally, climate change is an important factor in the design of the new WRRF. Wastewater treatment facilities in New England are required to be designed in accordance with the TR-16 Guide for the Design of Wastewater Treatment Works which are design guidelines for wastewater treatment facilities in New England and developed by New England Interstate Water Pollution Control Commission (NEIWPCC). These guidelines require all infrastructure associated with wastewater projects to be constructed a minimum of three feet above the effective FEMA 100-year floodplain elevation which is 211 FT NAVD 88 at the proposed WRRF site (242 King Street). Tank covers, lowest building floor elevation, and the effluent pumping station cover will be elevated to elevation 214 feet as required by the TR-16 Guide. The proposed pumping stations in the collection system are located outside of flood zones. In compliance with TR-16, the plant includes redundant components in the event of system failures. Additionally, the equalization tank at the head of the plant has been sized to handle peak events. The project has taken all available measures to add resiliency components.

9.0 Public Involvement

The Littleton Wastewater Expansion Project is within 1 mile radius of an EJ population in the neighboring Westford (see Section 6 above). This EJ Population is listed as Block Group 3, Census Tract 3181, and has an EJ characteristic of Minority. This EJ population is located downstream of the proposed WRRF as Beaver Brook flows through the EJ Population listed as Block Group 3, Census Tract 3181. This EJ population has been added to the email distribution list. The proponent will include the EJ group contacts as part of the email distribution list for upcoming MEPA submissions and public hearings that may occur as part of the project. The “Languages Spoken in Massachusetts” tab of the EJ Maps Viewer does not identify any languages spoken by 5 percent or more of the EJ population within this block group, therefore any written communication distributed does not have to be translated.

As agreed, upon with MEPA staff, a 14-day advance notification was provided to the community-based organizations and tribal organizations that the LWD would be filing the SEIR on June 15 (email sent May 27, 2022). A link to the SEIR is provided to the same COBs as well as information about the MEPA consultation session once scheduled. Any upcoming Town meetings for the proposed project will also be shared with the COB mailing list.

Per MassDOT’s comment letter “Traffic delays associated with construction on King Street in Littleton will unavoidably impact all Littleton residents and will not be borne disproportionately by EJ populations.” Throughout the construction period, public notices will be displayed to notify residents, including this EJ Block Group, of upcoming construction. The contractor will be required to comply with all town and state requirements, including the MassDOT Access Permit.

10.0 Alternatives Analysis

10.1 Wastewater Resources Recovery Facility (WRRF) Siting Analysis for Off-Site Alternatives

The Needs Assessment included a site screening and ranking process utilized for identifying and evaluating properties within the Littleton town limits for their potential as a site for a new wastewater reclamation facility. The evaluation methodology included review of parcel characteristics such as: physical features of each parcel, ownership, and land uses, and comparison with the design criteria and site requirements for a future wastewater reclamation facility.

Five sites were selected for further review based on their ranking criteria, as well as local knowledge by LWD. Section 7 of the Needs Assessment describes the site screening and ranking process that was performed. The Needs Assessment is available via this web link: <https://www.lelwd.com/sewer-department/>.

242 King Street (Preferred Site)

This site is an 8.7 acre privately owned parcel located off of King Street, directly abutting the northbound side of Interstate 495 and directly across from the northbound on/off ramp. The parcel is located in the Merrimack Watershed, outside of municipal well zones of contribution, priority habitats, and Zone II areas. There are areas on the parcel that are categorized as wetlands

and flood zones, due to a portion of Beaver Brook running adjacent to the property line. Facilities could be constructed above the flood elevation. This site received additional 0.5 points in the ranking criterion for having an owner that reached out to the Town with interest in selling the land.

This site is considered favorable due to its location between the service area, Littleton Common, and the groundwater recharge site at the Littleton High School, 56 King Street. It's also favorable due to its close proximity to Interstate 495 for light delivery and sludge hauling off site which will reduce long term traffic impacts and for the owner's willingness to sell the property.

165 King Street

This site is a 3.2 acre privately owned parcel in the Merrimack Watershed located off of King Street near a southbound on/off ramp to Interstate 495. The parcel is located outside of municipal well zones of contribution, priority habitats, and Zone II areas. A few portions of the parcel that abut Mill Pond (North Basin) fall within areas categorized as wetlands and flood zones. This site received a high score for its proximity to the groundwater recharge site at 56 King Street. This site was ultimately not selected due to its private ownership. The parcel is not currently for sale.

Great Road (U05 2 1 & U05 3)

This site is a combination of two privately owned parcels in the Concord/SuAsCo Watershed, with a combined acreage of 18.5 acres. The parcels are located off of Great Road in close proximity to Littleton Common. The parcels are outside of the municipal well zone of contribution, flood zones, and Zone II areas. A portion of the parcel falls within priority habitats and wetlands. This site was initially considered favorable due to its proximity to Littleton Common, however it was ultimately not selected due to its private ownership and far distance to the groundwater recharge site at 56 King Street.

36 King Street

This site is a combination of two privately owned parcels that have a total acreage of 4.3 acres. The parcels directly abut Littleton High School, the location of the Town's current wastewater reclamation facility and groundwater recharge site. The parcels fall within the Merrimack Watershed, and outside of municipal well zones of contribution, priority habitats, wetlands, flood zones, and Zone II areas. LWD initially viewed this site as favorable due to its proximity to the existing wastewater reclamation facility and groundwater recharge site. This site was ultimately not selected due to its private ownership. The parcel is not currently for sale.

9 Ayer Road

This site is a 5.2 acre privately owned parcel in the Merrimack Watershed, located off of King Street just north of Littleton High School. The parcel falls outside of municipal well zones of contribution, priority habitats, wetlands, flood zones, and Zone II areas. This site was eliminated as of September 2020, the landowners are actively mining the property and constructing private homes.

The WRRF siting analysis ultimately concluded that 242 King Street was the most favorable parcel. While some other parcels scored higher, one of the most important factors was the

feasibility for LWD to buy the property, if not already town-owned. The owner of 242 King Street was interested in selling the property to LWD within a reasonable timeframe that would work with the project schedule. In addition to its close proximity to the I-495 ramps, the 242 King Street site is centrally located between the service area and the effluent recharge site. As discussed in Section 1.4, Phases 2 and 4 identified in the Needs Assessment will no longer be sewered by LWD as there has been a significant shift in development in the Littleton Common District (Phase 1A). Therefore, potential WRRF sites located in close proximity to Phases 2 and 4 that scored high in the siting analysis no longer rank as high. Furthermore, although the development of this parcel for a new WRRF will result in alteration to wetland resource areas (i.e., BLSF and Riverfront Area), the proposed design is in full compliance with the performance standards of the MWPA and Regulations (310 CMR 10.00 et seq.) (see Section 3.2 above). The proposed design avoids alteration of the locally jurisdictional 50-ft No Disturb Zone with the exception of 723 square feet for the proposed riprap pad and lowering the area below the new culvert from elevation 210.6 ft to 210.2 feet in order to have a constant slope down to the wetlands, which have an elevation of 210.0. This design change was made as maintaining the 210.6 elevation may cause water to back up between the culvert and the high point of 210.6 with potential to erode the driveway. The proposed design meets the ten (10) Massachusetts Stormwater Standards with the exception of peak rate attenuation during the 2-year storm event. During the 2-year storm event there will be 0.1 cfs increase in peak discharge rate compared to existing conditions. As discussed in more detail in the Stormwater Reports provided as part of the EENF/Proposed EIR, this minor increase in the peak discharge rate is due to a higher overall weighted CN for the drainage area that includes the strip of land along the entrance driveway and along infiltration basin BB2, and the private single family residential property. Within this drainage area, there is no opportunity to construct stormwater management facilities to provide peak attenuation.

11.0 Environmental Mitigation Measures

11.1 Construction Measures

The following summary of mitigation measures will be implemented to protect the downstream wetland resource areas during and after construction.

Construction

- Prior to commencement of construction, compost filter tubes and silt fence will be installed at the limits of work to prevent the transport of sediment to downstream wetlands and waterbodies during construction. Sedimentation controls will be inspected weekly and after all storm events of a ½ -inch or more of rain and repaired as needed. The barrier will be left in place until the area is permanently stabilized. Compost filter tubes will be replaced as necessary due to sediment build-up and degradation.
- Stockpiled soils will be enclosed within compost filter tubes or silt fence or covered to prevent erosion or siltation into resource areas. The sedimentation control will be inspected and repaired as noted above.

- The Contractor will apply for and obtain a Construction General Permit (CGP) from EPA pursuant to the NPDES program. The permit requires preparing and submitting a Notice of Intent (NOI) for Storm Water Discharges and Notice of Termination Form and preparation of a Storm Water Pollution Prevention Plan (SWPPP).
- The Contractor will prepare an Erosion and Sedimentation Control Plan and submit to the Engineer for review and approval. Once approved by the Engineer, the Contractor will incorporate the Erosion and Sedimentation Control Plan into the SWPPP.
- The Contractor will update the Erosion and Sedimentation Control Plan and the SWPPP as necessary so that the documents are always current in accordance with the NPDES regulations and describe erosion and sediment control and storm water pollution prevention at all locations of construction and for all activities of construction.
- Topsoil will be stripped, stockpiled separately from the subsoil, and reused unless the area contains invasive species. At the Contractor's option, topsoil may be otherwise disposed of and replaced, when required, with approved topsoil of equal quality.
- On slopes, the Contractor will provide against washouts by an approved method. Any washout which occurs will be regraded and reseeded until a good sod is established.
- Work in and adjacent to wetland resource areas will proceed as rapidly as possible. Limiting the exposure time of disturbed soils to wind and precipitation will minimize the soil erosion and subsequent sedimentation.
- Periodic inspections will be made by the applicant to ensure compliance with the permit conditions. A resident engineer will be on site during construction activities.
- Dewatering is anticipated for the force main and gravity sewer within existing streets. Removed water will be filtered (i.e., use of a portable sedimentation tank that removes suspended solids or other means of filtering) to remove sediment prior to discharge back into the ground.
- Equipment staging, equipment refueling activities, and stockpiling will be located outside of resource areas and the 100-foot Buffer Zone.
- Spill containment equipment (e.g., oil absorbent pads, oil absorbent materials, containment booms, shovels, etc.) will be stored in the equipment and refueling area in an easily accessible manner for use in the cleanup of accidental releases of fuel or other hazardous substances.

Post Construction Measures

The following summary of mitigation measures will be implemented to restore any short-term impacts that occur within and adjacent to wetland resource areas.

- All disturbed soils will be permanently stabilized using seed. Seeded areas will be maintained and re-seeded as necessary until 80 percent cover is achieved, and in paved areas, the pavement will be repaired.

- If restoration (seeding) occurs outside of the growing season, temporary stabilization measures (i.e., mulching or erosion control blankets) will be used to prevent erosion until areas can be seeded during the following growing season.
- The erosion and sedimentation control barrier will not be removed until a vegetative cover dense enough to prevent erosion is established in the work area.

11.2 Other Mitigation Measures

Potential short-term impacts that may occur during construction include traffic, noise, air quality, and aesthetics. These impacts will be temporary and will cease once construction is completed. Typical mitigation measures for construction traffic, noise, and air quality are identified below.

Traffic

Mitigation measures will be necessary where traffic will be disrupted for the proposed sewer force and gravity mains to be constructed within existing streets. Traffic management plans have been developed for Phase 1A and are included in Attachment G. Traffic management plans will also be developed for Phases 1B and 2 during the final design.

At the existing High School site, a construction traffic control plan to include fencing, signage, and parking restrictions will be developed and implemented to provide secure construction areas separate from daily operational employee/student and vehicular traffic.

Noise

There are no sensitive noise receptors in the vicinity of the proposed WRRF as the site area is bordered by Route 495 to the north and west, King Street to the south, and Beaver Brook and associated wetlands to the east. The High School property however is bordered by private homes to the north and west.

As a course of good practice however, noise levels will be mitigated by using new or well-maintained equipment with standard intake/exhaust mufflers and engine jackets. In addition to these mitigation measures, if it is determined during construction that additional mitigation is required, the following mitigation measures could also be applied:

- Require the contractor to use the most quiet and practical construction techniques, such as replacing standard pile drivers with vibratory or sonic drivers to eliminate noise from the hammer hitting the sheeting.
- Make stationary equipment, such as pumps, generators, and compressors, quieter by using mufflers and enclosures; and
- Restrict construction activities to daytime hours.

Air Quality

Construction activities, such as site clearing, excavation, grading, and fill placement can generate airborne dust (suspended particulate matter), however these impacts are expected to be temporary and can be controlled with mitigation measures such as regular watering of active construction areas, street sweeping, and covering truck beds containing soil material. These

mitigation measures should significantly reduce fugitive dust impacts to an acceptable level and air quality standards are not expected to be exceeded.

Asbestos

A pre-demolition hazardous building assessment (HBMA) for the barn structure located at 242 King Street and to be demolished as part of the proposed project was performed on February 8, 2022, by Tighe & Bond's Massachusetts licensed asbestos inspector Francisco J. Rodrigues (AI040131). A HBMA type survey is required prior to any type of building or structure demolition to identify and quantify asbestos containing building material (ACM) which may be impacted by the demolition activities. The HBMA showed that the barn building has exterior asbestos cement shingles and asbestos cement panel (Transite). The ACMs identified at barn structure must be removed by a licensed asbestos abatement contractor, utilizing trained and licensed personnel prior to demolition or any activity that has the potential to disturb these materials. A project specific asbestos abatement technical specification for the removal of ACM will be developed for Phase 1A by a Massachusetts licensed asbestos project designer and address regulatory requirements, notification procedures, insurance considerations, air sampling needs and other pertinent information. Abatement activities must be subject to a passing post abatement visual inspection by an asbestos monitoring firm not affiliated with the abatement contractor.

The assessment also showed that paint coatings on the barn structure contain several heavy metals, including lead. These results will be communicated to workers whose activities have potential to disturb the paint and may exceed the Permissible Exposure Limit (PEL) as established by OSHA. With this information, the Contractor can also identify demolition methods that reduce or eliminate worker exposure. For demolition work involving lead, the Contractor will be held in compliance to the Federal National Emission Standards for Hazardous Air Pollutant Standards (NESHAPs) regulation governed by MassDEP which prohibits airborne emissions from any construction/demolition activity. To achieve this, the use of engineering controls to control dusts and measures to protect soils from contamination of paint, paint dust or debris resulting from their demolition activity will be necessary. With respect to disposal management, the painted wood system was subject to the EPA's Toxicity Characteristic Leaching Procedure (TCLP) sampling to determine if the painted/coated wood waste stream needs to be managed as hazardous or non-hazardous painted solid waste. TCLP testing is often performed during the demolition phase while the waste stream is being generated. TCLP is a chemical analysis process used to determine whether there are hazardous elements present in a specific waste. The test involves a simulation of leaching through a landfill and can provide a rating that can prove whether or not the waste could be dangerous to the environment. Analytical results reported concentrations of heavy metals well below EPA threshold limits. Based on the sample results, painted components comprising the proposed demolition waste stream would likely not be subject to hazardous waste disposal nor hazardous waste regulatory requirements. T

11.3 Best Management Practices

An erosion and sedimentation control plan will be developed and incorporated into the construction specifications to minimize temporary impacts to downgradient wetlands and waterways during the construction of the project by minimizing erosion and sedimentation. The

plan incorporates Best Management Practices (BMPs) specified in guidelines developed by the MassDEP and the U.S. Environmental Protection Agency and complies with the requirements of the NPDES General Permit for Storm Water Discharges from Construction Activities. All control measures will be installed and maintained in accordance with details that will be provided on design plans and the manufacturer's specifications. Proper implementation of the erosion and sedimentation control plan (developed for construction) and the long-term Operation and Maintenance Plan will mitigate potential adverse impacts to water quantity and quality and ensure compliance with federal state and local permit regulations and performance standards.

12.0 Draft Section 61 Findings

12.1 Introduction

The purpose of this chapter is to identify and present the mitigation measures and Draft Section 61 Findings as part of the SEIR. Draft Section 61 Findings are outlined in the Massachusetts Environmental Policy Act (MEPA) Regulations 301 CMR 11.07, in accordance with M.G.L. c. 30, section 61 for all State agency actions. These regulations require that each agency, department, board, commission and authority of the Commonwealth “*review, evaluate, and determine the impact on the natural environment of all works, project or activities conducted by them and shall use all practicable means and measures to minimize damage to the environment.*” The regulation also states that, “*Any determination made by an agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact.*”

The SEIR is required as part of the Certificate of the Secretary of Energy and Environmental Affairs to include a separate chapter on mitigation measures associated with the SEIR and that this chapter also includes Draft Section 61 Findings for all state agency actions. The Draft Section 61 Findings shall contain a clear commitment to implement mitigation, an estimate of the individual costs of the proposed mitigation, identification of the parties responsible for implementing the mitigation, and a schedule for the implementation of mitigation.

12.2 Draft 61 Findings for State Agency Actions

The anticipated State agency actions are listed below. These actions summarize permits and approvals that will be required for implementation of the preferred alternative.

- U.S. Environmental Protection Agency (USEPA) - National Pollutant Discharge Elimination System (NPDES) Permitting Program (as applicable), under 40 CFR Chapter 1, Section 122.26 (15) for NPDES Stormwater Permit for Construction Activities and review of developed Stormwater Pollution Prevention Plan (SWPPP) (Phases 1A, 1B, and 2).
- Massachusetts Executive Office of Energy and Environmental Affairs (EEA) approval of the SEIR (Phases 1A, 1B, and 2).
- Massachusetts Department of Environmental Protection (MassDEP) - Ground Water Discharge Permit Program, pursuant to M.G.L. c. 21 s. 43 and its regulations at 314 CMR 5.00, Individual Permit for Groundwater Discharge from Sewerage Treatment Plant (BRP

WP 79) for facility that discharges 10,000 gallons per day (gpd) or more into the ground (Phases 1A, 1B, and 2).

- MassDEP Sewer extensions are subject to state requirements in 314 CMR 7.00 based on their length. Note that sewer extension projects that obtain a Project Approval Certificate from MassDEP's Clean Water State Revolving Fund Program are exempt from permitting requirements, due to MassDEP's detailed review before the certificate is issued. Design plans for all phases funded by the State Revolving Fund will undergo MassDEP review and comment prior to receiving approval to advertise for construction bids.
- A MassDOT State Highway Permit application for work along state routes 2A and 119 is required for all project phases (Phases 1A, 1B, and 2).
- MassDEP - Air Quality Permit/Compliance with the Environmental Results Program Certification of the pertinent equipment is required within 60 days of startup under the Environmental Results Program (Phases 1A, 1B, and 2).
- MassDEP - Air Quality Permits (as applicable), BWP AQ 04 - Asbestos Removal Notification that may be required for Asbestos removal as part of the barn removal in Phase 1A and BWP AQ 06 Construction/Demolition Notification also in Phase 1A.
- Massachusetts Historical Commission (MHC) - Section 106 of the National Historic Preservation Act (NHPA) and M.G.L. Chapter 9, Sections 26-27c, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00) approval for construction of the new WRRF at 242 King Street (Phase 1A).
- Littleton Conservation Commission – An Orders of Conditions for each Phase for work within the BLSF, Riverfront Area, and 100-foot buffer zone, per the wetland regulations at 310 CMR 10.00 and local wetlands bylaw.
- Littleton Planning Board – Site Plan Review/Special Permit for the construction of the new WRRF at 242 King Street within local Water Resource Overlay Districts (Phase 1A).
- Town of Littleton building permit for the construction of the WRRF in Phase 1A.
- Littleton Historical Commission – Approval for the demolition of the existing barn structure under Littleton's Demolition By-Law (Phase 1A).

12.3 Project Schedule

The Project includes three construction phases, to take place over approximately 15 years and includes construction of a WRRF and an effluent recharge area at the Littleton High which will allow the LWD to construct Phases 1A, 1B, and 2 (formerly Phase 3) of the expanded wastewater collection system. Construction of Phase 1A will begin in late summer/fall of 2022 and is anticipated to have a construction period of approximately 18 months. Phases 1A and 2 will commence approximately five years following the completion of the previous phase.

12.4 Summary of Section 61 Findings

The Section 61 Findings provide an overview of the mitigation program for implementation of all phases of the Project, describing measures to avoid, minimize, and/or mitigate identified impacts to the maximum extent practicable. LWD is recommending a traditional wastewater program that includes installing sewer pipes, pumping stations and a centralized treatment facility. Other than the new WRRF, most of the construction will occur within previously disturbed areas such as existing roadways, some pumping stations will be outside of town and state roads. Careful layout of facilities was conducted to minimize impacts to the environment. Most impacts are construction-related and temporary. The most significant post-construction impact is beneficial – by removing Title 5 systems from Littleton and treating wastewater at a centralized facility. This promotes the removal of nitrogen in groundwater and protects potential impacts to drinking water.

Mitigation measures for the project were developed and presented in Section 11. Additional mitigation measures are also described herein that pertain to the potential long-term impacts of the proposed facilities. The mitigation measures described in these findings apply to all three phases of construction (1A, 1B, and 2) and are split into the following broad areas of concern:

- General Environmental Protection
 - Resiliency
 - Climate Change
- Environmental Justice Populations
- Land Disturbance
- Public Health
- Noise and Vibration
- Air Quality and Dust
 - Vehicle emissions
 - Greenhouse Gas Emissions
- Vegetation
- Traffic and Public Safety
- Water Quality, Wetlands, and Floodplain
- Significant Historical or Archaeological Resources
- Materials Management, Construction Debris, Solid Waste and Recycling
- Management of Hazardous Materials

12.5 Mitigation Measures

Mitigation Measure	Party Responsible for Implementation
General Environmental Protection	
The Contractor will be required to comply with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement.	LWD, Design Engineers, and Construction Contractors
The Contractor will be notified in writing of any non-compliance of environmentally objectionable acts. After receipt of such notice, the Contractor will be required to take corrective action. If the Contractor fails or refuses to comply promptly, the Town may issue an order stopping all or part of the work until satisfactory corrective action has been taken.	Construction Contractor
Prior to commencement of the work, the Contractor will meet with the LWD to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control programs.	Construction Contractor, LWD
Throughout the performance of the work required, the Contractor will be subject to environmental inspections of his/her equipment, routine daily operations, and environmental protection procedures.	Construction Contractors and Resident Engineers/ Inspectors
At the completion of the work, a joint final field inspection will be made by the Town and the Contractor.	Town, Construction Contractors and Resident Engineers
The Contractor will not be permitted to use procedures, activities, or operations that may adversely impact the natural environment to the extent practicable or the public health and safety.	Construction Contractors
For the duration of each contract, facilities constructed for pollution control will be maintained as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.	LWD
Structures and pipelines will be designed to minimize impacts to environmental resources wherever feasible.	Design Engineers
The town plans to adopt land use controls to limit growth by requiring a property to meet Title 5 requirements before it can be further developed, regardless of whether it is served by municipal sewer or an on-site septic system. This type of land use control will prevent existing unbuildable lots from becoming buildable as a result of new sewer service.	LWD

Mitigation Measure	Party Responsible for Implementation
Resiliency and Climate Change	
Base floor elevation to be 3 ft above FEMA Base Flood Elevation for WRRF and Wastewater Pumping Stations	Design Engineers
Waterproof Manhole Structures will be used	Design Engineers
Tree Replacement at WRRF Site (242 King Street)	Design Engineers
Stormwater Management Facilities designed to meet year 2070, 50-yr storm event	Design Engineers
Environmental Justice Populations	
Ensure effluent Recharge Facility meets the requirements of 314 CMR 5.00 to protect Public Health for identified EJ Population	Design Engineers
Compensatory flood storage will be provided to ensure that there will be no downstream flooding impacts from the proposed new treatment plant construction.	Design Engineers
Traffic management plans will be generated during the design phase to mitigate traffic impacts	Construction Contractors
Land Disturbance	
Long term post construction control and management of Phragmites within the stormwater basin and project limits.	LWD
The Contractor will not be permitted to enter or occupy private land outside of easements, except by written permission of the landowner and the Town.	Construction Contractors
The Contractor will be responsible for the preservation of all public and private property and must use every precaution necessary to prevent damage thereto, to the extent practicable. If direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, the Contractor will be required to restore such property to a condition similar or equal to that existing before the damage was done.	Construction Contractors
No work will be permitted within permanent easements which may be required for pumping stations until written authorization is provided by the Town.	Construction Contractors
Work areas will be restored to conditions that existed prior to construction. Land resources within the project boundaries and outside the limits of permanent work will be restored to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. All construction activities will be confined to areas shown on the contract drawings.	Construction Contractors
The locations of the Contractor's storage and temporary buildings will be cleared portions of the job site and will require written approval of the Engineer. These sites will not be within wetlands or floodplains. The preservation of the landscape will be a consideration in the selection of all such sites.	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
All signs of temporary construction facilities such as haul roads, work areas, structures, stockpiles of excess or waste materials, or any other vestiges of construction will be removed by the Contractor.	Construction Contractors
All areas disturbed by the installation and removal of groundwater control systems and observation wells will be restored to their original condition.	Construction Contractors
The Contractor will assume full responsibility for the protection of all buildings, structures, pavement, sidewalks, curbing, driveway aprons, fencing, landscaping, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the contract drawings. If necessary, curbing, driveway aprons and fencing will be removed and restored or replaced after backfilling. All existing facilities damaged by the construction will be promptly replaced with material equal to that existing prior to construction to the satisfaction of the Town.	Construction Contractors
Topsoil will be stripped, stockpiled, and reused from grassed areas crossed by trenches. At the Contractor's option, topsoil may be otherwise disposed of and replaced, when required, with approved topsoil of equal quality.	Construction Contractors
When designing and laying out facilities, clearing and grading and alteration of natural topography will be minimized.	Design Engineers
Noise and Vibration	
The Contractor will be required to make every effort to minimize noises caused by the operations. Equipment will be equipped with silencers or mufflers designed to operate with the least possible noise level in compliance with state and federal regulations and Town of Littleton regulations, whichever are more stringent.	Construction Contractors
During construction, the following measures will be used to control noise: 1) loud pieces of equipment will be substituted with quieter equipment, 2) effective intake and exhaust mufflers will be used on internal combustion engines, and 3) truck loading, unloading, and hauling operations will be conducted in a manner that keeps noise and vibration to a minimum.	Construction Contractors
Effective intake and exhaust mufflers must be used on internal combustion engines.	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
<p>All equipment to be installed, unless specified otherwise in the Technical Specifications, will be designed to ensure that the sound pressure level does not exceed 85 decibels over a frequency range of 37.8 to 9600 cycles per second at a distance of three feet from any portion of the equipment, under any load condition, when tested using standard equipment and methods. Noise levels will include the noise from the motor. Mufflers or external baffles will not be acceptable for the purpose of reducing post-construction noise. Outdoor equipment at the pumps stations is anticipated to be limited to odor control fans and the standby generator, which will be located within an enclosure.</p>	<p>Design Engineers</p>
Air Quality and Dust	
<p>The Contractor will perform dust control operations, in an approved manner, whenever a nuisance or hazard occurs or when directed by the Engineer, even though other work on the project may be suspended.</p>	<p>Construction Contractors</p>
<p>Methods of controlling dust will meet all air pollutant standards as set forth by federal and state regulatory agencies.</p>	<p>Construction Contractors</p>
<p>All road surfaces will be broomed clean after backfilling.</p>	<p>Construction Contractors</p>
<p>Paved streets adjacent to work areas will be swept regularly.</p>	<p>Construction Contractors</p>
<p>Dump trucks will be covered with tarpaulins and have tightly fitting tailgates.</p>	<p>Construction Contractors</p>
<p>The Contractor will be required to maintain all excavations, embankments, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or outside the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.</p>	<p>Construction Contractors</p>
<p>Dust control will be generally accomplished by the use of water. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted. Calcium chloride may be used if permitted by the Engineer and the Town. The use of petroleum products is prohibited.</p>	<p>Construction Contractors</p>
<p>Sprinkling will be repeated at such intervals as to keep all parts of the disturbed area at least damp, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used.</p>	<p>Construction Contractors</p>
<p>Where necessary, carbon filters will be installed at the pumping stations to control odors.</p>	<p>Design Engineers</p>

Mitigation Measure	Party Responsible for Implementation
Vehicle Emissions	
Install an emission control device on each piece of diesel construction equipment to reduce emissions, including a diesel oxidation catalyst (DOC) or diesel particulate filter (DPF). Requires that a verified DOC be installed on the equipment.	Construction Contractors
Ultra-low sulfur diesel (ULSD) fuel [sulfur content less than 15 parts per million (ppm)] in all diesel-fired construction equipment.	Construction Contractors
Prohibit motor vehicle engines from idling more than five minutes (in compliance with the Massachusetts 5-minute idle law, 310 CMR 7.11), unless the engine is being used to operate a lift or refrigeration unit.	Construction Contractors
Contractors will be required to comply with the Massachusetts Diesel Retrofit Program and the Clean Construction Initiative. These provisions will be included in construction specifications.	Design Engineers
Greenhouse Gas Emissions	
Demonstrate new tree planting	Design Engineer
Minimize building footprint	Design Engineer
Minimize energy use through proper building orientation and use of appropriate landscaping (e.g., trees for shading paved areas or southern facing facades)	Design Engineer
Building Design, Construction, and Operation	
Building Envelope	
Improve building envelope through higher R-value insulation in walls, roof, and if appropriate, basement walls and ceiling	LWD, Design Engineers
Conduct inspection and comprehensive air sealing of building envelope to minimize air leakage	LWD, Design Engineers
Install lower U-value windows to improve envelope performance	LWD, Design Engineers
Incorporate window glazing to balance and optimize daylighting, heat loss and solar heat gain performance	LWD, Design Engineers
Evaluate use of high-albedo roofing materials to reduce heat absorption	LWD, Design Engineers
Maximize interior daylighting through floor plates, and use of skylights, clerestories and light wells	LWD, Design Engineers
Building Mechanical Systems and Lighting	
Prevent over-sizing of HVAC or other equipment by sizing only after efficiency measures have been incorporated to reduce Heating, Ventilating, and Air Conditioning (HVAC), lighting and other electrical loads	LWD, Design Engineers
Install high-efficiency HVAC systems and premium efficiency motors	LWD, Design Engineers
Use demand control ventilation	LWD, Design Engineers

Mitigation Measure	Party Responsible for Implementation
Use energy efficient boilers, heaters, furnaces, incinerators, or generators	LWD, Design Engineers
Seal and leak-check all supply air ductwork	LWD, Design Engineers
Incorporate motion sensors into lighting, daylighting, and climate controls	LWD, Design Engineers
Use efficient, directed exterior lighting, such as LED technology	LWD, Design Engineers
Install high efficiency lighting, including compact fluorescent lamps (CFLs) and LED technology as appropriate	LWD, Design Engineers
Provide automated energy management control system with the capacity to: Adjust and maintain set points and schedules Indicate alarms and problems Provide information on trends and operating history Operate mechanical and lighting systems to minimize overall energy usage	LWD, Design Engineers
Water Conservation	
Plant only native species that need minimal watering and/or use xeriscaping	Design Engineer
Materials	
Use building materials that are extracted and/or manufactured within the region	LWD, Design Engineers
Use low volatile organic compound (VOC) adhesives, sealants, paints, carpets, and wood	LWD, Design Engineers
Energy Information (Data Acquisition)	
Track energy performance of building and develop strategy to maintain efficiency by using VFDs and SCADA.	LWD and Design Engineers
Conduct 3rd party building commissioning to ensure energy performance	LWD, Design Engineers
Other Industrial Process Systems and/or Facilities	
Specify and procure most efficient equipment	Design Engineers
Include sufficient metering and controls for real-time monitoring and optimization of the process operations	LWD, Design Engineers
Construction Period Emissions	
Implement a construction waste management plan	Construction Contractors
Implement and enforce no-idling policies	Design Engineers, Construction Contractors

Mitigation Measure	Party Responsible for Implementation
Vegetation	
<p>Outside of areas requiring earthwork for the construction of new facilities, the Contractor will not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys will be fastened or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, the trunk will first be wrapped with a sufficient thickness of burlap or rags over which softwood cleats can be tied before rope, cable, or wire is placed. The Contractor will be responsible for any damage resulting from such use.</p>	<p>Construction Contractors</p>
<p>Trees will be protected by placing boards, planks, or poles around them where they may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's operations.</p>	<p>Construction Contractors</p>
<p>Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations will be restored as nearly as possible to its original condition.</p>	<p>Construction Contractors</p>
<p>Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations will be restored as nearly as possible to its original condition.</p>	<p>Construction Contractors</p>
<p>All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in in diameter will be coated as soon as possible with an approved tree wound dressing. All trimming or pruning will be performed in an approved manner by experienced workmen with saws or pruning shears.</p>	<p>Construction Contractors</p>
<p>Clearing operations shall be conducted in a manner to prevent falling trees from damaging trees designated to remain.</p>	<p>Construction Contractors</p>
<p>Trees that are to remain that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer will be removed and replaced.</p>	<p>Construction Contractors, Resident Engineers</p>
<p>Areas outside easements or limits of clearing will be protected from damage and no equipment or materials shall be stored in these areas.</p>	<p>Construction Contractors</p>
<p>All tree trunks, limbs, roots, stumps, brush, foliage, other vegetation, and objectionable material will be removed from the site and disposed of in an approved manner.</p>	<p>Construction Contractors</p>
<p>The Contractor will be responsible for placing sod, topsoil, fertilizer, seed, and mulch, and maintaining all seeded and sodded areas. Seeding will be required where grass existed prior to construction including all areas disturbed by installing service connections.</p>	<p>Construction Contractors</p>

Mitigation Measure	Party Responsible for Implementation
Loam will be fertile, natural soil, typical of the locality, free from large stones, roots, sticks, clay, peat, weeds, and sod and obtained from naturally well drained areas. It will not be excessively acid or alkaline nor contain toxic material harmful to plant growth. Stockpiled topsoil may be used where available.	Construction Contractors
Seed will be from the same or previous year's crop; each variety of seed will have a percentage of germination not less than 90, a percentage of purity of not less than 85, and will have not more than one percent weed content and contain no noxious weed seed.	Construction Contractors
The seed will be furnished and delivered premixed in the proportions specified above. Seed shall be delivered in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable state seed laws.	Construction Contractors
Mulch will be a specially processed cellulose fiber containing no growth or germination-inhibiting factors.	Construction Contractors
Sod will be as grown by an established sod grower, as approved by the Engineer and will consist of the following grasses:	Construction Contractors, Resident Engineers
Sod will be vigorous, well rooted, healthy turf, free from insect pests, disease, weeds, other grasses, stones, bare spots, burned spots and any other harmful or deleterious matter. Sod shall be machine stripped at a uniform soil thickness of approximately 1 in and not less than 3/4 in.	Construction Contractors
Loam shall be placed to a minimum depth of 6 inches. Where loam exists prior to construction in depths greater than 6 inches, it will be replaced to the full depth.	Construction Contractors
The Contractor will keep all seeded areas watered and in good condition, reseeding if and when necessary, until a good, healthy, uniform growth is established over the entire area seeded.	Construction Contractors
On slopes, the Contractor will provide against washouts by an approved method. Any washout which occurs will be regraded and reseeded until a good sod is established.	Construction Contractors
Topsoil stripped from construction areas will be segregated from subsoils. Topsoil will be stockpiled in approved areas and reused onsite.	Construction Contractors
In sections where a pipeline passes through grassed areas, the disturbed area will be loamed and seeded.	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
Traffic and Public Safety	
<p>Adequately safeguard all open excavations by providing temporary barricades, caution signs, lights, and other means to prevent accidents to persons and damage to property. Provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. The length or size of excavation will be controlled by the particular surrounding conditions but will always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench or prohibiting stacking excavated material in the street.</p>	Construction Contractors
<p>Take precautions to prevent injury to the public. Provide adequate light at all trenches, excavated material, equipment, or other obstacles, which could be dangerous to the public at night. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress.</p>	Construction Contractors
<p>Unless permission to close a street is received in writing from the Littleton Police Department, place all excavated material so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer.</p>	Construction Contractors
<p>Detours around construction will be subject to the approval of the Engineer, the Littleton Police Department and MassDOT (for work on state roadways). Where detours are permitted, provide all necessary barricades and signs as required to divert the flow of traffic.</p>	LWD, Design Engineers
<p>Under each construction contract, the Contractor will submit a traffic management plan for review and approval prior to any work commencing within the right of way. This plan will include phased plans showing the setup, number, and width of open lanes and a schedule for approval by the Engineer. Any detours will also be shown.</p>	Construction Contractors
<p>Expedite construction operations while traffic is detoured. Periods when traffic is being detoured will be strictly controlled by the Town.</p>	Construction Contractors, LWD
<p>All streets not subject to special restrictions may be closed between 7:00 AM and 4:00 PM subject to the approval of the Littleton Police Department.</p>	Construction Contractors
<p>Affected property owners must be notified by the Contractor 48 hours prior to road closures or any work that will interfere with access to their residences or places of business. Residents will be provided access to their properties at all times.</p>	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
Work on roads in the immediate vicinity of schools must be performed either during school summer vacation or during restricted hours, subject to the approval of the Town.	Construction Contractors
Emergency vehicles and school buses will be provided access to all streets at all times.	Construction Contractors
All streets shall be plated, as necessary, every night. No open excavations will be allowed after working hours.	Construction Contractors
All traffic control work performed by the Contractor must be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).	Construction Contractors
LWD will work with MassDOT to develop a plan for working within Routes 2A and 119 that satisfies the needs of residents while complying with MassDOT standard requirements for work in state roadways.	LWD, Design Engineers
No open excavations on roadways will be allowed after working hours.	Construction Contractors
Water Quality and Wetlands	
Necessary permits required for proper execution of the project will be obtained prior to commencement of work. A copy of each permit will be submitted to the Engineer.	LWD, Design Engineers, Construction Contractors
The Contractor will apply for and obtain a Construction General Permit (CGP) from EPA pursuant to the National Pollutant Discharge Elimination System (NPDES) program. The permit requires preparing and submitting a Notice of Intent (NOI) for Storm Water Discharges and Notice of Termination Form and preparation of a Storm Water Pollution Prevention Plan (SWPPP).	Construction Contractors
The Contractor will update the SWPPP as necessary so that the documents are always current in accordance with the NPDES regulations and describe erosion and sediment control and storm water pollution prevention at all locations of construction and for all activities of construction.	Construction Contractors
The requirements of any applicable Littleton Conservation Commission Order of Conditions for each phase of construction will be followed. Preconstruction meetings will be held with the Conservation Agent for each phase of construction.	LWD, Design Engineers, Construction Contractors
The Contractor will submit a dewatering plan for review and approval by the Conservation Commission prior to the start of work for each phase of construction. The plan will include the methods and discharge points proposed to be used by the Contractor. The Contractor will be required to retain the services of a Professional Engineer registered in Massachusetts to prepare dewatering and drainage system designs and submittals.	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
The Contractor will submit the location of proposed stockpile areas to the Conservation Commission for approval prior to the start of work.	Construction Contractors
The Contractor will have a copies of the Order of Conditions and the approved SWPPPs on-site at all times.	Construction Contractors
The Contractor will take sufficient precautions during construction to minimize the runoff of polluting substances such as silt, clay, fuels, oils, bitumens and calcium chloride into the supplies and surface waters of the state. Special precautions will be taken in the use of construction equipment to prevent operations which promote erosion.	Construction Contractors
Disposal of drainage will be in an area approved by LWD. Drainage will not be disposed of until silt and other sedimentary materials have been removed. Particular care will be taken to prevent the discharge of unsuitable drainage to a water supply, surface water body, or other resource area.	Construction Contractors
Staked compost logs will be provided at points where drainage from the work site leaves the site, to reduce the sediment content of the water. Sufficient compost logs will be provided such that all flow will filter through the hay. Other methods which reduce the sediment content to an equal or greater degree may be used as approved by the Engineer.	Construction Contractors
When excavating in wetlands or floodplain, where no temporary diversion structure is required, excavated material will be placed on the uphill side of the trench/excavation so that the trench/excavation serves as a barrier between the excavated material and the wetland or floodplain.	Construction Contractors
Erosion and sedimentation control will be installed prior to site preparation activities. The Contractor will be required to contact the Littleton Conservation Agent to inspect siltation controls prior to excavation.	Construction Contractors
All work will be scheduled and conducted in a manner that will minimize the erosion of soils in the area of the work. Erosion control measures will be provided as required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc.	Construction Contractors
Offsite surface water will be diverted around the site, to a downstream channel ahead of siltation barriers. Ditches around construction areas will also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches will be backfilled, and the ground surface restored to original condition.	Construction Contractors
Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in a surface water body, will not be directly returned to the water body. Such waters will be diverted through a settling basin or filter before being directed into water bodies.	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
The Contractor will not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm water. Water from dewatering operations will be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels. Dewatering hose intakes will be kept off the bottom of the trench to minimize the pumping of silt.	Construction Contractors
The Contractor will repair any damage caused by dewatering and drainage system operations.	Construction Contractors
Existing or new sanitary sewers will not be used to dispose of drainage unless written permission is obtained from the Town.	Construction Contractors
Crushed stone for sediment filtration devices, access ways and staging areas will conform to Mass Highway Department "Standards and Specifications for Highways and Bridges" Section M2.01.3.	Construction Contractors
Filter bags will be placed in catch basins that discharge into wetlands, water supply or surface water bodies.	Construction Contractors
Straw mulch will be utilized on all newly graded areas to protect areas against washouts and erosion.	Construction Contractors
Silt fences will be positioned as necessary to prevent off site movement of sediment.	Construction Contractors
Staging areas and access ways, which in the opinion of the Engineer will erode due to truck traffic, will be surfaced with a minimum depth of 4 in of crushed stone.	Construction Contractors, Resident Engineers
The Contractor will visually inspect all sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas, the Contractor will promptly install additional devices as needed. Sediment controls in need of maintenance will be repaired promptly.	Construction Contractors
Where silt fence is used, accumulated sediment will be removed once it builds up to 1/2 of the height of the fabric. Damaged fabric will be replaced or patched with a 2 ft minimum overlap. Other repairs will be made as necessary to ensure that the fence is filtering all runoff directed to the fence.	Construction Contractors
Temporary mulch will be applied to areas where rough grading has been completed but final grading is not anticipated to begin within 30 days.	Construction Contractors
Once the site has been fully stabilized against erosion, sediment control devices and all accumulated silt will be removed and disposed of in a proper manner.	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
All preventative measures will be taken to avoid the spillage of petroleum products and other pollutants. Routine vehicle and equipment maintenance and refueling will only occur in designated areas located more than 100-feet from wetland resource areas. At each staging area, spill clean-up equipment (shovels, brooms, absorbent pads and materials) will be maintained for use in the event of an accidental spill.	Construction Contractors
All fuel, oil, solvents, etc. will be stored in original containers or in containers manufactured for storing such material that are clearly labeled as to the contents of the container. Fuel, oil and other potentially hazardous materials will be kept secured in a locked storage locker designed and properly vented for storing such material. Copies of Safety Data Sheets (formerly "MSDSs") for all applicable materials will be maintained at the construction site and will be readily accessible for employees or inspection officials.	Construction Contractors
The Contractor will immediately clean up any and all spills of fuel, oil, or other potentially hazardous materials. Any and all reportable spills will be reported to the proper authorities (Littleton Fire Department, Board of Health, MassDEP, and others as applicable).	Construction Contractors
Wherever feasible, wetland resource areas and associated buffer zones were avoided when laying out the project. The majority of work will take place within roadways.	Design Engineers
Any permanent structures constructed as part of the project in areas requiring review of the Littleton Conservation Commission, including the proposed wastewater resource recovery facility site, will be designed to comply with MassDEP's Stormwater Standards.	Design Engineers
Cultural Resources	
Conduct intensive (locational) archaeological survey at 242 King Street.	Historic and Archeologic Subcontractor to LWD
Comply with any historical and archeological mitigation measures as recommended by the Massachusetts Historical Commission.	LWD and Construction Contractors
Materials Management, Construction Debris, Solid Waste and Recycling	
Provide for the flow of sewers, drains and water courses interrupted during the progress of the work, and immediately cart away and remove all offensive matter.	Construction Contractors
During the course of the work, keep the site of operations in as clean and neat a condition as possible. Dispose of all residues resulting from the construction work and, at the conclusion of the work, remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction	Construction Contractors

Mitigation Measure	Party Responsible for Implementation
operations and leave the entire site of the work in a neat and orderly condition.	
Excavated material will be segregated for use in backfilling provided the material meets the requirements for its intended use.	Construction Contractors
It is expressly understood that no excavated material will be removed from the site of the work or disposed of, except as directed by the Engineer. When removal of surplus materials has been approved by the Engineer, dispose of such surplus material in approved designated areas.	Construction Contractors, Resident Engineer
Should conditions make it impracticable or unsafe to stack material adjacent to the trench, the material will be hauled and stored at a location provided. When required, it will be re handled and used in backfilling the trench.	Construction Contractors
All debris and excess material will be disposed of in an environmentally sound manner. Dumping or disposal of debris or excess material in any stream corridors, any wetlands, any surface waters, any floodplains or at unspecified locations is prohibited. Discharging of solid waste deleterious to any public or private property not specified for said purpose is prohibited.	Construction Contractors
Storing construction equipment and vehicles and/or stockpiling construction materials at locations not previously specified and approved by the Town for said purposes is prohibited.	Construction Contractors
Dumping, disposing, or stockpiling of any material at any location within the Town of Littleton without approval of the Conservation Agent is prohibited.	Construction Contractors
Burning at the project site for the disposal of refuse and debris or cleared and grubbed materials will not be permitted.	Construction Contractors
All pieces of ledge and boulders which are not suitable for use in other parts of the work will be removed and disposed of in an approved manner.	Construction Contractors
Surplus imported fill will be removed and disposed off site.	Construction Contractors
The Contractor will either be, or employ the services of a Subcontractor, who is licensed in the Commonwealth of Massachusetts to perform asbestos abatement where applicable	Construction Contractors
Management of Hazardous Materials	
Removal of the exterior asbestos cement shingles and asbestos cement panels from the existing barn will adhere to the special safeguards defined in the Air Pollution Control regulations (310 CMR 7.15)	LWD and Construction Contractors
ACM or asbestos containing waste material, including VAT and asphaltic-asbestos felts and shingles will not be disposed of at a facility operating as a recycling facility in accordance with 310 CMR 16.05.	LWD and Construction Contractors

Mitigation Measure	Party Responsible for Implementation
For demolition work involving lead, the Contractor will be held in compliance to the Federal National Emission Standards for Hazardous Air Pollutant Standards (NESHAPs) regulation governed by MassDEP which prohibits airborne emissions from any construction/demolition activity. To achieve this, the use of engineering controls to control dusts and measures to protect soils from contamination of paint, paint dust or debris resulting from their demolition activity will be necessary.	Construction Contractors
Excavated materials will be managed in accordance with applicable Massachusetts Contingency Plan (MCP) requirements. These provisions include identification of contaminated materials, segregation, proper stockpiling or containment, and sampling and analysis to determine the appropriate facility for reuse, recycling, or disposal of these materials.	Construction Contractors
For demolition work involving lead, the Contractor will be held in compliance to the Federal National Emission Standards for Hazardous Air Pollutant Standards (NESHAPs) regulation governed by MassDEP which prohibits airborne emissions from any construction/demolition activity.	Construction Contractors
The Contractor will identify demolition methods that reduce or eliminate worker exposure to lead.	Construction Contractors
Dewatering discharges will be managed in accordance with MCP requirements, including identification of contaminated groundwater, proper containment and pretreatment, and required sampling and analysis.	Construction Contractors
The Contractor will submit a Hazardous Material Health and Safety Plan detailing procedures and protocols to protect workers and the general public from potential hazards during the construction work.	Construction Contractors
The Contractor will submit an Emergency Response Plan detailing procedures to address the discovery of hazardous materials that could pose an imminent hazard to workers and the public, and procedures to address emergencies that involve fires and/or explosions.	Construction Contractors
Hazardous materials management activities will be conducted under the supervision of a Licensed Site Professional (LSP) in accordance with MCP Utility-Related Abatement Measure or Immediate Response Action provisions, as appropriate.	Construction Contractors

12.6 Self-Certification

The mitigation measures in the table above will be implemented during each phase as described herein, to minimize, to the maximum extent feasible, the environmental impacts of the proposed Project. Applicable federal, state, and local permits will be obtained during design and construction of each phase of the project.

13.0 Responses to Agency and Public Comments

The Certificate of the Secretary of Energy and Environmental Affairs require that the issues raised by commenters are addressed and includes direct responses to comments to the extent that they are within MEPA jurisdiction.

The following agencies/organizations/residents submitted comments on the EENF/Proposed EIR:

- Massachusetts Department of Transportation (MassDOT) dated 04/22/22
- R. Zimmerman dated 03/21/22
- Massachusetts Historical Commission (MHC) dated 04/01/22
- Organization for the Assabet, Sudbury & Concord Rivers (OARS) dated 04/21/22
- Natural Heritage Endangered Species Program dated 4/22/22
- Massachusetts Department of Environmental Protection (MassDEP) dated 04/22/22

Direct Response to Massachusetts Department of Transportation (MassDOT) dated 04/22/22

Comment: "The Proponent should coordinate with the Town of Littleton and MassDOT District 3 to minimize traffic disruption during project construction."

Response: LWD submitted an Application for a MassDOT Access Permit that is currently under review by MassDOT. LWD will continue to coordinate all construction activities with MassDOT.

Direct Response to R. Zimmerman dated 03/21/22

Comment: .. "smart sewer" the commercial zones by subsidizing the cost of the sewer system, mixing the organics in the wastewater with food waste and via anaerobic digestion creating methane to use to fire a generator. In addition, using a membrane bioreactor for wastewater treatment in the facility, treated water would be reclaimed and resold for use in all applications except bathing and drinking. The treatment facility, generically called a Community Water and Energy Resource Center (CWERC), would then subsidize its cost by collecting tipping fees for food waste, selling electricity, through combined heat and power selling heating and cooling to nearby facilities, and reclaiming and selling nearly potable water.

..reclamation and reuse should be a requirement of these MEPA findings..

Response: Refer to Section 2.3.

Direct Response to Massachusetts Historical Commission (MHC) dated 04/01/22

Comment: "The MHC requests that an updated MHC Form B pe prepared for the property by a qualified architectural preservation planner, and provided to MHC."

Response: Refer to Section 5.

Comment: "The MHC requests that a copy of the PNF and ENF be provided to the Littleton Historical Commission. Any comments received from the Littleton Historical Commission should be sent to the MHC."

Response: Refer to Section 5.

Comment: "The MHC requests that an intensive (locational) archaeological survey (950 CMR 70) be conducted for the WRRF aspect of the project."

Response: Refer to Section 5.

Direct Response to Organization for the Assabet, Sudbury & Concord Rivers (OARS) dated 4/21/22:

Comment: The Secretary must require that the applicant properly investigate a legitimate alternative that squarely addresses the need for infrastructure that promotes sustainable water use, avoids environmental damage, and builds climate resiliency.

Response: Potential water use is discussed in Section 2.3, refer to Section 10.0 for Alternatives to the WRRF, and Section 8.0 for climate resiliency.

Direct Response to Natural Heritage Endangered Species Program dated 4/22/22:

Comment: "As the project moves forward to contracting and implementation, the Proponents should check the then-current Massachusetts Natural Heritage Atlas to be certain that all the work remains outside of Priority and Estimated Habitat. If work enters or impacts Priority or Estimated Habitat, the Proponents should review the exemptions in 321 CMR 10.14 and, as necessary, be in contact with MassWildlife."

Response: The proponent agrees.

Comment: "Further, we recommend that all areas not maintained as lawn/grass, should be reseeded with a native restoration seed mixes composed off species native to the Middlesex County in accordance with "The Vascular Plants of Massachusetts: A County Checklist First Revision" (Dow Cullina, M, B Connolly, B Sorrie, and P Somers. 2011. MA NHESP DFW; available online from the State Library of Massachusetts at archives.lib.state.ma.us)."

Response: The proponent is using a seed mix that complies with the above, refer to Section 3.5.3.

Direct Response to Massachusetts Department of Environmental Protection (MassDEP) dated 04/25/22

Comment: "The EENF/Proposed EIR states that "continued monitoring" will determine whether the two phases not included in the Project will be implemented but does not describe the monitoring program or the results that would trigger the need for those phases. MassDEP believes that monitoring should be described in Proposed Section 61 Findings and may be included in the Wastewater Permit."

Response: Phases 3 and 4 are no longer proposed, refer to Section 1.5.

Comment: "Any future MEPA filings should further define the design flows for each phase of the Project further, including a description of the design basis for each phase."

Response: Refer to Table 1-1 in Section 1.4.

Comment: "The EENF/Proposed EIR and MassDEP's hydrogeologic approval for the Project (issued on April 4, 2019, with a follow-up on May 23, 2019) states the treated effluent will be discharged to a disposal system designed with a capacity of approximately 208,000 gallons per day (gpd). However, information provided after the March 29, 2022, MEPA scoping session shows a final design flow of 290,000 gpd, which exceeds the proposed flows. The hydrogeologic analysis examined the discharge location's ability to receive no more than 244,784 gpd of treated effluent. The Proponent should explain how this discrepancy will be addressed."

Response: Refer to Section 2.2.

Comment: The Proponent should clarify the ownership, operation, and maintenance responsibilities of the proposed pump stations. The Proponent should state whether these pump stations will be owned and operated by the Proponent or will be privately owned pump stations that will be connected to the municipal sewers. It is preferable that all pump stations be owned and operated by the Proponent. The Proponent shall verify that all existing pump stations that will be used as part of the Project shall meet TR-16 standards and be fully capable of conveying full buildout flows to the WRRF."

Response: Refer to Section 1.3.

Comment: "The Proponent should clarify that the existing effluent disposal system for the Littleton High School wastewater treatment facility will not be utilized as part of the Project. The existing disposal system should be abandoned or removed."

Response: The existing effluent disposal system will be decommissioned with the decommissioning of the existing wastewater treatment facility.

Comment: "The Proponent indicated during the MEPA scoping meeting that the potential for wastewater reuse remains under consideration. Please note that any reuse of treated wastewater must comply with 314 CMR 20.00, which may entail more stringent effluent limits."

Response: Proponent agrees with MassDEP's comment.

Comment: "The EENF/Proposed EIR indicates the treatment of sewage sludge or residuals will take place as part of the Project. It is MassDEP's understanding that no sludge treatment or residuals processing is included in the Project. Please confirm whether there will be sludge treatment or residuals processing."

Response: There will be no sludge treatment at the proposed WRRF. Sludge will be stored in a sludge holding tank, decanted, and hauled offsite.

Comment: "The EENF/Proposed EIR also mentions that the Project will generate traffic related to delivery of septage to the Facility and transportation of girt and sludge from the Facility. The Proponent should provide additional information about these processes."

Response: There will be no septage delivered to the WRRF. Sludge from the wastewater treatment process will be stored in a sludge holding tank, decanted, and hauled offsite. The traffic related to sludge hauling is shown in Figure 8. This is considered typical for treatment facilities of this size.

Comment: "Clarification is needed for all wetlands and BZ impacts. In future MEPA filings the Proponent should provide an updated summary table of all temporary and permanent wetland resource area and BZ impacts, especially impacts related to the Facility site, the Great Pond Pump Station site and roadway work. In addition, the narrative states that there will be temporary BZ, BLSF and RA impacts in Phases 1B & 2 roadway work. These impacts must be quantified."

Response: Refer to Section 3.3.

Comment: "MassDEP notes that the wetlands impact numbers in the NOI differ from the numbers in the EENF/Proposed EIR. MassDEP may provide additional commentary following technical review of the Project."

Response: Refer to Section 3.3.

Comment: "The Proponents should demonstrate in any future MEPA submittals that the Project complies with the Performance Standards for BLSF found in 310 CMR 10.57(4), specifically those requiring that compensatory storage be incrementally equal to the theoretical volume of flood water "at each elevation" and unrestricted hydraulic connection is provided to the same waterway."

Response: Refer to Section 3.4.

Comment: "It is unclear if the proposed culvert beneath the access road provides an unrestricted connection to existing BLSF that meets performance standards. The proposed roadway at elevation 212 feet and multiple emergency spillways may prevent such a connection and could result in flooding of the site access road during storm events. Future plans should show the proposed access and resultant wetland impacts needed to access the compensatory storage for construction and future operation and maintenance."

Response: Refer to Sections 3.4 and 4.3.

Comment: "It appears that BLSF alteration may exceed the 10% or 5,000 sf threshold of significance for the protection of wildlife habitat and may require the completion of a wildlife habitat evaluation. The Proponent should demonstrate whether the Project meets or exceeds this threshold. To adequately compensate for BLSF loss, a long-term vegetation management plan should be submitted as part of any future MEPA filings to prevent the establishment and spread of phragmites."

Response: Refer to Section 3.4.

Comment: "MassDEP recommends that the Proponent evaluate stormwater runoff impacts during construction and post-construction, and the Proponent should demonstrate that 1) source controls, pollution prevention measures, erosion and sediment controls and the post-development drainage system will be designed to comply with the MassDEP Stormwater Management regulations, and 2) the standards for water quality and quantity impacts and for impaired waters are being met."

Response: Refer to Section 4.

Comment: "Beaver Brook is an impaired waterbody with the segment adjacent to the proposed WRRF listed on the Massachusetts Year 2014 Integrated List of Waters for requiring a TMDL (impairments are fecal coliform/dissolved oxygen/low pH/TSS.) The Proponent shall design the stormwater management system to address the impairments listed in the TMDL."

Response: The proponent agrees. Refer to Section 4.

Comment: "The Stormwater Management regulations require that the Proponent shall consider environmentally sensitive site design that incorporates LID and the use of integrated management practices (IMP) for control of stormwater, either alone or in combination with conventional drainage control measures."

Response: Refer to Section 4.

Comment: "Before construction begins, the Proponent will be required to file an NOI with the U.S. Environmental Protection Agency for coverage under the National Pollution Discharge Elimination System's General Permit for Storm Water Discharges from Construction Activities and will develop and implement a Stormwater Pollution Prevention Plan to address stormwater controls during Project construction for Projects that disturb more than one acre."

Response: The proponent agrees.

Comment: "The Proponent should also determine whether the following U.S. EPA NPDES permit is necessary prior to commencing Project construction: Dewatering General Permit - <https://www.epa.gov/npdes-permits/dewatering-general-permit-dgp-massachusetts-new-hampshire>."

Response: The proponent's selected Contractor will prepare and file a U.S. EPA NPDES Construction General Permit (CGP) which allows for dewatering with applicable mitigation measures as would be outlined in the SWPPP also to be prepared by the selected Contractor.

Comment: "MassDEP requests that the Proponent incorporate long-term phragmites management into the Section 61 findings as mitigation measures."

Response: Refer to Sections 3.5 and 12.5.

Comment: "Proponent should propose measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during both construction and demolition. Because the Project is located roadways and abuts a school, excessive dust generation is a concern. The Proponent

should consider commercially available dust suppression methods including use of a water truck and/or spreading calcium chloride during the construction period.”

Response: Mitigation of dust, noise, and odor nuisance conditions is a requirement in the contract specifications.

Comment: “MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA’s Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.”

Response: The Proponent agrees.

Comment: “It is unclear whether decommissioning of the existing treatment plant will include demolition and if so, whether any building components include asbestos-containing materials. Before beginning any demolition or renovation, the Proponent is required to have the structures inspected by a licensed asbestos inspector to identify the presence, location, and quantity of any asbestos-containing material (ACM) and prepare a written asbestos survey report... If any ACM need to be abated through non-traditional methods, the Proponent must apply for and obtain approval from MassDEP through Application BWP AQ36-Application for Non-Traditional Asbestos Abatement Work Practice Approval.”

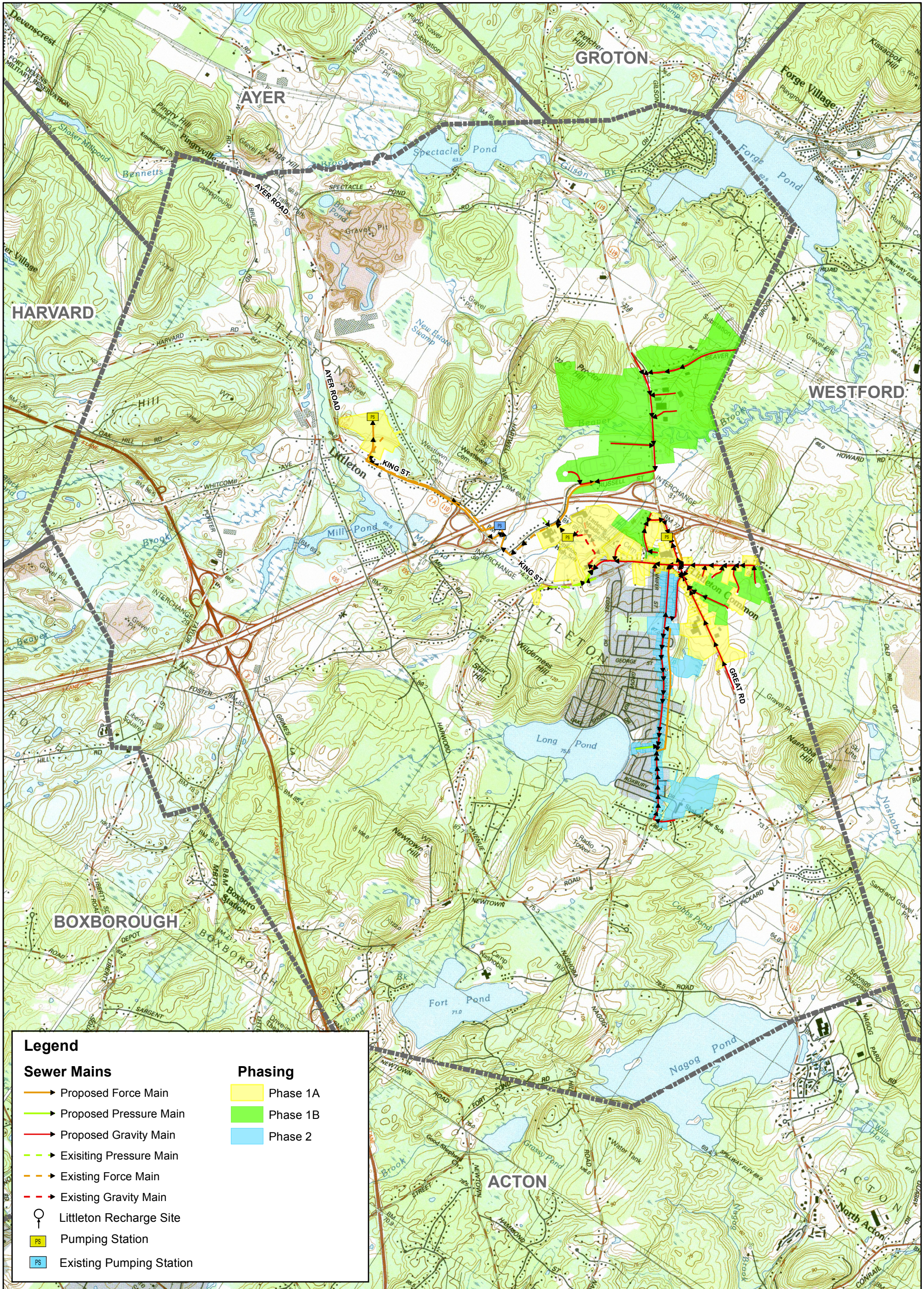
Response: The Proponent agrees. An assessment will be completed prior to decommissioning the existing treatment facility and will comply with all requirements.

Comment: “Demolition activities may generate asphalt, brick, and concrete (ABC) debris. If ABC debris will be crushed at the site of generation and used for fill in accordance with 310 CMR 16.03(2)(b)5, the Proponent must notify MassDEP and the Board of Health at least 30 days before beginning the crushing operation.”

Response: The Proponent agrees. An assessment will be completed prior to demolition activities and will comply with all notification requirements.

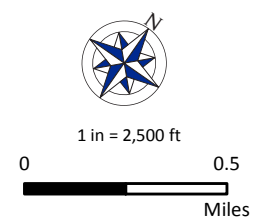


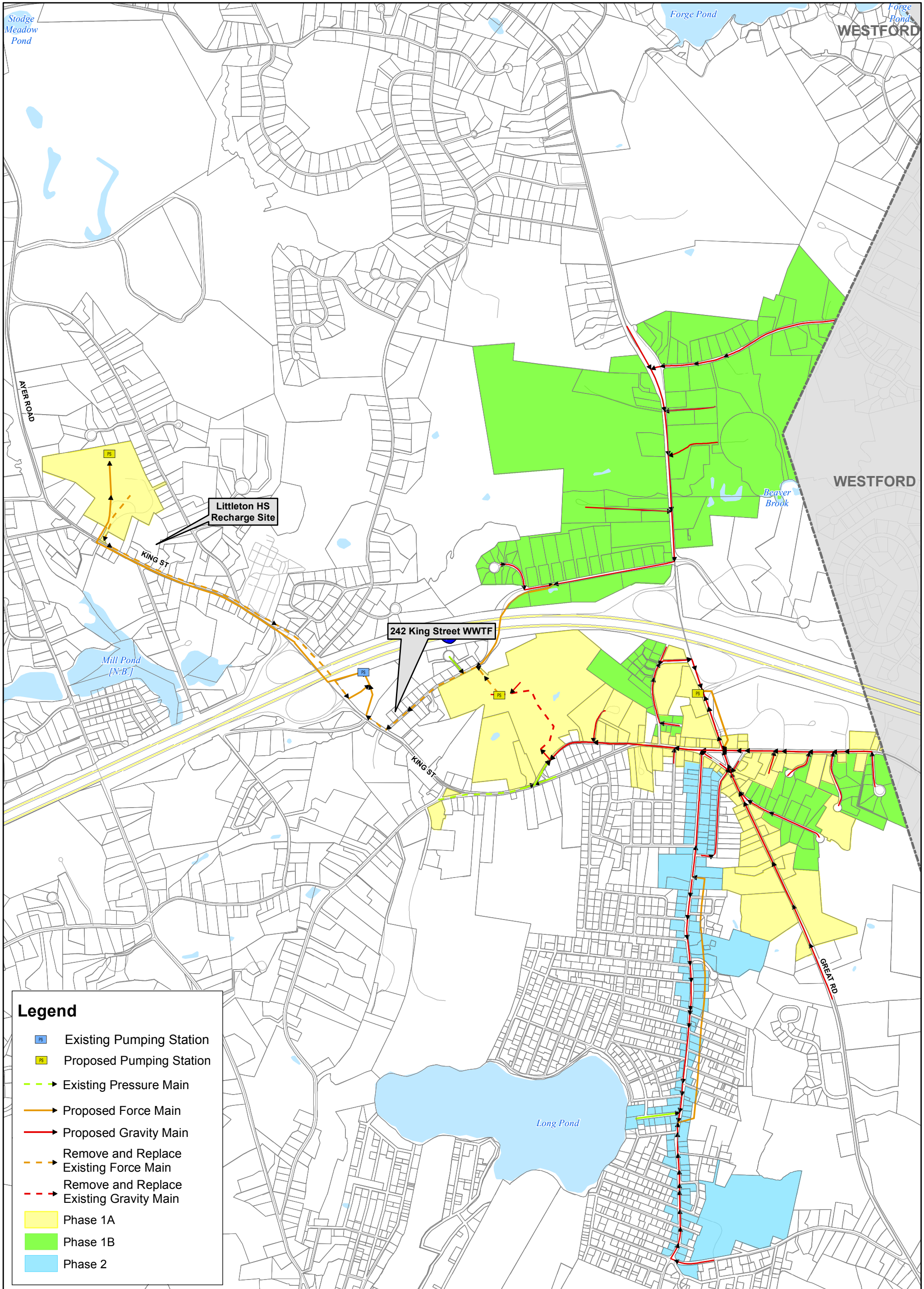
Figures



Littleton, MA
 Locus Map
 February 2022

Figure 1: Location Map



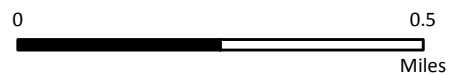


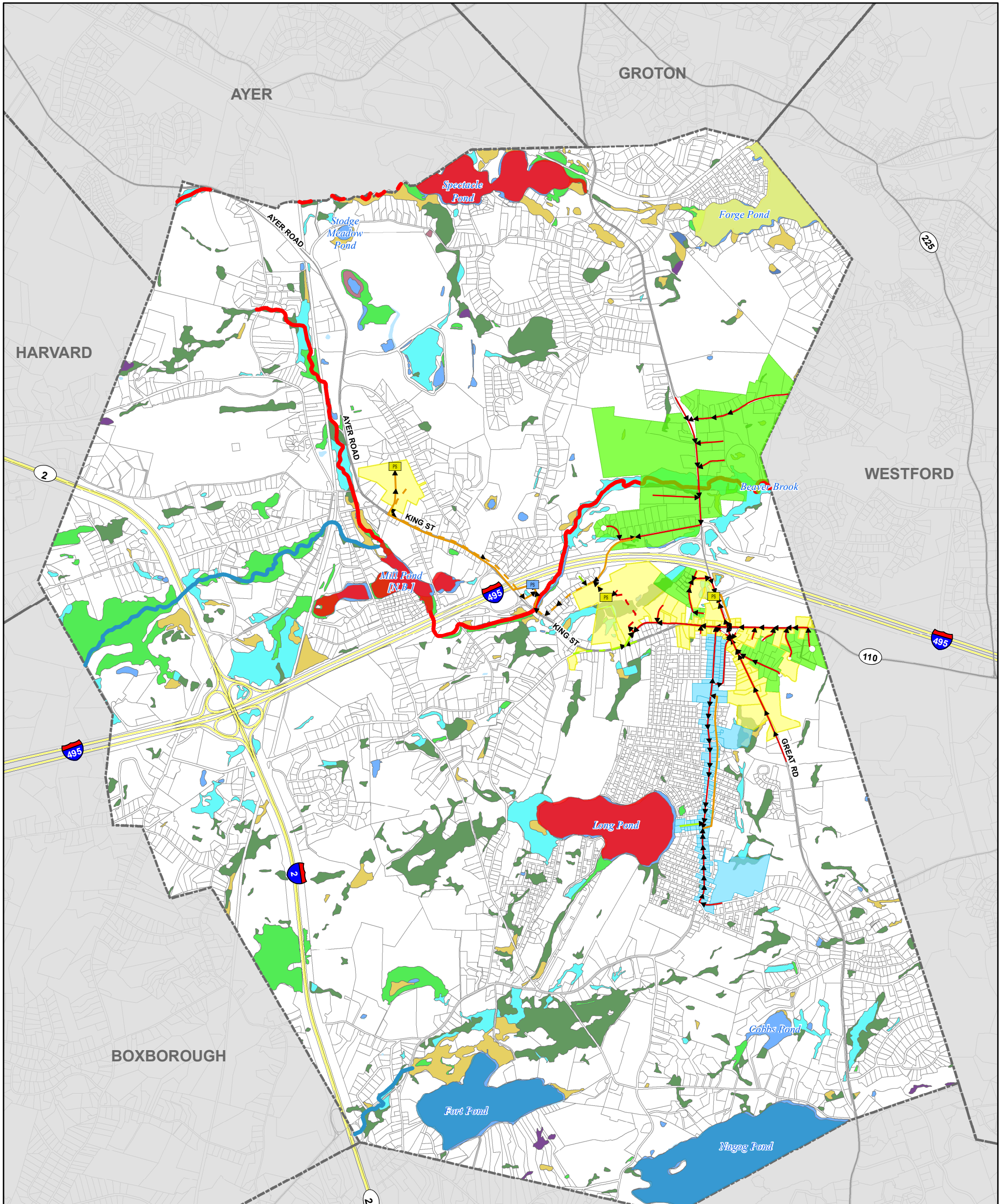
Littleton, MA
 Single Environmental Impact Report
 May 2022

Figure 2: Recommended Plan



1 in = 1,250 ft



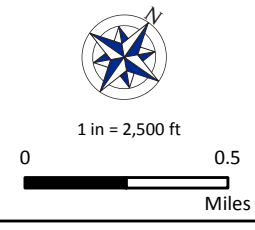


Sewer Main	Phasing	Wetlands	MassDEP Intergrated List of Waters
Proposed Force Main	Phase 1A	BOG	Streams
Proposed Pressure Main	Phase 1B	DEEP MARSH	No Uses Assessed
Proposed Gravity Main	Phase 2	OPEN WATER	Impaired TMDL Required
Existing Pressure Main		SHALLOW MARSH MEADOW OR FEN	Ponds
Existing Force Main		SHRUB SWAMP	No Uses Assessed
Existing Gravity Main		WOODED SWAMP CONIFEROUS	Impaired - TMDL is Completed
Littleton Recharge Site		WOODED SWAMP DECIDUOUS	Impaired - TMDL Required
Pumping Station		WOODED SWAMP MIXED TREES	
Existing Pumping Station			

Figure 3: MassGIS Wetlands

Littleton, MA

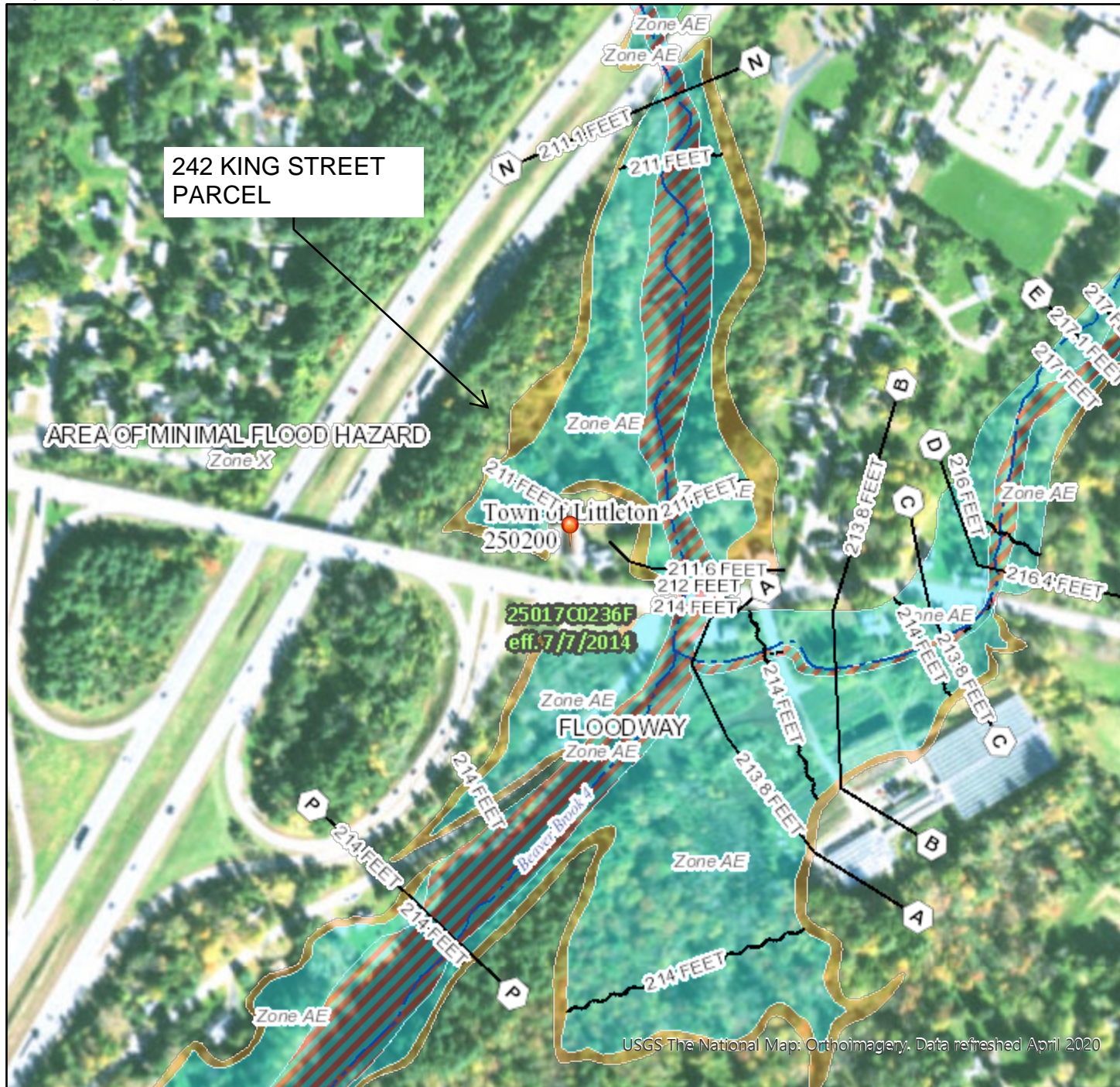
February 2022



National Flood Hazard Layer FIRMette



71°29'44"W 42°32'36"N



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

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

OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

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 9/11/2020 at 8:52 AM 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.

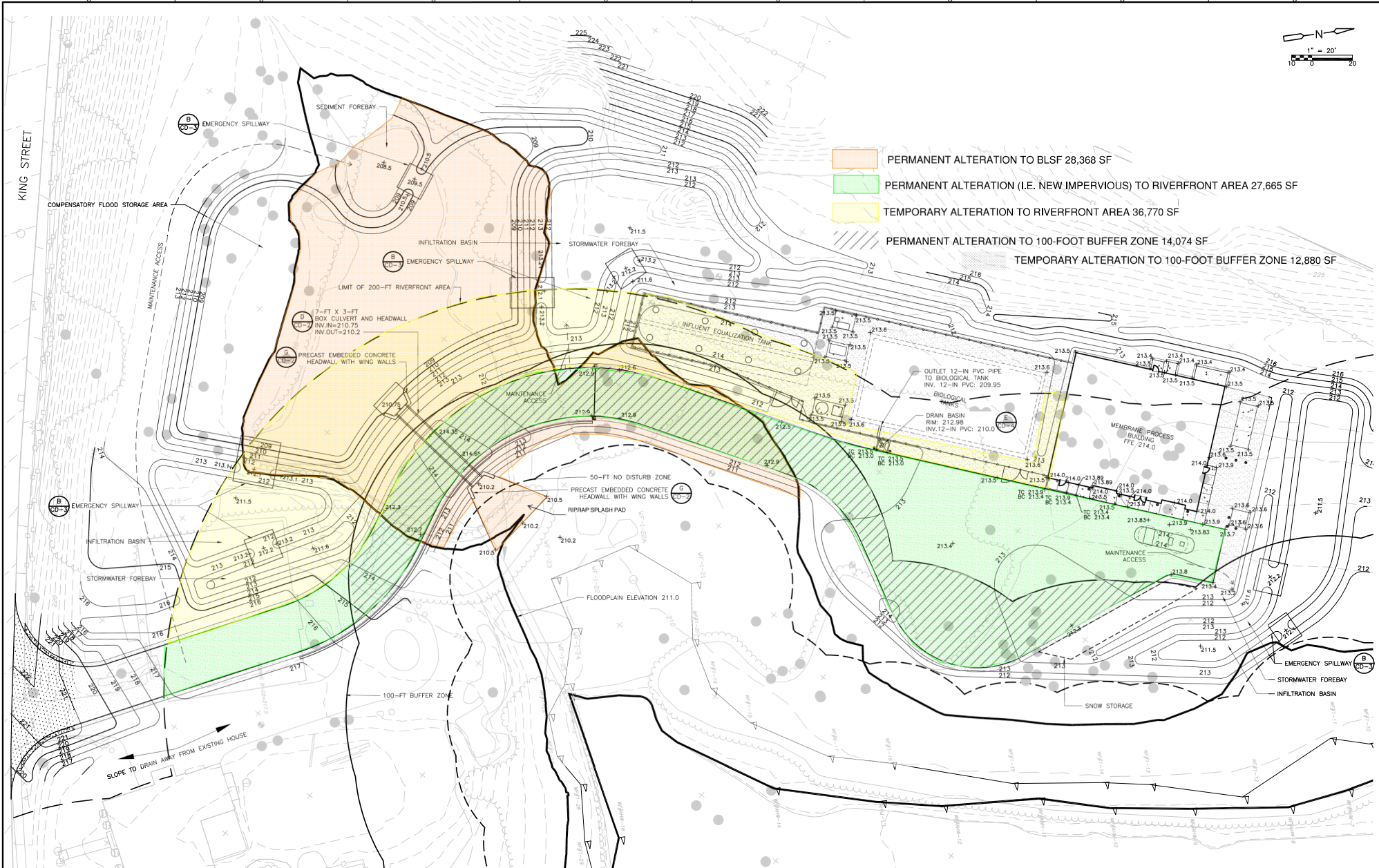
0 250 500 1,000 1,500 2,000 Feet 1:6,000

71°29'7"W 42°32'10"N

USGS The National Map: Orthoimagery. Data refreshed April 2020

FIGURE 4: FEMA FLOODPLAIN MAP

THESE DOCUMENTS ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.



REV. NO.	DATE	DRWN	CHKD	REMARKS

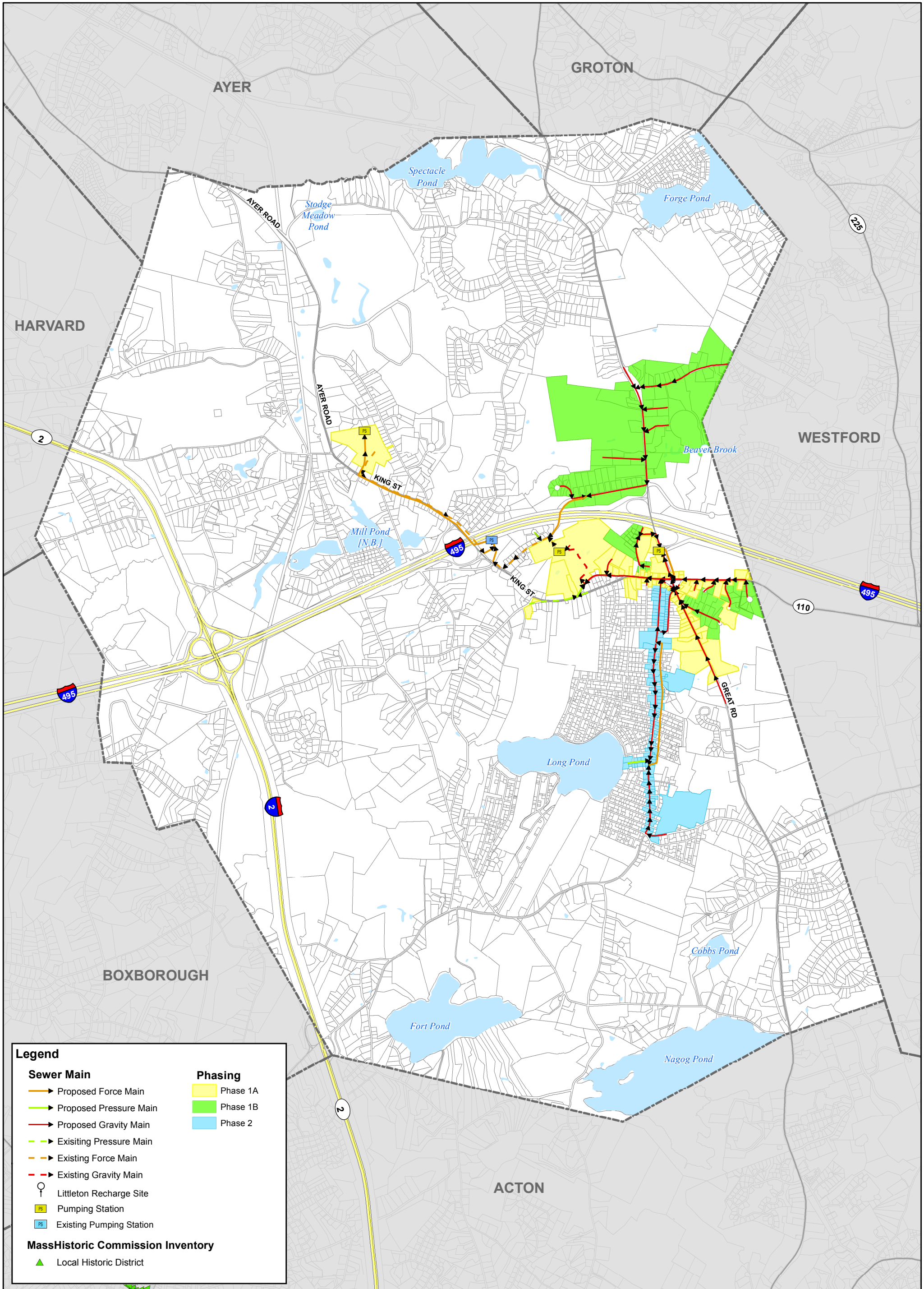
DESIGNED BY: M. DODDSON
 DRAWN BY: J. BRONKHORST
 SHEET CHECKED BY: M. DODDSON
 CROSS CHECKED BY: W. JENYEL
 APPROVED BY: X
 DATE: MAY 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-6000

LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

FIGURE 5: WETLAND RESOURCE AREA IMPACTS

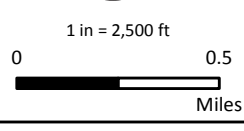
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 SHEET NO.

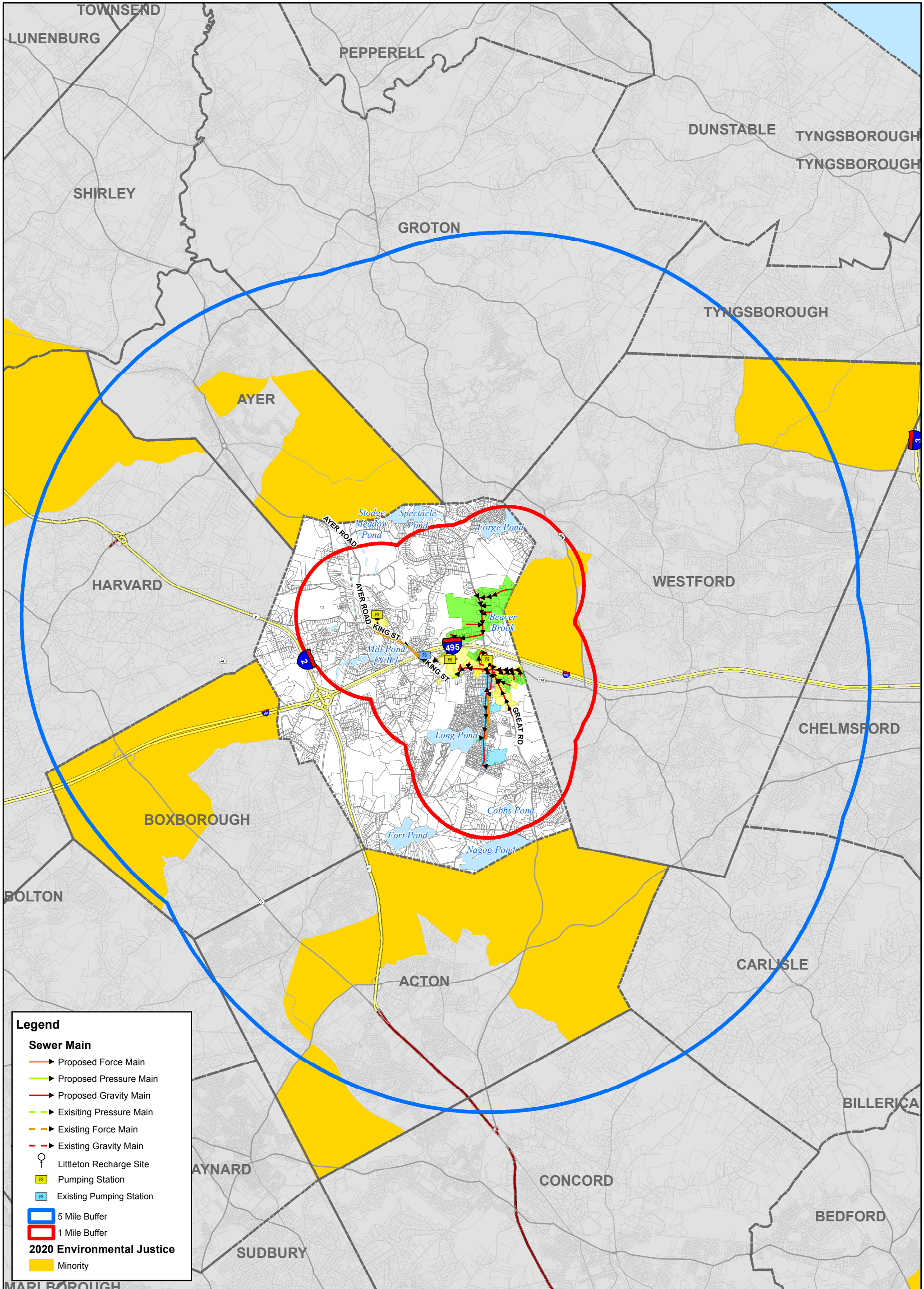


Littleton, MA

February 2022

Figure 6:
Historical Resources





Legend

Sewer Main

- Proposed Force Main
- Proposed Pressure Main
- Proposed Gravity Main
- Existing Pressure Main
- Existing Force Main
- Existing Gravity Main

○ Littleton Recharge Site

PS Pumping Station

PS Existing Pumping Station

5 Mile Buffer

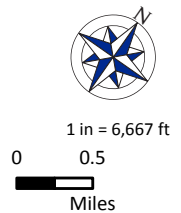
1 Mile Buffer

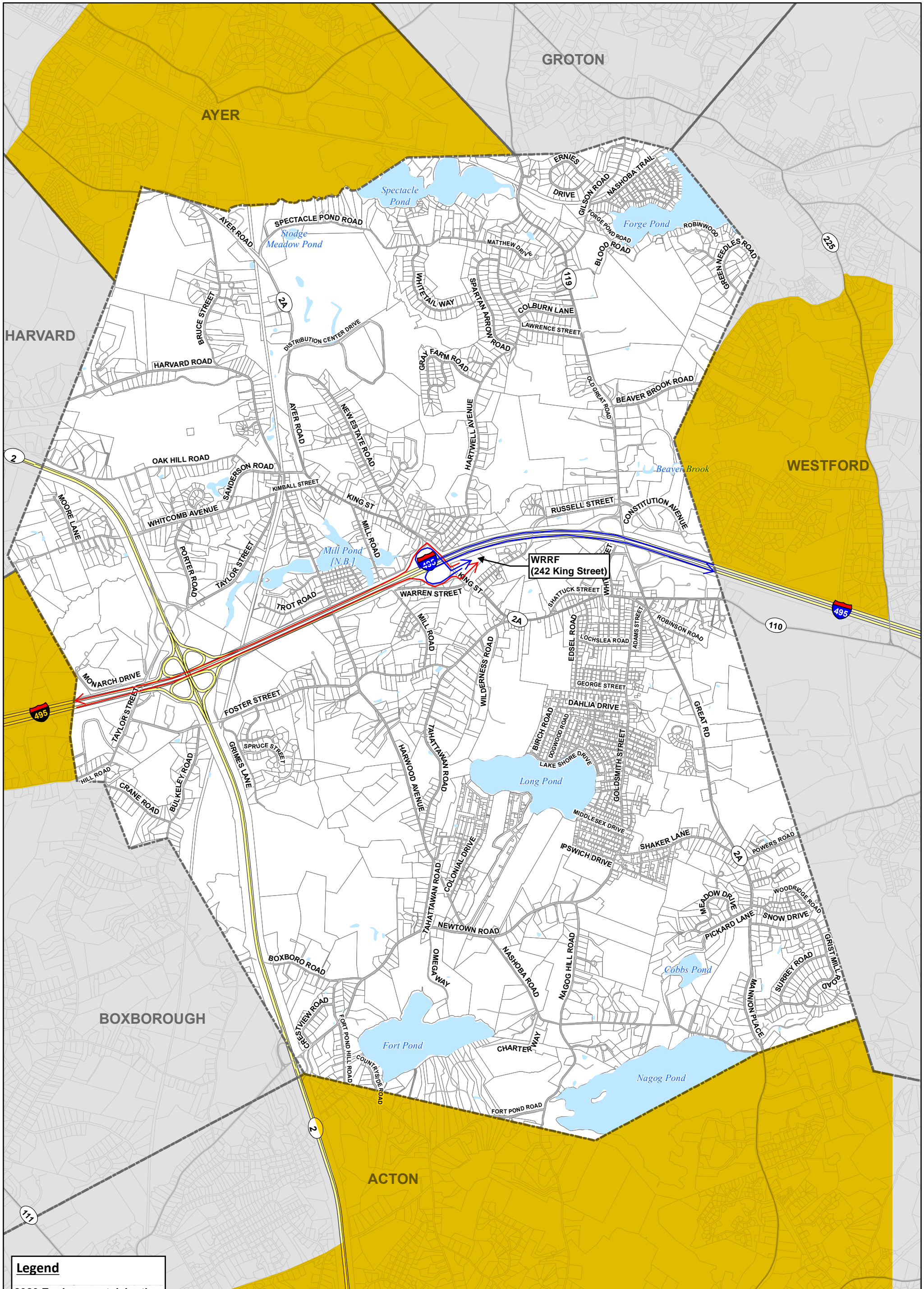
2020 Environmental Justice

Minority

Littleton, MA
February 2022

Figure 7: 2020 Environmental Justice Block Groups



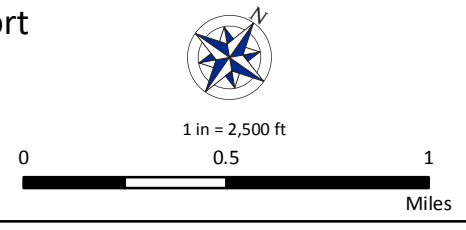


Legend

- 2020 Environmental Justice Minority
- Potential Truck Route 1
- Potential Truck Route 2

Littleton, MA
 Single Environmental Impact Report
 May 2022

Figure 8 - Average Daily Trips



Attachment A
MEPA Certificate on EENF with Comment Letters



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
<http://www.mass.gov/eea>

April 29, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM AND
PROPOSED ENVIRONMENTAL IMPACT REPORT

PROJECT NAME : Littleton Sewer System Expansion
PROJECT MUNICIPALITY : Littleton
PROJECT WATERSHED : Merrimack
EEA NUMBER : 16537
PROJECT PROPONENT : Littleton Water Department
DATE NOTICED IN MONITOR : March 9, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and Proposed Environmental Impact Report (EIR) submitted by the Proponent in accordance with 301 CMR 11.05(9) with a request that I allow a rollover in accordance with 301 11.06(13). As noted below, comments submitted by Agencies identified the need for additional information and analyses that were not provided in the Proposed EIR. The Proponent requested that, if a rollover EIR were not granted, a Single EIR be allowed to be submitted in accordance with 301 CMR 11.06(8) in lieu of the usual two-stage Draft and Final EIR process. I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.

Project Description

As described in the EENF/Proposed EIR and further detailed below, the project involves the

implementation of three phases (1A, 1B, and 2¹) of the Town of Littleton (“Town”)’s Wastewater Needs Assessment (“Needs Assessment”).² Phase 1A includes a new centralized Water Resources Recovery Facility (WRRF) consisting of 9,935-square-foot Membrane Bioreactor (MBR) treatment system located at 242 King Street, and expansion of the existing effluent recharge site at the Littleton High School (56 King Street). A hybrid collection system consisting of gravity sewers, supplemented with pumping stations and force mains at low points, will be constructed in three phases (1A, 1B, and 2) as outlined below. The proposed wastewater expansion collection system will consist of approximately 49,226 linear feet (9.32 miles) of gravity, force main, and pressure sewers, four new submersible sewerage pump stations, and upgrades to the existing Middle School and High School pump stations as described further below. The project includes demolition of an existing maintenance garage and decommissioning of the existing wastewater treatment facility. The project also includes two additional potential phases of sewerage (Phases 3 and 4), which may proceed based on the results of monitoring as described below.

Needs Assessment

The Needs Assessment evaluated environmental data sets to identify water quality areas of concern. The evaluation included a comprehensive review of drinking water Zone II areas, nitrite sampling results in Town wells, impaired water bodies, areas of poor soils for infiltration, small lots that may inhibit the size of a septic system, high groundwater areas, flood zones, and wetland areas. Based on the environmental assessment, six primary water quality areas of concern were identified (Beaver Brook, Taylor Street Industrial Area, Mill Pond, Beaver Brook connection, Long Pond neighborhood, and Spectacle Pond). Additionally, the Needs Assessment reviewed the Town’s six planning areas (Littleton Common, The Point, Great Road Corridor, Industrial Park, Littleton Depot, Taylor/Foster Street Area and MBTA Station) and historic sites to determine the potential need for wastewater infrastructure to allow smart growth to occur while protecting the Town’s environmental resources. Areas of concern were then prioritized and ranked. The EENF/Proposed EIR included a link to the full Needs Assessment which is hosted on the Littleton Electric Light and Water Departments (LELWD) website. The Needs Assessment describes a five-phase recommended plan (Phases 1A, 1B, 2, 3, and 4). The project components described in the EENF/Proposed EIR included only three phases: 1A, 1B, and 2 (formerly identified as Phase 3). Phases 3 (formerly 2) and 4 will only be implemented if they are determined to be beneficial to areas that may be adversely affected by septic systems. The EENF/Proposed EIR notes that septic systems may contribute to water quality issues in ponds and streams and identifies Beaver Brook as an impaired water body within ½ mile of the project site. The EENF/Proposed EIR states that “continued monitoring” will determine whether the two phases not included in the project will be implemented but does not describe the monitoring program or the results that would trigger the need for those phases. Comments from the Massachusetts Department of Environmental Protection (MassDEP) state that monitoring should be described in the Single EIR and included in Section 61 Findings. The Single EIR should also include a conceptual discussion of impacts associated with potential future phases (Phases 3 and 4), which may proceed based on the results of monitoring.

The Needs Assessment evaluated sixteen potential areas of concern comprised of water quality areas and planning areas and rated them on nine different criteria (eight environmental criteria (see above) and economic planning). The ranked areas of concern were used to develop alternatives for the phased approach of meeting offsite wastewater needs in the highest priority areas of concern. According

¹ Phase 2 is formerly Phase 3 of the Wastewater Needs Assessment.

² [Sewer Division | Littleton Electric Light & Water Departments \(lelwd.com\)](https://www.littletonma.gov/DocumentCenter/View/10000/Sewer-Division-Littleton-Electric-Light-Water-Departments-lelwd.com), Prepared by CDM Smith, 2020.

to the EENF/Proposed EIR, Phases 1A, 1B, and 2 will allow the Town to meet its water and land resource management needs while achieving desired smart economic growth and improve impaired water resources and are detailed below.

Project Phasing

Phase 1A includes the construction of an MBR treatment system located at 242 King Street. An MBR system is an activated sludge reactor with membrane filtration downstream of anoxic and aerobic bioreactors. The proposed initial treatment capacity of the new WRRF is 208,000 GPD. The treated effluent would then be pumped to the proposed recharge site at Littleton High School, to be recharged in a subsurface leaching system below the athletic fields. The Town currently maintains a groundwater discharge permit for a package style water resource recovery facility (WRRF) with a capacity of 17,600 gpd at the High School.³ The current effluent recharge site is permitted through Massachusetts Department of Environmental Protection (MassDEP)'s groundwater discharge program. The Town has requested to increase capacity by 190,400 gpd to 208,854 gpd total, to accommodate the proposed project.

The Phase 1A collection system consists of a total of approximately 24,400 linear feet of pipe ranging in diameter from 4 to 18 inches. Two new sewerage pumping stations will be constructed, and the existing Middle School Pumping Stations will be upgraded. The proposed Great Road Pumping Station will pump flow from the Phase 1A parcels north of King Street along Great Road and White Street to a gravity sewer at the intersection of Great Road and King Street. The gravity sewer will run within King Street and Shattuck Street up to Littleton Town Hall where it will run north to the Middle School pumping station within existing paved areas and gravel driveway. Sewerage flows from the Middle School pumping station will be pumped via a new force main within Russell Street and King Street to the new centralized WRRF MBR treatment system at 242 King Street. A small 2-inch pressure sewer will pick up the homes on Russell Street and Highland Lane and pumped that flow to the Middle School Pump Station.

The Phase 1B collection system consists of a total of approximately 13,700 linear feet of new gravity and force main piping to be installed within Beaver Brook Road, Great Road, and Russell Street. The gravity sewer will convey flow to a proposed pumping station on Russell Street. The new force main will pump the flow to the Middle School pumping station and from there it would get pumped to 242 King Street for treatment at the new centralized WRRF. Design plans have not been developed for the Phase 1B collection system; however, maps of the sewer routes were included in the EENF/Proposed EIR.

The Phase 2 collection system consists of a total of approximately 11,150 linear feet of new gravity, force main, and pressure sewer piping to be installed within Goldsmith Street. This collection system phase would tie into the Phase 1A collection system via the gravity sewer in Shattuck Street.

³ The current system serves several Town-owned buildings including the Fire Station, Town Offices, Town Library, Alumni Field, Littleton High School, Littleton Middle School and Russell Street Elementary School.

Below is a table showing projected flows for each phase (in gallons per day (gpd)).

Phase	Estimated Existing Wastewater Flow (gpd)	Estimated Additional Buildout Wastewater Flow (gpd)	I/I (gpd)	Total Project Flow (gpd) (ADF)
1A	32,000	92,000	7,000	131,000
550 King St. - 1	-	69,000	-	69,000
550 King St. - 2	-	34,000	-	34,000
1B	27,000	5,000	2,000	34,000
550 King St. - 3	-	7,000	-	7,000
2	12,000	2,000	1,000	15,000
Total	71,000	209,000	10,000	290,000

The EENF/Proposed EIR states the three construction phases will take place over approximately 15 years. The Single EIR should address conceptual descriptions of Phase 3 and 4 including potential sewer routes and estimated flows.

Project Site

As noted above, the Littleton Water Department (LWD) currently owns and operates a wastewater system comprised of 3,900 feet of gravity sewer, 10,350 feet of force main, three pumping stations, and a water reclamation facility located at Littleton High School. The MassDEP-permitted effluent recharge site located beneath athletic fields at the High School accepts approximately 17,500 gpd. The ENNF/Proposed EIR states there are seven private package wastewater treatment plants in the Town. The plants range in size and are limited to the amount of wastewater they can treat based on each specific discharge permit. The remaining parcels in the Town, not currently connected to the existing system or a private package wastewater treatment plant, have Title 5 Septic systems on each individual parcel.

The Needs Assessment included the ranking process utilized for identifying a site for the new WRRF. The chosen site at 242 King street is an approximately 9-acre parcel bounded by King Street to the south, Interstate 495 to the west and north, and Beaver Brook to the east. The parcel contains a former residence and warehouse/shed adjacent to King Street and a former agricultural field at the center. The remainder is wooded, except for the eastern side which contains Beaver Brook and associated Bordering Vegetated Wetlands (BVW). According to the EENF/Proposed EIR, a man-made stormwater basin dominated by common reed (*Phragmites australis*), which is regulated under the Wetlands Protection Act as Bordering Land Subject to Flooding (BLSF), is located at the southwestern corner of the parcel, and collects stormwater from King Street and a small portion of Route 495 and exit ramps. A small diameter pipe conveys stormwater flows from the manmade stormwater basin into the BVW.

The site is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rating Map (FIRM) (No. 25017C0236F, effective July 7, 2014) area mapped as Zone AE (elevation 211) that is subject to inundation by the 100-year (1% annual chance) flood event for Beaver Brook. The project site includes several wetland resources including BVW, BLSF, Riverfront Area (RA), and buffer zone (BZ). The EENF/Proposed EIR included correspondence from the Massachusetts Historic Commission (MHC) stating that after review of MHC files and the submitted materials, MHC has

determined that the proposed WRRF site includes the Elizabeth and Jonathan Hartwell House. The property is included in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth (MHC #LIT.224). MHC's comment letter states that other portions of the 242 King Street parcel are archaeologically sensitive, and MHC requests an intensive (locational) archaeological survey per 950 CMR 70.00. A review of the remaining project elements, including the sewers, effluent recharge site, and pumping stations, indicate that those elements of the project are unlikely to affect historic and archaeological resources. Based on review of the 2021 *Massachusetts Natural Heritage Atlas, 15th edition*, the site is not located within area of Estimated Habitats of Rare Wildlife or an area of Priority Habitats of Rare Species.

The project site is located within one mile of an EJ population in the adjacent Town of Westford, characterized by Minority. The EJ population borders on the Phase 1B sewer line portion of the project. The EENF/Proposed EIR does not identify EJ populations located within five miles of the project but does contain a map showing at least 4 additional EJ populations characterized by Minority in the adjacent towns of Acton, Ayer, and Boxborough. The Single EIR should list all EJ populations within five miles of any proposed project phase including future phases. As described below, the EENF/Proposed EIR identified the "Designated Geographic Area" for the project as 1 mile around EJ populations, included a review of potential impacts and benefits to the EJ populations within this DGA, and described public involvement efforts undertaken to date.

Environmental Impacts and Mitigation

Potential environmental impacts associated with the construction of the new WRRF at 242 King Street include impacts to wetland resource areas including to BLSF, RA, and BZ. Additional potential impacts include clearing of forested land and creation of 0.96 acres of new impervious area. Installation of the new gravity force main, and pressure sewers will result in additional temporary alteration of RA and BZ. The Single EIR should quantify these additional temporary impacts, as well as include a conceptual discussion of impacts associated with future phases. The EENF/Proposed EIR states the project will increase groundwater discharge at the Littleton High School infiltration site by 190,400 gpd for a total expected design flow of 208,854 gpd.

Measures to avoid, minimize, and mitigate environmental impacts associated with the construction of the WRRF include construction of compensatory flood storage, stormwater management (including a long-term operation and maintenance plan), invasive species removal (excavation and herbicide treatment of phragmites), and a replanting plan including over 60 trees. The overall goal of the project is to improve water quality by reducing nitrogen discharges to groundwater and surface water that currently comes from Title V septic systems. Measures to mitigate temporary impacts associated with construction of the recharge facility and the new collection system include controlling erosion and sedimentation from exposed spoil piles and tracking sediments onto adjacent paved street. A stormwater pollution prevention plan (SWPPP) will be developed as part of the under U.S. EPA's NPDES Construction General Permit (CGP) and implemented to control and mitigate construction related impacts. Further information related to mitigation for all phases should be provided in the Single EIR.

Jurisdiction and Permitting

The project is subject to MEPA review because it requires Agency Action MEPA review thresholds at 301 CMR 11.03(5)(b)(3)b, 301 CMR 11.03 (5)(b)1, and 301 CMR 11.03 (3)(b)(1)f for, respectively, construction of one or more New sewer mains five or more miles in length; construction of

a New wastewater treatment and/or disposal facility by the greater of with a Capacity of 100,000 gpd or more; and alteration of ½ or more of any other wetlands. The project requires the preparation of a mandatory EIR pursuant to 301 CMR 11.06(7)(b) because it is within 1 mile of an EJ Population. The project requires an Individual Permit for Groundwater Discharge from Sewerage Treatment Plant (BRP WP 79) from MassDEP and a State Highway Permit from MassDOT. The project is not subject to MEPA's Greenhouse Gas (GHG) Policy and Protocol (GHG Policy) because it does not exceed any mandatory EIR thresholds and is not expected to generate 2,000 or more tpy of GHG (CO₂) emissions from conditioned spaces that are likely to be used or occupied by EJ populations, as indicated in the MEPA Interim Protocol on Analysis of EJ Impacts.

The project requires an Order of Conditions (OOC) from the Littleton Conservation Commission (or if the order is appealed, a superseding Order of Conditions from MassDEP). The EENF/Proposed EIR states that an OOC will be obtained for each phase of the project. The project will also require a Special Permit/Site Plan Review from the Littleton Planning Board. A National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the U.S. Environmental Protection Agency (EPA) will also be required.

Because the project is seeking Financial Assistance from the Commonwealth in the form of State Revolving Fund (SRF) and Massworks funding, MEPA jurisdiction is broad in scope and extends to all aspects of the project that are likely, directly, or indirectly, to cause Damage to the Environment as defined in MEPA regulations.

Segmentation

The MEPA regulations include provisions (301 CMR 11.01 (2)(c)) to ensure that a project is not phased or segmented to evade, defer, or curtail MEPA review. In determining whether a project is subject to MEPA jurisdiction or meets or exceeds any review thresholds, and during MEPA review, the Proponent, any Participating Agency, and the Secretary shall consider the entirety of the project, including any likely future Expansion, and not separate phases or segments thereof. The Proponent, any Participating Agency, and the Secretary must consider all circumstances as to “whether various work or activities constitute one project, including but not limited to: whether the work or activities, taken together, comprise a common plan or independent undertakings, regardless of whether there is more than one Proponent; any time interval between the work or activities; and whether the environmental impacts caused by the work or activities are separable or cumulative.”

The EENF/Proposed EIR states that Phases 1A, 1B, and 2 will extend the existing sewer collection system by 9.32 miles. It further states that Phases 3 and 4 will only be constructed if ongoing monitoring indicates a need in order to meet water quality goals, and, therefore, included no discussion of work activities or impacts associated with those future phases. Comments from MassDEP note, however, that the final design flow of 290,000 gpd for the wastewater disposal system exceeds the proposed flows associated with the earlier phases, as well as the maximum volume of treated effluent that can be placed at the discharge location. I am also aware that the sewerage effort in Littleton has been the subject of a multi-year planning process, which culminated in legislation passed in 2020 (St. 2020, c. 279). I note that the addition of Phases 3 and 4 would mean that the project cumulatively would exceed the mandatory EIR threshold at 301 CMR 11.03(5)(a)(3) for construction of one or more New sewer mains ten or more miles in length. In light of these circumstances, I find it appropriate to treat all future phases of the project as a common undertaking for purposes of MEPA review. To avoid segmentation of the project, I am requiring a Single EIR to allow for a more comprehensive disclosure of the potential

cumulative impacts of all phases of the project. A conceptual discussion of future phases, including whether infrastructure is being constructed now (such as expansion of wastewater treatment capacity), to accommodate those future phases should be discussed. To the extent the design of future phases, were they to proceed, are materially different from those disclosed in the Single EIR, a Notice of Project Change (NPC) may be required.

Request for Rollover or Single EIR

The EENF included a request that I allow a Rollover EIR in accordance with 301 CMR 11.06(13) or alternatively, a Single EIR in accordance with 301 CMR 11.06(8).

The MEPA regulations provide that for projects required to submit an EIR under 301 CMR 11.06(7)(b), the Proponent may submit an EENF with a request that I allow a Rollover EIR in accordance with 301 CMR 11.06(13). To support this request, the EENF must be accompanied by a Proposed EIR, which, if the request for Rollover EIR is granted, would be published as a Final EIR in a subsequent Environmental Monitor in lieu of the typical two-stage Draft and Final EIR process.

In order to allow a Rollover EIR, I must find that the dual EENF and Proposed EIR:

1. presents a complete and definitive description and analysis of the project and its alternatives, and an assessment of its potential environmental and public health impacts and mitigation measures sufficient to allow a Participating Agency to fulfill its obligations in accordance with M.G.L. c. 30, §§ 61 and 62K and 301 CMR 11.12(5);
2. demonstrates that the project will not materially exacerbate any existing unfair or inequitable Environmental Burden and related public health consequences impacting an EJ population, and will not result in a disproportionate adverse effect or increased climate change effects on an EJ population;
3. describes measures taken to provide meaningful opportunities for public involvement by EJ populations prior to filing the dual ENF and Proposed EIR, including any changes made to the project to address concerns raised by or on behalf of EJ populations;
4. shows that comments received on the dual ENF and Proposed EIR do not raise substantial issues not previously considered by the Proponent; and
5. shows that no substantive issues remain to be resolved.

The MEPA regulations at 301 CMR 11.06(8) indicate that a Single EIR may be allowed provided I find that the EENF:

- a) describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
- b) provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,
- c) demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

For any project for which an EIR is required in accordance with 301 CMR 11.06(7)(b), I must also find that the EENF:

- d) describes and analyzes all aspects of the project that may affect Environmental Justice Populations located in whole or in part within the Designated Geographic Area around the

project; describes measures taken to provide meaningful opportunities for public involvement by Environmental Justice Populations prior to filing the expanded ENF, including any changes made to the project to address concerns raised by or on behalf of Environmental Justice Populations; and provides a detailed baseline in relation to any existing unfair or inequitable Environmental Burden and related public health consequences impacting Environmental Justice Populations in accordance with 301 CMR 11.07(6)(n)1.

Consistent with this request, the EENF/Proposed EIR was subject to an extended comment period under 301 CMR 11.05(8).

Review of the EENF/Proposed EIR

The filing was submitted as a “Dual Expanded Environmental Notification Form/Proposed EIR” and included a description of the Town’s existing wastewater services. It reviewed and provided maps of environmental conditions, including water supply protection areas, flood zones, wetlands, and rare species habitat. It describes the proposed location of the WRRF and the expansion of the groundwater recharge site. The EENF/Proposed EIR reviewed the WRRF and recharge siting analysis and alternatives to the wastewater collection system. It described the components of the recommended plan and identified environmental impacts and mitigation measures associated with its construction. This information was drawn from the more detailed Needs Assessment which was referenced throughout the EENF/Proposed EIR.⁴ Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF/Proposed EIR contained an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the “MA Resilience Design Tool”),⁵ together with information on climate resilience strategies to be undertaken by the project. The Proponent provided supplemental information to the MEPA Office on April 8, 11, and 14, 2022. Information included updated permit plans for the WRRF, a tree inventory for the 242 King Street site, the design flows for each phase of the project, and an updated output from the MA Resilience Design Tool for the Middle School Pump Station. For purposes of clarity, all supplemental materials, together with the EENF/Proposed EIR filing, are included in references to the “EENF/Proposed EIR” unless otherwise indicated.

SCOPE

General

The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should demonstrate that the Proponent will pursue all feasible measures to avoid, minimize and mitigate Damage to the Environment to the maximum extent feasible

Project Description and Permitting

The Single EIR should describe the project and identify any changes since the filing of the EENF/Proposed EIR. It should include updated calculations of impacts for all phases of the project in a tabular format. This includes impact numbers associated with updated plans submitted for the WRRF

⁴ Review of submitted materials was complicated by having to refer to information in the full Needs Assessment. Comments noted that all pertinent information should have been in the EENF/Proposed EIR.

⁵ https://resilientma.org/rmat_home/designstandards/

and approximate impact numbers for the collection system including pump stations as detailed below. As noted, a conceptual discussion of all phases of the project should be included in the Single EIR, and a detailed discussion of the monitoring system that will be implemented after phase 1A, 1B, and 2.

Alternatives Analysis

The EENF/Proposed EIR references the Needs Assessment for a complete description of the site screening and ranking process utilized for identifying and evaluating properties within the Town for their potential as a site for a new wastewater reclamation facility. The evaluation methodology included review of parcel characteristics such as: physical features of each parcel, ownership, and land uses, and comparison with the design criteria and site requirements for a future wastewater reclamation facility. With the exception of 9 Ayer Road (dismissed because of current mining activity), the EENF/Proposed EIR does not identify the reason other identified parcels were dismissed. Section 7 of the Needs Assessment includes a table of ranked parcels. Of 30 parcels, 242 King Street ranks 20th. Section 7 of the Needs Assessment states that following site visits to several parcels, 242 King Street is the preferred site due to its central location between the service area, Littleton Common, and the groundwater recharge site at the 56 King Street and its proximity to the highway for light delivery and sludge hauling off site will reduce long term traffic impacts. Given the preferred site's location within several wetland resource areas, including a flood zone, the Single EIR should contain further rationale for choosing this site.

The EENF/Proposed EIR evaluated a No-Build and a Preferred Alternative for the wastewater collection system. The No-Build alternative involves the continued use of onsite Title 5 septic systems. This alternative promotes maintenance of existing infrastructure and does not involve the construction of any new collection system or treatment technology. This no-build option does not meet the Town's goals to achieve desired smart economic growth and improve impaired water resources and was therefore dismissed. The EENF/Proposed EIR states that the Needs Assessment also reviewed vacuum sewers, septic tank effluent pumping (STEP) systems, and septic tank effluent gravity (STEG) systems, but these technologies are not recommended for implementation in the Town of Littleton.⁶ Vacuum sewers are less flexible for future system expansion, are limited to relatively flat topographic areas, and require specialized operator training in order to provide adequate system monitoring response times when problems develop. STEP/STEG systems require on-site septic tanks to be in good condition, property owners to regularly pump the solids (septage) from the septic tanks, and the water reclamation facility in this system is very challenging to operate due to the dilute waste stream without organics needed for biological nutrient removal. The preferred alternative uses a combination of sewer collection system technologies including conventional gravity sewers, force mains, and low-pressure sewers. The proposed collection system for Phases 1A, 1B, and 2 will be installed within existing streets and driveways and thereby minimizing disruption to the existing environment.

Environmental Justice

As noted above, the project site is located one mile of an EJ population in the adjacent Town of Westford, characterized by Minority. The EJ population borders on the Phase 1B sewer line portion of the project. Within the census tracts containing the above EJ populations within 1 mile of the project site, no languages are identified as those spoken by 5% of more of residents who also identify as not

⁶ Comments from OARS and R.Zimmerman, 4/21/22, reference other alternatives, including a "smart sewer" developed by the Charles River Watershed Association and reuse of treated wastewater.

speaking English very well. As stated above, the EENF/Proposed EIR does not identify EJ populations located within five miles of the project but the included map shows at least four additional EJ populations characterized by Minority in the adjacent towns of Acton, Ayer, and Boxborough. The Single EIR should list all EJ populations within five miles of each proposed project phase. The Single EIR should include an updated map from the EEA EJ mapper⁷ showing the boundaries for the 1-mile and 5-mile radius from the outer limits of the project work areas including potential Phases 3 and 4. Two additional EJ populations, characterized by Minority and located within the Towns of Boxborough and Ayer, appears to be within 1-mile of proposed gravity mains at the intersection of Porter Road and Taylor Street and at the northern end of Ayer Road as shown on Figure 7 of the EENF/Proposed EIR.⁸

Effective January 1, 2022, all new projects in “Designated Geographic Areas” (“DGA,” as defined in 301 CMR 11.02, as amended) around EJ populations are subject to new requirements imposed by the Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* (the “Climate Roadmap Map”) and amended MEPA regulations at 301 CMR 11.00.⁹ Two related MEPA protocols—the MEPA Public Involvement Protocol for Environmental Justice Populations (the “MEPA EJ Public Involvement Protocol”) and MEPA Interim Protocol for Analysis of project Impacts on Environmental Justice Populations (the “MEPA Interim Protocol for Analysis of EJ Impacts”)—are also in effect for new projects filed on or after January 1, 2022.¹⁰ Under the new regulations and protocols, all projects located in a DGA around one or more EJ populations must take steps to enhance public involvement opportunities for EJ populations, and must submit analysis of impacts to such EJ populations in the form of an EIR.

The EENF/Proposed EIR indicates that the DGA for the project is 1 mile, and states that EJ populations within this DGA are not likely to be negatively impacted by the project because the work that is within 1 mile of the EJ population consists of installation of gravity sewer within a public road (Beaver Brook Road). The temporarily disturbed areas for pipe installation will be restored to preconstruction conditions with no increase in impervious area or change to the existing street stormwater system. The EENF/Proposed EIR states that the EJ population may experience some short-term construction related impacts such as traffic detours. The EENF/Proposed EIR states that traffic management plans will be generated during the design phase to mitigate traffic impacts, and the project will comply with the requirements of the MassDOT Permit.

The Proponent distributed the EENF/Proposed EIR to the EJ Reference List provided for the project by the EEA EJ Director. Advance notification under 301 CMR 11.05(4) was not provided by the Proponent because the filing was submitted during the transition period for the new MEPA Public Involvement Protocol (January 1, 2022 – February 28, 2022); however, the comment period was extended by two weeks to accommodate distribution to the EJ Reference list. The Single EIR should describe a public involvement plan that the project intends to follow for EJ populations within the DGA for the remainder of the MEPA review process and should provide an updated analysis of impacts on EJ populations consistent with the Scope below.

⁷ <https://mass-coeea.maps.arcgis.com/apps/MapSeries/index.html?appid=535e4419dc0545be980545a0ccaf9b53>

⁸ According to the Needs Assessment these areas are part of Phases 3 (Formerly 2) and Phase 4.

⁹ MEPA regulations have been amended to implement Sections 55-60 of the Climate Roadmap Act and took effect on December 24, 2021. More information is available at <https://www.mass.gov/service-details/information-about-upcoming-regulatory-updates>.

¹⁰ Available at <https://www.mass.gov/service-details/eea-policies-and-guidance>.

The EENF/Proposed EIR contained a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. and the MEPA Interim Protocol for Analysis of EJ Impacts. According to the EENF/Proposed EIR, the data surveyed do not appear to indicate an existing “unfair or inequitable” burden impacting the identified EJ populations. Specifically, the EENF/Proposed EIR notes that the DPH EJ Tool does not identify any census tract or municipality in which the EJ populations are located as exhibiting “vulnerable health EJ criteria”; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average.¹¹ In addition, the EENF/Proposed EIR indicates that the following sources of potential pollution exist within the identified EJ populations, based on the mapping layers available in the DPH EJ Tool:

- Groundwater Discharge Permits: 1
- Tier II sites: 1

The Single EIR should provide a narrative description of the potential sources enumerated above, including the potential pollutants emitted and proximity to the identified EJ population.

In addition to the baseline assessment of existing burdens impacting EJ populations, the EENF/Proposed EIR included an analysis of the project’s impacts that may result in disproportionate adverse effects, or increase the risks of climate change, on the identified EJ population, in accordance with 301 CMR 11.07(6)(n)2. and the MEPA Interim Protocol for Analysis of EJ Impacts. The EENF/Proposed EIR states that compensatory flood storage will be provided to ensure that there will be no downstream flooding impacts from the proposed new treatment plant construction. Trees removed at the WRRF site will be replaced at a ratio of 1:1. A tree inventory of the 242 King Street parcel has been completed and a revised mitigation planting plan was submitted. As stated above, a GHG emissions analysis is not required for this project since it will not generate 2,000 or more tpy of GHG (CO₂) emissions from conditioned spaces that are likely to be used or occupied by EJ populations. The EENF/Proposed EIR states that the project will not generate “much” traffic related to delivery of septage to the WRRF and transportation of grit and sludge from the facility. The Single EIR should estimate the number of average daily trips (adt) to and from the WRRF by trucks and analyze proposed routes of travel for new truck trips and whether new traffic will disproportionately affect EJ populations. The Single EIR should clarify whether any EJ populations are located downstream of the proposed new wastewater treatment plant. The Single EIR should also describe the environmental benefits of the project that may specifically benefit EJ populations or otherwise further the equitable distribution of environmental benefits and burdens in accordance with “Environmental Justice Principles” as defined in 301 CMR 11.02.

Public Health

In accordance with St. 2021, c. 8, s. 57, the Single EIR should include a separate section on “Public Health,” and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts

¹¹ See <https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html>. Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer, of which two (heart attack hospitalization and childhood asthma) are tracked on a municipal level, and two (childhood blood lead, and low birth weight) are tracked on a census tract level.

that may materially exacerbate “vulnerable health EJ criteria,” in accordance with the MEPA Interim Protocol for Analysis of EJ Impacts. In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site, in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed. I note that one environmental indicator in the EPA EJ Screen Tool relates to proximity of the selected census block to wastewater discharge locations. The EPA EJ Screen should be reviewed to determine whether the EJ populations identified within the project’s DGA have been identified as having potential exposure to this risk factor at a rate of 80th percentile or higher of statewide average. The Single EIR should otherwise document that the project design will result in effluent discharge limits that will protect public health in Littleton and surrounding communities. It should contain a full discussion of permit requirements for groundwater discharge that are intended to be protective of public health.

Wetlands

As noted above, construction of the WRRF results in impacts to wetland resource areas including permanent alteration of 19,540 square feet (sf) of BLSF and 37,109 sf of RA and temporary alteration of 24,711 sf of RA. As stated in the EENF/Proposed EIR and in the MassDEP comment letter, the project is exempt from the requirements for RA under 310 CMR 10.58(6)(h). The EENF/Proposed EIR states approximately 0.83 acres of BZ will be altered and will be confirmed during preparation of the Notice of Intent (NOI). MassDEP comments state that EENF/Proposed EIR lists the temporary impacts to RA as 25,511 sf, 28,711 sf and 24,711 sf in different sections of the document. MassDEP comments also state that the EENF/Proposed EIR indicates that the project will permanently alter 19,540 sf of BLSF and temporarily alter 36,155 sf BZ, but revised plans were submitted with no updated impact numbers. The Single EIR should provide an updated summary table of all temporary and permanent wetland resource area and BZ impacts, especially impacts related to the WRRF site, the Great Pond Pump Station site and Phase 1A roadway work. The Single EIR should also quantify all BZ, BLSF and RA impacts in proposed Phases 1B and 2 and future Phases 3 and 4 of roadway work.

The Proponent filed an Abbreviated Notice of Resource Area Delineation (ANRAD) with the Littleton Conservation Commission and MassDEP in December 2021. MassDEP issued a file number for the ANRAD on December 21, 2021 with comments regarding clarification of jurisdictional areas related to the possible historical stormwater uses on the 242 King Street site. The Commission issued an Order of Resource Area Delineation on January 13, 2022 confirming the delineation of BVW, BLSF, Bank, RA and Land Under Water (LUW). The Proponent submitted an NOI application for the project with the Littleton Conservation Commission and MassDEP on April 4, 2022. The Proponent submitted the project as a Limited Project under 310 CMR 10.53(3)(d). MassDEP notes that the wetlands impact numbers in the NOI differ from the numbers in the EENF/Proposed EIR.

Comments received from MassDEP state the Single EIR should demonstrate that the project complies with the Performance Standards for BLSF found in 310 CMR 10.57(4), specifically those requiring that compensatory storage be incrementally equal to the theoretical volume of flood water “at each elevation” and unrestricted hydraulic connection is provided to the same waterway. Comments further state that it is unclear if the proposed culvert beneath the access road provides an unrestricted connection to existing BLSF that meets performance standards. The proposed roadway at elevation 212 and multiple emergency spillways may prevent such a connection and could result in flooding of the site access road during storm events. The Single EIR should contain plans that show the proposed access and resultant wetland impacts needed to access the compensatory storage for construction and future

operation and maintenance. Per MassDEP comments, it appears that BLSF alteration may exceed the 10% or 5,000 sf threshold of significance for the protection of wildlife habitat and may require the completion of a wildlife habitat evaluation. The Proponent should demonstrate whether the project meets or exceeds this threshold. To adequately compensate for BLSF loss, a long-term vegetation management plan should be submitted as part the Single EIR to prevent the establishment and spread of phragmites. Additional comments from the Natural Heritage Endangered Species Program (NHESP) state that all areas not maintained as lawn/grass should be reseeded with a native restoration seed mix composed of species native to Middlesex County in accordance with “The Vascular Plants of Massachusetts: A County Checklist First Revision” (Dow Cullina, M, B Connolly, B Sorrie, and P Somers. 2011. MA NHESP DFW; available online from the State Library of Massachusetts at archives.lib.state.ma.us). Updated plans submitted with the Single EIR should reflect the use of native seed mixes.

Stormwater

The EENF/Proposed EIR describes the existing and proposed stormwater management design at the WRRF site. The site currently receives stormwater runoff from the southeast ramp of Route 495 via a 36-inch pipe that crosses under King Street, as well as stormwater runoff from King Street that discharges directly to the site via an outfall. Stormwater runoff from these areas eventually discharge to an existing low area on the site that periodically fills and overtops towards Beaver Brook. Under proposed conditions, stormwater runoff from the southeast ramp and King Street will continue to discharge to the existing low area on the site.

According to the EENF/Proposed EIR, the WRRF project is considered a new development project per the 2008 Massachusetts Stormwater Handbook because there will be an increase in impervious area of approximately 0.96 acre on a mostly undeveloped site. The project site is located within a Zone II public water supply (a designated critical areas under the Massachusetts Stormwater Management Standards), therefore, the water quality volume is based on 1-inch times the total impervious area. Within the infiltration basins, outlet control structures are set such that the water quality and recharge volumes are provided below the lowest outlet elevation to allow for treatment and recharge. Comments from MassDEP add that the overflow elevations for stormwater structures should be set to an elevation that prevents intrusion of floodwater associated with the 100-year storm. This comment should be address in the Single EIR.

The stormwater management system (SMS) will also be designed in compliance with the NPDES Phase II MS4 General Permit which requires the project to meet an average annual pollutant removal of 60% of the average annual load of total phosphorus related to the total post-construction impervious surface area, in addition to 90% total suspended solids (TSS). The EENF/Proposed EIR states that this requirement can be met by retaining the volume of runoff equivalent to 1.0-inch times the total impervious area via the infiltration basins.

Mass DEP comments also note that Beaver Brook is an impaired waterbody with the segment adjacent to the proposed WRRF listed on the Massachusetts Year 2018/20 Integrated List of Waters for requiring a TMDL (impairments are fecal coliform/dissolved oxygen/low pH/TSS). The Single EIR should address how the design the stormwater management system will address the impairments listed in the TMDL. The Stormwater Management regulations require that the Proponent consider environmentally sensitive site design that incorporates Low Impact Development (LID) and the use of integrated management practices (IMP) for control of stormwater, either alone or in combination with

conventional drainage control measures. LID is an approach to stormwater management that minimizes runoff impacts by maintaining and mimicking existing hydrologic functions through site design techniques such as disconnecting runoff flow pathways and dispersing stormwater control across the site, reducing imperviousness, and minimizing clearing and grading while preserving natural resources and drainage patterns. When combined with pollution prevention measures, LID can be less costly than conventional gutter and pipe drainage system and can provide redundancy for stormwater control. The Single EIR should address LID proposed or considered in the design of the SMS. The Single EIR should evaluate whether additional LID measures can be incorporated into the project.

Water and Wastewater

As described above, the project includes three phases (possibly five). The Single EIR should further define the design flows for each phase of the project, including a description of the design basis for each phase. Comments from MassDEP state that the EENF/Proposed EIR and MassDEP's hydrogeologic approval for the Project (issued on April 4, 2019 with a follow-up on May 23, 2019) indicate the treated effluent will be discharged to a disposal system designed with a capacity of approximately 208,000 gpd. However, supplemental information submitted by the Proponent shows a final design flow of 290,000 gpd, which exceeds the proposed flows.¹² The hydrogeologic analysis examined the discharge location's ability to receive no more than 244,784 gpd of treated effluent. Mass DEP also comments that the EENF/Proposed EIR indicates the treatment of sewage sludge or residuals will take place as part of the project. MassDEP states their understanding was that no sludge treatment or residuals processing is included in the project. The Single EIR should address these discrepancies.

The collection system includes construction of four new submersible pump stations and upgrades to the existing Middle School and High School pump stations. MassDEP comments state the Single EIR should clarify the ownership, operation, and maintenance responsibilities of the proposed pump stations. MassDEP comments state that it is preferable that all pump stations be owned and operated by the Proponent. The Single EIR should verify that all existing pump stations that will be used as part of the project shall meet TR-16 standards and be fully capable of conveying full buildout flows to the WRRF. The Single EIR should address additional comments related to the existing disposal system, the potential for water reuse, and the treatment of sludge and residuals as outlined in the comment letter from MassDEP.

Climate Change

Adaptation and Resiliency

Governor Baker's Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth was issued on September 16, 2016. The Order recognizes the serious threat presented by climate change and direct Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. The urgent need to address climate change was again recognized by Governor Baker and the Massachusetts Legislature with the recent passage of St. 2021, c. 8, An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy, which sets a goal of Net Zero emissions by 2050. I note that the MEPA statute directs all Agencies to consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise, when

¹² Email from CDM Smith, April 11, 2022.

issuing permits, licenses and other administrative approvals and decisions (M.G.L. c. 30, § 61).

The Town is a participant in the Commonwealth's Municipal Vulnerability Preparedness (MVP) program, which is a community-driven process to define natural and climate-related hazards, identify existing and future vulnerabilities and strengths of infrastructure, environmental resources, and vulnerable populations, and develop, prioritize, and implement specific actions the town can take to reduce risk and build resilience. The Littleton *MVP Community Resilience Building Report* dated April 2018 identifies identified heavy precipitation, drought, extreme heat and cold, and wind as the most significant climate hazards facing the Town.

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the EENF/Proposed EIR, the project has a high exposure rating based on the project's location for the following climate parameters: extreme precipitation (urban and riverine flooding) and extreme heat. Based on the 50-year useful life identified for the WRRF project and the self-assessed criticality of the facility, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 50-year (2% chance) storm event when designing the WRRF portion of the project. The Proponent provided a second output report from the MA Resilience Design Tool as supplemental information. This supplemental report assessed the climate risks for the Middle School Pump Station based on its location near a flood zone. Based on the 50-year useful life identified for the Pump Station, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 10-year (10% chance) storm event when designing the Middle School Pump Station. I note that a 10-year storm design recommendation appears to be based on a "low" criticality assessment of the pump station, based on user inputs. Given the important function of this new wastewater infrastructure for Littleton and the surrounding community, this project should be assessed as "high" criticality and climate planning centered around recommendations for such infrastructure. The MA Resilience Design Tool recommends planning for at least a 50-year (2% chance) storm event to be resilient to extreme precipitation as of a future planning year (here, 2070) for "High" critical infrastructure assets.

According to the EENF/Proposed EIR, the new WRRF will site is located in the flood plain (BLSF). The new WRRF building and structures will have the lowest floors elevated 3 feet above the base flood elevation of 211 feet (NAVD88) determined based on the current 100-year storm size. The design of the stormwater management facilities will meet the current standards, including peak attenuation of the (current) 2-, 10-, and 100-year 24-hour storm events. Rainfall data will be based on the NOAA Atlas 14. While I commend the Town for elevating critical water supply infrastructure above the current flood plain elevation, I encourage the Town to consider future climate conditions in final design and to engage in flexible adaptive planning to allow for future upgrades when conditions dictate. The MA Resilience Design Tool could be a resource for obtaining best available climate data when designing project components. The Single EIR should comprehensively address whether the project has taken all available measures to add resiliency to project components. It should specifically address whether elevation and stormwater sizing are expected to meet 50-year storm conditions as of 2070, or 100-year conditions in later years.

Historic and Archeological Resources

As stated above, the 242 King Street property is included in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth and is located on one of the oldest roads in Littleton.

The EENF/Proposed EIR states there will be no disturbance to the residential structure on the property. MHC's comment letter states that an intensive (locational) archaeological survey (950 CMR 70.00) be conducted for the WRRF aspect of the project. The Single EIR should detail all measures the project will take to avoid, minimize, or mitigate any adverse effects to historic resources.

Construction Period

The Proponent should consult MassDEP's comment letter for guidance on relevant construction-period regulatory standards. All construction and demolition activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The Single EIR should describe all measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or to select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.00). All construction activities should be undertaken in compliance with the conditions of all State and local permits. I encourage the Proponent to reuse or recycle construction and demolition (C&D) debris to the maximum extent.

The project will be required to develop a Stormwater Pollution Prevention Plan (SWPP) in accordance with its NPDES CGP to manage stormwater during the construction period. The Single EIR should describe stormwater management measures that will be implemented during construction. It should describe potential construction period dewatering activities and identify mitigation measures. All construction-period mitigation measures should be listed in the draft Section 61 Findings.

Mitigation and Draft Section 61 Findings

The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize, and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

Response to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. To ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the Single EIR beyond what has been expressly identified in this certificate

Circulation

The Proponent should circulate the Single EIR to each Person or Agency who previously commented on the EENF/Proposed EIR, each Agency from which the project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope.

The Proponent should consult with the MEPA Office prior to filing the Single EIR to determine whether additional distribution requirements may be warranted to surrounding local communities in accordance with the EJ public involvement plan required in the Scope. Pursuant to 301 CMR 11.16(5), the Proponent may circulate copies electronically. However, the Proponent must make a reasonable number of hard copies available to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. A copy of the Single EIR should be made available for review in the Littleton Public Library.

April 29, 2022

Date



Kathleen A. Theoharides

Comments received:

04/01/22	Massachusetts Historical Commission (MHC)
04/21/22	Organization for the Assabet, Sudbury & Concord Rivers (OARS)
03/21/22	R.Zimmerman
04/22/22	Massachusetts Department of Transportation (MassDOT)
04/22/22	Massachusetts Department of Environmental Protection (MassDEP)

KAT/JH/jh



Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO



April 22, 2022

Kathleen Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Littleton Sewer Expansion Project
(EEA #16538)

ATTN: MEPA Unit
Jennifer Hughes

Dear Secretary Theoharides:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Environmental Notification Form filed for the proposed Littleton Sewer Expansion project as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavalley, P.E., Chief Engineer, Highway Division
Barry Lorion, P.E., District 3 Highway Director
Neil Boudreau, Assistant Administrator of Traffic and Highway Safety
Boston Region Metropolitan Planning Organization (MPO)
Planning Board, Town of Littleton



Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO



MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: April 22, 2022

RE: Littleton Sewer Expansion Project
(EEA #16538)

The Public/Private Development Unit (PPDU) has reviewed the Expanded Environmental Notification Form (EENF) for the Littleton Sewer Expansion Project (the “Project”) submitted by CDM Smith, Inc. on behalf of the Littleton Water Department (collectively, the “Proponent”). The Project includes physical improvements to the site of the current wastewater treatment plant at 242 King Street as well as excavation and installation of approximately 8.5 miles of new sewer infrastructure within existing roadways on King Street/Shattuck Street (Route 2A), Great Road (Route 119), and Russell Street.

The Project surpasses MEPA thresholds for review of an ENF due to impacts on wetlands per 301 CMR 11.03(3) and wastewater per 301 CMR 11.03(5). The Project additionally requires Access Permits from MassDOT as it proposes excavation and installation of water infrastructure in jurisdictional roadways on King Street (Route 2A) and Great Road (Route 119).

The Project requires a Draft Environmental Impact Report (DEIR) per 301 CMR 11.06(7)(b) as the expanded wastewater treatment facility at 242 King Street falls within one mile of an identified minority EJ population in Tract 3183 Block Group 3. The overall Project is not anticipated to result in disproportionate impacts to EJ populations as its primary impact would be contribution to increased flood levels, which is offset by sufficient stormwater systems proposed in the facility expansion. Traffic delays associated with construction on King Street will unavoidably impact all Littleton residents and will not be borne disproportionately by EJ populations. The Proponent requests a rollover of the EIR per 301 CMR 11.06(13), to which MassDOT has no objection.

Once completed, the Project is not expected to result in any change in observed traffic volumes on jurisdictional or local roadways. As a proposal focusing on non-transportation infrastructure, the Proponent estimates that proposed sewer replacements will not generate additional vehicle trips above current roadway use. No changes to surface roadways following construction are proposed, and the Project is unlikely to impact MassDOT Project #610723

(Bolton- Boxborough- Harvard- Littleton- Pavement Preservation on I-495) south of the Project site.

As a result, MassDOT recommends that no further environmental review be required based on transportation-related issues. The Proponent should coordinate with the Town of Littleton and MassDOT District 3 to minimize traffic disruption during project construction. If you have any questions regarding these comments, please contact me at *Curtis.B.Wiemann@dot.state.ma.us*.

Robert L. Zimmerman, Jr.
83 Sanderson Road
Littleton, Massachusetts 01460
617.543.3278

RE: Comments on MEPA Filing 16537: Littleton Sewer System Expansion Project

April 21, 2021

Ms. Jennifer Hughes
MEPA Analyst
Jennifer.Hughes@mass.gov

Dear Ms. Hughes:

Thank you for the opportunity to comment.

I have been following for some time the vagaries of getting a sewer project for the commercial Littleton Common area. In effect, the project started in 2001 and has been at various stages of rejection or acceptance ever since.

The original notion with the project was to provide sewers to the commercial district in Littleton alone, avoiding the serious growth impacts of an expanded system for much of the town. Littleton was and remains an exurban more rural community with much forested and agricultural open space. With a new sewer system available across the town, the best crops to grow would quickly become homes with four and five bedrooms. That outcome remains anathema to most all residents.

The problem with limited strategic sewers allowing for greater density and use in the village center is that the cost per gallon for treatment becomes prohibitive. As a consequence, a plan was paid for and developed by the Charles River Watershed Association to “smart sewer” the commercial zones by subsidizing the cost of the sewer system, mixing the organics in the wastewater with food waste and via anaerobic digestion creating methane to use to fire a generator. In addition, using a membrane bioreactor for wastewater treatment in the facility, treated water would be reclaimed and resold for use in all applications except bathing and drinking. The treatment facility, generically called a Community Water and Energy Resource Center (CWERC), would then subsidize its cost by collecting tipping fees for food waste, selling electricity, through combined heat and power selling heating and cooling to nearby facilities, and reclaiming and selling nearly potable water.

The approach has been rejected out by Littleton Water Department and CDM Smith, though their proposal is to build a membrane bioreactor to treat the 208,000 gallons per day their system is designed to accommodate.

Interestingly, in a separate filing with the Massachusetts Department of Environmental Protection through the Water Management Act, Littleton currently seeks permitting to rehabilitate and build new potable water wells near Cobb Pond and Nashoba Brook in Littleton, and just west of Nagog Pond,

Concord's drinking water supply. These new wells would provide the town up to 555,000 gallons daily, but not to exceed an annual average of 455,000 gallons daily.

I do not know how much the new wells will cost, nor the cost of the permitting and engineering to obtain permission to build and use them. I do know that Littleton's own modeling of the wells shows, particularly during the months of June, July, August, September, and October, the new wells will have serious impact on Nashoba Brook, a coldwater stream, and Cobbs Pond.

What strikes me is that the new wells are utterly unnecessary. They are a function of 19th Century "take/make/waste" thinking, and in the age of climate change and the uncertainty it brings to weather and our future, that thinking must be abandoned.

With 208,000 gallons daily of reclaimed and reusable water being produced by the proposed membrane bioreactor, LWD could resell that water, helping subsidize the capital and operations cost for the treatment plant, and obviating the need for the new wells. Over time the great likelihood is that the original 208,000 gallons treated will grow to something approximating the 455,000 gallons proposed.

A completely new collection system for the treatment plant will be built. At virtually no additional cost to LWD, purple pipes to carry nearly potable water from the treatment plant to the newly sewered commercial district to supply the to-be-built mixed use 350 residential units and commercial district on the property of the existing IBM facility is a simple straightforward undertaking. It is remarkable that it has not been proposed.

The energy needed to pump the reclaimed water uphill from the treatment facility to the new residential and commercial facilities will be no more, and will likely be less, than the energy needed to pump the water uphill from the proposed new wells at Cobbs Pond. Cobbs pond is actually farther downhill and farther away from residential and commercial areas in Littleton than the new treatment plant site.

Though some argue that the development of the new wells would provide LWD greater "flexibility" in their pumping regimes, allowing them to balance demand among their existing well sites. But, of course, the greatest flexibility for LWD comes with reducing demand in the first place, and reclamation and reuse will reduce demand, help provide for less damaged natural systems, help reduce the capital and operations costs of the treatment plant, and provide a model for similar such projects across the Commonwealth.

I would further recommend that this approach be required by MADEP in its Demand Management protocols for new water sources. Pretending that municipalities and water suppliers can continue blithely to draw down and hammer groundwater and surface waters all in a game of "necessary provision" to meet human demand is fantasy. The prediction is that of all species on earth we will lose approaching 50 percent by 2050 due to climate and the insatiable desires of humans and our 19th Century engineering. That likely outcome will be abject failure.

In addition to the obvious Demand Management aspects to the reclamation and reuse opportunities outlined here, there are also State Revolving Fund options. If, in the point system MADEP has devised to identify the best projects in the Commonwealth for SRF funding, points were awarded to those projects favoring water reclamation and reuse – for BOTH the wastewater and drinking water projects – the

likelihood is that the incentives would inspire similar projects and provide for overall reductions in demand across Massachusetts.

Finally, the cost benefits to Littleton are obvious. Eliminating the need for the development, permitting, and design and development of new wells is big. Enhancing the income for the new wastewater facility and thereby reducing the costs to sewer users is big. Eliminating the impacts on Cobbs Pond, Nashoba Brook, and Nagog Pond, to me, is the biggest benefit.

There is no question that reclamation and reuse should be a requirement of these MEPA findings, in partnership with the findings of the WMA permitting process.

Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "R. Zimmerman, Jr.", with a stylized flourish at the end.

Robert L. Zimmerman, Jr.
Littleton Resident

Cc: OARS
Massachusetts Rivers Alliance
Paul Glavey, Littleton Selectmen
Duane Levangie, DEP
Vandana Rao, EEA



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

April 25, 2022

Secretary Kathleen A. Theoharides
Executive Office of Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Attention: MEPA Unit – Jennifer Hughes

Re: Expanded Environmental Notification Form (EENF)/Proposed Environmental Impact
Report (EIR)
Littleton Sewer System Expansion Project
Littleton
EEA #16537

Dear Secretary Theoharides,

The Massachusetts Department of Environmental Protection's ("MassDEP") Central Regional Office has reviewed the EENF/Proposed EIR for the Littleton Sewer System Expansion Project (the "Project"). The Littleton Water Department (the "Proponent") is proposing to construct a "Water Resource Recovery Facility" at 242 King Street (the "Facility") consisting of a 9,935-square-foot Membrane Bioreactor (MBR) treatment system and expansion of the existing effluent recharge site at the Littleton High School (56 King Street). The Project also includes construction of a hybrid collection system consisting of gravity sewers supplemented with pumping stations and force mains at low points. The Project will include approximately 9.32 miles of gravity, force main, and pressure sewers, four new submersible sewerage pump stations, and upgrades to the existing Middle School and High School pump stations. The Project includes demolition of an existing maintenance garage and decommissioning of the existing wastewater treatment facility.

The Project requires an EIR in accordance with 301 CMR 11.06(7)(b). The Project meets or exceeds the following review thresholds:

- 301 CMR 11.03(3)(b)(1)(f) - alteration of ½ or more acres of any other wetlands;

This information is available in alternate format. Contact Glynis Bugg at 617-348-4040.

TTY# MassRelay Service 1-800-439-2370

MassDEP Website: www.mass.gov/dep

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- 301 CMR 11.03(5)(b)(1) - Construction of a New wastewater treatment and/or disposal facility with a Capacity of 100,000 or more gpd;
- 301 CMR 11.03(5)(b)(3)(b) - Construction of one or more New sewer mains five or more miles in length.

The Project requires the following State Agency Permits:

- MassDEP - Individual Permit for Groundwater Discharge from Sewerage Treatment Plant (BRP WP 79, filed on August 6, 2021 (the “Wastewater Permit Application”));
- MassDEP – Superseding Order of Conditions (if pending local Order of Conditions is appealed);
- Massachusetts Department of Transportation – State Highway Permit.

The Proponent is requesting a Single Environmental Impact Report, a Rollover EIR or a Special Review Procedure. MassDEP respectfully suggests that the EENF/Proposed EIR may not meet the standard for a Rollover EIR under 301 CMR 11.06(13)(a) given the scope of MassDEP’s comments below but we offer the comments for the purpose of any further MEPA review. The Proponent will receive funding from a MassWorks Grant and from the Massachusetts Clean Water State Revolving Fund (CWSRF 2022 #7020), so MEPA jurisdiction is broad. MassDEP offers the following comments:

Project Description

Much of the description of the Project is contained in a Wastewater Needs Assessment (“Needs Assessment”) available as a web link in the Proposed EIR. MassDEP’s review of the materials was complicated by having to refer to certain information that could possibly have been in the Proposed EIR itself. From its review of the EENF/Proposed EIR, the Needs Assessment, and the pending Wastewater Permit application, MassDEP understands that the Needs Assessment describes a five-phase recommended plan (Phases 1A, 1B, 2, 3, and 4). The Project includes only three phases: 1A, 1B, and 2 (formerly identified as Phase 3). Phases 3 (formerly 2) and 4 will only be implemented if they are determined to be beneficial to areas that may be adversely affected by septic systems. The EENF/Proposed EIR notes that septic systems may contribute to water quality issues in ponds and streams and identifies Beaver Brook as an impaired water body within ½ mile of the Project site. The EENF/Proposed EIR states that “continued monitoring” will determine whether the two phases not included in the Project will be implemented but does not describe the monitoring program or the results that would trigger the need for those phases. MassDEP believes that monitoring should be described in Proposed Section 61 Findings and may be included in the Wastewater Permit.

Wastewater

As noted above, the Project includes three phases (possibly five). Any future MEPA filings should further define the design flows for each phase of the Project further, including a description of the design basis for each phase. The EENF/Proposed EIR and MassDEP’s hydrogeologic approval for the Project (issued on April 4, 2019 with a follow-up on May 23,

2019) states the treated effluent will be discharged to a disposal system designed with a capacity of approximately 208,000 gallons per day (gpd). However, information provided after the March 29, 2022 MEPA scoping session shows a final design flow of 290,000 gpd, which exceeds the proposed flows. The hydrogeologic analysis examined the discharge location's ability to receive no more than 244,784 gpd of treated effluent. The Proponent should explain how this discrepancy will be addressed.

The Wastewater Permit Application includes the Phase 1A components of the Project: construction of the Facility, the Phase 1A collection system, the Great Road pump station, and the high school pump station; expansion of the effluent recharge site; and decommissioning of the existing wastewater treatment plant.

The Proponent should clarify the ownership, operation, and maintenance responsibilities of the proposed pump stations. The Proponent should state whether these pump stations will be owned and operated by the Proponent or will be privately owned pump stations that will be connected to the municipal sewers. It is preferable that all pump stations be owned and operated by the Proponent. The Proponent shall verify that all existing pump stations that will be used as part of the Project shall meet TR-16 standards and be fully capable of conveying full buildout flows to the WRRF.

The Proponent should clarify that the existing effluent disposal system for the Littleton High School wastewater treatment facility will not be utilized as part of the Project. The existing disposal system should be abandoned or removed. MassDEP's hydrogeologic review did not authorize any further use of the existing disposal system. Similarly, MassDEP assumes that all sewer pipes will be new and any of the existing sewer pipes will either be removed or abandoned.

The Proponent indicated during the MEPA scoping meeting that the potential for wastewater reuse remains under consideration. Please note that any reuse of treated wastewater must comply with 314 CMR 20.00, which may entail more stringent effluent limits.

The EENF/Proposed EIR indicates the treatment of sewage sludge or residuals will take place as part of the Project. It is MassDEP's understanding that no sludge treatment or residuals processing is included in the Project. Please confirm whether there will be sludge treatment or residuals processing. The EENF/Proposed EIR also mentions that the Project will generate traffic related to delivery of septage to the Facility and transportation of girt and sludge from the Facility. The Proponent should provide additional information about these processes.

Wetlands

Although wetlands impacts are discussed in the EENF/Proposed EIR, some of the numbers are inconsistent throughout the document. The EENF/Proposed EIR states that the Project will permanently alter 37,109 square feet (sf) of Riverfront Area (RA), but the temporary impacts to RA are listed as 25,511 sf, 28,711 sf and 24,711 sf in different sections of the document. The EENF/Proposed EIR says that the Project will permanently alter 19,540 sf of Bordering Land Subject to Flooding (BLSF) and temporarily alter 36,155 sf Buffer Zone (BZ),

but revised plans were submitted with no updated impact numbers. Clarification is needed for all wetlands and BZ impacts. In future MEPA filings the Proponent should provide an updated summary table of all temporary and permanent wetland resource area and BZ impacts, especially impacts related to the Facility site, the Great Pond Pump Station site and roadway work. In addition, the narrative states that there will be temporary BZ, BLSF and RA impacts in Phases 1B & 2 roadway work. These impacts must be quantified.

Temporary impacts to RA for the construction of the Facility will be associated with erosion control installation/removal, compensatory storage construction, and incidental grading. Other temporary impacts to RA are associated with the installation of gravity sewers and force main within King Street (Phase 1A) and Great Road (Phase 1B.) All temporary impact areas will be stabilized through seeding or planting. Permanent impacts to RA will be associated with proposed buildings, drive and parking lot. The Project is exempt from the requirements for RA under 310 CMR 10.58(6)(h).

Impacts to BZ proposed under the EENF/Proposed EIR will be directly associated with the work related to the Facility. The proposed installation of sewer mains within various roadway rights-of-way will temporarily impact Buffer Zone in some locations.

The Proponent filed an Abbreviated Notice of Resource Area Delineation (ANRAD) with the Littleton Conservation Commission (the "Commission") and MassDEP in December 2021. MassDEP issued a file number for the ANRAD on December 21, 2021 with comments regarding clarification of jurisdictional areas related to the possible historical stormwater uses on the 242 King Street site. The Commission issued an Order of Resource Area Delineation on January 13, 2022 confirming the delineation of BVW, BLSF, Bank, RA and Land Under Water. The Proponent submitted an NOI application for the Project with the Littleton Conservation Commission and MassDEP on April 4, 2022. The Proponent submitted the Project as a Limited Project under 310 CMR 10.53(3)(d). MassDEP notes that the wetlands impact numbers in the NOI differ from the numbers in the EENF/Proposed EIR. MassDEP may provide additional commentary following technical review of the Project.

The Proponents should demonstrate in any future MEPA submittals that the Project complies with the Performance Standards for BLSF found in 310 CMR 10.57(4), specifically those requiring that compensatory storage be incrementally equal to the theoretical volume of flood water "at each elevation" and unrestricted hydraulic connection is provided to the same waterway. It is unclear if the proposed culvert beneath the access road provides an unrestricted connection to existing BLSF that meets performance standards. The proposed roadway at elevation 212 feet and multiple emergency spillways may prevent such a connection and could result in flooding of the site access road during storm events. Future plans should show the proposed access and resultant wetland impacts needed to access the compensatory storage for construction and future operation and maintenance. It appears that BLSF alteration may exceed the 10% or 5,000 sf threshold of significance for the protection of wildlife habitat and may require the completion of a wildlife habitat evaluation. The Proponent should demonstrate whether the Project meets or exceeds this threshold. To adequately compensate for BLSF loss, a long-term vegetation management plan should be submitted as part of any future MEPA filings to prevent the establishment and spread of phragmites.

Stormwater

The Facility portion of the Project is considered new development and therefore must fully comply to the Massachusetts Stormwater Standards. Future phases of the Project that occur within the existing roadways are exempt from stormwater regulations. The proposed pump stations and the Facility will increase the extent of impervious surfaces by approximately 37,109 sf and there is a new stormwater conveyance proposed from the Facility. The Proponent states they have designed the stormwater management systems associated with the WWRF to fully meet the Massachusetts Stormwater Standards. The overflow elevations for stormwater structures should be set an elevation that prevents intrusion of floodwater associated with the 100-year storm.

MassDEP recommends that the Proponent evaluate stormwater runoff impacts during construction and post-construction, and the Proponent should demonstrate that 1) source controls, pollution prevention measures, erosion and sediment controls and the post-development drainage system will be designed to comply with the MassDEP Stormwater Management regulations, and 2) the standards for water quality and quantity impacts and for impaired waters are being met.

As noted above, Beaver Brook is an impaired waterbody with the segment adjacent to the proposed WRRF listed on the Massachusetts Year 2014 Integrated List of Waters for requiring a TMDL (impairments are fecal coliform/dissolved oxygen/low pH/TSS.) The Proponent shall design the stormwater management system to address the impairments listed in the TMDL.

The Stormwater Management regulations require that the Proponent shall consider environmentally sensitive site design that incorporates LID and the use of integrated management practices (IMP) for control of stormwater, either alone or in combination with conventional drainage control measures. LID is an approach to stormwater management that minimizes runoff impacts by maintaining and mimicking existing hydrologic functions through site design techniques such as disconnecting runoff flow pathways and dispersing stormwater control across the site, reducing imperviousness, and minimizing clearing and grading while preserving natural resources and drainage patterns. When combined with pollution prevention measures, LID can be less costly than conventional gutter and pipe drainage system and can provide redundancy for stormwater control.

Other Permits and Considerations

Before construction begins, the Proponent will be required to file an NOI with the U.S. Environmental Protection Agency for coverage under the National Pollution Discharge Elimination System's General Permit for Storm Water Discharges from Construction Activities and will develop and implement a Stormwater Pollution Prevention Plan to address stormwater controls during Project construction for Projects that disturb more than one acre.

The Proponent should also determine whether the following U.S. EPA NPDES permit is necessary prior to commencing Project construction: Dewatering General Permit - <https://www.epa.gov/npdes-permits/dewatering-general-permit-dgp-massachusetts-new-hampshire>.

MassDEP requests that the Proponent incorporate long-term phragmites management into the Section 61 findings as mitigation measures.

Air Quality

Construction and demolition activity must conform to Massachusetts Air Pollution Control regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10 and not cause or contribute to a condition of air pollution due to dust, odor or noise. As such, the Proponent should propose measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during both construction and demolition. Because the Project is located roadways and abuts a school, excessive dust generation is a concern. The Proponent should consider commercially available dust suppression methods including use of a water truck and/or spreading calcium chloride during the construction period.

The Proponent should be aware of and review the Department's Noise Policy, Policy 90-001, dated January 16, 1990. Copies of this Policy can be obtained from any of the Department's Regional Offices, Bureau of Air and Waste. Proper and considered placement of HVAC equipment and emergency generator(s), with the potential addition of noise abatement enclosure for HVAC roof top units or a noise abatement enclosure for generators, could prevent future noise complaints from nearby residents or abutters. The EENF/Proposed EIR states that noise from the new emergency generators will be mitigated by mufflers and enclosures.

MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.

Asbestos

The EENF/Proposed EIR notes that the existing maintenance garage to be demolished contains asbestos materials. It is unclear whether decommissioning of the existing treatment plant will include demolition and if so, whether any building components include asbestos-containing materials.

Before beginning any demolition or renovation, the Proponent is required to have the structures inspected by a licensed asbestos inspector to identify the presence, location and

quantity of any asbestos-containing material (ACM) and prepare a written asbestos survey report. At least 10 working days before beginning work, the Proponent must submit to MassDEP an Asbestos Removal Notification Form AQ04 (ANF-001) and/or a Construction/Demolition Notification (Form BWP AQ06). The removal of asbestos from the buildings must adhere to the special safeguards defined in the Air Pollution Control regulations (310 CMR 7.15). If any ACM need to be abated through non-traditional methods, the Proponent must apply for and obtain approval from MassDEP through Application BWP AQ36-Application for Non-Traditional Asbestos Abatement Work Practice Approval.

Except for vinyl asbestos tile and asphaltic-asbestos felt and shingles, the disposal of ACM within the Commonwealth must be at a facility specifically approved by MassDEP, in accordance with 310 CMR 19.061. Materials containing any amount of asbestos as well as materials contaminated by asbestos are defined in 310 CMR 7.15 as asbestos-containing waste material. No ACM or asbestos containing waste material, including VAT and asphaltic-asbestos felts and shingles may be disposed at a facility operating as a recycling facility in accordance with 310 CMR 16.05 and are classified as a special waste as defined in the Solid waste Management regulations (310 CMR 19.061). MassDEP Asbestos, Construction and Demolition Notifications can be found at: <https://www.mass.gov/guides/MassDEP-Asbestos-Construction-Demolition-Notifications>.

Demolition activities may generate asphalt, brick and concrete (ABC) debris. If ABC debris will be crushed at the site of generation and used for fill in accordance with 310 CMR 16.03(2)(b)5, the Proponent must notify MassDEP and the Board of Health at least 30 days before beginning the crushing operation. If the debris is not crushed on-site and used for fill, then other requirements may apply. Asphalt paving, brick, concrete, and metal are banned from disposal at Massachusetts landfills and waste combustion facilities. Wood wastes are banned from Massachusetts landfills. For more information see <http://www.mass.gov/eea/agencies/massdep/recycle/solid/massachusetts-waste-disposal-bans.html> and <http://www.mass.gov/eea/docs/dep/recycle/solid/a-thru-cd/cdbanfaq.pdf>.

MassDEP appreciates the opportunity to comment on the Project. If you have any questions regarding these comments, please do not hesitate to contact JoAnne Kasper-Dunne, Central Regional Office MEPA Coordinator, at (508) 767-2716.

Very truly yours,



Mary Jude Pigsley
Regional Director

cc: Commissioner's Office, MassDEP



The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

April 1, 2022

Corey Godfrey
Water & Sewer Superintendent
Littleton Electric Light & Water Department
P.O. Box 2406
Littleton, MA 01460

RE: Littleton Sewer System Expansion Project, Phases 1A, 1B, and Phase 2, Littleton, MA.
EEA #16537. MHC #RC.71190.

Dear Mr. Godfrey:

Staff of the Massachusetts Historical Commission (MHC), office of the State Historic Preservation Officer, have reviewed the Project Notification Form (PNF) that was included in the Environmental Notification Form (ENF) prepared by CDM Smith and submitted for the project referenced above.

The information submitted indicates that the project involves construction of a water resource recovery facility (WRRF) at 242 King Street that proposes demolition of buildings, expansion of the effluent recharge site at Littleton High School at 56 King Street, and an expansion of the wastewater collection system with sewers and pumping stations.

The information submitted indicates that the project proposes to use funding from the US Environmental Protection Agency's (EPA) State Revolving Fund administered by the Massachusetts Department of Environmental Protection (DEP), a MassWorks infrastructure grant from the Massachusetts Office of Housing and Economic Development (EOHED), and requires EPA, DEP, and Massachusetts Department of Transportation (MassDOT) permitting.

Review of the PNF, ENF, additional information located by the MHC, and the MHC's files indicates that the proposed King Street WRRF at 242 King Street includes the Elizabeth and Jonathan Hartwell House with the gable-roofed garage, office, and New England-style barn. The property is included in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth (MHC #LIT.224). The historic property is located on one of the oldest roads in Littleton, and the house dates before 1830.

Additional information is required by the MHC to formally evaluate the historic significance of the property at 242 King Street. The MHC requests that an updated MHC Form B be prepared for the property by a qualified architectural preservation planner, and provided to the MHC. The updated form should summarize results of additional research to determine the dates and architectural history of the structures at the property, and to determine the history of the owners, residents, and the land use of the property. Photographic documentation of the exterior façades of all structures should be included with the form.

The MHC requests that a copy of the PNF and ENF be provided to the Littleton Historical Commission. Any comments received from the Littleton Historical Commission should be sent to the MHC.

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

Portions of the parcel at 242 King Street proposed for the WRRF are archaeologically sensitive and may contain archaeological features and deposits that date from ancient to historical periods. The archaeological sensitivity of portions of the parcel relates to its environmental setting adjoining Beaver Brook and related wetlands, the favorable soils, and its proximity to a previously reported ancient period archaeological site. A 1962 plan of the parcel prepared by Harlan E. Tuttle and included with the Littleton Conservation Commission filing shows the boundaries of a graded area that was used during construction of I-495 and other important information. Other portions of the parcel where the WRRF is proposed appear to have intact soils.

The MHC requests that an intensive (locational) archaeological survey (950 CMR 70) be conducted for the WRRF aspect of the project. The goal of the survey is to locate and identify any significant historic or archaeological resources that may be affected by the project and to provide sufficient information to consult to avoid, minimize, or mitigate any adverse effects to the resources.

Review of the project plans provided in the ENF for the remaining elements of the project, including the sewers, the effluent recharge site, and the high school, middle school, and Great Road pumping stations, indicate that those elements of the project are unlikely to affect historic and archaeological resources.

The MHC looks forward to receiving the additional project information and to consultation to develop a plan to avoid, minimize, or mitigate any adverse effects to significant historic and archaeological resources.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), M.G.L. c. 9, ss. 26-27C (950 CMR 70-71), and MEPA (301 CMR 11). If you have any questions, please contact Edward L. Bell, Deputy State Historic Preservation Officer and Senior Archaeologist or Elizabeth Sherva, Director of Architectural Review.

Sincerely,



Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc:

✓ Secretary Kathleen Theoharides, EEA Attn. Christina Lyons
Maria Pinaud, DEP-SRF program
Erica Kreuter, EOHED
Barry Lorion, MassDOT District 3
Littleton Historical Commission
Kara M. Johnston, CDM Smith



FOR THE ASSABET SUDBURY & CONCORD RIVERS

23 Bradford Street · Concord, MA 01742

978 · 369 · 3956

office@oars3rivers.org

www.oars3rivers.org

April 21, 2022

Jennifer Hughes, Analyst
MEPA Office
100 Cambridge St., Suite 900
Boston MA 02114

Via: Jennifer.Hughes@mass.gov

Re: MEPA 16537 Littleton Sewer System Expansion Project

Dear Ms. Hughes:

Thank you for the opportunity to comment on the above referenced project. We also appreciate the information you provided at the virtual site visit on March 29, at which we asked several questions. I will focus our comments to elaborate on the same, below.

Littleton sits astride two watersheds: the Merrimack and the Sudbury-Assabet-Concord (SuAsCo). Although this proposed project is not in the SuAsCo watershed, it will have major implications for that watershed, particularly Nashoba Brook subwatershed. It also has the potential to have a very positive impact on the Commonwealth as a whole, showing an important path forward in making our communities more resilient to climate change. MEPA's policies require climate change to be taken into account in the Secretary's decisions. This is the focus of our comments.

Littleton is in the process of requesting permitting of water withdrawals at Cobbs Pond, in the Nashoba Brook watershed of 0.44 MGD. The pump tests show that this will impact the adjacent wetlands, reduce pond levels, and significantly impact the already low flow-stressed Nashoba Brook downstream. It is required in that permitting process to properly examine alternatives to these new wells. It is clear that the treated wastewater from this MBR wastewater treatment plant would be suitable for all but drinking and bathing purposes and could readily provide an alternative supply to new sources. As part of the same construction process and hence quite inexpensively, purple pipe could be laid to return the treated water to the town center where it could be used in the planned new construction at the old IBM campus. It could also be used by Aggregate Industries in their gravel processing facility, which currently uses treated drinking water. These and other appropriate uses for reclaimed water would cover the new demand needs and the need for flexibility in the town's water supply system. Unfortunately, the only water reuse option investigated during this MEPA process, as I learned at the site visit, was to irrigate the playing fields. This is a consumptive use and would not provide any of the benefits cited above for use of high-quality reclaimed water. It is very cost-effective to install water reuse systems in new construction and Littleton is poised to have both a supply of reclaimed water and new construction that can use it.


It is abundantly clear that we cannot expect to keep building water management infrastructure (supply, stormwater, wastewater) in the same way as we have in the past. We must urgently advance new approaches. We appreciate that recharging groundwater is a better use than discharging it to surface waters. But we need to do *much better* if our communities are to have adequate drinking water supplies in the coming decades. This is true throughout the Commonwealth, and particularly in this part of the state where almost all communities depend on very limited and already-stressed groundwater sources. If

MEPA's Interim Protocol on Climate Change and Climate Resiliency (2021) is to have any meaning, analysis of proposed projects must take water reuse seriously. Water reuse has been stalled for decades despite clearly successful examples nearby and afar (see: Fay School in Southborough, Gillette Stadium in Foxborough, an entire section of New York City and beyond). Significantly increasing water reuse in the Commonwealth would be transformative and an overwhelmingly positive environmental impact. This fact can no longer be ignored by state agencies.

In conclusion, under MEPA's policies and protocols the Secretary must require that the applicant properly investigate a legitimate alternative that squarely addresses the need for infrastructure that promotes sustainable water use, avoids environmental damage, and builds climate resiliency.

Please don't hesitate to contact me if you have any questions.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'A. Juma', with a long horizontal flourish extending to the left.

Alison Field-Juma
Executive Director

Hughes, Jennifer (EEA)

From: Marold, Misty-Anne (FWE)
Sent: Friday, April 22, 2022 10:54 AM
To: Hughes, Jennifer (EEA)
Cc: Cheeseman, Melany (FWE)
Subject: EEA 16537, Littleton Sewer System Expansion

RE: EEA 16537, Littleton Sewer System Expansion

Hi Jennifer,

The MA Division of Fisheries & Wildlife (MassWildlife) reviewed the DUAL EXPANDED ENVIRONMENTAL NOTIFICATION FORM/PROPOSED EIR for the LITTLETON SEWER SYSTEM EXPANSION PHASES 1A, 1B, 2. The work proposed does *not* appear to occur within *Priority* or *Estimated Habitats* for state-listed species according to the Massachusetts Natural Heritage Atlas' 15th edition. Further, much of the work would likely be considered exempt from review pursuant to 321 CMR 10.14(6, 7, 8, 12, 13) as it is immediately adjacent to or within existing paved roads and lawn areas. As the project moves forward to contracting and implementation, the Proponents should check the then-current Massachusetts Natural Heritage Atlas to be certain that all the work remains outside of *Priority* and *Estimated Habitat*. If work enters or impacts *Priority* or *Estimated Habitat*, the Proponents should review the exemptions in 321 CMR 10.14 and, as necessary, be in contact with MassWildlife.

Further, we recommend that all areas not maintained as lawn/grass, should be reseeded with a native restoration seed mixes composed off species native to the Middlesex County in accordance with "The Vascular Plants of Massachusetts: A County Checklist First Revision" (Dow Cullina, M, B Connolly, B Sorrie, and P Somers. 2011. MA NHESP DFW; available online from the State Library of Massachusetts at archives.lib.state.ma.us).

Best, Misty-Anne

Misty-Anne R. Marold (*she/her/hers*)
Senior Endangered Species Review Biologist
Massachusetts Division of Fisheries & Wildlife
Natural Heritage Endangered Species Program
1 North Drive, Rabbit Hill Road
Westborough, MA 01581
misty-anne.marold@mass.gov

Attachment B
Distribution List

Agency	Email Address	Address
Massachusetts Environmental Policy Act (MEPA) Office	MEPA@mass.gov	MEPA Office 100 Cambridge Street, Suite 900 Boston, MA 02144
Department of Environmental Protection, Boston Office	helena.boccardo@mass.gov	Commissioner's Office One Winter Street Boston, MA 02108
	andrea.briggs@mass.gov	DEP/Central Regional Office Attn: Attn: Mary Jude Pigsley, Regional Director/ MEPA Coordinator 8 New Bond Street Worcester, MA 01606
Massachusetts Department of Transportation - Boston	MassDOTPPDU@dot.state.ma.us	Public/Private Development Unit J. Lionel Lucien, P.E., Manager Ten Park Plaza, Suite #4160 Boston, MA 02116
Massachusetts Department of Transportation - Boston	MassDOTPPDU@dot.state.ma.us	Office of Transportation Planning David J. Mohler, Executive Director Ten Park Plaza, Suite #4160 Boston, MA 02116
	jeffrey.r.gomes@dot.state.ma.us	District #3 Attn: MEPA Coordinator 499 Plantation Parkway Worcester, MA 01605
Massachusetts Historical Commission	Mail a hard copy of the filing to MHC.	The MA Archives Building Ms. Brona Simon, State Historic Preservation Officer 220 Morrissey Boulevard Boston, MA 02125
Metropolitan Area Planning Council (MAPC)	mpillsbury@mapc.org afelix@mapc.org	60 Temple Place Boston, MA 02111
Littleton Board of Selectmen	Selectboard@littletonma.org	Littleton Town Offices 37 Shattuck Street 3rd Floor, Room 306 Littleton, MA 01460
Littleton Planning Board	MToohill@littletonma.org	Littleton Town Offices 37 Shattuck Street 3rd Floor, Room 303 Littleton, MA 01460
Littleton Conservation Commission	agreen@littletonma.org	Littleton Town Offices 37 Shattuck Street 3rd Floor, Room 302 Littleton, MA 01460

Agency	Email Address	Address
Littleton Board of Health	health@littletonma.org	Littleton Town Offices 37 Shattuck Street 3rd Floor, Room 302 Littleton, MA 01460
If the Project implicates public health impacts	DPHToxicology@State.MA.US	Department of Public Health Director of Environmental Health 250 Washington Street Boston, MA 02115
Commented on EENF/Proposed EIR		Robert L. Zimmerman, Jr. 83 Sanderson Road Littleton, MA 01460
Commented on EENF/Proposed EIR	office@oars3rivers.org	OARS Attn: Alison Field-Juma, Executive Director 23 Bradford Street Concord, MA 01742
MA Division of Fisheries & Wildlife (MassWildlife)	Misty-anne.marold@mass.gov	Massachusetts Division of Fisheries & Wildlife Natural Heritage & Endangered Species Program Attn: Misty-Anne R. Marold, Senior Endangered Species Review Biologist 1 North Drive, Rabbit Hill Road Westborough, MA 01581

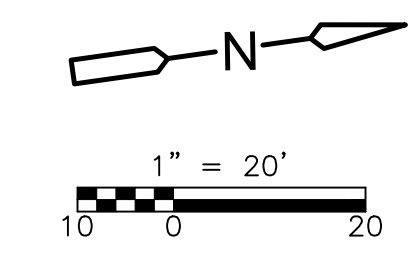
Attachment C
Tree Inventory for 242 King Street

Tag No.	Common Name	Scientific Name	Squared DBH in inches (for multi trunk trees only)	DBH in Inches	Condition	Notes
428	Eastern white pine	<i>Pinus strobus</i>	422.5	21	Good	Twin trunk
429	Eastern white pine	<i>Pinus strobus</i>	464.5	22	Good	Twin trunk
430	Northern catalpa	<i>Catalpa speciosa</i>		8	Good	
431	Red maple	<i>Acer rubrum</i>		24.5	Good	
432	American elm	<i>Ulmus americana</i>		10.5	Good	
433	Eastern white pine	<i>Pinus strobus</i>		35	Good	
434	Eastern white pine	<i>Pinus strobus</i>		21.5	Good	
435	Black cherry	<i>Prunus serotina</i>	94.5	9.7	Good	Multi trunk (4)
436	Box elder	<i>Acer negundo</i>	378.25	19.4	Good	Multi trunk (3)
437	Eastern white pine	<i>Pinus strobus</i>		15.5	Fair	
438	Red oak	<i>Quercus rubra</i>		16	Good	
439	Northern catalpa	<i>Catalpa speciosa</i>		6	Good	
440	Eastern white pine	<i>Pinus strobus</i>		17	Good	
441	Red oak	<i>Quercus rubra</i>		24.5	Good	
442	Eastern white pine	<i>Pinus strobus</i>	1241	35.2	Good	Twin trunk
443	Sugar maple	<i>Acer saccharum</i>		12	Good	
444	Sugar maple	<i>Acer saccharum</i>		8.5	Good	
445	Eastern white pine	<i>Pinus strobus</i>		17	Good	
446	Eastern white pine	<i>Pinus strobus</i>		15	Good	
447	Sugar maple	<i>Acer saccharum</i>		7	Good	
448	Eastern white pine	<i>Pinus strobus</i>	856.5	29.3	Good	Multi trunk (3)
449	Eastern white pine	<i>Pinus strobus</i>		29	Good	
450	Box elder	<i>Acer negundo</i>		13	Fair	
451	Red maple	<i>Acer rubrum</i>		20	Good	
452	Red maple	<i>Acer rubrum</i>		24	Good	
453						Tag not used
454	Red maple	<i>Acer rubrum</i>	501.25	22.4	Good	Twin trunk
455	Red maple	<i>Acer rubrum</i>		20.5	Good	
456	Red maple	<i>Acer rubrum</i>		11.5	Good	
457	Red maple	<i>Acer rubrum</i>		17	Good	
458	Red maple	<i>Acer rubrum</i>		11	Good	
459	Red maple	<i>Acer rubrum</i>		9.5	Good	
460	Red maple	<i>Acer rubrum</i>	254.25	15.9	Good	Twin trunk
461	Red maple	<i>Acer rubrum</i>		15	Good	
462	Red maple	<i>Acer rubrum</i>		10	Good	
463	Red maple	<i>Acer rubrum</i>		13	Fair	

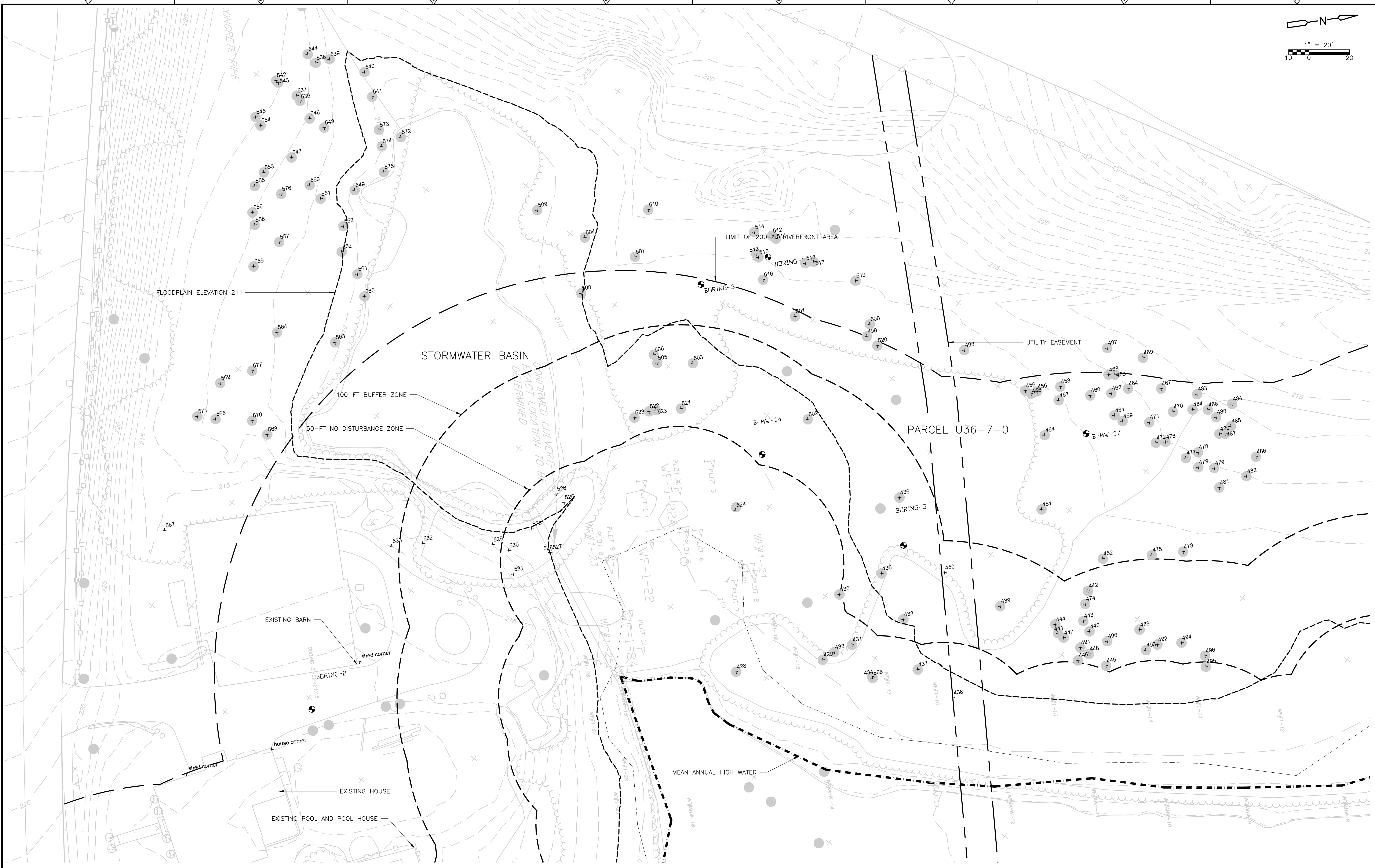
Tag No.	Common Name	Scientific Name	Squared DBH in inches (for multi trunk trees only)	DBH in Inches	Condition	Notes
464	Red maple	<i>Acer rubrum</i>		9	Good	
465	Eastern white pine	<i>Pinus strobus</i>	100	10.0	Good	Twin trunk
466	Eastern white pine	<i>Pinus strobus</i>		13.5	Fair	
467	Eastern white pine	<i>Pinus strobus</i>	164	12.8	Fair	Twin trunk, branches dead 3/4 up from ground
468	Red maple	<i>Acer rubrum</i>		13	Good	
469	Sugar maple	<i>Acer saccharum</i>		8	Good	
470	Sugar maple	<i>Acer saccharum</i>	164	12.8	Good	Twin trunk
471	Sugar maple	<i>Acer saccharum</i>		9.5	Good	
472	Eastern white pine	<i>Pinus strobus</i>	596.25	24.4	Fair	Multi trunk (6)
473	Red maple	<i>Acer rubrum</i>		19.0	Good	
474	Red maple	<i>Acer rubrum</i>		15.0	Good	
475	Eastern white pine	<i>Pinus strobus</i>	662.5	25.7	Good	Twin trunk
476	Red maple	<i>Acer rubrum</i>		17.0	Good	
477	Eastern white pine	<i>Pinus strobus</i>		13.0	Good	
478	Eastern white pine	<i>Pinus strobus</i>		26.0	Good	
479	Eastern white pine	<i>Pinus strobus</i>		12.5	Good	
480	Eastern white pine	<i>Pinus strobus</i>		23	Fair	
481	Eastern white pine	<i>Pinus strobus</i>		10.5	Fair	
482	Red maple	<i>Acer rubrum</i>		6	Good	
483	Red maple	<i>Acer rubrum</i>		6	Fair	Lacking branches lower 3/4
484	Eastern white pine	<i>Pinus strobus</i>		20	Fair	Needles on top of crown only
485	Eastern white pine	<i>Pinus strobus</i>	250	16	Fair	Twin trunk, needles on top of crown only
486	Eastern white pine	<i>Pinus strobus</i>		13.5	Fair	Needles on top of crown only
487	Eastern white pine	<i>Pinus strobus</i>	286	17	Fair	Multi trunk (3), needles on top of crown only
488	Eastern white pine	<i>Pinus strobus</i>		12.5	Fair	Needles on top of crown only
489	Eastern white pine	<i>Pinus strobus</i>		16	Fair	Needles on top of crown only
490	Eastern white pine	<i>Pinus strobus</i>		10	Fair	
491	Eastern white pine	<i>Pinus strobus</i>	596	24	Good	Twin trunk, needles on top of crown only
492	Sugar maple	<i>Acer saccharum</i>		13.5	Good	
493	Sugar maple	<i>Acer saccharum</i>		14.5	Good	
494	Sugar maple	<i>Acer saccharum</i>		10	Good	
495	Eastern white pine	<i>Pinus strobus</i>	591.25	24	Good	Multi trunk (3)

Tag No.	Common Name	Scientific Name	Squared DBH in inches (for multi trunk trees only)	DBH in Inches	Condition	Notes
496	Eastern white pine	<i>Pinus strobus</i>		19	Fair	Needles on top of crown only
497	American elm	<i>Ulmus americana</i>		11	Good	
498	Northern catalpa	<i>Catalpa speciosa</i>		17.5	Good	
499	White ash	<i>Fraxinus americana</i>		12	Fair	Emerald ash borer
500	American elm	<i>Ulmus americana</i>		10	Good	
501	White ash	<i>Fraxinus americana</i>		12.5	Fair	
502	Box elder	<i>Acer negundo</i>		13	Good	
503	Northern catalpa	<i>Catalpa speciosa</i>		18	Good	
504	Red oak	<i>Quercus rubra</i>	357.25	19	Good	
505	Eastern white pine	<i>Pinus strobus</i>		22	Good	
506	Eastern white pine	<i>Pinus strobus</i>		30	Good	
507	White ash	<i>Fraxinus americana</i>		9	Good	
508	Sugar maple	<i>Acer saccharum</i>	202	14	Fair	Twin trunks, split trunks
509	Red maple	<i>Acer rubrum</i>		32	Good	
510	Eastern white pine	<i>Pinus strobus</i>		7	Good	
511	White ash	<i>Fraxinus americana</i>		7	Poor	Emerald ash borer
512	White ash	<i>Fraxinus americana</i>		7	Poor	Emerald ash borer
513	White ash	<i>Fraxinus americana</i>		6	Poor	Emerald ash borer
514	White ash	<i>Fraxinus americana</i>		13	Poor	Emerald ash borer
515	White ash	<i>Fraxinus americana</i>		5	Poor	Emerald ash borer
516	Red maple	<i>Acer rubrum</i>		18.5	Poor	Growing along the ground
517	White ash	<i>Fraxinus americana</i>		11	Poor	Emerald ash borer
518	Red maple	<i>Acer rubrum</i>		8	Poor	
519	White ash	<i>Fraxinus americana</i>		11	Poor	Emerald ash borer
520	White ash	<i>Fraxinus americana</i>		16	Poor	Emerald ash borer
521	Northern catalpa	<i>Catalpa speciosa</i>		6	Good	
522	Box elder	<i>Acer negundo</i>		6	Good	
523	Red maple	<i>Acer rubrum</i>	680	26	Good	Twin trunk
524	Box elder	<i>Acer negundo</i>		19	Good	
525	Box elder	<i>Acer negundo</i>		16.5	Good	
526	Box elder	<i>Acer negundo</i>		12	Good	
527	Box elder	<i>Acer negundo</i>		7.5	Good	
528	White ash	<i>Fraxinus americana</i>		9	Poor	Emerald ash borer
529	Black cherry	<i>Prunus serotina</i>	317	18	Good	Twin trunk
530	Box elder	<i>Acer negundo</i>	205	14	Good	Twin trunk
531	Box elder	<i>Acer negundo</i>		10	Good	

Tag No.	Common Name	Scientific Name	Squared DBH in inches (for multi trunk trees only)	DBH in Inches	Condition	Notes
532	Norway spruce	<i>Picea abies</i>		27	Good	
533	Norway spruce	<i>Picea abies</i>		23	Good	
534	Eastern white pine	<i>Pinus strobus</i>	369	19	Good	Twin trunk
535	Red maple	<i>Acer rubrum</i>		8	Fair	
536	Eastern white pine	<i>Pinus strobus</i>		15	Dead	
537	White ash	<i>Fraxinus americana</i>		8.5	Poor	Emerald ash borer
538	Eastern white pine	<i>Pinus strobus</i>	450	21	Good	Multi trunk (3)
539	American elm	<i>Ulmus americana</i>		9	Good	
540	White ash	<i>Fraxinus americana</i>		7	Poor	Emerald ash borer
541	American elm	<i>Ulmus americana</i>	292	17	Good	Twin trunk
542	Eastern white pine	<i>Pinus strobus</i>		7	Poor	
543	Crab apple	<i>Malus sp.</i>	56.25	8	Good	Twin trunk
544	Eastern white pine	<i>Pinus strobus</i>		23	Good	
545	American elm	<i>Ulmus americana</i>		8.5	Fair	Growing close to white pine tree
546	Black cherry	<i>Prunus serotina</i>		6	Poor	Appears dead
547	American elm	<i>Ulmus americana</i>		6.5	Fair	
548	White ash	<i>Fraxinus americana</i>	229.5	15	Fair	Multi trunk (4), emerald ash borer
549	Eastern white pine	<i>Pinus strobus</i>		11	Good	
550	Eastern white pine	<i>Pinus strobus</i>		16	Fair	Emerald ash borer
551	White ash	<i>Fraxinus americana</i>		10.5	Dead	Emerald ash borer
552	American elm	<i>Ulmus americana</i>		7	Dead	
553	Eastern white pine	<i>Pinus strobus</i>		11.5	Good	
554	White ash	<i>Fraxinus americana</i>		8	Dead	
555	White ash	<i>Fraxinus americana</i>	181.25	13	Dead	Twin trunk
556	Sugar maple	<i>Acer saccharum</i>	249	16	Good	Multi trunk (3)
557	Black cherry	<i>Prunus serotina</i>		6	Fair	
558	White ash	<i>Fraxinus americana</i>	80	9	Dead	Twin trunk
559	Unknown			8	Good	
560	Red maple	<i>Acer rubrum</i>	677	26	Good	Multi trunk (3)
561	Red maple	<i>Acer rubrum</i>	159.25	13	Good	Twin trunk
562	Red maple	<i>Acer rubrum</i>		6	Good	
563	Willow	<i>Salix sp.</i>		16	Good	
564	White ash	<i>Fraxinus americana</i>		11.5	Poor	Appears dead
565	White oak	<i>Quercus alba</i>		24	Good	
566	Eastern white pine	<i>Pinus strobus</i>		19.5	Good	
567	Eastern white pine	<i>Pinus strobus</i>		22	Good	



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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M.DODSON
 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: M.DODSON
 CROSS CHK'D BY: _____
 APPROVED BY: _____
 DATE: FEBRUARY 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-6000

LITTLETON
 WATER DEPARTMENT
 KING STREET WATER RESOURCE
 RECOVERY FACILITY

CIVIL EXISTING CONDITIONS PLAN

PROJECT NO. 263387-261886
 FILE NAME: C025STPL.dwg
 SHEET NO.
C-2

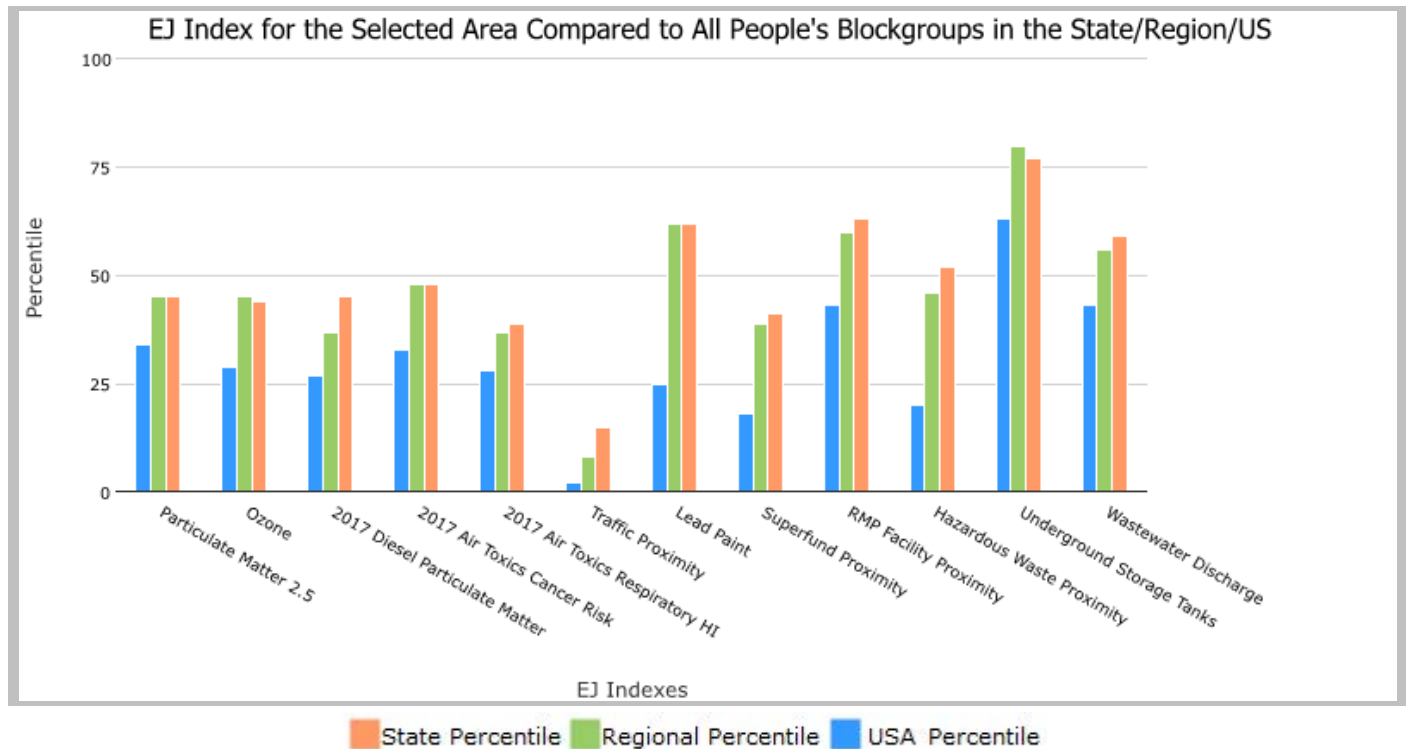
Attachment D
EPA EJ Screen Tool Report

Blockgroup: 250173183003, MASSACHUSETTS, EPA Region 1

Approximate Population: 1,764

Input Area (sq. miles): 1.59

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
Environmental Justice Indexes			
EJ Index for Particulate Matter 2.5	45	45	34
EJ Index for Ozone	44	45	29
EJ Index for 2017 Diesel Particulate Matter*	45	37	27
EJ Index for 2017 Air Toxics Cancer Risk*	48	48	33
EJ Index for 2017 Air Toxics Respiratory HI*	39	37	28
EJ Index for Traffic Proximity	15	8	2
EJ Index for Lead Paint	62	62	25
EJ Index for Superfund Proximity	41	39	18
EJ Index for RMP Facility Proximity	63	60	43
EJ Index for Hazardous Waste Proximity	52	46	20
EJ Index for Underground Storage Tanks	77	80	63
EJ Index for Wastewater Discharge	59	56	43

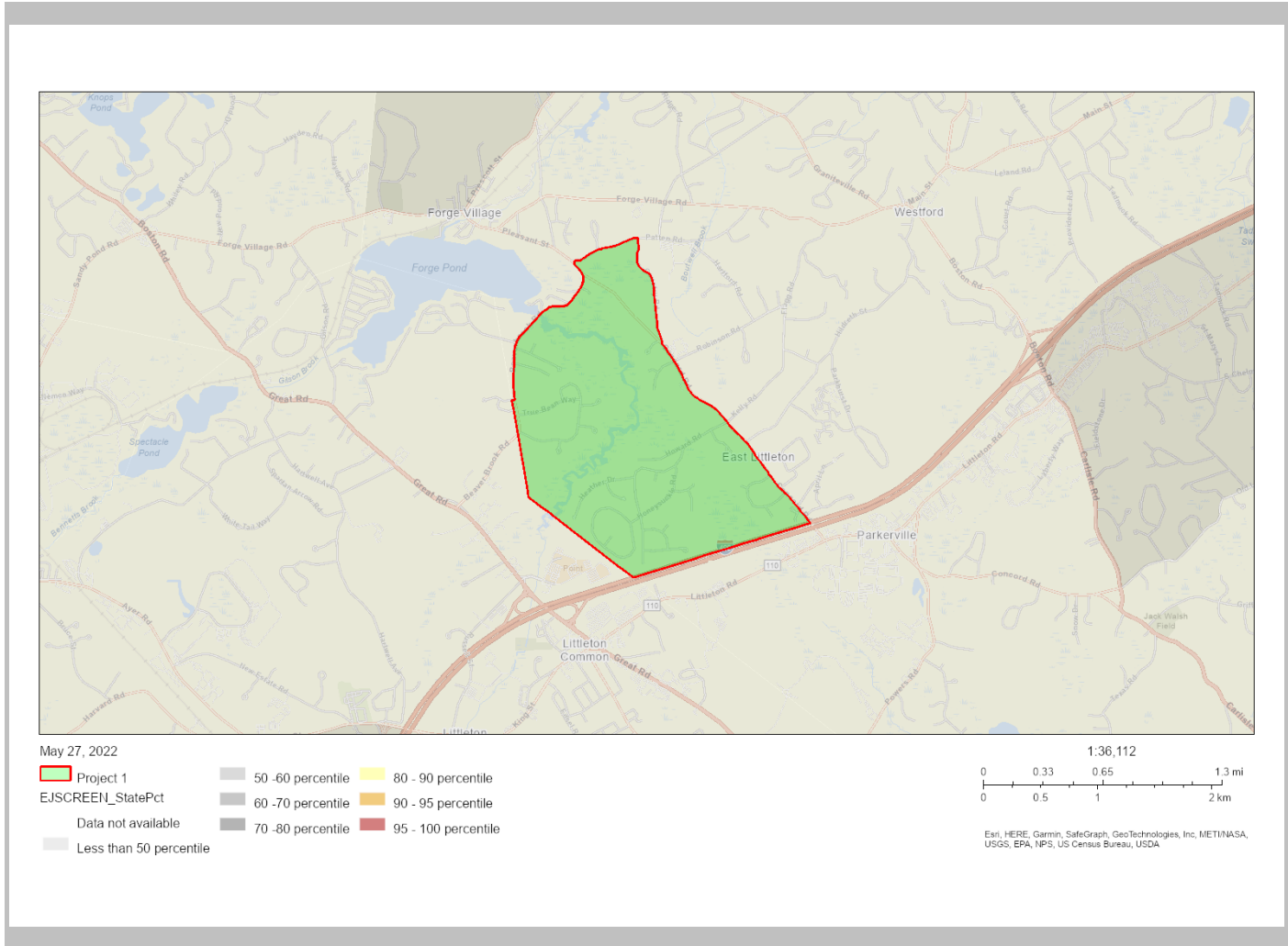


This report shows the values for environmental and demographic indicators and EJSscreen indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSscreen documentation for discussion of these issues before using reports.

Blockgroup: 250173183003, MASSACHUSETTS, EPA Region 1

Approximate Population: 1,764

Input Area (sq. miles): 1.59



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.0)

Blockgroup: 250173183003, MASSACHUSETTS, EPA Region 1

Approximate Population: 1,764

Input Area (sq. miles): 1.59

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Pollution and Sources							
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	6.24	6.78	22	6.68	31	8.74	5
Ozone (ppb)	37.8	39.5	4	39.8	22	42.6	20
2017 Diesel Particulate Matter* ($\mu\text{g}/\text{m}^3$)	0.198	0.295	36	0.227	50-60th	0.295	<50th
2017 Air Toxics Cancer Risk* (lifetime risk per million)	20	24	56	23	60-70th	29	<50th
2017 Air Toxics Respiratory HI*	0.3	0.3	81	0.28	90-95th	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	1700	2100	70	1300	82	710	90
Lead Paint (% Pre-1960 Housing)	0.16	0.49	12	0.44	14	0.28	48
Superfund Proximity (site count/km distance)	0.093	0.17	53	0.15	54	0.13	64
RMP Facility Proximity (facility count/km distance)	0.085	0.7	8	0.6	17	0.75	11
Hazardous Waste Proximity (facility count/km distance)	0.76	5.2	22	3.8	32	2.2	51
Underground Storage Tanks (count/km ²)	0	3.1	15	3	16	3.9	16
Wastewater Discharge (toxicity-weighted concentration/m distance)	2.9E-05	0.21	18	0.4	23	12	23
Socioeconomic Indicators							
Demographic Index	20%	25%	53	24%	57	36%	31
People of Color	40%	28%	73	25%	78	40%	58
Low Income	0%	22%	1	23%	0	31%	0
Unemployment Rate	2%	5%	24	5%	24	5%	23
Linguistically Isolated	0%	6%	40	5%	47	5%	45
Less Than High School Education	0%	9%	7	9%	6	12%	4
Under Age 5	1%	5%	10	5%	11	6%	7
Over Age 64	7%	16%	14	17%	11	16%	16

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's 2017 Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

For additional information, see: www.epa.gov/environmentaljustice

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

Attachment E
Revised Output Report from RMAAT Climate Resilience
Design Standards Tool

RMAT Climate Resilience Design Standards Tool Project Report

Littleton Sewer System Expansion Project

Date Created: 2/25/2022 12:36:59 PM

Created By: lofstedtmh

[Download](#)

Project Summary

[Link to Project](#)

Estimated Construction Cost: \$50000000.00
 End of Life Year: 2072
 Project within mapped Environmental Justice neighborhood: No

Ecosystem Benefits	Scores
Project Score	Moderate
Exposure	Scores
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 3

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Wastewater Treatment Facility	Low Risk	High Risk	High Risk	High Risk
Compensatory Flood Storage	— Natural Resource project assets do not receive a preliminary climate risk rating. —			
Middle School Pump Station	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Wastewater Treatment Facility					
Compensatory Flood Storage					
Middle School Pump Station					
Extreme Precipitation					
Wastewater Treatment Facility	2070			50-yr (2%)	Tier 3
Compensatory Flood Storage	2030				Tier 1
Middle School Pump Station	2070			10-yr (10%)	Tier 2
Extreme Heat					
Wastewater Treatment Facility	2070		90th		Tier 3
Compensatory Flood Storage	2030		50th		Tier 1
Middle School Pump Station	2070		10th		Tier 2

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Increased impervious area
- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- Existing impervious area of the project site is between 10% and 50%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 100ft of a waterbody
- Project is potentially susceptible to riverine erosion
- No historic riverine flooding at project site

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Increased impervious area
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is between 10% and 50%
- Located within 100 ft of existing water body

Scoring Rationale - Asset Risk Scoring

Asset - Wastewater Treatment Facility

Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Loss/inoperability of the asset would have impacts limited to local area and/or municipality
- Inoperability of the asset would be expected to result in minor impacts to people's health, including minor injuries or minor impacts to chronic illnesses
- Cost to replace is between \$30 million and \$100 million
- Spills and/or releases of hazardous materials are expected with difficult remediation and pose a severe threat to public health or safety

Asset - Compensatory Flood Storage

Primary asset criticality factors influencing risk ratings for this asset:

No score available

Asset - Middle School Pump Station

Primary asset criticality factors influencing risk ratings for this asset:

- Asset can be inaccessible/inoperable more than a week after natural hazard event without consequences
- Loss/inoperability of the asset would have impacts limited to local area and/or municipality
- Inoperability of the asset would not be expected to result in injuries
- Inoperability may moderately impact other facilities, assets, or buildings, but is not expected to affect their ability to operate
- Impact on natural resources can be mitigated naturally with the inoperability of the asset

Project Design Standards Output

Asset: Wastewater Treatment Facility

Infrastructure

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Projected Tidal Datums: No

Projected Water Surface Elevation: No

Projected Wave Action Water Elevation: No
Projected Wave Heights: No
Projected Duration of Flooding: No
Projected Design Flood Velocity: No
Projected Scour & Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070
 Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: Yes

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Wastewater Treatment Facility	2070	50-Year (2%)	9.2	Downloadable Methodology PDF

Limitations: While precipitation depth is useful for project planning and design, rainfall distribution and peak intensity of the design storm is recommended to also be considered. Lower-intensity, longer-duration storms allow time for infiltration and reduce the load on the infrastructure system over the duration of the storm. Higher-intensity, shorter-duration storms often have higher runoff volumes because the water does not have enough time to infiltrate and infrastructure systems (e.g., catch basins) and may overflow or back up during such storms. In the Northeast, short -duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. These events can result in the rapid inundation of the asset project location. Design should consider both short- and long-duration precipitation events and how they may impact the asset.

The precipitation values provided by this Tool (version 1) are recommended to inform planning and design, but they do not guarantee that the asset will be protected from or be able to withstand an extreme precipitation event. The planning, design, and review guidance accompanying these values is general and projects are encouraged to do their own due diligence to understand the vulnerability of their asset.

Projected Riverine Peak Discharge & Peak Flood Elevation: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
 Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: Yes

Projected Heat Index: Yes

Projected Growing Degree Days: No

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: Yes

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: Yes

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): No

Asset: Compensatory Flood Storage

Natural Resources

Sea Level Rise/Storm Surge

Applicable Design Criteria

Projected Tidal Datums: No

Projected Water Surface Elevation: No

Projected Wave Action Water Elevation: No

Projected Wave Heights: No

Projected Duration of Flooding: No

Projected Design Flood Velocity: No

Projected Scour & Erosion: No

Extreme Precipitation

Target Planning Horizon: 2030

Applicable Design Criteria

Tiered Methodology: Tier 1

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: Yes

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Compensatory Flood Storage	2030	25-Year (4%)	6.9	Downloadable Methodology PDF

Limitations: While precipitation depth is useful for project planning and design, rainfall distribution and peak intensity of the design storm is recommended to also be considered. Lower-intensity, longer-duration storms allow time for infiltration and reduce the load on the infrastructure system over the duration of the storm. Higher-intensity, shorter-duration storms often have higher runoff volumes because the water does not have enough time to infiltrate and infrastructure systems (e.g., catch basins) and may overflow or back up during such storms. In the Northeast, short -duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. These events can result in the rapid inundation of the asset project location. Design should consider both short- and long-duration precipitation events and how they may impact the asset.

The precipitation values provided by this Tool (version 1) are recommended to inform planning and design, but they do not guarantee that the asset will be protected from or be able to withstand an extreme precipitation event. The planning, design, and review guidance accompanying these values is general and projects are encouraged to do their own due diligence to understand the vulnerability of their asset.

Projected Riverine Peak Discharge & Peak Flood Elevation: Yes

Extreme Heat

Target Planning Horizon: 2030
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 1

Projected Annual/Summer/Winter Average Temperatures: Yes

Projected Heat Index: No

Projected Growing Degree Days: No

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: No

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: No

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): No

Asset: Middle School Pump Station

Building/Facility

Sea Level Rise/Storm Surge

Low Risk

Applicable Design Criteria

Projected Tidal Datums: No

Projected Water Surface Elevation: No

Projected Wave Action Water Elevation: No

Projected Wave Heights: No

Projected Duration of Flooding: No

Projected Design Flood Velocity: No

Projected Scour & Erosion: No

Extreme Precipitation

High Risk

Target Planning Horizon: 2070
Return Period: 10-yr (10%)

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: Yes

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Middle School Pump Station	2070	10-Year (10%)	6.7	Downloadable Methodology PDF

Limitations: While precipitation depth is useful for project planning and design, rainfall distribution and peak intensity of the design storm is recommended to also be considered. Lower-intensity, longer-duration storms allow time for infiltration and reduce the load on the infrastructure system over the duration of the storm. Higher-intensity, shorter-duration storms often have higher runoff volumes because the water does not have enough time to infiltrate and infrastructure systems (e.g., catch basins) and may overflow or back up during such storms. In the Northeast, short -duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. These events can result in the rapid inundation of the asset project location. Design should consider both short- and long-duration precipitation events and how they may impact the asset.

The precipitation values provided by this Tool (version 1) are recommended to inform planning and design, but they do not guarantee that the asset will be protected from or be able to withstand an extreme precipitation event. The planning, design, and review guidance accompanying these values is

general and projects are encouraged to do their own due diligence to understand the vulnerability of their asset.

Projected Riverine Peak Discharge & Peak Flood Elevation: Yes

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 10th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Annual/Summer/Winter Average Temperatures: Yes

Projected Heat Index: Yes

Projected Growing Degree Days: No

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: Yes

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: Yes

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): Yes

Project Inputs

Core Project Information

Name:	Littleton Sewer System Expansion Project
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2072
Location of Project:	Littleton
Estimated Capital Cost:	\$50,000,000
Who is the Submitting Entity?	City/Town Littleton Magdalena H Lofstedt (lofstedtmh@cdmsmith.com)
Is this project identified as a priority project in the Municipal Vulnerability Preparedness (MVP) plan or the local or regional Hazard Mitigation Plan (HMP)?	No
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Design
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	To construct a new centralized Water Resources Recovery Facility (WRRF) consisting of a Membrane Bioreactor (MBR) treatment system located at 242 King Street and expansion of the existing effluent recharge site at the Littleton High School (56 King Street) to be constructed under Phase 1A and a hybrid collection system comprising of gravity sewers, supplemented with pumping stations and force mains at low points (Phases 1A, 1B, and 2). The proposed wastewater expansion collection system will consist of approximately 49,226 linear feet (9.32 miles) of gravity, force main, and pressure sewers, four new submersible sewerage pump stations, and upgrades to the existing Middle School and High School pump stations. The Project is subject to MEPA review.

Project Submission Comments:

Project Ecosystem Benefits

Factors Influencing Output

- ✓ Project protects public water supply
- ✓ Project recharges groundwater
- ✓ Project filters stormwater using green infrastructure
- ✓ Project improves water quality
- ✓ Project protects fisheries, wildlife, and plant habitat
- ✓ Project provides pollinator habitat
- ✓ Project remediates existing sources of pollution
- ✓ Project prevents pollution

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Provide opportunities for passive and/or active recreation through open space

- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	Yes
Protects public water supply	Yes
Filters stormwater using green infrastructure	Yes
Improves water quality	Yes
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Yes
Remediates existing sources of pollution	Yes
Protects fisheries, wildlife, and plant habitat	Yes
Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	Yes
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Wastewater Treatment Facility
 Asset Type: Utility Infrastructure
 Asset Sub-Type: Wastewater
 Construction Type: New Construction
 Construction Year: 2022
 Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Less than 5,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

The infrastructure does not provide services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would be expected to result in minor impacts to people's health, including minor injuries or minor impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with difficult remediation and pose a severe threat to public health or safety (E.g. wastewater treatment plant; biohazard laboratory)

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Moderate – Inoperability may impact other facilities, assets, or buildings, but cascading impacts do not affect the ability of other facilities, assets, or buildings to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Between \$30 million and \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

Impact on natural resources will require remediation/rehabilitation

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

No Impact

Asset: Compensatory Flood Storage
Asset Type: Wetland Resource Area - Inland
Asset Sub-Type: Lower Floodplains
Construction Type: New Construction
Construction Year: 2022
Useful Life: 5
Asset: Middle School Pump Station
Asset Type: Typically Unoccupied
Asset Sub-Type: Pump Station - Sanitary
Construction Type: Renovation
Construction Year: 2022
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Building may be inaccessible/inoperable more than a week after natural hazard event without consequences

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.

Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.

Less than 1,000 people

Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

The building/facility does not provide services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the building/facility would not be expected to result in injuries

If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials?

There are no hazardous materials in the building/facility

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Moderate – Inoperability may impact other facilities, assets, or buildings, but is not expected to affect their ability to operate

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?

Less than \$10 million

Is this a recreational facility which can be vacated during a natural hazard event?

No

If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?

Many alternative programs and/or services are available to support the community

If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

Impact on natural resources can be mitigated naturally

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?

Loss of building is not expected to reduce the ability to maintain government services.

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?

No Impact

Report Comments

N/A

Attachment F

Environmental Screening Form and Email Correspondence of
Advance Notification to applicable State, Tribal, and Local CBOs

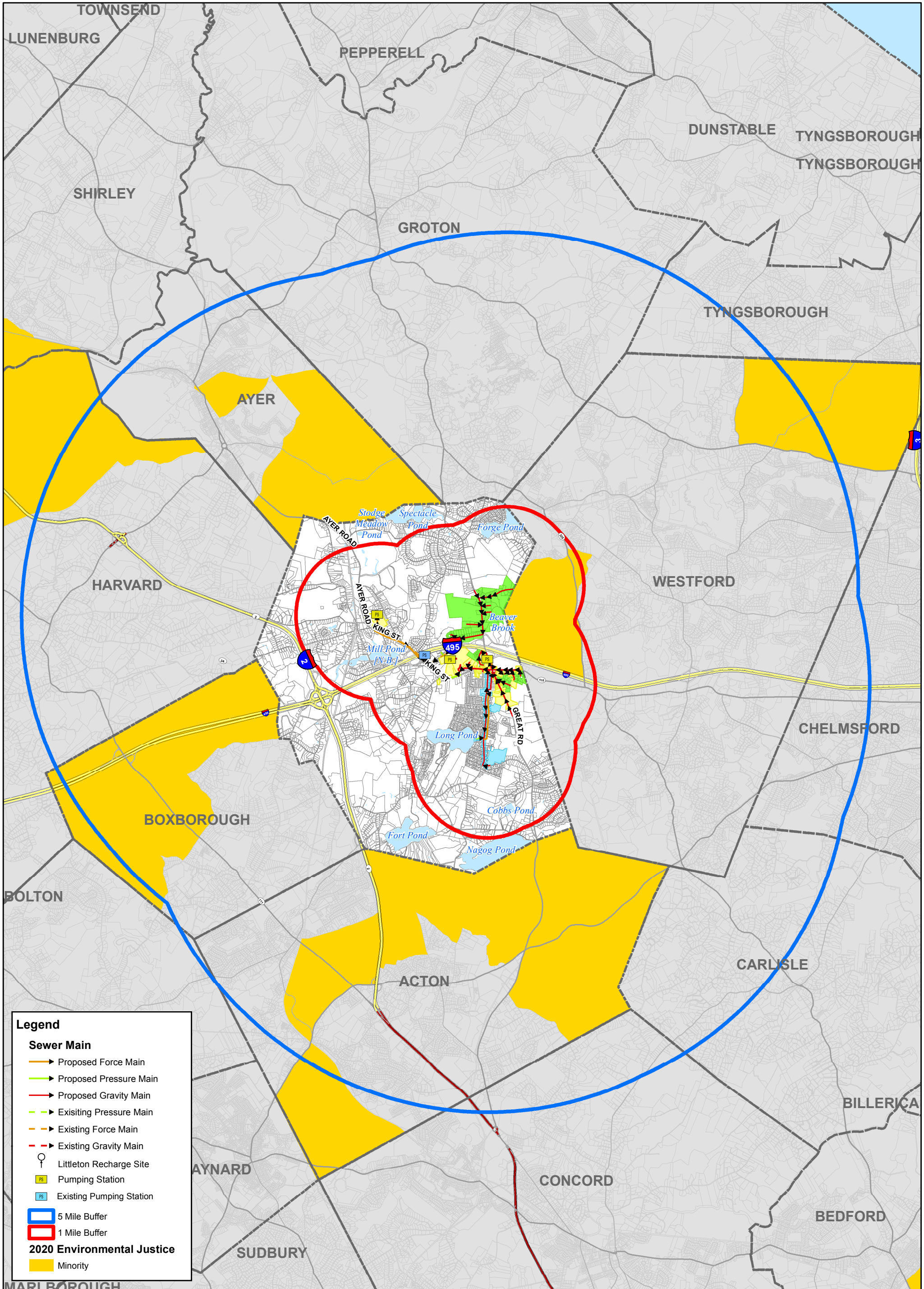
Environmental Justice Screening Form

Project Name	Littleton Sewer System Expansion Project, Phases 1A, 1B, and 2
Anticipated Date of MEPA Filing	Single EIR (SEIR) to be filed on June 15, 2022
Proponent Name	Littleton Water Department (LWD)
Contact Information (e.g., consultant)	CDM Smith Inc. (Attn. Magdalena Lofstedt) Email: lofstedtmh@cdmsmith.com
Public website for project or other physical location where project materials can be obtained (if available)	https://www.lclwd.com/sewer-department/
Municipality and Zip Code for Project (if known)	01460
Project Type* (list all that apply)	Wastewater – Treatment/Conveyance
Is the project site within a mapped 100-year FEMA flood plain? Y/N/unknown	Yes
Estimated GHG emissions of conditioned spaces (click here for GHG Estimation tool)	Unknown

Project Description

1. Provide a brief project description, including overall size of the project site and square footage of proposed buildings and structures if known.
- The project involves the implementation of three phases (1A, 1B, and 2) of the Town of Littleton’s Wastewater Needs Assessment. Phase 1 includes a new centralized Water Resources Recovery Facility (WRRF) consisting of 9,935 square foot Membrane Bioreactor (MBR) treatment system located at 242 King Street in Littleton, and expansion of the existing effluent recharge site at the Littleton High School (56 King Street). A hybrid collection system consisting of gravity sewers, supplemented with pump stations and force mains at low points, will be constructed in three phases (1A, 1B, and 2). The proposed wastewater expansion collection system will consist of approximately 49,226 linear feet (9.32 miles) of gravity, force main, and pressure sewers, four submersible sewerage pump stations, and upgrades to the existing Middle School and High School pump stations. Note that Phases 3 and 4 which were included in the Expanded Environmental Notification Form/Proposed Environmental Impact Report which would have involved a combination of new collection piping and pump stations will no longer be constructed due to increased demand for sewerage in the Littleton Common (Phase 1A area). The WRRF will not have capacity to treat wastewater from the Phase 3 and 4 areas. These two areas will continue to be served by onsite septic systems and be monitored via the Littleton Board of Health’s management of septic systems and MassDEP’s management for on-site treatment systems with groundwater discharge permits.**

<p>2. List anticipated MEPA review thresholds (301 CMR 11.03) (if known)</p> <ul style="list-style-type: none"> • Construction of an existing wastewater treatment and/or disposal facility by the greater of 100,000 gpd or 10% of existing Capacity [301 CMR 11.03 (5)(b)(1)]. • Construction of one or more new sewer mains five or more miles in length [301 CMR 11.03(5)(b)3. b]. • Alteration of ½ or more of any other wetlands [301 CMR 11.03 (3)(b)1. f].
<p>3. List all anticipated state, local and federal permits needed for the project (if known) Individual Permit for Groundwater Discharge from Sewerage Treatment Plant (BRP WP 79), Order of Conditions from Littleton Conservation Commission, Site Plan review/Special Permit from Littleton Planning/Zoning, and Demolition Permit from the Littleton Historical Commission.</p>
<p>4. Identify EJ populations and characteristics (Minority, Income, English Isolation) within 1 and 5 miles of project site (can attach map identifying 5-mile radius from EJ Maps Viewer in lieu of narrative) Within 1 mile radius: Block Group 3, Census Tract 3183, Middlesex County, Massachusetts. This 2020 block group in Westford is an EJ population with the criteria: Minority See attached Figure for EJ Populations within 5-mile radius.</p>
<p>5. Identify any municipality or census tract meeting the definition of “vulnerable health EJ criteria” in the DPH EJ Tool located in whole or in part within a 1 mile radius of the project site Westford meets the definition of “vulnerable health EJ criteria” for Heart Attack.</p>
<p>6. Identify potential short-term and long-term environmental and public health impacts that may affect EJ Populations and any anticipated mitigation: No long-term impacts to EJ populations will result from this project. Short-term construction impacts are associated with installation of new sewer collection piping within Beaver Brook Road and King Street and would be mainly traffic and noise both which will be mitigated for via approved plans.</p>
<p>7. Identify project benefits, including “Environmental Benefits” as defined in 301 CMR 11.02, that may improve environmental conditions or public health of the EJ population. Installing sanitary sewers and constructing a centralized treatment facility benefits the EJ population by improving drinking and surface water and providing nitrate control as improperly treated sewage can lead to increased nitrates in local water supplies.</p>
<p>8. Describe how the community can request a meeting to discuss the project, and how the community can request oral language interpretation services at the meeting . Specify how to request other accommodations, including meetings after business hours and at locations near public transportation. Please contact Magdalena Lofstedt at CDM Smith Inc., at lofstedtmh@cdmsmith.com or by calling (617) 452-6597.</p>



Legend

Sewer Main

- Proposed Force Main
- Proposed Pressure Main
- Proposed Gravity Main
- - - Existing Pressure Main
- - - Existing Force Main
- - - Existing Gravity Main

○ Littleton Recharge Site

PS Pumping Station

PS Existing Pumping Station

5 Mile Buffer

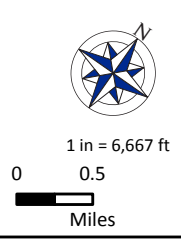
1 Mile Buffer

2020 Environmental Justice

Minority

Littleton, MA
February 2022

Figure 7: 2020 Environmental Justice Block Groups



Attachment G
90% Design Plans
WRRF 242 King Street Site Plans

CIVIL/SITE ABBREVIATIONS

SYMBOL	DESCRIPTION
TC	TOP OF CURB
BC	BOTTOM OF CURB
BW	BOTTOM OF WALL
TW	TOP OF WALL
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CS	CRUSHED STONE
D-PVC	POLYVINYL CHLORIDE DRAIN
DMH	DRAIN MANHOLE
FES	FLARED END SECTION
MH	MANHOLE
TS	TOP OF STEP/SLAB
BS	BOTTOM OF STEP
RCP	REINFORCED CONCRETE PIPE
MJ	MECHANICAL JOINT
DI	DUCTILE IRON
FFE	FINISHED FLOOR ELEVATION
DN	DOWN
VGC	VERTICAL GRANITE CURB
UP	UTILITY POLE
PVC	POLYVINYL CHLORIDE
INV. EL.	INVERT ELEVATION
S	SLOPE
GV	GATE VALVE
EFF	EFFLUENT

YARD PIPING NOTES

1. THE LOCATION OF EXISTING UTILITIES AND OTHER UNDERGROUND STRUCTURES SHOWN ON THE DRAWINGS IS APPROXIMATE, AND THEIR ACTUAL LOCATIONS MAY VARY FROM THAT SHOWN. FURTHER, IT IS NOT WARRANTED THAT ALL UNDERGROUND UTILITIES AND STRUCTURES ARE SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND FEATURES THAT MAY BE AFFECTED BY THE WORK.
2. NEW WATER MAINS SHALL HAVE A MINIMUM COVER OF 5 FEET UNLESS OTHERWISE INDICATED AND SHALL PASS UNDER EXISTING UTILITIES AS NECESSARY TO MEET THIS REQUIREMENT.
3. ALL NEW WATER PIPES, INCLUDING FIRE PROTECTION LINES, AND OTHER PRESSURE PIPES INCLUDING FORCE MAINS, SHALL HAVE RESTRAINED JOINTS AS SPECIFIED.
4. TEST PITS SHALL BE DUG TO LOCATE EXISTING PIPES TO WHICH NEW PIPES ARE TO BE CONNECTED, AND WHERE NECESSARY TO DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL FINAL CONNECTIONS TO PIPES.
6. ABANDONED PIPES, VALVES AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION MAY BE REMOVED AS REQUIRED. PIPES LEFT IN PLACE SHALL BE PLUGGED AND ABANDONED AS SPECIFIED AND AS APPROVED BY THE ENGINEER.
7. WALKWAYS AND PAVEMENTS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED WITHOUT ADDITIONAL EXPENSE BY OWNER.
8. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION BY DIGGING TEST PITS (WHETHER OR NOT INDICATED ON THE DRAWINGS) WHERE UTILITY INFORMATION IS ESSENTIAL.
9. PRIOR TO ANY EXCAVATION WORK, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE DETAILS OF THE PROJECT AREA. THE CONTRACTOR SHALL COORDINATE WITH DEPARTMENT PERSONNEL AND OWNER AND REVIEW ANY DRAWINGS THAT MAY BE AVAILABLE. CONTRACTOR SHALL ENSURE THAT EXISTING UTILITIES WITHIN THE WORK OF THIS CONTRACT ARE NOT DAMAGED, UTILITIES DAMAGED DURING EXCAVATION SHALL BE IMMEDIATELY REPAIRED AT NO ADDITIONAL COST TO OWNER.
10. PERFORM EXCAVATION CLOSE TO EXISTING UTILITIES BY HAND TO DETERMINE EXACT UTILITY LOCATION PRIOR TO INSTALLING EXCAVATION BRACING OR BEFORE MACHINE EXCAVATION.

GRADING NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING GRADES AND LOCATION OF UTILITIES. MAJOR DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. TO ESTABLISH PROPER GRADES, CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF GRADE STAKES. THE NUMBER AND LOCATION SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER.

GENERAL NOTES

1. BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE MUST BE NOTIFIED (SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40.) CALL "DIG SAFE" 1 (888) 344-7233 HTTP://WWW.DIGSAFE.COM.
2. FOR BORING INFORMATION AND LOCATIONS SEE EXISTING CONDITIONS DRAWINGS AND APPENDIX TO SPECIFICATIONS.
3. THE CONTRACTOR SHALL PREPARE AN EROSION AND SEDIMENT CONTROL PLAN AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS SPECIFIED TO PROTECT THE SITES FROM EROSION AND PREVENT THE MOVEMENT OF SEDIMENT AND DEBRIS.
4. ALL AREAS OUTSIDE THE LIMIT OF DISTURBANCE SHALL BE PROTECTED AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE OWNER AND/OR ENGINEER.
5. ALL MATERIALS TO BE REMOVED WITHIN THE LIMIT OF DISTURBANCE SHALL BE REMOVED TO A LOCATION ARRANGED BY THE CONTRACTOR AND APPROVED BY THE OWNER AND/OR ENGINEER. THE LOCATION OF STOCKPILED TOPSOIL SHALL BE IN AREAS APPROVED BY THE OWNER AND/OR ENGINEER.
6. CONTRACTOR SHALL PROVIDE SITE SECURITY THROUGHOUT CONSTRUCTION PERIOD.
7. WHEN EXCAVATING AROUND EXISTING STRUCTURES, EXCAVATE SOILS UNIFORMLY AROUND THE STRUCTURE UNLESS INDICATED OTHERWISE. CONTROL EXCAVATION LEVELS AROUND THE ENTIRE PERIMETER OF THE STRUCTURE SUCH THAT THE GRADE DIFFERENTIAL DOES NOT EXCEED 2 FT.
8. WHEN BACKFILLING AROUND STRUCTURES, BRING UP BACKFILL UNIFORMLY AROUND STRUCTURE UNLESS INDICATED OTHERWISE. CONTROL BACKFILL LEVELS AROUND THE ENTIRE PERIMETER OF THE STRUCTURE SUCH THAT THE GRADE DIFFERENTIAL DOES NOT EXCEED 2 FT.
9. GAS MAINS ARE ASSUMED TO HAVE THREE FEET OF COVER UNLESS SHOWN OTHERWISE. LOCAL WATER MAINS ARE ASSUMED TO HAVE 5 FEET OF COVER. IT IS NOT WARRANTED THAT ALL UTILITIES ARE SHOWN OR ARE SHOWN AT THE CORRECT ELEVATION.
10. ALL UNDERGROUND SERVICES TO HOUSES ARE NOT SHOWN.
11. BORING LOGS HAVE BEEN APPENDED TO THE SPECIFICATION DOCUMENTS. BORINGS ARE INCLUDED FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT BE SHOWN AT EXACT LOCATIONS.
12. LIMITS OF CLEARING AND GRUBBING ARE SHOWN ON SHEET C-3 SITE PREPARATION AND EROSION AND SEDIMENTATION CONTROL PLAN. CONTRACTOR SHALL MINIMIZE CLEARING AND GRUBBING AS MUCH AS POSSIBLE. ALL CROSS-COUNTRY AREAS SHALL BE LOAMED AND SEEDED OR SODDED TO THE LIMITS DISTURBED BY CONSTRUCTION UNLESS OTHERWISE NOTED.
13. CONTRACTOR SHALL NOT DISTURB ANY LAND OUTSIDE THE LIMITS OF WORK.
14. WHEN THE HORIZONTAL SEPARATION BETWEEN THE NEW SEWER AND EXISTING OR RELOCATED WATER MAIN IS LESS THAN 10-FT AND THE VERTICAL SEPARATION IS LESS THAN 18-IN THE NEW SEWER SHALL BE CONSTRUCTED OF RESTRAINED MJ DI OR CONCRETE ENCASED PIPE FOR A MINIMUM OF 10-FT BEYOND WHERE THE SPACING IS LESS THAN 10-FT HORIZONTAL AND 18-IN VERTICAL.
15. IF A WATER MAIN CROSSES UNDER THE NEW SEWER, BOTH PIPES SHALL BE RESTRAINED MJ DI OR CONCRETE ENCASED FOR A MINIMUM OF 10-FT TO EITHER SIDE OF THE RESPECTIVE CENTER LINES. DUCTILE IRON PIPE SHALL BE PAID UNDER THE RESPECTIVE PIPE ITEMS. CONCRETE ENCASEMENT SHALL BE PAID UNDER MISCELLANEOUS CONCRETE ITEM.
16. IF NECESSARY TO WORK IN LIVE SEWER MANHOLES CONTRACTOR SHALL FOLLOW ALL FEDERAL, STATE AND LOCAL REQUIREMENTS FOR SAFETY WHEN IN CONFINED SPACES. THE CONTRACTOR IS ALSO REFERRED TO RECOMMENDATIONS IN THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH PUBLICATION NO. 80-106, "WORKING IN CONFINED SPACES".
17. CONTRACTOR TO MAINTAIN FLOW IN EXISTING DRAINS AT ALL TIMES.
18. IT IS NOT WARRANTED THAT ALL EXISTING ABOVE GROUND AND UNDERGROUND STRUCTURES, EQUIPMENT, PIPING AND ELECTRICAL CONDUITS ARE SHOWN. NOR IS IT WARRANTED THAT LOCATIONS AND SIZES OF STRUCTURES AND UTILITIES ARE EXACT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL SIZES AND LOCATIONS OF EXISTING EQUIPMENT, PIPING, ETC. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
19. ELEVATIONS SHOWN ARE IN FEET AND ARE REFERENCED USGS DATUM NAVD88.
20. THE CONTRACTOR SHALL PREPARE AN EROSION AND SEDIMENT CONTROL PLAN AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) TO PROTECT THE SITE FROM EROSION AND PREVENT THE MOVEMENT OF SEDIMENT AND DEBRIS AS SPECIFIED. THE SWPPP SHALL BE PREPARED FOR APPROVAL BY STATE AND FEDERAL PERMIT AUTHORITIES AND FOR INFORMATION PURPOSES ONLY BY THE ENGINEER AND OWNER.
21. THE CONTRACTOR SHALL COORDINATE WORK TO ENSURE CONTINUED ACCESS TO ALL EXISTING FACILITY STRUCTURES. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.
22. REMOVE AND DISPOSE OF EXISTING PAVEMENT WITHIN LIMITS SHOWN ON DRAWINGS TAKING CARE NOT TO DAMAGE EXISTING WALLS, CURBS, BUILDINGS OR UTILITY STRUCTURES.
23. STRIP EXISTING VEGETATION AND 6" LAYER TOPSOIL WITHIN AREAS OF DISTURBANCE. GRIND ANY STUMPS TO A MINIMUM OF ONE FOOT BELOW FINISH GRADE AND BACKFILL WITH MAX. 12 INCH COMPACTED LAYERS AS SPECIFIED. CONTRACTOR SHALL STOCKPILE STRIPPED TOPSOIL IN A MANNER APPROVED BY THE ENGINEER.
24. EXISTING VERTICAL OR SLOPED GRANITE CURB DISTURBED FOR CONSTRUCTION SHALL BE STOCKPILED AND REINSTALLED AS APPROVED BY THE ENGINEER.
25. ALL BITUMINOUS ROADWAY AND SIDEWALK PAVEMENT AREAS AND ALL CONCRETE SIDEWALK AND OTHER AREAS DISTURBED BY TRENCHING SHALL BE REPAIRED AS SPECIFIED. SELECTED AREAS TO RECEIVE AN OVERLAY LEVELING COURSE AS DIRECTED BY THE ENGINEER.

LAYOUT NOTES:

1. FOR LAYOUT PURPOSES AND TO ESTABLISH THE COORDINATE SYSTEM SEE SURVEY NOTES G-1.
2. CONTRACTOR SHALL VERIFY ALL PROPERTY AND SURVEY INFORMATION.
3. CONTRACTOR SHALL BE RESPONSIBLE TO IDENTIFY AND PROTECT ALL ON-SITE STRUCTURES AND VEGETATION TO BE RETAINED ON THE SITE THROUGHOUT THE CONSTRUCTION PROJECT.
4. CONTRACTOR SHALL MAINTAIN VEHICULAR ACCESS AND ALL UTILITY SERVICES THROUGHOUT THE DURATION OF THE CONTRACT, UNLESS OTHERWISE SPECIFIED.
5. LOCATIONS OF BURIED UTILITIES, VAULTS AND CONCRETE PADS ARE APPROXIMATE ONLY. FINAL LOCATIONS SHALL BE DETERMINED IN THE FIELD AFTER STAKING BY THE CONTRACTOR BASED ON ACTUAL SITE CONDITIONS AS APPROVED BY THE OWNER AND/OR ENGINEER.
6. ALL DISTURBED AREAS NOT COVERED WITH PAVEMENT, PADS, CRUSHED STONE, SOD, OR STRUCTURES SHALL RECEIVE 6" LAYER OF LOAM AND SEED AS SPECIFIED, UNLESS NOTED OTHERWISE.
7. DIMENSIONS FOR STRUCTURES ARE TO OUTSIDE FACE OF WALL. DIMENSIONS TO CONCRETE PADS ARE TO EDGE OF PAD. DIMENSIONS TO FENCES AND GATES ARE ON-CENTER.
8. ALL ITEMS TO BE REMOVED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS, SHALL BE DISPOSED OFF SITE IN A LEGAL MANNER.
9. CONTRACTOR SHALL LIMIT CONSTRUCTION ACCESS TO AREAS DESIGNATED ON THE DRAWINGS AND AS INDICATED BY THE OWNER.
10. LOCATIONS OF CONCRETE PADS, PAVEMENTS, BOLLARDS, GATES, AND SIGNS ARE APPROXIMATE ONLY. FINAL LOCATIONS SHALL BE STAKED IN THE FIELD FOR REVIEW AND APPROVAL BY THE ENGINEER.
11. ALL ITEMS TO BE REMOVED AND DISPOSED SHALL BE DISPOSED OFF SITE IN A LEGAL MANNER IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
12. ITEMS SLATED FOR RE-USE SHALL BE STORED IN A CLEAN, DRY PLACE, PRIOR TO RELOCATION ON SITE.
13. ITEMS REMOVED AND INDICATED TO REMAIN PROPERTY OF THE OWNER SHALL BE DELIVERED TO AN AREA AS SPECIFIED BY THE OWNER.
14. BOUNDARIES OF AREAS TO RECEIVE LOAM & SEED MIXTURES, WASHED STONE, OVERLAY PAVEMENT OR OTHER SURFICIAL MATERIALS ARE FOR SCHEMATIC PURPOSES ONLY. FINAL LOCATIONS SHALL BE STAKED IN THE FIELD BY THE CONTRACTOR FOR REVIEW AND APPROVAL BY THE ENGINEER.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____	M.DODSON
DRAWN BY: _____	J. BRONENKANT
SHEET CHK'D BY: _____	M.DODSON
CROSS CHK'D BY: _____	W.LENGYEL
APPROVED BY: _____	X
DATE: _____	JUNE 2022



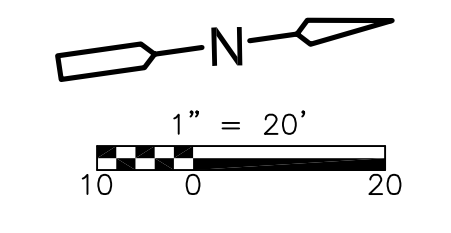
75 State Street, Suite 701
Boston, MA 02109
Tel: (617) 452-6000

LITTLETON WATER DEPARTMENT

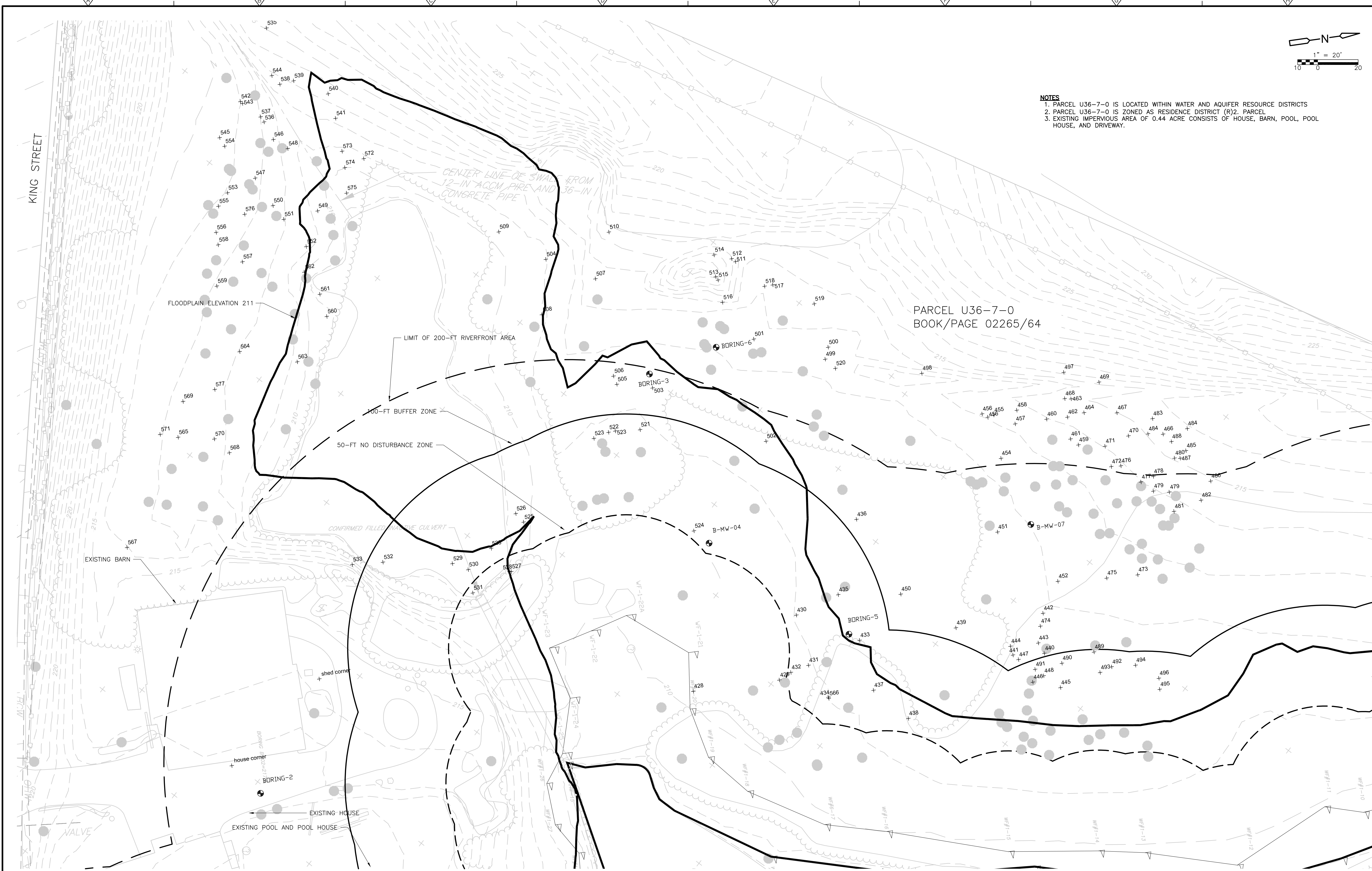
LITTLETON WATER RESOURCE
RECOVERY FACILITY

CIVIL GENERAL NOTES
AND ABBREVIATIONS

PROJECT NO. 263387-261886
FILE NAME: C025STPL.dwg
SHEET NO.
C-1



- NOTES**
1. PARCEL U36-7-0 IS LOCATED WITHIN WATER AND AQUIFER RESOURCE DISTRICTS
 2. PARCEL U36-7-0 IS ZONED AS RESIDENCE DISTRICT (R)2. PARCEL
 3. EXISTING IMPERVIOUS AREA OF 0.44 ACRE CONSISTS OF HOUSE, BARN, POOL, POOL HOUSE, AND DRIVEWAY.



PARCEL U36-7-0
BOOK/PAGE 02265/64

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M.DODSON
 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: M.DODSON
 CROSS CHK'D BY: W.LENGYEL
 APPROVED BY: X
 DATE: JUNE 2022

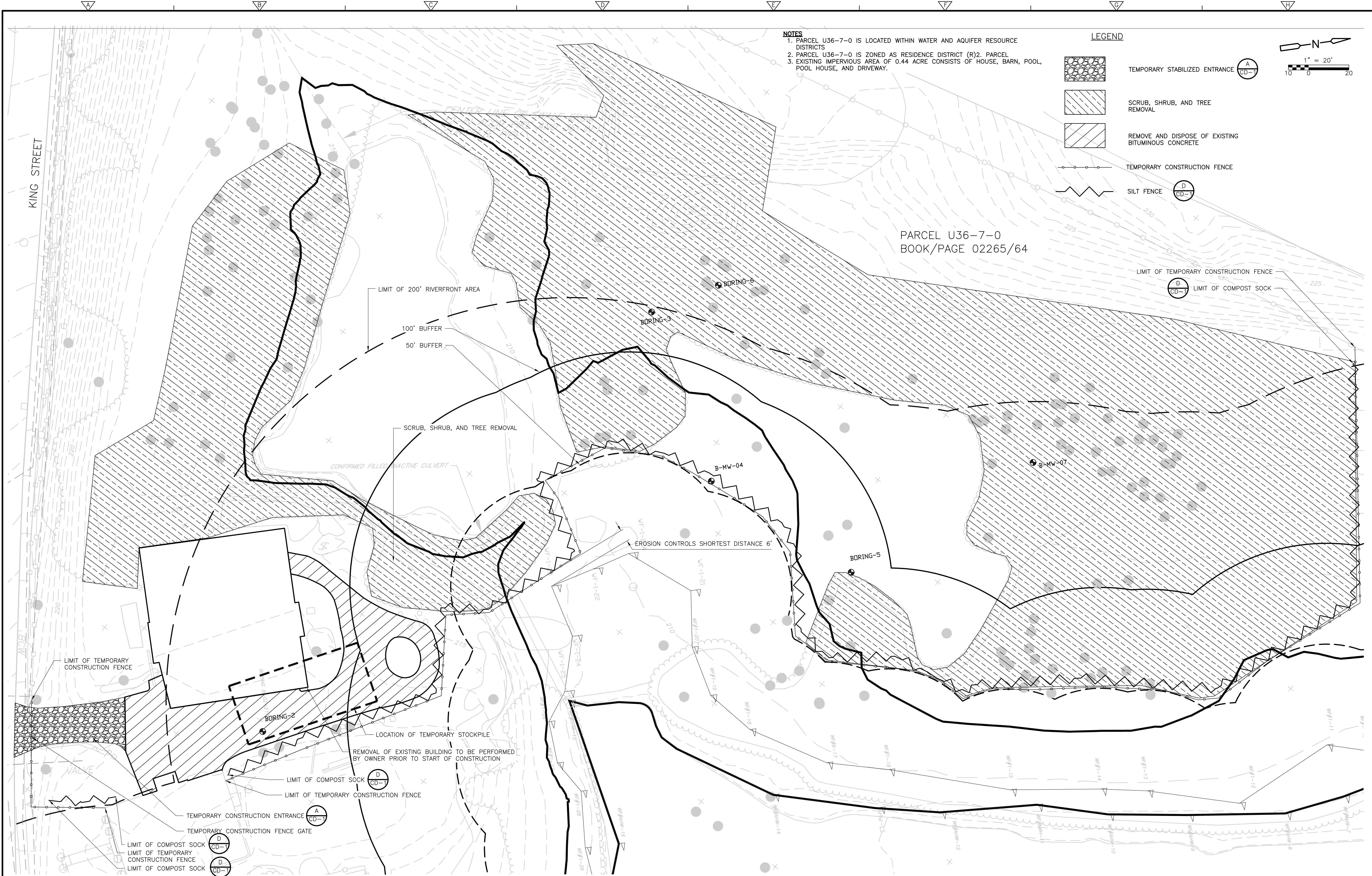
CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

CIVIL EXISTING CONDITIONS PLAN

PROJECT NO. 263387-261886
 FILE NAME: C025STPL.dwg
 SHEET NO.
C-2

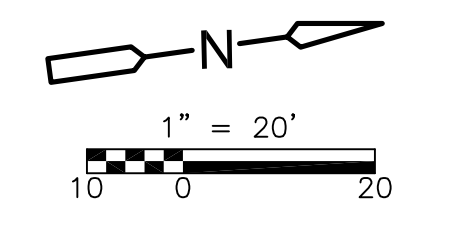
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LEGEND

- TEMPORARY STABILIZED ENTRANCE (A CD-1)
- SCRUB, SHRUB, AND TREE REMOVAL
- REMOVE AND DISPOSE OF EXISTING BITUMINOUS CONCRETE
- TEMPORARY CONSTRUCTION FENCE
- SILT FENCE (D CD-1)
- LIMIT OF TEMPORARY CONSTRUCTION FENCE (D CD-1)
- LIMIT OF COMPOST SOCK (D CD-1)



REV. NO.	DATE	DRWN	CHKD	REMARKS

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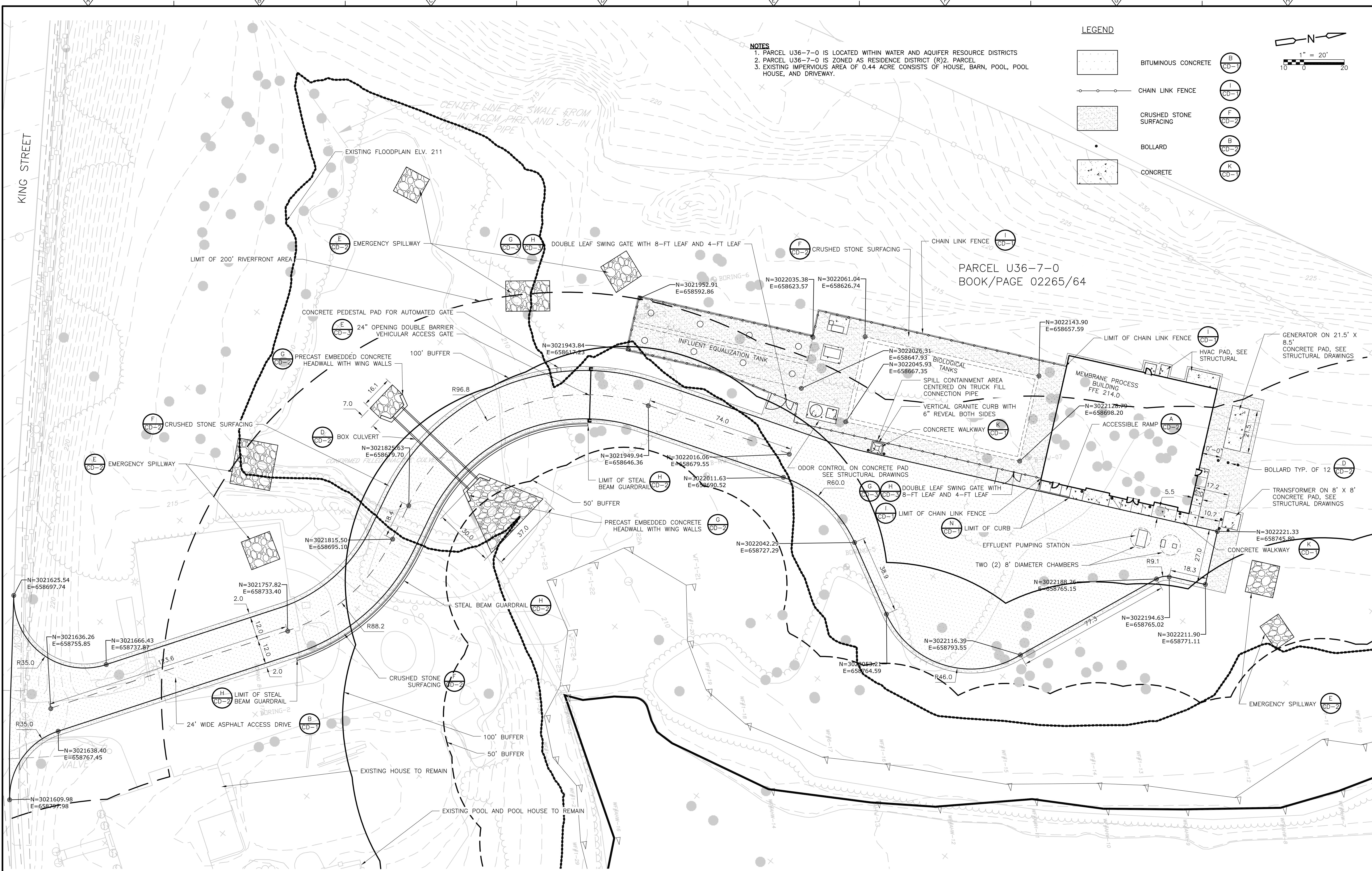
CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

SITE PREPARATION AND EROSION AND SEDIMENTATION CONTROL PLAN

PROJECT NO. 263387-261886
 FILE NAME: C027STPL.dwg
 SHEET NO. C-3

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LEGEND

	BITUMINOUS CONCRETE	(B)
	CHAIN LINK FENCE	(I)
	CRUSHED STONE SURFACING	(F)
	BOLLARD	(B)
	CONCRETE	(K)

1" = 20'

PARCEL U36-7-0
 BOOK/PAGE 02265/64

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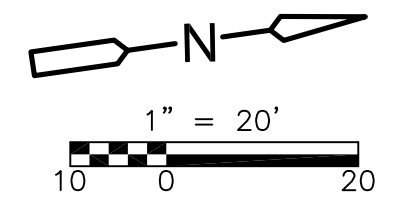
LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

CIVIL LAYOUT AND MATERIALS PLAN

PROJECT NO. 263387-261886
 FILE NAME: C004STPL.dwg
 SHEET NO.
C-4

90% SUBMITTAL - NOT FOR CONSTRUCTION

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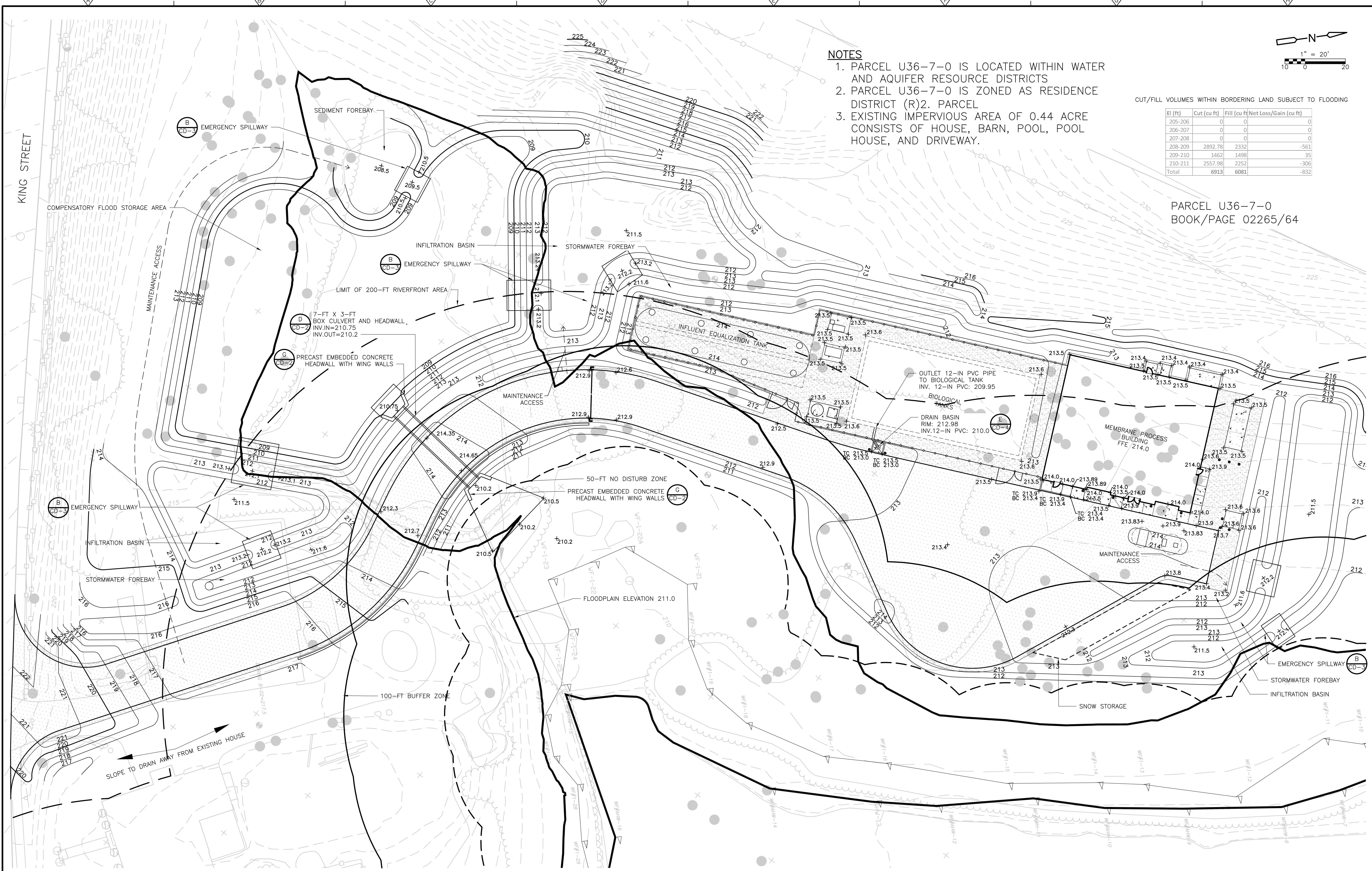
NOTES

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2. PARCEL U36-7-0 IS ZONED AS RESIDENCE DISTRICT (R)2. PARCEL
3. EXISTING IMPERVIOUS AREA OF 0.44 ACRE CONSISTS OF HOUSE, BARN, POOL, POOL HOUSE, AND DRIVEWAY.

CUT/FILL VOLUMES WITHIN BORDERING LAND SUBJECT TO FLOODING

El (ft)	Cut (cu ft)	Fill (cu ft)	Net Loss/Gain (cu ft)
205-206	0	0	0
206-207	0	0	0
207-208	0	0	0
208-209	2892.78	2332	-561
209-210	1462	1498	35
210-211	2557.98	2252	-306
Total	6913	6081	-832

PARCEL U36-7-0
BOOK/PAGE 02265/64



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M.DODSON
 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: M.DODSON
 CROSS CHK'D BY: W.LENGYEL
 APPROVED BY: X
 DATE: MAY 2022



LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

CIVIL GRADING AND DRAINAGE PLAN
 SHEET NO. C-5

PROJECT NO. 263387-261886
 FILE NAME: C005STPL

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PLAN
1" = 20'

- NOTES:
- COORDINATE THE TIE-IN OF THE PROPOSED WATER LINE WITH LITTLETON WATER DEPARTMENT.
 - COORDINATE THE TIE-IN OF THE PROPOSED GAS LINE WITH NATIONAL GRID.

REV. NO.	DATE	DRWN	CHKD	REMARKS

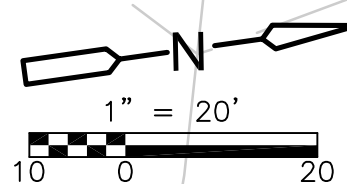
DESIGNED BY: W. LENGYEL
 DRAWN BY: S. ENGEL
 SHEET CHK'D BY: _____
 CROSS CHK'D BY: _____
 APPROVED BY: _____
 DATE: JUNE 2022

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 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

YARD PIPING PLAN
 SHEET NO. C-6

PROJECT NO. 263387-261886
 FILE NAME: C006YPP1
 SHEET NO. C-6



LEGEND

	INFILTRATION BASIN SEED MIX
	WETLAND AREA SEED MIX
	NATURAL AREA SEED MIX

PARCEL U36-7-0
BOOK/PAGE 02265/64

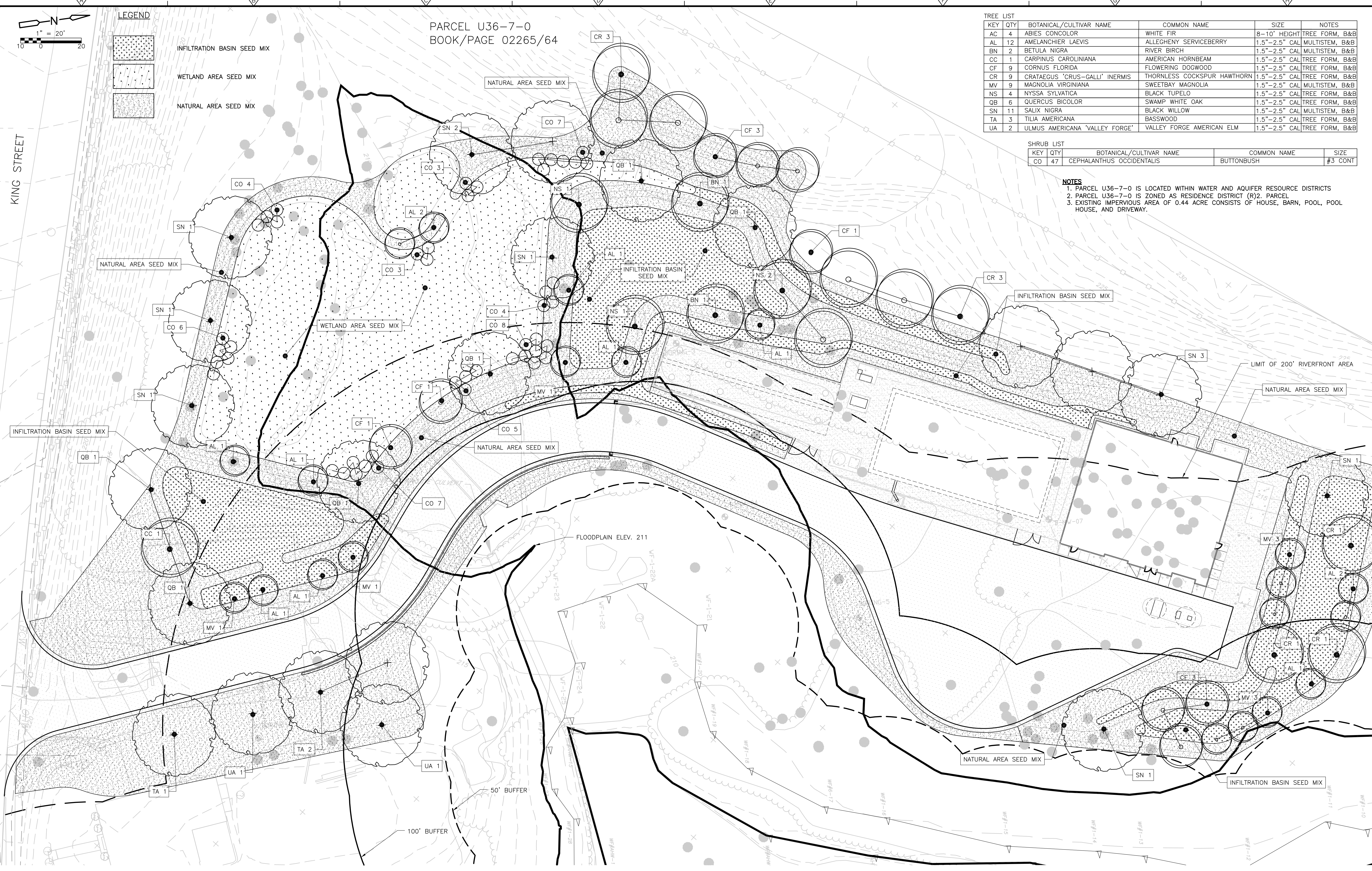
TREE LIST

KEY	QTY	BOTANICAL/CULTIVAR NAME	COMMON NAME	SIZE	NOTES
AC	4	ABIES CONCOLOR	WHITE FIR	8-10' HEIGHT	TREE FORM, B&B
AL	12	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	1.5"-2.5" CAL	MULTISTEM, B&B
BN	2	BETULA NIGRA	RIVER BIRCH	1.5"-2.5" CAL	MULTISTEM, B&B
CC	1	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	1.5"-2.5" CAL	TREE FORM, B&B
CF	9	CORNUS FLORIDA	FLOWERING DOGWOOD	1.5"-2.5" CAL	TREE FORM, B&B
CR	9	CRATAEGUS 'CRUS-GALLI' INERMIS	THORNLESS COCKSPUR HAWTHORN	1.5"-2.5" CAL	TREE FORM, B&B
MV	9	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	1.5"-2.5" CAL	MULTISTEM, B&B
NS	4	NYSSA SYLVATICA	BLACK TUPELO	1.5"-2.5" CAL	TREE FORM, B&B
QB	6	QUERCUS BICOLOR	SWAMP WHITE OAK	1.5"-2.5" CAL	TREE FORM, B&B
SN	11	SALIX NIGRA	BLACK WILLOW	1.5"-2.5" CAL	MULTISTEM, B&B
TA	3	TILIA AMERICANA	BASSWOOD	1.5"-2.5" CAL	TREE FORM, B&B
UA	2	ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE AMERICAN ELM	1.5"-2.5" CAL	TREE FORM, B&B

SHRUB LIST

KEY	QTY	BOTANICAL/CULTIVAR NAME	COMMON NAME	SIZE
CO	47	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	#3 CONT

- NOTES**
1. PARCEL U36-7-0 IS LOCATED WITHIN WATER AND AQUIFER RESOURCE DISTRICTS
 2. PARCEL U36-7-0 IS ZONED AS RESIDENCE DISTRICT (R)2. PARCEL
 3. EXISTING IMPERVIOUS AREA OF 0.44 ACRE CONSISTS OF HOUSE, BARN, POOL, POOL HOUSE, AND DRIVEWAY.



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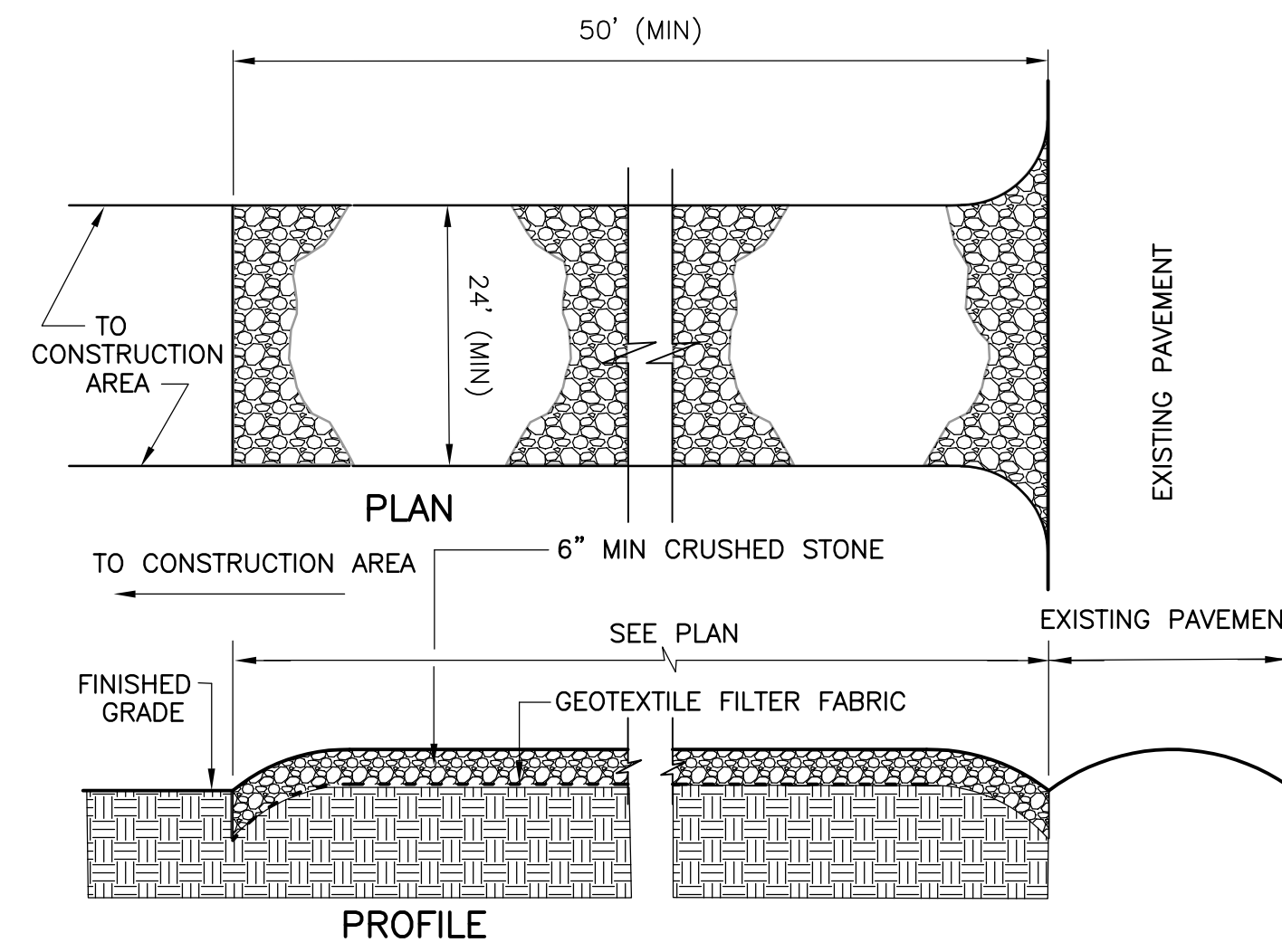
DESIGNED BY: M.DODSON
 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: M.DODSON
 CROSS CHK'D BY: W.LENGYEL
 APPROVED BY: X
 DATE: JUNE 2022

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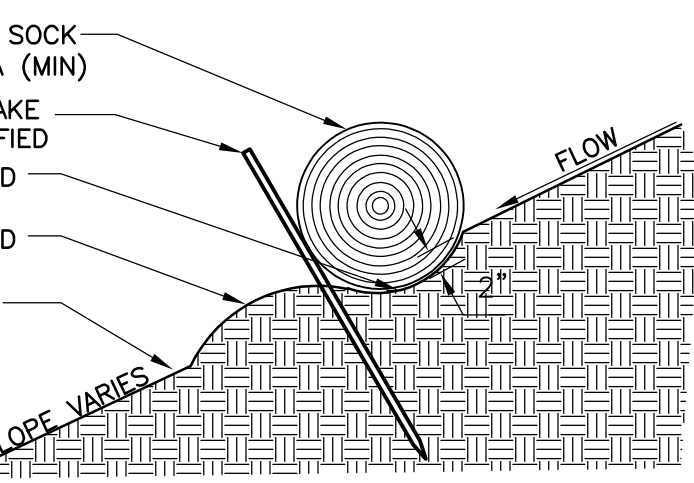
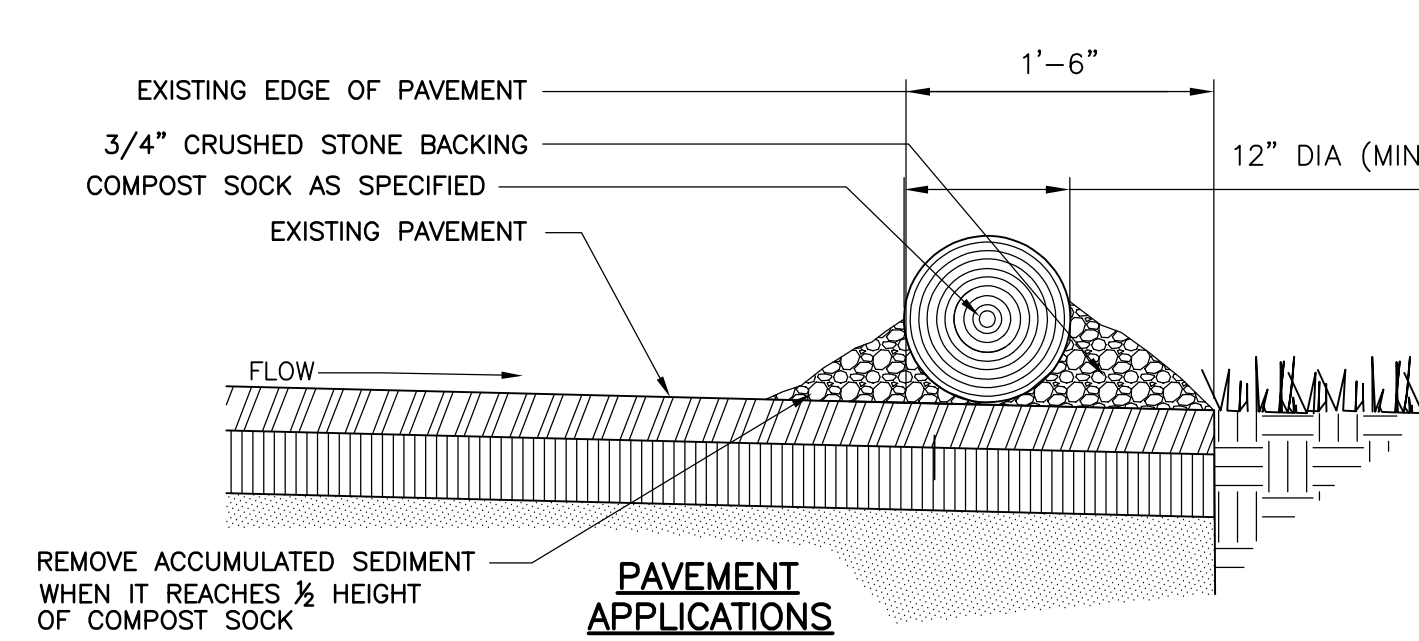
PLANTING PLAN
 SHEET NO. C-7

PROJECT NO. 263387-261886
 FILE NAME: C007STPL.dwg

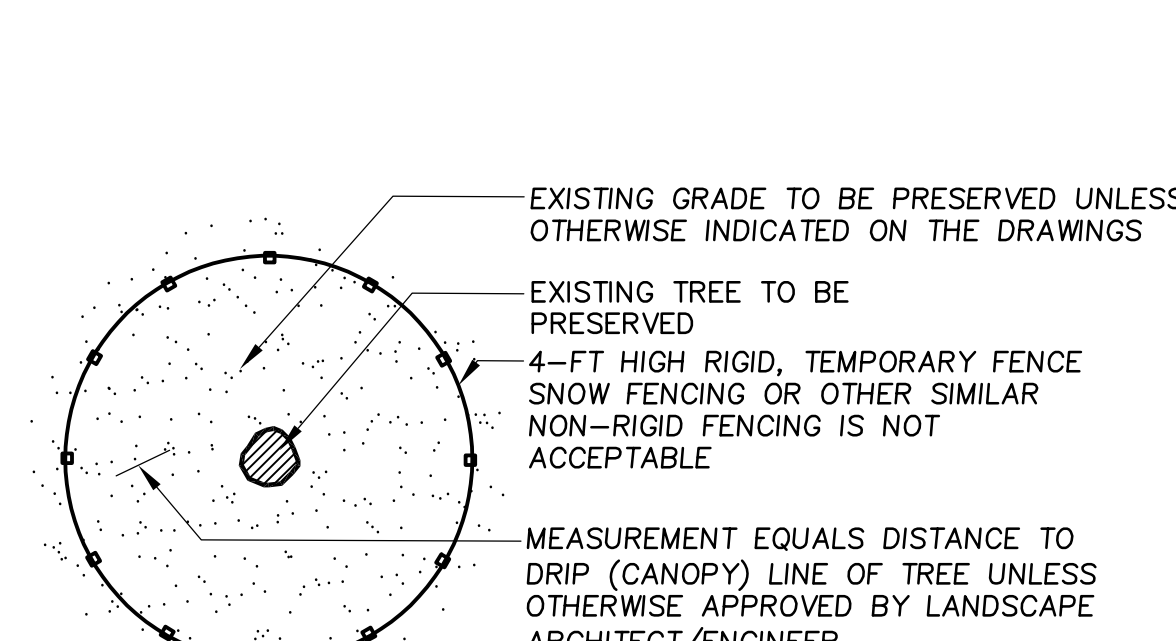


STABILIZED CONSTRUCTION ENTRANCE
DETAIL A
 NOT TO SCALE CD-1

- NOTES:**
- 1.) PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND EXISTING PAVEMENT.
 - 2.) LIMITS OF STABILIZED CONSTRUCTION ENTRANCE SHALL BE AS SHOWN ON PLANS AND APPROVED BY THE ENGINEER.
 - 3.) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDING STONE TO THE LENGTH OF THE ENTRANCE.
 - 4.) REPAIR AND CLEANOUT MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO EXISTING PAVEMENT SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

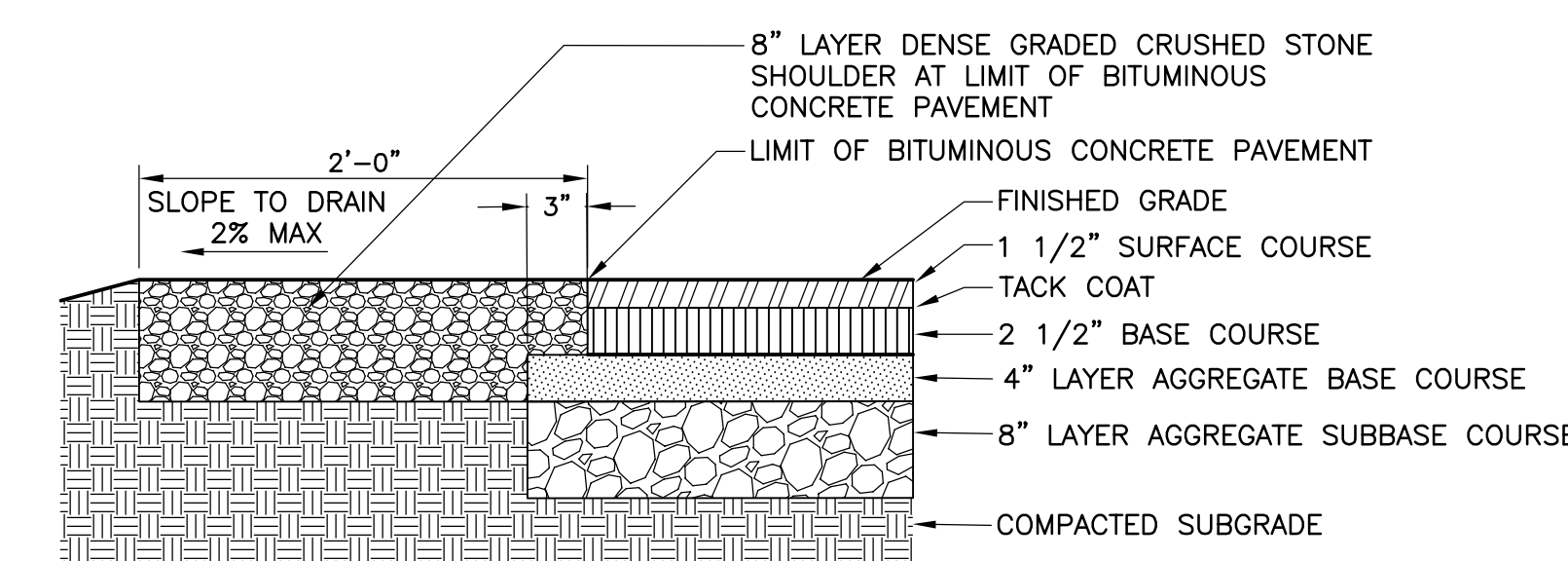


LANDSCAPE APPLICATIONS
TYPICAL COMPOST SOCK DETAIL
DETAIL D
 SCALE: NTS CD-1



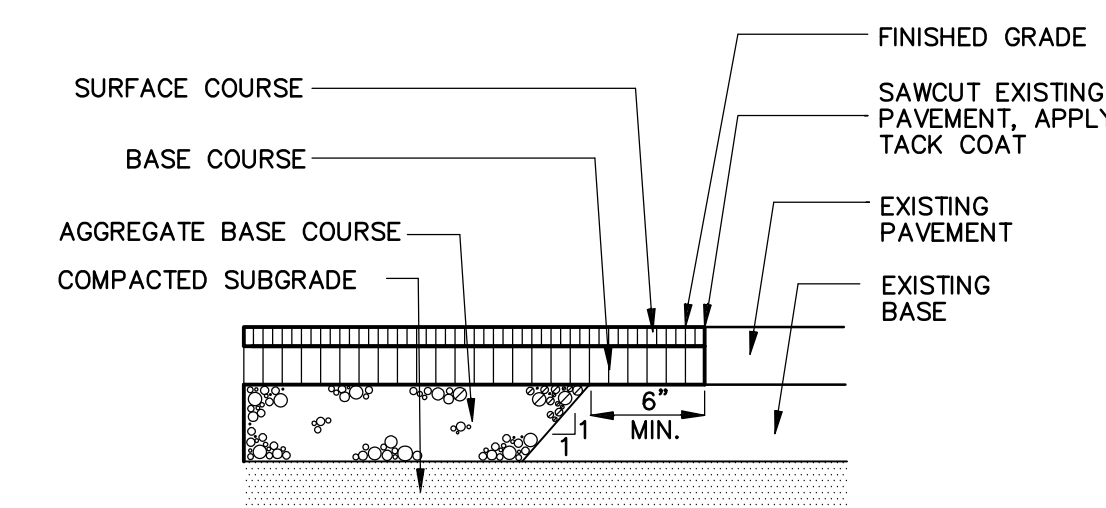
- NOTES:**
1. FENCING SHALL BE INSTALLED AROUND PERIMETER OF ALL EXISTING TREES TO BE PRESERVED WITHIN THE LIMIT OF WORK.
 2. FENCING MAY BE REMOVED TEMPORARILY, ONLY AS REQUIRED TO PERFORM THE WORK SHOWN ON THE DRAWINGS.
 3. FENCING SHALL REMAIN IN PLACE & BE MAINTAINED THROUGHOUT CONSTRUCTION AND THEN REMOVED COMPLETELY.

TREE PROTECTION
DETAIL G
 NOT TO SCALE CD-1

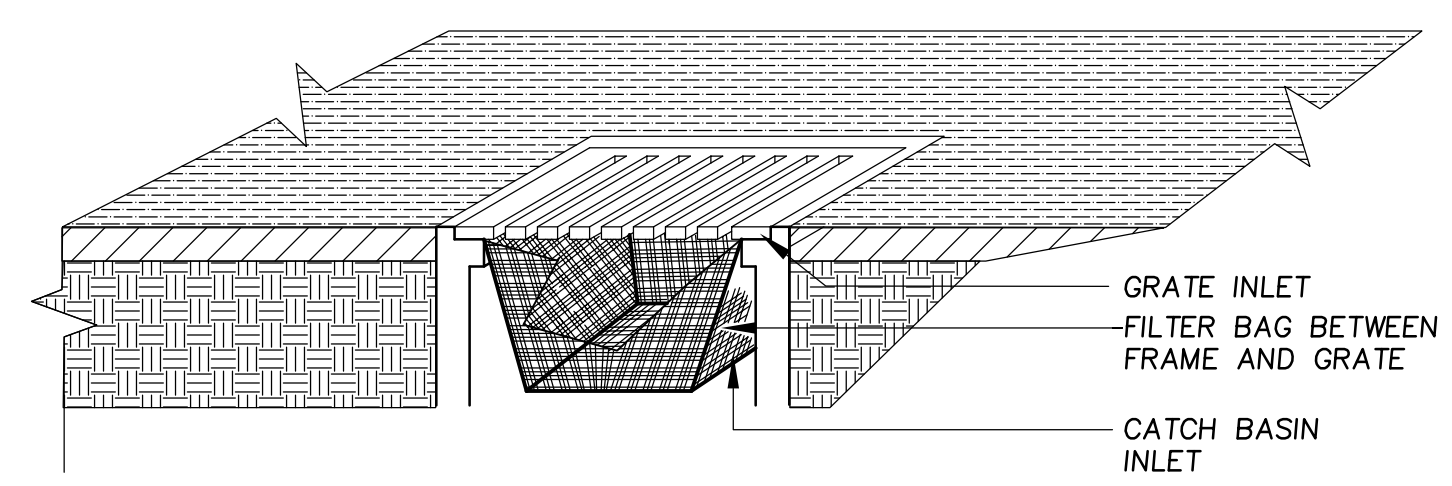


- NOTES:**
1. AGGREGATE BASE AND SUBBASE COURSE SHALL EXTEND 3\"/>

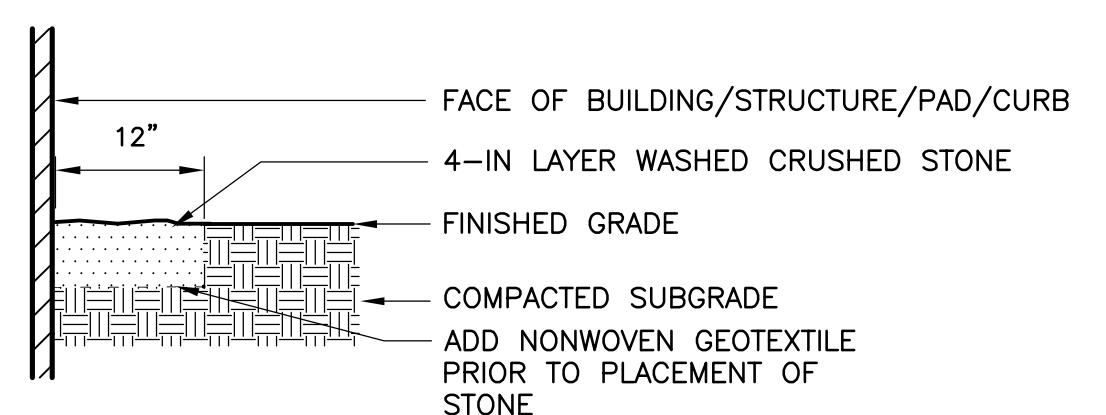
BITUMINOUS CONCRETE PAVEMENT
DETAIL B
 NOT TO SCALE CD-1



PAVEMENT MATCH
DETAIL E
 NOT TO SCALE CD-1

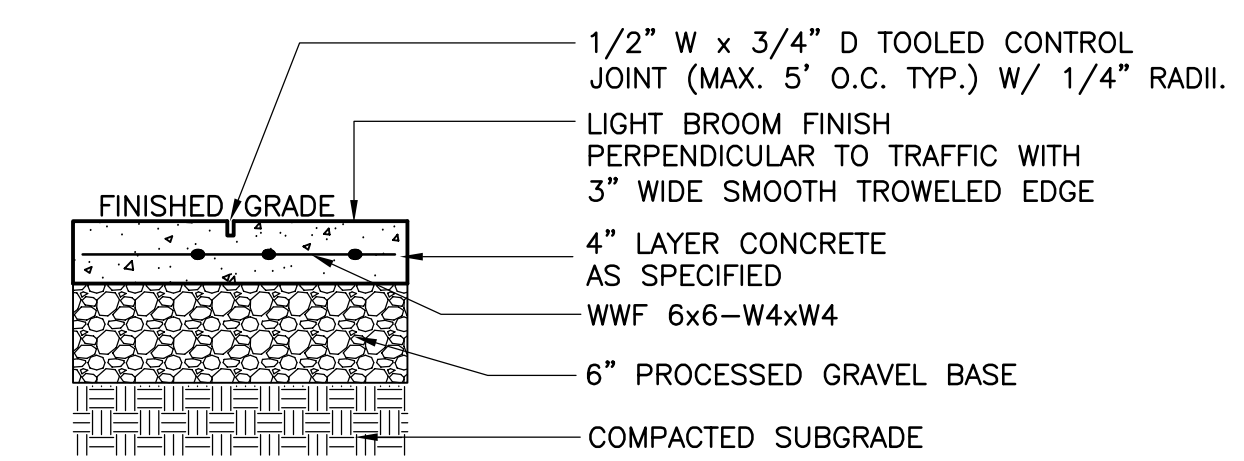


CATCH BASIN FILTER
DETAIL H
 NOT TO SCALE CD-1

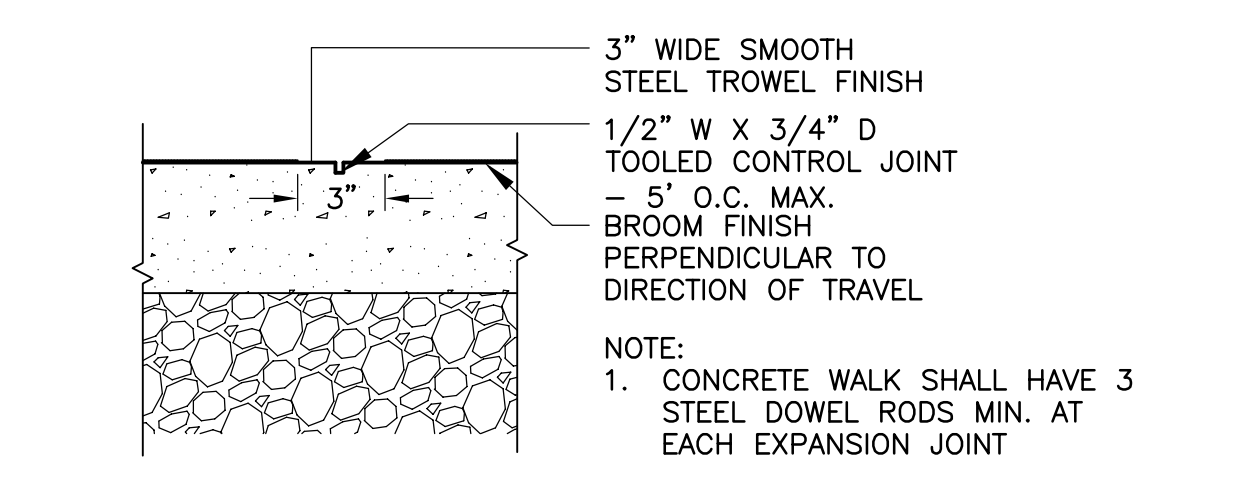


- NOTE:** CRUSHED STONE MOW STRIP SHALL BE CENTERED ON FENCE LINE WHEN LOCATED IN LAWN AREAS

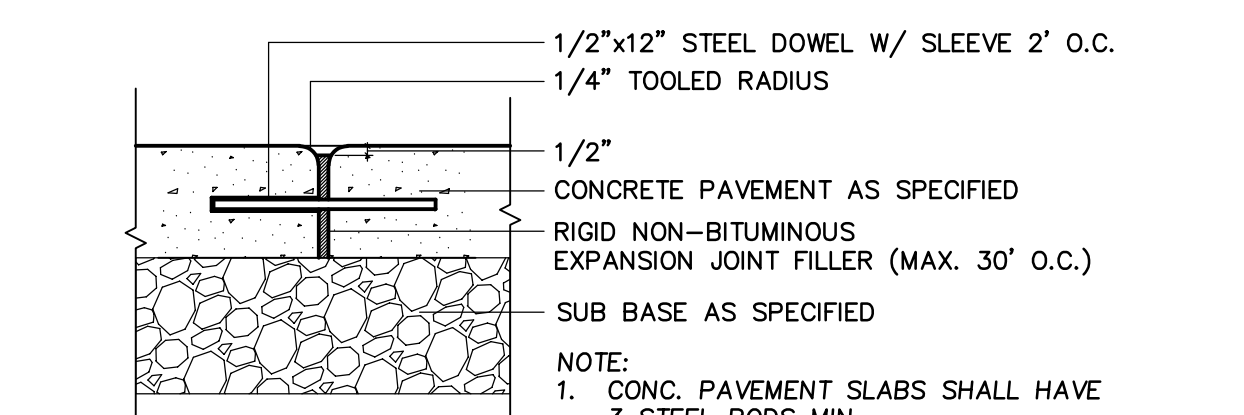
CRUSHED STONE MOW STRIP
DETAIL J
 NTS CD-1



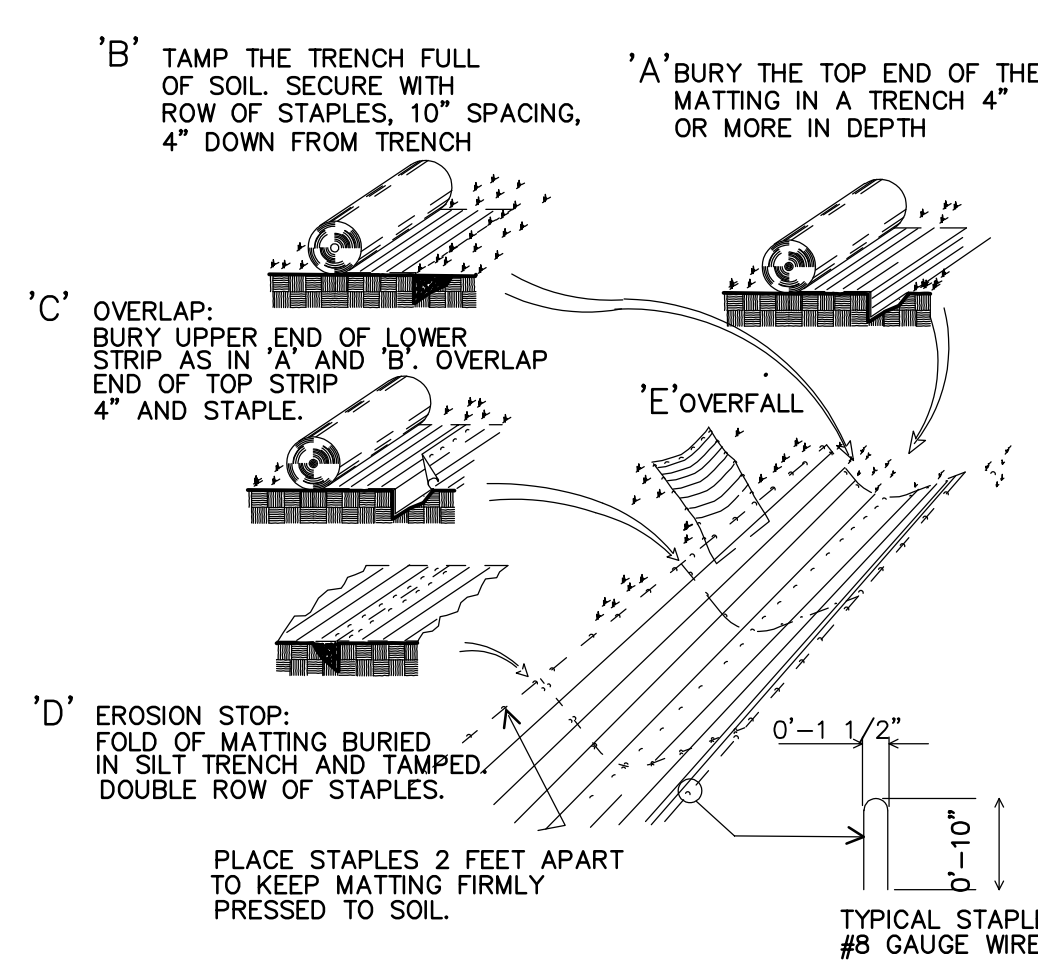
CONCRETE WALKWAY
DETAIL K
 NOT TO SCALE CD-1



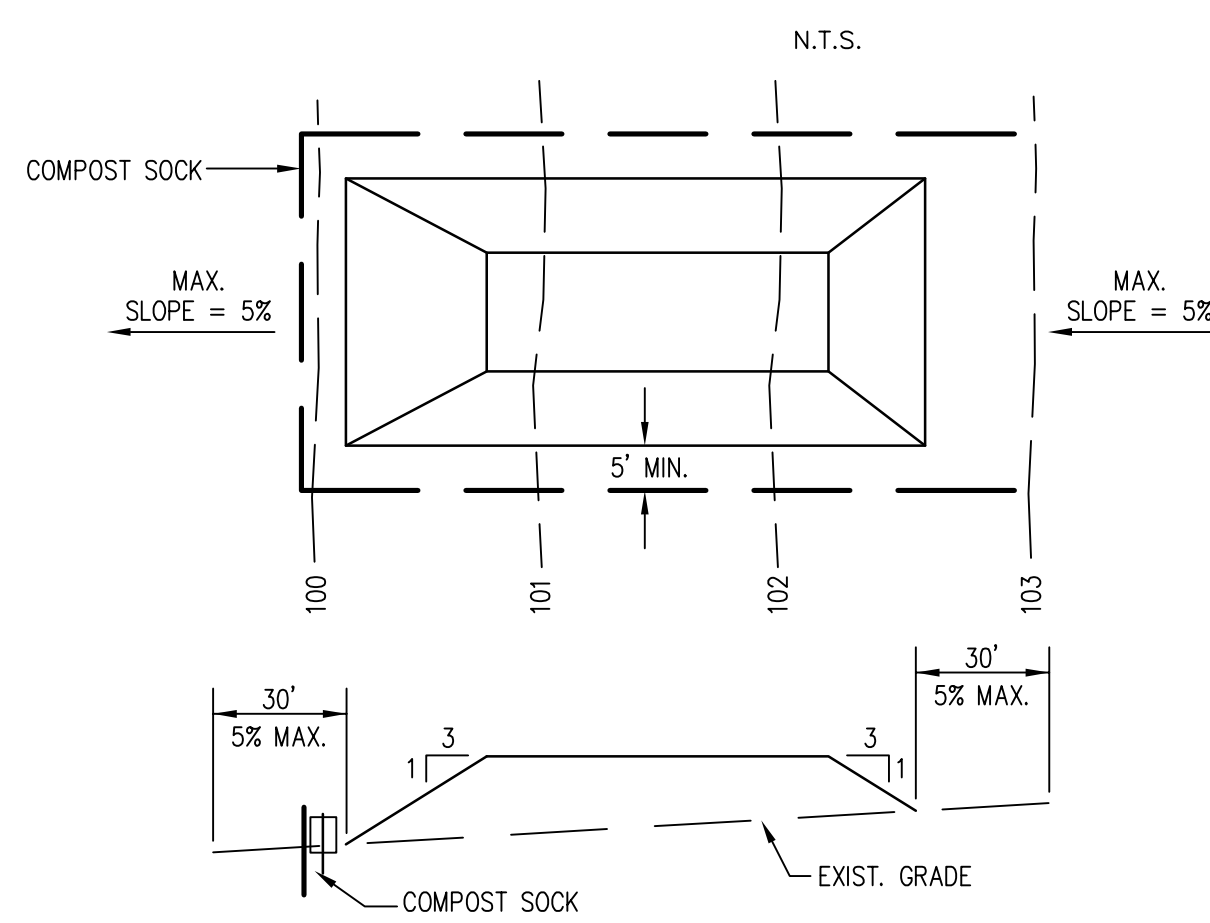
CONTROL JOINT
DETAIL L
 NOT TO SCALE CD-1



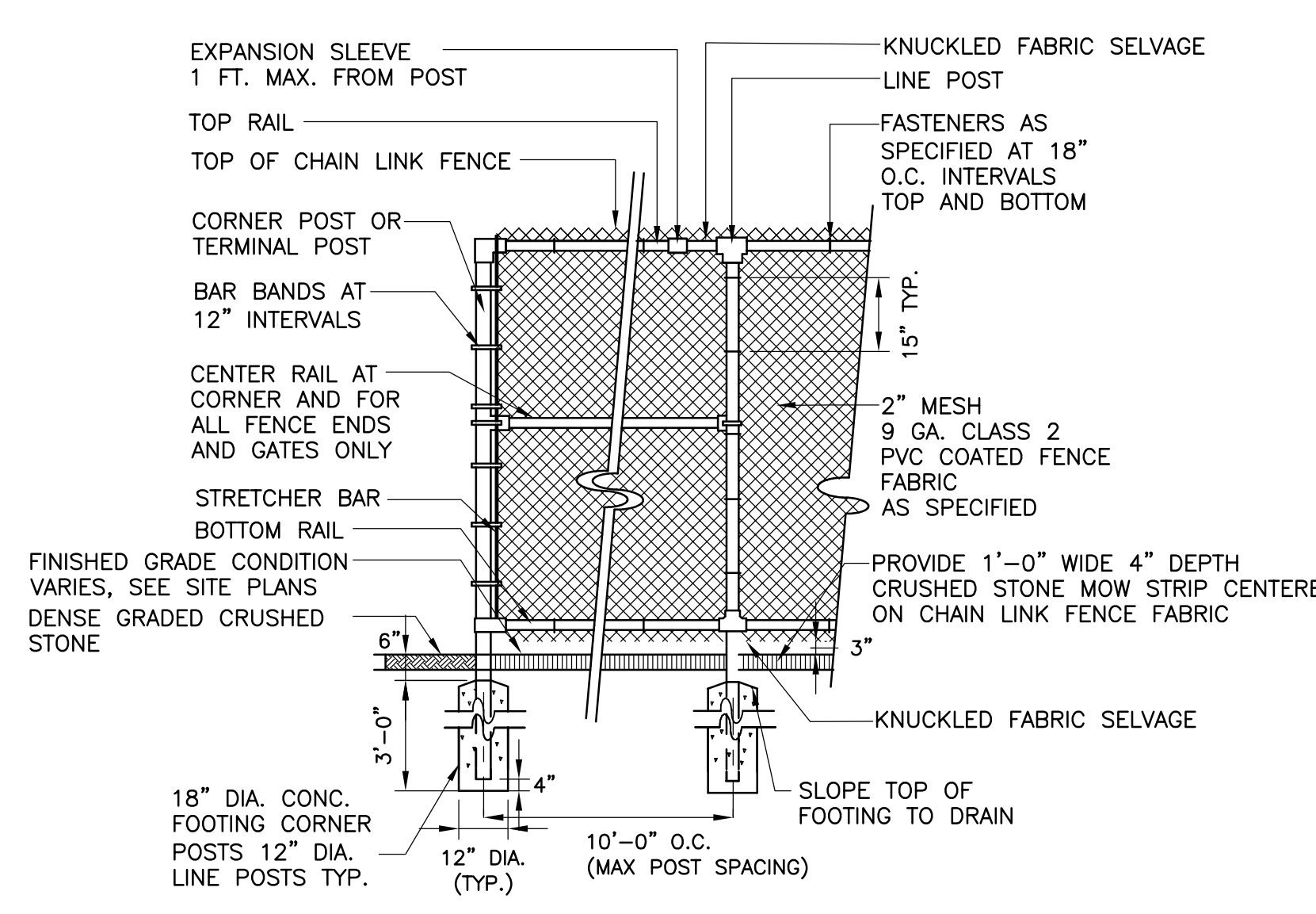
EXPANSION JOINT
DETAIL M
 NOT TO SCALE CD-1



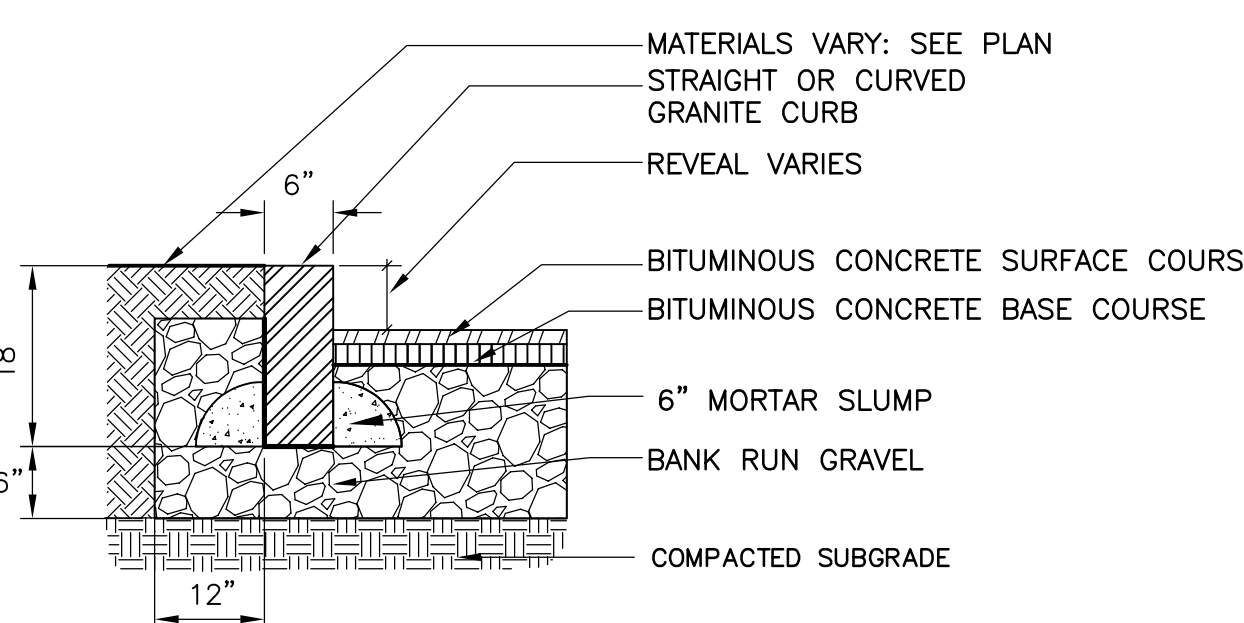
EROSION CONTROL BLANKET
DETAIL C
 NOT TO SCALE CD-1



SOIL STOCKPILE
DETAIL F
 NOT TO SCALE CD-1



6-Ft HIGH CHAIN LINK FENCE
DETAIL I
 NOT TO SCALE CD-1



VERTICAL GRANITE CURB
DETAIL N
 NOT TO SCALE CD-1

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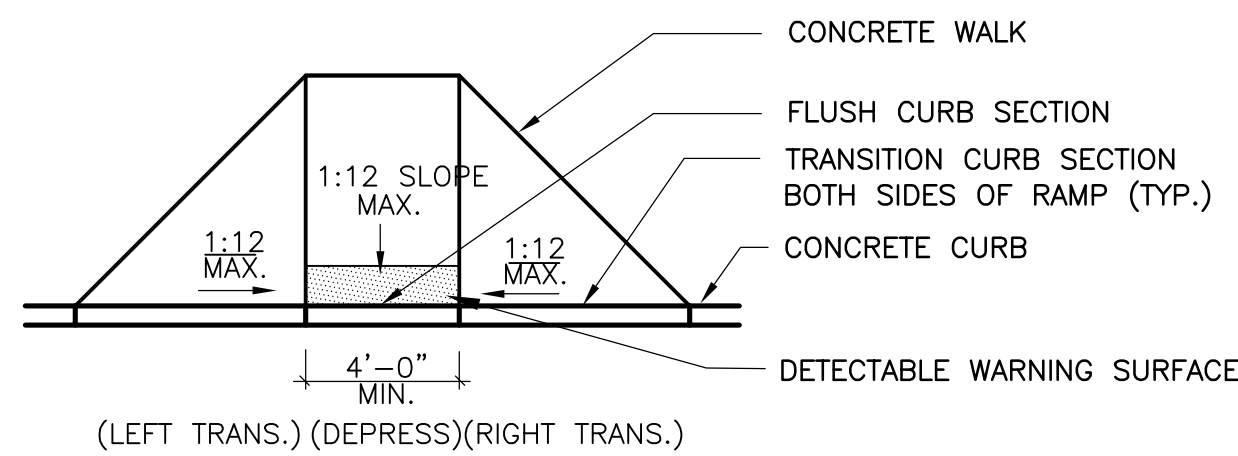
DESIGNED BY: M.DODSON
 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: M.DODSON
 CROSS CHK'D BY: W.LENGYEL
 APPROVED BY: X
 DATE: JUNE 2022

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 Boston, MA 02109
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 LITTLETON WATER RESOURCE RECOVERY FACILITY

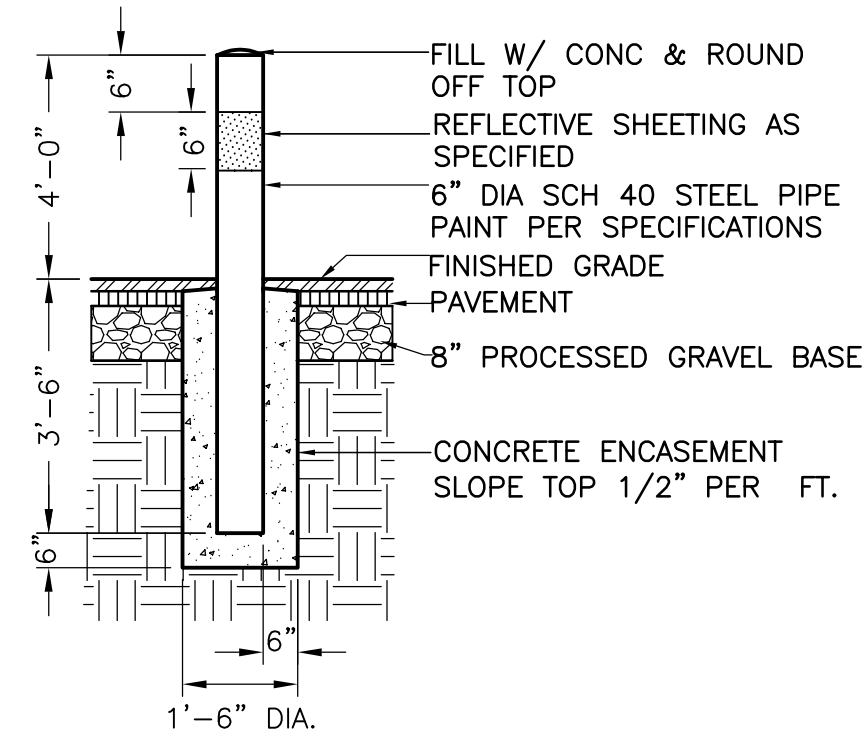
CIVIL DETAILS I
 SHEET NO. CD-1

PROJECT NO. 263387-261886
 FILE NAME: CD001STD1
 SHEET NO. CD-1

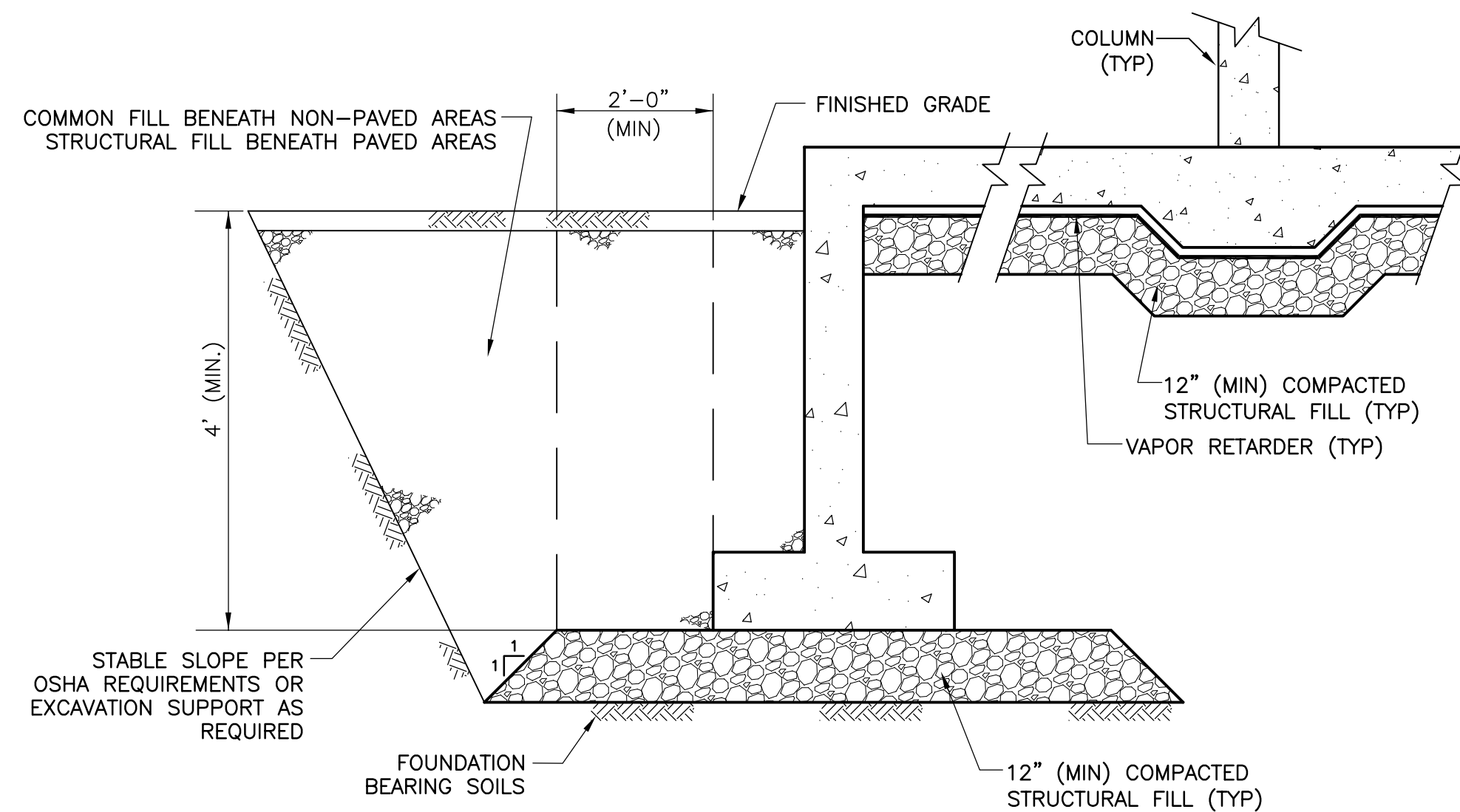


- NOTES:
- ALL RELEVANT DETAILS TO COMPLY WITH MADOT STANDARD CONSTRUCTION DETAILS MANUAL
 - DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH A.D.A. REQUIREMENTS.
 - PROVIDE EXPANSION JOINT AT TOPS OF RAMP AND AT BACK OF WALK AT INTERFACE OF CURB.
 - PROVIDE HEAVY BROOM FINISH ON RAMP AND SIDE SLOPES PERPENDICULAR TO FLOW OF TRAFFIC.
 - MINIMUM WALK DIMENSIONS ARE FROM BACK OF CURB.
 - TRANSITION CURB LENGTH AS REQUIRED TO MEET CODE.
 - FIXED OBJECTS (I.E. UTILITY POLES, HYDRANTS ETC.) MUST NOT ENCR OACH ON ANY PART OF A WHEELCHAIR RAMP, INCLUDING TRANSITION SLOPES.

ACCESSIBLE CURB RAMP
DETAIL A
NOT TO SCALE CD-2

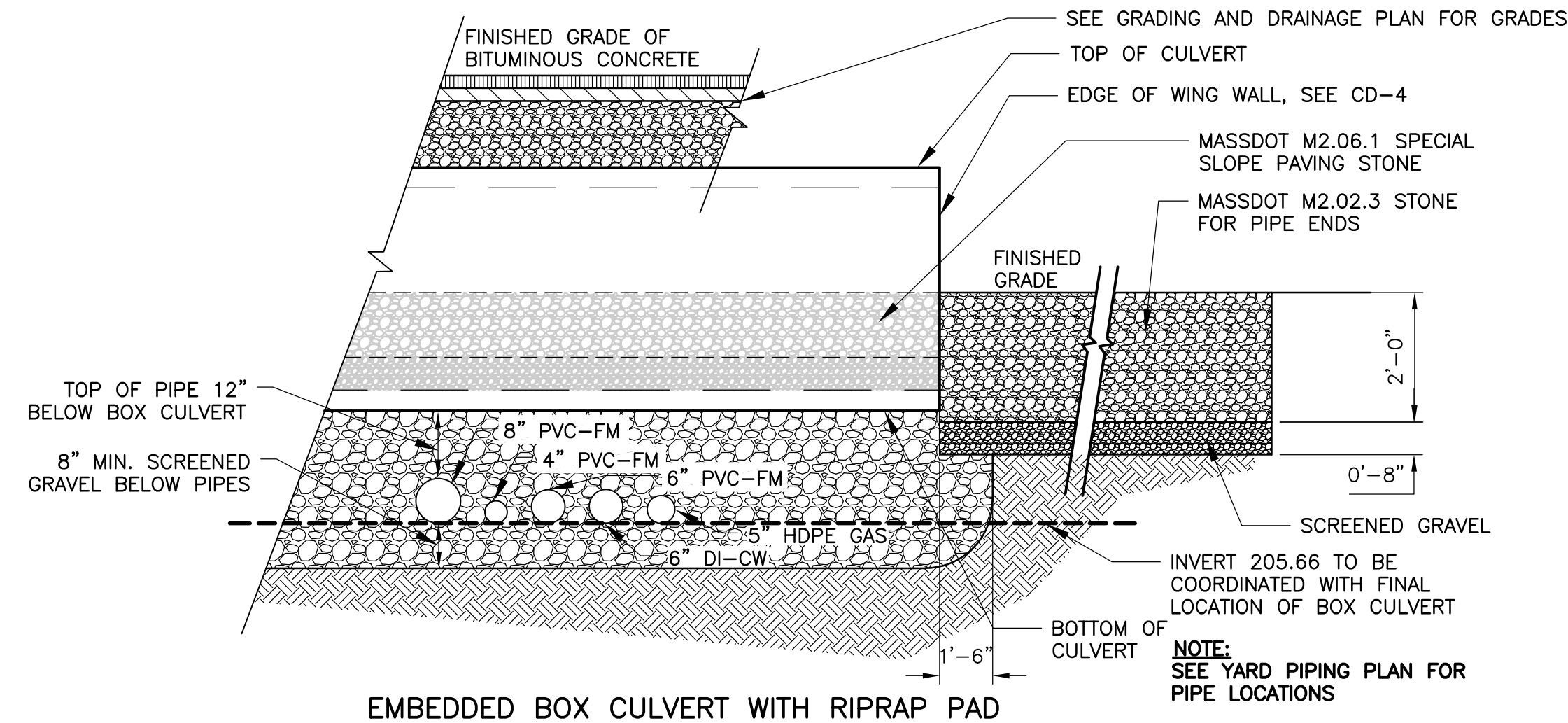
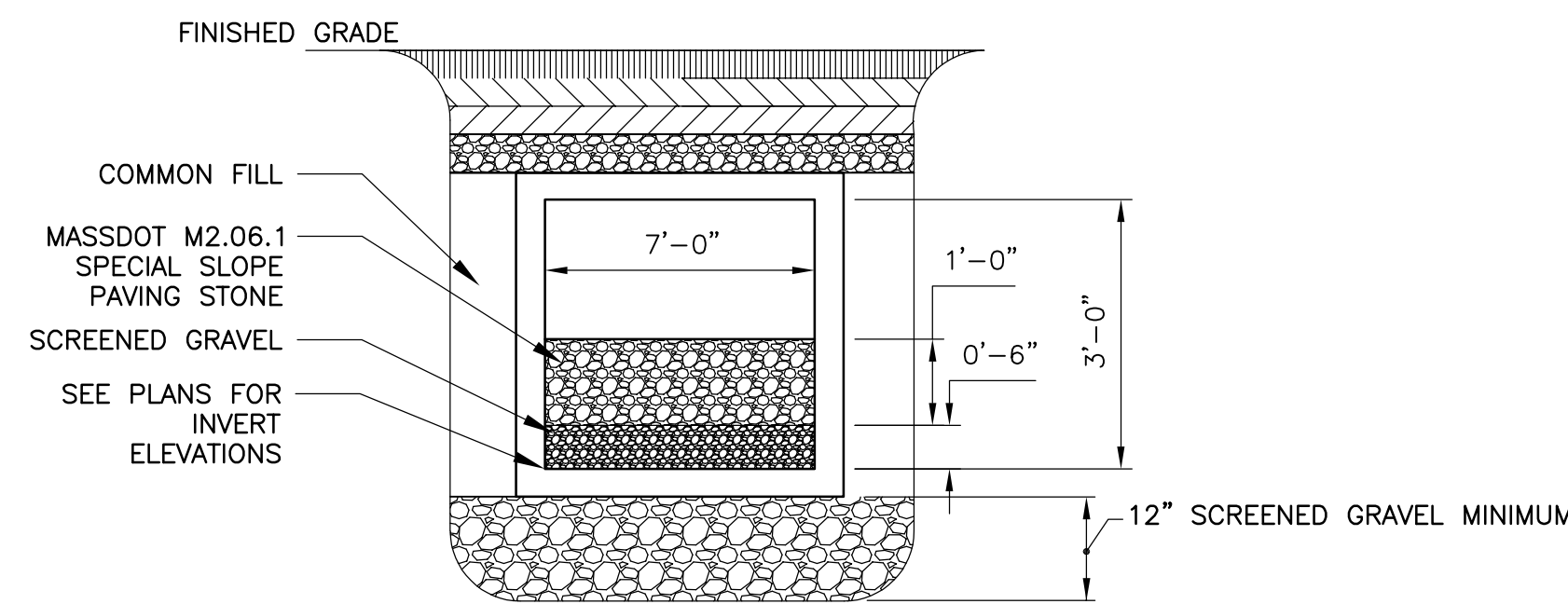


STEEL BOLLARD
DETAIL B
NOT TO SCALE CD-2

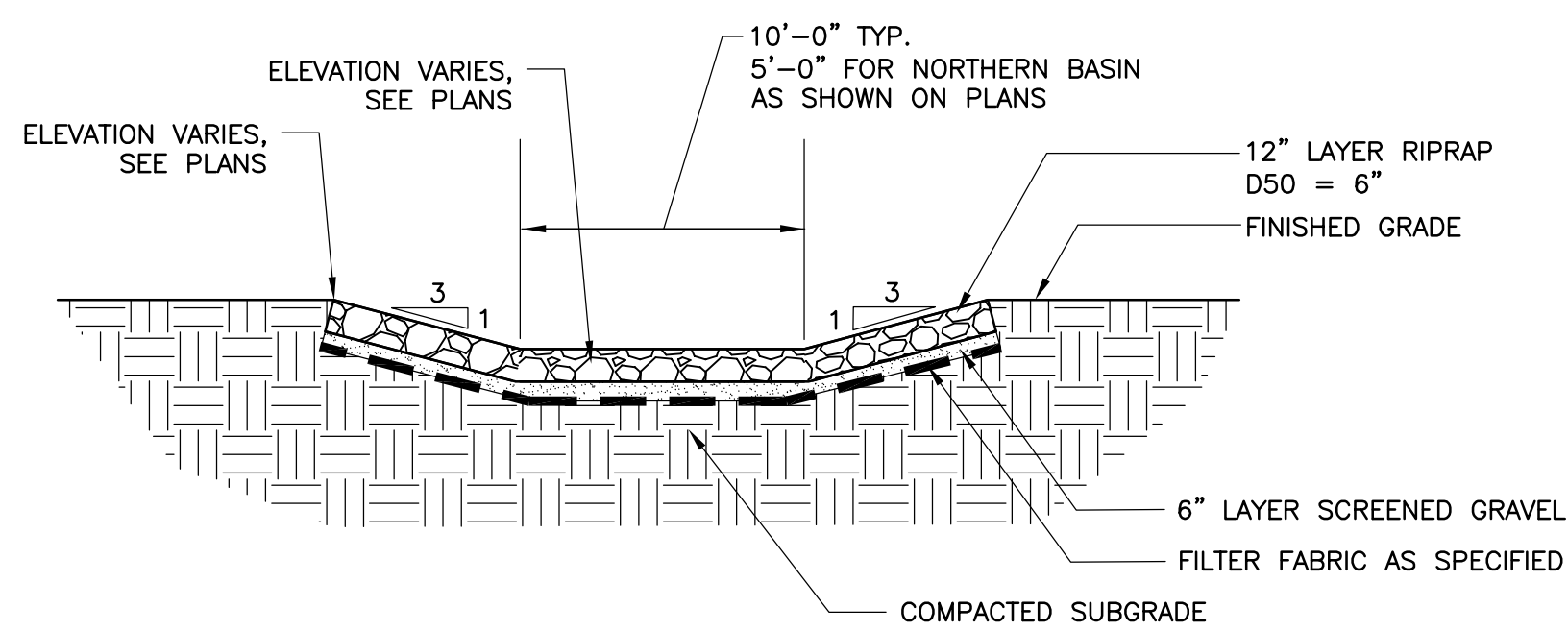


- NOTES:
- THE SUITABILITY OF THE FOUNDATION SUB-GRADE TO BE VERIFIED BY CONTRACTOR'S GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF CONCRETE.
 - SEE SPECIFICATION SECTION 312000 FOR COMPACTION REQUIREMENTS.
 - STRUCTURES INCLUDE TANK, BUILDING, OR SHALLOW FOOTINGS. SEE SITE PLANS.

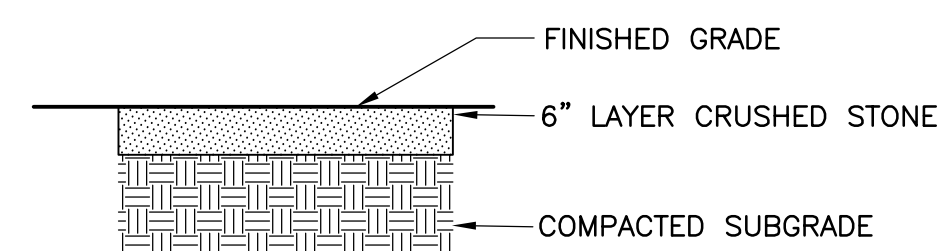
BACKFILL
DETAIL C
NTS CD-2



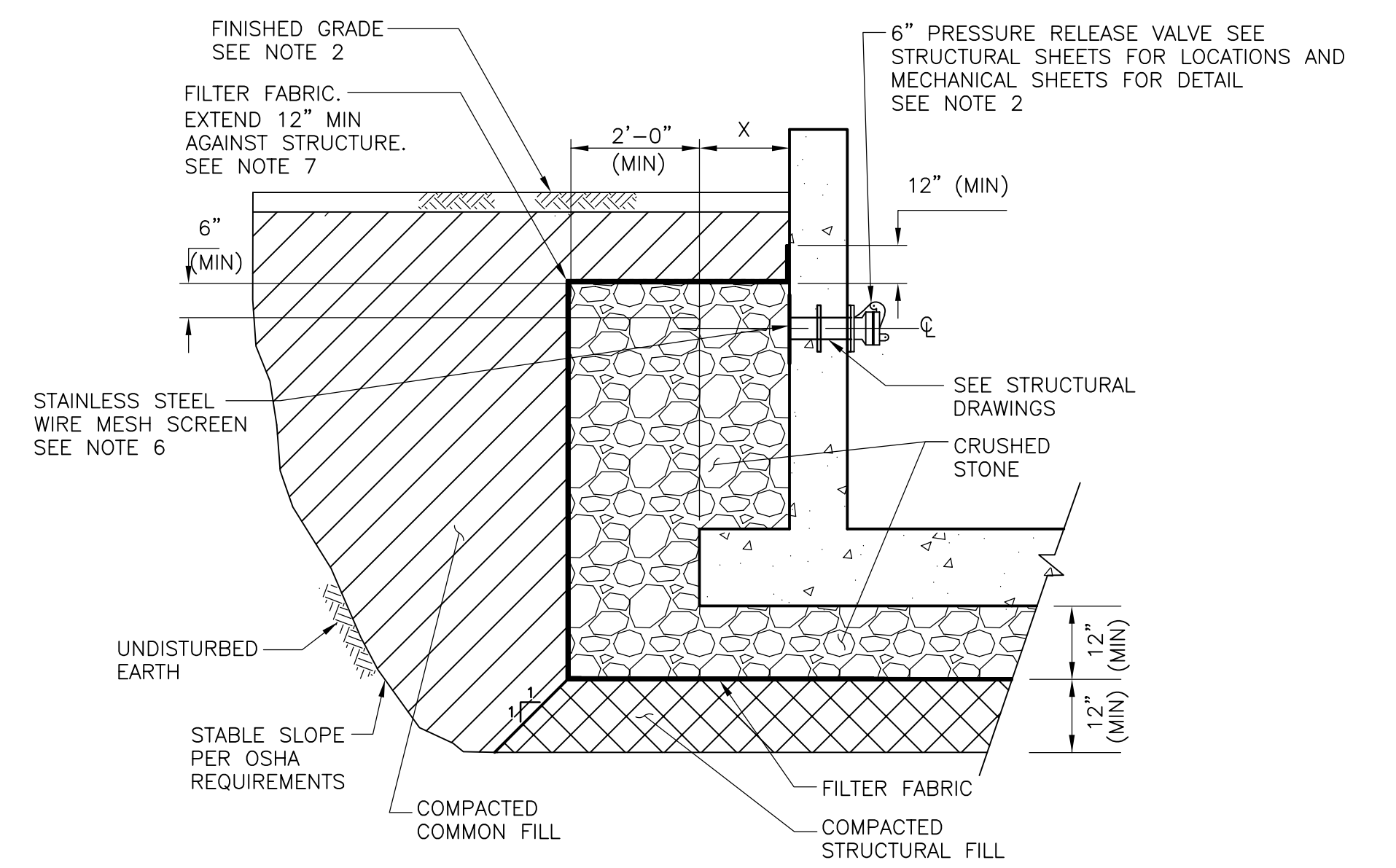
EMBEDDED BOX CULVERT WITH RIPRAP PAD
DETAIL D
NOT TO SCALE CD-2



EMERGENCY SPILLWAY
DETAIL E
NTS CD-2



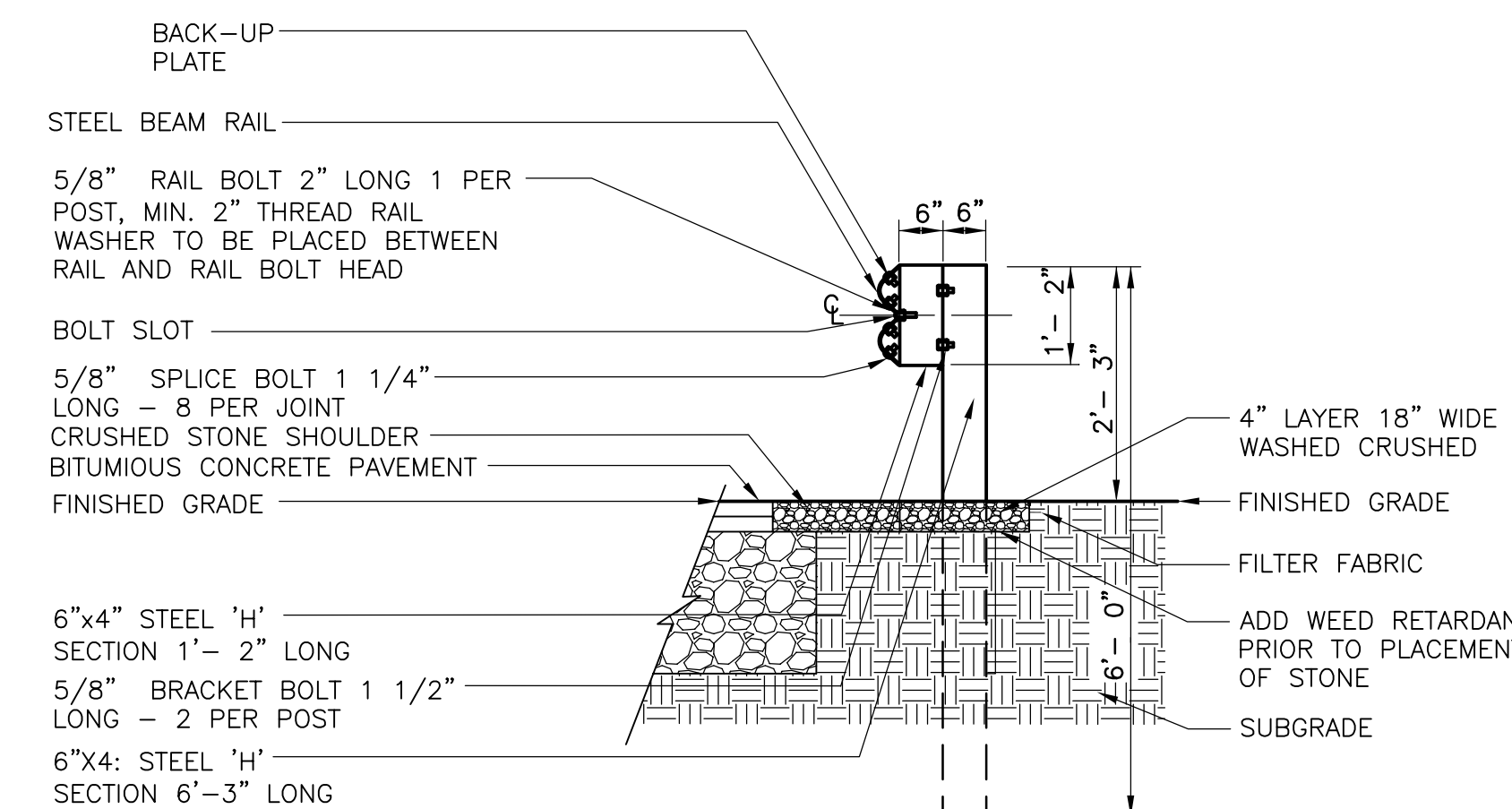
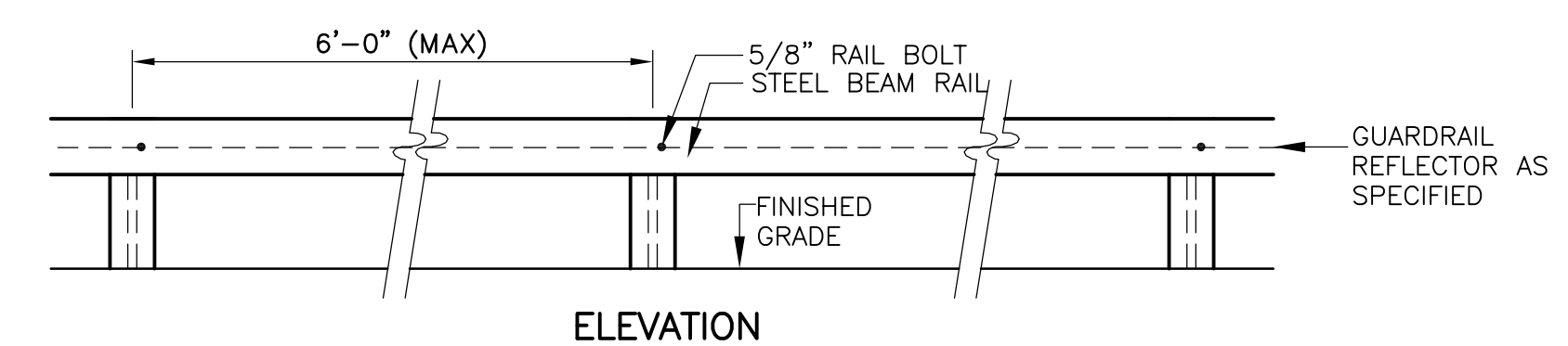
CRUSHED STONE SURFACING
DETAIL F
NOT TO SCALE CD-2



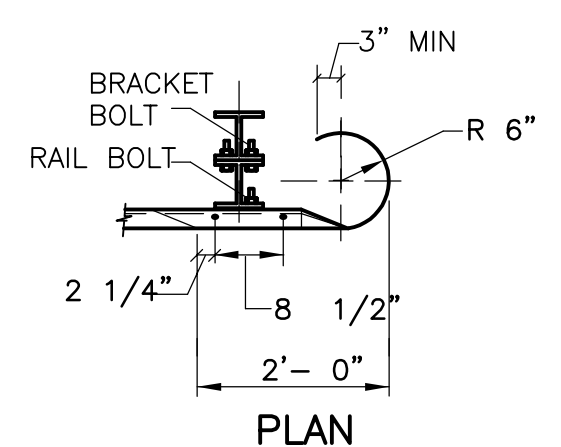
- NOTES:
- DETAIL TYPICAL FOR BIOLOGICAL TANKS.
 - FOR RELATIVE ELEVATIONS, SEE BELOW TABLE.
 - THE SUITABILITY OF THE FOUNDATION SUB-GRADE TO BE VERIFIED BY CONTRACTOR'S GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF FILL OR CONCRETE.
 - SEE SPECIFICATION SECTION 312000 FOR COMPACTION REQUIREMENTS.
 - WIRE MESH SHALL BE DESIGNED TO PREVENT MATERIALS FINER THAN No. 200 FROM PASSING AND ANCHORED TO THE EXTERNAL SURFACE OF THE CONCRETE TANKS A MINIMUM OF 4-IN BEYOND THE OD OF THE PIPE.
 - FILTER FABRIC SHALL BE OVERLAPPED NO LESS THAN 24-IN TO ASSURE CONTINUITY OF THE FABRIC.

	FINISHED GRADE	FLAP VALVE ELEVATION	BOTTOM OF SLAB ELEVATION	"X" DIMENSION
BIOLOGICAL TANKS	213.6	209.5	189.25	2'-0"

BACKFILL AT NEW TANKS AND STRUCTURES
DETAIL G
NOT TO SCALE CD-2



SECTION STEEL BEAM GUARDRAIL
DETAIL H
NOT TO SCALE CD-2



PROJECT NO. 263387-261886
FILE NAME: CD002STD1

SHEET NO.

CD-2

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DESIGNED BY: M.DODSON
DRAWN BY: J. BRONENKANT
SHEET CHK'D BY: M.DODSON
CROSS CHK'D BY: W.LENGYEL
APPROVED BY: X
DATE: JUNE 2022

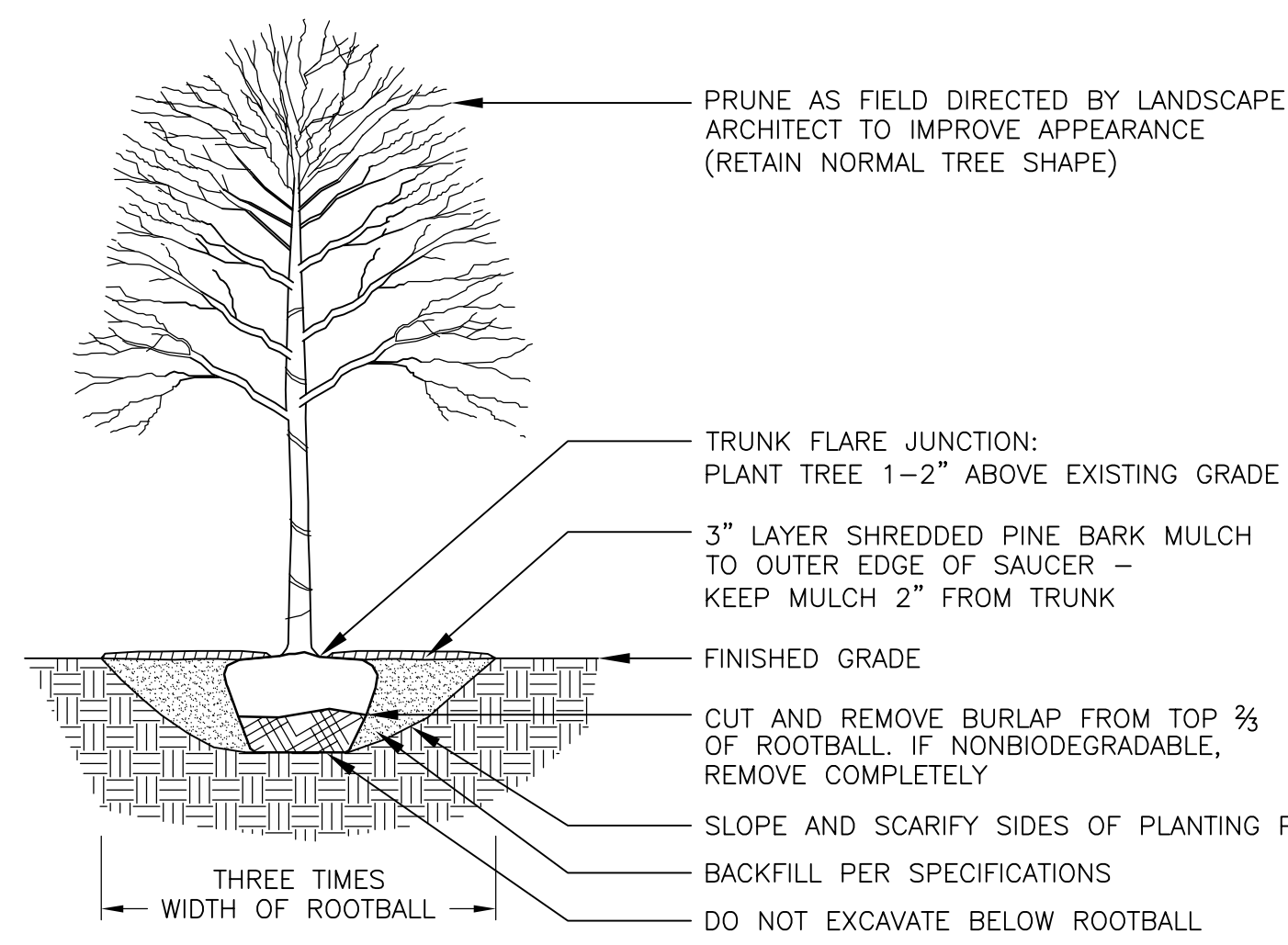
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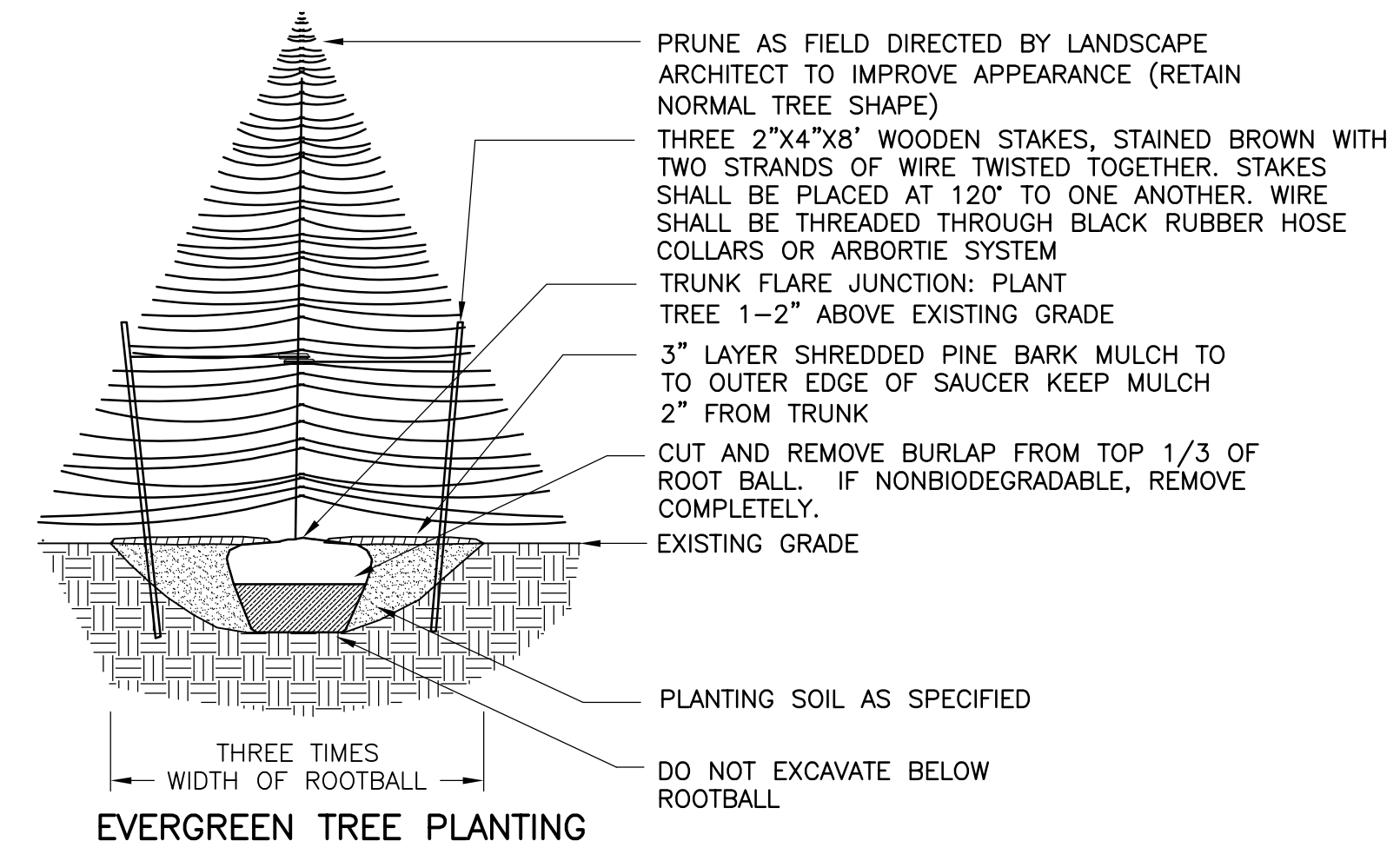
CIVIL DETAILS II

90% SUBMITTAL - NOT FOR CONSTRUCTION

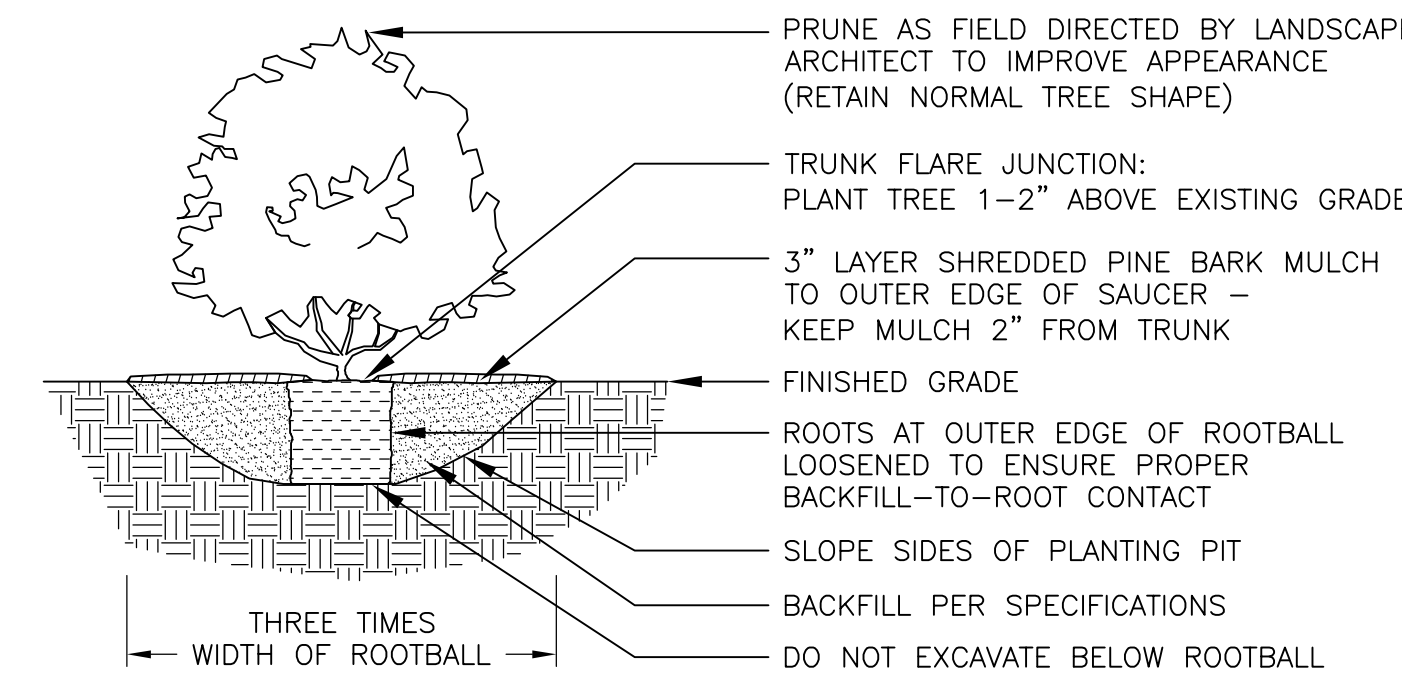
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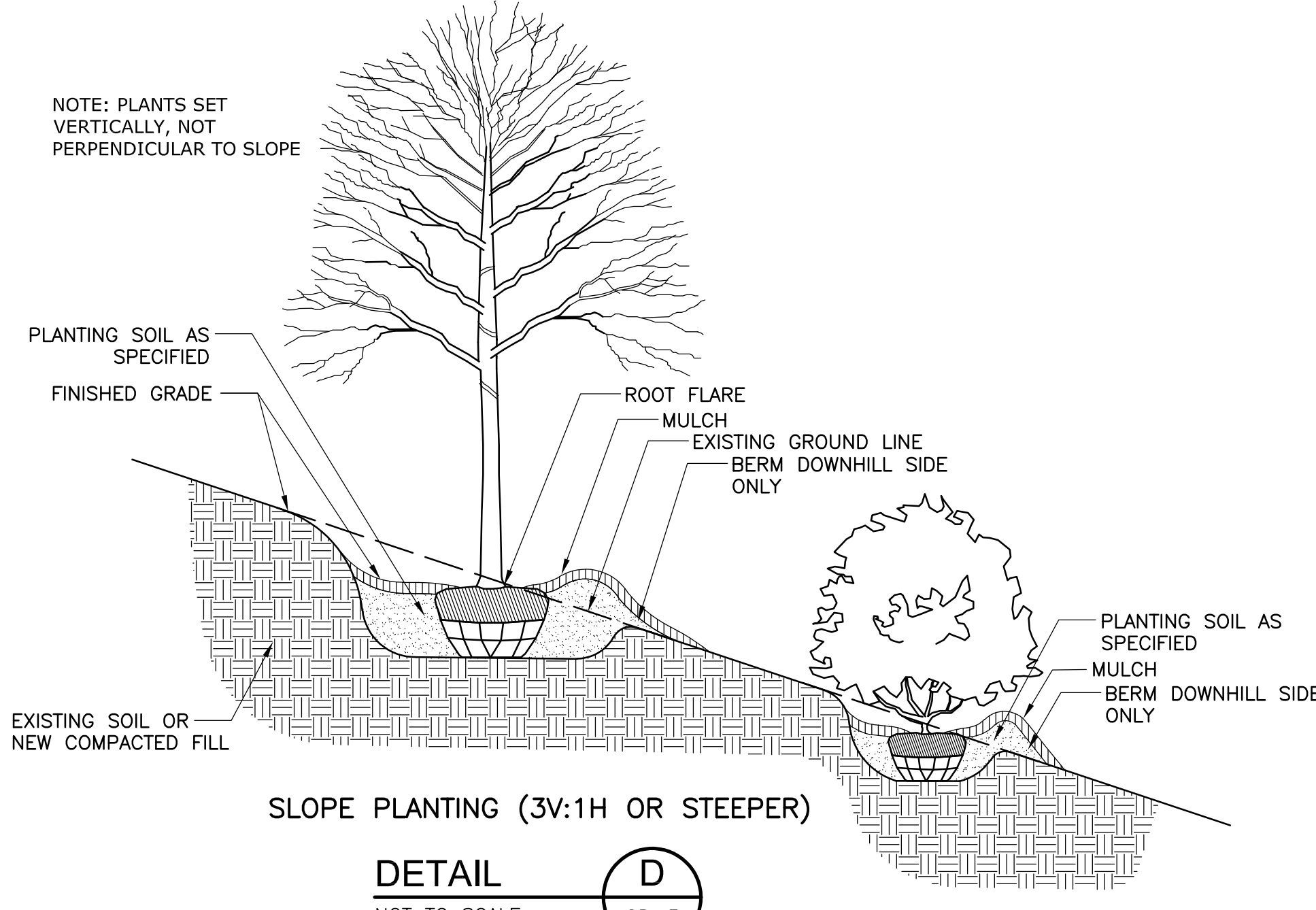
DECIDUOUS TREE PLANTING
DETAIL A
 NOT TO SCALE
 CD-3



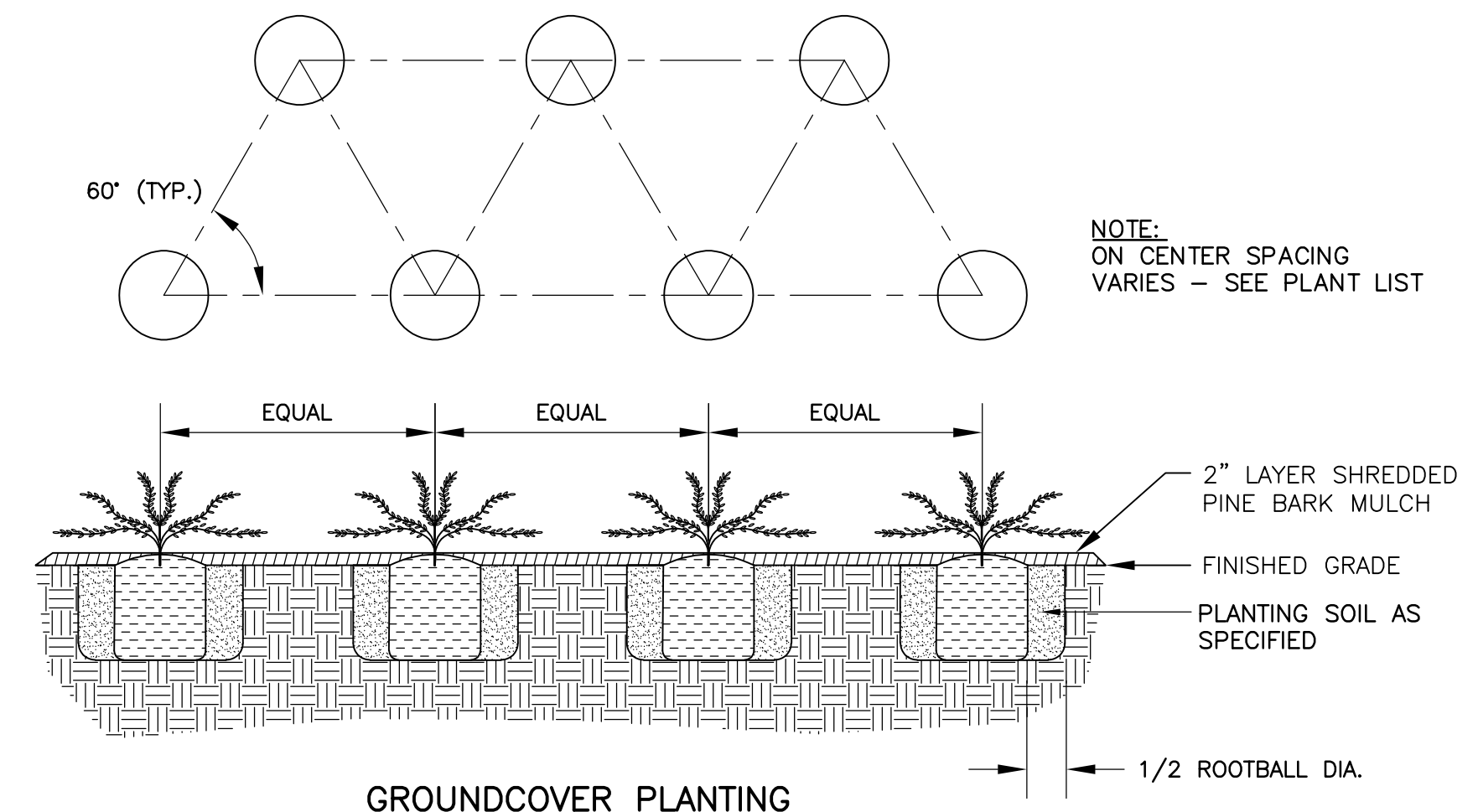
EVERGREEN TREE PLANTING
DETAIL B
 NOT TO SCALE
 CD-3



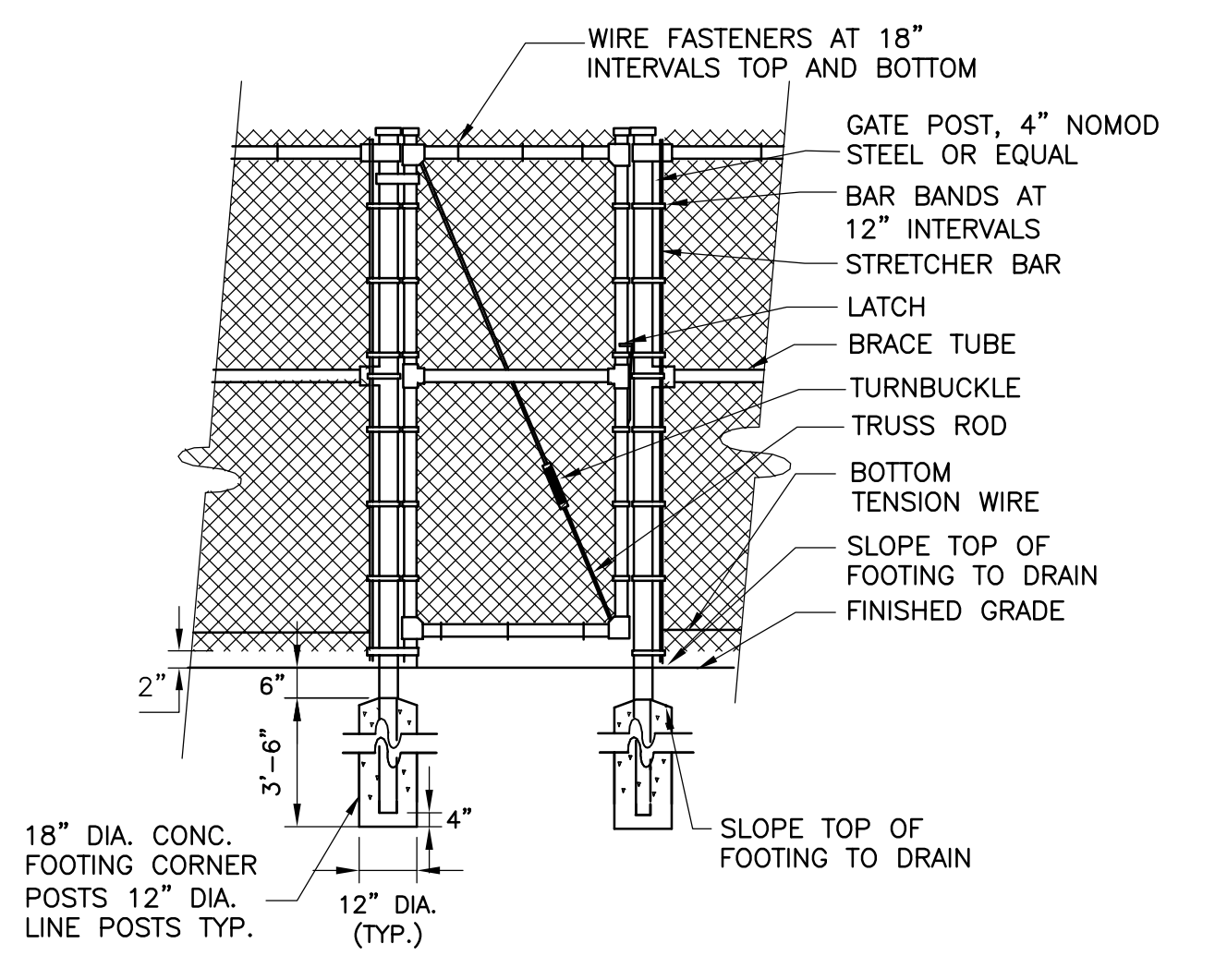
SHRUB PLANTING
DETAIL C
 NOT TO SCALE
 CD-3



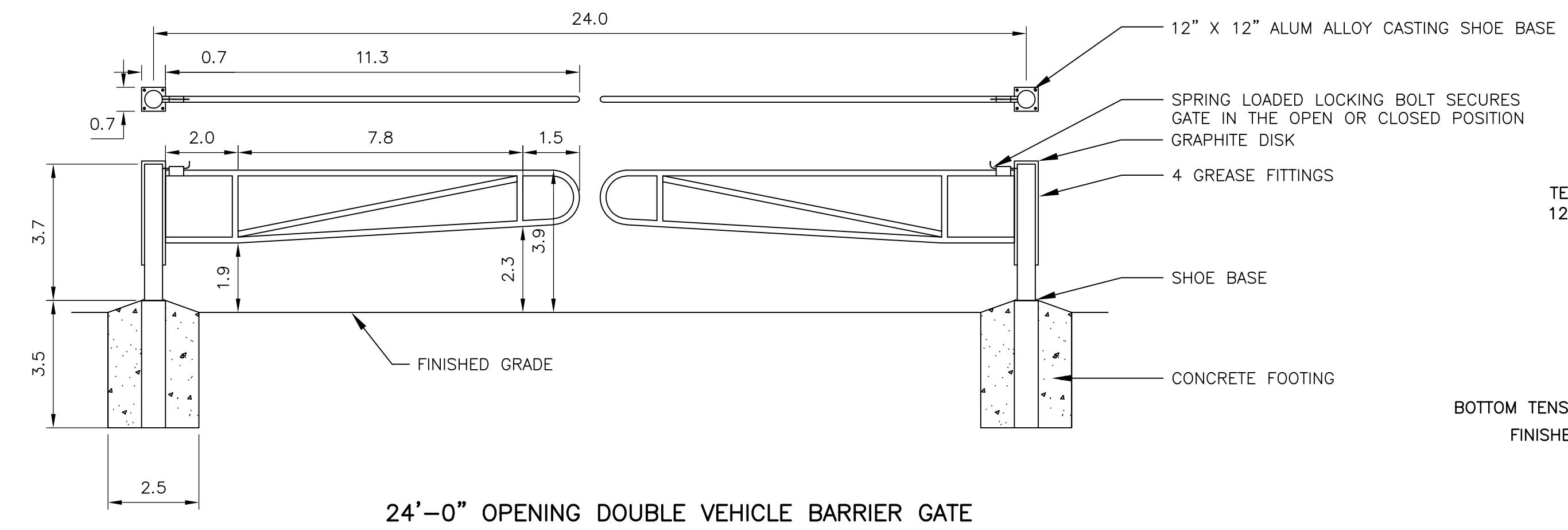
SLOPE PLANTING (3V:1H OR STEEPER)
DETAIL D
 NOT TO SCALE
 CD-3



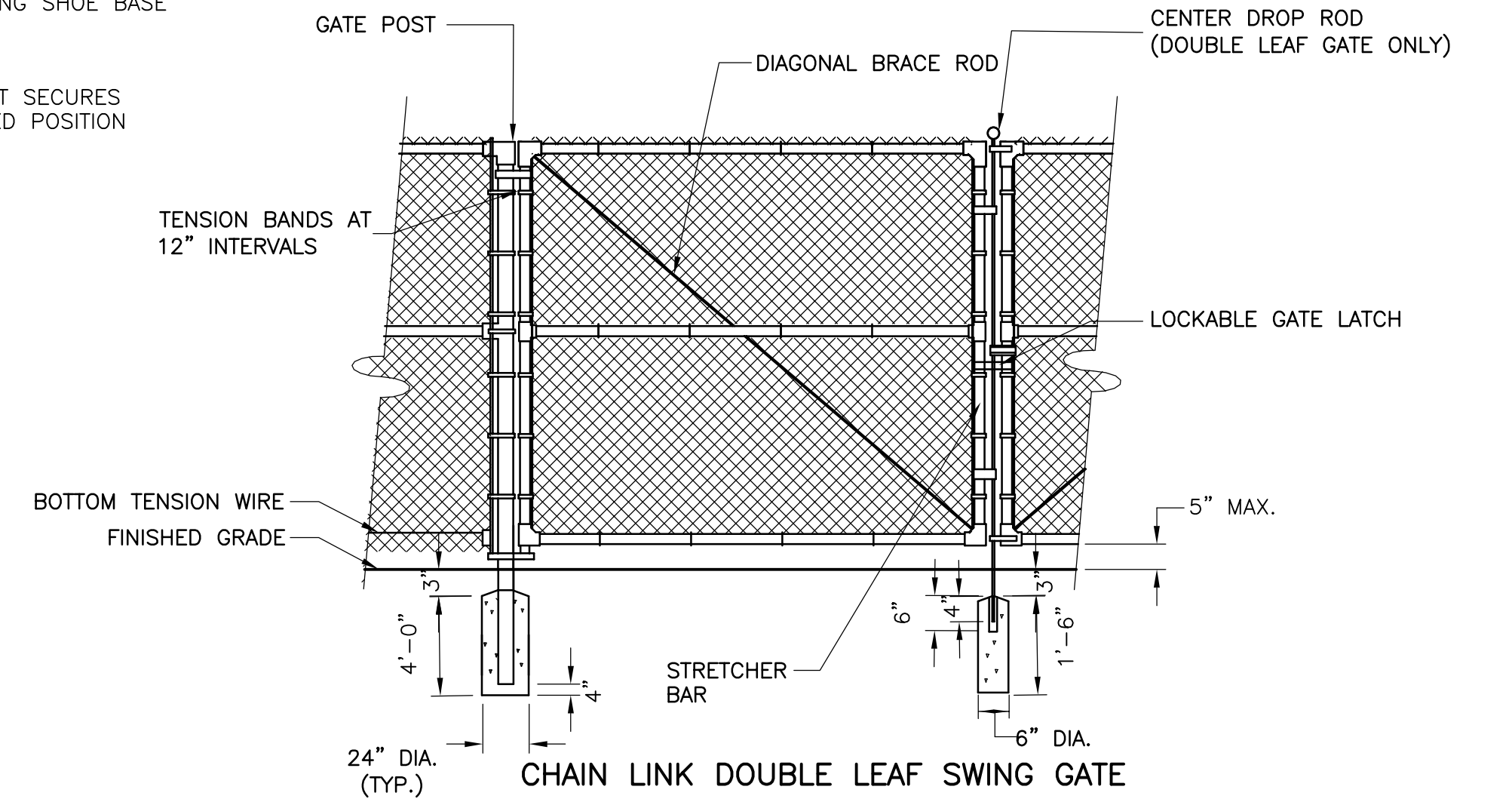
GROUNDCOVER PLANTING
DETAIL F
 NOT TO SCALE
 CD-3



PEDESTRAIN CHAIN LINK FENCE GATE
DETAIL G
 NOT TO SCALE
 CD-3



24'-0" OPENING DOUBLE VEHICLE BARRIER GATE
DETAIL E
 NOT TO SCALE
 CD-3



CHAIN LINK DOUBLE LEAF SWING GATE
DETAIL H
 NOT TO SCALE
 CD-3

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M.DODSON
 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: M.DODSON
 CROSS CHK'D BY: W.LENGYEL
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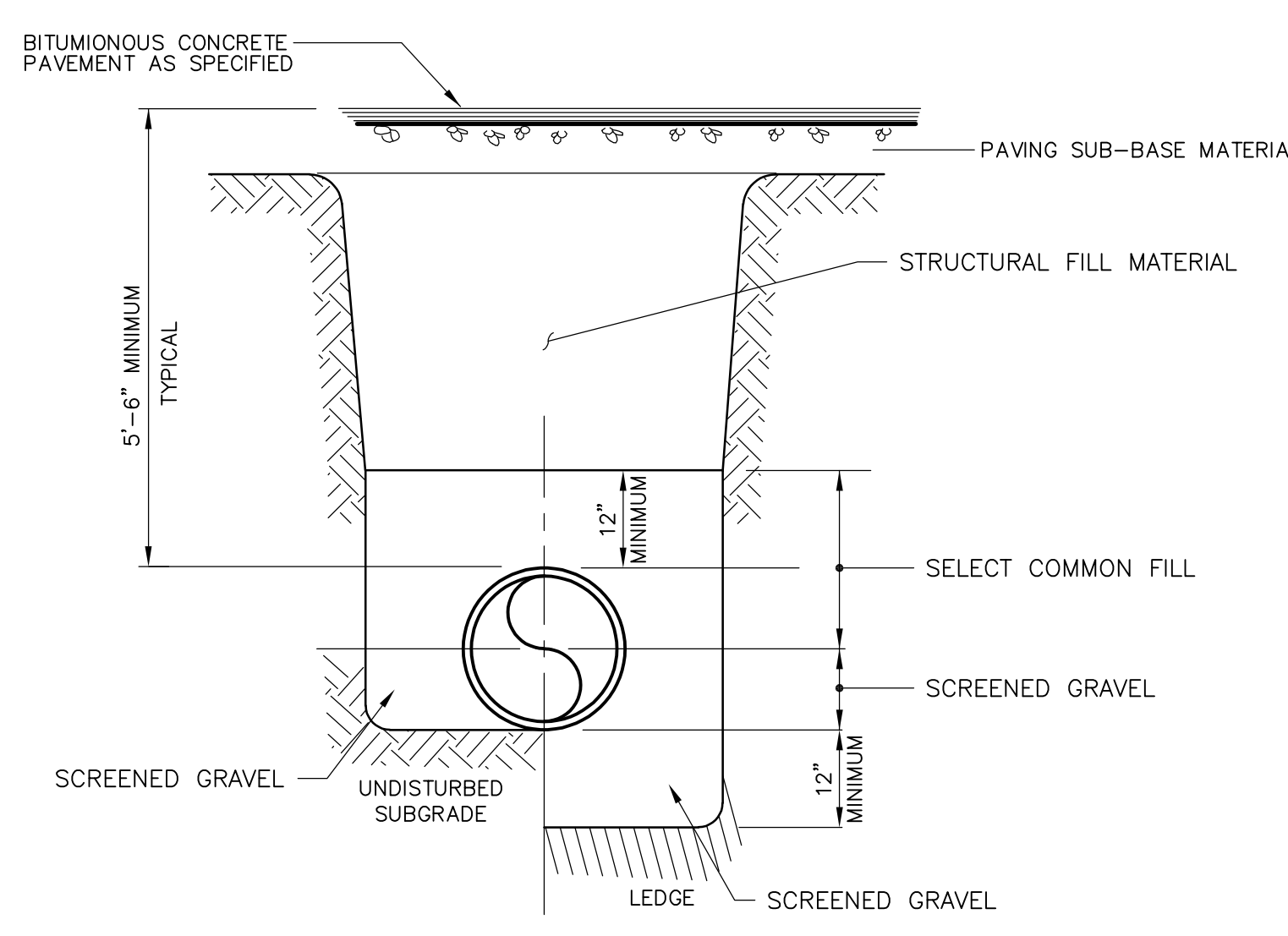
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CIVIL DETAILS III
 SHEET NO. CD-3

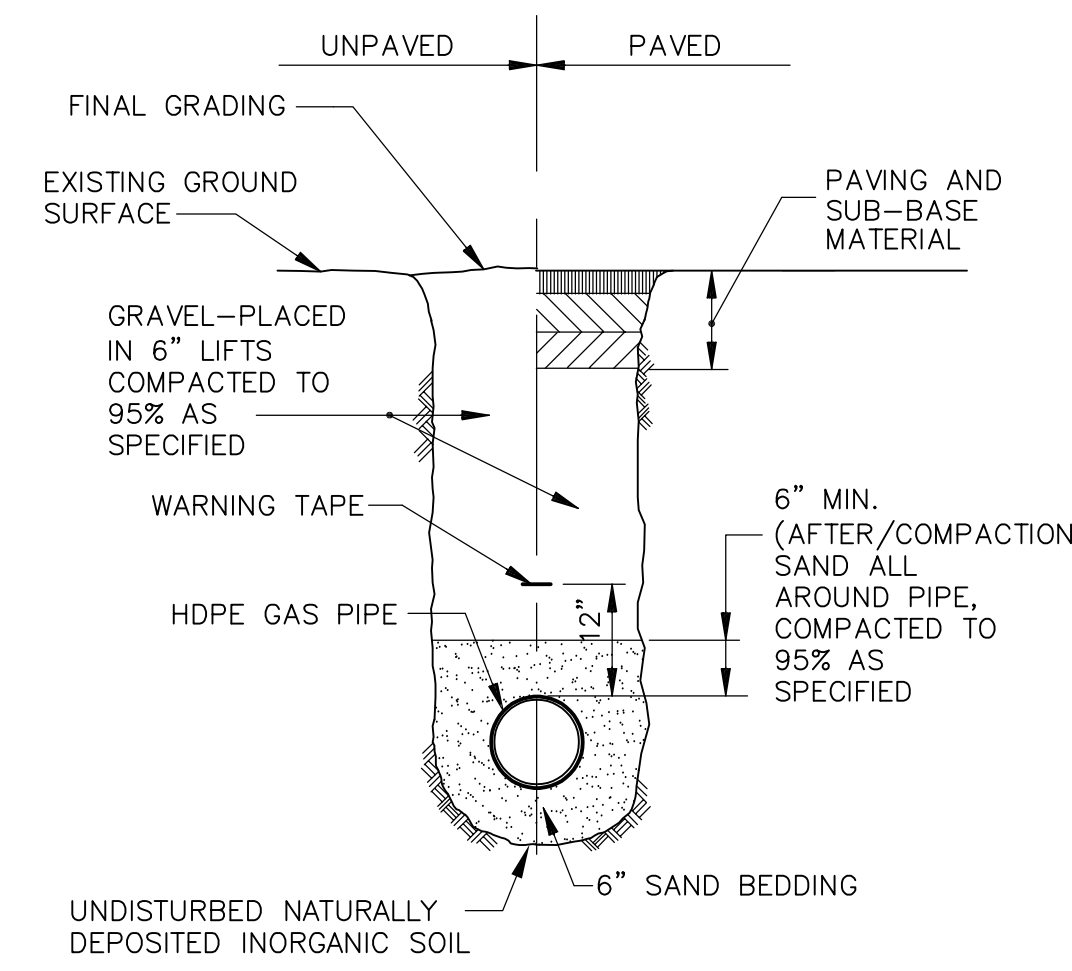
PROJECT NO. 263387-261886
 FILE NAME: CD003STD1
 SHEET NO. CD-3

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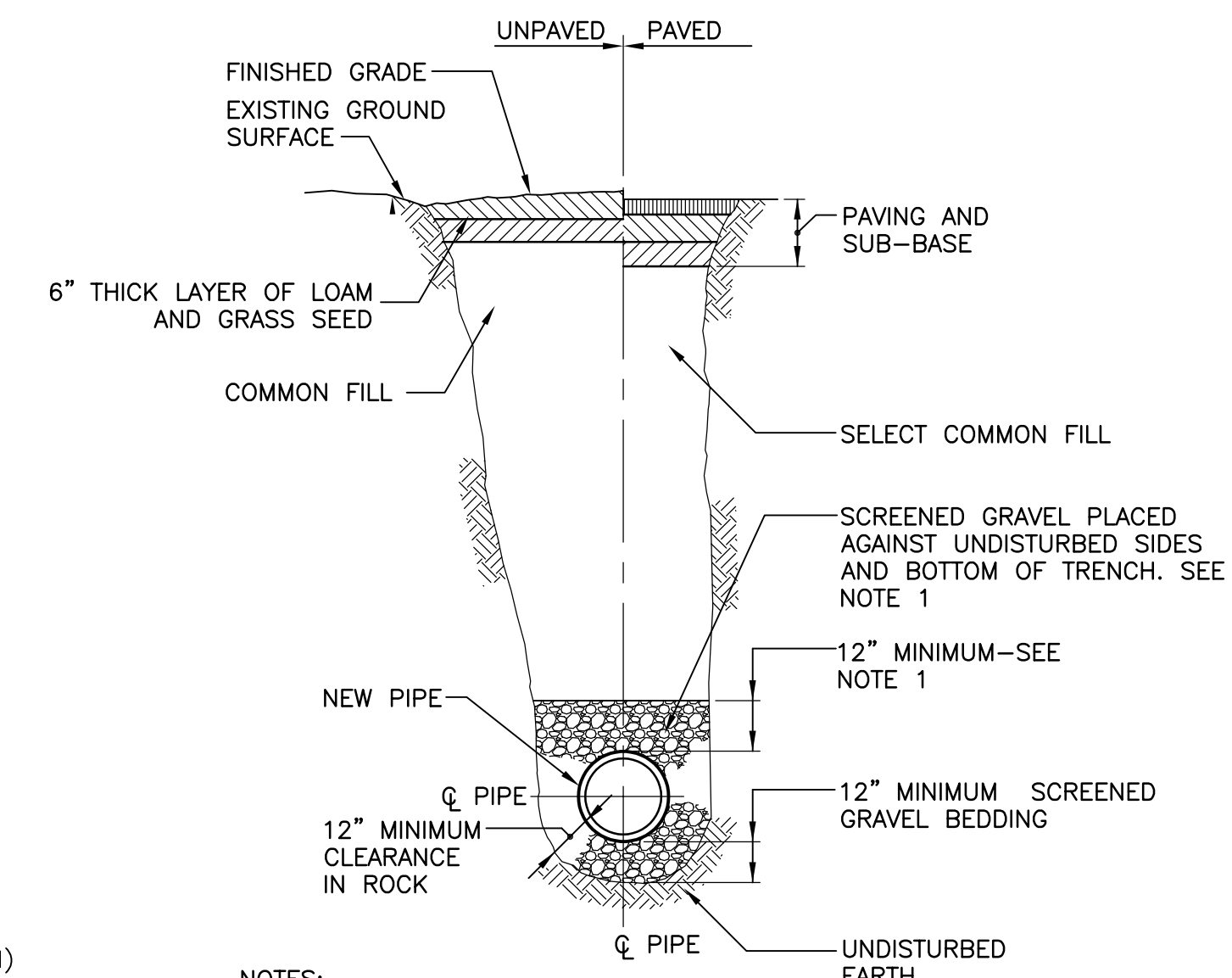


DUCTILE IRON PIPE TRENCH
DETAIL A
 N.T.S. CD-4

- NOTES:**
- PIPE SHALL HAVE 1'-0" MIN. CLEARANCE TO BEDROCK
 - TRENCH WIDTH FOR ROCK EXCAVATION = D + 2'-0"
 - ALL NEW WATER MAIN SHALL BE POLYETHYLENE ENCASED (POLYWRAP) FOR CORROSION PROTECTION.

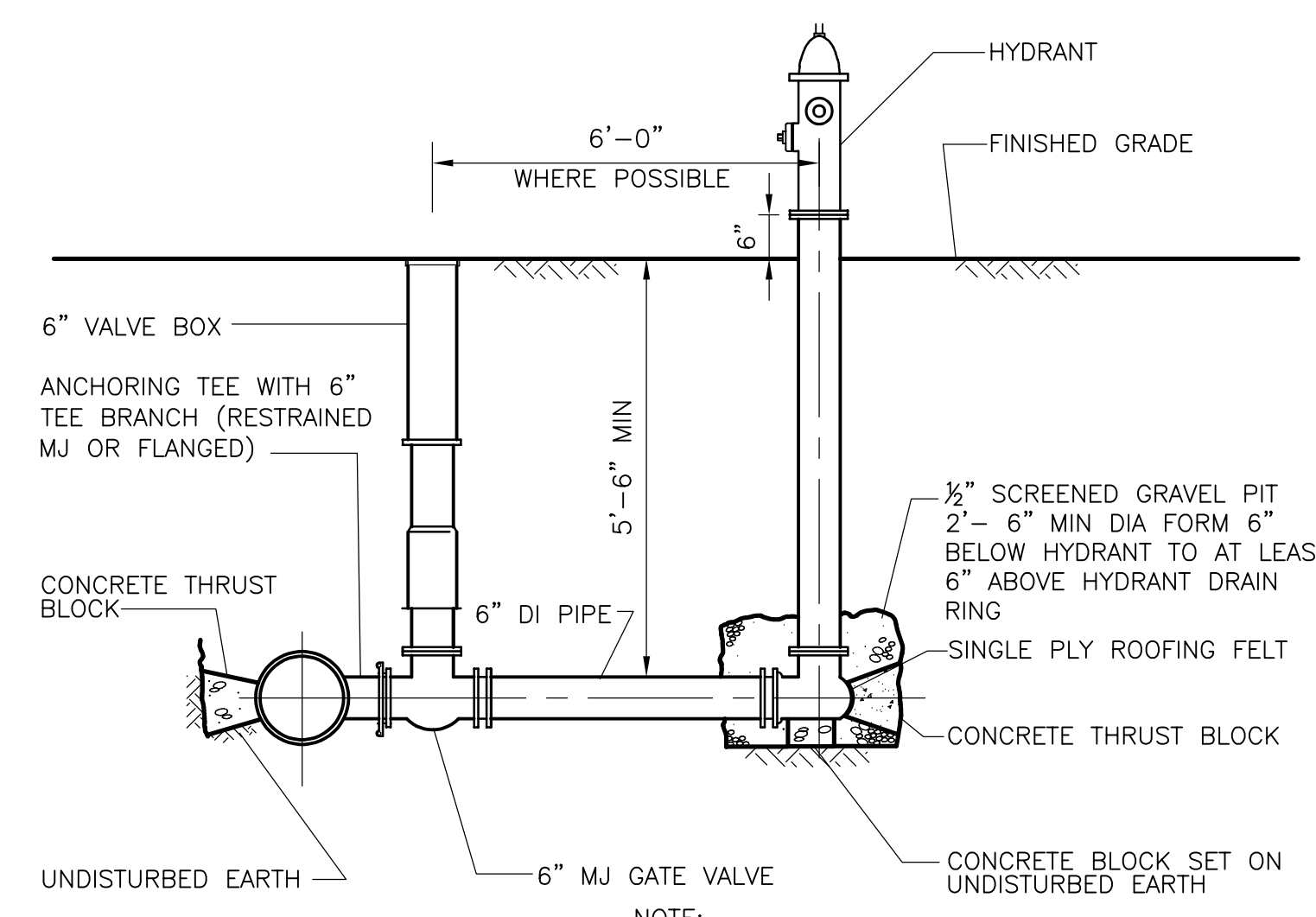


TYPICAL TRENCH DETAIL FOR BURIED NG PIPING
DETAIL D
 N.T.S. CD-4



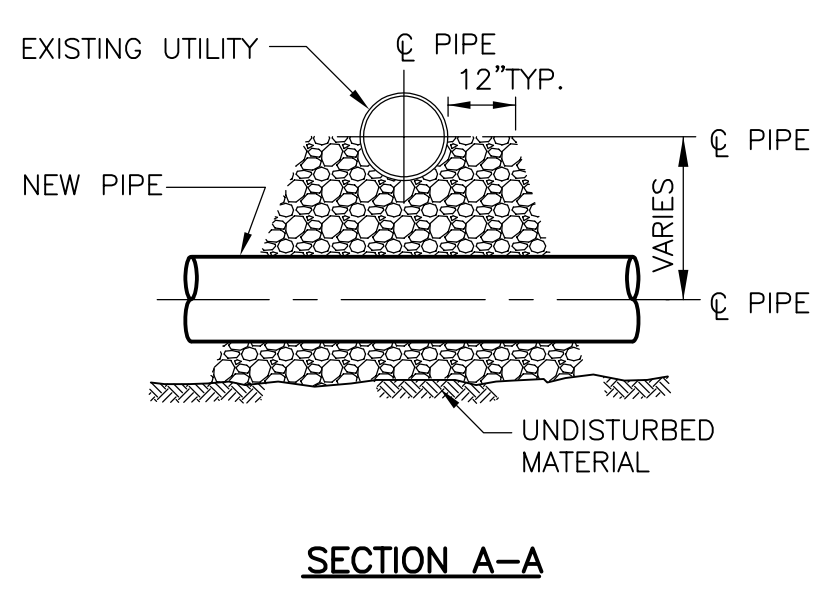
- NOTES:**
- FOR PIPES OTHER THAN PVC AND RCP, SELECT COMMON FILL MAY BE USED FROM MID-DIAMETER OF PIPE TO 12" ABOVE TOP OF PIPE.
 - FILTER FABRIC SHALL BE PLACED BETWEEN UNDISTURBED EARTH AND SCREENED GRAVEL WHERE TRENCH EXCAVATION EXTENDS BELOW THE GROUNDWATER LEVEL.
 - IN UNSUITABLE SUBGRADES, EXCAVATE TO THE TOP OF NATURALLY DEPOSITED SUITABLE MATERIAL TO A MAXIMUM OF 4'-FT BELOW THE PIPE INVERT AND SHALL BE REPLACED WITH LIGHTWEIGHT FILL AS SPECIFIED.

TYPICAL TRENCH DETAIL
DETAIL F
 NOT TO SCALE CD-4



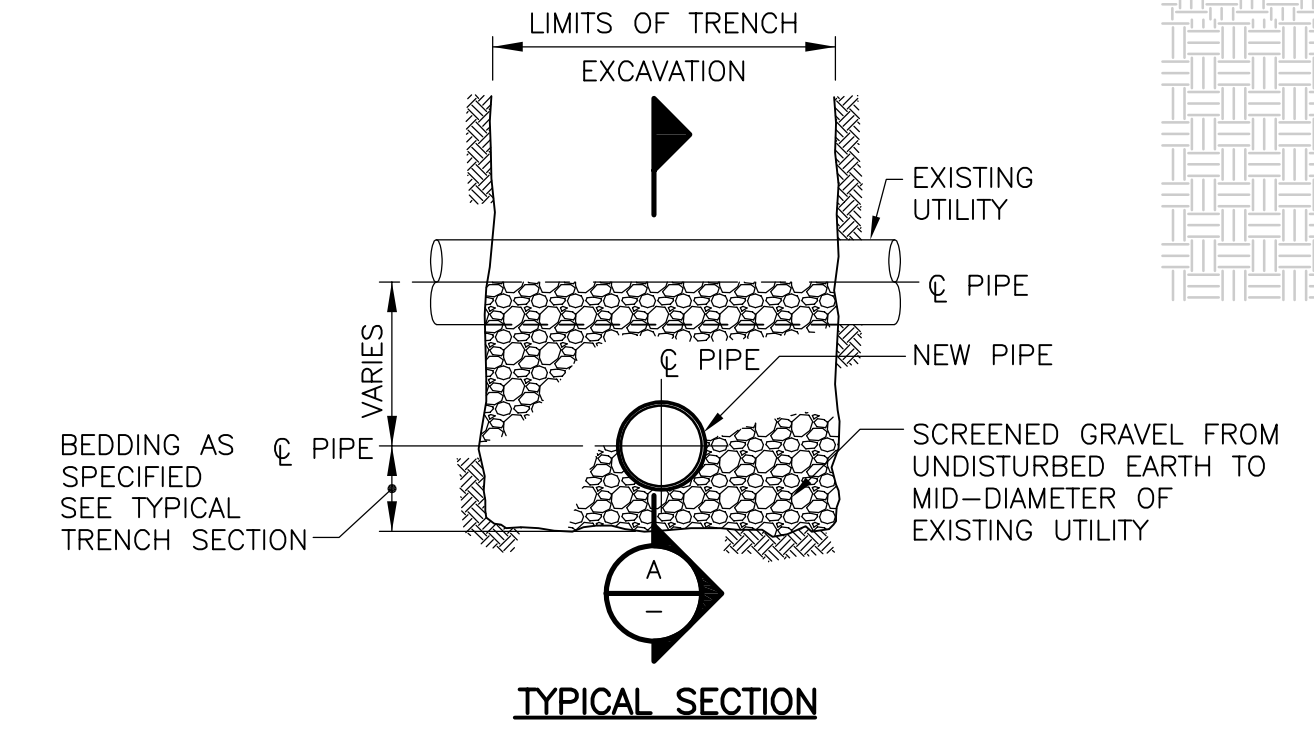
STANDARD HYDRANT
DETAIL B
 N.T.S. CD-4

NOTE:
 ALL PIPING BETWEEN THE WATER MAIN, GATE VALVE, AND HYDRANT SHALL BE FULLY RESTRAINED.

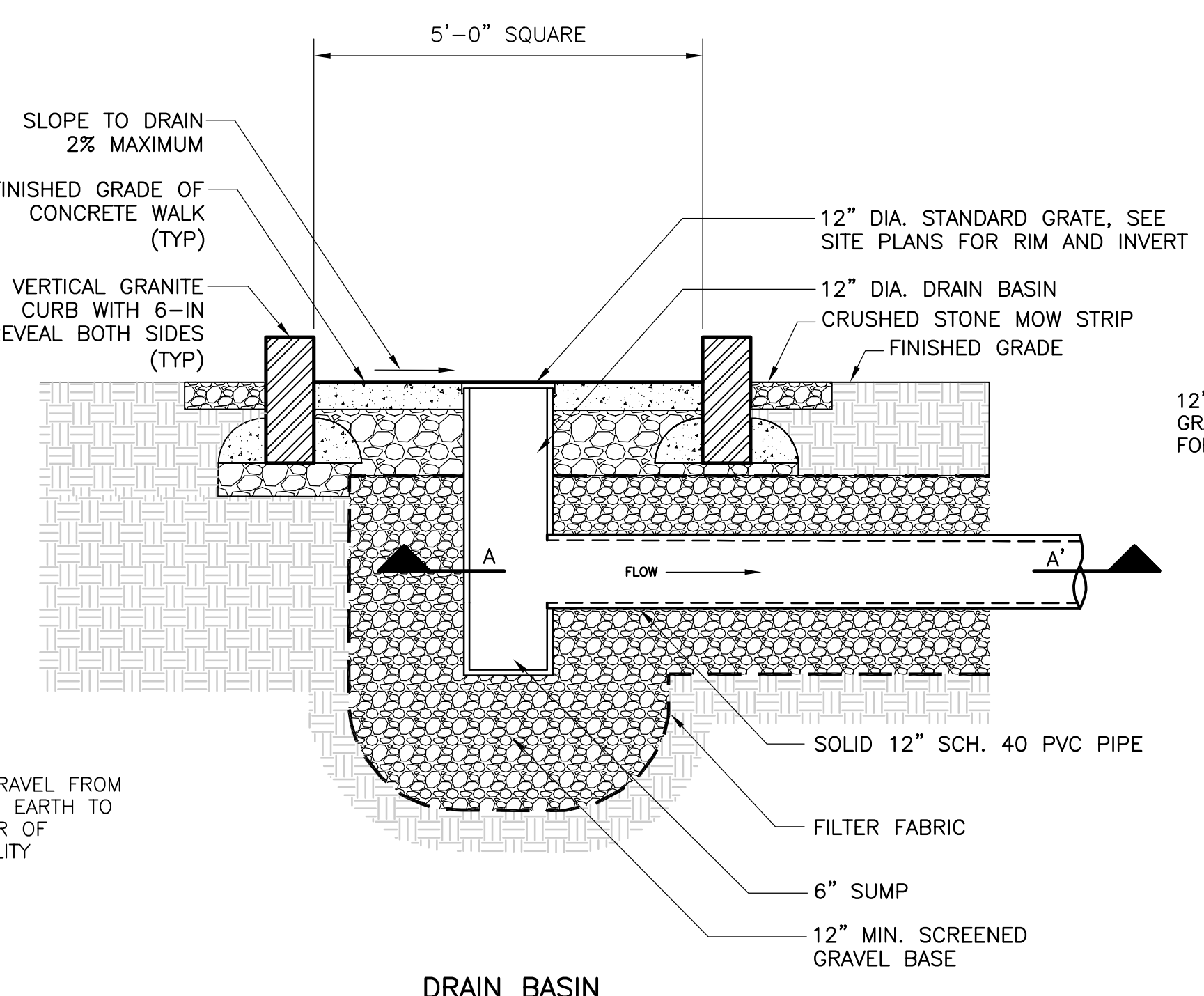


SECTION A-A

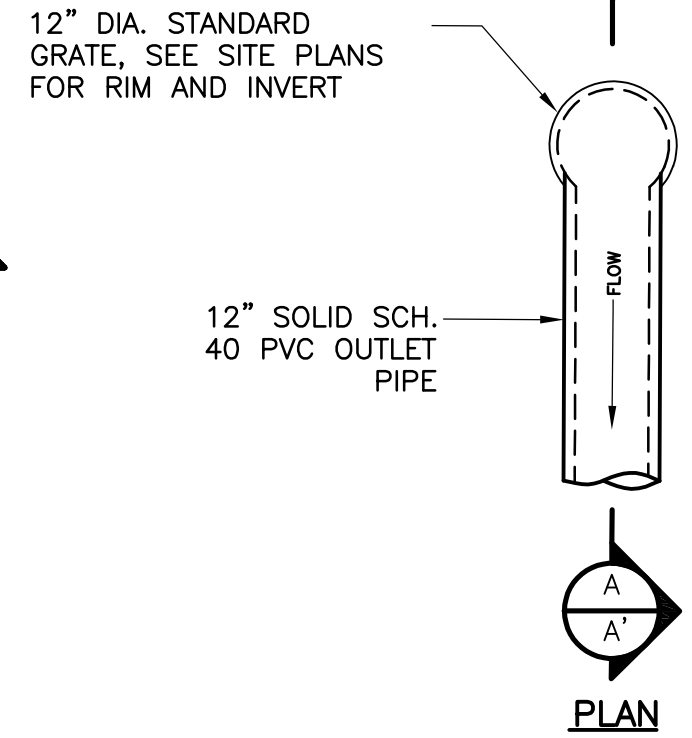
EXISTING UTILITY CROSSING
DETAIL C
 N.T.S. CD-4



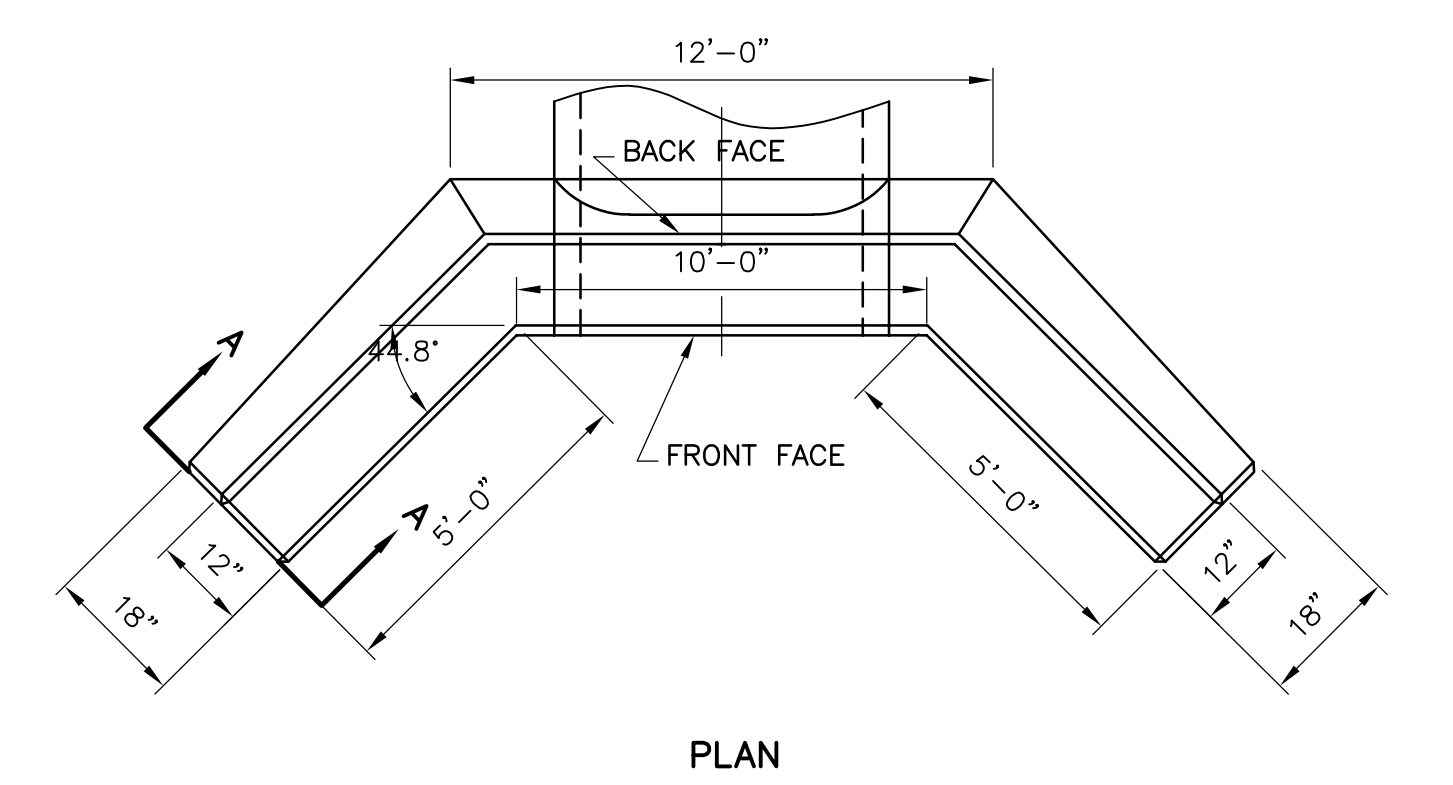
TYPICAL SECTION



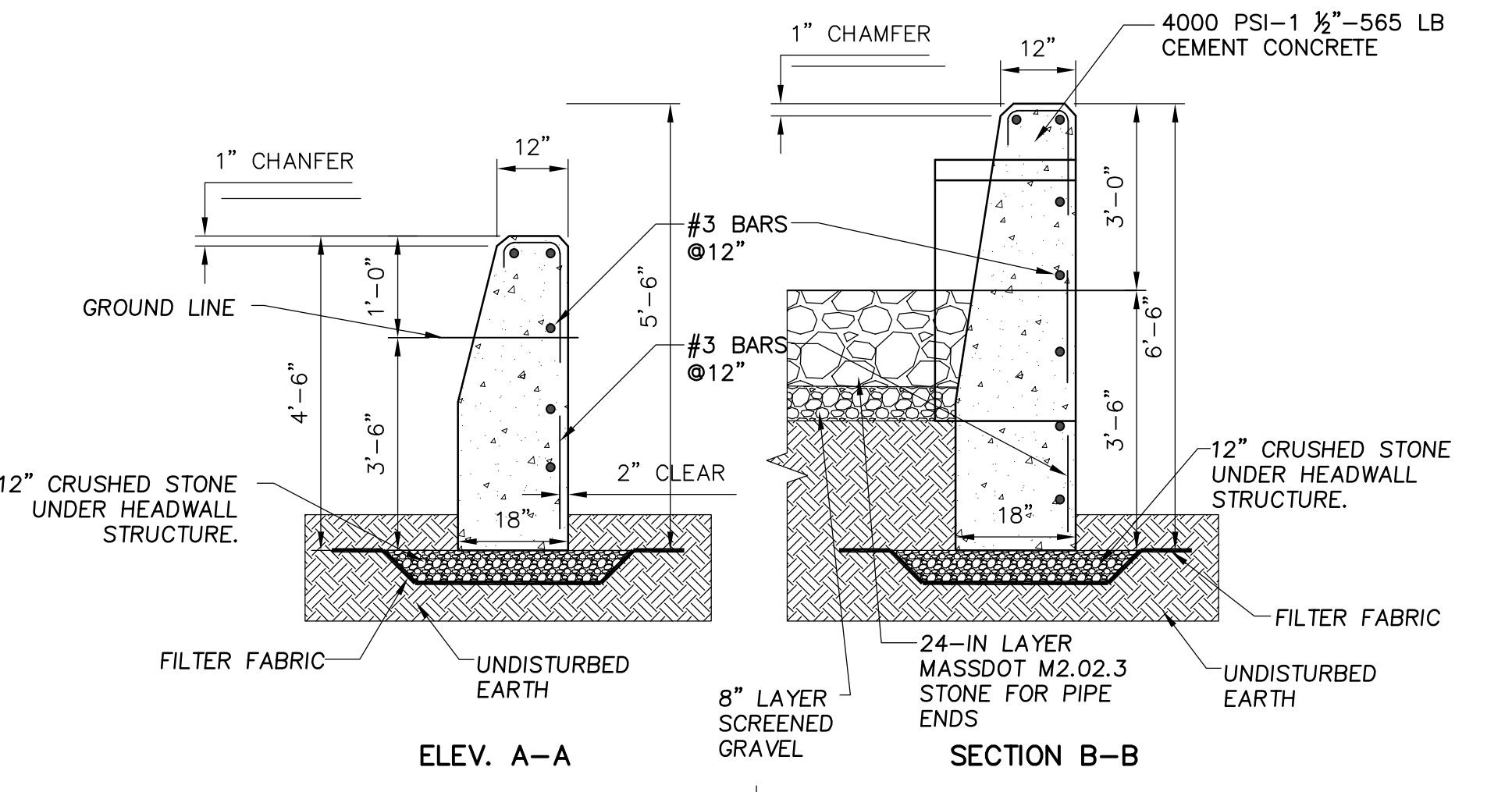
DRAIN BASIN
DETAIL E
 NOT TO SCALE CD-4



PLAN

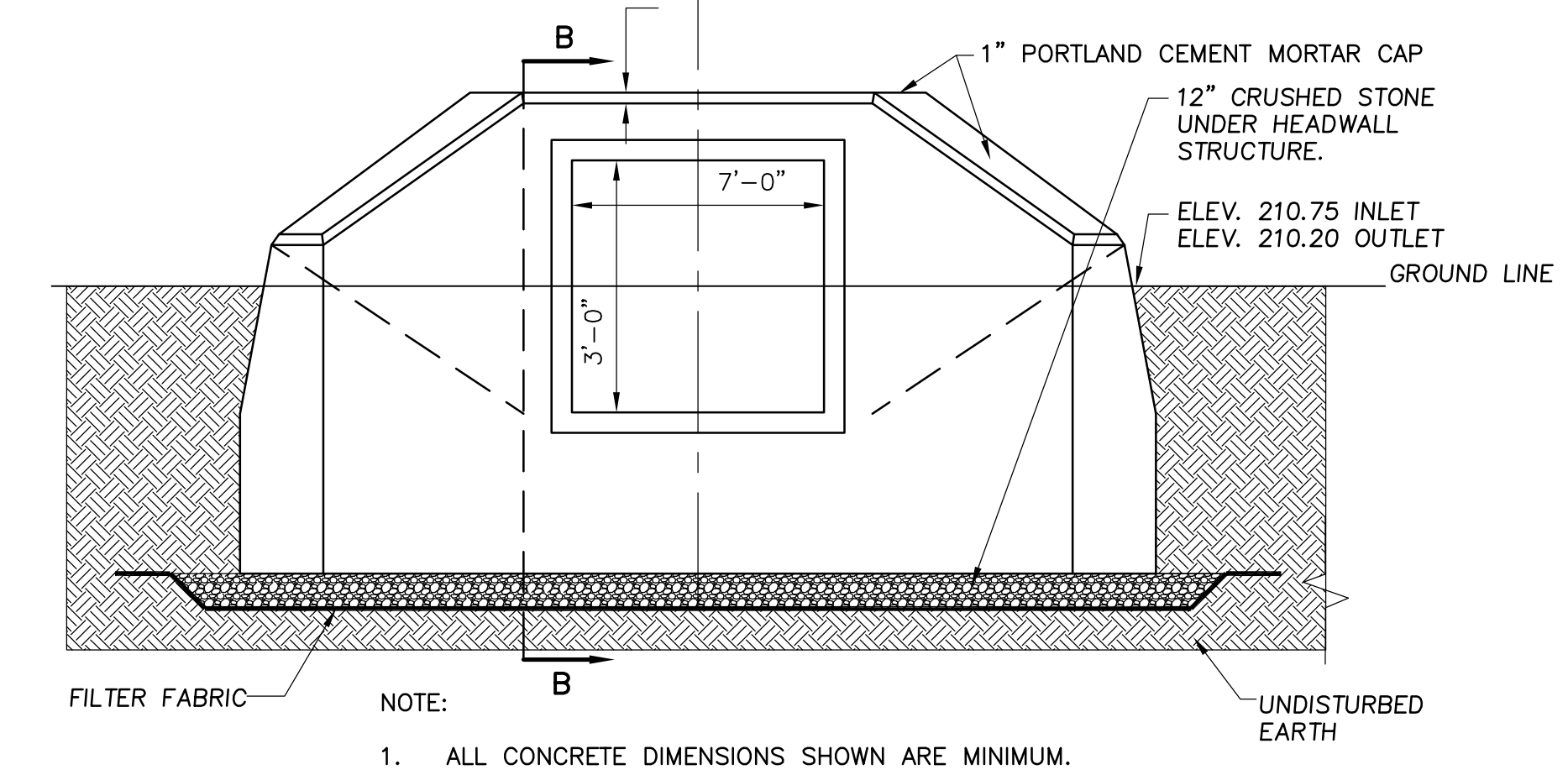


PLAN



ELEV. A-A

SECTION B-B



PRECAST EMBEDDED CONCRETE HEADWALL WITH WING WALLS
DETAIL G
 NOT TO SCALE CD-4

NOTE:
 1. ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	M.DODSON
DRAWN BY:	J. BRONENKANT
SHEET CHK'D BY:	M.DODSON
CROSS CHK'D BY:	
APPROVED BY:	X
DATE:	JUNE 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

CIVIL DETAILS IV
 CD-4

PROJECT NO.	263387-261886
FILE NAME:	CD0045TDT
SHEET NO.	CD-4

Attachment H
Littleton Common Sewer Expansion Project
90% Design Plans

**LITTLETON WATER DEPARTMENT
TOWN OF LITTLETON, MASSACHUSETTS**

LITTLETON COMMON SEWER EXPANSION AND WATER MAIN REPLACEMENT PROJECT

IFB-2022-LITTLETON COMMON SEWER EXPANSION AND WATER MAIN REPLACEMENT PROJECT

GENERAL MANAGER

NICK LAWLER

BOARD OF WATER COMMISSIONERS

JAMES KARR, CHAIR
SCOTT LARSEN, VICE-CHAIR
DICK TAYLOR, SECRETARY
BRUCE TRUMBULL
IVAN PAGACIK

WATER & WASTEWATER SUPERINTENDENT

COREY GODFREY



**100% SUBMITTAL
NOT FOR CONSTRUCTION**

JUNE 2022

LOCATION PLAN
SCALE — NTS



BOSTON, MASSACHUSETTS

Water

Environment

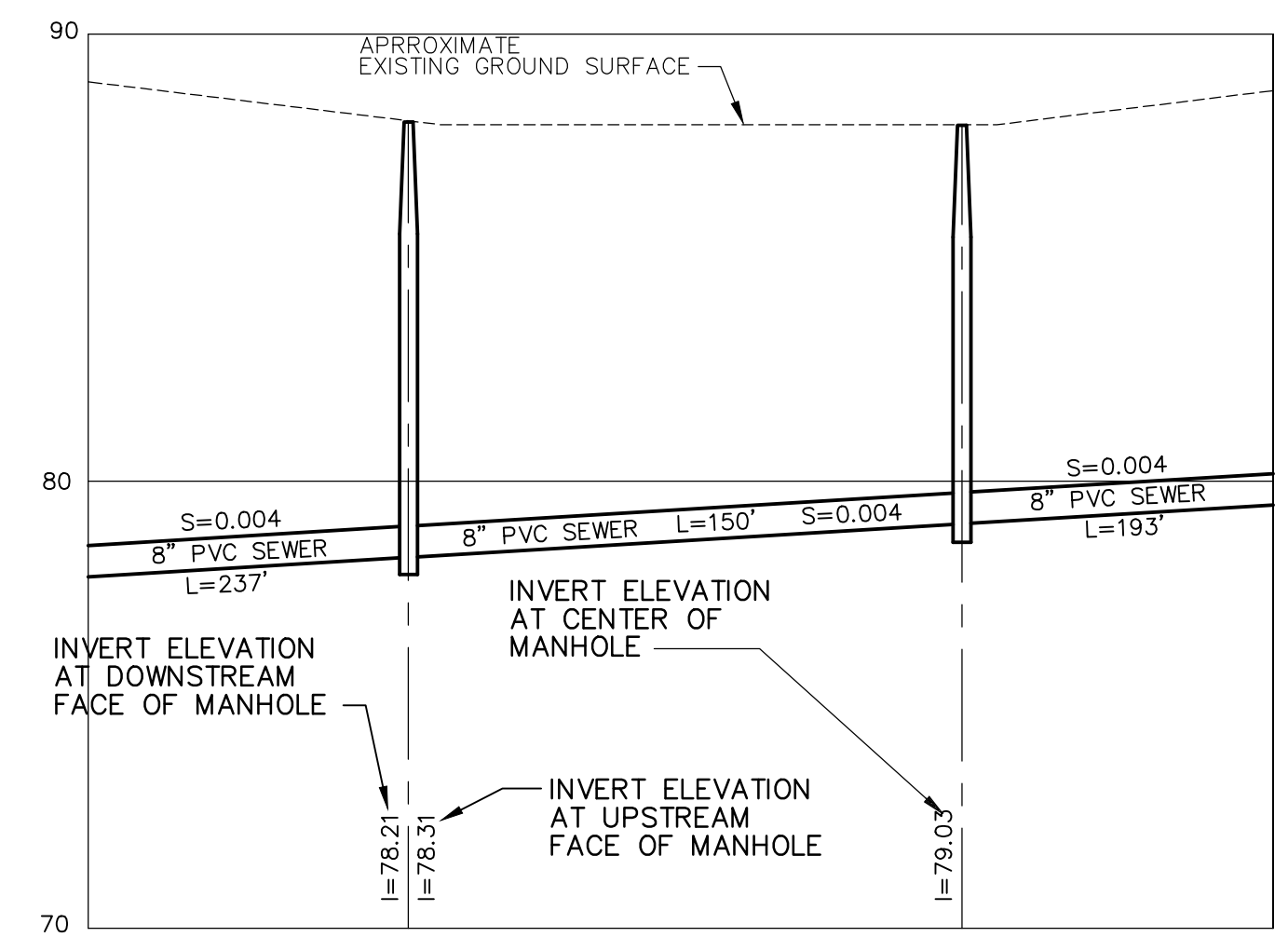
Transportation

Energy

Facilities

GENERAL NOTES:

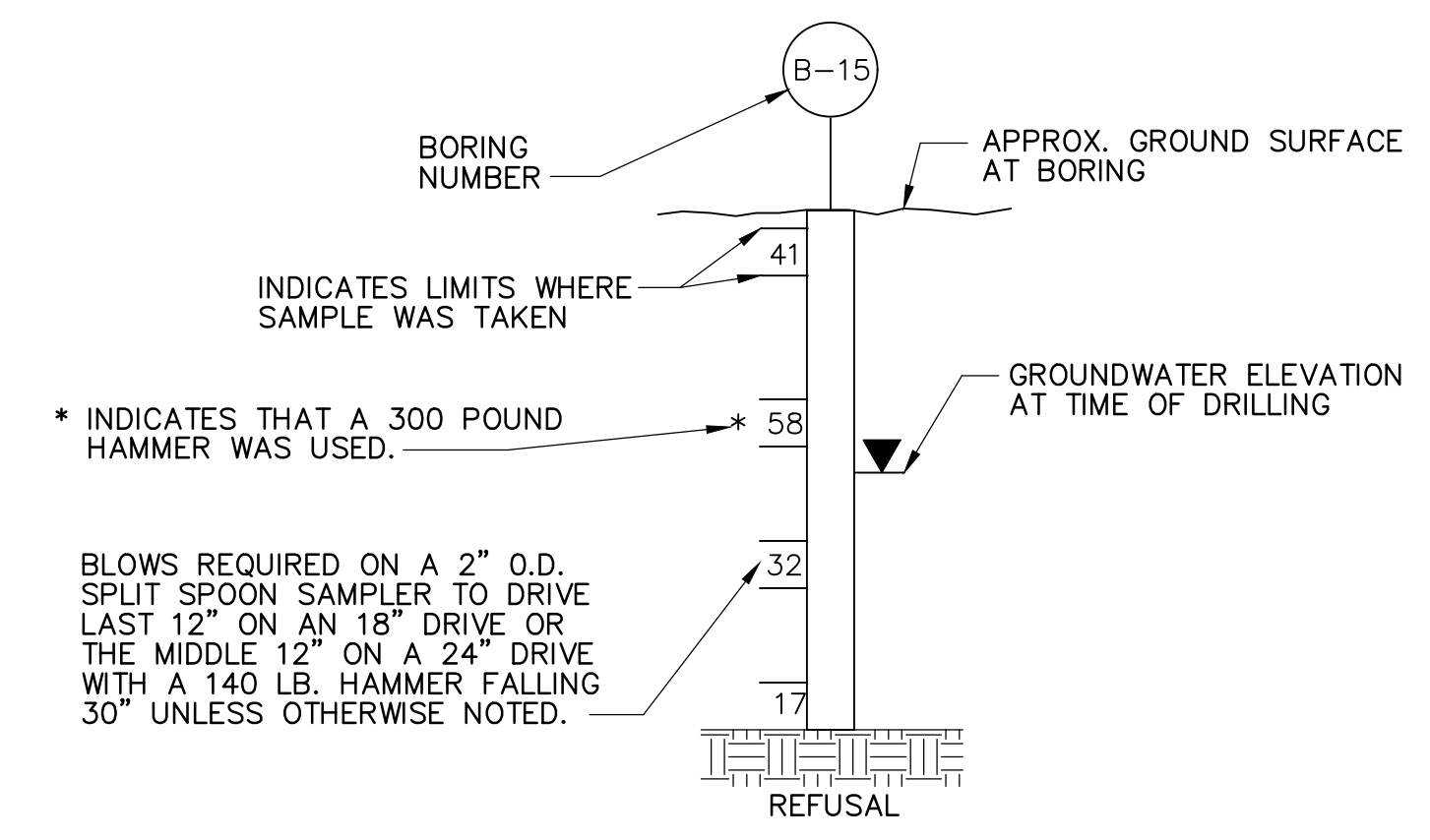
- PLANS AND TOPOGRAPHY PREPARED FROM SURVEY DEVELOPED BY DAWOOD ENGINEERING, INC. IN THE SUMMER AND FALL OF 2021.
- ALL ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) WATER SURFACE ELEVATIONS ARE THOSE OCCURRING AT TIME OF AERIAL PHOTOGRAPHY UNLESS INDICATED OTHERWISE.
- THE LOCATION OF ALL UTILITIES AND SUBSURFACE STRUCTURES WERE TAKEN FROM SURVEY AND RECORDS OF TOWN, CORPORATIONS, AND UTILITIES, ETC., AND ARE CONSIDERED APPROXIMATE, BOTH AS TO SIZE AND LOCATION AND ARE INDICATED ON THESE DRAWINGS TO GIVE BIDDERS A GENERAL IDEA OF EXISTING CONDITIONS. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACTOR SHALL NOT RELY UPON THESE DRAWINGS FOR SUCH INFORMATION, BUT SHALL MAKE EXAMINATIONS IN THE FIELD BY VARIOUS AVAILABLE METHODS AND SHALL OBTAIN INFORMATION FROM UTILITY CORPORATIONS AND INDIVIDUALS AS TO THE LOCATION OF ALL SUBSURFACE STRUCTURES, BOTH PUBLIC AND PRIVATE. IT IS NOT WARRANTED THAT ALL PIPES AND UNDERGROUND STRUCTURES ARE SHOWN NOR THAT THEY ARE SHOWN IN THE CORRECT LOCATIONS.
- GAS MAINS ARE ASSUMED TO HAVE 2.5 FEET OF COVER UNLESS SHOWN OTHERWISE. WATER MAINS ARE ASSUMED TO HAVE FIVE FEET OF COVER UNLESS SHOWN OTHERWISE. IT IS NOT WARRANTED THAT ALL UTILITIES ARE SHOWN OR SHOWN AT THE CORRECT ELEVATION.
- UNDERGROUND SERVICES TO HOUSES ARE NOT SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING, LOCATING AND PROVIDING MARKS-OUTS FOR ALL UNDERGROUND UTILITIES, BOTH PUBLIC AND PRIVATE. WORK TO BE PAID FOR UNDER MISCELLANEOUS WORK AND CLEANUP BID ITEM.
- BORINGS WERE PERFORMED BY NEW ENGLAND BORING CONTRACTORS IN THE SUMMER AND FALL OF 2021.
- BORING LOGS ARE APPENDED TO THE SPECIFICATIONS IN APPENDIX B. BORINGS ARE SHOWN IN PROFILE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT BE SHOWN AT EXACT LOCATIONS ALONG THE PIPE ALIGNMENT. GROUNDWATER ELEVATIONS SHOWN ON THE LOGS AND PROFILES ARE THOSE ENCOUNTERED AT THE TIME OF DRILLING AND MAY NOT BE REPRESENTATIVE OF ELEVATIONS ENCOUNTERED DURING CONSTRUCTION DUE TO SEASONAL FLUCTUATIONS AND OTHER FACTORS.
- NOTES AND INSTRUCTIONS TO CONTRACTOR FOR NEW WORK ARE BOXED. ALL SLOPES AND INVERTS CALLED OUT BY NUMBER REPRESENT THE SLOPES AND INVERTS TO BE CONSTRUCTED UNDER THE CONTRACT.
- LIMITS OF CLEARING AND GRUBBING ARE LIMITS OF TEMPORARY CONSTRUCTION EASEMENTS UNLESS INDICATED OTHERWISE. CONTRACTOR SHALL MINIMIZE CLEARING AND GRUBBING AS MUCH AS POSSIBLE. ALL CROSS COUNTRY AREAS SHALL BE LOAMED AND SEDED OR SODDED TO THE LIMITS DISTURBED BY CONSTRUCTION UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL NOT DISTURB ANY LAND OUTSIDE THE LIMITS OF EASEMENTS AND RIGHTS-OF-WAY. NECESSARY EASEMENTS TO BE PROVIDED BY LITTLETON WATER DEPARTMENT PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOT ENTER ANY OF THE EASEMENT AREAS UNTIL RECEIVING APPROVAL FROM THE LITTLETON WATER DEPARTMENT.
- NEW SEWER MANHOLE LOCATIONS ARE APPROXIMATE AND MAY BE ALTERED TO MINIMIZE PIPE CUTTING WHEN DIRECTED BY THE ENGINEER.
- WHEN THE HORIZONTAL SEPARATION BETWEEN THE NEW SEWER AND EXISTING OR RELOCATED WATER MAIN IS LESS THAN 10'-FT. AND THE VERTICAL SEPARATION IS LESS THAN 18"-IN. THE NEW SEWER SHALL BE CONSTRUCTED OF RESTRAINED MJDI OR CONCRETE ENCASED PIPE FOR A MINIMUM OF 10'-FT. BEYOND WHERE THE SPACING IS LESS THAN 10'-FT. HORIZONTAL AND 18"-IN. VERTICAL.
- IF A WATER MAIN CROSSES UNDER THE NEW SEWER, BOTH PIPES SHALL BE DUCTILE IRON OR CONCRETE ENCASED FOR A MINIMUM OF 10'-FT. TO EITHER SIDE OF THE RESPECTIVE CENTER LINES. DUCTILE IRON PIPE SHALL BE PAID UNDER THE RESPECTIVE PIPE ITEMS. CONCRETE ENCASEMENT SHALL BE PAID UNDER MISCELLANEOUS CONCRETE ITEM.
- WATER MAINS SHALL BE INSTALLED WITH 5 FEET MINIMUM DEPTH OF COVER OVER CROWN OF NEW MAIN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- NEW SEWER SERVICE CONNECTIONS SHALL BE INSTALLED SUCH THAT THEY ARE BENEATH THE NEW WATER MAIN AND WATER SERVICE CONNECTIONS WHILE STILL MAINTAINING 5 FEET MINIMUM DEPTH OF COVER ON NEW WATER MAINS AND SERVICE CONNECTIONS. ALL NEW SEWER SERVICES SHALL BE INSTALLED WITH A MINIMUM OF 7.5 FEET OF COVER WHEREVER POSSIBLE.
- ALL DI FORCE MAINS AND WATER MAINS SHALL HAVE RESTRAINED JOINTS ON EACH SIDE OF ALL FITTINGS AS INDICATED IN THE TABLE ON MISCELLANEOUS DETAILS SHEET II.
- THE CONTRACTOR SHALL BE AWARE THAT THIS CONTRACT REQUIRES WORKING IN LIVE SEWER MANHOLES AND SHALL FOLLOW ALL FEDERAL, STATE AND LOCAL REQUIREMENTS FOR SAFETY WHEN IN CONFINED SPACES. THE CONTRACTOR IS ALSO REFERRED TO RECOMMENDATIONS IN THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH PUBLICATION NO. 80-106, "WORKING IN CONFINED SPACES".
- CONTRACTOR SHALL PROTECT AGAINST SILTATION OF WETLANDS AS SPECIFIED IN SECTION 312500. EROSION AND SEDIMENTATION CONTROLS AND SHALL COMPLY WITH ALL REQUIREMENTS CONTAINED IN THE ORDER OF CONDITIONS APPENDED TO THE SPECIFICATIONS IN APPENDIX A. FILTER BAGS SHALL BE PLACED IN ALL CATCH BASINS SUBJECT TO RUNOFF FROM CONSTRUCTION AREAS. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL RECEIVING APPROVAL OF THE CONTRACTOR'S WORK PLAN AND DEWATERING PLAN FROM THE TOWN OF LITTLETON CONSERVATION COMMISSION.
- EXACT LOCATIONS OF WYE BRANCHES FOR HOUSE CONNECTIONS TO BE DETERMINED IN THE FIELD. 6-IN SERVICE CONNECTIONS SHALL BE INSTALLED TO THE STREET RIGHT-OF-WAY OR EDGE OF PERMANENT EASEMENT UNLESS OTHERWISE NOTED AND/OR DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL FURNISH AND INSTALL WYE BRANCHES, 6" PVC SERVICE CONNECTION PIPE AND CHIMNEYS TO BUILDABLE VACANT LOTS WHERE DIRECTED BY THE ENGINEER. ADDITIONAL QUANTITIES HAVE BEEN INCLUDED FOR THESE ITEMS IN THE BID FORM.
- ALL DROP MANHOLE CONNECTIONS SHALL BE INTERNAL DROP CONNECTIONS. EXTERNAL DROP CONNECTIONS HAVE BEEN SHOWN IN PROFILES FOR GRAPHICAL PURPOSES ONLY. MINIMUM 5 FOOT DIAMETER MANHOLES SHALL BE USED AT ALL INTERNAL DROP CONNECTION MANHOLES.
- CONTRACTOR TO MAINTAIN FLOW IN EXISTING DRAINS AT ALL TIMES.
- THE CONTRACTOR SHALL HAVE ON SITE A SUPPLY OF 1'-FT AND 2'-FT MANHOLE RISER SECTIONS AND FLAT SLAB TOPS TO ADJUST THE MANHOLE FINISHED GRADES AS REQUIRED TO FIT THE ACTUAL ELEVATION OF THE GROUND OR ROAD SURFACE AT THE TIME OF CONSTRUCTION.
- CONTRACTOR SHALL FOLLOW TOWN REGULATIONS FOR ALL "TOWN" TREES TO BE CUT/TRIMMED AND OR REMOVED WITHIN THE LIMITS OF THE TOWN RIGHT-OF-WAY.
- CONTRACTOR SHALL CONFIRM ROAD PROFILE ELEVATIONS PRIOR TO ORDERING MANHOLE SECTIONS.
- TEST PITS SHALL BE EXCAVATED AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL OBTAIN THE LOCATION OF THE UTILITY IN QUESTION WITH TIES TO SURROUNDING FEATURES AND THE ELEVATION OF BOTH THE TOP AND BOTTOM OF THE UTILITY/STRUCTURE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING WATER SERVICE DURING CONSTRUCTION. CONTRACTOR TO PROVIDE TEMPORARY WATER SERVICE CONNECTIONS TO EACH PROPERTY THAT IS AFFECTED BY SHUTTING DOWN OF EXISTING WATER MAINS WHEN NEW WATER MAIN IS NOT YET AVAILABLE FOR SERVICE.
- BYPASS PIPING ON ALL STREETS SHALL BE 4" MINIMUM ON THE HYDRANT SIDE AND 2" MINIMUM ON THE NON-HYDRANT SIDE. BYPASS PLANS SHALL BE SUBMITTED AND APPROVED ONE WEEK PRIOR TO COMMENCING WATER MAIN INSTALLATION. REFER TO SPEC SECTION 015000 FOR ADDITIONAL INFORMATION.
- WHERE THE BYPASS CROSSES DRIVEWAYS AND SIMILAR ACCESS WAYS TO PROPERTIES, A PREFABRICATED RUBBER OR PLASTIC RAMP SHALL BE INSTALLED AND MAINTAINED TO ALLOW DRIVING AND PASSING OVER THE PIPE EXCEPT WHERE THE ENGINEER REQUIRES BYPASS TO BE LAID IN A TRENCH WITH TEMPORARY PAVEMENT PLACED OVER IT.
- ALL TRAFFIC MAINTENANCE MEASURES SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- CONTRACTOR SHALL COORDINATE CONSTRUCTION SCHEDULE AND POTENTIAL GAS CONFLICTS WITH NATIONAL GRID GAS.
- CUTTING AND CAPPING OF WATER MAINS AND BYPASS IS ANCILLARY TO THE WORK.
- WHERE REQUIRED IN ORDER TO FACILITATE NEW CONSTRUCTION, CONTRACTOR SHALL REMOVE AND DISPOSE EXISTING A.C. WATER MAIN IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
- PROTECT ALL EXISTING CURBING DURING CONSTRUCTION. REMOVE AND REPLACE WITH NEW ANY CURBING DAMAGED DURING CONSTRUCTION OPERATIONS.
- PRIOR TO CONSTRUCTION AND/OR TEMPORARY FLOW INTERRUPTIONS, CONTRACTOR MUST COORDINATE WITH LWD TO VERIFY WHICH VALVES AND CONNECTIONS IN AND AROUND THE WORK SITE ARE OPERATIONAL. LWD SHALL OPERATE THE EXISTING VALVES ONLY.
- PAVEMENT REPLACEMENT SHALL NOT OCCUR UNTIL THE ENGINEER HAS RECEIVED ALL SOIL TESTING RESULTS AND APPROVED THE COMPACTED BACKFILL MATERIAL AS SPECIFIED IN SECTION 312333 OF THE SPECIFICATIONS.
- THE OWNER DOES NOT GUARANTEE A TIGHT SHUT DOWN OF EXISTING VALVES. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING EXISTING WATER MAINS, CONTROL OF LEAKAGE AND DISPOSAL OF WATER IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS. CONTRACTOR IS REQUIRED TO HANDLE LEAKAGE OF UP TO 100 GALLONS PER MINUTE AT EACH VALVE THAT IS CLOSED TO FACILITATE THE WORK.



INVERT ELEVATION DESIGNATIONS

LEGEND

- ASPHALT PAVEMENT
- SAND
- SILTY SAND
- SAND AND GRAVEL
- VACUUM EXPLORATION
- WEATHERED ROCK



NOTE:
FOR STRATA DESCRIPTIONS,
SEE BORING LOGS APPENDED
TO THE SPECIFICATIONS

TYPICAL BORING LOG

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DESIGNED BY: M. WINTER
 DRAWN BY: R. PAWAR
 SHEET CHK'D BY: H. SULLIVAN
 CROSS CHK'D BY: M. GUIDICE
 APPROVED BY: X
 DATE: APRIL 2022

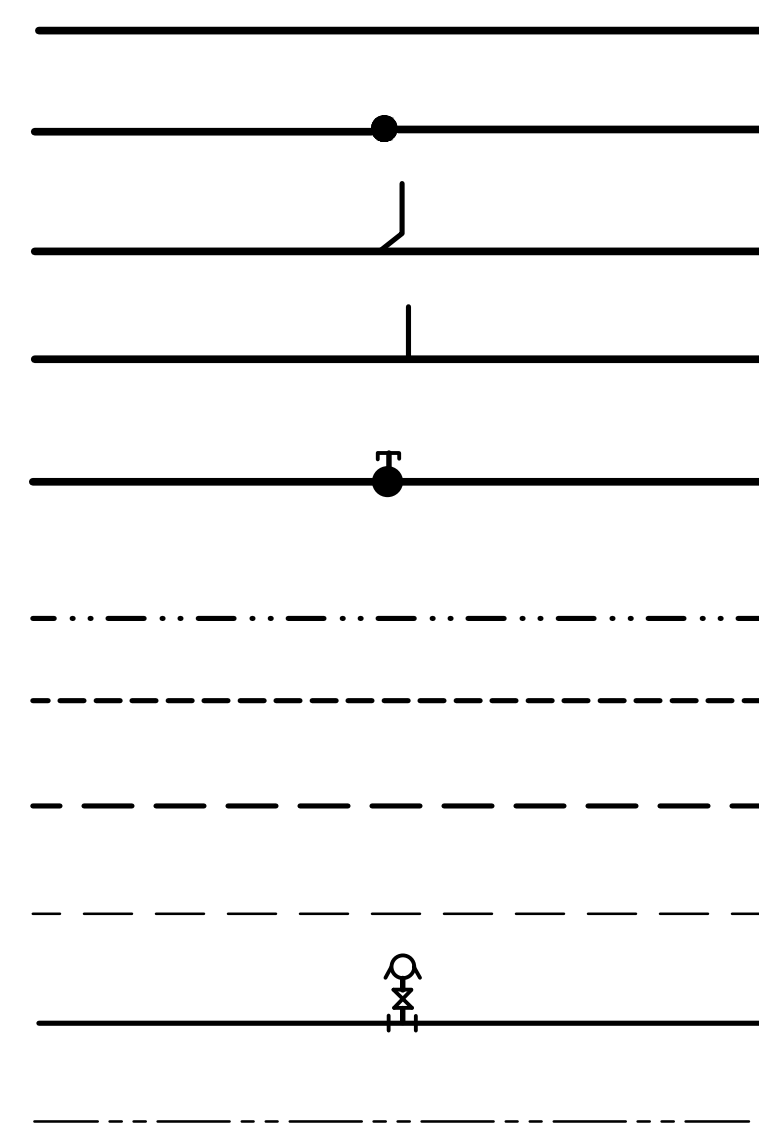


LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

LEGEND AND GENERAL NOTES

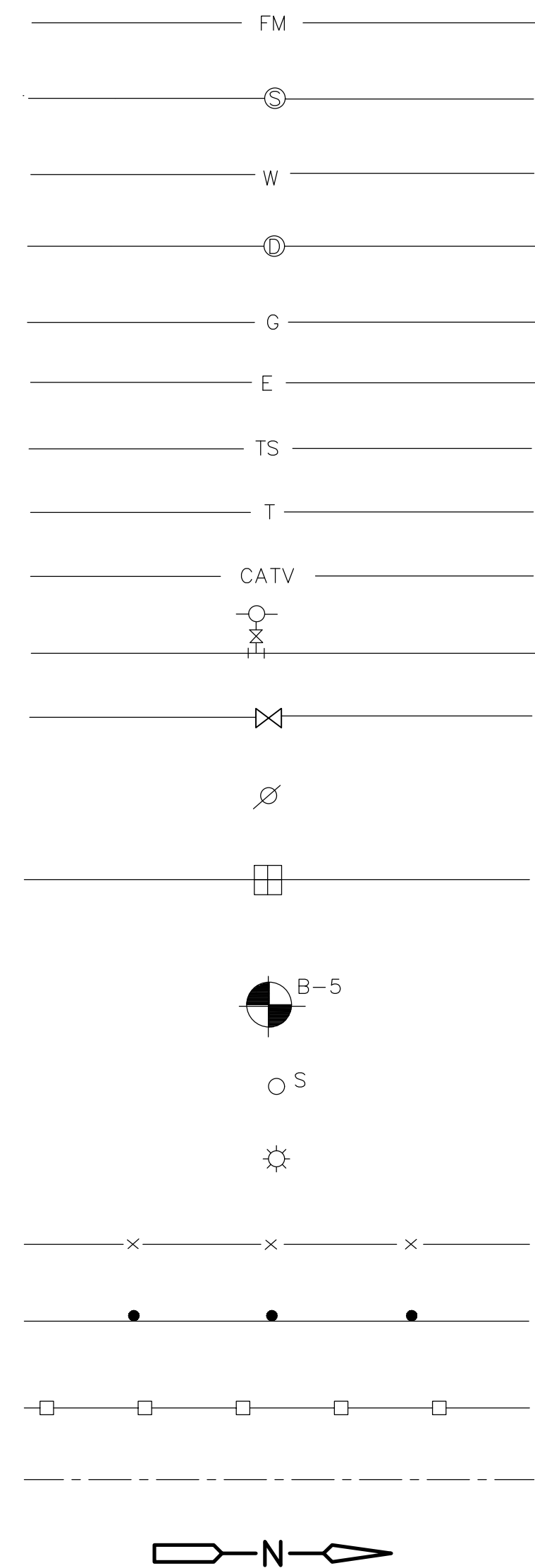
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 FILE NAME: G001LGND.DWG
 SHEET NO.
G-1

NEW



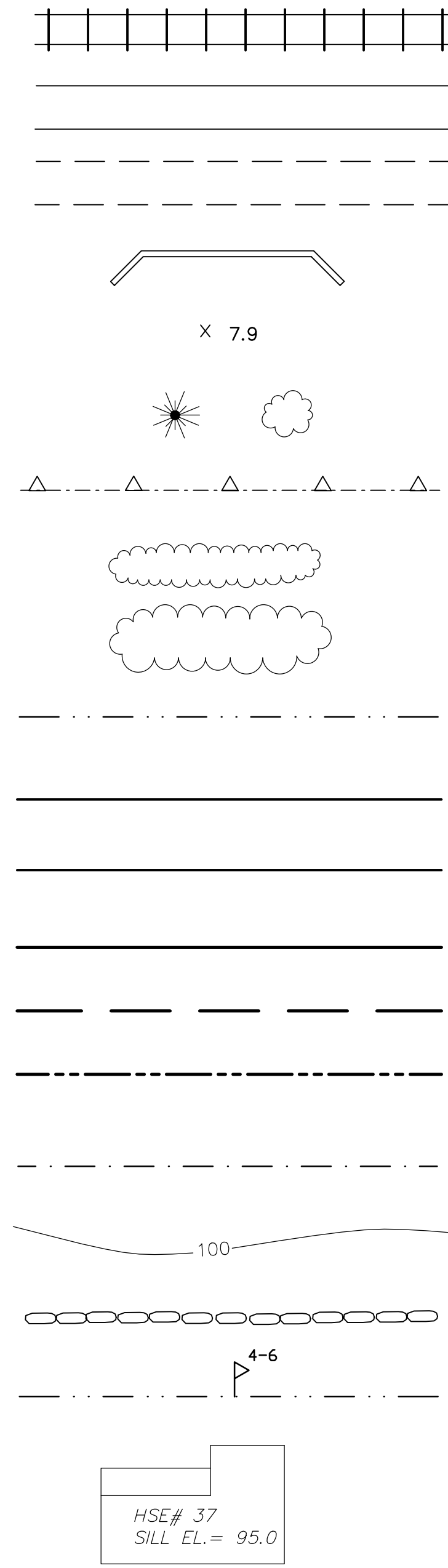
NEW SEWER
 NEW MANHOLE / PRESSURE SEWER FLUSHING CONNECTION
 NEW WYE-BRANCH & SERVICE CONNECTION ON PVC SEWER
 NEW TEE AND SERVICE CONNECTION ON PRESSURE SEWER
 NEW MANHOLE WITH PLUGGED STUB
 NEW PRESSURE SEWER
 NEW FORCE MAIN
 NEW SEWER SHOWN ON OTHER SHEET UNDER THIS CONTRACT
 PROPOSED SEWER BY OTHERS
 NEW WATER MAIN WITH HYDRANT
 NEW EASEMENT LINE

EXISTING



FORCE MAIN
 SEWER & MANHOLE
 WATER MAIN
 STORM DRAIN
 GAS MAIN
 UNDERGROUND ELECTRIC
 TRAFFIC SIGNAL WIRE
 UNDERGROUND TELEPHONE
 UNDERGROUND CABLE TELEVISION
 HYDRANT
 GATE VALVE
 UTILITY POLE
 CATCH BASIN
 BORING
 SIGN
 STREET LIGHT
 WIRE OR WOOD FENCE
 GUARD RAIL
 CHAIN LINK FENCE
 PROPERTY LINE
 NORTH ARROW

LEGEND



RAILROAD
 PAVED ROAD
 GRAVEL ROAD
 RETAINING WALL
 SPOT ELEVATION
 TREES
 ROCK RETAINING WALL
 HEDGE
 EDGE OF WOODS
 WETLANDS
 100-YR FLOOD ELEVATION
 TOP OF COASTAL BANK
 LAND SUBJECT TO COASTAL STORM FLOWAGE (LSCSF)
 LIMIT OF 100-FT BUFFER ZONE TO WETLAND
 LIMIT OF 50-FT BUFFER ZONE COMPOST LOG BORDERING LAND SUBJECT TO FLOODING
 STREAM, WATERLINE
 CONTOUR
 STONE WALL
 LIMITS OF WETLAND WITH NUMBER AND LOCATION OF WETLAND FLAG
 HOUSES WITH STREET NUMBER AND SILL ELEVATION

ABBREVIATIONS

CL CEMENT LINED
 CI CAST IRON
 DI DUCTILE IRON
 RC(P) REINFORCED CONCRETE (PIPE)
 PVC POLYVINYL CHLORIDE
 CM(P) CORRUGATED METAL (PIPE)
 CP(P) CORRUGATED PLASTIC (PIPE)
 AC ASBESTOS CEMENT
 VC VITRIFIED CLAY
 I= INVERT ELEVATION
 MH MANHOLE
 BFV BUTTERFLY VALVE
 GV GATE VALVE
 W WATER
 D STORM DRAIN
 G GAS
 E ELECTRIC
 T TELEPHONE
 CATV CABLE TELEVISION
 MB MAIL BOX
 CB CATCH BASIN
 S SLOPE
 M.JDI MECHANICAL JOINT DUCTILE IRON

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 SHEET CHK'D BY: H. SULLIVAN
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 APPROVED BY: X
 DATE: APRIL 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

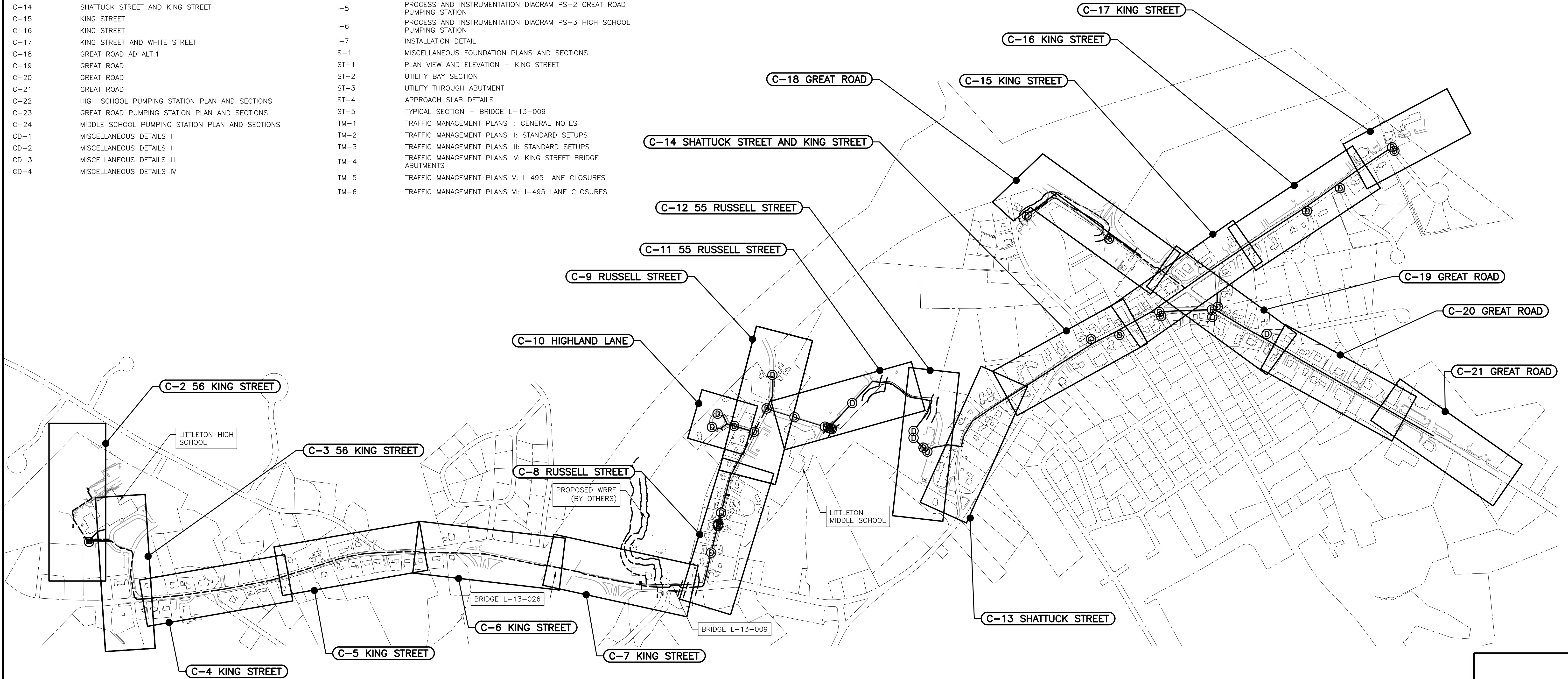
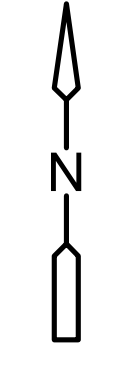
LEGEND AND ABBREVIATIONS
 SHEET NO.
G-2

PROJECT NO. 263387-261886
 FILE NAME: G002LGND.DWG
 SHEET NO.
G-2

LIST OF DRAWINGS

SHEET	TITLE
G-1	LEGEND AND GENERAL NOTES
G-2	LEGEND AND ABBREVIATIONS
C-1	KEY PLAN AND LIST OF DRAWINGS
C-2	56 KING STREET
C-3	56 KING STREET
C-4	KING STREET
C-5	KING STREET
C-6	KING STREET
C-7	KING STREET
C-8	RUSSELL STREET
C-9	RUSSELL STREET
C-10	HIGHLAND LANE
C-11	55 RUSSELL STREET
C-12	55 RUSSELL STREET
C-13	SHATTUCK STREET
C-14	SHATTUCK STREET AND KING STREET
C-15	KING STREET
C-16	KING STREET
C-17	KING STREET AND WHITE STREET
C-18	GREAT ROAD AD ALT.1
C-19	GREAT ROAD
C-20	GREAT ROAD
C-21	GREAT ROAD
C-22	HIGH SCHOOL PUMPING STATION PLAN AND SECTIONS
C-23	GREAT ROAD PUMPING STATION PLAN AND SECTIONS
C-24	MIDDLE SCHOOL PUMPING STATION PLAN AND SECTIONS
CD-1	MISCELLANEOUS DETAILS I
CD-2	MISCELLANEOUS DETAILS II
CD-3	MISCELLANEOUS DETAILS III
CD-4	MISCELLANEOUS DETAILS IV

E-1	ELECTRICAL GENERAL NOTES
E-2	ELECTRICAL SYMBOLS AND ABBREVIATIONS I
E-3	ELECTRICAL SYMBOLS AND ABBREVIATIONS II
E-4	ELECTRICAL HIGH SCHOOL PUMPING STATION SITE PLAN
E-5	ELECTRICAL GREAT ROAD PUMPING STATION SITE PLAN
E-6	ELECTRICAL MIDDLE SCHOOL PUMPING STATION SITE PLAN
E-7	ELECTRICAL HIGH SCHOOL PUMPING STATION ONE-LINE DIAGRAM
E-8	ELECTRICAL GREAT ROAD PUMPING STATION ONE-LINE DIAGRAM
E-9	ELECTRICAL MIDDLE SCHOOL PUMPING STATION ONE-LINE DIAGRAM
E-10	ELECTRICAL RISER DIAGRAM
E-11	ELECTRICAL STANDARD DETAILS I
I-1	PROCESS AND INSTRUMENTATION DIAGRAM LEGEND I
I-2	PROCESS AND INSTRUMENTATION DIAGRAM LEGEND II
I-3	PROCESS AND INSTRUMENTATION DIAGRAM CONTROL SYSTEM ARCHITECTURE
I-4	PROCESS AND INSTRUMENTATION DIAGRAM PS-1 MIDDLE SCHOOL PUMPING STATION
I-5	PROCESS AND INSTRUMENTATION DIAGRAM PS-2 GREAT ROAD PUMPING STATION
I-6	PROCESS AND INSTRUMENTATION DIAGRAM PS-3 HIGH SCHOOL PUMPING STATION
I-7	INSTALLATION DETAIL
S-1	MISCELLANEOUS FOUNDATION PLANS AND SECTIONS
ST-1	PLAN VIEW AND ELEVATION - KING STREET
ST-2	UTILITY BAY SECTION
ST-3	UTILITY THROUGH ABUTMENT
ST-4	APPROACH SLAB DETAILS
ST-5	TYPICAL SECTION - BRIDGE L-13-009
TM-1	TRAFFIC MANAGEMENT PLANS I: GENERAL NOTES
TM-2	TRAFFIC MANAGEMENT PLANS II: STANDARD SETUPS
TM-3	TRAFFIC MANAGEMENT PLANS III: STANDARD SETUPS
TM-4	TRAFFIC MANAGEMENT PLANS IV: KING STREET BRIDGE ABUTMENTS
TM-5	TRAFFIC MANAGEMENT PLANS V: I-495 LANE CLOSURES
TM-6	TRAFFIC MANAGEMENT PLANS VI: I-495 LANE CLOSURES



KEY PLAN
SCALE - 1" = 400'

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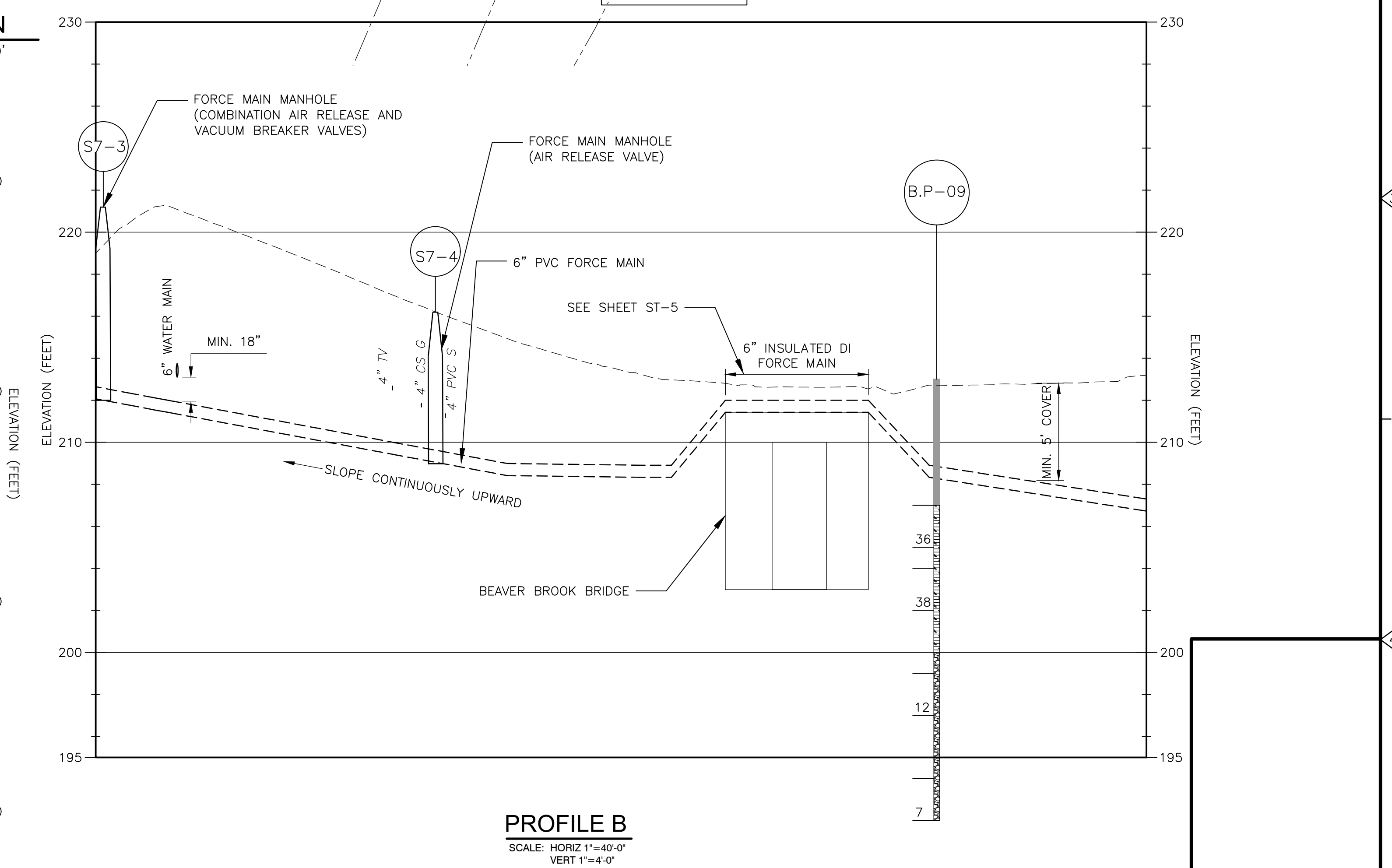
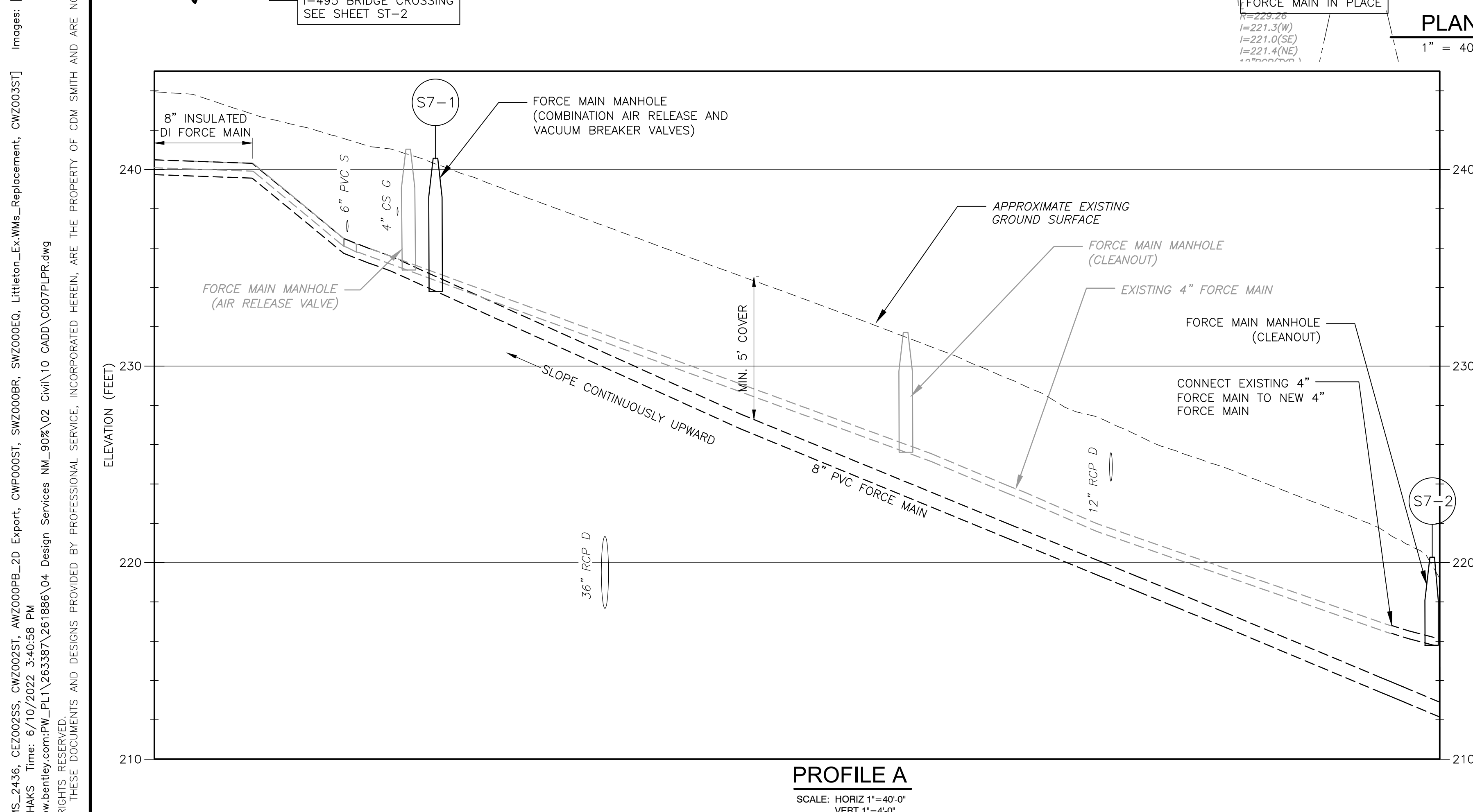
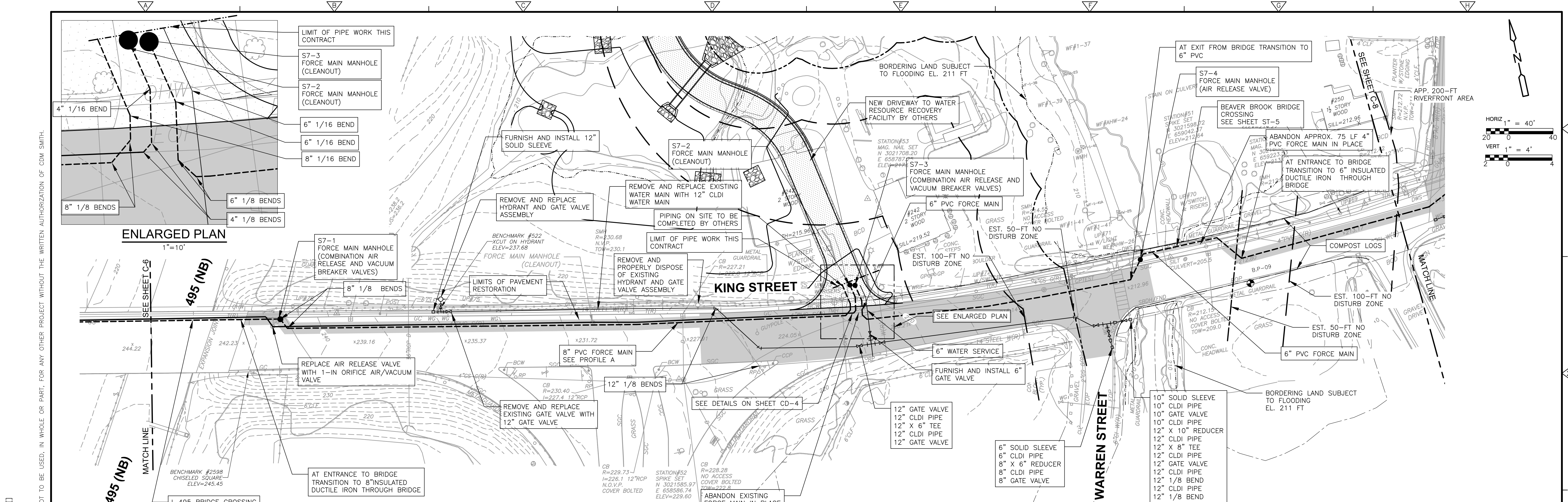
DESIGNED BY:	M. WINTER
DRAWN BY:	R. PAWAR
SHEET CHK'D BY:	H. SULLIVAN
CROSS CHK'D BY:	M. GUIDICE
APPROVED BY:	X
DATE:	APRIL 2022



LITTLETON WATER DEPARTMENT
LITTLETON COMMON SEWER EXPANSION AND
WATER MAIN REPLACEMENT PROJECT

KEY PLAN AND LIST OF DRAWINGS

PROJECT NO.	263387-261886
FILE NAME:	C001PLPR.DWG
SHEET NO.	C-1



REV. NO.	DATE	DRWN	CHKD	REMARKS

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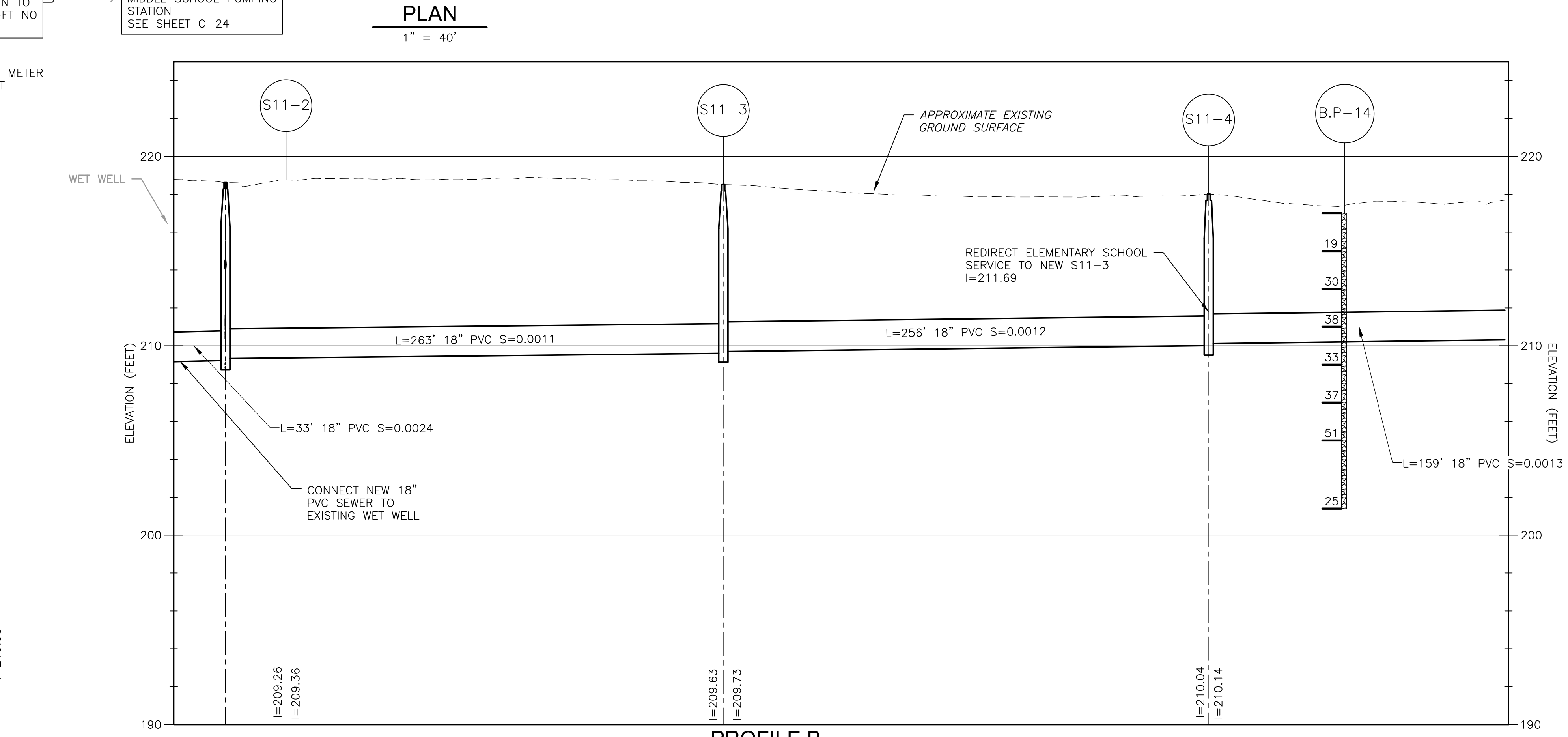
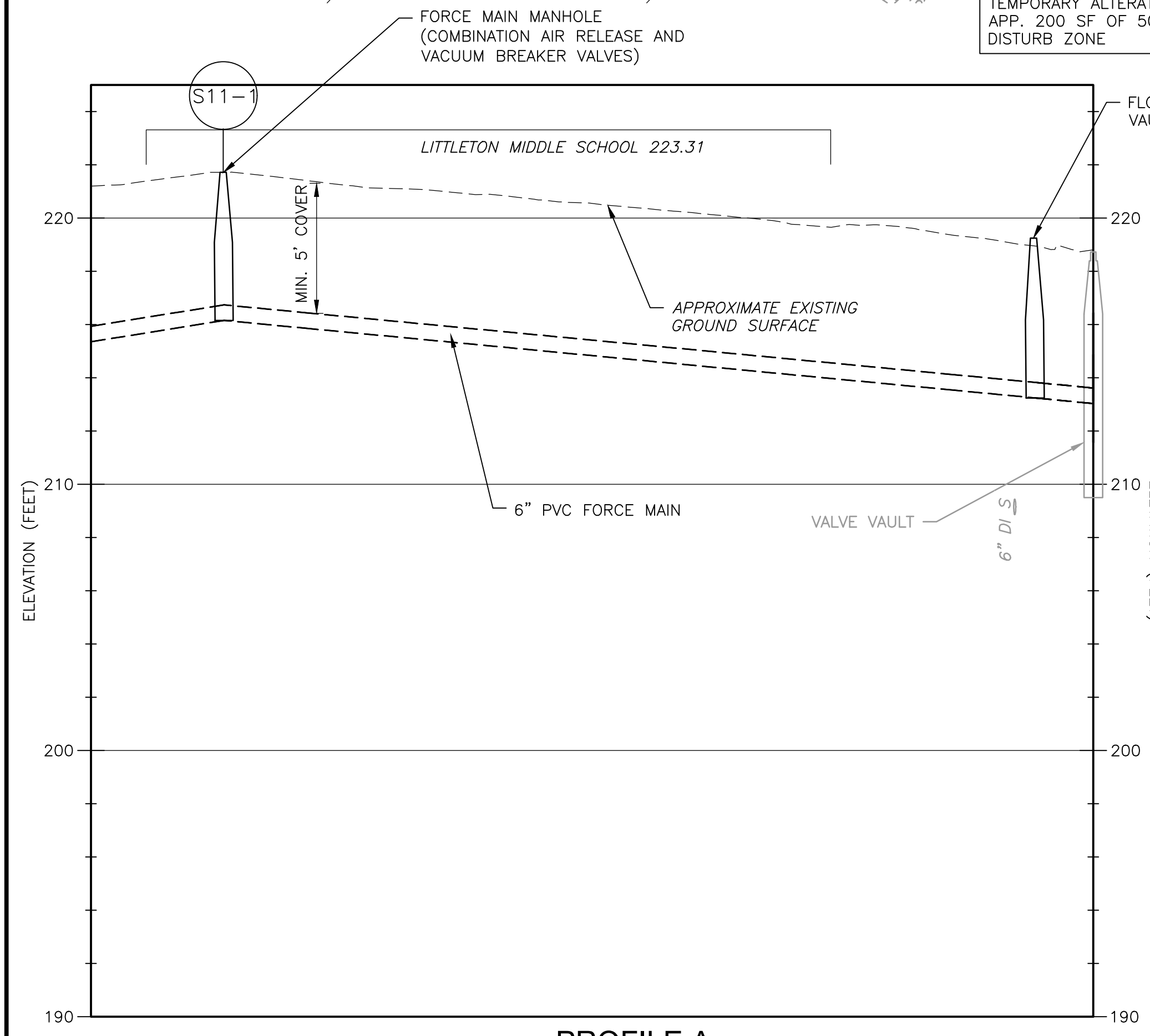
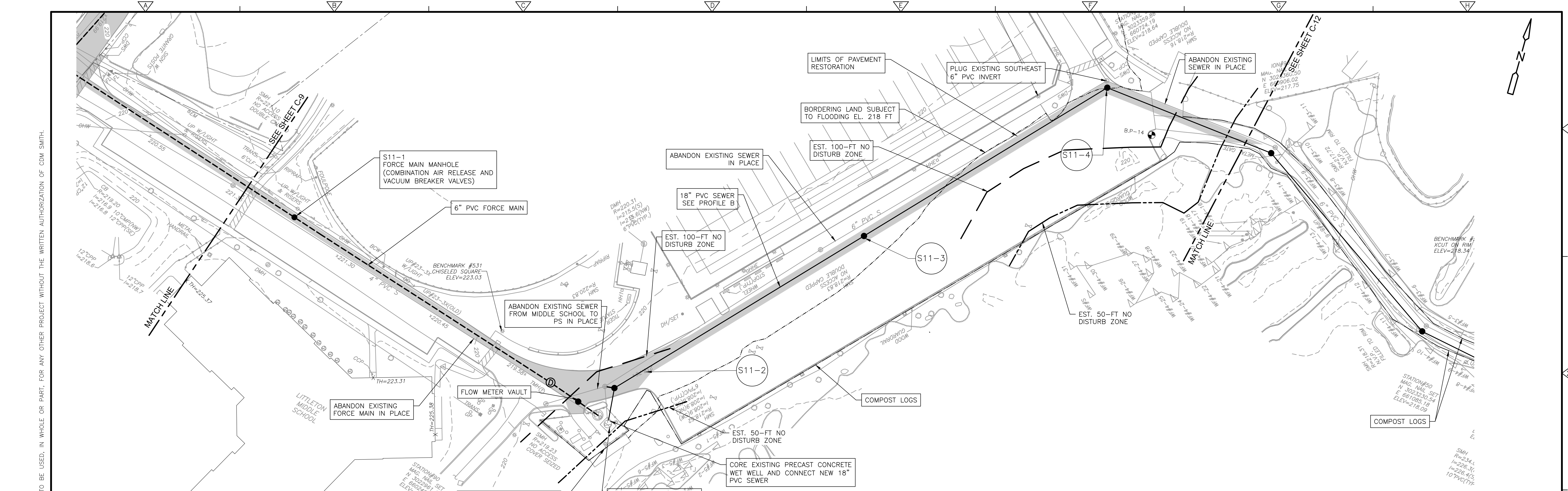
LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

KING STREET
 SHEET NO. C-7

PROJECT NO. 263387-261886
 FILE NAME: C007PLPR.DWG
 SHEET NO. C-7

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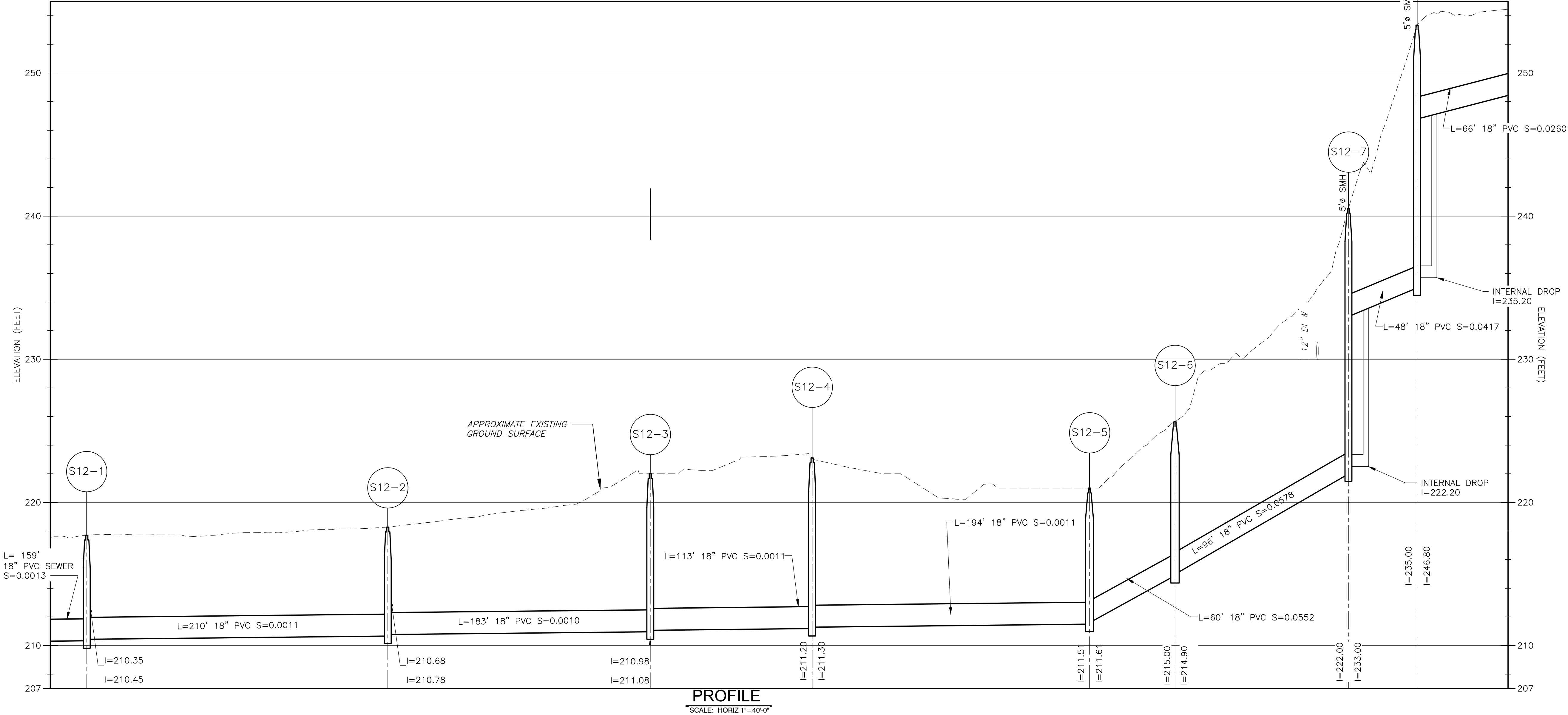
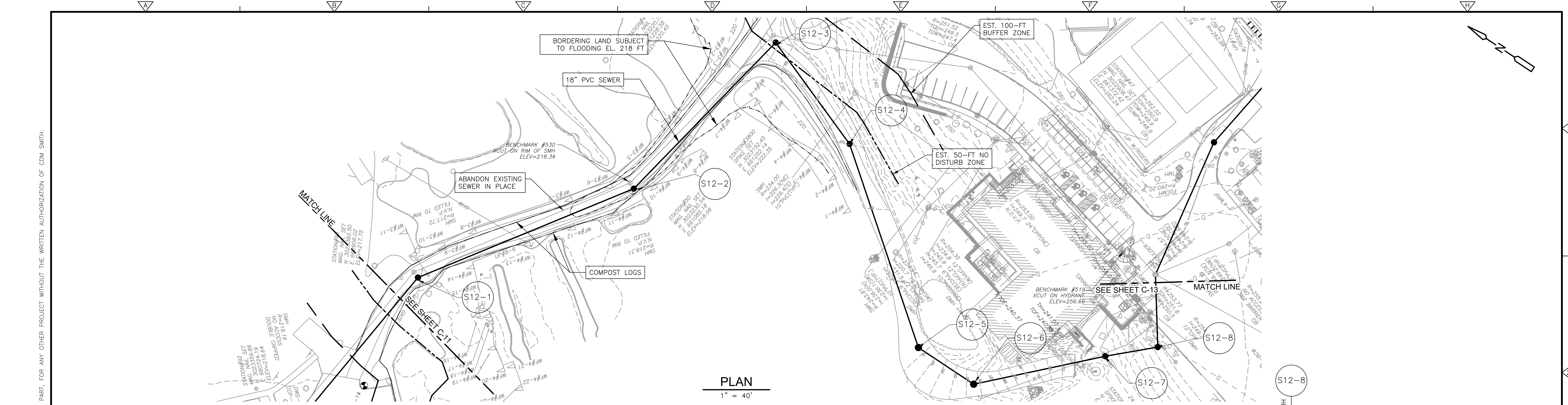
DESIGNED BY: M. WINTER
 DRAWN BY: R. PAWAR
 SHEET CHK'D BY: H. SULLIVAN
 CROSS CHK'D BY: M. GUIDICE
 APPROVED BY: X
 DATE: APRIL 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-6000

LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

55 RUSSELL STREET
 SHEET NO. C-11

PROJECT NO. 263387-261886
 FILE NAME: C011PLPR.DWG
 SHEET NO. C-11



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REV. NO.	DATE	DRWN	CHKD	REMARKS

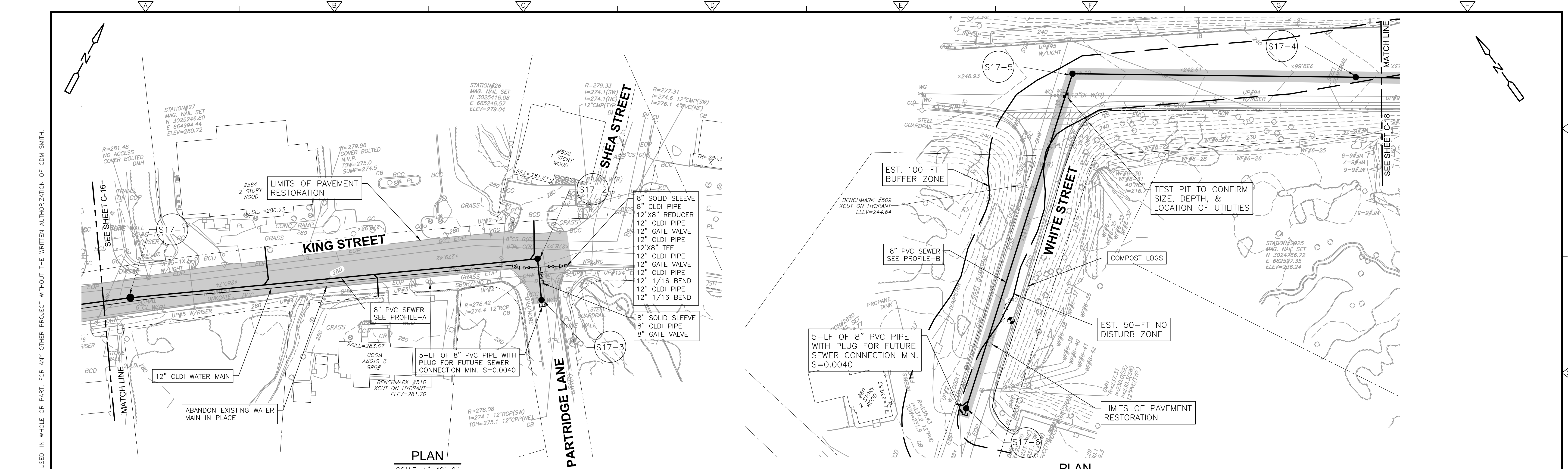
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CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-6000

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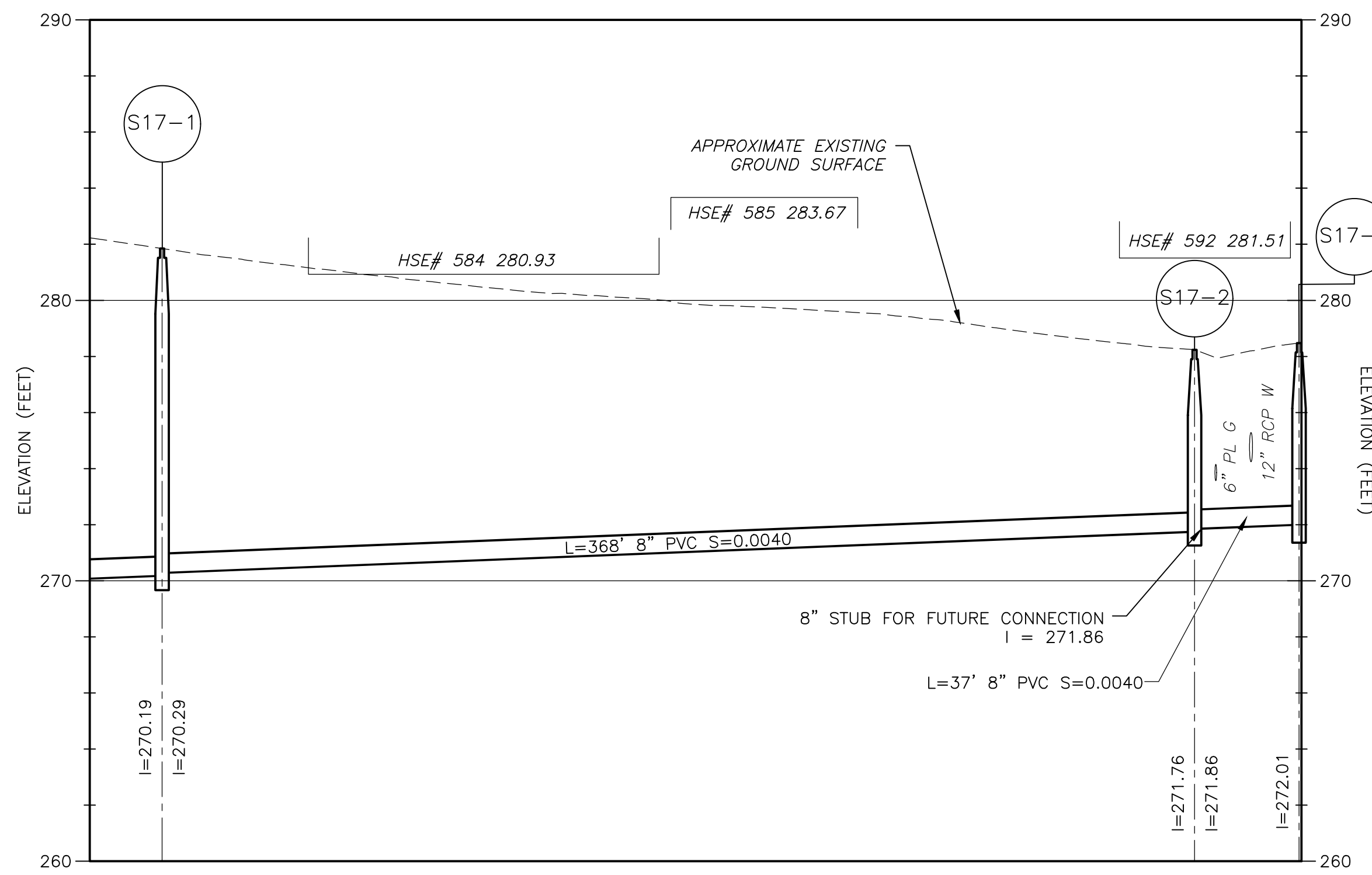
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 SHEET NO.
C-12

PROJECT NO. 263387-261886
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C-12

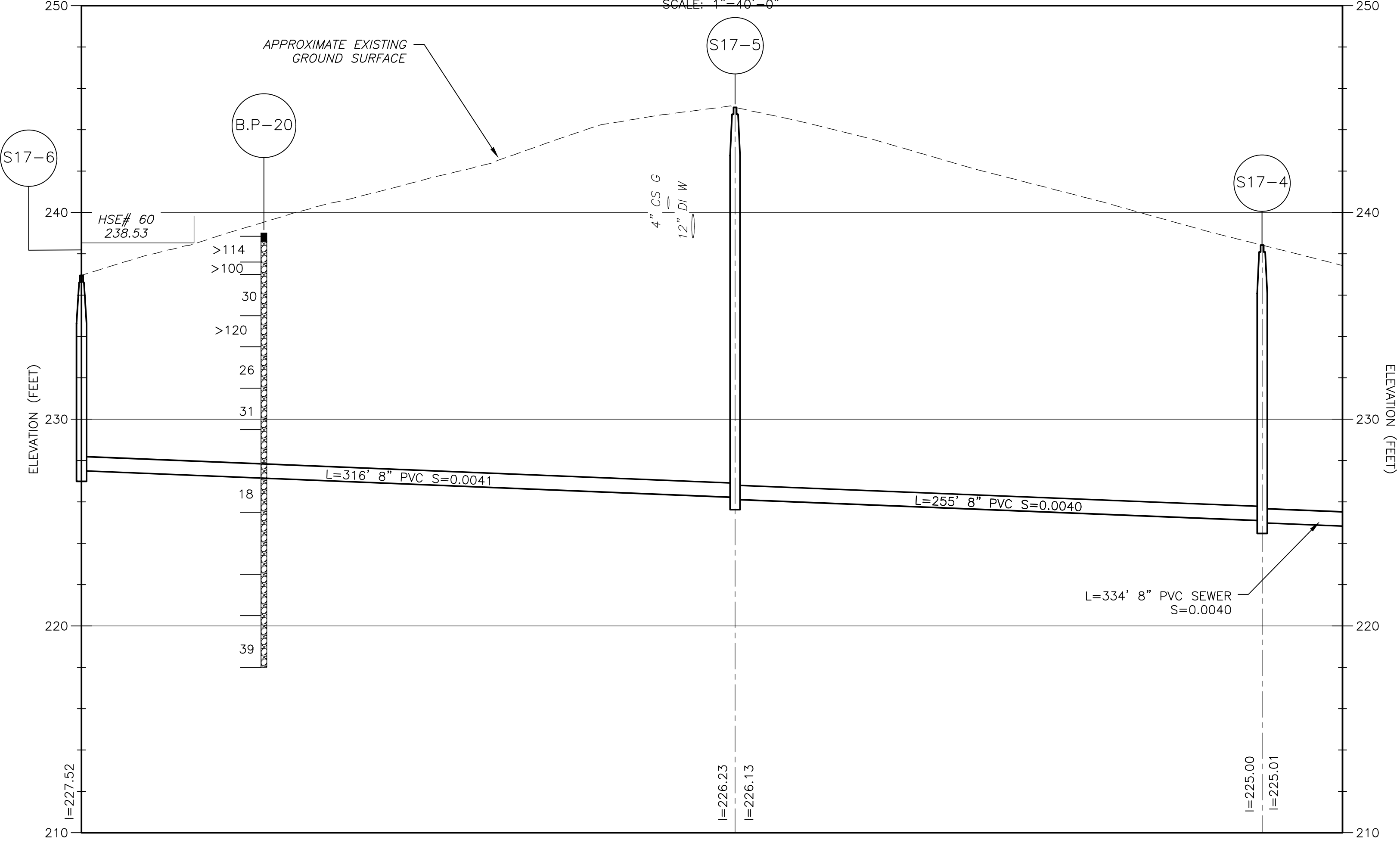


PLAN
SCALE: 1"=40'-0"

PLAN
SCALE: 1"=40'-0"



PROFILE-A
SCALE: HORIZ 1"=40'-0"
VERT 1"=4'-0"



PROFILE-B (AD ALT. 1)
SCALE: HORIZ 1"=40'-0"
VERT 1"=4'-0"

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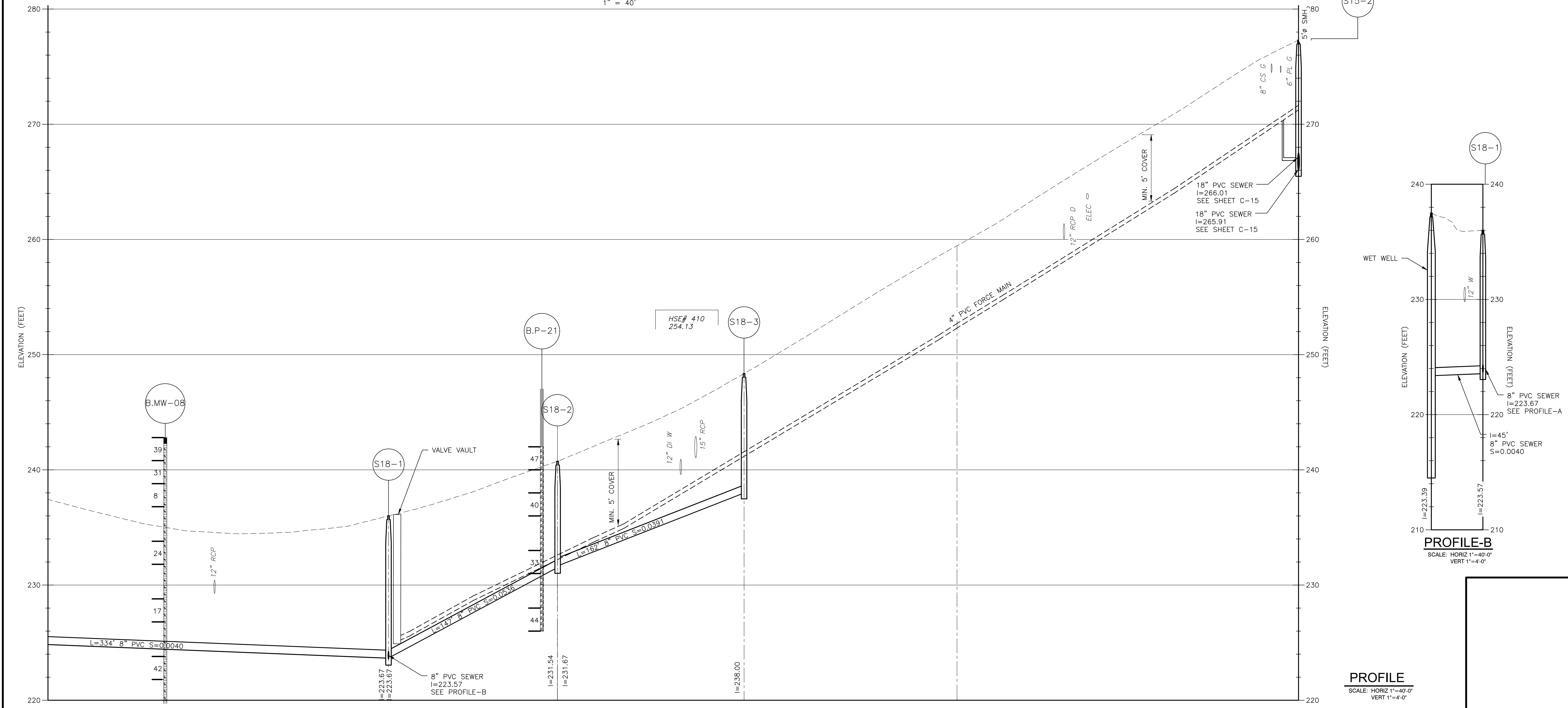
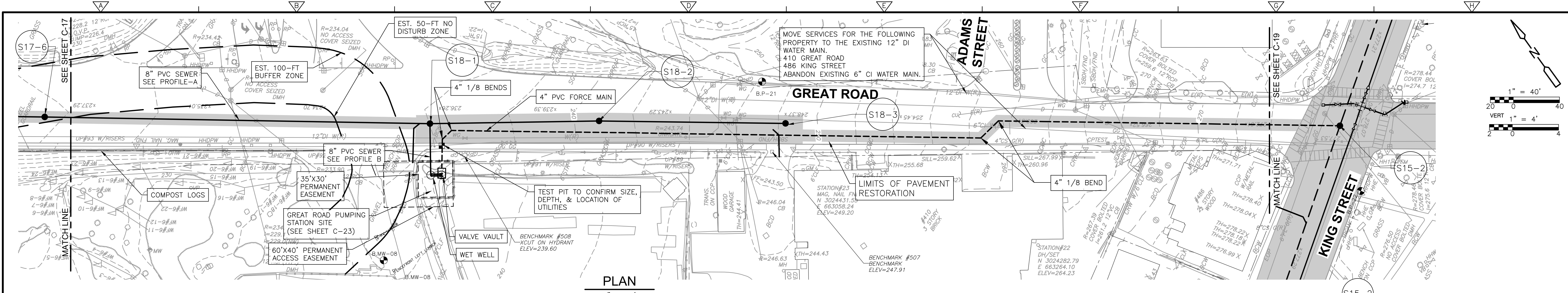
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 CROSS CHK'D BY: M. GUIDICE
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LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

KING STREET AND WHITE STREET

PROJECT NO. 263387-261886
 FILE NAME: C017PLPR.DWG
 SHEET NO.
C-17



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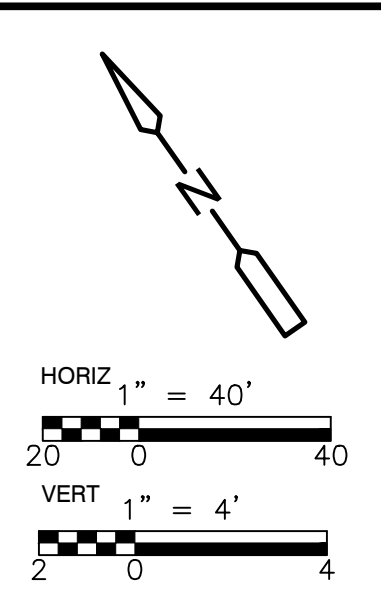
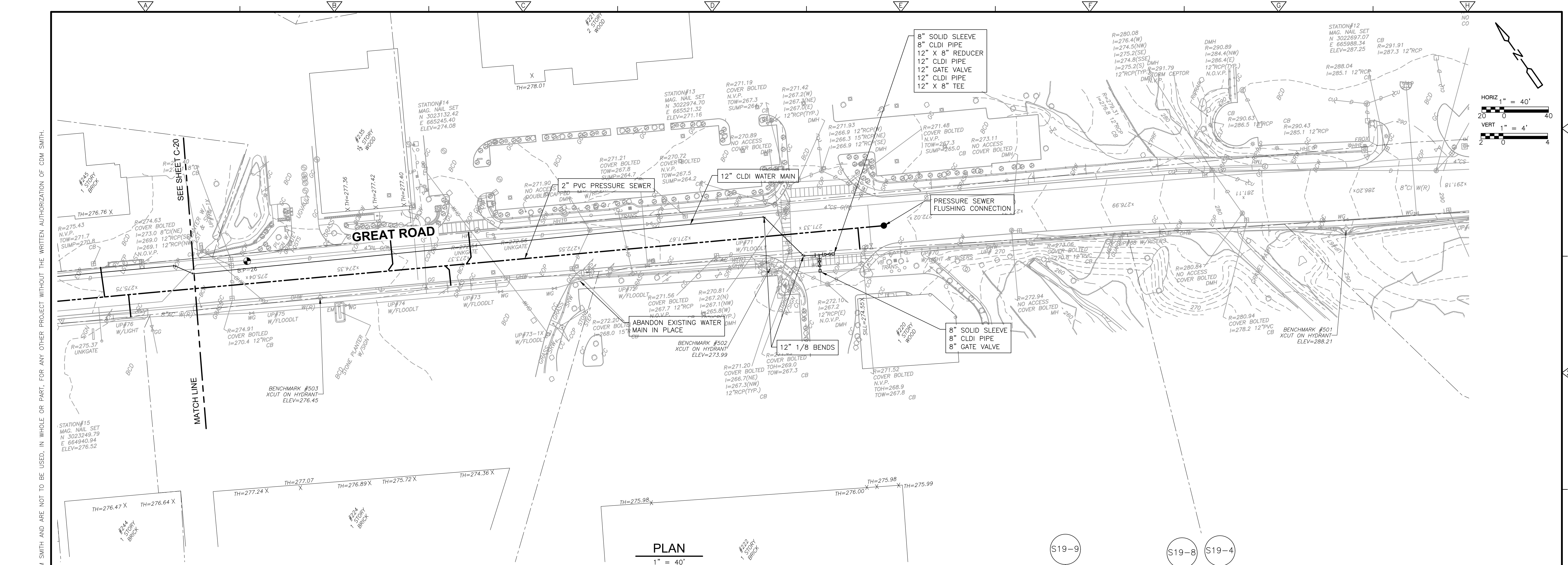
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 CROSS CHK'D BY: M. GUIDICE
 APPROVED BY: X
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CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-6000

LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

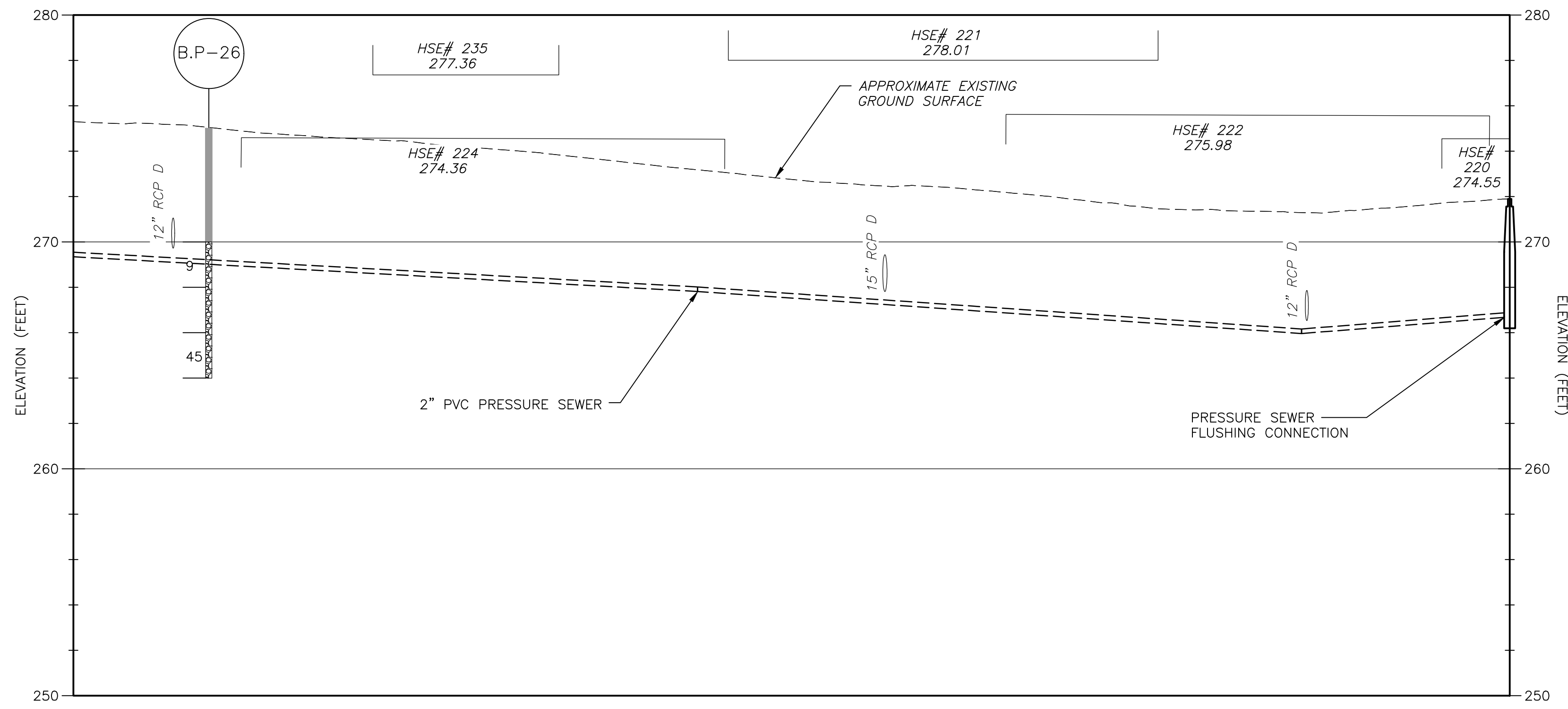
GREAT ROAD
 AD ALT.1
 SHEET NO.
C-18

PROJECT NO. 263387-261886
 FILE NAME: C018PLPR.DWG
 SHEET NO.
C-18

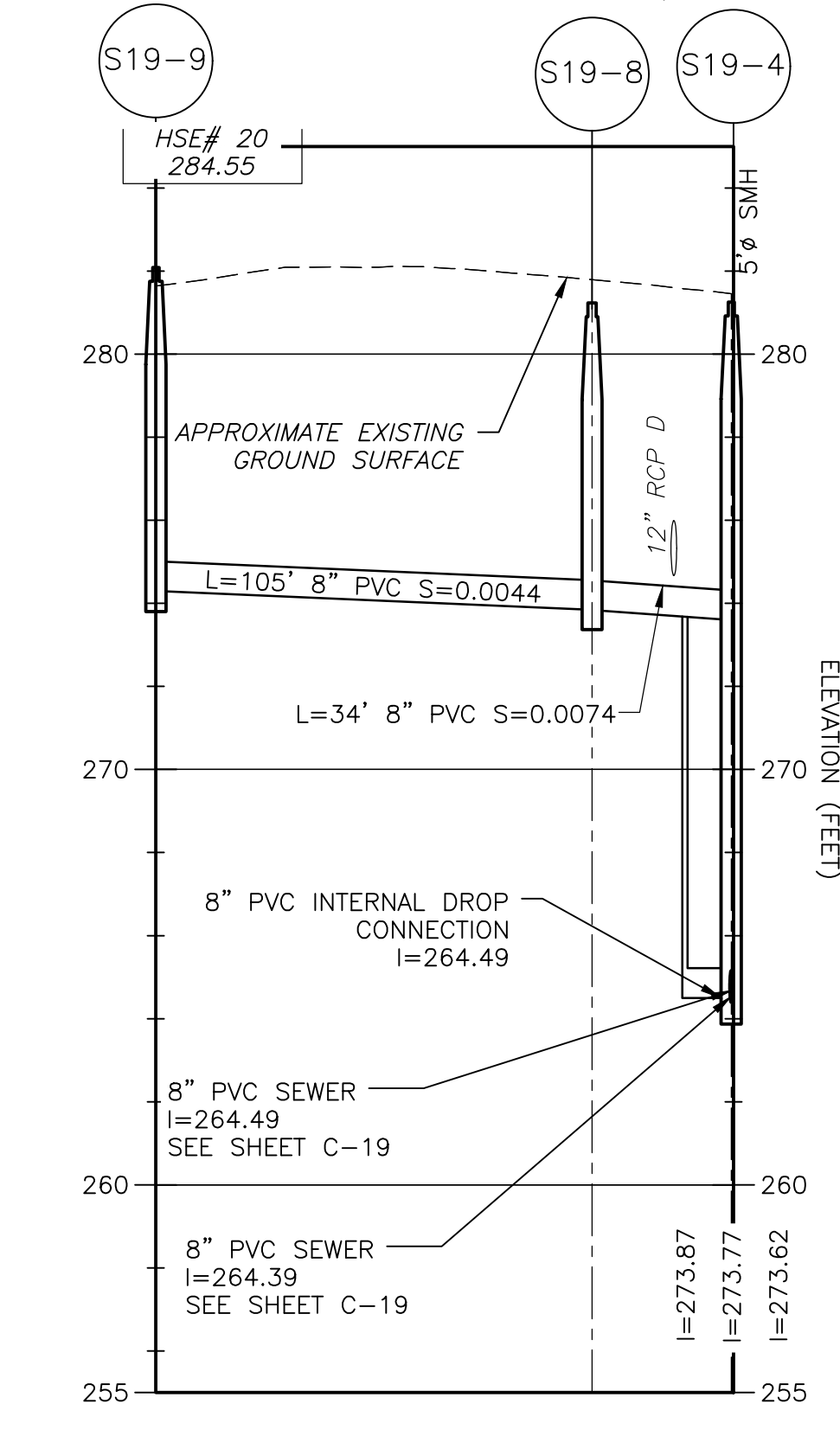


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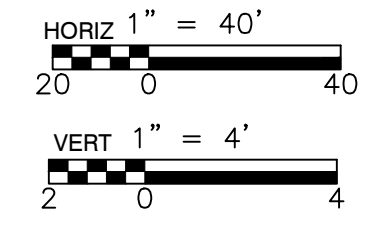
PLAN
1" = 40'



PROFILE
SCALE: HORIZ 1"=40'-0"
VERT 1"=4'-0"



**PROFILE-MEETINGHOUSE ROAD
(SEE SHEET C-19)**
SCALE: HORIZ 1"=40'-0"
VERT 1"=4'-0"



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. WINTER
 DRAWN BY: R. PAWAR
 SHEET CHK'D BY: H. SULLIVAN
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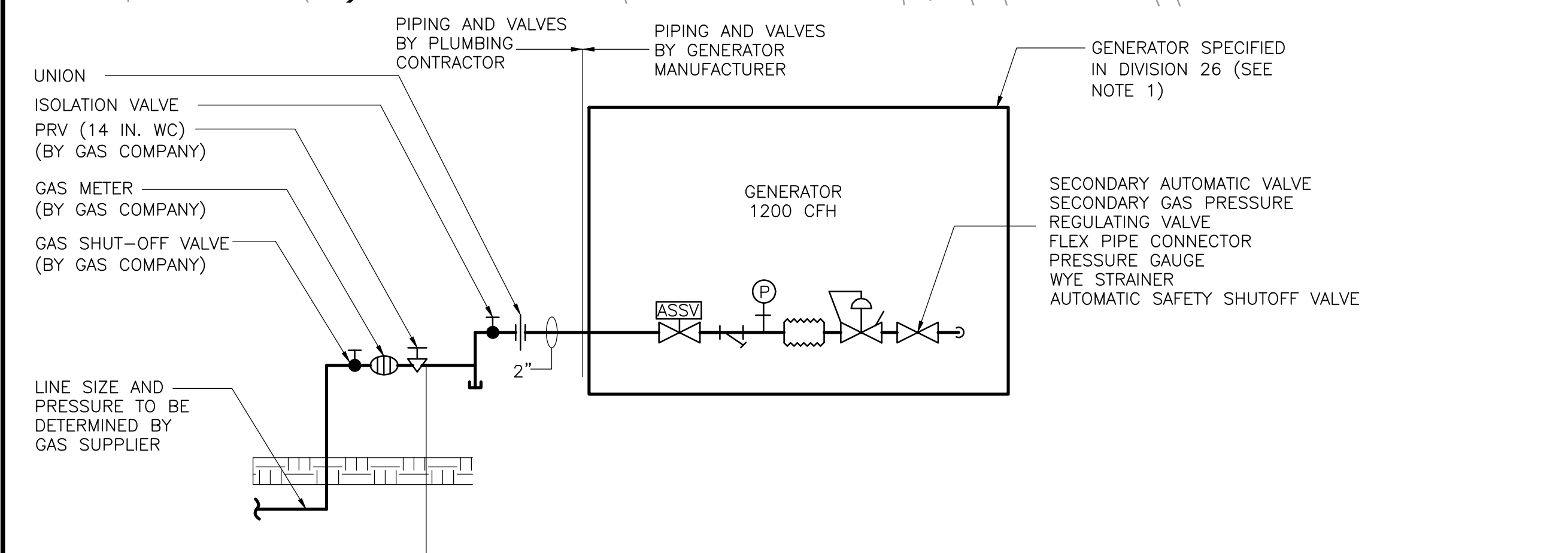
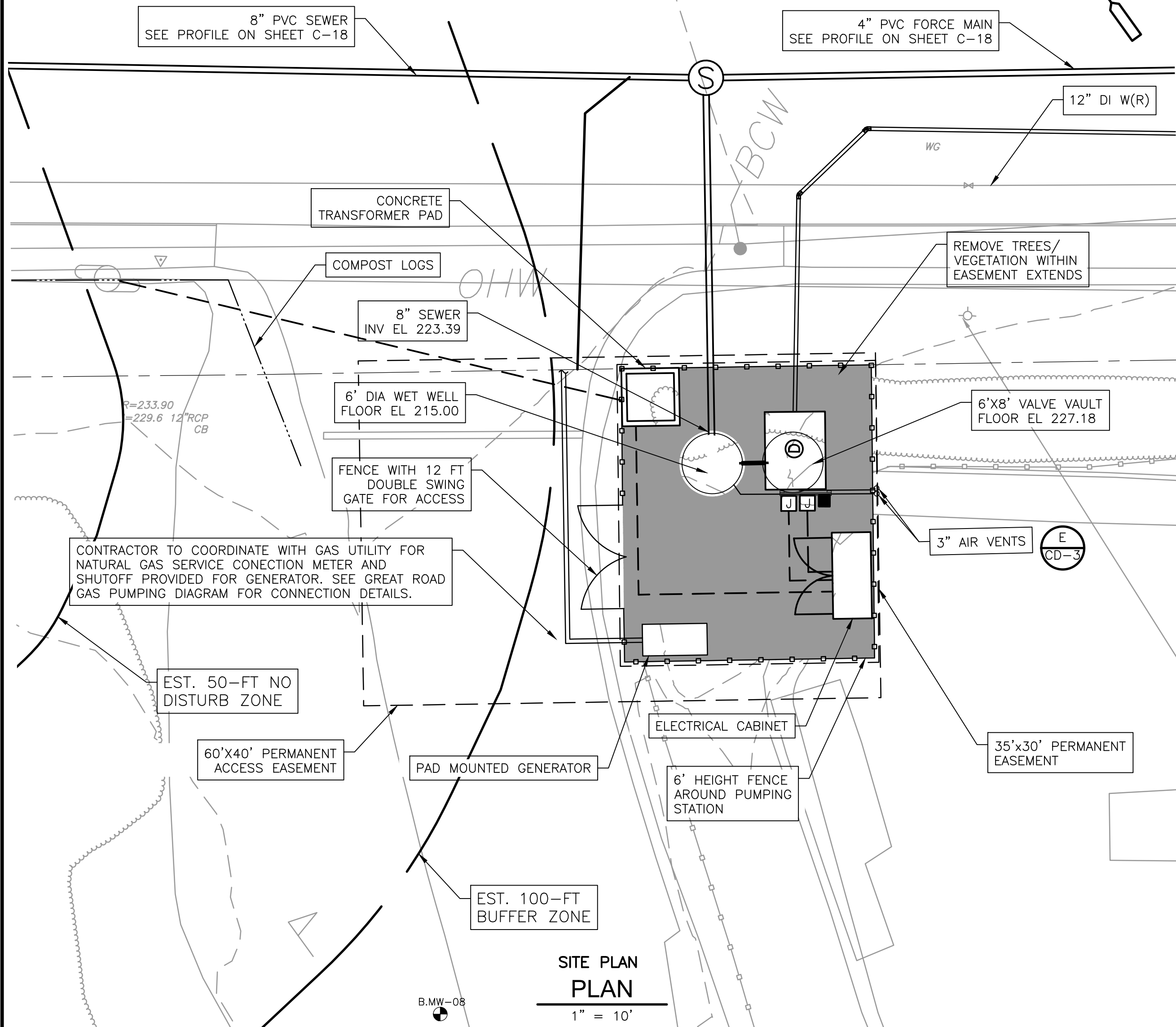
LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND
 WATER MAIN REPLACEMENT PROJECT

GREAT ROAD
 SHEET NO.
C-21

PROJECT NO. 263387-261886
 FILE NAME: C021PLPR.DWG
 SHEET NO.
C-21

NOTES:

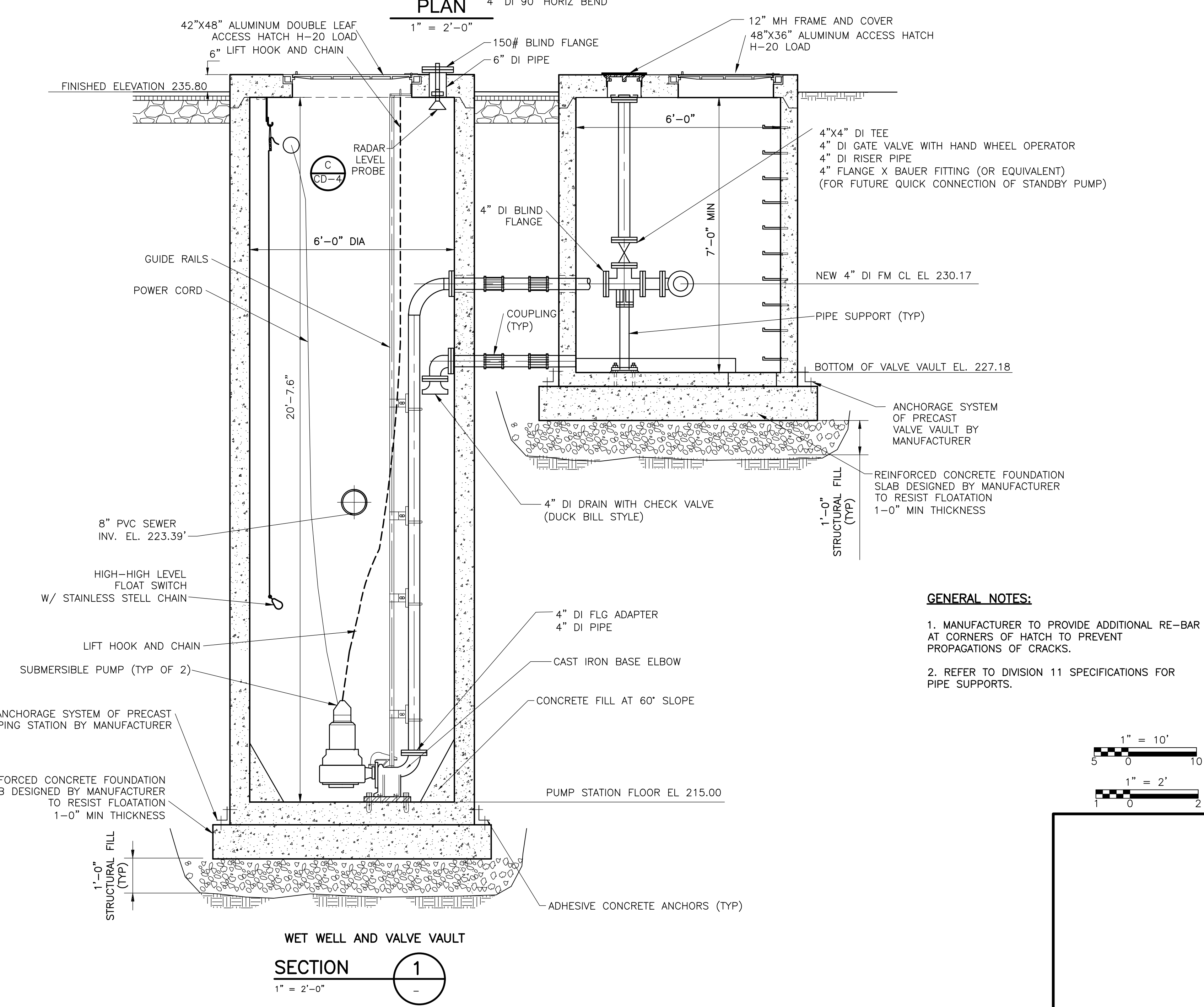
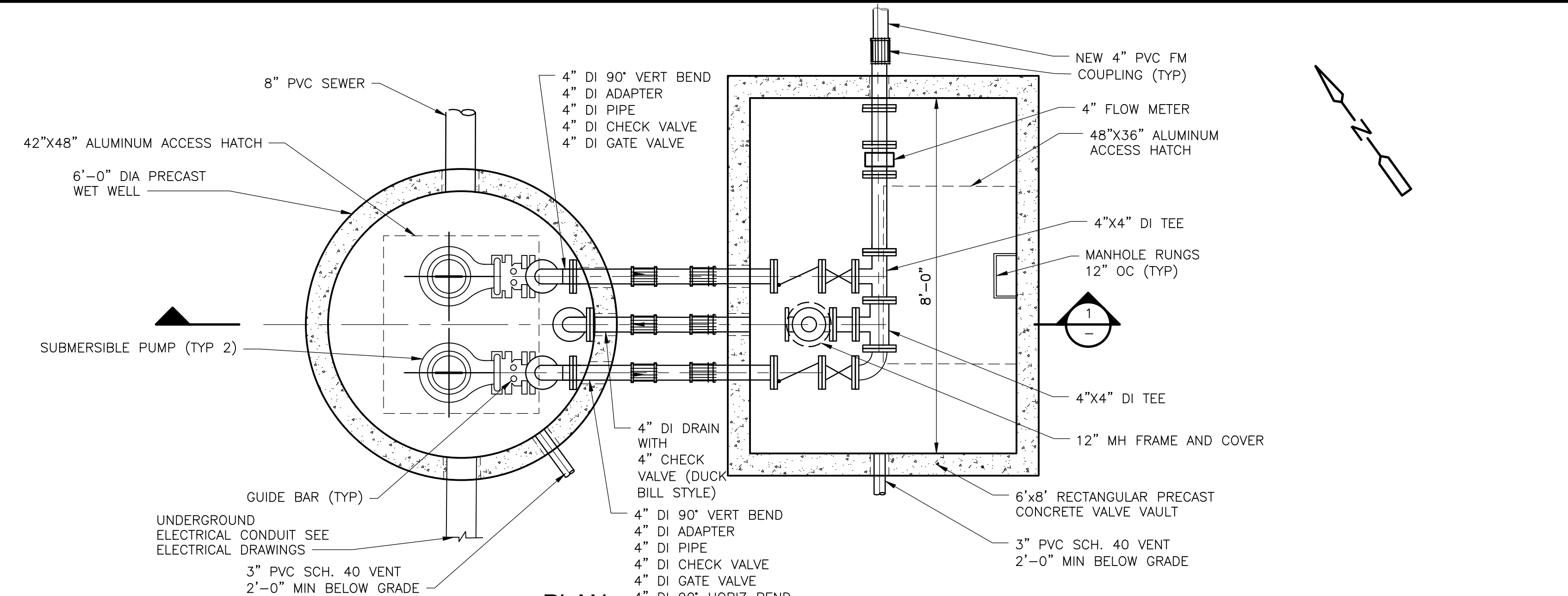
1. ALL PIPING WITHIN VALVE VAULT SHALL BE PAINTED WHITE.



NOTES:

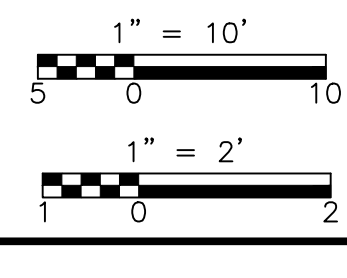
- GENERATOR AND GAS TRAIN COMPONENTS SHALL HAVE AN APPROVAL CODE FROM ACCEPTED PLUMBING ON LINE SYSTEM BY THE MASSACHUSETTS BOARD OF REGISTRATION OF PLUMBERS AND GAS FITTERS.
- SEE PLAN VIEW FOR DISTANCES AND LOCATIONS.

	FINISH GRADE	EL. =235.80
	8" PVC SEWER FROM GREAT ROAD	INV. EL. =223.39
	4" PVC FORCE MAIN	CL. =230.17
	HWLA (HIGH WATER LEVEL ALARM)	EL. =220.00
	HWL (PUMP ON)	EL. =219.00
	LWL (PUMP OFF)	EL. =217.00
	LWLA (LOW WATER LEVEL ALARM)	EL. =216.50
	WET WELL FLOOR	EL. =215.00



GENERAL NOTES:

- MANUFACTURER TO PROVIDE ADDITIONAL RE-BAR AT CORNERS OF HATCH TO PREVENT PROPAGATIONS OF CRACKS.
- REFER TO DIVISION 11 SPECIFICATIONS FOR PIPE SUPPORTS.



XREFS: (CDMS, 2436, CEZ0202SS, CWZ0202ST, CEZ0101SS, EWP0202ST) Images: []
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 DRAWN BY: R. PAWAR
 SHEET CHK'D BY: M. GUIDICE
 CROSS CHK'D BY: W. LENGYEL
 APPROVED BY: X
 DATE: APRIL 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-6000

LITTLETON WATER DEPARTMENT
 LITTLETON COMMON SEWER EXPANSION AND WATER MAIN REPLACEMENT PROJECT

GREAT ROAD PUMPING STATION
 PLAN AND SECTIONS

PROJECT NO. 263387-261886
 FILE NAME: C023STPL.DWG
 SHEET NO. C-23

TRAFFIC MANAGEMENT NOTES:

NOTES:

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

GENERAL:

- THE TRAFFIC MANAGEMENT PLANS CONTAINED HEREIN ARE GIVEN AS A GUIDE FOR TYPICAL WORK ZONE TRAFFIC CONTROL APPLICATIONS FOR THE TYPES OF WORK ANTICIPATED FOR THIS PROJECT. THEY ARE NOT INTENDED TO COVER ALL POSSIBLE CONSTRUCTION OPERATIONS WHICH THE CONTRACTOR MAY CHOOSE TO EMPLOY. WORK ZONE TRAFFIC CONTROL FOR OTHER CONSTRUCTION OPERATIONS OR OTHER TRAFFIC SITUATIONS IF APPLICABLE SHALL BE IN ACCORDANCE WITH THE M.U.T.C.D. AND AS APPROVED OR REQUIRED BY THE ENGINEER. ALL TRAFFIC CONTROL SETUP MUST HAVE APPROVAL OF THE RESIDENT ENGINEER AND THE TOWN OF LITTLETON PRIOR TO IMPLEMENTATION.
- WORK WITHIN THE STATE HIGHWAY TRAVELED WAY SHALL BE RESTRICTED TO 7AM TO 4PM MON. THROUGH FRI. OR AS OTHERWISE PERMITTED BY THE TOWN OF LITTLETON AND MASSDOT.
- LANE RESTRICTIONS MAY NOT REMAIN DURING NON-WORKING HOURS. AFTER EACH WORKING DAY, TRAFFIC CONTROL DEVICES THAT ARE NOT REQUIRED SHALL BE MOVED OFF THE ROADWAY OR FULL DEPTH CONSTRUCTION AREA AND PLACED SO AS NOT TO IMPEDE PEDESTRIAN AREAS, ABUTTER ACCESS OR CAUSE CONFUSION TO MOTORISTS.
- NIGHT WORK OPERATIONS (IF ALLOWED) SHALL INCLUDE PROPERLY LIT & PLACED LUMINAIRES MEETING THE REQUIREMENTS OF THE MUTCD AND MASSDOT.
- NIGHT WORK OPERATIONS WILL BE REQUIRED FOR LANE CLOSURES.
- ALL WORK ZONE AREAS SHALL BE PROTECTED APPROPRIATELY. ALL EXPOSED TRENCHES SHALL BE STEEL PLATED OR BACK FILLED WHEN NO WORK IS UNDERWAY/PERFORMED AND APPROPRIATELY SIGNED.
- ALL TEMPORARY SETUPS SHALL BE ADA/AAB COMPLIANT AND SHALL ACCOMMODATE PEDESTRIANS AND BICYCLISTS.

GRADE DIFFERENCES:

- WHERE THERE IS A LONGITUDINAL DIFFERENCE IN ELEVATION BETWEEN THE EXISTING PAVEMENT AND COLD PLANED OR NEW PAVEMENT, THE CONTRACTOR SHALL PATCH A TEMPORARY HOT MIX ASPHALT WEDGE WITH A 12:1 (OR FLATTER) SLOPE FOR SMOOTH TRANSITION.
- CROSS-SECTIONAL GRADE DIFFERENCES IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF REFLECTORIZED DRUMS.
- CROSS-SECTIONAL GRADE DIFFERENCES IN EXCESS OF 4" DURING NON-WORKING HOURS SHALL BE PROTECTED BY BACKFILLING WITH A WEDGE OF EARTH/WORK TO BE COMPACTED AT 4:1 SLOPE AND WILL ALSO REQUIRE DELINEATION BY USE OF DRUMS.
- A MINIMUM SLOPE OF 4:1 MUST BE MAINTAINED AFTER WORKING HOURS DURING SUBBASE AND BASE COURSE INSTALLATION ALONG THE TRAVELED WAY. THE MINIMUM SLOPE OF 8:1 MUST BE MAINTAINED ON ALL ABUTTED ACCESS DRIVES AND A MINIMUM SLOPE OF 12:1 MUST BE MAINTAINED ON ALL SIDEWALKS.

CONSTRUCTION SIGNING:

- THE FIRST CONSTRUCTION SIGN IN A SERIES ON EACH APPROACH TO THE PROJECT SHALL BE FLUORESCENT ORANGE, HIGH PERFORMANCE (OR HIGH DENSITY) SHEETING. FLAGS MAY BE MOUNTED WITH THE FIRST SIGN.
- ALL CONSTRUCTION SIGNS SHALL BE BLACK LEGEND ON A REFLECTORIZED ORANGE BACKGROUND UNLESS OTHERWISE NOTED AND SHALL CONFORM TO THE MUTCD.
- EXISTING GUIDE SIGNS SHALL BE TEMPORARILY RESET AS REQUIRED BY THE ENGINEER.
- ALL SIGNS, INCLUDING EXISTING, THAT ARE NOT REPRESENTATIVE OF ACTUAL WORK CONDITIONS SHALL BE EITHER COVERED OR REMOVED WHEN NOT APPLICABLE.
- IF USED, W20-4 AND W20-5 SIGNS SHALL BE TAKEN DOWN OR COVERED AT THE CLOSE OF EACH WORK DAY.
- USE W20-8 SIGNS ONLY WHILE POLICE ARE DIRECTING TRAFFIC. THEY SHALL BE TAKEN DOWN OR COVERED AT THE CLOSE OF EACH WORK DAY.
- SIGNS MUST BE PROFESSIONALLY LETTERED. NO HANDWRITTEN, PAINTED, OR OTHERWISE MODIFIED SIGNS SHALL BE ALLOWED.
- WHERE LANE SHIFTS, WORK ZONES, OR OTHER CONSTRUCTION ACTIVITIES INFRINGE UPON ON-STREET PARKING AREAS, THE CONTRACTOR SHALL INSTALL TEMPORARY "NO PARKING/TOW AWAY ZONE" SIGNS (R8-3/R7-201) AS APPROPRIATE AT LEAST 24 HOURS IN ADVANCE. THE R8-3/R7-201 SIGNS SHALL BE TAKEN DOWN OR COVERED AT THE CLOSE OF EACH DAY UNLESS PARKING RESTRICTIONS ARE PERMITTED TO REMAIN OVERNIGHT AS REQUIRED BY THE ENGINEER AND THE TOWN OF LITTLETON.
- IF USED, PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE IN CONFORMANCE WITH THE MUTCD AND SHOULD BE PLACED ON THE SHOULDER OF THE ROADWAY OR IF PRACTICAL SET WELL AWAY FROM THE TRAVELED LANE. MESSAGE SIGNS SHOULD BE PROTECTED WITH RETROREFLECTIVE TEMPORARY TRAFFIC CONTROL DEVICES WHEN PLACED WITHIN THE AVAILABLE CLEAR ZONE OR ELSE SHIELDED WITH A BARRIER OR CRASH CUSHION. THE LOCATION AND USE OF THE PCMS SHALL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

PAVEMENT MARKINGS:

- PAVEMENT MARKINGS WHICH ARE NO LONGER APPLICABLE SHALL BE REMOVED. APPLY TEMPORARY MARKINGS WHERE SHOWN ON THE TRAFFIC MANAGEMENT PLANS AND AS REQUIRED BY THE ENGINEER.
- EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH TEMPORARY TRAFFIC CONTROLS SHOULD BE COVERED TEMPORARILY WITH BLACKOUT TAPE, AS REQUIRED BY THE ENGINEER. FOR THE FULL DURATION OF THE PHASE IN PROGRESS, TEMPORARY PAINTED OR REMOVABLE TAPE MARKINGS SHALL BE USED AS NECESSARY FOR ALL PHASES OF CONSTRUCTION.
- REPLACE PAVEMENT MARKINGS ERADICATED BY PROPOSED WORK IN-KIND.

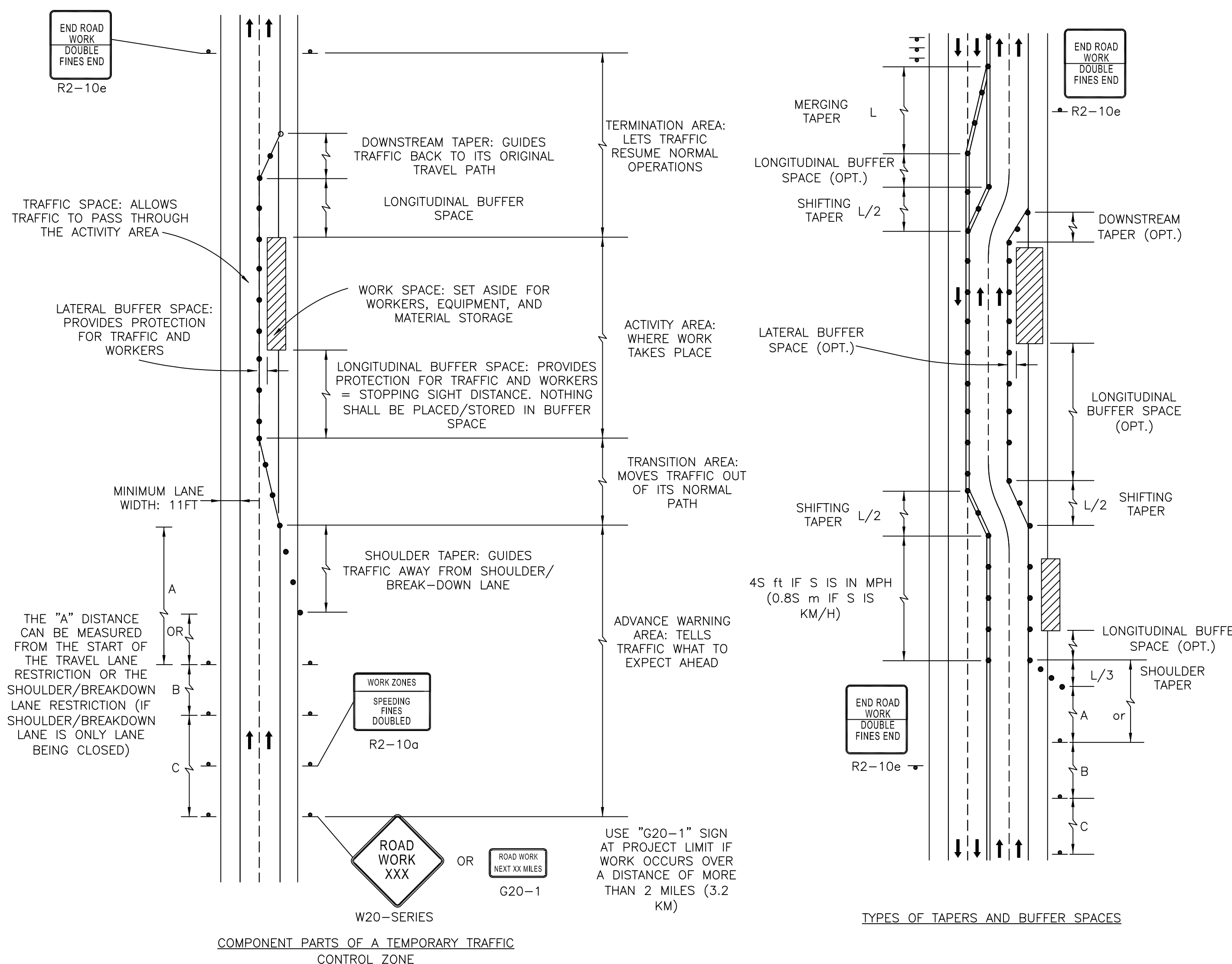
GUIDELINE FOR CHANNELIZATION

TAPER LENGTH (ft.)	20 MPH			35 MPH			45 MPH		
	TAPER	BUFFER AREA	WORK AREA	TAPER	BUFFER AREA	WORK AREA	TAPER	BUFFER AREA	WORK AREA
100	5	3	ONE	5	3	ONE	5	3	ONE
150	8	4	ONE	6	3	ONE	6	3	ONE
200	10	5	ONE	7	4	ONE	6	4	ONE
250	12	6	DRUM	9	5	DRUM	7	4	DRUM
300	15	7	DRUM	10	5	DRUM	8	4	DRUM
350	18	9	EVERY	11	6	EVERY	9	5	EVERY
400	20	10	EVERY	13	7	EVERY	10	6	EVERY
450	22	11	20'	14	7	35'	11	6	45'
500	25	12	(MAX.)	16	8	(MAX.)	13	7	(MAX.)
550	27	13	(MAX.)	17	8	(MAX.)	14	7	(MAX.)
600	30	15	(MAX.)	19	10	(MAX.)	15	9	(MAX.)
650	32	16	(MAX.)	20	10	(MAX.)	16	9	(MAX.)

NOTE: MINIMUM SPACING OF DRUMS MAY VARY AND SHALL BE DETERMINED IN THE FIELD.

LEGEND:

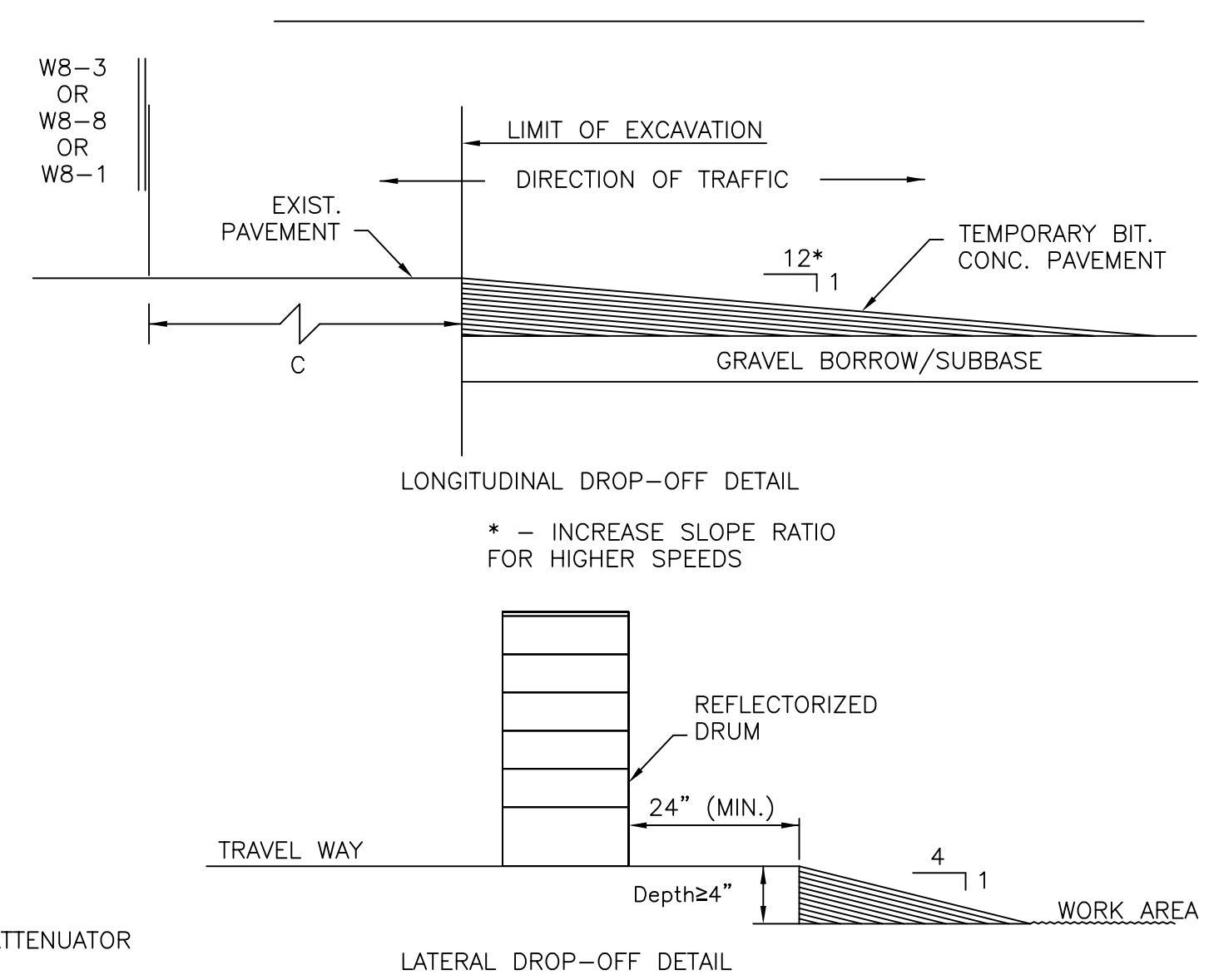
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN



PORTABLE CHANGEABLE MESSAGE SIGNS LEGEND

THE SUGGESTED MESSAGE 2 WEEKS IN ADVANCE:

- ① XX ST ROAD WORK
- ② BEGINS X/XX/XX



LATERAL AND LONGITUDINAL DROP-OFF DETAIL

N.T.S.

FORMULAS FOR DETERMINING TAPER LENGTHS

Speed Limit (S)	Taper Length (L) Feet
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

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

Source: Table 6C-4 2003 MUTCD

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

Type of Taper	Taper Length (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	100 FT MAXIMUM
DOWNSTREAM TAPER	100 FT PER LANE

Source: Table 6C-3 2003 MUTCD

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (mph)	DISTANCE (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED
THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.
THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 2003 MUTCD

SUGGESTED WORK ZONE WARNING SIGN SPACING

Road Type	Distance Between Signs**		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350	350	350
MOST OTHER ROADWAYS*	500	500	500
FREeways AND EXPRESSWAYS*	1,000	1,500	2,640

* SPEED CATEGORY TO BE DETERMINED BY ENGINEER.
** DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)
THE "THIRD" SIGN ABOVE IS REFERRED TO AS THE INITIAL ADVANCE WARNING SIGN ON THE TMP SETUPS. IT IS THE ONE WHICH MAY OFTEN HAVE THE "STANDARD RED OR RED-ORANGE FLAGS (16 in. X 16 in.)" MOUNTED ON IT. THESE INITIAL ADVANCE WARNING SIGNS ARE LOCATED AT THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT.
THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.
R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS.
FOR R2-10a, R2-10e, AND W20-1 SERIES SIGNS SEE ADVANCE WARNING SIGN SETUP.

Based on: Table 6C-1 2003 MUTCD

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	R. HALZACK
DRAWN BY:	R. HALZACK
SHEET CHK'D BY:	W. STERRIT
CROSS CHK'D BY:	X
APPROVED BY:	
DATE:	APRIL 2022

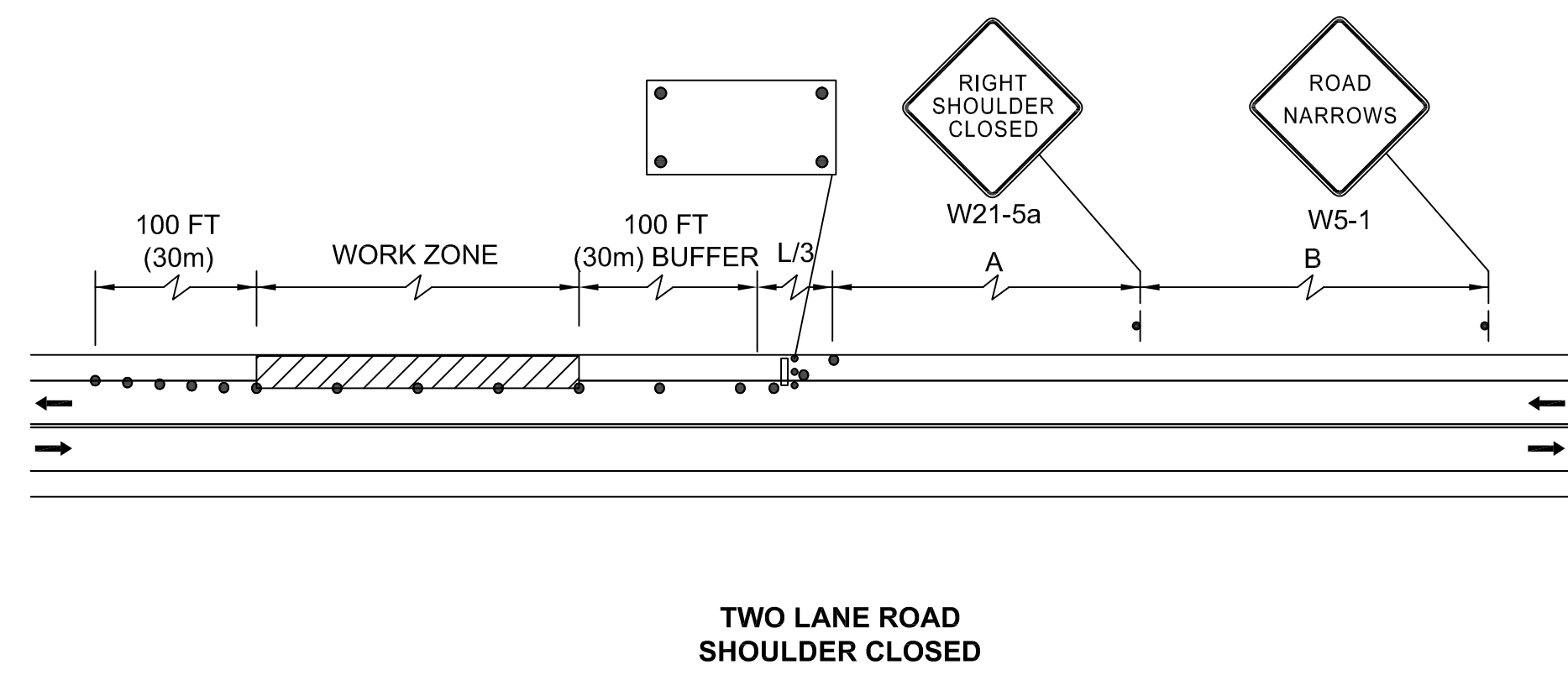
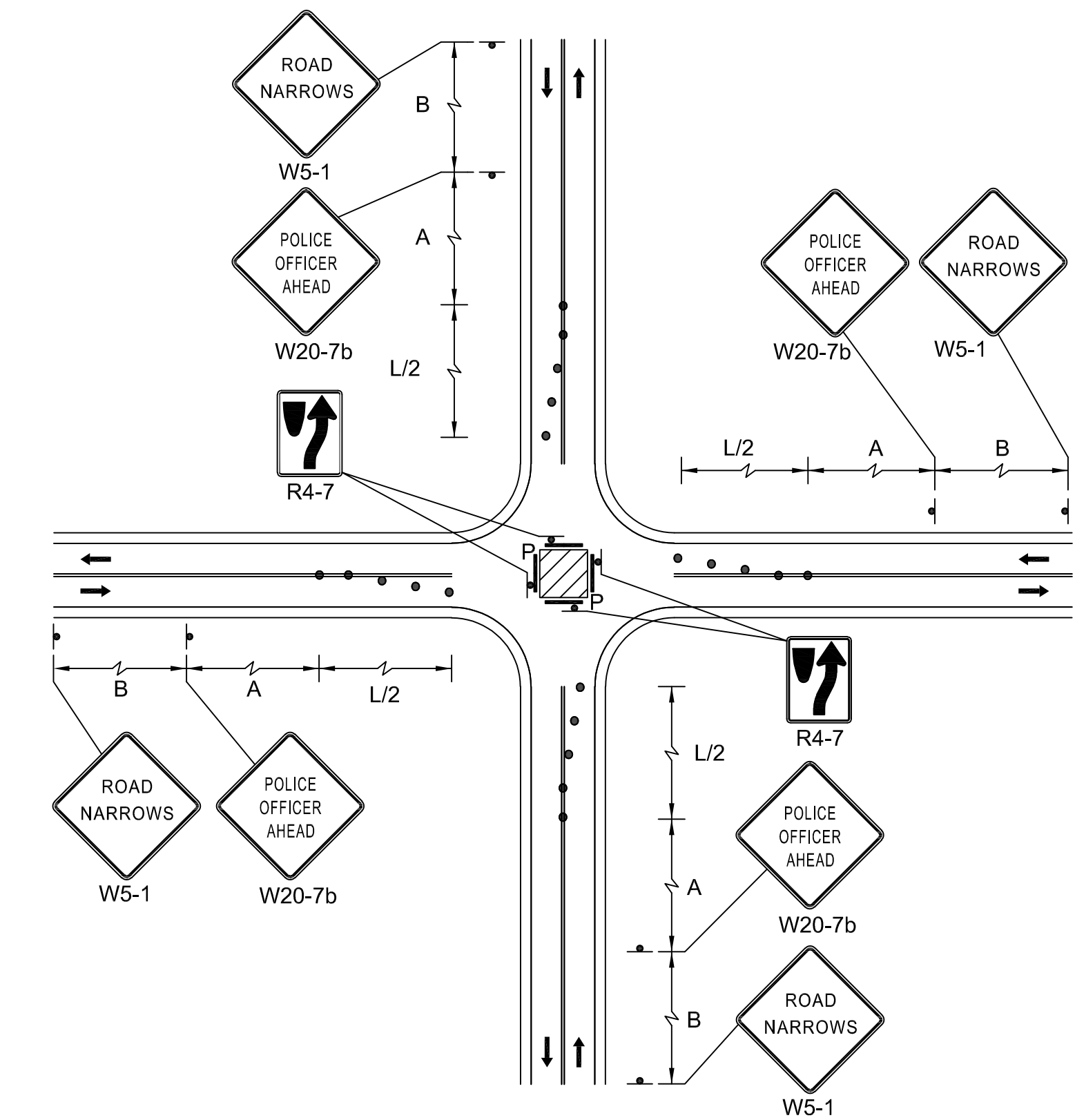
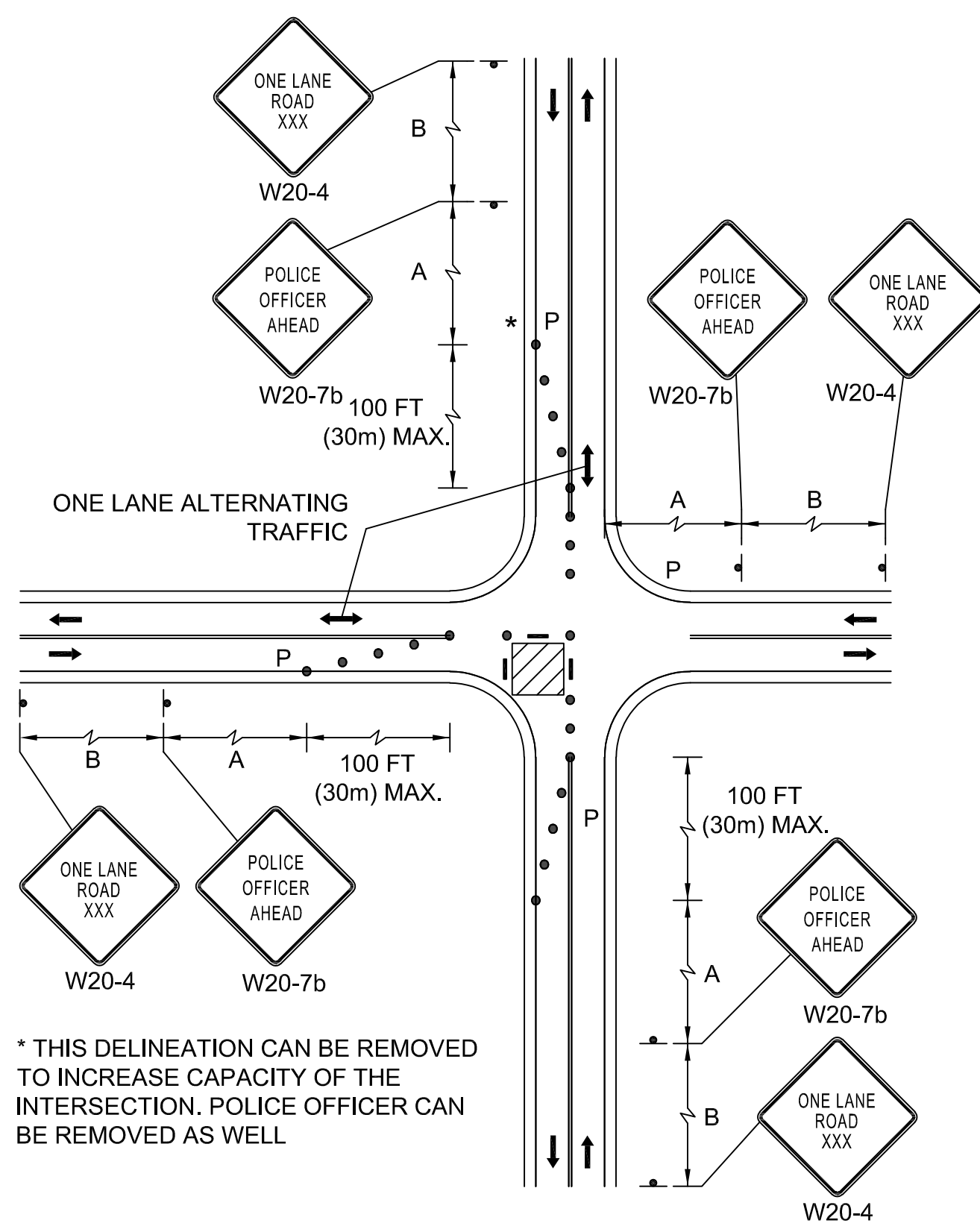
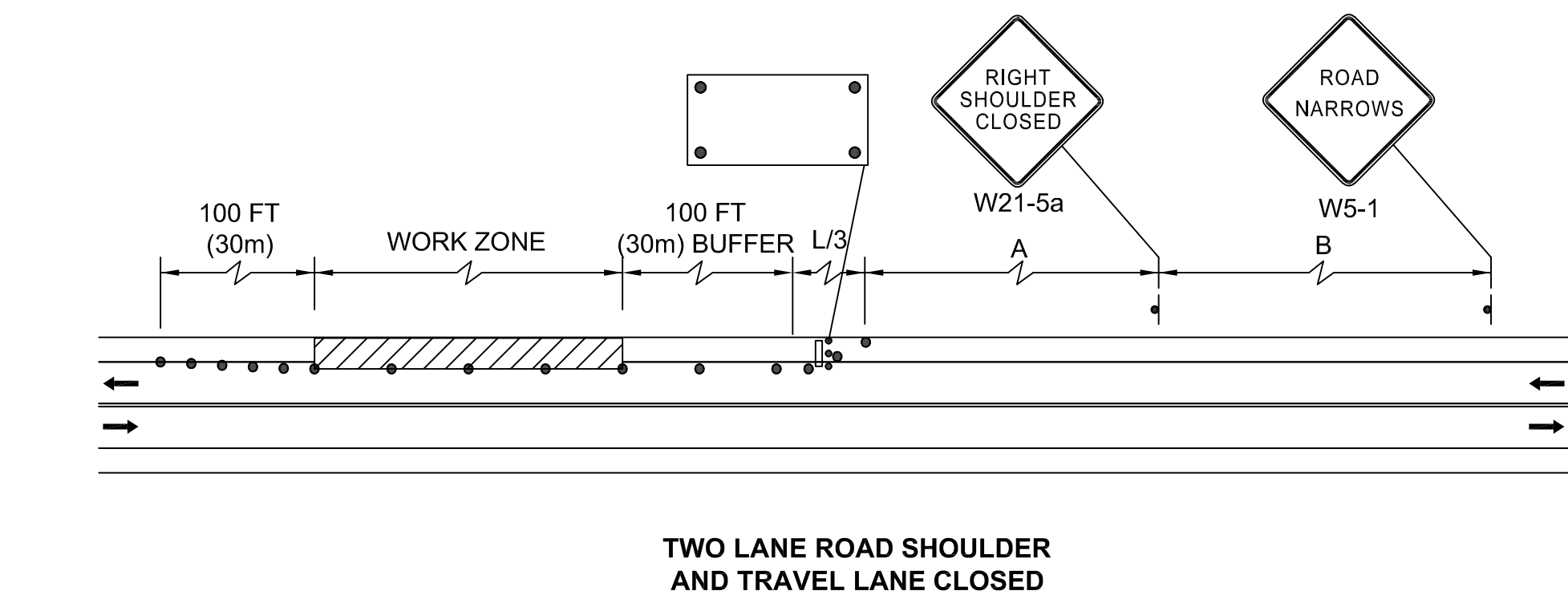
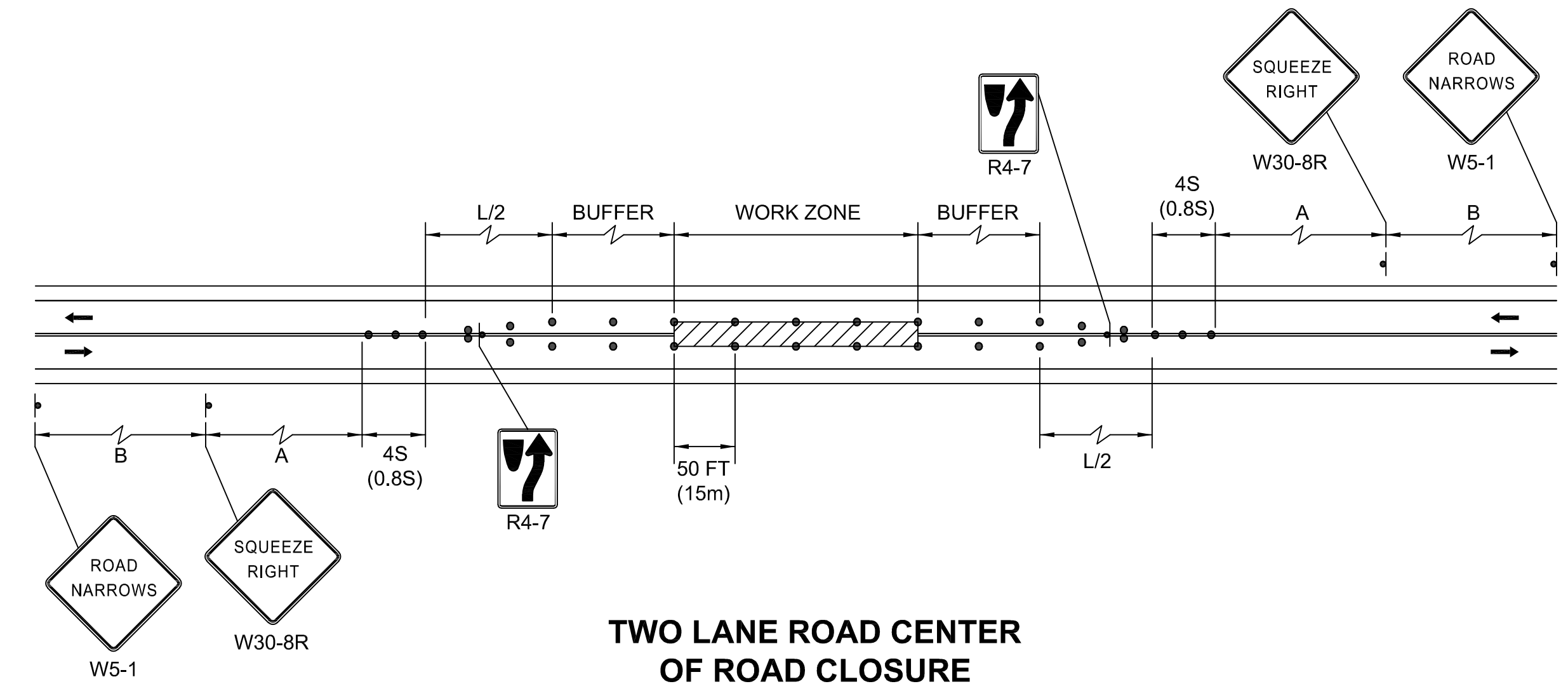
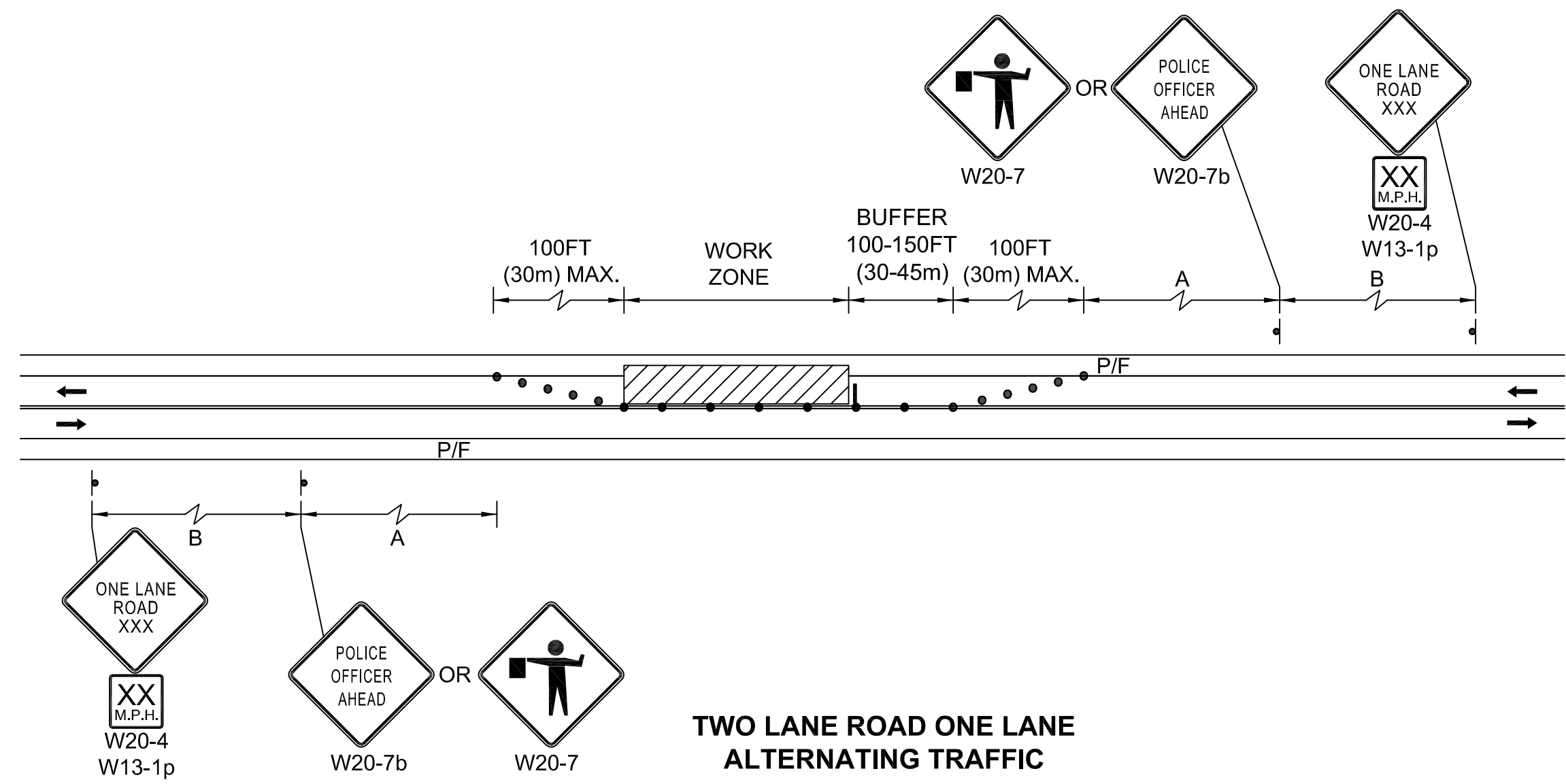
CDM Smith
75 State Street, Suite 701
Boston, MA 02109
Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
LITTLETON WATER RESOURCE RECOVERY FACILITY

TRAFFIC MANAGEMENT PLANS I
GENERAL NOTES
TM-1

PROJECT NO. 263387-261886
FILE NAME: TSTTM001.dwg
SHEET NO. TM-1

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* THIS DELINEATION CAN BE REMOVED TO INCREASE CAPACITY OF THE INTERSECTION. POLICE OFFICER CAN BE REMOVED AS WELL

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: C. LAUZON
 DRAWN BY: R. HALZACK
 SHEET CHK'D BY: W. STERRITT
 CROSS CHK'D BY: _____
 APPROVED BY: _____
 DATE: APRIL 2022

CDM Smith
 75 State Street, Suite 701
 Boston, MA 02109
 Tel: (617) 452-8000

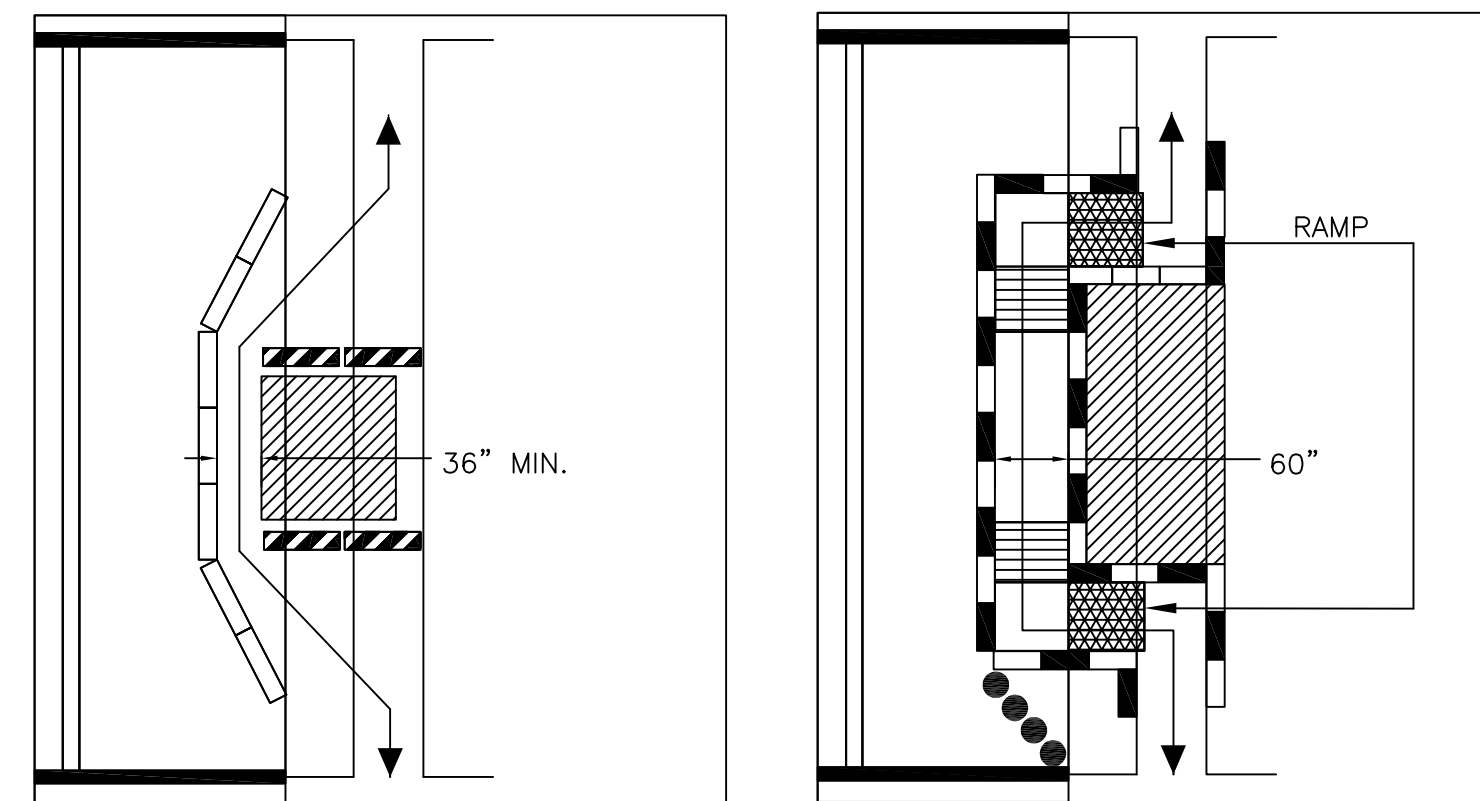
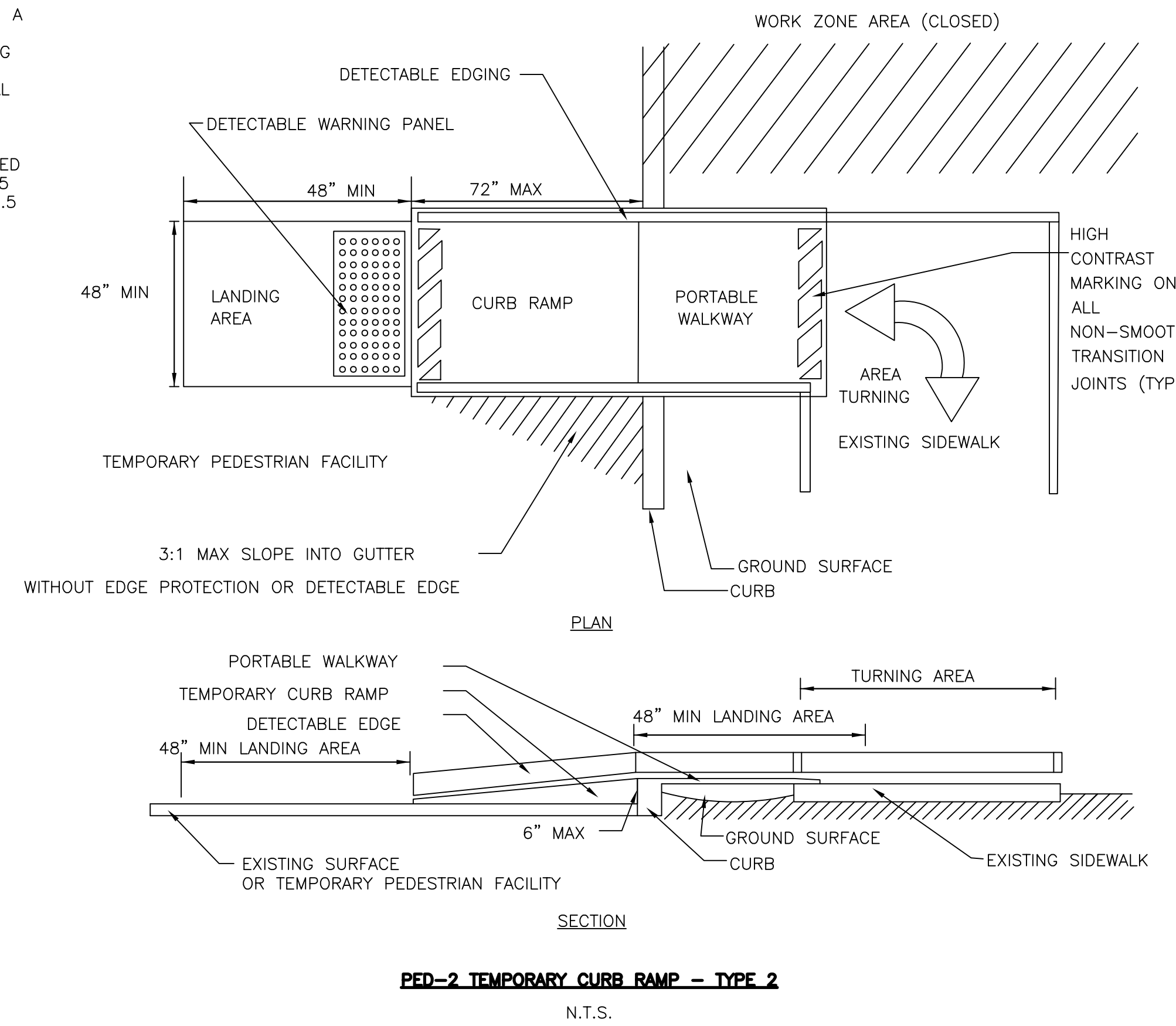
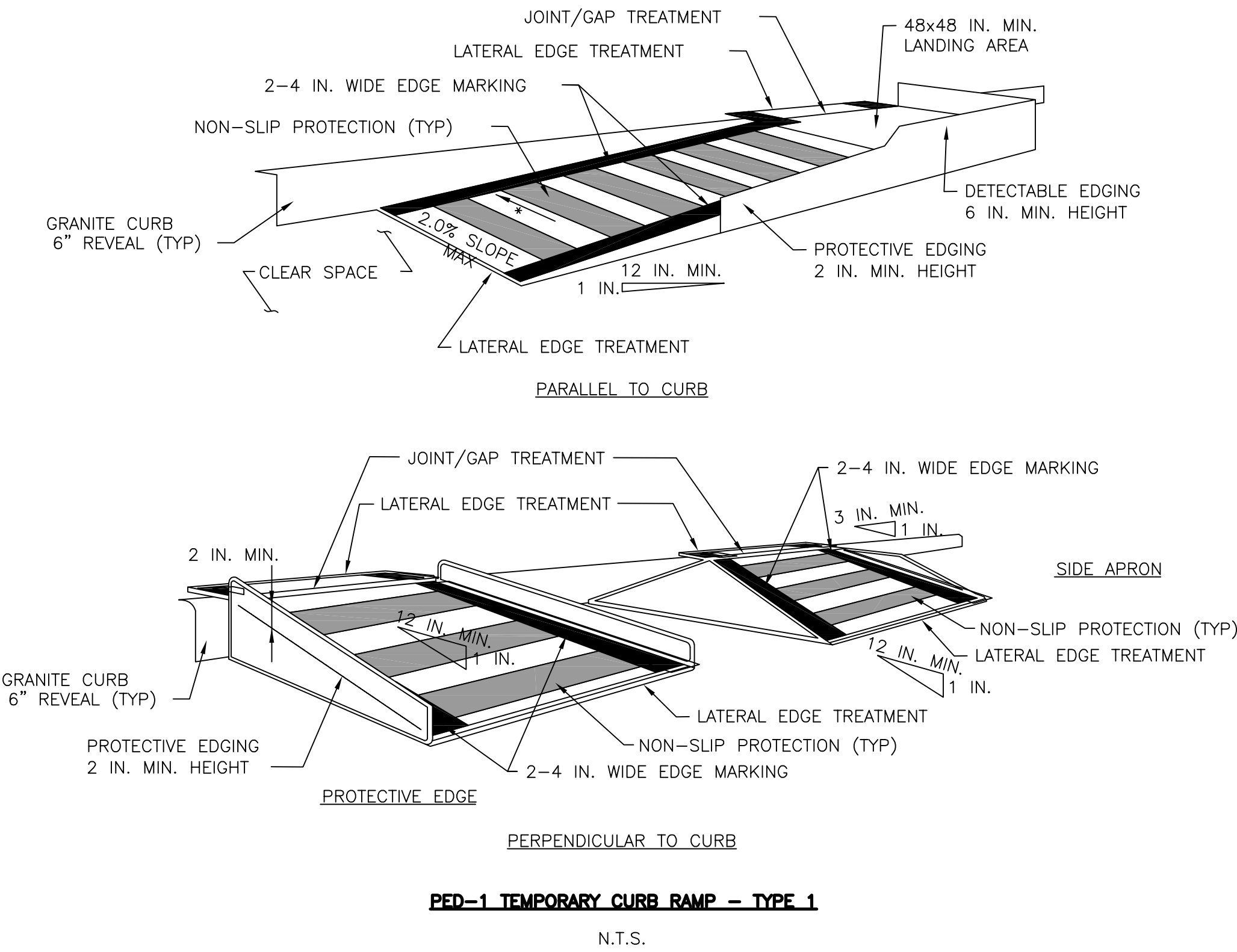
LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

TRAFFIC MANAGEMENT PLANS II
 STANDARD SETUPS

SHEET NO.
TM-2

PROJECT NO. 263387-261886
 FILE NAME: TSTTM001.dwg

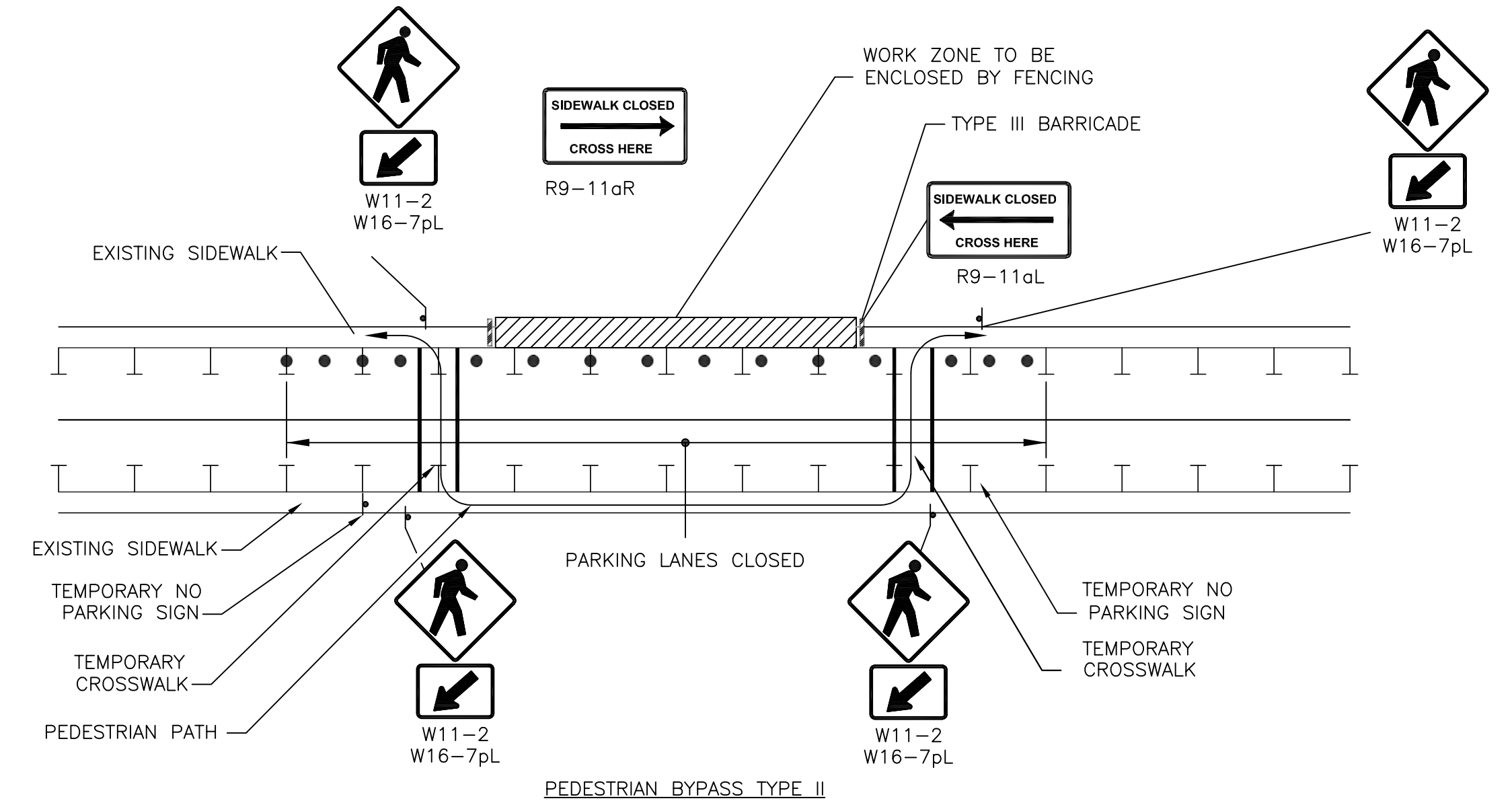
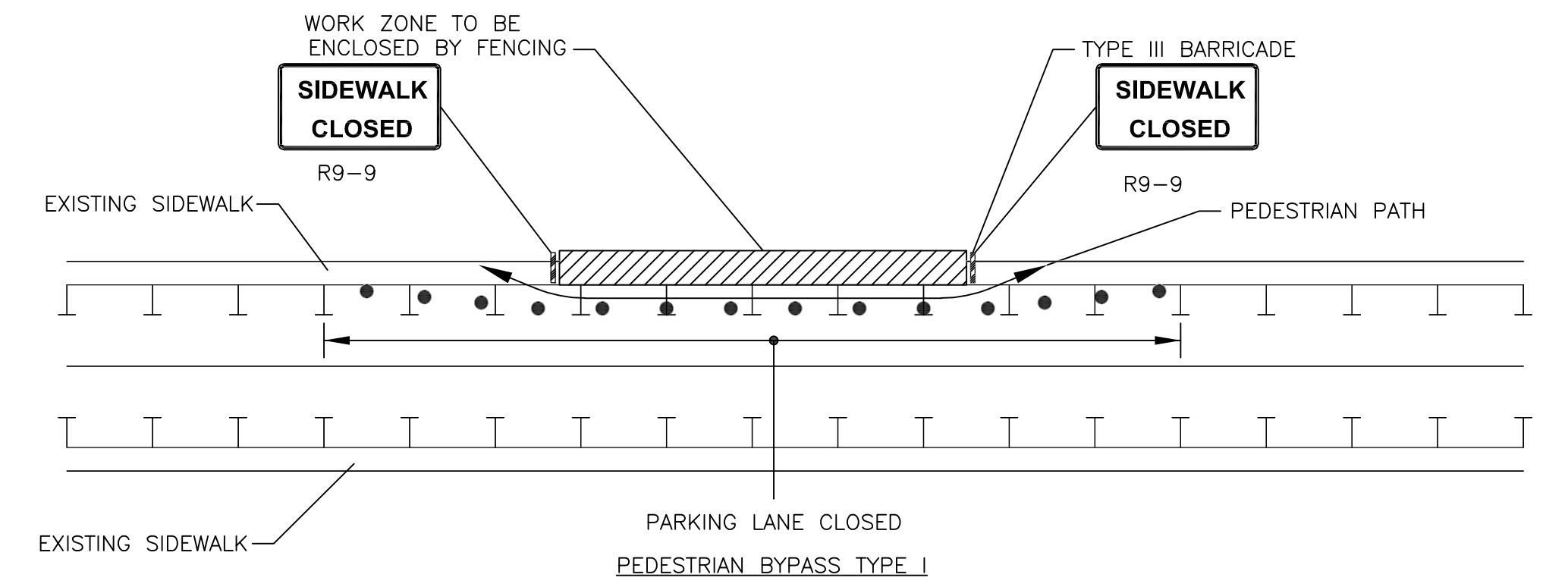
- NOTES:
- CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
 - PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
 - DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
 - CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
 - CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
 - THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
 - WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
 - LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
 - CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.



- WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
- A PEDESTRIAN CHANNELIZING DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ACROSS THE FULL WIDTH OF THE CLOSED SIDEWALK.
- WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT (SEE TEMPORARY CURB RAMP DETAILS).
- THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
- THE PROTECTIVE REQUIREMENTS OF A TTC SITUATION HAVE PRIORITY IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN THIS SITUATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
- AUDIBLE INFORMATION DEVICES SHOULD BE CONSIDERED WHERE MIDBLOCK CLOSINGS AND CHANGED CROSSWALK AREAS CAUSE INADEQUATE COMMUNICATION TO BE PROVIDED TO PEDESTRIANS WHO HAVE VISUAL DISABILITIES.

AUDIBLE DEVICES

FOR LONG TERM SIDEWALK CLOSURES (AT A MINIMUM OVERNIGHT) A FORM OF SPEECH MESSAGING FOR PEDESTRIANS WITH VISUAL DISABILITIES SHALL BE PROVIDED. AUDIBLE INFORMATION DEVICES SUCH AS DETECTABLE BARRIERS OR BARRICADES AND OTHER PASSIVE PEDESTRIAN ACTIVATION (MOTION ACTIVATED) DEVICES SHOULD BE CONSIDERED FOR THESE CASES. THESE AUDIBLE DEVICES CAN BE MOUNTABLE OR STAND ALONE.

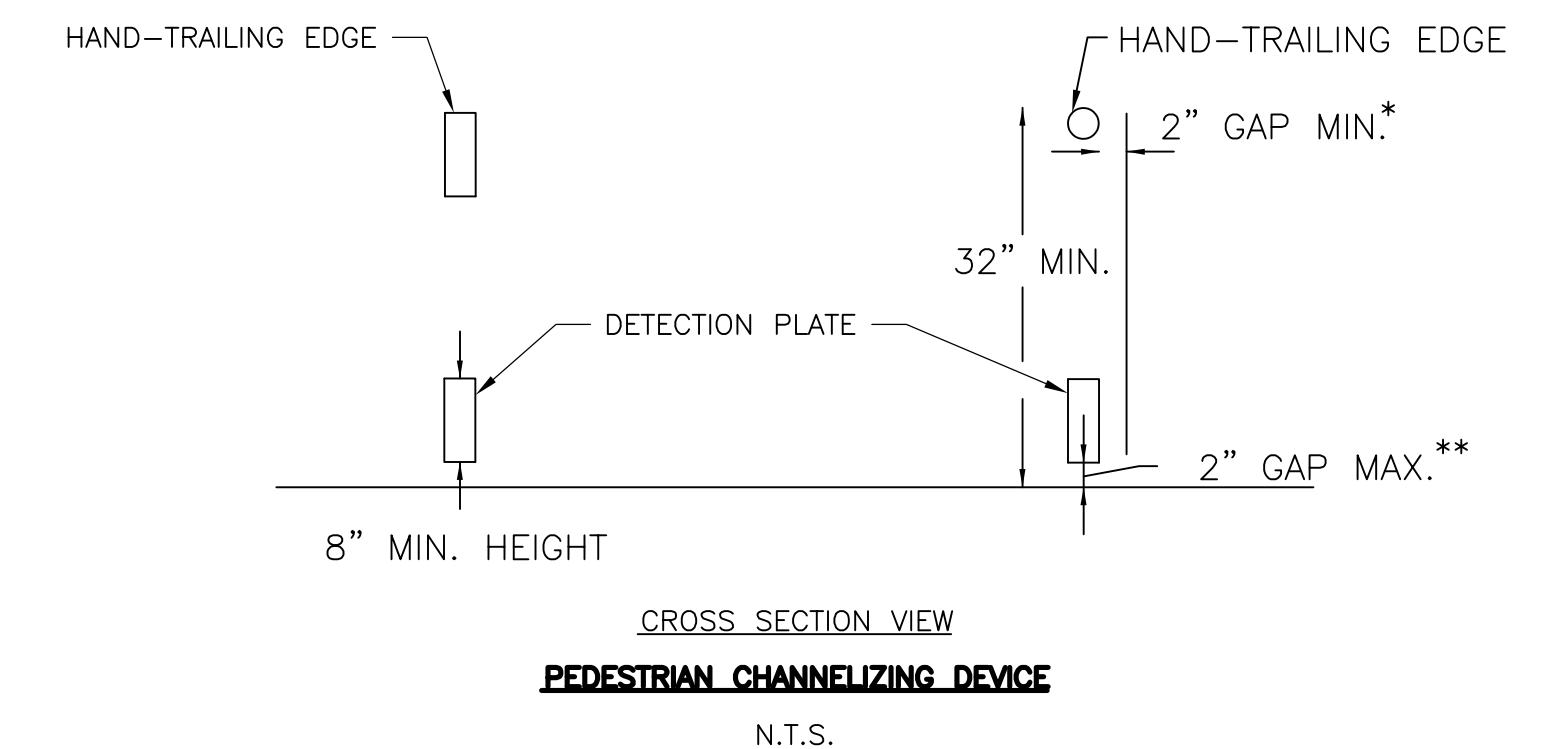


NOTES

- ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
- CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
- STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
- IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
- BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
- THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THIS WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT X 5 FOOT PASSING ZONE. (FOR SHORT TERM SETUPS < 10 HOURS, THIS CONDITION MAY BE WAIVED. A NOTE WOULD NEED TO BE INCLUDED IN THE TTC THAT STATES HOW THE CONTRACTOR SHOULD ADDRESS THIS ISSUE.)

PEDESTRIAN BYPASS

N.T.S.



NOTES:

* THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.

** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: C. LAUZON
 DRAWN BY: R. HALZACK
 SHEET CHK'D BY: W. STERRITT
 CROSS CHK'D BY: _____
 APPROVED BY: _____
 DATE: APRIL 2022

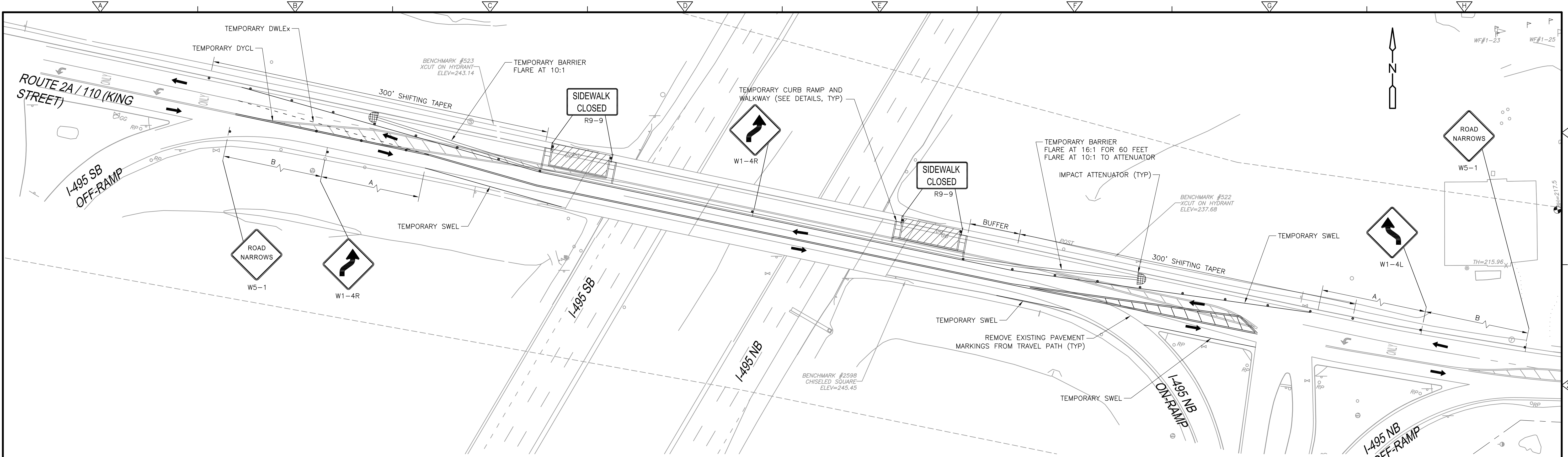


LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

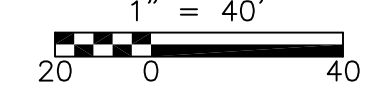
TRAFFIC MANAGEMENT PLANS III
 STANDARD SETUPS
 SHEET NO. TM-3

PROJECT NO. 263387-261886
 FILE NAME: TSTTM001.dwg
 SHEET NO. TM-3

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KING STREET BRIDGE – WEST APPROACH LANE SHIFTS



- NOTES
1. SEE TM-1 FOR ADVANCE AND DEPARTURE SIGNAGE AND DIMENSIONS.
 2. ADVANCE AND DEPARTURE SIGNAGE SHALL BE PROVIDED ON KING STREET AND I-495 RAMPS.
 3. AN ACCESSIBLE PEDESTRIAN PATH OF TRAVEL SHALL BE PROVIDED AT ALL TIMES AROUND THE WORK AREA.
 4. ABBREVIATIONS:
 SWL = SOLID WHITE LINE
 DYCL = DOUBLE YELLOW CENTER LINE
 DWLEX = DOTTED WHITE EXTENSION LINE (2' LINE WITH 6' GAP)

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: C. LAUZON
 DRAWN BY: R. HALZACK
 SHEET CHK'D BY: W. STERRITT
 CROSS CHK'D BY: _____
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 DATE: APRIL 2022

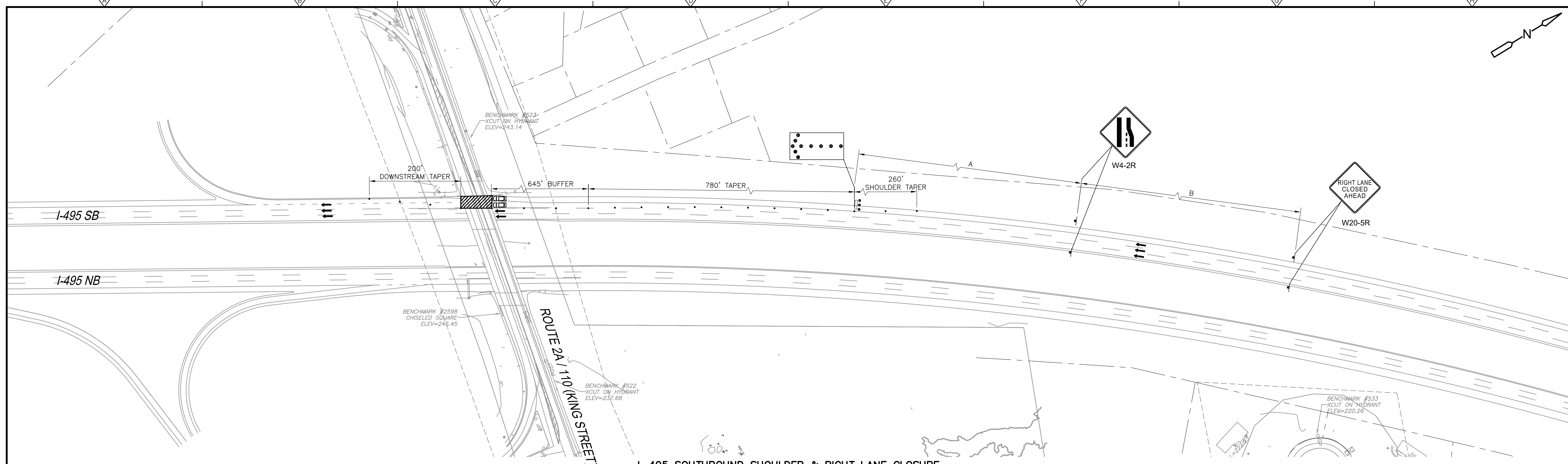
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 LITTLETON WATER RESOURCE RECOVERY FACILITY

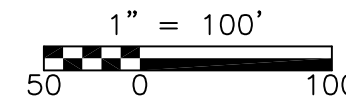
TRAFFIC MANAGEMENT PLANS IV
 KING STREET BRIDGE ABUTMENTS

PROJECT NO. 263387-261886
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 SHEET NO.
TM-4

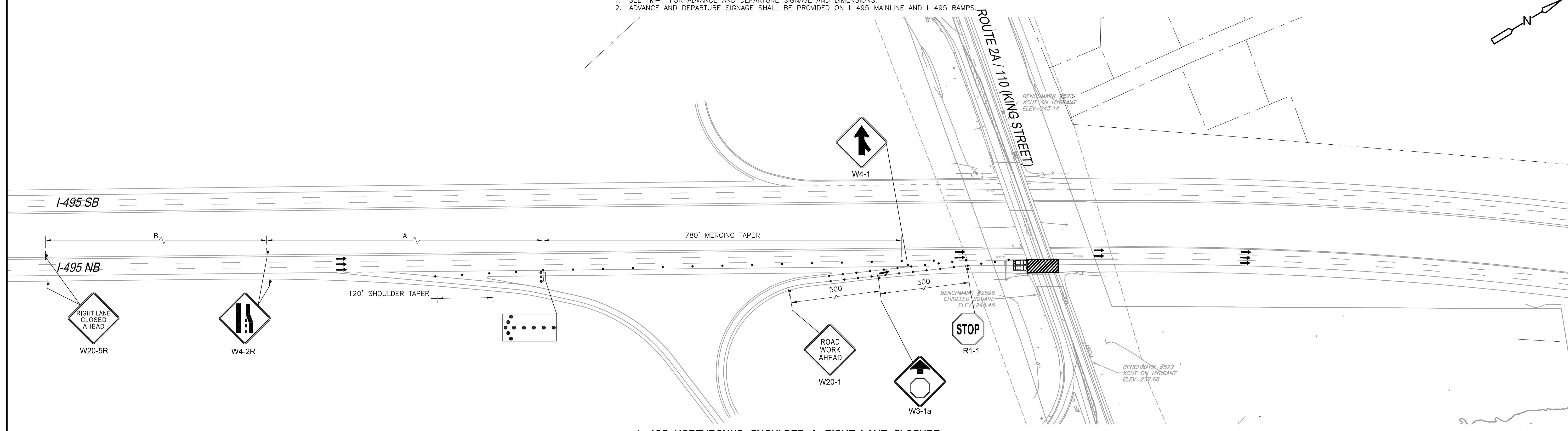
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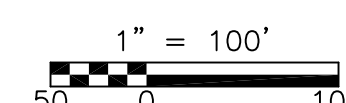
I-495 SOUTHBOUND SHOULDER & RIGHT LANE CLOSURE



- NOTES
 1. SEE TM-1 FOR ADVANCE AND DEPARTURE SIGNAGE AND DIMENSIONS.
 2. ADVANCE AND DEPARTURE SIGNAGE SHALL BE PROVIDED ON I-495 MAINLINE AND I-495 RAMPS.



I-495 NORTHBOUND SHOULDER & RIGHT LANE CLOSURE



- NOTES
 1. SEE TM-1 FOR ADVANCE AND DEPARTURE SIGNAGE AND DIMENSIONS.
 2. ADVANCE AND DEPARTURE SIGNAGE SHALL BE PROVIDED ON I-495 MAINLINE AND I-495 RAMPS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: C. LAUZON
 DRAWN BY: R. HALZACK
 SHEET CHK'D BY: W. STERRITT
 CROSS CHK'D BY: _____
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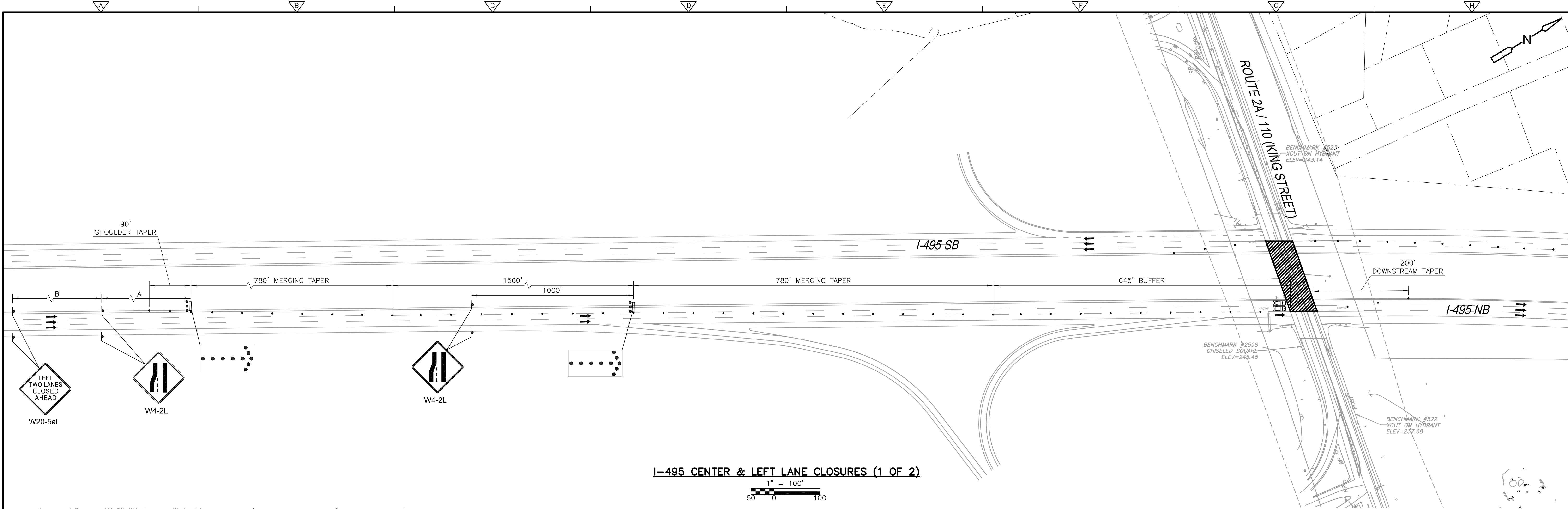
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LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

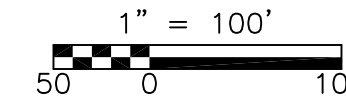
TRAFFIC MANAGEMENT PLANS V
 I-495 LANE CLOSURES

PROJECT NO. 263387-261886
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TM-5

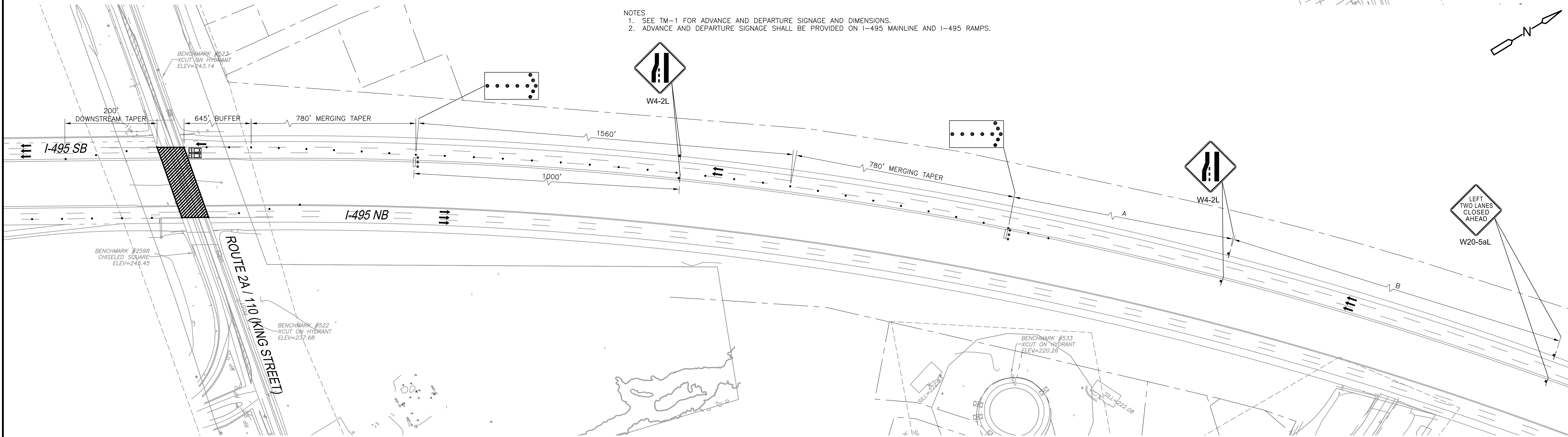
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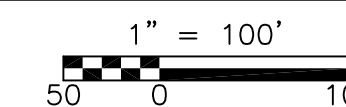
I-495 CENTER & LEFT LANE CLOSURES (1 OF 2)



- NOTES
 1. SEE TM-1 FOR ADVANCE AND DEPARTURE SIGNAGE AND DIMENSIONS.
 2. ADVANCE AND DEPARTURE SIGNAGE SHALL BE PROVIDED ON I-495 MAINLINE AND I-495 RAMPS.



I-495 CENTER & LEFT LANE CLOSURES (2 OF 2)



- NOTES
 1. SEE TM-1 FOR ADVANCE AND DEPARTURE SIGNAGE AND DIMENSIONS.
 2. ADVANCE AND DEPARTURE SIGNAGE SHALL BE PROVIDED ON I-495 MAINLINE AND I-495 RAMPS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: C. LAUZON
 DRAWN BY: R. HALZACK
 SHEET CHK'D BY: W. STERRITT
 CROSS CHK'D BY: _____
 APPROVED BY: _____
 DATE: APRIL 2022

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LITTLETON WATER DEPARTMENT
 LITTLETON WATER RESOURCE RECOVERY FACILITY

TRAFFIC MANAGEMENT PLANS VI
 I-495 LANE CLOSURES

PROJECT NO. 263387-261886
 FILE NAME: TSTTM001.dwg
 SHEET NO.
TM-6

Attachment I
Final Design Plans
Effluent Recharge Facility

LITTLETON WATER DEPARTMENT
TOWN OF LITTLETON, MASSACHUSETTS
**LITTLETON EFFLUENT
RECHARGE PROJECT**

CONTRACT NO. IFB-FY22-1

GENERAL MANAGER

NICK LAWLER

BOARD OF WATER COMMISSIONERS

JAMES KARR, CHAIRMAN
IVAN PAGACIK
SCOTT LARSEN
DICK TAYLOR
BRUCE TRUMBULL

WATER & WASTEWATER SUPERINTENDENT

COREY GODFREY



LOCATION PLAN
NTS

DRAWING INDEX



<u>SHEET</u>	<u>TITLE</u>
G-1	GENERAL NOTES AND LEGEND
C-1	SITE PLAN OVERVIEW
C-2	EXISTING CONDITIONS PLAN
C-3	SITE PREPARATION AND EROSION & SEDIMENT CONTROL PLAN
C-4	LAYOUT AND MATERIALS PLAN
C-5	GRADING AND DRAINAGE PLAN
C-6	YARD PIPING PLAN
C-7	LEACHING FIELD SITE ENLARGEMENT PLAN
CD-1	CIVIL DETAILS I
CD-2	CIVIL DETAILS II
CD-3	CIVIL DETAILS III

JULY 2021

100% PERMIT SET
NOT FOR CONSTRUCTION

**CDM
Smith**
BOSTON, MASSACHUSETTS

Water

Environment

Transportation

Energy

Facilities

LEGEND

⊞ CB	CATCH BASIN	CONC	CONCRETE
⊙ DMH	DRAIN MANHOLE	CC	CONCRETE CURB
⊞ GG	GAS GATE	CP	CONCRETE PAD
I	INVERT	CLF	CHAIN LINK FENCE
VAC	VALVE ACCESS COVER	EOP	EDGE OF PAVEMENT
BP	BITUMINOUS CONCRETE PATCH	G	GAS LINE
△	TRAVERSE STATION	D	DRAIN LINE
↑	GUY WIRE	DWS	DETECTABLE WARNING STRIP
⊙ HYD	HYDRANT	NVP	NO VISIBLE PIPE
⊙ SMH	SEWER MANHOLE	OH	OVERHEAD
+	SIGN	PVC	POLYVINYL CHLORIDE PIPE
+100.0	SPOT ELEVATION	PR	PEDESTRIAN RAMP
○ UP#	UTILITY POLE	RCP	REINFORCED CONCRETE PIPE
○ UP/LP	UTILITY POLE/LIGHT POLE	S	SEWER LINE
⊞ WG	WATER GATE	SWL	SOLID WHITE LINE
CU	CONNECTION UNDETERMINED	UNKGATE	UNKNOWN GATE
☆	LAMP	VCP	VITRIFIED CLAY PIPE
		GC	VERTICLE GRANITE CURB
		WF	WIRE FENCE

CIVIL/SITE ABBREVIATIONS

SYMBOL	DESCRIPTION
TC	TOP OF CURB
BC	BOTTOM OF CURB
BW	BOTTOM OF WALL
TW	TOP OF WALL
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CS	CRUSHED STONE
D-PVC	POLYVINYL CHLORIDE DRAIN
DMH	DRAIN MANHOLE
FES	FLARED END SECTION
MH	MANHOLE
TS	TOP OF STEP/SLAB
BS	BOTTOM OF STEP
RCP	REINFORCED CONCRETE PIPE
MJ	MECHANICAL JOINT
DI	DUCTILE IRON
FFE	FINISHED FLOOR ELEVATION
DN	DOWN
VGC	VERTICAL GRANITE CURB
UP	UTILITY POLE
PVC	POLYVINYL CHLORIDE
INV. EL.	INVERT ELEVATION
S	SLOPE
GV	GATE VALVE
EFF	EFFLUENT

GENERAL NOTES

- BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE MUST BE NOTIFIED (SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40.) CALL "DIG SAFE" 1 (888) 344-7233 HTTP://WWW.DIGSAFE.COM.
- FOR BORING INFORMATION AND LOCATIONS SEE EXISTING CONDITIONS DRAWINGS AND APPENDIX TO SPECIFICATIONS.
- THE CONTRACTOR SHALL PREPARE AN EROSION AND SEDIMENT CONTROL PLAN AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS SPECIFIED TO PROTECT THE SITES FROM EROSION AND PREVENT THE MOVEMENT OF SEDIMENT AND DEBRIS.
- ALL AREAS OUTSIDE THE LIMIT OF DISTURBANCE SHALL BE PROTECTED AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE OWNER AND/OR ENGINEER.
- ALL MATERIALS TO BE REMOVED WITHIN THE LIMIT OF DISTURBANCE SHALL BE REMOVED TO A LOCATION ARRANGED BY THE CONTRACTOR AND APPROVED BY THE OWNER AND/OR ENGINEER. THE LOCATION OF STOCKPILED TOPSOIL SHALL BE IN AREAS APPROVED BY THE OWNER AND/OR ENGINEER.
- CONTRACTOR SHALL PROVIDE SITE SECURITY THROUGHOUT CONSTRUCTION PERIOD.
- STRIP EXISTING VEGETATION AND 6" LAYER TOPSOIL UNLESS OTHERWISE SHOWN TO BE PROTECTED WITHIN LIMIT OF DISTURBANCE.
- WHEN EXCAVATING AROUND EXISTING STRUCTURES, EXCAVATE SOILS UNIFORMLY AROUND THE STRUCTURE UNLESS INDICATED OTHERWISE. CONTROL EXCAVATION LEVELS AROUND THE ENTIRE PERIMETER OF THE STRUCTURE SUCH THAT THE GRADE DIFFERENTIAL DOES NOT EXCEED 2 FT.
- WHEN BACKFILLING AROUND STRUCTURES, BRING UP BACKFILL UNIFORMLY AROUND STRUCTURE UNLESS INDICATED OTHERWISE. CONTROL BACKFILL LEVELS AROUND THE ENTIRE PERIMETER OF THE STRUCTURE SUCH THAT THE GRADE DIFFERENTIAL DOES NOT EXCEED 2 FT.
- GAS MAINS ARE ASSUMED TO HAVE THREE FEET OF COVER UNLESS SHOWN OTHERWISE. LOCAL WATER MAINS ARE ASSUMED TO HAVE 5 FEET OF COVER. IT IS NOT WARRANTED THAT ALL UTILITIES ARE SHOWN OR ARE SHOWN AT THE CORRECT ELEVATION.
- ALL UNDERGROUND SERVICES TO HOUSES ARE NOT SHOWN.
- BORING LOGS HAVE BEEN APPENDED TO THE SPECIFICATION DOCUMENTS. BORINGS ARE INCLUDED FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT BE SHOWN AT EXACT LOCATIONS.
- LIMITS OF CLEARING AND GRUBBING ARE SHOWN ON SHEET C-3 SITE PREPARATION AND EROSION AND SEDIMENTATION CONTROL PLAN. CONTRACTOR SHALL MINIMIZE CLEARING AND GRUBBING AS MUCH AS POSSIBLE. ALL CROSS-COUNTRY AREAS SHALL BE LOAMED AND SEEDDED OR SODDED TO THE LIMITS DISTURBED BY CONSTRUCTION UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL NOT DISTURB ANY LAND OUTSIDE THE LIMITS OF WORK.
- WHEN THE HORIZONTAL SEPARATION BETWEEN THE NEW SEWER AND EXISTING OR RELOCATED WATER MAIN IS LESS THAN 10-FT AND THE VERTICAL SEPARATION IS LESS THAN 18-IN THE NEW SEWER SHALL BE CONSTRUCTED OF RESTRAINED MJ DI OR CONCRETE ENCASED PIPE FOR A MINIMUM OF 10-FT BEYOND WHERE THE SPACING IS LESS THAN 10-FT HORIZONTAL AND 18-IN VERTICAL.
- IF A WATER MAIN CROSSES UNDER THE NEW SEWER, BOTH PIPES SHALL BE RESTRAINED MJ DI OR CONCRETE ENCASED FOR A MINIMUM OF 10-FT TO EITHER SIDE OF THE RESPECTIVE CENTER LINES. DUCTILE IRON PIPE SHALL BE PAID UNDER THE RESPECTIVE PIPE ITEMS. CONCRETE ENCASEMENT SHALL BE PAID UNDER MISCELLANEOUS CONCRETE ITEM.
- IF NECESSARY TO WORK IN LIVE SEWER MANHOLES CONTRACTOR SHALL FOLLOW ALL FEDERAL, STATE AND LOCAL REQUIREMENTS FOR SAFETY WHEN IN CONFINED SPACES. THE CONTRACTOR IS ALSO REFERRED TO RECOMMENDATIONS IN THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH PUBLICATION NO. 80-106, "WORKING IN CONFINED SPACES".
- CONTRACTOR TO MAINTAIN FLOW IN EXISTING DRAINS AT ALL TIMES.

YARD PIPING NOTES

- THE LOCATION OF EXISTING UTILITIES AND OTHER UNDERGROUND STRUCTURES SHOWN ON THE DRAWINGS IS APPROXIMATE, AND THEIR ACTUAL LOCATIONS MAY VARY FROM THAT SHOWN. FURTHER, IT IS NOT WARRANTED THAT ALL UNDERGROUND UTILITIES AND STRUCTURES ARE SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND FEATURES THAT MAY BE AFFECTED BY THE WORK.
- NEW WATER MAINS SHALL HAVE A MINIMUM COVER OF 5 FEET UNLESS OTHERWISE INDICATED AND SHALL PASS UNDER EXISTING UTILITIES AS NECESSARY TO MEET THIS REQUIREMENT.
- ALL NEW WATER PIPES, INCLUDING FIRE PROTECTION LINES, AND OTHER PRESSURE PIPES INCLUDING FORCE MAINS, SHALL HAVE RESTRAINED JOINTS AS SPECIFIED.
- TEST PITS SHALL BE DUG TO LOCATE EXISTING PIPES TO WHICH NEW PIPES ARE TO BE CONNECTED, AND WHERE NECESSARY TO DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL FINAL CONNECTIONS TO PIPES.
- ABANDONED PIPES, VALVES AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION MAY BE REMOVED AS REQUIRED. PIPES LEFT IN PLACE SHALL BE PLUGGED AND ABANDONED AS SPECIFIED AND AS APPROVED BY THE ENGINEER.
- WALKWAYS AND PAVEMENTS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED WITHOUT ADDITIONAL EXPENSE BY OWNER.

GRADING NOTES:

- CONTRACTOR IS RESPONSIBLE FOR CONFIRMING GRADES AND LOCATION OF UTILITIES. MAJOR DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE OWNER/ENGINEER.
- TO ESTABLISH PROPER GRADES, CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF GRADE STAKES. THE NUMBER AND LOCATION SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE OWNER AND/OR ENGINEER.
- ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE IN A MANNER APPROVED BY THE OWNER AND/OR ENGINEER.

SURVEY NOTES

- SURVEY PROVIDED BY DAWOOD ENGINEERING, INC. ON APRIL 16TH 2021
- COORDINATES, IN U.S. SURVEY FEET, ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983, (2011), EPOCH 2010.00, BASED ON THE KeyNet GPS VIRTUAL REFERENCE SYSTEM (VRS)
- ELEVATIONS, IN U.S. SURVEY FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), BASED ON THE KeyNet GPS VIRTUAL REFERENCE SYSTEM (VRS)
- SUBSURFACE UTILITY LINES AND FEATURES, AS SHOWN HEREON, WERE COMPILED FROM FIELD EVIDENCE OR AVAILABLE RECORD INFORMATION (SEE REFERENCES), AND THEIR LOCATIONS ARE ONLY APPROXIMATE. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD.

LAYOUT NOTES:

- FOR LAYOUT PURPOSES AND TO ESTABLISH THE COORDINATE SYSTEM SEE SURVEY NOTES.
- CONTRACTOR SHALL VERIFY ALL PROPERTY AND SURVEY INFORMATION.
- CONTRACTOR SHALL BE RESPONSIBLE TO IDENTIFY AND PROTECT ALL ON-SITE STRUCTURES AND VEGETATION TO BE RETAINED ON THE SITE THROUGHOUT THE CONSTRUCTION PROJECT.
- CONTRACTOR SHALL MAINTAIN VEHICULAR ACCESS AND ALL UTILITY SERVICES THROUGHOUT THE DURATION OF THE CONTRACT, UNLESS OTHERWISE SPECIFIED.
- LOCATIONS OF BURIED UTILITIES, VAULTS AND CONCRETE PADS ARE APPROXIMATE ONLY. FINAL LOCATIONS SHALL BE DETERMINED IN THE FIELD AFTER STAKING BY THE CONTRACTOR BASED ON ACTUAL SITE CONDITIONS AS APPROVED BY THE OWNER AND/OR ENGINEER.
- ALL DISTURBED AREAS NOT COVERED WITH PAVEMENT, PADS, CRUSHED STONE, SOD, OR STRUCTURES SHALL RECEIVE 6" LAYER OF LOAM AND SEED AS SPECIFIED, UNLESS NOTED OTHERWISE.
- DIMENSIONS FOR STRUCTURES ARE TO OUTSIDE FACE OF WALL. DIMENSIONS TO CONCRETE PADS ARE TO EDGE OF PAD. DIMENSIONS TO FENCES AND GATES ARE ON-CENTER.
- ALL ITEMS TO BE REMOVED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS, SHALL BE DISPOSED OFF SITE IN A LEGAL MANNER.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

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 DRAWN BY: J. BRONENKANT
 SHEET CHK'D BY: D. YOUNG
 CROSS CHK'D BY: M. DODSON
 APPROVED BY: K. JOHNSTON
 DATE: JULY 2021

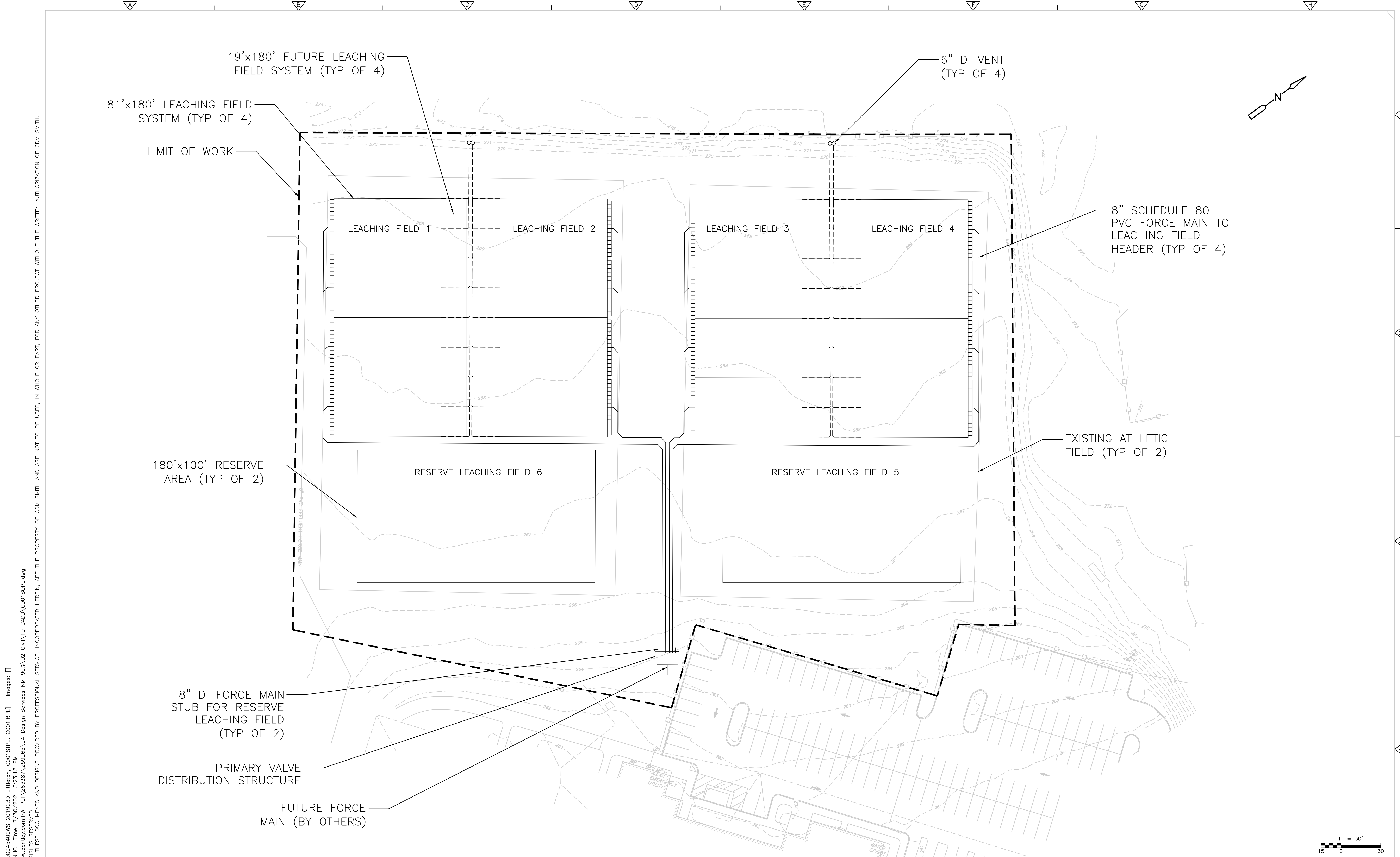


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 Boston, MA 02109
 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
EFFLUENT RECHARGE SYSTEM PROJECT

GENERAL NOTES AND LEGEND
 SHEET NO.
G-1

PROJECT NO. 263387-259265
 FILE NAME: G0001LGN0.DWG
 SHEET NO.
G-1



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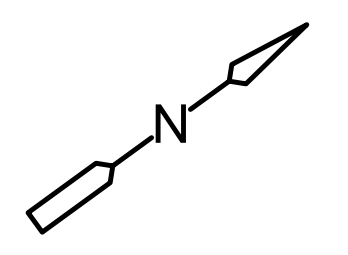
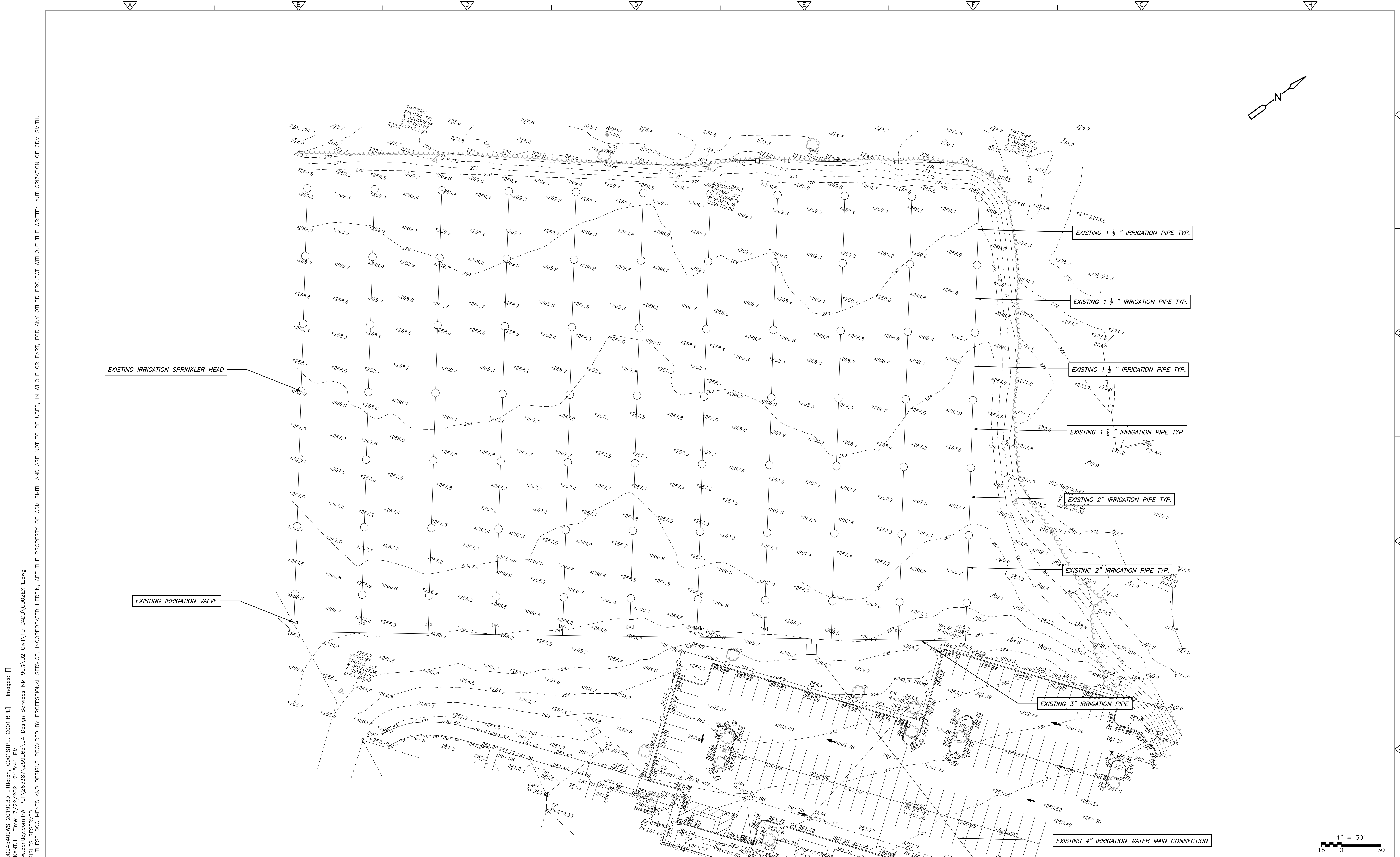
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 CROSS CHK'D BY: M. DODSON
 APPROVED BY: K. JOHNSTON
 DATE: JULY 2021

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 Boston, MA 02109
 Tel: (617) 452-6000

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 SHEET NO.
C-1

100% PERMIT SET - NOT FOR CONSTRUCTION



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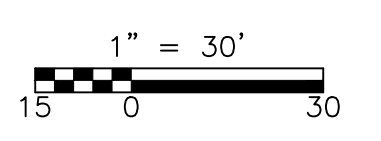
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 APPROVED BY: M. DODSON
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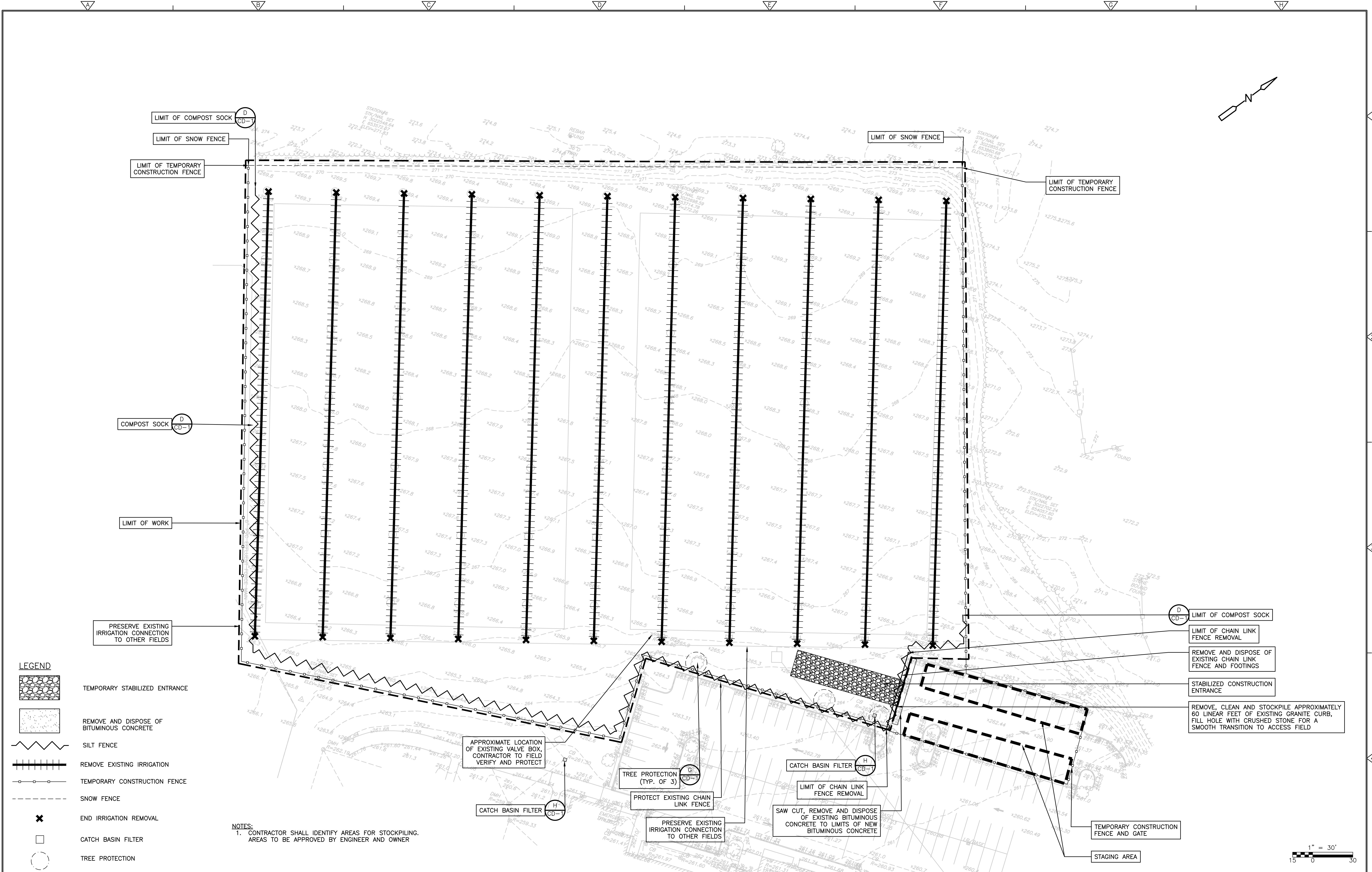
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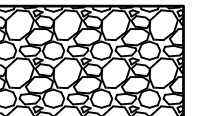



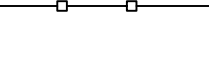




EXISTING CONDITIONS PLAN
 SHEET NO. **C-2**

PROJECT NO. 263387-259265
 FILE NAME: CO02EXPL.DWG
 SHEET NO. **C-2**



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- LEGEND**
-  TEMPORARY STABILIZED ENTRANCE
 -  REMOVE AND DISPOSE OF BITUMINOUS CONCRETE
 -  SILT FENCE
 -  REMOVE EXISTING IRRIGATION
 -  TEMPORARY CONSTRUCTION FENCE
 -  SNOW FENCE
 -  END IRRIGATION REMOVAL
 -  CATCH BASIN FILTER
 -  TREE PROTECTION

NOTES:
 1. CONTRACTOR SHALL IDENTIFY AREAS FOR STOCKPILING. AREAS TO BE APPROVED BY ENGINEER AND OWNER

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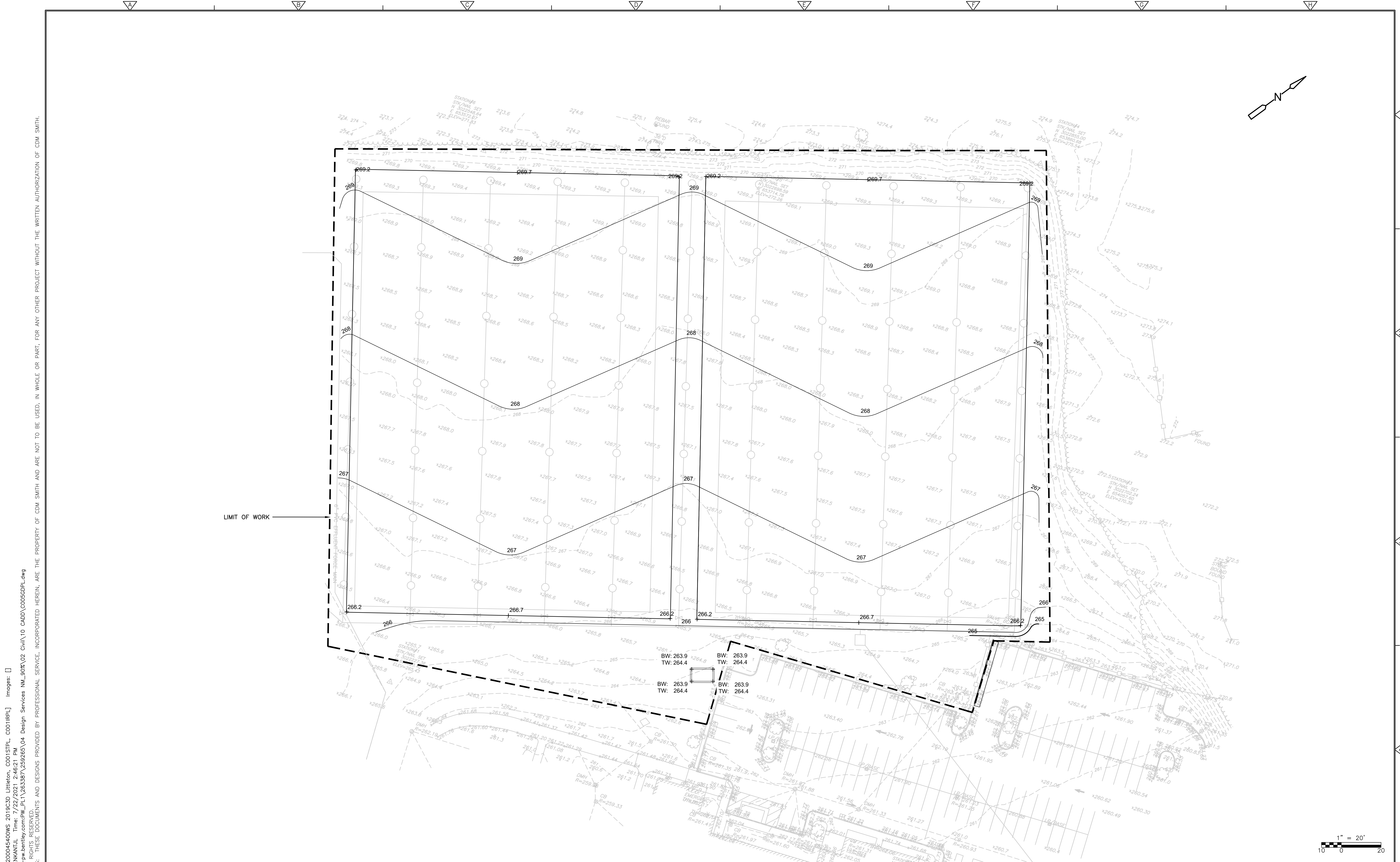
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 APPROVED BY: M. DODSON
 DATE: JULY 2021


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 Tel: (617) 452-8000

LITTLETON WATER DEPARTMENT
EFFLUENT RECHARGE SYSTEM PROJECT

**SITE PREPARATION AND
 AND EROSION AND SEDIMENTATION CONTROL PLAN**

PROJECT NO. 263387-259265
 FILE NAME: C003ESPL.DWG
 SHEET NO.
C-3



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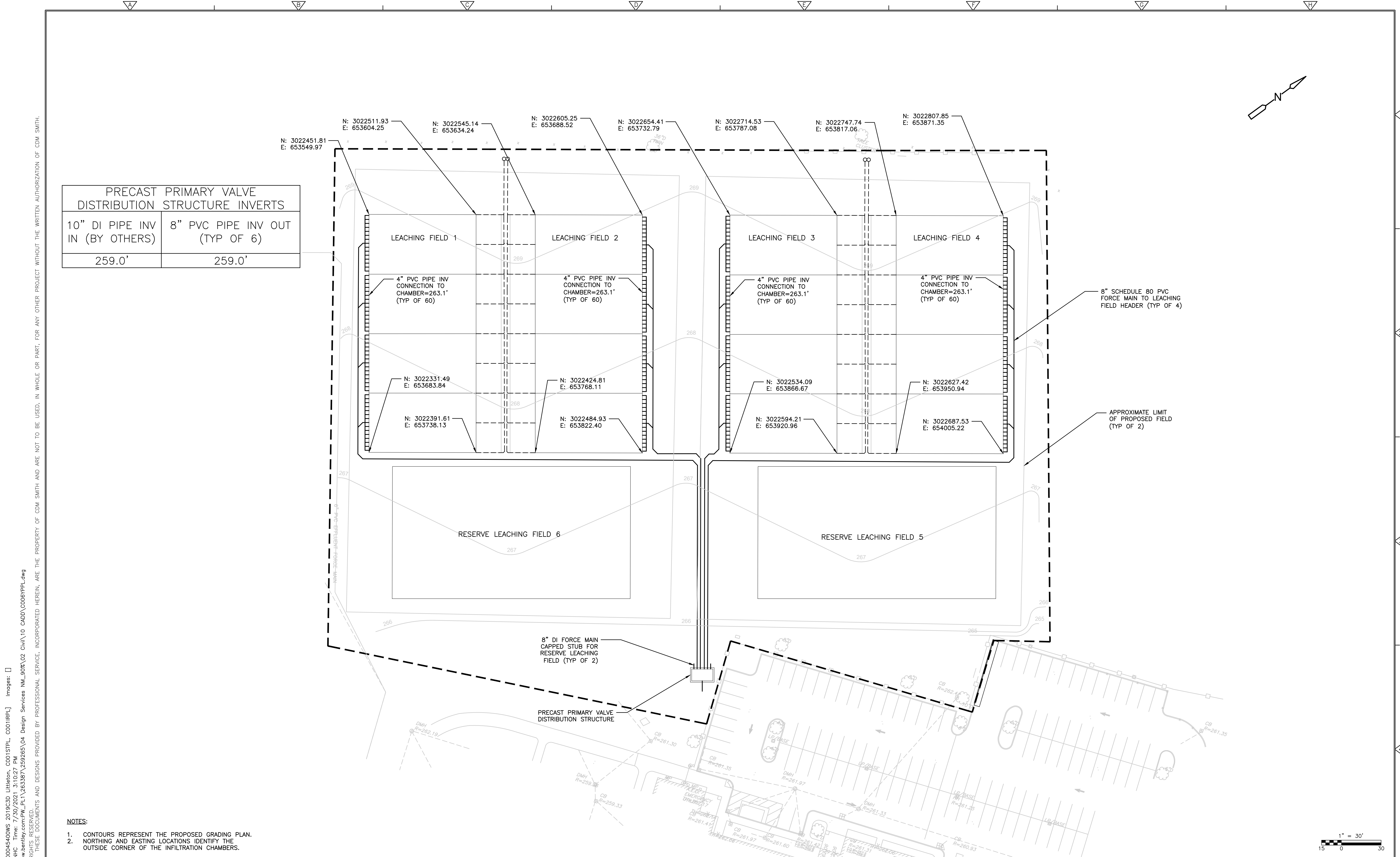
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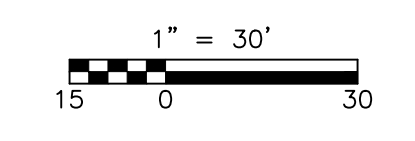
GRADING AND DRAINAGE PLAN
 SHEET NO.
C-5

PROJECT NO. 263387-259265
 FILE NAME: CO05GDPL.DWG
 SHEET NO.
C-5



PRECAST PRIMARY VALVE DISTRIBUTION STRUCTURE INVERTS	
10" DI PIPE INV IN (BY OTHERS)	8" PVC PIPE INV OUT (TYP OF 6)
259.0'	259.0'

- NOTES:**
1. CONTOURS REPRESENT THE PROPOSED GRADING PLAN.
 2. NORTHING AND EASTING LOCATIONS IDENTIFY THE OUTSIDE CORNER OF THE INFILTRATION CHAMBERS.



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LITTLETON WATER DEPARTMENT
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YARD PIPING PLAN
 SHEET NO.
C-6

PROJECT NO. 263387-259265
 FILE NAME: C006YPPPL.DWG
 SHEET NO.
C-6

