

# Blackstone River Bikeway – Segment 1A

Portions of Providence Assessor's Lot 8/ Plat  
17; Lots 66, 446, & 456/Plat 15; and a Portion  
of Beach Street, Providence, RI

PREPARED FOR

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The Rhode Island Department of  
Environmental Management  
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PREPARED BY

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SEPTEMBER 2015



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# 1

## Introduction

On behalf of our client, the Rhode Island Department of Environmental Management (RIDEM) Division of Planning and Development, Vanasse Hangen Brustlin, Inc. (VHB) has completed this Remedial Action Work Plan (RAWP) for the proposed Blackstone River Bikeway – Segment 1A. Segment 1A of the bikeway extends from East Transit Street northerly towards Pitman Street along the Seekonk River in Providence, Rhode Island. Specifically, the bikeway segment will include portions of Lot 8 on Assessor’s Plat Map 17; a portion of Beach Street (a paper street shown on Assessor’s Plat Map 17); and Lots 35, 66, 446, 456, 480 and 487 on Assessor’s Plat Map 15 in Providence, Rhode Island. A Project Location Map is included as **Figure 1**. Portions of Segment 1A, as shown on **Figure 2**, are proposed to cross the following properties that are RIDEM identified State Hazardous Waste Sites (SHWS) with existing Environmental Land Usage Restrictions (ELURs) recorded:

- East Transit Boat Ramp (SHWS ETBR-HWM), the area of Beach Street on Plat Map 17; and
- EPOCH Senior Living Center (SHWS KOFF-HWM), Lot 35 on Plat Map 15.

The RIDEM Division of Planning and Development and Office of Waste Management is aware of these ELURs and associated Soil Management Plans (SMPs) and any proposed construction activities on these sites will be in accordance with the applicable provisions of their respective ELURs. The RIDEM file number for the Site (which only refers to Portions of Providence Assessor’s Lot 8/ Plat 17; Lots 66, 446, & 456/Plat 15; and a Portion of Beach Street, Providence, RI) is SR-28-1774.

This RAWP has been prepared in accordance with Section 9.0 of the *Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases (Remediation Regulations)* to detail the remedy recommended in the Site



Investigation Report (SIR) and approved by the RIDEM Office of Waste Management (OWM) in a Program Letter dated August 12, 2015 relative to impacts to soils identified during site investigation activities. This plan was prepared with consideration to the following reports and correspondence:

- Preliminary Site Investigation (PSI), prepared by VHB, dated February 3, 2015;
- Hazardous Material Release Notification Form, prepared by RIDEM Division of Planning and Development, dated May 29, 2015;
- Voluntary Procedure Letter, prepared by RIDEM OWM, dated June 12, 2015;
- Pre-Site Investigation Public Notice Letter, prepared by VHB, dated June 24, 2015;
- Summary of Pre-Site Investigation Public Notice, prepared by VHB, dated July 23, 2015;
- Site Investigation Report, prepared by VHB, dated July 24, 2015;
- Program Letter, prepared by RIDEM OWM, dated August 12, 2015; and
- Post-Site Investigation Public Notice Letter, prepared by VHB, dated August 12, 2015.

VHB performed these investigations for the RIDEM Division of Planning and Development to support their efforts to construct a recreational bikeway along the proposed 0.70-mile stretch of land in Providence, Rhode Island. A Project Location Map is included as **Figure 1**.

Pursuant to the Rhode Island General Laws, Title 23, *Health and Safety*, Chapter 23-19.14, *Industrial Property Remediation and Reuse Act*, Section 23-19.14-5, *Environmental Equity and Public Participation*, a public meeting was advertised and held at the Fox Point Library on July 7, 2015. Following the 10-day public comment period, VHB submitted a response to public comments on July 23, 2015.

Site investigation activities were summarized in a report submitted to the RIDEM OWM on July 30, 2015. The RIDEM OWM issued a Program Letter on August 12, 2015.

Public notice was subsequently conducted at all abutting property owners, tenants, and the City of Providence, regarding the substantive findings of the completed investigation in accordance with Rules 7.07 and 7.09 of Remediation Regulations. The opportunity for public review and comment on the technical feasibility of the proposed remedial alternatives commenced on August 13, 2015 and the period closed August 27, 2015, with no comments received.



This RAWP presents a remedial action to eliminate direct exposure to impacted soils in portions of the proposed bikeway right-of-way. Direct exposure to impacted soils at the Site will be managed via soil excavation and construction of the bikeway which will serve as an engineered soil cap. Environmental Land Usage Restrictions (ELURs) which will include Soil Management Plans (SMPs) will be recorded for the regulated capped properties that the bikeway travels through after construction is complete.

VHB prepared a draft ELUR (attached as **Appendix E**) on behalf of the Client. The draft ELUR proposes:

- Prohibiting the use of groundwater at the Site for drinking water;
- The Site's capped areas are to remain in place and be maintained in good condition, as needed;
- RIDEM notification and appropriate SMP compliance should future soil excavation/disturbances be required unless otherwise exempt; and
- Annual evaluation of the properties for ELUR compliance.

Implementation of the RAWP is proposed to commence concurrently with redevelopment of the Site. This RAWP has been prepared on behalf of and for the exclusive use of RIDEM and the Rhode Island Department of Transportation. Limitations associated with this practice are included in **Appendix A**.



## Site Description and Overview

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### Location and Site Description

Segment 1A of the Blackstone River Bikeway, hereinafter referred to as the Site or Segment 1A, is located along the Seekonk River in Providence, Rhode Island. The Site consists of the approximate 0.71-mile strip of land that will be used to construct the bikeway, beginning at the exit ramp for Interstate Route 195 Westbound Exit 3 south of Gano Park in Providence Rhode Island, and ending at Pitman Street in Providence, Rhode Island. The Site is identified by the City of Providence Tax Assessor's Department as Lot 8 on Assessor's Plat Map 17; a portion of Beach Street (a paper street shown on Assessor's Plat Map 17); and Lots 35, 66, 446, 456, 480 and 487 on Assessor's Plat Map 15 in Providence, Rhode Island. A Site Location Map is included as **Figure 1**.

The land south of the railroad tracks, Plat 17, Lot 8 and Plat 15, Lots 66, 446, and 456 is currently vacant and used by the City of Providence for recreational purposes, including athletic fields, a boat ramp, and a public dog park. The land north of the railroad tracks is currently occupied by residential and commercial buildings. Lot 487 on Plat 15 is occupied by a commercial shopping plaza, which includes Eastside Marketplace. Lot 35 on Plat 15 is occupied by a senior living center. Lot 480 on Plat 15 is occupied by an old mill building, which is currently occupied by the Salvation Army.

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### Environmental Setting

The mean surface elevation of the Site is approximately 5 feet above sea level (USGS Topographic Map, Providence, RI, 1987). The topography of the Site is relatively flat, with the major topographical feature being a man made earthen berm in Gano Park and the railroad bed. The material used to construct the berm is not known, but is



suspected to be materials resulting from the leveling of tenement houses historically located in the Fox Point area. Both the earthen berm and the railroad bridge are approximately 10 feet higher in elevation than the surrounding areas.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) *Web Soil Survey*, soils at the Site consist of Udorthents-Urban land complex. Udorthents-Urban land complex consists of approximately 70 percent Udorthents and similar soils, 20 percent Urban land, and 10 percent minor components. The parent material of this soil consists of human transported material. The slope for Udorthents-Urban land complex is generally from 0 to 15 percent.

Groundwater at the majority of the Site is classified by the RIDEM as GB. Such groundwater resources are known or presumed to be unsuitable for public or private drinking water uses without treatment due to known or presumed degradation.

The nearest surface water body to the Site is the Seekonk River. According to the RIDEM Water Quality Regulations, the Seekonk River is classified as a "SB1{a}" surface water body. Class SB1{a} waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. These waters will likely be impacted by combined sewer overflows in accordance with approved CSO Facilities Plans and in compliance with rule 19.E.1 of these regulations and the Rhode Island CSO policy. Therefore, primary contact recreational activities; shellfishing uses; and fish and wildlife habitat will likely be restricted.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the Providence County, Rhode Island (Community Panel No. 44007C0309J, dated September 18, 2013), the Site is located in both an "Other Flood Areas" and a Special Flood Hazard Areas (SFHA). SFHAs denote 100-year flood zone, which has a one percent chance of being equaled or exceeded in any given year. Specifically, the Site is located in SFHA Zone VE, which is a coastal flood zone with velocity hazard (wave action) and where Base Flood Elevations have been determined. The "Other Flood Areas" indicates that the remainder of the Site is in areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas

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## Site Operational History

The Site was historically part of the Seekonk River. The land proposed for bikeway development was reclaimed by filling in portions of the Seekonk River from the early 1950s to the mid 1960s. Railroad tracks were constructed, bisecting the proposed



bikeway, sometime between 1894 and 1939. The railroad tracks ceased operation around 1976. Once the area was filled in, the land to the south of the railroad tracks was historically vacant and has been used by the City of Providence for recreational purposes. The land north of the railroad tracks was developed, starting in the 1960s, for commercial and residential use. Lot 487 on Plat Map 15 was developed sometime between 1962 and 1972 for commercial purposes.



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## Summary of Site Soil and Groundwater Conditions

Site Investigation activities in accordance with the *Remediation Regulations* have been completed at the Site by VHB. Pertinent data from the assessment has been included in the following reports previously submitted to the RIDEM.

- Preliminary Site Investigation, prepared by VHB, dated February 3, 2015; and
- Site Investigation Report, prepared by VHB, dated July 24, 2015.

The following section further outlines the constituents of concern identified in soil at the Site and the selected remedy to address the requirements of the RIDEM Site Remediation Regulations.

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### Soil

Laboratory analytical results from subsurface investigation sampling events indicate concentrations of arsenic, lead, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene that exceed the RIDEM Residential Direct Exposure Criteria (RDEC). Laboratory analytical results from subsurface investigation sampling events also indicate concentrations of arsenic, lead, and benzo(a)pyrene that exceed the RIDEM Industrial/Commercial Direct Exposure Criteria (I/CDEC).



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## Groundwater

Due to the shallow nature of the proposed development work at the Site, groundwater is not expected to be impacted. Therefore, groundwater analysis was not conducted and no remedial actions are proposed.

The ELUR will prohibit the use of groundwater at the Site for drinking water.

## Remedial Activities

As detailed in Section 9.0 of the Remediation Regulations, this work plan describes the remedial action necessary under these regulations.

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### Remedial Objectives

The remedial objective for this Site as recommended in the SIR and approved by RIDEM is to reduce possible direct exposure to impacted soils via limited soil excavation, capping, and institutional controls. Remediation will be conducted concurrently with construction.

In accordance with Section 9.02 of the Remediation Regulations, this Section addresses remedial objectives for all potentially impacted media (soil, groundwater, surface water, sediment, and air) for the Site. Remedial objectives for each of the media prescribed by the regulations are discussed below.

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### Soil

The remedial objective for soil is to reduce possible direct exposure to impacted soils and entrainment through wind and run-off via limited excavation and regrading or interment, capping and institutional controls. Exceedances of the RIDEM RDEC and/or the I/CDEC were detected in several areas along the proposed bikeway alignment. Where needed, remedial excavations will occur at the locations where soil data indicated exceedances of RIDEM criteria. The horizontal extent of the capping will include the entire bikeway due to exceedances of various chemical contaminants in each of the seven hand auger locations advanced south of the railroad tracks and areas of existing regulated soils north of the railroad tracks. Some areas will be excavated and/or regraded prior to capping to achieve the design grade and some will be capped directly, depending on existing and proposed grades. Some impacted soils



from those areas requiring excavation will be transferred to other regulated areas of the Site that require filling to raise the existing grade prior to capping. Any excavated or regraded contaminated soils not entered beneath the cap in a regulated portion of the Site will be disposed of at an off-Site licensed facility.

Since contaminated soil will be left in place beneath the cap, an ELUR will be required for the Site. The ELUR will require that capped portions of the Site remain in place, any soil disturbed post-remediation be managed in accordance with a RIDEM-approved Soil Management Plan (SMP), and the groundwater at the Site not be used as a source of drinking water.

As RIDOT plans to acquire the land area required to build the bikeway, the ELUR for the property north of the railroad tracks (EPOCH Senior Living Center: Lot 35 on Plat Map 15) will need to be modified to reflect the new property bounds and re-filed with the RIDEM and City Hall. The modification of the ELUR is the legal responsibility of the property owner.

Since the RIDOT land acquisitions include an area of the EPOCH Senior Living Center Property along the riverbank which was not capped but where access was restricted via vegetative plantings, supplemental plantings and/or fencing shall be considered to discourage access to said areas.

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## Groundwater

Groundwater investigation was not part of the Site Investigation activities at the Site. Due to relatively shallow depth of excavations, dewatering activities are not anticipated. Capping will limit infiltration of storm water through impacted soils. After construction of the bikeway, the ELUR will prohibit the use of groundwater below the Site for drinking water.

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## Air

Constituents of concern identified during the Site Investigation are not commonly associated with adverse impacts to ambient or indoor air. Therefore, no remedial objectives for air are proposed. However, dust control measures will be required during construction, and earthwork activities. Refer to "Dust Control" sub-section below for information pertaining to fugitive dust issues.

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## Surface Water/Sediment

Entrainment of impacted soil through wind and storm water runoff has the potential to impact adjacent surface water and sediments. By capping impacted soil, the potential for migration through entrainment will be eliminated. Surface and erosion



runoff controls will also be provided as detailed in the "Soil Stockpile Management/Erosion Control" sub-section below.

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## Proposed Remedy

Remedial actions will be conducted concurrently with Site redevelopment. Site redevelopment is dependent upon funding, but public advertising of the project by the RIDOT is slated to be in the Fall of 2015. The remedial action will consist of the encapsulation of soil over most of the Site in order to eliminate direct exposure (refer to **Figure 3a and 3b**). Some jurisdictional soils may be re-graded and placed within regulated areas of lower elevation prior to being capped. Some existing paved areas are proposed to be left undisturbed (with the exception of striping/painting) as a cap-in-place. These areas are located between Pittman Street and the northernmost terminus of the 1A bikeway segment.

The following minimum encapsulation methods are proposed for the Blackstone River Bikeway - Segment 1A in its entirety with the exception of any existing paved areas that are to be left undisturbed as a cap-in-place.

- 1) 10 inches of clean fill underlain with a geotextile fabric; or
- 2) Four inches of pavement above six inches of a clean fill sub-grade.

Since impacted soil will be left in place with a cap, an ELUR will be required for the Site. An ELUR is a legal document drafted for the purpose of placing a notice of restrictions on the use or physical condition of a property for the protection of human health. The ELUR will require that the capped portions of the property remain in place, any soil disturbed post-remediation will be managed in accordance with a RIDEM approved Soil Management Plan (SMP), and that groundwater at the Site is not used as a source of drinking water. A copy of the draft ELUR for this property is included in **Appendix E**. Upon completion of the proposed redevelopment construction activities and RIDEM approval, the ELUR will be filed in the city property records.

If any of the RIDOT land acquisitions include uncapped areas of properties that installed vegetation as part of the remedial action, such as areas along the riverbank of the EPOCH Senior Living Center Property, attempts to maintain the existing vegetation will be made. If deemed necessary, supplemental plantings and/or fencing shall be considered to discourage access to any significant uncapped areas.

The proposed remedy will meet the remedial objectives as follows:





- 1) The use of a cap will prevent migration of hazardous substances by eliminating soil exposure to wind;
- 2) The use of the cap will physically prevent direct contact with impacted soil beneath the cap;
- 3) Maintenance of existing restrictive vegetative barriers with fencing and/or vegetation will minimize the potential for direct contact with impacted soils in uncapped areas;
- 4) Volatilization is not a concern for the Site; however, the cap will prevent entrainment of contaminants through wind and rain; and
- 5) Surface runoff will be controlled through the use of erosion controls during construction as described herein.

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## Points of Compliance

During Site construction activities, the construction superintendent, along with the assistance of a VHB representative, will monitor construction to document that the engineered controls are properly constructed in accordance with the RAWP. Operation logs will be kept and submitted upon the completion of the project.

The proper installation and documented maintenance of the cap is the Point of Compliance. The area subject to the ELUR, which includes the engineered barrier, will be inspected on a yearly basis to document the long-term integrity of the cap. The inspection will be documented in a written report, which will be forwarded to the Department annually.

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## Proposed Schedule

The proposed Site remedy consists of soil encapsulation via engineered controls and implementation of an ELUR. The remedial actions will be completed concurrently with Site redevelopment construction. Construction of the bikeway is targeted to being in the Fall of 2016.

The Remedial Action Closure Report, draft ELUR and draft SMP will be submitted within 30 days following the completion of the remedial action. The ELUR and SMP will be finalized by the Client within 60 days following the approval by RIDEM and will be recorded with the City of Providence. A recorded copy of the ELUR will be forwarded to RIDEM within 15 days of filing.



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## Contractors and/or Consultants

The project is still in the design stage and a Site contractor has not been selected yet. VHB will document construction activities and installation of the engineered cap and is available to conduct the yearly cap inspections as requested.

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## Design Standards and Technical Specifications

The following minimum encapsulation methods are proposed for the Blackstone River Bikeway - Segment 1A in its entirety with the exception of areas of existing pavement or roadways which will be maintained as a cap-in-place.

- 1) 10 inches of clean fill underlain with a geotextile fabric; or
- 2) Four inches of pavement above six inches of a clean fill sub-grade.

A figure depicting the specifications of these cap types is attached as Exhibit D of the ELUR (located in **Appendix E** of this document). **Appendix B** contains engineering drawings provided by VHB showing typical cross sections of the impacted trail segments, impacted soil sample locations, and compliance points.

In areas where geotextile will be used as the engineered barrier/cap, the fabric will possess a minimum puncture strength of 120 pounds and minimum burst strength of 400 pounds per square inch in accordance with RIDEM guidance.

All soil imported to the Site for construction of the cap will meet the RDEC or will be certified to be non-jurisdictional. Clean fill and loam proposed to be used at the Site will be sampled and approved prior to importation to the Site. Clean fill and loam will be sampled for arsenic at a frequency of one sample per 500 cubic yards. One-quarter of the total number of compliance samples of clean fill and loam will be sampled for VOCs, Polycyclic Aromatic Hydrocarbons (PAHs), Total Metals (RCRA 13) and TPH.

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## Soil Stockpile Management

Temporary stockpiling of Site soil may be necessary for the work to be conducted at the Site. The locations of temporary stockpiles will be at the discretion of the contractor. All excavated material which requires stockpiling (with the exception of clean fill/loam imported to the Site) as detailed in previous section, will be temporarily stockpiled on 6-mil polyethylene sheeting and covered with 6-mil polyethylene sheeting in a contractor-designated stockpile area on Site. The stockpiles



will be covered whenever there is no active excavation being conducted. Stockpiles of clean imported soil will be sufficiently separated from impacted Site soil to avoid comingling of the materials.

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## Dust Control

All reasonable precautions will be taken to prevent the excessive generation of dust during soil excavation, stockpiling, loading, and other soil handling activities. Work at the Site must comply with all applicable federal, state, and local regulations, including the RIDEM Air Pollution Control Regulations, and specifically Regulation No. 5 regarding control of fugitive dust. Dust control measures must be implemented as required, to prevent airborne particulate matter from leaving the Site at all times. Dust control measures (wetting soils and the use of calcium chloride) shall be implemented on an as needed basis (i.e. visual evidence of airborne dust) throughout the project. All stockpiles shall be inspected on a daily basis to ensure compliance with RIDEM Air Pollution Control Regulations. VHB will conduct periodic Site visits to ensure dust control measures are being implemented if necessary. This information will then be recorded in the operating log.

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## Sedimentation and Erosion Control

Prior to the start of excavation activities, sediment and erosion controls consisting of compost filter socks, silt fencing or other equivalent methods proposed by the construction contractor will be installed at the Site. A stabilized construction entrance to reduce the tracking of soils into the area roadways will also be installed in areas where the Site entrances/exits intersect public roadways.

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## Health and Safety Plan

A Health and Safety Plan will be developed by the contractor for implementation with consideration to OSHA regulations. A copy of VHB's site-specific plan is attached as **Appendix C**.

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## Operating Log

An Operating Log that conforms with the requirements of Rule 9.14 of the Remediation Regulations will be utilized and maintained during all remedial actions. The Operating Logs will detail information such as the thickness, composition, and



location of the cap and will also document earthwork activities and monitoring to ensure that the appropriate regulations are complied with. A copy of the Operating Log template is include as **Appendix D**. The Operating Log will be readily available at the Site during construction. The Responsible Party will keep a copy of the Operating Log for a minimum of three years following completion of the remedy. All information will be summarized in a Remedial Action Closure Report submitted to the Department.

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## Management of Remediation Waste

Any remediation waste generated will be managed in accordance with state and federal requirements and disposal documentation will be provided to RIDEM. If excess Site soil is generated, the material will be sampled for the appropriate disposal parameters and disposed of at a permitted facility. Copies of disposal paperwork (e.g., weight slips) will be included in the Remedial Action Closure Report.

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## Security Procedures

Security will be addressed by the utilization of temporary construction fencing. Access will be controlled by the use of a gate. The fence will be secured at the conclusion of each workday during the construction project by the construction superintendent.

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## Shutdown, Closure, and Post-Closure Requirements

Upon Completion of the project, a Closure Report will be submitted to the Department outlining all field activities that were completed. The report will also include a schedule for yearly cap inspection and the results. Any maintenance necessary to repair or maintain the cap will also be noted.

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## Institutional Controls and Notices

As indicated, an ELUR will be recorded for the property in the City of Providence Land Evidence Records. The ELUR and SMP will be finalized by the Client within 60 days following the approval by RIDEM and will be recorded with the City of Providence. A recorded copy of the ELUR will be forwarded to RIDEM by the



Responsible Party within 15 days of filing. A copy of the draft ELUR and EMP are attached as **Appendix E**.

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## Compliance Determination

Successful completion of the Site capping activities documented in the periodic Operating Logs will be used to demonstrate compliance with the work plan. All information associated with these actions will be submitted to RIDEM as required.



# 5

## Certification Statements

VHB submits the following statements of certification.

### *Certification by Preparer:*

Vanasse Hangen Brustlin, Inc. has prepared this RAWP for contaminated soil in accordance with the requirements of Section 9.00 of the Remediation Regulations and certifies the accuracy of the information contained in the report to the best of our knowledge.

Shelby A. Miller

Prepared by: Shelby A. Miller  
Environmental Scientist

9/10/2015

Date

Peter M. Grivers

Reviewed by: Peter M. Grivers, P.E., LSP  
Senior Project Manager

9/10/2015

Date

### *Certification by Civil Engineer*

Engineering drawings and cross section views of the proposed trail provided in **Appendix B** are designed and stamped by Vanasse Hangen Brustlin, Inc. of Providence, Rhode Island. Bid specifications/contract documents including soil volumes, quantities, estimating, and formal construction drawings are to be provided by Vanasse Hangen Brustlin, Inc. on behalf of the State of Rhode Island.

Scott A. D'Amelio

Scott A. D'Amelio, P.E.  
Project Manager

SEPT 10, 2015

Date



*Certification by Owner/Operator*

I certify that the information contained in this report is a complete and accurate representation of the conditions at the Site and the proposed remedial activities to the best of my knowledge.

*[Signature]*                      *9/14/15*  
 Owner/Operator Name                  Date

*Chief, RI DEM, Planning & Development*  
 Title



# 6

## References

Environmental Data Resources, Inc. Certified Sanborn® Map Report (No. 4117038.3), October 29, 2014.

Environmental Data Resources, Inc. The EDR Radius Map™ Report with GeoCheck® (No. 4117038.2s), October 27, 2014.

Federal Emergency Management Agency Flood Insurance Rate Map, Providence County, Rhode Island, Community Panel No. 44007C0309J, dated September 18, 2013.

Hermes, O.D., L.P. Gromet and D.P. Murray, Bedrock Geologic Map of Rhode Island, 1994.

Providence Department of Inspections and Standards, December 2014.

Providence Fire Department, December 2014.

Providence Tax Assessor's Office, December 2014.

Rhode Island Department of Environmental Management Environmental Resources Map, accessed July 2015.

Rhode Island Department of Environmental Management Groundwater Classification and Well Head Protection Area Map. 2010.

Rhode Island Department of Environmental Management and Vanasse Hangen Brustlin, Inc., Hazardous Material Release Notification, May 2015.

Rhode Island Department of Environmental Management Rules and Regulations for Groundwater Quality, June 2010.





Rhode Island Department of Environmental Management Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases, November 2011.

Rhode Island Department of Environmental Management Topo Map & Aerial Photo Viewer, July 2015.

Rhode Island Department of Environmental Management Water Quality Regulations, December 2010.

Statewide Planning Program Aerial Photographs dated 1939, 1951-52, 1962, 1972, 1976, 1981, 1988, 1992, and 2008.

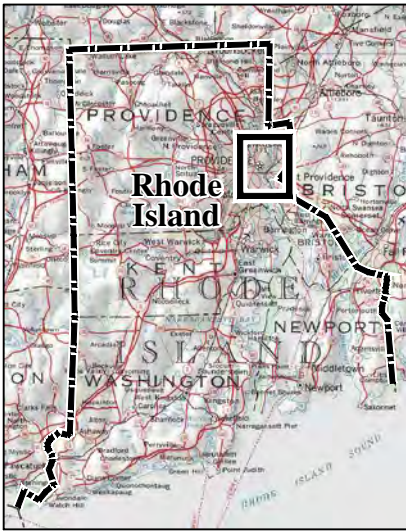
U.S. Department of Agriculture Web Soil Survey, July 2015.

Vanasse Hangen Brustlin, Inc., Preliminary Site Investigation, February 2015.

Vanasse Hangen Brustlin, Inc., Site Investigation Report, July 2015.



# Figures

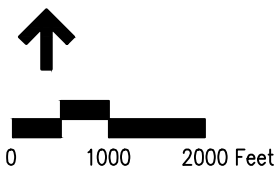


Site Location Key



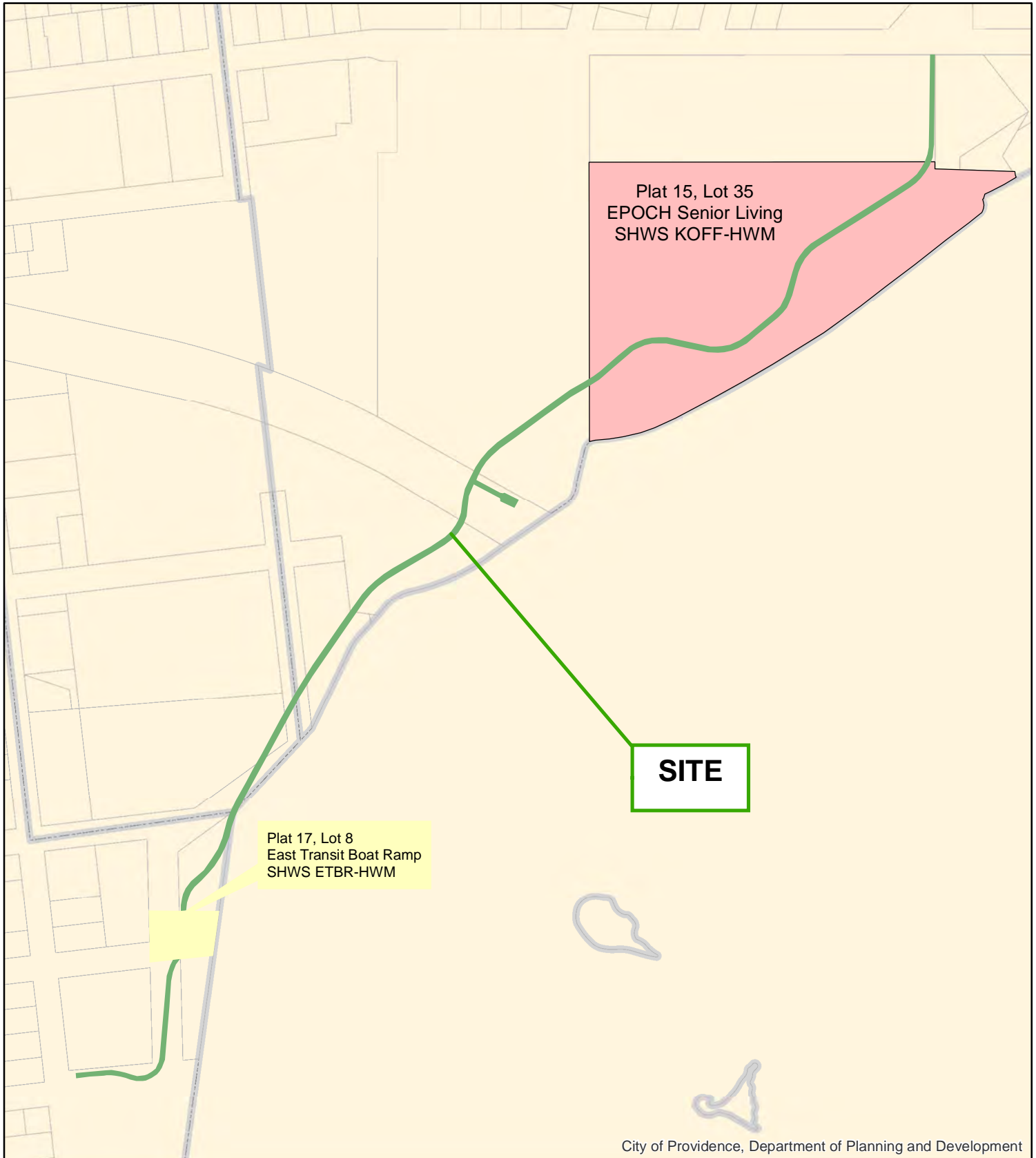
Source: USGS Quadrangles

Vanasse Hangen Brustlin, Inc.



Project Location Map  
Segment 1A  
Blackstone River Bikeway  
Providence, Rhode Island

Figure 1



Site Detail Map

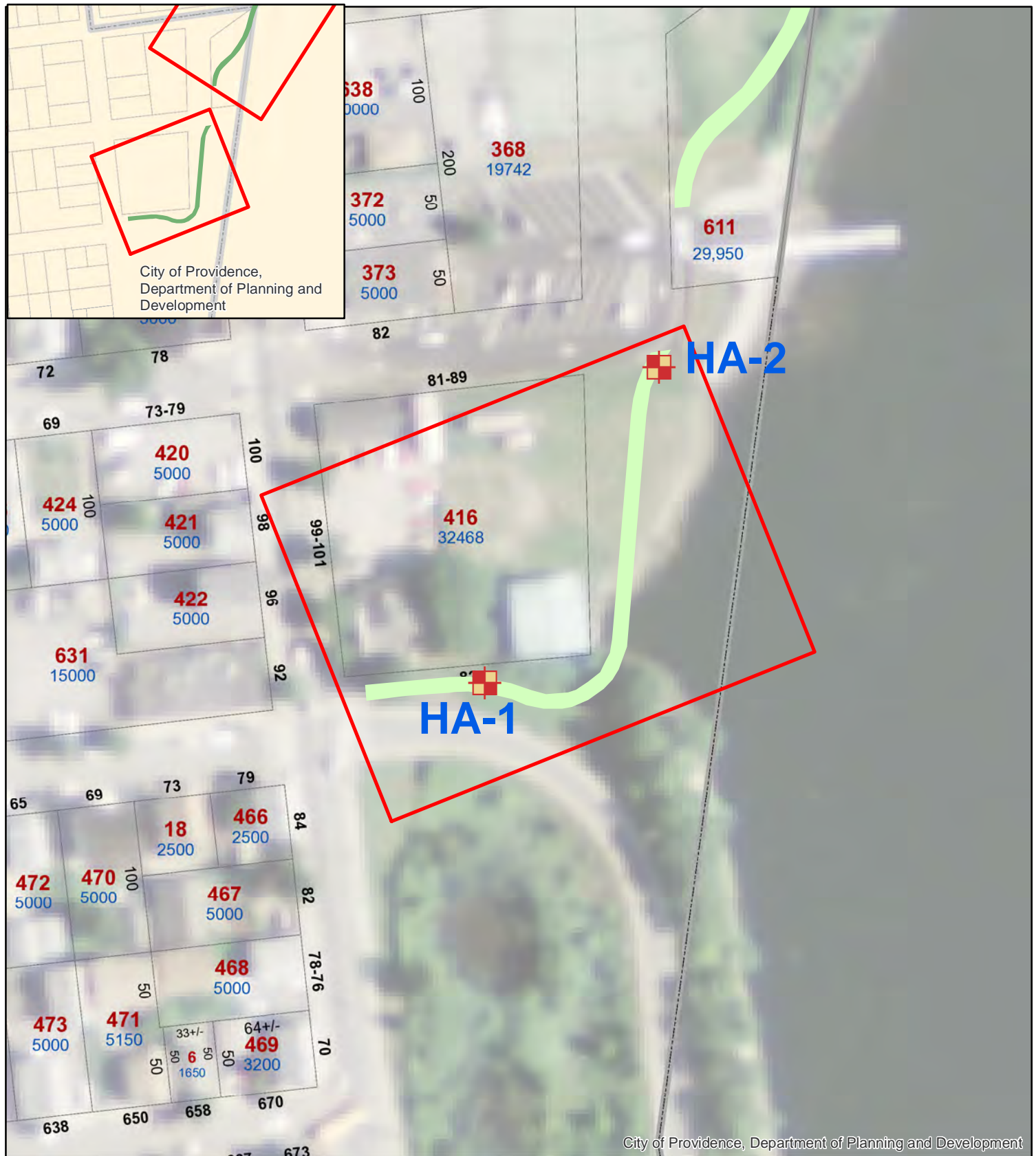
Figure 2  
September 11, 2015

**Legend**




 Proposed Bikeway Segment 1A

Blackstone River Bikeway - Segment 1A  
East Transit Street to Pitman Street  
Providence, Rhode Island 02906





**Legend**

-  Hand Auger Locations
-  Proposed Bikeway Segment 1A
-  Parcel Outlines



Sample Location Map




Blackstone River Bikeway - Segment 1A  
 East Transit Street to Pitman Street  
 Providence, Rhode Island 02906

Figure 3a  
 July 24, 2015





**Legend**

-  Hand Auger Locations
-  Proposed Bikeway Segment 1A
-  Parcel Outlines



Sample Location Map

Blackstone River Bikeway - Segment 1A  
East Transit Street to Pitman Street  
Providence, Rhode Island 02906

Figure 3b  
July 24, 2015





# Appendix A – Limitations



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## Limitations

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### **Blackstone River Bikeway Segment 1A Providence, Rhode Island**

This report has been prepared for the sole and exclusive use of Vanasse Hangen Brustlin, Inc., The Rhode Island Department of Transportation, and the Rhode Island Department of Environmental Management and is subject to the issued in connection with the Agreement and provisions thereof. Any use or reliance upon information provided in this report, without the specific written authorization of Client and VHB, shall be at the User's sole risk.

In conducting this work plan, VHB has obtained and relied upon information from multiple sources to form certain conclusions regarding potential environmental issues at and in the vicinity of the subject property. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information.

No attempt has been made to assess the compliance status of any past or present Owner or Operator of the Site with any federal, state, or local laws or regulations.

The findings, observations, and conclusions presented in this report are limited by the scope of services outlined in our Agreement, which regulates schedule and budgetary constraints imposed, by the Client for the current phase of environmental assessment. Furthermore, the assessment has been performed in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

The assessment presented in this report is based solely upon information gathered to date. Should further environmental or other relevant information be developed at a later date, the Client should bring the information to the attention of VHB as soon as possible. Based upon an evaluation, VHB may modify the report and its conclusions.





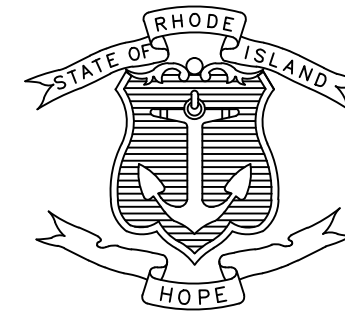
# Appendix B – Construction Plans

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI		2014	1	30
				PERMIT SUBMISSION	1 26

**INDEX**  
VOLUME 1 - BIKEWAY

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	STANDARD PLAN SYMBOLS & STANDARD LEGEND
3-4	STANDARD NOTES 1 & 2
5	JOB SPECIFIC PLAN SYMBOLS, LEGEND & NOTES
6-7	TYPICAL SECTIONS NOS. 1-2
8-10	GENERAL PLAN & PROFILE NOS. 1-3
11-12	LOCATION PLAN NOS. 1-2
13-15	SIGNING & STRIPING PLAN NOS. 1-3
16-17	11-12 DETAIL PLAN NOS. 1-2
18-30	13-25 CROSS SECTIONS

STATE OF RHODE ISLAND



DEPARTMENT OF TRANSPORTATION

PLAN, PROFILE AND SECTIONS OF PROPOSED

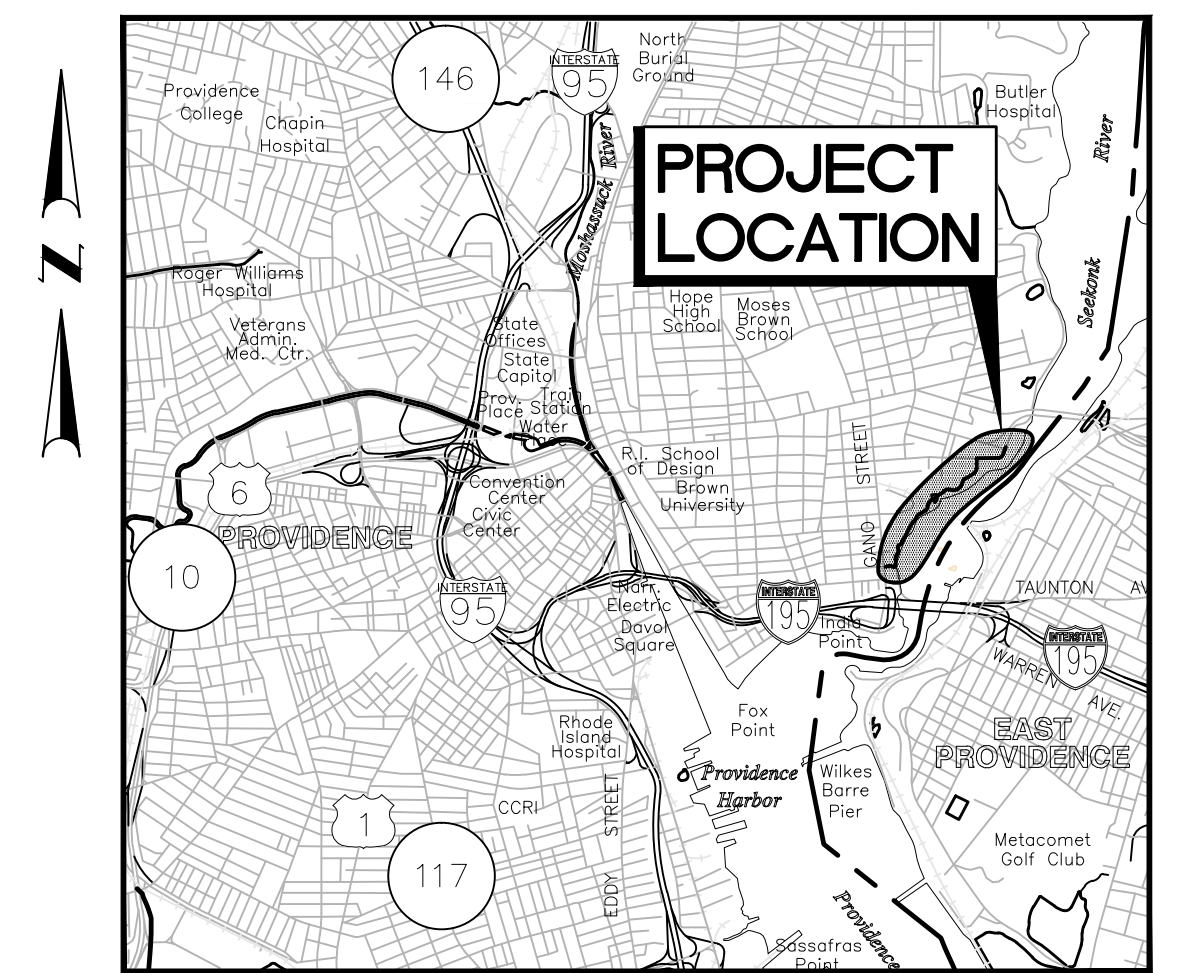
**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

**VOLUME 1**

FROM GANO STREET/TRENTON STREET TO WATERMAN STREET

CITY OF PROVIDENCE  
COUNTY OF PROVIDENCE

R.I. CONTRACT NO. 2014-XX-XXX F.A. PROJECT NO. XXX-XXXX (XXX)

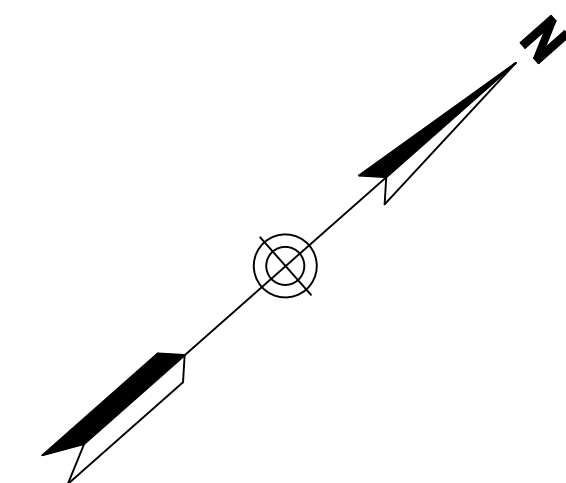


LOCATION PLAN



PAVEMENT STRUCTURE

- BIKEWAY PAVEMENT
- 2" CLASS 4.75 HOT MIX ASPHALT
- 2" CLASS 12.5 HOT MIX ASPHALT
- 6" GRAVEL BORROW SUBBASE COURSE



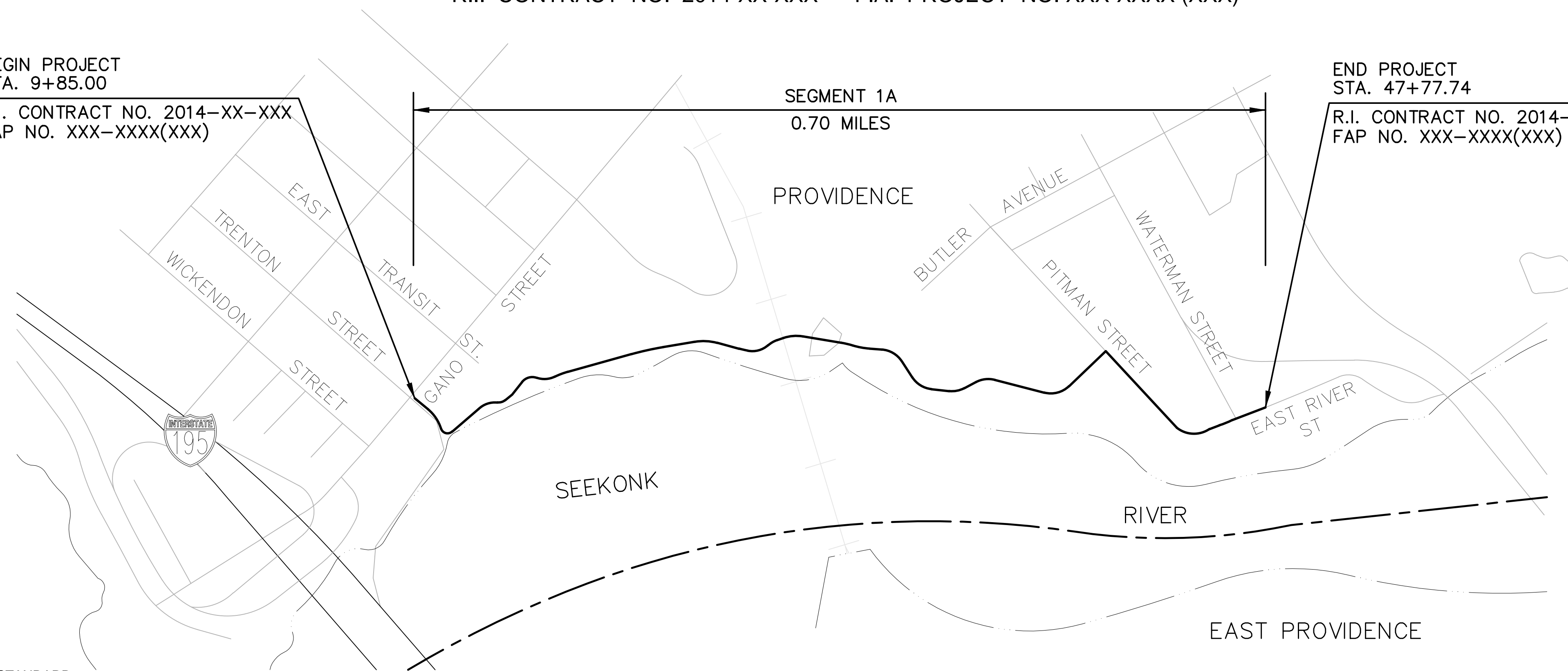
BEGIN PROJECT  
STA. 9+85.00

R.I. CONTRACT NO. 2014-XX-XXX  
FAP NO. XXX-XXXX(XXX)

SEGMENT 1A  
0.70 MILES

END PROJECT  
STA. 47+77.74

R.I. CONTRACT NO. 2014-XX-XXX  
FAP NO. XXX-XXXX(XXX)



PERMIT SUBMISSION

R.I. DEPARTMENT OF TRANSPORTATION	
APPROVED	
DEPUTY CHIEF ENGINEER	DATE
APPROVED	
CHIEF ENGINEER	DATE
APPROVED	
DIRECTOR	DATE
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED	
DIVISION ADMINISTRATOR	DATE

R.I. STANDARD SPECIFICATIONS AND STANDARD DETAILS  
SPECIFICATIONS TO GOVERN THIS PROJECT ARE THE R.I. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED 2010, WITH ALL REVISIONS, AND THE STATE AND FEDERAL SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS. STANDARD DETAILS FOR THIS PROJECT ARE R.I. STANDARD DETAILS, 1998 EDITION, WITH ALL REVISIONS.

LAYOUT  
SCALE: 1" = 300'  
BASE OF LEVELS  
NAVD 1988

SCALES OF DRAWINGS  
AS SHOWN



Contract Number 2014-XX-XXX  
Number of Sheet 1  
Total Sheets 30





FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			4	30
				PERMIT SUBMISSION	4 25

**LANDSCAPE NOTES:**

- ALL PLANT MATERIAL MUST BE TAGGED AT THE NURSERY (A RECOGNIZED GROWER OF PLANT MATERIAL) IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION. ALL PLANT MATERIAL MUST BE NURSERY GROWN; NO PLANTATION GROWN PLANT MATERIAL WILL BE ACCEPTED.
- ALL PLANT SUBSTITUTIONS AND/OR CHANGES IN PLANT LOCATION MUST BE APPROVED IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
- ALL PLANT MATERIAL IS TO BE FIELD LOCATED BY A REPRESENTATIVE FROM THE R.I.D.O.T. LANDSCAPE ARCHITECTURE UNIT.
- A R.I.D.O.T. LANDSCAPE REPRESENTATIVE MUST BE ON SITE TO APPROVE ALL TRIMMING AND CLEARING NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE PLANS.
- ANY TOPSOIL USED AS PLANTABLE SOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS, AND SHALL CONFORM TO SECTION M.18 OF THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
- ALL TREES AND SHRUBS SHALL BE MULCHED WITH PINE BARK MULCH IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
- ALL TREES AND/OR SHRUBS THAT ARE PLANTED AS A BED SHALL BE MULCHED AS A BED.
- PROVIDE A MINIMUM 6"-8" BRANCHING STANDARD ON ALL TREES INSTALLED ADJACENT TO SIDEWALKS AND/OR PEDESTRIAN ACCESS AREAS.

**STRUCTURAL NOTES FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS:**

**GENERAL**

- ALL SUPPORT DESIGNS AND ASSOCIATED SHOP DRAWING REVIEWS SHALL BE IN CONFORMANCE WITH THE LATEST EDITION, OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (THE "SPECIFICATIONS"), INCLUDING THE LATEST INTERIM SPECIFICATIONS, EXCEPT AS MODIFIED HEREIN.

**CONSTRUCTION DRAWINGS AND DETAILS**

- THE FOLLOWING NOTES SHALL BE INCLUDED ON ALL PLANS AND/OR SHOP DRAWINGS IN REFERENCE TO ANCHOR BOLTS:
  - "PRETENSIONING OF ALL ANCHOR NUTS IS REQUIRED, AND SHALL BE ACCOMPLISHED BY TIGHTENING TO 1/6TH TURN BEYOND THE SNUG-TIGHT POSITION."
  - "THE MAXIMUM CLEARANCE BETWEEN THE BOTTOM OF THE LEVELING NUTS AND THE TOP OF THE CONCRETE IS CRITICAL AND SHALL NOT EXCEED THE AMOUNT SPECIFIED ON THIS DRAWING."
- THE USE OF GROUT UNDER BASE PLATES SHALL GENERALLY NOT BE PERMITTED, IF SPECIFIC CONDITIONS WARRANT ITS USE, THE GROUT SHALL NOT BE CONSIDERED LOAD CARRYING; LOADS SHALL BE DIRECTLY SUPPORTED BY THE ANCHOR BOLTS. ADEQUATE DRAINAGE SHALL BE PROVIDED.
- THE DAMPENING EFFECTS OF VIBRATION MITIGATION DEVICES SHALL NOT BE CONSIDERED IN THE DESIGN OF STRUCTURAL SUPPORTS FOR SIGNS AND TRAFFIC SIGNALS. IF THE CONTRACTOR CHOOSES TO USE THESE DEVICES FOR WARRANTY PURPOSES, THE TYPE OF DEVICES PROPOSED SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO FABRICATION OF SUPPORTS.

**TRAFFIC SIGNAL NOTES:**

- ALL SALVAGED TRAFFIC SIGNAL EQUIPMENT SHALL BE DELIVERED TO THE R.I.D.O.T. MAINTENANCE HEADQUARTERS, 360 LINCOLN AVENUE, WARWICK, RHODE ISLAND, 02888.
- BACK PLATES SHALL BE INSTALLED ON ALL TRAFFIC SIGNAL HEADS.
- THE CONTRACTOR SHALL SUPPLY AND INSTALL ON THE UPPER LEFT HAND CORNER OF THE BACK OF THE CONTROLLER CABINET DOOR A LAMINATED INTERSECTION GRAPHIC AND TABLE DEPICTING THE TRAFFIC DETECTOR RELAY CHANNEL ASSIGNMENTS. THE DIAGRAM SHALL BE A GRAPHIC OF THE INDIVIDUAL INTERSECTION ORIENTED SIMILAR TO THE PLANS SHOWING THE LOCATIONS OF EACH OF THE LOOP DETECTORS. THE DIAGRAM SHALL, AT A MINIMUM, INCLUDE DETECTOR NUMBERS, STREET NAME LABELS, NORTH ARROW, AND CONTROLLER CABINET LOCATION. THE ASSIGNMENT INFORMATION SHALL BE INCLUDED IN A TABLE WHICH SHALL INCLUDE, AT A MINIMUM, THE APPROACH NAME, DETECTOR NUMBER, TERMINAL NUMBER, DETECTOR RACK SLOT NUMBER, RELAY NUMBER, RELAY CHANNEL NUMBER, AND PHASE ASSOCIATED WITH EACH DETECTOR.
- TRAFFIC CONTROLLER CABINETS, UNLESS OTHERWISE NOTED, SHALL BE NEMA TS2 TYPE 1 CABINET SIZE 6 ("P" TYPE) WITH NOMINAL DIMENSIONS OF 52"Hx44"Wx24"D.
- ALL DELAY AND EXTENSION TIMES, AS CALLED FOR ON THE PLANS, FOR PROPOSED LOOP DETECTORS SHALL BE PROGRAMMED IN THE TRAFFIC SIGNAL CONTROLLER AND NOT THE DETECTOR RELAY.
- A BARE GROUND WIRE SHALL BE PLACED IN ALL PVC CONDUITS AND SHALL BE BONDED TO GROUND RODS IN ACCORDANCE WITH SECTION T.03 OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
- THE FINAL POSITION OF SIGNAL HEADS, PEDESTRIAN PUSHBUTTONS, DETECTORS, AND STOP LINE AND CROSSWALK PAVEMENT MARKINGS SHALL BE AS DIRECTED BY THE ENGINEER IN THE FIELD ACCORDING TO ACTUAL INTERSECTION CHARACTERISTICS.
- A 2' MINIMUM BUFFER SHALL BE PROVIDED BETWEEN THE CURB AND ALL LATERAL OBSTRUCTIONS (INCLUDING ALL SIGNAL POLES AND TRAFFIC/PEDESTRIAN SIGNAL HEADS) TO PROVIDE ADEQUATE CLEARANCE FOR TURNING VEHICLES.
- ALL FOUNDATIONS MUST HAVE CONES OR BARRELS BOLTED TO FOUNDATION BASES UNTIL ACTUAL POLE IS INSTALLED.
- WHEN PLACING TRAFFIC SIGNAL HANDHOLES OR CONDUIT IN EXISTING PORTLAND CEMENT CONCRETE SIDEWALKS, THE ENTIRE SIDEWALK SQUARE OF CONCRETE SHALL BE REPLACED IN ACCORDANCE WITH R.I. STD. 43.1.0. NO PATCHES WILL BE ALLOWED.
- ALL PEDESTRIAN PUSHBUTTONS SHALL BE COMPLIANT WITH "THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES" (ADAAG) AND SHALL INCLUDE A PRESSURE-ACTIVATED (NON-MOVING) BUTTON. SIGNS APPLICABLE TO PUSHBUTTON ACTUATION SHALL BE INSTALLED SUCH THAT THE CROSSING ASSIGNED TO EACH BUTTON IS CLEARLY INDICATED. IF SITE CONDITIONS DO NOT ALLOW PEDESTRIAN PUSHBUTTONS TO BE INSTALLED WHERE CALLED FOR ON THE PLANS, THE R.I.D.O.T. TRAFFIC ENGINEERING UNIT SHALL BE CONSULTED WITH THROUGH AN R.F.I. PRIOR TO INSTALLING THE PUSHBUTTONS. THE FINAL PLACEMENT OF ALL PEDESTRIAN PUSHBUTTONS SHALL BE IN ACCORDANCE WITH ADAAG AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- ALL LOOP DETECTORS SHALL BE CENTERED WITHIN EACH LANE AS DELINEATED, UNLESS OTHERWISE DIMENSIONED ON PLANS.
- ALL LOOP DETECTORS SHALL BE CUT INTO THE FINAL PAVEMENT SURFACE COURSE.
- TRAFFIC SIGNAL CONTROLLERS SHALL BE WIRED SO THAT ANY FIRE PRE-EMPTION SHALL OVERRIDE MANUAL (PUSH BUTTON) OPERATION.
- THE CONTRACTOR SHALL WORK CONTINUOUSLY TO RESTORE TRAFFIC SIGNAL OPERATION TO ITS INTENDED PURPOSE WHEN REPLACING THE TRAFFIC SIGNAL EQUIPMENT. A POLICE DETAIL IS REQUIRED TO DIRECT TRAFFIC AT THE INTERSECTION AT ALL TIMES WHEN THE TRAFFIC SIGNAL IS INOPERATIVE. AT NO TIME SHALL THE CONTRACTOR LEAVE THE SITE BEFORE RESTORING FULL TRAFFIC OPERATIONS.

**MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:**

- ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELIZING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- ALL SIGN MOUNTINGS FOR TEMPORARY AND CONSTRUCTION SIGNS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.
- THE CONTRACTOR SHALL COVER ALL EXISTING AND/OR TEMPORARY SIGNS THAT ARE NOT RELEVANT TO THE TRAFFIC CONTROL REQUIRED DURING ANY PARTICULAR STAGE OF THE CONTRACT.
- ADVANCE FLAGPERSON SIGNS (W20-7A) SHALL BE USED IN ADVANCE OF ANY POINT AT WHICH A FLAGPERSON OR A POLICE OFFICER HAS BEEN STATIONED TO CONTROL TRAFFIC. WHEN NEEDED, AN APPROPRIATE DISTANCE MESSAGE MAY BE DISPLAYED ON A SUPPLEMENTAL PLATE (24"x18") BELOW THE FLAGPERSON SYMBOL SIGN. THE SIGN SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE FLAGPERSON IS NOT AT THE STATION.
- POLICE OFFICERS (AND NOT FLAGPERSONS) SHALL BE UTILIZED WHEN WORK WILL IMPACT SIGNALIZED INTERSECTIONS AND LIMITED ACCESS HIGHWAYS.
- POLYETHYLENE DRUMS SHALL BE UTILIZED AS A CHANNELIZING DEVICE WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN BEYOND WORKING HOURS WHEN NO WORKERS ARE PRESENT. CONES SHALL BE UTILIZED WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN ONLY DURING WORKING HOURS AND IS SUBSEQUENTLY BROKEN DOWN AT THE END OF THE WORKDAY.
- ARROW PANELS SHALL BE SET IN THE FLASHING FOUR CORNERS CAUTION MODE UNLESS UTILIZED FOR A MERGING TAPER. ARROW PANELS SET IN THE FLASHING ARROW MODE SHALL NOT BE UTILIZED FOR LANE SHIFTS.
- TEMPORARY CONSTRUCTION SIGNS AND OTHER WORKZONE TRAFFIC CONTROL DEVICES THAT ARE DAMAGED OR REQUIRE RELOCATION SHALL BE REPLACED AND / OR RELOCATED UNDER THE PAY ITEM FOR "MAINTENANCE AND MOVEMENT TRAFFIC PROTECTION."
- THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS SHALL NOT BE PARKED ON THE TRAVEL LANES OR SHOULDERS. THEY MAY BE PARKED WITHIN THE STATE RIGHT-OF-WAY ONLY IN AREAS 30' BEYOND THE OUTSIDE EDGE OF THE TRAVEL LANES AND/OR IN AREAS APPROVED BY THE ENGINEER.
- TEMPORARY CONSTRUCTION SIGNS AND OTHER TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC, AND SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER APPROPRIATE.
- THE INTENDED VEHICLE PATHS THROUGH EACH WORK ZONE SHALL BE CLEARLY MARKED AT ALL TIMES. WATERBORNE PAVEMENT MARKINGS SHALL BE INSTALLED BEFORE THE END OF THE WORK SHIFT ON ALL COLD-PLANED AND NEW ROADWAY SURFACES THAT WILL BE OPENED TO TRAFFIC AT THE END OF THE SHIFT.

REVISIONS			RHODE ISLAND	
NO.	DATE	BY	DEPARTMENT OF TRANSPORTATION	
			BLACKSTONE RIVER BIKEWAY SEGMENT 1A	
			PROVIDENCE,	RHODE ISLAND
			STANDARD NOTES - 2	
			CHECKED BY _____	DATE _____ SCALE _____



FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			5	30
PERMIT SUBMISSION				5	25

**JOB SPECIFIC GENERAL LEGEND**

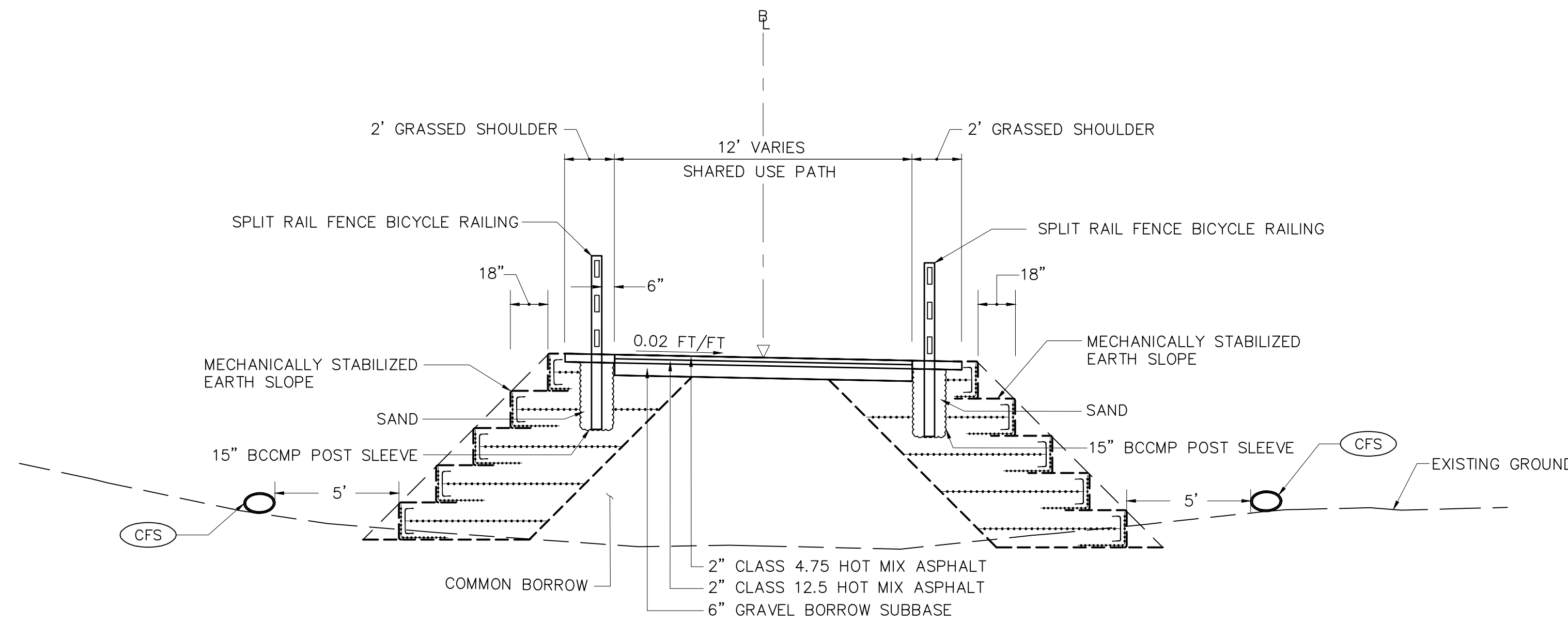
- (4BYL) 4" EPOXY RESIN PAVEMENT MARKINGS – BROKEN YELLOW LINE
- (4W) 4" EPOXY RESIN PAVEMENT MARKINGS – WHITE
- (6DWL) DASHED WHITE LINE--LANE DROP
- (24CW) CROSS WALK
- (7.1.9) PRECAST CONCRETE RAMP STONE, R.I. STD.
- (10.3.0M) MODIFIED CONCRETE RETAINING WALL
- (43.1.0M) STAMPED AND COLORED CONCRETE
- (BLM) BIKE LANE MARKING
- (BLS) BIKE LANE DOTTED LINE MARKING
- (BOL) STEEL BOLLARD  
(SEE DETAIL PLAN NO. 2)
- (BR) SPLIT RAIL BICYCLE RAILING  
(SEE DETAIL PLAN NO. 1)
- (BWP) BIKEWAY PAVEMENT  
2" CLASS 4.75 HOT MIX ASPHALT  
2" CLASS 12.5 HOT MIX ASPHALT  
6" GRAVEL BORROW SUBBASE COURSE
- (CFS) COMPOST FILTER SOCK
- (CSP) CLEAN AND SWEEP PAVEMENT
- (DRT) REMOVE AND DISPOSE RAILROAD TRACKS
- (DT) REMOVE AND DISPOSE TREE
- (DW) REMOVE AND DISPOSE WALL
- (DYL) DOUBLE YELLOW LINE
- (ERS) MECHANICALLY STABILIZED EARTH SLOPE  
(SEE DETAIL PLAN NO. 1)
- (GB) GRANITE BENCH  
(SEE DETAIL PLAN NO. 1)
- (OV) 2" MODIFIED CLASS 9.5 HOT MIX ASPHALT OVERLAY
- (RRF) REMOVE AND RESET FENCE
- (SC) SELECTIVE CLEARING
- (YL) YIELD LINE MARKINGS

REVISIONS			RHODE ISLAND DEPARTMENT OF TRANSPORTATION	
NO.	DATE	BY		
			BLACKSTONE RIVER BIKEWAY SEGMENT 1A	
			PROVIDENCE, RHODE ISLAND	
			JOB SPECIFIC PLAN SYMBOLS, LEGEND & NOTES	
			CHECKED BY _____	DATE _____ SCALE _____





FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS	
	RI			7	30	
		PERMIT SUBMISSION			7	25



**BIKEWAY WITH MECHANICALLY STABILIZED EARTH SLOPE**

STA. 24+50 TO STA. 25+48  
 STA. 25+67 TO STA. 26+75  
 STA. 28+94 TO STA. 29+50 RT

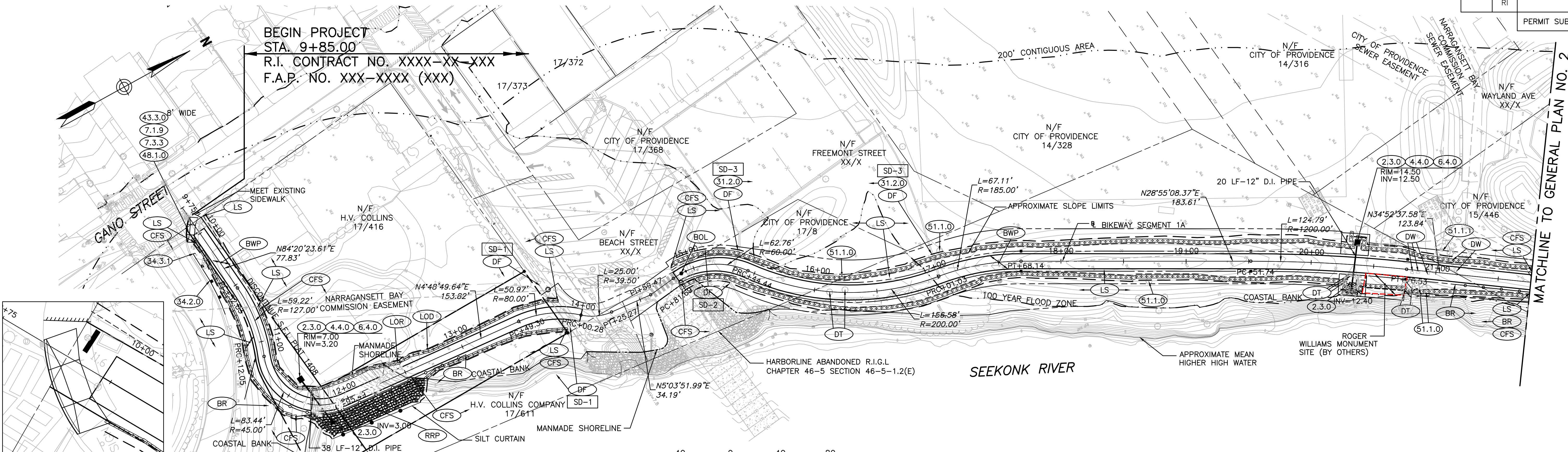
REVISIONS		
NO.	DATE	BY

RHODE ISLAND DEPARTMENT OF TRANSPORTATION	
BLACKSTONE RIVER BIKEWAY SEGMENT 1A	
PROVIDENCE,	RHODE ISLAND
TYPICAL SECTION NO. 2	
CHECKED BY _____	DATE _____ SCALE _____

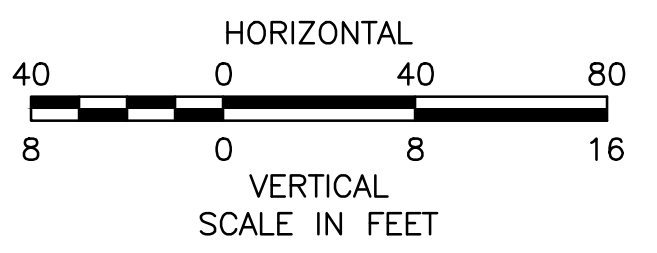
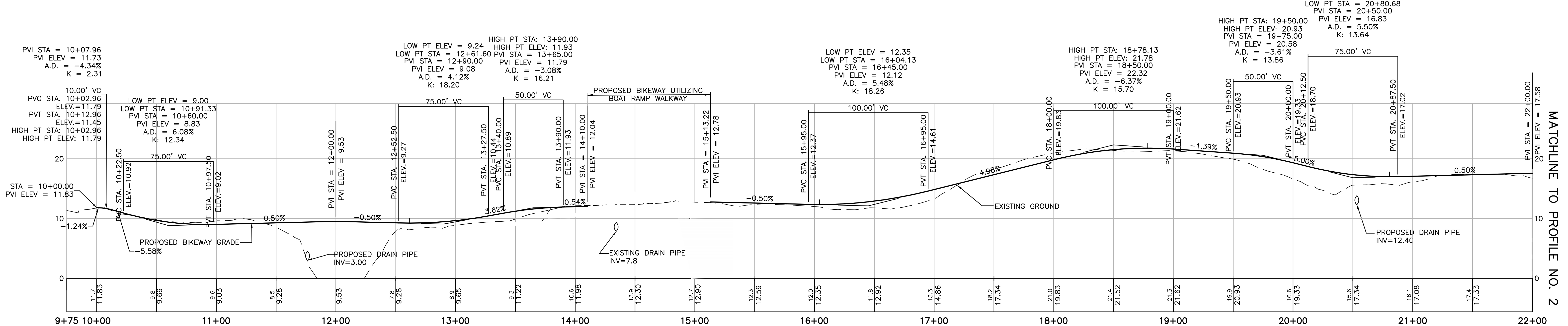
**VHB** VANASSE HANGEN BRUSTLIN, INC.  
 TRANSPORTATION LAND DEVELOPMENT  
 ENVIRONMENTAL SERVICES  
 PROVIDENCE, RHODE ISLAND



FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS	
	RI			8	30	
PERMIT SUBMISSION					8	25



(43.3.0) WHEELCHAIR RAMP  
SCALE: 1"=10'



**VHB** VANASSE HANGEN BRUSTLIN, INC.  
TRANSPORTATION LAND DEVELOPMENT  
ENVIRONMENTAL SERVICES  
PROVIDENCE, RHODE ISLAND

REVISIONS		
NO.	DATE	BY

RHODE ISLAND  
DEPARTMENT OF TRANSPORTATION

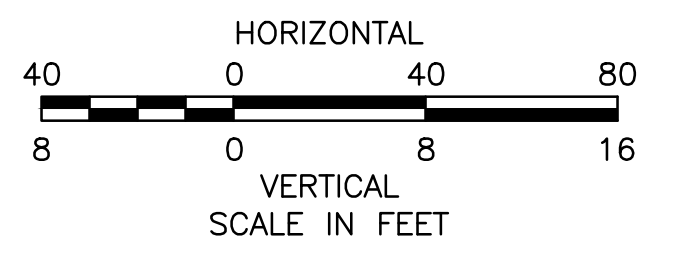
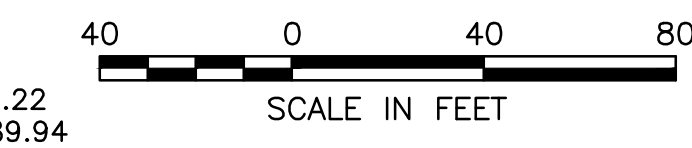
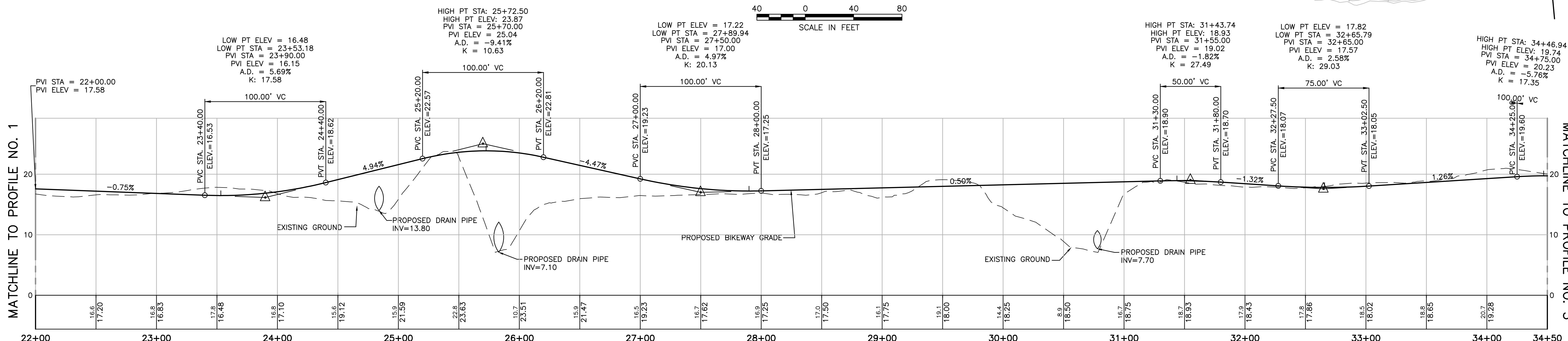
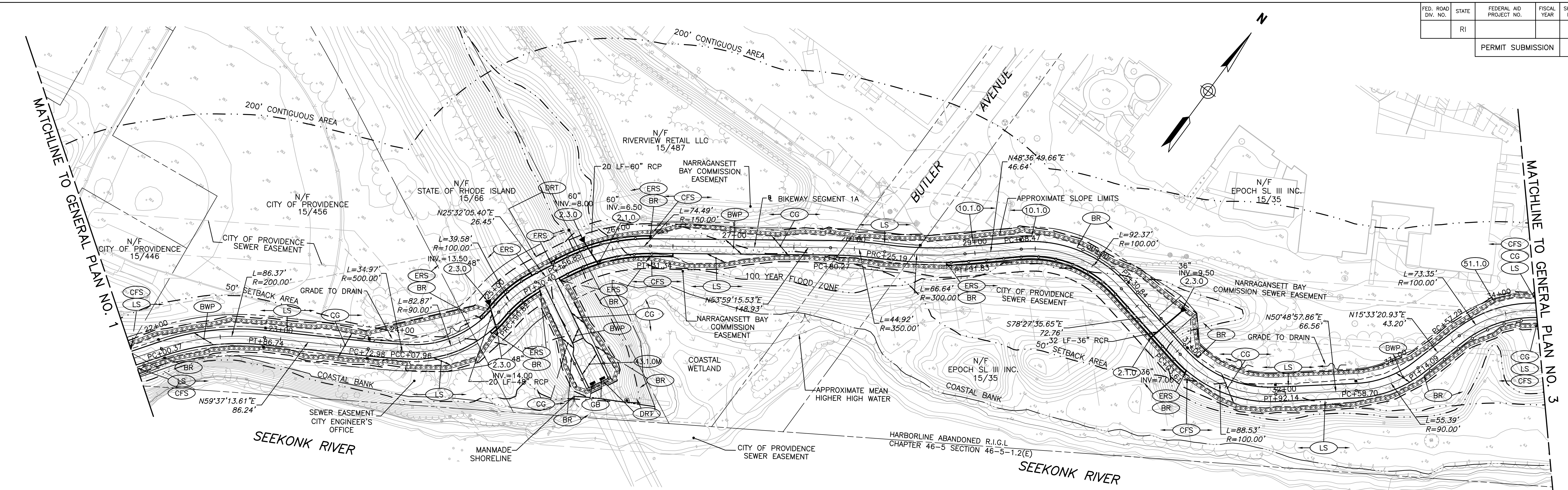
**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

PROVIDENCE, RHODE ISLAND

**GENERAL PLAN &  
PROFILE NO. 1**

CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ SCALE: \_\_\_\_\_

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			9	30
				PERMIT SUBMISSION	9
					25



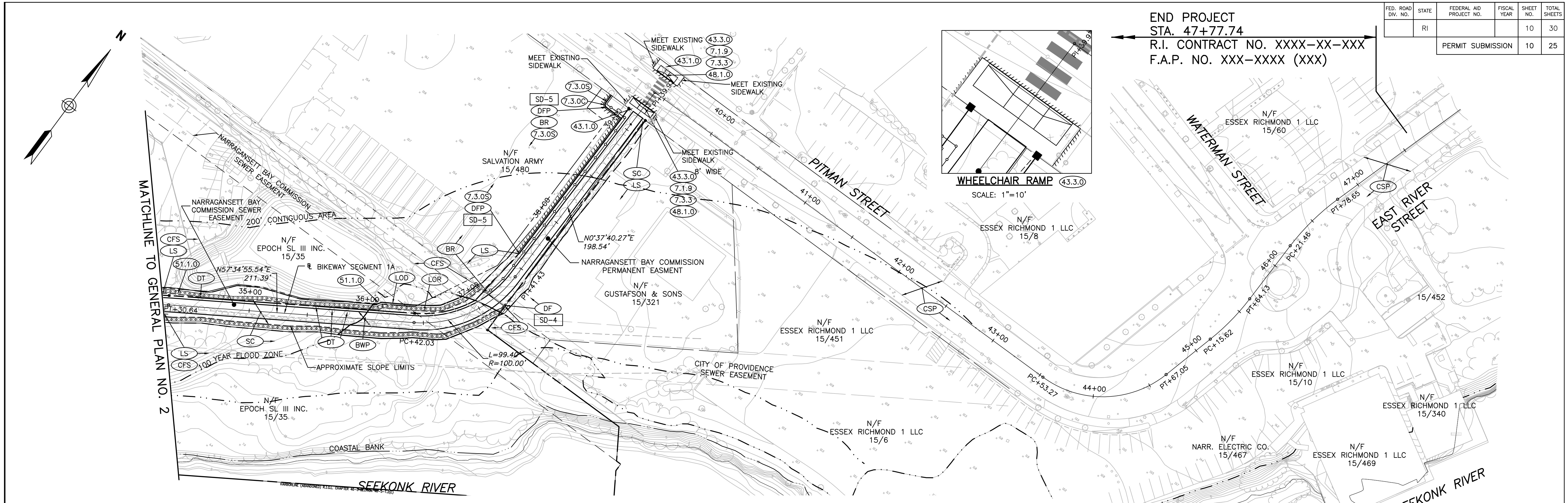
MATCHLINE TO PROFILE NO. 1

MATCHLINE TO PROFILE NO. 3

REVISIONS			RHODE ISLAND DEPARTMENT OF TRANSPORTATION BLACKSTONE RIVER BIKEWAY SEGMENT 1A PROVIDENCE, RHODE ISLAND GENERAL PLAN & PROFILE NO. 2
NO.	DATE	BY	
			CHECKED BY _____ DATE _____ SCALE _____ VANASSE HANGEN BRUSTLIN, INC. TRANSPORTATION LAND DEVELOPMENT ENVIRONMENTAL SERVICES PROVIDENCE, RHODE ISLAND

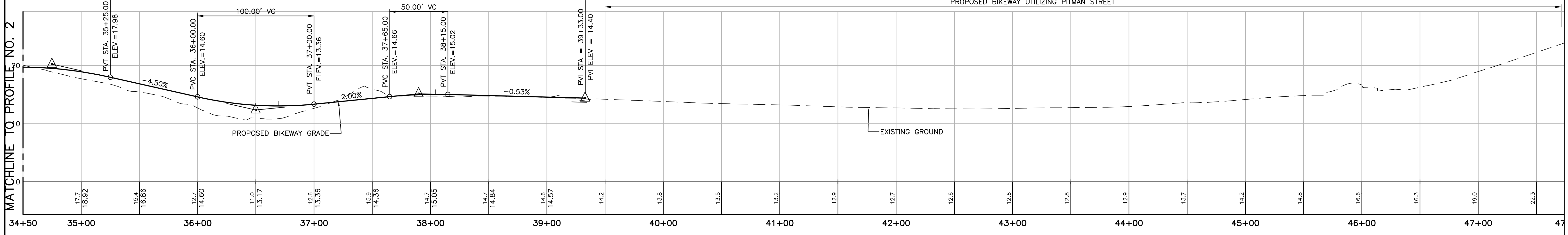
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			10	30
				PERMIT SUBMISSION	10
					25

END PROJECT  
 STA. 47+77.74  
 R.I. CONTRACT NO. XXXX-XX-XXX  
 F.A.P. NO. XXX-XXXX (XXX)



LOW PT ELEV = 13.05  
 LOW PT STA = 36+69.23  
 PVI STA = 36+50.00  
 PVI ELEV = 12.36  
 A.D. = 6.50%  
 K: 15.38

HIGH PT STA = 38+04.53  
 HIGH PT ELEV = 15.05  
 PVI STA = 37+90.00  
 PVI ELEV = 15.16  
 A.D. = -2.53%  
 K = 19.76

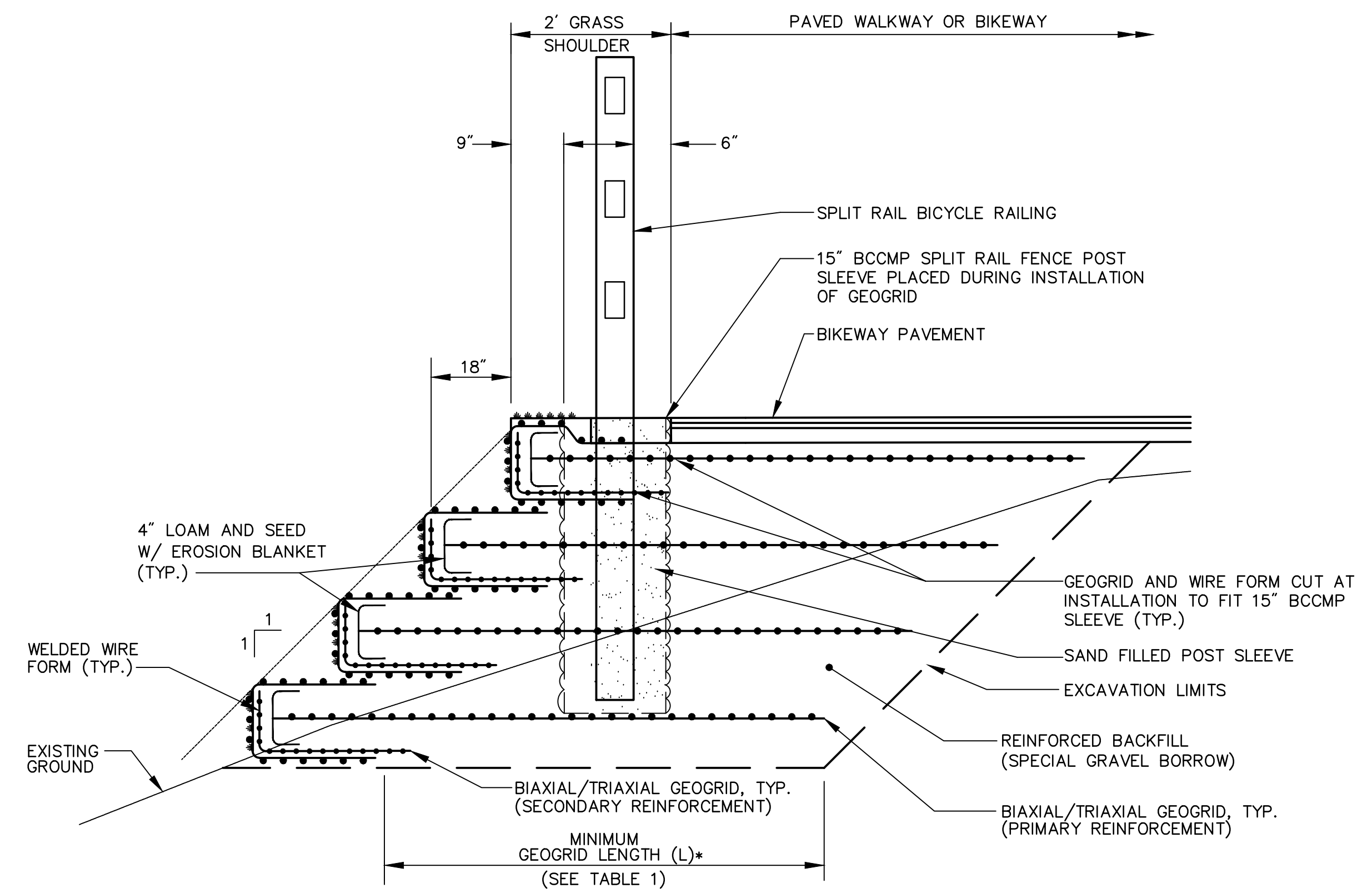


MATCHLINE TO PROFILE NO. 2

PROPOSED BIKEWAY UTILIZING PITMAN STREET

REVISIONS			RHODE ISLAND DEPARTMENT OF TRANSPORTATION	
NO.	DATE	BY		
			BLACKSTONE RIVER BIKEWAY SEGMENT 1A	
			PROVIDENCE, RHODE ISLAND	
			GENERAL PLAN & PROFILE NO. 3	
			CHECKED BY _____ DATE _____ SCALE _____	

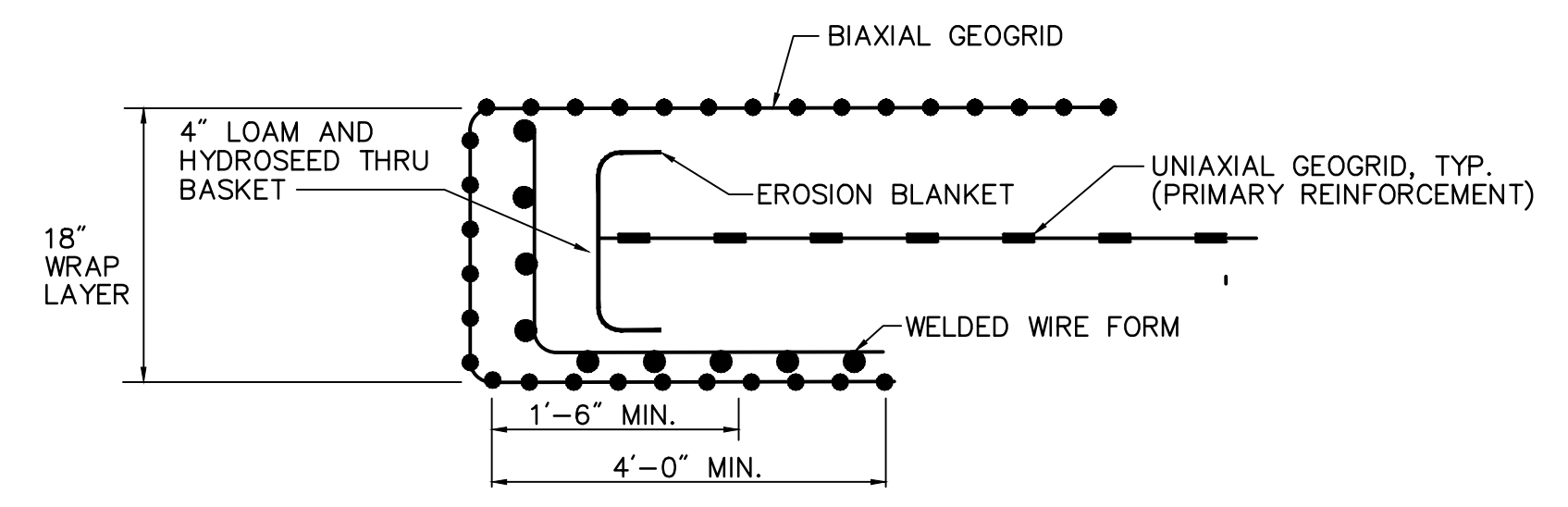
**VHB** VANASSE HANGEN BRUSTLIN, INC.  
 TRANSPORTATION LAND DEVELOPMENT  
 ENVIRONMENTAL SERVICES  
 PROVIDENCE, RHODE ISLAND



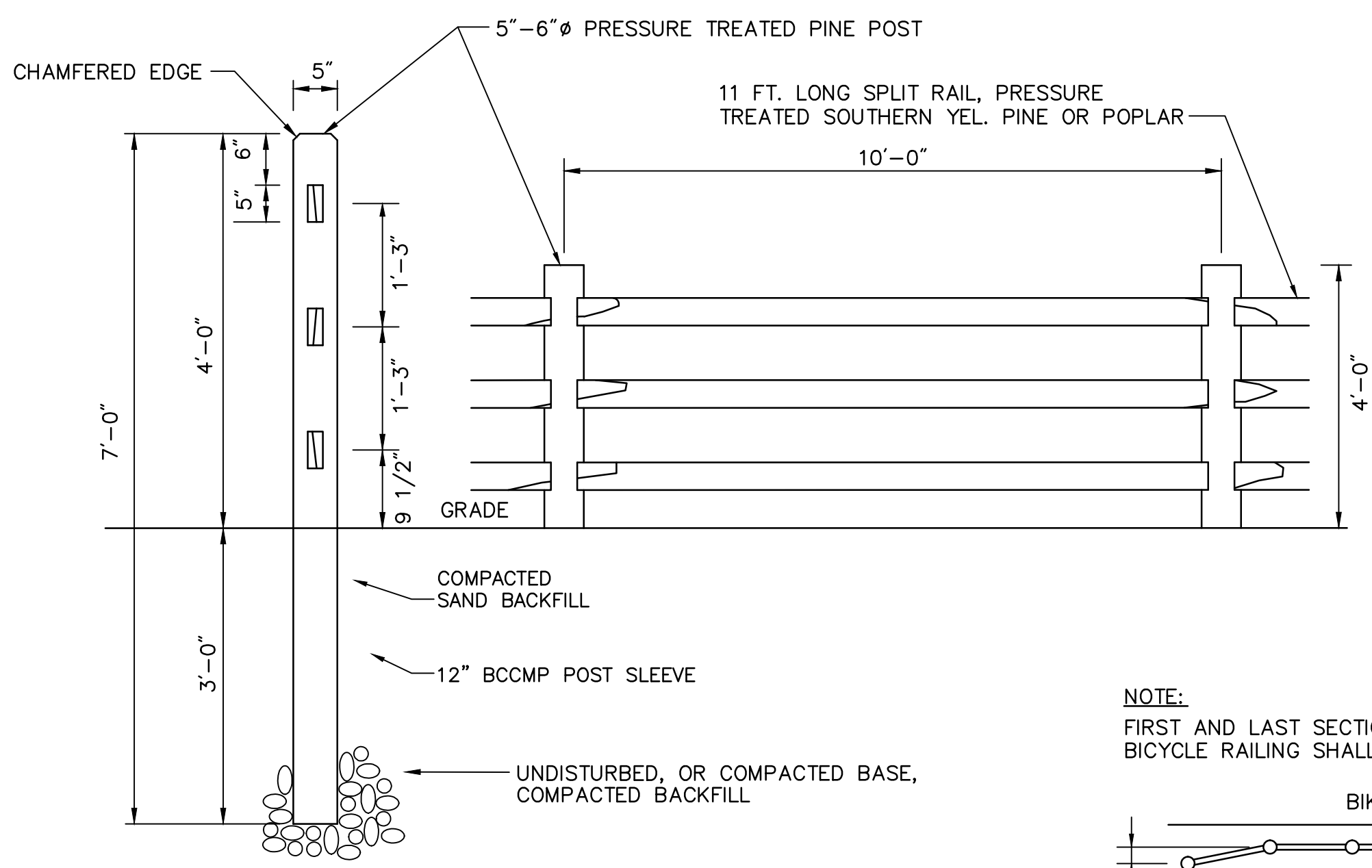
**MECHANICALLY STABILIZED EARTH SLOPE** (ERS)  
NOT TO SCALE

**DESIGN TABLE I**  
**REINFORCED EARTH RETAINING SLOPE DESIGN TABLE**

STATION	MINIMUM GEOGRID LENGTH L (FEET)
25+00	
26+00 LT	
26+00 RT	
29+00 RT	
29+50 RT	
30+00 RT	
30+50 RT	
31+00 RT	

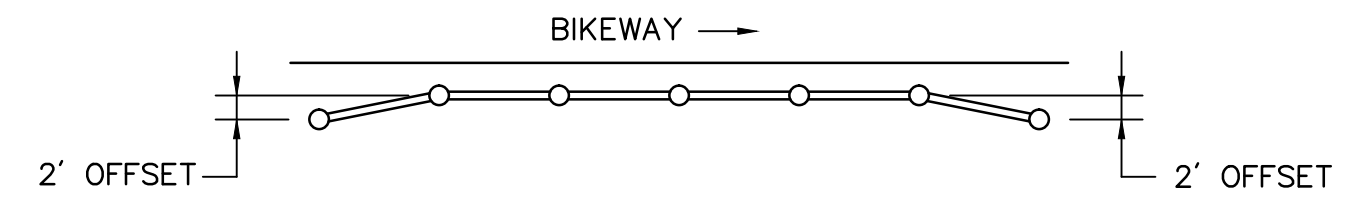


**TYPICAL DETAIL AT SLOPE FACE**  
NOT TO SCALE

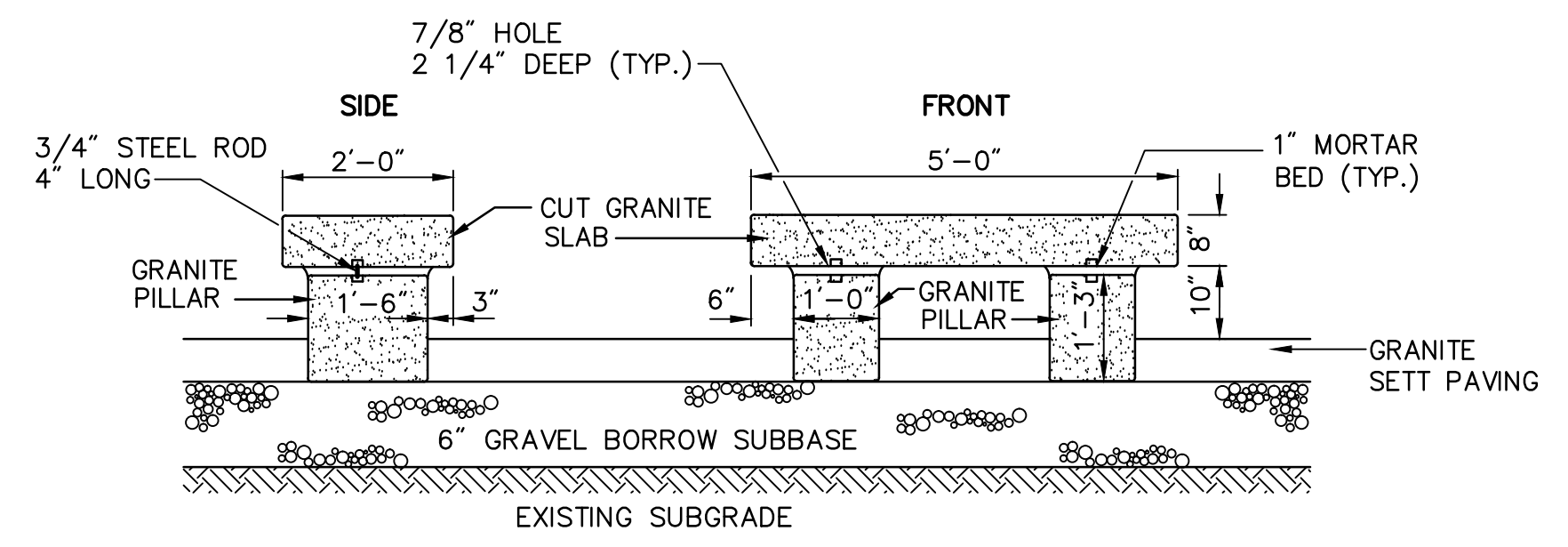


**FENCE POST**  
SCALE: 3/4" = 1'-0"

**NOTE:**  
FIRST AND LAST SECTION OF A LINE OF SPLIT RAIL FENCE BICYCLE RAILING SHALL BEGIN/END WITH A 2' OFFSET TAPER



**SPLIT RAIL FENCE BICYCLE RAILING** (BR)  
NOT TO SCALE



**GRANITE BENCH** (GB)  
SCALE: 1/2" = 1'

REVISIONS		
NO.	DATE	BY

RHODE ISLAND  
**DEPARTMENT OF TRANSPORTATION**

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

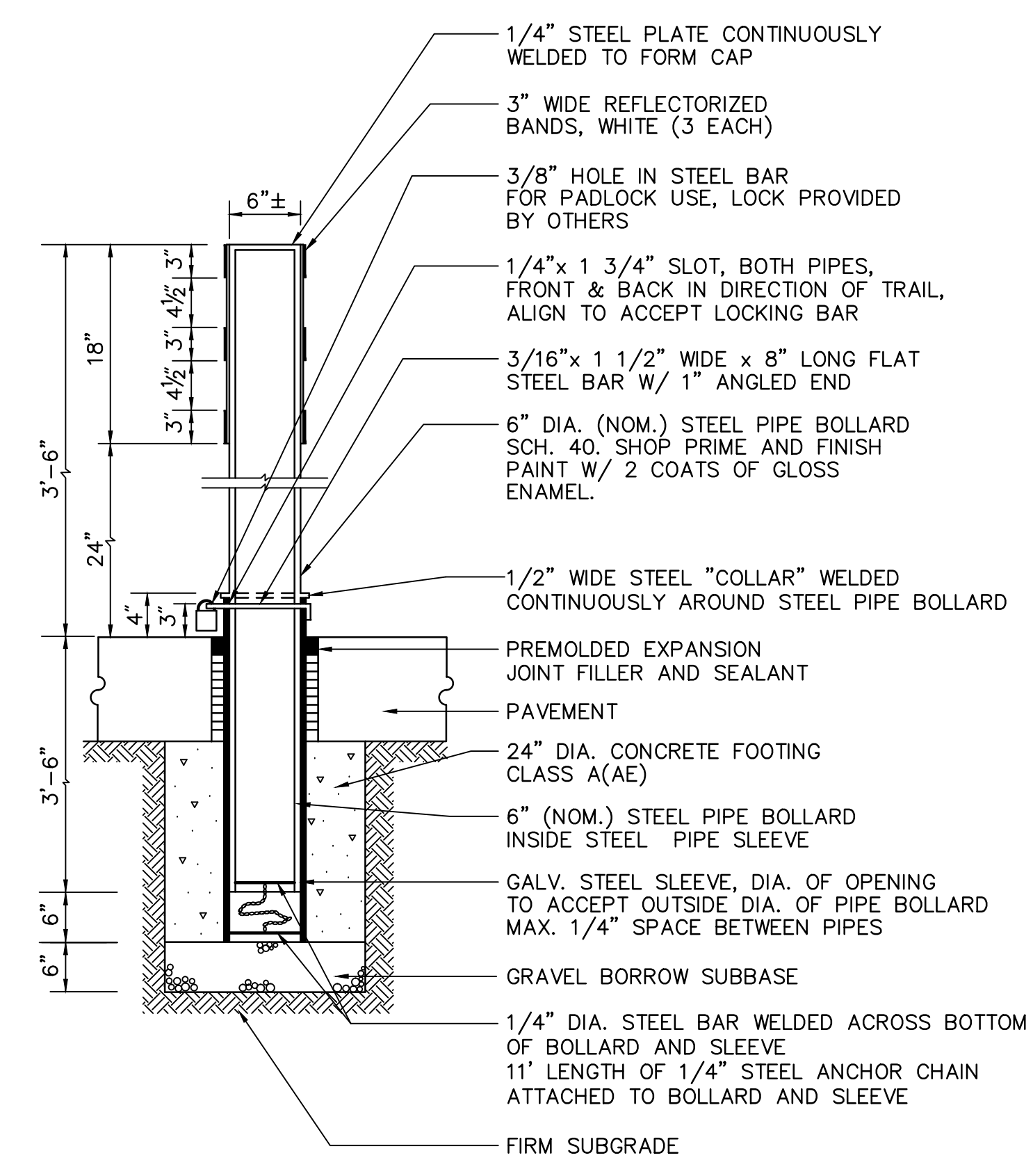
PROVIDENCE, RHODE ISLAND

**DETAIL PLAN NO. 1**

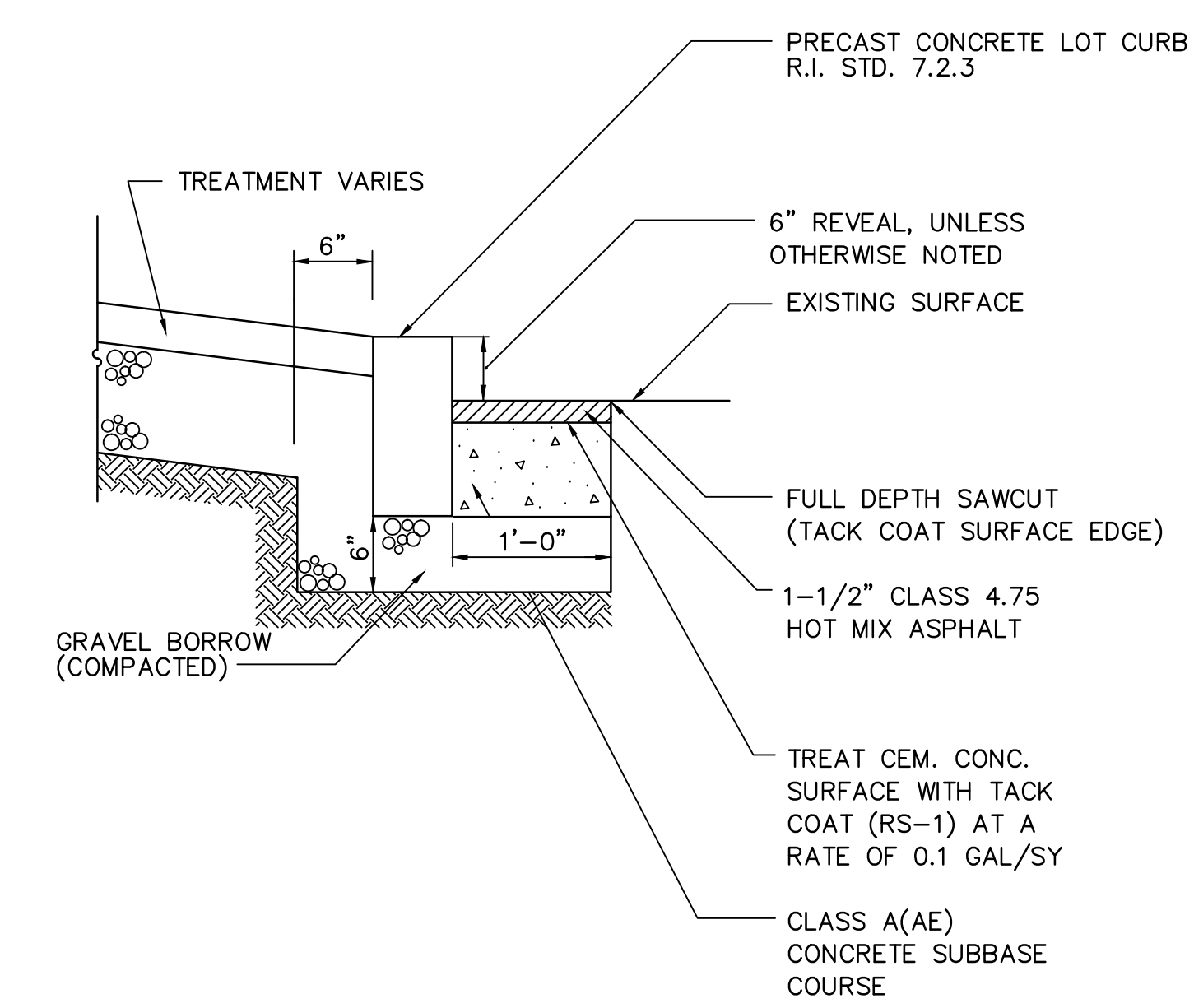
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE \_\_\_\_\_

**VHB** VANASSE HANGEN BRUSTLIN, INC.  
TRANSPORTATION LAND DEVELOPMENT  
ENVIRONMENTAL SERVICES  
PROVIDENCE, RHODE ISLAND

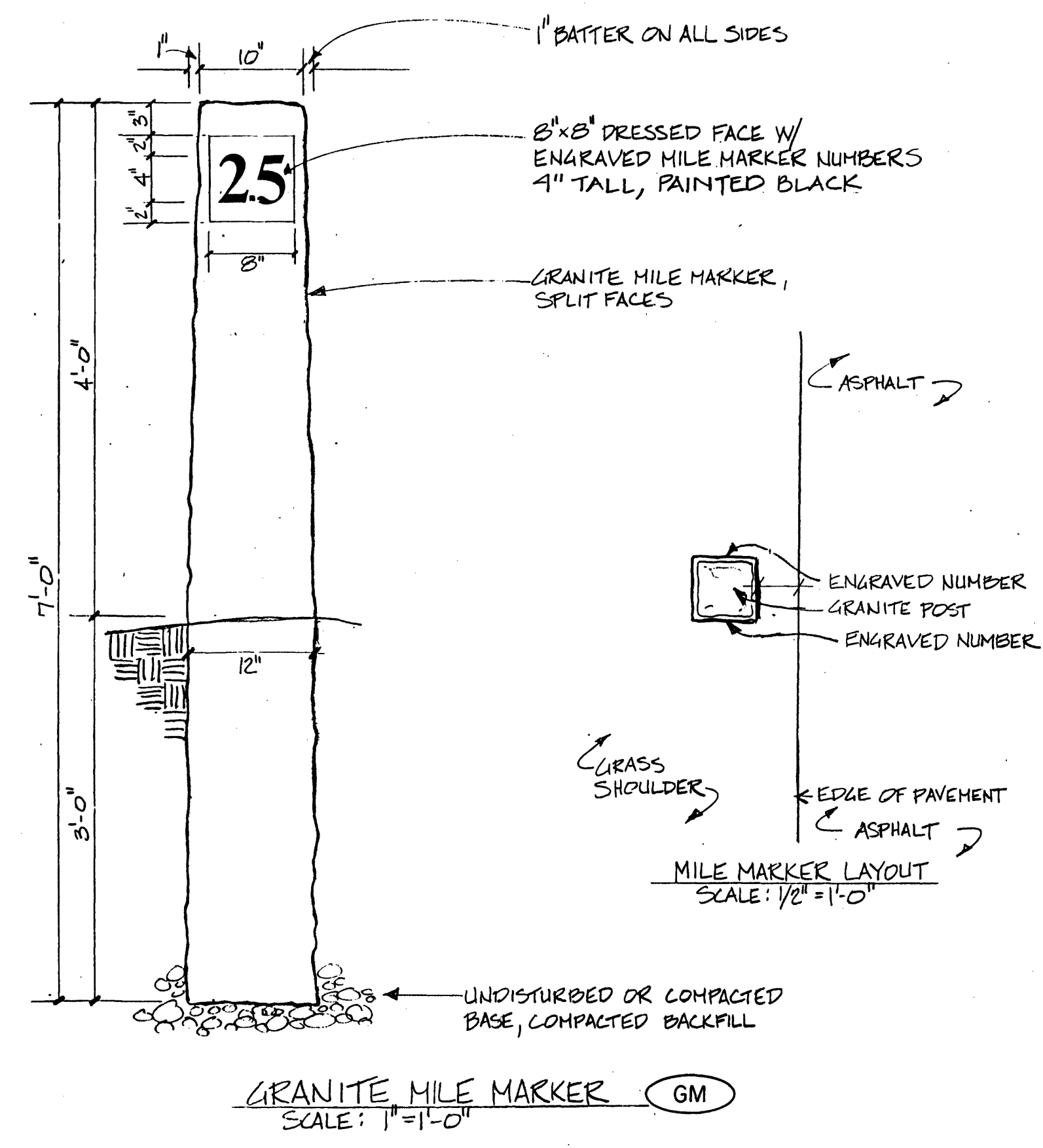
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	RI			17	30
PERMIT SUBMISSION				12	25



**STEEL BOLLARD** (BOL)  
NOT TO SCALE



**CURB/WALL INSTALLATION IN EXISTING PAVEMENT**  
NOT TO SCALE

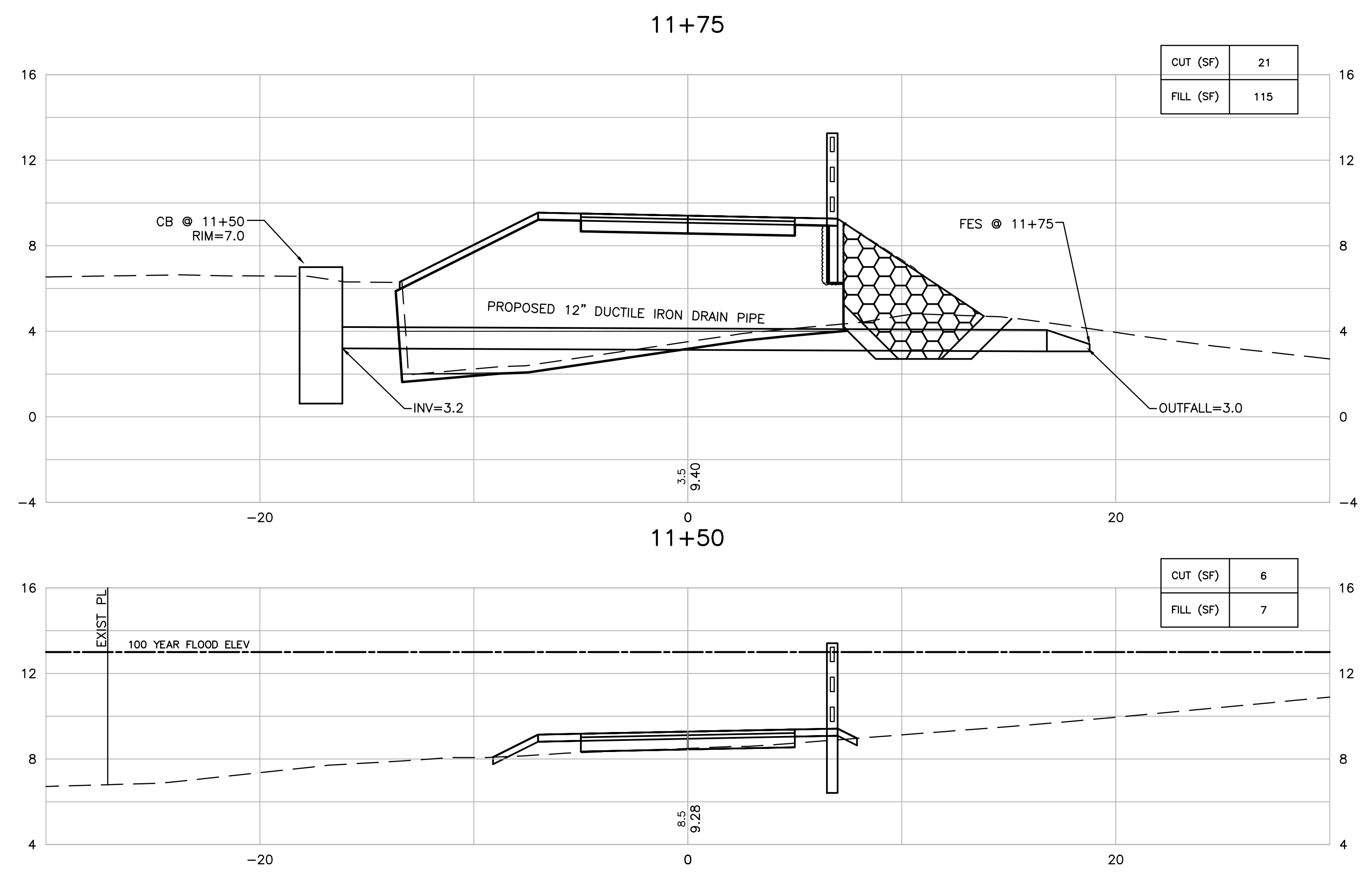
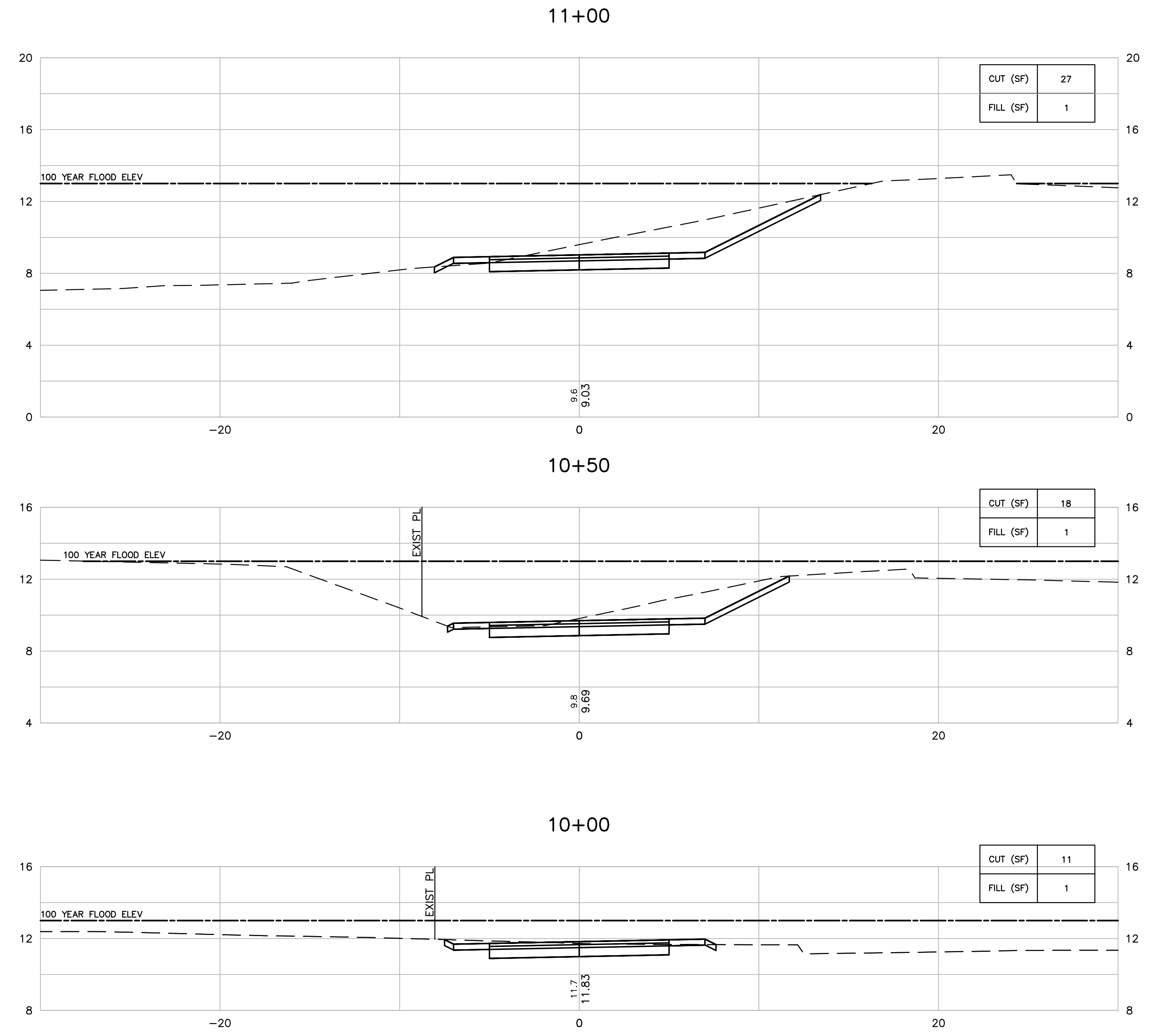


**GRANITE MILE MARKER** (GM)  
SCALE: 1" = 1'-0"

REVISIONS			RHODE ISLAND DEPARTMENT OF TRANSPORTATION	
NO.	DATE	BY	BLACKSTONE RIVER BIKEWAY SEGMENT 1A	
			PROVIDENCE, RHODE ISLAND	
			<b>DETAIL PLAN NO. 2</b>	
			CHECKED BY _____ DATE _____ SCALE _____	

**VHB** VANASSE HANGEN BRUSTLIN, INC.  
TRANSPORTATION LAND DEVELOPMENT ENVIRONMENTAL SERVICES  
PROVIDENCE, RHODE ISLAND

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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PERMIT SUBMISSION				13	25

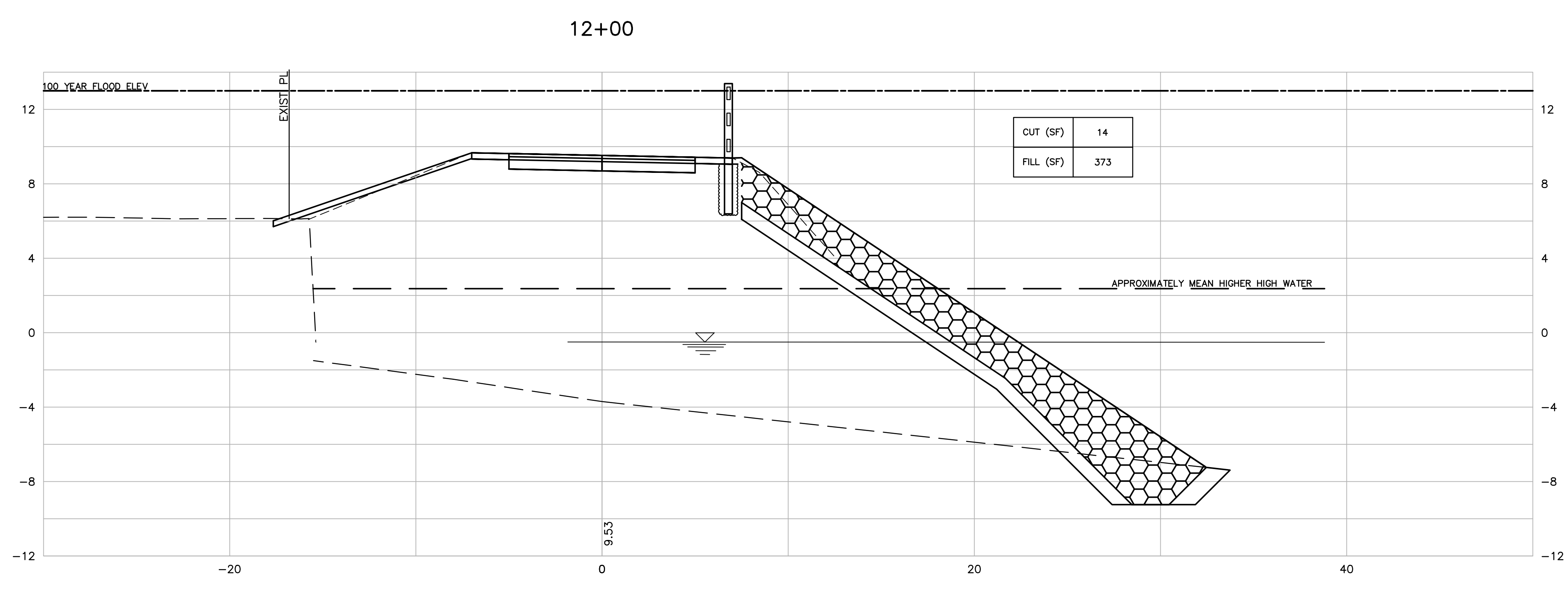
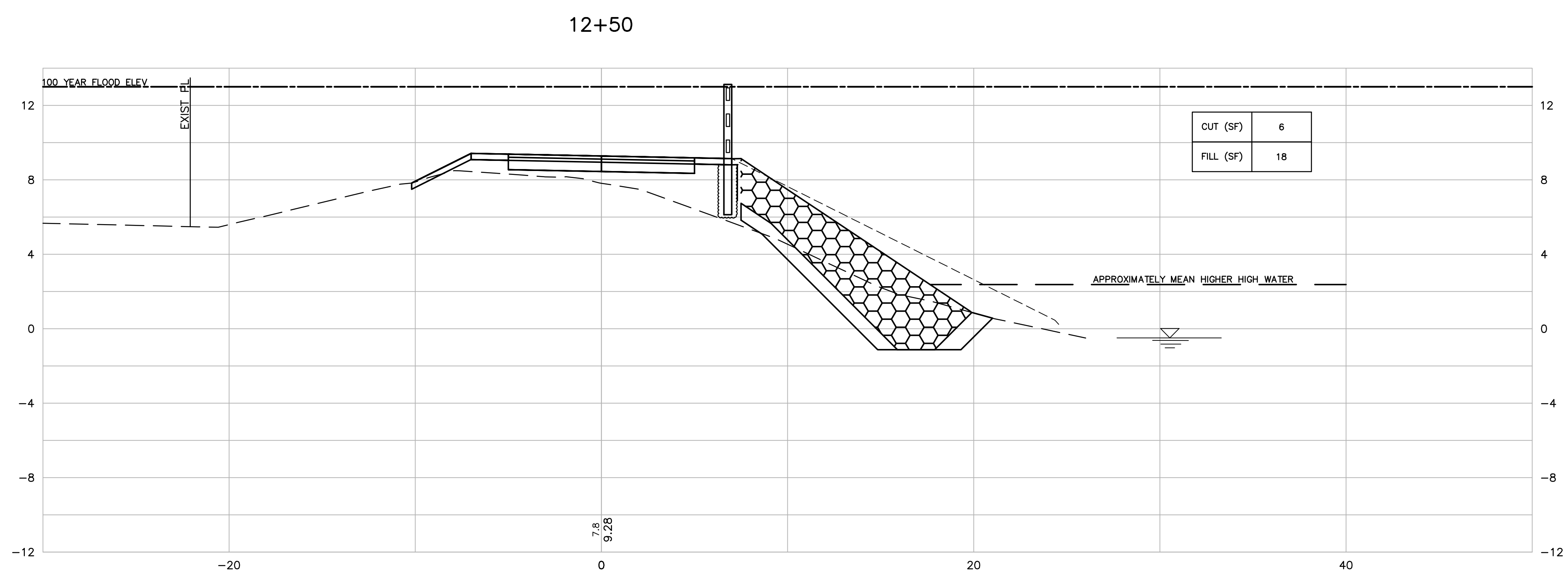


REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

PROVIDENCE, RHODE ISLAND  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'  
XXXXX\_XS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			19	30
PERMIT SUBMISSION				14	25

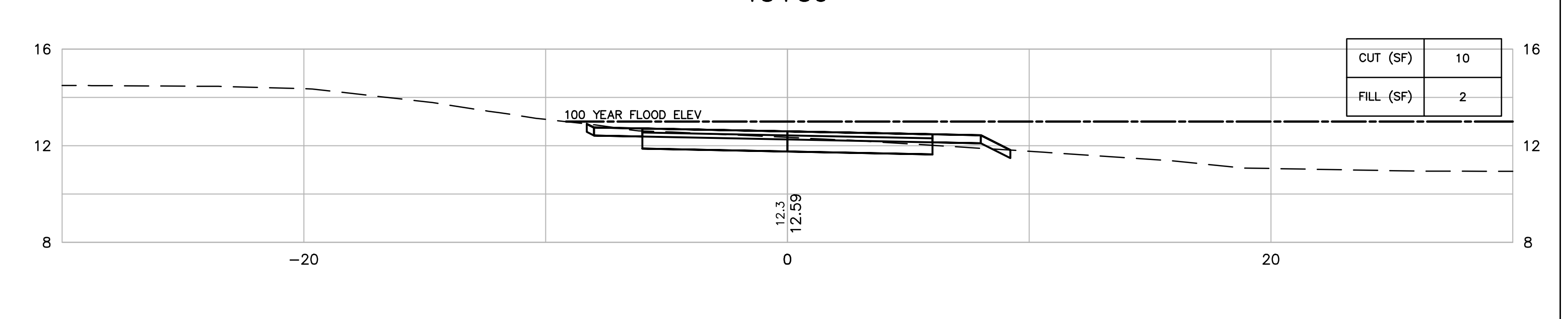
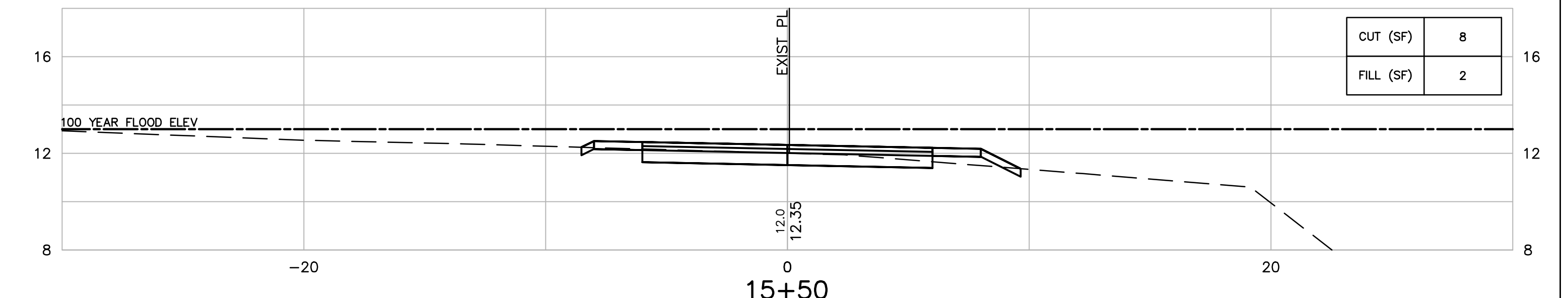
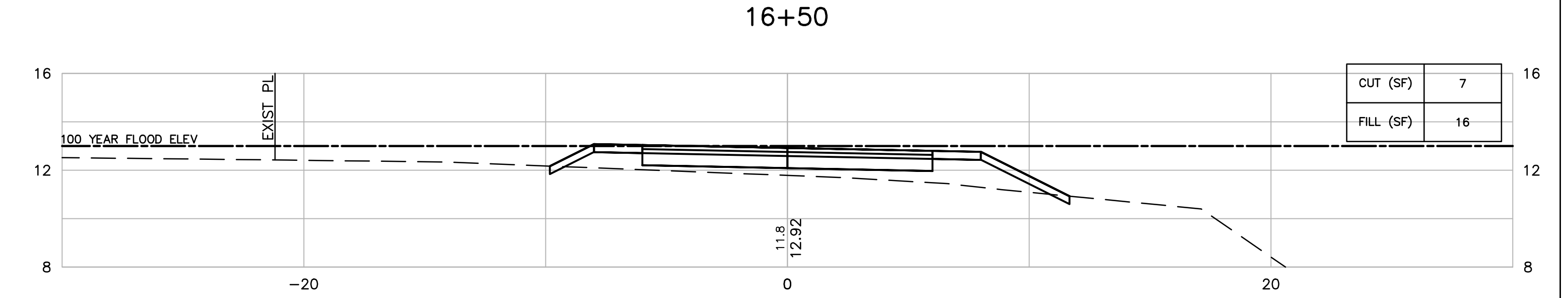
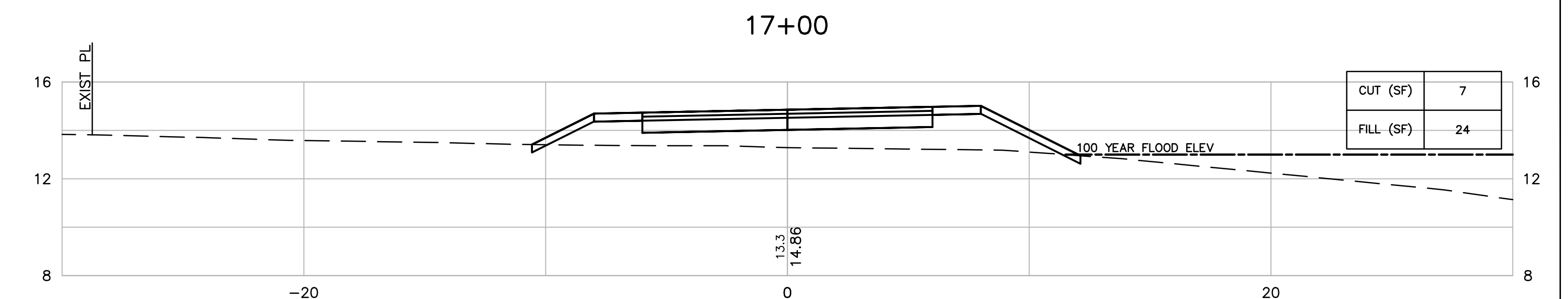
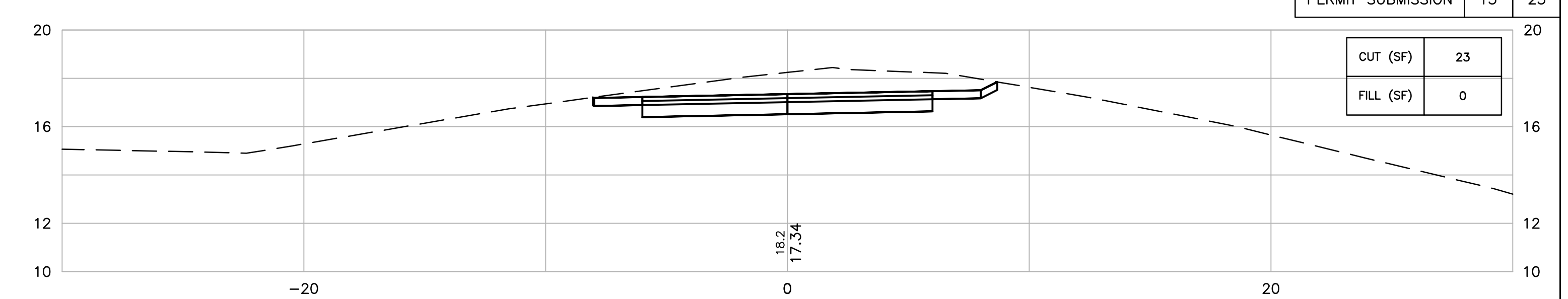
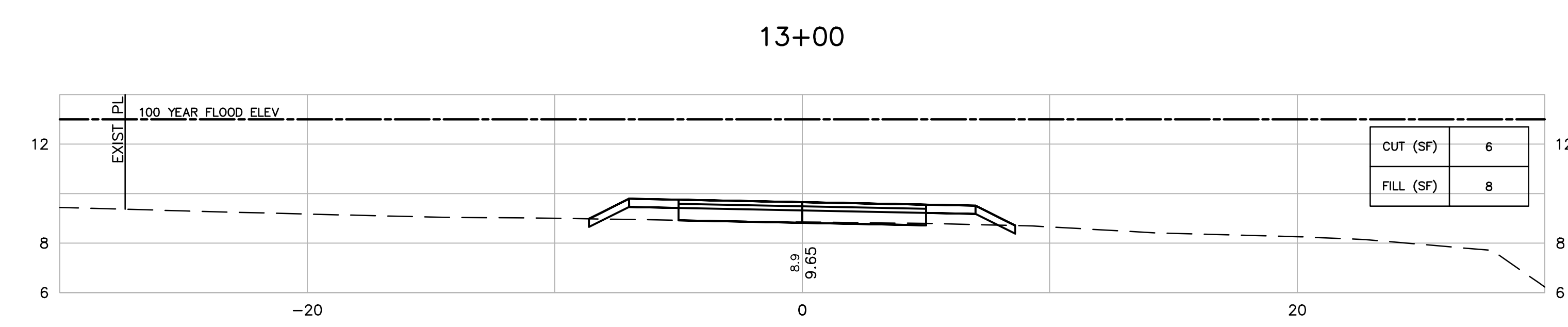
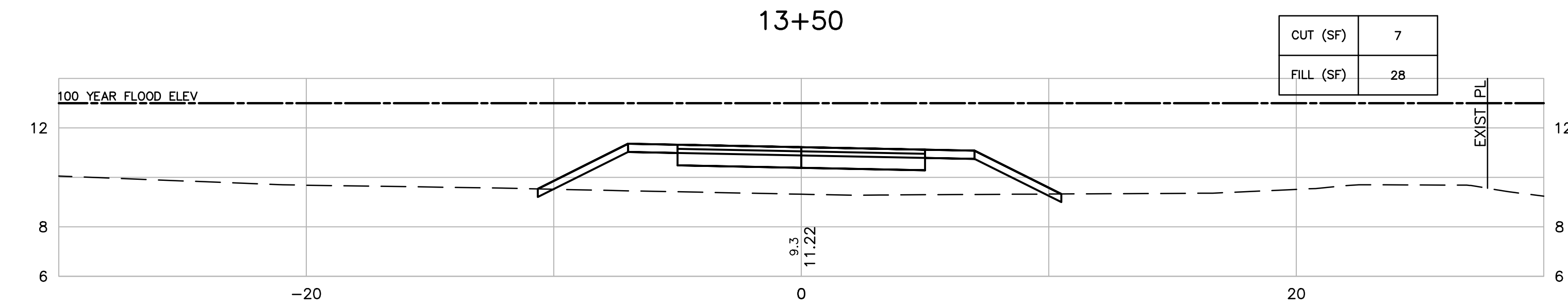
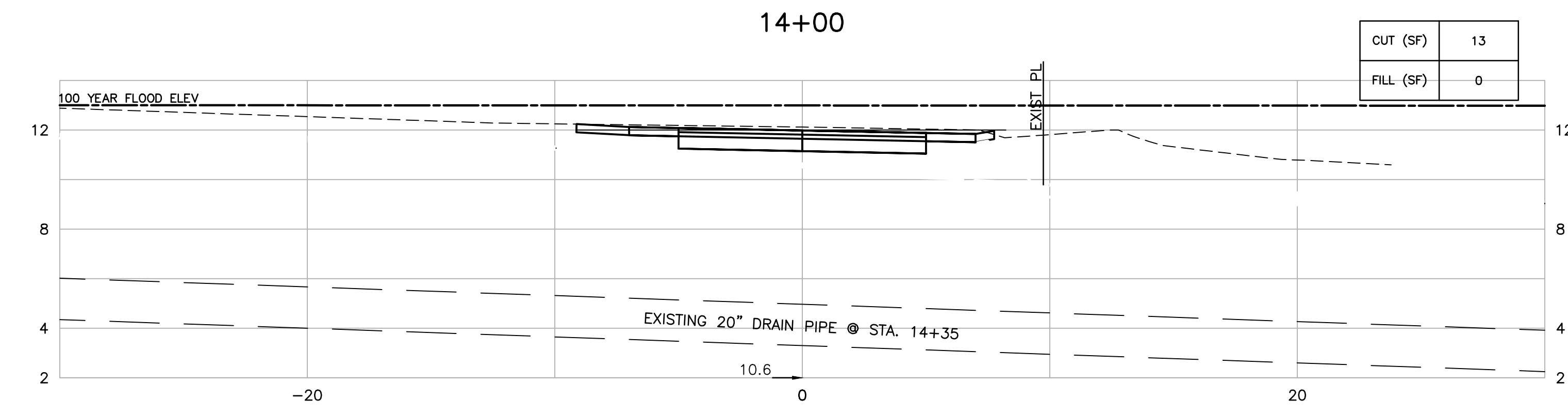
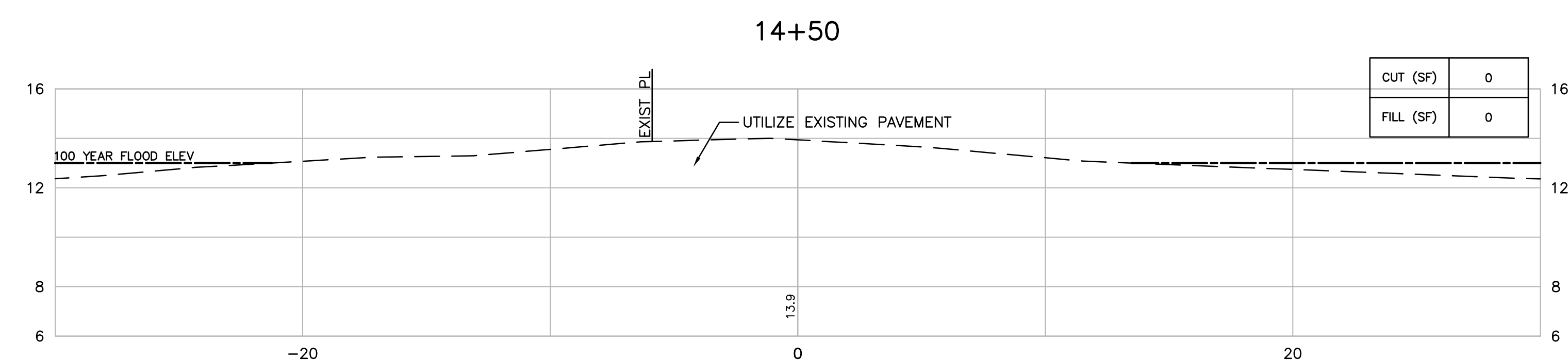
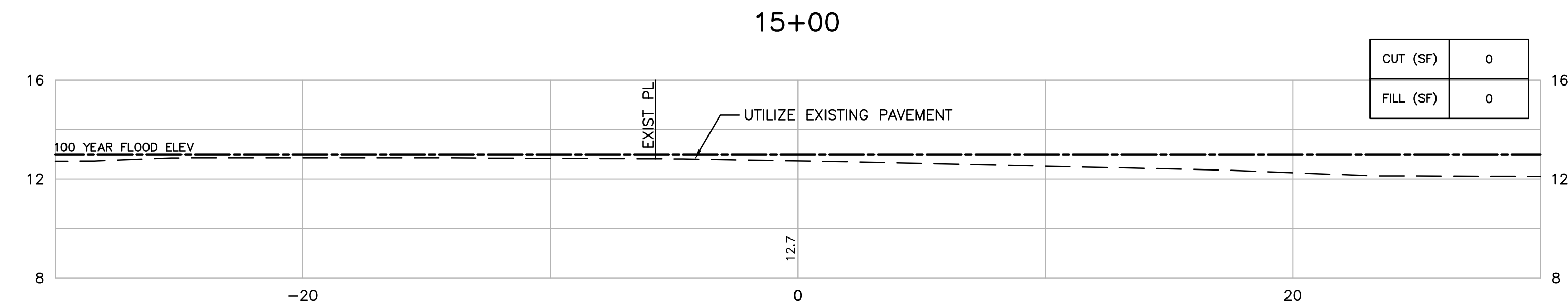


REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

PROVIDENCE, RHODE ISLAND  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ SCALE: 1"=4'

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			20	30
				PERMIT SUBMISSION	15



REVISIONS		
NO.	DATE	BY

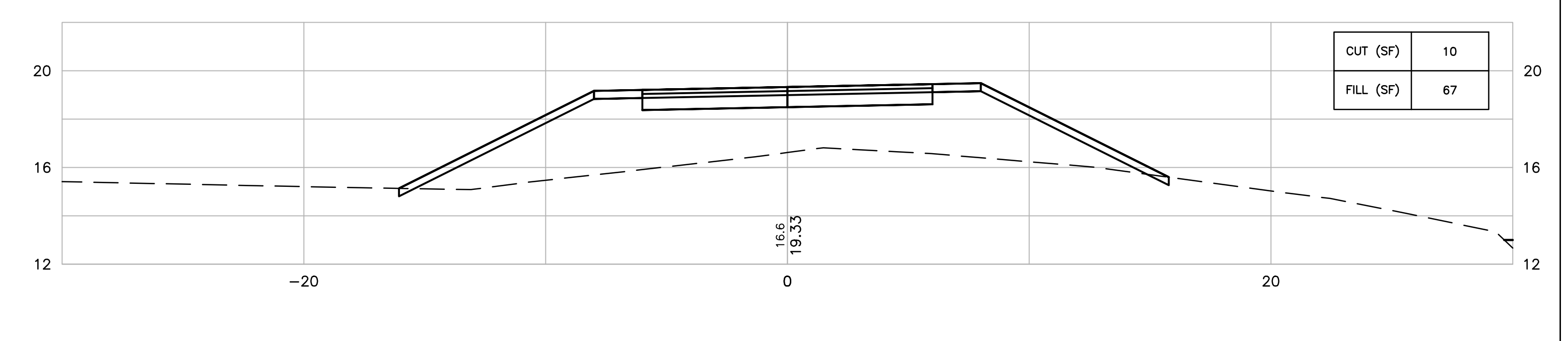
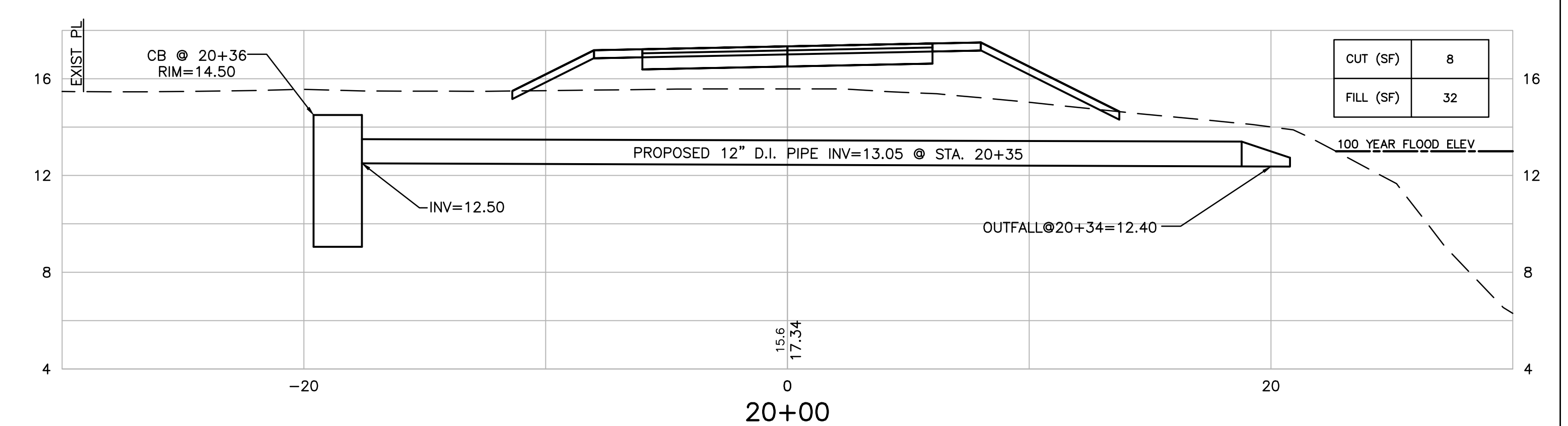
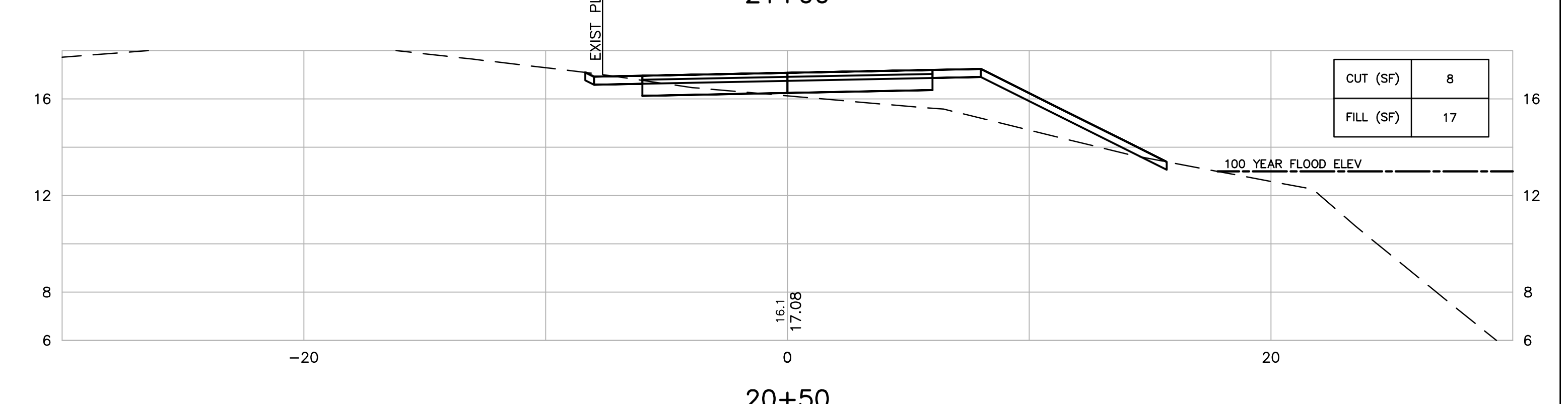
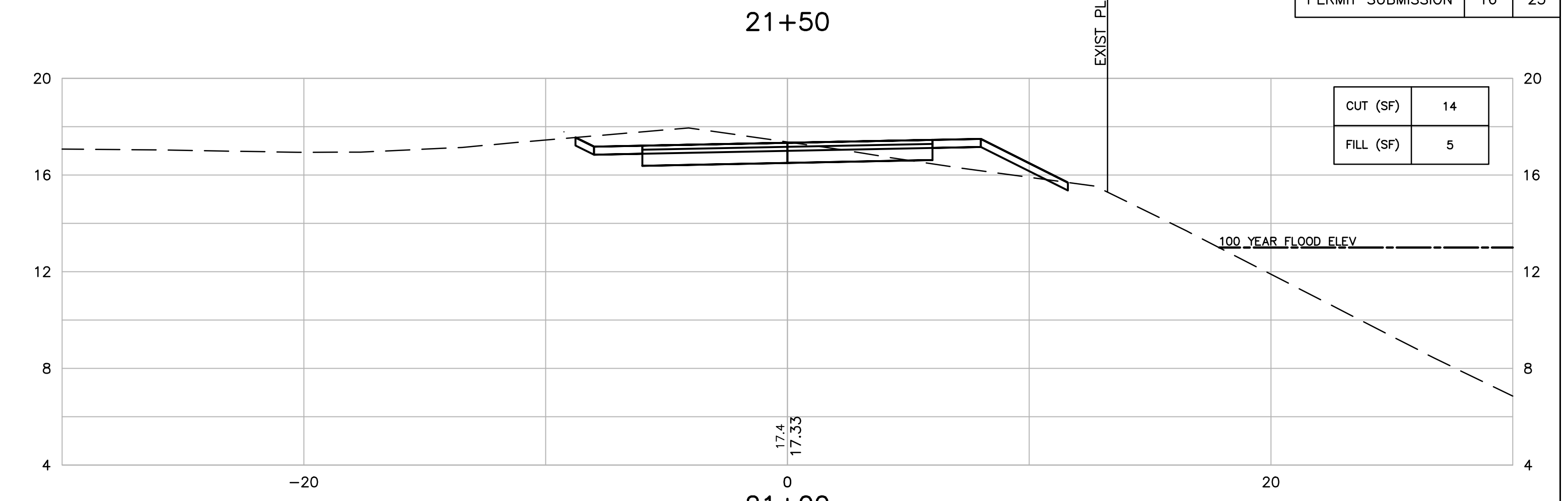
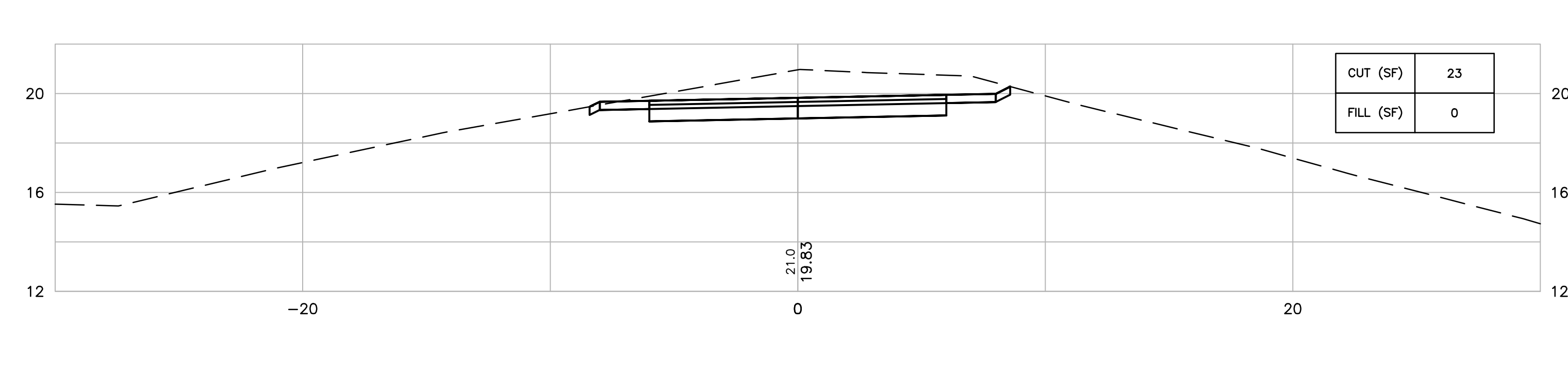
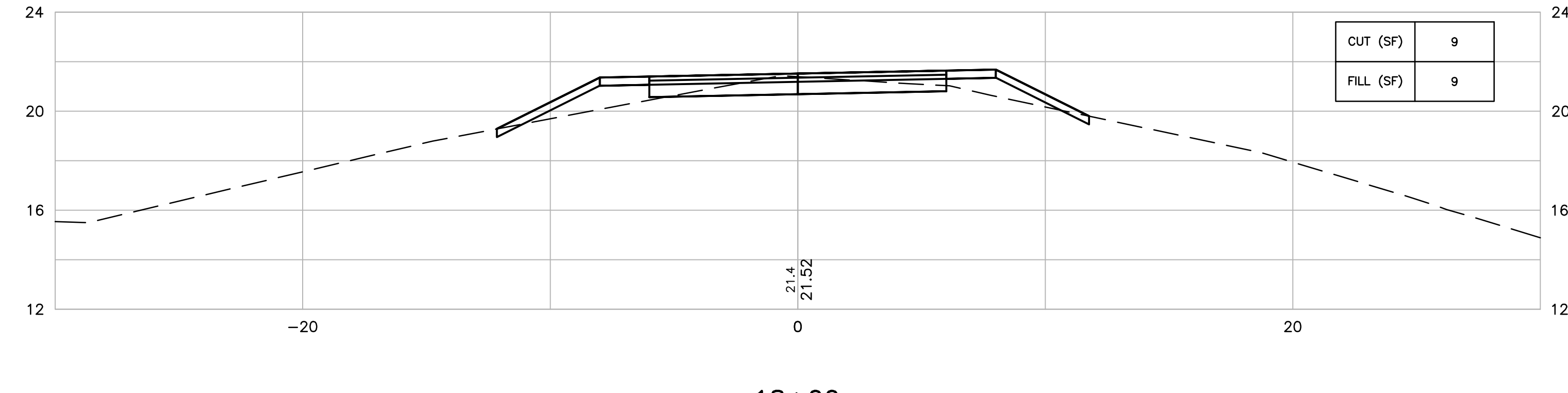
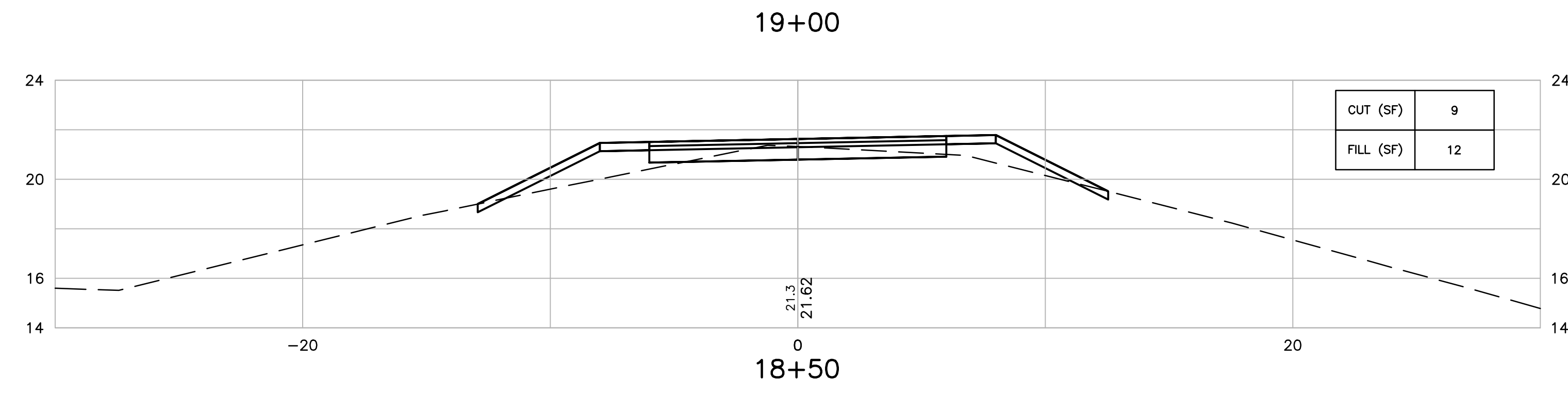
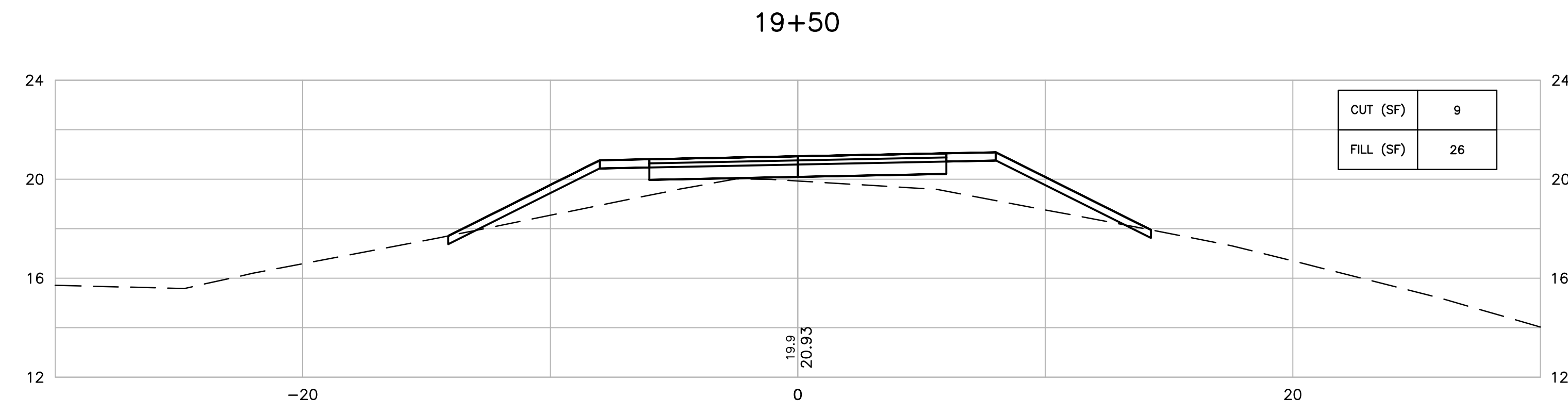
## BLACKSTONE RIVER BIKEWAY SEGMENT 1A

PROVIDENCE, RHODE ISLAND

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'



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	RI			21	30
				PERMIT SUBMISSION	16
					25

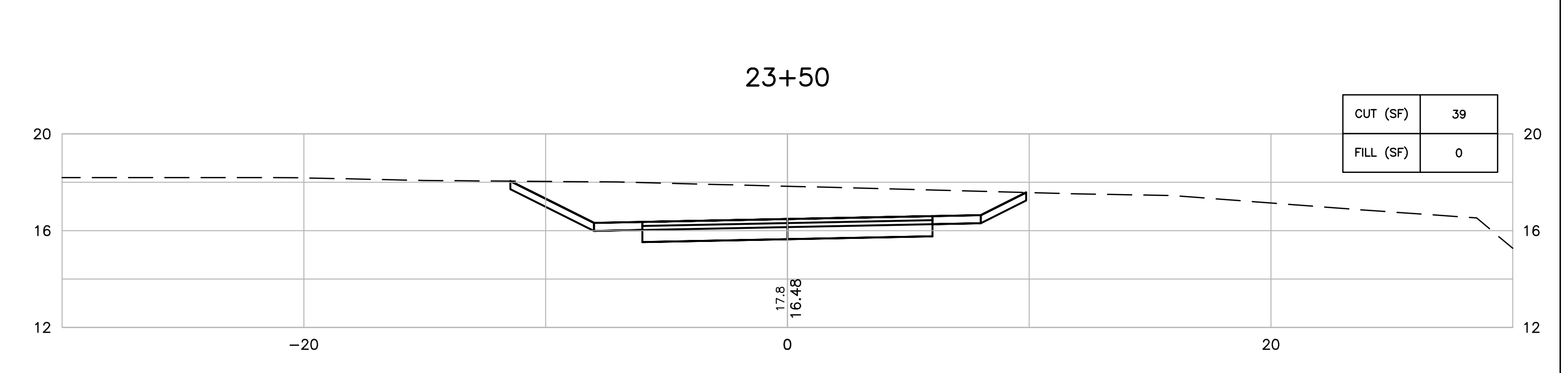
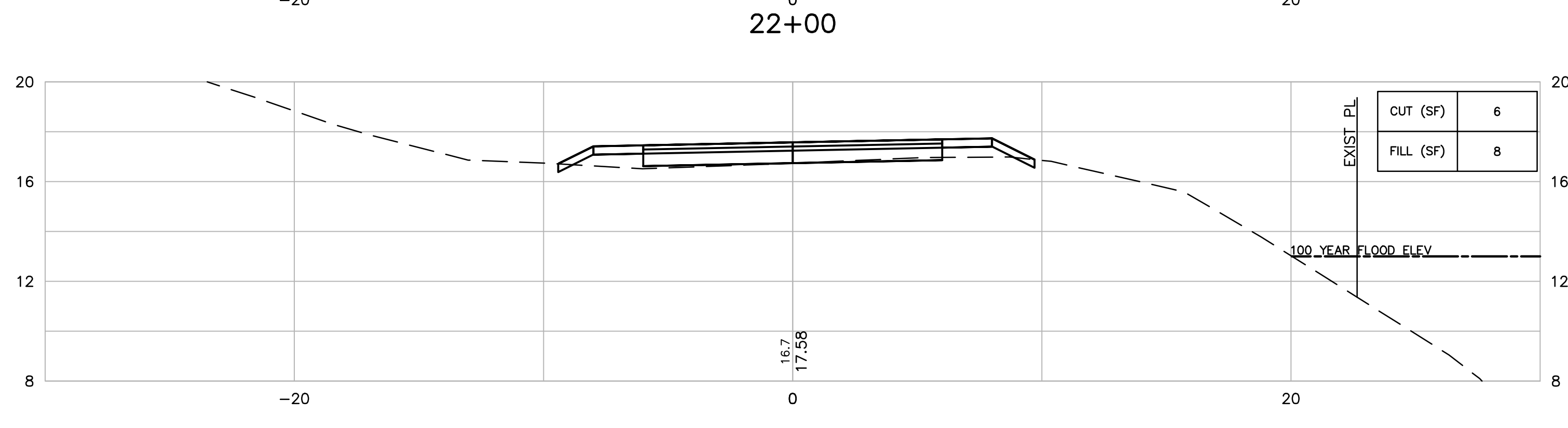
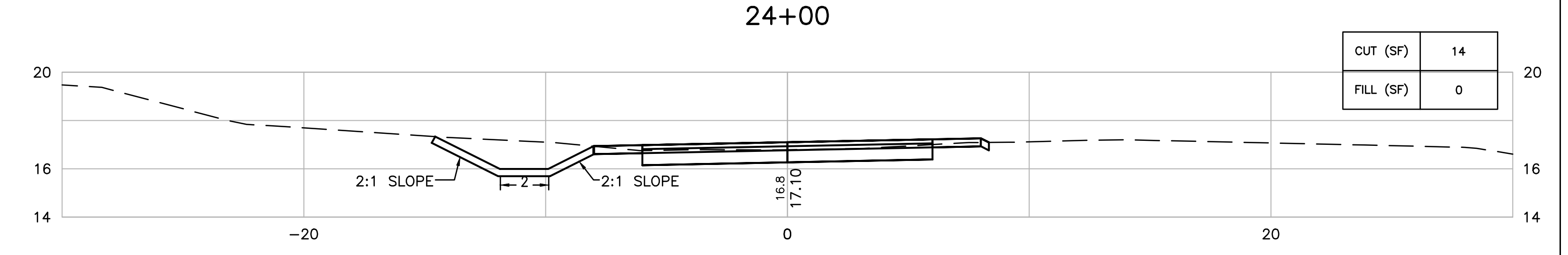
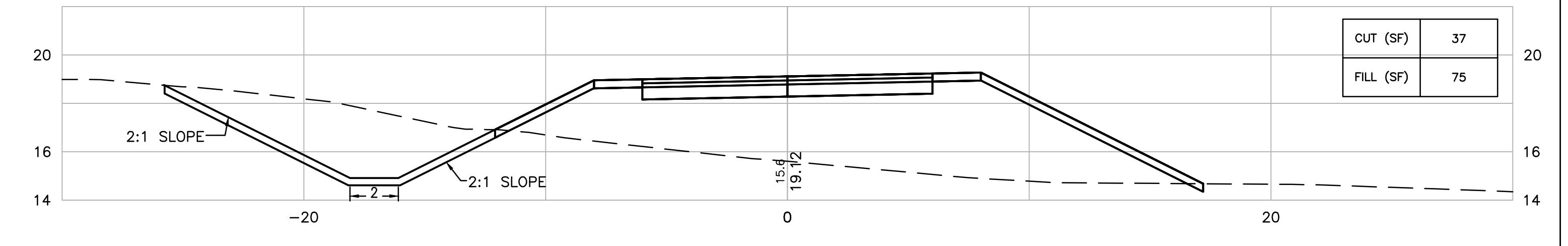
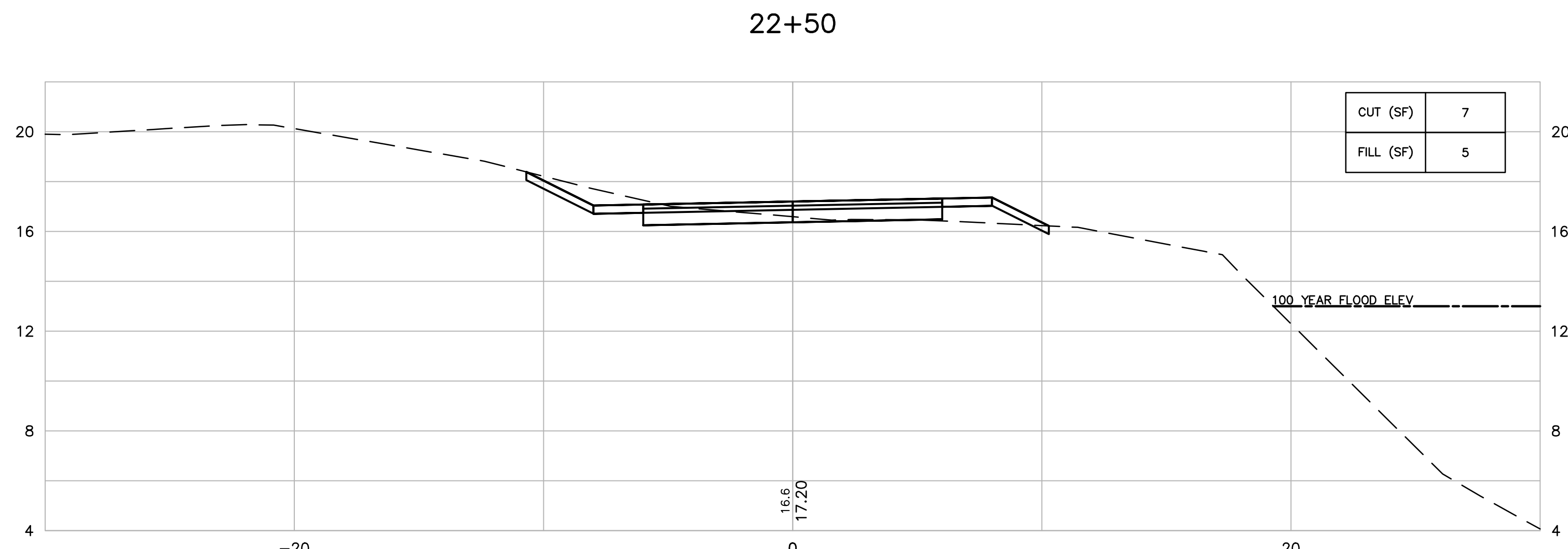
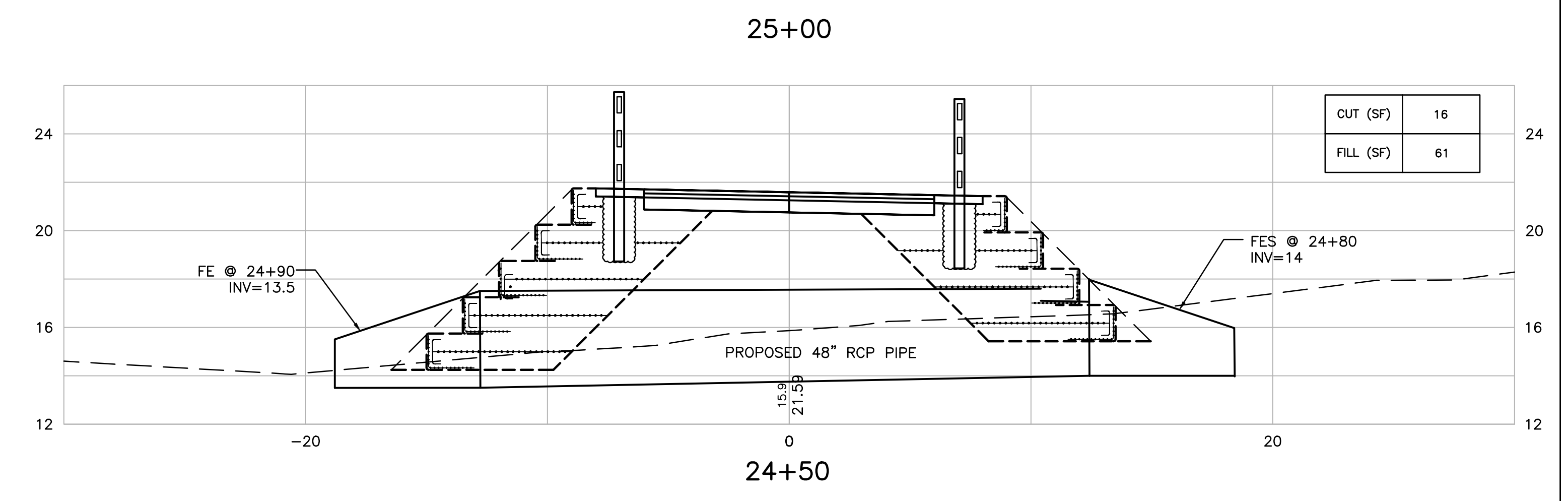
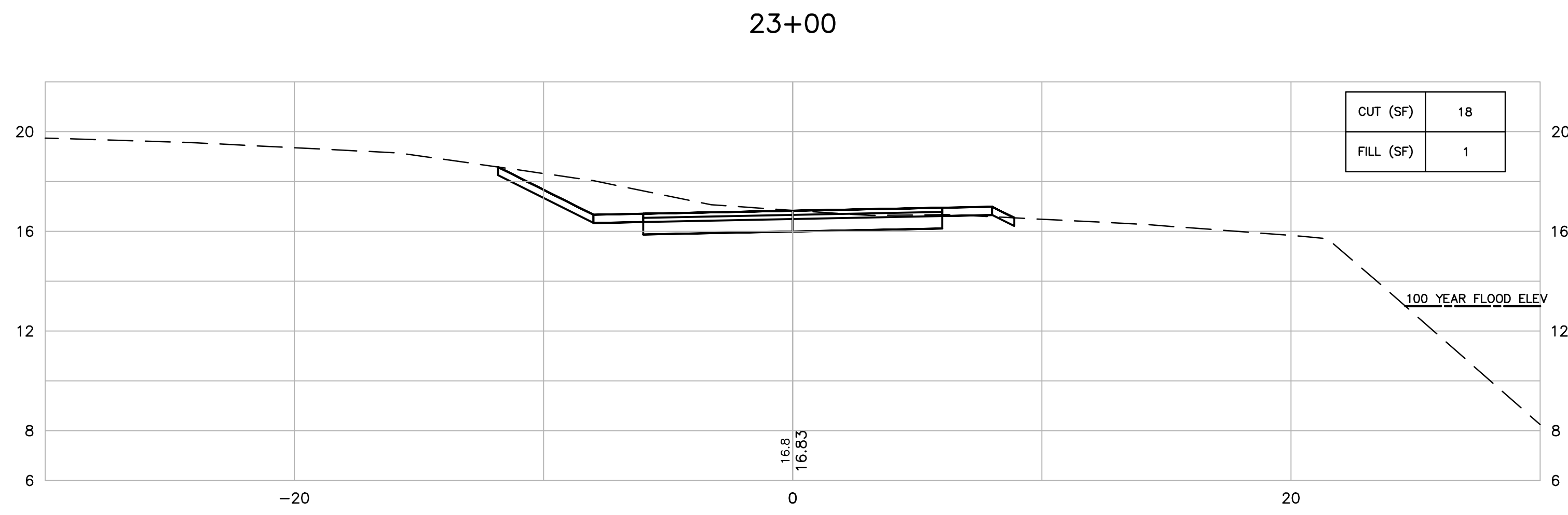


REVISIONS		
NO.	DATE	BY

## BLACKSTONE RIVER BIKEWAY SEGMENT 1A

PROVIDENCE, RHODE ISLAND  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ SCALE: 1"=4'

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			22	30
				PERMIT SUBMISSION	17



REVISIONS		
NO.	DATE	BY

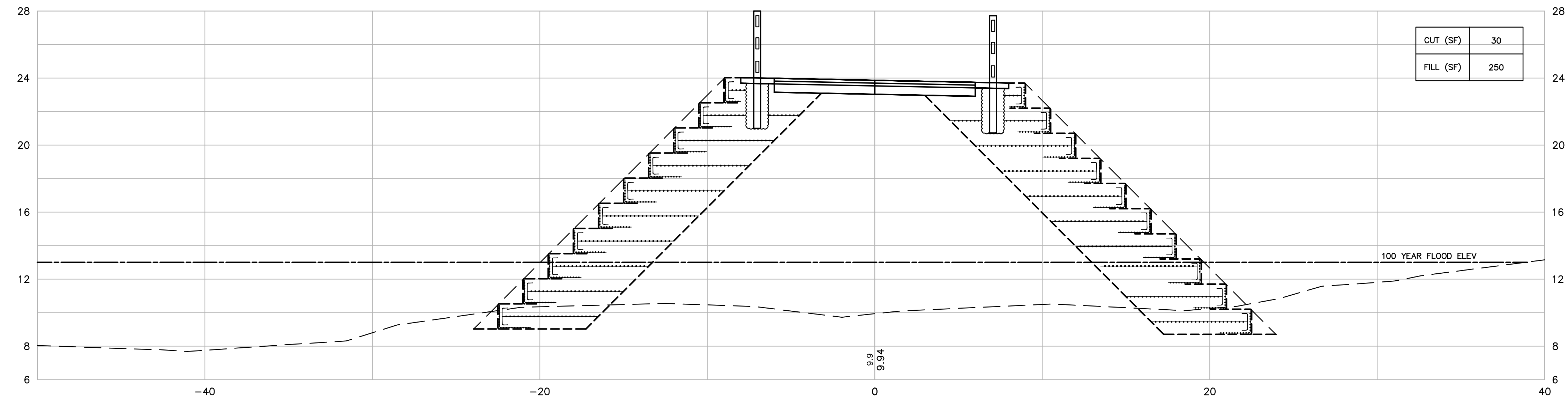
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PROVIDENCE, RHODE ISLAND

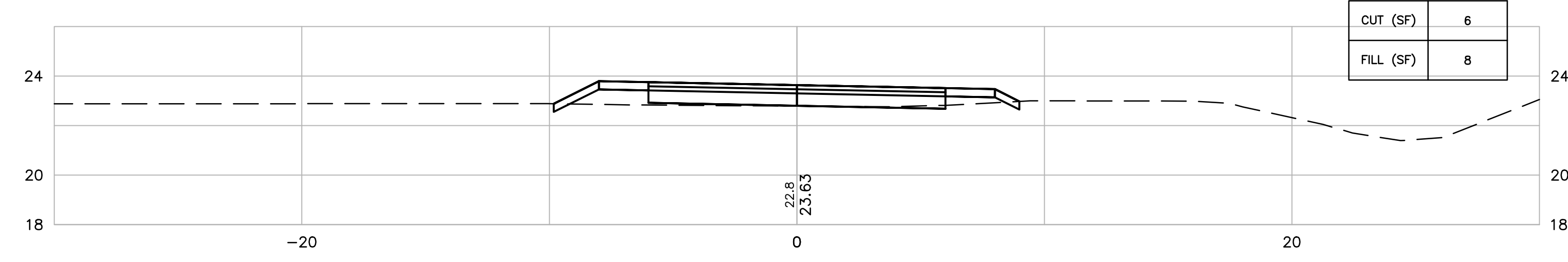
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	RI			23	30
PERMIT SUBMISSION				18	25

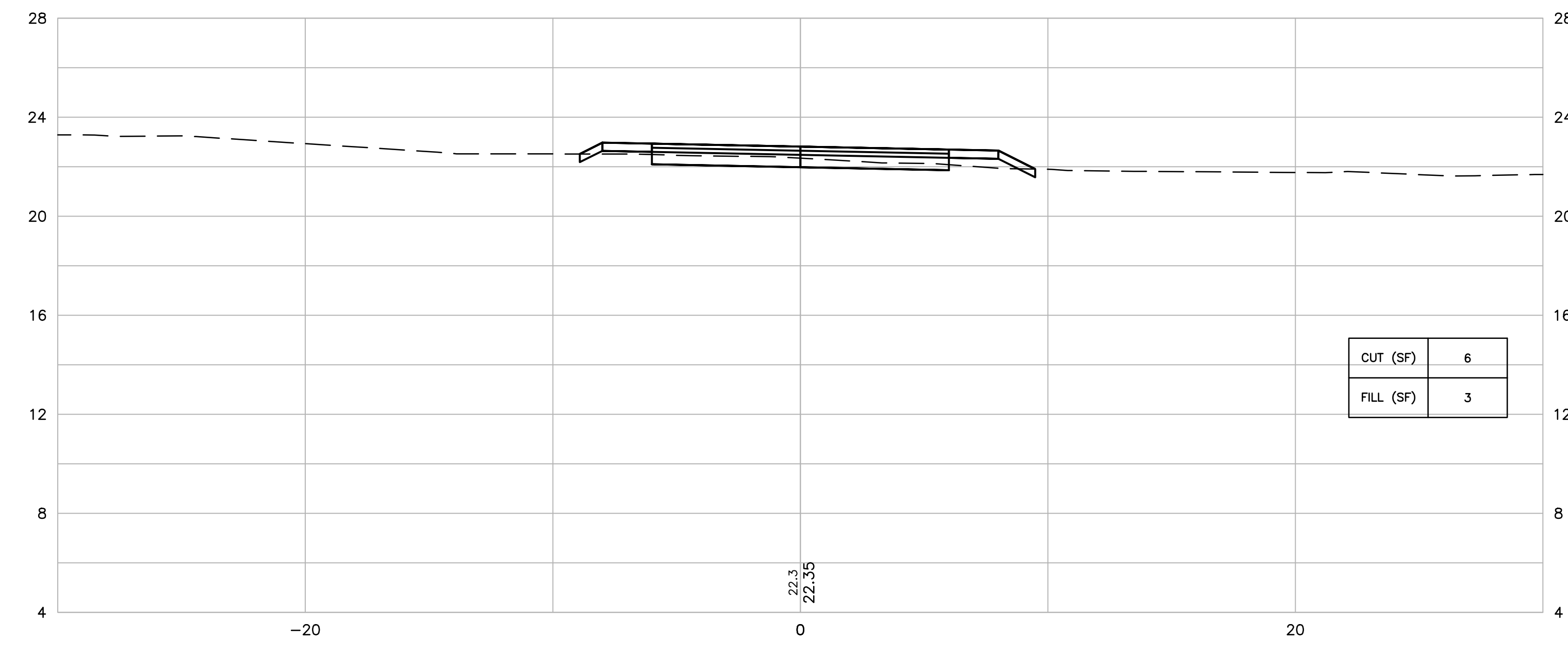
25+75



25+50



25+25



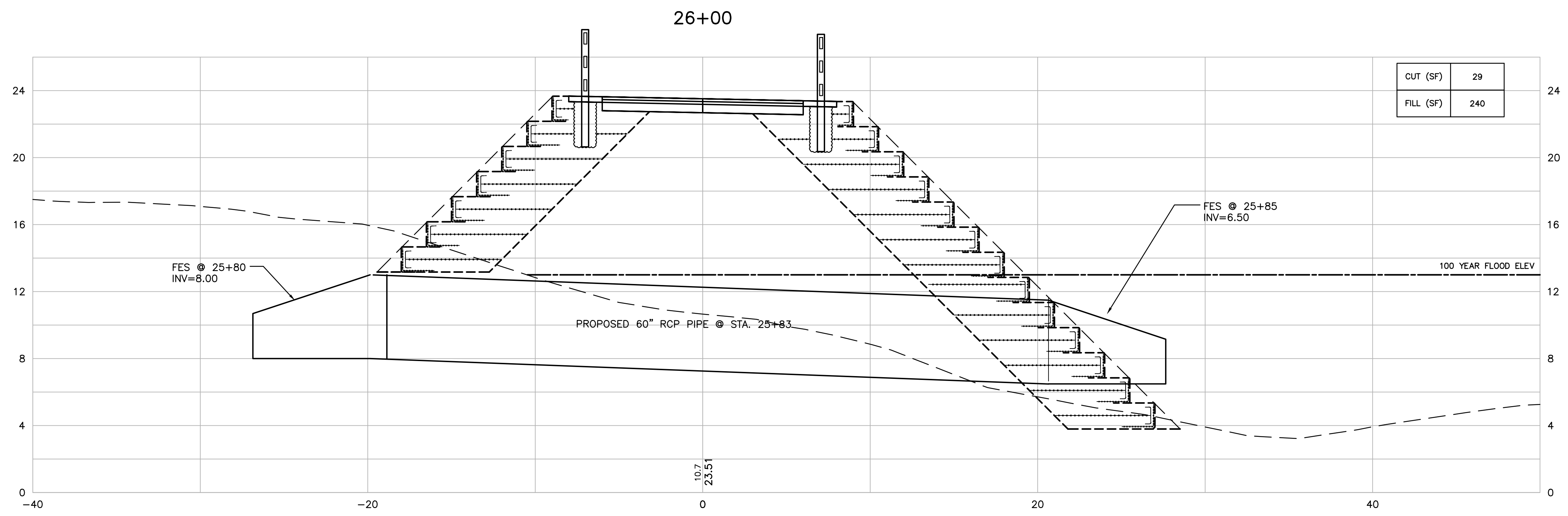
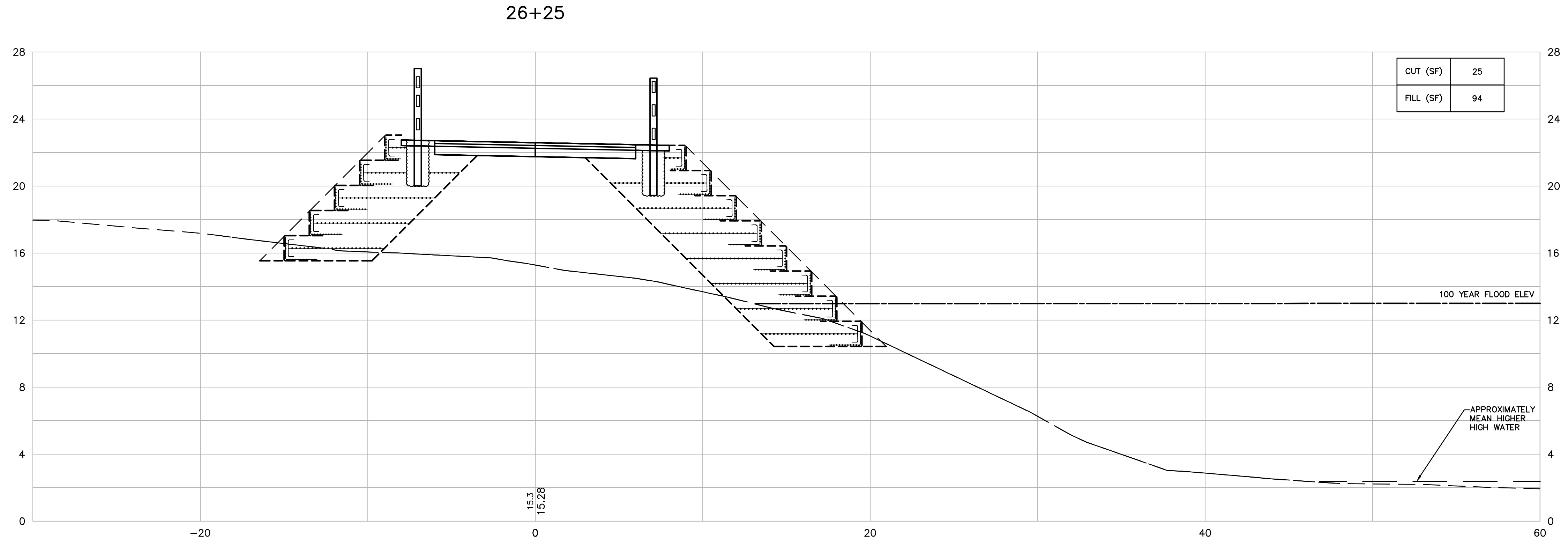
REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

PROVIDENCE, RHODE ISLAND

CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ SCALE: 1"=4'

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			24	30
PERMIT SUBMISSION				19	25



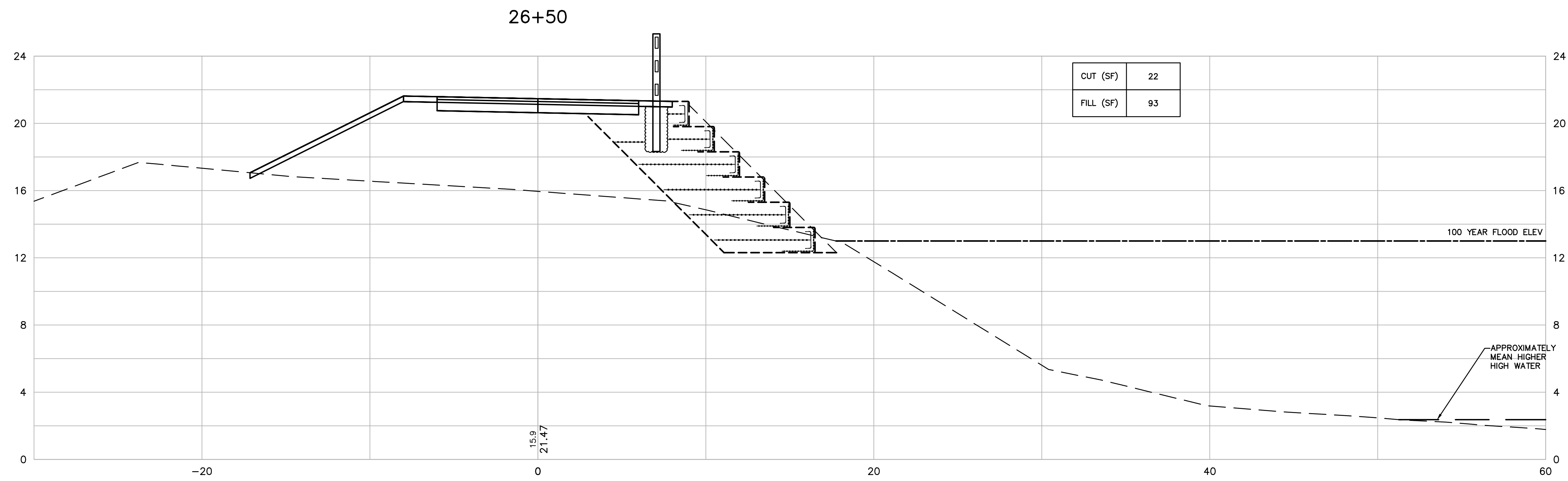
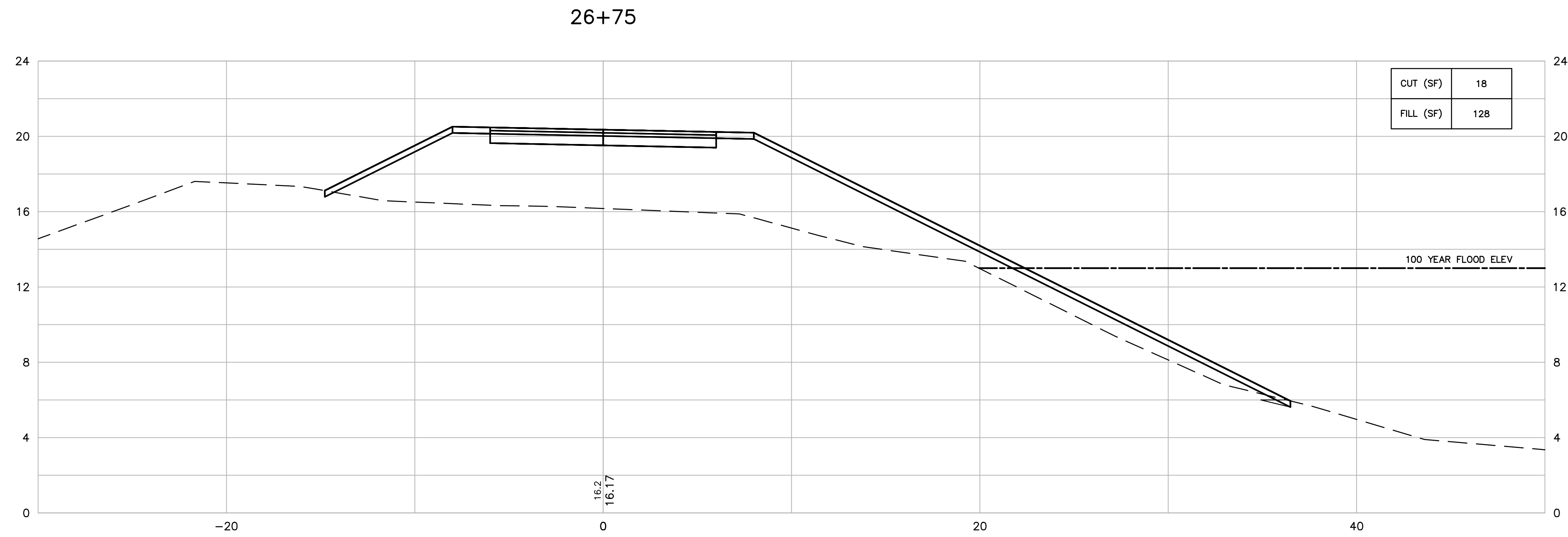
REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**



PROVIDENCE, RHODE ISLAND  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'  
XXXXX\_XS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			25	30
PERMIT SUBMISSION				20	25

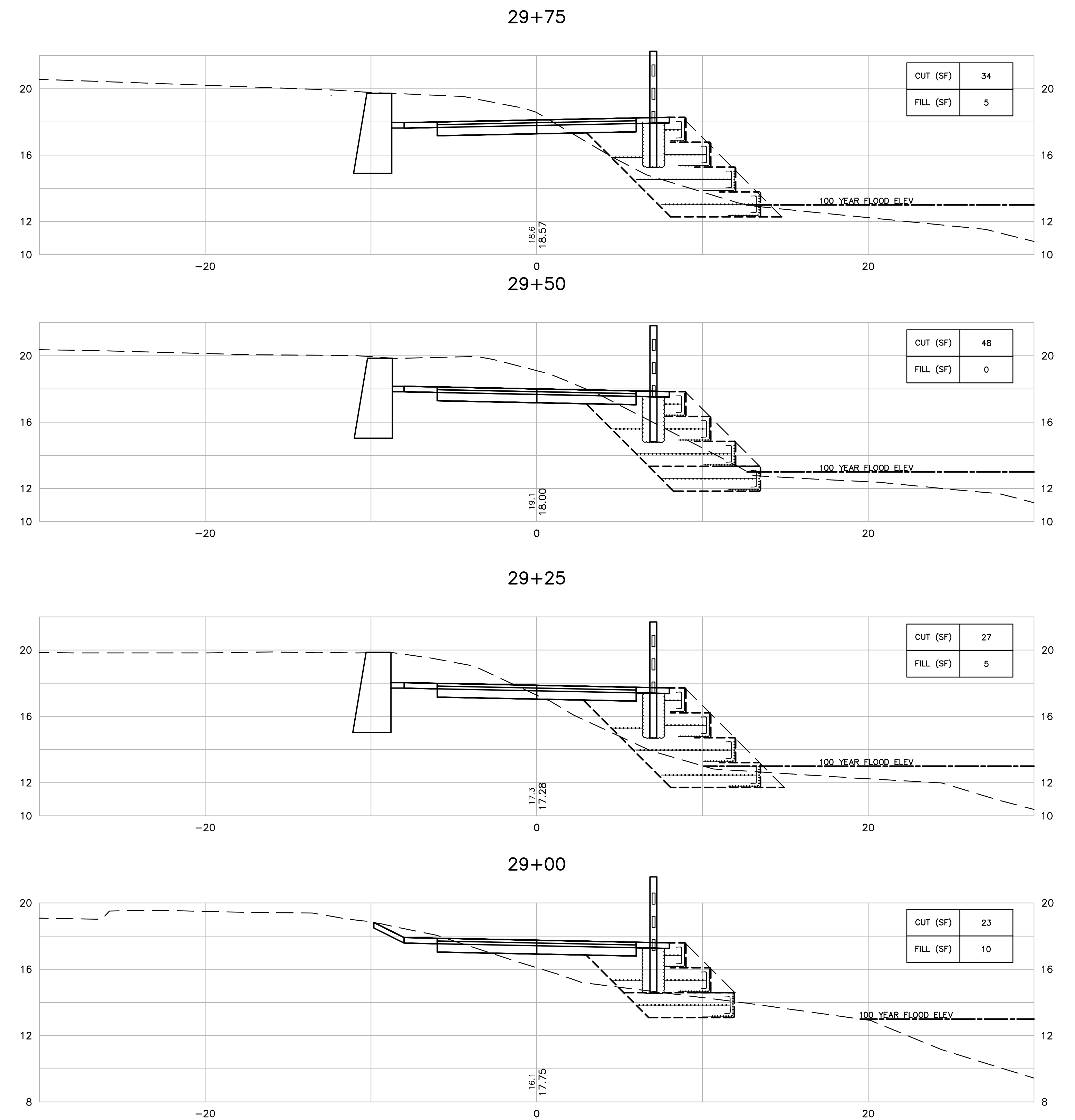
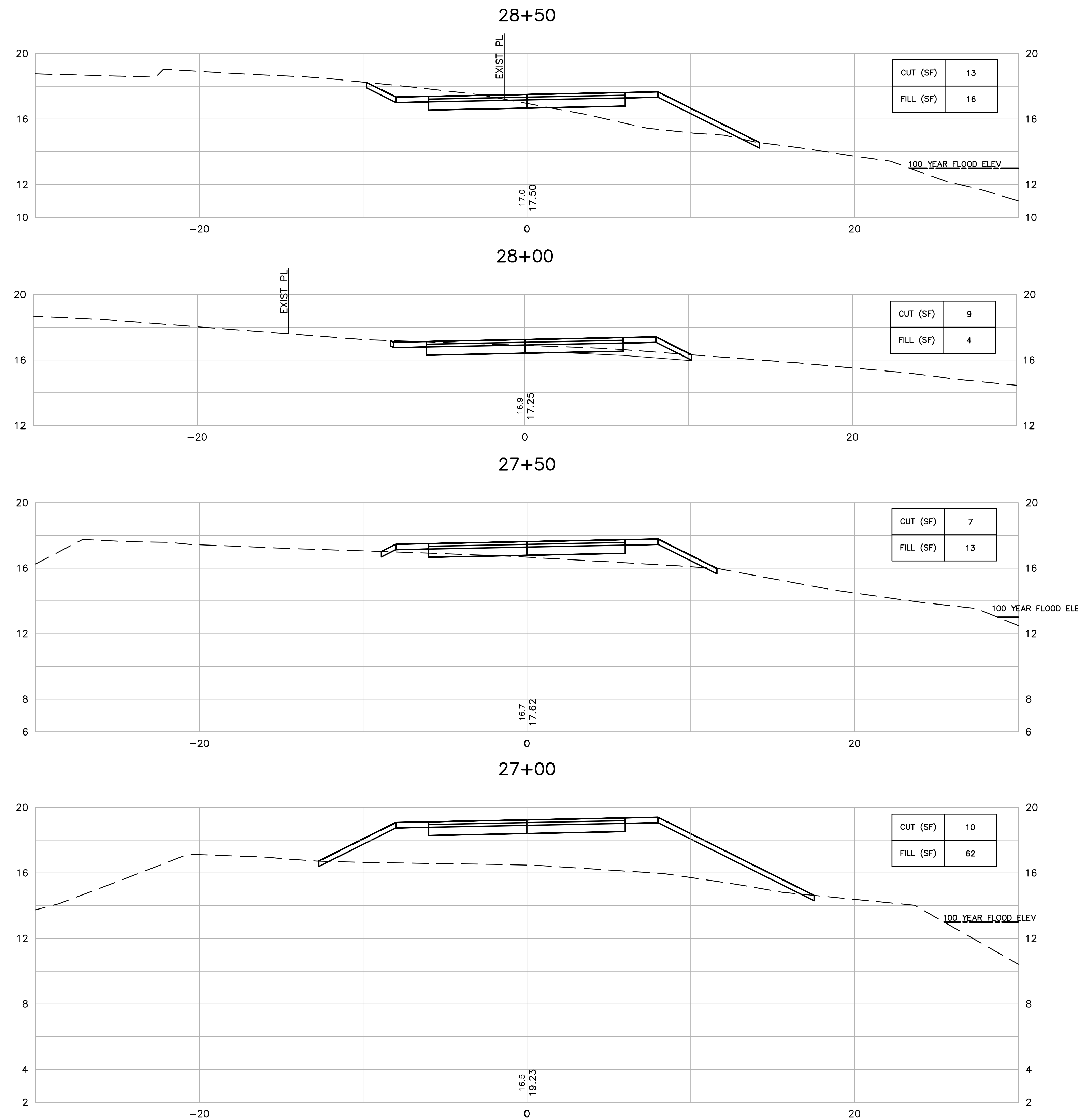


REVISIONS		
NO.	DATE	BY

## BLACKSTONE RIVER BIKEWAY SEGMENT 1A

PROVIDENCE, RHODE ISLAND

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'



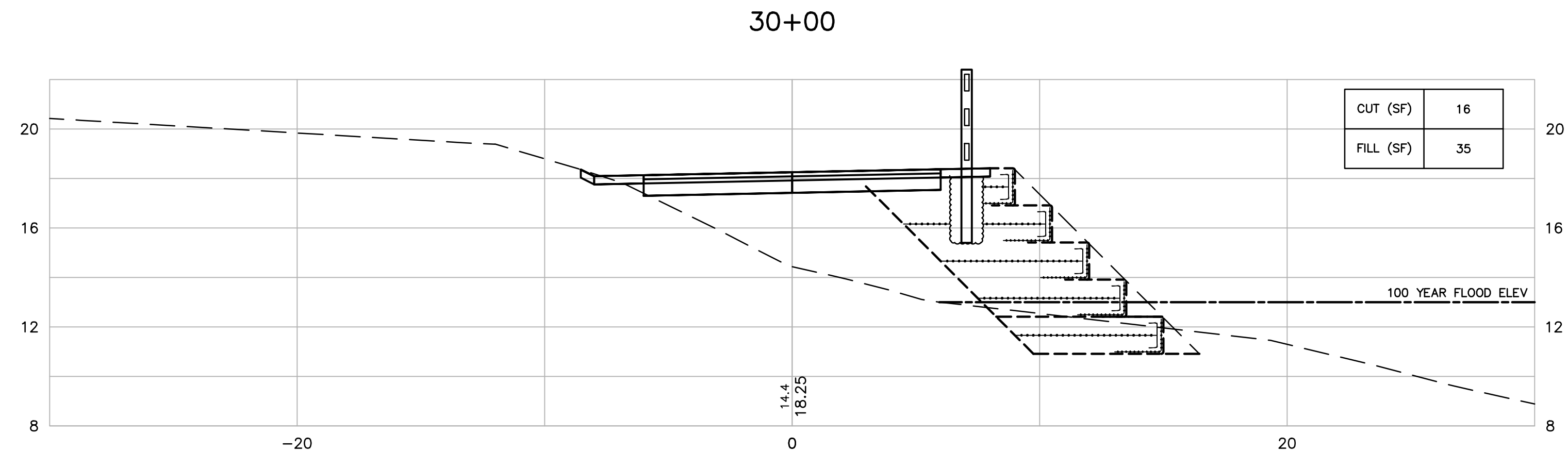
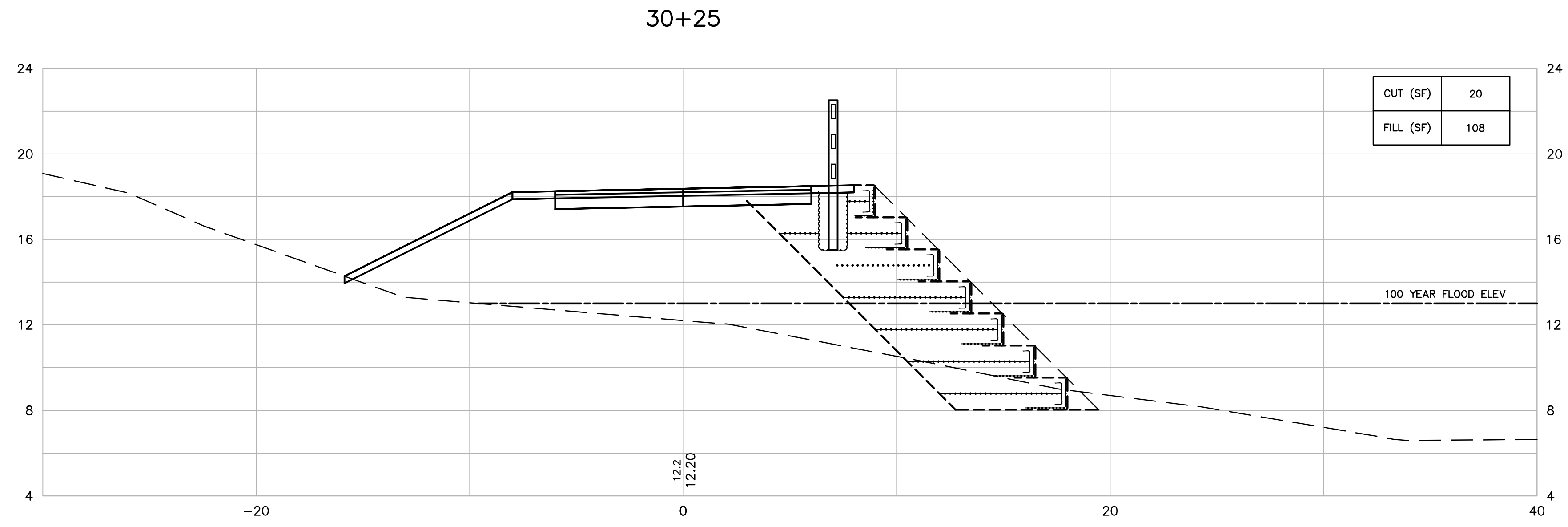
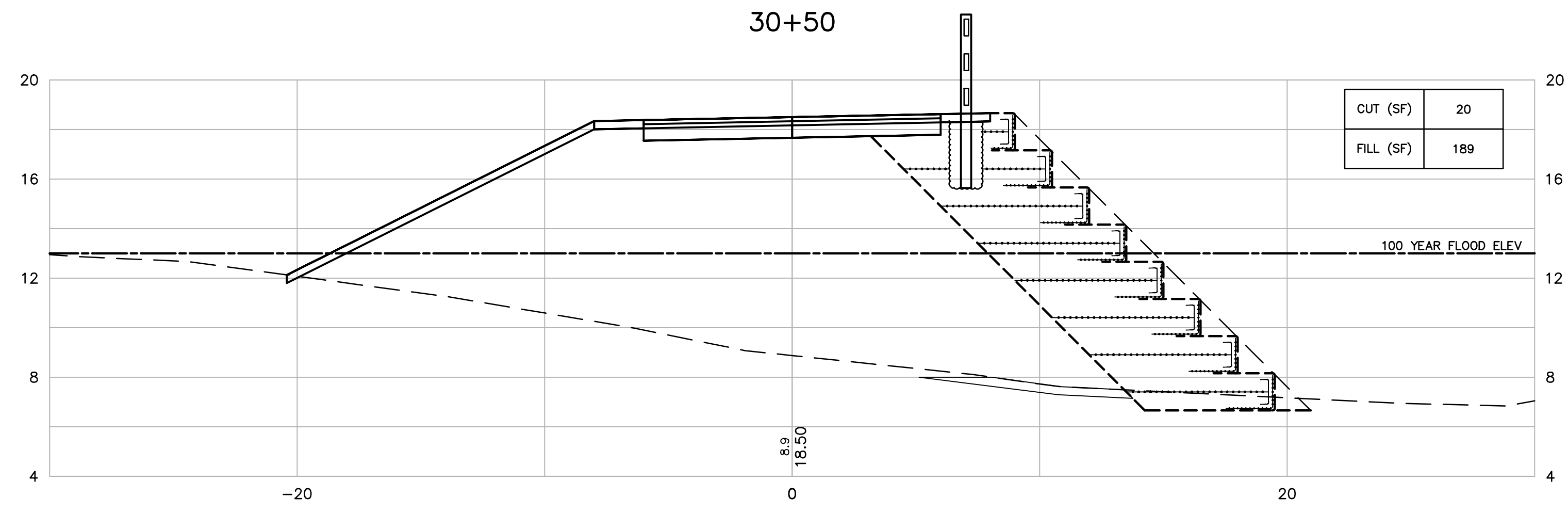
REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
 SEGMENT 1A**



PROVIDENCE, RHODE ISLAND  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'  
 XXXXX\_XS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			27	30
PERMIT SUBMISSION				22	25



REVISIONS		
NO.	DATE	BY

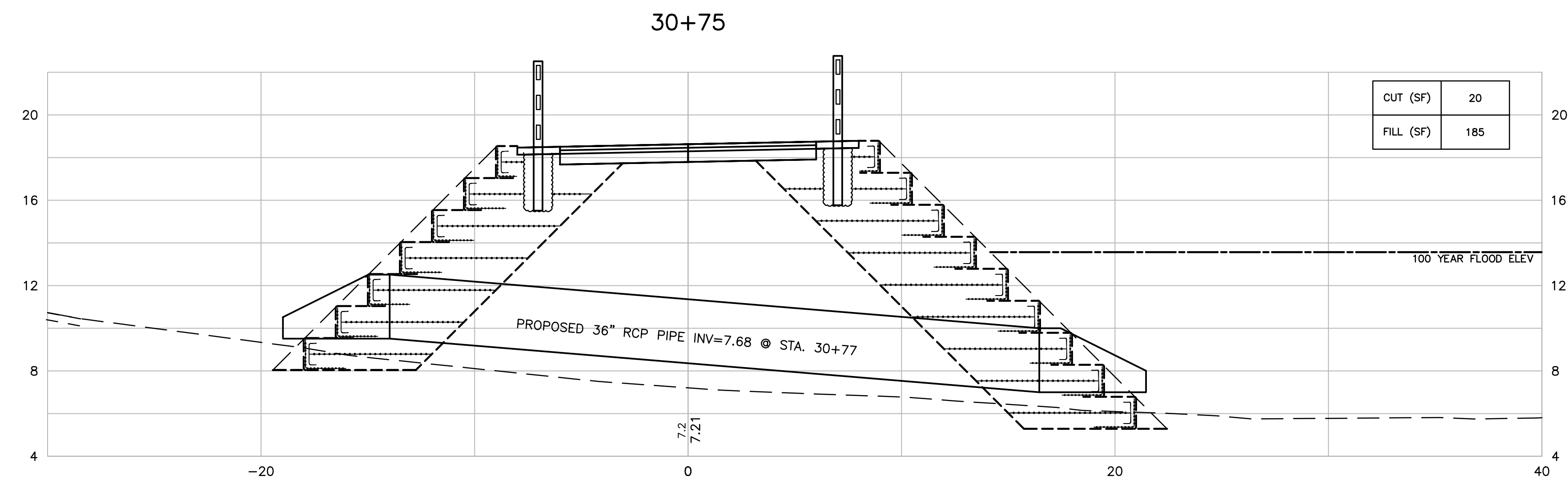
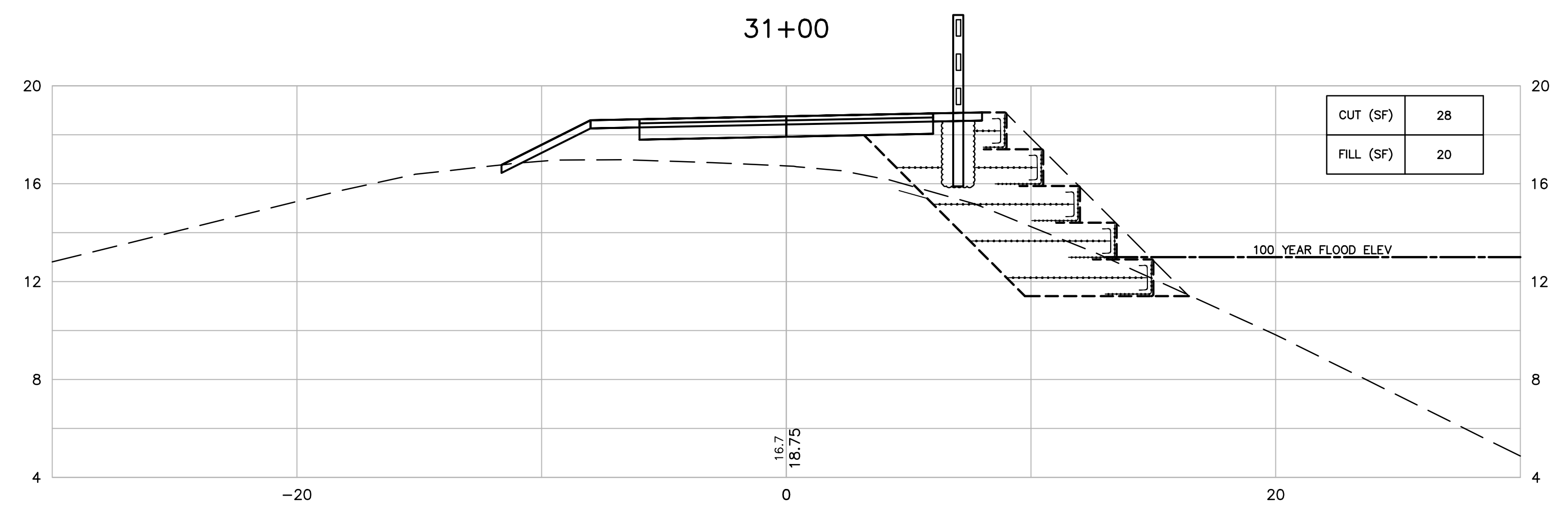
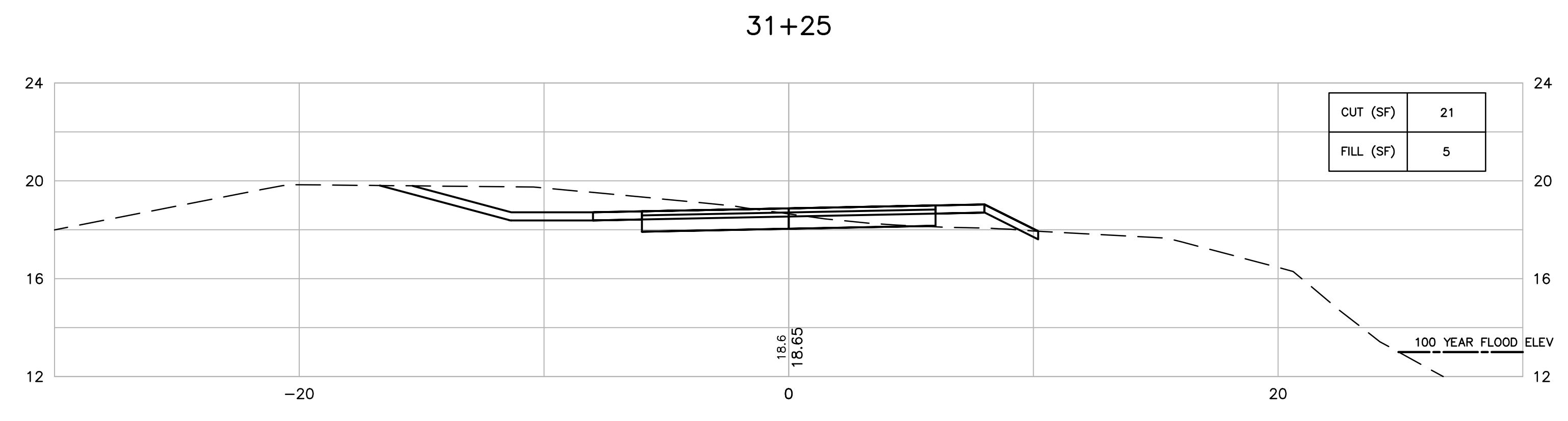
**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**



PROVIDENCE, RHODE ISLAND

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			28	30
PERMIT SUBMISSION				23	25



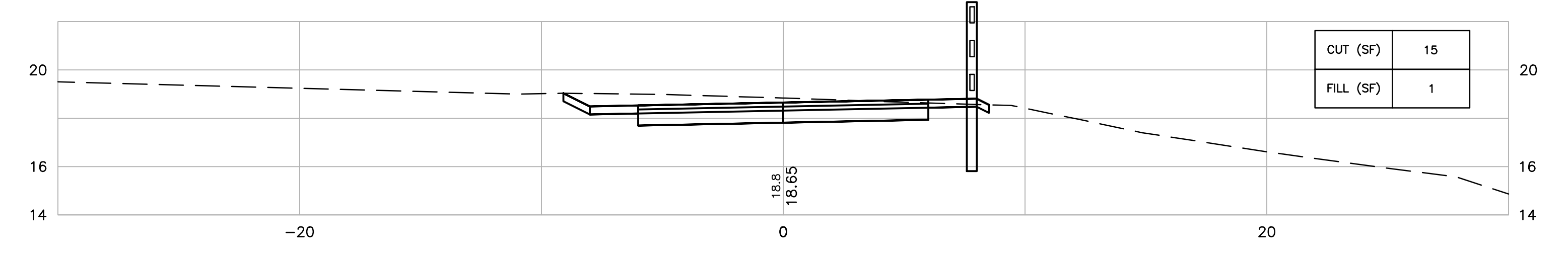
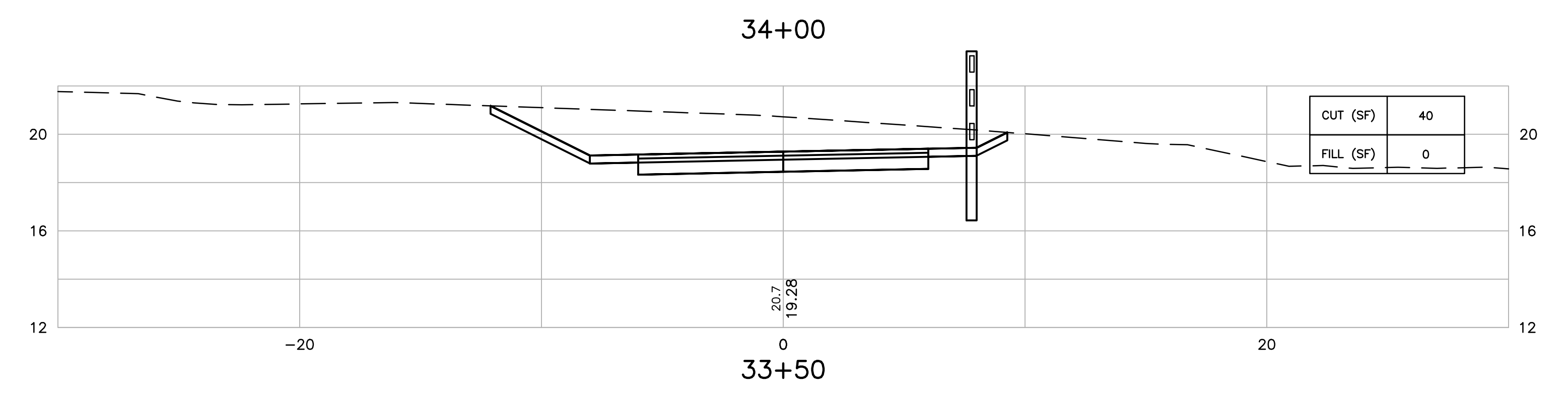
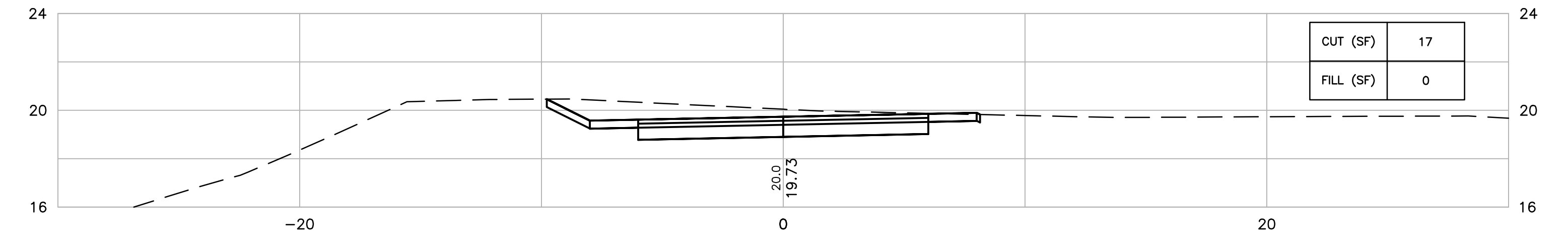
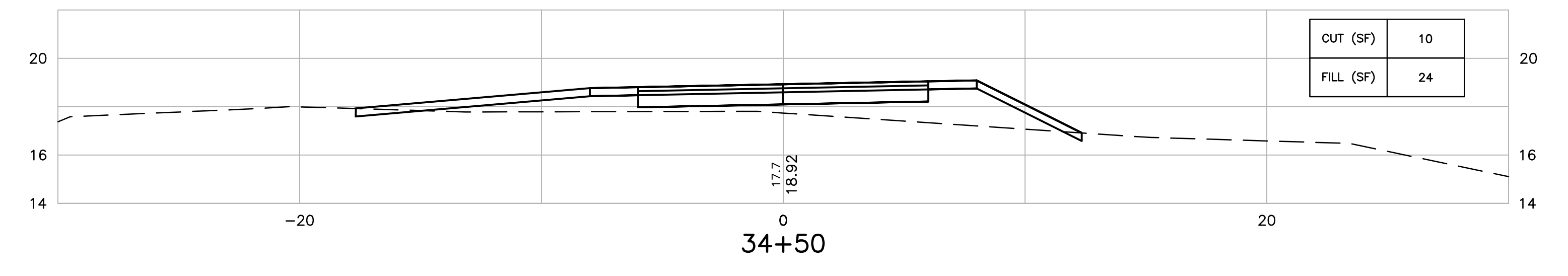
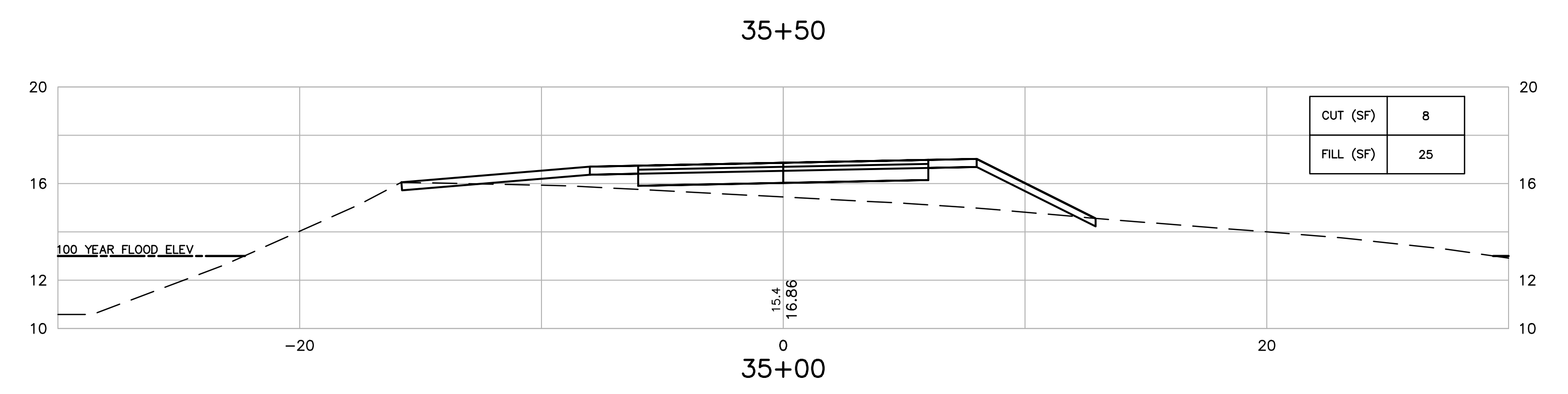
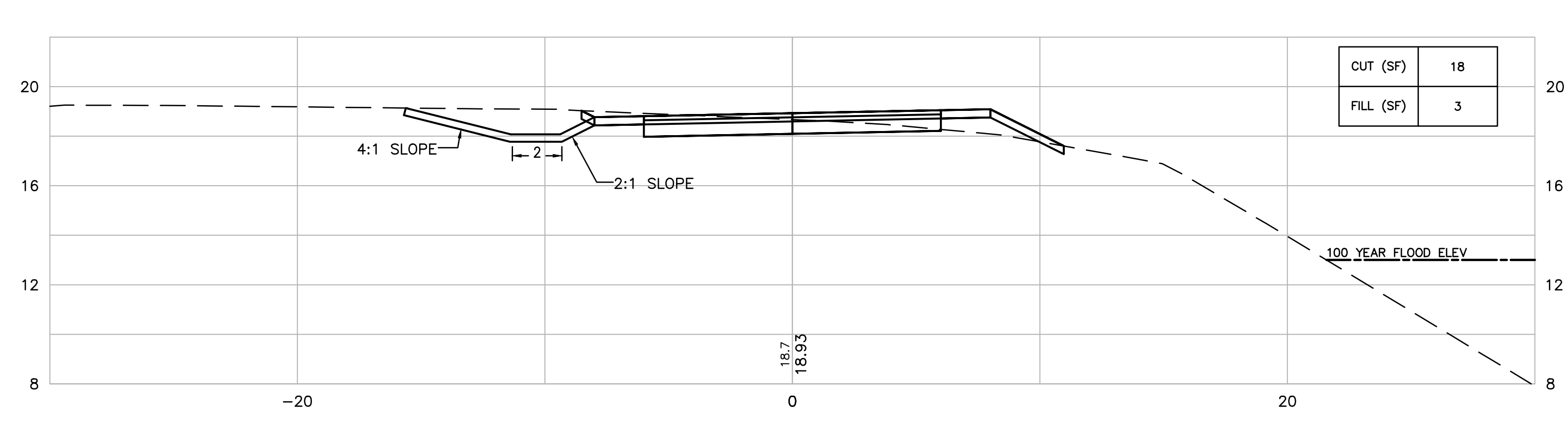
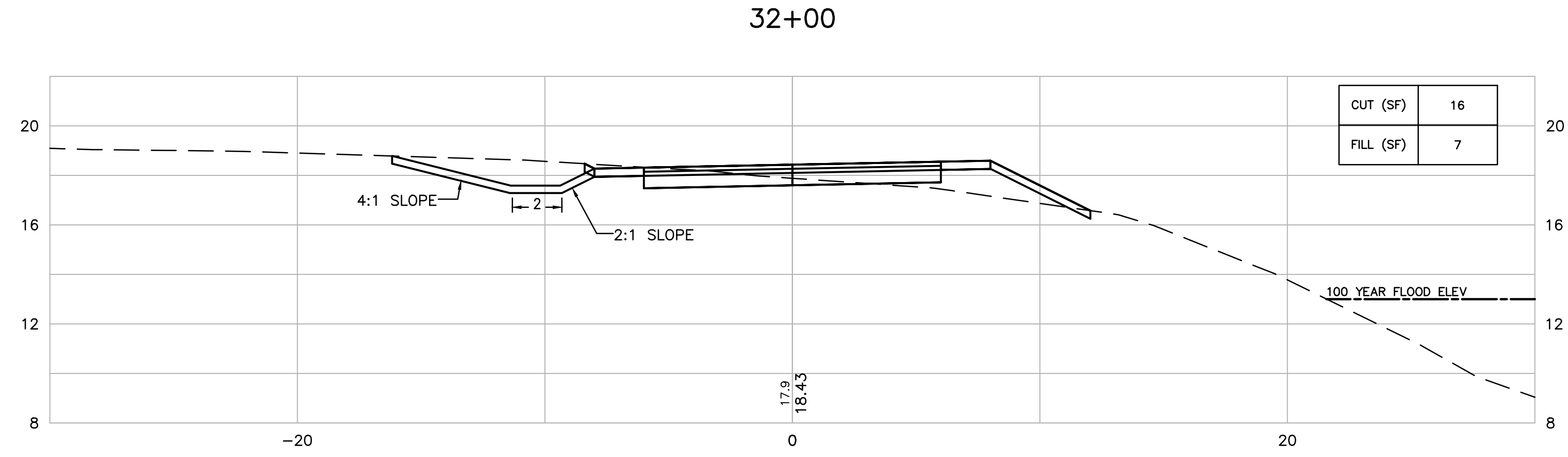
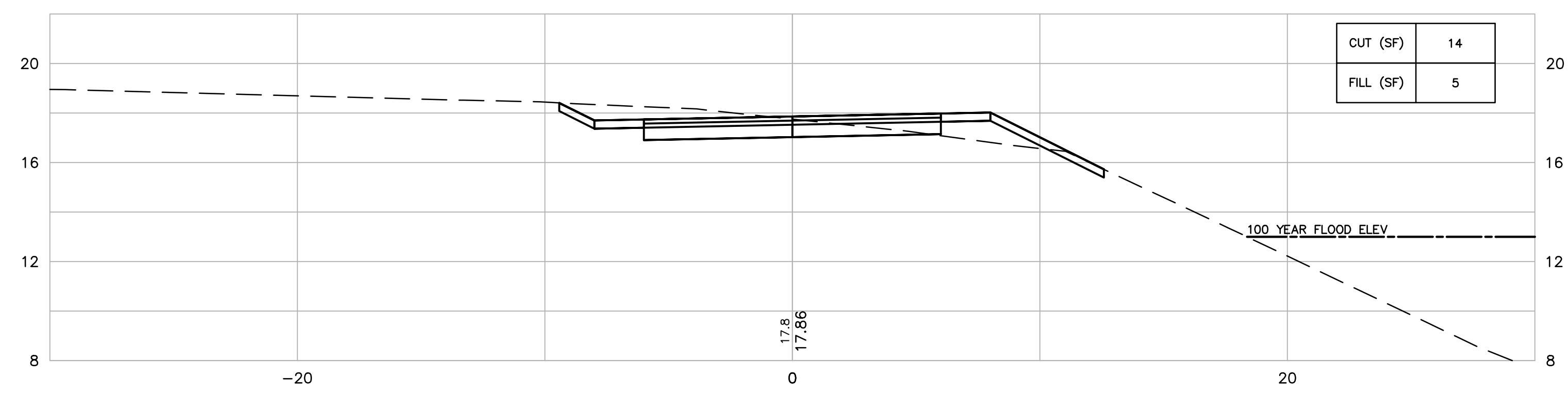
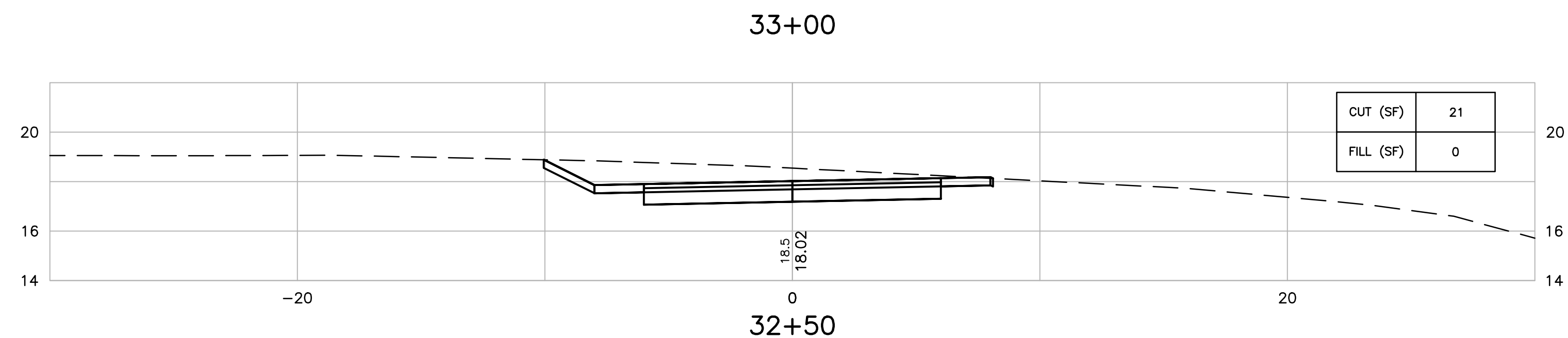
REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

PROVIDENCE, RHODE ISLAND

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'



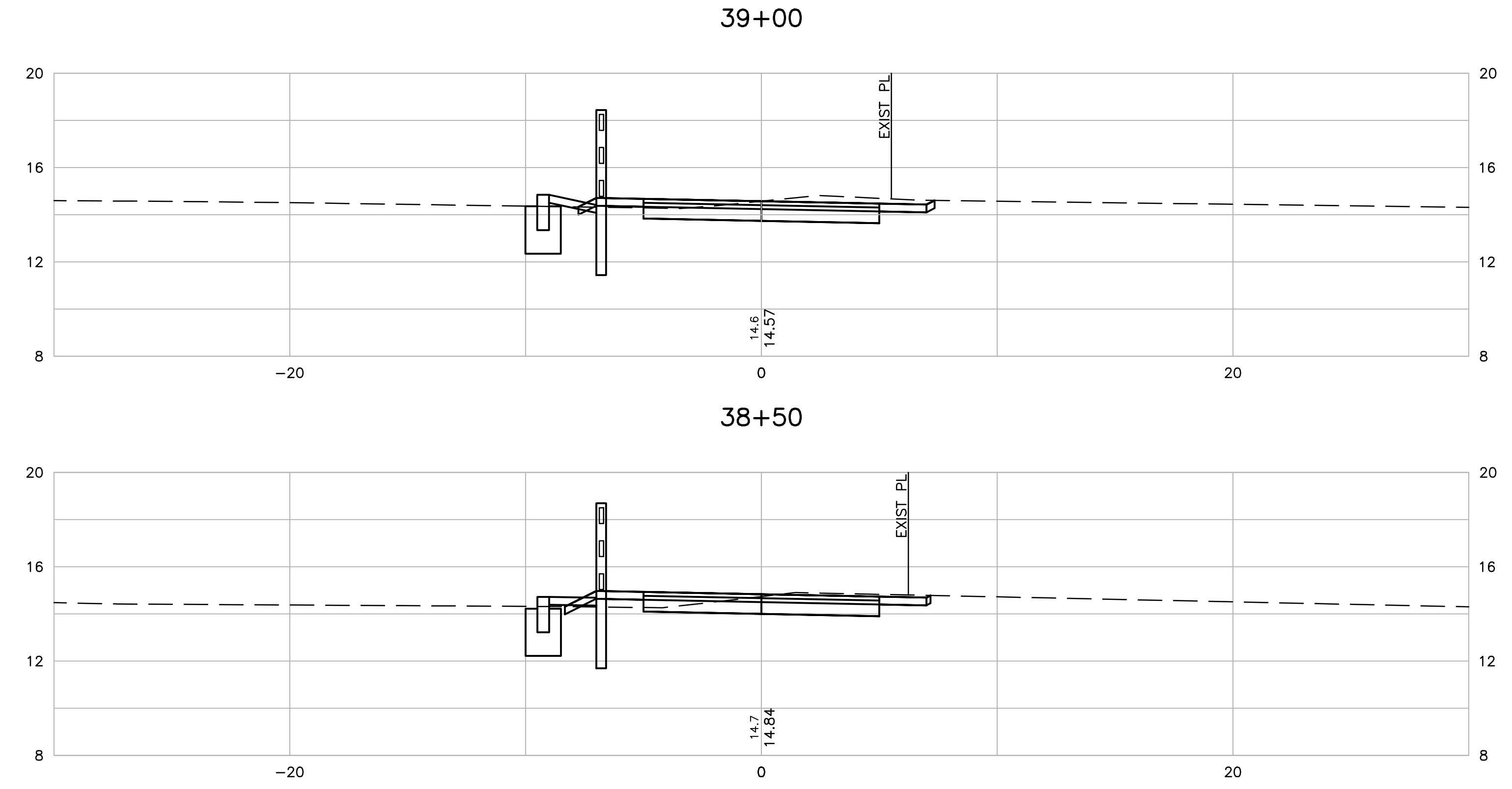
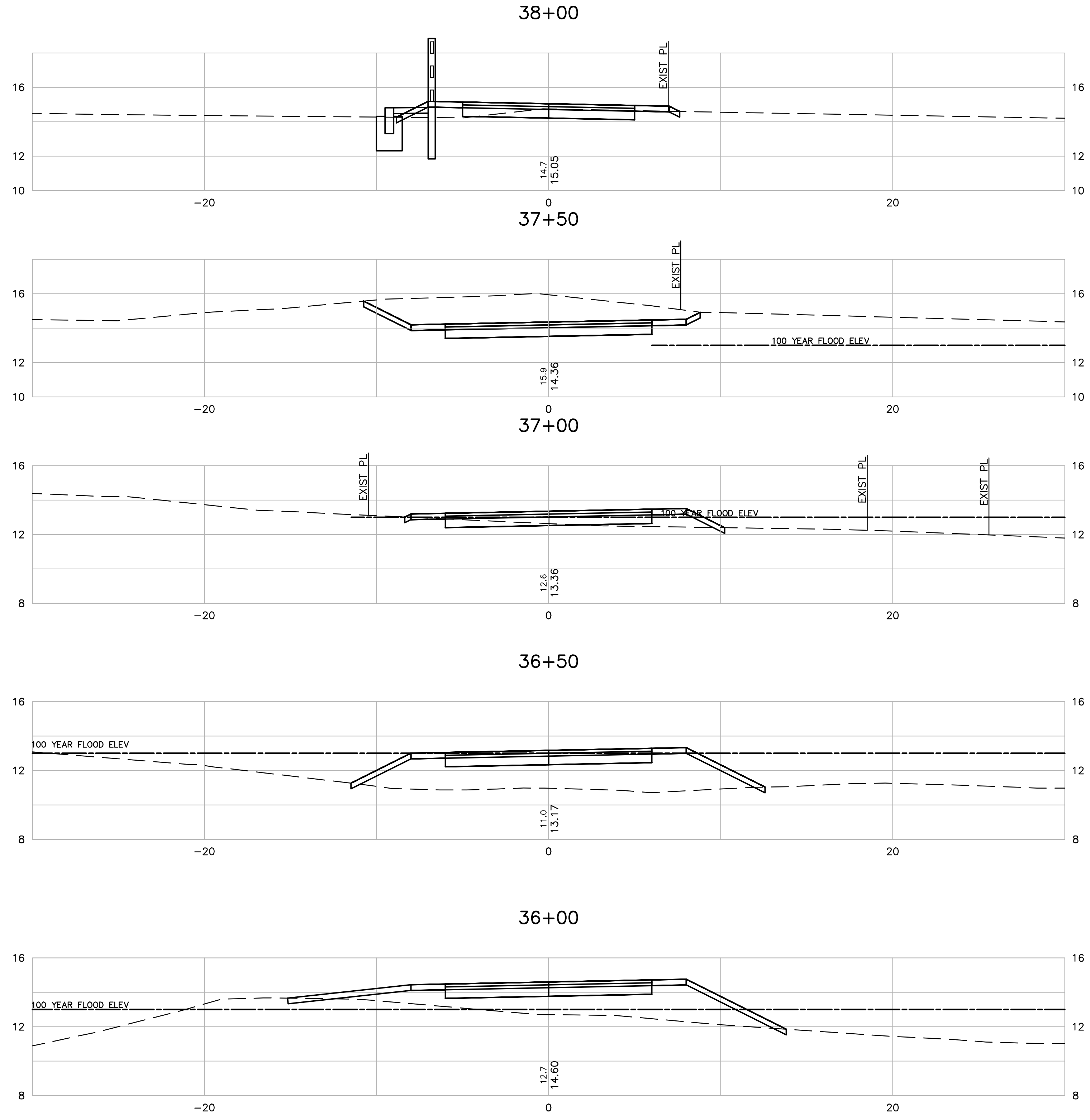


REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**

PROVIDENCE, RHODE ISLAND  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ SCALE: 1"=4'  
 XXXXX\_XS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			30	30
PERMIT SUBMISSION				25	25



REVISIONS		
NO.	DATE	BY

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 1A**



PROVIDENCE, RHODE ISLAND  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_ SCALE 1"=4'  
XXXXX\_XS



# Appendix C – Health and Safety Plan

# Blackstone River Bikeway – Segment 1A

Providence, Rhode Island

PREPARED BY

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1 Cedar Street, Suite 400  
Providence, RI 02903  
401.272.8100

SEPTEMBER 11, 2015

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# VHB Site-Specific Health and Safety Plan

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## Introduction

This Site-Specific Health and Safety Plan (HASP) has been prepared by Vanasse Hangen Brustlin, Inc. (VHB) for the sole and exclusive use by VHB personnel while working at the Blackstone River Bikeway – Segment 1A in Providence, Rhode Island (the Site). VHB’s work at the Site is being conducted at the request of the Rhode Island Department of Transportation (RIDOT) and the Rhode Island Department of Environmental Management (RIDEM). This work is subject to the scope of services provided in the contract between VHB and the State of Rhode Island and Providence Plantations dated October 1992 and the contract amendment dated February 8, 2013 and any subsequent contract amendments. Use or reliance upon information provided in this HASP by any party other than VHB, shall be at the User’s sole risk.

In preparing this HASP, VHB has obtained and relied upon information from multiple sources to form certain conclusions regarding potential environmental issues at and in the vicinity of the Site. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information.

The guidance presented in this HASP is based solely upon information gathered to date. Should further environmental or other relevant information be developed at a later date, VHB will evaluate and modify the HASP as appropriate. This HASP is established for field work consisting of construction observation and associated soil sampling as needed during Site redevelopment activities and is not relevant for any other services or tasks.

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## General Site Information

Site Name: Blackstone River Bikeway – Segment 1 A  
Portions of Providence Assessor’s Lot 8/Plat 17; Lots 66, 446 & 456/  
Plat 15 and a Portion of Beach Street  
Providence, Rhode Island



**Table 1 – Emergency Information and Local Resources  
Providence, Rhode Island**

<b>Public and Private Resources</b>	<b>Telephone Numbers</b>
Ambulance	911
Rhode Island Hospital	911 or (401) 729-2000
Providence Fire Department (Emergency)	911 or 401-272-3344
Providence Police Department (Emergency)	911 or 401-272-1111
Rhode Island Hospital – Emergency Room	911 or 401-444-5411
National Poison Control Center	800-682-9211
DIG SAFE Reporting Line	888-344-7233

Nearest Hospital: Rhode Island Hospital  
593 Eddy Street  
Providence, Rhode Island

Directions:

1. Head west on Power Street toward Gano Street (374 feet);
2. Turn left onto Gano Street (0.3 miles);
3. Turn right onto the US-44 W/I-195 W/US-6 W ramp (0.1 mile);
4. Merge onto I-195 W/US-6 W (0.6 miles);
5. Use the 2<sup>nd</sup> from the right lane to take exit 1B S for Interstate 95 S toward New York (0.3 miles);
6. Keep right to continue on Exit 1B, follow signs for Eddy Street (0.2 miles);
7. Turn right onto Eddy Street (0.2 miles); and
8. Rhode Island Hospital will be on the left.

A map depicting the emergency hospital route is attached.

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## Site/Hazard Overview

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### Site Description and History

Segment 1A of the Blackstone River Bikeway, hereinafter referred to as the Site or Segment 1A, is located along the Seekonk River in Providence, Rhode Island. The Site consists of the approximate 0.71-mile strip of land that will be used to construct the bikeway, beginning at the exit ramp for Interstate Route 195 Westbound Exit 3 south of Gano Park in Providence Rhode Island, and ending at Pitman Street in Providence,



Rhode Island. The Site is identified by the City of Providence Tax Assessor's Department as Lot 8 on Assessor's Plat Map 17; a portion of Beach Street (a paper street shown on Assessor's Plat Map 17); and Lots 35, 66, 446, 456, 480 and 487 on Assessor's Plat Map 15 in Providence, Rhode Island (refer to **Figures**). The land south of the railroad tracks, Plat 17, Lot 8 and Plat 15, Lots 66, 446, and 456 is currently vacant and is owned and used by the City of Providence for recreational purposes, including athletic fields, a boat ramp, and a public dog park. The land north of the railroad tracks is currently occupied by residential and commercial buildings. Lot 487 on Plat 15 is occupied by a commercial shopping plaza, which includes Eastside Marketplace, and is owned by Riverview Retail LLC. Lot 35 on Plat 15 is occupied by a senior living center and is owned by EPOCH SL III Inc. Lot 480 on Plat 15 is occupied by an old mill building, which is currently owned and occupied by the Salvation Army.

The Site was historically part of the Seekonk River. The land proposed for bikeway development was reclaimed by filling in portions of the Seekonk River from the early 1950s to the mid 1960s. Railroad tracks were constructed, bisecting the proposed bikeway, sometime between 1894 and 1939. The railroad tracks ceased operation around 1976. Once the area was filled in, the land to the south of the railroad tracks was historically vacant and has been used by the City of Providence for recreational purposes. The land north of the railroad tracks was developed, starting in the 1960s, for commercial and residential use. Lot 487 on Plat Map 15 was developed sometime between 1962 and 1972 for commercial purposes.

The Site is bounded to the north by a commercial property which contains a small shopping plaza and grocery store (East Side Marketplace); to the south by the Interstate 195 west Exit 3 off-ramp; to the west by recreational land (athletic fields); and to the east by the Seekonk River.

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## Regulatory Exceedances Summary

VHB has previously completed a Site Investigation for the property and discovered several chemical constituents above applicable Rhode Island Department of Environmental Management (RIDEM) Criteria.

- Residential Direct Exposure Criteria – Arsenic, Lead, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene
- Industrial Commercial Direct Exposure Criteria – Arsenic, Lead, Benzo(a)pyrene
- GA Leachability Criteria – None





- Upper Concentration Limits – None
- GN Groundwater Objectives – None

## Tasks

VHB staff will document encapsulation of the impacted Site soil in accordance with the RIDEM-approved Remedial Action Work Plan (RAWP). The work will be conducted pursuant to VHB’s Remedial Action Work Plan and the RIDEM Remedial Approval Letter.

## Hazard Assessment

Table 2 - Hazards of Concern (Check all that apply):

<input checked="" type="checkbox"/> <b>Heat Stress</b>	<input checked="" type="checkbox"/> <b>Excavation/Trenching</b>	Radiological
<input checked="" type="checkbox"/> <b>Cold Stress</b>	<input checked="" type="checkbox"/> <b>General Construction</b>	Biological
<input type="checkbox"/> <b>Explosion/Flammable Confined Space</b>	<input checked="" type="checkbox"/> <b>Inorganic Chemicals</b>	<input checked="" type="checkbox"/> <b>Noise</b>
<input checked="" type="checkbox"/> <b>Physical Hazard</b>	<input type="checkbox"/> <b>Volatile Organic Chemicals</b>	<input type="checkbox"/> <b>Corrosives</b>
	<input type="checkbox"/> <b>Other (Specify):</b>	

The dangers that may be attributed to these hazards are discussed below.

### Heat Stress

During the summer months, warm weather may become a health factor. Personnel working on-Site may have to wear protective clothing, which would increase the chance of workers suffering from heat-related problems. The situation will be monitored on days when the ambient temperature exceeds 70°F. Workers must be briefed on the signs and symptoms of heat-related problems and on preventative measures.

The three levels of Heat Stress are:

- Heat Cramps
- Heat Exhaustion
- Heat Stroke

Symptoms of heat cramps include painful muscle spasms. Treatment includes providing liquid with electrolytes.



Weakness, fatigue, dizziness, heavy sweating, headache, nausea, fainting and pale, cool moist skin are all symptoms of heat exhaustion. Treatment includes resting in a cool place and providing plenty of liquids with electrolytes if the person is conscious; if unconscious, seek medical help immediately.

Symptoms of heat stroke are very dry, hot skin, mottled blue or red appearance, confusion, convulsions, rapidly rising temperature and unconsciousness. If any person experiences these symptoms, seek medical attention immediately. **Heat stroke is a life-threatening emergency.**

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## Cold Stress

During the winter months, cold weather may become a health factor. Personnel working on-Site may have to wear protective clothing to protect themselves from wind and other cold weather exposures that may lead to hypothermia and frostbite. The situation will be monitored periodically on days when the ambient temperature is below 32°F, or when the local weather forecasting agencies suggest a wind chill factor of 32°F or lower. Workers must be briefed on the signs and symptoms of frostbite and on preventative measures if work is performed when the ambient temperature is below 32°F.

Frostbite occurs when skin tissue and blood vessels are damaged from exposure to temperatures below 32 degrees Fahrenheit. It most commonly affects the toes, fingers, earlobes, chin, cheeks and nose, body parts that are often left uncovered in cold temperatures. Frostbite can occur gradually or rapidly. The speed with which the process progresses depends upon how cold or windy the temperature conditions are and the duration of exposure to those conditions.

Frostbite has three stages of progression:

- Frostnip
- Superficial Frostbite
- Deep Frostbite

***Frostnip*** – In this stage, the individual experiences a pins and needles sensation with the skin turning very white and soft. No blistering occurs. This stage produces no permanent damage and may be reversed by soaking in warm water or breathing warm breath on the affected area.

***Superficial Frostbite*** – In this stage, blistering may occur. The skin feels numb, waxy, and frozen. Ice crystals form in the skin cells and the rest of the skin remains flexible.



*Deep Frostbite* – This is the most serious stage of frostbite. In this stage, blood vessels, muscles, tendons, nerves and bone may be frozen. This stage can lead to permanent damage, blood clots, and gangrene, in severe cases. No feeling is experienced in the affected area and there is usually no blistering. Serious infection and loss of limbs frequently occurs after frostbite reaches this stage. However, even with deep frostbite, some frozen limbs may be saved if medical attention is obtained as soon as possible.

Frostbite risk can be reduced by practicing the following:

- Wear several layers of clothing when in extremely cold conditions since the air pockets between the layers will help to retain warmth.
- Limit the use of alcohol and smoking tobacco. Alcohol causes the blood to cool quickly and tobacco inhibits circulation to extremities.
- Avoid going outdoors during extremely cold weather.
- When outside, shield the face and other body parts from the cold wind and temperatures by wearing protective clothing, scarves, earmuffs, gloves, etc.
- Wear waterproof skin moisturizer on exposed areas.
- Do not spend extended periods in extreme temperatures when exhausted, or when wet.

If, after being in extremely cold conditions, any of the following are experienced, seek emergency care.

- Skin swelling
- Loss of limb function and absence of pain
- Drastic skin color changes
- Blisters
- Slurred speech
- Memory loss

---

## Physical Hazards

The operation of heavy equipment poses hazards. Physical hazards may be associated with the malfunction, misuse, or improper operation of such equipment. Personnel not directly involved with equipment operation should stand a safe distance away from the machinery. **Personnel should wear hard-hats, eye protection, hearing protection, and steel toe boots whenever working within established work zones.** Personnel should be aware of these physical obstacles at all times and take the necessary precautions to avoid them while at the Site.



The Site may contain rough or unfamiliar terrain that can lead to injury. Slips, trips, and falls are the most common accidents caused by varying terrain. These accidents may result in cuts, bruises, and sprains. Falls may result in broken bones. Carefully examine unfamiliar terrain. Look out for holes, undergrowth, and open water.

VHB staff shall wear boots with good ankle support and good traction, long pants, long-sleeved shirts, and long socks in the field. Under no circumstances will shorts, tube tops, muscle shirts, or sandals be worn on any VHB work sites.

---

## Excavation/Trenching

Personnel should stand upwind of soil excavations to avoid being exposed to any dust generated during the excavation. During soil excavation operations, if any unusual odors or other unexpected observations are noted, all work must stop immediately. All personnel will retreat to a safe distance away from the excavation, and the VHB project manager will be notified of the situation before any additional action is taken.

---

## General Construction

The greatest potential hazard at most Sites is related to the operation of heavy equipment, especially in the case of malfunction, misuse or improper operation. Personnel not directly involved with equipment operation should stand a safe distance away from the machinery. Personnel should wear hard-hats, eye and hearing protection, steel toe boots, and reflective safety vests when working near heavy equipment and any time there is a potential hazard from overhead or falling objects.

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## Inorganic Chemicals

Contaminants may be encountered in the form of soil dusts containing various metals (specifically arsenic and lead). To the extent possible, care shall be taken not to disturb dusty areas during the Site activities. In the event that visible emissions are released during Site activities, dust control in the form of water shall be sufficiently sprayed to reduce visible emission. Protective gloves should be worn when contacting soil, such as during measurements, screening or any required stockpile sampling.

---

## Noise

Elevated noise levels may be encountered during the project due to construction equipment. Persons working in close proximity to construction equipment shall wear



sufficient hearing protection. This equipment may include foam earplugs or foam earmuffs. Hand signals must be used for communication in these situations. Hand signals shall be established and practiced prior to donning protective hearing equipment.

---

## Chemical Exposures

**Table 3** summarizes chemicals that are known to be present at the Site due to VHB's previous Site Investigation activities at the property, including the associated symptoms of acute exposure to such contaminants. Since additional unsuspected hazards may exist at the Site, periodic evaluation of Site conditions will be performed during all on-Site activities.

**Table 3 – Known Chemical Contaminants**

Chemical Contaminant	Potential Hazard	OSHA Std. (8-Hour TWA)	NIOSH Std. (8-Hour TWA)*
Arsenic	Toxic by inhalation, skin absorption, skin and/or eye contact and ingestion. Affects liver, kidneys, skin, lungs, and lymphatic system.	0.010 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>
Lead	Toxic by ingestion, inhalation, and skin and/or eye contact. Affects eyes, GI tract, CNS, kidneys, blood, and gingival tissue.	0.05 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
PAHs	Toxic by inhalation and skin and/or eye contact. Affects respiratory system, skin, bladder, and kidneys.	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>

\* See Appendix A and Appendix C (NIOSH Pocket Guide) for chemical properties and hazards. Minimize workplace exposure concentrations; limit number of workers exposed.

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## Symptoms of Chemical Exposure

On-Site workers should be aware of the specific symptoms of acute chemical exposure listed in **Table 3**. In general, workers should also be aware of some indications of toxic effects of chemical exposure which are described below:

- Observable by others:
  - Changes in complexion, skin discoloration
  - Lack of coordination
  - Changes in demeanor
  - Papillary response
  - Changes in speech pattern
  - Difficulty breathing
  
- Non-Observable by Others:



- Headaches
- Dizziness
- Blurred Vision
- Cramps
- Irritation of eyes, skin, or respiratory tract
- Nausea
- Chills

---

## First Aid

General first aid procedures for exposure include, but are not limited to, the following procedures:

- If contaminant contacts the eyes, irrigate immediately with large amounts of water;
- If contaminant contacts the skin, wash with soap and water promptly;
- If contaminant is inhaled, move the exposed person to fresh air at once. If the worker's breathing has stopped, perform artificial respiration **ONLY** if appropriately trained and currently certified by the Red Cross or equivalent. Request appropriate medical attention as soon as possible by dialing 911 or other relevant telephone numbers listed in **Table 1**.

On-Site personnel shall keep a First-Aid kit at the Site during Site activities.

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## On-Site Control

A Site-Safety Officer will be designated to coordinate access control to the work zone. No unauthorized personnel should enter the work zone to perform waste site cleanup activities without the appropriate 40-hour OSHA Site Worker Safety Training. Control boundaries have been established as follows:

- Exclusion Zone: A 10-foot perimeter around the soil excavations will be treated as the Exclusion Zone.
- Contaminant Reduction Zone: A designated area outside of the Exclusion Zone will be treated as the Contaminant Reduction Zone. All equipment will be decontaminated in this zone prior to being transferred to the Support Zone.
- Support Zone: The remainder of the Site outside of the Contaminant Reduction Zone will be considered the Support Zone.



Table 4 - On-Site Personnel

Site Safety Officer:	Shelby Miller - 339.223.2798
Regulatory Authority:	Rhode Island Department of Environmental Management
State Agency Reps.:	Nicholas Noons 401.222.2797 x7517
Local Agency:	N/A
Contractors:	TBD
Emergency Contacts:	Peter Grivers - 401.935.5080

**Action Levels and Personnel Protection**

The initial level of personnel protection will be Level D.

**Level D personnel protection will include:**

- Chemical-resistant or leather gloves;
- Boots/shoes, leather or chemical-resistant, steel toe and shank;
- Safety glasses or chemical splash goggles (optional unless required for specific job function);
- Hard-hat;
- Hearing Protection.

Field monitoring action levels are presented in **Table 5**:

Table 5 – Action Levels

Location	Action Level	Response
Exclusion Zone	10 ppm TVOC in the ambient air	Shut down operations, and allow area to equilibrate with background air quality before re-starting operations. If conditions above 10 ppm persist, VHB personnel should leave the work area and the Project Manager should be contacted. It is possible that personnel may upgrade to level C
Exclusion Zone	10 mg/m <sup>3</sup> particulate	Shut down operations and allow area to equilibrate with background air quality before re-starting operations. If conditions above 10 ppm persist, VHB personnel should leave the work area and the Project Manager should be contacted. It is possible that personnel may upgrade to level
Exclusion Zone	Any detection of TVOC in the ambient air	Modify work practices to minimize volatilization of contaminants
Exclusion Zone	5 ppm TVOC	Stop work until controls are identified that will reduce volatilization of contaminants. Do not restart work unless authorized by the project manger, department director, and/or the health and safety coordinator.



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## General Safety Requirement

All persons entering and/or working on the Site shall follow the following General Safety Procedures:

- No employee or subcontractor may be allowed on-site without the prior knowledge and consent of the Site Safety Officer and review of these Health and Safety Procedures. All VHB personnel engaged in this project will sign the Health and Safety plan to acknowledge that they have read and understand the Health and Safety Plan.
- There will be no activities conducted on-site without sufficient backup personnel. At a minimum, two persons must be present at the site.
- All contractor or subcontractor personnel shall bring to the attention of the Site Safety Officer or Supervisors any unsafe condition or practice associated with the site activities that they are unable to correct themselves.
- There will be no smoking, eating, drinking, chewing gum or tobacco, or applying cosmetics in the restricted area.
- Hands shall be thoroughly cleaned prior to smoking, eating or other activities outside the restricted area.
- Team members must avoid unnecessary contamination (i.e., walking through known or suspected "hot" zones or contaminated puddles, kneeling or sitting on the ground, leaning against potentially contaminated barrels or equipment).
- Respiratory devices may not be worn with beards, long sideburns, or under other conditions that prevent a proper seal.
- No visitors will be allowed access without the knowledge and consent of the Site Manager and/or Safety Officer. All visitors will be required to be briefed on safety procedures and will be required to be escorted while on-site.
- All excavations will be conducted in compliance with EPA/OSHA and RIDEM Standards. Excavation greater than four feet deep which require people to work in the excavation will have sides sloped no greater than 45° (1 to 1) or be shored pursuant to OSHA.





## Personal Protective Equipment

Based on an evaluation of potential hazards, the following levels of personal protection have been designated for the applicable areas or tasks.

Location	Job Function	Level of Protection				
Exclusion Zone	Excavation Observation	A	B	C	<b>D</b>	Other
Contaminant Reduction Zone	Decontamination	A	B	C	<b>D</b>	Other
Support Zone	Field Vehicle and Supplies	A	B	C	<b>D</b>	Other

## Decontamination Procedures

All non-expendable equipment will be cleaned according to Standard Operating Protocols. This protocol includes:

- Rinse with tap water
- Wash with Alconox detergent (or soap ) and water
- Rinse with distilled or tap water

Construction equipment leaving the Exclusion Zone will be decontaminated in the Support Zone by brushing soil from the equipment using a long-handled brush. The decontamination procedure for Level D requires the disposal of gloves, Tyvek suits (if used), and boot covers (if used) in plastic lined containers on-Site. All non-disposable equipment used on-Site that becomes contaminated will be cleaned by the protocol referenced above.

## Emergency Medical Care

The following are qualified on-Site First Aid Responders and/or EMTs: None

First Aid equipment is available on-Site at the following locations:

First Aid Kit: Located in field vehicle  
 Emergency Eye Wash: Water is kept in the field vehicle  
 Emergency Shower: Water is kept in the field vehicle  
 Other (Specify): N/A

Site Resource(s) and Locations:

Water Supply: Water is kept in the field vehicle  
 Telephones: Portable telephone in field vehicle  
 Communication Systems: Mobile telephones



Other (Specify):

\_\_\_\_\_  
N/A  
\_\_\_\_\_

---

## Emergency Procedures

On-Site personnel will use the following standard emergency procedures. These procedures may be modified as appropriate and required for each incident. The Site-Safety Officer will be notified of any on-Site emergencies and will be responsible for ensuring that the appropriate procedures are followed.

- **Fire/Explosion:** The fire department will be notified and all personnel moved to a safe distance from the involved area.
  
- **Personal Protective Equipment Failure:** If any site worker experiences a failure or malfunction of personal protective equipment that adversely affects the protection factor that person and his/her buddy will immediately leave the Exclusion Zone. Re-entry will not be permitted until the equipment has been repaired or replaced.
  
- **Other Equipment Failure:** If any other equipment on-site fails to operate properly, the Site Manager and Site Safety Officer will be notified and will then evaluate the effect of such failure on continuing operations. If the failure affects personnel safety or prevents completion of the investigation activities, all personnel will leave the Exclusion Zone until the situation is remedied through appropriate action(s).



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## Signature Page

I have read, understood, and agree to comply with the provisions set forth in this Site-specific Health and Safety Plan and as reviewed in the Health and Safety Briefing by the Site-Safety Officer.

**Prepared By:**

Shelby A. Miller  
Site-Safety Officer

*Shelby A Miller*  
Signature

9/11/2015  
Date

**Approved By:**

Peter M. Grivers, P.E., LSP  
Senior Project Manager

*Peter M Grivers*  
Signature

9/11/2015  
Date

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### VHB Personnel

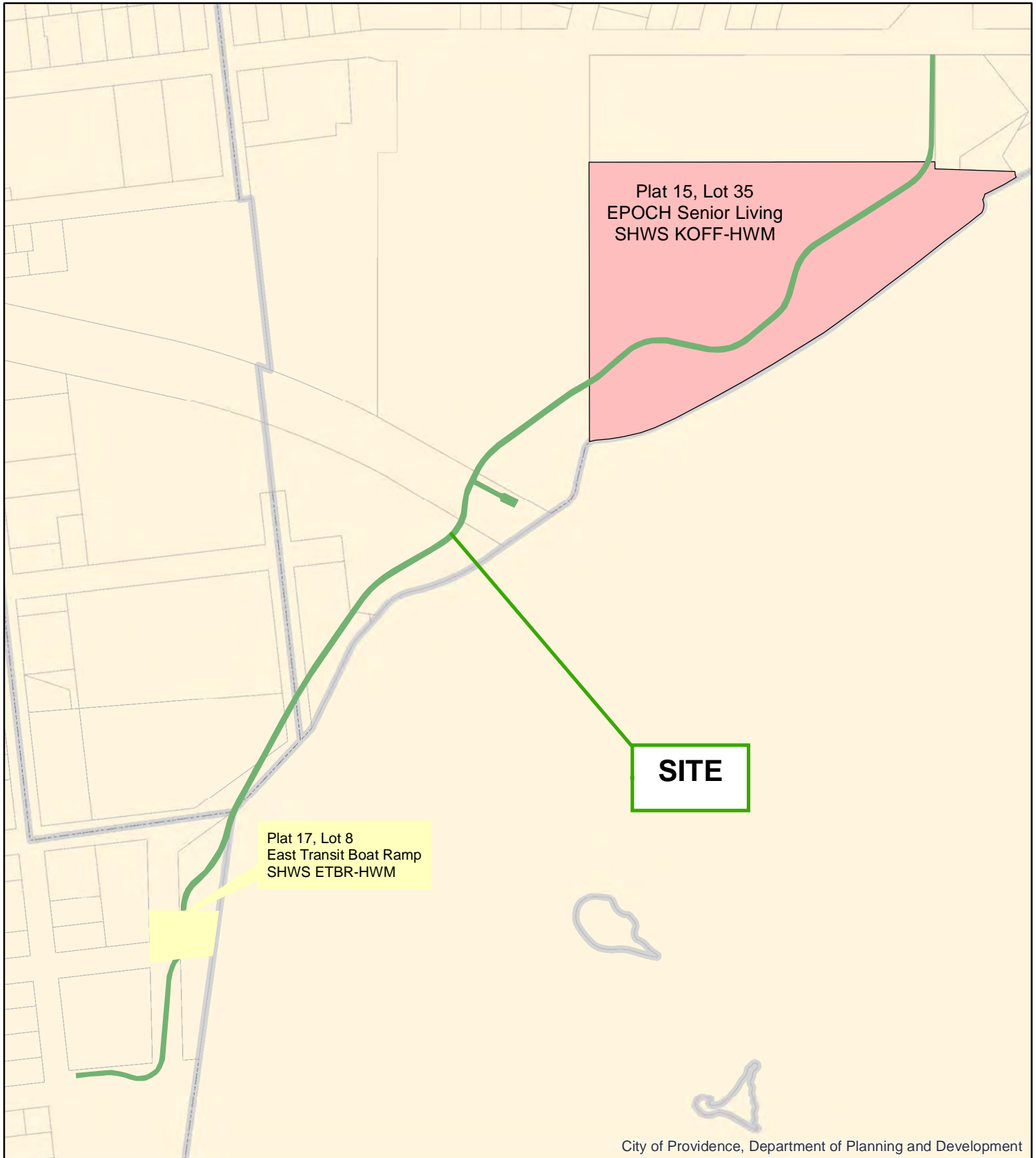
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# Figures



Site Detail Map

Figure 2  
September 11, 2015

**Legend**

 Proposed Bikeway Segment 1A

Blackstone River Bikeway - Segment 1A  
East Transit Street to Pitman Street  
Providence, Rhode Island 02906



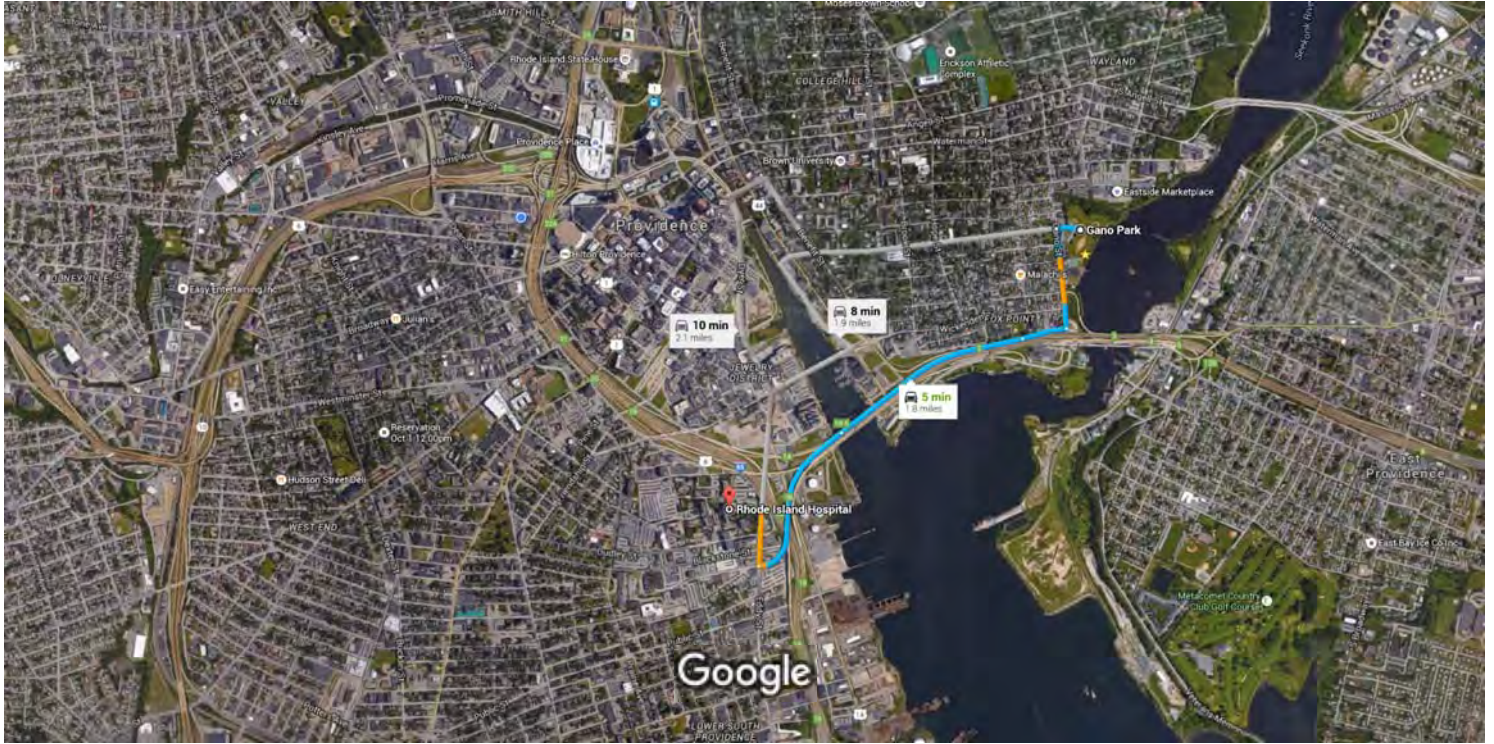


# Emergency Hospital Route



# Gano Park to Rhode Island Hospital

Drive 1.8 miles, 5 min



Imagery ©2015 Google, Map data ©2015 Google 1000 ft

## Gano Park

Power Street, Providence, RI 02902

- ↑ 1. Head west on Power St toward Gano St — 374 ft
  - ↶ 2. Turn left onto Gano St — 0.3 mi
  - ↶ 3. Turn left onto the ramp with the ramp — 0.1 mi
  - ↶ 4. Merge onto I-95 west — 0.6 mi
  - ↶ 5. Stay in the left lane to take the exit to take the exit to take Interstate 95 toward New York — 0.3 mi
  - ↶ 6. Keep right to continue on Exit 15, follow signs for Eddy St — 0.2 mi
  - ↶ 7. Turn right onto Eddy St — 0.2 mi
- (Note: The above list contains some illegible text from the original image, which has been transcribed as best as possible.)*

*(Note: The above list contains some illegible text from the original image, which has been transcribed as best as possible.)*

## Rhode Island Hospital

300 Eddy Street, Providence, RI 02902







# **Hazardous Substance Fact Sheets for Suspected Site Contaminants**





## Search the NIOSH Pocket Guide

Enter search terms separated by spaces.

# Arsenic (organic compounds, as As)

**Synonyms & Trade Names** Synonyms vary depending upon the specific organic arsenic compound.

CAS No.	RTECS No.	DOT ID & Guide
	<b>Conversion</b>	<b>IDLH</b> N.D. See: <a href="/niosh/idlh/intridl4.html">IDLH INDEX (/niosh/idlh/intridl4.html)</a>
<b>Exposure Limits</b> <b>NIOSH REL</b> : none <b>OSHA PEL</b> : TWA 0.5 mg/m <sup>3</sup>		<b>Measurement Methods</b> <b>NIOSH 5022</b>  ( <a href="/niosh/docs/2003-154/pdfs/5022.pdf">/niosh/docs/2003-154/pdfs/5022.pdf</a> ) See: <a href="/niosh/docs/2003-154/">NMAM (/niosh/docs/2003-154/)</a> or <a href="http://www.osha.gov/dts/sltc/methods/index.html">OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html)</a>  ( <a href="http://www.cdc.gov/Other/disclaimer.html">http://www.cdc.gov/Other/disclaimer.html</a> )

**Physical Description** Appearance and odor vary depending upon the specific organic arsenic compound.

Properties vary depending upon the specific organic arsenic compound.					

**Incompatibilities & Reactivities** Varies

**Exposure Routes** inhalation, ingestion, skin and/or eye contact

**Symptoms** In animals: irritation skin, possible dermatitis; resp distress; diarrhea; kidney damage; muscle tremor, convulsions; possible gastrointestinal tract, reproductive effects; possible liver damage

**Target Organs** Skin, respiratory system, kidneys, central nervous system, liver, gastrointestinal tract, reproductive system

**Personal Protection/Sanitation** (See [protection codes \(protect.html\)](#))  
Recommendations regarding personal

**First Aid** (See [procedures \(firstaid.html\)](#))  
**Eye:** Irrigate immediately  
**Skin:** Soap wash immediately

protective clothing vary depending upon the specific compound.

Recommendations regarding eye protection vary depending upon the specific compound.

Recommendations regarding washing the skin vary depending upon the specific compound.

Recommendations regarding the removal of personal protective clothing that becomes wet or contaminated vary depending upon the specific compound.

Recommendations regarding the daily changing of personal protective clothing vary depending upon the specific compound.

Recommendations regarding the need for eyewash or quick drench facilities vary depending upon the specific compound.

**Breathing:** Respiratory support

**Swallow:** Medical attention immediately

**Respirator Recommendations**

Not available.

[Important additional information about respirator selection \(pgintrod.html#mustread\)](#)

See also: [INTRODUCTION \(/niosh/npg/pgintrod.html\)](#)

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Page last reviewed: April 4, 2011

Page last updated: February 13, 2015

Content source: [National Institute for Occupational Safety and Health \(NIOSH\)](#) Education and Information Division

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Centers for Disease Control and Prevention 1600 Clifton Road Atlanta, GA 30329-4027, USA

800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - [Contact CDC-INFO](#)





## Search the NIOSH Pocket Guide

Enter search terms separated by spaces.

### Coal tar pitch volatiles

**Synonyms & Trade Names** Synonyms vary depending upon the specific compound (e.g., pyrene, phenanthrene, acridine, chrysene, anthracene & benzo(a)pyrene). [Note: NIOSH considers coal tar, coal tar pitch, and creosote to be coal tar products.]

<b>CAS No.</b> 65996-93-2	<b>RTECS No.</b> <a href="/niosh-rtecs/GF841098.html">GF8655000 (/niosh-rtecs/GF841098.html)</a>	<b>DOT ID &amp; Guide</b> 2713 <b>153</b> ( <a href="http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx/guide153/">http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx/guide153/</a> ) ( <a href="http://www.cdc.gov/Other/disclaimer.html">http://www.cdc.gov/Other/disclaimer.html</a> ) (acridine)
	<b>Conversion</b>	<b>IDLH</b> Ca [80 mg/m <sup>3</sup> ] See: <a href="/niosh/idlh/65996932.html">65996932 (/niosh/idlh/65996932.html)</a>

**Exposure Limits** **NIOSH**  
**REL** : Ca TWA 0.1 mg/m<sup>3</sup>  
(cyclohexane-extractable fraction)  
[See Appendix A \(nengapdx.html\)](#) [See Appendix C \(nengapdx.html\)](#)  
**OSHA PEL** : TWA 0.2 mg/m<sup>3</sup>  
(benzene-soluble fraction)  
[1910.1002] [See Appendix C \(nengapdx.html\)](#)

**Measurement Methods**  
**OSHA 58**  
<http://www.osha.gov/dts/sltc/methods/organic/org058/org058.html>  
 (<http://www.cdc.gov/Other/disclaimer.html>)  
See: [NMAM \(/niosh/docs/2003-154/\)](/niosh/docs/2003-154/) or [OSHA Methods \(http://www.osha.gov/dts/sltc/methods/index.html\)](http://www.osha.gov/dts/sltc/methods/index.html)   
(<http://www.cdc.gov/Other/disclaimer.html>)

**Physical Description** Black or dark-brown amorphous residue.

Properties vary depending upon the specific compound.				

**Combustible Solids**

**Incompatibilities & Reactivities** Strong oxidizers

**Exposure Routes** inhalation, skin and/or eye contact

**Symptoms** dermatitis, bronchitis, [potential occupational carcinogen]

**Target Organs** respiratory system, skin, bladder, kidneys

**Cancer Site** [lung, kidney & skin cancer]

**Personal Protection/Sanitation** ([See protection codes \(protect.html\)](#))

**Skin:** Prevent skin contact

**Eyes:** Prevent eye contact

**Wash skin:** Daily

**Remove:** No recommendation

**Change:** Daily

**First Aid** ([See procedures \(firstaid.html\)](#))

**Eye:** Irrigate immediately

**Skin:** Soap wash immediately

**Breathing:** Respiratory support

**Swallow:** Medical attention immediately

#### Respirator Recommendations

### NIOSH

**At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:**

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

#### Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.

[Click here \(pgintrod.html#nrp\)](#) for information on selection of N, R, or P filters.

Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection \(pgintrod.html#mustread\)](#)

See also: [INTRODUCTION \(/niosh/npg/pgintrod.html\)](#) See ICSC CARD: [1415](#)

[\(/niosh/ipcsneng/neng1415.html\)](#) See MEDICAL TESTS: [0054 \(/niosh/docs/2005-110/nmed0054.html\)](#)

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## Search the NIOSH Pocket Guide

Enter search terms separated by spaces.

## Lead

**Synonyms & Trade Names** Lead metal, Plumbum

<b>CAS No.</b> 7439-92-1	<b>RTECS No.</b> OF7525000 ( <a href="/niosh-rtecs/OF72D288.html">/niosh-rtecs/OF72D288.html</a> )	<b>DOT ID &amp; Guide</b>
<b>Formula</b> Pb	<b>Conversion</b>	<b>IDLH</b> 100 mg/m <sup>3</sup> (as Pb) See: <a href="/niosh/idlh/7439921.html">7439921 (/niosh/idlh/7439921.html)</a>

**Exposure Limits** **NIOSH REL** \*:

TWA (8-hour) 0.050 mg/m<sup>3</sup> See [Appendix C \(nengapdcx.html\)](#) [\*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]

**OSHA PEL** \*: [1910.1025] TWA 0.050 mg/m<sup>3</sup> See [Appendix C \(nengapdcx.html\)](#) [\*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]

**Measurement Methods**

**NIOSH** [7082 \(/niosh/docs/2003-154/pdfs/7082.pdf\)](#), [7105 \(/niosh/docs/2003-154/pdfs/7105.pdf\)](#), [7300 \(/niosh/docs/2003-154/pdfs/7300.pdf\)](#), [7301 \(/niosh/docs/2003-154/pdfs/7301.pdf\)](#), [7303 \(/niosh/docs/2003-154/pdfs/7303.pdf\)](#), [7700 \(/niosh/docs/2003-154/pdfs/7700.pdf\)](#), [7701 \(/niosh/docs/2003-154/pdfs/7701.pdf\)](#), [7702 \(/niosh/docs/2003-154/pdfs/7702.pdf\)](#), [9100 \(/niosh/docs/2003-154/pdfs/9100.pdf\)](#), [9102 \(/niosh/docs/2003-154/pdfs/9102.pdf\)](#), [9105 \(/niosh/docs/2003-154/pdfs/9105.pdf\)](#);

**OSHA ID121**

(<http://www.osha.gov/dts/sltc/methods/inorganic/id121/id121.html>)  
<http://www.cdc.gov/Other/disclaimer.html>), **ID125G**  
(<http://www.osha.gov/dts/sltc/methods/inorganic/id125g/id125g.html>)  
<http://www.cdc.gov/Other/disclaimer.html>), **ID206**  
(<http://www.osha.gov/dts/sltc/methods/inorganic/id206/id206.html>)  
<http://www.cdc.gov/Other/disclaimer.html>)

See: **NMAM** (</niosh/docs/2003-154/>) or **OSHA Methods**  
(<http://www.osha.gov/dts/sltc/methods/index.html>) <http://www.cdc.gov/Other/disclaimer.html>)

**Physical Description** A heavy, ductile, soft, gray solid.

<b>MW:</b> 207.2	<b>BP:</b> 3164°F	<b>MLT:</b> 621°F	<b>Sol:</b> Insoluble	<b>VP:</b> 0 mmHg (approx)	<b>IP:</b> NA
<b>Sp.Gr:</b> 11.34	<b>Fl.P:</b> NA	<b>UEL:</b> NA	<b>LEL:</b> NA		

Noncombustible Solid in bulk form.

**Incompatibilities & Reactivities** Strong oxidizers, hydrogen peroxide, acids**Exposure Routes** inhalation, ingestion, skin and/or eye contact

**Symptoms** lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension

**Target Organs** Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

**Personal Protection/Sanitation** (See [protection codes \(protect.html\)](#))

**Skin:** Prevent skin contact

**Eyes:** Prevent eye contact

**Wash skin:** Daily

**Remove:** When wet or contaminated

**Change:** Daily

**First Aid** (See [procedures \(firstaid.html\)](#))

**Eye:** Irrigate immediately

**Skin:** Soap flush promptly

**Breathing:** Respiratory support

**Swallow:** Medical attention immediately

#### Respirator Recommendations

(See [Appendix E \(nengapdx.html\)](#))

#### NIOSH/OSHA

##### Up to 0.5 mg/m<sup>3</sup>:

(APF = 10) Any air-purifying respirator with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter-mask respirators.

[Click here \(pgintrod.html#nrp\)](#) for information on selection of N, R, or P filters.

(APF = 10) Any supplied-air respirator

##### Up to 1.25 mg/m<sup>3</sup>:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter.

##### Up to 2.5 mg/m<sup>3</sup>:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.

[Click here \(pgintrod.html#nrp\)](#) for information on selection of N, R, or P filters.

(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode

(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter

(APF = 50) Any self-contained breathing apparatus with a full facepiece

(APF = 50) Any supplied-air respirator with a full facepiece

##### Up to 50 mg/m<sup>3</sup>:

(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

##### Up to 100 mg/m<sup>3</sup>:

(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

##### Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

##### Escape:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.

[Click here \(pgintrod.html#nrp\)](#) for information on selection of N, R, or P filters.

Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection \(pgintrod.html#mustread\)](#)

See also: [INTRODUCTION \(/niosh/npg/pgintrod.html\)](#) See ICSC CARD: [0052 \(/niosh/ipcsneng/neng0052.html\)](#) See MEDICAL TESTS: [0127 \(/niosh/docs/2005-110/nmedo127.html\)](#)

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Page last reviewed: April 4, 2011

Page last updated: February 13, 2015

Content source: [National Institute for Occupational Safety and Health \(NIOSH\)](#) Education and Information Division

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## Search the NIOSH Pocket Guide

Enter search terms separated by spaces.

# Petroleum distillates (naphtha)

**Synonyms & Trade Names** Aliphatic petroleum naphtha, Petroleum naphtha, Rubber solvent

<b>CAS No.</b> 8002-05-9	<b>RTECS No.</b> <a href="/niosh-rtecs/SE71A9A8.html">SE7449000 (/niosh-rtecs/SE71A9A8.html)</a>	<b>DOT ID &amp; Guide</b>
	<b>Conversion</b> 1 ppm = 4.05 mg/m <sup>3</sup>	<b>IDLH</b> 1100 ppm [10%LEL] See: <a href="/niosh/idlh/8002059.html">8002059 (/niosh/idlh/8002059.html)</a>
<b>Exposure Limits</b> <b>NIOSH REL</b> : TWA 350 mg/m <sup>3</sup> C 1800 mg/m <sup>3</sup> [15-minute] <b>OSHA PEL</b> † ( <a href="/nengapdxg.html">nengapdxg.html</a> ): TWA 500 ppm (2000 mg/m <sup>3</sup> )		<b>Measurement Methods</b> <b>NIOSH 1550</b>  ( <a href="/niosh/docs/2003-154/pdfs/1550.pdf">/niosh/docs/2003-154/pdfs/1550.pdf</a> ) See: <b>NMAM</b> ( <a href="/niosh/docs/2003-154/">/niosh/docs/2003-154/</a> ) or <b>OSHA Methods</b> ( <a href="http://www.osha.gov/dts/sltc/methods/index.html">http://www.osha.gov/dts/sltc/methods/index.html</a> )  ( <a href="http://www.cdc.gov/Other/disclaimer.html">http://www.cdc.gov/Other/disclaimer.html</a> )

**Physical Description** Colorless liquid with a gasoline- or kerosene-like odor. [Note: A mixture of paraffins (C<sub>5</sub> to C<sub>13</sub>) that may contain a small amount of aromatic hydrocarbons.]

<b>MW:</b> 99 (approx)	<b>BP:</b> 86-460°F	<b>FRZ:</b> -99°F	<b>Sol:</b> Insoluble	<b>VP:</b> 40 mmHg (approx)	<b>IP:</b> ?
<b>Sp.Gr:</b> 0.63-0.66	<b>Fl.P:</b> -40 to -86°F	<b>UEL:</b> 5.9%	<b>LEL:</b> 1.1%		

Flammable Liquid

**Incompatibilities & Reactivities** Strong oxidizers

**Exposure Routes** inhalation, ingestion, skin and/or eye contact

**Symptoms** irritation eyes, nose, throat; dizziness, drowsiness, headache, nausea; dry cracked skin; chemical pneumonitis (aspiration liquid)

**Target Organs** Eyes, skin, respiratory system, central nervous system

**Personal Protection/Sanitation** (See [protection codes \(protect.html\)](#))

**Skin:** Prevent skin contact

**Eyes:** Prevent eye contact

**Wash skin:** When contaminated

**Remove:** When wet (flammable)

**Change:** No recommendation

**First Aid** (See [procedures \(firstaid.html\)](#))

**Eye:** Irrigate immediately

**Skin:** Soap wash promptly

**Breathing:** Respiratory support

**Swallow:** Medical attention immediately

### Respirator Recommendations

#### NIOSH

##### Up to 850 ppm:

(APF = 10) Any supplied-air respirator

##### Up to 1100 ppm:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode\*

(APF = 50) Any self-contained breathing apparatus with a full facepiece

(APF = 50) Any supplied-air respirator with a full facepiece

##### Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

##### Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister

Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection \(pgintrod.html#mustread\)](#)

See also: [INTRODUCTION \(/niosh/npg/pgintrod.html\)](#)

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# Appendix D – Operating Log Template

**Blackstone River Bikeway – Segment 1A, Providence, Rhode Island  
DAILY OPERATIONS LOG SUMMARY**

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**NAME:**

**WEATHER:**

**DATE & TIME:**

**WIND:**

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**GENERAL CONSTRUCTION ACTIVITY:**

- 

**EARTHWORK ACTIVITY:**

- 

**SOIL AND EROSION MONITORING:**

- 

**DUST MONITORING:**

- 

**HEALTH AND SAFETY MONITORING:**

- 

**CONVERSATION NOTES:**

-



# Appendix E – Draft ELUR and SMP

~~Appendix G~~  
**ENVIRONMENTAL LAND USAGE RESTRICTION**

This Declaration of Environmental Land Usage Restriction (“Restriction”) is made on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ by ~~{property owner}~~the State of Rhode Island, and its successors and/or assigns (hereinafter, the “Grantor”).

**WITNESSETH:**

WHEREAS, the Grantor \_\_\_\_\_ ~~(name)~~the State of Rhode Island is the Owner in fee simple of certain real property identified as ~~{specify Plat, Lot(s), address and Town or City}~~portions of Providence Assessor’s Lot 8/Plat 17; Lots 66, 446, & 456/Plat 15; and a portion of Beach Street in Providence, Rhode Island (the “Property”), more particularly described in Exhibit A (Legal Description) which is attached hereto and made a part hereof;

WHEREAS, the Property (or portion thereof identified in the Class I survey which is attached hereto as Exhibit 2A and is made a part hereof) has been determined to contain soil and/or groundwater which is contaminated with certain Hazardous Materials and/or petroleum in excess of applicable ~~{residential and/or industrial/commercial Direct Exposure Criteria, and/or applicable groundwater objective}~~criteria pursuant to the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (“Remediation Regulations”);

WHEREAS, the Grantor and the Department have determined that the environmental land use restrictions set forth below are consistent with the regulations adopted by the Rhode Island Department of Environmental Management (“Department”) pursuant to R.I.G.L. § 23-19.14-1 and that this restriction shall be a Conservation Restriction pursuant to R.I.G.L. § 34-39-1 et. seq. and shall not be subject to the 30 year limitation provided in R.I.G.L. § 34-4-21;

WHEREAS, the Department's written approval of this Restriction is contained in the document entitled: ~~{Remedial Decision Letter/ Settlement Agreement/ Order of Approval/ Remedial Approval Letter}~~ issued pursuant to the Remediation Regulations;

WHEREAS, to prevent exposure to or migration of Hazardous Substances and to abate hazards to human health and/or the environment, and in accordance with the ~~{Remedial Decision Letter/ Remedial Agreement/ Order of Approval/ Remedial Approval Letter}~~, the Grantor desires to impose certain restrictions upon the use, occupancy, and activities of and at the ~~{Property/Contaminated-Site}~~;

WHEREAS, the Grantor believes that this Restriction will effectively protect public health and the environment from such contamination; and

WHEREAS, the Grantor intends that such restrictions shall run with the land and be binding upon and enforceable against the Grantor and the Grantor’s successors and assigns.

NOW, THEREFORE, Grantor agrees as follows:

A. **Restrictions Applicable to the ~~{Property/Contaminated-Site}~~:** In accordance with the ~~{Remedial Decision Letter/ Remedial Agreement/ Order of Approval/ Remedial Approval Letter}~~, the use, occupancy and activity of and at the ~~{Property/Contaminated-Site}~~ is restricted as follows:

- i. No residential use of the ~~{Property/Contaminated-Site}~~ shall be permitted that is contrary to Department approvals and restrictions contained herein;
- ii. No groundwater at the ~~{Property/Contaminated-Site}~~ shall be used as potable water;
- iii. No soil at the ~~{Property/Contaminated-Site}~~ shall be disturbed in any manner without written permission of the Department's Office of Waste Management, except as permitted in the Remedial Action Work Plan (RAWP) or Soil Management Plan (SMP) approved by the Department in a written approval letter dated \_\_\_\_\_ (date) Exhibit B and attached hereto;
- [iv. Humans engaged in activities at the ~~{Property/Contaminated-Site}~~ shall not be exposed to soils containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department approved Direct Exposure Criteria set forth in the Remediation Regulations;

~~[v. Water at the ~~{Property/Contaminated-Site}~~ shall be prohibited from infiltrating soils containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department approved leachability criteria set forth in the Remediation Regulations;~~

~~[vi. No subsurface structures shall be constructed on the ~~{Property/Contaminated-Site}~~ over groundwater containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department approved GA or GB Groundwater Objectives set forth in the Remediation Regulations;~~

[vii. [v. \_\_\_\_\_ The engineered controls at the ~~{Property/Contaminated-Site}~~ described in the ~~{RAWP or SMP}~~ contained in Exhibit B attached hereto shall not be disturbed and shall be properly maintained to prevent humans engaged in ~~{residential or industrial/commercial}~~ passive recreational activity from being exposed to soils containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department-approved ~~{residential and/or industrial/commercial}~~ Direct Exposure Criteria in accordance with the Remediation Regulations; and

~~[viii. The engineered controls at the ~~{Property/Contaminated-Site}~~ described in the ~~{RAWP or Soil Management Plan SMP}~~ contained in Exhibit B attached hereto shall not be disturbed and shall be properly maintained so that water does not infiltrate soils containing Hazardous Materials and/or petroleum in concentrations~~

~~exceeding the applicable Department-approved leachability criteria set forth in the Remediation Regulations.~~

**B. No action shall be taken, allowed, suffered, or omitted at the ~~{Property/Contaminated-Site}~~ if such action or omission is reasonably likely to:**

- i. Create a risk of migration of Hazardous Materials and/or petroleum;
- ii. Create a potential hazard to human health or the environment; or
- iii. Result in the disturbance of any engineering controls utilized at the ~~{Property/Contaminated-Site}~~, except as permitted in the Department-approved ~~{RAWP or SMP}~~ contained in Exhibit B.

**C. Emergencies:** In the event of any emergency which presents a significant risk to human health or to the environment, including but not limited to, maintenance and repair of utility lines or a response to emergencies such as fire or flood, the application of Paragraphs A (iii.-viii.) and B above may be suspended, provided such risk cannot be abated without suspending such Paragraphs and the Grantor complies with the following:

- i. Grantor shall notify the Department's Office of Waste Management in writing of the emergency as soon as possible but no more than three (3) business days after Grantor's having learned of the emergency. (This does not remove Grantor's obligation to notify any other necessary state, local or federal agencies.);
- ii. Grantor shall limit both the extent and duration of the suspension to the minimum period reasonable and necessary to adequately respond to the emergency;
- iii. Grantor shall implement reasonable measures necessary to prevent actual, potential, present and future risk to human health and the environment resulting from such suspension;
- iv. Grantor shall communicate at the time of written notification to the Department its intention to conduct the Emergency Response Actions and provide a schedule to complete the Emergency Response Actions;
- v. Grantor shall continue to implement the Emergency Response Actions, on the schedule submitted to the Department, to ensure that the ~~{Property/Contaminated-Site}~~ is remediated in accordance with the Remediation Regulations (or applicable variance) or restored to its condition prior to such emergency. Based upon information submitted to the Department at the time the ELUR was recorded pertaining to known environmental conditions at the ~~{Property/Contaminated-Site}~~, emergency maintenance and repair of utility lines shall only require restoration of the ~~{Property/Contaminated-Site}~~ to its condition prior to the maintenance and repair of the utility lines; and
- vi. Grantor shall submit to the Department, within ten (10) days after the completion of the Emergency Response Action, a status report describing the emergency activities that



have been completed.

- D. Release of Restriction; Alterations of Subject Area:** The Grantor shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of the ~~{Property/Contaminated-Site}~~ inconsistent with this Restriction unless the Grantor has received the Department's prior written approval for such alteration. If the Department determines that the proposed alteration is significant, the Department may require the amendment of this Restriction. Alterations deemed insignificant by the Department will be approved via a letter from the Department. The Department shall not approve any such alteration and shall not release the ~~{Property/Contaminated-Site}~~ from the provisions of this Restriction unless the Grantor demonstrates to the Department's satisfaction that Grantor has managed the ~~{Property/Contaminated-Site}~~ in accordance with applicable regulations.
- E. Notice of Lessees and Other Holders of Interests in the ~~{Property/Contaminated-Site}~~:** The Grantor, or any future holder of any interest in the ~~{Property/Contaminated-Site}~~, shall cause any lease, grant, or other transfer of any interest in the ~~{Property/Contaminated-Site}~~ to include a provision expressly requiring the lessee, grantee, or transferee to comply with this Restriction. The failure to include such provision shall not affect the validity or applicability of this Restriction to the ~~{Property/Contaminated-Site}~~.
- F. Enforceability:** If any court of competent jurisdiction determines that any provision of this Restriction is invalid or unenforceable, the Grantor shall notify the Department in writing within fourteen (14) days of such determination.
- G. Binding Effect:** All of the terms, covenants, and conditions of this Restriction shall run with the land and shall be binding on the Grantor, its successors and assigns, and each Owner and any other party entitled to control, possession or use of the ~~{Property/Contaminated-Site}~~ during such period of Ownership or possession.
- H. Inspection & Non-Compliance:** It shall be the obligation of the Grantor, or any future holder of any interest in the ~~{Property/Contaminated-Site}~~, to provide for annual inspections of the ~~{Property/Contaminated-Site}~~ for compliance with the ELUR in accordance with Department requirements.

~~{An officer or Director of the company with direct knowledge of past and present conditions of the {Property/Contaminated-Site} (the "Company Representative"), or}~~ A qualified environmental professional will, on behalf of the Grantor or future holder of any interest in the ~~{Property/Contaminated-Site}~~, evaluate the compliance status of the ~~{Property/Contaminated-Site}~~ on an annual basis. Upon completion of the evaluation, the ~~{Company Representative or}~~ environmental professional will prepare and simultaneously submit to the Department and to the Grantor or future holder of any interest in the ~~{Property/Contaminated-Site}~~ an evaluation report detailing the findings of the inspection, and noting any compliance violations at the ~~{Property/Contaminated-Site}~~. If the ~~{Property/Contaminated-Site}~~ is determined to be out of compliance with the terms of the ELUR, the Grantor or future holder of any interest in the ~~{Property/Contaminated-Site}~~ shall submit a corrective action plan in writing to the Department within ten (10) days of receipt of the evaluation report, indicating the plans to bring the ~~{Property/Contaminated-~~

**Site** into compliance with the ELUR, including, at a minimum, a schedule for implementation of the plan.

In the event of any violation of the terms of this Restriction, which remains uncured more than ninety (90) days after written notice of violation, all Department approvals and agreements relating to the **Property/Contaminated-Site** may be voided at the sole discretion of the Department.

**I. Terms Used Herein:** The definitions of terms used herein shall be the same as the definitions contained in Section 3 (DEFINITIONS) of the Remediation Regulations.

IN WITNESS WHEREOF, the Grantor has hereunto set (his/her) hand and seal on the day and year set forth above.

~~Name of Person(s), company, LLC or LLP~~ The State of Rhode Island

By: \_\_\_\_\_  
Grantor (signature) \_\_\_\_\_ Grantor (typed name)

STATE OF RHODE ISLAND  
COUNTY OF \_\_\_\_\_

In (CITY/TOWN), in said County and State, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me Personally appeared \_\_\_\_\_, to me known and known by me to be the party executing the foregoing instrument and (he/she) acknowledged said instrument by (him/her) executed to be (his/her) free act and deed.

Notary Public: \_\_\_\_\_

My Comm. Expires: \_\_\_\_\_

**Post Remediation Soil Management Plan**  
**Blackstone River Bikeway – Segment 1A**  
**Portions of Lot 8/Plat 17, Lots 66, 446, & 456/Plat 15; and a Portion of Beach Street**  
**Providence, Rhode Island**

This Soil Management Plan (SMP) has been prepared to establish procedures that will be followed should future construction/maintenance activities at the Blackstone River Bikeway – Segment 1A property require the need to manage soils excavated from the subsurface or when existing Site surfaces/Department approved engineered controls (asphalt, concrete, and/or landscaping) are disturbed. The plan serves to supplement, and will be initiated by, the RIDEM notification requirement established by the Environmental Land Use Restriction (ELUR) for the property.

*Background*

The Property, identified as portions of Lot 8 on Plat Map 17; Lots 35, 66, 446, 456, 480, & 487 on Plat Map 15 and a portion of Beach Street in Providence, Rhode Island, was formerly part of the Seekonk River. The land was created by filling in the river over time. Land south of the railroad tracks that bisect the Site remained vacant and has been used for recreational purposes. Land north of the railroad tracks was developed for industrial and commercial use. The lots that make up the bikeway north of the railroad tracks have recently been used for commercial and residential purposes. The Site was found to contain arsenic, lead, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene during a Site investigation performed at the property. More recently, the Site has been developed with a recreational bike path. The Department approved remedy, as described in the Remedial Decision Letter dated **September XX, 2015**, included limited excavation of soils that contain concentrations of polycyclic aromatic hydrocarbons that exceed the Department's Residential Direct Exposure Criteria (RDEC) and/or the Industrial/Commercial Direct Exposure Criteria (I/CDEC) and offsite disposal at a licensed facility, encapsulation of any remaining soils that contain exceedances of the Department's RDEC with clean fill materials and paved surfaces to limit exposure to subsurface soils, and an institutional control in the form of a Department approved ELUR. The regulated Site soils are covered with Department approved engineered controls (refer to attached figure), consisting of asphalt pavement and landscaping in order to prevent direct exposure to regulated soils.

*Applicable Area*

This SMP and affiliated ELUR, which restricts the property to **Industrial/Commercial** use, pertains to the entire Property. See attached Site figure.

*Soil Management*

The direct exposure pathway is the primary concern at the site. Individuals engaged in activities at the site may be exposed through incidental ingestion, dermal contact, or inhalation of vapors or

entrained soil particles if proper precautions are not taken. Therefore, the following procedures will be followed to minimize the potential of exposure.

During significant or long-term Site work involving intrusive soil activities, the appropriate precautions will be taken to restrict unauthorized access to the property. This will include perimeter fencing where applicable.

During all site/earth work, dust suppression (e.g. watering, etc) techniques must be employed at all times.

In the event that an unexpected observation or situation arises during site work, such activities will immediately stop. Workers will not attempt to handle the situation themselves but will contact the appropriate authority for further direction.

In the event that certain soils on site were not previously characterized, these soils are presumed to be regulated until such time that it is demonstrated to the Department, through sampling and laboratory analysis that they are not regulated. (For example, presumptive remedies or locations of previously inaccessible soil.)

If excess soil is generated/excavated from the Property, the soil is to remain on-site for analytical testing, to be performed by an environmental professional, in order to determine the appropriate disposal and/or management options. The soil must be placed on and covered with polyethylene/plastic sheeting during the entire duration of its staging and secured with appropriate controls to limit the loss of the cover and protect against storm-water and/or wind erosion (e.g. hay bales, silt fencing, rocks, etc).

Excavated soils will be staged and temporarily stored in a designated area of the property. Within reason, the storage location will be selected to limit the unauthorized access to the materials (e.g., away from public roadways/walkways). No regulated soil will be stockpiled on-site for greater than 60 days without prior Department approval.

In the event that stockpiled soils pose a risk or threat of leaching hazardous materials, a proper leak-proof container (e.g. drum or lined roll-off) or secondary containment will be utilized.

Soils excavated from the site may not be re-used as fill on residential property. Excavated fill material shall not be re-used as fill on commercial or industrial properties unless it meets the Department's Method 1 Residential Direct Exposure Criteria for all constituents listed in Table 1 of the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations). Copies of the laboratory analysis results shall be maintained by the site owner and included in the annual inspection report for the Site, or the closure report if applicable. In the event that the soil does not meet any of these criteria, the material must be properly managed and disposed of off-Site at a licensed facility.

Site soils, which are to be disposed of off-Site, must be done so at a licensed facility in accordance with all local, state, and federal laws. Copies of the material shipping records

associated with the disposal of the material shall be maintained by the site owner and included in the annual inspection report for the Site.

Best soil management practices should be employed at all times and regulated soils should be segregated into separate piles (or cells or containers) as appropriate based upon the results of analytical testing, when multiple reuse options are planned (e.g. reuse on-Site, reuse at a Department approved Industrial/Commercial property, or disposal at a Department approved licensed facility).

All non-disposable equipment used during the soil disturbance activities will be properly decontaminated as appropriate prior to removal from the Site. All disposable equipment used during the soil disturbance activities will be properly containerized and disposed of following completion of the work. All vehicles utilized during the work shall be properly decontaminated as appropriate prior to leaving the Site.

At the completion of Site work, all exposed soils are required to be recapped with Department approved engineered controls for this project (10-inches of clean fill underlain with a geotextile liner or 4 inches of pavement underlain with 6 inches of clean fill) consistent or better than the site surface conditions prior to the work that took place. These measures must also be consistent with the Department approved ELUR recorded on the property. Any clean fill material brought on Site is required to meet the Department's Method 1 Residential Direct Exposure Criteria or be designated by an Environmental Professional as Non-Jurisdictional under the Remediation Regulations. The Annual Inspection Report for the site, or Closure Report if applicable, should include either analytical sampling results from the fill demonstrating compliance or alternatively include written certification by an Environmental Professional that the fill is not jurisdictional.

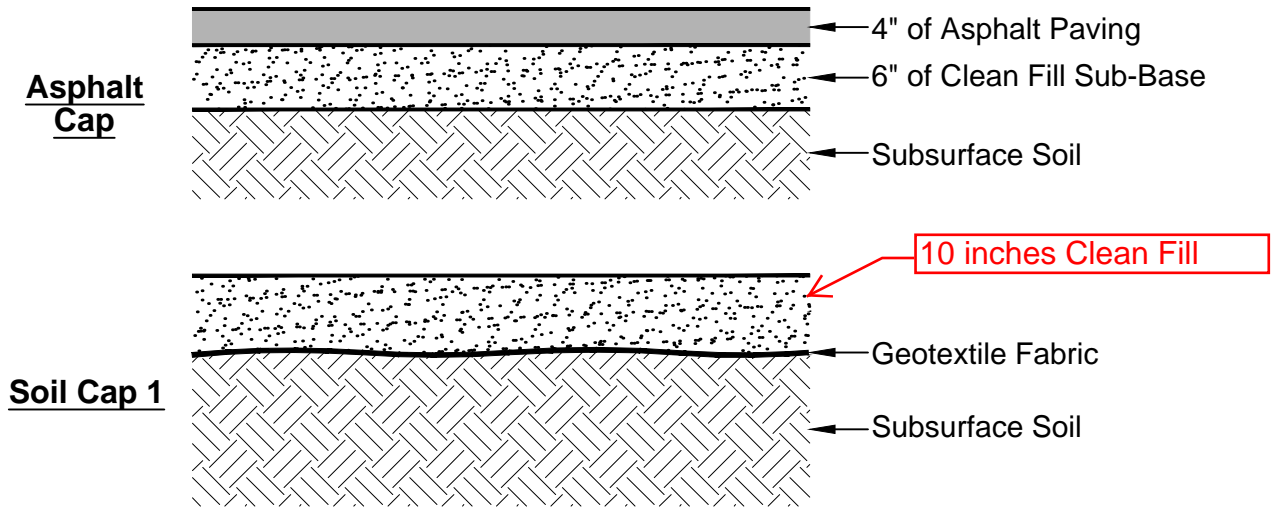
#### *Worker Health and Safety*

To ensure the health and safety of on-Site workers, persons involved in the excavation and handling of the material on site are required to wear a minimum of Level D personal protection equipment, including gloves, work boots and eye protection. Workers are also required to wash their hands with soap and water prior to eating, drinking, smoking, or leaving the Site.

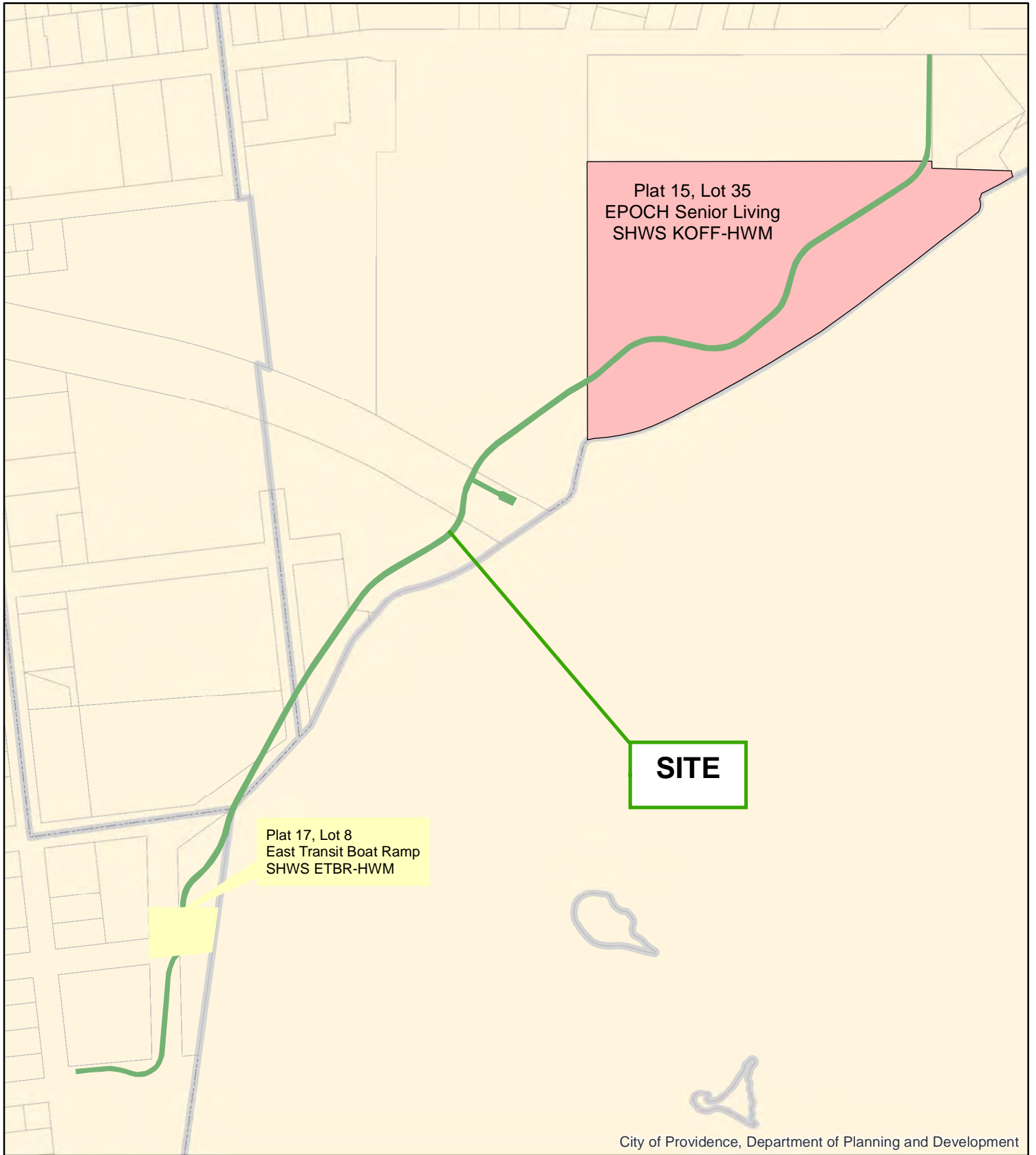
#### *Department Approval*

In accordance with Section A iii of the ELUR, no soil at the property is to be disturbed in any manner without prior written permission of the Department's Office of Waste Management, except for minor inspections, maintenance, and landscaping activities that do not disturb the contaminated soil at the Site. As part of the notification process, the Site owner shall provide a brief written description of the anticipated Site activity involving soil excavation. The notification should be submitted to the Department no later than 60 days prior to the proposed initiation of the start of Site activities. The description shall include an estimate of the volume of soil to be excavated, a list of the known and anticipated contaminants of concern, a Site figure clearly identifying the proposed areas to be excavated/disturbed, the duration of the project and the proposed disposal location of the soil.

Following written Notification, the Department will determine the post closure reporting requirements. Significant disturbances of regulated soil will require submission of a Closure Report for Department review and approval documenting that the activities were performed in accordance with this SMP and the Department approved ELUR. Minor disturbances of regulated soil may be documented through the annual certification submitted in accordance with Section H (Inspection & Non-Compliance) of the Department approved ELUR. The Department will also make a determination regarding the necessity of performing Public Notice to abutting property owners/tenants concerning the proposed activities. Work associated with the Notification will not commence until written Department approval has been issued. Once Department approval has been issued, the Department will be notified a minimum of two (2) days prior to the start of activities at the site. Shall any significant alterations to the Department approved plan be necessary, a written description of the proposed deviation, will be submitted to the Department for review and approval prior to initiating such changes.



Engineered Controls Details  
Blackstone River Bikeway  
Providence, Rhode Island



Site Detail Map

Figure 2  
September 11, 2015

**Legend**

 Proposed Bikeway Segment 1A

Blackstone River Bikeway - Segment 1A  
East Transit Street to Pitman Street  
Providence, Rhode Island 02906

