VIRGINIA RAILWAY EXPRESS

REQUEST FOR QUALIFICATIONS (RFQ) APPENDICES

RFQ No.: 026-006

L'ENFANT STATION AND 4TH TRACK IMPROVEMENTS PROJECT

Construction Manager/General Contractor Services

Appendix A
30% Design Plans and Submission Memo

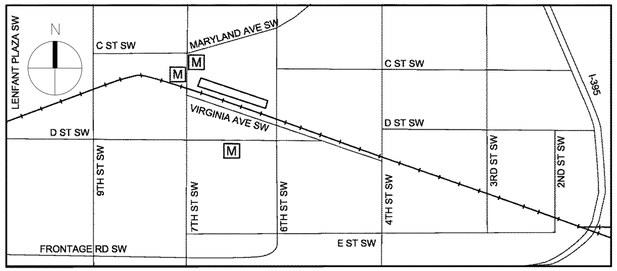
VIRGINIA RAILWAY EXPRESS

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
POTOMAC AND RAPPAHANNOCK TRANSPORTATION COMMISSION

L'ENFANT STATION AND FOURTH TRACK PROJECT

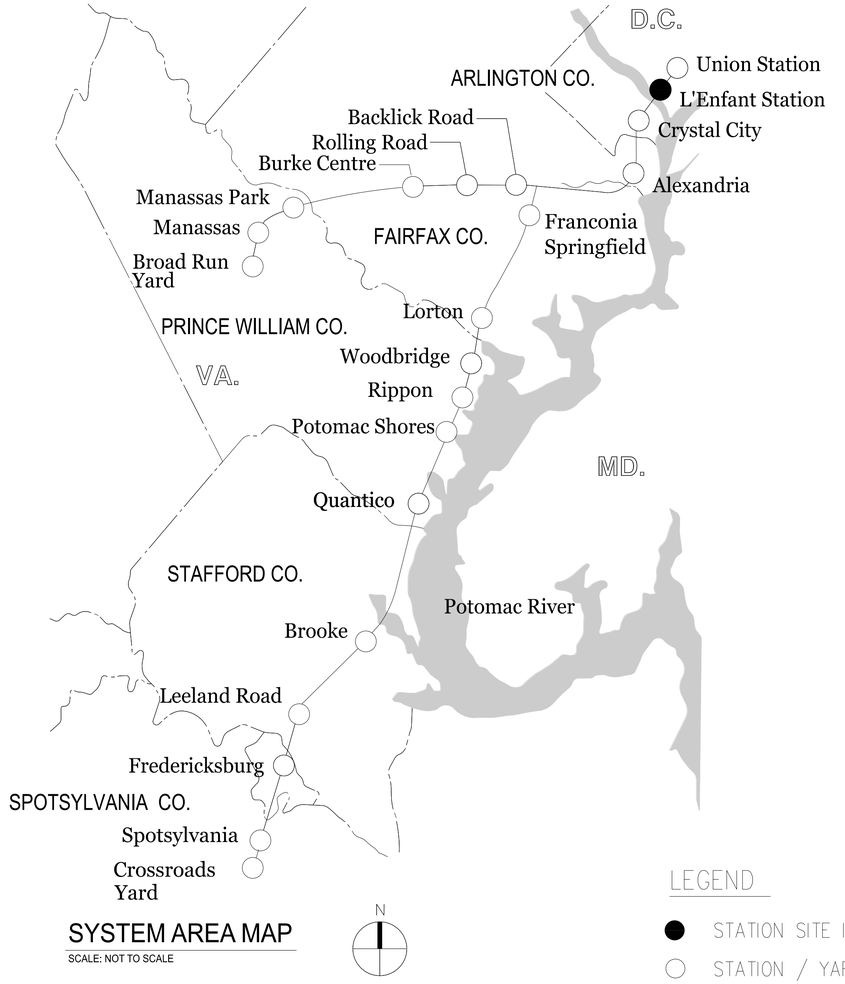
L'ENFANT STATION

650 VIRGINIA AVE SW
WASHINGTON, DC 20024



VICINITY MAP

(NOT TO SCALE)



SYSTEM AREA MAP

SCALE: NOT TO SCALE

RAILROAD LOCATION INFORMATION

HOST RAILROAD:CSX TRANSPORTATION
DIVISION: BALTIMORE
SUBDIVISION: RF&P
MILEPOST:CFP 111.5 TO 112.1
NEAREST CROSSING (OVERHEAD BRIDGE):
FRA #860483G AT CFP 108.5
26TH STREET (ROUTE 233)

LEGEND

- ● STATION SITE IN CONTRACT
- ○ STATION / YARD SITES NOT IN CONTRACT

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: VHB
DRAWN BY: N. THAHA
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

COVER SHEET

IFB NO:
DRAWING NO: G-000
SCALE: AS NOTED
SHEET NO: 1 OF 254

CODES AND STANDARDS:

THE WORK OF THIS PROJECT SHALL COMPLY WITH THE FOLLOWING:

A. 2024 AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION (AREMA) MANUAL FOR RAILWAY ENGINEERING.
B. AISC STEEL CONSTRUCTION MANUAL - 14TH EDITION.
C. CSXT DESIGN AND CONSTRUCTION STANDARD SPECIFICATION VOLUME 1, MARCH 1, 2021
D. CSXT MWI 2800 SERIES
E. DISTRICT DEPARTMENT OF TRANSPORTATION (DDOT) DESIGN AND ENGINEERING MANUAL (DEM), DECEMBER 2023
F. WMATA ADJACENT CONSTRUCTION PROJECT MANUAL, DECEMBER 2023
G. VIRGINIA RAILWAY EXPRESS (VRE) FACILITY DESIGN GUIDELINES, APRIL 2025
H. DISTRICT OF COLUMBIA BUILDING CODE 2017
I. INTERNATIONAL BUILDING CODE (IBC) 2015
J. INTERNATIONAL PLUMBING CODE (IPC) 2018
K. INTERNATIONAL MECHANICAL CODE (IMC) 2018
L. INTERNATIONAL ENERGY CONSERVATION VODE (IECC) 2018
M. INTERNATIONAL FUEL GAS CODE (IFGC) 2018
N. NATIONAL ELECTRICAL CODE (NEC) 2017
O. DISTRICT OF COLUMBIA ENERGY CONSERVATION CODE 2017
P. DISTRICT OF COLUMBIA PLUMBING CODE 2017
Q. DISTRICT OF COLUMBIA MECHANICAL CODE 2017
R. DISTRICT OF COLUMBIA ELECTRICA CODE 2017
S. NFPA 70 NATIONAL ELECTRICAL CODE 2014
T. NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE 2013
U. NFPA 110 STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS 2013
V. INTERNATIONAL FUEL GAS CODE 2015
W.THE ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS (ANSI/ASHRAE/IES 90.1-2013)
X. RECOMMENDED PRACTICE: LIGHTING COMMON APPLICATIONS ANSI/IES RP-20-20
Y. GUIDE FOR SECURITY LIGHTING FOR PEOPLE, PROPERTY, AND CRITICAL INFRASTRUCTURE, IES-G-1-22
Z. ANSI ASME A17.1 SAFETY CODE FOR ELEVATORS 2013

PROJECT/SUMMARY:

1. DESCRIPTION
THE WORK WILL CONSIST OF THE CONSTRUCTION OF A NEW ISLAND PLATFORM, GRADE SEPARATED ADA ACCESSIBLE PLATFORM ENTRANCES AND DEMOLITION OF THE EXISTING PLATFORM. THIS WORK WILL COINCIDE WITH THE REALIGNMENT OF THE TRACKS BY THE HOST RAILROAD. THE WORK ALSO ENTAILS THE WIDENING OF THE EXISTING 7TH STREET SW UNDERGRADE BRIDGE, REPLACEMENT OF THE 6TH STREET SW UNDERGRADE BRIDGE AND CONSTRUCTION OF THE NEW FOURTH TRACK BETWEEN THE VA AND LE INTERLOCKINGS.

2. OWNER NAME
VIRGINIA RAILWAY EXPRESS
1500 KING STREET, SUITE 202
ALEXANDRIA, VA 22314

GENERAL NOTES

1. WORK ON THIS PROJECT REQUIRES AN EXISTING CSX TRANSPORTATION (CSXT) RIGHT OF WAY. THE CONTRACTOR CAN EXPECT AND SHOULD PLAN ON ENCOUNTERING VARIANCES AND DEVIATIONS BETWEEN THE INFORMATION FOUND IN THESE DRAWINGS AND EXISTING SITE CONDITIONS. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS AND QUANTITIES. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL DETAILS INCLUDING GEOMETRY AND ELEVATIONS PRIOR TO ORDERING AND FABRICATION OF ANY MATERIALS AS WELL AS PERFORMING ANY WORK. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, OR AUTHORIZED REPRESENTATIVE, COPIES OF FIELD SURVEYS AND VERIFICATIONS FOR INCLUSION INTO THE CONSTRUCTION RECORDS FOR THE PROJECT.
2. ANY DESIGN REVISIONS LOCATED WITHIN THE CSXT RIGHT-OF-WAY. OR WITH THE POTENTIAL TO IMPACT CSXT FACILITIES OR OPERATIONS ARE SUBJECT TO CSXT REVIEW AND APPROVAL.
3. THE CONTRACTOR SHALL COMPLY WITH ALL RAILROAD (CSXT & VRE), LOCAL, STATE, AND FEDERAL SAFETY AND ENVIRONMENTAL REGULATIONS.
4. CONTRACTOR TO COMPLY WITH ALL NOISE ORDINANCES, AS APPLICABLE.
5. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR THE SATISFACTORY COMPLETION OR THE WORK. CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL NOT CONDUCT ANY MAJOR ACTIVITIES ON OR OFF SITE THAT WILL PRODUCE NOISE, DUST, ACCESS INTERFERENCE, OR OTHER IMPACTS TO OPERATIONS DURING WEEKDAY PRIOR TO 8 A.M. OR AFTER 5 P.M WITHOUT APPROVAL.
7. THE CONTRACTOR SHALL SCHEDULE ALL ACTIVITIES SUCH THAT RAIL TRAFFIC IS NOT DELAYED OR OTHERWISE IMPACTED DUE TO THE WORK BEING PERFORMED. WEEKEND AND NIGHT WORK SHOULD BE EXPECTED.
8. THE CONTRACTOR SHALL SUBMIT A DETAILED PROGRESS SCHEDULE AND SEQUENCING PLAN A MINIMUM OF 30 DAYS PRIOR TO THE START OF WORK.
9. THE CONTRACTOR SHALL COORDINATE LOCATIONS AND SCHEDULE OF STAGING AREAS WITH VRE.
10. THE CONTRACTOR SHALL NOT BE PERMITTED TO USE THE CSXT RIGHT-OF-WAY, EXCEPT AREA SHOWN ON APPROVED PLANS, FOR THE STORAGE OF MATERIALS OR EQUIPMENT DURING CONSTRUCTION WITHOUT PRIOR APPROVAL OF CSXT. THE CSXT RIGHT-OF-WAY MUST REMAIN CLEAR AT ALL TIMES.
11. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC CONTROL PLAN (IF REQUIRED) A MINIMUM OF 30 DAYS PRIOR TO THE START OF WORK. THE CONTRACTOR IS REQUIRED TO PROVIDE A TRAFFIC CONTROL PLAN, STAGING PLAN, AND WORK AREA SAFETY AND SECURITY PLAN.
12. ANY WORK INSTALLED IN CONFLICT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE AND AT NO ADDITIONAL EXPENSE TO THE OWNER.
13. REPAIRS TO UTILITIES OR PROPERTY DAMAGE AS A RESULT OF CONTRACTOR'S NEGLIGENCE OR METHOD OF OPERATION SHALL BE MADE AT THE CONTRACTOR'S EXPENSE BEFORE PROCEEDING WITH CONSTRUCTION.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO RESET ANY SIGN POSTS OR OTHER APPURTENANCES REMOVED DURING THE CONSTRUCTION TO FACILITATE THEIR WORK, EXCEPT SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
15. SPECIAL NOTICE TO CONTRACTORS - ALL CONTRACTORS PERFORMING WORK ON THE PREMISES SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING A REASONABLE AND PRUDENT SAFETY PROGRAM INCLUDING BUT NOT LIMITED TO THE ISOLATION OF WORK AREAS AND THE PROMPT REMOVAL OF ANY DEBRIS OR TOOLS WHICH MIGHT ENDANGER THE GENERAL PUBLIC, VISITORS AND STAFF TO THE OWNER.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY ADDITIONAL PERMITS REQUIRED BY GOVERNING JURISDICTIONS THAT HAVE NOT A ALREADY BEEN OBTAINED BY VRE.
17. THE CONTRACTOR SHALL USE REASONABLE AND NECESSARY PRECAUTIONS TO ENSURE THE SAFETY OF VRE COMMUTERS.
18. SEE EXCAVATION SUPPORT AND PROTECTION SPECIFICATIONS AND RELEVANT PLANS FOR INFORMATION ON TEMPORARY AND PERMANENT SHEETING AND SHORING REQUIREMENTS.

RAILROAD (CSXT & VPRA) COORDINATION:

1. TEMPORARY CONSTRUCTION CLEARANCES TO BE USED SHALL BE AS SPECIFIED BY THE RAILROAD'S DIVISION MANAGER. CLEARANCES WILL BE COORDINATED THROUGH CSXT CHIEF ENGINEER OR DESIGNATED REPRESENTATIVE.
2. CSXT DOES NOT PERMIT ANY REDUCTION TO EXISTING VERTICAL AND HORIZONTAL CLEARANCES.
3. THE CONTRACTOR SHALL COORDINATE WITH CSXT AND OBTAIN ACCESS APPROVALS PRIOR TO PERFORMING ANY WORK ON OR NEAR THE TRACKS OR CSXT RIGHT-OF-WAY.
4. THE CONTRACTOR WILL BE REQUIRED TO ACQUIRE RIGHT OF ENTRY AGREEMENT WITH CSXT PRIOR TO WORKING ON THEIR RIGHT OF WAY. CSXT MAY TAKE UP TO 60 DAYS TO ISSUE.
5. THE CONTRACTOR MUST COORDINATE CONSTRUCTION ACTIVITIES WITH CSXT & VRE. FLAGGING SERVICES MAY TAKE UP TO 90 DAYS TO OBTAIN. FLAGMEN ARE PROVIDED BASED ON AVAILABILITY.
6. THE CONTRACTOR SHALL MAINTAIN CONTACT WITH THE CSXT FLAGGERS AND FOLLOW HIS INSTRUCTIONS AT ALL TIMES.
7. THE CONTRACTOR WILL SCHEDULE AND COORDINATE ALL FLAGGERS SERVICES WITH CXST. THERE ARE NO GUARANTEES THAT A FLAGMAN WILL BE PROVIDED IN THE TIME LISTED. CSXT FLAGMEN SERVICES WILL BE PAID FOR BY VRE.
8. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING EXISTING UTILITIES AND RAILROAD SIGNALS AND FOR MAINTAINING THE UTILITIES AND RAILROAD SIGNALS THROUGHOUT THE DURATION OF THE PROJECT, UNLESS NOTED OTHERWISE. CSXT WILL MARK EXISTING CSXT FACILITIES. CONTRACTOR SHALL COORDINATE WITH CSXT TO HAVE THEIR FACILITIES MARKED IN THE FIELD, PRIOR TO PERFORMING WORK WITH THE POTENTIAL TO IMPACT BELOW-GRADE FACILITIES.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING RAILROAD FACILITIES FROM DEBRIS DURING CONSTRUCTION.
10. THE CONTRACTOR MUST PLAN AND PERFORM THE WORK IN A MANNER SUCH THAT THE CSXT TRACKS AT THE PROJECT LOCATION REMAIN FULLY CAPABLE OF CARRYING RAIL TRAFFIC AT CURRENT MAXIMUM OPERATION SPEED THROUGHOUT THE DURATION OF THE PROJECT. RAIL TRAFFIC SHALL NOT BE DELAYED OR OTHERWISE IMPACTED DUE TO THE WORK BEING PERFORMED.
11. CONTRACTOR SHALL NOT IMPEDE CSXT ACCESS ALONG ITS TRACK AND RIGHT-OF-WAY.
12. THE CONTRACTOR SHALL NOT REMOVE ANY EXISTING CSXT OWNED MATERIAL (INCLUDING, BUT NOT LIMITED TO, SOIL, STONE, COMMUNICATIONS AND SIGNAL DEVICE COMPONENTS, AND DRAINAGE FACILITIES) FROM CSXT RIGHT-OF-WAY WITHOUT PRIOR AUTHORIZATION FROM CSXT. IN THE EVENT THAT SUCH MATERIAL CANNOT BE RELOCATED WITHIN CSXT'S RIGHT-OF-WAY IN A MANNER SATISFACTORY TO CSXT, THE MATERIAL SHALL BE PROPERLY TESTED BY CSXT FOR CONTAMINATION AND DISPOSED OF IN ACCORDANCE WITH THE CSX DISPOSAL POLICY (SEE SPECIFICATIONS).

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

GENERAL NOTES

IFB NO:
DRAWING NO: G-003
SCALE: AS NOTED
SHEET NO: 2 OF 254

DRAWING NUMBER	CATEGORY	DRAWING TITLE	Revision 0 5/23/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 1 7/25/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 2
G-000	GENERAL	COVER SHEET			
G-001		DRAWING INDEX AND REVISION TRACKING (1 OF 2)			
G-002		DRAWING INDEX AND REVISION TRACKING (2 OF 2)			
G-003		GENERAL NOTES			
G-004		OVERALL PLAN			
G-005		PROJECT OVERVIEW (1 OF 4)			
G-006		PROJECT OVERVIEW (2 OF 4)			
G-007		PROJECT OVERVIEW (3 OF 4)			
G-008		PROJECT OVERVIEW (4 OF 4)			
G-009		PAY ITEM DESCRIPTION AND QUANTITY SUMMARY			
G-010		PAY ITEM DESCRIPTION AND QUANTITY SUMMARY			
G-101		SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (1 OF 2)			
G-102		SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (2 OF 2)			
G-201		TRACK STAGING SCHEMATIC STAGE 1			
G-202		TRACK STAGING SCHEMATIC STAGE 2			
G-203		TRACK STAGING SCHEMATIC STAGE 3a			
G-204		TRACK STAGING SCHEMATIC STAGE 3b			
G-205		TRACK STAGING SCHEMATIC STAGE 3c			
G-206		TRACK STAGING SCHEMATIC STAGE 3d			
G-207		TRACK STAGING SCHEMATIC STAGE 4			
G-208		TRACK STAGING SCHEMATIC STAGE 5			
G-209		TRACK STAGING SCHEMATIC STAGE FINAL CONDITION			
G-210		TRACK CLEARANCES			
G-301		TEMPORARY CONSTRUCTION IMPACTS PLAN			
G-401		EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN			
G-402		EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN - AERIAL			
G-403		EXISTING PROPERTY LINE AND EASEMENT INFORMATION (1 OF 3)			
G-404		EXISTING PROPERTY LINE AND EASEMENT INFORMATION (2 OF 3)			
G-405		EXISTING PROPERTY LINE AND EASEMENT INFORMATION (3 OF 3)			
C-001	CIVIL	CIVIL SYMBOLS, ABBREVIATIONS & NOTES			
C-101		EXISTING CONDITIONS NOTES			
C-102		EXISTING CONDITIONS PLAN (1 OF 9)			
C-103		EXISTING CONDITIONS PLAN (2 OF 9)			
C-104		EXISTING CONDITIONS PLAN (3 OF 9)			
C-105		EXISTING CONDITIONS PLAN (4 OF 9)			
C-106		EXISTING CONDITIONS PLAN (5 OF 9)			
C-107		EXISTING CONDITIONS PLAN (6 OF 9)			
C-108		EXISTING CONDITIONS PLAN (7 OF 9)			
C-109		EXISTING CONDITIONS PLAN (8 OF 9)			
C-110		EXISTING CONDITIONS PLAN (9 OF 9)			
C-201		EXISTING UTILITIES PLAN (1 OF 9)			
C-202		EXISTING UTILITIES PLAN (2 OF 9)			
C-203		EXISTING UTILITIES PLAN (3 OF 9)			
C-204		EXISTING UTILITIES PLAN (4 OF 9)			
C-205		EXISTING UTILITIES PLAN (5 OF 9)			
C-206		EXISTING UTILITIES PLAN (6 OF 9)			
C-207		EXISTING UTILITIES PLAN (7 OF 9)			
C-208		EXISTING UTILITIES PLAN (8 OF 9)			
C-209		EXISTING UTILITIES PLAN (9 OF 9)			
C-301		SITE DEMOLITION NOTES AND LEGEND			
C-302		SITE DEMOLITION PLAN (1 OF 9)			
C-303		SITE DEMOLITION PLAN (2 OF 9)			
C-304		SITE DEMOLITION PLAN (3 OF 9)			
C-305		SITE DEMOLITION PLAN (4 OF 9)			
C-306		SITE DEMOLITION PLAN (5 OF 9)			
C-307		SITE DEMOLITION PLAN (6 OF 9)			
C-308		SITE DEMOLITION PLAN (7 OF 9)			
C-309		SITE DEMOLITION PLAN (8 OF 9)			
C-310		SITE DEMOLITION PLAN (9 OF 9)			
C-401		UTILITY DEMOLITION NOTES AND LEGEND			

DRAWING NUMBER	CATEGORY	DRAWING TITLE	Revision 0 5/23/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 1 7/25/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 2
C-402	CIVIL	UTILITY DEMOLITION PLAN (1 OF 9)			
C-403		UTILITY DEMOLITION PLAN (2 OF 9)			
C-404		UTILITY DEMOLITION PLAN (3 OF 9)			
C-405		UTILITY DEMOLITION PLAN (4 OF 9)			
C-406		UTILITY DEMOLITION PLAN (5 OF 9)			
C-407		UTILITY DEMOLITION PLAN (6 OF 9)			
C-408		UTILITY DEMOLITION PLAN (7 OF 9)			
C-409		UTILITY DEMOLITION PLAN (8 OF 9)			
C-410		UTILITY DEMOLITION PLAN (9 OF 9)			
C-501		SITE IMPROVEMENTS GRADING AND UTILITY NOTES AND LEGEND			
C-502		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (1 OF 9)			
C-503		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (2 OF 9)			
C-504		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (3 OF 9)			
C-505		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (4 OF 9)			
C-506		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (5 OF 9)			
C-507		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (6 OF 9)			
C-508		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (7 OF 9)			
C-509		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (8 OF 9)			
C-510		SITE IMPROVEMENTS GRADING AND UTILITY PLAN (9 OF 9)			
C-511		ENGLARGED UTILITY CONNECTION PLAN (1 OF 2)			
C-512		ENGLARGED UTILITY CONNECTION PLAN (2 OF 2)			
C-513		TRACK AND UTILITY TYPICAL SECTIONS (1 OF 2)			
C-514		TRACK AND UTILITY TYPICAL SECTIONS (2 OF 2)			
C-601		PLATFORM DRAINAGE PLANS (1 OF 3)			
C-602		PLATFORM DRAINAGE PLANS (2 OF 3)			
C-603		PLATFORM DRAINAGE PLANS (3 OF 3)			
C-701		UTILITY DETAILS (1 OF 1)			
C-801		BORING LOCATION PLAN (1 OF 2)			
C-802		BORING LOCATION PLAN (2 OF 2)			
C-803		UTILITY TEST PIT PLAN (1 OF 2)			
C-804		UTILITY TEST PIT PLAN (2 OF 2)			
C-805		FOUNDATION TEST PIT PLAN (1 OF 1)			
C-806		LONG BRIDGE NORTH TEST PIT RECOVERY CARD INFORMATION			
C-901		WATERSHED OVERVIEW MAP			
C-902		PRE-DEVELOPMENT DRAINAGE AREA MAP (1 OF 3)			
C-903		PRE-DEVELOPMENT DRAINAGE AREA MAP (2 OF 3)			
C-904		PRE-DEVELOPMENT DRAINAGE AREA MAP (3 OF 3)			
C-905		POST-DEVELOPMENT DRAINAGE AREA MAP (1 OF 3)			
C-906		POST-DEVELOPMENT DRAINAGE AREA MAP (2 OF 3)			
C-907		POST-DEVELOPMENT DRAINAGE AREA MAP (3 OF 3)			
T-001	TRACK	TRACK DEFINITIONS, EQUATIONS, ABBREVIATIONS, & SYMBOLS			
T-002		TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED			
T-003		TRACK GEOMETRY TABLES			
T-101		TRACK 2 PLAN AND PROFILE (1 OF 1)			
T-102		TRACK 2 PLAN AND PROFILE (2 OF 2)			
T-201		TRACK 3 PLAN AND PROFILE (1 OF 1)			
T-301		TRACK 4 PLAN AND PROFILE (1 OF 4)			
T-302		TRACK 4 PLAN AND PROFILE (2 OF 4)			
T-303		TRACK 4 PLAN AND PROFILE (3 OF 4)			
T-304		TRACK 4 PLAN AND PROFILE (4 OF 4)			
T-401		TRACK 5 PLAN AND PROFILE (1 OF 4)			
T-402		TRACK 5 PLAN AND PROFILE (2 OF 4)			
T-403		TRACK 5 PLAN AND PROFILE (3 OF 4)			
T-404		TRACK 5 PLAN AND PROFILE (4 OF 4)			
T-501		TRACK CAPITAL INTERLOCKING			
T-601		TRACK TYPICAL SECTIONS			
T-602		TRACK CRITICAL SECTIONS			
T-603		TRACK DETAILS SPECIAL TRACKWORK (1 OF 2)			
T-604		TRACK DETAILS SPECIAL TRACKWORK (2 OF 2)			
T-701		CROSS SECTIONS (1 OF 16)			

SHEET NOT INCLUDED IN RFQ TECHNICAL INFORMATION PACKAGE

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

VRE

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1001 G STREET
SUITE 1125
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VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

DRAWING INDEX AND REVISION TRACKING (1 OF 2)

IFB NO:
DRAWING NO: G-001
SCALE: AS NOTED
SHEET NO: 3 OF 254

DRAWING NUMBER	CATEGORY	DRAWING TITLE	Revision 0 5/23/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 1 7/25/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 2
T-702	TRACK	CROSS SECTIONS (2 OF 16)			
T-703		CROSS SECTIONS (3 OF 16)			
T-704		CROSS SECTIONS (4 OF 16)			
T-705		CROSS SECTIONS (5 OF 16)			
T-706		CROSS SECTIONS (6 OF 16)			
T-707		CROSS SECTIONS (7 OF 16)			
T-708		CROSS SECTIONS (8 OF 16)			
T-709		CROSS SECTIONS (9 OF 16)			
T-710		CROSS SECTIONS (10 OF 16)			
T-711		CROSS SECTIONS (11 OF 16)			
T-712		CROSS SECTIONS (12 OF 16)			
T-713		CROSS SECTIONS (13 OF 16)			
T-714		CROSS SECTIONS (14 OF 16)			
T-715		CROSS SECTIONS (15 OF 16)			
T-716		CROSS SECTIONS (16 OF 16)			
GA-001	ARCHITECTURAL	EGRESS PLAN			
GA-002		EGRESS SUMMARY			
A-000		GENERAL NOTES & ABREVIATIONS			
A-100		ARCHITECTURAL SITE PLAN			
A-101		7TH STREET SW ENTRANCE PLAN			
A-102		6TH STREET SW ENTRANCE PLAN			
A-103		PLATFORM LEVEL PLAN - AREA 1 & 2			
A-104		PLATFORM LEVEL PLAN - AREA 3 & 4			
A-105		CANOPY LEVEL PLAN - AREA 1 & 2			
A-106		CANOPY LEVEL PLAN - AREA 3 & 4			
A-111		7TH STREET SW ENTRANCE - REFLECTED CEILING PLAN			
A-112		6TH STREET SW ENTRANCE - REFLECTED CEILING PLAN			
A-113		PLATFORM REFLECTED CEILING PLAN - AREA 1 & 2			
A-114		PLATFORM REFLECTED CEILING PLAN - AREA 3			
A-201		STREET ELEVATIONS			
A-202		PLATFORM ELEVATIONS			
A-203		7TH STREET SW ENTRANCE - INTERIOR ELEVATIONS			
A-204		6TH STREET SW ENTRANCE - INTERIOR ELEVATIONS			
A-301		PLATFORM & CANOPY SECTIONS			
A-302		7TH STREET SW ENTRANCE SECTION			
A-303		6TH STREET SW ENTRANCE SECTION			
A-401		ELEVATOR & STAIR DETAILS - AREA 1			
A-402		ELEVATOR & STAIR DETAILS - AREA 3			
A-403		UNIT SKYLIGHT DETAILS			
A-404		3D VIEWS			
A-500		SCHEDULES			
A-600		GENERAL NOTES AND ABBREVIATIONS AND SIGNAGE			
A-601		7TH STREET SW ENTRANCE SIGNAGE PLAN			
A-602		6TH STREET SW ENTRANCE SIGNAGE PLAN			
A-603		PLATFORM SIGNAGE PLAN AREA 1			
A-604		PLATFORM SIGNAGE PLAN AREA 2			
A-605		PLATFORM SIGNAGE PLAN AREA 3			
A-606		PLATFORM SIGNAGE PLAN AREA 4			
S-001	STRUCTURES	STRUCTURAL NOTES, SYMBOLS, AND ABBREVIATIONS (1 OF 2)			
S-002		STRUCTURAL NOTES, SYMBOLS, AND ABBREVIATIONS (2 OF 2)			
S-100		OVERALL PLATFORM PLAN			
S-101		7TH STREET SW TUNNEL PILE PLAN			
S-102		6TH STREET SW TUNNEL PILE PLAN			
S-103		7TH STREET SW TUNNEL FOUNDATION PLAN			
S-104		6TH STREET SW TUNNEL FOUNDATION PLAN			
S-105		7TH STREET SW TUNNEL ROOF FRAMING PLAN			
S-106		6TH STREET SW TUNNEL ROOF FRAMING PLAN			
S-107		PLATFORM SLAB ON GRADE PLAN AREA 1			
S-108		PLATFORM SLAB ON GRADE PLAN AREA 2			
S-109		PLATFORM SLAB ON GRADE PLAN AREA 3			
S-110		PLATFORM SLAB ON GRADE PLAN AREA 4			
S-111		PLATFORM CANOPY FRAMING PLAN AREA 1			
S-112		PLATFORM CANOPY FRAMING PLAN AREA 2			
S-113		PLATFORM CANOPY FRAMING PLAN AREA 3			
S-201		CANOPY FRAMING ELEVATIONS			
S-301		PLATFORM SECTIONS CAST-IN-PLACE OPTION			
S-302		PLATFORM SECTIONS PRECAST OPTION			
S-303		CSX SHORING ZONE AT TYPICAL PLATFORM SECTION			
S-304		WMATA ZONE OF INFLUENCE AT 7TH STREET TUNNEL			
S-305		CSX SHORING ZONES AT 7TH STREET ELEVATOR AND TUNNEL SECTION			
S-306		7TH STREET SW ENTRANCE ELEVATOR AND STAIR ELEVATION			
S-307		CSX SHORING ZONES AT 6TH STREET TUNNEL SECTION			
S-308		6TH STREET SW ENTRANCE ELEVATOR AND STAIR ELEVATION			
S-501		MICROPILE DETAILS			
BR-001		BRIDGE GENERAL NOTES (1 OF 2)			
BR-002		BRIDGE GENERAL NOTES (2 OF 2)			
BR-100		7TH STREET SW BRIDGE WIDENING KEY PLAN AND PROFILE			
BR-101		7TH STREET SW BRIDGE WIDENING PLAN AND LONGITUDINAL SECTION			
BR-102		7TH STREET SW BRIDGE WIDENING TRANSVERSE SECTION			
BR-103		7TH STREET SW BRIDGE WIDENING ABUTMENT A DEMOLITION PLAN			
BR-104		7TH STREET SW BRIDGE WIDENING ABUTMENT B DEMOLITION PLAN			
BR-105		7TH STREET SW BRIDGE WIDENING ABUTMENT A PLAN AND ELEVATION			
BR-106		7TH STREET SW BRIDGE WIDENING ABUTMENT A SECTIONS			
BR-107		7TH STREET SW BRIDGE WIDENING ABUTMENT B PLAN AND ELEVATION			
BR-108		7TH STREET SW BRIDGE WIDENING ABUTMENT B SECTIONS (1 OF 2)			
BR-109		7TH STREET SW BRIDGE WIDENING ABUTMENT B SECTIONS (2 OF 2)			
BR-110		7TH STREET SW BRIDGE WIDENING FRAMING PLAN			
BR-111		7TH STREET SW BRIDGE WIDENING CONCEPTUAL BEARING DETAILS			
BR-112		7TH STREET SW BRIDGE WIDENING WMATA CLEARANCES AND ZONE OF INFLUENCE			
BR-200		PROPOSED TRACK 5 LOAD TRANSFER PLATFORM GENERAL PLAN			
BR-201		PROPOSED TRACK 5 LOAD TRANSFER PLATFORM TRANSVERSE SECTION			
BR-202		PROPOSED TRACK 5 LOAD TRANSFER PLATFORM LTP DETAILS			
BR-300		6TH STREET SW BRIDGE REPLACEMENT KEY PLAN AND PROFILE			
BR-301		6TH STREET SW BRIDGE REPLACEMENT PLAN AND LONGITUDINAL SECTION			
BR-302		6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION			
BR-303		6TH STREET SW BRIDGE REPLACEMENT ABUTMENT DEMOLITION PLAN			
BR-304		6TH STREET SW BRIDGE REPLACEMENT PIER DEMOLITION PLAN			
BR-305		6TH STREET SW BRIDGE REPLACEMENT ABUTMENT A PLAN, ELEVATION, AND SECTION			
BR-306		6TH STREET SW BRIDGE REPLACEMENT PIER 1 PLAN, ELEVATION, AND SECTION			
BR-309		6TH STREET SW BRIDGE REPLACEMENT FRAMING PLAN			
BR-310		6TH STREET SW BRIDGE REPLACEMENT PHASING PLANS (1 OF 4)			
BR-311		6TH STREET SW BRIDGE REPLACEMENT PHASING PLANS (2 OF 4)			
BR-312		6TH STREET SW BRIDGE REPLACEMENT PHASING PLANS (3 OF 4)			
BR-313		6TH STREET SW BRIDGE REPLACEMENT PHASING PLANS (4 OF 4)			
BR-314		WMATA CLEARANCES AND ZONE OF INFLUENCE			
W-001		RETAINING WALL "A" PLAN AND PROFILE			
W-002		RETAINING WALL "A" SECTIONS			
W-003		VIRGINIA AVENUE RETAINING WALL SECTIONS			

DRAWING NUMBER	CATEGORY	DRAWING TITLE	Revision 0 5/23/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 1 7/25/2025 30% PRELIMINARY ENGINEERING PACKAGE	Revision 2
E-001	ELECTRICAL	ELECTRICAL NOTES, SYMBOLS, AND ABBREVIATIONS			
E-101		ELECTRICAL SITE PLAN			
E-102		ENTRANCES ENLARGED PLANS - POWER AND LIGHTING			
E-103		ELECTRICAL SITE PLAN - UTILITY AND GENERATOR SERVICES			
E-104		PLATFORM - AREA 1 - POWER AND LIGHTING			
E-105		PLATFORM - AREA 2 - POWER AND LIGHTING			
E-106		PLATFORM - AREA 3 - POWER AND LIGHTING			
E-107		PLATFORM - AREA 4 - POWER AND LIGHTING			
E-201		ENLARGED PLANS			
E-301		DETAILS (1 OF 2)			
E-302		DETAILS (2 OF 2)			
E-303		LIGHTING CONTROL DIAGRAM			
E-401		ELECTRICAL RISER DIAGRAM			
E-501		LIGHT FIXTURE SCHEDULE			
P-001	PLUMBING	PLUMBING NOTES, SYMBOLS, AND ABBREVIATIONS			
P-101		ENTRANCES PLUMBING PLAN			
P-201		6TH STREET SW ENTRANCE ENLARGED PLUMBING PLAN			
P-202		7TH STREET SW ENTRANCE ENLARGED PLUMBING PLAN			
P-203		PLATFORM LEVEL - AREA 1 - PLUMBING			
P-204		PLATFORM LEVEL - AREA 2 - PLUMBING			
P-205		PLATFORM LEVEL - AREA 3 - PLUMBING			
P-206		PLATFORM LEVEL - AREA 4 - PLUMBING			
M-001	MECHANICAL	MECHANICAL COVER SHEET			
M-101		ENTRANCES MECHANICAL PLAN			
M-201		ENTRANCES ENLARGED MECHANICAL PLAN			

SHEET NOT INCLUDED IN RFQ TECHNICAL INFORMATION PACKAGE

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

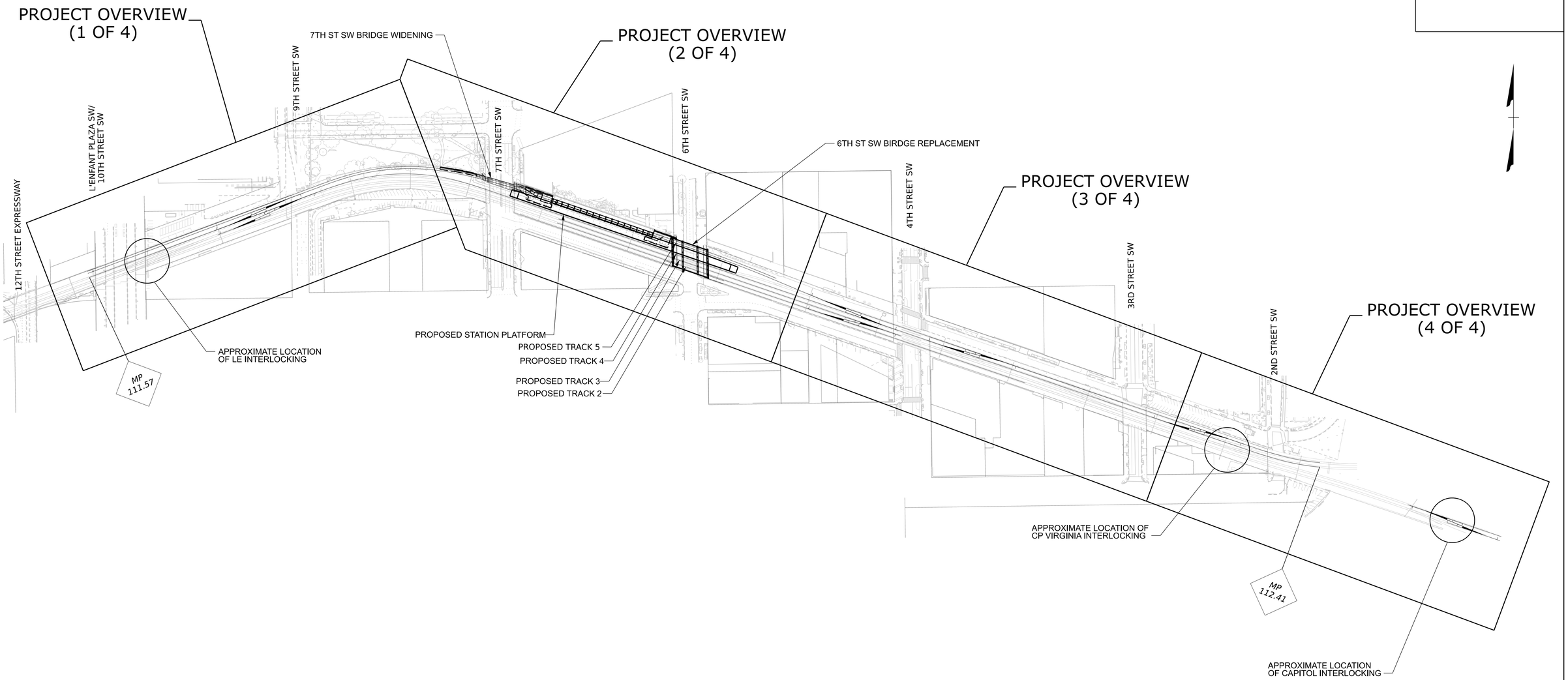
DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

DRAWING INDEX AND REVISION TRACKING (2 OF 2)

IFB NO:
DRAWING NO: G-002
SCALE: AS NOTED
SHEET NO: 4 OF 254



OVERALL PLAN

SCALE: 1" = 150'-0"

0 75 150 300 FEET

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: J. BENDYK

DRAWN BY: C. MACKEL

CHECKED BY: M. COLGAN

DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

OVERALL PLAN

IFB NO:

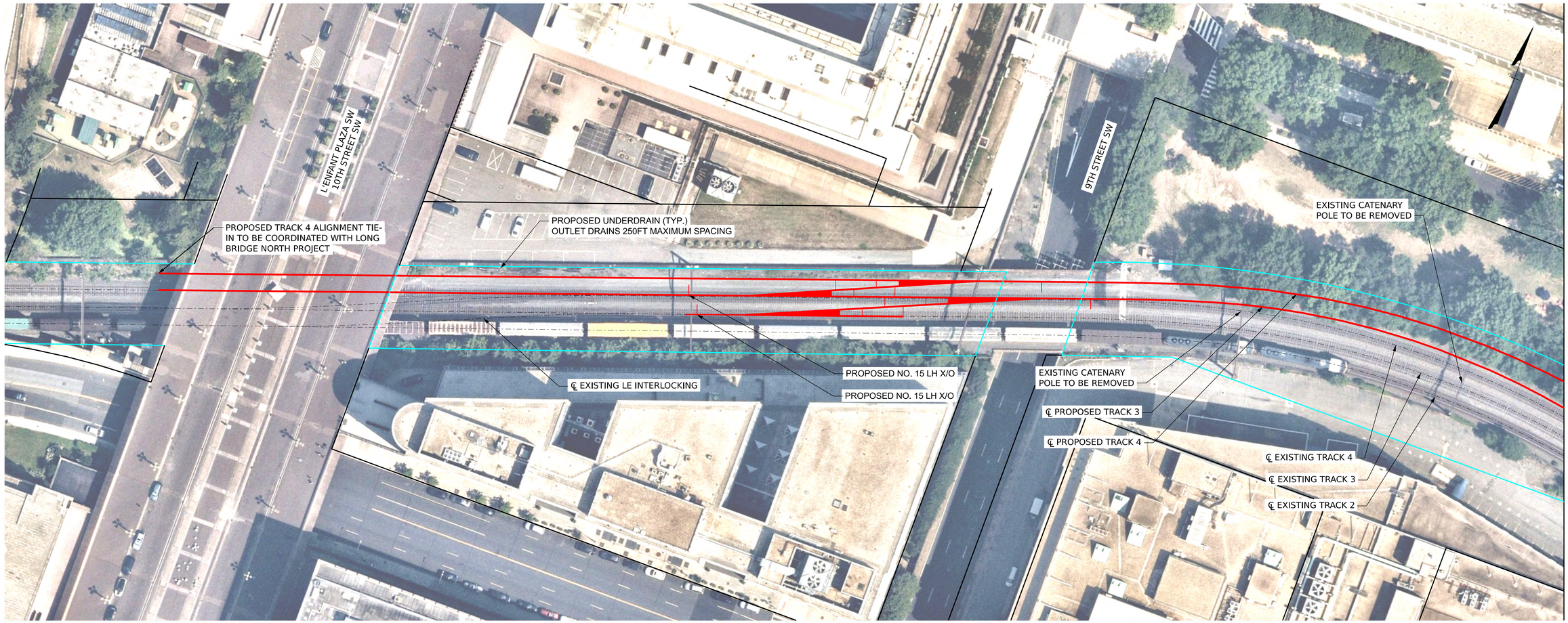
DRAWING NO: G-004

SCALE: AS NOTED

SHEET NO: 5 OF 254

L'ENFANT, D.C.
RR SOUTH

VIRGINIA, D.C.
RR NORTH



LEGEND

- CSX RIGHT OF WAY
- ℄ PROPOSED TRACK
- ℄ EXISTING TRACK
- PROPERTY LINE

0 20 40 80 FEET#

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/23/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 05/23/2025

RICH DALTON
CHEIF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

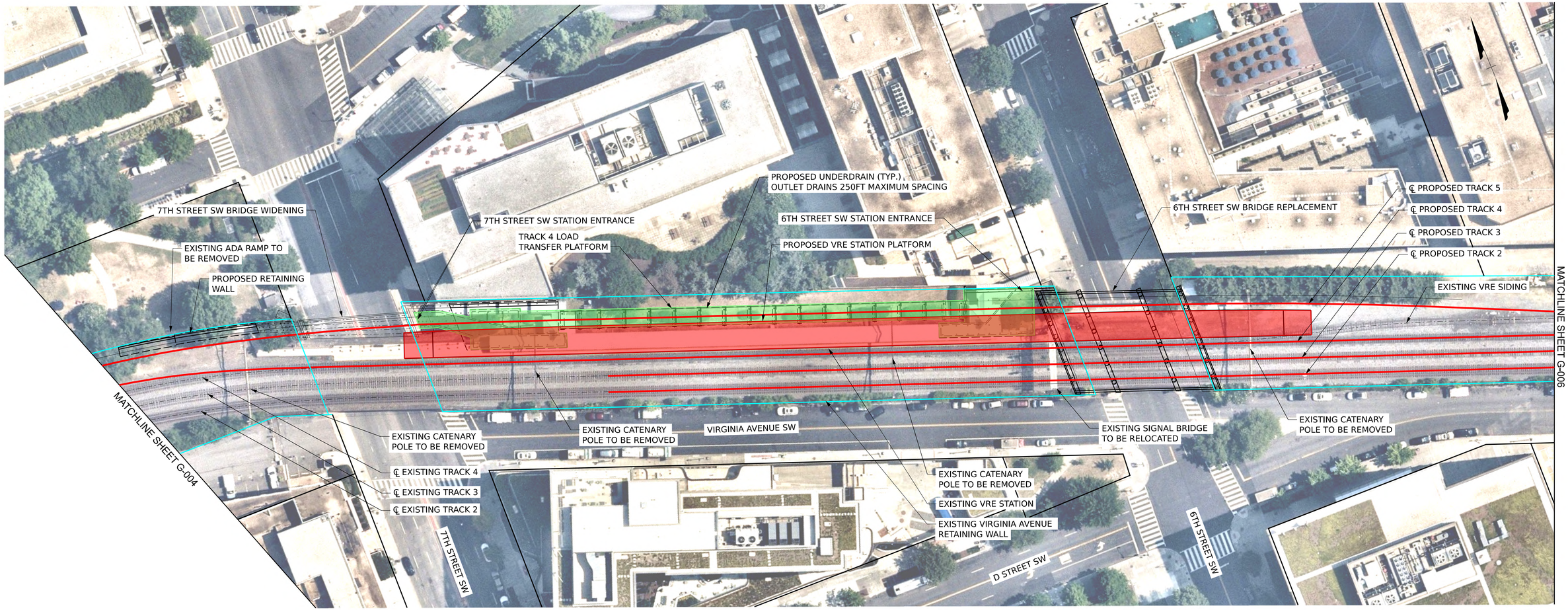
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PROJECT OVERVIEW (1 OF 4)

IFB NO:
DRAWING NO: G-005
SCALE: AS NOTED
SHEET NO: 6 OF 254

L'ENFANT, DC
RR SOUTH

VIRGINIA, DC
RR NORTH



LEGEND

- CSX RIGHT OF WAY
- ℄ PROPOSED TRACK
- ℄ EXISTING TRACK
- PROPOSED PLATFORM
- PROPOSED UNDERGROUND STRUCTURES
- PROPERTY LINE

0 20 40 80 FEET

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PROJECT OVERVIEW (2 OF 4)

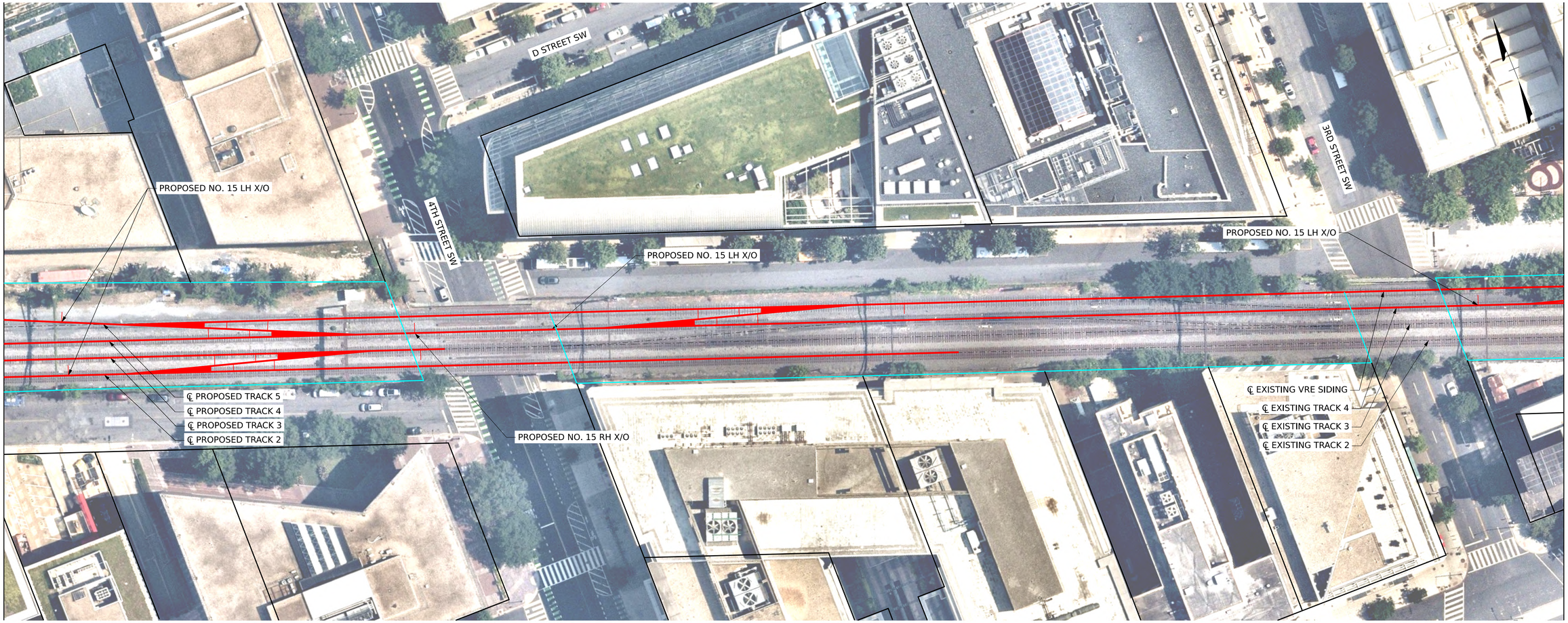
IFB NO:
DRAWING NO: G-006
SCALE: AS NOTED
SHEET NO: 7 OF 254

L'ENFANT, DC
RR SOUTH

VIRGINIA, DC
RR NORTH

MATCHLINE SHEET G-005

MATCHLINE SHEET G-007



LEGEND

- CSX RIGHT OF WAY
- ℄ PROPOSED TRACK
- ℄ EXISTING TRACK
- PROPERTY LINE

0 20 40 80 FEET

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PROJECT OVERVIEW (3 OF 4)

IFB NO:
DRAWING NO: G-007
SCALE: AS NOTED
SHEET NO: 8 OF 254

L'ENFANT, DC
RR SOUTH

VIRGINIA, DC
RR NORTH

LEGEND

- CSX RIGHT OF WAY
- ℄ PROPOSED TRACK
- ℄ EXISTING TRACK
- PROPERTY LINE

0 20 40 80 FEET

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: J. BENDYK
DRAWN BY: C. MACKEL
CHECKED BY: M. COLGAN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PROJECT OVERVIEW (4 OF 4)

IFB NO:
DRAWING NO: G-008
SCALE: AS NOTED
SHEET NO: 9 OF 254

C:\AMS\ACCDOCS\VHB\39641.00 VRE-L'ENFANT TRACK& STATION IMPROVEMENTS\PROJECT FILES\DESIGN\SITE-CIVIL\LD\PLANSET\3964100 - SI

Site Improvements Grading And Utility Notes

General

1. THE LOCATION OF EXISTING BELOW GRADE WMATA TUNNELS AND FACILITIES WERE TAKEN FROM AVAILABLE RECORDS INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE.
2. ALL WORK SHOWN ON PLANS SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE CURRENT REGULATIONS OF THE DISTRICT OF COLUMBIA AND TO THE SATISFACTION OF VRE.
3. MAINTAIN ACCESS TO ALL EXISTING BUILDINGS, HYDRANTS AND FDCS THROUGHOUT THE DURATION OF CONSTRUCTION UNLESS OTHERWISE NOTED.
4. SEE STRUCTURAL, ARCHITECTURAL AND RAIL SHEETS FOR INFORMATION ON PROPOSED PLATFORM LAYOUT, PROPOSED BRIDGE LAYOUT, AND PROPOSED RAIL ALIGNMENT
5. RAILROAD TRAFFIC SHALL BE MAINTAINED AND PROTECTED AT ALL TIMES AND THE CONTRACTOR SHALL AT NO TIME DURING CONSTRUCTION OF THIS PROJECT DELAY OR INTERFERE WITH THE SAFE OPERATION OF TRAIN TRAFFIC. ALL METHODS OF HANDLING THE WORK AFFECTING THE DELAY, SAFETY, AND GENERAL OPERATION OF TRAIN TRAFFIC SHALL BE APPROVED BY THE RAILROAD PRIOR TO PROCEEDING WITH THAT PART OF WORK.
6. THE CONTRACTOR SHALL COMPLY WITH ALL CSX, LOCAL, STATE, AND FEDERAL SAFETY AND ENVIRONMENTAL REGULATIONS.
7. CONTRACTOR TO COMPLY WITH ALL LOCAL NOISE AND AFTER HOURS PERMIT REQUIREMENT ORDINANCES.
8. THE CONTRACTOR SHALL SCHEDULE ALL ACTIVITIES SUCH THAT DISRUPTIONS TO VRE, AMTRAK, AND CSX OPERATIONS BE MINIMIZED. WEEKEND AND NIGHT WORK SHOULD BE EXPECTED.
9. PROPOSED CURB AND GUTTER TO TIE TO EXISTING CURB AND GUTTER WHERE APPLICABLE.
10. EXISTING CONTOURS NOT SHOWN FOR PLAN CLARITY.
11. PROPOSED DUCTBANK WILL BE CONSTRUCTED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.

NOTE

PROPOSED UTILITY PROFILES AND CROSS SECTIONS HAVE NOT BEEN PRODUCED AND WILL BE INCLUDED IN A FUTURE SUBMISSION. PROFILES WILL BE COMPLETED IN ACCORDANCE WITH LOCAL JURISDICTIONS INCLUDING BUT NOT LIMITED TO DDOT, DC WATER, AND DOEE REQUIREMENTS.

NOTE

CSXT TRACK ELECTRIC AND SIGNAL IS CURRENTLY BEING DESIGNED AND IS NOT SHOWN ON THIS PLAN. ONCE AN ALIGNMENT IS IDENTIFIED WITH CSXT ADDITIONAL COORDINATION IS REQUIRED.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

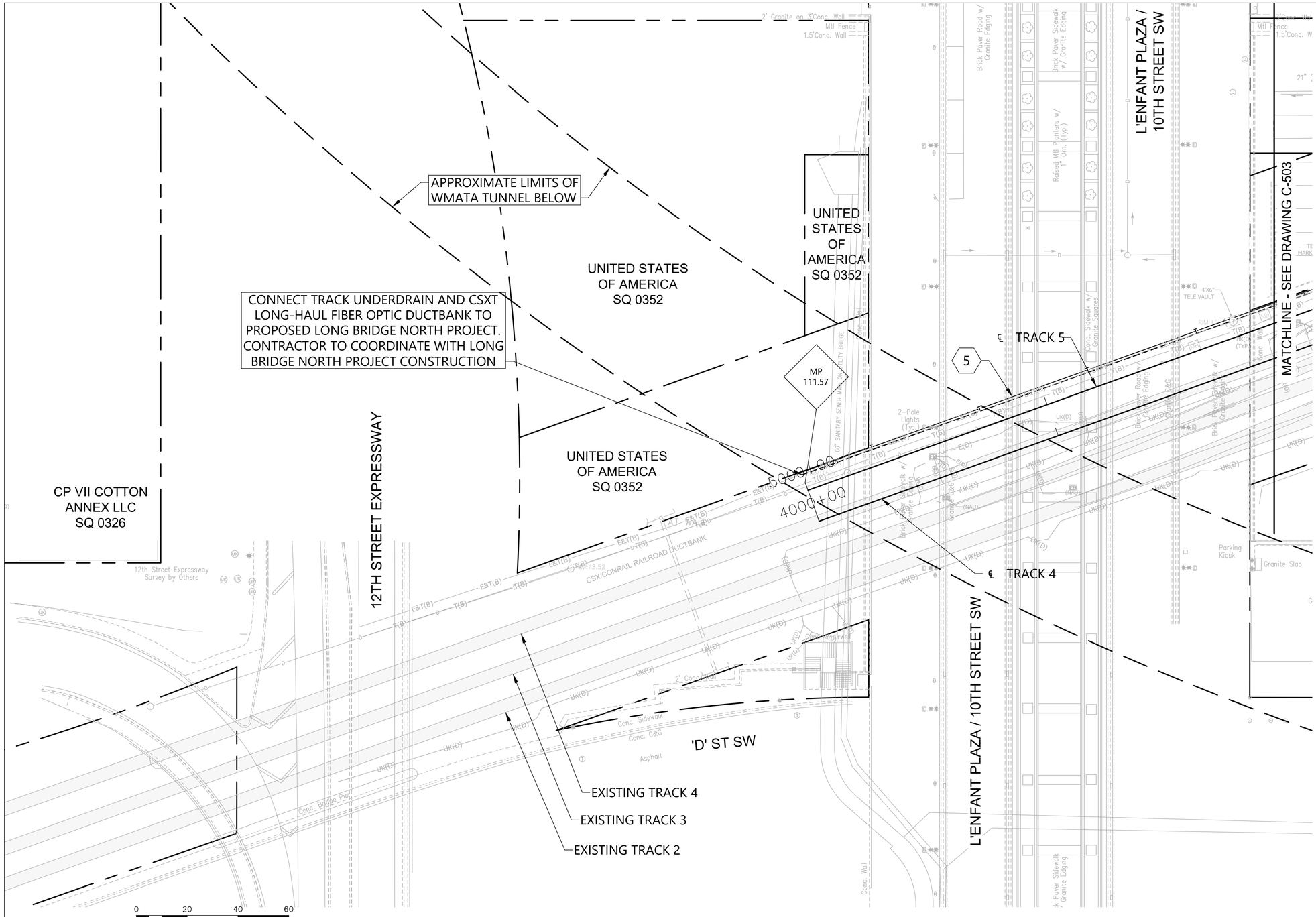
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY NOTES AND LEGEND

IFB NO:
DRAWING NO: C-501
SCALE: AS NOTED
SHEET NO: 70 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:35:16 PM Jadon Gerald



Notes

1. EXISTING RAILROAD DUCT BANK SHALL BE RELOCATED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.
2. LONG BRIDGE NORTH PROJECT IS LOCATED ON THE WEST EDGE OF THE VRE LEF PROJECT LIMITS AND IS EXPECTED TO BE FUTURE EXISTING.
3. RAILROAD TRACK STATIONING BEGINS AT RAILROAD MILE POST 111.57 WHICH IS THE BEGINNING OF THE VRE LEF TRACK WORK.

Site Improvement Legend

- PROPERTY LIMITS
- PROPOSED CONCRETE SIDEWALK AND BASE
- PROPOSED ASPHALT PAVEMENT AND BASE
- PROPOSED PLATFORM
- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS
- (1) PROPOSED ADA COMPLIANT WHEELCHAIR RAMP WITH TRUNCATED DOMES
- (2) PROPOSED CURB AND GUTTER
- (3) PROPOSED UTILITY REPLACEMENT
- (4) REPLACEMENT TRAFFIC SIGNAL. LOCATION AND MOUNTING TO BE COORDINATED WITH DDOT
- (5) PROPOSED CSX LONG HAUL FIBER OPTIC DUCTBANK
- (6) PROPOSED CURB INLET
- (7) PROPOSED GRATE INLET
- (8) PROPOSED CONCRETE PAD, GENERATOR, GROUNDING SYSTEM, AND RELOCATED FENCELINE
- (9) PROPOSED RETAINING WALL. SEE STRUCTURAL SHEETS FOR ADDITIONAL INFORMATION.
- (10) PROPOSED GENERATOR ELECTRIC, GAS, AND RETURN ELECTRIC SERVICE
- (11) PROPOSED TELECOMM SERVICE WITH A HANDHOLE LOCATED EVERY 300FT
- (12) UTILITY TO BE JACK AND BORED UNDERNEATH RAILROAD TRACKS AND VIRGINIA AVENUE RETAINING WALL
- PROPOSED DRAINAGE LINE AND STRUCTURES
- PROPOSED SANITARY LINE AND STRUCTURES
- PROPOSED WATER LINE AND STRUCTURES
- PROPOSED GAS LINE
- PROPOSED TELECOMM LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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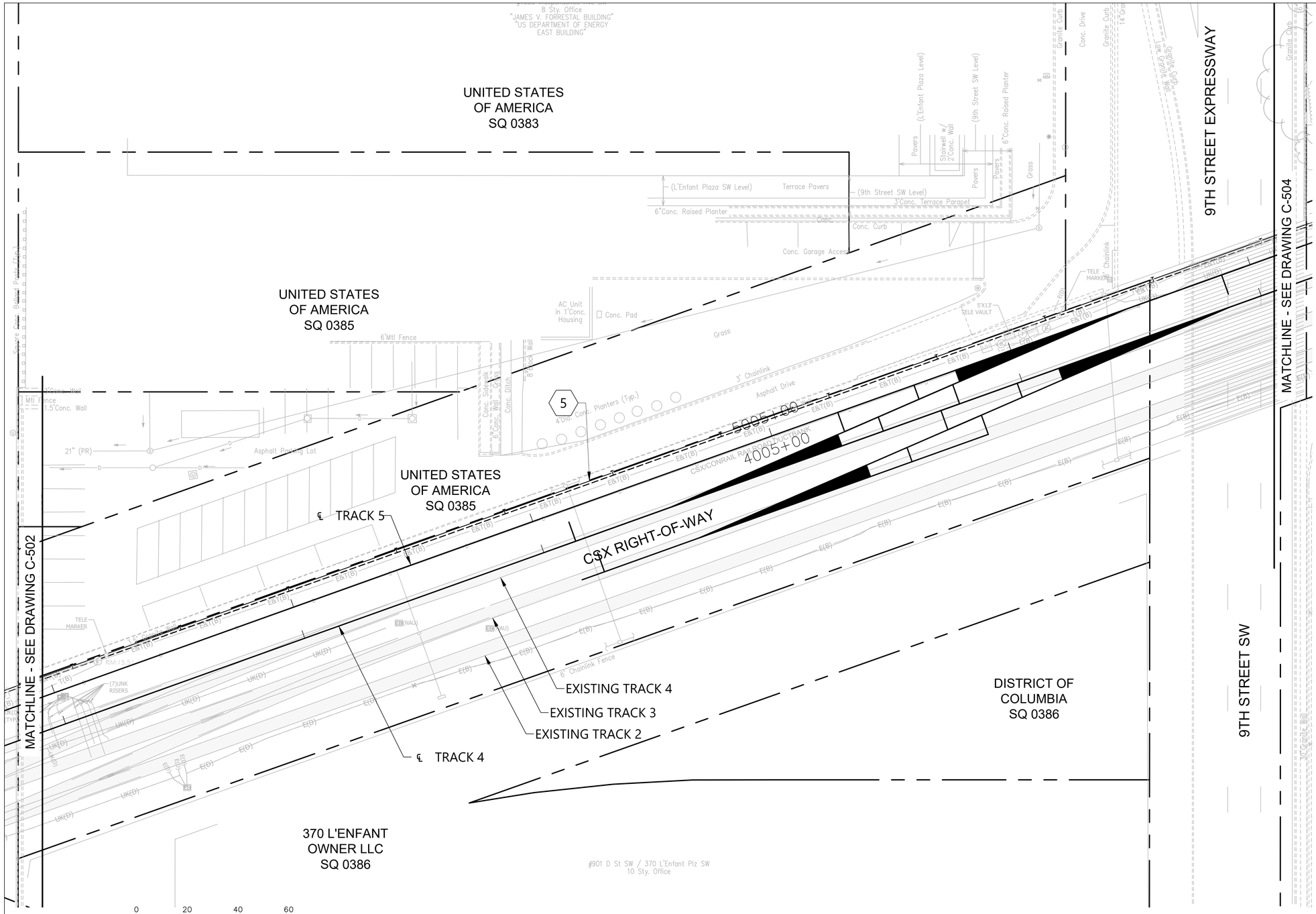
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (1 OF 9)

IFB NO:
DRAWING NO: C-502
SCALE: AS NOTED
SHEET NO: 71 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:35:30 PM Jadon Gerald



Notes

1. EXISTING RAILROAD DUCT BANK SHALL BE RELOCATED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.
2. LONG BRIDGE NORTH PROJECT IS LOCATED ON THE WEST EDGE OF THE VRE LEF PROJECT LIMITS AND IS EXPECTED TO BE FUTURE EXISTING.
3. RAILROAD TRACK STATIONING BEGINS AT RAILROAD MILE POST 111.57 WHICH IS THE BEGINNING OF THE VRE LEF TRACK WORK.

Site Improvement Legend

- PROPERTY LIMITS
- PROPOSED CONCRETE SIDEWALK AND BASE
- PROPOSED ASPHALT PAVEMENT AND BASE
- PROPOSED PLATFORM
- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS
- 1 — PROPOSED ADA COMPLIANT WHEELCHAIR RAMP WITH TRUNCATED DOMES
- 2 — PROPOSED CURB AND GUTTER
- 3 — PROPOSED UTILITY REPLACEMENT
- 4 — REPLACEMENT TRAFFIC SIGNAL. LOCATION AND MOUNTING TO BE COORDINATED WITH DDOT
- 5 — PROPOSED CSX LONG HAUL FIBER OPTIC DUCTBANK
- 6 — PROPOSED CURB INLET
- 7 — PROPOSED GRATE INLET
- 8 — PROPOSED CONCRETE PAD, GENERATOR, GROUNDING SYSTEM, AND RELOCATED FENCELINE
- 9 — PROPOSED RETAINING WALL. SEE STRUCTURAL SHEETS FOR ADDITIONAL INFORMATION.
- 10 — PROPOSED GENERATOR ELECTRIC, GAS, AND RETURN ELECTRIC SERVICE
- 11 — PROPOSED TELECOMM SERVICE WITH A HANDHOLE LOCATED EVERY 300FT
- 12 — UTILITY TO BE JACK AND BORED UNDERNEATH RAILROAD TRACKS AND VIRGINIA AVENUE RETAINING WALL
- PROPOSED DRAINAGE LINE AND STRUCTURES
- PROPOSED SANITARY LINE AND STRUCTURES
- PROPOSED WATER LINE AND STRUCTURES
- G — PROPOSED GAS LINE
- T — PROPOSED TELECOMM LINE
- E — PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

0 20 40 60
SCALE FEET
1" = 20'

N

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON, CHIEF EXECUTIVE OFFICER — DATE
DALLAS RICHARDS, PE, CHIEF ENGINEER — DATE

VRE

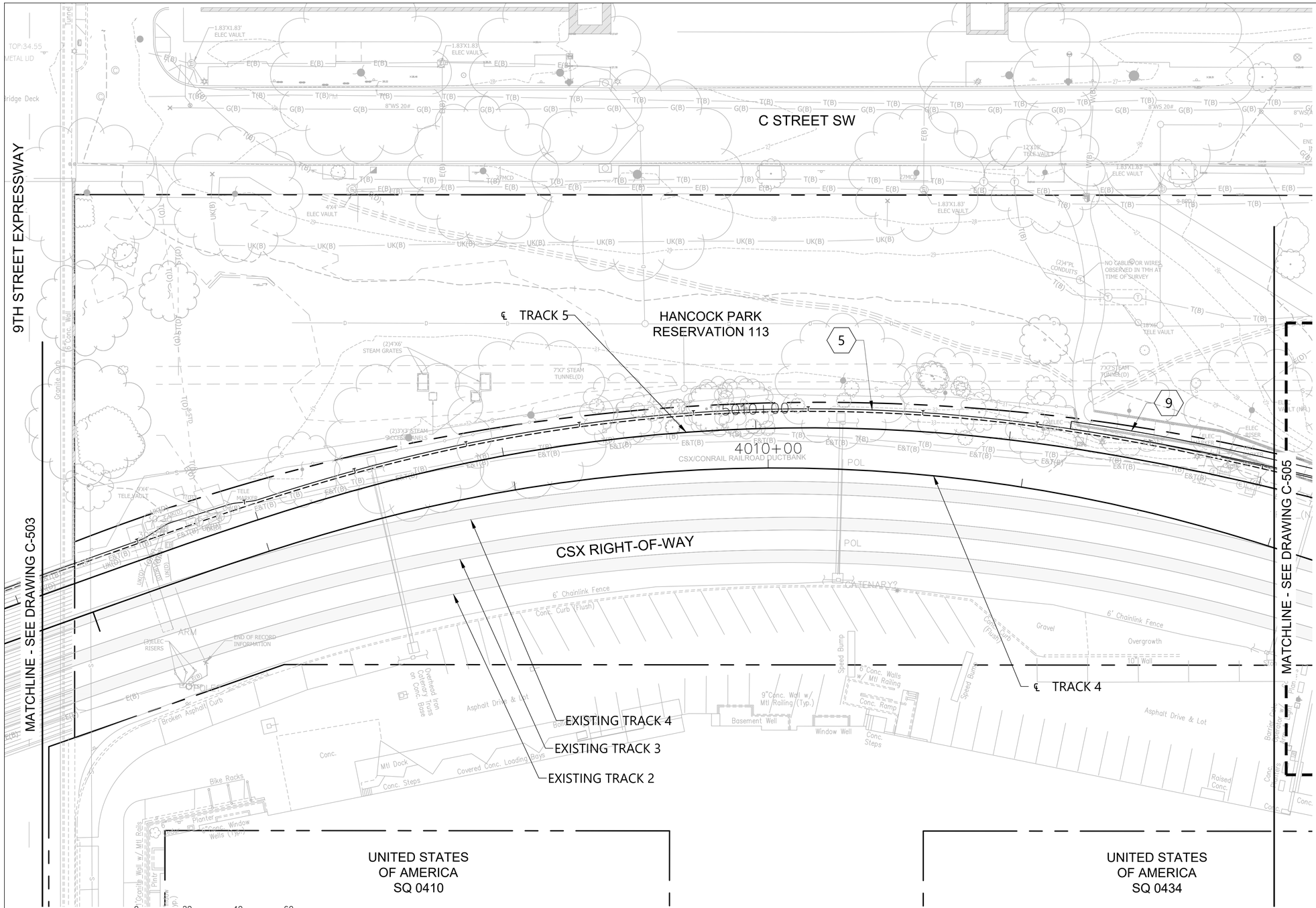
vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (2 OF 9)

IFB NO:
DRAWING NO: C-503
SCALE: AS NOTED
SHEET NO: 72 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:35:39 PM Jadon Gerald



Notes

1. EXISTING RAILROAD DUCT BANK SHALL BE RELOCATED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.
2. LONG BRIDGE NORTH PROJECT IS LOCATED ON THE WEST EDGE OF THE VRE LEF PROJECT LIMITS AND IS EXPECTED TO BE FUTURE EXISTING.
3. RAILROAD TRACK STATIONING BEGINS AT RAILROAD MILE POST 111.57 WHICH IS THE BEGINNING OF THE VRE LEF TRACK WORK.

Site Improvement Legend

- PROPERTY LIMITS
- PROPOSED CONCRETE SIDEWALK AND BASE
- PROPOSED ASPHALT PAVEMENT AND BASE
- PROPOSED PLATFORM
- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS
- 1 PROPOSED ADA COMPLIANT WHEELCHAIR RAMP WITH TRUNCATED DOMES
- 2 PROPOSED CURB AND GUTTER
- 3 PROPOSED UTILITY REPLACEMENT
- 4 REPLACEMENT TRAFFIC SIGNAL. LOCATION AND MOUNTING TO BE COORDINATED WITH DDOT
- 5 PROPOSED CSX LONG HAUL FIBER OPTIC DUCTBANK
- 6 PROPOSED CURB INLET
- 7 PROPOSED GRATE INLET
- 8 PROPOSED CONCRETE PAD, GENERATOR, GROUNDING SYSTEM, AND RELOCATED FENCELINE
- 9 PROPOSED RETAINING WALL. SEE STRUCTURAL SHEETS FOR ADDITIONAL INFORMATION.
- 10 PROPOSED GENERATOR ELECTRIC, GAS, AND RETURN ELECTRIC SERVICE
- 11 PROPOSED TELECOMM SERVICE WITH A HANDHOLE LOCATED EVERY 300FT
- 12 UTILITY TO BE JACK AND BORED UNDERNEATH RAILROAD TRACKS AND VIRGINIA AVENUE RETAINING WALL
- PROPOSED DRAINAGE LINE AND STRUCTURES
- PROPOSED SANITARY LINE AND STRUCTURES
- PROPOSED WATER LINE AND STRUCTURES
- PROPOSED GAS LINE
- PROPOSED TELECOMM LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (3 OF 9)

IFB NO:
DRAWING NO: C-504
SCALE: AS NOTED
SHEET NO: 73 OF 254

WMATA EASEMENT

APPROXIMATE LIMITS OF WMATA TUNNEL BELOW

SEE C-511 FOR ENLARGED UTILITY CONNECTION

SMITHSONIAN INSTITUTION SQ 0463

APPROXIMATE LIMITS OF FORMER PEDESTRAIN TUNNEL AND STAIRWAY FROM 1943 7TH ST PASSENGER STATION PLANS

MATCHLINE - SEE DRAWING C-504

7TH STREET SW

OCEAN VIEW DEVELOPMENT COMPANY SQ 0463

℄ TRACK 5

5013+00

4015+00

3015+00

2015+00

CSX RIGHT-OF-WAY

MATCHLINE - SEE DRAWING C-506

VIRGINIA AVENUE SW

℄ TRACK 4

℄ TRACK 3

℄ TRACK 2

EXISTING TRACK 4

EXISTING TRACK 3

EXISTING TRACK 2

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY SQ 0464

UNITED STATES OF AMERICA SQ 0434

APPROXIMATE LIMITS OF WMATA TUNNEL BELOW

7TH STREET SW

SCALE 1" = 20'

0 20 40 60 FEET

N

Notes

1. EXISTING RAILROAD DUCT BANK SHALL BE RELOCATED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.
2. LONG BRIDGE NORTH PROJECT IS LOCATED ON THE WEST EDGE OF THE VRE LEF PROJECT LIMITS AND IS EXPECTED TO BE FUTURE EXISTING.
3. RAILROAD TRACK STATIONING BEGINS AT RAILROAD MILE POST 111.57 WHICH IS THE BEGINNING OF THE VRE LEF TRACK WORK.

Site Improvement Legend

- PROPERTY LIMITS
- PROPOSED CONCRETE SIDEWALK AND BASE
- PROPOSED ASPHALT PAVEMENT AND BASE
- PROPOSED PLATFORM
- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS
- 1 PROPOSED ADA COMPLIANT WHEELCHAIR RAMP WITH TRUNCATED DOMES
- 2 PROPOSED CURB AND GUTTER
- 3 PROPOSED UTILITY REPLACEMENT
- 4 REPLACEMENT TRAFFIC SIGNAL, LOCATION AND MOUNTING TO BE COORDINATED WITH DDOT
- 5 PROPOSED CSX LONG HAUL FIBER OPTIC DUCTBANK
- 6 PROPOSED CURB INLET
- 7 PROPOSED GRATE INLET
- 8 PROPOSED CONCRETE PAD, GENERATOR, GROUNDING SYSTEM, AND RELOCATED FENCELINE
- 9 PROPOSED RETAINING WALL. SEE STRUCTURAL SHEETS FOR ADDITIONAL INFORMATION.
- 10 PROPOSED GENERATOR ELECTRIC, GAS, AND RETURN ELECTRIC SERVICE
- 11 PROPOSED TELECOMM SERVICE WITH A HANDHOLE LOCATED EVERY 300FT
- 12 UTILITY TO BE JACK AND BORED UNDERNEATH RAILROAD TRACKS AND VIRGINIA AVENUE RETAINING WALL
- PROPOSED DRAINAGE LINE AND STRUCTURES
- PROPOSED SANITARY LINE AND STRUCTURES
- PROPOSED WATER LINE AND STRUCTURES
- PROPOSED GAS LINE
- PROPOSED TELECOMM LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (4 OF 9)

IFB NO:
DRAWING NO: C-505
SCALE: AS NOTED
SHEET NO: 74 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:36:00 PM Jadon Gerald

OCEAN VIEW
DEVELOPMENT COMPANY
SQ 0463

6TH STREET SW

FEDERAL CENTER HOTEL
ASSOCIATES LLC
SQ 0535

MATCHLINE - SEE DRAWING C-505

VRE EASEMENT

SEE C-512 FOR
ENLARGED UTILITY
CONNECTION

CSX RIGHT-OF-WAY

RELOCATED FENCELINE
TO END AT EXISTING
RETAINING WALL

℄ TRACK 5

EXISTING VRE SIDING
TRACK TO BE REMOVED

℄ TRACK 4
℄ TRACK 3
VIRGINIA AVENUE SW
℄ TRACK 2

WASHINGTON
METROPOLITAN AREA
TRANSIT AUTHORITY
SQ 0464

BOXCAR WILLIE PARK
RESERVATION 115

DEAN WILHELM
MEMORIAL PARK
RESERVATION 116

EXISTING TRACK 4
EXISTING TRACK 3
EXISTING TRACK 2

APPROXIMATE LIMITS OF
WMATA TUNNEL BELOW

D STREET SW

MATCHLINE - SEE DRAWING C-507

SCALE
1" = 20'
0 20 40 60
FEET

N

Notes

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3. RAILROAD TRACK STATIONING BEGINS AT RAILROAD MILE POST 111.57 WHICH IS THE BEGINNING OF THE VRE LEF TRACK WORK.

Site Improvement Legend

- PROPERTY LIMITS
- PROPOSED CONCRETE SIDEWALK AND BASE
- PROPOSED ASPHALT PAVEMENT AND BASE
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- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS
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- PROPOSED WATER LINE AND STRUCTURES
- PROPOSED GAS LINE
- PROPOSED TELECOMM LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

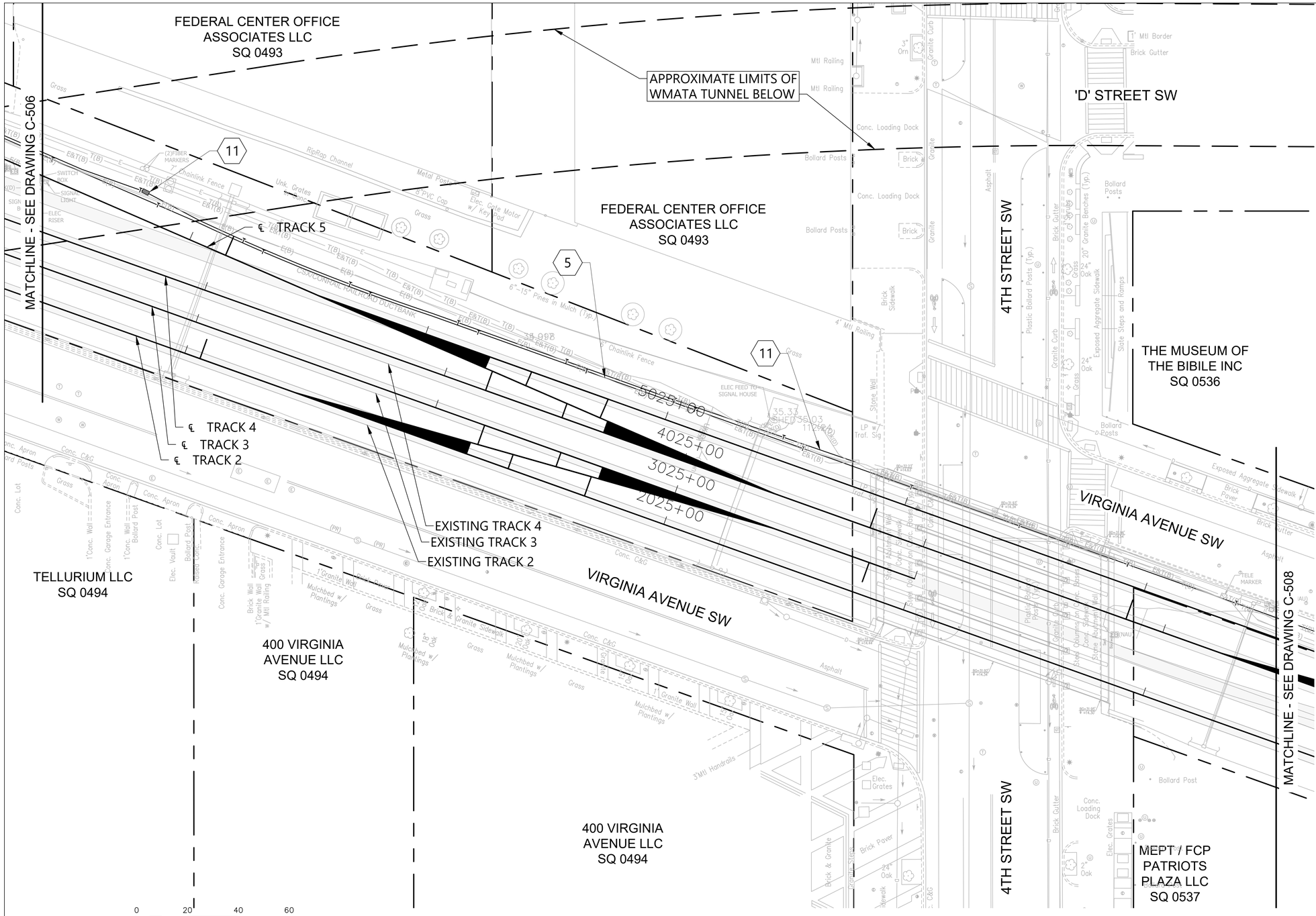
vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

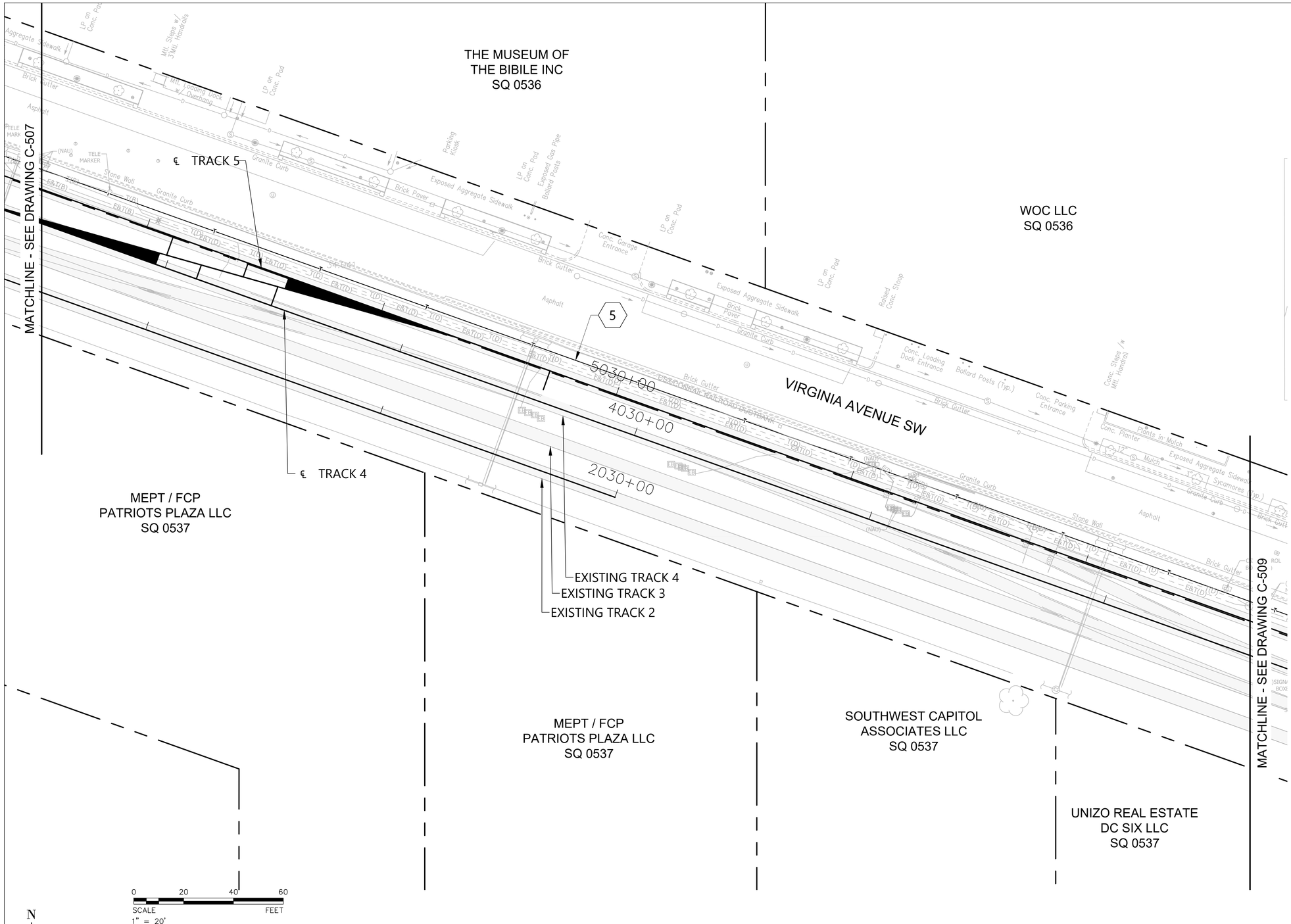
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (5 OF 9)

IFB NO:
DRAWING NO: C-506
SCALE: AS NOTED
SHEET NO: 75 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:36:10 PM Jadon Gerald


FEDERAL CENTER OFFICE ASSOCIATES LLC SQ 0493
APPROXIMATE LIMITS OF WMATA TUNNEL BELOW
'D' STREET SW
FEDERAL CENTER OFFICE ASSOCIATES LLC SQ 0493
4TH STREET SW
THE MUSEUM OF THE BIBILE INC SQ 0536
MATCHLINE - SEE DRAWING C-506
TRACK 5
TRACK 4
TRACK 3
TRACK 2
EXISTING TRACK 4
EXISTING TRACK 3
EXISTING TRACK 2
VIRGINIA AVENUE SW
TELLURIUM LLC SQ 0494
400 VIRGINIA AVENUE LLC SQ 0494
400 VIRGINIA AVENUE LLC SQ 0494
4TH STREET SW
MEPT / FCP PATRIOTS PLAZA LLC SQ 0537
MATCHLINE - SEE DRAWING C-508
5025+00
4025+00
3025+00
2025+00
USA/NORFOLK RAILROAD DUCTBANK
RipRap Channel
Metal Posts
Chainlink Fence
Elec. Gate Motor w/ Keypad
Conc. Loading Dock
Bollard Posts
Granite Curb
Brick Gutter
Brick Sidewalk
Stone Wall
Exposed Aggregate Sidewalk
Slate Steps and Ramps
Plastic Bollard Posts (Typ.)
Granite Benches (Typ.)
Brick Paver
Asphalt
Granite Wall
Mulchbed w/ Plantings
Grass
Conc. C&G
Conc. Apron
Conc. Garage Entrance
Brick Wall
Elec. Vault
Elec. Grates
Conc. Loading Dock
Ballard Post
Brick & Granite Sidewalk
3' Mtl Handrails
4' Mtl Railing
Mtl Railing
Mtl Border
Brick Gutter
Granite Curb
Brick
Granite
Asphalt
Plastic Bollard Posts (Typ.)
Brick Gutter
Granite Benches (Typ.)
Exposed Aggregate Sidewalk
Slate Steps and Ramps
Brick Paver
Brick Gutter
Asphalt
TELE MARKER
Brick Sidewalk
Stone Wall
Granite Curb
Brick Gutter
Brick Paver
Brick & Granite Sidewalk
Conc. Loading Dock
Elec. Grates
Ballard Post
Brick Gutter
Asphalt
Conc. Loading Dock
Elec. Grates
Ballard Post
Brick Paver
Brick & Granite Sidewalk
Conc. C&G
Conc. Loading Dock
Brick Gutter
Asphalt
Elec. Grates
Ballard Post
Brick Paver
Brick Gutter
Asphalt
Brick Gutter
Asphalt
Brick Gutter
Asphalt



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2. LONG BRIDGE NORTH PROJECT IS LOCATED ON THE WEST EDGE OF THE VRE LEF PROJECT LIMITS AND IS EXPECTED TO BE FUTURE EXISTING.
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- PROPOSED GAS LINE
- PROPOSED TELECOMM LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

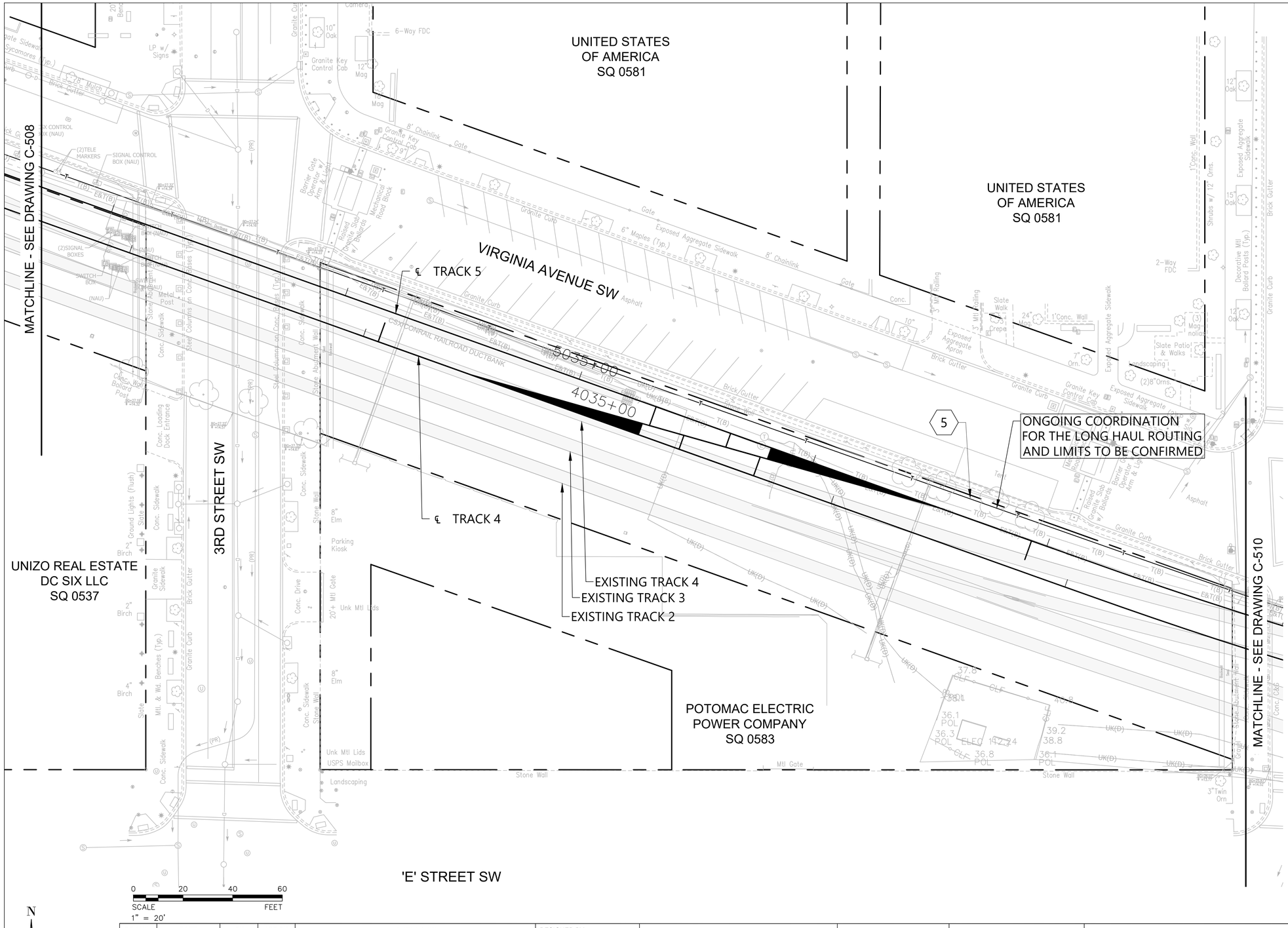
vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (7 OF 9)

IFB NO:
DRAWING NO: C-508
SCALE: AS NOTED
SHEET NO: 77 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:36:32 PM Jadon Gerald



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- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

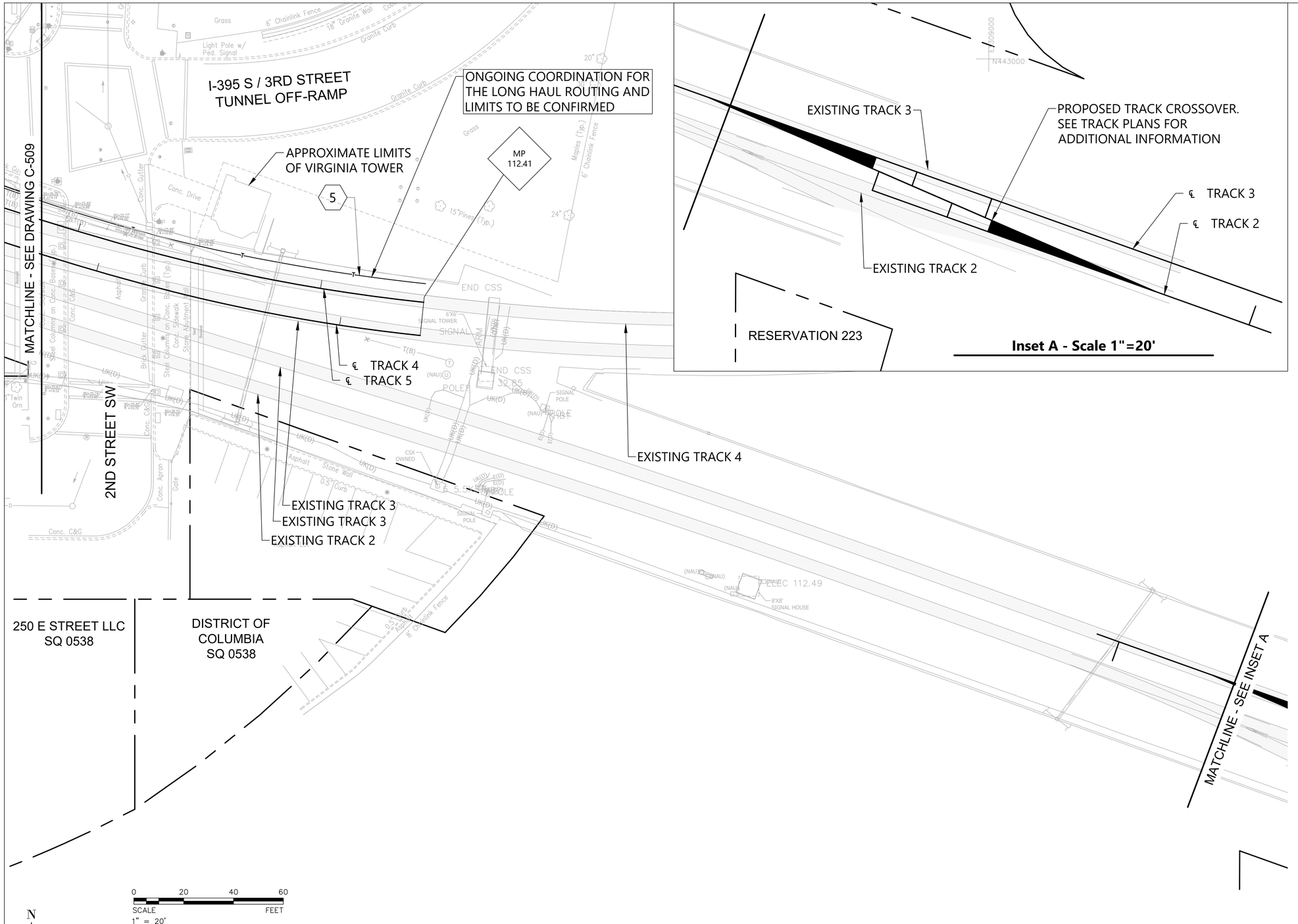
vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (8 OF 9)

IFB NO:
DRAWING NO: C-509
SCALE: AS NOTED
SHEET NO: 78 OF 254

Saved Tuesday, July 22, 2025 11:42:07 AM JGERALD Plotted Tuesday, July 22, 2025 1:36:45 PM Jadon Gerald



Notes

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Site Improvement Legend

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- PROPOSED SANITARY LINE AND STRUCTURES
- PROPOSED WATER LINE AND STRUCTURES
- PROPOSED GAS LINE
- PROPOSED TELECOMM LINE
- PROPOSED ELECTRIC LINE
- PROPOSED TRACK UNDERDRAIN

0 20 40 60
SCALE FEET
1" = 20'

N

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

SITE IMPROVEMENTS GRADING AND UTILITY PLAN (9 OF 9)

IFB NO:
DRAWING NO: C-510
SCALE: AS NOTED
SHEET NO: 79 OF 254

APPROXIMATE LIMITS OF WMATA TUNNEL BELOW

PROPOSED CURB INLET; CONNECTION PIPES TO BE REUSED

℄ TRACK 5

EXISTING STORM DRAIN LINE TO REMAIN IN PLACE

7TH STREET SW

SMITHSONIAN INSTITUTION SQ 0463

PROPOSED SANITARY RELOCATION

PROPOSED TRENCH DRAIN TO CONNECT TO SANITARY MH W/WATER SEAL

PROPOSED ELEVATOR SUMP TO CONNECT TO SANITARY MH W/WATER SEAL

℄ TRACK 4

EXISTING TRACK 3

EXISTING TRACK 2

E(B) TO CONDUIT IN WALL (TYP.)

PROPOSED TRENCH DRAIN AT RAIL GRADE (TYP.)

0 10 20 30
SCALE FEET
1" = 10'

N

Notes

1. EXISTING UNDERGROUND UTILITIES SHOW ONLY CENTERLINE FOR PLAN CLARITY
2. EXISTING RAILROAD DUCT BANK SHALL BE RELOCATED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.

Legend

- PROPOSED SEWER LINE AT STREET GRADE
- PROPOSED WATER LINE AT STREET GRADE
- PROPOSED STORM LINE AT STREET GRADE
- PROPOSED ELECTRIC LINE AT STREET GRADE
- PROPOSED GAS LINE AT STREET GRADE
- PROPOSED STORM LINE AT RAIL GRADE
- PROPOSED ELECTRIC AT RAIL GRADE
- PROPOSED GAS AT RAIL GRADE
- PROPOSED TELECOMM AT RAIL GRADE
- UTILITY TO BE REMOVED/ABANDONED
- PROPOSED TRACK UNDERDRAIN
- PROPOSED PLATFORM
- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
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RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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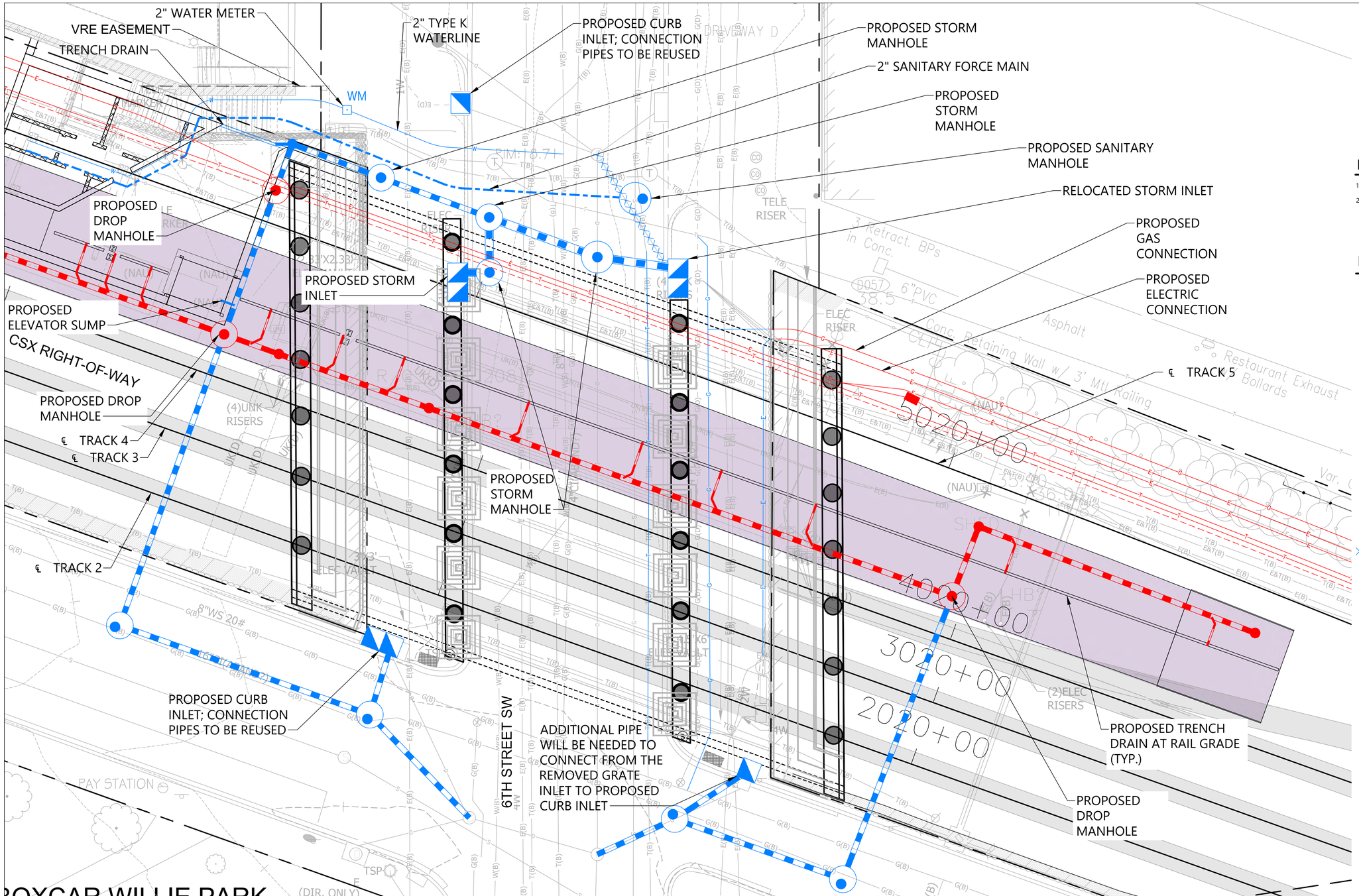
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ENLARGED UTILITY CONNECTION PLAN (1 OF 2)

IFB NO:
DRAWING NO: C-511
SCALE: AS NOTED
SHEET NO: 80 OF 254

Saved Tuesday, July 22, 2025 1:18:35 PM JGERALD Plotted Tuesday, July 22, 2025 1:37:34 PM Jadon Gerald



Notes

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2. EXISTING RAILROAD DUCT BANK SHALL BE RELOCATED IN COORDINATION WITH CSXT AND THE LONG BRIDGE NORTH PROJECT.

Legend

- PROPOSED SEWER LINE AT STREET GRADE
- PROPOSED WATER LINE AT STREET GRADE
- PROPOSED STORM LINE AT STREET GRADE
- PROPOSED ELECTRIC LINE AT STREET GRADE
- PROPOSED GAS LINE AT STREET GRADE
- PROPOSED STORM LINE AT RAIL GRADE
- PROPOSED ELECTRIC AT RAIL GRADE
- PROPOSED GAS AT RAIL GRADE
- PROPOSED TELECOMM AT RAIL GRADE
- UTILITY TO BE REMOVED/ABANDONED
- PROPOSED TRACK UNDERDRAIN
- PROPOSED PLATFORM
- PROPOSED BRIDGE STRUCTURE. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS

N

0 10 20 30
SCALE FEET
1" = 20'

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

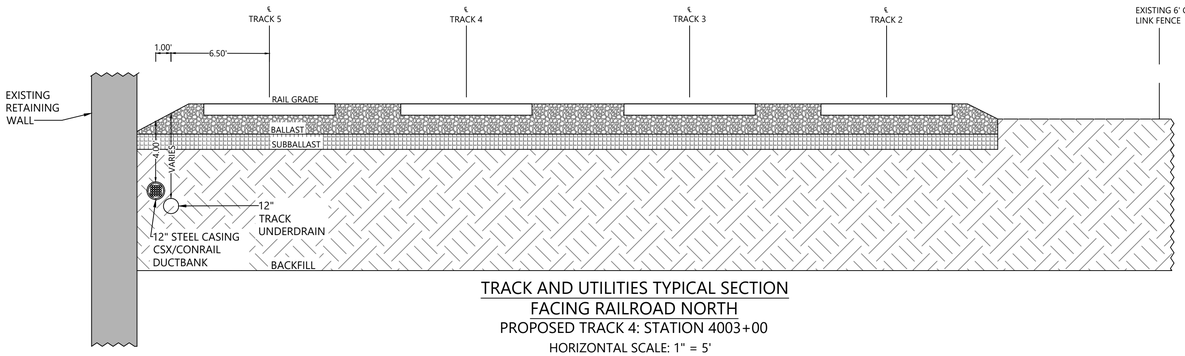
vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ENLARGED UTILITY CONNECTION PLAN (2 OF 2)

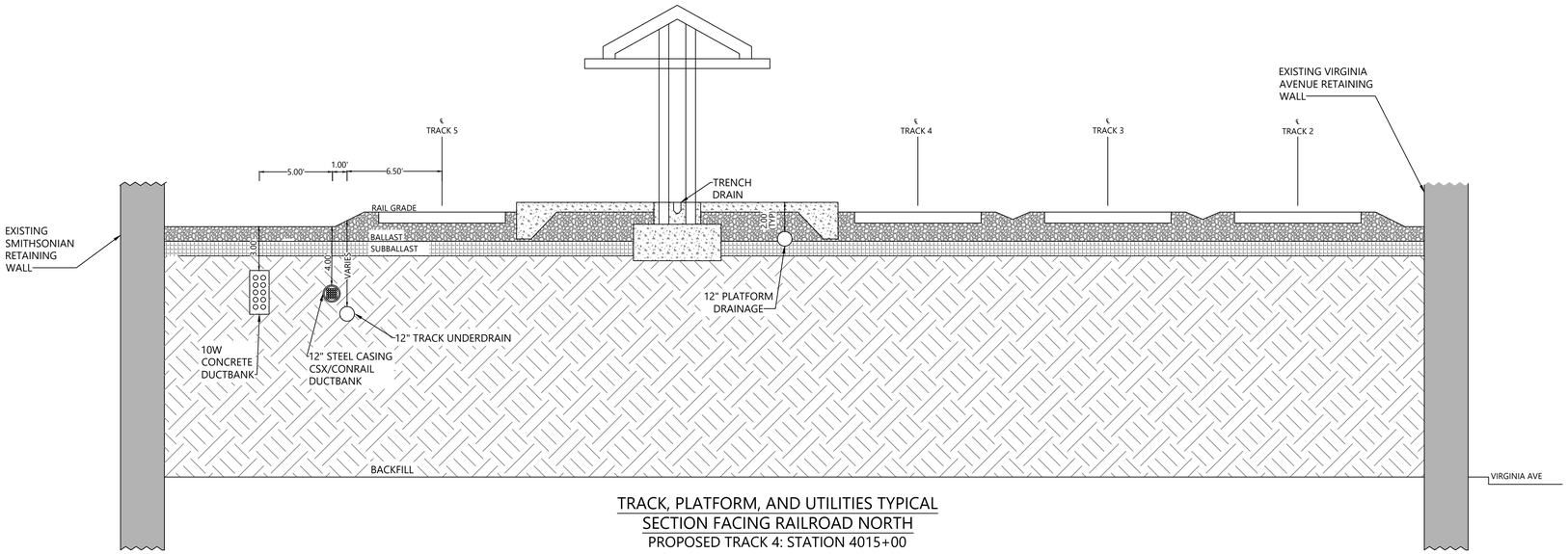
IFB NO:
DRAWING NO: C-512
SCALE: AS NOTED
SHEET NO: 81 OF 254

Saved Tuesday, July 22, 2025 1:18:35 PM JGERALD Plotted Tuesday, July 22, 2025 1:37:46 PM Jadon Gerald



TRACK AND UTILITIES TYPICAL SECTION
FACING RAILROAD NORTH
PROPOSED TRACK 4: STATION 4003+00

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE 1" = 5'



TRACK, PLATFORM, AND UTILITIES TYPICAL SECTION FACING RAILROAD NORTH
PROPOSED TRACK 4: STATION 4015+00

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE 1" = 5'

0 5 10 15
SCALE FEET
1" = 5'

N

REV.NO.	DATE	BY	APP BY	DESCRIPTION
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DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
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DATE: 05/23/2025

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CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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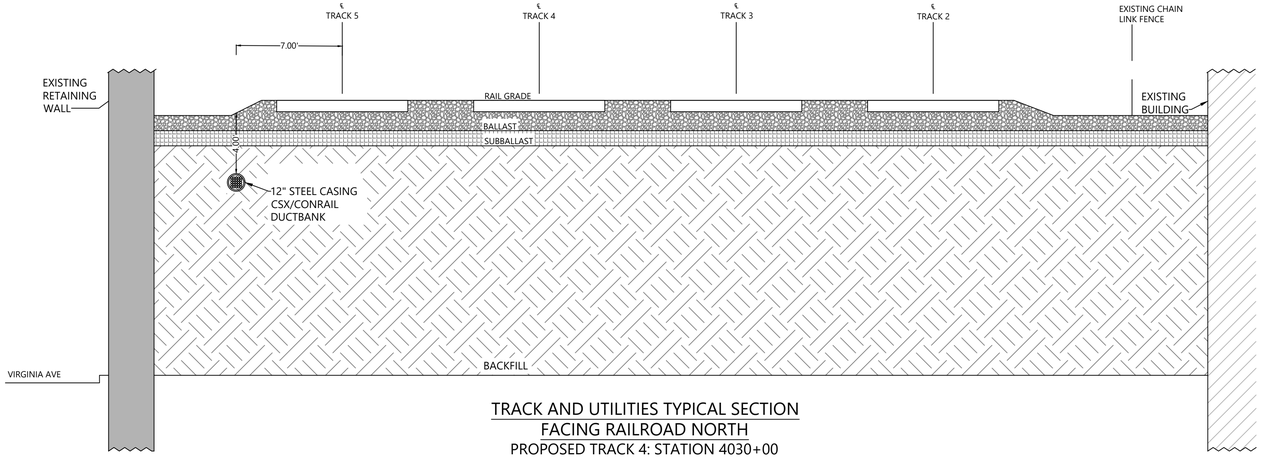
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

TRACK AND UTILITY TYPICAL SECTIONS (1 OF 2)

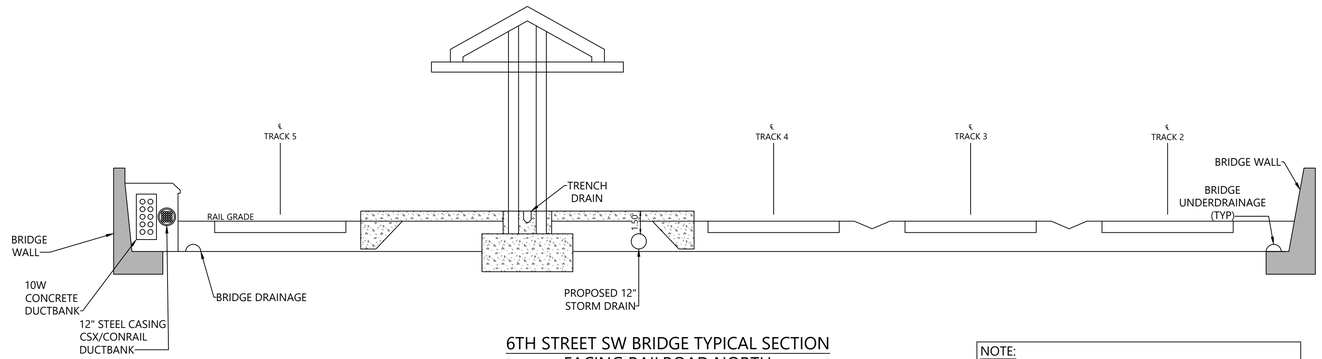
IFB NO:
DRAWING NO: C-513
SCALE: AS NOTED
SHEET NO: 82 OF 254

Saved Tuesday, July 22, 2025 9:53:13 AM JGERALD Plotted Tuesday, July 22, 2025 1:38:16 PM Jadon Gerald



TRACK AND UTILITIES TYPICAL SECTION
FACING RAILROAD NORTH
PROPOSED TRACK 4: STATION 4030+00

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE 1" = 5'



6TH STREET SW BRIDGE TYPICAL SECTION
FACING RAILROAD NORTH
PROPOSED TRACK 4: STATION 4019+22

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE 1" = 5'

NOTE:
THE INTENTION OF THIS DETAIL IS TO SHOW THE UTILITY CROSSINGS ON THE BRIDGE. FOR ADDITIONAL INFORMATION REFER TO BRIDGE PLANS.

0 5 10 15
SCALE FEET
1" = 5'

N

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: M. BRUNO
DRAWN BY: R. BLAZAUSKAS
CHECKED BY: J. LONG
DATE: 05/23/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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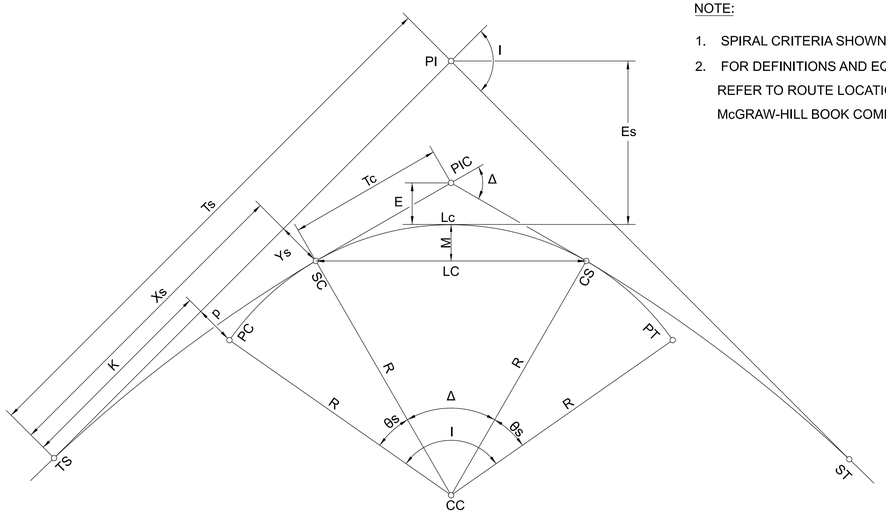
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

TRACK AND UTILITY TYPICAL SECTIONS (2 OF 2)

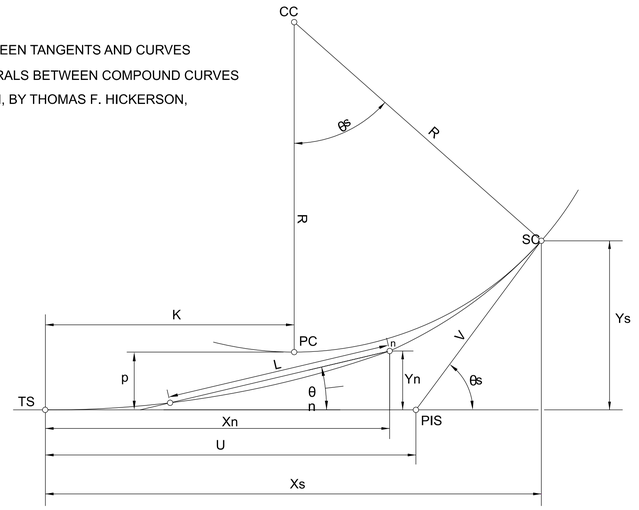
IFB NO:
DRAWING NO: C-514
SCALE: AS NOTED
SHEET NO: 83 OF 254

Saved Tuesday, July 22, 2025 9:53:13 AM JGERALD Plotted Tuesday, July 22, 2025 1:38:21 PM Jadon Gerald



NOTE:

1. SPIRAL CRITERIA SHOWN HEREIN IS FOR SPIRALS BETWEEN TANGENTS AND CURVES
2. FOR DEFINITIONS AND EQUATIONS FOR COMBINING SPIRALS BETWEEN COMPOUND CURVES REFER TO ROUTE LOCATION AND DESIGN, FIFTH EDITION, BY THOMAS F. HICKERSON, McGRAW-HILL BOOK COMPANY, 1964.



DEFINITIONS

ALL LENGTHS IN FEET, ALL ANGLES IN DEGREES EXCEPT AS NOTED

MAIN TANGENTS - THOSE LINES TANGENT TO ALIGNMENT AT TS AND ST WHICH INTERSECT AT PI.

CS	CURVE SPIRAL, THE POINT OF CHANGE IN ALIGNMENT FROM CURVE TO SPIRAL.
CC	CENTER OF CIRCULAR CURVE.
Dc	DEGREE OF CURVE DEFINED BY THE 100 FT CHORD DEFINITION.
E	EXTERNAL DISTANCE FROM MIDPOINT OF CIRCULAR CURVE TO PIC.
Es	EXTERNAL DISTANCE FROM CURVE TO PI.
I	ANGLE OF INTERSECTION OF MAIN TANGENTS AT MAIN PI.
K	DISTANCE ALONG MAIN TANGENT FROM TS (OR ST) TO OFFSET PC.
L	THE LENGTH OF EACH EQUAL CHORD.
Lc	LENGTH OF CIRCULAR CURVE BETWEEN SC AND CS MEASURED ALONG 100 FT CHORDS.
LC	CHORD LENGTH OF CIRCULAR CURVE FROM SC TO CS.
Ln	DISTANCE ALONG SPIRAL FROM TS (OR ST) TO POINT n.
Ls	THE LENGTH OF SPIRAL FROM TS TO SC (OR CS TO ST) AS MEASURED ON TEN CONSECUTIVE EQUAL CHORDS.
M	MID-ORDINATE DISTANCE OF CIRCULAR CURVE.
n	A NUMBER BETWEEN 1 AND 10 USED TO IDENTIFY CHORDS.
P	OFFSET FROM MAIN TANGENT TO PC (OR PT).
PC	POINT OF CURVE, THE POINT OF CHANGE IN ALIGNMENT FROM TANGENT TO CIRCULAR CURVE, ON SPIRALED CURVES THIS POINT IS OFFSET A DISTANCE p FROM THE MAIN TANGENT.
PI	POINT OF INTERSECTION OF MAIN TANGENTS.
PIC	POINT OF INTERSECTION OF LINES TANGENT AT SC AND CS.
PIS	POINT OF INTERSECTION OF MAIN TANGENT AND LINE TANGENT AT SC (OR CS).
PT	POINT OF TANGENCY, THE POINT OF CHANGE IN ALIGNMENT FROM CIRCULAR CURVE TO TANGENT, ON SPIRALED CURVES THIS POINT IS OFFSET A DISTANCE p FROM THE MAIN TANGENT.
R	RADIUS OF CIRCULAR CURVE.
SC	SPIRAL CURVE, THE POINT OF CHANGE IN ALIGNMENT FROM SPIRAL TO CURVE.
ST	SPIRAL TANGENT, THE POINT OF CHANGE IN ALIGNMENT FROM SPIRAL TO TANGENT.
Tc	DISTANCE FROM SC OR CS TO PIC IN SPIRALED CURVE OR TANGENT FROM PC OR PT TO PI IN A SIMPLE CURVE.
TS	TANGENT SPIRAL, THE POINT OF CHANGE IN ALIGNMENT FROM TANGENT TO SPIRAL.
Ts	LONG TANGENT, TANGENT DISTANCE FROM TS (OR ST) TO PI (MAIN TANGENTS).
U	LONG TANGENT OF SPIRAL, DISTANCE FROM TS (OR ST) TO PIS.
V	SHORT TANGENT OF SPIRAL, DISTANCE FROM PIS TO CS (OR SC).
Xn	DISTANCE ALONG MAIN TANGENT FROM TS (OR ST) TO OFFSET CHORD POINT n.
Xs	DISTANCE ALONG MAIN TANGENT TO PERPENDICULAR OFFSET FROM CS (OR SC).
Yn	OFFSET FROM MAIN TANGENT TO CHORD POINT n.
Ys	PERPENDICULAR OFFSET FROM MAIN TANGENT TO CS (OR SC).
Δ	(DELTA) ANGLE OF INTERSECTION AT PIC, CENTRAL ANGLE OF CIRCULAR CURVE.
θn	CHORD ANGLE, THE ANGLE BETWEEN THE MAIN TANGENT AND CHORD n.
θs	SPIRAL ANGLE, CENTRAL ANGLE OF SPIRAL.

EQUATIONS

1. $Dc = 2 \text{ ARCSIN } \frac{50}{R}$ $R = \frac{50}{\text{SIN } D/2}$
2. $\theta s = \frac{Ls \cdot Dc}{200}$
3. $L = \frac{Ls}{10}$
4. $\theta n = \frac{3n^2-3n+1}{300} \theta s$ n=1, ... 10
5. $Xn = L \sum_{n=1}^{N} \text{COS } \theta n$ n=1, ... 10
6. $Yn = L \sum_{n=1}^{N} \text{SIN } \theta n$ n=1, ... 10
7. $Xs = X_{10}$
8. $Ys = Y_{10}$
9. $P = Y_s - R(1 - \text{COS } \theta s)$
10. $K = X_s - R \text{ SIN } \theta s$
11. $U = X_s - \frac{Ys}{\text{TAN } \theta s}$
12. $V = \frac{Ys}{\text{SIN } \theta s}$
13. $\Delta = I - 2\theta s$ (WHEN BOTH SPIRALS ARE OF EQUAL LENGTH)
14. $T = R \text{ TAN } \frac{\Delta}{2}$
15. $Lc = 100 \frac{\Delta}{Dc}$
16. $E = R \{ \frac{1}{\text{COS } \Delta/2} - 1 \}$
17. $LC = 2R \text{ SIN } \frac{\Delta}{2}$
18. $M = R \{1\text{-COS } \frac{\Delta}{2}\}$
19. $Ts = K + (R+P) \text{ TAN } \frac{I}{2}$ (WHEN BOTH SPIRALS ARE OF EQUAL LENGTH)
20. $Es = \frac{Ts-K}{\text{SIN } I/2} - R$ (WHEN BOTH SPIRALS ARE OF EQUAL LENGTH)

RAILROAD TRACK / SIGNAL ABBREVIATIONS

CS	CURVE TO SPIRAL
CWR	CONTINUOUSLY WELDED RAIL
Dc	DEGREE OF CURVATURE (CHORD DEFINED)
E	EQUILIBRIUM or Ea + Eu
Ea	ACTUAL SUPERELEVATION
Eu	UNBALANCED SUPERELEVATION
EQ.	EQUAL OR EQUILATERAL
GA.	GAUGE
LVC	LENGTH OF VERTICAL CURVE
LLT	LAST LONG TIE
PC	TANGENT TO CURVE
PINC	POINT OF INTERSECTION NO CURVE
PITO	POINT OF INTERSECTION TURNOUT
POB	POINT OF BEGINNING
POT	POINT OF TANGENT
PS	POINT OF SWITCH
PT	CURVE TO TANGENT
PVC	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENT
r	RATE OF CHANGE
R	RADIUS
RE	AREMA
SC	SPIRAL TO CURVE
ST	SPIRAL TO TANGENT
STA	STATION
T/O.	TURNOUT
TRK.	TRACK
TS	TANGENT TO SPIRAL
T/R	TOP OF RAIL
VPI	VERTICAL POINT OF INTERSECTION
X/O	CROSSOVER

RAILROAD TRACK / SIGNAL SYMBOLS

EXISTING	PROPOSED	
		RAILROAD TRACK CENTERLINE
	C#	TRACK HORIZONTAL CURVE NAMING

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

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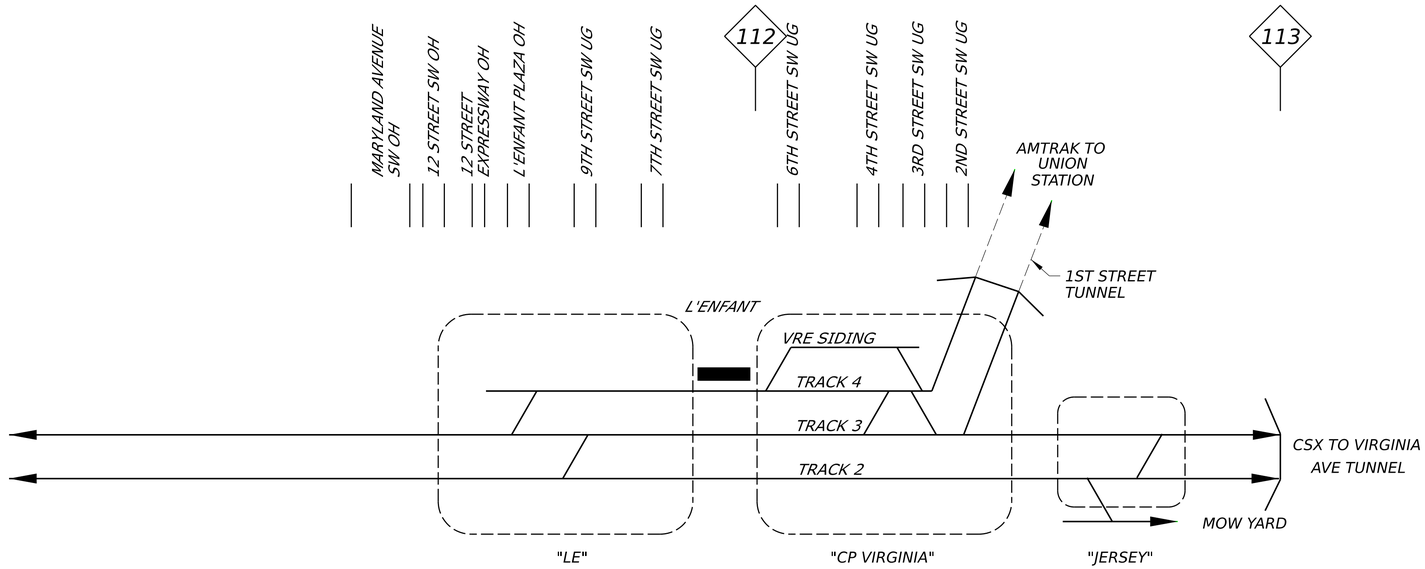
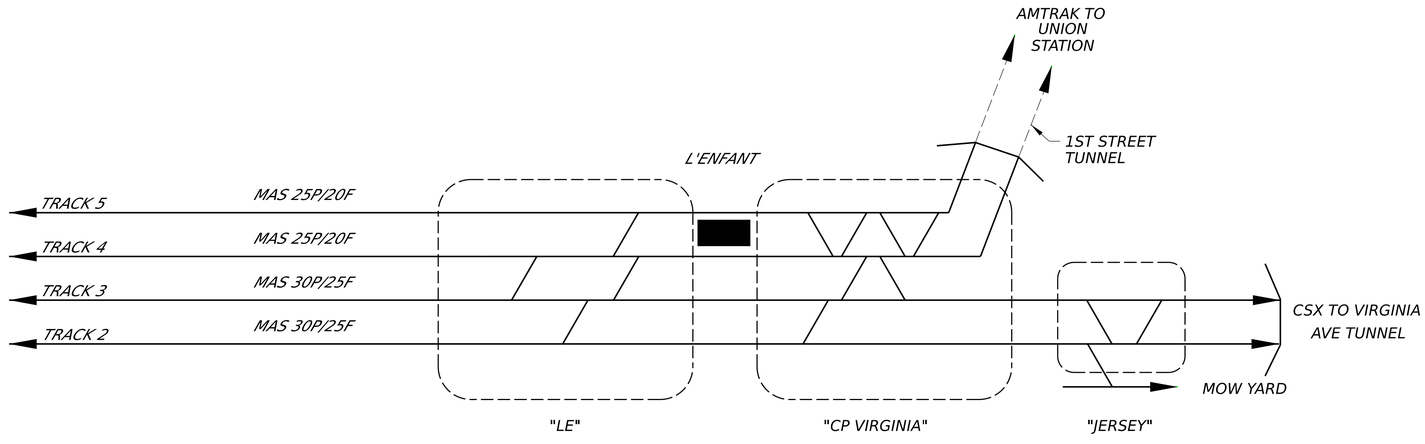
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

TRACK DEFINITIONS, EQUATIONS, ABBREVIATIONS, & SYMBOLS

IFB NO:
DRAWING NO: T-001
SCALE: AS NOTED
SHEET NO: 101 OF 254



EXISTING CONDITION



PROPOSED CONDITION

NOTE:
EXISTING THREE TRACKS ARE NUMBERED 2, 3, AND 4 FROM EAST TO WEST ACROSS TRACK SECTION AND WILL BE RENUMBERED TRACKS 1, 2, AND 3. THE NEW 4TH TRACK WILL BE NUMBERED TRACK 4.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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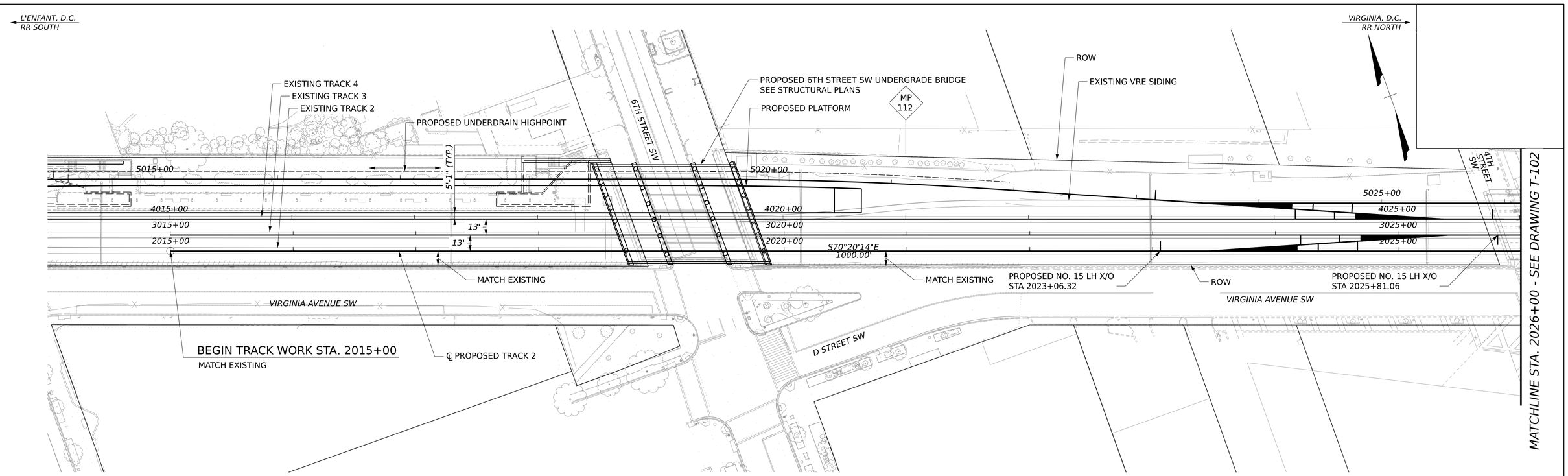
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

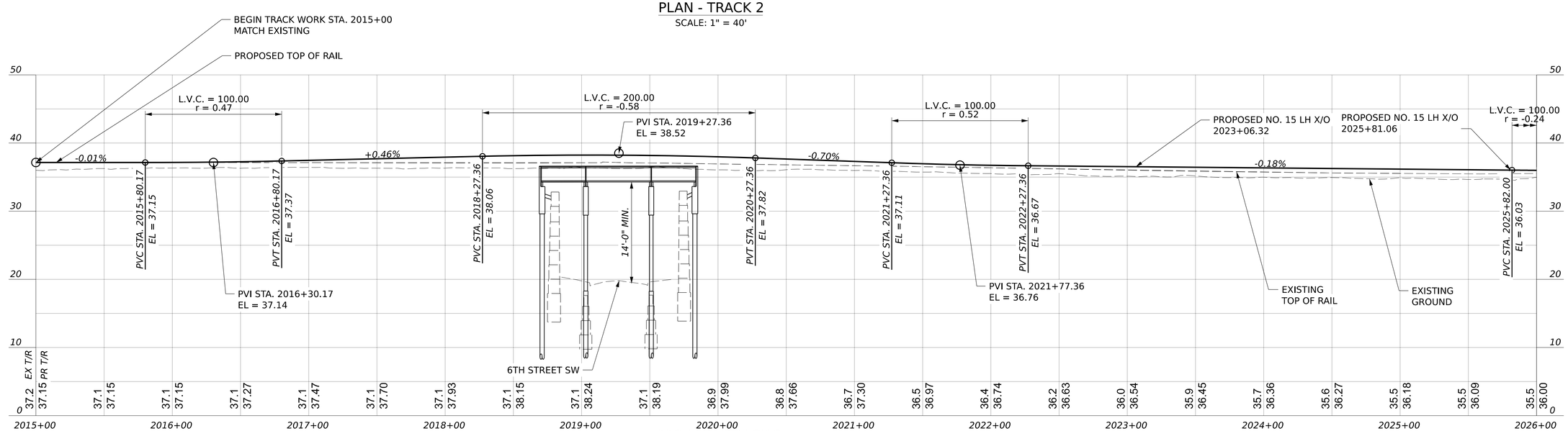
TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED

IFB NO:
DRAWING NO: T-002
SCALE: AS NOTED
SHEET NO: 102 OF 254



PLAN - TRACK 2

SCALE: 1" = 40'



PROFILE - TRACK 2

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
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DALLAS RICHARDS, PE
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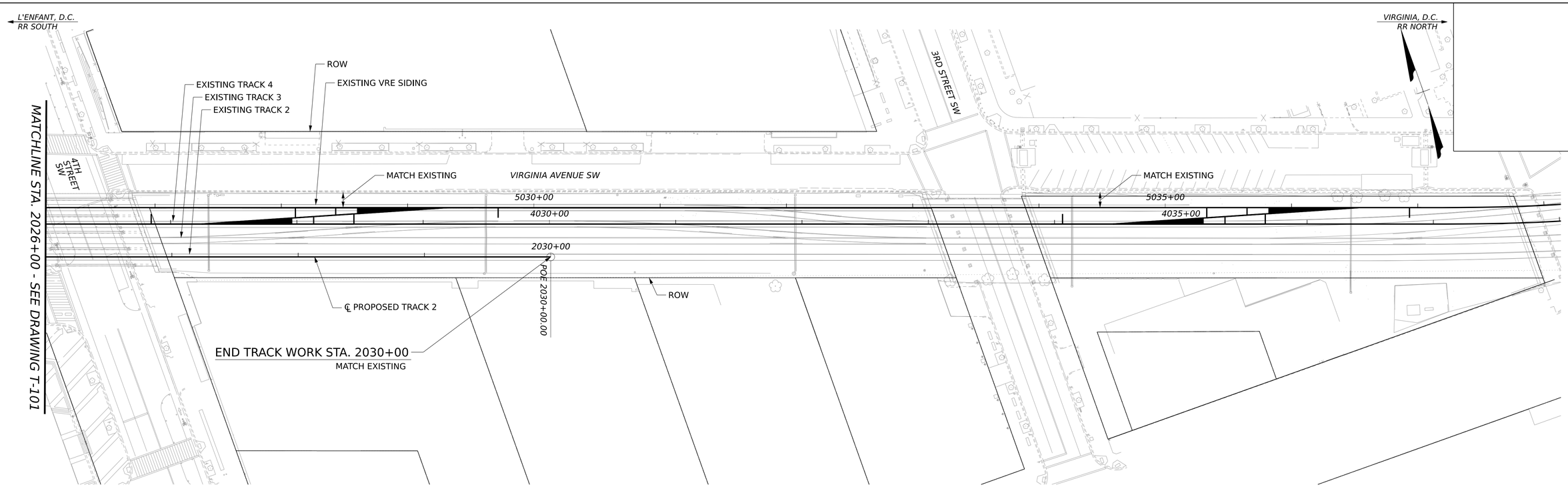
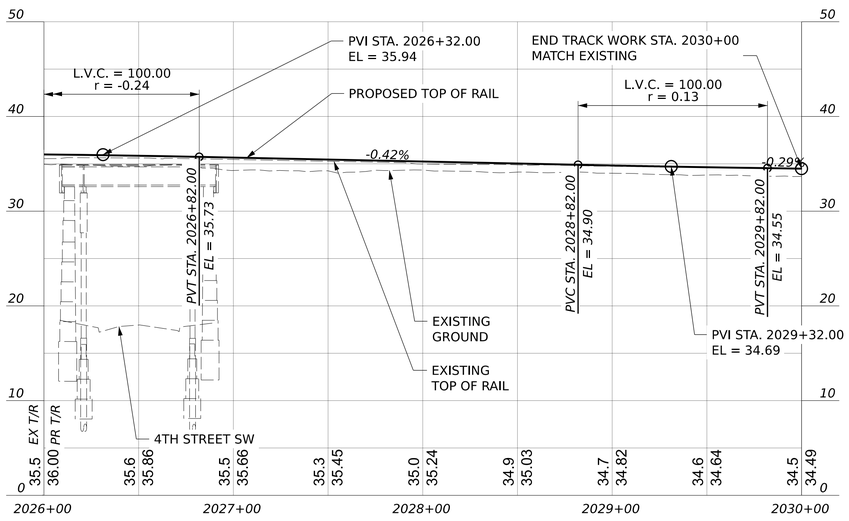
TRACK 2
PLAN AND PROFILE (1 OF 2)

IFB NO:
DRAWING NO: T-101
SCALE: AS NOTED
SHEET NO: 104 OF 254



PLAN - TRACK 2
SCALE: 1" = 40'



PROFILE - TRACK 2
SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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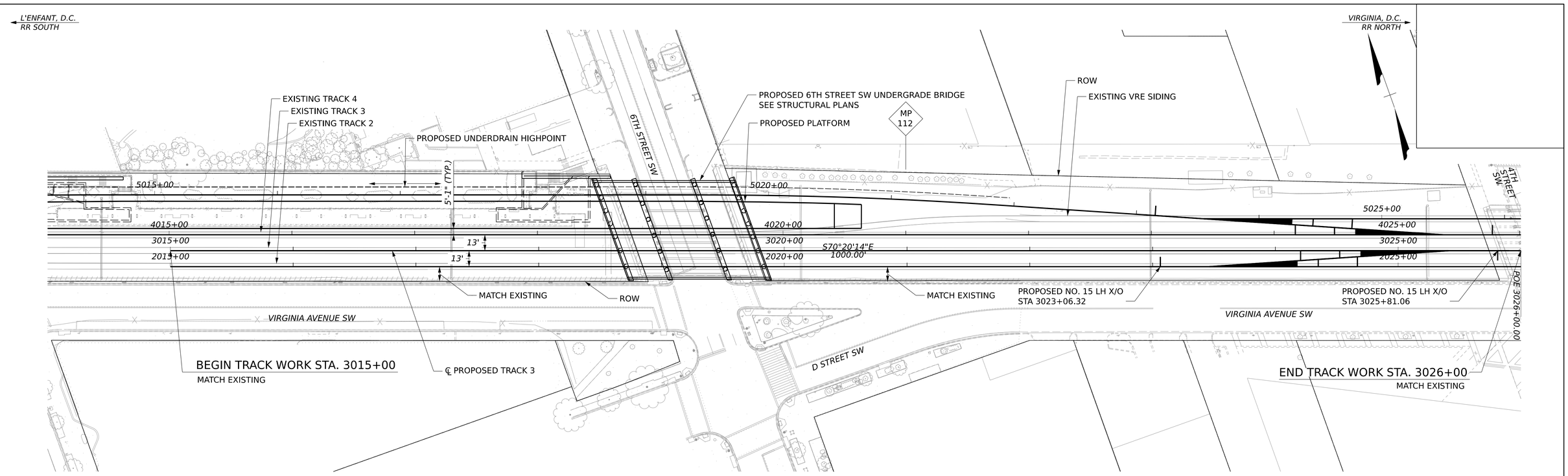
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

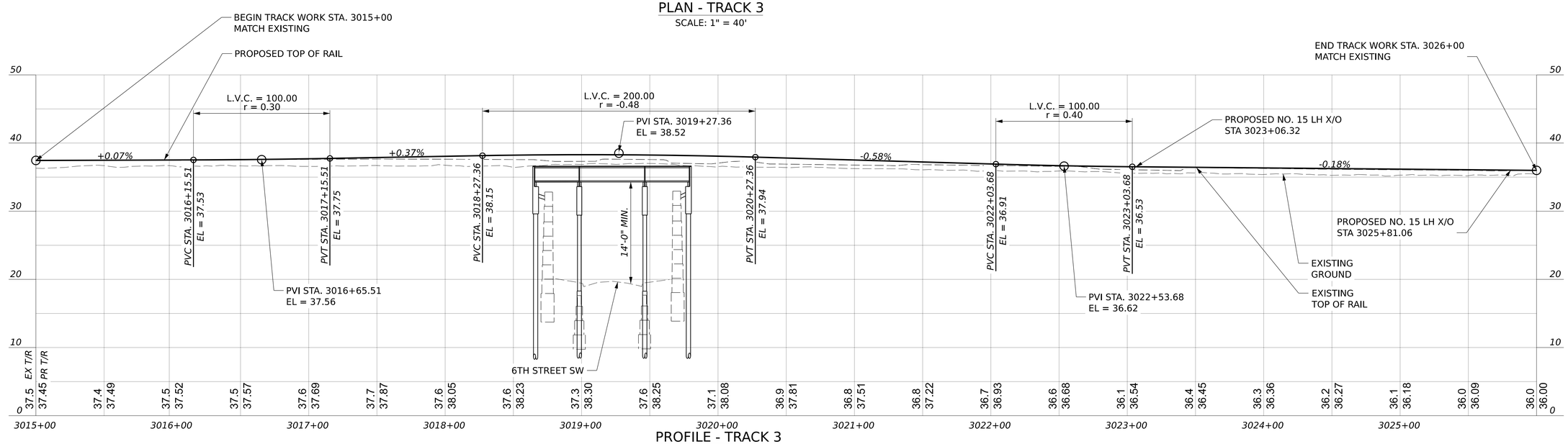
TRACK 2
PLAN AND PROFILE (2 OF 2)

IFB NO:
DRAWING NO: T-102
SCALE: AS NOTED
SHEET NO: 105 OF 254



PLAN - TRACK 3

SCALE: 1" = 40'



PROFILE - TRACK 3

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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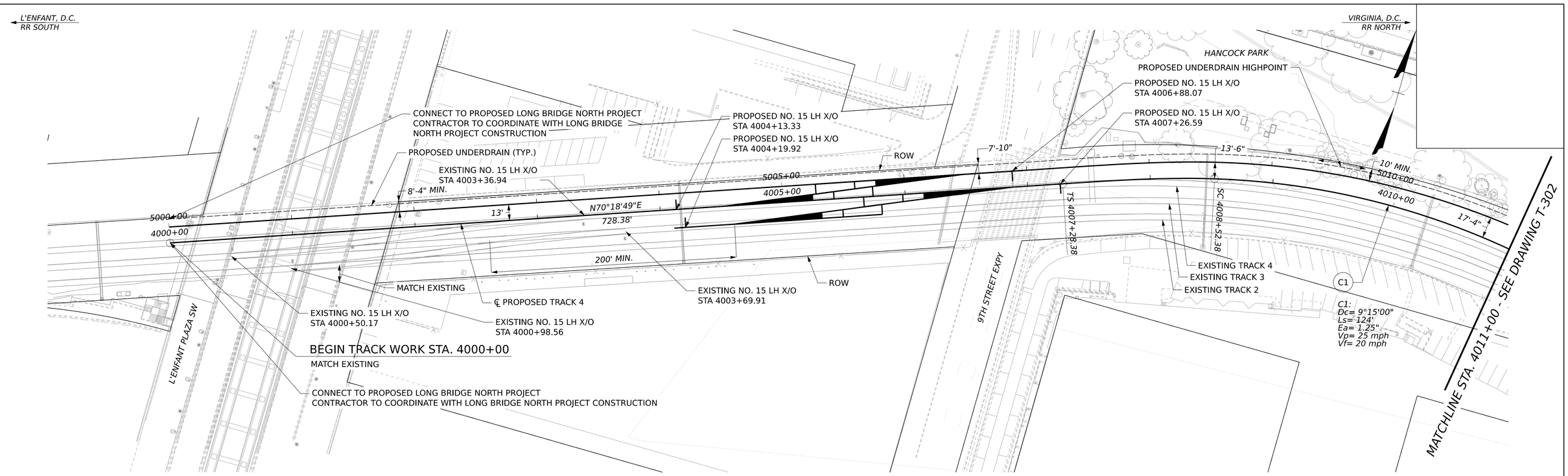
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

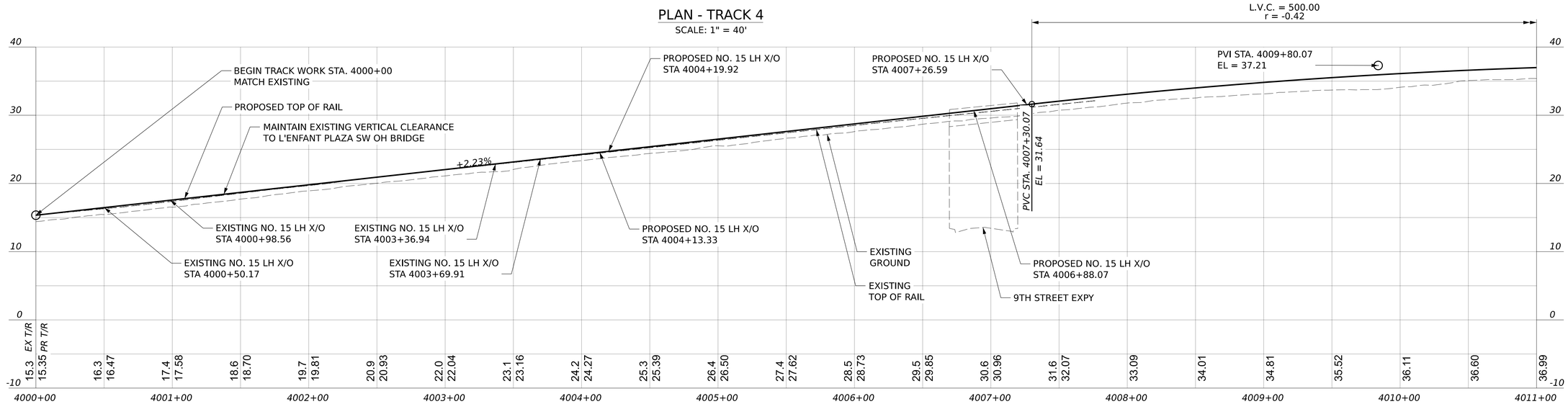
TRACK 3
PLAN AND PROFILE (1 OF 1)

IFB NO:
DRAWING NO: T-201
SCALE: AS NOTED
SHEET NO: 106 OF 254



PLAN - TRACK 4

SCALE: 1" = 40'



PROFILE - TRACK 4

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

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CHIEF ENGINEER — DATE

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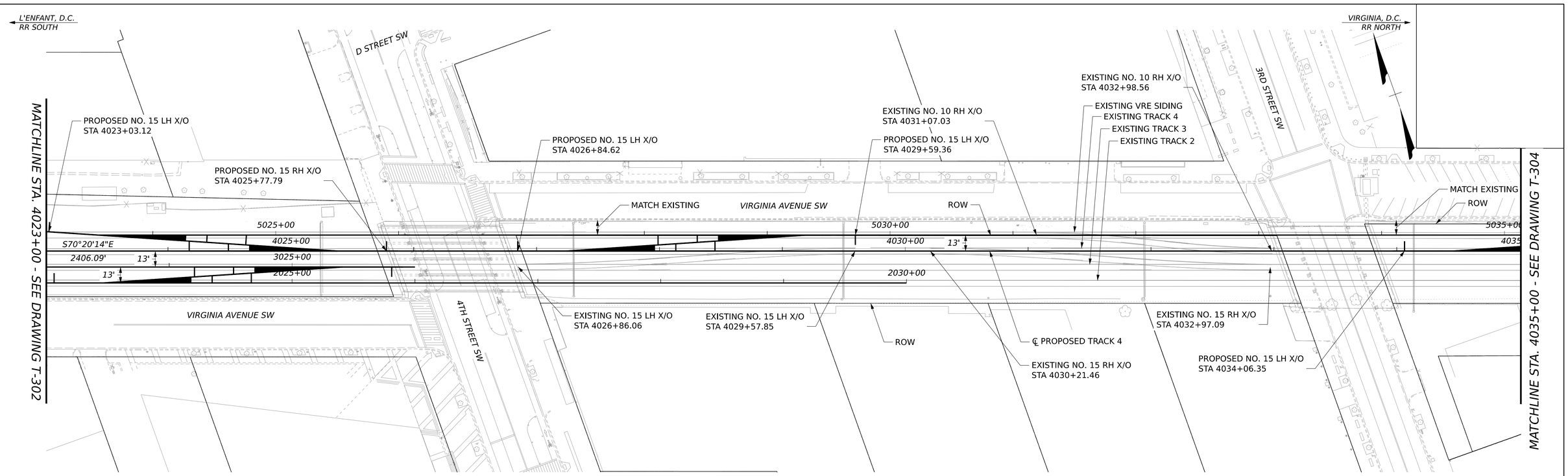
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

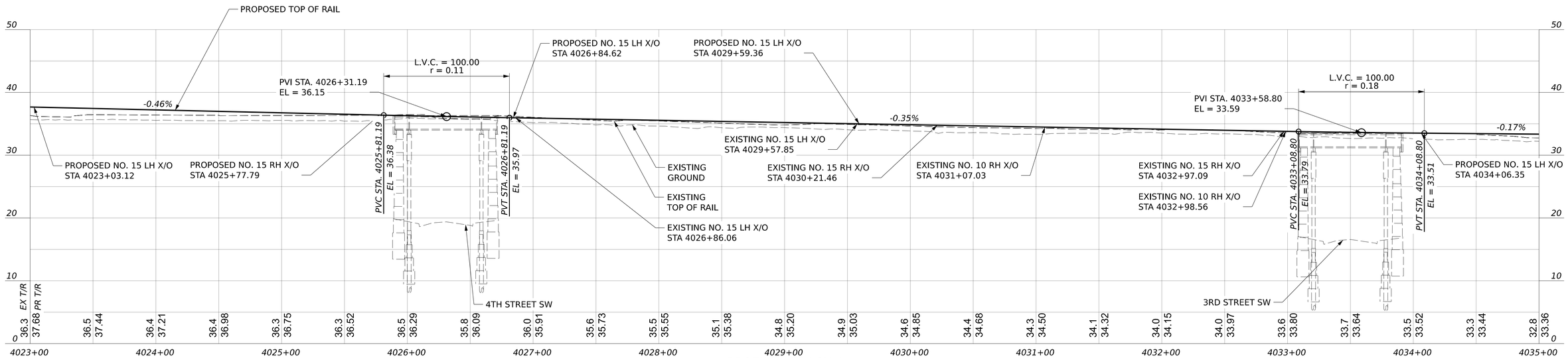
TRACK 4
PLAN AND PROFILE (1 OF 4)

IFB NO:
DRAWING NO: T-301
SCALE: AS NOTED
SHEET NO: 107 OF 254



PLAN - TRACK 4

SCALE: 1" = 40'



PROFILE - TRACK 4

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

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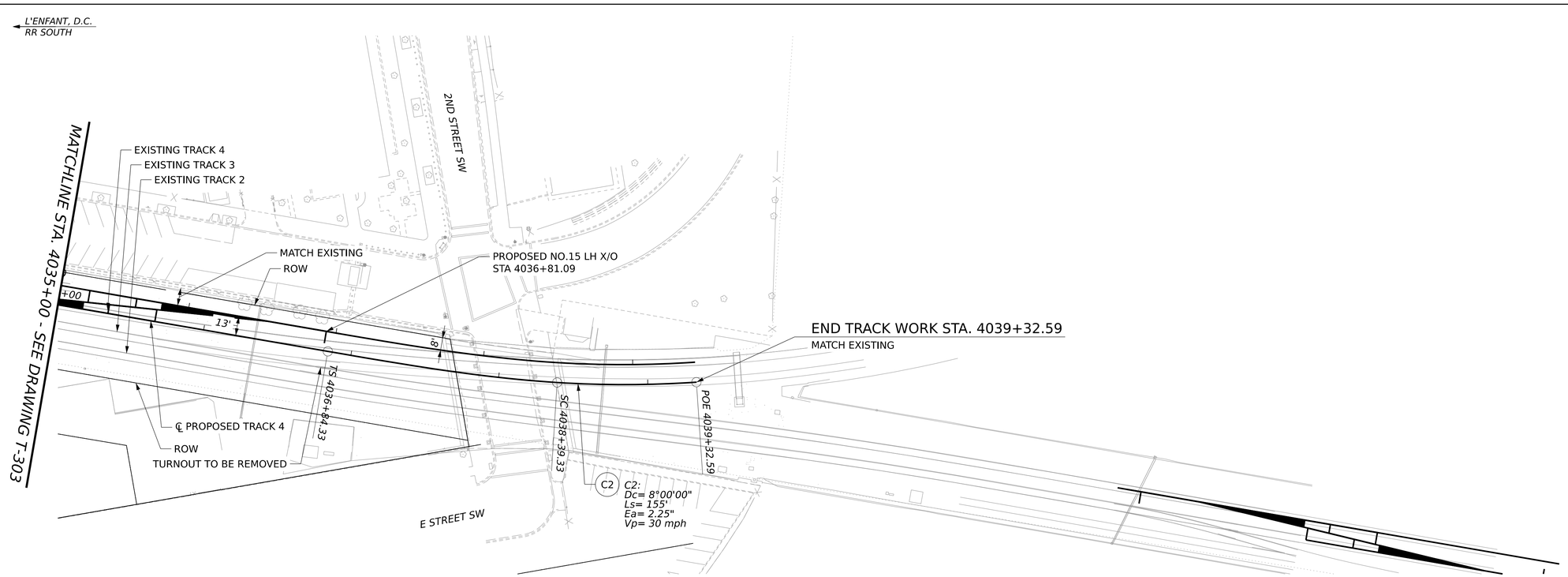
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

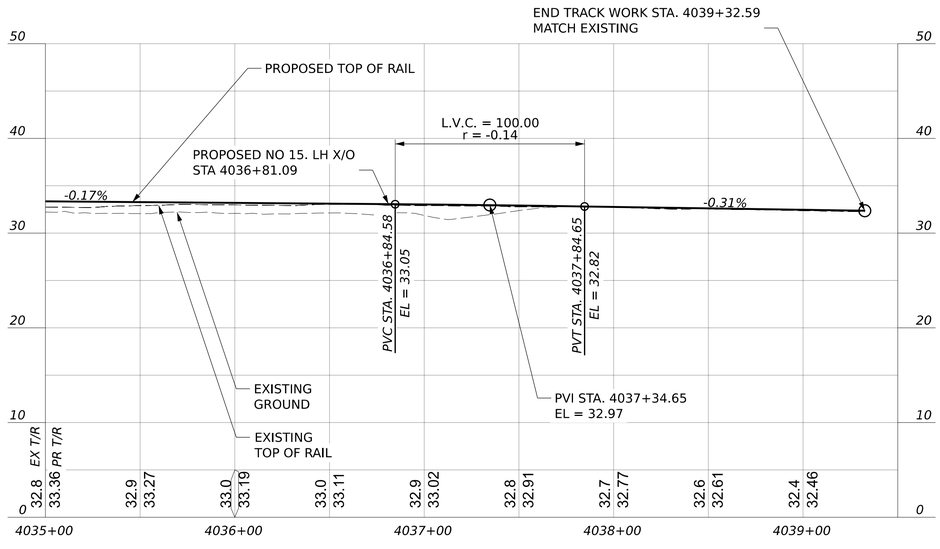
TRACK 4
PLAN AND PROFILE (3 OF 4)

IFB NO:
DRAWING NO: T-303
SCALE: AS NOTED
SHEET NO: 109 OF 254



PLAN - TRACK 4

SCALE: 1" = 40'



PROFILE - TRACK 4

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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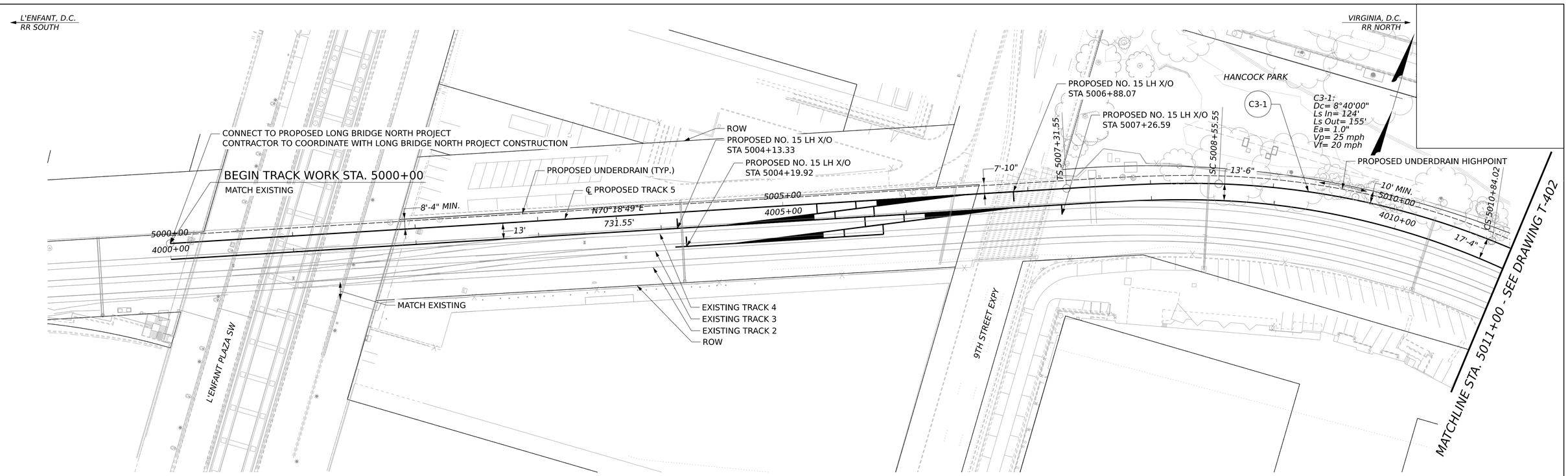
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

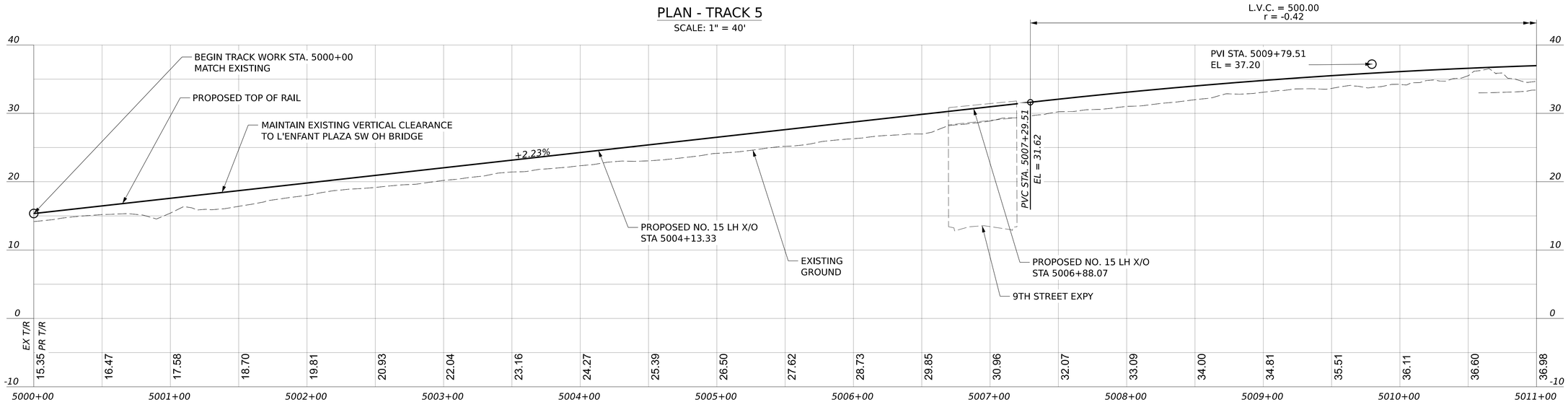
TRACK 4
PLAN AND PROFILE (4 OF 4)

IFB NO:
DRAWING NO: T-304
SCALE: AS NOTED
SHEET NO: 110 OF 254



PLAN - TRACK 5

SCALE: 1" = 40'



PROFILE - TRACK 5

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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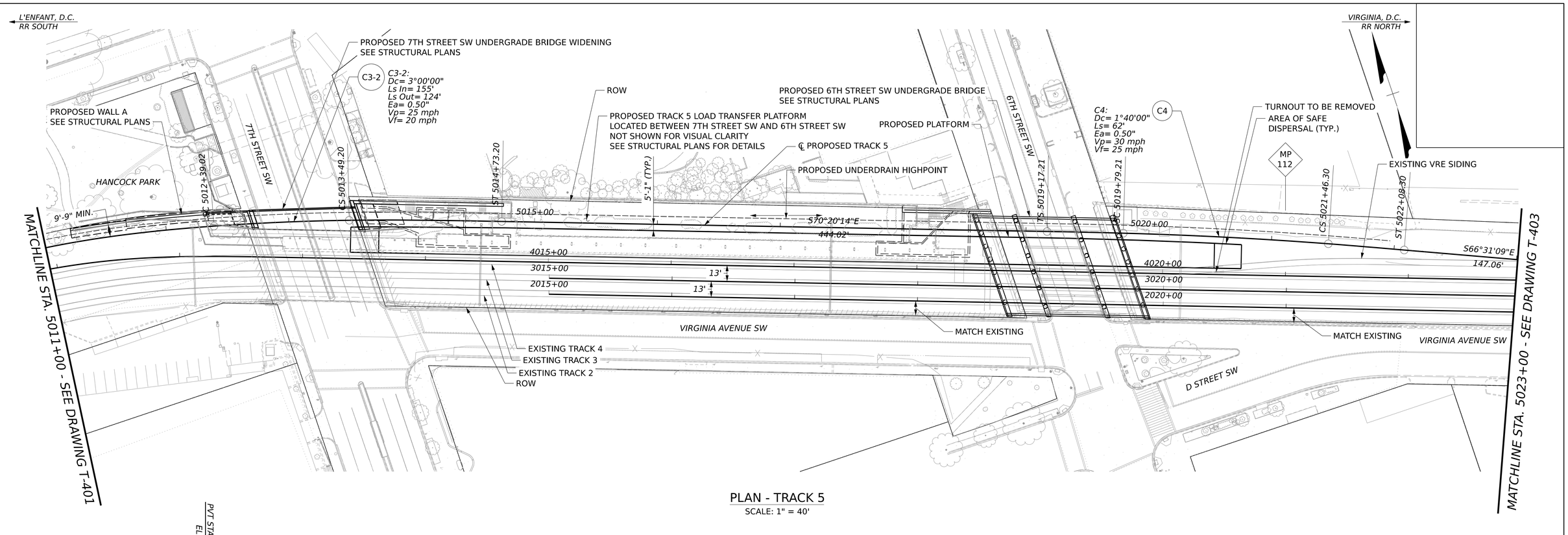
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

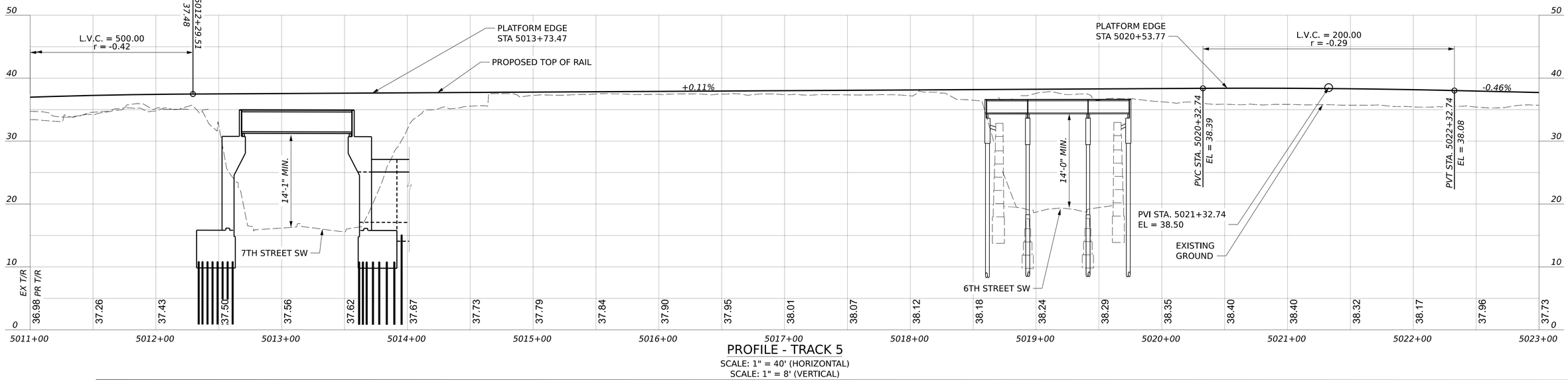
TRACK 5
PLAN AND PROFILE (1 OF 4)

IFB NO:
DRAWING NO: T-401
SCALE: AS NOTED
SHEET NO: 111 OF 254



PLAN - TRACK 5

SCALE: 1" = 40'



PROFILE - TRACK 5

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

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DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

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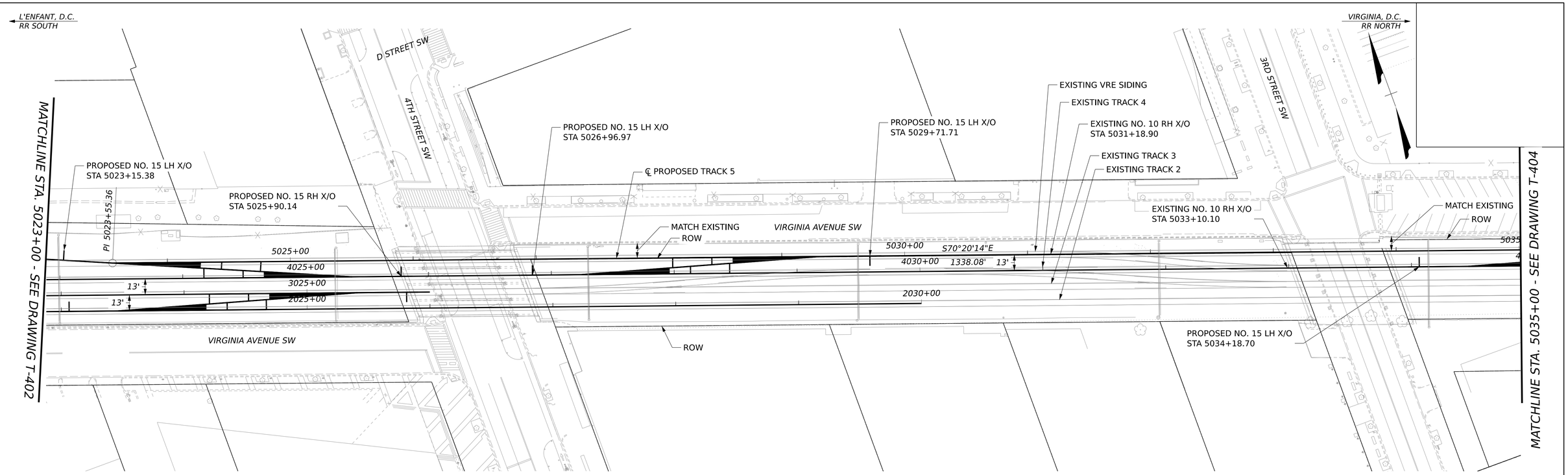
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

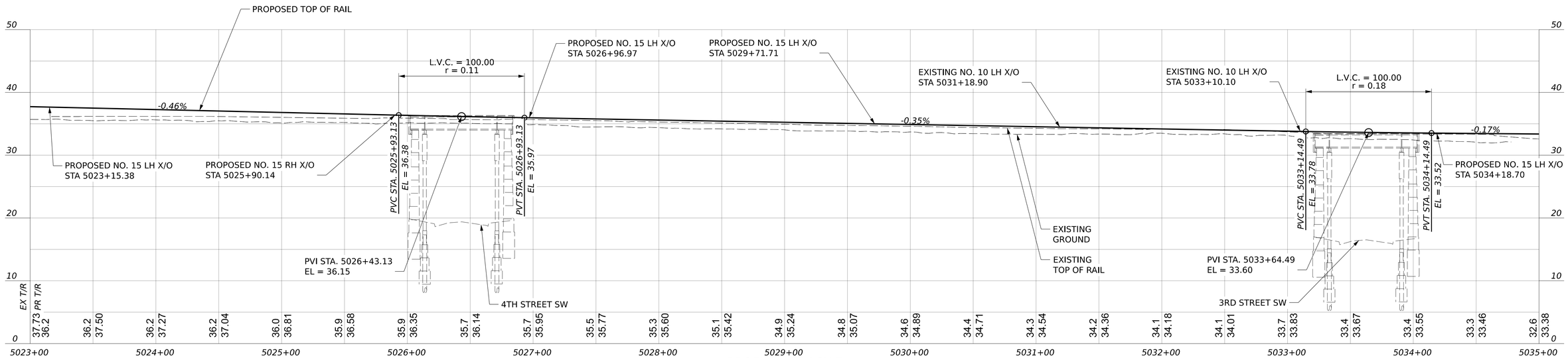
TRACK 5
PLAN AND PROFILE (2 OF 4)

IFB NO:
DRAWING NO: T-402
SCALE: AS NOTED
SHEET NO: 112 OF 254



PLAN - TRACK 5

SCALE: 1" = 40'



PROFILE - TRACK 5

SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

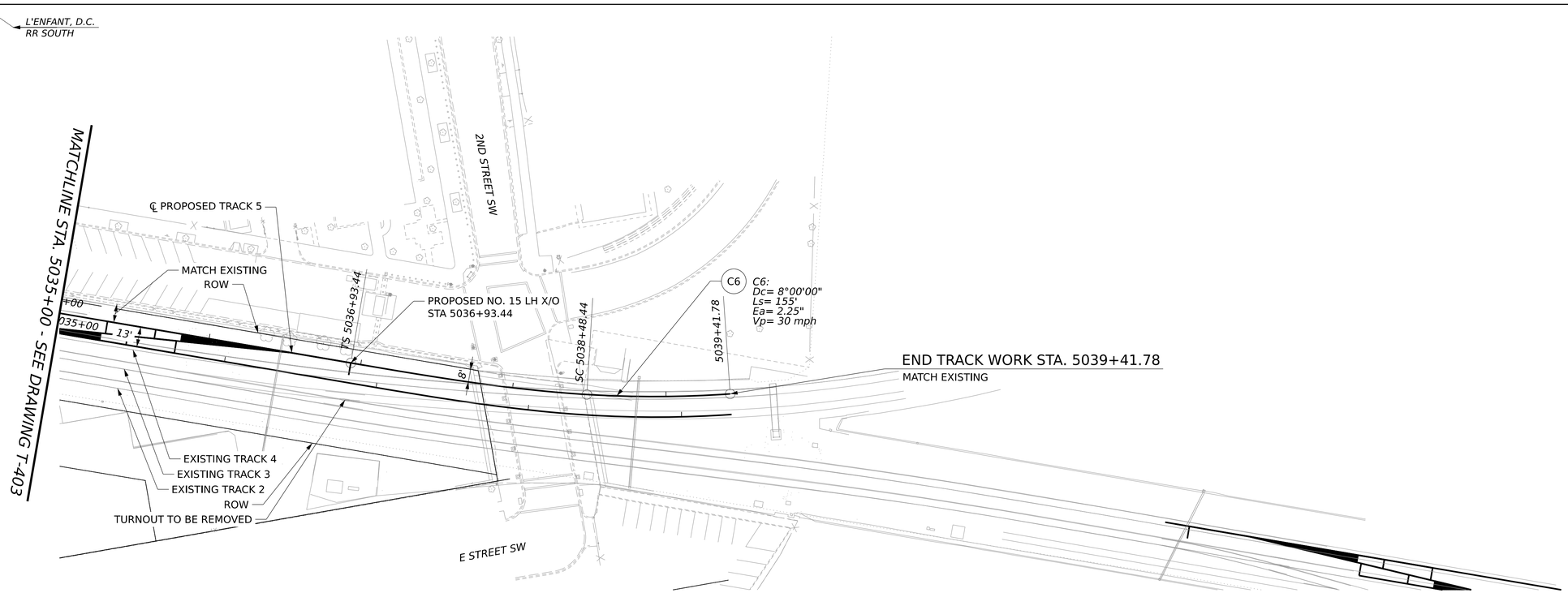
DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

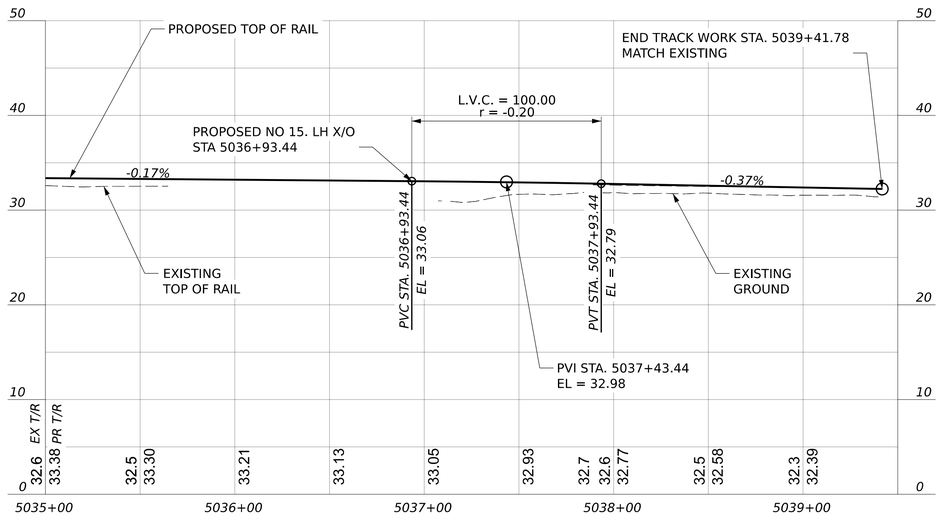
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

TRACK 5
PLAN AND PROFILE (3 OF 4)

IFB NO:
DRAWING NO: T-403
SCALE: AS NOTED
SHEET NO: 113 OF 254



PLAN - TRACK 5
SCALE: 1" = 40'



PROFILE - TRACK 5
SCALE: 1" = 40' (HORIZONTAL)
SCALE: 1" = 8' (VERTICAL)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

vhb
1001 G STREET
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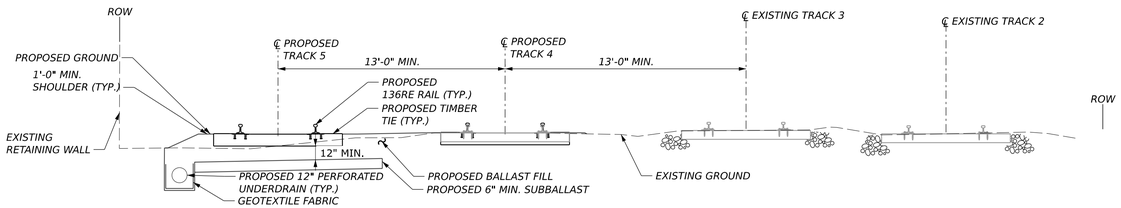
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

TRACK 5
PLAN AND PROFILE (4 OF 4)

IFB NO:
DRAWING NO: T-404
SCALE: AS NOTED
SHEET NO: 114 OF 254



TRACK TYPICAL SECTION - CUT WALL & UNDERDRAIN

APPROX. STA. 4000+00 TO 4006+50
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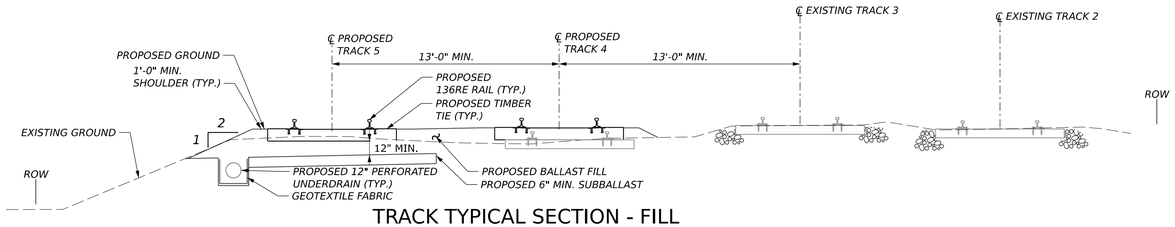

TRACK TYPICAL SECTION - FILL

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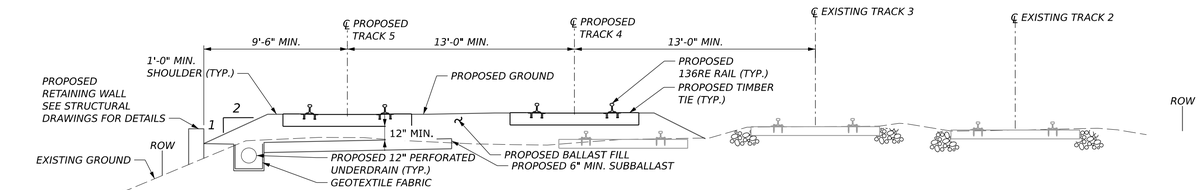

TRACK TYPICAL SECTION - FILL WALL & UNDERDRAIN

APPROX. STA. 4011+00 TO 4013+50
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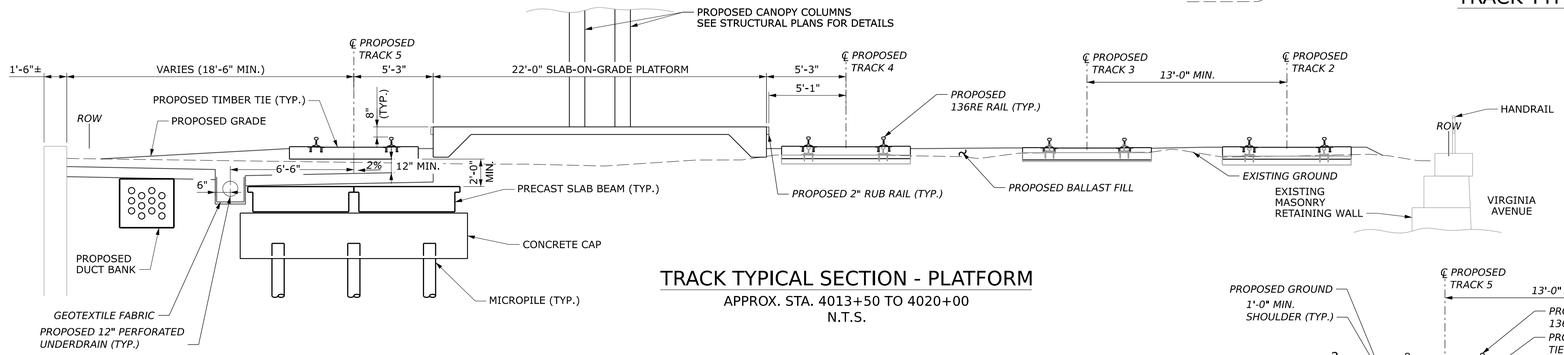

TRACK TYPICAL SECTION - PLATFORM

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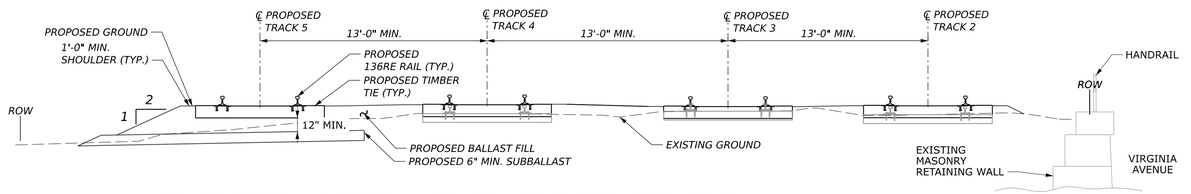

TRACK TYPICAL SECTION - FOURTH TRACK CONSTRUCTION

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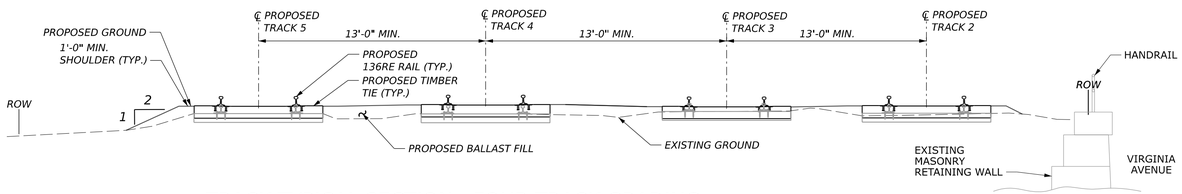

TRACK TYPICAL SECTION - FOUR TRACK GRADING

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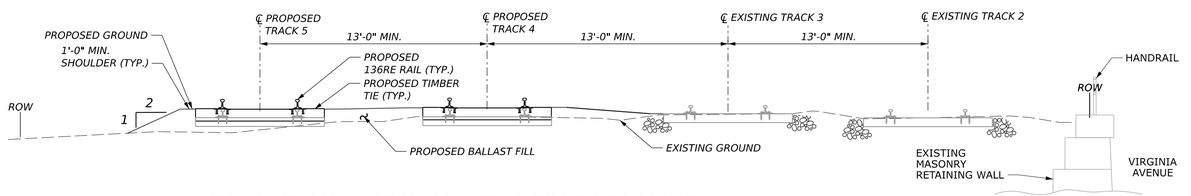
N.T.S.



TRACK TYPICAL SECTION - TWO TRACK GRADING

APPROX. STA. 4030+00 TO 4039+33
N.T.S.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

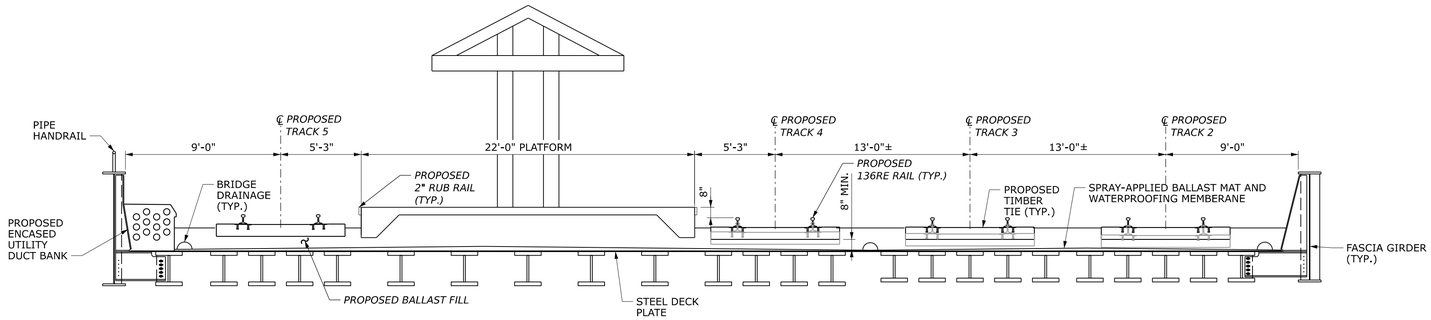
DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

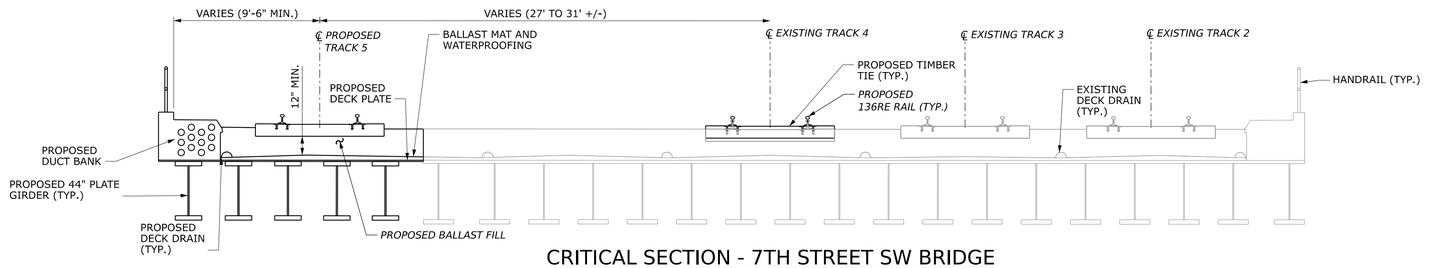
TRACK TYPICAL SECTIONS

IFB NO:
DRAWING NO: T-601
SCALE: AS NOTED
SHEET NO: 116 OF 254



CRITICAL SECTION - 6TH STREET SW BRIDGE

STA 4019+00 +/-
N.T.S.



CRITICAL SECTION - 7TH STREET SW BRIDGE

STA 4013+00 +/-
N.T.S.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/05/25			30% PE PLANS

DESIGNED BY: G. BOLES
DRAWN BY: G. BOLES
CHECKED BY: S. KULLEN
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

TRACK CRITICAL SECTIONS

IFB NO:
DRAWING NO: T-602
SCALE: AS NOTED
SHEET NO: 117 OF 254

GENERAL NOTES

1. ALL PROJECT DRAWINGS AND THE SPECIFICATIONS ARE A PART OF THE CONTRACT DOCUMENTS.

2. THESE DRAWINGS INDICATE IN GENERAL THE PROJECT IN TERMS OF ARCHITECTURAL DESIGN INTENT, THE DIMENSIONS OF THE BUILDING, THE MAJOR ARCHITECTURAL ELEMENTS AND TYPE OF STRUCTURAL, MECHANICAL AND ELECTRICAL SYSTEMS. THE DRAWINGS DO NOT NECESSARILY INDICATE OR DESCRIBE ALL WORK REQUIRED FOR FULL PERFORMANCE AND COMPLETION OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. AS INDICATED OR DESCRIBED, THE CONTRACTOR SHALL FURNISH ALL ITEMS REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK.

3. ITEMS MARKED "N.I.C." ARE "NOT IN CONTRACT." SUCH ITEMS ARE INCLUDED IN THE DOCUMENTS AND REQUIRE CONTRACTORS COORDINATION FOR CONSTRUCTION.

4. DIMENSIONS:
   A) IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON DRAWINGS.
   B) ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
   C) DIMENSIONS ARE NOT ADJUSTABLE WITHOUT APPROVAL OF CONSTRUCTION MANAGER IN WRITING.
   D) MINIMUM CLEARANCE AND OTHER DISABLED ACCESS DIMENSIONAL REQUIREMENTS SHALL TAKE PRECEDENCE IN ALL CASES. NOTIFY CMR OF ANY DISCREPANCIES.
   E) DIMENSION STRING TOLERANCES MAY VARY IN PRECISION. 1/8" TOLERANCE TAKES PRECEDENCE IN ALL CASES.

5. DETAILS MARKED "TYPICAL" (TYP) SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY INDICATED OTHERWISE.

6. WHERE NO SPECIFIC DETAIL IS SHOWN, THE FRAMING OR CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION ON THE PROJECT.

7. DETAILS MARKED AS "SIMILAR" (SIM) MEANS COMPARABLE CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY SIMILAR DIMENSIONS OR NOTES ON THE PLANS.

8. FOLLOW ALL MANUFACTURER'S RECOMMENDED SPECIFICATIONS AND INSTALLATION PROCEDURES UNLESS OTHERWISE DIRECTED.

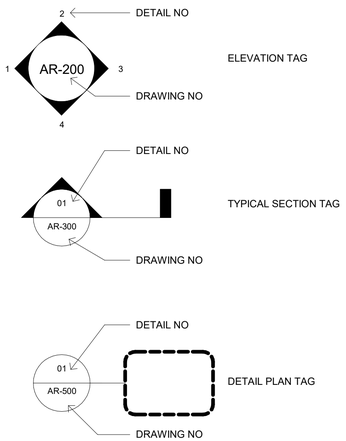
9. PROVIDE ADEQUATE ANCHORAGE, BLOCKING, BACKING AND FRAMING FOR SPRINKLERS, PIPING, LIGHT FIXTURES, ELECTRICAL UNITS, HVAC EQUIPMENT, CEILING AND WALL MOUNTED EQUIPMENT (E.G. CABINETS, HANDRAILS & GUARDRAILS, AND LIGHT FIXTURES) ETC., AS REQUIRED FOR A COMPLETE INSTALLATION.

10. CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITION ON THE JOBSITE AND CONSTRUCTION MANAGER MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITION.

11. ALL DIMENSIONS TO BE VERIFIED IN FIELD.

12. ALL EXPOSED STEEL TO BE GALVANIZED AND PAINTED.

SYMBOLS



CONTRACTOR RESPONSIBILITIES

1. THE CONTRACTOR SHALL EXAMINE THE PROJECT DRAWINGS AND PROJECT SPECIFICATIONS AND SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES FOUND BEFORE PROCEEDING WITH THE WORK.

2. THE CONTRACTOR SHALL VERIFY CONDITION AT THE SITE AND REPORT ANY DISCREPANCIES TO THE CONSTRUCTION MANAGER AND ENGINEER BEFORE PROCEEDING WITH THE WORK.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK AND OPERATIONS OF ALL TRADES AND DISCIPLINES. THE CONTRACTOR SHALL:

   A) SCHEDULE CONSTRUCTION OPERATION IN SEQUENCE TO OBTAIN THE BEST RESULTS WHERE INSTALLATION OF OTHER COMPONENTS, BEFORE OR AFTER ITS INSTALLATION.

   B) COORDINATE INSTALLATION OF DIFFERENT COMPONENTS WITH OTHER CONTRACTORS TO ENSURE MAXIMUM ACCESSIBILITY FOR REQUIRED MAINTENANCE, SERVICE AND REPAIR.

   C) MAKE ADEQUATE PROVISIONS TO ACCOMMODATE ITEMS SCHEDULED FOR LATER INSTALLATION.

4. FLOOR AND WALL OPENINGS, SLEEVES, VARIATIONS IN THE STRUCTURAL SLAB ELEVATIONS, DEPRESSED AREAS, AND ALL OTHER ARCHITECTURAL, MECHANICAL, ELECTRICAL AND / OR CIVIL REQUIREMENTS MUST BE COORDINATED BY THE CONTRACTOR BEFORE THE CONTRACTOR PROCEEDS WITH CONSTRUCTION.

5. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES BELOW GRADE AND RELATED SERVICE CONNECTIONS WITH THE RESPECTIVE UTILITY COMPANY PRIOR TO CONSTRUCTION.

6. THE CONTRACTOR SHALL COORDINATE THE REMOVAL, ABANDONMENT AND / OR RELOCATION OF EXISTING UTILITIES ABOVE OR BELOW GRADE WITH THE RESPECTIVE UTILITY COMPANY.

7. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACES AND SHORES REQUIRED TO SUPPORT ALL LOADS TO WHICH THE BUILDING STRUCTURES AND COMPONENTS, ADJACENT SOILS AND STRUCTURES, UTILITIES AND RIGHT-OF-WAYS MAY BE SUBJECT DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL CONDUCT HIS OWN SITE SURVEY OF THE EXISTING GROUND AND CURB ELEVATIONS (LEVELS) AND REPORT ACTUAL ELEVATIONS (LEVELS) TO THE ENGINEER.

9. CONTRACTOR'S SHOP DRAWINGS SHOULD INDICATE ACTUAL ELEVATIONS (LEVELS).

10. THE CONTRACTOR SHALL SUBMIT SAMPLES AND SHOP DRAWINGS FOR ALL WORKS WITH ALL NECESSARY DETAILS AND DESIGN INFORMATION FOR APPROVAL.

11. SEE SPECIFICATION SECTION "01 35 13 - HOST RAILROAD COORDINATION" FOR ALL REQUIREMENTS FOR WORKING WITHIN OR ADJACENT TO CSX

ABBREVIATIONS

A

AB	Anchor Bolt
ADD	Addendum
ADJ	Adjacent
AFF	Above Finished Floor
AGGR	Aggregate
ALUM	Aluminum
ALT	Alternate
ANOD	Anodized
APPROX	Approximate
ARCH	Architectural

B

BLK'G	Blocking
B.M.	Bench Mark
BD	Board
BF	Backface
BL	Building Line
BLDG	Building
BM	Beam
BRG	Bearing
BRL	Building Restriction Line
BTM	Bottom
BTWN	Between

C

CEM	Cement
CIP	Cast In Place
CJ	Control Joint
CNJT	Construction Joint
CL	Center Line
CLG	Ceiling
CLR	Clear
CMU	Concrete Masonry Unit
COL	Column
CONC	Concrete
CONN	Connection
CONST	Construction
CONT	Continuous
COORD	Coordinate
CORR	Corrugated
CR	Cold Rolled
CSK	Countersunk
CTD	Centered
CTR	Center

D

D	Depth
DTLS	Details
DTL	Detail
DIA	Diameter
DIM	Dimension
DL	Dead Load
DN	Down
DS	Down Spout
DWGS	Drawings
DWLS	Dowels

E

EA	Each
EJ	Expansion Joint
EL	Elevation
ELEV	Elevator
EMBDMT	Embedment
EOS	Edge of Slab
EPOXY'D	Epoxyed
EQ	Equal
EQUIP	Equipment
EW	Each Way
EXIST	Existing
EXP BLT	Expansion Bolt
EXT	Exterior
ETR	Existing to remain

F

FD	Floor Drain
FDN	Foundation
FF	Finish Floor
FHC	Fire Hose Cabinet
FIN	Finish
FLR	Floor
F.R.	Fire Rated
FT	Foot
FTG	Footing
FV	Field Verify

G

GA	Gauge
GALV	Galvanized
GB	Grade Beam
GEN	General
GI	Galvanized Iron
GLS	Glass
GMU	Glazed Masonry Unit
GND	Ground
GR	Grade
GSM	Galvanized Sheet Metal
GYP BD	Gypsum Board

H

H.	High
HDW	Hardware
HDR	Header
HORIZ	Horizontal
HP	High Point
HR	Hour
HT	Height
HWD	Hardwood

I

IBC	International Building Code
ID	Inside Diameter
INFO	Information
INSUL	Insulation

J

K

L

LDGR	Ledger
LG	Long
LOC	Location
LP	Low Point
LSL	Laminated Strand Lumber
LT	Light
LWC	Lightweight Concrete

M

MANUF	Manufacturer
MAS	Masonry
MATL	Material
MAX	Maximum
MDO	Medium Density Overlay
MDF	Medium Density Fiber
MECH	Mechanical
MEMB	Membrane
MEP	Mechanical, Electrical and Plumbing
MFR	Manufacturer
MIL	Thickness
MIN	Minimum
MISC	Miscellaneous
MO	Masonry Opening
MOD	Modified
STL	Metal

N

N/A	Not Available/Applicable
NEC	Necessary
NIC	Not in Contract
NOM	Nominal
NTS	Not to Scale
NWC	Normal Weight Concrete

O

OA	Over All
OC	On Center
OD	Outside Diameter
OD	Overflow Drain
OH	Opposite Hand
OPNG	Opening
OPP	Opposite

P

PERF	Perforated
PL	Property Line
PL	Plate
PLYWD	Plywood
PR	Pair
PREFAB	Prefabricated
PREP	Prepare
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PT	Point
PTD	Painted
PT	Pressure Treated

R

R	Riser
RAD	Radius
RCP	Reflected Ceiling Plan
RD	Roof Drain
REBAR	Reinforcing Bar
REF	Reference
REFURB	Refurbish
REINF	Reinforcing
RELOC	Relocate/Relocated
REQD	Required
RFVC	Recessed Fire Valve Cabinet
RO	Rough Opening

S

S.A.B.	Sound Attenuation Board
SCHED	Schedule
SECT	Section
SF	Square Feet
SHT'G	Sheathing
SHT	Sheet
SIM	Similar
SISTER'D	Sistered
SO	Structural Opening
SOG	Slab on Grade
SPEC	Specification
SQ	Square
S.S.	SS
SSF	Solid Surface
STAGGER'D	Staggered
STD	Standard
STIFF	Stiffener
STIR	Stirrup
STC	Sound Transmission Class
STL	Steel
STRUCT	Structural
SYM	Symmetrical
SYS	System

T

T	Tread
TAPER'D	Tapered
TB	Towel Bar
T&B	Top and Bottom
T&G	Tongue and Groove
THK	Thick
THRU	Through
TJI'S	Trus Joist I Joist
TO	Top of
TOB	Top of Beam
TOC	Top of Concrete
TOCB	Top of Curb
TOF	Top of Footing
TOM	Top of Mullion
TOS	Top of Slab
TOSTL	Top of Steel
TP	Toilet Paper Holder
TR	Towel Ring
TW	Top of Wall
TYP	Typical

U

U/C	Under counter
U/G	Underground
U.L.	Underwriters Laboratory
U.N.O.	Unless Noted Otherwise
UP,NS	Unprotected, Non sprinklered

V

VAR	Varies
VERT	Vertical
V.I.F.	Verify In Field

W

W/	With
W/O	Without
W	Width
WPFG	Waterproof(ing)
WD	Wood
WF	Wide Flange
WL	Wind Load
WP	Work Point
WP0	Work Point - Point of Origin
WP1	Work Point - numbered
W.R.	Weather/Water Resistant
WWF	Welded Wire Fabric

REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A. CHAMBARD
DRAWN BY: A. CHAMBARD
CHECKED BY: L. JEFFORDS
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

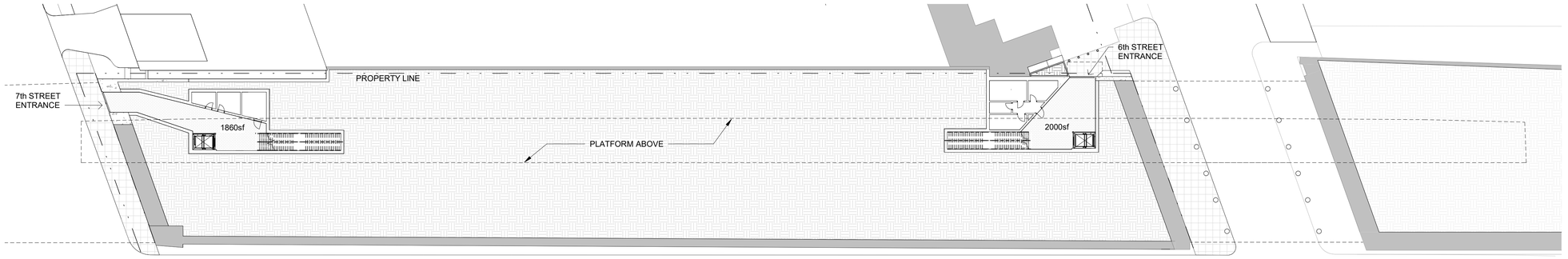
VRE

KGP design studio
1777 Church St. NW
Washington, DC 20036
202.822.2102

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

GENERAL NOTES & ABREVIATIONS

IFB NO:
DRAWING NO: A-000
SCALE: AS NOTED
SHEET NO: 138 OF 254



7TH STREET SW

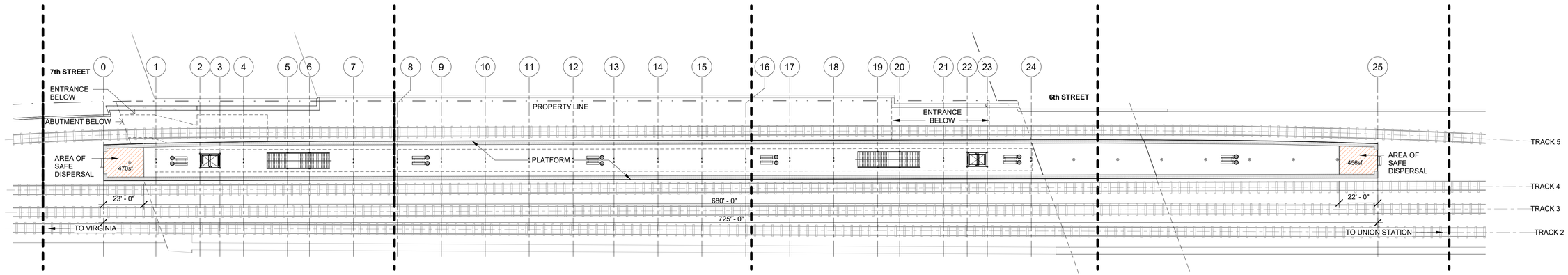
6TH STREET SW

GENERAL NOTES:

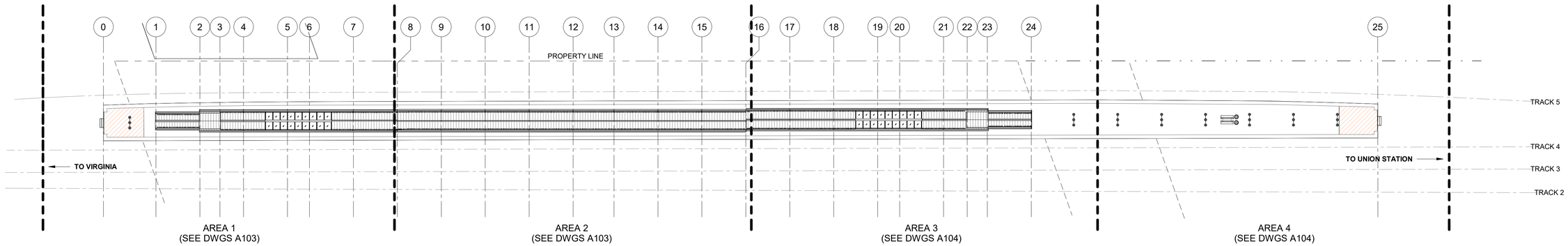
1. REFER TO CIVIL DRAWINGS FOR OVERALL PLATFORM DIMENSIONS. PLANS ARE ROTATED FOR DESIGN PURPOSE.

2. A TOTAL OF 12 BENCHES AND 12 BLAST-RESISTANT RECEPTACLES (6 FOR TRASH AND 6 FOR RECYCLING) SHALL BE PROVIDED BY VRE.

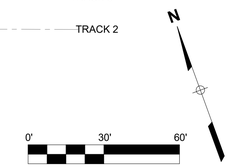
1 / A-100 SITE PLAN STREET ENTRANCE LEVEL
SCALE: 1" = 30'-0"



2 / A-100 SITE PLAN PLATFORM LEVEL
SCALE: 1" = 30'-0"



3 / A-100 SITE PLAN ROOF LEVEL
SCALE: 1" = 30'-0"



REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A. CHAMBARD
DRAWN BY: A. CHAMBARD
CHECKED BY: L. JEFFORDS
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

KGP design studio
1777 Church St. NW
Washington, DC 20036
202.822.2102

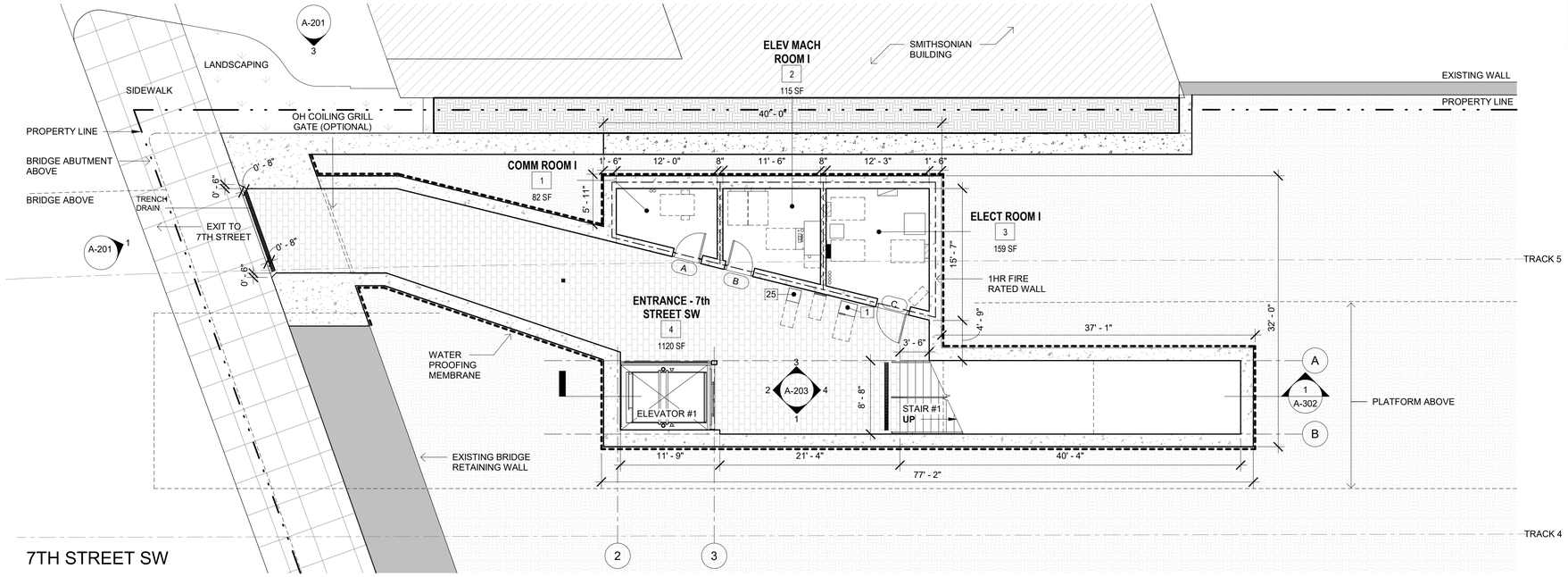
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ARCHITECTURAL SITE PLAN

IFB NO:
DRAWING NO: A-100
SCALE: AS NOTED
SHEET NO: 139 OF 254

KEYNOTES LEGEND

NUMBER	DESCRIPTION
1	VRE TICKET VENDING MACHINE, TYP
25	TICKET VALIDATOR



1 A-101 7TH STREET SW ENTRANCE PLAN
SCALE: 1/8" = 1'-0"

AREA I

2 A-101 7TH STREET SW ENTRANCE INTERIOR VIEW
SCALE: 3" = 1'-0"

3 A-101 7TH STREET SW ENTRANCE - EXTERIOR VIEW
SCALE: 3" = 1'-0"

4 A-101 7TH STREET SW EXISTING CONDITION
SCALE: 3" = 1'-0"

N

0' 4' 8' 16'

REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A. CHAMBARD
DRAWN BY: A. CHAMBARD
CHECKED BY: L. JEFFORDS
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

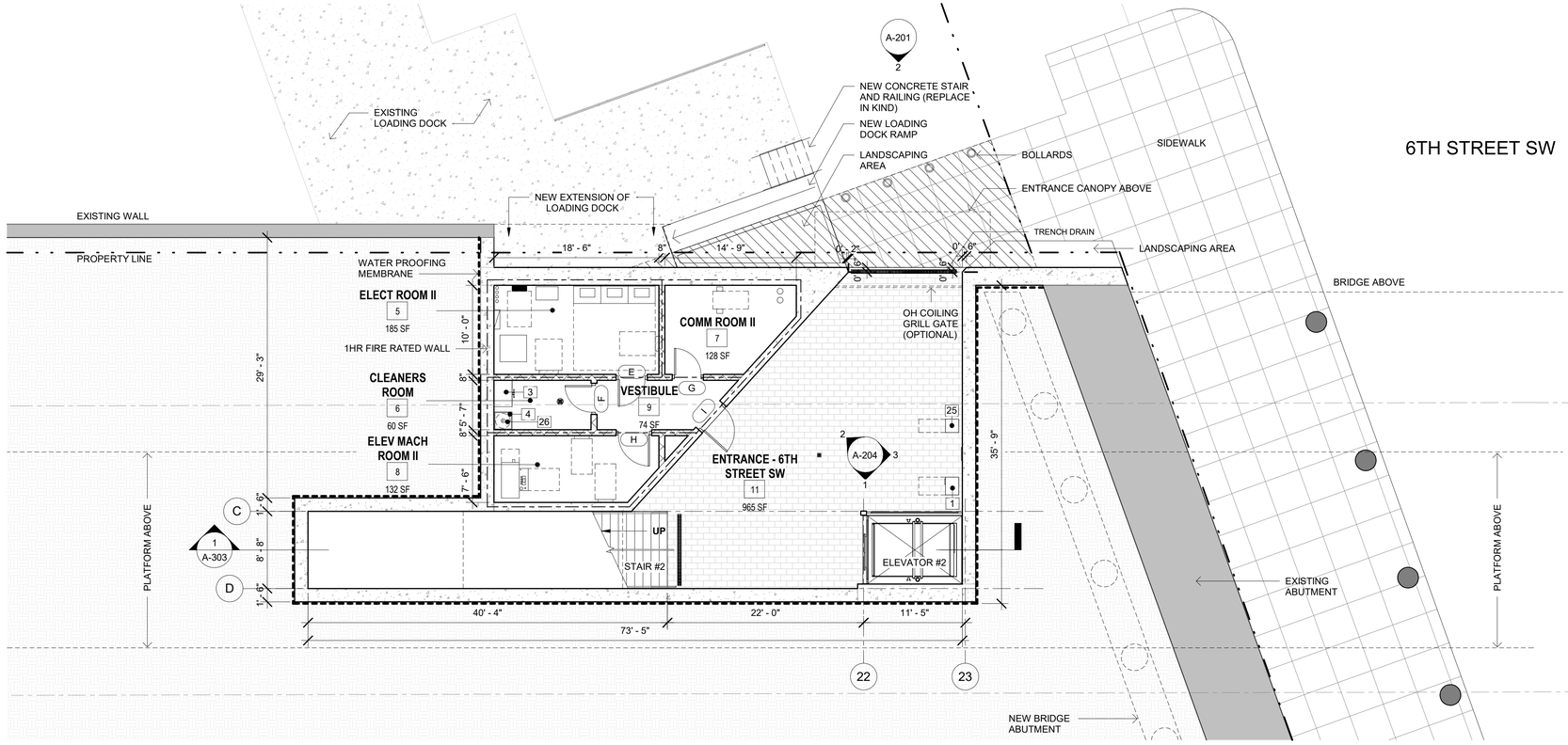
VRE

KGP design studio
1777 Church St. NW
Washington, DC 20036
202.822.2102

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

7TH STREET SW ENTRANCE PLAN

IFB NO:
DRAWING NO: A-101
SCALE: AS NOTED
SHEET NO: 140 OF 254

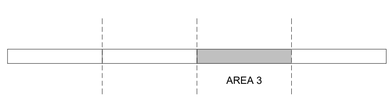


1 A-102 6TH STREET SW ENTRANCE - FLOOR PLAN
SCALE: 1/8" = 1'-0"

KEYNOTES LEGEND

NUMBER	DESCRIPTION
1	VRE TICKET VENDING MACHINE, TYP
3	CLEANER SUPPLY CABINET
4	UTILITY SINK
25	TICKET VALIDATOR
26	WATER HEATER

VRE EXISTING EASEMENT



2 A-102 6TH STREET SW ENTRANCE - INTERIOR VIEW
SCALE: 3" = 1'-0"

3 A-102 6TH STREET SW ENTRANCE - EXTERIOR VIEW
SCALE: 3" = 1'-0"

4 A-102 6TH STREET SW ENTRANCE - EXISTING CONDITION
SCALE: 3" = 1'-0"

N

0' 4' 8' 16'

REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A. CHAMBARD
DRAWN BY: A. CHAMBARD
CHECKED BY: L. JEFFORDS
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

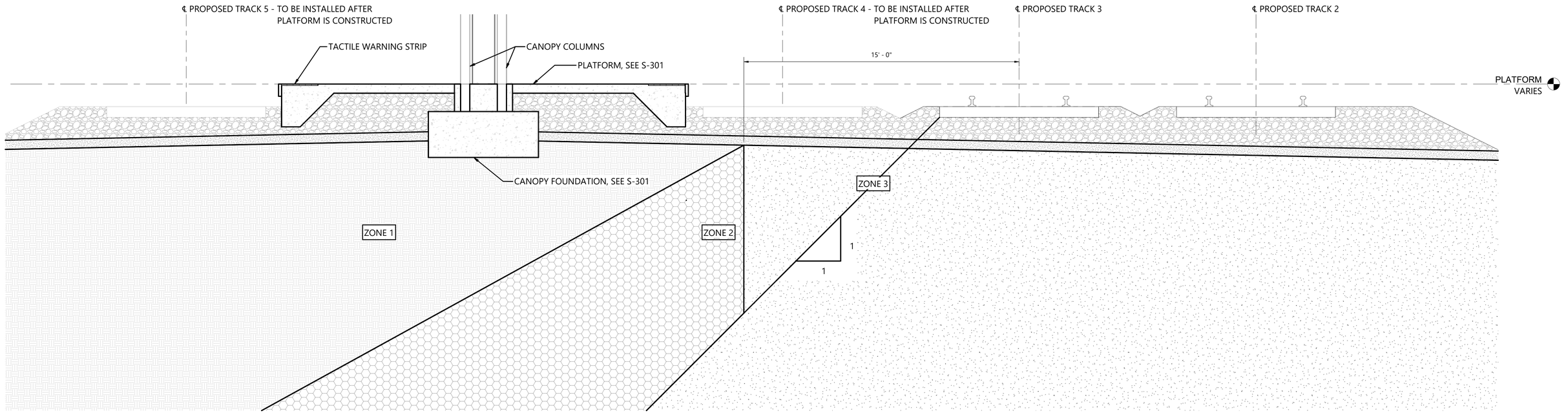
VRE

KGP design studio
1777 Church St. NW
Washington, DC 20036
202.822.2102

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

6TH STREET SW ENTRANCE PLAN

IFB NO:
DRAWING NO: A-102
SCALE: AS NOTED
SHEET NO: 141 OF 254



1 S-303 CSX SHORING ZONE AT TYPICAL PLATFORM SECTION
3/8" = 1'-0"

NOTES:

1. REFER TO STRUCTURAL NOTES, SYMBOLS, AND ABBREVIATIONS SHEETS FOR ADDITIONAL INFORMATION.
2. SEE CIVIL DRAWINGS FOR ADDITIONAL TOP OF GRADE ELEVATIONS.
3. TRACK 4 WILL BE PLACED AFTER THE PLATFORM FOUNDATIONS HAVE BEEN CONSTRUCTED, AND THEREFORE WILL NOT REQUIRE ADDITIONAL SHORING REQUIREMENTS.

NORMAL REQUIREMENTS FOR SHORING ADJACENT TO TRACK

ZONE 1 - EXCAVATIONS ABOVE AND OUTSIDE OF THE THEORETICAL RAILROAD EMBANKMENT LINE - DO NOT NORMALLY REQUIRE SHORING TO PROTECT RAILROAD ROADBED, SHORING MAY BE REQUIRED FOR OTHER REASONS

ZONE 2 - EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 2 REQUIRE SHORING, BUT THE SHORING MAY NORMALLY BE PULLED AFTER THE EXCAVATION HAS BEEN BACKFILLED

ZONE 3 - EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 3 WILL NORMALLY REQUIRE THE SHORING TO BE LEFT IN PLACE AND CUT-OFF 3' BELOW BASE OF RAIL. SHORING MUST BE DESIGNED FOR COOPER E80 LIVE LOAD

REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A.MACPHERSON
DRAWN BY: S. LEE
CHECKED BY: A.MACPHERSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

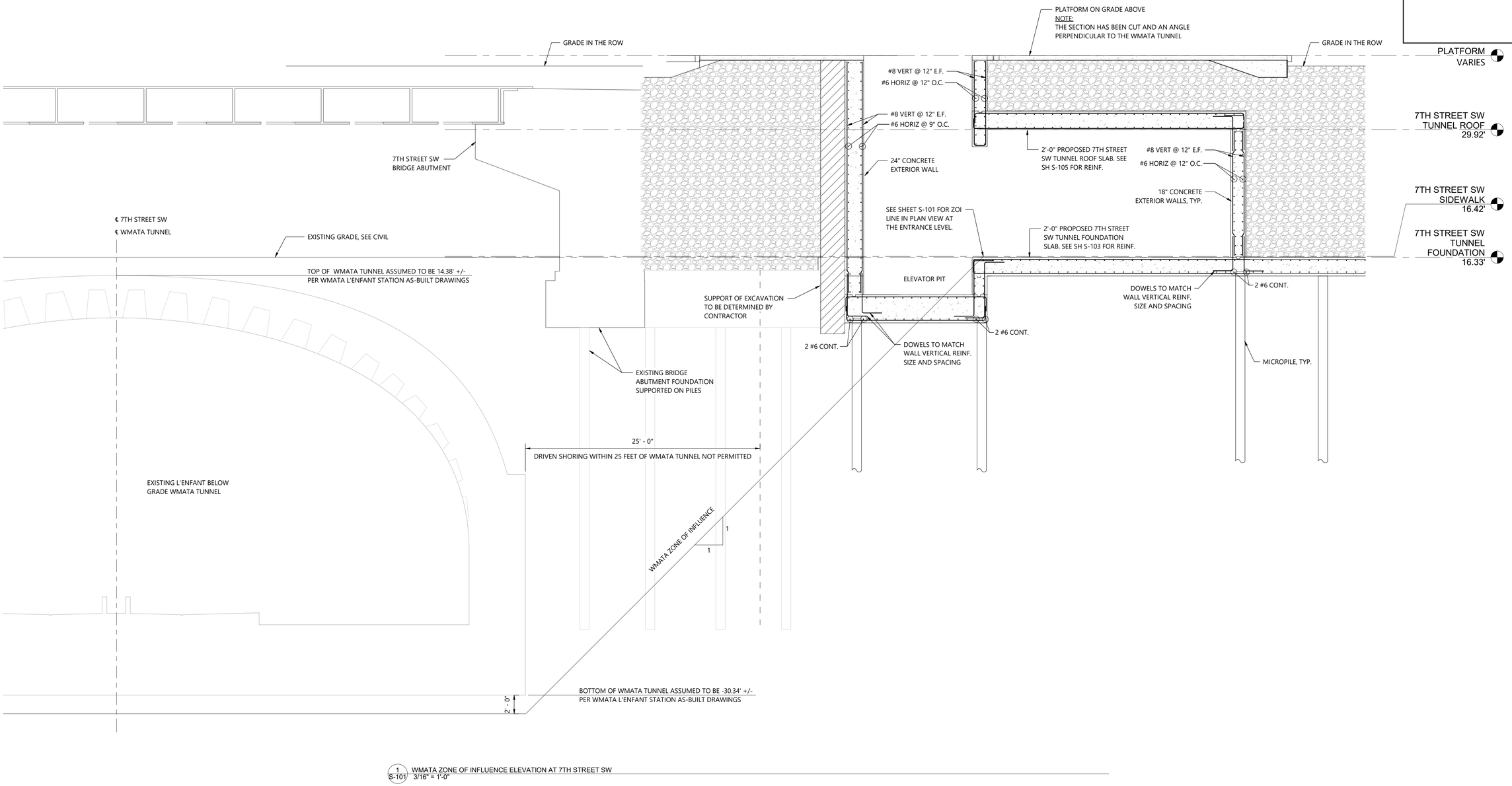
DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

CSX SHORING ZONE AT TYPICAL PLATFORM SECTION

IFB NO:
DRAWING NO: S-303
SCALE: AS NOTED
SHEET NO: 188 OF 254



1 S-101 WMATA ZONE OF INFLUENCE ELEVATION AT 7TH STREET SW
3/16" = 1'-0"

REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A.MACPHERSON
DRAWN BY: S. LEE
CHECKED BY: A.MACPHERSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

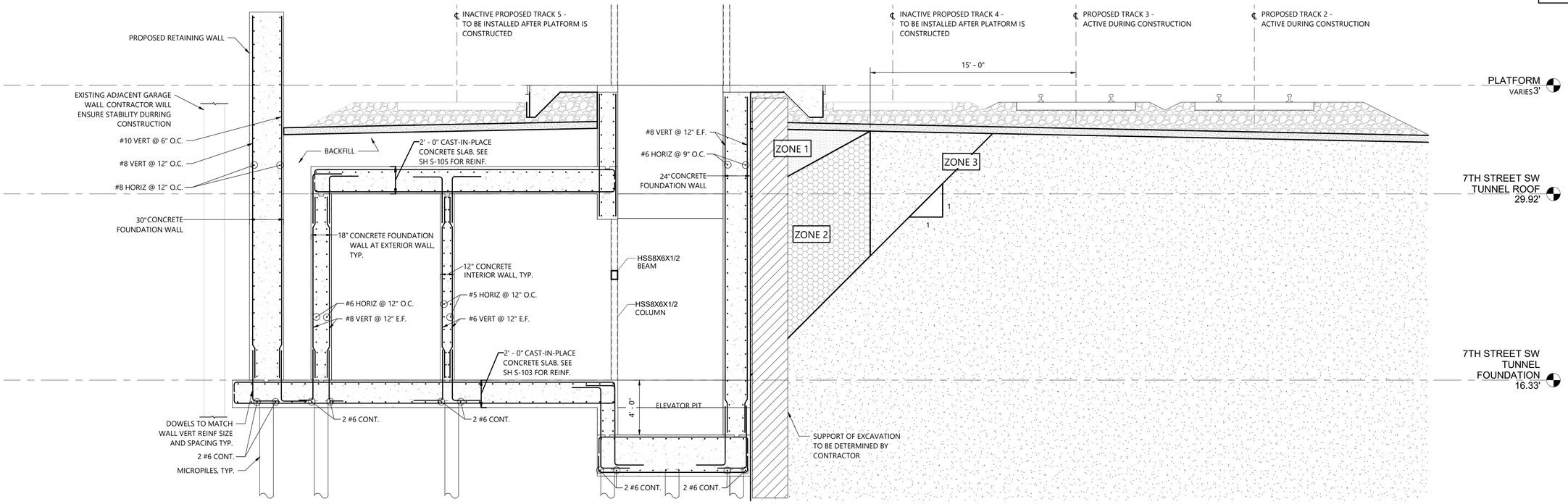
DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

WMATA ZONE OF INFLUENCE AT 7TH STREET SW TUNNEL

IFB NO:
DRAWING NO: S-304
SCALE: AS NOTED
SHEET NO: 189 OF 254



1 S-305 CSX SHORING ZONES AT TYPICAL ELEVATOR AND TUNNEL SECTION AT 7TH STREET SW
1/4" = 1'-0"

NOTES:

1. REFER TO STRUCTURAL NOTES, SYMBOLS, AND ABBREVIATIONS SHEETS FOR ADDITIONAL INFORMATION.
2. SEE CIVIL DRAWINGS FOR ADDITIONAL TOP OF GRADE ELEVATIONS.
3. TRACK 4 WILL BE PLACED AFTER THE PLATFORM FOUNDATIONS HAVE BEEN CONSTRUCTED, AND THEREFORE WILL NOT REQUIRE ADDITIONAL SHORING REQUIREMENTS.

NORMAL REQUIREMENTS FOR SHORING ADJACENT TO TRACK

ZONE 1 - EXCAVATIONS ABOVE AND OUTSIDE OF THE THEORETICAL RAILROAD EMBANKMENT LINE - DO NOT NORMALLY REQUIRE SHORING TO PROTECT RAILROAD ROADBED, SHORING MAY BE REQUIRED FOR OTHER REASONS

ZONE 2 - EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 2 REQUIRE SHORING, BUT THE SHORING MAY NORMALLY BE PULLED AFTER THE EXCAVATION HAS BEEN BACKFILLED

ZONE 3 - EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 3 WILL NORMALLY REQUIRE THE SHORING TO BE LEFT IN PLACE AND CUT-OFF 3' BELOW BASE OF RAIL. SHORING MUST BE DESIGNED FOR COOPER E80 LIVE LOAD

REV.NO.	DATE	BY	APP BY	DESCRIPTION

DESIGNED BY: A.MACPHERSON
DRAWN BY: S. LEE
CHECKED BY: A.MACPHERSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

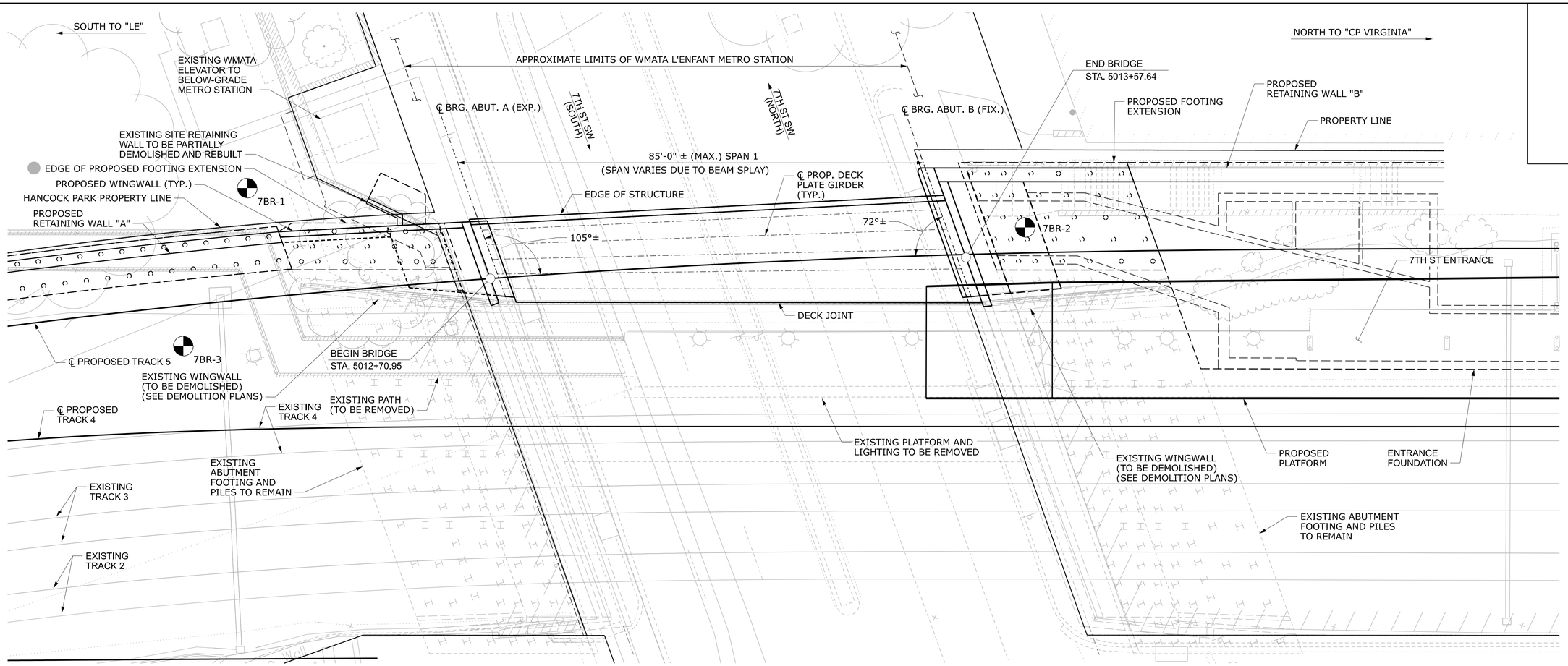
DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

VRE

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

CSX SHORING ZONES AT 7TH STREET SW ELEVATOR AND TUNNEL SECTION

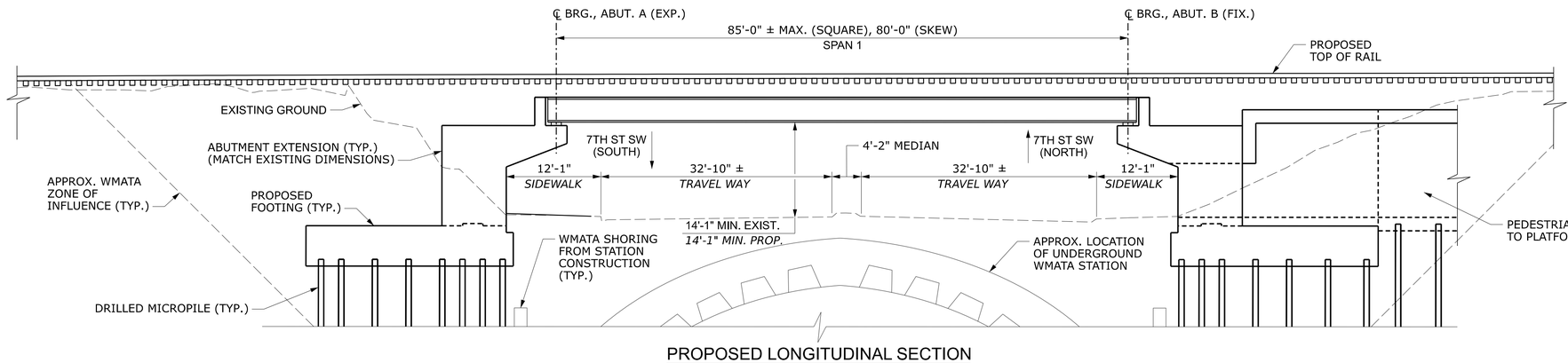
IFB NO:
DRAWING NO: S-305
SCALE: AS NOTED
SHEET NO: 190 OF 254



PLAN
SCALE 1" = 10'-0"

PLAN NOTES:

1. SEE CIVIL DRAWINGS FOR LOCATION OF ABANDONED 1943 PEDESTRIAN TUNNEL



PROPOSED LONGITUDINAL SECTION
SCALE 1" = 10'-0"

LONGITUDINAL SECTION NOTES:

1. SECTION TAKEN ALONG PROPOSED TRACK 5.
2. DIMENSIONS SHOWN ARE PERPENDICULAR TO THE FACE OF SUBSTRUCTURES UNLESS OTHERWISE NOTED.
3. UTILITIES NOT SHOWN FOR CLARITY, SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.
4. THE WMATA ZONE OF INFLUENCE IS APPROXIMATE BASED ON DIMENSIONS FROM THE ORIGINAL 1972 7TH STREET BRIDGE DRAWINGS BY SVERDRUP & PARCEL, FIELD SURVEY WITHIN THE STATION, AND THE WMATA ADJACENT CONSTRUCTION MANUAL SECTION 1.04.B.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: A. ELLIS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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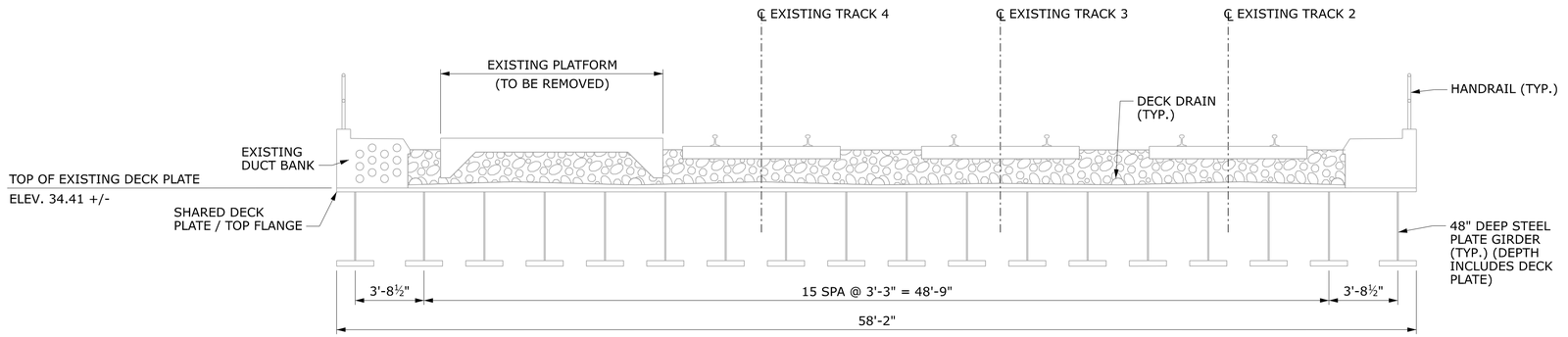
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

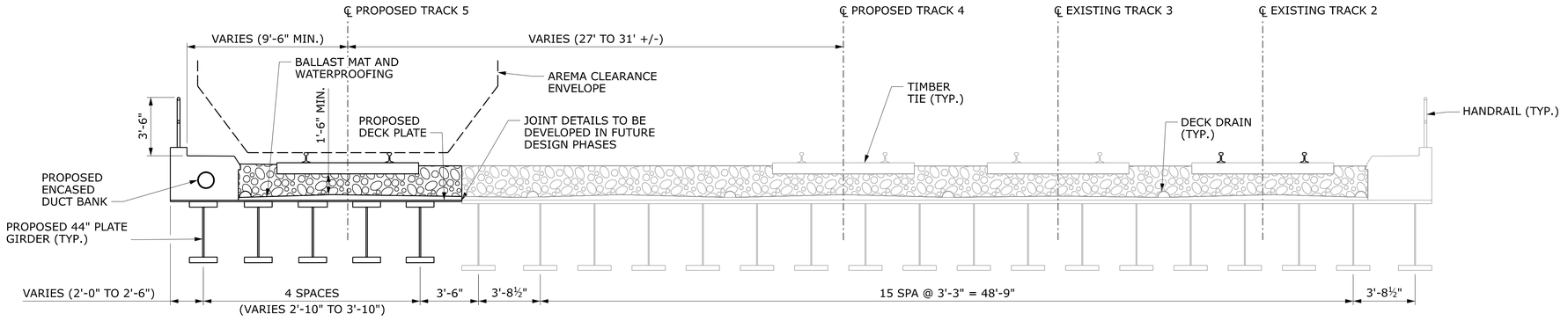
7TH STREET SW BRIDGE WIDENING PLAN AND LONGITUDINAL SECTION

IFB NO:
DRAWING NO: BR-101
SCALE: AS NOTED
SHEET NO: 198 OF 254



EXISTING TRANSVERSE SECTION

SCALE 1/4" = 1'-0"



PROPOSED TRANSVERSE SECTION

SCALE 1/4" = 1'-0"

NOTE: THE SAFE DISPERSAL AREA AT THE NORTHERN END OF THE BRIDGE IS NOT SHOWN FOR CLARITY. ADDITIONAL DETAILS TO BE PROVIDED IN FINAL DESIGN.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: A. ELLIS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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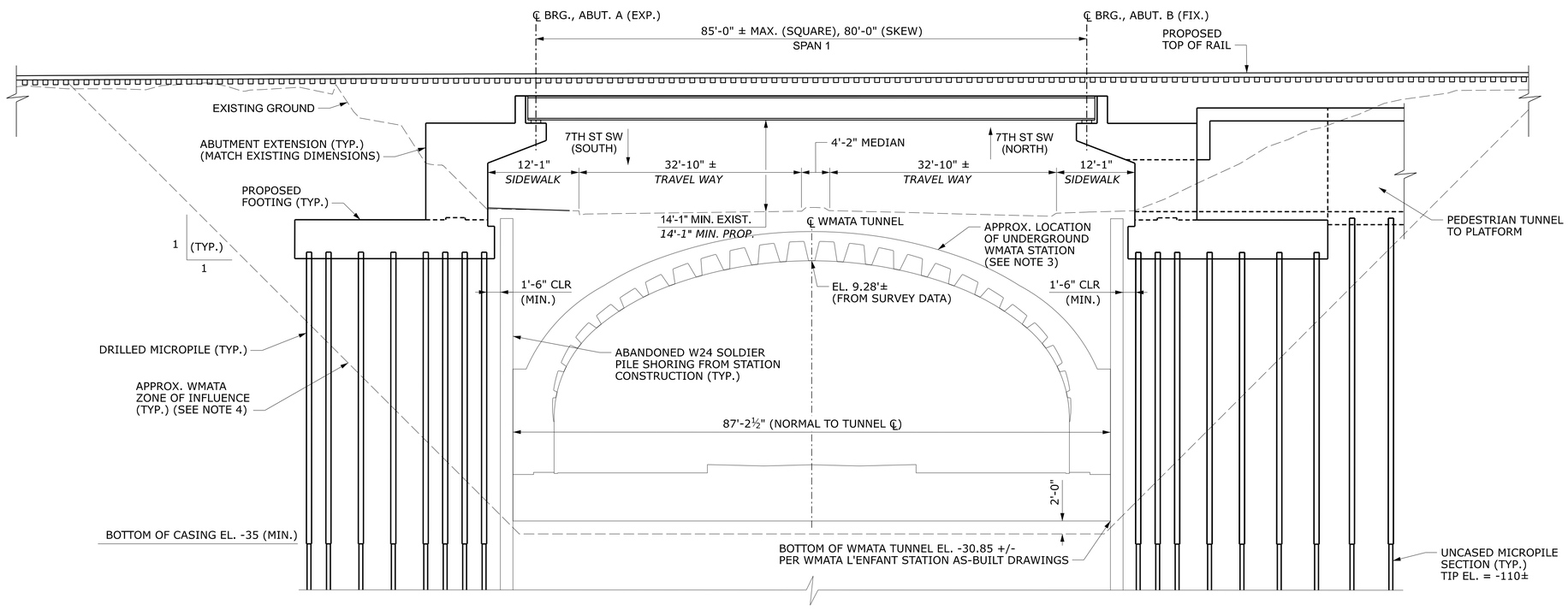
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

7TH STREET SW BRIDGE WIDENING TRANSVERSE SECTION

IFB NO:
DRAWING NO: BR-102
SCALE: AS NOTED
SHEET NO: 199 OF 254



7TH STREET SW BRIDGE - WMATA ZONE OF INFLUENCE

SCALE 1" = 10'-0"

DEVELOPED SECTION NOTES:

1. SECTION TAKEN ALONG PROPOSED TRACK 5.
2. DIMENSIONS SHOWN ARE PERPENDICULAR TO THE FACE OF SUBSTRUCTURES UNLESS OTHERWISE NOTED.
3. THE WMATA ZONE OF INFLUENCE IS APPROXIMATED BASED A COMBINATION OF FIELD SURVEY AND ELEVATIONS FROM THE ORIGINAL 1972 7TH STREET BRIDGE DRAWINGS BY SVERDRUP & PARCEL.
4. THE ZONE OF INFLUENCE IS SHOWN PER WMATA ADJACENT CONSTRUCTION MANUAL SECTION 1.04.B.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: D. MORRISSETTE
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

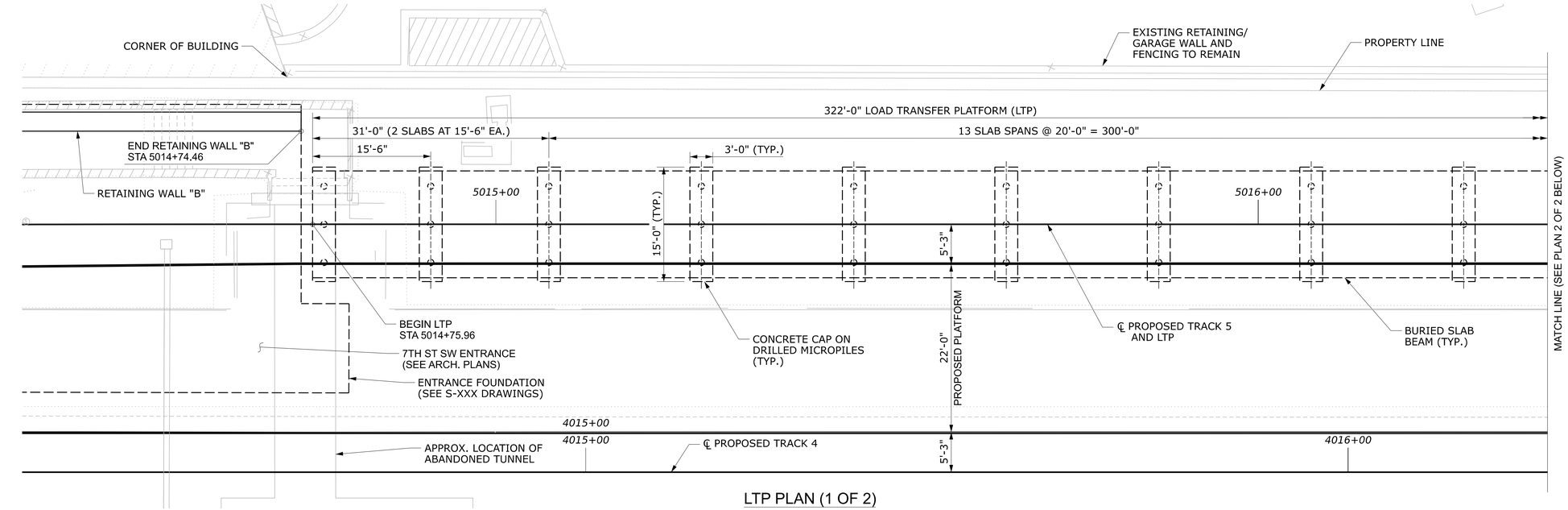
DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

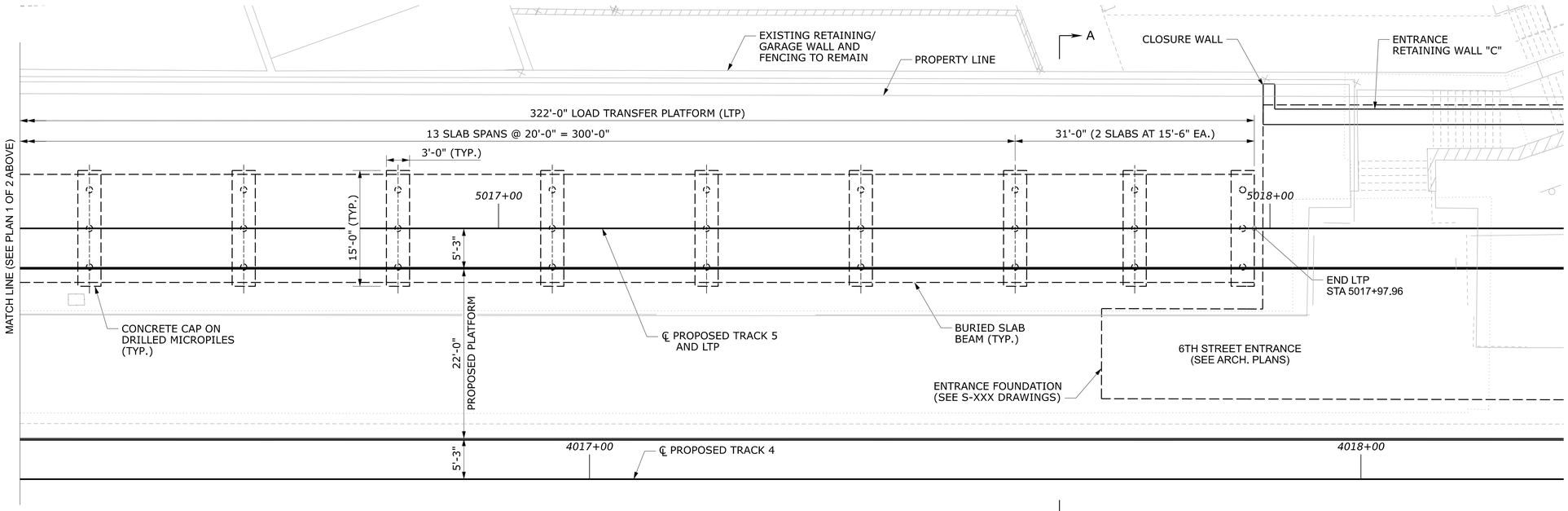
7TH STREET SW BRIDGE WIDENING WMATA CLEARANCES AND ZONE OF INFLUENCE

IFB NO:
DRAWING NO: BR-112
SCALE: AS NOTED
SHEET NO: 209 OF 254



LTP PLAN (1 OF 2)

SCALE ⅛" = 1'-0"



LTP PLAN (2 OF 2)

SCALE ⅛" = 1'-0"

NOTES:

1. SEE SHEET BR-100 FOR LOCUS MAP INDICATING LOCATION OF LTP.
2. SEE SHEET BR-201 FOR SECTION A-A.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: K. SMIACH
DRAWN BY: E. PHELPS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON, CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE, CHIEF ENGINEER — DATE

VRE

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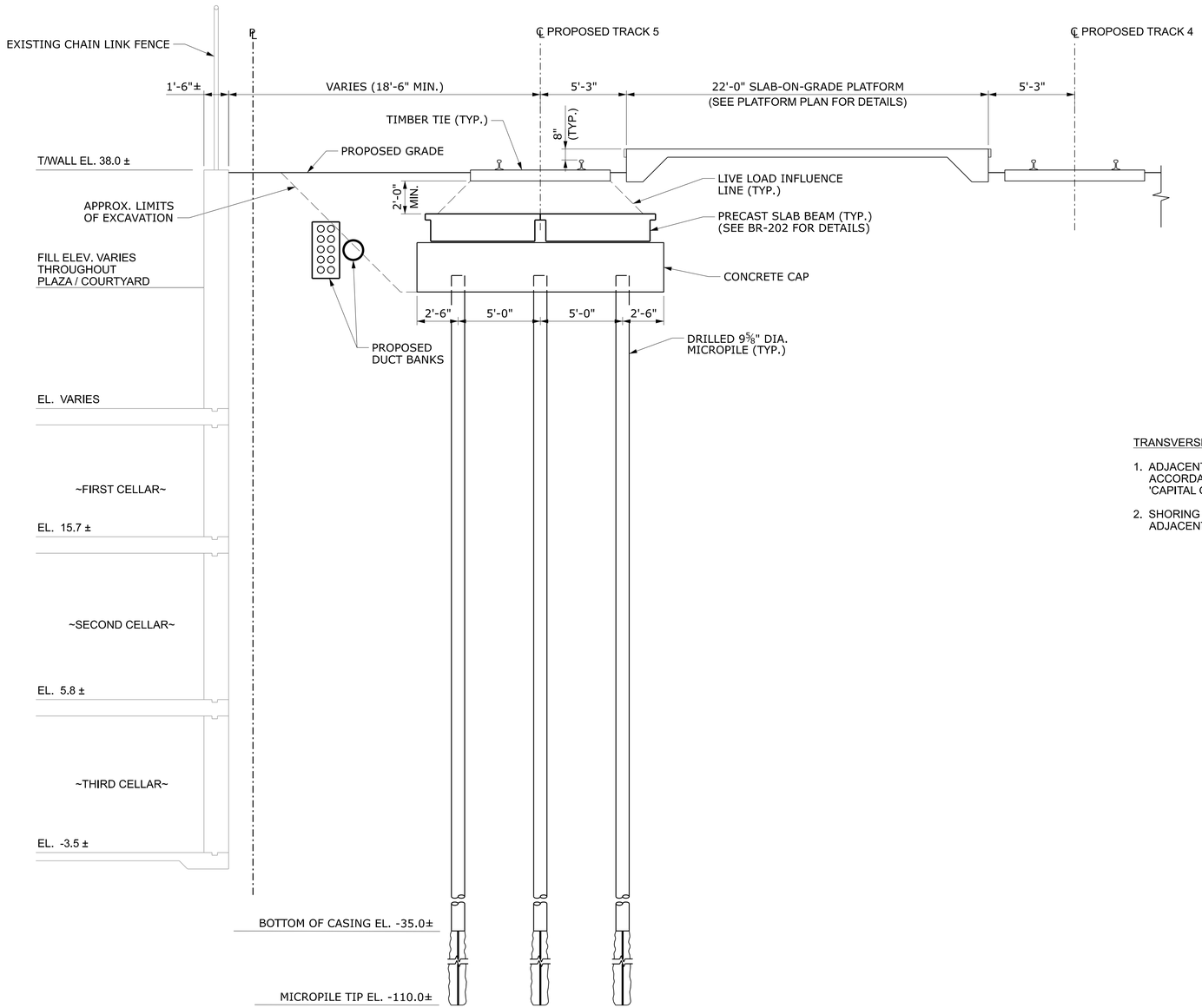
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PROPOSED TRACK 4 LOAD TRANSFER PLATFORM GENERAL PLAN

IFB NO:
DRAWING NO: BR-200
SCALE: AS NOTED
SHEET NO: 210 OF 254



SECTION A-A
LTP TRANSVERSE SECTION
SCALE ¼" = 1'-0"

TRANSVERSE SECTION NOTES:

1. ADJACENT INFRASTRUCTURE AND ELEVATIONS ARE SHOWN IN ACCORDANCE WITH THE 1980 STRUCTURAL DESIGN PLANS FOR 'CAPITAL GALLERY' BY KCE STRUCTURAL ENGINEERS, PC.
2. SHORING MAY HAVE BEEN ABANDONED IN PLACE ON THE ADJACENT PROPERTY. THE PRESENCE OF TIEBACKS IS UNKNOWN.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: K. SMIACH
DRAWN BY: E. PHELPS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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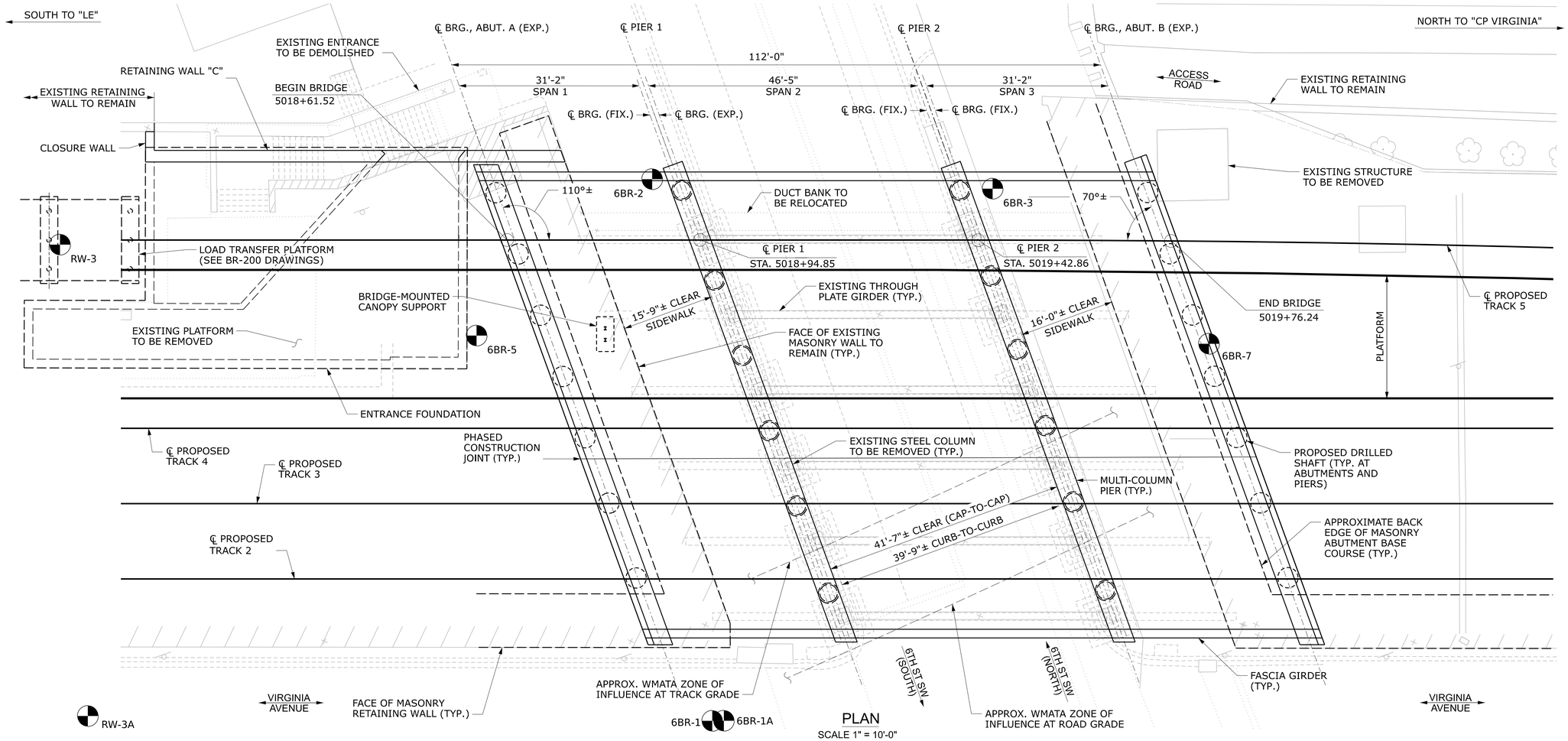
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

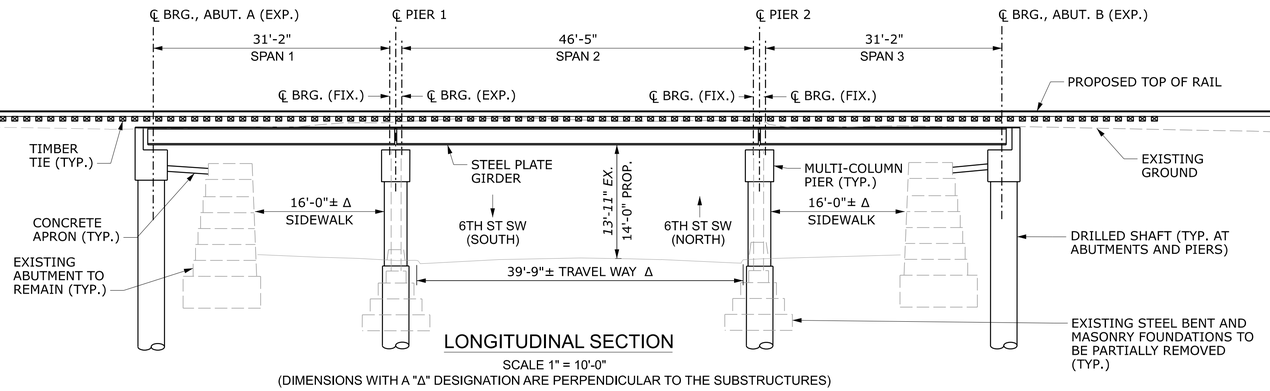
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PROPOSED TRACK 5 LOAD TRANSFER PLATFORM TRANSVERSE SECTION

IFB NO:
DRAWING NO: BR-201
SCALE: AS NOTED
SHEET NO: 211 OF 254



PLAN
SCALE 1" = 10'-0"



LONGITUDINAL SECTION
SCALE 1" = 10'-0"
(DIMENSIONS WITH A "Δ" DESIGNATION ARE PERPENDICULAR TO THE SUBSTRUCTURES)

LONGITUDINAL SECTION NOTES:

1. SECTION TAKEN ALONG PROPOSED TRACK 5.
2. UTILITIES NOT SHOWN FOR CLARITY, SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.
3. SEE SHEET BR-314 FOR ADDITIONAL INFORMATION ON WMATA ZONE OF INFLUENCE.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: E. PHELPS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

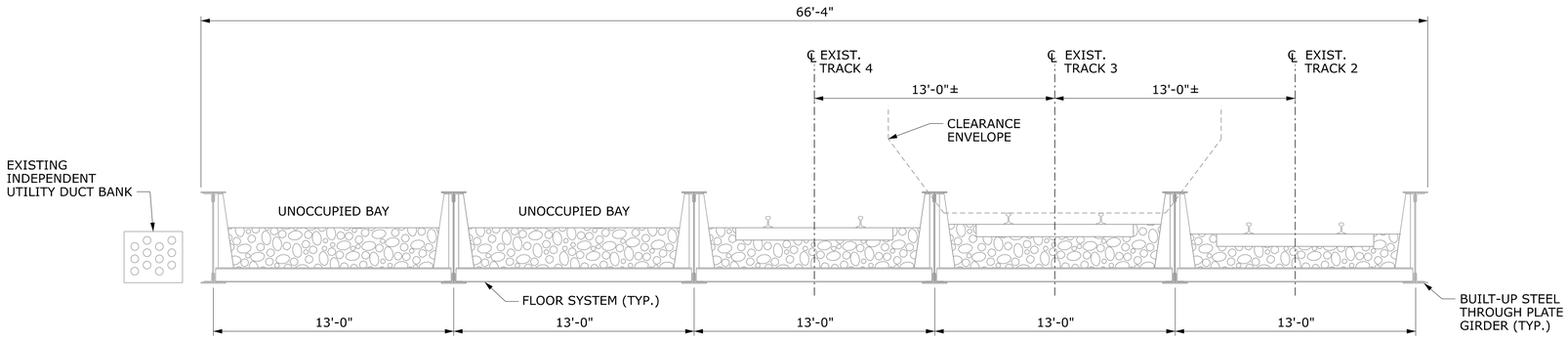
VRE

vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

6TH STREET SW BRIDGE REPLACEMENT PLAN AND LONGITUDIANAL SECTION

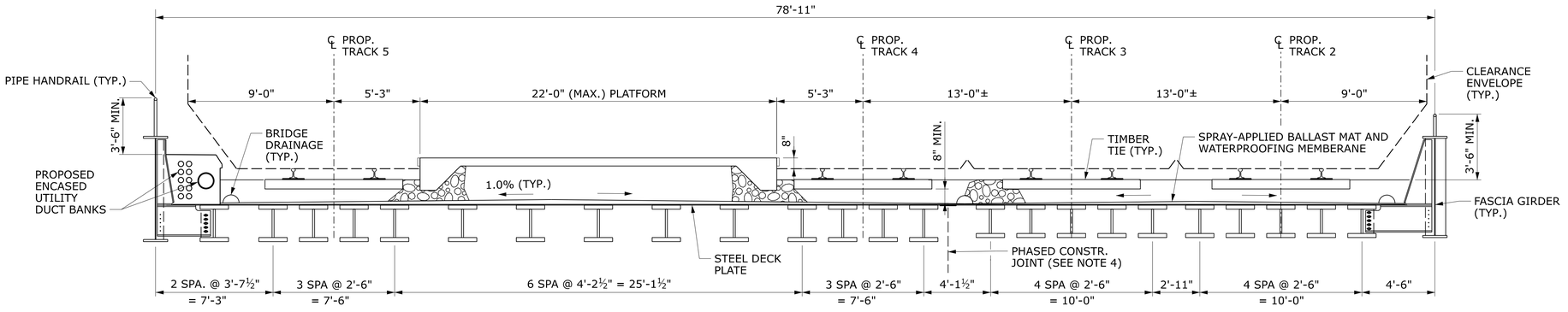
IFB NO:
DRAWING NO: BR-301
SCALE: AS NOTED
SHEET NO: 214 OF 254



EXISTING TRANVERSE SECTION

SCALE ¼" = 1'-0"

NOTE: ONLY ONE CLEARANCE ENVELOPE SHOWN FOR CLARITY. OTHER TRACKS SIMILAR.



PROPOSED TRANVERSE SECTION

SCALE ¼" = 1'-0"

NOTES:

1. THE THICKNESS OF THE SPRAY-APPLIED BALLAST MAT SHALL BE 1/4" AT THE GUTTERLINES.
2. THE THICKNESS OF THE SPRAY-APPLIED WATERPROOFING SHALL BY 80 MILS OR GREATER.
3. THE PLATE GIRDERS UNDER PROPOSED TRACKS 2 AND 3 ARE 24" DEEP. THE PLATE GIRDERS UNDER PROPOSED TRACKS 4 AND 5 AND THE PLATFORM ARE 27" DEEP. SEE SHEET BR-309 FOR ADDITIONAL DETAILS.
4. ADDITIONAL PHASED CONSTRUCTION JOINT DETAILS TO BE PROVIDED IN FUTURE SUBMITTALS.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: E. PHELPS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE

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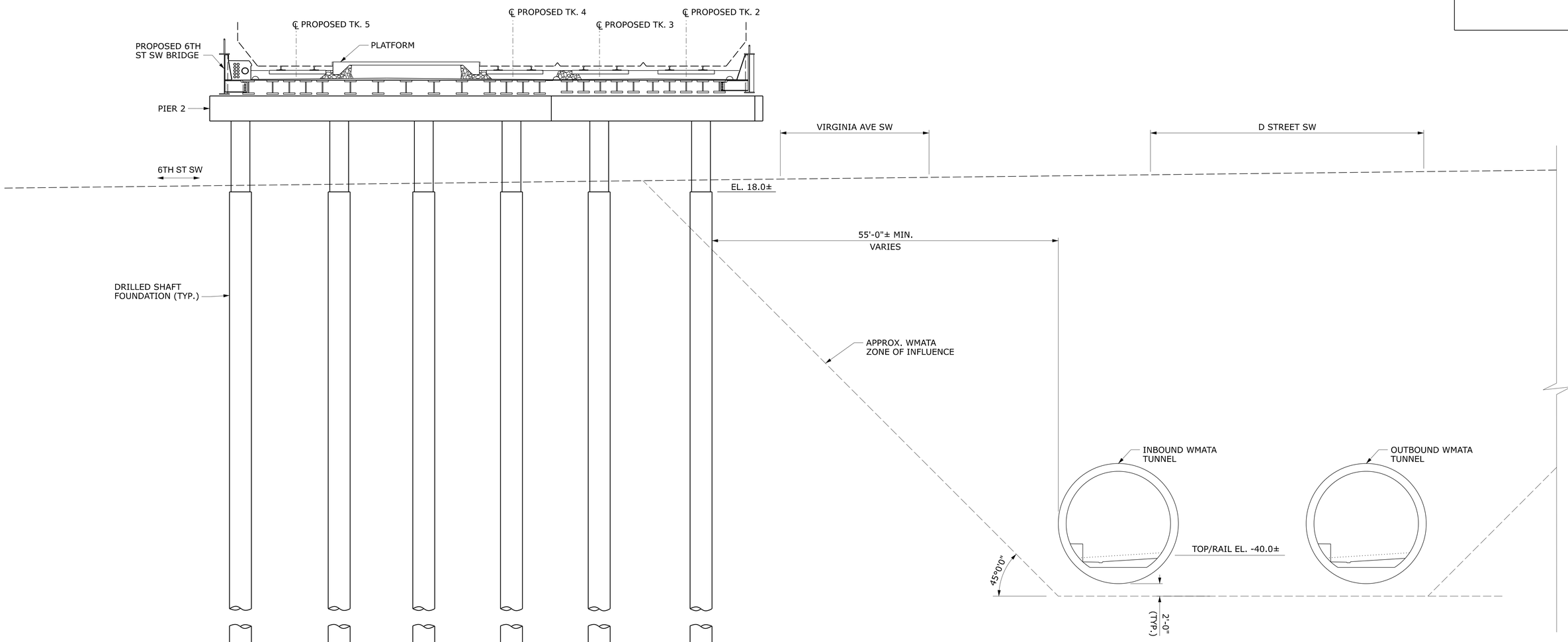
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION

IFB NO:
DRAWING NO: BR-302
SCALE: AS NOTED
SHEET NO: 215 OF 254



6TH ST BRIDGE - WMATA ZONE OF INFLUENCE

SCALE ⅛" = 1'-0"

DEVELOPED SECTION NOTES:

1. SECTION TAKEN ALONG 6TH STREET SW PARALLEL TO BRIDGE PIER 2.
2. THE ZONE OF INFLUENCE IS SHOWN PER WMATA ADJACENT CONSTRUCTION MANUAL SECTION 1.04.B.
3. THE WMATA ZONE OF INFLUENCE IS APPROXIMATED BASED ON THE 1972 'ARDMORE ROUTE' DRAWINGS BY PRAEGER, KAVANAGH, WATERBURY. FIELD SUVERY WITHIN THE WMATA TUNNELS IS NOT PART OF THIS PROJECT'S SCOPE.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: D. MORRISSETTE
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

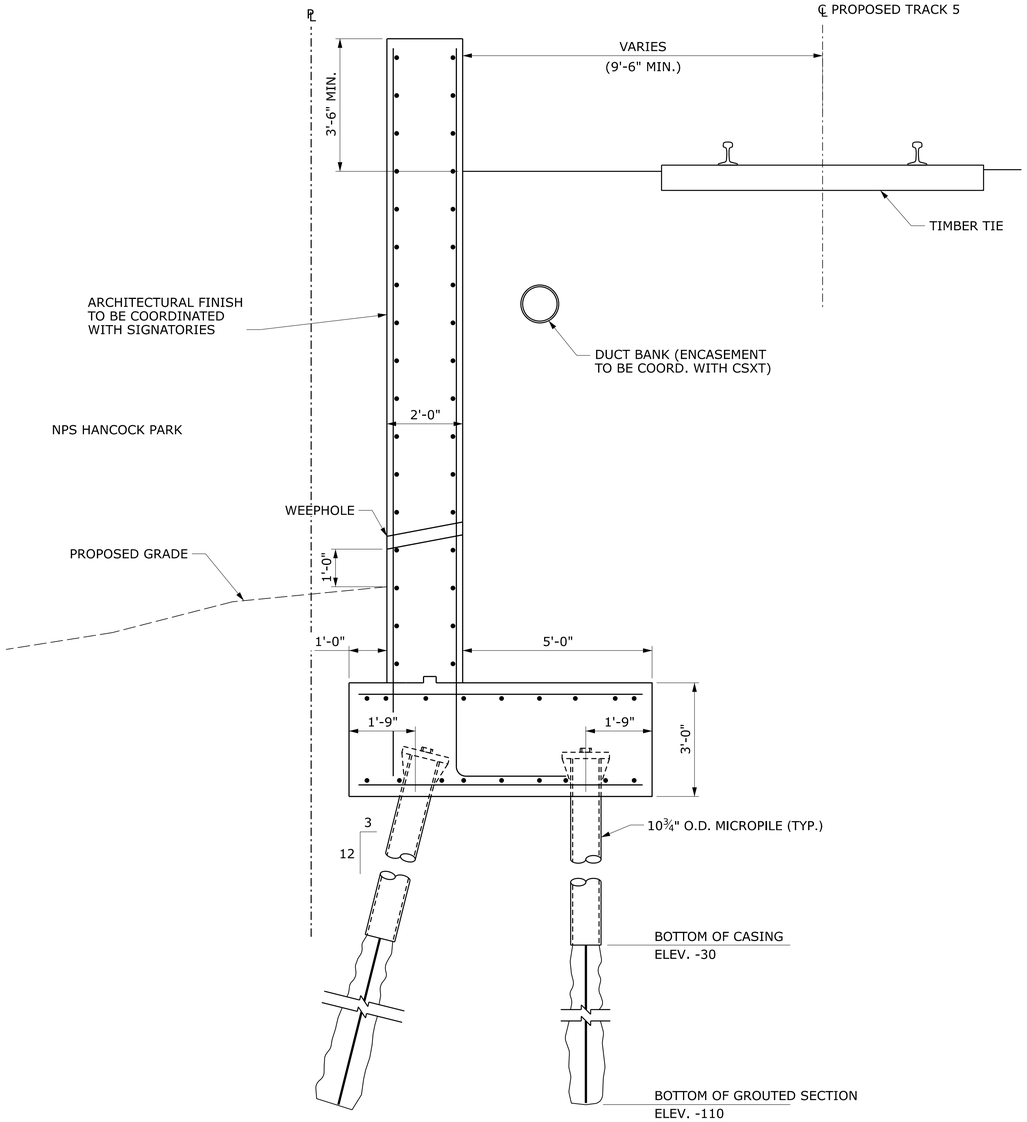
VRE

vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

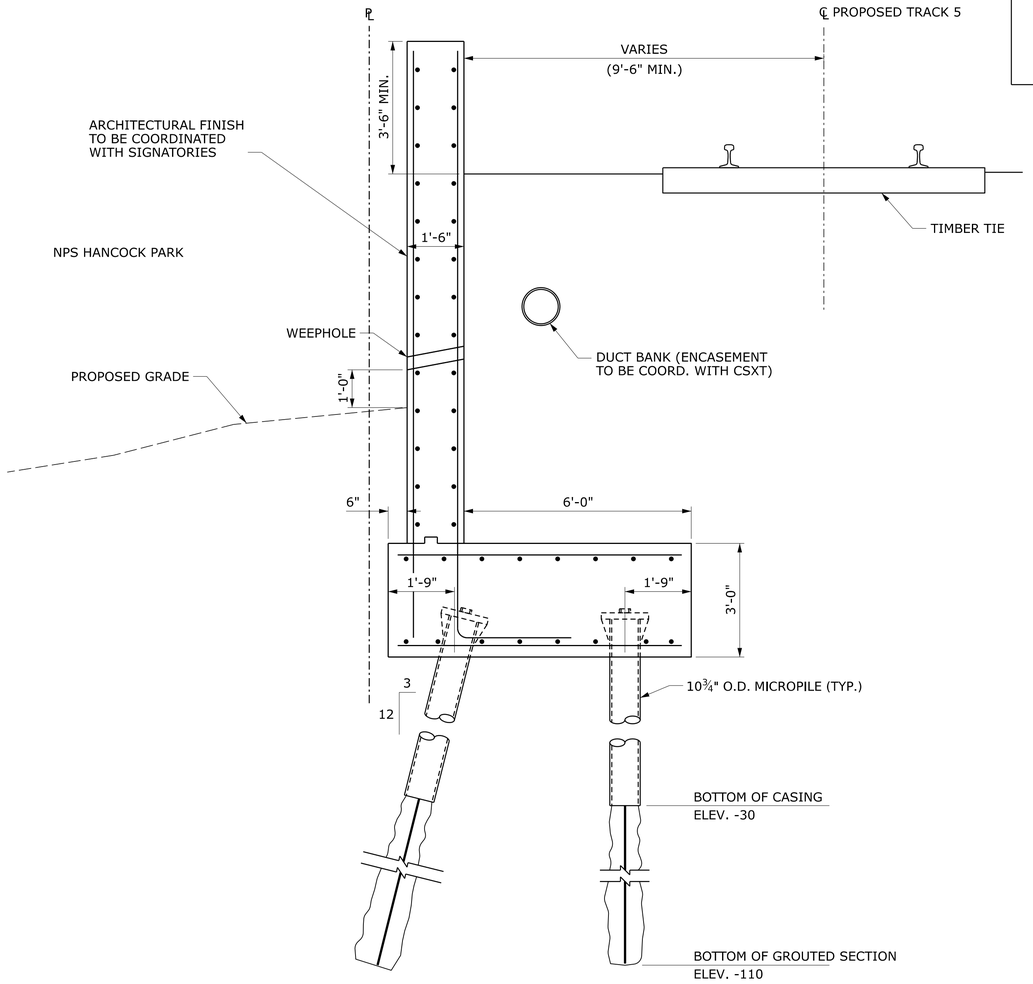
6TH STREET SW BRIDGE REPLACEMENT WMATA CLEARANCES AND ZONE OF INFLUENCE

IFB NO:
DRAWING NO: BR-314
SCALE: AS NOTED
SHEET NO: 225 OF 254



SECTION A-A

SCALE ½" = 1'-0"



SECTION B-B

SCALE ½" = 1'-0"

RETAINING WALL "A" NOTES

1. REINFORCING SHOWN IS CONCEPTUAL ONLY AND WILL BE DETAILED IN FINAL DESIGN.
2. THE USE OF BATTERED PILES TO BE COORDINATED WITH NATIONAL PARK SERVICE.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: E. PHELPS
DRAWN BY: E. PHELPS
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

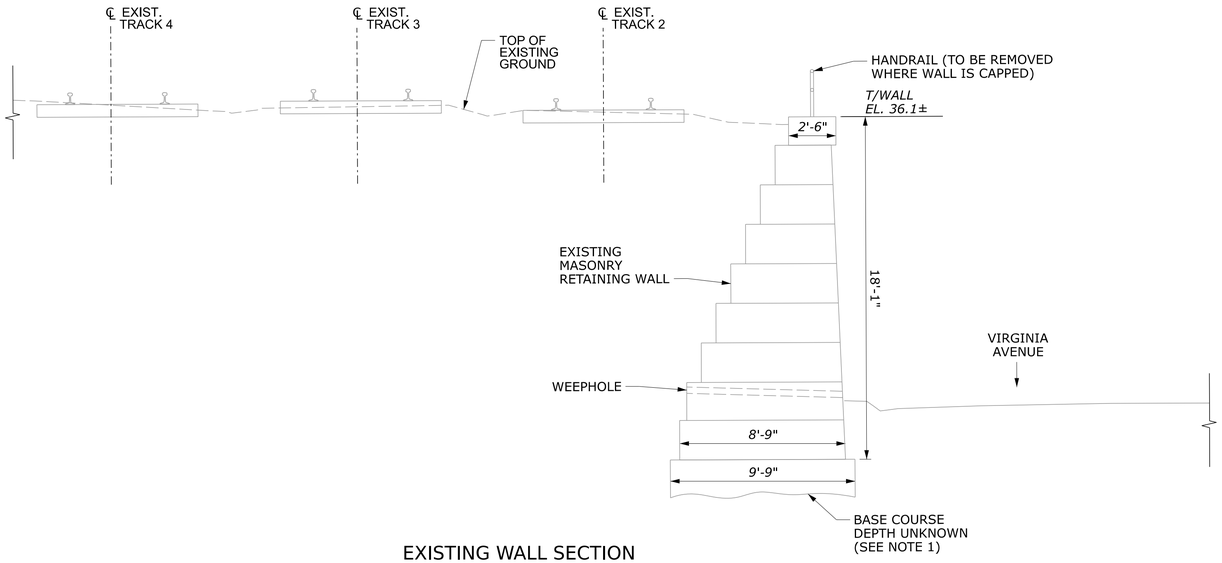
VRE

vhb
1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

RETAINING WALL "A" SECTIONS

IFB NO:
DRAWING NO: W-002
SCALE: AS NOTED
SHEET NO: 227 OF 254



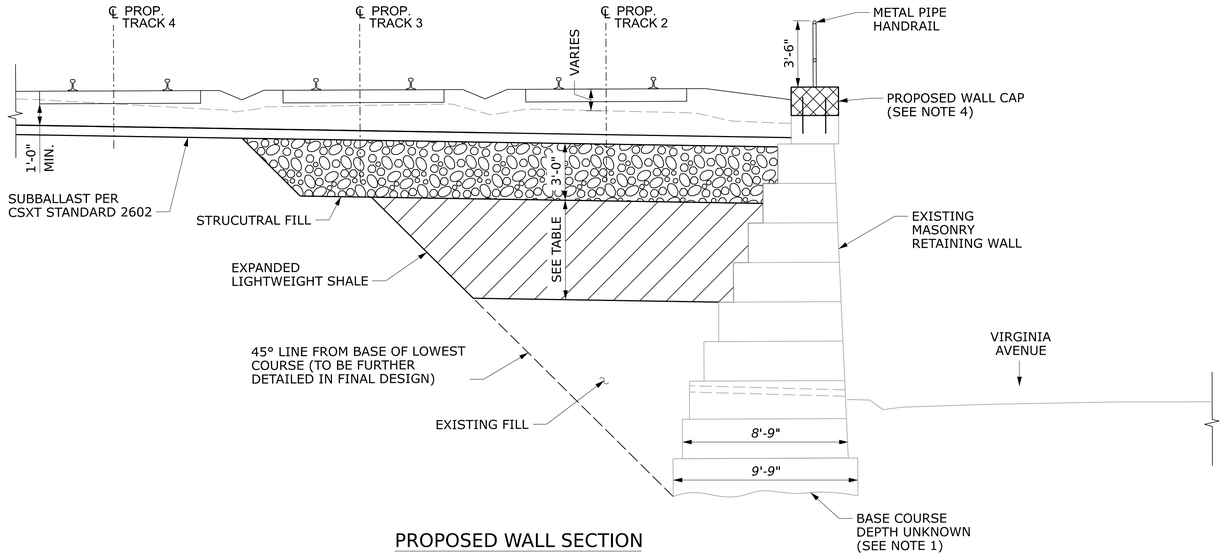
EXISTING WALL SECTION

SCALE 1/4" = 1'-0"
(LOOKING TRACK NORTH)
NOTE: WALL DIMENSIONS SHOWN PER
1906 6TH STREET BRIDGE DESIGN PLANS

REQUIRED ESCS DEPTH BY STATION	
STATION RANGE	ESCS DEPTH (FT)
7TH ST. SW BRIDGE ABUT. TO 2016+00	NOT REQUIRED
2016+01 TO 2017+00	2.0
2017+01 TO 2018+25	3.5
2018+26 TO 6TH ST. SW BRIDGE ABUT. A	5.0
6TH ST. SW BRIDGE ABUT. B TO 2021+50	3.5
2021+51 TO 4TH ST. SW BRIDGE ABUT. A	2.0

NOTES:

1. THE ELEVATION OF THE BOTTOM OF THE WALL IS UNKNOWN. TEST PITTING IS PROPOSED IN THE NEXT PROJECT PHASE TO EVALUATE WALL EMBEDMENT BELOW GRADE.
2. SEE TABLE FOR MINIMUM REQUIRED DEPTH OF EXPANDED SHALE, CLAY, AND SLATE (ESCS) LAYER.
3. THE RETROFITS SHOWN ON THIS SHEET HAVE BEEN DESIGNED TO NOT INCREASE NET OVERTURNING OR SLIDING FORCES ACTING ON THE WALL WHEN COMPARED TO EXISTING CONDITIONS.
4. THE PROPOSED WALL CAP SHALL BE 18" TALL x 24" WIDE. THE CAP MAY BE EITHER MASONRY MATCHING THE STYLE AND CHARACTER OF THE EXISTING WALL OR CONCRETE WHICH IS STAINED AND ROUGHENED TO EMULATE THE EXISTING WALL COLOR AND TEXTURE. THE CAP SHALL BE EITHER DOWELED TO THE EXISTING TOP STONE COURSE USING EPOXY-COATED REINFORCING, OR EXISTING RAILING POST CORE HOLES MAY BE REPURPOSED FOR AN ANCHORAGE SYSTEM TO BE DETAILED IN FINAL DESIGN.



PROPOSED WALL SECTION

SCALE 1/4" = 1'-0"
(LOOKING TRACK NORTH)

REV.NO.	DATE	BY	APP BY	DESCRIPTION
0	07/25/25			30% PE PLANS

DESIGNED BY: K. SMIACH
DRAWN BY: D. HINNANT
CHECKED BY: K. SMIACH
DATE: 07/25/2025

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

1001 G STREET
SUITE 1125
WASHINGTON, DC 20001

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

VIRGINIA AVENUE RETAINING WALL SECTIONS

IFB NO:
DRAWING NO: W-003
SCALE: AS NOTED
SHEET NO: 228 OF 254

ELECTRICAL LEGEND

LIGHTING

	RECESSED DOWN LIGHTS
	CANOPY MOUNTED STATION PLATFORM LIGHT FIXTURE
	DUAL POLE MOUNTED STATION PLATFORM LIGHT FIXTURE
	WEATHERPROOF VANDAL/RESISTANT LINEAR LED
	EXIT SIGN. SHADED AREAS INDICATE FACE LOCATIONS. ARROWS INDICATE CHEVRON DIRECTION

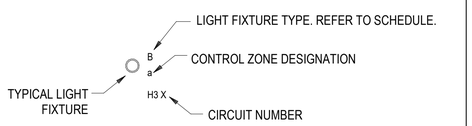
POWER DEVICES

	DUPLEX RECEPTACLE, NEMA 5-20R, 125, 2 POLE, 3 WIRE, 20A.
GFI	DUPLEX GFCI RECEPTACLE, NEMA 5-20R, 125, 2 POLE, 3 WIRE, 20A. "GFI" INDICATES GFCI RECEPTACLE. 'WP' INDICATES WEATHER PROOF WITH "WHILE IN USE" COVER
GFI	QUADRUPLEX RECEPTACLE, NEMA 5-20R, 125, 2 POLE, 3 WIRE, 20A. "GFI" INDICATES GFCI RECEPTACLE. 'WP' INDICATES WEATHER PROOF WITH "WHILE IN USE" COVER
	DUPLEX GFCI CEILING MOUNTED RECEPTACLE, NEMA 5-20R, 125, 2 POLE, 3 WIRE, 20A. 'WP' INDICATES WEATHER PROOF WITH "WHILE IN USE" COVER
	SPECIAL RECEPTACLE, NEMA L5-20R, 125, 2 POLE, 3 WIRE, 20A, TWIST LOCK.
$ WP	120/277V, 20A TOGGLE SWITCH. 'WP' INDICATES WEATHER PROOF WITH "WHILE IN USE" COVER
J	WALL MOUNTED JUNCTION BOX. 'TVM' INDICATES CONNECTION FOR TICKET VENDING MACHINE. 'VMS' INDICATES CONNECTION FOR VARIABLE MESSAGE SIGN.
J	JUNCTION BOX AT HARD WIRED EQUIPMENT
	GROUND ROD
HH	HANDHOLE
	SURFACE MOUNTED WALL OUTLET. CAT 6A, RJ-45 JACK.

POWER DISTRIBUTION EQUIPMENT

	480/277V PANELBOARD
	208/120V PANELBOARD
CB 3/30A	ENCLOSED CIRCUIT BREAKER, 600V, NUMBERS INDICATE POLES AND RATING
3R 3/30/20	FUSED DISCONNECT, 600V, NUMBERS INDICATE POLES, RATING, AND FUSE SIZE. '3R' INDICATES NEMA ENCLOSURE RATING.

LIGHT FIXTURE TAGS



POWER DISTRIBUTION EQUIPMENT

7.5	MOTOR INDICATION, NUMBER INDICATES HORSEPOWER SIZE
M	UTILITY METER
GB	COPPER GROUND BUX MOUNTED +24" AFF
UH	UNIT HEATER
TC	ASTRONOMICAL TIME CLOCK
C	LIGHTING CONTACTOR
S_M	FRACTIONAL HORSEPOWER 208V OR 277V MANUAL MOTOR STARTER AND DISCONNECT

ANNOTATIONS

<XM>	EXISTING TO REMAIN
<XD>	EXISTING TO BE DEMOLISHED
#	DRAWING KEYED NOTE
#	FEEDER TAG
+42"	TYPICAL CALLOUT FOR MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTER OF DEVICE
H1-24	CIRCUIT HOMERUN TO PANEL. ARROWS INDICATE NUMBER OF CIRCUITS, LETTERS INDICATE PANEL NAME
# E###	SECTION CALLOUT. TOP NUMBER INDICATES SECTION DETAIL. BOTTOM NUMBER INDICATES DRAWING LOCATION OF DETAIL
# E###	DETAIL CALLOUT. TOP NUMBER INDICATES DETAIL NUMBER. BOTTOM LEFT INDICATES CURRENT DRAWING. BOTTOM RIGHT INDICATES WHERE DETAIL IS DRAWN.

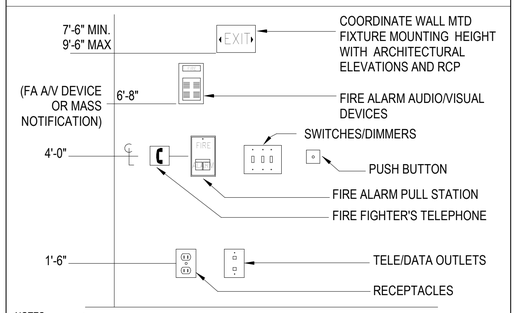
FIRE ALARM

FACP	FIRE ALARM CONTROL PANEL
CM	CONTROL MODULE
E	CONVENTIONAL SMOKE DETECTOR FOR ELEVATOR RECALL
E	CONVENTIONAL HEAT DETECTOR FOR ELEVATOR RECALL
MM	MONITOR MODULE

SECURITY/TELECOM

	CAMERA LOCATION. SHADED AREAS INDICATE IMAGER DIRECTION.
S	SPEAKER LOCATION
CR	CARD READER

TYPICAL DEVICE MOUNTING HEIGHT DETAIL



NOTES :

1. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
2. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.

GENERAL ABBREVIATIONS

A	AMPERES
ACH	ABOVE COUNTER HEIGHT
ACP	ACCESS CONTROL PANEL
ACU	AUTONOMOUS CONTROL UNIT
ADA	AMERICANS WITH DISABILITIES ACT
AF	AMP FRAME
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
APF	ABOVE PIT FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARA	AREA OF RESCUE ASSISTANCE
ARCH	ARCHITECT
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
ATC	AUTOMATIC TEMPERATURE CONTROL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BFC	BELOW FINISH CEILING
BFG	BELOW FINISH GRADE
BLDG	BUILDING
C	CONDUIT
CAT	CATALOG
CATV	CABLE ACCESS TELEVISION
CB	CIRCUIT BREAKER
CBM	CERTIFIED BALLASTS MANUFACTURERS
CF	COMPACT FLUORESCENT
CKT	CIRCUIT
CL	CENTERLINE
CLF	CURRENT LIMITING FUSE
COL	COLUMN
CPT	CONTROL POWER TRANSFORMER
CR	CARD READER
CRI	COLOR RENDERING INDEX
CT	CURRENT TRANSFORMER
CU	COPPER
DB	DIRECT BURIED
DIA	DIAMETER
DWG	DRAWING
EB	ENCASED BURIED
EC	EMPTY CONDUIT
EF	EXHAUST FAN
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
E.O.	ELECTRICALLY OPERATED
EPO	EMERGENCY POWER OFF
ES	EQUIPPED SPACE
ETD	EMERGENCY TRANSFER DEVICE
EWC	ELECTRIC WATER COOLER
FAAP	FIRE ALARM ANNUNCIATON PANEL
FACP	FIRE ALARM CONTROL PANEL
F	FUSE
FA	FIRE ALARM
FCU	FAN COIL UNIT
FLA	FULL LOAD AMPERES
FLUOR	FLUORESCENT
FMC	FLEXIBLE METAL CONDUIT
FT	FEET
FVNR	FULL VOLTAGE NON REVERSING
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND,G	GROUND OR GROUNDING
GRMC	GALVANIZED RIGID METALLIC CONDUIT
HC	HANDICAPPED
HH	HANDHOLE
HOA	HAND, OFF, AUTOMATIC SWITCH
IAW	IN ACCORDANCE WITH
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
INT	INTERLOCK OR INTERIORS
JBOX	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LCD	LIQUID CRYSTAL DISPLAY
LDC	LEAK DETECTION CONTROLLER
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
MAG	MAGNETIC STARTER
MAN	MANUAL STARTER
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDF	MAIN DISTRIBUTION FRAME
MFR	MANUFACTURER
MH	MANHOLE
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NF	NON FUSED
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
P	POLE
PB	PUSHBUTTON
PDU	POWER DISTRIBUTION UNIT
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMCS	POWER MONITORING AND CONTROL SYSTEM
PNL	PANEL
POS	PROVIDED UNDER OTHER SECTIONS
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
RDC	REMOTE DISTRIBUTION CABINET
REQ'D	REQUIRED
RM	ROOM
RMC	RIGID METAL CONDUIT
RMS	ROOT MEAN SQUARED
RNMC	RIGID NON-METALLIC CONDUIT
RTU	ROOF TOP UNIT
SCH	SCHEDULE
SP	SPARE
SS	SOFT STARTER
SSGB	SUB SYSTEM GROUND BUS
ST	SHUNT TRIP
STS	STATIC TRANSFER SWITCH
SW	SWITCH
SYM	SYMMETRICAL
TELE	TELEPHONE
TGB	TELEPHONE GROUND BUS
THD	TOTAL HARMONIC DISTORTION
TMCB	THERMAL MAGNETIC CIRCUIT BREAKER
TMGB	TELECOMMUNICATIONS MAIN GROUND BUS
TRSP	TRANSPONDER
TSP	TWISTED SHIELDED PAIR
TVM	TICKET VENDING MACHINE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UG	UNDERGROUND OR UNDERGRADE
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
U.O.N	UNLESS OTHERWISE NOTED (OR AS UON)
UPS	UNINTERRUPTABLE POWER SUPPLY
UV	ULTRAVIOLET
VMS	VARIABLE MESSAGE SIGN
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
VT	VOLTAGE TRANSFORMER
W	WIRE
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER
<XR>	EXISTING TO REMAIN
△	DELTA
Y	WYE
ϕ	PHASE

GENERAL NOTES

1. INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS VERSION OF THE IBC, NFPA, NEC, IECC AND THE AUTHORITY HAVING JURISDICTION.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS.
3. CONDUIT ROUTING SHOWN ON THESE PLANS IS DIAGRAMMATIC ONLY. THE CONTRACTOR SHALL ROUTE BRANCH WIRING AND CONDUIT ALONG THE SHORTEST AND MOST COST EFFECTIVE ROUTE WHERE POSSIBLE, WHILE REMAINING IN COMPLIANCE WITH THE SPECIFICATIONS.
4. SYMBOLS SHOWN ON THIS SHEET ARE STANDARD SYMBOLS. SOME SYMBOLS MAY NOT BE USED ON THIS PROJECT.
5. ANY ELECTRICAL EQUIPMENT OR CONDUIT AND WIRING ON SITE THAT ARE REQUIRED TO BE RELOCATED DUE TO CONSTRUCTION, SHALL BE INCLUDED IN THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SERVICE TO ANY SUCH EQUIPMENT. COORDINATE WITH THE OWNER PRIOR TO RELOCATING OR DEMOLISHING ANY UTILITIES.
6. COORDINATE ALL ELECTRICAL EQUIPMENT WITH ALL OTHER TRADES TO AVOID CONFLICTS. PROVIDE ALL NECESSARY FITTINGS, EQUIPMENT, HANGERS, OFFSETS, ROUTING, ETC. TO AVOID CONFLICTS.
7. COORDINATE JUNCTION BOX AND RECEPTACLE MOUNTING HEIGHTS FOR EQUIPMENT FURNISHED BY OTHER TRADES. ADJUST AS NECESSARY TO ACCOMMODATE THE EQUIPMENT SELECTED. PROVIDE ALL ELECTRICAL CONNECTIONS TO HARD WIRED EQUIPMENT.
8. PROVIDE INSULATED BUSHINGS ON ALL STUBBED UP CONDUITS. PROVIDE A PULL STRING IN ALL EMPTY CONDUITS.
9. FOR ABBREVIATIONS OF MECHANICAL EQUIPMENT, REFER TO THE MECHANICAL ABBREVIATIONS LIST ON THE MECHANICAL DRAWINGS. MECHANICAL EQUIPMENT IS SHOWN IN APPROXIMATE LOCATIONS. FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT AND PIPING, SEE MECHANICAL DRAWINGS.
10. GROUNDING CONDUCTORS ARE NOT INDICATED IN BRANCH CIRCUIT RACEWAYS. PROVIDE GROUND CONDUCTORS PER THE NEC. PROVIDE SEPARATE NEUTRAL CONDUCTORS FOR EACH CIRCUIT.
11. FOR 120V BRANCH CIRCUITS OVER 100 FEET IN LENGTH, INCREASE WIRE SIZE TO #10 AWG. FOR CIRCUITS OVER 150 FEET, INCREASE WIRE SIZE TO #8 AWG, UNLESS OTHERWISE NOTED.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

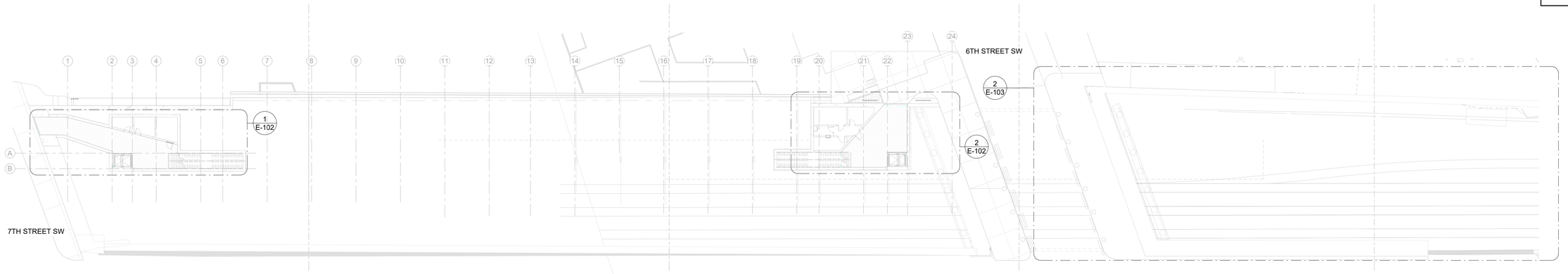
VRE™

NorthArrow DESIGN • BUILD • MANAGE

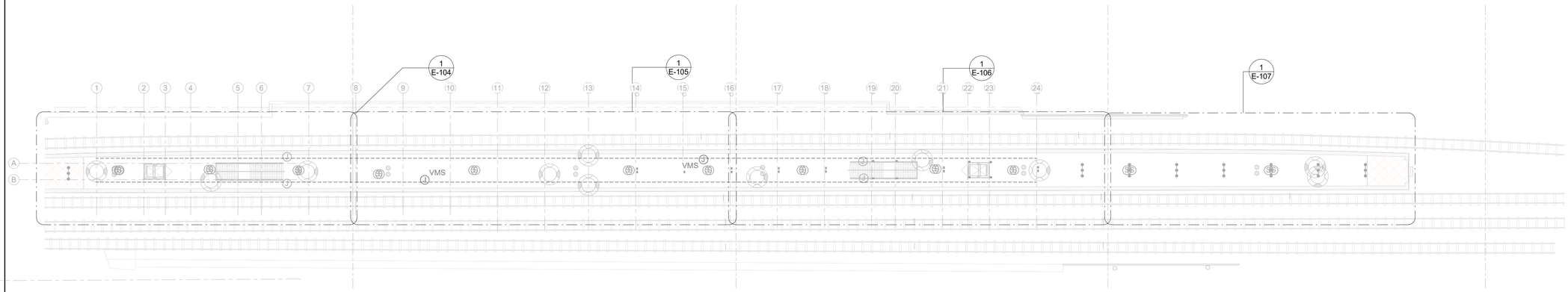
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ELECTRICAL NOTES, SYMBOLS, AND ABBREVIATIONS

IFB NO:
DRAWING NO: E-001
SCALE: AS NOTED
SHEET NO: 229 OF 254



1 E-101 TUNNEL LEVEL
1" = 30'-0"



2 E-101 VRE PLATFORM LEVEL
1" = 30'-0"

N

0 30 60 120
1" = 30'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E502 FOR PANEL SCHEDULES.

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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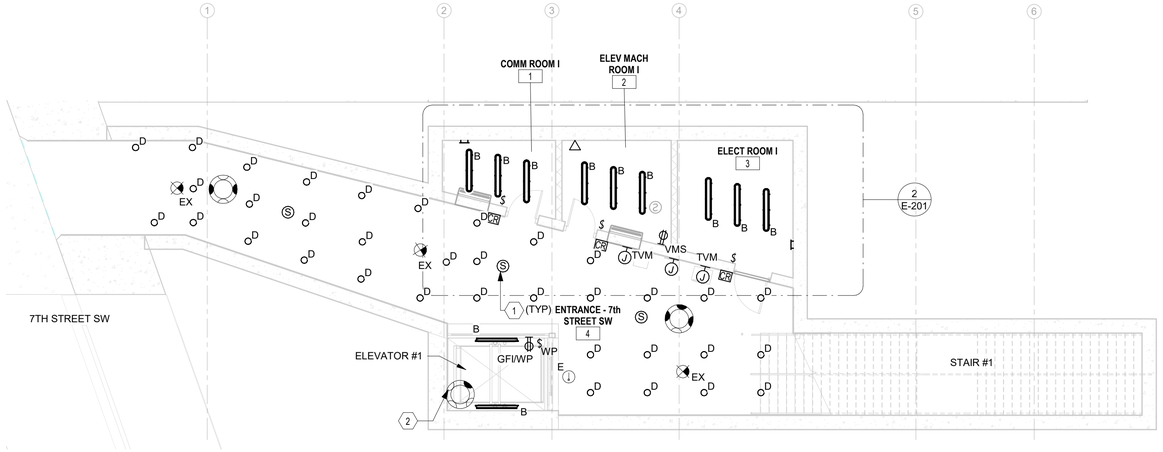
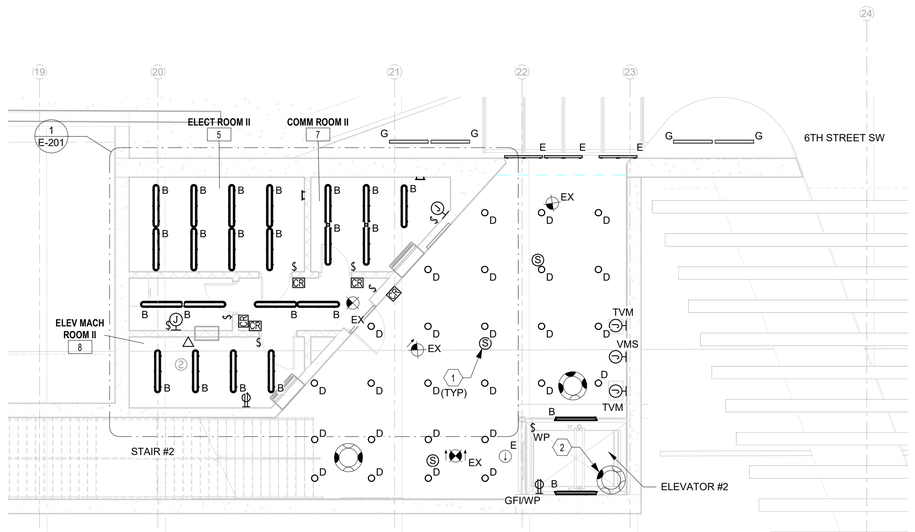
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ELECTRICAL SITE PLAN

IFB NO:
DRAWING NO: E-101
SCALE: AS NOTED
SHEET NO: 230 OF 254



1 E-102 7TH STREET SW ENTRANCE - POWER AND LIGHTING
1/8" = 1'-0"



2 E-102 6TH STREET SW ENTRANCE - POWER AND LIGHTING
1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E302 FOR LIGHTING CONTROL DETAILS

KEY NOTES:

1. NEW FLUSH CEILING MOUNTED 6" BOGEN "SEC4T" SPEAKER.
2. FIXED CAMERA MOUNTED INSIDE ELEVATOR CAB. COORDINATE WITH ELEVATOR MANUFACTURER FOR INSTALLATION.

0 8 16 32
1/8" = 1'-0"

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER
DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER
DATE

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ENTRANCES ENLARGED PLANS- POWER AND LIGHTING

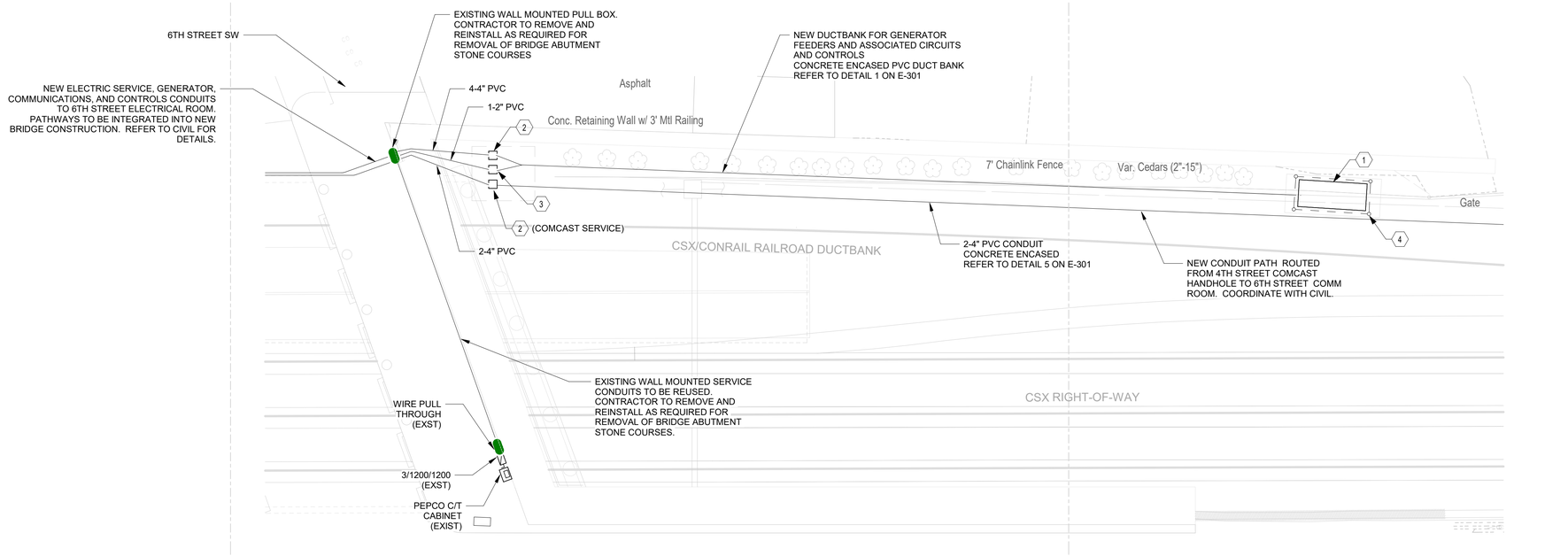
IFB NO:
DRAWING NO: E-102
SCALE: AS NOTED
SHEET NO: 231 OF 254

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E502 FOR PANEL SCHEDULES.

KEY NOTES:

1. NEW PAD MOUNTED DIESEL BACKUP GENERATOR FOR VRE STATION.
2. FURNISH AND INSTALL 2' X 3' HANDHOLE FOR GENERATOR POWER
3. FURNISH AND INSTALL 12" X 18" HANDHOLE FOR GENERATOR SIGNAL FOR ANNUNCIATOR AND ATS START CONTROLS.
4. 3/4" X 8'-0" COPPER CLAD STEEL GROUND ROD.



2 / E-103 ELECTRICAL SITE PLAN - UTILITY AND GENERATOR POWER
1/16" = 1'-0"

N

0 16 32 64
1/16" = 1'-0"

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	05/23/25			30% PE PLANS

DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker
DATE: 05/23/2025

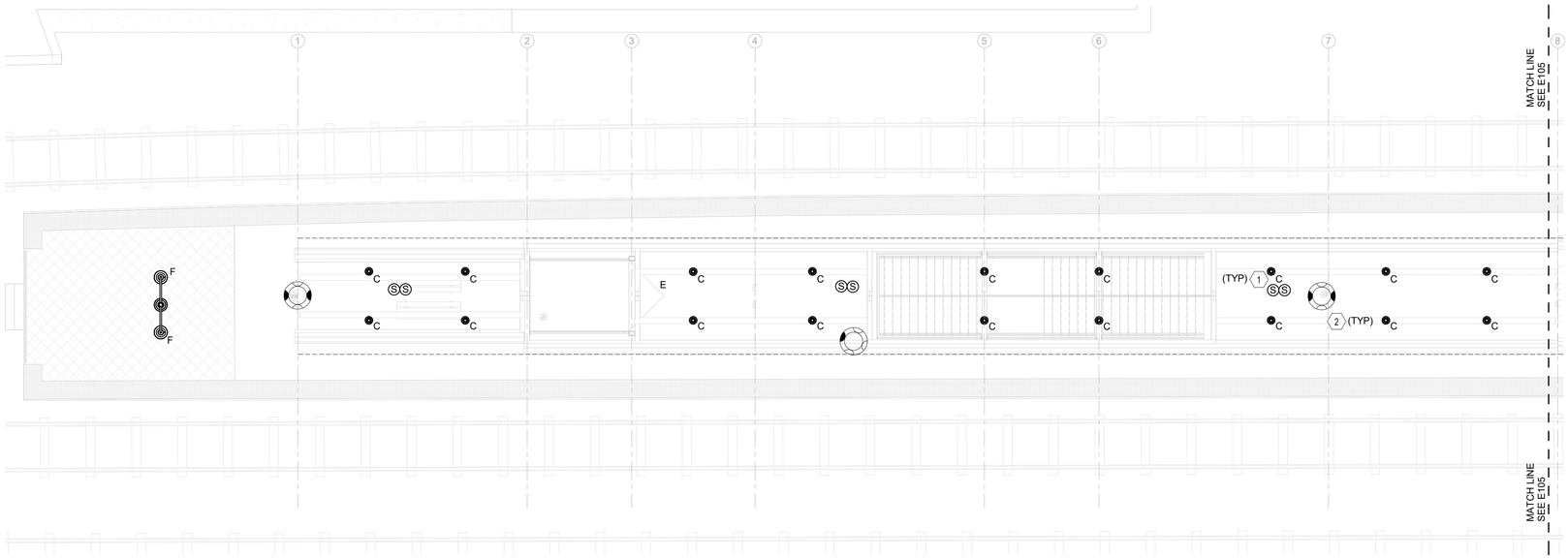
RICH DALTON, CHIEF EXECUTIVE OFFICER — DATE
DALLAS RICHARDS, PE, CHIEF ENGINEER — DATE

VRE

VRE L'ENFANT L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

ELECTRICAL SITE PLAN - UTILITY AND GENERATOR SERVICES

IFB NO:
DRAWING NO: E-103
SCALE: AS NOTED
SHEET NO: 232 OF 254



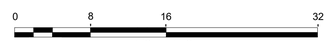
1 E-104 PLATFORM - AREA 1 - POWER AND LIGHTING
1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E502 FOR PANEL SCHEDULES.

KEY NOTES:

1. PROVIDE BI-DIRECTIONAL LOUDSPEAKER 'JBL CONTROL 25-1' OR APPROVED EQUAL. ROUTE 1" CONDUIT BETWEEN SPEAKERS. PROVIDE WITH CONDUIT CONNECTION PLATE.
2. PROVIDE 1" CONDUIT TO JUNCTION BOX AT CAMERA LOCATION. CONNECTION TO CAMERA HOUSING TO BOX BY VRE.



REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

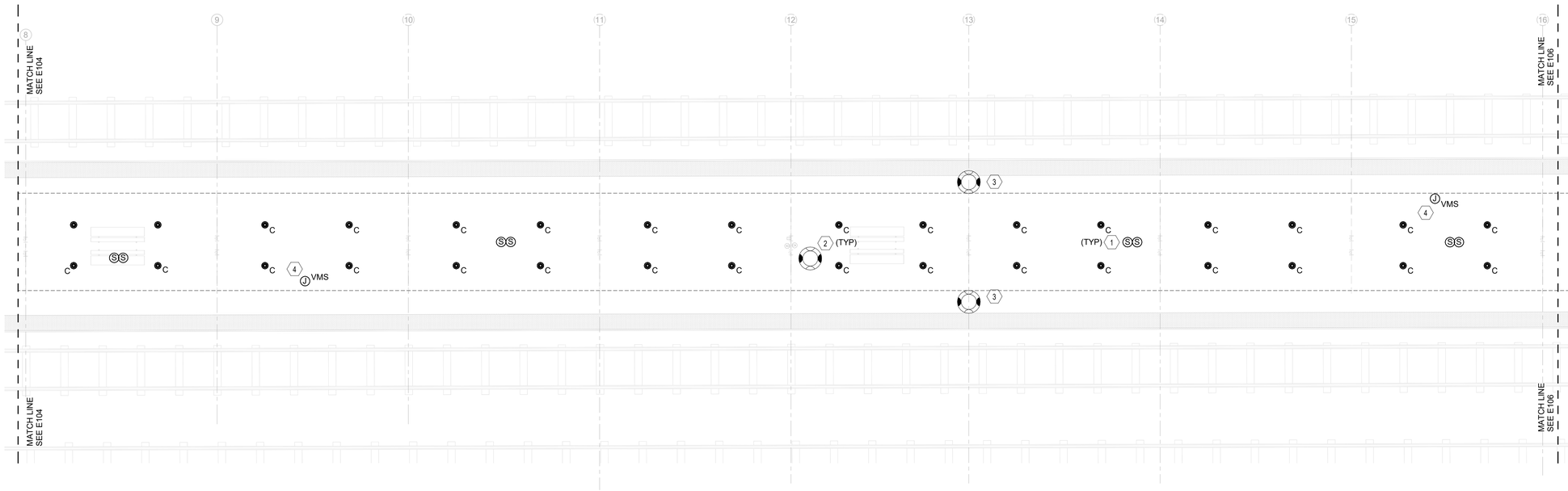
VRE

NorthArrow DESIGN • BUILD • MANAGE

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PLATFORM - AREA 1 - POWER AND LIGHTING

IFB NO:
DRAWING NO: E-104
SCALE: AS NOTED
SHEET NO: 233 OF 254



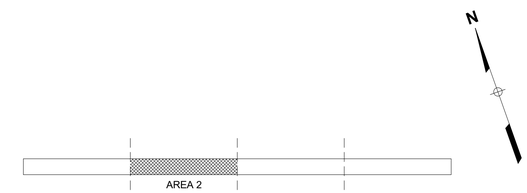
1 E-105 PLATFORM - AREA 2 - POWER AND LIGHTING
1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E302 FOR LIGHTING CONTROL DETAILS

KEY NOTES:

1. PROVIDE BI-DIRECTIONAL HORN LOUDSPEAKER BOGEN BDT30A OR APPROVED EQUAL. ROUTE 1" CONDUIT BETWEEN SPEAKERS. PROVIDE WITH CONDUIT CONNECTION PLATE.
2. PROVIDE 1" CONDUIT TO JUNCTION BOX AT CAMERA LOCATION. CONNECTION TO CAMERA HOUSING TO BOX BY VRE.
3. MOUNT FIXTURE ON GOOSE NECK TO CAPTURE OUTER EDGE OF CANOPY.
4. MOUNT VMS TO INSIDE EDGE OF CANOPY.



0 8 16 32
1/8" = 1'-0"

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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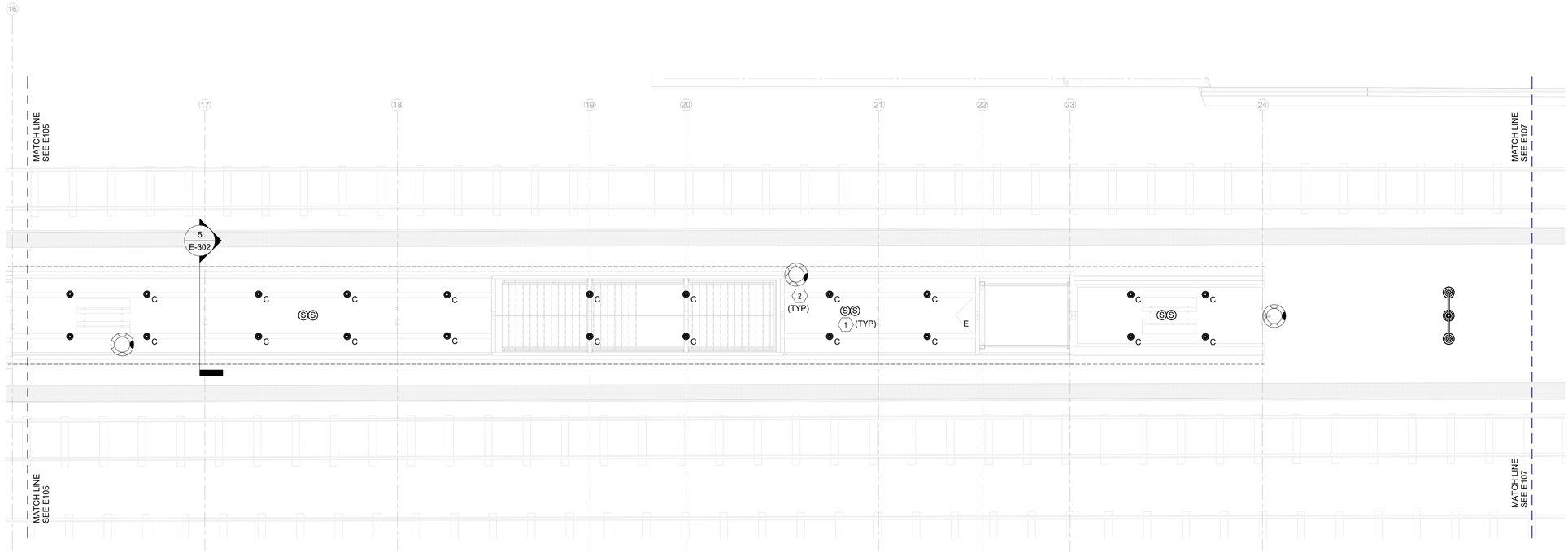
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PLATFORM - AREA 2 - POWER AND LIGHTING

IFB NO:
DRAWING NO: E-105
SCALE: AS NOTED
SHEET NO: 234 OF 254



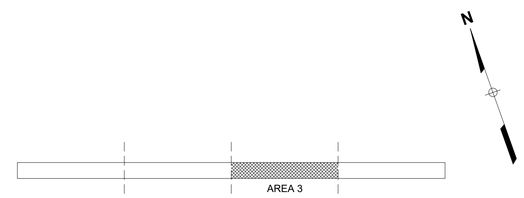
1 E-106 PLATFORM - AREA 3 - POWER AND LIGHTING
1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E302 FOR LIGHTING CONTROL DETAILS

KEY NOTES:

1. PROVIDE BI-DIRECTIONAL HORN LOUDSPEAKER BOGEN BDT30A OR APPROVED EQUAL. ROUTE 1" CONDUIT BETWEEN SPEAKERS. PROVIDE WITH CONDUIT CONNECTION PLATE.
2. PROVIDE 1" CONDUIT TO JUNCTION BOX AT CAMERA LOCATION. CONNECTION TO CAMERA HOUSING TO BOX BY VRE.



REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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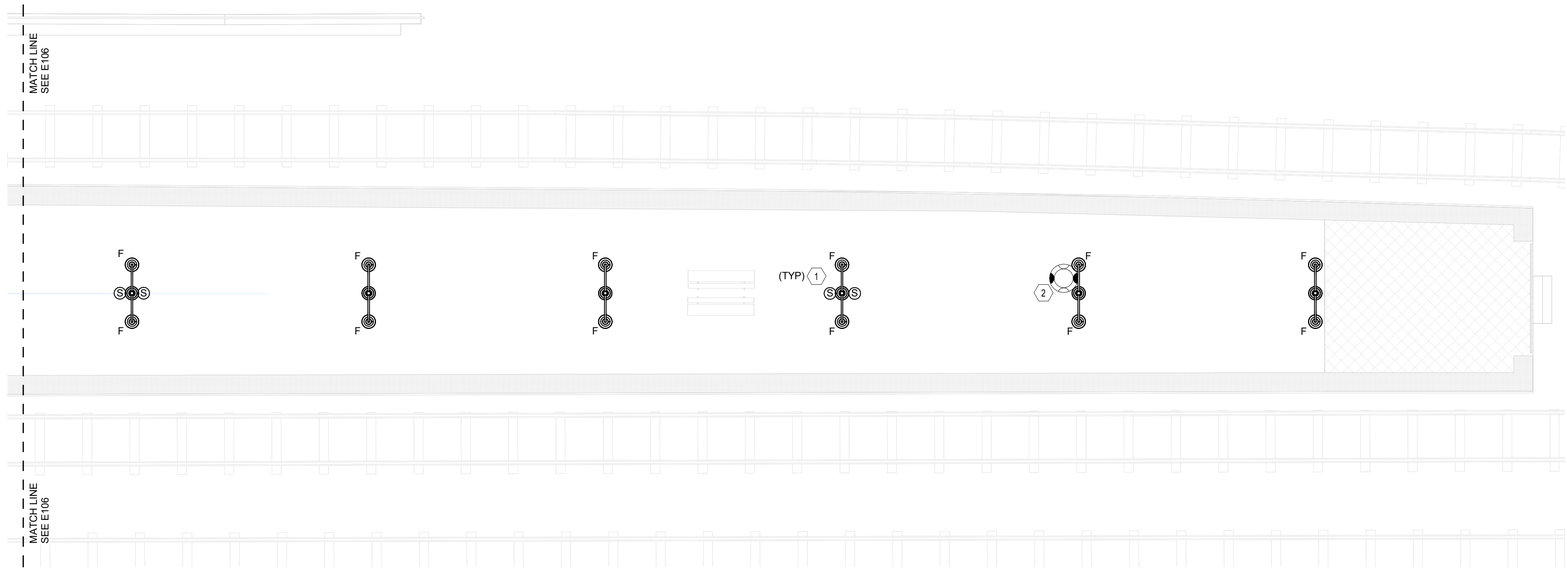
VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

PLATFORM - AREA 3 - POWER AND LIGHTING

IFB NO:
DRAWING NO: E-106
SCALE: AS NOTED
SHEET NO: 235 OF 254



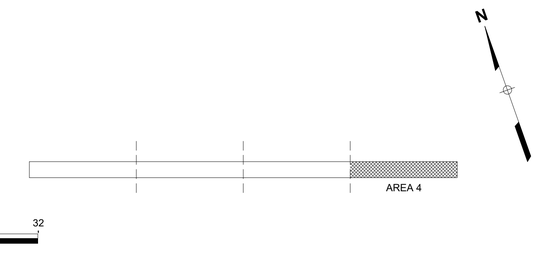
1 E-107 VRE PLATFORM - AREA 4 - POWER AND LIGHTING
1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO E501 FOR LIGHTING FIXTURE SCHEDULE.
3. REFER TO E302 FOR LIGHTING CONTROL DETAILS

KEY NOTES:

1. PROVIDE BI-DIRECTIONAL HORN LOUDSPEAKER BOGEN BDT30A OR APPROVED EQUAL. ROUTE 1" CONDUIT BETWEEN SPEAKERS. PROVIDE WITH CONDUIT CONNECTION PLATE.
2. PROVIDE 1" CONDUIT TO JUNCTION BOX AT CAMERA LOCATION. CONNECTION TO CAMERA HOUSING TO BOX BY VRE.



REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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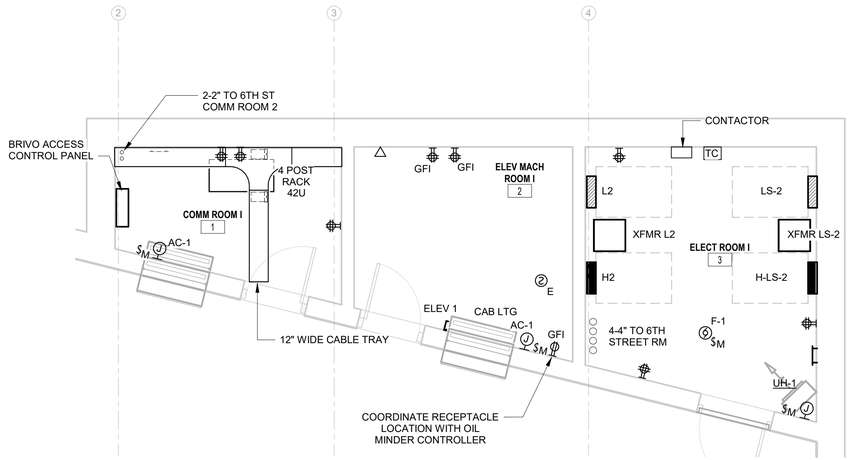
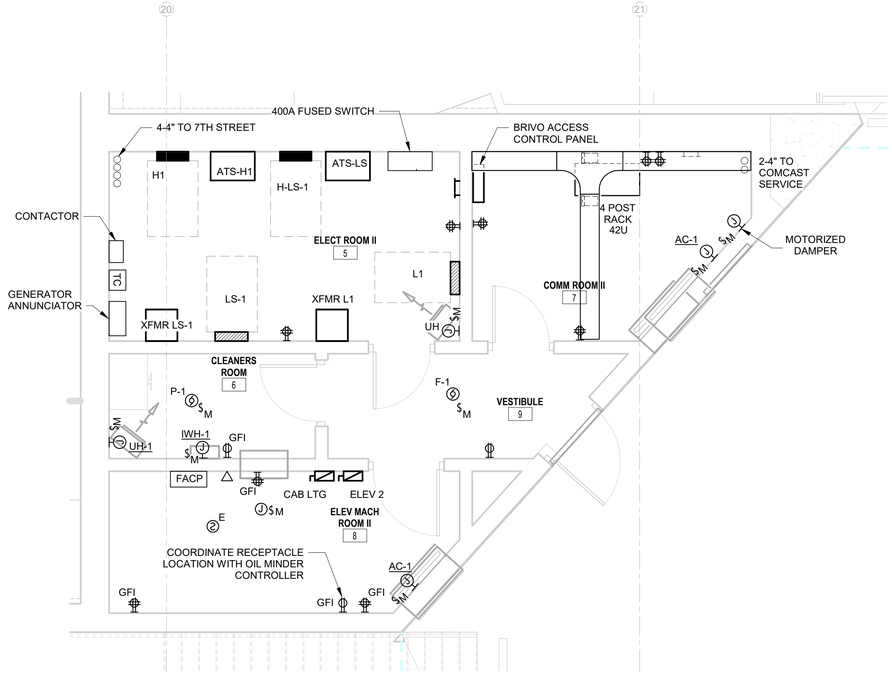
PLATFORM - AREA 4 - POWER AND LIGHTING

IFB NO:
DRAWING NO: E-107
SCALE: AS NOTED
SHEET NO: 236 OF 254



2 E-201 ENLARGED PLAN - 7TH STREET SW UTILITY ROOMS
1/4" = 1'-0"



1 E-201 ENLARGED PLAN - 6TH STREET SW UTILITY ROOMS
1/4" = 1'-0"

GENERAL NOTES:

1. REFER TO E001 FOR SYMBOL LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. REFER TO GROUNDING DIAGRAM AND GROUND BUS DETAILS ON E301 FOR GROUNDING SYSTEM CONNECTION.

N

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

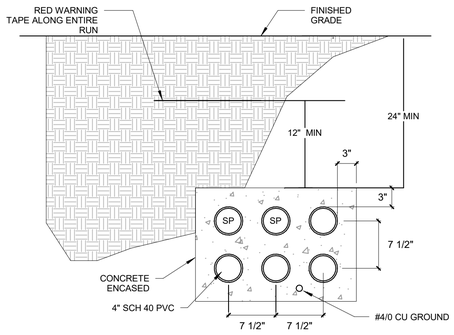
RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

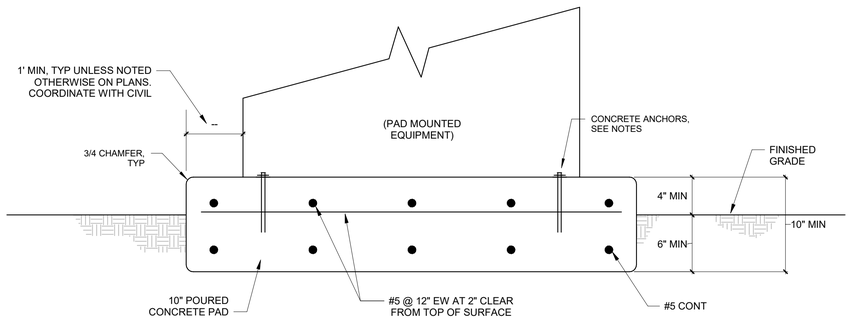
VRE L'ENFANT STATION AND
FOURTH TRACK PROJECT 30% PLANS

ENLARGED PLANS

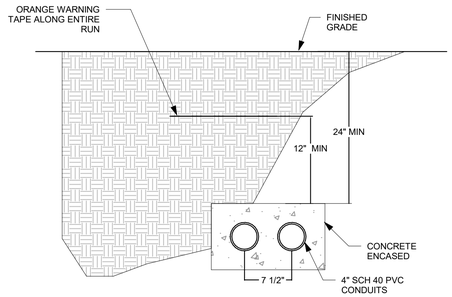
IFB NO:
DRAWING NO: E-201
SCALE: AS NOTED
SHEET NO: 237 OF 254



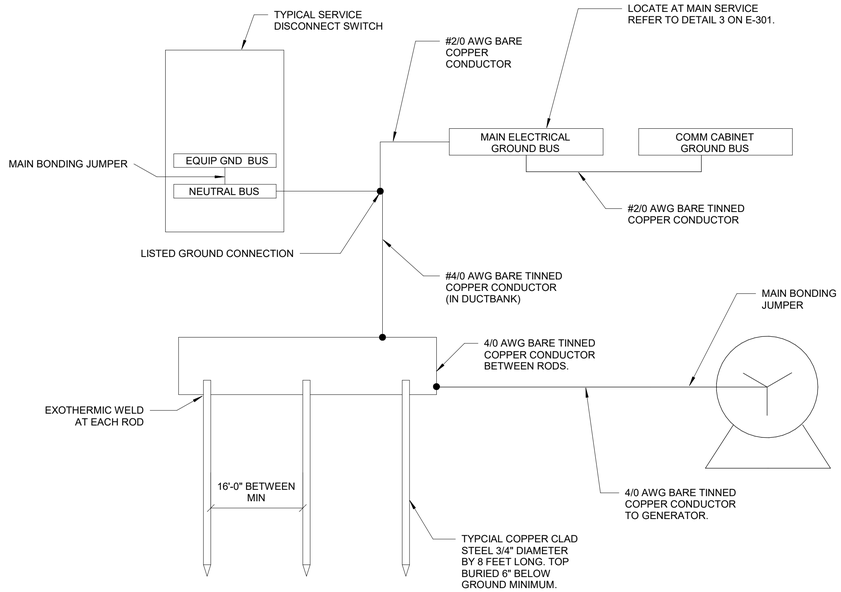
1 E-301 GENERATOR DUCTBANK SECTION



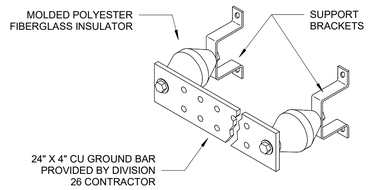
4 E-301 EQUIPMENT PAD



5 E-301 COMCAST SERVICE DUCT BANK SECTION



2 E-301 TYPICAL GROUNDING DETAIL



3 E-301 TYPICAL GROUND BUS

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON, CHIEF EXECUTIVE OFFICER — DATE
DALLAS RICHARDS, PE, CHIEF ENGINEER — DATE

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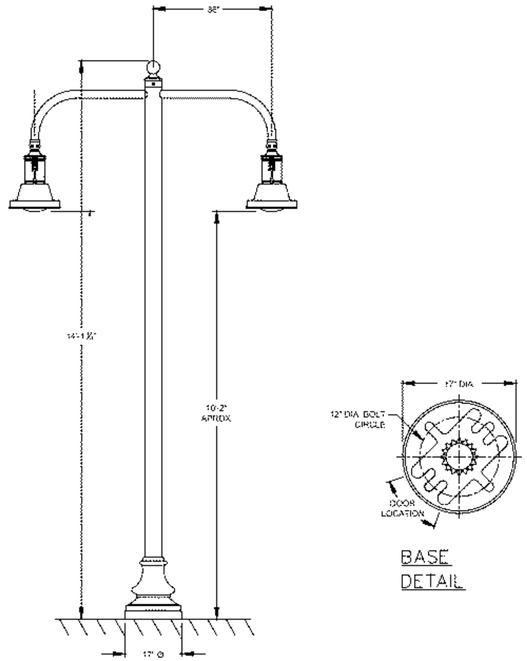
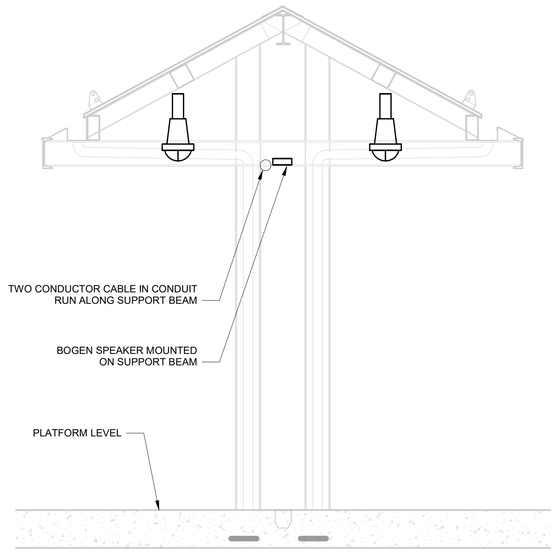
ELECTRICAL DETAILS (1 of 2)

IFB NO:
DRAWING NO: E-301
SCALE: AS NOTED
SHEET NO: 238 OF 254

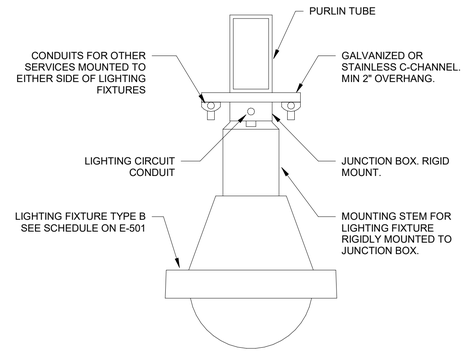


1 E-302 TYPICAL TYPE F POLE DETAIL DETAIL



5 E-302 TYPICAL PLATFORM CANOPY MOUNTING DETAIL

4 E-302 BOGEN IH8A SPEAKER DUAL HEAD



2 E-302 PENDANT FIXTURE TYPE A MOUNTING DETAIL

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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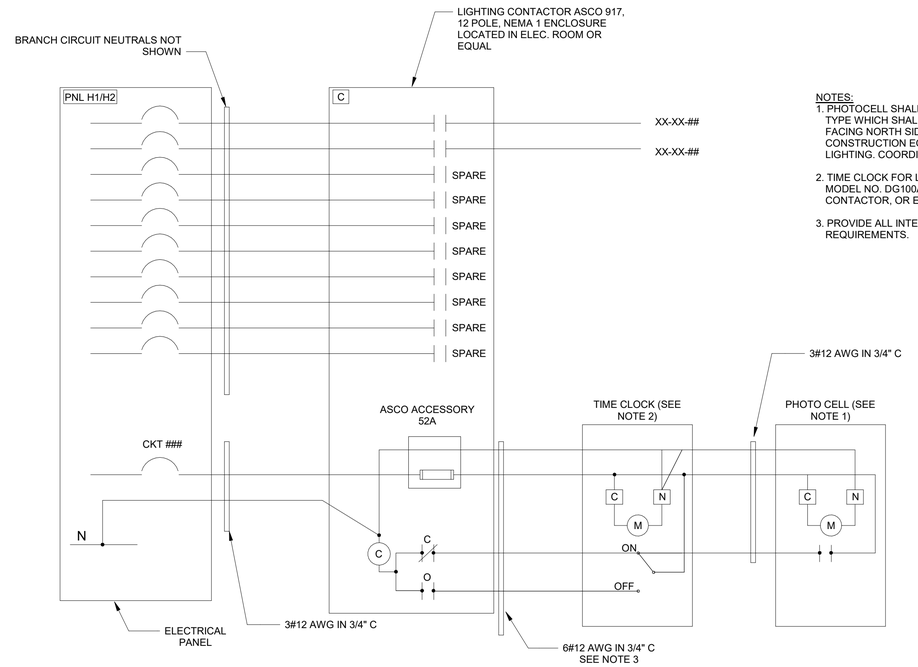
ELECTRICAL DETAILS (2 of 2)

IFB NO:
DRAWING NO: E-302
SCALE: AS NOTED
SHEET NO: 239 OF 254



NOTES:
1. PHOTOCELL SHALL BE SOLID STATE SILICON DIODE TWISTLOCK TYPE WHICH SHALL FAIL "ON". MOUNT PHOTOCELL ON THE ROOF FACING NORTH SIDE AT A LOCATION UNOBSTRUCTED BY CONSTRUCTION EQUIPMENT OR OTHER ELEMENTS AND AMBIENT LIGHTING. COORDINATE EXACT LOCATION IN THE FIELD.

2. TIME CLOCK FOR LIGHTING CONTACTOR'S COIL CONTROL. TORK MODEL NO. DG100A SERIES LOCATED ADJACENT TO THE LIGHTING CONTACTOR, OR EQUAL.

3. PROVIDE ALL INTERCONNECTING WIRING AS PER MANUFACTURER'S REQUIREMENTS.

1 / E-303 LIGHTING CONTROL DIAGRAM

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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LIGHTING CONTROL DIAGRAM

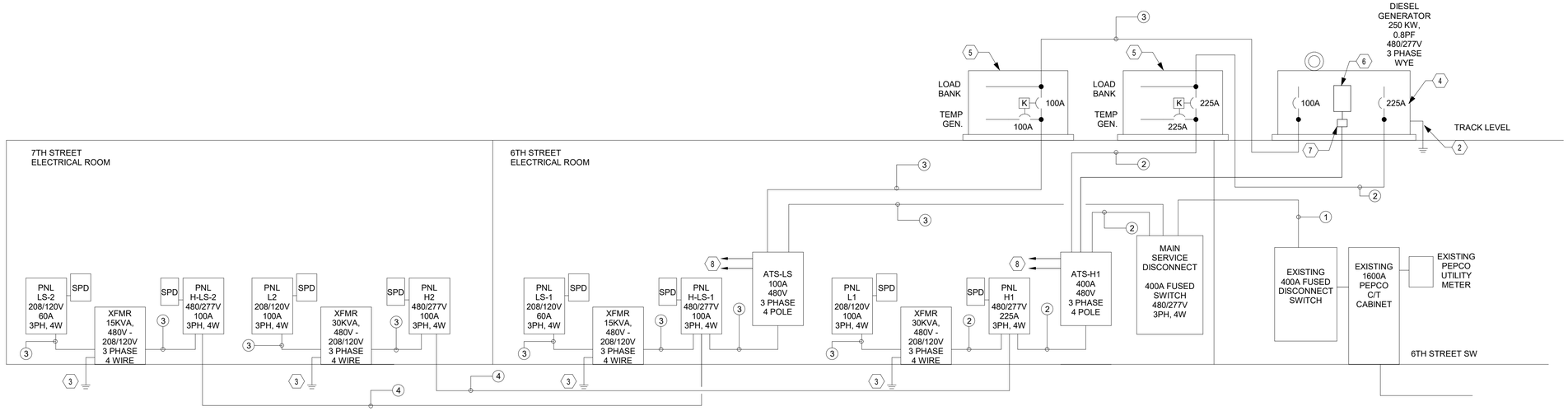
IFB NO:
DRAWING NO: E-303
SCALE: AS NOTED
SHEET NO: 240 OF 254

KEYED NOTES:

1. PROVIDE 1 # 2 AWG COPPER ELECTRODE CONDUCTOR TO GROUND BUS
2. 1# 2/0 AWG COPPER ELECTRODE CONDUCTOR TO GROUND LOOP INDICATED ON E-103.
3. 1# 2 AWG COPPER ELECTRODE CONDUCTOR TO GROUND BUS.
4. PROVIDE SOUND ATTENUATED CRITICAL WEATHERPROOF ENCLOSURE WITH INTEGRAL TRANSFORMER AND PANEL
5. PROVIDE PERMANENT LOAD BANK AND TEMPORARY GENERATOR CONNECTION CABINETS FOR EMERGENCY AND STANDBY POWER. CABINETS SHALL HAVE KIRK KEY INTERLOCK TO PREVENT TEMPORARY GENERATOR AND PERMANENT GENERATOR FROM CONNECTING SIMULTANEOUSLY. INCLUDE COLOR CODED MALE AND FEMALE CAMS FOR TEMP CABLING CONNECTION, CIRCUIT CONNECTION FOR TEMP GENERATOR BLOCK HEAT AND BATTERY CHARGER RECEPTACLES, AND PHASE ROTATION MONITOR FOR TEMP GENERATOR. HOUSING SHALL BE WEATHERPROOF AND LOCKABLE. BRACE FOR AVAILABLE FAULT CURRENT.
6. PANEL GEN. INCLUDED WITH HOUSING.
7. 15KVA 480-208/120 3 PHASE, 4 WIRE XFMR GEN. INCLUDED WITH HOUSING.
8. SIGNAL TO GENERATOR AND TO EACH ELEVATOR CONTROLLER

FEEDER SCHEDULE:

1. 2 SETS OF [4-300KCMIL CU + 1#3 AWG CU GND IN 2.5" EMT C.]
2. 3#3/0 AWG CU + 1#4 AWG CU GND IN 2" EMT C.
3. 3#2 AWG CU + 1#8 AWG CU GND IN 1.25" EMT C.
4. 3#1 AWG CU + 1#8 AWG CU GND IN 1.5" EMT C.



1 E-401 ELECTRICAL RISER DIAGRAM

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

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ELECTRICAL ONE-LINE DIAGRAM

IFB NO:
DRAWING NO: E-401
SCALE: AS NOTED
SHEET NO: 241 OF 254

LIGHT FIXTURE SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	MODEL NUMBER	VOLTAGE	LUMENS	TEMPERATURE	LAMP TYPE	MOUNTING	WATTS	REMARKS
A	LED RECESSED LINEAR	PRUDENTIAL LIGHTING	BPRO3-REC-LVR1-LED4-SO-YGW-PFL-WTW-X6	UNV	1000/FT	4000K	LED	RECESSED	7.8/FT	LED LINEAR FOR ENTRANCES PROVIDE IN CONTINUOUS LENGTTH AS SHOWN.
B	LED WP/VANDAL RESISTANT LINEAR	LITHONIA	VAP 4000LM FST MD 40K 90CRI	UNV	4000	4000K	LED	SURFACE	32.9	VANDAL RESISTANCE/WATERPROOF LED LINEAR LIGHT
C	LED PENDANT LIGHT	KING LIGHTING	K705-P4SA-IV-75-SSL-7030-277V-4K-BK	UNV	9091	4000K	LED	PENDANT	41.3	PENDANT MOUNTED LIGHT FOR CANOPY
D	LED DOWN LIGHT	GOTHAM	EVO4-30/15-AR-LSS-277-GZ10	120/277	1500	4000K	LED	CEILING	14.7	
E	LED ENTRY CANOPY LIGHT	FOCAL POINT	FSM2LWLS FL 625LF 40K UNV SM	120/277	625/FT	4000K	LED	SURFACE	33	
F	FULL CUTOFF DUAL HEAD POLE-MOUNTED PLATFORM LIGHT	KING LUMINAIRE	K705-P4S-III-75-(SSL)-7030-120V-KPL10 POLE: KING LUMINAIRE KM10RE-11 (DUAL HEAD/ARM ASSEMBLY)	120/277	--	4000K	LED	POLE	82.6	DUAL MOUNTED POLE LIGHT FIXTURES FOR OPEN PLATFORM AREAS REFER TO STRUCTURAL FOR MOUNTING DETAIL.
G	IN GRADE FLOOD LIGHT	LUMEN FACADE	LOI RO 120/277 36 40K WW TS5 INTL NO ASL	120/277	3634	4000K	LED	GROUND	33	
EX	LED EXIT SIGN	LITHONIA	LVS-1-R-120/277-UM-4X	120/277			LED	CEILING	2	WEATHERPROOF VANDAL RESISTANT NEMA 4X EXIT SIGN

REV.NO.	DATE	BY	APP BY	DESCRIPTION
A	07/25/25			30% PE PLANS

DESIGNED BY: E. HENRY
DRAWN BY: M. ALLEN
CHECKED BY: C. JOHNSON
DATE: 07/25/25

RICH DALTON
CHIEF EXECUTIVE OFFICER — DATE

DALLAS RICHARDS, PE
CHIEF ENGINEER — DATE

VRE L'ENFANT STATION AND FOURTH TRACK PROJECT 30% PLANS

LIGHT FIXTURE SCHEDULE

IFB NO:
DRAWING NO: E-501
SCALE: AS NOTED
SHEET NO: 242 OF 254

L’Enfant Station and Fourth Track Project

Final 30% Design Submission Memo

July 25, 2025

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Appendix C – Geotechnical Report
Appendix D – Permitting and Approvals Matrix
Appendix E – Design Guide Deviation Matrix
Appendix F – Final 30% Comment Response Matrix
Appendix G – Track and Interlocking Updates Memo
Appendix H– Virginia Avenue Wall Memo
Appendix I – 7th Street SW Retaining Wall Memo
Appendix J – South Elevator Concept Memo

1.0 Introduction

The intent of this memorandum is to provide an overview of the items included in the L'Enfant Station and Fourth Track Project Final 30% Design Submission, assumptions and updates made following the October 4, 2024 Draft 30% submission, and to document the major design coordination efforts and decisions to date. It is not the intent of this document to provide specific design criteria as that information is provided in the contract documents, included as Appendices listed below.

1.1 General

The Final 30% Design Submission includes the following design deliverables and supporting design criteria documents and technical reports and memos.

- Final 30% Preliminary Engineering Plans
- Final 30% Submission Memo and Appendices
  - Appendix A – Basis of Design Report
  - Appendix B – VRE Technical Specifications TOC
  - Appendix C – Geotechnical Report
  - Appendix D – Permitting and Approvals Matrix
  - Appendix E – Design Guide Deviation Matrix
  - Appendix F – Draft 30% Comment Response Matrix
  - Appendix G – Track and Interlocking Updates Memo
  - Appendix H– Virginia Avenue Wall Memo
  - Appendix I – 7th Street SW Retaining Wall Memo
  - Appendix J – South Elevator Concept Memo

1.2 30% Construction Cost Estimate and Schedule

A 30% construction cost estimate and construction schedule are also in development and will be delivered under separate cover. That deliverable will include an updated 30% project cost estimate in the VRE Cost Tool, as well as supporting construction cost estimate report and detail backup. The construction schedule deliverable will also include a schedule report documenting assumptions and methodology.

1.3 Right-of-Way

The existing rail right-of-way (ROW) within the site limits is owned and controlled by CSX Transportation (CSXT) and leased by the Virginia Passenger Rail Authority (VPRA) for VRE commuter rail service, along with through-running operation of Amtrak intercity passenger rail. VPRA has an easement over certain portions of the CSXT ROW for operation and maintenance of the existing Track 4 and future Track 5 through this section of the rail corridor and into Virginia. The majority of the Project's permanent structure will be contained within the existing rail right of way with any additional permanent land needs being pursued in the form of permanent and temporary easements. Temporary and permanent easements limits are identified in the Final 30% Submission based on the 30% Design.

Additional coordination of and finalization of easement areas and development of ROW Legal Descriptions and Sketches will be coordinated and completed during the Final Design Phase.

1.4 Section 106 Memorandum of Agreement Agreement, Consulting Party Coordination, and Documented categorical Exclusion (DCE)

- VRE and FTA are are currently finalizing the Section 106 Memorandum of Agreement (MOA) facilitating design reviews by the signatories to the MOA. The next phase of the project will include meetings with staff to review progress, identify design direction, and review plans.
- The next phase of the project will also include National Capital Planning Commission (NCPC) and U.S. Commission of Fine Arts (CFA) coordination and approvals. It is assumed that both CFA and NCPC will complete concept approval based on this 30% design (after PE) and final approval based on 60% design.
- The DCE has been drafted and updated for multiple VRE and FTA reviews and will be finalized after completion of the Section 106 process.

1.5 Overall Project Updates

- VRE requested the track numbering be updated per CSX direction to use track numbers 2-5, which replace proposed track numbers 1-4. As this was a late change in the 30% design phase, the numbering is reflected in the Final 30% plans and most of the submission appendices, however some of the technical memorandums previously completed use prior numbering. Rather than rewrite those documents, a note was added identifying the numbering difference for reference.
- VRE anticipates the Project will be delivered using a Construction Manager General Contractor (CMGC) delivery method, with the construction procurement phase expected to begin during the Final Design period. The next phase of design will include regular coordination with the selected CMGC contractor for technical input on design and construction means and methods. This will include preparation of Guaranteed Maximum Price (GMP) technical information packages, and assisting VRE with technical reviews and cost reconciliation.

2.0 Railroad

2.1 Track

Track design updates from Draft to Final 30% Submission summarized below are also documented in the attached Appendix G – Track & Interlocking Updates Memo.

- **Proposed Tracks 4 & 5**
  - The proposed alignment and design speed for Tracks 4 & 5 are constrained by Hancock Park and LE Interlocking.
  - The design team met with CSX and other stakeholders to discuss these constraints and how to include the proposed crossovers in LE interlocking while avoiding impacts to Hancock Park.
  - CSX directed the team to adjust the alignment and crossovers to avoid the curve overlapping with the point of switch, while maintaining a minimum of 200ft between the points of frog of the crossovers in LE Interlocking.

- The resulting proposed design avoids impacts to Hancock Park, removes the switch from overlapping with the curvature, and maintains a minimum of 200ft between the points of frog of the crossovers in LE Interlocking. However, the tighter curvature required adjacent to Hancock Park requires a reduced speed from 30P/25F to 25P/20F.

- **Proposed Tracks 2 & 3**
  - The proposed profiles for Tracks 2 & 3 need to be raised over 6th Street SW to accommodate the new bridge structure and minimum of 14 ft roadway clearance, while minimizing the raise adjacent to the Virginia Avenue wall.
  - Track 2, which is adjacent to the wall, is also lower than Track 3 and needs to be raised further.
  - CSX directed the team to limit the profile raise and to include a minimum ballast depth of 8-inches over the 6th Street SW bridge.
  - A set of vertical sag curves with a crest curve in the middle over the 6th Street SW bridge helped to limit the length of profile raise and extents of grade overflowing the Virginia Avenue wall.

2.2 Communications and Signals

This section summarizes some of the major design constraints and decisions that led to the current interlocking layouts included in the Final 30% Submission. CSX signal design, VPRA, and Amtrak coordination will be required as design advances to finalize interlocking layouts and signal equipment locations during Final Design.

- **L'Enfant Interlocking**
  - The proposed layout of L'Enfant Interlocking is constrained by the horizontal geometry of Tracks 4 & 5, as well as the existing crossovers that are to remain, which limit where additional crossovers can be located.
  - The additional proposed crossovers are necessary to facilitate rail operations during construction and would provide additional corridor flexibility in the future. They were also identified as future infrastructure improvements in the 2021 Comprehensive Rail Agreement between CSXT and VPRA.

- **Virginia Interlocking**
  - As a part of the Draft 30% Design comment review three additional crossovers were requested to be included in the proposed design of Virginia Interlocking.
  - The proposed layout of Virginia Interlocking is constrained by the vertical geometry of all four tracks, the existing crossovers to remain, and the existing bridge structures at 4th Street SW and 3rd Street SW, whose middle girders extend out from the track bed between tracks.
  - The two proposed crossovers between Tracks 4 & 5 as well as Tracks 2 & 3 were feasible with minor changes to the profiles to accommodate them to the north of 3rd Street SW and south of 4th Street SW respectively.
  - The proposed crossover between Tracks 5 & 4 to the south of 4th Street SW was more constrained and required an alternative layout to the crossover with a reverse switch on Track 5 to fit within the physical constraints.

- **Capitol Interlocking**
  - A crossover in Capitol Interlocking is required to support CSX operations during replacement of a portion of the 6th Street SW bridge.
  - The proposed crossover has been changed from temporary to permanent for the final condition at the request of CSX.

3.0 Bridges and Structures

3.1 Railroad Bridges

- **7th Street SW Bridge**
  - The bridge abutments mimic the geometry of the existing abutments, utilizing cantilevered abutment stems over the 7th Street SW sidewalks to support steel plate girder superstructures. The bridge abutments use embedded structural steel framing similar to the existing to resist bridge superstructure loads and transmit them to the foundations.
  - Abutment foundations must be drilled to comply with the WMATA Adjacent Construction Project Manual. Driven piles for abutment foundations will not be permitted unless explicitly stated otherwise by WMATA. Monitoring requirements will be developed in final design.
  - The widened bridge superstructure is tapered in width to follow track geometry and remain within rail right-of-way at both ends of the bridge.
  - The southern bridge abutment (Abutment A) is wholly contained within rail property, though the limits approach the property line. WMATA has future plans of installing elevators up to this same property line. Further coordination and consideration of possible structure interaction and solutions will continue during final design.
  - Plate girders are limited in depth to approximately 44 inches to maintain the existing 14'-1" vertical clearance with 7th St SW sloping upward in elevation over the bridge widening.
  - Lengthening the bridge span to avoid the cantilevered abutments was considered, but lengthening would create adverse differential deflections between the existing and proposed portions of the bridge and likely create future maintenance issues at that longitudinal joint. A practical girder design for the longer span length also proved challenging with the depth limitations noted above.
  - The closure detail between the new and existing deck plate/superstructure will be detailed in final design.
  - A concrete-encased duct bank with pipe handrail is proposed on the widened, western fascia to mimic the existing bridge fascia.
  - Bearing type (metal vs. disc) is to be determined in final design for optimized compatibility with the embedded steel framing system.
  - The western edge of the north abutment (Abutment B) is widened beyond what is structurally necessary to be flush with the retaining wall at the edge of the corridor for improved aesthetics. Solutions to prevent birds from nesting on the widened cap will be developed in final design.

- **6th Street SW Bridge**
  - The design assumes a vertical clearance of 14'-0" is permissible. This clearance exceeds the current posted 13'-6" vertical clearance. DDOT provided comments on July 11, 2025. These comments are currently being assessed, and further coordination will be required during final design.
    - Achieving 14'-0" of vertical clearance is based on CSX's approval of 8 inches of ballast below ties (less than the typical 12 inches per the Public Projects Manual)
  - Partial replacement of the existing bridge is permitted during phased construction, but a full bridge replacement is required.
  - Steel fascias are the desired signatory aesthetic for the structure. Concrete fascias will not be permitted.
  - Five girders per track are used to support Proposed Tracks 2 and 3 because the eastern half of the bridge governs vertical clearance and requires a shallower girder. Proposed Tracks 4 and 5 use four girders per track for support, and these girders can be approximately 3 inches deeper while still maintaining 14'-0" of vertical clearance to the roadway below. Using four girders at Proposed Track 4 provides a slightly improved horizontal clearance to the existing structure during phased construction.
  - Some foundations on the Proposed Track 2 side of the bridge are within the WMATA Zone of Influence. However, the WMATA tunnel is considerably offset from the 6th St. SW Bridge and further justification will be provided in final design showing negligible impacts to WMATA from the bridge drilled shafts.
  - Pier columns have been spaced between existing column foundations to minimize excavation and shoring required into the roadway. The track-eastern most existing pier column foundation will be fully removed to locate a proposed column which prevents a significant pier cap overhang which will deflect excessively.
  - The shape of the pier columns will be refined in final design to better align with aesthetic needs (such as changing the visible portions of the pier to squares for easier cladding of the faces).
  - Probing will be performed during final design to better locate the rear face of the existing masonry abutments to ensure proposed abutment foundations are offset a sufficient distance behind them for constructability and to reduce the risk of damaging the existing walls.
  - Continued coordination with CSX is required in final design to determine permissible outage windows during phased construction, particularly where proposed abutment construction is within 10-feet of the track centerline for short durations.

3.2 Retaining Walls

- **Virginia Avenue Retaining Wall**
  - The Virginia Avenue Retaining Wall is a stone masonry gravity wall running along the east side of the corridor adjacent to Virginia Avenue SW. Assumptions on wall geometry were taken from a combination of the 6th Street SW bridge plans as well as Pennsylvania Railroad standard drawing No. 54962.

- The depth of the base course of this wall below the Virginia Avenue SW roadway grade is unknown and will be determined via test pitting. Analysis done to-date for 30% design is based on the lowest course of stone shown in the reference drawings.
- Proposed Track 2 grade raises adjacent to the retaining wall will increase the net earth pressure and surcharge force on the wall while also shifting up the resultant line of action of these forces.
- Preliminary analyses of the wall do not show high factors of safety against sliding and overturning. However, the wall has been stable for decades without obvious signs of distress.
- The project will provide an engineered solution to ensure the wall does not experience larger overturning moments or sliding forces than it currently does. The intent of the retrofits is not to achieve safety factors that would be commensurate with a new wall design to AREMA code.
- A wall cap of either masonry or stamped concrete with pipe handrail is used atop the existing wall to contain any track raises and remain aesthetically consistent with the existing structure.
- The retaining wall exhibits a full-height crack at the northeast corner of the Virginia Avenue SW/ 6th Street SW intersection. This portion of the wall will have bridge loads removed in the final condition. Solutions for repair will be developed in final design.
- See Appendix H – Virginia Avenue Wall Memo for additional discussion and information on this retaining wall.

- **Retaining Wall "A" Adjacent NPS Hancock Park**
  - Retaining Wall "A" is provided to prevent track grading from encroaching on NPS Hancock Park.
  - Further coordination in final design with NPS is required to agree on wall limits. Some grading onto Hancock Park would not materially affect the function or use of the park compared to its current condition and may be preferred as opposed to a retaining wall.
  - The retaining wall uses battered micropiles for lateral load resistance. These micropiles extend into NPS property underground. Coordination with NPS on acceptability and any necessary easements or property rights transfers will be investigated during final design.
  - If battered piles are not acceptable, a vertical wall (such as a soldier pile wall) with tiebacks will be explored to remain wholly contained within rail property.
  - The aesthetic of the wall will be coordinated with NPS through final design based on the wall type selected.

3.3 Load Transfer Platform

- The Proposed Track 5 load transfer platform supports Track 5 live load and prevents additional surcharge loading on the wall at the western corridor property line.
- Plans for the retaining wall at the right-of-way do not indicate the wall was designed for rail surcharge loading, nor do preliminary concrete computations suggest there is considerable excess capacity.
- Shoring used to install the building retaining wall may remain, and the presence of tiebacks is unknown. Test pits are planned to verify whether shoring or tiebacks are present.

- A standard Union Pacific precast beam was used during preliminary design in lieu of creating a more costly custom shape. Alternate span lengths and beams may be considered during final design to optimize cost.
- Piles should extend below the base of the adjacent building structure (and three levels of underground parking) to avoid placing additional surcharge load on the neighboring structure.
- Further detailed analysis may be performed to justify a load path of railroad surcharge through the existing adjacent property's structural system in final design, but this analysis would require approval of the adjacent property owner which is not guaranteed. The cost of the load transfer platform has been carried in 30% design to ensure costs are appropriately accounted for.

3.4 Station Platform and Canopy Structures

- A slab-on-grade platform type, consistent with the VRE Facilities Design Guide, was selected as the base design. During the design process, alternate options including precast panel platforms and FRP platforms, were evaluated. An alternate precast slab platform option was included for the contractor. This option features precast panels spanning between canopy column foundations, which are supported by micropiles.
- The canopy width between gridlines 1 and 2 has been reduced to prevent interference with the clearance envelope of the curved track section at this location.

3.5 Station Entrance Structures

- The Communications, Elevator Machine, and Electrical rooms at the 7th Street SW entrance may be extended to the corridor retaining wall in final design after confirmation with the CMGC contractor. Extending the rooms will eliminate a small gap between the room wall and retaining wall which will leave a difficult area to compact soil adequately during construction. Appendix I - 7th Street SW Retaining Wall Memo provides additional evaluation of the 7th Street SW retaining wall.
- The selected foundation configuration between the 7th Street stair and the retaining wall is intended to prevent soil settlement in the area due to rail loading, prevent retaining wall overturning, and reduce required shoring. In future design phases, the design team and contractor should explore opportunities to optimize shoring methods, micropile configurations, and foundation types to determine if more efficient alternatives are available.
- While no connection was included in the 30% design, Appendix J – South End Elevator Concept Memo evaluates the feasibility of elevator connections between the proposed VRE platform and the Washington Metropolitan Transit Authority L'Enfant Plaza Metrorail Station at the 7th Street SW location.
- Limits of removal of the existing loading dock at the 6th Street SW entrance will be coordinated with the CMGC contractor. Maximum expected limits are considered at 30% design level but may not be required in practice.

4.0 Civil, Utilities, and Stormwater Design

4.1 Civil

- Demolition and removal of existing Railroad, VRE, and DDOT ROW infrastructure will be required for the installation of the new VRE LEF project. The demolition and removal of all equipment and materials will be in accordance with DOEE regulations.
- Curb and gutter, sidewalk, and ADA ramps will be replaced within the footprints of the 7th and 6th St Bridges. The existing infrastructure will be impacted during construction activities and replacements will be installed in-kind.
- Tree removal within NPS property requires significant coordination efforts and supporting documents as to why the trees must be removed. This project is currently removing trees located along the property line that fall on both CSXT and NPS property as they are in direct conflict with proposed track 5 and the train envelope.
- Adjacent to the new generator between 6th and 4th St SW, a new fence line will be installed along the CSXT property. The existing fence line is intertwined with the trees along the property line and will be removed as part of the demolition efforts.
- There is no formal site plan approval process for projects in DC. For land disturbing activities a B-Civ permit from the Depart of Buildings (DOB) will be the primary permit with all other permits and approvals connected to it.
- See Appendix D – Permitting and Approvals Matrix within the appendices for additional information.

4.2 Existing Utilities

- Available utility records have been received from the existing utility owners within the project limits and quality level B subsurface utility exploration (SUE) has been conducted. Existing utilities and owners within the vicinity of the project limits include:
    - CSXT Railroad owned utilities
    - Franchise utilities within CSXT ROW
    - DDOT owned utilities
    - DC Water owned utilities
    - PEPCO owned utilities
    - 3rd Party telecommunications and fiber optic owned utilities
    - GSA owned utilities
    - WMATA owned utilities
    - Dark fiber (no record, federal/military owned utilities)
- The existing project is located primarily within the MS4 area of DC Water, with a smaller portion at the track splits being located within the combined sewer area. The area within the combined sewer area is located on structure above Interstate-395.

- Preliminary utility coordination meetings have been conducted with utility owners located within DDOT ROW, introducing the VRE LEF project and obtaining as many utility records as available from the respective entities. A list of the utility owner meetings includes:
    - GSA (Steam)
    - DC Water (Water, Sanitary, Storm)
    - Washington Gas (Gas)
    - PEPCO Distribution (Electric)
    - Verizon (Telecommunications)
    - Verizon Business MCI (Telecommunications/FO)
    - PEPCO Transmission (Electric)
    - Comcast (Telecommunications)
    - Lumen (Telecommunications/FO)
- Existing utility meetings have not been held with DDOT, WMATA, AT&T Core, AT&T Legacy, AT&T Long Distance, Fiberlight, or Zayo Group. Utilities located within the CSXT Long-Haul Fiber Optics facilities are being coordinated with VPRA and the LBN project.
- The CSXT Long-Haul Fiber Optics network is a Long-Haul route that takes Fiber Optics facilities between various cities on the East Coast. The existing alignment is located along the north side of the tracks as it passes through the limits of the VRE LEF project. In its current configuration the ductbank is partially bifurcated into electric and telecommunications ductbanks reconnecting at manhole structures along the alignment. Sections within the project limits have two (2) separate 6-way ductbanks, one for electric and one for telecommunications, while other parts of the alignment have one (1) 12-way ductbank with conduits intermingled. The existing connections at manholes along the CSXT ROW are partially known by previously recorded envelope drawings.

4.3 Proposed Utilities

- Utility relocations are required as part of the proposed works in support of the VRE LEF station, 7th St SW Bridge widening, 6th St SW Bridge replacement, and track alignments. The 7th and 6th St SW crossings are extremely constrained DDOT ROWs with utilities requiring relocation as part of the bridge work. The primary utility relocations at railroad grade include the CSXT Long-Haul Fiber Optics ductbank and wayside power. CSXT is producing relocation plans for track signals, signal bridges, and signal houses across the project limits.
- The CSXT Long-Haul Fiber Optics ductbank is being relocated as part of this project and is being coordinated with VPRA and the LBN project. The western end of the ductbank will directly interface with the LBN project while the eastern edge of the ductbank is a part of ongoing coordination adjacent to the Virginia Tower at 2nd St SW.
- Storm drain curb inlets will need to be relocated and reinstalled at the 7th and 6th St SW crossings due to the construction/expansion of those bridges. Localized relocations of those facilities will be coordinated with DC Water and DDOT and meet all necessary requirements.

- There is a localized relocation of a DC Water sanitary sewer line in 7th St SW to clear the footprint of the bridge widening. The relocation will undergo DC Water coordination as the design progressed due to the tight alignment between a relocated DC Water curb inlet, bridge foundations, and miscellaneous existing utilities.
- Between 6th and 7th St SW there will be a 10W ductbank installed. The 10W ductbank is configured to be a 5x2 layout with 4" conduits – 2 PEPCO, 2 generator, 2 telecommunications, 1 signal, and 3 spare ducts.
- At 6th St SW there is a new PEPCO electrical service that will be provided on the east side of the bridge and goes to a diesel generator located in the CSXT ROW. The generator is located between 6th and 4th St SW adjacent to the existing access gate. The electrical service from the generator will head back towards the platform and connect to the 6th St entrance electrical room. The existing PEPCO service on 7th St SW will be removed in the permanent condition once permanent connections are completed. Electrical conduits will be connected from the 6th St SW entrance electrical room over to the 7th St SW entrance through the CSXT ROW and within the use of the 10W ductbank.
- A new primary telecommunications service will be provided by Comcast at 4th St SW. The 4th St SW connection will run within the CSXT ROW across the 6th St SW bridge and into the main telecommunications room at 6th St SW. Similar to the electric route – telecommunications will run within the ROW between 6th and 7th St SW entrances. The existing service at 7th St SW will remain active until such time that the proposed connections are complete.
- A potable water line service will be installed at 6th St SW off a DC Water owned public line and go into the 6th St SW entrance. The new service will require a water meter within DDOT ROW prior to entering the building.
- There are sanitary sewer connections at both 7th and 6th St SW to the existing DC Water infrastructure. The proposed station entrances do not have any bathrooms within the structure but will be discharging building waste and floor drains. The 7th St SW connection will require a water seal due to its location within the MS4 and an atypical connection to sanitary sewer. For 6th St SW, there will be internal building drains that all discharge to a large DC Water main in 6th ST SW.
- Storm drainage infrastructure connects the track underdrain, platform underdrain, and the facilities within the 6th and 7th St SW entrances. At 6th St SW there are two (2) routes currently shown with connections from the west side to the existing DC Water infrastructure in the DDOT ROW. The installation of drop manholes will be required to combine all necessary drainage flows and get it to street grade. There are two (2) crossings of the Virginia Avenue Wall on the south side of the railroad corridor that will require the utilities to be jack and bored underneath the railroad tracks and the retaining wall. All drainage connections and crossings of the railroad tracks will need to be coordinated and designed to account for railroad loading.
- Track underdrain will run from the western limits of the project area to the proposed generator location east of 6th St SW. The track underdrain will be installed within the CSXT ROW ballast and convey drainage runoff to outfall locations. The outfall locations will be located at bridge crossings to tie back into the DC Water infrastructure and will be coordinated during final design.
- Platform drainage will be located on the south side of the platform and connect to trench drains located in the center of the platform. The primary trunk of the drainage will be a 12in PVC pipe with

4in laterals going out to each respective trench drain and canopy downspout. Canopy downspouts are located every 25ft and trench drains are located between canopy columns. Platform drainage will require coordination with architectural, structural, and plumbing designs during final design.

- Relocated traffic signals at the 6th St SW bridge are not included in the Final 30% plans and will need to be coordinated with DDOT as part of final design.

4.4 Stormwater Design

- Storm drainage systems will be designed to provide safe roadway conditions and adequately convey design flows. The existing storm drainage system will be maintained where feasible.
- Design frequency, sizing, location, and spacing for the storm drain system are based on the stormwater drainage calculations, spread, bypass flow, and efficiency requirements. Horizontal clearance will be maintained between the proposed drainage system and all underground structures. Culverts are designed and sized to accommodate the design flows.
- Within DC, stormwater retention volume (SWRV) will be calculated for all major land disturbing activities in accordance with the DOEE Stormwater Management Guidebook. For Washington DC, this retention volume (SRV) is calculated using a 1.2-inch rainfall event. An additional volume of storage for water quantity control will be required by DOEE to reduce the post development discharge to pre-existing (typically "meadow") conditions. With the majority of the project area falling on either railroad lands or DDOT Right-of-way – the project will complete a Maximum Extent Practicable (MEP) with DOEE. The MEP process with DOEE will allow for unmet stormwater management requirements due to the constrained conditions of utilities and site features within public Right-of-ways.

4.5 Erosion and Sediment Control

- Within the District of Columbia, Erosion and Sediment Control (ESC) design is required to temporarily protect water resources from sediment pollution and increases in runoff associated with active land disturbance, clear, and grade activities. Therefore, ESC Plans are required for all portions of a construction project and need to be properly phased to provide the maximum amount of protection to the receiving waterways.
- Erosion and Sediment Control has not been produced as part of the Preliminary Engineering design phase and will be developed during final design. The project area consists of work on private property, CSXT Right-of-way (ROW), and DDOT ROW.

4.6 Floodplain Delineation

- The project limits are located primarily outside of the effective 100-year FEMA Floodplain area. The project crosses over the 100-year floodplain at the 9th St expressway bridge and the I-395 junction. Since the railroad infrastructure is on structure elevated above the street it is not actually impacting the 100-year floodplain.

5.0 Architecture

5.1 Entrance Designs

- The design of the entrance areas provides passenger circulation from the sidewalk to the station platform stairs and elevators, with a focus on safety, durability, and ease of maintenance. Tile finishes are used on the floors, and walls to promote an aesthetic appearance and maintain a clean, low-maintenance surface. Floors will have a durable slip resistant quarry tile and walls will have ceramic tile applied continuously from the floor up to the height of the facility door lintels, creating a clean and unified surface. Above this, the exposed cast-in-place concrete provides a textured contrast before transitioning to the metal panel ceiling. This layered approach makes the ceiling feel higher, improving passenger comfort.
- Ceilings are designed with a metal panel system to provide access to plumbing, mechanical and electrical systems. Stairs to the platform are cast-in-place concrete with a slip resistant finish to meet ADA standards and include metal floor and wall-mounted railings. Elevators are enclosed in glass with stainless steel mullions, forming a clearly defined vertical circulation element.
- Both entrances include ancillary spaces required for station operations, including Communication Rooms, Elevator Machine Rooms, and Electrical Rooms. The 6th Street SW entrance also includes a Cleaners Room to support maintenance of the tunnel and interior access areas. These rooms are utilitarian in design and do not include tile finishes on walls or floors. Ceilings in these spaces are left as exposed slabs, with no metal panel system provided.

5.2 Exterior Entrance Design

- The 6th Street SW station entrance will channel through an existing railway retaining wall. The 7th Street entrance will channel though an existing bridge abutment at 7th Street SW. New exterior entry finishes will match existing as close a possible to preserve historic qualities of the railway bridge structures. Exterior station signage is included to mark entry points. At the 7th Street SW entrance, signs are located below the abutment and on the north wall facing the Metro exit. The 6th Street SW entrance includes a large engraved sign and an exterior canopy. The steel frame canopy will be glazed and extend north to partially cover the passageway exit. The canopy provides weather protection for waiting passengers and improves visibility from the street.
- Planters are included on both sides of the pedestrian path at the 6th Street station entrance to help define the walkway and introduce landscaping. The 7th Street SW landscaping area will remain as a grass slope like it is today.

5.3 Architectural Platform Design

- The twenty-two foot wide, station platform includes a 2-foot-wide tactile warning strip along both edges, accompanied by a flush-mounted sacrificial edge.
- At each end of the platform, designated areas of safe dispersal are provided, marked with pavement striping and ended by steel railings with security gates designed to VRE standard. In addition, passenger amenities such as benches and VRE-supplied blast-resistant trash and recycling receptacles are incorporated throughout the platform design.

5.4 Architectural Canopy Design

- The station canopy is designed with 25'-0" bays. Steel columns and trusses form the gable roof, similar to the existing station. The 475'-0" x 12'- 8" canopy consist of seven components; one main roofing system with two 37'-0" skylight units located above the station entrance stairs, two elevator shaft roof elements and two smaller segments of canopy located at each end of the platform. The smaller segments are reduced in width and height to ensure the dynamic clearance envelope of vehicles adjacent to the curved portion of the station platform. The canopy roof structure will be clad with a standing seam metal panel system and include metal gutters and rain leaders. Steel for the canopy, station guardrails, and railings will be painted VRE blue. The elevator enclosure exterior and interior finishes are intended to be stainless steel.

5.5 Signage

- Signage has been developed following VRE Design Standards to ensure clarity, consistency, and accessibility throughout the station.
- Engraved signs are not part of the standard VRE signage package but are suggested due to the context of the surrounding federal buildings and museums. They are integrated into cast-in-place concrete finishes of the station entry walls to enhance visibility from the public sidewalk and reinforce the station's identity within the urban context.

6.0 Mechanical

6.1 Heating and Cooling

Several areas within the expanded station will require air conditioning.

- The Electric Room will be provided with an electric unit heater and a wall-mounted exhaust fan for ventilation. The fan will draw ventilation air through a wall louver. The fan will be sized based on a 30kVA transformer and a 10-degree Fahrenheit temperature rise from outdoor design day of 92F.
- The Water Service Room will be heated by an electric unit heater. Control for the unit heaters will be by an integral thermostat set at 65F (adjustable) and the fan will be controlled by a wall mounted thermostat set at 95F (adjustable).
- The Elevator Machine Room and Data Room will be provided with Packaged Terminal Air-Conditioning (PTAC) units for cooling. The PTAC for the Elevator Machine Room is preliminary sized for 3kW for the elevator controllers and the one for the Data Room will be sized to support 3kW of powered equipment. The PTAC units will be equipped with electric resistance heater for winter operation. Integral controls will cycle the compressor to satisfy a call for cooling and energize the electric resistance heater on a call for heating.

7.0 Electrical

7.1 Electrical Distribution

- A PEPCO 400A, 3PH, 480/277V service will be provided from the existing cabinet CT location serving the existing wayside power shed, which will be demolished as part of the project. The CT cabinet is located under the 6th Street SW bridge. Service will be routed along the bridge abutment

and across the bridge within a utility ductbank across the bridge. The service will enter into the 6th street entrance electrical room.

- The existing electrical service from the station originates on the 7th Street SW side of the station at 208/120V. It will remain in service during the phased construction of the 6th Street SW end of the station.
- A diesel generator will be located in the right-of-way track south of a vehicle entrance gate which is off the alley east of the station. It will have a sub-base fuel tank and a critical sound attenuated enclosure. The controls and electrical connections will route across the 6th Street SW bridge with the electrical service to the 6th street main electrical room. The generator will include a temporary generator/load bank termination cabinet on an adjacent pad.
- 480/277V panels will be provided in both the 6th and 7th street entrance electrical rooms of the station. 480/277V was selected versus 208/120V due to voltage drop considerations due to the long circuit distances on the project. 208/120V panels will be provided with transformers at each electrical room for support of lower voltage loads. Transfer switches will be provided in the 6th street electrical room for the standby and emergency load connections.
- Elevators, select mechanical equipment, and lighting will operate at 480/277V. Smaller motors, receptacles and IT equipment will operate at 208/120V.
- A single purpose fire alarm system will be installed for performing elevator recall functions only. It will use conventional heat detectors at the unconditioned elevator shafts and a smoke detector in the elevator machine rooms. It shall communicate to a central monitoring station via LTE cellular service.

7.2 Lighting

- The standard VRE King Luminaire (StressCrete Group) lighting will be used on the platform. A pendant style will be used at the canopies and a pole mount at open platform areas.
- Utility rooms will use an LED vaportight fixture. The entrances will use LED downlighting recessed in the ceilings. The 6th street entrance will include LED floodlighting at grade for VRE entrance signage and LED bollards at the adjacent loading dock perimeter. Weatherproof LED exit signage will be provided at the entrance tunnels.
- Recessed downlighting is being investigated to be located in the public space abutment of the 7th street entrance, to match an existing lighting pattern.
- Exterior lighting will be controlled via contactor and time clock/photo sensor control. Entrance tunnel lighting will keep the minimum safety lighting level on at all times, and switch to full on during evening hours.
- Lighting will be provided as required for temporary platforms as necessary during the phased construction.

7.3 Communications.

- Comcast service will be routed from 4th Street SW to the station via ductbank in the right of way. 2-4" conduits will be provided for the fiber optic service. Comcast will bring service in public space on 4th Street SW to the connection point.

- The existing LTE service/temporary Comcast service at 7th Street SW will remain active to the existing comm cabinet until the 2nd phase starts and the 6th street entrance telecom service is active for the Phase 1 work.
- The new service will route over the 6th Street SW bridge utility corridor and into the main telecommunications room at 6th street entrance.
- Two telecom rooms are provided at each entrance of the station to keep ethernet runs within 300 feet of the telecom room. 12 strand OM4 fiber optic cable will be routed from the 6th street entrance telecom room to the 7th street telecom room.
- Each room will include a 4-post rack, with 42U capacity, 19" mounting. 12" cable runway will be installed above the racks across the room.
- 48 port patch panels will be included for termination of all ethernet connections, as well as vertical and horizontal cable management. Fiber optic 12 port adapters will be used for patching the fiber optic terminations with Type LC connectors.
- CAT6 ethernet cable will be routed in conduit to all devices including cameras, TVMs, and VMS stations.
- Speakers will utilize 14/2 speaker wire in conduit routed to telecom room. Speakers will be dual head Bogen speakers on the platform and ceiling mounted flush units in the entrance tunnels.
- All active equipment will be VRE provided, and contractor installed.
- 4-4" conduits in ductbank will be routed below ground between the 6th and 7th street telecom rooms. 2-4" conduits in ductbank shall be stubbed out to the street at the 7th street entrance for future connection to utilities if needed in the future.

8.0 Plumbing

8.1 Potable Water

- A 1-inch potable water service will enter the 6th Street SW side of the station through a meter in the ground. The potable water line comes up through the floor in the Cleaner's Room and will be equipped with a normally closed shut-off valve and a backflow preventer once it enters.
- ADA compliant hose bibs will be provided on the platform within the platform surface. Each will be spaced within a 100-foot hose reach.

8.2 Sanitary and Storm

- Floor surfaces should be positively sloped for drainage to prevent water from ponding. The sump in the elevator shaft will be provided with a Stancor "Oil-Minder" Elevator Sump Pump or equal. The pump allows water to be automatically pumped from elevator pits in accordance with ASME A17.1 without danger of ejecting potentially harmful oily substances into the drainage system.
- These pumps have been approved by numerous local code enforcement authorities. The pumped discharge will be connected to the storm sewer system. A check valve will be placed in the line prior to the connection point. Platform and canopy drains will be coordinated with architecture and civil during final design.

Appendix A

Basis of Design Report

L'Enfant Station and Fourth Track Project

L’Enfant Station and Fourth Track Project

Preliminary Engineering – Basis of Design

July 25, 2025

DOCUMENT RECORD

Version	Issuance Date	Description
1	May 28, 2021	Draft 1 submitted for review
2	September 2, 2022	Draft 2 submitted for review
3	September 30, 2022	Final Submittal – Conceptual Engineering
4	December 15, 2023	NEPA/PE Phase Update
5	October 4, 2024	Draft 30% Submission Update
6	May 23, 2025	Final 30% VRE OTS Submission Update
7	July 25, 2025	Final 30% Submission Update

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1.0 Introduction

The Virginia Railway Express (VRE) L'Enfant Station, located at 650 Virginia Ave SW in Washington, DC, is one of VRE's most active stations serving both the Manassas and Fredericksburg VRE commuter rail lines. The existing side platform at the station is located at the western side of the railroad corridor (geographic north) and is served by one of the three tracks within the corridor via a single platform edge.

The L'Enfant Station and Fourth Track Improvements Project (the Project) proposes to enhance rail operations and increase capacity at the VRE L'Enfant Station by adding a fourth track between L'Enfant (LE) Interlocking and Virginia (VA) Interlocking along with upgrades to both Interlockings as shown in the **Project Area Exhibit** (**Figure 1-1)** and replacing the existing side platform with a center platform that can accommodate 8-car VRE trains. Additionally, the Project aims to strengthen multimodal connectivity and access surrounding the station, including with the L'Enfant Plaza Metrorail Station.

The existing side platform is approximately 550 feet long, which is insufficient to allow more than six train cars to access the platform, thus requiring some passengers to move between cars to exit longer trains. This can increase station dwell times and lead to schedule delays or other traffic impacts within the rail corridor. A center island platform served by two tracks would remove this operational bottleneck and expand train capacity in this heavily trafficked part of the CSX Transportation, Inc. (CSXT) RF&P Subdivision, while also improving the safety and reliability of the railroad corridor.

This Basis of Design (BOD) documents the technical criteria and standards to be used by the design team in the design development for the Project, beginning with Conceptual Design. The BOD is a living document that will be updated as the design progresses and as design decisions are made.

The BOD will be coordinated and developed with input from VRE and project stakeholders including the Federal Railroad Administration (FRA), Federal Transit Authority (FTA), Virginia Passenger Rail Authority (VPRA), CSXT, and Amtrak. The design team will also coordinate with other stakeholders that own or operate adjacent facilities, including the Washington Metropolitan Area Transit Authority (WMATA) and District of Columbia (DC) agencies, during this phase of the Project and will include design criteria or standards of those agencies, if applicable.

Figure 1-1: Project Area Exhibit

2.0 Project Overview

2.1 Project Location

The Project location in southwest Washington, DC, extends approximately 0.7 miles, from the LE interlocking at milepost (MP) CFP 111.5 south of the station to the VA interlocking at MP CFP 112.2 to the north (as shown in **Figure 1-1**), within the railroad right-of-way (ROW) owned by CSXT. VPRA is in the process of acquiring a permanent easement over CSXT property for operation and maintenance of the existing Track 4 and future Track 5. The final terms of the CSXT and VPRA agreements and responsibilities can be found online at VPRA/CSX CRA, and Exhibit E-4 of the Comprehensive Rail Agreement that applies to L'Enfant VRE Station is attached as Appendix A. The Project is bound by land owned and administered by the District Department of Transportation (DDOT), WMATA, the National Park Service (NPS), and private landowners.

2.2 Design Objectives

Specific design objectives for the Project include the following:

1. Design a center platform with two platform edges that can accommodate two trains simultaneously.
    a. Design for a platform length that can accommodate 8-car train set with all doors opening on the platform (635-foot minimum length).
    b. Design for grade-separated Americans with Disabilities Act (ADA)-compliant platform access using elevators and stairs.
2. Remain within the existing railroad ROW and avoid or minimize direct property encroachments and impacts to the surrounding property owners, if possible.
3. Add a continuous fourth track for the full length of the Project limits.

4. Update LE and VA interlockings to integrate the new continuous fourth track and provide additional operational flexibility.

5. Coordinate the design and construction of this project with adjacent projects, including the Long Bridge Project and Transforming Rail in Virginia program.

2.3 Station Objectives

To address capacity issues and allow for more seamless operations, VRE developed the following objectives for L'Enfant Station, which should:

- Relieve the existing bottleneck that hinders the efficient movement of passenger and freight rail in a critical segment of the national rail network;
- Expand operational functionality at the station including bi-directional service for passenger trains;
- Enhance connectivity to regional destinations through connections to Amtrak and Metrorail;
- Enhance connectivity to local destinations through connections to buses, shuttles, bikeshare, and the local pedestrian network;
- Enhance the user experience, including ADA access at all station entrances; and
- Integrate the station with the surrounding community.

3.0 Project Assumptions

Assumptions for this Project include the following:

- Preliminary and final design must be able to provide for the continuation of VRE service and other rail service during construction. Full track closures are to be avoided, and all efforts will be made to maintain two tracks in service during construction.
- The Project does not preclude future electrification of the Project area.
- VRE will obtain any required right-of-way and access agreements with property owners prior to construction.

3.1 Adjacent Projects Coordination

The L'Enfant VRE Station Project, beginning in the Alternative Analysis phase to determine the optimal station and track layout, has involved and will continue to require close coordination with several adjacent projects, including but not limited to:

- The Long Bridge Project;
- WMATA's New Headquarters at 300 7th Street SW;
- WMATA L'Enfant Plaza Metrorail Station 7th Street SW Elevator Replacement Project;
- GSA Regional Office Building (ROB) Repair and Alteration Project at 301 7th Street SW; and
- MARC Run-Through Service expanding into Virginia.

4.0 Design Criteria

This section identifies the design criteria that will guide the development of design plans for the Project. These guidelines have been established based on communications with and documentation provided by VRE and a review of their existing station facilities. The following summary of project design guidelines will be reviewed, updated, and further refined, as needed, as the Project advances.

4.1 Applicable Codes, Standards, and Recommended Practice

The following sources will be the basis for the project design guidelines and standards, following the VRE Facility Design Guidelines as closely as practical. The entire railroad ROW is currently owned by CSXT; however, since VPRA is in the process of acquiring the property for Tracks 4 and 5, track design standards will comply with the criteria set forth in the March 30, 2021, Transforming Rail in Virginia Agreement (Appendix A) and any subsequent updates provided by VPRA. Where design areas are not covered by VRE, CSXT, VPRA, or DC guidelines, and/or where project-specific criteria are more appropriate, the designer will provide recommendations for approval by VRE.

The following list of guidelines will be updated and further defined during the development of the Project:

- VRE Facility Design Guidelines (Redline Draft, 2023)
- CSXT Public Project Information Manual (2023)
- CSXT Design & Construction Standard Specifications – Pipeline Occupancies (2018)
- CSXT Design & Construction Standard Specifications Vol. 1 (2021)
- CSXT Design & Construction Standard Specifications – Wireline Occupancies (2016)
- CSXT Maintenance of Way Instructions and Regulations (2004)
- American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2024)
- AREMA Portfolio of Trackwork Plans (2010)
- ADA Standards for Transportation Facilities, US Department of Transportation (2006)
- ADA Standards for Accessible Design (2010)
- ADA-ABA Accessibility Guidelines (2004)
- Federal Railroad Administration (FRA) Railroad Corridor Transportation Plans Guidelines (2005)
- Federal Transit Administration (FTA) Accessibility Handbook for Transit Facilities (1992)
- AASHTO LRFD Bridge Design Specifications, 9th Edition (2020)
- ACI 318-14 Building Code Requirements for Structural Concrete
- AISC Steel Construction Manual, 14th Edition (2011)
- ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures (2010)

- ASCE Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data
- AWS D1.4-2011 Structural Welding Code (2011)
- ASME/A.17-13 CSA B44-2013 Safety Code for Elevators and Escalators (2013)
- National Fire Protection Association (NFPA) 130 Standard for Fixed Guideway Transit and Passenger Rail Systems (where applicable and does not conflict with VRE or CSXT standards and best practices)
- NFPA 101-15 Life Safety Code (where applicable and does not conflict with VRE or CSXT standards and best practices)
- District of Columbia Municipal Regulations (DCMR), Chapter 24-31. OCCUPATIONAL SAFETY: RAILROAD CLEARANCES, Title 24. PUBLIC SPACE AND SAFETY.
- District of Columbia (DC) Stormwater Regulations (2013)
- DC Building Code (2017)
- DC Department of Energy and Environment (DOEE) Erosion and Sediment Control Manual (2017)
- DOEE Soil Erosion and Sediment Control Handbook
- DOEE Soil Erosion and Sediment Control General Notes
- DOEE Stormwater Management Guidebook (2020)
- DC Water Project Design Manual Volume 3 (2001)
- DC Water Standard Design Guidelines, Drawings, and Specifications
- DC Water Green Infrastructure Utility Protection Guidelines
- District Department of Transportation (DDOT) Design and Engineering Manual (DEM) (2023)
- DDOT Standard Specifications for Highways and Structures (2020)
- DDOT Green Infrastructure Standards (2014)
- DDOT Temporary Traffic Control Manual (2006)
- Manual of Uniform Traffic Control Devices (MUCTD; 2025)
- International Building Code (2015; as referenced by 2017 DC Building Code)
- Washington Metropolitan Area Transit Authority (WMATA) Adjacent Construction Project Manual (ACPM), Revision 6 (2023)
- Transit Cooperative Research Program Report 165: Transit Capacity and Quality of Service Manual, 3rd Edition (2013)

4.2 Track Design Criteria

The Project shall expand the capacity of the existing L'Enfant Station within the existing railroad right-of-way in an existing three-track and future four-track environment and will consider the following design criteria.

4.2.1 Track Centers

Track centers and clearances to horizontal and vertical obstructions shall conform to VRE Facility Design Guidelines at or near station platforms. In other areas, track centers will conform to the CSX Transportation Maintenance of Way Instructions and Regulations where practical and taper to existing at project limits, as shown in Appendix A, Exhibit E-4 of the Comprehensive Rail Agreement between DRPT and CSX, on sheet EV-001 and EV-283. Mainline track center spacing shall remain unchanged at an absolute minimum of 13 feet on center in tangent.

4.2.2 Design Speed

Maximum authorized speeds (MAS) vary through the project limits with proposed design speeds maintaining existing MAS at a minimum. Existing freight MAS is 25 miles per hour (mph), and existing passenger MAS varies from 25 mph to 30 mph.

4.2.3 Track Geometry

Horizontal and vertical track geometry design shall conform to CSX Transportation Maintenance of Way Instructions and Regulations except where otherwise noted. In design areas not covered by VRE or CSXT design standards, the designer will make a recommendation for approval by VRE and CSXT, as required.

4.2.4 Roadbed Section

Track roadbed criteria shall be compliant with VRE and CSXT standards and plans. Track roadbed standards pertain to ballast depth, sub-ballast depth, shoulder widths, and track drainage. Ties, rail, and other track materials shall also be compliant with VRE and CSXT standards. Design preference for ties is to use timber ties, and for rail to use 136lb RE rail.

4.2.5 Special Trackwork

No new special trackwork is envisioned for the proposed VRE platform. However, updated interlockings are proposed as a part of the Project and to help facilitate operations during and after construction.

Three existing interlockings must be updated during construction as a part of this project: LE Interlocking located track south of the VRE station and VA Interlocking and Jersey Interlocking to the north. Both LE and VA interlockings will need significant upgrades and changes to their layouts to address desired train movements to and from the future fourth track, while Jersey Interlocking will need one additional crossover.

The design of the proposed interlockings will allow for improved interoperability between all four proposed tracks between the two interlockings to facilitate both freight and passenger operations. The final layout of the interlockings will be closely coordinated with CSXT, VRE, Amtrak, and the adjacent Long Bridge Project to ensure that proposed operational requirements are met. Close coordination with the adjacent Long Bridge Project will be key in the final design and layout of the proposed LE interlocking to resolve outstanding design issues.

Proposed crossovers in these interlockings will be no smaller than a No. 15 and every effort will be made to use No. 20's where feasible. Crossovers will be located on tangent track with no vertical geometry within their limits.

4.2.6 Clearances

Horizontal clearances at or near station platforms shall conform to VRE Facility Design Guidelines. Outside the station area, horizontal clearances shall conform with CSX Standard Drawings except where otherwise noted. Increases in clearance for curvature and superelevation shall be as shown in CSX Transportation Maintenance of Way Instructions and Regulations.

Vertical clearance shall conform to CSX Transportation Maintenance of Way Instructions and Regulations, 23 feet exactly above a plane across top of rail to a point 9 feet exactly on either side of the centerline of track.

4.3 Platform/Station Design Criteria

This section identifies the parameters used for design of the proposed station and supporting facilities, in accordance with the applicable VRE Facility Design Guidelines.

4.3.1 Platform Geometry

The proposed station platform design will be based on the following assumptions:

- A minimum 635-foot platform length will be provided to support operations (accommodating eight-car train sets) and final infrastructure design.
- VRE guidelines for a center platform require 24 feet in width; however, limited space dictated 22 feet in width with an additional 2 inches on either side of the platform for the sacrificial edge. Width may decrease at platform ends due to track curvature or converging tracks to maintain clearance between the train and platform edge.
- Platform height is 8 inches above top of rail.
- Platform shall be located between proposed track 4 and proposed track 5.
- Platform curvature to be less than 1°45'.
- The Project will at a minimum maintain the existing distance between track centerlines and any modifications of this spacing will be coordinated with VPRA and CSXT.
- Platform sacrificial edge shall be 5 feet 1 inch from centerline on tangent track. Sacrificial edge shall be 2 inches thick. Platform edge offset will be increased in curves according to CSXT standards. Minimum 1.0% platform cross slope to drain. Maximum 2.0% grade in any direction to meet ADA level boarding criteria. Platform surfaces shall drain away from tracks.

4.3.2 Platform Access

Two pedestrian access points will be provided for the station. Pedestrian access should connect to the surrounding sidewalk network and coordinate with access to the L'Enfant Plaza Metrorail Station. Additional considerations include the following:

- Minimum number and width of ramps to comply with the DC Building Code and the International Building Code (IBC), NFPA 101, 2004 ADAAG and FTA Accessibility Handbook for Transit Facilities.
- Minimum distance from edge of platform to stairs, ramps and elevators is 6 feet 0 inches. Anything less cannot be considered a loading platform edge per FRA guidelines.

4.3.3 Station Amenities

The L'Enfant platform will be an outdoor station, with no headhouse, restroom facilities, or employee facilities. Proposed features include:

- Canopy coverage with breaks as necessary and a maximum continuous canopy length of 200 feet;
- Canopy roof type to be a gabled metal standing seam with integral gutters, rain leaders, and unit skylights located above the platform access stairs;
- Ticket vending machines (TVM) and ticket validators at the 6th and 7th Street station entrances;

- Back of house facilities for electrical, vertical circulation, cleaning, and communications functions of the station;
- Plumbing and embedded hose connection points spaced across the length of the platform for station maintenance;
- Benches and furniture, per VRE design guidelines; and
- Trash receptacles at the platform level.

Consideration will be given to passive and active Passenger Information Systems including VRE Video Messaging System (VMS) monitors, in close coordination with the ongoing VRE's VMS Phase II project. Future design work should also consider options for locking off the station platform outside of rail operating hours.

4.3.4 Vehicular Access

The proposed Project will not provide dedicated spaces or lanes for passenger drop off; there are none at the existing station. It will not affect existing maintenance access to the railroad ROW from the east side of 6th Street SW or the existing on-street parking spaces for maintenance or security staff on 6th Street SW.

4.3.5 Parking Areas

No parking areas will be provided.

4.3.6 Fire Protection

Fire hydrants shall be required at the facility in accordance with local and state codes. Hydrant locations and types (wet versus dry) are to be determined in future designs. The Project team assumes that the fire department vehicle access to the station will be provided via the existing road network, although this still requires further study in future design work.

4.4 Structural Design Criteria

The Project includes several structural components such as a new platform, canopy, pedestrian access to the platform, rail bridge widening, rail bridge replacement, load transfer platform, retaining walls, and temporary shoring.

4.4.1 Platform Design

The platform is anticipated to be a slab-on-grade style platform with turned down edges with a precast alternative permitted at the contractor's discretion.

Structural design of the platform will conform to the 2017 District of Columbia Building Code, the International Building Code (IBC), and ACI 318. The platform will be designed for dead load, 100 psf live load, local snow load (as applicable based on canopy configurations), and any other applicable loads.

Turned down edges are provided in the cast-in-place platform with geometry in accordance with the 'Platform Details' section of the VRE Facility Design Guidelines. The proposed platform is within CSXT shoring 'Zone 1' and is not expected to require shoring for its construction.

4.4.2 Canopy Design

The proposed platform canopy will consist of the VRE Type I standard gable-style canopy, following VRE guidelines and standards. The canopy will be modified as required over stairway openings to accommodate the lack of center columns. Standing seam metal roofing will span between structural steel framing members, with glass glazing over the entrance stairways.

Structural design of the canopy will conform to the 2017 District of Columbia Building Code, the International Building Code (IBC), and the AISC Steel Construction Manual. The canopy will be designed for dead load, local snow and drift load, wind load, and any other applicable loads.

Canopy foundations will be coordinated with the geotechnical engineer to determine an optimum support type that minimizes construction footprint and limits disruptions to active track during installation.

4.4.3 Pedestrian Access Design

Pedestrian access will be designed in accordance with ADA Standards and guidelines specified in **Section 4.0**. Because the platform is elevated compared to the adjacent roadway network, access is provided via staircases and elevators from both 6th and 7th Streets.

A combination of concrete tunnels and walls will be used to retain adjacent fill through the entrances. These concrete structures will be designed in accordance with the AREMA Manual for Railway Engineering and will account for dead load, lateral and vertical surcharge loads from the adjacent fill, and lateral and vertical surcharges from train loading based on a Cooper E-80 design train. The train load will be distributed from the tie width outward in accordance with AREMA Chapter 8.

Elevator towers will be designed in accordance with the 2017 District of Columbia Building Code, the International Building Code (IBC), and the AISC Steel Construction Manual. Facades and architectural treatments of the elevator tower will be coordinated with the architect and VRE.

The minimum headroom for pedestrian access is 8 feet 0 inches in constricted areas (such as the 7th Street entrance through the abutment stem), and 10 feet 0 inches or greater headroom otherwise.

Foundations for all pedestrian access structures will be coordinated with the geotechnical engineer. Foundations at the 7th Street entrance shall be drilled since they are within the WMATA Zone of Influence per ACPM Section 1.03.B. All foundation concepts are to be coordinated with the WMATA Joint Development and Adjacent Construction (JDAC) as design progresses for review and approval prior to construction.

Handrail elements shall be designed in accordance with the District Building Code. The handrail shall be 3 feet 6 inches above grade in accordance with the VRE Facility Design Guidelines 'Pedestrian Railings' details.

4.4.4 Railroad Bridge Design and Design Life

Railroad bridge infrastructure will be designed in accordance with the AREMA Manual for Railway Engineering, CSX Public Projects Manual, and DDOT Design and Engineering Manual. The estimated design life for the proposed bridge infrastructure is 75 years for both the 6th Street SW bridge replacement and the 7th Street SW bridge widening, which exceeds the estimated remaining life of the existing 7th Street SW structure.

4.4.5 Design Speed and Track Geometry

Structures will be designed for a maximum allowable speed, minimum track centers, and curvature consistent with **Section 4.2**. Where curvature exists on a structure, the centrifugal force will conservatively be based on the maximum allowable speed or 60 mph, whichever is greater.

4.4.6 Clearances

The bridges will be designed and configured to not reduce the existing roadway horizontal and vertical clearances provided at the existing structures. Clearances will be coordinated with DDOT. Sidewalk widths may reduce slightly at 6th Street SW due to the larger pier columns proposed, but these sidewalks still provide approximately 16 feet 0 inches, which exceeds the 10 feet 0 inches minimum sidewalk width specified in the DDOT DEM Section 31.2.1.1 in the Central Business District.

Both the existing 6th Street SW and 7th Street SW bridges are currently signed for 13 feet 6 inches of vertical clearance. This clearance is substandard compared to the DDOT minimum clearance of 14 feet 6 inches (per DDOT DEM Section 13.3.1). Due to vertical constraints on both ends of the Project, achieving the DDOT minimum vertical clearance is not feasible, and a design waiver is expected for the reduced vertical clearance.

Proposed vertical clearance is 14 feet 1 inch for the 7th Street SW bridge widening to maintain existing governing clearance and 14 feet 0 inches for the 6th Street SW bridge replacement.

Insufficient horizontal space precludes the addition of crash beams or walkways between the track clearance envelopes and the bridge barriers.

4.4.7 Loads

Dead load, wind load, and seismic load will be developed in accordance with Chapters 8 and 15 of the AREMA Manual for Railway Engineering. Live load will consider full diesel impact and rocking per Chapter 15 of AREMA. Longitudinal forces and centrifugal forces (if applicable) will also be computed per AREMA and will be scaled proportionally based on the design live load noted below. The weight of concrete, steel, tracks, and other items shall be in accordance with Chapter 15 of AREMA. Earth pressures shall be in accordance with AREMA Chapter 8 and the Geotechnical Engineering Report.

The 7th Street SW bridge widened superstructure and substructure are being designed to accommodate Cooper E-80 live load, and for the 6th Street SW bridge replacement, the superstructure is being designed for Cooper E-80 live load and the substructure is being designed for Cooper E-90 live load. Multiple presence of live load will be in accordance with AREMA. Live load for temporary construction conditions will not exceed Cooper E-80 on any track.

4.4.8 Superstructure Design

The superstructure will be designed based on the following:

- The design of structural steel superstructures shall be in accordance with Chapter 15 of the AREMA Manual for Railway Engineering;
- All spans will be simple spans per CSXT PPM Appendix Section X.A. Continuous spans are prohibited;
- The structures will be designed using painted weathering steel with a yield strength of 50 ksi. The paint color shall be coordinated with signatories;
- The design will consider AREMA-recognized distributions of live load for longitudinal members, floor systems, and steel deck plates. Steel design will be based on Allowable Stress Design (ASD) methodology and corresponding load combinations;
- The structures shall additionally satisfy the L/640 deflection criteria specified by AREMA. For compatibility with the existing structure at 7th Street SW which uses a shared top flange/deck plate, the proposed deck plate in the widening will be considered for deflections only;
- Fatigue will be considered assuming greater than 2,000,000 constant stress cycles. The lowest acceptable fatigue detail category will be stress Category C;
- Timber ties will be used for all tracks. A minimum of 8 inches of ballast shall be provided at the 6th Street SW bridge replacement and a minimum of 12 inches of ballast shall be provided at the 7th Street SW bridge widening;
- The deck plate shall be protected via a combination of ¼-inch minimum spray-applied ballast mat and 80 mils minimum spray-applied waterproofing; and

- Disc or metal bearings shall be used to transmit superstructure loads into the substructure in accordance with CSXT guidance. Shock pads shall be provided at each bearing conforming to Federal Specifications MIL-C-882C.

4.4.9 Substructure Design

The design of reinforced concrete substructures will be in accordance with Chapter 8 of the AREMA Manual for Railway Engineering. The design will consider Load Factor Design (LFD) methodology and corresponding load combinations.

At 7th Street SW, the abutments will match the abutment stem geometry and load path detail used in the existing bridge. A series of embedded steel beams will take loads from the bridge superstructure into the concrete stem via a bearing and tension tie. This steel support system will be designed in accordance with Chapter 15 of AREMA and shall be capable of resisting all superstructure dead and live loads. Abutment self-weight is assumed to be distributed through the concrete via conventional reinforcing into the footings.

4.4.10 Foundations

Foundation designs are based on the results of a subsurface investigation and the Geotechnical Engineering Report. Foundation elements will be designed in accordance with the AREMA Manual for Railway Engineering using Allowable Stress Design methodology. Foundations that are within the WMATA Zone of Influence or foundations that may affect existing or proposed Metrorail infrastructure will be designed to also satisfy requirements set forth in the WMATA ACPM. Driven foundations are prohibited within the WMATA Zone of Influence.

Drilled shaft and micropile foundations are used for all proposed bridges. These drilled foundations are permissible within the WMATA Zone of Influence. These foundations are sized to appropriately resist applied lateral and vertical loads, with tip elevations varying to achieve sufficient vertical resistance to load. Alternate foundations may be investigated by the design team in future design stages based on feedback from the contractor.

4.4.11 Bridge Drainage

Bridge drainage will be carried off structure through an on-structure drainage system to outfalls at the bridge ends or connection into the track drainage system. Free-fall systems that outlet bridge drainage directly onto land or roadways shall not be permitted.

4.4.12 Load Transfer Platforms

A load transfer platform is proposed under the future Track 5 to mitigate railroad surcharge load from being placed on the adjacent wall (owned by Boston Properties/the Smithsonian Institution) running along the railroad corridor western property line, which was not designed to accommodate railroad loading.

The load transfer platform shall be buried at least one foot below the ties to mimic a similar stiffness to the two bridge structures at 6th and 7th Streets. The load transfer platform shall be capable of transmitting self-weight, dead load, and Cooper E-80 live load to foundation elements, which then transmit the load below the building basement elevation.

If precast elements are used as part of the load transfer platform, they should be designed in accordance with the AASHTO LRFD Bridge Design Specifications, due to limited AREMA resources regarding prestressed design. Substructures and foundations elements shall be designed in accordance with AREMA. See **Sections 4.3.9** and **4.3.10** for more information.

4.4.13 Retaining Walls and Crash Walls

Proposed retaining walls will be designed in accordance with recommendations from the geotechnical report. Walls supporting railroad infrastructure will be designed in accordance with Chapter 8, Part 5 of the AREMA Manual for Railway Engineering. Walls will be designed for the surcharge load caused by Cooper E-80 live load.

Any wall within 25 feet of the track that is also used as a protection element for an adjacent feature will be proportioned as a crash wall in accordance with the requirements of AREMA Chapter 8, Part 2.1.5. Other miscellaneous site retaining walls that do not support railroad embankment will be designed in accordance with the 2017 District of Columbia Building Code and the International Building Code (IBC).

The existing Virginia Avenue SW retaining wall runs along the eastern side of the corridor, supporting the rail embankment above the level of the roadway. This retaining wall is a gravity block wall that has been in place for over 100 years. Any increases in grade behind the wall that could increase loading on the wall shall be offset by an engineered solution designed to retain the wall's existing level of service with respect to sliding and overturning. The intent of the engineered solution is not to retrofit the wall to achieve current AREMA factors of safety against sliding and overturning. It is proposed to use Expanded Shale, Clay, or Slate (ESCS) to offset additional wall load. ESCS fill shall not be used within three feet of the ballast level.

4.4.14 Temporary Shoring

Temporary shoring shall be designed in accordance with the CSX Public Projects Manual Appendix Section VI using parameters outlined in the Geotechnical Engineering Report. Any deviations from the requirements of CSXT shall be coordinated with CSXT.

Any shoring system that includes piles shall be pre-augered within 25 feet of WMATA facilities in accordance with the ACPM Section 8.02. Shoring systems within WMATA's Zone of Influence (as defined by ACPM Section 1.04) shall be coordinated with WMATA for review and approval.

4.5 Site/Civil Criteria

4.5.1 Stormwater Drainage

Stormwater drainage systems will be designed to provide safe roadway and trackbed conditions and adequately convey design flows. The existing storm drainage system will be maintained where feasible. The Project is located within the Municipal Separate Storm Sewer Systems (MS4) portion of the city, where stormwater and sanitary sewer conveyance is separate. Design of the storm sewer systems will follow the applicable District of Columbia codes and standards for project areas that fall outside the railroad ROW. Areas within the railroad right-of-way will be designed to meet CSXT drainage requirements.

The track and platform drainage will not be combined within the railroad ROW, requiring two connections to the existing stormwater infrastructure at each tie-in location. Platform drainage will be captured by a trench drain located along the centerline of the platform. Canopy drainage will be captured by the gutters attached to the canopy and connected via downspout at each canopy column. Once the platform and canopy drainage descend below the structural slab, they will be combined and conveyed towards the downstream connection.

Floor drains located within the 7th Street and 6th Street entrances will need to be connected to the respective entrance trench drain and conveyed to the downstream storm sewer system. Coordination with DC Water and DOEE on storm sewer connections may be required.

4.5.2 Stormwater Management

Stormwater management practices will be required in accordance with applicable District of Columbia codes and standards for project areas that fall outside the railroad ROW. The limit of disturbance located within the railroad ROW will be eligible for Maximum Extent Practicable per DOEE. The Project is not located within the Anacostia Waterfront Development Zone as defined by DOEE. It is anticipated that both water quality and water quantity controls will be required and are yet to be determined.

4.5.3 Erosion and Sediment Control

Erosion and sediment control measures during construction will be required. These measures will conform to the DOEE Erosion and Sediment Control Manual.

4.5.4 Landscape

No landscaping is included in the 30% Design for this project. This will be re-evaluated as design progresses and included during Final Design.

4.5.5 Permits and Approvals

See Final 30% Submission Memo Appendix D - Permitting and Approvals Matrix for a detailed summary of required Civil and Utilities permits and approvals.

4.6 Electrical Design Criteria

The Project will include new electrical and communications service to the station.

4.6.1 PEPCO Service

A new electrical service to the station will be extended from the 6th Street end during the first phase of construction. The existing VRE wayside power PEPCO service is located under the 6th Street SW bridge on the east end. The wayside power pedestal must be demolished as part of the rail expansion, leaving the existing 1200A, 480/277V, 3PH service for use at the expanded station. The existing CT cabinet, meter, and service disconnect switch will be reused, and service extended across the 6th Street SW bridge to the main electrical room off the 6th Street entrance.

4.6.2 Electrical Distribution

The electrical service will terminate in a 1200A, 480/277V, 3PH switchboard in an electrical room off the 6th Street entrance. The switchboard will be provided with a main circuit breaker with ground fault protection and feeder circuit breakers, and it will serve distribution equipment within the 6th Street and 7th Street electrical rooms. The 7th Street electrical room is needed for voltage drop concerns due to the length of the platform and the snow melting equipment (see **Section 4.5.5**). An underground ductbank to connect the 6th Street and 7th Street electrical rooms will be partially built in the first phase of construction and extended in the second phase. A normal power connection (with no generator backup) will be provided to a panel and transformer to serve the snow melting systems in each electrical room. All other loads will be connected via an automatic transfer switch (ATS) to provide standby power. Transformers and panels will be connected downstream. Surge protection will be provided on the main service and elevator connections. In accordance with the DC Energy Code, submetering will be provided at branch circuits with a multi-input meter so as to isolate recording of lighting, receptacle, HVAC, and miscellaneous process loads.

Once the first phase is completed, the existing electrical service to the electrical cabinet from the 7th Street side of the platform will be demolished.

4.6.3 Standby Power

A natural gas fired generator will be provided to support standby power to all loads at the station, with the exception of the snow melting system. It will be a 250KW, 480/277V, 3PH generator in a weatherproof sound-attenuated enclosure. With the removal of the wayside power connection, the shed housing the motor control center that serves the wayside power pedestal can be demolished. The shed is located at the northeast corner of the 6th Street SW bridge in the railroad ROW. The generator would be located at the location of the demolished shed and would not be needed until after the wayside power is removed. New natural gas service will be extended from 6th Street SW to the generator location. The generator service will route across the bridge to the 6th Street electrical room. An ATS will be provided for standby power connection to the standby equipment (elevators, lighting, communications, etc.).

4.6.4 Lighting

The platform lighting will use the standard VRE LED light fixture from King Luminaire Chicago series fixtures. The layout will be designed to meet 10 footcandles (fc) at the platform surface. Areas with the canopy cover will use the pendant mounted fixture, while areas outside the canopy will use the pole mounted version. The two entrances will use recessed LED downlights and slot lighting. Utility rooms and elevator pits will use surface-mounted vapor tight LED fixtures.

The lighting will operate at 277V, and time of day controls will be operated via timeclock and contactor, including a photocell for daylight measurement. The entrance tunnel areas will be provided with a reduced dimmed output based on footcandle levels available during the daytime hours but will not completely turn off for security purposes. Utility rooms will be provided with occupancy-sensing lighting controls.

4.6.5 Comcast Service

Comcast will continue to provide the communications service to the station platform. The existing communications service is connected via LTE cellular communication from the communications cabinet near the 7th Street entrance. Comcast is planning to replace the cellular service with a hard-wired service connection to the cabinet from a handhole on 7th Street SW in the near future outside of the station improvement project. There is no existing service connection at 6th Street SW.

Communications to the new station platform will be provided from the east side of the platform from a new service, which Comcast plans to extend from 4th Street. Comcast will provide a handhole in public space at the 4th Street SW bridge for future routing of service through a new ductbank in the CSX right-of-way down to 6th Street SW.

The new Comcast service will enter the new communications room inside the 6th Street entrance. The room will service the station during the first phase of construction, while the old communications cabinet at 7th Street SW will remain in service for the second phase, until it is ready to be demolished. In the final condition, ductbank will extend between the 6th and 7th Street communications rooms, to provide fiber optic connectivity between the two rooms.

4.6.6 Communications Rooms

A four-post rack will be located in each communications room with fiber optic and CAT6 patch panels, Cisco Meraki PoE switches, Bogen amplifiers, and APC by Schneider Electric for Uniterruptable Power Supply (UPS), and PDUs. Horizontal and vertical wire management will be provided. Cable runway will be installed over the rack and perimeter walls, along with fire-treated plywood on the walls and a ground bus for safety. Brivo access control panels and door lock power supplies will be located on the wall.

4.6.7 Video Surveillance

Avigilon IP PoE cameras will be used throughout the station for monitoring the platform, elevators, TVMs, and entrances. All cameras will be located within 295 feet of the communications rooms due to the limitations of ethernet communications.

4.6.8 Paging System

Bogen amplifiers, paging speakers, and horns will be used for the platform and tunnels to provide audio paging coverage.

4.6.9 Ticket Vending Machines (TVM)

120V power and CAT6 cable will be provided to each TVM location.

4.6.10 Access Control

Brivo access control panels will be provided, with BMS door position monitors and encrypted smart card readers at each utility room door. The access control panels will be connected via CAT6 ethernet to the Cisco switches. Lock power supplies will be provided to support electric lock power and switching.

4.6.11 Video Messaging System (VMS)

CAT6 ethernet connections will be provided at each VMS station at the platform and tunnels.

4.6.12 Fire Alarm

A single-purpose fire alarm system will be installed for supporting elevator recall functions only. It will not serve evacuation purposes. The system will include a smoke detector in the elevator machine rooms and heat detectors at the landings. Recall relays will be used for primary and secondary recall. A cellular dialer will be used for system supervision.

4.7 Mechanical Design Criteria

4.7.1 Cooling and Heating

Several areas within the station will require air conditioning, including the electrical rooms, elevator machine rooms, and communications rooms. The electrical rooms at each entrance will be provided with an electric unit heater and a wall mounted exhaust fan for ventilation, which will draw air through a wall louver. The fan will be sized based on a 30kVA transformer and a 10-degree Fahrenheit (°F) temperature rise from outdoor design day of 92°F. The Cleaners' Room will be heated by an electric unit heater. Control for the unit heaters will be by an integral thermostat set at 65°F (adjustable), and the fan will be controlled by a wall mounted thermostat set at 95°F (adjustable). The elevator machine rooms and communications rooms will be provided with Packaged Terminal Air-Conditioning (PTAC) units for cooling. At this preliminary stage, the PTACs for the elevator machine rooms are sized for 3kW for the elevator controllers, and the ones for the communications rooms will be sized to support 3kW of powered equipment. The PTAC units will be equipped with an electric resistance heater for winter operation. Integral controls will cycle the compressor to satisfy a call for cooling and energize the electric resistance heater on a call for heating.

4.7.2 Potable Water

Water service required within the 7th Street and 6th Street entrances will require installation of a new meter in public space; new meter installations require a system availability fee paid to DC Water. Current designs show a 1-inch potable water service entering the 6th Street side through a meter in the ground. The potable water line comes up through the floor in the cleaners' room and will be equipped with a normally closed shut-off valve and a backflow preventer once it enters. Investigations into this are ongoing and will inform further development of this section.

4.7.3 Sanitary and Stormwater

Floor surfaces should be positively sloped for drainage to prevent water from ponding. Investigations into platform and canopy drains are ongoing and will inform further development of this section.

Within the District of Columbia, elevator ejector pits are required to discharge to the sanitary sewer system. The sump in the elevator shaft will be provided with a Stancor Oil-Minder Elevator Sump Pump or equivalent. This automatically pumps water from elevator pits in accordance with ASME A17.1 without danger of ejecting potentially harmful oily substances into the drainage system. These pumps have been approved by numerous local code enforcement authorities. The pumped discharge will be connected to the storm sewer system, and a check valve will be placed in the line prior to the connection point.

4.8 Architectural Design Criteria

4.8.1 Platforms

Platforms shall be a durable poured in place concrete structure with trench drainage, canopy structures, elevators, access stairs, seating, lighting, signage and communications.

4.8.2 Platform Egress

Platform occupancy and egress capacity are calculated using the IBC 2017 and amendments. Platform capacity is established at 15 square feet per person based on Table 1004.5: A-3 Assembly Group: Waiting areas in Transportation Terminals. This assumption is preliminary and subject to change. The Authority Having Jurisdiction has not yet been determined for the Project, which can impact the assumptions presented, adopted codes and standards, and calculations.

4.8.3 Tactile Warning Tiles

Tactile warning tiles with textured surfaces shall be installed near platform edges to enhance safety for visually impaired passengers on the train station platform. These tiles, often made of rubber or concrete, feature raised patterns such as domes or bars that are easily detectable by touch with a cane or underfoot. The distinctive texture and bright color, typically yellow, act as both a physical and visual cue, alerting passengers to the proximity of the platform edge and potential hazards. These tactile surfaces play a crucial role in accessibility and accident prevention in busy transit environments.

4.8.4 Signage

Signage shall provide clear and legible signs and include braille and tactile characters.

4.8.5 Passenger Information Management System (PIMS)

Passenger Information Management Systems, both visual and auditory, shall be designed to ensure announcements are received by those with hearing or visual impairments. These PIMS devices shall be located both in the station entrances and on the platform level.

4.8.6 ADA Accessible Ticket Vending and Validation Machines

ADA accessible ticket vending and validation machines shall be located at street level in each of the 6th and 7th Street entrances, with one of each kind per entrance. There shall be no validation machines on the platform.

4.8.7 Restrooms

Restrooms will not be provided in the VRE L'Enfant Station.

4.8.8 Station Seating

Seating shall be designed for durability, comfort, and efficiency, and feature benches made of metal that can withstand high foot traffic and frequent use. Seating shall be strategically placed in waiting areas, ensuring accessibility while leaving ample space for passenger movement. Seating shall be located on the platform, not installed in the street level entrances.

4.8.9 Trash and Recycling Bins

Trash and recycling bins shall be installed near seating, promoting cleanliness and encouraging passengers to properly dispose of waste. The station shall prioritize sustainability by offering separate bins for recyclables and general waste, helping to reduce environmental impact. The layout and frequency should balance convenience and tidiness in the busy transit station environment.

4.8.10 Metal Railings

Metal railings shall be installed for safety, guidance, and crowd control. Typically made from durable materials like stainless steel or aluminum, they are placed along staircases, ramps, and non-boarding sections of platform such as areas of refuge to prevent accidents and offer support for passengers. Railings also help manage foot traffic by directing the flow of passengers, particularly during busy times. In addition to safety, they often serve as barriers between restricted areas and public zones. Their design is functional, ensuring both durability and ease of maintenance in high-traffic environments.

4.8.11 Elevators

Elevators shall be provided for accessibility for passengers with mobility challenges, such as those using wheelchairs, the elderly, or travelers with heavy luggage. The elevators are typically located near staircases and offer a convenient, barrier-free way to move between station and platform levels. Designed with glazed doors, safety features, and easy-to-use controls, platform access elevators are intended for ensuring compliance with accessibility standards and making public transportation more inclusive for all passengers. ADA accessible elevators shall be located in each of the 6th and 7th Street entrances, with one dual post hole-less elevator per entrance.

4.8.12 Station Ancillary Rooms

Station ancillary rooms that support the station's primary function of passenger transport are located in each street entrance. These spaces include elevator machine rooms, electrical rooms, communications rooms, and a single cleaners' room located in the 7th Street entrance. While not directly related to boarding and alighting, these spaces are essential for the operation and overall efficiency of the station.

4.8.13 Station Platform Canopies

Station platform canopies shall be designed to cover 43% of the platform for passengers. A gabled platform canopy shall be designed with structural steel members that support a standing seam metal roofing system. Gutters and rain leaders shall be fabricated to trace the canopy steel structure down to the center of the platform, where they will tie to under-platform stormwater piping.

4.8.14 Station Platform Canopy Skylights

Canopy skylights shall be designed to align with the platform stairways beneath, providing additional natural light to the station entrances below.

4.8.15 Street Level 6th Street Station Entrance Canopy

The 6th Street entrance canopy shall be designed to shelter passengers and highlight the station entrance which is located slightly west of 6th Street SW. Canopy shall be designed with structural steel members that support frameless glazed roofing system and lighting. Gutter and rain leaders shall be fabricated to trace the canopy steel structure and daylight down to landscaping features flanking the station entrance on either side.

4.8.16 Train Platform Lighting

To ensure passenger safety, visibility, and comfort during both day and night operations, the platform and station entrances shall be lit to proper lighting levels. This includes the use of energy-efficient fixtures like LED lights that provide uniform illumination across the platform, reducing shadows and dark spots. Lighting shall be mounted under the canopy and pole mounted where there is no canopy cover and designed to enhance visibility of signage, tracks, and surrounding areas. In addition to safety, well-designed lighting improves the overall passenger experience and contributes to ease of navigation at the station. Design shall be based on Crime Prevention through Environmental Design principles to integrate station features with natural surveillance and visibility.

5.0 Maintenance of Traffic

The temporary work zones for the Project will be designed in accordance with Part 6 of the Manual of Uniform Traffic Control Devices (MUTCD), the AASHTO Roadside Design Guide, and the DC Temporary Traffic Control Manual to provide for the safe and efficient movement of vehicles, pedestrians, and bicyclists through each phase of construction. All produced maintenance of traffic phases are subject to review from DDOT.

5.1 Allowable Work Hours

This section will define the allowable work hours and road closures after traffic analysis and coordination with DDOT is complete during future phases of the Project.

6.0 Utilities

The Project will identify and minimize impacts to existing utilities. Utility relocations within the project limits will be avoided to the extent possible. This phase includes utility locating and surveying, which will inform further development of this section during future phases of the Project.

6.1 CSXT Railroad Ductbank

Portions of the existing CSXT ductbank will need to be relocated where impacted by the expanded bridges and station geometry changes. CSXT has leased ducts within this bank to various third-party utility owners with differing design criteria. Ductbank relocations will need to be completed between splice locations as any new splices are not allowable by the third-party utility owners.

7.0 Security and Safety

A VRE site specific safety plan will be completed and submitted to VRE for review prior to final design and construction. Construction work on CSXT property will be performed in accordance with the current version of the Minimum Safety Requirements for Contractors Working on CSXT Property.

8.0 ADA Compliance

Pedestrian access to the proposed center platform will be in accordance with the ADA requirements and guidelines specified in **Section 4.1**.

8.1 Platforms

Platforms shall be designed for level boarding to ensure that passengers with disabilities, including those using wheelchairs, can board trains easily and independently. Under the Americans with Disabilities Act of 1990 (ADA), level boarding platforms are designed to be at the same height as the train floor, eliminating the need for steps or additional assistance. This feature not only provides seamless access for people with mobility impairments, but also passengers with strollers and luggage.

Platform slopes shall drain from track edge to platform center and not exceed 2% in cross section.

8.2 Accessible Routes

Accessible routes shall be designed to ensure pathways are unobstructed for individuals using wheelchairs or other mobility devices and shall meet minimum continuous clear width requirements.

8.3 Station Design

ADA compliant station design shall ensure that public transportation facilities are accessible to individuals with disabilities, promoting inclusivity and equal access. Compliance involves providing features like ramps, elevators, tactile paving, and audible announcements for individuals with mobility, vision, or hearing impairments. Signage must be clear and placed at appropriate heights, while platforms and boarding areas should offer level access to trains or be equipped with lifts. Ticketing areas must also be accessible, and station staff should be trained to assist passengers with disabilities. These accommodations help remove barriers and ensure that public transportation is usable by all.

9.0 Construction

The proposed station platform construction sequencing shall consider construction access, maintenance of active CSXT tracks during construction, and maintenance of rail service to the existing L'Enfant Station platform.

9.1 Staging Area

Access to deliver equipment and materials onto the ROW is anticipated from the CSXT service area along the north side in the ROW. Access and staging plans will be further refined as part of the final design phase.

9.2 Temporary Station Impacts

The existing station will not be fully functional during construction of the new platform, requiring a temporary platform to maintain service. The temporary platform design shall be similar to the design used at VRE's Quantico Station during construction there.

10.0 Design Waivers

The following design waivers/exceptions are anticipated and are being coordinated with DDOT and CSXT:

DDOT:

- The 6th Street SW Bridge requires a waiver for the 14'-0" proposed roadway vertical clearance which is substandard compared to the 14'-6" minimum per the DDOT Design and Engineering Manual section 13.3.1.
- A waiver at the 7th Street SW Bridge widening is not anticipated since the proposed structure widening does not decrease existing vertical clearance.

CSXT:

- The 6th Street SW Bridge requires 8-inches of minimum ballast under ties as opposed to the standard 12-inches required by the CSX Public Projects Manual to minimize profile raises.
- The 6th Street SW Bridge Span 2 uses less than a 0.5% longitudinal grade as opposed to the standard 0.5% required by the CSX Public Projects Manual to minimize profile raises.
- The distance between the proposed Point of Switch (PS) and the existing PS in LE Interlocking is less than 100 feet in length due to spatial and geometric constraints as opposed to the CSX standard minimum of 100 feet.

APPENDICES

Basis of Design

L'Enfant Station and Fourth Track Project
Preliminary Engineering

Appendix A

Exhibit E-4 of the Comprehensive Rail Agreement between DRPT and CSX

Exhibit E-4

Confirmed Track Separation Distances Less Than 15 Feet (Phases 1 and 2)

I. L'Enfant Fourth Track and Station Improvements

The existing three track corridor, between CSXT Mileposts CFP 111.7 – CFP 112.35, includes mainline track centers spaced approximately 13 feet measured from centerline of track to centerline of track and the existing bridges associated with this project are four-track bridges located above 2nd Street, 3rd Street, 4th Street, and 6th Street. The existing raised structures are designed to accommodate a four-track corridor at substandard (13'-0") track center spacing. The existing track infrastructure including the siding track currently being used for VRE midday train storage is being conveyed from CSXT to DRPT as-is and the construction of the fourth track is proposed to tie into the existing siding track spaced approximately 13 feet from the centerline of the nearest mainline track. As a result of the existing infrastructure constraints, the proposed track centers do not meet the CSX Standard of 15 feet measured from centerline of track to centerline of track.

II. Long Bridge Project

The existing corridor under the Maryland Avenue Overbuild, between CSXT Mileposts 111.2 – CFP 111.7, consists of two (2) CSXT mainline tracks spaced approximately 13 feet measured from centerline of track to centerline of track in one portal under the Maryland Avenue overbuild, and one stub track in a parallel portal north of the CSXT mainline portal, which is separated by a series of structural columns. Adding the proposed third track in the existing mainline portal requires shifting the two existing tracks. The proposed fourth track will tie into the existing stub track in the northern portal which is not wide enough to accommodate more than one track. As a result of the existing infrastructure constraints, the proposed track centers do not meet the CSX Standard of 15 feet measured from centerline of track to centerline of track and the horizontal clearances do not meet the CSX Standard of 9 feet from the centerline of track to an obstruction. The Long Bridge Project proposes to increase the existing spacing of tracks to approximately 14 feet between track centers while maintaining a minimum clearance of 7.5 feet from the existing horizontal obstruction.

Conditions to Approval Of Deviations Required By The Proposed Long Bridge and L'Enfant 4th Track Project

Between CFP - 111.2 and CFP - 112.35 (the "Exhibit E-4 Locations")

1. The three tracks in the east bay of the tunnel underlying Maryland Avenue SW must be constructed with a minimum 14-foot track centers and 7.5-foot lateral clearance.

2. DRPT will design and construct crash walls as required by the Applicable Project Standards (as defined in the Master Engineering Agreements).

3. If required by the Applicable Project Standards, DRPT will construct a crash wall to protect the Mandarin Hotel and any other occupied or bridge structure along the entire area in which a railroad track will be operated within 25-feet.

4. DRPT will install automatic railroad clearance detectors based on the updated horizontal clearances identified in the PE design phase. Further, existing CSXT automatic railroad clearance detector locations will be identified and assessed to determine their feasibility and suitability for continued use.

5. DRPT will work with CSXT to determine where additional safety and security lighting is appropriate.

6. DRPT will work with CSXT to assess lighted and prominent close clearance signs at and approaching the substandard lateral clearance areas. DRPT will implement such signage as required by the Applicable Project Standards.

7. DRPT will work with CSXT to assess the need for enhanced security fencing and will implement such fencing as required as part of the ROD commitments and ongoing mitigation efforts.

8. DRPT will install railroad rail "friction modifiers" as required through the ROD commitments and ongoing mitigation efforts, to help mitigate rail wear, noise, and vibration. CSXT and DRPT will each maintain the friction modifiers on their respective tracks.

9. Agreement by DRPT that the configuration permitted by this Exhibit E-4 will not set a precedent for other Long Bridge Project areas or other projects.

10. The parties affirmatively acknowledge that CSXT's approval of the proposed design exception is not intended to shift responsibility to CSXT for incidents or damages to the Maryland Avenue overhead structures, DDOT structures, the existing and proposed Portals V structures, or any other structures resulting from CSXT's approval.

11. DRPT will obtain and maintain insurance in the types and amounts required by Section 13.3 of the Joint Operating and Maintenance Agreement. Specifically, the liability insurance obtained and maintained by DRPT will cover specific tortious injuries to third parties, including injuries and damage to adjacent property owners caused by noise and vibration issues arising from shifting the existing tracks closer to the Mandarin Hotel and other buildings.

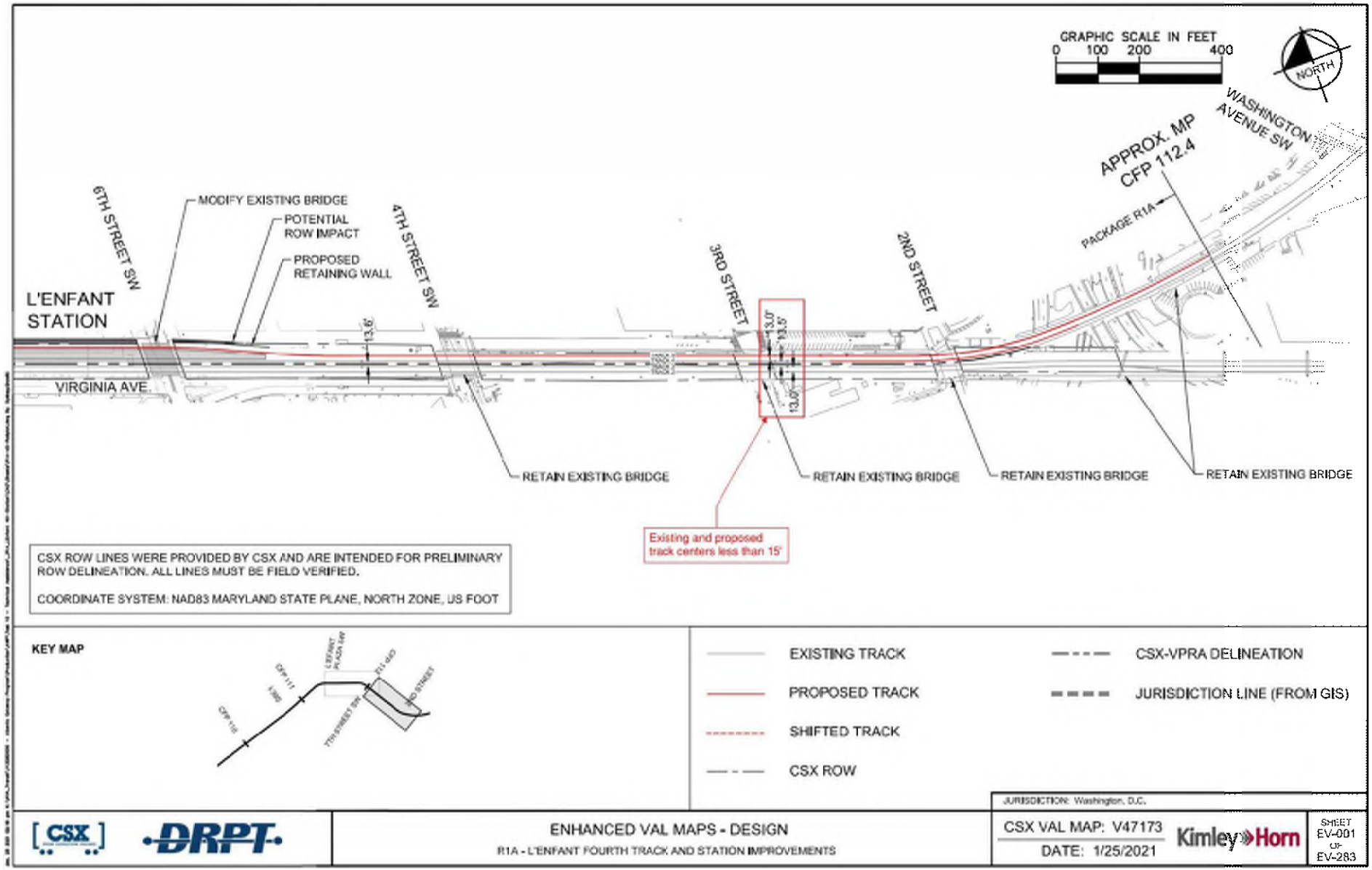
12. Agreement by DRPT that at such time in the future when the existing Maryland Avenue SW overhead bridge structures are proposed to be reconstructed, that it will support, or cause DDOT to support, CSXT's efforts to ensure a minimum 15-foot track centers and 9-foot lateral clearances for the tracks underlying the newly-reconstructed structures.

13. Agreement by DRPT that during final design of the Long Bridge Project, best efforts will be made to maximize the lateral clearance in this area to the extent possible without compromising track centers. In other words, increasing lateral clearance to greater than 7.5-feet would be prioritized, but only to the extent that the 14-foot track centers would not be reduced in any area.

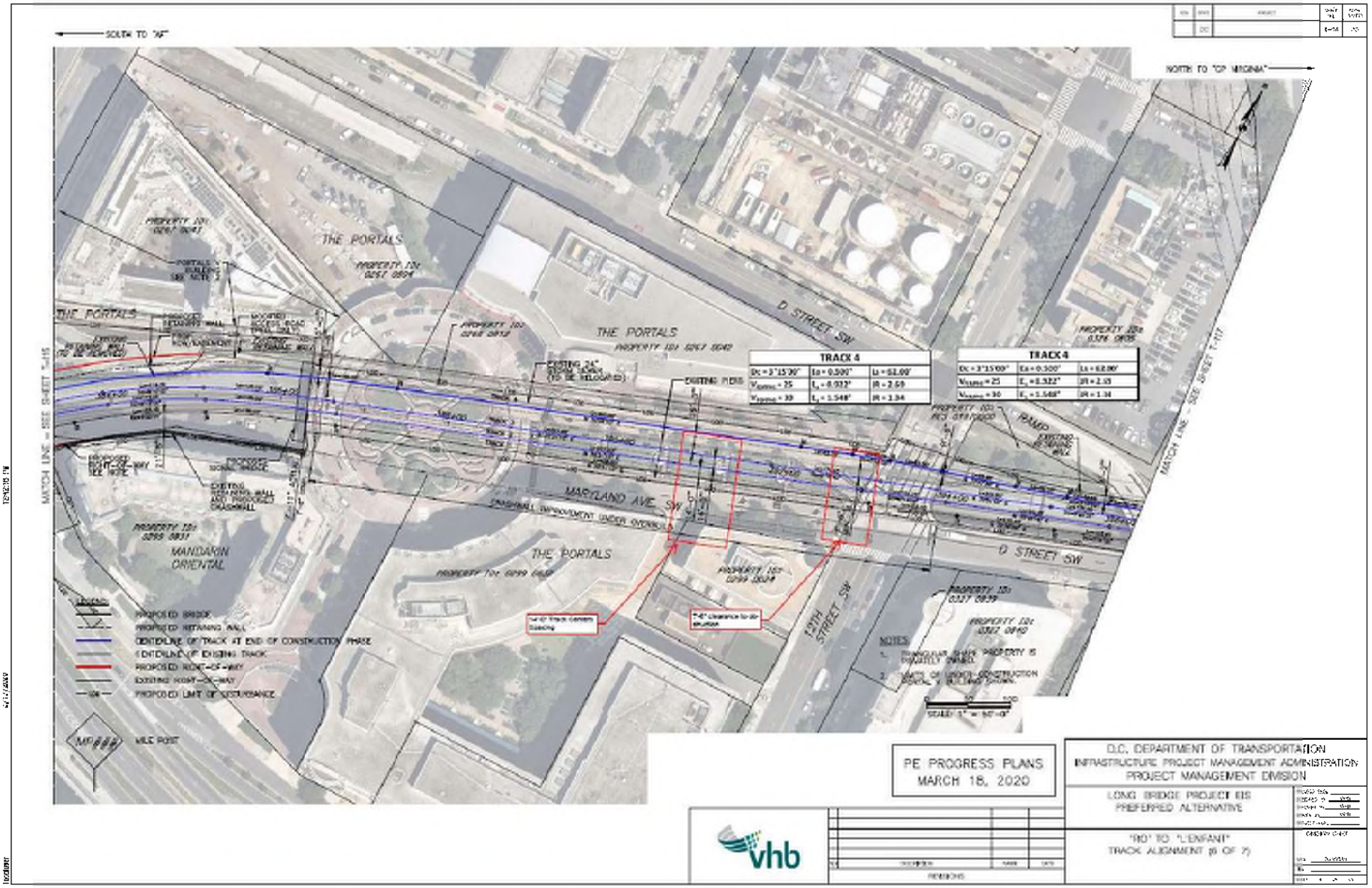
14. Due to the significant existing constraints between CFP 111.3 and CFP 112.35, CSXT will approve a reduction in the track centers of newly constructed track so long as the final design will seek to maximize the track centers through this area, but in no case may the 4th Track be

constructed with track centers less than current track centers between the current Track 3 and VRE Siding. DRPT shall not reduce any existing track centers as a result of this new track.

The CSXT approvals and conditions outlined above do not relieve DRPT of securing any necessary approvals from any other impacted parties or regulatory agencies. CSXT reserves the right to review and approve the new Long Bridge and L'Enfant Fourth Track designs in accordance with the applicable Master Engineering Agreements and/or Master Construction Agreements for safety and operational needs to support CSXT's ability to use the existing and future rail assets. In the event there is a conflict between the terms of this Exhibit E-4 and the Agreement, or any Ancillary Agreement, the terms of this Exhibit E-4 will govern with respect to the Exhibit E-4 Locations.


GRAPHIC SCALE IN FEET
0 100 200 400
NORTH
WASHINGTON AVENUE SW
APPROX. MP CFP 112.4
PACKAGE R1A
6TH STREET SW
MODIFY EXISTING BRIDGE
POTENTIAL ROW IMPACT
PROPOSED RETAINING WALL
4TH STREET SW
3RD STREET
2ND STREET
L'ENFANT STATION
VIRGINIA AVE
13.6'
13.0'
13.5'
13.0'
RETAIN EXISTING BRIDGE
RETAIN EXISTING BRIDGE
RETAIN EXISTING BRIDGE
RETAIN EXISTING BRIDGE
Existing and proposed track centers less than 15'
CSX ROW LINES WERE PROVIDED BY CSX AND ARE INTENDED FOR PRELIMINARY ROW DELINEATION. ALL LINES MUST BE FIELD VERIFIED.
COORDINATE SYSTEM: NAD83 MARYLAND STATE PLANE, NORTH ZONE, US FOOT
KEY MAP
EXISTING TRACK
PROPOSED TRACK
SHIFTED TRACK
CSX ROW
CSX-VPRA DELINEATION
JURISDICTION LINE (FROM GIS)
JURISDICTION: Washington, D.C.
CSX
DRPT
ENHANCED VAL MAPS - DESIGN
R1A - L'ENFANT FOURTH TRACK AND STATION IMPROVEMENTS
CSX VAL MAP: V47173
DATE: 1/25/2021
Kimley»Horn
SHEET EV-001 OF EV-283

Long Bridge Project



Appendix B

VRE Technical Specifications TOC

L'Enfant Station and Fourth Track Project

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Appendix C

Geotechnical Report

L'Enfant Station and Fourth Track Project

GEOTECHNICAL ENGINEERING REPORT
REVISION 1

Virginia Railway Express
L'Enfant Track and Station Improvements
Preliminary Engineering (30%) Design
Washington, DC

Schnabel Reference No. 22120047.000
June 23, 2025

Schnabel ENGINEERING
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June 23, 2025

Mr. Mark Colgan, PE
Vanasse Hangen Brustlin (VHB), Inc
1001 G Street NW, Suite 1125
Washington, DC, 20001

Subject: **Virginia Railway Express (VRE) L'Enfant Track & Station Improvements, Preliminary Engineering (30%) Design, Geotechnical Engineering Report, Washington, DC (Schnabel Reference 22120047.000)**

Dear Mr. Colgan:

SCHNABEL ENGINEERING, LLC (Schnabel) is pleased to submit our geotechnical engineering report for this project. This study was performed in accordance with our Subconsultant Authorization dated December 22, 2023.

We appreciate the opportunity to be of service for this project. Please call us if you have any questions regarding this report.

Sincerely,

SCHNABEL ENGINEERING, LLC

Maria Hernandez, PE
Project Engineer

William A. Billiet, PE
Senior Associate

mjh:wab:ka

GEOTECHNICAL ENGINEERING REPORT
VRE L'ENFANT TRACK & STATION IMPROVEMENTS
PRELIMINARY ENGINEERING (30%) DESIGN
WASHINGTON, DC

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1.0 SCOPE OF SERVICES

Our Subconsultant Authorization, dated December 22, 2023, defines the scope of services for this project. The scope of services includes a subsurface exploration and laboratory testing program as well as the preparation of this Geotechnical Engineering Report to provide engineering and foundation recommendations for the design and construction of the proposed station and fourth track.

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2.0 DESCRIPTION OF SITE AND PROPOSED CONSTRUCTION

2.1 Site Description

The project site extends approximately 3,700 ft along the CSX Transportation (CSXT) rail corridor in Washington, DC, from the LE interlocking east of 9th St SW to the VA interlocking east of 4th St SW. The existing VRE L'Enfant Station is located between 6th and 7th Street SW, north of Virginia Ave SW and serves both the Manassas and Fredericksburg VRE commuter rail lines.

The tracks are elevated on an embankment that extends about 16 ft to 18 ft above adjacent street grades. On the west side of the station, the tracks are carried over 7th St SW by a single-span steel deck-plate bridge with concrete cast-in-place abutments supported on steel H-piles. On the east side of the station, the tracks are carried over 6th St SW by a three-span steel through-plate bridge supported on spread footings.

The south side of the rail embankment along Virigina Ave SW between 7th St SW and 4th St SW is supported by a masonry gravity retaining wall constructed around 1910 that extends approximately 16 ft above the street level. Street grades in the area vary from EL 16 to 20 ft, while existing grades along the rail embankment vary from about EL 35 to 37 ft west of 4th St SW. Near the northwest corner of Virginia Ave SW and 6th St SW, the north side of the rail embankment is supported by a retaining wall extending up from the three-level underground parking garage for the Smithsonian Institute Building. This wall and parking garage structure were likely constructed using temporary support of excavation that may have included tieback anchors or soil nails. Anchors or nails, if used, may have been abandoned in-place after construction and could be present below the existing rail embankment in this area.

The station's existing side platform is about 550 ft long and situated on the north side of the rail corridor and is served by existing Track 3 via a single platform edge. The existing platform is approximately 16 ft wide and is supported by 4 ft diameter drilled pier shafts. Access to the platform is provided by stairs to both 6th and 7th Streets, as well as a pedestrian ramp at Hancock Park. Hancock Park is owned by the National Park Service (NPS) and is located northwest of the VRE L'Enfant Station.

Two WMATA Metro tunnels extend below the streets in the vicinity of the VRE L'Enfant Station. One tunnel runs beneath 7th Street and serves the Green and Yellow Metro lines. The other tunnel extends below D Street SW serving the Orange, Silver, and Blue Metro lines.

Underground utilities, including power, electric, gas, communication, stormwater, sewer, fiber optic and water are present around the VRE L'Enfant Station.

Schnabel obtained the site information from the VRE L'Enfant Station 30 percent Draft Preliminary Engineering Plans (30% Draft PE Plans) dated October 2024 prepared by VHB, utility and topographic survey data provided by VHB, and complemented by Google Earth, our available historic records, and our site visits. A Site Vicinity Map is included as **Figure 1**.

2.2 Proposed Construction

VRE plans to improve their L'Enfant Station to improve movement of both passenger and freight trains along a vital segment of the national rail network. The Station improvements will also introduce bi-

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directional service for passenger trains to optimize rail traffic and improve scheduling flexibility, strengthen connections to local transportation services, such as buses, shuttles, bikeshare stations, and pedestrian pathways, improving access to nearby destinations and upgrade station facilities, ensuring ADA-compliant access at all station entrances, providing a more comfortable and accessible environment for all passengers. The project will include the following key components:

- Addition of a Continuous Fourth Track: A new fourth track is planned north of the three existing tracks, extending approximately 3,900 ft between the LE and VA interlocking. Site grades below the new fourth track will be increased by less than 2 ft to accommodate the new track. The existing track alignments will be adjusted as necessary to accommodate the new fourth track, although they will remain largely unchanged within the platform limits. Track grades will be raised by up to about 12 inches to accommodate the alignment changes and achieve the required bridge clearances with the exception of the existing track adjacent to the Virginia Avenue wall, which will be raised by up to 18 inches.
- New platform relocation: The platform will be replaced to better align with the proposed tracks configuration. The new station platform will be constructed as an island platform between the existing Track 4 (Track 4) and the future fourth track (Track 5). The new station platform will be approximately 680 ft long and 22 ft wide and will have a canopy above the platform. Finish platform grades will vary between about El 37 and 39 ft, approximately 8 inches above the top of rail and up to 2 ft above existing site grades.
- Replacement of the 6th Street SW Bridge: The existing 6th Street Bridge will be replaced to achieve several key upgrades. These include increased vertical clearance, enhanced structural capacity to support a surcharge load equivalent to the Cooper E-80 live load, and the accommodation of the proposed fourth track and platform geometry, expanding the rail infrastructure. The existing abutment walls will remain in place and new stub abutments will be installed behind the existing walls that do not retain any earth. The new piers will be constructed over the footprint of the existing piers, with the new foundations being installed between the existing spread footing foundations.
- Widening of the Existing 7th Street SW Bridge: The existing 7th Street Bridge will be widened on the north side while maintaining the same overall span length to ensure it clears the WMATA tunnel that runs below. The new widened abutment wall subgrades are planned at about EL 9 ft to match existing. The current vertical clearance will remain unchanged.
- Modifications to the Virginia Avenue Retaining Wall: The existing Virginia Avenue retaining wall may require modifications or retrofits to accommodate a track raise of approximately 18 inches adjacent to the wall.
- New Station Entrance Structures: Pedestrian access will be provided from 6th and 7th Streets SW by two new entrance structures that extend through the rail embankment. The entrance structures will incorporate staircases and elevators to provide access to the platform from the street level. The 6th and 7th Street entrance structure subgrades will extend below street level to about EL 13 ft or EL 16 ft, respectively. The elevator pits in each structure will extend 4 ft deeper to EL 9 to 12 ft. The entrance structures will retain earth on all sides and support a maximum of 22 ft of soil cover over parts of their roofs.
- New Retaining Walls: Several new retaining walls are planned. The widened 7th St SW bridge will include new abutments and wingwalls on the north side of the tracks that are up to 22 ft tall. A new cantilever cast-in-place retaining wall (Retaining Wall A) is planned on the west side of the

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7th St SW bridge to separates the new fourth track from Hancock Park. Retaining Wall A will be about 114 ft long and up to 18 ft tall (measured from top of wall to top of footing). Two new cantilevered retaining walls are also planned adjacent to the entrance structures to separate the north side of the rail embankment from the street level. These walls will be structurally mounted on the same pile cap supporting the entrance structures will retain up to 24 ft of backfill. These cantilevered retaining walls will also support a crash wall above the retained earth.

- Load Transfer Platform (proposed Track 5): The platform is planned to transfer the vertical load from the track, through the existing fill stratum, to a deeper bearing stratum using micropiles. The proposed system is intended to reduce lateral loading on the existing wall located on the north corridor.

Schnabel obtained the information about the proposed construction from the 30 percent Draft PE Plans dated October 2024 and from discussions with the design team during development of the plans.

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3.0 SUBSURFACE EXPLORATION PROGRAM

We performed a subsurface exploration and field-testing program to identify the subsurface stratigraphy underlying the site and to evaluate the geotechnical properties of the materials encountered. In addition, we reviewed adjacent geotechnical data available from historic subsurface exploration programs performed near the project site. **Figure 2**, included at the end of this report, indicates the approximate test boring locations. Descriptions of the exploration programs and methods used are discussed below. The appendices to this report contain the results of our exploration and the relevant data from the adjacent explorations.

3.1 Subsurface Exploration and Field Testing

Our subcontractor, HSA, Inc., drilled 17 test borings under our observation between August 8 and November 15, 2024.

Six test borings were drilled from the platform level. Four of these borings (RW-1, RW-2, RW-3, and 6BR-5) were advanced using a tripod rig and cathead and extended to depths of 20 ft. Two of these test borings (6BR-7 and 7BR-3) were advanced using a traditional drill rig and extended to depths of 30 ft. The remaining eleven test borings were drilled from the street level using traditional drill rigs to depths of about 60 or 100 ft. These borings were advanced using hollow-stem auger techniques until reaching the water level. Beyond this point, drilling was generally advanced using mud rotary techniques to ensure hole stability and support production. Where pavement was encountered, borings were advanced by augering and pavement cores were not obtained.

Due to the presence of nearby underground utilities, the top 8 ft of soil in borings 6BR-01A, 6BR-04 and 7BR-02A were excavated using an air vacuum method prior to drilling. Vacuum excavation was performed up to a depth of 8 ft at approximately 2-foot offset locations from test borings 6BR-3, 7BR-1, 7BR-2, 7BR-2A and RW-1A to avoid potential underground utilities prior to drilling.

Test boring 6BR-01 was attempted without using the air vacuum method prior to drilling, but an obstruction was encountered at a depth of approximately 2.6 ft. Consequently, this test boring was relocated about 2 ft from the original location and renamed 6BR-01A. As previously mentioned, vacuum drilling was performed to a depth of 8 ft for this test boring to avoid potential underground utilities prior to drilling.

Test boring 7BR-02 was originally located at the entrance of the existing VRE L'Enfant Station on 7th Street. Due to conflicts with nearby utilities, an attempt was made to clear this test boring location using the vacuum drilling method to a depth of 10 ft. However, various obstructions were encountered at all three selected potential locations at the entrance. Soil samples were obtained from one of these attempts, and the boring was named 7BR-02. Due to the potential conflicts with obstructions at the selected locations for 7BR-02, as well as the proximity to the right-of-way and the WMATA tunnel running beneath 7th Street, it was not possible to select another nearby location at the station entrance. As a result, the test boring was relocated south of the original location, near the intersection of 7th Street and Virginia Avenue, and renamed 7BR-02A.

The Standard Penetration Test (SPT) was performed at selected depths in the borings using a hydraulically driven automatic trip hammer when the test borings were advanced by a drill rig and a safety

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hammer when the test borings were completed using a tripod rig. Most correlations with SPT data are based on N-values collected with a safety hammer. The energy applied to the split-spoon sampler using the ATH is about 33 percent greater than that applied using the safety hammer, resulting in lower N-values. The hammer blows shown on the boring logs are uncorrected for the higher energy. However, we correct SPT N-values for the higher energy when using N-values in our analyses.

Pocket penetrometer tests were performed on selected samples of fine-grained or cohesive soil as they were collected from the boreholes. Pocket penetrometer readings provide an estimate of the unconfined compressive strength of fine-grained soils.

Appendix A includes specific observations, remarks, and logs for the borings; classification criteria; drilling methods; and sampling protocols.

3.2 Previous Explorations by Others

We reviewed historic records and geotechnical data available near the L'Enfant Plaza station. These records included as-built records from the Washington Metropolitan Area Transit Authority (WMATA) of the original L'Enfant Plaza station construction, reports of the original subsurface explorations performed to support the construction of the station and adjacent track sections.

A subsurface exploration was completed near the site by Mueser, Rutledge, Wentworth & Johnston in 1970 to support the original design and construction of the Branch Route (Yellow & Green line) which extends below 7th Street. The results of the exploration are included in the Final Report - Subsurface Investigation, Branch Route, Sta. 3+00(F001) to 95+70 (F002), Washington Metropolitan Area Transit Authority (WMATA), dated August 1970 (Branch Route Report). The exploration included test borings and groundwater monitoring wells installed in certain test borings. SPT's were performed at selected depths in the borings.

Historic test borings F-15 and F-16 were performed along 7th St SW near the 7th St bridge. We have considered the data from these boring during preparation of this report. The boring locations are shown on the Boring Location Plan included as **Figure 2** and the logs are included in **Appendix C**. We assumed the original SPT samples were obtained using a 'donut' hammer, which was a common SPT hammer used in the DC region during that period.

This data was developed by others, and we were not present during the performance of these tests. We have reviewed these data for reasonableness, but we assume no responsibility for the completeness and accuracy of this information. Note that site grading and construction subsequent to these explorations may have altered the near-surface soils and thus the borings may not represent the current site conditions near the surface.

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4.0 LABORATORY TESTING

Our laboratory performed tests on selected soil samples obtained during the subsurface exploration. The testing aided in the classification of materials encountered in the subsurface exploration and provided data for use in the development of the recommendations provided herein. The results of the laboratory tests are included in **Appendix B** and are summarized for each stratum in the *Site Geology and Subsurface Conditions* section below. Selected test results are also shown on the boring logs in **Appendix A**.

4.1 Soils Testing

Natural moisture content, Atterberg limits, and gradation tests were performed on representative jar and tube soil samples from various strata encountered to provide soil classifications, index properties, and to provide parameters for use with published correlations with soil properties.

Three unconsolidated-undrained (UU) triaxial shear tests were performed on undisturbed (Shelby tube) samples of soils representing Stratum B1 to evaluate the shear strength of these materials. The UU triaxial shear tests were performed in accordance with ASTM D2850.

One one-dimensional consolidation tests was performed on an undisturbed Shelby tube sample of soil representing Stratum B1 to evaluate the compressibility characteristics of these soils. The consolidation tests were performed in accordance with ASTM D2435 Method B.

Six corrosion potential series tests were conducted on samples of soil representing Stratum A and B2. The samples were tested for parameters that comprise the Federal Highway Administration's factors considered to contribute to the corrosive environment: resistivity, pH, reduction-oxidation (redox) potential, sulfides (presence). The resistivity tests and pH tests were performed in accordance with AASHTO T288 and T289, respectively. The redox tests were performed in accordance with ASTM G200. The presence of sulfides tests was performed in accordance with the AWWA Qualitative test methods. The chloride content and sulfate content tests were performed in accordance with the method EPA SW9056A.

4.2 Previous Testing by Others

The Branch Route Report includes the results of soil laboratory tests performed on samples obtained from the historic borings performed on 7th Street. We considered the laboratory test results of samples collected from historic borings F-15 and F-16 to evaluate the soil properties for this project. Testing included natural moisture content, Atterberg limits, and unconfined compressive strength tests. Selected laboratory test results from the Branch Route Report are presented in **Appendix C**. These data were developed by others, and we were not present during the performance of these tests. We have reviewed these data for reasonableness, but we assume no responsibility for the completeness and accuracy of this information.

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5.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

5.1 Site Geology

The project site is located within the Atlantic Coastal Plain Physiographic Province, a low and partially submerged area extending from Cape Cod to Florida and bounded by the Piedmont Plateau to the west and the continental shelf to the east. Coastal Plain sedimentary deposits generally consist of sand, gravels, clays, and silts that dip gently to the southeast. The fall line, northwest of the site, marks the limit of where relatively young Coastal Plain sedimentary deposits overlie crystalline rock of Piedmont.

Based on the information shown in the Geologic Map of the National Parks in the National Capital Region (Southworth and Denenny 2006), the site is generally underlain by lower-level Terrace Deposits from the early Pleistocene Epoch of the Quaternary Period. These deposits underlie much of the broad floodplain adjacent to the Potomac and Anacostia Rivers and typically consist of sand, silt, gravel, and varying amounts of clay.

The Terrace deposits are underlain by Cretaceous-aged Potomac Group soils. Potomac Group soils typically consist of stiff to hard silts and clays interbedded with dense sands and gravels that were deposited in channels, bars, and floodplains by rivers that flowed eastward. Potomac Clays are typically highly over-consolidated and exhibit low compressibility. Crystalline bedrock at the site is expected to underlie the Potomac Group soils at depths of about 150 ft.

Near the surface, much of the above strata has been modified for historic roadway and utility construction and replaced with fill materials. Below 7th St SW and D St SW, much of the near-surface soils have been excavated and replaced with fill soils to accommodate the original cut-and-cover construction of the Metro tunnels and the WMATA L-Enfant Plaza station. The existing rail embankment extending above the streel level is generally constructed of fill soils.

5.2 Generalized Subsurface Stratigraphy

We characterized the following generalized subsurface stratigraphy based on the exploration and laboratory test data included in the appendices.

- Stratum A: Existing Fill
- Stratum B1: Fine-grained Terrace Deposits
- Stratum B2: Coarse-grained Terrace Deposits
- Stratum C1: Fine-grained Potomac
- Stratum C2: Coarse-grained Potomac

Ground Cover

Borings RW-01A through RW-03A, 6BR-01, 6BR-01A, 6BR-04, and 7BR-02A were drilled through asphalt pavement along Virginia Avenue. The borings on Virginia Avenue encountered about 2 to 9.5 inches of asphalt overlaying 8.5 to 14 inches of concrete. Concrete was not encountered in boring 6BR-04. Borings 6BR-02 and 6BR-03 were drilled through concrete sidewalks where the concrete thickness varied between 4.5 and 5 inches.

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Borings RW-01 through RW-03 were drilled on a grassy area behind the existing VRE station platform and borings 6BR-05, 6BR-07, and 7BR-03 were drilled in grassy areas adjacent to the tracks. These borings encountered 2 inches of grass. Boring 7BR-01 was drilled on a grassy area in Hancock Park and encountered 5 inches of grass. 7BR-02 was performed in an area covered in mulch. The mulch thickness was 5 inches.

Stratum A: Existing Fill

Below the ground cover materials, the borings encountered existing fill to depths ranging from about 2.0 ft to 23 ft below the ground surface (EL 20.0 to 5.0 ft). Between the 7th St SW and 6th St SW, the existing fill soil typically extended to about EL 10 ft. The existing fill soils consisted of Sands and Gravels with various amounts of sand, gravel, clay, and silt (SM, SC, SP-SC, SP-SM, GM, GW), as well as Clays (CL, CH) with various amounts of sand and gravel. The SPT N-values of the fill soils typically varied from 1 to 32 bpf indicating consistencies of soft to very stiff and densities of very loose to dense. Some higher blowcounts were encountered on potential obstructions.

Between 7th St SW and 6th St SW, the existing fill soils typically consisted of a layer of silty or clayey Sand or Gravel from the track subgrade level to about EL33 ft. Below that, soft to medium stiff Clay was observed extending to EL 19 to 22 ft. Below the clay, the existing fill soils encountered typically consist of dense silty or clayey Sand, extending to the natural soils of Stratum B at EL 11 to 20 ft.

As described above in the *Subsurface Exploration Program* section above, an obstruction was encountered in test boring 6BR-01, requiring the location to be abandoned. Similarly, three attempts were made to complete test boring 7BR-02 at its original location, but obstructions were encountered within the top 10 ft during each attempt to clear the site.

The soil samples tested within this stratum had the following properties:

- Moisture Content = 10.7 to 21.3%
- Liquid Limit = 25 to 39
- Plasticity Index = 8 to 15
- Retained No. 4 Sieve = 0.0 to 22.7%
- Passing No. 200 Sieve = 17.6 to 60.6%
- Pocket Penetrometer = 0.5 to 2.0 tsf

Stratum B1: Fine-grained Terrace Deposits

Below and interbedded with soils from Stratum B2, the borings encountered fine-grained Terrace deposits to between EL -23.0 and EL -34.0 ft. The fine-grained Terrace deposits generally consist of reddish and orangish brown, and gray Lean Clay (CL), and Elastic Silt (MH) with varying amounts of sand and gravel. The Branch Report refers to this stratum as T1. The SPT N-values of the fine-grained soils typically varied from about 4 to 34 bpf indicating medium stiff to very hard consistencies. Soil samples tested within this stratum had the following properties:

- Moisture Content = 11 to 27.7%
- Liquid Limit = 32 to 38

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- Plasticity Index = 14 to 18
- Retained No. 4 Sieve = 0 to 6.1%
- Passing No. 200 Sieve = 56 to 98.2%
- Pocket Penetrometer = 0.5 to 2.0 tsf

One-dimensional consolidation testing was performed on one sample of Stratum B1 soil collected from boring 7BR-01 during our exploration of the site. The test results are summarized in the tables below and included in Appendix B. The test results indicate the clay soils are slightly over consolidated.

Table 5.1: Summary of Consolidation Test Results in Stratum B1

Boring	Sample Elevation (ft)	Stratum	USCS Soil Class.	Approx. OCR[1]	Initial Void Ratio (e_0)	Comp. Ratio[2]	Recomp. Ratio[3]
7BR-01	-22 to -24	B1	CL	1.5	0.67	0.172	0.012

1) OCR = Over Consolidation Ratio
2) Compression Ratio = $C_c/(1+e_0)$, where C_c = Compression Index
3) Recompression Ratio = $C_r/(1+e_0)$, where C_r = Compression Index

Unconsolidated-undrained (UU) triaxial shear tests were performed on three undisturbed samples of Stratum B1 collected from borings 7BR-01, RW-01A and RW-02A. The results are summarized in the table below.

Table 5.2: Summary of Triaxial UU Test Results for Stratum B

Boring	Sample Elevation (ft)	Stratum	Saturated Soil Unit Weight (pcf)	USCS Soil Classification	Undrained Shear Strength (psf)
7BR-01	-22 to -24	B1	126	CL	2,074
RW-01A	-21.5 to -23.5	B1	127	CL	2,225
RW-02A	-19 to -21	B1	127	CL	1,116

Stratum B2: Coarse-grained Terrace Deposits

Below the existing fill soils of Stratum A and interbedded with Stratum B1, the borings encountered coarse-grained Terrace deposits to between EL 20.0 and EL -39.0 ft. The coarse-grained Terrace deposits generally consist of grayish brown, reddish brown, orangish brown, brown, and grey SAND and GRAVEL (SP, SM, SP-SM, SC, GM, GW, GC, GW-GM, GP-GC) with varying amounts of silt and clay. The Branch Report refers to this stratum as T2, T3 and T5. The SPT N-values of the coarse-grained terrace deposits typically ranged from 15 to 100 bpf indicating densities between medium and very dense. Soil samples tested within this stratum had the following properties:

- Moisture Content = 1.8 to 15.9%
- Liquid Limit = NP to 32
- Plasticity Index = NP to 12
- Retained No. 4 Sieve = 0.4 to 26.6%
- Passing No. 200 Sieve = 22.9 to 45.3%

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Stratum C1: Fine-grained Potomac

Below Stratum B2 and interbedded with soils from Stratum C2, the borings encountered fine-grained Potomac soils to between EL -29.8 and EL -81.0 ft. The fine-grained Potomac soils generally consist of greenish, bluish, brownish, and olive gray, and greenish brown Fat Clay (CH), Lean Clay (CL), Silt (ML), and Elastic Silt (MH) with varying amounts of sand and gravel. The Branch Report refers to this stratum as P1. The SPT N-values of the fine-grained soils typically varied from about 30 to 65 bpf indicating very stiff to hard consistencies. Some very hard clay (SPT Nvalue > 100 bpf) was encountered in boring RW-03A. Soil samples tested within this stratum had the following properties:

- Moisture Content = 33%
- Pocket Penetrometer = 1.0 to >4.5 tsf

Stratum C2: Coarse-grained Potomac

Below Stratum B2 and interbedded with soils from Stratum C1, the borings encountered coarse-grained Potomac soils to between EL -34.0 and EL -82.0 ft. The coarse-grained Potomac soils generally consist of greenish, bluish, yellowish, brownish, light, or olive gray, and brown Clayey Sand (SC), Silty Sand (SM), and Poorly Graded Sand (SP). The Branch Report refers to this stratum as P3. The SPT N-values of the coarse-grained fill soils ranged from 31 to 100 bpf, indicating densities between dense and very dense. Soil samples tested within this stratum had the following properties:

- Moisture Content = 20.9 to 30.2%
- Liquid Limit = 34 to 62
- Plasticity Index = 8 to 32
- Retained No. 4 Sieve = 0 to 0.3%
- Passing No. 200 Sieve = 16.3 to 43.1%

5.3 Groundwater

The test boring logs in **Appendix A** include groundwater observations obtained during our subsurface exploration. These data include depths to groundwater encountered during drilling and after drilling between 16 and 96 hours after completion where borings were not backfilled immediately after completion. Groundwater levels observed in the test borings during drilling are summarized in the table below. Groundwater levels are also indicated on the subsurface profile included as **Figure 3**.

Table 5.3: Summary of Groundwater Observations

Boring	Encountered During Drilling		After Drilling	
	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)
6BR-01	Dry	--	--	--
6BR-01A*	29.0	-11.0	--	--
6BR-02*	28.0	-8.0	--	--
6BR-03*	29.0	-9.0	--	--
6BR-04*	23.5	-5.5	--	--

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Boring	Encountered During Drilling		After Drilling	
	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)
6BR-05	12.5	24.5	13.6	23.4
6BR-07	15.0	22.0	--	--
7BR-01*	32.0	-9.0	--	--
7BR-02	Dry	--	--	--
7BR-02A*	28.0	-9.0	--	--
7BR-03	Dry	--	--	--
RW-01	Dry	--	Dry	--
RW-02	4.0	33.0	10.3	26.7
RW-03	15.0	22.0	13.0	24.0
RW-01A	30.0	-11.0		
RW-02A	33.0	-12.0	--	--
RW-03A	33.0	-14.0	36.6	-17.6

** drilling mud introduced to borehole after groundwater was encountered*

Where feasible, groundwater observations were also recorded upon drilling completion (both before pulling the casing and after pulling the casing). Because drilling mud was added to borings 6BR-01A, 6BR-02, 6BR-03, 6BR-04, 7BR-01, and 7BR-02A during drilling to stabilize the boreholes, the at completion and after-drilling readings in these borings are not considered reliable.

Some of the higher water levels observed at the platform level (borings RW-02, RW-03, 6BR-05, and 6BR-07) likely represent zones where groundwater is perched above a low permeability layer. The presence and elevation of perched groundwater may vary significantly with variations in weather conditions. Because discontinuous layers of relatively impermeable clays of Stratum A are interbedded with the more permeable granular soils of Stratum A at the site, perched groundwater may be encountered at the site during construction above EL +5 ft and should be considered by the Contractor. The presence and elevation of perched groundwater can vary significantly with variations in weather conditions.

The groundwater levels on the logs indicate our estimate of the hydrostatic water table at the time of our subsurface exploration. The final design should anticipate the fluctuation of the hydrostatic water table depending on variations in precipitation, surface runoff, pumping, evaporation, leaking utilities, nearby buildings/developments, seasonal fluctuations, and similar factors.

The Branch Route Report describes that groundwater levels were observed in test borings F-15 and F-16 between April 1968 and May 1970. A monitoring well was also installed in boring F-15 upon completion. The Branch Route Report describes that the average depth of groundwater in the F-15 monitoring well was EL -3.9 ft, and in boring F-16 during drilling was EL 4.4 ft.

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We recommend groundwater levels of EL +5 ft be considered in the design of this project. Based on our groundwater observations, we do not expect groundwater levels to significantly impact the proposed construction.

5.4 Soil Corrosivity Potential

Corrosion potential laboratory testing consisting of pH, electric resistivity, reduction-oxidation potential (redox), sulfides, sulfate, and chloride content were performed on selected samples of Stratum A and B2. The results of the laboratory testing are presented in detail in **Appendix C** and summarized below.

Table 5.4: Summary of Corrosion Potential Series Test Results

Boring	Sample Elevation (ft)	Stratum	pH	Electric Resistivity (ohm-cm)	Redox (mV)	Sulfides (mg/kg)	Sulfate Content (mg/kg)	Chlorides Content (mg/kg)
6BR-02	12.0 – 10.0	B2	7.6	13,000	273	ND	ND	ND
6BR-03	20.0 – 18.0	A	7.2	1,400	119	ND	460	27.6
6BR-07	29.0 – 27.0	A	7.4	8,600	244	ND	13.3	ND
7BR-01	5.0 – 3.0	B2	6.3	21,000	298	ND	15.3	ND
7BR-02A	5.0 – 3.0	B2	8.0	1,900	101	ND	64.3	68.4
RW-03	31.0 – 29.0	A	7.7	3,400	265	ND	70.7	ND

Notes: "ND" – Not Detected above the reporting limit

Based on the above laboratory test results, the onsite soils present a risk of macrocell corrosion to steel piles or micropile casing when evaluated in accordance with AASHTO R-27-01. The onsite soils also present a risk to buried ferric metal utilities, such as ductile iron, prestressed concrete, or steel when evaluated in accordance with the DC Water Project Design Manual Vol. 3.

Based on correlations between sulfate concentrations and severity of sulfate attack as presented in American Concrete Institute (ACI) 318 Chapter 4, the above sulfate concentrations are considered to pose a negligible risk of sulfate attack on buried concrete, falling into Exposure Category Class S0.

5.5 Seismic Site Classification

We evaluated the Seismic Site Class for this project according to the International Building Code (IBC) Section 1613 (2018). Our analysis indicates seismic Site Class D for this location. This Seismic Site Class was evaluated based on corrected SPT N-values and extrapolation of the soil parameters to 100 ft.

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6.0 FOUNDATION RECOMMENDATIONS

Recommendations for supporting the various planned structures are presented in the following section. We based our geotechnical engineering analysis on the information developed from our subsurface exploration and soil laboratory testing, along with the 30 percent Draft PE Plans. Foundation loading was not available at the time this report was prepared. The foundation recommendations provided below are in general conformance with AREMA MRE 2024. Site grades will increase by less than 2 ft, resulting in negligible settlement of the existing embankment from the weight of new embankment fill. Downdrag loading is not expected to develop on any of the foundations.

Deep foundations will be necessary to support the new structures due to the adjacent WMATA Metro station and tunnels and the extent of existing fill soils across the site which are unsuitable for direct support of structures. The WMATA Adjacent Construction Project Manual (ACPM) requires that new foundations of adjacent structures bear below the ZOI. Because some portions of both the 6th St SW and 7th St SW bridges fall within the WMATA Zone of Influence (ZOI), new bridge substructures will require support from deep foundations extending below the ZOI, regardless of the depth of existing fill soils. In addition, existing fill soils are generally present across the site above about EL 10 ft, or about 28 ft below the platform level and 7 to 10 ft below existing street grades. The existing fill soil is not considered suitable for support of new foundations due to the risk of excessive settlements, particularly between 6th St SW and 7th St SW. Because it is not feasible to remove and replace the existing fill soil below tracks, deep foundations will be necessary to support the new structures planned along the rail corridor.

Driven piles should be avoided for this project due to the proximity of adjacent structures that could be susceptible to vibration, the restrictions described in the ACPM with regard to driving piles within 25 ft of WMATA structures, and the challenges of driving piles adjacent to live tracks.

We recommend drilled shafts for support of the new 6th St SW bridge where sufficient space is available to mobilize the necessary equipment and where they can be installed without fouling the tracks. Drilled shafts can be installed with little vibration and without restrictions from WMATA. They can be constructed with dense reinforcing steel cages, allowing them to resist large lateral loads and bending moments. However, the installation of drilled shafts requires both a drill rig with an extended Kelly bar and a crane to lift and set the steel casing and reinforcing cage. Because the abutment shafts will be installed from the track level, CSXT may require that some or all of the drilled shaft construction is performed during track closures. If drilled shafts can only be installed during track closures, an alternative foundation system such as micropile may be necessary, particularly for the abutments where the foundations will be installed from track level. We recommend that CSXT is consulted about the feasibility of installing drilled shafts from both the track and street level while maintaining rail traffic.

Continuous Flight Auger (CFA) piles may be a cost-effective alternative to drilled shafts if the lateral loads and bending moments at the 6th St SW bridge foundation level are low enough. CFA piles require a drill rig and crane similar to drilled shafts, though no casing is required with CFA piles. CFA piles can typically achieve maximum allowable capacities of about 200 kips to 300 kips in these conditions. We can investigate the feasibility of CFA piles during a future design stage when the foundation loads are established. We recommend CSXT is consulted about the feasibility of installing CFA piles from both the track and street level while maintaining rail traffic.

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We recommend micropiles for support of the 7th St SW bridge widening and the two pedestrian entrance structures where the limited space makes drilled shafts unfeasible. We also recommend micropiles for support of Retaining Wall A and the Track 5 viaduct, which will be constructed from at or near the track grades. Micropiles are drilled and grouted elements, typically with a diameter of 5 to 9-5/8 inches, although specialized equipment may be used to install micropiles up to 12 inches in diameter. Micropiles transfer their loads to the ground through grout-to-ground skin friction within the bond zone. Due to their small size and construction methods, end-bearing of micropiles is typically neglected. The drill rig used for micropile installation is smaller than typical drilled shaft rigs and can operate with less risk of fouling the tracks. Continuous Flight Auger (CFA) piles may also be cost-effective alternative to micropiles if they can be installed from the track level.

We recommend that the pedestrian platform and canopy structure are supported on helical piles. While the platform and canopy structure are expected to be lightly loaded, the test borings at the platform level encountered a layer of soft clay (Stratum A) to depths up to about 13 ft below track grade. This soft clay is unsuitable for support of the platform and canopy foundations and is too deep to economically undercut and replace.

Helical piles are low displacement piles that consist of multiple bearing plates shaped in the form of a helix, a center shaft, and a termination connector. The helical bearing plates transfers the load from the pile to the bearing stratum at the desired depth. Helical piles are installed by applying torque to a pile with helical plates and screwing it into the ground. As the helical pile is screwed through the subsurface material, the torque applied is monitored until the desired bearing capacity required is achieved. Correlations exist between torque and bearing capacity for various sizes of helical piles in different soil types. Helical piles can be installed by small portable equipment, with low vibrations and disturbance, and without generating spoils. Helical piles can be installed relatively quickly by screwing into place but are practically limited to maximum allowable capacities of about 60 kips with locally available installation equipment. If greater capacities are necessary, micropiles may be considered to support the platform.

6.1 Drilled Shafts

We recommend drilled shafts for support of the new 6th St SW bridge where they can be installed without impacting rail operations. Drilled shafts should be at least 3.0 ft in diameter and gain their capacity from a combination of end bearing and skin friction resistance in the dense or hard natural soils of Strata B or C below about EL 10 ft. Drilled shafts should be spaced no closer than three diameters center-to-center. We understand that when the shafts are within the zone of influence of the existing tracks, CSXT requires that permanent casing is used to construct the drilled shafts.

We evaluated 3.0, 3.5, and 5.0 ft diameter straight-sided drilled shafts for axial capacity considering static loading conditions in accordance with methods described AREMA Chapter 8 Part 24. Because the foundation loads are unknown at the time of this report, various tip grades were evaluated for each size shaft. The table below summarizes the estimated allowable capacities of drilled shafts at various diameters and tip elevations.

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Table 6.1: Preliminary Drilled Shaft Axial Capacities for the 6th St SW Bridge

Shaft Diameter (ft)	Shaft Tip Elevation (ft)	Estimated Allowable Axial Capacity	
		Compression	Uplift
		(kips)	(kips)
3	-35	440	295
	-50	600	430
	-65	710	540
	-80	810	640
3.5	-35	550	350
	-50	730	500
	-65	860	630
	-70	900	670
	-80	980	750
5	-35	845	500
	-50	1105	710
	-65	1,295	900
	-80	1,460	1070

The allowable capacities presented above consider both side friction resistance and end bearing and utilize a factor of safety of 2.5 in accordance with AREMA MRE 2023. Downdrag loading is not expected to develop at the 6th St SW bridge and the above capacities do not consider any downdrag. Load testing of the drilled shafts is not recommended because the AREMA MRE 2023 does not allow for a reduction in the factor of safety of drilled shafts if load testing is performed. If AREMA MRE 2024 is followed, could the factor of safety could be reduced by load testing a sacrificial test shaft.

If the design drilled shaft length extends below about Elevation -75, the next phase of the project should include test borings that extend at least 1.5 times the shaft diameter below the deepest drilled shaft tip elevation.

Total settlements of drilled shaft-supported columns at design load are not expected to exceed about 1 inch. Differential settlement between similarly loaded drilled shafts is expected to be less than about half this value.

Drilled shafts will be plumb and will resist lateral loading through the bending resistance of the shaft and the lateral response of the soils along the shaft length. The lateral performance was evaluated assuming the shafts were installed to the shallowest tip elevation presented above in Table 6.1 (EL -32 ft), below the depth of fixity. Shafts installed to deeper depths are not expected to provide significantly greater lateral resistance. Because the shafts will be installed in a single row below the pile cap, we modeled the shaft with free-head condition. The results of our LPILE analysis are summarized in the table below. The reported "Lateral Capacity" is equivalent to the horizontal lateral load applied to the top of shaft which results in a top of shaft deflection of 1/2 inch.

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Table 6.2: Preliminary Drilled Shaft Lateral Capacities for the 6th St SW Bridge

Shaft Diameter (ft)	Shaft Tip Elevation (ft)	Lateral Capacity (kips)
3.0	≤ -32	55
3.5	≤ -32	77
5.0	≤ -32	160

Drilled shafts spaced at a center-to-center spacing of six times the shaft diameter (6D) in the direction of the lateral loading or less will experience reduced lateral resistance due to group action. For purposes of our preliminary analysis, we have assumed that the shafts are spaced at 3D and have reduced the lateral load capacity accordingly in accordance with AREMA MRE 2024. We assumed a minimum of 1 percent reinforcing steel and 3 inches of concrete cover in our lateral analyses. Greater lateral capacities could be achieved with more reinforcing steel. Our analysis considers the top of shaft extends to the ground surface.

6.2 Micropiles

We recommend micropiles for support of the 7th St SW bridge widening and the two pedestrian entrance structures where the limited space makes drilled shafts unfeasible. We also recommend micropiles for support of Retaining Wall A and the load transfer platform for the proposed fourth track, which will be constructed from at or near the track grades.

Micropiles should gain their capacity from skin friction resistance in the dense or hard natural soils of Strata B or C below about EL -30 ft. The micropiles should be permanently cased with steel casing to at least this elevation. End bearing resistance should be neglected. Micropiles should be spaced at a minimum center-to-center spacing of three pile diameters or 30 inches, whichever is greater, from adjacent micropiles or existing piles.

Foundation loads are unavailable at the time this report was developed. For preliminary engineering purposes, we estimated the allowable axial capacities for 5-1/2 inch, 9-5/8 inch and 10-3/4 inch diameter micropiles of different lengths under static loading conditions. The table below presents the results of our analysis. If necessary, greater capacities could be realized by lengthening the micropiles and increasing the reinforcing bar size or by increasing their diameter.

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Table 6.3: Preliminary Micropile Axial Capacities

Micropile Casing Outside Diameter (in)	Full-Length Threaded Reinforcing Steel Bar	Bottom of Casing EL (ft)	Estimated Micropile Tip EL. (ft)	Allowable Micropile Compression Capacity (kips)	Allowable Micropile Tension Capacity (kips)
5-1/2	No.9	-30	-70	47	41
	No.14	-30	-110	92	92
9-5/8	No.9	-30	-70	93	41
	No. 18	-30	-110	186	165
10-3/4	No.9	-30	-70	105	41
	No. 20	-30	-110	210	202

If the selected micropile length extends below Elevation -80, the next phase of the project should include at least one test boring that extends below the deepest micropile tip elevation.

The allowable capacities presented above consider the micropiles are installed using pressure grouting techniques. Post grouting of the micropiles may be necessary to fully develop the bond capacity of the micropile. Downdrag loading is not expected to develop, and the above capacities do not consider any downdrag.

We calculated the allowable micropile capacities based on a factor of safety of 2.0 against vertical compressive capacity which considers that pile load testing will be performed. The use of a factor of safety of 2.0 is consistent with AREMA MRE Chapter 8 Part 4 for piles where their design capacity is determined by a geotechnical investigation and field testing of the piles.

Total settlements of micropiles at their design load are not expected to exceed about ½ inch. Differential settlement between similarly loaded micropiles is expected to be less than about half this value.

Due to their slender nature, micropiles have little lateral resistance. Overturning or lateral loads should be resisted with battered micropiles, which can support similar axial loads as plumb micropiles. Battered micropiles should not exceed 3 horizontal to 12 vertical in accordance with AREMA guidelines.

Table 6.4: Preliminary Micropile Lateral Capacities

Micropile Casing Outside Diameter (in)	Micropile Casing Thickness (in)	Max. Lateral Load (kips) 3D spacing			Max. Lateral Load (kips) 5D spacing			Max. Lateral Load (kips) >6D spacing		
		Lead Row	*2nd Row*	*3rd Row*	*Lead Row*	*2nd Row*	*3rd Row*	*Lead Row*	*2nd Row*	*3rd Row*
5.5	0.415	3.4	3.1	2.6	3.8	3.7	3.4	3.8	3.8	3.8
9.625	0.545	8.9	7.4	6.1	10.9	9.9	8.9	10.9	10.9	10.9
10.75	0.595	10.9	9.1	7.4	13.4	12.1	10.9	13.4	13.4	13.4

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The lateral capacity of the micropiles presented in the table above represent the horizontal top of pile loads that result in ½ inch of deflection. These capacities consider API-80 steel casing, and free-head conditions at the top of the micropile.

The lateral capacity table includes scenarios accounting for reduced capacity due to group effects and micropile spacing. Micropiles should be spaced at a minimum center-to-center spacing of three pile diameters or 30 inches, whichever is greater, to avoid a reduction in the overall pile group resistance. Micropiles should be located at least 5 ft away from any underground utility.

Potential section loss of the steel casing due to corrosion over their 100-year design life should be considered during final design in accordance with FHWA NHI-05-039 for an aggressive site condition. For preliminary purposes, we considered that the micropile casing thickness is reduced by about 1/16 inch over their 100-year design life.

At least one static load test should be performed on a sacrificial test pile at each substructure to verify the pile capacity and the load-settlement characteristics. The load test should be performed according to ASTM D1143 using the Quick Loading Procedure. The pile should be loaded to failure, or to at least 200 percent of the allowable compressive pile capacity. The pile designer should establish final pile installation criteria based on the results of the test pile program.

6.3 Helical Piles

We recommend helical pile foundations for support of the proposed platform structure and canopy. Helical piles are proprietary systems, and their final design is typically performed by a Professional Engineer retained by the specialty contractor who installs the piles. The helical pile designer should determine the applied torque, spacing, design load, and the number of piles. The dimensions of the central shaft, the number, size and thickness of the helical bearing plates and the terminal connection shall be designed and manufactured to resist all stresses induced by handling, installing, and the design loads. The helical pile designer should be a Professional Engineer registered in Washington DC and should demonstrate at least three successfully completed helical design projects over the last five years, similar in scope and geology.

We recommend that the design consider helical piles with a preliminary maximum allowable bearing capacity of 60 kips. Based on our discussions with a local helical pile contractor, we expect that these allowable capacities can be achieved at the site with locally available equipment. We expect that each pile will require at least three 8 to 12-inch diameter helics and be tipped near EL - 13 ft. Helical piles requiring less capacity could be installed with less helics and to shorter depths.

Lateral loads at the foundation level should be resisted by battered helical piles. Where used, the maximum pile batter should be limited to no more than 3 horizontal to 12 vertical, (3H:12V). The center-to-center spacing of the helical piles should be a minimum of three times the largest helic diameter or 3-ft, whichever is greater, to avoid a reduction in axial resistance from group effects. The helical piles should be designed with corrosion protection measures for an aggressive site condition. This includes using sacrificial steel or other protective coatings to ensure durability and functionality over the helical piles' 100-year design life.

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Specific vertical and lateral load carrying requirements, allowable stresses for structural elements, as well as vertical and lateral deflection criteria should be provided to the helical pile designer for development of the final helical design. The helical piles should be designed to reduce the amount of post construction foundation movements to 1/2 inch or as specified by the structural engineer. The helical piles should extend through the existing fill soils of Stratum A to develop their bearing resistance below about EL 10 ft within the underlying Terrace Deposits of Strata B or the Potomac Group soils of Stratum C. The specialty contractor should be required to furnish piles of the required capacity with a factor of safety of at least 2.0, which considers that static pile load testing is performed.

At least one static load test should be performed on a sacrificial test pile to verify the pile capacity and the load-settlement characteristics. The load test should be performed according to ASTM D1143 using the Quick Loading Procedure. The pile should be loaded to failure, or to at least 200 percent of the allowable compressive pile capacity. The pile designer should establish final pile installation criteria based on the results of the test pile program.

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7.0 RETAINING STRUCTURE RECOMMENDATIONS

Several new cantilevered cast-in-place retaining walls are planned at the site. These include the new abutments and wing walls at the 7th St SW bridge widening, Retaining Wall A, and the cantilevered retaining walls extending above both entrance structure foundations. In addition, the two new entrance structures will be buried within the rail embankment and will retain earth on all sides, as well as support the weight of earth and surcharge loading over their roofs. In addition to the new retaining structures, the existing gravity retaining wall along Virginia Avenue SW may also be affected by the proposed construction. The following sections provide our retaining structure recommendations.

7.1 New Retaining Structures

The cantilevered retaining walls will retain between up to 24 ft of earth. The buried entrance structures will also retain earth and will support up to 8 ft of earth and track over their roofs. Each new cantilevered retaining and entrance structure will be supported on deep foundations as recommended above.

New cantilevered retaining walls should be designed in accordance with the procedures outlined in the AREMA Manual, Chapter 8, Part 5 considering active earth pressures. Per AREMA Chapter 8 Part 5.3.2.g, if the wall is prevented from deflecting freely at its crest, such as where the abutment walls are connected to the wing walls or crash walls in such a way that they could be laterally restrained, the computed backfill pressure should be increased 25 percent. The new buried entrance structures will be rigid and should be designed in accordance with similar procedures but considering at-rest earth pressures.

Tiebacks may be used to resist additional horizontal loads acting on the retaining walls where additional lateral resistance is required. Tiebacks should be located to avoid buried structures.

The design of the entrance structures should consider vertical pressures above the roof from dead load, live load, and impact load. The dead load should include the estimated weight of the track and platform above the tunnel entrance, as well as from live load. Vertical surcharge pressure acting on the entrance structures should be developed in general in accordance with AREMA Manual, Chapter 8, Part 16.

Backfill materials for the new retaining walls and entrance structures should consist of Structural Fill material placed and compacted as recommended in the *Compacted Fill* section of this report. Where the new structural fill is placed at least entirely within a wedge behind the wall rising at 45 degrees from horizontal (measured from the bottom of the wall), the wall may be designed considering the properties of the structural fill. If existing fill soils remain with the 45 degree wedge, for example if limited space is available and temporary shoring is used to limit the excavation size, then the properties of the existing fill soil could control the earth pressures that develop on the structures, and the structure should be design considering entirely the properties of the existing fill. Recommended design parameters for the retaining structures are provided in the table below for their respective backfill condition.

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Table 7.1: Recommended Design Parameters for New Retaining Structures

Backfill Material	Backfill Unit Weight (pcf)	Backfill Friction Angle (deg)	Active Earth Pressure Coefficient[1] K_a	At-Rest Earth Pressure Coefficient[2] K_0
Structural Fill	130	30	0.33	0.50
Existing Fill	125	28	0.36	0.53

1) Use active earth pressure for cantilevered wall design. If wall is prevented from freely deflection, the computed backfill pressure should be increased by 25%.

2) Use at-rest earth pressure for entrance structure wall design.

The parameters were estimated using Rankine-Coulomb active earth pressure theory in accordance with AREMA Chapter 8 with the assumption of zero wall friction, level backfill, and zero wall inclination (from the vertical). The parameters do not include surcharge loading and are not factored.

The new retaining structures should account for surcharge loads in accordance with AREMA MRE Chapter 8, Part 5. For uniform surcharges, such as backfill, a rectangular earth pressure distribution may be considered, as shown in Figure 6. For uniform surcharges, the horizontal surcharge pressure should be obtained by multiplying the surface surcharge pressure, q, by the appropriate earth pressure coefficient K_0' or 'K_a' in Table 7.1 above. For non-uniform surcharges including the live rail surcharge, the trial wedge method described in AREMA Chapter 8 Section 5 or the modified Boussinesq equations described in AREMA Chapter 8 Section 20 may be used to calculate the surcharge pressures on the retaining structures.

New retaining walls should generally be designed to limit the maximum wall deflection under full live load to less than ½ inch, consistent with the requirements of the CSXT Public Projects Manual for temporary retaining systems found within 12 ft of the track centerline.

The above parameters do not consider hydrostatic pressure since we recommend below that subdrainage is used behind the retaining structures. If conditions do not permit the construction of subdrainage, the walls should be waterproofed and hydrostatic pressure should be considered in the wall design because water may accumulate behind the walls even though the walls are expected to be founded above the design groundwater table. We should be contacted to provide different parameters if subdrainage is not used.

Drainage fill material, such as AASHTO No. 57 stone or equivalent, should be used directly behind the new retaining walls and entrance structures to allow dissipation of water pressures and collect the water for drainage. AREMA Chapter 8 Part 5 describes that it is preferable that the free-draining backfill (Drainage Fill) is used within a wedge behind the wall, bounded by a plane rising at 60 degrees from the horizontal, measured from the back of the wall footing subgrade. Geotextile fabric should wrap around the drainage fill to separate it from the retained embankment fill material.

Wall subdrainage should be provided behind the abutment walls within the drainage fill material to prevent the accumulation of water. The back of abutment walls should be damp proofed by approved materials. Subdrainage may be provided using weepholes where the weepholes will discharge into the project right-of-way. Weepholes should be four inches in diameter and should be installed on 6-ft

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maximum centers. A filter plug consisting of at least a 2 ft square of drainage filter material wrapped in drainage geotextile should be placed at the back of each weephole to prevent the loss of the porous fill or the intrusion of soil during a flood event.

Where weep holes are not allowed or are not feasible, subdrainage should consist of a 6-inch diameter perforated Schedule 80 PVC pipe located on top of the wall footing, behind the wall, as indicated in Figure 2 or in the District of Columbia Department of Transportation (DDOT) Standard Drawing No. 602.01 or equivalent. The subdrains will be installed within the Drainage Fill, which we recommend is wrapped in geotextile fabric, so it is not necessary to wrap the pipe in geotextile fabric. The subdrains pipes should drain by gravity to an appropriate outlet or discharge.

7.2 Virginia Avenue SW Retaining Wall

An existing gravity retaining wall extends along the north side of Virginia Avenue between 7th St SW and 4th St SW. The retaining wall is constructed of stone masonry and supports the rail embankment above Virginia Ave SW. The top of the wall is found at about EL 36.1 ft. The exposed height of the retaining wall varies from about 15 to 18 ft.

As-built plans of the existing wall are not available at the time of this report. However, available plans from the 6th St SW Bridge replacement in 1908 and the 7th St SW Bridge replacement in 1972 include some details of the wall. They indicate that the wall is constructed of 18-inch-tall granite blocks that vary in width from 5 ft 6 inches at the top of the wall to at least 9 ft at the base. The bottom elevation of the wall is not indicated or known, though the plans indicate that it extends at least one course below EL 17.95 ft. The wall may be dry stacked without any mortar or internal reinforcement.

The grade behind the existing wall may be raised by up to 15 inches and the tracks may be shifted a few inches closer to the top of the wall to accommodate the new fourth track and required bridge clearances. The grade raise may be geometrically accommodated by installing a cap on the top of the wall. This will result in a slight increase to the earth pressures and live load surcharge pressures acting on the wall. Because details of the wall construction are unknown, it is not possible to precisely quantify the wall's stability in its current condition or in the proposed future condition.

The increased earth and surcharge pressures could be addressed by reinforcing or anchoring the wall so that it can safely resist these increased forces. However, this approach presents challenges. The existing wall is over 100 years old and may not meet modern design standards even in its present condition. Resisting the new loads in accordance with modern standards could require installing anchoring or dowels through the granite wall blocks to satisfy internal and external stability, which present the risk of damaging the stone and would change the appearance of the exposed wall face and likely encroach into DDOT right-of-way.

Alternatively, rather than reinforcing the retaining wall, it may be acceptable to CSXT and VRE to instead modify the backfill in such a way that reduces the earth pressures acting on the wall and results in no net increase in loading on the wall in the final condition. This could be performed by excavating the area behind the wall and replacing it with lightweight fill as shown below in **Figure A**. The extent of the required excavation and replacement will depend on the magnitude of the grade raises and track shifts. While it may not be possible with this approach to demonstrate that the wall meets modern design factors

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of safety on overturning and sliding, it could be demonstrated that the modified wall backfill will result in the same or improved level of stability compared to the existing condition.

We recommend that lightweight fill material used for this application consist of an Expanded Shale, Clay, and Slate (ESCS) material (such as Stalite®) that conforms to Size No. 57 or equivalent per AASHTO M-43. Special permission will be necessary from CSXT to utilize ESCS material on the project. Lightweight cellular concrete could also be considered as an alternative to ESCS fill with permission from CSXT. We considered Expanded Polystyrene (EPS) foam, commonly referred to as Geofoam, as a lightweight fill material but do not recommend it for this application because it could deflect excessively under live rail loading and it is susceptible to degradation if exposed to petroleum products or solvent, which CSXT trains carry on a regular basis.

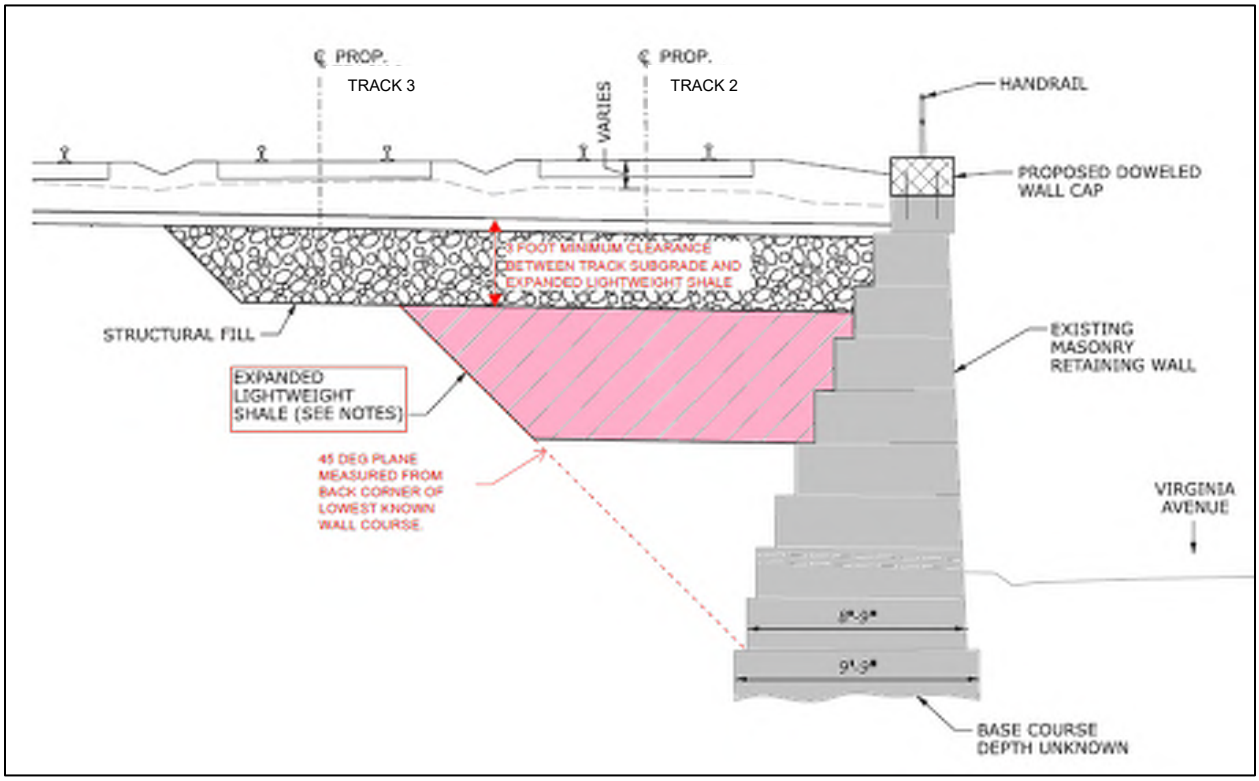

Figure A: Virginia Ave SW Retaining Wall, Excavate and Replace with Lightweight Fill

ESCS is a durable, relatively inert manufactured aggregate created by taking raw shale, clay, or slate material and expanding it in a kiln at high temperatures. The gas bubbles formed in the softened material are trapped when it cools. ESCS has a similar hardness to other natural stone aggregates. ECSC is available in a variety of gradations from sand to gravel and may be placed and compacted like normal weight soil or aggregate without specialized equipment or techniques. An ESCS aggregate such as Stalite®, which is an expanded shale product commonly used in the region, typically has a maximum dry density between 60 and 65 pounds per cubic foot with a No. 57 gradation.

To avoid concerns from CSXT and VRE about the ability of the lightweight fill to directly support the track bed, we recommend that lightweight fill is used only within the core of the rail embankments, at least 3 ft below the track subgrade plane (bottom of subballast level), as shown in **Figure A**. CSXT specifications

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require that fill material 3 ft or more below the track subgrade have a maximum particle size of 3 inches and a plasticity index less than 35. ESCS lightweight aggregate meets or exceeds all these requirements. At least 3 ft of Structural Fill material should be placed and compacted above the lightweight fill as recommended in the *Compacted Fill* section of this report. The lightweight fill should extend in an envelope bounded by a plane rising at 45 degrees from the horizontal, measured from the back of the lowest known wall course, as shown in **Figure A**.

The existing retaining wall should be evaluated in general accordance with AREMA Manual, Chapter 8, Part 5. Where the lightweight fill is placed as shown in Figure A, the wall may be evaluated considering the respective properties of the new structural fill, lightweight fill, and existing fill that will make up the wall backfill. Recommended design parameters for Existing Fill soils and for new Structural Fill are provided above in Table 7.1, while design parameters for lightweight ESCS Fill is provided below in Table 7.2. The existing retaining wall should be evaluated considering active earth pressures.

Table 7.2: Recommended Design Parameters for Lightweight ESCS Fill

Backfill Material	Backfill Unit Weight (pcf)	Backfill Friction Angle (deg)	Active Earth Pressure Coefficient[1] K_a	At-Rest Earth Pressure Coefficient K_0
Lightweight ESCS Fill	65	40	0.22	0.36

1) Use active earth pressure for evaluation of existing wall.

The parameters were estimated using Rankine-Coulomb active earth pressure theory in accordance with AREMA Chapter 8 with the assumption of zero wall friction, level backfill, and zero wall inclination (from the vertical). The parameters do not include surcharge loading and are not factored. Surcharge pressures acting on the existing wall should be evaluated as described above in the *New Retaining Structures* section above.

These design parameters do not consider hydrostatic pressure since we assume that subdrainage was installed behind the existing wall. If subdrainage was not installed or is not functional, hydrostatic pressure could develop behind the wall even though the walls are above the anticipated groundwater table.

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8.0 SITE GRADING AND EARTHWORK

The proposed track and platform subgrade levels are not expected to vary significantly from existing grades, typically requiring cuts or fills less than about 1 foot. However, temporary excavations up to 22 ft deep are planned at the new 7th St SW bridge abutments, and temporary excavations up to 29 ft deep will be necessary for the two new entrance structures. In addition, the existing gravity retaining wall along Virginia Ave SE may require excavation and replacement of up to 6 ft of existing fill soil with lightweight fill.

Earthmoving operations performed within CSXT right-of-way (ROW), including excavation, backfilling, and track subgrade preparation, should generally be performed in accordance with the latest CSXT Design and Construction Standard Specifications (MWI 1911) and the CSXT Public Project Manual. Earthmoving operations performed within the WMATA Zone of Influence (ZOI) should also comply with requirements in the latest WMATA Adjacent Project Construction Manual (APCM). Earthmoving performed within the DDOT ROW will also need to comply with the latest DDOT Standard Specifications for Highways and Structures (DDOT Specifications). The following sections provide our grading and earthwork recommendations.

8.1 Excavation

The CSXT Public Project Manual describes that soils generated from CSXT property must adhere to CSXT's soil management policies. CSXT requires soils generated from its property to either be properly disposed in a CSXT approved disposal facility or reused on CSXT property. The management of excavation spoils should be incorporated into the project specifications and properly permitted prior to construction.

8.2 Compacted Fill Subgrades

Compacted fill subgrades are generally expected to consist of existing fill material. Compacted fill subgrades should be prepared in accordance with MWI 1911 Section 020200. Existing ballast material should be removed, and any areas with soft, wet, or unsuitable soils should be scarified, dried and recompacted, or undercut and replaced with compacted structural fill as described in the *Compacted Fill* section of this report.

8.3 Track Subgrade Preparation

Track subgrades to receive subballast are expected to consist of existing fill material or new compacted structural fill. The track subgrades should be prepared in accordance with MWI 1911 Section 020200, which requires that the prepared track subgrades are proof rolled by the Contractor with a 20-ton offroad dump truck (or similar) to evaluate the subgrade prior to the placement of subballast. Areas with soft, wet, or unsuitable soils, or areas that exhibit excessive pumping, weaving, or rutting should be scarified, dried and recompacted, or undercut and replaced with compacted structural fill as described in the *Compacted Fill* section of this report.

While the actual depth and extent of any undercut will be determined during construction, for preliminary planning purposes, we recommend expecting to undercut track subgrades an average depth of 6 inches below the planned track subgrade level and replace with compacted structural fill to provide a firm

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subgrade on which to place subballast. Material and placement requirements for compacted structural fill are described in the section below.

8.4 Compacted Fill

Compacted fill and backfill must meet the requirements of MWI 1911 Section 020200. Compacted fill and backfill used within the WMATA ZOI must also meet the requirements of the WMATA Standard Specification 02320 *Grading, Excavating and Backfilling* Section 2.01.B. Compacted fill and backfill used within DDOT ROW must also conform to the DDOT Specifications.

We recommend that all compacted fill and backfill consist of structural fill material with a maximum particle size of 3 inches, a plasticity index between 0 and 35, and less than 20 percent passing a #200 sieve (as determined by ASTM D1140). This definition of structural fill meets MWI 1911 requirements for use as fill in rail embankments at any distance from the track level and meets WMATA requirements for use within their ZOI. This definition meets DDOT requirements for use as embankment fill or below roadways but not for use as pavement base course and/or structural backfill.

The majority of the onsite near-surface soils are not expected to meet the above criteria for reuse as structural fill. Most soils that meet the criteria for reuse are likely to be contaminated with unsuitable soils during excavation, particularly when excavating below the existing rail corridor. For preliminary cost estimating purposes, we recommend planning to import all compacted fill and backfill material from offsite borrow sources and dispose of all excavated soils offsite or in waste piles around the site.

Compacted fill and backfill placed within 3 ft vertically and 15 ft horizontally of track subgrades should be compacted in accordance with MWI 1911 to 100 percent of the maximum dry density or to a relative density of 75 percent of its maximum, whichever is higher, as determined by ASTM D1557 (Modified Proctor) or ASTM D2049. Compacted fill and backfill placed outside the limits of the track subgrades describe above should be compacted in accordance with MWI 1911 to 95 percent of the maximum dry density as determined by ASTM D-1557 (Modified Proctor) and at a moisture content within 2 percent of optimum, except that material within 1 ft below pavement or foundation subgrades should be compacted to 100 percent of the same standard. This standard meets DDOT, CSXT and WMATA requirements.

All compacted fill and backfill should generally be placed in maximum 8-inch thick horizontal, loose lifts, except at structure backfills, culverts, piles, and trenches where the lift thickness should not exceed 6 inches, in accordance with MWI 1911.

8.5 Geosynthetics

Geosynthetics including geotextile and geogrid will be used during construction. Geosynthetics used beneath roadways should meet the material and installation requirements provided in the DDOT Standard Specification Divisions 200 and 800. Geosynthetics used beneath rail embankments or track beds should meet CSXT material and installation requirements as described in MWI 1003-02 and MWI 1911. These specifications require geotextile fabric is no closer than 1 foot from the bottom of the tie to protect against damage from tamping and to avoid interference with future ballast cleaning operations.

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8.6 Track Subdrainage

Behind retaining structures, side drains should be installed below the new fourth track bed structure to collect and remove water that reaches the track subgrade.

Track subdrainage should consist of a trench with perforated pipe surrounded by drainage fill and wrapped in drainage geotextile fabric, as shown below in **Figure B**. AREMA Chapter 1 Part 4.23 describes requirements for perforated pipe drains. The perforations should be installed at the bottom of the pipe. The top of the subdrains should be installed at the bottom of the ballast level and extend through the subballast layer into the underlying subgrade, as shown below. The subdrain trench should be lined with filter fabric on all sides and overlapped at least 2 ft at all seams. Requirements for drainage fill materials and drainage geotextiles are provided in the sections above.

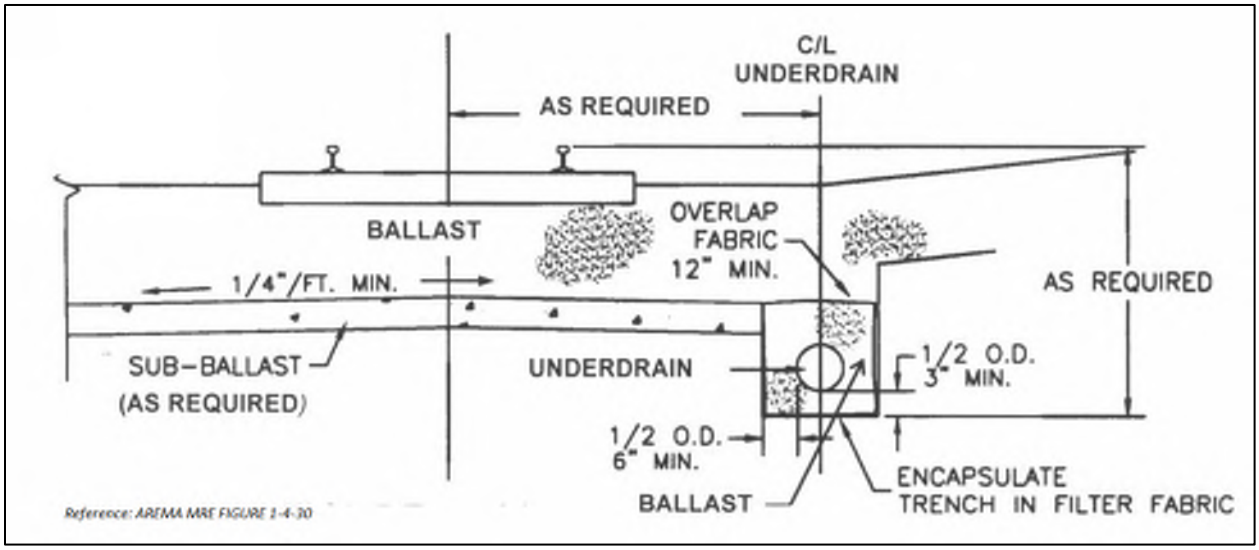

Figure B: Typical Track Underdrain Detail

The track subdrainage should be shown on the project plans. The pipe underdrains require adequate cover to protect the pipe from both temporary construction loads and long-term design live rail loading. Suitable minimum cover limits should be established and incorporated into the plans. Pipe underdrains should be placed on grades steeper than 0.5 percent if possible. AREMA describes that minimum grades of 0.2 percent are acceptable upon engineering review.

Subdrains should drain by gravity to an outlet, sump, or storm sewer. Where the track embankments are supported by retaining walls, we understand that CSXT allows the track underdrains to connect to the planned wall subdrainage at the base of the wall through downspouts. The side drains may collect the water from the cross drains. The subdrain system should be laid out to provide redundant flow paths where possible.

The design and construction of a subdrainage system is not foolproof. System failures may occur due to various causes. Periodic maintenance will be required, including flushing, and possible chemical treatment to flush out soil particles and remove mineral or bacterial deposits that may restrict flow in the

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pipes. Cleanouts should be provided at maximum spacings of 500 ft and should be located at upstream ends of laterals and at critical intersections.

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9.0 TEMPORARY EXCAVATION SUPPORT

Temporary excavation support will be necessary when excavating through the existing railroad corridor; when an excavation encroaches on the *Theoretical Railroad Live Load Influence Zone*; where an excavation could adversely impact the stability of adjacent structures or utilities; when excavating below the street level; or anytime that an excavation cannot be temporarily sloped safely in accordance with OSHA requirements. Temporary excavation support should be designed during construction by a licensed Professional Engineer on behalf of the Contractor in accordance with AREMA and CSXT requirements. When excavations fall within the WMATA ZOI, the temporary excavation support must also conform to the requirements provided in the WMATA ACPM.

The CSXT Public Projects Manual describes that CSXT's preferred shoring system is the cofferdam type that completely encloses the excavation. Where dictated by conditions, partial cofferdams with open sides away from the track may be used. Cofferdams should be constructed using interlocking steel sheet piling, which CSXT requires be used for shoring systems within 18 ft of the nearest track centerline or within the live load influence zone. Where within 18 ft of the track or within the live load influence zone, the sheet piles may not be removed and must be cut off a minimum of 3 ft below finish grade. A minimum horizontal clearance of 10 ft from the centerline of adjacent track to the face of the nearest point of TSOE must be maintained in accordance with CSXT standards. Special permission from CSXT will be necessary to install TSOE closer to the tracks.

Temporary excavation support should generally consist of cantilevered sheet pile walls and braced or anchored sheet pile walls in accordance with CSXT requirements because most excavations are expected within 18 ft of a track, through an existing rail embankment, or within the live load influence zone. The use of trench boxes is prohibited on CSXT property or within the *Theoretical Railroad Live Load Influence Zone*.

WMATA prohibits pile driving within 25 ft horizontally of WMATA structures, which may limit the use of sheet piling at the excavations planned for the widened 7th St Bridge abutments and the 7th St SW entrance structure. Acceptable shoring systems to WMATA for use within the WMATA ZOI are soldier piles and lagging walls, slurry walls, secant pile walls, or tangent pile walls secured in place with bracing members. Special permission will be necessary from CSXT to utilize a shoring system other than sheet piling in areas within 18 ft of an active track and within 25 ft of WMATA structures.

The height of cantilevered sheet pile walls should not exceed 10 ft in accordance with AREMA requirements for shoring adjacent to operating tracks. If taller walls are necessary, they should be supported with anchorage or bracing such as struts or rakers. Walers will be necessary to support the shoring between braces. Existing underground structures and utilities may limit the use of tieback anchors in other areas.

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10.0 ADJACENT STRUCTURES

Existing structures and utilities are present across the project corridor that could be impacted by the proposed construction.

Proposed construction that falls within the WMATA Zone of Influence (ZOI) must be designed and constructed in accordance with the latest WMATA ACPM. Where project elements will fall within the ZOI of WMATA, the design and construction of these elements will be subject to their review and approval.

Much of the proposed construction in the vicinity of the 7th St SW Bridge widening including part of the new 7th St SW entrance structure falls within the WMATA ZOI. The foundations for these structures must extend below the WMATA ZOI to achieve their capacity, consistent with our recommendations herein. The existing retaining wall surrounding the WMATA street-to-mezzanine elevator on 7th St SW will be impacted by the construction and will be modified. Underpinning portions of this retaining wall may be necessary during construction.

We generally do not expect that the proposed construction will negatively impact the WMATA underground facilities where the new foundations are installed below the ZOI, excavations remain above the groundwater table, and grade changes across the site are limited to 2 ft or less.

The pedestrian access ramp from the south side of the existing platform through Hancock Park will be removed, which will need to be coordinated with the National Park Service (NPS). Construction that falls within DDOT ROW should be in accordance with DDOT standards and coordinated with DDOT.

Based on the planned excavation depths and proposed future grades, the adjacent buildings and structures are not expected to require underpinning, except where noted above, provided the temporary shoring is designed in accordance with the recommendations provided in the *Temporary Excavation Support* section.

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11.0 CONSTRUCTION DEWATERING

The Contractor must prevent stormwater and runoff from the platform or street level from entering the excavations. Surface water can be managed and diverted by grading the site, and incorporating berms, trenches, and/or pumping from sumps to divert and control surface water.

The planned excavations are expected to remain above the groundwater table (EL -5 ft); however, the Contractor should anticipate encountering perched groundwater above this level in excavations through both the rail embankment and below the street level. Temporary dewatering of excavations may be necessary if perched water is encountered during construction. Ineffective groundwater control will result in softening of excavation subgrades and the need to remove softened and otherwise unsuitable subgrade materials.

Where excavations remain above EL -5 ft, we expect that localized trenches with sump pits and pumps will provide effective temporary groundwater control during excavation. Where excavations extend below EL -5 ft, well points combined with localized sumping and pumping may be necessary. Discharge of water from construction dewatering will require a Temporary Discharge Authorization Permit from DC Water.

Dewatering systems that drawdown groundwater below EL -5 ft should be designed by an Engineer retained by the Contractor during construction. The dewatering system should be designed to keep groundwater levels a minimum of 2 ft below the bottom of excavations to protect the subgrades. The Contractor should be prepared to address fluctuations and localized increases in groundwater flow.

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12.0 RECOMMENDED ADDITIONAL STUDIES

Additional soil test borings or laboratory testing are not expected to be necessary to advance the project to final design and construction unless there are substantial changes to the proposed construction. However, the geotechnical recommendations provided herein should be updated during final design when the actual loads are established.

If the existing Virginia Avenue SW retaining wall will be braced or reinforced (rather than over-excavating and replacing with lightweight fill), we recommend that test pit explorations are performed along the front the existing Virginia Avenue SW retaining wall to determine the actual foundation depth and bearing elevation. We recommend that approximately six test pits are performed along the wall between 7th St SW and 6th St SW at a typical spacing of about 100 ft along the wall. The test pits may need to extend 10 to 15 ft below the streel level to reach the foundation subgrade. We recommend that vacuum excavation techniques are used to excavate the test pits.

Excavation of the test pits will require temporary removal and replacement of some of the sidewalks and pavement on Virginia Avenue SW. Permits will be required from DDOT to perform the test pits and sidewalk replacement, and it will be necessary to backfill the test pits with compacted structural fill and replace the sidewalks and pavements per DDOT standards.

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13.0 LIMITATIONS

We based the analyses and recommendations submitted in this report on the information revealed by our exploration. We attempted to provide for normal contingencies, but the possibility remains that unexpected conditions may be encountered during construction.

This report has been prepared to aid in the evaluation of this site and to assist in the preliminary design of the project. It is intended for use concerning this specific project. We based our recommendations on information on the site and proposed construction as described in this report. Changes in loads, locations, or grades should be brought to our attention so we can modify our recommendations as needed.

We have endeavored to complete the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions as this project. No other representation, express or implied, is included or intended, and no warranty or guarantee is included or intended in this report or other instrument of service.

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FIGURES

Figure 1: Vicinity Map
Figure 2: Boring Location Plan
Figure 3: Subsurface Profile

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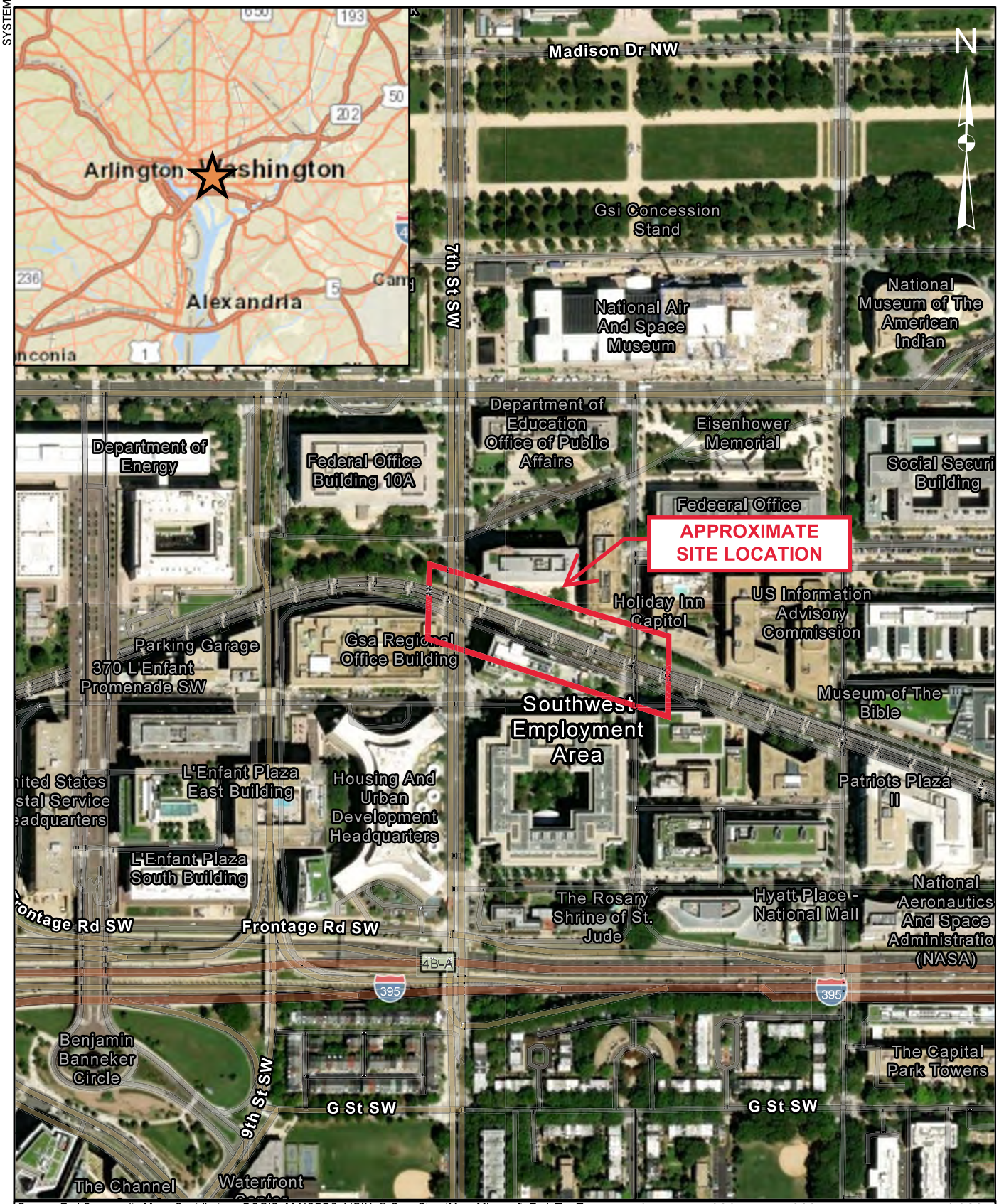

Source: Esri Community Maps Contributors, DCGIS, M-NCPPC, VGIN, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar, Esri, HERE, Garmin, NGA, USGS, NPS
Spatial Reference PCS: WGS 1984 Web Mercator Auxiliary Sphere

0 330 660 1,320 ft

Scale: 1:6,739 1 in =562 ft

Schnabel ENGINEERING

VRE L'ENFANT PLAZA
TRACK & STATION IMPROVEMENTS
WASHINGTON, DC
PROJECT NO. 22120047.000

SITE VICINITY MAP

FIGURE #1

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SYSTEM

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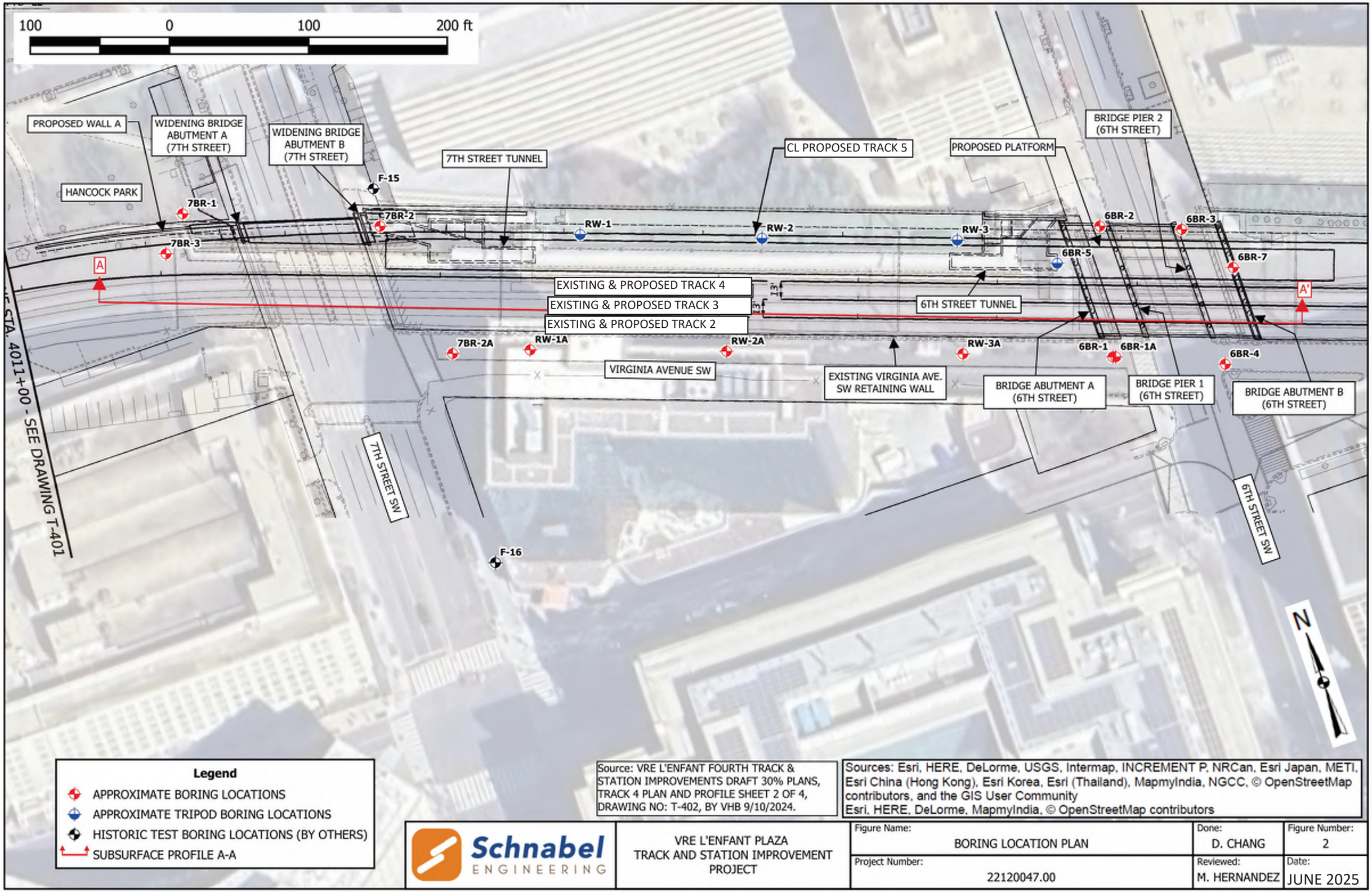

Source: VRE L'ENFANT FOURTH TRACK & STATION IMPROVEMENTS DRAFT 30% PLANS, TRACK 4 PLAN AND PROFILE SHEET 2 OF 4, DRAWING NO: T-402, BY VHB 9/10/2024.

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community
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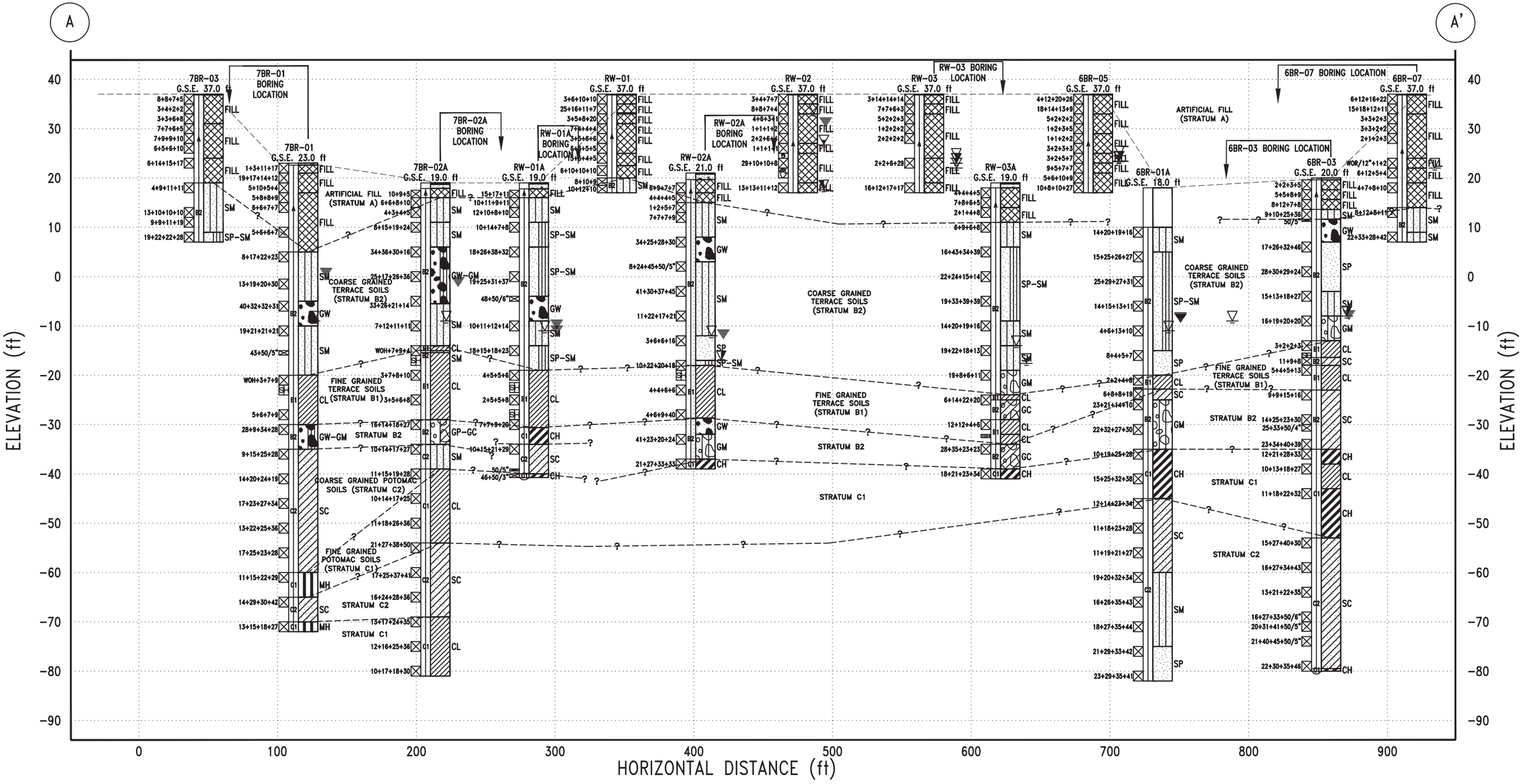
VRE L'ENFANT PLAZA
TRACK AND STATION IMPROVEMENT
PROJECT

Figure Name:	Done:	Figure Number:
BORING LOCATION PLAN	D. CHANG	2
Project Number:	Reviewed:	Date:
22120047.00	M. HERNANDEZ	JUNE 2025



LEGEND

Asphalt	Concrete	Fill (made ground)	SM
SP-SM	SP	CL	SC
GM	CH	GW	Topsoil
GW-GM	MH	GP-GC	GC

Schnabel ENGINEERING

VRE L'Enfant Plaza
Track and Station Improvements

SCALE:
VERTICAL 1" = 20'
HORIZONTAL 1" = 70'

SUBSURFACE PROFILE A-A

PROJECT NO. 22120047.000
FIGURE 3

APPENDIX A

SUBSURFACE EXPLORATION DATA

Subsurface Exploration Procedures
General Notes for Subsurface Exploration Logs
Identification of Soil
Test Boring Logs

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SUBSURFACE EXPLORATION PROCEDURES

Test Borings – Hollow Stem Augers

The borings are advanced by turning an auger with a center opening of 2¼ or 3¼ inches. A plug device blocks off the center opening while augers are advanced. Cuttings are brought to the surface by the auger flights. Sampling is performed through the center opening in the hollow stem auger by standard methods after removal of the plug. Usually, no water is introduced into the boring using this procedure.

Test Borings – Mud Rotary

Drillers advanced the borings using mud rotary drilling techniques below the water table. The boring is advanced with a drill string consisting of a 3⅞-inch diameter tri-cone roller bit attached to A-sized drilled rods. Bentonite drilling fluid is pumped through the drill rods to flush cuttings to the surface. The borehole remains full of drilling fluid to maintain the sides of the borehole. At the designated depth, the drillers removed the drill string and collected a sample using standard methods. Water level data is indicated on the logs.

Test Borings – Tripod

Drillers advanced the borings using continuous flighted augers approximately 3 inches in diameter. Cuttings are brought to the surface by the auger flights. Sampling is performed after removing the augers by standard methods. Usually, no water is introduced into the boring using this procedure.

Standard Penetration Test Results

The Standard Penetration Test (SPT) is performed in the borings at regular depth intervals to collect soil samples. The numbers in the Sampling Data column of the boring logs represent SPT results. Each number represents the blows needed to drive a 2-inch O.D., 1⅜-inch I.D. split-spoon sampler 6 inches, using a 140-pound hammer falling 30 inches. The sampler is typically driven a total of 18 or 24 inches. The first 6 inches are considered a seating interval. The total of the number of blows for the second and third 6-inch intervals is the SPT “N-value.” The Standard Penetration Test is performed according to ASTM D1586.

The SPT samples were obtained using a hydraulically driven automatic trip hammer (ATH). Most correlations with SPT data are based on N-values collected with a safety hammer. The energy applied to the split-spoon sampler using the ATH is about 33 percent greater than that applied using the safety hammer, resulting in lower N-values. The hammer blows shown on the boring logs are uncorrected for the higher energy. However, we correct SPT N-values for the higher energy when using N-values in our analyses.

Undisturbed Sampling

Thin-walled tube samples were collected at selected locations in general accordance with ASTM D 1587. Upon collection, tubes were sealed, labeled for depth, and boring designation. The tube samples were handled in general accordance with ASTM D4220.

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Soil Classification Criteria

The group symbols on the logs represent the Unified Soil Classification System Group Symbols (ASTM D2487) based on visual observation and limited laboratory testing of the samples. Criteria for visual identification of soil samples are included in this appendix. Some variation can be expected between samples visually classified and samples classified in the laboratory.

Disintegrated rock is defined as residual material with SPT N-values between 60 blows per foot and refusal. Refusal is defined as an N-value of 50 blows for a penetration of one inch or less.

Partially weathered rock (PWR) is defined as residual material with SPT Nvalues between 100 blows per foot and refusal. Refusal is defined as an N-value of 50 blows for a penetration of one inch or less.

Pocket Penetrometer Results

The values following “PP=” in the sampling data column of the logs represent pocket penetrometer readings. Pocket penetrometer readings provide an estimate of the unconfined compressive strength of fine-grained soils.

Boring Locations and Elevations

Boring locations were staked by taping from existing site features. Approximate boring locations are shown on Figure 2. Ground surface elevations at the boring locations were obtained from the Existing Conditions Plans (C-102 to C-104) included in the VRE L’Enfant Station 30% Draft Preliminary Engineering Plans dated October 2024 and are indicated on the boring logs. Locations and elevations should be considered no more accurate than the methods used to determine them.

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GENERAL NOTES FOR SUBSURFACE EXPLORATION LOGS

- Numbers in sampling data column next to Standard Penetration Test (SPT) symbols indicate blows required to drive a 2-inch O.D., 1⅜-inch I.D. sampling spoon 6 inches using a 140 pound hammer falling 30 inches. The Standard Penetration Test (SPT) N-value is the number of blows required to drive the sampler 12 inches, after a 6-inch seating interval. The Standard Penetration Test is performed in general accordance with ASTM D1586.
- Visual classification of soil is in accordance with terminology set forth in “Identification of Soil.” The ASTM D2487 group symbols (e.g., CL) shown in the classification column are based on visual observations.
- Estimated water levels indicated on the logs are only estimates from available data and may vary with precipitation, porosity of the soil, site topography, and other factors.
- Refusal at the surface of rock, boulder, or other obstruction is defined as an SPT resistance of 50 blows for 1 inch or less of penetration.
- The logs and related information depict subsurface conditions only at the specific locations and at the particular time when drilled or excavated. Soil conditions at other locations may differ from conditions occurring at these locations. Also, the passage of time may result in a change in the subsurface soil and water level conditions at the subsurface exploration location.
- The stratification lines represent the approximate boundary between soil and rock types as obtained from the subsurface exploration. Some variation may also be expected vertically between samples taken. The soil profile, water level observations and penetration resistances presented on these logs have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.
- Key to symbols and abbreviations:

S-1, SPT	Sample No., Standard Penetration Test
5+10+1	Number of blows in each 6-inch increment

SH-1, SH	Sample No., 2" or 3" Shelby Tube Sample
Rec=24", 100%	Recovery in inches, Percent Recovery

GRAB-1, GRAB	Sample No., Grab Sample
Rec=24", 100%	Disturbed sample from cuttings and/or excess SPT recovery

LL	Liquid Limit
MC	Moisture Content (percent)
PL	Plastic Limit
PP	Pocket Penetrometer Reading (tsf)
%Passing#200	Percent by weight passing a No. 200 Sieve

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IDENTIFICATION OF SOIL

I. DEFINITION OF SOIL GROUP NAMES (ASTM D2487)

			SYMBOL	GROUP NAME
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels – More than 50% of coarse fraction retained on No. 4 sieve Coarse, ¾" to 3" Fine, No. 4 to ¾"	Clean Gravels Less than 5% fines	GW	WELL GRADED GRAVEL
			GP	POORLY GRADED GRAVEL
		Gravels with fines More than 12% fines	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	Sands – 50% or more of coarse Fraction passes No. 4 sieve Coarse, No. 10 to No. 4 Medium, No. 40 to No. 10 Fine, No. 200 to No. 40	Clean Sands Less than 5% fines	SW	WELL GRADED SAND
			SP	POORLY GRADED SAND
		Sands with fines More than 12% fines	SM	SILTY SAND
			SC	CLAYEY SAND
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays – Liquid Limit less than 50 Low to medium plasticity	Inorganic	CL	LEAN CLAY
			ML	SILT
		Organic	OL	ORGANIC CLAY
				ORGANIC SILT
	Silts and Clays – Liquid Limit 50 or more Medium to high plasticity	Inorganic	CH	FAT CLAY
			MH	ELASTIC SILT
		Organic	OH	ORGANIC CLAY
				ORGANIC SILT
Highly Organic Soils	Primarily organic matter, dark in color and organic odor		PT	PEAT

II. DEFINITION OF SOIL COMPONENT PROPORTIONS (ASTM D2487)

			Examples
Adjective Form	GRAVELLY SANDY	>30% to <50% coarse grained component in a fine-grained soil	GRAVELLY LEAN CLAY
	CLAYEY SILTY	>12% to <50% fine grained component in a coarse-grained soil	SILTY SAND
"With"	WITH GRAVEL WITH SAND	>15% to <30% coarse grained component in a fine-grained soil	FAT CLAY WITH GRAVEL
	WITH GRAVEL WITH SAND	>15% to <50% coarse grained component in a coarse-grained soil	POORLY GRADED GRAVEL WITH SAND
	WITH SILT WITH CLAY	>5% to <12% fine grained component in a coarse-grained soil	POORLY GRADED SAND WITH SILT

III. GLOSSARY OF MISCELLANEOUS TERMS

SYMBOLS ..... Unified Soil Classification Symbols are shown above as group symbols. A dual symbol "-" indicates the soil belongs to two groups. A borderline symbol "/" indicates the soil belongs to two possible groups.

FILL ..... Man-made deposit containing soil, rock and often foreign matter.

PROBABLE FILL ..... Soils that contain no visually detected foreign matter but which are suspect with regard to origin.

DISINTEGRATED ROCK (DR) ..... Residual materials with a standard penetration resistance (SPT) between 60 blows per foot and refusal. Refusal is defined as an SPT of 100 blows for 2" or less penetration.

BOULDERS & COBBLES..... Boulders are considered rounded pieces of rock larger than 12 inches, while cobbles range from 3 to 12-inch size.

MOISTURE CONDITIONS..... Wet, moist or dry to indicate visual appearance of specimen.

COLOR..... Overall color, with modifiers such as light to dark or variation in coloration.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-01**
Contract Number: 22120047.000
Sheet: 1 of 1

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger
Hammer Type: Auto Hammer (140 lb)
Dates Started: 10/9/24 **Finished:** 10/9/24
Location: See Location Plan

Ground Surface Elevation: 18± (ft) **Total Depth:** 2.6 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	10/9	---	Dry	---	---
Completion ▼	10/9	---	Dry	---	---
Casing Pulled ▼	10/9	---	Dry	---	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.3	Asphalt; 3.5 inches		17.7					
1.0	Concrete; 8.5 inches		17.0					
	FILL, sampled as sandy lean clay; moist, dark brown, estimated <5% gravel	FILL		A		S-1, SPT 7+6+11+50/1" REC=15", 79%		Fill
2.6			15.4					

Bottom of Boring at 2.6 ft.
Boring backfilled with cuttings upon completion.
Hit obstruction at 2.6 ft; boring was offset 2 ft east.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-01A**
Contract Number: 22120047.000
Sheet: 1 of 4

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: C. Brown
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger and Mud Rotary
Hammer Type: Auto Hammer (140 lb)
Dates Started: 10/9/24 **Finished:** 10/29/24
Location: See Location Plan

Ground Surface Elevation: 18± (ft) **Total Depth:** 100.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	10/9	2:00 PM	29.0'	28.0'	---
End of Day	10/9	2:20 PM	27.2'	28.0'	---
Start of Day	10/22	9:50 AM	27.0'	30.5'	---
Start of Day	10/23	---	Dry	30.5'	22.5'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	Auger probe to 8 ft through vacuumed test pit; boring was vacuumed exacated to a depth of 8 ft to clear utilities. Refer to boring 6BR-1 for soil stratigraphy from 0 to 2.6ft.							
8.0	SILTY SAND WITH GRAVEL, fine to medium grained sand; moist, brown	SM	10.0		10	S-1, SPT 14+20+19+16 REC=24", 100%		Terrace
13.0	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to medium grained sand; moist, brown	SP-SM	5.0	B2	15	S-2, SPT 15+25+26+27 REC=14", 58%		Hard drilling
					20	S-3, SPT 25+29+27+31 REC=24", 100%		
						S-4, SPT 14+15+13+11 REC=24", 100%	LL = NP PI = NP MC = 4.6%	

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-01A**
Contract Number: 22120047.000
Sheet: 2 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to medium grained sand; moist, brown *(continued)*						% Passing #200 = 9.4	
	Change: wet	SP-SM		B2	30	S-5, SPT 4+6+13+10 REC=24", 100%		Installed casing to 30.5 ft; switched to mud rotary
33.0	POORLY GRADED SAND, medium grained sand; wet, yellowish brown, estimated <5% gravel	SP	-15.0		35	S-6, SPT 8+4+5+7 REC=16", 67%		
38.0	LEAN CLAY; moist, brown with bands of orangish brown, estimated 5 - 10% sand, estimated <5% gravel, contains mica	CL	-20.0	B1	40	S-7, SPT 2+2+4+8 REC=24", 100%	PP = 1.00 tsf	
40.8	CLAYEY SAND, fine to coarse grained sand; wet, orangish brown	SC	-22.8			SH-1, SH REC=0", 0%		Shelby tube SH-1 no recovery
						S-8, SPT 6+8+8+19 REC=15", 63%		
43.0	SILTY GRAVEL WITH SAND, fine grained gravel; wet, orangish brown		-25.0			S-9, SPT 23+21+14+10 REC=15", 63%		
					45			Changed drill rig truck on 10/25/24
								Hard drilling
	Change: contains quartz fragments	GM		B2	50	S-10, SPT 22+32+27+30 REC=7", 29%		
53.0	FAT CLAY; moist, dark greenish gray and dark brown		-35.0			S-11, SPT 10+19+25+28 REC=24", 100%	PP >4.50 tsf	Potomac
					55			
	Change: bluish gray with brown	CH		C1		S-12, SPT	PP >4.50 tsf	

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-01A**
Contract Number: 22120047.000
Sheet: 3 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	FAT CLAY; moist, dark greenish gray and dark brown *(continued)*	CH		C1	60	15+25+32+38 REC=24", 100%	PP >4.50 tsf	
63.0	CLAYEY SAND, fine to medium grained sand; moist, bluish gray, contains mica		-45.0		65	S-13, SPT 12+14+23+34 REC=24", 100%		
		SC			70	S-14, SPT 11+18+23+28 REC=24", 100%		
					75	S-15, SPT 11+19+21+27 REC=24", 100%		
78.0	SILTY SAND, fine to coarse grained sand; moist, bluish gray, contains mica		-60.0	C2	80	S-16, SPT 19+20+32+34 REC=24", 100%		
		SM			85	S-17, SPT 16+26+35+43 REC=24", 100%	LL = 34 PI = 8 MC = 24.2% % Passing #200 = 18.7	
	Change: gray				90	S-18, SPT 18+27+35+44 REC=24", 100%		

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-01A**
Contract Number: 22120047.000
Sheet: 4 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
93.0	POORLY GRADED SAND, fine to medium grained sand; moist, gray, estimated <5% clay	SM	-75.0	C2	95	S-19, SPT 21+29+33+42 REC=24", 100%		
		SP						
100.0			-82.0		100	S-20, SPT 23+29+35+41 REC=24", 100%		

Bottom of Boring at 100.0 ft.
Boring backfilled with grout upon completion.
Groundwater readings were taken before switching to mud rotary.
Start of Day groundwater reading on 10/23 was taken after installing casing prior to switching to mud rotary.
Groudwater readings prior to 10/23 were taken through augers.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-02**
Contract Number: 22120047.000
Sheet: 1 of 4

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger and Mud Rotary
Hammer Type: Auto Hammer (140 lb)
Dates Started: 9/19/24 **Finished:** 9/25/24
Location: See Location Plan

Ground Surface Elevation: 20± (ft) **Total Depth:** 100.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	9/19	2:30 PM	28.0'	28.0'	---
Start of Day ▼	9/23	8:50 AM	27.7'	30.5'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.4	Concrete; 5 inches		19.6					
	FILL, sampled as sandy lean clay; moist, dark brown with mottles of black, estimated <5% gravel	FILL		A		S-1, SPT 3+5+7 REC=10", 56%		Fill
2.0	CLAYEY SAND, fine to coarse grained sand; moist, reddish brown with mottles of black	SC	18.0			S-2, SPT 6+9+8+15 REC=12", 50%	LL = 23 PI = 9 MC = 13.1% % Passing #200 = 35.6	Terrace Collected bulk sample from 2 ft to 6 ft.
4.0	SILTY SAND WITH GRAVEL, fine to medium grained sand; moist, reddish brown	SM	16.0		5	S-3, SPT 4+8+6+8 REC=12", 50%		Rig chattering from 5 ft to 30 ft
6.0	CLAYEY SAND WITH GRAVEL, fine to coarse grained sand; moist, reddish brown	SC	14.0			S-4, SPT 12+14+21+33 REC=18", 75%		
8.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, light orangish brown		12.0			S-5, SPT 19+36+50/5" REC=17", 100%	MC = 3.6% Resistivity = 13000 Ohms-cm Redox = 273 mv Sulfides = ND pH = 7.6 Sulfates = ND Chlorides = ND	
	Change: contains quartz fragments			B2	10	S-6, SPT 14+23+19+29 REC=24", 100%	MC = 1.8%	
		SM			15			
					20	S-7, SPT 14+24+21+32 REC=24", 100%		
23.0	SILTY SAND, medium grained sand; moist, orangish brown, contains quartz fragments	SM	-3.0			S-8, SPT 16+16+10+14 REC=24", 100%		

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-02**
Contract Number: 22120047.000
Sheet: 2 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND, medium grained sand; moist, orangish brown, contains quartz fragments *(continued)*	SM						
28.0	SILTY GRAVEL WITH SAND, fine grained gravel; wet, orangish brown	GM	-8.0	B2	30	S-9, SPT 14+17+16+19 REC=18", 75%		Switched to mud rotary. Installed casing to 30.5 ft. Rig chattering
33.0	SANDY LEAN CLAY; wet, brownish gray	CL	-13.0	B1	35	S-10, SPT 4+2+7+10 REC=19", 79%	PP = 1.00 tsf	Sample S-10 collected as S-10A and S-10B.
34.5	CLAYEY GRAVEL WITH SAND, fine grained gravel; wet, orangish brown	GC	-14.5	B2				
38.0	SANDY LEAN CLAY; wet, gray, contains mica	CL	-18.0	B1	40	S-11, SPT 2+3+3+4 REC=20", 83%	PP = 0.50 tsf	
40.5	CLAYEY SAND, fine to coarse grained sand; moist, grayish brown	SC	-20.5	B2		SH-1, SH REC=7", 70%		Rig chattering
43.0	SILTY SAND, fine to coarse grained sand; wet, yellowish brown	SM	-23.0		45	S-12, SPT 21+20+9+9 REC=24", 100%		Sample S-12 collected as S-12A and S-12B.
44.7	SANDY ELASTIC SILT; moist, gray, contains mica, and wood fragments	MH	-24.7	B1				Rig chattering
48.0	SILTY GRAVEL WITH SAND, fine grained gravel; wet, brown and gray	GM	-28.0	B2		S-13, SPT 19+34+38+35 REC=17", 71%		
49.8	FAT CLAY; moist, greenish brown, contains mica	CH	-29.8	C1	50		PP = 3.50 tsf	Potomac
	Change: bluish gray with bands of brown				55	S-14, SPT 18+24+26+34 REC=6", 25%	MC = 33.0% PP = 1.50 tsf	
58.0		MH	-38.0			S-15, SPT	PP = 1.00 tsf	

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-02**
Contract Number: 22120047.000
Sheet: 3 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SANDY ELASTIC SILT; moist, bluish gray, contains mica *(continued)*	MH		C1	60	9+14+15+28 REC=24", 100%	PP = 1.00 tsf	
63.0	SILTY SAND, fine grained sand; moist, bluish gray, contains mica, estimated <5% gravel		-43.0		65	S-16, SPT 13+15+17+24 REC=24", 100%		
					70	S-17, SPT 14+15+19+25 REC=24", 100%		
		SM			75	S-18, SPT 13+20+20+31 REC=24", 100%	LL = 56 PI = 19 MC = 30.2% % Passing #200 = 43.1	
	Change: fine to medium grained sand			C2	80	S-19, SPT 16+22+25+38 REC=24", 100%		
					85	S-20, SPT 13+18+17+40 REC=24", 100%	MC = 32.5%	
88.0	CLAYEY SAND, fine to medium grained sand; wet, gray	SC	-68.0		90	S-21, SPT 16+31+39+47 REC=24", 100%	LL = 43 PI = 19 MC = 20.9% % Passing #200 = 18.6	

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-02**
Contract Number: 22120047.000
Sheet: 4 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND, fine to medium grained sand; wet, gray *(continued)*	SC		C2	95	S-22, SPT 19+27+33+40 REC=24", 100%	LL = 43 PI = 19 MC = 20.9% % Passing #200 = 18.6	
						S-23, SPT 22+30+36+41 REC=24", 100%		
100.0			-80.0		100			

Bottom of Boring at 100.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Start of day groundwater readings may be affected by drilling fluids.
Groundwater reading at completion and casing pulled may be affected by drilling mud and were not recorded.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-03**
Contract Number: 22120047.000
Sheet: 1 of 4

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger and Mud Rotary
Hammer Type: Auto Hammer (140 lb)
Dates Started: 9/10/24 **Finished:** 9/19/24
Location: See Location Plan

Ground Surface Elevation: 20± (ft) **Total Depth:** 100.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	9/10	2:45 PM	29.0'	28.0'	---
Start of Day	9/11	11:05 AM	28.6'	30.0'	---
Completion	9/19	9:30 AM	28.0'	30.0'	81.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.4	Concrete 4.5-inches, black plastic sheet underneath		19.6			SS S-1, SPT 2+2+3+5 REC=24", 100%	MC = 11.8% Resistivity = 1400 Ohms-cm Redox = 119 mv Sulfides = ND pH = 7.2 Sulfates = 460 mg-kg Chlorides = 27.6 mg-kg	Fill Collected bulk sample from 0 ft to 5 ft.
	FILL, sampled as fat clay with sand; moist, brown with mottles of black	FILL						
2.4	FILL, sampled as sandy lean clay; moist, brown with mottles of black	FILL	17.6	A		S-2, SPT 5+5+8+9 REC=24", 100%		
4.4	FILL, sampled as silty sand with gravel, fine to medium grained sand; moist, brown, trace clay	FILL	15.6		5	S-3, SPT 8+12+7+8 REC=12", 50%	PP = 1.50 tsf PP = 2.00 tsf LL = 32 PI = 11 MC = 18.6% % Passing #200 = 55.8	
6.4	SILTY SAND WITH GRAVEL, fine to medium grained sand; moist, brown, contains quartz fragments	SM	13.6			S-4, SPT 9+10+25+36 REC=24", 100%		Terrace Rig chattering; boulders
8.4	WELL GRADED GRAVEL WITH SAND, fine grained gravel; moist, light gray, contains rock fragments	GW	11.6			S-5, SPT 50/5" REC=3", 60%	MC = 8.7%	
13.0	POORLY GRADED SAND WITH GRAVEL, fine to coarse grained sand; moist, brown, estimated <5% silt	SP	7.0	B2	10	S-6, SPT 17+26+32+46 REC=24", 100%		
	Change: contains quartz fragments				15	S-7, SPT 28+30+29+24 REC=18", 75%		
23.0	SILTY SAND, fine to medium grained sand; moist, orangish brown	SM	-3.0		20	S-8, SPT 15+13+18+27 REC=13", 54%		

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-03**
Contract Number: 22120047.000
Sheet: 2 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND, fine to medium grained sand; moist, orangish brown *(continued)*	SM						
28.0	SILTY GRAVEL WITH SAND, fine grained gravel; wet, orangish brown	GM	-8.0	B2	30	S-9, SPT 16+19+20+20 REC=16", 67%		
33.0	SANDY LEAN CLAY; wet, gray, contains mica	CL	-13.0	B1	35	S-10, SPT 3+2+2+3 REC=24", 100%	PP = 0.25 tsf	Switched to mud rotary; installed casing to 30 ft.
						SH-1, SH REC=4", 36%	PP = 0.50 tsf	Soil sliding out of tube during extraction
36.4	CLAYEY SAND WITH GRAVEL, fine to coarse grained sand; wet, yellowish brown with gray	SC	-16.4	B2		S-11, SPT 11+9+8 REC=6", 33%		Rig chattering
38.0	SANDY LEAN CLAY; wet, gray, estimated 5 - 10% gravel, contains mica Change: yellowish brown	CL	-18.0	B1	40	S-12, SPT 5+4+5+13 REC=18", 75%	PP = 0.50 tsf	
43.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; wet, reddish brown	SM	-23.0	B2	45	S-13, SPT 9+9+15+16 REC=12", 50%	LL = 32 PI = 12 MC = 15.9% % Passing #200 = 44.0 PP = 1.00 tsf	Rig chattering
					50	S-14, SPT 14+25+23+30 REC=0", 0%		Sample S-14 not representative; piece of gravel blocked spoon.
						S-15, SPT 25+33+50/4" REC=2", 13%		Rig chattering; losing mud
						S-16, SPT 23+34+40+39 REC=0", 0%		No recovery
55.0	FAT CLAY; moist, greenish gray with mottles of brown, estimated <5% sand	CH	-35.0	C1	55	S-17, SPT 12+21+28+33 REC=24", 100%	PP >4.50 tsf	Potomac
58.0		CL	-38.0			S-18, SPT	PP >4.50 tsf	

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-03**
Contract Number: 22120047.000
Sheet: 3 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SANDY LEAN CLAY; greenish gray, contains mica *(continued)*	CL			60	10+13+18+27 REC=24", 100%	PP >4.50 tsf	
63.0	SANDY FAT CLAY; greenish gray, contains mica	CH	-43.0	C1	65	S-19, SPT 11+18+22+32 REC=24", 100%	PP >4.50 tsf	68-70ft sample skipped by mistake
73.0	CLAYEY SAND, fine to medium grained sand; moist, greenish gray, contains mica	SC	-53.0	C2	70			
					75	S-20, SPT 15+27+40+30 REC=24", 100%		
					80	S-21, SPT 16+27+34+43 REC=20", 83%		
					85	S-22, SPT 13+21+22+35 REC=24", 100%	LL = 62 PI = 32 MC = 28.1% % Passing #200 = 21.4	
	Change: gray				90	S-23, SPT 16+27+33+50/6" REC=0", 0%		
						S-24, SPT 20+31+41+50/5" REC=23", 100%		

(continued)

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Schnabel ENGINEERING

TEST BORING LOG

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-03**
Contract Number: 22120047.000
Sheet: 4 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND, fine to medium grained sand; moist, greenish gray, contains mica *(continued)*	SC		C2	95	S-25, SPT 21+40+45+50/5" REC=13", 57%		
						S-26, SPT 22+30+35+46 REC=16", 67%		
99.5 100.0	FAT CLAY; moist, bluish gray	CH	-79.5 -80.0	C1	100		PP >4.50 tsf	

Bottom of Boring at 100.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Encountered and Start of Day groundwater readings were taken prior to switching to mud rotary.
Completion groundwater reading may be affected by drilling fluids.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-04**
Contract Number: 22120047.000
Sheet: 1 of 4

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: K. Salas
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger and Mud Rotary
Hammer Type: Auto Hammer (140 lb)
Dates Started: 11/7/24 **Finished:** 11/15/24
Location: See Location Plan

Ground Surface Elevation: 18± (ft) **Total Depth:** 100.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	11/7	12:25 PM	23.5'	23.0'	---
Completion ▼	11/15	11:55 AM	3.5'	20.5'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.8	Asphalt; 9.5 inches		17.2					
	Auger probe to 8 ft through vacuumed test pit; boring was vacuumed exacated to a depth of 8 ft to clear utilities. ▼							
8.0	FILL, sampled as silty sand with gravel, fine to coarse grained sand; moist, brown	FILL	10.0	A	10	S-1, SPT 15+50+45+42 REC=6", 25%	LL = NP PI = NP MC = 3.7% % Passing #200 = 15.3	Fill
13.0	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained sand; moist, brown and yellowish brown	SP-SM	5.0	B2	15	S-2, SPT 14+22+25+32 REC=22", 92%	LL = NP PI = NP MC = 3.0% % Passing #200 = 9.0	Terrace
					20	S-3, SPT 17+28+50+39 REC=24", 100%		
23.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, brown ▽ Change: wet, brown and yellowish brown	SM	-5.0			S-4, SPT 27+42+32+29 REC=20", 83%		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-04**
Contract Number: 22120047.000
Sheet: 2 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, brown *(continued)*	SM						Switched to mud rotary at 25 ft, installed casing to 20.5 ft.
28.0	CLAYEY SAND, fine to coarse grained sand; wet, orangish brown, estimated 10 - 15% gravel	SC	-10.0	B2	30	S-5, SPT 15+20+29+18 REC=12", 50%		
33.0	SANDY LEAN CLAY; wet, orangish brown	CL	-15.0	B1	35	S-6, SPT 10+17+13+15 REC=21", 88%	PP >4.50 tsf	
	Change: orangish brown with mottles of black				40	S-7, SPT 7+9+25+13 REC=19", 79%	PP >4.50 tsf	
	Change: orangish brown and light reddish brown				45	S-8, SPT WOH+11+7+19 REC=24", 100%	PP = 3.00 tsf	
48.0	CLAYEY SAND WITH GRAVEL, fine to coarse grained sand; wet, light reddish brown and orangish brown	SC	-30.0	B2	50	S-9, SPT 18+14+15+20 REC=12", 50%		
53.0	CLAYEY SAND, fine to coarse grained sand; wet, dark brown	SC	-35.0	C2	55	S-10, SPT 7+15+25+30 REC=24", 100%	LL = 48 PI = 31 MC = 20.0% % Passing #200 = 39.1	Potomac
						S-11, SPT		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-04**
Contract Number: 22120047.000
Sheet: 3 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND, fine to coarse grained sand; wet, dark brown *(continued)*	SC			60	15+22+27+40 REC=18", 75%	LL = 48 PI = 31 MC = 20.0% % Passing #200 = 39.1	
63.0	POORLY GRADED GRAVEL WITH SILT, fine to coarse grained sand; wet, grayish brown, contains mica, and gravel		-45.0		65	S-12, SPT 12+17+18+31 REC=24", 100%		
					70	S-13, SPT 10+19+24+36 REC=24", 100%		
		SP-SM		C2	75	S-14, SPT 13+23+32+46 REC=24", 100%	LL = 38 PI = 12 MC = 32.0% % Passing #200 = 7.4	
					80	S-15, SPT 13+19+32+48 REC=24", 100%		
	Change: yellowish gray and olive gray				85	S-16, SPT 13+27+42+50/5" REC=17", 74%		
	Change: light gray and brownish gray				90	S-17, SPT 15+25+33+46 REC=20", 83%		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-04**
Contract Number: 22120047.000
Sheet: 4 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	POORLY GRADED GRAVEL WITH SILT, fine to coarse grained sand; wet, grayish brown, contains mica, and gravel *(continued)*							
		SP-SM		C2	95	S-18, SPT 16+25+36+47 REC=16", 67%		
						S-19, SPT 22+28+34+43 REC=16", 67%		
100.0			-82.0		100			

Bottom of Boring at 100.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Encountered groundwater reading was taken prior to switching to mud rotary.
Completion groundwater reading may be affected by drilling fluids.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-05**
Contract Number: 22120047.000
Sheet: 1 of 1

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: H. Lyon
Schnabel Representative: D. Chang-Ramirez
Equipment: Tripod Drilling Equipment
Method: Tripod with portable cathead
Hammer Type: Safety Hammer (140 lb)
Dates Started: 8/13/24 **Finished:** 8/13/24
Location: See Location Plan

Ground Surface Elevation: 37± (ft) **Total Depth:** 20.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	8/13	1:30 PM	12.5'	---	---
Completion ▽	8/13	2:10 PM	13.7'	---	19.7'
After Drilling ▼	8/14	7:07 AM	13.6'	---	18.6'
After Drilling ▼	8/14	2:04 PM	13.6'	---	18.3'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Topsoil; Grass; 2 inches		36.8			S-1, SPT 4+12+20+26 REC=24", 100%		Fill
	FILL, sampled as silty sand, fine to coarse grained sand; moist, black, contains brick fragments, root fragments, and slag	FILL				S-2, SPT 18+14+13+9 REC=24", 100%	LL = 39 PI = 8 MC = 21.3% % Passing #200 = 30.9	Recovery collected from 3-inch spoon.
4.0	FILL, sampled as gravelly fat clay with sand; moist, dark brown and black, contains brick fragments	FILL	33.0		5	S-3, SPT 5+2+2+2 REC=24", 100%	PP = 0.50 tsf	Recovery collected from 3-inch spoon. Noted 3-inch piece of gravel inside 3-inch spon.
						S-4, SPT 1+2+3+5 REC=24", 100%	PP = 0.50 tsf	
8.0	FILL, sampled as sandy lean clay; moist, dark brown with black, estimated 5 - 10% gravel, contains rock fragments	FILL	29.0	A	10	S-5, SPT 1+1+2+2 REC=12", 50%	LL = 28 PI = 10 MC = 20.0% % Passing #200 = 50.4	Recovery collected from 3-inch spoon.
						S-6, SPT 3+2+3+3 REC=0", 0%	PP = 1.00 tsf	
12.0	FILL, sampled as silty sand, fine to coarse grained sand; moist, black ▽ ▼	FILL	25.0			S-7, SPT 3+2+5+7 REC=12", 50%		Possible perched water
14.0	FILL, sampled as silty gravel with sand, fine grained gravel; moist, black	FILL	23.0		15	S-8, SPT 9+5+7+7 REC=3", 13%		
16.0	FILL, sampled as sandy fat clay; moist, orangish brown and dark brown	FILL	21.0			S-9, SPT 5+6+10+9 REC=7", 29%	PP = 1.00 tsf	
						S-10, SPT 10+8+10+27 REC=0", 0%		No recovery; attempted second spoon but recovery not representative.
20.0			17.0		20			

Bottom of Boring at 20.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-07**
Contract Number: 22120047.000
Sheet: 1 of 2

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger
Hammer Type: Auto Hammer (140 lb)
Dates Started: 8/20/24 **Finished:** 8/20/24
Location: See Location Plan

Ground Surface Elevation: 37± (ft) **Total Depth:** 30.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	8/20	9:50 AM	15.0'	13.0'	---
Completion ▽	8/20	1:30 PM	Dry	28.0'	---
Casing Pulled ▽	8/20	1:45 PM	Dry	---	2.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Topsoil; 2 inches		36.8					
	FILL, sampled as silty gravel with sand, fine to coarse grained gravel; moist, black Change: contains brick fragments, and clay pockets	FILL				S-1, SPT 6+12+16+22 REC=24", 100% S-2, SPT 15+18+12+11 REC=12", 50%		Fill Collected bulk sample from 0 ft to 4 ft.
4.0	FILL, sampled as sandy lean clay; moist, orangish brown and black, contains brick fragments, estimated 5 - 10% gravel	FILL	33.0	A	5 10	S-3, SPT 3+3+2+3 REC=20", 83% S-4, SPT 3+3+2+2 REC=24", 100% S-5, SPT 2+1+2+3 REC=17", 71%	PP = 1.20 tsf LL = 28 PI = 10 MC = 20.6% % Passing #200 = 56.9 PP = 1.00 tsf MC = 20.2% % Passing #200 = 56.9 PP = 0.50 tsf Resistivity = 8600 Ohms-cm Redox = 244 mv Sulfides = ND pH = 7.42 Sulfates = 13.3 mg-kg Chlorides = ND	
13.0	FILL, sampled as silty gravel with sand, fine grained gravel; moist, black, contains brick fragments	FILL	24.0			S-6, SPT WOR/12"+1+2 REC=6", 25%		
15.0 ▽	FILL, sampled as silty sand with gravel, fine to medium grained sand; moist, brown, contains brick fragments	FILL	22.0		15	S-7, SPT 6+12+5+4 REC=8", 33%		Possible perched water
18.0	FILL, sampled as sandy lean clay; moist, orangish brown, estimated <5% gravel, contains rock fragments	FILL	19.0		20	S-8, SPT 4+7+8+10 REC=13", 54%	LL = 36 PI = 15 MC = 18.5% % Passing #200 = 60.6 PP = 1.00 tsf	
23.0	SILTY SAND, fine to coarse grained sand; moist, orangish brown, estimated <5% gravel	SM	14.0	B2		S-9, SPT 8+12+8+11 REC=18", 75%		Hard drilling; rig chattering Terrace

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **6BR-07**
Contract Number: 22120047.000
Sheet: 2 of 2

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND, fine to coarse grained sand; moist, orangish brown, estimated <5% gravel *(continued)*	SM		B2			LL = NP PI = NP MC = 9.7% % Passing #200 = 22.9	Hard drilling; rig chattering
28.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, orangish brown, contains quartz fragments	SM	9.0		30	S-10, SPT 22+33+28+42 REC=19", 79%		
30.0			7.0					

Bottom of Boring at 30.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-01**
Contract Number: 22120047.000
Sheet: 1 of 4

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger and Mud Rotary
Hammer Type: Auto Hammer (140 lb)
Dates Started: 9/26/24 **Finished:** 10/4/24
Location: See Location Plan

Ground Surface Elevation: 23± (ft) **Total Depth:** 95.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	9/26	1:11 PM	32.0'	33.0'	---
Start of Day	9/30	9:40 AM	23.0'	33.0'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.4	Topsoil; grass; 5-inches		22.6			S-1, SPT 1+3+11+17 REC=18", 75%		Fill Rig chattering from 0 ft to 13 ft.
	FILL, sampled as well graded gravel with sand, fine grained gravel; moist, brown, estimated <5% silt	FILL						
2.0			21.0			S-2, SPT 19+17+14+12 REC=14", 58%	LL = 24 PI = 7 MC = 4.0% % Passing #200 = 34.8	
	FILL, sampled as silty, clayey sand with gravel, fine to coarse grained sand; moist, brown, contains brick fragments, and root fragments	FILL				S-3, SPT 5+10+5+4 REC=14", 58%		
6.0			17.0		5			
	PROBABLE FILL, sampled as silty sand, fine to medium grained sand; moist, orangish brown with mottles of black					S-4, SPT 5+8+8+9 REC=21", 88%		
				A		S-5, SPT 6+6+7+7 REC=24", 100%	LL = NP PI = NP MC = 7.7% % Passing #200 = 31.1	
		FILL			10			
						S-6, SPT 5+6+6+7 REC=20", 83%		
					15			
18.0	SILTY SAND WITH GRAVEL, medium to coarse grained sand; moist, orangish brown, contains quartz fragments		5.0			S-7, SPT 8+17+22+23 REC=19", 79%	MC = 3.0% Resistivity = 21000 Ohms-cm Redox = 298 mv Sulfides = ND pH = 6.3 Sulfates = 15.3 mg-kg Chlorides = ND	Terrace
		SM		B2	20			
						S-8, SPT 13+19+20+30 REC=16", 67%		

(continued)

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TEST BORING LOG

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: 7BR-01
Contract Number: 22120047.000
Sheet: 2 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND WITH GRAVEL, medium to coarse grained sand; moist, orangish brown, contains quartz fragments *(continued)*	SM						
28.0	WELL GRADED GRAVEL WITH SAND, fine grained gravel; moist, light brown, contains rock fragments	GW	-5.0			S-9, SPT 40+32+32+31 REC=5", 21%		Rig chattering; hard drilling
					30			
33.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; wet, yellowish brown		-10.0	B2		S-10, SPT 19+21+21+21 REC=12", 50%		Installed 33 ft of casing
					35			Switched to mud rotary
	Change: contains clay pockets	SM				S-11, SPT 43+50/5" REC=7", 64%	LL = NP PI = NP MC = 5.0% % Passing #200 = 18.6	Rig chattering; hard drilling
					40			
43.0	LEAN CLAY; moist, gray, contains sand, and wood, and organics, and mica		-20.0			S-12, SPT WOH+3+7+9 REC=24", 100%	PP = 0.50 tsf	
					45	SH-1, SH REC=24", 100%	LL = 38 PI = 18 MC = 24.1% % Passing #200 = 98.2 PP = 0.75 tsf	
		CL		B1				
	Change: est 10-15 % sand, no wood fragments, no organics				50	S-13, SPT 5+6+7+9 REC=24", 100%	PP = 1.00 tsf	
53.0	WELL GRADED GRAVEL WITH SILT AND SAND, fine to coarse grained gravel; wet, grayish brown		-30.0			S-14, SPT 28+9+34+28 REC=8", 33%		Rig chattering; hard drilling
		GW-GM		B2	55			
58.0		SC	-35.0	C2		S-15, SPT		Potomac

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: 7BR-01
Contract Number: 22120047.000
Sheet: 3 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND, fine to medium grained sand; moist, greenish gray, contains mica *(continued)*				60	9+15+25+28 REC=16", 67%		
	Change: gray				65	S-16, SPT 14+20+24+19 REC=24", 100%	LL = 36 PI = 13 MC = 26.3% % Passing #200 = 16.3	
					70	S-17, SPT 17+23+27+34 REC=24", 100%		
		SC		C2	75	S-18, SPT 13+22+25+36 REC=24", 100%		
					80	S-19, SPT 17+25+23+28 REC=24", 100%		
83.0	ELASTIC SILT WITH SAND; moist, greenish gray	MH	-60.0	C1	85	S-20, SPT 11+15+22+29 REC=24", 100%	PP >4.50 tsf	
88.0	CLAYEY SAND, fine to medium grained sand; moist, gray	SC	-65.0	C2	90	S-21, SPT 14+29+30+42 REC=24", 100%		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-01**
Contract Number: 22120047.000
Sheet: 4 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
93.0		SC	-70.0	C2				
	SANDY ELASTIC SILT; moist, gray	MH		C1	95	S-22, SPT 13+15+18+27 REC=24", 100%		
95.0			-72.0					

Bottom of Boring at 95.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Start of Day groundwater reading on 9/30/24 may be affected by drilling fluids.
Encountered groundwater reading was taken before switching to mud rotary.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-02**
Contract Number: 22120047.000
Sheet: 1 of 1

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: M. Dulliam
Schnabel Representative: D. Chang-Ramirez
Equipment: Air Vacuum
Method:
Hammer Type:
Dates Started: 8/26/24 **Finished:** 8/26/24
Location: See Location Plan

Ground Surface Elevation: 19± (ft) **Total Depth:** 8.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	8/26	---	Dry	---	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.4	Topsoil; 5 inches		18.6					
	FILL, sampled as poorly graded sand with silt and gravel, medium grained sand; moist, orangish brown	FILL		A		GRAB-1, GRAB REC=24", 100%		Fill Bulk sample collected from 0 ft to 5 ft.
	Change: trace brick fragments					GRAB-2, GRAB REC=24", 100%		
	Change: contains wood fragments, no brick fragments				5	GRAB-3, GRAB REC=24", 100%		
						GRAB-4, GRAB REC=24", 100%		
8.0			11.0					

Bottom of Boring at 8.0 ft.
Boring backfilled with cuttings upon completion.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-02A**
Contract Number: 22120047.000
Sheet: 1 of 4

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez / K. Salas
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger and Mud Rotary
Hammer Type: Auto Hammer (140 lb)
Dates Started: 10/31/24 **Finished:** 11/6/24
Location: See Location Plan

Ground Surface Elevation: 19± (ft) **Total Depth:** 100.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	10/31	1:00 PM	28.0'	28.0'	---
Start of Day ▼	11/1	10:20 AM	Dry	---	18.0'
Start of Day ▼	11/4	9:55 AM	20.9'	30.5'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.3	Asphalt; 3.5 inches		18.7					
1.1	Concrete; 10 inches		17.9					
	FILL, sampled as silty sand with gravel, fine to coarse grained sand; moist, brown, contains quartz fragments	FILL		A		S-1, SPT 10+9+5 REC=15", 83%	MC = 7.8% Resistivity = 1900 Ohms-cm Redox = 101 mv Sulfides = ND pH = 8 Sulfates = 64.3 mg-kg Chlorides = 68.4 mg-kg	Fill
3.0	SILTY SAND, fine to medium grained sand; moist, brown		16.0			S-2, SPT 6+6+8+10 REC=12", 50%		Terrace
		SM			5	S-3, SPT 4+3+4+5 REC=24", 100%		
8.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, brown with mottles of black, contains quartz fragments		11.0			S-4, SPT 8+15+19+24 REC=24", 100%		
		SM			10			Hard drilling
13.0	WELL GRADED GRAVEL WITH SILT AND SAND, fine to coarse grained gravel; moist, light gray, contains rock fragments, and quartz		6.0	B2		S-5, SPT 34+36+30+16 REC=12", 50%	LL = NP PI = NP MC = 0.1% % Passing #200 = 8.8	
					15			Rig chattering
		GW-GM				S-6, SPT 25+17+26+36 REC=20", 83%		
					20			Rig chattering; hard drilling
						S-7, SPT 33+26+21+14 REC=10", 42%		Sample S-7 collected as S-7A and S-7B
24.5		SM	-5.5					

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-02A**
Contract Number: 22120047.000
Sheet: 2 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, yellowish brown, contains clay pockets *(continued)*							
	Change: wet	SM		B2	30	S-8, SPT 7+12+11+11 REC=24", 100%		Switched to mud rotary; installed casing to 30.5 ft.
33.0	LEAN CLAY; moist, dark gray, estimated 5 - 10% sand, contains organics, and mica	CL	-14.0	B1		S-9, SPT WOH+7+9+4 REC=24", 100%	PP = 1.00 tsf	Sample S-9 collected as S-9A, S-9B and S-9C
34.0		SM	-15.0	B2				
34.4	SILTY SAND, fine to medium grained sand; moist, yellowish red		-15.4		35	SH-1, SH REC=24", 100%	PP = 0.75 tsf	
	LEAN CLAY; moist, dark gray, estimated <5% sand, contains organics, and mica							
	Change: wet, estimated 10 - 15% sand					S-10, SPT 3+7+8+10 REC=24", 100%		
		CL		B1	40			
	Change: estimated 5 - 10% sand					S-11, SPT 3+5+6+8 REC=24", 100%		
48.0	POORLY GRADED GRAVEL WITH CLAY AND SAND, fine to coarse grained gravel; wet, dark gray		-29.0		45			
		GP-GC		B2		S-12, SPT 16+14+18+27 REC=14", 58%		
53.0	SILTY SAND, fine to medium grained sand; moist, dark grayish green		-34.0		50			
		SM		C2		S-13, SPT 10+14+17+27 REC=20", 83%		Potomac
58.0		SC	-39.0		55			
						S-14, SPT	PP >4.50 tsf	

(continued)

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Schnabel ENGINEERING TEST BORING LOG	Project: VRE L'Enfant Plaza Track and Station Improvements Washington, Washington, D.C.	Boring Number: **7BR-02A** Contract Number: 22120047.000 Sheet: 3 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND WITH GRAVEL, fine to coarse grained sand; moist, gray *(continued)*				60	11+15+19+28 REC=24", 100%	PP >4.50 tsf	
	Change: wet, olive gray	SC			65	S-15, SPT 10+14+17+25 REC=22", 92%	LL = 44 PI = 24 MC = 26.4% % Passing #200 = 14.0 PP >4.50 tsf	
					70	S-16, SPT 11+18+26+36 REC=24", 100%	PP >4.50 tsf	
73.0	CLAYEY SAND, fine to medium grained sand; wet, olive gray and gray		-54.0		75	S-17, SPT 21+27+38+50 REC=24", 100%		
		SC		C2	80	S-18, SPT 17+25+37+41 REC=24", 100%		
					85	S-19, SPT 16+24+28+36 REC=24", 100%		
88.0	CLAYEY SAND, fine to coarse grained sand; wet, gray, contains mica, and gravel	SC	-69.0		90	S-20, SPT 13+17+24+35 REC=24", 100%	LL = 35 PI = 15 MC = 24.8% % Passing #200 = 14.4 PP >4.50 tsf	

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-02A**
Contract Number: 22120047.000
Sheet: 4 of 4

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND, fine to coarse grained sand; wet, gray, contains mica, and gravel *(continued)*	SC		C2	95	S-21, SPT 12+16+25+36 REC=24", 100%	LL = 35 PI = 15 MC = 24.8% % Passing #200 = 14.4 PP >4.50 tsf PP >4.50 tsf	
100.0			-81.0		100	S-22, SPT 10+17+18+30 REC=24", 100%	PP = 4.50 tsf	

Bottom of Boring at 100.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Start of day groundwater reading on 11/1/24 was recorded after removing augers and before installing casing.
Start of day groundwater reading on 11/4/24 may be affected by drilling fluids.
Groundwater reading at completion and casing pulled may be affected by drilling mud and were not recorded.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-03**
Contract Number: 22120047.000
Sheet: 1 of 2

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger
Hammer Type: Auto Hammer (140 lb)
Dates Started: 8/21/24 **Finished:** 8/21/24
Location: See Location Plan

Ground Surface Elevation: 37± (ft) **Total Depth:** 30.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	8/21	---	Dry	---	---
Completion ▼	8/21	---	Dry	28.0'	---
Casing Pulled ▼	8/21	---	Dry	---	10.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Topsoil; 2 inches		36.8					
	FILL, sampled as silty gravel with sand, fine to coarse grained gravel; moist, brown	FILL				S-1, SPT 8+8+7+5 REC=12", 50%		Fill Attempted to collect bulk sample from 0 ft to 5 ft with no return.
						S-2, SPT 3+4+2+2 REC=2", 8%		
					5	S-3, SPT 3+3+6+8 REC=3", 13%		
6.0	FILL, sampled as silty sand with gravel, fine to coarse grained sand; moist, brown, estimated <5% clay		31.0			S-4, SPT 7+7+6+5 REC=10", 42%		
		FILL		A		S-5, SPT 7+9+9+10 REC=1", 4%		
	Change: contains brick fragments				10	S-6, SPT 6+5+6+10 REC=15", 63%		
13.0	FILL, sampled as sandy lean clay; orangish brown with mottles of black, contains root fragments		24.0			S-7, SPT 6+14+15+17 REC=24", 100%	LL = 25 PI = 8 MC = 10.7% % Passing #200 = 51.1	
		FILL			15			
18.0	SILTY SAND, fine to coarse grained sand; moist, orangish brown		19.0			S-8, SPT 4+9+11+11 REC=24", 100%		Terrace
		SM		B2	20			
	Change: 3-inch gravel layer					S-9, SPT 13+10+10+10 REC=0", 0%		Sample S-9; no recovery, piece of gravel blocked spoon

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **7BR-03**
Contract Number: 22120047.000
Sheet: 2 of 2

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND, fine to coarse grained sand; moist, orangish brown *(continued)*	SM		B2		S-10, SPT 9+9+11+19 REC=24", 100%	LL = NP PI = NP MC = 8.4% % Passing #200 = 23.1	
28.0	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained sand; moist, orangish brown	SP-SM	9.0			S-11, SPT 19+22+22+28 REC=24", 100%		
30.0			7.0		30			

Bottom of Boring at 30.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-01**
Contract Number: 22120047.000
Sheet: 1 of 1

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: H. Lyon
Schnabel Representative: D. Chang-Ramirez
Equipment: Tripod Drilling Equipment
Method: Tripod with portable cathead
Hammer Type: Safety Hammer (140 lb)
Dates Started: 8/14/24 **Finished:** 8/16/24
Location: See Location Plan

Ground Surface Elevation: 37± (ft) **Total Depth:** 20.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	8/14	9:00 AM	Dry	---	---
Completion ▽	8/14	9:15 AM	Dry	---	20.0'
After Drilling ▼	8/16	8:00 AM	Dry	---	20.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Topsoil; Grass; 2 inches		36.8			S-1, SPT 3+6+10+10 REC=15", 63%		Fill
	FILL, sampled as clayey sand, fine to coarse grained sand; moist, dark brown, estimated 5 - 10% gravel, contains brick fragments, and quartz fragments	FILL						
2.0			35.0			S-2, SPT 25+16+11+7 REC=10", 42%		Sample S-2 collected as S-2A and S-2B.
	FILL, sampled as silty gravel with sand, fine grained gravel; moist, black	FILL						
3.8			33.2					
4.0	FILL, sampled as sandy lean clay; moist, orangish brown with mottles of black		33.0			S-3, SPT 3+5+8+20 REC=12", 50%	MC = 12.9%	
	FILL, sampled as clayey sand, fine to medium grained sand; moist, orangish brown, contains brick fragments, estimated <5% gravel	FILL			5			
6.0	Change: 3-inch crushed stone layer		31.0			S-4, SPT 7+4+4+4 REC=12", 50%		
	FILL, sampled as clayey sand with gravel, fine to coarse grained sand; moist, orangish brown with mottles of black, contains brick fragments, estimated <5% gravel	FILL		A		S-5, SPT 3+5+6+6 REC=20", 83%	LL = 25 PI = 8 MC = 12.6% % Passing #200 = 44.2	
					10	S-6, SPT 6+6+5+5 REC=15", 63%		
12.0	FILL, sampled as sandy fat clay; moist, orangish brown with mottles of black, estimated <5% gravel	FILL	25.0			S-7, SPT 15+5+4+5 REC=5", 21%		Pocket pen attempted but soil crumbled.
14.5	FILL, sampled as clayey sand, fine to medium grained sand; moist, orangish brown with mottles of black	FILL	22.5		15	S-8, SPT 6+10+10+10 REC=15", 63%		
17.0	SILTY SAND, fine to medium grained sand; moist, orangish brown, estimated <5% gravel	SM	20.0	B2		S-9, SPT 8+10+9 REC=18", 100%		Terrace
	Change: no gravel					S-10, SPT 10+12+10 REC=18", 100%		
20.0			17.0		20			

Bottom of Boring at 20.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-01A**
Contract Number: 22120047.000
Sheet: 1 of 3

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger
Hammer Type: Auto Hammer (140 lb)
Dates Started: 10/17/24 **Finished:** 10/21/24
Location: See Location Plan

Ground Surface Elevation: 19± (ft) **Total Depth:** 59.8 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	10/17	2:15 PM	30.0'	28.0'	---
Start of Day ▼	10/18	9:20 AM	29.5'	30.0'	---
Start of Day ▼	10/21	9:30 AM	30.7'	45.5'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Asphalt; 2.5 inches		18.8					
1.2	Concrete; 12.5 inches		17.8					
	FILL, sampled as clayey sand, fine to medium grained sand; moist, brown, estimated <5% gravel	FILL		A		S-1, SPT 15+17+11 REC=12", 67%		Fill
3.0	SILTY SAND, fine to coarse grained sand; moist, brown with mottles of black	SM	16.0			S-2, SPT 10+11+9+11 REC=20", 83%	LL = NP PI = NP MC = 13.0% % Passing #200 = 45.3	Terrace
					5	S-3, SPT 12+10+8+10 REC=10", 42%		
8.0	POORLY GRADED SAND WITH SILT, fine to medium grained sand; moist, brown	SP-SM	11.0			S-4, SPT 10+14+7+8 REC=15", 63%		
					10			
13.0	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained sand; moist, brown	SP-SM	6.0	B2		S-5, SPT 18+26+38+32 REC=24", 100%		
					15			Rig chattering
						S-6, SPT 19+25+31+37 REC=24", 100%	LL = NP PI = NP MC = 1.2% % Passing #200 = 9.3	
					20			Hard drilling
23.0	WELL GRADED GRAVEL WITH SAND, fine to coarse grained gravel; moist, gray and brown	GW	-4.0			S-7, SPT 48+50/6" REC=8", 67%		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-01A**
Contract Number: 22120047.000
Sheet: 2 of 3

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	WELL GRADED GRAVEL WITH SAND, fine to coarse grained gravel; moist, gray and brown *(continued)*	GW						
28.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, orangish brown, contains quartz fragments	SM	-9.0	B2	30	S-8, SPT 10+11+12+14 REC=24", 100%		
	Change: wet							
33.0	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained sand; wet, orangish brown	SP-SM	-14.0		35	S-9, SPT 18+15+18+23 REC=24", 100%		
38.0	LEAN CLAY; moist, gray, contains mica, and sand pockets	CL	-19.0	B1	40	S-10, SPT 4+5+5+6 REC=24", 100%	PP = 0.50 tsf	
						SH-1, SH REC=24", 100%	LL = 35 PI = 15 MC = 24.0% % Passing #200 = 96.0	
					45	S-11, SPT 2+5+5+8 REC=24", 100%	PP = 1.50 tsf PP = 1.00 tsf	
						SH-2, SH REC=24", 100%	PP = 1.00 tsf	
	Change: estimated 5 - 10% sand					S-12, SPT 7+7+9+20 REC=24", 100%	PP = 1.00 tsf	Sample S-12 collected as S-12A and S-12B.
49.6	SANDY FAT CLAY; moist, bluish gray with bands of purple, estimated 5 - 10% gravel, contains quartz fragments	CH	-30.6	C1	50			Potomac
53.0	CLAYEY SAND, fine to medium grained sand; moist, bluish gray with brown	SC	-34.0	C2	55	S-13, SPT 10+15+21+29 REC=24", 100%		
						S-14, SPT		Sample S-14 no

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-01A**
Contract Number: 22120047.000
Sheet: 3 of 3

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
59.0	SANDY FAT CLAY; moist, greenish gray with mottles of brown, contains mica	CH	-40.0	C1		50/5" REC=0", 0% S-15, SPT 46+50/3" REC=5", 56%	PP = 3.00 tsf	recovery
59.8			-40.8					

Bottom of Boring at 59.8 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Groundwater reading at Casing Pulled was not taken because boring was goruted through augers.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-02**
Contract Number: 22120047.000
Sheet: 1 of 1

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: H. Lyon
Schnabel Representative: D. Chang-Ramirez
Equipment: Tripod Drilling Equipment
Method: Tripod with portable cathead
Hammer Type: Safety Hammer (140 lb)
Dates Started: 8/9/24 **Finished:** 8/12/24
Location: See Location Plan

Ground Surface Elevation: 37± (ft) **Total Depth:** 20.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	8/9	2:15 PM	4.0'	---	---
Start of Day	8/12	9:15 AM	6.5'	4.3'	---
Completion	8/12	2:05 PM	Dry	4.3'	19.5'
Casing Pulled	8/12	3:00 PM	19.4'	---	19.5'
After Drilling	8/13	7:20 AM	10.3'	---	13.7'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Topsoil; Grass; 2 inches	FILL	36.8			S-1, SPT 3+4+7+7 REC=12", 50%		Fill First 6 inches hammer short stroked.
2.0	FILL, sampled as clayey sand, fine to coarse grained sand; moist, dark brown, contains brick fragments, and root fragments		35.0			S-2, SPT 8+8+7+4 REC=5", 21%		
4.0	FILL, sampled as silty sand, fine to coarse grained sand; moist, black, estimated 5 - 10% gravel	FILL	33.0			S-3, SPT 4+6+3+1 REC=20", 83%	MC = 15.9% PP = 0.50 tsf	Perched water. Installed casing to 4.3 ft.
	FILL, sampled as sandy lean clay; wet, brown with mottles of black				5	S-4, SPT 1+1+1+2 REC=18", 75%	PP = 0.50 tsf	
	Change: contains brick fragments, and shell fragments	FILL				S-5, SPT 2+2+6+4 REC=1", 4%		Sample not representative; piece of gravel in spoon.
10.0	FILL, sampled as sandy lean clay with gravel; wet, dark brown	FILL	27.0	A	10	S-6, SPT 1+1+1+1 REC=19", 79%	PP = 0.50 tsf	End of day drilling 8/9/24.
12.0	FILL, sampled as clayey sand, fine and coarse grained sand; wet, dark brown, contains brick fragments, estimated <5% gravel		25.0			GRAB-1, GRAB REC=12", 100%		
	Change: moist, orangish brown with mottles of black, no brick fragments	FILL			15	S-7, SPT 29+10+10+8 REC=15", 63%	LL = 27 PI = 11 MC = 17.4% % Passing #200 = 46.8	
18.0	PROBABLE FILL, sampled as clayey sand, fine to medium grained sand; moist, orangish brown, estimated 5 - 10% gravel, contains quartz fragments	FILL	19.0			GRAB-2, GRAB REC=24", 100%		
20.0			17.0		20	S-8, SPT 13+13+11+12 REC=15", 63%		

Bottom of Boring at 20.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Heavy rainstorm rained prior to start on drilling on 8/9/24; groundwater may be affected.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-02A**
Contract Number: 22120047.000
Sheet: 1 of 3

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger
Hammer Type: Auto Hammer (140 lb)
Dates Started: 10/9/24 **Finished:** 10/10/24
Location: See Location Plan

Ground Surface Elevation: 21± (ft) **Total Depth:** 60.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	10/9	1:25 PM	33.0'	33.0'	---
Start of Day	10/10	9:00 AM	33.5'	40.0'	---
Completion	10/10	1:05 PM	38.0'	58.0'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Asphalt; 2 inches		20.8					
	Concrete; 14 inches							
1.3	FILL, sampled as sandy lean clay with gravel; moist, brown	FILL	19.7	A		S-1, SPT 6+9+7+7 REC=12", 50%	MC = 12.4%	Fill Collected bulk sample from 0 ft to 5 ft.
4.0	FILL, sampled as clayey sand, fine to medium grained sand; moist, brown, estimated <5% gravel	FILL	17.0		5	S-2, SPT 4+4+4+5 REC=17", 71%		
6.0	SILTY SAND, fine to medium grained sand; moist, brown	SM	15.0			S-3, SPT 1+2+5+7 REC=24", 100%		Terrace
						S-4, SPT 7+7+7+9 REC=6", 25%		
					10			Rig chattering
13.0	WELL GRADED GRAVEL WITH SAND, fine to coarse grained gravel; moist, brown, contains quartz	GW	8.0	B2		S-5, SPT 34+25+28+30 REC=4", 17%		Low recovery due to gravel blocking spoon
					15			
18.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, brown	SM	3.0			S-6, SPT 8+24+45+50/5" REC=17", 74%	LL = NP PI = NP MC = 4.4% % Passing #200 = 12.4	
					20			
	Change: contains quartz fragments					S-7, SPT 41+30+37+45 REC=24", 100%		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-02A**
Contract Number: 22120047.000
Sheet: 2 of 3

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND WITH GRAVEL, fine to coarse grained sand; moist, brown *(continued)*	SM		B2		S-9, SPT 11+22+17+21 REC=24", 100%	LL = NP PI = NP MC = 4.4% % Passing #200 = 12.4	Hard drilling
33.0	POORLY GRADED SAND, medium grained sand; wet, brown, estimated <5% silt	SP	-12.0		30 35	S-10, SPT 3+6+6+16 REC=24", 100%		
38.0	POORLY GRADED SAND WITH SILT AND GRAVEL, medium grained sand; wet, orangish brown	SP-SM	-17.0			S-11, SPT 10+22+20+18 REC=24", 100%		Sample S-10 collected as S-10A, S-10B and S-10C.
39.0	LEAN CLAY; moist, reddish brown Change: gray	CL	-18.0	B1	40	SH-1, SH REC=24", 100%	LL = 38 PI = 18 MC = 28.5% % Passing #200 = 97.2 PP = 1.50 tsf	
	Change: contains mica				45	S-12, SPT 4+4+6+6 REC=24", 100%	PP = 1.00 tsf	
	Change: wet				50	S-13, SPT 4+6+9+40 REC=18", 75%	PP = 1.00 tsf	Sample S-12 collected as S-12A and S-12B.
49.7	WELL GRADED GRAVEL WITH SAND, fine to coarse grained gravel; wet, grayish brown, estimated <5% silt	GW	-28.7					
53.0	SILTY GRAVEL WITH SAND, fine to coarse grained gravel; wet, yellowish brown	GM	-32.0	B2	55	S-14, SPT 41+23+20+24 REC=15", 63%		Rig chattering; hard drilling
58.0		CH	-37.0	C1		S-15, SPT	PP = 1.80 tsf	Potomac

(continued)

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Schnabel ENGINEERING TEST BORING LOG	Project: VRE L'Enfant Plaza Track and Station Improvements Washington, Washington, D.C.	Boring Number: **RW-02A** Contract Number: 22120047.000 Sheet: 3 of 3

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
60.0	FAT CLAY; moist, bluish gray, contains mica *(continued)*	CH	-39.0	C1	60	21+27+33+33 REC=10", 42%	PP = 1.80 tsf	

Bottom of Boring at 60.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Groundwater at casing pulled was not taken because boring was grouted through augers.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-03**
Contract Number: 22120047.000
Sheet: 1 of 1

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: H. Lyon
Schnabel Representative: D. Chang-Ramirez
Equipment: Tripod Drilling Equipment
Method: Tripod with portable cathead
Hammer Type: Safety Hammer (140 lb)
Dates Started: 8/8/24 **Finished:** 8/12/24
Location: See Location Plan
Ground Surface Elevation: 37± (ft) **Total Depth:** 20.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	8/9	---	15.0'	---	---
Completion ▽	8/9	---	14.0'	---	17.7'
After Drilling ▼	8/12	---	14.0'	---	15.3'
After Drilling ▼	8/13	---	13.0'	---	14.5'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Topsoil; Grass; 2 inches		36.8			S-1, SPT 3+14+14+14 REC=15", 63%		Fill First 6 inches hammer short stroked.
	FILL, sampled as clayey sand, fine to coarse grained sand; moist, dark brown, contains brick, asphalt, and quartz, est. <10% gravel	FILL						
2.0			35.0			S-2, SPT 7+7+6+3 REC=10", 42%	MC = 14.0% % Passing #200 = 17.6	
	FILL, sampled as silty sand with gravel, fine to coarse grained sand; moist, black, contains asphalt fragments	FILL						
4.0			33.0			S-3, SPT 5+2+2+3 REC=12", 50%	PP = 0.50 tsf	
	FILL, sampled as sandy lean clay; moist, brown with black				5			
	Change: estimated 5 - 10% gravel, contains shell fragments					S-4, SPT 1+2+2+2 REC=15", 63%	LL = 30 PI = 12 MC = 18.7% % Passing #200 = 59.8	
	Change: no shell fragments, contains wood fragments, and brick fragments	FILL		A		S-5, SPT 2+2+2+2 REC=20", 83%	PP = 0.50 tsf Resistivity = 3400 Ohms-cm Redox = 265 mv Sulfides = ND pH = 7.7 Sulfates = 70.7 mg-kg Chlorides = ND	
					10			
13.0	FILL, sampled as gravelly lean clay; moist, brown and black, estimated 10 - 15% sand	FILL	24.0			S-6, SPT 2+2+6+29 REC=24", 100%	PP = 0.50 tsf PP = 0.50 tsf	
					15			
18.0	PROBABLE FILL, sampled as clayey sand, fine to medium grained sand; moist, orangish brown with mottles of black	FILL	19.0			S-7, SPT 16+12+17+17 REC=13", 54%	PP = 1.80 tsf	
20.0			17.0		20			

Bottom of Boring at 20.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
Heavy rainstorm rained prior to start on drilling on 8/9/24; groundwater may be affected.

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-03A**
Contract Number: 22120047.000
Sheet: 1 of 3

Contractor: HSA Inc.
Washington, DC
Contractor Foreman: A. Skinner
Schnabel Representative: D. Chang-Ramirez
Equipment: CME-55 (Track)
Method: 3-1/4" I.D. Hollow Stem Auger
Hammer Type: Auto Hammer (140 lb)
Dates Started: 10/15/24 **Finished:** 10/16/24
Location: See Location Plan
Ground Surface Elevation: 19± (ft) **Total Depth:** 60.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	10/15	12:15 PM	33.0'	33.0'	---
After Drilling ▼	10/16	9:30 AM	36.6'	60.0'	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.2	Asphalt; 2 inches		18.8					
1.0	Concrete; 10 inches		18.0			S-1, SPT 4+4+4+5 REC=6", 25%		Fill
	FILL, sampled as clayey sand, fine to coarse grained sand; moist, brown with orangish brown, estimated <5% gravel Change: no gravel	FILL				S-2, SPT 7+8+6+5 REC=12", 50%	LL = 28 PI = 11 MC = 13.9% % Passing #200 = 42.8	
5.0			14.0	A	5	S-3, SPT 2+1+4+8 REC=12", 50%		
	FILL, sampled as silty sand, fine to medium grained sand; moist, orangish brown, contains clay pockets	FILL						
8.0			11.0			S-4, SPT 6+9+6+8 REC=17", 71%		Terrace
	SILTY SAND, fine to medium grained sand; moist, orangish brown, estimated <5% gravel, contains quartz fragments	SM			10			
13.0			6.0			S-5, SPT 16+43+34+39 REC=24", 100%		
	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained sand; moist, orangish brown				15			Rig chattering
				B2				
		SP-SM				S-6, SPT 22+24+15+14 REC=24", 100%		
					20			
						S-7, SPT 19+33+39+39 REC=24", 100%		

(continued)

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Schnabel ENGINEERING **TEST BORING LOG**

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, Washington, D.C.

Boring Number: **RW-03A**
Contract Number: 22120047.000
Sheet: 2 of 3

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained sand; moist, orangish brown *(continued)*	SP-SM						
28.0	SILTY SAND, medium grained sand; moist, yellowish red, estimated <5% gravel	SM	-9.0		30	S-8, SPT 14+20+19+16 REC=7", 29%		
33.0	SILTY SAND WITH GRAVEL, fine to coarse grained sand; wet, yellowish red	SM	-14.0	B2	35	S-9, SPT 19+22+18+13 REC=20", 83%		
38.0	SILTY GRAVEL WITH SAND, fine grained gravel; wet, yellowish red	GM	-19.0		40	S-10, SPT 19+8+6+11 REC=17", 71%		
43.0	SANDY LEAN CLAY; wet, orangish brown, estimated <5% gravel	CL	-24.0	B1	45	S-11, SPT 6+14+22+20 REC=20", 83%	PP = 1.00 tsf	Sample S-11 collected as S-11A and S-11B
44.0	CLAYEY GRAVEL WITH SAND, fine grained gravel; wet, orangish brown	GC	-25.0	B2				
48.0	SANDY LEAN CLAY; moist, brown and gray, contains interbedded layers of sand and gravel	CL	-29.0	B1	50	S-12, SPT 12+12+4+6 REC=24", 100%	LL = 32 PI = 14 MC = 18.9% % Passing #200 = 56.0 PP = 0.50 tsf	
51.0	LEAN CLAY WITH GRAVEL; moist, gray and yellowish brown	CL	-32.0			SH SH-1, SH REC=8", 100%	PP = 1.00 tsf	Shelby tube attempted; tube bent
53.0	CLAYEY GRAVEL WITH SAND, fine to coarse grained gravel; wet, orangish brown	GC	-34.0	B2	55	S-13, SPT 28+35+23+23 REC=10", 42%		
58.0		CH	-39.0	C1		S-14, SPT	PP >4.50 tsf	Potomac

(continued)

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Schnabel ENGINEERING TEST BORING LOG	Project: VRE L'Enfant Plaza Track and Station Improvements Washington, Washington, D.C.	Boring Number: **RW-03A** Contract Number: 22120047.000 Sheet: 3 of 3

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
60.0	FAT CLAY; moist, gray, estimated <5% sand *(continued)*	CH	-41.0	C1	60	18+21+23+34 REC=20", 83%	PP >4.50 tsf	

Bottom of Boring at 60.0 ft.
Boring terminated at selected depth.
Boring backfilled with grout upon completion.
After Drilling groundwater reading was taken before grouting boring through augers.

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APPENDIX B

SOIL LABORATORY TEST DATA

Summary of Laboratory Tests
Gradation Curves
Atterberg Limits Plot
Unconsolidated Undrained Triaxial Compression Test
One-dimensional Consolidation and Triaxial Shear Test
Chloride and Sulfate Tests Results
Corrosion Potential Series Test

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Summary of Laboratory Tests

Project Number: 22120047.000

Boring No.	Sample Depth ft / Elevation ft	Sample Type	Description of Soil Specimen	Stratum	Natural Moisture (%)	Wet Natural Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	% Retained No. 4 Sieve	pH	Oxidation Reduction Potential (mV)	Resistivity (ohm-cm)	Sulfides (presence)	Chlorides (mg/kg)	Sulfates (mg/kg)
6BR-01A	23.0 - 25.0 / -5.0 - -7.0	Bag	POORLY GRADED SAND WITH SILT (SP-SM), fine to coarse, brown, contains gravel	B2	4.6	--	NP	NP	NP	9.4	12.0	--	--	--	--	--	--
6BR-01A	83.0 - 85.0 / -65.0 - -67.0	Jar	SILTY SAND (SM), fine to coarse grained sand, greenish gray	C2	24.2	--	34	26	8	18.7	0.0	--	--	--	--	--	--
6BR-02	2.0 - 4.0 / 18.0 - 16.0	Jar	CLAYEY SAND (SC), fine to coarse grained sand, brown	B2	13.1	--	23	14	9	35.6	7.2	--	--	--	--	--	--
6BR-02	8.0 - 9.5 / 12.0 - 10.5	Jar	SILTY SAND WITH GRAVEL (SM), light brown {Visual}	B2	3.6	--	--	--	--	--	--	7.6	273	13000	ND	ND	ND
6BR-02	73.0 - 75.0 / -53.0 - -55.0	Jar	SILTY SAND (SM), fine to coarse grained sand, brown and gray	C2	30.2	--	56	37	19	43.1	0.3	--	--	--	--	--	--
6BR-02	88.0 - 90.0 / -68.0 - -70.0	Jar	CLAYEY SAND (SC), fine to medium grained sand, gray	C2	20.9	--	43	24	19	18.6	--	--	--	--	--	--	--
6BR-03	0.0 - 2.0 / 20.0 - 18.0	Jar	FAT CLAY WITH SAND (CH), brown with mottles of black {Visual}	A	11.8	--	--	--	--	--	--	7.2	119	1400	ND	27.6	460

Notes:
1. Soil tests in general accordance with ASTM standards.
2. Soil classifications are in general accordance with ASTM D2487(as applicable), based on testing indicated and visual classification.
3. Key to abbreviations: NP=Non-Plastic; ND=Not Detected; ; P=Present; T=Trace; -- indicates no test performed

Schnabel ENGINEERING

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, DC

DYNAMIC LAB SUMMARY: P:\VRE L'ENFANT PLAZA.GPJ; D: L;GINT LIBRARY 2024_10_21(NCO).GLB; Print:1/23/25

Summary of Laboratory Tests

Project Number: 22120047.000

Boring No.	Sample Depth ft / Elevation ft	Sample Type	Description of Soil Specimen	Stratum	Natural Moisture (%)	Wet Natural Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	% Retained No. 4 Sieve	pH	Oxidation Reduction Potential (mV)	Resistivity (ohm-cm)	Sulfides (presence)	Chlorides (mg/kg)	Sulfates (mg/kg)
6BR-03	2.4 - 4.4 17.6 - 15.6	Jar	SANDY LEAN CLAY (CL), brown	A	18.6	--	32	21	11	55.8	2.1	--	--	--	--	--	--
6BR-03	43.0 - 45.0 -23.0 - -25.0	Jar	CLAYEY SAND WITH GRAVEL (SC), fine to coarse grained sand, reddish brown	B2	15.9	--	32	20	12	44.0	18.0	--	--	--	--	--	--
6BR-03	83.0 - 85.0 -63.0 - -65.0	Jar	CLAYEY SAND (SC), fine to medium grained sand, brown and gray	C2	28.1	--	62	30	32	21.4	--	--	--	--	--	--	--
6BR-04	8.0 - 10.0 10.0 - 8.0	Bag	SILTY SAND WITH GRAVEL (SM), fine to coarse, reddish brown	A	3.7	--	NP	NP	NP	15.3	31.2	--	--	--	--	--	--
6BR-04	13.0 - 15.0 5.0 - 3.0	Bag	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), fine to coarse, yellowish brown	B2	3.0	--	NP	NP	NP	9.0	43.3	--	--	--	--	--	--
6BR-04	53.0 - 55.0 -35.0 - -37.0	Bag	CLAYEY SAND (SC), fine to coarse, dark brown	C2	20.0	--	48	17	31	39.1	1.3	--	--	--	--	--	--
6BR-04	73.0 - 75.0 -55.0 - -57.0	Bag	POORLY GRADED SAND WITH SILT (SP-SM), grayish brown, fine to coarse, contains mica, and gravel	C2	32.0	--	38	26	12	7.4	10.0	--	--	--	--	--	--

Notes:
1. Soil tests in general accordance with ASTM standards.
2. Soil classifications are in general accordance with ASTM D2487(as applicable), based on testing indicated and visual classification.
3. Key to abbreviations: NP=Non-Plastic; ND=Not Detected; ; P=Present; T=Trace; -- indicates no test performed

Schnabel ENGINEERING

Project: VRE L'Enfant Plaza
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Summary of Laboratory Tests

Project Number: 22120047.000

Boring No.	Sample Depth ft / Elevation ft	Sample Type	Description of Soil Specimen	Stratum	Natural Moisture (%)	Wet Natural Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	% Retained No. 4 Sieve	pH	Oxidation Reduction Potential (mV)	Resistivity (ohm-cm)	Sulfides (presence)	Chlorides (mg/kg)	Sulfates (mg/kg)
6BR-05	2.0 - 4.0 / 35.0 - 33.0	Jar	SILTY SAND (SM), fine to coarse grained sand, contains crushed stone and slag, dark gray	A	21.3	--	39	31	8	30.9	13.9	--	--	--	--	--	--
6BR-05	8.0 - 10.0 / 29.0 - 27.0	Jar	SANDY LEAN CLAY (CL), contains rock fragments, dark brown	A	20.0	--	28	18	10	50.4	7.2	--	--	--	--	--	--
6BR-07	6.0 - 8.0 / 31.0 - 29.0	Jar	SANDY LEAN CLAY (CL), contains rock fragments, brown	A	20.6	--	28	18	10	56.9	2.4	--	--	--	--	--	--
6BR-07	8.0 - 10.0 / 29.0 - 27.0	Jar	LEAN CLAY, contains rock fragments, brown {Visual}	A	20.2	--	--	--	--	56.9	2.4	7.42	244	8600	ND	ND	13.3
6BR-07	18.0 - 20.0 / 19.0 - 17.0	Jar	SANDY LEAN CLAY (CL), contains rock fragments and mica, brown	A	18.5	--	36	21	15	60.6	0.7	--	--	--	--	--	--
6BR-07	23.0 - 25.0 / 14.0 - 12.0	Jar	SILTY SAND (SM), fine to coarse grained sand, brown	B2	9.7	--	NP	NP	NP	22.9	2.8	--	--	--	--	--	--
7BR-01	2.0 - 4.0 / 21.0 - 19.0	Bag	SILTY, CLAYEY SAND WITH GRAVEL (SC-SM), fine to coarse, brown, contains paint chips and concrete	A	4.0	--	24	17	7	34.8	18.4	--	--	--	--	--	--

Notes:
1. Soil tests in general accordance with ASTM standards.
2. Soil classifications are in general accordance with ASTM D2487(as applicable), based on testing indicated and visual classification.
3. Key to abbreviations: NP=Non-Plastic; ND=Not Detected; ; P=Present; T=Trace; -- indicates no test performed

Schnabel ENGINEERING

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, DC

DYNAMIC LAB SUMMARY: P:\VRE L'ENFANT PLAZA.GPJ; D: L:\GINT LIBRARY 2024_10_21(NCO).GLB; Print:1/23/25

Summary of Laboratory Tests

Project Number: 22120047.000

Boring No.	Sample Depth ft / Elevation ft	Sample Type	Description of Soil Specimen	Stratum	Natural Moisture (%)	Wet Natural Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	% Retained No. 4 Sieve	pH	Oxidation Reduction Potential (mV)	Resistivity (ohm-cm)	Sulfides (presence)	Chlorides (mg/kg)	Sulfates (mg/kg)
7BR-01	8.0 - 10.0 / 15.0 - 13.0	Bag	SILTY SAND (SM), fine to coarse, brown	A	7.7	--	NP	NP	NP	31.1	0.2	--	--	--	--	--	--
7BR-01	18.0 - 20.0 / 5.0 - 3.0	Jar	SILTY SAND WITH GRAVEL (SM), light brown {Visual}	B2	3.0	--	--	--	--	--	--	6.3	298	21000	ND	ND	15.3
7BR-01	38.0 - 40.0 / -15.0 - -17.0	Bag	SILTY SAND WITH GRAVEL (SM), fine and coarse, brown	B2	5.0	--	NP	NP	NP	18.6	27.3	--	--	--	--	--	--
7BR-01	45.0 - 47.0 / -22.0 - -24.0	Tube	LEAN CLAY (CL), contains mica, gray	B1	24.1	127.9	38	20	18	98.2	--	--	--	--	--	--	--
7BR-01	63.0 - 65.0 / -40.0 - -42.0	Jar	CLAYEY SAND (SC), fine to medium grained sand, greenish gray	C2	26.3	--	36	23	13	16.3	--	--	--	--	--	--	--
7BR-02A	1.5 - 3.0 / 17.5 - 16.0	Jar	SILTY SAND WITH GRAVEL (SM), fine to coarse grained sand, moist, brown, contains quartz fragments {Visual}	A	7.8	--	--	--	--	--	--	8	101	1900	ND	68.4	64.3
7BR-02A	13.0 - 15.0 / 6.0 - 4.0	Bag	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), fine and coarse, light brown	B2	0.1	--	NP	NP	NP	8.8	53.8	--	--	--	--	--	--

Notes:
1. Soil tests in general accordance with ASTM standards.
2. Soil classifications are in general accordance with ASTM D2487(as applicable), based on testing indicated and visual classification.
3. Key to abbreviations: NP=Non-Plastic; ND=Not Detected; ; P=Present; T=Trace; -- indicates no test performed

Schnabel ENGINEERING

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, DC

DYNAMIC LAB SUMMARY: P:\VRE L'ENFANT PLAZA.GPJ; D: L:\GINT LIBRARY 2024_10_21(NCO).GLB; Print:1/23/25

Summary of Laboratory Tests

Project Number: 22120047.000

Boring No.	Sample Depth ft / Elevation ft	Sample Type	Description of Soil Specimen	Stratum	Natural Moisture (%)	Wet Natural Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	% Retained No. 4 Sieve	pH	Oxidation Reduction Potential (mV)	Resistivity (ohm-cm)	Sulfides (presence)	Chlorides (mg/kg)	Sulfates (mg/kg)
7BR-02A	63.0 - 65.0 / -44.0 - -46.0	Bag	CLAYEY SAND WITH GRAVEL (SC), fine to coarse, gray	C2	26.4	--	44	20	24	14.0	16.0	--	--	--	--	--	--
7BR-02A	88.0 - 90.0 / -69.0 - -71.0	Bag	CLAYEY SAND (SC), fine to coarse, gray, contains mica, and gravel	C2	24.8	--	35	20	15	14.4	11.1	--	--	--	--	--	--
7BR-03	13.0 - 15.0 / 24.0 - 22.0	Jar	SANDY LEAN CLAY (CL), brown	A	10.7	--	25	17	8	51.1	0.0	--	--	--	--	--	--
7BR-03	25.0 - 27.0 / 12.0 - 10.0	Jar	SILTY SAND (SM), fine to coarse grained sand, brown	B2	8.4	--	NP	NP	NP	23.1	6.3	--	--	--	--	--	--
RW-01	8.0 - 10.0 / 29.0 - 27.0	Jar	CLAYEY SAND WITH GRAVEL (SC), fine to coarse grained sand, brown	A	12.6	--	25	17	8	44.2	15.8	--	--	--	--	--	--
RW-01A	3.0 - 5.0 / 16.0 - 14.0	Jar	SILTY SAND (SM), fine to coarse grained sand, dark brown	B2	13.0	--	NP	NP	NP	45.3	0.4	--	--	--	--	--	--
RW-01A	18.0 - 20.0 / 1.0 - -1.0	Bag	WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), fine to coarse, brown, contains mica	B2	1.2	--	NP	NP	NP	9.3	41.3	--	--	--	--	--	--

Notes:
1. Soil tests in general accordance with ASTM standards.
2. Soil classifications are in general accordance with ASTM D2487(as applicable), based on testing indicated and visual classification.
3. Key to abbreviations: NP=Non-Plastic; ND=Not Detected; ; P=Present; T=Trace; -- indicates no test performed

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Project: VRE L'Enfant Plaza
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RW-01A	40.5 - 42.5 / -21.5 - -23.5	Tube	LEAN CLAY (CL), contains mica, gray	B1	24.0	126.6	35	20	15	96.0	--	--	--	--	--	--	--
RW-02	13.0 - 15.0 / 24.0 - 22.0	Jar	CLAYEY SAND (SC), fine to coarse grained sand, brown	A	17.4	--	27	16	11	46.8	1.9	--	--	--	--	--	--
RW-02A	18.0 - 20.0 / 3.0 - 1.0	Jar	SILTY SAND WITH GRAVEL (SC), fine to coarse grained sand, contains crushed stone, brown	B2	4.4	--	NP	NP	NP	12.4	26.6	--	--	--	--	--	--
RW-02A	40.0 - 42.0 / -19.0 - -21.0	Tube	LEAN CLAY (CL), contains mica, gray	B1	28.5	121.7	38	20	18	97.2	--	--	--	--	--	--	--
RW-03	2.0 - 4.0 / 35.0 - 33.0	Jar	SILTY SAND WITH GRAVEL, fine to coarse grained sand, contains asphalt fragments and gravel, black {Visual}	A	14.0	--	--	--	--	17.6	22.7	--	--	--	--	--	--
RW-03	6.0 - 8.0 / 31.0 - 29.0	Jar	SANDY LEAN CLAY (CL), dark brown	A	18.7	--	30	18	12	59.8	4.2	7.7	265	3400	ND	ND	70.7
RW-03A	3.0 - 5.0 / 16.0 - 14.0	Jar	CLAYEY SAND (SC), fine to coarse grained sand, brown	A	13.9	--	28	17	11	42.8	5.1	--	--	--	--	--	--

Notes:
1. Soil tests in general accordance with ASTM standards.
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3. Key to abbreviations: NP=Non-Plastic; ND=Not Detected; ; P=Present; T=Trace; -- indicates no test performed

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Boring No.	Sample Depth ft / Elevation ft	Sample Type	Description of Soil Specimen	Stratum	Natural Moisture (%)	Wet Natural Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	% Retained No. 4 Sieve	pH	Oxidation Reduction Potential (mV)	Resistivity (ohm-cm)	Sulfides (presence)	Chlorides (mg/kg)	Sulfates (mg/kg)
RW-03A	48.0 - 50.0 -29.0 - -31.0	Jar	SANDY LEAN CLAY (CL), olive brown	B1	18.9	--	32	18	14	56.0	6.1	--	--	--	--	--	--

Notes:
1. Soil tests in general accordance with ASTM standards.
2. Soil classifications are in general accordance with ASTM D2487(as applicable), based on testing indicated and visual classification.
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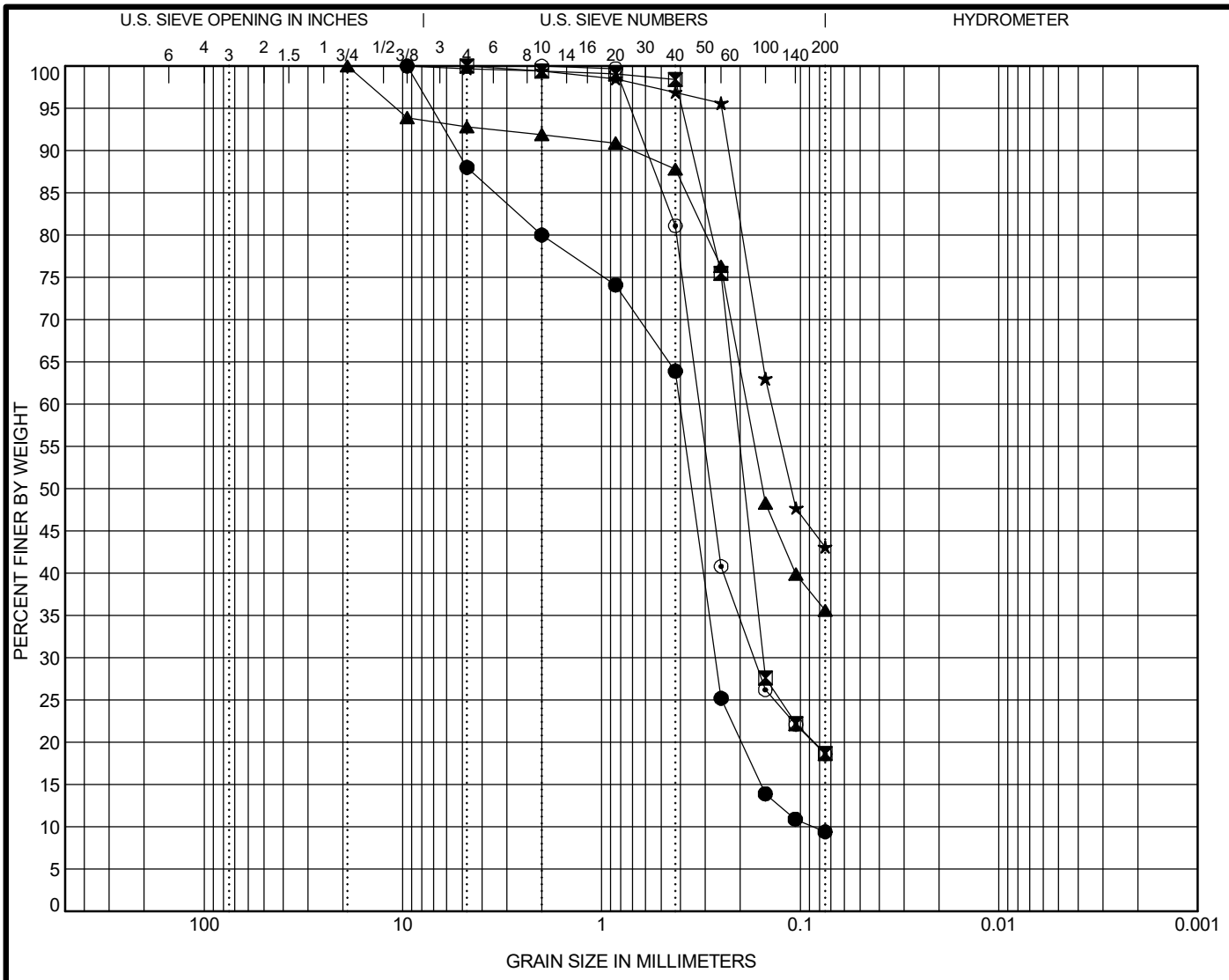

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	6BR-01A 23.0 ft	POORLY GRADED SAND WITH SILT (SP-SM), fine to coarse, brown, contains gravel	NP	NP	NP	2.05	4.68
⊠	6BR-01A 83.0 ft	SILTY SAND (SM), fine to coarse grained sand, greenish gray	34	26	8	--	--
▲	6BR-02 2.0 ft	CLAYEY SAND (SC), fine to coarse grained sand, brown	23	14	9	--	--
★	6BR-02 73.0 ft	SILTY SAND (SM), fine to coarse grained sand, brown and gray	56	37	19	--	--
⊙	6BR-02 88.0 ft	CLAYEY SAND (SC), fine to medium grained sand, gray	43	24	19	--	--

Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6BR-01A 23.0 ft	ASTM D6913	9.5	0.403	0.267	0.086	12.0	78.6	9.4	
⊠	6BR-01A 83.0 ft	ASTM D6913	4.75	0.212	0.154		0.0	81.3	18.7	
▲	6BR-02 2.0 ft	ASTM D6913	19	0.186			7.2	57.2	35.6	
★	6BR-02 73.0 ft	ASTM D6913	9.5	0.14			0.3	56.6	43.1	
⊙	6BR-02 88.0 ft	ASTM D6913	2	0.322	0.171		0.0		18.6	

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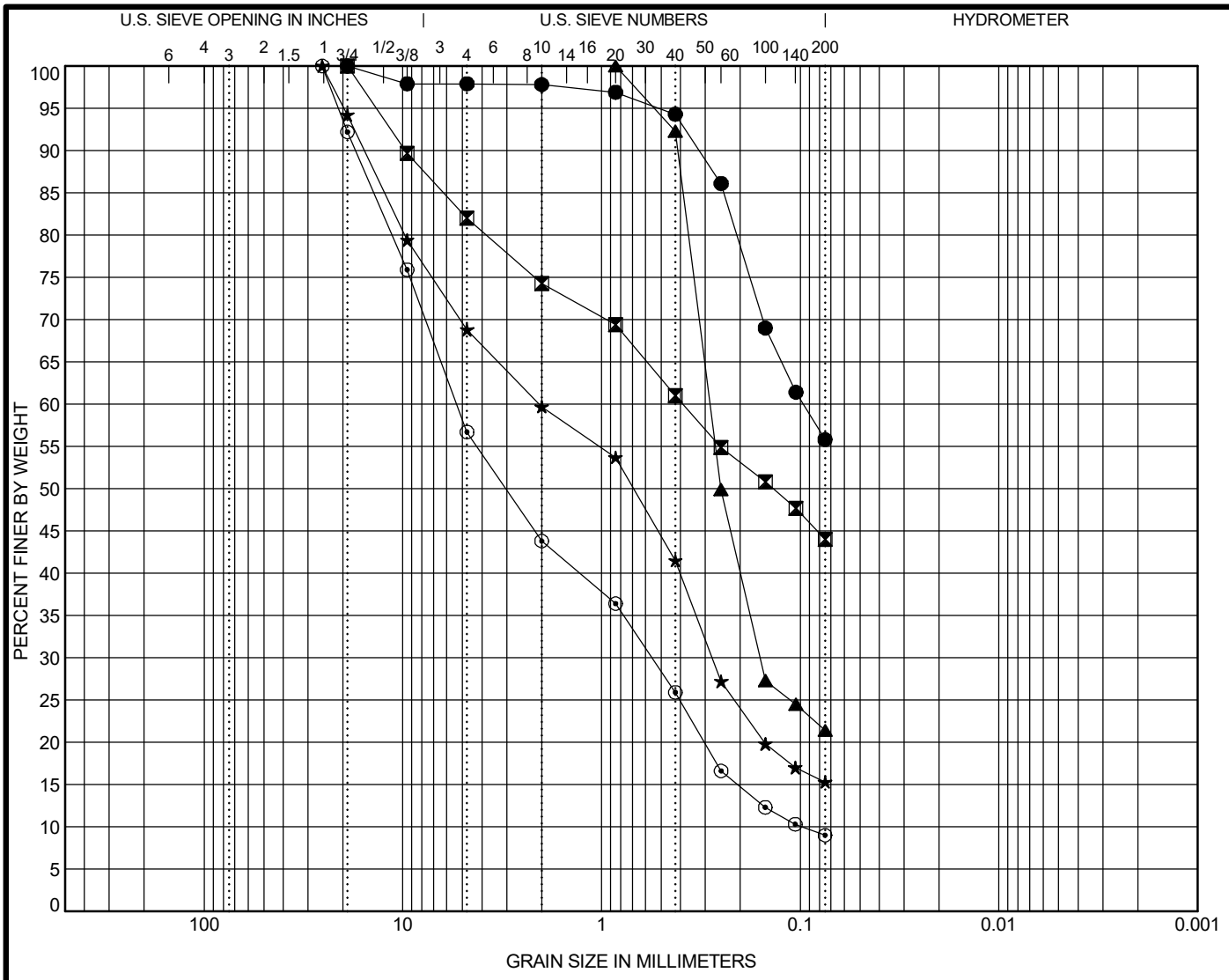

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	6BR-03 2.4 ft	SANDY LEAN CLAY (CL), brown	32	21	11	--	--
⊠	6BR-03 43.0 ft	CLAYEY SAND WITH GRAVEL (SC), fine to coarse grained sand, reddish brown	32	20	12	--	--
▲	6BR-03 83.0 ft	CLAYEY SAND (SC), fine to medium grained sand, brown and gray	62	30	32	--	--
★	6BR-04 8.0 ft	SILTY SAND WITH GRAVEL (SM), fine to coarse, reddish brown	NP	NP	NP	--	--
⊙	6BR-04 13.0 ft	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), fine to coarse, yellowish brown	NP	NP	NP	0.59	54.68

Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6BR-03 2.4 ft	ASTM D6913	19	0.097			2.1	42.1	55.8	
⊠	6BR-03 43.0 ft	ASTM D6913	19	0.39			18.0	38.0	44.0	
▲	6BR-03 83.0 ft	ASTM D6913	0.85	0.284	0.159		0.0		21.4	
★	6BR-04 8.0 ft	ASTM D6913	25.4	2.058	0.277		31.2	53.5	15.3	
⊙	6BR-04 13.0 ft	ASTM D6913	25.4	5.351	0.557	0.098	43.3	47.7	9.0	

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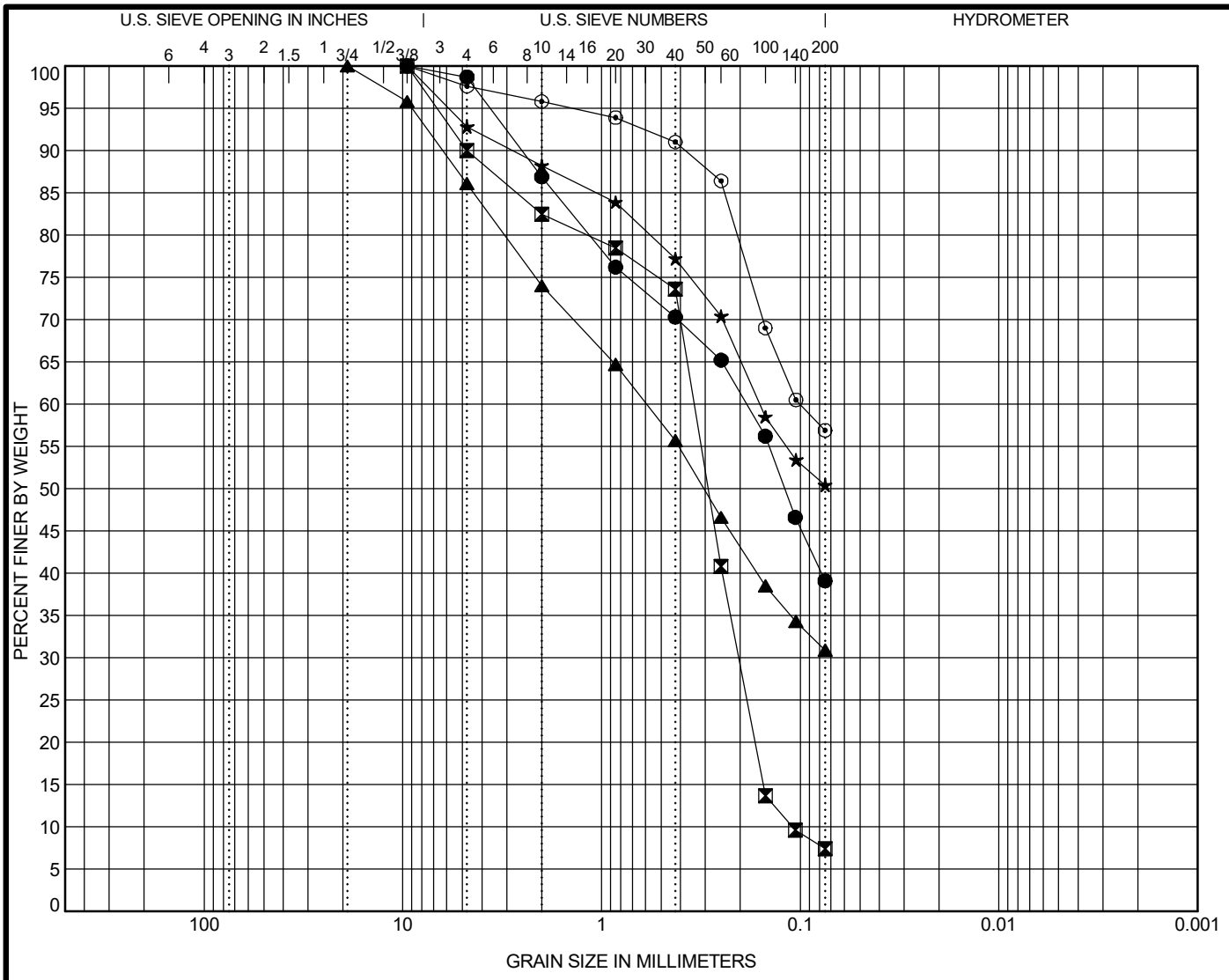

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	6BR-04	53.0 ft	CLAYEY SAND (SC), fine to coarse, dark brown	48	17	31	--	--
⊠	6BR-04	73.0 ft	POORLY GRADED SAND WITH SILT (SP-SM), grayish brown, fine to coarse, contains mica, and gravel	38	26	12	1.11	3.11
▲	6BR-05	2.0 ft	SILTY SAND (SM), fine to coarse grained sand, contains crushed stone and slag, dark gray	39	31	8	--	--
★	6BR-05	8.0 ft	SANDY LEAN CLAY (CL), contains rock fragments, dark brown	28	18	10	--	--
⊙	6BR-07	6.0 ft	SANDY LEAN CLAY (CL), contains rock fragments, brown	28	18	10	--	--

	Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6BR-04	53.0 ft	ASTM D6913	9.5	0.186			1.3	59.6	39.1	
⊠	6BR-04	73.0 ft	ASTM D6913	9.5	0.341	0.204	0.11	10.0	82.6	7.4	
▲	6BR-05	2.0 ft	ASTM D6913	19	0.592			13.9	55.2	30.9	
★	6BR-05	8.0 ft	ASTM D6913	9.5	0.16			7.2	42.4	50.4	
⊙	6BR-07	6.0 ft	ASTM D6913	9.5	0.1			2.4	40.7	56.9	

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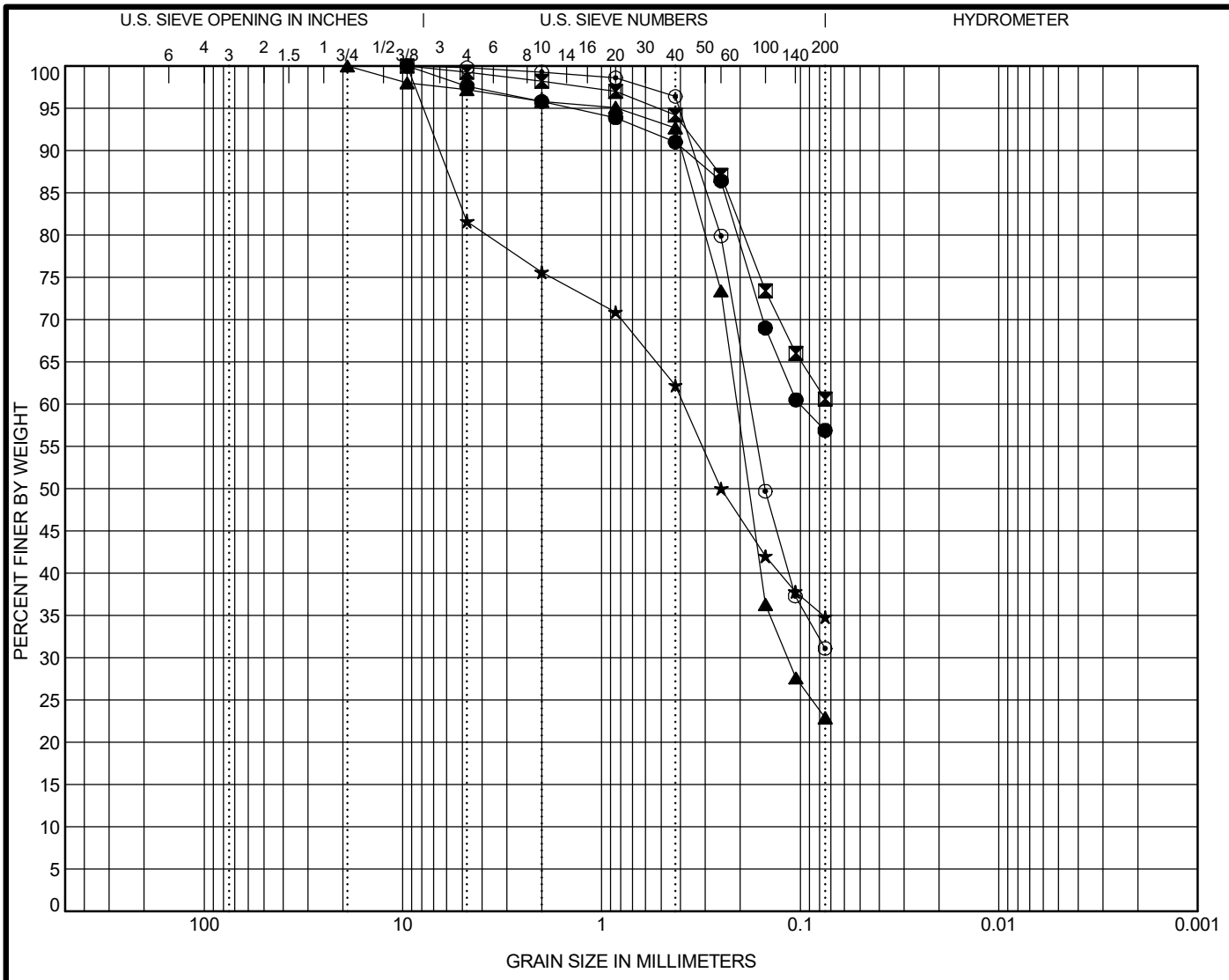

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	6BR-07 8.0 ft	LEAN CLAY, contains rock fragments, brown {Visual}	--	--	--	--	--
⊠	6BR-07 18.0 ft	SANDY LEAN CLAY (CL), contains rock fragments and mica, brown	36	21	15	--	--
▲	6BR-07 23.0 ft	SILTY SAND (SM), fine to coarse grained sand, brown	NP	NP	NP	--	--
★	7BR-01 2.0 ft	SILTY, CLAYEY SAND WITH GRAVEL (SC-SM), fine to coarse, brown, contains paint chips and concrete	24	17	7	--	--
⊙	7BR-01 8.0 ft	SILTY SAND (SM), fine to coarse, brown	NP	NP	NP	--	--

Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6BR-07 8.0 ft	ASTM D6913	9.5	0.1			2.4	40.7	56.9	
⊠	6BR-07 18.0 ft	ASTM D6913	9.5				0.7	38.7	60.6	
▲	6BR-07 23.0 ft	ASTM D6913	19	0.208	0.116		2.8	74.3	22.9	
★	7BR-01 2.0 ft	ASTM D6913	9.5	0.386			18.4	46.8	34.8	
⊙	7BR-01 8.0 ft	ASTM D6913	9.5	0.179			0.2	68.7	31.1	

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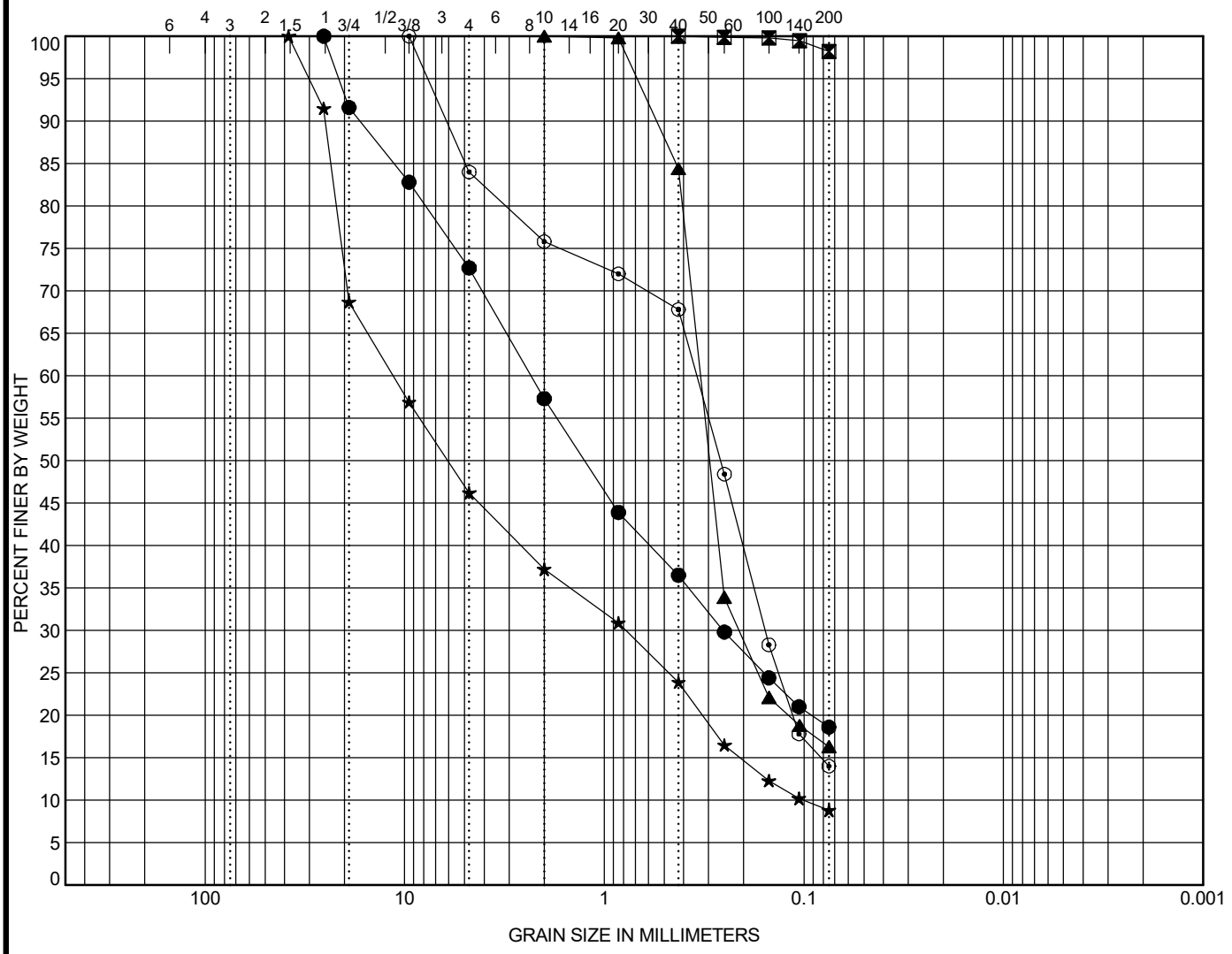

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	7BR-01 38.0 ft	SILTY SAND WITH GRAVEL (SM), fine and coarse, brown	NP	NP	NP	--	--
⊠	7BR-01 45.0 ft	LEAN CLAY (CL), contains mica, gray	38	20	18	--	--
▲	7BR-01 63.0 ft	CLAYEY SAND (SC), fine to medium grained sand, greenish gray	36	23	13	--	--
★	7BR-02A 13.0 ft	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), fine and coarse, light brown	NP	NP	NP	0.53	112.97
⊙	7BR-02A 63.0 ft	CLAYEY SAND WITH GRAVEL (SC), fine to coarse, gray	44	20	24	--	--

Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	7BR-01 38.0 ft	ASTM D6913	25.4	2.328	0.254		27.3	54.1	18.6	
⊠	7BR-01 45.0 ft	ASTM D6913	0.425				0.0		98.2	
▲	7BR-01 63.0 ft	ASTM D6913	2	0.329	0.211		0.0		16.3	
★	7BR-02A 13.0 ft	ASTM D6913	38.1	11.397	0.778	0.101	53.8	37.4	8.8	
⊙	7BR-02A 63.0 ft	ASTM D6913	9.5	0.343	0.157		16.0	70.0	14.0	

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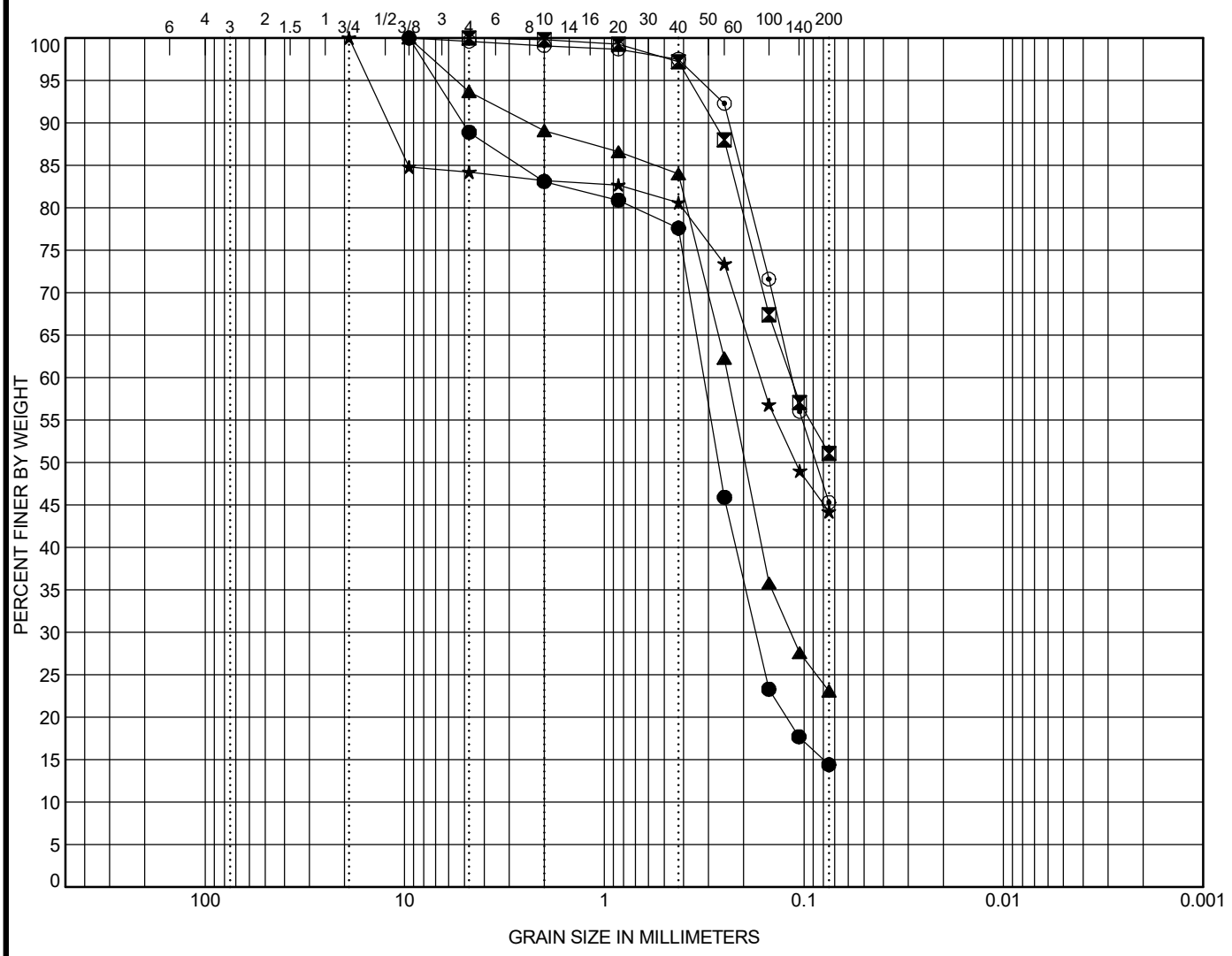

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	7BR-02A 88.0 ft	CLAYEY SAND (SC), fine to coarse, gray, contains mica, and gravel	35	20	15	--	--
⊠	7BR-03 13.0 ft	SANDY LEAN CLAY (CL), brown	25	17	8	--	--
▲	7BR-03 25.0 ft	SILTY SAND (SM), fine to coarse grained sand, brown	NP	NP	NP	--	--
★	RW-01 8.0 ft	CLAYEY SAND WITH GRAVEL (SC), fine to coarse grained sand, brown	25	17	8	--	--
⊙	RW-01A 3.0 ft	SILTY SAND (SM), fine to coarse grained sand, dark brown	NP	NP	NP	--	--

Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	7BR-02A 88.0 ft	ASTM D6913	9.5	0.317	0.175		11.1	74.5	14.4	
⊠	7BR-03 13.0 ft	ASTM D6913	4.75	0.116			0.0	48.9	51.1	
▲	7BR-03 25.0 ft	ASTM D6913	9.5	0.239	0.117		6.3	70.6	23.1	
★	RW-01 8.0 ft	ASTM D6913	19	0.166			15.8	40.0	44.2	
⊙	RW-01A 3.0 ft	ASTM D6913	9.5	0.115			0.4	54.3	45.3	

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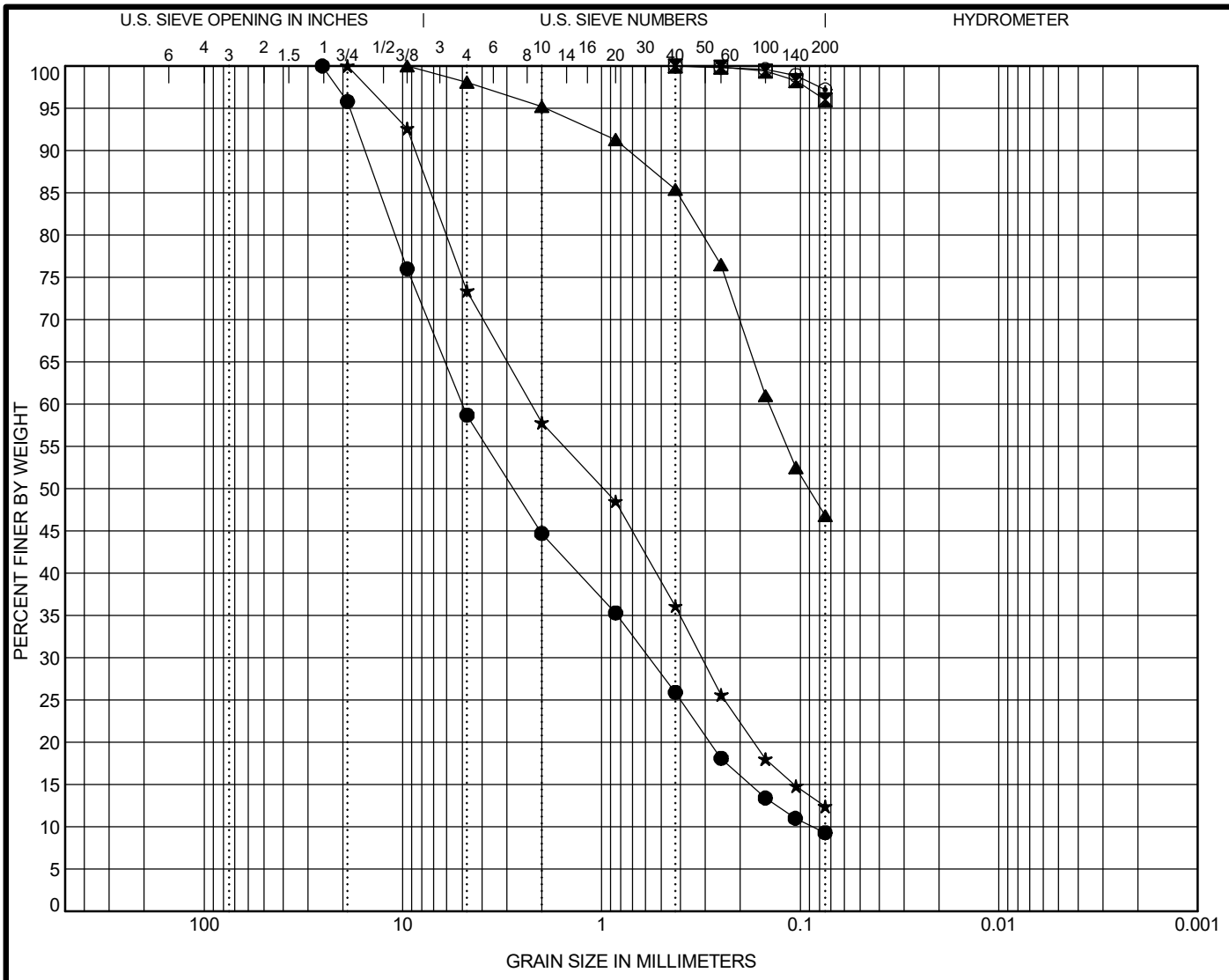

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen		Sample Description	LL	PL	PI	Cc	Cu
● RW-01A	18.0 ft	WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), fine to coarse, brown, contains mica	NP	NP	NP	0.76	57.86
⊠ RW-01A	40.5 ft	LEAN CLAY (CL), contains mica, gray	35	20	15	--	--
▲ RW-02	13.0 ft	CLAYEY SAND (SC), fine to coarse grained sand, brown	27	16	11	--	--
★ RW-02A	18.0 ft	SILTY SAND WITH GRAVEL (SC), fine to coarse grained sand, contains crushed stone, brown	NP	NP	NP	0.81	42.18
⊙ RW-02A	40.0 ft	LEAN CLAY (CL), contains mica, gray	38	20	18	--	--

Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● RW-01A	18.0 ft	ASTM D6913	25.4	5.004	0.575	0.086	41.3	49.4	9.3	
⊠ RW-01A	40.5 ft	ASTM D6913	0.425				0.0		96.0	
▲ RW-02	13.0 ft	ASTM D6913	9.5	0.144			1.9	51.3	46.8	
★ RW-02A	18.0 ft	ASTM D6913	19	2.259	0.312		26.6	61.0	12.4	
⊙ RW-02A	40.0 ft	ASTM D6913	0.425				0.0		97.2	

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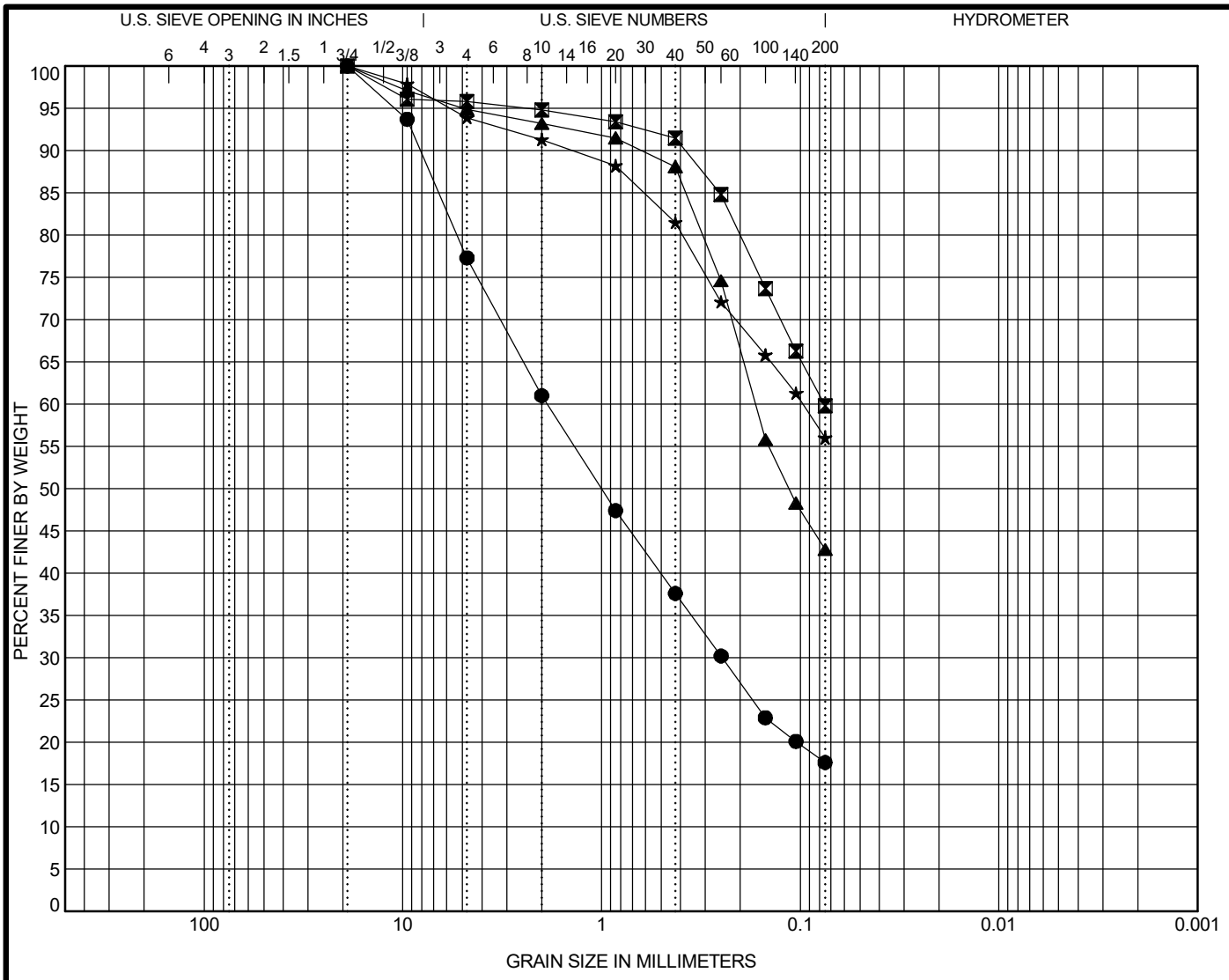

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen		Sample Description	LL	PL	PI	Cc	Cu
●	RW-03	2.0 ft	SILTY SAND WITH GRAVEL, fine to coarse grained sand, contains asphalt fragments and gravel, black {Visual}	--	--	--	--	--
⊠	RW-03	6.0 ft	SANDY LEAN CLAY (CL), dark brown	30	18	12	--	--
▲	RW-03A	3.0 ft	CLAYEY SAND (SC), fine to coarse grained sand, brown	28	17	11	--	--
★	RW-03A	48.0 ft	SANDY LEAN CLAY (CL), olive brown	32	18	14	--	--

	Specimen		Test Method	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	RW-03	2.0 ft	ASTM D6913	19	1.878	0.247		22.7	59.7	17.6	
⊠	RW-03	6.0 ft	ASTM D6913	19	0.076			4.2	36.0	59.8	
▲	RW-03A	3.0 ft	ASTM D6913	19	0.168			5.1	52.1	42.8	
★	RW-03A	48.0 ft	ASTM D6913	19	0.097			6.1	37.9	56.0	

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Contract: 22120047.000

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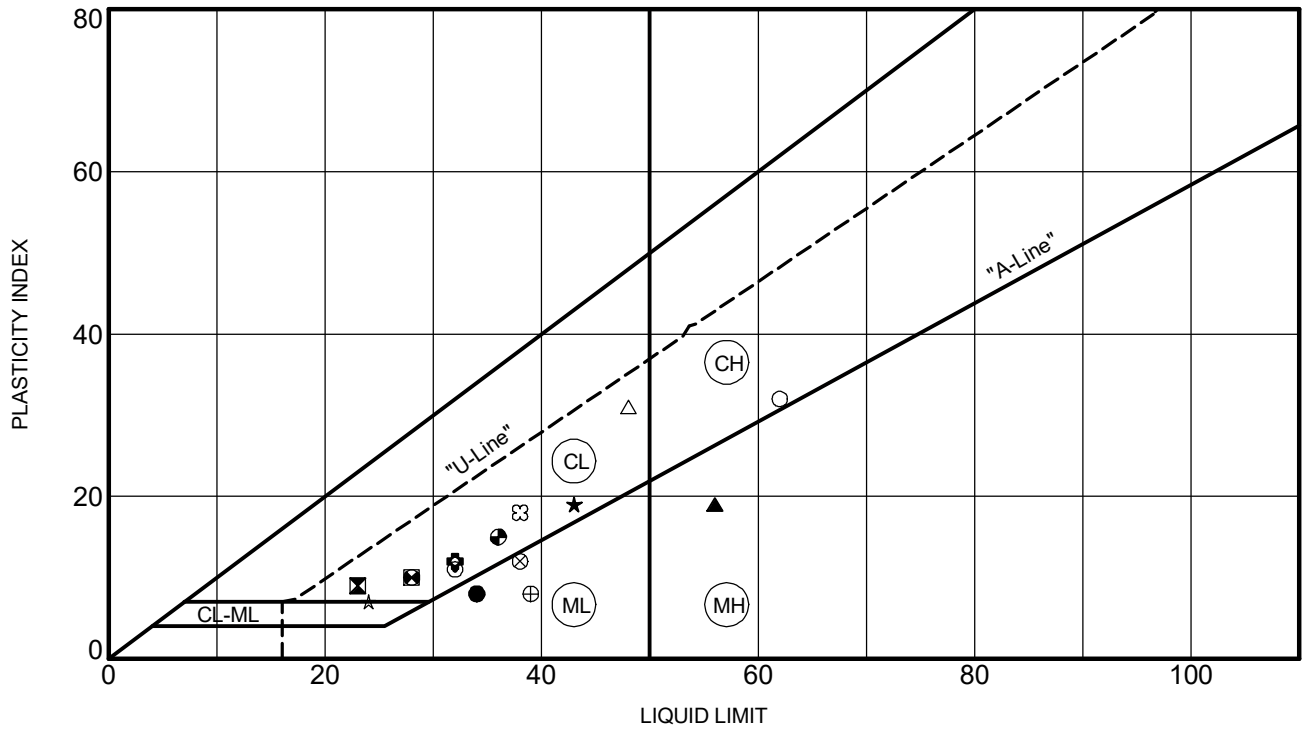


PLOTTED DATA REPRESENTS SOIL PASSING NO. 40 SIEVE

	Specimen		LL	PL	PI	Fines	Description
●	6BR-01A	83.0 ft	34	26	8	19	SILTY SAND (SM), fine to coarse grained sand, greenish gray
⧓	6BR-02	2.0 ft	23	14	9	36	CLAYEY SAND (SC), fine to coarse grained sand, brown
▲	6BR-02	73.0 ft	56	37	19	43	SILTY SAND (SM), fine to coarse grained sand, brown and gray
★	6BR-02	88.0 ft	43	24	19	19	CLAYEY SAND (SC), fine to medium grained sand, gray
⊙	6BR-03	2.4 ft	32	21	11	56	SANDY LEAN CLAY (CL), brown
✿	6BR-03	43.0 ft	32	20	12	44	CLAYEY SAND WITH GRAVEL (SC), fine to coarse grained sand, reddish brown
○	6BR-03	83.0 ft	62	30	32	21	CLAYEY SAND (SC), fine to medium grained sand, brown and gray
△	6BR-04	53.0 ft	48	17	31	39	CLAYEY SAND (SC), fine to coarse, dark brown
⊗	6BR-04	73.0 ft	38	26	12	7	POORLY GRADED SAND WITH SILT (SP-SM), grayish brown, fine to coarse, contains mica, and gravel
⊕	6BR-05	2.0 ft	39	31	8	31	SILTY SAND (SM), fine to coarse grained sand, contains crushed stone and slag, dark gray
□	6BR-05	8.0 ft	28	18	10	50	SANDY LEAN CLAY (CL), contains rock fragments, dark brown
◓	6BR-07	6.0 ft	28	18	10	57	SANDY LEAN CLAY (CL), contains rock fragments, brown
◕	6BR-07	18.0 ft	36	21	15	61	SANDY LEAN CLAY (CL), contains rock fragments and mica, brown
☆	7BR-01	2.0 ft	24	17	7	35	SILTY, CLAYEY SAND WITH GRAVEL (SC-SM), fine to coarse, brown, contains paint chips and concrete
⊠	7BR-01	45.0 ft	38	20	18	98	LEAN CLAY (CL), contains mica, gray

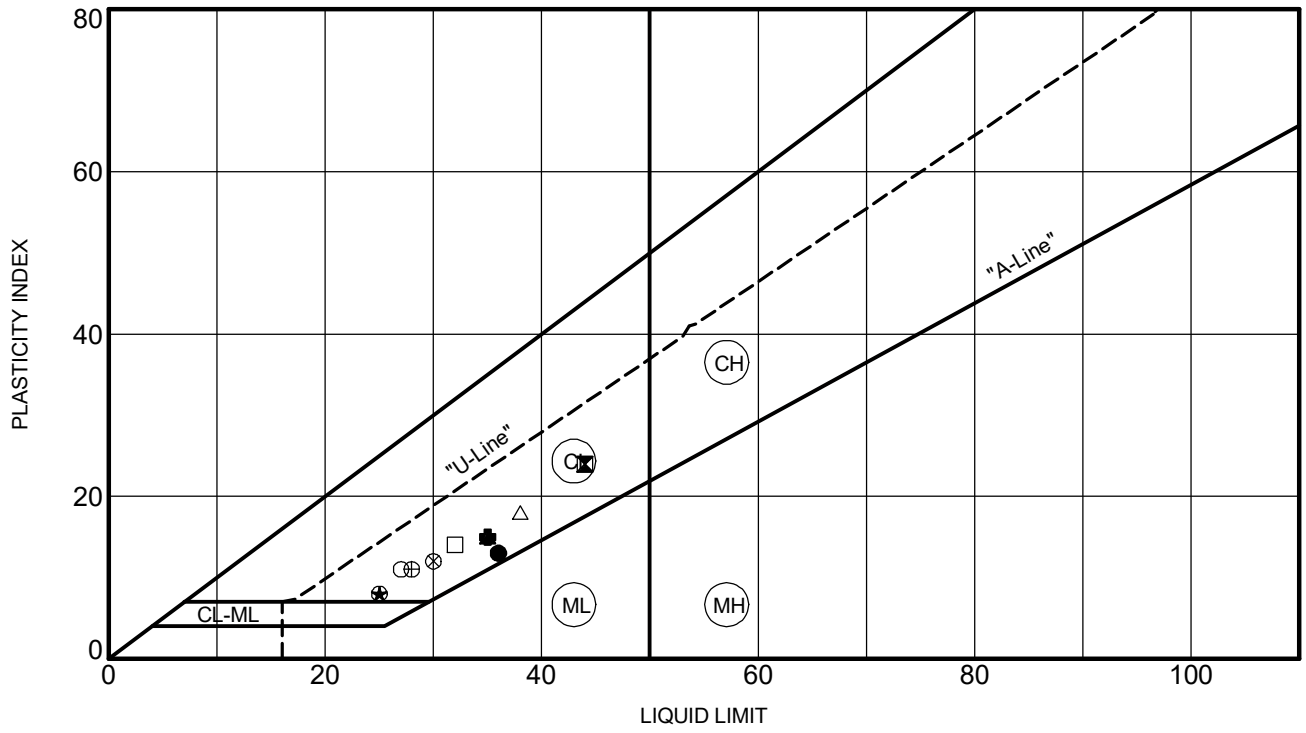
Schnabel ENGINEERING

ATTERBERG LIMITS

Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, DC

Contract: 22120047.000

ATTERBERG_LIMITS; P:\VRE L'ENFANT PLAZA.GPJ; D:\SCHNABEL DATA TEMPLATE 2008 04 22.GDT L:\GINT LIBRARY 2024 10 21(NCO).GLB; Print:1/23/25



PLOTTED DATA REPRESENTS SOIL PASSING NO. 40 SIEVE

	Specimen		LL	PL	PI	Fines	Description
●	7BR-01	63.0 ft	36	23	13	16	CLAYEY SAND (SC), fine to medium grained sand, greenish gray
⧓	7BR-02A	63.0 ft	44	20	24	14	CLAYEY SAND WITH GRAVEL (SC), fine to coarse, gray
▲	7BR-02A	88.0 ft	35	20	15	14	CLAYEY SAND (SC), fine to coarse, gray, contains mica, and gravel
★	7BR-03	13.0 ft	25	17	8	51	SANDY LEAN CLAY (CL), brown
⊙	RW-01	8.0 ft	25	17	8	44	CLAYEY SAND WITH GRAVEL (SC), fine to coarse grained sand, brown
✿	RW-01A	40.5 ft	35	20	15	96	LEAN CLAY (CL), contains mica, gray
○	RW-02	13.0 ft	27	16	11	47	CLAYEY SAND (SC), fine to coarse grained sand, brown
△	RW-02A	40.0 ft	38	20	18	97	LEAN CLAY (CL), contains mica, gray
⊗	RW-03	6.0 ft	30	18	12	60	SANDY LEAN CLAY (CL), dark brown
⊕	RW-03A	3.0 ft	28	17	11	43	CLAYEY SAND (SC), fine to coarse grained sand, brown
□	RW-03A	48.0 ft	32	18	14	56	SANDY LEAN CLAY (CL), olive brown

Schnabel ENGINEERING

ATTERBERG LIMITS

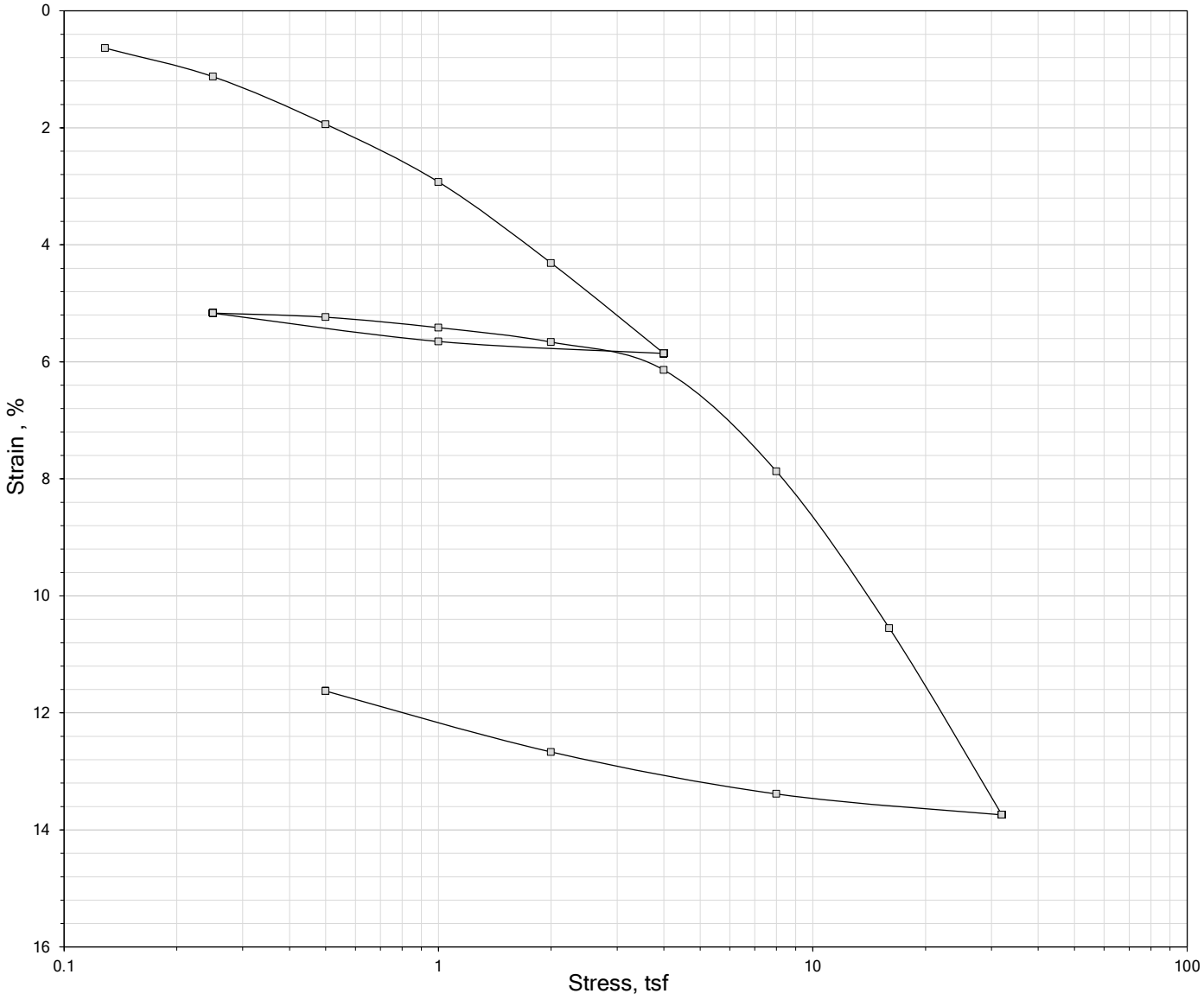
Project: VRE L'Enfant Plaza
Track and Station Improvements
Washington, DC

Contract: 22120047.000

ATTERBERG_LIMITS; P:\VRE L'ENFANT PLAZA.GPJ; D:\SCHNABEL DATA TEMPLATE 2008 04 22.GDT L:\GINT LIBRARY 2024 10 21(NCO).GLB; Print:1/23/25

One-Dimensional Consolidation by ASTM D2435 - Method B

Summary Report

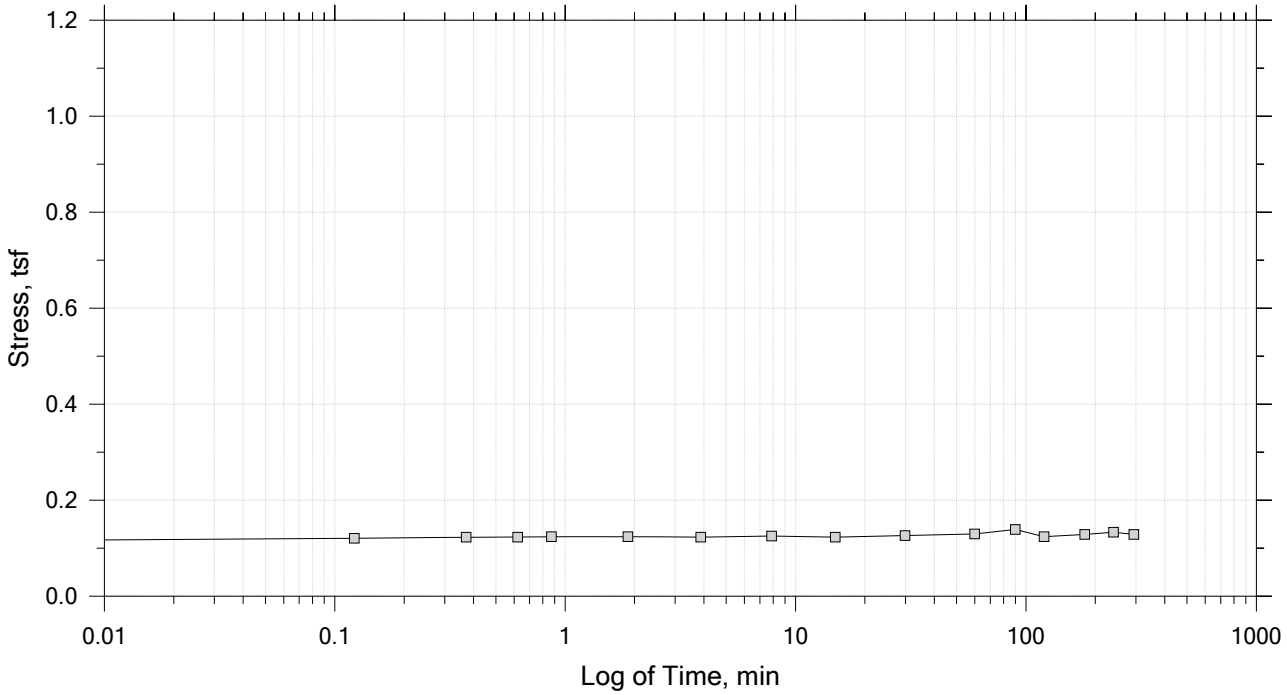


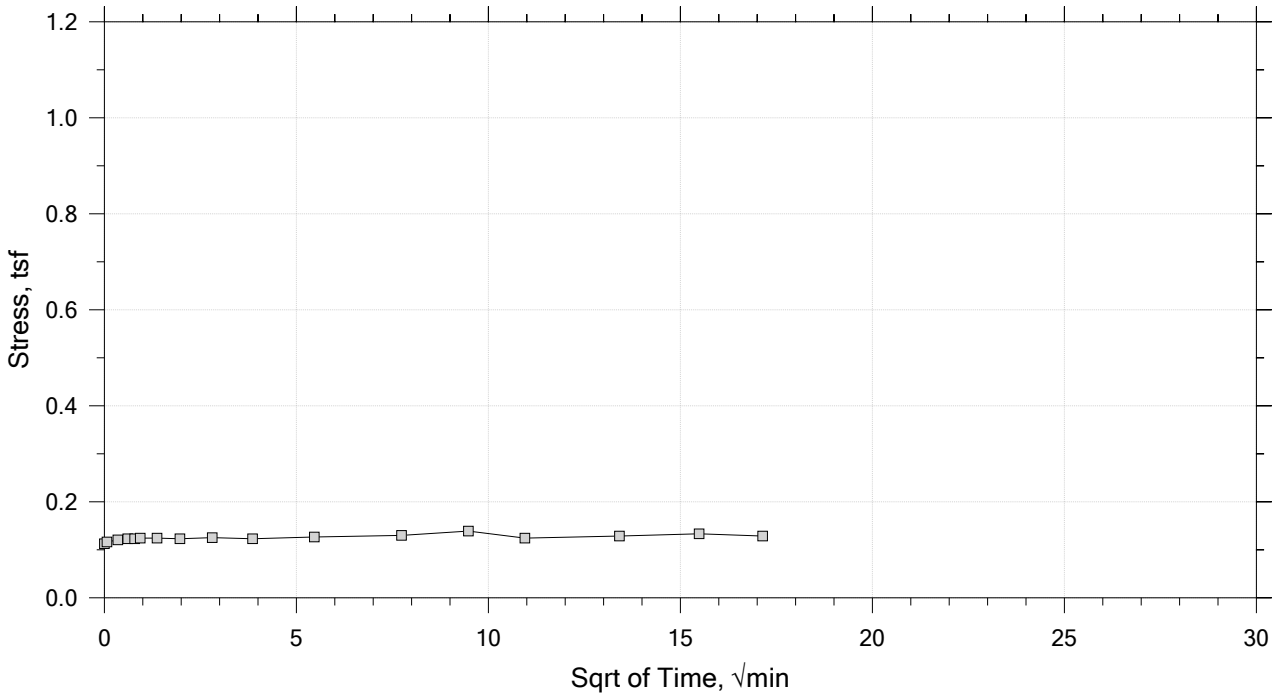
				Before Test	After Test
Current Vertical Effective Stress, tsf:	---		Water Content, %	23.43	17.07
Preconsolidation Stress, tsf:	---		Dry Unit Weight, pcf	104.71	119.12
Compression ratio:	---	Recompression ratio: ---	Saturation, %	98.19	102.54
Specimen Diameter, in:	2.5000	Specimen Height: 1.0000	Void Ratio	0.67	0.47
LL: 38	PL: 20	PI: 18			

Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/2024	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 1 of 18
Constant Volume Step
Stress: 0.129 tsf





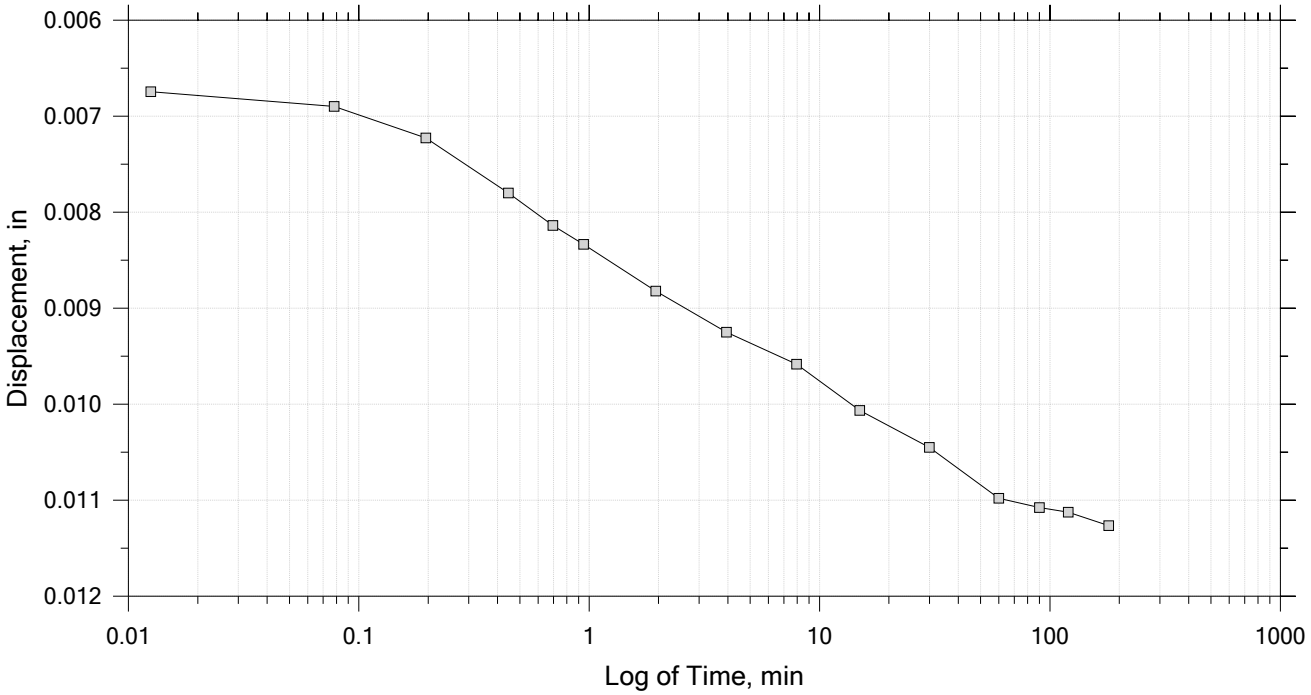
Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

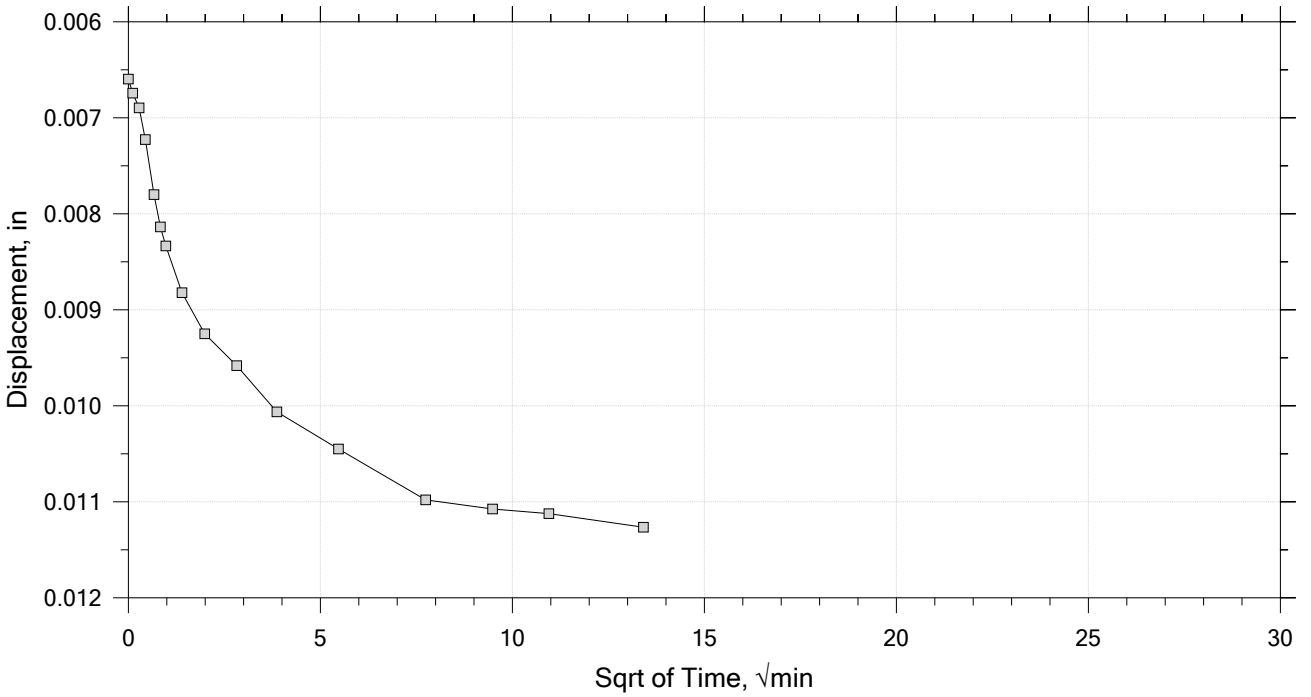
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 2 of 18

Constant Load Step

Stress: 0.25 tsf

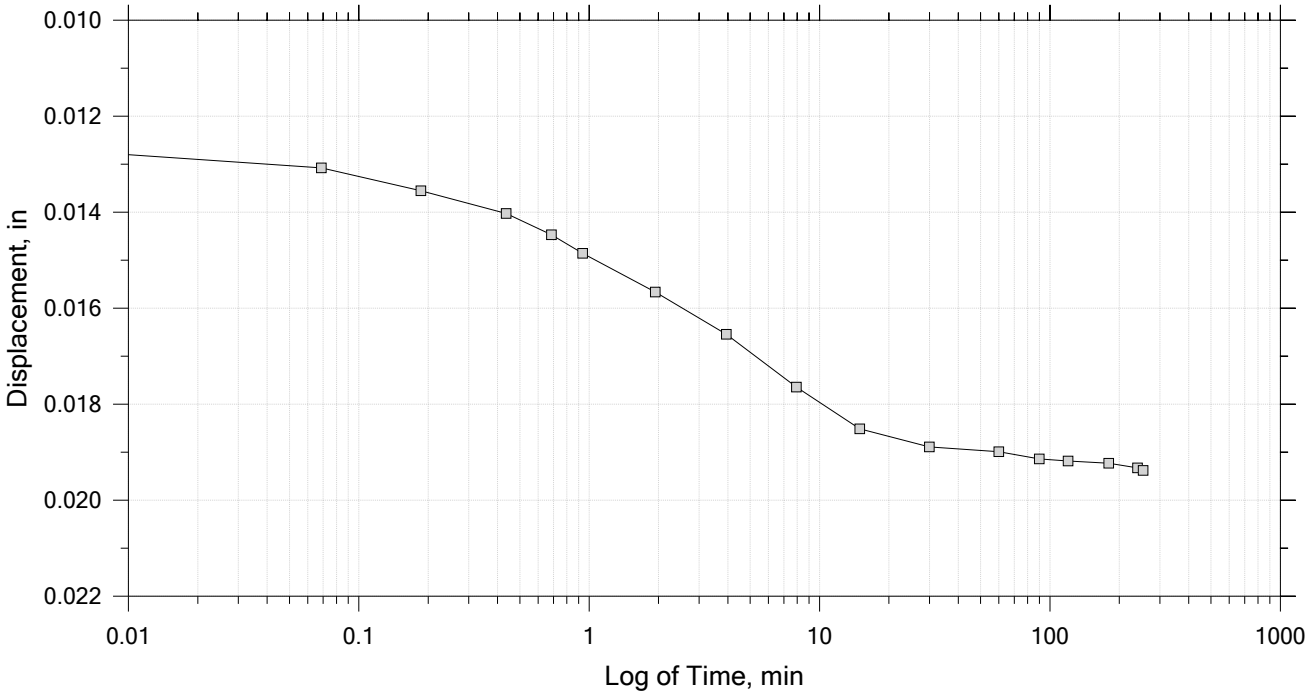


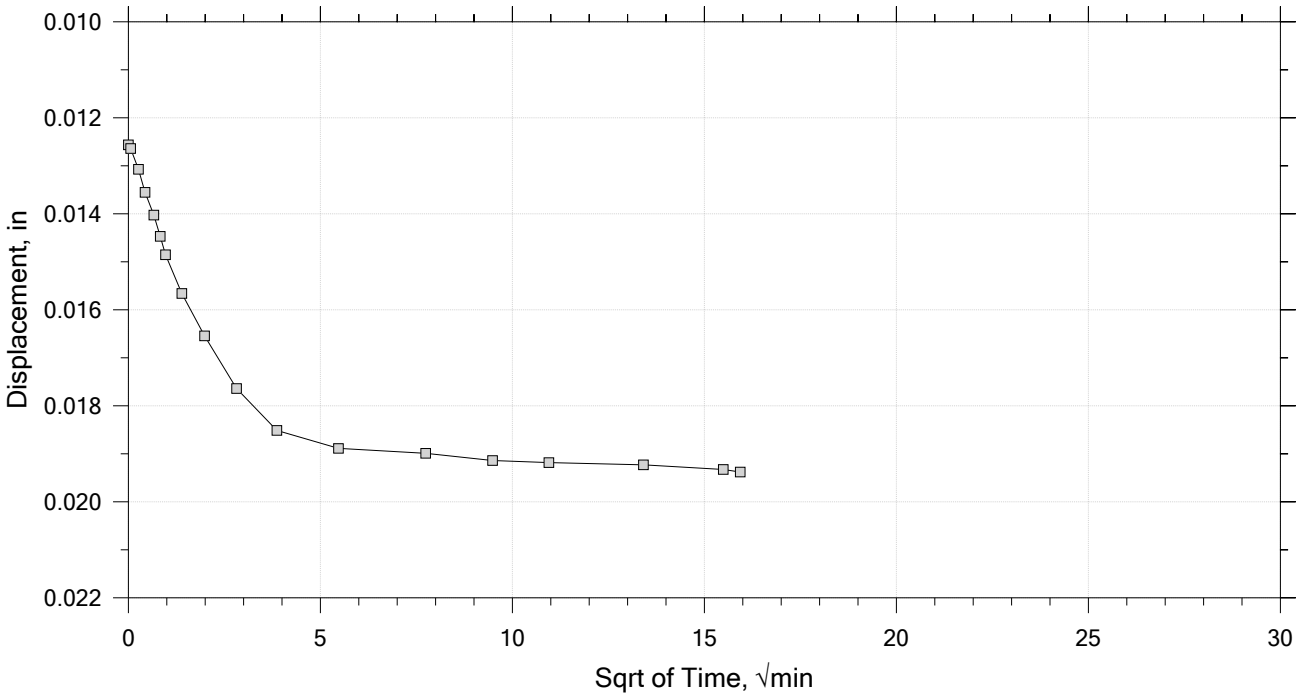


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 3 of 18
Constant Load Step
Stress: 0.5 tsf

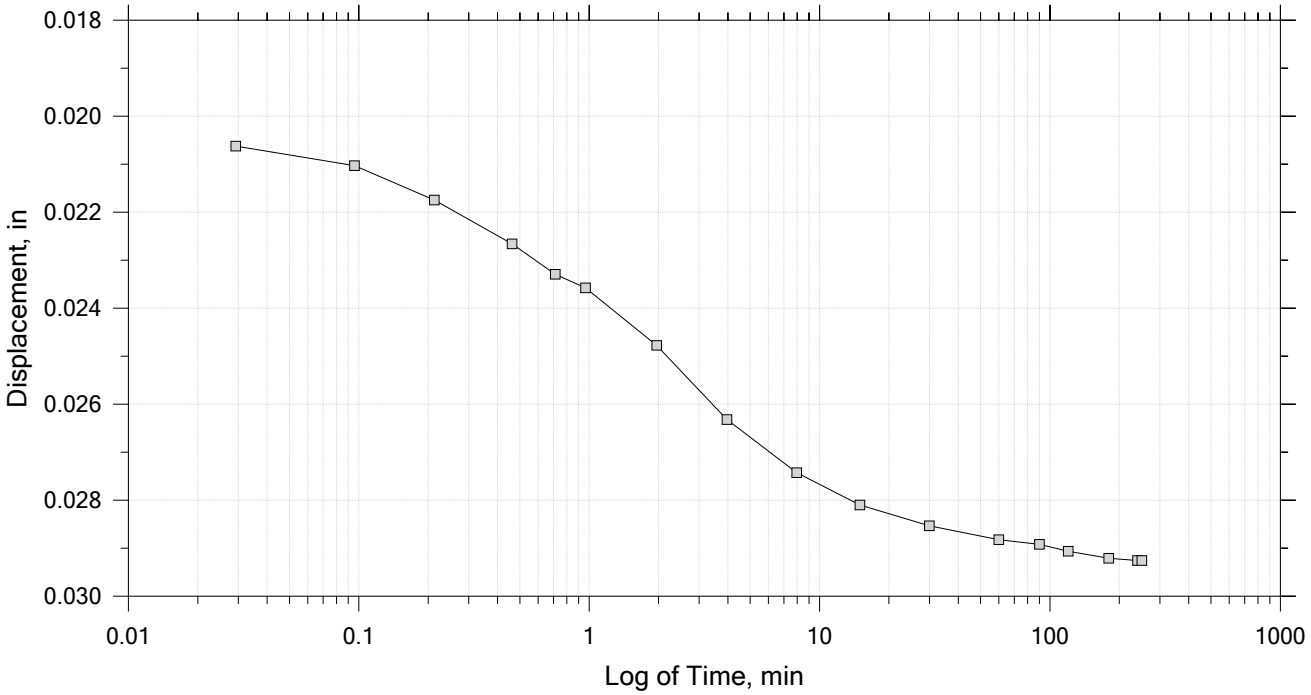


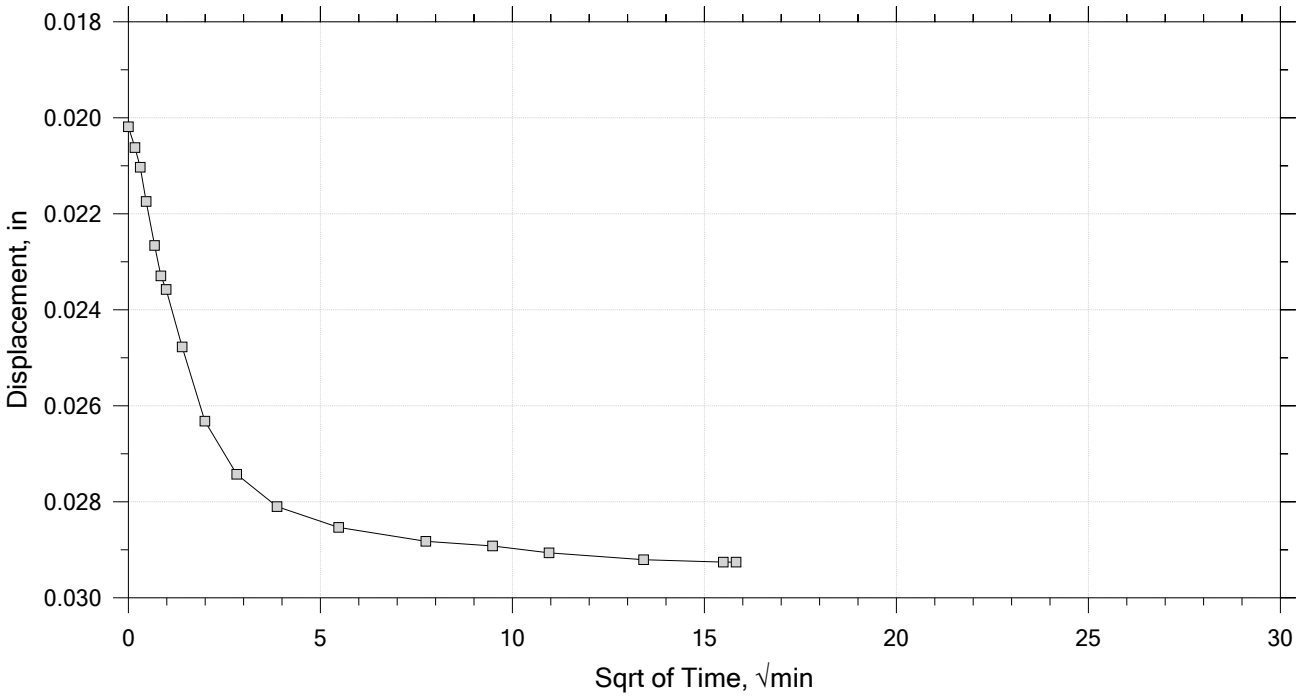


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 18
Constant Load Step
Stress: 1 tsf

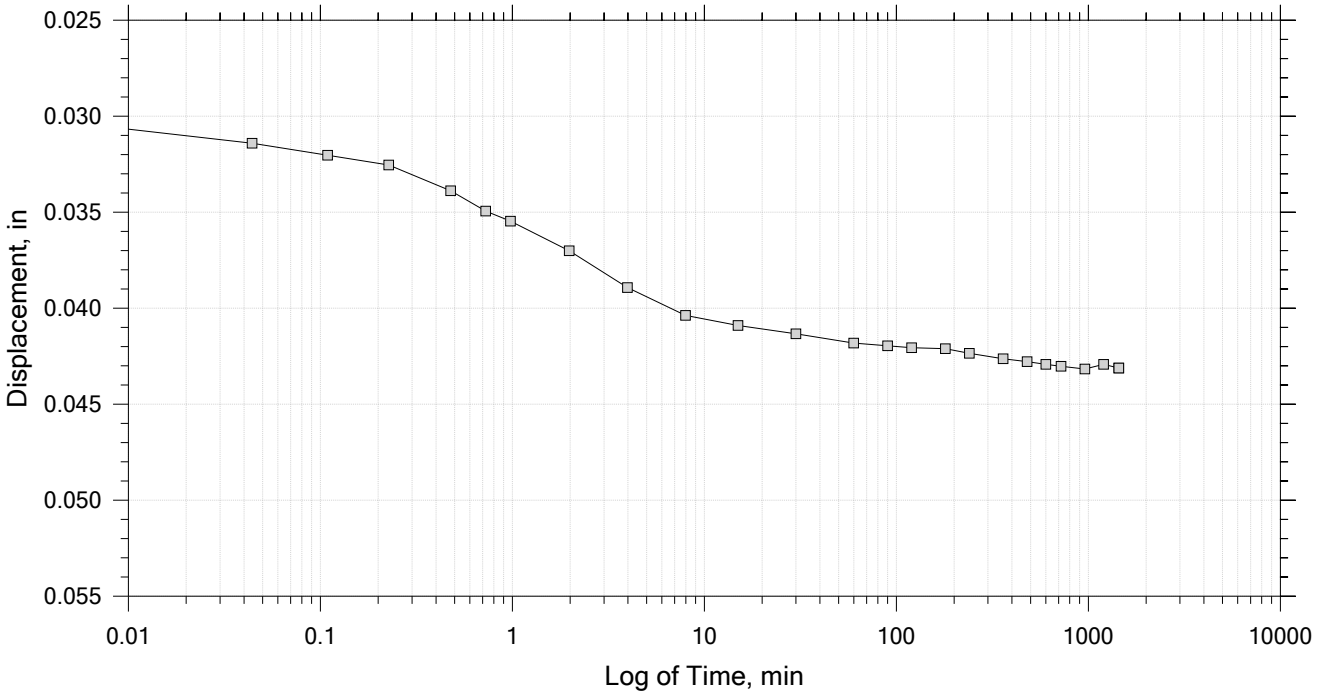


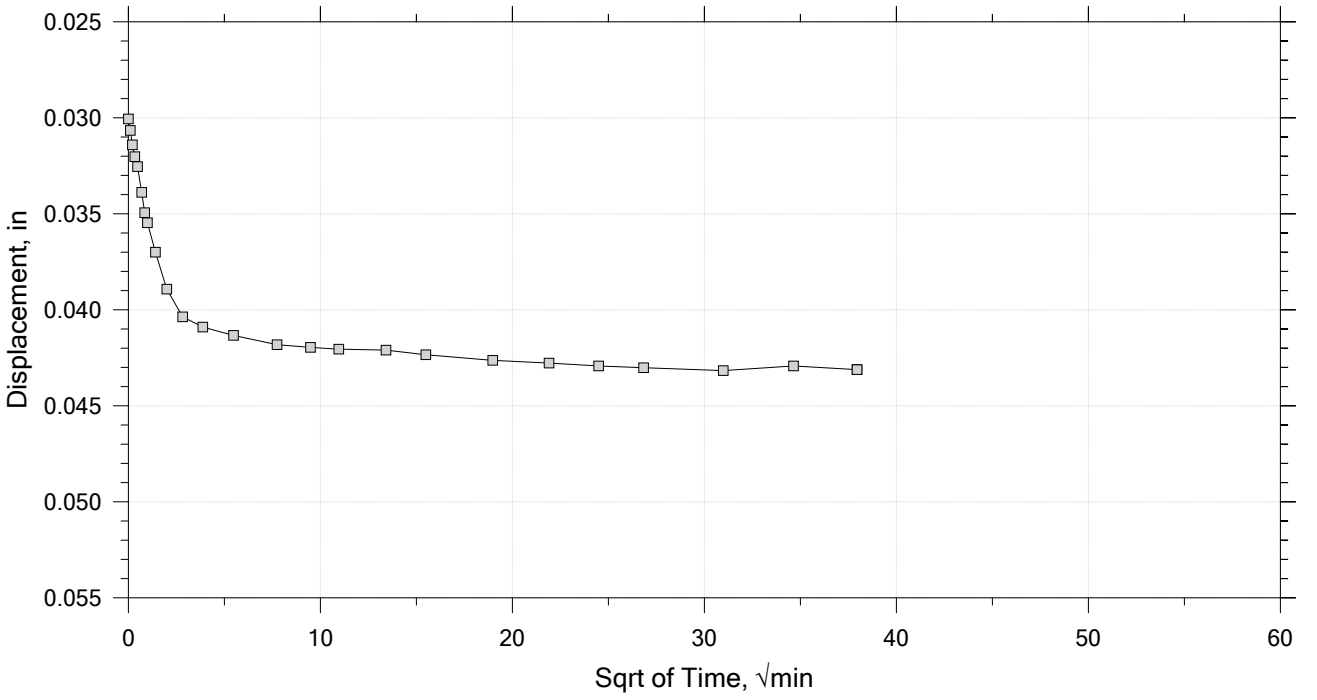


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 18
Constant Load Step
Stress: 2 tsf





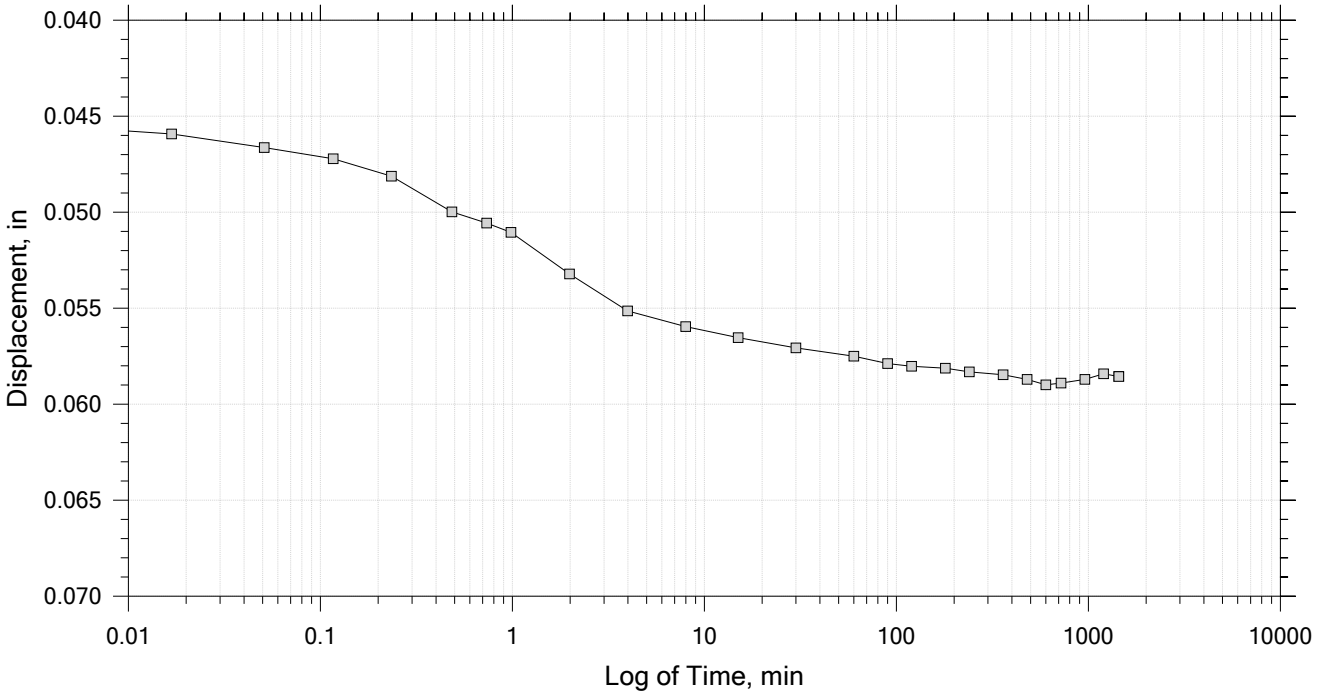
Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

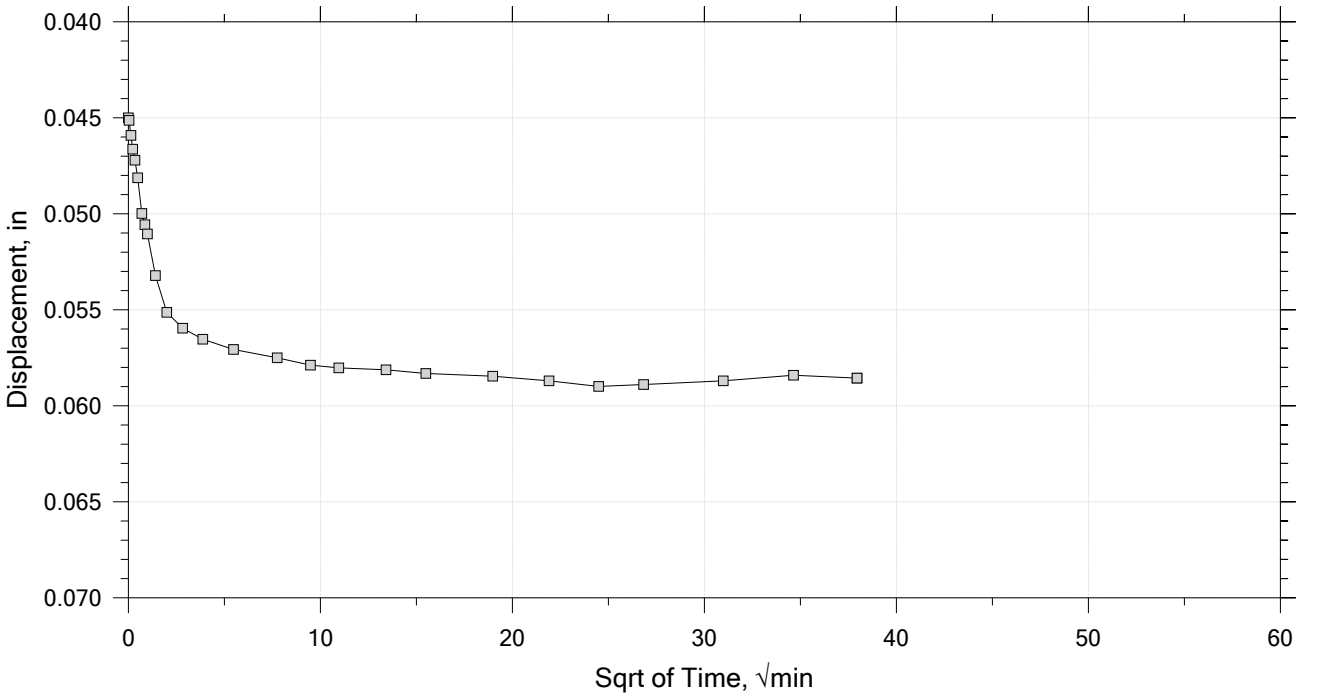
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 18

Constant Load Step

Stress: 4 tsf





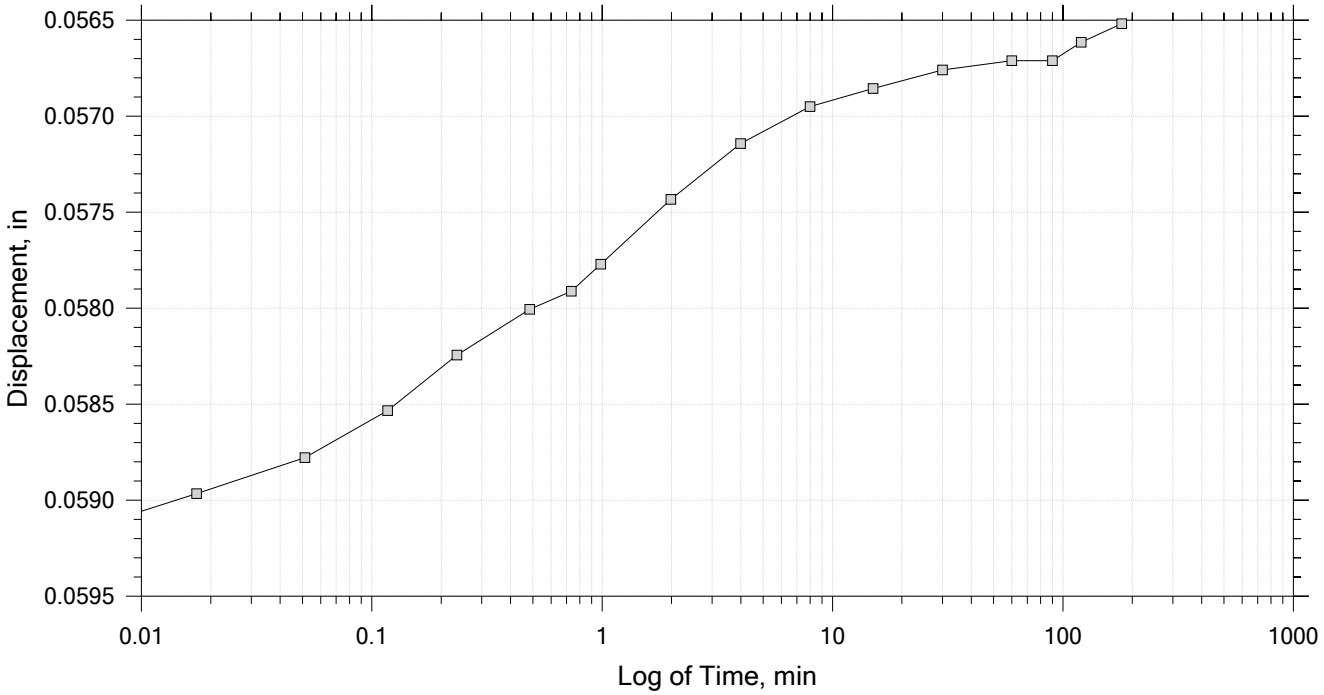
Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

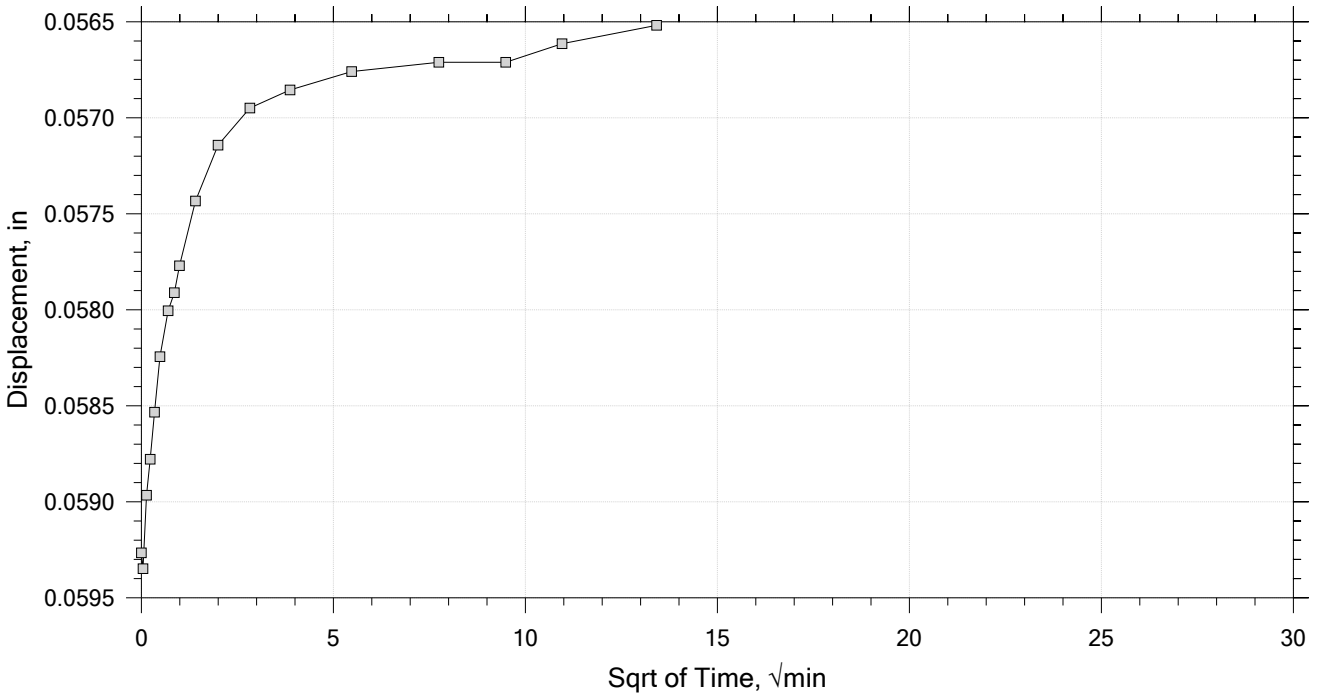
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 18

Constant Load Step

Stress: 1 tsf

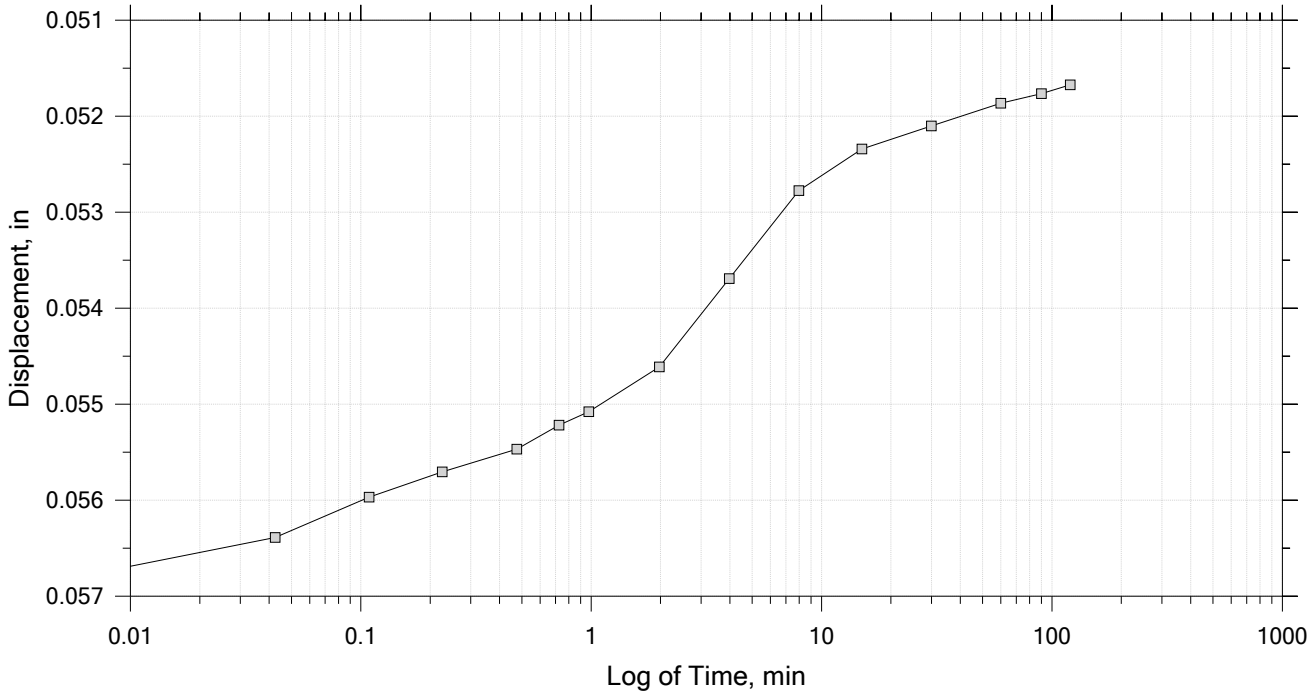


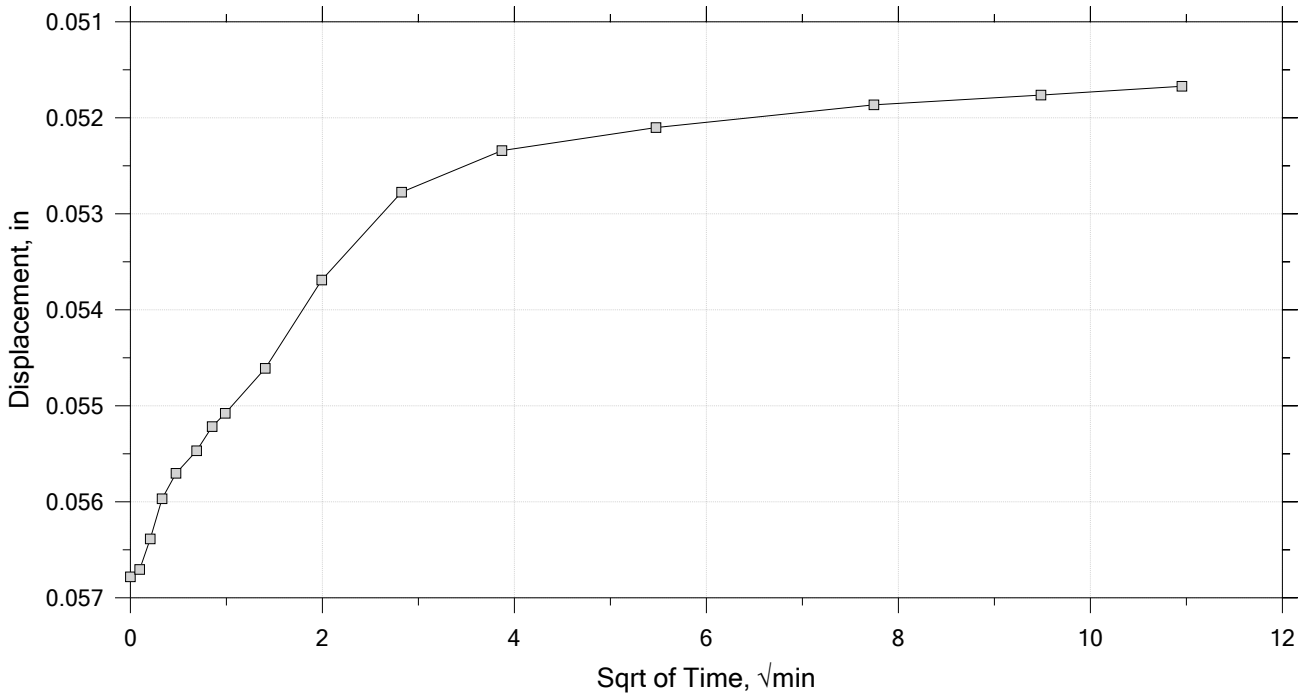


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 18
Constant Load Step
Stress: 0.25 tsf

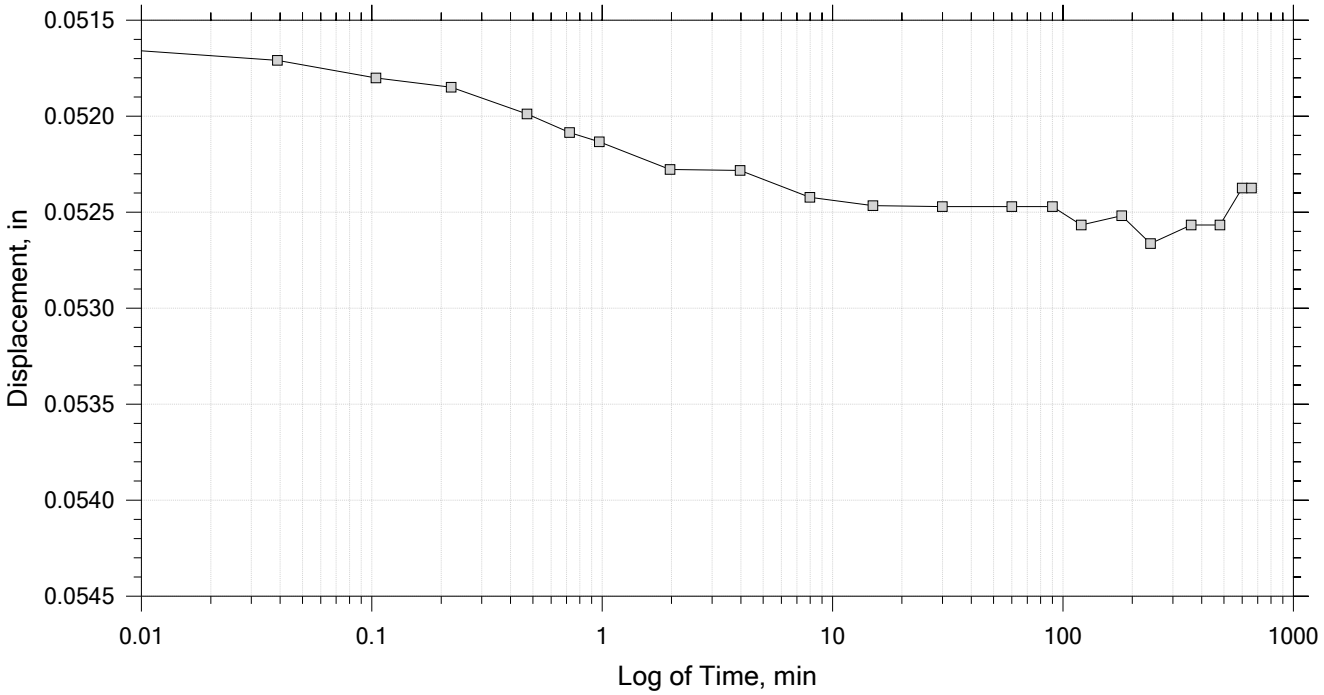


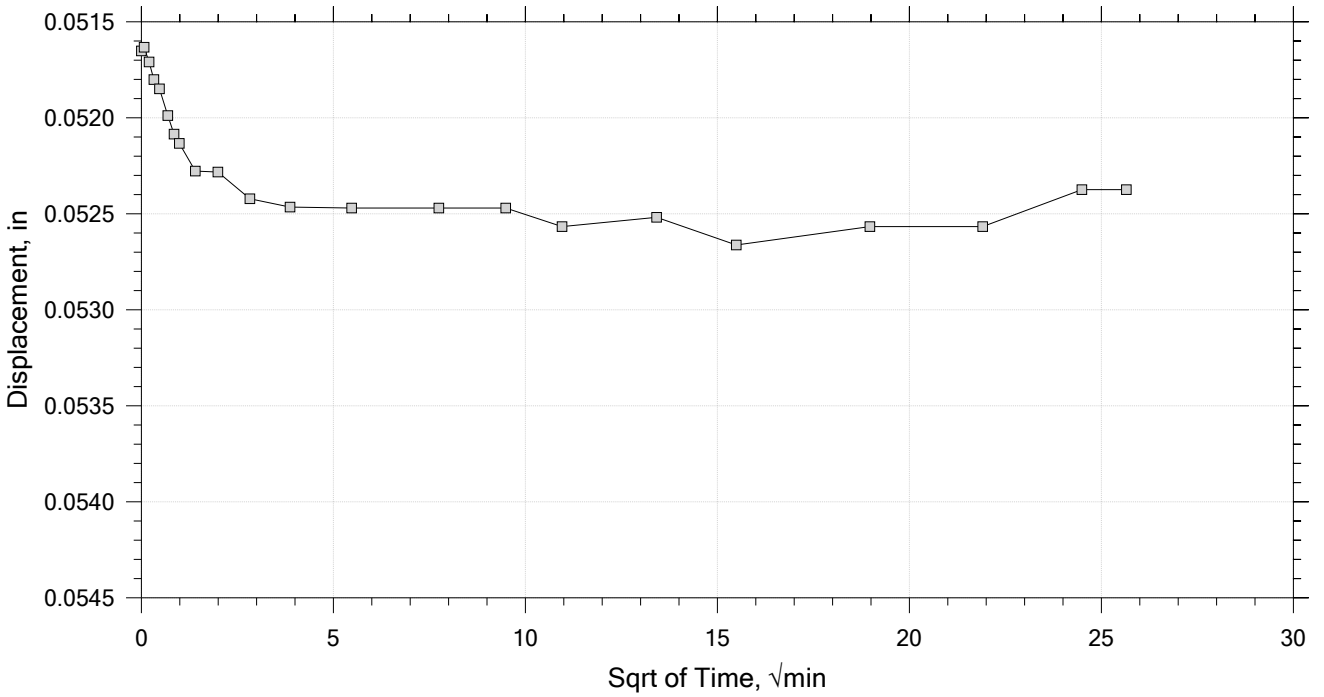


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 18
Constant Load Step
Stress: 0.5 tsf

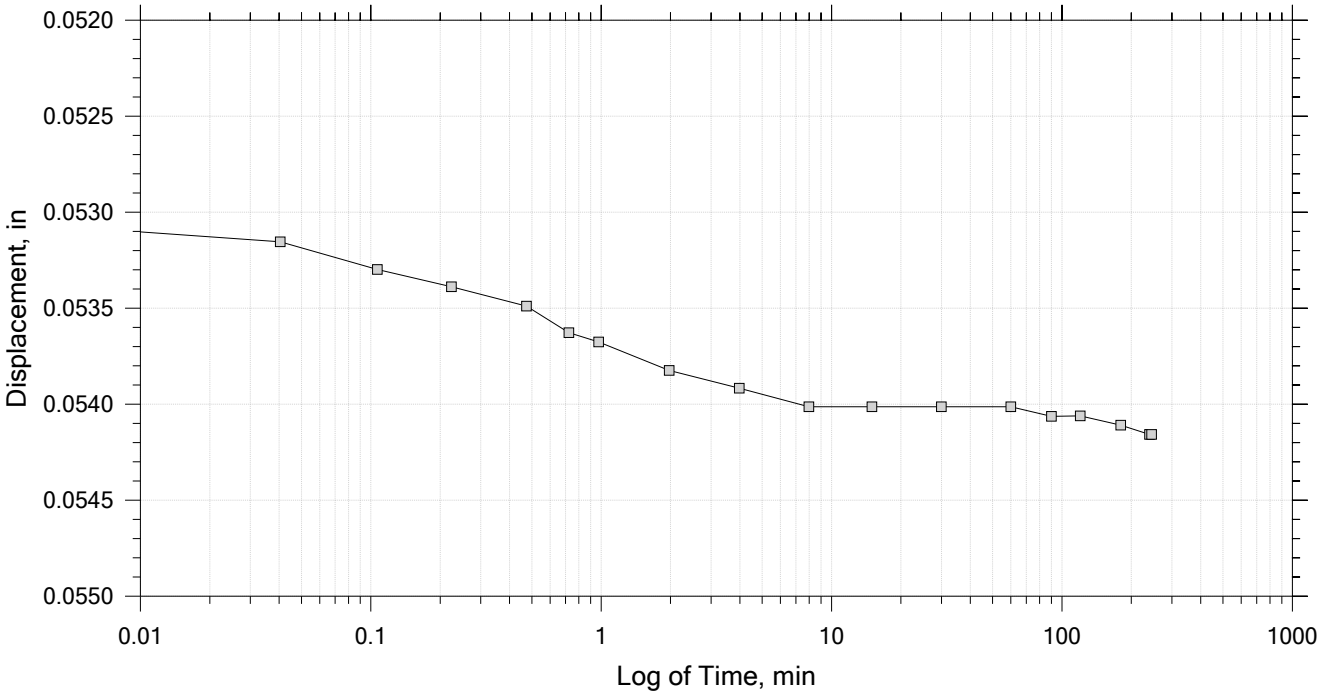


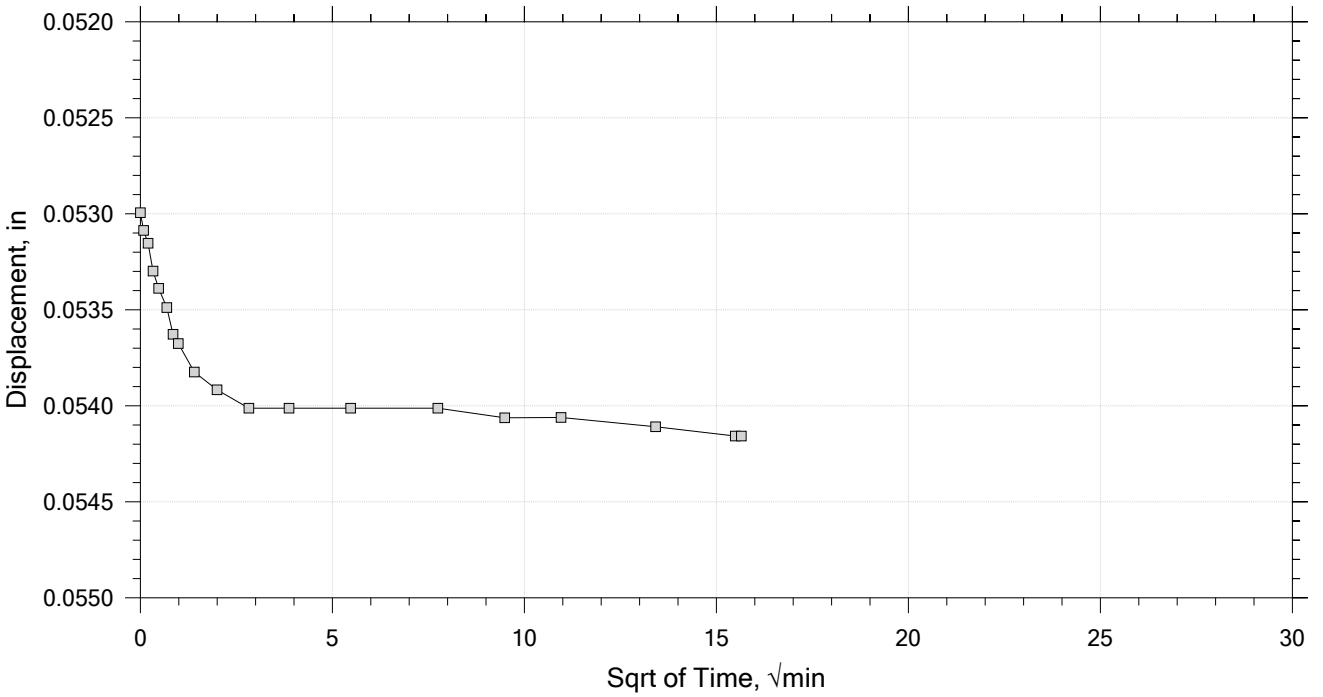


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 18
Constant Load Step
Stress: 1 tsf

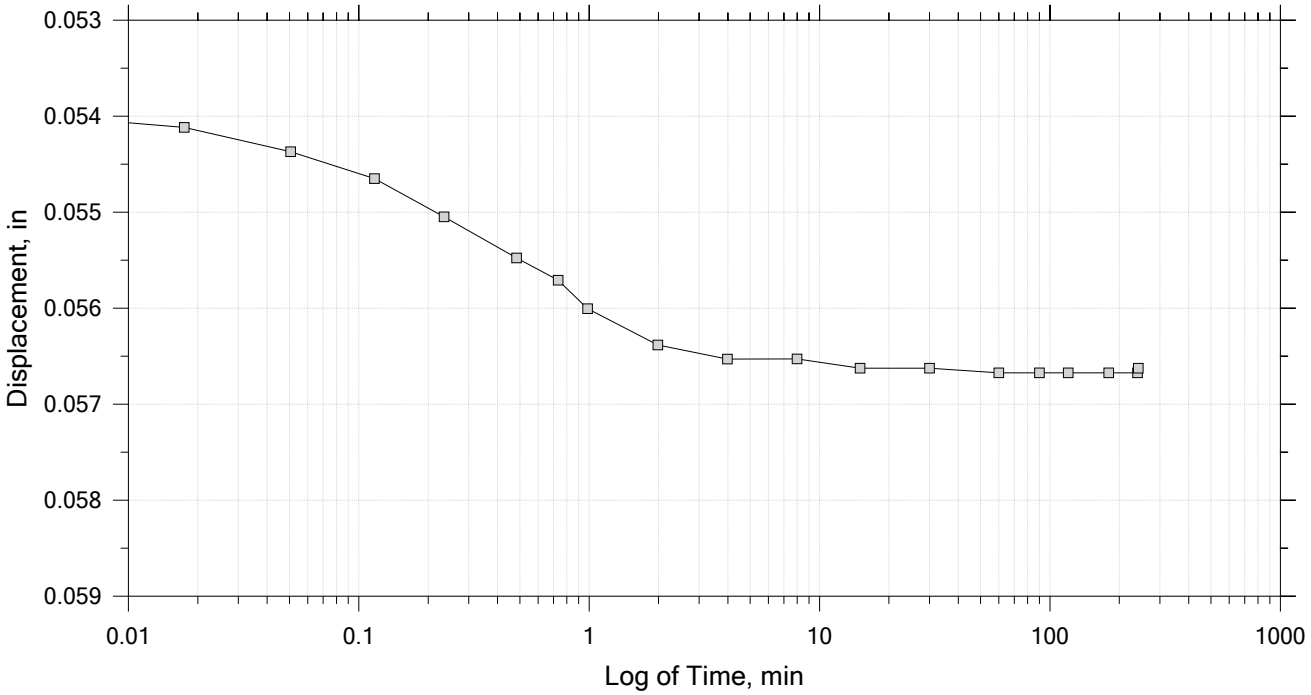


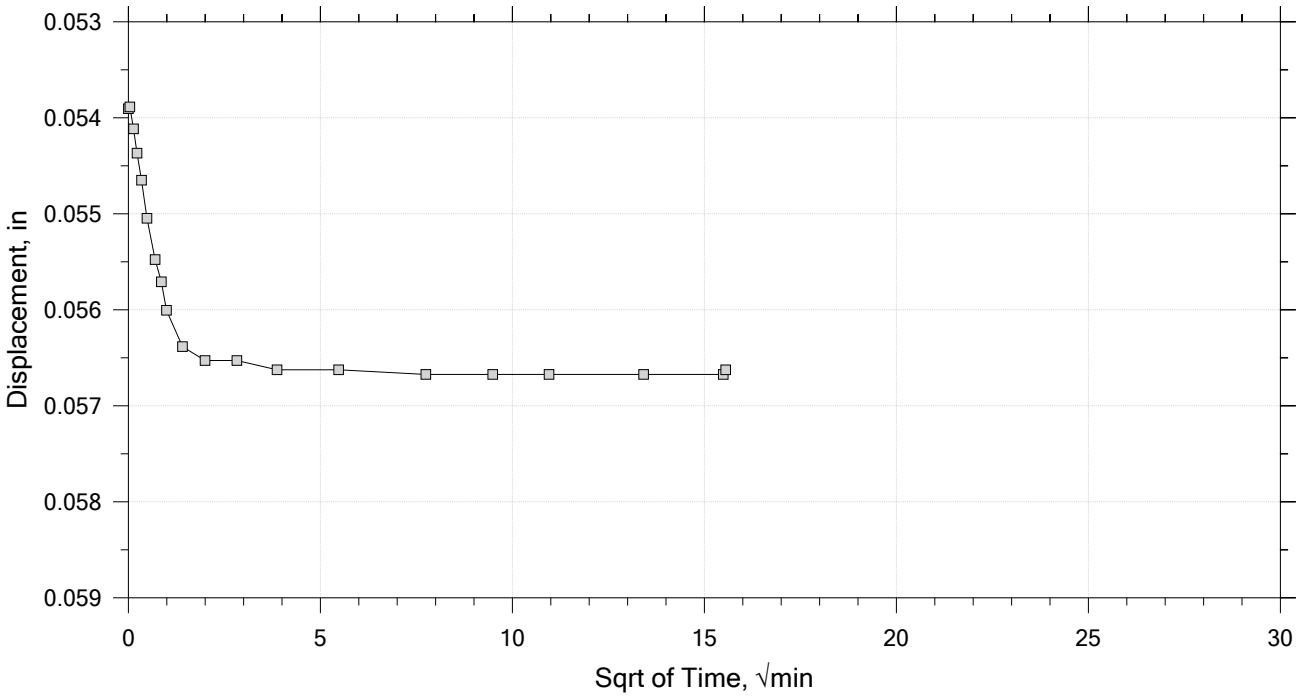


Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation:
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 18
Constant Load Step
Stress: 2 tsf

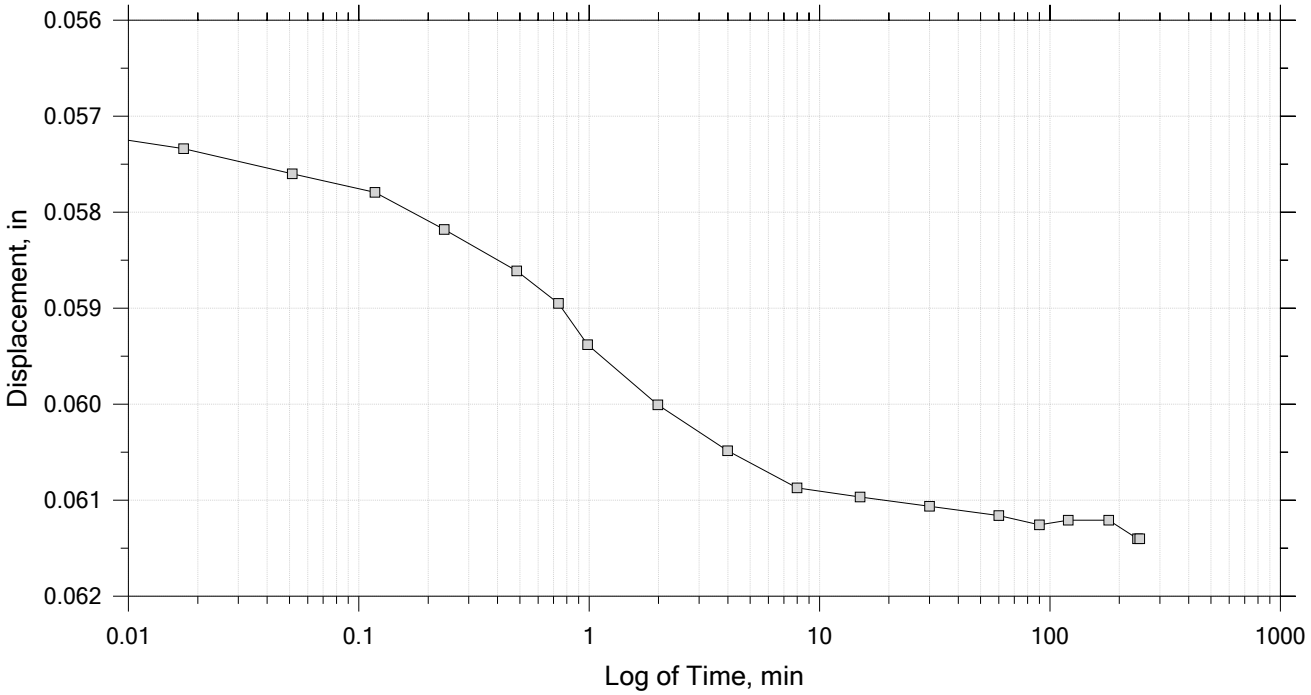


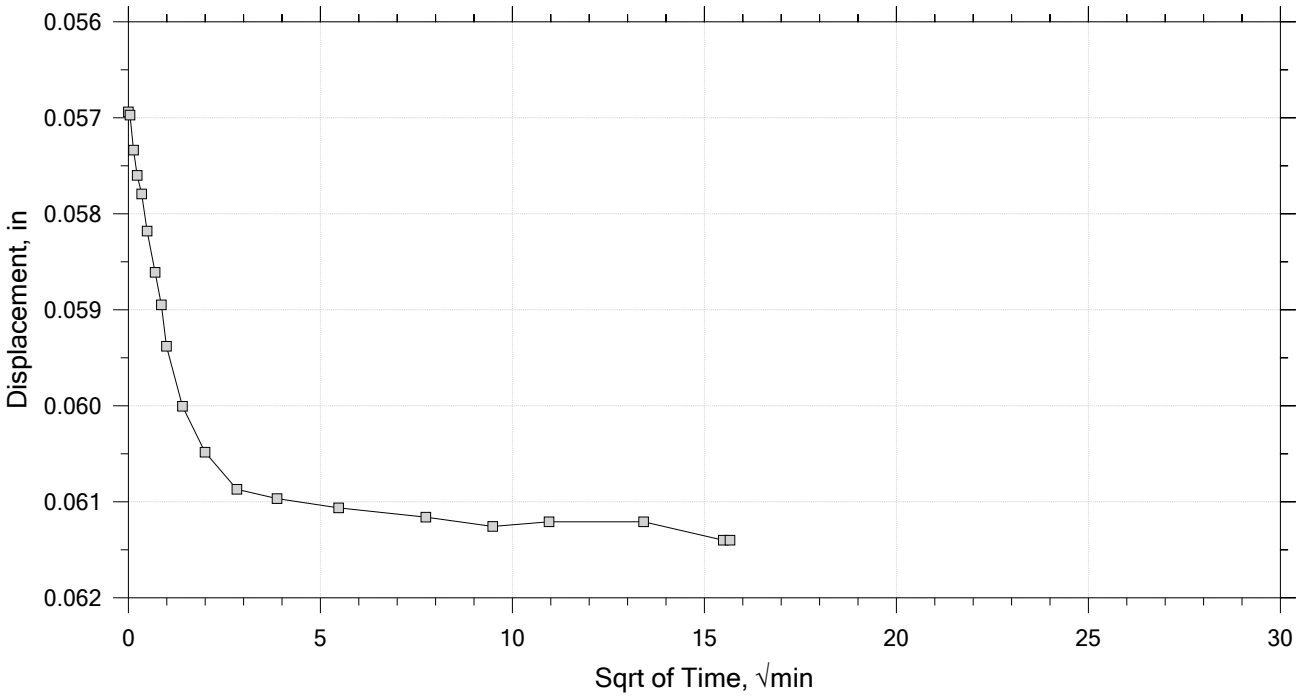


Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation:
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 18
Constant Load Step
Stress: 4 tsf

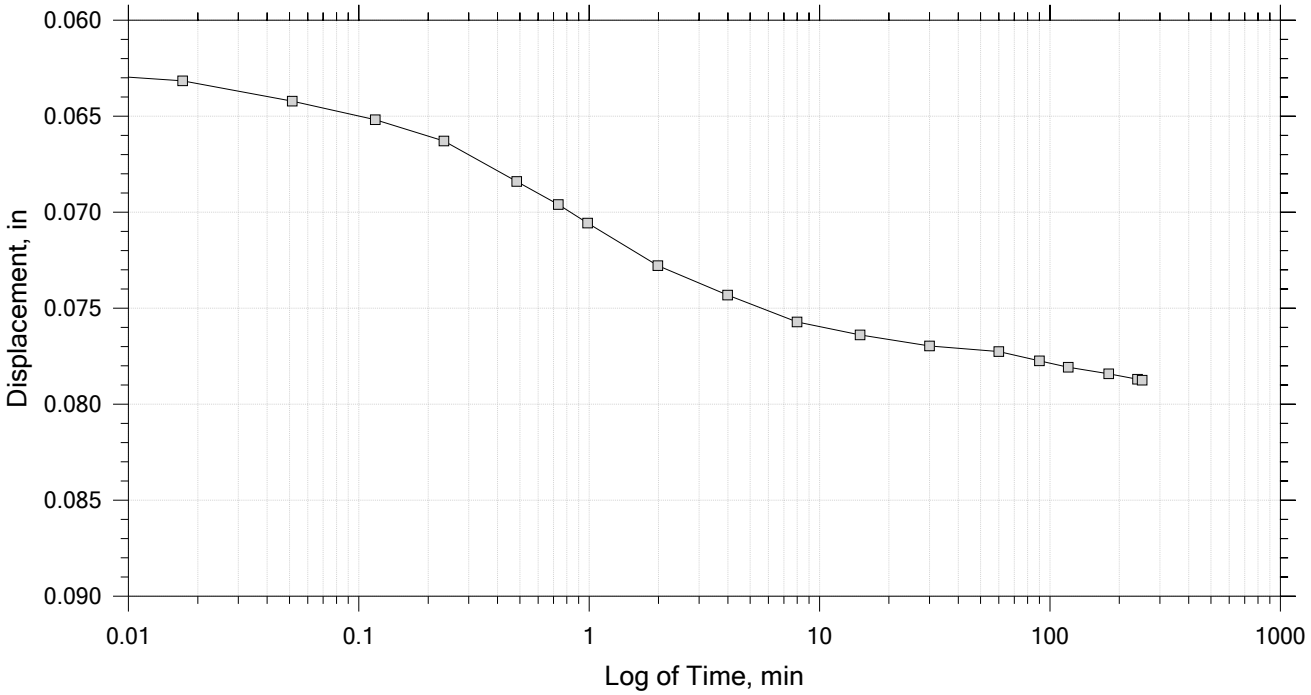


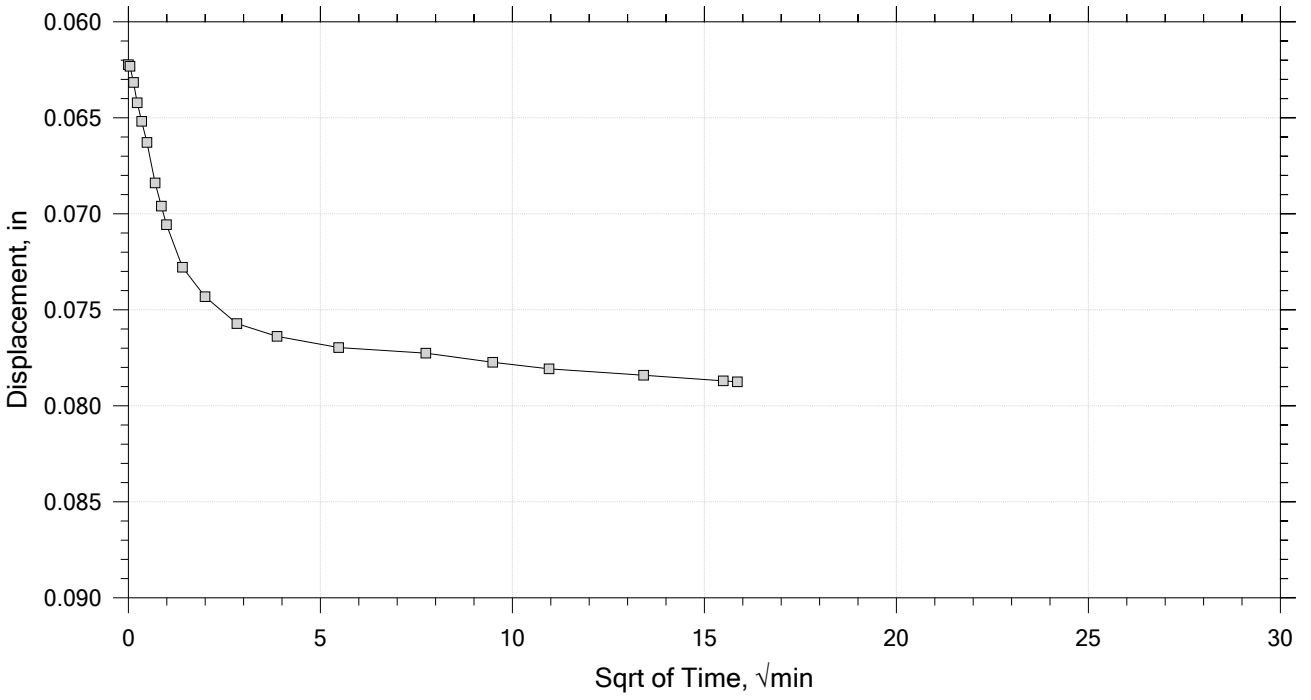


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 18
Constant Load Step
Stress: 8 tsf

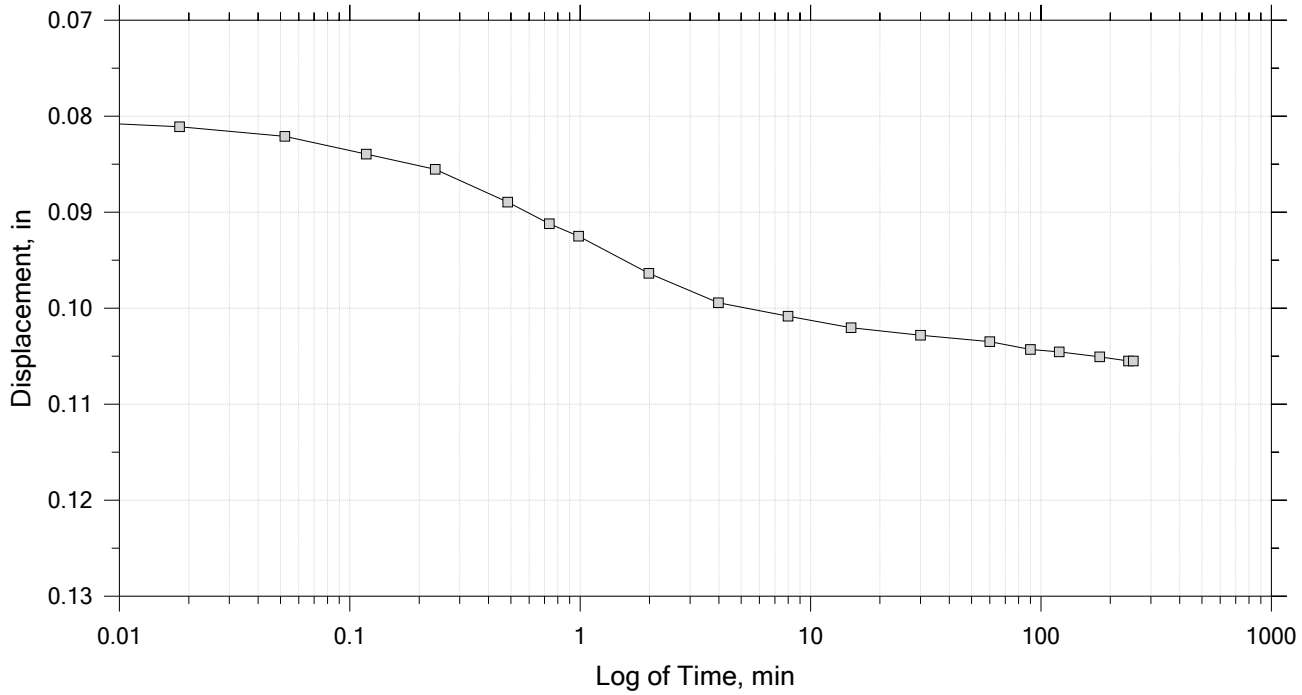


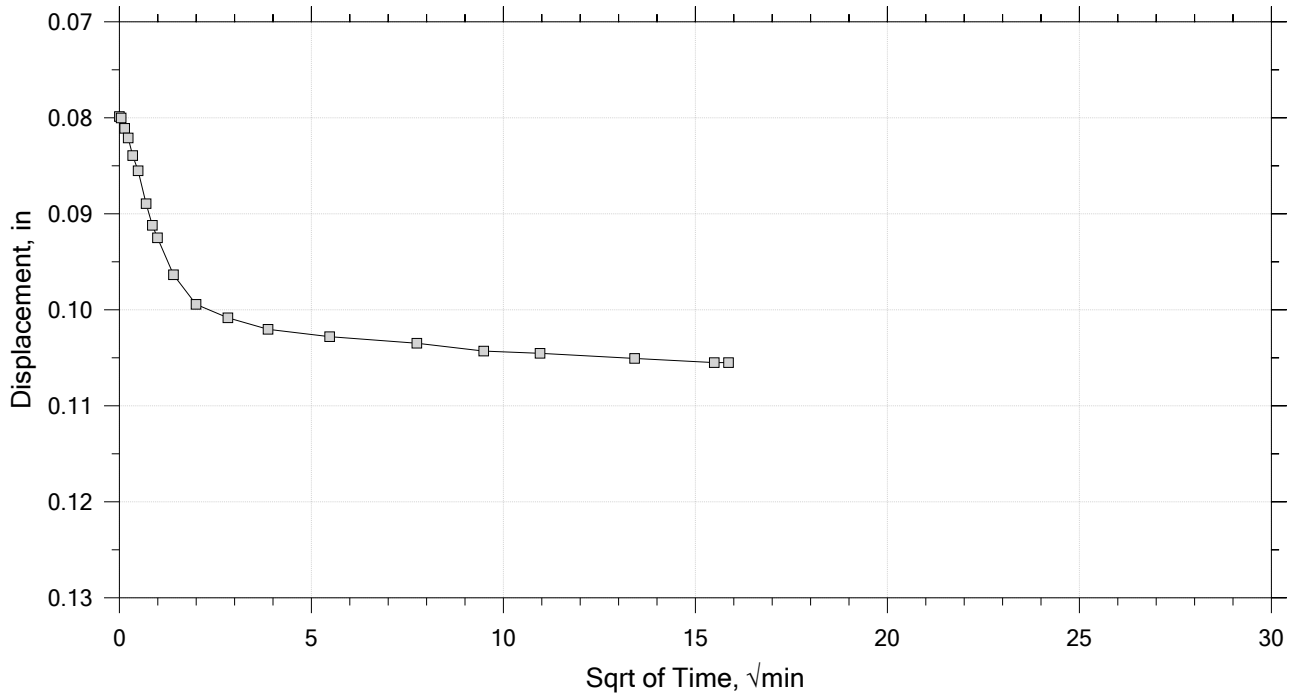


Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation:
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 18
Constant Load Step
Stress: 16 tsf

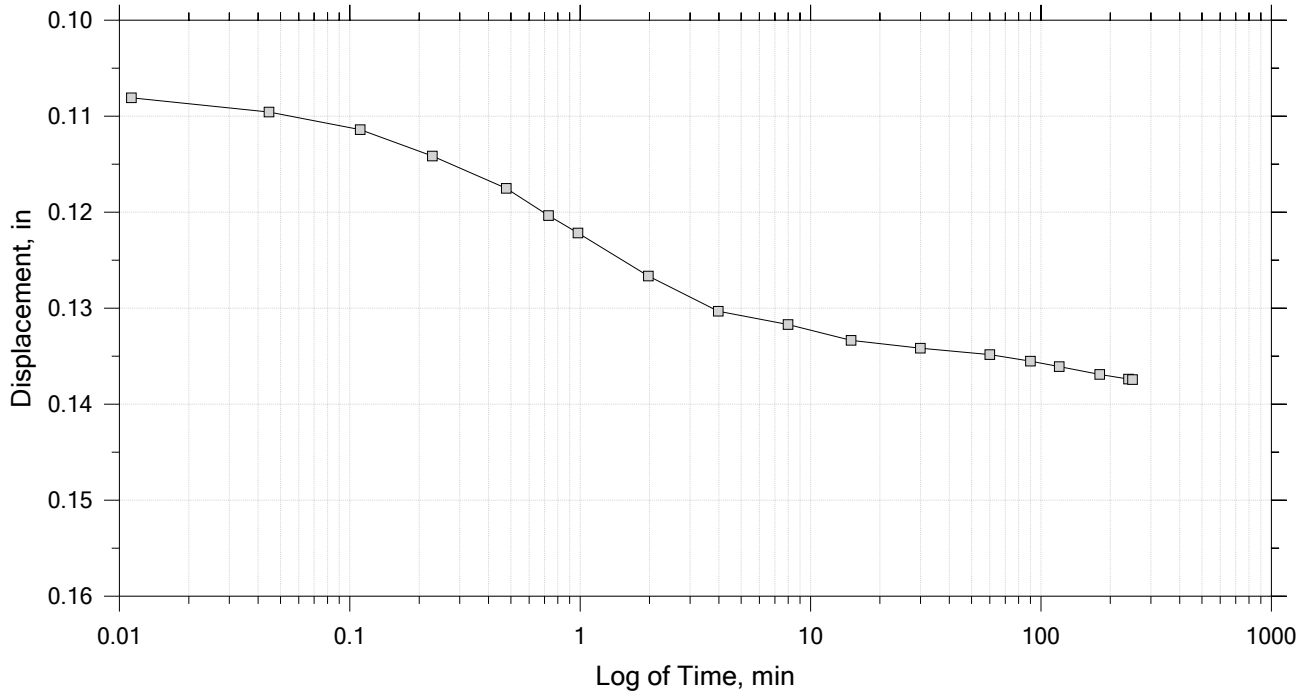


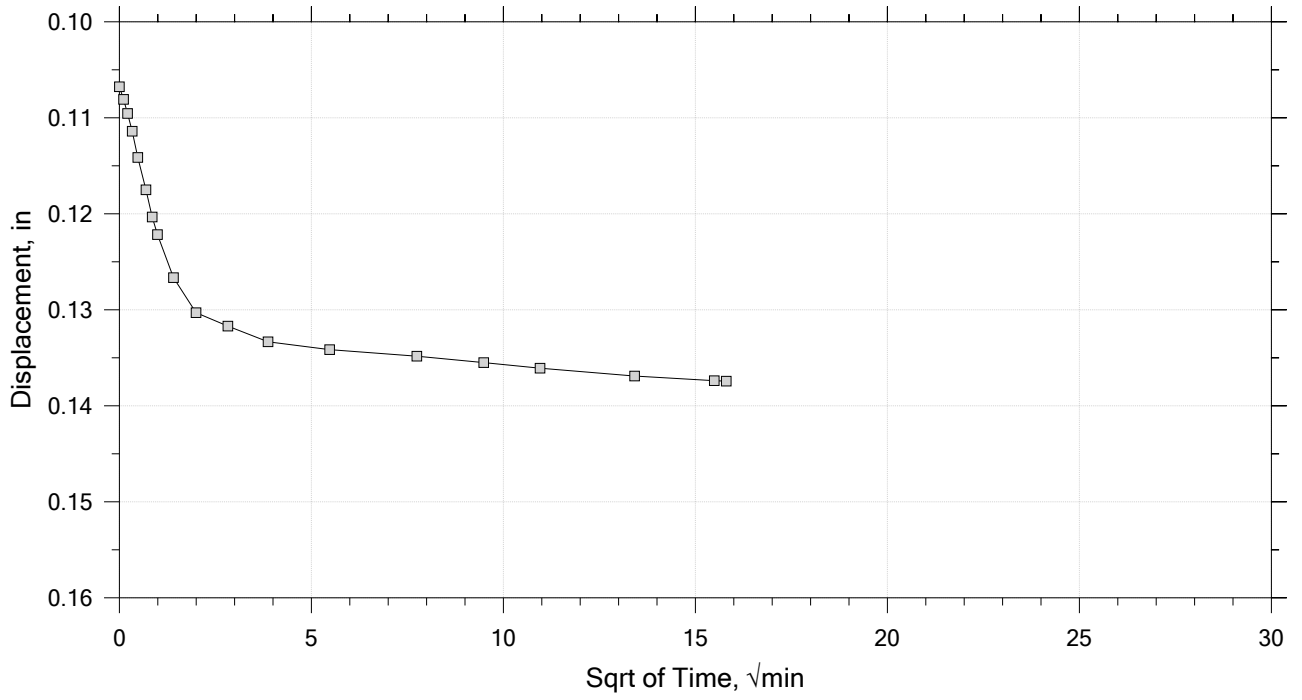


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 18
Constant Load Step
Stress: 32 tsf

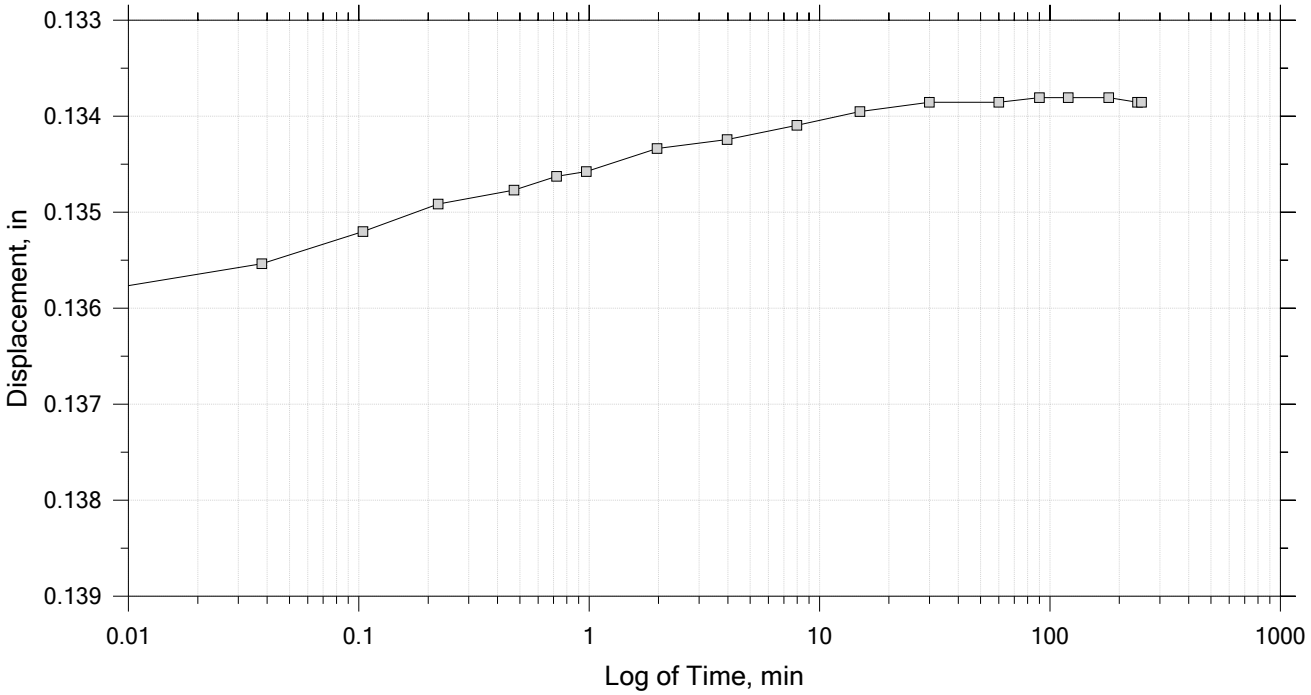


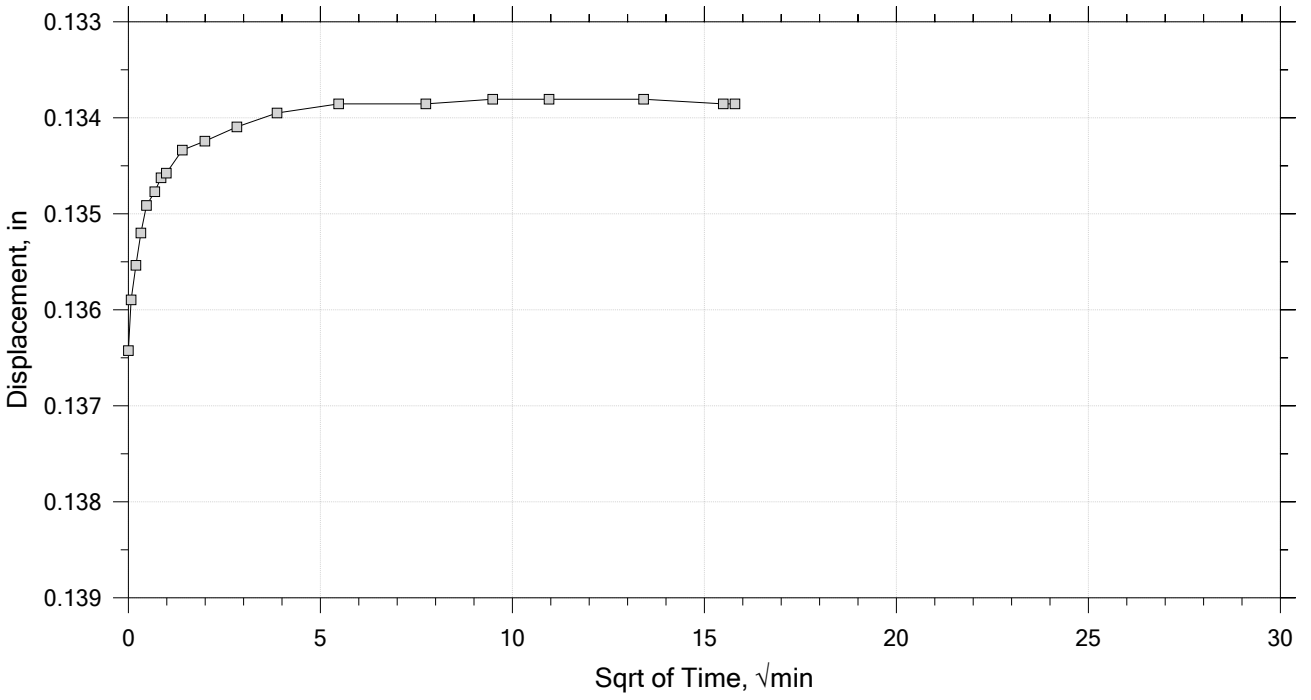


Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation:
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 18
Constant Load Step
Stress: 8 tsf





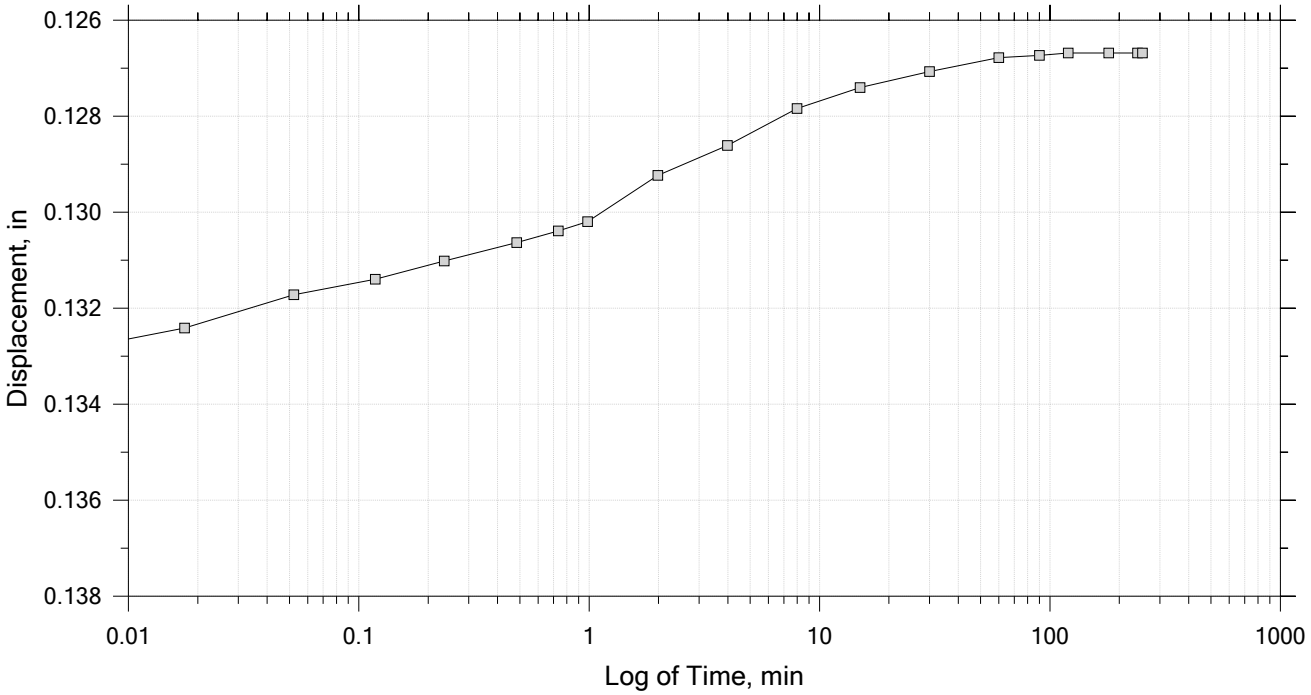
Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation:
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

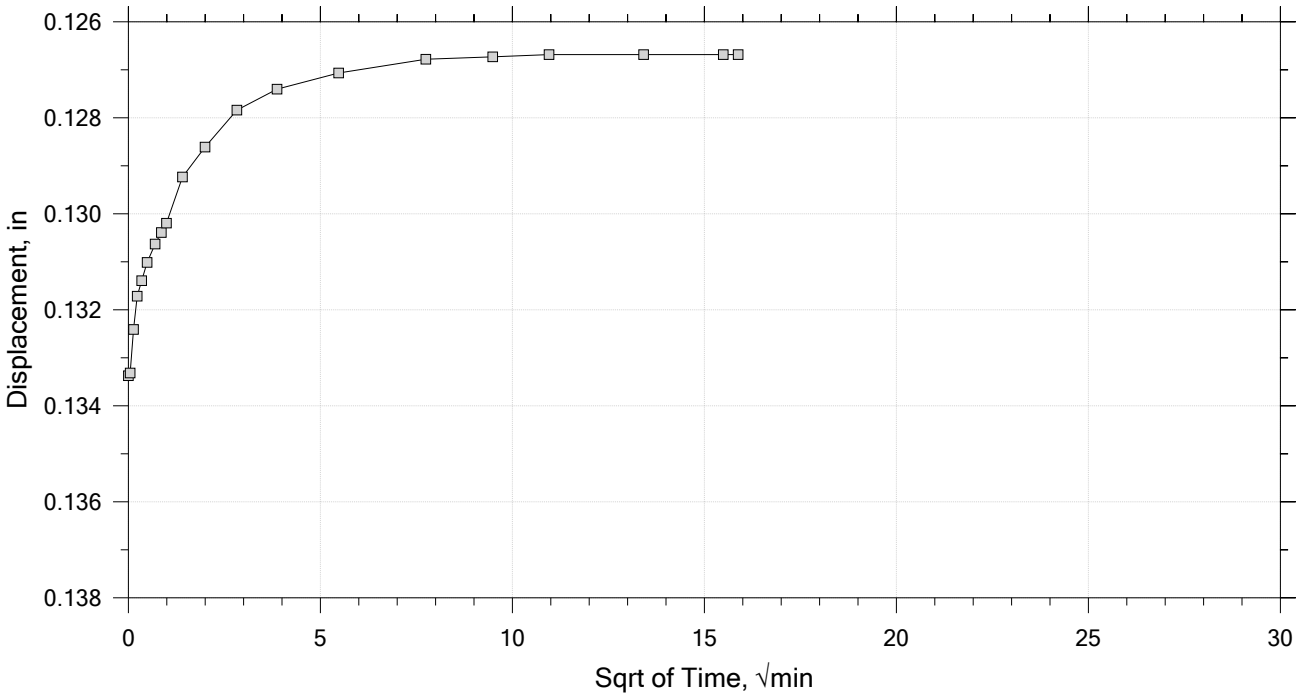
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 18

Constant Load Step

Stress: 2 tsf

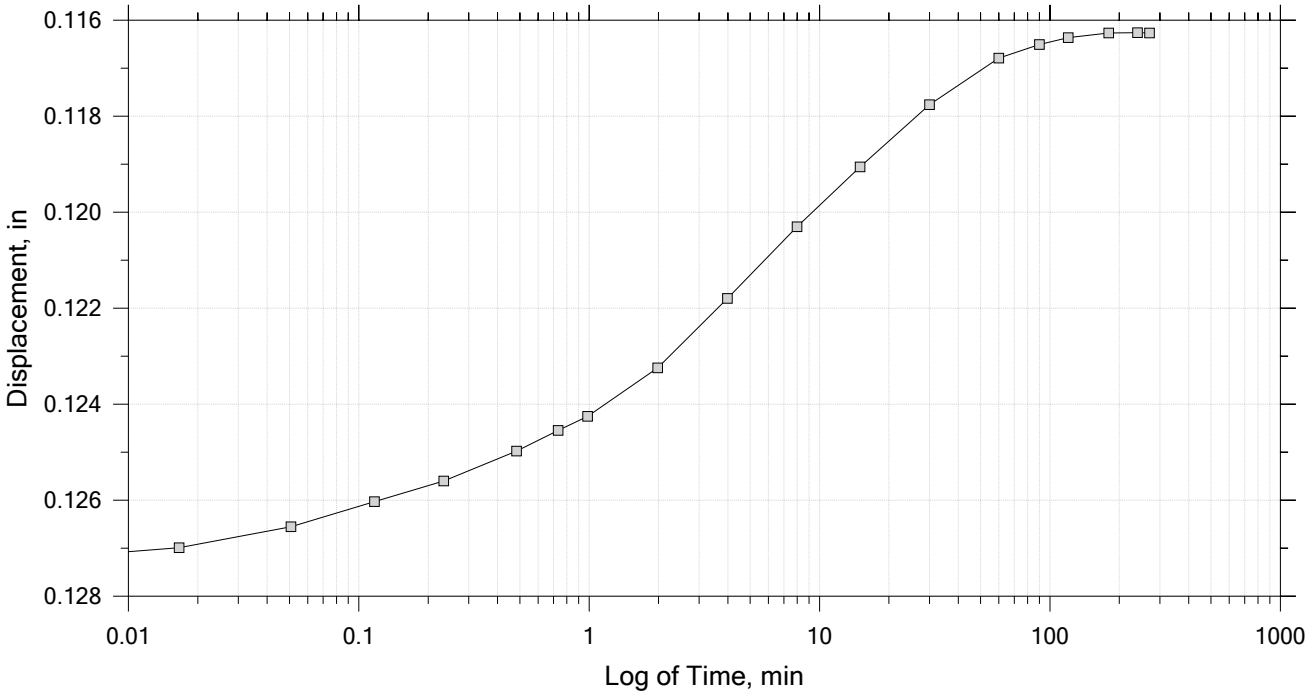


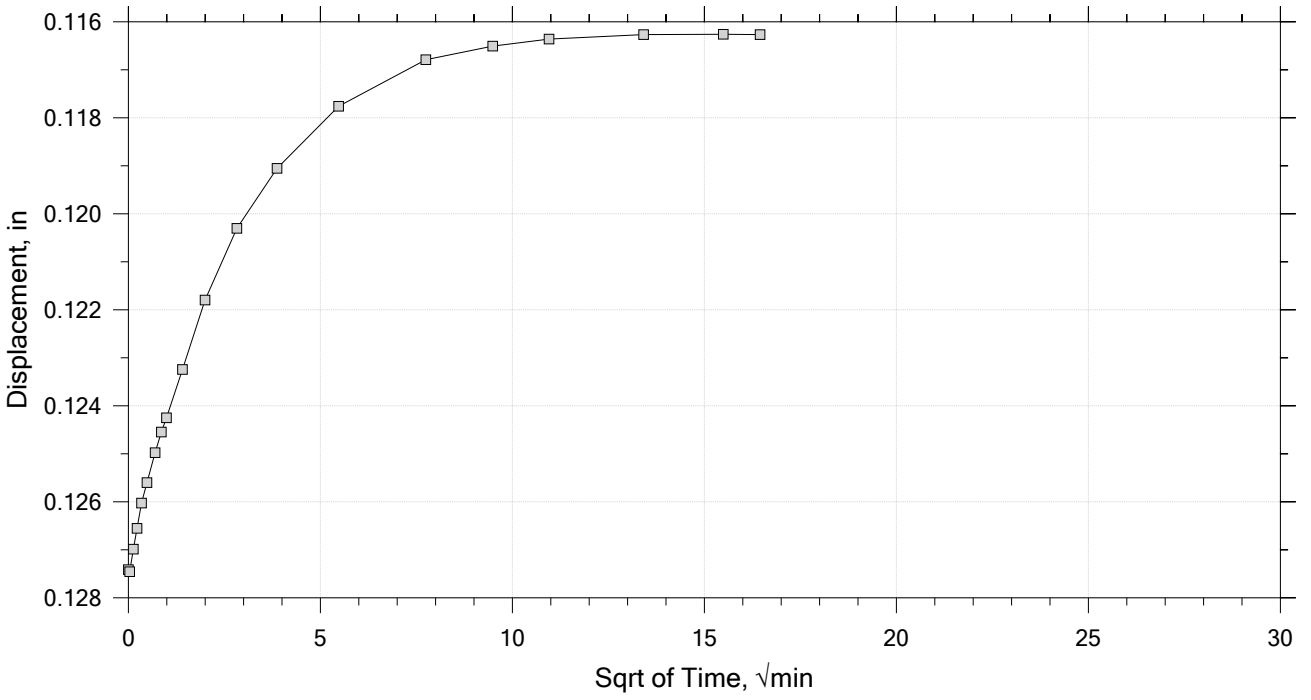


Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 18
Constant Load Step
Stress: 0.5 tsf





Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
Boring Number: 7BR-01	Tester: RC	Checker: DS
Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
Test Number: 1	Preparation: Undisturbed	Elevation:
Description: LEAN CLAY (CL), contains mica, gray		
Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter, in: 2.5000	Specific Gravity: 2.80 (Measured)	Liquid Limit: 38
Specimen Height, in: 1.0000	Initial Void Ratio: 0.667	Plastic Limit: 20
Final Height, in: 0.88	Final Void Ratio: 0.465	Plasticity Index: 18

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID		---		
Mass Container, gm	48.91	111.63	111.63	92.5
Mass Container + Wet Soil, gm	252.12	278.15	269.57	249.72
Mass Container + Dry Soil, gm	214.96	246.55	246.55	226.8
Mass Dry Soil, gm	166.05	134.92	134.92	134.3
Water Content, %	22.38	23.43	17.07	17.07
Void Ratio	---	0.67	0.47	---
Degree of Saturation, %	---	98.19	102.54	---
Dry Unit Weight, pcf	---	104.71	119.12	---

Schnabel ENGINEERING	Project Name: VRE L'Enfant Plaza Track	Location:	Project Number: 22120047
	Boring Number: 7BR-01	Tester: RC	Checker: DS
	Sample Number: UD-01	Test Date: 12/3/24	Depth: 45'-47'
	Test Number: 1	Preparation: Undisturbed	Elevation:
	Description: LEAN CLAY (CL), contains mica, gray		
	Remarks: Held at 2 and 4 tsf for 24 hours to ensure virgin compression.		

Unconsolidated Undrained Triaxial Compression Test

Schnabel ENGINEERING

Project: L' Enfant Track & Station Improvements
Location: Washington DC

Schnabel Contract: 22120047
Boring No.: 7BR-01
Depth: 45'-47'
Elevation: -22' to -24'
Confining Stress (psi): 24.3

Date: 11/27/2024
Reviewed by: DS

Specimen Conditions	
Diameter (in)	2.871
Height (in)	5.999
Area (in^2)	6.47
Moisture (%):	23.9
Weight (g)	1293.70
ρ_{wet} (pcf)	126.90
ρ_{dry} (pcf)	102.5
Void Ratio	0.69
Saturation, %	96

Shear Testing Conditions	
Cell Pressure (psi):	24.3
Rate of Strain (%/min):	1.0

Specimen Type: Undisturbed

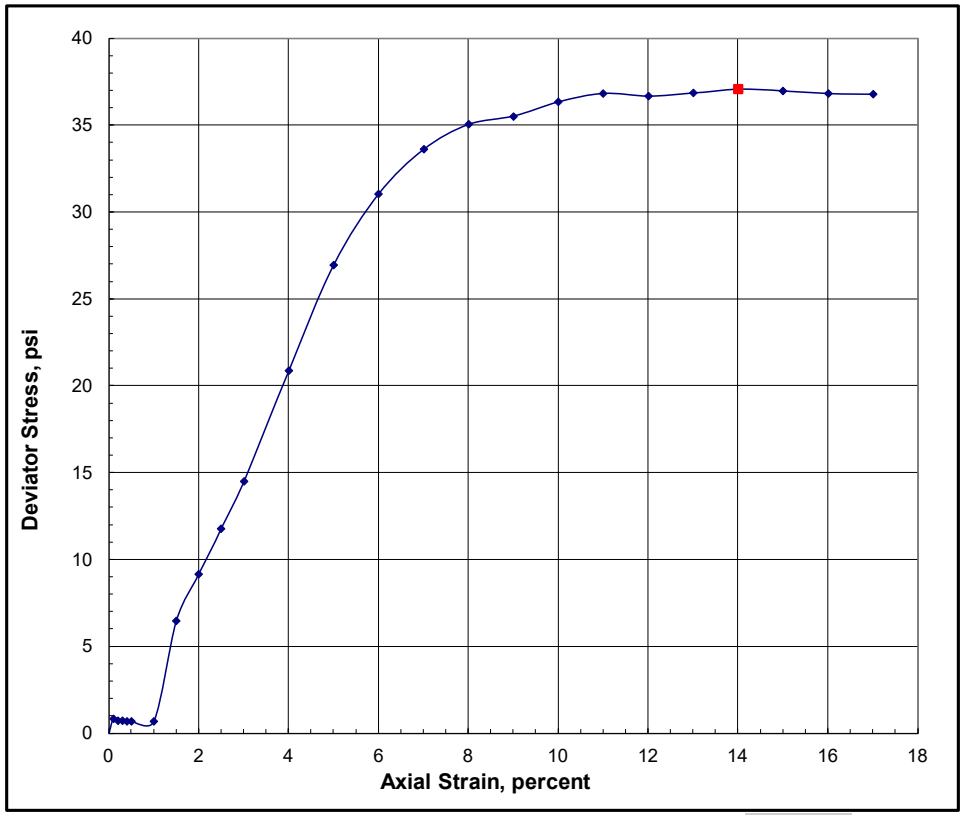
Axial Strain at Failure (%): *14.0*
Compressive Strength (psi): *37.1*
Major Principal Stress (psi): *61.4*
Minor Principal Stress (psi): *24.3*

Soil Description: *LEAN CLAY, (CL) contains mica, gray*

Liquid Limit: 38
Plasticity Index: 18
% finer than No. 200: 98.2
Specific Gravity: 2.68
Remarks:

Failure Sketch

Reading No.	Deviator Load[1] (lbs)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	-0.1	0.00	6.45	24.3	24.3	0.0
1	5.5	0.10	6.46	25.2	24.3	0.8
2	4.9	0.20	6.46	25.0	24.2	0.7
3	4.8	0.30	6.47	25.0	24.3	0.7
4	4.6	0.40	6.48	25.0	24.3	0.7
5	4.6	0.50	6.48	25.0	24.3	0.7
6	4.8	1.00	6.52	25.0	24.3	0.7
7	42.9	1.50	6.55	30.8	24.3	6.5
8	61.0	2.00	6.58	33.4	24.3	9.1
9	78.8	2.50	6.62	36.1	24.3	11.8
10	97.7	3.00	6.65	38.8	24.3	14.5
11	141.7	4.00	6.72	45.2	24.3	20.9
12	185.0	5.00	6.79	51.3	24.3	27.0
13	215.4	6.00	6.87	55.3	24.3	31.0
14	235.9	7.00	6.94	58.0	24.3	33.6
15	248.9	8.00	7.01	59.4	24.3	35.1
16	255.4	9.00	7.09	59.9	24.4	35.5
17	264.6	10.01	7.17	60.7	24.3	36.4
18	271.3	11.00	7.25	61.2	24.4	36.8
19	273.7	12.00	7.33	60.9	24.2	36.7
20	278.4	13.00	7.42	61.2	24.4	36.9
21	283.6	14.00	7.51	61.4	24.3	37.1
22	286.6	15.00	7.59	61.3	24.3	37.0
23	289.2	16.00	7.68	61.1	24.2	36.8
24	292.6	17.00	7.78	61.2	24.4	36.8
25						
26						



Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method

Testing Lab: RICH

Unconsolidated Undrained Triaxial Compression Test

Schnabel ENGINEERING

Project: L' Enfant Track & Station Improvements
Location: Washington DC

Schnabel Contract: 22120047
Boring No.: 7BR-01
Depth: 45'-47'
Elevation: -22' to -24'
Confining Stress (psi): 38.2

Date: 11/27/2024
Reviewed by: DS

Specimen Conditions	
Diameter (in)	2.862
Height (in)	6.024
Area (in^2)	6.43
Moisture (%):	24.7
Weight (g)	1283.00
ρ_{wet} (pcf)	126.11
ρ_{dry} (pcf)	101.1
Void Ratio	0.72
Saturation, %	96

Shear Testing Conditions	
Cell Pressure (psi):	38.2
Rate of Strain (%/min):	1.0

Specimen Type: Undisturbed

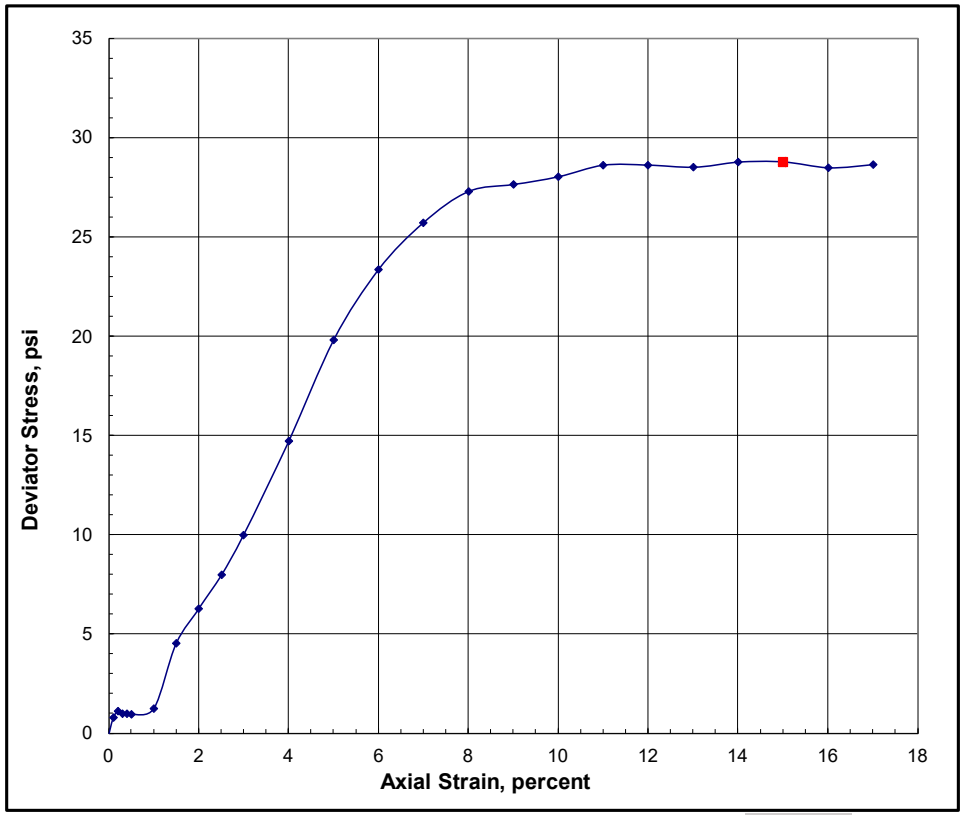
Axial Strain at Failure (%): *15.0*
Compressive Strength (psi): *28.8*
Major Principal Stress (psi): *67.0*
Minor Principal Stress (psi): *38.2*

Soil Description: *LEAN CLAY, (CL) contains mica, gray*

Liquid Limit: 38
Plasticity Index: 18
% finer than No. 200: 98.2
Specific Gravity: 2.68
Remarks:

Failure Sketch

Reading No.	Deviator Load[1] (lbs)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	-0.1	0.00	6.38	38.2	38.2	0.0
1	5.1	0.10	6.38	39.0	38.2	0.8
2	7.2	0.20	6.39	39.3	38.2	1.1
3	6.5	0.30	6.40	39.2	38.2	1.0
4	6.5	0.40	6.40	39.2	38.2	1.0
5	6.3	0.50	6.41	39.1	38.2	1.0
6	8.4	1.00	6.44	39.5	38.2	1.2
7	30.0	1.50	6.48	42.7	38.2	4.5
8	41.6	2.00	6.51	44.5	38.2	6.3
9	53.1	2.51	6.54	46.2	38.2	8.0
10	66.8	3.00	6.58	48.2	38.2	10.0
11	99.3	4.00	6.65	53.0	38.2	14.7
12	134.9	5.00	6.72	58.0	38.2	19.8
13	160.7	6.00	6.79	61.6	38.2	23.4
14	179.1	7.00	6.86	63.9	38.2	25.7
15	192.3	8.00	6.93	65.5	38.2	27.3
16	197.1	9.00	7.01	66.0	38.3	27.6
17	202.5	10.00	7.09	66.3	38.3	28.0
18	209.2	11.00	7.17	66.8	38.2	28.6
19	212.1	12.00	7.25	66.8	38.2	28.6
20	214.0	13.01	7.33	66.8	38.3	28.5
21	218.7	14.00	7.42	67.0	38.2	28.8
22	221.8	15.00	7.51	67.0	38.2	28.8
23	222.5	16.00	7.60	66.7	38.2	28.5
24	226.6	17.00	7.69	66.8	38.2	28.6
25						
26						



Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method

Testing Lab: RICH

Unconsolidated Undrained Triaxial Compression Test

Project: VRE L'Enfant Track and Station Improvements
Location: Washington DC

Schnabel Contract: 22120047
Boring No.: RW-01A
Depth: 40.5'-42.5'
Elevation: -21.5' to -23.5'
Confining Stress (psi): 24.3

Date: 11/25/2024
Reviewed by: DS

Specimen Conditions	
Diameter (in)	2.858
Height (in)	5.974
Area (in^2)	6.42
Moisture (%):	24.1
Weight (g)	1276.30
ρ_{wet} (pcf)	126.87
ρ_{dry} (pcf)	102.3
Void Ratio	0.70
Saturation, %	96

Shear Testing Conditions	
Cell Pressure (psi):	24.3
Rate of Strain (%/min):	1.0

Specimen Type: Undisturbed

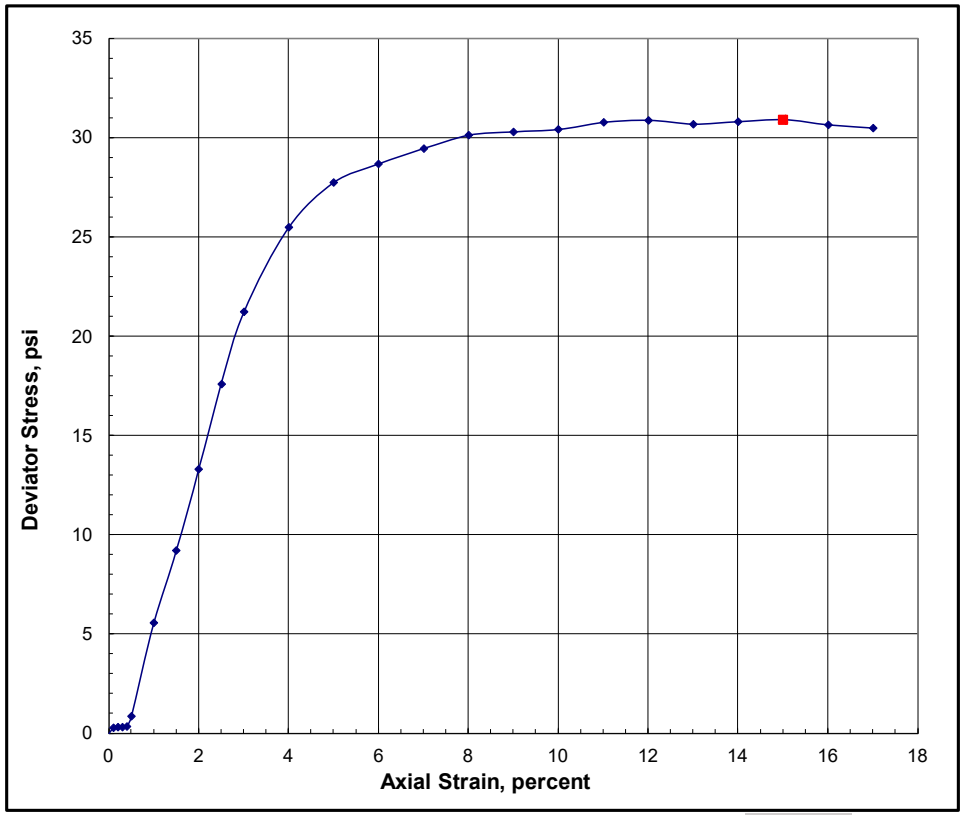
Axial Strain at Failure (%): *15.0*
Compressive Strength (psi): *30.9*
Major Principal Stress (psi): *55.2*
Minor Principal Stress (psi): *24.3*

Soil Description: *LEAN CLAY, (CL) contains mica, gray*

Liquid Limit: 35
Plasticity Index: 15
% finer than No. 200: 96
Specific Gravity: 2.68
Remarks:

Failure Sketch

Reading No.	Deviator Load[1] (lbs)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	-0.1	0.00	6.39	24.3	24.3	0.0
1	1.8	0.10	6.39	24.6	24.3	0.3
2	2.0	0.20	6.40	24.6	24.3	0.3
3	2.2	0.30	6.41	24.6	24.3	0.3
4	2.4	0.40	6.41	24.7	24.3	0.3
5	5.8	0.50	6.42	25.2	24.3	0.9
6	36.4	1.00	6.45	29.9	24.3	5.6
7	60.2	1.50	6.49	33.5	24.3	9.2
8	87.4	2.00	6.52	37.5	24.3	13.3
9	116.1	2.50	6.55	41.9	24.3	17.6
10	140.9	3.00	6.59	45.4	24.2	21.2
11	171.1	4.00	6.65	49.9	24.4	25.5
12	188.4	5.00	6.72	52.1	24.3	27.7
13	197.2	6.00	6.80	52.9	24.2	28.7
14	204.9	7.00	6.87	53.7	24.3	29.4
15	212.2	8.00	6.94	54.4	24.2	30.1
16	216.1	9.00	7.02	54.6	24.3	30.3
17	219.6	10.00	7.10	54.8	24.4	30.4
18	225.0	11.00	7.18	55.1	24.4	30.8
19	228.7	12.00	7.26	55.2	24.3	30.9
20	230.3	13.00	7.34	55.0	24.3	30.7
21	234.1	14.00	7.43	55.1	24.3	30.8
22	238.0	15.00	7.52	55.2	24.3	30.9
23	239.2	16.00	7.60	55.0	24.3	30.7
24	241.0	17.01	7.70	54.8	24.3	30.5
25						
26						



Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method

Testing Lab: RICH

Unconsolidated Undrained Triaxial Compression Test

Project: VRE L'Enfant Track and Station Improvements
Location: Washington DC

Schnabel Contract: 22120047
Boring No.: RW-01A
Depth: 40.5'-42.5
Elevation: -21.5' to -23.5'
Confining Stress (psi): 38.2

Date: 11/26/2024
Reviewed by: DS

Specimen Conditions	
Diameter (in)	2.865
Height (in)	6.081
Area (in^2)	6.45
Moisture (%):	23.5
Weight (g)	1304.70
ρ_{wet} (pcf)	126.78
ρ_{dry} (pcf)	102.6
Void Ratio	0.69
Saturation, %	95

Shear Testing Conditions	
Cell Pressure (psi):	38.2
Rate of Strain (%/min):	1.0

Specimen Type: Undisturbed

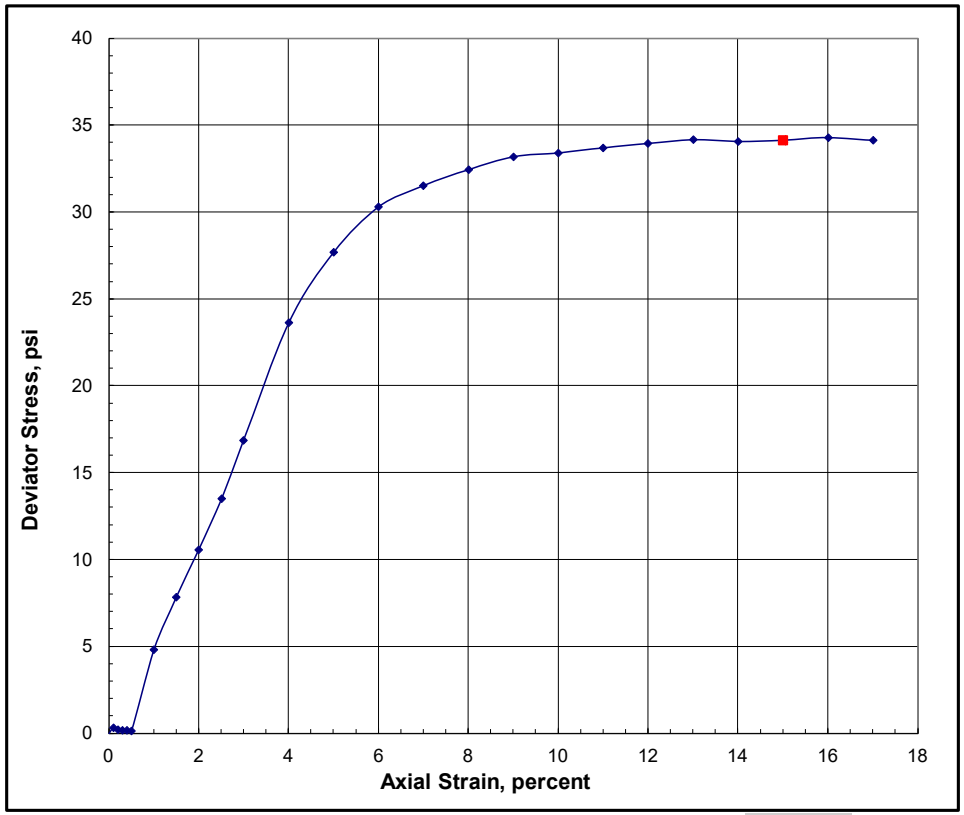
Axial Strain at Failure (%): *15.0*
Compressive Strength (psi): *34.2*
Major Principal Stress (psi): *72.4*
Minor Principal Stress (psi): *38.2*

Soil Description: *LEAN CLAY, (CL) contains mica, gray*

Liquid Limit: 35
Plasticity Index: 15
% finer than No. 200: 96
Specific Gravity: 2.68
Remarks:

Failure Sketch

Reading No.	Deviator Load[1] (lbs)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	-0.1	0.00	6.40	38.2	38.2	0.0
1	2.1	0.10	6.41	38.5	38.2	0.3
2	1.5	0.20	6.42	38.5	38.3	0.2
3	1.3	0.30	6.42	38.4	38.2	0.2
4	1.2	0.40	6.43	38.3	38.2	0.2
5	1.2	0.50	6.44	38.3	38.2	0.2
6	31.5	1.00	6.47	43.0	38.2	4.8
7	51.6	1.50	6.50	46.0	38.2	7.8
8	69.9	2.00	6.54	48.8	38.2	10.6
9	89.8	2.50	6.57	51.7	38.2	13.5
10	112.4	3.00	6.60	55.1	38.2	16.9
11	159.2	4.00	6.67	61.8	38.2	23.6
12	188.5	5.00	6.74	65.8	38.2	27.7
13	208.7	6.00	6.81	68.6	38.3	30.3
14	219.7	7.00	6.89	69.8	38.2	31.5
15	229.0	8.00	6.96	70.7	38.2	32.5
16	237.1	9.00	7.04	71.4	38.2	33.2
17	241.6	10.00	7.12	71.6	38.2	33.4
18	246.8	11.00	7.20	72.0	38.2	33.7
19	251.6	12.00	7.28	72.1	38.1	33.9
20	256.5	13.00	7.36	72.4	38.2	34.2
21	259.1	14.00	7.45	72.3	38.2	34.1
22	263.0	15.00	7.54	72.4	38.2	34.2
23	267.6	16.00	7.63	72.5	38.2	34.3
24	269.8	17.00	7.72	72.4	38.3	34.1
25						
26						



Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method

Testing Lab: RICH

Unconsolidated Undrained Triaxial Compression Test

Project: VRE L'Enfant Track and Station

Location: Washington DC

Schnabel Contract: 22120047
Boring No.: RW-02A
Depth: 40'-42'
Elevation: -19' to -21'
Confining Stress (psi): 24.3

Date: 12/2/2024
Reviewed by: DS

Soil Description: *LEAN CLAY (CL), contains mica, gray*

Liquid Limit: 38
Plasticity Index: 18
% finer than No. 200: 97.2
Specific Gravity: 2.68
Remarks:

Failure Sketch

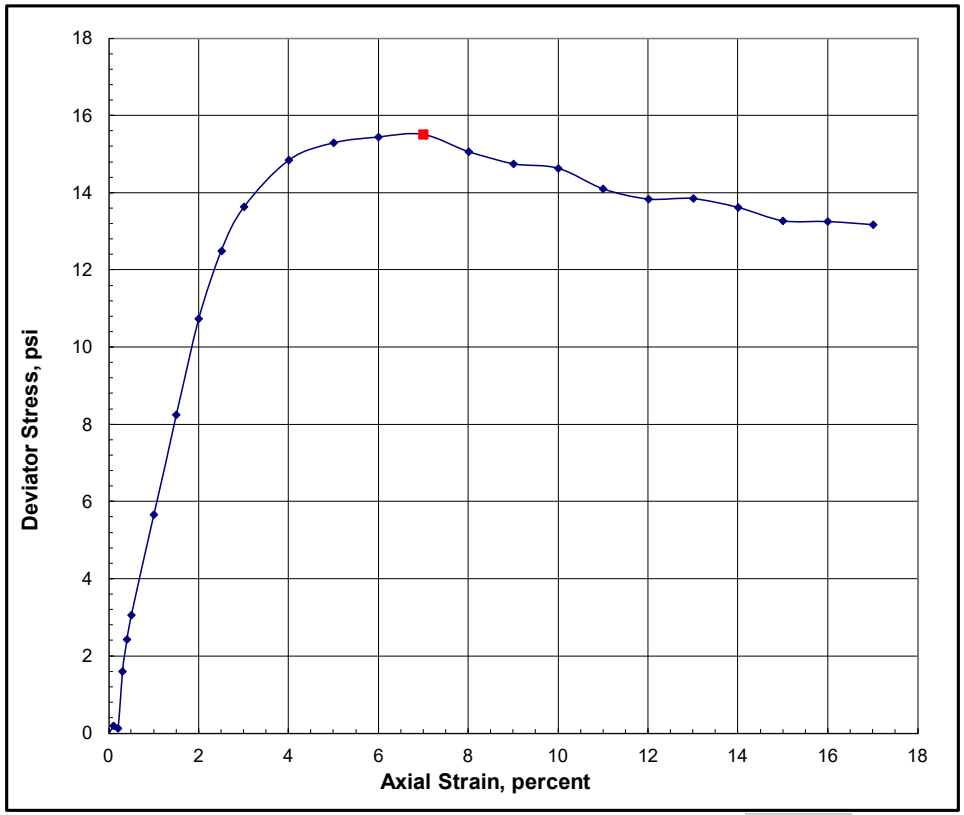
Specimen Conditions	
Diameter (in)	2.859
Height (in)	5.991
Area (in^2)	6.42
Moisture (%):	28.5
Weight (g)	1239.40
ρ_{wet} (pcf)	122.76
ρ_{dry} (pcf)	95.5
Void Ratio	0.75
Saturation, %	102

Shear Testing Conditions	
Cell Pressure (psi):	24.3
Rate of Strain (%/min):	1.0

Specimen Type: Undisturbed

Axial Strain at Failure (%): *7.0*
Compressive Strength (psi): *15.5*
Major Principal Stress (psi): *39.8*
Minor Principal Stress (psi): *24.3*

Reading No.	Deviator Load[1] (lbs)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	-0.1	0.00	6.39	24.3	24.3	0.0
1	1.2	0.10	6.40	24.5	24.3	0.2
2	0.9	0.20	6.41	24.5	24.4	0.1
3	10.4	0.30	6.41	25.9	24.3	1.6
4	15.7	0.40	6.42	26.7	24.3	2.4
5	19.9	0.50	6.43	27.4	24.3	3.1
6	37.0	1.00	6.46	30.0	24.3	5.7
7	54.1	1.50	6.49	32.5	24.3	8.3
8	70.9	2.00	6.52	35.1	24.4	10.7
9	82.9	2.50	6.56	36.8	24.3	12.5
10	91.0	3.00	6.59	38.0	24.3	13.6
11	100.4	4.00	6.66	39.2	24.4	14.9
12	104.8	5.00	6.73	39.6	24.3	15.3
13	107.4	6.00	6.80	39.8	24.3	15.5
14	109.3	7.00	6.88	39.8	24.3	15.5
15	107.8	8.00	6.95	39.4	24.4	15.1
16	107.1	9.01	7.03	39.1	24.3	14.8
17	107.8	10.00	7.10	38.9	24.3	14.6
18	105.5	11.00	7.18	38.4	24.3	14.1
19	105.1	12.00	7.27	38.2	24.4	13.8
20	106.7	13.00	7.35	38.1	24.3	13.9
21	106.5	14.01	7.44	37.9	24.3	13.6
22	105.5	15.00	7.52	37.5	24.2	13.3
23	107.0	16.00	7.61	37.6	24.3	13.3
24	107.9	17.00	7.70	37.5	24.4	13.2
25						
26						



Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method

Testing Lab: RICH

Unconsolidated Undrained Triaxial Compression Test

Project: VRE L'Enfant Track and Station

Location: Washington DC

Schnabel Contract: 22120047
Boring No.: RW-02A
Depth: 40'-42'
Elevation: -19' to -21'
Confining Stress (psi): 38.2

Date: 12/2/2024
Reviewed by: DS

Soil Description: *LEAN CLAY (CL), contains mica, gray*

Liquid Limit: 38
Plasticity Index: 18
% finer than No. 200: 97.2
Specific Gravity: 2.68
Remarks:

Failure Sketch

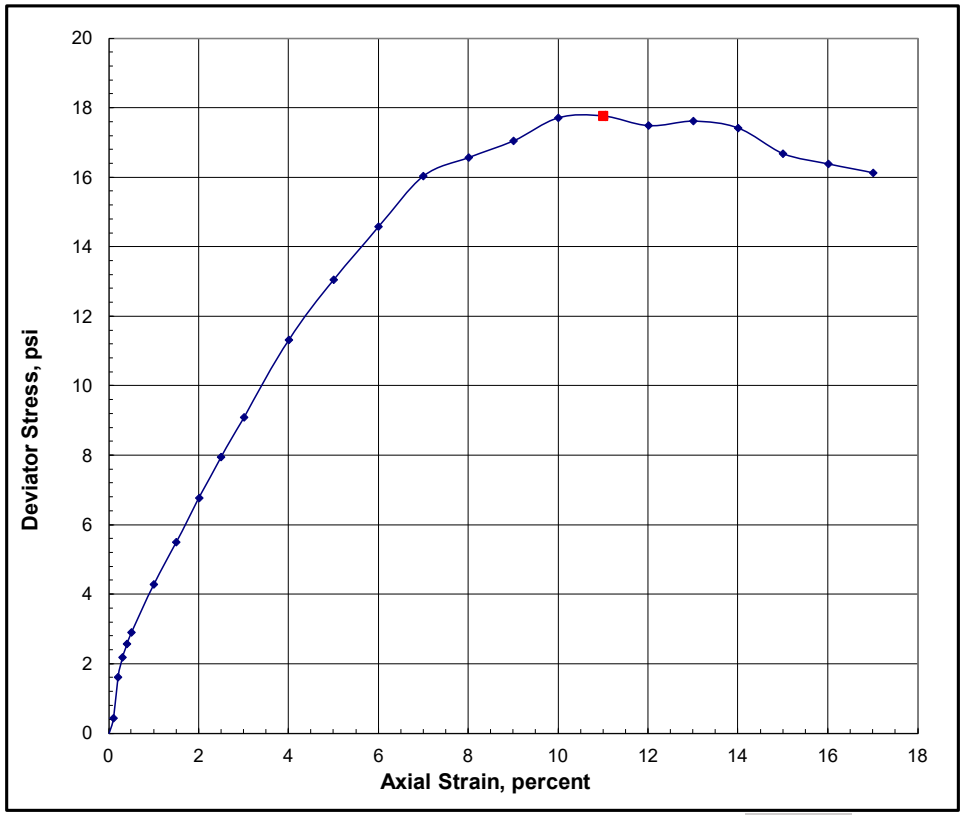
Specimen Conditions	
Diameter (in)	2.859
Height (in)	6.008
Area (in^2)	6.42
Moisture (%):	26.4
Weight (g)	1253.00
ρ_{wet} (pcf)	123.76
ρ_{dry} (pcf)	97.9
Void Ratio	0.71
Saturation, %	100

Shear Testing Conditions	
Cell Pressure (psi):	38.2
Rate of Strain (%/min):	1.0

Specimen Type: Undisturbed

Axial Strain at Failure (%): *11.0*
Compressive Strength (psi): *17.8*
Major Principal Stress (psi): *56.0*
Minor Principal Stress (psi): *38.2*

Reading No.	Deviator Load[1] (lbs)	Axial Strain (%)	Corrected Area[2] (in^2)	σ_1 (psi)	σ_3 (psi)	Deviator Stress (psi)
Initial	-0.1	0.00	6.38	38.2	38.2	0.0
1	2.9	0.10	6.39	38.7	38.2	0.4
2	10.3	0.20	6.39	39.8	38.2	1.6
3	14.1	0.30	6.40	40.3	38.1	2.2
4	16.6	0.40	6.41	40.8	38.2	2.6
5	18.8	0.50	6.41	41.1	38.2	2.9
6	28.0	1.00	6.44	42.5	38.2	4.3
7	36.2	1.50	6.48	43.7	38.2	5.5
8	44.9	2.00	6.51	45.0	38.2	6.8
9	53.0	2.50	6.54	46.2	38.2	8.0
10	61.0	3.00	6.58	47.3	38.2	9.1
11	76.8	4.00	6.65	49.5	38.2	11.3
12	89.5	5.00	6.72	51.3	38.2	13.1
13	101.2	6.00	6.79	52.9	38.3	14.6
14	112.7	7.00	6.86	54.2	38.2	16.0
15	118.0	8.00	6.94	54.8	38.2	16.6
16	123.0	9.00	7.01	55.3	38.3	17.1
17	129.4	10.00	7.09	55.9	38.2	17.7
18	131.5	11.00	7.17	56.0	38.2	17.8
19	131.3	12.00	7.25	55.7	38.2	17.5
20	134.1	13.00	7.33	55.8	38.2	17.6
21	134.6	14.00	7.42	55.6	38.2	17.4
22	130.9	15.00	7.51	54.9	38.2	16.7
23	130.5	16.00	7.60	54.6	38.2	16.4
24	130.5	17.00	7.69	54.3	38.1	16.1
25						
26						



Notes: 1. Deviator load corrected for membrane effects.
2. Right Cylinder Correction Method

Testing Lab: RICH

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Certificate of Analysis

Final Report

Laboratory Order ID 24J1056

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen, VA 23059	Date Received:	October 16, 2024 11:17
		Date Issued:	October 21, 2024 14:34
		Project Number:	22120047
Submitted To:	Dom Snyder	Purchase Order:	
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

Enclosed are the results of analyses for samples received by the laboratory on 10/16/2024 11:17. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Andrew Bruner
Project Manager

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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VELAP ID 460021

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

ANALYTICAL REPORT FOR SAMPLES

Laboratory Order ID 24J1056

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
6BR-07 8FT	24J1056-01	Solids	10/15/2024 13:34	10/16/2024 11:17

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

Laboratory Order ID: 24J1056

Analytical Results

Sample I.D. 6BR-07 8FT **Laboratory Sample ID:** 24J1056-01

Grab Date/Time: 10/15/2024 13:34

Field Residual Cl: **Field pH:**

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Ion Chromatography Analyses									
Chloride	01	SW9056A	<10.0 mg/kg		10.0	1	10/18/24 23:22	10/18/24 23:22	MGC
Sulfate	01	SW9056A	**13.3 mg/kg**		10.0	1	10/18/24 23:22	10/18/24 23:22	MGC

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Ion Chromatography Analyses		**Preparation Method:**	**No Prep IC**		
24J1056-01	10.3 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Ion Chromatography Analyses			**Preparation Method:**	**No Prep IC**	
BHJ0888-BLK1	10.0 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234
BHJ0888-BS1	10.0 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234
BHJ0888-MS1	10.3 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234
BHJ0888-MS2	10.4 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234
BHJ0888-MSD1	10.3 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234
BHJ0888-MSD2	10.4 g / 100 mL	SW9056A	BHJ0888	SHJ0800	AJ40234

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

Ion Chromatography Analyses - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BHJ0888 - No Prep IC										
Blank (BHJ0888-BLK1)				Prepared & Analyzed: 10/18/2024						
Sulfate	<10.0 mg/kg	10.0	mg/kg							
Chloride	<10.0 mg/kg	10.0	mg/kg							
LCS (BHJ0888-BS1)				Prepared & Analyzed: 10/18/2024						
Sulfate	20.6 mg/L	10	mg/L	20.0	mg/L	103	90-110			
Chloride	20.7 mg/L	10	mg/L	20.0	mg/L	103	90-110			
Matrix Spike (BHJ0888-MS1)	**Source: 24J1054-01**			Prepared & Analyzed: 10/18/2024						
Sulfate	1620 mg/kg	10.0	mg/kg	97.5	1690 mg/kg	-68.9	90-110			M
Chloride	104 mg/kg	10.0	mg/kg	97.5	<10.0 mg/kg	103	90-110			
Matrix Spike (BHJ0888-MS2)	**Source: 24J1054-02**			Prepared & Analyzed: 10/18/2024						
Sulfate	536 mg/kg	10.0	mg/kg	96.0	487 mg/kg	51.9	90-110			M
Chloride	103 mg/kg	10.0	mg/kg	96.0	<10.0 mg/kg	104	90-110			
Matrix Spike Dup (BHJ0888-MSD1)	**Source: 24J1054-01**			Prepared & Analyzed: 10/18/2024						
Sulfate	1620 mg/kg	10.0	mg/kg	97.5	1690 mg/kg	-69.7	90-110	0.0482	15	M
Chloride	104 mg/kg	10.0	mg/kg	97.5	<10.0 mg/kg	103	90-110	0.309	15	
Matrix Spike Dup (BHJ0888-MSD2)	**Source: 24J1054-02**			Prepared & Analyzed: 10/18/2024						
Sulfate	538 mg/kg	10.0	mg/kg	96.0	487 mg/kg	53.1	90-110	0.213	15	M
Chloride	104 mg/kg	10.0	mg/kg	96.0	<10.0 mg/kg	104	90-110	0.455	15	

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

Certified Analyses included in this Report

Analyte	Certifications
SW9056A in Solids	
Chloride	VELAP,NCDEQ
Sulfate	VELAP,NCDEQ

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2024
NCDEQ	North Carolina DEQ	495	12/31/2024
NCDOH	North Carolina Department of Health	51714	07/31/2025
NYDOH	New York DOH Drinking Water	12069	04/01/2025
PADEP	NELAP-Pennsylvania Certificate #009	68-03503	10/31/2024
TXCEQ	Texas Comm on Environmental Quality #T10470	T104704576	05/31/2025
VELAP	NELAP-Virginia Certificate #12969	460021	06/14/2025
WVDEP	West Virginia DEP	350	11/30/2024

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

Summary of Data Qualifiers

M	Matrix spike recovery is outside established acceptance limits
RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
D.F.	Dilution Factor. Please also see the Preparation Factor in the Analysis Summary section.
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

Page 7 of 7

Effective: Feb 14, 2014

CHAIN OF CUSTODY

AWS COC_v140214.xls

PAGE OF

COMPANY NAME: Schnabel Engineering	INVOICE TO: SAME	PROJECT NAME: VRE L'Enfant Plaza/ASG 4
CONTACT: Dom Snyder/Maria Hernandez	INVOICE CONTACT: Dom Snyder	SITE NAME:
ADDRESS: 9800 JE8 Stuart Pkwy, Suite 100, Glen Allen, VA 23059	INVOICE ADDRESS: SAME	PROJECT NUMBER: 22120047
PHONE #: 804-649-7035	INVOICE PHONE #: SAME	P.O. #:
FAX #: 804-264-3244	EMAIL: dsnyder@schnabel-eng.com/mhernandez@schnabel-	Pretreatment Program:
Is sample for compliance reporting? NO	Is sample from a chlorinated supply? NO	PWS I.D. #:
Sampled by: Madison Signature:		Turn Around Time: 5 Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE) Sulfate	Chloride	COMMENTS
6BR-07 8FT	x					10/15/2024	1:34		S	1	X	X	
6-06 (water)													
9)													
10)													

Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol
PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

Observed Temp °C: 1.4
Correction Factor °C: 0.0
Corrected Temp °C: 1.4

RELINQUISHED:	DATE / TIME 10/16 10:39	RECEIVED:	DATE / TIME 10/16/24 1:39
RELINQUISHED:	DATE / TIME 10/16/24 1117	RECEIVED:	DATE / TIME 10/16/24 1117
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME

QC Data Package
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

LAB USE ONLY COOLER TEMP °C

24J1056

Schnabel 24J1056
VRE L'Enfant Plaza/ASG 4
Recd: 10/16/2024 Due: 10/23/2024

v130325002

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	October 21, 2024 14:34 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza ASG 4		

Sample Conditions Checklist

Samples Received at:	**1.40°C**
How were samples received?	AWS Courier
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis. In addition, field parameters are always received outside holding time and will be marked accordingly.	Yes

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Certificate of Analysis

Final Report

Laboratory Order ID 24K1185

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen, VA 23059	Date Received:	November 19, 2024 13:07
		Date Issued:	November 21, 2024 16:51
		Project Number:	22120047
Submitted To:	Dom Snyder	Purchase Order:	
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Enclosed are the results of analyses for samples received by the laboratory on 11/19/2024 13:07. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Andrew Bruner

Project Manager

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	November 21, 2024 16:51 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

ANALYTICAL REPORT FOR SAMPLES

Laboratory Order ID 24K1185

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
6BR-02 8FT	24K1185-01	Solids	11/18/2024 11:13	11/19/2024 13:07
RW-03 6FT	24K1185-02	Solids	11/18/2024 11:20	11/19/2024 13:07
7BR-01 18FT	24K1185-03	Solids	11/18/2024 11:25	11/19/2024 13:07

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	November 21, 2024 16:51 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Laboratory Order ID: 24K1185

Analytical Results

Sample I.D. 6BR-02 8FT **Laboratory Sample ID:** 24K1185-01

Grab Date/Time: 11/18/2024 11:13

Field Residual Cl: **Field pH:**

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Ion Chromatography Analyses									
Chloride	01	SW9056A	<10.0 mg/kg		10.0	1	11/20/24 19:50	11/20/24 19:50	MGC
Sulfate	01	SW9056A	<10.0 mg/kg		10.0	1	11/20/24 19:50	11/20/24 19:50	MGC

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	November 21, 2024 16:51 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Laboratory Order ID: 24K1185

Analytical Results

Sample I.D. RW-03 6FT **Laboratory Sample ID:** 24K1185-02

Grab Date/Time: 11/18/2024 11:20

Field Residual Cl: **Field pH:**

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Ion Chromatography Analyses									
Chloride	02	SW9056A	<10.0 mg/kg		10.0	1	11/20/24 20:08	11/20/24 20:08	MGC
Sulfate	02	SW9056A	**70.7 mg/kg**		10.0	1	11/20/24 20:08	11/20/24 20:08	MGC

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	November 21, 2024 16:51 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Laboratory Order ID: 24K1185

Analytical Results

Sample I.D. 7BR-01 18FT **Laboratory Sample ID:** 24K1185-03

Grab Date/Time: 11/18/2024 11:25

Field Residual Cl: **Field pH:**

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Ion Chromatography Analyses									
Chloride	03	SW9056A	<10.0 mg/kg		10.0	1	11/20/24 20:26	11/20/24 20:26	MGC
Sulfate	03	SW9056A	**15.3 mg/kg**		10.0	1	11/20/24 20:26	11/20/24 20:26	MGC

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Ion Chromatography Analyses		**Preparation Method:**	**No Prep IC**		
24K1185-01	10.0 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231
24K1185-02	10.1 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231
24K1185-03	10.2 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231

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Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	November 21, 2024 16:51 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Ion Chromatography Analyses			**Preparation Method:**	**No Prep IC**	
BHK1011-BLK1	10.0 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231
BHK1011-BS1	10.0 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231
BHK1011-MS1	10.2 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231
BHK1011-MSD1	10.2 g / 100 mL	SW9056A	BHK1011	SHK0862	AJ40231

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Ion Chromatography Analyses - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BHK1011 - No Prep IC										
Blank (BHK1011-BLK1)				Prepared & Analyzed: 11/20/2024						
Sulfate	<10.0 mg/kg	10.0	mg/kg							
Chloride	<10.0 mg/kg	10.0	mg/kg							
LCS (BHK1011-BS1)				Prepared & Analyzed: 11/20/2024						
Sulfate	20.2 mg/L	10	mg/L	20.0	mg/L	101	90-110			
Chloride	19.4 mg/L	10	mg/L	20.0	mg/L	96.8	90-110			
Matrix Spike (BHK1011-MS1)	**Source: 24K1185-03**			Prepared & Analyzed: 11/20/2024						
Sulfate	115 mg/kg	10.0	mg/kg	98.1	15.3 mg/kg	102	90-110			
Chloride	95.5 mg/kg	10.0	mg/kg	98.1	<10.0 mg/kg	95.2	90-110			
Matrix Spike Dup (BHK1011-MSD1)	**Source: 24K1185-03**			Prepared & Analyzed: 11/20/2024						
Sulfate	114 mg/kg	10.0	mg/kg	98.1	15.3 mg/kg	101	90-110	0.693	15	
Chloride	94.9 mg/kg	10.0	mg/kg	98.1	<10.0 mg/kg	94.6	90-110	0.554	15	

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Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Certified Analyses included in this Report

Analyte	Certifications
SW9056A in Solids	
Chloride	VELAP,NCDEQ,SCDHEC
Sulfate	VELAP,NCDEQ,SCDHEC

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2024
NCDEQ	North Carolina DEQ	495	12/31/2024
NCDOH	North Carolina Department of Health	51714	07/31/2025
NYDOH	New York DOH Drinking Water	12069	04/01/2025
PADEP	NELAP-Pennsylvania Certificate #009	68-03503	10/31/2025
SCDHEC	South Carolina Dept of Health and Environmental	93016	06/14/2025
TXCEQ	Texas Comm on Environmental Quality #T104704	T104704576	05/31/2025
VELAP	NELAP-Virginia Certificate #12969	460021	06/14/2025
WVDEP	West Virginia DEP	350	11/30/2024

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Certificate of Analysis

Final Report

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Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Summary of Data Qualifiers

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
D.F.	Dilution Factor. Please also see the Preparation Factor in the Analysis Summary section.
TIC	Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.
PCBs, Total	Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

Effective: Feb 14, 2014

CHAIN OF CUSTODY

PAGE OF ____

AWS COC_v140214.xls

COMPANY NAME: Schnabel Engineering	INVOICE TO: SAME	Project Name: VRE L'Enfant Plaza Track / ASG-2
CONTACT: Dom Snyder/ Maria Hernandez	INVOICE CONTACT: Dom Snyder	SITE NAME:
ADDRESS: 9800 JEB Stuart Pkwy, Suite 100, Glen Allen, VA 23059	INVOICE ADDRESS: SAME	PROJECT NUMBER: 22120047
PHONE #: 804-649-7035	INVOICE PHONE #: SAME	P.O. #:
FAX #: 804-264-3244	EMAIL: dsnyder@schnabel-eng.com/ mhernandez@schnabel-eng.com	Pretreatment Program:
Is sample for compliance reporting? NO	Is sample from a chlorinated supply? NO	PWS I.D. #:
Sampled by: Adriel Signature:		Turn Around Time: 5 Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other_____

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE) Sulfate	Chloride							COMMENTS
6BR-02 8FT	X					11/18/2024			S	1	X	X							
RW-03 6FT	X					11/18/2024			S	1	X	X							
7BR-01 18FT	X					11/18/2024			S	1	X	X							
B-06 (water)																			
9)																			
10)																			

Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol
PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

393 Observed Temp °C: 1.1

0516 Correction Factor °C: 0.0

mixed Corrected Temp °C: 1.1

RELINQUISHED: Adriel	DATE / TIME 11/19/24 10:03	RECEIVED:	DATE / TIME 11/19/24 1003
RELINQUISHED:	DATE / TIME 11/19/24 1307	RECEIVED:	DATE / TIME 11/19/24 1307
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME

QC Data Package
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

LAB USE ONLY COOLER TEMP °C

Schnabel 24K1185
VRE L'Enfant Plaza Track ASG-2
Recd: 11/19/2024 Due: 11/26/2024
v130325002

1941 Reymet Road ● Richmond, Virginia 23230 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Client Name:	Schnabel Engineering, LLC 9800 Jeb Stuart Pkwy Ste 200 Glen Allen VA, 23059	Date Issued: Project Number: Purchase Order:	November 21, 2024 16:51 22120047
Submitted To:	Dom Snyder		
Client Site I.D.:	VRE L Enfant Plaza Track ASG-2		

Sample Conditions Checklist

Samples Received at:	**1.10°C**
How were samples received?	AWS Courier
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	No
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis. In addition, field parameters are always received outside holding time and will be marked accordingly.	Yes

The chain of custody did not indicate a collection time. The samples have been logged per the container labels. Dom Snyder notified via email. 11/20/24 1720 DLJ

Schnabel ENGINEERING

CORROSION POTENTIAL SERIES
AWWA C-105

Project Number:	22120047
Project Name:	VRE L'Enfant Plaza Track

Specimen No. 1

Sample Description:	SILTY SAND WITH GRAVEL (SM), light brown (visual)		
Boring:	6BR-02	Sample Type:	Jar
Depth (ft):	8	Bottom Depth (ft):	9.5

Test	Unit	Value	AWWA C105 Points
pH	----------	7.6	0
Resistivity	ohm-cm	13000	0
Redox	mV	273	0
Sulfides	presence	Negative	0

Specimen No. 2

Sample Description:	Brown(visual)		
Boring:	RW-03	Sample Type:	Jar
Depth (ft):	6	Bottom Depth (ft):	8

Test	Unit	Value	AWWA C105 Points
pH	----------	7.7	0
Resistivity	ohm-cm	3400	0
Redox	mV	265	0
Sulfides	presence	Negative	0

Specimen No. 3

Sample Description:	SILTY SAND WITH GRAVEL (SM), light brown (visual)		
Boring:	7BR-01	Sample Type:	Jar
Depth (ft):	18	Bottom Depth (ft):	20

Test	Unit	Value	AWWA C105 Points
pH	----------	6.3	0
Resistivity	ohm-cm	21000	0
Redox	mV	298	0
Sulfides	presence	Negative	0

Tested By:	XL	Reviewed By:	DS
Date:	11/19/2024	Date:	

APPENDIX C

HISTORICAL DATA

Selected Sheets from the Final Report - Subsurface Investigation, Branch Route, Sta. 3+00(F001) to 95+70 (F002), Washington Metropolitan Area Transit Authority (WMATA), August 1970 (10 sheets)

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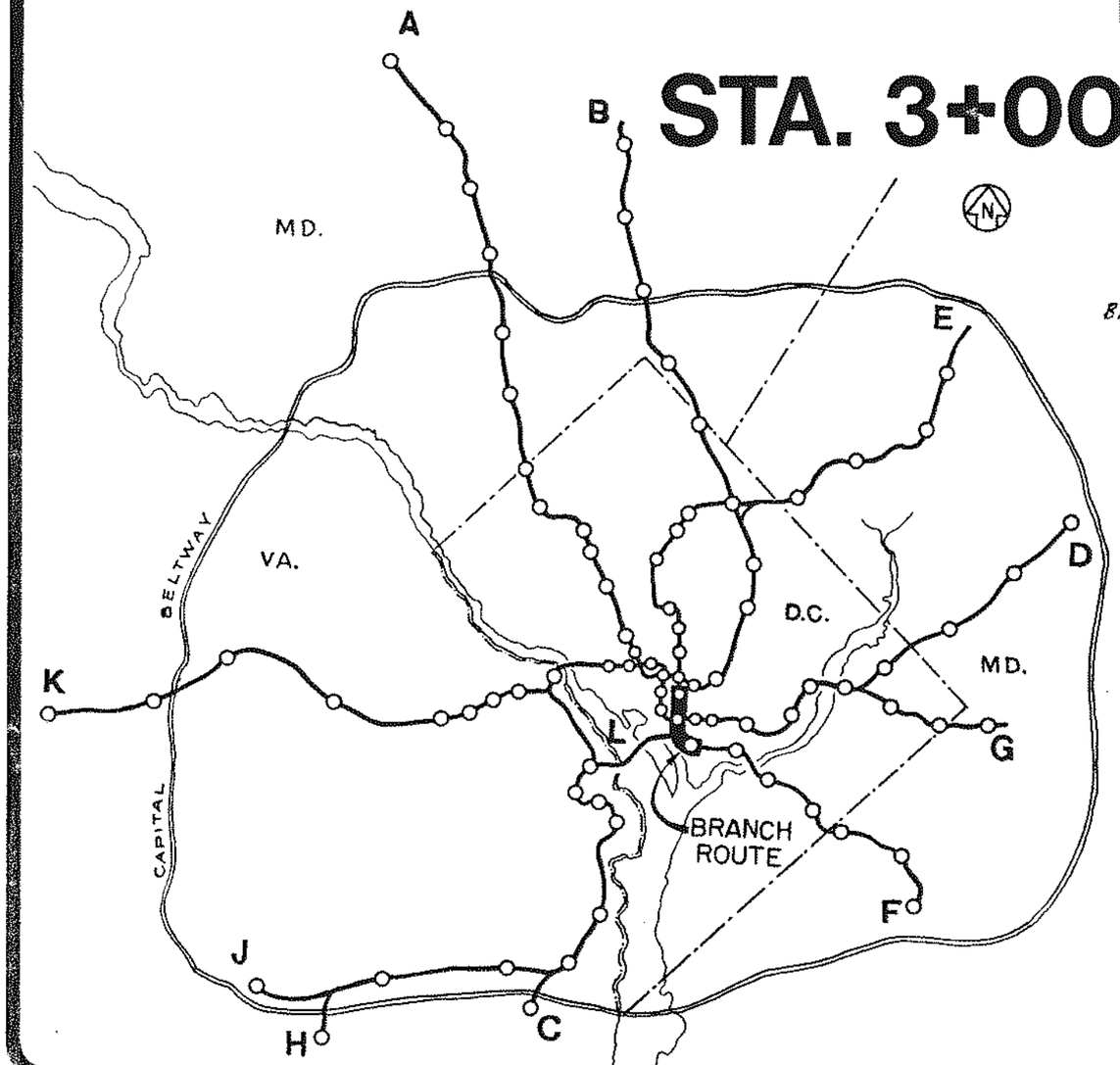
FINAL REPORT - SUBSURFACE INVESTIGATION

BRANCH ROUTE

STA. 3+00(F001) TO 95+70(F002)



F1-b
Branch 3+80 thru Branch 42+80

#41

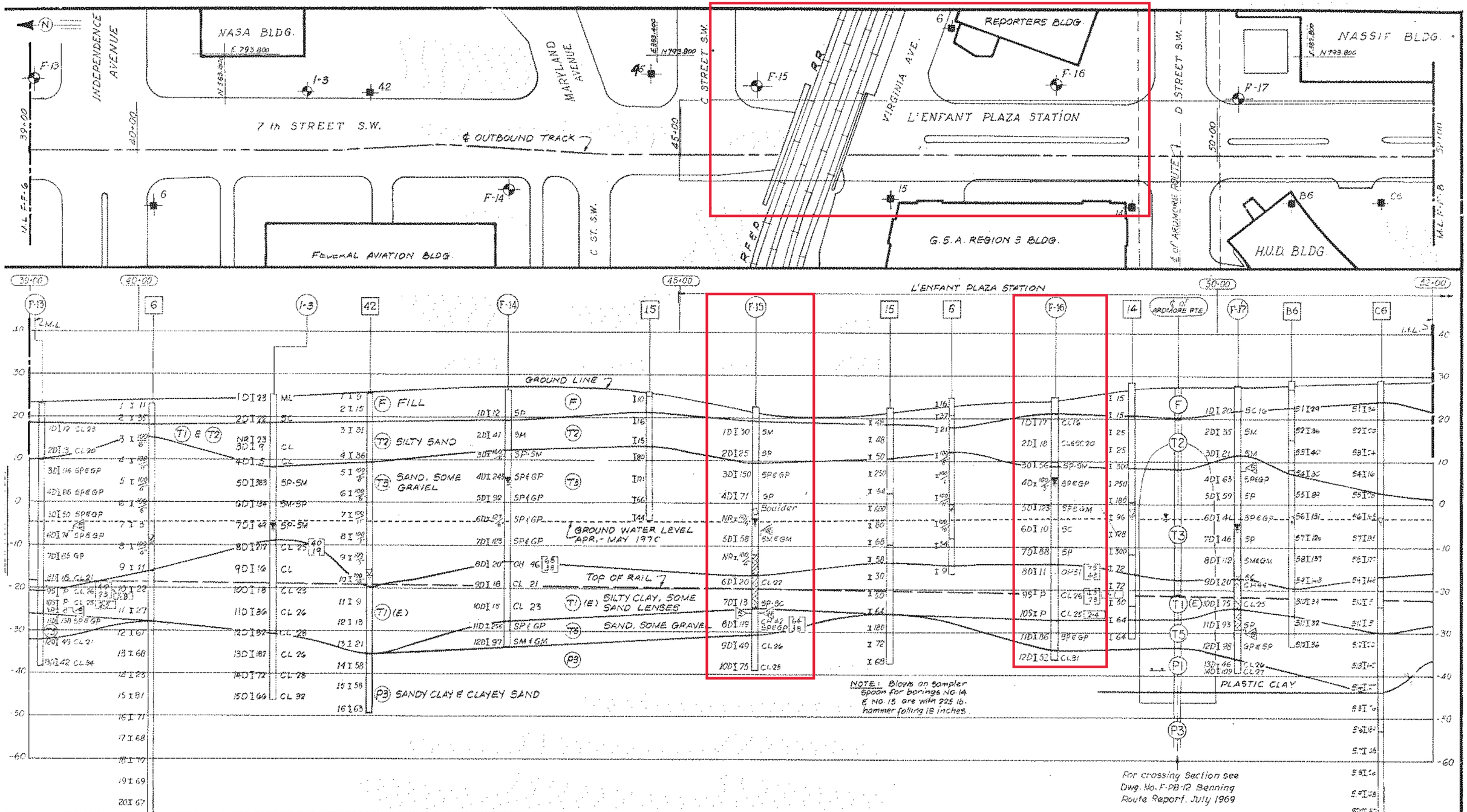
M

metro
WASHINGTON
METROPOLITAN
AREA TRANSIT
AUTHORITY

RETURN TO
DGGO
GEOLOGY DEPT.

Mueser, Rutledge, Wentworth & Johnston
General Soils Consultant

New York, N.Y. August, 1970



DESIGNED		DATE	
DRAWN	A.R.&F.B.C.	DATE	8-6-70
CHECKED	SLT&JPG	DATE	8-18-70
APPROVED		DATE	

REFERENCE DRAWINGS			REVISIONS		
NUMBER	DESCRIPTION		DATE	BY	DESCRIPTION
F-F-1	General Notes & Legend				

DISTRICT OF COLUMBIA — WILLIAM W. KLEGAR — 4070 — REGISTERED PROFESSIONAL ENGINEER

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

MUESER - RUTLEDGE - WENTWORTH & JOHNSTON
CONSULTING ENGINEERS
415 MADISON AVE., NEW YORK 17, N.Y.
SUBMITTED William H. Klegar

DE LEUW, CATHER & COMPANY
GENERAL ENGINEERING CONSULTANT ☐

HARRY WEESE & ASSOCIATES
GENERAL ARCHITECTURAL CONSULTANT ☐

APPROVED

BRANCH ROUTE GEOLOGICAL SECTION STATION 39+00 TO 52+00

SCALE HORIZ. VERT.

DRAWING NO. F-F-7

DEPTH BELOW GROUND SURFACE, FEET

BORING NUMBER F-12
Ground surface elevation +17.0

10	7,11, 21	Stiff brown silty clay, some fine sand pocket trace roots (Possible Fill) (CL & ML)	BROWN SILT WITH SOME CLAY, POSSIBLE FILL	13.5'
20	7,11, 16	Do, 10 (CL & ML)		
30	46,60 56	Very compact brown fine to coarse sand & gravel, trace silt (SP & GP)	BROWN FINE TO COARSE SAND AND GRAVEL WITH TRACE SILT	34.0'
40	50, 100/3"	Do, 30 (SP & GP)		
50	15,50 60	Do, 30 (SP & GP)		
60	33,31 32	Do, 30 (SP & GP)		
70	4,3,5	Medium light gray silty clay (CL)	MEDIUM LIGHT GRAY SILTY CLAY	43.5'
80	3,4,5	Do, 70 (CL)		
90	24,58 38	Very compact brown medium to coarse sand & gravel, trace fine sand & silt (SP & GP)	SAND AND GRAVEL	48.0'
100	12,13 19	Green-gray clayey fine sand, trace lignite (Cretaceous) (SC)	LIGHT GRAY F-M CLAYEY SAND WITH OCCA-SIONAL LAYER OF GRAY-GREEN SILT AND LIGNITE	51.5'
110	20,28 31	Do, 100 (SC)		
120	17,28 24	Do, 100 (SC)		

Boring started 4-10-70 , completed 4-13-70
Final depths:
Boring = 61.5' Casing = None
Casing diameter = None
Average depth of ground water = ------ = El.+ ------

REMARKS:
Drilling mud used to maintain open hole.
No measurement of ground water made in this hole.
Loss of mud at 15' depth.

BORING NUMBER F-13
Ground surface elevation +22.9

10	5,6,6	Red-brown silty clay, trace decomposed vegetation (Possible Fill) (ML-CL)	RED-BRN SILT, TRACE FINE SAND AND CLAY, TRACE DECOM-POSED VEGETA-TION, POSSIBLE FILL	13.0'
20	5,6,7	Do, 10 (CL)		
30	41,55 67	Red-brown fine to coarse sand & gravel, trace silt (SP & GP)	BROWN FINE TO COARSE SAND AND GRAVEL WITH TRACE SILT	39.5'
40	22,41 47	Do, 30 (SP & GP)		
50	29,22 28	Do, 30 (SP & GP)		
60	22,39 55	Do, 30 (SP & GP)		
70	22,35 36	Brown gravel, some medium to coarse sand (GP)		
80	6,8, 10	Stiff gray silty clay (CL)	STIFF GRAY SILTY CLAY	49.0'
95	P	Gray silty clay (CL)		
105	P	Gray-green silty clay (CL)		
110	56,85 73	Gray-green to brown coarse to fine sand & gravel, trace silt & clay (SP & GP)	SAND AND GRAVEL	55.0'
120	37,26 23	Gray-green fine sandy clay (Cretaceous) (CL)	CLAYEY SAND AND SILTY CLAY	61.5'
130	13,18 23	Gray-green clayey fine sand & gray silty clay (CL & SC)		

Boring started 4-17-70 , completed 4-20-70
Final depths:
Boring = 61.5' Casing = None
Casing diameter = None
Average depth of ground water = ------ = El.+ ------

REMARKS:
Drilling mud used to maintain hole open.
No measurement of ground water made in this hole.
Loss of mud at 20' depth.

BORING NUMBER F-14
Ground surface elevation +26.6

10	2,5,7	Brown medium to fine sand some gravel & brick (fill) (SP)	BROWN COARSE TO FINE SAND & GRAVEL FILL	7.0'
20	16,29, 12	Brown silty medium to fine sand, trace gravel (SM)	BROWN SILTY MEDIUM TO FINE SAND	14.0'
30	66/8"	Brown medium to fine sand trace gravel & silt (SP)		
40	94,169	Brown coarse to medium sand & gravel, trace silt (SP & GP)	BROWN COARSE TO MEDIUM SAND & GRAVEL, TRACE SILT	40.0'
50	34,47, 45	"Do 50" (SP & GP)		
60	127/6"	"Do 40" (SP & GP)		
70	34,66, 57	"Do 40" (SP & GP)		
80	3,10, 10	Medium gray silty clay, some medium to fine sand, trace gravel, slightly organic (CH)	MEDIUM GRAY SILTY CLAY, SLIGHTLY ORGANIC	54.0'
90	5,7,11	Gray silty clay (CL)		
100	6,6,9	"Do 90" (CL)		
110	56,200	Brown medium to fine sand & gravel, trace silt (SP & GP)	BROWN SILTY COARSE TO FINE SA & GVL	60.0'
120	38,39 58	Brown coarse to medium sand & gravel, some silt (SM & GM)		

Boring started 4-29-70 , completed 4-30-70
Final depths:
Boring = 60.0' Casing = 57.0'
Casing diameter = 3-1/2"
Average depth of ground water = 21.5' = El.+5.1

BORING NUMBER F-15
Ground surface elevation + 22.8

10	11,14 16	Brown silty fine sand, trace gravel (Possible Fill) (SM)	BROWN FINE SAND, SOME SILT, POSSIBLE FILL	13.0'
20	13,10 15	Brown fine sand, trace silt (SP)		
30	42,75 75	Brown coarse to fine sand & gravel (SP & GP)	COARSE TO FINE SAND AND GRAVEL, NUMEROUS BOULDERS BETWEEN DEPTHS 23' TO 25' AND 27' TO 29' AND 34' TO 35'	39.0'
40	15,30 61	Gravel, some coarse to fine sand (GP)		
50	116/6"	Probable gravel with some boulders 23' to 25' and 27' to 29'		
60	7,27, 31	Orange-brown silty fine sand, some gravel (SM & GM)		
70	100/4"			
80	8,9, 11	Stiff gray clay, some silt, trace medium sand & decomposed wood (CL)	GRAY COARSE TO MEDIUM SAND AND CLAY LAYERS	47.0'
90	7,6,7	Gray coarse to medium sand & clay (SP-SC)	GRAY CLAY AND SAND	53.0'
100	21,51 68	Top: Gray-green clay, trace organic material (CH) Bott: Gray-green coarse sand, trace clay (SP & GP)		
110	19,22 27	Green fine sandy clay (CL)	GREEN FINE SANDY CLAY	61.5'
120	21,32 43	Do, 90 (CL)		

Boring started 4-17-70 , completed 5-17-70
Final depths:
Boring = 61.5' Casing = 37.0'
Casing diameter = 4"
Average depth of ground water = 26.7 = El.-3.9

REMARKS:
Drilling mud used to maintain hole open, casing lowered following drilling.
Hole caved in at 35' depth.
Probable boulders encountered between 27' and 29' depth.
Observation well consisting of 1-1/2" steel pipe installed with tip at 45' depth.

BORING NUMBER F-16
Ground surface elevation + 25.1

10	12,9, 8	Brown fine sandy clay (CL)	BRN SILTY FINE SAND FILL	4.0'
20	6,8, 10	Do, 10, and brown clayey fine sand (CL & SC)	BROWN CLAYEY FINE SAND AND CLAY	15.0'
30	18,26 30	Brown medium to fine sand some silt (SP-SM)		
40	107, 100/3"	Brown coarse to medium sand & gravel (SP & GP)	BROWN SILTY COARSE TO FINE SAND AND GRAVEL	39.0'
50	62,66 57	Do, 40, silty (SM & GP)		
60	7,6,8	Brown clayey fine to medium sand, trace gravel (SC)		
70	25,42 45	Orange-brown coarse to fine sand, some gravel (SP)	GRAY SILTY CLAY, SOME ORGANIC MATERIAL	52.0'
80	5,5,6	Gray organic silty clay (OH)		
95	P	Medium gray silty clay, some organic material (CL)	VERY COMPACT COARSE SAND AND GRAVEL	59.0'
105	P	Do, 80 (CL)		
110	71,53 33	Light gray coarse sand & gravel (SP & GP)		
120	15,23 29	Stiff green-gray silty clay (Cretaceous) (CL)		61.5'

Boring started 5-4-70 , completed 5-5-70
Final depths:
Boring = 61.5' Casing = 60.0'
Casing diameter = 2-1/2"
Average depth of ground water = 20.7' = El.+4.4

REMARKS:
Boulders encountered between 18' to 20' and 23' to 26' depth.

BORING NUMBER F-17
Ground surface elevation + 27.7

		Concrete Pavement		0.5'
10	9,10, 10	Brown clayey fine sand (Possible Fill) (SC)	BROWN CLAYEY FINE SAND	5.0'
20	12,16 19	Brown silty fine to medium sand, trace gravel (SM)	BROWN SILTY FINE TO MEDIUM SAND	16.0'
30	8,10, 19	Brown silty fine sand, some gravel (SM)		
40	40,53 30	Light brown coarse to medium sand & gravel (SP & GP)	BROWN COARSE TO MEDIUM SAND AND GRAVEL	45.0'
50	24,28 31	Brown coarse to medium sand, some gravel (SP)		
60	18,20 21	Brown coarse to medium sand & gravel (SP & GP)		
70	19,21 25	Brown coarse to medium sand, trace gravel (SP)		
80	21,54 58	Brown coarse to medium sand, some silt & gravel (SM & GM)	LENSED GRAY FINE SAND & CLAY	52.0'
90	7,10, 10	Top: Light gray clayey fine to medium sand (SC) Bott: Dark gray clay, trace fine sand, trace organic material (CH)		
100	12,20 55	Relatively stiff gray clay, trace sand pockets (CL)	LIGHT BROWN COARSE TO MEDIUM SAND AND GRAVEL	64.0'
110	25,42 55	Light brown medium sand (SP)		
120	28,39 59	Light brown coarse to fine sand & gravel (SM)	GRN CLAY	67.0'
130	19,27	Stiff green clay, trace fine sand (Cretaceous) (CL)		
140	62,62	Do, 130, hard (CL)		

Boring started 5-4-70 , completed 5-6-70
Final depths:
Boring = 67.0' Casing = 65.0'
Casing diameter = 4" & 3-1/2"
Average depth of ground water = 33.5' = El.-6.8

REMARKS:
Boulder encountered between 60' to 61' depth; NX diamond bit used to break through.
Observation well consisting of 1-1/2" steel pipe installed with tip at 55' depth.

DESIGNED _____ DATE
DRAWN VK 8-14-70 DATE
CHECKED SLT & JPG 8-17-70 DATE
APPROVED _____ DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
F-F-12	Legend and Notes

REVISIONS

DATE	BY	DESCRIPTION

4070

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

MUESER · RUTLEDGE · WENTWORTH & JOHNSTON
CONSULTING ENGINEERS
415 MADISON AVE., NEW YORK 17, N.Y.
SUBMITTED William A. Lawson

DE LEUW, CATHER & COMPANY ☐
GENERAL ENGINEERING CONSULTANT
HARRY WEESE & ASSOCIATES ☐
GENERAL ARCHITECTURAL CONSULTANT
APPROVED _____

BRANCH ROUTE

LOGS OF F-SERIES BORINGS, Nos. F-12 TO F-17

SCALE VERT. 0 3' 6' 12'
DRAWING NO. F-F-14

TABLE NO. 4, SURVEY DATA FOR BORINGS

BORING NUMBER	HORIZONTAL CONTROL COORDINATES:		VERTICAL CONTROL: GROUND SURFACE ELEVATION (FT)	STATUS OF OBSERVATION WELLS		
	EAST	NORTH		INSTALLED	TYPE	PRESENT CONDITION
F-1	E 793,748	N 387,219	+42.0			
F-2U	E 793,692	N 386,922	+36.7	4-23-70	**	F.
F-3	E 793,752	N 386,659	+25.8			
F-4	E 793,690	N 386,370	+17.6			
F-5U	E 793,693	N 386,183	+13.9	4-28-70	**	F.
F-6	E 793,678	N 385,928	+11.1			
F-7U	E 793,763	N 385,781	+9.4	4-30-70	**	F
F-8	E 793,652	N 385,606	+8.5			
F-9	E 793,774	N 385,134	+10.4			
F-10	E 793,677	N 385,045	+11.2			
F-11U	E 793,772	N 384,746	+13.9	4-16-70	**	Q.
F-12	E 793,678	N 384,477	+17.0			
F-13	E 793,779	N 383,975	+22.9			
F-14	E 793,676	N 383,536	+26.6			
F-15	E 793,772	N 383,308	+22.8	5-8-70	**	F.
F-16	E 793,775	N 383,031	+25.1			
F-17U	E 793,762	N 382,863	+27.7	5-6-70	**	F.
F-18	E 793,682	N 382,679	+29.0			
F-19	E 793,772	N 382,289	+29.6			
F-20	E 793,766	N 381,654	+26.1	5-1-70	*	F.
F-21	E 793,682	N 381,300	+23.7			
F-22	E 793,787	N 380,859	+20.7			
F-23	E 793,674	N 385,326	+9.0			
F-24U	E 793,796	N 380,276	+13.9	4-23-70	**	Q.
F-25	E 793,981	N 380,028	+15.5			
F-26	E 794,210	N 379,954	+17.3			

TABLE NO. 5

SUMMARY OF LABORATORY TEST DATA

SAMPLE IDENTIFICATION				CLASSIFICATION PROPERTIES								PHYSICAL PROPERTIES													
									UNIFIED CLASSIFICATION SYSTEM			STRENGTH								CONSOLIDATION					
												UNCONFINED COMPRESSION			TRIAXIAL COMPRESSION										
BORING NO.	SAMPLE NO.	DEPTH FT.	STRATUM DESIGNATION	NATURAL WATER CONTENT W(%) AVERAGE OF ENTIRE SAMPLE	LIQUID LIMIT (W_L)	PLASTICITY INDEX (I_p)	NATURAL WATER CONTENT OF LIMIT SAMPLE W(%)	SPECIFIC GRAVITY OF SOLIDS (Gs)	SOIL TYPE	% SAND (#4 & #200 SIEVE)	% CLAY (< #200 SIEVE)	COMPRESSIVE STRENGTH TSF	WATER CONTENT AT END OF TEST %	STRAIN AT FAILURE %	TYPE OF TEST	DEVIATION STRESS ($\sigma_1 - \sigma_3$) TSF	CONFINING PRESSURE (σ_3) TSF	NATURAL WATER CONTENT %	WATER CONTENT AT END OF TEST %	NATURAL WATER CONTENT %	EXISTING OVERBURDEN STRESS TSF	ESTIMATED PROBABLE PRECONSOLIDATION STRESS - TSF	COMPRESSION INDEX C_c	SWELLING INDEX C_s	VOID RATIO AT START OF SWELL, e_f
F110	7U	36.6	TIE	28.1	39.6	16.4	31.0	2.87	CL						Q	1.44	0.5	25.6	26.0	32.3	1.8	4.7	0.34	0.09	0.845
															Q	1.40	2.0	29.5	28.0						
	8U	39.0	TIE	30.7	51.8	23.4	31.0		CH						Q	1.53	2.0	29.0	28.6	32.4	1.9	5.4	0.37	0.15	0.866
															Q	2.06	0.5	27.8	25.8						
															Q	1.60	1.0	34.7	34.2						
	10S	43.0	TIE	31.0					CH			2.70	47.6	6.5	Q	2.28	1.0	53.5	53.4						
F18	9S	44.0	TIE	24.0	29.5	16.8	25.8		CL			1.69	28.7	18.2											
												1.76	22.5	13.7											
	10S	47.0	TIE	24.9					CL			2.43	25.2	14.6											
												2.54	24.0	9.2											
F16	8S	46.0	TIE	25.8	43.9	20.0	27.9		CL			1.10	24.8	7.5											
	10S	50.5	TIE	24.7					CL			2.42	24.5	18.7											
F19	11S	48.0	TIE	37.8	53.2	20.5	44.3		OH			0.03	36.8	13.1											
F20	9S	46.0	TIE	41.6					CH			2.79	40.4	5.0											
												2.68	42.3	5.0											
F22	7S	33.0	TH & TI	29.6					SL SP	56	2														
	10S	54.6	TS & TI	37.0					SM & CL	92	8	0.40	38.8	10.9											
F24U	6U	31.0	TIE	51.9	78.8	27.8	52.0	2.62	OH			1.60	48.1	6.2						52.0	1.7	3.6	0.73	0.14	0.730
	11U	68.0	PI	24.8					CH																
F27U	7S	37.9	TIE	22.9					CL			2.20	21.6	11.2											
												2.08	23.8	8.7											
F28U	7U	30.5	TIE	28.6	43.1	18.2	32.7		CL & SM			0.68	27.4	6.2						26.9	1.8	4.0	0.24	0.05	0.741
	8U	36.0	TIE	20.3	26.0	9.5	20.3		CL																
	9U	40.8	TIE	---					SM & CL																
	13S	60.8	P2	20.8					CH																

Permeability Test K = 7.3 x 10^{-6} ft/min.

NOTES

1. ALL TESTS SUMMARIZED ABOVE WERE PERFORMED IN THE SOILS LABORATORY OF MUESER, RUTLEDGE, WENTWORTH & JOHNSTON.
2. THE SAMPLE DEPTH LISTED ABOVE IS THE AVERAGE DEPTH OF THE SAMPLE RECOVERED.
3. FOR GROUND SURFACE ELEVATIONS AT THE BORINGS SEE TABLE NO. 4. FOR GENERALIZED STRATA DESCRIPTIONS SEE DRAWING NO. F-F-1
4. "NATURAL WATER CONTENT OF ENTIRE SAMPLE" IS A WEIGHTED AVERAGE OF ALL MATERIAL TYPES RECOVERED.
5. THE TRIAXIAL COMPRESSION TESTS PERFORMED WERE:
   Q - QUICK TESTS (UU - UNCONSOLIDATED UNDRAINED TESTS)
   Q_c - CONSOLIDATED QUICK TESTS (CU - CONSOLIDATED UNDRAINED TESTS)
6. STRENGTH TESTS WERE PERFORMED ON PISTON TYPE SAMPLES (U) APPROXIMATELY 2.9 INCHES IN DIAMETER AND ON SPLIT TYPE SAMPLES (S) APPROXIMATELY 1.8 INCHES IN DIAMETER. THE RATIO OF HEIGHT TO DIAMETER OF ALL STRENGTH TEST SPECIMENS WAS APPROXIMATELY 2.0.
7. THE TRIAXIAL COMPRESSION TESTS WERE PERFORMED AT A RATE OF STRAIN OF APPROXIMATELY 1 PER CENT PER MINUTE.
8. THE DIRECT SHEAR TESTS WERE PERFORMED AT A CONSTANT RATE OF STRAIN EQUAL TO A HORIZONTAL DISPLACEMENT OF 0.02 INCHES PER HOUR. THE SPECIMENS WERE OF APPROXIMATELY 1/2 INCH THICKNESS.
9. COMPRESSION INDEX: C_c = STRAIGHT LINE PORTION OF THE VIRGIN CURVE OF CONSOLIDATION TEST: $e = e_0 - C_c \log P/P_0$
10. SWELLING INDEX: C_s = STRAIGHT LINE PORTION OF THE REBOUND CURVE OF CONSOLIDATION TEST: $e = e_0 - C_s \log P/P_0$

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CONSULTING ENGINEERS
415 MADISON AVENUE
NEW YORK, N.Y. 10017

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GENERAL ENGINEERING CONSULTANTS

TABLE No. 6, SUMMARY OF LABORATORY TEST DATA RELATING TO CORROSION CHARACTERISTICS

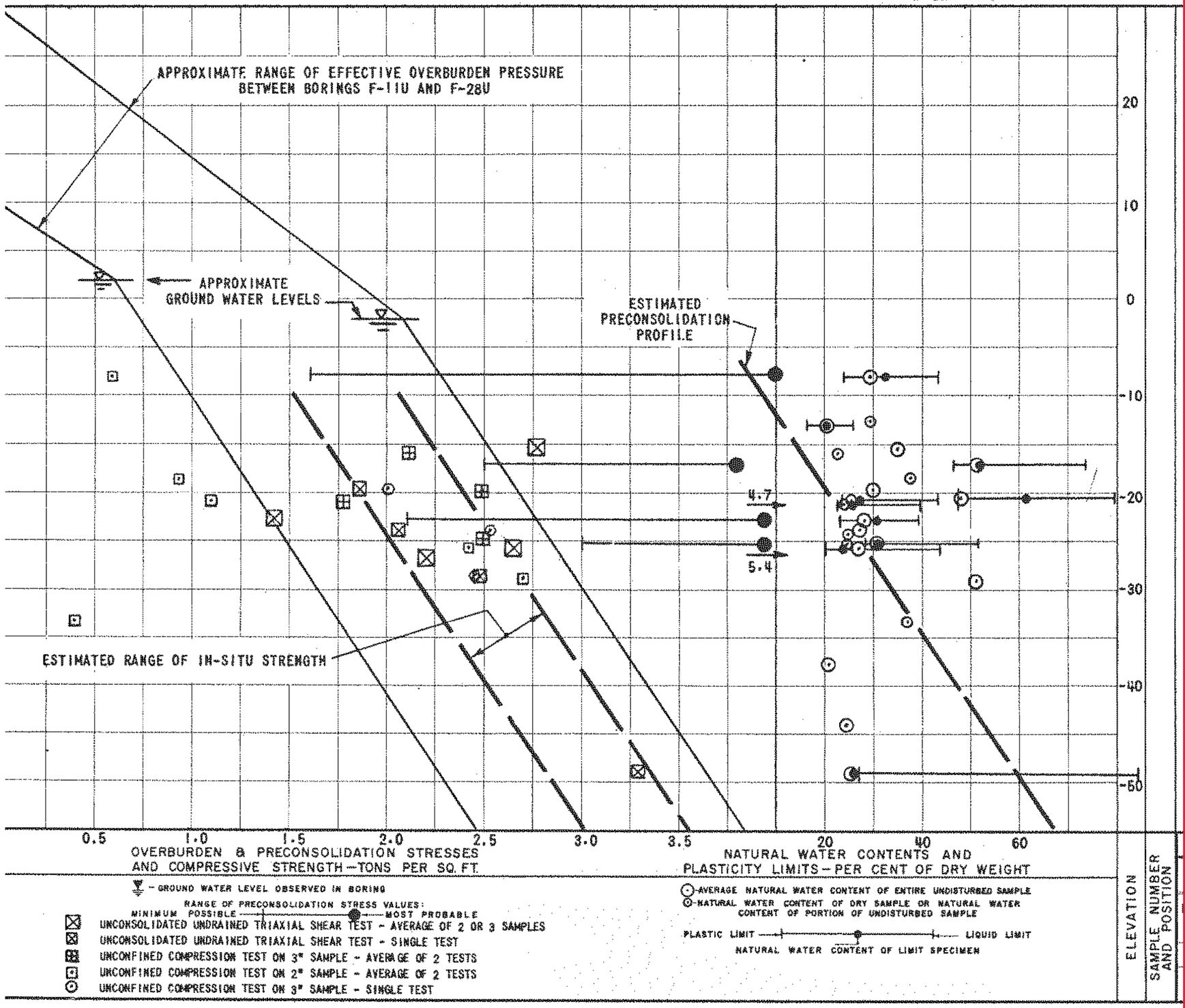
Boring number			F-1	F-1	F-1	F-3	F-3	F-5U	F-5U	F-7U	F-7U	F-9	F-9	F-11U	F-11U	F-13	F-13	F-15	F-15	F-17	F-17	F-19	F-19	F-20
Depth below surface, feet			55	72	65	42	60	26	47	23.5	25	27	47	30	46	30	48	30	48	20	57	38	58	42
SOIL	Classification Properties	Stratum	T4	T5		T1C	P3	T1C	P3	T1C		T3	T5	T1E	T1E	T3	T1E		T5	T3	T5	T3	T5	T1E
		Unified Classification	SP-SM	SP		CL	SC	CL	SC	CL		SP	SP	CH	CH	SP-GP	CL		SP&GP	SP&GP	SP	SP&GP	SP&GP	CH
		Sample number	Near 11D	14D		9S	14D	9D	15D	Near 6U		5D	100	6UD	11D	6D	10S		Near 8D	Near 4D	Near 11D	8D	15D	Near 8D
		Natural water content, %				24	20	22	18	26				36	42		25							53
		Liquid limit				27		24		28				53			40*							71
		Plastic limit				18		17		17				27			23*							44
		% sand (#4 to #200 sieve)	77					30*		35*						48								
		% fines (-#200 sieve)	12					68*		65*						10								
	Electrical and Chemical Properties	pH	6.8	6.3		6.0	5.3	6.2	5.8	6.1		7.1	5.2	5.8	5.8	7.0	5.7		6.3	6.7	6.5	6.3	5.7	6.5
		Resistivity, ohms/cm^2	11,310	16,095		8,700	2,131	5,655	3,176	3,350		6,090	4,176	1,914	3,132	5,220	2,697		2,610	35,235	29,145	566	12,180	4,306
		Total chlorides, % as NaCl				0.0077	0.0090	0.0059		0.0079				0.0214	0.0090				0.0049					0.0247
		Total sulfates, % as SO_4				0.0087	0.0075	0.0072		0.0076				0.0085	0.0076				0.009					0.0071
		Sulfides	No TR	No TR		Slight	No TR	No TR	No TR	No TR		No TR	No TR	No TR	No TR	No TR	No TR		No TR	No TR	No TR	No TR	No TR	No TR
WATER	Electrical and Chemical Properties	pH			7.5						8.6							7.8	7.8					
		Resistivity, ohms/cm^2			4,045						4,350							696	696					
		Carbonate alkalinity as $CaCO_3$, p.p.m.									0								0					
		Bicarbonate alkalinity as $CaCO_3$, p.p.m.									59								132					
		Free carbon dioxide, p.p.m.									132.5								45					
		Hardness as $CaCO_3$, p.p.m.									30								27					
		Chloride (Cl), p.p.m.									10								35					
		Sulfate (SO_4), p.p.m.									52								640					
		Hydroxide alkalinity as $CaCO_3$, p.p.m.																						

*: Identification test data derived from nearby sample which appears similar to corrosion test sample

TABLE No. 7, SUMMARY OF FALLING HEAD PERMEABILITY TESTS IN BORE HOLES AND OBSERVATION WELLS

Boring No.	F-1	F-2U Observ. Well	F-3	F-4	F-5U	F-5U Observ. Well	F-6	F-7U	F-7U Observ. Well	F-8	F-14	F-15	F-15 Observ. Well	F-16	F-17 Observ. Well
Elevation of top and bottom of opening tested	-43.0	-17.8 -30.3	-40.8 -45.8	-32.4 -42.4	-36.1 -46.1	-21.2 -33.1	-33.9 -43.9	-30.6 -45.6	-20.1 -32.6	-36.5 -46.5	-30.4 -33.4	-14.2 -33.7	-11.7 -24.2	-34.9 -36.4	-16.8 -29.3
Length of opening, feet	0	12.5	5.0	10.0	10.0	11.9	10.0	15.0	12.5	10.0	3.0	19.5	12.5	1.5	12.5
Computed permeability, feet/minute	$\sim 1x10^{-2}$	$\sim 1x10^{-2}$	$4.5x10^{-4}$	$\sim 1x10^{-2}$	$\sim 1x10^{-2}$	$1.9x10^{-4}$	$\sim 1x10^{-2}$	$\sim 1x10^{-2}$	$\sim 1x10^{-2}$	$1.1x10^{-5}$	$1.3x10^{-5}$	$\sim 1x10^{-2}$	$\sim 1x10^{-2}$	$8.2x10^{-6}$	$\sim 1x10^{-2}$
Stratum tested	P3	T4&T5	P3	P3	P3	T5	P3	P3	T5	P3	T5	T5	T3	P3	T5

Boring No.	F-20 Observ. Well	F-24U Observ. Well	F-26	F-28U Observ. Well											
Elevation of top and bottom of opening tested	-18.4 -30.9	-20.6 -33.1	+17.3 -44.2 (entire hole)	-20.7 -33.2											
Length of opening, feet	12.5	12.5	61.5	12.5											
Computed permeability, feet/minute	$\sim 1x10^{-2}$	$1.8x10^{-6}$	$7.8x10^{-6}$	$5.3x10^{-6}$											
Stratum tested	T5	T4&T1	T&P	T5											



GROUND SURFACE ELEVATION
+10 TO +30
APPROXIMATELY

DESCRIPTIONS OF STRATA

ALL TESTS ARE FOR STRATUM (TI) E
LOWER CLAY OF PLEISTOCENE
"25-FOOT" TERRACE, THROUGHOUT
THE SOUTHWEST AREA

DATA ARE INCLUDED FROM BORINGS NOS. 1-2U, 1-4U & 2-1U OF PRELIMINARY INVESTIGATION OF REGIONAL SYSTEM, FEBRUARY 1969

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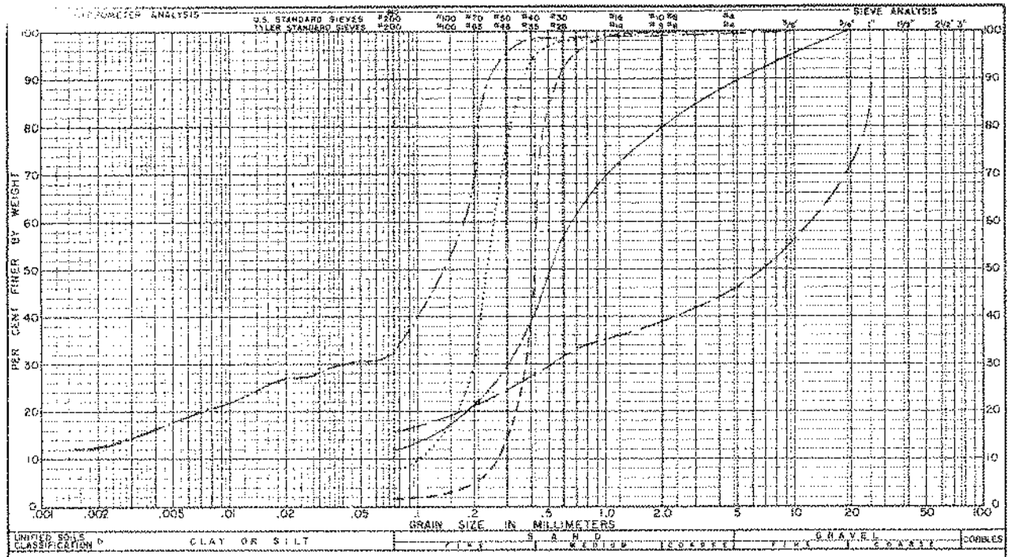
CH'KD BY:	VLT	DATE:	8-11-70	

SOIL PROPERTIES PROFILE
BORING F-11U TO F-28U

PLATE NO. 10



SYMBOL	BORING	SAMPLE	DESCRIPTION OF SAMPLE
	F-1	110	STRATUM T2
	F-22	20	MEDIUM COMPACT TO COMPACT BROWN AND ORANGE-BROWN SILTY OR CLAYEY FINE TO
	F-22	60	MEDIUM SAND WITH TRACES OF SMALL GRAVEL.
	F-22	110	STRATUM T4
	F-26	30	MEDIUM COMPACT TO COMPACT GRAY AND GRAY-BROWN FINE TO MEDIUM SAND WITH

PLATE NO. A5

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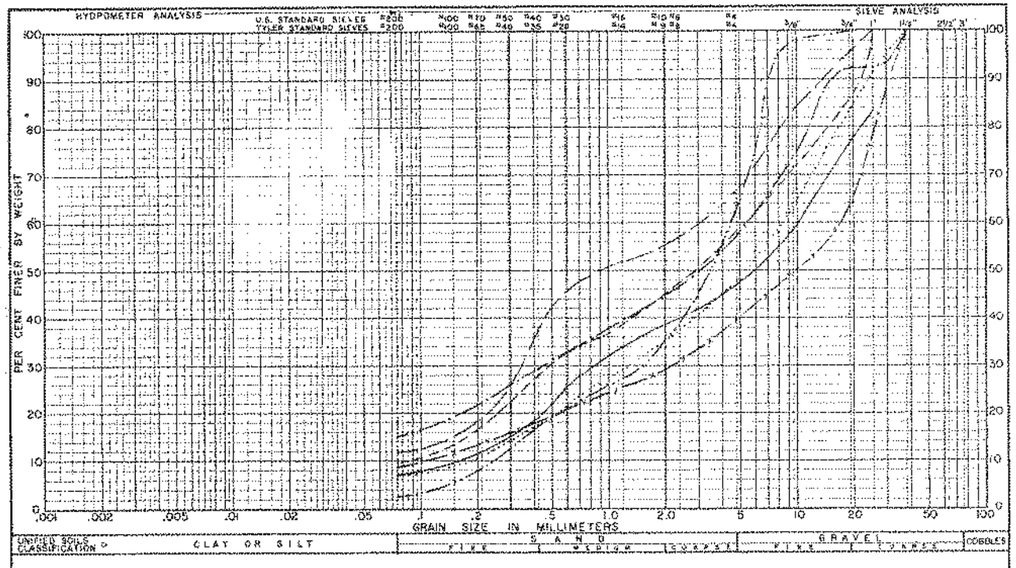
MADE BY: AR DATE: 8-25-70 FILE NO. 3291E
CHKD BY: DATE:
GRADATION CURVES
STRATA T2 & T4
PLATE NO. A5



SYMBOL	BORING	SAMPLE	DESCRIPTION OF SAMPLE
	F-12	50	STRATUM T3
	F-13	60	
	F-19	20 & 80	COMPACT TO VERY COMPACT BROWN AND RED-BROWN FINE TO
	F-18	50	COARSE SAND WITH SOME SILT AND GRAVEL, OR SAND AND
	F-170	70	GRAVEL WITH A TRACE OF SILT AND NUMEROUS BOULDERS
	F-25	40	
	F-29	50	

PLATE NO. A6

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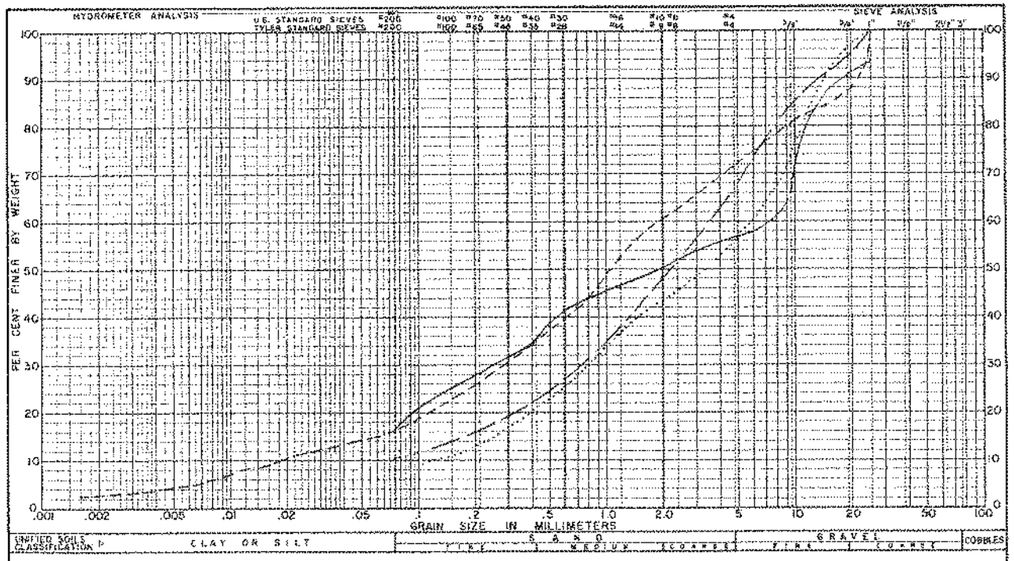
MADE BY: AR DATE: 8-26-70 FILE NO. 3291E
CHKD BY: DATE:
GRADATION CURVES
STRATUM T3
PLATE NO. A6



SYMBOL	BORING	SAMPLE	DESCRIPTION OF SAMPLE
	F-50	130	STRATUM T5
	F-170	120	
	F-20	100	COMPACT TO VERY COMPACT GRAY AND GRAY-BROWN FINE TO
	F-21	110	COARSE SAND WITH SOME GRAVEL AND SOME TO TRACE SILT,
			OR SAND AND GRAVEL WITH NUMEROUS BOULDERS

PLATE NO. A7

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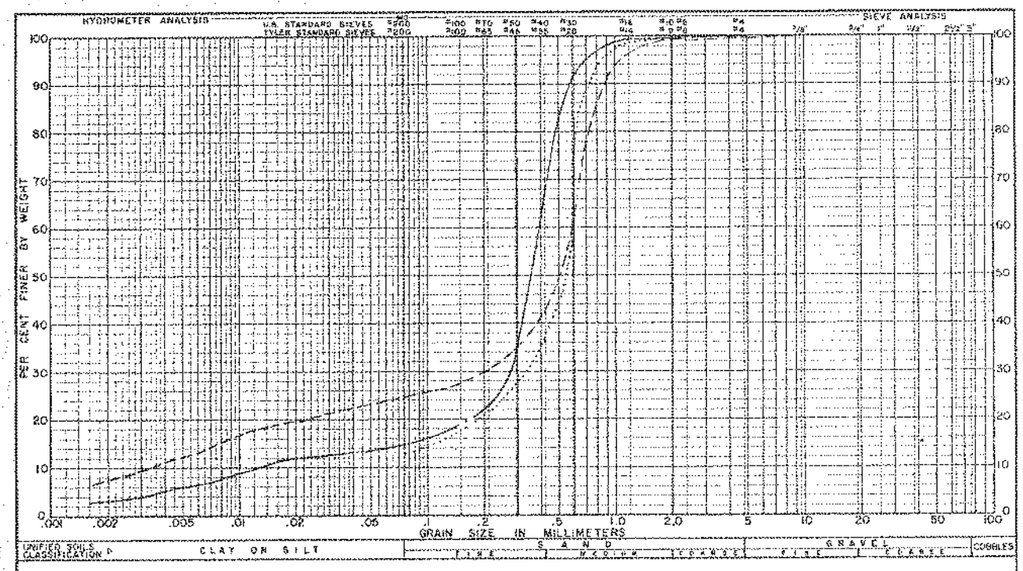
CHKD BY: DATE:
GRADATION CURVES
STRATUM T5
PLATE NO. A7



SYMBOL	BORING	SAMPLE	DESCRIPTION OF SAMPLE
	F-6	90	STRATUM P2
	F-26	110	COMPACT TO VERY COMPACT LIGHT GRAY OR TAN SILTY OR CLAYEY FINE TO
	F-29	110	MEDIUM SAND WITH POCKETS OF SILTY CLAY AND TRACE OF SMALL GRAVEL.
			OCCASIONAL LIGNITE FRAGMENTS
			STRATUM P3
			HARD GRAY-GREEN OR GRAY-BLUE SILTY OR SANDY CLAY AND SANDY SILT AND
			SILTY OR CLAYEY FINE SAND WITH OCCASIONAL SMALL GRAVEL.

PLATE NO. A8

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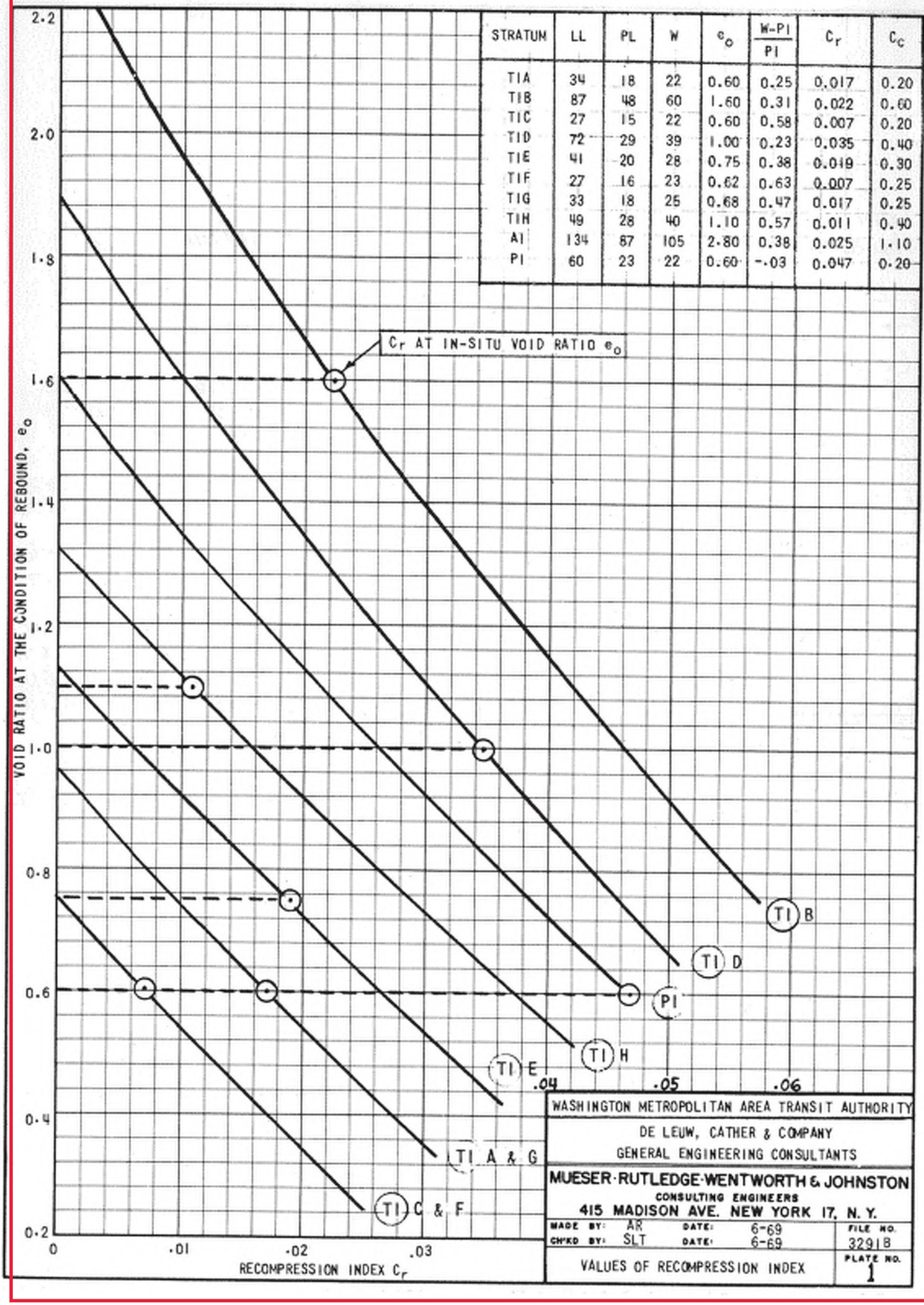
MADE BY: AR DATE: 8-26-70 FILE NO. 3291E
CHKD BY: DATE:
GRADATION CURVES
STRATA P2 & P3
PLATE NO. A8

STRATUM	LL	PL	W	e_o	$\frac{W-PI}{PI}$	C_r	C_c
TIA	34	18	22	0.60	0.25	0.017	0.20
TIB	87	48	60	1.60	0.31	0.022	0.60
TIC	27	15	22	0.60	0.58	0.007	0.20
TID	72	29	39	1.00	0.23	0.035	0.40
TIE	41	20	28	0.75	0.38	0.019	0.30
TIF	27	16	23	0.62	0.63	0.007	0.25
TIG	33	18	25	0.68	0.47	0.017	0.25
TIH	49	28	40	1.10	0.57	0.011	0.40
AI	134	87	105	2.80	0.38	0.025	1.10
PI	60	23	22	0.60	-.03	0.047	0.20



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MADE BY:	AR	DATE:	6-69	FILE NO.
CH'KD BY:	SLT	DATE:	6-69	32918

VALUES OF RECOMPRESSION INDEX

PLATE NO. 1

Appendix D

Permitting and Approvals Matrix

L'Enfant Station and Fourth Track Project

VRE L'Enfant Station and Fourth Track Project

Permitting and Approvals Matrix

ID	Name	Package and Design Timing for Initial Submission	Permit or Approval Issued by	Duration from First Submission to Issuance (Business Days)	Responsible Party for Fees	Resource	Agency Contact	Type of Permit or Approval	Lead Preparer	Status	Notes (Internal)
DC WATER											
1	Large Non-Residential Project Review	60% Design Plan Completion	DC Water		VRE	https://www.dcwater.com/sites/default/files/engineering/meter_worksheets/large-non-residential-submission-checklist.pdf	-	Approval	VHB	Not Started	Submission required for review of all existing and proposed water, storm, and sanitary sewer connections for the project. Upgrades to the water supply system may be required to meet new standards for backflow prevention. Submissions are made online through the DC Water Permit Operations Office. Permit review fees must be paid in advance in order for the review to start.
2	Availability Letter (Large Commercial)	60% Design Plan Completion	DC Water	-	VRE	Water and Sewer Availability Letter | DC Water	-	Approval	VHB	Not Started	Required review by DC Water to assess the capacity of the existing water, sewer, and storm drainage lines surrounding the frontage of a particular project. Submissions are made online through the DC Water Permit Operations Office.
3	Availability Certificate	60% Design Plan Completion	DC Water		VRE	Water and Sewer Availability Certificate | DC Water	-	Approval	VHB	Not Started	In order to obtain a building permit when a connection to the public water and/or sewer mains is required, the applicant must obtain a Water and Sewer Availability Certificate (WSAC) from DC Water. The WSAC is the final approval document that the applicant will receive from DC Water. It signifies that the plans are in accordance with DC Water's design requirements and guidelines and all fees have been paid. A WSAC is completed for all projects that entail a connection to the water and/or sewer system, a temporary water connection, the raze of an existing building, a foundation to grade permit, or a sheeting and shoring permit.
4	System Availability Fee (SAF)	60% Design Plan Completion	DC Water	-	VRE	https://www.dcwater.com/sites/default/files/permit_files/saf-faq.pdf	-		VRE	Not Started	New fee that went into effect on January 1, 2018 for new (or upgraded) water and sewer services that applies to renovation and redevelopment projects as well as new construction including campus type projects. Fee is base upon the computed size of a water meter based at peak demand. Submissions are made online through the DC Water Permit Operations Office.
5	Large Project Sheeting and Shoring Review (Large Commercial)	Need input from CMGC on proposed SOE Design	DC Water	4 Weeks[1]	VRE		-	Approval	VHB	Not Started	This review may be required if the excavation for any of the proposed improvements (or any temporary works that impart additional loads) impact the existing surrounding water, sewer, and storm drain infrastructure that is to remain. Submissions are made online through the DC Water Permit Operations Office.
6	Temporary Discharge Authorization Permit	90% Design Plan Completion	DC Water	2 Weeks[1]	VRE		-	Permit	VHB	Not Started	This review is required to determine where any discharges from construction dewatering activities should be routed (to the existing surrounding storm drain or sanitary sewer systems) based upon a laboratory analysis of any contaminants present in the existing groundwater. Submissions are made manually through the DC Water Pretreatment Program Office.
DDOT											
7	Public Space Permit - Construction	60% Design Plan Completion	DDOT	30 Business Days[1]	VRE		-	Permit	CMGC Contractor	Not Started	All construction that takes place in public right of way (public space) areas must be submitted to DDOT for review and approval. This includes all roadway, driveways, sidewalk, utility, and paving type elements, streetlight systems, traffic signal systems, as well as all streetscape/hardscape related items. Submission are made electronically through DDOT TOPS System. Preliminary project designs at the 30% and 70% levels are also made to DDOT through the TOPS System with a request to hold a Preliminary Design Review Meeting (PDRM).
8	Public Space Committee Review	N/A	DDOT	-	VRE		-	Approval	Not Required	Not Required	This permit is only required if non-standard items are installed within DDOT controlled Public Space.
9	Public Space Sheeting and Shoring Review	Need input from CMGC on proposed SOE Design	DDOT	30 Business Days[1]	VRE		-	Approval	CMGC Contractor	Not Started	Required review by DDOT to assess the impacts of excavation on the surrounding public space frontage of a particular project. Submissions are made electronically through the DDOT TOPS System.
10	Public Space Permit - Occupancy	60% Design Plan Completion	DDOT	30 Business Days[1]	VRE		-	Permit	CMGC Contractor	Not Started	This is a companion permit to the DDOT Public Space Permit - Construction. This permit is typically the responsibility of the construction contractor and includes the preparation of maintenance of traffic plans (both vehicular and pedestrian) for any lane, street, or sidewalk closures required to facilitate construction. Submissions are made electronically through the DDOT TOPS System.

VRE L'Enfant Station and Fourth Track Project

Permitting and Approvals Matrix

ID	Name	Package and Design Timing for Initial Submission	Permit or Approval Issued by	Duration from First Submission to Issuance (Business Days)	Responsible Party for Fees	Resource	Agency Contact	Type of Permit or Approval	Lead Preparer	Status	Notes (Internal)
11	Air Rights Agreement	90% Design Plan Completion	DDOT	-	VRE		-	-	VRE/VHB	Not Started	This is a companion permit to the DDOT Public Space Permit - Construction for bridges and below grade tunnels/vaults that fall above or below DDOT Public Space areas. Air Rights Agreements require that a formal easement with metes/bounds description be created by a DC Registered Surveyor for the proposed structure. Once approved by DDOT, the easement also needs to be reviewed and approved by the DC Surveyors Office (DCSO) and then recorded with the DC Office of Tax (OTR) and Revenue Recorder of Deeds office.
DOEE											
12	Erosion and Sediment Control Approval	60% Design Plan Completion	DOEE	30 Days[1]	VRE		-	Approval	VHB	Not Started	Erosion and Sediment Control (ESC) Plans for all phases of construction must be prepared and submitted to DOEE in accordance with their current (2013) guidelines and standards. Submissions are made electronically through the DOEE Stormwater Management Database System.
13	Stormwater Management Approval	60% Design Plan Completion	DOEE	30 Days[1]	VRE		-	Approval	VHB	Not Started	The new 2020 District of Columbia Stormwater Regulations now require that a Stormwater Retention Volume (SWRV) now be calculated for all major land disturbing activities. This volume of water must remain on-site and be infiltrated or harvested for other uses. Existing and proposed railroad ballast areas (railroad lands) are considered by DOEE to be impervious runoff areas. For this area of the city this retention volume is calculated using a 1.2-inch rainfall event. An additional retention volume may be required to manage the runoff back to pre-existing (meadow) conditions (Curve Number 70 in TR-55 Methodology) for areas of the city where there are capacity/conveyance constraints. Maximum Extent Practicable (MEP) considerations are eligible for lands located within public R.O.W. including railroad lands and DDOT land. Submissions are made electronically through the DOEE Stormwater Management Database System.
14	Maintenance Covenants	60% Design Plan Completion	DOEE/DC OTR (Recorder of Deeds)	-	VRE		-	Approval	VHB	Not Started	After the final stormwater management design is approved by DOEE, a maintenance covenant must be prepared and submitted to DOEE as well as the DC Office of the Attorney General (OAG) for review and approval. Once approved, the covenant must then be recorded at the DC Office of Tax and Revenue, Recorder of Deeds. Maintenance covenants are only required for Stormwater Management (SWM) facilities that fall on private property. They are not required for SWM in Public Space.
15	Stormwater Pollution Prevention	TBD	DOEE	-	VRE		-	Approval	CMGC Contractor	Not Started	Prior to the start of construction, the selected construction contractor must prepare a Stormwater Pollution Prevention Plan (SWPPP) which is a required by DOEE. The plan must address how pollution will be controlled with respect to all construction activities as well as the management of fuel, hazardous materials, daily cleanup procedures, and other housekeeping measures necessary to maintain a clean construction site.
16	Notice of Intent	TBD	DOEE	-	VRE		-	Approval	VHB	Not Started	All projects that disturb over 1-acre of land surface in the United States must file a Notice of intent (NOI) with DOEE/EPA. The NOI is not a permit but a required reporting procedure for large projects where non-point source pollution sources.
DC DOB											
17	Building Permit	N/A	DOB	-	VRE		-	Permit	Not Required	Not Required	A Building Permit is required relevant to the intended project work in the District of Columbia within private property. Previous discussions with DC DOB officials indicate they do not have jurisidiction over railroad lands.
18	Environmental intake Screening Form (EISF) and Environment Intake Form (EIF)	60% Design Plan Completion	DOB	30 Days[1]	VRE		-		VHB	Not Started	The Environmental Impact Screening Form (EISF) and its companion Environmental Intake Form (EIF) is designed to help applicants and District government agencies to determine whether or not a major action, would likely result in significant adverse environmental impacts, during the project's construction or operational phase. The EISF review process provides an orderly and comprehensive procedure that permits the introduction of information tailored to the specific project or actions proposed.

VRE L'Enfant Station and Fourth Track Project

Permitting and Approvals Matrix

ID	Name	Package and Design Timing for Initial Submission	Permit or Approval Issued by	Duration from First Submission to Issuance (Business Days)	Responsible Party for Fees	Resource	Agency Contact	Type of Permit or Approval	Lead Preparer	Status	Notes (Internal)
19	B-Civ Permit	60% Design Plan Completion	DOB	30 Days	VRE		-	Permit	VHB	Not Started	A Civil (BCIV) Permit is a permit that allows owners and contractors to submit and get approval for civil drawings for sitework/groundwork (below-grade and at-grade) prior to the application of the main building permit. This permit reduces the total amount of review time for a project because it allows the applicant to secure DOB and critical sister agency (DC Water, DDOE, and DDOT) reviews either prior to the submission of the main building permit application or even while the building permit is being reviewed. Permits are submitted electronically through the DC DOB ProjectDox system.
20	DC Surveyor's Office (DCSO) Building Plat	N/A	DOB	1 Day[1]	VRE		-	Plat	Not Required	Not Required	A DOB Building Plat is required relevant to the intended project work in the District of Columbia within private property. Previous discussions with DC DOB officials indicate they do not have jurisidiction over railroad lands.
NPS											
21	Special Use Permit for Construction	TBD	NPS	30 Days[1]	VRE	-	-	Permit	CMGC Contractor	Not Started	Special Use Permit (SUP) will be needed for any construction, staging, or access located within NPS land. This includes Hancock Park (Reservation 113), Boxcar Willie Park (Reservation 115), and Dean Wilhelm Memorial Park (Reservation 116). SUP will need to be applied via email to a member of the NPS NAMA region. Relocation of NPS owned utilities that fall on NPS lands as well as other public utility lines will also trigger the need for a submission of an SUP.
WMATA											
22	Joint Development Adjacent Construction (JDAC) Approval	TBD	WMATA	60 Days[1]	VRE	https://www.wmata.com/business/adjacent-construction/index.cfm	Asegu Woldemariam	Permit	CMGC Contractor	Not Started	JDAC review will be required with any work located within WMATA zone of influence (ZOI). Submissions for review can be made throughout the project design to allow for multiple reviews. JDAC will assign a construction engineer for review and approval through their website.
DC Fire & EMS Department (DCFEMS)											
23	Safety Oversight Review	60% Design Plan Completion	DCFEMS	-	VRE	-	-	Approval	VHB	Not Started	The DCFEMS State Safety Oversight Office (SSOO) has the authority to develop, manage, and carry out FTA safey and security requirements. The SSOO establishes minimum standards for the safety of all rail fixed guideway public transportation systems within it's oversight and mandates all rail transit agencies to develop and implement a written public transportation agency safety plan.
CSXT											
24	Righ of Entry Permit for Construction	TBD	CSXT	30 Days[1]	VRE	https://www.csx.com/index.cfm/customers/value-added-services/property-real-estate/permitting-utility-wireless-infrastructure-installations-and-rights-of-entry/rights-of-entry-permits/	-	Permit	CMGC Contractor	Not Started	Right of Entry Permit allowing access to construct within the CSX rail right-of-way

1. Anticipated review timeline is an estimated timeframe in which the applicant may expect to receive a response from the reviewer and is established by the review agency. Agency established review timelines are not mandated in most cases and permit issuance timelines may vary based on factors such as permit type, agency responsiveness, initiation of comment response periods, interagency coordination, and project complexity.

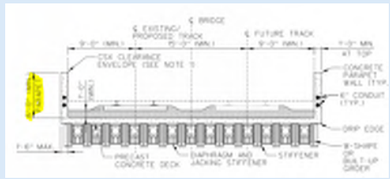
2. Anticipated review timeline is an estimated timeframe in which the applicant may expect to receive a response from the reviewer and is established based on prior project experience in the absence of a target timeline provided by the review agency. Permit issuance timelines may vary based on factors such as agency responsiveness, initiation of comment response periods, the need for interagency coordination, and project complexity.

Appendix E

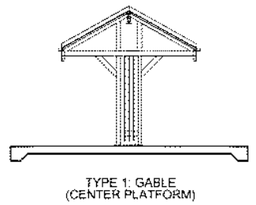
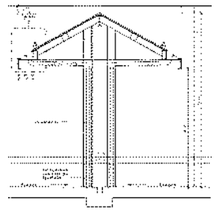
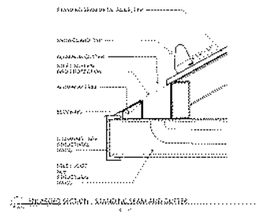
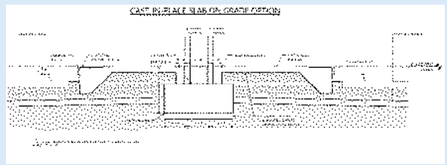
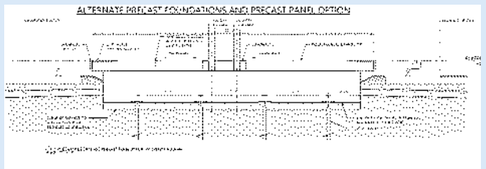
Design Guide Deviation Matrix

L'Enfant Station and Fourth Track Project

Project Name: L"Enfant Station and Fourth Track Project
Document: Final 30% Submission Design Guide Deviation Matrix
Date Updated: 7/25/2025

Discipline	Element	Deviation Description	Deviation Reason	Applicable Images
Structures	Bridge Parapets	• **Design Guide:** CSX Public Projects Manual; 6' parapet walls on bridges • **Designed Configuration:** 6th Street SW - use esterior steel Through Plate Girders 7th Street SW - Match other side of the existing bridge	At 6th Street SW, the bridge parapet is a combination of through plate girder and pipe handrail to mimic the existing structure while providing an aesthetic desirable to Section 106 Signatories that does not significantly alter the viewshed along 6th St SW. This concept provides a safety improvement compared to current conditions. At 7th Street SW, the bridge parapet is a concrete curb with attached handrail to match the other half of the structure which is to remain. For both structures, significant ballast raises are not expected due to the station as well as other limitations such as the Virginia Avenue SW retaining wall. Therefore, we expect that the 3'-6" handrail will provide required fall protection through the bridge's lifespan.	
Structures	Retaining Wall Parapets	• **Design Guide:** CSX Public Projects Manual; 6' parapet walls • **Designed Configuration:** Virginia Avenue SW Wall - Pipe handrail to match existing Capital Gallery Retaining Wall - no changes to private retaining wall	Guidance for fall protection on CSX retaining walls is not explicitly specified; however, the adjacent Long Bridge project has used a concrete parapet similar to the bridge criteria where new walls are installed. The Virginia Avenue SW retaining wall will remain as part of the project and it will be capped with stone or concrete and an added handrail. Adding the weight of an additional concrete parapet (and subsequent moment slab required for support) will add weight to the wall which already experiences large bearing pressures. A taller concrete or stone wall will also impede viewsheds, particularly toward the Washington Monument, which is not desired. The retaining wall at the Captial Gallery property is a wall on private property which is topped with a chain link fence. Adding a parapet to the top of this wall would similarly increase loading on the wall which it was not designed for.	
Structures	Bridge Vertical Clearance	• **Design Guide:** DDOT Design and Engineering Manual; 14'-6" of vertical clearance required CSX Public Projects Manual; 16'-6" of vertical clearance desired without sacrificial beam • **Designed Configuration:** 6th Street SW - 14'-0" proposed with exterior through plate girders, which also serve as sacrificial beams 7th Street SW - 14'-1" proposed	A design waiver/exception has been submitted to DDOT regarding the 14'-0" vertical clearance fro 6th Street SW. Coordination is ongoing, but initial DDOT review inferred concurrence with waiver aproach and provided suggestions to add information that further bolsters justification. The 6th Street SW 30% bridge design was coordinated with CSX throughout in order to achieve the maximum practical vertical clearance. CSX had acknowledged 16'-6" vertical clearance is not practical. The vertical clearance at 7th Street SW is kept to maintain the existing structure vertical clearance since this is only a widening and the existing structure with 14'-1" of clearance will remain.	
Structures	Bridge Design Loading	• **Design Guide:** CSX Public Projects Manual; Cooper E90 & 2' added ballast • **Designed Configuration:** -7th Street SW - Cooper E80 (match existing for widening) -6th Street SW - Cooper E80 superstructure; E90 substructure	Bridge superstructure designs in constrained urban corridors can benefit from the consideration of Cooper E80 loading in lieu of Cooper E90. Designs on the project are largely controlled by deflection and serviceability, so their design strength may still exceed what is required to resist Cooper E90 train sets. This approach was accepted by CSX on the Long Bridge Corridor Bridges 7th Street SW uses Cooper E80 throughout to match what the existing bridge was designed for.	
Structures	6th Street SW Design Exceptions	• **Design Guide:** CSX Public Projects Manual: -12" minimuim ballast under ties -24" future ballast -Sacrificial crash beam • **Designed Configuration:** -8" minimuim ballast under ties -12" future ballast -No dedicated sacrificial element	In order to achieve a maximized vertical clearance, CSX has agreed that 8" minimum ballast under ties is acceptable in liue of the 12" specified in the PPM. Due to the adjacent station and Virginia Avenue SW retaining wall in the tight urban corridor, significant grade raises are not practical. 12" of future ballast is accounted for in the design which should conservatively exceed any future reballasting on the corridor. Sacrificial crash beams are required by CSX when vertical clearance is not met. However, there is not enough horizontal clearance (especially at Virginia Avenue SW side of the 6th Street SW bridge) to install dedicated crash beams. At 6th Street SW, the through plate girder facias can be detailed to have some degree of horizontal play via slotted holes. This bridge does not have a noted crash history, but any collisions would occur with this beam which should largely dissipate any slow-speed collisions prior to hitting primary load carrying members. The higher vertical clearance coupled with more redundancy considerably improves upon the existing, non-redundant through plate girders.	

Project Name: L"Enfant Station and Fourth Track Project
Document: Final 30% Submission Design Guide Deviation Matrix
Date Updated: 7/25/2025

Discipline	Element	Deviation Description	Deviation Reason	Applicable Images
Structures/Architectural	Platform Canopy Configuration	• **Design Guide:** Type 1 Gable, with gutter along the edge of the canopy • **Designed Configuration:** Gable canopy with gutter inside the canopy.	VRE requested the canopy look similar to the canopy designed at Broad Run and constructed at Lorton and Rolling Road stations. Direction provided during the 2/28/2025 Design Coordination Meeting, with VRE to provide the team with the preferred canopy design specification.	  
Structural	At Grade Platform Structure Type	• **Design Guide:** Slab on Grade • **Designed Configuration:** Slab on Grade selected as typical, with alternate precast plank options fo the contractor.	Slab on grade platform option was ultimately selected as the base platform design for this project. Multiple options where explored, cast in place, precast slabs supported on intermediate footings at the canopies, FRP platforms with intermediate footings at the canopy's. During a meeting on 7/3/2024 Dallas Richards agreed the approach would be to have the base design as slab on grade, and to provide the contractor with an option to do the precast slab. This would allow the contractor to bid the project considering both cost, and speed of instalation between the two system.	 
Track	Track Centers	• **Design Guide:** CSX DWG 2605 - Standard Clearance Matrix - 15'-0" for Main Tracks • **Designed Configuration:** - 13'-0"	Reduced track centers match existing condition and are in accordance with previous exceptions agreed to as a part of the Comprehensive Rail Agreement between VPRA and CSX.	
Track	Minimum Distance between Points of Switch	• **Design Guide:** CSX Design Standards - 100ft min between points of switch • **Designed Configuration:** - 200ft min between points of frog	Due to spatial constraints, the distance between the frog of the proposed crossover between Tracks 3 & 4 and the frog of the existing crossover bewteen Tracks 2 & 3 is a minimum 200ft.	

Appendix F

Draft 30% Comment Response Matrix

L'Enfant Station and Fourth Track Project

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (VRE, VPRA/PST)
REVIEW DATE: 11/01/2024
COMMENT RESPONSE DATE: 02/17/2025

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

COMMENT TYPE:
E – Editorial
ROK – Response
M – Mandatory

ACTION CODES: A – Designer agrees and will comply/take action
DE – Designer to evaluate
B – Designer disagrees for reasons noted
C – Answer provided; no action needed .

RESPONSE STATUS:
VRE – VRE will evaluate
D – Discretionary
DC – Delete Comment
B - Designer disagrees, discussion may be required

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
1	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	POTOMAC SHORES	A	Agreed and will revise as requested.
2	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	MOVE LEGEND HERE	A	Agreed and will revise as requested.
3	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	MOVE VRE LOGO HERE	A	Agreed and will revise as requested.
4	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	MAINTAIN A CONSISTENT PROJECT NAME "VRE L'ENFANT STATION AND FOURTH TRACK PROJECT"	A	Agreed and will revise as requested.
5	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	VA AND LE INTERLOCKINGS (Mileposts CFP 112.1 and CFP 111.5)	A	Agreed and will revise as requested.
6	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	GENERAL COMMENT: USE THE UPDATED TITLE BLOCK ON ALL DRAWING SHEETS WITH ADDITIONAL VHB DETAILS. PLEASE REPLACE "DATE ISSUED" WITH "IFB NUMBER"	A	Agreed. We will replace the current title block with the example provided by VRE as requested.
7	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	Use standard VRE titleblock	A	Agreed. We will replace the current title block with the example provided by VRE as requested and will confirm the approval block required for DOB and/or DDOT as needed.
8	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	A	A	Agreed and will revise as requested.
9	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	10/4/2024	A	Agreed and will revise as requested.
10	DRAFT 30% DRAWINGS	1 (G-000)	COVER SHEET	VRE	GENERAL	30% PE PLANS	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
11	DRAFT 30% DRAWINGS	2 (G-001)	DRAWING INDEX	VRE	GENERAL	REFORMAT USING THE LATEST VRE FDG. ZOOM OUT TO VIEW A TEMPLATE AND SAMPLE "DRAWING INDEX AND REVISION TRACKING SHEET" PLACED TO THE LEFT OF THIS SHEET	A	Agreed and will revise as requested.
12	DRAFT 30% DRAWINGS	3 (G-002)	GENERAL NOTES	VRE	GENERAL	DECEMBER 2023	A	Agreed and will revise as requested.
13	DRAFT 30% DRAWINGS	3 (G-002)	GENERAL NOTES	VRE	GENERAL	IN THE DESCRIPTION INCLUDE "CONSTRUCTION OF THE NEW FOURTH TRACK BETWEEN THE VA AND LE INTERLOCKINGS"	A	Agreed and will revise as requested.
14	DRAFT 30% DRAWINGS	3 (G-002)	GENERAL NOTES	VRE	GENERAL	ALEXANDRA	A	Agreed and will revise as requested.
15	DRAFT 30% DRAWINGS	3 (G-002)	GENERAL NOTES	VRE	GENERAL	Need to check specifications to see actions needed if flaggers are not available.	C	Internal comment related to VRE Specification Manual. See also Comment 17.
16	DRAFT 30% DRAWINGS	3 (G-002)	GENERAL NOTES	VRE	ELECTRICAL	PLEASE LIST PLUMBING, ELECTRICAL, MECHANICAL, GAS, ENERGY....CODES	A	Agreed and will revise as requested.
17	DRAFT 30% DRAWINGS	3 (G-002)	GENERAL NOTES	VRE	GENERAL	Has the VRE Design Manual been Finalized?	C	The Draft 30% plan set references VRE standards under codes and standards. If an updated VRE Design Manual is made available, the design team will review and apply it to the project design where applicable.
18	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	VRE	GENERAL	PROJECT OVERVIEW 1	A	Agreed and will revise as requested.
19	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	VRE	GENERAL	PROJECT OVERVIEW 2	A	Agreed and will revise as requested.
20	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	VRE	GENERAL	PROJECT OVERVIEW 3	A	Agreed and will revise as requested.
21	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	VRE	GENERAL	PROJECT OVERVIEW 4	A	Agreed and will revise as requested.
22	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	VRE	GENERAL	IDENTIFY PROJECT LIMITS. CALLOUT LE AND VA INTERLOCKINGS	A	Agreed and will revise as requested.
23	DRAFT 30% DRAWINGS	5 (G-004)	PROJECT OVERVIEW (1 OF 4)	VRE	GENERAL	CALLOUT NEW/MODIFIED CROSSOVERS	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
24	DRAFT 30% DRAWINGS	5 (G-004)	PROJECT OVERVIEW (1 OF 4)	VRE	GENERAL	INCLUDE IN OVERVIEW PLANS	A	Agreed and will revise as requested.
25	DRAFT 30% DRAWINGS	6 (G-005)	PROJECT OVERVIEW (2 OF 4)	VRE	GENERAL	CALLOUT SIGNAL BRIDGE TO BE REMOVED AND REPLACED/RELOCATED	A	Agreed and will revise as requested.
26	DRAFT 30% DRAWINGS	6 (G-005)	PROJECT OVERVIEW (2 OF 4)	VRE	GENERAL	NEW RETAINING WALL	A	Agreed and will revise as requested.
27	DRAFT 30% DRAWINGS	6 (G-005)	PROJECT OVERVIEW (2 OF 4)	VRE	GENERAL	EXISTING ADA RAMP TO BE REMOVED	A	Agreed and will revise as requested.
28	DRAFT 30% DRAWINGS	6 (G-005)	PROJECT OVERVIEW (2 OF 4)	VRE	GENERAL	IDENTIFY CATNERY POLES TO BE REMOVED	A	Agreed and will revise as requested.
29	DRAFT 30% DRAWINGS	6 (G-005)	PROJECT OVERVIEW (2 OF 4)	VRE	GENERAL	INCLUDE IN OVERVIEW PLANS	A	Agreed and will revise as requested.
30	DRAFT 30% DRAWINGS	7 (G-006)	PROJECT OVERVIEW (3 OF 4)	VRE	GENERAL	CALLOUT NEW/MODIFIED CROSSOVERS	A	Agreed and will revise as requested.
31	DRAFT 30% DRAWINGS	7 (G-006)	PROJECT OVERVIEW (3 OF 4)	VRE	GENERAL	INCLUDE IN OVERVIEW PLANS	A	Agreed and will revise as requested.
32	DRAFT 30% DRAWINGS	8 (G-007)	PROJECT OVERVIEW (4 OF 4)	VRE	GENERAL	INCLUDE IN OVERVIEW PLANS	A	Agreed and will revise as requested.
33	DRAFT 30% DRAWINGS	9 (G-101)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (1 OF 2)	VRE	GENERAL	Show 8-car consist with 68' Locomotive on south end	A	Agreed and will revise as requested.
34	DRAFT 30% DRAWINGS	9 (G-101)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (1 OF 2)	VRE	GENERAL	Will it be possible to extend the temporary platform either to the east or possibly a car length to the west?	DE	The project team will explore the feasiblilty of extending the temporary platform area to include an additional car or car door. The length of the boardable temporary platform is constrained in stage 1 by the existing track geometry to the west of the platform and the required construction zone to the east. Any shift will also require balancing the boardable legnth for Stage 2.
35	DRAFT 30% DRAWINGS	9 (G-101)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (1 OF 2)	VRE	GENERAL	SCALE AND NORTH ARROW	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
36	DRAFT 30% DRAWINGS	9 (G-101)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (1 OF 2)	VRE	GENERAL	& THE WEST SECTION OF 6TH STREET BRIDGE.	A	Agreed and will revise as requested. Please note that the section of bridge scheduled for demolition during this phase is the north face and will be labeled accordingly.
37	DRAFT 30% DRAWINGS	10 (G-102)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (2 OF 2)	VRE	GENERAL	INCLUDING ADA RAMP	A	Agreed and will revise as requested.
38	DRAFT 30% DRAWINGS	10 (G-102)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (2 OF 2)	VRE	GENERAL	Show 8-car consist with 68' Locomotive on south end	A	Agreed and will revise as requested.
39	DRAFT 30% DRAWINGS	10 (G-102)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (2 OF 2)	VRE	GENERAL	& THE EAST SECTION OF 6TH STREET BRIDGE.	A	Agreed and will revise as requested. Please note that the section of bridge scheduled for demolition during this phase is the south face and will be labeled accordingly.
40	DRAFT 30% DRAWINGS	11 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	VRE	TRACK	The turnout for the VRE siding must be removed for construction of the 6th street bridge. This may be a good time to install the start of Future Track 4 and the crossover from the VRE siding to the southbound track from Union Station as noted in Stage 3a.	A	Agreed and will revise as requested.
41	DRAFT 30% DRAWINGS	11 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	VRE	TRACK	Install the Track 3 portion of this crossover before Track 4 is taken out of service. This will permit installation of the remaining turnouts in CP LE to be installed while Track 4 and Future Track 4 are out of service during the construction of the station.	DE	The project team will explore the feasiblity of installing the Track 3 turnout in Stage 1, and the associated potential impact on rail operations.
42	DRAFT 30% DRAWINGS	11 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	VRE	TRACK	Remove existing turnout and derail to enable construction of 6th Street Bridge.	A	Agreed and will revise as requested.
43	DRAFT 30% DRAWINGS	11 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	VRE	TRACK	EXISTING PLATFORM	A	Agreed and will revise as requested.
44	DRAFT 30% DRAWINGS	12 (G-202)	TRACK STAGING SCHEMATIC STAGE 2	VRE	TRACK	EXISTING PLATFORM	A	Agreed and will revise as requested.
45	DRAFT 30% DRAWINGS	12 (G-202)	TRACK STAGING SCHEMATIC STAGE 2	VRE	TRACK	NEW PLATFORM	A	Agreed and will revise as requested.
46	DRAFT 30% DRAWINGS	13 (G-203)	TRACK STAGING SCHEMATIC STAGE 2	VRE	TRACK	The existing crossover at the south end of VRE Siding will need to be removed to construct the 6th Street bridge in Stage 1. Depending on operational requirements, the new crossover can be installed at any stage up to Stage 3a.	A	Agreed and will revise as requested.
47	DRAFT 30% DRAWINGS	13 (G-203)	TRACK STAGING SCHEMATIC STAGE 2	VRE	TRACK	NEW PLATFORM	A	Agreed and will revise as requested.
48	DRAFT 30% DRAWINGS	14 (G-204)	TRACK STAGING SCHEMATIC STAGE 3b	VRE	TRACK	Is there any need to retain this crossover since it duplicates the new crossover from the southbound from Union Station to the VRE Siding. Look at the possibility of connecting the southbound track from Union Station to the VRE Siding (Future Track 4) followed soon after by removing	DE	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
49	DRAFT 30% DRAWINGS	15 (G-205)	TRACK STAGING SCHEMATIC STAGE 3c	VRE	TRACK	NEW PLATFORM	A	Agreed and will revise as requested.
50	DRAFT 30% DRAWINGS	16 (G-206)	TRACK STAGING SCHEMATIC STAGE 3d	VRE	TRACK	The crossover at CP Jersey can be installed at any time before Stage 1 or after Stage 3b	A	Agreed and will revise as requested.
51	DRAFT 30% DRAWINGS	18 (G-208)	TRACK STAGING SCHEMATIC STAGE 5	VRE	TRACK	Is there enough space in CP Virginia to install the both new crossovers? Having both crossovers will permit freight trains to operate over the new Long Bridge on Track 4 if the older bridge is under repair or otherwise out-of-service.	DE	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.
52	DRAFT 30% DRAWINGS	18 (G-208)	TRACK STAGING SCHEMATIC STAGE 5	VRE	TRACK	Is there enough space in CP Virginia to install the both new crossovers? Having both crossovers will permit freight trains to operate over the new Long Bridge on Track 4 if the older bridge is under repair or otherwise out-of-service.	DE	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.
53	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.
54	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.
55	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.
56	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.
57	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.
58	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.

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59	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	INDICATE SQ FT	A	Agree and will revise as requested to include the proposed easement areas in the Final 30% plans, estimated based on the property boundary information compiled using topographic survey and land records obtained by the Project Team. Precise areas for proposed easements will be determined during the final design phase of the project after a formal boundary survey (DCSO Survey to Mark) is completed.
60	DRAFT 30% DRAWINGS	21 (G-301)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN	VRE	CIVIL	PLEASE INDICATE PROPOSED LAYDOWN AND STAGING AREAs	A	Agree and will revise as requested. Further coordination with VRE will be needed to confirm proposed staging areas for the project.
61	DRAFT 30% DRAWINGS	26 (C-001)	CIVIL SYMBOLS, ABBREVIATIONS & NOTES	VRE	CIVIL	D	A	Agreed and will revise as requested.
62	DRAFT 30% DRAWINGS	27 (C-101)	EXISTING CONDITIONS NOTES	VRE	CIVIL	On the drawings these PEPCO transmission lines should have a unique mark separate from PEPCO electric distribution.	A	Agreed. Additional text labeling will be added next to any transmission lines. The linetype will remain as an electric, quality level B shown as E(B) in the base survey.
63	DRAFT 30% DRAWINGS	42 (C-404)	UTILITY DEMOLITION PLAN (3 OF 3)	VRE	CIVIL	Is this line labeled E(B) actually the PEPCO transmission line? can it be labeled to differentiate it from electric distribution cables?	A	Agreed. Additional text labeling will be added next to any transmission lines. The linetype will remain as an electric, quality level B shown as E(B) in the base survey.
64	DRAFT 30% DRAWINGS	53 (T-002)	TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED	VRE	TRACK	Is the new crossover in CP Jersey being removed?	A	No, the intent is for the crossover to remain in the permanent condition unless CSXT requests otherwise. Will revise.
65	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	VRE	TRACK	Check dimensioning on this drawing. The difference between the TS and PS of the XO on Future Track 3 is only 2.5 feet and yet visually this is a larger dimension at this scale.	A	Agreed and will revise as requested.
66	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	VRE	TRACK	Provide stationing on the existing crossovers as information.	A	Agreed and will revise as requested.
67	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	VRE	TRACK	Please provide stationing on the existing crossovers as information.	A	Agreed and will revise as requested.
68	DRAFT 30% DRAWINGS	86 (GA-002)	EGRESS SUMMARY	VRE	ELECTRICAL	We'd like a back up generator for the elevators	C	Elevators will be fed out of distribution equipment backed up by NG generator.
69	DRAFT 30% DRAWINGS	86 (GA-002)	EGRESS SUMMARY	VRE	ARCHITECTURAL	doen	A	Agreed and will revise as requested.
70	DRAFT 30% DRAWINGS	86 (GA-002)	EGRESS SUMMARY	VRE	ARCHITECTURAL	GRAND TOTAL = 1087 Occupants	A	Agreed and will revise as requested.
71	DRAFT 30% DRAWINGS	86 (GA-002)	EGRESS SUMMARY	VRE	ARCHITECTURAL	Y	A	Agreed and will revise as requested.

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72	DRAFT 30% DRAWINGS	87 (A-000)	GENERAL NOTES & ABREVIATIONS	VRE	ARCHITECTURAL	Please prepare a separate list of items that are deemed NIC. If none, please remove note.	A	Agreed and will revise as requested.
73	DRAFT 30% DRAWINGS	87 (A-000)	GENERAL NOTES & ABREVIATIONS	VRE	ARCHITECTURAL	CMR	A	Agreed and will revise as requested.
74	DRAFT 30% DRAWINGS	88 (A-100)	ARCHITECTURAL SITE PLAN	VRE	ARCHITECTURAL	SITE PLAN PLATFORM LEVEL	A	Agreed and will revise as requested.
75	DRAFT 30% DRAWINGS	89 (A-101)	7TH STREET ENTRANCE PLAN	VRE	ARCHITECTURAL	Zoom out on this perspective if you can for a more comparable view to the existing condition image to the right	A	Agreed and will revise as requested.
76	DRAFT 30% DRAWINGS	90 (A-102)	6TH STREET ENTRANCE PLAN	VRE	ARCHITECTURAL	If you are using the key plan reference for sub level part plans, this should be area III	A	Agreed and will revise as requested.
77	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	Revisit trench drain location outside of elevator door which will slope away from doorway for positive drainage.	A	Agreed and will revise as requested.
78	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	Provide call out for sacrificial edge	A	Agreed and will revise as requested.
79	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	Provide end railing terminating 9'-3" form C/L of tracks. Also turn in detectable warning strip to 9'-0" from C/L of tracks as shown.	A	Agreed and will revise as requested.
80	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	Show all downspout locations for coordination	A	Agreed and will revise as requested.
81	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	Show missing benches and waste receptacles between CL-8 & CL-9	A	Agreed and will revise as requested.
82	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	Consider pairing recycling receptacles with each waste receptacle.	DE	Will coordinate with VRE and revise accordingly. Would VRE like to use two individual recycling receptacles or one single receptacle with two internal partitions?
83	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	VRE is getting away from using display cases such as these and have begun to remove. Please delete all proposed from the platform.	A	Agreed and will revise as requested.
84	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	9'-3"	A	Agreed and will revise as requested.

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85	DRAFT 30% DRAWINGS	91 (A-103)	PLATFORM LEVEL PLAN - AREA I & II	VRE	ARCHITECTURAL	9'-3"	A	Agreed and will revise as requested.
86	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	Show all downspout locations for coordination	A	Agreed and will revise as requested.
87	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	Consider pairing reclining receptacles with each waste receptacle.	DE	See response to CN 82.
88	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	Revisit trench drain location outside of elevator door which will slope away from doorway for positive drainage.	A	Agreed and will revise as requested.
89	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	Provide call out for sacrificial edge	A	Agreed and will revise as requested.
90	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	Provide end railing terminating 9'-3" form C/L of tracks. Also turn in detectable warning strip to 9'-0" from C/L of tracks as shown.	A	Agreed and will revise as requested.
91	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	9'-3"	A	Agreed and will revise as requested.
92	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	VRE	ARCHITECTURAL	9'-3"	A	Agreed and will revise as requested.
93	DRAFT 30% DRAWINGS	100 (A-202)	PLATFORM ELEVATIONS	VRE	ARCHITECTURAL	Show missing receptacle	A	Agreed and will revise as requested.
94	DRAFT 30% DRAWINGS	100 (A-202)	PLATFORM ELEVATIONS	VRE	ARCHITECTURAL	Show platform end railings	A	Agreed and will revise as requested.
95	DRAFT 30% DRAWINGS	100 (A-202)	PLATFORM ELEVATIONS	VRE	ARCHITECTURAL	Show platform end railings	A	Agreed and will revise as requested.
96	DRAFT 30% DRAWINGS	100 (A-202)	PLATFORM ELEVATIONS	VRE	ARCHITECTURAL	VRE is getting away from using display cases such as these and have begun to remove. Please delete all proposed from the platform.	A	Agreed and will revise as requested.
97	DRAFT 30% DRAWINGS	101 (A-203)	7TH STREET ENTRANCE - INTERIOR ELEVATIONS	VRE	ARCHITECTURAL	VRE is getting away from using display cases such as these and have begun to remove. Please delete all proposed from the station. A system map sign can be wall mounted at this location next to TVMs.	A	Agreed and will revise as requested.

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98	DRAFT 30% DRAWINGS	101 (A-203)	7th STREET ENTRANCE - INTERIOR ELEVATIONS	VRE	ARCHITECTURAL	Raise VMS left to avoid conflict with system map	A	Agreed and will revise as requested.
99	DRAFT 30% DRAWINGS	101 (A-203)	7th STREET ENTRANCE - INTERIOR ELEVATIONS	VRE	ARCHITECTURAL	6'-3"	A	Agreed and will revise as requested.
100	DRAFT 30% DRAWINGS	102 (A-204)	6TH STREET ENTRANCE - INTERIOR ELEVATIONS	VRE	ARCHITECTURAL	VRE is getting away from using display cases such as these and have begun to remove. Please delete all proposed from the station. A system map sign can be wall mounted at this location next to TVMs.	A	Agreed and will revise as requested.
101	DRAFT 30% DRAWINGS	102 (A-204)	6TH STREET ENTRANCE - INTERIOR ELEVATIONS	VRE	ARCHITECTURAL	Raise VMS left to avoid conflict with system map	A	Agreed and will revise as requested.
102	DRAFT 30% DRAWINGS	102 (A-204)	6TH STREET ENTRANCE - INTERIOR ELEVATIONS	VRE	ARCHITECTURAL	6'-3"	A	Agreed and will revise as requested.
103	DRAFT 30% DRAWINGS	103 (A-301)	PLATFORM & CANOPY SECTIONS	VRE	ARCHITECTURAL	Show any downspouts present in this section.	A	Agreed and will revise as requested.
104	DRAFT 30% DRAWINGS	103 (A-301)	PLATFORM & CANOPY SECTIONS	VRE	ARCHITECTURAL	Show platform sloping away from track in this section and address how drainage will be intercepted before reaching the open stairwell	A	Agreed and will revise as requested.
105	DRAFT 30% DRAWINGS	103 (A-301)	PLATFORM & CANOPY SECTIONS	VRE	ARCHITECTURAL	Prove sections at north and south end of canopy to detail end railings and emergency exit gates to ASDs	A	Agreed and will revise as requested.
106	DRAFT 30% DRAWINGS	103 (A-301)	PLATFORM & CANOPY SECTIONS	VRE	ARCHITECTURAL	Make it clear that column and canopy heights above platform shall be uniform	A	Agreed and will revise as requested.
107	DRAFT 30% DRAWINGS	106 (A-401)	ELEVATOR & STAIR DETAILS - AREA I	VRE	ARCHITECTURAL	Show platform sloping away from track and address how drainage will be intercepted before reaching the open stairwell	A	Agreed and will revise as requested.
108	DRAFT 30% DRAWINGS	106 (A-401)	ELEVATOR & STAIR DETAILS - AREA I	VRE	ARCHITECTURAL	Show platform sloping away from track and address how drainage will be intercepted and/or redirected around elevators.	A	Agreed and will revise as requested.
109	DRAFT 30% DRAWINGS	106 (A-401)	ELEVATOR & STAIR DETAILS - AREA I	VRE	ARCHITECTURAL	Detail platform end railings with gates in section drawings at north and south ends of platform	A	Agreed and will revise as requested.
110	DRAFT 30% DRAWINGS	107 (A-402)	ELEVATOR & STAIR DETAILS - AREA III	VRE	ARCHITECTURAL	Show platform sloping away from track and address how drainage will be intercepted before reaching the open stairwell	A	Agreed and will revise as requested.

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111	DRAFT 30% DRAWINGS	107 (A-402)	ELEVATOR & STAIR DETAILS - AREA III	VRE	ARCHITECTURAL	Show platform sloping away from track and address how drainage will be intercepted and/or redirected around elevators.	A	Agreed and will revise as requested.
112	DRAFT 30% DRAWINGS	108 (A-403)	3D VIEWS	VRE	ARCHITECTURAL	Wrong locomotive	A	Agreed and will revise as requested.
113	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Rendering look nothing like SN-1 signs. Remove this reference.	A	Agreed and will revise as requested.
114	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
115	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
116	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
117	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Move EN-1 signs to platform to satisfy ADA requirements	A	Agreed and will revise as requested.
118	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	SN-3 Signs are available for your consideration as our typical for station entrances	A	Agreed and will revise as requested.
119	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Strike/Line (see markups)	A	Agreed and will revise as requested.
120	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Adding snapshots (see markups)	A	Agreed and will revise as requested.
121	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	FN-1	A	Agreed and will revise as requested.
122	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	TY-1	A	Agreed and will revise as requested.
123	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	EX-3R	A	Agreed and will revise as requested.

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124	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	EX-3L	A	Agreed and will revise as requested.
125	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	WS-3	A	Agreed and will revise as requested.
126	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	PR-1	A	Agreed and will revise as requested.
127	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	SC-1	A	Agreed and will revise as requested.
128	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	NT-2	A	Agreed and will revise as requested.
129	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	EX-3U	A	Agreed and will revise as requested.
130	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	EX-3D	A	Agreed and will revise as requested.
131	DRAFT 30% DRAWINGS	111 (A-601)	7TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	DP-1	A	Agreed and will revise as requested.
132	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Move EN-1 signs to platform to satisfy ADA requirements	A	Agreed and will revise as requested.
133	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Rendering look nothing like SN-1 signs. Remove this reference.	A	Agreed and will revise as requested.
134	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Do we need NT-2 on all doors or can we get away with the one public facing door?	C	We propose to use NT-2 "6th Street Ancillary Rooms" on the public facing door for first responders and then NT-2 for the rest of the rooms Electrical Room, Communications , ETC.
135	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Should this Room ID Sign only speak to Elevator Machine Room given the other spaces in the corridor.	C	Proposed Room ID Signs should be placed directly on each room access door, not on the front door to the corridor. See response to 134
136	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.

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137	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
138	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
139	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	SN-3 Signs are available for your consideration as our typical for station entrances	A	Agreed and will revise as requested.
140	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	WS-3	A	Agreed and will revise as requested.
141	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	PR-1	A	Agreed and will revise as requested.
142	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	SC-1	A	Agreed and will revise as requested.
143	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	NT-2	A	Agreed and will revise as requested.
144	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	EX-3L	A	Agreed and will revise as requested.
145	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	EX-3R	A	Agreed and will revise as requested.
146	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	SM-1	A	Agreed and will revise as requested.
147	DRAFT 30% DRAWINGS	112 (A-602)	6TH STREET ENTRANCE SIGNAGE PLAN	VRE	ARCHITECTURAL	DP-1	A	Agreed and will revise as requested.
148	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	Strike/Line (see markups)	A	Agreed and will revise as requested.
149	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	Adding snapshots (see markups)	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
150	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	Show all downspout locations to verify there are no conflicts with proposed sign mountings	A	Agreed and will revise as requested.
151	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	Demonstrate how and where the SN-1 signs will be mounted outside of tracks 1&4. Typically these go on ROW fence but there does not appear to be any through the platform limits.	A	Agreed and will revise as requested.
152	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	Don't show signs beyond the part plan matchline	A	Agreed and will revise as requested.
153	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
154	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	90'-0"	A	Agreed and will revise as requested.
155	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	What is the text for this call-out?	A	Agreed and will revise as requested.
156	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	EN-1	A	Agreed and will revise as requested.
157	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	NT-3	A	Agreed and will revise as requested.
158	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
159	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
160	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	MAX. SN SIGN SPACING IS 90' O.C.	A	Agreed and will revise as requested.
161	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
162	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
163	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
164	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
165	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
166	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
167	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
168	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
169	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	EX-1U	A	Agreed and will revise as requested.
170	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	** INDICATES DOUBLE-SIDED SIGNS	A	Agreed and will revise as requested.
171	DRAFT 30% DRAWINGS	113 (A-603)	PLATFORM SIGNAGE PLAN AREA I	VRE	ARCHITECTURAL	EX-2U	A	Agreed and will revise as requested.
172	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	Move matchline north of column 16 to prevent confusion between area plans	A	Agreed and will revise as requested.
173	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
174	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	90'-0"	A	Agreed and will revise as requested.
175	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	79'-10"	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
176	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	77'-0"	A	Agreed and will revise as requested.
177	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
178	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
179	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
180	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
181	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	EX-7U	A	Agreed and will revise as requested.
182	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	EX-7U	A	Agreed and will revise as requested.
183	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	EX-6U	A	Agreed and will revise as requested.
184	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	EX-6U	A	Agreed and will revise as requested.
185	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
186	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
187	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
188	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
189	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
190	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
191	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
192	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
193	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
194	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
195	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
196	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
197	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
198	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
199	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
200	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
201	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
202	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
203	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
204	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
205	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	Strike/Line (see markups)	A	Agreed and will revise as requested.
206	DRAFT 30% DRAWINGS	114 (A-604)	PLATFORM SIGNAGE PLAN AREA II	VRE	ARCHITECTURAL	Adding snapshots (see markups)	A	Agreed and will revise as requested.
207	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	Show missing light pole	A	Agreed and will revise as requested.
208	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	Move matchline north of column 16 to prevent confusion between area plans	A	Agreed and will revise as requested.
209	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
210	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	90'-0"	A	Agreed and will revise as requested.
211	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	77'-0"	A	Agreed and will revise as requested.
212	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	82'-9"	A	Agreed and will revise as requested.
213	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	75'-0"	A	Agreed and will revise as requested.
214	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	EN-1	A	Agreed and will revise as requested.

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215	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	EX-2U	A	Agreed and will revise as requested.
216	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
217	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
218	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	EX-1U	A	Agreed and will revise as requested.
219	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
220	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
221	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
222	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
223	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
224	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
225	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
226	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
227	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
228	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
229	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
230	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
231	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
232	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	Strike/Line (see markups)	A	Agreed and will revise as requested.
233	DRAFT 30% DRAWINGS	115 (A-605)	PLATFORM SIGNAGE PLAN AREA III	VRE	ARCHITECTURAL	Adding snapshots (see markups)	A	Agreed and will revise as requested.
234	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	Consider adding a 7th light pole at north end of platform. If Areas of Safe Dispersal are used off platform they will need additional light poles between the tracks to light those spaces.	A	Agreed and will revise as requested.
235	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	Delete and replace with new signs as pasted here	A	Agreed and will revise as requested.
236	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	75'-0"	A	Agreed and will revise as requested.
237	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	NT-3	A	Agreed and will revise as requested.
238	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	EX-2U	A	Agreed and will revise as requested.
239	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
240	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
241	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
242	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-2	A	Agreed and will revise as requested.
243	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-3	A	Agreed and will revise as requested.
244	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	TN-3**	A	Agreed and will revise as requested.
245	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-3	A	Agreed and will revise as requested.
246	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	TN-4**	A	Agreed and will revise as requested.
247	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-3	A	Agreed and will revise as requested.
248	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-3	A	Agreed and will revise as requested.
249	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-3	A	Agreed and will revise as requested.
250	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-3	A	Agreed and will revise as requested.
251	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
252	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.
253	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	PR-4	A	Agreed and will revise as requested.

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254	DRAFT 30% DRAWINGS	116 (A-606)	PLATFORM SIGNAGE PLAN AREA IV	VRE	ARCHITECTURAL	SN-1	A	Agreed and will revise as requested.
255	DRAFT 30% DRAWINGS	156 (BR-200)	GENERAL PLAN	VRE	STRUCTURAL	PROVIDE SECTION CUT SHOWING DETAILS OF RETAINIG WALLS WITH FENCES	A	Agree and will revise as requested.
256	DRAFT 30% DRAWINGS	157 (BR-201)	TRANSVERSE SECTION	VRE	STRUCTURAL	SHOW EXISTING OR PROPOSED FENCE OVER EXISTING WALL	A	Agree and will revise as requested.
257	DRAFT 30% DRAWINGS	175 (E-101)	ELECTRICAL SITE PLAN	VRE	ELECTRICAL	add VMS symbols at locations designated in area plan markups	A	Agree and will revise as requested.
258	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	VMS	A	Agree and will revise as requested.
259	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Does IST need to provide a spec for ceiling mount speaker?	C	Yes. Please provide spec for ceiling mount speaker. We are assuming a standard 8" Bogen flush ceiling speaker.
260	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Camera inside elevator car.	A	Agree and will revise as requested.
261	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Camera inside elevator car	A	Agree and will revise as requested.
262	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Prefered location for camera. 270 degree.	A	Agree and will revise as requested.
263	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Does IST need to provide telephone number for elevator/ fire alarm monitoring?	C	Yes. Please provide information for phone number if a VOIP service will be used for dial out or if a cellular service will be used.
264	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	270 degree camera. Third lens facing TVM	A	Agree and will revise as requested.
265	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Does IST need to provide SPEC for flush ceiling speaker?	C	Yes. Please provide spec for ceiling mount speaker. We are assuming a standard 8" Bogen flush ceiling speaker.
266	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Call-out VMS between TVMs as shown on architectural elevations	A	Agree and will revise as requested.

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267	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Label VMS and add symbol for junction box	A	Agree and will revise as requested.
268	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	Adding snapshots (see markups)	A	Agree and will revise as requested.
269	DRAFT 30% DRAWINGS	176 (E-102)	ENTRANCES ENLARGED PLANS - POWER AND LIGHTING	VRE	ELECTRICAL	VMS	A	Agree and will revise as requested.
270	DRAFT 30% DRAWINGS	177 (E-103)	PLATFORM - AREA 1 - POWER AND LIGHTING	VRE	ELECTRICAL	Relocate camera to stairwell side.	A	Agree and will revise as requested.
271	DRAFT 30% DRAWINGS	177 (E-103)	PLATFORM - AREA 1 - POWER AND LIGHTING	VRE	ELECTRICAL	Dual Head Camera Centered on canopy	A	Agreed. Camera will be moved to align with canopy supports. Camera details and mounting details to be provided in next submission.
272	DRAFT 30% DRAWINGS	177 (E-103)	PLATFORM - AREA 1 - POWER AND LIGHTING	VRE	ELECTRICAL	Provide key plan	A	Agree and will revise as requested.
273	DRAFT 30% DRAWINGS	177 (E-103)	PLATFORM - AREA 1 - POWER AND LIGHTING	VRE	ELECTRICAL	Darken matchline	A	Agree and will revise as requested.
274	DRAFT 30% DRAWINGS	177 (E-103)	PLATFORM - AREA 1 - POWER AND LIGHTING	VRE	ELECTRICAL	Should this be dual-headed camera?	DE	Cameras will be evaulated to ensure coverage.
275	DRAFT 30% DRAWINGS	177 (E-103)	PLATFORM - AREA 1 - POWER AND LIGHTING	VRE	ELECTRICAL	Adding snapshots (see markups)	A	Agree and will revise as requested.
276	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	VMS Mounted to inside edge of canopy.	A	Agree and will revise as requested.
277	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	VMS Mounted to inside edge of canopy.	A	Agree and will revise as requested.
278	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	Dual head camera facing railroad north and south. Mounted on goose neck to capture outer edge of canopy.	A	Agreed. Camera will be moved to align with canopy supports. Camera details and mounting details to be provided in next submission.
279	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	Provide key plan	A	Agree and will revise as requested.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
280	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	Darken matchline	A	Agree and will revise as requested.
281	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	Extend part plan to matchline at column 8	A	Agree and will revise as requested.
282	DRAFT 30% DRAWINGS	178 (E-104)	PLATFORM - AREA 2 - POWER AND LIGHTING	VRE	ELECTRICAL	Adding snapshots (see markups)	A	Agree and will revise as requested.
283	DRAFT 30% DRAWINGS	179 (E-105)	PLATFORM - AREA 3 - POWER AND LIGHTING	VRE	ELECTRICAL	Relocate camera to face the elevator door.	DE	Cameras will be evaulated to ensure coverage.
284	DRAFT 30% DRAWINGS	179 (E-105)	PLATFORM - AREA 3 - POWER AND LIGHTING	VRE	ELECTRICAL	Provide key plan	A	Agree and will revise as requested.
285	DRAFT 30% DRAWINGS	179 (E-105)	PLATFORM - AREA 3 - POWER AND LIGHTING	VRE	ELECTRICAL	Extend part plan to matchline at column 16	A	Agree and will revise as requested.
286	DRAFT 30% DRAWINGS	179 (E-105)	PLATFORM - AREA 3 - POWER AND LIGHTING	VRE	ELECTRICAL	Extend part plan to matchline north of column line 25.	A	Agree and will revise as requested.
287	DRAFT 30% DRAWINGS	179 (E-105)	PLATFORM - AREA 3 - POWER AND LIGHTING	VRE	ELECTRICAL	Adding snapshots (see markups)	A	Agree and will revise as requested.
288	DRAFT 30% DRAWINGS	179 (E-105)	PLATFORM - AREA 3 - POWER AND LIGHTING	VRE	ELECTRICAL	25	A	Agree and will revise as requested.
289	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Are these numbers backwards?	A	Agree and will revise as requested.
290	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Mount dual cone speakers parallel with tracks	A	Agree and will revise as requested.
291	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Provide dual horn speaker every third light pole. mount to these two as shown.	A	Agree and will revise as requested.
292	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Provide key plan	A	Agree and will revise as requested.

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293	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Continue to label column lines	A	Agreed and will revise as requested.
294	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Darken matchline	A	Agree and will revise as requested.
295	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Consider adding a 7th light pole at north end of platform. If Areas of Safe Dispersal are used off platform they will need additional light poles between the tracks to light those spaces.	DE	Lighting level calculations will be evaulated and additional light pole will be added if required to ensure safe lighting levels.
296	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Strike/Line (see markups)	A	Agree and will revise as requested.
297	DRAFT 30% DRAWINGS	180 (E-106)	PLATFORM - AREA 4 - POWER AND LIGHTING	VRE	ELECTRICAL	Adding snapshots (see markups)	A	Agree and will revise as requested.
298	DRAFT 30% DRAWINGS	181 (E-201)	ENLARGED PLANS	VRE	ELECTRICAL	What is the height of this rack? 42u?	C	Yes, it is 42U. Equipment racks will be further specified for next submission.
299	DRAFT 30% DRAWINGS	181 (E-201)	ENLARGED PLANS	VRE	ELECTRICAL	All end points* both Fiber and Ethernet needs to be terminated on 48 port patch panel. *End Points for camera, pots lines, vms, fare collection must be properly labeled	C	Network riser diagram will be included as part of next submissions and network connections will be clearly identified and details added. Please confirm POTS lines are desired for station.
300	DRAFT 30% DRAWINGS	181 (E-201)	ENLARGED PLANS	VRE	ELECTRICAL	All end points* both Fiber and Ethernet needs to be terminated on 48 port patch panel. *End Points for camera, pots lines, vms, fare collection must be properly labeled	C	Network riser diagram will be included as part of next submissions and network connections will be clearly identified and details added. Please confirm POTS lines are desired for station.
301	DRAFT 30% DRAWINGS	181 (E-201)	ENLARGED PLANS	VRE	ELECTRICAL	BRIVO Access control panel	A	Agree and will revise as requested.
302	DRAFT 30% DRAWINGS	181 (E-201)	ENLARGED PLANS	VRE	ELECTRICAL	BRIVO Access control panel	A	Agree and will revise as requested.
303	DRAFT 30% DRAWINGS	185 (E-401)	ELECTRICAL ONE-LINE DIAGRAM	VRE	ELECTRICAL	Where is this equipment shown on th site plans? No natural gas service is shown.	A	Call-outs are located on plans for enlarged plans, see E-102 and E-201 for electrical equipment. Gas service from 6th Street will be detailed in the Final 30% submission.
304	DRAFT 30% DRAWINGS	188 (P-101)	ENTRANCES PLUMBING PLAN	VRE	PLUMBING	Provide domestic water service to hydrant locations on platform. Hose connections will be used here to wash down platforms at end of winter season for salt removal. Lines shall be able to be winterized.	A	Agreed domestic water service will be provided to hydrants on the platform.
305	BOD REPORT	9	4.2.5 Special Trackwork	VRE	TRACK	It is a minor detail, but there are three interlockings involved. CP Jersey will have a new crossover installed.	A	Agreed and will revise as requested.

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306	BOD REPORT	9	4.2.6 Clearances	VRE	TRACK	Have the VRE Facility Design Guidelines been issued as final?	C	When the VRE Facility Design Guidelines have been issued as final, the design team will review and apply it to the project design where applicable, and coordinate any potential changes as a result with VRE.
307	BOD REPORT	15	4.5.4 Landscape	VRE	CIVIL	There may be a need to landscape/ restore Hancock Park following tree removal and construction activities/ staging area use. This needs to be coordinated and negotiated with NPS	C	Agree, VRE and the Project Team will continue to coordinate with NPS as the design advances, including developing additional details regarding Hancock Park construction laydown areas, timelines, overlaps with the Long Bridge North project, as well as impacts, restoration, and landscaping. Long Bridge North is also planning to use Hancock Park as a staging area and restoration and landscaping requirements will likely be similar between projects.
308	DRAFT 30% DRAWINGS	13 (G-203)	TRACK STAGING SCHEMATIC STAGE 2	VPRA/PST	TRACK	Confirm that the Service Performance Committee has been informed of the desire to reduce service to two tracks for an extended period of time to understand impacts to service during construction	C	VRE and the Project Team coordinated with VPRA and the Service Performace Committee to discuss the construction phasing plans and potential imapcts on February 6, 2025.
309	DRAFT 30% DRAWINGS	19 (G-209)	TRACK STAGING SCHEMATIC STAGE FINAL CONDITION	VPRA/PST	TRACK	Confirm this crossover needed for construction phasing is intended to be permanent - Previous sets of plans showed as temporary and it is currently not shown on track plans Pgs 60 and 64	A	Confirmed. This crossover is intented to be permanent unless CSXT requests otherwise. Will revise.
310	DRAFT 30% DRAWINGS	28 (C-102)	EXISTING CONDITIONS PLAN (1 OF 3)	VPRA/PST	CIVIL	ALL PLAN SERIES: - SHOW SOUTHERN TIE-IN LOCATION IN PLAN VIEWS - IDENTIFY START OF CONSTRUCTION STATION/MP - SHOW SURVEY DATA BEYOND TIE-IN LIMITS PER CSX STANDARD	A	Agree and will revise as requested. Additional sheets will be added track south to L'Enfant Promenade SW and the tie-in location with Long Bridge North Package.
311	DRAFT 30% DRAWINGS	28 (C-102)	EXISTING CONDITIONS PLAN (1 OF 3)	VPRA/PST	CIVIL	RECOMMEND USING TRACK CENTERLINE ALIGNMENTS ON ALL SHEETS INSTEAD OF THICK REPRESENTATIVE GREY LINE SHOW TRACK ALIGNMENTS AND STATIONING ON ALL PLAN SHEETS	A	Agreed. Track centerlines will be added to supplment the grey hatched linework. DC review agencies will want to to see the full extents of the existing tracks when reviewing the plans.
312	DRAFT 30% DRAWINGS	28 (C-102)	EXISTING CONDITIONS PLAN (1 OF 3)	VPRA/PST	CIVIL	SUGGEST SHOWING LONG BRIDGE NORTH TRACK/ CIVIL ELEMENTS AS FUTURE EXISTING, ONCE MATCHLINE/ADDITIONAL SHEET TO THE SOUTH IS ADDED	A	Agreed and will revise as requested.
313	DRAFT 30% DRAWINGS	28 (C-102)	EXISTING CONDITIONS PLAN (1 OF 3)	VPRA/PST	CIVIL	PROBABLY WANT TO INCLUDE ADDITIONAL LINETYPES IN THE LEGEND (I.E. TRACK ELEMENTS, EASEMENTS, PAVEMENT LIMITS, TREES, MHs, SWM ELEMENTS, ETC.) (typical)	A	Typical linetypes and symbols are shown on sheet C-001 'CIVIL SYMBOLS, ABBREVIATIONS & NOTES'. A reference note to see sheet C-001 will be added.
314	DRAFT 30% DRAWINGS	31 (C-201)	EXISTING UTILITIES PLAN (1 OF 3)	VPRA/PST	CIVIL	ALL PLAN SERIES: - SHOW SOUTHERN TIE-IN LOCATION IN PLAN VIEWS - IDENTIFY START OF CONSTRUCTION STATION/MP - SHOW SURVEY DATA BEYOND TIE-IN LIMITS PER CSX STANDARD	A	Agree and will revise as requested. Additional sheets will be added track south to L'Enfant Promenade SW and the tie-in location with Long Bridge North Package.
315	DRAFT 30% DRAWINGS	31 (C-201)	EXISTING UTILITIES PLAN (1 OF 3)	VPRA/PST	CIVIL	SUGGEST SHOWING LONG BRIDGE NORTH UTILITIES AS FUTURE EXISTING, ONCE MATCHLINE/ADDITIONAL SHEET TO THE SOUTH IS ADDED	A	Agreed and will revise as requested.
316	DRAFT 30% DRAWINGS	36 (C-302)	SITE DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	MAY REQUIRE REMOVAL FOR RISK OF SURVIVAL AND/OR SAFETY DEPENDING ON CRZ IMPACT EVEN IF OUTSIDE ROW / LOD	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding Hancock Park construction laydown areas and associated tree protection and/or restoration plans.
317	DRAFT 30% DRAWINGS	36 (C-302)	SITE DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	ALL PLAN SERIES: - SHOW SOUTHERN TIE-IN LOCATION IN PLAN VIEWS - IDENTIFY START OF CONSTRUCTION STATION/MP - SHOW SURVEY DATA BEYOND TIE-IN LIMITS PER CSX STANDARD	A	Agree and will revise as requested. Additional sheets will be added track south to L'Enfant Promenade SW and the tie-in location with Long Bridge North Package.
318	DRAFT 30% DRAWINGS	36 (C-302)	SITE DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	SUGGEST SHOWING LONG BRIDGE NORTH TRACK/ CIVIL ELEMENTS AS FUTURE EXISTING, ONCE MATCHLINE/ADDITIONAL SHEET TO THE SOUTH IS ADDED	A	Agreed and will revise as requested.

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319	DRAFT 30% DRAWINGS	38 (C-304)	SITE DEMOLITION PLAN (3 OF 3)	VPRA/PST	CIVIL	ASSUME TRACK WILL ULTIMATELY BE REMOVED AND REPLACED OVER BRIDGES THAT ARE BEING REPLACED - MAY WANT TO SHOW THAT TRACK AS BEING REMOVED FOR QUANTIFYING PURPOSES	A	Agreed and will revise as requested.
320	DRAFT 30% DRAWINGS	39 (C-401)	UTILITY DEMOLITION NOTES AND LEGEND	VPRA/PST	CIVIL	AND IN COORDINATION WITH THE WMATA OFFICE OF JOINT DEVELOPMENT AND ADJACENT CONSTRUCTION (JDAC)	A	Agreed and will revise as requested.
321	DRAFT 30% DRAWINGS	39 (C-401)	UTILITY DEMOLITION NOTES AND LEGEND	VPRA/PST	CIVIL	DELAY, SAFETY, AND GENERAL OPERATION OF...	A	Agreed and will revise as requested.
322	DRAFT 30% DRAWINGS	40 (C-402)	UTILITY DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	WHAT OF THE REST OF THE FACILITY? SUGGEST INCLUDING EITHER A REQUIREMENT TO FILL IF ABANDONED IN PLACE, OR REVISE TO REMOVE THE FULL FACILITY (TYPICAL)	A	Agreed. Coded note will be broken into 2 parts: Existing railroad ductbank to be removed. Existing railroad manholes to be removed.
323	DRAFT 30% DRAWINGS	40 (C-402)	UTILITY DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	CSX DUCT BANK IS TO BE REMOVED, CORRECT? IF SO, ANNOTATE ACCORDING TO THE LEGEND	A	Agreed. Xs will be added along the extents of the railroad ductbank.
324	DRAFT 30% DRAWINGS	40 (C-402)	UTILITY DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	ALL PLAN SERIES: - SHOW SOUTHERN TIE-IN LOCATION IN PLAN VIEWS - IDENTIFY START OF CONSTRUCTION STATION/MP - SHOW SURVEY DATA BEYOND TIE-IN LIMITS PER CSX STANDARD	A	Agree and will revise as requested. Additional sheets will be added track south to L'Enfant Promenade SW and the tie-in location with Long Bridge North Package.
325	DRAFT 30% DRAWINGS	40 (C-402)	UTILITY DEMOLITION PLAN (1 OF 3)	VPRA/PST	CIVIL	SUGGEST SHOWING LONG BRIDGE NORTH UTILITIES AS FUTURE EXISTING, ONCE MATCHLINE/ADDITIONAL SHEET TO THE SOUTH IS ADDED	A	Agreed and will revise as requested.
326	DRAFT 30% DRAWINGS	41 (C-403)	UTILITY DEMOLITION PLAN (2 OF 3)	VPRA/PST	CIVIL	CSX DUCT BANK IS TO BE REMOVED, CORRECT? IF SO, ANNOTATE ACCORDING TO THE LEGEND	A	Agreed. Xs will be added along the extents of the railroad ductbank.
327	DRAFT 30% DRAWINGS	43 (C-501)	SITE IMPROVEMENTS GRADING AND UTILITY NOTES AND LEGEND	VPRA/PST	CIVIL	DELAY, SAFETY, AND GENERAL OPERATION OF...	A	Agreed and will revise as requested.
328	DRAFT 30% DRAWINGS	44 (C-502)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (1 OF 3)	VPRA/PST	CIVIL	CSX/CONRAIL	A	Agreed and will revise as requested.
329	DRAFT 30% DRAWINGS	44 (C-502)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (1 OF 3)	VPRA/PST	CIVIL	ALL PLAN SERIES: - SHOW SOUTHERN TIE-IN LOCATION IN PLAN VIEWS - IDENTIFY START OF CONSTRUCTION STATION/MP - SHOW SURVEY DATA BEYOND TIE-IN LIMITS PER CSX STANDARD	A	Agree and will revise as requested. Additional sheets will be added track south to L'Enfant Promenade SW and the tie-in location with Long Bridge North Package.
330	DRAFT 30% DRAWINGS	44 (C-502)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (1 OF 3)	VPRA/PST	CIVIL	SUGGEST SHOWING LONG BRIDGE NORTH TRACK/ CIVIL/ UTILITY ELEMENTS AS FUTURE EXISTING, ONCE MATCHLINE/ADDITIONAL SHEET TO THE SOUTH IS ADDED	A	Agreed and will revise as requested.
331	DRAFT 30% DRAWINGS	44 (C-502)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (1 OF 3)	VPRA/PST	CIVIL	SHOW TRACK ALIGNMENT STATIONING AND MAJOR/MINOR STA. TICK MARKS ON ALL SHEETS FOR REFERENCE (TYPICAL)	A	Agreed and will revise as requested.

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332	DRAFT 30% DRAWINGS	45 (C-503)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (2 OF 3)	VPRA/PST	CIVIL	SUGGEST CALLING OUT OR OTHERWISE IDENTIFYING THE LIMITS OF PROPOSED PLATFORM, AND REFERENCING LATER DETAILS SHEETS AS APPROPRIATE	A	Agreed and will revise as requested.
333	DRAFT 30% DRAWINGS	53 (T-002)	TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED	VPRA/PST	TRACK	Suggest updating existing condition to look like the existing crossovers in the proposed condition to help differentiate between existing and proposed in proposed graphic	A	Agreed and will revise as requested.
334	DRAFT 30% DRAWINGS	53 (T-002)	TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED	VPRA/PST	TRACK	Confirm proposed condition with plans - This markup appears to be in conflict with the proposed plans Pg 59	A, B	No change is needed to the layout shown at CP Virginia, it is correct as shown in T-002 prior to the review markup. However we agree with the VRE markup at Jersey and will revise as requested.
335	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	VPRA/PST	TRACK	THIS VIEW MISSING FROM ALL PREVIOUS PLAN SERIES	C	No trackwork is planned for Tracks 1 & 2 in the limits of this view so sheets were deemed unnecessary and not included.
336	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	VPRA/PST	TRACK	REFERENCE AND SHOW TYING TO LONG BRIDGE NORTH ADD NOTE(S) FOR CONTRACTOR TO COORDINATE WITH LONG BRIDGE NORTH PROJECT FOR SCHEDULING/SEQUENCING OF WORK, TRACK OUTAGES, ETC	A	Agreed and will revise as requested.
337	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	VPRA/PST	TRACK	WAIVER FOR PS BEING IN THE SPIRAL OF CURVE?	DE	The proposed geometry in the area between the existing crossovers, the proposed curves and station platform, and Hancock Park is very constrained. The project team investigated additional options to increase the spacing between points of switch and adjust the spiral and vertical curve locations, but the alternative options resulted in either ROW impacts, LBN design impacts, or a reduction in crossover size and operating speed. These options were reviewed and discussed with CSX during the January 21, 2025 comment resolution meeting. CSX expressed preference to deconflict the spiral and point of switch and leave the shorter spacing between switch points, than reduce the switch sizes and speeds. CSX recommended maintaining a No. 15 crossover, and to make adjustments to shift the spiral out of the switch and maximize distance between points of frog to a minimum 100 feet. The LEF Project Team incorporated these updates into the Final 30% design.
338	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	VPRA/PST	TRACK	AND/OR CHECK CALLOUT TEXT STATES THE CORRECT STATIONING FOR THE "TS" - IT APPEARS TO BE INCORRECT IN RELATION TO THE TICK MARK FOR STA. 3007+00	A	Agreed and will revise as requested.
339	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	VPRA/PST	TRACK	?	A	This is a stray line that will be removed.
340	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	VPRA/PST	TRACK	SHOW EXISTING BRIDGE LIMITS EVEN IF NOT REPLACING SINCE WE ARE PROPOSING TRACK WORK OVER IT	A	Agreed and will revise as requested.
341	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	VPRA/PST	TRACK	SHOW EXISTING BRIDGE LIMITS EVEN IF NOT REPLACING SINCE WE ARE PROPOSING TRACK WORK OVER IT	A	Agreed and will revise as requested.
342	DRAFT 30% DRAWINGS	60 (T-304)	TRACK 3 PLAN AND PROFILE (4 OF 4)	VPRA/PST	TRACK	Show existing tracks to show tie-in	A	Agreed and will revise as requested.

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343	DRAFT 30% DRAWINGS	60 (T-304)	TRACK 3 PLAN AND PROFILE (4 OF 4)	VPRA/PST	TRACK	WHAT IS CLEARANCE TO EDGE OF EXIST. BRIDGE?	A	Agreed and will revise as requested.
344	DRAFT 30% DRAWINGS	60 (T-304)	TRACK 3 PLAN AND PROFILE (4 OF 4)	VPRA/PST	TRACK	ENSURE TIE-IN IS CONSISTENT WITH EXISTING CURVE GEOMETRY, CENTERLINE OFFSETS, ETC.	A	Agreed and will revise as requested.
345	DRAFT 30% DRAWINGS	63 (T-403)	TRACK 4 PLAN AND PROFILE (3 OF 4)	VPRA/PST	TRACK	SHOW EXISTING BRIDGE LIMITS EVEN IF NOT REPLACING SINCE WE ARE PROPOSING TRACK WORK OVER IT	A	Agreed and will revise as requested.
346	DRAFT 30% DRAWINGS	63 (T-403)	TRACK 4 PLAN AND PROFILE (3 OF 4)	VPRA/PST	TRACK	SHOW EXISTING BRIDGE LIMITS EVEN IF NOT REPLACING SINCE WE ARE PROPOSING TRACK WORK OVER IT	A	Agreed and will revise as requested.
347	DRAFT 30% DRAWINGS	64 (T-404)	TRACK 4 PLAN AND PROFILE (4 OF 4)	VPRA/PST	TRACK	Show existing tracks to show tie-in	A	Agreed and will revise as requested.
348	DRAFT 30% DRAWINGS	66 (T-502)	TRACK CRITICAL SECTIONS	VPRA/PST	TRACK	Suggest showing change in elevation for proposed tracks 1 and 2	A	Agreed and will revise as requested.
349	DRAFT 30% DRAWINGS	66 (T-502)	TRACK CRITICAL SECTIONS	VPRA/PST	TRACK	Show drain as existing if existing	A	Agreed and will revise as requested.
350	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	VPRA/PST	TRACK	Suggest showing as proposed infrastructure - Applies to all sections	A	Agreed and will revise as requested.
351	DRAFT 30% DRAWINGS	73 (T-705)	CROSS SECTIONS (5 OF 16)	VPRA/PST	TRACK	Label bridge with street name like other bridges	A	Agreed and will revise as requested.
352	DRAFT 30% DRAWINGS	74 (T-706)	CROSS SECTIONS (6 OF 16)	VPRA/PST	TRACK	Label bridge with street name like other bridges	A	Agreed and will revise as requested.
353	DRAFT 30% DRAWINGS	75 (T-707)	CROSS SECTIONS (7 OF 16)	VPRA/PST	TRACK	Label bridge with street name like other bridges	A	Agreed and will revise as requested.
354	DRAFT 30% DRAWINGS	76 (T-708)	CROSS SECTIONS (8 OF 16)	VPRA/PST	TRACK	Label bridge with street name like other bridges	A	Agreed and will revise as requested.
355	DRAFT 30% DRAWINGS	94 (A-106)	CANOPY LEVEL PLAN - AREA III & IV	VPRA/PST	ARCHITECTURAL	WAS VIEW INTENTIONALLY CUT OFF HERE?	A	Agreed and will revise as requested.

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356	DRAFT 30% DRAWINGS	94 (A-106)	CANOPY LEVEL PLAN - AREA III & IV	VPRA/PST	ARCHITECTURAL	MATCHLINE?	A	Agreed and will revise as requested.
357	DRAFT 30% DRAWINGS	95 (A-111)	7TH STREET ENTRANCE - REFLECTED CEILING PLAN	VPRA/PST	ARCHITECTURAL	RECOMMEND LABELING ROADWAY, MATCHLINES. ETC. FOR CLARITY AND VISUAL ORIENTATION (TYPICAL)	A	Agreed and will revise as requested.
358	DRAFT 30% DRAWINGS	96 (A-112)	6TH STREET ENTRANCE - REFLECTED CEILING PLAN	VPRA/PST	ARCHITECTURAL	PREVIOUS VIEW/DETAIL SHOWS BRIDGE STRUCTURE, THIS ONE DOES NOT. RECOMMEND BEING CONSISTENT WITH DETAILS/ STYLE/ INCLUSIONS	A	Agreed and will revise as requested.
359	DRAFT 30% DRAWINGS	96 (A-112)	7th STREET ENTRANCE - REFLECTED CEILING PLAN	VPRA/PST	ARCHITECTURAL	RECOMMEND LABELING ROADWAY, MATCHLINES. ETC. FOR CLARITY AND VISUAL ORIENTATION (TYPICAL)	A	Agreed and will revise as requested.
360	BOD REPORT	7	4.0 Design Criteria	VPRA/PST	GENERAL	Please confirm - Long Bridge South is using the 2024 MRE due to start date of final design and construction. LEF would likely be similar?	A	Agreed and will revise as requested.
361	BOD REPORT	8	4.1 Applicable Codes, Standards, and Recommended Practice	VPRA/PST	GENERAL	Also include latest MUTCD	A	Agreed and will revise as requested.
362	BOD REPORT	17	4.6.7 Communications Rooms	VPRA/PST	ELECTRICAL	Please specify APC by Schneider Electric for the brand of UPS and PDU	A	Agree and will revise as requested.
363	BOD REPORT	19	4.8.3 Tactile Warning Tiles	VPRA/PST	ARCHITECTURAL	Does VRE require specific tactile warning surface types/specs? If not, are we using DDOT specs? Std. width is 2' - assume will use the same, recommend defining	A	Agree and will revIse to specify the VRE preferred tactile warning tile, which will depend on the construction of the platform.
364	BOD REPORT	19	4.8.8 Trash and Recycling Bins	VPRA/PST	ARCHITECTURAL	Should this be it's own numbered sub-section?	A	Agreed and will revise as requested.
365	BOD REPORT	20	4.8.9 Metal Railings	VPRA/PST	ARCHITECTURAL	Is there an expected standard (i.e. VDOT Std. HR-1)?	A	Agree and will revise to specify DDOT standards on the street level, and VRE standards on the Platform Level.
366	BOD REPORT	20	4.8.15 Train Platform Lights	VPRA/PST	ARCHITECTURAL	Recommend listing/defining minimum acceptable levels	A	Agreed and will revise as requested.
367	BOD REPORT	21	5.0 Maintenance of Traffic	VPRA/PST	CIVIL	List in collection of required standards/ references above	A	Agree and will revise as requested.
368	BOD REPORT	21	6.0 Utilities	VPRA/PST	CIVIL	How will agreements with the various utility owners/providers be established? This has taken a very long time (and is still ongoing) for Long Bridge	DE	Initial coordination meetings with individual utility owners to identify existing agreements and define requirements of the project have been completed. The project team and VRE will continue to coordinate with utility owners to determine imapcts, relocations, and required agreements as design advances. DC Permitting agencies will treat VRE as a developer, making improvements to their existing ROW and/or assets.

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369	BOD REPORT	22	9.1 Staging Area	VPRA/PST	GENERAL	Assume Hancock Park will be used for staging and access to the rail corridor - suggest detailing any coordination done by the LEF project with NPS to date, and any requirements that have been established at this time	A	Agreed and will revise as requested. NPS coordination is in early stages and no requirements or agreements have been documented at this stage of design.
370	BOD REPORT	22	9.2 Temporary Station Impacts	VPRA/PST	GENERAL	What agreement has been established with CSX regarding track outages, number of tracks required to be in service at any given time, notification requirements for potential to foul or scheduling for track outages, etc. If we have details on the above, suggest including here.	A	Agree and will revise accordingly. Coordination on the design and construction phasing with CSXT will continue, but no formal agreement has been documented.
371	DRAFT 30% DRAWINGS	11 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	VRE	TRACK	[See markup showing crossover between Tracks 2 and 3 in Stages 1 to 3a]	DE	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (CSXT)
REVIEW DATE: 11/01/2024
COMMENT RESPONSE DATE: 2/17/2025

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

COMMENT TYPE:
E – Editorial
ROK – Response
M – Mandatory

ACTION CODES: A – Designer agrees and will comply/take action
DE – Designer to evaluate
B – Designer disagrees for reasons noted
C – Answer provided; no action needed .

RESPONSE STATUS:
VRE – VRE will evaluate
D – Discretionary
DC – Delete Comment
B - Designer disagrees, discussion may be required

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	FINAL STAKEHOLDER RESPONSE
1	DRAFT 30% DRAWINGS	2 (G-001)	DRAWING INDEX	CSXT	GENERAL	SPELLING : DOWNSPOUT	A	Agreed and will revise as requested.
2	DRAFT 30% DRAWINGS	2 (G-001)	DRAWING INDEX	CSXT	GENERAL	PAGE NUMBER SHOULD BE 54	A	Agreed and will revise as requested.
3	DRAFT 30% DRAWINGS	2 (G-001)	DRAWING INDEX	CSXT	GENERAL	ARE THESE THE SAME AREAS? IF SO CAN WE BE CONSISTENT IN NUMBERING? ROMAN OR ARABIC NUMERALS?	A	Agreed and will revise as requested with Roman numerals.
4	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	CSXT	TRACK	A crossover from track 4 to track 3 is needed for future interoperability (see markup)	DE	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.
5	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	CSXT	TRACK	Include Railroad Mile Post	A	Agreed and will revise as requested.
6	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	CSXT	TRACK	Call out bridge replacement	A	Agreed and will revise as requested.
7	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	CSXT	TRACK	Call out bridge widening	A	Agreed and will revise as requested.
8	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	CSXT	TRACK	Confirm and show work needed on 3 existing crossovers at CP Virginia	C	The intent is for the existing crossovers in CP Virginia to remain unchanged. There are no proposed vertical or horizontal changes to the track in this area.
9	DRAFT 30% DRAWINGS	4 (G-003)	OVERALL PLAN	CSXT	TRACK	Railroad is elevated throughout entire project limits. How will that affect construction, demo, utility relocations, grading, phasing, etc.? Will that in turn affect design?	C	Constraints due to the nature of the existing corridor are being considered for all portions of the proposed project and have impacted the proposed design. The goal of the proposed design is to limit the amount of work needed as much as possible to limit impacts along the corridor.
10	DRAFT 30% DRAWINGS	4 (G-003) to 19 (G-209)	GENERAL (MULTIPLE SHEETS)	CSXT	TRACK	CST Standard = Control Point, State <---------- RR West/East/North/South	A	Agreed and will revise as requested.

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11	DRAFT 30% DRAWINGS	4 (G-003) to 19 (G-209)	GENERAL (MULTIPLE SHEETS)	CSXT	TRACK	CST Standard = Control Point, State ----------> RR West/East/North/South	A	Agreed and will revise as requested.
12	DRAFT 30% DRAWINGS	5 (G-004)	PROJECT OVERVIEW (1 OF 4)	CSXT	TRACK	Is this crossover getting removed?	C	The existing crossovers in LE are to remain.
13	DRAFT 30% DRAWINGS	5 (G-004)	PROJECT OVERVIEW (1 OF 4)	CSXT	TRACK	Why is the point of switch in a spiral?	DE	The proposed geometry in the area between the existing crossovers, the proposed curves and station platform, and Hancock Park is very constrained. The project team investigated additional options to increase the spacing between points of switch and adjust the spiral and vertical curve locations, but the alternative options resulted in either ROW impacts, LBN design impacts, or a reduction in crossover size and operating speed. These options were reviewed and discussed with CSX during the January 21, 2025 comment resolution meeting. CSX expressed preference to deconflict the spiral and point of switch and leave the shorter spacing between switch points, than reduce the switch sizes and speeds. CSX recommended maintaining a No. 15 crossover, and to make adjustments to shift the spiral out of the switch and maximize distance between points of frog to a minimum 100 feet. The LEF Project Team incorporated these updates into the Final 30% design.
14	DRAFT 30% DRAWINGS	7 (G-006)	PROJECT OVERVIEW (3 OF 4)	CSXT	TRACK	Confirm and show work needed on 3 existing crossovers at CP Virginia	C	The intent is for the existing crossovers in CP Virginia to remain unchanged. There are no proposed vertical or horizontal changes to the track in this area.
15	DRAFT 30% DRAWINGS	9 (G-101)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (1 OF 2)	CSXT	TRACK	Label tracks. Is this one out of service for this stage?	A	Agreed and will revised as requested. Yes, the existing turnout and VRE Siding track will be out of service early on to facilitate construction activities on the 6th St bridge.
16	DRAFT 30% DRAWINGS	11 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSXT	TRACK	Track Demolition (see markup)	A	Agreed and will revise as requested.
17	DRAFT 30% DRAWINGS	12 (G-202)	TRACK STAGING SCHEMATIC STAGE 2	CSXT	TRACK	What do the black lines represent? (see markup)	A	Black lines repesent installed track, which will be added to the legend as requested.
18	DRAFT 30% DRAWINGS	12 (G-202)	TRACK STAGING SCHEMATIC STAGE 2	CSXT	TRACK	Label this (see markup)	A	Agreed and will revise as requested.
19	DRAFT 30% DRAWINGS	13 (G-203)	TRACK STAGING SCHEMATIC STAGE 2	CSXT	TRACK	What is this? (see markup)	A	This is the removal of the existing turnout to the VRE siding. The legend will be updated to better clarify red is for track removal.
20	DRAFT 30% DRAWINGS	14 (G-204)	TRACK STAGING SCHEMATIC STAGE 3b	CSXT	TRACK	What is this? (see markup)	A	This is removal of the existing track being cut over and connected to the newly built track. The legend will be updated to better clarify red is for track removal.
21	DRAFT 30% DRAWINGS	15 (G-205)	TRACK STAGING SCHEMATIC STAGE 3c	CSXT	TRACK	label this (see markup)	A	Agreed and will revise as requested.

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22	DRAFT 30% DRAWINGS	19 (G-209)	TRACK STAGING SCHEMATIC STAGE FINAL CONDITION	CSXT	TRACK	A crossover from track 4 to track 3 is needed for future interoperability	DE	See resposne to CN 4.
23	DRAFT 30% DRAWINGS	20 (G-210)	TRACK CLEARANCES	CSXT	TRACK	CSX Std Dwg 2604 shows 6' - 0" to start of bevel.	C	See Comment 24.
24	DRAFT 30% DRAWINGS	20 (G-210)	TRACK CLEARANCES	CSXT	TRACK	Upon further discussion, we understand that this dimension is to the platform. However, please dimension the clearance envelope as well.	A	Agreed and will revise as requested.
25	DRAFT 30% DRAWINGS	20 (G-210)	TRACK CLEARANCES	CSXT	TRACK	Comply with CSX MWI Standard Drawing 2611 for passenger platforms	DE	Proposed design will be further reviewed to ensure that this standard is being followed, but appears to be compliant as currently designed.
26	DRAFT 30% DRAWINGS	22 (G-302)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN - AERIAL	CSXT	CIVIL	CST Standard = Control Point, State <---------- RR West/East/North/South	A	Agree and will revise as requested.
27	DRAFT 30% DRAWINGS	22 (G-302)	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN - AERIAL	CSXT	CIVIL	Would a longer temporary easement running the entire length from 6th St to 7th St along RR west side of tracks be needed?	DE	Proposed temporary easements are where construction will be closest to the neighboring BXP building RR West of the tracks, or where retaining wall will be removed/replaced. Work is expected to stay within the existing RR ROW along the portion of existing retaining wall that will remain. However, the Project team will evaluate expanding the temporary easement as the comment suggests, given the proximity and location of the BXP garage underground.
28	DRAFT 30% DRAWINGS	26 (C-001)	CIVIL SYMBOLS, ABBREVIATIONS & NOTES	CSXT	CIVIL	Will erosion control plans be added to the next plans submittal?	DE	Erosion and Sediment Control plans will be added in a future submission to DOEE for approval.
29	DRAFT 30% DRAWINGS	32 (C-202)	EXISTING UTILITIES PLAN (2 OF 3)	CSXT	CIVIL	Ensure CSX specs are met, particularly horizontal clearances between utilities and all project work, incl track and structures	A	Agreed. All utilities will meet horizontal clearances and profiles will be provided in a future submission.
30	DRAFT 30% DRAWINGS	32 (C-202)	EXISTING UTILITIES PLAN (2 OF 3)	CSXT	CIVIL	Show existing and proposed utilities in profile and ensure all CSX utility specs for OH clearance, and cover and casing are met.	A	Agreed. All utilities will meet horizontal clearances and profiles will be provided in a future submission.
31	DRAFT 30% DRAWINGS	32 (C-202)	EXISTING UTILITIES PLAN (2 OF 3)	CSXT	CIVIL	Add proposed utility relocations to plans, profiles, and cross sections when info is available. Ensure all CSX utility specs are met such as for appropriate OH vertical clearances, horizontal clearances, cover and casing requirements.	A	Agreed. All utilities will meet horizontal clearances and profiles will be provided in a future submission.
32	DRAFT 30% DRAWINGS	33 (C-203)	EXISTING UTILITIES PLAN (3 OF 3)	CSXT	CIVIL	Would it be better to bundle fiber optic lines into CSX duct bank (separate label)?	DE	Review of the quality level B utility survey will be undertaken and additional notes for depicting the orignial railroad electric and railroad communication ductbanks will be added to the next submission.
33	DRAFT 30% DRAWINGS	34 (C-204)	WATERSHED OVERVIEW MAP	CSXT	CIVIL	Does this mean effective 100-yr FEMA floodplain?	A	Yes. Legend wording will be updated in next submission.

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34	DRAFT 30% DRAWINGS	42 (C-404)	UTILITY DEMOLITION PLAN (3 OF 3)	CSXT	CIVIL	What to do with this grate inlet?	A	Agreed and will add note for curb inlet protection.
35	DRAFT 30% DRAWINGS	42 (C-404)	UTILITY DEMOLITION PLAN (3 OF 3)	CSXT	CIVIL	What to do with this curb inlet?	A	Agreed and will add note for curb inlet protection.
36	DRAFT 30% DRAWINGS	42 (C-404)	UTILITY DEMOLITION PLAN (3 OF 3)	CSXT	CIVIL	What to do with this combinational inlet?	C	This comment is pointing to the existing ADA ramp.
37	DRAFT 30% DRAWINGS	45 (C-503)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (2 OF 3)	CSXT	CIVIL	Work very close to the grate inlet.	A	Agreed. Work will be extended and the status of the inlet will be evaulated and revised.
38	DRAFT 30% DRAWINGS	45 (C-503)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (2 OF 3)	CSXT	CIVIL	General comment: Show stations in the grading plan.	A	Agreed and will revise as requested.
39	DRAFT 30% DRAWINGS	46 (C-504)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (3 OF 3)	CSXT	CIVIL	Pave over the grate of the combination inlet?	A	Agreed. Pavement limits, including milling and overlay, will be updated to avoid the grate in next submission.
40	DRAFT 30% DRAWINGS	46 (C-504)	SITE IMPROVEMENTS GRADING AND UTILITY PLAN (3 OF 3)	CSXT	CIVIL	Need inlet protection?	A	Agreed. Erosion and Sediment Control plans with inlet protection will be added in future submission for DOEE approval.
41	DRAFT 30% DRAWINGS	48 (C-701)	PLATFORM DRAINAGE PLANS (1 OF 3)	CSXT	CIVIL	General comment: Provide cleanouts for underdrains and indicate how to outfall them	A	Agreed. The Project team will also be coordinating with DC Water to identify outfalls for the underdrains and the platform drainage piping.
42	DRAFT 30% DRAWINGS	48 (C-701)	PLATFORM DRAINAGE PLANS (1 OF 3)	CSXT	CIVIL	General comment: Show stations in the drainage plan.	A	Agreed and will revise as requested.
43	DRAFT 30% DRAWINGS	51 (C-1001)	PRE-DEVELOPMENT DRAINAGE AREA MAP	CSXT	CIVIL	Lines (see markup)	A	Agreed. Drainage divide at 6th St will be updated in next submission.
44	DRAFT 30% DRAWINGS	51 (C-1001)	PRE-DEVELOPMENT DRAINAGE AREA MAP	CSXT	CIVIL	Provide post development condition drainage area map as well once available	A	Agreed. Post Development condition drainage area maps will be added in future submission.
45	DRAFT 30% DRAWINGS	51 (C-1001)	PRE-DEVELOPMENT DRAINAGE AREA MAP	CSXT	CIVIL	General comment: Show stations in drainage area maps	A	Agreed and will revise as requested.

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46	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	From Basis of Design 4.2.3 Track Geometry Horizontal and vertical track geometry design shall conform to CSX Transportation Maintenance of Way Instructions and Regulations except where otherwise noted. In design areas not covered by VRE or CSXT design standards, the designer will make a recommendation for approval by VRE and CSXT, as required.	A	Noted and will revise as requested where necessary.
47	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 2.5 @ 25mph Ea = 4.25 @ 30 mph	C	Proposed freight speeds are 25 mph, which matches superelevation value of 2.5" per CSX 2511.
48	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 2.0 @ 25mph Ea = 3.5 @ 30 mph	A	Agreed and will revise as requested.
49	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 2.0 Eu(p) = 3.04 Eu(f) = 1.50	A	Agreed and will revise as requested.
50	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 2.5 @ 25mph Ea = 4.25 @ 30 mph	C	Proposed freight speeds are 25 mph, which matches superelevation value of 2.5" per CSX 2511.
51	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 0.5 Eu(p) = 1.39 Eu(f) = 0.81	A	Agreed and will revise as requested.
52	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 0.5 @ 25mph Ea = 0.5 @ 30 mph	A	Agreed and will revise as requested.
53	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 0.5 Ls (p) = 1.63 Eu(p) = 68 Ls (p) = 1.22 Eu(p) = 51	C	Noted and agree that with reduced superelevation the associated spiral lengths can be shorter. However, one of these is a compound spiral that connects to a higher degree of curve that would still require the longer spiral. Additionally, these formulas provide the minimum length of spiral required for the proposed superelevation, but in this case we've artifically elongated them for a smoother transition and to make the proposed connections feasible. The longer spiral to the north helps to connect to the station tangent at the correct bearing without impacting the adjacent Hancock Park.
54	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 0.5 @ 25mph Ea = 0.5 @ 30 mph	A	Agreed and will revise as requested.
55	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 0.5 Ls (p) = 1.63 Eu(p) = 37 Ls (p) = 1.22 Eu(p) = 31	C	These formulas provide the minimum length of spiral required for the proposed superelevation, and the design team has rounded up to the next 31 ft increment based on general railroad practices.
56	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 0.5 Eu(p) = 0.76 Eu(f) = 0.38	A	Agreed and will revise as requested.
57	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 0.5 @ 25mph Ea = 0.5 @ 30 mph	A	Agreed and will revise as requested.

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58	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 0.5 Ls (p) = 1.63 Eu(p) = 37 Ls (p) = 1.22 Eu(p) = 31	C	These formulas provide the minimum length of spiral required for the proposed superelevation, and the design team has rounded up to the next 31 ft increment based on general railroad practices.
59	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 0.5 Eu(p) = 0.76 Eu(f) = 0.38	A	Agreed and will revise as requested.
60	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	Per CSX 2511 Ea = 2.0 @ 25mph Ea = 3.5 @ 30 mph	A	Agreed and will revise as requested.
61	DRAFT 30% DRAWINGS	54 (T-003)	TRACK GEOMETRY TABLES	CSXT	TRACK	With Ea = 2.0 Eu(p) = 3.04 Eu(f) = 1.50	A	Agreed and will revise as requested.
62	DRAFT 30% DRAWINGS	55 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	CSXT	TRACK	Is it possible to reduce the number of vertical curves? many vertical curves with minimum tangent length (100ft).	C	Vertical curves have been placed as close together as possible to minimize the length of track to be raised to accommodate the proposed 6th St bridge and to minimize impacts to the adjacent Virginia Avenue wall.
63	DRAFT 30% DRAWINGS	55 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	CSXT	TRACK	can vertical curve be located outside of bridge? Will this bridge type allow vertical curve on bridge?	C	The vertical curve is located on the bridge because all the vertical curves have been placed as close together as possible to minimize the length of track to be raised; this is needed to accommodate the proposed 6th St bridge and to minimize impacts to the adjacent Virginia Avenue wall. The proposed bridge type allows for a vertical curve on the bridge.
64	DRAFT 30% DRAWINGS	55 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	CSXT	TRACK	Please add existing TOR to all Profiles in plan set	A	Agreed and will revise as requested.
65	DRAFT 30% DRAWINGS	55 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	CSXT	TRACK	Need to see ex TOR on profile. Track raises will adversely impact VA Ave stone masonry retaining wall and historically stable track structure.	A	Agreed and will revise as requested.
66	DRAFT 30% DRAWINGS	56 (T-201)	TRACK 2 PLAN AND PROFILE (1 OF 1)	CSXT	TRACK	can vertical curve be located outside of bridge? Will this bridge type allow vertical curve on bridge?	C	The vertical curve is located on the bridge because all the vertical curves have been placed as close together as possible to minimize the length of track to be raised; this is needed to accommodate the proposed 6th St bridge and to minimize impacts to the adjacent Virginia Avenue wall.
67	DRAFT 30% DRAWINGS	56 (T-201)	TRACK 2 PLAN AND PROFILE (1 OF 1)	CSXT	TRACK	Need to see ex TOR on profile. Track raises will adversely impact VA Ave stone masonry retaining wall and historically stable track structure.	A	Agreed and will revise as requested.
68	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	spiral in turnout.	DE	See response to CN 13.
69	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	vertical curve 6ft after turnout 3007+48.15	DE	See response to CN 13.
70	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	vertical curve 6ft after turnout 3007+48.15	DE	See response to CN 13.

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71	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	show crossovers stationing on profile	A	Agreed and will revise as requested.
72	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	what happens to the existing turnouts	C	Existing turnouts to remain unchanged.
73	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	Need to see vertical clearance from TOR to L'Enfant Plaza SW OH structure.	A	Agreed and will revise as requested.
74	DRAFT 30% DRAWINGS	58 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	Arema standard max D value = 0.2%. D = Absolute value of grade exceed D = 0.205%	C	Noted. Curve matches existing condition.
75	DRAFT 30% DRAWINGS	58 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	vertical curve on bridge	C	Noted. Curve matches existing condition.
76	DRAFT 30% DRAWINGS	58 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	is vertical curve far enough away from platform. for ada boarding	C	Yes, distance between vertical curve and edge of platform is ADA compliant.
77	DRAFT 30% DRAWINGS	58 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	is vertical curve far enough away from platform. could affect boarding ada individuals	C	Yes, distance between vertical curve and edge of platform is ADA compliant.
78	DRAFT 30% DRAWINGS	58 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	Need to see ex TOR on profile. Track raises will adversely impact VA Ave stone masonry retaining wall and historically stable track structure.	A	Agreed and will revise as requested.
79	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	CSXT	TRACK	existing turnouts to be removed? or replaced?	A	Existing turnouts to remain unchanged. Additional notes to be added to better clarify
80	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	CSXT	TRACK	crossover in bridge not ideal. can it be avoided	C	Proposed crossover is at the very edge of the bridge and matches the condition of the existing crossover that it parallels. The proposed crossover cannot be shifted farther from the bridge without conflicting with the clearance of the existing crossover parallel to it.
81	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	CSXT	TRACK	Confirm and show all work needed on all crossovers at CP Virginia. Include all proposed and existing crossovers	A	Agreed and will revise as requested.
82	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	CSXT	TRACK	Show both CSX ROW Lines on all sheets throughout plan set.	A	Agreed and will revise as requested.
83	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	crossover begins at spiral	DE	See response to CN 13.

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84	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	crossover in bridge not ideal. can it be avoided	DE	Location of proposed crossover is driven by adjacent proposed crossover, which is driven by existing crossovers in LE which will remain. The proposed crossovers must be located partially on the existing bridge. Also see response to CN 13.
85	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	vertical curve approx 5 ft from crossover	DE	See response to CN 13.
86	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	show crossovers stationing on profile	A	Agreed and will revise as requested.
87	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	CSXT	TRACK	Need to see vertical clearance from TOR to L'Enfant Plaza SW OH structure.	A	Agreed and will revise as requested.
88	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	existing top of rail or ground?	A	Existing ground is currently shown. The final 30% submission will include existing top of rail.
89	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	retaining wall is curved. is this constructible?	C	Yes, proposed retaining wall will follow curvature of proposed track alignment.
90	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	spiral in station platform. potential clearance and ada boarding issues?	C	Noted. Design team is aware of spiral within the platform limits and are accounting for clearance and ADA concerns within the design of the platform.
91	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	can vertical curve get off bridge. is vertical curve distance sufficient to platform	C	Vertical curve extends onto bridge due to raised track profile through proposed platform and 6th St bridge and to meet the existing grade south of the 9th St bridge.
92	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	is vertical curve far enough away from platform. potential ada boarding issues.	C	Yes, distance between vertical curve and edge of platform is ADA compliant.
93	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	Arema standard max D value = 0.2%. D = Absolute value of grade exceed D = 0.205%	C	Noted. Curve matches existing condition.
94	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSXT	TRACK	Need to see ex TOR on profile. Track raises will adversely impact VA Ave stone masonry retaining wall and historically stable track structure.	A	Agreed and will revise as requested.
95	DRAFT 30% DRAWINGS	63 (T-403)	TRACK 4 PLAN AND PROFILE (3 OF 4)	CSXT	TRACK	existing turnouts to be removed? or replaced?	A	Existing turnouts to remain unchanged. Additional notes to be added to better clarify
96	DRAFT 30% DRAWINGS	63 (T-403)	TRACK 4 PLAN AND PROFILE (3 OF 4)	CSXT	TRACK	Confirm and show all work needed on all crossovers at CP Virginia. Include all proposed and existing crossovers.	A	Agreed and will revise as requested.

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97	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	show canopy see canopy plans sheet 93	A	Agreed and will revise as requested.
98	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	how does the tracks drain. subgrade etc. adding platform impacts drainage	C	Intent is for these tracks to be surfaced and lined with additional ballast and no changes to the existing subgrade and drainage systems.
99	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	subgrade grading? important for drainage	A	Intent is for these tracks to be surfaced and lined with additional ballast and no changes to the existing subgrade and drainage systems. Existing drainage systems will be added to help further clarify.
100	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	subgrade grading? important for drainage	C	Intent is for these tracks to be surfaced and lined with additional ballast and no changes to the existing subgrade and drainage systems.
101	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	how does drainage work here	A	Agreed and will revise as requested.
102	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	Is there approval to go below 15'?	C	Clearances match the existing condition and are in accordance with Exhibit E-4 of the Rail Agreement between VPRA and CSX
103	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	Comply with CSX MWI 2611	DE	Proposed design will be further reviewed to ensure that this standard is being followed, but it appears to be compliant as currently designed.
104	DRAFT 30% DRAWINGS	65 (T-501)	TRACK TYPICAL SECTIONS	CSXT	TRACK	Show all horizontal and vertical clearances to all structures- prop and existing- in all cross sections throughout plan set	A	Agreed and will revise as requested.
105	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Show all horizontal and vertical clearances to all structures- prop and existing- in all cross sections throughout plan set. Include all platform structures including canopy sections,	A	Agreed and will revise as requested.
106	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Show all existing tracks throughout all cross sections	A	Agreed and will revise as requested.
107	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Show existing utilities and proposed utility relocations to cross sections. Ensure all CSX utility specs are met such as for appropriate OH vertical clearances, horizontal clearances, cover and casing requirements.	A	Agreed and will revise as requested.
108	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Show super-elevation of all proposed and existing tracks and roadbed throughout all cross sections	A	Agreed and will revise as requested.
109	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Show all existing and proposed drainage structures and ensure CSX Specs are met. Show depth.	A	Agreed and will revise as requested.

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110	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Show all street names at, parallel and Grade separations, on all cross sections	A	Agreed and will revise as requested.
111	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Track is elevated throughout entire project. Show retaining walls.	A	Agreed and will revise as requested.
112	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Call out the Virginia Ave Stone Mansonry Retaining Wall.	A	Agreed and will revise as requested.
113	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Label L'Enfant Plaza SW in appropriate cross sections. Show prop vertical clearances from ex bridge to TOR of all prop and existing tracks	A	Agreed and will revise as requested.
114	DRAFT 30% DRAWINGS	69 (T-701)	CROSS SECTIONS (1 OF 16)	CSXT	TRACK	Can we label/ delineate which retaining walls are rail load bearing and which are not?	A	Agreed and will revise as requested.
115	DRAFT 30% DRAWINGS	92 (A-104)	PLATFORM LEVEL PLAN - AREA III & IV	CSXT	ARCHITECTURAL	Please provide platform and canopy cross sections with horizontal clearances to nearest tracks. Also incorporate drainage detail and any other items that may affect track structure.	A	Platform and canopy cross sections with horizontal clearances to nearest tracks are shown on sheet A-301. Agree and will incorporate drainage detail and any other items that may affect track structure.
116	DRAFT 30% DRAWINGS	103 (A-301)	PLATFORM & CANOPY SECTIONS	CSXT	ARCHITECTURAL	Tracks will remain interoperable. Does this meet CSX Specs and Standards such as CSX Standard Drawings 2611, 2604, 2605?	C	Yes, proposed clearances and offsets to the proposed platform meet clearance requirements to allow tracks to be interoperable.
117	DRAFT 30% DRAWINGS	117 (S-001)	STRUCTURAL NOTES, SYMBOLS, AND ABBREVIATIONS (1 OF 2)	CSXT	STRUCTURAL	MAY	A	Agreed and will revise as requested.
118	DRAFT 30% DRAWINGS	142 (BR-001)	BRIDGE GENERAL NOTES (1 OF 2)	CSXT	STRUCTURAL	Include seismic load case	A	Agreed and will provide once geotechnical analysis is completed to better inform the parameters.
119	DRAFT 30% DRAWINGS	143 (BR-002)	BRIDGE GENERAL NOTES (2 OF 2)	CSXT	STRUCTURAL	need a reference for AREMA Chapter 15	A	Agreed and will revise as requested.
120	DRAFT 30% DRAWINGS	143 (BR-002)	BRIDGE GENERAL NOTES (2 OF 2)	CSXT	STRUCTURAL	There is a small reduction of the zinc layer on galv bolts when used with weathering steel.	DE	Noted - we will further consider material dissimilarities as design progresses to ensure we provide a solution that minimizes future maintenance and corrosion potential.
121	DRAFT 30% DRAWINGS	144 (BR-100)	KEY PLAN AND PROFILE	CSXT	STRUCTURAL	Show LTP in this view?	C	The LTP limits are not within the extents of the plan view on this sheet. They begin after the foundation of the new station entrance.

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122	DRAFT 30% DRAWINGS	145 (BR-101)	PLAN AND LONGITUDINAL SECTION	CSXT	STRUCTURAL	Recommend using a longer span and traditional bearing on abutment cap type structure instead of matching the existing type. Concerns with steel support beam system encased in concrete. Could provide a corbel to match existing look under the bridge but actual spans sit further back from the face of the abutment.	DE	The Project team will take this comment under advisement and consider as the design progresses. There are concerns with achieving live load deflection limits with the longer span and differential deflections between the new and existing system. These girders must also be shallower to maintain vertical clearance over 7th Street. Since this track is primarily intended for passenger operations in the final condition, more lax deflection limits (such as consideration of a pedestrian car configuration) could be considered and we will discuss further.
123	DRAFT 30% DRAWINGS	147 (BR-103)	ABUTMENT A DEMOLITION PLAN	CSXT	STRUCTURAL	what is retaining the soil behind this wall during removal?	DE	With the active tracks shifted to the east of the railroad corridor, some grading can occur between the active tracks and the wingwall. This will be further coordinated as design advances, and may include items like bolting support of excavation to the existing foundations.
124	DRAFT 30% DRAWINGS	148 (BR-104)	ABUTMENT B DEMOLITION PLAN	CSXT	STRUCTURAL	show groundline for removal of backfill and slope for excavation	A	Agreed and will revise as requested.
125	DRAFT 30% DRAWINGS	150 (BR-106)	ABUTMENT A SECTIONS	CSXT	STRUCTURAL	Expansion bearing - provide a way for the deck to slide with movement.	DE	Additional details will be provided in future stages of design.
126	DRAFT 30% DRAWINGS	150 (BR-106)	ABUTMENT A SECTIONS	CSXT	STRUCTURAL	Next submittals - include design and details for how this system will carry heavy loads through the cantilever. Explore alternative designs and spans where we could use traditional bearing on abutment seat arrangements.	DE	See response to CN 122.
127	DRAFT 30% DRAWINGS	151 (BR-107)	ABUTMENT B PLAN AND ELEVATION	CSXT	STRUCTURAL	What is happening in the cantilever beam anchorage at this location? There is no abutment stem to tie down to? Suggest making hte span longer on at least this end to avoid the cantilver system over the open void.	C	The intended system is shown on BR-111. No anchorage will be present over the tunnel extents. The purpose of the spreader beam in the cantilever is to take loads from the bearings and distribute it back to the support beams where they are anchored by abutment stem.
128	DRAFT 30% DRAWINGS	153 (BR-109)	ABUTMENT B SECTIONS (2 OF 2)	CSXT	STRUCTURAL	no cantilevered support beams here? how will the load be transferred?	C	The intended system is shown on BR-111. No anchorage will be present over the tunnel extents. The purpose of the spreader beam in the cantilever is to take loads from the bearings and distribute it back to the support beams where they are anchored by abutment stem.
129	DRAFT 30% DRAWINGS	155 (BR-111)	CONCEPTUAL BEARING DETAILS	CSXT	STRUCTURAL	What about maintenance and inspection of this system? Our main load carrying members are encased in concrete.	C	This detail matches the existing bridge, which also does not provide maintenance and inspection access to the primary load carrying system.
130	DRAFT 30% DRAWINGS	155 (BR-111)	CONCEPTUAL BEARING DETAILS	CSXT	STRUCTURAL	How will this steel be protected from corrosion - painted or coated before encased in concrete? Also need to consider any galvanic reaction with dissimilar metals with whatever type of rebar is being used.	DE	The project team will further assess the steel protective system as design progresses, and agree to the need for careful consideration given the lack of inspection access.
131	DRAFT 30% DRAWINGS	156 (BR-200)	GENERAL PLAN	CSXT	STRUCTURAL	Add track stationing	A	Agreed and will revise as requested.
132	DRAFT 30% DRAWINGS	156 (BR-200)	GENERAL PLAN	CSXT	STRUCTURAL	Add a note locating where there is a plan view with the bridge and the LTP all together for relative location of this.	A	Agreed and will revise as requested.

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133	DRAFT 30% DRAWINGS	156 (BR-200)	GENERAL PLAN	CSXT	STRUCTURAL	Has it been determined this wall cannot takethe LL surcharge forces? Is there a way to strengthen the wall instead of building the LTP?	C	We received structural drawings for the adjacent building and determined via analysis and a note review that it was not designed for rail live load surcharge. The structural system is unique and there is a small chance we could prove a structural load path, but that route would also likely require independent review and acceptance of the adjacent building owner. We believe this to be the most risk averse option at this time and will continue assessing.
134	DRAFT 30% DRAWINGS	157 (BR-201)	TRANSVERSE SECTION	CSXT	STRUCTURAL	How will this affect installation of the micropiles and LTP?	C	We suggest test pitting the existing wall prior to construction to evaluate if shoring was left in place and if there is a normal cadence of tiebacks. If there are, foundation locations can be adjusted to avoid interference. While the intent would be to avoid tiebacks, the shoring system is no longer necessary and cutting a tieback would not be cause for concern.
135	DRAFT 30% DRAWINGS	157 (BR-201)	TRANSVERSE SECTION	CSXT	STRUCTURAL	How will maintenance and inspection of this structure be addressed if it is a completely buried structure?	C	This will be a completely buried structure without maintenance or inspection accessibility. Though the structure is designed as a bridge, localized failure of the slab beams would be unlikely to cause significant issue since adequate compaction and subgrade preparation below the beams would be expected, which would lead them to act more like bearing elements.
136	DRAFT 30% DRAWINGS	157 (BR-201)	TRANSVERSE SECTION	CSXT	STRUCTURAL	Was an analysis performed to determine that this wall couldn't withstand the RR surcharge? What about strengthening the wall?	C	We received structural drawings for the adjacent building and determined via analysis and a note review that it was not designed for rail live load surcharge. The wall cantilevered above the courtyard does not appear to have the capacity to support added rail live load surcharge. There is a strong possibility that the below-grade walls will see a tolerable increase in load from rail live load surcharge, but since deep foundations are already required, they are continued to a competent support strata. Further assessment of this will continue as the project progresses.
137	DRAFT 30% DRAWINGS	159 (BR-300)	KEY PLAN AND PROFILE	CSXT	STRUCTURAL	Does this proposed bridge option avoid the track raise that leads to disturbing of the historic Virginia Ave Stone Masonry Retaining Wall and risk adverse affects on a historically stable track structure?	C	The design team has extensively considered everything it can to balance the constructability and sequencing needs of the project while minimizing grade raises. We believe this structure provides the least track raise possible while balancing all other project needs.
138	DRAFT 30% DRAWINGS	160 (BR-301)	PLAN AND LONGITUDINAL SECTION	CSXT	STRUCTURAL	Show clearance to existing structures from proposed drilled shafts. How confident are we in the location of these footings? Could remove all of them to eliminate any issues during construction. Consider effects of installing drilled shafts so close to spread footing foundations - will this cause settlement of the existing structure?	DE	The existing foundations have been drawn per record drawings, but they have not been test pitted. New foundations will not be installed until the old superstructure has been removed above, so the foundations can be removed at the contractor's discretion. We are simply showing the deeper courses of stone to remain to avoid more significant impacts to the adjacent DDOT roadway. Settlement is not expected to be a significant concern, but we will further discuss with our geotechnical partners and consider items like casing during construction of critical shafts to minimize the risk of cave-ins, etc.
139	DRAFT 30% DRAWINGS	160 (BR-301)	PLAN AND LONGITUDINAL SECTION	CSXT	STRUCTURAL	What is the clearance here between existing and proposed? Consider affects of installing a drilled shafts so close to the existing. Could consider making the end spans longer to give a bit more clearance.	DE	The design was set with a minimum of 1' offset from the shaft edge to the existing foundation heels. Lengthening the end spans was considered, but it may be detrimental particularly on the south side since that will require shifting the southern 6th St station entrance further away from the road.
140	DRAFT 30% DRAWINGS	161 (BR-302)	TRANSVERSE SECTION	CSXT	STRUCTURAL	Will there be a canopy or other structure on platform on 6th St bridge? If so please show structures.	A	There is only a canopy at the beginning few feet of the structure. We will show further details in future design submittals (there is an anchorage detail shown on BR-309).
141	DRAFT 30% DRAWINGS	161 (BR-302)	TRANSVERSE SECTION	CSXT	STRUCTURAL	Tracks will remain interoperable. Does this conform to CSX specs? 2611.2604, 2605?	C	Yes, clearances to the platform have been established in conformance with CSX standard clearances.
142	DRAFT 30% DRAWINGS	161 (BR-302)	TRANSVERSE SECTION	CSXT	STRUCTURAL	12" required on CSX bridges	C	We agree 12" is required per the CSX Public Project Manual. However, based on coordination with CSX to date and the January 21, 2025 comment resolution meeting, CSX has agreed that 8" minimum ballast is acceptable.

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143	DRAFT 30% DRAWINGS	161 (BR-302)	TRANSVERSE SECTION	CSXT	STRUCTURAL	This is proposed to be constructed in stages. Need to show the staging lines for removal and construction. This is a typical comment for these bridge plans (abutment/pier/foundation work and superstructure work).	A	Agreed additional details will be provided on typical sections as warranted. A conceptual staging schematic is shown on sheets BR-310 through BR-313.
144	DRAFT 30% DRAWINGS	161 (BR-302)	TRANSVERSE SECTION	CSXT	STRUCTURAL	if this is your deck joint line, how are making the deck continuous here?	DE	Additional details will be provided in future stages of design.
145	DRAFT 30% DRAWINGS	161 (BR-302)	TRANSVERSE SECTION	CSXT	STRUCTURAL	is 4 girders per track your controlling design? If so, why use 5 under the other tracks? What is driving the shallower girders under Tracks 2 and 1?	C	Proposed Tracks 1 and 2 are under the highest elevations of roadway below, so we are considering five girders per track to limit structure depth and achieve vertical clearance. The roadway is approximately 3" lower under track 3 and west, so deeper beams can be used. Also, the use of four beams provides better clearance during phased construction.
146	DRAFT 30% DRAWINGS	162 (BR-303)	ABUTMENT DEMOLITION PLAN	CSXT	STRUCTURAL	Add Track centerlines. Where is the stage line?	A	Agreed and will revise as requested.
147	DRAFT 30% DRAWINGS	163 (BR-304)	PIER DEMOLITION PLAN	CSXT	STRUCTURAL	this will required significant excavation into the street and sidewalk- is that planned? Any utilities here to consider?	C	Yes - we agree this will require more extensive work into the street. This has been considered in our maintenance of traffic needs as well as utility relocation/protection needs.
148	DRAFT 30% DRAWINGS	164 (BR-305)	ABUTMENT A PLAN, ELEVATION, AND SECTION	CSXT	STRUCTURAL	Notes state the wall location may vary. Add a note to field verify prior to construction of drilled shafts. This seems to be a really tight clearance to be unsure of exact location of existing structures.	A	Agree and will revise as requested.
149	DRAFT 30% DRAWINGS	164 (BR-305)	ABUTMENT A PLAN, ELEVATION, AND SECTION	CSXT	STRUCTURAL	Include notes to field verify prior to fabrication or construction in case it changes the design or details.	A	Agreed and will revise as requested.
150	DRAFT 30% DRAWINGS	166 (BR-309)	FRAMING PLAN	CSXT	STRUCTURAL	Replacement	A	Agreed and will revise as requested.
151	DRAFT 30% DRAWINGS	166 (BR-309)	FRAMING PLAN	CSXT	STRUCTURAL	This is built in two stages- framing plan should distinguish that.	A	Agreed and will revise as requested. A phased construction joint is shown, but the phases will be more clearly differentiated in a future submittal.
152	DRAFT 30% DRAWINGS	167 (BR-310)	PHASING PLANS (1 OF 4)	CSXT	STRUCTURAL	Design will need to include check of existing structure under phased condition and loading.	A	Agreed - although reductions to the existing capacity or ratings are not anticipated. The girder adjacent Proposed Track 3 will be unloaded by removal and see only one track of live load which should by inspection be adequate.
153	DRAFT 30% DRAWINGS	167 (BR-310)	PHASING PLANS (1 OF 4)	CSXT	STRUCTURAL	Include a required monitoring of the existing bridge during this phasing to address any settlement that may occur.	A	Agreed and will revise as requested.
154	DRAFT 30% DRAWINGS	167 (BR-310)	PHASING PLANS (1 OF 4)	CSXT	STRUCTURAL	Show CL of other tracks that are out of service during this phase	A	Agreed and will revise as requested.
155	DRAFT 30% DRAWINGS	168 (BR-311)	PHASING PLANS (2 OF 4)	CSXT	STRUCTURAL	Provide clearances from proposed to existing structures. Considerations for design - how will installation of foundations this close adversely affect the existing structure still carrying live load?	A	Agreed and will revise as requested. If there are concerns for settlement due to foundation construction, we can consider removing the next existing foundation and provide additional clearance. Will will continue to assess as the design progresses and geotechnical recommendations are available.

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156	DRAFT 30% DRAWINGS	168 (BR-311)	PHASING PLANS (2 OF 4)	CSXT	STRUCTURAL	Show CL of other tracks that are out of service during this phase	A	Agreed and will revise as requested.
157	DRAFT 30% DRAWINGS	168 (BR-311)	PHASING PLANS (2 OF 4)	CSXT	STRUCTURAL	? [Add dimension]	A	Agreed and will revise as requested. Will require further coordination with CSXT.
158	DRAFT 30% DRAWINGS	169 (BR-312)	PHASING PLANS (3 OF 4)	CSXT	STRUCTURAL	This will interfere with your proposed abutment to be constructed in the next phase	A	Agreed the arrangement will be updated in future submittals and the project team will continue to coordinate the abutment construction with CSXT to understand anticipated windows of construction and permissible means and methods as noted in the January 21, 2025 comment resolution meeting. The exact dimension and arrangement of the shoring will be the responsibility of the contractor.
159	DRAFT 30% DRAWINGS	170 (BR-313)	PHASING PLANS (4 OF 4)	CSXT	STRUCTURAL	seems unlikely you can build this with the active track that close- consider moving your construction joint	DE	We will continue to coordinate this construction with CSXT since it may require intermittent night outages, etc. We will also consider moving the construction joint, but it may require temporarily burying portions of the abutment under ballast.
160	DRAFT 30% DRAWINGS	170 (BR-313)	PHASING PLANS (4 OF 4)	CSXT	STRUCTURAL	? [Add dimension]	A	Agreed and will revise as requested. Will require further coordination with CSXT.
161	DRAFT 30% DRAWINGS	170 (BR-313)	PHASING PLANS (4 OF 4)	CSXT	STRUCTURAL	? [Add dimension]	A	Agreed and will revise as requested. Will require further coordination with CSXT.
162	DRAFT 30% DRAWINGS	173 (W-003)	VIRGINIA AVENUE RETAINING WALL SECTIONS	CSXT	STRUCTURAL	any drainage proposed?	DE	The existing wall appears to have weepholes which should continue to drain. No specific drainage features are currently provided, though we will continue to assess as design progresses.
163	BOD REPORT	6	3.1 Adjacent Projects Coordination	CSXT	STRUCTURAL	Proper railroad terminology is Run-Through Service	A	Agreed and will revise as requested.
164	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	TRACK	Obtaining CSX approval, too, strongly recommended. Tracks will remain interoperable. Especially if design item has potential to affect CSX operations.	A	Agreed and will revise accordingly. Interoperability is defined in the referenced DRPT/CSXT Comprehensive Rail Agreement.
165	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	Ensure all of the design manuals listed and used are the most up-to-date versions	C	The DC Building Code 2017 has not adopted the most recent versions of all codes. Structural Elements designed to meet the DC building code standards are designed per the adopted codes/manuals listed in chapter 35.
166	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	Not most current	A	Agreed and will revise as requested.
167	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	Use current version	A	The project team will review and apply the current version for AREMA as the design advances and coordinate any potential design changes as a result with VRE and CSXT.

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168	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	Use current version	A	Agreed and will revise as requested.
169	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	not most current	C	ACI 318-14 Building Code Requirements for Structural Concrete is the current version adopted by the DC Building Code 2017.
170	BOD REPORT	7	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	not most current	C	ASCE/SEI 7-10 Minimium Design Loads for Building and Other Structures is the current version adopted by the DC Building Code 2017.
171	BOD REPORT	8	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	Ensure all of the design manuals listed and used are the most up-to-date versions	C	The DC Building Code 2017 has not adopted the most recent versions of all codes. Structural Elements designed to meet the DC building code standards are designed per the adopted codes/manuals listed in chapter 35.
172	BOD REPORT	8	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	not most current	C	AWS D1.4 2011 Structural Welding Code is the current version adopted by the DC Building Code 2017.
173	BOD REPORT	8	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	amended in 2020	A	Will verify and update accordingly.
174	BOD REPORT	8	4.1 Applicable Codes, Standards, and Recommended Practice	CSXT	STRUCTURAL	2018, Revision C amended in 2020	A	Will verify and update accordingly.
175	BOD REPORT	8	4.2 Track Design Criteria	CSXT	STRUCTURAL	Tracks will be interoperable, thus all tracks will include freight traffic. Ensure designs and clearances throughout entire project limits will meet CSX standards.	A	Agree and will revise to note that track centers and clearances shall conform to VRE Facility Design Guidelines and not preclude interoperability of freight traffic, as defined in the referenced DRPT/CSXT Comprehensive Rail Agreement.
176	BOD REPORT	12	4.4.4 Railroad Bridge Design and Design Life	CSXT	STRUCTURAL	Design life required to be 100 years on other TRV projects.	DE	The Project team will review changes necessary if the design life of the 6th Street SW bridge is updated to 100 years and coordinate any potential changes as a result with VRE and CSXT.
177	BOD REPORT	13	4.4.8 Superstructure Design	CSXT	STRUCTURAL	12" required on CSX bridges	C	We agree 12" is required per the CSX Public Project Manual. However, based on coordination with CSX to date and the January 21, 2025 comment resolution meeting, CSX has agreed that 8" minimum ballast is acceptable.
178	BOD REPORT	23	10.0 Design Waivers	CSXT	TRACK	CSX requires 200ft if progressives moves are made	DE	See response to CN 13.
179	BOD REPORT	23	10.0 Design Waivers	CSXT	TRACK	Standard deviation request will need to be made	DE	See response to CN 13.
180	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	Agree total with Staging	C	Agreed and will revise as requested.

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181	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	Designate the existing class/speed of track in the notes	A	Agreed and will revise as requested.
182	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	Incorrect, 2/3/4/5 in final condition	A	Agreed and will revise as requested.
183	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	CAPITOL	A	Agreed and will revise as requested.
184	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	"JERSEY"	A	Agreed and will revise as requested.
185	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	L'ENFANT	A	Agreed. We will replace the current title block with the example provided by VRE as requested.
186	UPDATED DRAFT 30% TRACK SHEETS	1 (G-201)	TRACK STAGING SCHEMATIC STAGE 1	CSX	TRACK	Be consistent with use of CP prefix	A	Agreed. We will replace the current title block with the example provided by VRE as requested.
187	UPDATED DRAFT 30% TRACK SHEETS	9 (G-209)	TRACK STAGING SCHEMATIC FINAL CONDITION	CSX	TRACK	Why are these tracks not shown as in use for VRE & Amtrak service? Is the assumption that this is complete before the Long Bridge Project?	C	Agreed and will revise as requested.
188	UPDATED DRAFT 30% TRACK SHEETS	10 (T-003)	TRACK GEOMETRY TABLES	CSX	TRACK	EA = 2.75 PER CSX 2511 Eup = 1.30 Euf = 1.30 Ls = 171 FT	DE	Agreed and will revise as requested.
189	UPDATED DRAFT 30% TRACK SHEETS	10 (T-003)	TRACK GEOMETRY TABLES	CSX	TRACK	EA = 2.00 PER CSX 2511 Eup = 3.04 Euf = 1.50 Ls = 149 FT	C	Agreed and will revise as requested.
190	UPDATED DRAFT 30% TRACK SHEETS	10 (T-003)	TRACK GEOMETRY TABLES	CSX	TRACK	EA = 2.50 PER CSX 2511 Eup = 1.29 Euf = 1.29 Ls = 155 FT	DE	Agreed and will revise as requested.
191	UPDATED DRAFT 30% TRACK SHEETS	10 (T-003)	TRACK GEOMETRY TABLES	CSX	TRACK	EA = 0.50 PER CSX 2511 Eup = 1.31 Euf = 1.31 Ls = 33 FT	DE	Agreed and will revise as requested.
192	UPDATED DRAFT 30% TRACK SHEETS	10 (T-003)	TRACK GEOMETRY TABLES	CSX	TRACK	MINIMUM Ls = 33 FT	C	Agreed and will revise as requested.
193	UPDATED DRAFT 30% TRACK SHEETS	10 (T-003)	TRACK GEOMETRY TABLES	CSX	TRACK	EA = 2.00 PER CSX 2511 Eup = 3.04 Euf = 1.50 Ls = 149 FT	C	Agreed and will revise as requested.

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194	UPDATED DRAFT 30% TRACK SHEETS	11 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	CSX	TRACK	r = -0.64	A	Agreed and will revise as requested.
195	UPDATED DRAFT 30% TRACK SHEETS	11 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	CSX	TRACK	r = 0.74	A	Agreed and will revise as requested.
196	UPDATED DRAFT 30% TRACK SHEETS	12 (T-201)	TRACK 2 PLAN AND PROFILE (1 OF 1)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	The Draft 30% plan set references VRE standards under codes and standards. If an updated VRE Design Manual is made available, the design team will review and apply it to the project design where applicable.
197	UPDATED DRAFT 30% TRACK SHEETS	12 (T-201)	TRACK 2 PLAN AND PROFILE (1 OF 1)	CSX	TRACK	r = -0.48	A	Agreed and will revise as requested.
198	UPDATED DRAFT 30% TRACK SHEETS	13 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	Agreed and will revise as requested.
199	UPDATED DRAFT 30% TRACK SHEETS	14 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	Agreed and will revise as requested.
200	UPDATED DRAFT 30% TRACK SHEETS	14 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	r = -0.39	A	Agreed and will revise as requested.
201	UPDATED DRAFT 30% TRACK SHEETS	14 (T-302)	TRACK 3 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	r = -0.20	A	Agreed and will revise as requested.
202	UPDATED DRAFT 30% TRACK SHEETS	16 (T-304)	TRACK 3 PLAN AND PROFILE (4 OF 4)	CSX	TRACK	r = -0.19	A	Agreed and will revise as requested.
203	UPDATED DRAFT 30% TRACK SHEETS	17 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	Agreed and will revise as requested.
204	UPDATED DRAFT 30% TRACK SHEETS	18 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	Agreed and will revise as requested.
205	UPDATED DRAF 30% TRACK SHEETS	18 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	Ted question - What is the minimum clearance that CSX is asking for?		Noted. Existing Vertical Clearance will be maintained.
206	UPDATED DRAFT 30% TRACK SHEETS	18 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	r = -0.35	A	Agreed and will revise as requested.

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207	UPDATED DRAFT 30% TRACK SHEETS	18 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	CSX	TRACK	r = -0.25	A	Agreed and will revise as requested.
208	DATED DRAFT 30% TRACK SHE	19 (T-403)	TRACK 4 PLAN AND PROFILE (3 OF 4)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	Agreed and will revise as requested.
209	UPDATED DRAFT 30% TRACK SHEETS	19 (T-403)	TRACK 4 PLAN AND PROFILE (3 OF 4)	CSX	TRACK	r = 0.08	A	Agreed and will revise as requested.
210	DATED DRAFT 30% TRACK SHE	20 (T-404)	TRACK 4 PLAN AND PROFILE (4 OF 4)	CSX	TRACK	Pull dimension off track, similar to Proposed Track description	A	Agreed and will revise as requested.
211	DATED DRAFT 30% TRACK SHE	20 (T-404)	TRACK 4 PLAN AND PROFILE (4 OF 4)	CSX	TRACK	Unsure the reason for the small V-Curve	C	Agreed and will revise as requested.
212	DATED DRAFT 30% TRACK SHE	20 (T-404)	TRACK 4 PLAN AND PROFILE (4 OF 4)	CSX	TRACK	Whats the purpose of this vertical curve. it allows for the change of grade of .01%	C	Agreed and will revise as requested.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (FRA)
REVIEW DATE: 11/01/2024
COMMENT RESPONSE DATE: 2/17/2025

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

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1	DRAFT 30% DRAWINGS	10 (G-102)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (2 OF 2)	FRA	GENERAL	Identify construction of the north end of temporary platform in Stage 2	A	The construction of the temporary platform is being proposed during stage 1. The construction zone identified on sheet G-101 for stage 1 will be revised to include the temporary platform area.
2	DRAFT 30% DRAWINGS	10 (G-102)	SUGGESTED CONSTRUCTION SEQUENCING PLATFORM BOARDING (2 OF 2)	FRA	GENERAL	Objective states an 8-car platform, but only 7 cars shown	A	Agreed and will revise the staging configurations revised to show 8 passenger rail cars as stated in the objective.
3	DRAFT 30% DRAWINGS	11-14 (G-201-204)	TRACK STAGING SCHEMATIC STAGE 1	FRA	GENERAL	Suggest showing temporary platform corresponding to operating notes	A	The temporary platform is shown on sheets G-202 - G-204, the sheet legends will be revised to identify it where applicable.
4	DRAFT 30% DRAWINGS	16 (G-206)	TRACK STAGING SCHEMATIC STAGE 3d	FRA	GENERAL	Does contractor scope of work include RH crossover at Jersey Interlocking? Is a plan sheet needed?	A	Yes, a RH crossover is proposed in Jersey Interlocking and additional sheets will be added to the set to address the proposed work.
5	DRAFT 30% DRAWINGS	17 (G-207)	TRACK STAGING SCHEMATIC STAGE 4	FRA	GENERAL	Is access to the MOW Yard needed in Stage 4, and if so, is reversing on Track 1 acceptable?	DE	Agreed that proposed staging would limit access to MOW Yard in Stage 4 due to construction on Tracks 1 & 2 at the 6th St bridge. Further coordination with CSX and operators on the line will be needed to confirm if the reverse move on Track 1 is acceptable duing this stage of construction.
6	DRAFT 30% DRAWINGS	17 (G-207)	TRACK STAGING SCHEMATIC STAGE 4	FRA	GENERAL	Were additional RH crossovers considered at the north end of CP Virginia to reduce operating impact to CSX?	C	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.
7	DRAFT 30% DRAWINGS	36-38 (C-302-304)	SITE DEMOLITION PLAN (1 OF 3)	FRA	CIVIL	Is the track removal within the interlockings outside of the contractor scope of work. Are additional plan sheets required?	A	Agreed and will revise as requested.
8	DRAFT 30% DRAWINGS	37 (C-303)	SITE DEMOLITION PLAN (2 OF 3)	FRA	CIVIL	Should portions of Existing Track 3 be shown for removal?	A	Agreed and will revise as requested.
9	DRAFT 30% DRAWINGS	38 (C-304)	SITE DEMOLITION PLAN (3 OF 3)	FRA	CIVIL	Should portions of Existing Track 3 and all tracks through 6th St. Bridge be shown for removal?	A	Agreed and will revise as requested.
10	DRAFT 30% DRAWINGS	53 (T-002)	TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED	FRA	TRACK	The RH crossover at the Jersey Interlocking is not shown in the proposed condition	A	Agreed and will revise as requested.
11	DRAFT 30% DRAWINGS	55 (T-101)	TRACK 1 PLAN AND PROFILE (1 OF 1)	FRA	TRACK	No plan sheet included for the Jersey Interchange	A	Agreed and will revise as requested.
12	DRAFT 30% DRAWINGS	56 (T-201)	TRACK 2 PLAN AND PROFILE (1 OF 1)	FRA	TRACK	No plan sheet included for the LE interchange, Jersey Interchange, or track replacement for turnout removal at 2nd St.	A	Agreed and will revise as requested.

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13	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	The distance between facing point turnouts (Existing LH to Proposed LH) is less than typical	C	The proposed geometry in the area between the existing crossovers, the proposed curves and station platform, and Hancock Park is very constrained. The project team investigated additional options to increase the spacing between points of switch and adjust the spiral and vertical curve locations, but the alternative options resulted in either ROW impacts, LBN design impacts, or a reduction in crossover size and operating speed. These options were reviewed and discussed with CSX during the January 21, 2025 comment resolution meeting. CSX expressed preference to deconflict the spiral and point of switch and leave the shorter spacing between switch points, than reduce the switch sizes and speeds. CSX recommended maintaining a No. 15 crossover, and to make adjustments to shift the spiral out of the switch and maximize distance between points of frog to a minimum 100 feet. The LEF Project Team incorporated these updates into the Final 30% design.
14	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	The point of switch is within the spiral of C1	C	See response to CN 13.
15	DRAFT 30% DRAWINGS	57 (T-301)	TRACK 3 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	Label all track centers	A	Agreed and will revise as requested.
16	DRAFT 30% DRAWINGS	57, 59 (T-301, T-303)	TRACK 3 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	Suggest adding point of switch and or turnout limits to profile	A	Agreed and will revise as requested.
17	DRAFT 30% DRAWINGS	59 (T-303)	TRACK 3 PLAN AND PROFILE (3 OF 4)	FRA	TRACK	Is any shifting or surfacing through existing crossovers required near 3rd St.?	C	Yes, there will be surface and lining for the proposed alignments and profiles of Tracks 3 & 4 through this area. The proposed matches the existing profile and alignment.
18	DRAFT 30% DRAWINGS	60 (T-304)	TRACK 3 PLAN AND PROFILE (4 OF 4)	FRA	TRACK	Add minimum track centers through curve. Are 13' track centers a concern when compensating for 8° curves?	A	Track centers are increased through proposed curves to account for degree of curve and superelevation. Agreed and will add notation for minimum track centers through curves.
19	DRAFT 30% DRAWINGS	60 (T-304)	TRACK 3 PLAN AND PROFILE (4 OF 4)	FRA	TRACK	Suggest extending plan and profile beyond tie-in point.	C	The northern tie-in point limit shown is based on survey limits.
20	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	Facing point distance to existing crossover is tight, but likely acceptable. Confirm.	C	See response to CN 13.
21	DRAFT 30% DRAWINGS	61 (T-401)	TRACK 4 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	Point of switch is on the end of the spiral	C	See response to CN 13.
22	DRAFT 30% DRAWINGS	61, 63 (T-401, 403)	TRACK 4 PLAN AND PROFILE (1 OF 4)	FRA	TRACK	Suggest adding point of switch and or turnout limits to profile	A	Agreed and will revise as requested.
23	DRAFT 30% DRAWINGS	62 (T-402)	TRACK 4 PLAN AND PROFILE (2 OF 4)	FRA	TRACK	Confirm if superelevation at platform is acceptable and if spiral is effectively a 1°45' curve of flatter.	C	Superelevation is to be reduced to 0.5" based on CSXT comments. The length of spiral is longer than required in order to meet the proposed station tangent and as such the majority of the spiral length is effectively a 1°-45' curve or flatter.
24	DRAFT 30% DRAWINGS	64 (T-404)	TRACK 4 PLAN AND PROFILE (4 OF 4)	FRA	TRACK	Suggest extending plan and profile beyond tie-in point.	C	Northern tie-in point limit shown is based on survey limits.
25	DRAFT 30% DRAWINGS	64 (T-404)	TRACK 4 PLAN AND PROFILE (4 OF 4)	FRA	TRACK	Add minimum track centers through curve. Are 13' track centers a concern when compensating for 8° curves?	A	Track centers are increased through proposed curves to account for degree of curve and superelevation. Agreed and will add notation for minimum track centers through curves.
26	DRAFT 30% DRAWINGS	65, 66 (T-501, 502)	TRACK TYPICAL SECTIONS	FRA	TRACK	Is the wall height shown preferred versus something approaching top of tie or top of rail?	C	The proposed wall height is preferred.
27	DRAFT 30% DRAWINGS	65, 66 (T-501, 502)	TRACK TYPICAL SECTIONS	FRA	TRACK	Will the triangle void against the wall actually be filled with ballast?	C	Intent is for the wall height to extend above toe of slope of ballast to avoid ballast flowing over the top of wall.
28	DRAFT 30% DRAWINGS	65, 66 (T-501, 502)	TRACK TYPICAL SECTIONS	FRA	TRACK	Suggest identifying the sacrifical layer	A	The proposed platform does include a 2" sacrifical rub rail. Agreed and will update the plans to clarify.

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29	DRAFT 30% DRAWINGS	53 (T-002)	TRACK SCHEMATICS - LE TO VA EXISTING & PROPOSED	FRA	TRACK	Was consideration given to installation of a left-hand crossover at "CP Virginia" between track 2 and 3 during Stage 1? Approximately 60 daily passenger trains from VRE and Amtrak operate in both directions on a single track and all of the VRE trains stop at L'Enfant station. Adding to this situation may be track work going on at the lower level of Washington Union Station. In addition, there are 20-30 long CSX freight trains operating over the Potomac River bridge every day.	C	As part of the final 30% design the project team explored the feasibility of alternative CP VA interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking will require coordination and agreement between the operating railroads during 60% design.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (NPS)
REVIEW DATE: 11/01/2024
COMMENT RESPONSE DATE: 2/17/2025

LEGEND:

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1	DRAFT 30% DRAWINGS	General	-	NPS	It would be nice to have the raked grading and retaining wall proposal included in the drawings to allow the chance to review. At this time I cannot speak to appropriateness of either design as we do not know the historical evolution of	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including developing additional details regarding the proposed retaining wall within the railroad right of way adjacent to Hancock Park and potential grading and landscaping.
2	DRAFT 30% DRAWINGS	36 - 37	SITE DEMOLITION PLAN (1 OF 3), (2 OF 3)	NPS	Please indicate what species of trees will be removed from Hancock Park. Please indicate the size of the trees as well.	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas and associated tree protection and/or restoration plans.
3	DRAFT 30% DRAWINGS	36 - 37	SITE DEMOLITION PLAN (1 OF 3), (2 OF 3)	NPS	Please indicate any tree restoration plan. The existing trees provide multiple benefits to the park, most importantly, they create a buffer/barrier between the railroad and the park.	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas and associated tree protection and/or restoration plans. Trees currently proposed as to be removed are within the railroad right of way. With the addition of Proposed Track 4, there is not adequate clearance for tree plantings within the railroad right of way.
4	DRAFT 30% DRAWINGS	General	-	NPS	NAMA is interested in knowing more details about the boundaries and timeline for the closure of some portions of the park for a construction, as well as the coordination with the LBN team that is going to have a laydown area at the	DE	VRE, VPRA, and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas, timelines, and overlaps with the Long Bridge North project.
5	DRAFT 30% DRAWINGS	36 - 37	SITE DEMOLITION PLAN (1 OF 3), (2 OF 3)	NPS	All tree removal must occur from August 16 - March 14.	C	Noted. VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas and associated tree protection and/or restoration plans.
6	DRAFT 30% DRAWINGS	General	-	NPS	In addition to PDF as-builts, all final as-builts should be delivered in GIS format as well	A	The Project Team will provide as-built drawings formatted as a pdf and a GIS shapefile for NPS records once available.
7	DRAFT 30% DRAWINGS	General	-	NPS	What has been the coordination with the Downtown BID about the construction areas and closures of sections of the park?	C	Coordination has been ongoing with Southwest BID (project is not within Downtown BID) and will continue as details of construction and closures are developed.
8	DRAFT 30% DRAWINGS	General	-	NPS	Do you have a protection plan for the trees on the ROW?	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas and associated tree protection and/or restoration plans. Trees currently proposed as to be removed are within the railroad right of way. With the addition of Proposed Track 4, there is not adequate clearance for tree plantings within the railroad right of way.

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9	DRAFT 30% DRAWINGS	General	-	NPS	Do you have a traffic plan (pedestrian detour, access, signage, etc.) for vehicles entering the construction area?	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas and associated traffic plans.
10	DRAFT 30% DRAWINGS	General	-	NPS	What are the temporary and permanent impacts to the park? Have you considered a restoration plan for the park?	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding proposed Hancock Park construction laydown areas and associated tree protection and/or restoration plans. Trees currently proposed as to be removed are within the railroad right of way. With the addition of Proposed Track 4, there is not adequate clearance for tree plantings within the railroad right of way.
11	DRAFT 30% DRAWINGS	General	-	NPS	What are the SWM requirements of this project?	DE	VRE and the Project Team will continue to coordinate with NPS as the design advances, including providing additional details regarding potential SWM requirements of the project. Future coordination meetings will be held with DOEE. DOEE has previously expressed that railroad lands and DDOT ROW are to be considered under the MEP process of the 2020 regulations.
12	DRAFT 30% DRAWINGS	General	-	NPS	Is there any consideration of having a retaining wall and tree planting and landscaping on the CSX property, which mitigates the visual impact on the park?	C	The proposed retaining wall adjacent to Hancock park is within the CSX rail property. With the addition of Proposed Track 4, there is not adequate clearance for tree plantings within the railroad right of way.
13	DRAFT 30% DRAWINGS	General	-	NPS	Would there be a temporary detour for the pedestrians that usually walk trhough the park?	C	The eastern portion of the park (most used currently) will remain open to pedestrians. For those who cross the western portion of the park diagonally to and from 7th to 9th St SW, they will need to use the sidewalks along 7th St and C St SW. That part of the park would temporarily be within the proposed construction staging area/laydown area.
14	DRAFT 30% DRAWINGS	General	-	NPS	Is there any proposal for the restoration of the site to maintain the current flow of pedestrians coming out of the train station?	C	Proposed station entrances would largely maintain the current pedestrian flows, given their proximity to the sites of existing stairway entrances. Riders who use the existing ramp through Hancock Park and across 7th Street to access the platform would need to re-route to the crosswalk at 7th and Maryland. Due to the proposed fourth track, ramp access between the platform and Hancock Park would not be possible.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (WMATA)
REVIEW DATE: 11/01/2024
COMMENT RESPONSE DATE: 2/3/2025

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1	DRAFT 30% DRAWINGS	S-304, S-306, BR-100, BR-101 & C-504	-	WMATA	STRUCTURAL	WMATA D-Line tunnel Under D- Street that runs East-West is not shown on any of the plans or ZoI drawings – I understand it is close to the 6th street construction. If this has not been done already, pls. submit the plans and sections showing ZoI lines so that it (whether or not the construction near the 6th street is within the ZoI) can be determined.	A	The ZOI for the D-STreet Tunnel will be shown in future submittals. There are isolated foundation elements of the proposed 6th St Bridge which may be within the WMATA ZOI; however, at the tunnel depth, these bridge foundation elements are expected to be transmitting nearly fully vertical load and should have negligible impact on the WMATA tunnel.
2	DRAFT 30% DRAWINGS	General	-	WMATA	GENERAL	North arrow is missing on several drawing (plan) sheets, please dd those for clarity.	A	Agree and will revise as requested.
3	DRAFT 30% DRAWINGS	BR-100	7TH STREET SW BRIDGE WIDENING KEY PLAN AND PROFILE	WMATA	STRUCTURAL	Is the location to the proposed WMATA elevator to the West of 7th street shown on this plans? Not sure because one elevator location is shown, but not two. There is an existing one as well.	C	The only elevator shown is the existing WMATA elevator. See response to CN 6 for additional information on proposed elevator.
4	DRAFT 30% DRAWINGS	C-303	SITE DEMOLITION PLAN (2 OF 3)	WMATA	STRUCTURAL	If abutment demolition uses impact methods, seismograph monitoring of the nearest WMATA structure may be required to ensure vibrations are within required limits.	C	Construction monitoring will be coordinated in future project phases.
5	DRAFT 30% DRAWINGS	S-001	NOTES, SYMBOLS, AND ABBREVIATI	WMATA	GENERAL	It is understood that a Geotechnical Report will be provided in a future submittal that provides project-specific design recommendations based on site sampling and testing performed.	C	Agreed, the geotechnical report will be provided with the Final 30% plans.
6	DRAFT 30% DRAWINGS	BR-100	7TH STREET SW BRIDGE WIDENING KEY PLAN AND PROFILE	WMATA	STRUCTURAL	Overlaying drawings from WMATA's 7th Street SW elevator replacement project on drawing BR-100 (see attached) identifies a potential conflict between the VRE's revised west abutment wingwall and its foundation and the proposed new elevator structure. Before further development of the design, the team, in consultation with WMATA (including WMATA structural) should explore the extent of this conflict and explore alternatives to avoid the conflict.	DE	The proposed bridge widening is fully contained within the existing freight railroad Right of Way. The proposed WMATA elevator linework has since been provided to VHB design engineer, and further coordination with WMATA is suggested to ensure the success of both projects.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
7	DRAFT 30% DRAWINGS	C-304	EXISTING PROPERTY LINE AND EASEMENT INFORMATION (2 OF 3)	WMATA	CIVIL	Drawing C-304 indicates that the sidewalk in front of WMATA's existing 7th Street SW elevator will be removed and replace. The current Basis of Design Document should reflect the requirement that the project design include either a plan that maintains continuous ADA access to the existing elevator during all revenue hours or how the project will provide bus bridge service during periods when the elevator is not accessible.	A	Agree and will revise as requested, construction work in that area will be phased so that continuous ADA access will be maintained to the elevator at all times.
8	DRAFT 30% DRAWINGS	General	-	WMATA	STRUCTURAL	This submittal only provides a conceptual information related with WMATA structures. In order to better understand the impact from the project, the following shall be provided. provided. 1. Provide foundation type, size and construction methodology to be used for the bridge abutment extension	A	Agree, foundations will be further detailed in future submittals after the project geotechnical report is available.
9	DRAFT 30% DRAWINGS	-	-	WMATA	STRUCTURAL	2. Provide a plan view to show the outline of WMATA structure in relative to the proposed foundation and new entrance structures. The horizontal distance between the proposed foundation elements relative to the impacted WMATA structures needs to be provided.	A	Agree, will provide in future submittals.
10	DRAFT 30% DRAWINGS	-	-	WMATA	STRUCTURAL	3. Provide sections views to show the relationship between WMATA structure and the proposed foundation and new entrance structures.	A	Agree, will provide in future submittals.
11	DRAFT 30% DRAWINGS	-	-	WMATA	GENERAL	4. Provide the project geotechnical report.	C	Agreed, the geotechnical report will be provided with the Final 30% plans.
12	DRAFT 30% DRAWINGS	-	-	WMATA	STRUCTURAL	5. For the new entrance proposed along 6th St SW, plan view and section view shall be also provided to show there is no impact to WMATA structure.	A	Agree, the WMATA ZOI will be depicted in future submitals, and sections will be provided if necessary to demonstrate a 'no impact' condition.
13	DRAFT 30% DRAWINGS	BR-105 to BR-109	-	WMATA	STRUCTURAL	Refer to comment provided by Jia Li. BR-105 to BR-109: Deep foundations/piles for the abutment extension, located within the WMATA Zone of Influence (ZOI), should include casings to prevent the transfer of abutment loads to the existing tunnel. The skin friction within the WMATA ZOI layer should either be discounted, or the piles for the abutment extension should be designed as end-bearing piles.	C	Noted. These comments will be taken under advisement as foundations are developed after the geotechnical report and associated data is available.
14	DRAFT 30% DRAWINGS	-	-	WMATA	GENERAL	No additional comments. Concur with Seth Garland's comments.	C	Noted.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: DRAFT 30% Submision Stakeholder Comment Response Matrix
DOCUMENT DATE: 2024-10-04

REVIEWER: Boston Properties/Smithsonian Institution
REVIEW DATE: 2024-11-04
COMMENT RESPONSE DATE: 2024-11-08

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

COMMENT TYPE:
E – Editorial
ROK – Response
M – Mandatory

ACTION CODES: A – Designer agrees and will comply/take action
DE – Designer to evaluate
B – Designer disagrees for reasons noted
C – Answer provided; no action needed .

RESPONSE STATUS :
VRE – VRE will evaluate
D – Discretionary
DC – Delete Comment
B - Designer disagrees, discussion may be required

CN	DOCUMENT	DWG. N/ SPECT. SECT./ PAGE N.	AGENCY	DISCIPLINE	COMMENT	AC	RESPONSE
1	Existing Cond., Demolition, & Proposed	29, 37, 85	SI	ARCHITECTURE	Provide accoustic and visual barrier wall at Capitol Gallery building, West tower, southern wing closest to new rail line. Wall should allow clear access to south facing building wall for cleaning and maintenace of the building. Consider access of equipment to do so. Consider how best to treat accoustic and visual disruption along entire south property line with SI Capitol Gallery building. Consider a tall wall, possibly concrete or masonry, that can accomodate planting on both sides to create green space.	DE	The current scope of the L'Enfant project does not include modifications to the existing retaining wall, which is intended to remain in place. However, within the constraints of available funding and governing regulations, the request for an acoustic and visual barrier wall will be carefully evaluated by the project team during the 60% design development phase.
2	Proposed Plan & Sections	-401, 402, 403, S-2(	SI	ARCHITECTURE	Maximize extent of roof cover over platform length and at stairs and elevators. Current plans, sections and 3D renderings show very shallow cover for patrons. Experience with driving rains suggests that need to extend roof structure close to the outside edge of the platform.	C	The maximum width of the canopy is governed by the required train clearance envelope along each track, which extends approximately 4 ft. into the platform area on each side. The canopy width has already been maximized within this limitation.
3	Digital Screen	?	SI	ELECTRICAL	Provide digital screen/s at street level entrances to indicate delays or on-time status of trains for arriving patrons. Current condition requires patrons to walk up stairs to find out train status.	C	Design includes digital screens at the street-level for both of the station entrances.
4	Signage plans - Furniture	A-604, 605	SI	FFE	Maximize bench seating. Currently shown is not adequate. Perhaps signage can be between and above back to back benches.	A	Comment noted. Additional seating and layout of signage will be further evaluated by the project team during the 60% design development phase.
5	Proposed detail plans	A-402	SI	CIVIL	Platform width north and south of stairs (6'-10") and elevators (6-8") seems narrow for the volume of people using this station.	A	Additional clarification will be provided on the required platform widths, ADA constraints, and recommended design details.
6	Utility Demolition Plan	C-402	SI	ELECTRICAL	Under note 9, "Electric Line to be protected in place." Please ensure protections means/methods are specifed for electric utility line.	A	Agree, will be included in technical specifications as design advances.

CN	DOCUMENT	DWG. N/ SPECT. SECT./ PAGE N.	AGENCY	DISCIPLINE	COMMENT	AC	RESPONSE
7	Drawing Index	G-001	SI	ELECTRICAL	Please confirm electrical site plan, power and lighting for the entrance and platforms, one-lines, schedules and detail plans will be provided for review.	A	Project team will provide Boston Properties the architectural and electrical plans in the Draft 30% package. As these details were considered outside Boston Properties' purview, they were not included in original review package.
8	30% Drawings	S305	SI	STRUCTURAL	Is the existing wall shown in this detail the exterior of the neighboring building?	C	Yes, the existing wall in this detail is a representation of the BXP building exterior wall. Only partial extents are shown - it does extend lower into parking levels and upward to additional floor levels.
9	30% Drawings	S305	SI	STRUCTURAL	What is the plan for support of excavation for the tunnel construction along the property line?	C	Support of Excavation is a contractor means and methods responsibility, so the project team cannot provide definitive information on specific details or sequencing. However, the contract documents to be further advanced during upcoming final design phase will establish prescribed requirements the contractor must work within. The project team does not anticipate structural impacts to the BXP facility as a result of these temporary works, but will provide more information for BXP review as the design
10	30% Drawings	S305	SI	STRUCTURAL	The neighboring building is assumed to be founded on shallow spread footings. Confirm that these foundations have been considered in the design of the VRE structure foundations.	C	We received structural drawings for the adjacent building and considered the existing building foundation system in the components of the station design. The new VRE facility is to be founded on deep foundations, so all new loads from the corridor and trains is intended to be transferred from surface to the bearing stratum without increasing loads on existing building foundations.
11	30% Drawings	S305	SI	STRUCTURAL	The neighboring building has 3 subgrade levels of parking. Confirm that the VRE structure foundations will not increase the loading on the basement walls.	C	Confirmed. The 'load transfer platform' system shown in the BR-200 series drawings is specifically designed with intent to carry all loads from surface past existing strutures to bearing stratums below, thus avoid any new additional loading on existing structures.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2025-07-11

REVIEWERS: Draft 30% Stakeholders (District Department of Transportation - DDOT)
REVIEW DATE: 2025-07-11
COMMENT RESPONSE DATE: 2025-07-15

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

COMMENT TYPE:
E – Editorial
ROK – Response
M – Mandatory

ACTION CODES: A – Designer agrees and will comply/take action
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B – Designer disagrees for reasons noted
C – Answer provided; no action needed .

RESPONSE STATUS:
VRE – VRE will evaluate
D – Discretionary
DC – Delete Comment
B - Designer disagrees, discussion may be required

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
1	30% DDOT Design Waiver	3	-	DDOT		First paragraph states "based on the lack of any truck collision data…". What is the basis of this statement? Was a review of available crash data completed?		Will clarify crash data history and sources.
2	30% DDOT Design Waiver	3	-	DDOT		Paragraph 3: call out full name of Greenbook (Policy on Geometric Design of Highways and Streets)		Will update as requested
3	30% DDOT Design Waiver	3	-	DDOT		Paragraph 3: describe/show alternate route that provides 16' minimum clearance		Will update as requested
4	30% DDOT Design Waiver	4	-	DDOT		Paragraph 2: provide additional detail on "various concessions and exceptions". Will CSX be issuing a design exception/waiver for the design, or is DDOT the only agency being asked to waive their standards?		CSX is waiving a number of standards which is handled through the inclusion of details and notes on the drawings which are then approved by CSX. No formal waiver process is required.
5	30% DDOT Design Waiver	5	-	DDOT		Document the profile changes that would be required to provide 14'-6" clearance. I assume the impacts would extend west beyond 9th St and east beyond 2nd St, and require rebuilding all of those bridges to provide 14'-6" as well (or 16'-6" for 9th St). While construction cost is not a criterion used to assess DW requests, the scope of the construction impacts to rail and vehicular traffic would be considered, and would likely be unacceptable to both the District and CSX.		Will update as requested

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6	30% DDOT Design Waiver	5	-	DDOT		Paragraph 4: is the existing stone wall historic or eligible for listing?		The rail corridor and retaining wall is considered historic and the project is currently advancing the NEPA and Section 106 process with FTA and signatories.
7	30% DDOT Design Waiver	5	-	DDOT		Paragraph 6: restate to say that meeting the minimum vertical clearance by lowering the grade of 6th St is not feasible because of the proximity of adjacent intersections and existing utilities.		Will update as requested
8	30% DDOT Design Waiver	5	-	DDOT		Paragraph 6: state that lowering the grade of 6th St could potentially impact existing 30" gravity sanitary sewer and 60" trunk storm sewer.		Will update as requested
9	30% DDOT Design Waiver	6	-	DDOT		Paragraph 2: move this paragraph to the beginning of Section 5.		Will update as requested
10	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Provide a profile showing the limits of reconstruction needed to fully meet design standards		Will update as requested
11	DRAFT 30% DRAWINGS	G-002	GENERAL NOTES	DDOT		Missing Utility Contact Table- DDOT requires a utility owner contact list with agency names, contacts, and numbers. Not provided on cover or general notes sheet.		Will update as requested
12	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Ensure canopy downspout discharge is tied to drainage System. Discharge into public ROW without control is non-compliant.		Will review drainage design and update accordingly

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
13	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Ensure demolition work near Hancoock Park requires NPS and DDOT coordination. Add callout notes for coordination.		Will add additional callout notes as requested
14	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		All work related to DDOT should be done as per latest edition of DDOT Standard Specification and Standard Drawings		Will add notes identifying work requiring conformance to DDOT Standard Specification and Standard Drawings
15	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		All materials to be used for DDOT related work shall be approved by DDOT prior to their use.		Acknowledged and will incorporate into contract.
16	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		All mix designs to be used for DDOT related work shall be approved by DDOT prior to their use.		Acknowledged and will incorporate into contract.
17	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Show the construction linit for the poject. From Start point - End Point.		As this is a 1+ mile rail corridor project, Begin/End project are called on the Track sheets. Will add Start/End to streets as well.
18	30% DDOT Design Waiver	3	-	DDOT		Section 3 Current Design Criteria - 2nd Paragraph - provide alternate routes with 16'-0" minimum vertical clearances and attach to this design waiver.		Will update as requested
19	30% DDOT Design Waiver	3	-	DDOT		Section 2 Existing and Proposed Conditions - provide and attach the traffic incident data to support the lack of truck collision to this design waiver.		Will update as requested

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
20	30% DDOT Design Waiver	4	-	DDOT		Figure 3 is showing the deck plate girders with concrete barrier option instead of the thru-girder option which is not shown in this design waiver. Note that the submitted 30% plans show both options. Has VRE decided that the deck plate girder option is the option to take to final design?		Section 106 signatories requested the through plate girder as exterior members consistent with Long Bridge project, so concrete barrier option will be eliminated.
21	DRAFT 30% DRAWINGS	BR-302	6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION	DDOT		PROPOSED TRANSVERSE SECTION - given that the proposed underclearance is less than the standard 16'-0" minimum, have the crash beams to protect the fascia girders been evaluated to provide additional safety for the rail facility as well as 6th Street below?		The exterior through plate girders only support maintenance walkway areas and effectively serve as crash beams.
22	DRAFT 30% DRAWINGS	BR-302	6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION	DDOT		PROPOSED TRANSVERSE SECTION - given that the proposed underclearance is less than the standard 16'-0" minimum, have the crash beams to protect the fascia girders been evaluated to provide additional safety for the rail facility as well as 6th Street below		The exterior through plate girders only support maintenance walkway areas and effectively serve as crash beams.
23	DRAFT 30% DRAWINGS	BR-302	6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION	DDOT		Between the two superstructure options, will the proposed minimum vertical celarance remain the same @ 14'-0" for both options?		Yes, both superstruture types propose same vertical clearance, however through plate girders have been selected as exterior members.
24	DRAFT 30% DRAWINGS	BR-302	6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION	DDOT		Indiate that the two proposed transverse sections shown are two separate options in the detail titles to make clear.		Options eliminated and only the exterior through plate girders with interior deck plate girders will be advanced.
25	DRAFT 30% DRAWINGS	BR-302	6TH STREET SW BRIDGE REPLACEMENT TRANSVERSE SECTION	DDOT		Given the shallowness of the existing masonry pier foundations, why aren't they specified to be completely removed along 6th Street?		Additional evaluation of demolition limits will be analyzed in 65% design.
26	DRAFT 30% DRAWINGS	BR-301	6TH STREET SW BRIDGE REPLACEMENT PLAN AND LONGITUDINAL SECTION	DDOT		LONGITUDINAL SECTION - are the existing abutments to remain serve any structural functions (say providing lateral support for the proposed abutment drilled shafts for example) other than earth retainage? Can they be removed and replaced with a new retaining wall/feature that is closer to the new abutment providing additional sidewalk space along 6th Street?		Section 106 signatories have strongly requested retaining existing masonry abutments. The existing abutments will function to retain earth while bridge live loading is transferred below with drilled shaft foundations.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
27	30% DDOT Design Waiver	UNDERCLEARANCE WAIVER MEMO REQUEST		DDOT		Need to be approved and signed by DDOT Chief engineer.		Ackowledged and will advance for signature during final design.
28	DRAFT 30% DRAWINGS	BR-001 / BR-300	BRIDGE GENERAL NOTES /6TH STREET SW BRIDGE REPLACEMENT KEY PLAN AND PROFILE	DDOT		Add bridge number that is associated with existing DDOT bridge number to the plans (eg. Verify 0520-RR for bridge over 6th street and 0519-RR for bridge over 7th street)		Will update as requested
29	DRAFT 30% DRAWINGS	BR-001 / BR-300	BRIDGE GENERAL NOTES /6TH STREET SW BRIDGE REPLACEMENT KEY PLAN AND PROFILE	DDOT		Will using higher steel strength for girders allow increasing underclerance?		Increasing steel strength does not result in ability to use shallower steel members and increase vertical clearance, as girder depth is governed by serviceability requirements which are functions of stiffness rather than strength.
30	DRAFT 30% DRAWINGS	BR-001 /BR-300	BRIDGE GENERAL NOTES /6TH STREET SW BRIDGE REPLACEMENT KEY PLAN AND PROFILE	DDOT		Mark on the plans about steel plate girder size, is the girder size verified by the preliminary design?		Will add full details on steel member sizes for 65% submission.
31	DRAFT 30% DRAWINGS	BR-001 / BR-301	BRIDGE GENERAL NOTES /6TH STREET SW BRIDGE REPLACEMENT KEY PLAN AND PROFILE	DDOT		Profile should show the top of rack elevation, top of the girder elevation and bottom of girder elevation		Will add additional details as requested.
32	DRAFT 30% DRAWINGS	G-301 - 302	EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN / EXISTING AND PROPOSED PROPERTY LINE AND EASEMENT PLAN - AERIAL	DDOT		Will the existing easements need to be updated to cover the expanded bridge structure(s) and fourth track? What's the relation between the existing and proposed aerial and ROW easements, and where are you in the process?		Intent is to advance all easements and acquisitions during upcoming 65% design phase, which will include close coordination with DDOT, VPRA, NPS, CSX, and private property owners. Does DDOT have documentation for existing easements for the historic railroad bridges over 6th and 7th Street SW? VRE/VPRA understanding is that DDOT does not have the ability to grant easements without legislation. For the Long Bridge Project at Maine Avenue SW VPRA will obtain DDOT agreements for ROW/Aerial Easement via construction permits. It is assumed the same would apply at the 7th and 6th Street SW bridges.

CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
33	DRAFT 30% DRAWINGS	A-102	6TH STREET SW ENTRANCE PLAN	DDOT		DDOT is considering the public ROW near the 6th St SW entrance as a potential location for a Capital Bikeshare station which would require an area of 40-50 feet in length and at least 6 feet in width. Would it be possible to provide an electrical conduit along/through the abutment for potential use by the bikeshare station?		Project will coordinate further with DDOT to obtain additional details and evaluate how these amenities might be incorporated into the 6th St entrance area.
34	DRAFT 30% DRAWINGS	A-102	7th STREET SW ENTRANCE PLAN	DDOT		Would VRE be willing to incorporate inverted U-racks for short-term bike parking into the landscaped areas next to the 6th St SW entrance?		Project will coordinate further with DDOT to obtain additional details and evaluate how these amenities might be incorporated into the 6th St entrance area.
35	30% DDOT Design Waiver	6	-	DDOT		Waiver Memo p6: The 6th St SW bridge (BRKEY 520-RR) is currently posted at 13'6" not 13'0" and the actual underclearance is currently 13.86. (The memo correctly states this on p2, but not on p6.) Having a 14" vertical underclearance would allow at most a 13'9" posted clearance, not a 14'0" posted clearance.		Will update page 6 as noted.
36	30% DDOT Design Waiver	2	-	DDOT		Please use "posted" rather than "signed" for consistency and clarity when referring to posted clearances		Will update as requested.
37	30% DDOT Design Waiver	5	-	DDOT		Please update the first paragraph in the Summary of Proposed Design section to reflect that the actual underclearance -- my understanding is that the minimum underclearance for BRKEY 520-RR is 13.86.		Will confirm existing underclearance with project survey and update as requested.
38	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Please identify and distinguish between actual vertical minimum undercleances and posted clearances throughout this memo.		Will update as requested.
39	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Will there be any change to the underclearance of the bridge over 7th St? Or any of the other bridges along this stretch?		Project is providing current 7th St minimum vertical clearance or greater with the bridge widening. No other bridges are being impacted.

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40	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Based on DDOT Work Zone Management Manual, the project is classified as significant where it needs a comprehensive Type C Transportation Management Plan (TMP). This Type C TMP must include MOT plans that detail the specific traffic control measures to be implemented, and a detailed report analysis and strategy for managing the project's impact. Key elements to be addressed within this report are a public information strategy and traffic operation. The traffic operation builds upon the MOT and includes analysis using simulation software like Vissim or Sychro.		Project team to incorporate these efforts into 65% design phase.
41	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		The 30% submittal package is not complete. Provide the completed HSWM checklist spreadsheet, provide specific page numbers and paragraph reference for each line item.		Many of the HSWM checklist items do not apply to a railroad bridge project. For the roadway design elements, the project team needs concurrence from DOEE and DC Water for new utility and stormwater work in the public space areas. The project team will coordinate further with DDOT and incorporate these efforts into the 65% design phase.
42	DRAFT 30% DRAWINGS	GENERAL	-	DDOT		Provide a separate drainage report per the HSWM checklist		For the roadway design elements, the project team needs concurrence from DOEE and DC Water for new utility and stormwater work in the public space areas. The project team will will coordinate further with DDOT and incorporate these efforts into the 65% design phase.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (DOB)
REVIEW DATE: 11/01/2024
COMMENT RESPONSE DATE: 2/3/2025

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

COMMENT TYPE:
E – Editorial
ROK – Response
M – Mandatory

ACTION CODES: A – Designer agrees and will comply/take action
DE – Designer to evaluate
B – Designer disagrees for reasons noted
C – Answer provided; no action needed .

RESPONSE STATUS:
VRE – VRE will evaluate
D – Discretionary
DC – Delete Comment
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1	DRAFT 30% DRAWINGS	86 (GA-002)	EGRESS SUMMARY	DOB	ARCHITECTURAL	The DC Building Codes would require 3 exits. That is based upon your 944 possible occupants. Below is a copy of Table 1006.3.1 for the number of exits based upon your occupancy plan. [see email] I have one additional question, how did you determine 944 occupants? Since it is 57 shy of 1,001+ we would asked how 944 was determined.	C	303.4 Proposed Platform Occupancy Factor A-3 (Airport Terminal Waiting Area) TABLE 1004.5 Maximum floor area allowances per occupant. Assembly without fixed seats (standing space) 15 sq. ft. Platform Sq. Ft. (without stairs and elevators) = 14,160 / 15 sf ft = 944 occupants The intent is to egress people with four (4) exits. One exit off each end of the station platform and one exit down the stairs to each street level entrance. Exits at the end of the platform are 'Areas of Safe Dispersal'. Exits should be in a public way, however, this is not possible so, we are looking for an exception, exit into a safety dispersal area. The safety dispersal area should comply with the 4 requisites shown below. 1028.5 Access to a public way. The exit discharge shall provide a direct and unobstructed access to a public way. Exception: Where access to a public way cannot be provided, a safe dispersal area shall be provided where all of the following are met: 1. The area shall be of a size to accommodate not less than 5 square feet (0.46 m2) for each person. 2. The area shall be located on the same lot not less than 50 feet (15 240 mm) away from the building requiring egress. 3. The area shall be permanently maintained and identified as a safe dispersal area. 4. The area shall be provided with a safe and unobstructed path of travel from the building. Requisite #1- Due to the limited space available between the tracks at either end of the station platform, it is proposed to allow for net floor area allowance of 3 sq. ft. per person in place of 5 sq. ft. for the area of dispersal. (1026.4.1. Refuge Area) Further encroachment towards unprotected railway is not preferred. Requisite #2 – It is maintained that there is not a building (no walls) since it is a Platform (open air). This has been accepted in the recent past.

PROJECT: VRE L'ENFANT Station and Fourth Track Project
PHASE: DRAFT 30% Design
DOCUMENT NAME: Draft 30% Comment Response Matrix
DOCUMENT DATE: 2024-11-20

REVIEWERS: Draft 30% Stakeholders (Amtrak)
REVIEW DATE: 1/24/2025
COMMENT RESPONSE DATE: 2/17/2025

LEGEND:

COLUMN TITLES: CN – Comment Number AC – Action Code CT – Comment Type RC – Reviewer Code RS – Response Code

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CN	Document	DWG. N/ SPECT. SECT./ PAGE N.	SHEET TITLE	Agency	Discipline to Provide Response	COMMENT	AC	RESPONSE
1	DRAFT 30% DRAWINGS	19 (G-209)	TRACK STAGING SCHEMATIC FINAL CONDITION	AMTRAK	TRACK	Is it still VRE's intention to have a universal crossover at LE between tracks 3 and 4 once Long Bridge is in service? This would be required to allow a NB intercity train to overtake a NB commuter train stopped at L'Enfant Station by using the SB platform/track and the universals at LE/CP Virginia.	DE	A universal crossover between tracks 3 and 4 at LE is not proposed as part of the VRE L'Enfant Station and Fourth Track or Long Bridge projects, and was not included as part of the DRPT/CSXT Comprehensive Rail Agreement. As part of the final 30% design the project team explored the feasibility of alternative LE and CP Virginia interlocking configurations and construction phasing to best support rail operations. However, horizontal and vertical geometric constraints make the addition of an additional number 15 crossover between tracks 3 and 4 at LE interlocking infeasible.
2	DRAFT 30% DRAWINGS	General	-	AMTRAK	GENERAL	Amtrak will need to review the signal design drawings once they are available in order to confirm consistency with adjacent Amtrak controlled track as well as to ensure consistency with the approach for separate control of freight and passenger rail mutually agreed upon by VPRA and Amtrak	C	Amtrak should coordinate directly with CSXT, who is responsible for the signal design for the RF&P cooridor projects including the L'Enfant Station and Fourth Track and Long Bridge Projects.
3	DRAFT 30% DRAWINGS	General	-	AMTRAK	GENERAL	Any temporary or permanent operational changes will need to be analysed and identified by VRE/VPRA for discussion with Amtrak prior to approval	C	VRE, VPRA and the Project Team will continue to coordinate potential track and operational changes with Amtrak and CSXT.
4	DRAFT 30% DRAWINGS	13 (G-203)	TRACK STAGING SCHEMATICS	AMTRAK	GENERAL	In stages 1, 2 and 3a Amtrak and VRE will share a single track connection to Union Station. Since Amtrak doesn't stop at L'Enfant, an Amtrak train can get around a stopped VRE train on phases 3b and 3c even though the line highlight doesn't show it. Would it be possible for VRE and Amtrak to have separate line markings on the Track Staging Schematics?	A	The schematics will be updated to include separate VRE and Amtrak route markings for all possible operational routings through the station area.
5	DRAFT 30% DRAWINGS	13 (G-203)	TRACK STAGING SCHEMATICS	AMTRAK	GENERAL	Do the train schedules support Amtrak and VRE sharing a single track connection to Union Station in stages 1, 2 and 3a? Or is a temporary LH 2 to 1 XO needed in CP Virginia in those phases? Has any modeling been done? Would recommend that at least stringlines or excel be used to highlight the single track platform occupancy.	DE	As part of the final 30% design the project team further explored the feasibility of alternative CP Virginia interlocking configurations and construction phasing to best support rail operations. The updated layout of the interlocking, which includes the addition of this crossover will require coordination and agreement between the operating railroads during 60% design. No operations analysis or modeling was included in the current scope of work. High level analysis will be considered as part of the Final Design Phase.

Appendix G

Track and Interlocking Updates Memo

L'Enfant Station and Fourth Track Project

To: VRE

Date: July 25, 2025
Project #: 39641.00

From: VHB Design Team

Re: Track and Interlocking Updates Memo
VRE L'Enfant Station and Fourth
Track Improvements Project

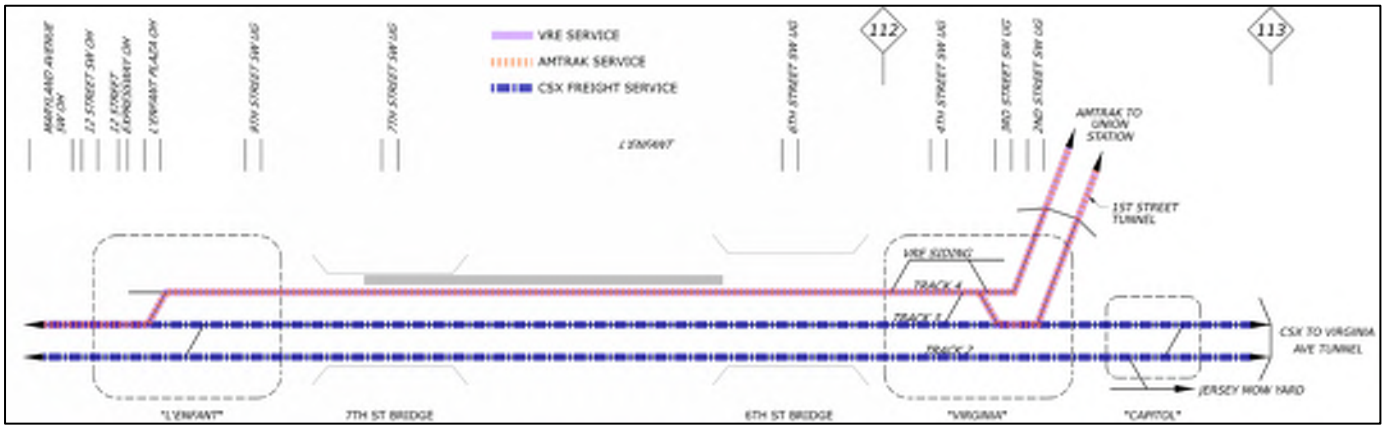
The purpose of this memo is to document the approach and changes made during the review of proposed adjustments to both Virginia and LE interlockings in response to comments received by VPRA, Amtrak, and CSX during the Draft 30% Submission review process.

1. Virginia

Existing Layout

The current layout of Virginia is shown in *Figure 1-1: Existing Track Configuration* and includes three mainline tracks and a VRE siding with a set of universal #15 crossovers between Tracks 3 & 4, as well as a #10 turnout and #10 crossover off Track 4 to access the VRE Siding. Track 4 is primarily used by VRE and Amtrak passenger trains operating between Washington Union Station and points south of Washington, DC, including the single side platform at L'Enfant Station on Track 4. Tracks 2 and 3 are primarily used by CSX for through moves to the south via Long Bridge and to the north to the Virginia Avenue tunnel, although Track 3 is also used by some passenger trains that bypass L'Enfant Station, including non-revenue movements.

Figure 1-1: Existing Track Configuration

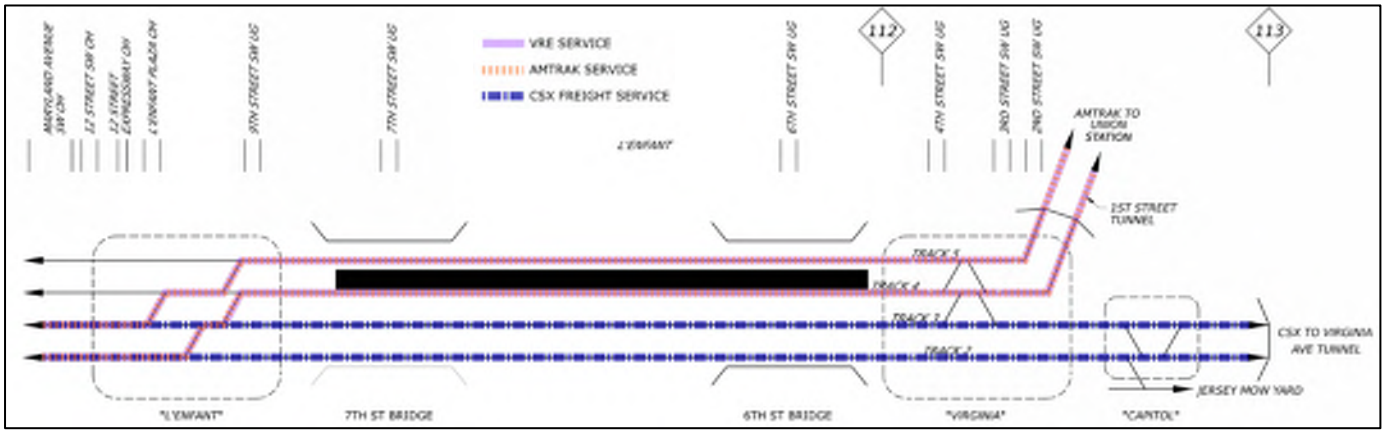


Proposed Draft 30% Layout

The proposed layout of Virginia shown in *Figure 1-2: Proposed Track Configuration* is based on what was shown in the Draft 30% Plans and includes changing the connections coming out of the First Street tunnel, renumbering the tracks to reflect these new connections, and the addition of a new #15 crossover between Tracks 4 and 5 to replace the existing turnout. This proposed layout at Virginia also matches what is shown in the VPRA/CSXT Comprehensive Rail Agreement Exhibit E (dated 03/24/2021) and prioritizes use of Tracks 4 and 5 for VRE and Amtrak passenger service with access to the new center island

platform and Tracks 2 and 3 for CSX freight operations. In addition, the proposed layout would include a new crossover at the Capitol Interlocking.

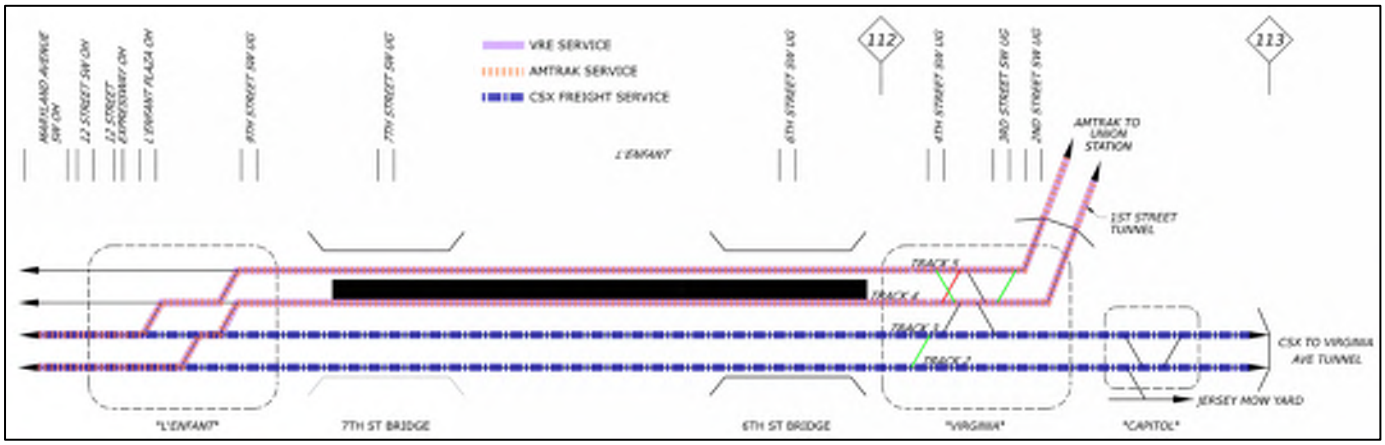
Figure 1-2: Proposed Track Configuration



Proposed Changes to Draft 30% Layout

CSX, VPRA, and Amtrak provided comments on the Draft 30% Plans recommending modifications to the layout of the Virginia interlocking. The suggested modifications to the Virginia layout include moving one of the proposed crossovers and the addition of two new crossovers. The relocated crossover is shown in red, and the new crossovers are shown in green in *Figure 1-3: Proposed Virginia Changes*. These modifications would provide for universal connections between Tracks 2 and 3 to either of the tracks in the First Street tunnel, as well as from Tracks 4 or 5 to either of the tracks approaching the Virginia Avenue Tunnel in conjunction with Jersey interlocking.

Figure 1-3: Proposed Virginia Changes



Constraints

The proposed interlocking changes to Virginia are constrained by the surrounding bridge and roadway infrastructure, as well as the proposed horizontal and vertical track geometry. Currently, all Virginia crossovers are located on tangent track between the 4th and 3rd Street SW bridges.

- To add the proposed new crossovers, the limits of Virginia will need to be extended beyond the limited available length between these bridges.
- To the cardinal east and railroad north of the 3rd Street Bridge, the proposed condition shown in the Draft 30% Plans realigns Tracks 4 and 5 with an adjustment to the connection at the existing signal cantilever leading to the First Street tunnel.
- To the cardinal west and railroad south of the 4th Street Bridge, Tracks 2 and 3 are on tangent with modifications to the profile to account for the track raise at 6th Street SW.
- Also to the cardinal west and railroad south of the 4th Street Bridge, Track 4 is on tangent and Track 5 diverges from Track 4 to create the necessary width for the proposed center island platform. Both Tracks 4 and 5 require profile increases to account for the track raise at the 6th Street Bridge.

Results

The design team investigated the feasibility of each of the suggested modifications with the constraints outlined above.

- The proposed crossover between Tracks 4 and 5 to the east and railroad north of 3rd Street as shown in *Figure 1-4: Proposed Track 4 and 5 East Crossover Configuration* and as highlighted in *Figure 1-5: Proposed Track 4 and 5 East Crossover Track Chart* is feasible with no modifications to the current design as there is enough tangent space between the 3rd Street Bridge and the beginning of the curves to the First Street tunnel to fit a #15 crossover.

Figure 1-4: Proposed Track 4 and 5 East Crossover Configuration

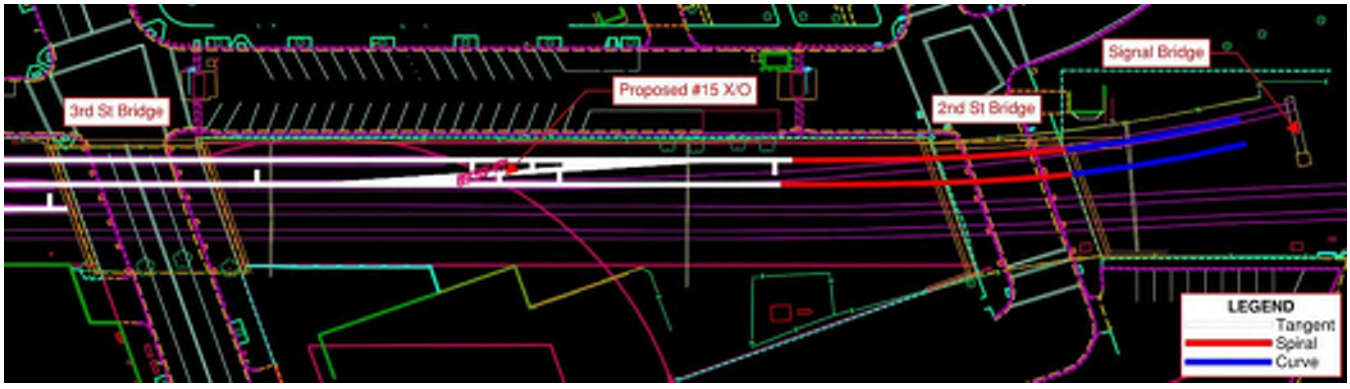
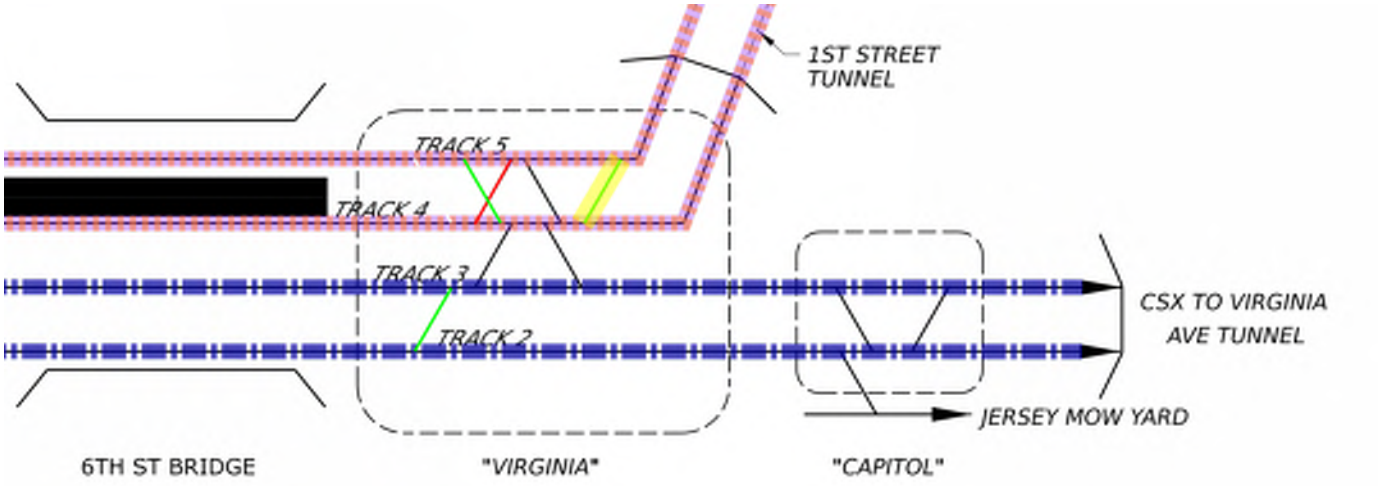


Figure 1-5: Proposed Track 4 and 5 East Crossover Track Chart



- The proposed crossover between Tracks 2 and 3 to the west and railroad south of the 4th Street Bridge is feasible with minor modifications to the proposed profile to avoid conflicts between the vertical curves and the proposed #15 crossover limits as shown in *Figure 1-6: Proposed Track 2 and 3 Crossover Configuration* and as highlighted in *Figure 1-7: Proposed Track 2 and 3 Crossover Track Chart*.

Figure 1-6: Proposed Track 2 and 3 Crossover Configuration

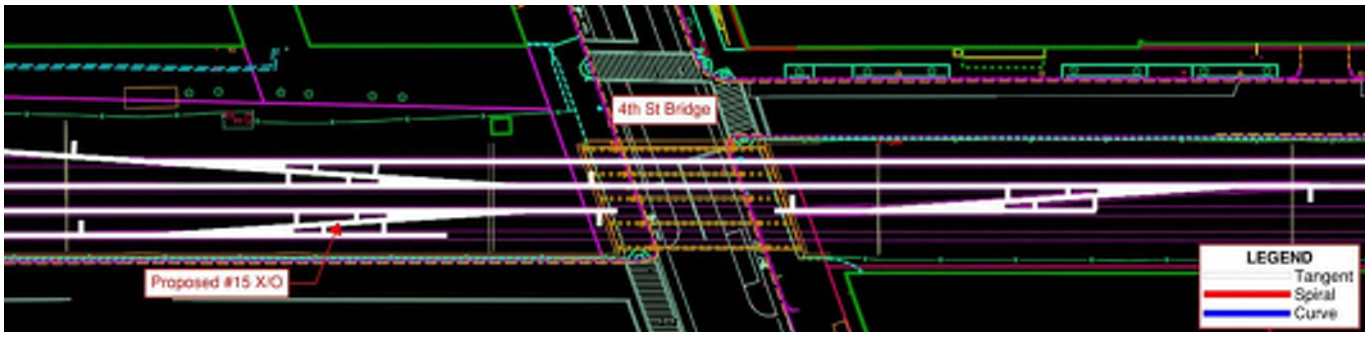
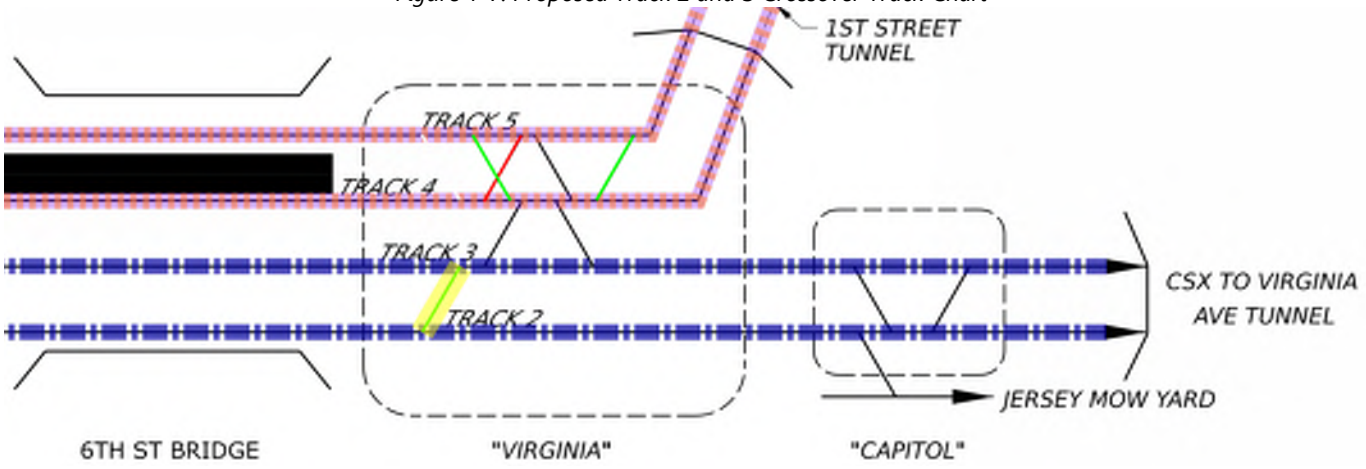


Figure 1-7: Proposed Track 2 and 3 Crossover Track Chart



- The proposed connection between Tracks 4 and 5 to the west and railroad south of the 4th Street Bridge is feasible, but the crossover will require a different switch layout compared to a traditional crossover due to the need for Track 5 to diverge enough to widen for the proposed platform. By orienting the switches as shown in *Figure 1-8 Proposed Track 4 and 5 West Crossover Configuration* and as highlighted in *Figure 1-9: Proposed Track 4 and 5 West Crossover Track Chart*, the angle of the switch could be utilized like a curve to facilitate Track 5 diverging for the proposed platform, which allows for a #15 crossover to fit. However, this would require all trains utilizing Track 5 to take a diverging move through the turnout to stay on Track 5, which will add to maintenance needs. This would also have a minor impact to the platform and require the edge to be tapered for the new geometry.

Figure 1-8: Proposed Track 4 and 5 West Crossover Configuration

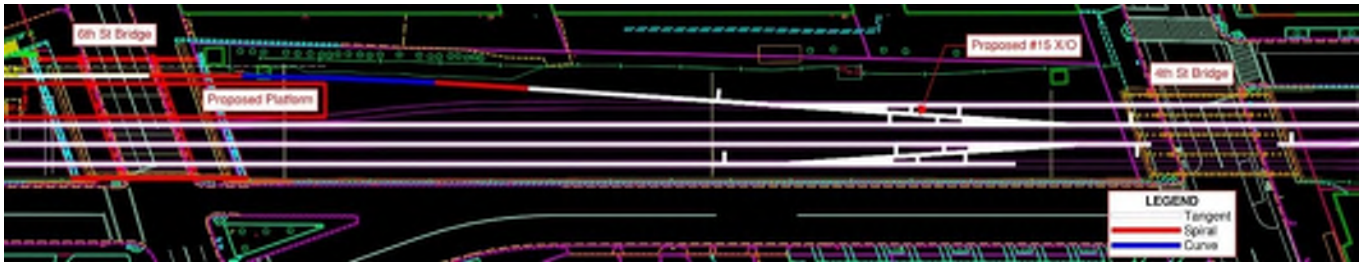
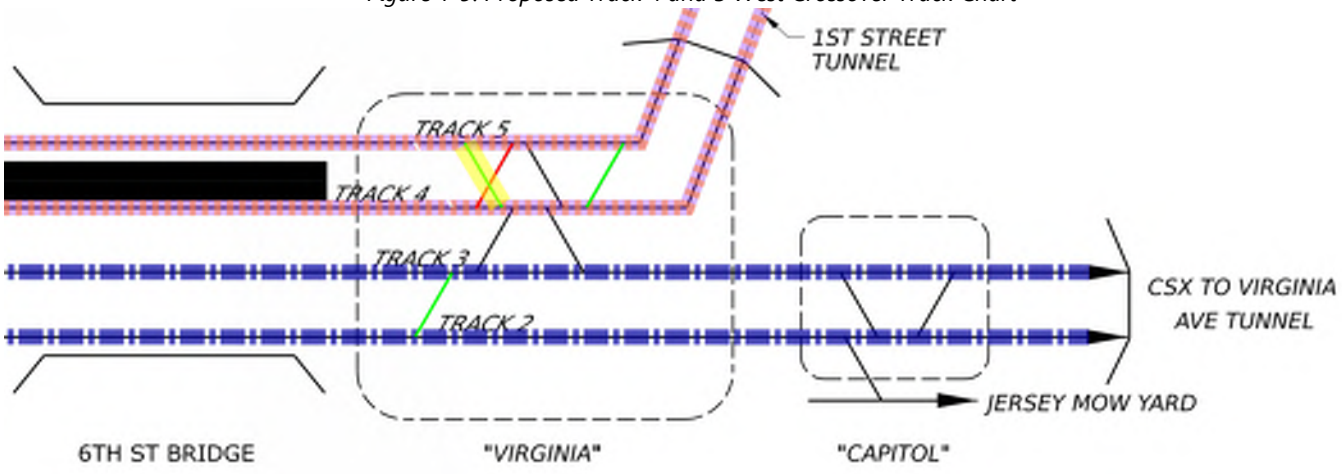


Figure 1-9: Proposed Track 4 and 5 West Crossover Track Chart



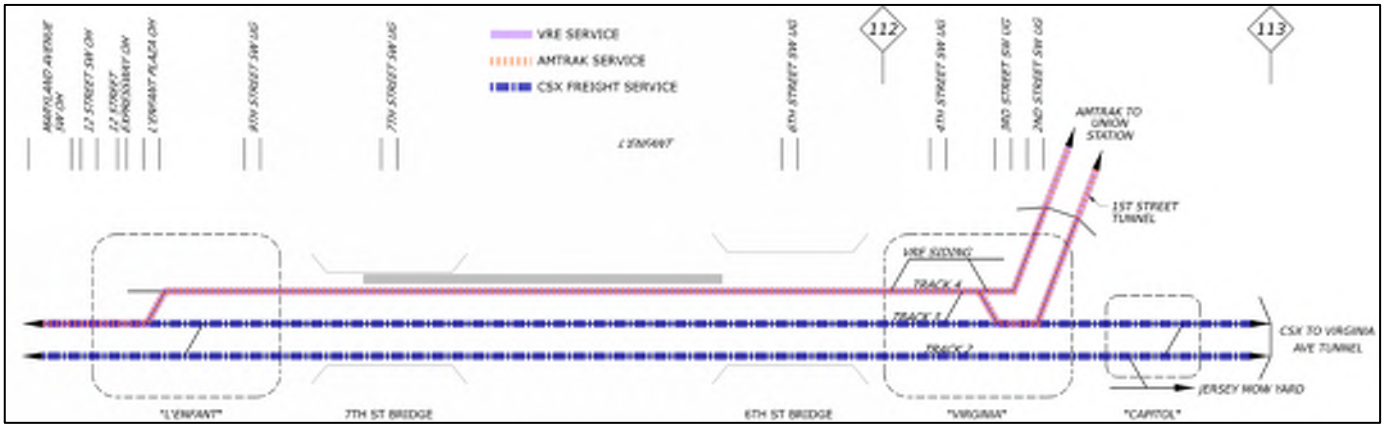
- Additional crossover sizes and combinations were considered at this location. Larger crossovers such as a #20 could provide for smoother transitions, but the diverging angle is too small and the track centers do not widen quickly enough to allow for the proposed center island platform. Similar issues arise if the switch were to be an equilateral as the diverging angle would effectively be cut in half.

2. LE Interlocking

Existing Layout

The current layout of LE interlocking is shown in *Figure 2-1: Existing Track Configuration* and includes three mainline tracks connected by two parallel #15 crossovers. Track 4 is primarily used by VRE and Amtrak. VRE uses Track 4 to access the single side platform at L'Enfant Station and to access the First Street tunnel to Union Station via the #15 crossover between Tracks 3 and 4. Amtrak uses Track 4 to access the Frist Street tunnel to Union Station but does not stop at the side platform at L'Enfant Station. Tracks 2 and 3 are primarily used by CSX for through moves to the south via Long Bridge and to the north to the Virginia Avenue tunnel.

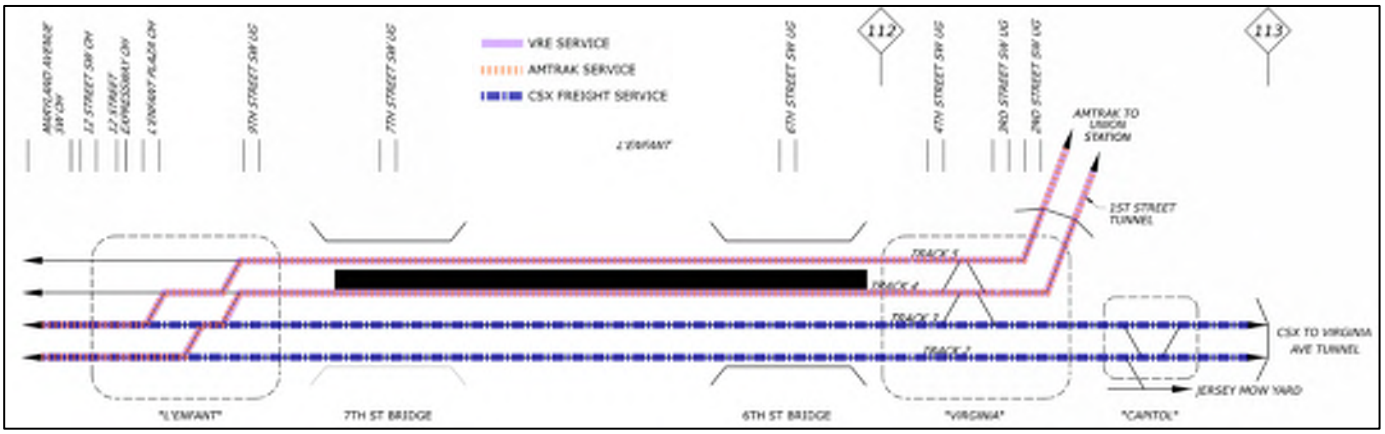
Figure 2-1: Existing Track Configuration



Proposed Draft 30% Layout

The proposed layout of LE interlocking shown in *Figure 2-2: Proposed Track Configuration* is based on what is included in the Draft 30% Plans and includes an added fourth track and two additional parallel #15 crossovers as well as renumbering the tracks. The proposed layout would provide new parallel movements between Tracks 3 and 4 and Tracks 4 and 5 primarily for VRE to access the new center island platform and for both VRE and Amtrak passenger trains to access the First Street tunnel. These connections would also be required to support construction of the station and 6th Street SW bridge.

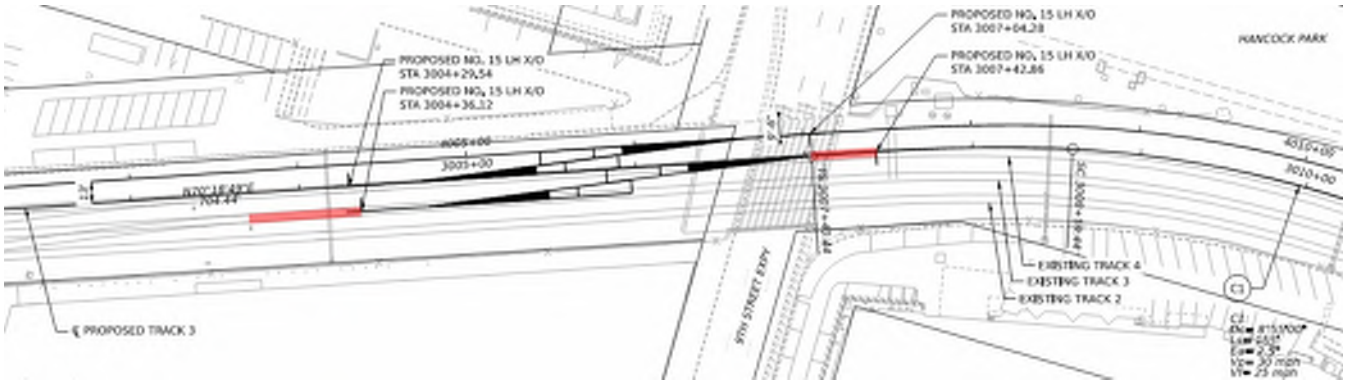
Figure 2-2: Proposed Track Configuration



Proposed Changes to Draft 30% Layout

VPRA, Amtrak, and CSX provided comments during the review period of the Draft 30% Plan Set that raised concerns about the horizontal geometry and spacing of the proposed crossovers within LE interlocking. Specifically, concerns were raised about the minimal distance between the points of switch (PS) of the existing crossovers between Tracks 2 and 3 and the proposed crossover between Tracks 3 and 4, as well as the proposed spiral limits of the curve on Track 4 overlapping into the proposed crossover between Tracks 3 and 4. These two areas of concern are highlighted in red and shown in *Figure 2-3: Draft 30% Track Layout* below.

Figure 2-3: Draft 30% Track Layout



The design team met with CSX on January 21st, 2025, to discuss these concerns as well as potential design changes to address them including reducing speeds and crossover sizes. During this meeting CSX noted a preference to deconflict the spiral and PS and leave the shorter spacing between switch points, rather than reducing the switch sizes and speeds. At the conclusion of the discussion, CSX recommended that the design maintain a No. 15 crossover, and to make adjustments to the alignment to shift the spiral out of the switch and maximize the distance between points of frog to a minimum of 200 feet.

Constraints

The proposed changes to maintain at least 200 feet between the points of frog between the existing and proposed crossovers as well as to pull the spiral out of the proposed crossover are constrained by multiple factors.

- The existing crossovers within LE interlocking are to remain in their current configuration and location as it is not feasible to move them further south due to the large sag curve that ends at the L'Enfant Plaza SW bridge
- The proposed Track 5 alignment and required retaining wall approaching the 7th Street bridge must not require permanent encroachment onto Hancock Park property (NPS Reservation 113)
- Keeping all proposed infrastructure within the existing railroad right-of-way limits at Hancock Park and elsewhere is a primary goal of the VRE project in order to avoid adverse environmental impacts, facilitate completion of the National Environmental Policy Act (NEPA) review, and maintain the overall project schedule.
- The current NEPA class of action is a documented categorical exclusion (DCE) premised on a design that avoids permanent impacts to Hancock Park, adverse effects to the property under Section 106 of the National Historic Preservation Act, and permanent use of the park property under Section 4(f) of the U.S. Department of Transportation Act of 1966.
- Changes to the design that result in additional impacts to Hancock Park beyond those identified to date through the NEPA process may jeopardize the ability of the project to qualify as a DCE, which would then require the completion of an environmental assessment and/or environmental impact statement and increase the NEPA schedule by up to two years or more. At a minimum, such changes would require revisions to the completed environmental analyses, including re-starting the Section 106 consultation process and completing a Section 4(f) evaluation, resulting in months of delay to the project schedule.

With the location and size of the proposed crossover set, the proposed design of Track 4 and Track 5 curvature must be modified to shift the spiral out of the proposed crossover limits, while maintaining a minimum 13-foot clearance between the proposed track centers.

Results

The design team evaluated options to move the proposed spiral out of the proposed crossover limits with the constraints outlined above. The preferred option maintains similar geometry to what was included in the Draft 30% Plans but is able to reduce the spiral lengths by reducing the speed for passenger trains from 30mph to 25mph and freight from 25 to 20mph.

- The preferred option layout adjusts the proposed curvature of both Tracks 4 and 5 by slightly sharpening the curves to shorten the length of the arc, as well as reducing the proposed speeds by 5mph to shorten the required spiral lengths as well. See *Figure 2-4: Reduced Speed Curvature* and *Figure 2-5: Reduced Speed Curvature Section* below.
    - For Track 4 the Draft 30% Plans utilized an 8°-55' curve with 155-foot spirals at 30mph resulting in an overall length of approximately 595 feet.
    - By sharpening the curve to 9°-15' and utilizing a speed of 25mph the spirals were able to be reduced from 155 feet to 124 feet resulting in an overall length of approximately 550

feet, approximately 45 feet in savings that pulls the spiral out of the proposed crossover.

- The sharpened curve shifts the alignment of Track 4 approximately 2 feet closer to Hancock Park with the same adjustment for Track 5.
- The adjustment of Track 4 and Track 5 approximately 2 feet closer to Hancock Park for this preferred layout is only possible with a minor reduction of train speeds.
  Currently, the train speeds in this section of the corridor are split at Virginia with points railroad north being 25mph for both passenger and freight, and points railroad south being 30mph passenger and 25mph freight.
- By reducing the speed 5mph for the curves at Hancock Park the proposed design would move the speed change point from Virginia further railroad south to LE interlocking, a distance of approximately 2,000 feet.
- For VRE passenger trains, this shift of the speed change point would not have any impact on service, as trains would be departing or approaching the station stop at the proposed platform.
- For Amtrak passenger trains, this shift of the speed change point would add approximately 9 seconds of travel time, based on the 5-mph difference for 2,000 feet.
- This speed reduction would require VRE, VPRA, and Amtrak approval.

Figure 2-4: Reduced Speed Curvature

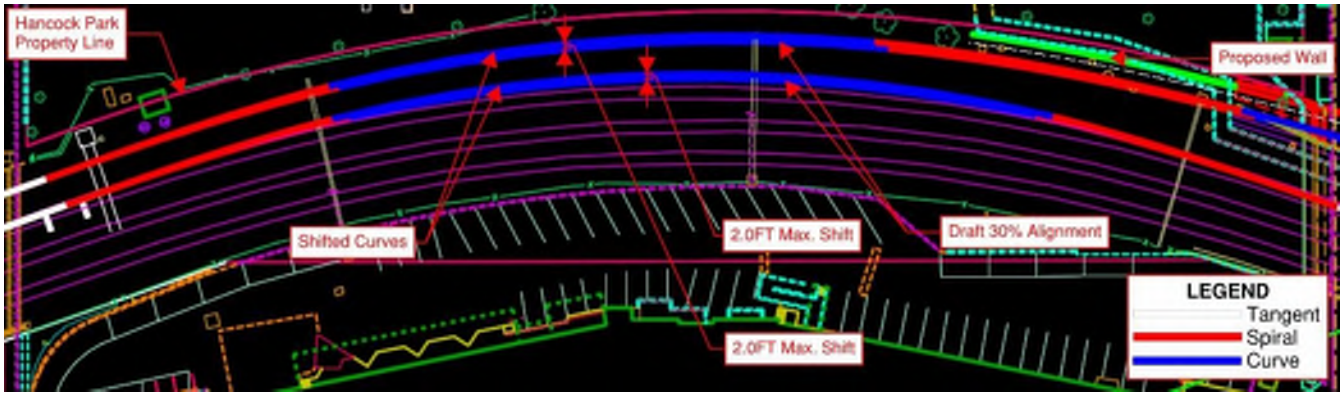
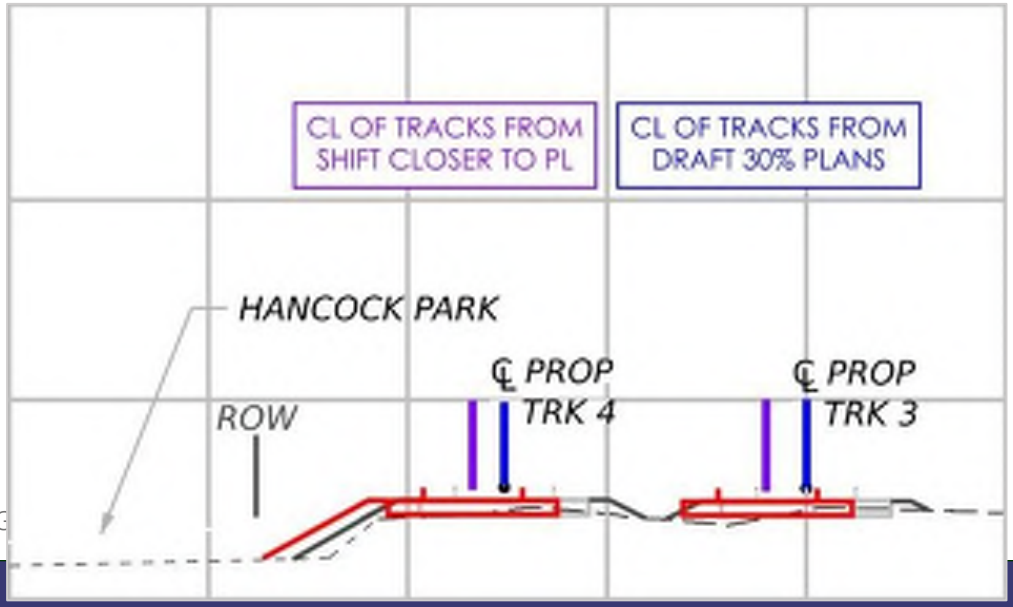


Figure 2-5: Reduced Speed Curvature Section



3. Conclusion

In response to comments received from CSX, VPRA, and Amtrak on the Draft 30% Plans, the design team evaluated proposed modifications to both the Virginia and LE interlockings with the conclusions outlined below.

- The proposed changes to Virginia are feasible but require adjustments to the profiles of Tracks 2 and 3 along with an atypical layout of the proposed crossover between Tracks 4 and 5 to the west of the 4th Street bridge.
- The proposed changes to LE interlocking shift the switch out of the spiral and shifts Track 4 and Track 5 approximately 2 feet closer to Hancock Park with minimized impacts to parkland and trees. This layout would also reduce the design speed for trains 5 mph on Tracks 4 and 5, shifting the speed change from Virginia to LE Interlocking, approximately 2,000 feet.

Appendix H

Virginia Avenue Wall Memo

L'Enfant Station and Fourth Track Project

This memo was completed prior to the VRE requested update to track numbering per CSX direction from proposed track numbers 1-4 to track numbers 2-5, which is reflected in the Final 30% planset.

To: VRE – Dagmawie Shikurye
Date: May 15, 2024
Project #: 39641.00

From: VHB Design Team
Re: VRE L'Enfant Station – Virginia Avenue Retaining Wall Modification Memo

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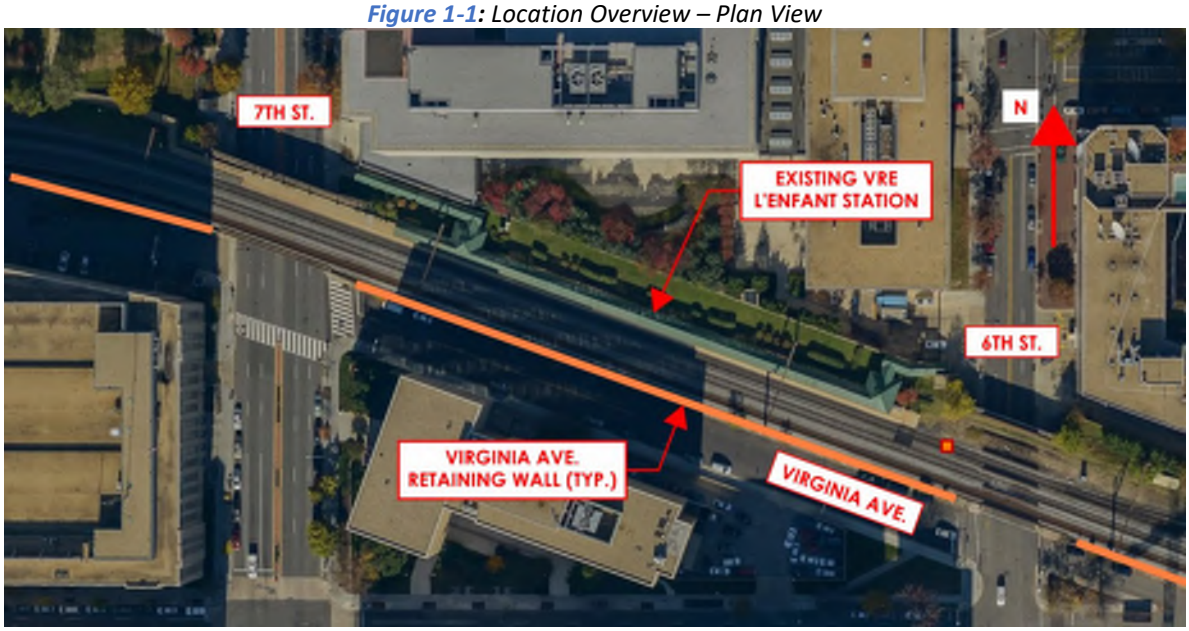
This memo evaluates potential modifications and retrofits to the Virginia Avenue retaining wall to limit earth and surcharge pressures acting on the wall to accommodate a proposed track grade raise.

Background

There is a gravity masonry wall running parallel to Virginia Avenue which supports the railroad corridor as shown in **Figure 1-1**. The retaining wall was constructed at the same time as the existing 6th Street bridge, circa 1910. The wall continues east (railroad north) until approximately Interstate 395.

***Figure 1-1**: Location Overview – Plan View*



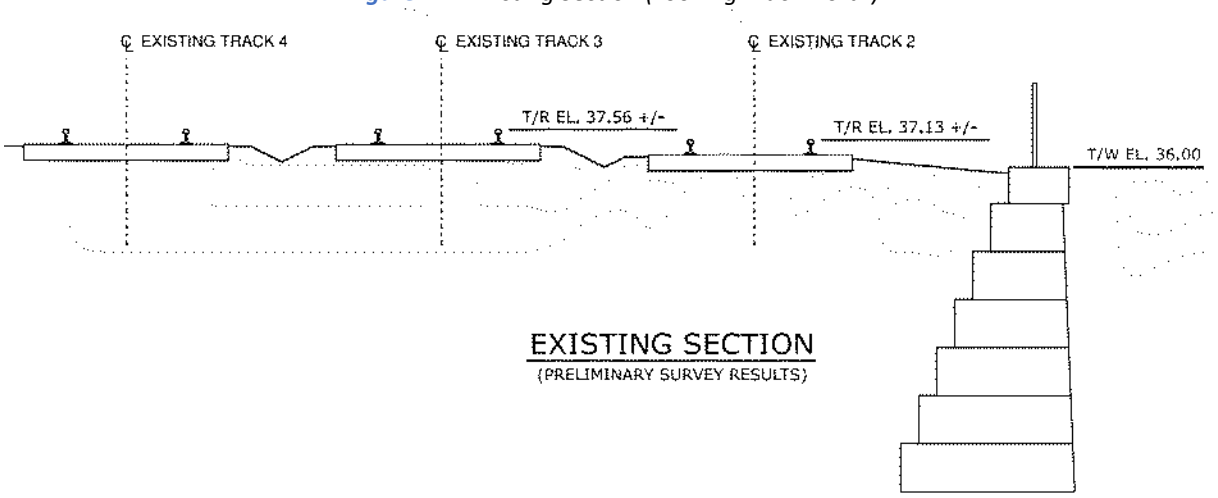
Currently, the top rail elevation for the Existing Track 2 directly adjacent the wall is approximately 13" to 14" above the top of wall elevation, requiring some minor grading from the edge of tie to the top of wall as shown in **Figure 1-2** to prevent ballast from overtopping the wall. Existing Track 2 is also approximately 5" to 6" lower on average compared to the next adjacent track (Existing Track 3).

As part of the VRE L'Enfant Station replacement, the 6th Street bridge must be replaced to accommodate the proposed 4th track and platform geometry.

Due to the shallow structural depth of the existing through plate girder bridge, we expect that track grade raises will be required to meet current CSX standards while still maintaining adequate vertical clearance over 6th Street. The magnitude of track raises will vary based on the structure type selected but could be **up to 18"** for Existing Track 2 if a deck plate girder alternative is selected.

The track requiring the most raise is Existing Track 2 adjacent to the Virginia Avenue wall, so modifications or retrofits to the wall will be required to geometrically accommodate the track raise.

Figure 1-2: Existing Section (Looking Track North)



We have performed preliminary analyses on the Virginia Avenue wall which indicate that it does not have AREMA recommended factors of safety against sliding (1.50) and overturning (resultant eccentricity of load within the middle third of the footing) when considering Cooper E80 surcharge loading. Based on the Pennsylvania Railroad standards in place at the time of construction, the wall may have been designed for approximately a Cooper E50 equivalent, though we do not have sufficient backup to confirm that.

Additional analyses were performed for 286-kip and 315-kip carloads that are typically considered when rating bridge structures. These analyses additionally show the wall does not have the recommended factors of safety against sliding and overturning.

However, there are no obvious signs of structural deficiencies or instability in the existing wall which suggests the wall is stable under loading it is experiencing today.

Borings are proposed in the rail corridor which will better inform the design team on the type and quality of fill used to build up the rail corridor. The results of these borings may indicate a better fill quality than currently assumed in the analysis which could show better performance via calculations, but it is unlikely the fill quality will change the analysis significantly enough where the wall meeting recommended factors of safety per AREMA under any of the rail loadings considered.

However, much like a bridge rating, existing infrastructure can be evaluated from a safe load carrying perspective and not necessarily against current design recommendations for new structures. VHB will continue to refine our analysis as new information becomes available to evaluate its stability and make recommendations to VRE and CSX.

While the existing wall appears safe and stable in its current condition, the addition of ballast will add loading to the wall which cannot simply be 'written off' by engineering judgement. Therefore, the design team has conceptually evaluated several alternatives if a grade raise is required for the 6th Street bridge replacement. These alternatives are presented below assuming an 18" track raise of Existing Track 2 for illustration purposes.

Alternative 1 – Grading Option

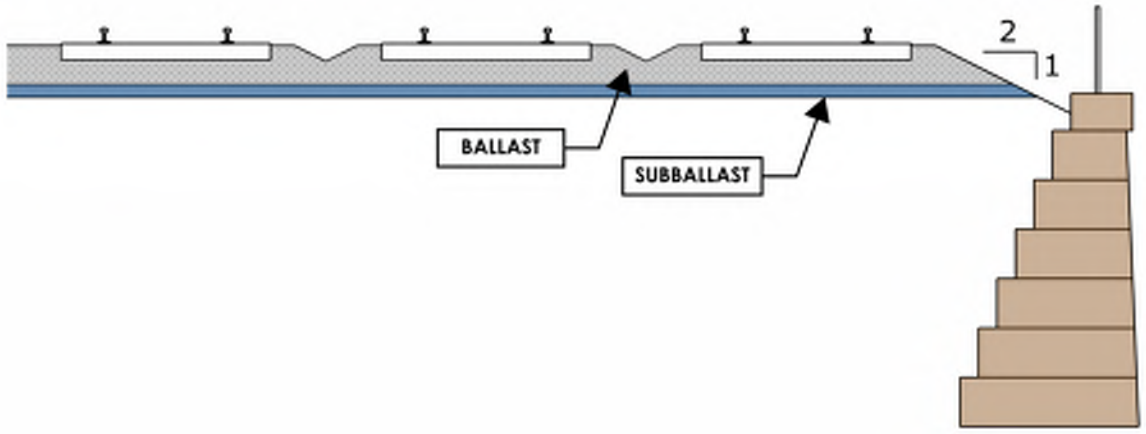
Alternative 1 considers raising the track and simply using a typical 2:1 grade to slope back to the top of the wall as shown in **Figure 1-3**.

While this option may be geometrically feasible, it does nothing to address the concerns of wall stability since the extra fill contributes to additional lateral earth pressure and raises the moment arm of the resultant force.

Additionally, random pieces of ballast may be more likely to come loose over time from the 2:1 slope and may fall over the wall, resulting in potential settlement of the tracks as well as posing a risk to pedestrians and vehicles below. Lack of a level area between tracks and the wall also decreases walkability should workers ever need to use this area for routine maintenance and inspection.

If this alternative is selected, the wall will continue to not meet recommended factors of safety on sliding and overturning, and additional loading could introduce concerns of the wall's stability.

Figure 1-3: *Alternative 1 – Grading Option*



Alternative 2 – Wall Extension Option

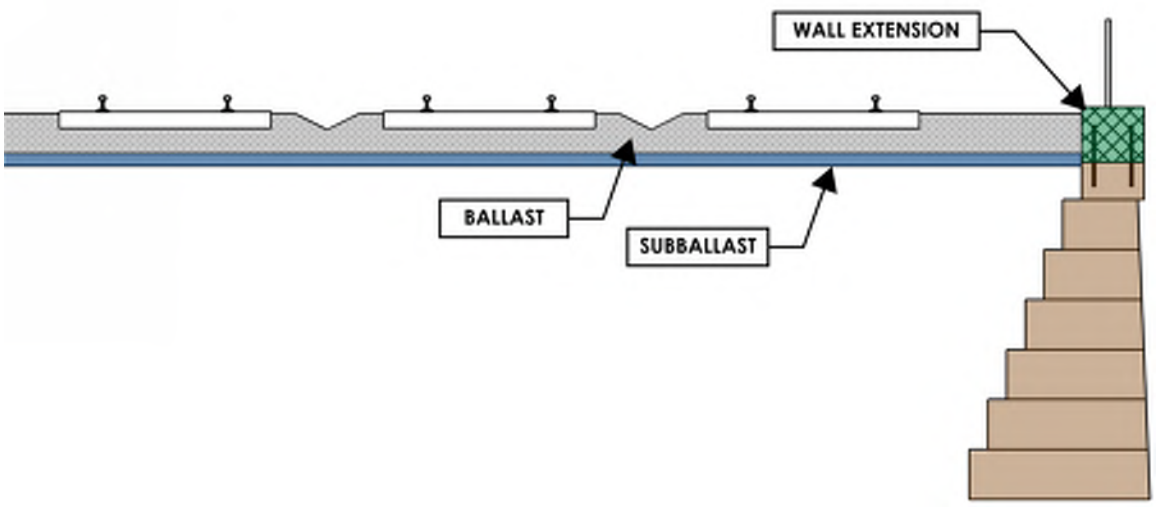
Alternative 2 considers retrofitting the existing wall to extend it to the top of proposed ballast as shown in **Figure 1-4**.

This option mitigates some of the risk of ballast overtopping the wall and provides better inspection and maintenance access than Alternative 1, but the same concerns exist with the additional height of wall and increased loading compared to existing.

Alternative 2 is considered to provide better inspection and maintenance access in the corridor compared to Alternative 1 while reducing the risk of ballast movement below tracks and aggregate falling from the top of the wall on pedestrians or cars.

If this alternative is selected, the wall will continue to not meet recommended factors of safety on sliding and overturning, and additional loading could introduce concerns of the wall's stability.

Figure 1-4: Alternative 2 – Wall Raise Option



Alternative 3 – Fill Replacement Option

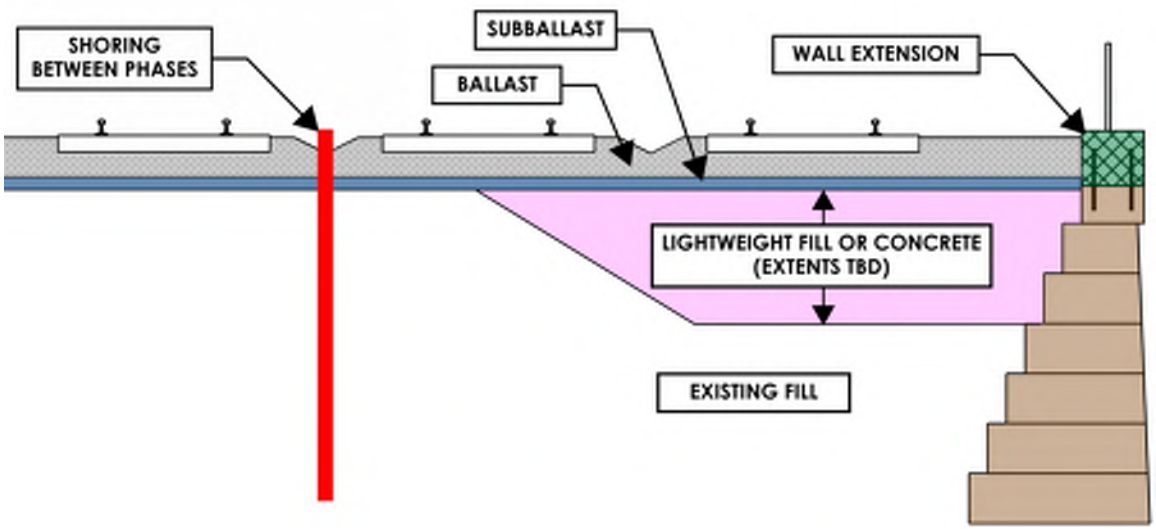
The remaining options consider additional modifications that incorporate measures to reduce loading on the wall so that the current design requirements are met. These options incorporate the wall extension shown in Alternative 2.

Alternative 3 considers overexcavating some of the existing fill material and replacing it with a stable lightweight aggregate, cellular concrete, or other fill alternative as shown in **Figure 1-5**.

The lightweight aggregate produces less lateral surcharge force on the wall. Concrete exerts even less pressure on the wall after it has set and cured. The magnitude of overexcavation will be highly dependent on the material selected by CSX and the design team and will require further analysis. We assume the project will be built in two main phases, so the fill alternative is likely to only be used under the two tracks adjacent to the retaining wall. The limits shown in **Figure 1-5** are conceptual only at this time.

We expect that overexcavation and use of a fill alternative can potentially result in no net load increase on the wall compared to existing conditions. However, this option still may not provide the reduction in load intensity to meet current recommended factors of safety pending the selected material. If this alternative is pursued further, additional analysis is required after we receive the test boring results and a fill type is selected to determine the extent and nature of fill be replaced.

Figure 1-5: Alternative 3 –Fill Replacement Option



Alternative 4 – Tieback Option

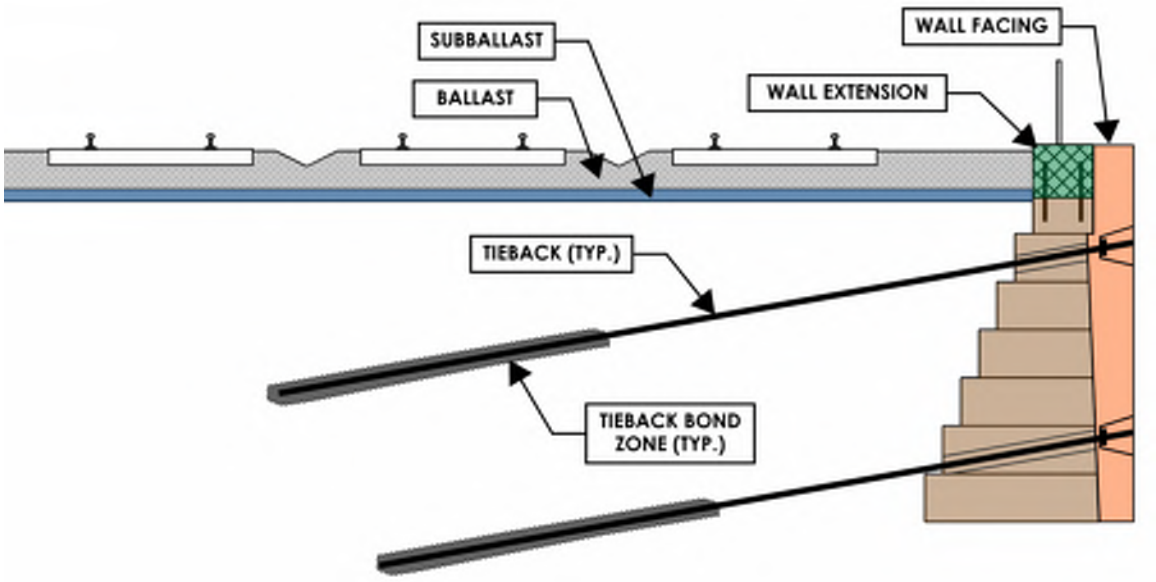
Alternative 4 considers the installation of two or more levels of tiebacks through the existing wall as shown in **Figure 1-6**.

Tiebacks help in providing stability against overturning. However, due to constraints on the other side of the rail corridor, the tiebacks would be grouted and obtain their strength from a bond zone in fills under the tracks. Based on our understanding, the use of a permanent tieback system below the tracks is usually not acceptable to CSX and would need to be approved by CSX.

Furthermore, the existing wall is stone masonry. Coring of the existing stone for tieback installation may create cracks or damage to the stones. Additionally, the stones are individual elements held together via mortar only. For a series of discreet tiebacks to effectively transfer load through the whole system, a series of walers or a facing is probably required. Walers and a concrete facing (that may need to be reinforced) will extend beyond the existing face of the wall and likely into DDOT right-of-way. The use of facing is also likely undesirable to signatories without further aesthetic consideration such as adding a veneer which will further impede into the DDOT right-of-way.

Due to the challenges associated with this alternative, we do not recommend further consideration of this option.

Figure 1-6: Alternative 4 –Tieback Option



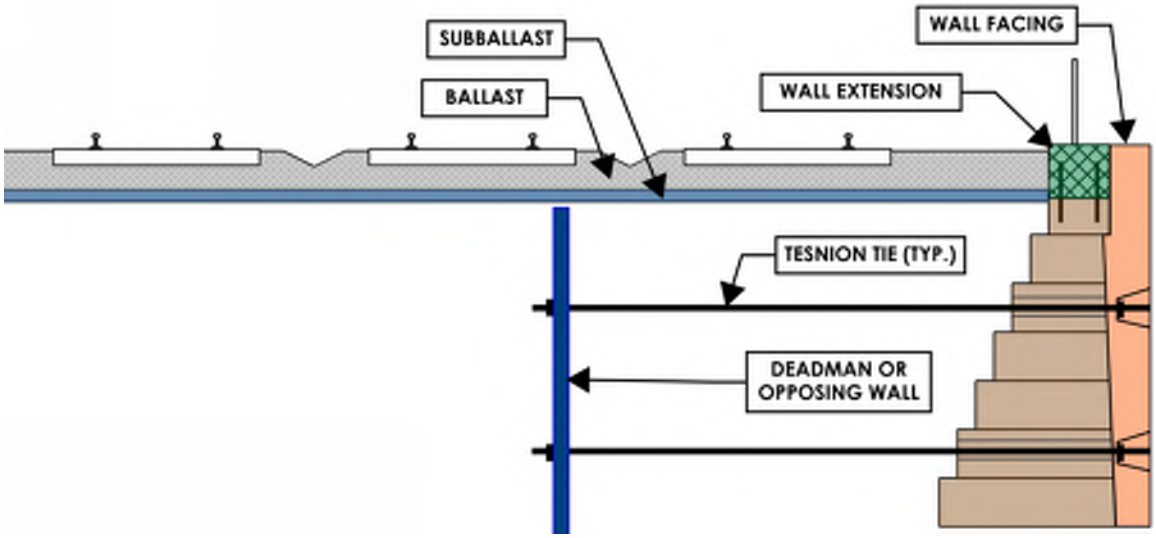
Alternative 5 – Tension Tie Option

Alternative 5 considers the installation of tension ties as shown in **Figure 1-7**.

This option is similar to Alternative 4 but eliminates the need to derive the tieback strength by grouting under the rail corridor, instead using either an opposing wall or deadman system to provide additional overturning resistance.

While this alternative improves on Alternative 4, it will require careful consideration with the project phasing to determine the most viable system to anchor to and it will still likely require a facing on the wall to distribute the tension tie load to the whole masonry wall system.

Figure 1-7: Alternative 5 – Tension Tie Option



Alternative 6 – Load Transfer System Option

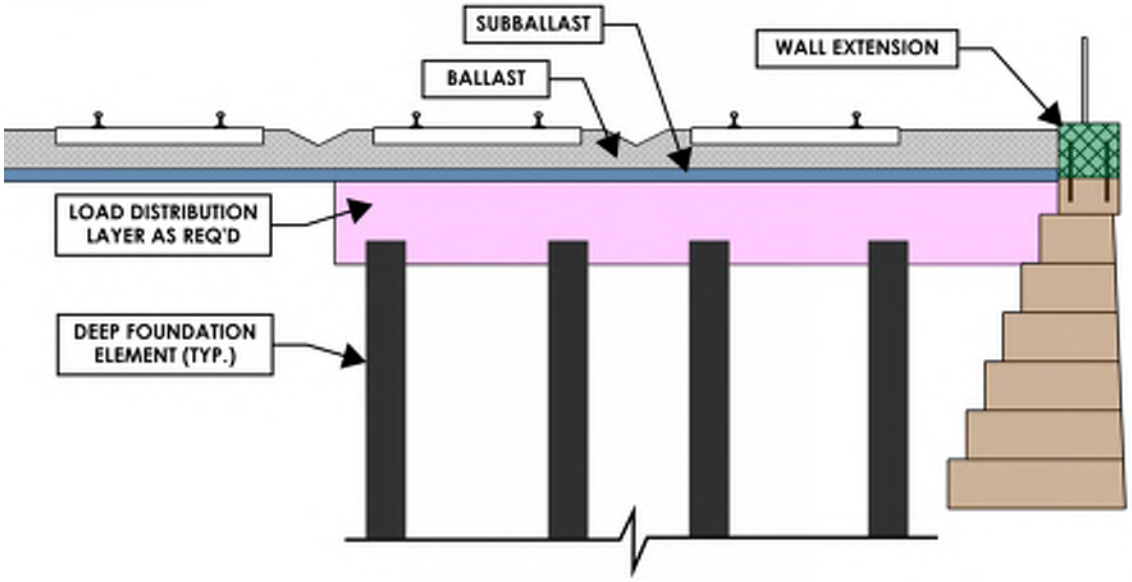
Alternative 6 considers the installation of a load transfer system under the proposed tracks adjacent to the wall as shown in **Figure 1-8**.

The function of this load transfer system would be to directly take the vertical load from the train and carry it through the existing wall backfill to transfer the vertical load to a deeper bearing stratum. This system reduces the lateral loading on the existing wall from live load surcharge to achieve no net increase in load on the wall. The system's design will be performed in collaboration with our geotechnical partners.

This option is likely to add considerable cost to the project since it will require a series of foundation elements such as drilled shafts, micropiles, helical piles, or other foundation elements along the length of the track at a spacing sufficient to support the Cooper E80 loading.

Injection grouting of the soil mass is also a similar means of stabilizing the soil and providing improved load transfer without specifically using a series of discrete foundations as noted above. If permitted by CSX, we can analyze this option further to determine the extent and magnitude of the improvement. However, careful consideration needs to be given to pressure grouting next to a mortared wall.

Figure 1-8: *Alternative 6 –Load Transfer System Option*



Appendix - Preliminary Wall Analysis

DRAFT PRELIMINARY ANALYSIS

Computations

Project:	VRE L'Enfant Station	Project #	39641.00
Location:	Washington, DC	Sheet	1 of 12
Calculated by:	KFS	Date:	4/1/2024
Checked by:		Date:	
Title	Virginia Avenue Gravity Wall Analysis		

Purpose

-To analyze the existing gravity masonry wall which supports the rail corridor running along Virginia Avenue.
-To determine the adequacy of the existing retaining wall if track grade raises are required.

Disclaimer

-These calculations are preliminary. By inspection and engineering judgment, the existing Virginia Avenue wall is stable and has experienced thousands of train load cycles without notable defects or concerns over its stability, so factors of safety of at least 1.0 are expected. These calculations are based on the best information available to VHB at this time and standard engineering assumptions. These assumptions will be refined as the results of borings and other information become available. Results of these calculations will be discussed further with VRE.

References

1. AREMA Manual for Railway Engineering, 2022 Edition
2. 6th Street Bridge Design Plans
3. Pennsylvania Railroad Standard No. 54962, 1892
4. CSX Public Projects Information Manual, January 2022 Edition

Approach

1. Use survey and plans to draft the wall in relation to the existing tracks and Virginia Avenue.
2. Estimate the wall weight and weight of fill over the gravity wall stones to determine overturning resistance.
3. Compute live load effects in accordance with AREMA and the CSX Public Projects Manual to determine the effects of live load surcharge on the wall. Both a uniform surcharge and Boussinesq are considered and compared. Various rail loadings are also considered such as Cooper E80, 286k car, and 315k car.
4. Evaluate stability against overturning and sliding. Computations are done on a per-foot-of-wall basis.

Assumptions

1. The base of the wall elevation is unknown, so the wall's resistance to passive pressure cannot be fully determined. Test pitting may be required to confirm. This only impacts sliding resistance; the overturning resistance of a mortared block masonry wall is still valid at each of the individual joint locations since the mortar provides negligible tensile resistance should overturning and movement occur. This analysis is performed at the bottom 'known' joint location.
2. Active earth pressure is assumed.
3. Without having borings within the rail corridor to inform better data, assume the following rail corridor backfill properties corresponding to a 'Type 2' backfill per AREMA Table 8-5-2:

Friction Angle =	30	degrees
Active EP Coefficient =	0.333	
Unit Weight =	110	pcf

4. The allowable bearing capacity of the soil is unknown. The soil has been burdened by the wall for over 100-years without sign of notable settlement, so it is reasonable to assume the wall has the capabilities of resisting the current bearing loads.
5. The roadway elevation of Virginia Avenue varies. Analyze near the 6th Street bridge where a potential grade raise is maximized and exposed wall height is nearing its largest.

DRAFT PRELIMINARY ANALYSIS

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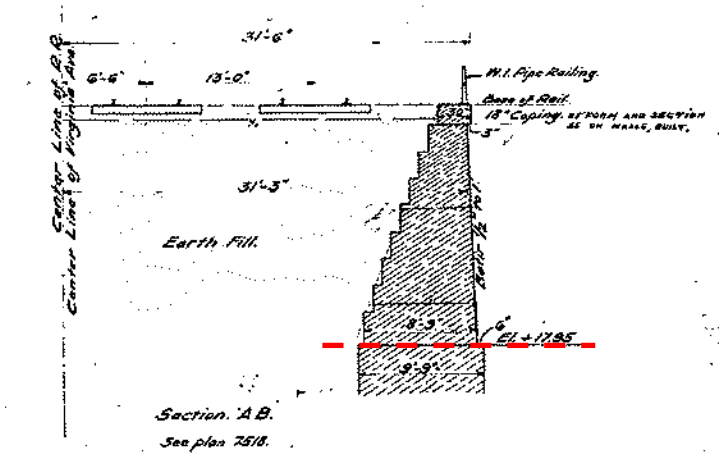
Title	Virginia Avenue Gravity Wall Analysis		

Existing Section

-The following wall section is taken from the 6th Street Bridge plans:



Based on a top of coping elevation shown of El. 36.04 on other sections in this plan set, we have analyzed the wall at the 17.95 elevation at this time (18' tall, shown as the red dashed line).

Referenced Standard

-The wall appears to be generally in conformance with Pennsylvania Railroad Standard No. 54962 (snipped below) which requires a stone width at the mid-height equal to the exposed height divided by 3.

-This standard also shows variable-depth base courses, so no additional surety is provided on the below-ground structure.

-Based on computations, the mid-height thickness of the Virginia Avenue wall is approximately 5'-8", and the exposed height above the roadway is approximately 16', so the standard appears to have been used (16'/3 = 5'-4").

The standard does not list a design live loading or an allowable proximity of the track to the wall, but we believe based on record documents that the live load is approximately equivalent to a Cooper E-50.

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Computations

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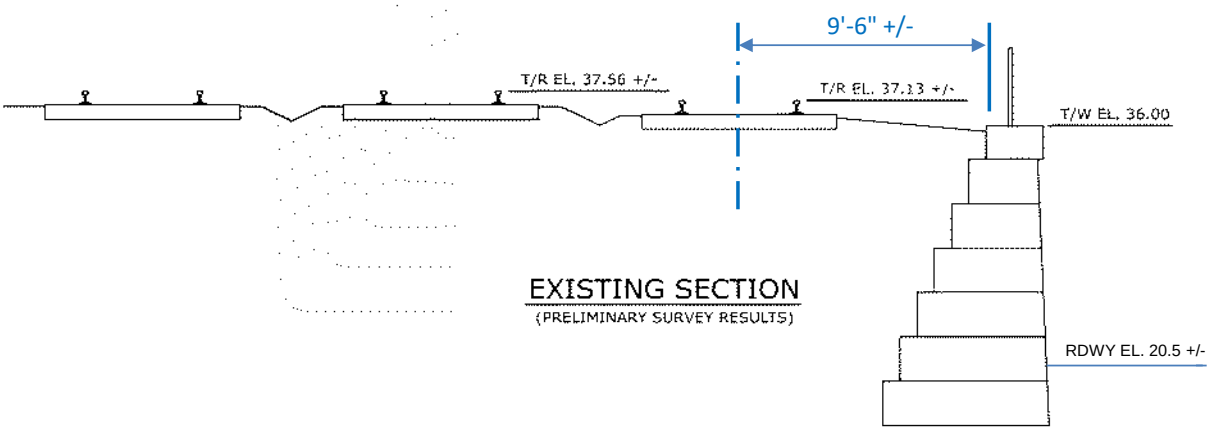
Survey Data Results

-The existing wall section between the 6th and 7th Street Bridges is approximated below:



Design Requirements

-There are two potential methods for evaluating this wall for existing and proposed loading:

-**Method A** - compare the wall to the current AREMA manual and verify the wall is in compliance with AREMA-recommended factors of safety and stability.

> -AREMA 8.5.4.2.a requires a 1.5 factor of safety against sliding.
>
> -AREMA 8.5.4.1 does not explicitly list a factor of safety against overturning, but this is under the assumption that the resultant load is within the middle third of the wall footing. Assume a similar 1.5 factor of safety against overturning is required, consistent with local and international building code.

-Use of Method A would be atypical since this is an existing structure. When bridges or other structures are evaluated and load rated, they are often compared to a certain loading vehicle and evaluated for safety and stability in accordance with AREMA Chapter 8.19 - not adhering to the most recent version of the design code.

-**Method B** - analyze proposed changes to wall loading and evaluate compared to existing loading. The existing wall shows no significant signs of distress, deterioration, or tilting over its 100-year life, so it appears to be adequately performing under current loading.

DRAFT PRELIMINARY ANALYSIS

Computations

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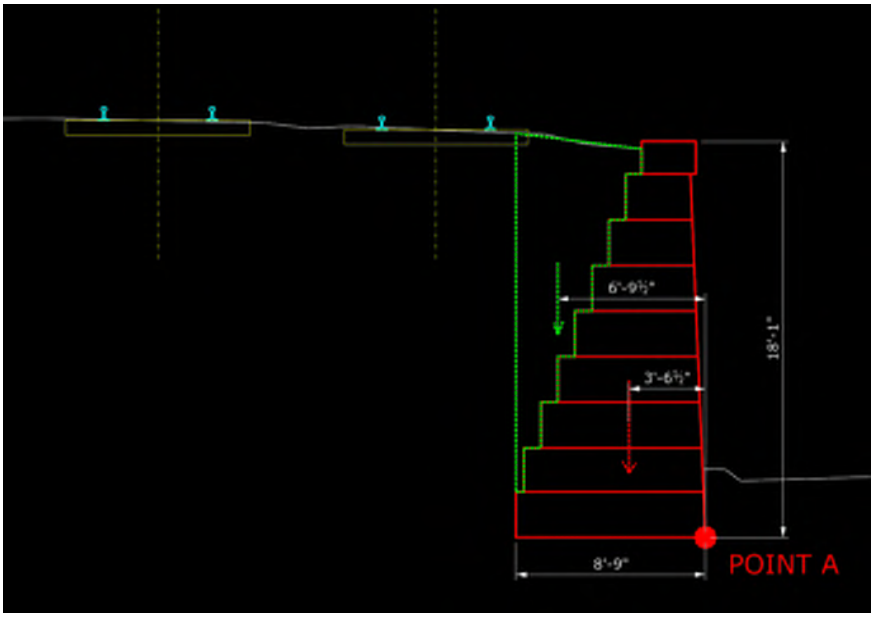
Title	Virginia Avenue Gravity Wall Analysis		

Compute Wall Resisting Forces (Existing Condition):

-The wall has been sketched in CAD to obtain both areas of the wall itself and the supported soil over the 'heel':



Component	Area (sf)	Dens (pcf)	Wt (k)	Arm (ft)	M (k-ft)
Wall	103.40	150	15.51	3.54	54.9
Soil over Heel	48.55	115	5.58	6.81	38.0

Total Weight = 21.1 kip/ft
Total Resisting Moment = 92.9 kip-ft/ft

Compute Wall Earth Pressure Forces

-Consider active earth pressure assuming the wall has the flexibility to rotate a nominal amount.
-Soil parameters below to be updated pending geotechnical findings.

Friction Angle =	30	degrees
Active EP Coefficient =	0.333	
Unit Weight =	110	pcf
Equivalent Fluid Pressure =	37H	
Wall Height =	18.00	ft
Total Force =	**5.9**	**kip/ft (ignore effects of minor backfill sloping)**
Moment Arm =	6.0	ft
Total AEP Overturning Moment =	**35.6**	**kip-ft/ft**

Computations

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Live Load Surcharge

-CSX Public Project Manual does not directly dictate a method for computing forces on a permanent retaining wall. In this analysis, we have considered typical train loading configurations of Cooper E-80, a 286-kip car, and a 315-kip car.

-AREMA Section 8.20.3.2.2 details out a method of computations for strip loading acting on the wall which is the most similar scenario to loading on the Virginia Avenue wall. This method is based on Boussinesq principles.

20.3.2.2 Strip Load q

a. A continuous strip of surcharge load q (pounds per square foot) parallel to the bulkhead is shown in Figure 8-20-2. The intensity of pressure at a given point may be computed by:

$$p_s = \frac{2q}{\pi}(\beta + \sin\beta \sin^2\alpha - \sin\beta \cos^2\alpha)$$

b. The Strip Load is not shown in Figure 8-20-1. Symbols and notations are shown in Figure 8-20-2.

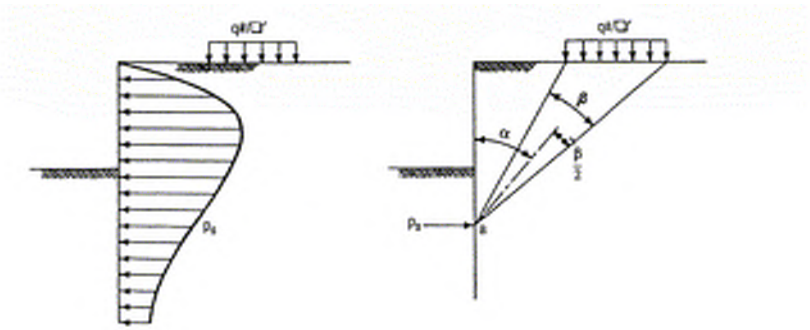

Figure 8-20-2. Pressure Distribution for Strip Load

-An Appendix to these calculations shows these computations with Cooper E-80 surcharge loading considered from two tracks.

-An analysis of the computations shows that due to the proximity of the Proposed Track 1 to the wall, an unrealistic lateral pressure is produced on the wall of essentially the vertical pressure (implying an earth pressure coefficient of nearly 1.0). This result appears overly conservative and unrealistic, so a computation assuming the train pressure over the entire backfill is computed in accordance with AREMA 8.20.3.2.1 (equal to Ka times the surface pressure).

-In all subsequent calculations, this method of uniform surcharge pressure from live load is considered.

-This method is slightly conservative for train loadings like the 286-kip and 315-kip cars because it does not take into account the longitudinal distribution of the loading long the length of the wall from the 4-axle clusters.

DRAFT PRELIMINARY ANALYSIS

Computations

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Title	Virginia Avenue Gravity Wall Analysis		

Analysis - Existing Conditions, No Live Load Surcharge

Live Load Pressure at Surface =	0.0	psf
Live Load Surcharge Force =	0.0	kip/ft
Live Load Surcharge Moment =	0.0	kip-ft/ft

Overturning:

Total Resisting Moments =	92.9	kip-ft/ft
Total Overturning Moments =	35.6	kip-ft/ft (LLS and AEP)
Factor of Safety on Overturning =	**2.61**	

Sliding:

-For sliding, assume the bottom of the block in question is at the soil interface. The block is actually at a mortared joint, so more resistance to sliding will be provided at this location. However, the calculation is intended to emulate a general sliding check. At the actual wall bottom, further passive resistance will be provided; however, additional live load surcharge and earth pressure will also be acting, so this is considered a general representative check at this time until further information is known.

Total Vertical Weight, P =	21.1	kip/ft
Assumed Sliding Coefficient =	0.45	(AREMA 8.5.4.2.b for 'coarse grained soil with silt')
Total Sliding Resistance =	9.5	kip/ft
Total Acting Forces =	5.9	kip/ft (AEP)
Factor of Safety on Sliding =	**1.60**	

-The addition of passive earth pressure will increase the sliding resistance as shown below:

Passive EP Depth at Wall Front =	3.00	ft (Virginia Avenue side)
Passive EP Coefficient =	3.00	(maximum)
Maximum Passive EP Force =	1.5	kip/ft
Factor of Safety on Sliding w/ Passive =	**1.85**	

Bearing:

Eccentricity of Force from Point A =	2.72	ft (negative implies instability)
Base Width, B =	8.75	ft
Eccentricity about Center =	1.66	ft
AREMA 8.5.4.1 B/3 limit =	1.46	ft
Eccentricity within Limits? =	No	
Pressure from Vertical Load, P/B =	2.41	ksf
Moment about Centerline, M =	35.00	k-ft
Pressure from Moment = 6M/B^2 =	2.74	ksf (AREMA 8.3.5.1)
Maximum Bearing Pressure =	**5.2**	**ksf**

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Computations

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Analysis - Existing Conditions, Cooper E80 Live Load Surcharge

Live Load Pressure at Surface =	1882	psf
Live Load Surcharge Force =	11.3	kip/ft
Live Load Surcharge Moment =	101.6	kip-ft/ft

Overturning:

Total Resisting Moments =	92.9	kip-ft/ft
Total Overturning Moments =	137.3	kip-ft/ft (LLS and AEP)
Factor of Safety on Overturning =	**0.68**	

Sliding:

-For sliding, assume the bottom of the block in question is at the soil interface. The block is actually at a mortared joint, so more resistance to sliding will be provided at this location. However, the calculation is intended to emulate a general sliding check. At the actual wall bottom, further passive resistance will be provided; however, additional live load surcharge and earth pressure will also be acting, so this is considered a general representative check at this time until further information is known.

Total Vertical Weight, P =	21.1	kip/ft
Assumed Sliding Coefficient =	0.45	(AREMA 8.5.4.2.b for 'coarse grained soil with silt')
Total Sliding Resistance =	9.5	kip/ft
Total Acting Forces =	17.2	kip/ft (LLS and AEP)
Factor of Safety on Sliding =	**0.55**	

-The addition of passive earth pressure will increase the sliding resistance as shown below:

Passive EP Depth at Wall Front =	3.00	ft (Virginia Avenue side)
Passive EP Coefficient =	3.00	(maximum)
Maximum Passive EP Force =	1.5	kip/ft
Factor of Safety on Sliding w/ Passive =	**0.64**	

Bearing:

Eccentricity of Force from Point A =	-2.10	ft (negative implies instability)
Base Width, B =	8.75	ft
Eccentricity about Center =	6.48	ft
AREMA 8.5.4.1 B/3 limit =	1.46	ft
Eccentricity within Limits? =	No	
Pressure from Vertical Load, P/B =	2.41	ksf
Moment about Centerline, M =	136.62	k-ft
Pressure from Moment = 6M/B^2 =	10.71	ksf (AREMA 8.3.5.1)
Maximum Bearing Pressure =	**13.1**	**ksf**

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Analysis - Existing Conditions, 286-kip Car Live Load Surcharge *(Note: this is ~equal to a Cooper E61 equivalent)*

Live Load Pressure at Surface =	1442	psf (equals 71.5k / (8.5' tie x 5.83' spacing))
Live Load Surcharge Force =	8.7	kip/ft
Live Load Surcharge Moment =	77.9	kip-ft/ft

Overturning:

Total Resisting Moments =	92.9	kip-ft/ft
Total Overturning Moments =	113.5	kip-ft/ft (LLS and AEP)
Factor of Safety on Overturning =	**0.82**	

Sliding:

-For sliding, assume the bottom of the block in question is at the soil interface. The block is actually at a mortared joint, so more resistance to sliding will be provided at this location. However, the calculation is intended to emulate a general sliding check. At the actual wall bottom, further passive resistance will be provided; however, additional live load surcharge and earth pressure will also be acting, so this is considered a general representative check at this time until further information is known.

Total Vertical Weight, P =	21.1	kip/ft
Assumed Sliding Coefficient =	0.45	(AREMA 8.5.4.2.b for 'coarse grained soil with silt')
Total Sliding Resistance =	9.5	kip/ft
Total Acting Forces =	14.6	kip/ft (LLS and AEP)
Factor of Safety on Sliding =	**0.65**	

-The addition of passive earth pressure will increase the sliding resistance as shown below:

Passive EP Depth at Wall Front =	3.00	ft (Virginia Avenue side)
Passive EP Coefficient =	3.00	(maximum)
Maximum Passive EP Force =	1.5	kip/ft
Factor of Safety on Sliding w/ Passive =	**0.75**	

Bearing:

Eccentricity of Force from Point A =	-0.98	ft (negative implies instability)
Base Width, B =	8.75	ft
Eccentricity about Center =	5.35	ft
AREMA 8.5.4.1 B/3 limit =	1.46	ft
Eccentricity within Limits? =	No	
Pressure from Vertical Load, P/B =	2.41	ksf
Moment about Centerline, M =	112.86	k-ft
Pressure from Moment = 6M/B^2 =	8.84	ksf (AREMA 8.3.5.1)
Maximum Bearing Pressure =	**11.3**	**ksf**

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Computations

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Analysis - Existing Conditions, 315-kip Car Live Load Surcharge *(Note: this is ~equal to a Cooper E68 equivalent)*

Live Load Pressure at Surface =	1588	psf (equals 78.75k / (8.5' tie x 5.83' spacing))
Live Load Surcharge Force =	9.5	kip/ft
Live Load Surcharge Moment =	85.8	kip-ft/ft

Overturning:

Total Resisting Moments =	92.9	kip-ft/ft
Total Overturning Moments =	121.4	kip-ft/ft (LLS and AEP)
Factor of Safety on Overturning =	**0.77**	

Sliding:

-For sliding, assume the bottom of the block in question is at the soil interface. The block is actually at a mortared joint, so more resistance to sliding will be provided at this location. However, the calculation is intended to emulate a general sliding check. At the actual wall bottom, further passive resistance will be provided; however, additional live load surcharge and earth pressure will also be acting, so this is considered a general representative check at this time until further information is known.

Total Vertical Weight, P =	21.1	kip/ft
Assumed Sliding Coefficient =	0.45	(AREMA 8.5.4.2.b for 'coarse grained soil with silt')
Total Sliding Resistance =	9.5	kip/ft
Total Acting Forces =	15.5	kip/ft (LLS and AEP)
Factor of Safety on Sliding =	**0.61**	

-The addition of passive earth pressure will increase the sliding resistance as shown below:

Passive EP Depth at Wall Front =	3.00	ft (Virginia Avenue side)
Passive EP Coefficient =	3.00	(maximum)
Maximum Passive EP Force =	1.5	kip/ft
Factor of Safety on Sliding w/ Passive =	**0.71**	

Bearing:

Eccentricity of Force from Point A =	-1.35	ft (negative implies instability)
Base Width, B =	8.75	ft
Eccentricity about Center =	5.73	ft
AREMA 8.5.4.1 B/3 limit =	1.46	ft
Eccentricity within Limits? =	No	
Pressure from Vertical Load, P/B =	2.41	ksf
Moment about Centerline, M =	120.76	k-ft
Pressure from Moment = 6M/B^2 =	9.46	ksf (AREMA 8.3.5.1)
Maximum Bearing Pressure =	**11.9**	**ksf**

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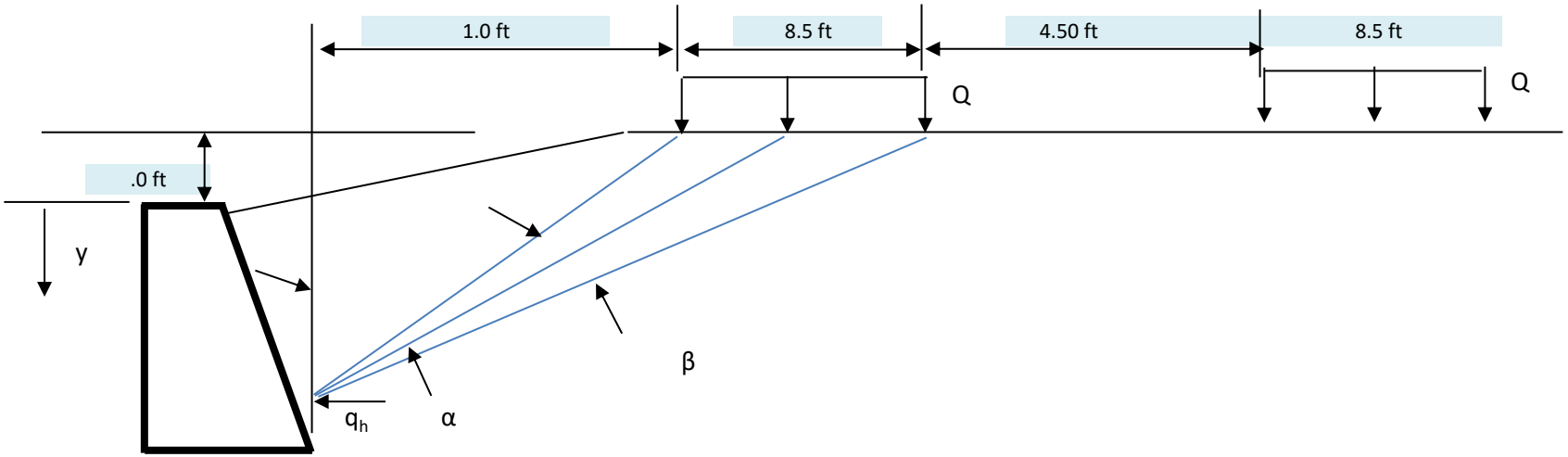
Appendix A - Boussinesq Surcharge Computations

- Use Boussinesq theory (AREMA 8.20.3.2.2 Strip Load method) to determine live load surcharge acting on the retaining wall.
- Apply forces on the vertical extension of the wall heel as this section of fill acts with the wall in resisting overturning.



Cooper E Loading Considered, EXX =	80	
Surface Pressure, Q =	1,882	psf (for Cooper E80)

DRAFT PRELIMINARY ANALYSIS

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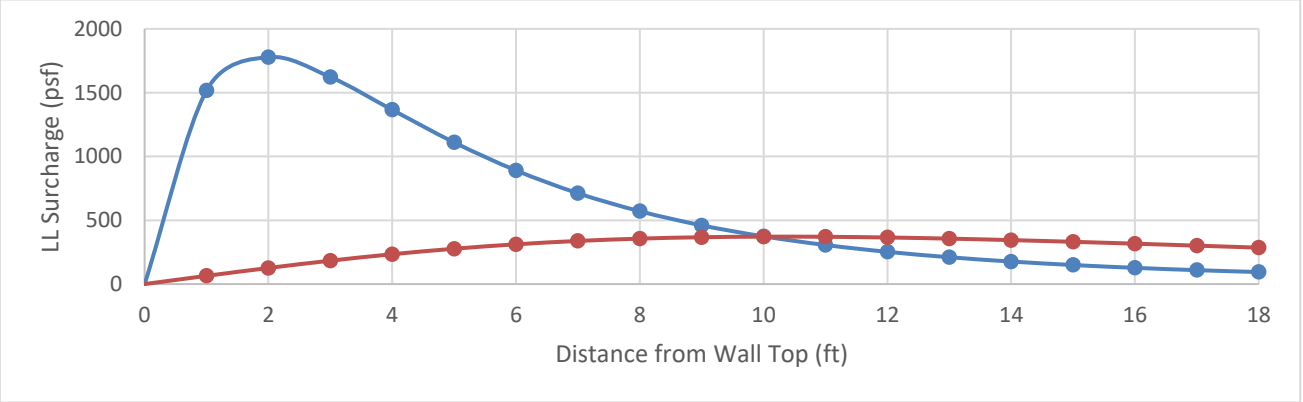
Distance	Proposed Track 1 (Adjacent Wall)					Proposed Track 2 (Farther From Wall)					Total M
from Top (y)	α (°)	β (°)	αr (rad)	βr (rad)	q_h (psf)	α (°)	β (°)	αr (rad)	βr (rad)	q_h (psf)	(lb-ft) both trk
0	-90.0	0.0	-1.571	0.000	0	-90.0	0.0	-1.571	0.000	0	13828
1	79.2	39.0	1.383	0.680	1516	86.9	1.5	1.516	0.027	64	28751
2	69.1	51.5	1.207	0.900	1778	83.7	3.1	1.462	0.053	126	28752
3	60.3	54.0	1.052	0.943	1622	80.7	4.5	1.408	0.079	183	24685
4	52.7	53.1	0.920	0.927	1365	77.6	5.9	1.355	0.102	234	20159
5	46.4	50.9	0.810	0.889	1110	74.7	7.1	1.303	0.124	277	16183
6	41.2	48.3	0.719	0.842	891	71.8	8.3	1.253	0.144	312	12948
7	36.9	45.5	0.644	0.794	712	69.0	9.3	1.205	0.162	338	10377
8	33.3	42.8	0.581	0.747	571	66.3	10.2	1.158	0.178	356	8331
9	30.3	40.2	0.528	0.702	460	63.8	10.9	1.113	0.191	367	6682
10	27.7	37.8	0.483	0.660	374	61.3	11.6	1.070	0.202	371	5331
11	25.5	35.6	0.445	0.622	306	58.9	12.1	1.028	0.211	370	4206
12	23.6	33.6	0.412	0.587	253	56.7	12.5	0.989	0.219	365	3256
13	22.0	31.8	0.384	0.554	210	54.5	12.9	0.952	0.224	356	2447
14	20.6	30.1	0.359	0.525	177	52.5	13.1	0.916	0.229	345	1753
15	19.3	28.5	0.337	0.498	149	50.6	13.3	0.883	0.232	331	1155
16	18.2	27.1	0.317	0.473	127	48.8	13.4	0.851	0.234	316	640
17	17.2	25.8	0.300	0.451	109	47.0	13.5	0.821	0.235	301	197
18	16.3	24.6	0.284	0.430	94	45.4	13.5	0.792	0.235	285	0



DRAFT PRELIMINARY ANALYSIS

Project:	VRE L'Enfant Station	Project #	39641.00
Location:	Washington, DC	Sheet	12 of 12
Calculated by:	KFS	Date:	4/1/2024
Checked by:		Date:	
Title	Virginia Avenue Gravity Wall Analysis		

Total Forces Computed from Above:

Total Shear =	17.1	kip/ft
Total Moment =	189.7	kip-ft/ft

Alternate Approach - Uniform Surface Pressure

Surface Pressure =	1,882	psf
Active EP Coefficient =	0.333	
Equivalent LL Surcharge Pressure =	627	psf (laterally)
Total Force =	11.3	kip/ft
Moment Arm =	9.00	ft
Moment =	101.6	kip-ft/ft

Based on the results above, the uniform surcharge moment is ~53% of the moment as that computed via strip loads. The loading cannot exceed uniform surcharge (since the surcharge is already only over tie widths), so the uniform surcharge loading is considered in computations.

Appendix I

7th Street SW Retaining Wall Memo

L'Enfant Station and Fourth Track Project

To: Virginia Railway Express

Date: July 25, 2025
Project #: 39641.00

From: VHB Design Team

Re: VRE L'Enfant Station – 7th St. SW Retaining Wall Memo

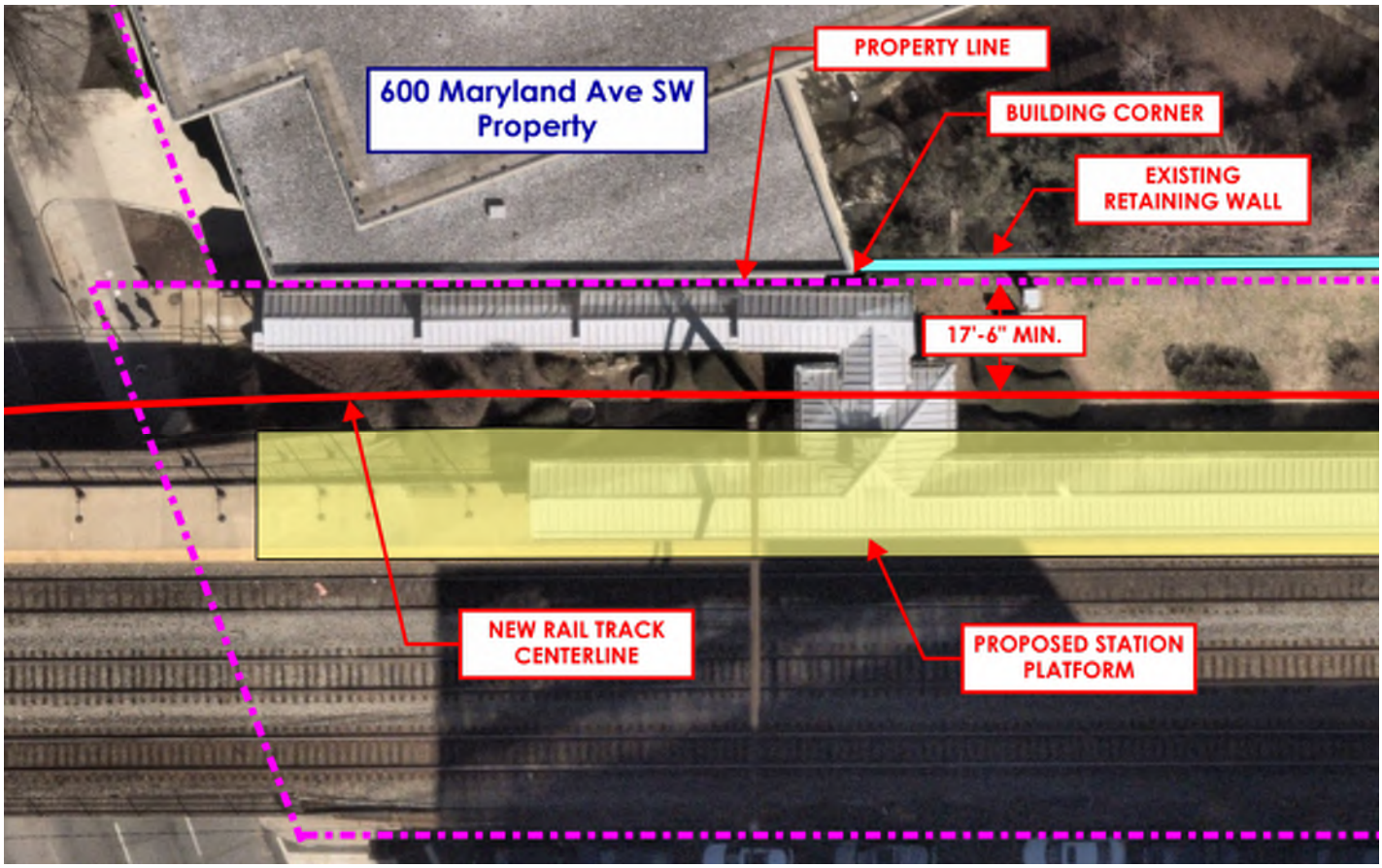
This memo evaluates the function of the retaining wall at the railroad north end of the 7th Street SW bridge extension which is adjacent to the 600 Maryland Avenue SW property.

Background

The Virginia Railway Express (VRE) L'Enfant Station and Fourth Track Project will expand service at the existing VRE station by providing a new fourth track north of the existing platform in what is currently a grassy area between the station platform and a retaining wall on the 600 Maryland Avenue SW property (shown in **Figure 1-1**).

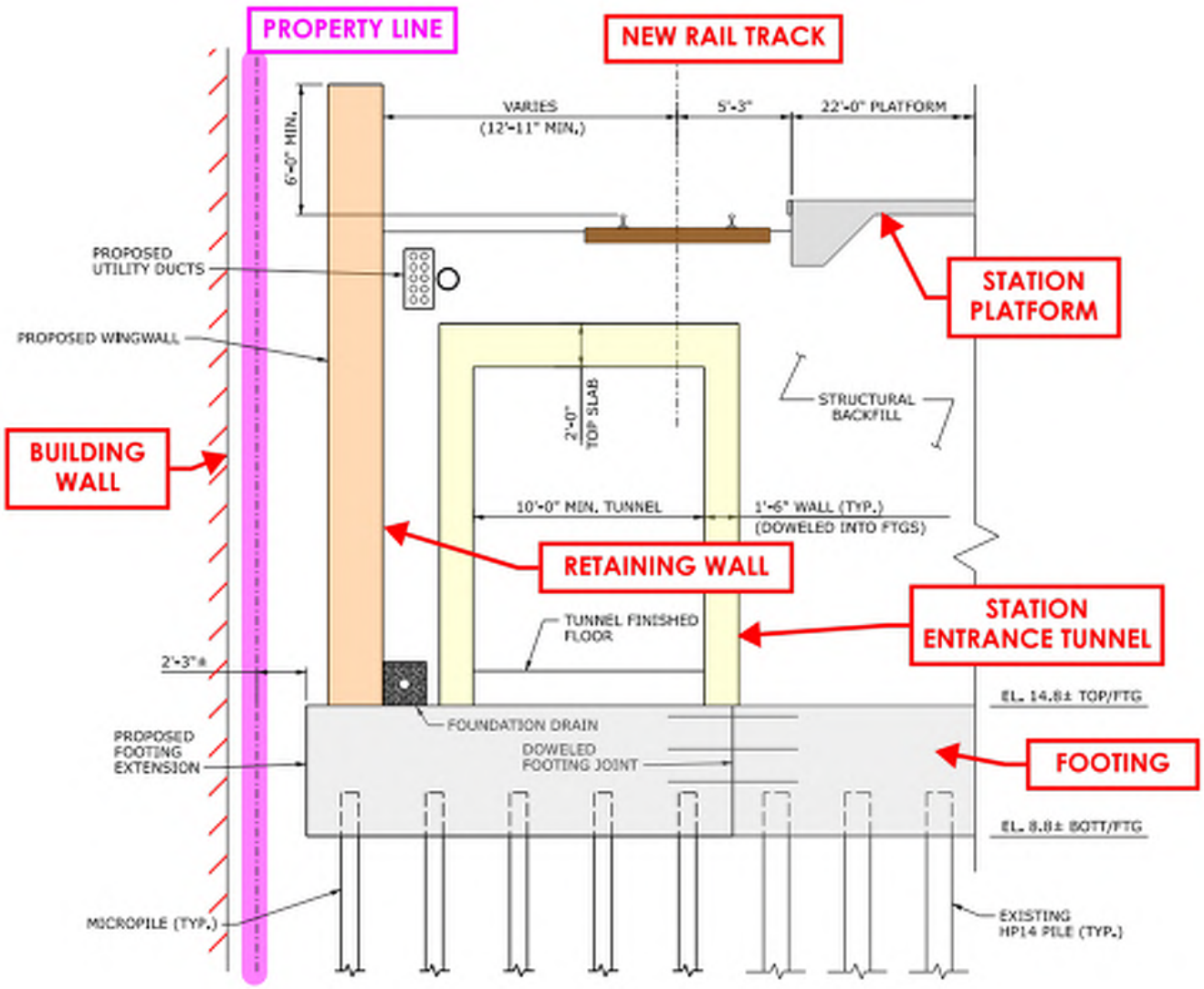
The proposed track will be closer to the 600 Maryland Avenue SW property and a new retaining wall will separate the rail corridor from the adjacent building to avoid imparting additional load on the building face. The functionality of this retaining wall is assessed in this memo.

Figure 1-1: Location Overview – Plan View



A typical section of the wall is shown in **Figure 1-2** looking east toward 6th Street SW with the retaining wall shown in **orange**.

Figure 1-2: Retaining Wall Section



Design Criteria

The new retaining wall will be located in a similar location of an existing wall supporting the current VRE entrance stairs with a primary purpose of retaining fill used to build up the rail corridor. The wall holds back this fill and prevents earth pressure or any live load surcharge from the new railroad track from acting on the adjacent building.

The design of railroad structures is governed by the American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual of Railway Engineering (MRE) and supplemented with requirements of the specific railroad owner/operator which in this case is CSX Transportation (CSXT). The reinforced concrete retaining wall will

be designed to resist soil pressure and train live load surcharge as specified in the MRE with soil properties as specified in the Geotechnical Engineering Report.

AMEMA also introduces the concept of a 'crash wall' in MRE Chapter 8, Article 2.1.5 in a section on 'Pier Protection' with the primary purpose of preventing a train impact on a piers causing bridge collapse. In this section, a crash wall is defined as a 2'-6" thick wall which 'limits damage by the redirection and deflection of railroad equipment'. Crash walls are required for any bridge pier within 25 feet or less from the centerline of a railroad track, with the required height of the wall varying based on its proximity to the track.

AREMA does not further expand upon requirements for crash walls beyond 'pier protection'. The CSX Public Projects Manual notes similar requirements in the 'Overhead Bridge Criteria' Appendix in Section III, only specifically referencing cases where piers are involved. A summary of crash wall geometric design criteria is listed in **Table 1-1**.

Table 1-1: Crash Wall Geometric Criteria Summary

	AREMA 8-2.1.5.1		CSX Overhead Bridge Criteria	
Feature Distance to CL Track	**Height above T/R***	**Thickness**	**Height above T/R***	**Thickness**
12 ft < CL Track < 25 ft	6'-0"	2'-6"	6'-0"	2'-6"
CL Track < 12 ft	12'-0"	2'-6"	12'-0"	2'-6"

* T/R – Top of Rail Elevation

Project Wall Function and Design

The 600 Maryland Avenue SW building corner is located within 25 feet of the new track. The minimum distance from the track centerline to the property line is approximately 17'-6", with the building wall further offset, yielding approximately 19'-0" from the building wall to the track.

Since 600 Maryland Avenue SW is not a bridge pier, meeting crash wall requirements is **not** required by code and this wall is **not** considered a crash wall.

At this location, the track alignment is coming off a curve into a straight, tangent alignment through most of the station limits. Superelevation on the tracks from the curvature tends to tilt the train inward toward the platform and away from the wall. Also, the track adjacent to the property line is intended to be primarily a passenger rail track which results in lighter loading than freight trains and the passenger trains would typically be at low speeds or in a stopped condition at the VRE station platform. The track will carry freight trains during some phases of construction when the 6th Street SW bridge is replaced, but a series of railroad crossovers and other geometric features will limit the speed trains travel during the construction period.

Though this wall is not a crash wall, providing a robust retaining wall is still required to resist the forces acting on it. The design team has recommended using a minimum wall thickness of 2'-6" as this is sufficient width to resist the required earth pressure and surcharge loading forces acting on the wall stem with reasonable amount of steel reinforcement, while also generally meeting the AREMA and CSX wall thicknesses shown in **Table 1-1** as a best practice.

The wall will be located 12 feet or greater from the centerline of track, so we recommend it extend 6 feet above the top of rail. This 6-foot height satisfies AREMA and CSX crash wall requirements shown in **Table 1-1** as best practice. This height also provides ample fall protection for railroad workers and avoids blocking the windows and natural light from the adjacent property at track level.

According to the plans for the adjacent building, there is a floor located at approximately Elevation 45.3 with the roof at Elevation 56.0. The top of rail for the adjacent track is at approximately Elevation 37.7 which would set the top of the retaining wall at approximately Elevation 44. This wall height should not interfere with the series of windows highlighted in **Figure 1-3**.

***Figure 1-3**: Isometric View of Adjacent Building*

We will continue to coordinate with the adjacent property owner through final design. If there is a need to limit visual sight lines of the rail corridor from the highlighted floor in **Figure 1-3,** fencing could be considered atop the wall, though fencing may limit natural light into the building.

Since the adjacent building floor is already within a direct path view of the existing tracks, we are not proposing the wall be extended further upward to avoid blocking sight lines, which will also be coordinated further with the property owner during final design.

Appendix J

South Elevator Concept Memo

L'Enfant Station and Fourth Track Project

This memo was completed prior to the VRE requested update to track numbering per CSX direction from proposed track numbers 1-4 to track numbers 2-5, which is reflected in the Final 30% planset.

To: VRE

Date: May 19, 2025
Project #: 39641.00 (VHB)

From: VHB Design Team

Re: VRE L'Enfant Station & Fourth Track Improvements Project - Elevator Connection to WMATA L'Enfant Plaza Metrorail Station Feasibility

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The Virginia Railway Express (VRE) L'Enfant Station and Fourth Track Improvements Project (the Project) proposes to enhance rail operations and increase capacity by adding a fourth track between the L'Enfant Interlocking and Virginia (VA) Interlocking and replacing the existing side platform with a center platform. The new platform will be able to accommodate two full-length VRE trains simultaneously, enabling bi-directional service and reducing crowding. Additionally, the Project aims to strengthen multimodal connectivity and access surrounding the station. The current design includes replacement of the 6th Street SW railroad bridge and expansion of the 7th Street SW bridge and will include elevators and stairs from the new platform to the street level at both the 6th and 7th Street SW station entrances.

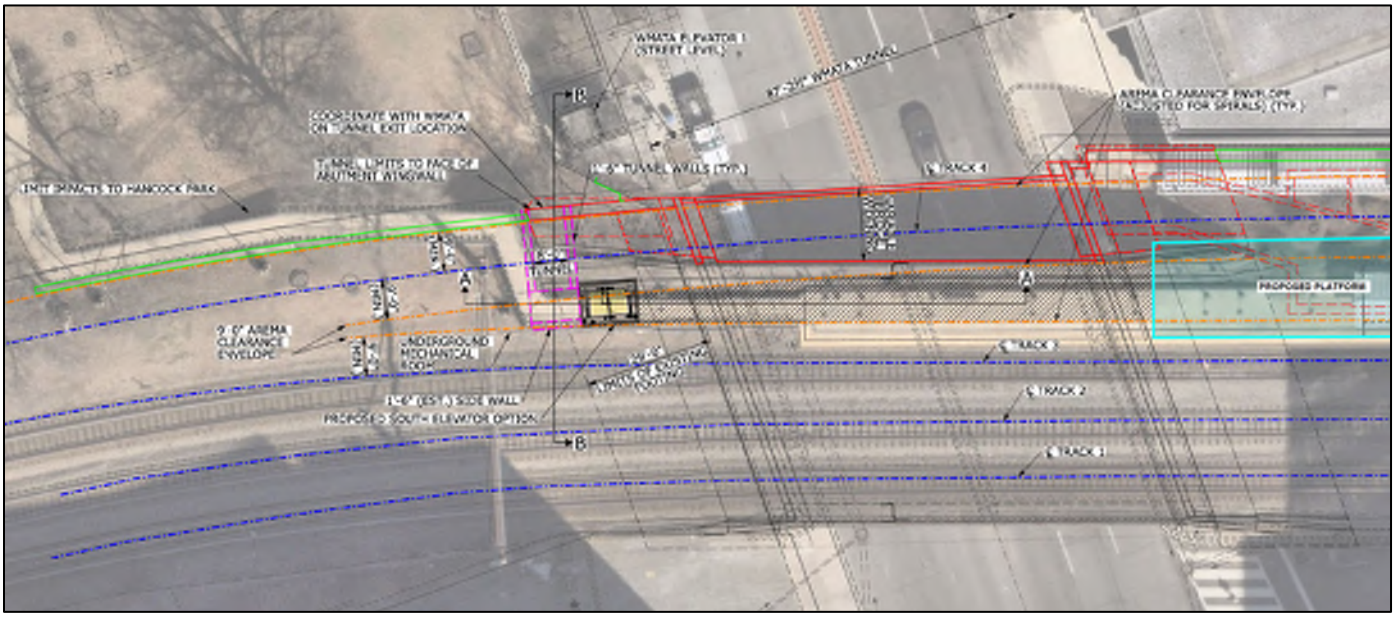
The purpose of this memorandum is to review the feasibility of elevator connections between the proposed VRE platform and the Washington Metropolitan Area Transit Authority (WMATA) L'Enfant Plaza Metrorail Station at the 7th Street SW location. For the purposes of this feasibility study, the railroad corridor is referred to with a north-south orientation (i.e., Union Station to the north, Richmond to the south, Hancock Park to the west) rather than an east-west orientation using cardinal directions. Three elevator concepts were evaluated as follows:

1. Railroad South Elevator Concept – a two-stop elevator located on the railroad-south (cardinal west) end of the VRE platform between Tracks 3 and 4 that transfers passengers between the platform level and street level through a pedestrian tunnel with an entrance adjacent to the existing Metro street elevator.
2. Direct Elevator Connection Concept – a three-stop elevator serving the VRE platform, street level, and a below-ground pedestrian tunnel that connects directly into the Metro station on the unpaid side of the WMATA faregates.
3. Street Level Elevator Connection Concept – an independent street-level elevator located on the railroad-north side of 7th Street SW

1. Railroad South Elevator Concept Evaluation

The Project Team reviewed the feasibility of an elevator connection located at the south end of the proposed VRE platform. In this concept, shown in **Figure 1-1**, an elevator connecting to a pedestrian tunnel would be installed at the south end of the VRE platform to provide pedestrians direct access to the existing WMATA street level elevator located on the railroad-south side of 7th Street SW. In evaluating this concept, the Project Team considered several constraints as documented in the sections below and ultimately determined this elevator connection is not feasible.

Figure 1-1: South End Elevator Concept



Track Constraints: Three existing Tracks 1, 2, and 3 (railroad-east to west) as shown in **Figure 1.1** are in service through this section of the corridor and will remain in the current locations with a new Track 4 added on the railroad-west side of the corridor with all permanent improvements located inside the Railroad Right of Way. The proposed VRE platform is located between Tracks 3 and 4 as shown in **Figure 1.1**.

Track Curvature: The south elevator location is significantly constrained by the required curvature of the proposed Track 4 and available space between tracks 3 and 4 to avoid impacts to Hancock Park while ensuring the track alignment ties into a tangent segment at the 9th SW Street Expressway bridge.

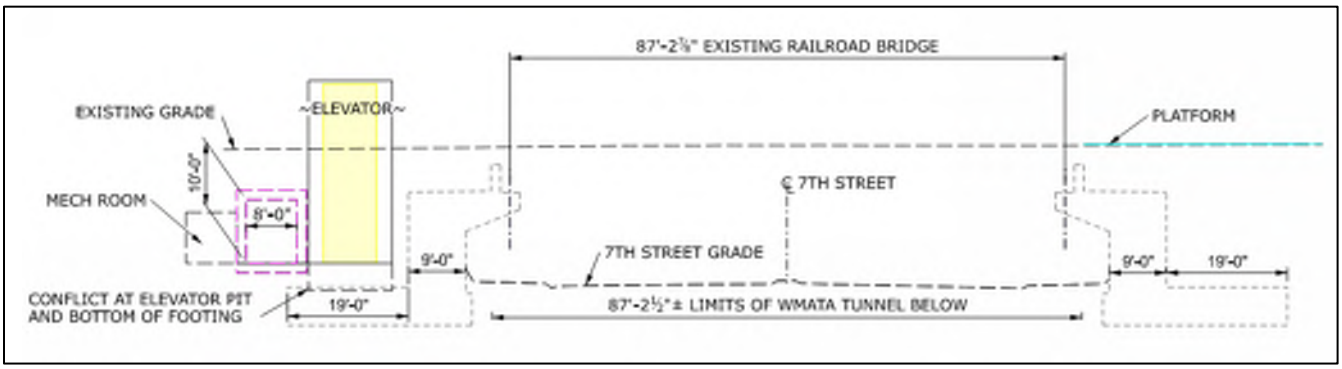
AREMA Clearance: Per American Railway Engineering and Maintenance-of-Way Association (AREMA) criteria, the Project must maintain a minimum horizontal offset of 9 feet from track centers to the nearest obstruction. The proposed railroad-south elevator concept location between Tracks 3 and 4 is within inches of impeding on the required horizontal clearance, given the need to maintain the tangent track alignment. As a result, the elevator cannot be moved further railroad-south.

Structural Constraints: The 7th Street SW bridge requires widening of approximately 21 feet to accommodate the proposed 4th track and new island platform as shown in red linework on **Figure 1.1**.

7th Street SW Bridge Geometry: The existing abutments for the 7th Street SW bridge include a 9-foot-wide stemwall and a 19-foot-wide footing behind the stem (see **Figure 1-2**) to provide sufficient counterweight for the girder supports cantilevered out over each sidewalk. This unique abutment geometry and function to resist loads presents a major constraint to adding an elevator in this location. To meet the above-mentioned AREMA clearance, a proposed elevator would need to be positioned

over the top of the existing 7th Street SW bridge footing to allow the 4th track alignment to transition back adjacent to Track 3 before crossing the 9th Street SW Expressway bridge to the railroad-south.

Figure 1-2: Section View through 7th Street SW Bridge



Elevator Pit Depth: The elevator would require a pit depth of at least four feet, and the elevator structure/hoist way would require anchorage into the existing bridge footing. It is likely that some amount of footing removal would be required for the elevator pit and mechanical systems to accommodate pumping any drainage away from elevator. Anchoring the elevator to the existing foundation would also require rigorous structural analysis of the existing system to determine the retrofitting that would be required to add additional structural counterweight systems and account for the removal of soil dead loads at the elevator and tunnel locations. Based upon preliminary review, it is most likely the proposed elevator would require some reconstruction of the existing bridge footing to provide elevator pit depth. Alternatively, raising the proposed pedestrian tunnel connection to Hancock Park/WMATA elevator to avoid reconstructing the bridge footing would result in a grade difference between the south elevator exit and Hancock Park/WMATA elevator. It would also require raising tracks 3 and 4 as well as the VRE platform to maintain minimum vertical clearances over the tunnel. The grade change of approximately 2-3 feet would require sloping the proposed pedestrian tunnel and/or providing a switchback ramp in Hancock Park to connect to the existing Metro elevator. This option would require extensive coordination with WMATA and NPS and would have permanent impacts to the NPS Hancock Park property beyond the current project intent.

Additional Challenges

In addition to the above-mentioned track and structural constraints, the south elevator would face the following challenges:

Constructability: Constructing the elevator would require installing excavation support within the limits of the existing bridge footing while maintaining railroad traffic along Tracks 1, 2, and 3 during construction. In addition, a dead load counterweight would be needed during construction to offset the girder loads on bridge seats over the sidewalk, which would be very challenging at best or not feasible

at all. Construction would also require closure of the roadway, VRE ramp access, and sidewalk during this counterweight installation for safety concerns.

WMATA Zone of Influence: Construction activities would be within the zone of influence for the WMATA underground tunnel located beneath 7th Street SW; therefore, extensive coordination with WMATA would be required to determine feasibility with likely request for additional structural analysis of the Metro tunnel vault structure in accordance with the WMATA Joint Development & Adjacent Construction (JDAC) criteria. While the JDAC manual provides well-defined requirements, the ultimate feasibility and requirements for any adjacent construction are generally at the judgement of the WMATA Structures Group. This can be a long and intensive coordination process resulting in extensive additional design and construction requirements before receiving WMATA's approval.

Elevator Mechanical Room: The mechanical room for the proposed elevator would likely need to be located underground between Tracks 3 and 4, which adds to the constructability challenges. An elevator option that does not require a machine room could be evaluated, but it does not relieve other feasibility constraints with siting the elevator at the south end of the platform.

Coordination: Additional coordination and approvals would be required from stakeholders including, but not limited to, WMATA, CSXT, DDOT, and NPS. Any proposed elevator configuration above the existing bridge footing would also be subject to formal CSXT approval as the bridge owner.

Conclusion

Due to the extensive constraints, challenges, property impacts, and prohibitive costs, the Project Team has determined the Railroad South Elevator Concept as infeasible.

2. Direct Elevator Connection Concept

The Project Team analyzed the feasibility of a direct three-stop elevator connection with an undergrade pedestrian tunnel on the railroad-north side of 7th Street SW connecting passengers from the proposed VRE platform to the WMATA L'Enfant Plaza Metro station north entrance mezzanine. After reviewing the concept, the option was deemed infeasible due to the following spatial constraints:

Underground Constraints: The alignment for an underground pedestrian tunnel would need to avoid penetrating WMATA's existing underground tunnel vault section beneath 7th Street SW as well as the structural foundation for the adjacent building at 600 Maryland Avenue SW. As-built drawing records suggest a maximum clearance of 22 feet may exist between the existing WMATA tunnel vault and the adjacent building foundation as shown in **Figure 1-3**. However, abandoned support of excavation located in front of both substructures further constrains available space by an additional 3 feet on each side, limiting the maximum space available for new support of excavation and tunnel to approximately 16 feet. The additional support of excavation for a new tunnel construction is assumed to require another 3 feet of width on each side of tunnel, leaving around 10 feet of available space for the new

tunnel. Assuming 2.5-foot-thick walls, that would leave approximately 5 feet of clear space between new tunnel walls for pedestrians, which would be insufficient.

Bridge Foundation Constraints: In addition, the underground tunnel alignment along 7th Street SW from platform to WMATA mezzanine spaces would be in direct conflict with the proposed underground abutment footing extension and pile system that would support the widened 7th Street SW Bridge below, as shown in **Figure 1-3** and **Figure 1-4**.

Figure 1-3: Plan View of South End of Platform

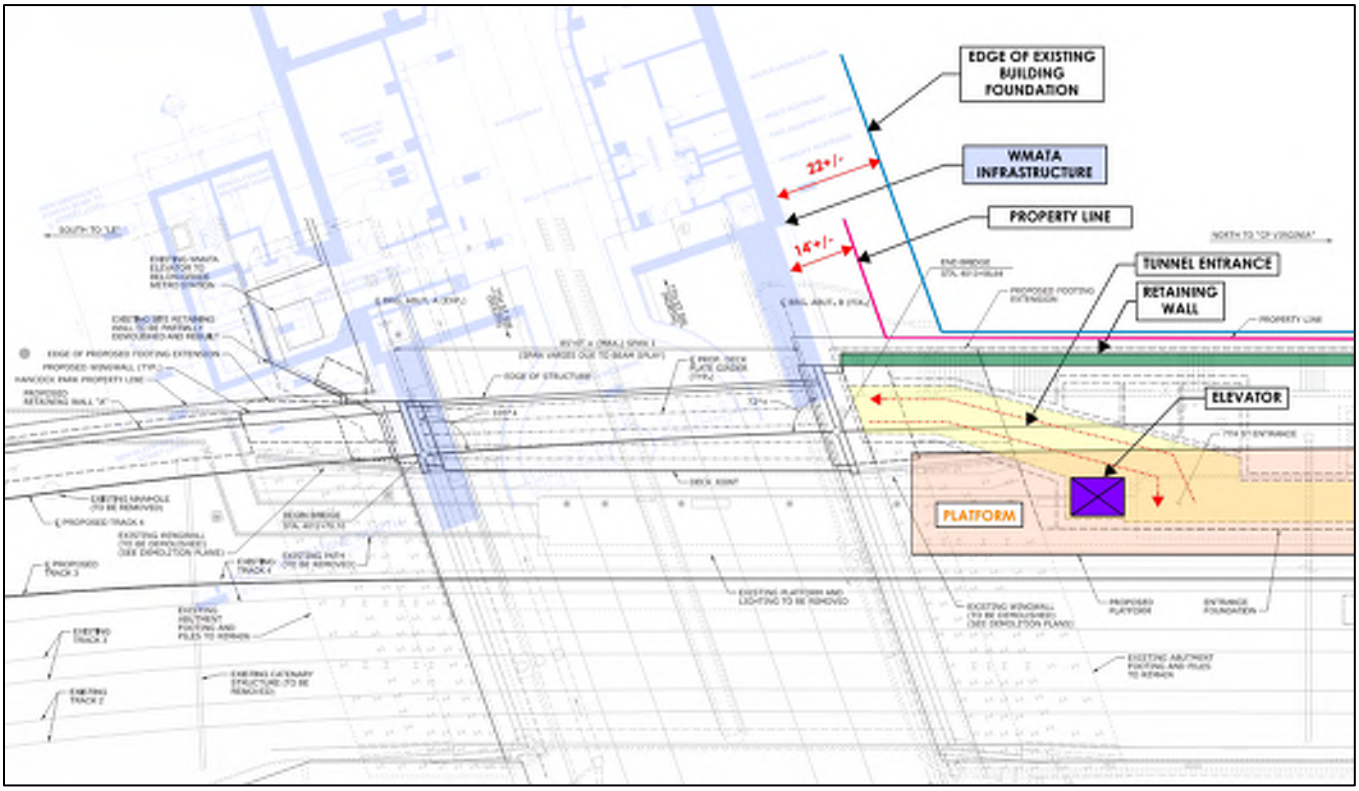
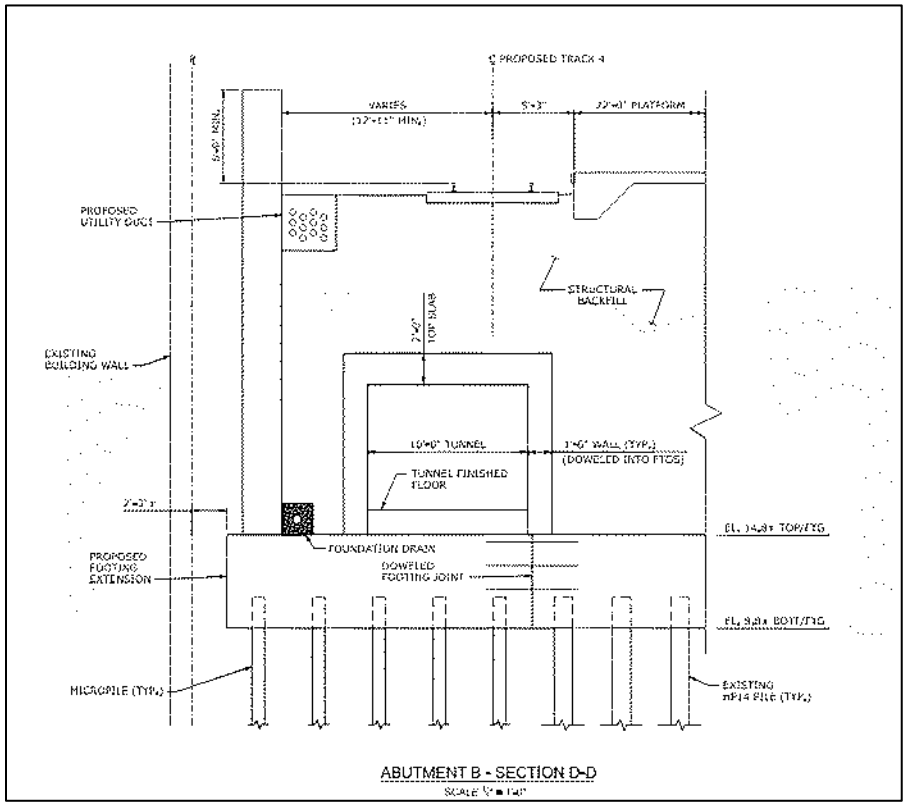


Figure 1-4: Section View through 7th Street SW Bridge North Abutment



Conclusion

Due to insufficient space for a tunnel to connect the elevators combined with constraints with penetrating the proposed bridge foundations, the Project Team has determined the Direct Elevator Connection Concept as infeasible.

3. Street Level Elevator Connection Concept

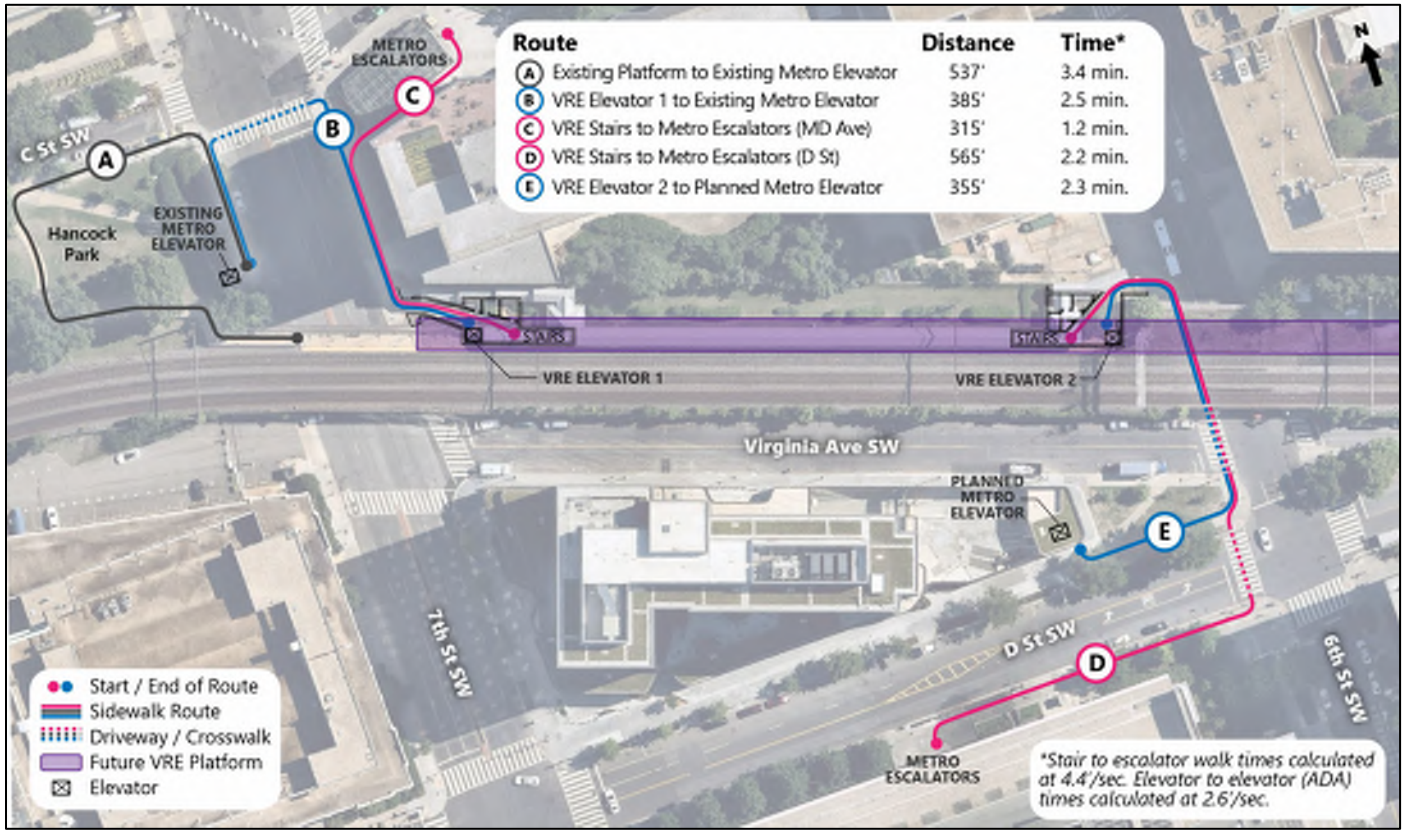
The Project Team also conducted a cursory review of a concept for a new elevator being installed at street level on the railroad-north side of 7th Street SW (opposite the existing WMATA elevator) to provide passenger access between the proposed VRE station entrance and the WMATA station. This connection would be a separate project from the VRE L'Enfant Station and 4th Track project. Ideally, a new elevator would be installed adjacent to the WMATA station mezzanine on the unpaid side of the fare gates connecting to the back of house spaces to avoid penetrations into the WMATA tunnel vault.

Similarly to the pedestrian tunnel concept evaluated above, an elevator installation would need to avoid the existing WMATA station back of house walls, the adjacent building foundation, and existing support of excavation assumed left in place. However, unlike the direct connection pedestrian tunnel option, a small single-car elevator shaft has more feasibility within the estimated 10 feet of available clearance. While this option does not provide a direct connection between the two stations, it appears to be a

more feasible alternative for passenger transfers between stations, with the following benefits to WMATA riders:

- Travel Distance: Reduces the current travel distance for passengers transferring between the WMATA and VRE stations to less than 200 feet. Current access routes, shown in **Figure 1-5**, exceed 300 feet of travel distance between the proposed VRE entrance and the escalators at Maryland Avenue SW (route C below) or the existing WMATA elevator on the opposite side of 7th Street SW via the nearest crosswalk (route A).
- Pedestrian Safety: Improves pedestrian safety for transferring riders by eliminating the need to cross 7th Street SW to access the existing WMATA elevator on the south side of the street.
- ADA Access: Provides an additional ADA-compliant access point to the L'Enfant Plaza Metro station. When coupled with the existing access elevator, the future condition would provide access on both sides of the street and provide a redundancy in the event one of the elevator facilities becomes inoperable or is closed for maintenance or repairs.

Figure 1-5: Existing and Proposed Connections to L'Enfant Plaza Metrorail Station



Conclusion

The Project Team has determined that the Street Level Elevator Connection Concept appears to be the most feasible alternative for connection between the VRE and Metro stations at L'Enfant. This would require a more detailed feasibility analysis beyond this cursory review with planning, design, and construction completed under a separate project from the VRE L'Enfant Station and 4th Track Project.