LOCATION MAP

LATITUDE: N 41°25'50" LONGITUDE: W 81°36'10"

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

ROUTE	ADT (2026)	ADTT (2026)	ADT (2046)	ADTT (2046)	D	DESIGN SPEED	LEGAL SPEED	DESIGN FUNC. CLASS	NHS ROUTE?
S.R. 14 (BROADWAY AVE.)	18500	1295	19000	1330	0.51	35	35	03 - PRINCIPAL ARTERIAL (URBAN)	Y
C.R. 240 (HENRY ST.)	7000	630	7500	675	0.54	25	25	07 - LOCAL (URBAN)	N
CHAINCRAFT RD.						25		07 - LOCAL (URBAN)	N

DESIGN EXCEPTIONS

NONE REQUIRED

ADA DESIGN WAIVERS

NONE REQUIRED

UNDERGROUND UTILITIES
Contact Two Working Days Before You Dig
OHIO811.org Before You Dig
OHIO811, 8-1-1, or 1-800-362-2764
(Non members must be called directly)

PLAN PREPARED BY:
AECOM
564 WHITE POND DRIVE AKRON, OHIO 44320-1100
(330) 836-9111

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

CUY-14-6.93

RECONSTRUCTION OF THE EXISTING GRADE-SEPARATED CROSSING WITH THE NORFOLK SOUTHERN RAILROAD AND WHEELING AND LAKE ERIE RAILROAD

CITY OF GARFIELD HEIGHTS
CUYAHOGA COUNTY

INDEX OF SHEETS:

FEDERAL PROJECT NUMBER

E190 (250)

RAILROAD INVOLVEMENT

NORFOLK SOUTHERN AND WHEELING AND LAKE ERIE

PROJECT DESCRIPTION

REPLACE THE WHITEHOUSE CROSSING BRIDGE (SR-14) OVER THE NORFOLK AND SOUTHERN RAILROAD ON A NEW ALIGNMENT. WORK INCLUDES NEW PAVEMENT, CURBS, WALKS, STORM DRAINAGE, 22'X7' AND 8'X4' CULVERTS, MSE WALLS, WATERLINE AND SANITARY RELOCATIONS, TRAFFIC SIGNAL, SIGNING AND PAVEMENT MARKINGS, AND LIGHTING.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	7.72 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	1.00 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA:	8.72 ACRES

2023 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND CHANGES LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKINGOF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT FOR THE SIDE ROADS AS DESCRIBED ON SHEET P.25 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

John Picuri, P.E., S.I.
District 12 Deputy Director

Pamela Boratyn
Director, Department of Transportation

STANDARD CONSTRUCTION DRAWINGS

BP-2.2	1/15/21	CB-2-2B	7/19/24	WQ-1.2	1/15/16	TC-41.20	10/18/13	MT-95.31	7/19/19	AS-1-15	1/20/23	800	7/19/24	WATERWAY PERMIT	
BP-3.1	1/19/24	CB-2-3	7/19/24			TC-41.30	4/21/23	MT-95.41	7/21/23	AS-2-15	1/20/23	809	7/19/24	08/15/2024	
BP-3.2	1/18/19	CB-3	7/19/24	HL-10.11	7/21/23	TC-41.40	10/18/13	MT-95.50	7/21/17	BR-2-15	7/19/24	813	7/21/23		
BP-4.1	7/19/13	CB-3A	7/19/24	HL-10.12	7/21/23	TC-42.20	10/18/13	MT-96.11	7/21/23	EXJ-4-87	1/19/24	825	7/19/24		
BP-5.1	7/15/22			HL-10.13	1/20/23	TC-52.10	10/18/13	MT-96.20	7/21/23	GSD-1-19	7/19/24	832	7/19/24		
BP-7.1	7/19/24	DM-1.1	7/17/20	HL-20.11	7/21/23	TC-52.20	1/15/21	MT-97.10	4/19/19	PCB-91	7/17/20	836	1/19/24		
		DM-1.2	7/16/21	HL-20.14	4/17/20	TC-71.10	4/21/23	MT-97.11	1/20/17	VPF-1-24	7/19/24	840	7/19/24		
RM-1.1	1/20/23	DM-4.2	7/20/12	HL-30.11	7/21/23	TC-74.10	7/21/23	MT-101.60	4/21/23			867	4/15/22		
RM-4.2	4/17/20	DM-4.3	1/15/16	HL-30.21	4/17/20	TC-81.11	1/19/24	MT-101.70	7/19/24			895	4/18/14		
RM-4.5	1/17/25	DM-4.4	1/15/16	HL-30.22	1/15/21	TC-81.22	7/21/23	MT-101.75	7/21/23			909	7/19/24		
RM-4.6	7/19/24			HL-30.31	7/19/24	TC-83.10	1/17/20	MT-103.10	1/21/22			913	4/16/21		
		HW-2.1	7/15/22	HL-40.20	7/19/24	TC-83.20	7/19/24	MT-105.10	1/17/20			961	4/17/20		
MH-1	7/15/22	HW-2.2	7/20/18	HL-50.11	1/16/15	TC-85.10	1/19/24	MT-110.10	7/19/13			995	7/17/15		
MH-2	7/19/24			HL-50.21	7/15/22	TC-85.20	4/21/23								
MH-3	7/19/24			HL-60.11	7/21/17										
MH-5	7/19/24			HL-60.31	7/19/24										

ENGINEER'S SEAL	ENGINEER'S SEAL
FOR SHEETS P.1 - P.208	FOR SHEETS P.209 - P.399
STATE OF OHIO ROBERT J. JANKOVSKY E-88606 REGISTERED PROFESSIONAL ENGINEER	STATE OF OHIO JOSHUA DAVID MILLER E-86773 REGISTERED PROFESSIONAL ENGINEER

TITLE SHEET

DESIGN AGENCY
AECOM
564 White Pond Drive
Akron, OH 44320
(330) 836-9111
www.aecom.com

DESIGNER RJJ
REVIEWER WFS 08/05/24
PROJECT ID 104132
SHEET P.1 TOTAL 399

CUY-14-6.93

MODEL: Sheet PAPERSIZE: 34x22 (in.) DATE: 2/19/2025 TIME: 1:12:57 PM USER: robert.jankovsky
pw:\\aecom-na-pw.bentley.com:AECOM_DS20_NA_2019\Documents\60581903-CUY-14-6.93\104132\400-Engineering\Roadway\Sheets\104132_GT001.dgn

GENERAL

ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLIES TO ALL CROSS-SECTIONS, EVEN THOUGH OTHERWISE SHOWN.

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

CITY OF CLEVELAND,
CLEVELAND PUBLIC POWER
ATTN: CHRISTOPHER M. HIRZEL
1300 LAKESIDE AVE.
CLEVELAND, OH 44114
(216) 664-3922, EXT. 76115
CHIRZEL@CPP.ORG

CITY OF CLEVELAND,
CLEVELAND WATER
ATTN: FRED ROBERTS
1201 LAKESIDE AVE.
CLEVELAND, OH 44114
(216) 664-2444, EXT. 75590
FRED_ROBERTS
@CLEVELANDWATER.COM
WATERSERVICEAPPLICATION
@CLEVELANDWATER.COM
(PLAN SUBMITTAL)

CITY OF CLEVELAND,
WATER POLLUTION CONTROL
ATTN: ALAN SCHIELY
12302 KIRBY RD.
CLEVELAND, OH 44108
(216) 664-3638
ASCHIELY@CLEVELANDWPC.COM

CITY OF CLEVELAND,
TRAFFIC ENGINEERING
ATTN: ANDREW R. CROSS
601 LAKESIDE AVE., STE. 25
CLEVELAND, OH 44114
(216) 664-3197
ACROSS@CITY.CLEVELAND.OH.US

CITY OF GARFIELD HEIGHTS
ATTN: MARK SIKON
5407 TURNEY RD.
GARFIELD HEIGHTS, OH 44125
(216) 475-1107
MSIKON@GARFIELDHTS.ORG

NORTHEAST OHIO REGIONAL
SEWER DISTRICT
ATTN: ROBERT STOERKEL
3900 EUCLID AVE.
CLEVELAND, OH 44115
(216) 881-6600, EXT. 6802
STOERKLER@NEORSD.ORG
HTTPS://WWW.SAGESGOV.COM/
NEORSD-OH (PLAN SUBMITTAL)

AT&T
ATTN: JAMES JANIS
13630 LORAIN AVE., 2ND FLOOR
CLEVELAND, OH 44111
(216) 476-6142
PJ8191@ATT.COM

THE ILLUMINATING CO/FIRST ENERGY/CEI
ATTN: JOHN M. ZASSICK
6896 MILLER RD., STE. 101
BRECKSVILLE, OH 44141
(440) 546-8706
JMZASSICK
@FIRSTENERGYCORP.COM

FIRST ENERGY TRANSMISSION GROUP
ATTN: BRYAN HUNSCHE
76 S. MAIN ST.
AKRON, OH 44308
(330) 384-5180
BHUNSCHE
@FIRSTENERGYCORP.COM

CHARTER
ATTN: EMIL SYMISTER
7820 DIVISION DR.
MENTOR, OH 44060
(440) 343-1530
EMIL.SYMISTER@CHARTER.COM

ENBRIDGE GAS
(FORMERLY DOMINION ENERGY)
320 SPRINGSIDE DR.
AKRON, OH 44333
(330) 664-2409
RELOCATION
@DOMINIONENERGY.COM

ENERGY TRANSFER
(SUNOCO PIPELINE)
ATTN: DEBRA SCHNECK
ATTN: MATHEW DEBROCK
525 FRITZTOWN RD.
SINKING SPRING, PA 19608
(610) 670-3258
(216) 712-2945
DEBRA.SCHNECK@ENERGYTRANSFER.COM
ENCROACHEMNTS@ENERGYTRANSFER.COM
(PLAN SUBMITTAL)

VERIZON BUSINESS (MCI)
ATTN: DAN ARZ
12300 RIDGE RD
NORTH ROYALTON, OH 44133
(216) 570-9343
(440) 457-4832
DANIEL.ARZ@VERIZON.COM
VZFIBER-NORTHERNOHIO@
VERIZON.COM (PLAN SUBMITTAL)

WINDSTREAM
ATTN: GEOFFREY HAMM
560 TERNES AVE.
ELYRIA, OH 44035
(937) 725-5358
GEOFFREY.P.HAMM
@WINDSTREAM.COM

LUMEN/CENTURYLINK/LEVEL 3
ATTN: DOUG HOLLOWAY
4000 CHESTER AVE
CLEVELAND, OH 44103
(216) 426-6010
DOUG.HOLLOWAY@LUMEN.COM
RELOCATIONS@LUMEN.COM
(PLAN SUBMITTAL)

ZAYO FIBER SOLUTIONS
ATTN: DAVE GALUSKA
4199 KINROSS LAKES PKWY., STE. 10
RICHFIELD, OH 44286
(234) 281-0025

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEET P.3 OF THE PLANS FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

PROJECT CONTROL

POSITIONING METHOD: ODOT VRS GNSS
MONUMENT TYPE: TYPE B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD88
GEOID: GEOID12B

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83 (2011)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE, NORTH ZONE (3401)
COMBINED SCALE FACTOR: 0.99992561
ORIGIN OF COORDINATE SYSTEM: 0,0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. BENCH ALL OTHER SLOPED EMBANKMENT AREAS AS SET FORTH IN SECTION 203.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS). NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF SECTION 203.05.

CONSTRUCTION NOISE

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION-TYPE DEVICES BETWEEN THE HOURS OF 9:00 PM AND 7:30 AM. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY DEVICE IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

THE PROCESS FOR OBTAINING A NOISE ORDINANCE WAIVER IS DESCRIBED IN THE CITY OF GARFIELD HEIGHT'S ORDINANCE 535.07 - SPECIAL VARIANCES:

535.07 SPECIAL VARIANCES
A) THE MAYOR SHALL HAVE THE AUTHORITY TO GRANT SPECIAL VARIANCES TO THE PROVISIONS IN THIS CHAPTER.
B) THE PERSON DESIRING THE VARIANCE SHALL SUBMIT A REQUEST, IN WRITING, TO THE MAYOR. THE REQUEST SHALL INCLUDE THE SOURCE OF SOUND, THE REASON THE VARIANCE IS NEEDED, THE LENGTH OF TIME THE VARIANCE IS NEEDED AND ANY OTHER INFORMATION THE MAYOR DEEMS NECESSARY.
C) THE MAYOR SHALL NOTIFY ANY PERSONS HE FEELS WOULD BE ADVERSELY AFFECTED BY THE VARIANCE. THOSE PERSONS MAY STATE THEIR OBJECTION IN WRITING TO THE MAYOR. IN DETERMINING WHETHER TO GRANT OR DENY THE VARIANCE, THE MAYOR SHALL BALANCE THE HARDSHIP TO THE APPLICANT, THE COMMUNITY AND OTHER PERSONS OF NOT GRANTING THE SPECIAL VARIANCE AGAINST THE ADVERSE IMPACT ON THE HEALTH, SAFETY AND WELFARE OF PERSONA AFFECTED, THE ADVERSE IMPACT ON PROPERTY AFFECTED AND ANY OTHER ADVERSE IMPACTS OF GRANTING THE SPECIAL VARIANCE.
D) THE MAYOR HAS THE AUTHORITY TO GRANT THE VARIANCE, GRANT THE VARIANCE WITH CONDITIONS, OR DENY THE VARIANCE. THE VARIANCE IS NOT IN AFFECT UNTIL ALL CONDITIONS ARE MET, AND BECOMES VOID IF AND WHEN ANY CONDITION IS NOT ADHERED TO. APPLICANTS FOR SPECIAL VARIANCES AND PERSONS CONTESTING SPECIAL VARIANCES MAY APPEAL THE MAYOR'S DECISION TO THE BOARD OF ZONING APPEALS. (ORD. 50-2012)

NOTE: THE CITY WOULD BE AMENABLE TO ODOT ADMINISTERING A BLANKET WAIVER TO AVOID REPEATED REQUESTS TO THE MAYOR.

MONUMENT ASSEMBLIES

CONSTRUCT MONUMENT ASSEMBLIES IN ACCORDANCE WITH THE DETAILS SHOWN ON THE STANDARD CONSTRUCTION DRAWINGS AND AT THE LOCATIONS SHOWN ON SHEETS RW.4 AND RW.5.

TO ADDRESS MONUMENTATION THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 623 - MONUMENT ASSEMBLY, TYPE C	*26 EACH*
ITEM 623 - RIGHT-OF-WAY MONUMENT, TYPE B	*23 EACH*

ITEM 623 - CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN

PER CMS 623.04 AND 623.05, THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING MONUMENT ASSEMBLIES PRIOR TO BEGINNING ANY PAVEMENT WORK AND AFTER PROJECT COMPLETION. A PRE-INSPECTION REPORT TO BE SUBMITTED PRIOR TO COMMENCEMENT OF WORK AND POST-CONSTRUCTION REPORT SUBMITTED PRIOR TO OR IN CONJUNCTION WITH THE FINAL INSPECTION TO THE DISTRICT SURVEY OPERATIONS MANAGER. EXISTING MONUMENTATION SHALL BE PRESERVED AND PERPETUATED THROUGHOUT THE PROJECT.

THE DEPARTMENT'S STANDARDIZED VERIFICATION REPORT TEMPLATE CAN BE FOUND AT THE FOLLOWING LOCATION: HTTPS://WWW.DOT.STATE.OH.US/DIVISIONS/CONSTRUCTIONMGT/DOCUMENTS

ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NEEDED TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM 623 - CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN.

ANY MONUMENT ASSEMBLY THAT IS IMMEDIATELY VISIBILE ON THE SURFACE OF THE EXISITNG PAVEMENT OR IS UNCOVERED DURING THE PLANNING PROCESS SHALL BE ADJUSTED TO GRADE OR, IF SUBSTANTIAL DETERIORATION IS DETERMINED BY THE ENGINEER, RECONSTRUCTED TO GRADE. THESE ADJUSTMENTS AND RECONSTRUCTIONS SHALL BE PAID FOR UNDER THE PERTINENT 623 PAY ITEMS.

AFTER COMPLETION OF ALL WORK, BUT PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, AN OHIO PROFESSIONAL SURVEYOR SHALL DETERMINE THE MINIMUM VERTICAL CLEARANCES OF ALL EXISTING AND NEW BRIDGES WITHIN THE PROJECT LIMITS. AT A MINIMUM, MEASUREMENTS SHALL BE TAKEN ALONG EACH FASCIA BEAM AT THE EDGE OF SHOULDERS, EDGE LINES, LANE LINES, AND CROWN OF THE ROADWAY BELOW. FOR BRIDGES OVER RAILROADS, MEASUREMENTS SHALL BE TAKEN ALONG EACH FASCIA BEAM AT BOTH RAILS OF EACH TRACK BELOW. THE ODOT DISTRICT 12 VERTICAL CLEARANCE SURVEY FORM SHALL BE USED, WHERE APPLICABLE, TO DOCUMENT THE MEASUREMENTS. WHERE THE ODOT DISTRICT 12 VERTICAL CLEARANCE SURVEY FORM IS NOT APPLICABLE, THE MEASUREMENTS SHALL BE DOCUMENTED ON A CONTRACTOR-DEVELOPED FORM THAT CLOSELY RESEMBLES THE ODOT DISTRICT 12 VERTICAL CLEARANCE SURVEY FORM AND ACCURATELY DEPICTS THE BRIDGE AND THE LANE AND SHOULDER AND/OR TRACK CONFIGURATION OF THE ROADWAY AND/OR RAILROAD THAT PASSES BELOW THE BRIDGE. THE COMPLETED FORM SHALL BEAR THE STAMP OR SEAL OF THE OHIO PROFESSIONAL SURVEYOR WHO HAS TAKEN THE MEASUREMENTS AND SHALL BE SUBMITTED TO THE PROJECT ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.

THE ODOT DISTRICT 12 VERTICAL CLEARANCE SURVEY FORM CAN BE DOWNLOADED FROM THE FOLLOWING FTP SITE: FTP://FTP.DOT.STATE.OH.US/PUB/CONTRACTS/ATTACH/CUY-104132

ITEM 204 - SUBGRADE COMPACTION AND PROOF ROLLING

CONSTRUCT THE SUBGRADE AS FOLLOWS AND IN THE FOLLOWING SEQUENCE:

1. SHAPE THE SUBGRADE TO WITHIN 0.2 FEET OF THE PLAN SUBGRADE ELEVATION.

2. EXCAVATE AND REPLACE UNSUITABLE SUBGRADE BEFORE PROOF ROLLING. NO UNSUITABLE SUBGRADE WAS IDENTIFIED WITHIN THE PROPOSED SUBGRADE ELEVATION DURING THE PROJECT EXPLORATION. UNSUITABLE SUBGRADE INCLUDES UNSUITABLE SOIL (A-4B, A-2-5, A-5, A-7-5, AND SOIL WITH A LIQUID LIMIT GREATER THAN 65) ANY COAL, SHALE, OR ROCK WHICH NEEDS TO BE REMOVED ACCORDING TO SECTION 204.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS). IF THERE IS UNSUITABLE SUBGRADE IN A SHALLOW FILL LOCATION, EXCAVATE AND REPLACE THE UNSUITABLE SUBGRADE BEFORE CONSTRUCTING THE SHALLOW FILL AND SHAPING THE SUBGRADE.

3. COMPACT THE SUBGRADE ACCORDING TO C&MS 204.03.

4. APPROXIMATE LIMITS FOR EXCAVATION OF UNSTABLE SUBGRADE ARE SHOWN AND LABELED ON THE CROSS SECTIONS AS UNSTABLE SUBGRADE. THE ENGINEER WILL IDENTIFY THE ACTUAL LIMITS OF EXCAVATION FOR UNSTABLE SUBGRADE BASED ON THE PROOF ROLLING RESULTS AND VISUAL OBSERVATIONS.

PROOF ROLL THE COMPACTED SUBGRADE ACCORDING TO C&MS 204.06.

5. EXCAVATE UNSTABLE SUBGRADE AS DIRECTED BY THE ENGINEER AND STABILIZE BY REPLACING WITH THE SPECIFIED MATERIALS ACCORDING TO C&MS 204.07. EXCAVATIONS WILL EXTEND 18 INCHES BEYOND THE EDGE OF THE SURFACE OF THE PAVEMENT, PAVED SHOULDERS, OR PAVED MEDIANS.

6. PROOF ROLL THE STABILIZED AREAS ACCORDING TO C&MS 204.06 TO VERIFY STABILITY.

7. FINE GRADE THE SUBGRADE TO THE SPECIFIED GRADE.

THE QUANTITIES FOR EXCAVATING THE UNSUITABLE SUBGRADE AND UNSTABLE SUBGRADE ARE BOTH PAID UNDER ITEM 204, EXCAVATION OF SUBGRADE.

ITEM 204 - PROOF ROLLING

THE FOLLOWING QUANTITY IS PROVIDED IN THE GENERAL SUMMARY TO ADDRESS LOCATIONS REQUIRING PROOF ROLLING.

ITEM 204 - PROOF ROLLING	*7 HOURS*

GENERAL NOTES

DESIGN AGENCY
AECOM
564 White Pond Drive
Akron, OH 44320
(330) 836-9111
www.aecom.com

DESIGNER RJJ
REVIEWER WFS 08/05/24
PROJECT ID 104132
SHEET P.11 TOTAL 399

CUY-14-6.93
MODEL: General Notes - 1 PAPERSIZE: 34x22 (in.) DATE: 2/18/2025 TIME: 4:29:40 PM USER: robert.jankovsky
pw:\\aecom-na-pw.bentley.com:AECOM_DS20_NA_2019\Documents\60581903-CUY-14-6.93\104132\400-Engineering\Roadway\Sheets\104132_GN001.dgn

GENERAL (CONT.)

ITEM 619 – FIELD OFFICE, TYPE C, AS PER PLAN

ALL REQUIREMENTS OF C&MS 619 SHALL APPLY EXCEPT AS MODIFIED HEREIN:

THE FIELD OFFICE SHALL BE A SUITE TYPE OFFICE (NO TRAILER OR MODULAR OFFICE) WITH A MINIMUM OF 4,000 SQUARE FEET AND AT GROUND LEVEL WITH A MINIMUM CEILING HEIGHT OF EIGHT (8) FEET. PROVIDE TWO (2) OUTSIDE DOORS, LOCKABLE VANDAL PROOF CYLINDER TYPE DEAD BOLTS AND LOCKABLE WINDOWS. THE FLOOR SPACE WILL BE DIVIDED INTO TWO RESTROOMS, ONE GENERAL OFFICE AREA (MINIMUM 400 SQUARE FEET), NOT LESS THAN SIX INDIVIDUAL OFFICES (MINIMUM 300 SQUARE FEET EACH) AS SEPARATE ENCLOSED ROOMS (NO CUBICLE DIVIDERS WILL BE ACCEPTED), ONE KITCHEN SPACE INCLUDING SINK, REFRIGERATOR, AND MICROWAVE, AND ONE CONFERENCE ROOM (MINIMUM 1000 SQUARE FEET).

FURNISH NEAT, SANITARY, ENCLOSED TOILET ACCOMMODATIONS CONNECTED TO AN EXISTING SANITARY SEWER LINE FOR THE USE OF THE OCCUPANTS OF THE FIELD OFFICE, MEETING APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. FURNISH ASSOCIATED LAVATORY AND SANITARY SUPPLIES. POTABLE HOT AND COLD RUNNING WATER WILL BE PROVIDED IN THE RESTROOM FOR SANITARY PURPOSES.

FURNISH TRASH COLLECTION SERVICE/DUMPSTER.

FURNISH PROFESSIONAL, BONDED, AND INSURED JANITORIAL SERVICE WITH A WEEKLY CLEANING OF THE ENTIRE OFFICE TO INCLUDE THE RESTROOM FACILITIES FOR THE DURATION OF THE PROJECT.

FURNISH BOTTLED DRINKING WATER SERVICE WITH A HOT AND COLD DISPENSER AND ASSOCIATED SUPPLIES.

FURNISH A BOX FOR STORING A NUCLEAR DENSITY GAUGE WITH REQUIREMENTS AS SET FORTH IN C&MS 619.02.

FURNISH AND MAINTAIN A BROADBAND INTERNET CONNECTION CAPABLE OF MINIMUM DOWNLOAD SPEEDS OF 1.0 GB/S. PROVIDE A WIRELESS ROUTER THAT SUPPORTS WI-FI STANDARD 802.11AX (WIFI 6) AND A MINIMUM WIRELESS DATA TRANSFER RATE OF 4000 MB/S. PROVIDE PRE-WIRED ETHERNET ACCESS FOR ALL INDIVIDUAL OFFICES AND THE CONFERENCE ROOM.

FURNISH EIGHT (8) DESK AND CHAIR SETS, THIRTY (30) STACKABLE CHAIRS, TEN (10) WORK TABLES (30"x72"), AND TWELVE (12) 24-QUART WASTE BASKETS WITH APPROPRIATE SIZED TRASH BAGS.

FURNISH AND INSTALL TWO (2) WALL-MOUNTED 8'x4' GLASS, MAGNETIC DRY ERASE BOARDS.

FURNISH ONE NEW TELEVISION WITH THE FOLLOWING SPECIFICATIONS:

a) DIAGONAL SCREEN SIZE - 70" MINIMUM
b) NATIVE RESOLUTION - 4K
c) HDMI PORTS: 3
d) ALL ACCESSORIES NECESSARY TO OPERATE
e) ALL HARDWARE AND INSTALLATION NECESSARY TO HANG THE TELEVISION ON THE WALL IN THE CONFERENCE ROOM

THE FIELD OFFICE WILL BE APPROVED IN ADVANCE BY THE ENGINEER AND FULLY OPERATIONAL WITHIN 30 DAYS AFTER THE SIGNING AND EXECUTION OF THE PROJECT OR PRIOR TO THE START OF ANY CONSTRUCTION WORK, WHICHEVER COMES FIRST.

THE DEPARTMENT WILL MEASURE FIELD OFFICE, TYPE C, AS PER PLAN BY THE NUMBER OF MONTHS THE OFFICE IS MAINTAINED. A PARTIAL MONTH AT THE END OF THE PROJECT WILL BE PAID AS A FULL MONTH.

THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS FOLLOWS:

ITEM 619 – FIELD OFFICE, TYPE C, AS PER PLAN 36 MONTHS

STAGING AREAS

THERE ARE NO SPECIFIC AREAS GIVEN IN THE PLANS FOR THE CONTRACTOR TO USE AS A STAGING AREA(S). IF THE CONTRACTOR WANTS TO USE AN AREA(S) FOR STAGING, REGARDLESS IF IT FALLS WITHIN THE PROJECT LIMITS OR NOT, THE CONTRACTOR IS TO USE THE RIGHT OF WAY E-PERMITTING SYSTEM AT HTTPS://ODHCP.BEMCORP.NET/ACCOUNTS/ACCOUNT/ACCOUNT IN ORDER TO APPLY FOR A PERMIT PER SECTION 107.02 OF THE CMS. FOR SPECIFIC PERMITTING QUESTIONS, THE CONTRACTOR CAN CONTACT THE DISTRICT PERMITTING OFFICE, (MELVIN SAFFORD) AT 216-584-2137 OR AT DISTRICT12PERMITS@DOT.OHIO.GOV.

IF A PERMIT IS GRANTED, ALL CONDITIONS OF THE PERMIT SHALL BE MET IN ADDITION TO THE REQUIREMENTS OF 104.04 OF THE CMS, AT NO ADDITIONAL COST TO THE STATE. IF THE PROJECT ENGINEER DEEMS THAT ALL THE CONDITIONS OF THE PERMIT WERE NOT MET, THEN 10% OF THE CONTRACT BID AMOUNT FOR MOBILIZATION SHALL BE WITHHELD UNTIL ALL THE CONDITIONS OF THE PERMIT ARE SATISFIED.

THE STAGING AREA IS NOT PERMITTED TO BE ON THE CLEVELAND METROPARK'S PARK PROPERTY.

NORFOLK SOUTHERN PN 151 - 07/21/2023 - RAILROAD FLAGGING SERVICE

FLAGGING FOR WORK ON RAILROAD RIGHT OF WAY SHALL BE COORDINATED, OBTAINED AND PAID FOR BY THE CONTRACTOR. FLAGGING SHALL BE PROVIDED BY THE CONTRACTOR WHENEVER REQUIRED BY THE NORFOLK SOUTHERN SPECIAL PROVISIONS FOR THE PROTECTION OF RAILWAY INTEREST. NORFOLK SOUTHERN SHALL APPROVE THE FLAGGING SERVICE PROVIDER AND THEIR STAFF

NORFOLK SOUTHERN HAS THE SOLE AUTHORITY TO DETERMINE THE NEED FOR PROTECTION SERVICES TO PROTECT ITS OPERATIONS IN GENERAL. THE REQUIREMENTS OF SUCH SERVICES WILL BE WHENEVER THE CONTRACTOR'S PERSONNEL OR EQUIPMENT ARE OR ARE LIKELY TO BE, WORKING ON THE RAILROAD'S RIGHT OF WAY, OR ACROSS, OVER, ADJACENT TO, OR UNDER A TRACK, OR WHEN SUCH WORK HAS DISTURBED OR IS LIKELY TO DISTURB A RAILROAD STRUCTURE OR THE RAILROAD ROADBED OR SURFACED AND ALIGNMENT OF ANY TRACK TO SUCH EXTENT THAT THE MOVEMENT OF TRAINS MUST BE CONTROLLED BY FLAGGING.

THE TOTAL DOLLARS IN THE ESTIMATED QUANTITIES IS BASED UPON AN ESTIMATE OF TOTAL FLAGGING DOLLARS NEEDED TO COMPLETE THE PLANNED WORK.

ONLY THE FOLLOWING CERTIFIED FLAGGING PROVIDES ARE ACCEPTABLE BY NORFOLK SOUTHERN:

NORTH CAROLINA RAILROAD COMPANY (RALEIGH, NC)
GENERAL INQUIRES: TPP@NCRR.COM
JOHN GASS, SENIOR SAFETY & COMPLIANCE MANAGER
JGASS@NCRR.COM
(864) 504-0455
HTTPS://WWW.NCRR.COM/

RAILPROS (IRVING, TX)
FIELD SUPPORT TEAM
(877) 315-0513 (OPTION 1)
NS.INFO@RAILPROS.COM
ADAM BROWN
(334) 530-2861
ADAM.BROWN@RAILPROS.COM

R&R CONSULTING TEAM (HARRISBURG, PA)
DAVID N. CRAFT, CO-OWNER & PRESIDENT
R&R CONSULTING TEAM, LLC.
(717) 497-4373 (CELL)
(775) 521-2495 (E-FAX)
DCRAFT@RRCONSULTINGTEAM.COM
WWW.RRCONSULTINGTEAM.COM

PAYMENT FOR CERTIFIED FLAGGING PROVIDERS WILL BE MADE PER ITEM 900E00100 EACH - RAILROAD FLAGGING SERVICES BASED UPON THE INVOICES RECEIVED FROM THE FLAGGING SERVICE FOR THE DOLLARS USED, INCLUDING A FIVE PERCENT MARKUP FOR CONTRACTOR OVERHEAD FOR ADMINISTERING THE CONTRACT WITH THE FLAGGING SERVICE.

IN THE EVENT THE PROJECT IS DELAYED DUE TO RAILROAD FLAGGER AVAILABILITY, THE CONTRACTOR WILL PROVIDE DOCUMENTATION SUPPORTING THEIR EFFORTS TO SCHEDULE A FLAGGER FROM THE FLAGGING SERVICE.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 900 - RAILROAD FLAGGING SERVICES 459,000 EACH

NORFOLK SOUTHERN DRAINAGE

ALL PROPOSED DRAINAGE DITCHES AND STRUCTURE DETAILS ON RAILROAD RIGHT-OF-WAY SHALL BE DEVELOPED IN ACCORDANCE WITH THE REQUIREMENTS OF AREMA CHAPTER 1 AND NORFOLK SOUTHERN TYPICAL DRAWING NO. 1 - OVERHEAD BRIDGE DETAILS - PERMANENT CLEARANCES.

ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN

THE DEPARTMENT HAS NOT MARKED INDIVIDUAL TREES AND STUMPS FOR REMOVAL. UNLESS SPECIFICALLY DESIGNATED AS "DO NOT DISTURB" IN THE PLANS, REMOVE ALL TREES AND STUMPS WITHIN THE CONSTRUCTION LIMITS UNDER THE LUMP SUM BID FOR ITEM 201 CLEARING AND GRUBBING, AS PER PLAN WITH THE FOLLOWING EXCEPTIONS:

1. *THE DEPARTMENT WILL CUT A PORTION OF THE TREES NECESSARY TO FACILITATE UTILITY RELOCATION AND PHASE 1 CONSTRUCTION PRIOR TO APRIL 1, 2025. FELLED MATERIAL AND STUMPS WILL REMAIN AND SHALL BE DISPOSED OF BY THE CONTRACTOR UNDER THIS ITEM.*
2. *THE DEPARTMENT (OES) HAS DETERMINED THAT THE AREA BETWEEN THE NSRR AND W&LE TRACKS NECESSARY TO BE CLEARED FOR PIER 2 CONSTRUCTION IS NOT SUBJECT TO THE REQUIREMENTS OF "ENDANGERED BAT HABITAT REMOVAL" ON SHEET P.14.*

SEE SHEET P.15A FOR MORE DETAILS AND LOCATIONS.

ROADWAY

ITEM 203 – ROADWAY, MISC.: #4 WASHED LANDSCAPE GRAVEL, 4" THICK

PROVIDE #4 SIZE AGGREGATE IN ACCORDANCE WITH CMS 703 AND TABLE 703.01 THAT HAS BEEN WASHED TO REMOVE ALL DIRT AND DEBRIS. PLACE THE MATERIAL OVER THE FILTER FABRIC TO A DEPTH OF 4" THICK AND RAKE THE GRAVEL LEVEL TO ENSURE EVEN DEPTH.

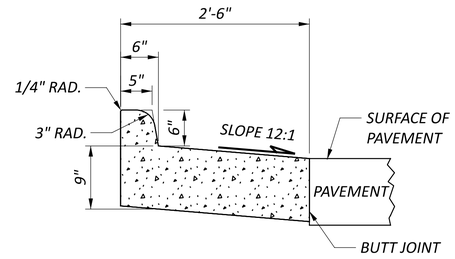
ITEM 606 - IMPACT ATTENUATOR, TYPE 1 (UNIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY ONE OF THE MASH (2016) CRASH-TESTED TYPE 1 IMPACT ATTENUATORS AS LISTED ON THE OFFICE OF ROADWAY ENGINEERING'S WEB PAGE. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, IMPACT ATTENUATOR, TYPE 1 (UNIDIRECTIONAL), EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED TRANSITIONS, HARDWARE, REFLECTIVE SHEETING AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

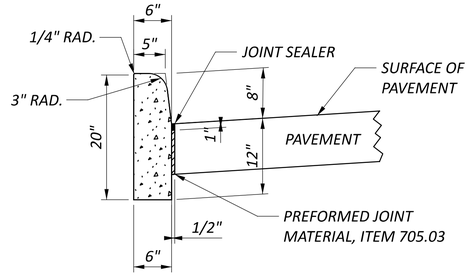
ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN

TYPE 2 CURB AND GUTTER WITH REVERSED CROSS-SLOPE.



ITEM 609 - CURB, TYPE 6, AS PER PLAN

TYPE 6 CURB WITH 8" REVEAL.



ITEM 607 - FENCE, MISC.: TEMPORARY FENCING

THE FOLLOWING LUMP SUM HAS BEEN CARRIED TO THE GENERAL SUMMARY TO ACCOMMODATE THE LARGE QUANTITY OF FENCING REQUIRED DURING CONSTRUCTION

MATERIAL SHALL MEET ALL REQUIREMENTS OF ODOT CMS 607.

ITEM 607 - FENCE, MISC.: TEMPORARY FENCINGS LS

ITEM SPECIAL – FILTER FABRIC

MATERIAL SHALL MEET ALL REQUIREMENTS OF ODOT CMS 712.09, TYPE D.

PAVEMENT

PART-WIDTH CONSTRUCTION

BECAUSE OF THE NECESSITY TO BUILD THIS PROJECT UNDER TRAFFIC AND TO CONSTRUCT THE FULL PAVEMENT WIDTH IN STAGES, EXERCISE CARE TO PREVENT THE CONSTRUCTION OF A BUTT JOINT IN THE BASE COURSES. LAP LONGITUDINAL JOINTS AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-3.1.

GENERAL NOTES

DESIGN AGENCY
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564 White Pond Drive
Akron, OH 44320
(330) 836-9111
www.aecom.com

DESIGNER RJJ
REVIEWER WFS 08/05/24
PROJECT ID 104132
SHEET P.12 TOTAL 399

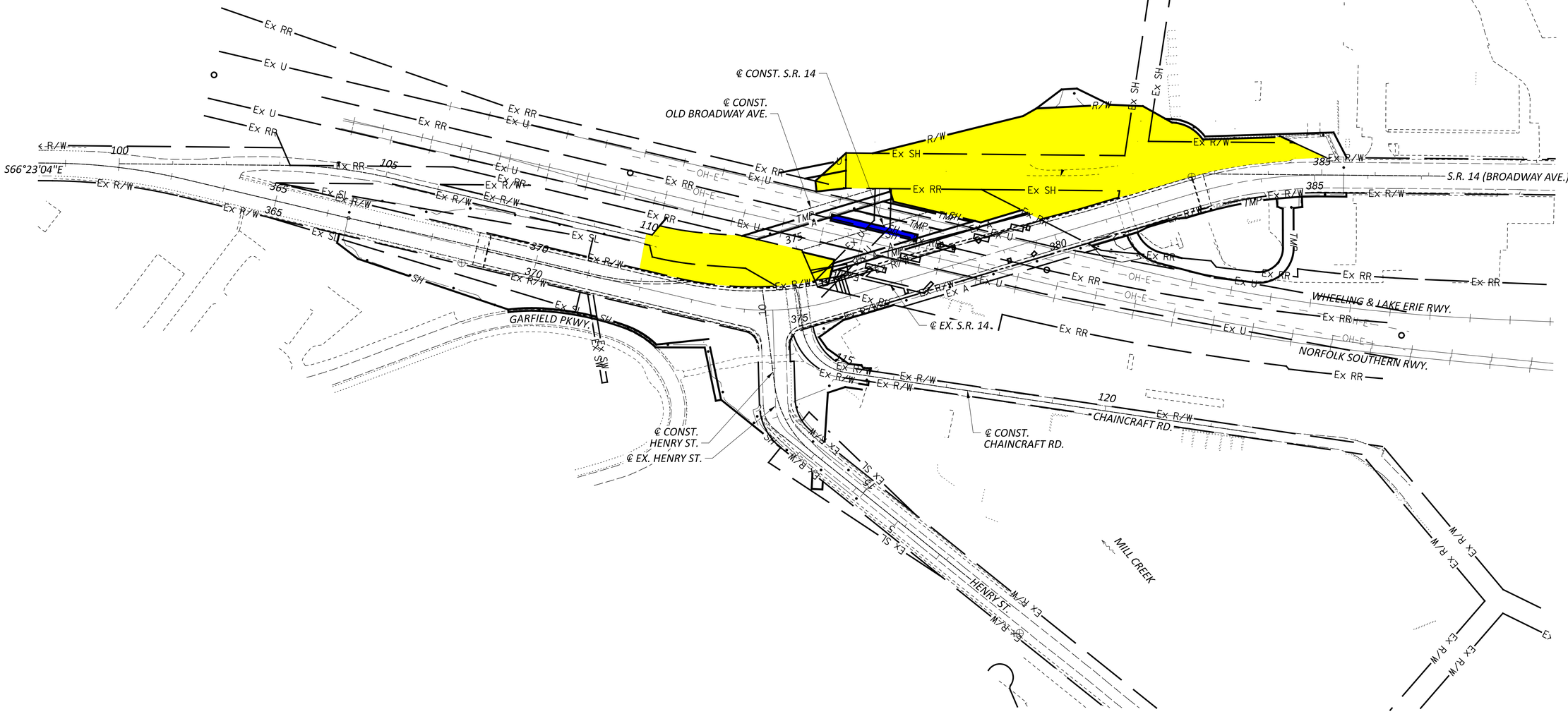
CUY-14-6.93

MODEL: General Notes - 2 PAPERSIZE: 34x22 (in.) DATE: 2/19/2025 TIME: 1:40:30 PM USER: robert.jankovsky
pw:\\aecom-na-pw.bentley.com:AECOM_DS20_NA_2019\Documents\60581903-CUY-14-6.93\104132\400-Engineering\Roadway\Sheets\104132_GN001.dgn

TREE CLEARING SCHEMATIC PLAN

HORIZONTAL SCALE IN FEET
0 50 100 200

LEGEND:
PORTIONS CLEARED BY THE DEPARTMENT
OES APPROVAL TO CLEAR WITHIN RESTRICTED PERIOD



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DESIGNER BNC
REVIEWER WFS 02/19/25
PROJECT ID 104132
SHEET 15A TOTAL 399

CUY-14-6.93

MODEL: 104132_GB001 PAPERSIZE: 34x22 (in.) DATE: 2/19/2025 TIME: 1:03:19 PM USER: Brittney.Crandall
pw:\\aecom-na-pw.bentley.com:AECOM_DS20_NA_2019\Documents\60581903-CUY-14-6.93\104132400-Engineering\Roadway\Sheets\104132_GD002.dgn

SHEET NUM.																			PART.	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
P.11	P.12	P.14	P.61	P.62	P.63	P.64	P.66	P.67	P.68	P.69	P.70	P.71	P.72	P.73	P.74	P.75	P.215	P.327	01/BRO/10						
																								ROADWAY	
LS																			LS	201	11001	LS		CLEARING AND GRUBBING, AS PER PLAN	P.12
				LS															LS	202	11000	LS		STRUCTURE REMOVED (EX. CONC. BLOCK WALL)	
				LS															LS	202	11200	LS		PORTIONS OF STRUCTURE REMOVED (EX. WALL)	
													5,992						5,992	202	23000	5,992	SY	PAVEMENT REMOVED	
													6,418						6,418	202	30000	6,418	SF	WALK REMOVED	
				LS															LS	202	30204	LS		STEPS REMOVED	
													2,068						2,068	202	32000	2,068	FT	CURB REMOVED	
					1,114	1,008		1,465											3,587	202	35100	3,587	FT	PIPE REMOVED, 24" AND UNDER	
							52												52	202	35200	52	FT	PIPE REMOVED, OVER 24"	
				376															376	202	38000	376	FT	GUARDRAIL REMOVED	
					2	4	3												9	202	58000	9	EACH	MANHOLE REMOVED	
					7	8													15	202	58100	15	EACH	CATCH BASIN REMOVED	
				6															6	202	60010	6	EACH	MONUMENT ASSEMBLY REMOVED	
				111															111	202	75000	111	FT	FENCE REMOVED	
				1															1	202	75250	1	EACH	GATE REMOVED	
								12											12	202	75610	12	EACH	VALVE BOX REMOVED	P.158
							258												258	202	98700	258	FT	ABANDON MISC.: PLUG AND FILL 42" SANITARY CONDUIT	P.14
														2,106		446			2,552	203	10000	2,552	CY	EXCAVATION	
														35,831		16,801			52,632	203	20000	52,632	CY	EMBANKMENT	
												582							582	203	98100	582	SY	ROADWAY, MISC.: #4 WASHED LANDSCAPE GRAVEL, 4" THICK	P.12
									404	5,252	5,770	2,010							13,436	204	10000	13,436	SY	SUBGRADE COMPACTION	P.11
											454								454	204	13000	454	CY	EXCAVATION OF SUBGRADE	
											454								454	204	30010	454	CY	GRANULAR MATERIAL, TYPE B	
7											1								8	204	45000	8	HOUR	PROOF ROLLING	P.11
											1,360								1,360	204	50000	1,360	SY	GEOTEXTILE FABRIC	
			1																1	606	60002	1	EACH	IMPACT ATTENUATOR, TYPE 1 (UNIDIRECTIONAL)	P.12
																	951	1,616	2,567	607	39901	2,567	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN	P.213
	LS																		LS	607	98200	LS		FENCE, MISC.: TEMPORARY FENCING	P.12
										12,254	4,144								16,398	608	10000	16,398	SF	4" CONCRETE WALK	
			315																315	608	52000	315	SF	CURB RAMP	
			20																20	608	53020	20	SF	DETECTABLE WARNING	
			868																868	622	10160	868	FT	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	
26																			26	623	38500	26	EACH	MONUMENT ASSEMBLY, TYPE C	
23																			23	623	40520	23	EACH	RIGHT-OF-WAY MONUMENT, TYPE B	
												582							582	SPECIAL	69012000	582	SY	FILTER FABRIC	P.12
		400																	400	SPECIAL	69065010	400	TON	WORK INVOLVING SOLID WASTE	P.14
		LS																	LS	SPECIAL	69070000	LS		ENVIRONMENTAL, SITE SPECIFIC HEALTH AND SAFETY PLAN	P.14
		400																	400	SPECIAL	69070020	400	TON	ENVIRONMENTAL, WORK INVOLVING RECYCLED MATERIAL	P.14

GENERAL SUMMARY

CUY-14-6.93

MODEL: GG001A PAPERSIZE: 34x22 (in.) DATE: 2/18/2025 TIME: 4:04:57 PM USER: Brittney.Crandall
pw:\\aecom-na-pw.bentley.com:AECOM_DS20_NA_2019\Documents\60581903-CUY-14-6.93\104132400-Engineering\Roadway\Sheets\104132_GG001.dgn

DESIGN AGENCY

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DESIGNER
BNC

REVIEWER
WFS 08/05/24

PROJECT ID
104132

SHEET P.53 TOTAL 399

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

AS-1-15	DATED (REVISED)	01-20-23
AS-2-15	DATED (REVISED)	01-20-23
BR-2-15	DATED (REVISED)	01-21-22
EXJ-4-87	DATED (REVISED)	07-15-22
GSD-1-19	DATED (REVISED)	01-15-21
PCB-91	DATED (REVISED)	07-17-20
VPF-1-24	DATED (REVISED)	07-19-24

REFER TO THE FOLLOWING STANDARD CONSTRUCTION DRAWINGS:

BP-7.1	DATED (REIVSED)	01-20-23
RM-4.2	DATED (REVISED)	04-17-20

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

SS800	DATED	7-15-22
SS840	DATED	4-15-22
SS867	DATED	4-15-22

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO THE 9TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2020 AND THE ODOT BRIDGE DESIGN MANUAL, 2020.

OPERATIONAL IMPORTANCE:

A LOAD MODIFIER OF 1.0 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN LOADING:

VEHICULAR LIVE LOAD: HL-93
FUTURE WEARING SURFACE (FWS) OF 0.06 KIPS/FT^2

PEDESTRIAN LOAD: 0.075 KSF

SPECIAL DESIGN SPECIFICATIONS:

THIS BRIDGE REQUIRED THE USE OF AN IMPROVED 2-DIMENSIONAL GRID MODEL USING FINITE ELEMENT DESIGN METHOD TO ANALYZE THE STRUCTURE PER THE AASHTO G13.1-2019 GUIDELINES FOR STEEL GIRDER BRIDGE ANALYSIS, 2ND EDITION. THIS METHOD REQUIRES THE USAGE OF EQUIVALENT TORSION CONSTANT, WHICH ESTIMATES THE INFLUENCE OF GIRDER WARPING IN RESPONSE ON TORSIONAL STIFFNESS, AS WELL AS ACCOUNTING FOR BOTH THE SHEAR AND BENDING FLEXIBILITY OF THE CROSS-FRAMES. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MIDAS CIVIL 2021 V1.2. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD AND THE LIVE LOAD DISTRIBUTION FACTORS USED WERE:

DEAD LOAD DISTRIBUTION: SLAB DEAD LOADS ARE DISTRIBUTED IN RELATION TO GIRDER SPACING AND TRIBUTARY WIDTH. COMPOSITE LOADS ARE DISTRIBUTED EQUALLY TO ALL GIRDERS. WHERE APPLICABLE, PEDESTRIAN LOADS ARE DISTRIBUTED BY INVERSE LEVER RULE TO TRIBUTARY GIRDERS.

LIVE LOAD DISTRIBUTION: TRAFFIC LINE LAYOUT IS INPUT INTO THE MODEL AND THE ANALYSIS SOFTWARE LONGITUDINALLY AND TRANSVERSELY LOCATES THE DESIGN VEHICLE FOR MOVING LOAD OPTIMIZATION. THE DESIGN PROGRAM DISTRIBUTED THE LIVE LOADS BASED ON BOTH THE LONGITUDINAL AND LATERAL STIFFNESS, LIVE LOAD DISTRIBUTION FACTORS VARY ALONG THE LENGTH AND WIDTH OF THE STRUCTURE.

DESIGN DATA:

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI
(SUPERSTRUCTURE)

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI
(SUBSTRUCTURE)

MASS CONCRETE CLASS QC4 - COMPRESSIVE STRENGTH 4.0 KSI

CONCRETE REINFORCEMENT:
EPOXY COATED STEEL REINFORCEMENT - MIN. YIELD STRENGTH 60 KSI

STRUCTURAL STEEL - ASTM A709 GRADE 50W - YIELD STRENGTH 50 KSI

STEEL H-PILES - ASTM A572 - YIELD STRENGTH 50 KSI

STEEL CIP PILES - ASTM A252 GRADE 3 - YIELD STRENGTH 45 KSI

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

PROPOSED WORK:

THE WORK TO BE COMPLETED INCLUDES THE COMPLETE REPLACEMENT OF THE EXISTING BRIDGE.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE):

THE ULTIMATE BEARING VALUE IS 414.4 KIPS PER PILE FOR THE REAR AND FORWARD ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 414.4 KIPS PER PILE FOR THE PIER 01 AND 02 PILES.

REAR ABUTMENT PILES:
125 16" DIAMETER PIPE PILES 25 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM (NON BATTERED PILE)
1 DYNAMIC LOAD TESTING ITEM (BATTERED PILE)

PIER 01 PILES:
44 16" DIAMETER PIPE PILES 25 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM

PIER 02 PILES:
42 16" DIAMETER PIPE PILES 25 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM

PROVIDE PLAIN CYLINDRICAL CASINGS WITH A MINIMUM PILE WALL THICKNESS OF 0.46 INCH FOR THE CAST-IN-PLACE REINFORCED CONCRETE PIPE PILES. USE CONICAL STEEL PILE POINTS TO PROTECT THE TIPS OF THE PROPOSED STEEL CIP REINFORCED CONCRETE PIPE PILES AT ALL LOCATIONS.

FOUNDATION BEARING RESISTANCE:

FORWARD ABUTMENT SPREAD FOOTING, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LIMIT STATE BEARING PRESSURE OF 5.2 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LIMIT STATE BEARING PRESSURE OF 7.5 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 7.5 KIPS PER SQUARE FOOT.

DECK PLACEMENT DESIGN ASSUMPTIONS:

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.
AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.68 KIPS.
A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103".
A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48 IN A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".
FOR THE DECK POUR SEQUENCE AS DETAILED IN THESE PLANS, SCREED RAILS ARE ASSUMED TO BE PLACED OVER GIRDERS A & H.

COLORS AND SURFACE TREATMENT:

ABUTMENTS, PIERS, PARAPETS AND DECK OVERHANGS: SEAL SURFACES, AS NOTED IN THE BRIDGE PLANS, WITH EPOXY-URETHANE USING FEDERAL STANDARD COLOR NUMBER 13522 (BUFF).

PARTIAL PAINTING OF A709 GRADE 50W STEEL: PAINT THE EXPOSED SIDE OF THE FASCIA GIRDERS WEB AND BOTTOM FLANGE FOR THE FULL LENGTH OF THE BRIDGE. IN ADDITION TO THE FASCIA'S, PAINT THE LAST 10 FT OF EACH GIRDER END ADJACENT TO THE ABUTMENTS INCLUDING ALL CROSS-FRAMES AND OTHER STEEL WITHIN THESE LIMITS. THE PRIME COAT SHALL BE PER 708.01. THE TOP COAT COLOR SHALL CLOSELY APPROACH FEDERAL STANDARD NO. 595B - 20045 OR 20059 (THE COLOR OF WEATHERING STEEL).

ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:

FOR DETAILS AND NOTES, INCLUDING PAYMENT FOR PHASED REMOVAL OF THE EXISTING BRIDGE, SEE PHASED CONSTRUCTION DETAILS, SHEETS 8 , 99 THRU 15 , 99 .

REMOVE ALL CONCRETE SUBSTRUCTURE ELEMENTS OF THE EXISTING BRIDGE WITHIN THE RIGHT-OF-WAY LIMITS OF NORFOLK SOUTHERN RAILWAY AND WHEELING & LAKE ERIE RAILWAY DOWN TO THE ELEVATION OF TWO FEET BELOW PROPOSED GRADE.

THE CONTRACTOR SHALL INCLUDE THE TEMPORARY SUPPORT CONSTRUCTION COSTS NECESSARY FOR THE SAFE REMOVAL OF THE BROADWAY AVE. BRIDGE AS AN INCIDENTAL COST EMBEDDED IN THE ITEM 202 LUMP SUM. FOR DETAILS, SEE SHEET 8 , 99 .

MAINTENANCE OF TRAFFIC:

FOR MAINTENANCE OF TRAFFIC NOTES AND DETAILS, INCLUDING TEMPORARY BARRIER DETAILS AND PAY ITEMS, SEE SHEETS P.16 , 399 THRU P.52 , 399 .

ITEM 203 EMBANKMENT, AS PER PLAN:

PLACE AND COMPACT EMBANKMENT MATERIAL IN 6 INCH LIFTS FOR THE CONSTRUCTION OF ALL PROJECT APPROACH EMBANKMENT UNLESS NOTED OTHERWISE AS ITEM 203 SELECT GRANULAR BACKFILL.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN:

THE DESIGN SHOWN ON THE PLANS FOR TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVATIONS. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH C&MS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN. THE COST OF TEMPORARY ANCHORS AS SHOWN ON THE PLANS WILL BE INCLUDED WITH THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN.

FOR ANY ALTERNATE DESIGNS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND OBTAINING RAILROAD APPROVAL OF THE DESIGN AND CONSTRUCTION OF THE TEMPORARY SUPPORT OF THE EXCAVATION ADJACENT TO THE RAILROAD. THE REQUIREMENTS OF CMS 501.05A SHALL BE MET IN THIS REGARD. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AS IT SHALL BE CONSIDERED INCIDENTAL TO ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN.

ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN:

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH CMS SECTION 503 AND SHALL INCLUDE THE EXCAVATION REQUIRED TO CONSTRUCT THE NEW ABUTMENTS, WING WALLS AND PIER FOOTINGS. EXCAVATION AND BACKFILLING REQUIRED FOR SUBSTRUCTURE REMOVAL AND STRUCTURE DRAINAGE SHALL BE INCLUDED WITH RESPECTIVE ITEMS 202 AND 518.

ITEM 607 - VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN:

THIS ITEM SHALL BE AS PER THE DETAILS IN THE PLAN, THE APPLICABLE PORTIONS OF STANDARD DRAWING VPF-1-24, AND THE MANUFACTURER'S RECOMMENDATIONS.

THE ANCHORS ON TOP OF THE PROPOSED CONCRETE BRIDGE RAILING SHALL BE CAST IN PLACE WITH 6" OR 7" MINIMUM EMBEDMENT LENGTH, AS SHOWN ON THE STANDARD DRAWING FOR THE SPECIFIED BASE PLATE TYPE.

AT LOCATIONS WHERE THE EXISTING FENCE SPANS ACROSS THE EXPANSION JOINT, DO NOT INSTALL LINE RAILS AND EXPANSION JOINT SLEEVES; HOWEVER, THE FABRIC SHALL REMAIN CONTINUOUS ACROSS THE EXPANSION JOINT.

THE COLOR OF THE FENCE FABRIC, RAILS, POSTS, PLATES, TIE WIRES, AND ADDITIONAL VISUAL HARDWARE AND CAULK SHALL BE BLACK. SUBMIT A PROCEDURE FOR PAINTING ALL UNCOATED VISUAL HARDWARE BLACK.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER LINEAR FOOT FOR ITEM 607 - VANDAL PROTECTION FENCE 6' STRAIGHT, COATED FABRIC, AS PER PLAN WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

EXISTING STRUCTURE VERIFICATION:

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO C&MS, SECTIONS 102.05 AND 105.02. BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND OPEN A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSION THAT HAVE BEEN VERIFIED IN THE FIELD.

UTILITY LINES:

SEE GENERAL NOTES, SHEET P.11 , 399 FOR THE LIST OF UTILITIES IN THE PROJECT AREA.

ALL EXPENSES INVOLVED IN RELOCATIONS (INSTALLING) THE AFFECTED UTILITY LINE(S) SHALL BE BORNE BY THE UTILTY(IES). THE CONTRACTOR AND THE UTILITIES ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

STRUCTURE GROUNDING:

PROVIDE STRUCTURE GROUNDING PER ODOT STD. DWG. HL-50.21. SEE LIGHTING PLANS FOR ADDITIONAL DETAILS AND PAYMENT.

ITEM 516 JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE:

THIS WORK CONSISTS OF TEMORARILY BRACING THE EXISTING STRUCTURES FOR MAINTENANCE OF TRAFFIC TO THE DIMENSIONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH C&MS 501.05. IF, DURING JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE.

THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING TEMPORARY SUPPORT PLANS TO THE DEPARTMENT FOR A FOURTEEN (14) DAY REVIEWAL PERIOD PRIOR TO CONSTRUCTION.

ITEM SPECIAL - STRUCTURAL SURVEY AND MONITORING OF VIBRATION

MONITOR GROUND VIBRATIONS CAUSED BY PILE DRIVING TO MINIMIZE THE POTENTIAL FOR DAMAGE TO THE 4'X6' CULVERT RUNNING UNDER THE PROPOSED PIER 1 FOOTING.

RETAIN AN EXPERIENCED VIBRATION SPECIALIST TO ESTABLISH THE ACCEPTABLE VIBRATION LIMITS AND TO PERFORM THE VIBRATION MONITORING. USE A VIBRATION SPECIALIST THAT IS AN EXPERT IN THE INTERPRETATION OF VIBRATION DATA, AND WHO MEETS ONE OF THE FOLLOWING CRITERIA: 1) IS A REGISTERED ENGINEER WITH AT LEAST TWO YEARS OF PROVEN EXPERIENCE IN MONITORING VIBRATIONS ON SIMILAR CONSTRUCTION PROJECTS, OR 2) HAS AT LEAST FIVE YEARS OF PROVEN EXPERIENCE IN MONITORING VIBRATIONS ON SIMILAR CONSTRUCTION PROJECTS. DO NOT USE A VIBRATION SPECIALIST THAT IS AN EMPLOYEE OF THE CONTRACTOR.

SUBMIT A RESUME OF THE CREDENTIALS OF THE PROPOSED VIBRATION SPECIALIST AT OR BEFORE THE PRECONSTRUCTION MEETING. INCLUDE IN THE RESUME A LIST OF CONSTRUCTION PROJECTS ON WHICH THE VIBRATION SPECIALIST WAS RESPONSIBLY IN CHARGE OF MONITORING THE VIBRATIONS. LIST A DESCRIPTION OF THE PROJECTS, WITH DETAILS OF THE VIBRATION INTERPRETATIONS MADE ON THE PROJECT. LIST THE NAMES AND TELEPHONE NUMBERS OF PROJECT OWNERS WITH SUFFICIENT KNOWLEDGE OF THE PROJECTS TO VERIFY THE SUBMITTED INFORMATION. OBTAIN THE ENGINEER'S ACCEPTANCE OF THE VIBRATION SPECIALIST BEFORE BEGINNING ANY PILE DRIVING WORK. ALLOW 30 DAYS FOR THE REVIEW OF THIS DOCUMENTATION.

USE SEISMOGRAPHS CAPABLE OF CONTINUOUSLY RECORDING THE PEAK PARTICLE VELOCITY FOR THREE MUTUALLY PERPENDICULAR COMPONENTS OF VIBRATION, AND OF PROVIDING A PERMANENT RECORD OF THE ENTIRE VIBRATION EVENT. USE A SUFFICIENT NUMBER OF SEISMOGRAPHS TO PROVIDE REDUNDANCY IN CASE ONE DEVICE SHOULD FAIL. SUBMIT A PLAN OF THE PROPOSED SEISMOGRAPH LOCATIONS TO THE ENGINEER FOR REVIEW.

THE VIBRATION SPECIALIST SHALL PERFORM THE FOLLOWING:

1. MEASURE THE AMBIENT GROUND VIBRATIONS NEAR EXISTING STRUCTURES BEFORE PILE DRIVING BEGINS.
2. ESTABLISH VIBRATION LIMITS TO MINIMIZE POTENTIAL DAMAGE TO EXISTING STRUCTURES AND EXPLAIN WHY THEY ARE BEING USED TO THE ENGINEER BEFORE DRIVING PILES NEAR EXISTING STRUCTURES.
3. MONITOR GROUND VIBRATIONS DURING PILE DRIVING.
4. IMMEDIATELY INFORM THE CONTRACTOR AND ENGINEER IF THE VIBRATION LIMITS ARE REACHED OR EXCEEDED.
5. FURNISH THE DATA RECORDED AND INCLUDE THE FOLLOWING:
   A. IDENTIFICATION OF SEISMOGRAPH.
   B. DISTANCE AND DIRECTION OF SEISMOGRAPH FROM PILE DRIVING.
   C. START TIME AND DURATION OF PILE DRIVING.
   D. LIST OF PILES DRIVEN DURING EACH MONITORING INTERVAL.

IMMEDIATELY SUSPEND ALL PILE DRIVING IF THE VIBRATION LIMITS ARE REACHED OR EXCEEDED. EVALUATE ALTERNATIVE CONSTRUCTION PROCEDURES, SUCH AS PREBORED HOLES, TO REDUCE THE VIBRATIONS.

SUBMIT THREE COPIES OF THE FINAL REPORT WHICH CONTAINS ALL MEASUREMENTS, INTERPRETATIONS, AND RECOMMENDATIONS TO THE ENGINEER.

THE DEPARTMENT WILL PAY FOR THIS ITEM AT THE CONTRACT LUMP SUM PRICE FOR ITEM SPECIAL – STRUCTURAL SURVEY AND MONITORING OF VIBRATION. THE DEPARTMENT WILL PAY THE FINAL TWENTY PERCENT AFTER THE ENGINEER RECEIVES THE FINAL REPORT.

THE DEPARTMENT WILL PAY ACCORDING TO C&MS 109.05 FOR ALTERNATIVE CONSTRUCTION PROCEDURES THAT THE ENGINEER DETERMINES ARE NECESSARY TO REDUCE VIBRATIONS.

GENERAL NOTES 1 OF 2
BRIDGE NO. CUY-00014-06.930
BROADWAY AVENUE (S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS

SFN 1801806

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DESIGNER	CHECKER
JDM	GAD

REVIEWER
MRW 08/05/24

PROJECT ID
104132

SUBSET	TOTAL
5	99

SHEET	TOTAL
P.213	399

CUY-14-6.93

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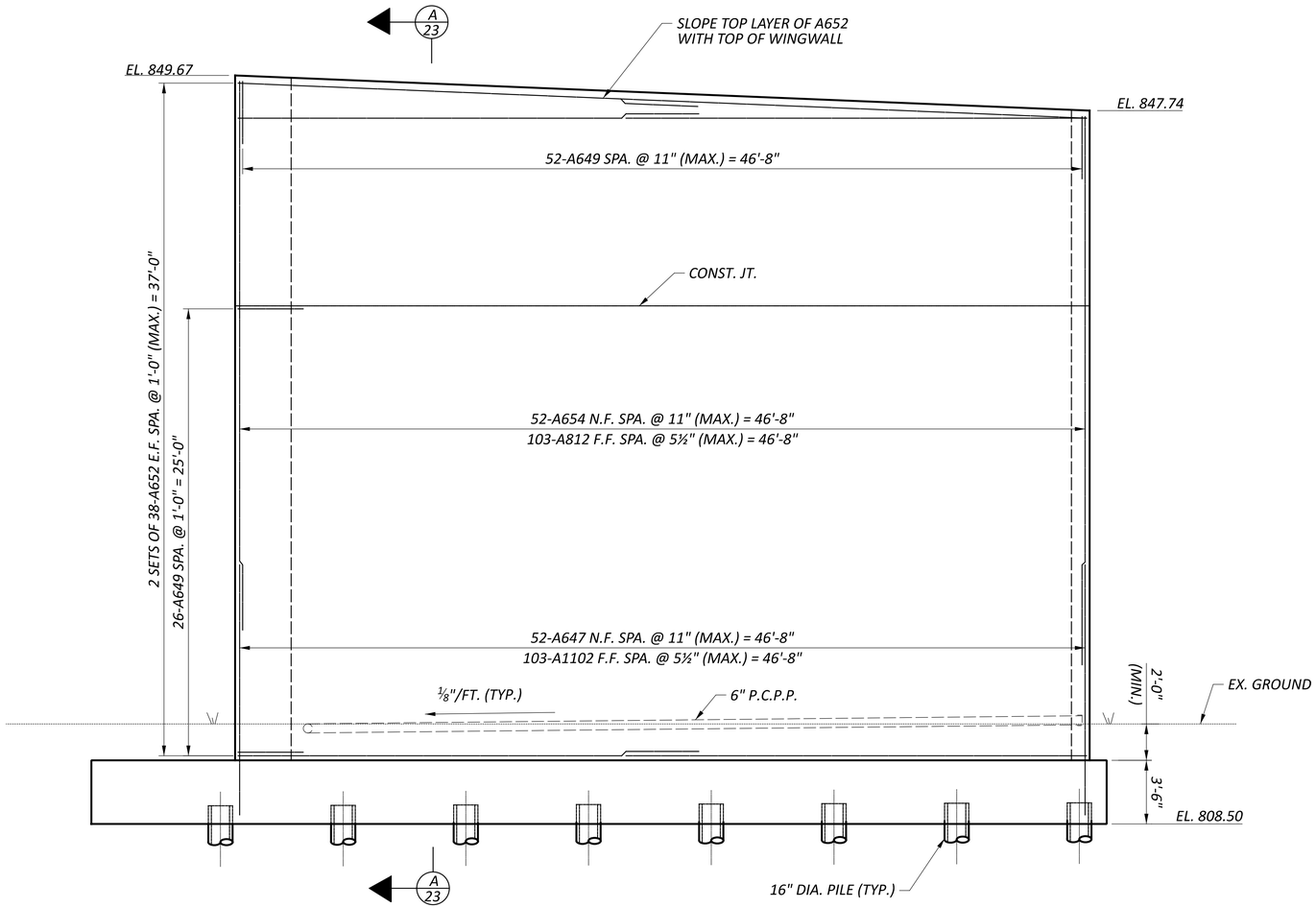
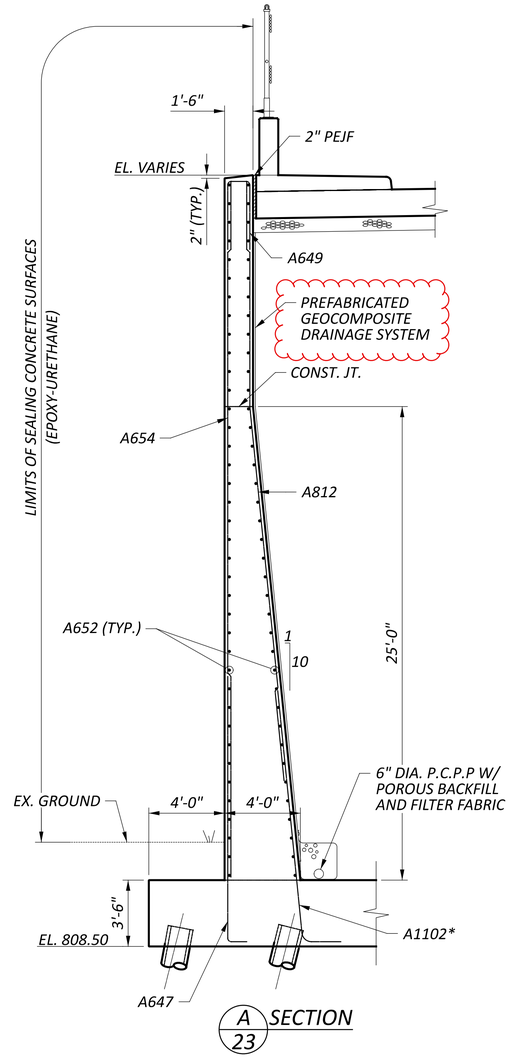


ELEVATION
REAR ABUTMENT, LEFT WINGWALL



REQUIRED MIN. LAP LENGTHS	
NO. 5 BARS	2'-5"
NO. 6 BARS (VERTICAL)	3'-7"
NO. 6 BARS (HORIZONTAL)	4'-0"
NO. 8 BARS	4'-9"

LEGEND:

* - REINFORCING BAR SPACING TO BE ADJUSTED IN THE FIELD TO AVOID CONFLICT WITH THE PROPOSED PILES

NOTES:

1. 3" MIN. CLEAR COVER IN BOTTOM OF FOOTING, 2" MIN. FOR ALL OTHER SURFACES UNLESS NOTED.
2. FOR GENERAL NOTES, SEE SHEET 5 | 99.
3. FOR FOUNDATION PLAN, SEE SHEET 16 | 99.
4. FOR FOOTING REINFORCING PLAN, SEE SHEET 22 | 99.
5. FOR REINFORCING STEEL LIST, SEE SHEET 90 | 99.
6. FOR ADDITIONAL SIGNAL POLE PILASTER DETAILS, SEE ODOT STD. DWG. TC-81.22.

REAR ABUTMENT DETAILS
BRIDGE NO. CUY-00014-06.930
BROADWAY AVENUE (S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS

SFN 1801806

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ERM	JDM

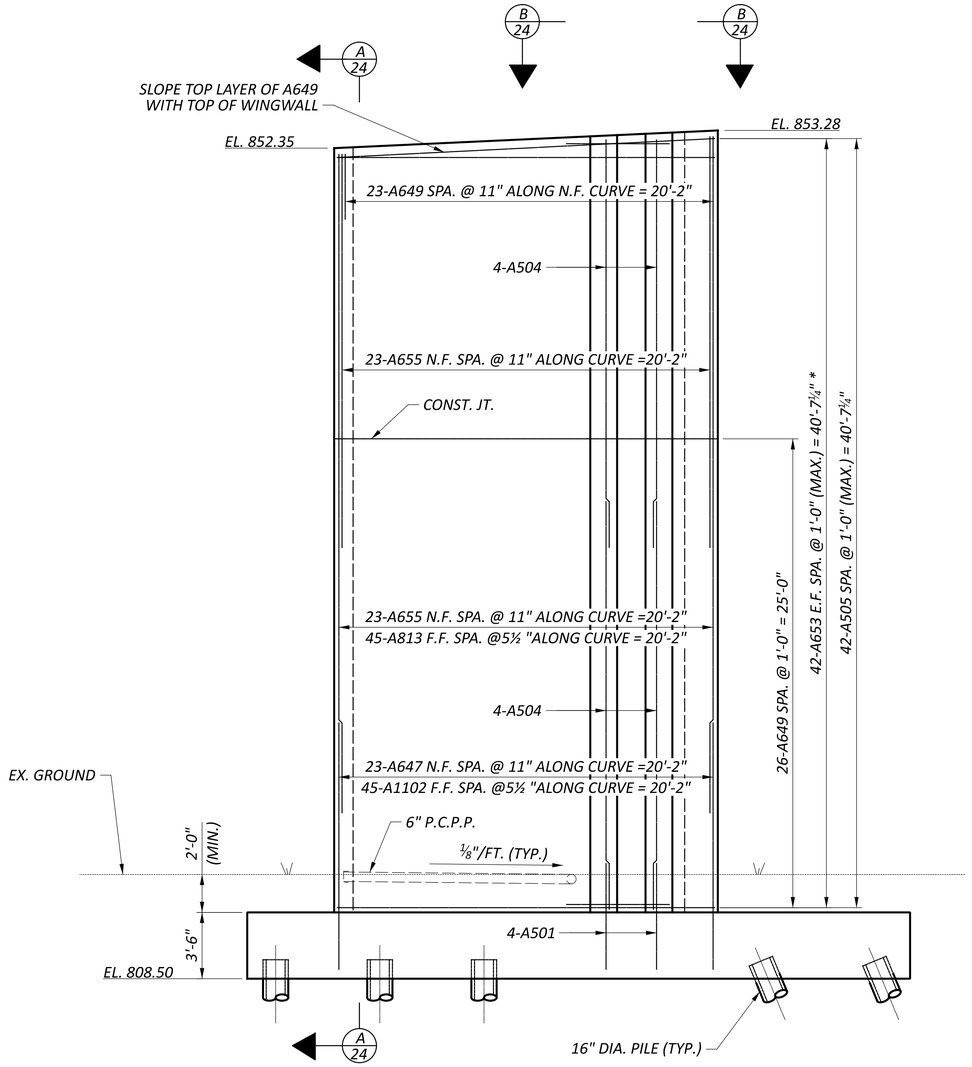
REVIEWER: MRW 08/05/24

PROJECT ID: 104132

SUBSET	TOTAL
23	99

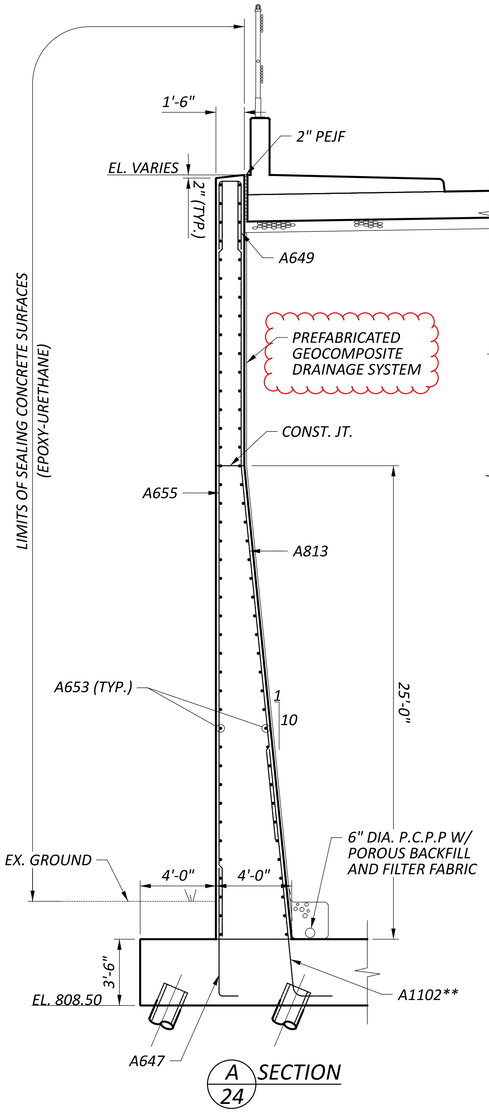
SHEET	TOTAL
P.231	399

CUY-14-6.93



ELEVATION

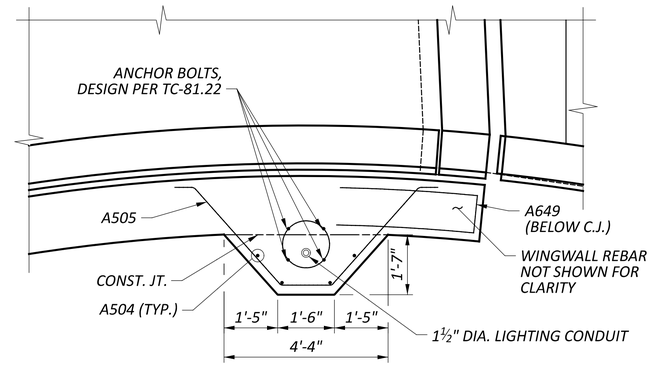
REAR ABUTMENT, RIGHT WINGWALL



SECTION

A 24

SIGNAL POLE PILASTER



SECTION

B 24

SIGNAL POLE PILASTER

REQUIRED MIN. LAP LENGTHS	
NO. 5 BARS	2'-5"
NO. 6 BARS	3'-7"
NO. 8 BARS	4'-9"

LEGEND:

* - REINFORCING BAR TO BE FIELD BENT TO A RADIUS OF 47'-2"
** - REINFORCING BAR SPACING TO BE ADJUSTED IN THE FIELD TO AVOID CONFLICT WITH THE PROPOSED PILES.

NOTES:

1. 3" MIN. CLEAR COVER IN BOTTOM OF FOOTING, 2" MIN. FOR ALL OTHER SURFACES UNLESS NOTED.
2. FOR GENERAL NOTES, SEE SHEET 5 | 99.
3. FOR FOUNDATION PLAN, SEE SHEET 16 | 99.
4. FOR FOOTING REINFORCING PLAN, SEE SHEET 22 | 99.
5. FOR REINFORCING STEEL LIST, SEE SHEET 90 | 99.
6. FOR ADDITIONAL SIGNAL POLE PILASTER DETAILS, SEE ODOT STD. DWG. TC-81.22.

REAR ABUTMENT DETAILS
BRIDGE NO. CUY-00014-06.930
BROADWAY AVENUE (S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS

CUY-14-6.93

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SFN	
1801806	
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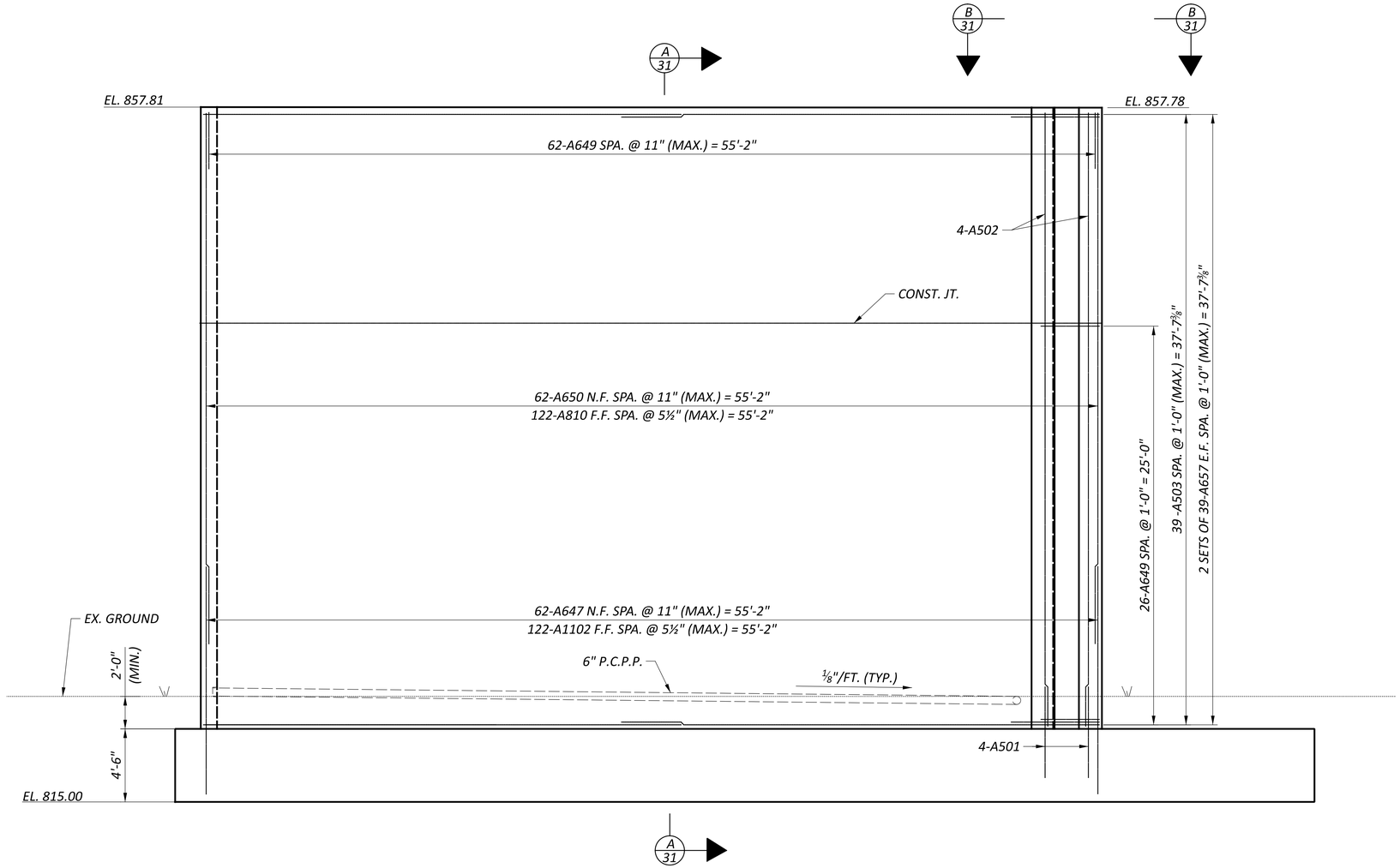
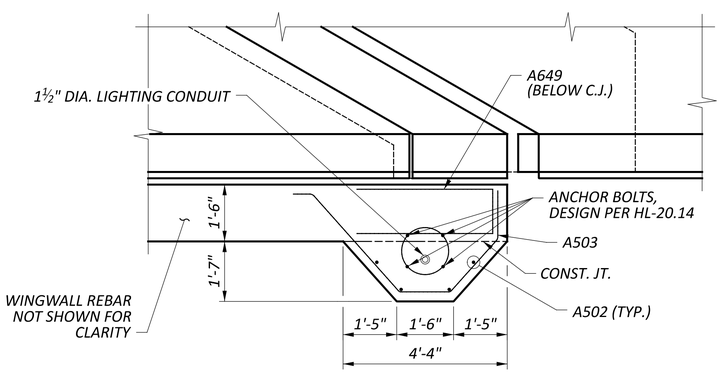
ERM	JDM
REVIEWER	
MRW 08/05/24	
PROJECT ID	
104132	
SUBSET	TOTAL
24	99
SHEET	TOTAL
P.232	399



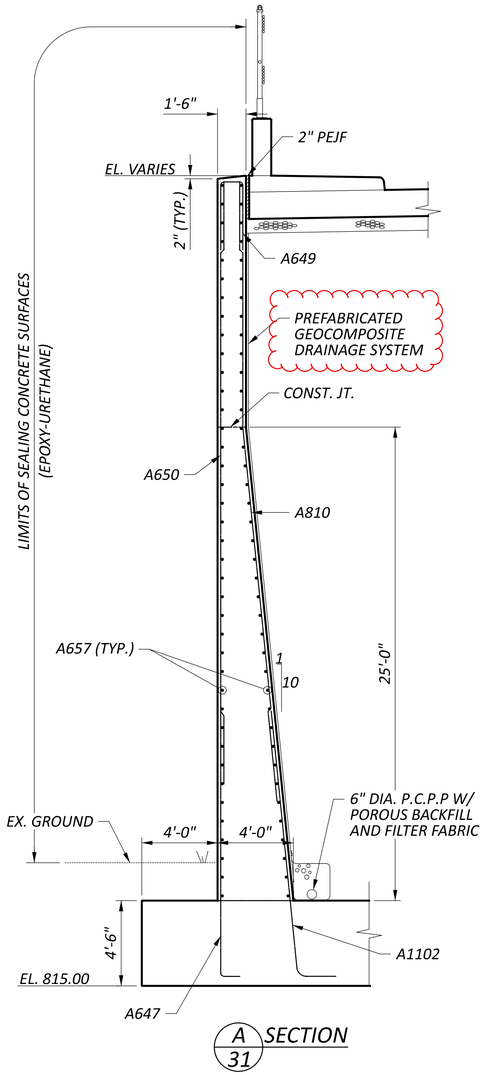
ELEVATION

FORWARD ABUTMENT, LEFT WINGWALL



B 31 SECTION

LIGHTING POLE PILASTER



A 31 SECTION

REQUIRED MIN. LAP LENGTHS	
NO. 5 BARS	2'-5"
NO. 6 BARS	3'-7"
NO. 8 BARS	4'-9"

NOTES:

1. 3" MIN. CLEAR COVER IN BOTTOM OF FOOTING, 2" MIN. FOR ALL OTHER SURFACES UNLESS NOTED.
2. FOR GENERAL NOTES, SEE SHEET 5 | 99 .
3. FOR FOOTING LAYOUT PLAN, SEE SHEET 30 | 99 .
4. FOR REINFORCING STEEL LIST, SEE SHEET 90 | 99 .
5. FOR ADDITIONAL LIGHTING POLE PILASTER DETAILS, SEE ODOT STD. DWG. HL-20.14.

FORWARD ABUTMENT DETAILS
BRIDGE NO. CUY-00014-06.930
(S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS
BROADWAY AVENUE (S.R.

SFN 1801806

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REVIEWER MRW 08/05/24

PROJECT ID 104132

SUBSET	TOTAL
31	99

SHEET	TOTAL
P.239	399

CUY-14-6.93

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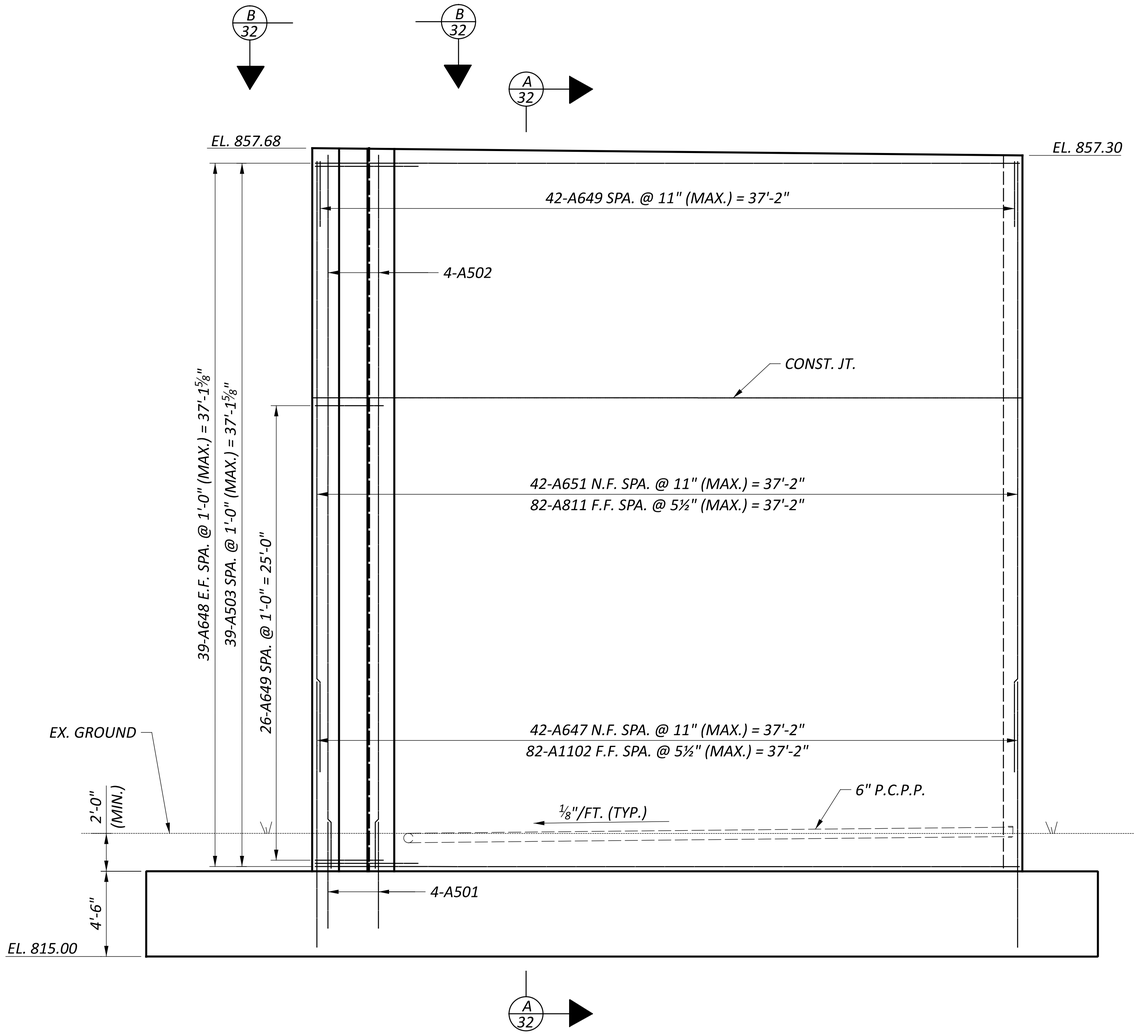
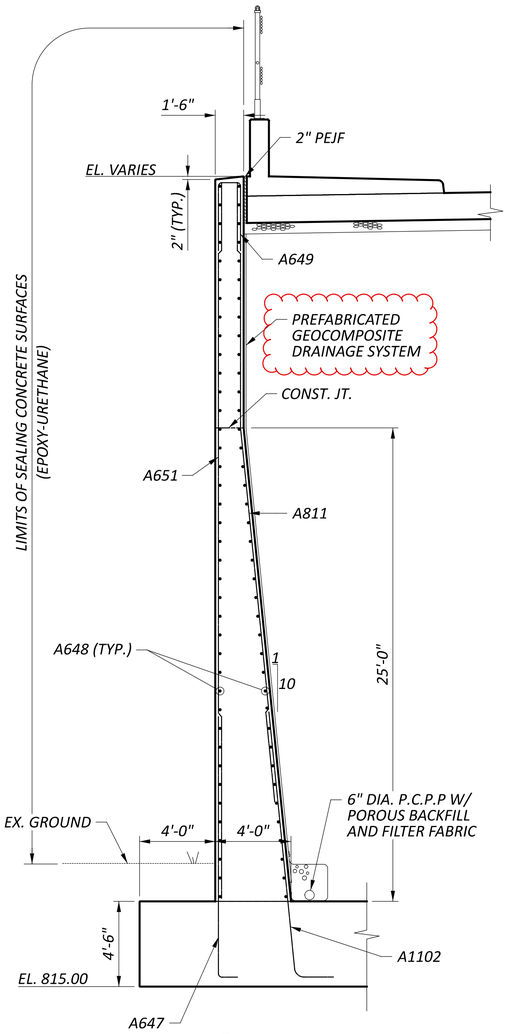


ELEVATION

FORWARD ABUTMENT, RIGHT WINGWALL



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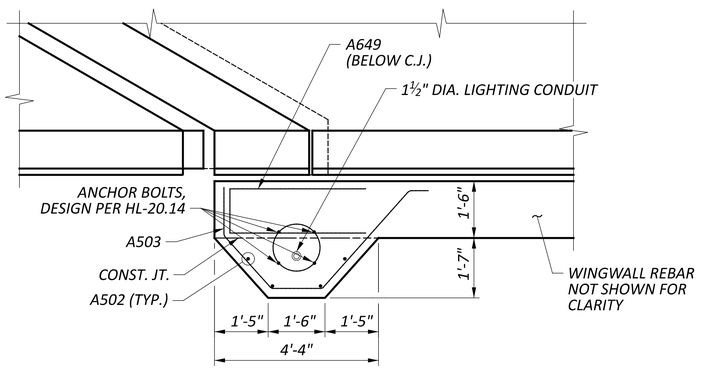

B 32 SECTION

LIGHTING POLE PILASTER

REQUIRED MIN. LAP LENGTHS	
NO. 5 BARS	2'-5"
NO. 6 BARS	3'-7"
NO. 8 BARS	4'-9"

NOTES:

1. 3" MIN. CLEAR COVER IN BOTTOM OF FOOTING, 2" MIN. FOR ALL OTHER SURFACES UNLESS NOTED.
2. FOR GENERAL NOTES, SEE SHEET 5 | 99 .
3. FOR FOOTING LAYOUT PLAN, SEE SHEET 30 | 99 .
4. FOR REINFORCING STEEL LIST, SEE SHEET 90 | 99 .
5. FOR ADDITIONAL LIGHTING POLE PILASTER DETAILS, SEE ODOT STD. DWG. HL-20.14.

FORWARD ABUTMENT DETAILS
BRIDGE NO. CUY-00014-06.930
BROADWAY AVENUE (S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS

SFN 1801806

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ERM	JDM

REVIEWER MRW 08/05/24

PROJECT ID 104132

SUBSET	TOTAL
32	99

SHEET	TOTAL
P.240	399

CUY-14-6.93

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ITEM 203 - ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS

PART 1: DESCRIPTION AND OBJECTIVE

1.1. PERFORMANCE CRITERIA

A. THIS WORK INCLUDES THE DESIGN OF, FURNISHING THE MATERIALS FOR, AND CONSTRUCTION OF THE COLUMN-SUPPORTED EMBANKMENTS AND WALLS (CSEW), LOAD TRANSFER PLATFORMS (LTP), AND WORKING PLATFORMS (WP) IN THE INSTALLATION AREA NOTED ON THE PLANS TO MEET THE PERFORMANCE CRITERIA PROVIDED IN THIS SECTION. THE CSEW DESIGNER SHALL DEMONSTRATE BY CALCULATIONS THAT THE CSEW SYSTEMS SATISFY THE FOLLOWING REQUIREMENTS:

1. CSEW SHALL SATISFY THE FACTORED BEARING RESISTANCE AND SETTLEMENT REQUIREMENTS OF THE PLANNED EMBANKMENTS AND WALLS AT THE DESIGNATED BEARING LEVELS.

I. THE DESIGNATED BEARING LEVEL FOR MSE WALLS IS THE BOTTOM OF THE LEVELING PAD/BASE OF THE MSE SELECT GRANULAR BACKFILL (SGB).

II. THE DESIGNATED BEARING LEVEL FOR RIGID GRAVITY AND SEMIGRAVITY WALLS AND BRIDGE ABUTMENTS IS THE BOTTOM OF THE SPREAD FOOTING FOUNDATION.

III. THE DESIGNATED BEARING LEVEL FOR THE EMBANKMENTS IS EXISTING GRADE.

2. THE FACTORED BEARING RESISTANCE REQUIREMENTS OF THE CSEW FOR EACH ZONE AT THE DESIGNATED BEARING LEVELS ARE AS FOLLOWS:

I. THE MINIMUM FACTORED BEARING RESISTANCE FOR WALL 3 IS 8.54 KSF. THE RESISTANCE FACTOR IS 0.65 IN ACCORDANCE WITH AASHTO LRFD TABLE 11.5.7-1 FOR MSE WALLS.

II. THE MINIMUM FACTORED BEARING RESISTANCE FOR WALL 4 IS 9.23 KSF. THE RESISTANCE FACTOR IS 0.65 IN ACCORDANCE WITH AASHTO LRFD TABLE 11.5.7-1 FOR MSE WALLS.

III. THE MINIMUM FACTORED BEARING RESISTANCE FOR WALL 6 IS 8.54 KSF. THE RESISTANCE FACTOR IS 0.65 IN ACCORDANCE WITH AASHTO LRFD TABLE 11.5.7-1 FOR MSE WALLS.

IV. THE MINIMUM FACTORED BEARING RESISTANCE FOR THE FORWARD ABUTMENT OF BRIDGE CUY-00014-06.930 IS 7.45 KSF. THE RESISTANCE FACTOR IS 0.55 IN ACCORDANCE WITH AASHTO LRFD TABLE 11.5.7-1 FOR GRAVITY AND SEMIGRAVITY WALLS.

V. THE MINIMUM FACTORED BEARING RESISTANCE FOR THE APPROACH EMBANKMENT BEYOND THE FORWARD EMBANKMENT AND BETWEEN MSE WALLS 3 AND 6 IS 5.67 KSF. THE RESISTANCE FACTOR IS 0.90.

VI. THE MINIMUM NOMINAL (UNFACTORED) BEARING RESISTANCE FOR THE CSEW SYSTEM IN EACH ZONE SHALL BE EQUAL TO THE FACTORED BEARING RESISTANCE DIVIDED BY THE BEARING RESISTANCE FACTOR FOR THAT ZONE.

3. TOTAL SETTLEMENT OF THE CSEW SYSTEM IS TO BE LIMITED TO 2 INCHES OR LESS OCCURRING WITHIN 30-DAYS AFTER THE SUPPORTED WALL AND EMBANKMENT REACHES FULL DESIGN HEIGHT (LESS COPING).

VII. AN ADDITIONAL 0.5 INCHES OF SETTLEMENT AFTER THE 30-DAY WAITING PERIOD IS ACCEPTABLE.

VIII. THE CONTRACTOR SHALL TAKE SURVEY SHOTS AT 50 FEET INTERVALS ALONG THE CENTERLINE OF CONSTRUCTION OF EMBANKMENTS AND ALONG THE EXPOSED FACE OF RETAINING WALLS SUPPORTED BY CSEW. THESE SHOTS SHALL BE TAKEN AT THE END OF THE 30-DAY WAITING PERIOD AND AGAIN 1 WEEK PRIOR TO BEGINNING PLACEMENT OF AGGREGATE BASE. THE SURVEY SHOTS SHALL BE PROVIDED TO THE DEPARTMENT AND WILL BE CONSIDERED INCIDENTAL TO THE CSEW PAY ITEMS. THE SURVEY DATA WILL BE USED TO CALCULATE ANY ADDITIONAL EMBANKMENT OR AGGREGATE BASE NEEDED TO ACCOUNT FOR 1 INCHES OR LESS OF SETTLEMENT. PAYMENT FOR EMBANKMENT OR AGGREGATE BASE NEEDED FOR SETTLEMENTS EXCEEDING 1 INCHES AT THE TIME OF PAVEMENT CONSTRUCTION WILL NOT BE MADE. THE CONTRACTOR WILL BE REQUIRED TO CONTINUE MONITORING THE SETTLEMENT UNTIL PROJECT CLOSE-OUT TO VERIFY THE MAXIMUM PERMISSIBLE SETTLEMENT IS NOT EXCEEDED. PAYMENT FOR CORRECTIVE REPAIRS NEEDED RESULTING FROM SETTLEMENT EXCEEDING 1 INCHES AFTER THE 30-DAY WAITING PERIOD WILL ALSO NOT BE MADE.

IX. WICK DRAINS MAY BE UTILIZED TO ACCELERATE THE TIME RATE OF SETTLEMENT.

4. MEASURE CSEW DIFFERENTIAL SETTLEMENT FOR COLUMN-SUPPORTED WALLS IN THE LONGITUDINAL DIRECTION (ALONG THE WALL FACING) AND IN THE TRANSVERSE DIRECTION (PERPENDICULAR TO THE WALL FACING).

I. MAXIMUM DIFFERENTIAL SETTLEMENT IS 0.5% FOR CONVENTIONAL MSE FACING PANELS AND 1.0% FOR SLIP-JOINTED PANELS.

II. MAXIMUM DIFFERENTIAL SETTLEMENT IS 0.2% FOR RIGID GRAVITY AND SEMIGRAVITY WALLS AND BRIDGE ABUTMENTS.

III. MAXIMUM DIFFERENTIAL SETTLEMENT IN THE TRANSVERSE DIRECTION IS 1.0%.

5. AT A MINIMUM, THE CONTRACTOR SHALL PROVIDE TWO SURVEY POINTS FOR EVERY 50 FEET ALONG THE EMBANKMENT ALIGNMENT, WITH ONE SURVEY POINT LOCATED ABOVE A COLUMN AND ONE SURVEY POINT LOCATED AT THE CENTROID OF A UNIT CELL FORMED BY THE CENTERS OF ADJACENT COLUMNS. DIFFERENTIAL SETTLEMENT BETWEEN UNIT CELL CENTROIDS AND ADJACENT CSEW COLUMNS SHALL NOT EXCEED 1.0%.

6. GLOBAL AND LOCAL STABILITY OF CSEW SYSTEMS SUPPORTING EMBANKMENTS AND WALLS SHALL EXCEED 1.3 FOR BOTH SHORT-TERM AND LONG-TERM CONDITIONS.

7. GLOBAL AND LOCAL STABILITY OF CSEW SYSTEMS SUPPORTING BRIDGES SHALL EXCEED 1.5 FOR BOTH SHORT-TERM AND LONG-TERM CONDITIONS.

8. PROVIDE A LTP, AS NECESSARY, TO LIMIT PENETRATION (PUNCHING) OF CSEW COLUMNS AND DIFFERENTIAL SETTLEMENT OF MSE WALLS AND EMBANKMENTS BETWEEN CSEW COLUMNS. IF A LTP IS NOT REQUIRED, PROVIDE A 1-FOOT LAYER OF ODOT C&MS ITEM 703.16.C.3 (GRANULAR MATERIAL TYPE C) COMPACTED PER ITEM 203 TO SUPPORT MSE LEVELING PADS, SPREAD FOOTINGS, AND EMBANKMENT MATERIALS.

9. THE CSEW SYSTEM AND CONSTRUCTION PROCESSES SHALL NOT CAUSE ANY ADDITIONAL LOADING, DETRIMENTAL SETTLEMENT, OR DAMAGE TO ADJACENT FACILITIES, UTILITIES, OR EMBANKMENTS.

B. THE DESIGN CONCEPT OF THE CSEW INVOLVES CONSTRUCTING A PATTERN OF COLUMNS USING AN ACCEPTED GROUND IMPROVEMENT TECHNIQUE OF CSEW COLUMNS. DESIGN THE CSEW SYSTEM TO EFFICIENTLY DISTRIBUTE EMBANKMENT AND WALL LOADS PLUS SURCHARGE LIVE AND DEAD LOADS. THE TYPE, NUMBER OF COLUMNS, SPACING, DIAMETER AND DEPTH SHALL BE DETERMINED BY THE CSEW CONTRACTOR AND CSEW DESIGNER. CSEW COLUMNS SHALL NOT BE LOCATED AT PROPOSED STRUCTURE PILE LOCATIONS.

C. THE CSEW DESIGN CONCEPT INCLUDES THE DESIGN OF LTP, INCLUDING SELECT FILL AND GENERAL EMBANKMENT FILL MATERIALS, NUMBER OF GEOSYNTHETIC REINFORCEMENT LAYERS, TYPE OF GEOSYNTHETIC REINFORCEMENT, AND PROPERTIES OF THE GEOSYNTHETIC REINFORCEMENT.

D. PRIOR TO SUBMITTING THE BID, THE CONTRACTOR AND CSEW DESIGNER SHALL REVIEW THE AVAILABLE SUBSURFACE INFORMATION AND VISIT THE SITE TO ASSESS SITE GEOMETRY, CSEW INSTALLATION METHOD VIABILITY, EQUIPMENT ACCESS CONDITIONS, AND LOCATION OF EXISTING STRUCTURES AND ABOVE GROUND UTILITIES AND FACILITIES.

1.2. GEOTECHNICAL ENGINEER DESIGN CRITERIA FOR CSEW

THE PURPOSE OF THE GROUND IMPROVEMENT IS TO PROVIDE SUPPORT FOR THE FORWARD BRIDGE ABUTMENT, MSE WALLS AND ADJACENT EMBANKMENT. THE CSEW COLUMNS WILL EXTEND THROUGH THE VARIABLE FILL AND SURFICIAL COHESIVE SOILS AND BEAR IN THE UNDERLYING DENSE TO VERY DENSE GLACIAL GRANULAR SOILS. SEE SHEET P.328 THRU P.328B FOR THE PLAN LIMITS OF THE GROUND IMPROVEMENT AREA.

1.3. VERIFICATION PROGRAM

A VERIFICATION PROGRAM DESIGNED, ACCOMPLISHED, AND REPORTED BY THE CONTRACTOR IS REQUIRED TO MEASURE THE QUALITY OF THE INSTALLED CSEW COLUMNS.

AT MINIMUM, THE VERIFICATION PROGRAM SHALL INCLUDE THE FOLLOWING.

A. PROPOSED MEANS AND METHODS FOR VERIFICATION THAT THE DESIGN AND PERFORMANCE CRITERIA AS STATED IN THIS NOTE AND THE GROUND IMPROVEMENT DETAILS HAVE BEEN SATISFIED. THIS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, MODULUS OR LOAD TESTS ON INDIVIDUAL CSEW COLUMNS AND GROUPS, SOIL BORINGS, AND OTHER METHODS AS REQUIRED BY THE CSEW COLUMN DESIGNER.

B. A QUALITY CONTROL PROGRAM TO VERIFY THAT THE CSEW COLUMNS ARE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE REQUIREMENTS AS OUTLINED IN THIS NOTE AND THE GROUND IMPROVEMENT DETAILS. THE QUALITY CONTROL PROGRAM SHALL INCLUDE TESTING AND OBSERVATIONS BY AN INDEPENDENT TESTING LABORATORY AS REQUIRED IN THE CONTRACT DOCUMENTS.

C. A CSEW DEMONSTRATION COLUMN AND LOAD TESTING PROGRAM TO DEMONSTRATE INSTALLATION TECHNIQUES AND COMPLIANCE WITH THE PERFORMANCE CRITERIA. THE LOAD TEST PROGRAM SHALL INCLUDE THE INSTALLATION OF TYPICAL UNIT CELLS OF THREE OR MORE COLUMNS OF THE SIZE, TYPE AND SPACING SPECIFIED BY THE CSEW DESIGNER IN EACH STABILIZED ZONE IDENTIFIED IN SECTION 1.1.A.2. THE CSEW DESIGNER SHALL PRESCRIBE A LOAD TEST PROCEDURE FOR MEASURING THE PERFORMANCE OF THE CSEW COLUMNS (E.G. ASTM D1143 FOR PILE COLUMNS), SUBJECT TO ACCEPTANCE BY THE ENGINEER. THE TEST PROGRAM SHALL INCLUDE AT A MINIMUM:

1. MEASURE VERTICAL SURFACE DEFLECTIONS BOTH OVER THE TEST COLUMN AND BETWEEN TEST COLUMNS BY A SUITABLE METHOD.

2. COLUMNS SHALL HAVE SUFFICIENT STRENGTH AND STIFFNESS TO MEET OR EXCEED THE NOMINAL BEARING RESISTANCE CRITERIA IN EACH STABILIZED ZONE IDENTIFIED IN SECTION 1.1.A.2 AND TO SATISFY SETTLEMENT CRITERIA IN SECTION 1.1.A AT A DESIGN STRESS EQUAL TO THE NOMINAL BEARING RESISTANCE. IN THE EVENT THAT TEST COLUMNS FAIL TO COMPLY WITH THE DESIGN REQUIREMENTS, THE CONTRACTOR SHALL INSTALL ADDITIONAL TEST COLUMNS AND CONDUCT ADDITIONAL TESTS AT NO COST TO THE DEPARTMENT.

3. ANY PLANNED DEVIATIONS FROM THESE LOAD TEST PROCEDURES SHALL BE DESCRIBED IN THE CONTRACTOR'S DESIGN SUBMITTAL, APPROVED BY THE DESIGNER, AND ACCEPTED BY THE ENGINEER.

4. THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS FOR THE LOAD TEST REACTION ELEMENTS INCLUDING DIAMETER, TYPE, REINFORCEMENT, AND DEPTH AS WELL AS THE REACTION FRAME AND BEAMS FOR REVIEW BY THE ENGINEER. THE CONTRACTOR SHALL DESIGN THE REACTION PILES AND FRAME FOR A MINIMUM ONE AND HALF TIMES THE MAXIMUM TEST LOAD. ALL SHOP DRAWINGS AND SUPPORTING SHOP DRAWING CALCULATIONS SHALL BE SIGNED AND SEALED BY PROFESSIONAL ENGINEER.

D. CSEW COLUMN PRODUCTION SHALL ONLY START UPON COMPLETION OF TWO LOAD TESTS AND AFTER THE ENGINEER ACCEPTS THE CSEW DESIGNER'S FINAL TIP ELEVATION, INSTALLATION CRITERIA, AND SPACING OF COLUMNS.

1.4. CSEW COLUMN TYPES AND MATERIALS

CSEW COLUMN TYPES MAY INCLUDE, BUT ARE NOT LIMITED TO:

1. STEEL H PILES
2. STEEL PIPE PILES
3. CONTINUOUS FLIGHT AUGER (CFA) PILES (A.K.A. AUGERCAST PILES)
4. AGGREGATE COLUMNS (A.K.A. STONE COLUMNS OR AGGREGATE PIERS)
5. RIGID INCLUSIONS (RI)
6. CONTROLLED MODULUS COLUMNS (CMC)
7. SOIL MIXING COLUMNS

OR OTHER COLUMN-SUPPORTED METHODS WITH THE APPROVAL OF THE ENGINEER. METHODS SUCH AS VIBRO COMPACTION THAT DENSIFY THE SURROUNDING SOIL ARE NOT ACCEPTABLE DUE TO POTENTIAL RAILROAD IMPACTS.

PART 2 MINIMUM CONTRACTOR QUALIFICATIONS:

2.1. THE CONTRACTOR CONSTRUCTING THE CSEW SYSTEM SHALL HAVE A MINIMUM 5+ YEARS EXPERIENCE INSTALLING GEOSYNTHETIC REINFORCEMENT AND THE COLUMN TYPE SUBMITTED IN THE CONTRACTORS BID PROPOSAL.

2.2. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR THREE RECENT, SUCCESSFUL GROUND IMPROVEMENT PROJECTS COMPLETED WITH SIMILAR SITE CONDITIONS AND IMPROVEMENT CRITERIA. THE CONTRACTOR SHALL PROVIDE NAMES AND CONTACT INFORMATION OF INDIVIDUALS WHO CAN ATTEST TO THE ADEQUACY OF THE WORK PERFORMED. THIS INFORMATION SHALL BE SUBMITTED IN THE CONTRACTOR'S BID PROPOSAL.

2.3. THE CONTRACTOR SHALL ASSIGN A MANAGER WHO HAS BEEN RESPONSIBLE FOR THE CSEW WORK ON AT LEAST THREE (3) PROJECTS. THE PROJECT MANAGER SHALL HAVE BEEN IN FULL-TIME EMPLOYMENT OF THE CONTRACTOR FOR AT LEAST TWO OF THOSE PROJECTS (PROVIDE A LIST OF PROJECTS AND DATES IN BID PROPOSAL). A DESIGNER THAT IS A CONSULTANT ON THIS PROJECT CANNOT BE THE PROJECT MANAGER.

2.4. THE CSEW SYSTEM SHALL BE DESIGNED BY THE DESIGNER, AN OHIO REGISTERED ENGINEER WITH EXPERIENCE IN THE DESIGN OF AT LEAST THREE SUCCESSFULLY COMPLETED CSEW PROJECTS OVER THE PAST FIVE YEARS. THE DESIGNER MAY BE EITHER AN EMPLOYEE OF THE CONTRACTOR OR A SEPARATE CONSULTANT DESIGN ENGINEER MEETING THE STATED EXPERIENCE REQUIREMENTS.

2.5. THE CONTRACTOR SHALL ASSIGN A FULL-TIME PROJECT SUPERINTENDENT WITH AT LEAST THREE (3) YEARS EXPERIENCE IN CSEW CONSTRUCTION AND WHO HAS BEEN RESPONSIBLE FOR A MINIMUM OF THREE (3) CSEW PROJECTS (PROVIDE A LIST OF PROJECTS AND DATES IN BID PROPOSAL).

2.6. WRITTEN REQUESTS FOR SUBSTITUTION OF THESE KEY PERSONNEL SHALL BE SUBMITTED PRIOR TO PERSONNEL CHANGES. DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER THAT DEMONSTRATES THAT THE SUBSTITUTE MEETS THE REQUIREMENTS LISTED ABOVE.

REFERENCES

A. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020 (AASHTO LRFD), AND AASHTO LRFD CONSTRUCTION SPECIFICATIONS, 4TH EDITION, 2017, WITH 2020 INTERIMS.

B. FHWA NHI-16-027 AND 028, FHWA GEC 013 GROUND IMPROVEMENT METHODS: REFERENCE MANUAL VOLUMES I & II, APRIL 2017.

C. FHWA-NHI-16-009, FHWA GEC 012: DESIGN AND CONSTRUCTION OF DRIVEN PILE FOUNDATIONS VOLUMES I & II, 2016.

D. FHWA-RD-83-026 DESIGN AND CONSTRUCTION OF STONE COLUMNS, VOL. 1.

E. FHWA NHI-06-089 SOILS AND FOUNDATIONS REFERENCE MANUAL VOLUMES I & II, 2006.

F. FHWA GEC NO. 8 DESIGN AND CONSTRUCTION OF CONTINUOUS FLIGHT AUGER PILES, 2007.

G. ASTM D4595 STANDARD TEXT METHOD FOR TENSILE PROPERTIES OF GEOTEXTILES BY THE WIDE-WIDTH STRIP METHOD.

H. ASTM D5262 STANDARD TEST METHOD FOR DETERMINING THE UNCONFINED TENSION CREEP AND CREEP RUPTURE BEHAVIOR OF PLANAR GEOSYNTHETICS USED FOR REINFORCEMENT PURPOSES.

I. ASTM D6637 STANDARD TEST METHOD FOR DETERMINING TENSILE PROPERTIES OF GEOGRIDS BY THE SINGLE OR MULTI-RIB TENSILE METHOD.

PART 3 - EQUIPMENT

3.1. THE EQUIPMENT REQUIRED FOR COLUMN INSTALLATION WILL VARY DEPENDING ON THE COLUMN TYPE. EQUIPMENT FOR COLUMN INSTALLATION SHALL MEET FHWA CRITERIA FOR THE TYPE OF COLUMN SELECTED.

3.2. EQUIPMENT FOR FILL AND GEOSYNTHETIC REINFORCEMENT PLACEMENT SHALL NOT CAUSE EXCESSIVE LOADS OR SETTLEMENT TO THE SOFT GROUND BETWEEN COLUMNS.

GROUND IMPROVEMENT PLAN DETAIL
BRIDGE NO. CUY-00014-06.930
BROADWAY AVENUE (S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS

SFN
-

DESIGN AGENCY
AECOM
564 White Pond Drive
Akron, OH 44320
(330) 836-9111
www.aecom.com

DESIGNER	CHECKER
HER	ERM

REVIEWER
MRW 02/10/25

PROJECT ID
104132

SUBSET	TOTAL
3	25

SHEET	TOTAL
P.324	399

CUY-14-6.93

MODEL: WD303A PAPERSIZE: 34x22 (in.) DATE: 2/20/2025 TIME: 1:12:02 PM USER: hiba.elrassi
pw:\\aecom-na-pw.bentley.com:AECOM_D520_NA_2019\Documents\60581903-CUY-14-6.93\104132\400-Engineering\Structures\MSE Walls\Sheets\104132_WD303.dgn

ITEM 203 - ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS CONT.

PART 4 - MATERIALS REQUIREMENTS:

4.1. FOR CMC, RI, AND SOIL MIXING COLUMNS, PROVIDE MATERIALS FOR CEMENTITIOUS GROUT OR CAST-IN-PLACE CONCRETE CONFORMING TO C&MS 499.02. THE GROUT OR CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH (F'C) OF 4,000 POUNDS PER SQUARE INCH (PSI). A MINIMUM OF 30 DAYS BEFORE PLACEMENT, SUBMIT TO THE ENGINEER FOR ACCEPTANCE THE MIX PROPORTIONS FOR EACH MIXTURE AND 28 DAY COMPRESSIVE STRENGTH RESULTS FROM AN AASHTO ACCREDITED LABORATORY. BATCH CONCRETE AND GROUT MATERIALS IN ACCORDANCE WITH C&MS 499.06. SAMPLES FOR COMPRESSIVE STRENGTH TESTING SHALL BE TAKEN BY A 3RD PARTY AASHTO ACCREDITED LABORATORY PRIOR TO PUMPING. ONE COMPRESSIVE STRENGTH SAMPLE SHALL BE OBTAINED PER 50 CY OF MATERIAL PLACED. PERFORM COMPRESSIVE STRENGTH TESTING OF CONCRETE IN ACCORDANCE WITH ASTM C39. PERFORM COMPRESSIVE STRENGTH TESTING OF GROUT IN ACCORDANCE WITH ASTM C109, EXCEPT USING THE MATERIAL PROPORTIONS BATCHED, OR BY USING 3"X 6" CYLINDERS TESTED IN ACCORDANCE WITH ASTM C39. THE DEPARTMENT MAY MAKE CYLINDERS TO VERIFY THE 3RD PARTY LABORATORY RESULTS. EARTHWORK WITHIN THE IMMEDIATE VICINITY OF THE COLUMNS MAY PROCEED A MINIMUM OF 7 DAYS AFTER CSEW COLUMN INSTALLATION, AFTER VERIFICATION THAT GROUT OR CONCRETE HAS REACHED 80% OF DESIGN COMPRESSIVE STRENGTH.

4.2. FOR LTP, WP, AND AGGREGATE COLUMNS, PROVIDE CCS CONFORMING TO C&MS 703. THE CCS FOR LTP AND WP IS HEREIN DEFINED AS "SELECT FILL."

4.3. FOR STEEL H PILES OR STEEL PIPE PILES, PROVIDE AND INSTALL PILES IN ACCORDANCE WITH C&MS 507.

4.4. FOR CFA PILES, PROVIDE AND INSTALL PILES IN ACCORDANCE WITH SS893, CONTINUOUS FLIGHT AUGER PILES.

4.5 FOR GEOSYNTHETIC REINFORCEMENT, PROVIDE GEOTEXTILE FABRIC CONFORMING TO 712.09, TYPE D; PROVIDE GEOGRID CONFORMING TO C&MS 712.15.

PART 5 - SUBMITTALS

5.1. FOLLOWING AWARD OF THE CONTRACT AND PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT HARD AND SOFT COPIES OF THE DOCUMENTS LISTED UNDER SUBMITTALS TO ODOT A MINIMUM OF 30-DAYS PRIOR TO ANY MOBILIZATION OF EQUIPMENT, THE ORDERING OF ANY MATERIALS, OR INSTALLATION OF THE CSEW. THE ENGINEER SHALL REVIEW THE SUBMITTED ITEMS FOR CONFORMANCE WITH THE PERFORMANCE SPECIFICATION. THE CONTRACTOR SHALL ALLOW A MINIMUM OF 30-DAYS FOR THE REVIEW OF THE INITIAL SUBMISSION AND SHALL ALSO ACCOUNT FOR THE SUBSEQUENT REVIEW AND ACCEPTANCE PROCESS WHICH WILL DEPEND ON THE ACCURACY AND QUALITY OF THE SUBMITTED DOCUMENTS.

5.2. SUBMITTALS

A. PROPOSED CSEW CONSTRUCTION SEQUENCE AND SCHEDULE.

B. ENGINEERED CONSTRUCTION DRAWINGS, WHICH SHALL:

1. SHOW THE COLUMN TYPE, COLUMN LAYOUT, COLUMN SIZE, SPACING OF COLUMNS, THE COLUMN LOCATION, THE TOP AND BOTTOM ELEVATIONS OF EACH COLUMN, AND THE DEPTH OF COLUMNS AS PROPOSED TO ACHIEVE THE CRITERIA OUTLINED IN THIS SPECIFICATION AND THE CONTRACT PLANS.
2. EACH COLUMN SHALL BE IDENTIFIED WITH A UNIQUE REFERENCE NUMBER.
3. SHOW EXISTING UTILITY LOCATIONS AND ADDRESS ANY POTENTIAL CONFLICTS.
4. SHOW LOCATIONS OF ALL SURVEY MARKERS.
5. PROVIDE DETAILS OF THE SELECT FILL, GEOSYNTHETIC REINFORCEMENT, AND EMBANKMENT FILL DETAILS (MATERIAL TYPES, ELEVATIONS, GEOSYNTHETIC REINFORCEMENT, ETC.).
6. BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OHIO.
7. BE ON-SITE AT ALL TIMES DURING CONSTRUCTION. THIS INCLUDES THE ENGINEERED CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS.

C. DESCRIPTION OF THE EQUIPMENT AND CONSTRUCTION PROCEDURES TO BE USED, INCLUDING A PLAN TO DISPOSE OF ANY WATER OR SPOILS IF APPLICABLE.

D. A DETAILED WRITTEN PROCEDURE OF PLANS TO PROTECT ADJACENT FACILITIES AND EMBANKMENTS FROM DAMAGE, INCLUDING DESIGN CALCULATIONS. ADJACENT EXISTING STRUCTURES AND PAVEMENT SHALL REMAIN IN SERVICE AT ALL TIMES, EXCEPT WHEN CLOSED PER MOT REQUIREMENTS.

E. PROPOSED PLAN FOR QUALITY CONTROL THROUGHOUT THE INSTALLATION PROCEDURE. THIS PLAN SHALL ADDRESS ISSUES SUCH AS CONTROL AND MEASUREMENT OF COLUMN DIAMETER, LIFT THICKNESS, AND ANY OTHER PERTINENT INFORMATION.

F. PROPOSED VERIFICATION PROGRAM, INCLUDING PROPOSED INDEPENDENT TESTING AGENCY TO BE USED. SEE SECTION 1.3 (VERIFICATION PROGRAM).

G. PROPOSED MONITORING PLAN OF PRE-INSTALLATION PERFORMANCE AND POST-INSTALLATION PERFORMANCE OF EXISTING STRUCTURES, EMBANKMENTS AND CSEW SYSTEM

H. CALCULATIONS FOR ANTICIPATED SETTLEMENTS, BEARING RESISTANCE, AND OTHER DESIGN CALCULATIONS RELATING TO PERFORMANCE OF THE CSEW COLUMN AND REQUIRED COMPOSITE SOIL PARAMETERS.

I. ANY OTHER REQUIRED INFORMATION FOR THE CSEW SYSTEM.

J. SUBMIT CALIBRATION RECORDS FOR LOAD CELLS, HYDRAULIC JACKS, PUMPS AND PRESSURE GAUGES AT LEAST 7 DAYS PRIOR TO PERFORMING THE LOAD TESTS.

1. SUBMIT THE FOLLOWING TO THE ENGINEER AFTER THE LOAD TESTS ARE COMPLETED:

a. A REPORT DOCUMENTING THE OBSERVATIONS AND RESULTS OF ALL TESTS. THE REPORT WILL CERTIFY THAT THE REQUIRED BEARING RESISTANCE HAS BEEN ACHIEVED WITHIN THE SETTLEMENT TOLERANCES AS DETAILED IN SECTION 1.1 (PERFORMANCE CRITERIA).

b. AS-BUILT DRAWINGS INDICATING THE LOCATION, DIAMETER, TOP AND BOTTOM ELEVATIONS, AND IDENTIFICATION NUMBER FOR EACH CSEW COLUMN.

K. LTP SUBMITTALS:

1. GRADATION, ATTERBERG LIMITS, AND THE RESULTING ODOT/AASHTO CLASSIFICATION FOR ALL FILL MATERIALS USED.
2. THE CONTRACTOR SHALL SUBMIT A CERTIFICATE STATING THAT THE GEOSYNTHETIC REINFORCEMENT MEETS THE DESIGN REQUIREMENTS FOR ULTIMATE STRENGTH, CREEP, DURABILITY, INSTALLATION DAMAGE, AND COEFFICIENT OF INTERACTION FOR SLIDING IN ACCORDANCE WITH THE DESIGN SUBMITTAL.

5.3. DAILY REPORTS

DURING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT ONE COPY OF DAILY PROGRESS REPORTS IN WRITING TO ODOT DETAILING THE FOLLOWING AT A MINIMUM:

A. CSEW COLUMN IDENTIFIED BY LOCATION NUMBER

B. DATE CONSTRUCTED

C. ELEVATION OF TOP AND BOTTOM OF EACH COLUMN

D. AVERAGE LIFT THICKNESS

E. ESTIMATE OF GROUND HEAVE OR SUBSIDENCE

F. VIBRATOR POWER CONSUMPTION DURING PENETRATION AND COMPACTION OF EACH INCREMENT OF COLUMN CONSTRUCTED

G. JETTING PRESSURE (AIR OR WATER)

H. DESCRIPTION OF SOIL AND GROUNDWATER CONDITIONS

I. DETAILS OF OBSTRUCTIONS, DELAYS, AND ANY UNUSUAL GROUND CONDITIONS

J. QUANTITY OF GROUT PLACED IN EACH COLUMN

K. AMOUNT OF WATER USED PER COLUMN (IF APPLICABLE)

L. RESULTS OF QUALITY CONTROL TESTING.

5.4. FINAL REPORTS

UPON COMPLETION OF THE CSEW, THE CONTRACTOR SHALL SUBMIT A REPORT TO ODOT DETAILING THE PERFORMANCE OF THE SITE DURING TREATMENT, AND THAT THE SITE MEETS THE CRITERIA ESTABLISHED FOR THE SITE AND PROJECT.

5.5. ACCEPTANCE OF THE PROPOSED DESIGN AND CONSTRUCTION METHODOLOGIES SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR THE SAFETY OF THE METHOD OR EQUIPMENT USED OR THE RESPONSIBILITY OF CARRYING OUT THE WORK IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

5.6. THE CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS TO THE ENGINEER NO-LATER-THAN 30-DAYS FOLLOWING COMPLETION OF CONSTRUCTION.

PART 6 SPOIL HANDLING REQUIREMENTS

MAINTAIN RECORDS (SUCH AS MANIFESTS, LANDFILL TICKETS, DAILY LOGS, ETC.) TO DOCUMENT THE SOURCE, MOVEMENT AND DESTINATION OF EACH TRUCKLOAD OF SOLID WASTE OR REGULATED MATERIAL. ALL TRANSPORT VEHICLES USED FOR THE MOVEMENT OF REGULATED MATERIALS SHALL MEET ALL APPLICABLE LOCAL, STATE AND FEDERAL REQUIREMENTS. ONE COPY OF EACH RECORD SHALL BE SUBMITTED TO THE ENGINEER.

PART 7 CSEW CONSTRUCTION AND QC/QA REQUIREMENTS

7.1. PRE-CONSTRUCTION MEETING:

A PRE-CONSTRUCTION MEETING SHALL BE HELD AT LEAST FIVE WORKING DAYS PRIOR TO MOBILIZING EQUIPMENT TO THE PROJECT SITE AND PRIOR TO THE CONTRACTOR BEGINNING ANY CSEW COLUMN INSTALLATION WORK AT THE SITE TO DISCUSS CONSTRUCTION PROCEDURES, PERSONNEL, QUALITY CONTROL, AND EQUIPMENT TO BE USED. THOSE ATTENDING SHALL INCLUDE THE ENGINEER, THE CONTRACTOR, THE DESIGNER, THE SUPERINTENDENT, ON-SITE SUPERVISORS, INDEPENDENT TESTING AGENCY REPRESENTATIVE, AND ALL FOREMEN IN CHARGE OF CSEW COLUMN INSTALLATION OPERATIONS, AS WELL AS ODOT AND THEIR KEY INSPECTION PERSONNEL. AT THE MEETING, THE COLUMN INSTALLATION MEANS/METHODS, OBSERVATION, ACCEPTANCE/REJECTION PROCEDURES, TESTING AND CSEW CONSTRUCTION PROCEDURES SHALL BE DISCUSSED AND FORMALIZED. IF THE CONTRACTOR'S KEY PERSONNEL CHANGE OR IF THE CONTRACTOR PROPOSES A SIGNIFICANT REVISION OF THE INSTALLATION PLAN, AN ADDITIONAL MEETING SHALL BE HELD BEFORE ANY ADDITIONAL WORK IS PERFORMED.

7.2. THE CONTRACTOR SHALL PROVIDE ENGINEERED DRAWINGS AND ALL REQUIRED SUBMITTALS IN ACCORDANCE WITH PART 5.

7.3. SITE PREPARATION

A. THE CONTRACTOR SHALL ENSURE A FIRM WP ON WHICH HEAVY EQUIPMENT CAN BE OPERATED SAFELY UNDER ITS OWN POWER. THE WP SHALL COMPLY WITH ITEM 203.

B. THE CONTRACTOR SHALL ACCURATELY LOCATE THE LIMITS OF COLUMN INSTALLATION AND EMBANKMENT EXTENTS IN ACCORDANCE WITH THE CONTRACT PLANS.

C. THE CONTRACTOR SHALL EXERCISE CAUTION TO AVOID SETTLEMENT OR DAMAGE TO EXISTING FACILITIES AND SETTLEMENT, UNDERMINING, OR INSTABILITY TO EXISTING EMBANKMENTS.

D. STABILITY OF ALL THE TEMPORARY SHEETING AND TEMPORARY SLOPES, IF USED TO FACILITATE INSTALLATION OF THE COLUMNS, IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY HIS ACTIVITIES AT NO ADDITIONAL COST TO THE DEPARTMENT.

E. THE CONTRACTOR SHALL EXERCISE CAUTION AND ACCOUNT FOR THE TEMPORARY INSTABILITY THAT MAY BE CAUSED BY GROUND IMPROVEMENT UNTIL THE GROUND IMPROVEMENT FEATURES GAIN STRENGTH WITH TIME.

7.4. CSEW COLUMN CONSTRUCTION

A. INSTALL CSEW COLUMNS TO THE SPECIFIED INSTALLATION REQUIREMENTS DEVELOPED FROM THE INSTALLATION OF DEMONSTRATION COLUMNS AND THE RESULTS OF LOAD TESTS. PERFORM LOAD TESTS IN ACCORDANCE WITH SECTION 1.3 VERIFICATION PROGRAM.

B. IN AREAS NEAR ABUTMENTS WHERE PILES ARE REQUIRED, THE CONTRACTOR SHALL COORDINATE THE LOCATION OF THE CMC TO AVOID PLACING A CMC BELOW A PILE.

7.5. CSEW COLUMN TOLERANCE

A. THE CSEW DESIGNER SHALL SPECIFY IN THE CONTRACTOR'S SUBMITTAL THE ALLOWABLE TOLERANCES FOR:

1. COLUMN VERTICALITY
2. HORIZONTAL TOLERANCE FROM PLAN LOCATION
3. VERTICAL TOLERANCE FROM COLUMN TOP
4. ACCEPTABLE CONDITION OF COLUMN TOPS PRIOR TO INSTALLATION OF THE LTP
5. MINIMUM COLUMN DIMENSIONS
6. COLUMN OVERLAP REQUIREMENTS, IF APPLICABLE
7. MINIMUM STRENGTH REQUIREMENTS OF COLUMN MATERIALS
8. MATERIAL PROPERTIES, AS INCORPORATED INTO THE COLUMNS
9. OTHER ITEMS, AS REQUIRED PER ODOT C&MS

B. BEFORE BEGINNING INSTALLATION, THE CONTRACTOR SHALL ACCURATELY STAKE THE LOCATION OF THE CSEW COLUMNS USING A LICENSED SURVEYOR. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE METHOD FOR LOCATING COLUMNS TO ALLOW THE ENGINEER TO VERIFY THE AS-BUILT LOCATION OF THE COLUMNS DURING CONSTRUCTION. THE CONTRACTOR WILL NOT BE COMPENSATED FOR COLUMNS THAT ARE LOCATED OUTSIDE OF THE SPECIFIED TOLERANCES. IF THE ENGINEER DETERMINES THAT MISALIGNED COLUMNS WILL INTERFERE WITH CONSTRUCTION, A METHOD OF CORRECTION SHALL BE PREPARED BY THE CSEW DESIGNER AND SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.

C. CSEW COLUMNS INSTALLED BEYOND THE MAXIMUM ALLOWABLE TOLERANCES SHALL BE ABANDONED AND REPLACED WITH NEW COLUMNS, UNLESS THE DESIGNER APPROVES THE CONDITION OR PRESCRIBES OTHER REMEDIAL MEASURES TO BE COMPLETED BY CONTRACTOR AND CSEW DESIGNER. ALL MATERIAL AND LABOR REQUIRED TO REPLACE OR REMEDY REJECTED COLUMNS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE DEPARTMENT. REMEDIAL MEASURES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.

7.6. AS-BUILT COLUMN INSTALLATION RECORDS

A. THE CONTRACTOR SHALL SUBMIT AS-BUILT FIELD MEASUREMENT DATA INDICATING SURVEYED AS-BUILT PLAN LOCATIONS OF EACH CSEW COLUMN, INCLUDING THE COLUMN CENTER (PER SITE SPECIFIC COORDINATES), THE COLUMN DIMENSION, THE COLUMN VERTICALITY, AND THE TOP AND BOTTOM ELEVATIONS OF EACH COLUMN, MEASURED TO THE ACCURACY REQUIRED BY THE PROJECT SPECIFICATIONS.

B. THE AS-BUILT DOCUMENTATION SHALL BE APPROVED BY THE DESIGNER AND SUBMITTED TO THE ENGINEER NO LATER THAN 90 DAYS AFTER THE COMPLETION OF EACH CSEW-STABILIZED ZONE.

C. A DISINCENTIVE OF $500 PER DAY WILL BE ASSESSED FOR EACH DAY BEYOND 90 DAYS THAT THE COMPLETED AS-BUILT DRAWINGS ARE NOT SUBMITTED TO THE ENGINEER.

7.7. SELECT FILL PLACEMENT AND QC/QA REQUIREMENTS (LTP AND WP)

A. NO GEOSYNTHETIC REINFORCEMENT OR FILL MATERIALS SHALL BE PLACED PRIOR TO SATISFYING THE COLUMN PERFORMANCE CRITERIA, UNLESS THE FILL MATERIAL IS REQUIRED AS A WP FOR COLUMN INSTALLATION.

B. INSTRUMENTATION FOR MONITORING OF EXISTING STRUCTURES AND EMBANKMENTS SHALL BE INSTALLED PRIOR TO INSTALLATION OF CSEW COLUMNS, SELECT FILL, OR GEOSYNTHETIC REINFORCEMENT. INSTRUMENTATION FOR PERFORMANCE MEASUREMENTS SHALL BE INSTALLED AFTER THE PLACEMENT OF ANY SELECT FILL OR GEOSYNTHETIC REINFORCEMENT.

C. PRIOR TO CONSTRUCTION OF THE LTP, THE CONTRACTOR SHALL PREPARE THE FOUNDATION SOILS AT THE DESIGNATED BEARING LEVEL AND REMOVE ANY DELETERIOUS MATERIALS SUCH AS TREE ROOTS. THE FOUNDATION SOIL SHALL BE OBSERVED AND ACCEPTED BY THE ENGINEER PRIOR TO PLACEMENT OF SELECT FILL.

D. IF CEMENTITIOUS GROUND IMPROVEMENT METHODS ARE USED, PLACEMENT OF FILL MATERIAL SHALL NOT START UNTIL THE COLUMNS HAVE GAINED ADEQUATE STRENGTH TO SUPPORT THE FILL MATERIALS AND FILL INSTALLATION AND CONSTRUCTION EQUIPMENT.

E. FOR HEAVY COMPACTION EQUIPMENT, SELECT FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10 IN. IN UNCOMPACTED THICKNESS. FOR ZONES WHERE COMPACTION IS ACCOMPLISHED WITH HAND-OPERATED COMPACTION EQUIPMENT, FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 6 IN. IN UNCOMPACTED THICKNESS.

F. SELECT FILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH ITEM 203. THIS MAY NOT BE ACHIEVABLE FOR THE FIRST LIFT OF FILL BECAUSE OF THE WEAK SOILS BETWEEN COLUMNS, HOWEVER, SUBSEQUENT LIFTS SHALL MEET THE MINIMUM REQUIREMENTS.

G. DURING PLACEMENT OF THE LTP AND WP, HAVE GRADATION TESTING COMPLETED BY AN INDEPENDENT TESTING AGENCY TO ENSURE THAT THE LTP AND WP MEETS THE SPECIFICATION AND IS CONSISTENT. COMPLETE GRADATION TESTING AT THE FREQUENCY DESCRIBED IN THE PROJECT SPECIFICATIONS OR AT A MINIMUM FREQUENCY OF ONE (1) TEST PER 1,500 CUBIC YARDS.

H. PRIOR TO PLACEMENT OF THE LTP, RE-COMPACT THE WP. PLACE, COMPACT, AND TEST THE WP TO THE SAME STANDARDS AS THE LTP.

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PROJECT ID 104132
SUBSET 4 | TOTAL 25
SHEET P.325 | TOTAL 399

MODEL: WD303B PAPERSIZE: 34x22 (in.) DATE: 2/20/2025 TIME: 11:03:26 AM USER: hiba.elrassi
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ITEM 203 - ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS CONT.

7.8. GEOSYNTHETIC REINFORCEMENT PLACEMENT AND QC/QA REQUIREMENTS

A. PLACE GEOSYNTHETIC REINFORCEMENT AT THE LOCATIONS AND ELEVATION SHOWN ON THE CONTRACTOR'S ENGINEERED DRAWINGS. NO CHANGES TO THE GEOSYNTHETIC REINFORCEMENT LAYOUT, INCLUDING, BUT NOT LIMITED TO LENGTH, REINFORCEMENT TYPE, REINFORCEMENT STRENGTH, DIRECTION OF REINFORCEMENT, OR ELEVATION SHALL BE MADE WITHOUT THE EXPLICIT WRITTEN APPROVAL OF THE DESIGNER. THE CONTRACTOR SHALL SUBMIT THE CHANGES TO THE ENGINEER FOR ACCEPTANCE.

B. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOSYNTHETIC REINFORCEMENT. A MINIMUM FILL THICKNESS OF 6 INCHES IS REQUIRED FOR OPERATION OF VEHICLES OVER THE GEOSYNTHETIC REINFORCEMENT. TURNING OF VEHICLES ON THE FILL SHALL BE KEPT TO A MINIMUM TO PREVENT TRACKS OR TIRES FROM DISPLACING THE FILL AND GEOSYNTHETIC REINFORCEMENT.

C. MINIMUM OVERLAP OF ADJACENT ROLLS OF GEOSYNTHETIC REINFORCEMENT SHALL BE AS INDICATED BY THE DESIGNER OF THE ENGINEERED DRAWINGS.

D. EACH ROLL OF GEOSYNTHETIC REINFORCEMENT SHALL BE INSPECTED BY THE CONTRACTOR TO ENSURE THAT IT IS UNDAMAGED PRIOR TO COVERING WITH FILL MATERIAL.

E. PREVENT EXCESSIVE MUD, WET CONCRETE, EPOXY, OR OTHER DELETERIOUS MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE GEOGRID MATERIALS.

F. GEOSYNTHETIC REINFORCEMENT SHALL BE STORED AT TEMPERATURES RECOMMENDED BY THE MANUFACTURER.

G. GEOSYNTHETIC REINFORCEMENT SHALL NOT BE LEFT DIRECTLY EXPOSED TO SUNLIGHT FOR A PERIOD LONGER THAN RECOMMENDED BY THE MANUFACTURER OR ONE MONTH WHICHEVER IS SHORTER.

H. ANY ROLL OR PORTION OF A ROLL OF GEOSYNTHETIC REINFORCEMENT DAMAGED BEFORE, DURING, OR AFTER INSTALLATION SHALL BE REPLACED BY THE CONTRACTOR.

I. STOCKPILES OF FILL MATERIAL SHALL NOT BE PLACED ON THE GEOSYNTHETIC REINFORCEMENT.

J. IF GEOTEXTILE SEAMS ARE SPECIFIED, THE SEAMS SHALL BE PLACED UP AND EVERY STITCH SHALL BE INSPECTED.

K. THE CONTRACTOR SHALL REMOVE SLACK AND WRINKLES FROM THE GEOSYNTHETIC REINFORCEMENT PRIOR TO PLACING FILL.

L. THE CONTRACTOR SHALL SUBMIT THE LOT NUMBERS AND ROLL NUMBERS ALONG WITH THEIR LOCATIONS WITHIN THE EMBANKMENT FOR ALL GEOSYNTHETIC REINFORCEMENT.

PART 8 POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION

8.1. POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION: TEN (10) SETS OF CSEW PERFORMANCE MONITORING INSTRUMENTATION SHALL BE INSTALLED. THIS INSTRUMENTATION WILL BE PLACED TO MONITOR THE PERFORMANCE OF THE CSEW SYSTEM AFTER IT HAS BEEN SUCCESSFULLY CONSTRUCTED AND IS SUBJECTED TO CONSTRUCTION LOADING AND SUBSEQUENT SERVICE LOADING. THE INSTALLATION MAY BE PERFORMED BY THE PRIME CONTRACTOR, CSEW CONTRACTOR, AN INSTRUMENTATION SUBCONTRACTOR, OR CONSULTANT (OR IN WHOLE OR IN PART BY COMBINATIONS THEREOF). IMPORTANT NOTE: IN THE EVENT THAT THIS QA MONITORING WORK IS NOT TO BE COORDINATED OR PERFORMED BY THE CSEW CONTRACTOR, THE CSEW CONTRACTOR SHALL SPECIFICALLY COORDINATE THIS WORK AND SUBMIT A WORK PLAN TO THE ENGINEER PRIOR TO INITIATING THE CSEW WORK.

A. THE INSTRUMENT SHALL BE INSTALLED AS DESCRIBED IN THE FOLLOWING SUBSECTIONS, IN AREAS TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER SUCH THAT CONSTRUCTION INTERFERENCE AND THE POTENTIAL FOR DAMAGE IS MINIMIZED. THE INSTALLATIONS SHALL ALSO BE PLACED SUCH THAT DATA MAY CONTINUE TO BE ACQUIRED ONCE THE FACILITY HAS BEEN PLACED IN SERVICE. DETAILS OF THE EXACT INSTALLATION LOCATIONS WILL BE DETERMINED AT THE PRE-CONSTRUCTION MEETING.

B. MINIMUM INSTRUMENTATION PROVIDED BY THE CONTRACTOR IS TO CONSIST OF SETTLEMENT PLATES, TO BE INSTALLED ON TOP OF THE LTP.

C. RECORD INSTRUMENTATION DATA FROM THE TIME OF INSTALLATION (END OF CSEW CONSTRUCTION) UNTIL 30-DAYS AFTER THE WALLS REACH THEIR FINAL PLAN ELEVATION (LESS COPING AND PAVEMENTS). READINGS SHALL BE TAKEN TWICE WEEKLY DURING WALL AND EMBANKMENT FILL PLACEMENT AND AT INTERVALS NOT TO EXCEED 15 CALENDAR DAYS AT OTHER TIMES. DATA FROM ALL SENSORS SHALL BE READ IN A UNIFORM MANNER, SUCH THAT ALL DATA IS TAKEN WITHIN A 2-DAY PERIOD AT THE PRESCRIBED INTERVALS TO AID IN THE EVALUATION OF THE DATA AND SUBSEQUENT PRESENTATION OF RESULTS.

D. IF THE WALLS SUPPORTED OVER THE CSEW COLUMNS HAVE COMPLETED SETTLEMENT IN ACCORDANCE WITH THE PERFORMANCE CRITERIA (AS DEFINED IN 1.1.A.6) WITHIN 30-DAYS OF SUBSTANTIAL WALL COMPLETION, THE CONTRACTOR MAY TURN OVER FURTHER MONITORING OF THE DATA TO THE DEPARTMENT. IF THE WALLS HAVE NOT COMPLETED SETTLEMENT IN ACCORDANCE WITH THE PERFORMANCE CRITERIA, THE CONTRACTOR SHALL CONTINUE MONITORING EFFORTS (AT NO ADDITIONAL COST TO THE DEPARTMENT) AS DIRECTED BY THE ENGINEER.

E. INSTRUMENTATION SHALL BE INSTALLED AFTER THE CONSTRUCTION OF THE CSEW COLUMNS AND PRIOR TO WALL CONSTRUCTION OR EMBANKMENT FILL PLACEMENT. A MINIMUM OF 2 SETS OF BASELINE READINGS SHALL BE TAKEN AND CONFIRMED PRIOR TO THE CONSTRUCTION OF WALLS OR EMBANKMENTS ABOVE THE INSTALLED CSEW CONSTRUCTION.

F. INSTRUMENTATION SHALL BE ELECTRONIC AND SELF-RECORDING, WHERE PRACTICAL. READINGS FROM SENSORS SHALL BE TAKEN WITH AUTOMATED DATA COLLECTION SYSTEMS. ANY PARTICULAR INSTRUMENT TYPE SHALL BE OBTAINED FROM THE SAME MANUFACTURER TO MINIMIZE POTENTIAL INCOMPATIBILITIES AND ERRORS. DATA ACQUISITION DEVICES (DATA LOGGERS) SHALL BE OF A TYPE COMPATIBLE WITH EACH TYPE OF INSTRUMENTATION AND RECOMMENDED BY THE MANUFACTURER.

G. INSTRUMENTATION SHALL BE PROVIDED WITH CALIBRATION CERTIFICATES FROM THE MANUFACTURER, AS APPROPRIATE.

H. ALL INSTRUMENTATION AND ASSOCIATED MONITORING AND DATA COLLECTION DEVICES (PROBES, CABLES, DATA COLLECTORS, ETC.) BECOME THE PROPERTY OF THE DEPARTMENT AT THE END OF THE MONITORING PERIOD. ELECTRONIC FILES AND ALL DATA REPORTS SHALL BE PROVIDED TO THE DEPARTMENT AT THE END OF THE MONITORING PERIOD.

I. THE DEPARTMENT RESERVES THE RIGHT TO PUBLISH THE INFORMATION FROM THE MONITORING INVESTIGATION IN INTERNAL AND EXTERNAL TECHNICAL PUBLICATIONS.

J. THE ENGINEER MAY USE THE PERFORMANCE MONITORING INSTRUMENTATION AND ASSOCIATED DATA COLLECTION AND ANALYSIS AS A BASIS OF MEASUREMENT OF PERFORMANCE CRITERIA FOR THE DETERMINATION OF SUCCESSFUL INSTALLATION OF THE CSEW APPLICATION.

K. INSTRUMENTS SHALL MEET ACCEPTED INDUSTRY STANDARDS AND HAVE AN ACCURACY OF +/- 0.5% WITH A MINIMUM PRECISION OF +/- 0.5% OF FULL SCALE (SPAN).

L. INSTRUMENTS SHALL HAVE APPROPRIATE RUGGEDNESS TO SURVIVE INSTALLATION AND CONSTRUCTION PROCESSES SUCH THAT THEY READ WITH THE MINIMUM PRECISION AND ACCURACY OVER THE DURATION OF CONSTRUCTION AND A MINIMUM OF EIGHTEEN (18) MONTHS OF SERVICE FOLLOWING CONSTRUCTION.

M. INSTRUMENTATION SHALL HAVE AN OPERATING TEMPERATURE RANGE AS APPROPRIATE FOR CONDITIONS ANTICIPATED WHERE INSTALLED (I.E. WITHIN OR ABOVE A CSEW COLUMN).

N. CABLING TO EACH SENSOR (REQUIRING CABLING) SHALL BE INCLUDED SUCH THAT DATA MAY BE OBTAINED AT ALL PHASES OF CONSTRUCTION AND WHEN THE NEW CONSTRUCTION IS IN SERVICE. THE DISTANCE FROM THE DATA ACQUISITION SYSTEM TO ANY GIVEN SENSOR SHALL BE A MINIMUM HORIZONTAL DISTANCE FROM THE SENSOR TO THE OUTSIDE OF THE NEAREST RETAINING WALL OR ABUTMENT FACE, PLUS A MINIMUM CABLING AMOUNT TO PROVIDE FOR ANY NECESSARY VERTICAL TRAVEL TO THE GROUND SURFACE, PLUS 6 FT.

O. THE INSTRUMENTATION INSTALLATIONS SHALL BE ADEQUATELY PROTECTED FROM CONSTRUCTION IMPACTS, DURING CONSTRUCTION, AS WELL AS WEATHER EFFECTS, AND VANDALISM. APPROPRIATE LOCKED CASINGS OR REMOVABLE CABLING AND PLASTIC CONNECTOR CAPS AND RELATED PROTECTIVE DEVICES SHALL BE PROVIDED TO ENSURE THE INTEGRITY OF THE INSTRUMENTATION OVER THE PROPOSED MONITORING DURATION.

P. THE PLAN FOR INSTALLATION OF INSTRUMENTATION SHALL BE APPROVED BY THE DESIGNER AND SUBMITTED TO THE ENGINEER FOR ACCEPTANCE PRIOR TO PLACEMENT.

PART 9 ACCEPTANCE CRITERIA AND METHOD OF MEASUREMENT

THE CSEW IS CONSIDERED ACCEPTABLE WHEN THE EMBANKMENT CONSTRUCTION AND QC/QA REQUIREMENTS ARE COMPLETED IN ACCORDANCE WITH SECTION 7, COMPLIANCE WITH THE PERFORMANCE CRITERIA FROM PARAGRAPH 1.1 IS DEMONSTRATED, AND NO DAMAGE TO ADJACENT FACILITIES IS FOUND, COMPENSATION IS MADE FOR DAMAGE CAUSED, OR DAMAGE IS REPAIRED AT CONTRACTOR'S EXPENSE.

THE DEPARTMENT WILL MEASURE ITEM 203 - ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS BY LUMP SUM (LS), SATISFACTORILY COMPLETED IN-PLACE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER.

PART 10 BASIS OF PAYMENT

10.1. ALL COSTS IN CONNECTION WITH MOBILIZATION AND DEMOBILIZATION OF MATERIALS, EQUIPMENT, AND LABOR FOR THE CONSTRUCTION OF CSEW, LTP, AND WP AS REQUIRED IN THIS SPECIFICATION SHALL BE IN PAID FOR UNDER ITEM 203 - ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS.

10.2. ALL COSTS IN CONNECTION WITH DESIGN, EQUIPMENT, MATERIAL, AND LABOR FOR THE INSTALLATION OF CSEW, INCLUDING COLUMN MATERIALS AND CONSTRUCTION, QC MONITORING, INSTRUMENTATION, LTP AND WP MATERIALS, WICK DRAINS IF NECESSARY TO MEET SETTLEMENT REQUIREMENTS, AND GEOSYNTHETIC REINFORCEMENTS AS REQUIRED IN THIS SPECIFICATION SHALL BE INCIDENTAL TO ITEM - 203, ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS. SEPARATE PAYMENT WILL NOT BE MADE FOR SITE PREPARATION, DEWATERING, TEMPORARY WORKS TO FACILITATE CONSTRUCTION, ETC. INCLUDE ALL THE ANTICIPATED COSTS IN THE PRICE BID FOR ITEM 203 - ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS. THE GROUND IMPROVEMENT AREA HAS BEEN DEFINED IN THE PLANS FOR BIDDING PURPOSES. ADDITIONAL COLUMN SUPPORTS SHALL BE PROVIDED AS NECESSARY BEYOND THE DEFINED AREA TO SATISFY GLOBAL STABILITY AND SHALL BE INCIDENTAL TO THIS ITEM.

10.3. ALL COSTS ASSOCIATED WITH THE INSTALLATION OF DEMONSTRATION AND TEST COLUMNS, REACTION FRAMES, INSTRUMENTATION, PERFORMANCE, ANALYSIS, AND REPORTING OF TEST RESULTS TO THE ENGINEER SHALL BE INCLUDED IN THE PRICE BID FOR ITEM - 203, ROADWAY, MISC.: COLUMN-SUPPORTED EMBANKMENTS AND WALLS.

GROUND IMPROVEMENT PLAN DETAIL
BRIDGE NO. CUY-00014-06.930
BROADWAY AVENUE (S.R. 14) OVER CHAINCRAFT ROAD, W&LE AND NS RAILWAYS

SFN -

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DESIGNER	CHECKER
HER	ERM

REVIEWER MRW 02/10/25

PROJECT ID 104132

SUBSET	TOTAL
5	25

SHEET	TOTAL
P.326	399

CUY-14-6.93

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