

**ITEM SPECIAL - STRUCTURAL SURVEY AND MONITORING OF VIBRATION**

THE CONTRACTOR SHALL MONITOR GROUND VIBRATIONS CAUSED BY PILE DRIVING TO AVOID IMPACTS TO THE TAYLORSVILLE DAM EMBANKMENT AND CLAY CORE.

THE CONTRACTOR SHALL 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.

THE CONTRACTOR SHALL 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 ACCEPTANCE OF THE VIBRATION SPECIALIST FROM THE ENGINEER AND THE MIAMI CONSERVANCY DISTRICT 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 AND THE MIAMI CONSERVANCY DISTRICT FOR REVIEW AND APPROVAL.

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 AND THE MIAMI CONSERVANCY DISTRICT 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 RECORD AND INCLUDE THE FOLLOWING:
  - A. IDENTIFICATION OF THE 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.

IN ADDITION, SUBMIT ONE COPY OF THE FINAL REPORT TO EACH OF THE FOLLOWING STAKEHOLDERS:

MIAMI CONSERVANCY DISTRICT  
 DON O'CONNOR  
 CHIEF ENGINEER  
 38 E. MONUMENT AVE  
 DAYTON, OH 45402  
 DOCONNOR@MCDWATER.ORG

FIVE RIVERS METROPARKS  
 ERIC SAUER  
 PLANNING MANAGER  
 409 E. MONUMENT AVE  
 DAYTON, OH 45402  
 ERIC.SAUER@METROPARKS.ORG

CITY OF VANDALIA  
 ROB CRON  
 333 JAMES E. BOHANAN DR.  
 VANDALIA, OH 45377  
 RCRON@VANDALIAOHIO.ORG

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 DEPARTMENT RECEIVES THE FINAL REPORT.

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

**COORDINATION WITH THE RAILROAD**

THE CONTRACTOR SHALL COORDINATE ALL WORK ON, OVER, OR ADJACENT TO THE RAILROAD WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL CONTACT THE RAILROAD REPRESENTATIVE LISTED BELOW AT LEAST 30 DAYS IN ADVANCE TO COORDINATE THE NECESSARY WORK. UNDER NO CIRCUMSTANCES SHALL THERE BE ANY WORK PERFORMED WITHIN THE RAILROAD RIGHT OF WAY WITHOUT THE PROPER WRITTEN AUTHORIZATION AND/OR FLAGGING PROTECTION FROM THE RAILROAD.

CSX TRANSPORTATION, INC.  
 MR. DAVID C. CLARK, PE  
 500 MEIJER DRIVE, SUITE 305  
 FLORENCE, KY 41042  
 PHONE (859) 372-6114

**CSX TRANSPORTATION COORDINATION NOTES**

REFER TO THE CSX TRANSPORTATION PUBLIC PROJECT INFORMATION MANUAL FOR ADDITIONAL REQUIREMENTS NEEDED FOR WORKING ON/ABOVE/ADJACENT TO CSXT. SPECIFIC SECTIONS THAT PERTAIN TO THIS PROJECT ARE SPECIAL PROVISIONS FOR CONSTRUCTION NEAR CSXT PROPERTY, OVERHEAD BRIDGE CRITERIA, CONSTRUCTION SUBMISSION CRITERIA, AND INSURANCE REQUIREMENTS FOR PUBLIC PROJECTS.

CONTRACTOR ACCESS WILL BE LIMITED TO THE IMMEDIATE PROJECT AREA ONLY. THE CSXT RIGHT-OF-WAY OUTSIDE THE PROJECT AREA MAY NOT BE USED FOR CONTRACTOR ACCESS TO THE PROJECT SITE AND NO TEMPORARY AT-GRADE CROSSINGS WILL BE ALLOWED.

THE CONTRACTOR WILL BE REQUIRED TO ABIDE BY THE PROVISIONS OF THE AGENCY/CSXT CONSTRUCTION AGREEMENT. PERIODICALLY, THROUGHOUT THE PROJECT DURATION, THE CONTRACTOR WILL BE REQUIRED TO MEET, DISCUSS AND, IF NECESSARY, TAKE IMMEDIATE ACTION AT THE DISCRETION OF CSXT PERSONNEL AND/OR THEIR AUTHORIZED REPRESENTATIVE, TO COMPLY WITH PROVISIONS OF THAT AGREEMENT AND THESE SPECIFICATIONS.

IT IS THE RESPONSIBILITY OF THE INDIVIDUAL OWNERS OF WIRELINES, PIPELINES, UTILITIES, ETC. TO COORDINATE DIRECTLY WITH CSXT REAL ESTATE AND FACILITIES MANAGEMENT (REFM) GROUP. THIS INCLUDES ALL NEW INSTALLATIONS AND THE ADJUSTMENT, MODIFICATION, REMOVAL OR RETIREMENT IN PLACE OF ALL EXISTING FACILITIES.

THE CONTRACTOR MAY NOT USE CSXT RIGHT-OF-WAY FOR STORAGE OF MATERIALS OR EQUIPMENT DURING CONSTRUCTION WITHOUT PRIOR CSXT APPROVAL. THE CSXT RIGHT-OF-WAY MUST ALWAYS REMAIN CLEAR FOR RAILROAD USE. EQUIPMENT MAY NOT BE POSITIONED TO BLOCK THE RAILROAD ACCESS ROAD, TRACK AREA OR ANY PART OF THE CSXT RIGHT-OF-WAY WITHOUT PRIOR CSXT APPROVAL. ALL MOVEMENTS OF EQUIPMENT WITHIN RAILROAD RIGHT-OF-WAY MUST BE COORDINATED WITH THE RAILROAD FLAGGER.

THE ROADWAY AUTHORITY, OR DESIGNATED CONTRACTOR, SHALL COORDINATE WITH THE RAILROAD WHENEVER THE CONTRACTOR'S WORK ACTIVITIES ARE LOCATED OVER, UNDER OR WITHIN THE RAILROAD'S RIGHT-OF-WAY.

ANY DAMAGE CAUSED BY THE PROJECT WORK TO THE TRACK OR RAILROAD PROPERTY WILL REQUIRE REPAIR IMMEDIATELY UPON NOTIFICATION FROM THE RAILROAD OR THEIR DESIGNATED REPRESENTATIVE. IF THE DAMAGE AFFECTS THE TRACK, TRACK STRUCTURE, RAILROAD FACILITIES, OR TRAIN OPERATIONS AS DETERMINED BY THE RAILROAD, THE REPAIRS WILL BE PERFORMED BY THE RAILROAD AT THE CONTRACTOR'S EXPENSE INCLUDING ALL ASSOCIATED COSTS OF DELAYS TO THE RAILROAD.

DURING TRAIN MOVEMENTS THROUGH THE PROJECT LOCATION, VEHICLES, EQUIPMENT, AND PERSONNEL WILL NOT BE ALLOWED TO OPERATE WITHIN TWENTY-FIVE (25) FEET OF THE TRACK.

CSXT SHALL BE NOTIFIED AT LEAST FIVE (5) DAYS IN ADVANCE OF THE PRE-CONSTRUCTION MEETING.

THE CONTRACTOR SHALL COORDINATE ALL WORK ON, OVER OR ADJACENT TO THE RAILROADS WITHIN THE PROJECT'S LIMITS. THE CONTRACTOR SHALL CONTACT CSXT RAILROAD AT LEAST THIRTY (30) DAYS IN ADVANCE IN ORDER TO COORDINATE THE NECESSARY WORK. UNDER NO CIRCUMSTANCES SHALL THERE BE ANY WORK WITHIN THE RAILROAD RIGHT-OF-WAY WITHOUT THE PROPER AUTHORIZATION AND/OR FLAG PROTECTION FROM THE RAILROAD.

THE USE OF ACETYLENE GAS IS PROHIBITED FOR USE ON OR OVER CSX PROPERTY. TORCH CUTTING SHALL BE PERFORMED UTILIZING OTHER MATERIALS SUCH AS PROPANE.

CSXT REQUIRES THAT THE CONTRACTOR SUBMIT AND RECEIVE ACCEPTANCE OF A COMPREHENSIVE MEANS & METHODS SUBMITTAL (CSXT CONSTRUCTION SUBMISSION CRITERIA, ISSUED MAY 2023) DETAILING SCOPE OF WORK WITHIN CSXT TRACKS OR RIGHT-OF-WAY, OR OTHER WORK WHICH PRESENTS THE POTENTIAL TO AFFECT CSXT PROPERTY OR OPERATIONS TO UNDERTAKING THE WORK.

A. THE CONTRACTOR SHALL SUBMIT A DETAILED PROCEDURE FOR DEMOLITION OF EXISTING STRUCTURES OVER OR ADJACENT TO CSXT'S TRACKS OR RIGHT-OF-WAY. THE PROCEDURE SHALL CLEARLY INDICATE THE CAPACITY OF EQUIPMENT, LOCATION OF EQUIPMENT WITH RESPECT TO THE TRACKS AND THE CALCULATED LIFTS.

B. THE DEMOLITION PROCEDURE MUST BE APPROVED BY CSXT'S CONSTRUCTION ENGINEERING AND INSPECTION REPRESENTATIVE.

C. CSXT'S TRACKS, SIGNALS, STRUCTURES, AND OTHER FACILITIES SHALL BE PROTECTED FROM DAMAGE DURING DEMOLITION OF THE STRUCTURE.

**CSX TRANSPORTATION COORDINATION NOTES (CONTINUED)**

D. DURING DEMOLITION, A PROTECTION SHIELD SHALL BE ERECTED OVER THE TRACK AREA TO CATCH FALLING DEBRIS. THE PROTECTION SHIELD SHALL BE SUPPORTED FROM GIRDERS OR BEAMS. THE PROTECTION SHIELD SHALL BE DESIGNED WITH SUPPORTING CALCULATIONS FOR A MINIMUM OF FIFTY (50) POUNDS PER SQUARE FOOT (PSF) PLUS THE WEIGHT OF THE EQUIPMENT DEBRIS, PERSONNEL, AND OTHER LOADS TO BE CARRIED.

E. LARGE PIECES OF CONCRETE SHALL NOT BE ALLOWED TO FALL ON THE PROTECTION SHIELD.

F. A BALLAST PROTECTION SYSTEM CONSISTING OF GEOFABRIC OR CANVAS SHALL BE PLACED WITHIN THE TRACK STRUCTURE TO KEEP IT FREE FROM FINES. THE SYSTEM SHALL EXTEND ALONG THE TRACK STRUCTURE FOR A MINIMUM OF 25'-0" BEYOND THE LIMITS OF THE DEMOLITION WORK, OR FARTHER IF REQUIRED BY CSXT'S CONSTRUCTION ENGINEERING DESIGNATE.

G. CONTRACTOR SHALL SUBMIT DETAILED PLANS WITH SUPPORTING CALCULATIONS FOR THE PROTECTION SHIELD AND BALLAST PROTECTION SYSTEM FOR APPROVAL PRIOR TO THE START OF DEMOLITION.

H. SUBSTRUCTURE FOUNDATION EXCAVATION AND CONSTRUCTION THAT MAY REQUIRE SHORING OR OTHER PROTECTION OF RAILROAD TRACK(S).

I. INSTALLATION OF PILES AND SHEETING FOR ABUTMENT FOUNDATIONS, PIER FOUNDATIONS, RETAINING WALL FOUNDATIONS, TEMPORARY AND PERMANENT SHORING AND OTHER STRUCTURES ON OR ADJACENT TO CSX'S RIGHT-OF-WAY, THE CONTRACTOR MAY BE REQUIRED TO SUBMIT A DETAILED TRACK MONITORING PROGRAM FOR CSX'S APPROVAL PRIOR TO PERFORMING ANY WORK NEAR CSX'S RIGHT-OF-WAY.

J. CONTRACTOR SHALL VERIFY THE EXISTING TOP OF RAIL ELEVATIONS RELATIVE TO PLAN BENCHMARKS TO ENSURE DESIGNED RAILROAD MINIMUM VERTICAL CLEARANCE IS ACHIEVED.

K. BEAM ERECTION AND STABILIZATION OVER RAILROAD RIGHT-OF-WAY.

ALL LIFTING EQUIPMENT AND CONNECTION DEVICES SHALL HAVE A CAPACITY FOR 150% OF THE ACTUAL LIFTING LOAD. THE FACTOR OF SAFETY PROVIDED BY THE MANUFACTURER IN THE LIFTING CAPACITY DATA SHALL NOT BE CONSIDERED IN THE 150% REQUIREMENT.

DURING BEAM ERECTION AND PRIOR TO PERMANENTLY INSTALLING ANCHOR DOWELS / TIE RODS, AND CONSTRUCTING CONCRETE DECK, THE CONTRACTOR SHALL FIELD VERIFY THE VERTICAL CLEARANCE OVER EXISTING RAILROAD TRACKS AT EXTERIOR EDGE OF FASCIA BEAMS. THE VERTICAL CLEARANCE SHALL BE MEASURED FROM TOP OF RAILS TO THE LOWEST OBSTRUCTION, WITHIN SIX FEET (6'-0") OF THE TRACK CENTERLINE, IN EITHER DIRECTION.

IF THE MINIMUM VERTICAL CLEARANCE OVER RAILROAD TRACKS IS LESS THAN 23'-11 1/4" AT ANY LOCATION, NOTIFY THE ENGINEER FOR FURTHER EVALUATION. THE ENGINEER WILL DETERMINE IF INSTALLING SHIM PLATES AND / OR BEARING LOAD PLATE MODIFICATIONS ARE REQUIRED.

TEMPORARY CONSTRUCTION CLEARANCES (HORIZONTAL & VERTICAL) PROPOSED - FOR EXISTING OR LESS THAN STANDARD CONDITIONS - SHALL BE SUBJECT TO APPROVAL BY CSXT. TYPICALLY REDUCTION IN CONSTRUCTION CLEARANCES ARE NOT PERMITTED.

PER CSXT SOIL AND WATER MANAGEMENT POLICY, CSXT REQUIRES ALL SPOILS GENERATED AND NOT REUSED FROM WITHIN THE PROPERTY TO BE PROPERLY DISPOSED IN A RAILROAD APPROVED DISPOSAL FACILITY. THE MANAGEMENT OF SOILS GENERATED FROM CSXT PROPERTY SHOULD BE PLANNED FOR AND PROPERLY PERMITTED (IF APPLICABLE) PRIOR TO INITIATING ANY WORK ON RAILROAD'S PROPERTY. CSXT ENVIRONMENTAL DEPARTMENT WILL HANDLE WASTE CHARACTERIZATION AND PROFILING FOR DELIVERY TO AN APPROVED FACILITY.

DURING AND AFTER COMPLETION OF CONSTRUCTION, THE OUTSIDE PARTY OR ITS CONTRACTOR SHALL CLEAR CSXT'S DRAINAGE DITCHES OF ALL DEBRIS TO THE SATISFACTION OF CSXT'S CONSTRUCTION MONITORING REPRESENTATIVE.

A WORK SITE SAFETY PLAN THAT INCLUDES A RECOGNITION TO KEEP ALL PERSONNEL FROM FOULING CSXT RAIL OPERATIONS, A FALL PROTECTION PLAN DESCRIBING THE MEASURES TO BE TAKEN WHEN REQUIRED, AND A FIRE PROTECTION PLAN SHALL BE PRESENTED AND ACCEPTED BY CSXT FOR WORK ON, OVER OR ADJACENT CSXT PROPERTY.

ALL WASTE MATERIALS GENERATED BY THIS PROJECT, INCLUDING WASHING WITH CLEANING SOLVENTS, BLASTING, SCRAPING, BRUSHING AND/OR PAINTING OPERATIONS, SHALL BE THE RESPONSIBILITY OF THE AGENCY OR ITS CONTRACTOR, AND SHALL BE CONTAINED, COLLECTED AND PROPERLY DISPOSED OF BY THE STATE OR ITS CONTRACTOR. THE STATE AND ITS CONTRACTOR AGREE TO FULLY COMPLY WITH ALL FEDERAL, STATE, AND LOCAL ENVIRONMENTAL LAWS, REGULATIONS, STATUTES AND ORDINANCES AT ALL TIMES.

CSXT MAY REQUIRE FULL TIME RAILROAD FLAGGING FOR ANY PROJECT TASKS THAT MAY HAVE THE POTENTIAL TO FOUL THE TRACK OR CAUSE A HAZARD TO TRAIN MOVEMENTS.

CSXT HAS SOLE AUTHORITY TO DETERMINE THE NEED FOR TRACK PROTECTION REQUIRED TO PROTECT ITS OPERATIONS AND PROPERTY. IN GENERAL, TRACK PROTECTION WILL BE REQUIRED WHENEVER CONTRACTOR OR EQUIPMENT ARE, OR ARE LIKELY TO BE, WORKING WITHIN FIFTY (50) FEET OF TRACK OR OTHER TRACK CLEARANCES AS SPECIFIED BY CSXT.

UPON COMPLETION OF THE WORK ON CSXT PROPERTY, THE CONTRACTOR SHALL REQUEST THE OWNER TO ARRANGE A FINAL INSPECTION OF THE PROJECT WITH THE RAILROAD'S PROJECT ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE.

CSXT SHALL BE FURNISHED AS-BUILT DRAWINGS SHOWING ACTUAL OPERATING CLEARANCES AS CONSTRUCTED PRIOR TO PROJECT COMPLETION AND CLOSEOUT.

SFN 5765131  
 DESIGN AGENCY



DESIGNER CHECKER  
 AMT NRP

REVIEWER  
 DWS 11/01/23

PROJECT ID  
 111388

SUBSET	TOTAL
3	12

SHEET	TOTAL
133	171

ESTIMATED QUANTITIES								
ITEM	EXTENSION	QUANTITY	UNIT	DESCRIPTION	ABUT.	SUPERSTR.	GENERAL	AS PER PLAN SHEET NUMBER
503	11101	1	LUMP	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN			1	2 / 12
503	21300	1	LUMP	UNCLASSIFIED EXCAVATION			1	
505	11100	1	LUMP	PILE DRIVING EQUIPMENT MOBILIZATION			1	
507	00500	720	FT	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	720			
507	00550	780	FT	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	780			
509	10000	10391	POUND	EPOXY COATED REINFORCING STEEL	10391			
511	43510	90	CU YD	CLASS QC1 CONCRETE, ABUTMENT INCLUDING FOOTING	90			
512	10100	69	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	69			
516	10501	28	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC COMPRESSION SEAL, AS PER PLAN		28		2 / 12
516	13600	11	SQ FT	1" PREFORMED EXPANSION JOINT FILLER		11		
518	21200	42	CU YD	POROUS BACKFILL WITH GEOTEXTILE FABRIC	42			
518	40000	54	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	54			
518	40010	35	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	35			
523	20000	1	EACH	DYNAMIC LOAD TESTING	1			
526	10000	34	SQ YD	REINFORCED CONCRETE APPROACH SLAB (T=12")			34	
SPECIAL	530E00200	1	EACH	STRUCTURE, MISC.: PREFABRICATED BRIDGE			1	2-4-6 / 12
SPECIAL	530E14000	1	LUMP	STRUCTURAL SURVEY AND MONITORING OF VIBRATION			1	3 / 12
601	20010	10	CU YD	CRUSHED AGGREGATE SLOPE PROTECTION			10	
601	21050	2	SQ YD	TIED CONCRETE BLOCK MAT WITH TYPE 1 UNDERLAYMENT			2	
611	99710	1	EACH	PRECAST REINFORCED CONCRETE OUTLET	1			
625	33000	1	EACH	STRUCTURE GROUNDING SYSTEM			1	

CALCULATED BY: AMT 02 / 23  
 CHECKED BY: NRP 02 / 23

SFN	5765131
DESIGN AGENCY	
DESIGNER	CHECKER
NRP	AMT
REVIEWER	
DWS	11/01/23
PROJECT ID	111388
SUBSET	TOTAL
7	12
SHEET	TOTAL
137	171

**GENERAL NOTES:**

**REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS**

840 DATED 7-21-23  
878 DATED 1-21-22

**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.

**DESIGN DATA**

CONCRETE CLASS QC-1 - COMPRESSIVE STRENGTH 4.0 KSI (CIP COPING)  
EPOXY COATED STEEL REINFORCEMENT - MINIMUM YIELD STRENGTH 60 KSI

**ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)**

SEALING OF MSE WALLS PANELS AND COPING SHALL BE PER ITEM 512. THE TOP COAT COLOR FOR THE EPOXY-URETHANE SEALER SHALL BE LIGHT NEUTRAL AND MEET THE STANDARD FEDERAL COLOR NUMBER FS-595B-17778. THE COST OF SEALING THE ADDITIONAL SURFACE AREA OF THE AESTHETIC TREATMENT SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

**ITEM 605 - AGGREGATE DRAINS, AS PER PLAN**

CONSTRUCT THE TWO-STAGE AGGREGATE DRAINS FOR THE MSE WALL AS DETAILED IN THE PLANS. THE COARSE AGGREGATE FILTER MATERIAL SHALL BE NO. 8 STONE CONFORMING TO CMS 703.02B. THE FINE AGGREGATE FILTER MATERIAL SHALL CONFORM TO CMS 703.02A.

PROVIDE AGGREGATES THAT LOSE NO MORE THAN 5% MASS WHEN TESTED ACCORDING TO ASTM D3042 WITH AN ACID BATH PH OF 4.0.

ALL LABOR AND MATERIAL NEEDED TO INSTALL THE TWO-STAGE AGGREGATE DRAINS SHALL BE INCLUDED WITH THIS ITEM.

**ITEM 840 - MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN**

IN ADDITION TO THE REQUIREMENTS OF SS 840, WALL SOIL REINFORCEMENT LOCATIONS SHALL BE COORDINATED WITH THE WOOD FENCE POST LOCATIONS TO AVOID INTERFERENCE.

GEOTEXTILE FABRIC MAY ONLY BE USED FOR MSE WALL NO. 1. GEOTEXTILE FABRIC IS PROHIBITED WITHIN THE LIMITS OF THE TAYLORSVILLE DAM AND BASIN.

**ITEM 840 - AESTHETIC SURFACE TREATMENT**

THIS ITEM OF WORK SHALL CONSIST OF PROVIDING AESTHETIC TREATMENT TO THE CONCRETE SURFACES OF MSE WALLS AS SHOWN IN THE PLANS. IT SHALL INCLUDE BUT NOT BE LIMITED TO FORM LINERS AND TEXTURED SURFACES.

MSE WALL PANELS SHALL HAVE A SURFACE FINISH WITH A MAXIMUM OF 1/2" RELIEF. ALL MSE WALL BASELINES ARE ALONG THE STRUCTURAL BACK FACE OF A 5/2" MINIMUM THICKNESS FACING PANEL.

ACCEPTABLE PATTERNED FORMLINERS ARE:

STONE FORM LINER:

PATTERN	DESCRIPTION	MANUFACTURER
1103	RUSTIC ASHLAR	CUSTOM ROCK FORMLINER
17002	AUSTIN ASHLAR	FITZGERALD FORMLINERS
1502	ASHLAR STONE	SPEC FORMLINERS

FORM LINER MANUFACTURER INFORMATION:

CUSTOM ROCK FORMLINER  
2020 WEST 7TH STREET  
ST. PAUL, MN 55116  
PHONE: (651)699-1345

FITZGERALD FORMLINERS  
1500 EAST CHESTNUT AVENUE  
SANTA ANA, CA 92701  
PHONE: (800)547-7760

SPEC FORMLINERS  
1038 EAST 4TH STREET  
SANTA ANA, CA 92701  
PHONE: (714)429-9500

THE CONTRACTOR SHALL SUBMIT PRODUCT INFORMATION FOR THE PROPOSED PATTERNED FORM LINER TO THE ENGINEER FOR APPROVAL. ALL PRODUCT INFORMATION AND SHOP DRAWINGS SHALL BE SUBMITTED PRIOR TO BEGINNING ANY WORK.

PAYMENT FOR ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO PRODUCE THE AESTHETIC TREATMENT AS SHOWN IN THE PLANS SHALL BE INCLUDED WITH ITEM 840, AESTHETIC SURFACE TREATMENT. PAYMENT FOR ALL MSE WALL PANELS SHALL BE INCLUDED IN ITEM 840, MECHANICALLY STABILIZED EARTH WALLS, AS PER PLAN.

**ITEM 607 - FENCE, MISC.: WOOD FENCE**

CONSTRUCT THE WOOD FENCE PER STANDARD ROADWAY DRAWING RM-5.2. THE CONTRACTOR IS RESPONSIBLE TO LIMIT A MAXIMUM OPENING OF 6" BETWEEN RAILING ELEMENTS.

AT THE BRIDGE ABUTMENTS, THE FENCE SHALL END ADJACENT TO THE ENDS OF THE BRIDGE RAILING. THE GAP BETWEEN THE ENDS OF THE FENCE AND THE ENDS OF THE BRIDGE RAILING SHALL BE LIMITED TO A MAXIMUM OF 2 INCHES AT A TEMPERATURE OF 50 DEGREES. THE FENCE POSTS THAT COINCIDE WITH THE BRIDGE APPROACH SLABS SHALL BE INSTALLED BEFORE THE APPROACH SLAB IS CAST. THE POSTS WILL EXTEND THROUGH THE APPROACH SLABS TO THE EMBEDMENT SHOWN ON THE FENCE STANDARD.

ALL LABOR AND MATERIAL NEEDED TO INSTALL THE FENCE SHALL BE INCLUDED WITH THIS ITEM, WHICH IS INCLUDED WITH THE ROADWAY QUANTITIES FOR PAYMENT.

**ITEM 840 - FOUNDATION PREPARATION, AS PER PLAN**

THIS ITEM INCLUDES THE ADDITIONAL EXCAVATION AS SHOWN IN THE PLANS FOR MSE WALL NUMBER 2 AND THE INSTALLATION OF THE COARSE AGGREGATE FILTER MATERIAL AROUND THE FOUNDATION PREPARATION MATERIALS (GRANULAR MATERIAL, TYPE C). INSTALL FOUNDATION PREPARATION MATERIALS PER CMS 840.03G AND 840.06D.

ALL LABOR AND MATERIAL REQUIRED TO INSTALL THE FOUNDATION PREPARATION MATERIALS AND THE SURROUNDING COARSE AGGREGATE FILTER MATERIAL AS SHOWN IN THE PLANS SHALL BE INCLUDED WITH THIS ITEM FOR PAYMENT.

**FOUNDATION BEARING RESISTANCE**

THE MSE WALL NO. 1 REINFORCED SOIL MASS, AS DESIGNED, PRODUCES A MAXIMUM SERVICE LIMIT STATE BEARING PRESSURE OF 1.67 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LIMIT STATE BEARING PRESSURE OF 2.255 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 2.734 KIPS SQUARE FOOT.

THE MSE WALL NO. 2 REINFORCED SOIL MASS, AS DESIGNED, PRODUCES A MAXIMUM SERVICE LIMIT STATE BEARING PRESSURE OF 4.187 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LIMIT STATE BEARING PRESSURE OF 5.652 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 12.465 KIPS SQUARE FOOT.

**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 CMS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING. THE DEPARTMENT WILL NOT MAKE ADDITIONAL PAYMENT FOR PROVIDING AN ALTERNATE DESIGN.

**ESTIMATED QUANTITIES - MSE WALLS NUMBER 1 AND 2**

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	MSE WALL NO. 1	MSE WALL NO. 2	GENERAL	AS PER PLAN SHEET NUMBER
503	11101	1	LUMP	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN			1	1 / 5
512	10100	941	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	286	655		
518	62100	525	FT	STRUCTURE DRAINAGE, MISC.: 12" PERFORATED PLASTIC DRAINAGE PIPE		525		
518	62100	50	FT	STRUCTURE DRAINAGE, MISC.: 12" NON-PERFORATED PLASTIC DRAINAGE PIPE		50		
601	21050	10	SQ YD	TIED CONCRETE BLOCK MAT WITH TYPE 1 UNDERLAYMENT	6	4		
605	31101	525	FT	AGGREGATE DRAINS, AS PER PLAN		525		1 / 5
611	99710	5	EACH	PRECAST REINFORCED CONCRETE OUTLET	3	2		
840	20001	9880	SQ FT	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	3360	6520		1 / 5
840	21000	3877	CU YD	WALL EXCAVATION	1371	2506		
840	22000	417	SQ YD	FOUNDATION PREPARATION	417			
840	22001	652	SQ YD	FOUNDATION PREPARATION, AS PER PLAN		652		1 / 5
840	23000	6213	CU YD	SELECT GRANULAR BACKFILL	1467	4746		
840	23050	735	CU YD	NATURAL SOIL	301	434		
840	25010	526	FT	6" DRAINAGE PIPE, PERFORATED	526			
840	25020	36	FT	6" DRAINAGE PIPE, NON-PERFORATED	36			
840	26000	515	FT	CONCRETE COPING	265	250		
840	26050	9108	SQ FT	AESTHETIC SURFACE TREATMENT	2963	6145		
840	27000	5	DAY	ON-SITE ASSISTANCE			5	
840	28000	1	LUMP	SGB INSPECTION AND COMPACTION TESTING			1	

CALCULATED BY: AMT 07 / 22  
CHECKED BY: NRP 02 / 23

MOT-VANDALIA BIKEWAY

MODEL: Sheet PAPER: 34x22 (in.) DATE: 4/16/2024 TIME: 3:59:44 PM USER: npaneru  
C:\City of Vandalia\0116494A.01 - MOT-Vandalia Bkeway Part 2\111388\400-Engineering\Structures\Wall\_001\Sheets\111388\_001\_WN001.dgn

MSE WALL - GENERAL NOTES & ESTIMATED QUANTITIES

DESIGN AGENCY



DESIGNER

NRP

REVIEWER

AMT 11/01/23

PROJECT ID

111388

SUBSET

1 | 5

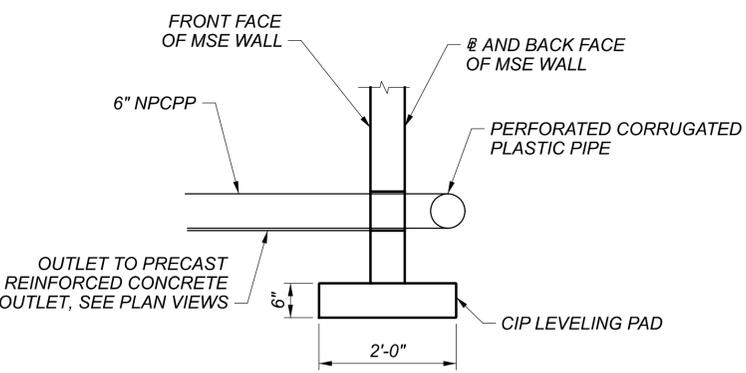
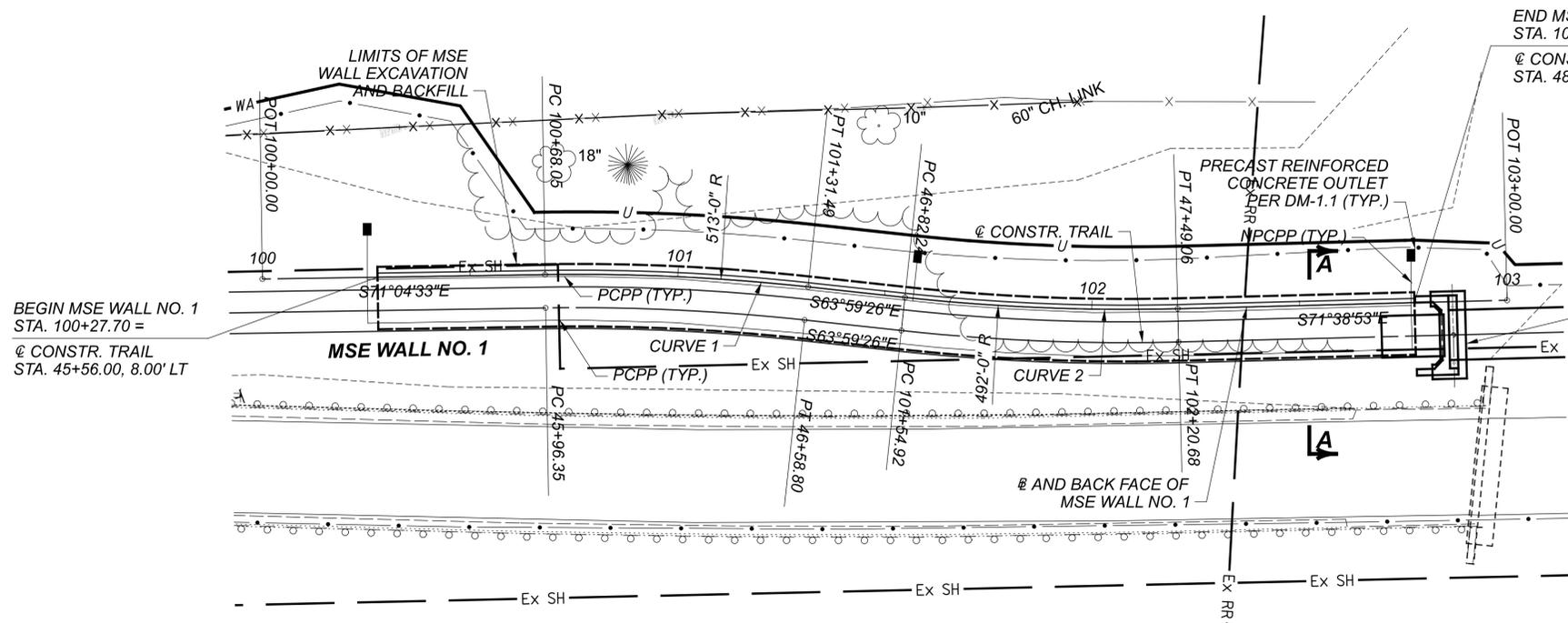
SHEET

144 | 171



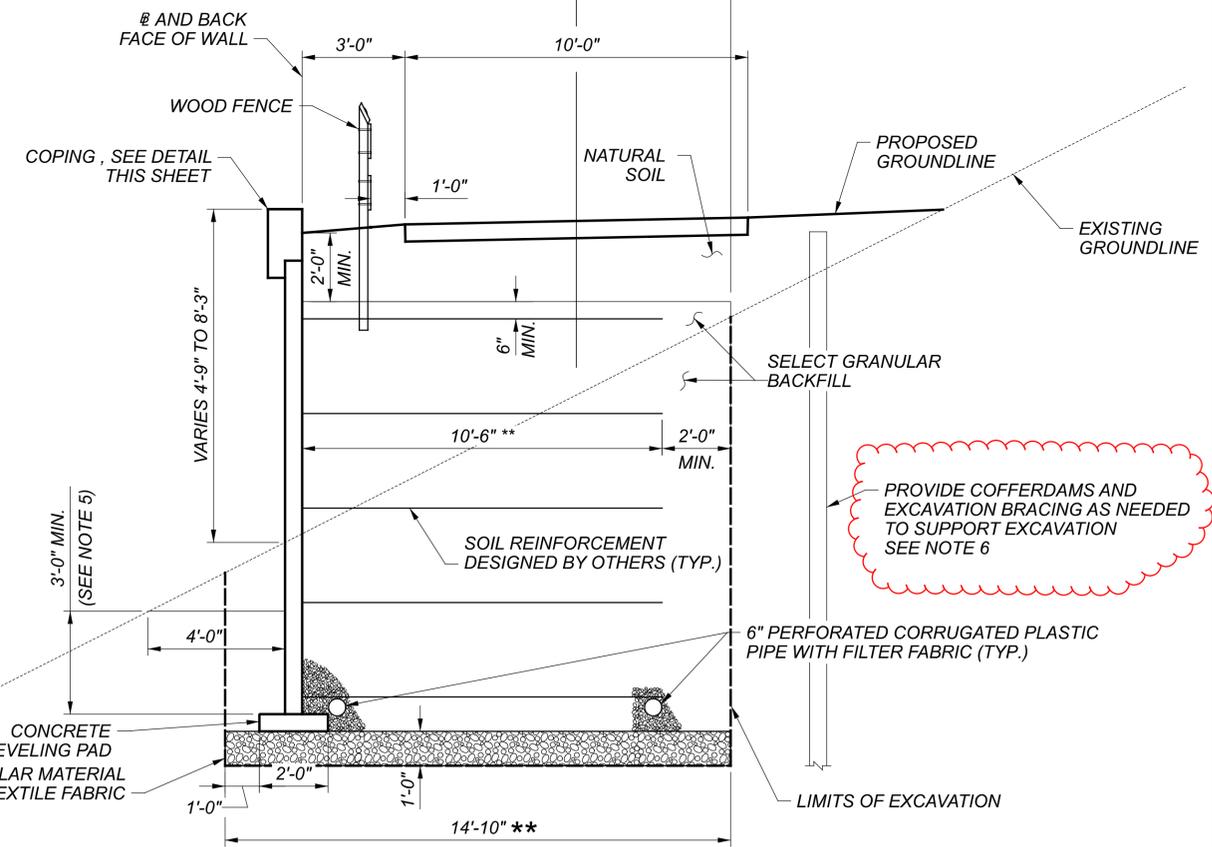
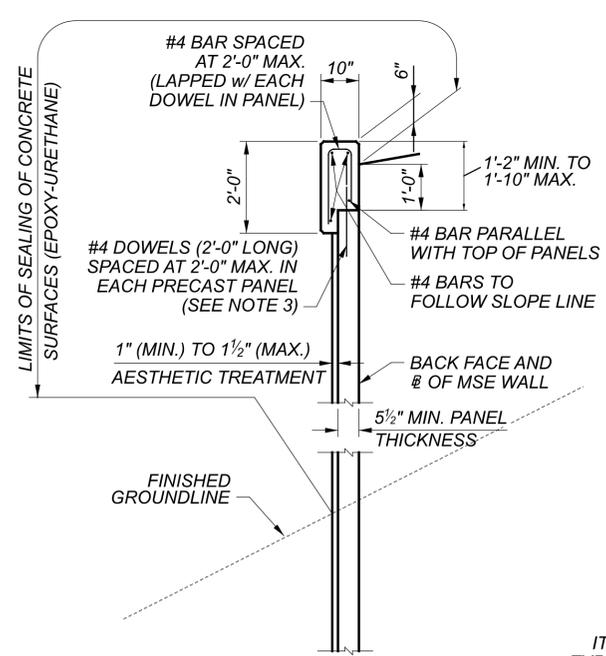
**HORIZONTAL CURVE DATA**

CURVE 1	CURVE 2
P.I. = Sta. 100+99.81	P.I. = Sta. 101+87.85
Δ = 07°05'07" LT	Δ = 07°39'28" RT
Dc = 11°10'08"	Dc = 11°38'44"
R = 513.00'	R = 492.00'
T = 31.76'	T = 32.93'
L = 63.44'	L = 65.76'
E = 0.98'	E = 1.1'



**NOTES**

1. ALL WALL STATIONS GIVEN ALONG BACK FACE OF WALL.
2. FOR MSE WALL NO. 1 ELEVATION, SEE SHEET 3 OF 5.
3. MINIMUM 2 DOWELS FOR PANELS LESS THAN 4'-0" WIDE, AND MINIMUM 3 DOWELS FOR PANELS 4'-0" WIDE OR WIDER.
4. FOR DRAINAGE OUTLET LOCATIONS, SEE ELEVATION VIEW ON SHEET 3 OF 5.
5. TOP OF LEVELING PAD SHALL BE A MINIMUM OF 3'-0" BELOW A POINT 4'-0" IN FRONT OF THE FRONT FACE OF WALL.
6. TEMPORARY SHORING SHALL BE CANTILEVER SHEET PILING (ASTM A328) WITH A MINIMUM SECTION MODULUS OF 40.40 CU. IN PER FT, A MAXIMUM RETAINED FILL HEIGHT OF 13'-6", AND A MINIMUM EMBEDDED DEPTH OF 22'-0". THIS DESIGN IS IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.



\*\* MINIMUM VALUE ASSUMED, SUPPLIER TO CONFIRM DESIGN AND STABILITY PER SUPPLEMENTAL SPECIFICATION 840

DESIGN AGENCY	
DESIGNER	NRP
REVIEWER	AMT 11/01/23
PROJECT ID	111388
SUBSET	TOTAL
2	5
SHEET	TOTAL
145	171