

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

WAS-550-14.30

**BARLOW TOWNSHIP
WASHINGTON COUNTY**

PROJECT DESCRIPTION

LANDSLIDE REPAIR USING A 100 FT DRILLED SHAFT, SOLDIER PILE WALL.

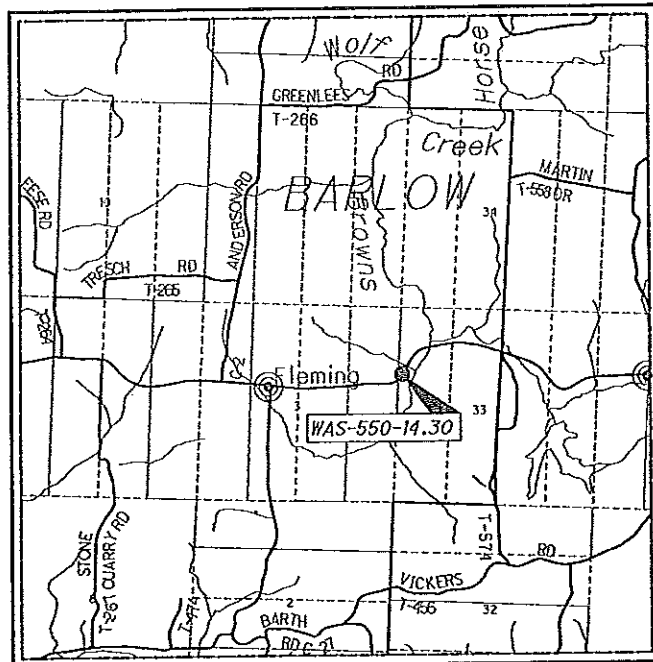
EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: 0.20 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.25 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A ACRES

2016 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.

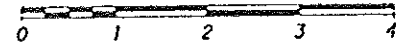
I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.



LOCATION MAP

LATITUDE: 39°23'34" LONGITUDE: 81°35'51"

SCALE IN MILES



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

DESIGN DESIGNATION

CURRENT ADT (2019)	4,000
DESIGN YEAR ADT (2039)	4,700
DESIGN HOURLY VOLUME (2039)	470
DIRECTIONAL DISTRIBUTION	70%
TRUCKS (24 HOUR B&C)	4%
DESIGN SPEED	55
LEGAL SPEED	55
DESIGN FUNCTIONAL CLASSIFICATION:	
RURAL MINOR ARTERIAL	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE

INDEX OF SHEETS:

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UNDERGROUND UTILITIES
CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.

Call Before You Dig
1-800-362-2764

(Non-members must be called directly)

OIL & GAS PRODUCERS
UNDERGROUND PROTECTION SERVICE
1-800-925-0988

PLAN PREPARED BY:
OHIO DEPARTMENT OF
TRANSPORTATION PLANNING
AND ENGINEERING - DISTRICT 10

ENGINEERS SEAL	STANDARD CONSTRUCTION DRAWINGS	SUPPLEMENTAL SPECIFICATIONS	
<p>SIGNED: <i>John Coen</i> DATE: 9/28/18</p>	BP-3.1 7/18/14 MT-96.11 1/20/17	800 7/20/18	
		MT-96.20 7/15/16	
	DM-1.1 7/21/17 MT-96.26 7/19/13	832 1/17/14	
	DM-1.2 1/18/13 MT-97.10 7/18/14	902 12/31/12	
		MT-101.70 1/17/14	
	GR-2.1 7/20/12 MT-101.75 7/15/16		
		MT-101.90 7/21/17	
	RM-4.2 4/18/14		
		TC-65.10 1/17/14	
	HW-2.1 7/20/18 TC-65.11 7/21/17		
	HW-2.2 7/20/18		

APPROVED: *Paul J. Miller*
DATE: 9/28/18 DISTRICT DEPUTY DIRECTOR

APPROVED: *Sonny Whang*
DATE: 10/11/18 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO.
E 180 (706)

PID NO.
108675

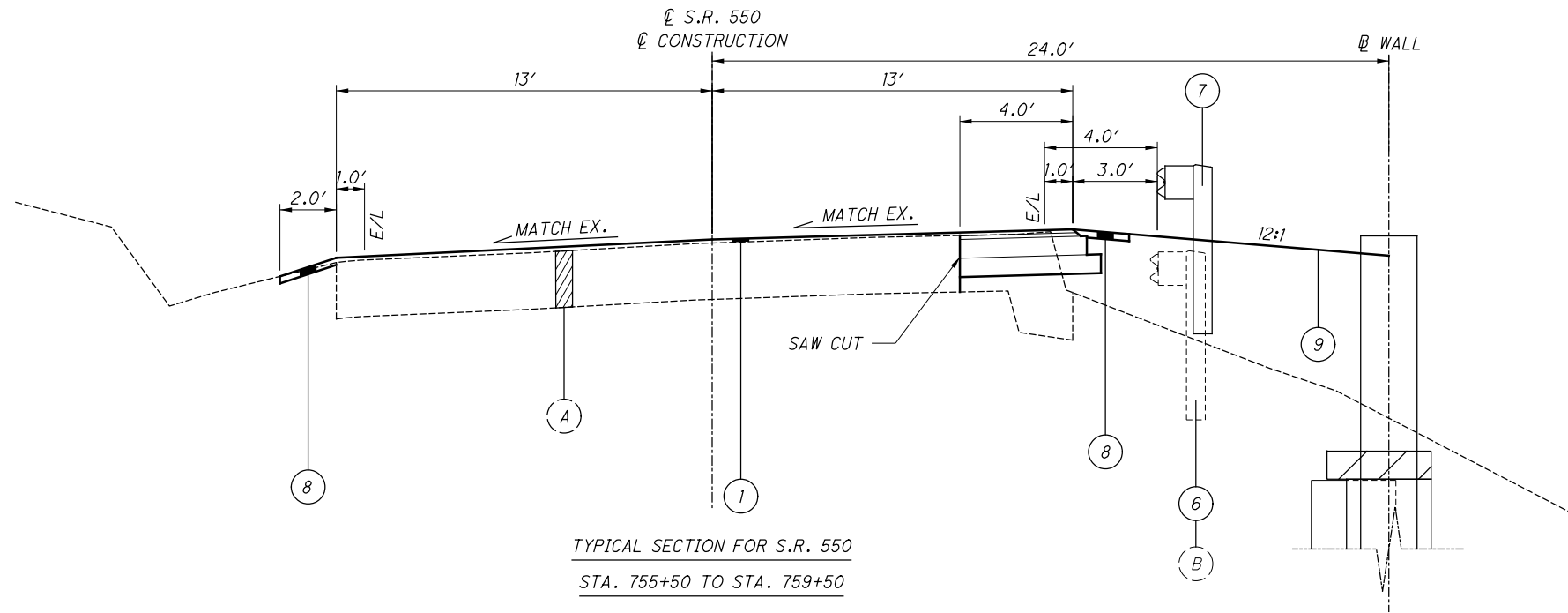
CONSTRUCTION PROJECT NO.
00000

WAS-550-14.30

WAS - SR 550 14.300
187078 PID - 108675
Dist 10 11/8/2018

Contract Proposal Available @
www.contracts.dot.state.oh.us/home

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TYPICAL SECTION FOR S.R. 550
STA. 755+50 TO STA. 759+50

PROPOSED LEGEND

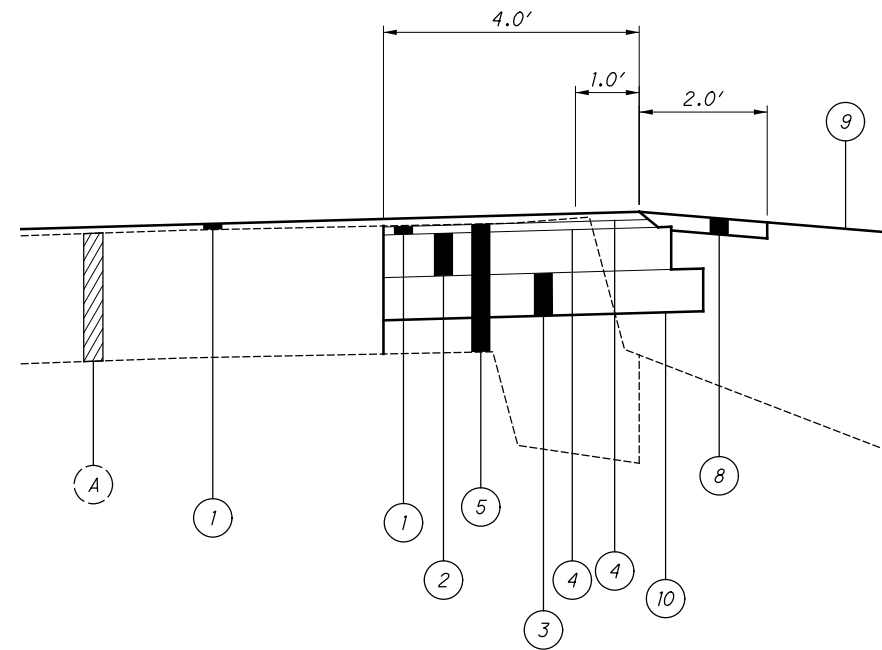
- * - MAXIMUM LIFT THICKNESS OF 2"
- ** - MAXIMUM LIFT THICKNESS OF 4"

EXISTING LEGEND

- (A) 2.0'± EXISTING ASPHALT CONCRETE
- (B) EXISTING GUARDRAIL

PROPOSED LEGEND

- (1) ITEM 441 - 1.5" ASPHALT CONCRETE SURFACE, TYPE 1, (448), PG64-22 *
- (2) ITEM 301 - 8" ASPHALT CONCRETE BASE, PG64-22 **
- (3) ITEM 304 - 8" AGGREGATE BASE
- (4) ITEM 407 - NON-TRACKING TACK COAT
- (5) ITEM 202 - PAVEMENT REMOVED
- (6) ITEM 202 - GUARDRAIL REMOVED
- (7) ITEM 606 - GUARDRAIL, TYPE 5
- (8) ITEM 617 - 3" COMPACTED AGGREGATE & ITEM 408 - PRIME COAT (0.4 GAL/SY)
- (9) ITEM 659 - SEEDING AND MULCHING
- (10) ITEM 204 - SUBGRADE COMPACTION



PAVEMENT REPAIR DETAIL
STA. 756+87 TO STA. 757+45

UTILITIES

THERE ARE NO KNOWN UNDERGROUND OR OVERHEAD UTILITIES WITHIN THE PROJECT CONSTRUCTION LIMITS.

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

AT&T
160 N. SIXTH STREET
ZANESVILLE, OH 43701
BARRETT TAMASOVICH 740-454-3552

CLEARING AND GRUBBING

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.

ITEM 659 - SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

FIELD VERIFICATION OF QUANTITIES

DUE TO THE NATURE OF THE PROJECT BEING A SLIDE REPAIR, THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF QUANTITIES PRIOR TO BIDDING AND THEN PRIOR TO CONSTRUCTION. THE ACTUAL WORK LOCATIONS AND QUANTITIES PERFORMED SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

NOTIFICATION OF TRAFFIC RESTRICTIONS

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW TO INFORM SPECIAL HAULING PERMITS SECTION (HAULING.PERMITS@DOT.OHIO.GOV) AND THE DISTRICT PUBLIC INFORMATION OFFICE (PIO). THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

INFORMATION SHOULD INCLUDE, BUT IS NOT LIMITED TO, ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHALL LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, NUMBER OF LANES CLOSED, MINIMUM VERTICAL CLEARANCE, MINIMUM WIDTH OF DRIVABLE PAVEMENT, DETOUR ROUTES, IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

NOTIFICATION TIME TABLE		
ITEM	DURATION OF CLOSURE	NOTICE DUE TO OFFICE OF COMMUNICATIONS
RAMP & ROAD CLOSURES	>= 2 WEEKS	21 CALENDER DAYS PRIOR TO CLOSURE
	> 12 HOURS & < 2 WEEKS	14 CALENDER DAYS PRIOR TO CLOSURE
	< 12 HOURS	4 BUSINESS DAYS PRIOR TO CLOSURE
LANE CLOSURES & RESTRICTIONS	>= 2 WEEKS	14 CALENDER DAYS PRIOR TO CLOSURE
	< 2 WEEKS	7 BUSINESS DAYS PRIOR TO CLOSURE
START OF CONSTRUCTION & TRAFFIC PATTERN CHANGES	N/A	14 CALENDER DAYS PRIOR TO IMPLEMENTATION

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING TRAFFIC RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME TABLE.

THE PROJECT ENGINEER WILL FORWARD THIS INFORMATION TO THE FOLLOWING:

DISTRICT PUBLIC INFORMATION OFFICER (PIO):
ASHLEY RITTENHOUSE
FAX: (740) 373-3953
EMAIL: ASHLEY.RITTENHOUSE@DOT.OHIO.GOV

DISTRICT PERMIT SECTION:
LYNNETTE RICHARDS
FAX: (740) 373-3953
EMAIL: LYNNETTE.RICHARDS@DOT.OHIO.GOV

CENTRAL OFFICE SPECIAL HAUL PERMITS SECTION:
FAX: (614) 728-4099
EMAIL: HAULING.PERMITS@DOT.OHIO.GOV

THE PIO WILL, IN TURN, NOTIFY THE PUBLIC, THE LOCAL EMERGENCY SERVICES, AFFECTED SCHOOLS AND BUSINESSES, AND ANY OTHER IMPACTED LOCAL PUBLIC AGENCY OF THE ABOVE MENTIONED ITEMS VIA MEDIA SOURCES.

ITEM 524 - DRILLED SHAFTS, 36" DIAMETER, ABOVE BEDROCK, AS PER PLAN

ITEM 524 - DRILLED SHAFTS, 36" DIAMETER, INTO BEDROCK, AS PER PLAN

THIS WORK CONSISTS OF FURNISHING AND INSTALLING DRILLED SHAFTS FOR SOLDIER PILE AND LAGGING WALLS. THE DRILLED SHAFTS ARE REINFORCED WITH SOLDIER PILES INSTEAD OF REINFORCING STEEL CAGES. THE SOLDIER PILES EXTEND ABOVE THE TOP OF THE DRILLED SHAFT. FURNISH AND INSTALL DRILLED SHAFTS IN ACCORDANCE WITH CMS 524 EXCEPT AS MODIFIED AND SUPPLEMENTED BELOW.

EXCAVATE THE HOLE FOR THE DRILLED SHAFTS WITHIN 3 INCHES OF THE PLAN LOCATION IN THE HORIZONTAL PLANE. IF FIELD CONDITIONS INDICATE GREATER DEPTHS, NOTIFY THE ENGINEER FOR FURTHER EVALUATION.

PLACE THE SOLDIER PILE VERTICALLY WITHIN THE HOLE SO IT IS NOT INCLINED MORE THAN 1" BETWEEN THE TOP AND BOTTOM. PLACE THE SOLDIER PILE SO THAT THE FLANGES ARE PARALLEL TO THE CENTERLINE OF CONSTRUCTION. DO NOT ALLOW THE ORIENTATION OF THE FLANGES TO VARY BY MORE THAN 10 DEGREES. SUPPORT THE SOLDIER PILE SO THAT IT DOES NOT MOVE DURING CONCRETE PLACEMENT.

USE CLASS OCI CONCRETE ACCORDING TO CMS 511. PLACE CONCRETE TO THE ELEVATION FOR THE BOTTOM OF THE PRECAST LAGGING. THE CONTRACTOR MAY PLACE CONCRETE USING THE FREE FALL METHOD PROVIDED THE DEPTH OF WATER IS LESS THAN 6 INCHES AND THE CONCRETE FALLS WITHOUT STRIKING THE SIDES OF THE HOLE. POURING CONCRETE ALONG THE WEB OF THE SOLDIER PILE IS ACCEPTABLE.

CHECK THE POSITION, THE VERTICAL ALIGNMENT AND ORIENTATION OF THE SOLDIER PILE IMMEDIATELY AFTER CONCRETE PLACEMENT. MAKE CORRECTIONS AS NECESSARY TO MEET THE ABOVE TOLERANCES.

PLACE PRECAST LAGGING SO THAT THE SOLDIER PILE FLANGE OVERLAPS THE END OF THE LAGGING BY AT LEAST 3 INCHES AT BOTH ENDS OF THE LAGGING.

SEQUENCE OF INSTALLATION
THE INSTALLATION SEQUENCE SHALL BE SUCH THAT NO DRILLED SHAFT IS INSTALLED ADJACENT TO EITHER AN OPEN DRILLED SHAFT EXCAVATION OR A DRILLED SHAFT IN WHICH THE CONCRETE HAS LESS THAN A 48 HOUR CURE. INSTALLING THE SHAFTS IN AN ALTERNATING SEQUENCE OR ANY OTHER SEQUENCE THAT MEETS THIS CRITERIA IS PERMISSIBLE.

PROTECTION OF UNATTENDED OPEN SHAFTS
CARE SHALL BE EXERCISED AS TO COVER UNATTENDED OPEN SHAFTS. TEMPORARY COVERS SHALL BE OF ADEQUATE STRENGTH TO PREVENT A PERSON OR ANIMAL FROM FALLING IN. NO DRILLED SHAFT EXCAVATION SHALL BE LEFT UN-POURED OVERNIGHT

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS USED TO CONSTRUCT THE DRILLED SHAFTS AND PLACE CONCRETE PANELS. ANY TEMPORARY GRADING, EXCAVATION, EMBANKMENT, AGGREGATE, DRAINAGE, SHEETING, ETC. NEEDED TO COMPLETE THE WORK AREA SHALL BE INCLUDED IN THE BID PRICE FOR THE DRILLED SHAFTS. THE COST OF ANY EXCAVATION AND SUBSEQUENT REPLACEMENT OF EMBANKMENT (PER ITEM 203 EMBANKMENT) SHALL BE INCLUDED IN THE VARIOUS BID ITEMS FOR THE DRILLED SHAFTS AND CONCRETE PANELS. NO SEPARATE PAYMENT WILL BE MADE.

PAYMENT IS FULL COMPENSATION FOR CONSTRUCTING THE DRILLED SHAFTS, INCLUDING FURNISHING AND PLACING CONCRETE AND REMOVAL OF CONCRETE FROM AROUND THE SOLDIER PILE IN ORDER TO PLACE PRECAST LAGGING. PAYMENT FOR SOIL OVERBURDEN DRILLING, WHICH IS GROUND LEVEL TO THE TOP OF THE SHAFT, SHALL BE INCLUSIVE OF ITEM 524 DRILLED SHAFTS, 36" DIAMETER, ABOVE BEDROCK

MEASUREMENT FOR PAYMENT FOR DRILLED SHAFTS ABOVE BEDROCK, AS PER PLAN, WILL BE MEASURED ALONG THE AXIS OF THE DRILLED SHAFT FROM THE TOP OF THE SHAFT TO THE TOP OF BEDROCK, AS DETERMINED BY THE ENGINEER. MEASUREMENT FOR PAYMENT FOR DRILLED SHAFTS INTO BEDROCK, AS PER PLAN, WILL BE LIMITED TO THE DISTANCE BETWEEN THE TOP OF BEDROCK AND THE BOTTOM OF THE DRILLED SHAFT, AS DETERMINED BY THE ENGINEER.

ITEM SPECIAL - PRECAST CONCRETE LAGGING

THIS WORK CONSISTS OF FURNISHING AND PLACING PRECAST REINFORCED CONCRETE PANELS BETWEEN THE SOLDIER PILES TO FUNCTION AS LAGGING FOR THE RETAINING WALL. PROVIDE PRECAST CONCRETE LAGGING FROM A PRECAST CONCRETE MANUFACTURER CERTIFIED UNDER SUPPLEMENT 1073. PROVIDE CONCRETE WITH A 28-DAY DESIGN STRENGTH OF AT LEAST 4000 PSI ACCORDING TO CMS 499. PROVIDE EPOXY COATED REINFORCING STEEL ACCORDING TO CMS 709.00. IN LIEU OF EPOXY COATING, A CORROSION INHIBITING CONCRETE ADMIXTURE MAY BE USED AT THE SPECIFIED DOSAGE RATE. A QUALIFIED PRODUCT LIST OF CORROSION INHIBITING ADMIXTURES IS ON FILE AT THE LABORATORY. MANUFACTURERS SHOULD RECOGNIZE THAT THE CORROSION INHIBITOR MAY AFFECT THE STRENGTH, ENTRAINED AIR CONTENT, WORKABILITY, ETC. OF THEIR CONCRETE MIXES. THE MANUFACTURER'S CHOICE TO USE ONE OF THESE CORROSION INHIBITORS DOES NOT ALLEVIATE MEETING ALL DESIGN REQUIREMENTS. DO NOT ALLOW THE DIMENSIONS OF THE REINFORCING STEEL TO VARY BY MORE THAN 1/4 INCH. PERMANENTLY MARK EACH PANEL TO INDICATE THE FACE TO BE PLACED AGAINST THE SOIL. PLACE THE PANEL BETWEEN THE FLANGES OF THE SOLDIER PILES AND BEARING AGAINST THE FLANGES ON THE EXPOSED SIDE OF THE WALL.

THE DEPARTMENT WILL PAY FOR PRECAST LAGGING AT THE CONTRACT UNIT PRICE PER EACH FOR ITEM SPECIAL, PRECAST CONCRETE LAGGING.

ITEM 507 - STEEL PILES, MISC.: SOLDIER PILES W24X104

THIS WORK CONSISTS OF FURNISHING AND PLACING STEEL SOLDIER PILES INTO DRILLED HOLES. FURNISH SOLDIER PILES CONSISTING OF STRUCTURAL STEEL MEMBERS THAT MEET THE PLAN REQUIREMENTS AND CONFORM TO ASTM A572, GRADE 50. DO NOT FIELD WELD OR SPLICE STEEL SOLDIER PILES; WITH PANEL SEATS BEING THE EXCEPTION.

MEASUREMENT FOR PAYMENT WILL BE LIMITED TO THE DISTANCE BETWEEN THE TOP OF WALL ELEVATION AND THE BOTTOM OF THE DRILLED SHAFT, AS DETERMINED BY THE ENGINEER. THE DEPARTMENT WILL PAY FOR SOLDIER PILES AT THE CONTRACT UNIT PRICE PER FOOT OF ITEM 507 - STEEL PILES, MISC.: SOLDIER PILES - W24X104

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GENERAL NOTES

WAS-550-14.30

STAKEOUT COORDINATES FOR C U.S. 550

STATION	NORTHING	EASTING
PC 755+66.74	508333.23	2223338.90
PT 757+76.96	508488.71	2223478.59
POT 760+93.47	508758.85	2223643.59

DRILLED SHAFT COORDINATES (KING PILES)

STATION	NORTHING	EASTING
1756+72.93	508387.09	2223432.47
1756+78.68	508391.38	2223436.30
1756+84.43	508395.70	2223440.09
1756+90.18	508400.05	2223443.85
1756+95.93	508404.45	2223447.56
1757+01.68	508408.88	2223451.22
1757+07.43	508413.34	2223454.85
1757+13.18	508417.84	2223458.43
1757+18.93	508422.37	2223461.97
1757+24.68	508426.94	2223465.46
1757+30.43	508431.54	2223468.91
1757+36.18	508436.17	2223472.32
1757+41.93	508440.83	2223475.68
1757+47.68	508445.53	2223479.00
1757+53.43	508450.26	2223482.27
1757+59.18	508455.02	2223485.49
1757+64.93	508459.81	2223488.67

SUMMER BAT TREE REMOVAL

SUITABLE WOODED HABITAT (SWH) WILL BE REMOVED DURING THE BATS' (FEDERALLY LISTED, ENDANGERED INDIANA BAT AND FEDERALLY LISTED, THREATENED NORTHERN LONG-EARED BAT) ACTIVE SEASON WHICH COULD RESULT IN FELLING TREES IN WHICH INDIVIDUAL BATS OR MATERNITY COLONIES OF FEMALE BATS AND THEIR PUPS ARE ROOSTING.

THEREFORE, IF WORKERS AT THE PROJECT SITE OBSERVE ANY BATS FLYING FROM THE TREES BEING FELLED, ALL WORK SHOULD CEASE, AND THE CONTRACTOR SHALL CONTACT THE ODOT DISTRICT 10 ENVIRONMENTAL COORDINATOR, RACHEL GOODPASTER AT RACHEL.GOODPASTER@DOT.OHIO.GOV OR 740-568-4391.

IN TURN, ODOT SHALL NOTIFY THE USFWS AND CONSULT IMMEDIATELY FOR GUIDANCE ON HOW BEST TO PROCEED.

ITEM SPECIAL - FILL AND PLUG EXISTING CONDUIT

THIS ITEM SHALL CONSIST OF THE CONSTRUCTION OF BULKHEADS IN AN EXISTING 18 IN DIAMETER CONDUIT AND FILLING THE AREA THUS SEALED OFF WITH ITEM 613, SAND OR OTHER MATERIAL APPROVED BY THE ENGINEER.

BULKHEADS SHALL BE LOCATED AT THE LIMITS OF THE AREA TO BE FILLED AS INDICATED ON THE PLANS. THE BULKHEADS SHALL CONSIST OF BRICK OR CONCRETE MASONRY WITH A MINIMUM THICKNESS OF 12 INCHES.

THE FILL MATERIAL SHALL BE PUMPED INTO PLACE, OR PLACED BY OTHER MEANS APPROVED BY THE ENGINEER, SO THAT, AFTER SETTLEMENT, AT LEAST 90 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CONDUIT, FOR ITS ENTIRE LENGTH, SHALL BE FILLED. THE LENGTH OF FILLED AND PLUGGED CONDUIT TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF FEET (MEASURED ALONG THE CENTERLINE OF EACH CONDUIT FROM OUTER FACE TO OUTER FACE OF BULKHEADS) FILLED AND PLUGGED AS DESCRIBED ABOVE.

IN LIEU OF FILLING AND PLUGGING THE EXISTING CONDUIT, THE PIPE MAY BE CRUSHED AND BACK-FILLED IN ACCORDANCE WITH THE PROVISIONS OF 203, OR IT MAY BE REMOVED. THE LENGTH, MEASURED AS PROVIDED ABOVE, SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR, ITEM SPECIAL, FILL AND PLUG EXISTING CONDUIT.

INTERIM COMPLETION DATE

THIS PROJECT SHALL HAVE AN INTERIM COMPLETION DATE OF 1/31/2019 FOR ALL WORK EXCEPT THE ASPHALT OVERLAY. THE PROJECT COMPLETION DATE FOR THIS PROJECT, INCLUDING THE ASPHALT OVERLAY SHALL BE 7/30/19.

ITEM 511 CLASS QC1 CONCRETE, FOOTING, AS PER PLAN

ALL REQUIREMENTS OF CMS 511 SHALL BE FOLLOWED, EXCEPT THE CONTRACTOR WILL BE PERMITTED TO LOAD THE CONCRETE PAD ONE DAY AFTER PLACEMENT.

SURVEYING POSITIONAL PARAMETERS

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

VERTICAL POSITIONING
ORTHOMETRIC HEIGHT DATUM: NAVD88
GEOID: GEOID12A

HORIZONTAL POSITIONING
REFERENCE FRAME: NAD83 (2011)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE, SOUTH ZONE
COMBINED SCALE FACTOR: N/A

UNITS:
FURNISH UNITS IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

DELINEATION OF TEMPORARY AND PERMANENT GUARDRAIL

BARRIER REFLECTORS SHALL BE INSTALLED ON ALL TEMPORARY GUARDRAIL USED FOR TRAFFIC CONTROL AND ON ALL PERMANENT GUARDRAIL LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE. BARRIER REFLECTORS SHALL CONFORM TO C&MS 626.

OBJECT MARKERS SHALL BE INSTALLED ON ALL TEMPORARY AND PERMANENT GUARDRAIL LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE. GUARDRAIL-MOUNTING OF OBJECT MARKERS SHALL BE MADE BY INSTALLING THE OBJECT MARKERS ON THE EXTENSION BLOCKS RATHER THAN DIRECTLY ONTO THE GUARDRAIL ITSELF. OBJECT MARKERS SHALL CONFORM TO C&MS 614.03 AND THE SPACING SHALL BE APPROXIMATELY 50 FEET.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING THE ABOVE ITEM(S).

CONTROL POINTS

STATION	OFFSET	NORTHING	EASTING	ELEVATION	FEATURE
756+05.61	19.38' LT	508372.48	2223356.06	763.59	IRON PIN
758+59.17	21.71' LT	508570.22	2223502.92	742.88	IRON PIN

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GENERAL NOTES

WAS-550-14.30

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ITEM 614 - MAINTAINING TRAFFIC, AS PER PLAN

MAINTAIN TRAFFIC WITH PORTABLE BARRIER AS PER STANDARD DRAWING MT-96.11 USING A WORK AREA LENGTH OF 400 FEET. BASED ON THIS WORK AREA LENGTH, THE SIGNAL TIMING IS SHOWN ON THIS SHEET. MAINTAIN A MINIMUM LANE WIDTH OF 10 FEET DURING CONSTRUCTION. A QUANTITY OF 650 FEET OF PORTABLE BARRIER, FOUR (4) BI-DIRECTIONAL IMPACT ATTENUATORS, AND 60 SQUARE YARDS OF PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

THE MAINTENANCE OF TRAFFIC SHALL BE IN CONFORMANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST REVISION, THE REFERENCED STANDARD CONSTRUCTION DRAWINGS INCLUDING DESIGNER NOTES, THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS), POLICY NO. 516-003(P) TRAFFIC MANAGEMENT IN WORK ZONES INTERSTATE AND OTHER FREEWAYS, ODOT LOCATION AND DESIGN MANUAL, VOLUME 1, AND ALL REQUIREMENTS DETAILED IN THESE PLANS.

PAYMENT FOR ALL THE ITEMS REQUIRED TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THESE REQUIREMENTS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR ITEM 614 - MAINTAINING TRAFFIC, AS PER PLAN, UNLESS SEPERATELY ITEMIZED.

IF IN THE OPINION OF THE ENGINEER, THE CONTRACTOR FAILS TO COMPLY WITH THESE REQUIREMENTS AND THE PROVISIONS OF THE APPROVED MAINTENANCE OF TRAFFIC PLAN, THE ENGINEER SHALL SUSPEND WORK UNTIL ALL REQUIREMENTS ARE MET. ANY COST OR DELAYS INCURRED AS A RESULT OF THE FAILURE SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR.

ITEM 614, WORK ZONE IMPACT ATTENUATOR, FOR HAZARDS OVER 24" AND LESS THAN 36" WIDE, (BIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A NON-GATING IMPACT ATTENUATOR. FURNISH AN IMPACT ATTENUATOR FROM THE OFFICE OF ROADWAY ENGINEERING'S APPROVED LIST FOR WORK ZONE IMPACT ATTENUATORS, FROM THE ROADWAY STANDARDS WEB PAGE FOR ROADWAY STANDARDS WEB PAGE.

INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE CONTRACTOR SHALL REPAIR OR REPLACE A DAMAGED UNIT WITHIN 24 HOURS OF A DAMAGING IMPACT.

WHEN BIDIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS.

WHEN GATING IMPACT ATTENUATORS ARE DESIRED, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER FOR ACCEPTANCE.

THE COST FOR THE ADDITIONAL BARRIER REQUIRED FOR A GATING IMPACT ATTENUATOR SHALL BE INCLUDED IN THE COST OF THE GATING IMPACT ATTENUATOR.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT AND MAINTAIN A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS, TRANSITIONS, LEVELING PADS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

SEQUENCE OF CONSTRUCTION

PHASE 1:

1. WHILE USING FLAGGERS, INSTALL PORTABLE BARRIERS, IMPACT ATTENUATORS, SIGNALS, SIGNS, AND PLACE PAVEMENT MARKINGS FOR WORK TO BE PERFORMED IN ACCORDANCE WITH SCD'S MT-96.11, MT-96.20, MT-96.26, MT-97.10, MT-101.70, AND MT-101.75.
2. BUILD SOILDER PILE AND LAGGING WALL, PERFORM PART-WIDTH CONDUIT REPLACEMENT, ENSURING PROPER DRAINAGE AT ALL TIMES.
3. PERFORM EARTHWORK AS SHOWN ON PLANS. PAVEMENT BUILDUP SHOULD BE PERFORMED ONLY TO THE BOTTOM OF THE FIRST SURFACE COURSE.

PHASE 2:

1. ALL SIGNALS, SIGNS, AND STOPLINE PLACEMENT SHALL REMAIN THE SAME AS PHASE 1.
2. PERFORM PART-WIDTH CONDUIT REPLACEMENT, ENSURING PROPER DRAINAGE AT ALL TIMES.
3. PLACE ASPHALT SURFACE COURSE AND FINAL PAVEMENT MARKINGS.

LIGHTING

LIGHTING SHALL BE PROVIDED AT EACH END OF THE LANE CLOSURE FOR THE CLOSING OF ONE LANE OF A TWO-LANE HIGHWAY.

LIGHTING SHALL BE BY CONVENTIONAL METHODS, WITH LUMINAIRE ARMS ATTACHED TO THE SIGNAL SUPPORTS. AREA ILLUMINATION SHALL BE PROVIDED BY USING 150 WATT MINIMUM HIGH PRESSURE SODIUM LUMINARIES OR 250 WATT MINIMUM MERCURY LUMINARIES. THE MINIMUM HEIGHT OF THE LUMINAIRE SHALL BE 27 FT FROM THE GROUND SURFACE.

PAYMENT FOR LIGHTING SHALL INCLUDE DELIVERY, ERECTION, MAINTENANCE AND REMOVAL. PAYMENT SHALL BE INCLUDED WITH MAINTENANCE OF TRAFFIC, AS PER PLAN.

REMOVAL OF ODOT SIGNALS AND DRUMS

THE CONTRACTOR SHALL NOTIFY DOUG THIEMAN (740-568-3985) TWO WEEKS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION TO ALLOW ODOT TO REMOVE THE DRUMS AND TEMPORARY SIGNALS.

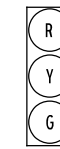
DELINEATION OF PORTABLE AND PERMANENT BARRIER

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL AND ON PERMANENT CONCRETE BARRIER (INCLUDING BRIDGE PARAPETS) LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE.

BARRIER REFLECTORS SHALL CONFORM TO C&MS 626, EXCEPT THAT THE SPACING SHALL BE AS PER TRAFFIC SCD MT-101.70. OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO C&MS 614.03 AND SCD MT-101.70. WHEN THE PB CONTAINS GLARE SCREEN, ONE SET OF THREE VERTICAL STRIPES OF SHEETING SHALL BE CONSIDERED EQUIVALENT TO AN OBJECT MARKER, ONE-WAY.

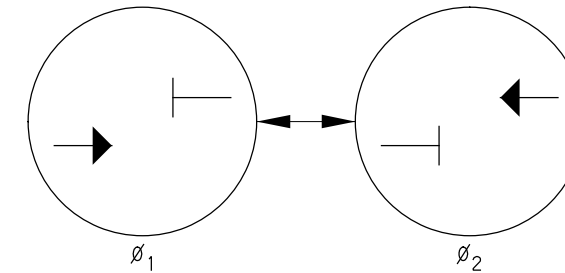
PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING EACH OF THE ABOVE ITEMS.

1-2-3-4



12 INCH

SIGNAL INDICATORS



PHASING DIAGRAM

COLOR SEQUENCE CHART

INDICATIONS FACINGS	No	Ø1			Ø2		
		1	2	3	1	2	3
EAST BOUND SR 550	1	G	Y	R	R	R	R
	2	G	Y	R	R	R	R
WEST BOUND SR 550	3	R	R	R	G	Y	R
	4	R	R	R	G	Y	R

TIMING CHART

INTERVAL	Ø1			Ø2		
	1	2	3	1	2	3
GREEN	16			16		
YELLOW CHANGE		3			3	
ALL RED CLEARANCE			11			11
CYCLE LENGTH	60					

ITEM 614, BARRIER REFLECTORS AND/OR OBJECT MARKERS

BARRIER REFLECTORS AND/OR OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO CMS 626, EXCEPT THAT THE SPACING SHALL BE 50 FEET

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GENERAL NOTES

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SHEET NUM.										PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
5	7	8	9	11	13					01/STR/OT							
											LUMP	201	11000	LS		ROADWAY	
	26		25								51	202	23000	51	SY	CLEARING AND GRUBBING	
			45								45	202	35100	45	FT	PAVEMENT REMOVED	
		150									150	202	38000	150	FT	PIPE REMOVED, 24" AND UNDER	
			23								23	SPECIAL	20270000	23	FT	GUARDRAIL REMOVED	
			1								1	202	98100	1	EACH	FILL AND PLUG EXISTING CONDUIT	4
	75										75	203	20000	75	CY	REMOVAL MISC.: HEADWALL	9
	39										39	204	10000	39	SY	EMBANKMENT	
		150									150	606	13000	150	FT	SUBGRADE COMPACTION	
																GUARDRAIL, TYPE 5	
																EROSION CONTROL	
			2								2	601	32300	2	CY	ROCK CHANNEL PROTECTION, TYPE D WITH FILTER	
			4								4	601	32100	4	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	
	116										116	659	10000	116	SY	SEEDING AND MULCHING	
	0.02										0.02	659	20000	0.02	TON	COMMERCIAL FERTILIZER	
	0.03										0.03	659	31000	0.03	ACRE	LIME	
	0.4										0.4	659	35000	0.4	MGAL	WATER	
											3,000	832	30000	3,000	EACH	EROSION CONTROL	
																DRAINAGE	
			0.53								0.53	602	20000	0.53	CY	CONCRETE MASONRY	
			49								49	611	11700	49	FT	27" CONDUIT, TYPE A	
		2									2	611	99710	2	EACH	PRECAST REINFORCED CONCRETE OUTLET	
			91								91	613	41200	91	CY	LOW STRENGTH MORTAR BACKFILL	
																PAVEMENT	
	7		17								24	301	46000	24	CY	ASPHALT CONCRETE BASE, PG64-22	
	8		17								25	304	20000	25	CY	AGGREGATE BASE	
	98		4								102	407	20000	102	GAL	NON-TRACKING TACK COAT	
	70										70	408	10000	70	GAL	PRIME COAT	
	51		4								55	441	50000	55	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
	15										15	617	10100	15	CY	COMPACTED AGGREGATE	
																TRAFFIC CONTROL	
	10										10	621	00100	10	EACH	RPM	
	10										10	621	54000	10	EACH	RAISED PAVEMENT MARKER REMOVED	
		3									3	626	00110	3	EACH	BARRIER REFLECTOR, TYPE 2	
		2									2	630	85100	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
		2									2	630	86010	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND REERECTION	
	0.15										0.15	642	00094	0.15	MILE	EDGE LINE, 6"	
	0.08										0.08	642	00290	0.08	MILE	CENTER LINE	
																RETAINING WALLS	
					746						746	507	00400	746	FT	STEEL PILES, MISC.: SOLDIER PILES W24X104	3,10-13
	6										6	511	46511	6	CY	CLASS QC1 CONCRETE, FOOTING, AS PER PLAN	4
	52										52	518	21200	52	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
		83									83	518	40000	83	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
		20									20	518	40012	20	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE	
					499						499	524	94703	499	FT	DRILLED SHAFTS, 36" DIAMETER, ABOVE BEDROCK, AS PER PLAN	3,10-13
					255						255	524	94705	255	FT	DRILLED SHAFTS, 36" DIAMETER, INTO BEDROCK, AS PER PLAN	3,10-13
					16						16	524	95000	16	FT	DRILLED SHAFTS, MISC.: EXTENSION	3,10-13
				51							51	SPECIAL	53000400	51	EACH	STRUCTURES: PRECAST CONCRETE LAGGING NO. 1	3,10-13
				1							1	SPECIAL	53000400	1	EACH	STRUCTURES: PRECAST CONCRETE LAGGING NO. 2	3,10-13
																MISCELLANEOUS STRUCTURE	
			LUMP								LUMP	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
																MAINTENANCE OF TRAFFIC	
		3									3	614	13360	3	EACH	OBJECT MARKER, TWO WAY	
	4										4	614	12339	4	EACH	WORK ZONE IMPACT ATTENUATOR (BIDIRECTIONAL), AS PER PLAN	5
	60										60	615	25001	60	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN	5
	650										650	622	41001	650	FT	PORTABLE BARRIER, 32", AS PER PLAN	5
																INCIDENTALS	
	LUMP										LUMP	614	11001	LS		MAINTAINING TRAFFIC, AS PER PLAN	5
											LUMP	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
											LUMP	624	10000	LS		MOBILIZATION	

GENERAL SUMMARY

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ITEM 301 - 8" ASPHALT CONCRETE BASE COURSE, PG64-22

STA. 756+87 TO STA. 757+45
 58 FT x 4.5 FT x (8 IN/12)/27 = 6.4 CY

A TOTAL OF 7 CY TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 304 - 8" AGGREGATE BASE

STA. 756+87 TO STA. 757+45
 58 FT x 5.0 FT x (8 IN/12)/27 = 7.2 CY

A TOTAL OF 8 CY TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 441 - 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22

(FIRST COURSE)
 STA. 756+87 TO STA. 757+45
 58 FT x 4.0 FT x (1.5 IN/12)/27 = 1.1 CY

(OVERLAY)

STA. 755+50 TO STA. 759+50
 400 FT x AVE. 27.0 FT x (1.5 IN/12)/27 = 50.0 CY

A TOTAL OF 51 CY TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 407 - NON-TRACKING TACK COAT

RATE = 0.08 GAL/SY (APPLIED ONTO EXISTING PAVEMENT)
 STA. 755+50 TO STA. 759+50
 400 FT x AVE. 27.0 FT/9 x 0.08 = 96 GAL.

RATE = 0.05 GAL/SY (APPLIED TO PAVEMENT REPAIR)
 STA. 756+87 TO STA. 757+45
 58 FT x AVE. 4.0 FT/9 x 0.05 = 1.3 GAL.

A TOTAL OF 98 GAL TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 642 - EDGE LINE, 6"

STA. 755+50 TO STA. 759+50
 400 FT x 2 / 5280 FT = 0.15 MILE

A TOTAL OF 0.15 MILE TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 642 - CENTERLINE

STA. 755+50 TO STA. 759+50
 400 FT / 5280 FT = 0.08 MILE

A TOTAL OF 0.08 MILE TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 621 - RPM / RPM REMOVED

STA. 755+50 TO STA. 759+50
 400 FT / 40 FT SPACING = 10 EA

A TOTAL OF 10 EA TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 617 - COMPACTED AGGREGATE

STA. 755+50 TO STA. 759+50
 400 FT x 2 FT x (3 IN / 12) / 27 = 7.4 CY
 STA. 755+65 TO STA. 759+50
 385 FT x 2 FT x (3 IN / 12) / 27 = 7.1 CY

A TOTAL OF 15 CY TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 408 - PRIME COAT

STA. 755+50 TO STA. 759+50
 400 FT x 2 FT / (9 SY/SF) x (0.4 GAL/SY) = 35.6 GAL
 STA. 755+65 TO STA. 759+50
 385 FT x 2 FT / (9 SY/SF) x (0.4 GAL/SY) = 34.2 GAL.

A TOTAL OF 70 GAL TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 204 - SUBGRADE COMPACTION

STA. 756+87 TO STA. 757+45
 58 FT x 6.0 FT / (9 SY/SF) = 38.7 SY

A TOTAL OF 39 SY TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 518 - POROUS BACKFILL WITH FILTER FABRIC

ITEM 518 - POROUS BACKFILL		
STATION	HEIGHT (FT)	VOLUME (CF)
1756+72.93	0	
	3.6	31.05
1756+78.68	5.1	
	4.3	162.15
1756+90.18	4.8	
	4.4	158.70
1757+01.68	6.9	
	6.4	229.43
1757+13.18	8.9	
	6.4	395.89
1757+30.43	4.8	
	4.3	313.95
1757+53.43	4.8	
	1.3	105.23
1757+64.93		
TOTAL (CY) CARRIED TO GENERAL SUMMARY		52

ITEM 202 - PAVEMENT REMOVED

STA. 756+87 TO STA. 757+45
 58 FT x AVE. 4.0 FT / (9 SY/SF) = 25.8 SY

A TOTAL OF 26 SY TO BE CARRIED TO THE GENERAL SUMMARY.

ITEM 511 - CLASS QCI CONCRETE, FOOTING, AS PER PLAN

@ WALL STA. 1756+72 TO STA. 1757+08
 36 FT x 3.5 FT x (6 IN / (12 IN/FT)) / (27 CY/CF) = 2.3 CY

@ WALL STA. 1757+13 TO STA. 1757+19
 6 FT x 3.5 FT x (6 IN / (12 IN/FT)) / (27 CY/CF) = 0.4 CY

@ WALL STA. 1757+24 TO STA. 1757+67
 43 FT x 3.5 FT x (6 IN / (12 IN/FT)) / (27 CY/CF) = 2.8 CY

A TOTAL OF 6 CY TO BE CARRIED TO THE GENERAL SUMMARY.

EARTHWORK CALCULATIONS

STATION	EXCAVATION		EMBANKMENT		S & M	
	SF	CY	SF	CY	FT	SY
756+60.00	0		0		0	
756+70.00	0	0	12	3	15	3
756+75.00	0	0	12	3	15	3
757+00.00	0	0	24	17	55	33
757+50.00	0	0	20	41	17	67
757+58.30	0	0	21	7	17	6
757+68.30	0	0	0	4	0	4
	0	0	0	0	0	0
TOTALS TO GENERAL SUMMARY		0		75		116

SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659 - SEEDING AND MULCHING = 116 SQ. YD.

659 - COMMERCIAL FERTILIZER 116 SY x 1 TON/7410 SY = 0.02 TON

659 - LIME 116 SQ. YD. x 9 / 43,560 = 0.03 ACRES

659 - WATER 116 SY x 0.0027M. GAL/SY = 0.4 M. GAL.

TOTALS CARRIED TO THE GENERAL SUMMARY.

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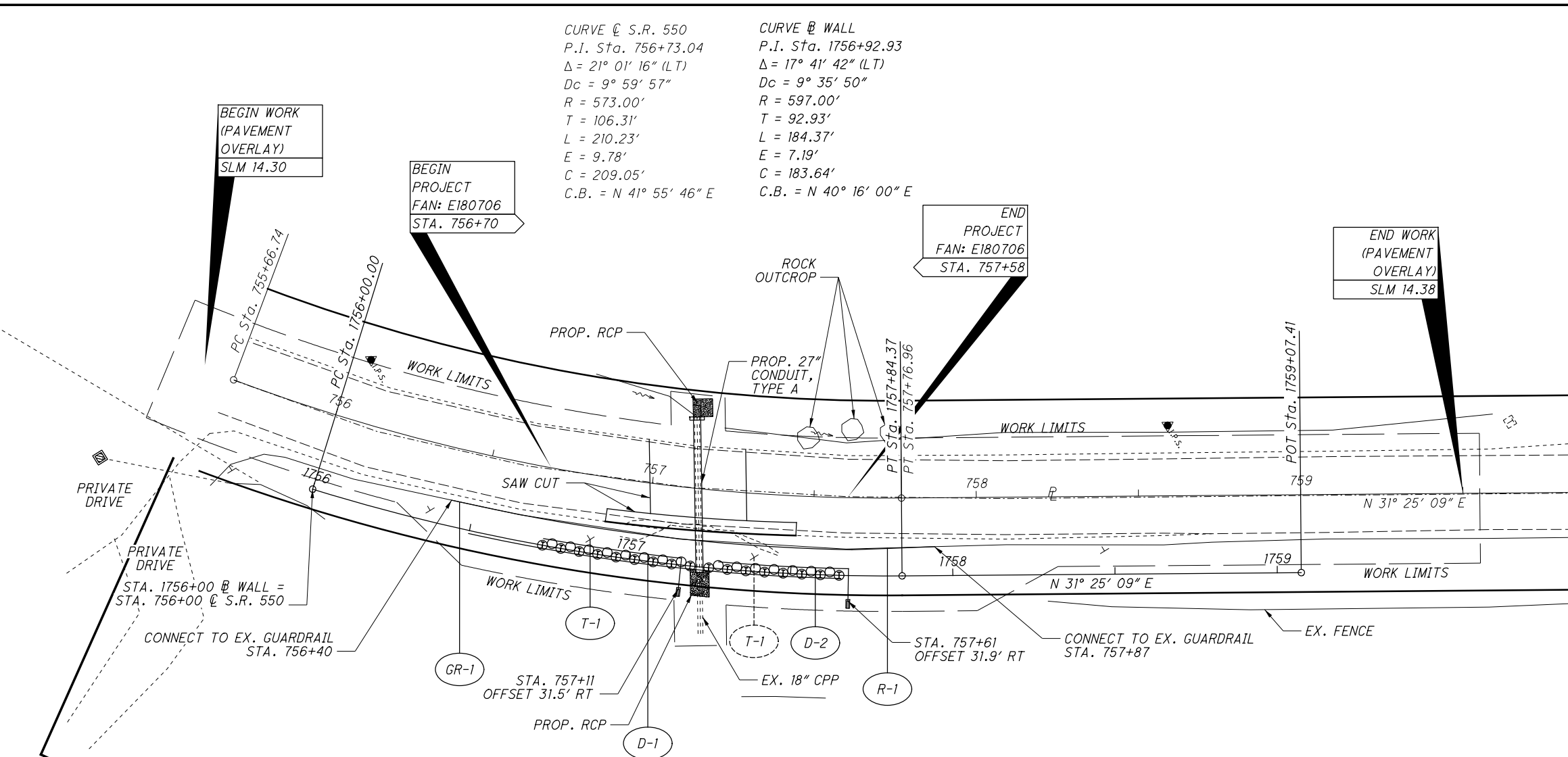
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CALCULATIONS

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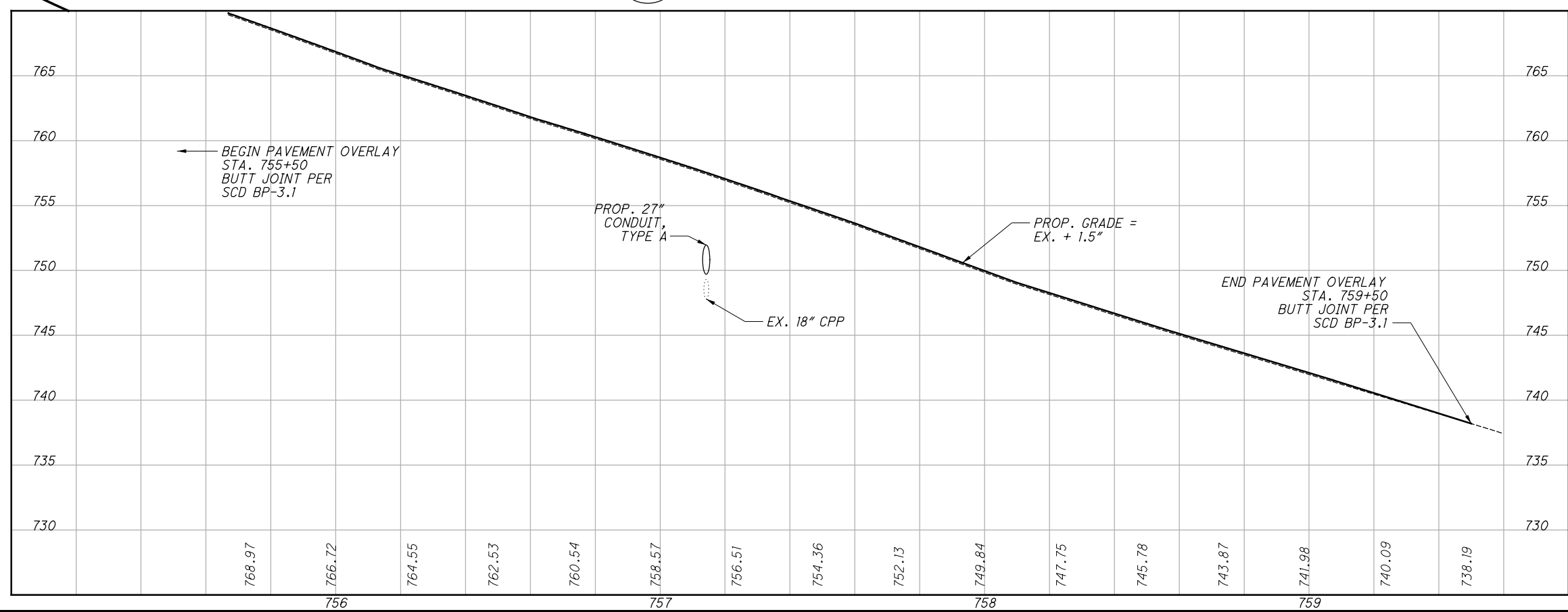
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CURVE @ S.R. 550
 P.I. Sta. 756+73.04
 $\Delta = 21^\circ 01' 16''$ (LT)
 $D_c = 9^\circ 59' 57''$
 $R = 573.00'$
 $T = 106.31'$
 $L = 210.23'$
 $E = 9.78'$
 $C = 209.05'$
 $C.B. = N 41^\circ 55' 46'' E$

CURVE @ WALL
 P.I. Sta. 1756+92.93
 $\Delta = 17^\circ 41' 42''$ (LT)
 $D_c = 9^\circ 35' 50''$
 $R = 597.00'$
 $T = 92.93'$
 $L = 184.37'$
 $E = 7.19'$
 $C = 183.64'$
 $C.B. = N 40^\circ 16' 00'' E$

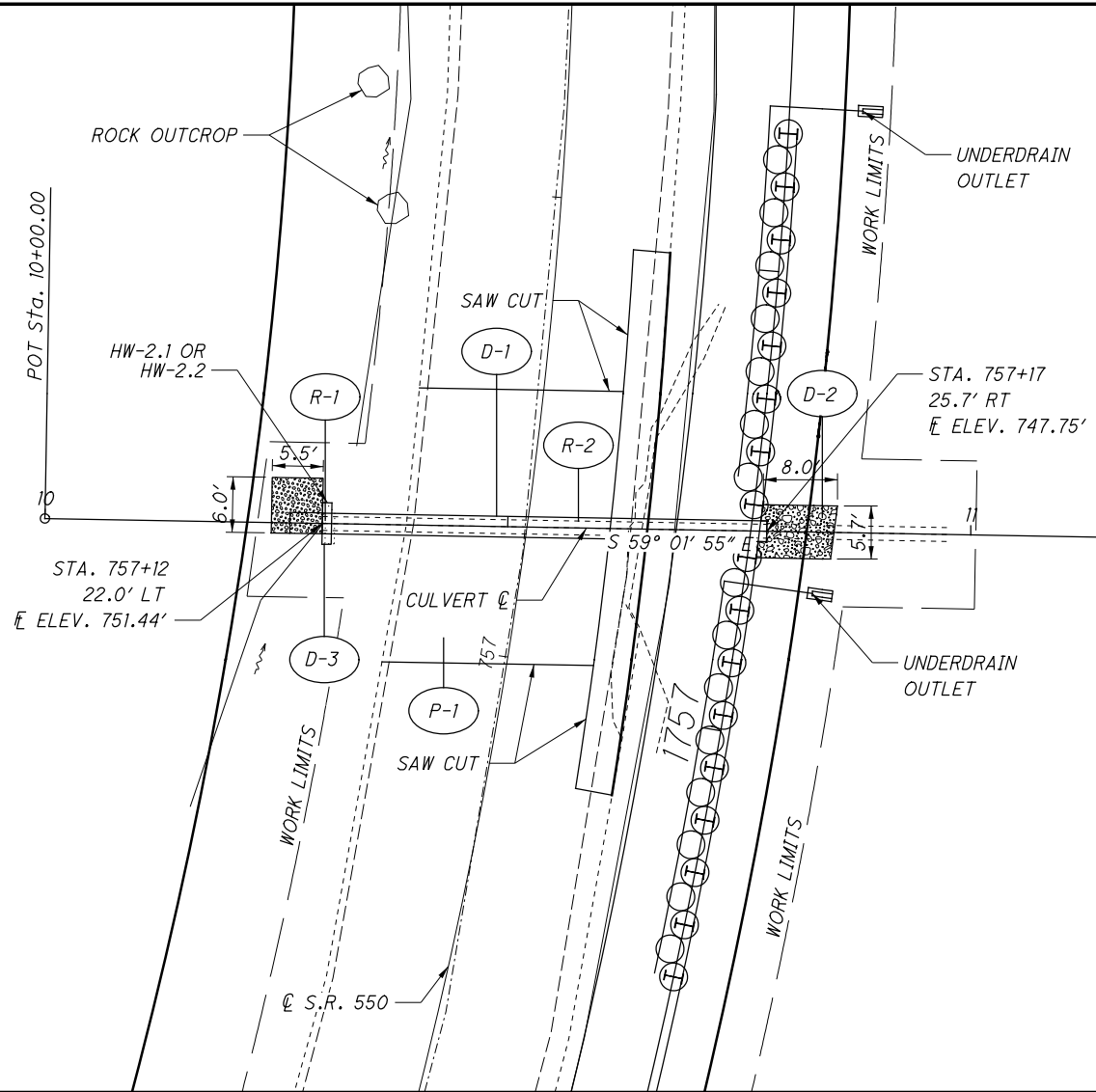


REF NO.	STATION		SIDE	QUANTITY	UNIT	DESCRIPTION
	FROM	TO				
R-1	756+40	757+87	RT	150	FT	GUARDRAIL REMOVED
GR-1	756+40	757+87	RT			
D-1	756+70	757+11	RT	43	FT	6" PERF. CORR. PLASTIC PIPE
D-2	757+22	757+61	RT	40	FT	6" NON-PERF. CORR. PLASTIC PIPE
T-1	756+84	757+33	RT			
TOTALS CARRIED TO GENERAL SUMMARY				150		
				202		
				518		
				518		
				611		
				606		
				626		
				614		
				630		
				630		

0 20 40
HORIZONTAL SCALE IN FEET

PLAN AND PROFILE
STA. 755+75 TO STA. 759+75

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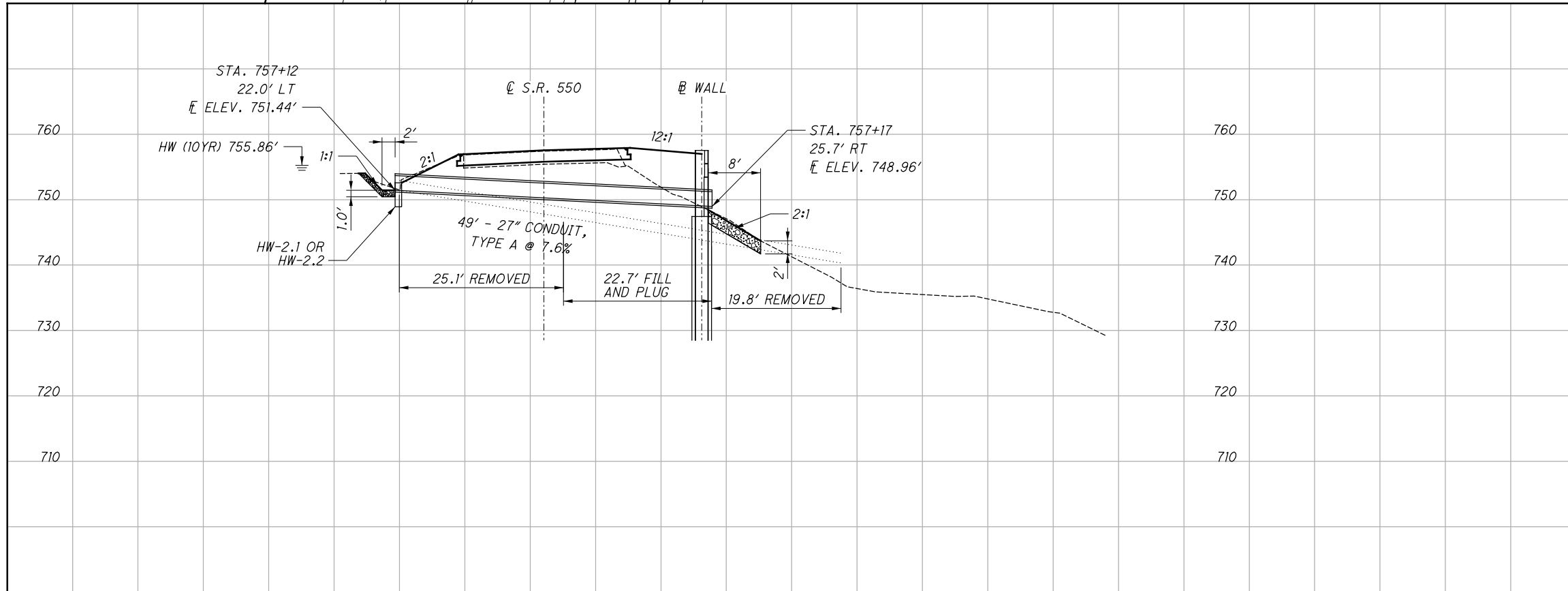


EXISTING STRUCTURE
 STA. 757+14
 TYPE: CORRUGATED PLASTIC
 SIZE: 18" CIRCULAR
 SKEW: 6°43' R.F.
 ALIGNMENT: TANGENT
 CONDITION: POOR

PROPOSED CULVERT
 TYPE: 27" CONDUIT TYPE A
 SKEW: 6°43' R.F.
 ROADWAY: 26' ± PAVED WIDTH
 ALIGNMENT: TANGENT

CALCULATIONS
 DRAINAGE AREA: 7.6 AC
 Q(10): 22.0 CFS
 HW(10): 755.86'
 pH: 7

ITEM 441 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448) PG64-22, 1.5"
 $29.9' \times 22.0' \times (T=1.5' / 12 / 27) = 3.1 \text{ CU. YDS.}$
ITEM 302 ASPHALT CONCRETE BASE PG64-22, 8"
 $29.9' \times 22.5' \times (T=8' / 12 / 27) = 16.6 \text{ CU. YDS.}$
ITEM 304 AGGREGATE BASE, 8"
 $29.9' \times 23.0' \times (T=8' / 12 / 27) = 17.0 \text{ CU. YDS.}$
ITEM 613 LOW STRENGTH MORTAR BACKFILL
 $(A=106 \text{ SQ. FT.}) \times (L=23.0' / 27) = 90.3 \text{ CU. YDS.}$
ITEM 407 TACK COAT
 $29.9' \times 22.0' / 9 \times 0.05 = 3.7 \text{ GAL}$
ITEM 601 ROCK CHANNEL PROTECTION, TYPE B, WITH FILTER
 $8.0' \times 5.8' \times 2' / 27 = 3.44 \text{ CY}$
ITEM 601 ROCK CHANNEL PROTECTION, TYPE D WITH FILTER
 $6.0' \times 5.5' \times 1.0' / 27 = 1.2 \text{ CY}$



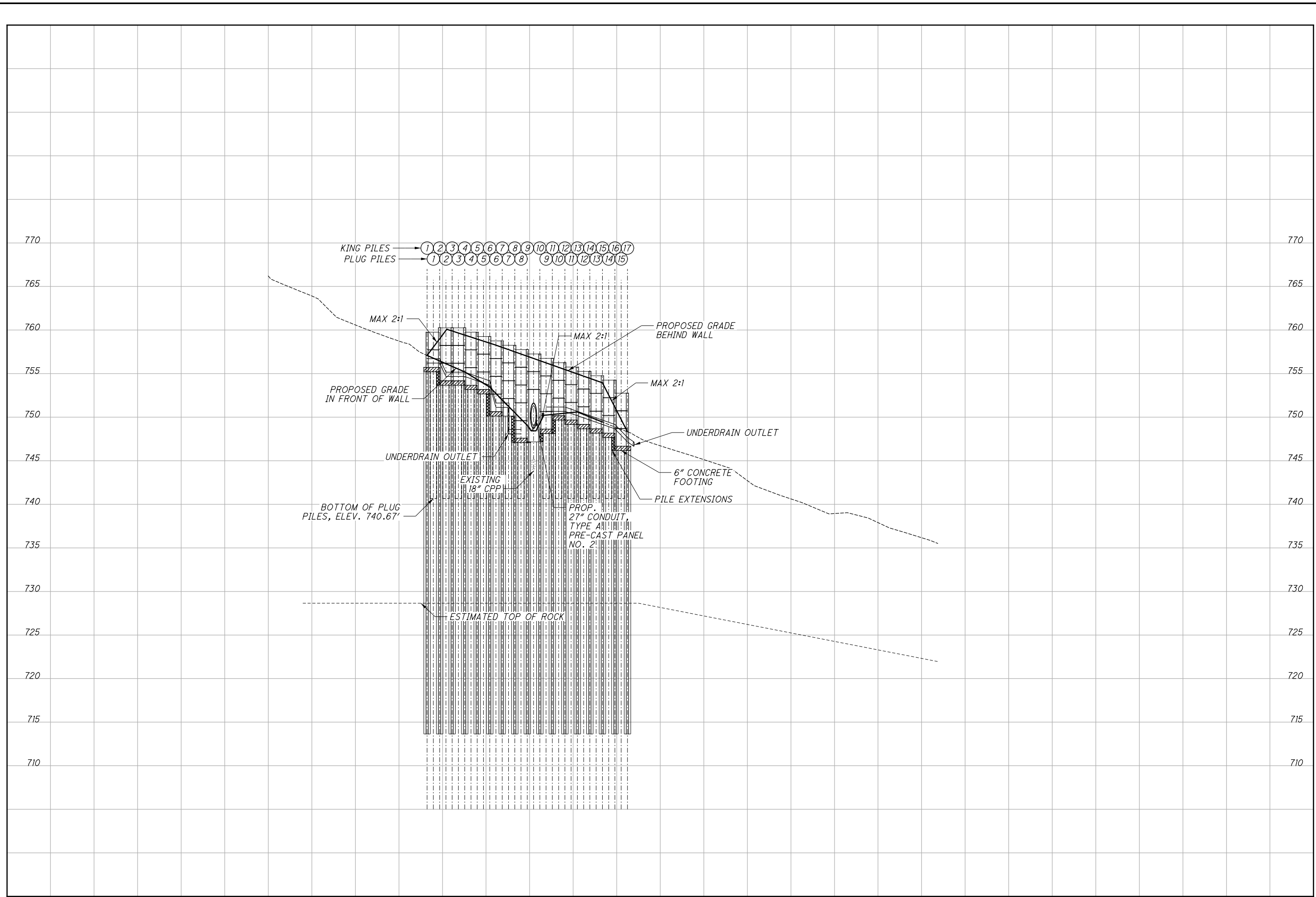
REF NO.	STATION		SIDE	DESCRIPTION	UNIT	QUANTITY	MATERIAL	REMARKS
	FROM	TO						
R-1	757+14	757+14	LT	ROCK CHANNEL PROTECTION, TYPE B, WITH FILTER	FT	1		
R-2	757+14	757+14	LT/RT	ROCK CHANNEL PROTECTION, TYPE D WITH FILTER	FT	23		
D-1	757+14	757+14	LT/RT	PIPE REMOVED, 24" AND UNDER	FT	45		
D-2	757+14	757+14	LT	PAVEMENT REMOVED	SY	25		
D-3	757+14	757+14	LT	PAVEMENT REMOVED	SY	25		
TOTALS CARRIED TO GENERAL SUMMARY						45		
TOTALS CARRIED TO GENERAL SUMMARY						202		
P-1	756+99	757+29	LT/RT	REMOVAL MISC. HEADWALL	EACH	1		
TOTALS CARRIED TO GENERAL SUMMARY						1		
TOTALS CARRIED TO GENERAL SUMMARY						23		
TOTALS CARRIED TO GENERAL SUMMARY						49		
TOTALS CARRIED TO GENERAL SUMMARY						2		
TOTALS CARRIED TO GENERAL SUMMARY						4		
TOTALS CARRIED TO GENERAL SUMMARY						4		
TOTALS CARRIED TO GENERAL SUMMARY						407		
TOTALS CARRIED TO GENERAL SUMMARY						0.53		
TOTALS CARRIED TO GENERAL SUMMARY						0.53		
TOTALS CARRIED TO GENERAL SUMMARY						441		
TOTALS CARRIED TO GENERAL SUMMARY						613		

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CULVERT DETAILS
STA. 757+14

SCALE: 1" = 20' HORIZONTAL
 1" = 2' VERTICAL

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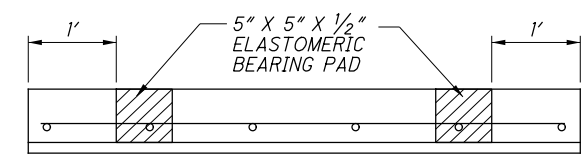
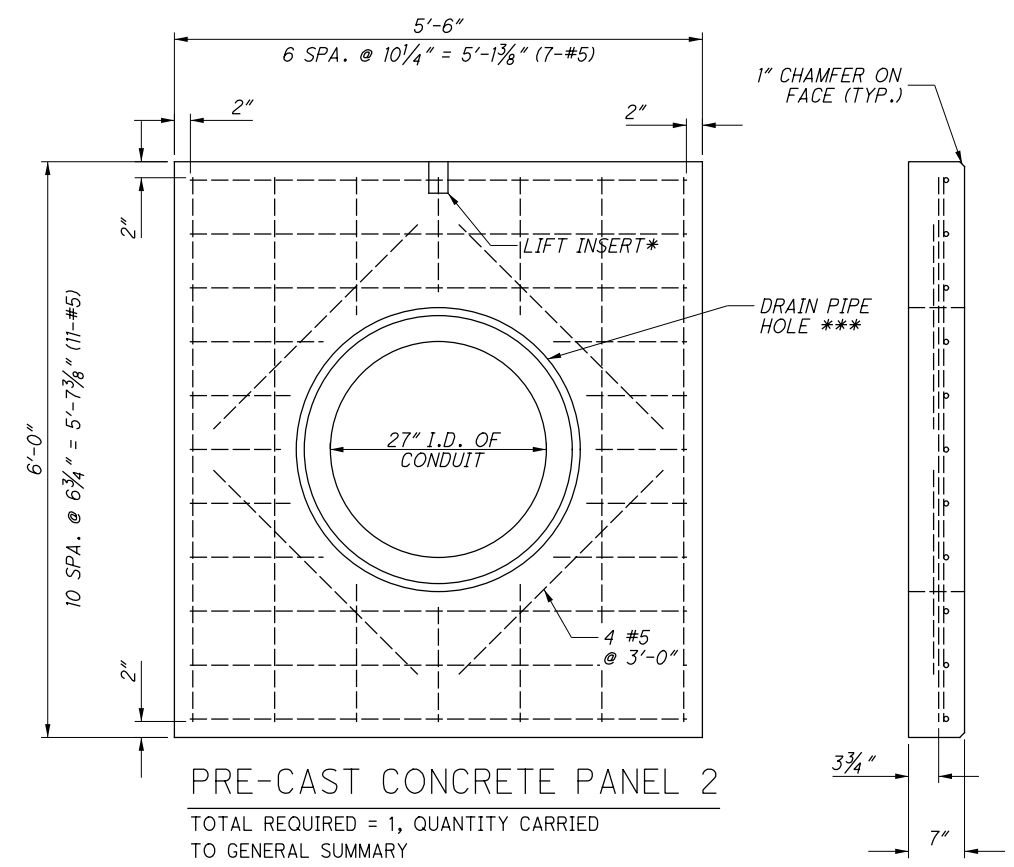
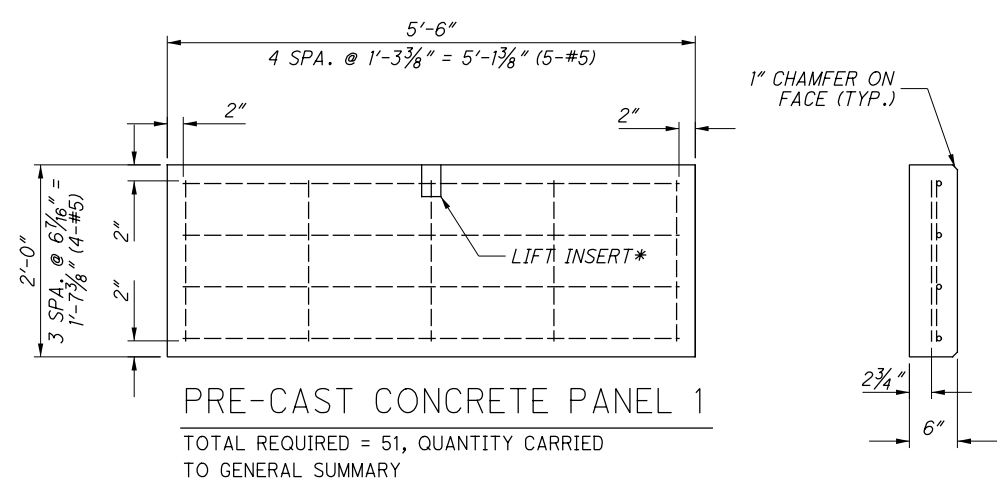


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PROFILE

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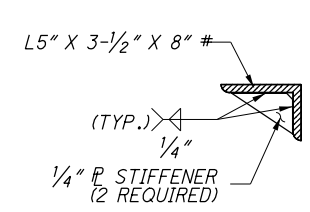
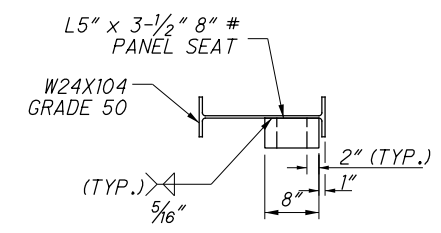
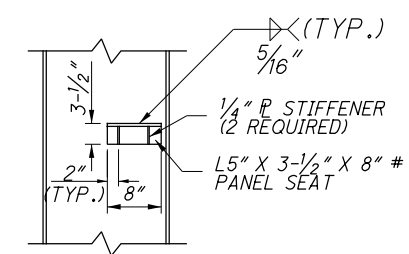
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ELASTOMERIC BEARING PAD TYPICAL DETAIL.**

NOTES:

- * PRECAST PANEL MANUFACTURER TO DESIGN LIFT INSERT. MANUFACTURER TO DETERMINE NUMBER OF INSERTS FOR EACH PANEL.
- ** PRICE OF ELASTOMERIC BEARING PADS SHALL BE INCLUDED IN THE UNIT PRICE OF THE PRECAST CONCRETE PANELS.
- *** THE PIPE OPENING SHALL BE THE OUTSIDE DIAMETER OF THE PIPE SUPPLIED PLUS 2". THE CONTRACTOR SHALL GROUT BETWEEN THE PIPE AND PANEL OPENING WITH NON-SHRINK GROUT PER 705.20. PAYMENT FOR PROVIDING AND INSTALLING GROUT SHALL BE INCLUDED IN ITEM SPECIAL - RETAINING WALL MISC.: PRECAST LAGGING.



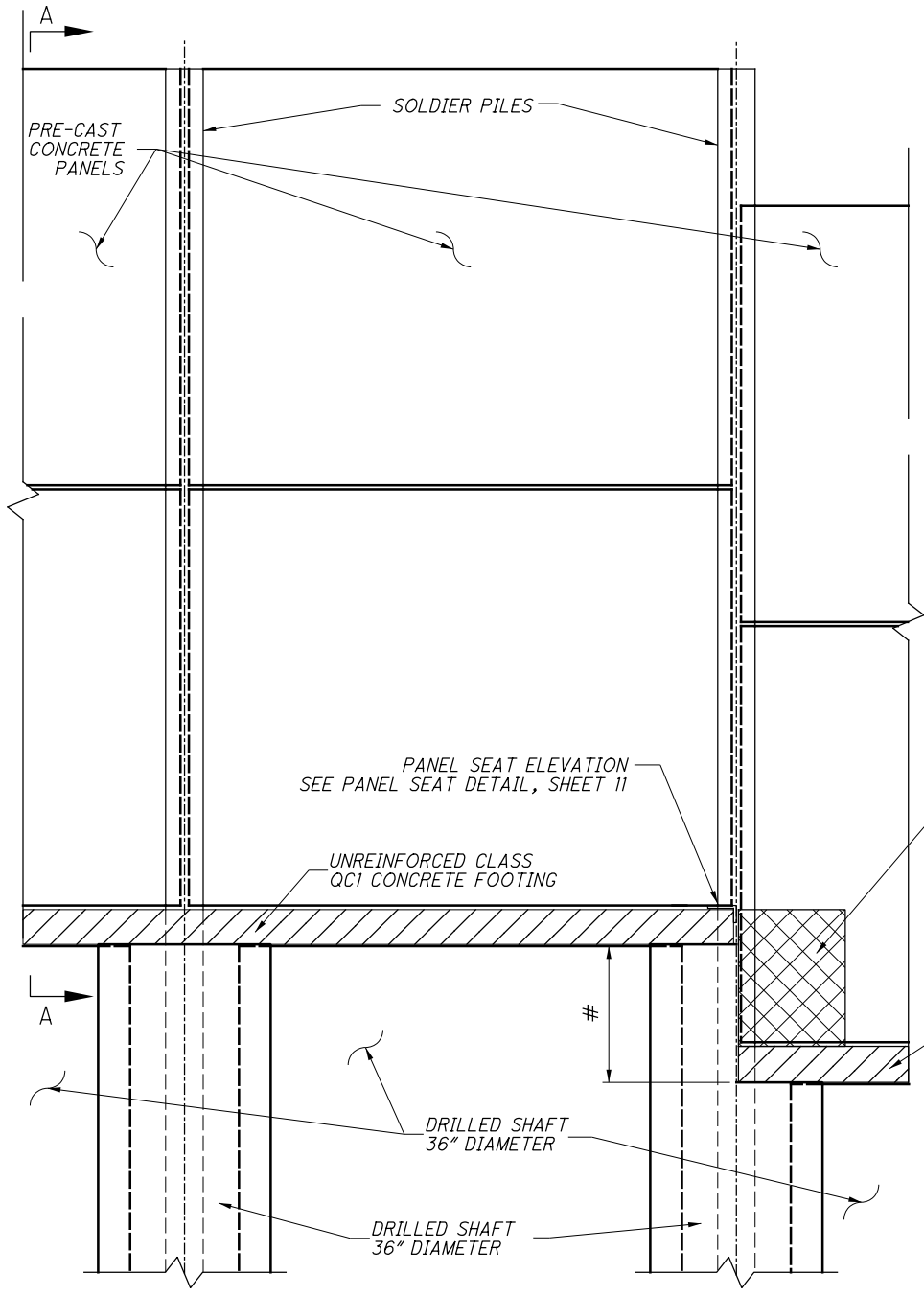
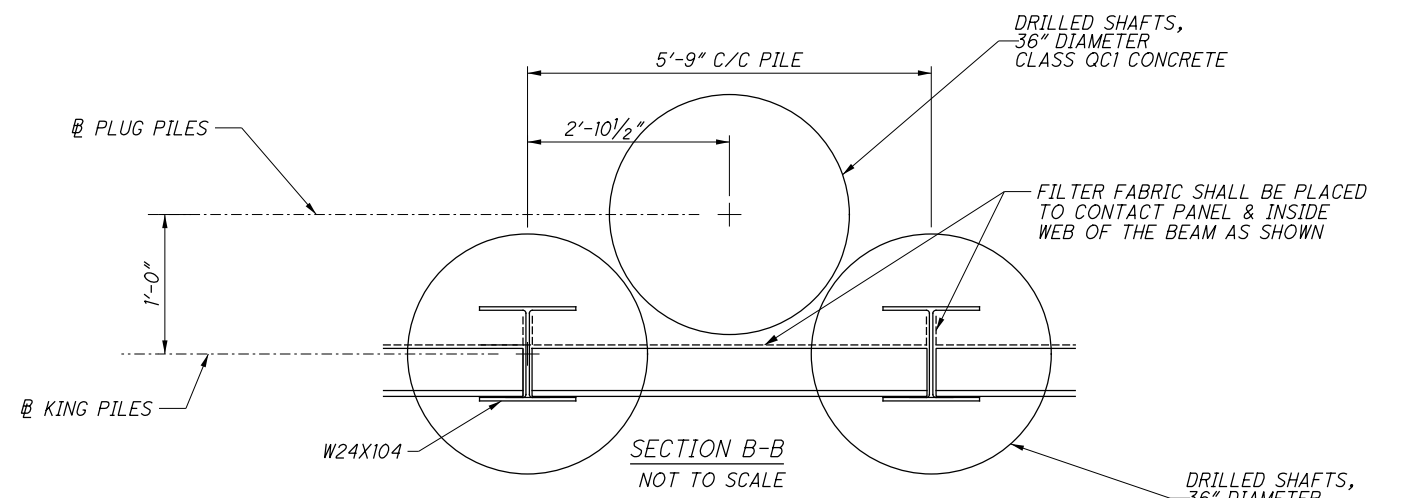
PANEL SEAT DETAIL.

- # PANEL SEAT, STIFFENERS FOR PANEL SEAT STEEL IS INCLUDED IN PAYMENT FOR ITEM 507 - SOLDIER PILE, MISC.: SOLDIER PILES W24X104.

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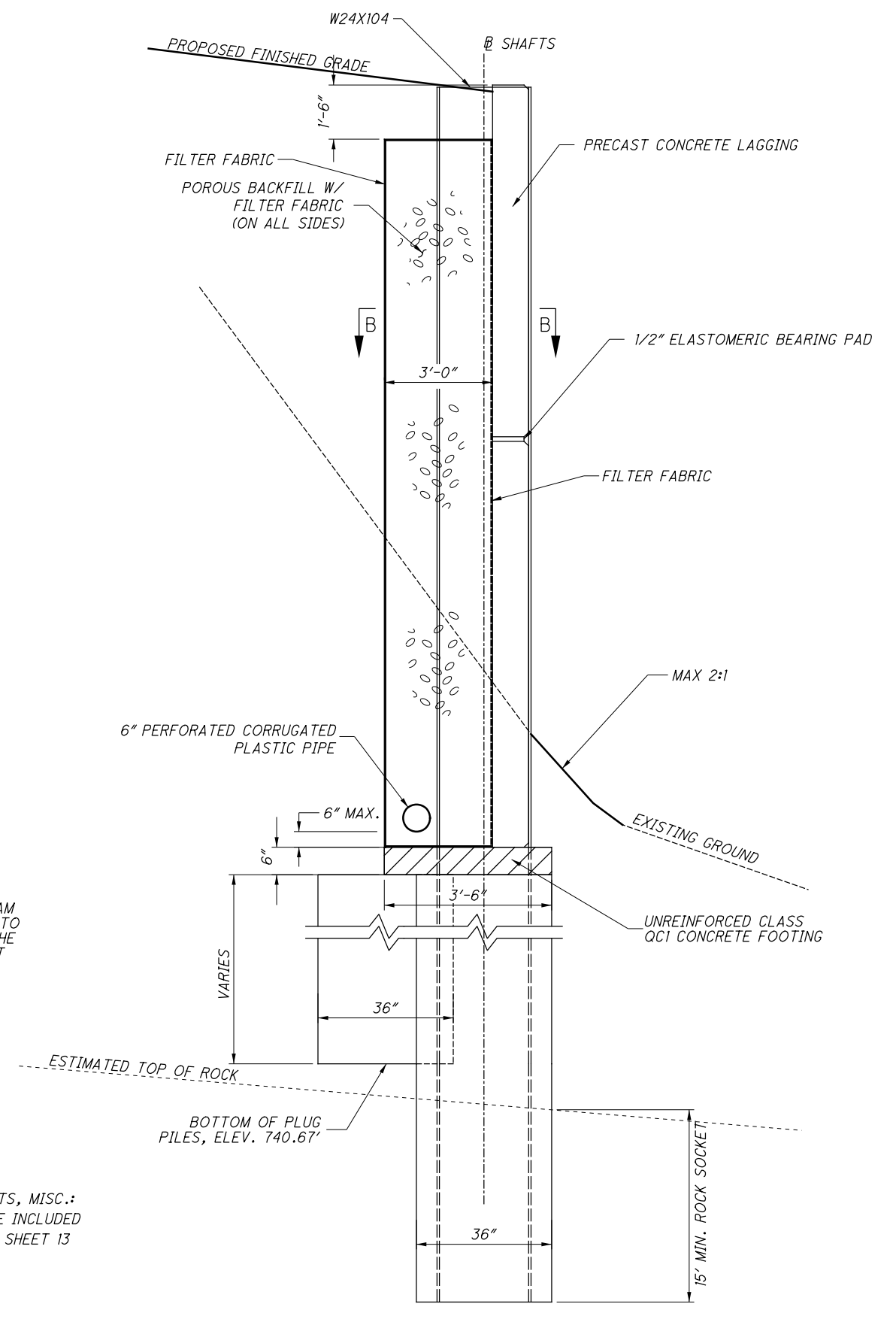
DRILLED SHAFT DETAILS

WAS-550-14.30



BLOCK OUT DRILLED SHAFT CONCRETE WITH FOAM INSULATION OR SIMILAR TO PROVIDE SUPPORT TO THE LOWER PANEL. THE COST TO BLOCK OUT THE DRILLED SHAFT WILL BE INCLUDED FOR PAYMENT UNDER ITEM 524 - DRILLED SHAFT, MISC.: EXTENSION.

NOTE:
- ITEM 524 - DRILLED SHAFTS, MISC.: EXTENSION. QUANTITIES ARE INCLUDED IN DRILLED SHAFT DETAILS, SHEET 13



SECTION A-A
NOT TO SCALE

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DRILLED SHAFT SUMMARY (KING PILE)										
SHAFT No.	CENTERLINE DRILLED SHAFT (KING PILE) STA.	CENTERLINE S.R. 550 STA.	CENTERLINE S.R. 550 OFFSET	BOTTOM ELEVATION OF SHAFT	TOP ELEVATION OF SHAFT	TOP ELEVATION OF LAGGING WALL	ESTIMATED TOP OF ROCK ELEVATION	ITEM 524: 36" DIA. DRILLED SHAFTS INTO BEDROCK		ITEM 507: STEEL PILES, MISC.: SOLDIER PILES W24X104
								FEET	FEET	
1	1756 + 72.93	756 + 70.00	24.00	RT	713.64	755.21	728.64	15.00	26.57	46.11
2	1756 + 78.68	756 + 75.52	24.00	RT	713.64	753.67	728.64	15.00	25.03	46.61
3	1756 + 84.43	756 + 81.04	24.00	RT	713.64	753.67	728.64	15.00	25.03	46.61
4	1756 + 90.18	756 + 86.55	24.00	RT	713.64	753.17	728.64	15.00	24.53	46.61
5	1756 + 95.93	756 + 92.07	24.00	RT	713.64	752.67	728.64	15.00	24.03	46.11
6	1757 + 01.68	756 + 97.59	24.00	RT	713.64	750.13	728.64	15.00	21.49	45.61
7	1757 + 07.43	757 + 03.11	24.00	RT	713.64	750.13	728.64	15.00	21.49	45.11
8	1757 + 13.18	757 + 08.63	24.00	RT	713.64	747.08	728.64	15.00	18.44	44.61
9	1757 + 18.93	757 + 14.15	24.00	RT	713.64	747.08	728.64	15.00	18.44	44.11
10	1757 + 24.68	757 + 19.67	24.00	RT	713.64	747.17	728.64	15.00	18.53	43.61
11	1757 + 30.43	757 + 25.19	24.00	RT	713.64	748.13	728.64	15.00	19.49	43.11
12	1757 + 36.18	757 + 30.71	24.00	RT	713.64	749.17	728.64	15.00	20.53	42.61
13	1757 + 41.93	757 + 36.22	24.00	RT	713.64	748.67	728.64	15.00	20.03	42.11
14	1757 + 47.68	757 + 41.74	24.00	RT	713.64	748.17	728.64	15.00	19.53	41.61
15	1757 + 53.43	757 + 47.26	24.00	RT	713.64	747.67	728.64	15.00	19.03	41.11
16	1757 + 59.18	757 + 52.78	24.00	RT	713.64	746.17	728.64	15.00	17.53	40.61
17	1757 + 64.93	757 + 58.30	24.00	RT	713.64	746.17	728.64	15.00	17.53	39.11
TOTALS CARRIED TO GENERAL SUMMARY								255.00	357.25	745.37
SUBTOTAL										

DRILLED SHAFT SUMMARY (PLUG PILE)						
SHAFT No.	CENTERLINE DRILLED SHAFT (PLUG PILE) STA.	CENTERLINE S.R. 550 STA.	CENTERLINE S.R. 550 OFFSET	BOTTOM ELEVATION OF SHAFT	TOP ELEVATION OF SHAFT	ITEM 524: 36" DIA. DRILLED SHAFTS ABOVE BEDROCK
						FEET
1	1756 + 75.81	756 + 72.76	23.00	RT	740.67	14.54
2	1756 + 81.56	756 + 78.28	23.00	RT	740.67	13.00
3	1756 + 87.31	756 + 83.80	23.00	RT	740.67	13.00
4	1756 + 93.06	756 + 89.32	23.00	RT	740.67	12.50
5	1756 + 98.81	756 + 94.84	23.00	RT	740.67	12.00
6	1757 + 04.56	757 + 00.35	23.00	RT	740.67	9.46
7	1757 + 10.31	757 + 05.87	23.00	RT	740.67	7.41
8	1757 + 16.06	757 + 11.39	23.00	RT	740.67	6.41
	- + -	- + -				
9	1757 + 27.56	757 + 22.43	23.00	RT	740.67	7.46
10	1757 + 33.31	757 + 27.95	23.00	RT	740.67	9.00
11	1757 + 39.06	757 + 33.47	23.00	RT	740.67	8.50
12	1757 + 44.81	757 + 38.99	23.00	RT	740.67	8.00
13	1757 + 50.56	757 + 44.50	23.00	RT	740.67	7.50
14	1757 + 56.31	757 + 50.03	23.00	RT	740.67	7.00
15	1757 + 62.06	757 + 55.55	23.00	RT	740.67	5.50
SUBTOTAL						141.28
SUBTOTAL						357.25
TOTAL CARRIED TO GENERAL SUMMARY						498.53

PROJECT DESCRIPTION

THE WAS-550-14.30 PROJECT INVOLVES THE EXPLORATION AND REPAIR OF A LANDSLIDE THAT HAS IMPACTED THE SR 550 ROADWAY ABOUT 0.6 MILES WEST OF THE INTERSECTION WITH RIGGENBACH HILL ROAD.

HISTORIC RECORDS

A STRUCTURE FOUNDATION INVESTIGATION SHEET DATED APRIL 29, 1985 WAS OBTAINED FROM ODOT HISTORIC RECORDS FOR THE WAS-550-14.65 BRIDGE OVER A TRIBUTARY OF BROWNS RUN. THE INVESTIGATION FOR THE WAS-550-14.65 PROJECT INCLUDED ADVANCEMENT OF TWO SOIL BORINGS TO DEPTHS OF 16 TO 20 FEET BELOW EXISTING GRADE. THE BORINGS ENCOUNTERED 10 TO 12.5 FEET OF VERY LOOSE TO LOOSE SANDY SILT, SILT, AND GRAVEL WITH SAND AND SILT (A-4a, A-4b AND A-2-4) AND SOFT SILT AND CLAY (A-6a). BENEATH THE SOIL OVERBURDEN, BROWN, REDDISH-BROWN AND/OR GRAY WEATHERED MUDSTONE AND SHALE WAS ENCOUNTERED TO THE BORING TERMINATION DEPTHS. GROUNDWATER WAS NOTED IN THE BORINGS AT DEPTHS RANGING FROM 7.5 TO 12.5 FEET BELOW EXISTING GRADE.

A SOIL PROFILE SHEET FOR THE WAS-550-15.12 PROJECT WAS OBTAINED FROM ODOT HISTORIC RECORDS FOR THE PROPOSED CONSTRUCTION OF A SEGMENT OF SR 550 BEGINNING ABOUT 0.4 MILES EAST OF THE CURRENT PROJECT. THE PLANNED GRADE CHANGES INCLUDED 10 FEET MAXIMUM CUTS AND 14 FEET MAXIMUM FILL HEIGHTS. A TOTAL OF NINE (9) BORINGS WERE ADVANCED ALONG THE PLANNED ROADWAY ALIGNMENT TO DEPTHS RANGING FROM 13 TO 23 FEET BELOW EXISTING GRADE. THE BORINGS PRIMARILY ENCOUNTERED SANDY SILT, SILT AND CLAY AND SILTY CLAY (A-4a, A-6a AND A-6b) OVERLYING WEATHERED SHALE, CLAY SHALE AND SANDSTONE.

GEOLOGY

THE LANDSLIDE IS LOCATED WITHIN THE MARIETTA PLATEAU OF THE UNGLACIATED ALLEGHENY PLATEAUS PHYSIOGRAPHIC REGION OF OHIO ON THE NARROW FLOODPLAIN OF BROWNS RUN AND ASSOCIATED TRIBUTARY. THIS REGION IS CHARACTERIZED AS A DISSECTED, HIGH-RELIEF PLATEAU THAT CONSISTS PRIMARILY OF FINE-GRAINED ROCK. RED SHALES AND RED SOIL OVERBURDEN IS COMMON IN THIS REGION ALONG WITH LANDSLIDES. RELATIVELY THIN VALLEY AND ALLUVIAL DEPOSITS OVERLIE SANDSTONE, SHALE, CLAYSTONE AND COAL OF PERMIAN AGE.

RECONNAISSANCE

A GEOTECHNICAL FIELD RECONNAISSANCE WAS PERFORMED ON JULY 8, 2018. CRACKS AND SCARPS WERE OBSERVED IN THE PAVEMENT SHOULDER AND JUST INTO THE TRAVELING LANE. GUARDRAIL POSTS WERE OBSERVED TO BE TILTED WITH SOME COMPLETELY EXPOSED AND UNSUPPORTED. A CULVERT WAS LOCATED AT THE CENTER OF THE FAILURE AREA AND THE INLET WAS OBSERVED TO BE BLOCKED. THE EASTBOUND LANE WAS CLOSED TO TRAFFIC WITH TEMPORARY SIGNALS BEING UTILIZED FOR MAINTENANCE OF TRAFFIC FOR THE ONE OPEN LANE IN THE WESTBOUND DIRECTION.

SUBSURFACE EXPLORATION

THREE (3) BORINGS WERE PERFORMED AS PART OF THE EXPLORATION FROM AUGUST 7 TO 10, 2018. BORINGS B-001-0-18 AND B-002-0-18 WERE PERFORMED IN THE EASTBOUND LANE OF SR 550 NEAR THE SLIDE AREA. THE THIRD BORING, TERMED B-003-0-18, WAS PERFORMED NEAR THE BOTTOM OF THE EXISTING SLOPE. AN OFFSET BOREHOLE B-001-1-18 WAS PERFORMED APPROXIMATELY 20 FEET AWAY FROM B-001-0-18 TO OBTAIN ADDITIONAL ROCK CORE SAMPLES. ALL BORINGS WERE PERFORMED WITH A TRACK-MOUNTED GEOPROBE 3230DT ROTARY DRILL RIG AND 4-1/4-INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE BORINGS THROUGH SOIL. THE HAMMER SYSTEM WAS LAST CALIBRATED ON OCTOBER 27, 2017 AND THE AVERAGE DRILL ROD ENERGY RATIO (ER) IS 87.1%. DISTURBED SAMPLES WERE COLLECTED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT VARIABLE INTERVALS UNTIL BEDROCK WAS ENCOUNTERED. UNDISTURBED SAMPLING (I.E.; A SHELBY TUBE) WAS ALSO ATTEMPTED AT B-001-0-18 AND B-002-0-18. CORING OF BEDROCK WAS PERFORMED IN B-001-0-18 AND B-002-0-18 USING AN NQ CORE BARREL, AIR METHOD. BORING B-003-0-18 WAS TERMINATED UPON ENCOUNTERING AUGER PENETRATION REFUSAL WITH NO ROCK CORING PERFORMED.

EXPLORATION FINDINGS

THE BORINGS IN THE ROADWAY ENCOUNTERED 24 TO 30 INCHES OF ASPHALT OVERLYING 0 TO 6 INCHES OF AGGREGATE BASE. BORING B-003-0-18 DOWNSLOPE ENCOUNTERED 12 INCHES OF TOPSOIL. BENEATH THE SURFICIAL MATERIALS, THE ROADWAY BORINGS SHOWED A VERY STIFF REDDISH BROWN AND GRAY CLAY/SILTY CLAY LAYER TILL 18 FEET (B-002-0-18) AND 30 FEET BORING (B-001-0-18). THE COHESIVE LAYERS WERE OVERTOPPED BY A FILL LAYER IN (B-002-0-18) FROM 3 TO 6 FEET BELOW GRADE AND A MEDIUM DENSE SANDY SILT LAYER FROM 6 TO 7.5 FEET. IN BORING B-001-0-18, THE COHESIVE LAYERS WERE INTERRUPTED BY A LOOSE TO MEDIUM DENSE SANDY SILT LAYER BETWEEN 3.5 AND 6.5 FEET AND A VERY DENSE SANDSTONE FRAGMENTS WITH SAND LAYER BETWEEN 19 AND 23.5 FEET. THE COHESIVE MATERIAL CLASSIFIES AS A-7-6 (FOR THE CLAY), & A-6b (FOR THE SILTY CLAY). THE SANDY SILT LAYER CLASSIFIES AS A-4a, WHILE THE SAND/ SANDSTONE FRAGMENTS CLASSIFIES AS A-1-b. BORING B-003-0-18 (DOWNSLOPE) SHOWED A SILT AND CLAY LAYER FROM 1 FOOT TO 11.5 FEET BELOW GRADE, FOLLOWED BY SHALE FRAGMENTS TILL 13.5 FEET. HARD REDDISH BROWN CLAY WAS THEN ENCOUNTERED TILL 18.5 FEET. BENEATH THE SOIL OVERBURDEN, BEDROCK WAS ENCOUNTERED AT 30 FEET (B-001-0-18), AND 18.5 FEET (B-002-0-18, B-003-0-18) TO BORING TERMINATION DEPTHS. IT GENERALLY CONSISTS OF WEATHERED TO SEVERELY WEATHERED CLAYSTONE, INTERCALLATIONS OF CLAYSTONE AND SANDSTONE, SHALE AND SANDSTONE, LIMESTONE AND SANDSTONE OR CLAYSTONE. RQD WAS LOW, WITH A MAXIMUM OF 37%.

GROUNDWATER WAS ENCOUNTERED AFTER DRILLING AT B-001-0-18, B-001-1-18 AND B-002-0-18 AT DEPTHS OF 21 TO 24.5 FEET BELOW EXISTING GRADE.

LEGEND

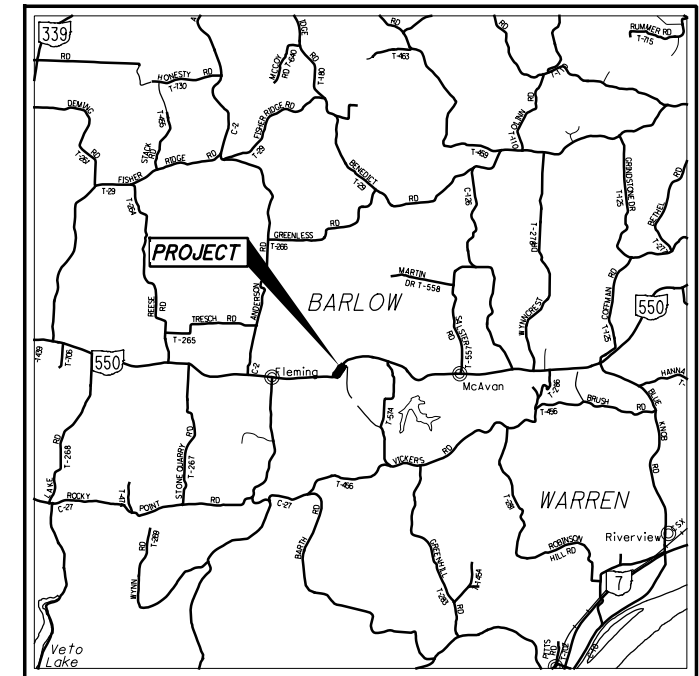
DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
CLAY	A-7-6	3	4
SANDY SILT	A-4a	2	1
SILTY CLAY	A-6b	1	4
GRAVEL, AND/OR STONE FRAG. WITH SAND AND SILT	A-2-4	0	2
SILT AND CLAY	A-6a	3	2
GRAVEL, AND/OR STONE FRAGMENTS WITH SAND	A-1-b	0	1
GRAVEL, AND/OR SHALE FRAGMENTS	A-1-a	0	1
TOTAL	TOTAL	9	15
WEATHERED SHALE	VISUAL		
LIMESTONE	VISUAL		
CLAYSTONE	VISUAL		
WEATHERED CLAYSTONE	VISUAL		
PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL		
BORING LOCATION - PLAN VIEW			
DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.			
WC	INDICATES WATER CONTENT IN PERCENT.		
N₆₀	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.		
X/Y/D"	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X= NUMBER OF BLOWS FOR FIRST 6 INCHES (UNCORRECTED) Y/D"= NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL.		
▼	INDICATES STATIC WATER ELEVATION.		
TR	INDICATES TOP OF ROCK.		
ST	INDICATES A SHELBY TUBE SAMPLE.		
SS	INDICATES A SPLIT SPOON SAMPLE.		
●	INDICATES A PLASTIC MATERIAL WITH A MOISTURE CONTENT EQUAL TO OR GREATER THAN THE LIQUID LIMIT MINUS 3.		

SPECIFICATIONS

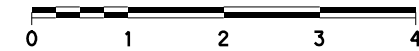
THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JULY 2017.

AVAILABLE INFORMATION

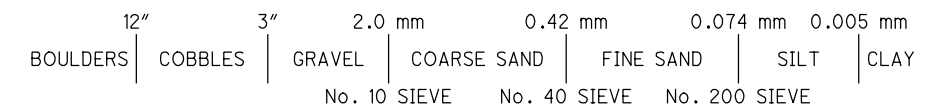
ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED AT THE ODOT DISTRICT 10 OFFICE, LOCATED AT 338 MUSKINGUM DRIVE, MARIETTA, OHIO 45750.



LOCATION MAP
SCALE IN MILES



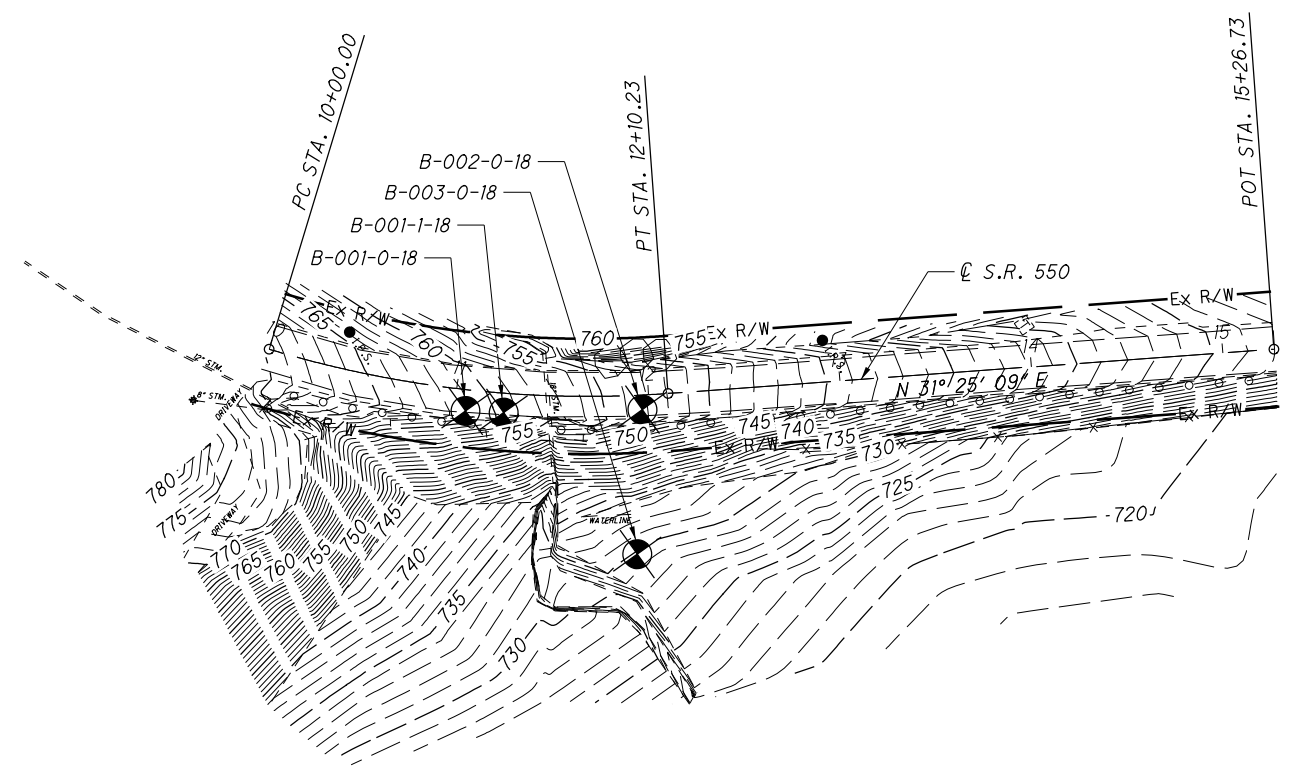
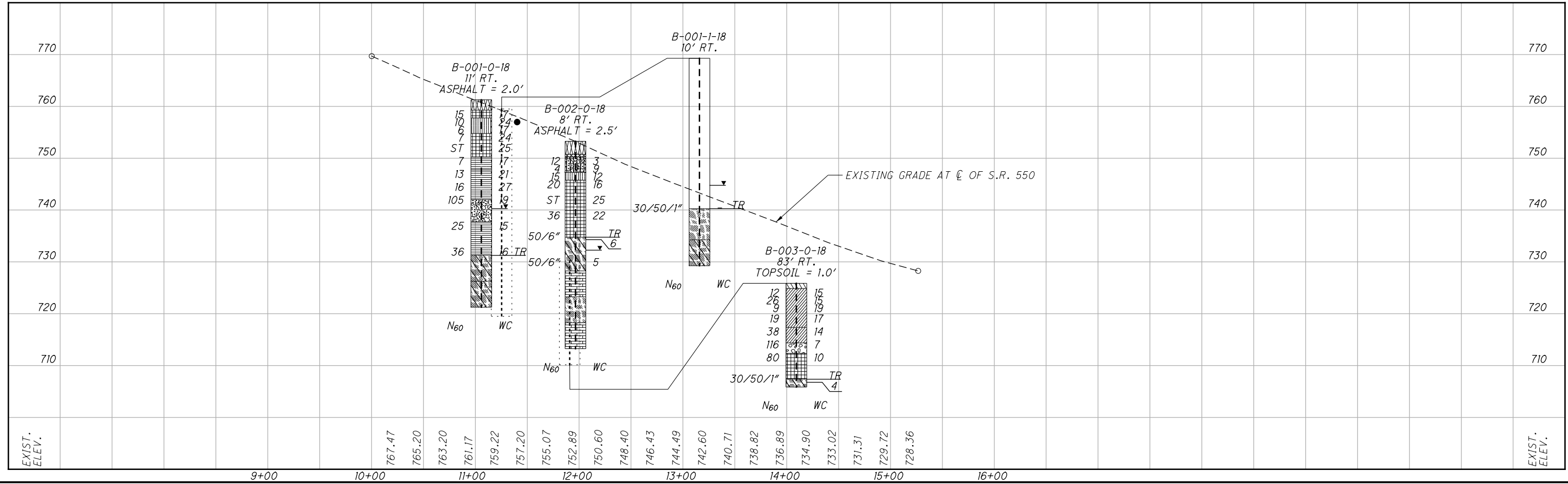
PARTICLE SIZE DEFINITIONS



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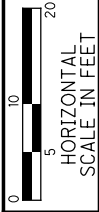
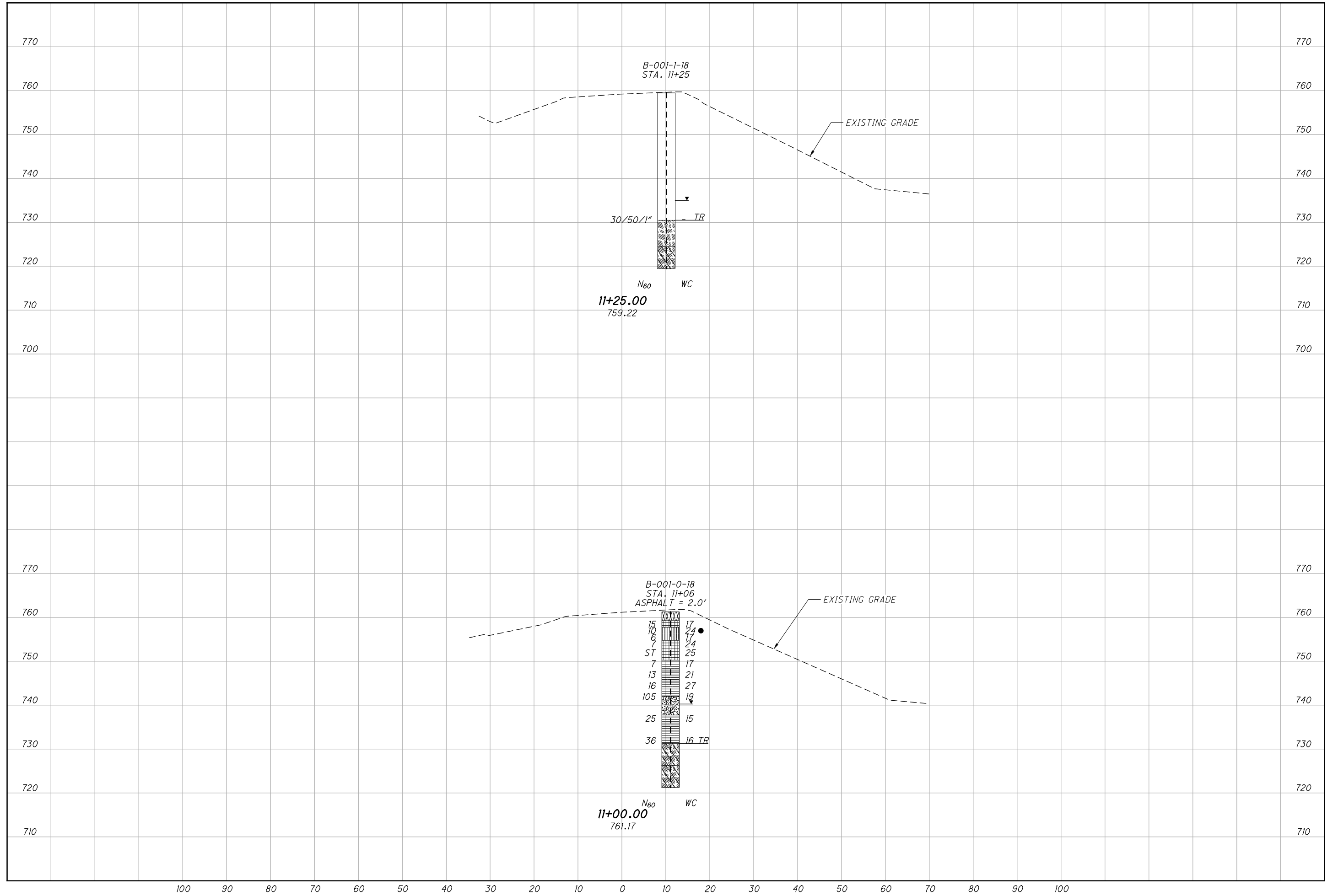
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LANDSLIDE EXPLORATION
STA. 10+00.00 TO 15+26.73

WAS -550-14.30



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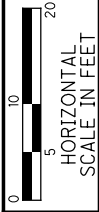
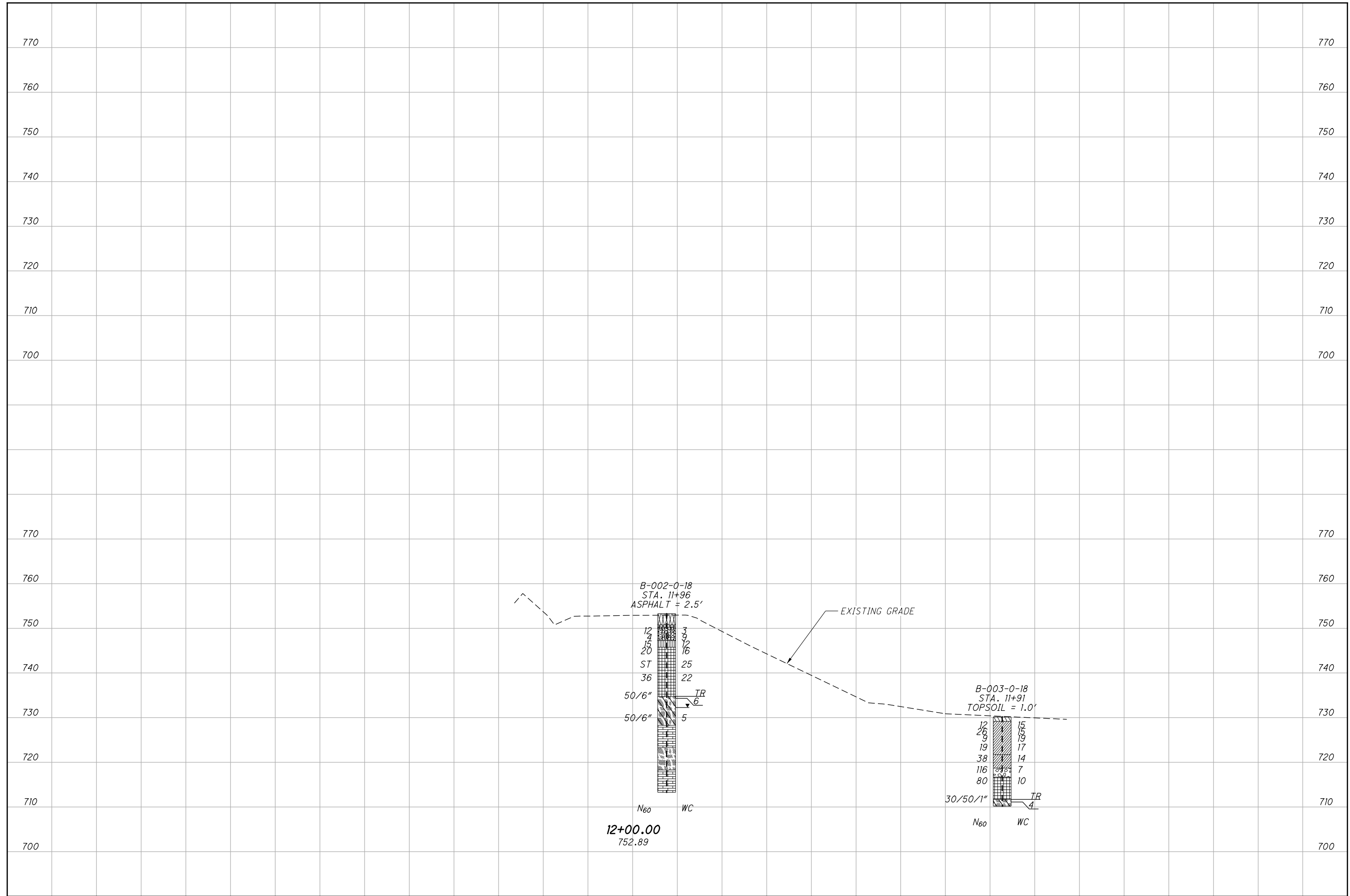
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**LANDSLIDE EXPLORATION
CROSS SECTIONS STA. 11+00.00 TO STA. 11+25.00**

WAS-550-14.30



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**LANDSLIDE EXPLORATION
CROSS SECTION STA. 12+00.00**

WAS-550-14.30



PROJECT: WAS-550-14.30		DRILLING FIRM / OPERATOR: MSG / J. J. FAITEL		DRILL RIG: GEOPROBE 3230DT		STATION / OFFSET: 11+06.11' RT.		EXPLORATION ID					
TYPE: LANDSLIDE		SAMPLING FIRM / LOGGER: MSG / L. ABUQTAISH		HAMMER: AUTOMATIC HAMMER		ALIGNMENT: SR 550		B-001-0-18					
PID: 108675 - SFN:		DRILLING METHOD: 4.25" HSA / NQ		CALIBRATION DATE: 10/27/17		ELEVATION: 761.3 (MSL) EOB: 40.0 ft.		PAGE					
START: 8/8/18 END: 8/8/18		SAMPLING METHOD: SPT/ST/NQ		ENERGY RATIO (%): 87.1		COORD: 508397.6410 N, 2223424.5940 E		1 OF 1					
MATERIAL DESCRIPTION AND NOTES		ELEV.		REC SAMPLE ID		GRADATION (%)		ATTERBERG		ODOT CLASS (GI)		ABANDONED	
		761.3		N ₆₀		GR CS FS SI CL LL PL PI		WC					
DEPTHS													
ASPHALT		759.3		1									
Very stiff, brown CLAY, some silt, trace sand and gravel, contains some sandstone fragments, damp		757.8		2 4 6		78		SS-1		3.00		17 A-7-6 (V)	
Loose, brown SANDY SILT, trace clay, wet				4 3 4		10 33		SS-2		-		24 A-4a (3)	
Stiff, red CLAY, and silt, trace sand, moist		754.8		2 2 2		6 44		SS-3		-		17 A-4a (V)	
				1 2 3		7 78		SS-4		1.25		24 A-7-6 (V)	
Very stiff, red and gray SILTY CLAY, trace sand, contains some sandstone fragments, damp		750.3		1 2 3		7 61		SS-6		2.75		17 A-6b (V)	
Stiff, reddish-brown and gray SILTY CLAY, trace sand and organics, damp to moist		747.8		2 4 5		13 100		SS-7		1.50		21 A-6b (V)	
Becomes very stiff and contains some sandstone fragments				1 5 6		16 100		SS-8		2.50		27 A-6b (V)	
Very dense, gray SANDSTONE FRAGMENTS WITH SAND, damp		742.0		2 22 50		105 100		SS-9		3.00		19 A-1-b (V)	
				5 5 12		25 100		SS-10		3.25		15 A-6b (10)	
Very stiff, red and reddish-brown SILTY CLAY, trace sand, contains some claystone and sandstone fragments, damp		737.8		5 10 15		36 100		SS-11		3.50		16 A-6b (V)	
CLAYSTONE, reddish-brown to gray, severely weathered, veyr weak, highly fractured to fractured; REC 27%, RQD 9% @30.5'-30.9'; Qu = 268 psi		731.3		TR									
				9		27		NQ-12				CORE	
CLAYSTONE, gray, severely weathered, very weak, highly fractured to fractured; REC 40%, RQD 7% @36.6'-37.0'; Is(50) = 14.32 psi		726.3		17		100		NQ-13				CORE	
				0		0		NQ-14				CORE	
		721.3		EOB									

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 9/17/18 13:53 - W:\PROJECTS\PROJECTS K-O\ODOT0070\ADMIN\TASK 10M\GEO\TECH\LAB\SOIL BORING LOGS_TASKM.GPJ

NOTES: NONE
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 24 IN. ASPHALT PATCH; PLACED 200 LB. BENTONITE PELLETS

PROJECT: WAS-550-14.30
 TYPE: LANDSLIDE
 PID: 108675 - SFN:
 START: 8/9/18 END: 8/9/18
 DRILLING FIRM / OPERATOR: MSG / J. FAITEL
 SAMPLING FIRM / LOGGER: MSG / L. ABUQTAISH
 DRILLING METHOD: 4.25" HSA / NQ
 SAMPLING METHOD: SPT / NQ
 DRILL RIG: GEOPROBE 3230DT
 HAMMER: AUTOMATIC HAMMER
 CALIBRATION DATE: 10/27/17
 ENERGY RATIO (%): 87.1
 STATION / OFFSET: 11+25, 10' RT.
 ALIGNMENT: SR 550
 ELEVATION: 759.5 (MSL) EOB: 40.0 ft.
 COORD: 508413.2910 N, 2223436.8740 E
 GRADATION (%) ATTERBERG
 GR CS FS SI CL LL PL PI WC
 EXPLORATION ID B-001-1-18
 PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES

Augered with no sampling to 29 feet. See B-001-0-18 for material descriptions to 29 feet.

DEPTH	ELEV.	SPT/RQD	REC (%)	N ₆₀	HP ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	ABANDONED
1	759.5															
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
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16																
17																
18																
19																
20																
21																
22																
23																
24	735.0															
25																
26																
27																
28																
29	730.5	TR														
30		30/1"	100	SS-1												Rock (V)
31																
32		0	40	NQ-1												CORE
33																
34																
35	724.5															
36																
37		0	15	NQ-2												CORE
38																
39																
40	719.5	EOB														

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 24 IN. ASPHALT PATCH; PLACED 200 LB. BENTONITE PELLETS



STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 9/17/18 13:53 - W:\PROJECTS\PROJECTS K-O\ODOT0070\ADMIN\TASK 10M\GEO\TECH\LAB\SOIL BORING LOGS TASKM.GPJ

PROJECT: WAS-550-14.30		DRILLING FIRM / OPERATOR: MSG / J. J. FAITEL		DRILL RIG: GEOPROBE 3230DT		STATION / OFFSET: 11+96.8' RT.		EXPLORATION ID											
TYPE: LANDSLIDE		SAMPLING FIRM / LOGGER: MSG / L. ABUQTAISH		HAMMER: AUTOMATIC HAMMER		ALIGNMENT: SR 550		B-002-0-18											
PID: 108675 - SFN:		DRILLING METHOD: 4.25" HSA / NQ		CALIBRATION DATE: 10/27/17		ELEVATION: 753.3 (MSL) EOB: 40.0 ft.		PAGE											
START: 8/7/18 END: 8/7/18		SAMPLING METHOD: SPT/ST/NQ		ENERGY RATIO (%): 87.1		COORD: 508473.0010 N, 2223477.8830 E		1 OF 1											
MATERIAL DESCRIPTION AND NOTES		ELEV.		REC SAMPLE ID		GRADATION (%)		ODOT CLASS (gl)											
		753.3		HP (tsf)		GR CS FS SI CL LL PL PI		WC											
		DEPTHS		N ₆₀		SPT/RQD		ABANDONED											
ASPHALT			1																
			2																
			3																
		750.8	4	12	6	SS-1	-	-	-	3	A-2-4 (V)								
		750.3	5	2	4	SS-2	-	-	-	9	A-2-4 (V)								
			6	1	4	SS-3	-	17	3	44	27	9	NP	NP	NP	12	A-4a (0)		
		747.3	7	4	6	SS-4	2.00	-	-	-	-	-	-	-	-	-	16	A-7-6 (V)	
		745.8	8	12	20	SS-4	2.00	-	-	-	-	-	-	-	-	-	-	-	-
			9	6	12	SS-4	2.00	-	-	-	-	-	-	-	-	-	-	-	-
			10																
SHALE AND SANDSTONE reddish-brown, severely weathered, very weak			11																
			12																
			13																
			14	6	10	36	100	ST-5	1.75	0	3	67	30	47	28	19	25	A-7-6 (13)	
			15	15															
			16																
			17																
			18																
			19	50/6"			100	SS-7	-	-	-	-	-	-	-	-	-	6	Rock (V)
			20																
Becomes gray			21																
			22																
			23																
			24	50			100	SS-8	-	-	-	-	-	-	-	-	-	5	Rock (V)
			25																
			26																
			27	0			38	NQ-9											
			28																
			29																
			30																
CLAYSTONE dark reddish-gray, moderately weathered to highly weathered, weak to slightly strong, fractured to slightly strong; REC 90%; RQD 37% @30.9'-31.9'; Qu = 623 psi			31																
			32																
			33	37			90	NQ-10											
			34																
			35																
			36																
			37	16			33	NQ-11											
			38																
			39																
			40																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 30 IN. ASPHALT PATCH; PLACED 200 LB. BENTONITE PELLETS

PROJECT: WAS-550-14.30	DRILLING FIRM / OPERATOR: MSG / J. FAITEL	DRILL RIG: GEOPROBE 3230DT	STATION / OFFSET: 11+91.83' RT.	EXPLORATION ID: B-003-0-18														
TYPE: LANDSLIDE	SAMPLING FIRM / LOGGER: MSG / L. ABUQTAISH	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: SR-550															
PID: 108675 SFN:	DRILLING METHOD: 4.25" HSA	CALIBRATION DATE: 10/27/17	ELEVATION: 730.2 (MSL) EOB: 20.0 ft.	PAGE 1 OF 1														
START: 8/10/18 END: 8/10/18	SAMPLING METHOD: SPT	ENERGY RATIO (%): 87.1	COORD: 508426.9840 N, 2223537.3630 E															
MATERIAL DESCRIPTION AND NOTES																		
TOPSOIL	ELEV. 730.2	DEPTHS	SPT/RQD	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (gl)	ABANDONED	
Very stiff, reddish-brown SILT AND CLAY , little gravel, trace sand, contains some claystone and sandstone fragments, damp Contains trace organics and no gravel	729.2	1																
		2	1	100	SS-1	2.00	-	-	-	-	-	-	-	-	-	15	A-6a (V)	
		3	3	100	SS-2	3.75	5	18	49	14	31	20	11			15	A-6a (6)	
		4	4	100	SS-3	2.75	10	6	18	55	21	34	20	14		19	A-6a (10)	
		5	2	56														
		6	2															
		7	5	100	SS-4	2.25	8	-	-	-	-	-	-	-	-	-	17	A-6a (V)
		8																
		721.7	9	5	100	SS-5	3.50	10	2	71	25	36	21	15		14	A-6a (10)	
			10	16														
Very dense, gray and reddish-brown SHALE FRAGMENTS , damp	718.7	11	20	116	SS-6	-	40	-	-	-	-	-	-	-	-	7	A-1-a (V)	
		12	40															
		13																
Hard, reddish-brown CLAY , and silt, contains some gray shale fragments, damp	716.7	14	10	80	SS-7	4.00	20	-	-	-	-	-	-	-	10	A-7-6 (V)		
		15	35															
		16																
SHALE , reddish-brown, severely weathered, very weak	711.7	17																
		18																
		19	30	-	100	SS-8	-	50/1"	-	-	-	-	-	-	-	4	Rock (V)	
	710.2	20																
EOB																		

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 9/17/18 13:53 - W:\PROJECTS\PROJECTS K-O\ODOT0070\ADMIN\TASK 10M\GEO\TECH\LAB\SOIL BORING LOGS.TASKM.GPJ

NOTES: AUGER REFUSAL AT 20 FEET
ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 150 LB. BENTONITE PELLETS



OHIO DEPARTMENT OF TRANSPORTATION
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**UNCONFINED COMPRESSION TEST
AASHTO T - 208**

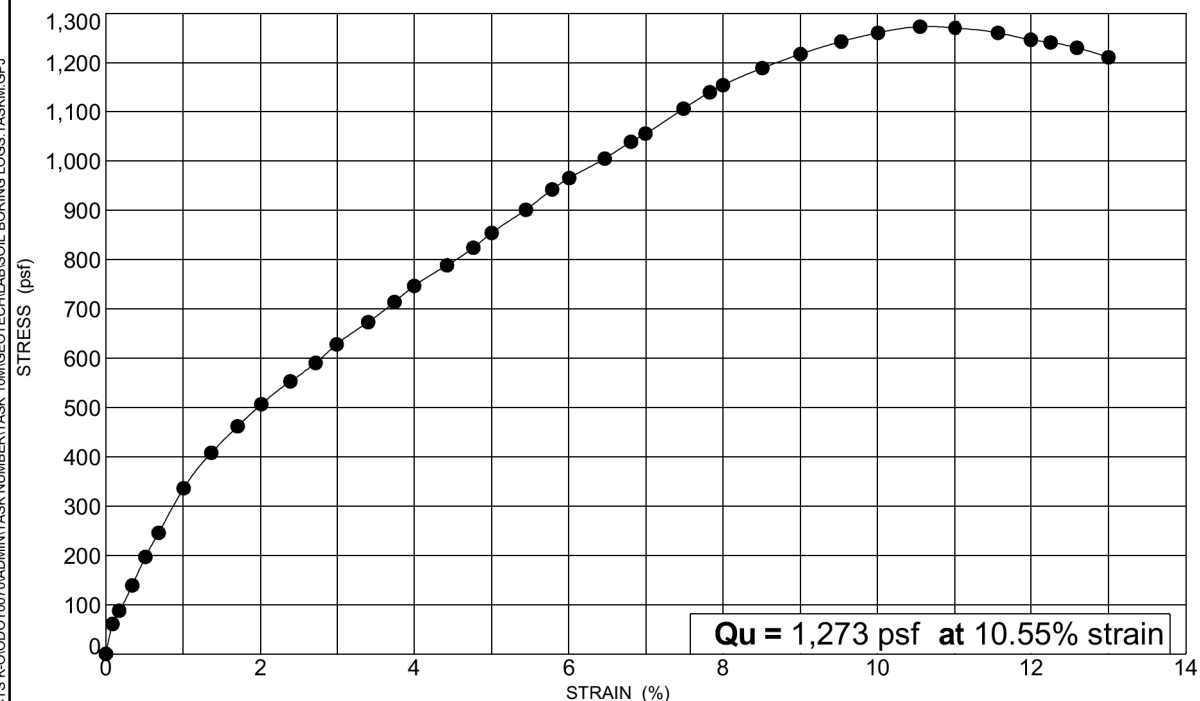
PROJECT WAS-550-14.30
OGE NUMBER ODOT0070

PID 108675
PROJECT TYPE GEOHAZARD EXPLORATION

SAMPLE IDENTIFICATION

BORING ID: B-001-0-18
STATION: NOT RECORDED

SAMPLE ID: ST-5
DEPTH: 8.0 - 10.0 feet



SPECIMEN FAILURE SKETCHES OR PHOTOGRAPHS

FRONT VIEW

SIDE VIEW

SPECIMEN DETAILS

HEIGHT: 149.270 mm
DIAMETER: 72.540 mm
WET UNIT WT: 124.02 pcf
DRY UNIT WT: 99.58 pcf

TESTED BY: MJG 8/14/2018

CLASSIFICATION RESULTS

GRADATION (%)				
GR	CS	FS	SI	CL
0	1	6	65	28
ATTERBERG LIMITS				
LL	PL	PI	MOISTURE	
45	21	24	WC	
			25	

ODOT CLASS: A-7-6 HP (tsf): _____

DESCRIPTION: Reddish-brown CLAY and silt



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**UNCONFINED COMPRESSION TEST
AASHTO T - 208**

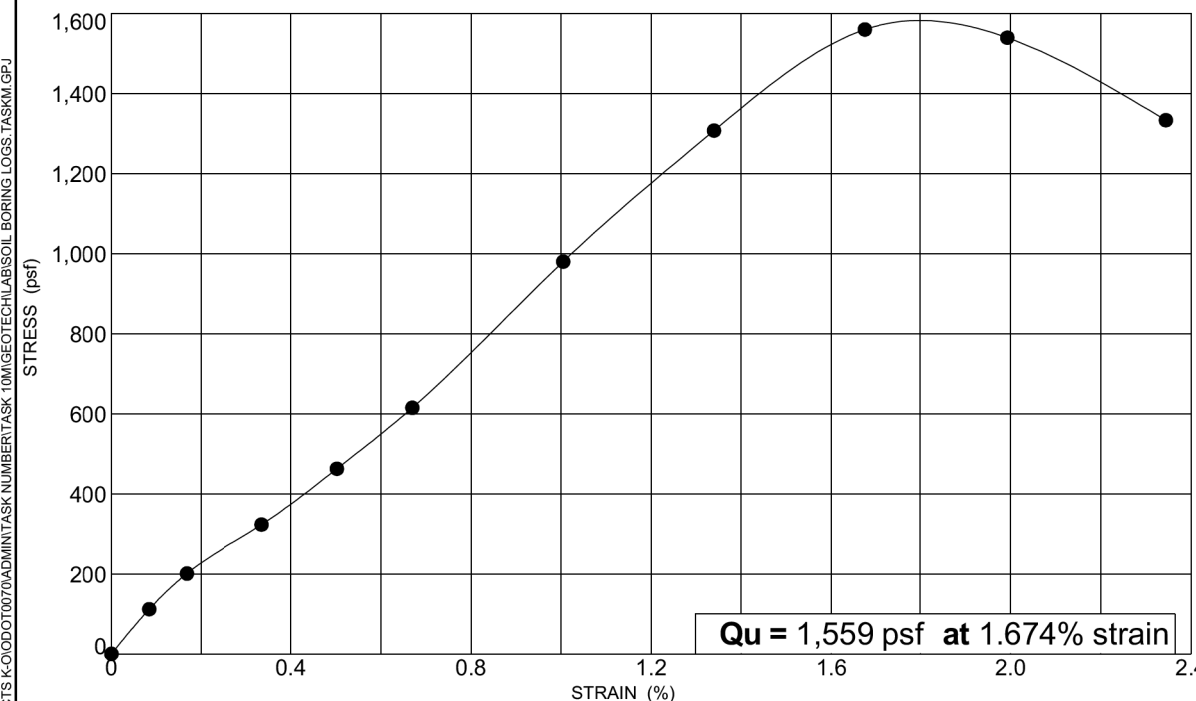
PROJECT WAS-550-14.30
OGE NUMBER ODOT0070

PID 108675
PROJECT TYPE GEOHAZARD EXPLORATION

SAMPLE IDENTIFICATION

BORING ID: B-002-0-18
STATION: NOT RECORDED

SAMPLE ID: ST-5
DEPTH: 10.0 - 12.0 feet



SPECIMEN FAILURE SKETCHES OR PHOTOGRAPHS

FRONT VIEW

SIDE VIEW

SPECIMEN DETAILS

HEIGHT: 151.680 mm
DIAMETER: 72.770 mm
WET UNIT WT: 120.30 pcf
DRY UNIT WT: 96.23 pcf

TESTED BY: MJG 8/14/2018

CLASSIFICATION RESULTS

GRADATION (%)				
GR	CS	FS	SI	CL
0	0	3	67	30
ATTERBERG LIMITS				
LL	PL	PI	MOISTURE	
47	28	19	WC	
			25	

ODOT CLASS: A-7-6 HP (tsf): 1.75

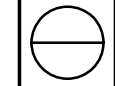
DESCRIPTION: Reddish-brown CLAY and silt


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DRAWN SV
CHECKED SH

LANDSLIDE EXPLORATION
UNCONFINED COMPRESSION TEST RESULTS

WAS-550-14.30



	UNCONFINED COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS. ASTM D7012-METHOD C SOP 3019		
	SOURCE INFORMATION		
CLIENT:	ODOT	BORING ID:	B-001-0
PROJECT NAME:	WAS-550-14.30	DEPTH:	30.5'-30.96'
PROJECT NUMBER:	ODOT0070	SAMPLE ID"	NQ-12

SOURCE INFORMATION			
CLIENT:	ODOT	BORING ID:	B-001-0
PROJECT NAME:	WAS-550-14.30	DEPTH:	30.5'-30.96'
PROJECT NUMBER:	ODOT0070	SAMPLE ID"	NQ-12

SAMPLE INFORMATION:

SAMPLE	Rock Core Specimen		
FORMATION NAME:	Reddish-brown claystone		
LOAD DIRECTION:	<input checked="" type="checkbox"/> AXIAL	<input type="checkbox"/> OTHER:	0

SPECIMEN	LENGTH (IN)	DIAMETER (INCHES)	DISPLACEMENT (INCHES)
READING NO.1:	3.98	1.87	0.063
READING NO.2:	3.98	1.87	
READING NO.3:	3.98	1.88	
AVERAGE:	3.98	1.87	
L/D:	2.13		

TEST SPECIMEN AFTER TEST

DESCRIPTION OF SAMPLE AFTER TEST:	Cracking
-----------------------------------	----------


SELECT IF APPLICABLE:	<input checked="" type="checkbox"/> CRACKING	<input type="checkbox"/> SPALLING	<input type="checkbox"/> SHEARING
-----------------------	--	-----------------------------------	-----------------------------------

PICTURE OF SPECIMEN:



TOTAL LOAD (LBS)	735.00
COMPRESSIVE STRENGTH (PSI)	267.75
FRACTURE TYPE:	Cracking
RATE OF LOADING (LBS/SEC):	0.49
TIME TO BREAK (MIN:SEC)	0.06
TEST TEMPERATURE (°F)	75.00

	INITIAL	DATE
TESTED BY:	KL	8/14/2018
CHECKED BY:	FRK	8/21/2018

	UNCONFINED COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS. ASTM D7012-METHOD C SOP 3019		
	SOURCE INFORMATION		
CLIENT:	ODOT	BORING ID:	B-002-0
PROJECT NAME:	WAS-550-14.30	DEPTH:	30.92'-31.96'
PROJECT NUMBER:	ODOT0070	SAMPLE ID"	NQ-10

SOURCE INFORMATION			
CLIENT:	ODOT	BORING ID:	B-002-0
PROJECT NAME:	WAS-550-14.30	DEPTH:	30.92'-31.96'
PROJECT NUMBER:	ODOT0070	SAMPLE ID"	NQ-10

SAMPLE INFORMATION:

SAMPLE	Rock Core Specimen		
FORMATION NAME:	Dark reddish-brown claystone		
LOAD DIRECTION:	<input checked="" type="checkbox"/> AXIAL	<input type="checkbox"/> OTHER:	0

SPECIMEN	LENGTH (IN)	DIAMETER (INCHES)	DISPLACEMENT (INCHES)
READING NO.1:	4.43	1.87	0.051
READING NO.2:	4.43	1.87	
READING NO.3:	4.42	1.87	
AVERAGE:	4.43	1.87	
L/D:	2.37		

TEST SPECIMEN AFTER TEST

DESCRIPTION OF SAMPLE AFTER TEST:	Cracking
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SELECT IF APPLICABLE:	<input checked="" type="checkbox"/> CRACKING	<input type="checkbox"/> SPALLING	<input type="checkbox"/> SHEARING
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PICTURE OF SPECIMEN:



TOTAL LOAD (LBS)	1710.00
COMPRESSIVE STRENGTH (PSI)	622.94
FRACTURE TYPE:	Cracking
RATE OF LOADING (LBS/SEC):	0.49
TIME TO BREAK (MIN:SEC)	0.05
TEST TEMPERATURE (°F)	75.00

	INITIAL	DATE
TESTED BY:	KL	8/14/2018
CHECKED BY:	FRK	8/21/2018


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DRAWN SV
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LANDSLIDE EXPLORATION UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

WAS-550-14.30



	UNCONFINED COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS. ASTM D7012- METHOD C SOP 3019	

SOURCE INFORMATION			
CLIENT:	ODOT	BORING ID:	B-002-0
PROJECT NAME:	WAS-550-14.30	DEPTH:	35.0'-35.4'
PROJECT NUMBER:	ODOT0070	SAMPLE ID"	NQ-11

SAMPLE INFORMATION:			
SAMPLE	Rock Core Specimen		
FORMATION NAME:	Gray limestone interbedded with sandstone and claystone		
LOAD DIRECTION:	<input checked="" type="checkbox"/> AXIAL	<input type="checkbox"/> OTHER:	0

SPECIMEN	LENGTH (IN)	DIAMETER (INCHES)	DISPLACEMENT (INCHES)
READING NO.1:	3.95	1.85	0.066
READING NO.2:	3.95	1.85	
READING NO.3:	3.96	1.86	
AVERAGE:	3.95	1.85	
L/D:	2.14		

TEST SPECIMEN AFTER TEST	
DESCRIPTION OF SAMPLE AFTER TEST:	Cracking

SELECT IF APPLICABLE:	<input checked="" type="checkbox"/> CRACKING	<input type="checkbox"/> SPALLING	<input type="checkbox"/> SHEARING
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PICTURE OF SPECIMEN:



TOTAL LOAD (LBS)	2815.00
COMPRESSIVE STRENGTH (PSI)	1047.77
FRACTURE TYPE:	Cracking
RATE OF LOADING (LBS/SEC):	0.49
TIME TO BREAK (MIN:SEC)	0.06
TEST TEMPERATURE (°F)	75.00

	INITIAL	DATE
TESTED BY:	KL	8/14/2018
CHECKED BY:	FRK	8/21/2018

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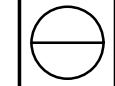
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LANDSLIDE EXPLORATION
UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS

WAS - 550 - 14.30

11 / 12





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		SUMMARY OF POINT LOAD STRENGTH INDEX OF ROCK AND APPLICATION TO ROCK STRENGTH CLASSIFICATION ASTM D5731										
		Project Name: WAS-550-14.30 Tested By: MJG Test Device: Controls Readout: Report No: 1					Project Number: ODOT0070 Date: 8/14/18 Serial No: 13007154 Calibrated: 2/5/18 Location: Canton, Michigan					
Sample Details: B-001-0 NQ-13 Depth: 36.65'-37.0' Gray claystone												
Specimen No:	Test Type	Width (w)mm	Diameter 1 (mm)	Diameter 2 (mm)	Diameter 3 (mm)	Average Diameter D (mm)	Load, P (KN)	D _e , mm	D _e ² , mm ²	I _s , MPA	F	I _{s(50)} , MPA
1	d//	87.9	47.73	47.96	47.63	47.77	0.23	47.77	2282.29	0.1008	0.98	0.0987
Diametrical = d//						Statistics						
Moisture Content		Mass of Container (g)	Mass of Container and Wet Specimen (g)	Mass of Container and Oven dried specimen (g)	Mass of Water (g)	Percent Water Content (%)						
		13.11	389.2	378.76	10.44	2.86						
						Mean I _{s(50)} d// (MPA)	0.0987					
						Mean I _{s(50)} d// (PSI)	14.32					

		SUMMARY OF POINT LOAD STRENGTH INDEX OF ROCK AND APPLICATION TO ROCK STRENGTH CLASSIFICATION ASTM D5731										
		Project Name: WAS-550-14.30 Tested By: MJG Test Device: Controls Readout: Report No: 1					Project Number: ODOT0070 Date: 8/14/18 Serial No: 13007154 Calibrated: 2/5/18 Location: Canton, Michigan					
Sample Details: B-002-0 NQ-9 Depth: 29.4'-29.7' Gray limestone interbedded with sandstone												
Specimen No:	Test Type	Width (w)mm	Diameter 1 (mm)	Diameter 2 (mm)	Diameter 3 (mm)	Average Diameter D (mm)	Load, P (KN)	D _e , mm	D _e ² , mm ²	I _s , MPA	F	I _{s(50)} , MPA
1	d//	60.96	47.55	47.65	47.45	47.55	3.91	47.55	2261.00	1.7293	0.98	1.6907
Diametrical = d//						Statistics						
Moisture Content		Mass of Container (g)	Mass of Container and Wet Specimen (g)	Mass of Container and Oven dried specimen (g)	Mass of Water (g)	Percent Water Content (%)						
		13.35	281.41	278.89	2.52	0.95						
						Mean I _{s(50)} d// (MPA)	1.6907					
						Mean I _{s(50)} d// (PSI)	245.21					