

LOCATION MAP

LATITUDE: N39°14'55" LONGITUDE: W82°01'24"

# ATHENS COUNTY ENGINEER

## ATH-CR25-0.16

### LANDSLIDE REPAIRS

**PROJECT DESCRIPTION**

THIS PROJECT CONSISTS OF THE CONSTRUCTION OF A 265 FOOT DRILLED SHAFT AND CONCRETE LAGGING SOLDIER PILE WALL.

**2019 SPECIFICATIONS**

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

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**UNDERGROUND UTILITIES**

CONTACT BOTH SERVICES  
CALL TWO WORKING DAYS  
BEFORE YOU DIG

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CALL  
**1-800-362-2764**  
(TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY

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



PLANS PREPARED BY:  
ATHENS COUNTY ENGINEER'S OFFICE  
16000 CANAANVILLE RD  
ATHENS, OHIO 45701

ENGINEER'S SEAL	STANDARD CONSTRUCTION DRAWINGS	SUPPLEMENTAL SPECIFICATIONS	DESIGN ENGINEER'S SEAL
 SIGNED: <i>Rex Maiden</i> DATE: 5/10/24	DM-1.1 7-21-17	SS-800 1-19-24	 SIGNED: <i>Donnie E. Stevens II</i> DATE: 5/10/24
	DM-1.2 1-18-13	SS-832 7-21-23	
	MT-97.10 7-18-14		
	MT-101.60 1-20-17		
	MT-101.70 1-17-14		
	MT-105.10 7-19-13		

OPWC PROJECT NO. CU24AA  
 SITE NO. CR25-0.16  
 CONSTRUCTION PROJECT NO.  
 RAILROAD INVOLVEMENT NONE  
 ATH-CR25-0.16 LANDSLIDE REPAIRS

CONTRACT SPECIFICATIONS

THE JANUARY 1, 2019 VERSION OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS AS PUBLISHED BY THE OHIO DEPARTMENT OF TRANSPORTATION SHALL GOVERN ALL ASPECTS OF THE CONTRACT WORK. THE CONTRACTOR SHOULD BE FAMILIAR WITH THESE SPECIFICATIONS AND THEIR PROCEDURAL REQUIREMENTS.

STANDARD DRAWINGS

REFERENCE SHOULD BE MADE TO THE STANDARD DRAWINGS SHOWN IN THE TABLE ON THE COVER SHEET.

O.U.P.S CALL:

THE CONTRACTOR IS RESPONSIBLE FOR CALLING THE OHIO UTILITIES PROTECTION SERVICE AT LEAST TWO DAYS BEFORE DIGGING. THE TOLL-FREE NUMBER IS (800) 362-2764.

UTILITIES

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

ELECTRIC AMERICAN ELECTRIC POWER  
38831 SR 7  
REEDSVILLE, OHIO 45769  
CONTACT: CLARKE SAUNDERS  
PHONE: 614-312-5807

TELEPHONE FRONTIER COMMUNICATIONS  
241 SOUTH NELSON AVENUE  
WILMINGTON, OHIO 45177  
CONTACT: ROB LATHAM  
PHONE: 937-382-2222

WATER LE-AX WATER  
PO BOX 97  
THE PLAINS, OHIO 45780  
CONTACT: TRAVIS ANDERSON  
PHONE: 740-594-0123

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNER OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.

UTILITY LINES

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

WORK LIMITS

ALL PHYSICAL WORK SHALL BE COMPLETED WITHIN THE COUNTY RIGHT-OF-WAY ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ELEVATION DATUM

ALL ELEVATIONS ARE ORTHOMETRIC HEIGHTS USING THE NORTH AMERICAN VERTICAL DATUM OF 1988(NAVD 88) AND THE GEOID 12A. HORIZONTAL POSITIONS ARE BASED ON THE OHIO STATE PLANE SOUTH ZONE 3402.

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.

ROAD CLOSED/MAINTENANCE OF TRAFFIC

THE COUNTY ROAD WILL BE CLOSED FOR A MAXIMUM OF 45 DAYS. LOCAL TRAFFIC WILL BE DETOURED.

ITEM 614 - MAINTAINING TRAFFIC

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN STANDARD 48" X 30" - "ROAD CLOSED" SIGNS, SIGN SUPPORTS, BARRICADES, GATES, AND LIGHTS, AS DETAILED IN STANDARD CONSTRUCTION DRAWING MT-101.60 AT LOCATIONS NEAR THE SLIPS DURING PERIODS IN WHICH THE AFFECTED ROADS ARE CLOSED TO TRAFFIC.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR 614, MAINTAINING TRAFFIC.

THE ATHENS COUNTY ENGINEER WILL PROVIDE THE SIGNS FOR THE DETOUR ROUTE, AND WILL MAINTAIN THE DETOUR SIGNS.

ITEM 659 - SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE EASEMENT LINES. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

ITEM 201 - CLEARING AND GRUBBING

CONTRACTORS SHOULD INSPECT THE AREAS WHERE THE RETAINING WALLS ARE TO BE CONSTRUCTED TO FIND THE BULK OF THIS WORK. SPECIFIC TREES TO BE REMOVED HAVE NOT BEEN DENOTED ON THESE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH THE SCOPE OF WORK REQUIRED TO CLEAR THE AREAS NEEDED TO CONSTRUCT THE VARIOUS ELEMENTS OF THIS PROJECT.

ITEM 507 - STEEL PILES, MISC.: SOLDIER PILES W18x97

THIS WORK CONSISTS OF FURNISHING AND PLACING STEEL SOLIDER PILES INTO DRILLED HOLES. FURNISH SOLDIER PILES CONSISTING OF STRUCTURAL STEEL MEMBER THAT MEET THE PLAN REQUIREMENTS AND CONFORM TO ASTM A572, GARDE 50. DO NOT FIELD WELD OR SPLICE 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 - W18x97.

ITEM 524 - DRILLED SHAFTS, 36" DIAMETER, PLUG PILES, AS PER PLAN

THESE SHAFTS ARE TO BE UN-REINFORCED NON-STRUCTURAL "PLUG PILES".

THIS WORK SHALL BE PER ITEM 524 EXCEPT REINFORCING WILL NOT BE USED IN THE SHAFT. EACH PLUG PILE SHALL BE CENTERED BETWEEN EACH REINFORCED 24" DIAMETER DRILLED SHAFT AND DRILLED TO THE ELEVATIONS PER THE PLUG PILE DRILLED SHAFT SUMMARY ON SHEET 6 AND DETAILS ON SHEET 5, AND BACKFILLED WITH UN-REINFORCED CLASS QC1 CONCRETE.

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 A 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

ACCESS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS USED TO CONSTRUCT THE DRILLED SHAFTS. ANY TEMPORARY GRADING, AGGREGATE, DRAINAGE, SHEETING ETC. NEEDED FOR ACCESS TO 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 SHAFT AND NO SEPARATE PAYMENT WILL BE MADE. PAYMENT IS FULL COMPENSATION FOR CONSTRUCTING THE DRILLED SHAFTS, INCLUDING FURNISHING AND PLACING CONCRETE AND ANY SONOTUBE REQUIRED FOR FORMING THE TOPS OF THE SHAFTS. 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, PLUG PILES, AS PER PLAN.

MEASUREMENT FOR PAYMENT FOR DRILLED SHAFTS, AS PER PLAN, WILL BE MEASURED ALONG THE AXIS OF THE DRILLED SHAFT FROM THE TOP OF THE SHAFT TO THE BOTTOM OF THE SHAFT, AS DETERMINED BY THE ENGINEER.

ITEM 530 - STRUCTURE, MISC.: PRECAST CONCRETE PANEL

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 SOLIDER 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 530 - STRUCTURE, MISC.: PRECAST CONCRETE LAGGING.

ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN

THIS ITEM CONSISTS OF EXCAVATING A BENCH IN ORDER TO CONSTRUCT THE DRILLED SHAFTS AND PLACING A COMPACTED FILL PER 203 UP TO THE ROAD SUBGRADE AFTER THE WALL IS CONSTRUCTED. CONTRACTOR SHALL COMPACT THE FILL BEHIND THE WALL USING EITHER A VIBRATORY "HO-PAC" OR SIMILAR COMPACTION DEVICE.

ITEM 617 - COMPACTED AGGREGATE

CONTRACTOR MAY USE ITEM 617 COMPACTED AGGREGATE OR 304 AGGREGATE BASE FOR SHOULDER.

ITEM 524 - DRILLED SHAFTS, 30" DIAMETER, KING PILES, 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 CONCRETE PLACEMENT.

USE CLASS QC1 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 A 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

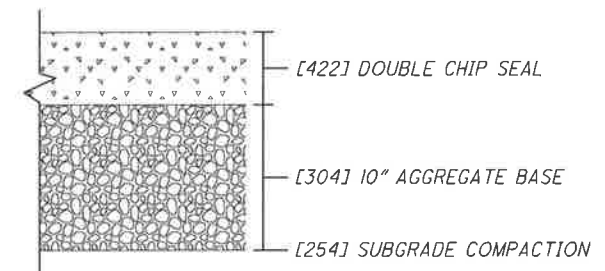
ACCESS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS USED TO CONSTRUCT THE DRILLED SHAFTS. ANY TEMPORARY GRADING, AGGREGATE, DRAINAGE, SHEETING ETC. NEEDED FOR ACCESS TO 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 SHAFT AND NO SEPARATE PAYMENT WILL BE MADE. PAYMENT IS FULL COMPENSATION FOR CONSTRUCTING THE DRILLED SHAFTS, INCLUDING FURNISHING AND PLACING CONCRETE AND ANY SONOTUBE REQUIRED FOR FORMING THE TOPS OF THE SHAFTS. PAYMENT FOR SOIL OVERBURDEN DRILLING, WHICH IS GROUND LEVEL TO THE TOP OF THE SHAFT, SHALL BE INCLUSIVE OF ITEM 524 DRILLED SHAFTS, 24" DIAMETER, KING PILES, AS PER PLAN.

MEASUREMENT FOR PAYMENT FOR DRILLED SHAFTS, AS PER PLAN, WILL BE MEASURED ALONG THE AXIS OF THE DRILLED SHAFT FROM THE TOP OF THE SHAFT TO THE BOTTOM OF THE SHAFT, AS DETERMINED BY THE ENGINEER.

ITEM 422 - DOUBLE CHIP SEAL

DOUBLE CHIP SEAL SHALL CONSIST OF #67 STONE @ 36#/SY AND CRS-2P @ 0.6 GAL/SY (FIRST LAYER) AND #8 STONE @ 24#/SY AND CRS-2P @0.4 GAL/SY (SECOND LAYER). THESE QUANTITIES MAY BE ADJUSTED BY THE ENGINEER TO ACHIEVE 2/3 AGGREGATE EMBEDMENT DEPTH AS OUTLINED IN ODOT CMS ITEM 422.



FULL DEPTH REPAIR DETAIL

CALCULATED  
DES  
CHECKED  
RJM

GENERAL NOTES

ATH-CR25-0.16  
LANDSLIDE REPAIRS

**COAL TAR EPOXY COATING**

**DESCRIPTION**

A. THIS WORK SHALL CONSIST OF PROVIDING ALL LABOR, MATERIALS, EQUIPMENT AND SUPERVISION NECESSARY TO PROVIDE A PROTECTIVE COAL TAR EPOXY COATING SYSTEM. THE COATING SHALL BE APPLIED TO ALL SPACER AND ALL EXTERIOR SURFACES OF THE SOLDIER PILE FROM APPROXIMATELY 4' BELOW THE TOP OF THE SHAFT TO THE TOP OF THE SOLDIER PILE. THE ANGLES USED FOR SEATS SHALL ALSO BE COATED IN THE PANEL SEATS ARE TO BE FILED WELDED, COAT THE ANTICIPATED PANEL SEAT AREA ON THE PILE.

**COATING MATERIALS**

A. THE COATING SHALL BE SELF CURING CONSISTING OF TWO COMPONENTS. THE MATERIAL USED SHALL MEET OR EXCEED ALL THE REQUIREMENTS OF THE CORPS OF ENGINEERS SPECIFICATION C-200, GOVERNMENT SPECIFICATION MIL -P-23236 AND STEEL STRUCTURES PAINTING COUNCIL PAINT SYSTEM SSPC- PAINT NO. 16, COAL TAR EPOXY-POLYAMIDE BLACK.

B. ALL COATINGS SHALL BE PROCESSED AND PACKAGED AS TO INSURE THAT WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF MANUFACTURE, THEY WILL NOT GEL, LIVER OR THICKEN DELETERIOUSLY OR FROM GASSES IN THE CLOSED CONTAINER.

**PACKAGING AND LABELING**

COATINGS AND VEHICLES SHALL BE PACKAGED IN STANDARD CONTAINERS NOT LARGER THAN FIVE GALLONS IN SIZE, WITH REMOVABLE FRICTION OR LUG-TYPE COVERS. EACH CONTAINER OF SEPARATELY PACKAGED COMPONENTS SHALL BE CLEARLY AND DURABLY LABELED TO INDICATE THE PURCHASERS ORDER NUMBER, DATE OF MANUFACTURE, MANUFACTURERS BATCH NUMBER, QUANTITY, COLOR, COMPONENT IDENTIFICATION, AND THE DESIGNATED NAME AND FORMULA OR SPECIFICATION NUMBER OF THE COATING TOGETHER WITH SPECIAL INSTRUCTIONS.

**CERTIFICATIONS**

IN ADDITION TO MEETING THE OTHER QUALIFICATIONS, THE COATING MANUFACTURER SHALL CERTIFY THAT:

A. HE HAS BEEN A PRODUCER OF COATINGS OF THIS CLASS FOR A PERIOD OF AT LEAST TWO YEARS.

B. THE COATING BEING OFFERED UNDER THIS SPECIFICATION IS THE SAME FORMULATION WHICH HAS BEEN MANUFACTURED AND DISTRIBUTED BY HIM DURING THIS TWO YEAR PERIOD.

C. THE COATING BEING OFFERED UNDER THIS SPECIFICATION HAS BEEN SUCCESSFULLY USED IN SEA WATER IMMERSION SERVICE FOR AT LEAST TWO YEARS.

**SURFACE PREPARATION**

A. ALL SURFACES SHALL BE THOROUGHLY PREPARED FOR COATING APPLICATION IS STRICT ACCORDANCE WITH THE COATING MANUFACTURERS RECOMMENDATION. ALL CLEANING AND COATING WORK MUST BE PERFORMED IN A HEATED BUILDING. PRECEDING GRIT BLASTING, STEEL MUST BE HEATED TO AT LEAST 100 F TO ELIMINATE THE POSSIBILITY OF MOISTURE ON THE SURFACE TO BE CLEANED AND COATED.

B. GRIT BLASTING SHALL BE TO CLEAN NEAR-WHITE METAL, BLAST AS DEFINED BY SSPC SPECIFICATION SP-10. ALL WORK BLASTED IN ONE DAY MUST BE COATED ON THAT DAY.

C. ANY AREAS OF THE SURFACE WHICH SHOW TRACES OF OIL, GREASE, OR OTHER ORGANIC MATTER, SHALL BE REMOVED PRIOR TO BLASTING. THE CONTAMINATION SHALL BE REMOVED USING A SOLVENT WAS AS DEFINED BY STEEL STRUCTURES PAINTING COUNCIL SPECIFICATION SP-1.

D. ALL SURFACES TO BE COATED MUST BE COMPLETELY DRY, FREE OF MOISTURE, SOIL, DUST AND GRIT AT THE TIME THE COATING IS APPLIED.

E. THE FINISHED COATING SHALL BE POST-CURED AT A TEMPERATURE OF APPROXIMATELY NO DEGREES F WHEREVER THE AMBIENT AVERAGE TEMPERATURE FALLS BELOW TO DEGREES F.

**APPLICATION OF COATING**

ALL COATING SHALL BE APPLIED BY BRUSH OR SPRAY USING COMMERCIALY AVAILABLE SPRAY EQUIPMENT. THE COATINGS SHALL EXHIBIT REASONABLE LEVELING WITHOUT EXCESSIVE SAGGING WHEN APPLIED AT THE REQUIRED FILM THICKNESS. COATING MANUFACTURERS RECOMMENDATIONS SHALL BE ADHERED TO STRICTLY. THE TEMPERATURE OF THE COATING SHALL NOT BE LESS THAN THE TEMPERATURE OF THE STEEL AT THE SUBSTRUCTURE MUST BE AT LEAST 5 DEGREES F ABOVE THE DEW POINT TEMPERATURE.

**PROGRESS OF COATING WORK**

WHERE COATING ON ANY TYPE OF SURFACE HAS COMMENCED, THE COMPLETE COATING OPERATION, INCLUDING PRIMING AND FINISHING COATS WHEN MULTIPLE COATS ARE USED ON THAT PORTION OF THE WORK, SHALL BE COMPLETED AS SOON AS PRACTICAL, WITHOUT PROLONGED DELAYS. WHERE NECESSARY, SUFFICIENT TIME SHALL ELAPSE BETWEEN SUCCESSIVE COATS TO PERMIT THEM TO DRY PROPERLY FOR RECOATING AND THIS PERIOD SHALL BE MODIFIED AS NECESSARY TO SUIT SHOP CONDITIONS, FASTER BETWEEN COAT APPLICATIONS ARE POSSIBLE AT HIGHER TEMPERATURE, FOR EXAMPLE IF THE INITIAL COAT IS APPLIED AT 100 DEGREES F BY USE OF AN INLINE HEATER, A SECOND COAT MAY USUALLY BE APPLIED WITHIN THREE HOURS AFTER THE FIRST COAT.

**COATING THICKNESS**

A. THE MINIMUM THICKNESS OF 16 MILS DRY FILM IS REQUIRED ON ALL SURFACES TO BE COATED.

B. WHERE TO COATS ARE REQUIRED TO ACHIEVE THE RECOMMENDED FILM BUILD, THE INTERNAL BETWEEN COATS SHOULD BE AS SHORT AS POSSIBLE. TO INSURE MAXIMUM INTERCOAT ADHESION, IT IS RECOMMENDED THAT:

(1) THE NEXT COAT BE APPLIED AS SOON AS POSSIBLE AFTER THE PREVIOUS COAT IS FIRM.

(2) IF THE PREVIOUS COAT HAS CURED FOR MORE THAN THE RECOAT TIME SPECIFIED BY THE MANUFACTURER, BRUSH SAND BLAST FOLLOWED BY DRY CLEANING SUCH AS VACUUMING, USE OF AIR HOSES OR SWEEPING TO REMOVE DIRT ALL SURFACES TO BE RECOATED MUST SHOW A SURFACE PROFILE SUFFICIENT TO PROVIDE AN ADEQUATE MECHANICAL BOND. SURFACE PROFILE IS ESSENTIAL FOR INTERCOAT ADHESION.

**FINAL CURING TIME**

COATING SURFACES SHALL BE PERMITTED AS LONG A DRYING TIME AS PRACTICABLE, BUT IN ANY EVENT THE FOLLOWING MINIMUM REQUIREMENTS SHALL BE MET: THE STEEL COATED WITH THE COAL TAR EPOXY SYSTEM SHALL NOT BE PLACED UNTIL THE FINISHED COATING HAS CURED AT LEAST SEVEN DAYS AT 77 DEGREES F, OR BEEN POSTCURED AT HIGHER TEMPERATURES FOR A SHORT PERIOD OF TIME IN ACCORDANCE WITH THE COATING MANUFACTURERS RECOMMENDATIONS.

THINNING OF THE COATING MATERIAL FOR APPLICATION WILL BE PERMITTED ONLY IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

**INSPECTION**

A. SATISFACTION PERFORMANCE WILL BE BASED ON ACCEPTANCE BY THE ENGINEER OF THE COMPLETED WORK, ALL WORK WILL BE SUBJECT TO THE INSPECTION OF THE ENGINEER. THE GRIT BLASTING IS TO BE APPROVED BEFORE THE START OF THE COATING APPLICATION.

B. INSPECTION OF THE COMPLETED COATING WILL BE BASED UPON A NORDSON MIKROTEST OR OTHER MAGNETIC DETECTOR READINGS. DETECTION OF INADEQUATELY COATED SECTIONS WILL BE INDICATED BY CIRCLING WITH CHALK THE AREAS TO BE RECOATED.

**APPEARANCE OF FINISHED COATING**

A. THE FINISHED COATING SHALL BE GENERALLY SMOOTH AND FREE OF SHARP PROTUBERANCES WHICH COULD BE REMOVED BY ABRASION. A MINOR AMOUNT OF SAGGING, DIMPLING, OR CURTAINING WHICH DOES NOT EXCEED TWO TO THREE PERCENT OF THE SURFACE WILL NOT BE CONSIDERED CAUSE FOR REJECTION UNLESS THEY PRESENT SHARP EDGES WHICH MIGHT BE REMOVED BY ABRASION.

B. SHARP PROTUBERANCES SHALL BE CUT OFF USING A SHARP WOOD CHISEL LAID FLAT AGAINST THE SURFACE. THE AREA FROM WHICH MATERIAL HAS BEEN REMOVED SHALL BE RECOATED TO SMOOTH THE SURFACE.

**PROTECTION OF COATED STEEL**

THE CONTRACTOR SHALL EXERCISE EXTREME CARE HANDLING OF ALL COATED STEEL SO AS NOT TO DAMAGE THE COATED SURFACE. ANY DAMAGE TO THE COATING DUE TO HANDLING OR CONSTRUCTION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.

**SAFETY**

A. IF COATING IS APPLIED BY SPRAY IT SHALL BE PERFORMED IN AN ENCLOSED PLACE WITH A FORCED VENTILATION SYSTEM. THE SYSTEM SHALL BE CAPABLE OF POSITIVELY EXCHANGING THE AIR IN THE ENCLOSED PLACE FOR FRESH AIR AT THE RATE OF NOT LESS THAN 5000 CUBIC FEET PER MINUTE FOR EACH SPRAY GUN IN OPERATION, AND ALL PARTS OF THE SPACE SHALL BE SWEEPED BY MOVING AIR. THE VENTILATION SYSTEM SHALL BE OPERATED DURING THE ENTIRE OPERATION OF APPLICATION AND SHALL BE CONTINUED AFTER THE SPRAYING HAS BEEN HALTED UNTIL THE APPLIED FILM IS NO LONGER GIVING OFF APPRECIABLE SOLVENT VAPORS. THE AIR IN THE ENCLOSED PAINTING SPACE SHALL BE SAFE AT ALL TIMES FROM FIRE AND EXPLOSION HAZARDS AS DETERMINED BY THE EXPLOSIMETER, MANUFACTURED BY THE MINE SAFETY APPLIANCE COMPANY. WHERE SPRAYING IS BEING CARRIED OUT IN ENCLOSED OR OTHER SPACES NOT FREELY SWEEPED BY NATURAL WIND CURRENT, WORKMEN SHALL WEAR RESPIRATORS FED BY FRESH AIR. GRIT BLAST NOZZLE OPERATORS SHALL WEAR FRESH AIR FED HELMETS UNDER ALL CIRCUMSTANCES.

B. IN ADDITION TO NORMAL SAFETY PRECAUTIONS, WORKMEN SHALL TAKE EXTRA CARE TO AVOID CONTACT OF THE PAINT WITH THE SKIN AND TO AVOID INHALING FUMES OR ATOMIZED PARTICLES OF THE COATING.

**MEASUREMENT AND PAYMENT**

SEPARATE MEASUREMENT AND PAYMENT WILL NOT BE MADE FOR COAL TAR EPOXY COATING. THE COST SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT ITEM 507 - STEEL PILES, MISC.: SOLDIER PILES.

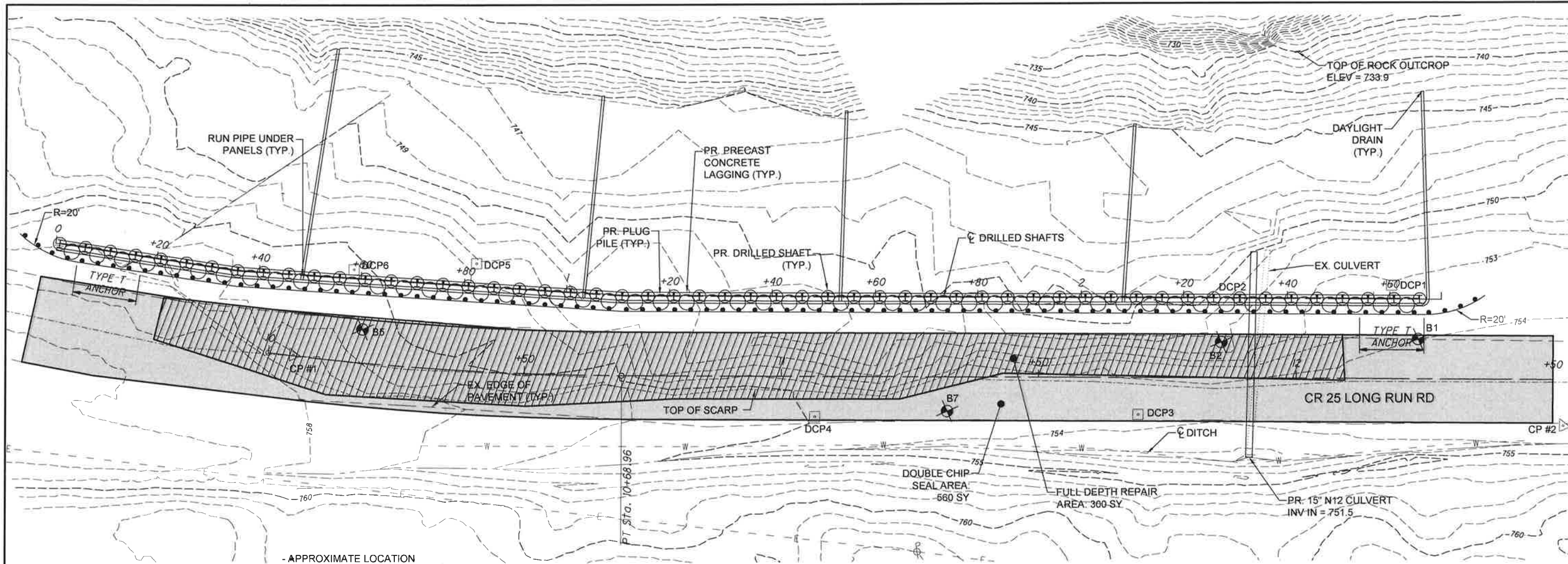
**GENERAL SUMMARY**

REF NO.	ITEM NO.	ITEM DESCRIPTION	QTY	UNIT
1	201	CLEARING AND GRUBBING	1	LS
2	203	EMBANKMENT	330	CY
3	606	GUARDRAIL, TYPE 5	287.5	FT
4	606	ANCHOR ASSEMBLY, TYPE T	2	EACH
5	617	COMPACTED AGGREGATE	15	CY
6	659	SEEDING AND MULCHING, AS PER PLAN	300	SY
7	832	EROSION CONTROL	2000	EACH
8	611	15" CONDUIT, TYPE B	40	FT
9	611	PRECAST REINFORCED CONCRETE OUTLET	5	EACH
10	254	SUBGRADE COMPACTION	300	SY
11	304	AGGREGATE BASE	83	CY
12	422	DOUBLE CHIP SEAL	560	SY
13	503	UNCLASSIFIED EXCAVATION, AS PER PLAN	1	LS
14	507	STEEL PILES, MISC.:SOLDIER PILE W18x97	1584	FT
15	511	CLASS QC 1 CONCRETE, FOOTING	16	CY
16	518	POROUS BACKFILL WITH GEOTEXTILE FABRIC	157	CY
17	518	6" PERFORATED CORRUGATED PLASTIC PIPE	270	FT
18	518	6" NON-PERFORATED CORRUGATED PLASTIC PIPE	200	FT
19	524	DRILLED SHAFTS, 36" DIAMETER, PLUG PILES, AS PER PLAN	356	FT
20	524	DRILLED SHAFTS, 30" DIAMETER, KING PILES, AS PER PLAN	1012	FT
21	530	STRUCTURE, MISC.: PRECAST CONCRETE PANEL	106	EACH
22	614	MAINTAINING TRAFFIC	1	LS
23	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	LS
24	624	MOBILIZATION	1	LS
25	103	PREMIUM FOR PERFORMACE BOND AND FOR PAYMENT BOND	1	LS

CALCULATED  
DES  
CHECKED  
RJM

GENERAL NOTES & GENERAL SUMMARY

ATH-CR25-0.16  
LANDSLIDE REPAIRS



- APPROXIMATE LOCATION BASED ON TERRACON REPORT

SITE PLAN

DYNAMIC CONE PENETROMETER \*

DCP	STATION	OFFSET	EX. GROUND SURFACE ELEV.	REFUSAL ELEVATION
DCP1	2+23.5	2.5' Lt	753	741.3
DCP2	1+94.0	0.5' Lt	752	739.3
DCP3	1+74.5	22.5' Rt	754.3	740.6
DCP4	1+11.5	23.5' Rt	754.6	743.6
DCP5	0+45.0	4.5' Lt	755	746.7
DCP6	0+21.5	2.0' Lt	754	740.7

SOIL BORINGS

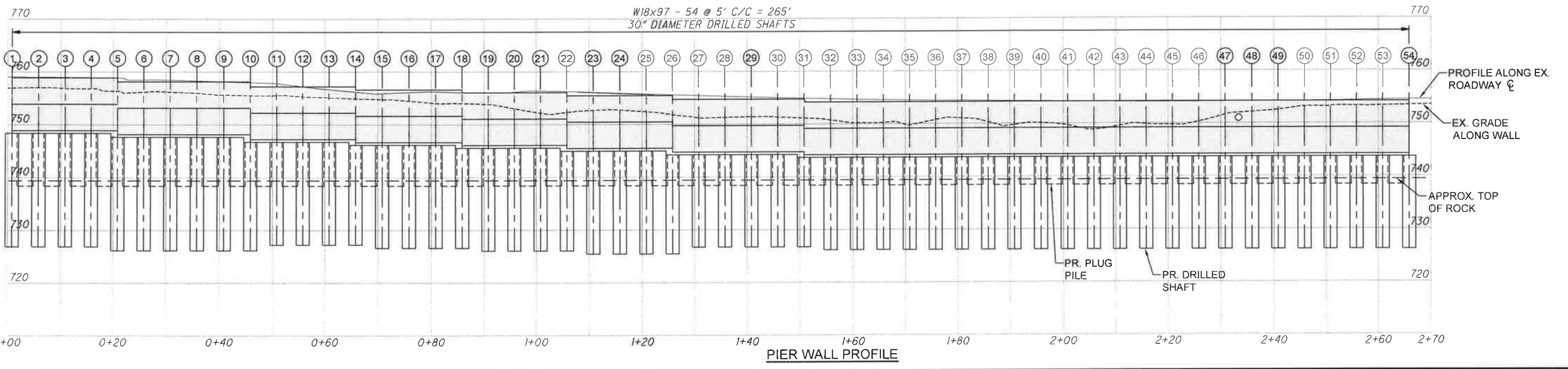
BORING	STATION	OFFSET	EX. GROUND SURFACE ELEV.	APPROX. TOP OF ROCK
B1	2+28.7	7.8' Rt	753.9	740.4
B2	1+90.5	8.6' Rt	752.9	739.4
B5	0+24.0	9.8' Rt	756.7	740.7
B7	1+37.2	22.2' Rt	754.3	743.3

CONTROL POINTS

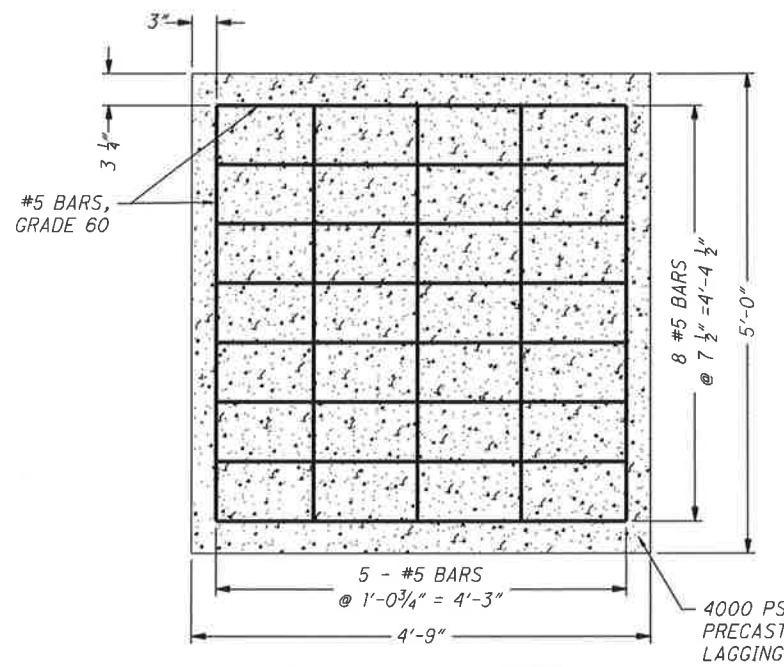
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP #1	455186.611	2103317.321	757.69	NAIL
CP #2	455072.985	2103536.998	754.49	NAIL

LEGEND

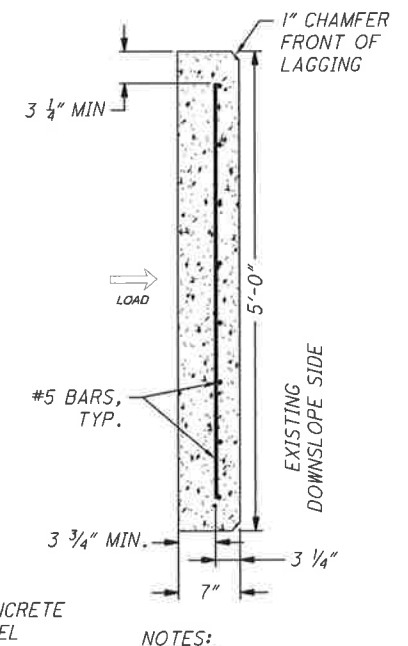
- BORING LOCATION
- DYNAMIC CONE PENETROMETER TEST
- CONTROL POINT



PIER WALL PROFILE

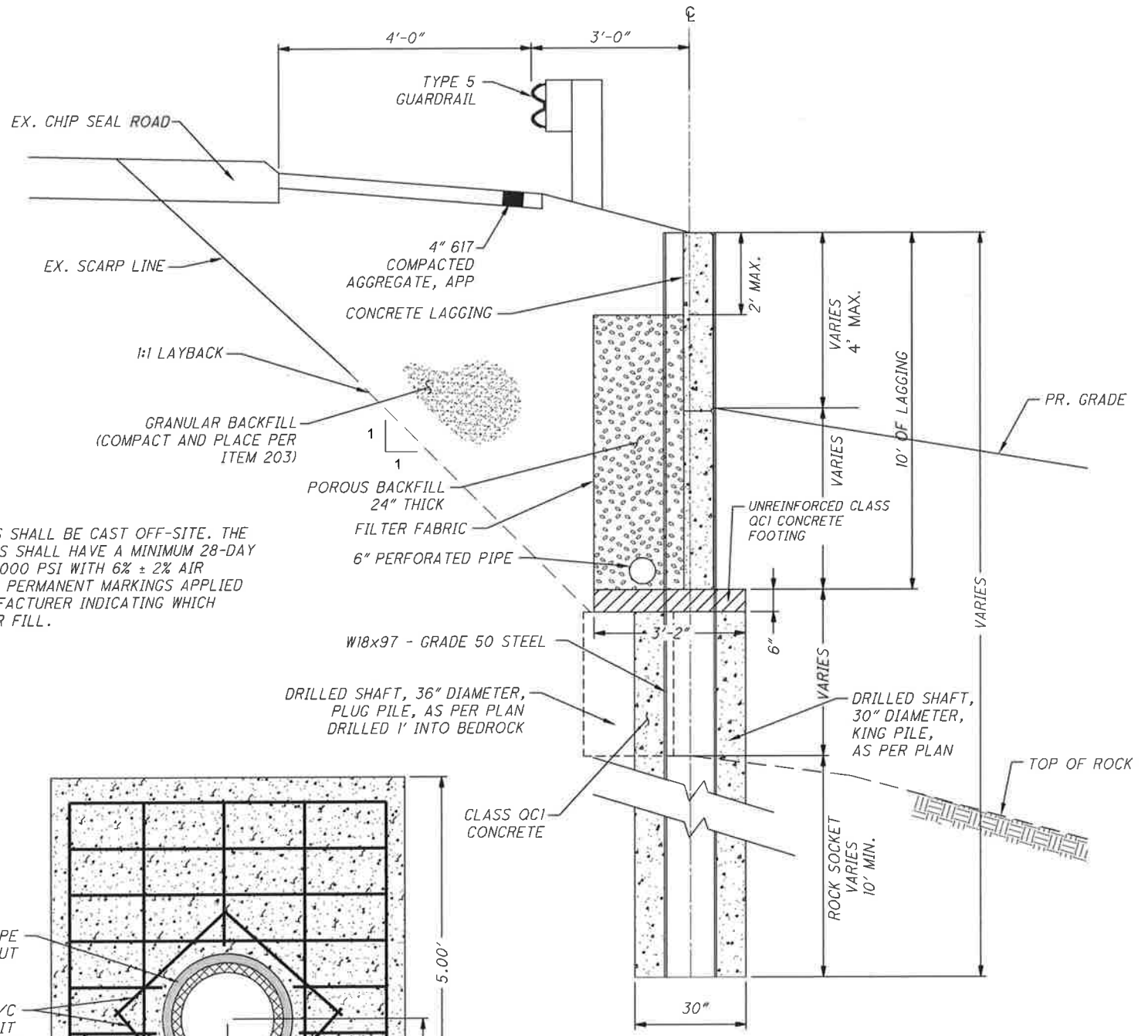


**PRECAST CONCRETE LAGGING PANEL DETAIL**  
SCALE: NOT TO SCALE

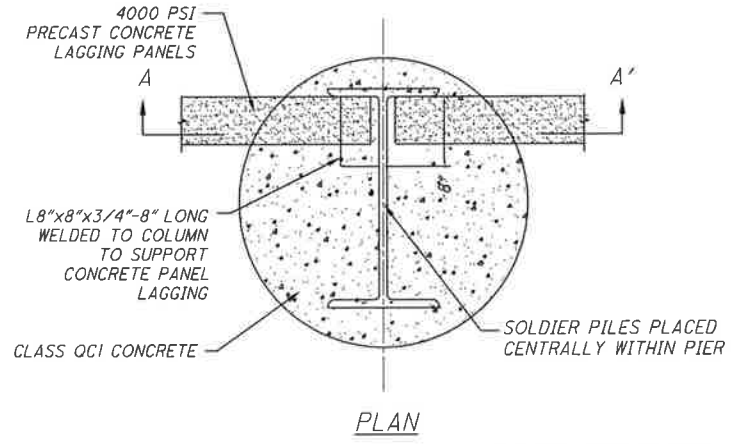


**NOTES:**

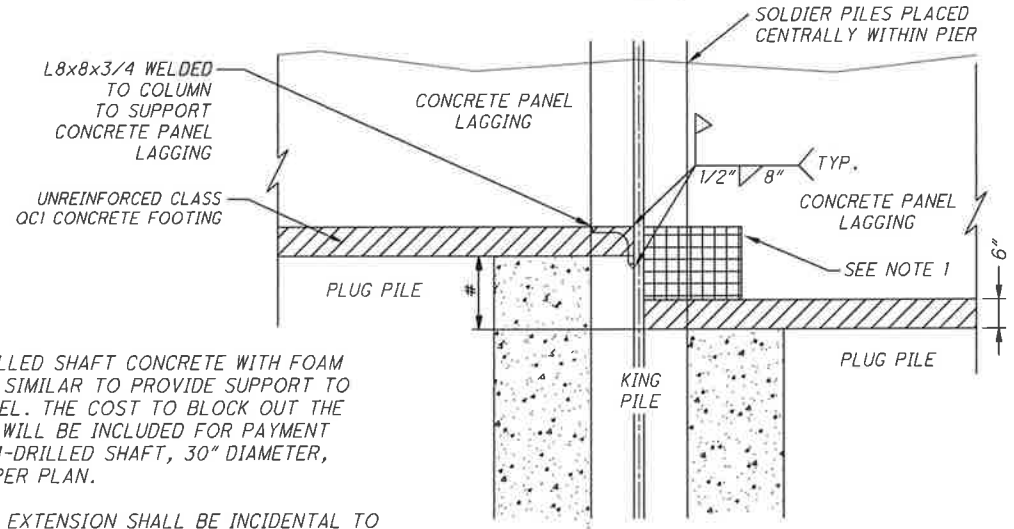
1. PRECAST REINFORCED CONCRETE PANELS SHALL BE CAST OFF-SITE. THE CONCRETE USED TO FABRICATE THE PANELS SHALL HAVE A MINIMUM 28-DAY UNCONFINED COMPRESSIVE STRENGTH OF 4000 PSI WITH 6% ± 2% AIR ENTRAINMENT. EACH PANEL SHALL INCLUDE PERMANENT MARKINGS APPLIED TO THE FACE OF THE PANEL BY THE MANUFACTURER INDICATING WHICH FACE SHALL BE PLACED AGAINST GRANULAR FILL.



**RETAINING WALL DETAIL**  
W18x97

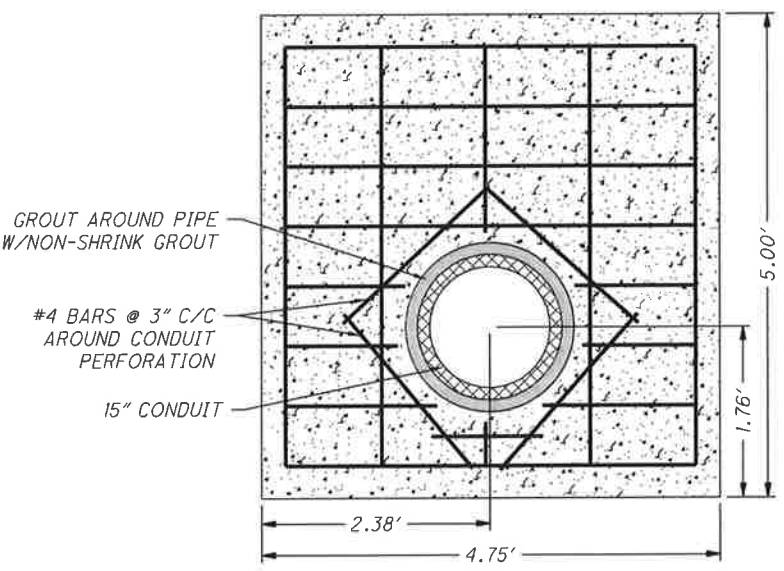


**PLAN**

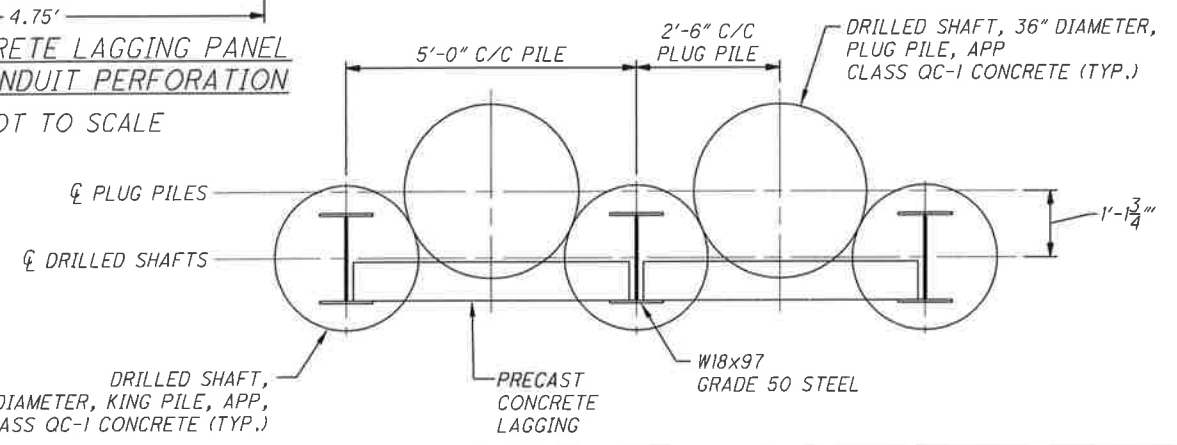


**SECTION A-A'**

**CONCRETE PANEL LAGGING ATTACHMENT TO SOLDIER PILE**  
SCALE: NOT TO SCALE



**PRECAST CONCRETE LAGGING PANEL DETAIL FOR CONDUIT PERFORATION**  
SCALE: NOT TO SCALE



**NOTES:**

1. 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, 30" DIAMETER, KING PILE, AS PER PLAN.

\* DRILLED SHAFT EXTENSION SHALL BE INCIDENTAL TO ITEM 524-DRILLED SHAFT, 30" DIAMETER, KING PILE, AS PER PLAN.

DRILLED SHAFT SUMMARY (KING PILE)						
SHAFT NO.	C.L. DRILLED SHAFT STATION	BOTTOM ELEV. OF SHAFT	TOP ELEV. OF SHAFT	ESTIMATED TOP OF ROCK ELEVATION	ITEM 524 DRILLED SHAFTS, 30" DIA. KING PILES, APP	ITEM 507 STEEL PILES, MISC.: SOLDIER PILES W18x97
					(FT)	(FT)
1	00+00.80	726.90	748.40	739.40	21.5	32.0
2	00+05.80	726.90	748.40	739.40	21.5	32.0
3	00+10.80	726.90	748.40	739.40	21.5	32.0
4	00+15.80	726.90	748.40	739.40	21.5	32.0
5	00+20.80	726.15	747.65	739.40	21.5	32.0
6	00+25.80	726.15	747.65	739.40	21.5	32.0
7	00+30.80	726.15	747.65	739.40	21.5	32.0
8	00+35.80	726.15	747.65	739.40	21.5	32.0
9	00+40.80	726.15	747.65	739.40	21.5	32.0
10	00+45.80	726.15	746.72	739.40	20.6	32.0
11	00+50.80	727.22	746.72	739.40	19.5	30.0
12	00+55.80	727.22	746.72	739.40	19.5	30.0
13	00+60.80	727.22	746.72	739.40	19.5	30.0
14	00+65.80	727.22	746.11	739.40	18.9	30.0
15	00+70.80	726.62	746.11	739.40	19.5	30.0
16	00+75.80	726.62	746.11	739.40	19.5	30.0
17	00+80.80	726.62	746.11	739.40	19.5	30.0
18	00+85.80	726.62	745.57	739.40	19.0	30.0
19	00+90.80	726.07	745.57	739.40	19.5	30.0
20	00+95.80	726.07	745.57	739.40	19.5	30.0
21	01+00.80	726.07	745.57	739.40	19.5	30.0
22	01+05.80	726.07	744.96	739.40	18.9	30.0
23	01+10.80	725.46	744.96	739.40	19.5	30.0
24	01+15.80	725.46	744.96	739.40	19.5	30.0
25	01+20.80	725.46	744.96	739.40	19.5	30.0
26	01+25.80	725.46	744.23	739.40	18.8	30.0
27	01+30.80	726.73	744.23	739.40	17.5	28.0
28	01+35.80	726.73	744.23	739.40	17.5	28.0
29	01+40.80	726.73	744.23	739.40	17.5	28.0
30	01+45.80	726.73	744.23	739.40	17.5	28.0
31	01+50.80	726.73	743.66	739.40	16.9	28.0
32	01+55.80	726.73	743.66	739.40	16.9	28.0
33	01+60.80	726.73	743.66	739.40	16.9	28.0
34	01+65.80	726.16	743.66	739.40	17.5	28.0
35	01+70.80	726.16	743.66	739.40	17.5	28.0
36	01+75.80	726.16	743.66	739.40	17.5	28.0
37	01+80.80	726.16	743.66	739.40	17.5	28.0
38	01+85.80	726.16	743.66	739.40	17.5	28.0
39	01+90.80	726.16	743.66	739.40	17.5	28.0
40	01+95.80	726.16	743.66	739.40	17.5	28.0
41	02+00.80	726.16	743.66	739.40	17.5	28.0
42	02+05.80	726.16	743.66	739.40	17.5	28.0
43	02+10.80	726.16	743.66	739.40	17.5	28.0
44	02+15.80	726.16	743.66	739.40	17.5	28.0
45	02+20.80	726.16	743.66	739.40	17.5	28.0
46	02+25.80	726.16	743.66	739.40	17.5	28.0
47	02+30.80	726.16	743.66	739.40	17.5	28.0
48	02+35.80	726.16	743.66	739.40	17.5	28.0
49	02+40.80	726.16	743.66	739.40	17.5	28.0
50	02+45.80	726.16	743.66	739.40	17.5	28.0
51	02+50.80	726.16	743.66	739.40	17.5	28.0
52	02+55.80	726.16	743.66	739.40	17.5	28.0
53	02+60.80	726.16	743.66	739.40	17.5	28.0
54	02+65.80	726.16	743.66	739.40	17.5	28.0
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>					1012	1584

DRILLED SHAFT SUMMARY (PLUG PILE)				
SHAFT NO.	C.L. DRILLED SHAFT STATION	BOTTOM ELEV. OF SHAFT	TOP ELEV. OF SHAFT	ITEM 524 DRILLED SHAFTS, 36" DIA. PLUG PILES, APP
				(FT)
1	00+03.30	738.40	748.40	10.00
2	00+08.30	738.40	748.40	10.00
3	00+13.30	738.40	748.40	10.00
4	00+18.30	738.40	748.40	10.00
5	00+23.30	738.40	747.65	9.25
6	00+28.30	738.40	747.65	9.25
7	00+33.30	738.40	747.65	9.25
8	00+38.30	738.40	747.65	9.25
9	00+43.30	738.40	747.65	9.25
10	00+48.30	738.40	746.72	8.32
11	00+53.30	738.40	746.72	8.32
12	00+58.30	738.40	746.72	8.32
13	00+63.30	738.40	746.72	8.32
14	00+68.30	738.40	746.11	7.71
15	00+73.30	738.40	746.11	7.71
16	00+78.30	738.40	746.11	7.71
17	00+83.30	738.40	746.11	7.71
18	00+88.30	738.40	745.57	7.17
19	00+93.30	738.40	745.57	7.17
20	00+98.30	738.40	745.57	7.17
21	01+03.30	738.40	745.57	7.17
22	01+08.30	738.40	744.96	6.56
23	01+13.30	738.40	744.96	6.56
24	01+18.30	738.40	744.96	6.56
25	01+23.30	738.40	744.96	6.56
26	01+28.30	738.40	744.23	5.83
27	01+33.30	738.40	744.23	5.83
28	01+38.30	738.40	744.23	5.83
29	01+43.30	738.40	744.23	5.83
30	01+48.30	738.40	744.23	5.83
31	01+53.30	738.40	743.66	5.26
32	01+58.30	738.40	743.66	5.26
33	01+63.30	738.40	743.66	5.26
34	01+68.30	738.40	743.66	5.26
35	01+73.30	738.40	743.66	5.26
36	01+78.30	738.40	743.66	5.26
37	01+83.30	738.40	743.66	5.26
38	01+88.30	738.40	743.66	5.26
39	01+93.30	738.40	743.66	5.26
40	01+98.30	738.40	743.66	5.26
41	02+03.30	738.40	743.66	5.26
42	02+08.30	738.40	743.66	5.26
43	02+13.30	738.40	743.66	5.26
44	02+18.30	738.40	743.66	5.26
45	02+23.30	738.40	743.66	5.26
46	02+28.30	738.40	743.66	5.26
47	02+33.30	738.40	743.66	5.26
48	02+38.30	738.40	743.66	5.26
49	02+43.30	738.40	743.66	5.26
50	02+48.30	738.40	743.66	5.26
51	02+53.30	738.40	743.66	5.26
52	02+58.30	738.40	743.66	5.26
53	02+63.30	738.40	743.66	5.26
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>				356

