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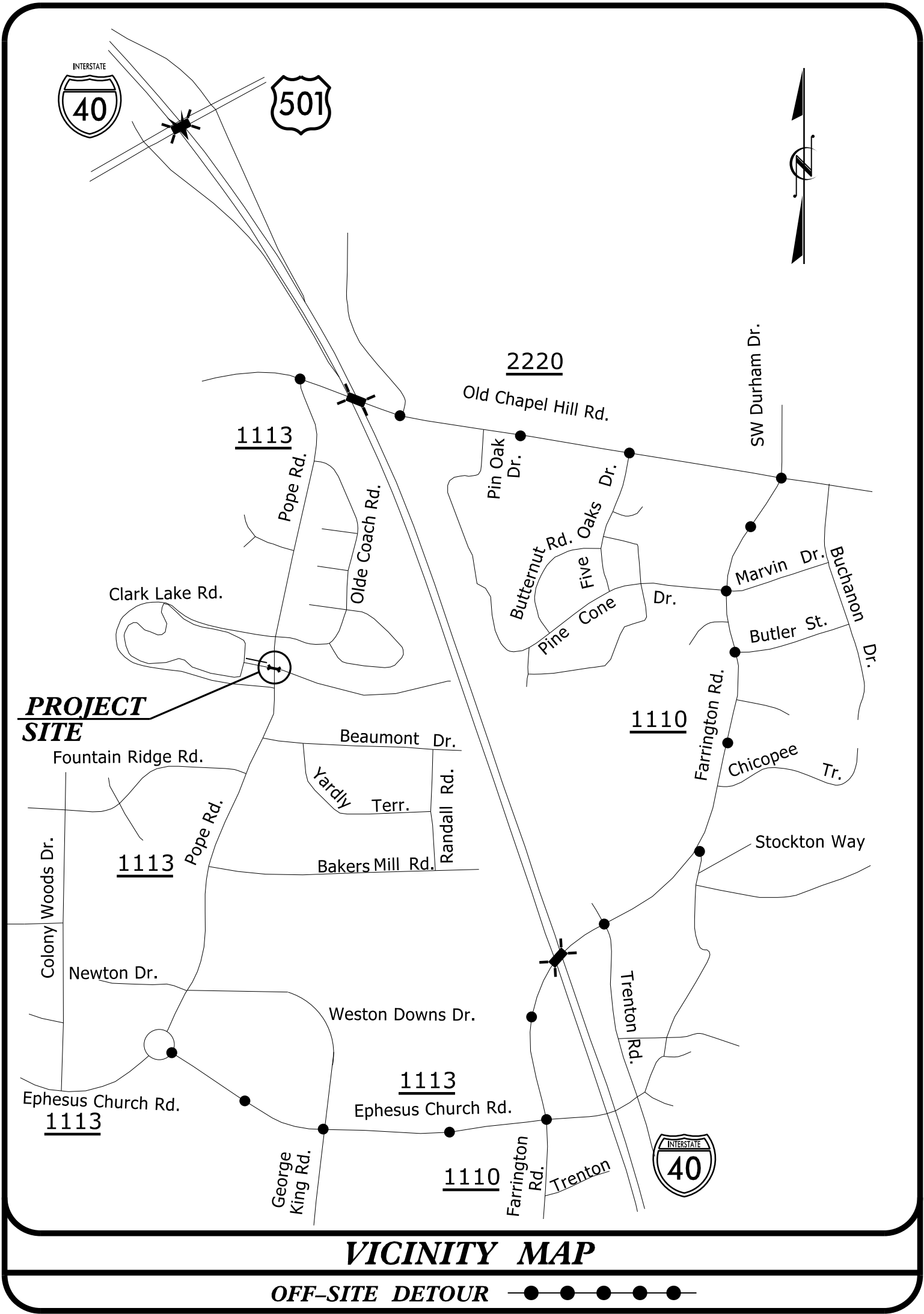
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09.05/99

4/8/2024  
\\5B.203214.6.Durham\_1113\_RDY\_TSH.dgn  
USER:skennedy

PROJECT: 5B.203214.6

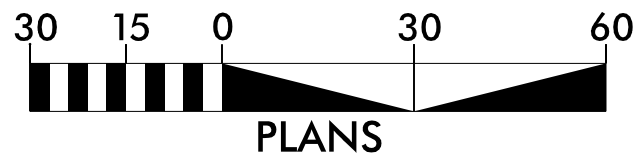
CONTRACT: ME00021



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-B	CONVENTIONAL SYMBOLS
2A-1	TYPICAL SECTIONS, PAVEMENT SCHEDULE, MISCELLANEOUS DETAILS
2D-1	METHOD OF PIPE INSTALLATION DETAIL
3B-1	GUARDRAIL SUMMARY
4	PLAN SHEET
5	PROFILE AND DETAILS
EC-1 THRU EC-5	EROSION CONTROL TITLE SHEET, SOIL STABILIZATION TIME FRAMES, MISCELLANEOUS DETAILS AND PUMP AROUND DETAIL AND PLAN SHEET
RF-1	REFORESTATION PLAN
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLAN AND DETAILS
UO-1 THRU UO-2	UTILITY BY OTHERS PLAN

GRAPHIC SCALES



PROJECT LENGTH

LENGTH ROADWAY PROJECT 5B.203214.6 =	0.042 MILES
LENGTH STRUCTURE PROJECT 5B.203214.6 =	0.000 MILES
TOTAL LENGTH PROJECT 5B.203214.6 =	0.042 MILES

NCDOT CONTACT: SHAWN DUCKWORTH  
DIVISION BRIDGE MAINTENANCE ENGINEER

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

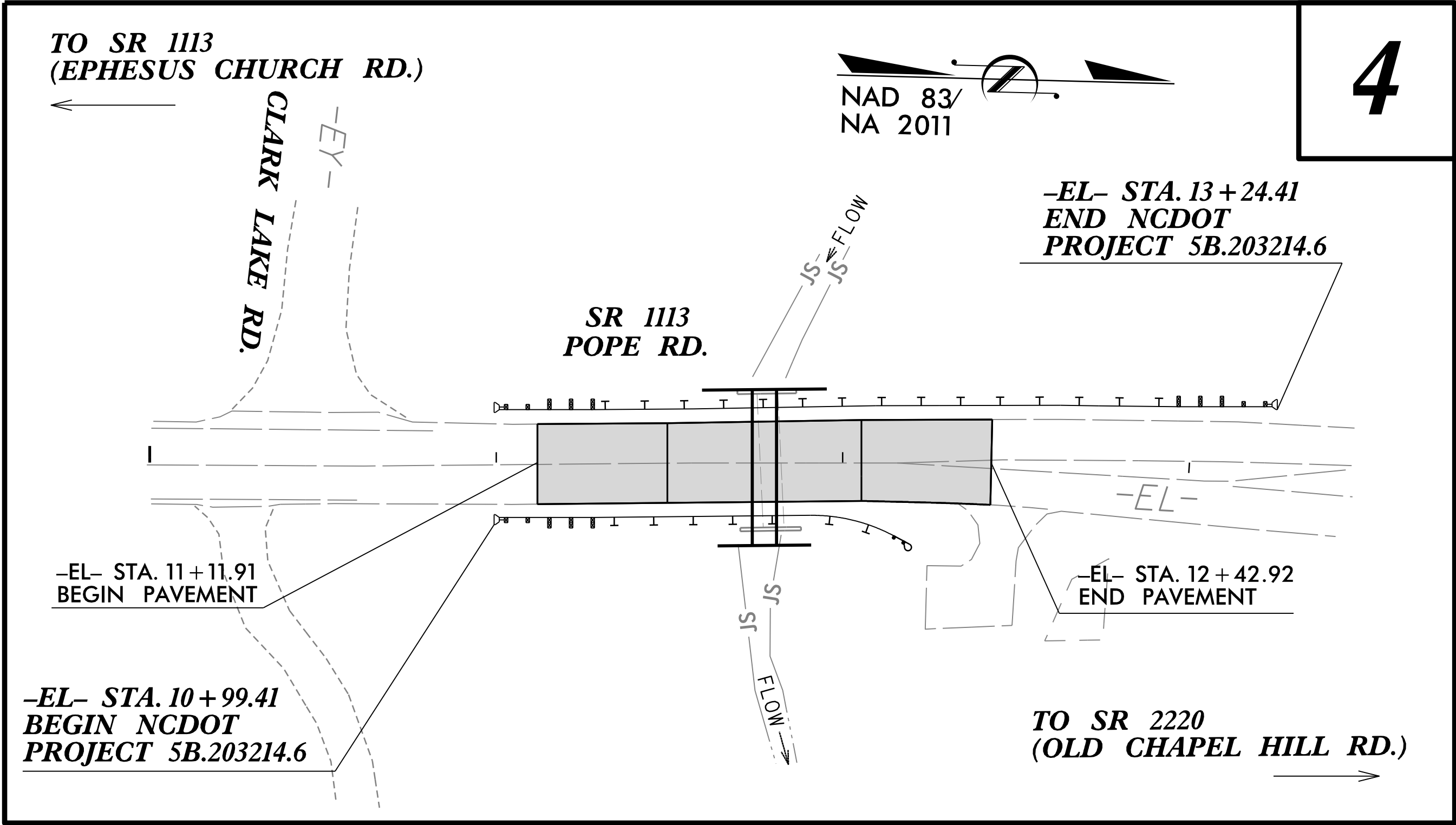
DURHAM COUNTY

LOCATION: PIPE CROSSING ON SR 1113 (POPE ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE  
& UTILITIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	5B.203214.6	1	
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
5B.203214.6		PE, UTIL., RW	
5B.203214.6		CONST.	

FINAL PLANS



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

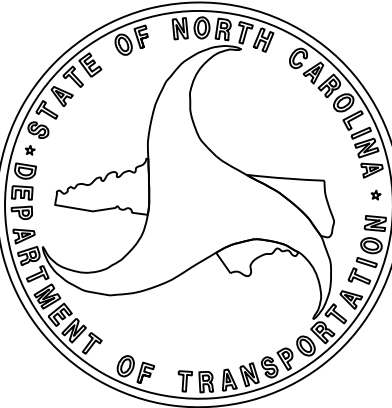
Prepared for:  
DIVISION OF HIGHWAYS  
DIVISION FIVE  
2612 N. Duke Street, Durham NC, 27704

2024 STANDARD SPECIFICATIONS  
RIGHT OF WAY DATE: EDWARD G. WETHERILL, PE  
PROJECT ENGINEER

LETTING DATE: MAY 8, 2024  
R.K. MURPHY, JR., PE  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER  
4/8/2024  
SEAL 15833  
ENGINEER  
JERRY L. LINDSEY  
SIGNATURE: Jerry L. Lindsey P.E.

ROADWAY DESIGN ENGINEER  
4/8/2024  
SEAL 018981  
ENGINEER  
R.K. MURPHY, JR.  
SIGNATURE: R.K. Murphy P.E.





*Note: Not to Scale*

**BOUNDARIES AND PROPERTY:**

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin (EIP)	
Computed Property Corner	
Existing Concrete Monument (ECM)	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

**HYDROLOGY:**

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

**RAILROADS:**

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

**RIGHT OF WAY & PROJECT CONTROL:**

Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

**ROADS AND RELATED FEATURES:**

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
<b>VEGETATION:</b>	
Single Tree	
Single Shrub	
Hedge	

Woods Line	
Orchard	
Vineyard	

**EXISTING STRUCTURES:**

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

**UTILITIES:**

\* SUE – Subsurface Utility Engineering  
LOS – Level of Service – A,B,C or D (Accuracy)

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line Test Hole (SUE – LOS A)*	
U/G Power Line (SUE – LOS B)*	
U/G Power Line (SUE – LOS C)*	
U/G Power Line (SUE – LOS D)*	

**TELEPHONE:**

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Test Hole (SUE – LOS A)*	
U/G Telephone Cable (SUE – LOS B)*	
U/G Telephone Cable (SUE – LOS C)*	
U/G Telephone Cable (SUE – LOS D)*	
U/G Telephone Conduit (SUE – LOS B)*	
U/G Telephone Conduit (SUE – LOS C)*	
U/G Telephone Conduit (SUE – LOS D)*	
U/G Fiber Optics Cable (SUE – LOS B)*	
U/G Fiber Optics Cable (SUE – LOS C)*	
U/G Fiber Optics Cable (SUE – LOS D)*	

**WATER:**

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE – LOS A)*	
U/G Water Line (SUE – LOS B)*	
U/G Water Line (SUE – LOS C)*	
U/G Water Line (SUE – LOS D)*	
Above Ground Water Line	

**TV:**

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Test Hole (SUE – LOS A)*	
U/G TV Cable (SUE – LOS B)*	
U/G TV Cable (SUE – LOS C)*	
U/G TV Cable (SUE – LOS D)*	
U/G Fiber Optic Cable (SUE – LOS B)*	
U/G Fiber Optic Cable (SUE – LOS C)*	
U/G Fiber Optic Cable (SUE – LOS D)*	

**GAS:**

Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE – LOS A)*	
U/G Gas Line (SUE – LOS B)*	
U/G Gas Line (SUE – LOS C)*	
U/G Gas Line (SUE – LOS D)*	
Above Ground Gas Line	

**SANITARY SEWER:**

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE – LOS A)*	
SS Force Main Line (SUE – LOS B)*	
SS Force Main Line (SUE – LOS C)*	
SS Force Main Line (SUE – LOS D)*	

**MISCELLANEOUS:**

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE – LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
Abandoned According to Utility Records	
End of Information	

8/17/99

REVISIONS

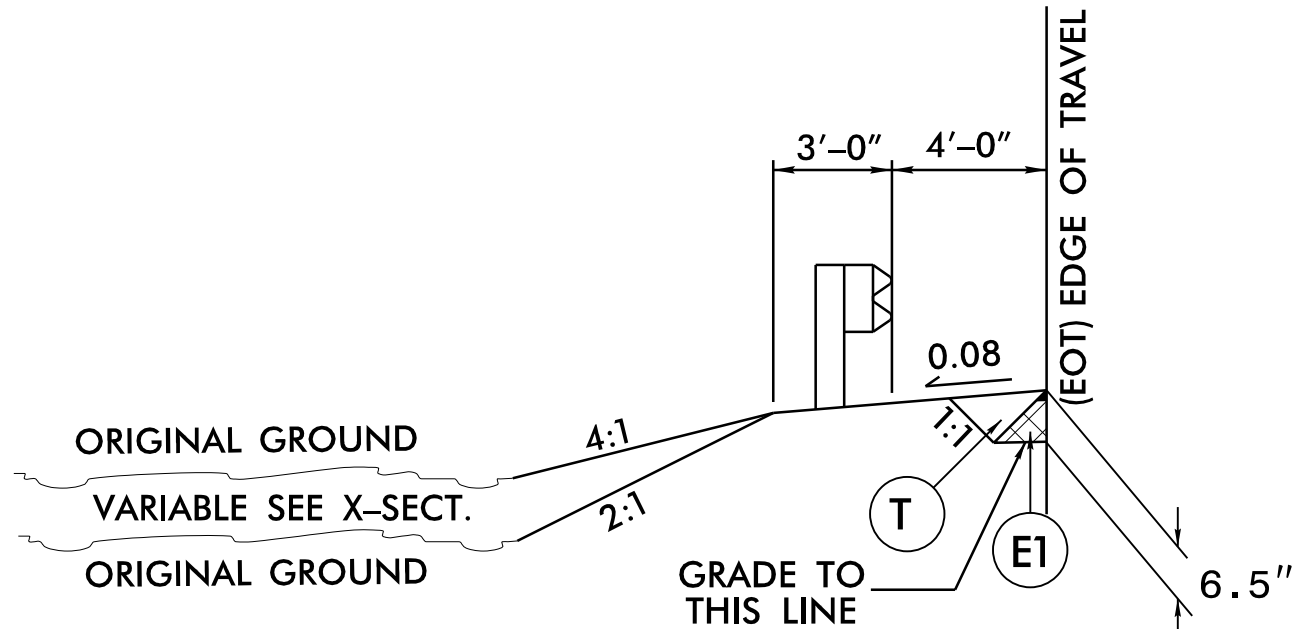
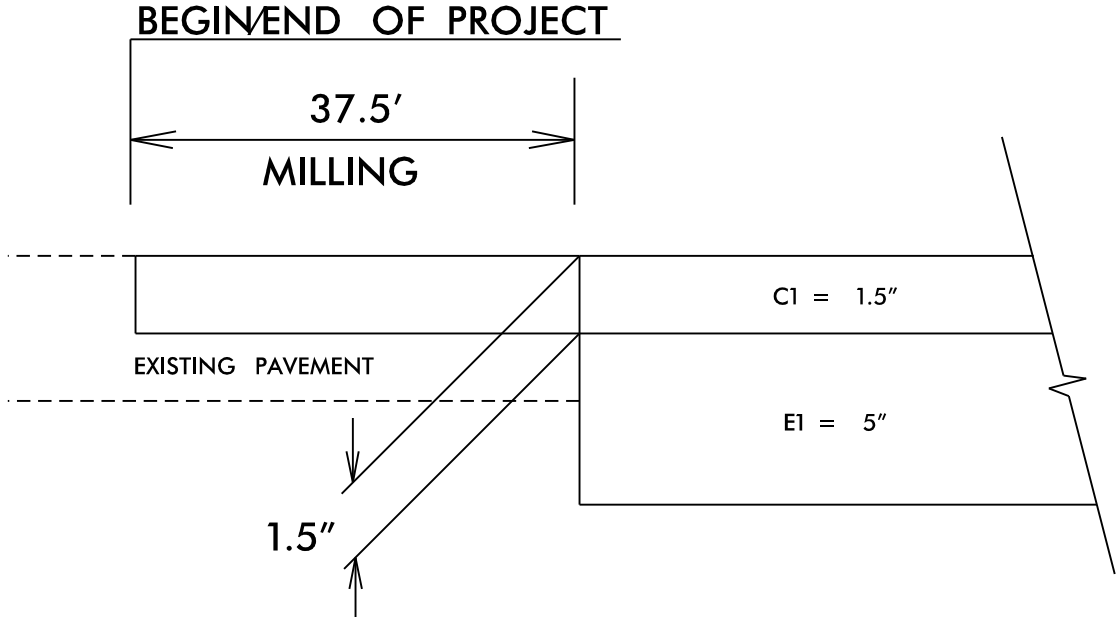
2/22/2024  
1113-rdy-psb 2A-1.dgn  
JSH

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
T	AGGREGATE SHOULDER BORROW.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. (SEE MILLING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

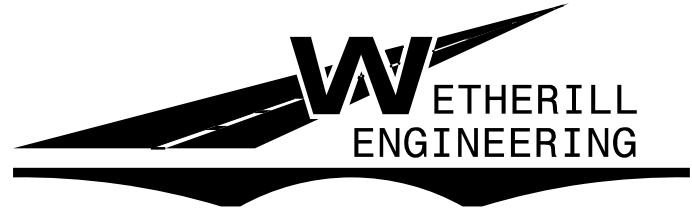
NOTES TO CONTRACTOR

Perform the work in accordance with Section 607 of the January 2024 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



**SHOULDER DETAIL**

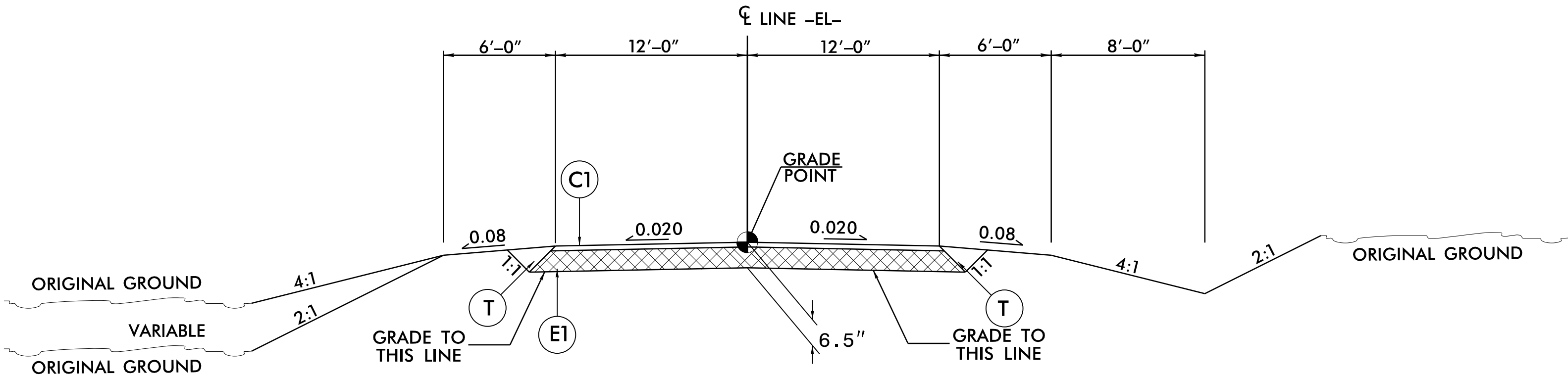
USE SHOULDER DETAIL IN  
CONJUNCTION WITH TYPICAL SECTION  
-EL- STA. 10+99.41 TO -EL- STA. 13+24.41 LT.  
-EL- STA. 10+99.41 TO -EL- STA. 12+19.86 RT.



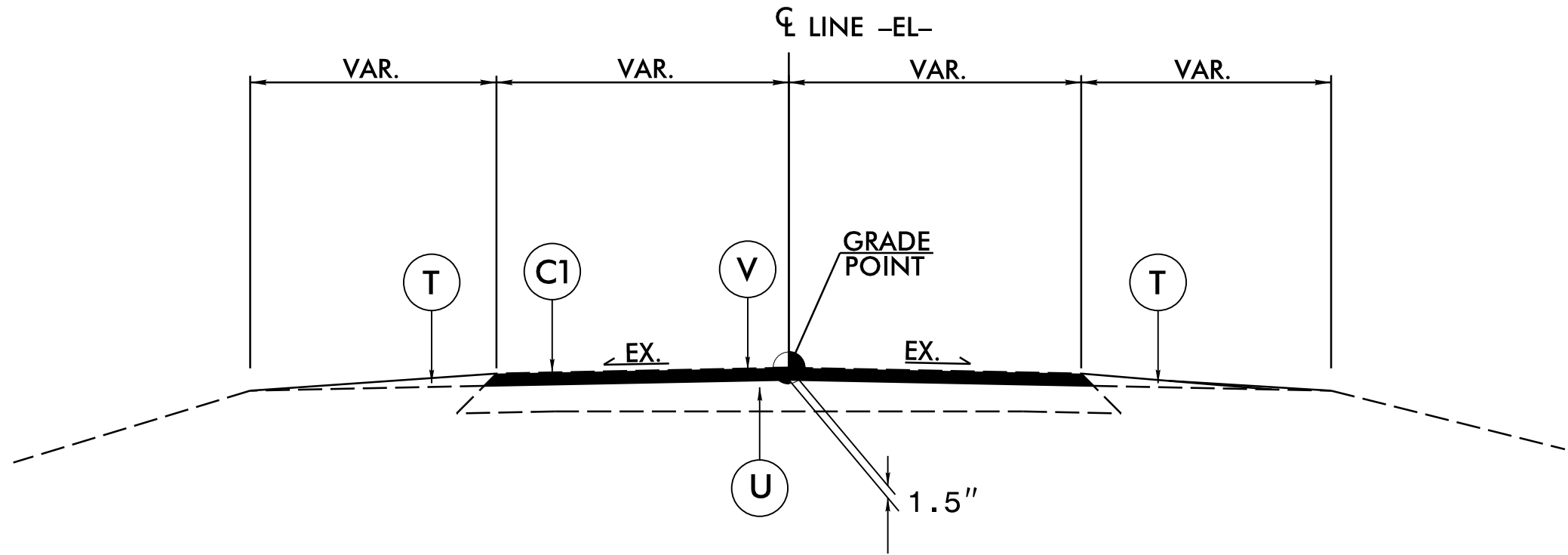
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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License No. F-0377  
Bus: 919 851 8077  
Fax: 919 851 8107

PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 2/22/2024	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**TYPICAL SECTION WITHIN EXCAVATION**



**V: MILLING DETAIL**



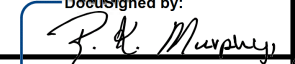
8/17/99

REVISIONS

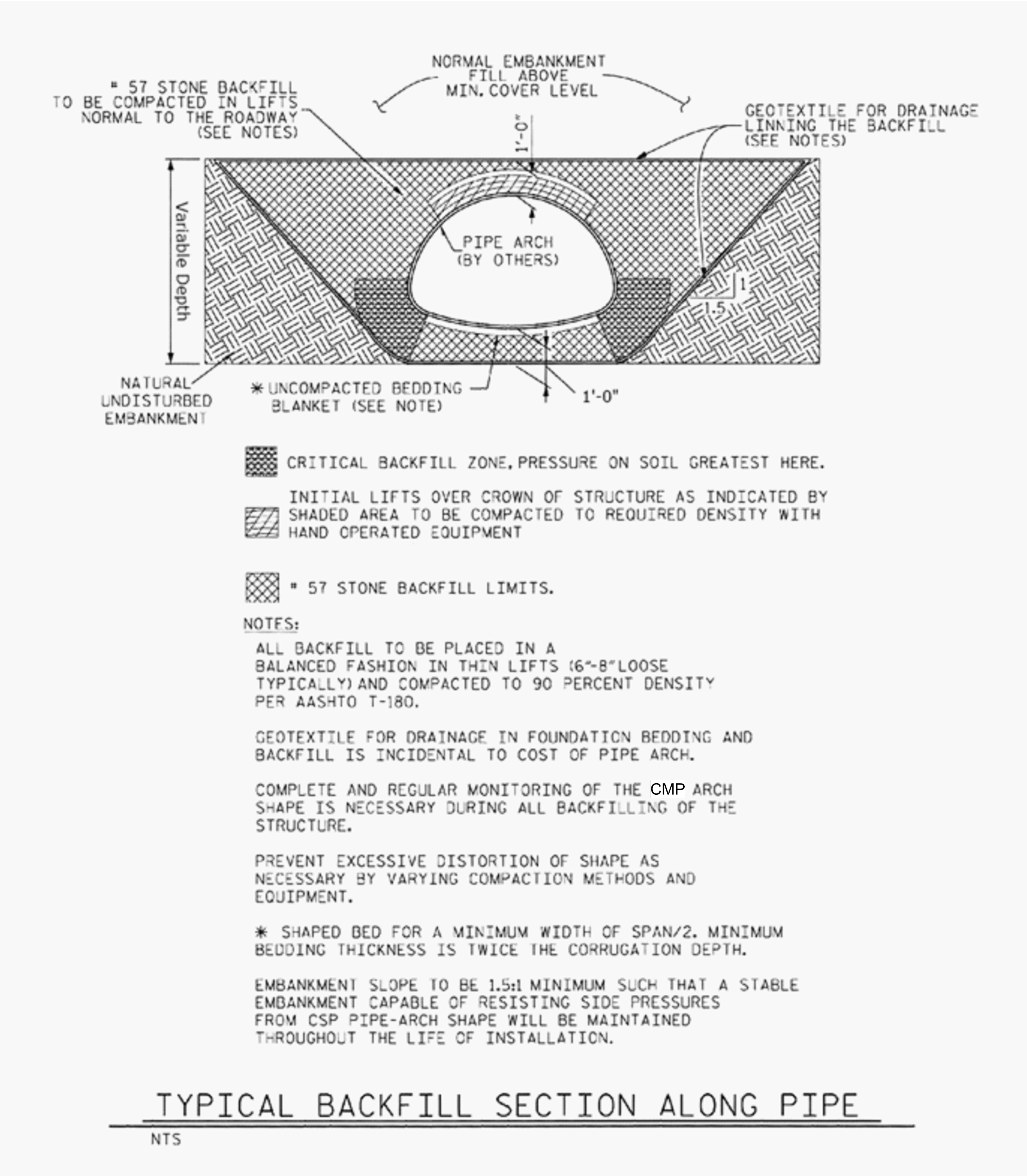
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TSE:SKM/NER

PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	2D-1

10/17/2023  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
018981  
R. K. MURPHY, JR.  
ENGINEER



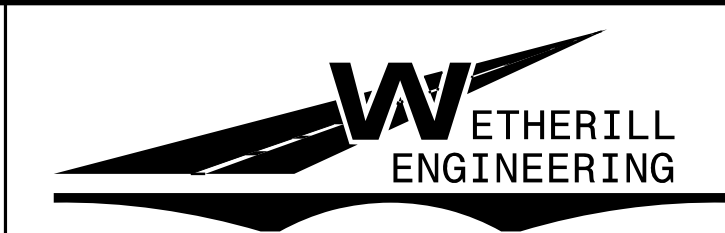
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PROJECT REFERENCE NO.	SHEET NO.
5B.2032/4.6	3B-1

## GUARDRAIL SUMMARY



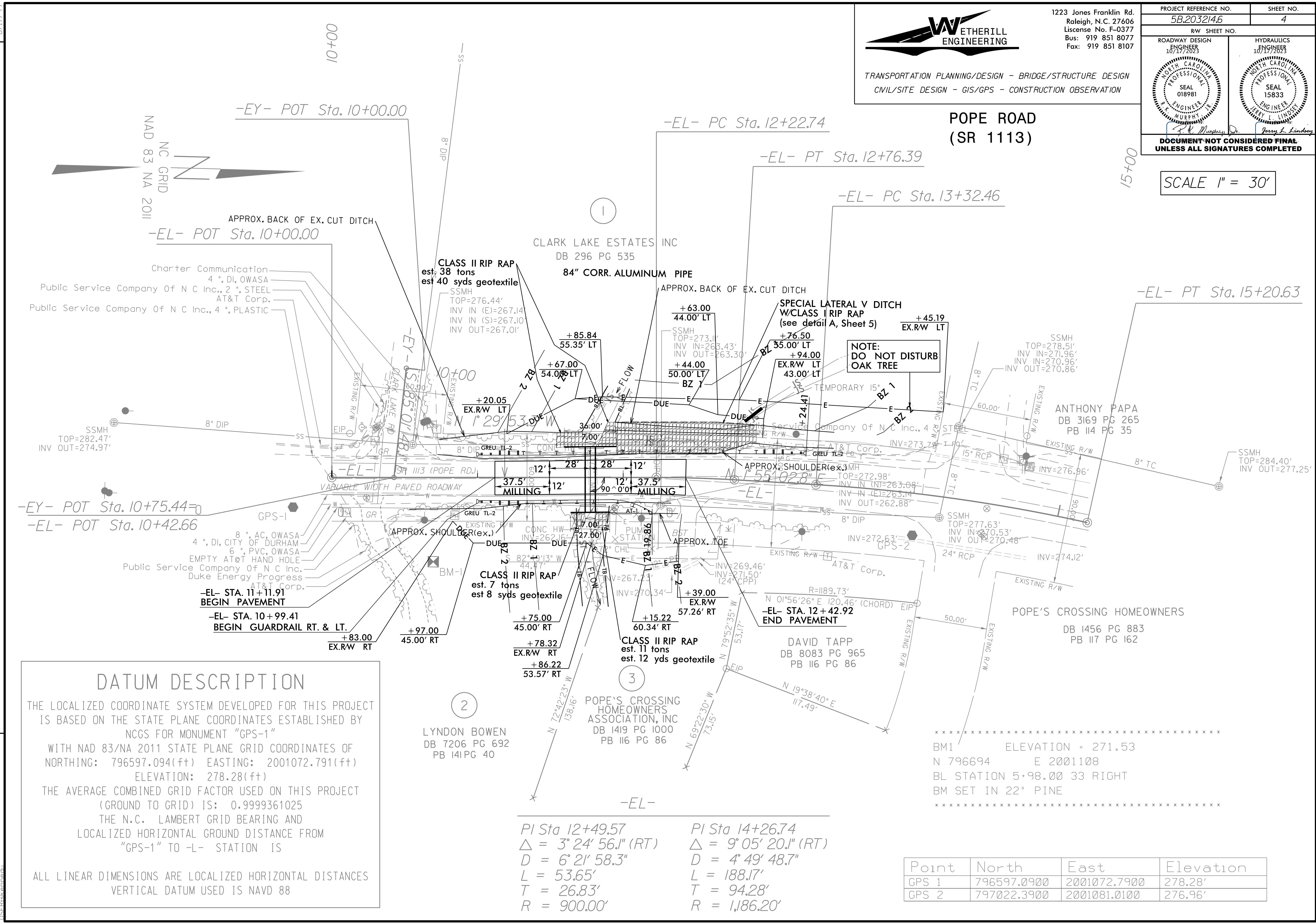
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. <b>5B.2032146</b>		SHEET NO. <b>4</b>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER 10/17/2023 	HYDRAULICS ENGINEER 10/17/2023 	
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# POPE ROAD (SR 1113)

SCALE 1" = 30'



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 796597.094(+) EASTING: 2001072.791(+) ELEVATION: 278.28(+)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999361025

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

PI Sta 12+49.57	PI Sta 14+26.74
Δ = 3° 24' 56.1" (RT)	Δ = 9° 05' 20.1" (RT)
D = 6° 21' 58.3"	D = 4° 49' 48.7"
L = 53.65'	L = 188.17'
T = 26.83'	T = 94.28'
R = 900.00'	R = 1,186.20'

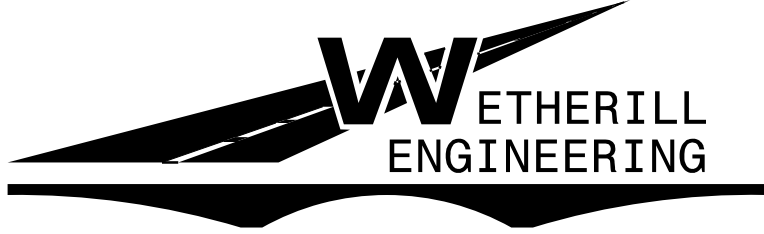
Point	North	East	Elevation
GPS 1	796597.0900	2001072.7900	278.28'
GPS 2	797022.3900	2001081.0100	276.96'

\*\*\*\*\*  
BM1 ELEVATION = 271.53  
N 796694 E 2001108  
BL STATION 5+98.00 33 RIGHT  
BM SET IN 22" PINE  
\*\*\*\*\*



5/14/2024

4/8/2024  
\\EB-2032142-Durham-1113-RDY\_PSH\_05.dgn  
11:58:00 AM



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Raleigh, N.C. 27606  
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Bus: 919 851 8077  
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.  
**5B.203214.6**

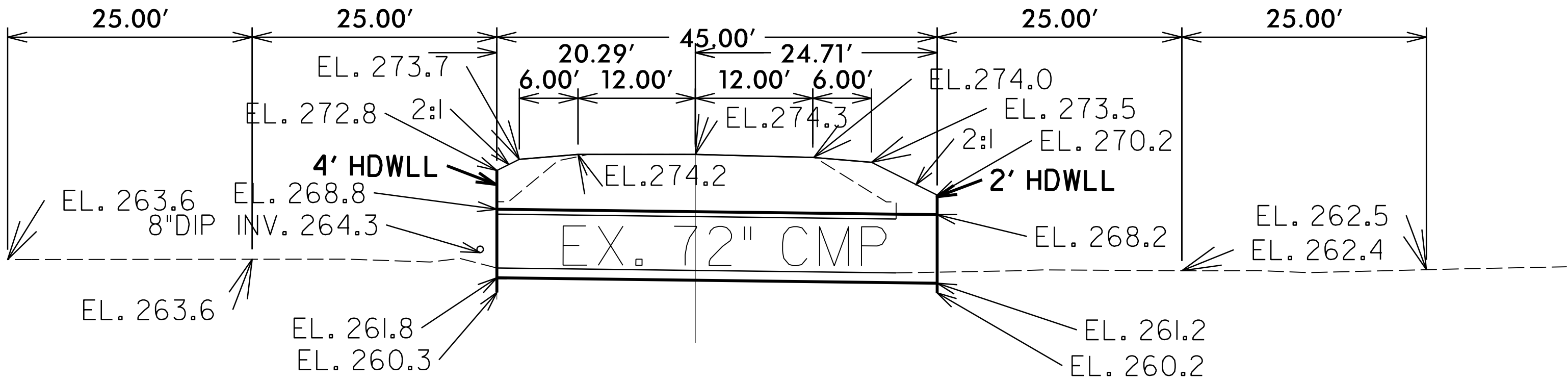
SHEET NO.  
**5**

ROADWAY DESIGN  
ENGINEER  
*[Signature]*  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
018981  
R.K. MURPHY, III  
4/8/2024

HYDRAULICS  
ENGINEER  
*[Signature]*  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
15833  
JERRY L. LINDSEY  
4/8/2024

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

POPE ROAD  
(SR 1113)



PROFILE VIEW ACROSS PIPE  
1 @ 84" CORR. ALUMINUM PIPE  
90 DEGREE SKEW

PROPOSED ELEVATIONS:  
CENTERLINE ROADWAY OVER PIPE  
ELEVATION=274.3'

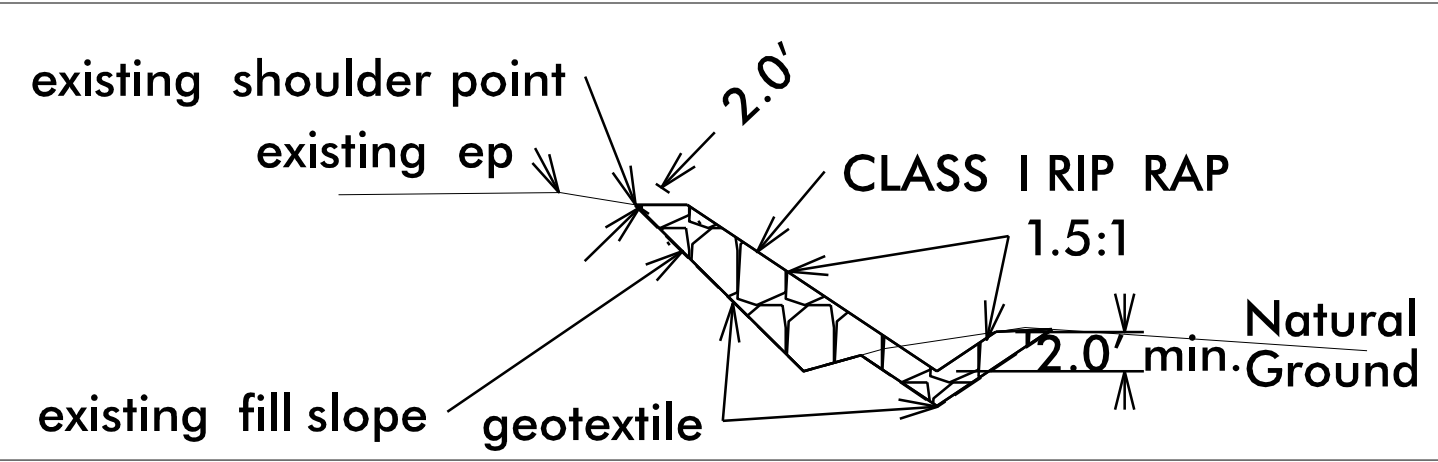
INLET:

TOP OF HEADWALL=272.8'  
TOP OF PIPE= 268.8'  
STREAM BED= 262.8  
INVERT PIPE= 261.8'

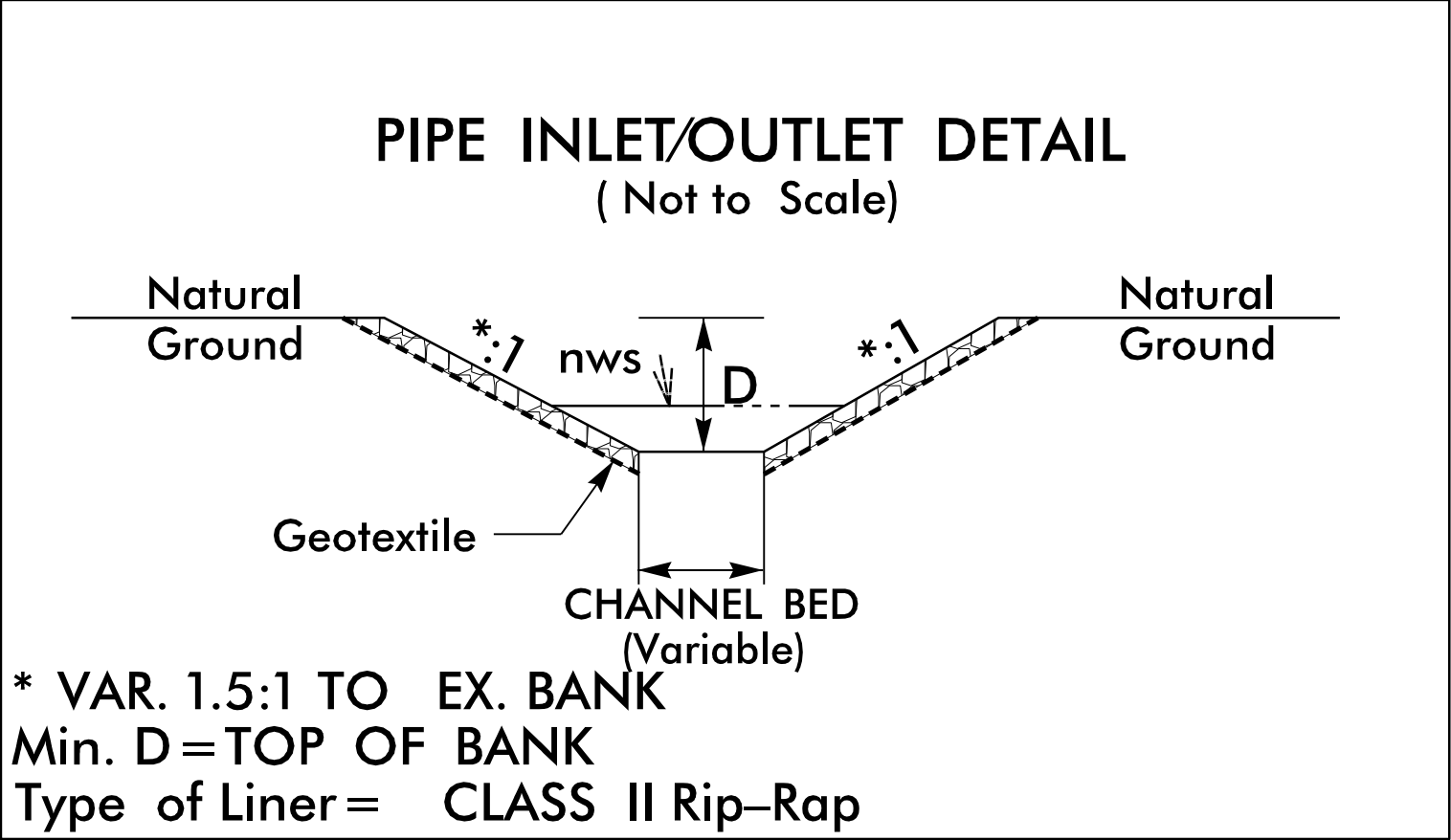
OUTLET:

TOP OF HEADWALL=270.2'  
TOP OF PIPE= 268.2'  
STREAM BED= 262.2'  
INVERT PIPE= 261.2'

CENTERLINE LENGTH=45'-0" OF 1 @ 84" CAP W/HEADWALLS  
ONE 36'-0" WIDE BY 12'-5" TALL (UPSTREAM) AND  
ONE 27'-0" WIDE BY 10'-0" TALL (DOWNSTREAM) FULLY WELDED  
STRUCTURAL ALUMINUM STRUCTURAL PLATE HEADWALL  
W/1 SECTION OF 84" 10 GAGE" ALUMINUM  
PIPE STUBBED OUT, WHICH SHALL BE FULLY WELDED  
TO ALUMINUM STRUCTURAL PLATE HEADWALL.  
  
MINIMUM COVER=2.0' AT HEADWALL;  
5.1' AT SHOULDER POINT;  
MAXIMUM COVER OVER PIPE=5.8' AT CENTER LINE.



DETAIL A  
TYPICAL SECTION  
SPECIAL LATERAL V DITCH  
W/CLASS I RIP RAP  
est. 270 tons  
est. 288 yds geotextile  
DDE=65 CY





# ROADWAY STANDARD DRAWINGS

## ***PHASING***




STEP 1: - USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9 AND SHEET TMP-2 CLOSE POPE ROAD (SR 1113) TO TRAFFIC.

STEP 2: - INSTALL PROPOSED DRAINAGE AND RECONSTRUCT PROPOSED ROADWAY, UP TO & INCLUDING THE FINAL LAYER OF SURFACE COURSE (SEE ROADWAY PLANS).

- PLACE THE FINAL MARKINGS (THEROPLASTIC) IN THE EXISITNG TRAFFIC PATTERN.

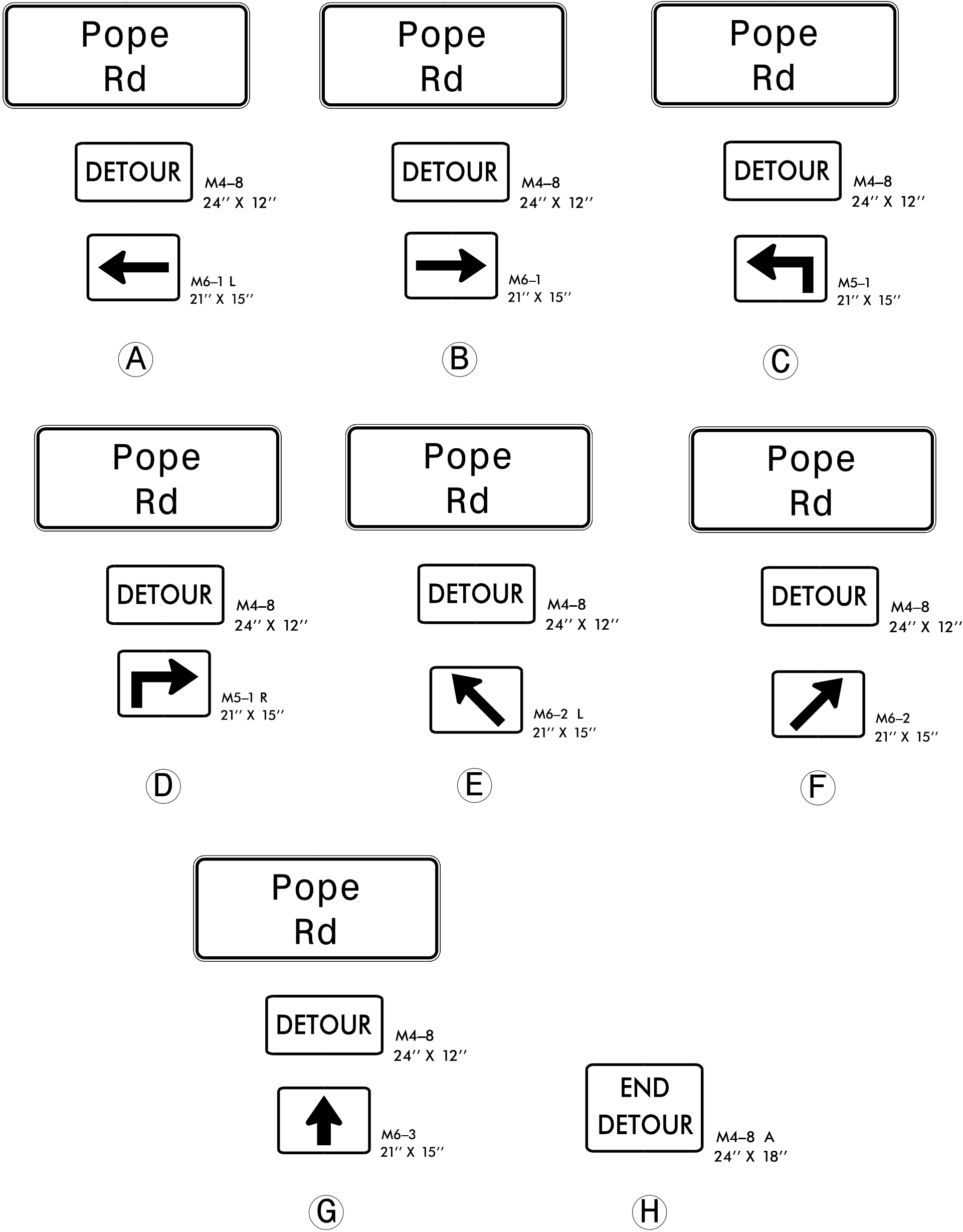
STEP 3: - OPEN POPE ROAD (SR 1113) TO THE FINAL TRAFFIC PATTERN AND REMOVE ALL TRAFFIC CONTROL DEVICES FROM THE PROJECT.

[illegible]

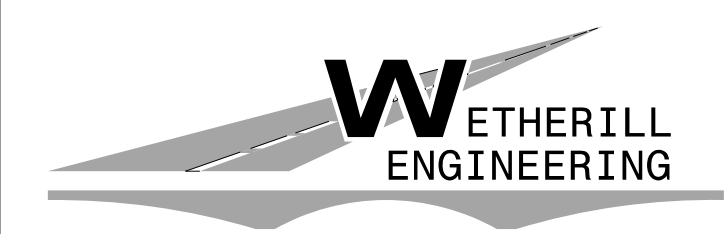
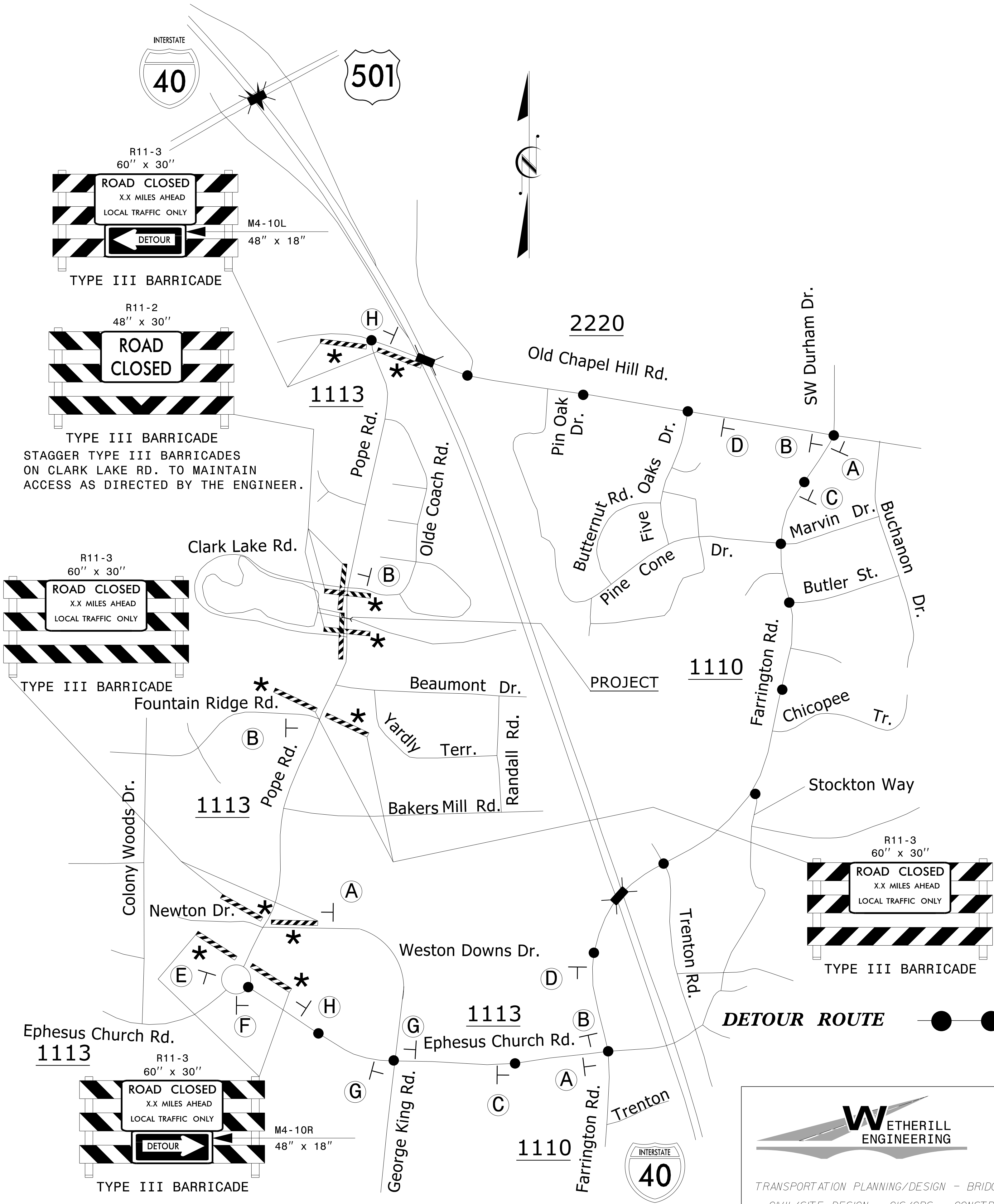
 <p>1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107</p> <p>TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION</p>		<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p> <p>APPROVED: <u><i>[Signature]</i></u> DATE: <u>2/7/2024</u></p> <p>SEAL</p> 		<p><b>DIVISION OF HIGHWAYS</b> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL</p> 		<p><b>ROAD STANDARD DRAWINGS, PHASING AND SPECIAL SIGN DESIGN FOR POPE ROAD (SR 1113)</b></p>	
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PROJ. REFERENCE NO.	SHEET NO.
5B.203214.6	TMP-2

DETOUR SIGNING



- NOTES: SEE TMP-1 FOR "POPE ROAD" SPECIAL SIGN DESIGN.  
ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.  
\* SEE RSD 1101.03, SHEET 1 OF 9, FOR TYPE III BARRICADE LOCATION WITH ATTACHED SIGNING & ADDITIONAL SIGNING FOR ROAD CLOSURE.

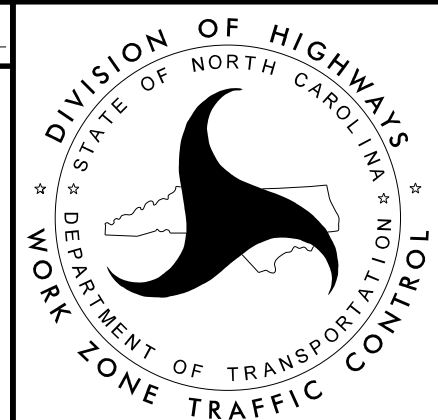
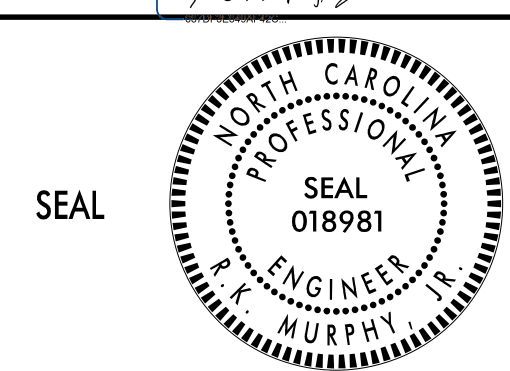


TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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APPROVED: [Signature] DATE: 2/7/2024

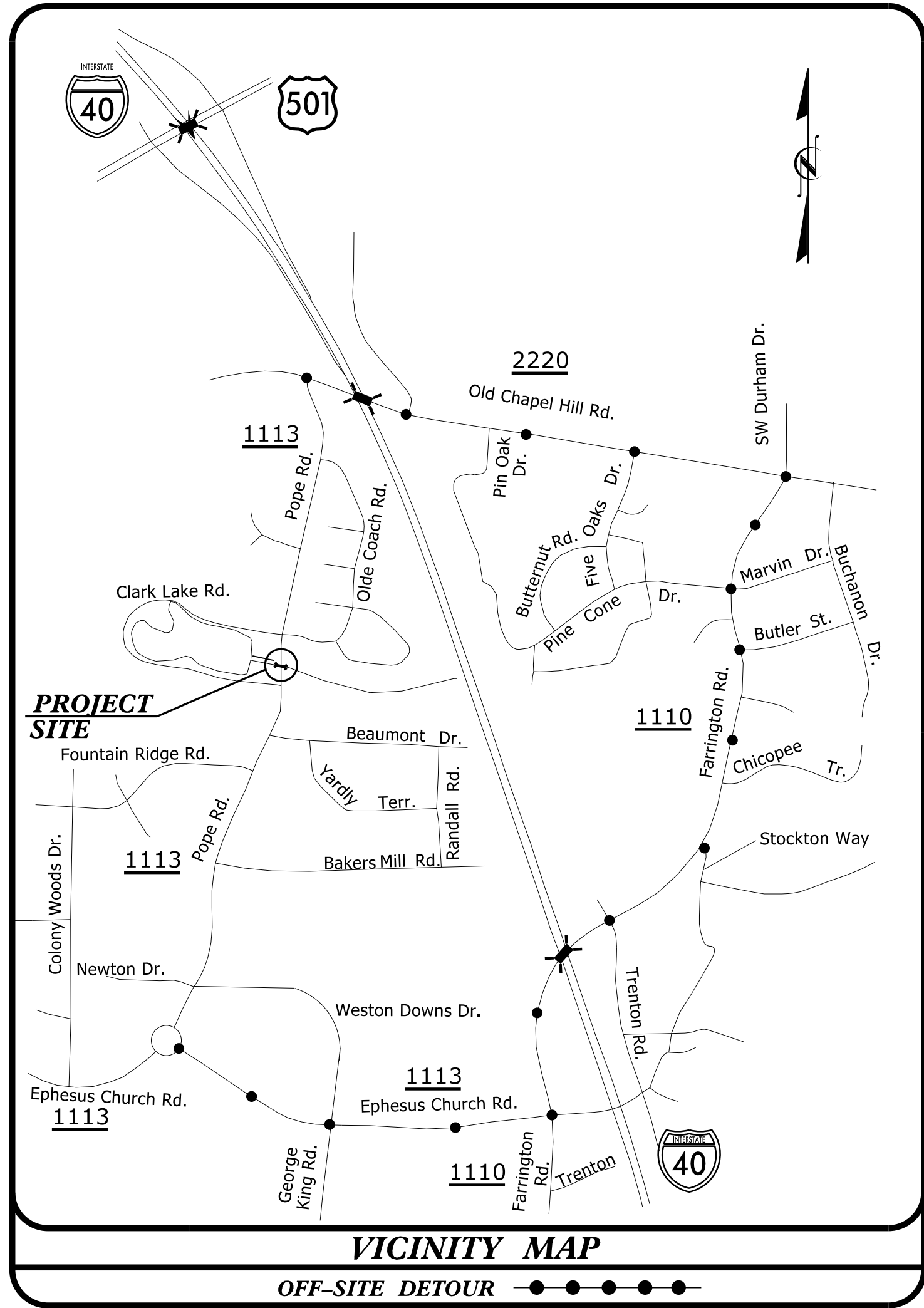


DETOUR  
POPE ROAD  
(SR 1113)

2/8/2024  
R:\Durham 1113.ec.TSH.dgn  
USER:KEstep

CONTRACT: ME00021

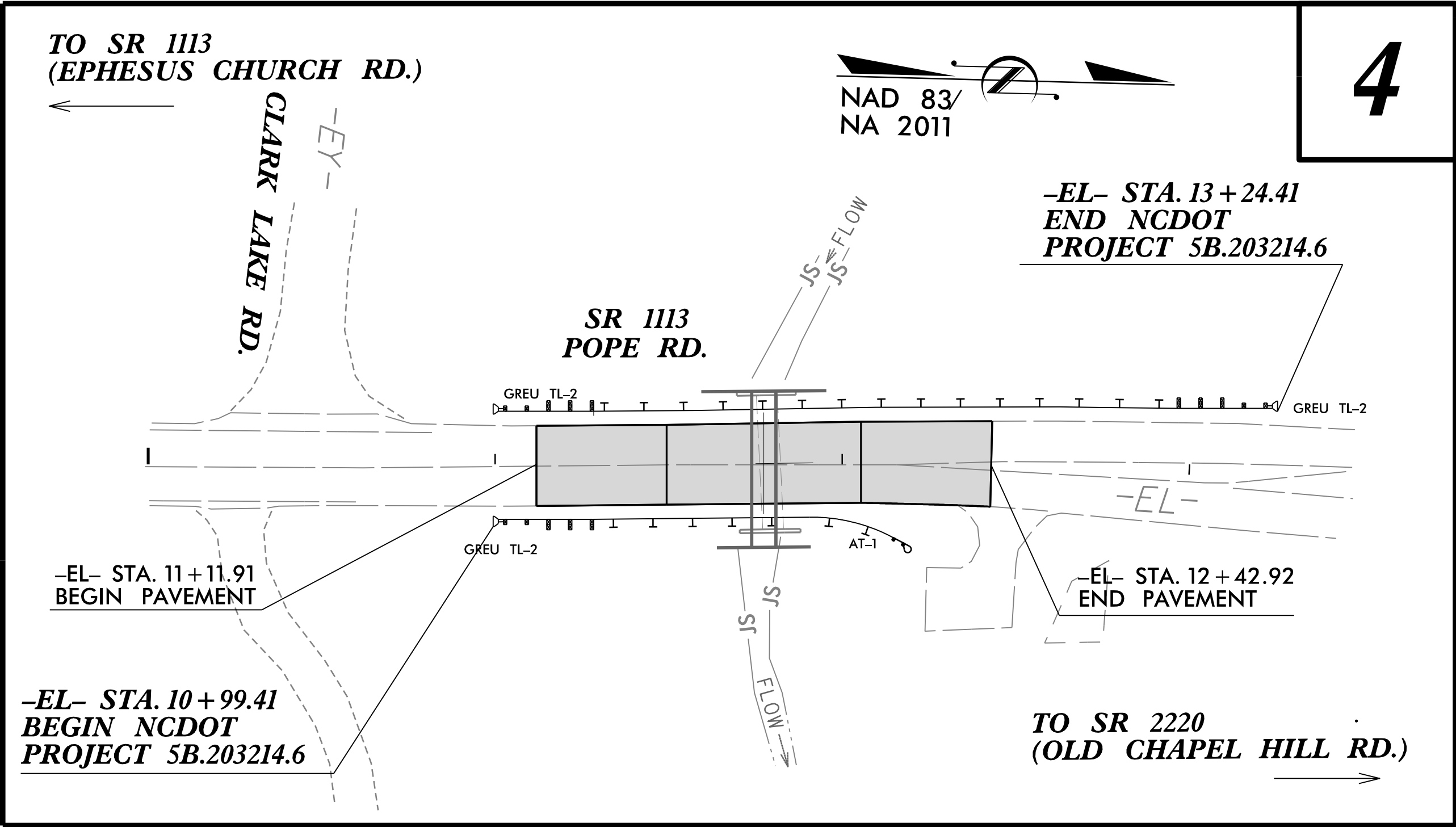
PROJECT: 5B.203214.6



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL  
**DURHAM COUNTY**

LOCATION: PIPE CROSSING ON SR 1113 (POPE ROAD)  
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	5B.203214.6	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	



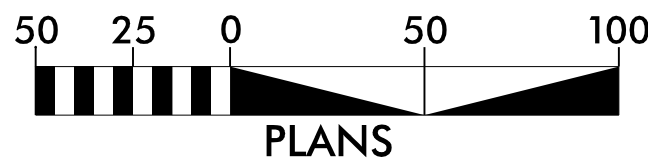
THIS PROJECT CONTAINS  
EROSION CONTROL PLANS  
FOR CLEARING AND  
GRUBBING PHASE OF  
CONSTRUCTION.

THIS PROJECT HAS  
BEEN DESIGNED TO  
SENSITIVE WATERSHED  
STANDARDS.

ENVIRONMENTALLY  
SENSITIVE AREA(S) EXIST  
ON THIS PROJECT

Refer To E. C. Special Provisions  
for Special Considerations.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH  
THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000  
GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019  
AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF  
ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.



1223 JONES FRANKLIN ROAD  
RALEIGH, N.C. 27606  
License No. E-25277  
Bus: 919 851 8077  
Fax: 919 851 8087

Prepared in the Office of:  
**WETHERILL ENGINEERING, INC.**  
1223 JONES FRANKLIN ROAD  
RALEIGH, NC 27606

Designed by:

**KATIE ESTEP** **4485**  
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C.  
Department of Transportation - Raleigh, N. C., dated January 2024  
and the latest revision thereto are applicable to this project and by  
reference hereby are considered a part of these plans.



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

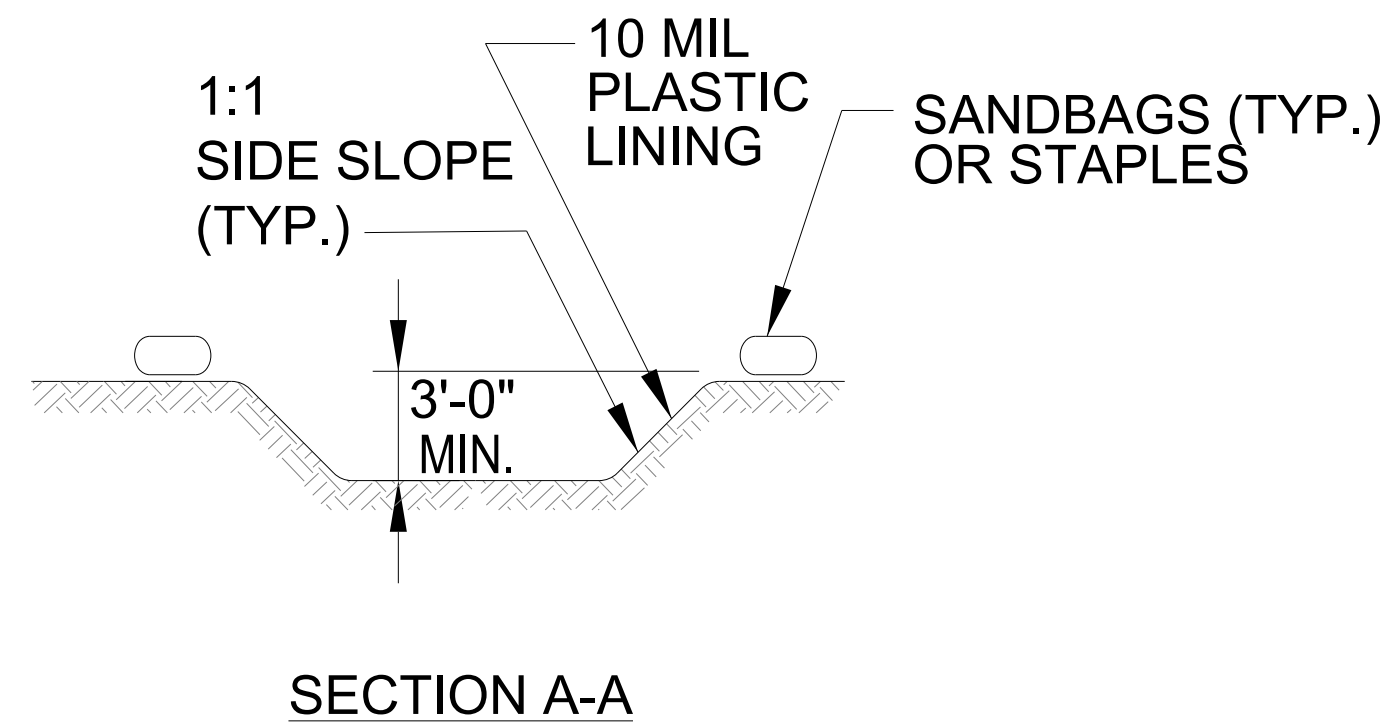
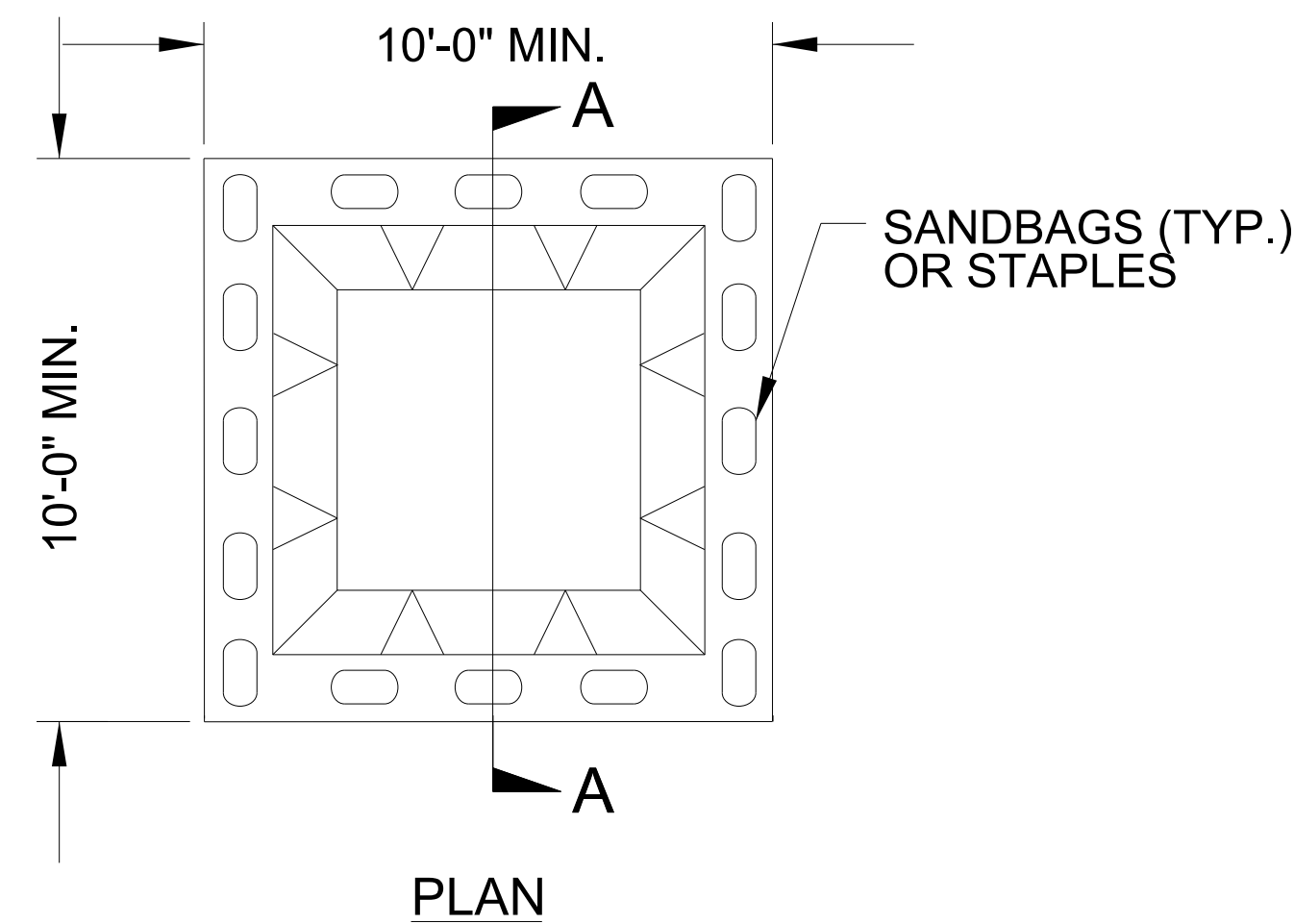
PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol	Std. #	Description	Symbol
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1630.02	Silt Basin Type B		1634.01	Temporary Rock Sediment Dam Type A	
1630.03	Temporary Silt Ditch		1634.02	Temporary Rock Sediment Dam Type B	
1630.04	Stilling Basin		1635.01	Rock Pipe Inlet Sediment Trap Type A	
1630.05	Temporary Diversion		1635.02	Rock Pipe Inlet Sediment Trap Type B	
1630.06	Special Stilling Basin		1636.01	Excelsior Wattle Check	
1630.07	Skimmer Basin		1636.01	Excelsior Wattle Check with Flocculant	
1630.08	Tiered Skimmer Basin		1636.01	Coir Fiber Wattle Check	
1630.09	Earthen Dam with Skimmer		1636.01	Coir Fiber Wattle Check with Flocculant	
	Infiltration Basin		1636.02	Silt Fence Excelsior Wattle Break	
	Rock Inlet Sediment Trap:			Silt Fence Coir Fiber Wattle Break	
1632.01	Type A				
1632.02	Type B		1636.03	Excelsior Wattle Barrier	
1632.03	Type C		1636.03	Coir Fiber Wattle Barrier	

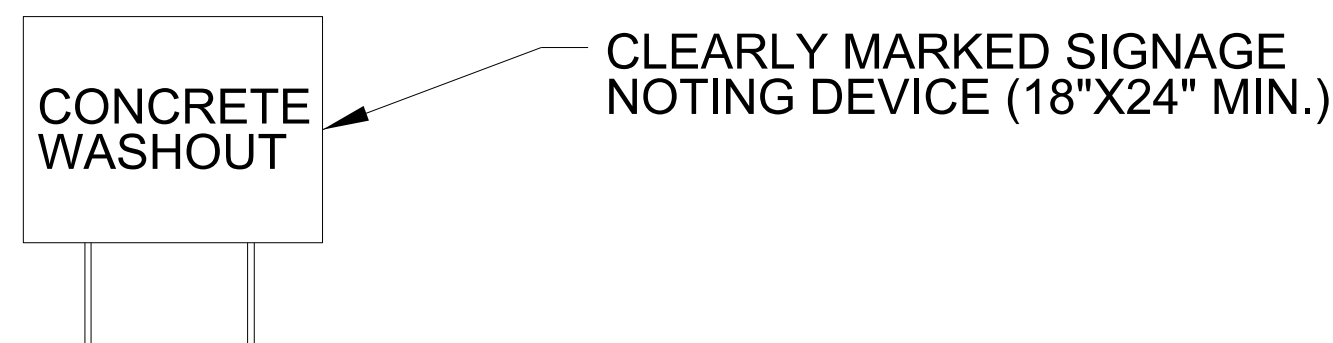
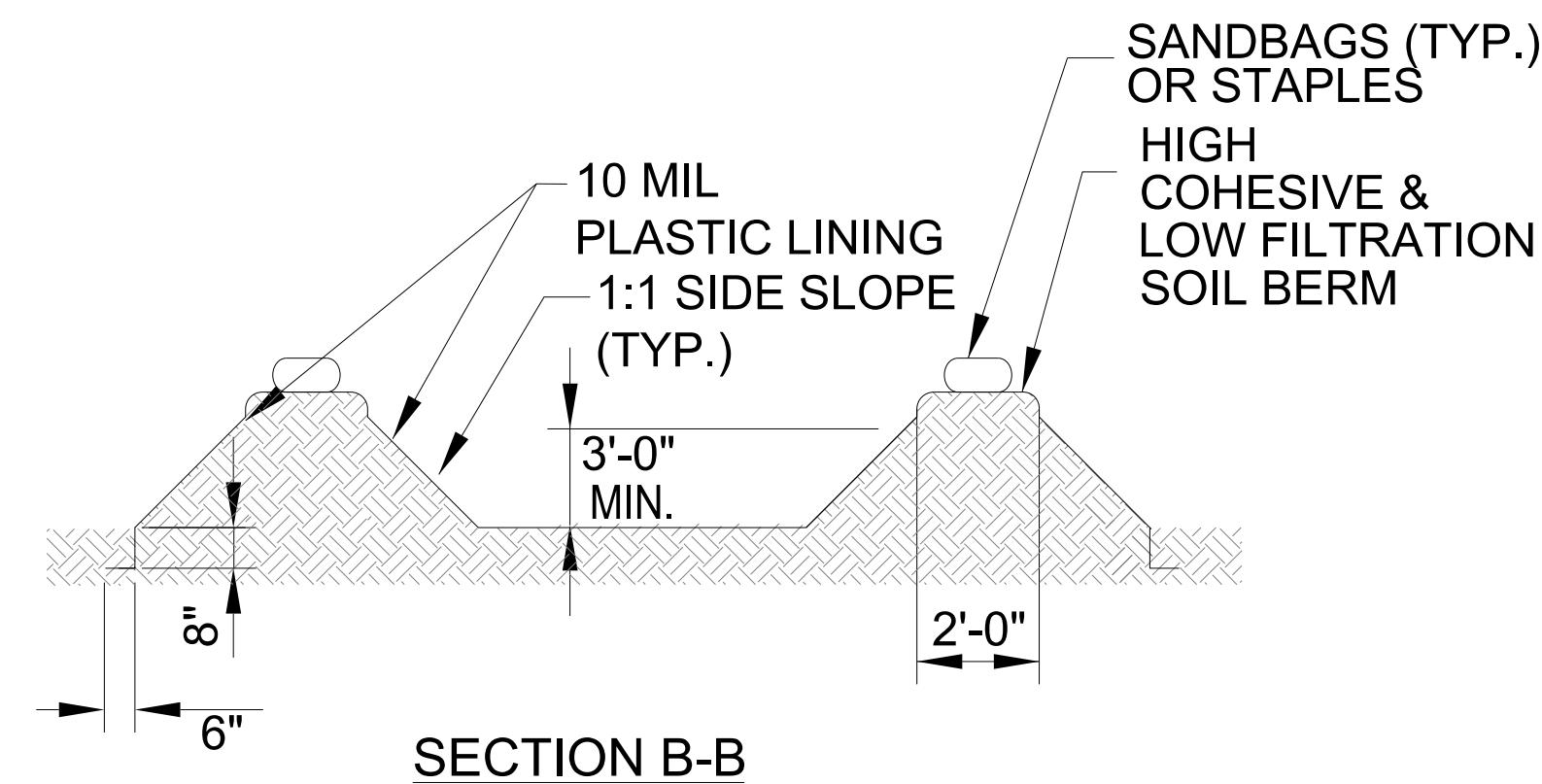
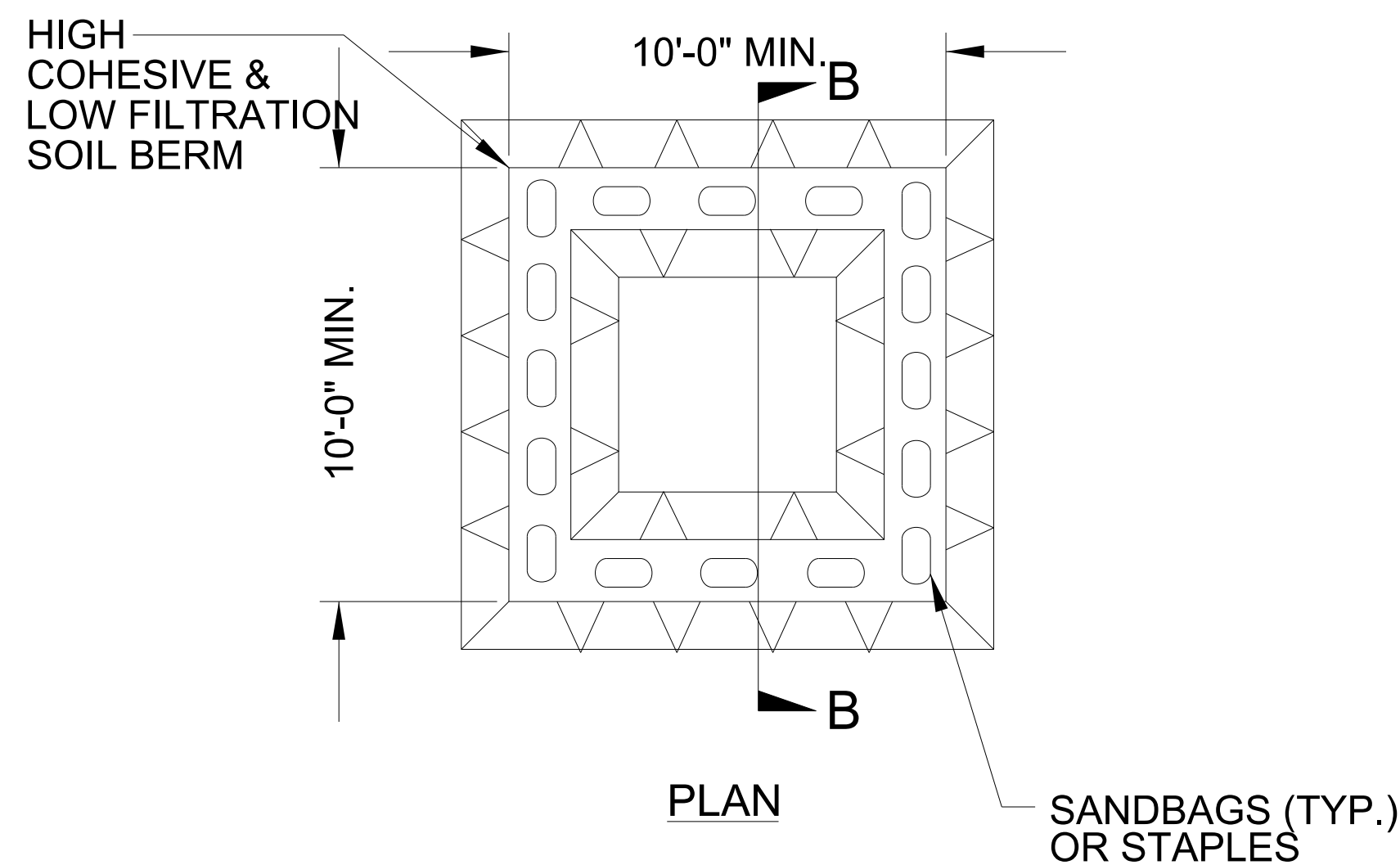
# ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER

PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



**BELOW GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

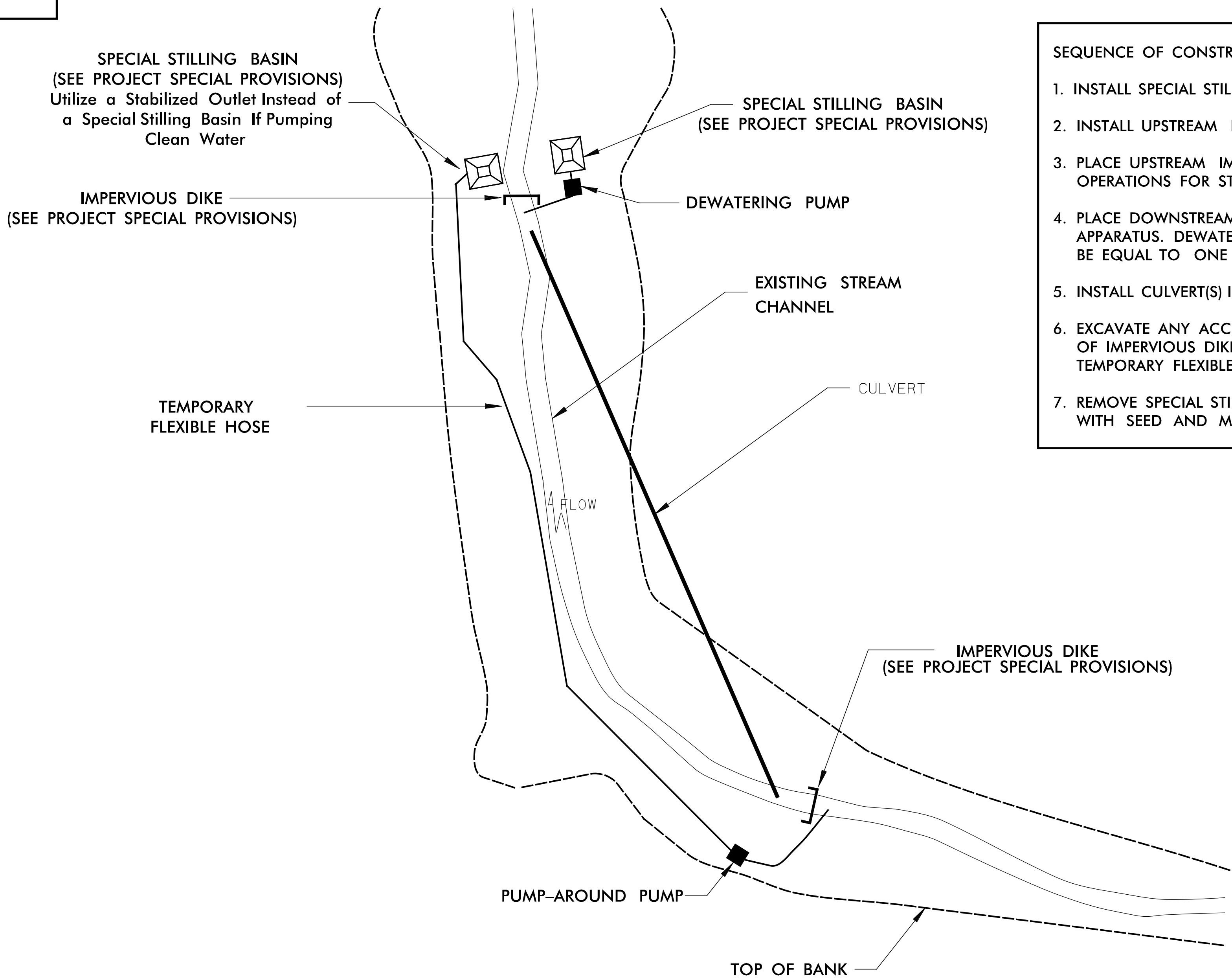


**ABOVE GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

# EXAMPLE OF PUMP-AROUND OPERATION

- NOTES:
- 1) All excavation shall be performed in only dry or isolated areas of the work zone.
  - 2) Impervious dikes are to be used to isolate work from stream flow when necessary.
  - 3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
  - 4) Pumps and hoses shall be of sufficient size to dewater the work area.

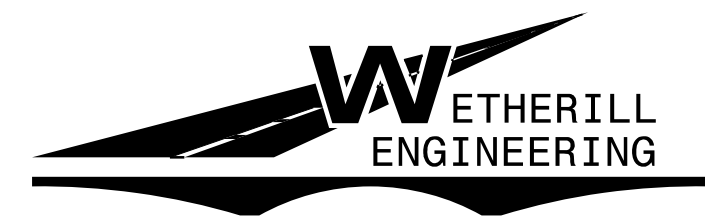


- SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA
1. INSTALL SPECIAL STILLING BASIN(S).
  2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
  3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
  4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
  5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
  6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
  7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

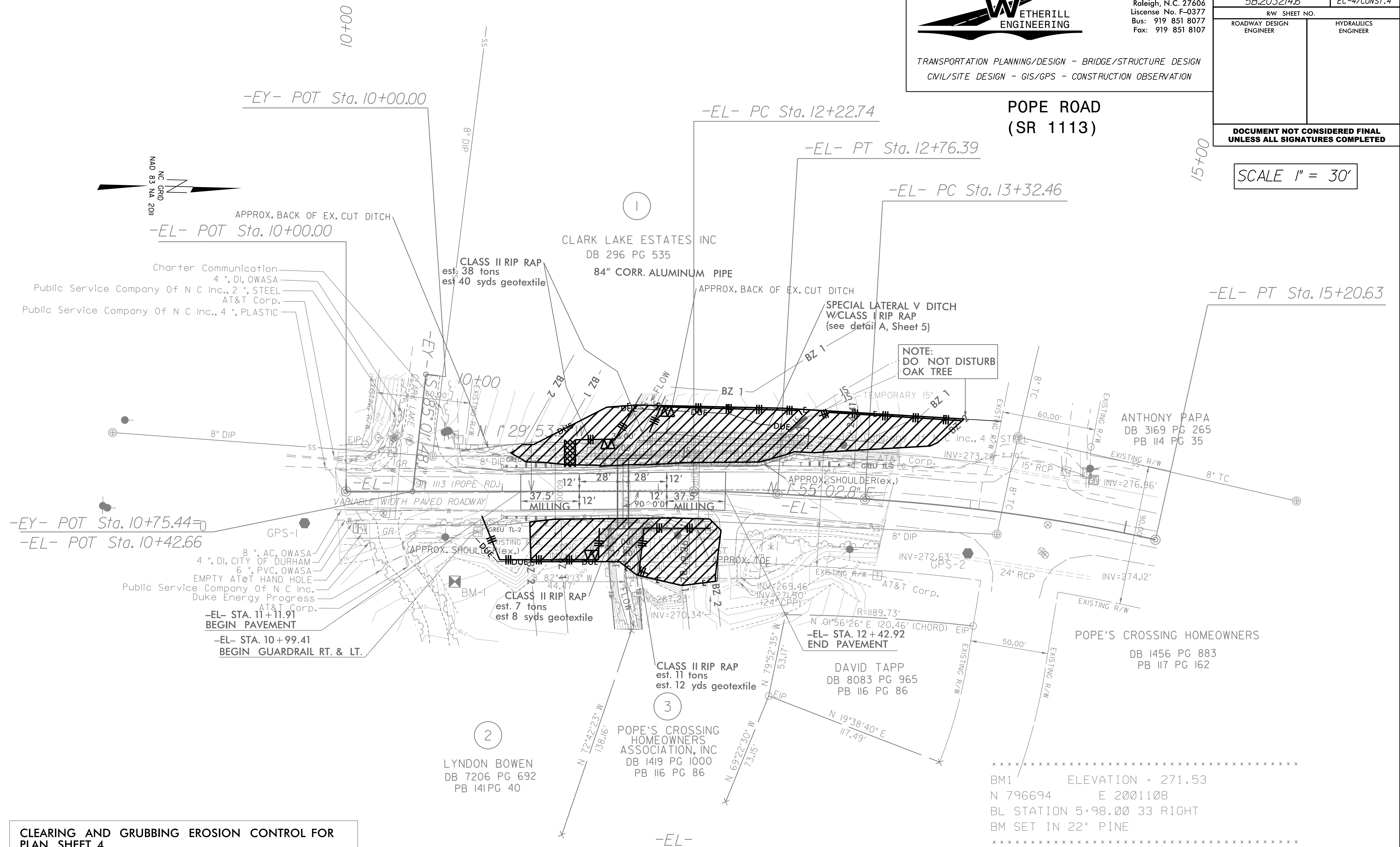


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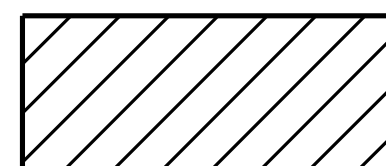
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SCALE 1" = 30'



CLEARING AND GRUBBING EROSION CONTROL FOR  
PLAN SHEET 4



ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS

PI Sta 12+49.57  
 $\Delta = 3^{\circ}24'56.1''$  (RT)  
 $D = 6^{\circ}21'58.3''$   
 $L = 53.65'$   
 $T = 26.83'$   
 $R = 900.00'$

PI Sta 14+26.74  
 $\Delta = 9^{\circ}05'20.1''$  (RT)  
 $D = 4^{\circ}49'48.7''$   
 $L = 188.17'$   
 $T = 94.28'$   
 $R = 1,186.20'$

Point	North	East	Elevation
GPS 1	796597.0900	2001072.7900	278.28'
GPS 2	797022.3900	2001081.0100	276.96'

\*\*\*\*\*  
BM1 ELEVATION = 271.53  
N 796694 E 2001108  
BL STATION 5+98.00 33 RIGHT  
BM SET IN 22" PINE  
\*\*\*\*\*



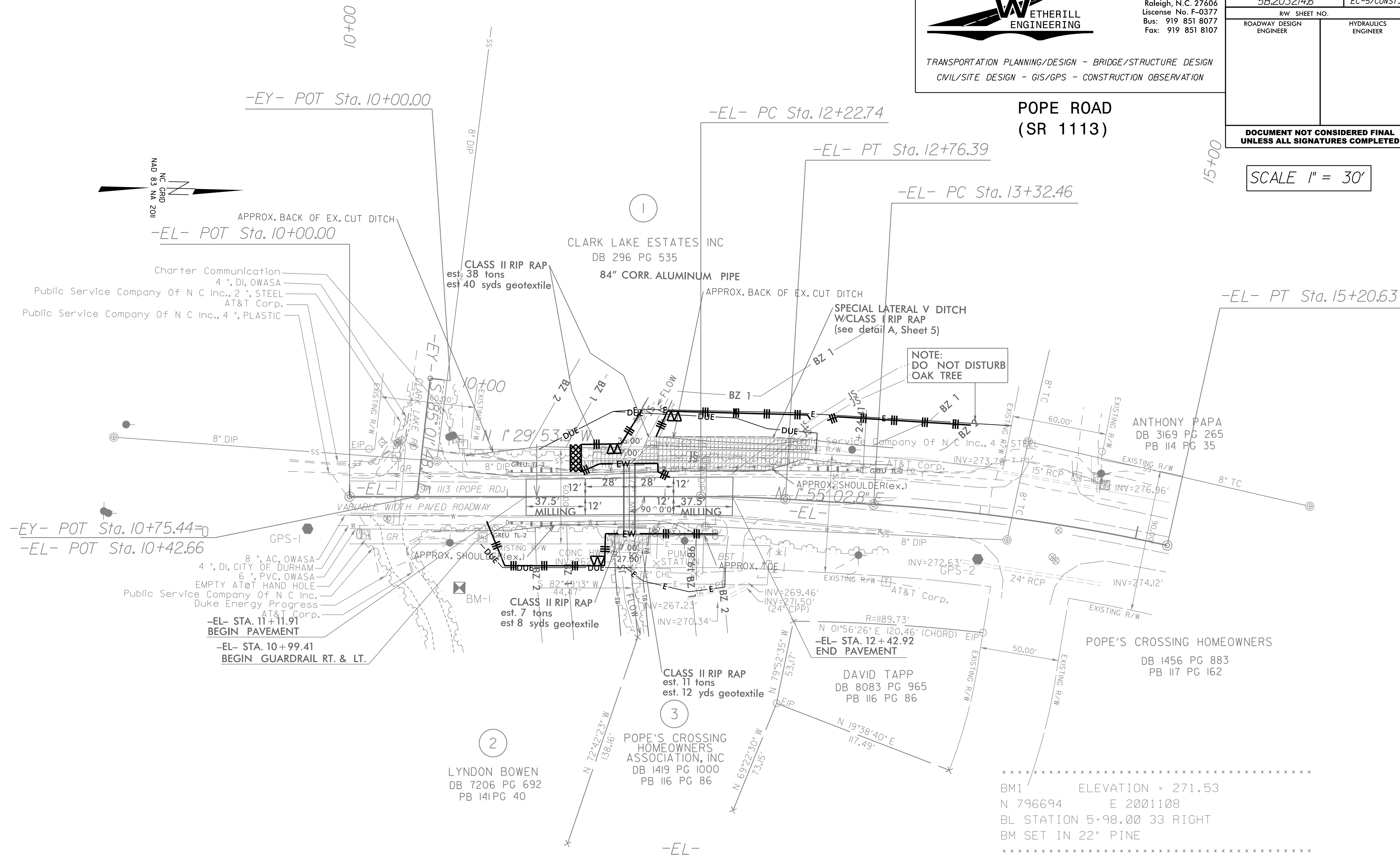
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	

SCALE 1" = 30'

POPE ROAD  
(SR 1113)



<i>Pl Sta 12+49.57</i>	<i>Pl Sta 14+26.74</i>
$\Delta = 3^{\circ} 24' 56.1''$ (RT)	$\Delta = 9^{\circ} 05' 20.1''$ (RT)
$D = 6^{\circ} 21' 58.3''$	$D = 4^{\circ} 49' 48.7''$
$L = 53.65'$	$L = 188.17'$
$T = 26.83'$	$T = 94.28'$
$R = 900.00'$	$R = 1,186.20'$

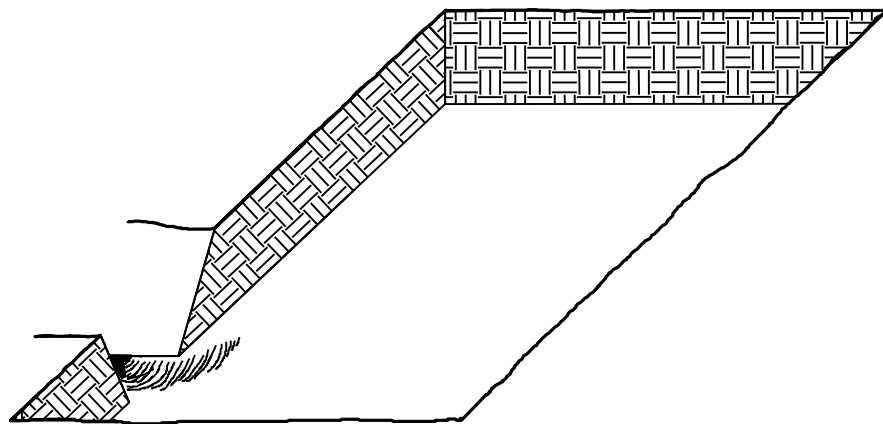
Point	North	East	Elevation
GPS 1	796597.0900	2001072.7900	278.28'
GPS 2	797022.3900	2001081.0100	276.96'

PLANTING DETAILS

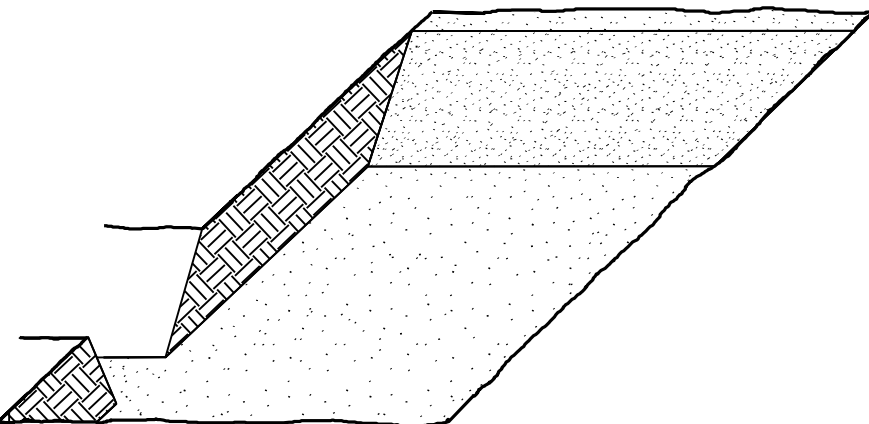
SEEDLING / LINER BARERROOT PLANTING DETAIL

HEALING IN

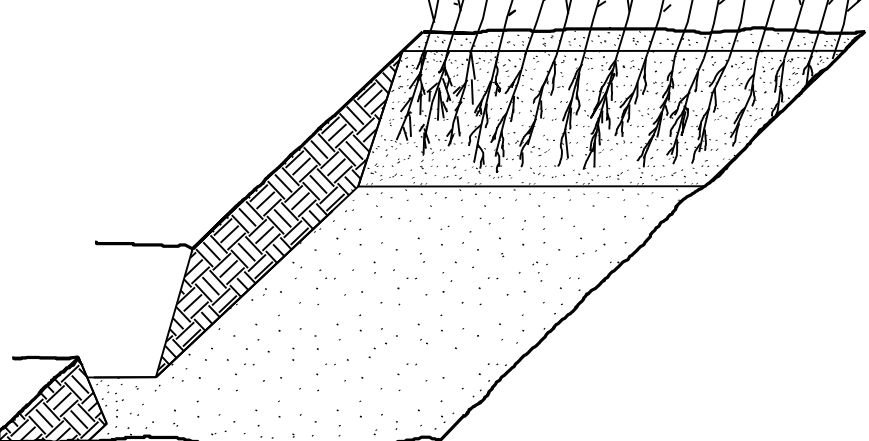
1. Locate a healing-in site in a shady, well protected area.  
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



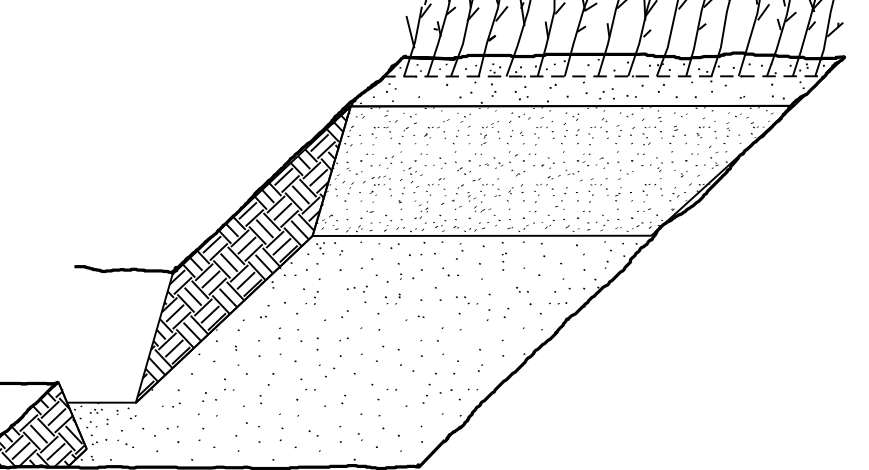
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

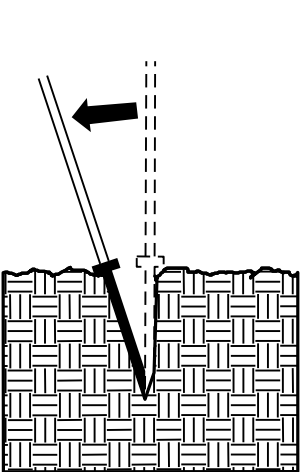


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

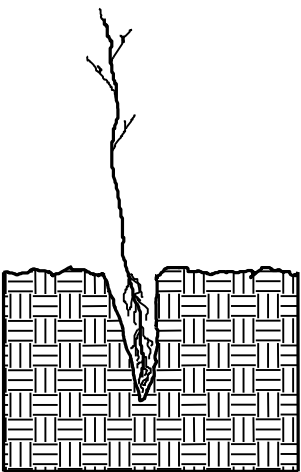


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

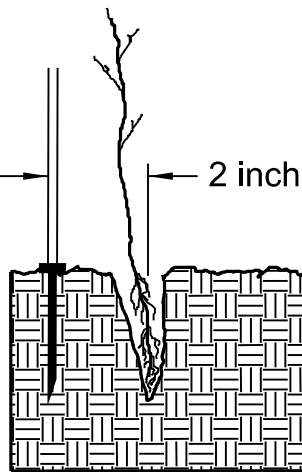
DIBBLE PLANTING METHOD  
USING THE KBC PLANTING BAR



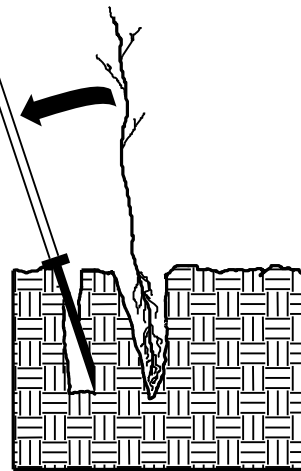
1. Insert planting bar as shown and pull handle toward planter.



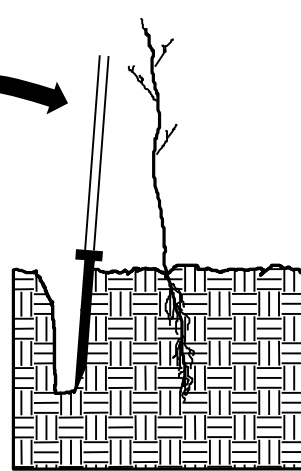
2. Remove planting bar and place seedling at correct depth.



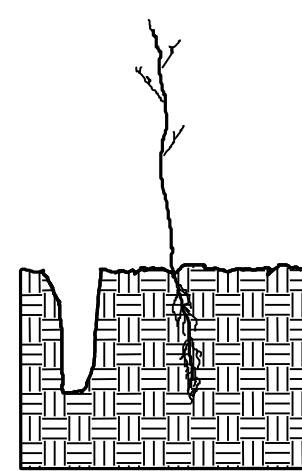
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



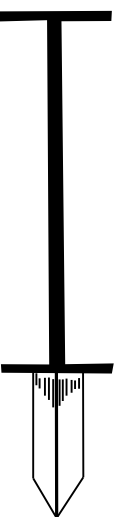
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG  
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR  
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING  
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

34% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
33% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
33% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

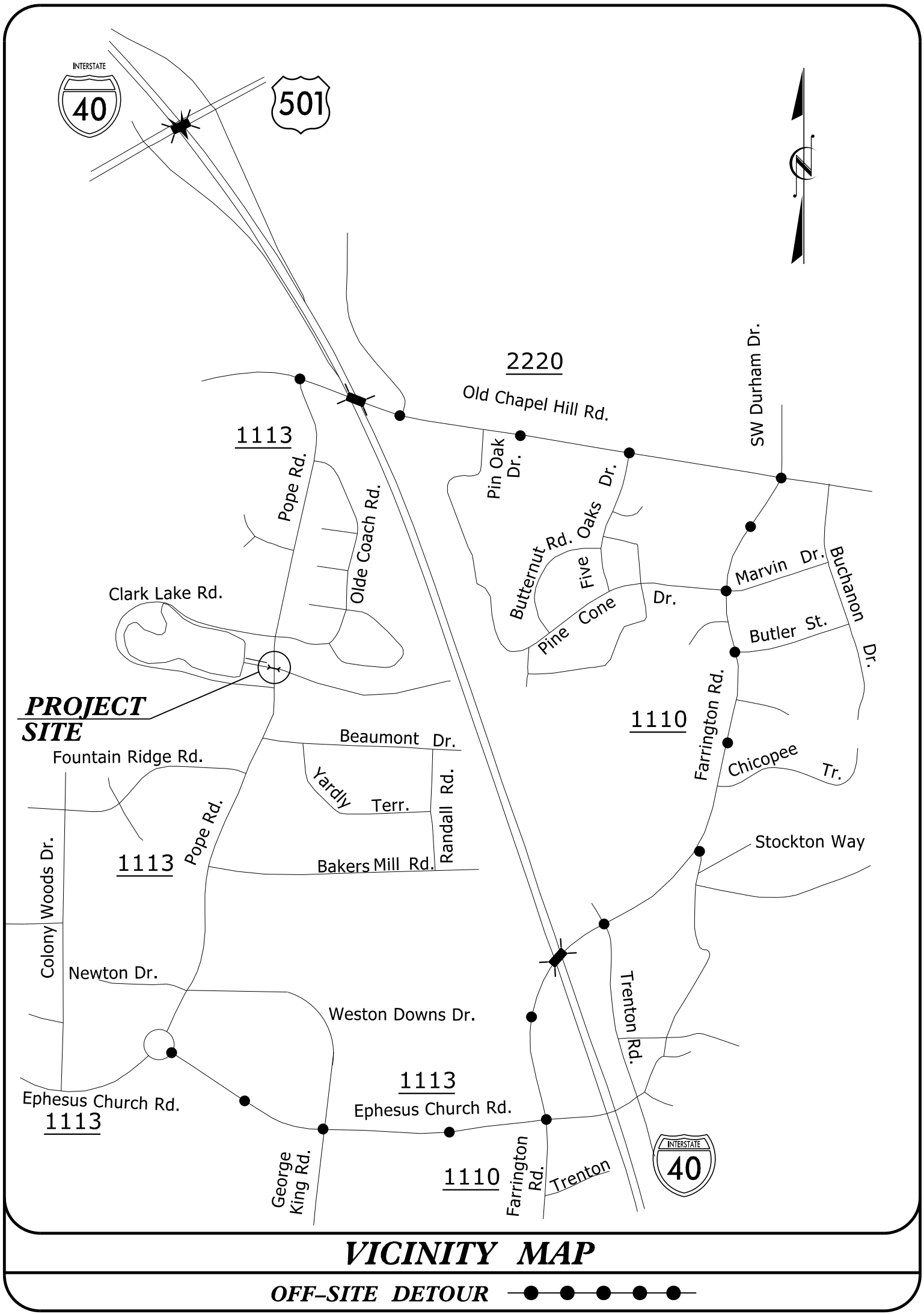
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT



09.08/2019

TIP PROJECT: 5B.203214.6

CONTRACT: ME00021

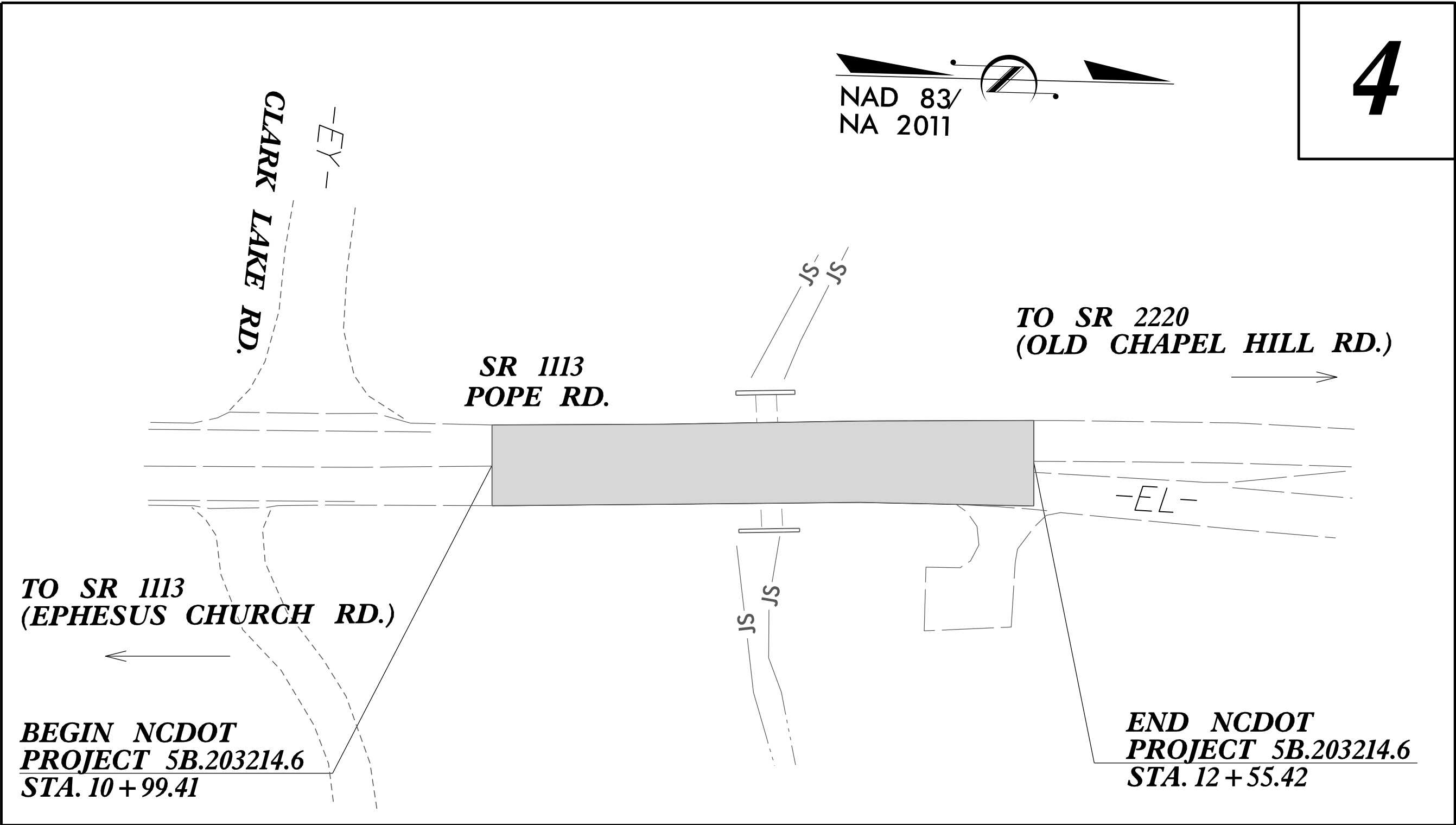


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

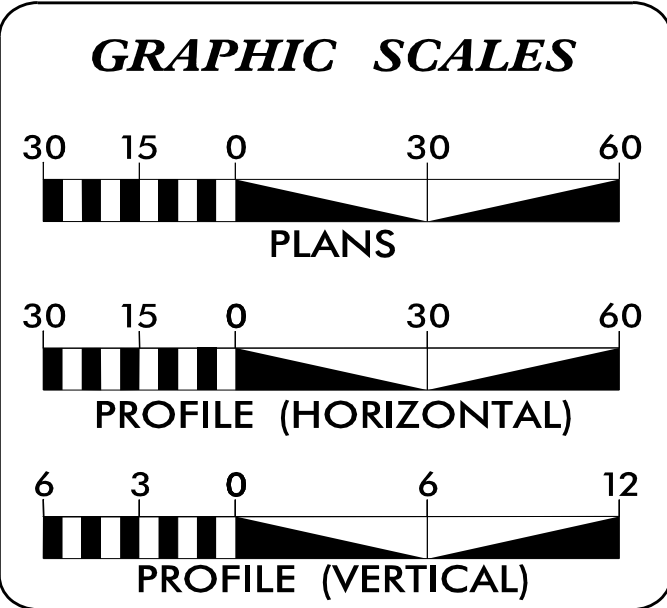
UTILITY CONSTRUCTION PLANS  
DURHAM COUNTY

LOCATION: PIPE CROSSING ON SR 1113 (POPE ROAD)

TYPE OF WORK: WATER AND SEWER RELOCATION



DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4 THRU UC-5	UTILITY CONSTRUCTION SHEETS
UC-6	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT	
(A) CITY OF DURHAM - WATER	
(B) OWASA - WATER	
(C) OWASA - SANITARY SEWER	

PREPARED IN THE OFFICE OF

**WETHERILL ENGINEERING**

1223 Jones Franklin Rd.  
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - SURVEY/SUE - UTILITIES - CONSTRUCTION OBSERVATION

<u>PANKIL PATEL</u>	UTILITY DESIGN SUPERVISOR
<u>JOHN SCHRINER, PLS</u>	UTILITY COORDINATOR

SEAL 9/26/2023

**NORTH CAROLINA**  
PROFESSIONAL  
SEAL  
10773  
ENGINEER  
EDWARD G. WETHERILL

DocuSigned by:  
Edward G. Wetherill  
880753EEBC01470...

**DIVISION OF HIGHWAYS  
DIVISION FIVE**

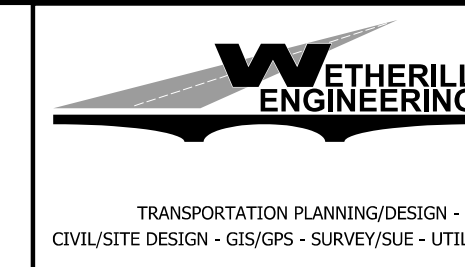
2612 N. DUKE STREET  
DURHAM, NC, 27704

<u>JEREMY L. WARREN, PE</u>	ASSISTANT DIVISION MAINTENANCE ENGINEER
<u>DON PROPER</u>	DIVISION UTILITIES ENGINEER





# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS



1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
License No. F-0377  
Bus: 919 851 8077  
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN • BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - SURVEY/SUE - UTILITIES - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.		SHEET NO.	
5B.203214.6		UC-2	
DESIGNED BY: JDS			
DRAWN BY: JDS			
CHECKED BY: PKP			
APPROVED BY: EGW			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		 PLANS ONLY	

## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED


## PROPOSED WATER SYMBOLS


Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	


## PROPOSED SEWER SYMBOLS


Gravity Sewer Line ..... 12" SS  
(Sized as Shown)  
Force Main Sewer Line ..... 12" FSS  
(Sized as Shown)  
Manhole ..... ●  
(Sized per Note)  
Sewer Pump Station ..... PS(SS)

## PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

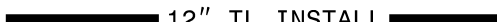
Power Pole ..... 


Telephone Pole ..... 

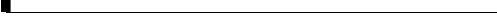
Joint Use Pole ..... 

Telephone Pedestal .....  TEL. PED



















Utility Line by Others ..... \_\_\_\_\_  
(Type as Shown)

Trenchless Installation .....  12" TL INSTALL






Encasement by Open Cut .....  24" ENCAS BY OC

Encasement .....  24" ENCASEMENT

## EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	<b>AATUR</b>
End of Information	<b>E.O.I.</b>

Thrust Block .....	
Air Release Valve .....	
Utility Vault .....	
Concrete Pier .....	
Steel Pier .....	
Plan Note .....	
Pay Item Note .....	

*Underground Power Line .....	P
*Underground Telephone Cable .....	T
*Underground Telephone Conduit .....	TC
*Underground Fiber Optics Telephone Cable .....	T FO
*Underground TV Cable .....	TV
*Underground Fiber Optics TV Cable .....	TV FO
*Underground Gas Pipeline .....	G
Aboveground Gas Pipeline .....	A/G Gas
*Underground Water Line .....	W
Aboveground Water Line .....	A/G Water
*Underground Gravity Sanitary Sewer Line .....	SS
Aboveground Gravity Sanitary Sewer Line .....	A/G Sanitary Sewer
*Underground SS Forced Main Line .....	FSS
Underground Unknown Utility Line .....	
SUE Test Hole .....	
Water Meter .....	
Water Valve .....	
Fire Hydrant .....	
Sanitary Sewer Cleanout .....	

\*For Existing Utilities

Utility Line Drawn from Record ..... — — — P — — — —  
(Type as Shown)  
Designated Utility Line ..... — — — P — — — —  
(Type as Shown)

5/14/2023

9/26/2023 11:13 AM UC-3 notes.dgn

# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE UTILITY OWNER'S SPECIFICATIONS AND STANDARDS

2. WATER AND SANITARY FACILITIES ARE OWNED AND MAINTAINED BY THE CITY OF DURHAM OR OWASA.  
OWASA CONTACT: NICK PARKER,  
OWASA ENGINEERING AND PLANNING AT 919-537-4201.  
CITY OF DURHAM CONTACT: JEFF LECKY,  
CIVIL ENGINEER IV, PUBLIC WORKS AT 919-560-4326 XT 30273

3. ALL WATER AND SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SECTION, CITY OF DURHAM REFERENCE GUIDE FOR DEVELOPMENT, AND OWASA SPECIFICATIONS. ALL SANITARY SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WQ PERMITTING SECTION, PERCS UNIT.  
PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. NCDOT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND THE TOWN ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE THE UTILITY OWNERS.

6. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

7. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.


8. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

9. CITY OF DURHAM AND OWASA SHALL BE PROVIDED WITH TWO COPIES OF SURVEYED AS-BUILTS OF THE INSTALLED UTILITY. THE AS-BUILTS SHALL INCLUDE NOTATIONS OF HE SIZE AND TYPE OF MATERIAL INSTALLED; GPS COORDINATES OF ALL: FITTINGS, UTILITY CONTROLS, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE PIPING. PROVIDE BORING LOGS FROM TRENCHLESS INSTALLATIONS.



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License No. F-0377  
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Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - SURVEY/SUE - UTILITIES - CONSTRUCTION OBSERVATION

PROJECT		SHEET NO.	
5B.203214.6		UC-3	
DESIGNED BY: JDS		UTILITY CONSTRUCTION PLANS ONLY	
DRAWN BY: JDS			
CHECKED BY: PKP			
APPROVED BY: EGW			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

## WATER INSTALLATION NOTES

- 1) CONTRACTOR SHALL FULLY INSTALL, PRESSURE & LEAKAGE TEST, AND CHLORINATE NEW WATER MAIN PRIOR TO CONNECTION TO EXISTING SYSTEM.
- 2) CONTRACTOR SHALL PERFORM THE CONNECTION DURING OFF PEAK HOURS WITH A MAXIMUM SHUT DOWN TIME OF FIVE HOURS. (MIDNIGHT TO 5 AM)
- 3) ANY TEST PERFORMED WITHOUT NOTIFICATION AND CONTACT WITH UTILITY OWNER'S FIELD INSPECTORS SHALL BE PERFORMED AT THE CONTRACTOR'S RISK. TESTING SHALL BE PERFORMED IN THE PRESENCE OF UTILITY PERSONNEL.
- 4) OPERATION OF EXISTING GATE VALVES SHALL BE DONE BY UTILITY OWNERS.
- 5) TIE NEW WATER MAIN INTO EXISTING. INSTALL THRUST BLOCKS AND RODDING AS REQUIRED.
- 6) NEW WATER MAIN SHALL NOT BE CONNECTED TO EXISTING MAIN WITHOUT PRIOR APPROVAL AND COORDINATION WITH THE UTILITY OWNER.
- 7) FOR NEW WATER MAIN CONNECTIONS, USE GRIP RING PIPE RESTRAINER AS REQUIRED.
- 8) CONTRACTOR SHALL SPAN THE 84" PIPE WITH A SINGLE SEGMENT OF PIPE.

## SEWER INSTALLATION NOTES

- 1) CONTRACTOR SHALL FULLY INSTALL, PRESSURE & LEAKAGE TEST NEW SEWER MAIN PRIOR TO CONNECTION TO EXISTING SYSTEM.
- 2) CONTRACTOR SHALL PERFORM THE CONNECTION DURING OFF PEAK HOURS WITH A MAXIMUM SHUT DOWN TIME OF FIVE HOURS. (MIDNIGHT TO 5 AM)
- 3) ANY TEST PERFORMED WITHOUT NOTIFICATION TO OWASA SHALL BE PERFORMED AT THE CONTRACTOR'S RISK. TESTING SHALL BE PERFORMED IN THE PRESENCE OF OWASA PERSONNEL. CONTACT NICK PARKER, OWASA ENGINEERING AND PLANNING AT 919-537-4201.
- 4) VERIFY LOCATION AND DEPTH OF EXISTING SEWER SERVICE LATERALS PRIOR TO INSTALLATION OF THE NEW SEWER MAIN.
- 5) NEW SEWER MAIN SHALL NOT BE CONNECTED TO EXISTING MAIN WITHOUT PRIOR APPROVAL AND COORDINATION WITH OWASA.
- 6) FOR NEW SEWER MAIN CONNECTIONS, USE GRIP RING PIPE RESTRAINER AS REQUIRED.



Diagram illustrating the cross-section of a foundation structure, likely a stone column, showing various layers and materials.

Labels and Notes:

- COMPACTED BACKFILL (SEE NOTE 1)
- UNDISTURBED EXISTING SOIL
- SELECT BACKFILL (SEE NOTE 1)
- NO. 5 OR NO. 57 STONE
- SEE NOTES 2 AND 3
- UNDISTURBED EXISTING ROCK

Dimensions shown:

- 12" (height of the stone column)
- 12" (diameter of the stone column)

NOTES:

1. See specification section 31.23.17 Trenching, Backfilling, and Compaction of Utilities for backfill and compaction requirements. See also details 511.02 (water) and 731.01 (groovy pipes).
2. See specification 31.23.17 section 3.12 Bedding requirement as bedding relates to pipe material.
3. An additional 1 inch of depth of bedding material will be required for each additional 2 feet of trench depth in excess of 16 feet up to a maximum of 12 inches.



MAX. PAYMENT LIMIT  
(w) = O.D. + 4'-0"

RESTORE GRADE TO ORIGINAL  
GROUND SURFACE ELEVATION

EXISTING SURFACE

VARIES

12" TYP. PIPE O.D. 12" TYP.

CARRIER PIPE

NON-WOVEN  
GEOTEXTILE  
FABRIC FILTER

UNDISTURBED  
EARTH

SEE NOTE 3 (VARIES WITH  
PIPE LAYING CONDITIONS)

SEE NOTE 2

SEE NOTE 1

1. 8" deep No. 57 stone or equal wrapped in non-woven geotextile filter fabric lightly consolidated. Overlap fabric by minimum one pipe O.D.
2. Minimum 4" deep bedding stone lightly consolidated.
3. Carefully compacted select trench backfill in 6 to 8 inch lifts or as required / indicated in paragraph 2.2 of specification section 31 23 17 for Specified Laying Condition.



WATER, RECLAIMED WATER, OR STORM DRAIN

12"

PIPE SIZE O.D.

12"

3000 PSI CONCRETE CRADLE

SADDLE TO BE 1" COMPRESSIBLE JOINT MATERIAL

VERTICAL SEPARATION IS  $< 18"$ , SEPARATION MAY NOT BE LESS THAN 6"

NO. 57 STONE DUMPED LOOSE AND SHOVEL SLICED IN

FIRM UNDISTURBED SUBGRADE BELOW PIER

12" 6" CL 6" CL 12"

12" MAX PIPE SIZE O.D. 12" MAX

SAN. SEWER OR RECLAIMED WATER

**C5 VERTICAL SEPARATION**

POTABLE WITH  $\leq 18"$  SEPARATION

1. Where less than 12" of vertical separation is available between pipes, a concrete saddle (Detail 736.02) between the 2 pipes is required. The minimum available separation between pipes with cradle is 6".



NEW ASPHALT PER CITY (SEE DETAIL 408.01)  
OR NCDOT REMT'S AS APPLICABLE

ABC STONE COMPACTED TO 100% STD. PROCTOR OR B25.08 BASE COURSE COMPACTED TO 92% STD. PROCTOR OR AS DIRECTED BY ENGINEER

TACK COAT

PER CITY (DETAIL 408.01) AND NCDOT REMT'S AS APPLICABLE

EXISTING BASE

SAW CUT

12" MIN. (BCH) (BOTH SIDES)

12" MIN. (BCH) (BOTH SIDES)

TYVEK OR OTHER APPROVED EQUAL HOUSE WRAP (TO RETAIN CONCRETE WHEN EXCAVATABLE FLOWABLE FILL IS USED)

2" TO 3" MIN. ABOVE PIPE

TOP OF PIPE

4" MIN. PIPE O.D. VARIES 4" MIN.

HAUNCHING TO SPRINGLINE

4" TO 6" MIN. UNDER PIPE (NOTE 2)

VARIES 3" MIN.

FLOWABLE EXCAVATABLE FILL AS DIRECTED (NCDOT SPEC.)

#57 STONE ABOVE AND UNDER PIPE

UNDISTURBED MATERIAL

EXCAVATION LIMITS

**NOTES:**

1. Foundation stone shall be required when soil conditions are unsuitable.
2. An additional 1 inch depth of bedding material will be required for each additional 2 feet of trench depth in excess of 16 feet up to a maximum of inches.
3. See City of Durham standard construction details 511.02 (Water) and 731.01 (Gravity Pipe) for bedding, backfilling, and compaction requirements.



**WATER AND SEWER**

SEPARATION REQUIRED PER  
 SUBCHAPTER 27.07 TITLE 15A OF  
 THE NC ADMINISTRATION CODE.

**P1 POTABLE WATER BENCH CONDITION**  
 < 10' HORIZONTAL SEPARATION

**P3 POTABLE WATER TRENCHED CONDITION**  
 ≥ 10' HORIZONTAL SEPARATION

**P2 POTABLE WATER TRENCHED CONDITION**  
 < 10' HORIZONTAL SEPARATION

**P4 RECLAIMED WATER TRENCHED CONDITION**  
 ≥ 2' HORIZONTAL SEPARATION  
 NOTE: IF LESS THAN 2' HORIZONTAL SEPARATION, USE (P1) OR (P2) TYPE INSTALLATION



The image contains two sets of technical drawings for a gate valve assembly, each consisting of a plan view and an elevation view.

**Left Set (Standard Concrete Pad):**

- PLAN:** Shows a square valve box with a central circular opening. The distance from the center to the side walls is labeled "12" MIN. (TYP.)".
- ELEVATION:** Shows a cross-section of the valve assembly. The valve is mounted on a "CONCRETE PAD". The distance from the top of the pad to the top of the valve box is labeled "6" MIN.". The total height of the assembly is labeled "ADJUSTABLE 18" TO 24" OR 24" TO 36". The valve is labeled "GATE VALVE". The top of the valve box is labeled "CAST IRON VALVE BOX AND COVER".

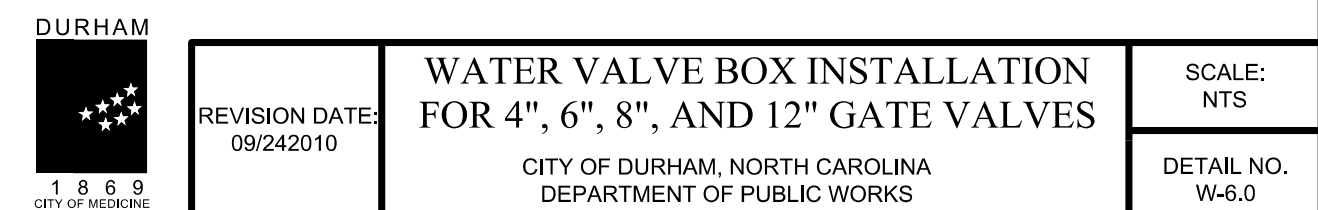
**Right Set (Asphalt Base):**

- PLAN:** Similar to the left plan, but the distance from the center to the side walls is labeled "VARIES".
- ELEVATION:** Shows a cross-section of the valve assembly. The valve is mounted on a "CONCRETE PAD (SIZE VARIES)". The distance from the top of the pad to the top of the valve box is labeled "1" MIN.". The total height of the assembly is labeled "ADJUSTABLE 18" TO 24" OR 24" TO 36". The valve is labeled "GATE VALVE". The top of the valve box is labeled "CAST IRON VALVE BOX AND COVER". The base is labeled "ASPHALT THICKNESS (VARIES)". The distance from the center of the valve to the side walls is labeled "VARIES".

VALVE BOX NOT IN PAVEMENT

VALVE BOX IN PAVEMENT

PROVIDE HDPE INSERTS IN ALL VALVE BOXES BASED ON SPECIFICATIONS DESCRIBED IN DETAIL P-6.0







TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - SURVEY/SUE - UTILITIES - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO.

5B.2032146

SHEET NO.

UC 3A-2

**DOCUMENT NOT CONSIDERED FINAL  
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DESIGNED BY: JDS

DRAWN BY: JDS

CHECKED BY: PKP

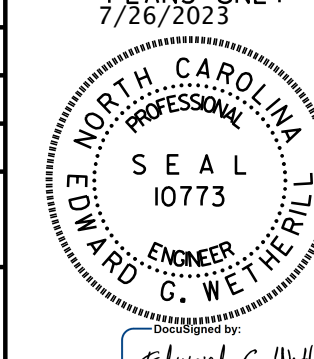
APPROVED BY: EGW

REVISED:

NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION

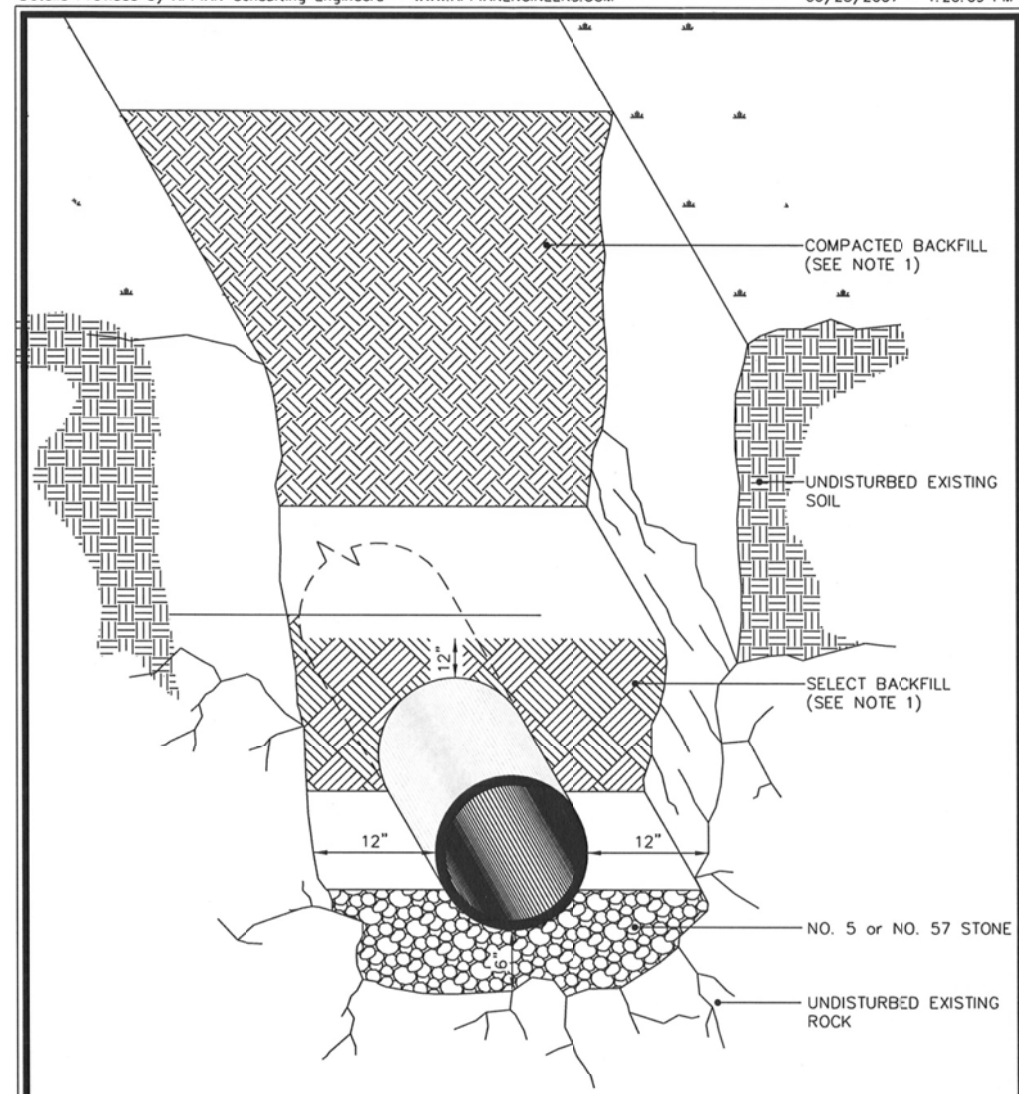
UTILITIES ENGINEERING SEC.  
PHONE: (919) 707-6590  
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UTILITY CONSTRUCTION  
PLANS ONLY  
7/26/2023



Edward G. Wetherill  
Professional Engineer

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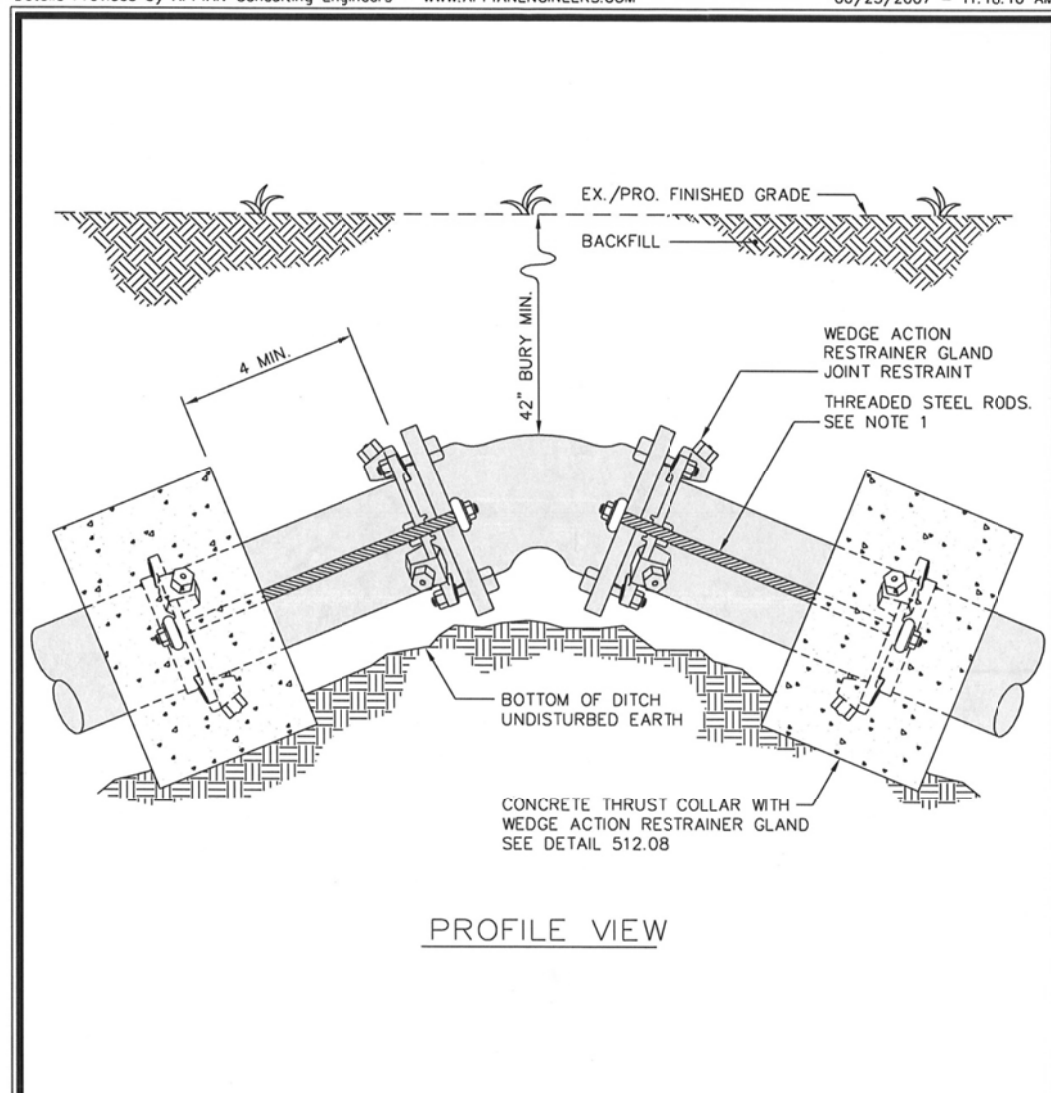


**NOTES:**

- See specification section 02275 Trenching, Backfilling, and Compaction of Utilities for backfill and compaction requirements.

OWASA Quality Service Since 1977	ORANGE WATER AND SEWER AUTHORITY 800 Jones Ferry Road PO Box 360 Carrboro, NC 27510-0360 USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY		Voice (919) 968-4421 FAX (919) 968-4464 www.owasa.org
	SCALE: Not To Scale	DETAIL # 2512.01	
	REVISION DATE: August 15, 2003	SHEET # 1 of 1	
	DETAIL OF ROCK EXCAVATION		

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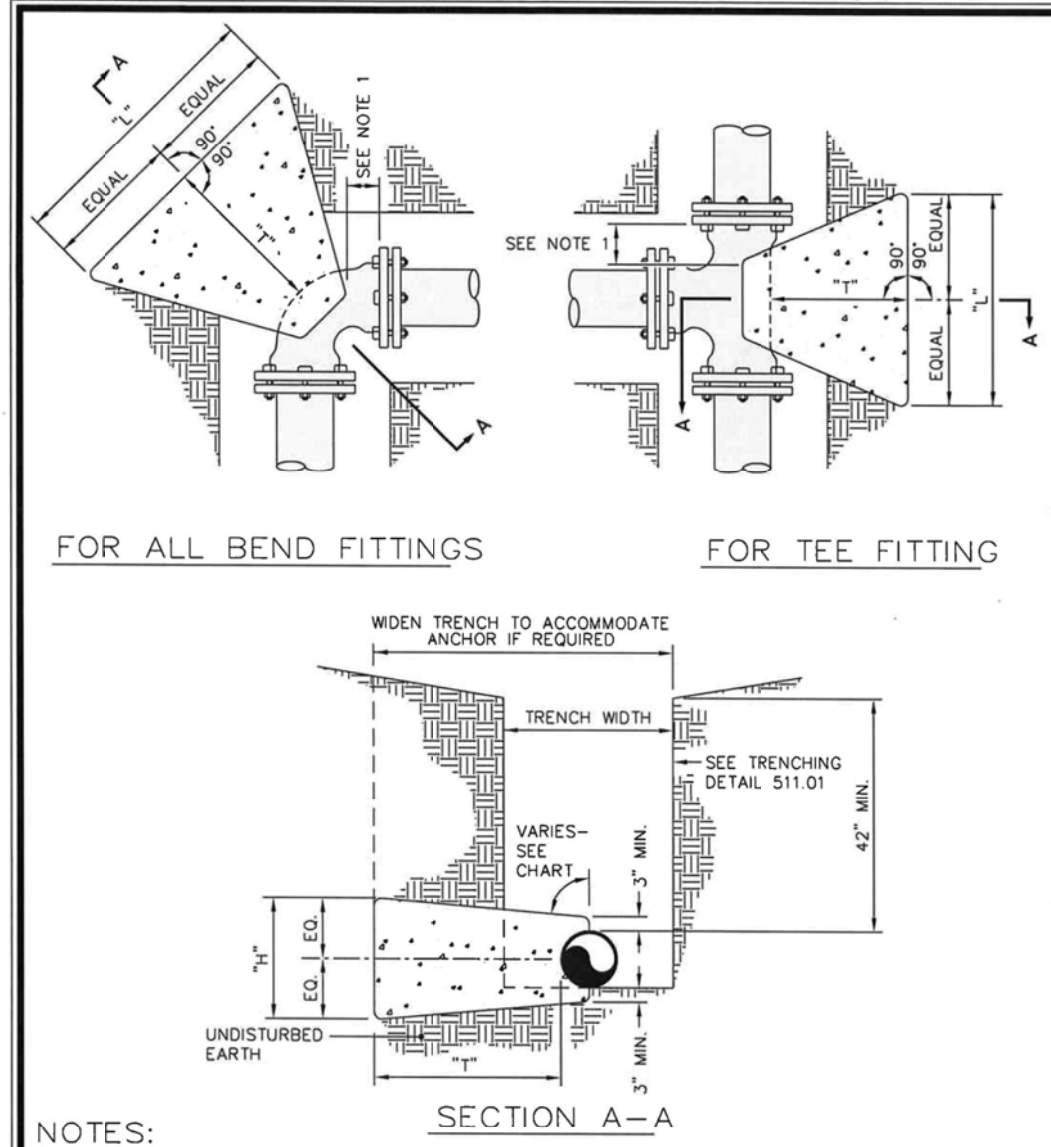


**NOTES:**

- If 42" bury depth is not maintained or located in high pressure zone, a minimum of (2) 3/4" dia. rods to be used for pipe thru 24" dia. per joint - a minimum of (2) 1" dia. rods to be used for pipe 30" & 36" dia. per joint - a minimum of (2) 1 1/4" dia. rods to be used for pipe 42" & 48" dia. per joint. (See detail 512.03)

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	SCALE: Not To Scale	DETAIL # 2512.01	
	REVISION DATE: August 15, 2003	SHEET # 1 of 1	
	STANDARD VERTICAL BEND DETAIL		

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**NOTES:**

- Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
- Fittings are to be completely wrapped with plastic, prior to pouring concrete.
- Concrete to be minimum 3,000 psi. @ 28 days.

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	SCALE: Not To Scale	DETAIL # 2512.02	
	REVISION DATE: August 15, 2003	SHEET # 2 of 4	
	BLOCKING DETAIL for HORIZONTAL BENDS AND TEE		

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TEST PRESSURE = 150 P.S.I.					
PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.)			VOLUME CONCRETE CU. YD.
		"L"	"H"	"T"	
<4 INCHES	11 1/4"	1.00	1.00	1.50	0.06
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.09
	90"	1.00	1.00	2.00	0.07
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.00	1.00	2.50	0.15
	90"	1.50	1.50	2.00	0.12
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	1.50	1.50	3.00	0.28
	90"	2.00	2.00	2.50	0.23
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.25
	45"	2.00	2.00	3.00	0.39
	90"	3.00	2.00	2.50	0.32
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	2.00	2.00	3.00	0.28
	45"	3.00	2.50	3.00	0.47
	90"	4.50	3.00	3.50	0.94
16 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	3.00	3.50	0.84
	90"	6.50	3.50	3.50	1.54

**CHART NOTES:**

- If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
- Blocking sizes shown in these tables assume the following:
  - Blocking is constructed in residual soils as shown in detail
  - Soil bearing pressure = 2000 psf
  - Velocity of flow = 15 fps
- This detail not applicable to reducing bends.
- Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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	SCALE: Not To Scale	DETAIL # 2512.02	
	REVISION DATE: August 15, 2003	SHEET # 2 of 4	
	BLOCKING DETAIL for HORIZONTAL BENDS AND TEE		

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TEST PRESSURE = 200 P.S.I.					
PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.)			VOLUME CONCRETE CU. YD.
		"L"	"H"	"T"	
<4 INCHES	11 1/4"	1.00	1.00	1.00	0.04
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.50	1.50	2.50	0.15
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.50	1.50	2.50	0.15
	90"	1.50	1.50	2.50	0.15
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	2.50	2.00	3.00	0.33
	90"	2.50	2.00	2.50	0.28
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.00	2.00	2.50	0.23
	90"	4.00	2.00	3.00	0.50
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	2.50	3.00	0.61
	90"	5.50	3.00	3.50	1.13
16 INCHES	11 1/4"	7.50	4.00	3.50	2.01
	90"	7.50	4.00	3.00	1.72

**CHART NOTES:**

- If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
- Blocking sizes shown in these tables assume the following:
  - Blocking is constructed in residual soils as shown in detail
  - Soil bearing pressure = 2000 psf
  - Velocity of flow = 15 fps
- This detail not applicable to reducing bends.
- Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

OWASA Quality Service Since 1977	ORANGE WATER AND SEWER AUTHORITY 800 Jones Ferry Road PO Box 360 Carrboro, NC 27510-0360 USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY		Voice (919) 968-4421 FAX (919) 968-4464 www.owasa.org
	SCALE: Not To Scale	DETAIL # 2512.02	
	REVISION DATE: August 15, 2003	SHEET # 3 of 4	
	BLOCKING DETAIL for HORIZONTAL BENDS AND TEE		

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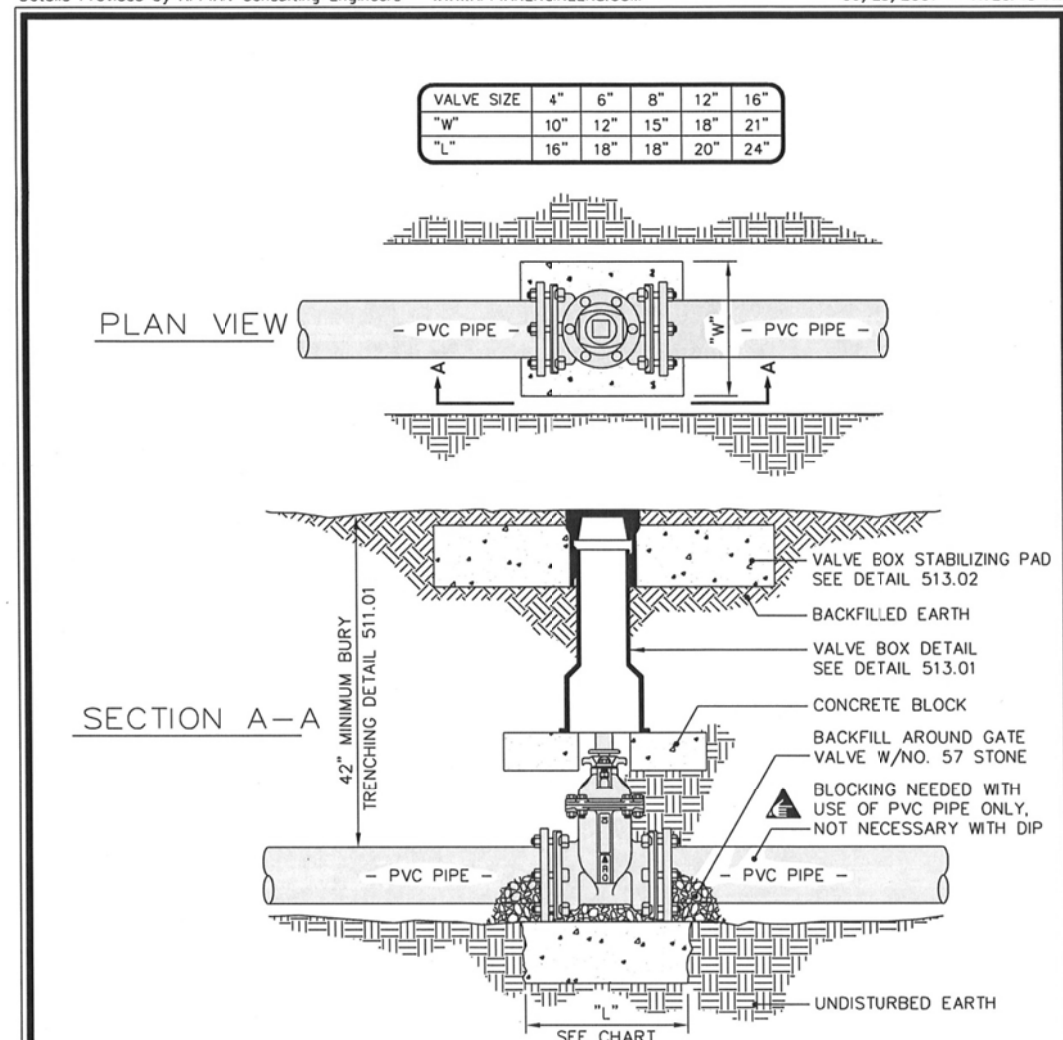
TEST PRESSURE = 250 P.S.I.					
PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.)			VOLUME CONCRETE CU. YD.
		"L"	"H"	"T"	
<4 INCHES	11 1/4"	1.00	1.00	1.00	0.04
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.50	1.50	2.50	0.15
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.50	1.50	2.50	0.15
	90"	2.00	2.00	2.50	0.23
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	2.00	1.50	2.50	0.19
	90"	3.00	2.00	3.00	0.39
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.50	2.00	2.50	0.28
	90"	4.00	2.50	3.00	0.61
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.50	2.00	3.00	0.44
	45"	4.50	2.75	3.00	0.74
	90"	6.00	3.50	3.50	1.43
16 INCHES	11 1/4"	8.00	4.50	4.00	2.74
	90"	8.00	4.50	3.50	2.40

**CHART NOTES:**

- If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
- Blocking sizes shown in these tables assume the following:
  - Blocking is constructed in residual soils as shown in detail
  - Soil bearing pressure = 2000 psf
  - Velocity of flow = 15 fps
- This detail not applicable to reducing bends.
- Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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	SCALE: Not To Scale	DETAIL # 2512.02	
	REVISION DATE: August 15, 2003	SHEET # 4 of 4	
	BLOCKING DETAIL for HORIZONTAL BENDS AND TEE		

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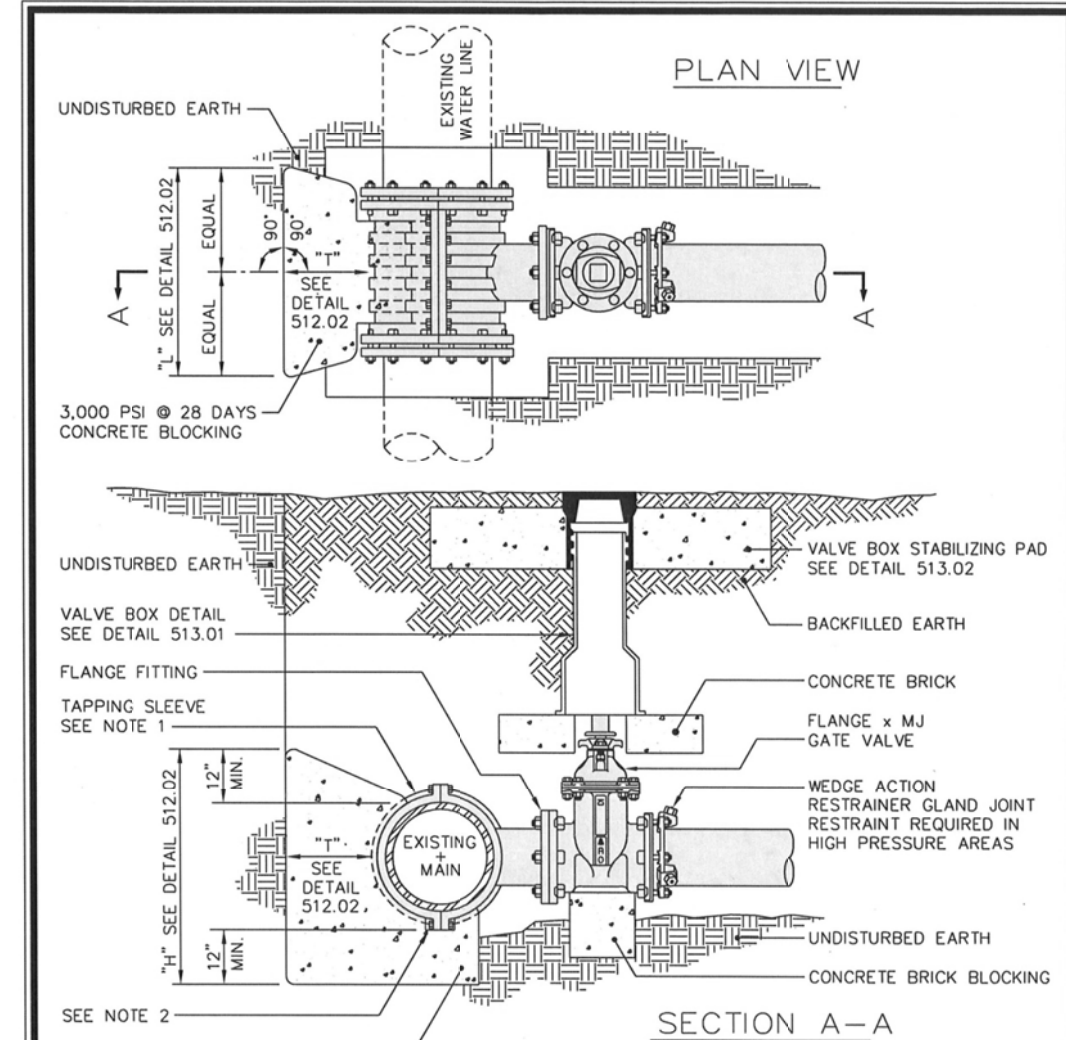


**NOTES:**

- The use of PVC must be approved by Director of Engineering.
- Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
- Fittings are to be completely wrapped with plastic, prior to pouring concrete.
- Concrete to be minimum 3,000 psi. @ 28 days.
- Solid concrete block may be substituted and must meet or exceed concrete area shown on chart above. Bed solid block on 2" to 4" of No. 57 stone.

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	SCALE: Not To Scale	DETAIL # 2512.03	
	REVISION DATE: August 15, 2003	SHEET # 1 of 1	
	BLOCKING DETAIL for PVC PIPE IN-LINE VALVE		

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 06/25/2007 - 11:21:54 AM

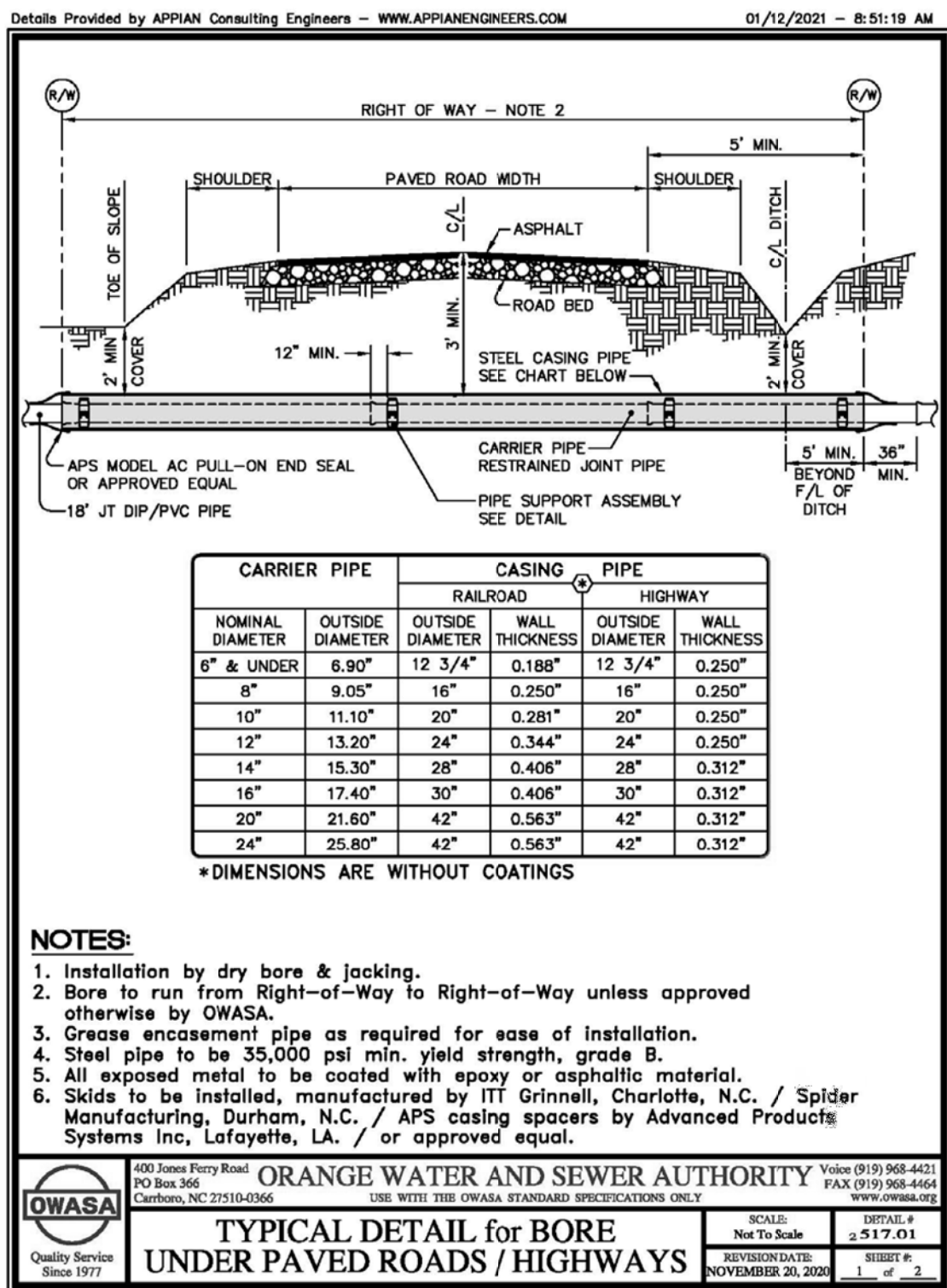
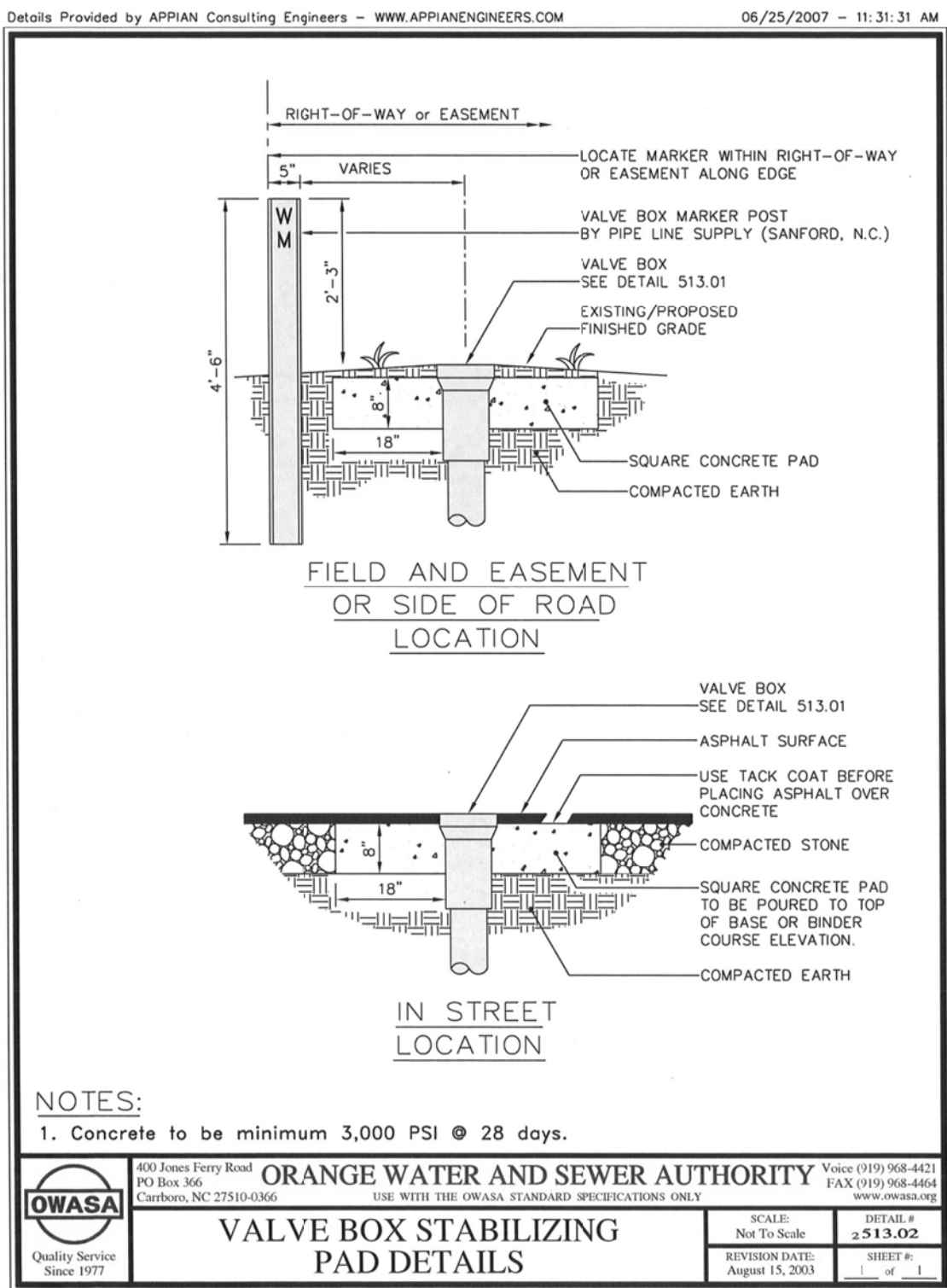
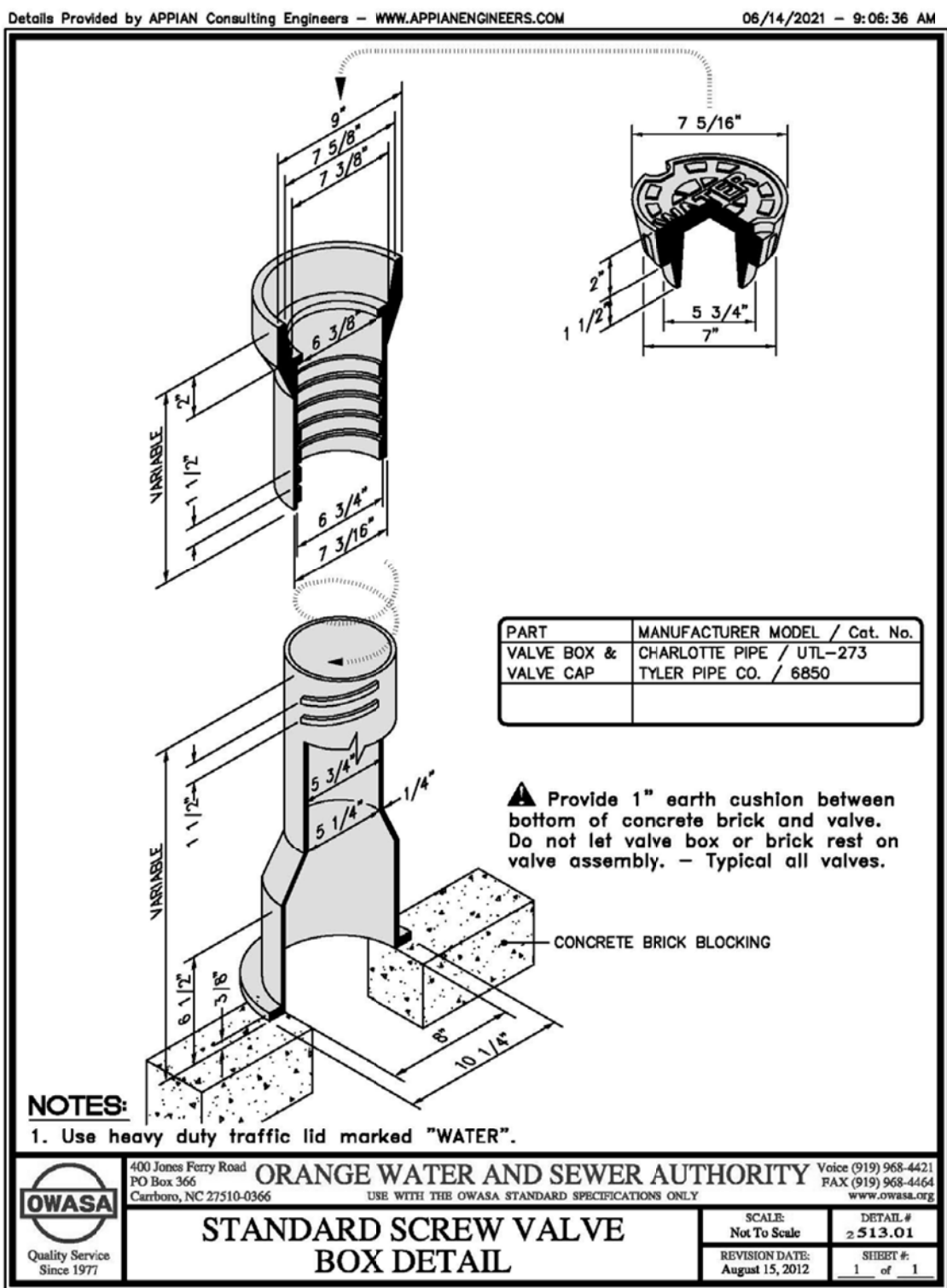
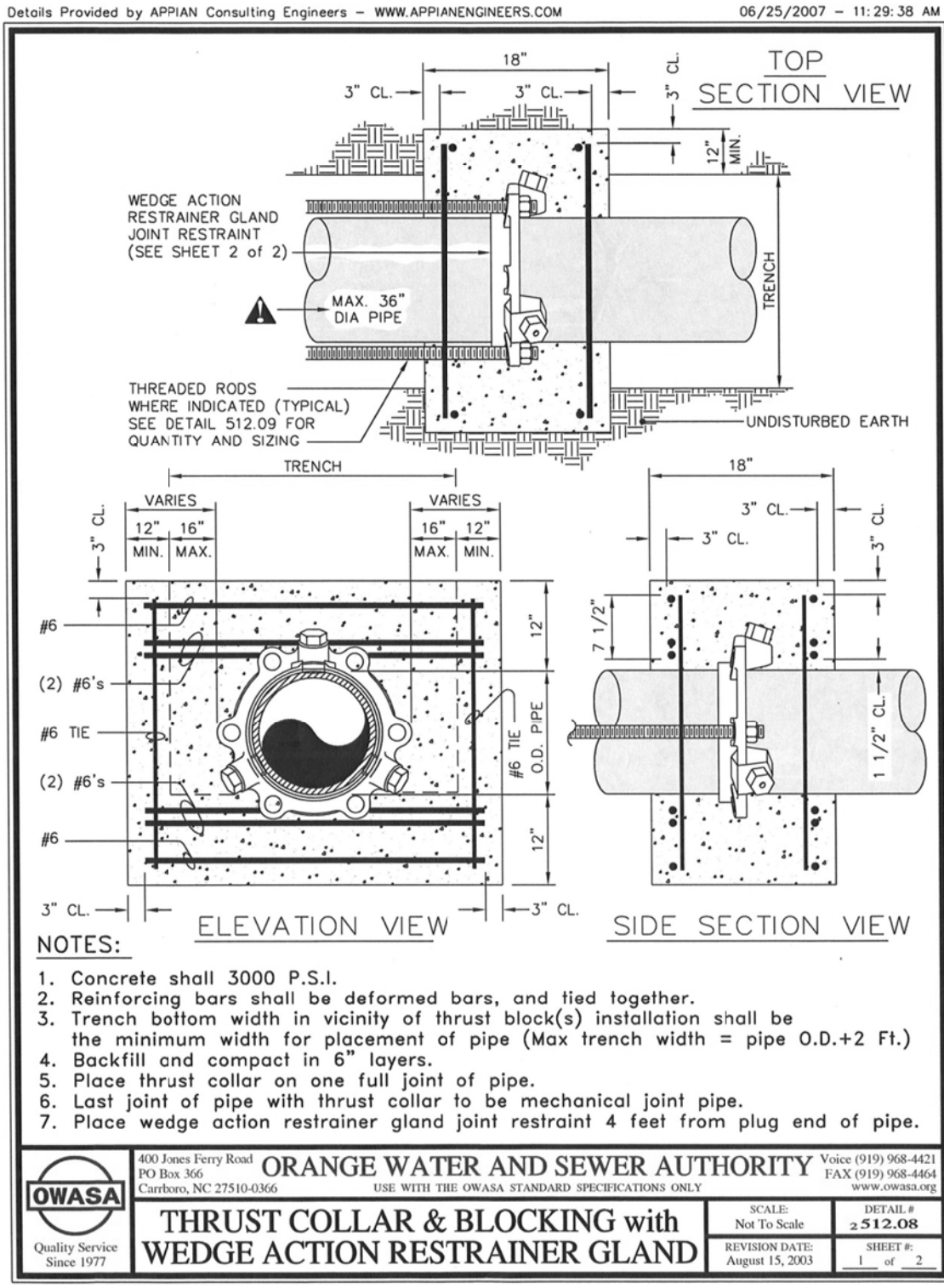


**NOTES:**

- Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
- Fittings are to be completely wrapped with plastic, prior to pouring concrete.
- Concrete to be minimum 3,000 psi. @ 28 days.
- Tops onto in-service mains by OWASA personnel only.

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	REVISION DATE: August 15, 2003	SHEET # 1 of 1	
	4" to 12" STANDARD TAPPING SLEEVE and VALVE ASSEMBLY		





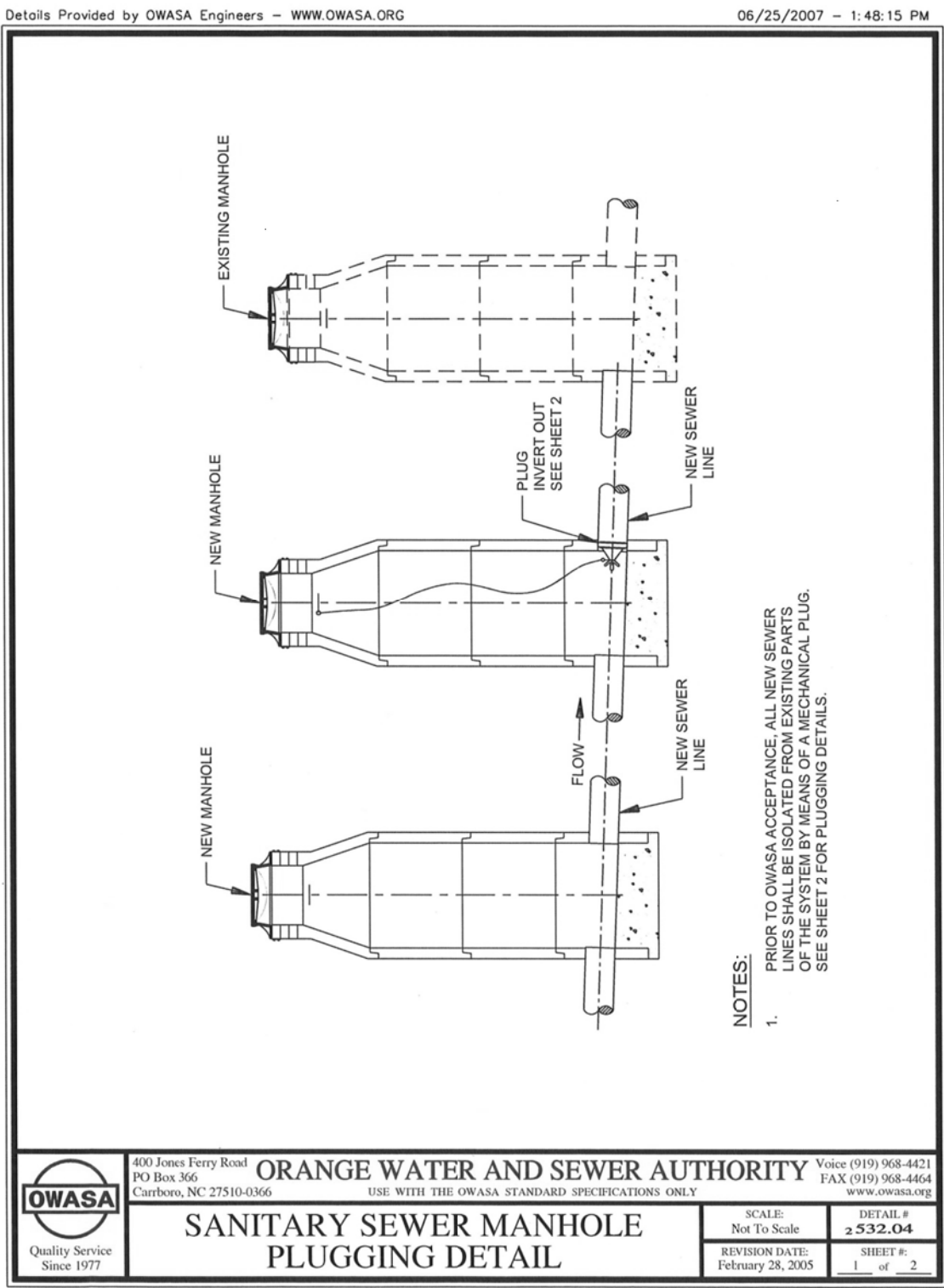
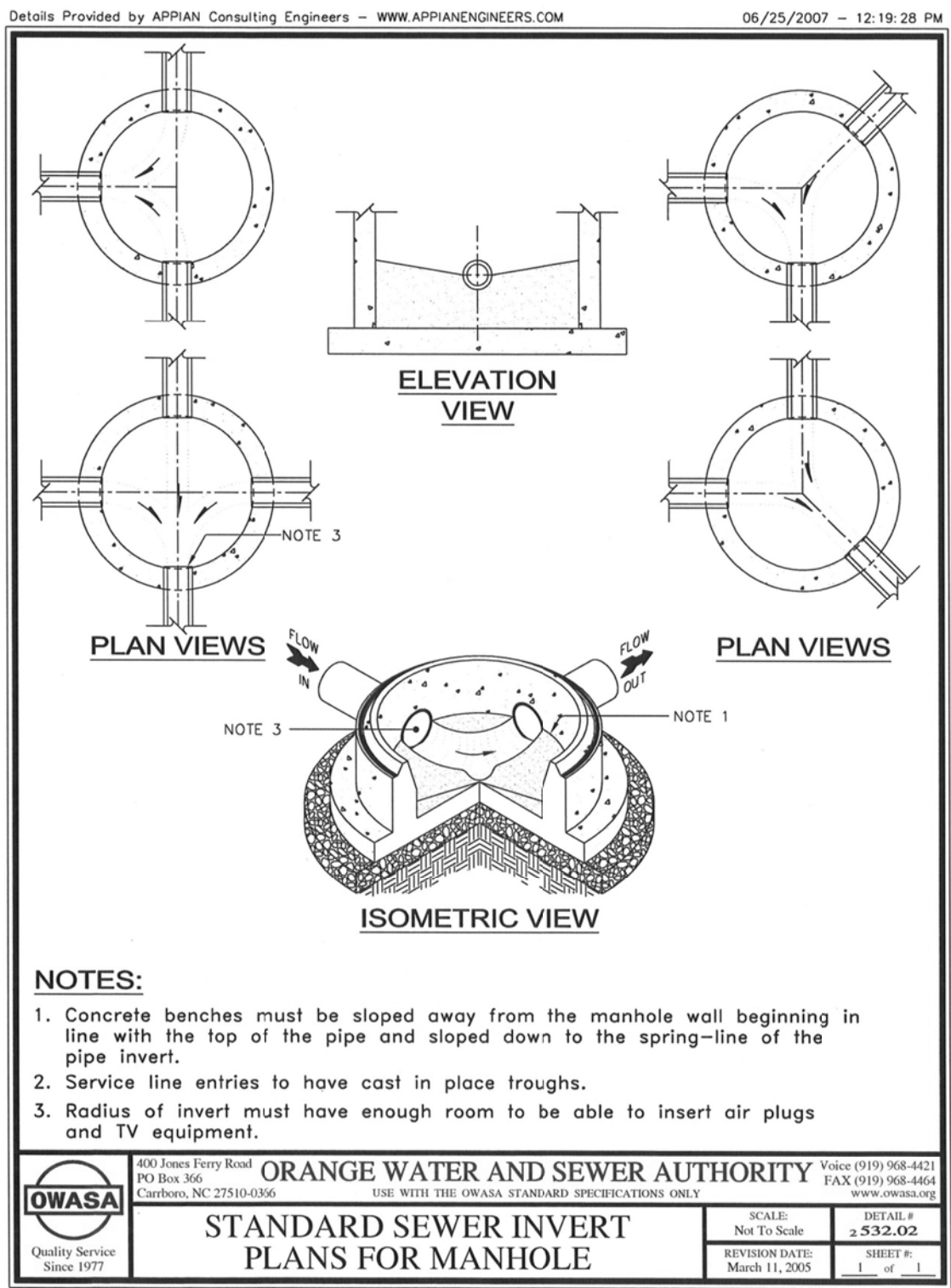
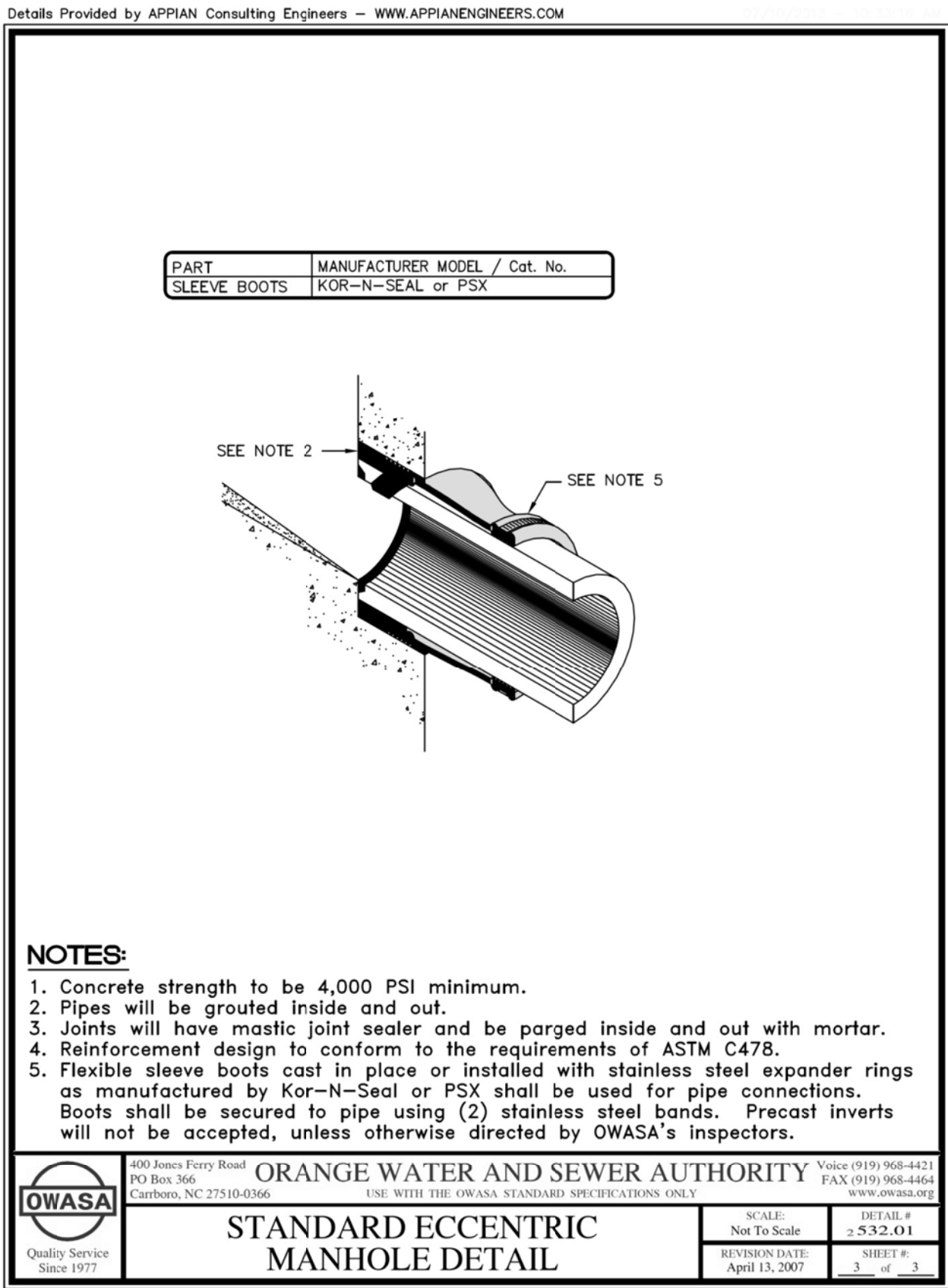
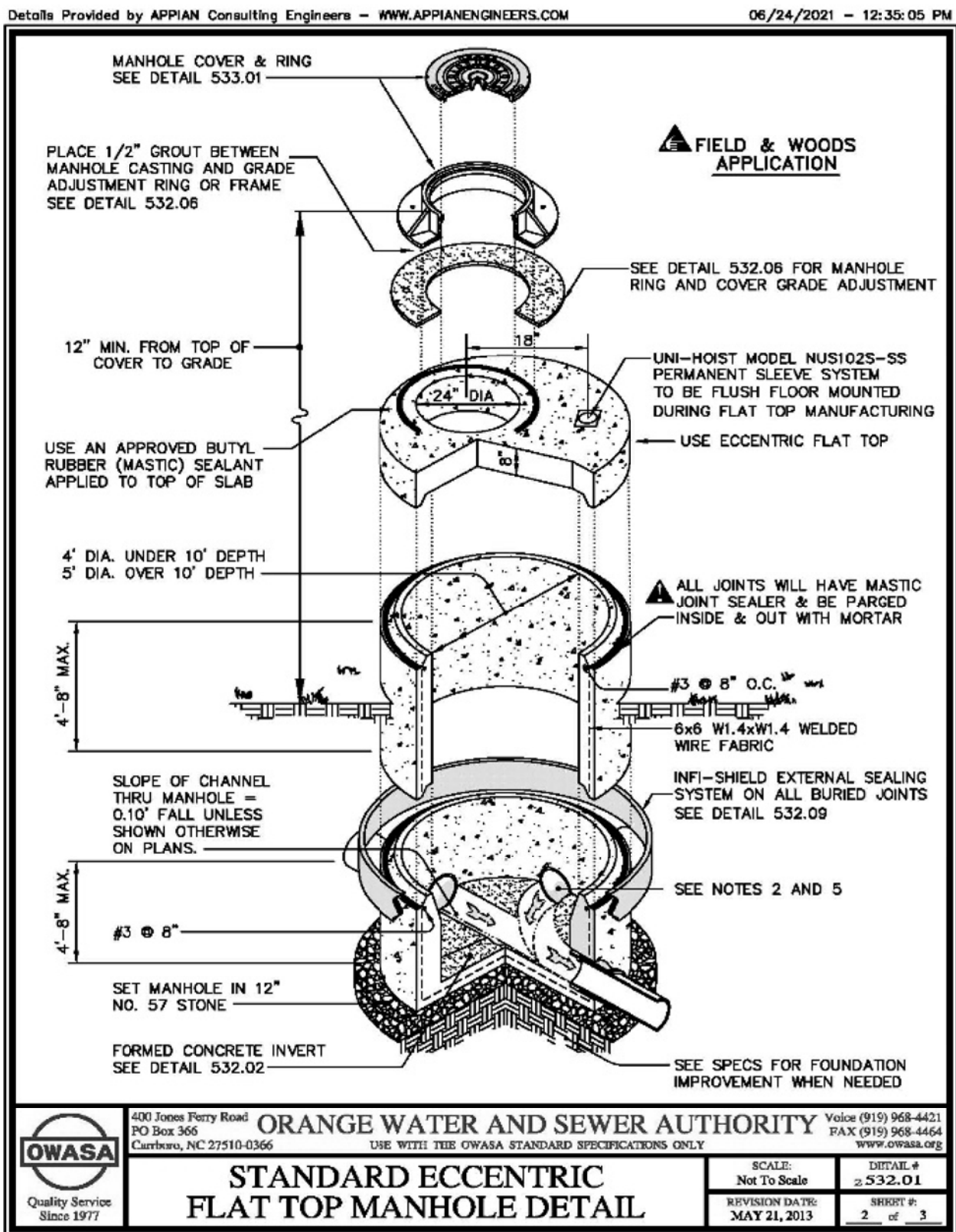
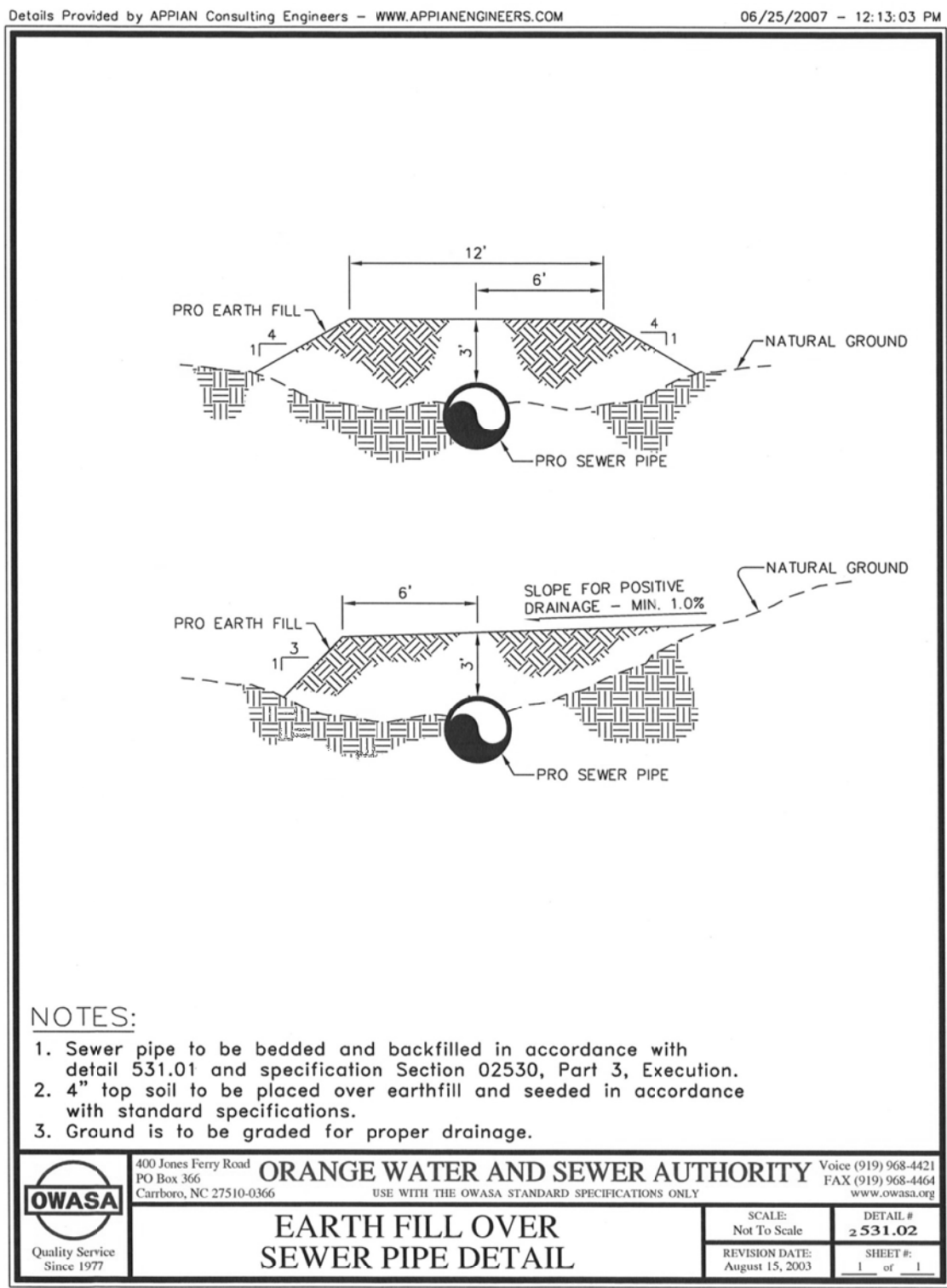
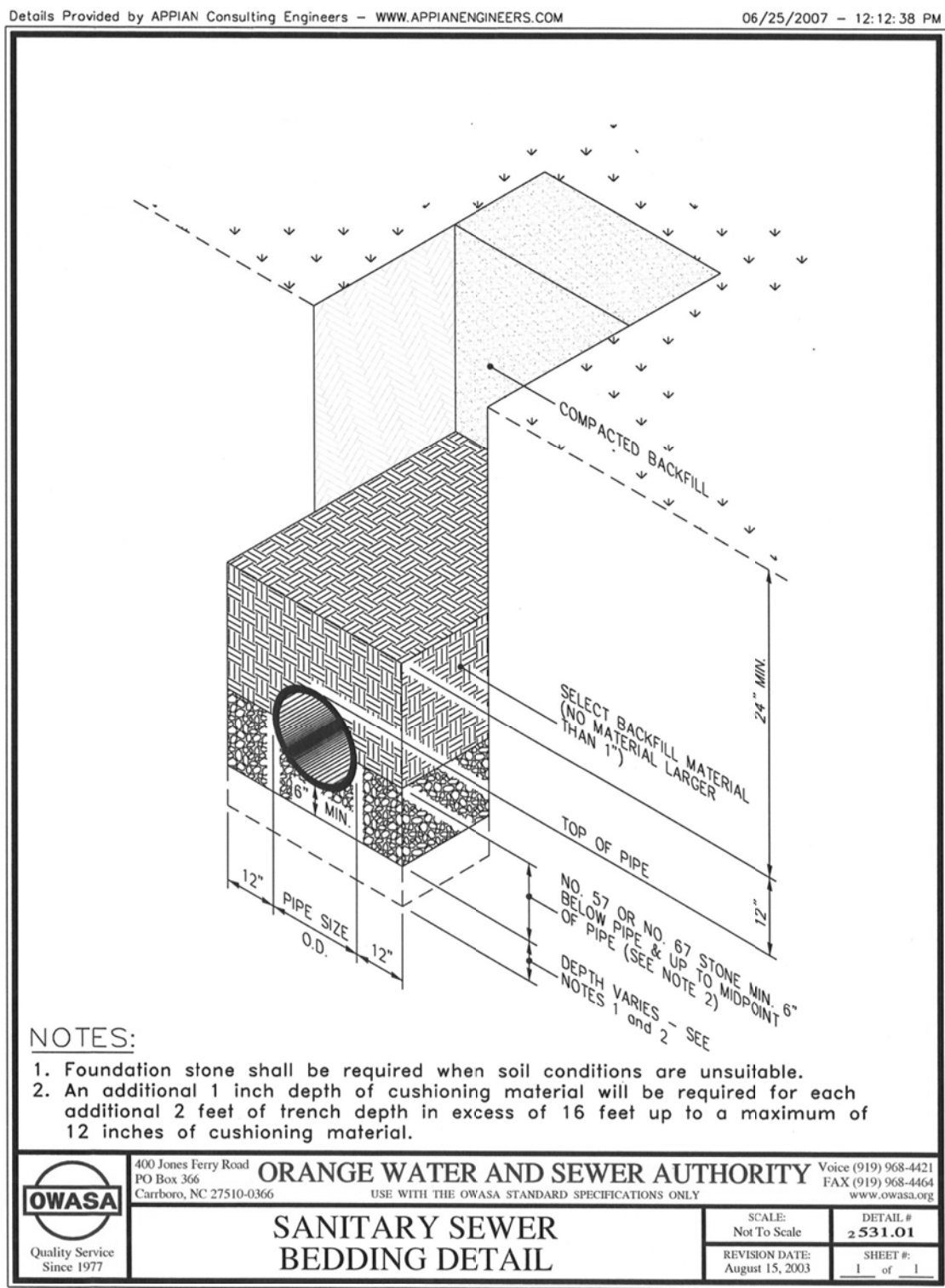
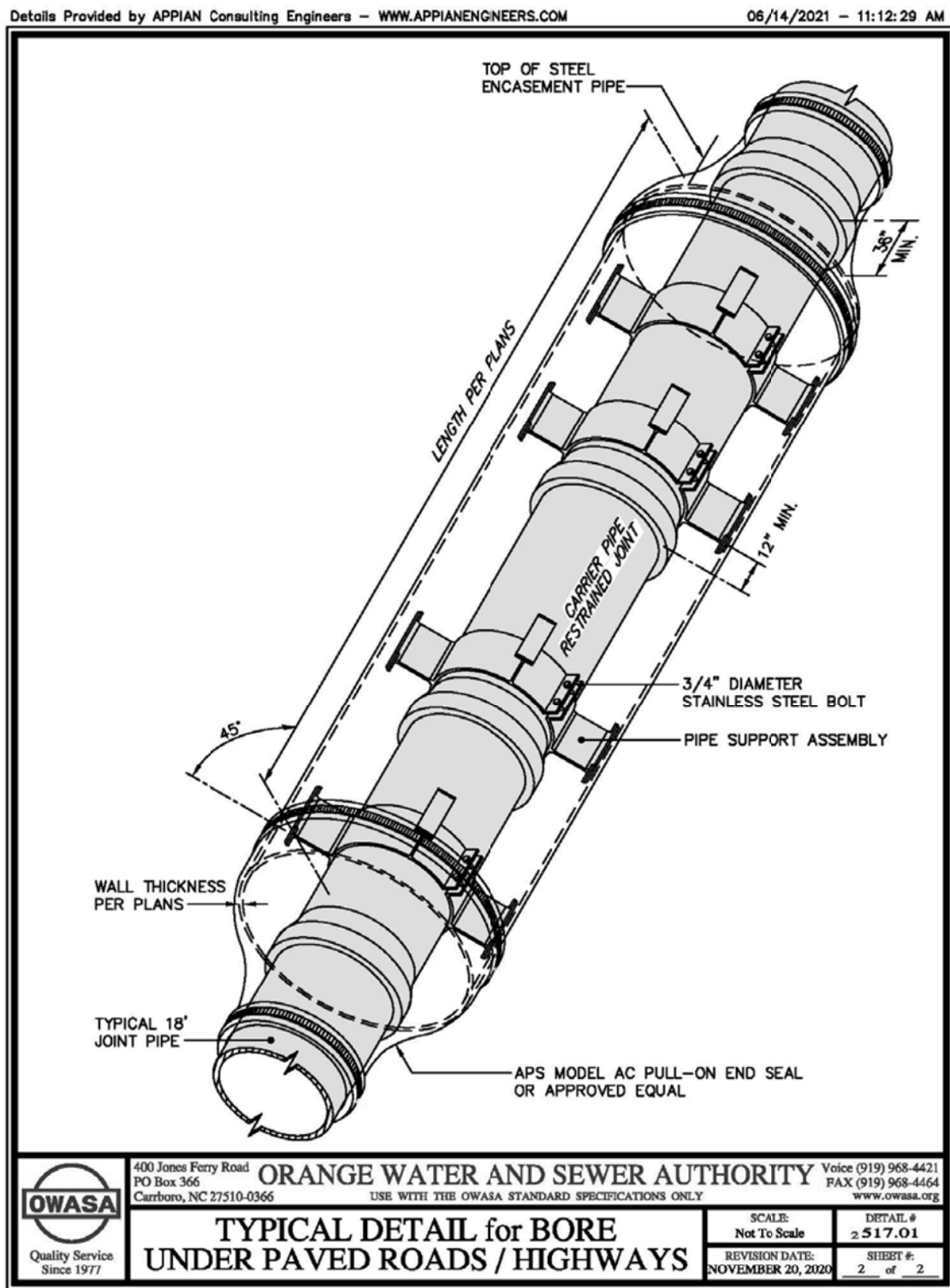




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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - SURVEY/SUE - UTILITIES - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
5B.2032146	UC 3A-4
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REVISED:	
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SHEET NO.

UC 3A-5

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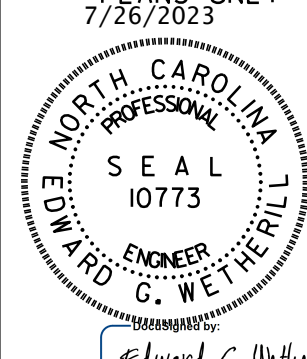
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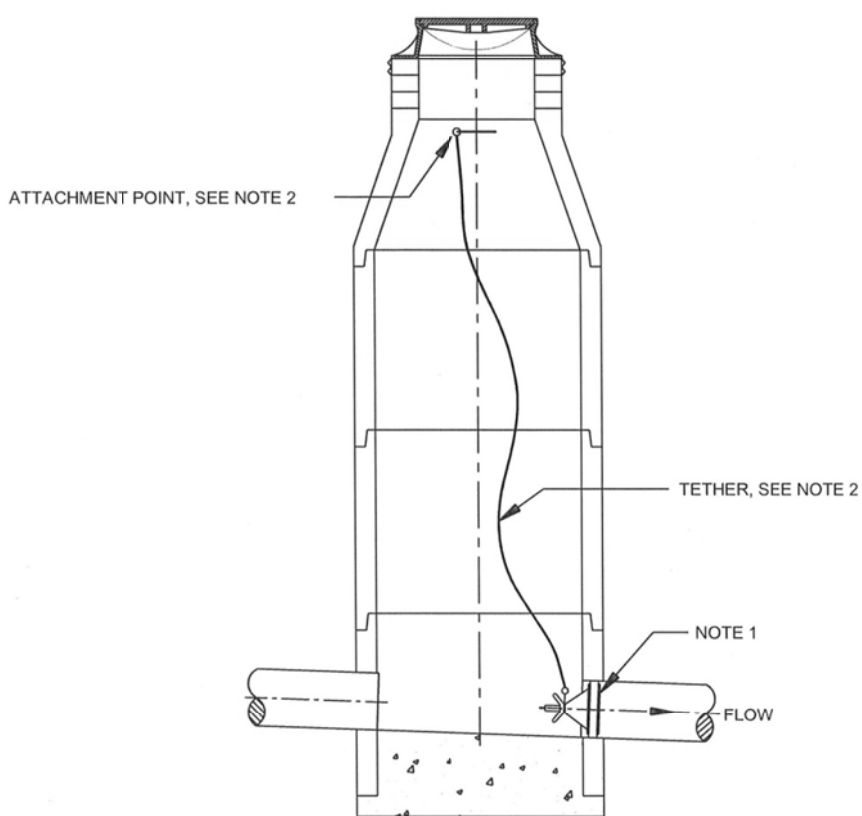
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NOTES:

- PIPE PLUG SHALL BE A "CHERIE" IRON-GRIP BY-PASS STYLE MECHANICAL PLUG OR APPROVED EQUAL.
- PIPE PLUG SHALL BE TETHERED TO THE MANHOLE TOP STEP OR OTHER PERMANENT ANCHOR POINT WITH A CORROSION AND ABRASION RESISTANT STAINLESS STEEL CABLE ATTACHED TO THE CABLE SHALL BE A CORROSION RESISTANT METAL TAG WITH THE PLUG OWNERS NAME, ADDRESS AND 24-HOUR CONTACT INFORMATION.

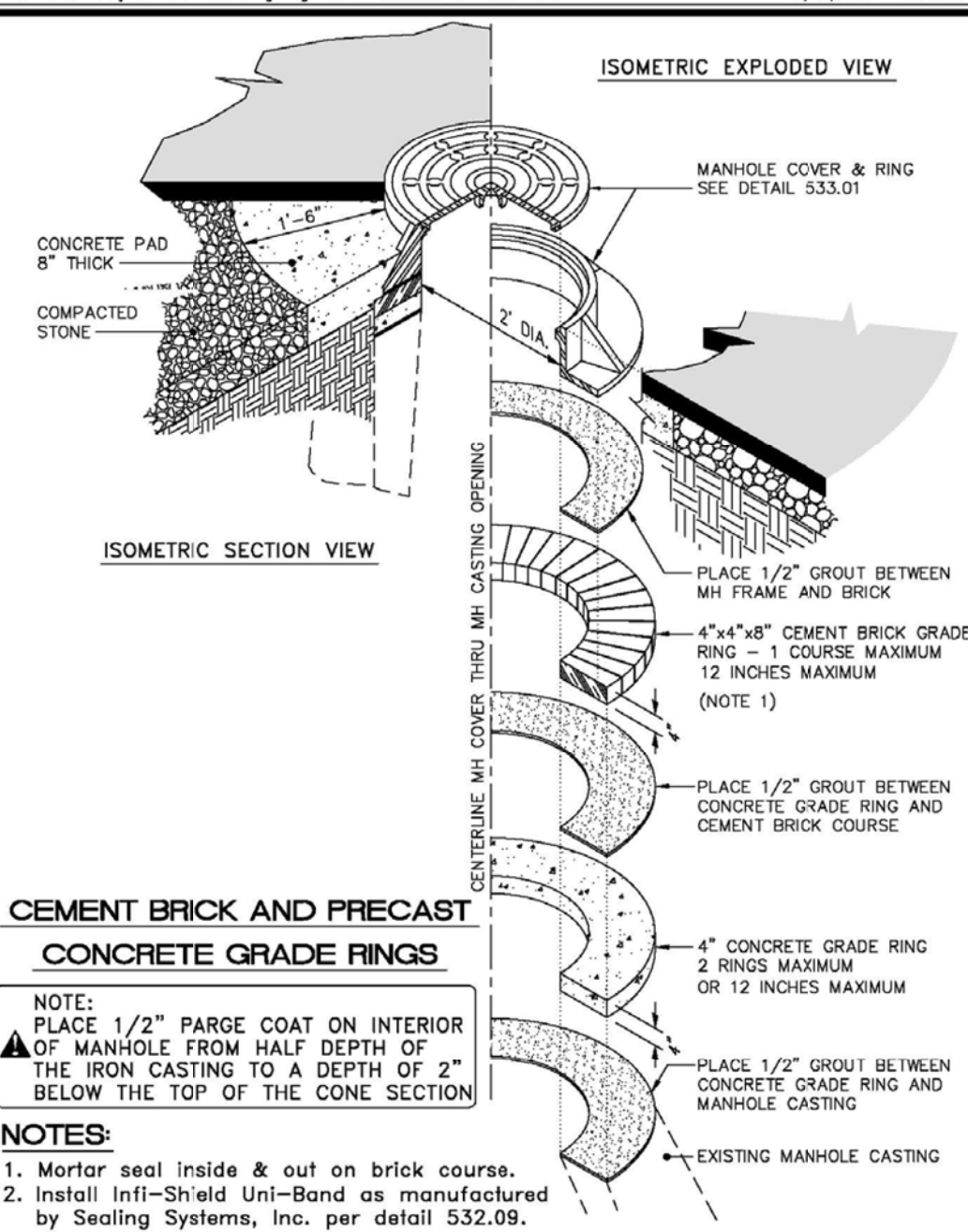


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**SANITARY SEWER MANHOLE  
PLUGGING DETAIL**

SCALE: Not To Scale  
REVISION DATE: February 20, 2005  
SHEET # 2  
DETAIL # 532.04

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 12/13/2012 - 8:50:53 AM



**CEMENT BRICK AND PRECAST  
CONCRETE GRADE RINGS**

NOTE:  
PLACE 1/2" PARGE COAT ON INTERIOR OF MANHOLE FROM HALF DEPTH OF THE IRON CASTING TO A DEPTH OF 2" BELOW THE TOP OF THE CONE SECTION

NOTES:

- Mortar seal inside & out on brick course.
- Install Infi-Shield Uni-Band as manufactured by Sealing Systems, Inc. per detail 532.08.

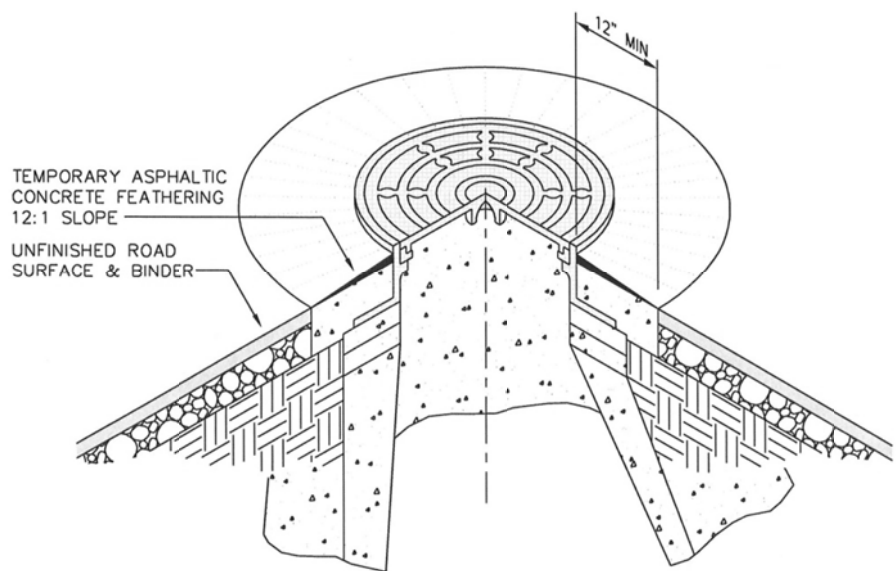


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**MANHOLE RING AND COVER  
GRADE ADJUSTMENT**

SCALE: Not To Scale  
REVISION DATE: December 1, 2012  
SHEET # 2  
DETAIL # 532.06

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 06/25/2007 - 12:24:40 PM



NOTES:

- When the rim & cover of a manhole or a valve box extends more than 1" above an unfinished road surface, a temporary layer of asphaltic concrete feathering shall be required to provide a smooth transition from 1" below the edge of the rim & cover to the unfinished road surface. A 12 to 1 slope ratio shall be used. The exposed sides of the valve box and/or manhole cover shall be painted bright orange or as specified by OWASA inspector.
- Prior to final paving contractor shall remove feathering, completely, & apply asphalt tack coat to binder to insure proper asphalt adhesion.

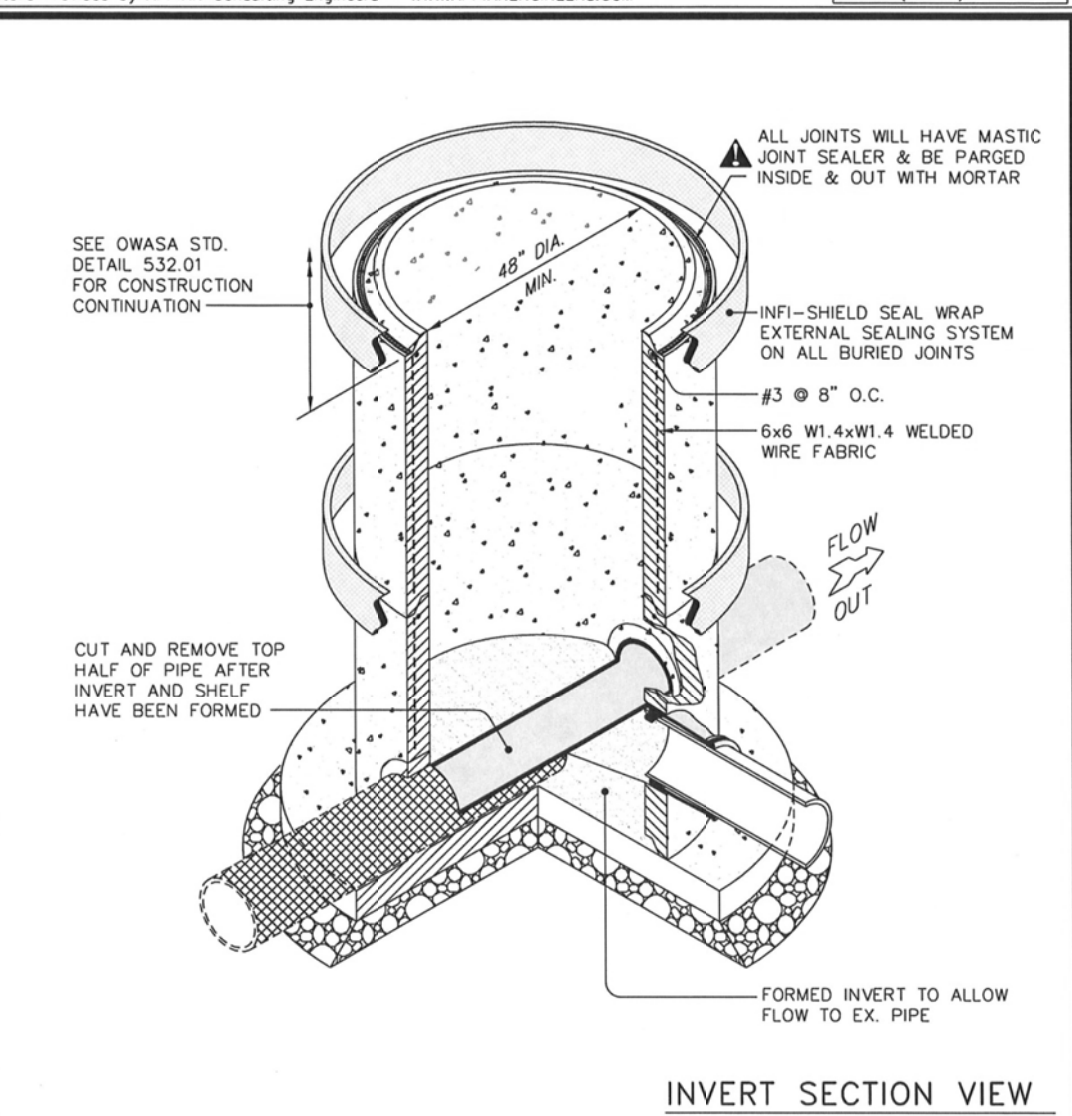


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**STRUCTURE PROTECTION  
UNFINISHED ROAD GRADE**

SCALE: Not To Scale  
REVISION DATE: August 15, 2003  
SHEET # 1  
DETAIL # 532.07

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM [RTEXT] (RTEXT)



NOTES:

- All service laterals into manhole to be core drilled and booted.
- Maximum depth 4' dia. manhole = 10' (see specifications). Use 5' dia. manhole for depth greater than 10'.

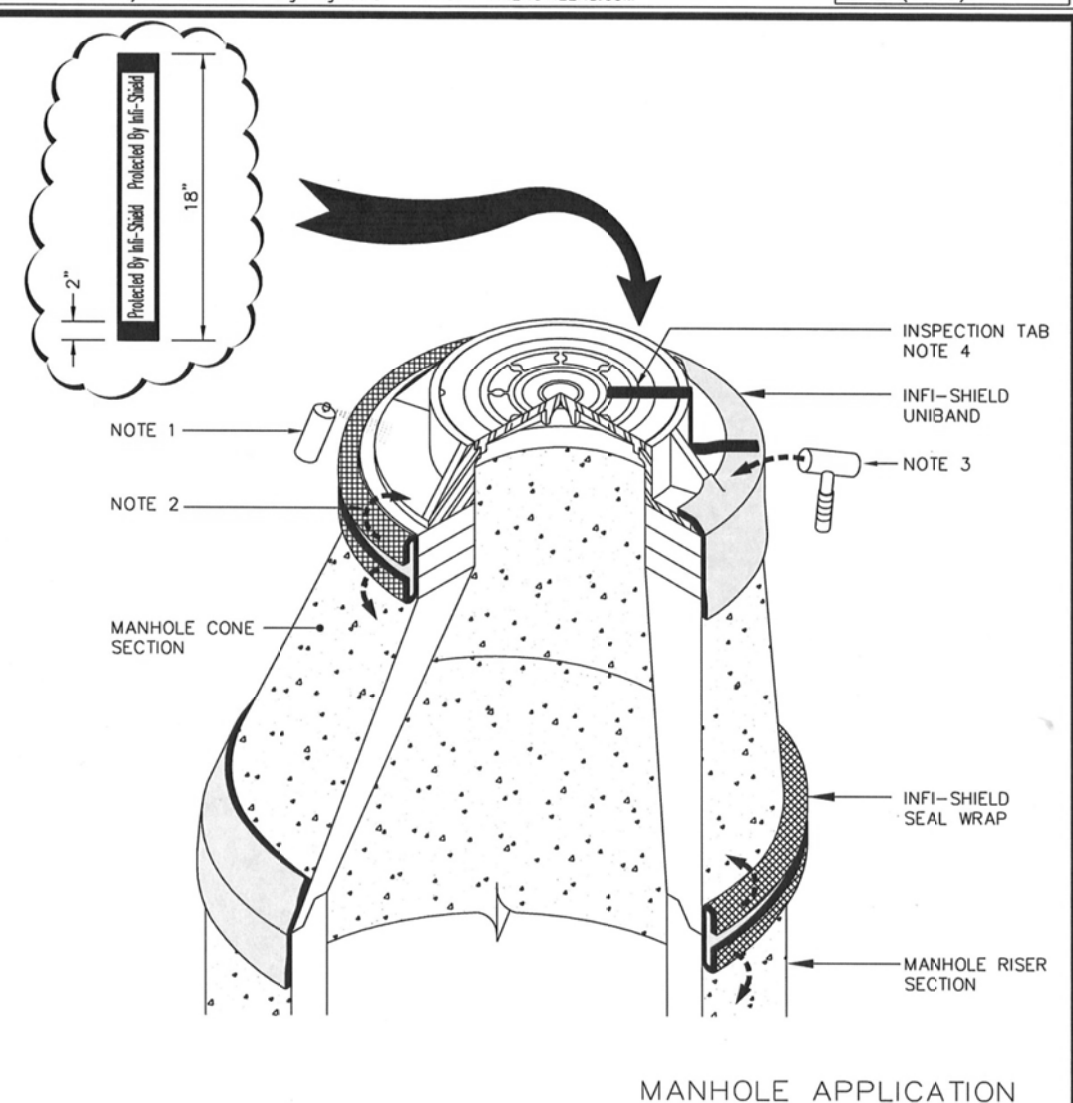


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**PRECAST CONCRETE  
DOGHOUSE MANHOLE**

SCALE: Not To Scale  
REVISION DATE: April 13, 2007  
SHEET # 2  
DETAIL # 532.08

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INSTALLATION NOTES:

- Clean casting frame, riser rings and cone section. Spray primer to areas where attaching non-hardening butyl mastic.
- Install the Infi-shield External Seal on the outside surface of the adjustment ring area covering all grade rings. Remove protective tape and fold back on to the structure.
- Using a rubber hammer, tap the sealing surface area.
- Ensure lid and casting is clean. Attach inspection tab to manhole lid and backfill.
- Contact Sealing Systems Inc. for additional installation instructions @ 800-478-2054.

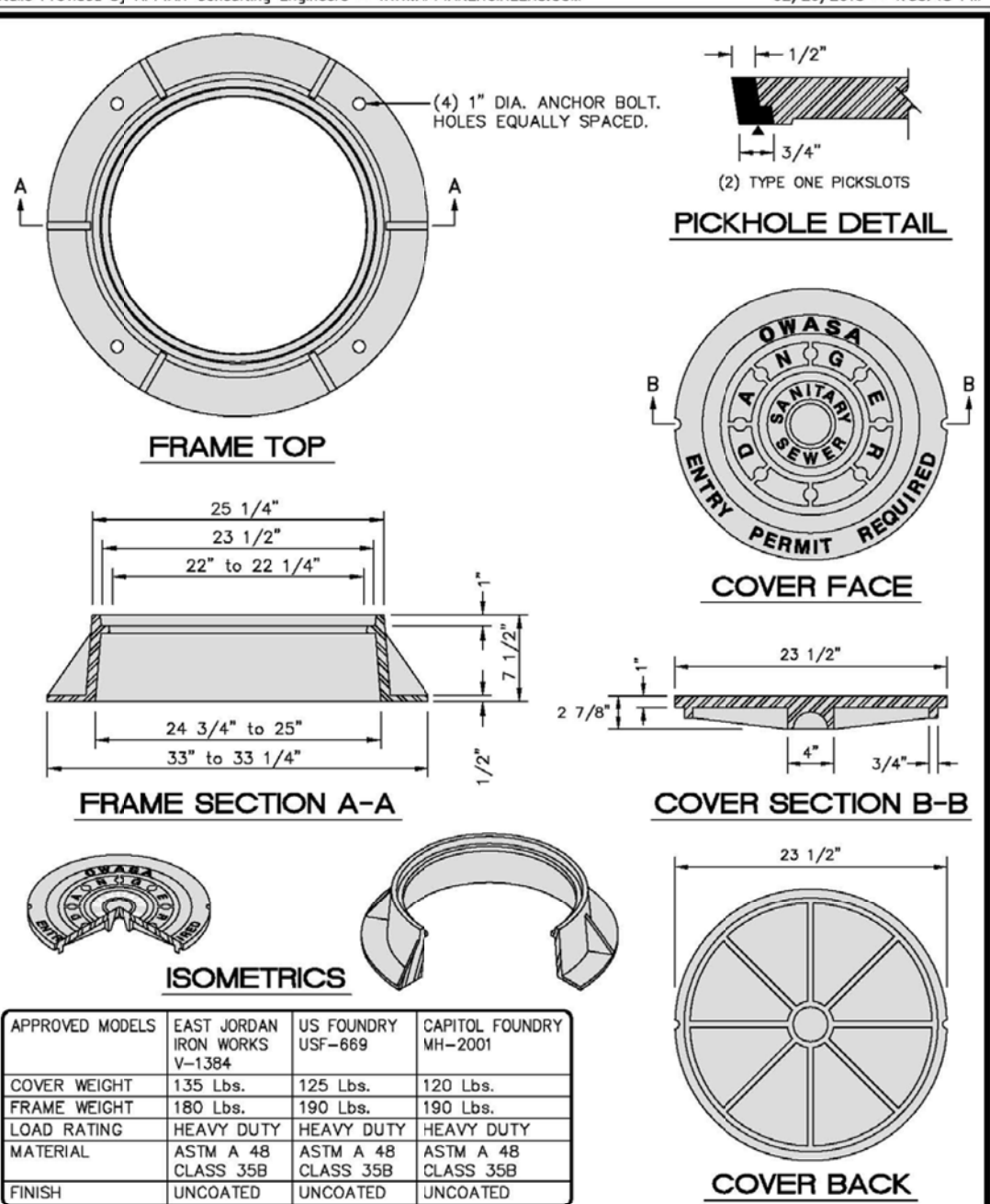


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**INFI-SHIELD EXTERNAL  
SEALING DETAIL**

SCALE: Not To Scale  
REVISION DATE: April 13, 2007  
SHEET # 1  
DETAIL # 532.09

Details Provided by APPIAN Consulting Engineers - WWW.APPIANENGINEERS.COM 02/20/2013 - 1:35:48 PM



APPROVED MODELS	EAST JORDAN IRON WORKS V-1354	US FOUNDRY USF-669	CAPITOL FOUNDRY MH-2001
COVER WEIGHT	135 Lbs.	125 Lbs.	120 Lbs.
FRAME WEIGHT	180 Lbs.	190 Lbs.	190 Lbs.
LOAD RATING	HEAVY DUTY	HEAVY DUTY	HEAVY DUTY
MATERIAL	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B
FINISH	UNCOATED	UNCOATED	UNCOATED

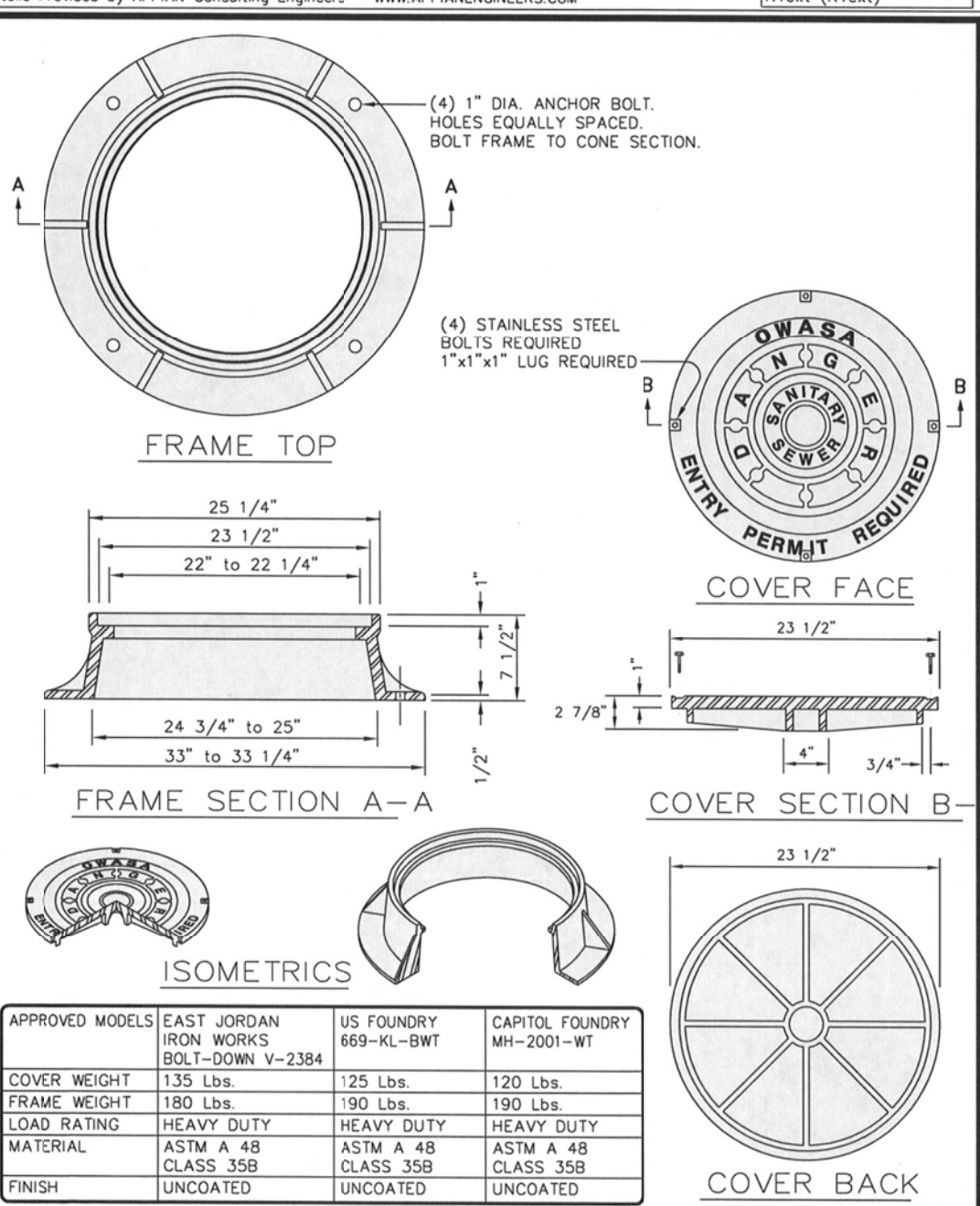


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**SANITARY SEWER MANHOLE  
FRAME and COVER**

SCALE: Not To Scale  
REVISION DATE: February 20, 2013  
SHEET # 1  
DETAIL # 532.01

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APPROVED MODELS	EAST JORDAN IRON WORKS BOL-DOWN V-2384	US FOUNDRY 669-KL-BWT	CAPITOL FOUNDRY MH-2001-WT
COVER WEIGHT	135 Lbs.	125 Lbs.	120 Lbs.
FRAME WEIGHT	180 Lbs.	190 Lbs.	190 Lbs.
LOAD RATING	HEAVY DUTY	HEAVY DUTY	HEAVY DUTY
MATERIAL	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B
FINISH	UNCOATED	UNCOATED	UNCOATED



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**SANITARY SEWER WATERTIGHT  
MANHOLE FRAME and COVER**

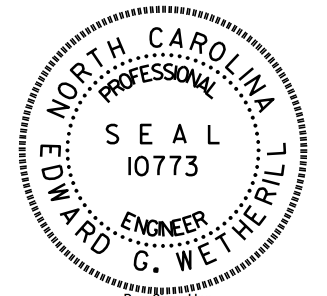
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SHEET # 1  
DETAIL # 532.02



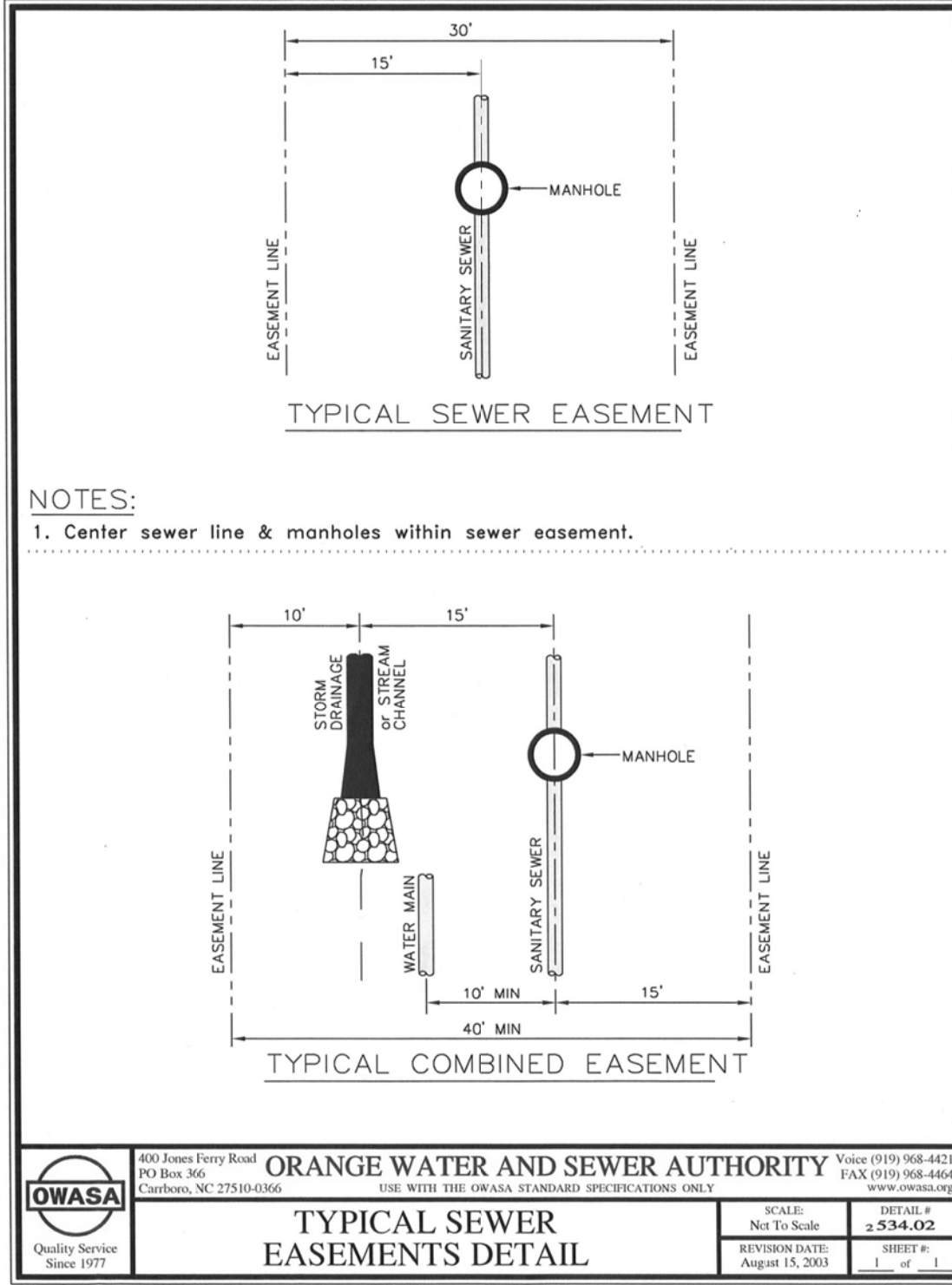


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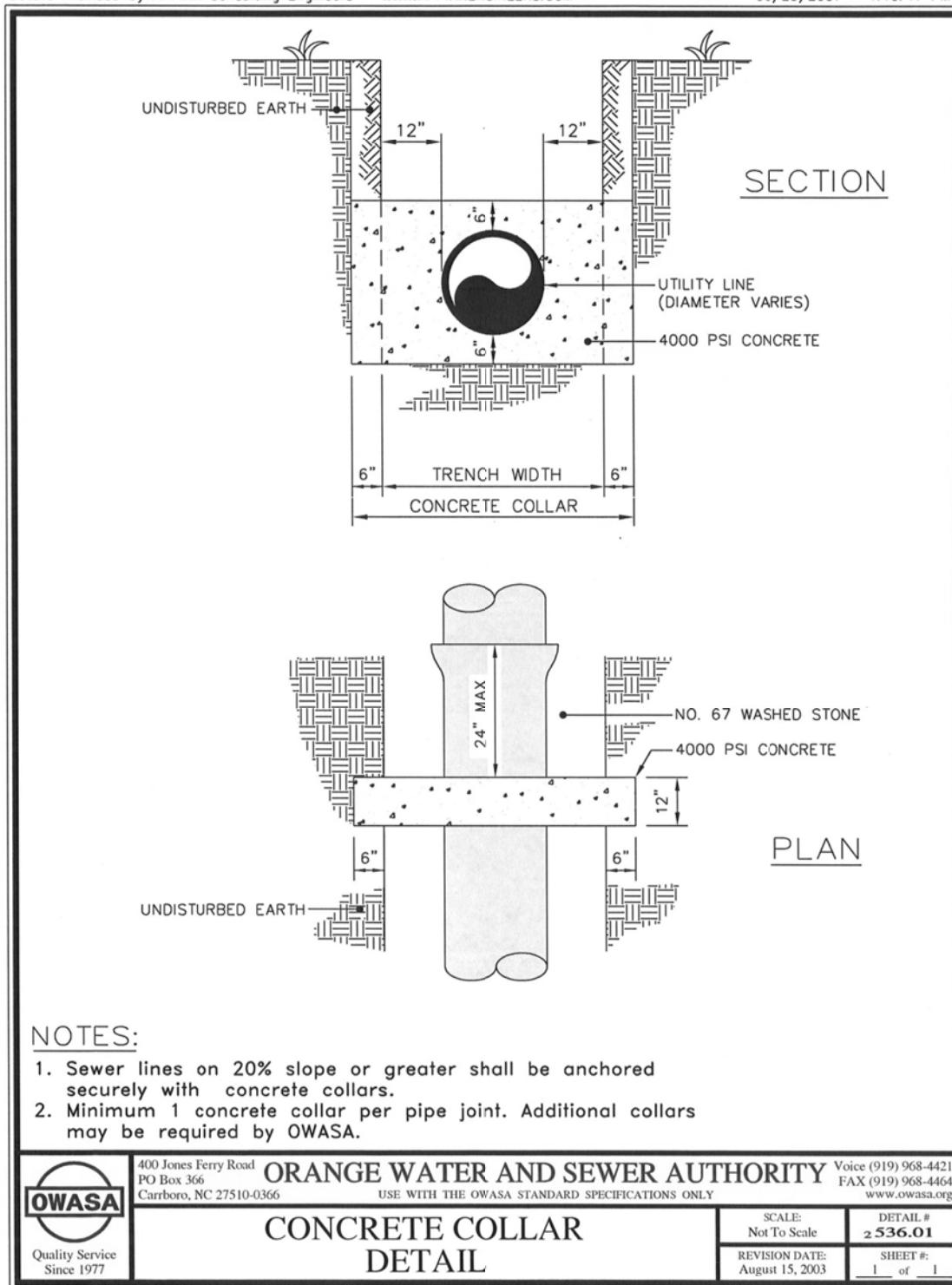
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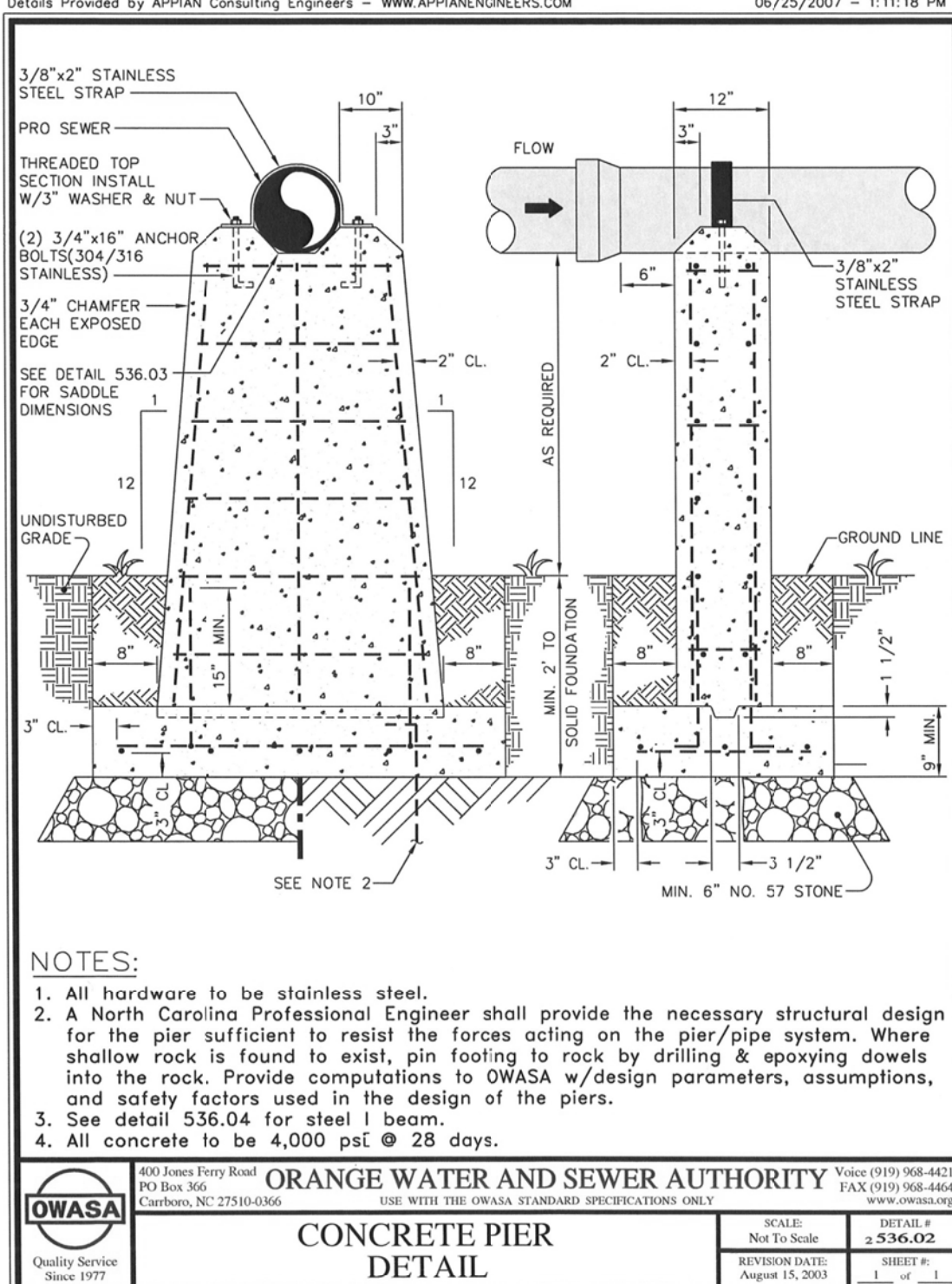
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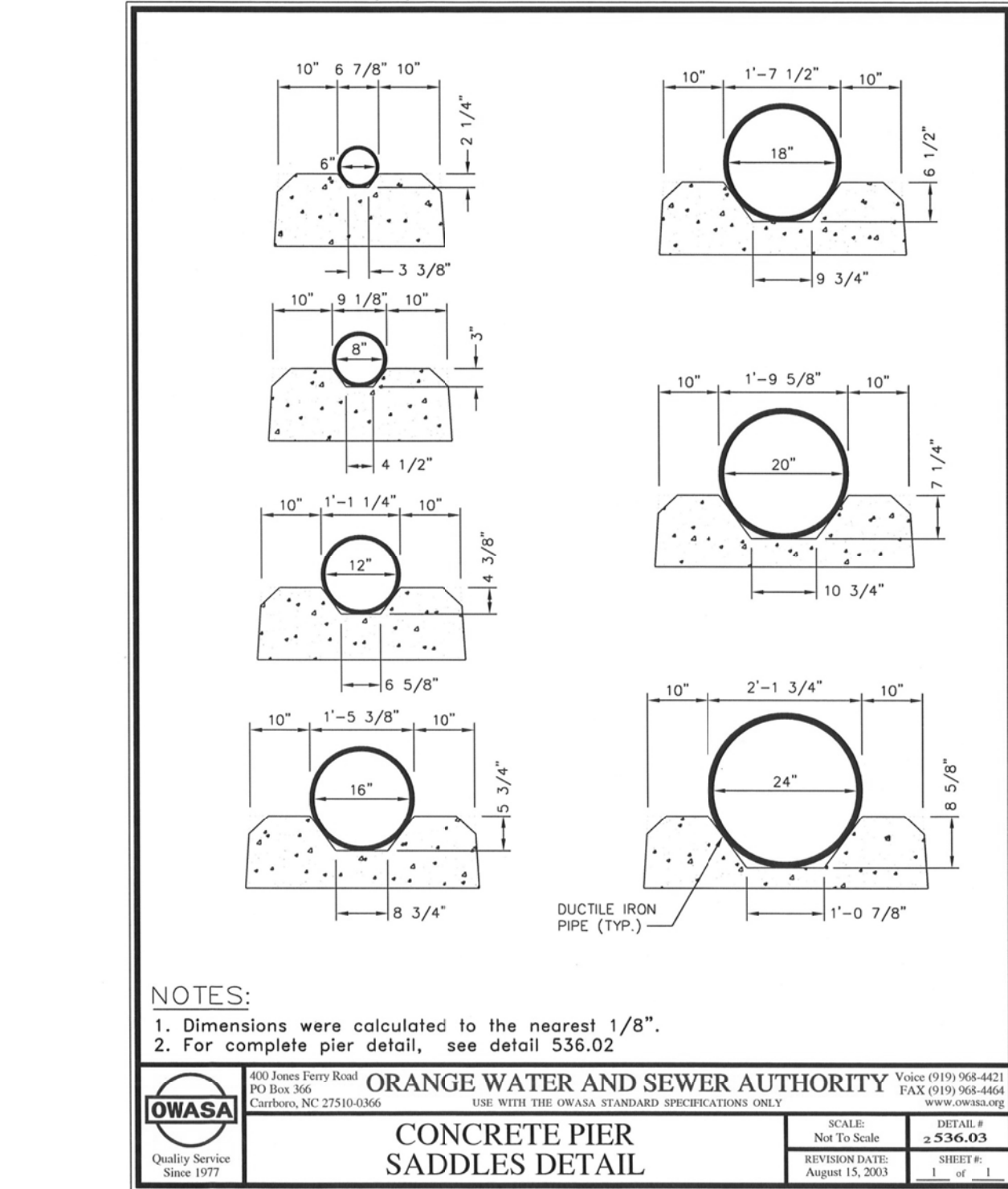
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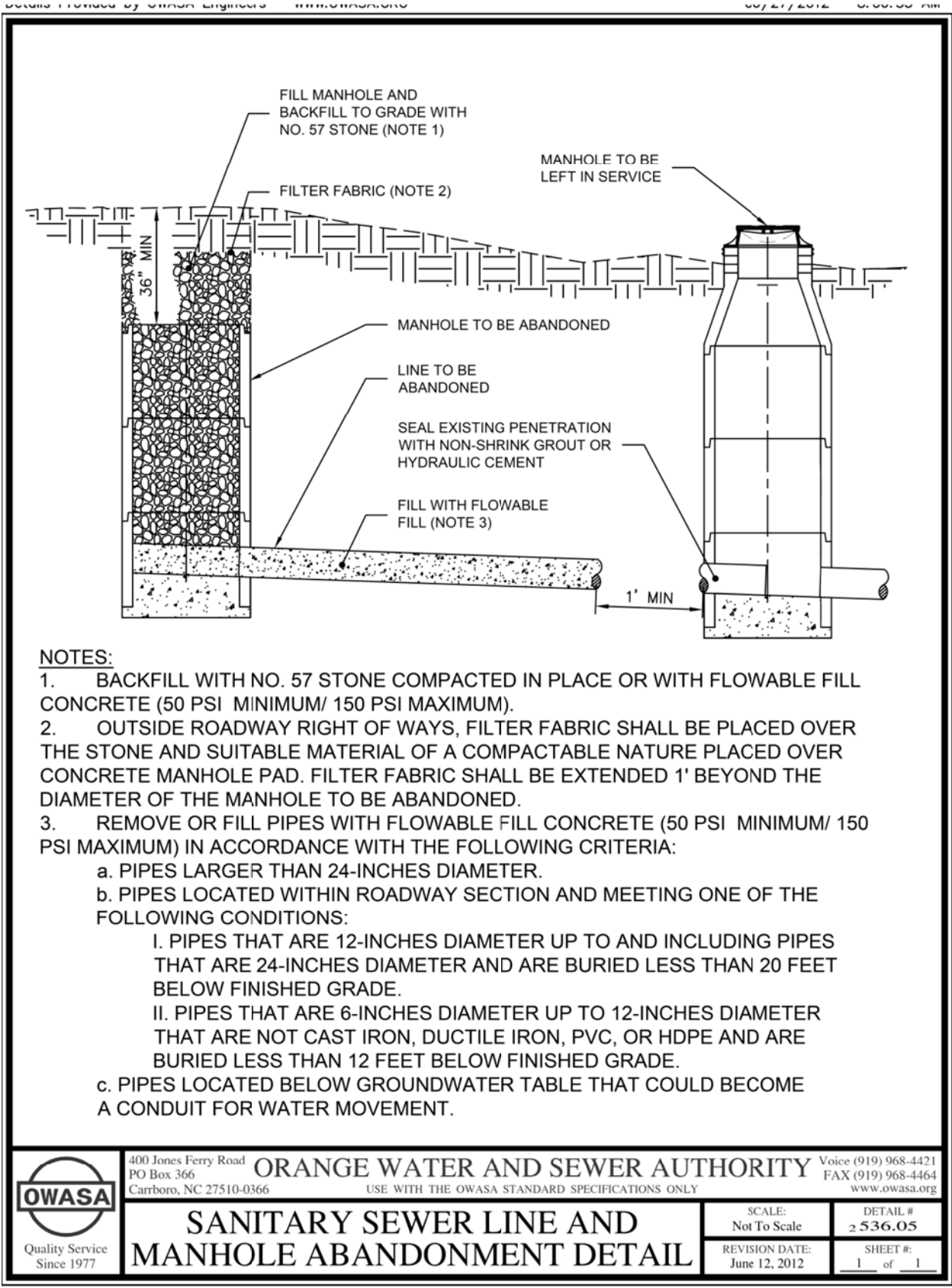
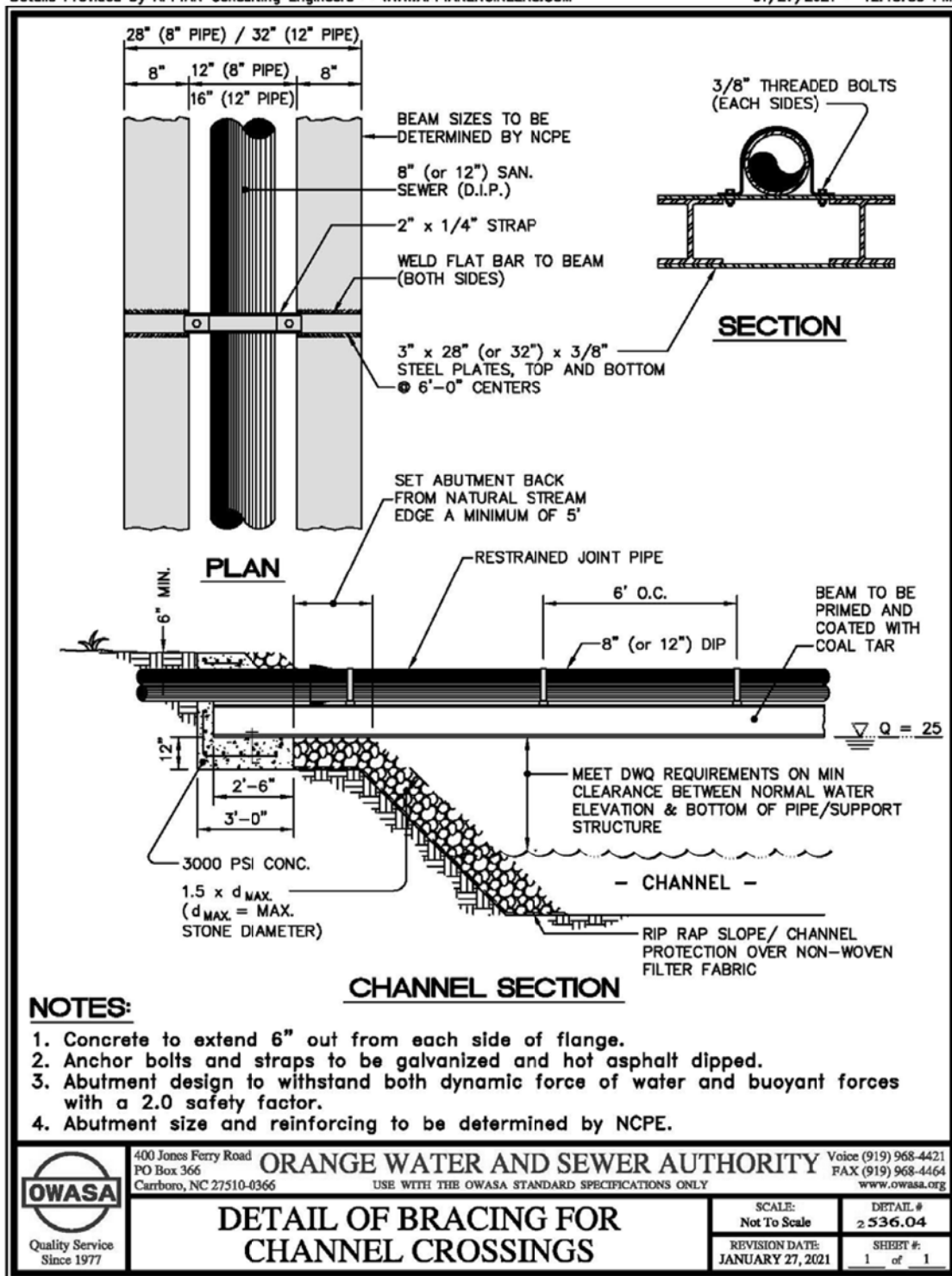
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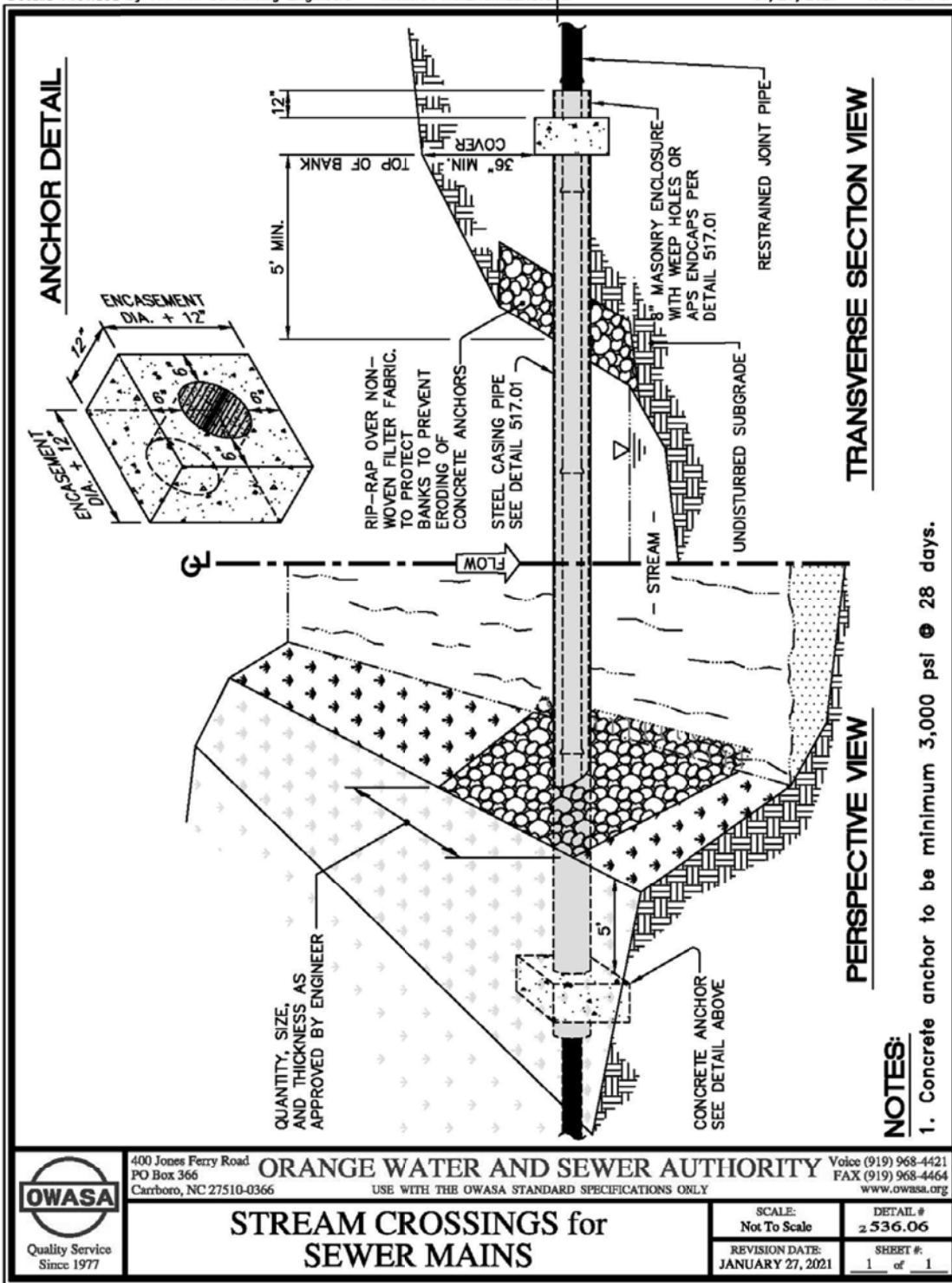
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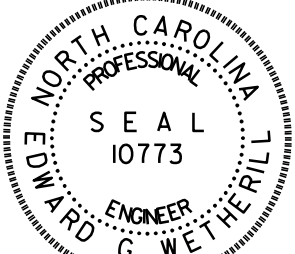
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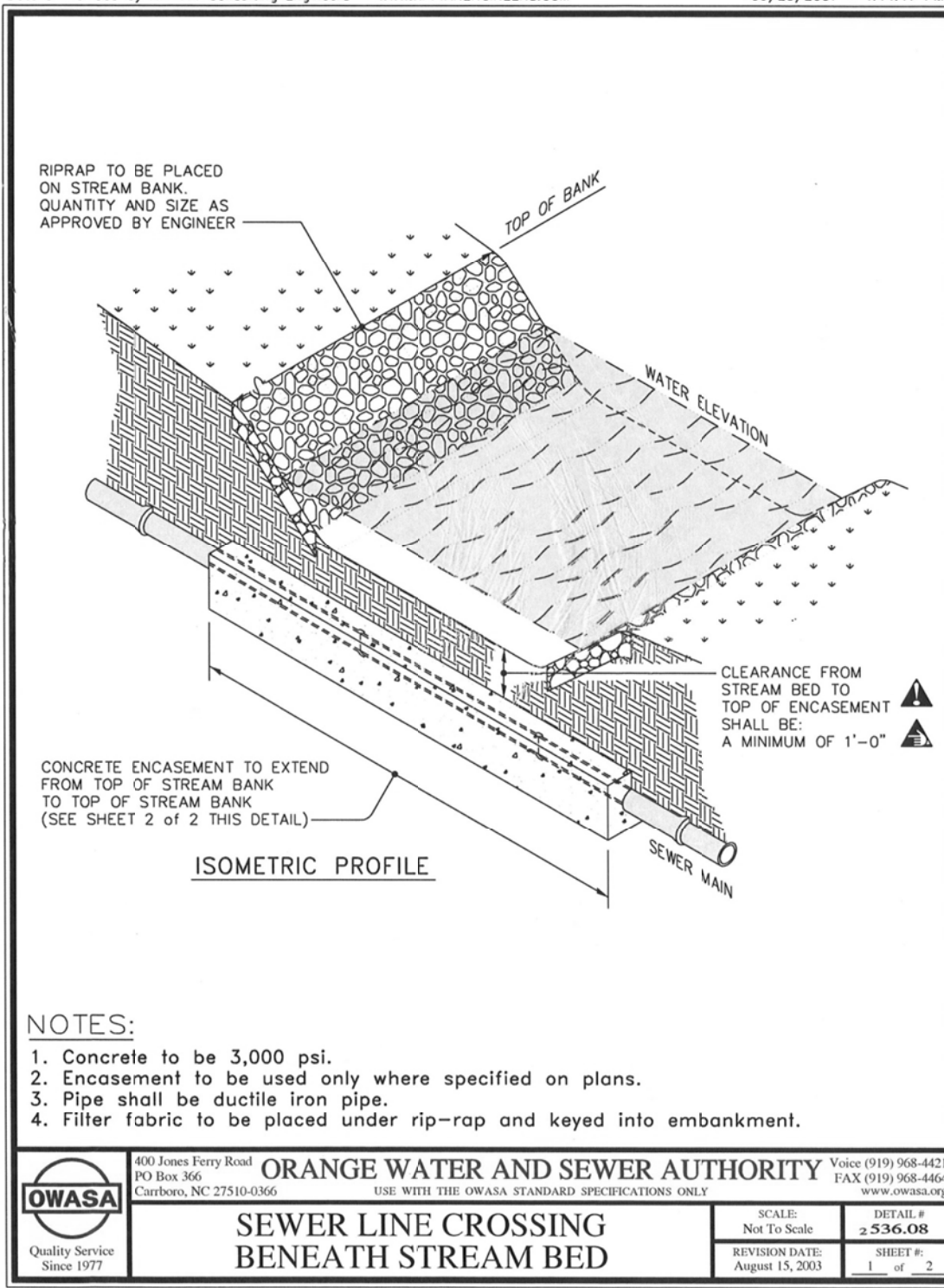




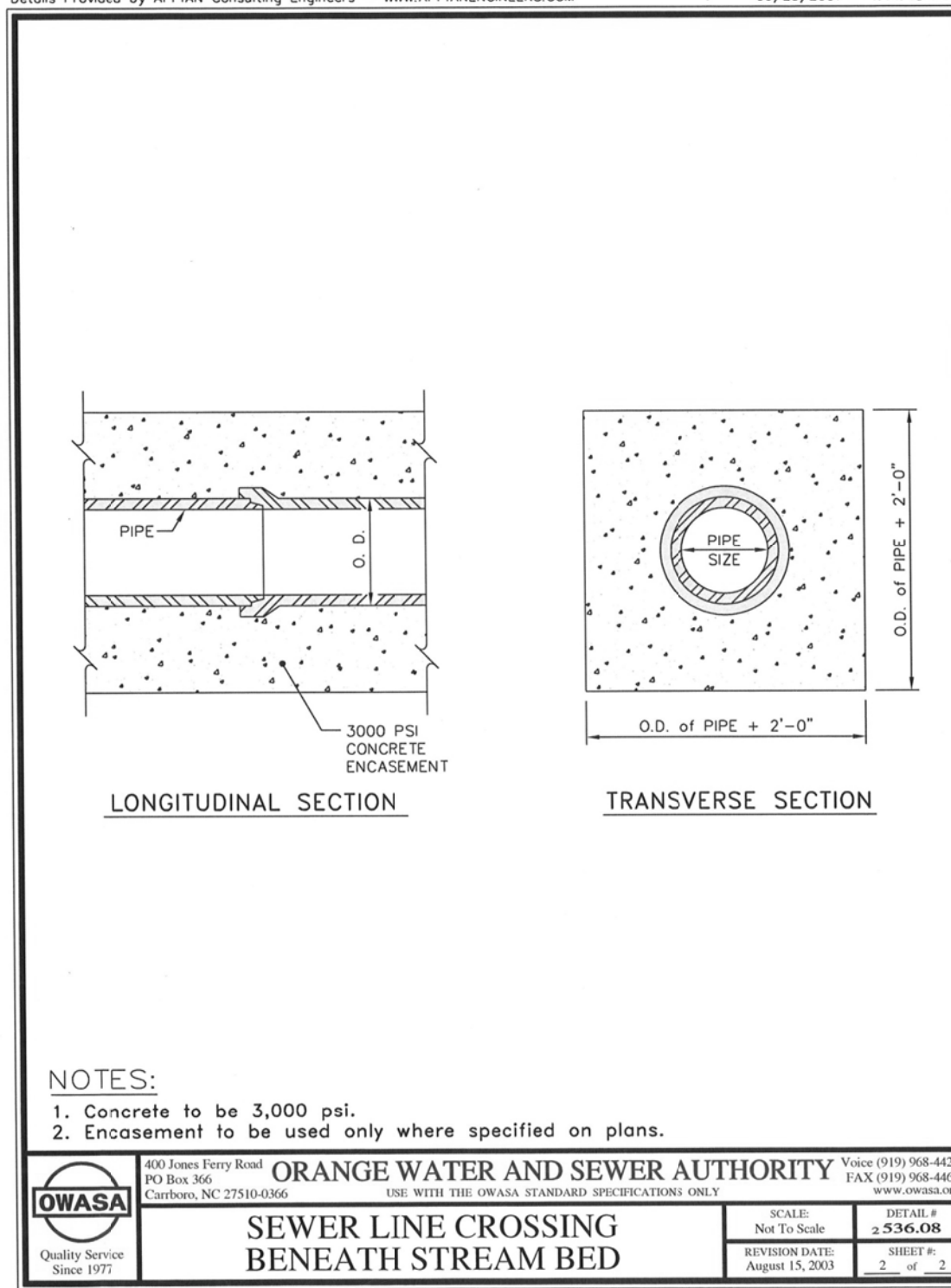
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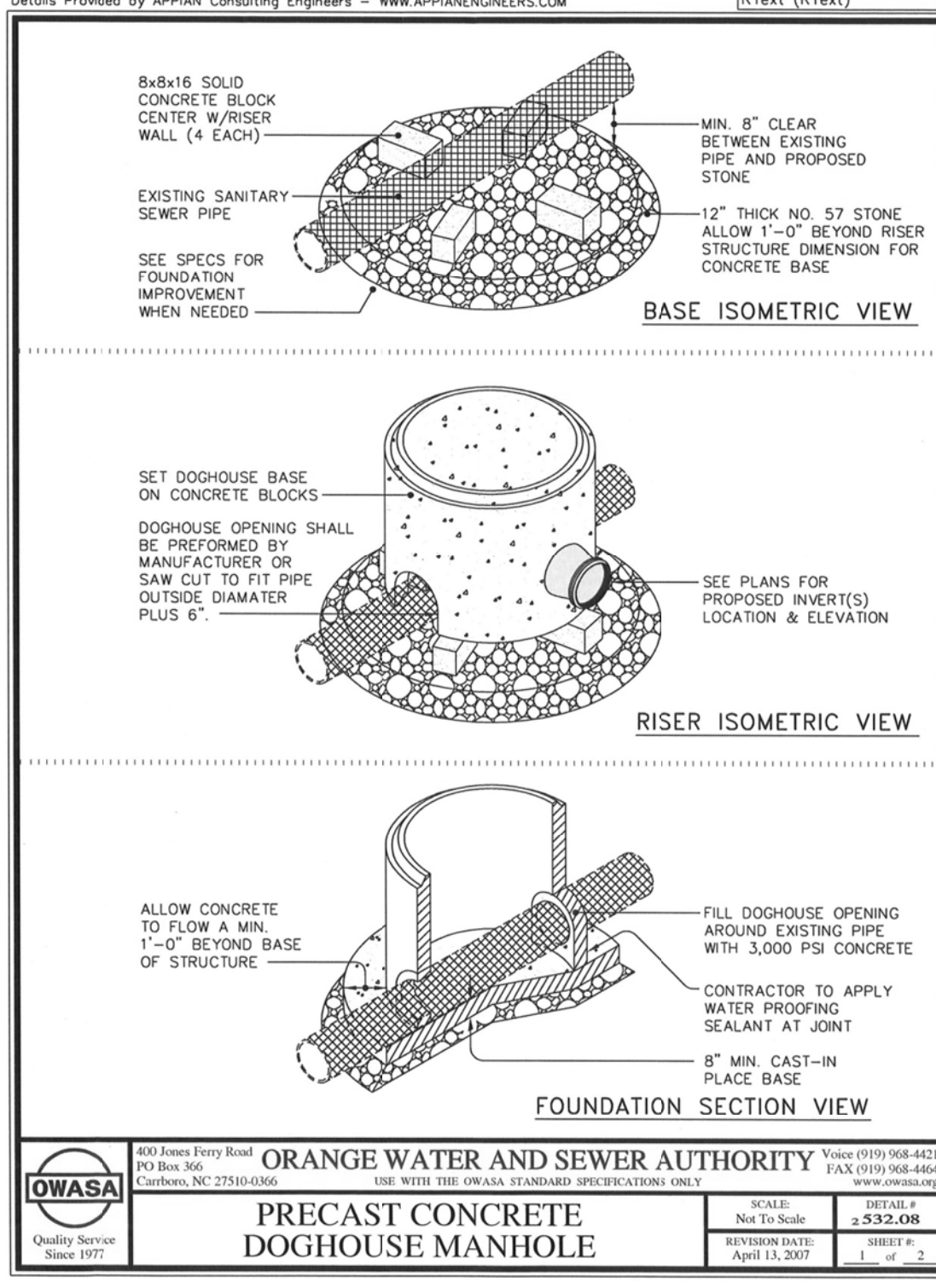
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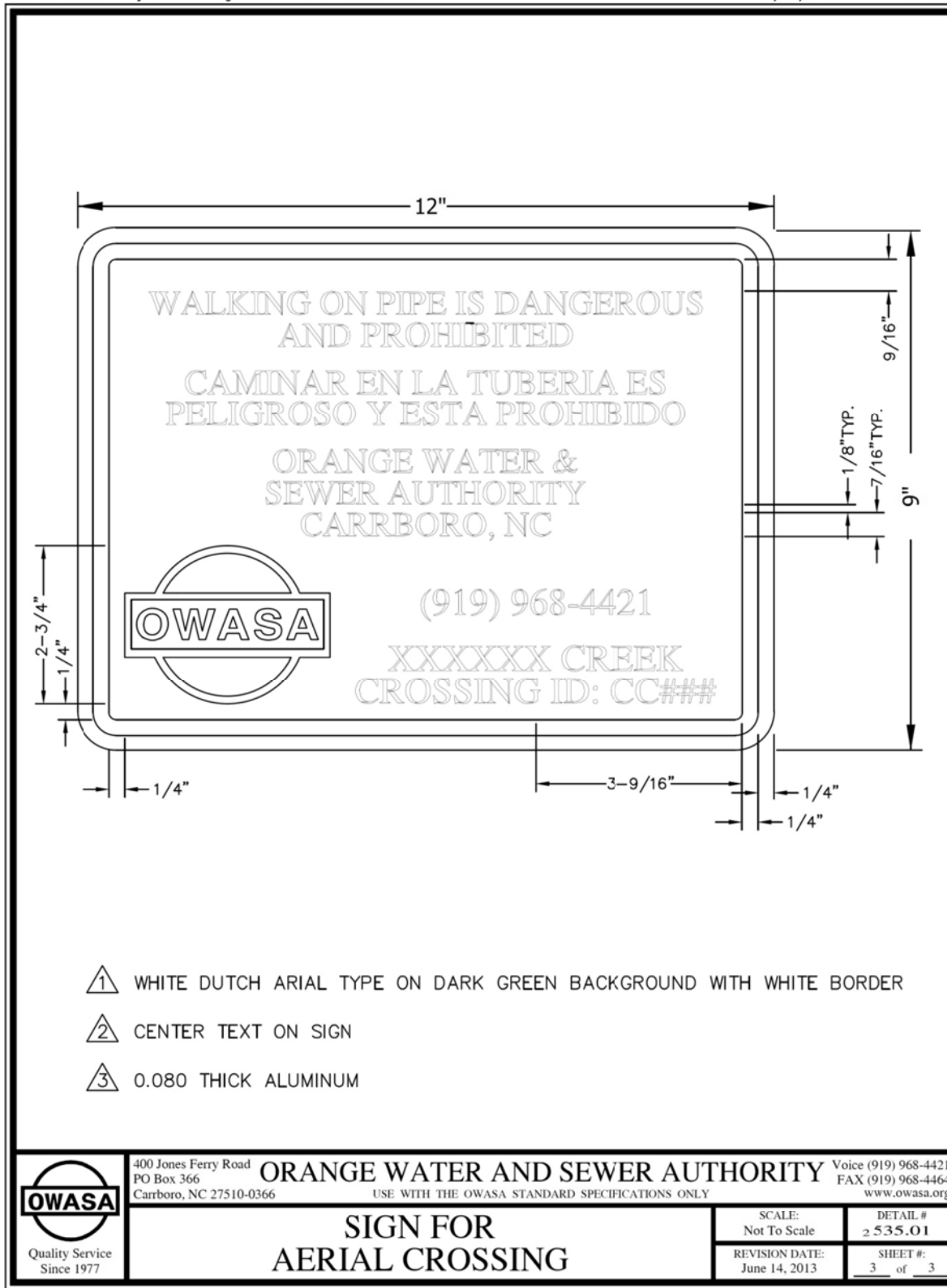
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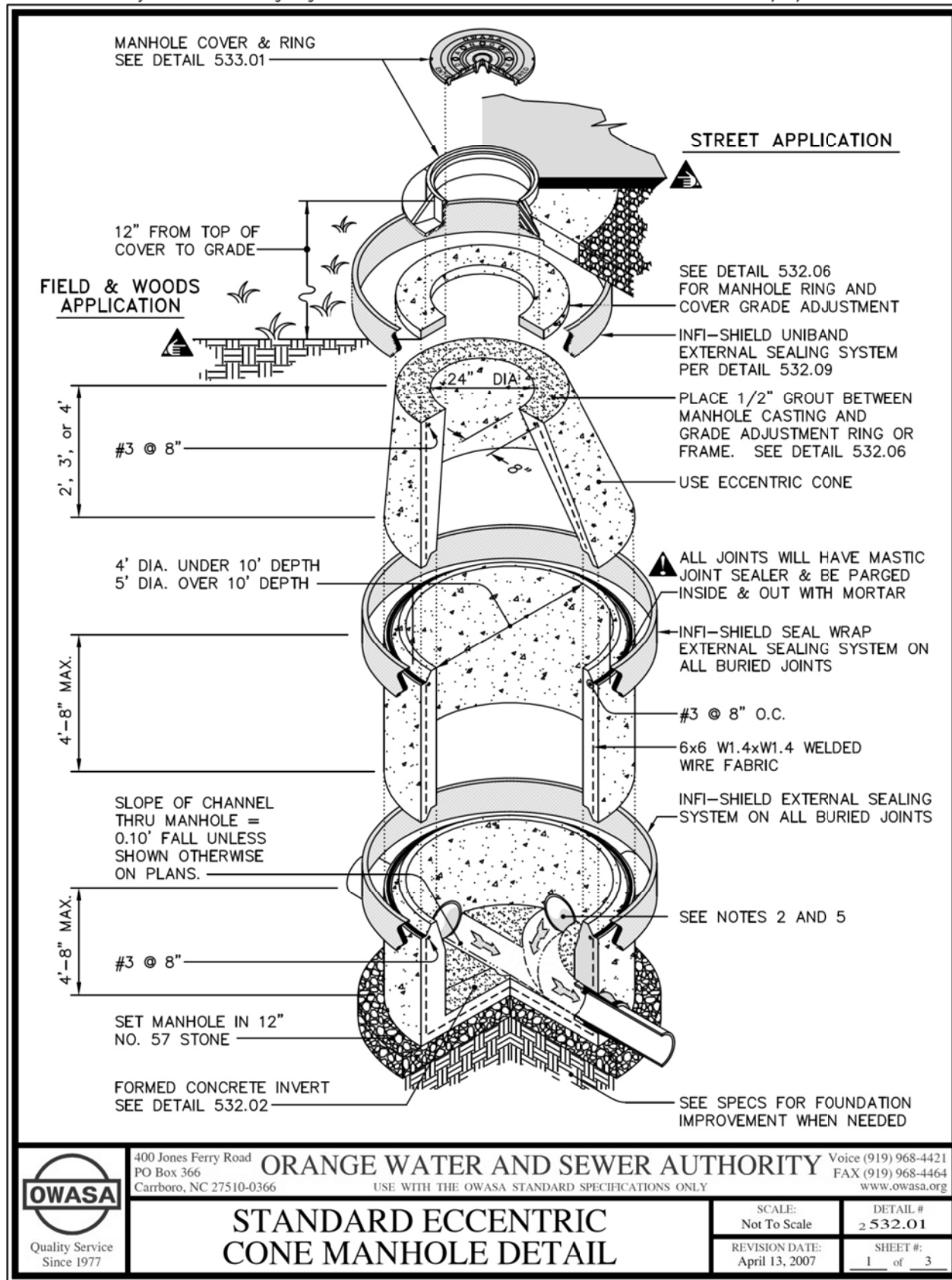
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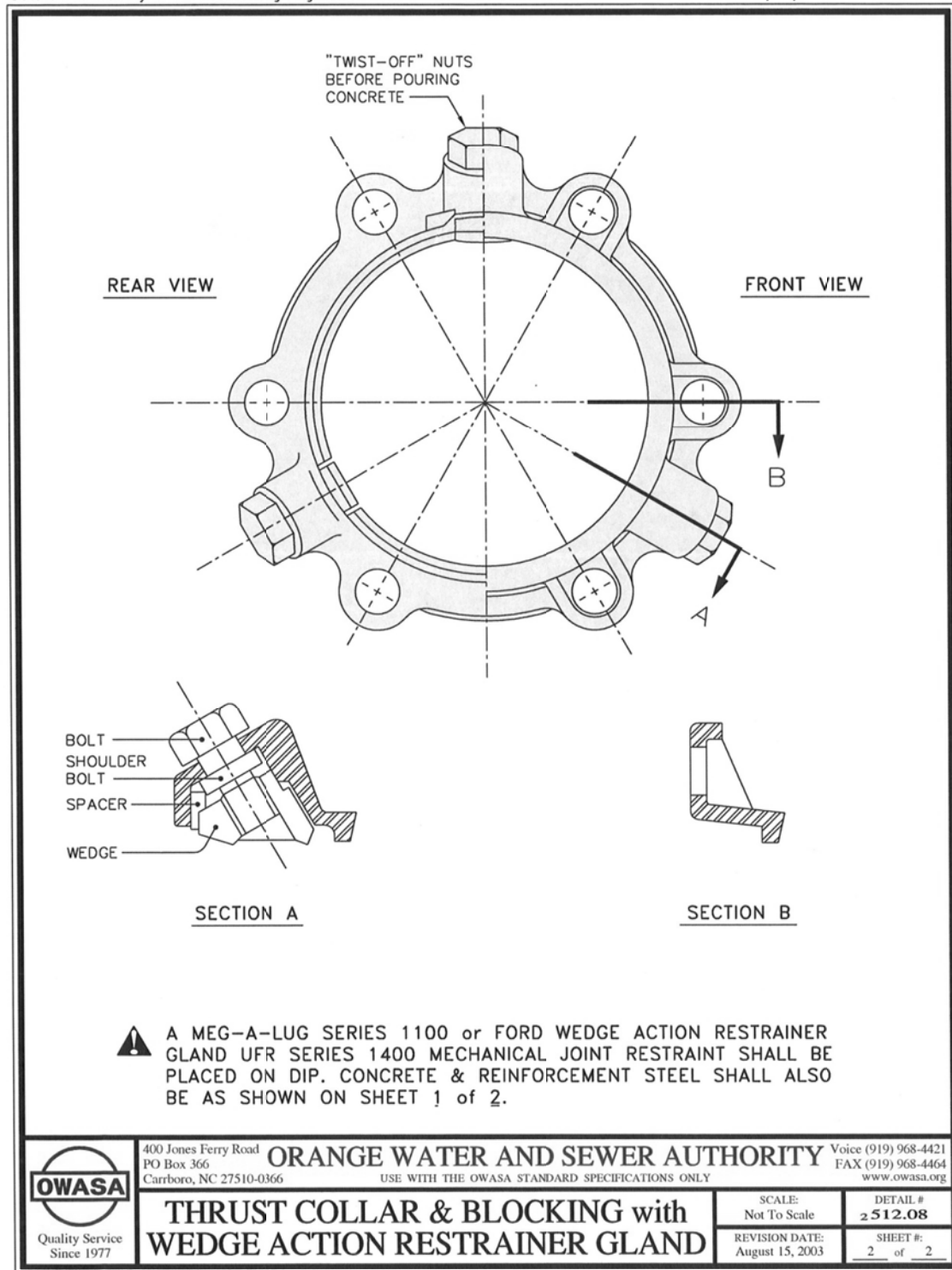
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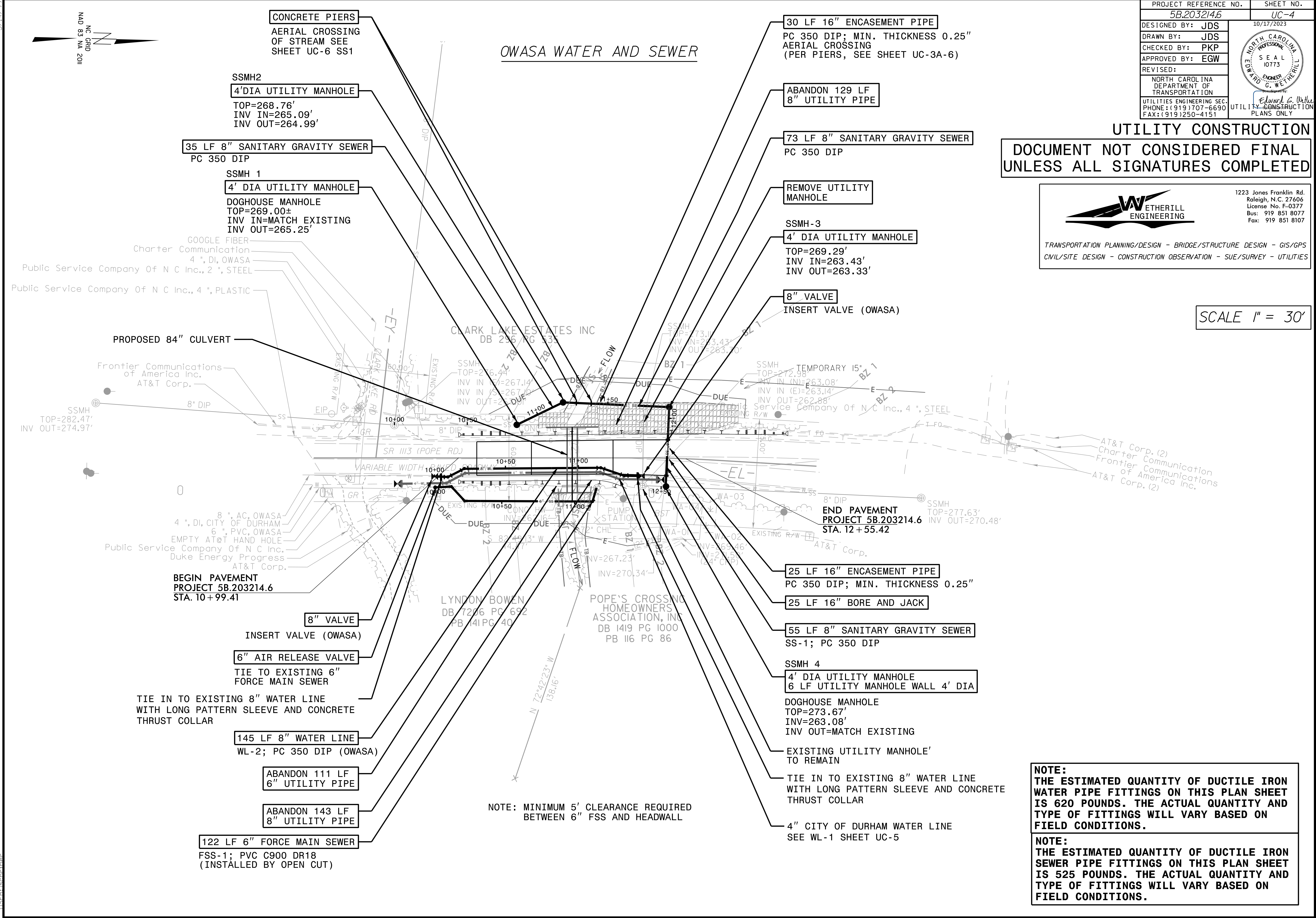
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158.43.11.11



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SCALE 1" = 30'

**NOTE:**  
THE ESTIMATED QUANTITY OF DUCTILE IRON  
WATER PIPE FITTINGS ON THIS PLAN SHEET  
IS 620 POUNDS. THE ACTUAL QUANTITY AND  
TYPE OF FITTINGS WILL VARY BASED ON  
FIELD CONDITIONS.

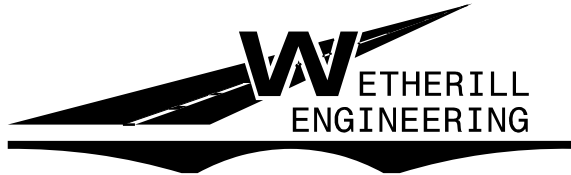
**NOTE:**  
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5/28/24

26-Jun-23 11:13 ut\_UC6-pfl.dgn  
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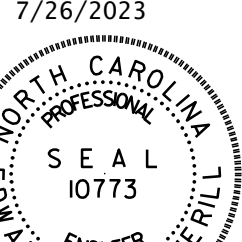
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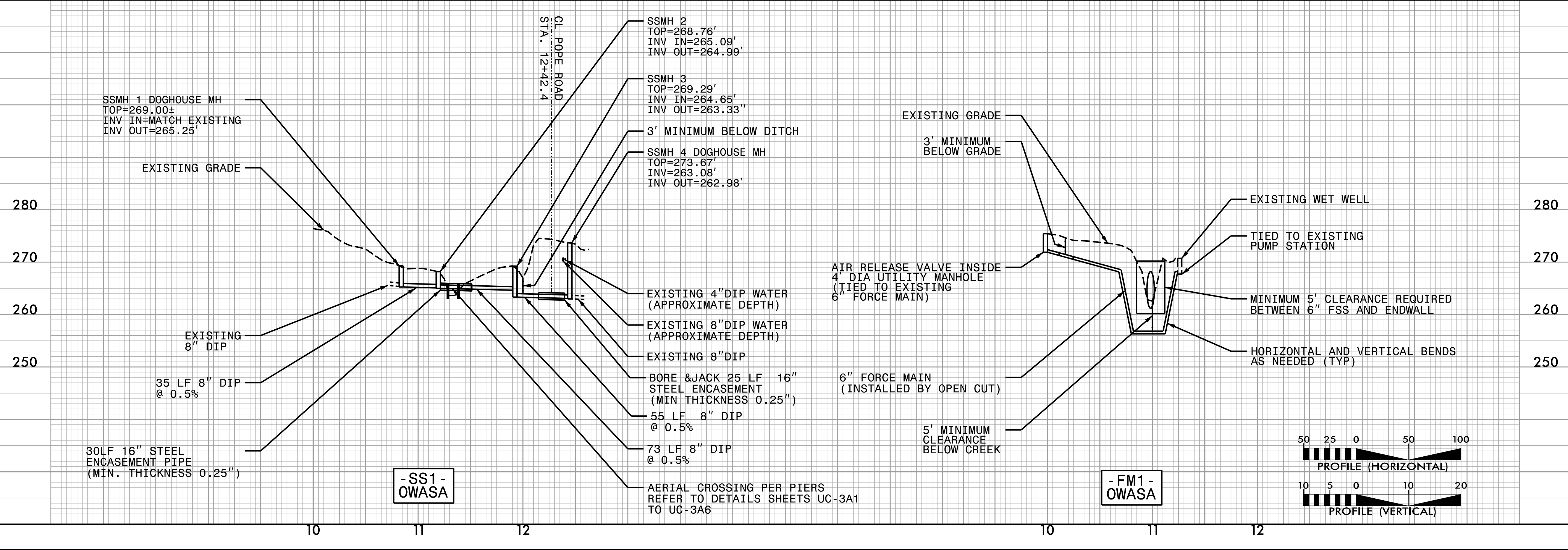
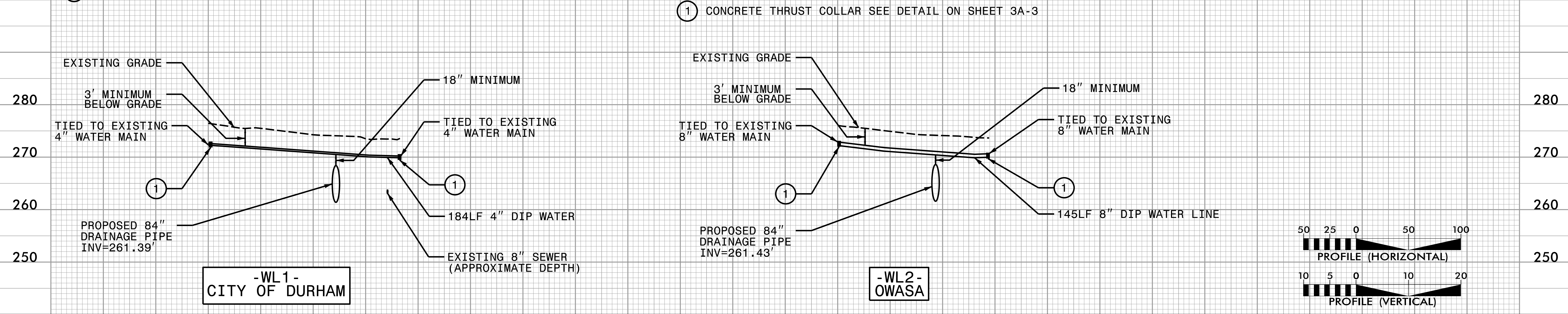
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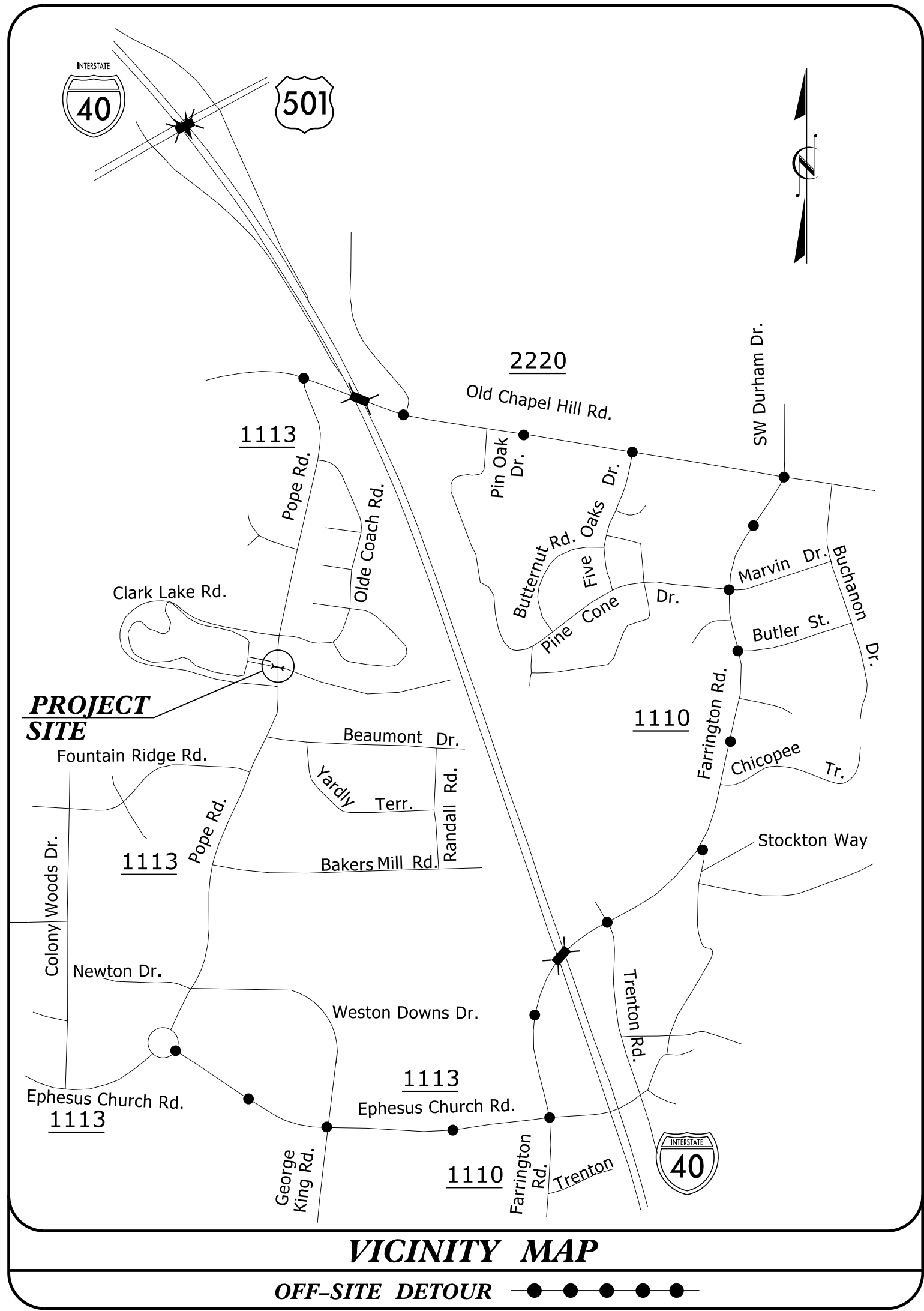
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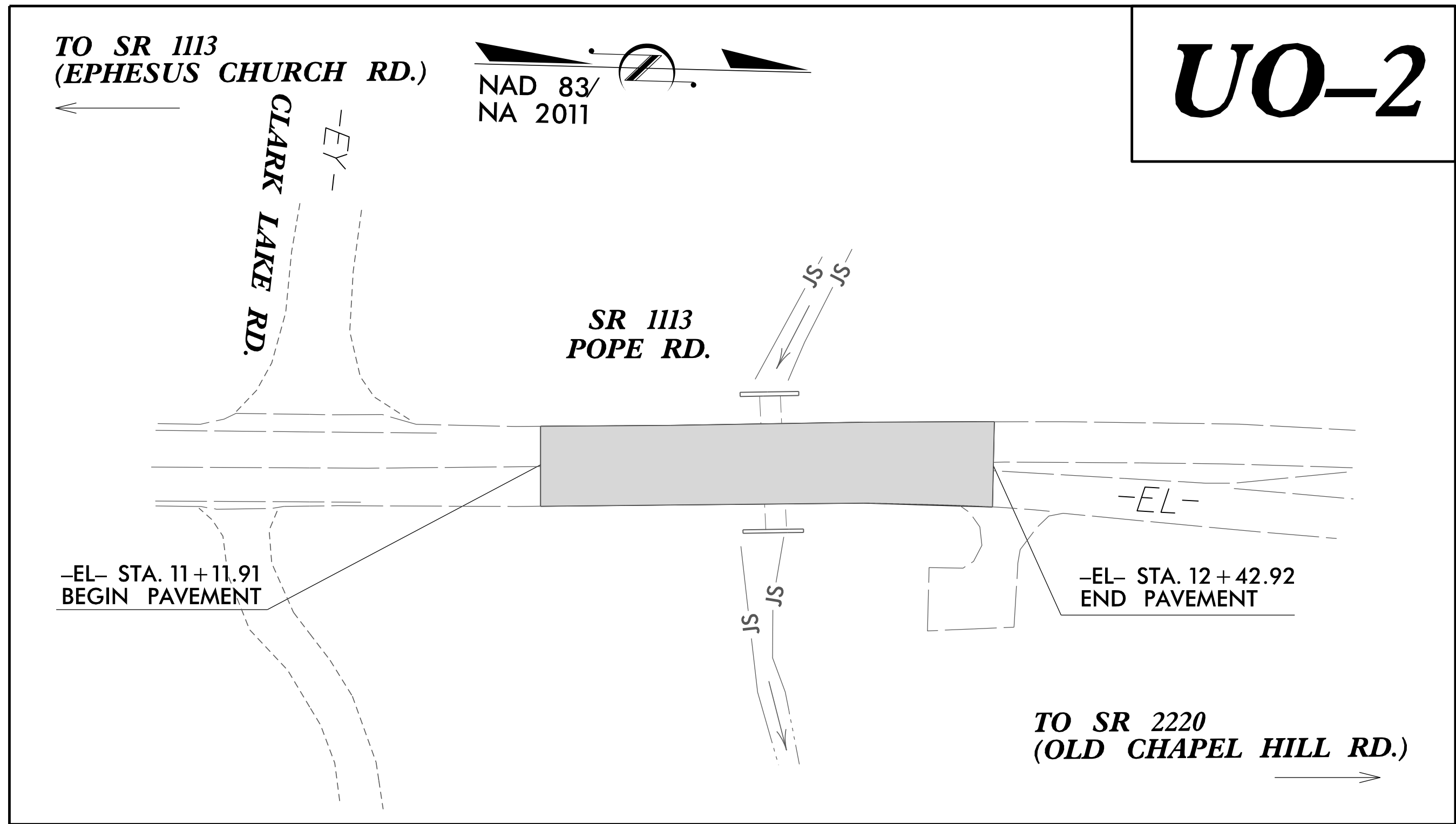


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

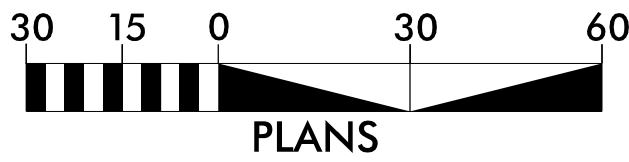
UTILITIES BY OTHERS PLANS  
DURHAM COUNTY

LOCATION: PIPE CROSSING ON SR 1113 (POPE ROAD)

TYPE OF WORK: UTILITY RELOCATION BY OTHERS



GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:

UO-1

UO-2

DESCRIPTION:

TITLE SHEET

UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

- (A) COMMUNICATIONS - AT&T
- (B) COMMUNICATIONS - CHARTER
- (C) COMMUNICATIONS - FRONTIER
- (D) COMMUNICATIONS - GOOGLE
- (E) GAS - DOMINION ENERGY
- (F) POWER - DUKE ENERGY

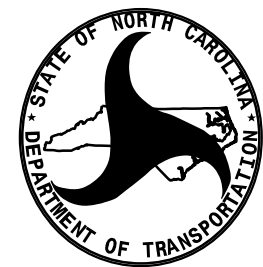
PREPARED IN THE OFFICE OF:



1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
License No. F-0377  
Bus: 919 851 8077  
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN - GIS/GPS  
CIVIL/SITE DESIGN - CONSTRUCTION OBSERVATION - SURVEY/SUE - UTILITIES

PANKIL K. PATEL	UTILITY PROJECT MANAGER
JOHN SCHRINER, PLS	PROJECT UTILITY COORDINATOR
TREVER REEVES	PROJECT UTILITY COORDINATOR



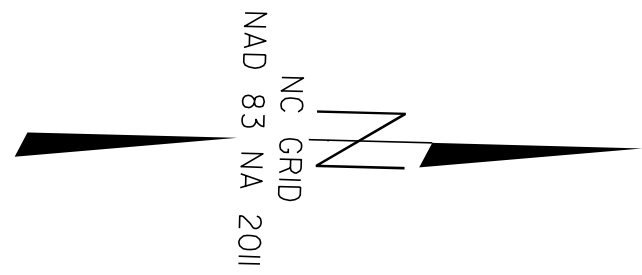
DIVISION OF HIGHWAYS  
DIVISION FIVE

2612 N. Duke Street  
Durham NC, 27704

JEREMY L. WARREN, PE	ASSISTANT DIVISION MAINTENANCE ENGINEER
DON PROPER	DIVISION UTILITIES ENGINEER

8/12/99

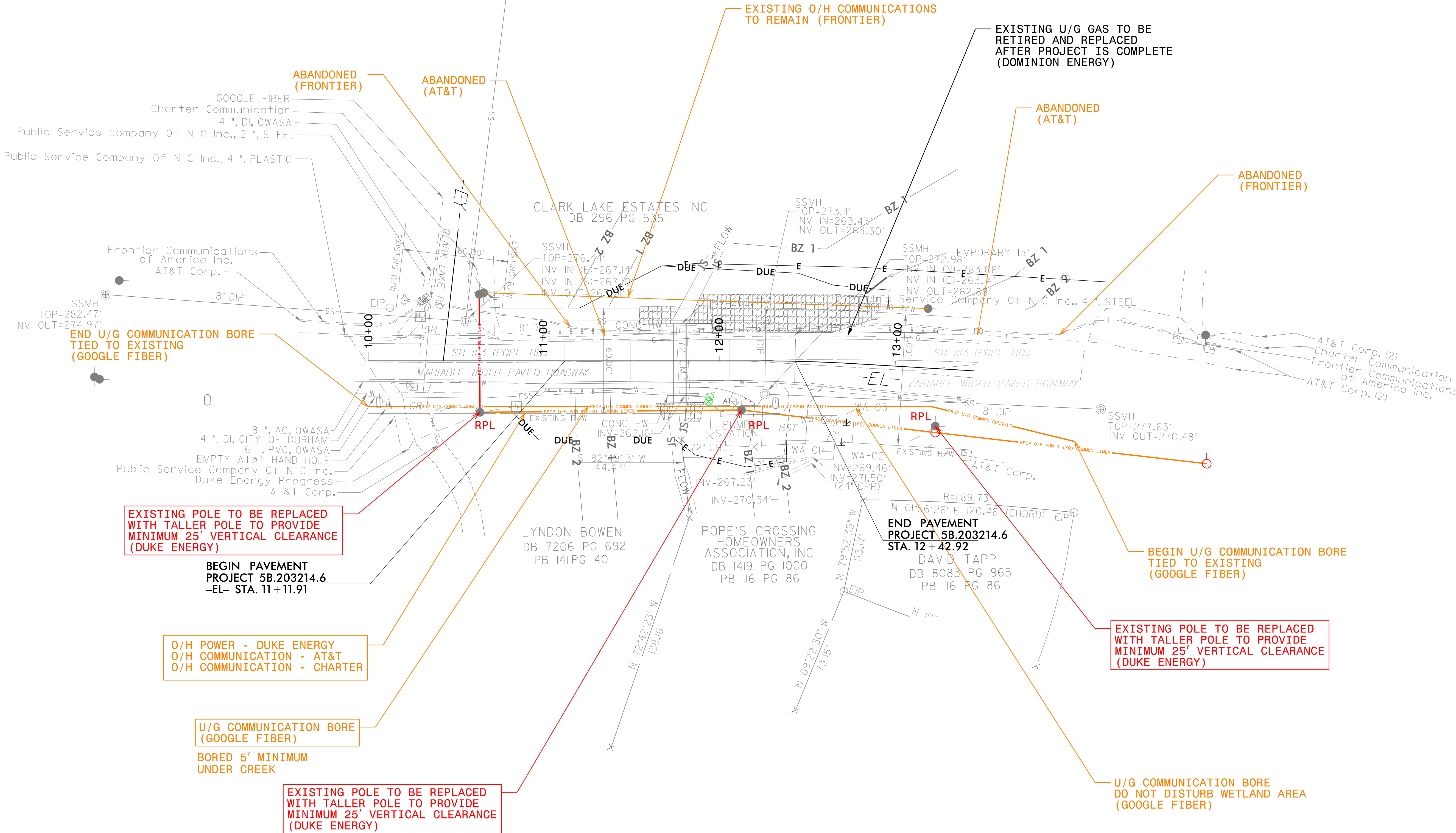
5:26:16 PM  
P:\2008\18121.09\_DIV 5 PIPE REPLACEMENT\Durham\_Pope Rd.SR 1113\Utilities\Engineering\UBO\Proj\Durham 1113.ut\_rdy4\_U02\_psh.dgn  
10/24/2023



## UTILITIES BY OTHERS

PROJECT REFERENCE NO.	SHEET NO.
5B.203214.6	U0 2
THIS SHEET CORRESPONDS TO RDY-4	

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



SCALE 1" = 30'