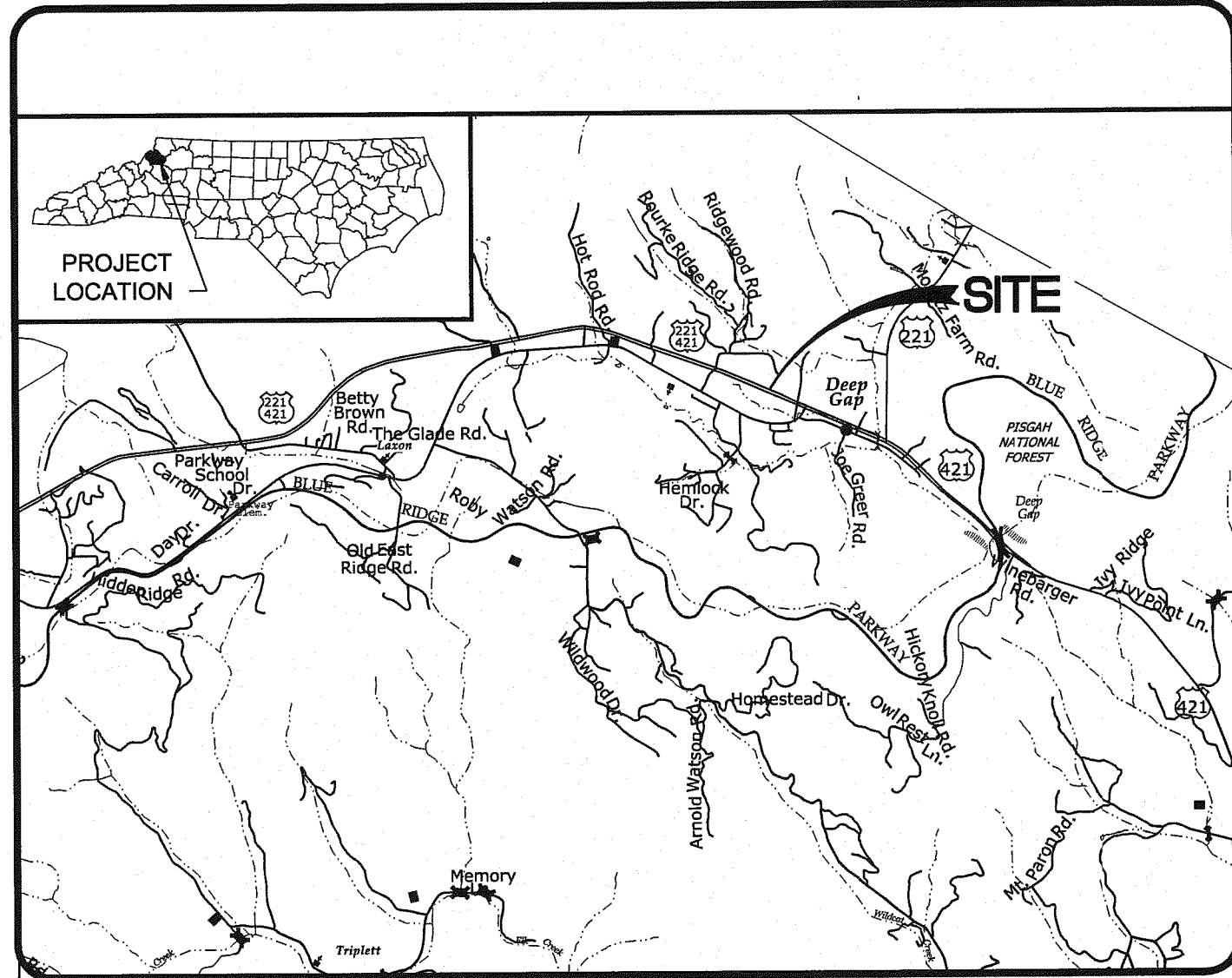


CONTRACT: 34625.2.50 TIP PROJECT: R-4436KC

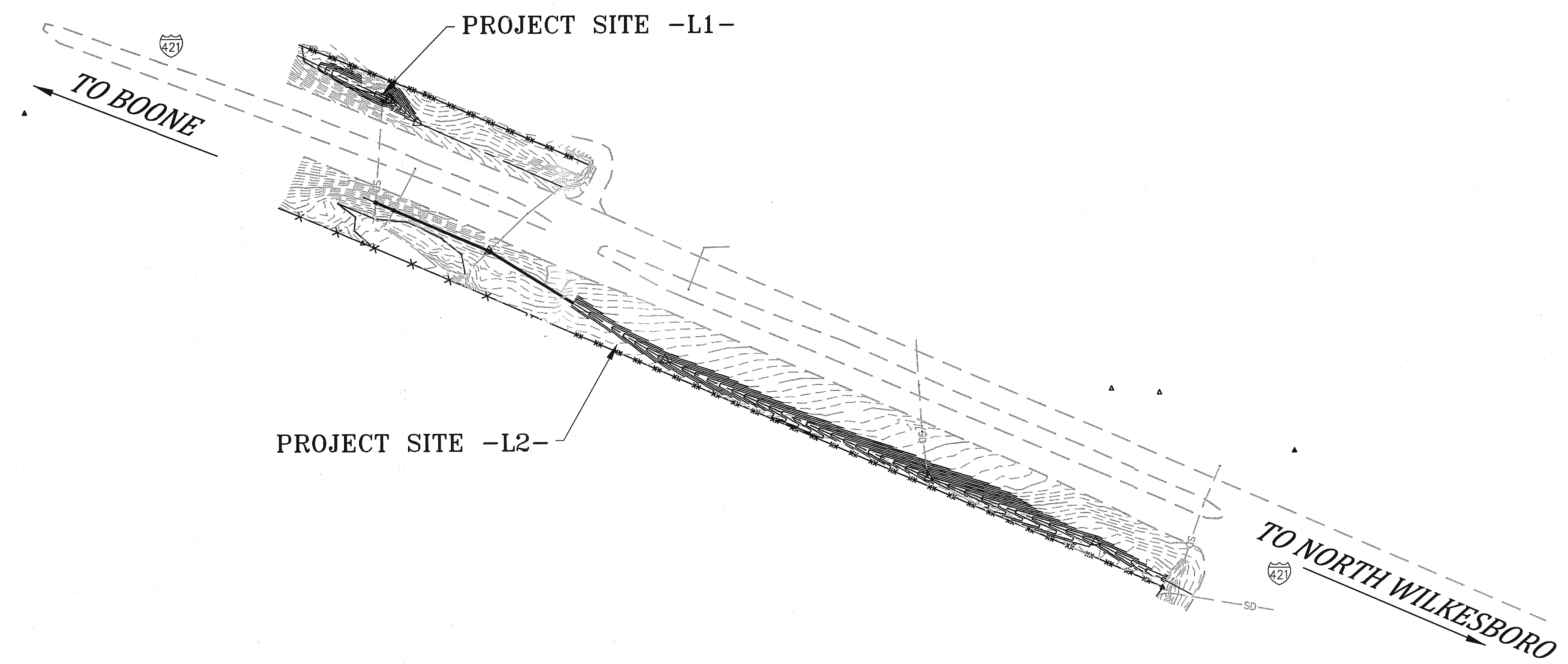
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS WATAUGA COUNTY

LOCATION : NORTH & SOUTH SIDE OF US 221/US 421
IN DEEP GAP, BETWEEN RIDGEWOOD ROAD
AND OLD U.S. 421 S
TYPE OF WORK : GRADING, STORM DRAINAGE, EROSION
CONTROL AND SEEDING AND MULCHING

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | R-4436KC | 1 | |
| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION | |
| 34625.2.50 | NHPP-0221(43) | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



GRAPHIC SCALES

SEE INDIVIDUAL
PLAN SHEETS

NCDOT CONTACTS:

BRIAN S. LIPSCOMB, PE
PROJECT MANAGER-
HIGHWAY STORMWATER
MANAGEMENT PROGRAM

Prepared in the Office of:

WITHERS & RAVENEL
ENGINEERS | PLANNERS | SURVEYORS
111 MacKenzie Drive Cary, North Carolina 27511 tel: 919-469-3340 www.withersravenel.com License No. C-0832

2012 STANDARD SPECIFICATIONS

LETTING DATE:
11/21/2013

HUNTER C. FREEMAN, PE
PROJECT ENGINEER

ERIC N. REARDON, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

9-26-13
Eric N. Reardon
SIGNATURE P.E.

REVISIONS SCHEDULE

| NO. | DESCRIPTION | DATE |
|-----|-------------|---------|
| 1 | 30% DESIGN | 5/30/13 |
| 2 | 60% DESIGN | 6/18/13 |
| 3 | 90% DESIGN | 7/17/13 |
| 4 | 100% DESIGN | 9/25/13 |

K:\08\08-0250\080252-Deep Gap Retain\CAVR-4436KC-1.dwg Thursday, September 26, 2013 8:18:50 AM - TDDER, KATHLEEN

REVISIONS

INDEX OF SHEETS

| SHEET NO. | SHEET DESCRIPTION |
|-----------|--|
| I | TITLE SHEET |
| I-A | INDEX SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| I-B | CONVENTIONAL PLAN SHEET SYMBOLS |
| I-C | SURVEY CONTROL MAP |
| 2 | RISER BASIN DETAILS |
| 2-A | TRASH RACK DETAILS |
| 3 | SUMMARY OF EARTHWORK QUANTITIES |
| 4 THRU 6 | PLAN & PROFILE SHEETS |
| EC-I | EROSION CONTROL PLAN |
| TC-I | TRAFFIC CONTROL PLAN DETAILS |

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January 17, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO. | TITLE |
|---|--|
| DIVISION 2 - EARTHWORK | |
| 200.02 | Method of Clearing - Method II |
| DIVISION 8 - INCIDENTALS | |
| 838.01 | Concrete Endwall for Single and Double Pipe Culverts |
| 838.11 | Brick Endwalls for Single and Double Culverts |
| 840.31 | Concrete Junction Box |
| 840.32 | Brick Junction Box |
| 840.45 | Precast Drainage Structure |
| 840.66 | Drainage Structure Steps |
| 840.54 | Manhole Frame and Cover |
| 876.01 | Rip Rap in Channels |
| DIVISION 11 - WORK ZONE TRAFFIC CONTROL | |
| 1101.01 | Work Zone Advance Warning Signs |
| 1101.04 | Temporary Shoulder Closures |
| 1101.05 | Work Zone Vehicle Accesses |
| DIVISION 16 - EROSION CONTROL | |
| 1605.01 | Temporary Silt Fence |
| 1606.01 | Special Sediment Control Fence |
| 1607.01 | Gravel Construction Entrance |
| 1631.01 | Matting Installation |
| 1634.02 | Temporary Rock Sediment Dam, Type B |
| 1640.01 | Coir Fiber Baffle |

GENERAL NOTES

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 1-17-12
REVISED:

GRADING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

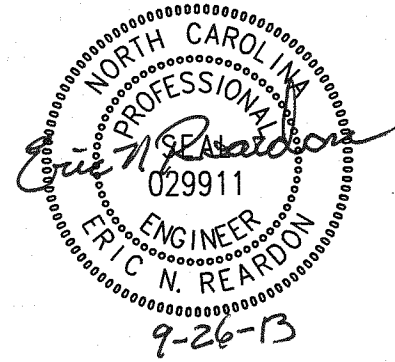
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

PROJECT REFERENCE NO.
R-4436KC

SHEET NO.
1-A

HYDRAULICS
ENGINEER







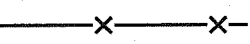



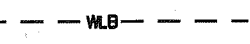



Note: Not to Scale
*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS






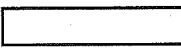
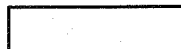




| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| R-4436KC | 1-B |

CONVENTIONAL PLAN SHEET SYMBOLS











BOUNDARIES AND PROPERTY:

| | |
|-------------------------------------|--|
| State Line | |
| County Line | |
| Township Line | |
| City Line | |
| Reservation Line | |
| Property Line | |
| Existing Iron Pin |  |
| Property Corner |  |
| Property Monument |  |
| 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 |  |






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:

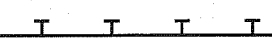
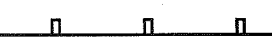
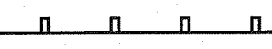


| | |
|--------------------|---|
| Standard Gauge |  |
| RR Signal Milepost |  |
| Switch |  |
| RR Abandoned |  |
| RR Dismantled |  |

RIGHT OF WAY:




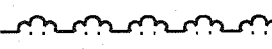


| | |
|--|---|
| Baseline Control Point |  |
| Existing Right of Way Marker |  |
| Existing Right of Way Line |  |
| Proposed Right of Way Line |  |
| Proposed Right of Way Line with Iron Pin and Cap Marker |  |
| Proposed Right of Way Line with Concrete or Granite Marker |  |
| Existing Control of Access |  |
| Proposed Control of Access |  |
| Existing Easement Line |  |
| Proposed Temporary Construction Easement |  |
| Proposed Temporary Drainage Easement |  |
| Proposed Permanent Drainage Easement |  |
| Proposed Permanent Utility Easement |  |
| Proposed Temporary Utility Easement |  |
| Proposed Permanent Easement with Iron Pin and Cap Marker |  |

ROADS AND RELATED FEATURES:









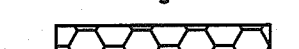
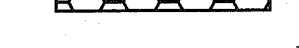
| | |
|----------------------------|---|
| Existing Edge of Pavement |  |
| Existing Curb |  |
| Proposed Slope Stakes Cut |  |
| Proposed Slope Stakes Fill |  |
| Proposed Wheel Chair Ramp |  |
| Existing Metal Guardrail |  |

| | |
|--------------------------|---|
| Proposed Guardrail |  |
| Existing Cable Guiderail |  |
| Proposed Cable Guiderail |  |
| Equality Symbol |  |
| Pavement Removal |  |










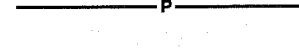
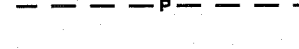
VEGETATION:

| | |
|--------------|---|
| 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 |  |
| RIPRAP |  |








UTILITIES:

| | |
|-------------------------------------|---|
| 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 |  |
| Recorded U/G Power Line |  |
| Designated U/G Power Line (S.U.E.*) |  |









TELEPHONE:

| | |
|---|---|
| Existing Telephone Pole |  |
| Proposed Telephone Pole |  |
| Telephone Manhole |  |
| Telephone Booth |  |
| Telephone Pedestal |  |
| Telephone Cell Tower |  |
| U/G Telephone Cable Hand Hole |  |
| Recorded U/G Telephone Cable |  |
| Designated U/G Telephone Cable (S.U.E.*) |  |
| Recorded U/G Telephone Conduit |  |
| Designated U/G Telephone Conduit (S.U.E.*) |  |
| Recorded U/G Fiber Optics Cable |  |
| Designated U/G Fiber Optics Cable (S.U.E.*) |  |






WATER:

| | |
|-------------------------------------|---|
| Water Manhole |  |
| Water Meter |  |
| Water Valve |  |
| Water Hydrant |  |
| Recorded U/G Water Line |  |
| Designated U/G Water Line (S.U.E.*) |  |
| Above Ground Water Line |  |







TV:

| | |
|--|---|
| TV Satellite Dish |  |
| TV Pedestal |  |
| TV Tower |  |
| U/G TV Cable Hand Hole |  |
| Recorded U/G TV Cable |  |
| Designated U/G TV Cable (S.U.E.*) |  |
| Recorded U/G Fiber Optic Cable |  |
| Designated U/G Fiber Optic Cable (S.U.E.*) |  |











GAS:

| | |
|-----------------------------------|---|
| Gas Valve |  |
| Gas Meter |  |
| Recorded U/G Gas Line |  |
| Designated U/G Gas Line (S.U.E.*) |  |
| Above Ground Gas Line |  |

SANITARY SEWER:

| | |
|--|---|
| Sanitary Sewer Manhole |  |
| Sanitary Sewer Cleanout |  |
| U/G Sanitary Sewer Line |  |
| Above Ground Sanitary Sewer |  |
| Recorded SS Forced Main Line |  |
| Designated SS Forced Main Line (S.U.E.*) |  |

MISCELLANEOUS:

| | |
|--|---|
| Utility Pole |  |
| Utility Pole with Base |  |
| Utility Located Object |  |
| Utility Traffic Signal Box |  |
| Utility Unknown U/G Line |  |
| U/G Tank; Water, Gas, Oil |  |
| A/G Tank; Water, Gas, Oil |  |
| U/G Test Hole (S.U.E.*) |  |
| Abandoned According to Utility Records |  |
| End of Information |  |

SURVEY CONTROL MAP

PROJECT REFERENCE NO.
R-4436KC

SHEET NO.
1-C

HYDRAULICS
ENGINEER

NORTH CAROLINA
PROFESSIONAL
ENGINEER
029911
ERIC N. REARDON

9-26-13

| SURVEY CONTROL POINTS TABLE | | | | | |
|-----------------------------|-------------|-------------|--------------|-----------|--------------------------|
| POINT | DESCRIPTION | NORTHING | EASTING | ELEVATION | STATION OFFSET |
| 1 | PKN1 | 915967.1974 | 1256102.8280 | 3106.51 | - |
| 2 | PKN2 | 915772.1911 | 1256593.1535 | 3088.57 | -L2- 20+63.84, 28.99 LT |
| 3 | PKN | 915585.2599 | 1257068.3360 | 3071.25 | -L2- 25+74.02, 77.34 LT |
| 4 | PKN | 915343.9382 | 1257574.2993 | 3052.50 | -L2- 31+37.25, 90.85 LT |
| 5 | GPS PKN 3 | 915071.3087 | 1258105.1300 | 3033.20 | - |
| 6 | GPS PKN 4 | 914793.3282 | 1257706.4523 | 3051.36 | -L2- 34+65.29, 372.69 RT |
| 8 | NAIL | 915947.3740 | 1256639.1249 | 3093.90 | -L1- 12+42.30, 39.80 LT |

REVISIONS

DATUM DESCRIPTION

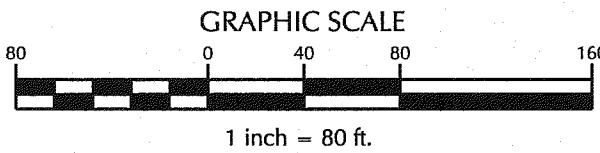
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GAP CREEK"

WITH NAD 83 (2011) STATE PLANE GRID COORDINATES OF
NORTHING: 918672.1700(ft) EASTING: 1261676.6800(ft)
ELEVATION: 2985.62(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988602

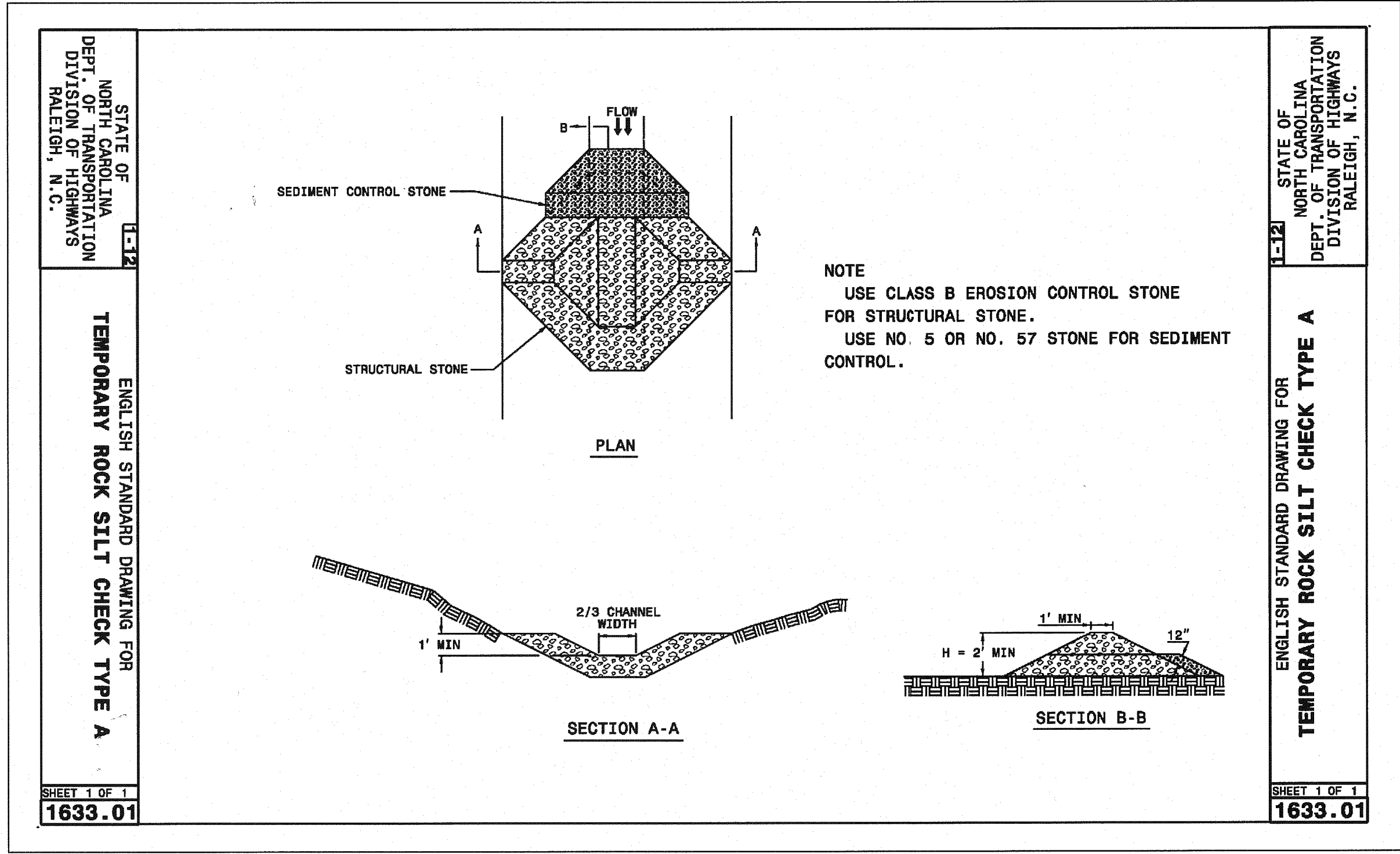
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GAP CREEK" TO -L- "1" IS 6195.54' S 64°06'46"W

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

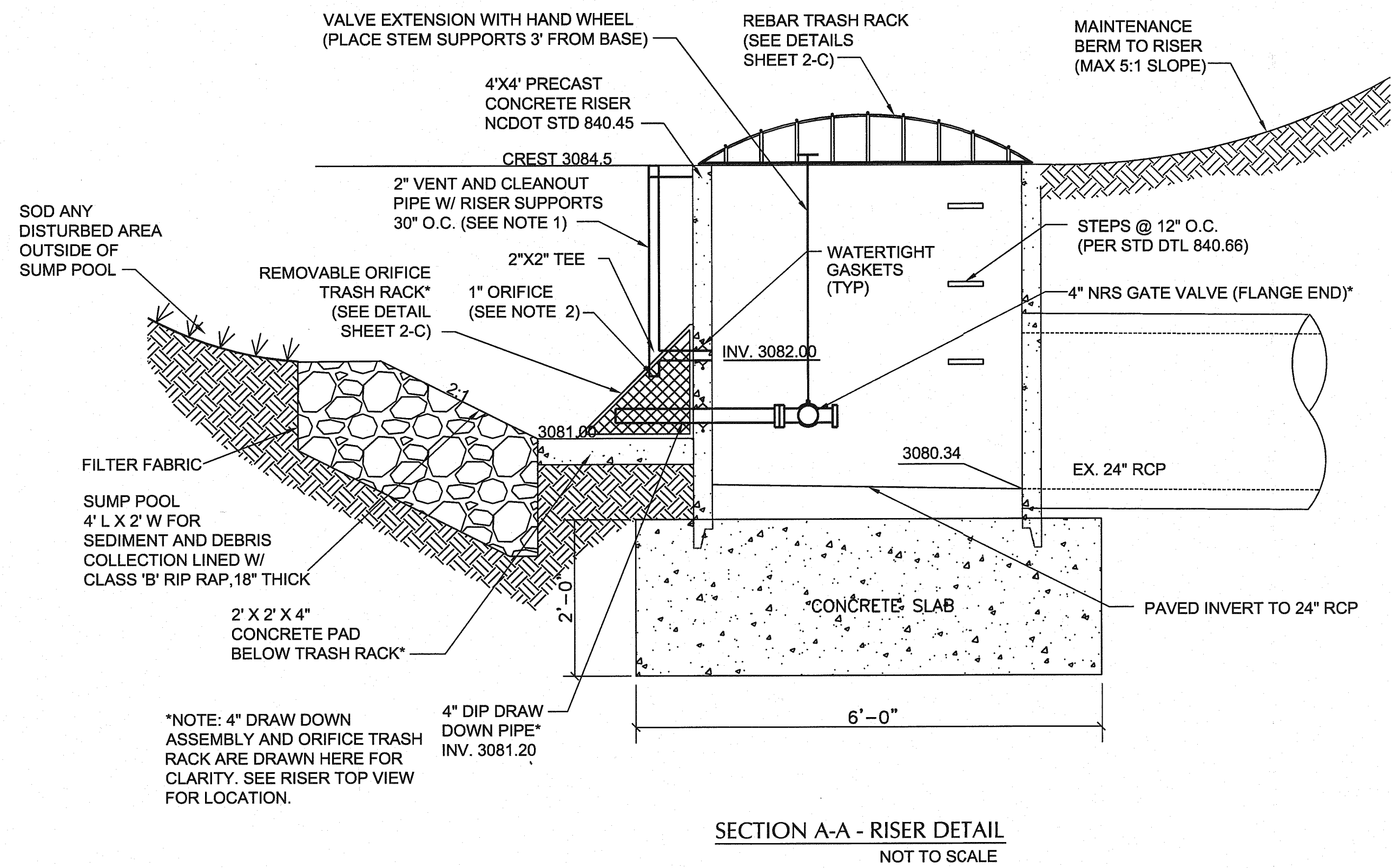


WITHERS & RAVENEL
ENGINEERS | PLANNERS | SURVEYORS

115 McKinnon Drive Cary, North Carolina 27511 Tel: 919-469-3340 www.wITHERSRV.com License No. C0832

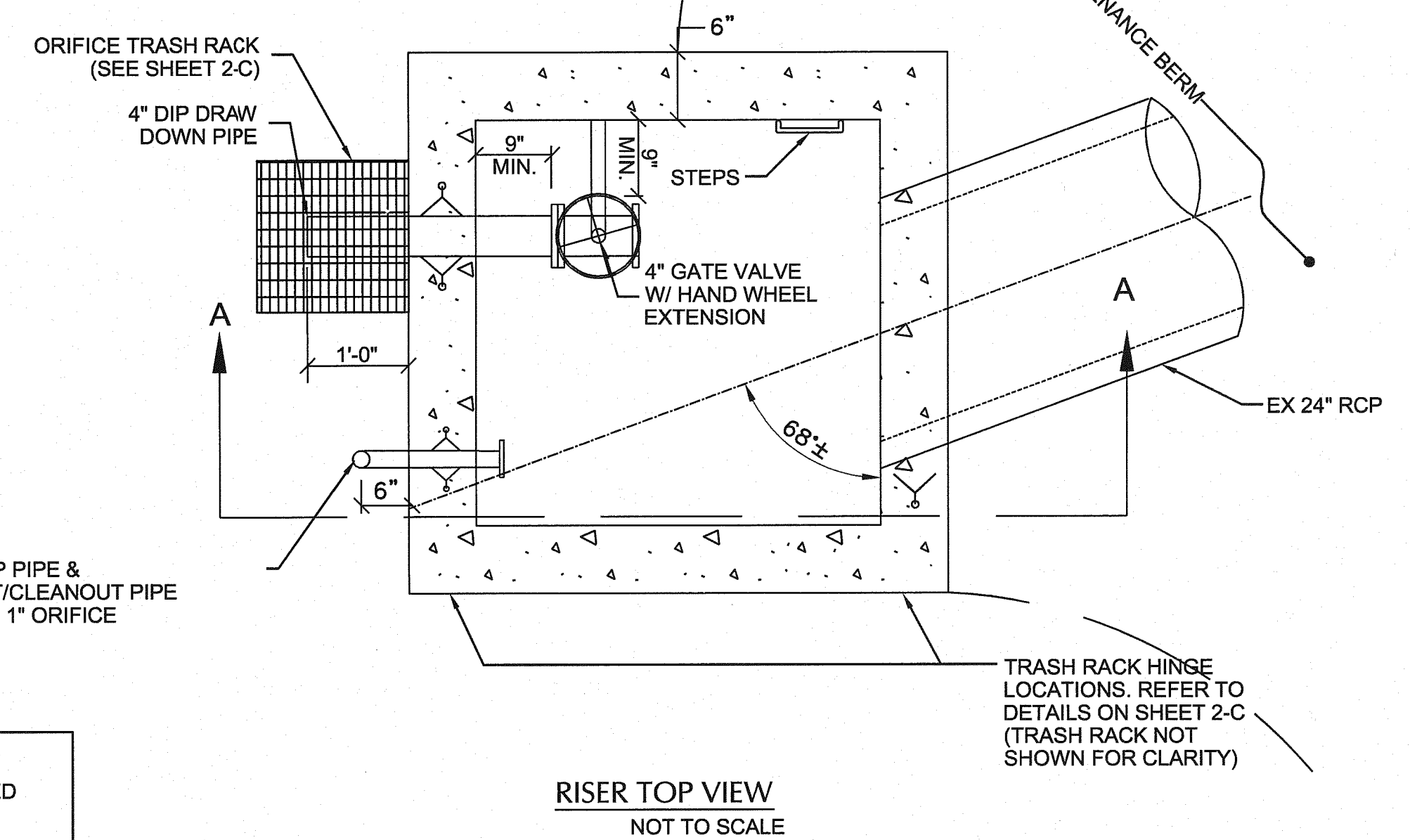


PERMAMENT ROCK CHECK
NOT TO SCALE



| | DIMENSIONS | ELEV. |
|--------------------------|-------------|---------|
| WATER QUALITY POOL | — | 3084.50 |
| 1-yr WSEL | — | 3084.97 |
| 2-yr WSEL | — | 3085.26 |
| 10-yr WSEL | — | 3087.18 |
| 25-yr WSEL | — | 3088.61 |
| 50-yr WSEL | — | 3089.41 |
| 100-yr WSEL | — | 3089.77 |
| TOP OF DAM | — | 3088.73 |
| RISER | 4' x 4' BOX | 3084.50 |
| DRAW DOWN ORIFICE 2" | 2" DIA. | 3082.00 |
| DRAW DOWN PIPE | 4" DIP | 3081.50 |
| OUTLET PIPE - INVERT OUT | 24" RCP | 3080.34 |

- NOTES:**
1. 4" DRAW DOWN ASSEMBLY SHALL BE CONSTRUCTED WITH 4" DIP, 4" NRS GATE VALVE, INCLUDING SUPPORTS AND VALVE EXTENSION HAND WHEEL, WITHIN THE RISER.
 2. ALL ORIFICE AND VALVE PIPING SHALL BE DIP, GALVANIZED STEEL, OR STAINLESS STEEL; PVC OR HDPE SHALL NOT BE USED

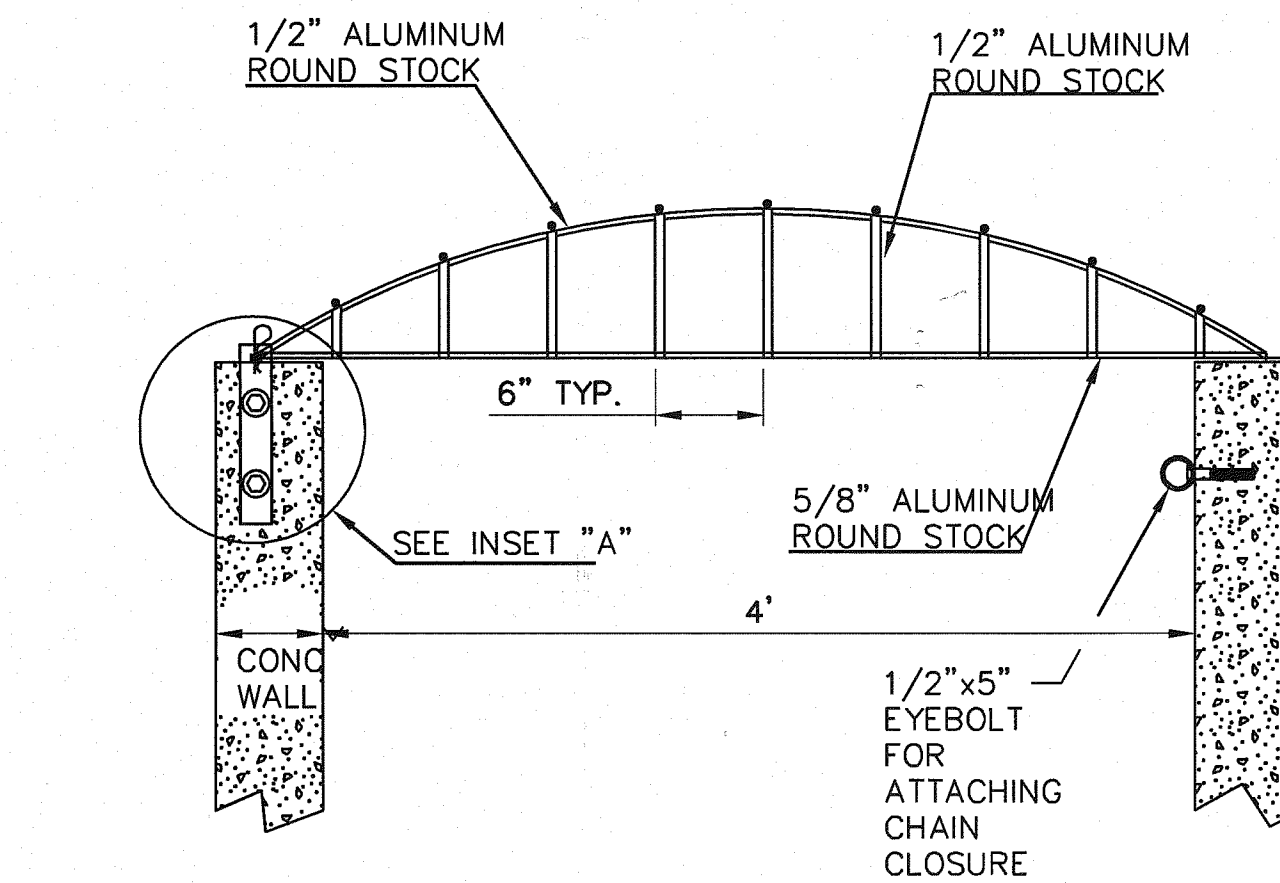


- NOTES:**
1. THE BOTTOM OF THE 2" VENT PIPE SHALL BE THREADED TO ACCOMMODATE A SCREW CAP.
 2. DRILL A 1" DIAMETER HOLE THROUGH A 2" SCREW CAP TO CREATE THE 1" ORIFICE. SECURELY ATTACH SCREW CAP TO THE BOTTOM OF THE 2" VENT PIPE.

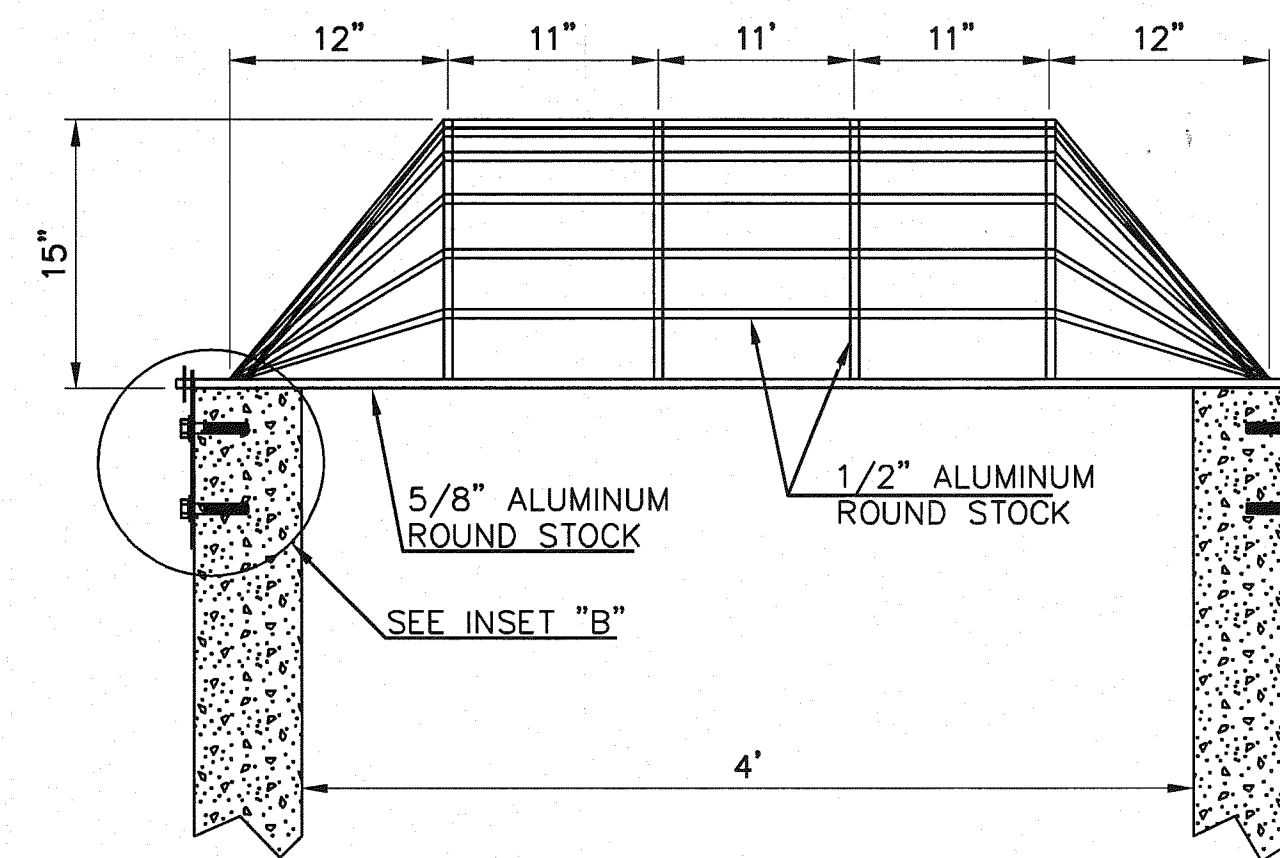
REMOVEABLE ORIFICE TRASH RACK

ORIFICE TRASH RACK NOTES:

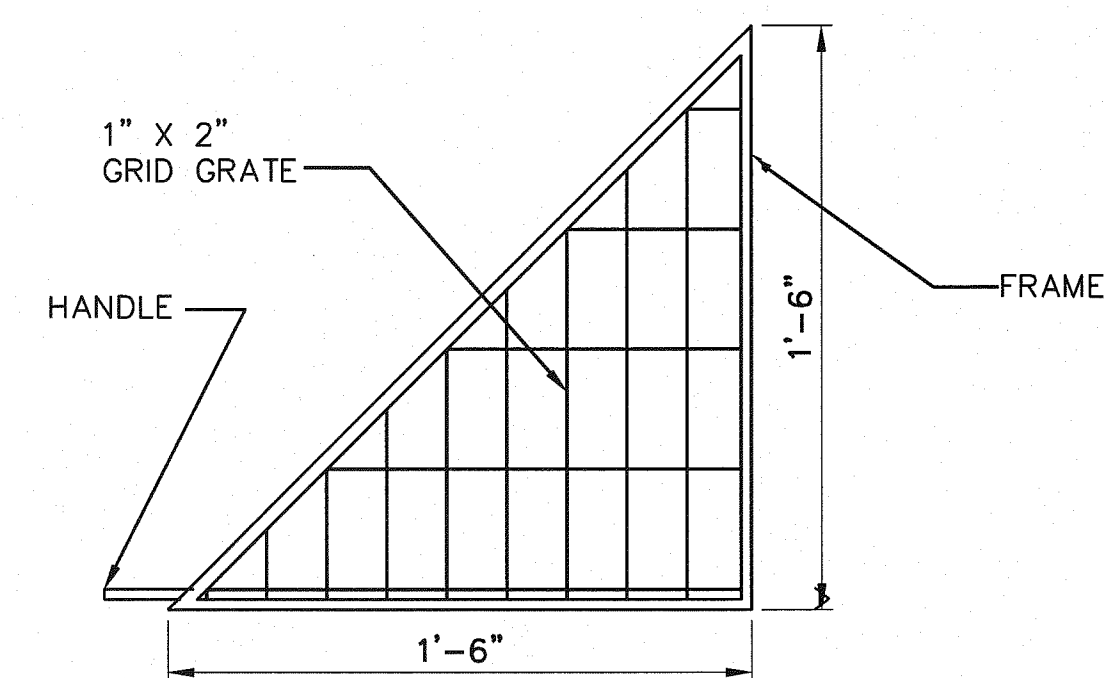
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A " BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A-153.



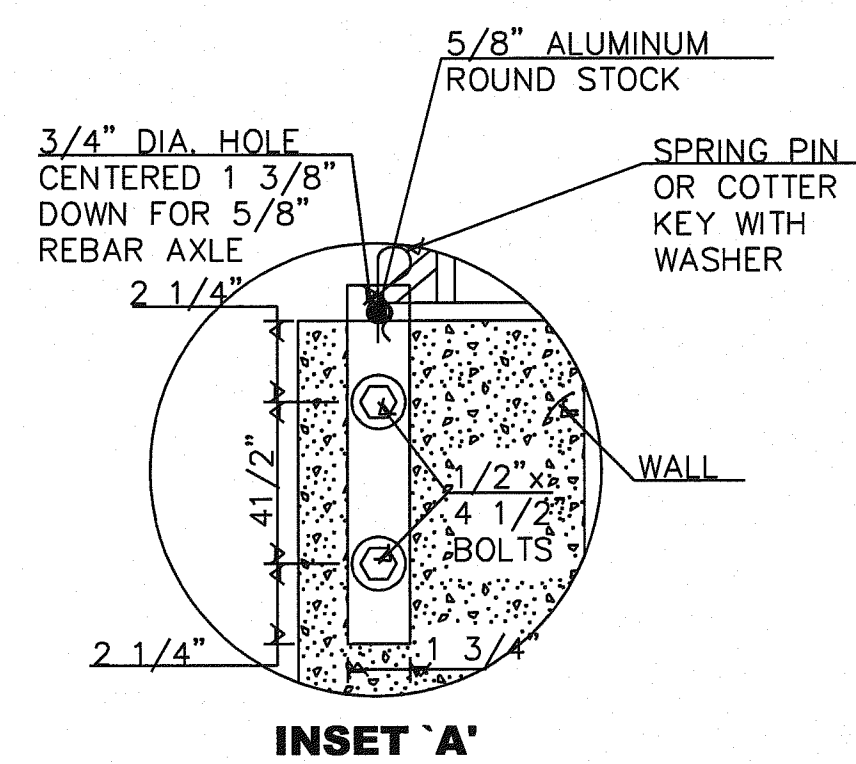
SECTION A-A



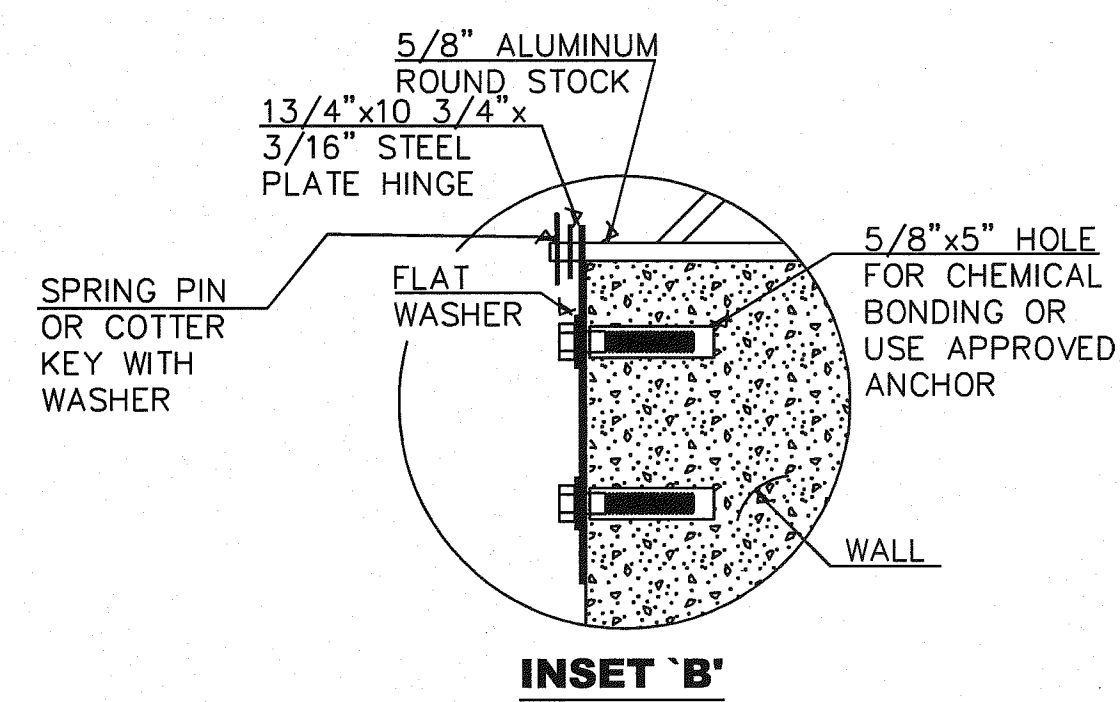
SECTION B-B



SECTION A-A



INSET 'A'



INSET 'B'

SURVEY CONTROL MAP

PROJECT REFERENCE NO.
R-4436KC

SHEET NO.
1-C

HYDRAULICS
ENGINEER

NORTH CAROLINA
PROFESSIONAL
ENGINEER
029911

Eric N. Reedon
E.N. REEDON

9-26-13

| SURVEY CONTROL POINTS TABLE | | | | |
|-----------------------------|-------------|---------------------------|--------------|-----------|
| POINT | DESCRIPTION | NORTHING | EASTING | ELEVATION |
| 1 | PKN1 | 915967.1974 | 1256102.8280 | 3106.51 |
| 2 | PKN2 | 915772.1911 | 1256593.1535 | 3088.57 |
| 3 | PKN | 915565.2599 | 1257068.3360 | 3071.25 |
| 4 | PKN | 915343.9382 | 1257574.2993 | 3052.50 |
| 5 | GPS PKN 3 | 915071.3087 | 1258105.1300 | 3033.20 |
| 6 | GPS PKN 4 | 914793.3282 | 1257706.4523 | 3051.36 |
| 8 | NAIL | 915947.3740 | 1256639.1249 | 3093.90 |
| | | STATION OFFSET | | |
| | | -L2- 20+63.84, 28.99' LT | | |
| | | -L2- 25+74.02, 77.34' LT | | |
| | | -L2- 31+37.25, 90.85' LT | | |
| | | -L2- 34+65.29, 372.69' RT | | |
| | | -L1- 12+42.30, 39.80' LT | | |

REVISIONS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GAP CREEK"

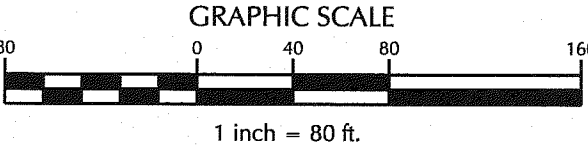
WITH NAD 83 (2011) STATE PLANE GRID COORDINATES OF
NORTHING: 918672.1700(ft) EASTING: 1261676.6800(ft)
ELEVATION: 2985.62(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988602

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GAP CREEK" TO -L- "1" IS 6195.54'

S 64°06'46"W

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



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REVISIONS

| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| R-4436KC | 3 |

HYDRAULICS
ENGINEER

Eric N. Reardon
029911
ENGINEER
P. C. N. REARDON

9-26-13

SUMMARY OF SOIL STABILIZATION

SUMMARY OF DRAINAGE QUANTITIES

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

SUMMARY OF DRAINAGE QUANTITIES

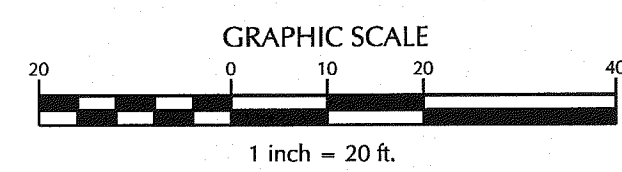
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

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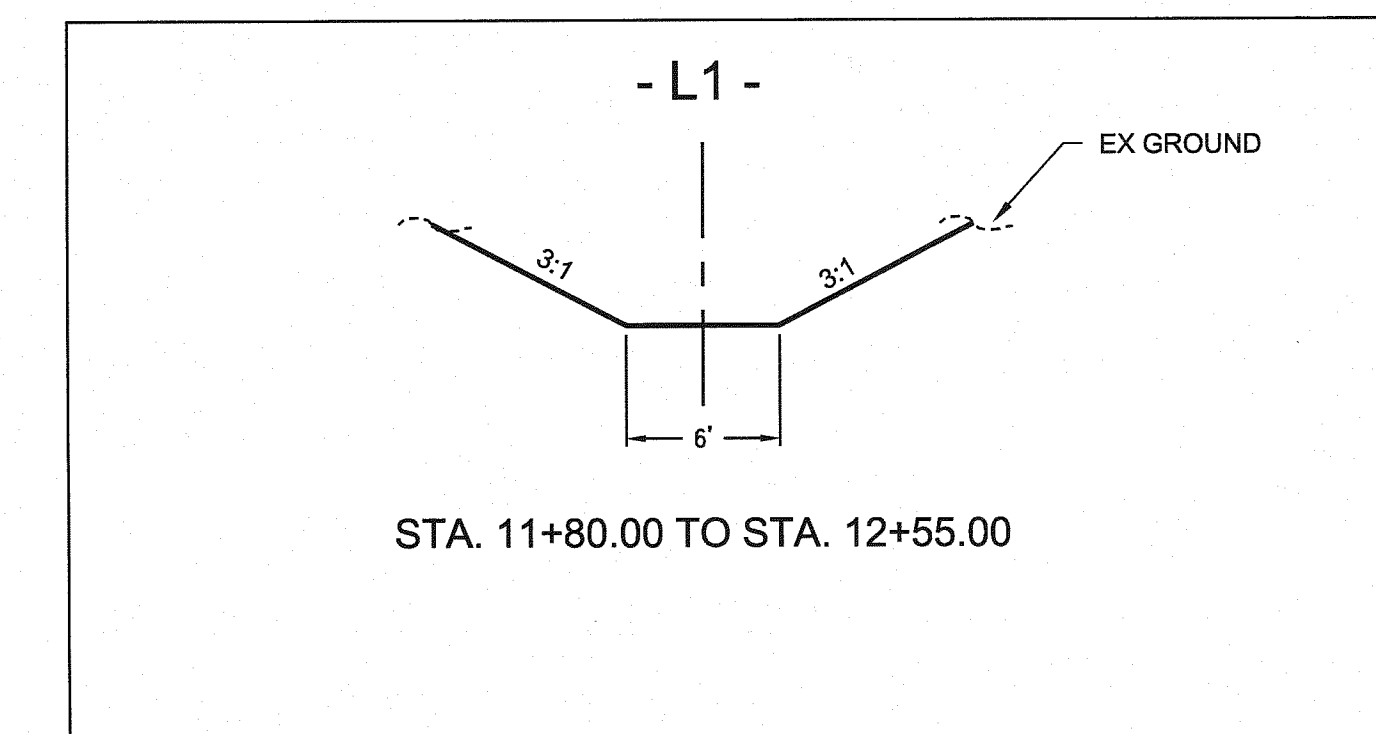
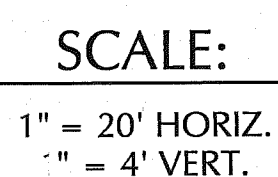
SHEET NO.

4

A circular professional engineer seal for the State of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "EXPIRES 9-26-13" at the bottom. The inner ring contains "PROFESSIONAL ENGINEER" at the top and "ERIC N. REARDON" at the bottom. In the center, the license number "029911" is displayed. A handwritten signature "Eric N. Reardon" is written across the seal.



REVISIONS



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PLAN & PROFILE SHEET

PROJECT REFERENCE NO.
R-4436KC

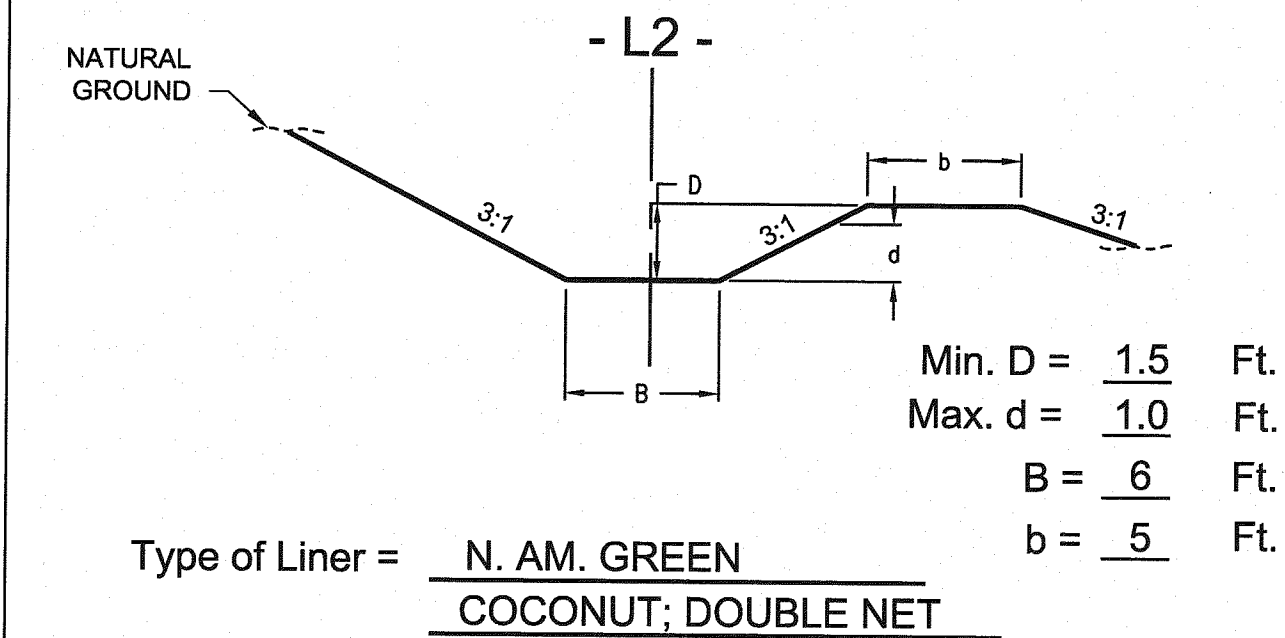
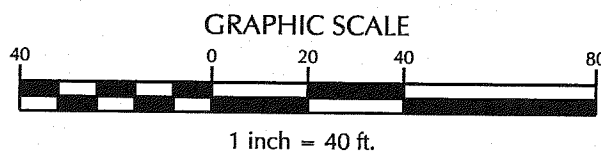
SHEET NO.
5

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029911
N.C.

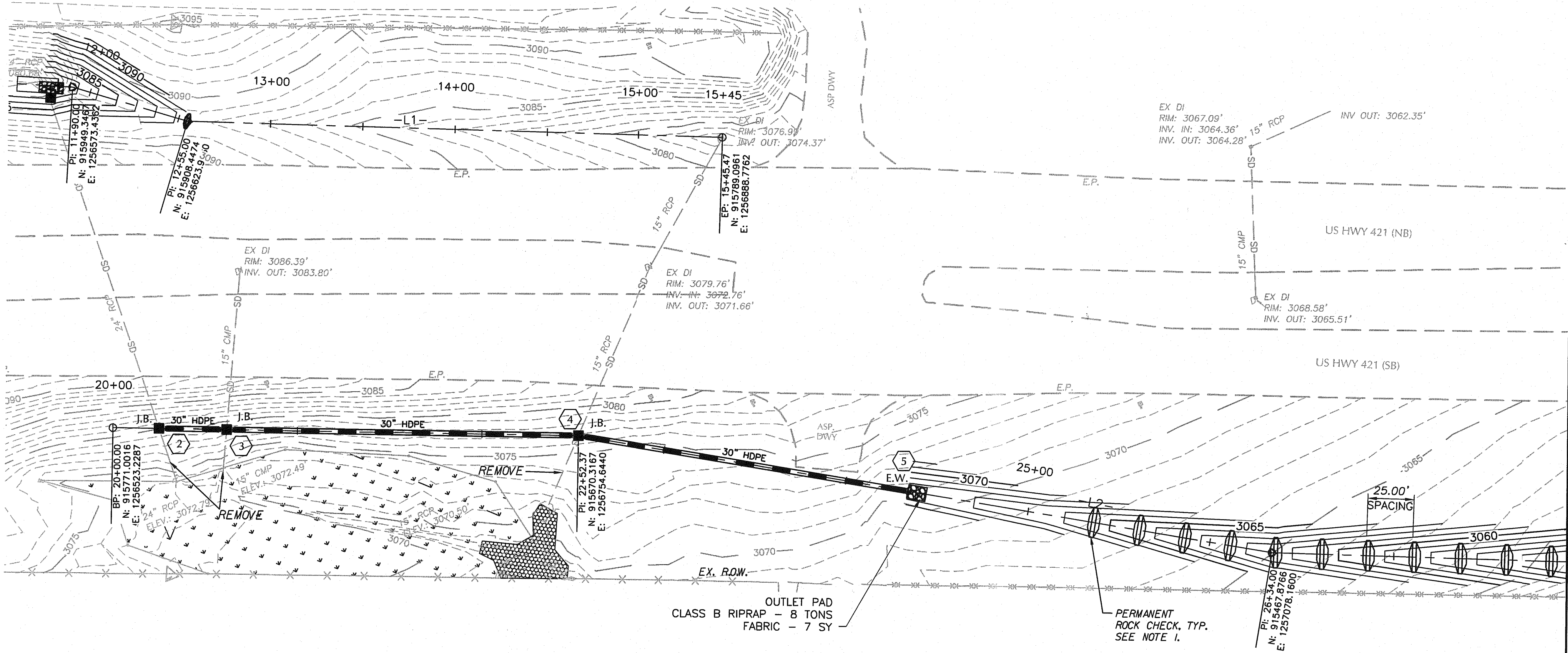
9-26-13

- NOTES:
- CONTRACTOR TO PLACE ROCK CHECK DAMS AT 25 FOOT SPACING BEGINNING AT 25+35 AND AT A 33 FOOT SPACING BEGINNING AT STA 25+35.00.
 - PERMANENT ROCK CHECKS ARE TO BE CONSTRUCTED ACCORDING NCDOT STD 1633.01.
 - PROFILE PIPE LENGTHS ARE MEASURED TO CENTER OF STRUCTURES.

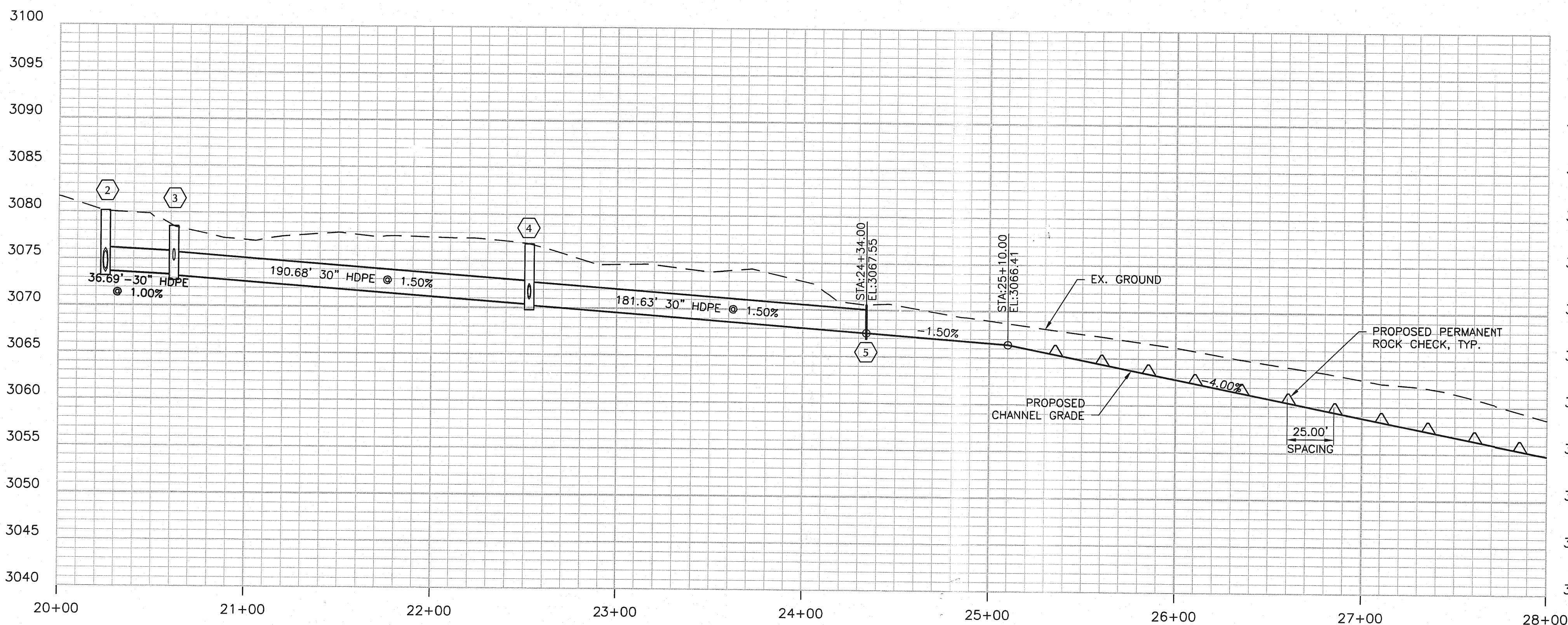


SCALE:
1" = 40' HORIZ.
1" = 8' VERT.

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STA. 28+00 MATCHLINE SEE SHEET 5



REVISIONS

PLAN & PROFILE SHEET

PROJECT REFERENCE NO.
R-4436KC

SHEET NO.
6

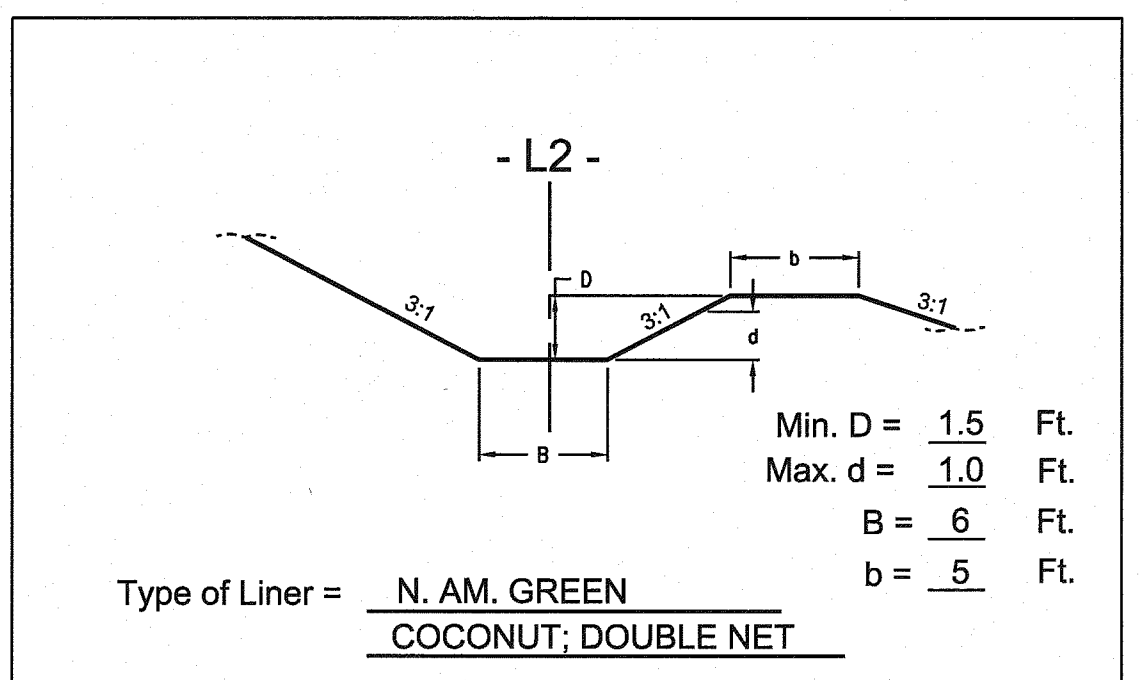
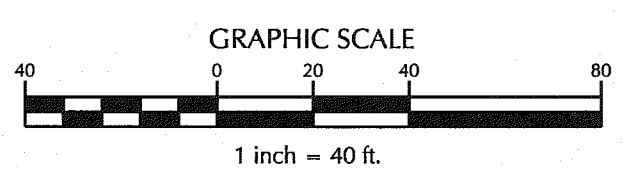
HYDRAULICS
ENGINEER

NORTH CAROLINA
PROFESSIONAL
ENGINEER
029911

ERIC N. REARDON

9-26-13

- NOTES:
- CONTRACTOR TO PLACE ROCK CHECK DAMS AT 25 FOOT SPACING BEGINNING AT 25+35 AND AT A 33 FOOT SPACING BEGINNING AT STA 31+98.
 - REMOVE 12 LF OF 30" RCP AND INSTALL RIPRAP OUTLET PAD.
 - PERMANENT ROCK CHECKS ARE TO BE CONSTRUCTED ACCORDING TO NCDOT STD 1633.01.

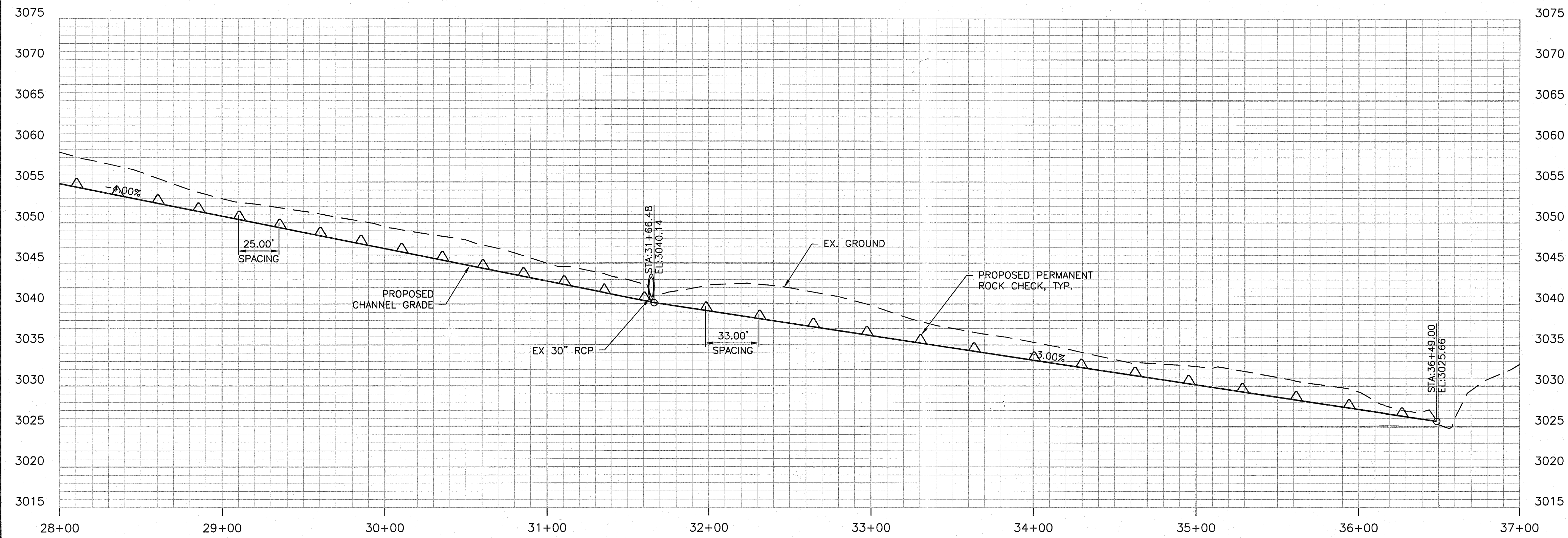
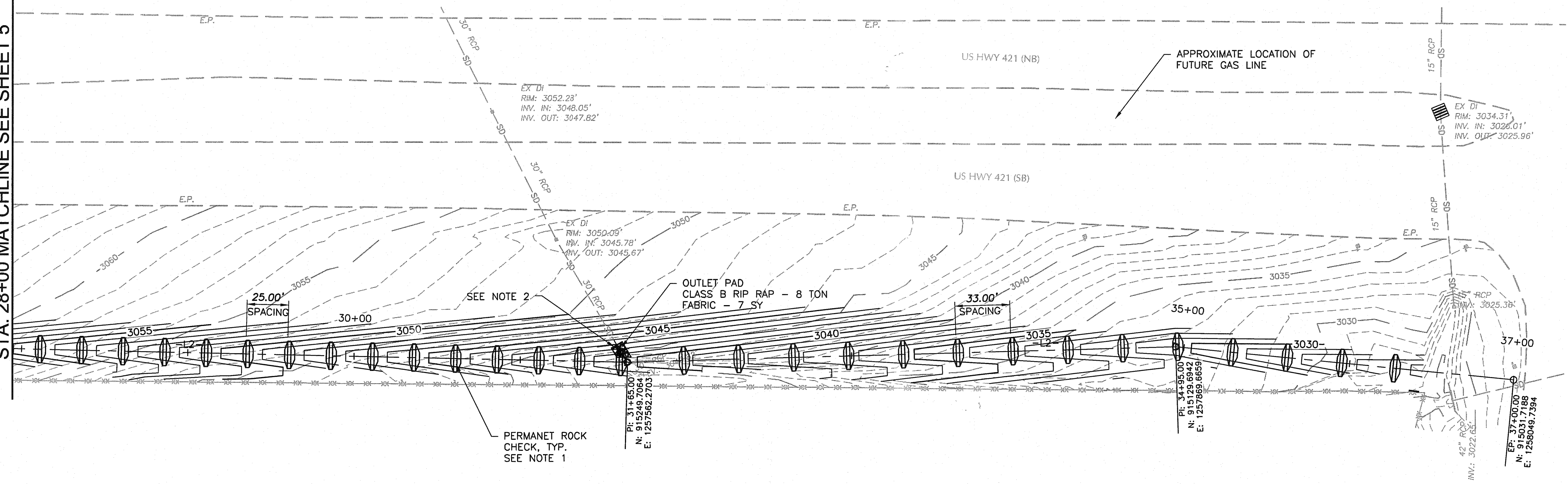


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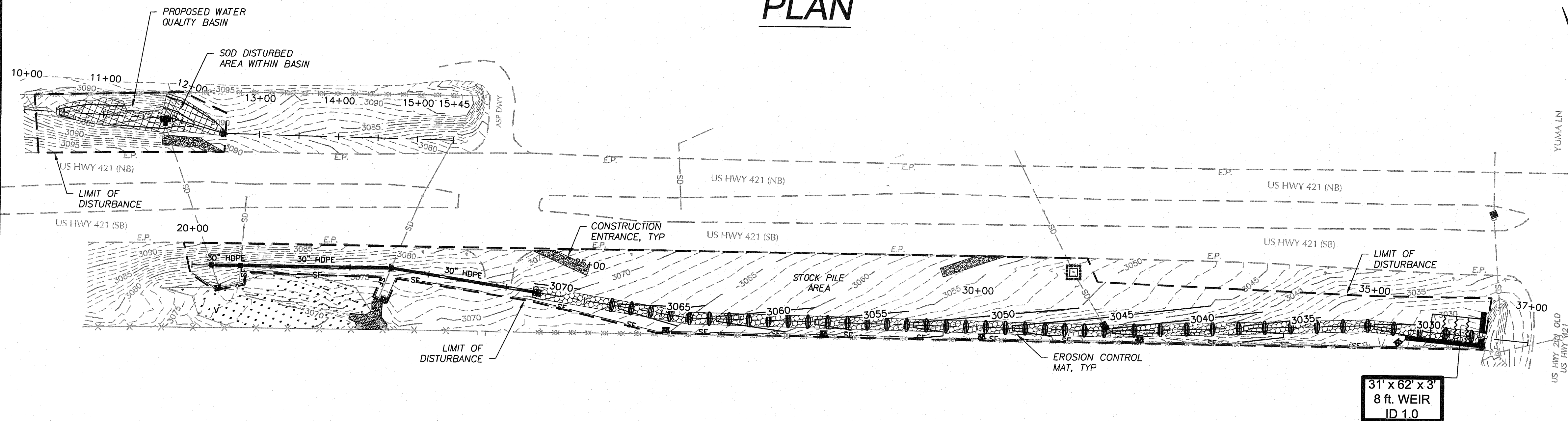
STA. 28+00 MATCHLINE SEE SHEET 5



SCALE:
1" = 40' HORIZ.
1" = 8' VERT.

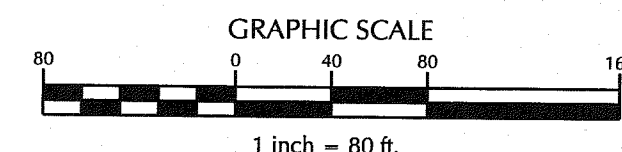
REVISIONS

EROSION CONTROL PLAN



| | |
|--------------------------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| R-4436KC | EC-1 |
| HYDRAULICS ENGINEER | |
| NORTH CAROLINA PROFESSIONAL ENGINEER | |
| C. N. REARDON | |
| 029911 | |
| 9-26-13 | |

- NOTES:
1. CONTRACTOR TO INSTALL PERMANENT ROCK CHECK DAMS IN PROPOSED BERM DITCH SOUTH OF US 421.
 2. PERMANENT ROCK CHECK DAMS SHALL BE CONSTRUCTED ACCORDING TO NCDOT STD 1633.01.



DISTURBED AREA
144,200 SF

SODDED AREA
667 SY



SOD:

1. ALL SOD TO BE FESCUE.
2. ALL SOD SHALL BE CUT INTO RECTANGLES, NOT SQUARES, AND INSTALLED ACCORDING TO THE STANDARD SPECIFICATIONS, SECTION 1664.
3. SOD SHALL BE APPROVED BY THE ENGINEER OR DESIGNATED INSPECTOR PRIOR TO PLACEMENT.

SEEDING SCHEDULE (WEST)

THE KINDS OF SEED AND FERTILIZER, AND THE RATES OF APPLICATION OF SEED, FERTILIZER, AND LIME, SHALL BE AS STATED BELOW. DURING PERIODS OF OVERLAPPING DATES, THE KIND OF SEED TO BE USED SHALL BE DETERMINED. ALL RATES ARE IN POUNDS PER ACRE.

| SHOULDERS AND MEDIAN AREAS | | |
|----------------------------|---------------------------|----------------|
| DATE | TYPE | PLANTING RATE |
| AUG 1 - JUN 1 | KENTUCKY BLUEGRASS | 20 LBS/ACRE |
| | HARD FESCUE | 75 LBS/ACRE |
| | RYE GRAIN | 25 |
| LBS/ACRE | FERTILIZER | 500 LBS/ACRE |
| | LIMESTONE | 4,000 LBS/ACRE |
| MAY 1 - SEP 1 | KENTUCKY BLUEGRASS | 20 LBS/ACRE |
| | HARD FESCUE | 75 LBS/ACRE |
| | GERMAN OR BROWNTOP MILLET | 10 LBS/ACRE |
| LBS/ACRE | FERTILIZER | 500 LBS/ACRE |
| | LIMESTONE | 4,000 LBS/ACRE |

AREAS BEYOND MOWING PATTERN, WASTE AND BORROW AREAS

| DATE | TYPE | PLANTING RATE |
|---------------|--------------------|----------------|
| AUG 1 - JUN 1 | TALL FESCUE | 100 LBS/ACRE |
| | KENTUCKY BLUEGRASS | 15 LBS/ACRE |
| | HARD FESCUE | 30 LBS/ACRE |
| LBS/ACRE | FERTILIZER | 500 LBS/ACRE |
| | LIMESTONE | 4,000 LBS/ACRE |
| MAY 1 - SEP 1 | TALL FESCUE | 100 LBS/ACRE |
| | KENTUCKY BLUEGRASS | 15 LBS/ACRE |
| | HARD FESCUE | 30 LBS/ACRE |
| LBS/ACRE | FERTILIZER | 500 LBS/ACRE |
| | LIMESTONE | 4,000 LBS/ACRE |

ON CUT AND FILL SLOPES 2:1 OR STEEPER ADD 20# SERICEA LESPEDEZA JANUARY 1 - DECEMBER 31.

FERTILIZER SHALL BE 10-20-20 ANALYSIS. A DIFFERENT ANALYSIS OF FERTILIZER MAY BE USED PROVIDED THE 1-2-2 RATIO IS MAINTAINED AND THE RATE OF APPLICATION ADJUSTED TO PROVIDE THE SAME AMOUNT OF PLANT FOOD AS A 10-20-20 ANALYSIS AND AS DIRECTED.

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GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS, LATEST REVISION.
2. SILT FENCING AND TEMPORARY ROCK SEDIMENT DAM SHALL BE INSTALLED AND INSPECTED PRIOR TO ANY CONSTRUCTION ACTIVITY.
3. CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES DURING THE LIFE OF THE PROJECT UNLESS OTHERWISE INDICATED ON THE PLANS OR DIRECTED BY THE NCDOT INSPECTOR.
4. CONTRACTOR SHALL CONSTRUCT DIVERSION DITCHES AS NECESSARY TO ENSURE THAT ALL SEDIMENT IS DIRECTED INTO EROSION CONTROL MEASURES.
5. ALL STREETS ADJACENT TO THIS PROJECT MUST REMAIN CLEAN AT ALL TIMES OR A WASH STATION MAY BE REQUIRED.
6. TOPSOIL STOCKPILING SHALL OCCUR ON SITE AS APPROVED BY NCDOT OR WASTED OFFSITE.
7. THE SILT FENCE SHALL BE MAINTAINED ON THE SITE UNTIL ALL SITE WORK IS COMPLETED AND THE FINAL SITE INSPECTION IS SCHEDULED.
8. DRAINAGE FROM THIS SITE IS TO A TRIBUTARY TO GAP CREEK (NEW RIVER BASIN).
9. THIS SITE HAS NO FEMA MAPPED FLOOD PLAINS AS REFERENCED BY FIRM MAP NO. 3710295100J DATED 12-3-09.
10. STREAM AND WETLAND AREAS SHALL NOT BE CLEARED, DRAINED, FILLED, OR OTHERWISE IMPACTED EXCEPT AS PERMITTED BY NCDENR AND U.S. ARMY CORPS OF ENGINEERS.
11. EXISTING TOPOGRAPHY TAKEN FROM FIELD SURVEY BY WITHERS & RAVENEL, INC.

SEED AND SOD BED PREPARATION:

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACES REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SOD A FRESHLY PREPARED SODBED.
7. SEED A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
8. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
9. INSPECT ALL SEEDBED AND SODDED AREAS AND MAKE NECESSARY REPAIRS OR RESEED/RESOD WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 70% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
10. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

• APPLY: AGRICULTURAL LIMESTONE - 2 TONS/ACRE (34 TONS/ACRE ON CLAY SOILS)
FERTILIZER - 1,000 LBS/ACRE - 10-10-10
SUPERPHOSPHATE - 500 LBS/ACRE - 20%
MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR - ASPHALT EMULSION @ 300 GAL/ACRE

EROSION CONTROL NARRATIVE:

THIS STORMWATER MANAGEMENT RETROFIT PROJECT IS LOCATED ON U.S. 421 IN DEEP GAP, NC. THE PURPOSE OF THIS PROJECT IS TO REDIRECT THE DISCHARGE FROM THREE STORM SEWERS AWAY FROM AN ERODING STREAM OUTSIDE THE RIGHT-OF-WAY.

THIS PROJECT WILL CONSIST OF A WATER QUALITY BASIN, STORM SEWER SYSTEM THAT DISCHARGES TO A BMP SWALE.

SEDIMENT RUNOFF IS TO BE CONTROLLED BY SILT FENCE ALONG WITH PERMANENT ROCK CHECK DAMS LOCATED IN THE BMP SWALE. THE LOCATION OF THESE ITEMS ARE SHOWN ON THE PLANS.

CONSTRUCTION SEQUENCE NOTES:

- PROJECT REQUIRES A PRE-CONSTRUCTION CONFERENCE PRIOR TO "NOTICE TO PROCEED" BEING ISSUED.
1. INSTALL ALL SILT FENCE AS SHOWN ON PLAN. OBTAIN APPROVAL OF INSTALLATION.
 2. CLEAR ONLY AS NEEDED TO INSTALL PERIMETER EROSION CONTROL DEVICES.
 3. INSTALL EROSION CONTROL MEASURES. OBTAIN CERTIFICATE OF COMPLIANCE FROM EROSION CONTROL INSPECTOR.
 4. CLEAR & GRUB AREAS WITHIN CONSTRUCTION LIMITS AND BEGIN GRADING ACTIVITIES.
 5. CONSTRUCT WATER QUALITY BASIN, STORM SEWER SYSTEM AND CHANNEL. MAINTAIN EROSION CONTROL DEVICES AS DRAINAGE STRUCTURES ARE INSTALLED AND AREAS ARE BROUGHT UP TO FINISHED GRADE.
 6. INSTALL TEMPORARY AND PERMANENT EROSION CONTROL MATTING AS SHOWN ON PLAN AND FOLLOW SEEDING/MULCHING GUIDELINES TO STABILIZE ALL BARE AREAS AND PRODUCE VEGETATIVE COVER.
 7. UPON SUBSTANTIAL COMPLETION OF WORK, REQUEST FINAL APPROVAL FROM DEPARTMENT INSPECTOR. UPON APPROVAL, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES.

MAINTENANCE PLAN:

1. ALL EROSION AND SEDIMENTATION CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. SEDIMENT WILL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT BECOMES ABOUT 6-INCHES DEEP AT THE FENCE. THE SILT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
3. INLET PROTECTION DEVICES SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT. DAMAGED SILT FENCE SHALL BE REPLACED AND GRAVEL SHALL BE CLEANED OR REPLACED WHEN INLET NO LONGER DRAINS PROPERLY.

REVISIONS

TRAFFIC CONTROL PLAN

PROJECT REFERENCE NO.
R-4436KC

SHEET NO.
TC-1

HYDRAULICS
ENGINEER

NORTH CAROLINA
PROFESSIONAL
ENGINEER
029911
ERIC N. REARDON

9-26-13

GENERAL NOTES

THE FOLLOWING GENERAL NOTES SHALL APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

A) THE TRAFFIC CONTROL PLANS CONSIST OF DETAIL DRAWINGS, STANDARD DETAIL DRAWINGS AND ROADWAY STANDARD DRAWINGS SHOWING TRAFFIC CONTROL DEVICES TO BE USED WHERE VARIOUS TYPES OF CONSTRUCTION ACTIVITIES ARE OCCURRING ON THE PROJECT. THESE DRAWINGS ARE FOR TYPICAL SITUATIONS AND SHOULD BE ADAPTED TO THE ACTUAL FIELD CONDITIONS, SUCH AS WHEN PHYSICAL DIMENSIONS ARE NOT ATTAINABLE, OR WHEN MORE THAN ONE DRAWING IS APPLIED TO SIMULTANEOUSLY RESULTING IN DUPLICATE SIGNING, OR UNDESRED OVERLAPPING OF DEVICES. WHEN THESE SITUATIONS ARISE, THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER SHALL BE RESPONSIBLE FOR ADAPTING THE TRAFFIC CONTROL PLAN TO FIELD CONDITIONS TO PROVIDE SAFE AND EFFICIENT TRAFFIC MOVEMENT. MODIFICATIONS MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES.

SHOULDER CLOSURE REQUIREMENTS

- B) SHOULDER CLOSURES SHALL BE REMOVED AS SOON AS PRACTICAL AFTER WORK BEHIND THE CLOSURE IS COMPLETED OR WHEN SHOULDER CLOSURE IS NO LONGER NEEDED.
- C) CONTRACTOR SHALL MAINTAIN EXISTING TRAFFIC PATTERNS AND LANE CONFIGURATIONS AT THE END OF EACH DAYS OPERATION AND DURING CONSTRUCTION INACTIVITY, EXCEPT AS OTHERWISE INDICATED IN THE PHASING PLAN.
- D) WHEN SHOULDER CLOSURES ARE NOT IN EFFECT, CHANNELIZING DEVICES IN WORK AREAS SHALL BE SPACED NO GREATER THAN TWICE THE POSTED SPEED LIMIT, EXCEPT 10-FEET ON CENTER IN RADII, AND SHALL BE SET 3' OFF THE EDGE OF AN EXISTING TRAVEL LANE.
- E) TEMPORARY SHOULDER CLOSURES SHALL BE REQUIRED DURING PERIODS WHEN CONSTRUCTION TRAFFIC WILL BE ENTERING AND/OR EXITING THE WORK AREA FOR LOADING/UNLOADING OF MATERIALS AND/OR EQUIPMENT. SHOULDER CLOSURES SHALL BE IN ACCORDANCE WITH DETAIL 1101.04. DRUMS SHALL BE EXTENDED AS SHOWN IN DETAIL 1101.05 TO PROVIDE SUFFICIENT ROOM FOR EXITING CONSTRUCTION TRAFFIC TO MERGE BACK INTO EXISTING TRAFFIC PATTERNS.

SIGNING

- F) EXISTING TRAFFIC SIGNALS SHALL BE MOVED AND OTHERWISE MAINTAINED BY THE CONTRACTOR AS APPROPRIATE DURING CONSTRUCTION.
- G) ALL NECESSARY TRAFFIC CONTROL SIGNING SHALL BE IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
WORK ZONE ADVANCE WARNING SIGNS FOR
FACILITIES ≤ 55 MPH

SHEET 2 OF 3
1101.01

DETAIL A

DETAIL B

DETAIL C

DETAIL D

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK UNLESS COVERED.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B). MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01.
- DO NOT BACK BRACE SIGN SUPPORTS.
- TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

LEGEND

- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
WORK ZONE ADVANCE WARNING SIGNS FOR
FACILITIES ≤ 55 MPH

SHEET 2 OF 3
1101.01

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES

SHEET 1 OF 1
1101.04

SHOULDER CLOSURE ON CONTROLLED ACCESS FACILITIES - ≥ 60 MPH

SHOULDER CLOSURE ON DIVIDED FACILITIES - ≤ 55 MPH

SHOULDER CLOSURE ON UNDIVIDED ROADWAYS (SEE NOTE 5)

GENERAL NOTES

- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.
- PLACE DRUMS IN THE SHOULDER TAPER AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MAXIMUM SPACING OF DRUMS ALONG THE WORK AREA IS EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- USE STATIONARY SIGNS FOR LONG TERM OPERATIONS (LONGER THAN 3 DAYS).
- REFER TO STD. 1101.11 FOR "L" DISTANCE AND SIGN SPACING.
- THE TWO-LANE, TWO-WAY DRAWING MAY BE APPLIED TO UNDIVIDED, MULTI-LANE FACILITIES.

LEGEND

- DRUM
- STATIONARY OR PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES

SHEET 1 OF 1
1101.04

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
WORK ZONE VEHICLE ACCESSSES

SHEET 1 OF 1
1101.05

ROADSIDE ACCESS POINT

ACCESS THROUGH TEMPORARY BARRIER

HAUL ROADS FOR 2-LANE, 2-WAY ROADWAYS

GENERAL NOTES

- MOUNT SIGNS ON BOTH LEFT AND RIGHT SIDES ON DIVIDED ROADWAYS. SIGNS ARE REQUIRED ONLY ON THE RIGHT SIDE OF THE ROADWAY FOR UNDIVIDED ROADWAYS.
- PROVIDE MINIMUM STOPPING SIGHT DISTANCE FOR EACH FLAGGER LOCATION.
- REFER TO STD. 1101.11 SHEETS 2 & 4 FOR STOPPING SIGHT DISTANCE AND SIGN SPACING.
- UPON COMPLETION OF EACH HAULING OPERATION, REPAIR, SWEEP, AND RESTORE THE ROADWAY TO BE SAFELY TRAVERSABLE AT NORMAL OPERATING SPEEDS.
- "BUMP" SIGNS (W3-1) ARE REQUIRED ONLY IF A BUMP OVER THE ROADWAY EXISTS AS A RESULT OF IMPLEMENTING THE HAUL ROAD. USE FLAGGERS AT ALL TIMES TO STOP TRAFFIC WHEN BUMPS ARE LOCATED ACROSS THE ROADWAY. CONSTRUCT BUMPS TO PROVIDE A SMOOTH TRANSITION FOR TRAFFIC CROSSING THEM. REMOVE BUMPS PRIOR TO ALLOWING TRAFFIC TO RESUME NORMAL OPERATING SPEEDS.
- WHEN NOT SPECIFIED IN THE PLANS OR BY THE ENGINEER, PAYMENT FOR CONVENIENCE WILL NOT BE MADE FOR FLAGGERS.

LEGEND

- PORTABLE CONCRETE BARRIER
- TEMPORARY CRASH CUSHION
- DRUM
- STATIONARY SIGN
- PORTABLE SIGN
- FLAGGER
- DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
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1-12

ENGLISH STANDARD DRAWING FOR
WORK ZONE VEHICLE ACCESSSES

SHEET 1 OF 1
1101.05