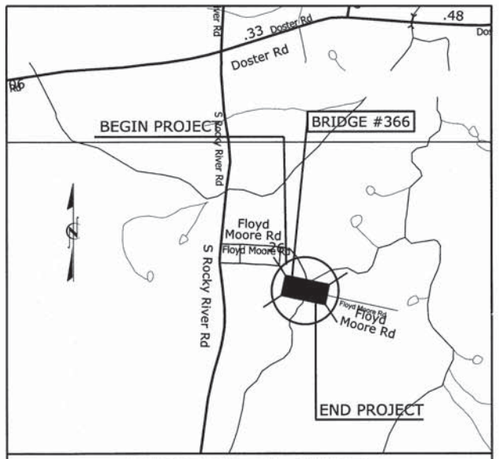
09/08/99

PROJECT: WBS 17BP.10.R.19

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

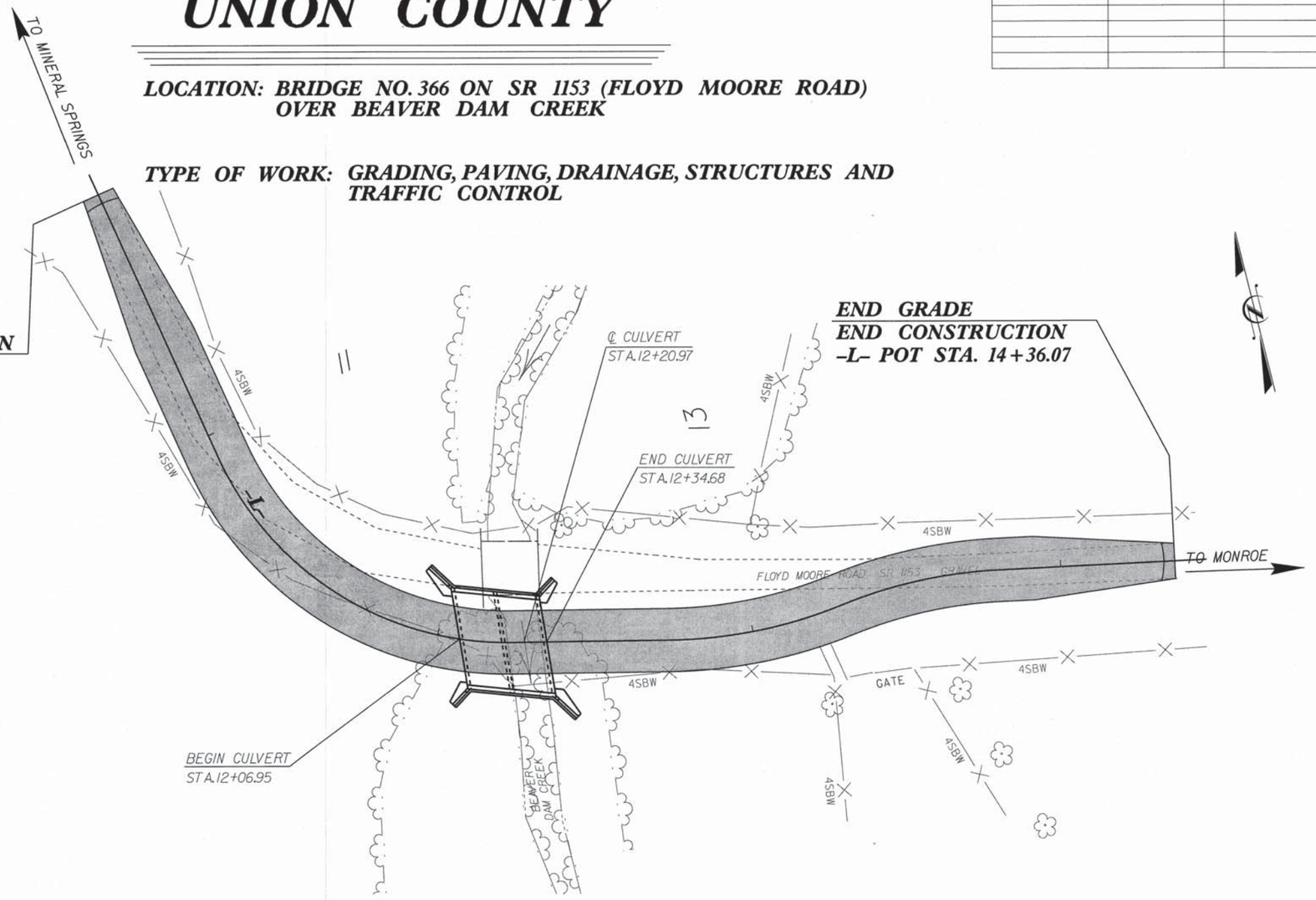
UNION COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.19	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.10.R.19		PE
		ROW/UTIL.
		CONST.

LOCATION: BRIDGE NO. 366 ON SR 1153 (FLOYD MOORE ROAD) OVER BEAVER DAM CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES AND TRAFFIC CONTROL



– CLEARING SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALES

PLANS: 20 10 0 20 40

PROFILE (HORIZONTAL): 20 10 0 20 40

PROFILE (VERTICAL): 4 2 0 4 8

DESIGN DATA

ADT 2000 = 70
ADT 2020 = 115
DHV = NA %
D = NA %
T = NA % *
V = 15 MPH

FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P. PROJECT 17BP.10.R.19 = 0.079 MI.
LENGTH OF STRUCTURE T.I.P. PROJECT 17BP.10.R.19 = 0.000 MI
TOTAL LENGTH OF T.I.P. PROJECT 17BP.10.R.19 = 0.079 MI

NCDOT CONTACT: GARLAND HAYWOOD, PE
BRIDGE PROGRAM MANAGER

PREPARED IN THE OFFICE OF:

Stantec
Stantec Consulting Inc.
801 Jones Franklin Road, Suite 300
Raleigh, NC U.S.A.
27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 19, 2013

LETTING DATE: JUNE 19, 2013

GARLAND HAYWOOD, PE
PROJECT ENGINEER

ROBERT WILLIAMS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL 29185 ENGINEER RICHARD L. HINER P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

SEAL 30932 ENGINEER ROBERT A. WILLIAMS P.E. 5/10/13

SIGNATURE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

5/7/2013
U:\Union366\Roadway\Proj\890366_rdy_TSH.dgn
rawilliams

PROJECT REFERENCE NO.	SHEET NO.
17BPJO.R.19	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 30932 ENGINEER ROBERT A. WILLIAMS

7/8/13

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2A	STANDARD TEMPORARY SHORING
2B THRU 2D	STANDARD TEMPORARY WALL
3	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND DRAINAGE
4	PLAN/PROFILE SHEET
5	DRAINAGE SHEET
TMP-1 THRU TMP-4	TRAFFIC MAINTENANCE PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITY BY OTHER PLANS
X-1 THRU X-3	CROSS-SECTIONS
C-1 THRU C-3	CULVERT PLANS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11/01/11

GRADE LINE:

GRADING AND SURFACING:
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND 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.

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

GUARDRAIL:
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE UNION POWER CO-OP AND FRONTIER COMMUNICATIONS. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

ROADWAY STANDARD DRAWINGS

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, 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
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.02	Granite Right-of-Way Marker

7/8/2013
U:\Projects\8903366\Roadway\Proj\8903366_rdy_psh1a.dgn

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ0.RJ9	I-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0.RJ9	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 30932 ENGINEER ROBERT A. WILLIAMS

9/17/13

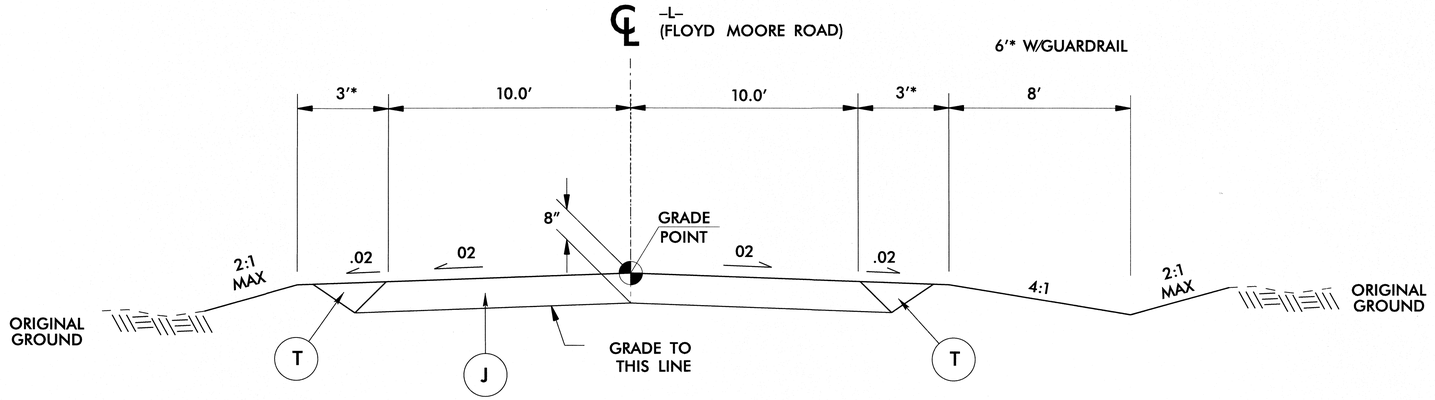
HYDRAULICS ENGINEER

10:41:31 AM (-04'00' GMT)

NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. MINER

PAVEMENT SCHEDULE	
J	PROPOSED 8" AGGREGATE BASE COURSE
T	EARTH MATERIAL

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



TYPICAL SECTION NO. 1

–L– STA. 10+16.50 TO STA. 14+36.07

9/17/2013
\Union365\Roadway\Proj\8910366_rdy_typ.dgn
cwilkins

PROJECT REFERENCE NO.	SHEET
17BP.10.R.19	2A

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18580 ENGINEER GARY R. TAYLOR

SIGNATURE 5/6/13 DATE

ENGINEER

SIGNATURE DATE

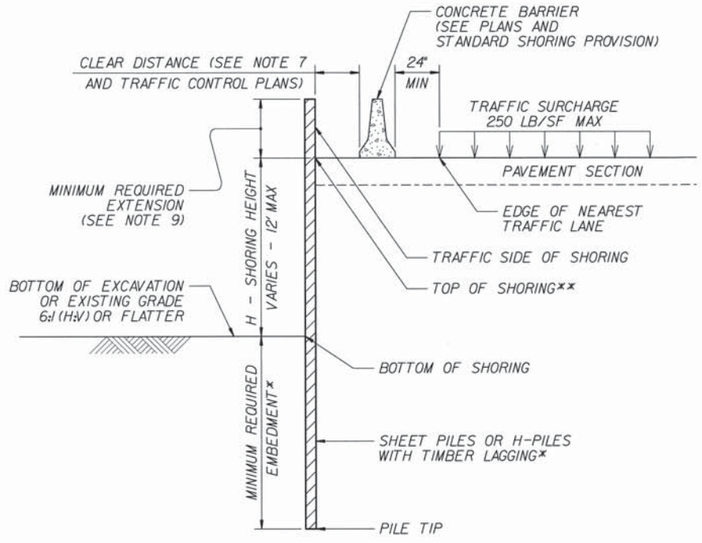
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

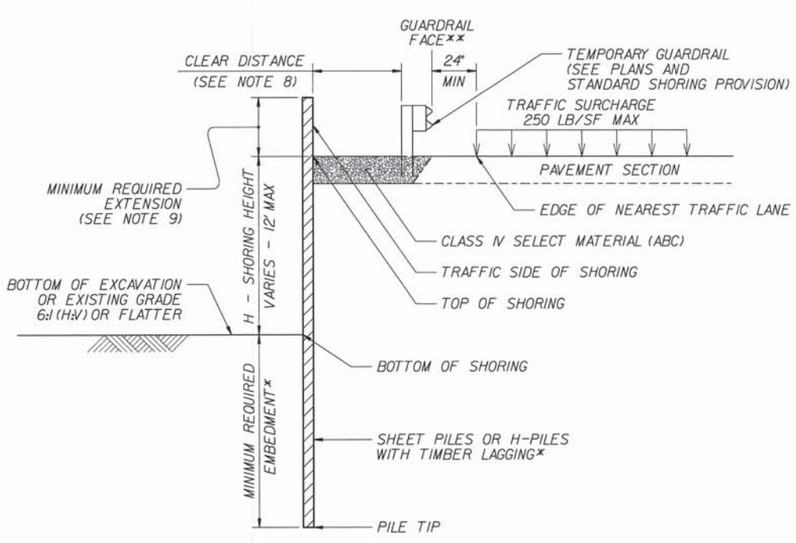
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



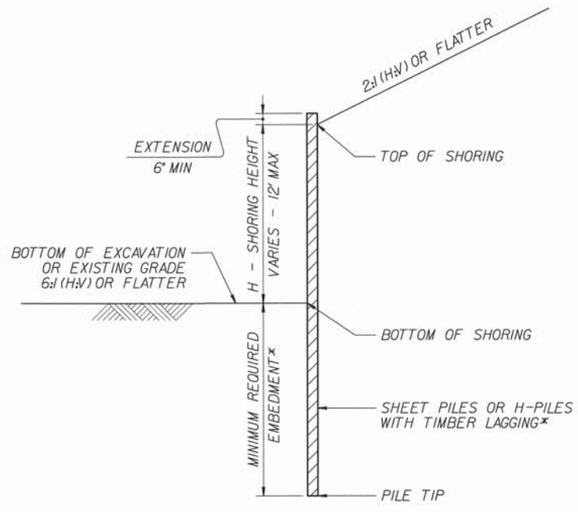
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)

***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

***SEE TABLE ABOVE.**

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-20-12

PROJECT REFERENCE NO.	SHEET
17BP.10.R.19	2B

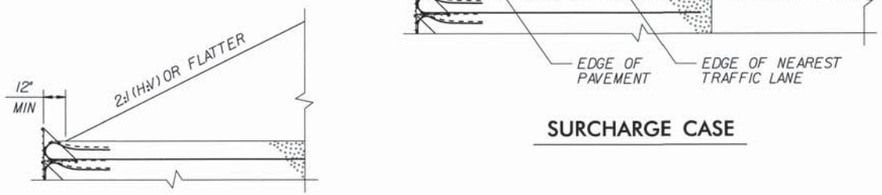
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18560 ENGINEER GARY R. TAYLOR

SIGNATURE 5/6/13 DATE

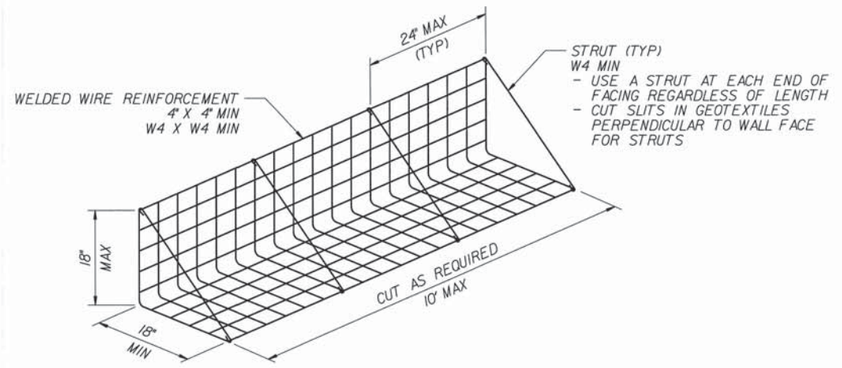
ENGINEER

SIGNATURE DATE

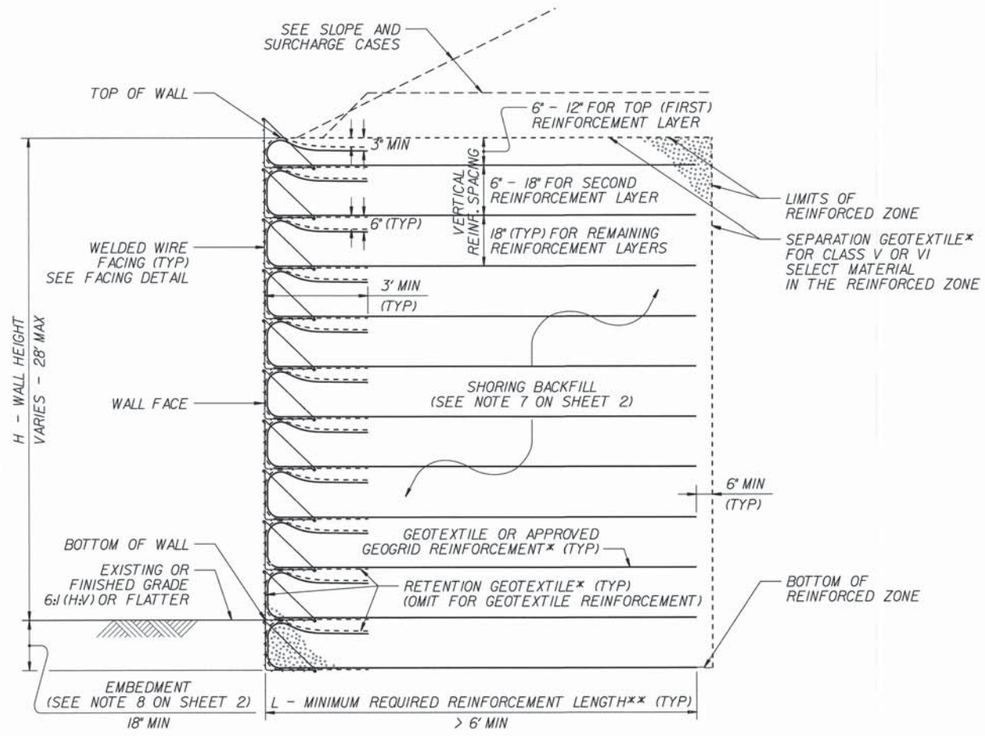


SLOPE CASE

SURCHARGE CASE

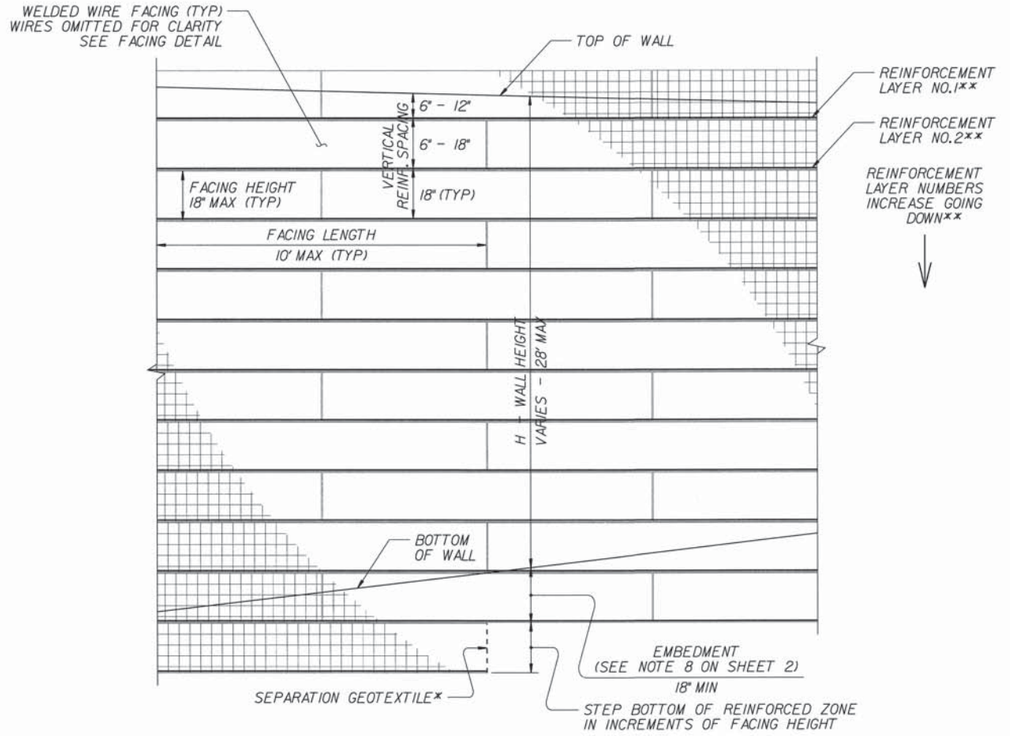


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 1 of 3

DATE: 11-20-12

PROJECT REFERENCE NO.	SHEET
17BP.10.R.19	2C

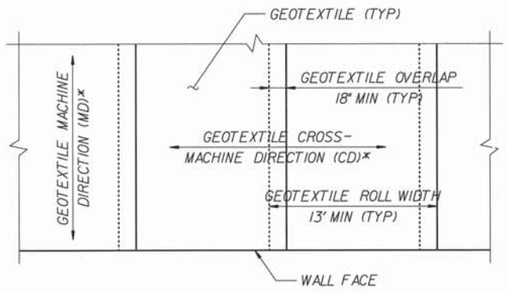
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18580 ENGINEER GARY R. TAYLOR

SIGNATURE 5/21/13 DATE

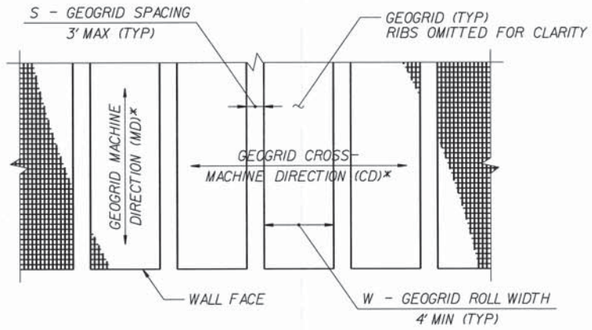
ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



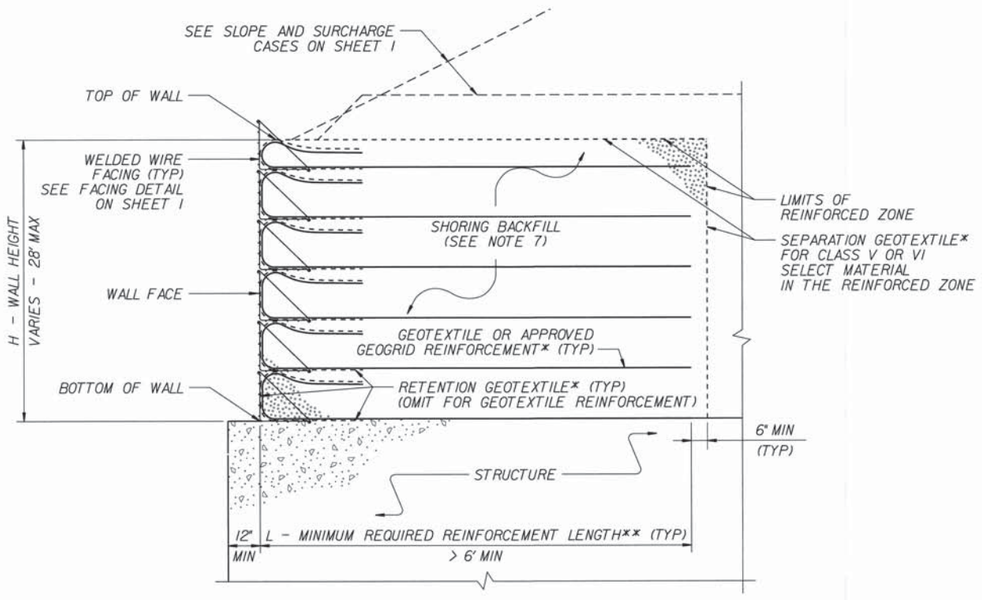
GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 ≥ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)

***SEE NOTE 12.**



TEMPORARY WALL ON STRUCTURE DETAIL

***SEE GEOSYNTHETIC PLACEMENT DETAILS.**

****SEE REINFORCEMENT TABLES ON SHEET 3.**

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE APPROVED FOR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) BASED ON MATERIAL TYPE. FOR DETAILS OF APPROVED GEOGRIDS AND SHORT-TERM DESIGN STRENGTHS, SEE www.ncdot.org/doh/operations/materials/soils/geo.html
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) ≥ L (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD ≥ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION.
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL

Sheet 2 of 3

DATE: 11-20-12

PROJECT REFERENCE NO.	SHEET
17BP.10.R.19	2D

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18580 ENGINEER GARY R. TAYLOR

SIGNATURE 3/6/13 DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H – WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20′ > 0 TO 10 FOR H ≥ 20′	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20′ > 10 FOR H ≥ 20′	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 – 4	3
4 – 5.5	4
5.5 – 7	5
7 – 8.5	6
8.5 – 10	7
10 – 11.5	8
11.5 – 13	9
13 – 14.5	10
14.5 – 16	11
16 – 17.5	12
17.5 – 19	13
19 – 20.5	14
20.5 – 22	15
22 – 23.5	16
23.5 – 25	17
25 – 26.5	18
26.5 – 28	19
28 – 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 3 of 3

DATE: 11-20-12

COMPUTED BY: RAW DATE: AUGUST 2012
CHECKED BY: JTG DATE: AUGUST 2012

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.10.R.19	3

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300–5".

EARTHWORK SUMMARY (CY)

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
–L– STA. 10+16.50 TO STA. 14+36.07	419		23		396
SUBTOTAL SUMMARY	419		23		396
SUMMARY	419		23		396
LOSS DUE TO CLEARING & GRUBBING					
PROJECT TOTAL	419		23		396
WASTE IN LIEU OF BORROW					
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS					
GRAND TOTAL	419		23		396
SAY	430				

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION	STATION	LOCATION	SY

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading".

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32								CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON–GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

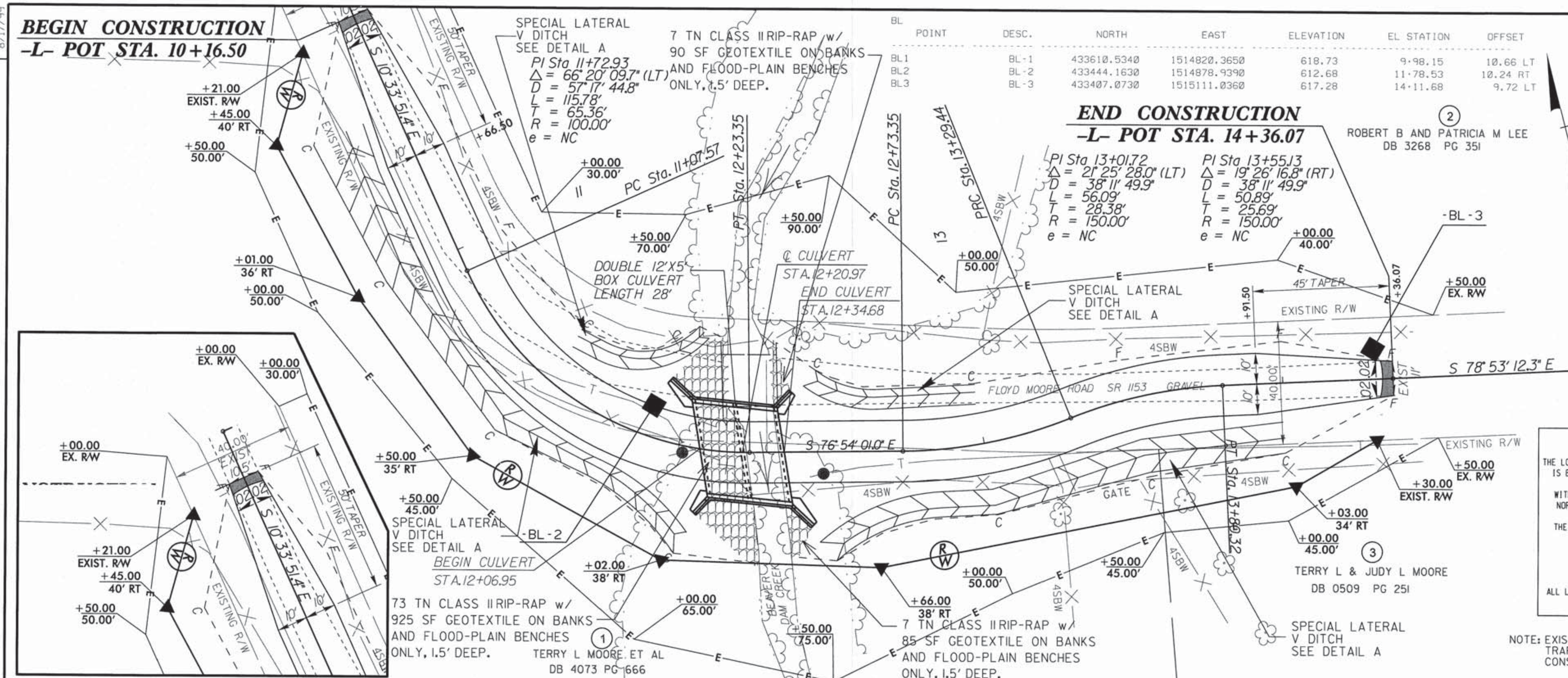
SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GRAU 350 (TL–2)	M–350	XIII	CAT–1	VI MOD	BIC	AT–1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
			TOTAL:																											
			TOTAL ANCHOR LENGTH:																											
			TOTAL GUARDRAIL LENGTH:																											
			SAY:																											

6/21/00
5/7/2013
U:\Union366\Roadway\Proj\890366_rdy_psh3.dgn
rawilliams

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0.RJ9	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

BL POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
BL1	BL-1	433610.5340	1514820.3650	618.73	9+98.15	10.66 LT
BL2	BL-2	433444.1630	1514878.9390	612.68	11+78.53	10.24 RT
BL3	BL-3	433407.0730	1515111.0360	617.28	14+11.68	9.72 LT



BEGIN CONSTRUCTION
-L- POT STA. 10+16.50
END CONSTRUCTION
-L- POT STA. 14+36.07
SPECIAL LATERAL V DITCH SEE DETAIL A
7 TN CLASS II RIP-RAP w/ 90 SF GEOTEXTILE ON BANKS AND FLOOD-PLAIN BENCHES ONLY, 1.5' DEEP.
DOUBLE 12'X5' BOX CULVERT LENGTH 28'
℄ CULVERT STA. 12+20.97
END CULVERT STA. 12+34.68
BEGIN CULVERT STA. 12+06.95
73 TN CLASS II RIP-RAP w/ 925 SF GEOTEXTILE ON BANKS AND FLOOD-PLAIN BENCHES ONLY, 1.5' DEEP.
7 TN CLASS II RIP-RAP w/ 85 SF GEOTEXTILE ON BANKS AND FLOOD-PLAIN BENCHES ONLY, 1.5' DEEP.
FLOYD MOORE ROAD SR 1153 GRAVEL
ROBERT B AND PATRICIA M LEE DB 3268 PG 351
TERRY L MOORE ET AL DB 4073 PG 666
TERRY L & JUDY L MOORE DB 0509 PG 251
S 78°53'12.3" E
S 76°54'01.0" E
S 10°33'51.4" E

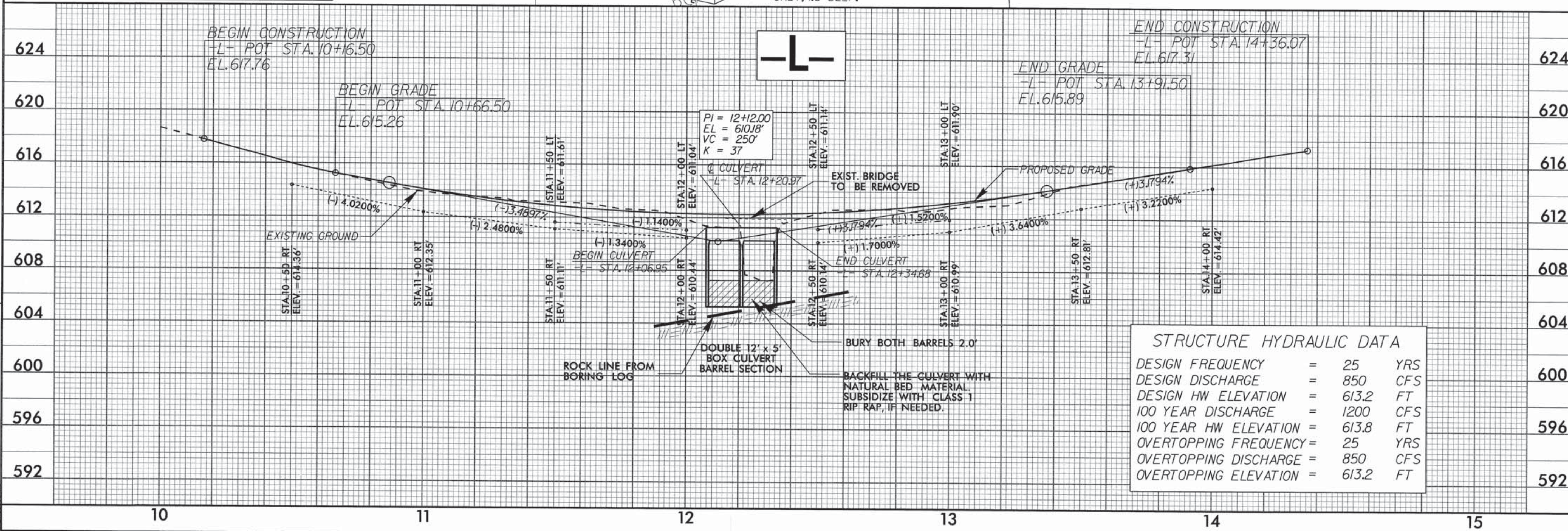
DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground — 2:1 — D — 4:1 or Flatter — Fill Slope
Min. D = 1 Ft.

STA.11+50 TO STA.12+00 LT
STA.12+50 TO STA.13+04 LT
STA.10+50 TO STA.12+00 RT
STA.12+50 TO STA.14+00 RT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 433407.073(ft) EASTING: 1515111.036(ft) ELEVATION: 617.277(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999864
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STA. 10+00.00 IS N 56°25'19.5" W 361.06 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: EXISTING BRIDGE TO REMAIN IN PLACE AND TRAFFIC IS TO BE MAINTAINED DURING CONSTRUCTION OF NEW CULVERT STRUCTURE.



-L-
BEGIN CONSTRUCTION -L- POT STA. 10+16.50 EL. 617.76
BEGIN GRADE -L- POT STA. 10+66.50 EL. 615.26
END GRADE -L- POT STA. 13+91.50 EL. 615.89
END CONSTRUCTION -L- POT STA. 14+36.07 EL. 617.31
PI = 12+12.00 EL = 610.18' VC = 250' K = 37
EXIST. BRIDGE TO BE REMOVED
PROPOSED GRADE
EXISTING GROUND
BURY BOTH BARRELS 2.0'
DOUBLE 12' x 5' BOX CULVERT BARREL SECTION
ROCK LINE FROM BORING LOG
BACKFILL THE CULVERT WITH NATURAL BED MATERIAL. SUBSIDIZE WITH CLASS 1 RIP RAP, IF NEEDED.

STRUCTURE HYDRAULIC DATA

DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	850	CFS
DESIGN HW ELEVATION	=	613.2	FT
100 YEAR DISCHARGE	=	1200	CFS
100 YEAR HW ELEVATION	=	613.8	FT
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING DISCHARGE	=	850	CFS
OVERTOPPING ELEVATION	=	613.2	FT

REVISIONS

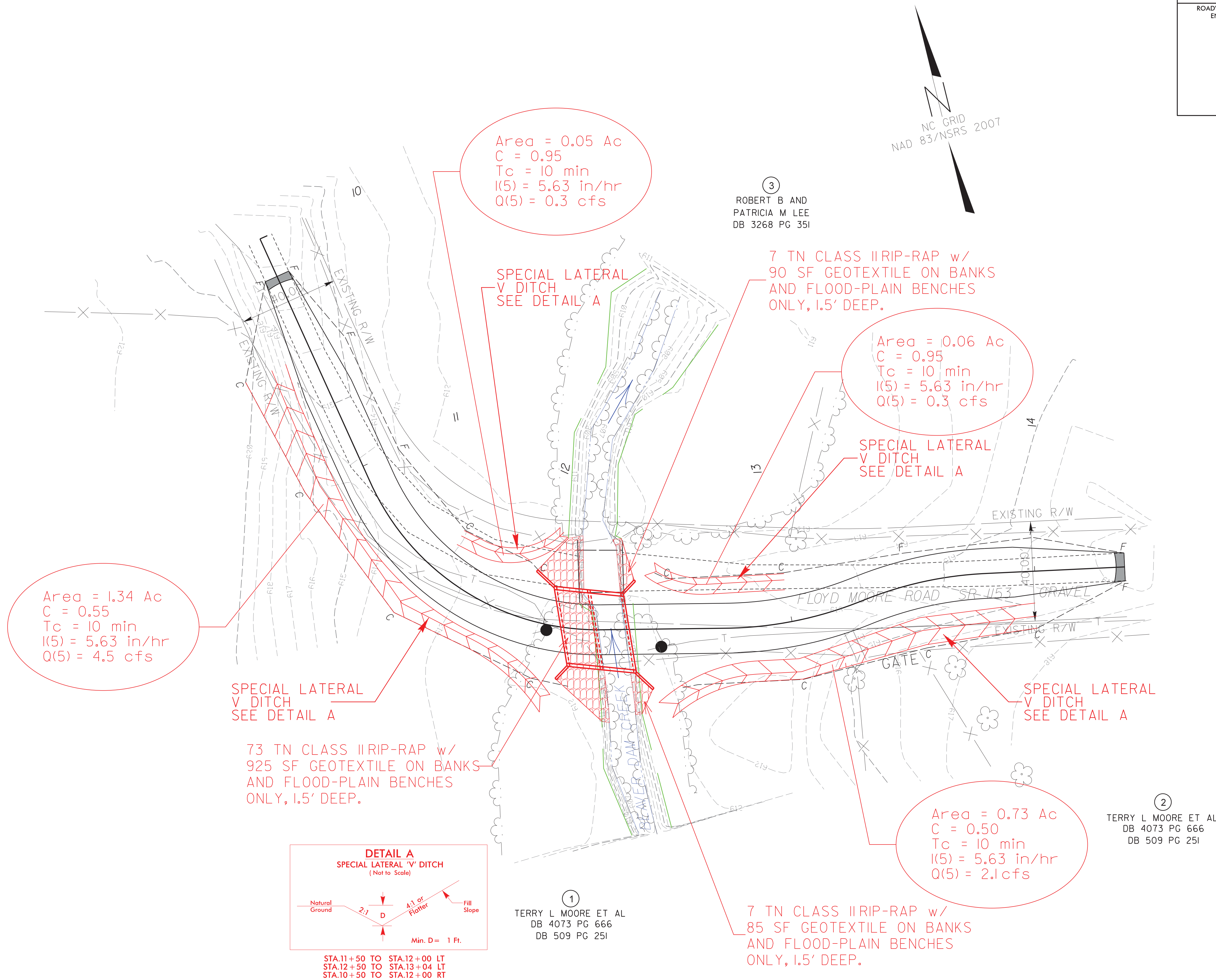
8/17/99

5/7/2013

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0.R19	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER

AMEC LICENSE No.F-1253



8/17/99

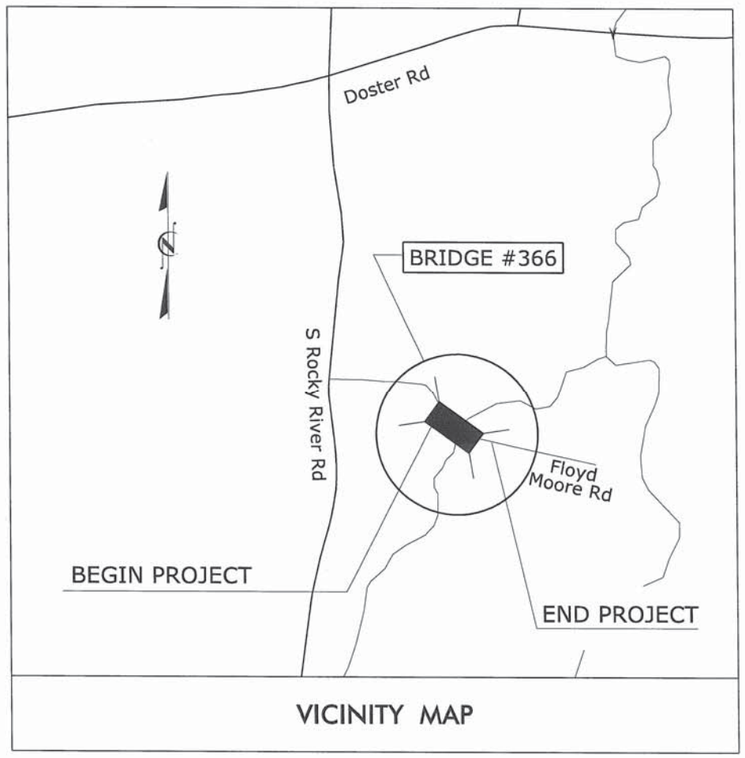
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

UNION COUNTY

DIVISION 10

BRIDGE #366 – SR 1153 (FLOYD MOORE ROAD) OVER BEAVER DAM CREEK



VICINITY MAP

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	LEGEND AND LIST OF ROADWAY STANDARD DRAWINGS
TMP-2	GENERAL NOTES & PHASING
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-2B	TEMPORARY SHORING NOTES
TMP-3	PHASE I
TMP-4	PHASE II

SHEET NO.
TMP-1

WBS 17BP.10.R.19

TRAFFIC MANAGEMENT STRATEGY

PROPOSED REPLACEMENT OF BRIDGE #366 WITH NEW CULVERT, WILL BE STAGE CONSTRUCTED. LANE CLOSURES, TEMPORARY BARRIER AND TEMPORARY SHORING WILL BE USED. SEE SHEET TMP-2 FOR PHASING.

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLAN PREPARED FOR NCDOT
RALEIGH, NC

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PLAN PREPARED BY:
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com

BETSY L. WATSON, P.E.
TRAFFIC ENGINEER

GEORGE KARAGEORGE
WORK ZONE TRANSPORTATION DESIGN MANAGER

APPROVED: Betsy L Watson
DATE: 5/15/13

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

5/8/2013
U:\Union366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_01_TITLE.dgn
rcullen

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	TMP-1A

LEGEND

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

WORK AREA

PAVEMENT REMOVAL

NORTH ARROW

TYPE III BARRICADE

CONE

DRUM

SKINNY DRUM

TUBULAR MARKER

CHANGEABLE MESSAGE SIGN (CMS)

FLAGGER

AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

FLASHING ARROW BOARD(TYPE C)

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

PORTABLE CONCRETE BARRIER (PCB)

TEMPORARY CRASH CUSHION

TEMPORARY SHORING

WORK ZONE SIGN-PORTABLE

WORK ZONE SIGN-STATIONARY

WORK ZONE SIGN-STATIONARY OR PORTABLE

SIGNALS

EXISTING

PROPOSED

TEMP

TEMPORARY

PAVEMENT MARKINGS

EXISTING PAVEMENT MARKING (GRAY)

SKIP LINES

MINI-SKIP LINES

SOLID LINES

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

ONLY PAVEMENT MARKING ALPHANUMERIC CHARACTERS

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

YELLOW/YELLOW

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED:________ DATE:________

SEAL

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BETSY L. WATSON

5/6/13

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

LEGEND & ROADWAY STANDARD DRAWINGS

5/3/2013
U:\Union366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_01A_RDWYSTDSLEGEND.dgn
rcullen

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	TMP-2

GENERAL NOTES

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

B) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.

C) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

TEMPORARY TRAFFIC BARRIER

F) INSTALL TEMPORARY BARRIER ACCORDING TO THE PLANS A MAXIMUM OF ONE(1) WEEK PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION, UNLESS OTHERWISE STATED IN THE PLANS OR DIRECTED BY THE ENGINEER.

G) DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

H) INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW, BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW, BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

I) INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

J) PROTECT THE APPROACH END OF PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PAVEMENT MARKINGS AND MARKERS

K) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	PAVEMENT MARKER
SR 1153 FLOYD MOORE RD.	PAINT	NONE

PHASING

PHASE I

STEP 1:

PRIOR TO ANY CONSTRUCTION OPERATIONS INSTALL WORK ZONE ADVANCE WARNING SIGNS PER SHEET TMP-3 AND ROADWAY STANDARD DRAWING 1101.01, SHEET 1.

STEP 2:

INSTALL PORTABLE CONCRETE BARRIER ON EXISTING ROADWAY (SEE TMP-3).

STEP 3:

WHILE TRAFFIC IS MAINTAINED ON THE EXISTING ROADWAY, CONSTRUCT PORTION OF THE PROPOSED CULVERT AND ROADWAY THAT CAN BE CONSTRUCTED AWAY FROM TRAFFIC. CONSTRUCT ROADWAY PAVEMENT AT LEAST THRU THE INTERMEDIATE COURSE (SEE TMP-3).

PHASE II

STEP 1:

BEGIN PLACEMENT OF ANCHORED CONCRETE BARRIER ALONG CONSTRUCTED SECTION OF PROPOSED ROADWAY AND INSTALLATION OF TEMPORARY PAVEMENT MARKINGS THAT CAN BE INSTALLED AWAY FROM TRAFFIC.

STEP 2:

IN A CONTINUOUS OPERATION CONSTRUCT PROPOSED TIE-INS TO EXISTING ROADWAY AND SWITCH TRAFFIC ONTO THE REALIGNED ROADWAY.

STEP 3:

WITH TRAFFIC ON SECTION OF NEW ROADWAY, REMOVE EXISTING BRIDGE, AND CONSTRUCT REMAINDER OF CULVERT AND ROADWAY.

STEP 4:

UPON COMPLETION OF ALL OTHER OPERATIONS, OR AS DIRECTED BY THE ENGINEER, PAVE THE SURFACE COURSE AND INSTALL FINAL PAVEMENT MARKINGS.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED:_____ DATE:_____

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29416 LINDSY L. WATSON
5/16/13

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

GENERAL NOTES & PHASING

5/31/2013
U:\Union\366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_02_ GENERALNOTES_PHASING.dgn
cculler

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	TMP-2A

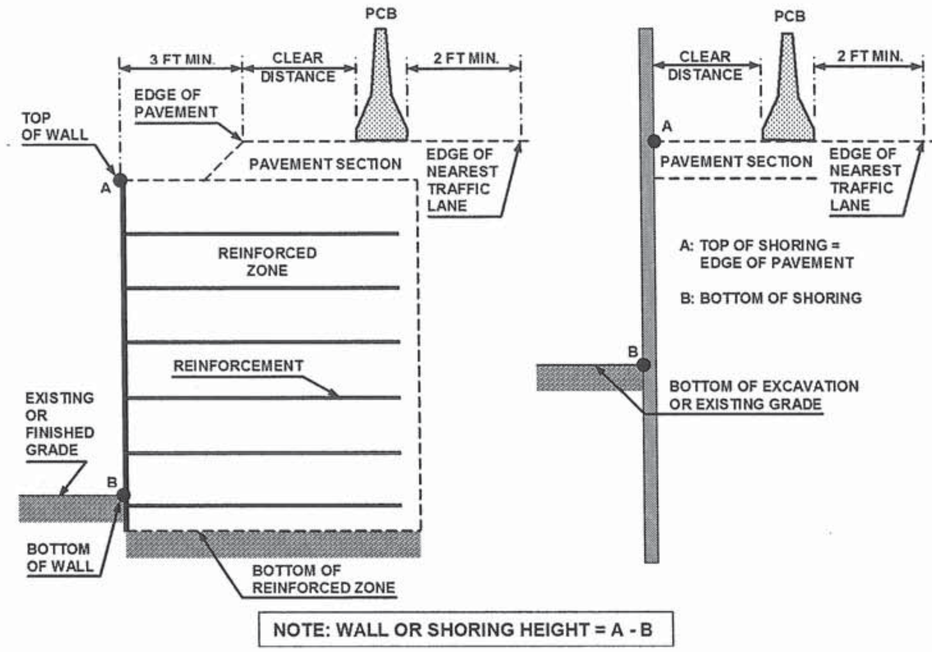


FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph <30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

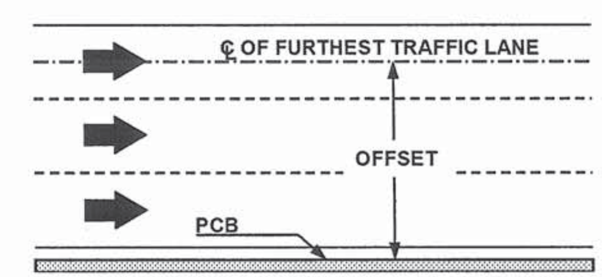


FIGURE B

APPROVED: ______ DATE: ______

SEAL

PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

5/3/2013
U:\Union366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_02A_Standard temporary shoring drawing.dgn
rcullen

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	TMP-2B

TEMPORARY SHORING LOCATION NO. 1
-L- 11+77± TO -L- 12+13±

ESTIMATED QUANTITY = 234 SF

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISIONS.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

LIMITED SUBSURFACE INFORMATION IS AVAILIBLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 11+77, 11.8 FT LEFT, TO STATION 12+13, 15.1 FT LEFT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 11+77, 11.8 FT LEFT, TO STATION 12+13, 15.1 FT LEFT WILL NOT PENETRATE BELOW ELEVATION 605 FT (±) DUE TO WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 11+77, 11.8 FT LEFT, TO STATION 12+13, 15.1 FT LEFT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 11+77, 11.8 FT LEFT, TO STATION 12+13, 15.1 FT LEFT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

TEMPORARY SHORING LOCATION NO. 2
-L- 12+32± TO -L- 12+52±

ESTIMATED QUANTITY = 90 SF

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISIONS.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

LIMITED SUBSURFACE INFORMATION IS AVAILIBLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 12+32, 14.7 FT LEFT, TO STATION 12+52, 14.8 FT LEFT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 12+32, 14.7 FT LEFT, TO STATION 12+52, 14.8 FT LEFT WILL NOT PENETRATE BELOW ELEVATION 605 FT (±) DUE TO WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 12+32, 14.7 FT LEFT, TO STATION 12+52, 14.8 FT LEFT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 12+32, 14.7 FT LEFT, TO STATION 12+52, 14.8 FT LEFT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

*THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A TEMPORARY SHORING RECOMMENDATION FROM AMEC E&I, INC. THE DOCUMENT WAS SUBMITTED TO STANTEC ON MAY 6, 2013 BY PROFESSIONAL ENGINEERS SHARAT GOLLAMUDI, LICENSE # 38977 AND GARY R. TAYLOR, LICENSE # 18580.

TEMPORARY SHORING LOCATION NO. 3
-L- 12+05± TO -L- 12+33±

ESTIMATED QUANTITY = 56 SF

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISIONS.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 12+05, 7.1 FT LEFT, TO STATION 12+33, 9.3 FT LEFT. SEE STANDARD DRAWING NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

TEMPORARY SHORING LOCATION NO. 4
-L- 11+84± TO -L- 12+06±

ESTIMATED QUANTITY = 99 SF

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISIONS.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 11+84, 5.1 FT LEFT, TO STATION 12+06, 5.1 FT LEFT. SEE STANDARD DRAWING NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS,WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

TEMPORARY SHORING LOCATION NO. 5
-L- 12+34± TO -L- 12+55±

ESTIMATED QUANTITY = 95 SF

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISIONS.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 12+34, 5.1 FT LEFT, TO STATION 12+55, 5.1 FT LEFT. SEE STANDARD DRAWING NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED:_____ DATE:_____

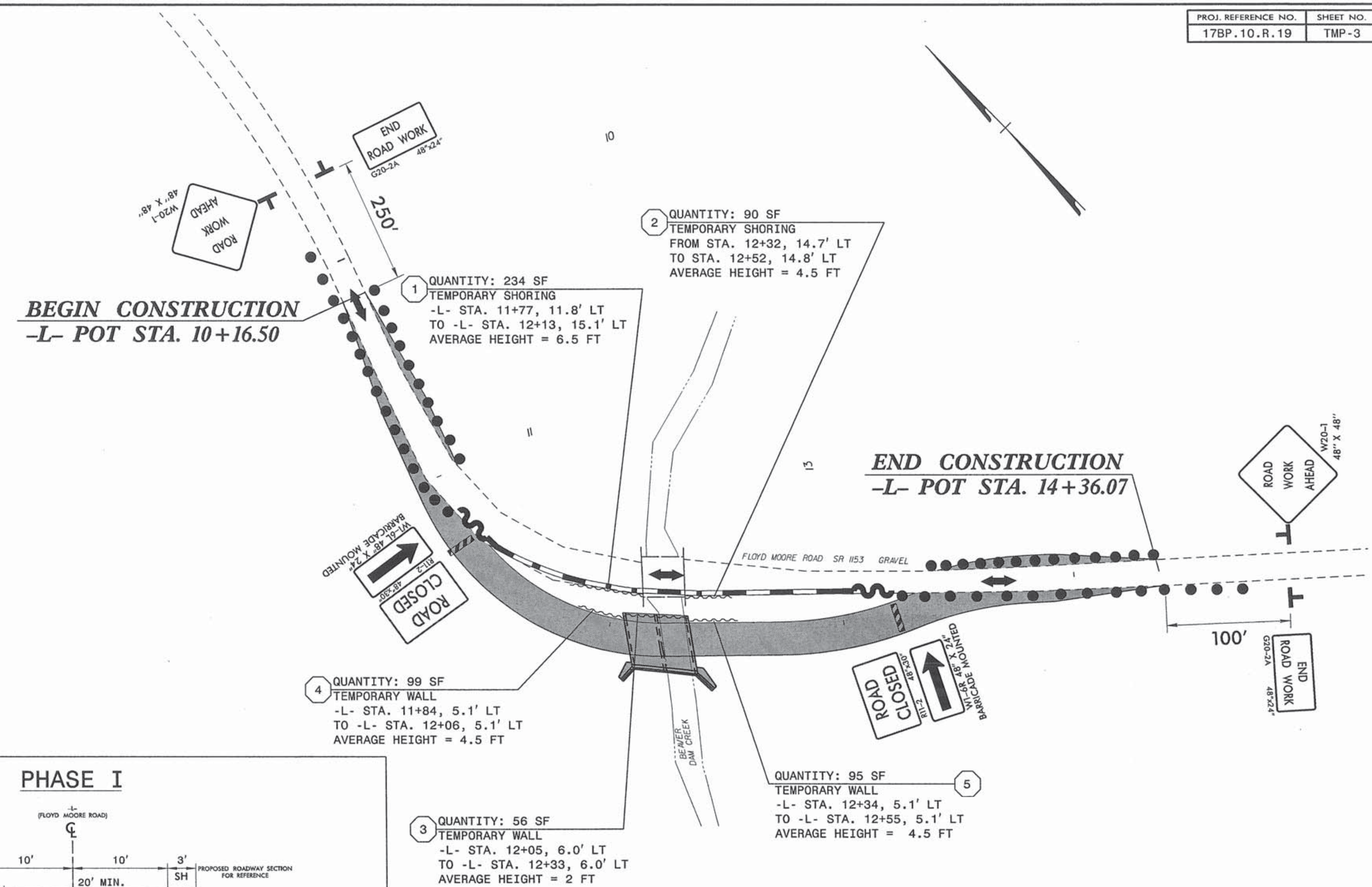
SEAL NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER BETSY L. WATSON
5/15/13

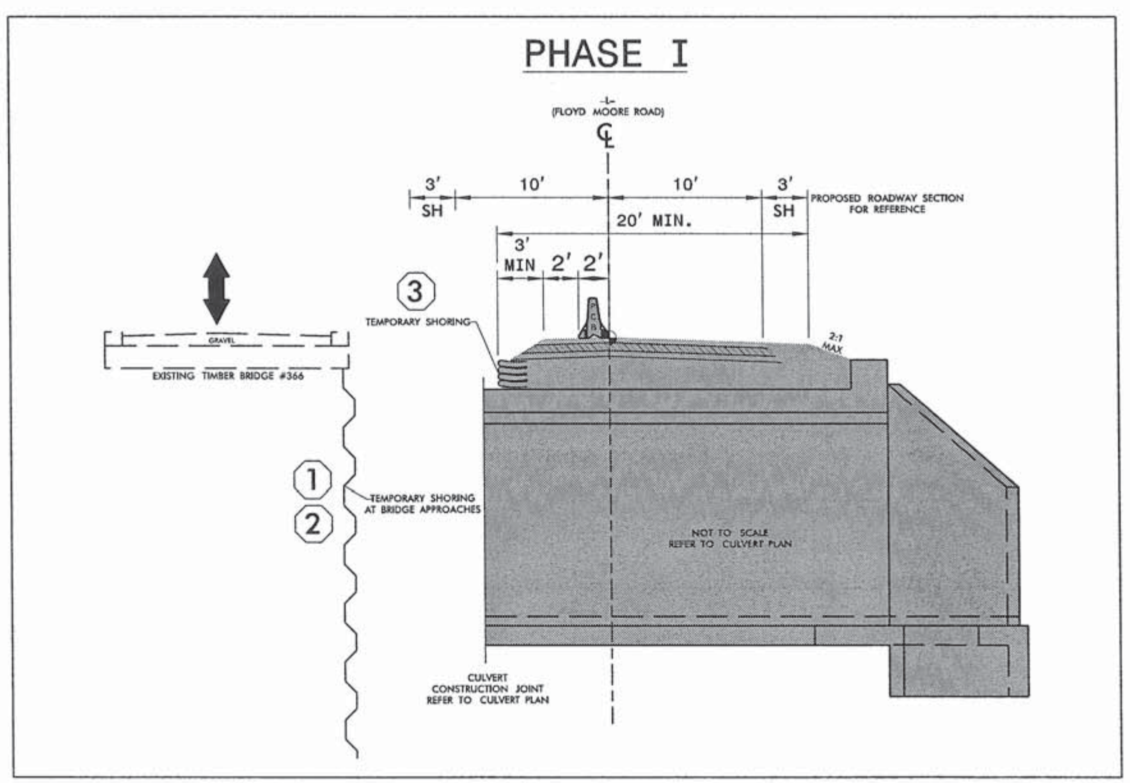
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TEMPORARY SHORING NOTES

5/15/2013
U:\Union366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_02B_TEMPORARY SHORING NOTES.dgn
rawilliams

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	TMP-3





Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED:____________ DATE:________

SEAL

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BETSY L. WATSON

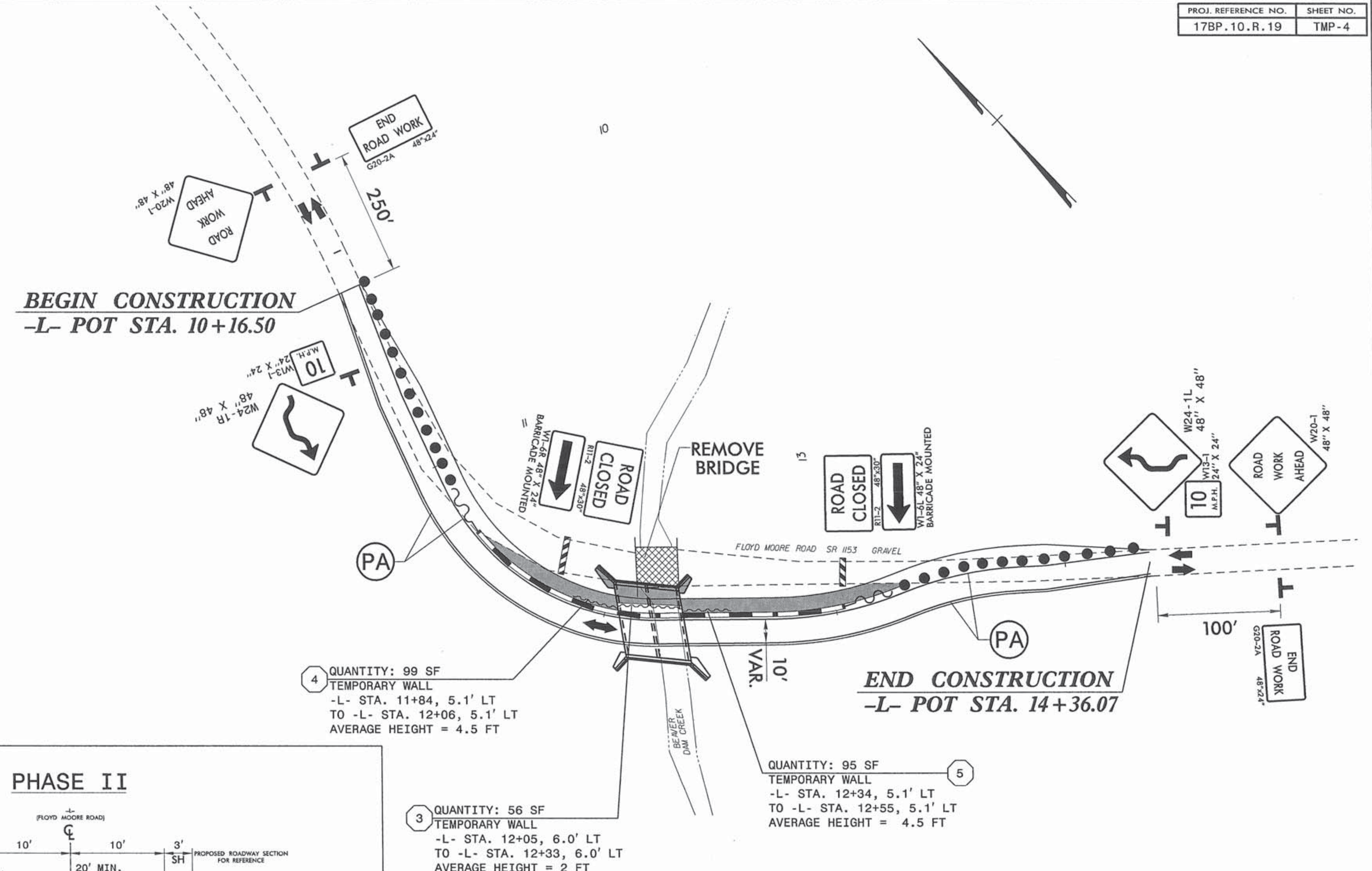
5/6/13

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

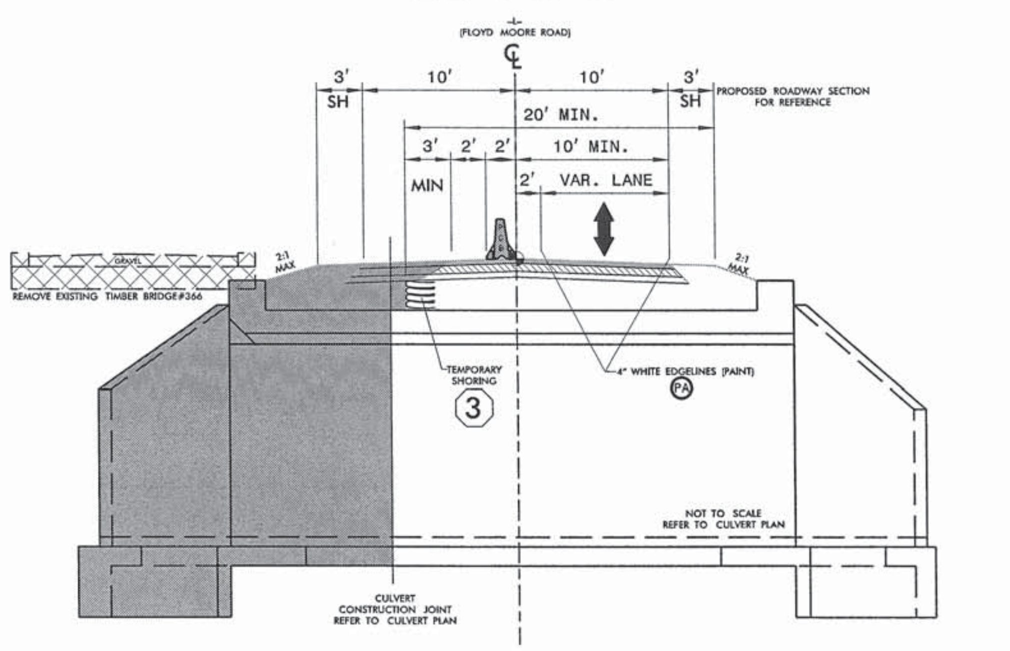
PHASE I

5/3/2013
U:\Union366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_03_PHASE_I_DETAILS.dgn
rcullen

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	TMP-4



PHASE II



TEMPORARY PAVEMENT MARKING SCHEDULE		
SYMBOL	DESCRIPTION	TYPE
PA	WHITE EDGELINE (4")	PAINT

NOTE: IF TEMPORARY PAVEMENT MARKINGS ARE PLACED ON THE FINAL SURFACE COURSE IN A NON-FINAL PATTERN, USE COLD APPLIED PLASTIC (TYPE IV) OR PAINT WITH REMOVAL AS APPROVED BY THE ENGINEER.

Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED:____________ DATE:______

SEAL

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BETSY L. WATSON

5/6/13

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASE II

5/3/2013
U:\Union366\Traffic\TrafficControl\TCP\Plansheets\17BP.10.R.19_TC_TMP_04_PHASE_II_DETAILS.dgn
rcullen

PROJECT: WBS 17BP.10.R.19

CONTRACT:

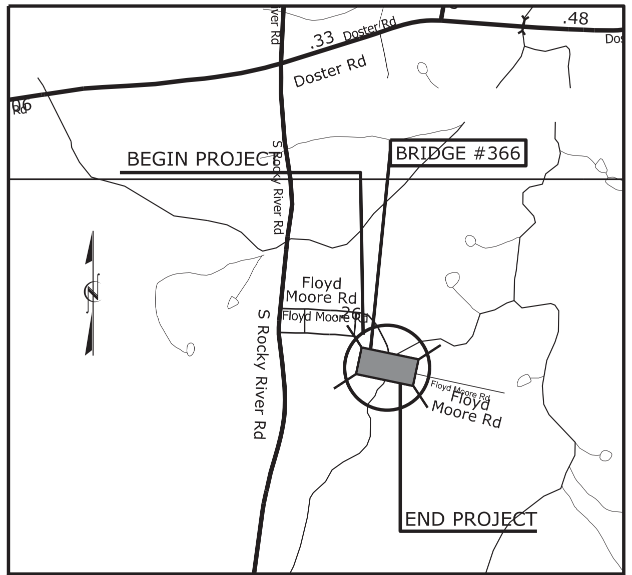
T.I.P. NO.	SHEET NO.
17BP.10.R.19	UO-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

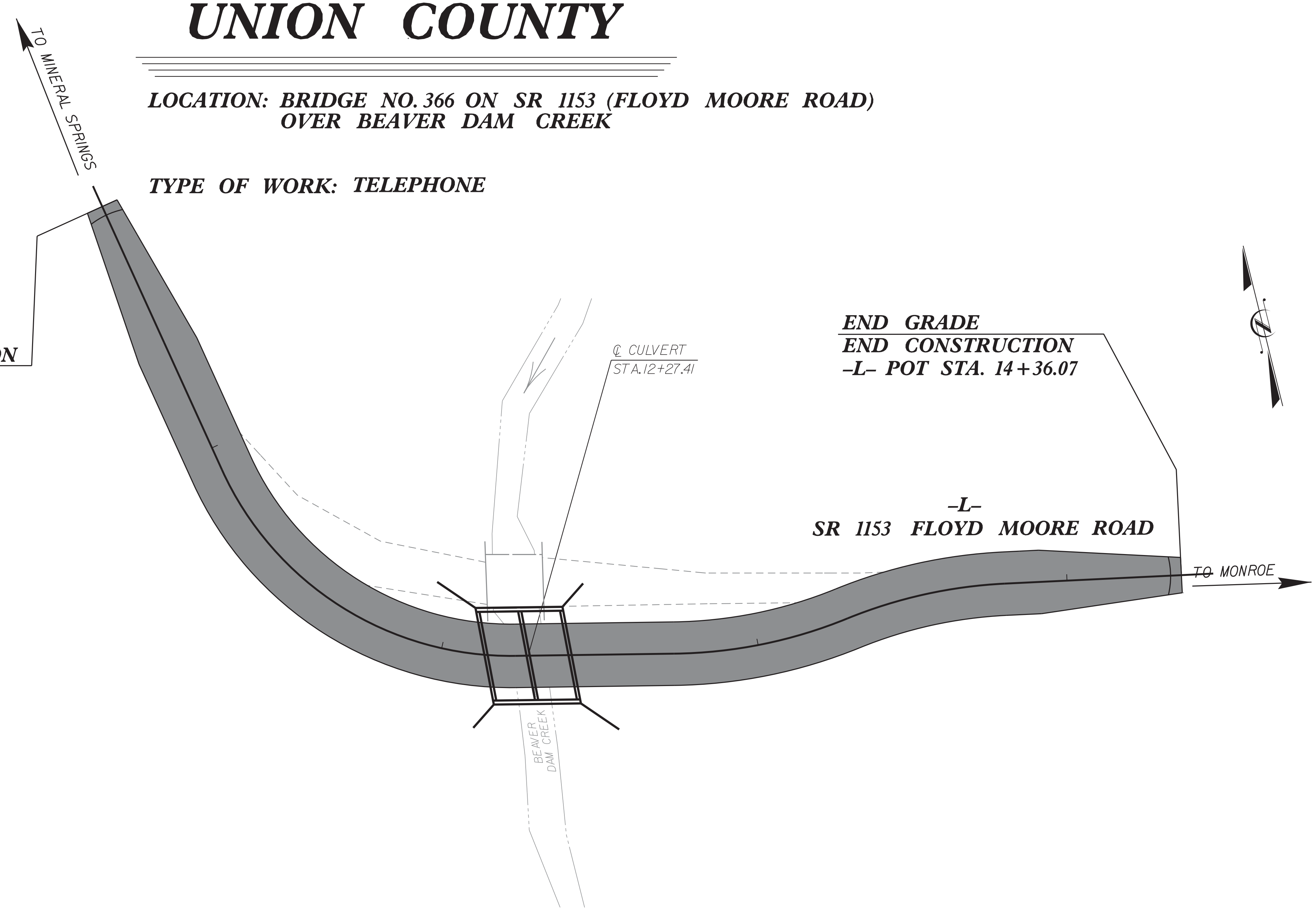
UNION COUNTY

LOCATION: BRIDGE NO. 366 ON SR 1153 (FLOYD MOORE ROAD) OVER BEAVER DAM CREEK

TYPE OF WORK: TELEPHONE



VICINITY MAP



GRAPHIC SCALES

20 10 0 20 40

PLANS

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITY BY OTHERS PLAN SHEET

UTILITY OWNERS ON PROJECT

(1) TELEPHONE - FRONTIER COMMUNICATIONS

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26960 REECE M. SCHULER

V&M
Vaughn & Melton
Consulting Engineers
3089-L Beam Road
Charlotte, NC 28217
704-357-0488

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PREPARED FOR THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E.	UTILITIES SECTION ENGINEER
Xxxxx Xxxxx, P.E.	UTILITIES SQUAD LEADER PROJECT ENGINEER
Reece Schuler, PE	UTILITIES PROJECT DESIGNER

09/08/99

$$$$SYSTIME$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
WBS 17BP.10.R.19	U0-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Vaughn & Melton
Consulting Engineers
Charlotte, North Carolina 704-357-0488
Asheville, North Carolina 828-253-2796
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

REVISIONS
8/17/99

BEGIN CONSTRUCTION
-L- POT STA. 10+16.50

END CONSTRUCTION
-L- POT STA. 14+36.07

ABANDON

REMOVE

PROP U/G TEL CABLE

-BL-2

-BL-3

EXISTING R/W

4SBW

DOUBLE 12'X5' BOX CULVERT LENGTH 28'

℄ CULVERT STA.12+27.41

FLOYD MOORE ROAD SR 1153 GRAVEL

S 10° 37' 51.4" E

S 78° 53' 12.3" E

S 76° 54' 01.0" E

PC Sta. 11+07.57

PT Sta. 12+23.35

PC Sta. 12+73.35

PRC Sta. 13+29.44

PT Sta. 13+60.32

BEAVER DAM CREEK

GATE

+21.00 EXIST. R/W
+45.00 40' RT
+50.00 50.00'
+01.00 36' RT
+00.00 50.00'
+50.00 35' RT
+50.00 45.00'
+02.00 38' RT
+00.00 65.00'
+50.00 75.00'
+00.00 30.00'
+50.00 70.00'
+50.00 90.00'
+00.00 50.00'
+66.00 38' RT
+00.00 40.00' 45° TAPER
+50.00 EX. R/W
+30.00 EXIST. R/W
+03.00 34' RT
+00.00 45.00'
+50.00 45.00'
+50.00 EX. R/W

(1) MOORE TERRY L ET AL TERRY L MOORE
DB 4073 PG 666

(2) MOORE TERRY L & WIFE JUDY L
DB 0509 PG 251

(3) LEE ROBERT BRADFORD & PATRICIA M
DB 3268 PG 351

DATUM DESCRIPTION

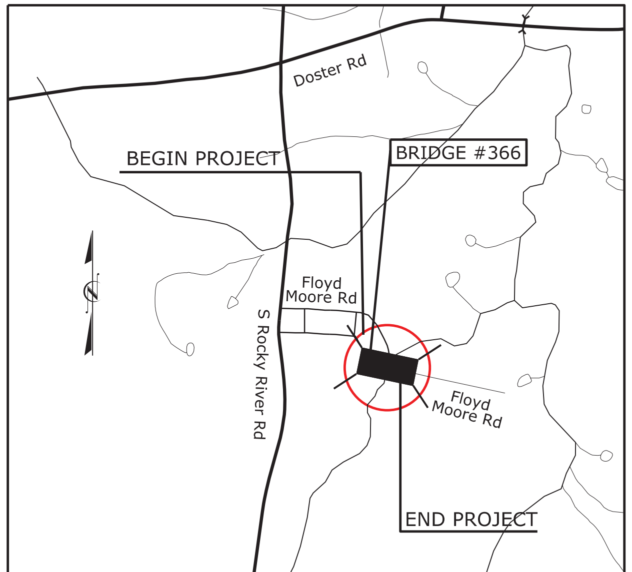
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 433407.073(ft) EASTING: 1515111.036(ft)
ELEVATION: 617.277(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999864
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STA. 14+29.78 IS
S 11°06'48" W 9.72 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

TIP PROJECT: 17BP.10.R.19

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.19	EC-1	4

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.10.R.19		PE
		ROW/UTIL.
		CONST.



VICINITY MAP

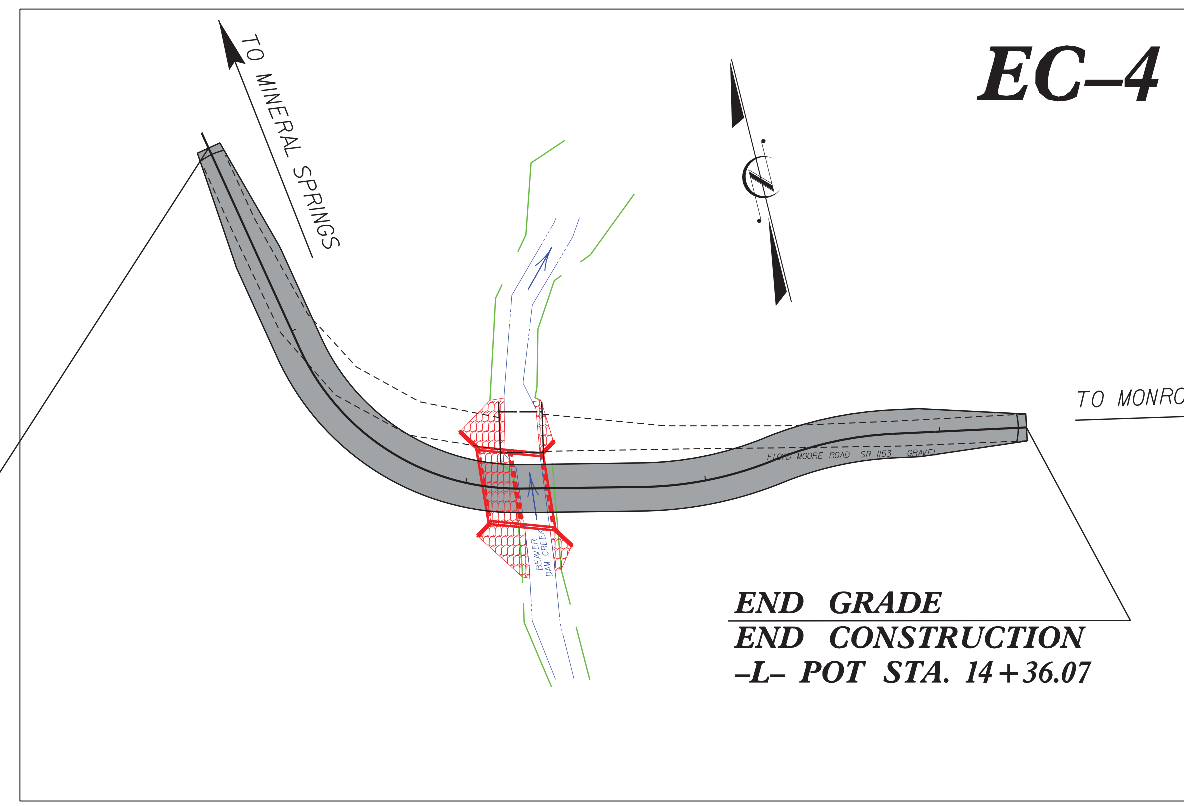
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

UNION COUNTY

LOCATION: BRIDGE NO. 366 ON SR 1153 (FLOYD MOORE ROAD) OVER BEAVER DAM CREEK

BEGIN CONSTRUCTION
-L- POT STA. 10+16.50



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle/ Coir Fiber Wattle	
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

GRAPHIC SCALES

20 10 0 20 40

PLANS

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

03:29:31 PM 03-08-2013 (-05'00' GMT)

NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER

AMEC LICENSE No.F-1253

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:

AMEC Environment & Infrastructure, Inc.
4021 Stirrup Creek Drive, Suite 100
Durham, North Carolina, 27703
NC Eng. License #: F-1253

amec

Tel. (919) 381-9900
Fax. (919) 381-9901
www.amec.com

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.02	Silt Basin Type B
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1631.01	Matting Installation
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
1634.01	Temporary Rock Sediment Dam Type A
1634.02	Temporary Rock Sediment Dam Type B
1635.01	Rock Pipe Inlet Sediment Trap Type A
1635.02	Rock Pipe Inlet Sediment Trap Type B
1640.01	Coir Fiber Baffle
1645.01	Temporary Stream Crossing

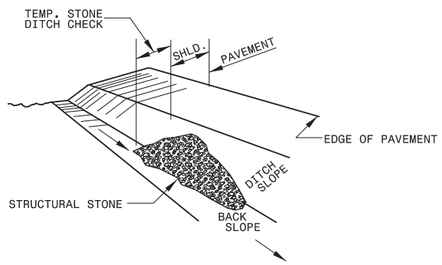
PROJECT REFERENCE NO.	SHEET NO.
17BP.10.R.19	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

03:30:15 PM EDT (-0400 GMT)

NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L WINER

AMEC LICENSE No.F-1253

TEMPORARY ROCK SILT CHECK TYPE 'B' DETAIL

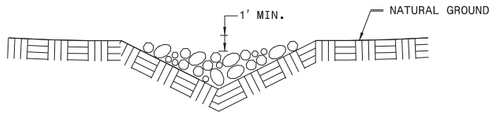


ISOMETRIC VIEW

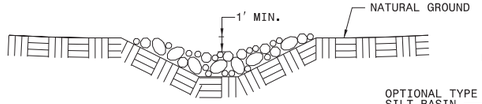
NOTES:

USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.

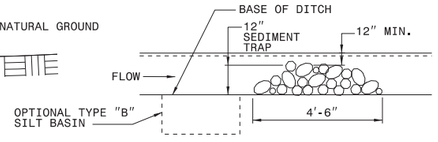
THE ENGINEER MAY DIRECT THE OPTION OF CLASS "A" STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.



CROSS SECTION VEE DITCH

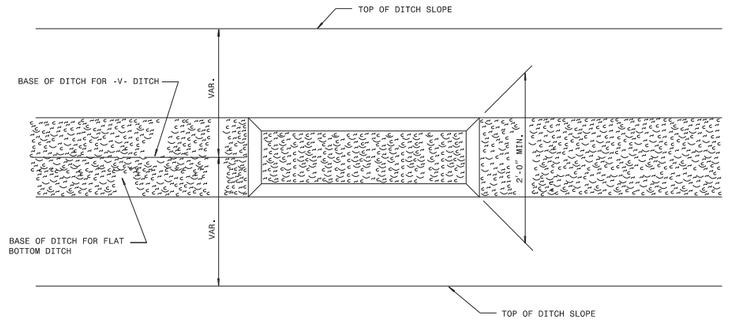


CROSS SECTION TRAPEZOIDAL DITCH

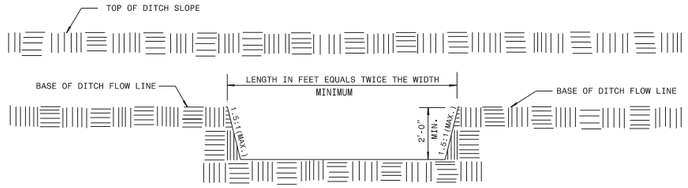


ELEVATION VIEW

SILT BASIN 'B' DETAIL

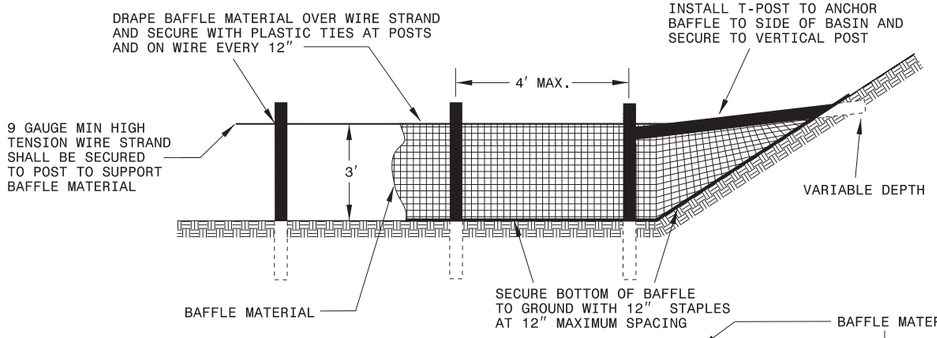


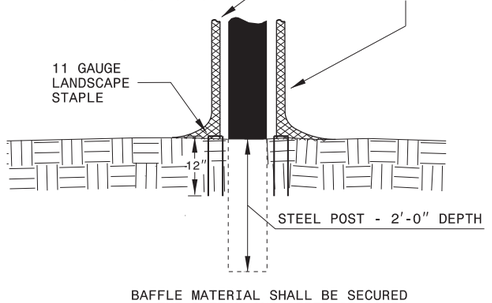
PLAN



ELEVATION

COIR FIBER BAFFLE DETAIL





BAFFLE MATERIAL SHALL BE SECURED TO THE BOTTOM AND SIDES OF BASIN USING 12" LANDSCAPE STAPLES

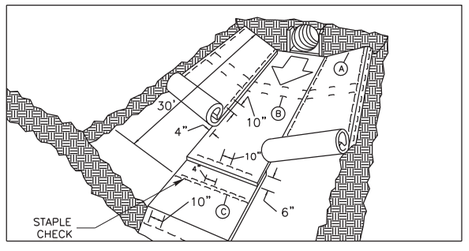
NOTES:

1. INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF ¼ THE BASIN LENGTH.

2. TWO(2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF 1/3 THE BASIN LENGTH.

3. TOP HEIGHT OF COIR FIBER BAFFLES SHALL NOT BE BELOW BASE OF EMERGENCY SPILLWAY ELEVATION.

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

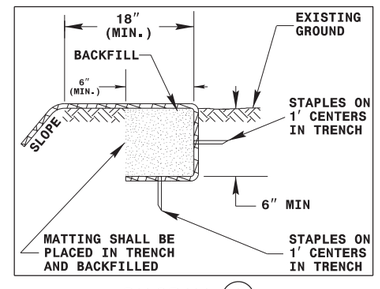
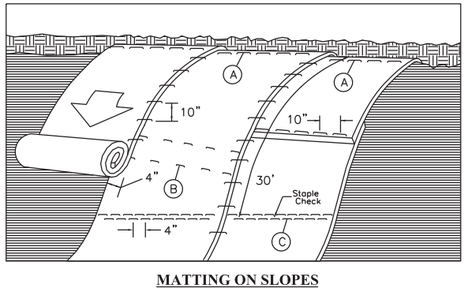


DIAGRAM (A)



MATTING ON SLOPES

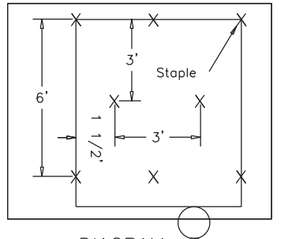


DIAGRAM (B)

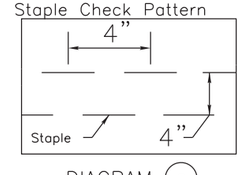


DIAGRAM (C)

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER

AMEC LICENSE No.F-1253

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (FOR SLOPE STABILIZATION)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+17	12+03	LT	140
4	-L-	12+33	14+36	LT	140
4	-L-	10+17	12+10	RT	300
4	-L-	12+36	14+36	RT	275
				SUBTOTAL	855
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					0
				TOTAL	855
				SAY	875

IMPERVIOUS LINER (FOR TEMP. DIVERSION DITCHES)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE
4	-L-	10+17	12+10	RT	300
4	-L-	12+36	14+36	RT	275
				SUBTOTAL	575
MISCELLANEOUS LINER TO BE INSTALLED AS DIRECTED BY THE ENGINEER					0
				TOTAL	575
				SAY	600

TEMPORARY SILT FENCE (FOR STOCK PILES)

SUBTOTAL	300 LF
ADDITIONAL FENCE TO BE INSTALLED	95 LF
TOTAL	395 LF
SAY	400 LF

SILT BAG

TOTAL	1

SPECIAL STILLING BASIN

TOTAL	1

PERMANENT SOIL REINFORCEMENT MAT (FOR TEMP. SILT DITCH STABILIZATION)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+16	11+60	LT	120
4	-L-	12+59	14+36	LT	170
4	-L-	10+29	11+97	RT	170
4	-L-	12+74	14+20	RT	140
				SUBTOTAL	600
		ADDITIONAL PSRM TO BE INSTALLED			0
				TOTAL	600
				SAY	625

COIR FIBER MATTING (STREAM BANK AT TEMP. DIKE)

SUBTOTAL	21
ADDITIONAL MATTING TO BE INSTALLED	0
TOTAL	21
SAY	25

CLASS II RIP RAP (WING WALLS AND CULVERT)

SUBTOTAL	87
ADDITIONAL STONE TO BE INSTALLED	0
TOTAL	87
SAY	90 TON

GEOTEXTILE (BANKS AND FLOODPLAIN BENCHES)

SUBTOTAL	1100
ADDITIONAL GEOTEXTILE TO BE INSTALLED	0
TOTAL	1100
SAY	1100 SF

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0RJ9	EC-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

03:30:25 PM 05'00' GMT)

NORTH CAROLINA
PROFESSIONAL
SEAL
29185
ENGINEER
RICHARD L. HINER

AMEC LICENSE No.F-1253

NC GRID
NAD 83/NSRS 2007

3
ROBERT B AND
PATRICIA M LEE
DB 3268 PG 351

IMPERVIOUS DIKE

INSTALL PSRM IN THE PROPOSED DITCH LINE.

TEMP. SILT DITCH(TYP.)
D=1.0' w/2:1 SIDE SLOPES

TEMP. SILT BASIN 'B'
26 x 13 x 3
ID A.1

TEMP. SILT BASIN 'B'
26 x 13 x 3
ID A.3

TEMP. DIVERSION DITCH
w/IMPERVIOUS LINER
TO DIVERT OFFSITE WATER
AWAY FROM PROJECT
D=1.5' w/2:1 SIDE SLOPES(TYP.)

CONTRACTOR TO
PROTECT LARGE TREE

TEMP. ROCK SILT CHECK TYPE 'B'
WEIR HEIGHT=1.5'(TYP.)

TEMPORARY SILT
FENCE

INSTALL PSRM IN THE
PROPOSED DITCH LINE.

FLOYD MOORE ROAD SR 1153 GRAVEL

EXISTING R/W

TEMP. SILT DITCH(TYP.)
D=1.0' w/2:1 SIDE SLOPES

TEMP. ROCK SILT CHECK TYPE 'B'
WEIR HEIGHT=1.5'(TYP.)

SUSPENDED BYPASS PIPE PER NCDOT BMPs FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES SEC. 5.2.2 (AUGUST 2003), CONTRACTOR SHALL DEWATER SUMP BY PUMPING TO A SILT BAG AND DISCHARGE TO NEAREST SEDIMENT BASIN

TEMP. SILT BASIN 'B'
30 x 15 x 3
ID A.2

IMPERVIOUS DIKE

TEMP. SILT BASIN 'B'
30 x 15 x 3
ID A.4

Place Matting for Erosion Control on Slope as Work Allows.

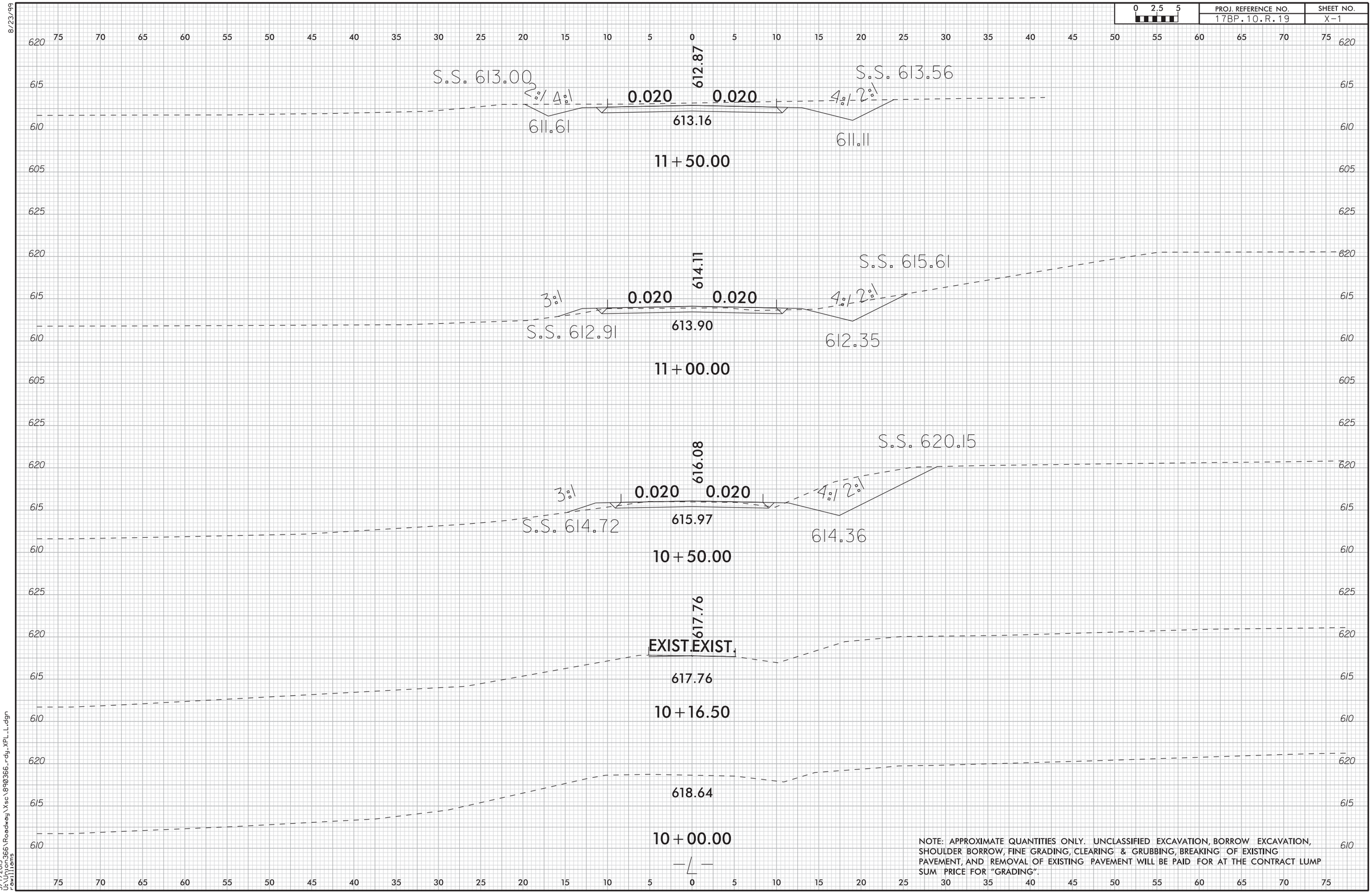
1
TERRY L MOORE ET AL
DB 4073 PG 666
DB 509 PG 251

2
TERRY L MOORE ET AL
DB 4073 PG 666
DB 509 PG 251

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.R.19	X-1



NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING & GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

5/7/2013
D:\U0366\Roadway\Xsc\890366_rdy_XPL_LL.dgn
rawilliams

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.R.19	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

625 620 615 610 605

614.57

S.S. 614.30 — 0.020 — 0.020 — S.S. 616.41

4:1 2:1

614.60

612.81

13+50.00

620 615 610 605

613.16

S.S. 613.31 — 2:1/4:1 — 0.020 — 0.020 — 4:1 2:1 — S.S. 612.49

612.75

611.90

610.99

13+00.00

620 615 610 605

612.40

S.S. 612.70 — 2:1/4:1 — 0.020 — 0.020 — 4:1 2:1 — S.S. 611.84

612.33

611.14

610.14

12+50.00

620 615 610 605

612.30

S.S. 612.84 — 2:1/4:1 — 0.020 — 0.020 — 4:1 2:1 — S.S. 611.94

611.86

611.04

610.44

12+00.00

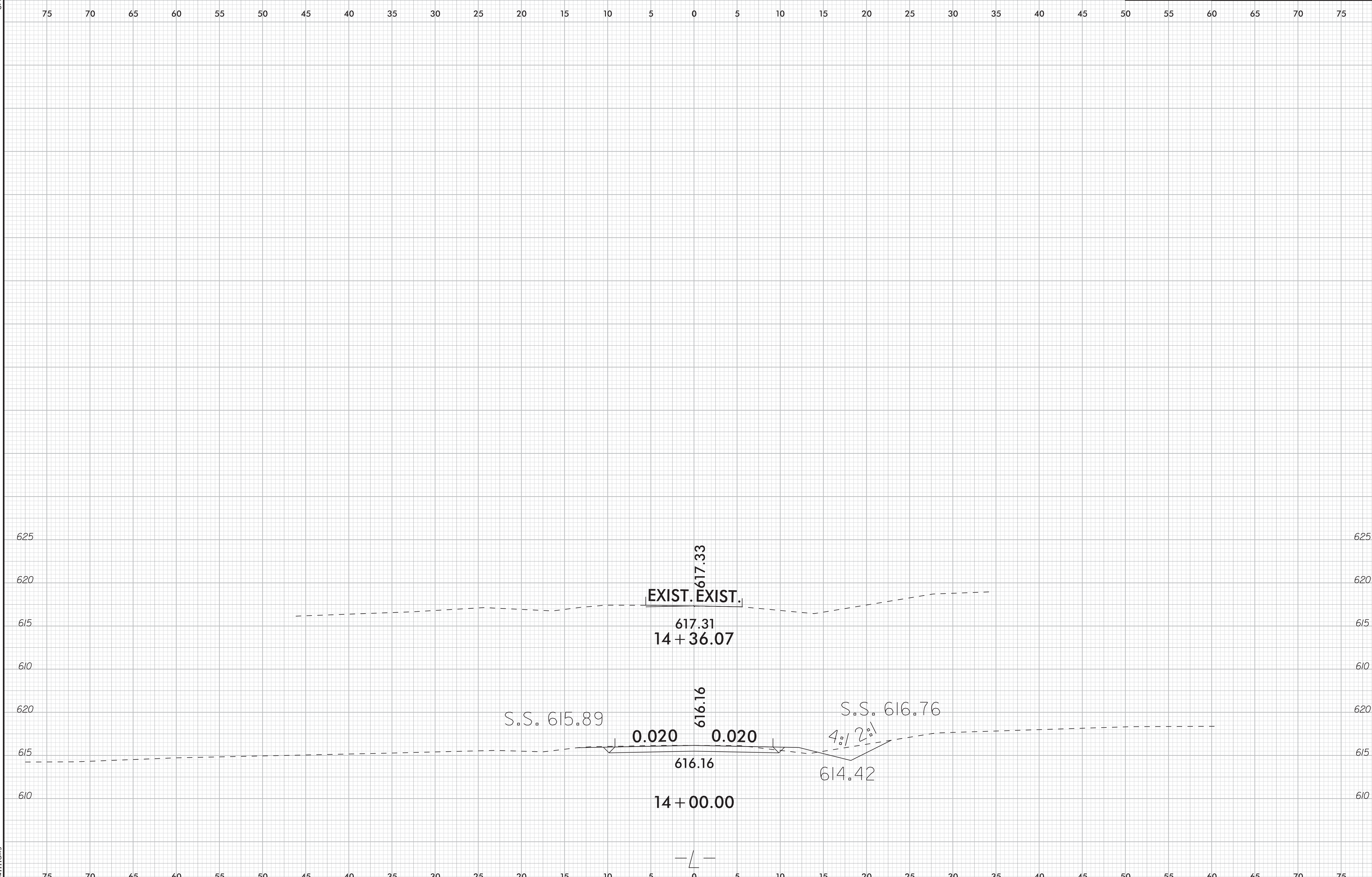
—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

5/7/2003
U:\Corp366\Roadway\Xsc\890366-rdy_XPL_L.dgn
rawilliams

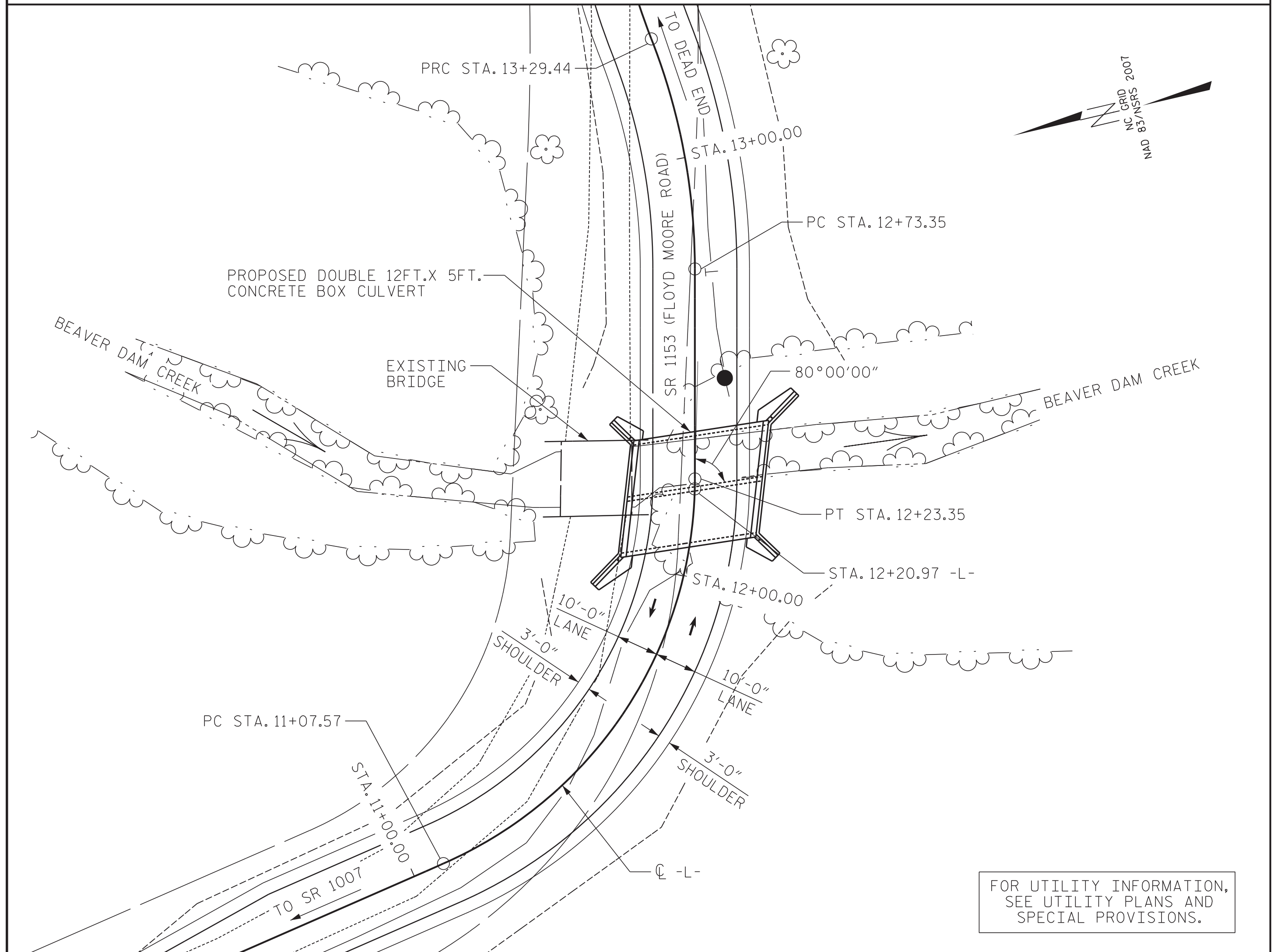
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
17BP.10.R.19	X-3

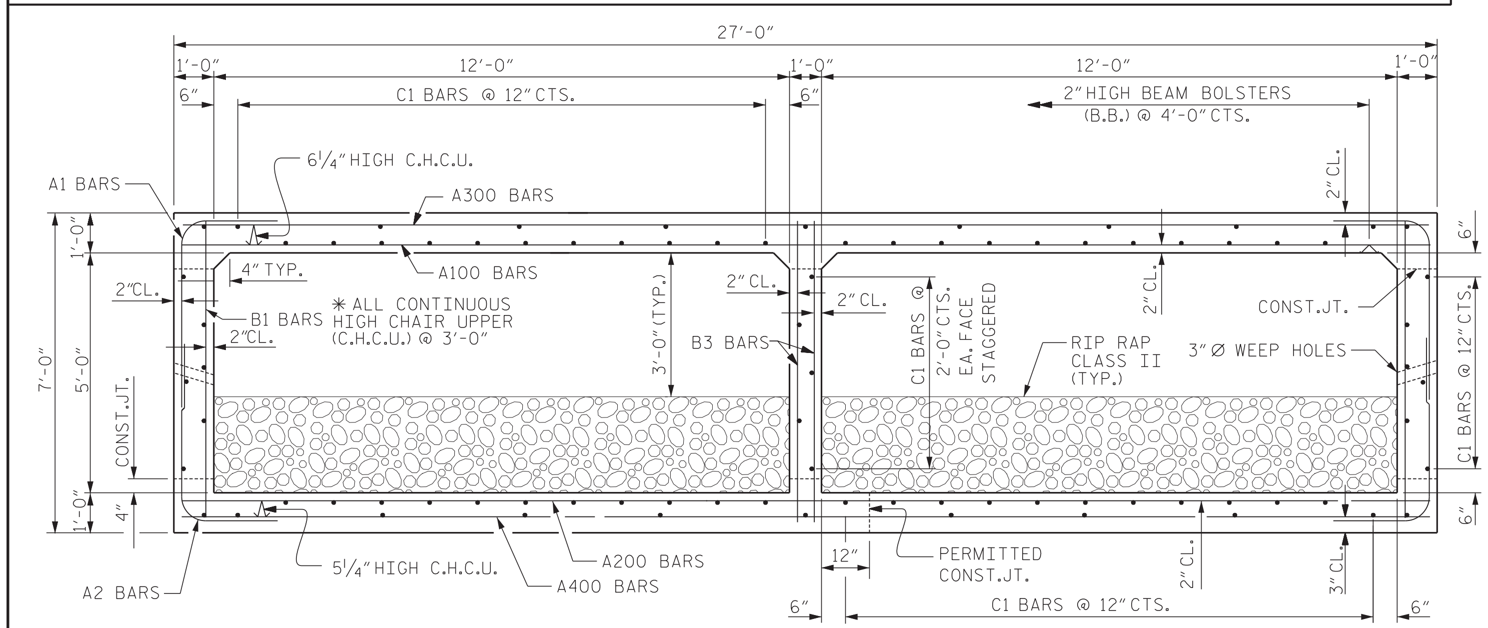


5/7/2013
U:\Union366\Roadway\Xsc\890366_rdy_XPL_L.dgn
rwilliams

BM: BL-2 MONUMENT AT -L- STA. 11+78.53, 10.24' RT, EL. 612.68



LOCATION SKETCH



RIGHT ANGLE SECTION OF BARREL

THERE ARE 83 "C" BARS IN SECTION OF BARREL.
(LOOKING DOWNSTREAM)

DRAWN BY :	JY	DATE :	10/12/12
CHECKED BY :	WPM	DATE :	11/07/12

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

HYDRAULIC DATA

DESIGN DISCHARGE	= 650 CFS
FREQUENCY OF DESIGN FLOOD	= 10 YRS.
DESIGN HIGH WATER ELEVATION	= 611.9
DRAINAGE AREA	= 2.1 SQ. MI.
BASIC DISCHARGE (Q100)	= 1,185 CFS
BASIC HIGH WATER ELEVATION	= 613.79

OVERTOPPING FLOOD DATA

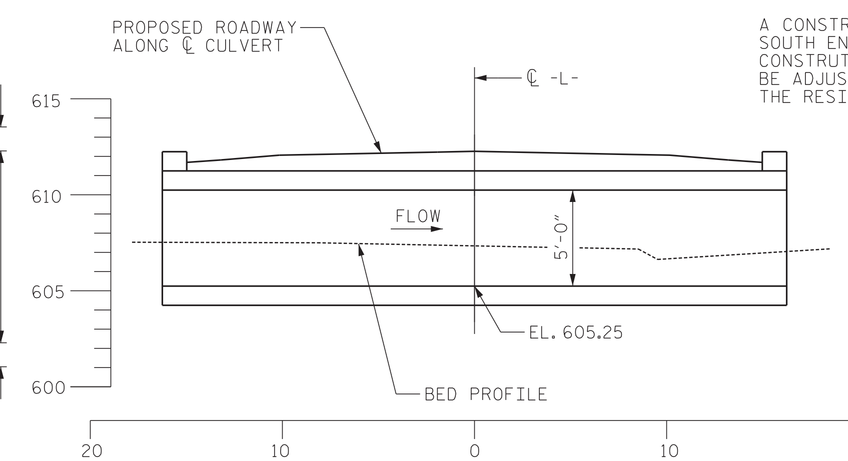
OVERTOPPING DISCHARGE	= 650 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 10 YRS.
OVERTOPPING FLOOD ELEVATION	= 611.9

GRADE DATA

GRADE POINT ELEVATION @ STA. 12+20.97 -L-	= 612.27
BED ELEVATION @ STA. 12+20.97 -L-	= 607.25
ROADWAY SLOPES	= 2:1 MAX

TOTAL STRUCTURE QUANTITIES

REMOVAL OF EXISTING STRUCTURE		LUMP SUM
CLASS A CONCRETE		
BARREL @ 2.57 CY/FT	83.4	C.Y.
WING ETC.	18.4	C.Y.
TOTAL	101.8	C.Y.
REINFORCING STEEL		
BARREL	18,700	LBS.
WINGS ETC.	744	LBS.
TOTAL	19,444	LBS.
FOUNDATION CONDITIONING MATERIAL	62	TONS
CULVERT EXCAVATION		LUMP SUM



PROFILE ALONG ℄ CULVERT

NOTES:

ASSUMED LIVE LOAD ----------HS20-44 OR ALTERNATE LOADING.

MAX. DESIGN FILL----------------- 5'

MIN. DESIGN FILL----------------- 6"

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

THIS BARREL STANDARD TO BE USED ONLY ON CULVERT ON 75° SKEW AND TO BE USED WITH STANDARD WING SHEET WITH THE SAME SKEW AND VERTICAL CLEARANCE.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY CONTRACTOR.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF A 18'-6" LONG SINGLE SPAN; A 17'-3" CLEAR ROADWAY WIDTH ON A TIMBER JOIST SUPPORTED TIMER DECK ON THE ABUTMENTS WITH TIMBER CAPS, POSTS, SILLS AND BULKHEADS AT THE PROPOSED STRUCTURE SITE, SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATION.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

EXCAVATE 1 FOOT BELOW CULVERT AND FOOTINGS AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH ARTICLE 414 OF THE STANDARD SPECIFICATIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

RIP RAP CLASS II IS INCLUDED IN THE QUANTITY SHOWN ON THE DRAINAGE PLANS.

A CONSTRUCTION JOINT SHALL BE CONSTRUCTED A MINIMUM OF 26'-11" FROM THE SOUTH END OF THE CULVERT AS SHOWN ON SHEET C-2 TO FACILITATE STAGED CONSTRUTION. THE REINFORCING STEEL DETAILED IN THE TABLE ON SHEET 2 SHALL BE ADJUSTED IN THE SHOP DRAWING REVIEW PROCESS SUBJECT TO THE APPROVAL OF THE RESIDENT ENGINEER.

PROJECT NO. 17BP.10.R.19
UNION COUNTY
STATION: 12+20.97 -L-

SHEET 1 OF 3 REPLACES BR. NO. 366

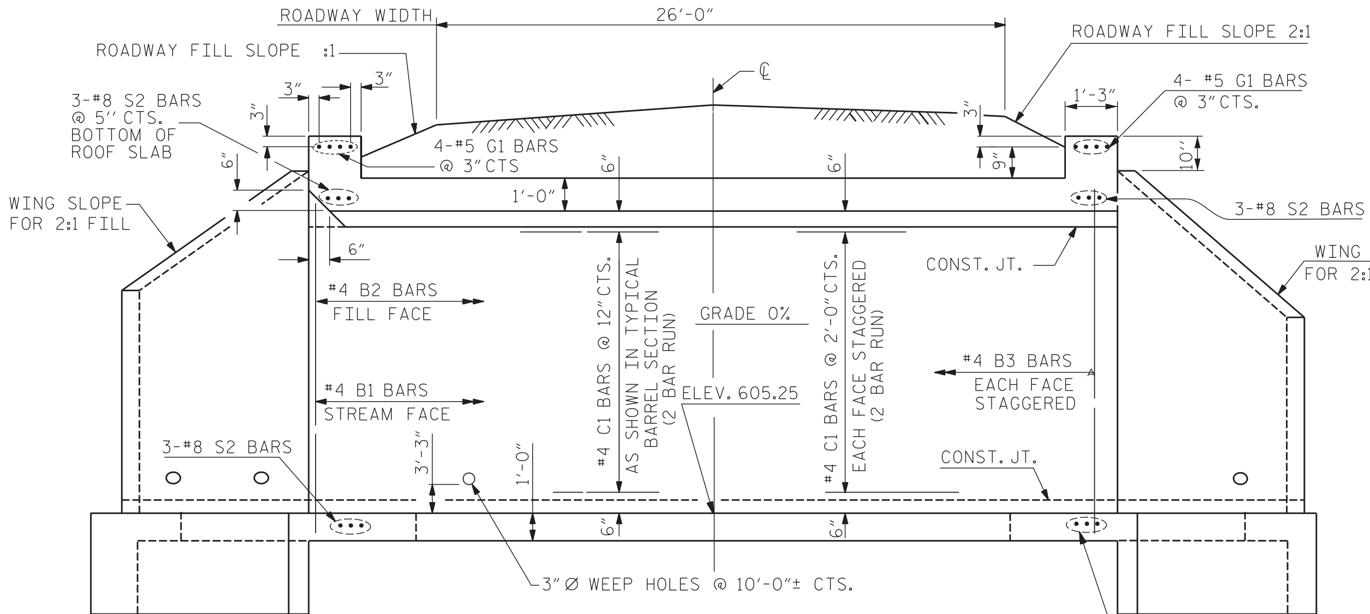
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 12 FT. X 5 FT.
CONCRETE BOX CULVERT
75° SKEW

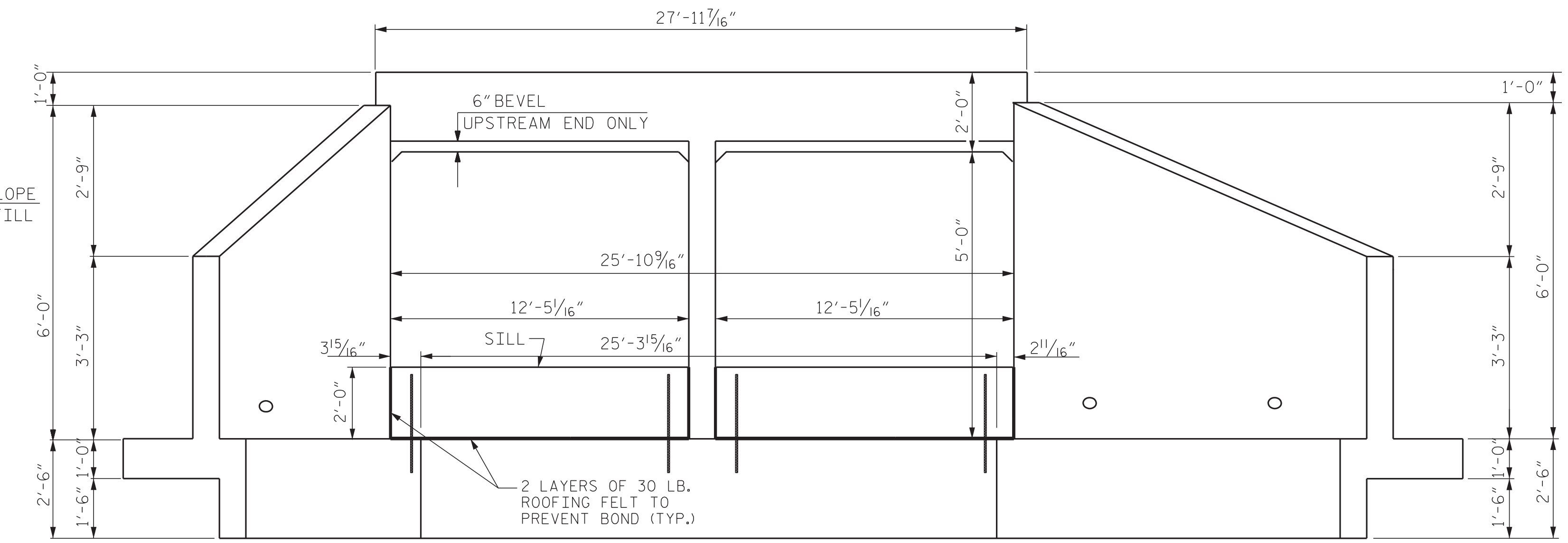
PREPARED IN THE OFFICE OF:
AMEC Environment & Infrastructure, Inc.
4021 Stirrup Creek Drive, Suite 100
Durham, North Carolina, 27703
NC Eng. License #: F-1253
amec
Tel. (919) 381-9900
Fax. (919) 381-9901
www.amec.com
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

08:5_ _ _2013 (-05'00')
NORTH CAROLINA PROFESSIONAL SEAL 038770 ENGINEER WILLIAM P. MALINOWSKI

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			3

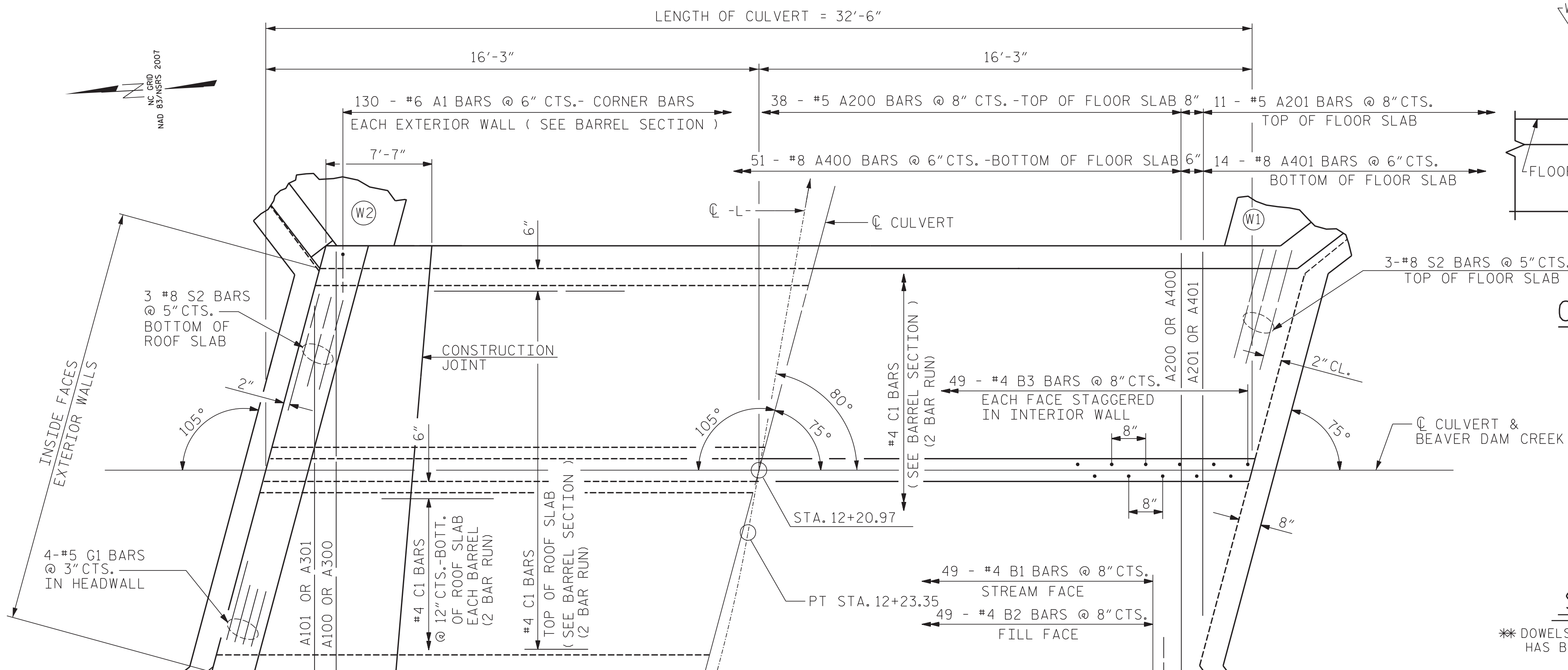


CULVERT SECTION NORMAL TO ROADWAY



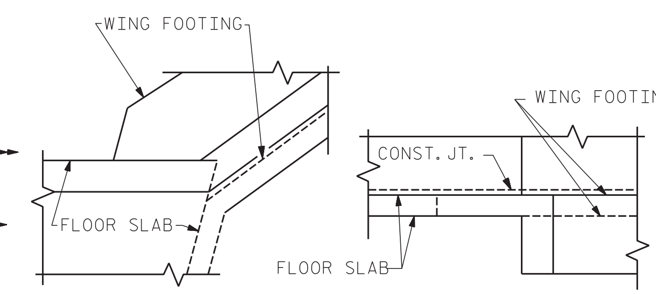
END ELEVATION NORMAL TO SKEW

(LOOKING DOWNSTREAM)

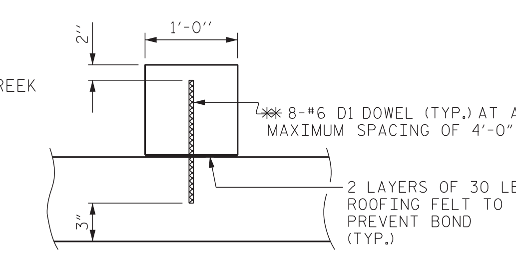


PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB

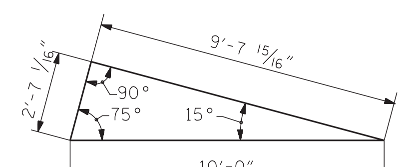


DETAIL
CONNECTION OF WING FOOTING AND FLOOR SLAB

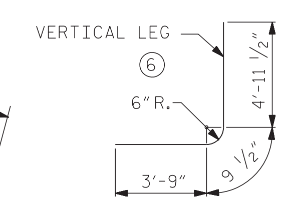


SECTION THROUGH SILL

** DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED. COST INCLUDED IN CULVERT



SKEW TRIANGLE



BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

* ORDER BARS A101, A201, A301, AND A401 FULL LENGTH. CUT IN FIELD AND USE THE REMAINING IN THE OTHER END OF THE CULVERT

BILL OF MATERIAL

	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	A1	130	#6	6	9'-6"	1855
	A2	130	#6	6	9'-6"	1855
	B1	98	#4	STR	6'-7"	431
	B2	98	#4	STR	6'-7"	431
	B3	98	#4	STR	6'-7"	431
	C1	166	#4	STR	17'-9"	1968
	A100	38	#6	STR	26'-8"	1522
*	A101	11	#6	STR	26'-8"	441
	A200	38	#5	STR	26'-8"	1057
*	A201	11	#5	STR	26'-8"	306
	A300	51	#6	STR	26'-8"	2043
*	A301	14	#6	STR	26'-8"	561
	A400	51	#8	STR	26'-8"	3631
*	A401	14	#8	STR	26'-8"	997
	G1	8	#5	STR	27'-7"	230
	S2	12	#8	STR	27'-7"	884
	D1	8	#6	STR	2'-7"	31

REINFORCING STEEL 18,700 LBS

CLASS A CONCRETE
BARREL 83.4 CY
SILLS 1.8 CY

PROJECT NO. 17BP.10.R.19

UNION COUNTY

STATION: 12+20.97 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 12 FT. X 5 FT. CONCRETE BOX CULVERT 75° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038770 WILLIAM P. MALINOWSKI

PREPARED IN THE OFFICE OF:
AMEC Environment & Infrastructure, Inc.
4021 Stirrup Creek Drive, Suite 100
Durham, North Carolina, 27703
NC Eng. License #: F-1253
amec
Tel. (919) 381-9900
Fax. (919) 381-9901
www.amec.com
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

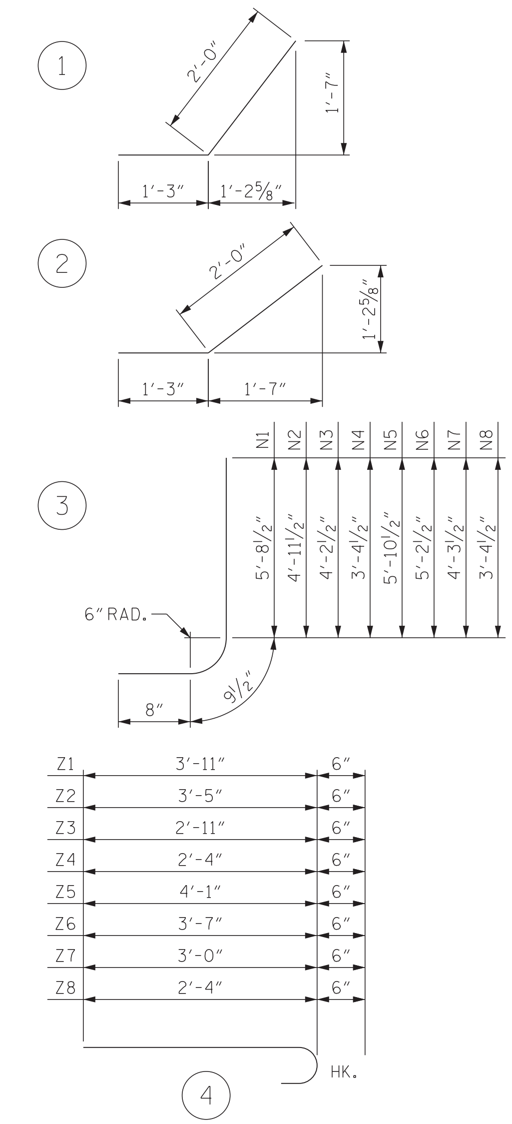
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			3

DRAWN BY : JY DATE : 10/12/12
CHECKED BY : WPM DATE : 11/07/12

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

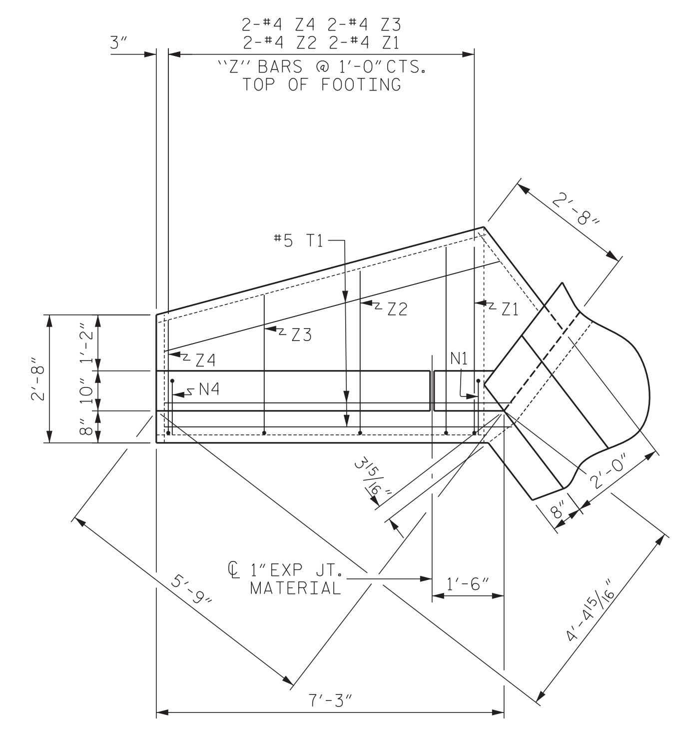


BILL OF MATERIAL

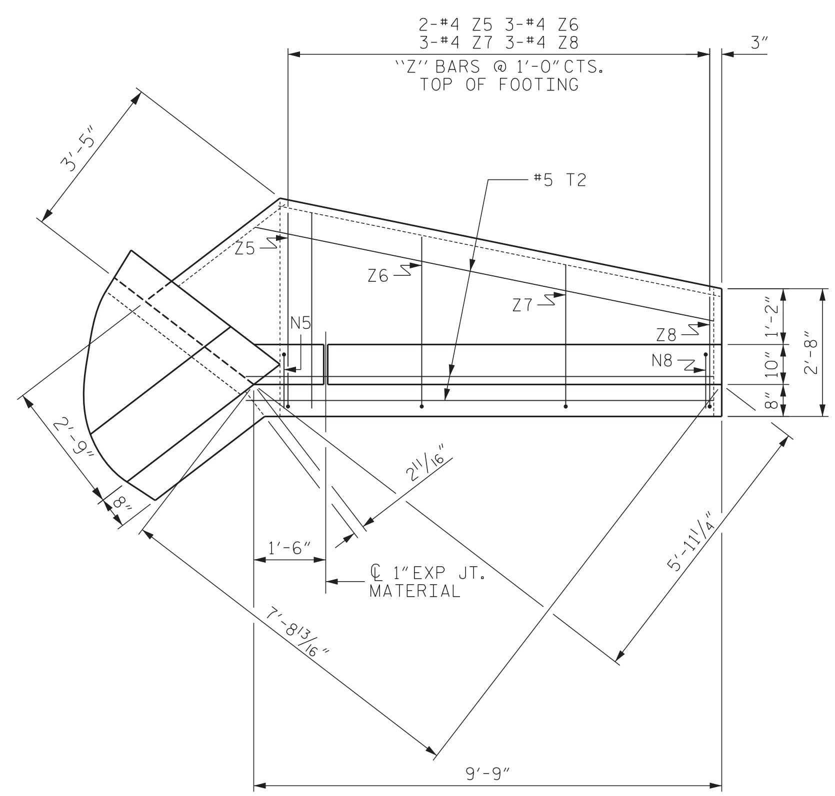
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	5'-4"	43
H2	4	#4	STR	4'-5"	12
H3	4	#4	STR	2'-0"	5
H4	24	#4	1	3'-3"	52
H5	4	#4	STR	5'-9"	15
H6	12	#4	STR	7'-10"	63
H7	4	#4	STR	6'-7"	18
H8	4	#4	STR	3'-3"	9
H9	24	#4	2	3'-3"	52
H10	4	#4	STR	8'-2"	22
N1	4	#4	3	7'-2"	19
N2	4	#4	3	6'-5"	17
N3	4	#4	3	5'-8"	15
N4	4	#4	3	4'-10"	13
N5	4	#4	3	7'-4"	20
N6	6	#4	3	6'-8"	27
N7	6	#4	3	5'-9"	23
N8	6	#4	3	4'-10"	19
T1	6	#5	STR	7'-3"	45
T2	6	#5	STR	9'-9"	61
V1	4	#4	STR	5'-2"	14
V2	4	#4	STR	4'-5"	12
V3	4	#4	STR	3'-7"	10
V4	4	#4	STR	2'-10"	8
V5	4	#4	STR	5'-3"	14
V6	6	#4	STR	4'-7"	18
V7	6	#4	STR	3'-8"	15
V8	6	#4	STR	2'-10"	11
Z1	4	#4	4	4'-5"	12
Z2	4	#4	4	3'-11"	10
Z3	4	#4	4	3'-5"	9
Z4	4	#4	4	2'-10"	8
Z5	4	#4	4	4'-7"	12
Z6	6	#4	4	4'-1"	16
Z7	6	#4	4	3'-6"	14
Z8	6	#4	4	2'-10"	11

REINFORCING STEEL FOR 4 WINGS — 744 LBS

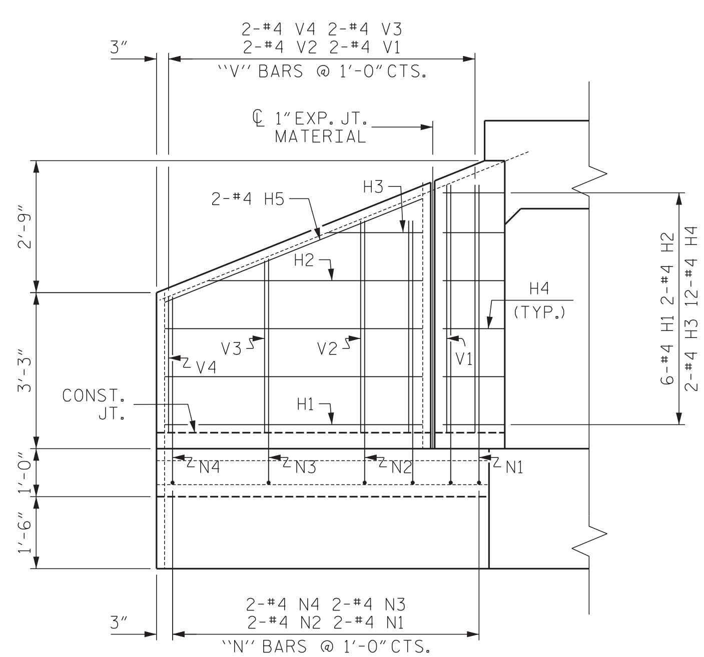
CLASS A CONCRETE
- 4 WINGS — 11.2 CY
- 2 HEADWALLS — 2.6 CY
- 2 END CURTAIN WALLS — 2.8 CY
- TOTAL — 16.6 CY



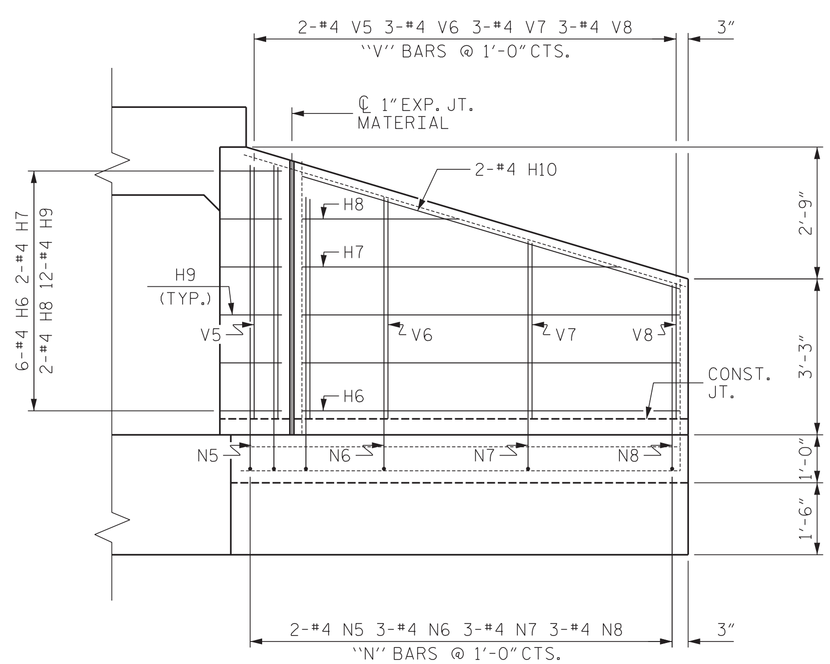
PLAN W2



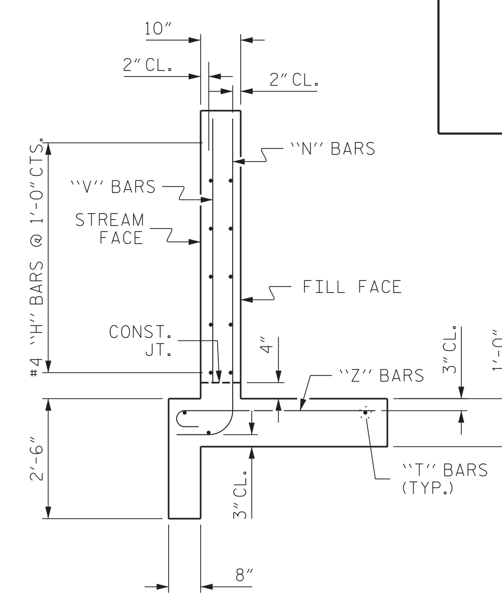
PLAN W1



ELEVATION W2



ELEVATION W1



TYPICAL WING SECTION

PROJECT NO. 17BP.10.R.19

UNION COUNTY

STATION: 12+20.97 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS
FOR CONCRETE BOX CULVERT
H = 5 FT.
75° SKEW

SEAL 038770 — WILLIAM P. MALINOWSKI — PROFESSIONAL ENGINEER — NORTH CAROLINA

PREPARED IN THE OFFICE OF:
AMEC Environment & Infrastructure, Inc.
4021 Stirrup Creek Drive, Suite 100
Durham, North Carolina, 27703
NC Eng. License #: F-1253
Tel. (919) 381-9900
Fax. (919) 381-9901
www.amec.com
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
1			3			TOTAL SHEETS
2			4			3

DRAWN BY : JY DATE : 10/12/12
CHECKED BY : WPM DATE : 11/07/12

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$