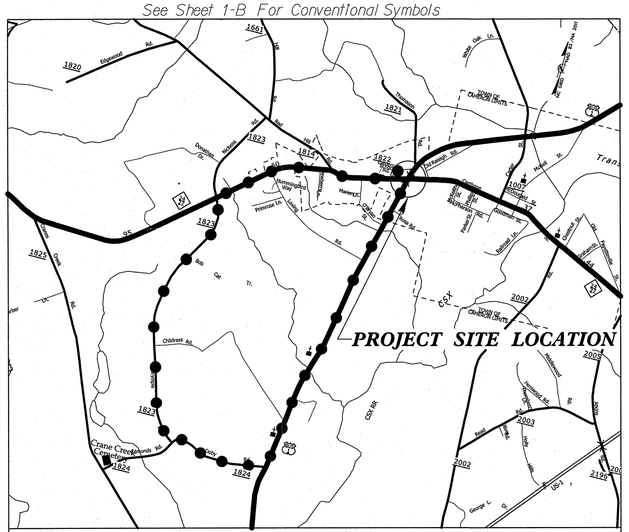
09/09/99

PROJECT: 41665.1A

CONTRACT: C203380

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



VICINITY MAP

DETOUR ROUTE

N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MOORE COUNTY

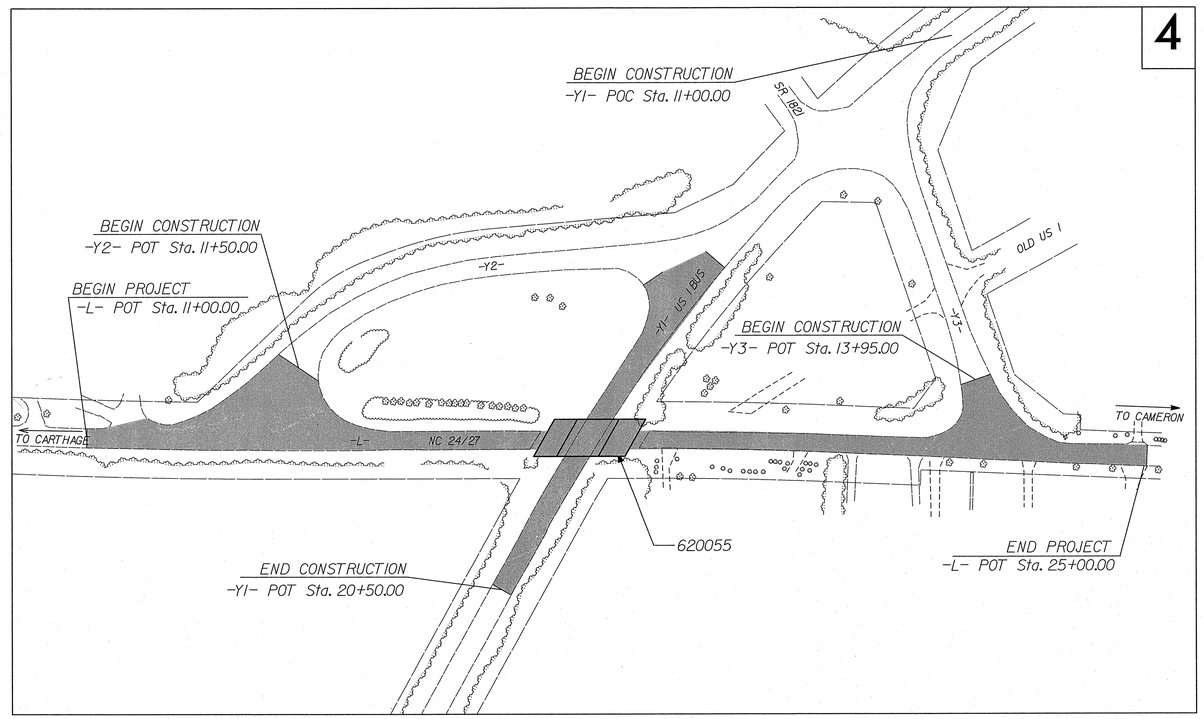
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.1A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
WBS 41665.1A		CONST.

LOCATION: BRIDGE NO. 55 ON NC 24/27 OVER US 1 BUSINESS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

NC GRID
NAD 83 /NA 2011



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011	=	3300
ADT 2031	=	5960
DIR	=	60 %
TTST	=	4 %
DUALS	=	8 %
DES. SPEED	=	40 MPH

FUNCTIONAL CLASSIFICATION:
MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY PROJECT 41665.1A	=	0.242 mi
LENGTH STRUCTURE PROJECT 41665.1A	=	0.023 mi
TOTAL LENGTH OF PROJECT 41665.1A	=	0.265 mi

PLANS PREPARED BY:
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
8-20-2013

NCDOT CONTACT:

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
902 N. Sandhills Blvd.
Aberdeen, NC 28315

THOMAS R. HEPLER, PE, PLS
PROJECT ENGINEER

ERIC M. TWEED, PE
PROJECT DESIGN ENGINEER

TIM WELCH, PE
DIVSION 8 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER MARY D. ROBINSON, JR.
5-23-13 P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 10359 ENGINEER THOMAS R. HEPLER
5-21-13 P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 10659 ENGINEER THOMAS R. HEFNER

5/21/13

INDEX OF SHEETS

1	Title Sheet
1-A	Index of Sheets, Roadway Standards, General Notes
1-B	Conventional Symbols
2	Typical Sections
2-A	Guardrail and Island Details
2-B	Temporary Shoring Details
3	Summary of Quantities
3-A	Summary of Earthwork, List of Pipes, Guardrail Summary
4	Plan Sheet
5	Profile Sheet
TCP-1 thru TCP-7	Traffic Control Plans
PMP-1 thru PMP-2	Pavement Marking Plans
EC-1 thru EC-5	Erosion Control Plans
UC-1 thru UC-4	Utility Coordination Plans
UO-1 thru UO-2	Utilities by Others Plans
X-0 thru X-5	-L- line Cross Sections
X-6 thru X-9	-Y1- line Cross Sections
S-1 thru S-27	Structure Plans

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04
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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

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.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE PROGRESS ENERGY, CENTURY LINK, CHARTER CABLE, MCNC, MOORE COUNTY PUBLIC SCHOOL SYSTEM, AND TOWN OF CAMERON. WATERLINE RELOCATION WORK FOR TOWN OF CAMERON IS PART OF THIS CONTRACT. ANY OTHER RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT HAVE BEEN PLACED. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PERMANENT RIGHT-OF-WAY MARKERS DISTURBED DURING CONSTRUCTION

SIGNING:

EXISTING SIGNS ON THIS PROJECT WHICH ARE IMPACTED BY CONSTRUCTION SHALL BE REMOVED AND STOCKPILED. SIGNS SHALL BE RESET AT DIRECTION OF ENGINEER.

EFF. 01-17-12
REV. 10-30-12

2012 ROADWAY 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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.09	Guide for Shoulder and Ditch Transition at Grade Separation
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Rigid Pipe
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills - Cored Slab Bridges
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.02	Guide for Paving Shoulders Under Bridges - Method II
DIVISION 8 - INCIDENTALS	
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90° Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90° Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90° Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick, Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter, and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
DIVISION 9 - SIGNING	
904.50	Mounting of Type 'D','E' and 'F' Signs on U Channel Posts

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	1-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 — W
- Designated U/G Water Line (S.U.E.*) — W
- 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:

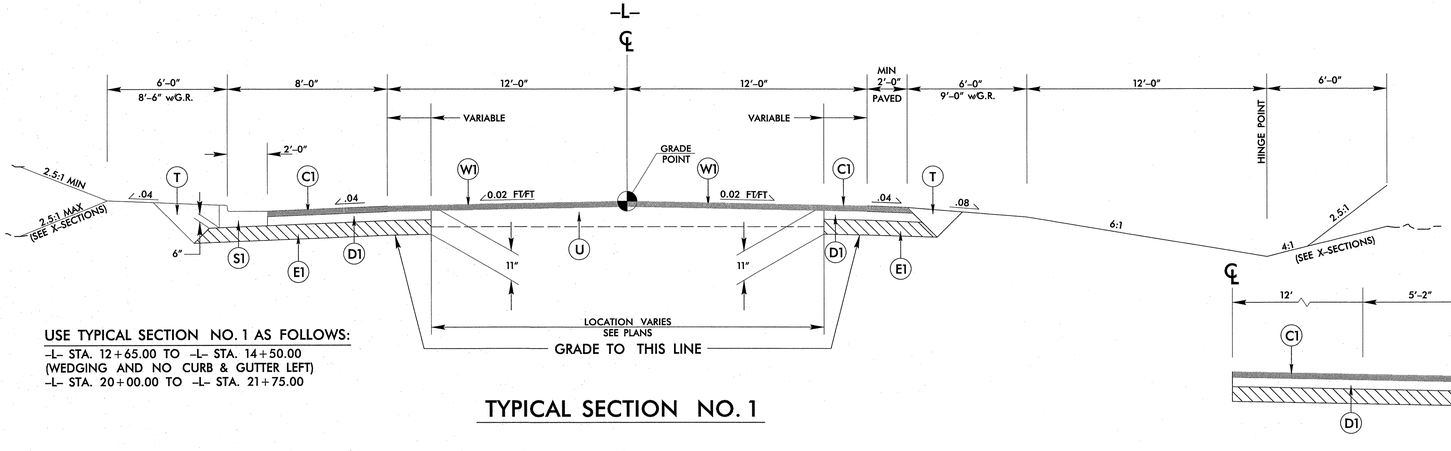
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

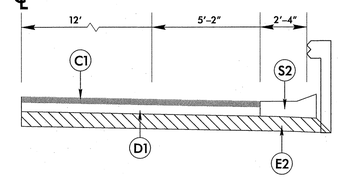
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



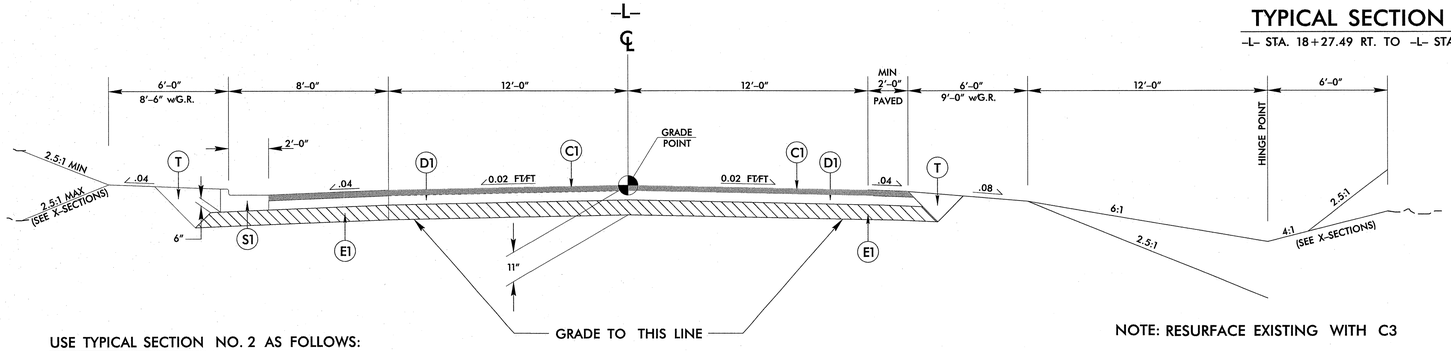
USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 12+65.00 TO -L- STA. 14+50.00
(WEDGING AND NO CURB & GUTTER LEFT)
-L- STA. 20+00.00 TO -L- STA. 21+75.00

TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 6

-L- STA. 18+27.49 RT. TO -L- STA. 18+41.00 RT.



USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-L- STA. 14+50.00 TO -L- STA. 17+00.68 (BEG BRIDGE)
-L- STA. 18+23.56 (END BRIDGE) TO -L- STA. 20+00.00

TYPICAL SECTION NO. 2

NOTE: RESURFACE EXISTING WITH C3

-L-	STA. 11+00.00	TO	-L-	STA. 12+65.00
-L-	STA. 21+75.00	TO	-L-	STA. 25+00.00
-Y2-	STA. 10+13.00	TO	-Y2-	STA. 11+50.00
-Y3-	STA. 13+95.00	TO	-Y3-	STA. 14+80.00

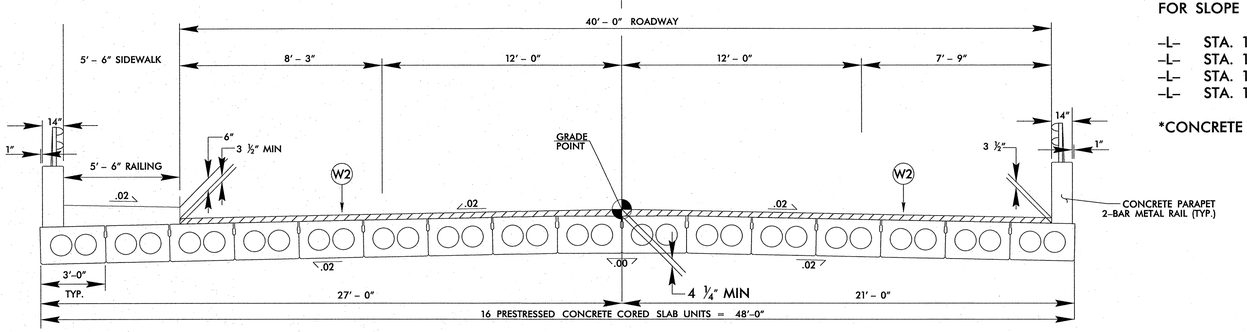
NOTE: SEE CROSS SECTIONS AND STDS 225.09 FOR SLOPE TRANSITIONS UNDER BRIDGES

-L-	STA. 16+75 RT.	TO	-L-	STA. 17+00 RT
-L-	STA. 17+00 LT.	TO	-L-	STA. 17+50 LT.
-L-	STA. 17+75 RT.	TO	-L-	STA. 18+25 RT.
-L-	STA. 18+25 LT.	TO	-L-	STA. 18+50 LT.

*CONCRETE SLOPE PROTECTION REQUIRED

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS
C2	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE,TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1½" OR GREATER THAN 2" IN DEPTH.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AVG. RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
D3	PROP APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I 19.0B, AT AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE,TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5½" IN DEPTH.
S1	2'-6" CONCRETE CURB & GUTTER
S2	SHOULDER BERM GUTTER
S3	8"x 6" MEDIAN CURB
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE METHOD OF WEDGING DETAIL)
W2	VARIABLE DEPTH CONCRETE WEARING SURFACE (SEE STRUCTURE PLANS)

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

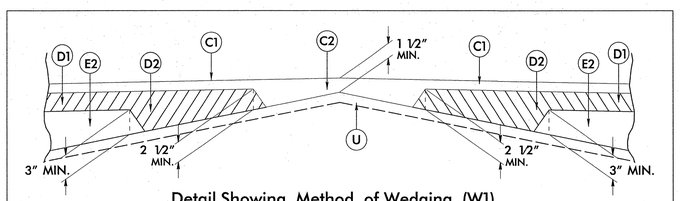


TYPICAL SECTION NO. 3

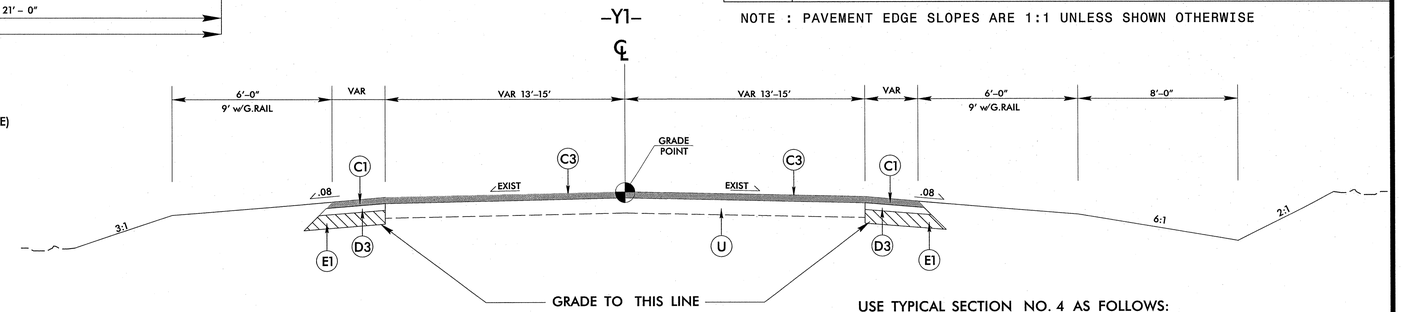
USE TYPICAL SECTION NO. 3 AS FOLLOWS:

-L- STA. 17+00.68 (BEG BRIDGE) TO -L- STA. 18+23.56 (END BRIDGE)

* TWO BAR METAL RAIL USED FOR PEDESTRIAN AND BICYCLE



Detail Showing Method of Wedging (W1)



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:

-Y1- STA. 17+30.00 TO -Y1- STA. 20+50.00

6/2/99
5/22/2013
62-2055-ROY-TYP.dgn
CHEPFER

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS
D3	PROP APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I 19.0B, AT AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
S3	8"x 6" MEDIAN CURB
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

SUE TEST HOLES

TH#	UTILITY	TOP ELEV.
TH#1	4" PVC FM	389.21
	2" FIBER OPTIC	389.20
TH#2	4" PVC FM	385.77
	2" FIBER OPTIC	385.51

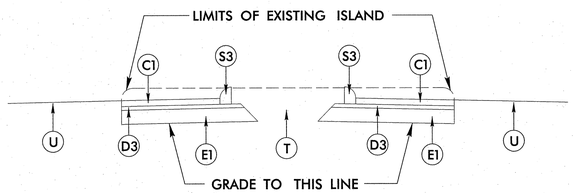
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 10356 ENGINEER THOMAS R. HEPLER 5-21-13

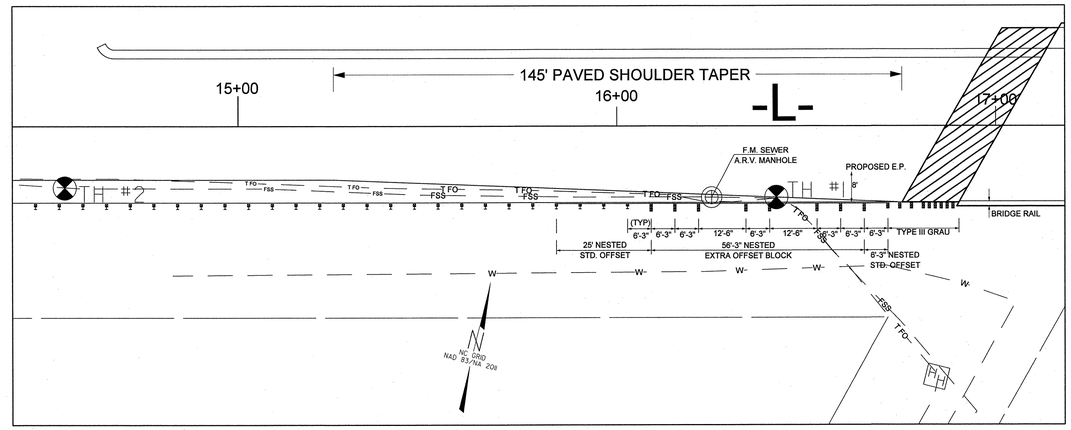
NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV 05/22/13

SEE PLAN SHEET 4 FOR ISLAND LOCATIONS (STA & OFFSETS ARE TO RADIUS POINT)

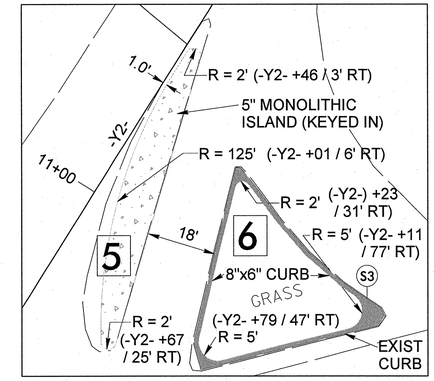


TYPICAL SECTION NO. 5

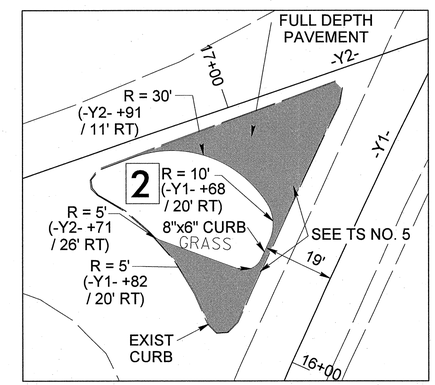
USE AT ISLANDS [1], [2], AND [6]



DETAIL OF SW BRIDGE APPROACH

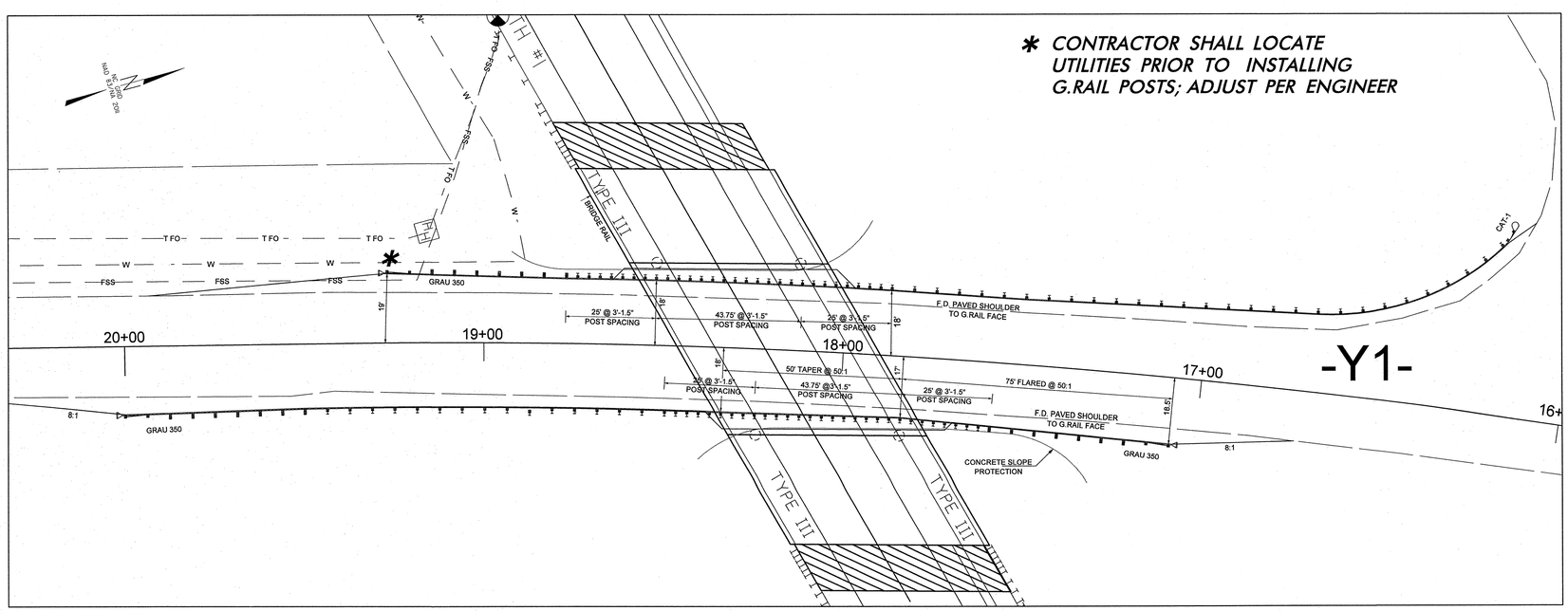


ISLAND DETAIL 5 AND 6

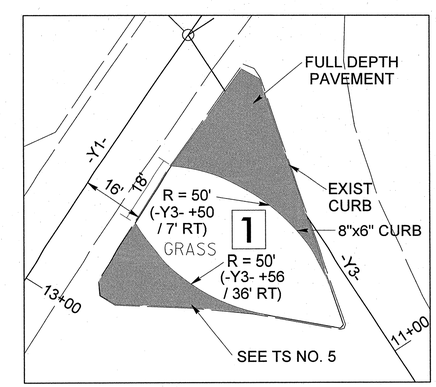


ISLAND DETAIL 2

20 10 0 20 40



DETAIL OF GUARDRAIL UNDER STRUCTURE



ISLAND DETAIL 1

6/2/99

5/22/2013
620055_RDY_PSH02A.dgn
TLHEPLER

PROJECT REFERENCE NO.	SHEET
41665.1A	2-B

GEOTECHNICAL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN — Scott A. Hidden 8/10/12 SIGNATURE DATE

ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 10359 ENGINEER THOMAS R. KEPLER — 8/21/12 SIGNATURE DATE

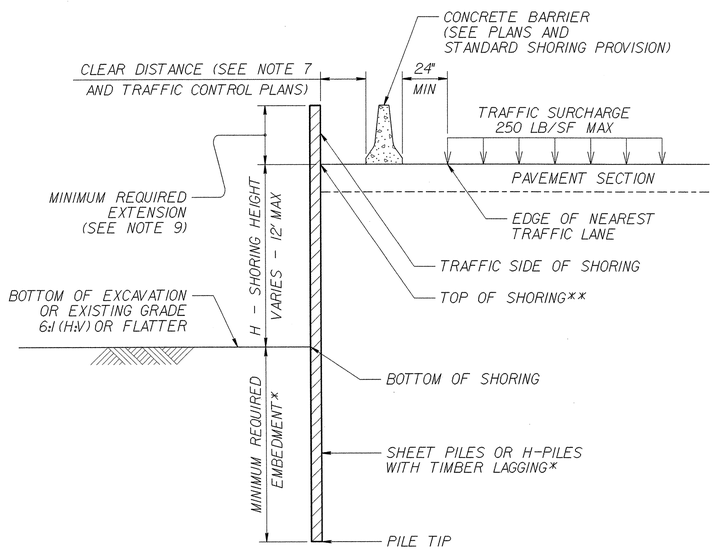
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 "--".**

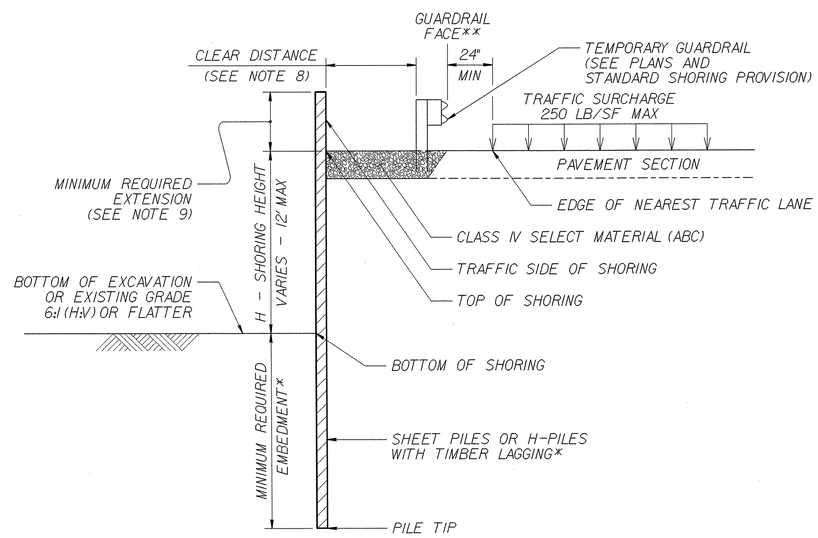
NOTES:

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.



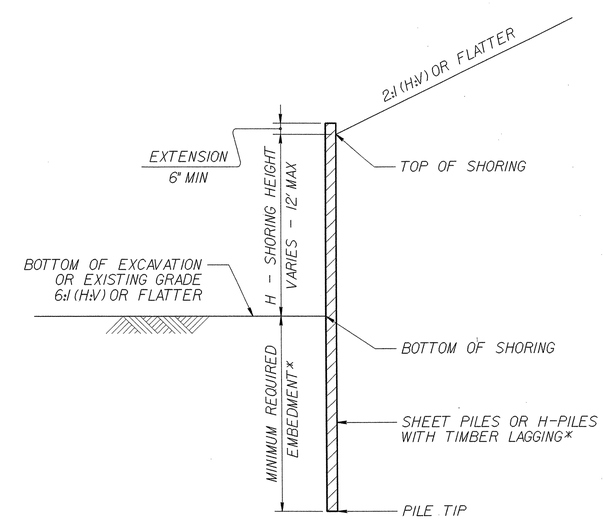
CONCRETE BARRIER

****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.**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-20-12

SUMMARY OF QUANTITIES - 41665.1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203380

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (17+59.66)
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	5,500	CY	BORROW EXCAVATION
0199000000-E	SP	705	SF	TEMPORARY SHORING
0318000000-E	300	112	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	340	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	56	LF	15" DRAINAGE PIPE
0335300000-E	305	48	LF	18" DRAINAGE PIPE
0335850000-E	305	2	EA	**" DRAINAGE PIPE ELBOWS (15")
0343000000-E	310	20	LF	15" SIDE DRAIN PIPE
0344000000-E	310	32	LF	18" SIDE DRAIN PIPE
0372000000-E	310	98	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	12	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E	310	12	LF	30" RC PIPE CULVERTS, CLASS III
0448200000-E	310	328	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	310	348	LF	18" RC PIPE CULVERTS, CLASS IV
1220000000-E	545	50	TON	INCIDENTAL STONE BASE
1330000000-E	607	250	SY	INCIDENTAL MILLING
1489000000-E	610	710	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	670	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	1,040	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	620	130	TON	ASPHALT BINDER FOR PLANT MIX
2209000000-E	838	2.3	CY	ENDWALLS
2253000000-E	840	1.209	CY	PIPE COLLARS
2286000000-N	840	7	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	1.1	LF	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	3	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2535000000-E	846	320	LF	***X **" CONCRETE CURB (8" X 6")
2549000000-E	846	620	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	15	LF	SHOULDER BERM GUTTER
2647000000-E	852	80	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
3030000000-E	862	825	LF	STEEL BM GUARDRAIL
3045000000-E	862	100	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	30	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3210000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	3	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	5	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-E	876	15	TON	RIP RAP, CLASS B
3656000000-E	876	190	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4400000000-E	1110	709	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	144	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	255	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	60	EA	DRUMS
4435000000-N	1135	58	EA	CONES
4445000000-E	1145	152	LF	BARRICADES (TYPE III)
4455000000-N	1150	60	DAY	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	4	EA	RESET TEMPORARY CRASH CUSHION
4485000000-E	1170	512	LF	PORTABLE CONCRETE BARRIER
4500000000-E	1170	512	LF	RESET PORTABLE CONCRETE BARRIER
4685000000-E	1205	6,800	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	6,800	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	200	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4725000000-E	1205	6	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	606	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)
4810000000-E	1205	10,520	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	220	LF	PAINT PAVEMENT MARKING LINES (8")
4850000000-E	1205	650	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4900000000-N	1251	50	EA	PERMANENT RAISED PAVEMENT MARKERS
5325200000-E	1510	345	LF	2" WATER LINE
5606000000-E	1515	1	EA	2" BLOW OFF
5648000000-N	1515	2	EA	RELOCATE WATER METER
5649000000-N	1515	1	EA	RECONNECT WATER METER
6000000000-E	1605	2,360	LF	TEMPORARY SILT FENCE
6006000000-E	1610	80	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	70	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	165	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	2	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	100	LF	SAFETY FENCE
6030000000-E	1630	90	CY	SILT EXCAVATION
6036000000-E	1631	6,425	SY	MATTING FOR EROSION CONTROL
6038000000-E	SP	287	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	590	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	90	LF	WATTLE
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	3	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	1.75	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	13	EA	RESPONSE FOR EROSION CONTROL

6/21/00

COMPUTED BY:	TLH	DATE:	5-30-13
CHECKED BY:	TRH	DATE:	5-30-13

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	3-A
BRIDGE NO. 620055	

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

CHAIN	FROM STATION	TO STATION	SIDE	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L-	12+65	17+25	CENTERLINE	9		3563	3,554	0
SUBTOTAL SUMMARY NO. 1				9		3563	3554	0
-L-	18+23	22+25	CENTERLINE	112		1682	1570	0
SUBTOTAL SUMMARY NO. 2				112		1682	1570	0
-Y1-	16+75	20+50	CENTERLINE	68		42	0	26
SUBTOTAL SUMMARY NO. 3				68		42	0	26
SUBTOTAL SUMMARY 1-3				189		5287	5124	26
LOSS DUE TO CLEARING AND GRUBBING				-38			38	
PROJECT TOTAL				151			5162	26
WASTE IN LIEU OF BORROW							-26	-26
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT							257	
GRAND TOTAL				151			5393	0
SAY				200			5500	0

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

SUMMARY OF ASPHALT PAVEMENT BREAKING /REMOVING

LINE	FROM STATION	TO STATION	SQUARE YARDS BREAKING	SQUARE YARDS REMOVAL	REMARKS
-L-	14+00	15+00	256	256	NEAR BEGIN BRIDGE
-L-	15+00	16+86	475		NEAR BEGIN BRIDGE
		TOTAL	731	256	
		SAY	740	260	

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

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".

STATION	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"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109
-L- Sta. 13+73	RT	400		379.1	377.1	376.8																				
-L- Sta. 15+00	LT	401		392.9	390.0																					
-L- Sta. 15+00	LT	401	402		390.0	375.7	0.26		56							X										
-L- Sta. 15+00	LT	402		376.9	375.7																					
-Y1- Sta. 18+36	RT	403			375.2	374.8																				
-Y1- Sta. 18+01	LT	404			373.3	370.8																				
-L- Sta. 18+35	RT	405		395.3	392.3																					
-L- Sta. 18+45	CL	405	406		392.3	391.1																				
-L- Sta. 18+55	LT	406		395.0	391.1																					
-L- Sta. 19+78	LT	406	408		391.1	384.3																				
-L- Sta. 21+00	LT	408		389.5	384.1																					
-L- Sta. 21+00	RT	407		387.9	384.8																					
-L- Sta. 21+00	CL	407	408		384.8	384.3																				
-L- Sta. 21+50	LT	408	409		384.1	381.6																				
-L- Sta. 22+00	LT	409		387.3	381.6																					
-L- Sta. 22+61	LT	409	410		381.6	378.3																				
-Y3- Sta. 14+25	LT	410		381.8	378.3																					
-Y3- Sta. 14+00	LT	410	411		378.3	378.0				48																
-Y3- Sta. 13+75	LT	411		379.5	378.0																					
-Y3- Sta. 12+62	LT	412			369.7	369.4																				
-Y3- Sta. 11+17	RT	413		360.2	357.7	357.5																				
-L- Sta. 20+39	RT	414																								
SHEET TOTALS									56	48																

STATION	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
-L- Sta. 13+73			12												
-L- Sta. 15+00															
-L- Sta. 15+00															
-L- Sta. 15+00															
-Y1- Sta. 18+36										104					
-Y1- Sta. 18+01										112					
-L- Sta. 18+35															
-L- Sta. 18+45									40						
-L- Sta. 18+55															
-L- Sta. 19+78									244						
-L- Sta. 21+00															
-L- Sta. 21+00															
-L- Sta. 21+00									44						
-L- Sta. 21+50		98													
-L- Sta. 22+00															
-L- Sta. 22+61										132					
-Y3- Sta. 14+25															
-Y3- Sta. 14+00															
-Y3- Sta. 13+75															
-Y3- Sta. 12+62															
-Y3- Sta. 11+17				12											
-L- Sta. 20+39															
SHEET TOTALS		98	12	12					328	348					

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" 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	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	TRAFFIC BEARING G.D.I. STD. 840.35	DRAINAGE PIPE 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
-L- Sta. 13+73																								0.5526			
-L- Sta. 15+00								1			1		1														
-L- Sta. 15+00																							2@15"				
-L- Sta. 15+00																											PRE-FORMED SCOUR HOLE
-Y1- Sta. 18+36																											5' OFFSET FROM BRIDGE BENT
-Y1- Sta. 18+01																											5' OFFSET FROM BRIDGE BENT
-L- Sta. 18+35								1												1		1					
-L- Sta. 18+45																											
-L- Sta. 18+55								1			1			1													
-L- Sta. 19+78																											
-L- Sta. 21+00								1	0.40		1			1													
-L- Sta. 21+00								1											1		1						
-L- Sta. 21+00																											
-L- Sta. 21+50																											
-L- Sta. 22+00								1	0.70		1			1													
-L- Sta. 22+61																											
-Y3- Sta. 14+25								1											1		1						
-Y3- Sta. 14+00																											
-Y3- Sta. 13+75																											STD RR PAD AT OUTLET
-Y3- Sta. 12+62					32																						STD RR PAD AT OUTLET
-Y3- Sta. 11+17						2.3																		0.656			REBUILD EMBANKMENT AT PIPE EXTENSION
-L- Sta. 20+39				20																							
SHEET TOTALS				20	32	2.3		7	1.1		4		1	3					2	1	2	1	2@15"	1.209			

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	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END	ANCHORS XI MOD	III	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	NESTED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	13+21.83	16+90.58	RIGHT	368.75			14+00.00		8	11	50		1.0			1	1										87.5			STANDARD 862.01 SHEET 10 OF 12
-L-	18+10.86	18+60.00	RIGHT	33.25	37.5		18+10.86		7.75	7.75						1							1							STANDARD 862.01 SHEET 4 OF 12
-L-	18+36.13	19+86.13	LEFT	150.00			18+36.13		7.5	8.5	50		1.0			1	1													STANDARD 862.01 SHEET 5 OF 12
-Y1-	17+08.00	20+26.75	LEFT	318.75			17+83.00	18+23.00	6	9	50	50	1.0	1.0			2													STANDARD 862.01 SHEET 1 OF 12
-Y1-	16+17.50	19+27.00	RIGHT	270.75	50.25		18+12.5	18+52.50	6	9		50		1.0			1			1										
	LESS ANCHOR DEDUCTIONS																													
		GRAU 350 TL-2	5 @ 50'	-250																										
		III	3 @ 18.75'	-56.25																										
		CAT-1	1 @ 8.25'	-8.25																										
		AT-1	1 @ 8.25'	-8.25																										
		TOTAL		818.75	87.75											3	5			1			1				87.5			
		SAY		825	100																									30 ADDITIONAL GUARDRAIL POSTS

5/30/2013
620055_RDY_PSH03.dgn
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PROJECT REFERENCE NO.	SHEET NO.
41665.1A	4
BRIDGE NO. 620055	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 10859 ENGINEER THOMAS R. MEYER — 5/28/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON JR. — 5-28-13

CH ENGINEERING
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NC LICENSE #P-0189

-L- CURVE DATA

PI Sta 11+84.37
△ = 2° 20′ 23.1″ (LT)
D = 0° 40′ 00.0″
L = 350.96′
T = 175.51′
R = 8,594.37′

PI Sta 19+57.48
△ = 2° 20′ 03.1″ (RT)
D = 1° 00′ 00.0″
L = 233.42′
T = 116.73′
R = 5,729.58′
e = NC

-Y1- CURVE DATA

PI Sta 11+75.95
△ = 9° 31′ 33.8″ (LT)
D = 3° 15′ 00.0″
L = 293.11′
T = 146.89′
R = 1,762.95′
R = 1,762.95′

PI Sta 16+34.18
△ = 17° 10′ 41.8″ (LT)
D = 2° 50′ 00.0″
L = 606.29′
T = 305.44′
R = 2,022.20′

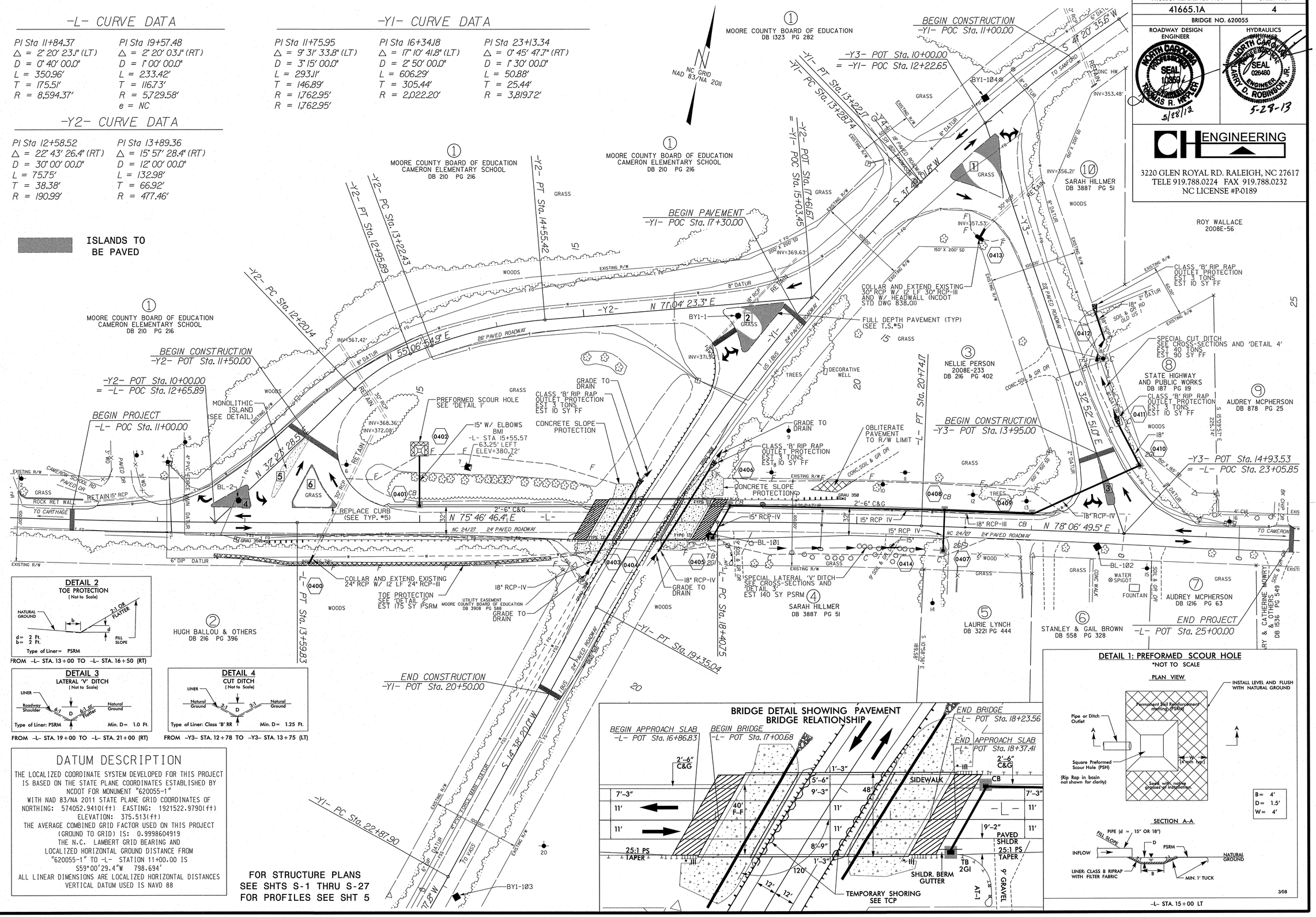
PI Sta 23+13.34
△ = 0° 45′ 47.7″ (RT)
D = 1° 30′ 00.0″
L = 50.88′
T = 25.44′
R = 3,819.72′

-Y2- CURVE DATA

PI Sta 12+58.52
△ = 22° 43′ 26.4″ (RT)
D = 30° 00′ 00.0″
L = 75.75′
T = 38.38′
R = 190.99′

PI Sta 13+89.36
△ = 15° 57′ 28.4″ (RT)
D = 12° 00′ 00.0″
L = 132.98′
T = 66.92′
R = 477.46′

ISLANDS TO BE PAVED



DETAIL 2
TOE PROTECTION
(Not to Scale)

d= 2 Ft.
b= 2 Ft.
Type of Liner= PSRM

FROM -L- STA. 13+00 TO -L- STA. 16+50 (RT)

DETAIL 3
LATERAL 'V' DITCH
(Not to Scale)

Type of Liner: PSRM — Min. D= 1.0 Ft.

FROM -L- STA. 19+00 TO -L- STA. 21+00 (RT)

DETAIL 4
CUT DITCH
(Not to Scale)

Type of Liner: Class 'B' RR — Min. D= 1.25 Ft.

FROM -Y3- STA. 12+78 TO -Y3- STA. 13+75 (LT)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "620055-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 574052.9410(ft) EASTING: 1921522.9790(ft)
ELEVATION: 375.513(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998604919
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "620055-1" TO -L- STATION 11+00.00 IS
S59°00′29.4″W 798.694′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

FOR STRUCTURE PLANS SEE SHTS S-1 THRU S-27
FOR PROFILES SEE SHT 5

BRIDGE DETAIL SHOWING PAVEMENT BRIDGE RELATIONSHIP

DETAIL 1: PREFORMED SCOUR HOLE
*NOT TO SCALE

-L- STA. 15+00 LT

3/08

REVISIONS

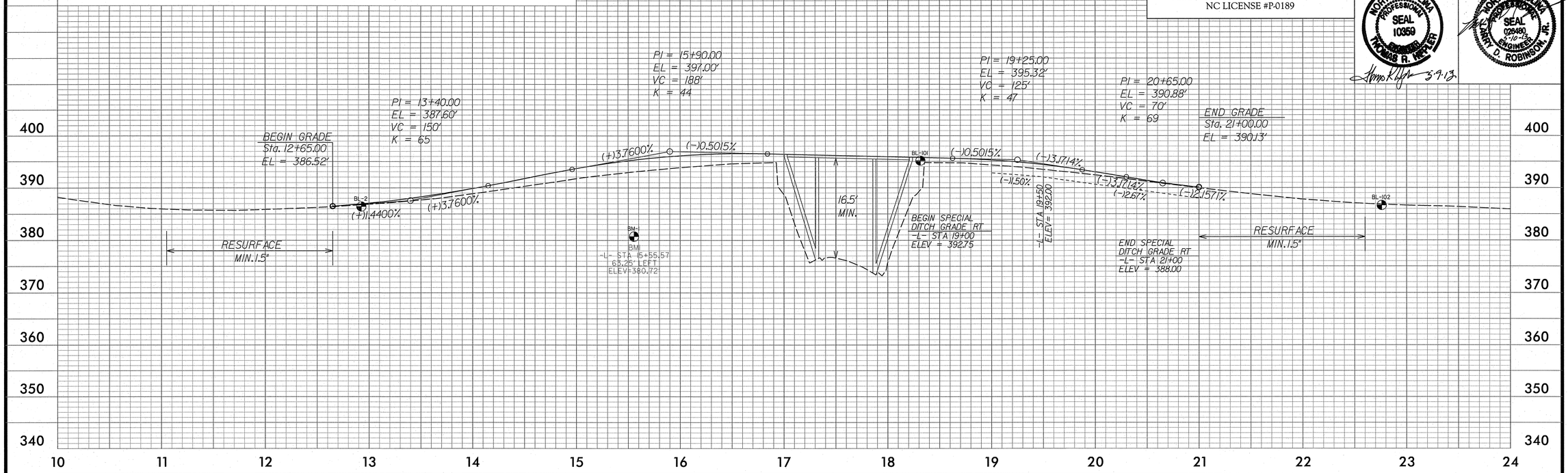
8/17/99

$$$$$SYSTIME$$$$$
$$$$$JCN$$$$$
$$$$$USERNAME$$$$$

SHT. 2 OF 2

-L- PROFILE

BL POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
2	620055-2	573709.8460	1921019.9920	386.44	12+92.70	25.12 LT
3	POINT NOT SET	573787.2704	1921467.8356	UNKNOWN	17+46.04	9.58 RT
101	BL-101	573801.8780	1921552.3300	395.15	18+31.53	16.18 RT
102	BL-102	573898.1760	1921985.6210	386.67	22+76.10	16.31 RT



-Y1- PROFILE

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	EY1 STATION	OFFSET
104	BY1-104	574362.3490	1921736.5860	367.81	12+04.20	21.57 RT
1	620055-1	574052.9410	1921522.9790	375.51	15+72.82	51.05 RT
3	POINT NOT SET	573787.2704	1921467.8356	UNKNOWN	18+36.91	6.48 RT
103	BY1-103	573329.2000	1921372.7570	376.63	23+03.79	19.72 LT

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PROJECT REFERENCE NO.	SHEET NO.
41665.1A	5
BRIDGE NO. 620055	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 10359 ENGINEER THOMAS R. HEPLER — 3-9-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. — 5-10-13

REVISIONS

8/17/99

5/9/2013
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TI HEPLER

STATE PROJECT REFERENCE NO.	SHEET NO.
41665.1A	TCP-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED TRAFFIC CONTROL

MOORE COUNTY

TIP PROJECT: 41665.1A

NOTES

TEMPORARY SHORING NO. 1

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

DESIGN TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT. RT, TO STATION 18+66 -Y1-, 16.0 FT RT. FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = 357 FT

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 AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT.RT, TO STATION 18+66 -Y1-, 16.0 FT RT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DO NOT USE A TEMPORARY WALL FOR THE TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT.RT, TO STATION 18+66 -Y1-, 16.0 FT RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT. RT,TO STATION 18+66 -Y1-, 16 FT. RT. AVG. DEPTH IS 5.0'. SEE STANDARD DRAWING 1801.01 FOR STANDARD TEMPORARY SHORING.

ESTIMATED TEMPORARY SHORING NO. 1 = 350 SF

TEMPORARY SHORING NO. 2

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

DESIGN TEMPORARY SHORING FROM STATION 17+69 -Y1-, 15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT. FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LF/CF
FRICTION ANDGLE = 30 DEGREES
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = 361 FT

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 AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 17+69 -Y1-, 15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DO NOT USE A TEMPORARY WALL FOR THE TEMPORARY SHORING FROM STATION 17+69 -Y1-,15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+69 -Y1-, 15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT. AVG. DEPTH IS 5.0'. SEE STANDARD DRAWING 1801.01 FOR STANDARD TEMPORARY SHORING.

TOTAL ESTIMATED TEMPORARY SHORING NO. 2 = 355 SF

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN 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 WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD 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
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.12	PAVEMENT MARKINGS - BRIDGES
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

DIRECTION OF TRAFFIC FLOW
NORTH ARROW
PROPOSED PVMT. ---------- EXIST. PVMT.

TRAFFIC CONTROL DEVICES

TYPE III BARRICADE
DRUM SKINNY DRUM
STATIONARY SIGN

INDEX OF SHEETS

SHEET NO.	TITLE
TCP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND AND INDEX OF SHEETS
TCP-1A	PHASING & GENERAL NOTES
TCP-2	DETOUR FOR US 24/27 (PHASES I,II,II)
TCP-3	OFFSITE DETOUR FOR US 1 BUS (PHASE I AND II)
TCP-4	OFFSITE DETOUR DETAIL
TCP-5	ADVANCE WARNING SIGNS FOR DETOUR
TCP-6	STRUCTURE STAGING DETAIL
TCP-7	PORTABLE CONCRETE BARRIER

TEMPORARY PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKING LINES	
PAINT (4")	
PA	WHITE EDGE LINE
PI	YELLOW DOUBLE CENTER LINE
PAINT(8")	
PV	YELLOW DIAGONAL

CH ENGINEERING
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NC LICENSE #P-0189

APPROVED: DATE: 5-9-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 10350 ENGINEER THOMAS R. HEPLER

PLAN PREPARED FOR N.C.D.O.T. BY: CH ENGINEERING, PLLC

STATE TRAFFIC MANAGEMENT ENGINEER
T. R. HEPLER, P.E. TRAFFIC CONTROL PROJECT ENGINEER
TRAFFIC CONTROL PROJECT DESIGN ENGINEER
T. L. HEPLER TRAFFIC CONTROL DESIGN ENGINEER / TECHNICIAN

5/9/2013
62065_TC_TSH.dgn
TLHEPLER

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

US 1 BUS AND NC 24/27 DETOUR ROUTE

HOLIDAY AND SPECIAL EVENT

1. FOR UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 AM DECEMBER 31st TO 8:00 PM JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 AM THE FRIDAY BEFORE AND 8:00 PM THE TUESDAY AFTER EASTER.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 AM THE FRIDAY BEFORE AND 8:00 PM THE TUESDAY AFTER EASTER.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 AM JULY 3, AND 8:00 PM JULY 6. IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 AM THE THURSDAY BEFORE INDEPENDENCE DAY AND 8:00 PM THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS 6:00 AM THE FRIDAY BEFORE AND 8:00 PM THE TUESDAY AFTER LABOR DAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS 6:00 AM TUESDAY BEFORE AND 8:00 PM THE MONDAY FOLLOWING THANKSGIVING.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 AM THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 8:00 PM THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
9. FOR THE CAMERON ANTIQUE SHOW, BETWEEN THE HOURS OF 6:00 AM AND 8:00 PM ON THE FOLLOWING SATURDAYS: 10/05/2013 AND 10/04/2014.
10. FOR CAMERON HOLIDAY OPEN HOUSE TOUR BETWEEN THE HOURS OF 8:00 AM ON SATURDAY 11/23/2013 AND 6:00 PM ON SUNDAY 11/24/2013.

B) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
US 1 BUS.	LIMIT CLOSURE OF ROADWAY AND DETOURING TRAFFIC TO A 48 CONSECUTIVE HOUR OPERATION FOR EACH OF THE TWO EVENTS SPECIFIED PHASE I, STEPS 5, 6 AND 7 AND PHASE II STEPS 3, 4 AND 5 OF THE TCP PHASING.

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

D) 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.

E) 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.

F) 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 USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

H) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

I) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

J) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 ft IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

K) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

L) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

M) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

N) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

O) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

P) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 ft IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

Q) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRAFFIC CONTROL PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

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.

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.

R) PROTECT THE APPROACH END OF MOVABLE/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.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

S) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

T) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

U) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

V) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

W) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PHASING

SCHEME:
DURING DEMOLITION OF THE EXISTING STRUCTURE AND CONSTRUCTION OF THE NEW BRIDGE, NC 24/27 TRAFFIC WILL BE DETOURED ON-SITE VIA -Y2-, US 1 BUS. AND -Y3-. ISLANDS AT THE INTERSECTIONS WILL BE MODIFIED TO FACILITATE SAFE FLOW OF TRAFFIC. THIS DETOUR WILL REMAIN IN OPERATION FOR THE DURATION OF THE PROJECT. DURING BRIDGE DEMOLITION AND CONSTRUCTION ACTIVITIES WHICH WILL ENDANGER US 1 BUS. TRAFFIC DUE TO FALLING DEBRIS, US 1 BUS. TRAFFIC WILL BE DETOURED FOR A LIMITED TIME VIA -Y2-, US 24/27, DALRYMPLE ROAD (SR 1823) AND DOBY ROAD (SR 1824).

PHASE I:

STEP 1: PRIOR TO CONSTRUCTION OPERATIONS, PLACE WORK ZONE ADVANCED WARNING SIGNS ON -L- (NC 24/27) AND -Y1- LINE (US 1BUS) IN ACCORDANCE WITH NCDOT STD. DRAWING 1101.01 FOR TWO-WAY UNDIVIDED WORK ZONE.

STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02 (SHEET 1 OF 15) AND FLAGGERS AS NEEDED PAVE ISLANDS [1] THROUGH [5], DRAINAGE SYSTEM CROSSING -Y3- (STRS 409 TO 411, 412 AND 413) AND PAVEMENT MARKINGS AS SHOWN ON TCP-2, EXCLUDING MARKINGS AT INTERSECTIONS OF -Y2- AND -Y3- WITH NC 24/27. CONSTRUCT WATERLINE AND SEWERLINE RELOCATIONS IN ACCORDANCE WITH THE UC PLANS. CONFIRM THE RELOCATION OF UTILITIES BY OTHERS AS SHOWN ON THE UO PLANS. CONSTRUCT MINIMUM 5 FT. OF PAVED SHOULDERS ON US 1 BUS (-Y1-) UP TO THE EXISTING EDGE AND ELEVATION OF EXISTING PAVEMENT. INSTALL PCB IN ACCORDANCE WITH TCP-6.

STEP 3: PLACE DETOUR SIGNING -L- (NC 24/27), US 1 BUS (-Y1-), AND RAMPS PER TCP-2 AND TCP 5, COVERING SIGNS UNTIL IMPLEMENTING DETOUR. PLACE REMAINING PAVEMENT MARKINGS, BARRICADES AND DRUMS AT INTERSECTION OF NC 24/27 WITH -Y2- AND -Y3-, UNCOVER DETOUR SIGNS AND IMPLEMENT DETOUR OF NC 24/27 TRAFFIC ONTO -Y2-, US 1 BUS. AND -Y3-, REMOVING OR COVERING EXISTING SIGNS WHICH CONFLICT WITH DETOUR.

STEP 4: MOBILIZE EQUIPMENT FOR THE DEMOLITION OF THE EXISTING BRIDGE, REMOVING COMPONENTS THAT WILL NOT ENDANGER TRAFFIC ON US 1 BUS. (-Y1-). INSTALL SIGNAGE FOR -Y1-(US 1 BUS.) OFF-SITE DETOUR (SEE TCP-3) COVERING SIGNS UNTIL DETOUR IS IMPLEMENTED.

STEP 5: UNCOVER ROAD CLOSURE AND DETOUR SIGNS INSTALLED IN STEP 4. INSTALL ROAD CLOSURE BARRICADES, DETOUR TRAFFIC AND CLOSE ROADWAY. SEE GEN. NOTE B, CONTRACT TIME AND LIQUIDATED DAMAGES.

STEP 6: WITH -Y1- (US 1 BUS.) DETOURED, REMOVE THE EXISTING BRIDGE SUPERSTRUCTURE BETWEEN BENT #1 AND BENT #2 (SEE TCP-3 AND TCP-4).

STEP 7: RETURN -Y1- (US 1 BUS.) TO ITS FORMER TRAFFIC PATTERN, COVER SIGNAGE AND REMOVE BARRICADES INSTALLED UNDER STEP 4. MAINTAIN -L- (NC 24/27) DETOUR.

STEP 8: USING ROADWAY STANDARD DRAWING NO. 1101.02 (SHEET 1 OF 15) AND FLAGGERS AS NEEDED INSTALL TEMPORARY SHORING FROM -Y1- STA. 17+96 TO 18+66, RIGHT AND FROM -Y- STA. 17+69 TO STA. 18+40, LEFT.

PHASE II:

STEP 1: WORKING BEHIND PCB, CONSTRUCT THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL SURFACE COURSE: -L- FROM STA. 13+50+/- TO STA. 17+00+/- AND 18+37+/- TO 22+50+/- INCLUDING ISLAND [6]; REMOVAL OF EXISTING END BENTS AND INTERIOR BENTS (BOTH SIDES OF -Y1-); PROPOSED END BENTS AND INTERIOR BENTS, DRAINAGE AND SLOPE PROTECTION BETWEEN END BENTS AND INTERIOR BENTS; REMAINING PAVED SHOULDER UP TO FINAL SLOPE PROTECTION, AND PLACEMENT OF CORED SLABS BETWEEN END BENT #1 AND BENT #1 AND BETWEEN BENT #2 AND END BENT #2.

STEP 2: WORKING BEHIND PCB INSTALL GUARDRAIL ON BOTH SIDES OF US-1 BUS (-Y1-) UP TO LIMITS OF PCB, ASSURING NON-ATTENUATED GUARDRAIL ENDS ARE PROTECTED BY PCB.

STEP 3: UNCOVER OFF-SITE DETOUR SIGNAGE WHICH WAS COVERED UNDER PHASE I, STEP 7. REINSTALL BARRICADES REMOVED IN PHASE 1, STEP 7 AND AS SHOWN IN TCP-3 AND DETOUR US 1 BUS. TRAFFIC OFF-SITE. SEE GEN. NOTE B, CONTRACT TIME AND LIQUIDATED DAMAGES.

STEP 4: WITH US 1 BUS. TRAFFIC DETOURED INSTALL CORED SLABS BETWEEN BENT #1 AND #2 AND COMPLETE OTHER OVERHEAD CONSTRUCTION THAT MIGHT ENDANGER TRAFFIC ON US 1 BUS. UNDER STRUCTURE.

STEP 5: REMOVE BARRICADES AND RETURN US 1 BUS. TO ITS ORIGINAL TRAFFIC PATTERN. REMOVE SIGNAGE FOR OFF-SITE DETOUR INSTALLED AND UNCOVERED IN PHASE II, STEP 3.

STEP 6: USING ROADWAY STD. DRAWING NO. 1101.02(SHT. 1 OF 15) AND FLAGGERS AS NEEDED COMPLETE INSTALLATION OF GUARDRAIL ON BOTH SIDES OF US 1 BUS. AND REMOVE PCB. INSTALL FINAL SURFACE COURSE AND PERMANENT PAVEMENT MARKINGS ON US 1 BUS. (REFER TO PMP-2)

PHASE III

STEP 1: COMPLETE CONSTRUCTION OF STRUCTURE AND ITS APPURTENANCES.

STEP 2: USING ROADWAY STD. DRAWING NO. 1101.02(SHT. 1 OF 15) AND FLAGGERS AS NEEDED INSTALL MONOLITHIC ISLAND [5] AND COMPLETE TIE-IN OF PAVEMENT AT -L- 12+00+/-, -Y2- 11+50+/-, -Y3- 14+00+/- AND -L-25+00=/-. INSTALL FINAL SURFACE AND PAVEMENT MARKINGS ON -L- STA 12+00+/- TO 25+00 INCLUSIVE OF -Y2- AND -Y3- INTERSECTIONS.

STEP 2: UNCOVER OR RE-INSTALL APPLICABLE ORIGINAL SIGNAGE WHICH WAS COVERED OR REMOVED IN PHASE I,STEP 3. REMOVE BARRICADES AND DETOUR SIGNAGE INSTALLED DURING PHASE I, STEP 3 RETURN NC 24/27 TRAFFIC TO ITS ORIGINAL PATTERN, OBLITERATING CONFLICTING MARKINGS.

STEP 3: USING ROADWAY STANDARD DRAWING NO. 1101.02 (SHEET 1 OF 9) AND FLAGGERS AS NEEDED AND APPLY PERMANENT PAVEMENT MARKINGS IN ACCORDANCE WITH PMP-2, OBLITERATING ANY CONFLICTING PAVEMENT MARKINGS REMAINING FROM THE DETOUR PLAN (TCP-2).

CH ENGINEERING
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APPROVED: [signature] DATE: 6.10.13

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 10359 THOMAS R. HEPLER

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

TRANSPORTATION OPERATIONS PLAN

6/10/2013
620055_TC_TCP-1A.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	TCP-2

NOTE: COVER EXISTING DIRECTIONAL SIGNING @ -Y1- 7+50

ISLANDS TO BE PAVED PHASE I, STEP 2

1 ISLANDS NUMBER

A — R11-2 48"X30" ROAD CLOSED DETOUR; M4-10R 48"X18"
TYPE III BARRICADE

B — R11-2 48"X30" ROAD CLOSED DETOUR; M4-10L 48"X18"
TYPE III BARRICADE

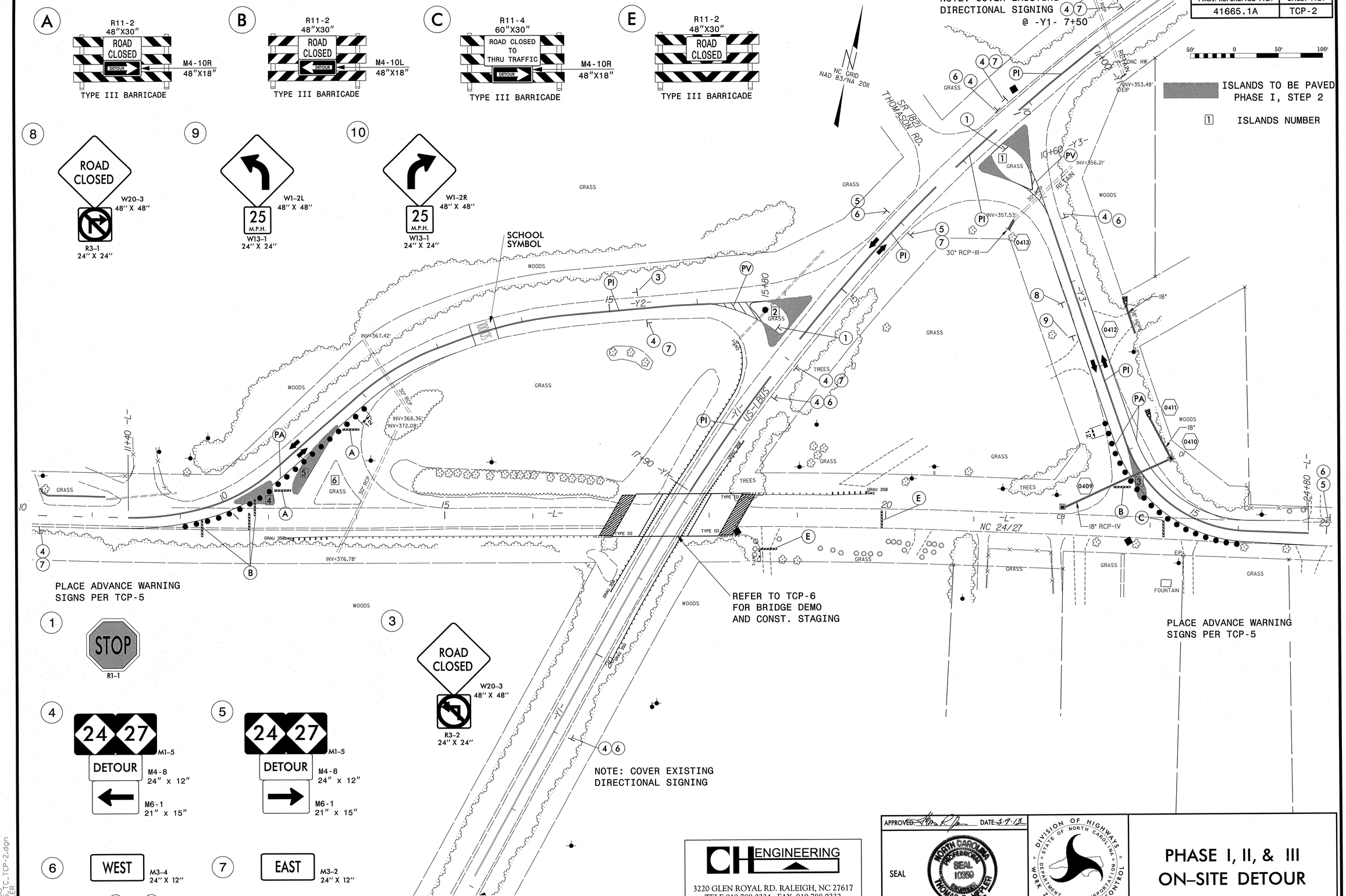
C — R11-4 60"X30" ROAD CLOSED TO THRU TRAFFIC DETOUR; M4-10R 48"X18"
TYPE III BARRICADE

E — R11-2 48"X30" ROAD CLOSED
TYPE III BARRICADE

8 — ROAD CLOSED; W20-3 48" X 48"; R3-1 24" X 24"

9 — W1-2L 48" X 48"; 25 M.P.H. W13-1 24" X 24"

10 — W1-2R 48" X 48"; 25 M.P.H. W13-1 24" X 24"



PLACE ADVANCE WARNING SIGNS PER TCP-5

REFER TO TCP-6 FOR BRIDGE DEMO AND CONST. STAGING

PLACE ADVANCE WARNING SIGNS PER TCP-5

NOTE: COVER EXISTING DIRECTIONAL SIGNING

1 — STOP; R1-1

3 — ROAD CLOSED; W20-3 48" X 48"; R3-2 24" X 24"

4 — 24 27; M1-5; DETOUR; M4-8 24" x 12"; M6-1 21" x 15"

5 — 24 27; M1-5; DETOUR; M4-8 24" x 12"; M6-1 21" x 15"

6 — WEST; M3-4 24" X 12"

7 — EAST; M3-2 24" X 12"

NOTE: SIGNS 6 AND 7 TO BE POSITIONED ON TOP OF ROUTE SIGN

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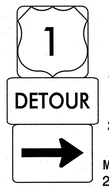
PHASE I, II, & III ON-SITE DETOUR

5/9/2013
62065_TC_TCP-2.dgn
T.L.HEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	TCP-3

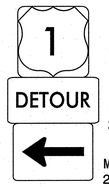
OFF-SITE DETOUR ROUTE

(11)



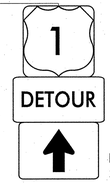
M1-4
M4-8
24" x 12"
M6-1
21" x 15"

(12)



M1-4
M4-8
24" x 12"
M6-1
21" x 15"

(13)



M1-4
M4-8
24" x 12"
M6-3
21" x 15"

(14)

M3-1
24" X 12"

(15)

M3-3
24" X 12"

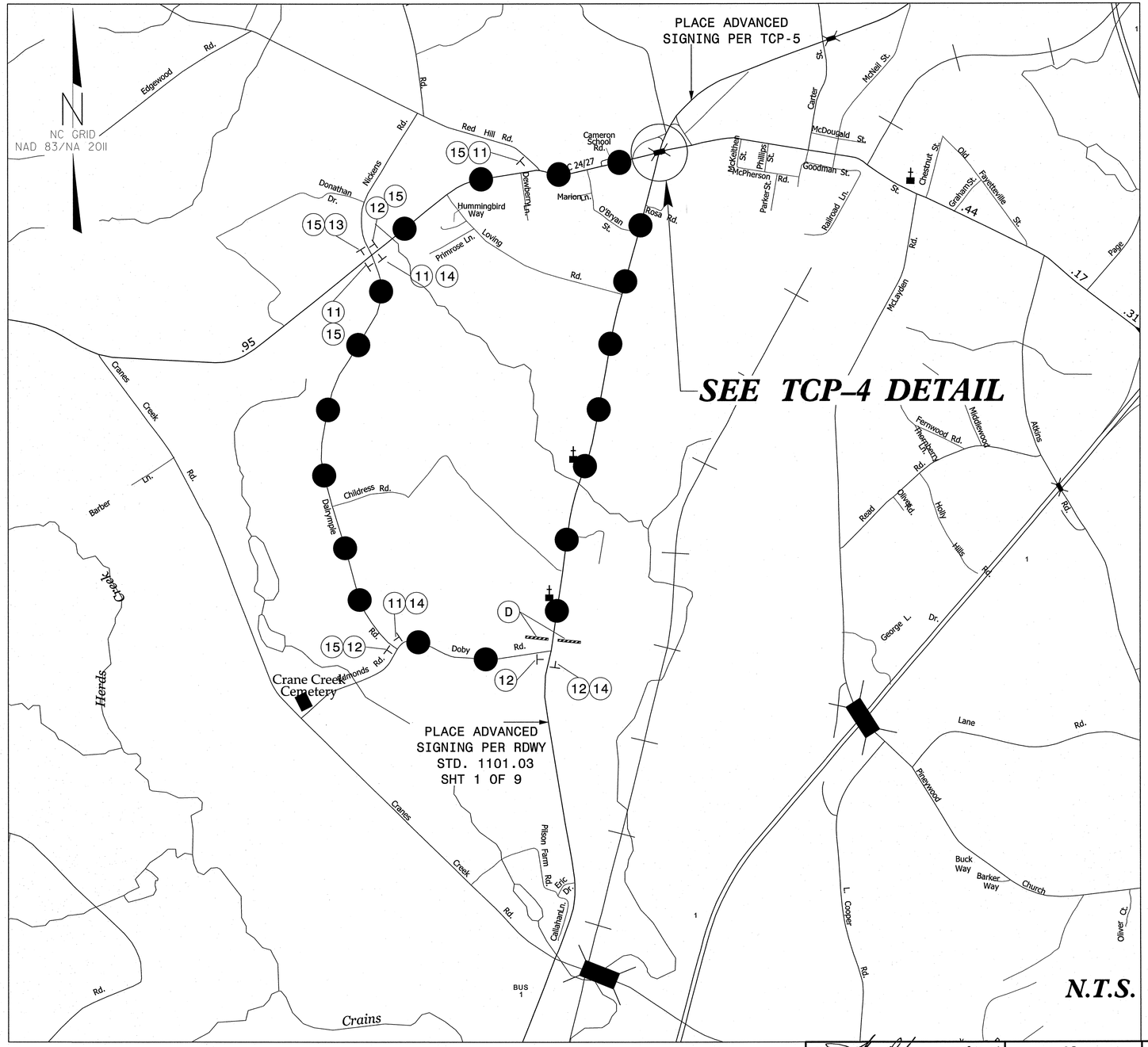
NOTE: SIGNS (14) AND (15) POSTED ON TOP OF ROUTE SIGN

(D)

R11-4
60"X30"

M4-10L
48"X18"

TYPE III BARRICADE



N.T.S.

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PHASE I AND II

5/21/2013
62005_TC_TCP-3.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	TCP-4

NOTE: COVER EXISTING DIRECTIONAL SIGNING @ -Y1- 7+50

PLACE ADVANCE SIGNING PER TCP-5

ISLANDS TO BE PAVED PHASE I, STEP 2

1 ISLANDS NUMBER

4 DEVICES PLACED FOR ONSITE DETOUR TO REMAIN

A — R11-2 48"X30" ROAD CLOSED, DETOUR, M4-10R 48"X18" — TYPE III BARRICADE

B — R11-2 48"X30" ROAD CLOSED, DETOUR, M4-10L 48"X18" — TYPE III BARRICADE

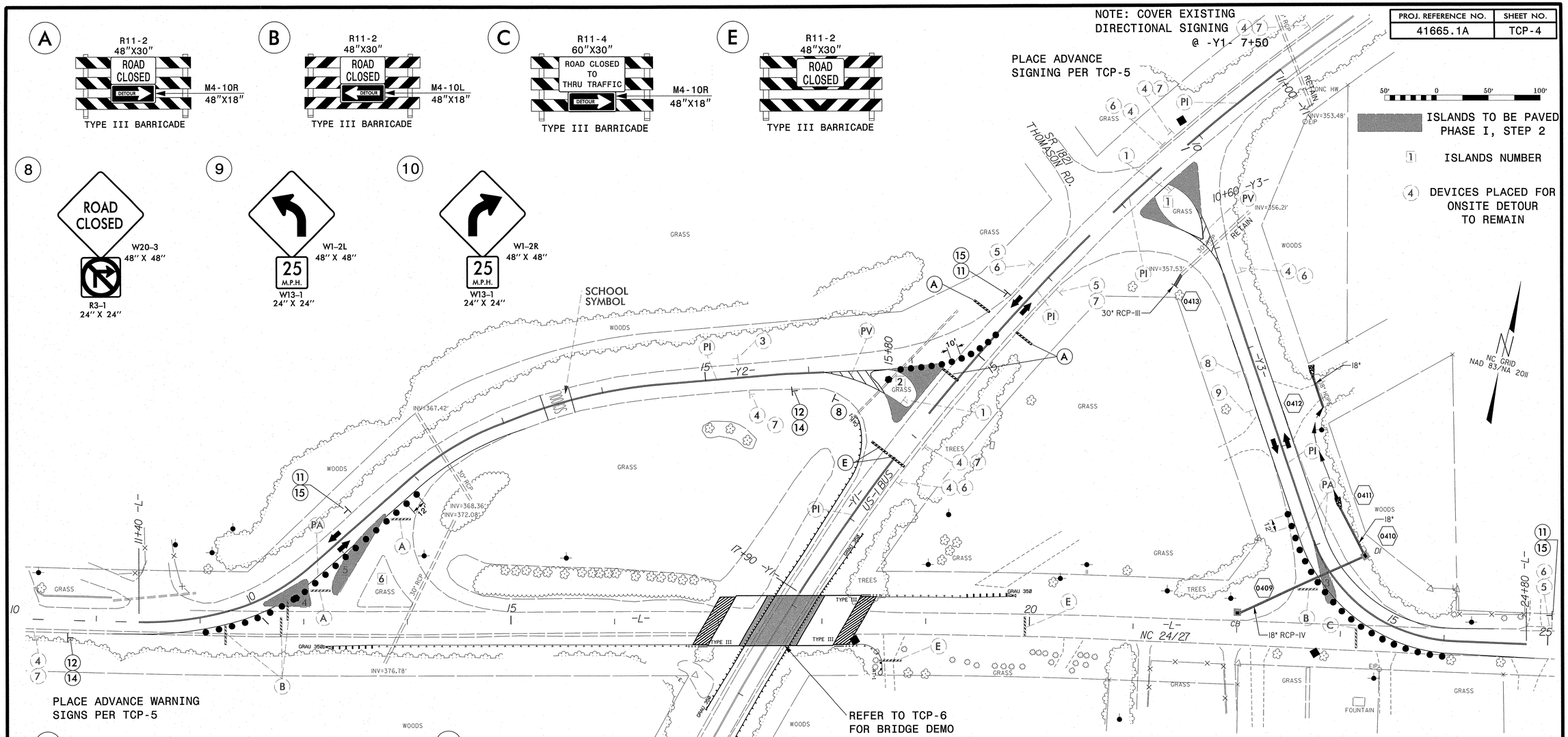
C — R11-4 60"X30" ROAD CLOSED TO THRU TRAFFIC, DETOUR, M4-10R 48"X18" — TYPE III BARRICADE

E — R11-2 48"X30" ROAD CLOSED — TYPE III BARRICADE

8 — ROAD CLOSED, W20-3 48" X 48", R3-1 24" X 24"

9 — W1-2L 48" X 48", 25 M.P.H., W13-1 24" X 24"

10 — W1-2R 48" X 48", 25 M.P.H., W13-1 24" X 24"



PLACE ADVANCE WARNING SIGNS PER TCP-5

REFER TO TCP-6 FOR BRIDGE DEMO AND CONST. STAGING

PLACE ADVANCE WARNING SIGNS PER TCP-5

1 — STOP, R1-1

3 — ROAD CLOSED, W20-3 48" X 48", R3-2 24" X 24"

4 — 24 27, M1-5, DETOUR, M4-8 24" x 12", M6-1 21" x 15"

5 — 24 27, M1-5, DETOUR, M4-8 24" x 12", M6-1 21" x 15"

6 — WEST, M3-4 24" X 12"

7 — EAST, M3-2 24" X 12"

NOTE: SIGNS 6 AND 7 TO BE POSITIONED ON TOP OF ROUTE SIGN

11 — 1, M1-4, DETOUR, M4-8 24" x 12", M6-1 21" x 15"

NOTE: COVER EXISTING DIRECTIONAL SIGNING

12 — 1, DETOUR, M4-8 24" x 12", M6-1 21" x 15"

14 — NORTH, M3-1 24" X 12"

15 — SOUTH, M3-3 24" X 12"

NOTE: SIGNS 14 AND 15 TO BE POSITIONED ON TOP OF ROUTE DETOUR SIGN

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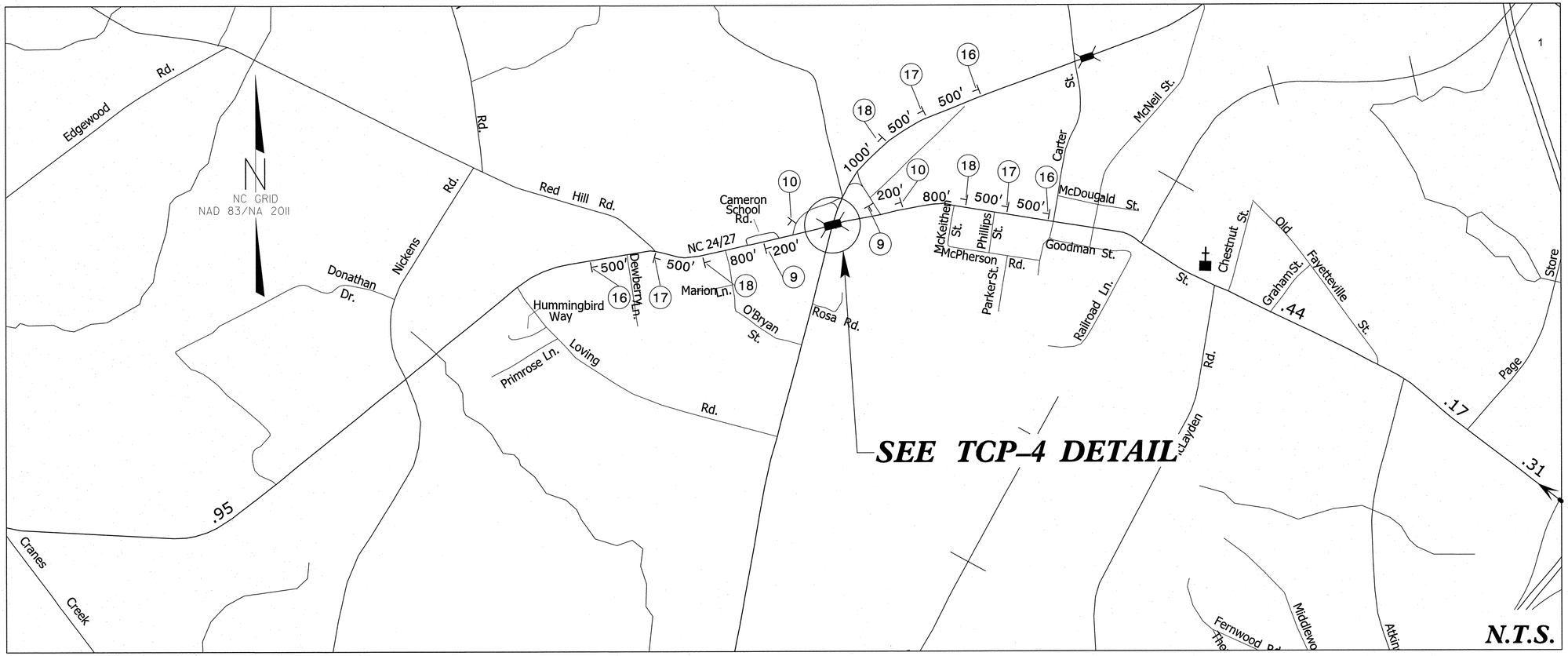
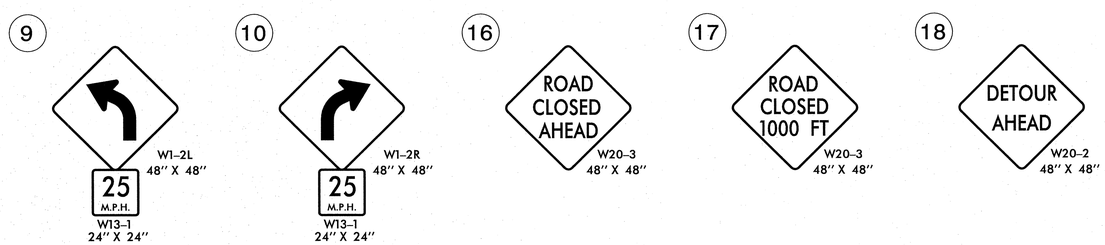
PHASE I AND II OFFSITE DETOUR DETAIL

5/9/2013
62005_TC_TCP-4.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	TCP-5





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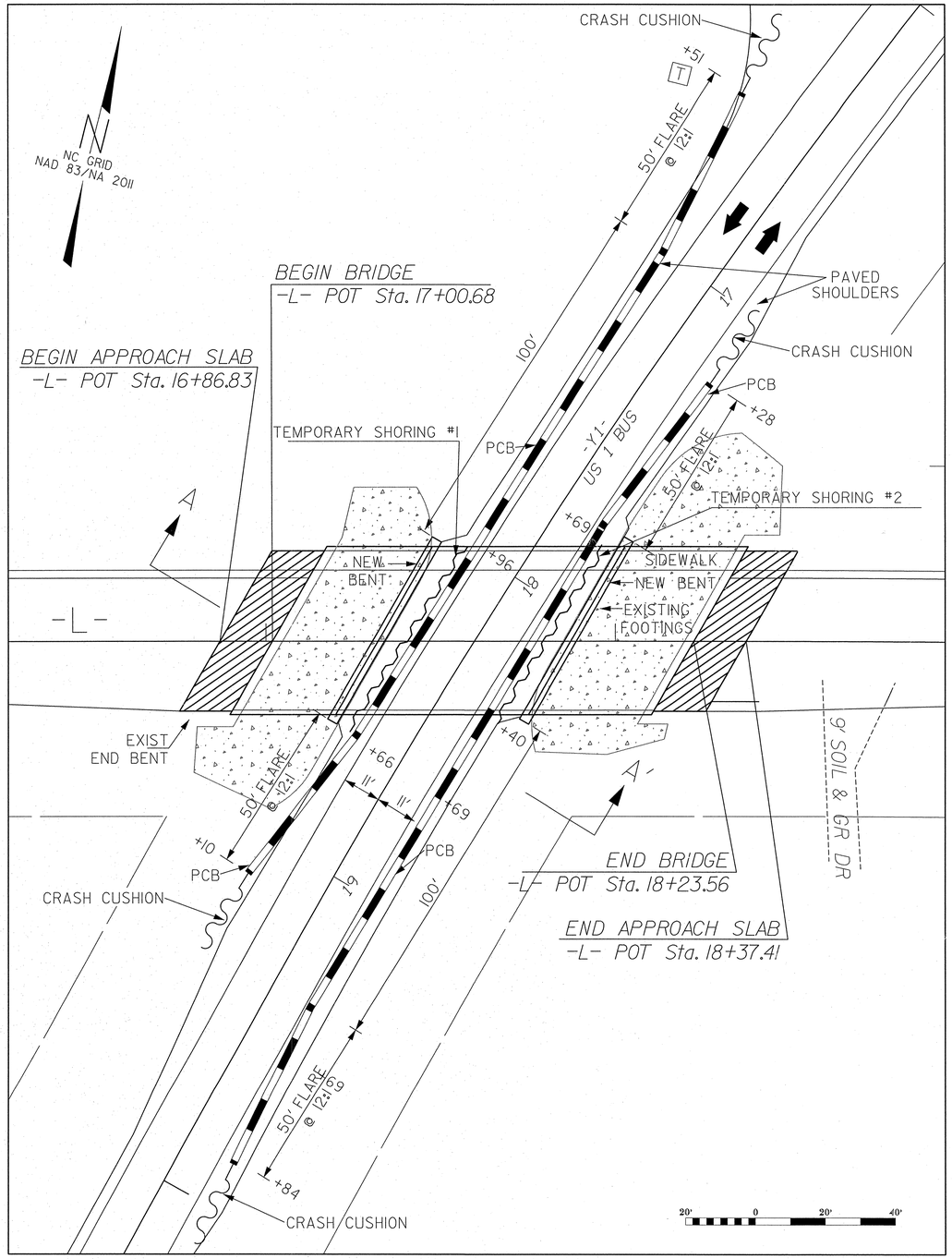
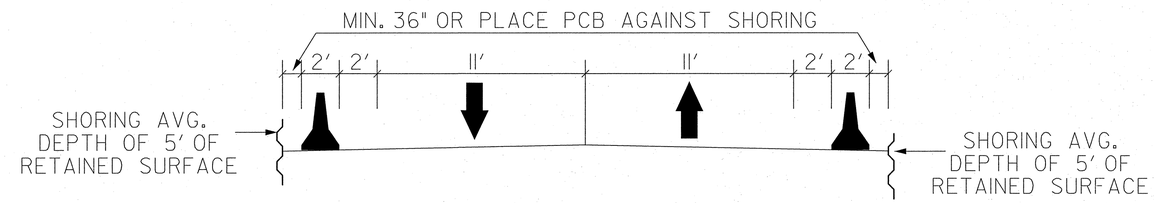
ADVANCE WARNING FOR DETOUR

5/21/2013
620055_TC_TCP-5.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	TCP-6

DETAIL SHOWING TRAFFIC CONTROL FOR STRUCTURE WORK
PHASE I, STEP 2 THRU PHASE II STEP 5





SECTION A-A'

TEMP SHORING #1 = EST. 350 SF
TEMP SHORING #2 = EST. 355 SF

NOTE: REFER TO ROADWAY SHT 2B FOR SHORING DETAILS AND SHT TCP-1 AND TCP-7 FOR SHORING PLACEMENT NOTES.

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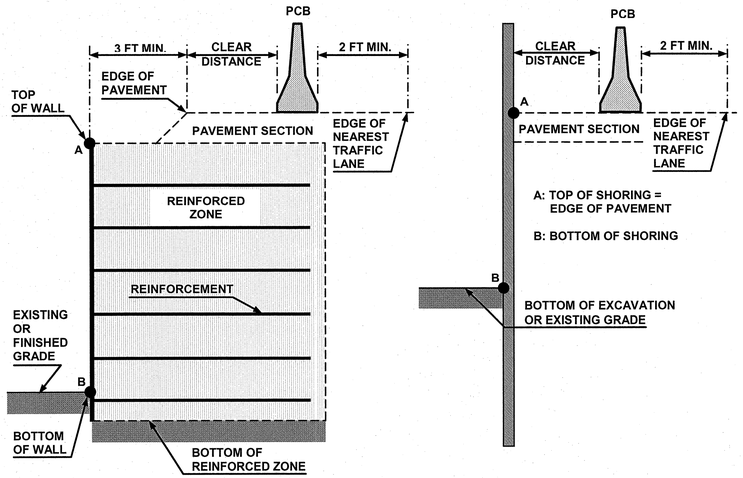
PHASE I AND II STRUCTURE STAGING DETAIL

5/21/2013
62005_TC_TCP-6.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	TCP-7



NOTE: WALL OR SHORING HEIGHT = A - B

FIGURE A

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 to Right

NOTES

1- REFER TO TCP-6 FOR FOR TEMPORARY SHORING LOCATIONS.

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.

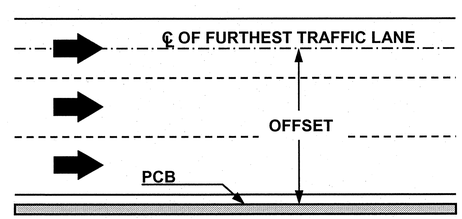


FIGURE B

TEMPORARY SHORING NO. 1

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

DESIGN TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT. RT, TO STATION 18+66 -Y1-, 16.0 FT RT. FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = 357 FT

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 AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT.RT, TO STATION 18+66 -Y1-, 16.0 FT RT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DO NOT USE A TEMPORARY WALL FOR THE TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT.RT, TO STATION 18+66 -Y1-, 16.0 FT RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+96 -Y1-, 17.3 FT. RT,TO STATION 18+66 -Y1-, 16 FT. RT. AVG. DEPTH IS 5.0'. SEE STANDARD DRAWING 1801.01 FOR STANDARD TEMPORARY SHORING.

ESTIMATED TEMPORARY SHORING NO. 1 = 350 SF

TEMPORARY SHORING NO. 2

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

DESIGN TEMPORARY SHORING FROM STATION 17+69 -Y1-, 15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT. FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LF/CF
FRICTION ANDGLE = 30 DEGREES
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = 361 FT

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 AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 17+69 -Y1-, 15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DO NOT USE A TEMPORARY WALL FOR THE TEMPORARY SHORING FROM STATION 17+69 -Y1-,15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+69 -Y1-, 15.2 FT. LT, TO STATION 18+40 -Y1-, 17.3 FT LT. AVG. DEPTH IS 5.0'. SEE STANDARD DRAWING 1801.01 FOR STANDARD TEMPORARY SHORING.

TOTAL ESTIMATED TEMPORARY SHORING NO. 2 = 355 SF

APPROVED: DATE: 5/27/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 10359 ENGINEER THOMAS R. HEPLER

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

PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

5/29/2013
62005_TC_TCP-7.dgn
TLHEPLER

STATE PROJECT REFERENCE NO.	SHEET NO.
41665.1A	PMP-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED PAVEMENT MARKING

MOORE COUNTY

41665.1A

TIP PROJECT:

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN 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
904.50	MOUNTING OF TYPE 'D','E' AND 'F' SIGNS ON U CHANNEL POSTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKINGS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

GENERAL NOTES

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

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
APPROACH SLAB & BRIDGE DECK	COLD APPLIED PLASTIC	RAISED
NC 24/27, US 1 BUS, & RAMPS	THERMOPLASTIC	RAISED

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.

D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

E) EXISTING SIGNS ON THIS PROJECT WHICH ARE IMPACTED BY CONSTRUCTION SHALL BE REMOVED AND STOCKPILED. SIGNS SHALL BE RESET AT DIRECTION OF ENGINEER.

INDEX OF SHEETS

SHEET NO.	TITLE
PMP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, INDEX OF SHEETS, PAVEMENT MARKING SCHEDULE GENERAL NOTES
PMP-2	PROJECT NOTES & PAVEMENT MARKING/ DELINEATION PLAN

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKING LINES	
THERMOPLASTIC LINES (4")	
TA	WHITE EDGELINE (90 MILS)
TD	2' WHITE MINISKIP (90 MILS)
TI	YELLOW DOUBLE CENTER LINE (120 MILS)
TE	WHITE SOLID LANE LINE (90 MILS)
THERMOPLASTIC LINES (8")	
TV	YELLOW DIAGONAL (90 MILS)
COLD APPLIED PLASTIC LINES (4")	
TYPE 2 - PERMANENT HIGH PERFORMANCE	
CA	WHITE EDGELINE
CI	YELLOW DOUBLE CENTER LINE
PERMANENT RAISED PAVEMENT MARKERS	
MA	YELLOW & YELLOW

PAVEMENT MARKING SYMBOLS

↰	UA
↱	UB
↰↱	UC

THERMOPLASTIC SYMBOLS (2.3 mm)

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- NORTH ARROW
- PROPOSED PVMT. --------- EXIST. PVMT.

PAVEMENT MARKINGS

- CRYSTAL/CRYSTAL PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- CRYSTAL/RED PAVEMENT MARKER
- PAVEMENT MARKING SYMBOLS

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

APPROVED: Thomas R. Hepler
DATE: 6-21-13

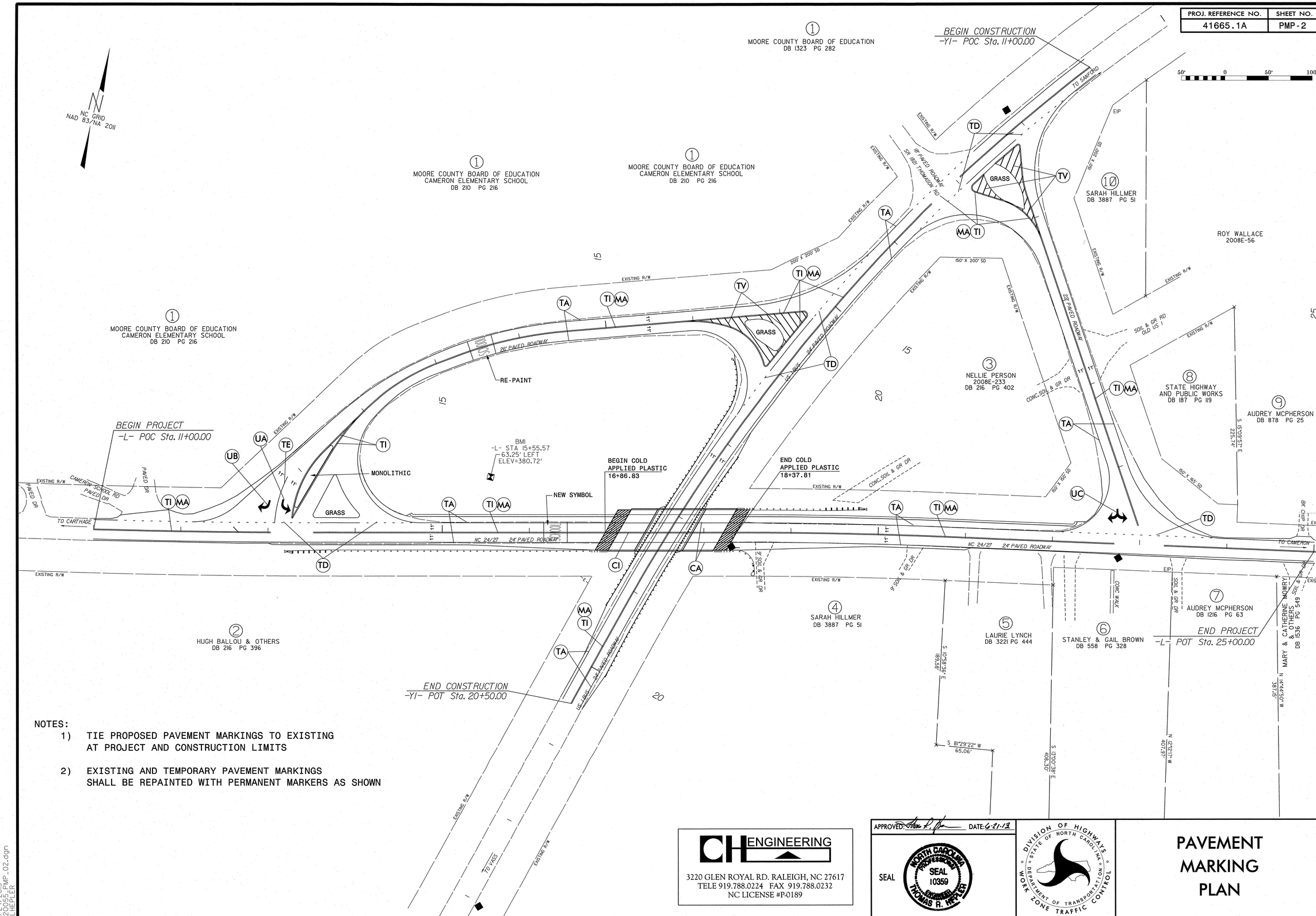
SEAL — NORTH CAROLINA PROFESSIONAL SEAL 10359 ENGINEER THOMAS R. HEPLER

PLAN PREPARED FOR N.C.D.O.T. BY: CH ENGINEERING, PLLC

	STATE TRAFFIC MANAGEMENT ENGINEER
T. R. HEPLER, P.E.	TRAFFIC CONTROL PROJECT ENGINEER
	TRAFFIC CONTROL PROJECT DESIGN ENGINEER
T. L. HEPLER	TRAFFIC CONTROL DESIGN ENGINEER / TECHNICIAN

6/24/2013
6:06:53 PM
41665_PMP_TSH.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	PMP-2



NOTES:

1) TIE PROPOSED PAVEMENT MARKINGS TO EXISTING AT PROJECT AND CONSTRUCTION LIMITS

2) EXISTING AND TEMPORARY PAVEMENT MARKINGS SHALL BE REPAINTED WITH PERMANENT MARKERS AS SHOWN

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

APPROVED: DATE: 6-21-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 10359 ENGINEER THOMAS R. HEPLER

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

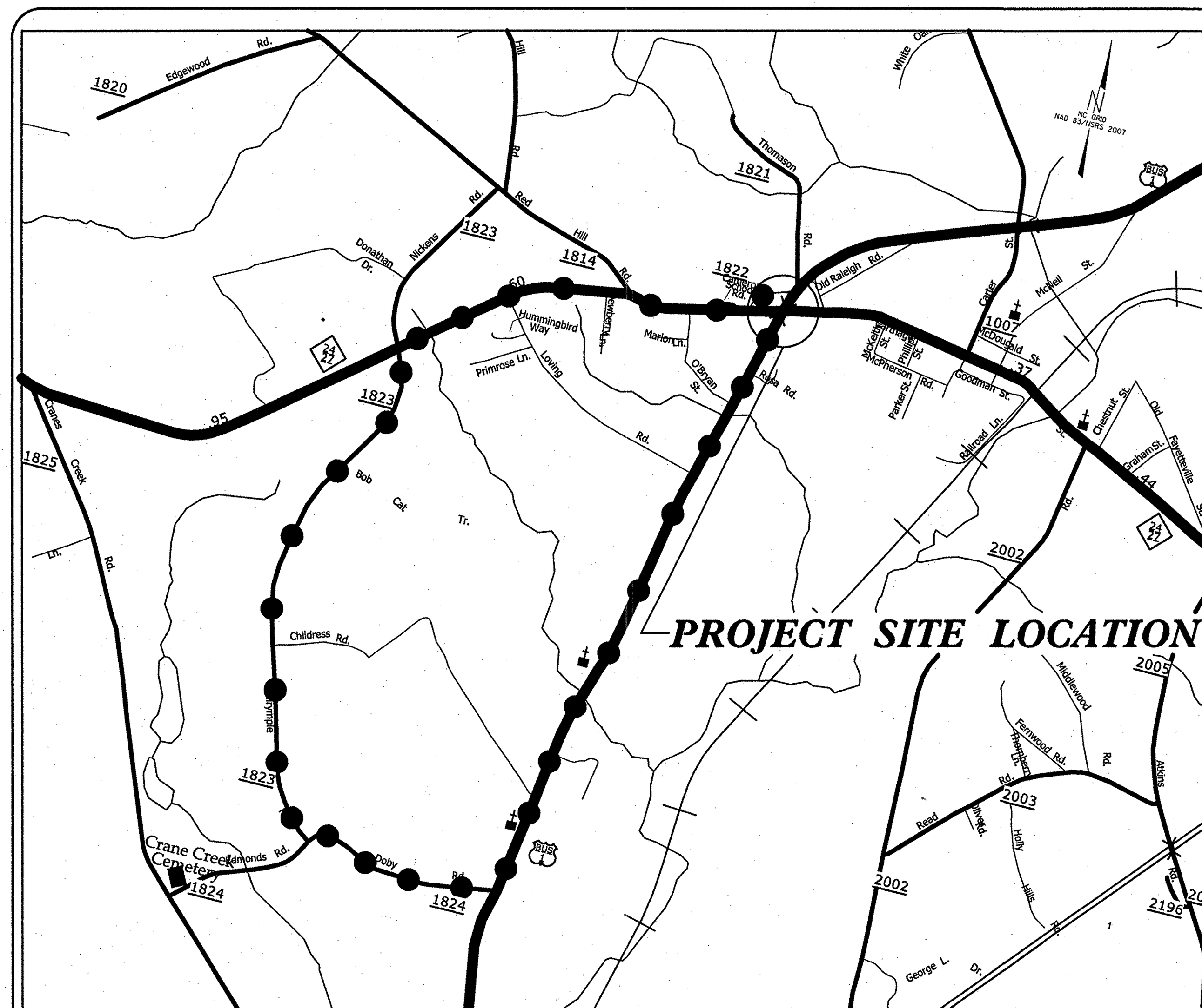
PAVEMENT MARKING PLAN

6/24/2013
62005_PMP_02.dgn
TLHEPLER

PROJECT: 41665.1A

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.1A	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



VICINITY MAP

DETOUR ROUTE

N.T.S.

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PLAN FOR PROPOSED

HIGHWAY EROSION CONTROL

MOORE COUNTY

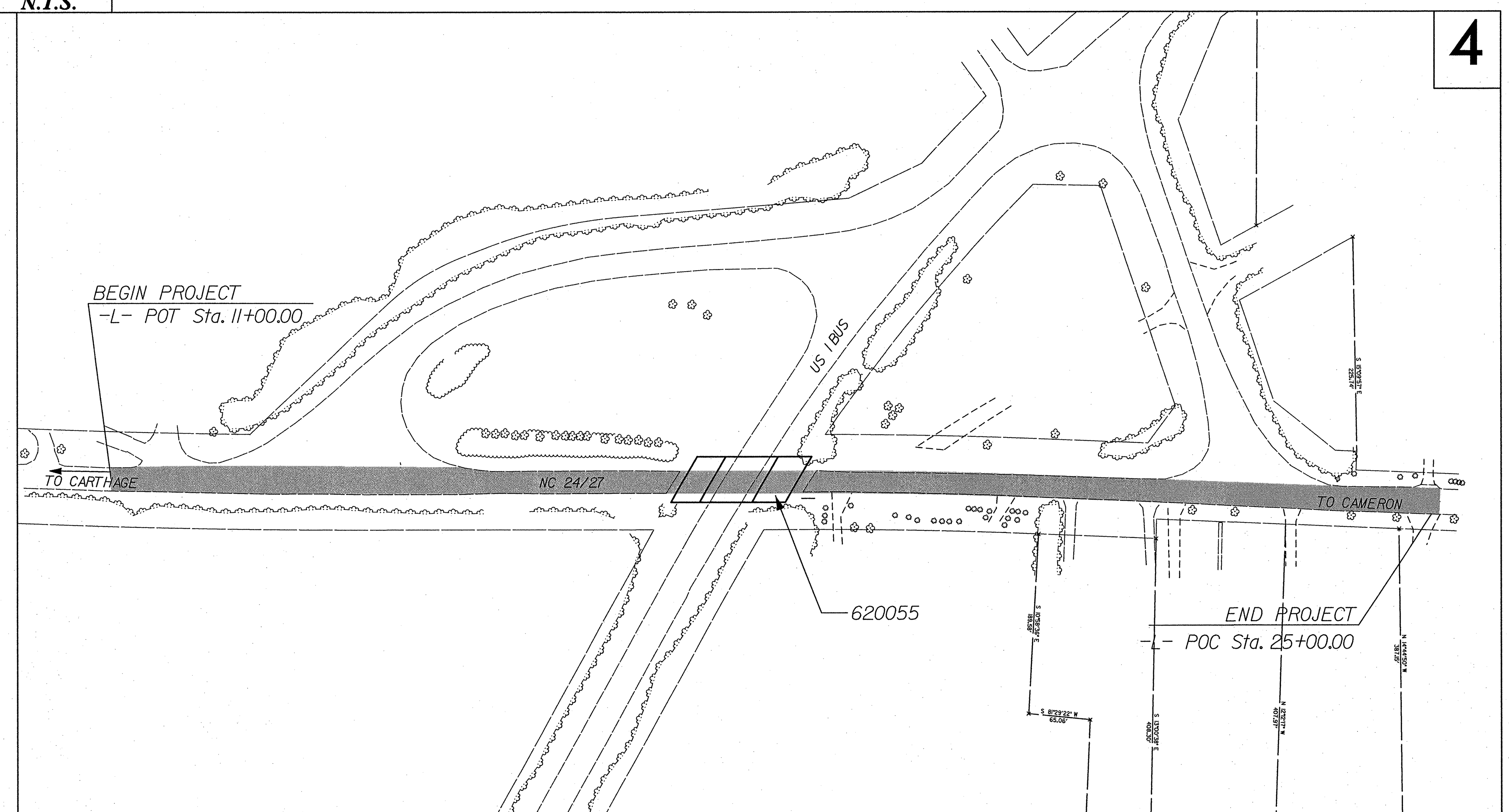
LOCATION: BRIDGE NO. 620055 ON NC 24/27 OVER US 1 BUSINESS

TYPE OF WORK: GRADING, CURB & GUTTER, DRAINAGE, PAVING, PAVEMENT MARKING AND STRUCTURES

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

NC GRID NAD 83 /NC 2011



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
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	EW / CFW
	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.

PREPARED BY:

Kimley-Horn and Associates, Inc.

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

Vance W. Blanton
LEVEL IIIA NAME

707
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALE

50 0 100
PLANS

50 0 100
PROFILE (HORIZONTAL)

50 0 100
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

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

5/21/2013
620055_RDY_TSH_EC-1.dgn
TLHEPLER

8/17/99

PREPARED BY:
Kimley-Horn and Associates, Inc.
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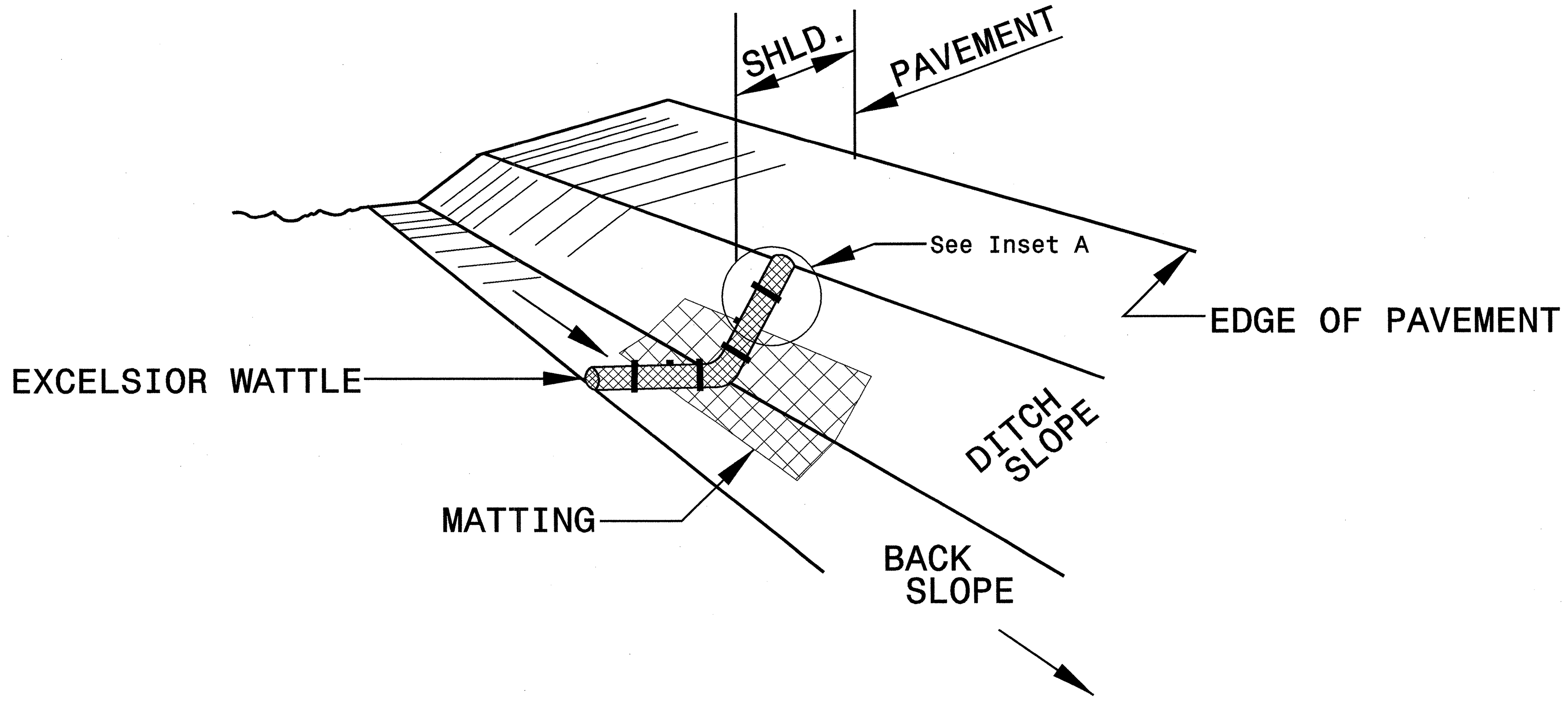
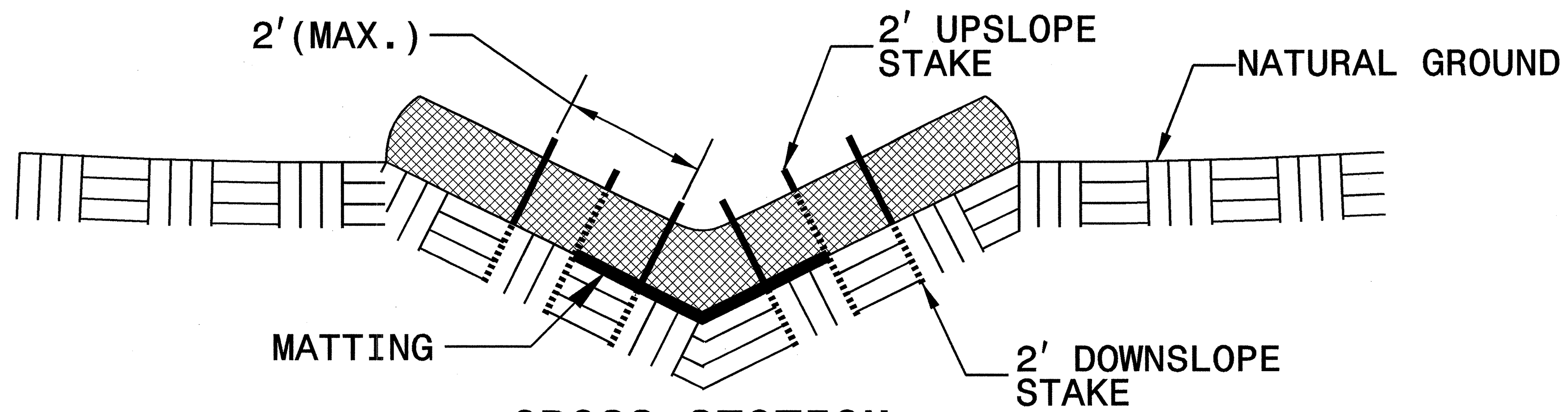
PROJECT REFERENCE NO.	SHEET NO.
41665.1A	EC-2
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

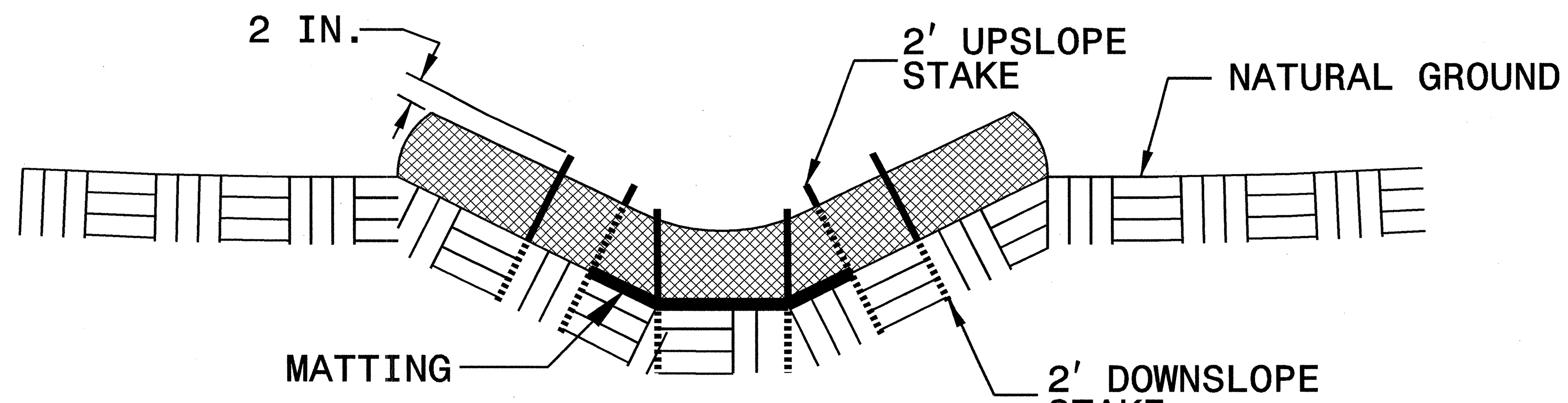
WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

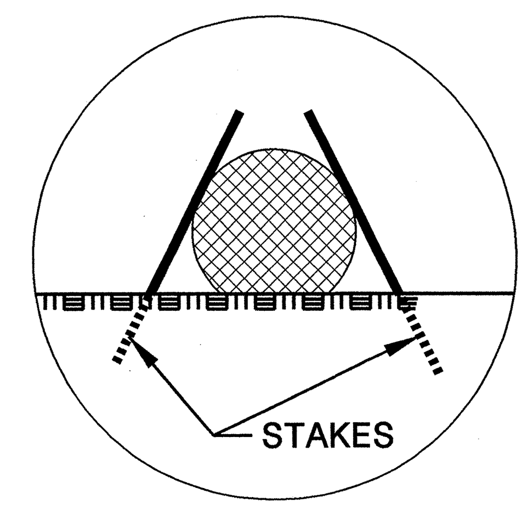
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

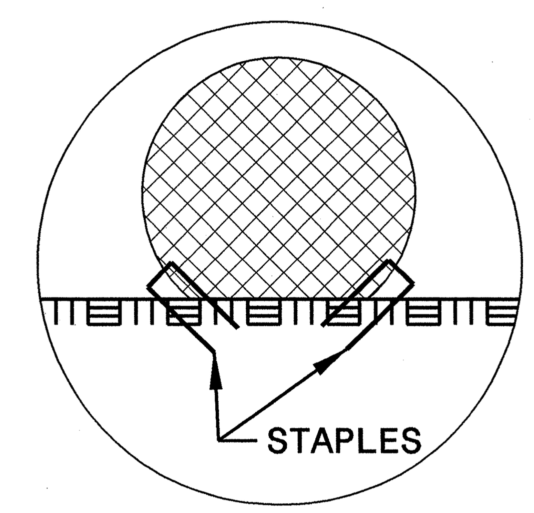
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

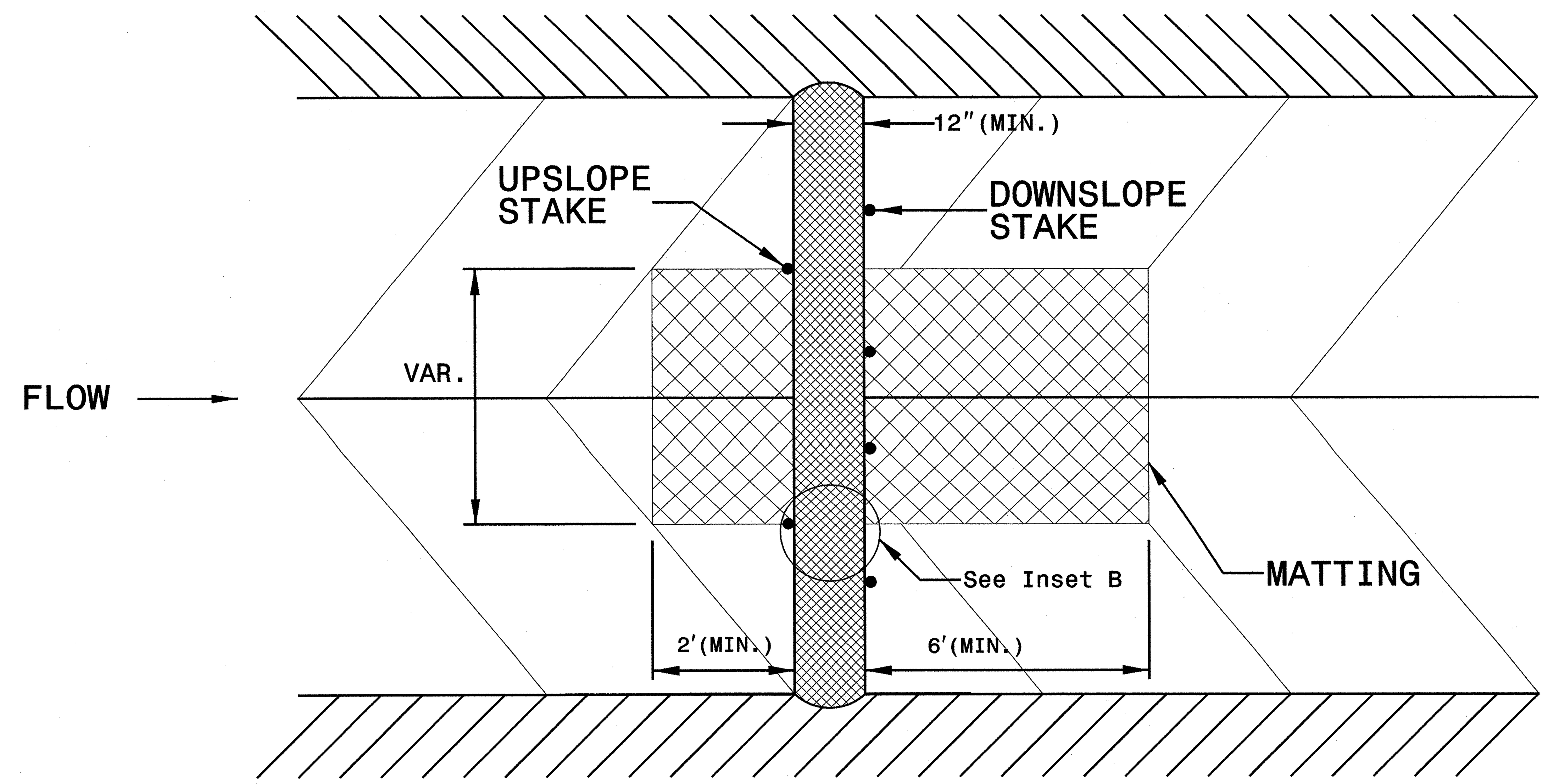
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

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

8/17/99

REVISIONS

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PREPARED BY:
Kimley-Horn and Associates, Inc.
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RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	EC-3
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-Y1-	18+50	20+00	LT	135
			SUBTOTAL		135
		MATTING FOR WATTLE INSTALLATION			36
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					6250
				TOTAL	6421
				SAY	6425

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		0
		ADDITIONAL PSRM TO BE INSTALLED			0
				TOTAL	0
				SAY	0

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PREPARED BY:
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	EC-3A
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

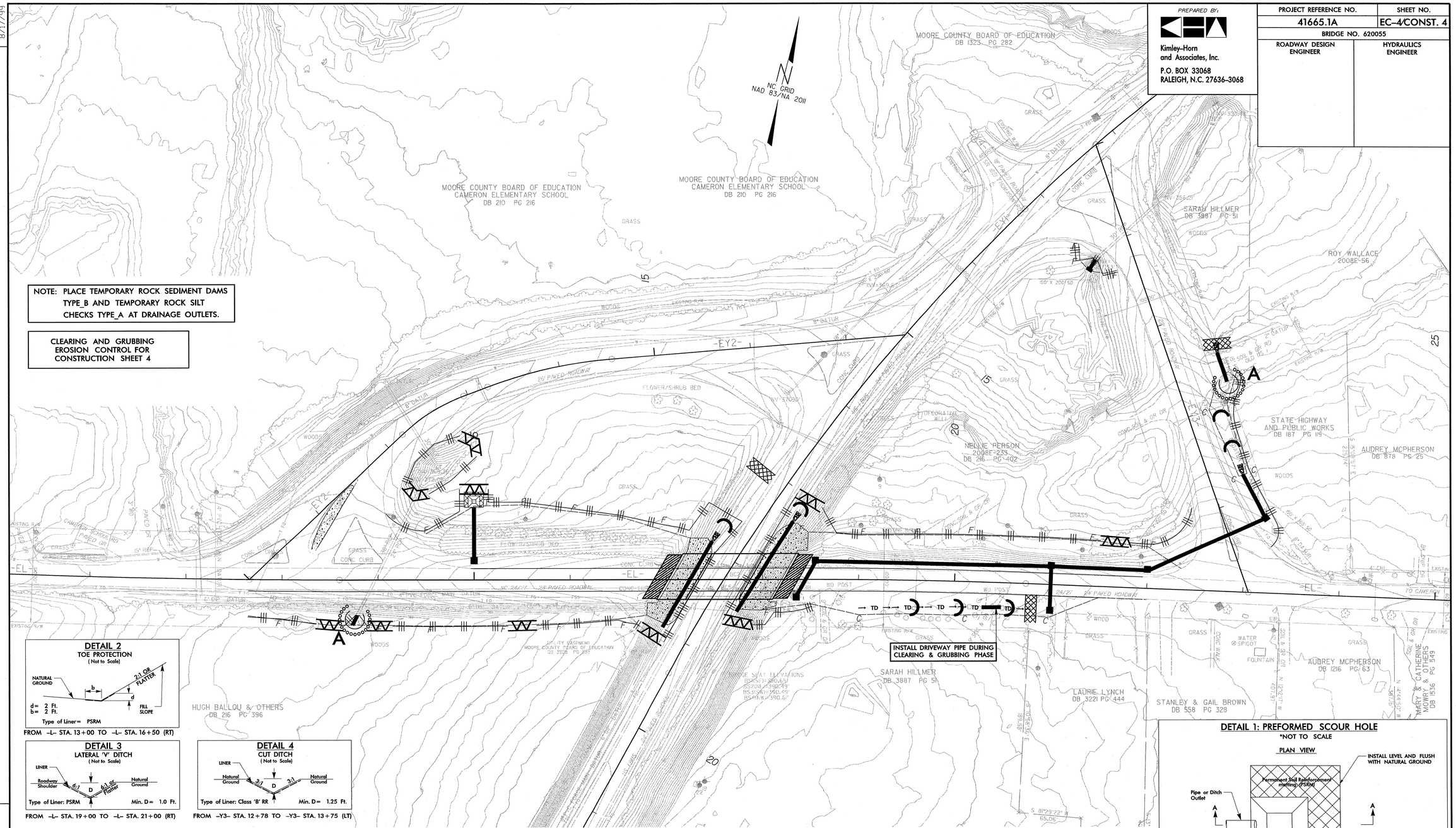
REVISIONS

8/17/99

$$$$SYSTIME$$$$ $$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	EC-4/CONST. 4
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PREPARED BY:
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068



NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE_B AND TEMPORARY ROCK SILT CHECKS TYPE_A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

DETAIL 2
TOE PROTECTION
(Not to Scale)

FROM -L- STA. 13+00 TO -L- STA. 16+50 (RT)

DETAIL 3
LATERAL 'V' DITCH
(Not to Scale)

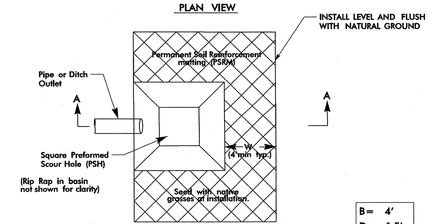
FROM -L- STA. 19+00 TO -L- STA. 21+00 (RT)

DETAIL 4
CUT DITCH
(Not to Scale)

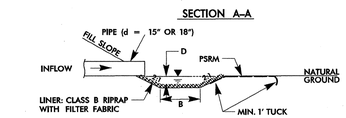
FROM -Y3- STA. 12+78 TO -Y3- STA. 13+75 (LT)

DETAIL 1: PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



SECTION A-A



3/08

-L- STA. 15+00 LT

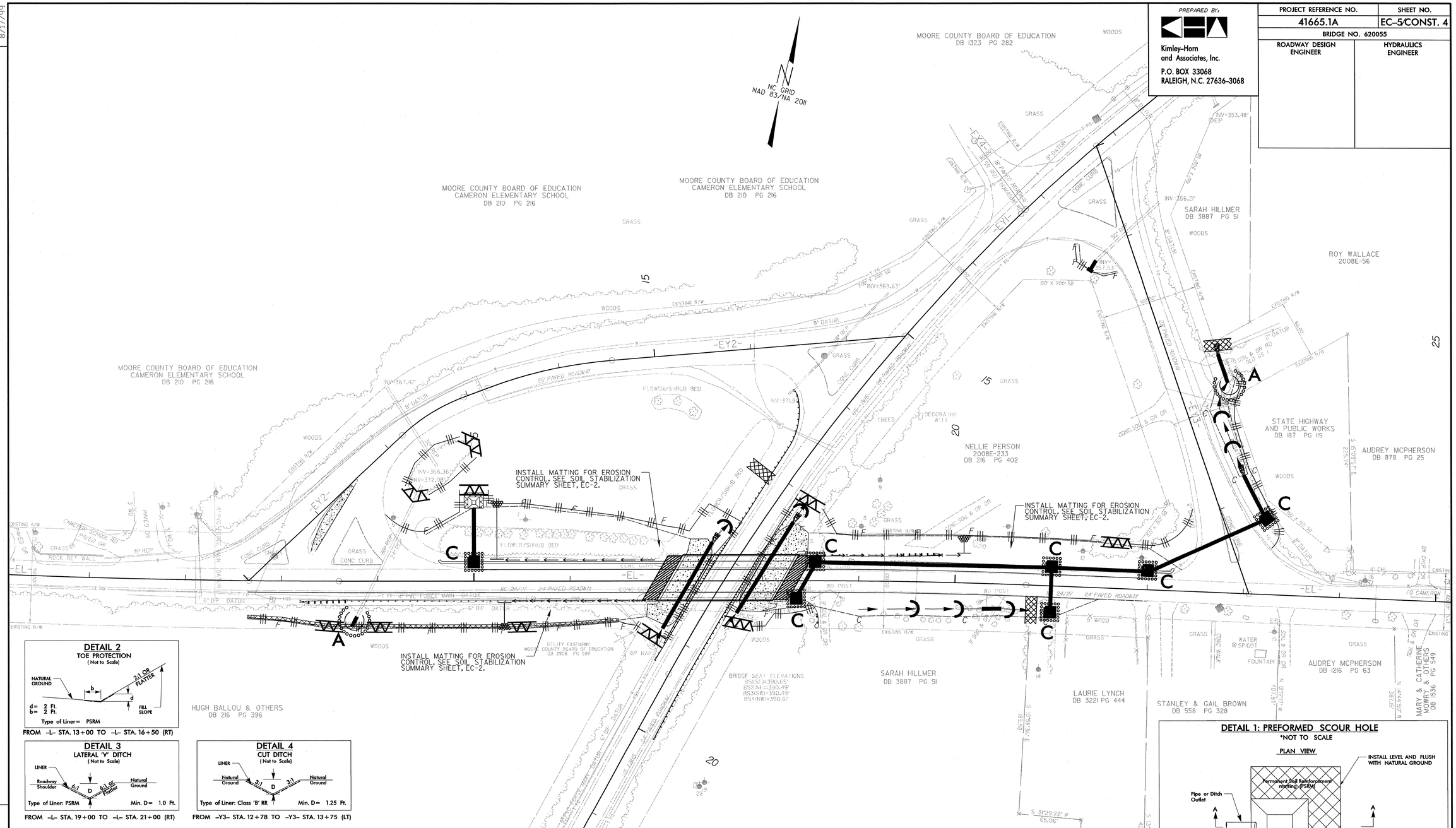
REVISIONS

8/17/99

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$CELL$$$$
$$$$LEVEL$$$$
$$$$DATE$$$$

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	EC-5/CONST. 4
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PREPARED BY:
Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068



DETAIL 2
TOE PROTECTION
(Not to Scale)

d= 2 Ft.
b= 2 Ft.
Type of Liner= PSRM

FROM -L- STA. 13+00 TO -L- STA. 16+50 (RT)

DETAIL 3
LATERAL 'V' DITCH
(Not to Scale)

Type of Liner: PSRM
Min. D= 1.0 Ft.

FROM -L- STA. 19+00 TO -L- STA. 21+00 (RT)

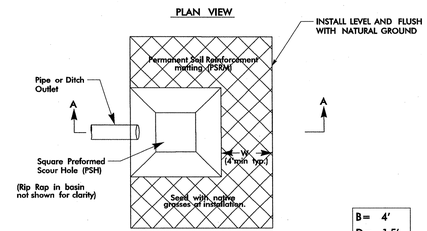
DETAIL 4
CUT DITCH
(Not to Scale)

Type of Liner: Class 'B' RR
Min. D= 1.25 Ft.

FROM -Y3- STA. 12+78 TO -Y3- STA. 13+75 (LT)

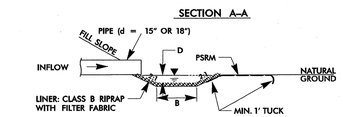
DETAIL 1: PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



B= 4'
D= 1.5'
W= 4'

SECTION A-A



308

-L- STA. 15+00 LT

REVISIONS

8/17/99

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

09/06/99

PROJECT: 41665.1A

CONTRACT: DH00104

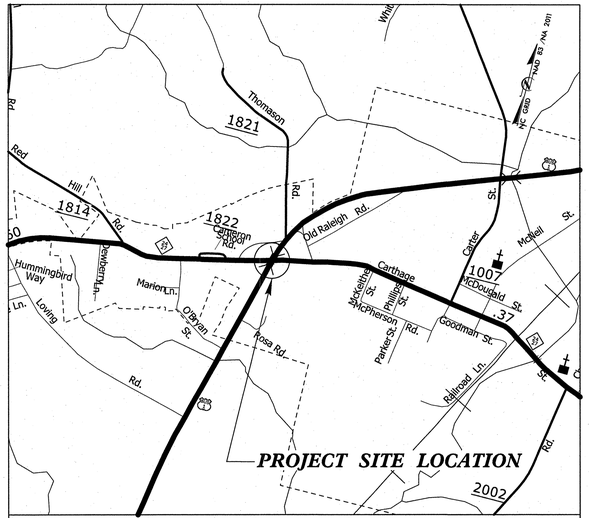
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
41665.1A	UC–1

UTILITY CONSTRUCTION PLANS
MOORE COUNTY

LOCATION: BRIDGE NO. 620055 ON NC 24/27 OVER US 1 BUSINESS

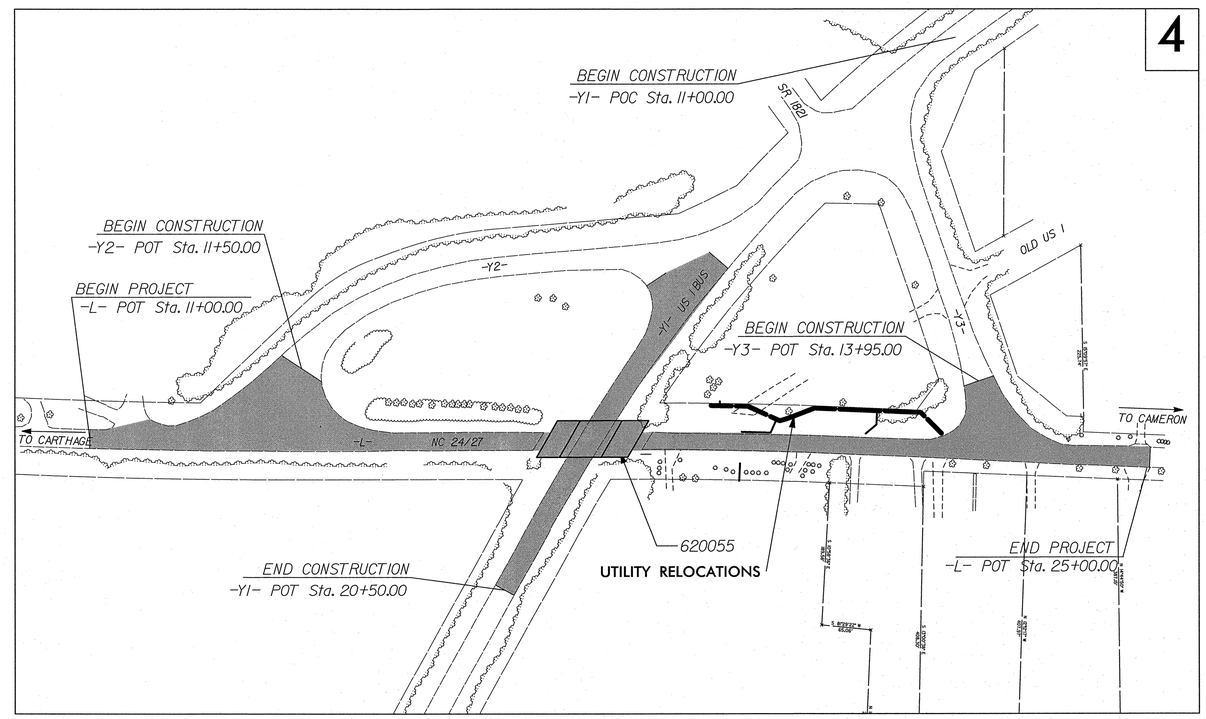
TYPE OF WORK: WATER LINE AND FORCEMAIN RELOCATION



VICINITY MAP

DETOUR ROUTE

N.T.S.



NC GRID
NAD 83 /NA 2011

GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC–1	TITLE SHEET
UC–2	SYMBOLOGY SHEET
UC–3	WATER PLAN AND PROFILE SHEET
UC–4	UTILITY DETAILS AND CONSTRUCTION NOTES

WATER AND SEWER OWNERS ON PROJECT

(1) WATER – TOWN OF CAMERON

Davis Reynolds
PHONE (910) 245–3212

(2) SEWER – MOORE COUNTY PUBLIC SCHOOLS

Jacob Monroe
PHONE (910) 947–2258

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028012 ENGINEER ERIC M. TWEED

5-21-13

PLANS PREPARED BY:

CH ENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PREPARED FOR THE OFFICE OF:

DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1555 MAIL SERVICE CENTER
RALEIGH NC 27699–1555
PHONE (919) 707–6690
FAX (919) 250–4151

Roger Worthington, P.E.	UTILITIES SECTION ENGINEER
Louis L. Mitchell, P.E.	DIVISION CONSTRUCTION MANAGER
Eric Tweed, P.E.	UTILITIES PROJECT ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	UC-2
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	UTILITY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028912 ENGINEER ERIC M. TWEED
3-15-13

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown)
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — REH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown)
- Force Main Sewer Line (Sized as Shown)
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown)
- Trenchless Installation
- Encasement by Open Cut
- Encasement
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line
- *Underground Telephone Cable
- *Underground Telephone Conduit
- *Underground Fiber Optics Telephone Cable
- *Underground TV Cable
- *Underground Fiber Optics TV Cable
- *Underground Gas Pipeline
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line
- Underground Unknown Utility Line
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown)
- Designated Utility Line (Type as Shown)

REV: 2/1/2012

5/14/99

3/15/2013
ETWEED
620055_SYM_UC-2.dgn

NOTE:
COORDINATE WITH UTILITY OWNER FOR MAKING TIES TO EXISTING LINE. UTILITY OWNER MAY REQUEST OFF-HOURS TIMING TO PREVENT DISRUPTIONS TO LOCAL BUSINESSES.

DRIVE AT STA 80+60 TO 80+85 WILL NOT REQUIRE REPLACEMENT BY UTILITY CONTRACTOR

QUANTITIES: 345LF OF NEW 2" PIPE
122 LF OF ¾" SERVICE
RELOCATE 2 WATER METERS
RECONNECT 1 WATER METER

ASSOCIATED SERVICE LINES TO BE INCLUDED IN COST OF RELOCATION OR RECONNECTION AS APPROPRIATE.

CH ENGINEERING
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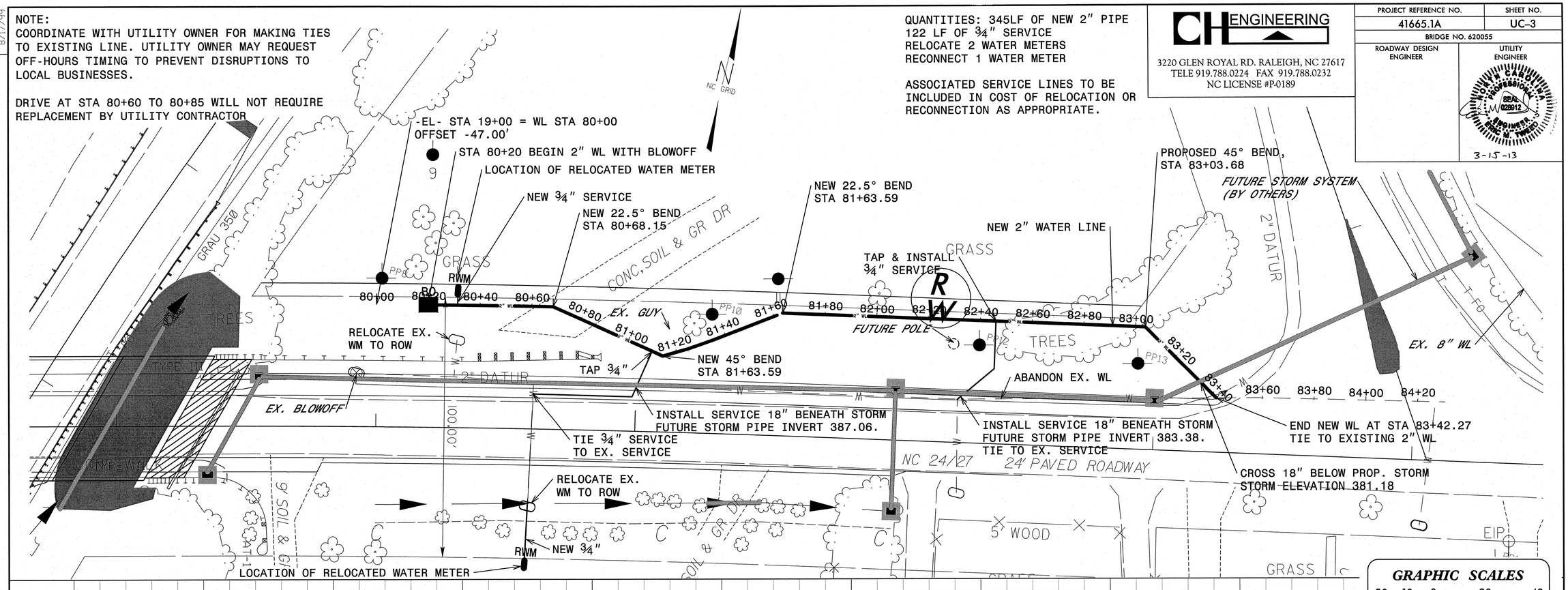
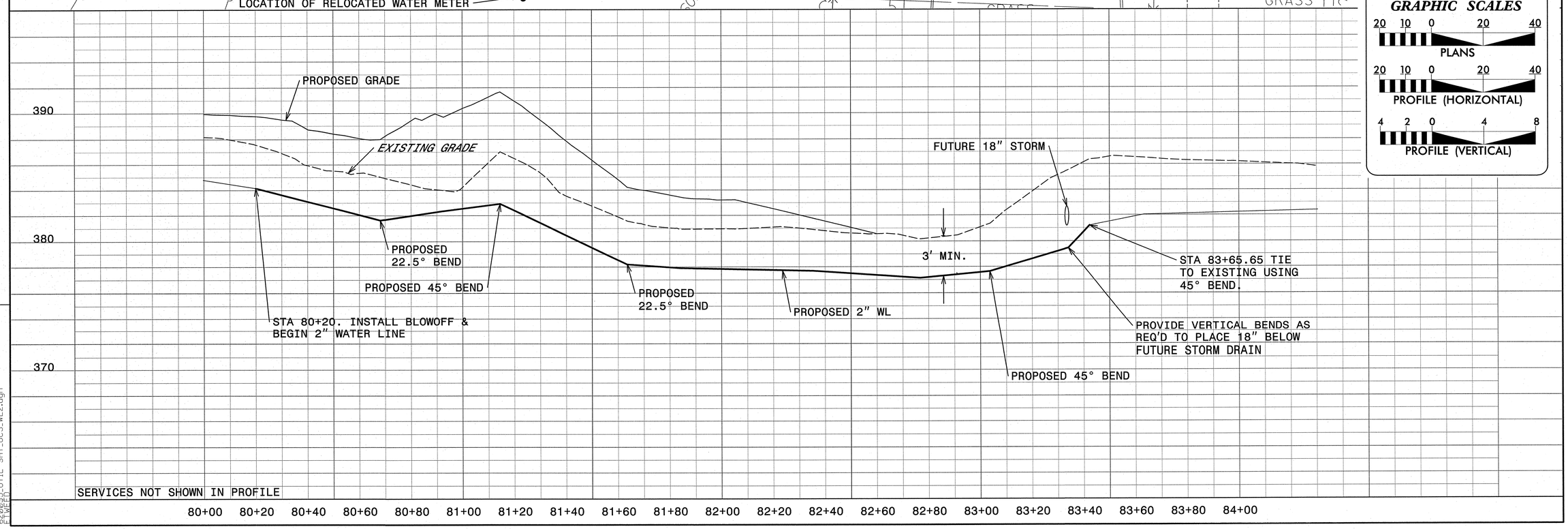
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	UC-3
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	UTILITY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029912 ENGINEER JACK N. TIMES
3-15-13





REVISIONS

8/17/99

3/15/2013
52.0055 UTIL SHT_UC3_WL2.dgn
EFWILLIAMS

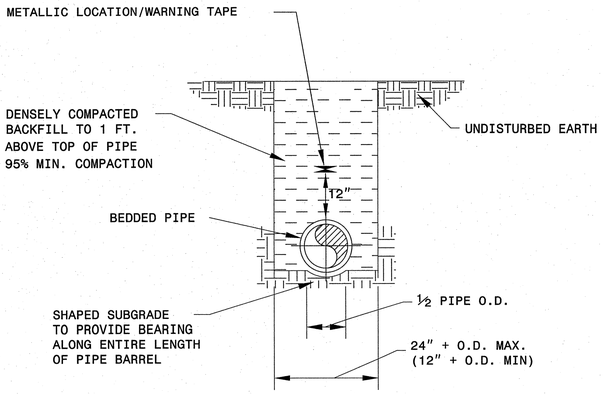
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	UC-4
BRIDGE NO. 620055	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028912 ENGINEER ERIC M. TWEED
3-15-13

REVISIONS

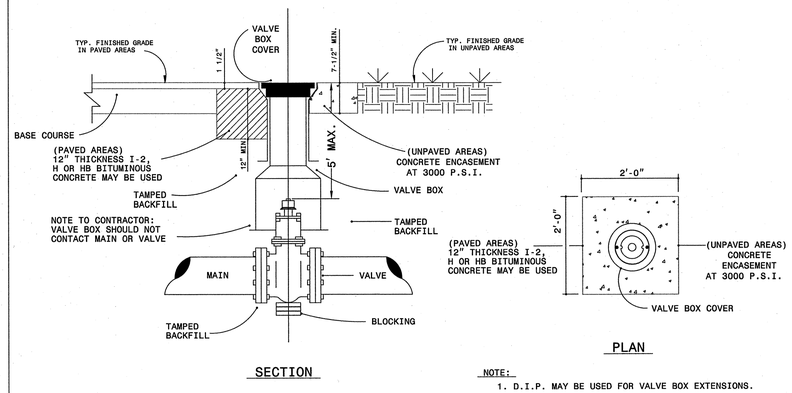
8/17/99



WATER MAINS 8" AND SMALLER SHALL HAVE A MINIMUM OF 3' OF COVER.

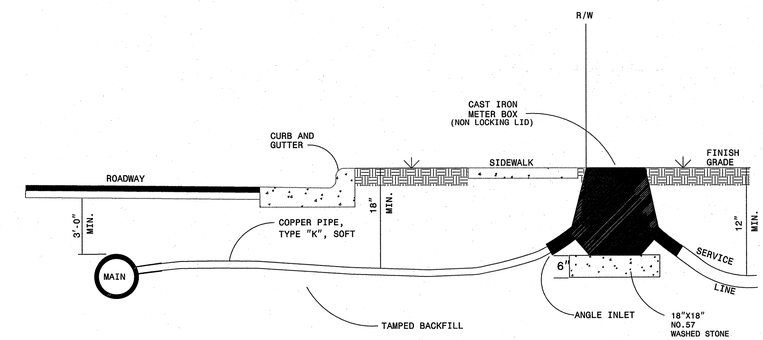
PIPE LAYING CONDITION

NOT TO SCALE

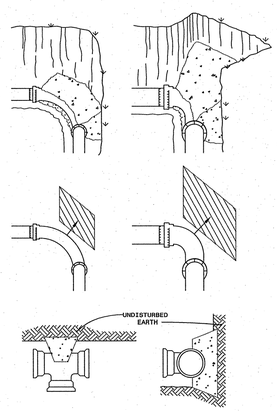


NOTE:
1. D.I.P. MAY BE USED FOR VALVE BOX EXTENSIONS.
2. VALVE OPERATING NUT MUST BE EXTENDED SO THAT THE DEPTH IS NO GREATER THAN 5' FROM THE SURFACE USING A MANUFACTURER APPROVED EXTENSION KIT.
3. PRECAST CONCRETE ENCASEMENT IS ALLOWED OUTSIDE OF PAVED AREAS.

STANDARD VALVE BOX INSTALLATION



STANDARD 3/4" AND 1" METER BOX INSTALLATION

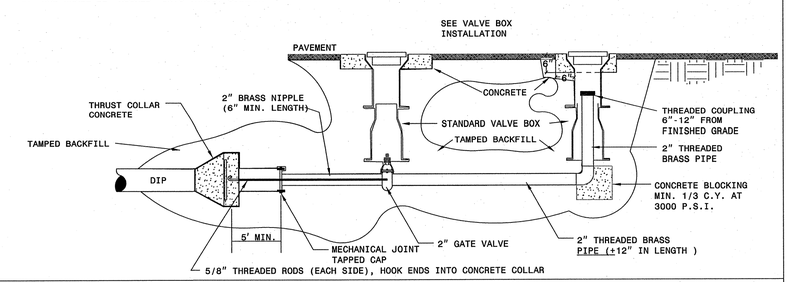


MINIMUM CONCRETE BLOCKING (C.Y.) *					
NOM. PIPE DIA. IN.	TEES & DEAD ENDS	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
2	1/3	1/3	1/4	1/4	1/4

NOTE:
FITING SHALL BE WRAPPED WITH A MINIMUM 4 MIL PLASTIC
NO CONCRETE SHALL COVER
BOLTS OR GLANDS.

STANDARD REACTION BLOCKING

NOTE:
1. FOR MAINS THAT ARE TO BE EXTENDED USE A VALVE EQUAL TO THE MAIN SIZE AS THE BLOW-OFF VALVE AND THEN REDUCE TO THE 2" STANDPIPE.
2. ROD SHALL BE "HOOKED" INTO THRUST COLLAR.



STANDARD 2" BLOW-OFF ASSEMBLY

3/15/2013
620055_SHT_UC6_DTLS.dgn
ETWEED

09/08/99

PROJECT: 41665.1A

CONTRACT: DH00104

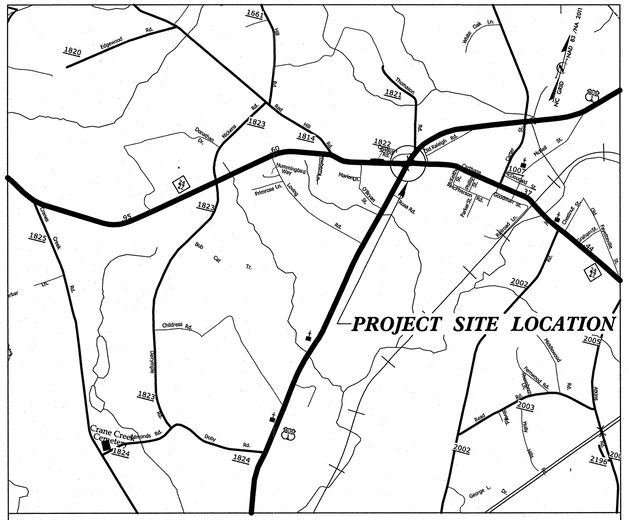
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
41665.1A	UO–1

UTILITIES BY OTHERS PLANS
MOORE COUNTY

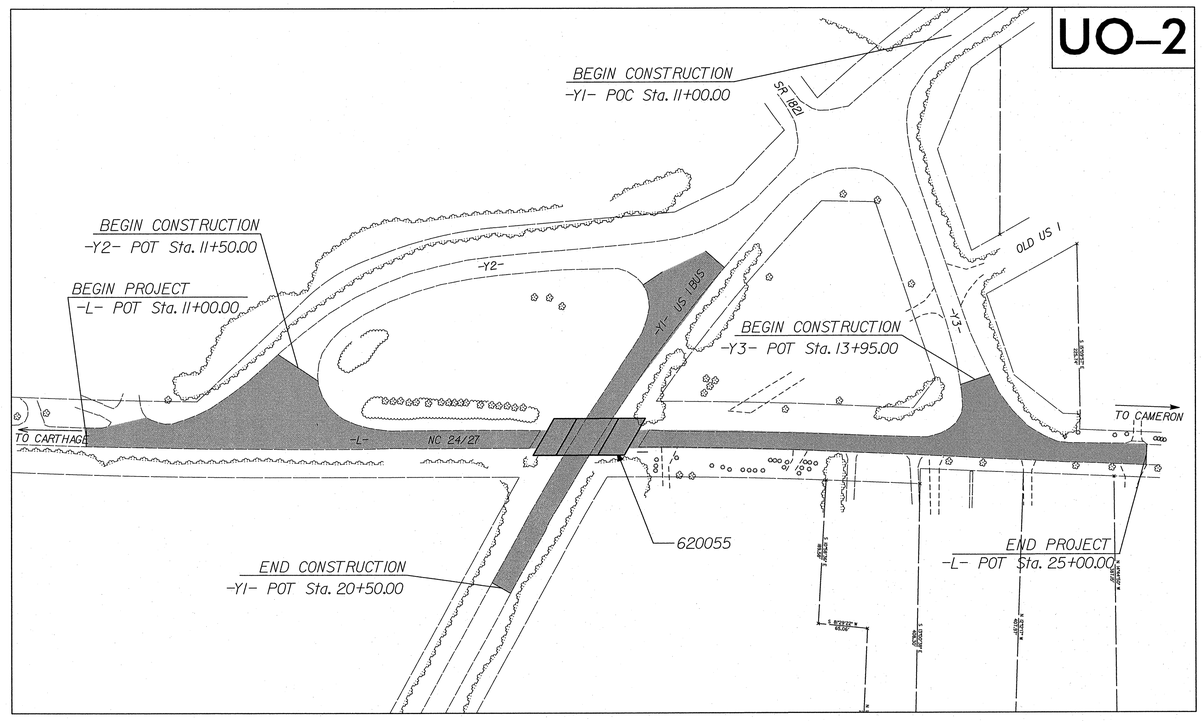
LOCATION: BRIDGE NO. 620055 ON NC 24/27 OVER US 1 BUSINESS

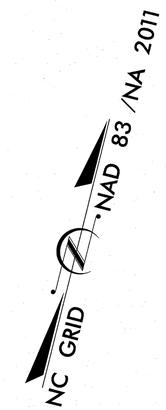
TYPE OF WORK: AERIAL AND BURIED UTILITIES



VICINITY MAP

N.T.S.





GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO–1	TITLE SHEET
UO–2	UTILITIES BY OTHERS PLAN SHEET

UTILITY OWNERS ON PROJECT

(1) POWER: PROGRESS ENERGY – Timothy Sauls, Jr. (919) 882–5043

(2) COMMUNICATIONS: CENTURYLINK – Kevin Godwin (910) 366–2142

(3) COMMUNICATIONS: MCNC – David Warden (919) 248–1467

(4) COMMUNICATIONS: CHARTER CABLE – Rex Gray (919) 353–2712

(5) WATER: TOWN OF CAMERON – Davis Reynolds (910) 690–6463

(6) SANITARY SEWER: MOORE COUNTY SCHOOL SYSTEM – Jacob Monroe (910) 947–2258

PLANS PREPARED BY:

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

UTILITIES PROJECT ENGINEER

Mary Jo Lee, P.E.

PREPARED FOR THE OFFICE OF:

DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1555 MAIL SERVICE CENTER
RALEIGH NC 27699–1555
PHONE (919) 707–6690
FAX (919) 250–4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
41665.1A	UO-2

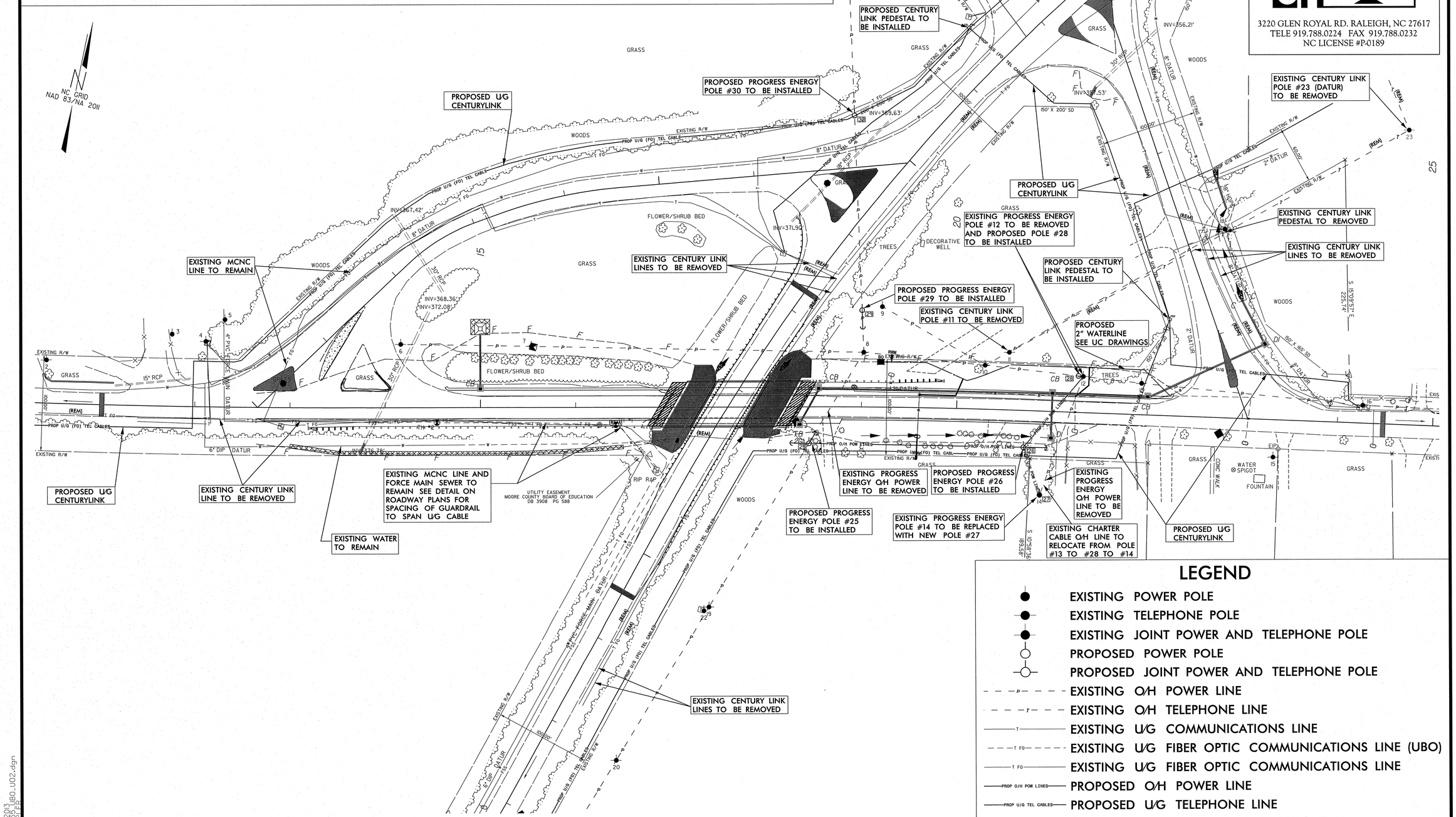
UTILITIES BY OTHERS

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

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

CONTACT INFORMATION FOR UTILITIES

POWER: PROGRESS ENERGY; TIMOTHY SAULS, JR. 919-882-5043 TIMOTHY.SAULSJR@PGNMAIL.COM
COMMUNICATIONS: CENTURYLINK; KEVIN GODWIN 910-366-2142 KEVIN.GODWIN@CENTURYLINK.COM
COMMUNICATIONS: MCNC; DAVID WARDEN 919-248-1467 DWARDEN@MCNC.ORG
COMMUNICATIONS: CHARTER CABLE; REX GRAY 919-353-2712 REX.GRAY@CHARTERCOM.COM
WATER: TOWN OF CAMERON; DAVIS REYNOLDS 910-690-6463 DAVISANDJOANN@EMBARQMAIL.COM
SAN SEWER: MOORE COUNTY SCHOOL SYSTEM; JACOB MONROE 910-947-2258 JMONROE@NCMCS.ORG



LEGEND

- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING JOINT POWER AND TELEPHONE POLE
- PROPOSED POWER POLE
- PROPOSED JOINT POWER AND TELEPHONE POLE
- EXISTING O/H POWER LINE
- EXISTING O/H TELEPHONE LINE
- EXISTING U/G COMMUNICATIONS LINE
- EXISTING U/G FIBER OPTIC COMMUNICATIONS LINE (UBO)
- EXISTING U/G FIBER OPTIC COMMUNICATIONS LINE
- PROPOSED O/H POWER LINE
- PROPOSED U/G TELEPHONE LINE
- PROPOSED U/G FIBER OPTIC TELEPHONE LINE

8/17/99

3/15/2013
620055_UBO_U02.dgn

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	X-0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION

INDEX OF SHEETS

DESCRIPTION	SHEETS
VOLUME SUMMARY	X-0A
-L-	X-1 THRU X-5
-Y-	X-6 THRU X-9

PROJ. REFERENCE NO.	SHEET NO.
41665.1A	X-0A

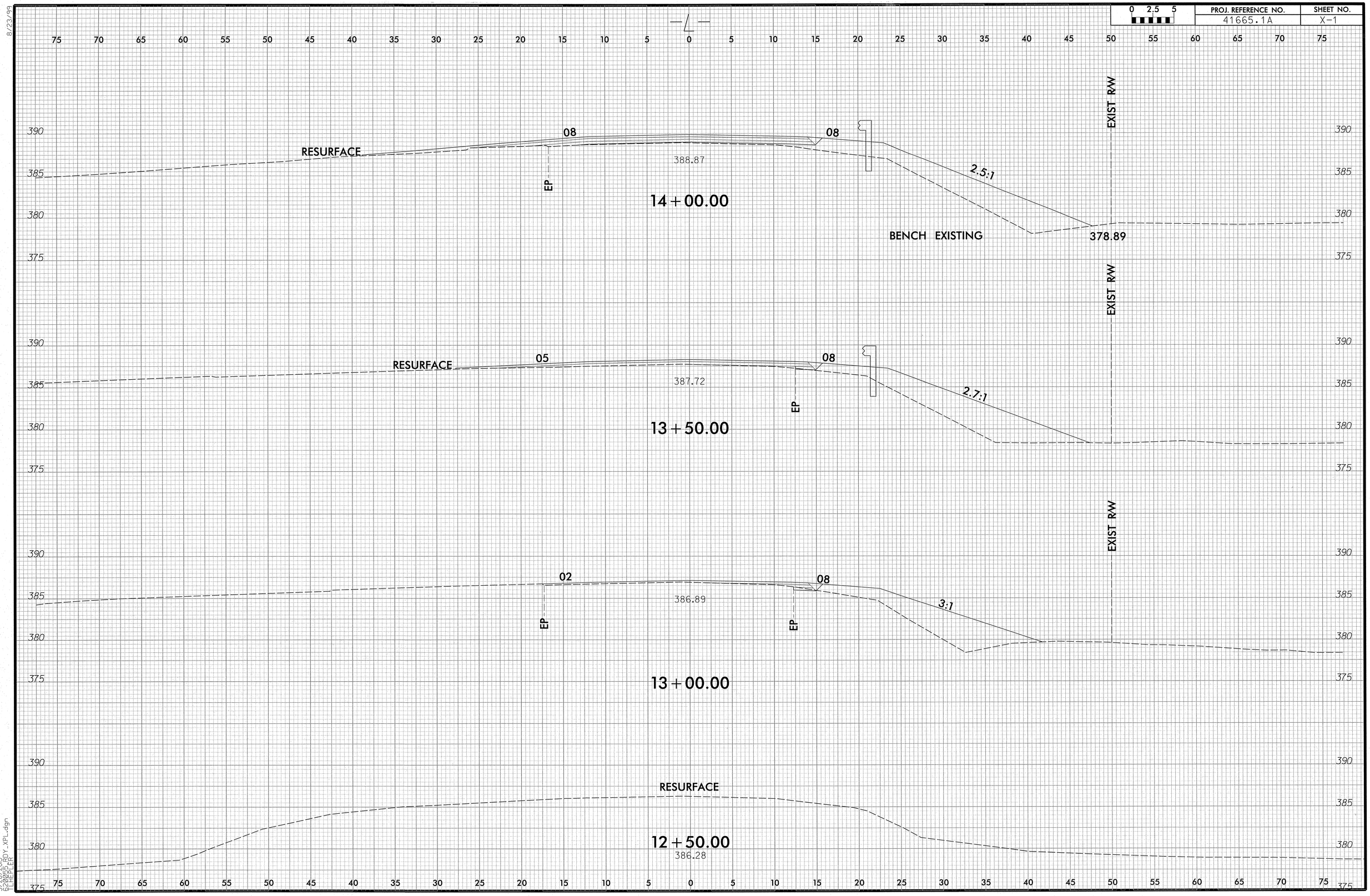
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+65.00	0	0
12+65.00	0	0
13+00.00	3	45
13+50.00	4	102
14+00.00	2	128
14+50.00	0	167
15+00.00	0	354
15+50.00	0	569
16+00.00	0	594
16+50.00	0	482
17+00.00	0	390
17+25.00	0	139
Subtotal	9	2969
	BRIDGE	
18+23.00	0	0
18+50.00	2	150
19+00.00	8	267
19+50.00	8	193
20+00.00	11	200
20+50.00	25	161
21+00.00	30	152
21+50.00	18	149
22+00.00	7	100
22+25.00	3	31
Subtotal	112	1402
-Y1-		
16+75.00	0	0
17+00.00	2	2
17+50.00	7	7
18+00.00	8	6
18+50.00	8	3
19+00.00	13	5
19+50.00	14	6
20+00.00	10	5
20+50.00	5	3
Subtotal	68	35

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement, and removal of existing pavement, will be paid for at the lump sum price for "Grading".



8/23/99

3/28/2013
620055_RDY_XPL.dgn
TLHEPLER

PROJ. REFERENCE NO.	SHEET NO.
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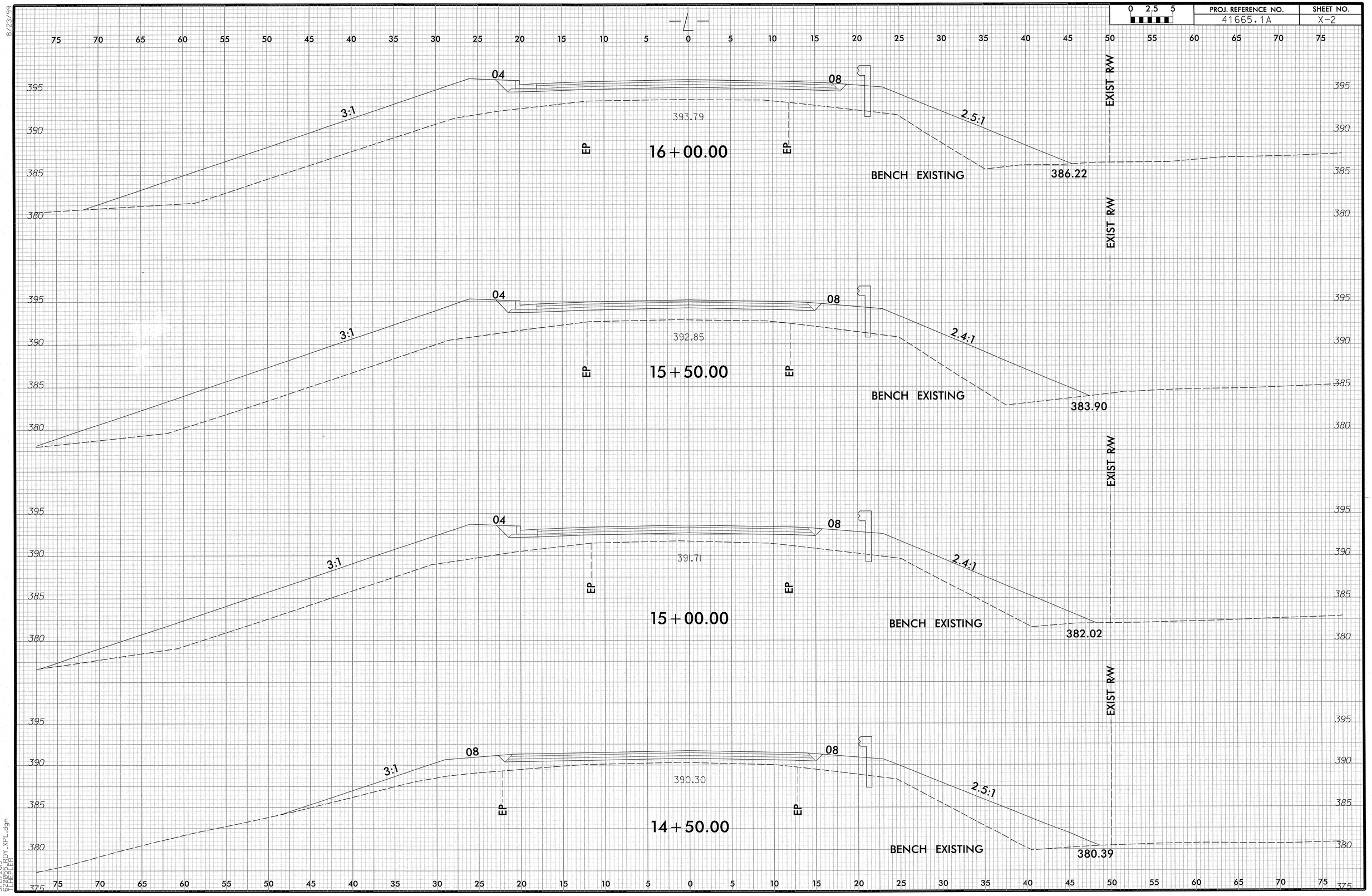

8/23/99

5/21/2013
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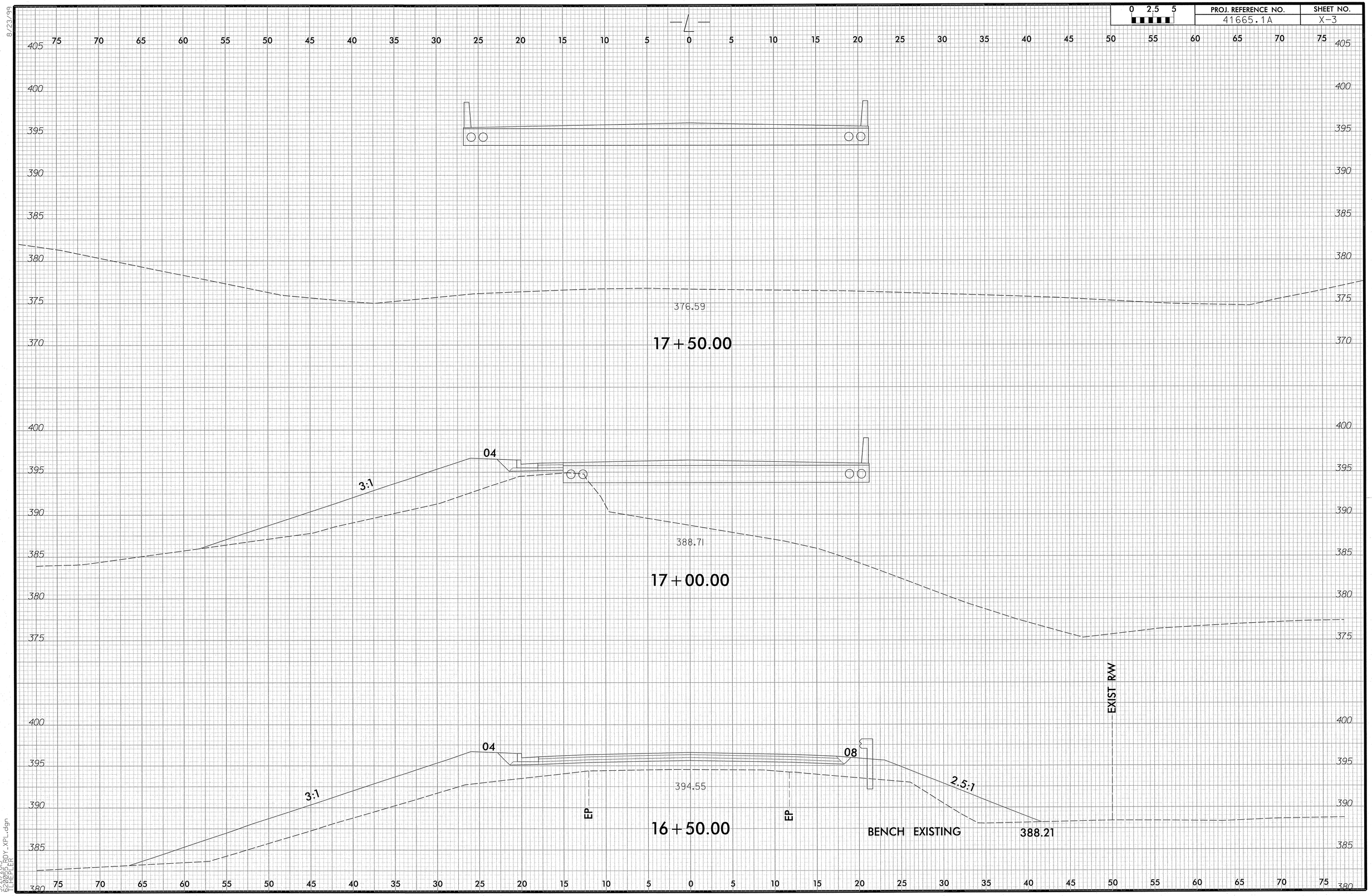

0 2.5 5
PROJ. REFERENCE NO.
41665.1A
SHEET NO.
X-3
8/23/99
376.59
17+50.00
04
3:1
388.71
17+00.00
EXIST R/W
04
08
3:1
2.5:1
394.55
EP
EP
16+50.00
BENCH EXISTING
388.21
5/21/2013
620055_RDY_XPL.dgn
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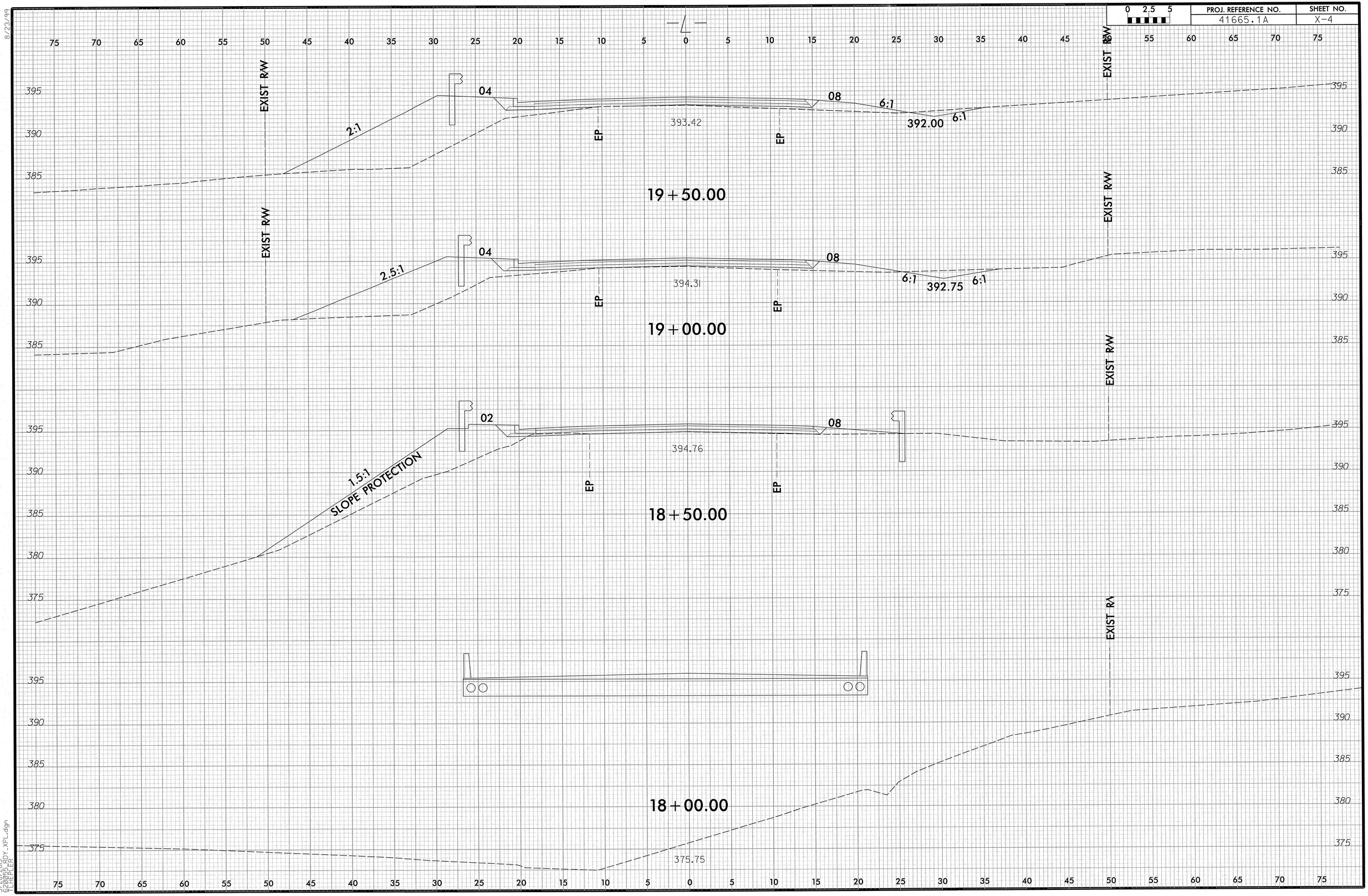

PROJ. REFERENCE NO.
41665.1A
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X-4
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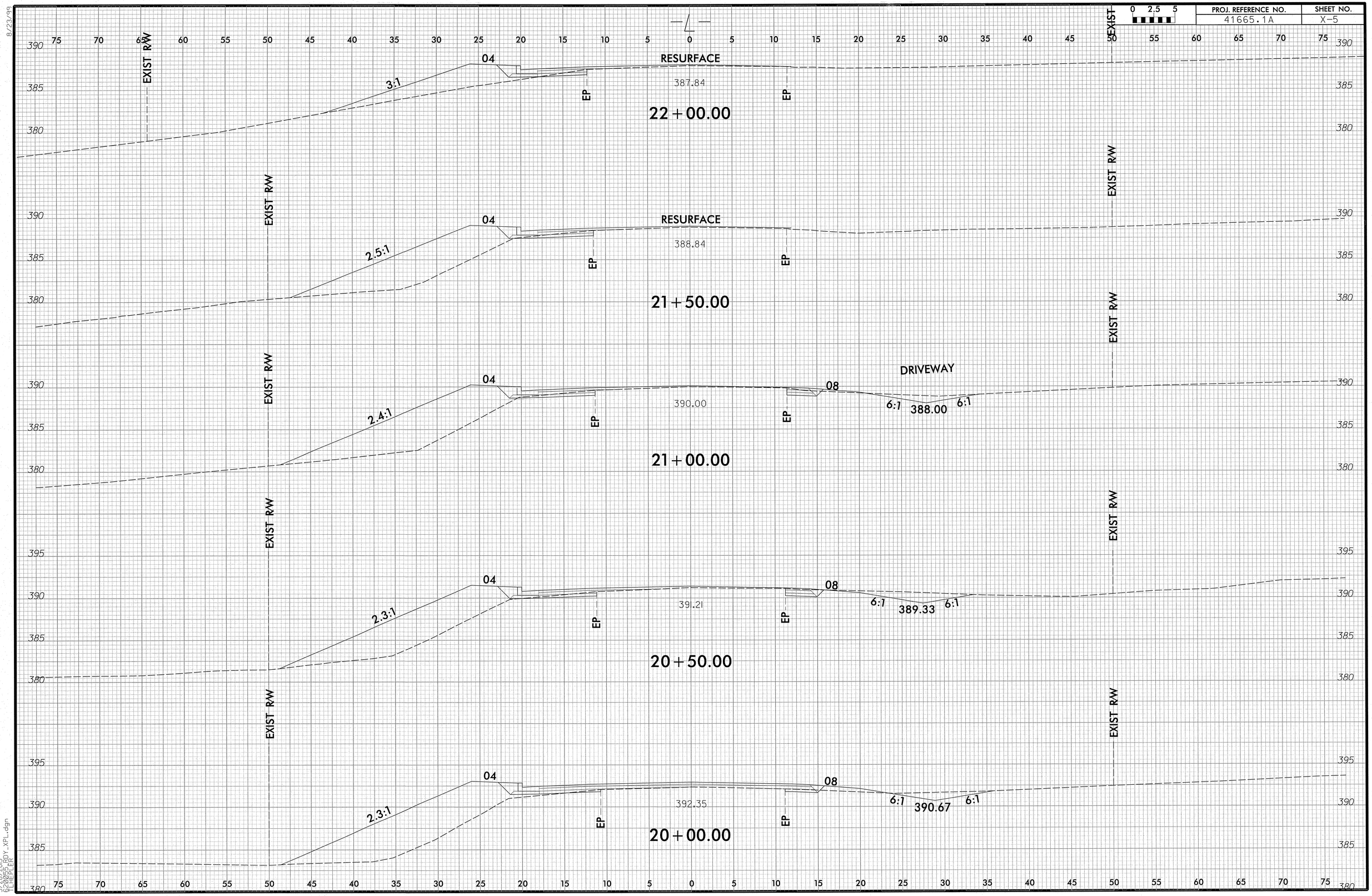
EXIST R/W
EP
04
08
2:1
6:1
393.42
392.00
19+50.00
2.5:1
394.31
392.75
19+00.00
02
1.5:1
SLOPE PROTECTION
394.76
18+50.00
18+00.00
375.75



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X-5
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RESURFACE
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04
EP
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RESURFACE
388.84
2.5:1
21+50.00
DRIVEWAY
390.00
2.4:1
08
6:1
388.00
21+00.00
391.21
2.3:1
389.33
20+50.00
392.35
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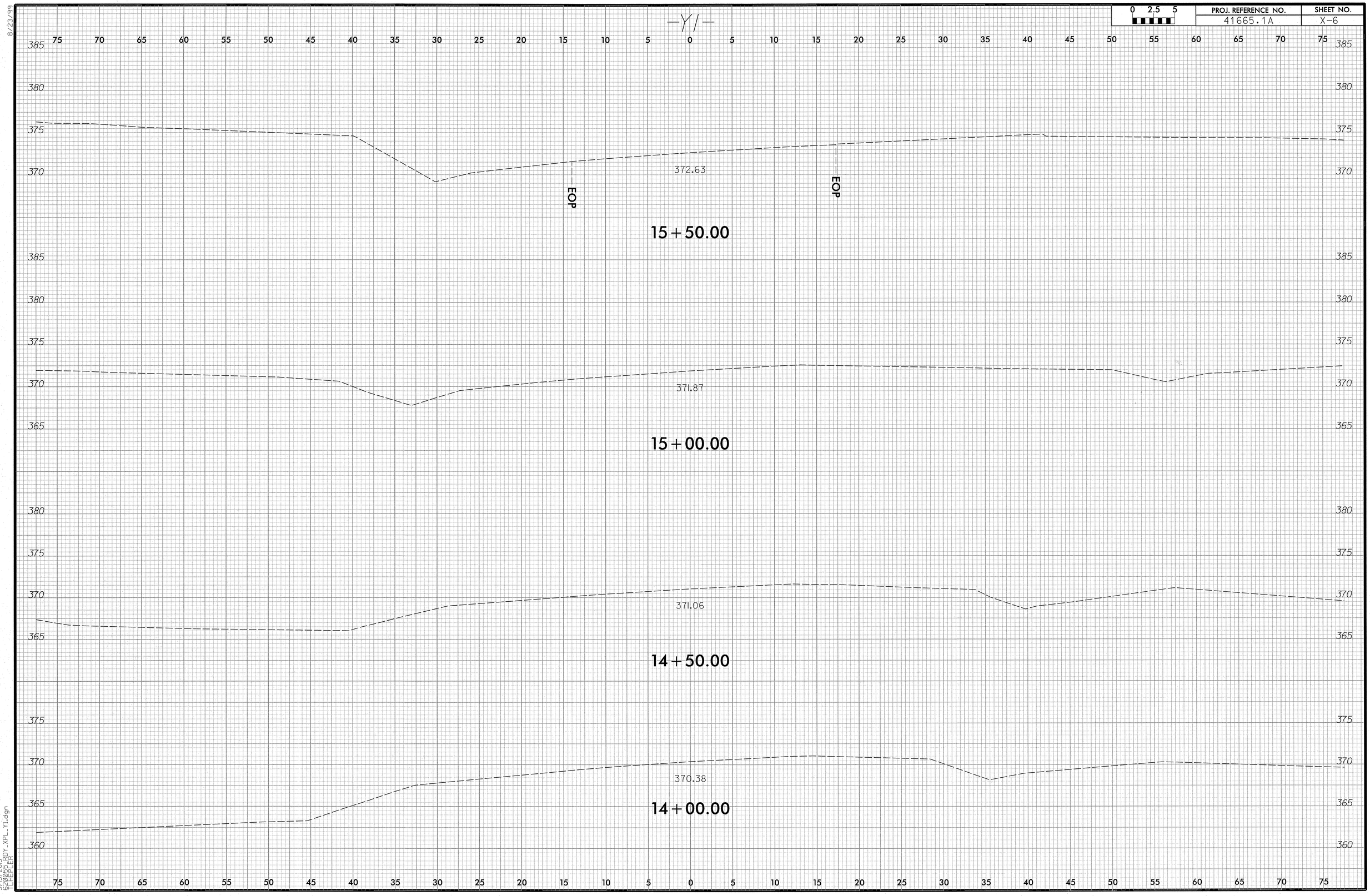
390.67
20+00.00

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	41665.1A	X-6



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3/15/2013
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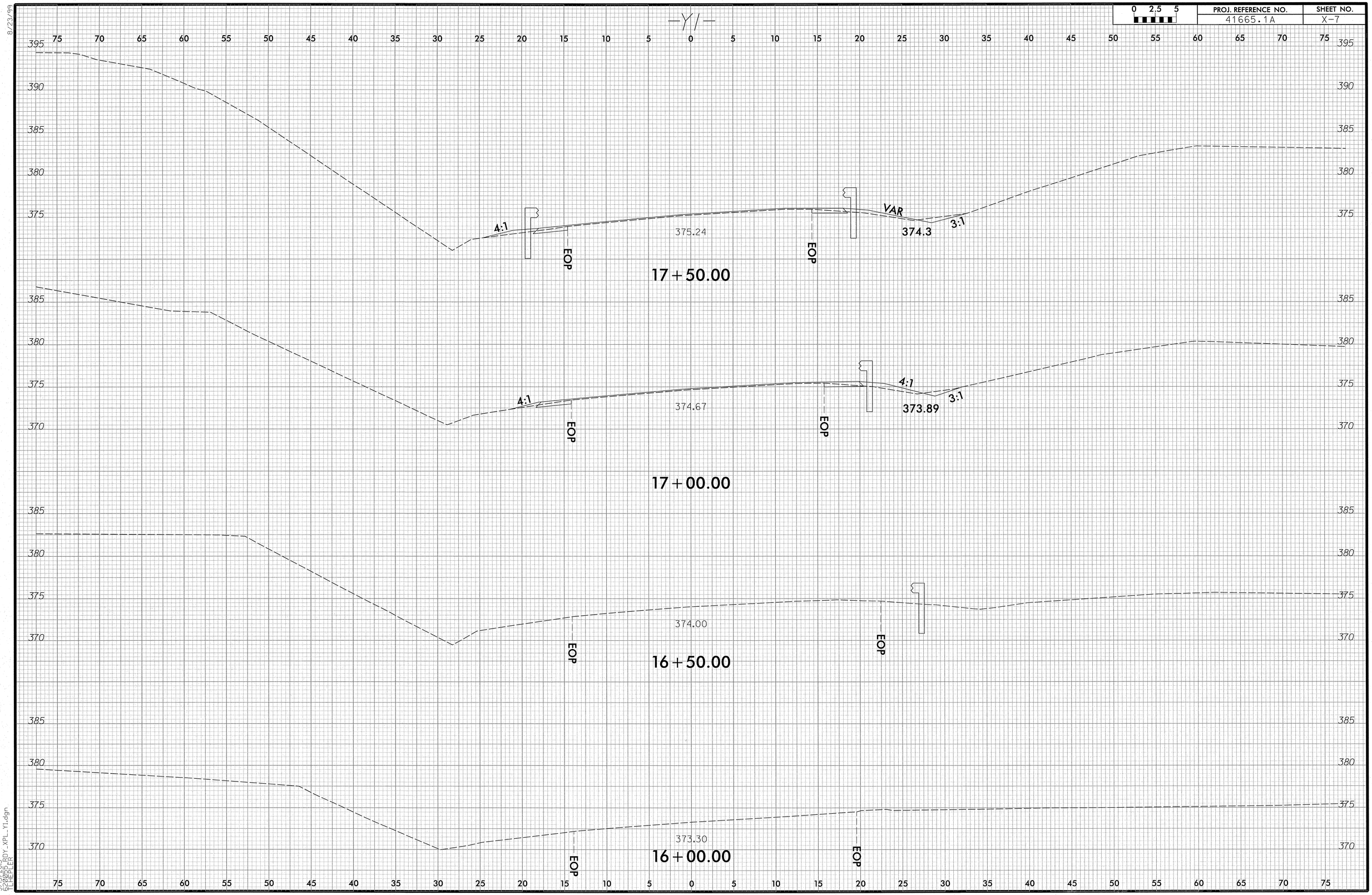

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3/15/2013
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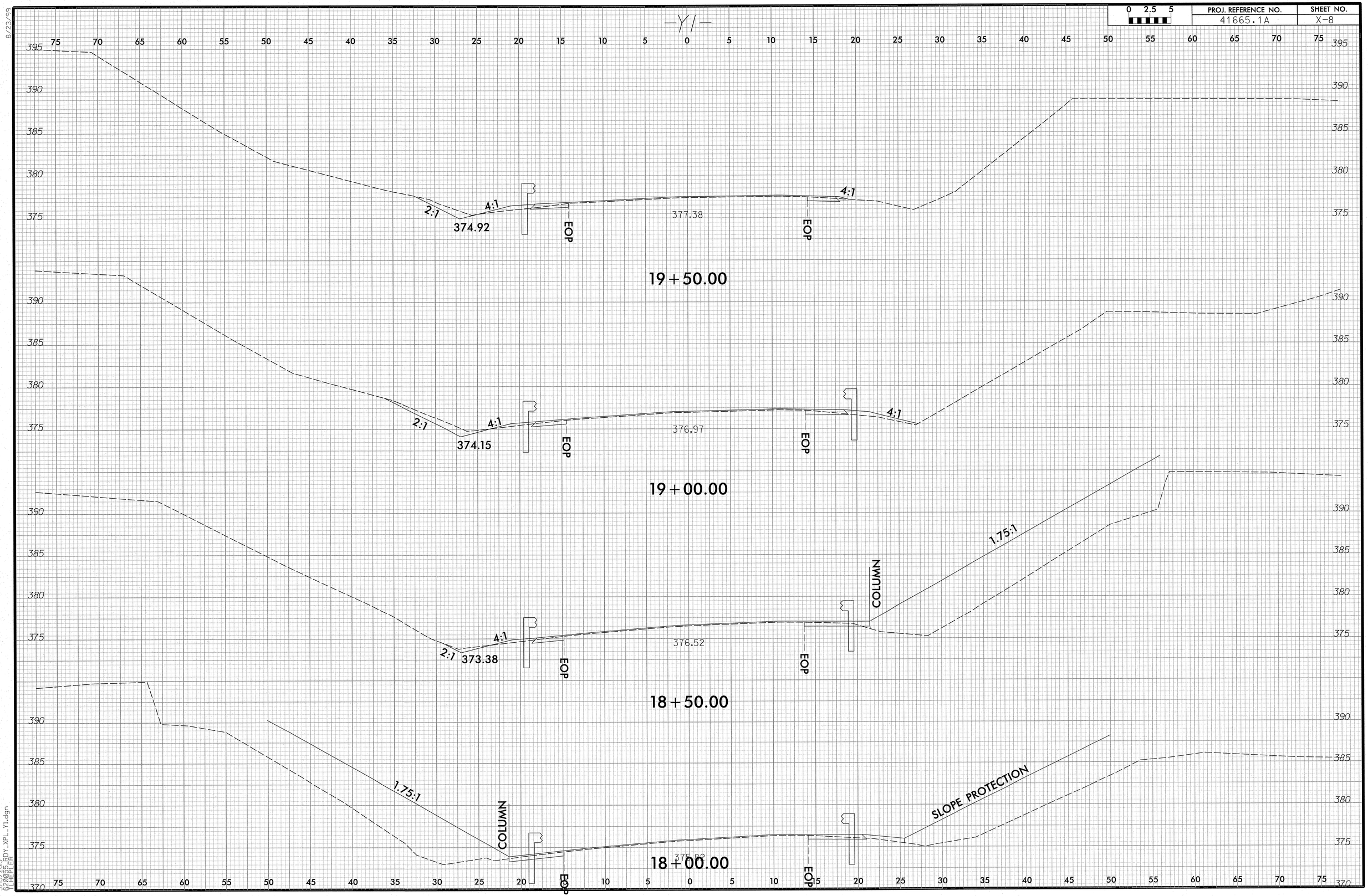
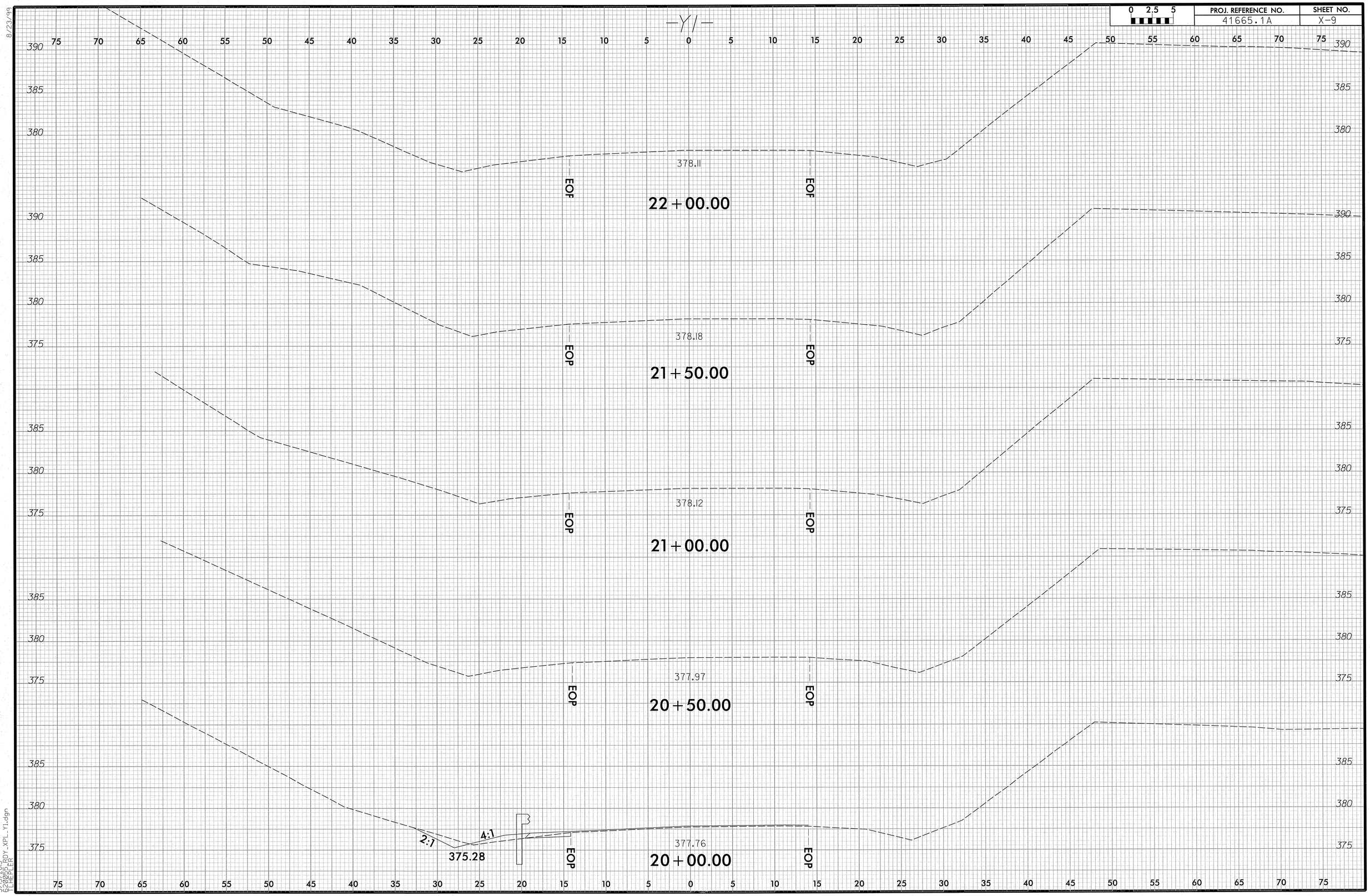


PROJ. REFERENCE NO.
41665.1A
SHEET NO.
X-8
0 2.5 5
-Y1-
19+50.00
2:1
4:1
374.92
377.38
EOP
19+00.00
374.15
376.97
18+50.00
373.38
376.52
COLUMN
1.75:1
18+00.00
SLOPE PROTECTION



8/23/99

3/15/2013
620055_RDY_XPL_Y1.dgn
TLHEPLER