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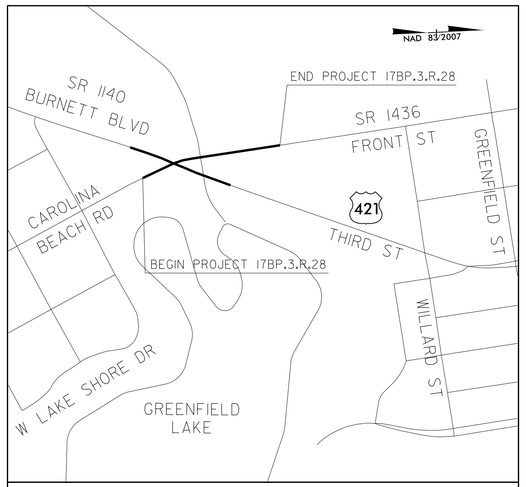
This file or an individual page shall not be considered a certified document.

09/08/99

PROJECT: 17BP.3.R.28

CONTRACT: C203922

See Sheet 1-A For Index of Sheets



VICINITY MAP

SEE SHEET 6 FOR ONSITE DETOURS
SEE TMP-8 FOR OFFSITE DETOURS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

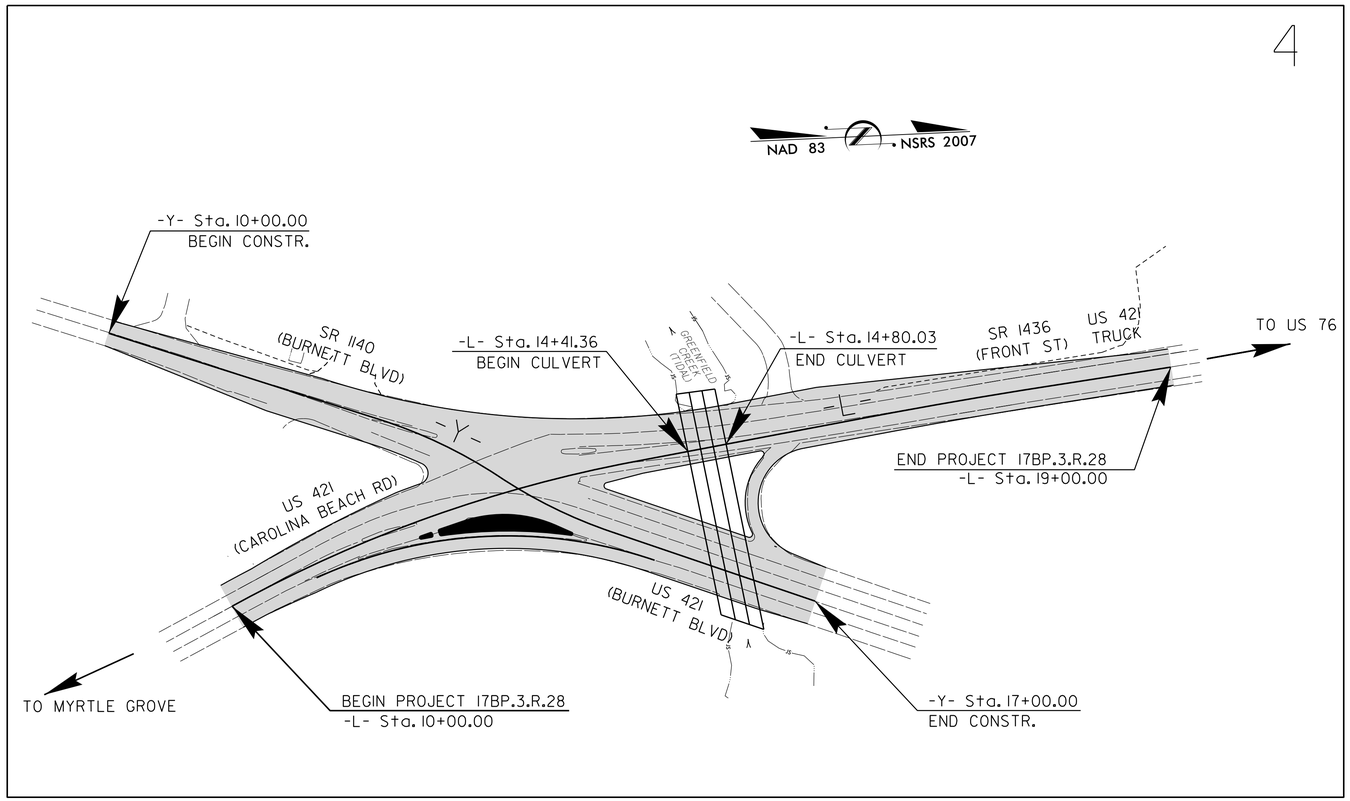
NEW HANOVER COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.3.R.28	1	

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

LOCATION: INTERSECTION OF SR 1436 /US 421 TRUCK (FRONT STREET) AND SR 1140 (BURNETT BOULEVARD) SOUTH OF WILLARD STREET

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT, SIGNALS, AND UTILITIES



GRAPHIC SCALES

40 20 0 40 80
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 20,000

V = 40 MPH

REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.3.R.28 = 0.163 MILES
LENGTH STRUCTURE PROJECT 17BP.3.R.28 = 0.007 MILES
TOTAL LENGTH PROJECT 17BP.3.R.28 = 0.170 MILES

NCDOT CONTACT:
TREVOR CARROLL, PE
RESIDENT ENGINEER
295-B WILMINGTON HWY
JACKSONVILLE, NC 28540
(910)347-3488

PREPARED IN THE OFFICE OF:
ATKINS
1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER, 2013

LETTING DATE:
NOVEMBER 15, 2016

CLINTON J. MORGAN, PE
PROJECT ENGINEER

NATHAN CHAPMAN, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER W. HENRY WELLS, JR.

DocuSigned by: W. Henry Wells, Jr. C2645E80448426...

P.E. 10/11/2016

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024929 ENGINEER CLINTON J. MORGAN

DocuSigned by: Clinton J. Morgan EC9803046106496...

P.E. 10/11/2016

SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

14-SEP-2016 11:55
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$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17.BP.3.R.28	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL Clinton J. Morgan EC98030461064B6... 024929 ENGINEER CLINTON J. MORGAN

10/11/2016

INDEX OF SHEETS

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Righ-of-Way Marker
806.02	Granite Right-of-Way Marker
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
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands

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 II.

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Cape Fear Public Utility Authority, Peidmont Natural Gas

Duke-Energy Progress, AT&T, Time Warner Cable

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

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BERNARD
ATLUS2023

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17.BP.3.R.28	1B

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:

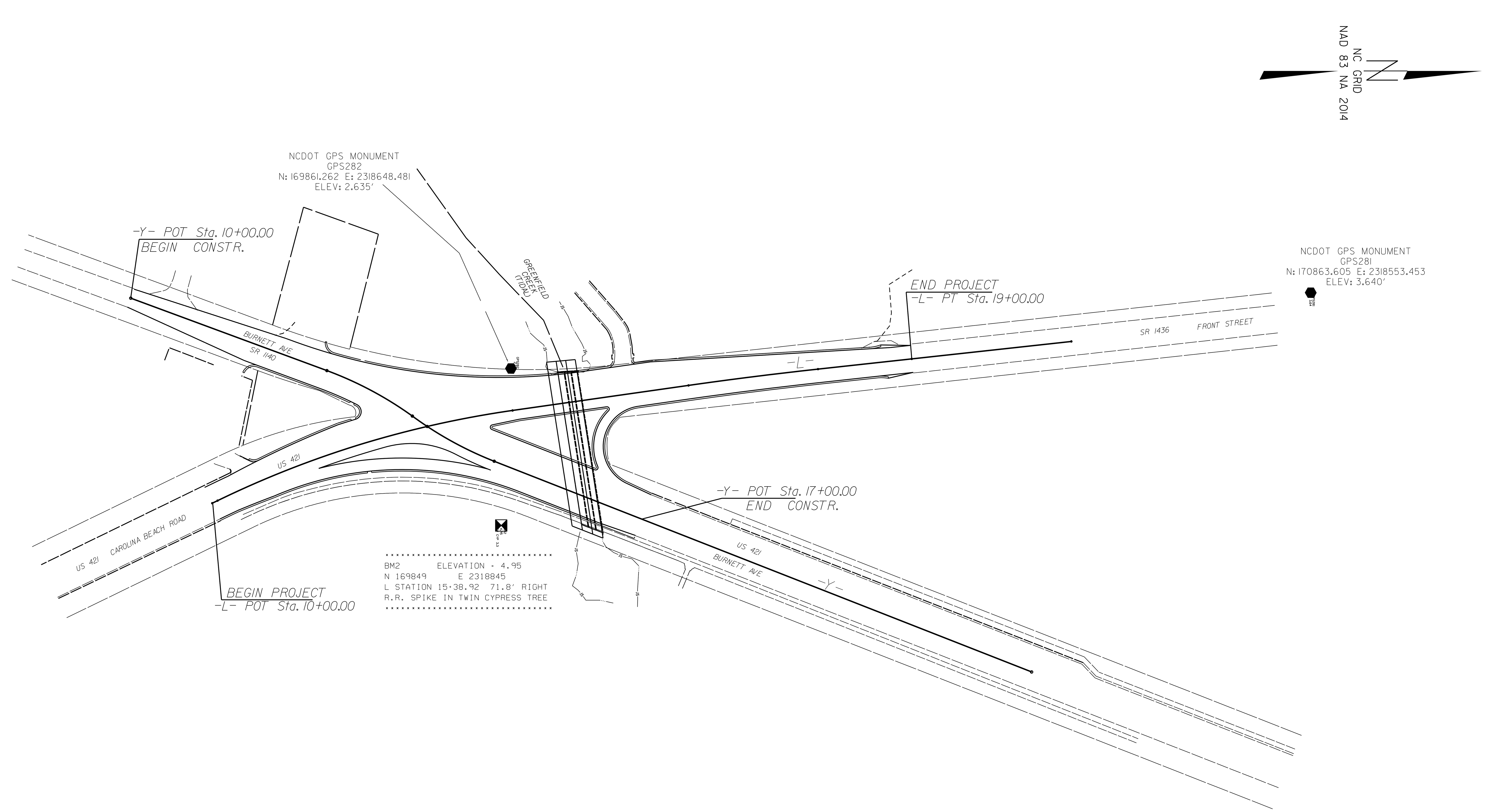
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
WBS# 17.BP.3.R.28	1C
Location and Surveys	

SURVEY CONTROL SHEET 64–0028



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS282"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 169861.262(ft) EASTING: 2318648.481(ft)
ELEVATION: 2.635(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000041167
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS282" TO -L- STATION 10+00.00 IS
S 24°17'33" E 410.67'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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14-SEP-2016 11:55
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ATKINS
1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

POINT #	CHAIN	STATION	NORTHING (Y)	EASTING (X)
1	-L-	10+00.00	169486.9579	2318817.427
2	-L-	11+00.00	169578.3327	2318776.862
3	-L-	12+00.00	169672.649	2318743.71
4	-L-	13+00.00	169769.3131	2318718.2
5	-L-	14+00.00	169867.7055	2318700.49
6	-L-	15+00.00	169966.7054	2318686.383
7	-L-	16+00.00	170065.7054	2318672.276
8	-L-	17+00.00	170164.7958	2318658.829
9	-L-	18+00.00	170264.1277	2318647.301
10	-L-	19+00.00	170363.5361	2318636.44
11	-Y-	10+00.00	169384.7751	2318560.264
12	-Y-	11+00.00	169478.5753	2318594.927
13	-Y-	12+00.00	169572.3756	2318629.589
14	-Y-	13+00.00	169665.58	2318665.735
15	-Y-	14+00.00	169750.9322	2318717.51
16	-Y-	15+00.00	169839.0767	2318764.302
17	-Y-	16+00.00	169932.1665	2318800.83
18	-Y-	17+00.00	170025.257	2318837.356
19	-R-	10+00.00	169566.1532	2318794.75
20	-R-	11+00.00	169662.3704	2318768.378
21	-R-	12+00.00	169762.0902	2318765.349
22	-R-	13+00.00	169859.7306	2318785.833
23	-D1-	10+00.00	169575.7078	2318777.939
24	-D1-	11+00.00	169671.779	2318750.935
25	-D1-	12+00.00	169771.4396	2318745.769
26	-D1-	13+00.00	169870.8507	2318756.092
27	-D1-	14+00.00	169970.3753	2318748.76
28	-D1-	15+00.00	170065.8369	2318719.674
29	-D1-	16+00.00	170156.8306	2318678.317
30	-D1-	17+00.00	170252.8487	2318650.796

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024928 ENGINEER CLINTON J. MORGAN
DocuSigned by: Clinton J. Morgan
9/28/2016

PAVEMENT DESIGN ENGINEER

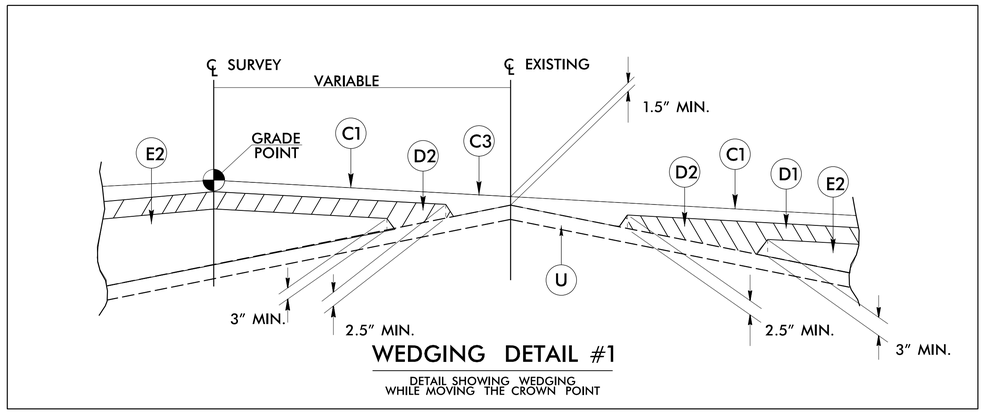
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
DocuSigned by: Clark Morrison
9/28/2016

ATKINS
1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

PAVEMENT SCHEDULE

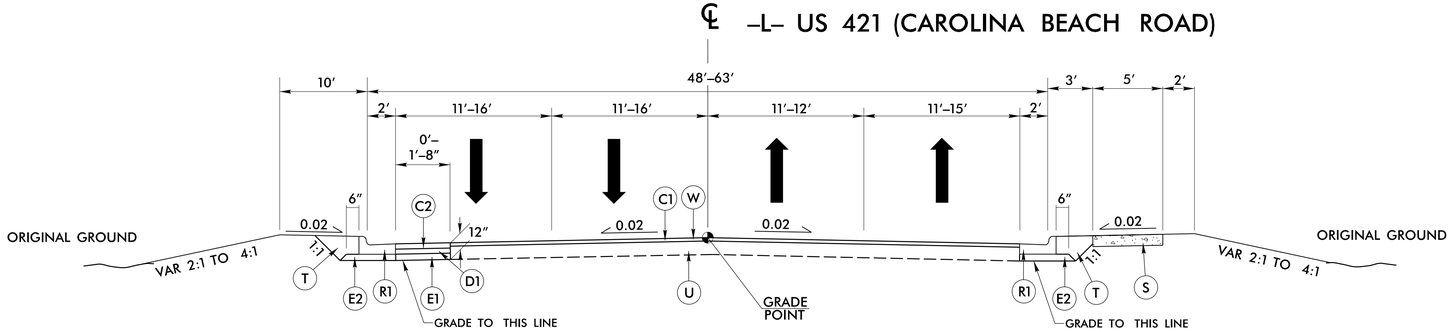
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
R1	2′-6″ CONCRETE CURB AND GUTTER.
S	4″ CONCRETE SIDEWALK.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



WEDGING DETAIL #1

DETAIL SHOWING WEDGING WHILE MOVING THE CROWN POINT



TYPICAL SECTION NO. 1

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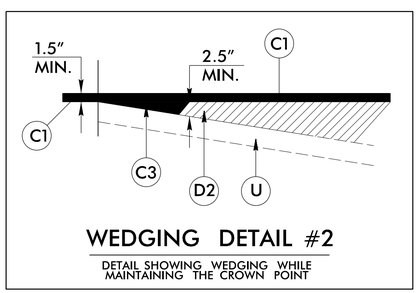
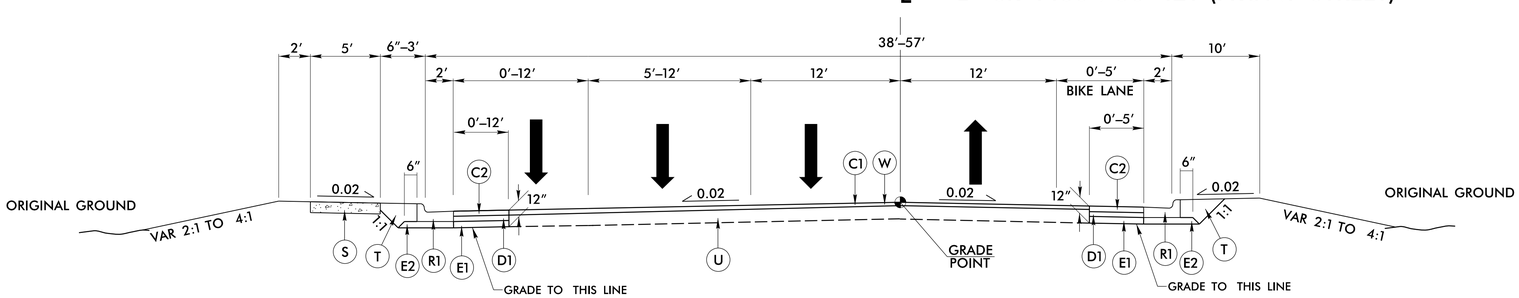
–L– STA. 10+00.00 TO STA. 12+86.70



WEDGING DETAIL #2

DETAIL SHOWING WEDGING WHILE MAINTAINING THE CROWN POINT



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
–L– STA. 12+86.70 TO STA. 18+50.00

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024629 ENGINEER CLINTON J. MORGAN

9/28/2016

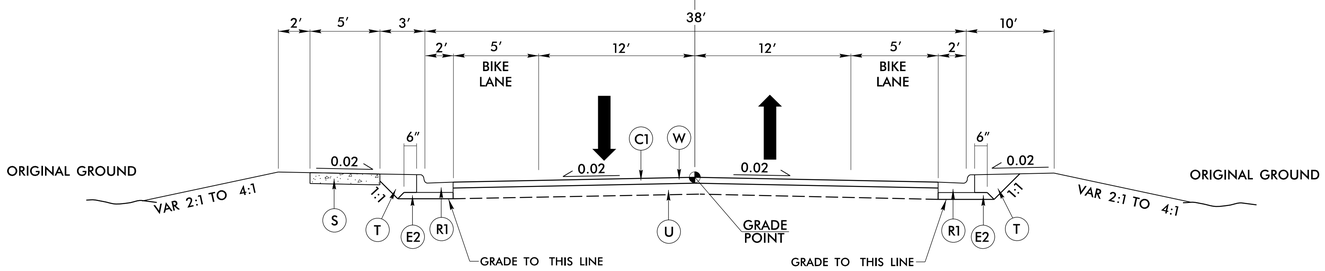
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22806 ENGINEER CLARK S. MORRISON

9/28/2016

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

℄ –L– (FRONT STREET)



TYPICAL SECTION NO. 3

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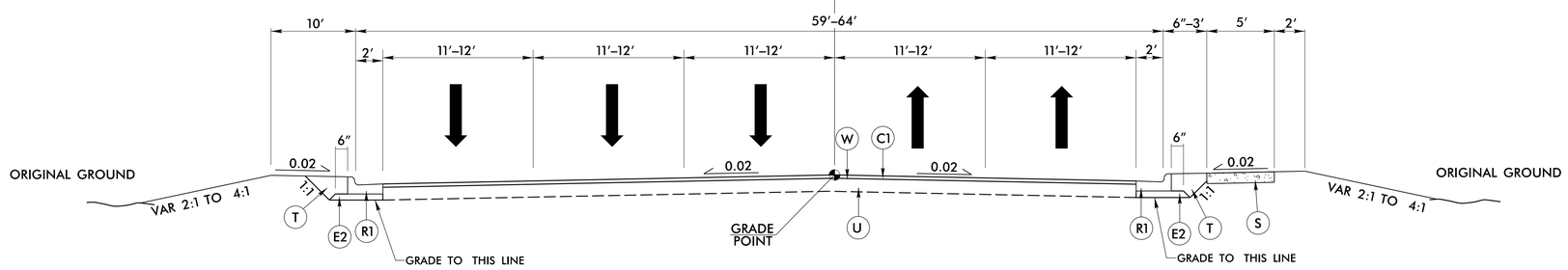
–L– STA. 18+50.00 TO STA. 19+00.00

℄ –Y– US 421 (BURNETT AVENUE)



TYPICAL SECTION NO. 4

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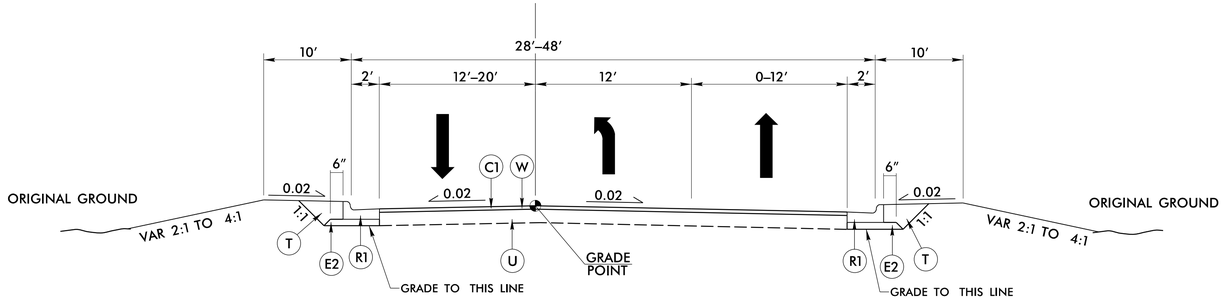
–Y– STA. 14+83.78 TO STA. 17+00.00

℄ –Y– (BURNETT AVENUE)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
–Y– STA. 10+00.00 TO STA. 13+17.16

C1	1½″ S9.5C
E2	VAR.DEPTH B25.0C
R1	2′-6″ C & G
S	4″ SIDEWALK
T	EARTH MAT.
U	EXIST PAVE.
W	WEDGING

28-SEP-2016 12:00
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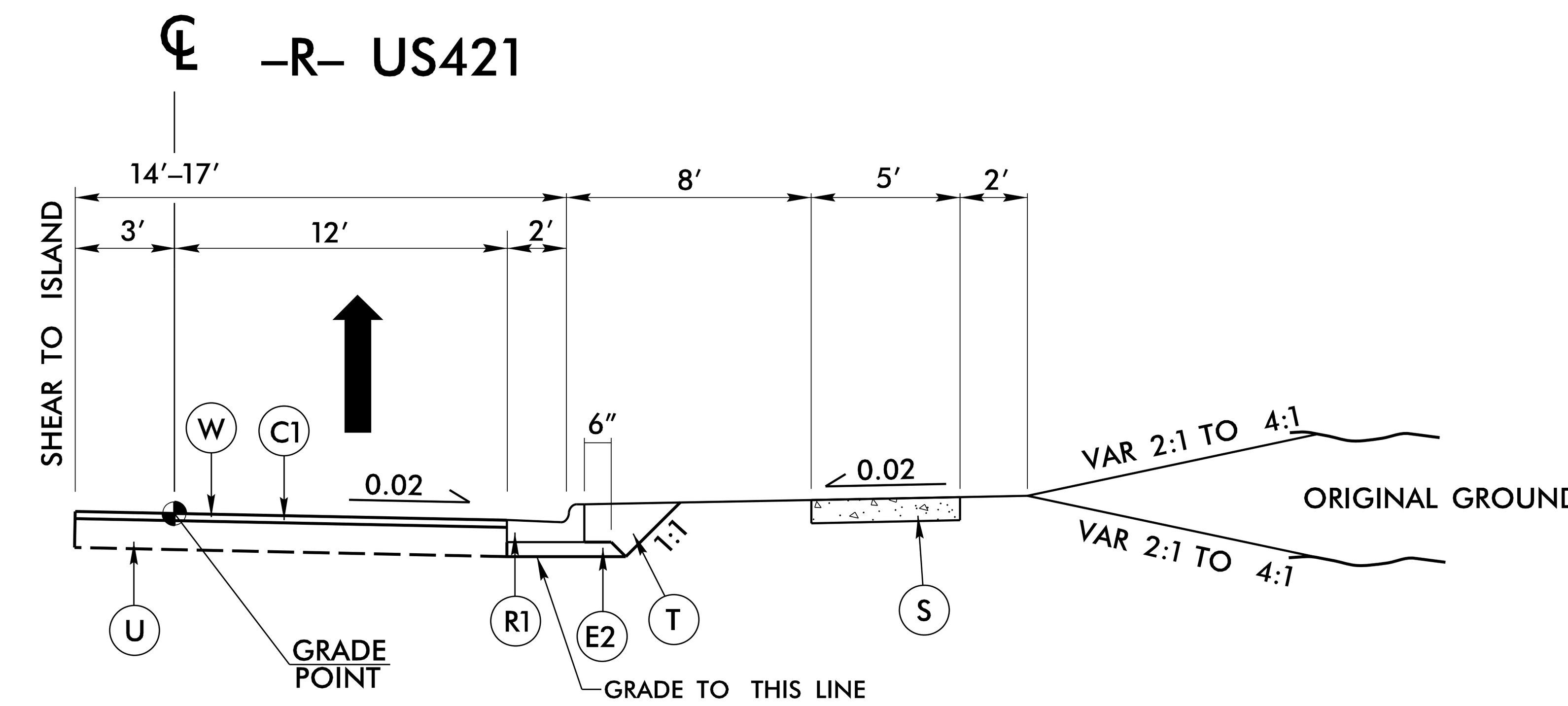
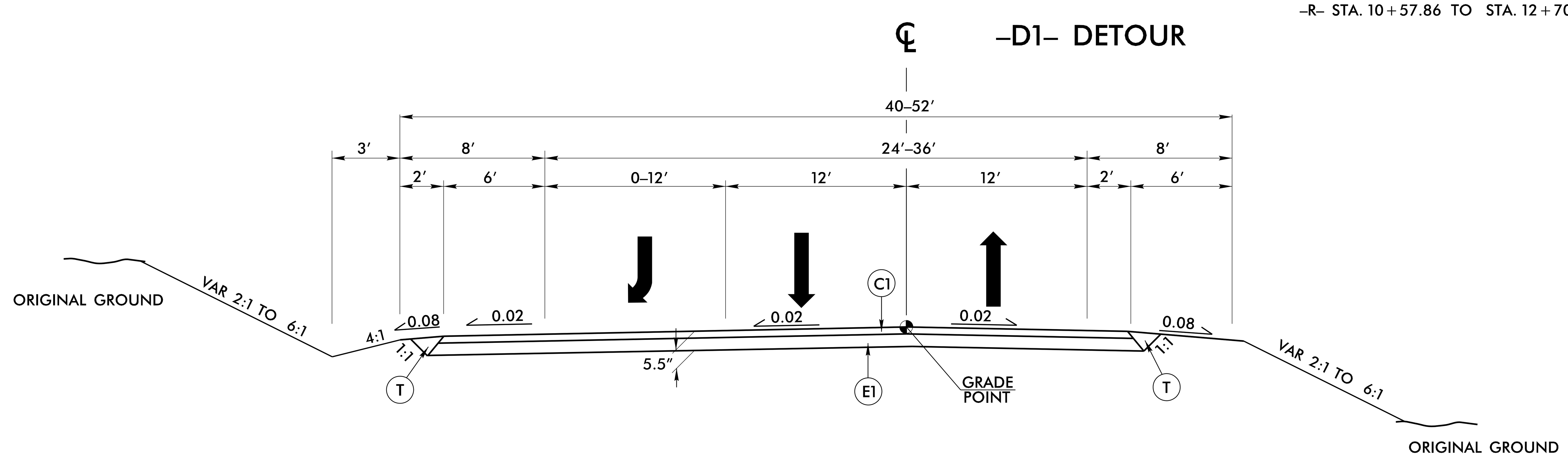
PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
Clinton J. Morgan, 024929, 9/28/2016	Clark S. Morrison, 22896, 9/28/2016

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326



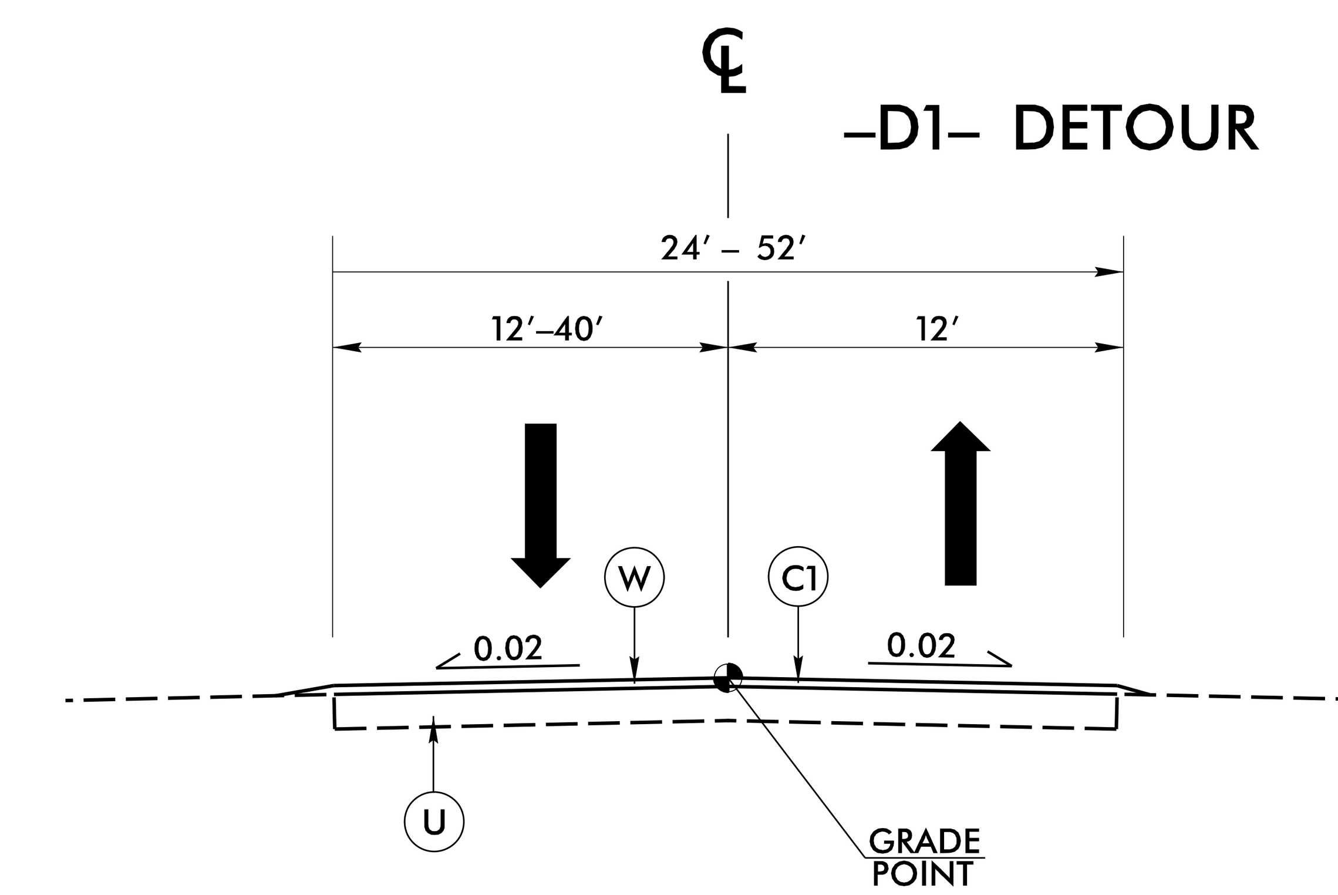
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:
-R- STA. 10+57.86 TO STA. 12+70.47



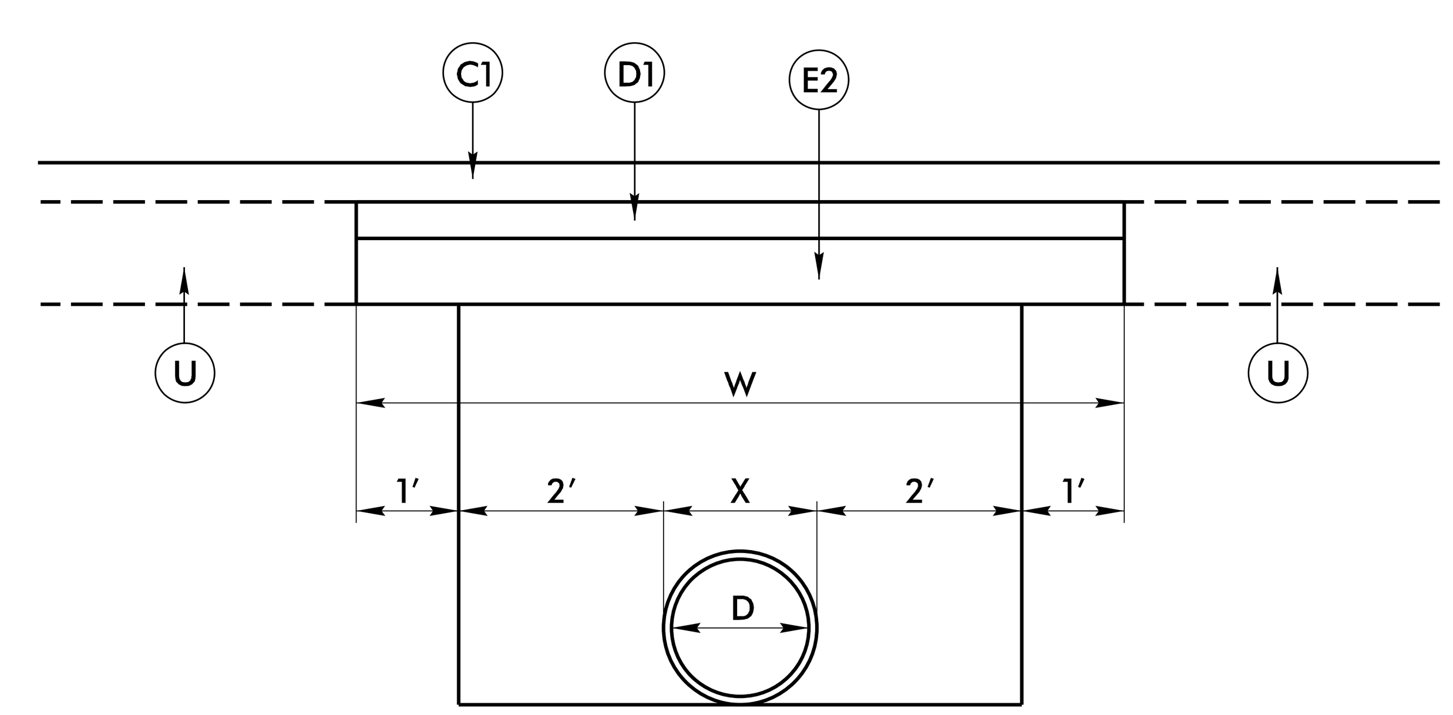
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS:
-D1- STA. 12+50.39 TO STA. 15+27.40



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS:
-D1- STA. 10+00.00 TO STA. 12+50.39



PAVEMENT REPAIR DETAIL

D	X	W
12"	1'-4"	7'-4"
15"	1'-7"	7'-7'
18"	1'-10"	7'-10"
24"	2'-6"	8'-6"
30"	3'-1"	9'-1"
36"	3'-8"	9'-8"
42"	4'-5"	10'-5"
48"	5'-0"	11'-0"

C1	1½" S9.5C
D1	4" I19.0C
E1	5" B25.0C
E2	VAR.DEPTH B25.0C
R1	2'-6" C & G
S	4" SIDEWALK
T	EARTH MAT.
U	EXIST PAVE.
W	WEDGING

6/2/99

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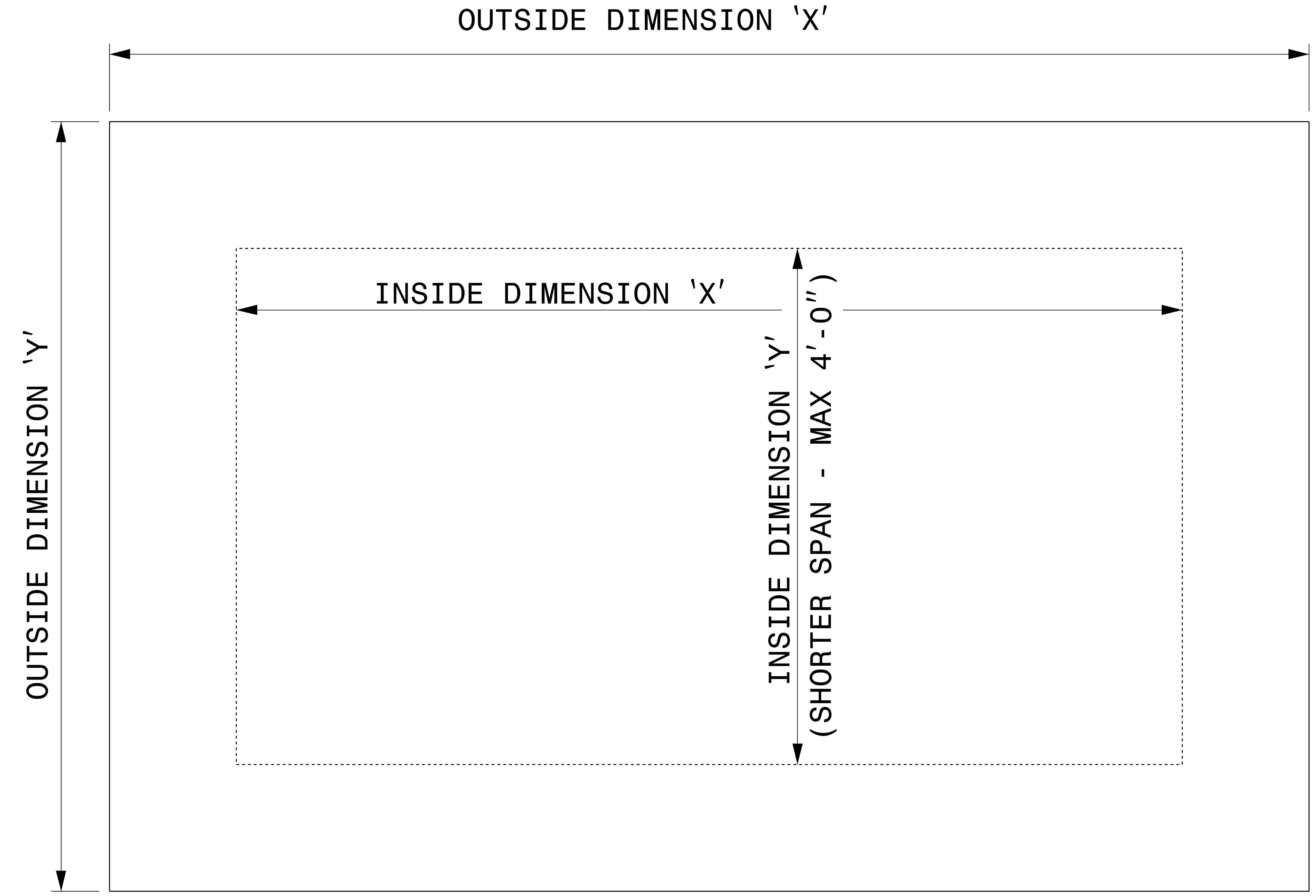
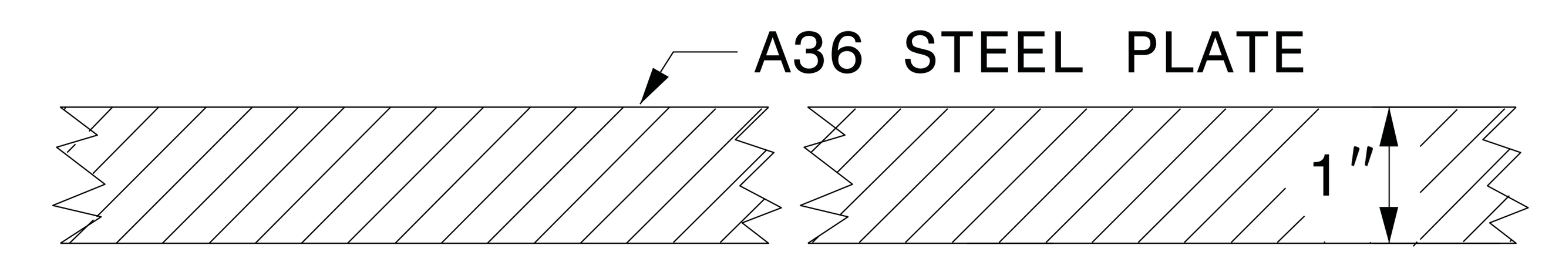


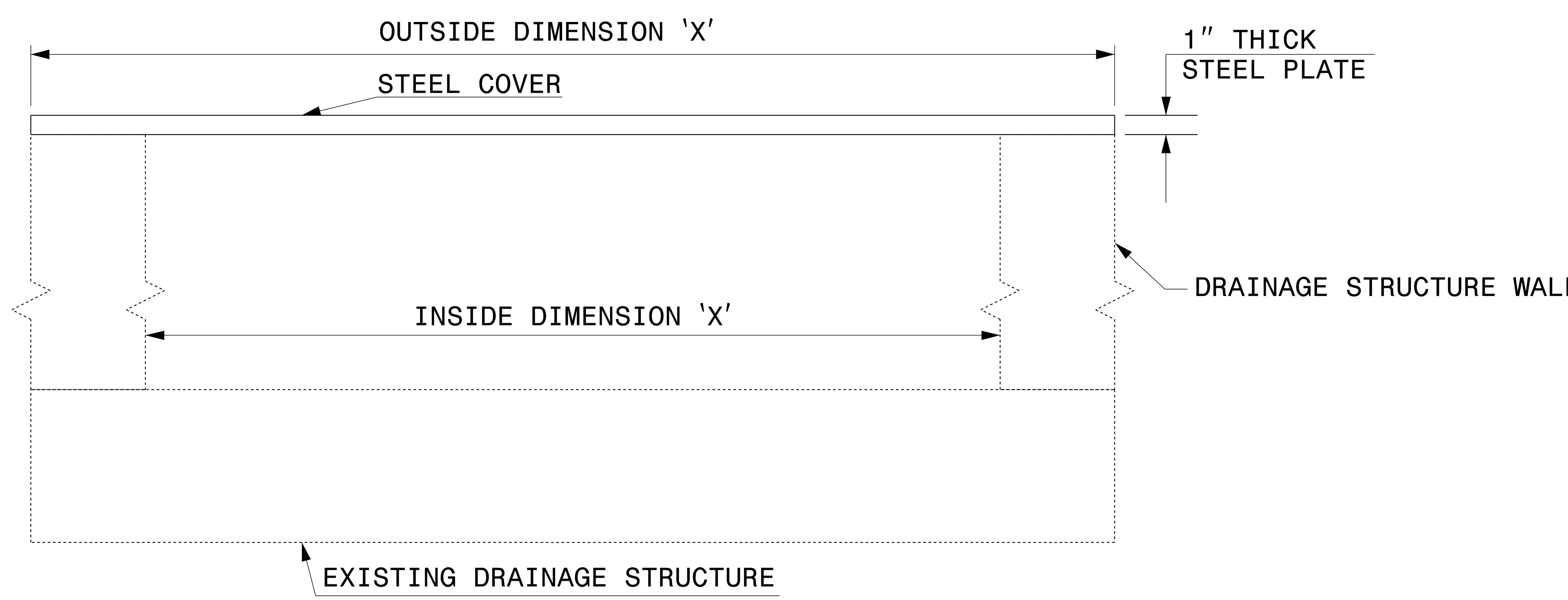
PLAN VIEWS

GENERAL NOTES:

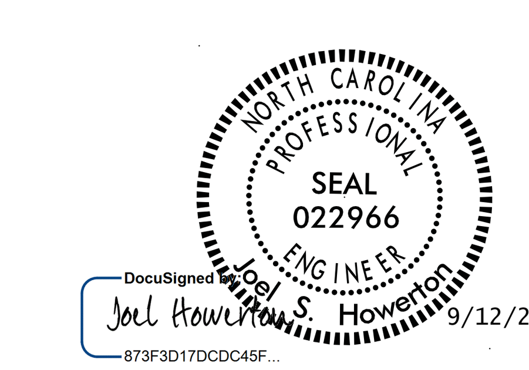
- -USE GRADE A36 STEEL
- -STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- -FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- -SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- -QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF TEMPORARY
1" STEEL COVER
OVER DRAINAGE STRUCTURE

ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

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

PROJECT REFERENCE NO.	SHEET
17BP.3.R.28	2H-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus F. Parker C66492AF5E824DF...

10/13/2016

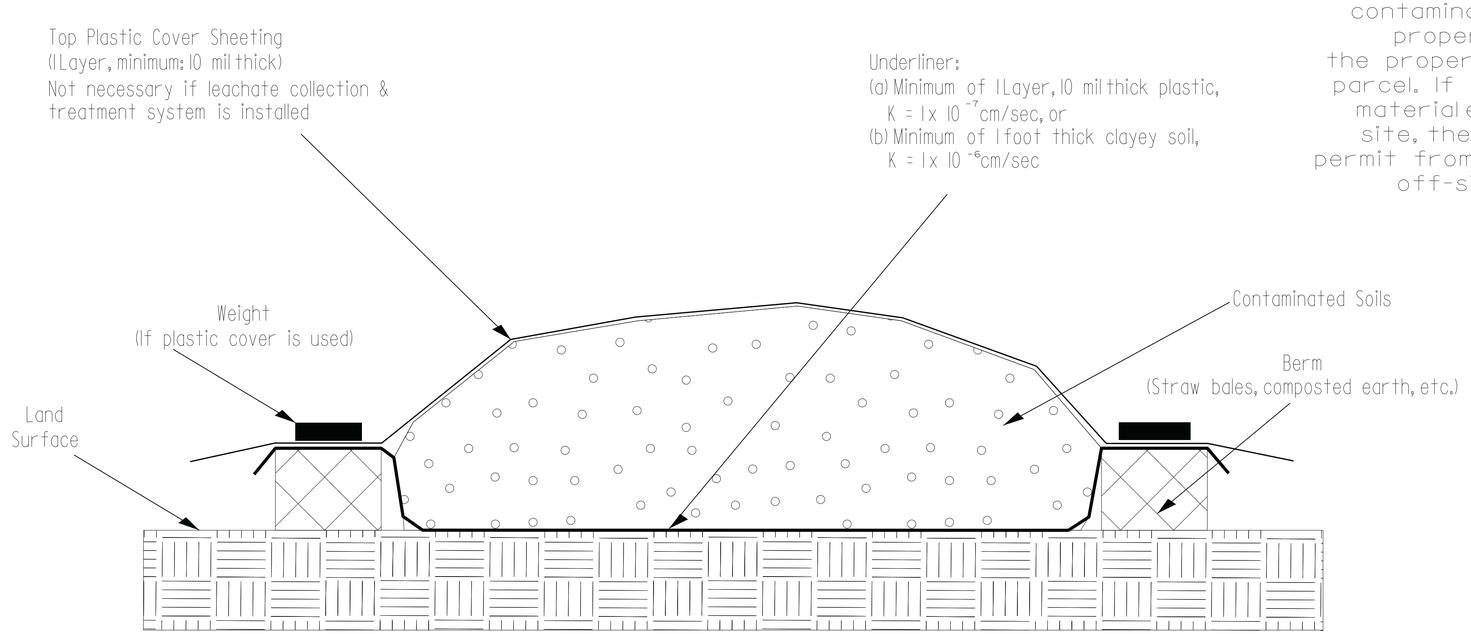
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

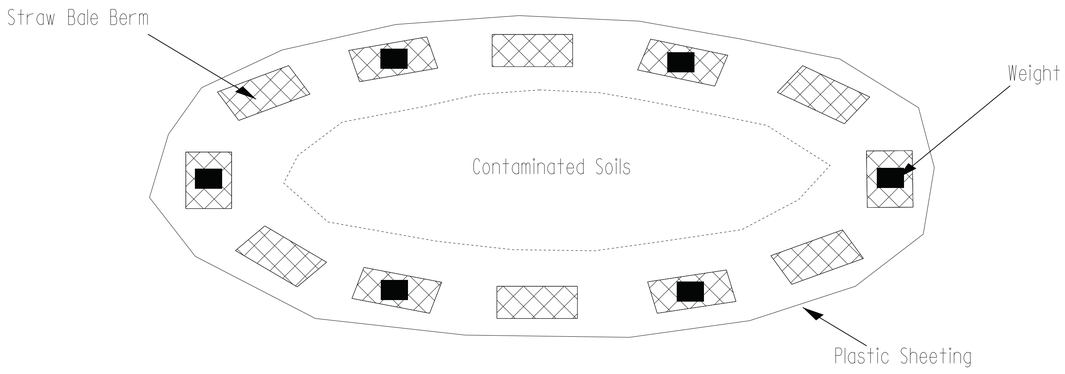
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.

Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☒ CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

12/06/07

COMPUTED BY: NATHAN CHAPMAN DATE:
CHECKED BY: BRYAN LAMBETH, PE DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	3B-1

SUMMARY OF EARTHWORK
(IN CUBIC YARDS)

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–L– 10+00 LT	–L– 12+12.25 LT	7.61	106.42	98.81	0
–Y– 10+00 RT	–Y– 13+24.85 RT	156.27	32.06	0	124.21
SUBTOTALS:		163.88	138.48	98.81	124.21
–Y– 10+00 LT	–Y– 13+24.85 LT	9.79	221.82	212.03	0
–L– 12+80.54 LT	–L– 19+00 LT	19.65	955.45	935.80	0
SUBTOTALS:		29.44	1,177.27	1,147.83	0
–L– 13+64.60 RT	–L– 19+00 RT	49.97	279.28	229.31	0
–Y– 14+79.26 LT	–Y– 17+00 LT	20.17	116.30	96.13	0
SUBTOTALS:		70.14	395.58	325.44	0
–L– 10+00 RT	–L– 10+89.90 RT	11.88	30.52	18.64	0
–Y– 14+79.26 RT	–Y– 17+00 RT	33.40	45.44	12.04	0
–R– 10+00	–R– 13+24.99	64.76	26.31	0	38.45
SUBTOTALS:		110.04	102.27	30.68	38.45
–D1– 13+59.80	–D1– 16+87.72	103.15	345.03	241.88	0
SUBTOTALS:		103.15	345.03	241.88	0
TOTALS:		476.65	2,158.62	1,844.63	162.66
LOSS DUE TO C&G (5%):		–24.00		24.00	
USE SUIT. WASTE TO REPLACE BORROW:				–162.66	–162.66
UNSUITABLE MATERIAL:		60.00		60.00	60.00
REMOVAL OF DETOUR:		241.88			241.88
PROJECT TOTALS:		754.53	2,158.62	1,765.97	301.88
REPLACE TOPSOIL ON BORROW PIT (5%):				88.30	
GRAND TOTALS:		754.53	2,189.60	1,854.27	301.88
SAY:		760		1,860	310

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	14+93	15+50	CL	168.89
–Y–	12+58	13+25	CL	17.11
–D1–	13+70	15+17	CL	1294.44
			TOTAL:	1480.44
			SAY:	1500

4/04/06

COMPUTED BY: NATHAN CHAPMAN DATE: 5-8-14
CHECKED BY: BRYAN LAMBETH, PE DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	3D-1

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".

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

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												C.A.A. PIPE							SEALED PIPE SYSTEM SEE SPECIAL PROVISIONS D.I. PIPE							R.C. PIPE (CLASS IV)								**" R. C. PIPE (CLASS V)	**" 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.		BOOTS FOR SEALED STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE				CONCRETE TRANSITIONAL SECTION		D.I. FRAME & GRATE STD. 840.16	T.B.J.B. STD. 840.34	M.H. FRAME & COVER STD. 840.54	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	J.B. STD. 840.31 OR 840.32	D.I. STD. 840.14 OR STD. 840.15	TEMP. STEEL PLATE	CONC. COLLARS CL. "B" C.Y. STD 840.72	FLOWABLE FILL C.Y.	PIPE REMOVAL LIN.FT.	REMARKS
SIZE		FROM	TO					12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE PVC	DO NOT USE HDPE	12"	15"	18"	24"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"					R.C.P.	C.S.P.		PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE		E	F	G		CATCH BASIN	DROP INLET											
THICKNESS OR GAUGE																				.051	.051	.051	.051	.064	.081	.081																																											
–L– Sta. 10+02	RT	401		7.13	4.13																																												1			1	1																
–L– Sta. 10+02	CL	401	402		4.13	3.99																													44																																				
–L– Sta. 10+02	LT	402		7.15	3.99																																												1			1	1																
–L– Sta. 10+82	LT	402	403	7.15	3.99	1.98																					164																																										
–L– Sta. 11+62	LT	403		6.84	1.98																																											3	1			1	1																PRECAST ONLY
–L– Sta. 11+54	LT	403	405	6.84	1.98	1.76																					40																																								76	15" RCP
–L– Sta. 11+99	LT	404		5.11	2.11																																											1	1			1	1																PRECAST ONLY
–L– Sta. 11+83	LT	404	403		2.11	1.98																					48																																										
–Y– Sta. 12+09	RT	405	407		1.58	–0.25																						76																																									
–Y– Sta. 11+70	RT	406	407		2.93	1.74																					16																																										
–Y– Sta. 11+70	RT	407		4.87	–0.60																																											4	1	1										1	1								PRECAST ONLY
–Y– Sta. 11+71	CL	407	409		–0.60	–0.81																								48																																							
–Y– Sta. 12+66	LT	408		4.87	1.87																																											1	1			1		1															PRECAST ONLY
–Y– Sta. 12+19	LT	408	409		1.87	0.44																					96																																										
–Y– Sta. 11+72	LT	409		4.88	–0.81																																											3	1	1											1		1						PRECAST ONLY
–Y– Sta. 11+72	LT	409	410		–0.81	–0.84																								12																																							
–Y– Sta. 11+82	RT	411		4.67	1.67																																											1	1			1	1																PRECAST ONLY
–Y– Sta. 11+76	RT	411	407		1.67	0.65																					12																																										
–R– Sta. 12+38	LT	414		5.18	2.01																																												1									1	1					1					
–R– Sta. 12+38	CL	414	415		2.01	1.55																													20																																				
–R– Sta. 12+39	RT	415		4.55	1.55																																												1			1	1																
–R– Sta. 12+63	CL	415	416		1.55	1.41																													44																																				
–R– Sta. 12+87	LT	416		4.64	1.41																																												1			1	1																
–Y– Sta. 15+30	RT	416	419		1.41	0.40																													76																																				
–Y– Sta. 15+43	LT	417		4.45	1.45																																												1			1	1																
–L– Sta. 14+24	RT	417	421		1.45	1.34																													36																																		52	12" RCP
–Y– Sta. 15+90	RT	419		5.03	0.40																																												1			1			1														
–Y– Sta. 15+97	RT	419	420		0.40	–0.40																													16																																		72	24" RCP
–L– Sta. 14+29	RT	421		4.69	1.34																																												1			1	1																
–L– Sta. 14+29	CL	421	422		1.34	–0.69																					52																																								16	12" RCP
–L– Sta. 14+29	LT	422		4.16	–0.69																																											3	1			1	1																PRECAST ONLY
–L– Sta. 14+33	LT	422	423		–0.69	–0.80																					20																																										
–L– Sta. 13+29	LT	425		5.11	2.11																																											1	1			1			1														PRECAST ONLY
–L– Sta. 13+78	LT	425	422		2.11	–0.69																					104																																										
–Y– Sta. 16+08	LT	426		3.15	0.15																																												1			1	1																
–Y– Sta. 16+05	LT	426	427		0.15	–0.30																													12																																		36	15" RCP
–Y– Sta. 16+89	RT	428	429		1.68	–0.40																														80																															4.0		
–L– Sta. 18+07	RT	430		3.80	0.79																																												1			1		1															
–L– Sta. 18+07	CL	430	431		0.79	–3.91																													40																																				
–L– Sta. 18+07	LT	431		3.54	–3.91																																												1	3		1			1														
–L– Sta. 18+07	LT	431	433		–3.91	–3.93																													8																																				
–L– Sta. 18+07	LT	433		4.35	–4.10																																												1	4											1		1						
–L– Sta. 15+23	LT	435		5.10	–4.65																																												1	5											1		1						
–L– Sta. 15+01	LT	435	436		–4.65	–4.75																																	44																													76	36" RCP
–L– Sta. 15+26	LT	441	435		–3.89	–4.64																													8																																		40	18" RCP
–L– Sta. 15+90	LT	437	434		–0.36	–4.63																													24																																		24	12" DIP
–L– Sta. 15+94	LT	437		2.10	–0.36																																												1										1					1					
–L– Sta. 15+66	LT	438																																																																	.764			
–L– Sta. 15+44	LT	438	435		–4.64	–4.65																				44																																													
–DI– Sta. 13+27	LT																																																																	1				
–Y– Sta. 14+68	LT																																																																			4.4		ESTIMATED QUANTITY, END OF PIPE NOT LOCATED
–Y– Sta. 15+51	LT																																																																			2.8		
PROJECT TOTALS																								44			552	76		60					328	80			44									17	22	14		16	11	2	3			1	2	1	4		3	2	1	.764	11.2	392	
SAY TOTALS																								44			552	76		60					328	80			44									17	22	14		16	11	2	3			1	2	1	4		3	2	1	0.8	11.2	392	

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PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024829 ENGINEER CLINTON J. MORGAN

DocuSigned by: Clinton J. Morgan 024829

10/11/2016

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039334 ENGINEER W. HENRY WELLS, JR.

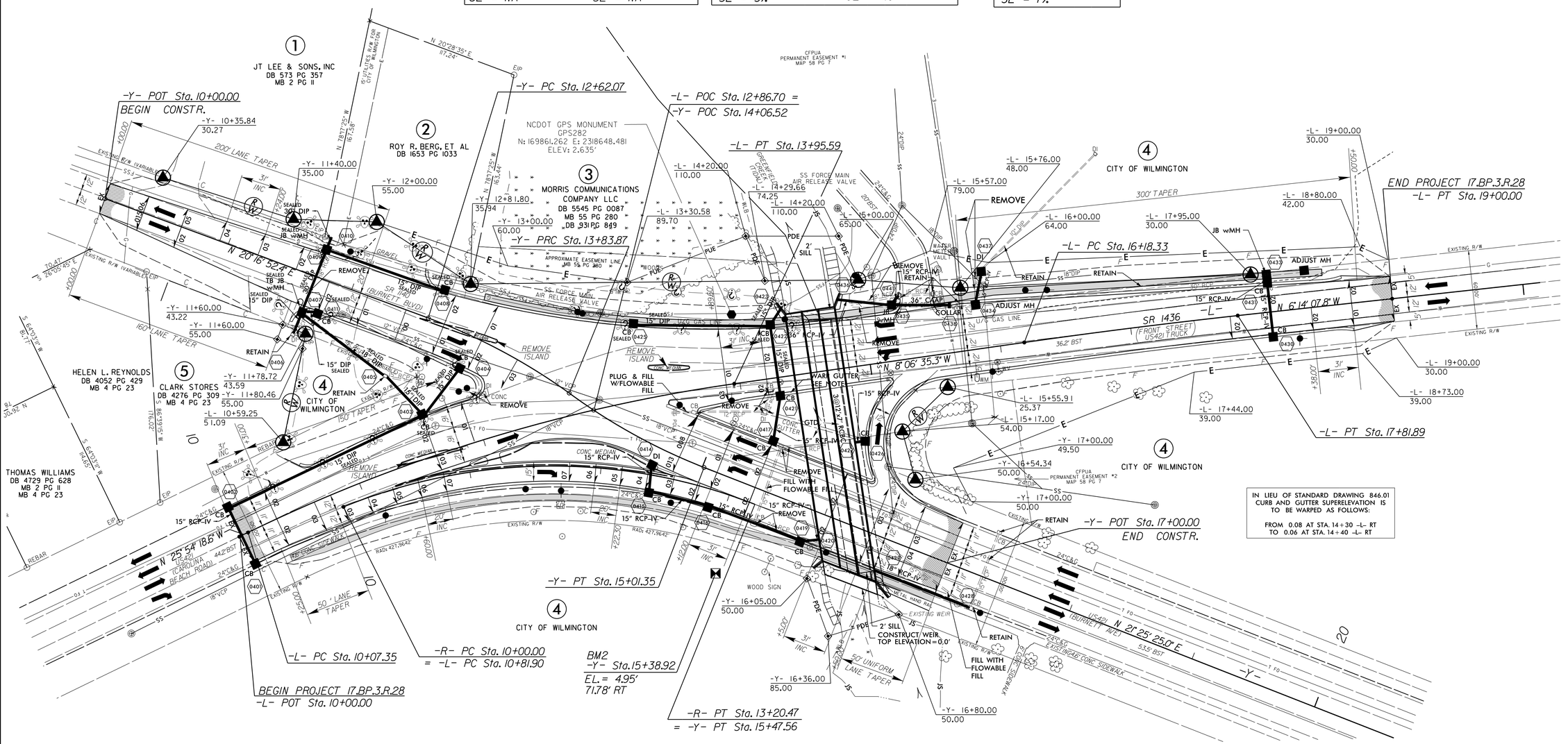
DocuSigned by: W. Henry Wells, Jr. 039334

10/11/2016

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

NAD 83/NSRS 2007

-Y-		-L-		-R-
PI Sta 13+23.34	PI Sta 14+42.94	PI Sta 12+03.05	PI Sta 17+00.12	PI Sta 11+68.42
△ = 15° 30' 26.4" (RT)	△ = 14° 57' 31.1" (LT)	△ = 17° 47' 43.3" (RT)	△ = 1° 52' 27.5" (RT)	△ = 43° 32' 42.0" (RT)
D = 12° 43' 56.6"	D = 12° 43' 56.6"	D = 4° 35' 01.2"	D = 1° 08' 45.3"	D = 13° 35' 16.0"
L = 121.79'	L = 117.48'	L = 388.23'	L = 163.57'	L = 320.47'
T = 61.27'	T = 59.08'	T = 195.69'	T = 81.79'	T = 168.42'
R = 450.00'	R = 450.00'	R = 1,250.00'	R = 5,000.00'	R = 421.67'
DS = 40MPH	DS = 40MPH	DS = 40MPH	DS = 40MPH	DS = 40MPH
SE = NA	SE = NA	SE = 3%	SE = NC	SE = 7%



NOTE: SEE SHEET 5 FOR CURB AND GUTTER, ISLAND, AND SIDEWALK DETAILS
SEE SHEET 7 FOR -L- AND -Y- PROFILES
SEE SHEET 8 FOR -R- PROFILES

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5/14/99

ISLAND, CURB AND GUTTER, AND SIDEWALK DETAIL

NAD 83/NSRS 2007

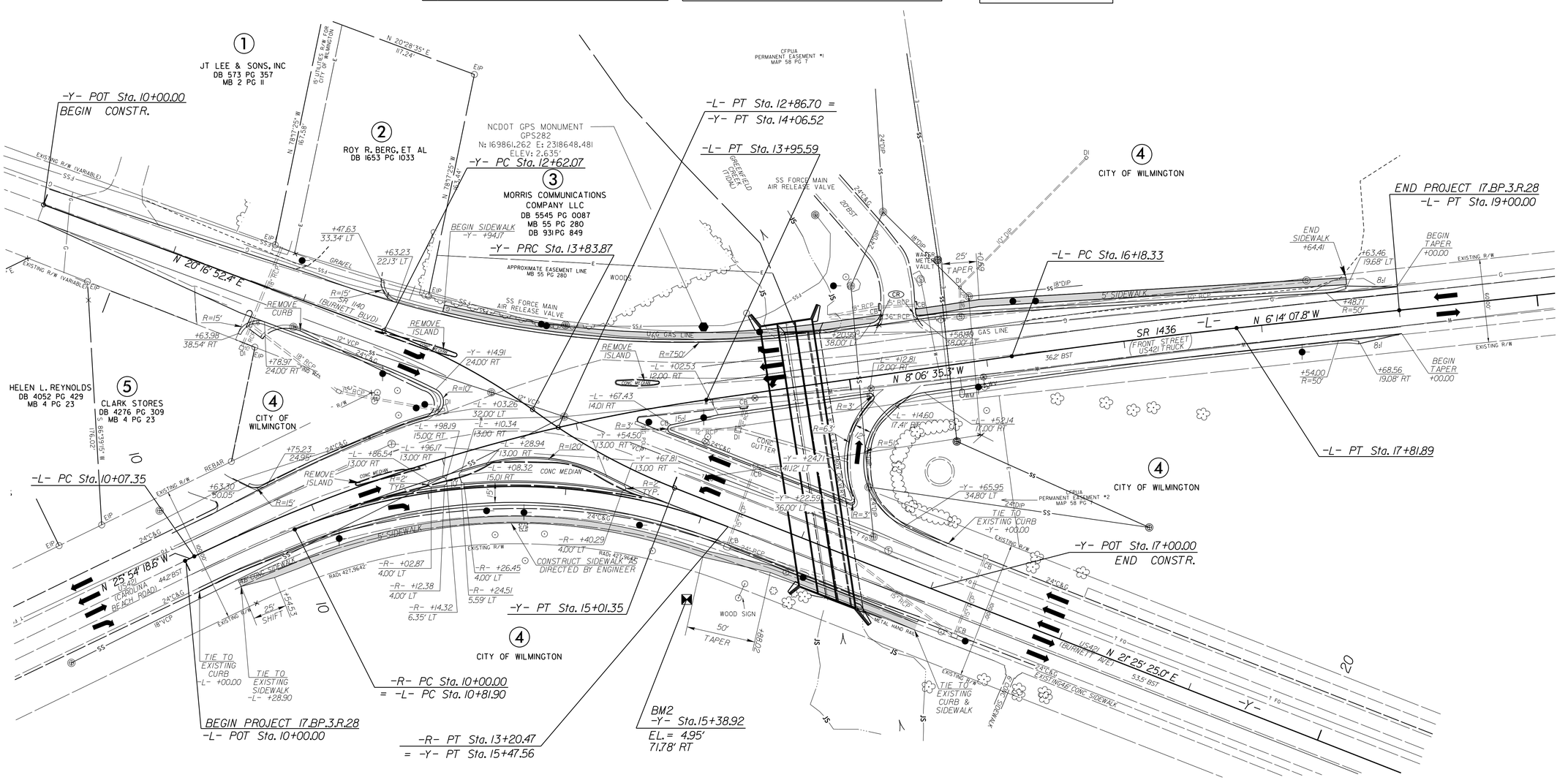
PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 024929 ENGINEER CLINTON J. MORGAN — 10/11/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 039334 ENGINEER HENRY WELLS, JR. — 10/11/2016

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

-Y-	-L-	-R-
PI Sta 13+23.34 Δ = 15° 30' 26.4" (RT) D = 12° 43' 56.6" L = 121.79' T = 61.27' R = 450.00' DS = 40MPH SE = NA	PI Sta 14+42.94 Δ = 14° 57' 31.1" (LT) D = 12° 43' 56.6" L = 117.48' T = 59.08' R = 450.00' DS = 40MPH SE = NA	PI Sta 12+03.05 Δ = 17° 47' 43.3" (RT) D = 4° 35' 01.2" L = 388.23' T = 195.69' R = 1,250.00' DS = 40MPH SE = 3%	PI Sta 17+00.12 Δ = 1° 52' 27.5" (RT) D = 1° 08' 45.3" L = 163.57' T = 81.79' R = 5,000.00' DS = 40MPH SE = NC	PI Sta 11+68.42 Δ = 43° 32' 42.0" (RT) D = 13° 35' 16.0" L = 320.47' T = 168.42' R = 421.67' DS = 40MPH SE = 7%



NOTE: SEE SHEET 4 FOR PLANVIEW
SEE SHEET 7 FOR -L- AND -Y- PROFILES
SEE SHEET 8 FOR -R- PROFILES

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024929, CLINTON J. MORGAN — 10/11/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 009334, W. HENRY WELLS, JR. — 10/11/2016

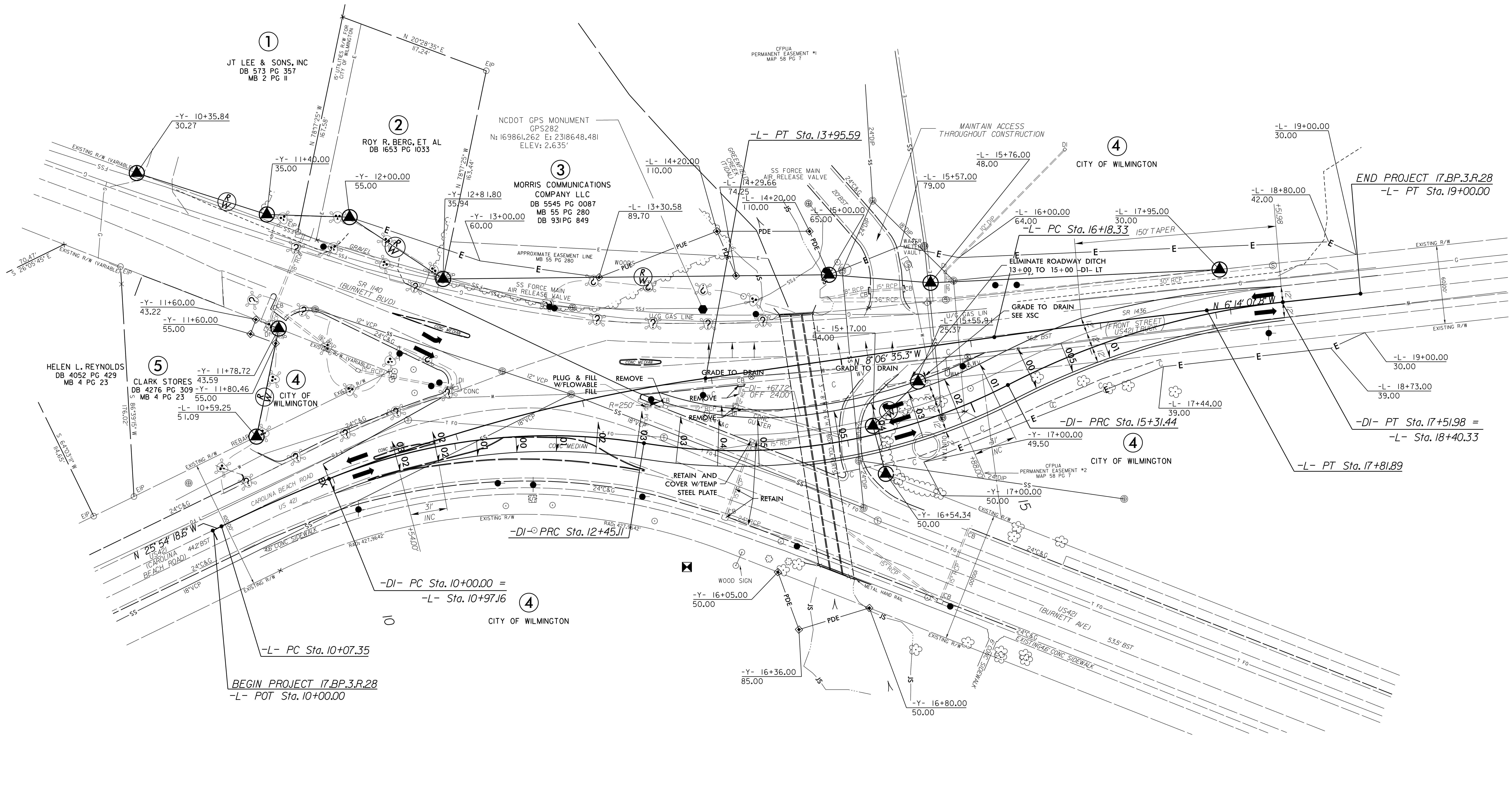
ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

DETOUR OF FRONT STREET TO CAROLINA BEACH ROAD

NAD 83/NSRS 2007

-DI-		
PI Sta 11+25.68	PI Sta 13+93.31	PI Sta 16+42.97
△ = 31° 12' 29.4" (RT)	△ = 36° 27' 25.6" (LT)	△ = 21° 03' 36.9" (RT)
D = 12° 43' 56.6"	D = 12° 43' 56.6"	D = 9° 32' 57.5"
L = 245.11'	L = 286.33'	L = 220.54'
T = 125.68'	T = 148.20'	T = 111.53'
R = 450.00'	R = 450.00'	R = 600.00'
DS = 40 MPH	DS = 40 MPH	DS = 40 MPH
SE = N/A	SE = 5%	SE = N/A

-L-	
PI Sta 12+03.05	PI Sta 17+00.12
△ = 17° 47' 43.3" (RT)	△ = 1° 52' 27.5" (RT)
D = 4° 35' 01.2"	D = 1° 08' 45.3"
L = 388.23'	L = 163.57'
T = 195.69'	T = 81.79'
R = 1,250.00'	R = 5,000.00'
DS = 40MPH	DS = 40MPH
SE = 3%	SE = NC



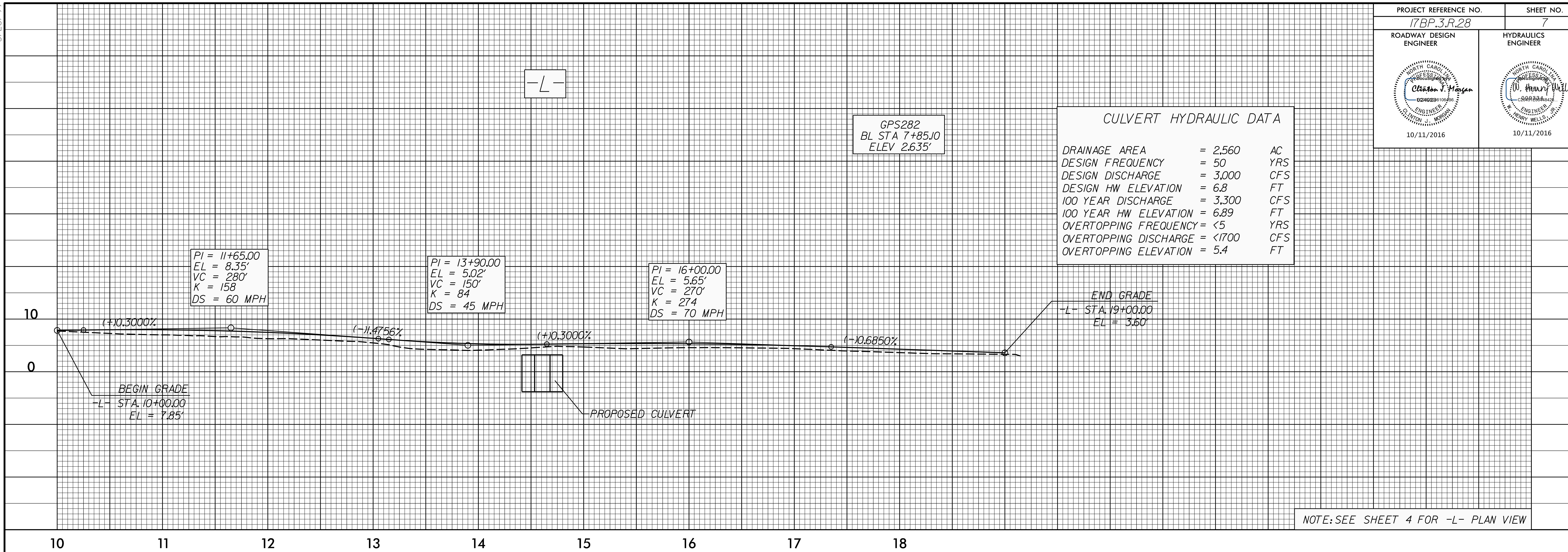
NOTE: SEE SHEET 8 FOR -DI- PROFILE

5/28/99

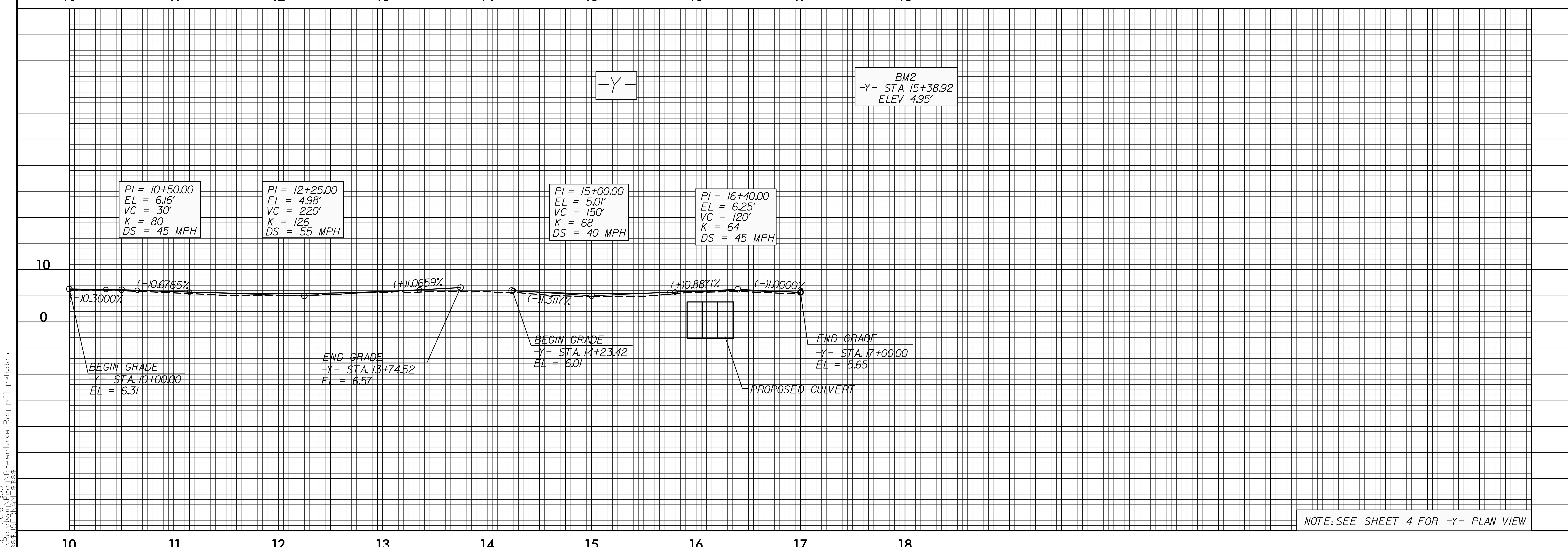
PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
10/11/2016	10/11/2016

CULVERT HYDRAULIC DATA

DRAINAGE AREA	= 2,560	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3,000	CFS
DESIGN HW ELEVATION	= 6.8	FT
100 YEAR DISCHARGE	= 3,300	CFS
100 YEAR HW ELEVATION	= 6.89	FT
OVERTOPPING FREQUENCY	= <5	YRS
OVERTOPPING DISCHARGE	= <1700	CFS
OVERTOPPING ELEVATION	= 5.4	FT



NOTE: SEE SHEET 4 FOR -L- PLAN VIEW



NOTE: SEE SHEET 4 FOR -Y- PLAN VIEW

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R:\Roadway\Proj\Greenlake_Rdy_pfl_psh.dgn
$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.28	8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024929 ENGINEER CLINTON J. MORGAN

Clinton J. Morgan

10/11/2016

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER HENRY WELLS, JR.

Henry Wells, Jr.

10/11/2016

-R-

PI = 10+64.00
EL = 7.75'
VC = 120'
K = 71
DS = 45 MPH

PI = 12+50.00
EL = 4.95'
VC = 130'
K = 68
DS = 40 MPH

(+)0.1788%
(−)1.5040%
(−)1.5040%
(+)0.4175%

BEGIN GRADE
-R- STA. 10+00.00
EL = 7.63

END GRADE
-R- STA. 13+20.47
EL = 5.24

10
0

10 11 12 13

NOTE: SEE SHEET 4 FOR -R- PLAN VIEW

-DI-

PI = 10+93.00
EL = 6.57'
VC = 60'
K = 53
DS = 35 MPH

PI = 10+25.00
EL = 7.14'
VC = 30'
K = 46
DS = 40 MPH

PI = 11+75.00
EL = 6.82'
VC = 90'
K = 56
DS = 40 MPH

PI = 13+00.00
EL = 5.19'
VC = 100'
K = 55
DS = 35 MPH

PI = 14+05.00
EL = 5.74'
VC = 80'
K = 65
DS = 45 MPH

(−)0.1824%
(−)0.8379%
(+)0.3000%
(−)1.3000%
(+)0.5179%
(−)0.7213%

BEGIN GRADE
-DI- STA. 10+00.00
EL = 7.19

END GRADE
-DI- STA. 16+31.23
EL = 4.10

10

10 11 12 13 14 15 16 17

NOTE: SEE SHEET 6 FOR -DI- PLAN VIEW

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