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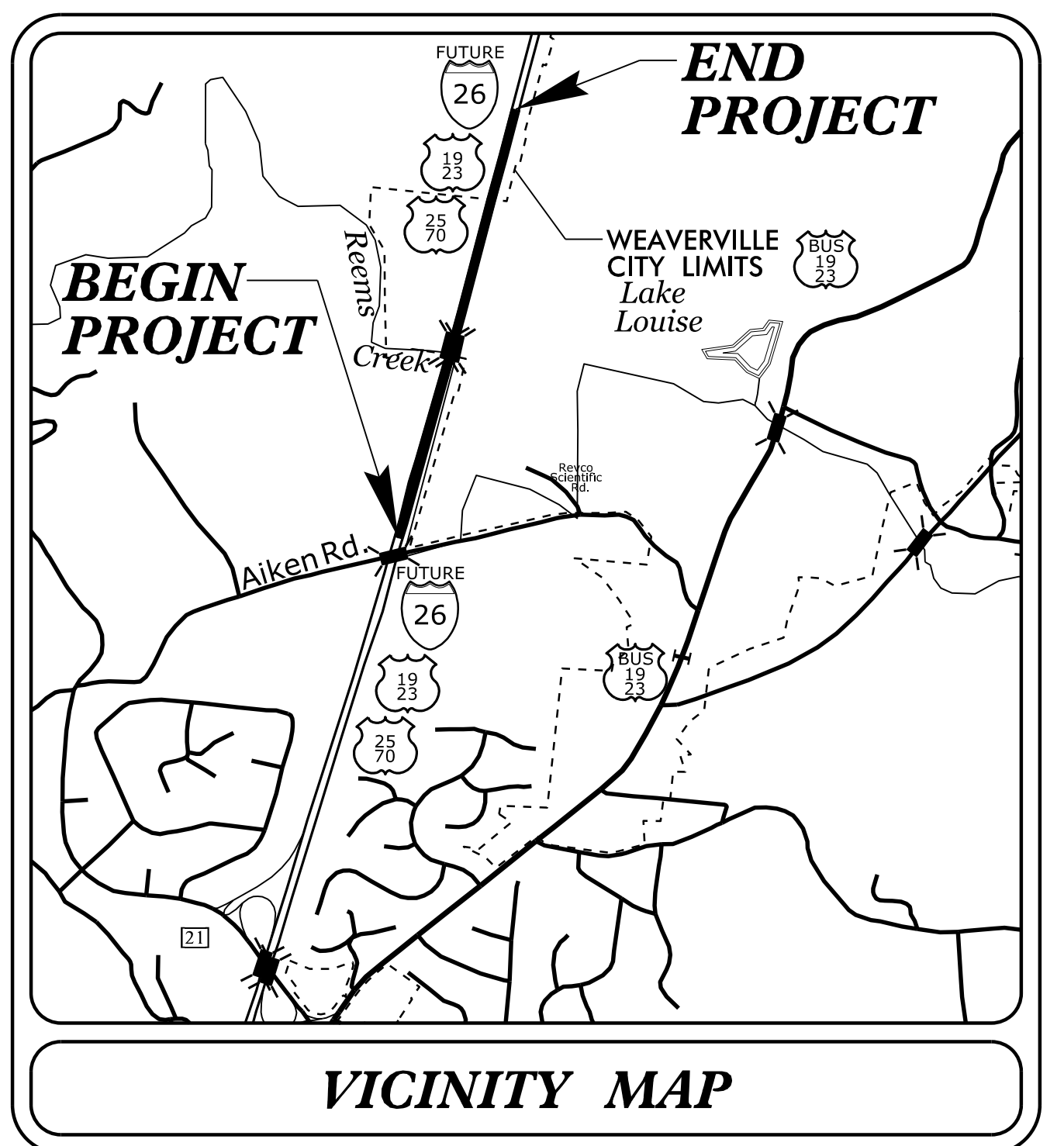
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TIP PROJECT: B-4442

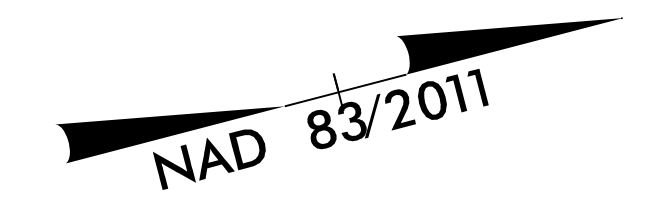
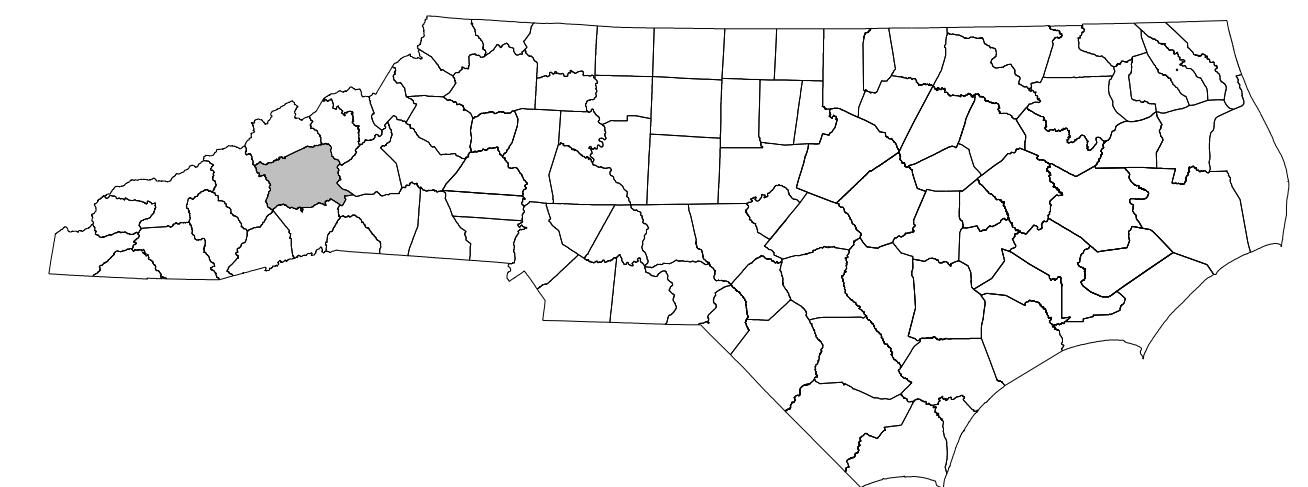
CONTRACT: C204740

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4442	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38368.1.2		P.E.	
38368.2.1	0019061	R/W	
38368.2.2	0019061	UTILS.	
38368.3.1	0019061	CONST	

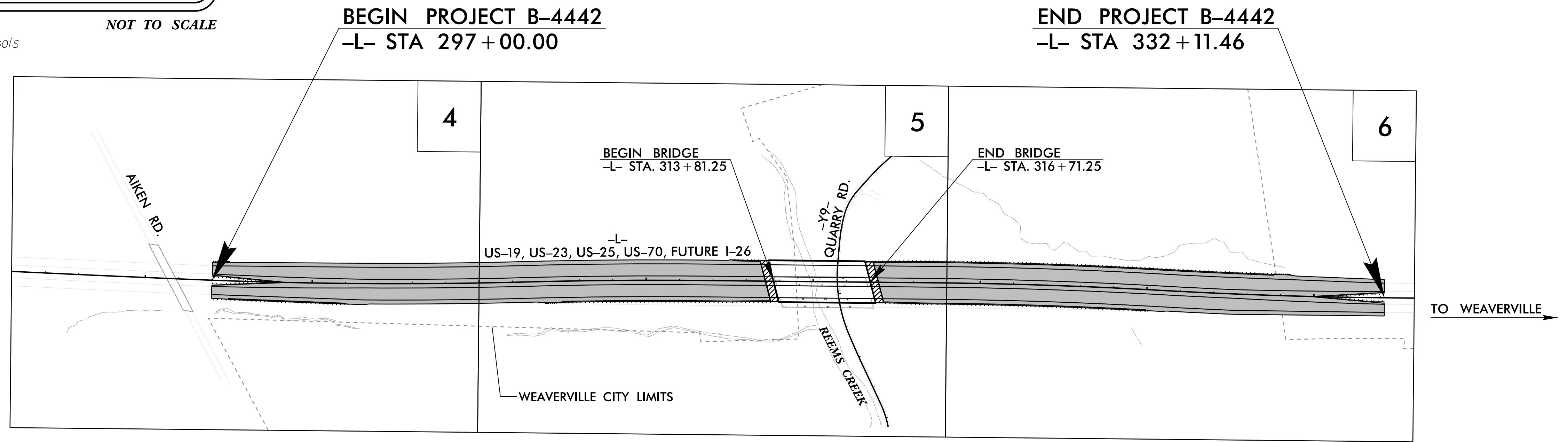


VICINITY MAP
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
NOT TO SCALE



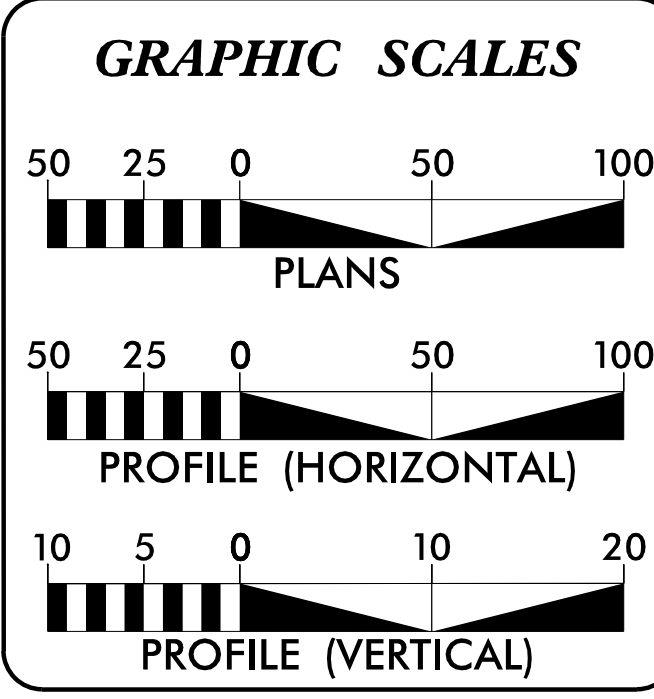
**LOCATION: REPLACE US-19, US-23, US-25, US-70, FUTURE I-26
BRIDGES OVER REEMS CREEK- STRUCTURES NO. 370 and 373**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



THIS IS A FULL CONTROLLED ACCESS PROJECT WITH ACCESS ONLY AT INTERCHANGES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2023 =	55,400
ADT 2043 =	75,400
K =	9 %
D =	65 %
T =	7 % *
V =	70 MPH
* (TTST 4% + DUAL 3%)	
FUNC CLASS =	INTERSTATE
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-4442 =	0.610 MILES
LENGTH STRUCTURE PROJECT B-4442 =	0.055 MILES
TOTAL LENGTH PROJECT B-4442 =	0.665 MILES

Prepared In the Office of:

AECOM
2018 STANDARD SPECIFICATIONS
RIGHT-OF-WAY DATE: JANUARY 26, 2022
LETTING DATE: SEPTEMBER 20, 2022
NCDOT CONTACT:

NC FIRM LICENSE No: F-0342
5438 Wade Park Boulevard, Suite 200
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

ART MCMILLAN, PE
PROJECT ENGINEER

MOHAMMED FALLAHA, PE
PROJECT DESIGN ENGINEER

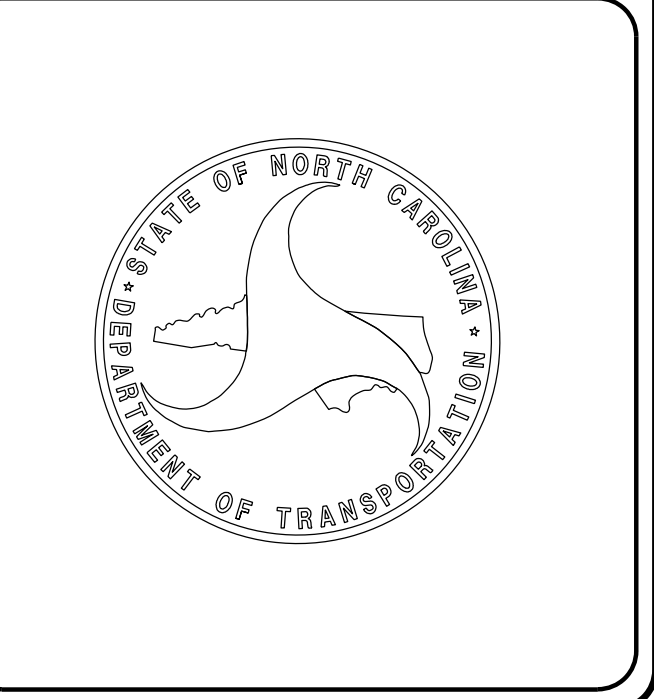
BEVERLY ROBINSON

HYDRAULICS ENGINEER

DocuSigned by: *Mohammed Fallaha*
SIGNATURE: 7/18/2022

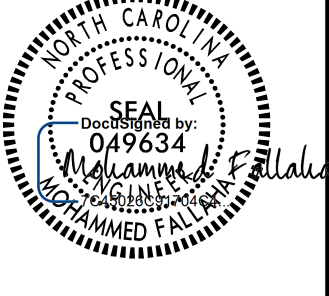

ROADWAY DESIGN ENGINEER

DocuSigned by: *Mohammed Fallaha*
SIGNATURE: 7/18/2022



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES AND 2018 ROADWAY ENGLISH STANDARD DRAWINGS

PROJECT REFERENCE NO. B-4442	SHEET NO. 1A
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<small>Prepared in the Office of:</small>  <small>NC FIRM LICENSE NO. F-0342 1438 Wood Park Boulevard, Suite 200 Raleigh, NC 27605 (919) 871-1000</small>	

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-6	TEMPORARY DETOUR DETAILS
2C-1	TEMPORARY GUARDRAIL ANCHOR UNIT DETAIL
2C-2	GUARDRAIL INSTALLATION DETAIL
2C-3	DOUBLE FACED GUARDRAIL DETAIL
2C-4	ROCK PLATING DETAIL
2C-5	SINGLE SLOPE CONCRETE BARRIER DETAIL
2C-6	OPEN THROAT CATCH BASIN DETAILS
2C-7	TEMPORARY STEEL COVER DETAIL
2D-1	DRAINAGE DETAIL SHEET
2G-1	ROCK EMBANKMENTS DETAIL
2G-2	TEMPORARY SHORING DETAILS
2G-3 THRU 2G-5	TEMPORARY WALL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1 THRU 3D-2	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 6	ROADWAY PLAN SHEETS
7 THRU 10	PROFILE SHEETS
RW-1 THRU RW-6	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-16	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-4	PAVEMENT MARKING PLANS
EC-1 THRU EC-9	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-8	SIGNING PLANS
X-1	CROSS SECTION SUMMARY
X-2 THRU X-32	CROSS SECTIONS
W-1 THRU W-4	WALL PLANS
1	STRUCTURE PLANS TITLE SHEET
S-1 THRU S-58	STRUCTURE PLANS
SN	STANDARD NOTES

2018 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, 2018 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
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.05	Method of Obtaining Super-elevation - Divided Highways
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Super-elevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.02	Subsurface Drain
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
840.00	Concrete Base Pad for Drainage Structures
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
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
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.01	Chain Link Fence - 4', 5', and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

EFF. 01-16-2018
REV.

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

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. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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 AS "TEMPORARY SHORING".

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.

RIGHT-OF-WAY MARKERS:

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

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	(123)
Existing Fence Line	-x-x-x-
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
Existing Historic Property Boundary	HPB
Known Contamination Area: Soil	☠-s-☠-s-
Potential Contamination Area: Soil	☠-s-☠-s-
Known Contamination Area: Water	☠-w-☠-w-
Potential Contamination Area: Water	☠-w-☠-w-
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	▲
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◇
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	▲
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	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

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	T
Proposed Guardrail	T
Existing Cable Guiderail	T
Proposed Cable Guiderail	T
Equality Symbol	⊕
Pavement Removal	⊗
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	-----

Woods Line	-----
Orchard	○
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	○
Storm Sewer	S

UTILITIES:

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

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

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	PH
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	T
U/G Telephone Cable (SUE - LOS C)*	T
U/G Telephone Cable (SUE - LOS D)*	T
U/G Telephone Conduit (SUE - LOS B)*	TC
U/G Telephone Conduit (SUE - LOS C)*	TC
U/G Telephone Conduit (SUE - LOS D)*	TC
U/G Fiber Optics Cable (SUE - LOS B)*	T FO
U/G Fiber Optics Cable (SUE - LOS C)*	T FO
U/G Fiber Optics Cable (SUE - LOS D)*	T FO

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line Test Hole (SUE - LOS A)*	⊕
U/G Water Line (SUE - LOS B)*	P
U/G Water Line (SUE - LOS C)*	P
U/G Water Line (SUE - LOS D)*	P
Above Ground Water Line	A/G Water
TV:	
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	PH
U/G TV Test Hole (SUE - LOS A)*	⊕
U/G TV Cable (SUE - LOS B)*	TV
U/G TV Cable (SUE - LOS C)*	TV
U/G TV Cable (SUE - LOS D)*	TV
U/G Fiber Optic Cable (SUE - LOS B)*	TV FO
U/G Fiber Optic Cable (SUE - LOS C)*	TV FO
U/G Fiber Optic Cable (SUE - LOS D)*	TV FO

GAS:

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

SANITARY SEWER:

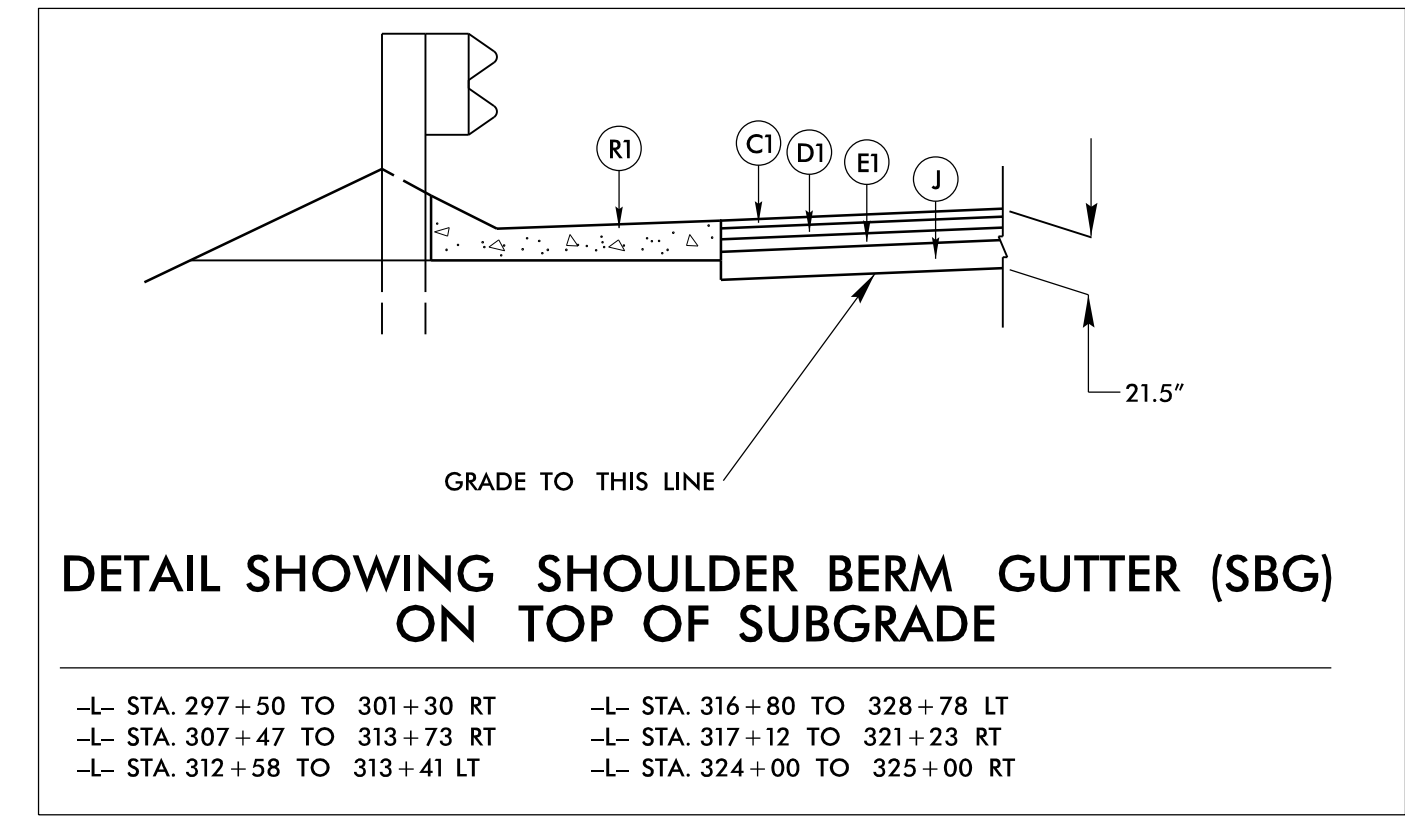
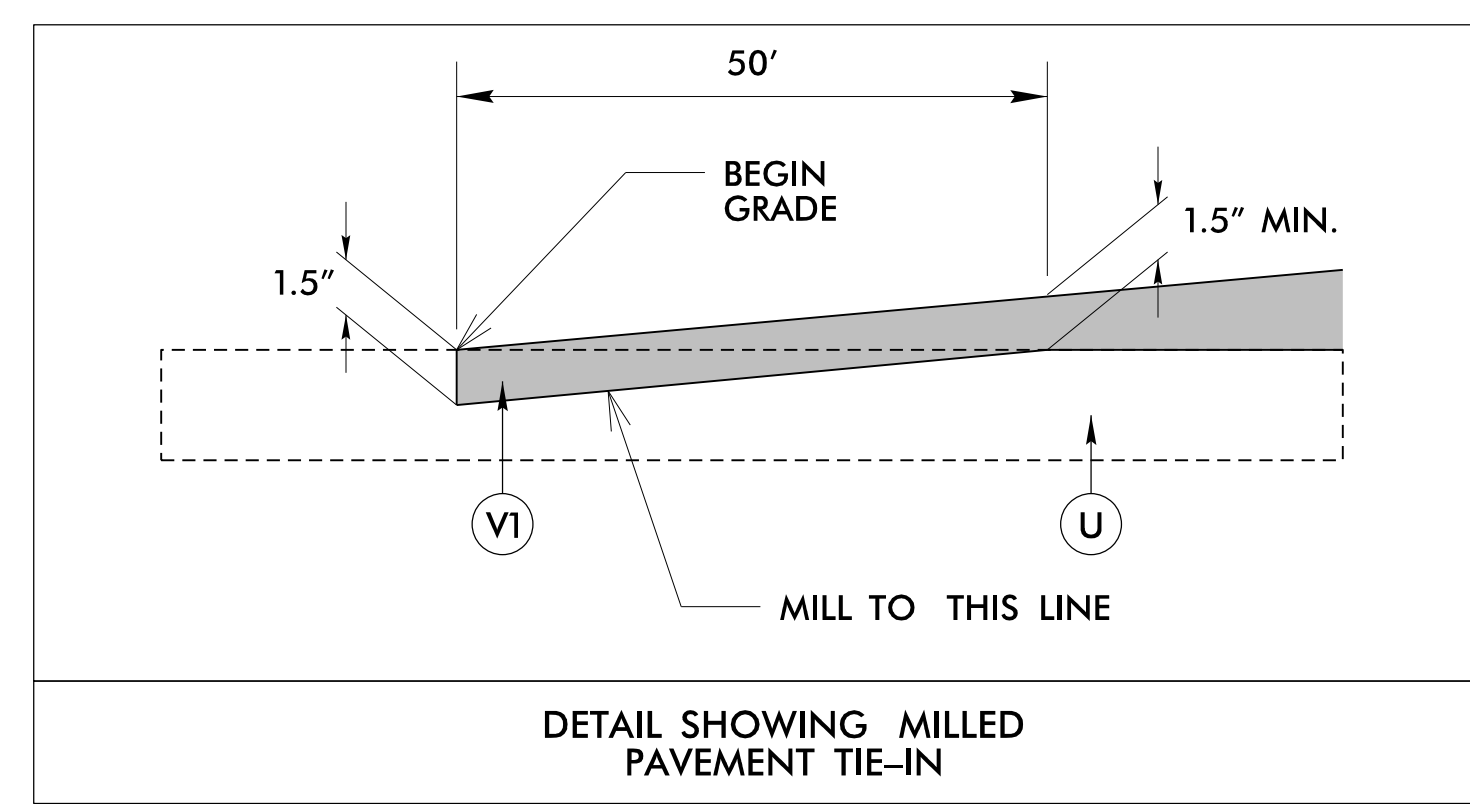
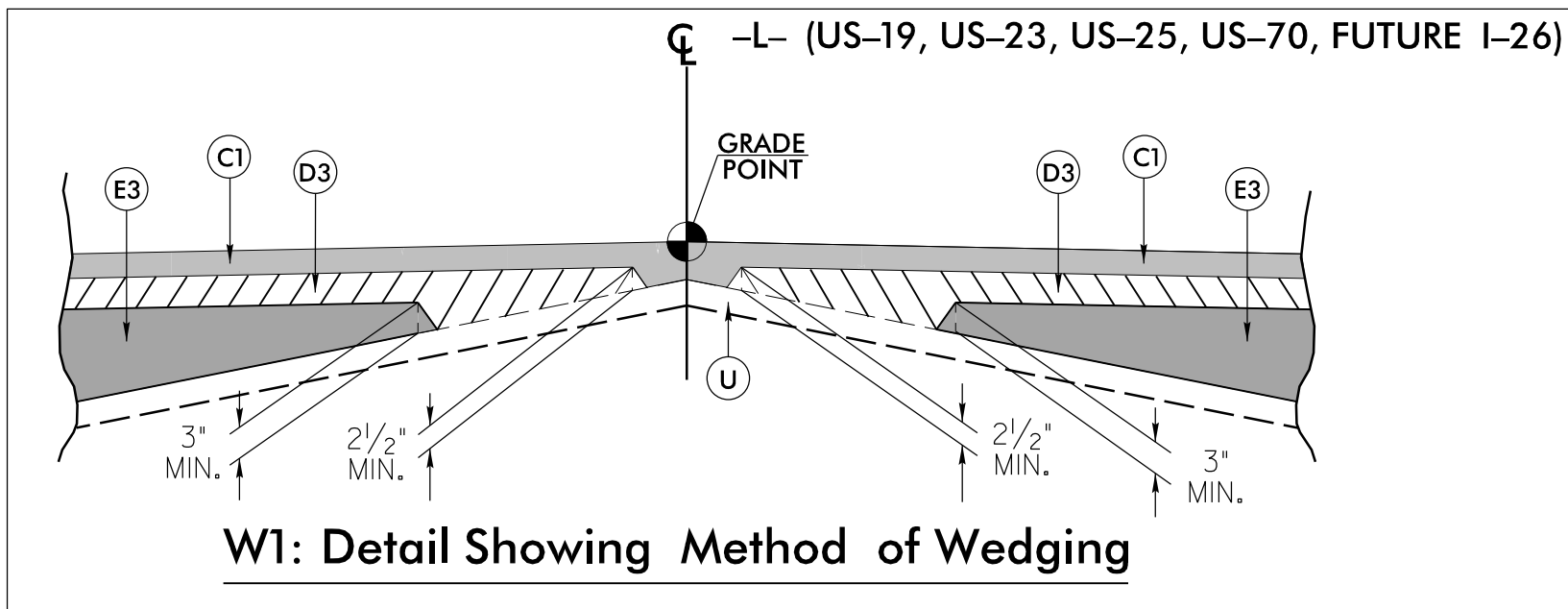
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
SS Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	FSS
SS Force Main Line (SUE - LOS C)*	FSS
SS Force Main Line (SUE - LOS D)*	FSS

MISCELLANEOUS:

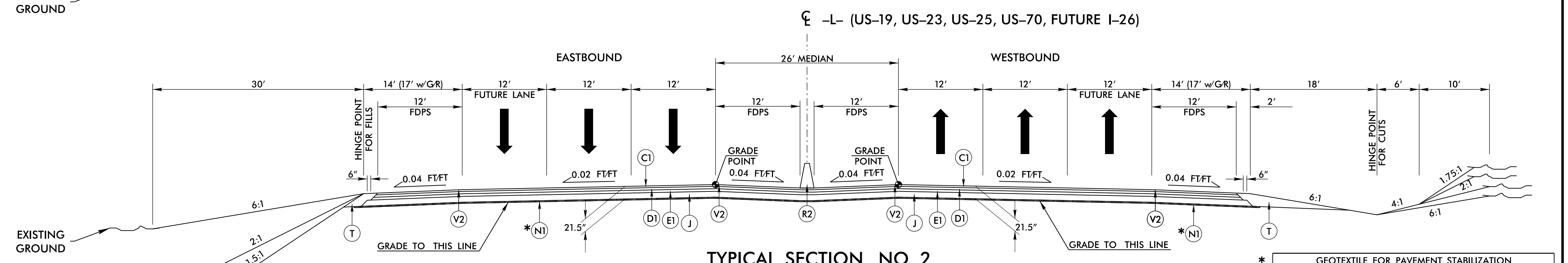
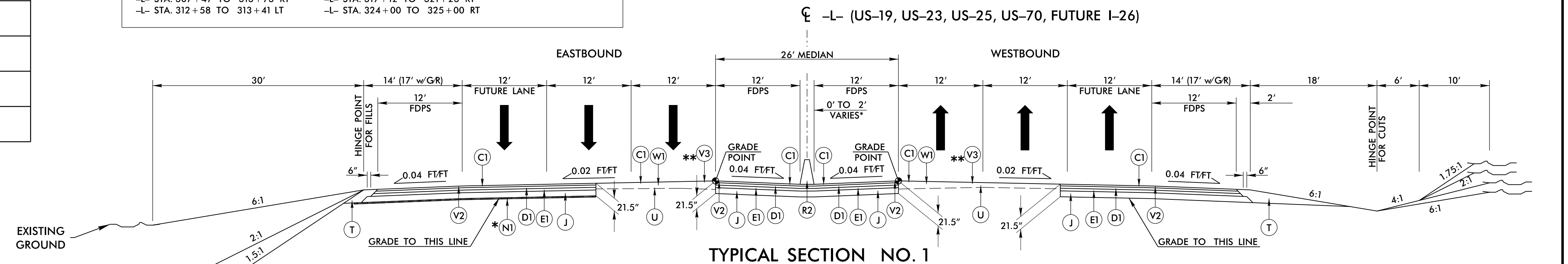
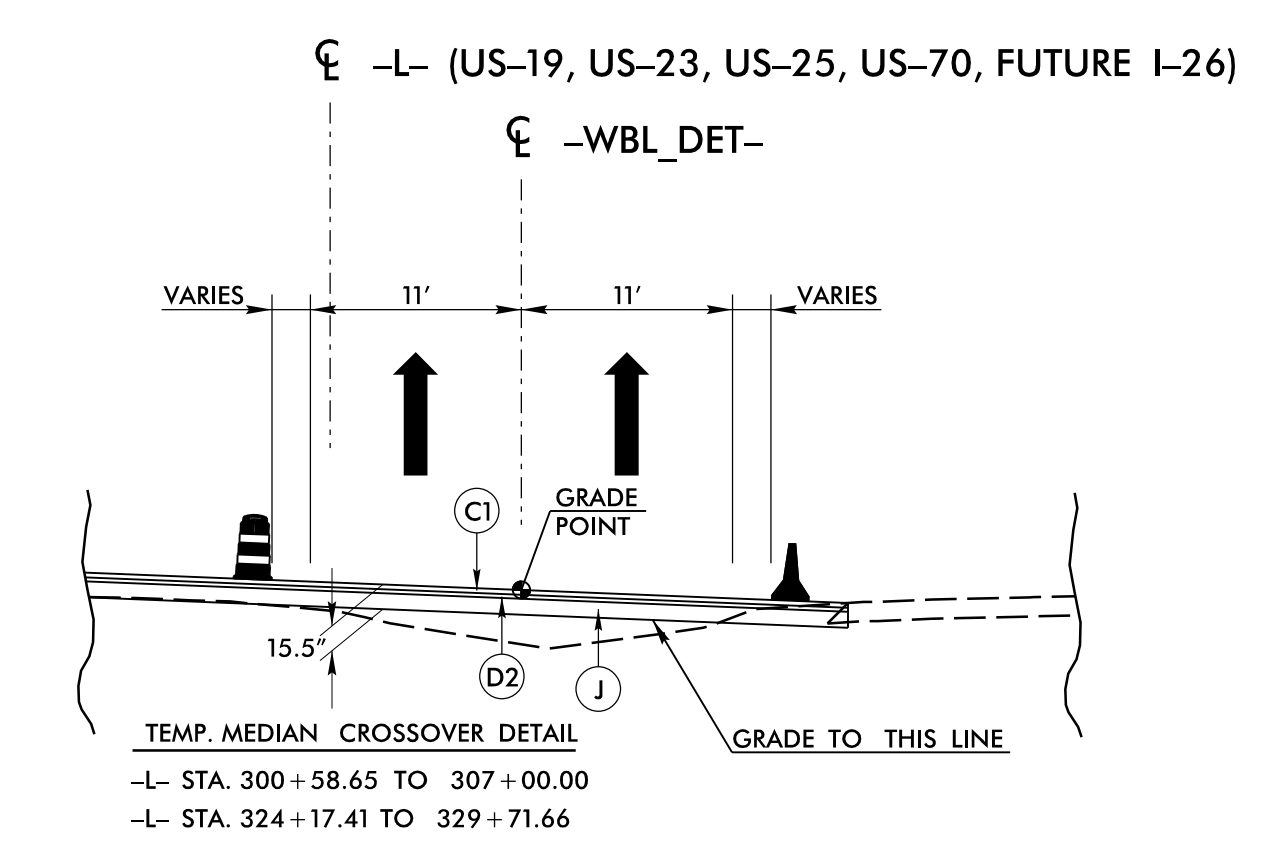
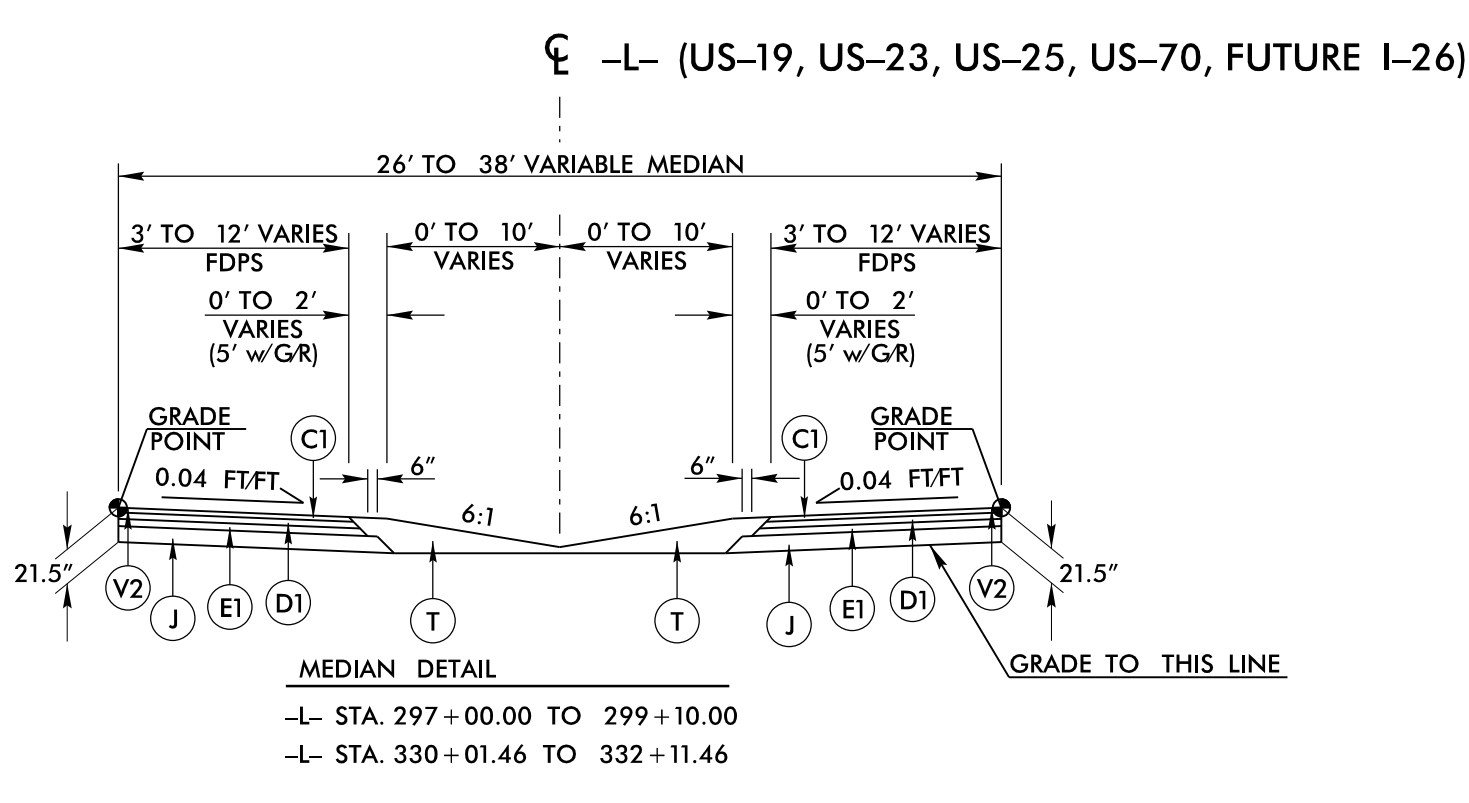
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line (SUE - LOS B)*	UTL
U/G Tank; Water, Gas, Oil	UST
Underground Storage Tank, Approx. Loc.	UST
A/G Tank; Water, Gas, Oil	UST
Geoenvironmental Boring	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/2022
 8/9/2022
 p:\aecom\ng-pw-bentley.com\AECOM\DS21.LA_2020\Documents\M100480-B-4442-1-26 over Reems Creek\900-CAD GIS\910-CAD 70-NCDDT-TIP-Roadway\Design\B4442-1-Rdy-tp01.dgn
 mohammed.f@alstia.com

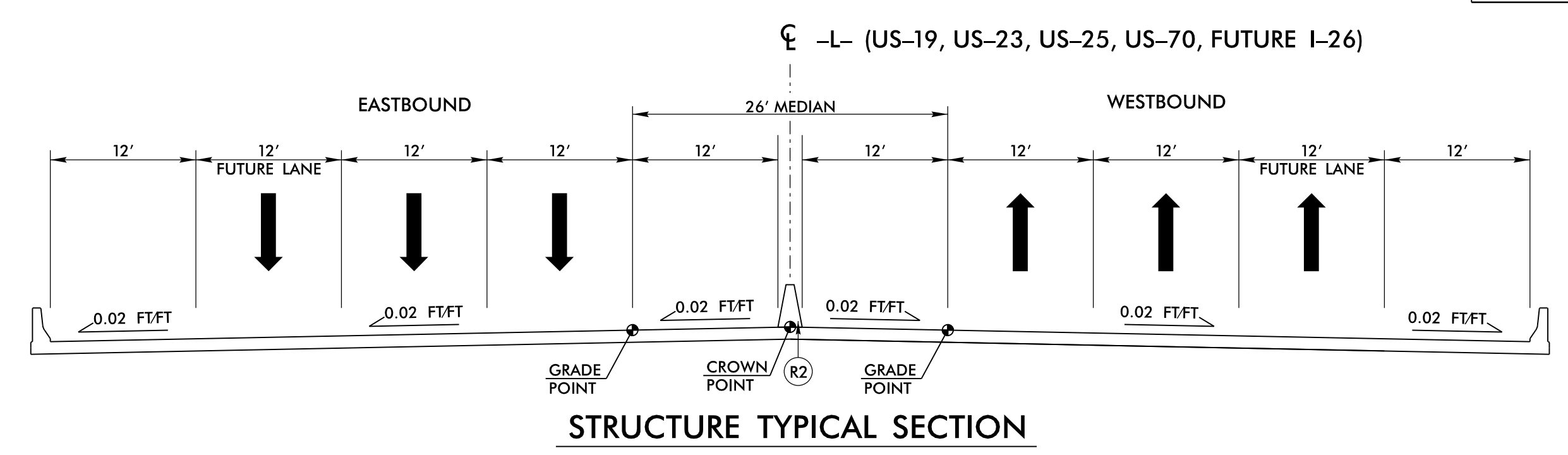
PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D3	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. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. APPROX. 9" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
E3	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 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J	PROP. APPROX. 10" AGGREGATE BASE COURSE
N1	GEOTEXTILE FOR PAVEMENT STABILIZATION
R1	PROP. CONCRETE SHOULDER BERM GUTTER
R2	PROP. SINGLE SLOPE CONCRETE BARRIER (42" HEIGHT ABOVE S9.5C LAYER)
V1	VARIABLE DEPTH MILLING
V2	MILLED RUMBLE STRIPS
V3	1.5" MILLING
U	EXISTING PAVEMENT
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING)



PROJECT REFERENCE NO. B-4442	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER SEAL 024934 M. J. HOLLAND	PAVEMENT DESIGN ENGINEER SEAL 024934 M. J. HOLLAND
Prepared in the Office of: AECOM	NC FIRM LICENSE No: F-0342 5438 Wood Park Boulevard Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)
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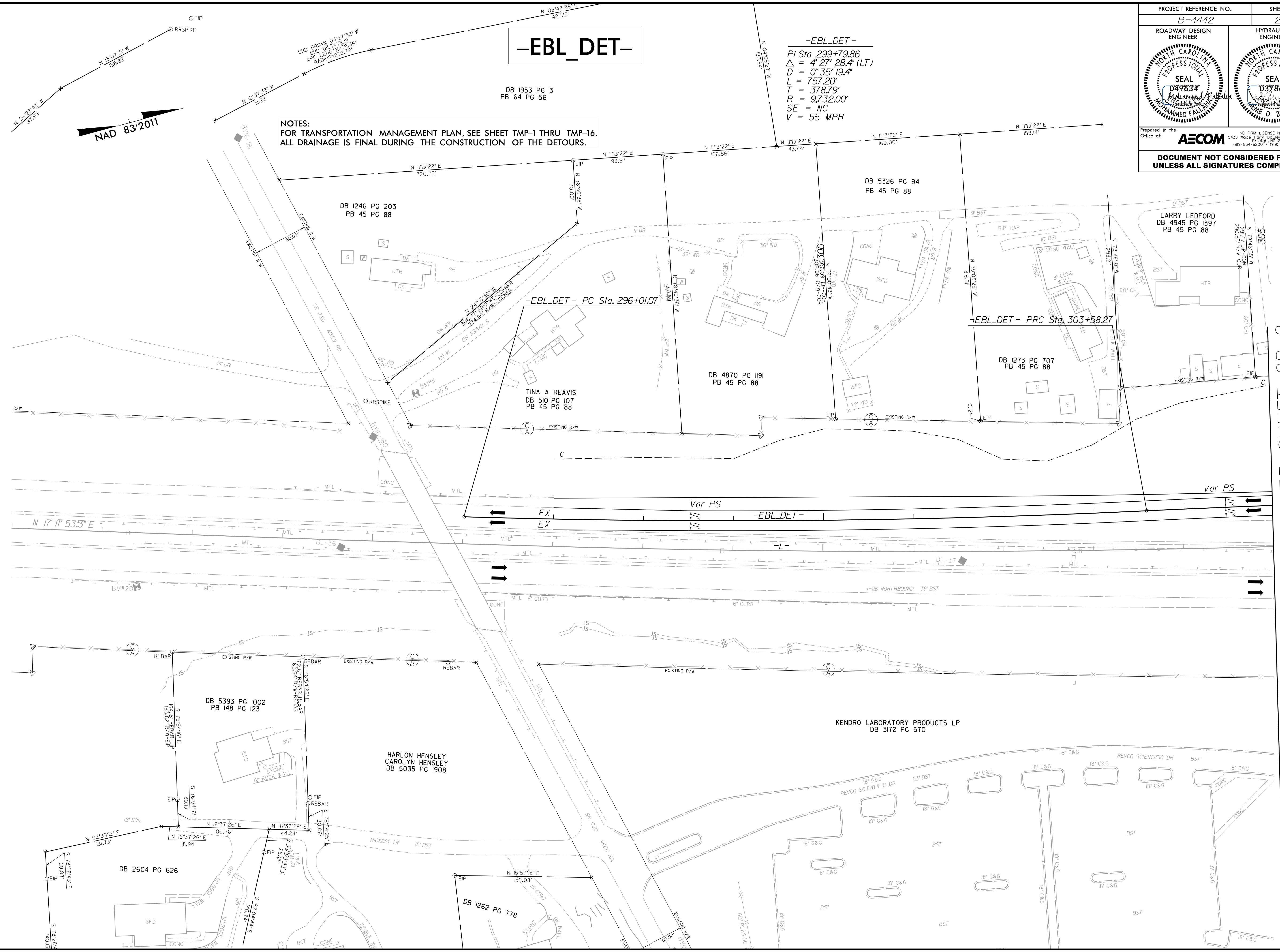
GEOTEXTILE FOR PAVEMENT STABILIZATION					
LINE	BEGIN STATION	END STATION	GEOTEXTILE (SY)	CLASS IV (TONS)	OFFSET
-L-	313+50	314+00	694	ABC	CL
-L-	317+00	328+00	15,278	ABC	CL
-L-	328+00	330+00	533	ABC	LT
TOTAL			16,505		



USE STRUCTURE TYPICAL SECTION
-L- STA. 313+81.25 TO 316+71.25

5/12/2022
C:\Users\mohammed.falaha\Documents\100480-B-4442_I-26_over_Reems_Creek\900-CAD_GIS\910_CAD\70_NCD01_TIP_Roadway\Design\B4442_cdy_rsb_02B-1.dgn
Mohammed Falaha

REVISIONS



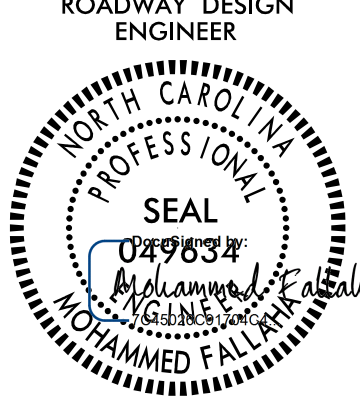
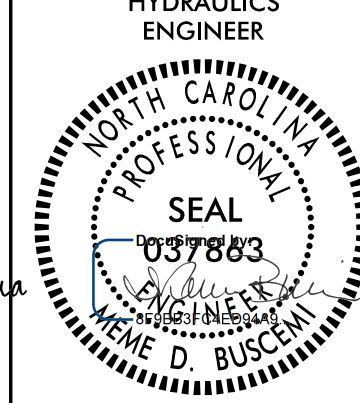
-EBL_DET-

-EBL_DET-
 PI Sta 299+79.86
 $\Delta = 4' 27'' 28.4'' (LT)$
 $D = 0' 35'' 19.4''$
 $L = 757.20'$
 $T = 378.79'$
 $R = 9,732.00'$
 $SE = NC$
 $V = 55 MPH$

NOTES:
 FOR TRANSPORTATION MANAGEMENT PLAN, SEE SHEET TMP-1 THRU TMP-16.
 ALL DRAINAGE IS FINAL DURING THE CONSTRUCTION OF THE DETOURS.

PROJECT REFERENCE NO. B-4442	SHEET NO. 2B-1
ROADWAY DESIGN ENGINEER MOHAMMED FALAHA	HYDRAULICS ENGINEER WAME D. BUSCEMI
Prepared in the Office of: AECOM <small>NC FIRM LICENSE NO. F-0342 5438 Wade Park, Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCHLINE -L- STA 305+00 SEE SHEET 2B-2

PROJECT REFERENCE NO. B-4442	SHEET NO. 2B-2
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
Prepared in the Office of: AECOM NC FIRM LICENSE NO: F-0342 5438 Wade Park, Boulevard, Suite 200 Charlotte, NC 28209 (919) 854-6200 / (919) 854-6259 (FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-EBL_DET-

-EBL_DET-
 PI Sta 307+05.14
 $\Delta = 2^\circ 43' 58.1''$ (RT)
 $D = 0^\circ 23' 38.4''$
 $L = 693.60'$
 $T = 346.87'$
 $R = 14,542.00'$
 $SE = NC$
 $V = 55$ MPH

NAD 83/2011

DB 4714 PG 109
PB 45 PG 88

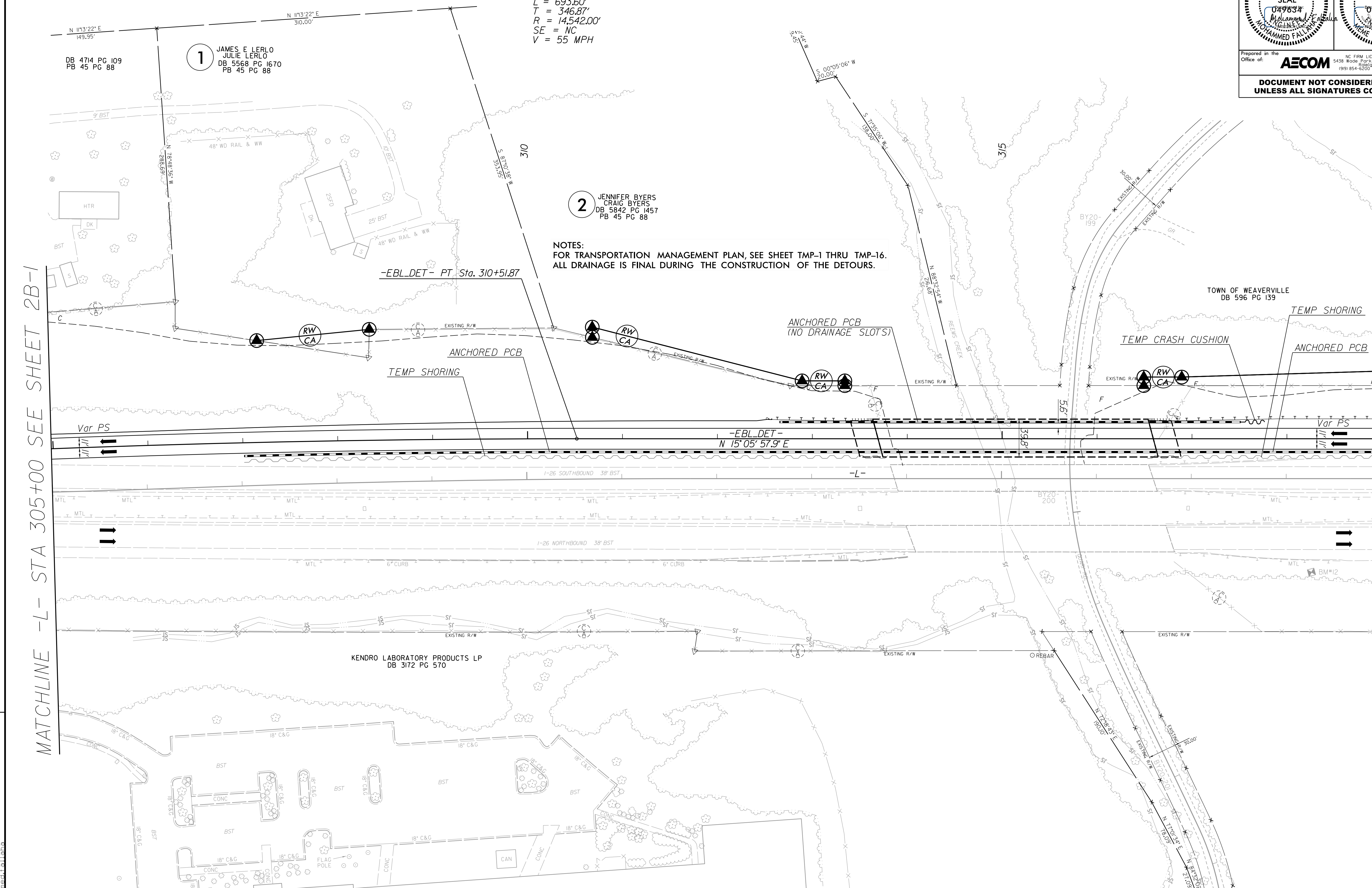
1 JAMES E LERLO
JULIE LERLO
DB 5568 PG 1670
PB 45 PG 88

2 JENNIFER BYERS
CRAIG BYERS
DB 5842 PG 1457
PB 45 PG 88

NOTES:
 FOR TRANSPORTATION MANAGEMENT PLAN, SEE SHEET TMP-1 THRU TMP-16.
 ALL DRAINAGE IS FINAL DURING THE CONSTRUCTION OF THE DETOURS.

MATCHLINE -L- STA 305+00 SEE SHEET 2B-1

MATCHLINE -L- STA 319+00 SEE SHEET 2B-3



REVISIONS

5/12/2022
 pak\sec\mnp\pwbentley.com\AECOM_DS21_NA_2020\Documents\M100450-B-4442_I-26_Over_Reems_Creek\900-CAD_GIS\910_CAD\Y70_NCDOT_IIP_Roadway_Design_B4442_cdu.psb_02B-2.dgn
 Mohammed Fallouh

8/17/99

PROJECT REFERENCE NO. B-4442		SHEET NO. 2B-3	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		AECOM <small>NC FIRM LICENSE No. F-0342 5438 Wade Street, Boulevard Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259 (FAX)</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

-EBL_DET-

-EBL_DET-

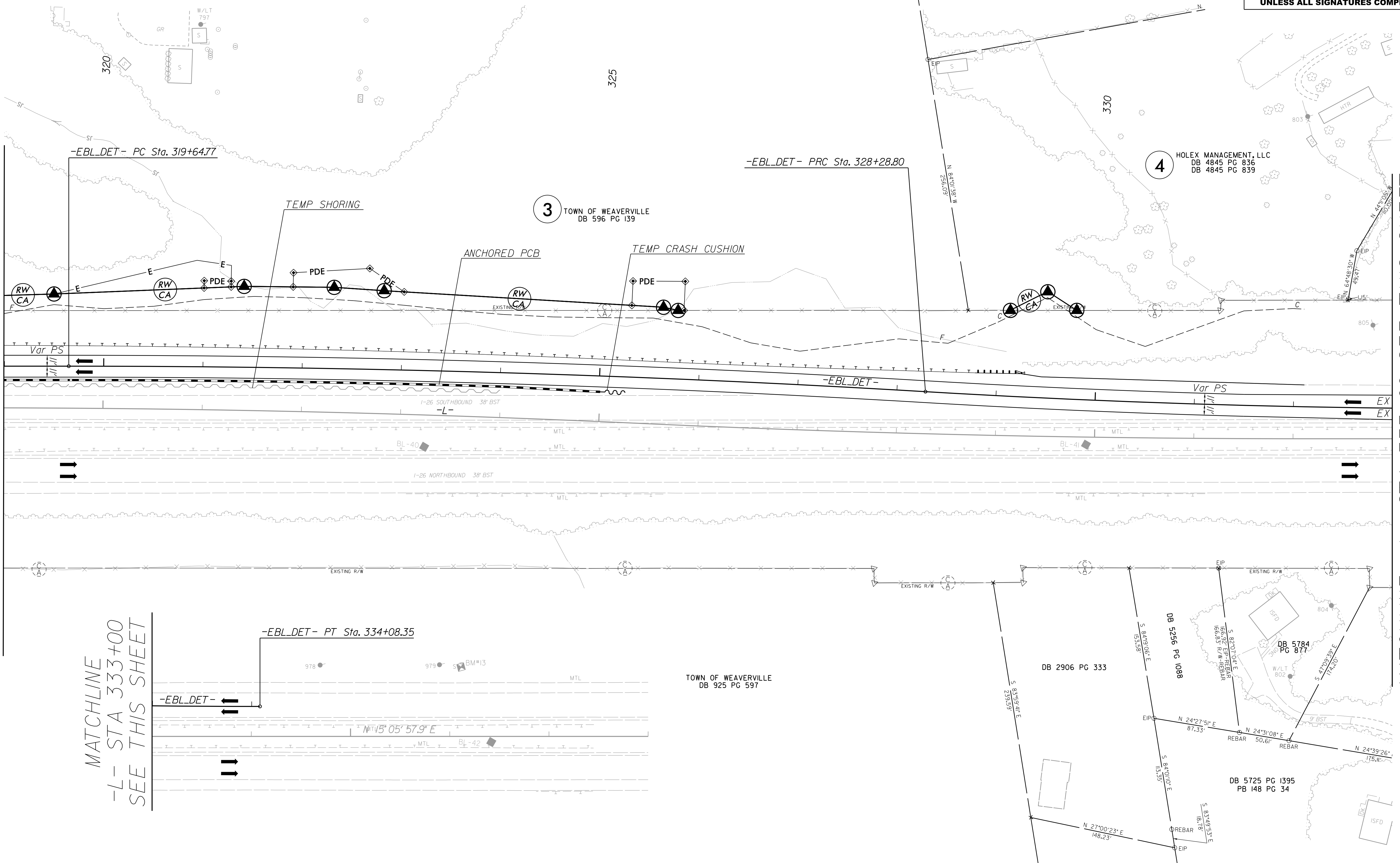
PI Sta 323+96.91	PI Sta 331+18.66
$\Delta = 3^{\circ} 24' 15.5" (RT)$	$\Delta = 3^{\circ} 24' 15.5" (LT)$
$D = 0^{\circ} 23' 38.4"$	$D = 0^{\circ} 35' 14.7"$
$L = 864.03'$	$L = 579.55'$
$T = 432.14'$	$T = 289.86'$
$R = 14,542.00'$	$R = 9,754.00'$
SE = NC	SE = NC
V = 55 MPH	V = 55 MPH

NOTES:
 FOR TRANSPORTATION MANAGEMENT PLAN, SEE SHEET TMP-1 THRU TMP-16.
 ALL DRAINAGE IS FINAL DURING THE CONSTRUCTION OF THE DETOURS.

DB 4786 PG 1703

MATCHLINE -L- STA 319+00 SEE SHEET 2B-2

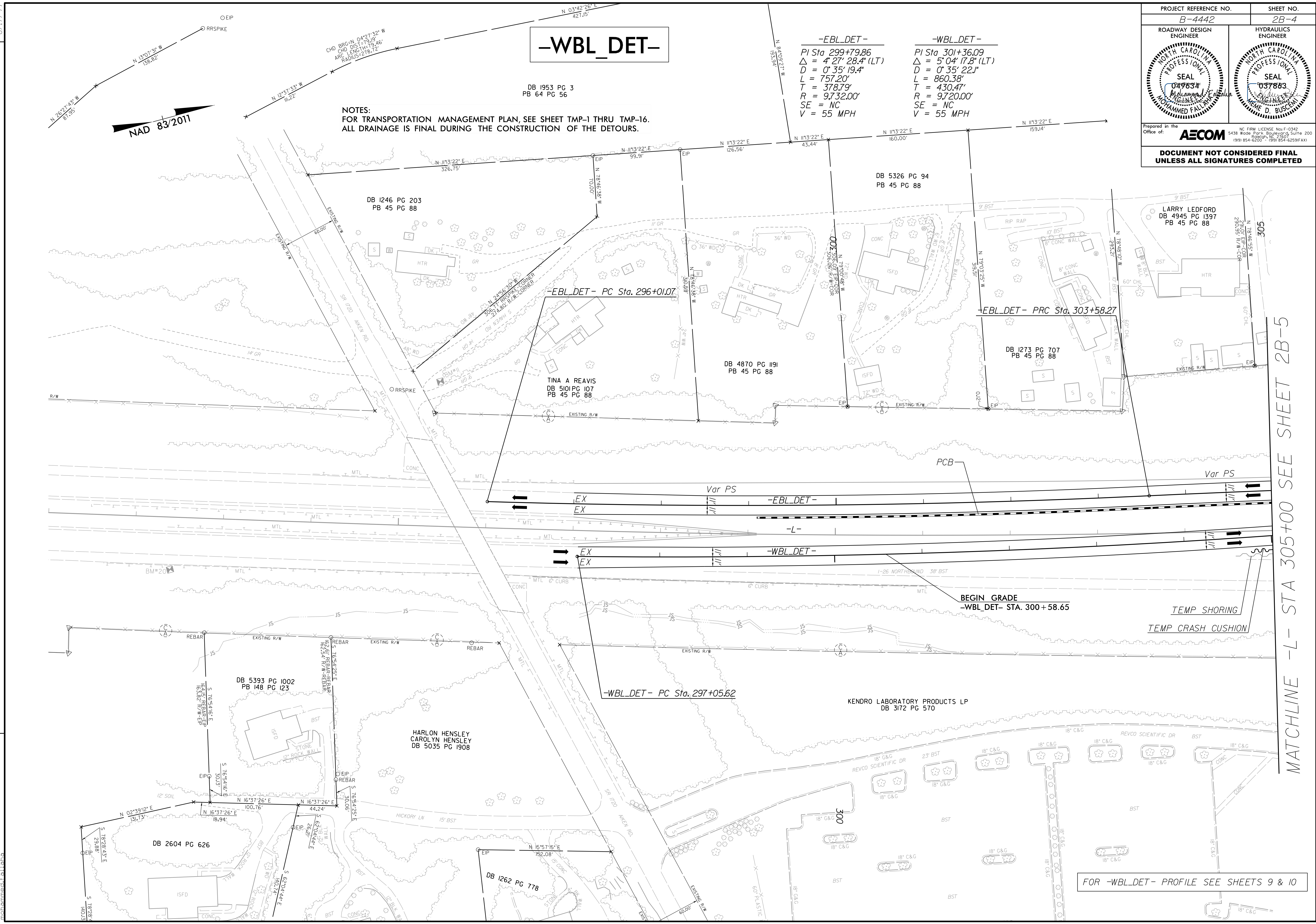
MATCHLINE -L- STA 333+00 SEE THIS SHEET



REVISIONS

5/12/2022
 pak\sec\mng\paw.bentley.com\AECOM_DS21_NA_2020\Documents\M100480-B-4442_I-26_over_Reems_Creek\900-CAD_GIS\910_CAD\Y20_NCDOT_IIP_Roadway_Design_B4442_cdu.psb_02B-3.dgn
 Mohammed Fallouh

PROJECT REFERENCE NO. B-4442	SHEET NO. 2B-4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM	
<small>NC FIRM LICENSE NO. F-0342 5438 Wade Park, Boulevard Suite 200 Charlotte, NC 28217 (919) 854-6200 • (919) 854-6259 (fax)</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTES:
FOR TRANSPORTATION MANAGEMENT PLAN, SEE SHEET TMP-1 THRU TMP-16.
ALL DRAINAGE IS FINAL DURING THE CONSTRUCTION OF THE DETOURS.

-EBL_DET-
PI Sta 299+79.86
 $\Delta = 4' 27'' 28.4''$ (LT)
D = 0' 35' 19.4"
L = 757.20'
T = 378.79'
R = 9,732.00'
SE = NC
V = 55 MPH

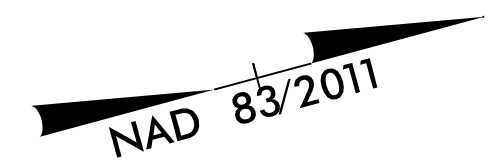
-WBL_DET-
PI Sta 301+36.09
 $\Delta = 5' 04'' 17.8''$ (LT)
D = 0' 35' 22.1"
L = 860.38'
T = 430.47'
R = 9,720.00'
SE = NC
V = 55 MPH

MATCHLINE -L- STA 305+00 SEE SHEET 2B-5

FOR -WBL_DET- PROFILE SEE SHEETS 9 & 10

REVISIONS

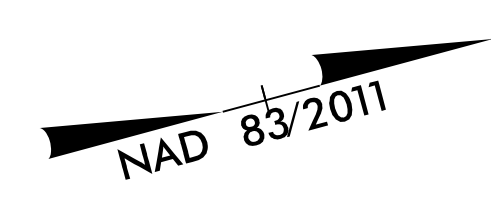
5/12/2022
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 Mohammed Fallouh



8/17/99

8/17/99

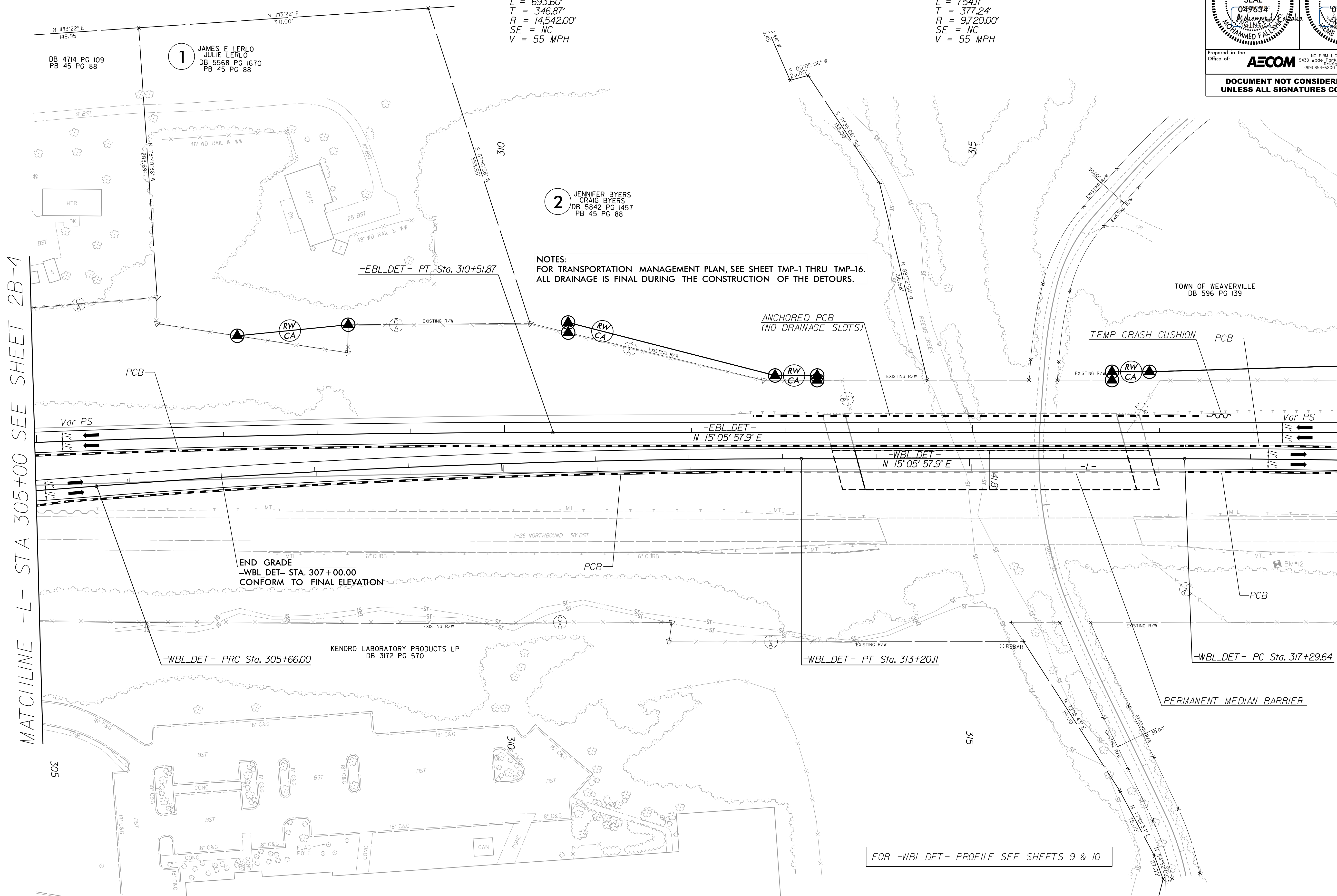
PROJECT REFERENCE NO. B-4442	SHEET NO. 2B-5
ROADWAY DESIGN ENGINEER MOHAMMED FALLAH	HYDRAULICS ENGINEER WAME D. BUSCEMI
Prepared in the Office of: AECOM	
NC FIRM LICENSE No. F-0342 5438 Wade Park, Boulevard Suite 200 Charlotte, NC 28217 (919) 854-6200 / (919) 854-6259 (FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-EBL_DET-
 PI Sta 307+05.14
 $\Delta = 2^\circ 43' 58.1''$ (RT)
 $D = 0' 23' 38.4''$
 $L = 693.60'$
 $T = 346.87'$
 $R = 14,542.00'$
 $SE = NC$
 $V = 55$ MPH

-WBL_DET-

-WBL_DET-
 PI Sta 309+43.24
 $\Delta = 4^\circ 26' 42.7''$ (RT)
 $D = 0' 35' 22.1''$
 $L = 754.11'$
 $T = 377.24'$
 $R = 9,720.00'$
 $SE = NC$
 $V = 55$ MPH



NOTES:
 FOR TRANSPORTATION MANAGEMENT PLAN, SEE SHEET TMP-1 THRU TMP-16.
 ALL DRAINAGE IS FINAL DURING THE CONSTRUCTION OF THE DETOURS.

MATCHLINE -L- STA 305+00 SEE SHEET 2B-4


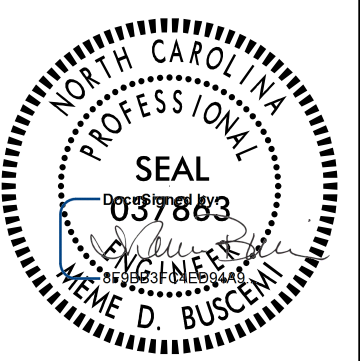
MATCHLINE -L- STA 319+00 SEE SHEET 2B-6

FOR -WBL_DET- PROFILE SEE SHEETS 9 & 10

REVISIONS

5/17/2022
 P:\1\sec\m\p\w\ben\ben\proj\AECOM_DS21_NA_2020\Documents\M100480-B-4442_I-26_over_Reems_Creek\900-CAD_GIS\910_CAD\Y70_NCDOT_IIP_Roadway_Design_B4442_cdy.psb_02B-5.dgn
 Mohammed Fallah

8/17/19

PROJECT REFERENCE NO. B-4442		SHEET NO. 2B-6	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
Prepared in the Office of: AECOM <small>NC FIRM LICENSE No. F-0342 5438 Wade Park, Boulevard Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259 (FAX)</small>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

-EBL_DET-

PI Sta 323+96.91	PI Sta 331+18.66
$\Delta = 3^{\circ} 24' 15.5" (RT)$	$\Delta = 3^{\circ} 24' 15.5" (LT)$
$D = 0^{\circ} 23' 38.4"$	$D = 0^{\circ} 35' 14.7"$
$L = 864.03'$	$L = 579.55'$
$T = 432.14'$	$T = 289.86'$
$R = 14,542.00'$	$R = 9,754.00'$
SE = NC	SE = NC
V = 55 MPH	V = 55 MPH

-WBL_DET-

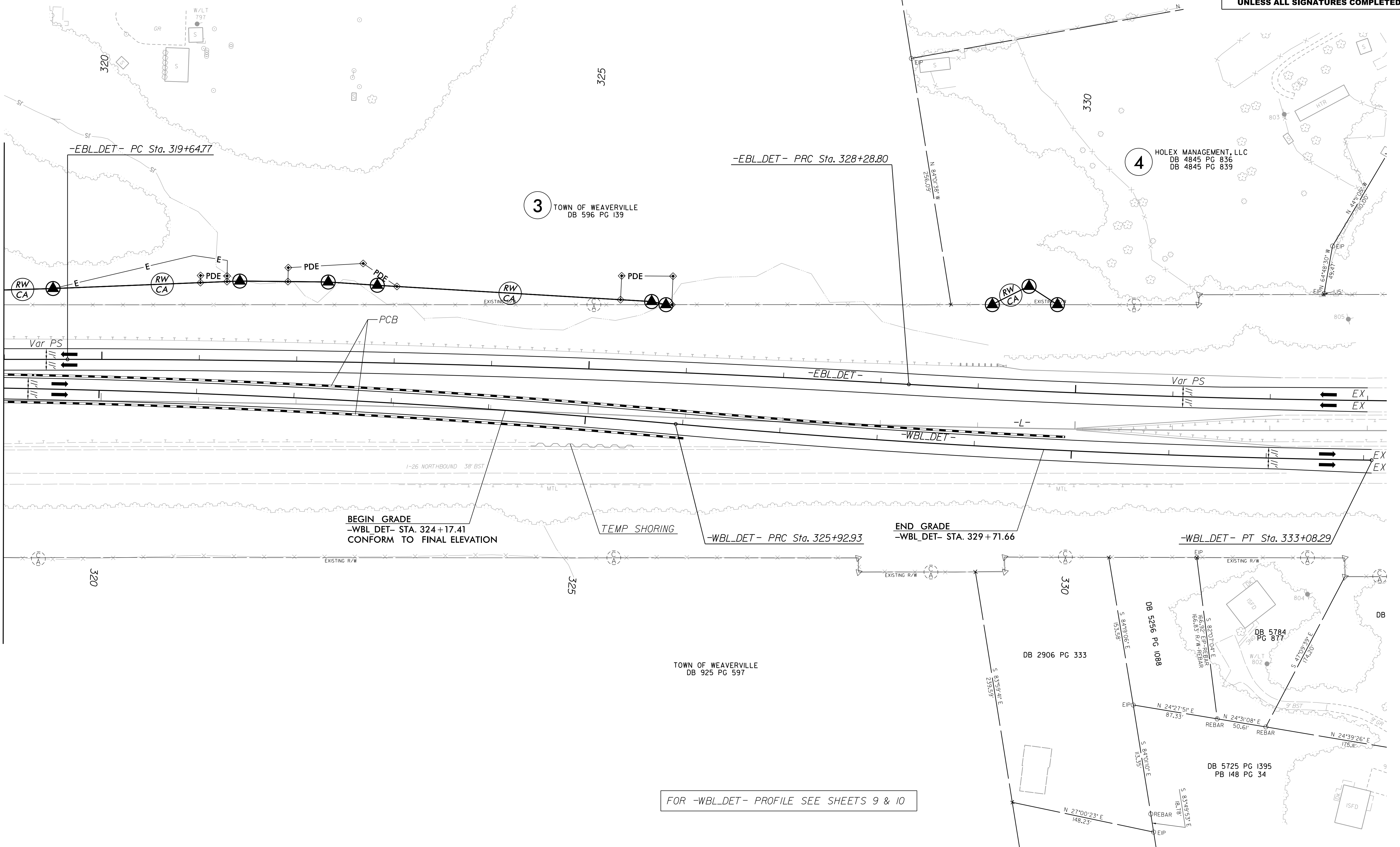
-WBL_DET-

PI Sta 321+61.57	PI Sta 329+50.77
$\Delta = 5^{\circ} 05' 19.6" (RT)$	$\Delta = 4^{\circ} 13' 00.5" (LT)$
$D = 0^{\circ} 35' 22.1"$	$D = 0^{\circ} 35' 22.1"$
$L = 863.29'$	$L = 715.36'$
$T = 431.93'$	$T = 357.84'$
$R = 9,720.00'$	$R = 9,719.97'$
SE = NC	SE = NC
V = 55 MPH	V = 55 MPH

DB 4786 PG 1703

NOTES:
FOR TRANSPORTATION MANAGEMENT PLAN, SEE SHEET TMP-1 THRU TMP-16.
ALL DRAINAGE IS FINAL DURING THE CONSTRUCTION OF THE DETOURS.

MATCHLINE -L- STA 319+00 SEE SHEET 2B-5



BEGIN GRADE
-WBL_DET- STA. 324+17.41
CONFORM TO FINAL ELEVATION

TEMP SHORING

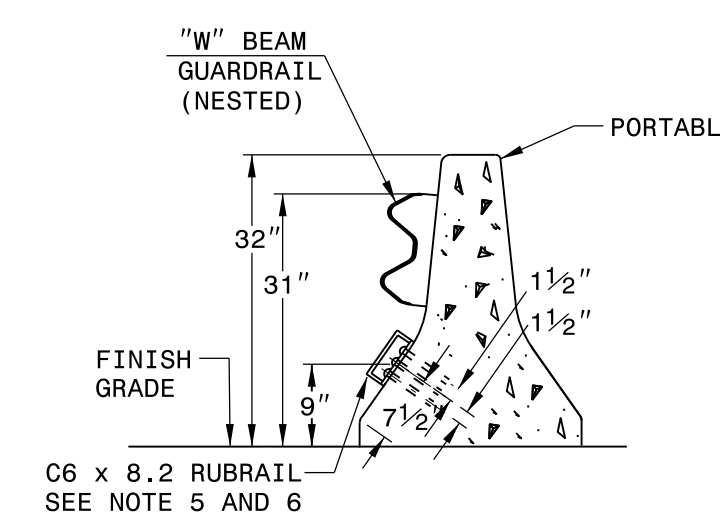
END GRADE
-WBL_DET- STA. 329+71.66

TOWN OF WEAVERVILLE
DB 925 PG 597

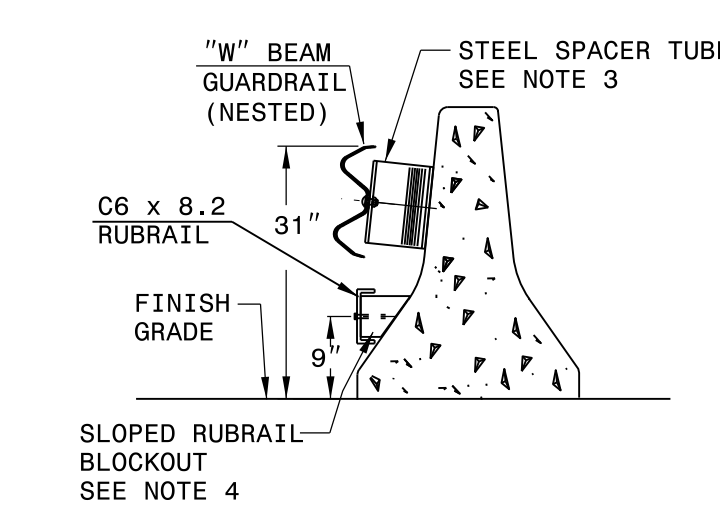
FOR -WBL_DET- PROFILE SEE SHEETS 9 & 10

REVISIONS

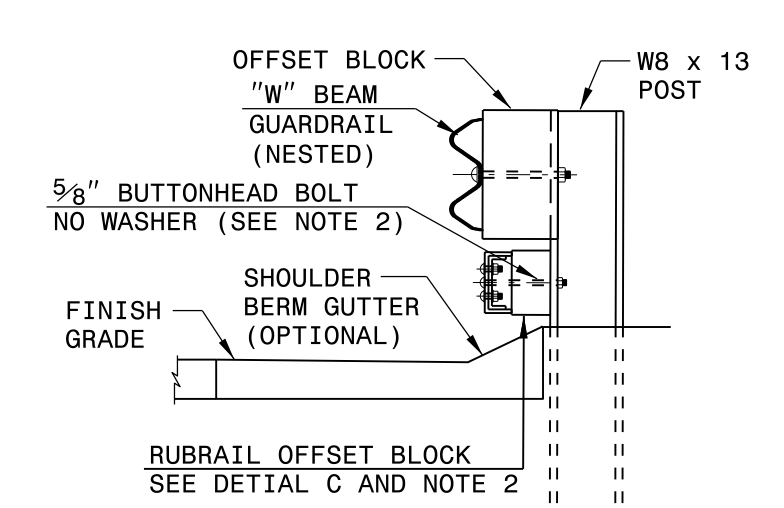
5/12/2022
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 Mohammed Fallouh



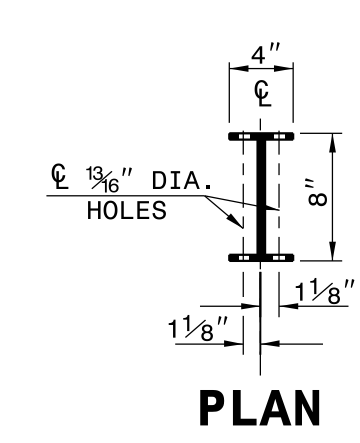
SECTION A-A



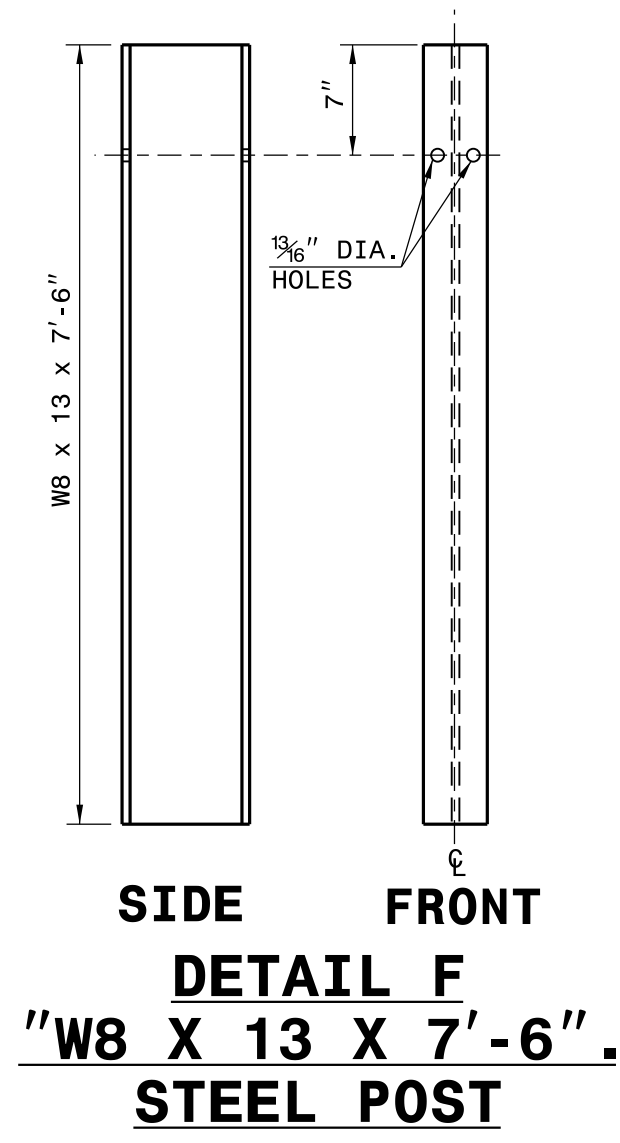
SECTION B-B



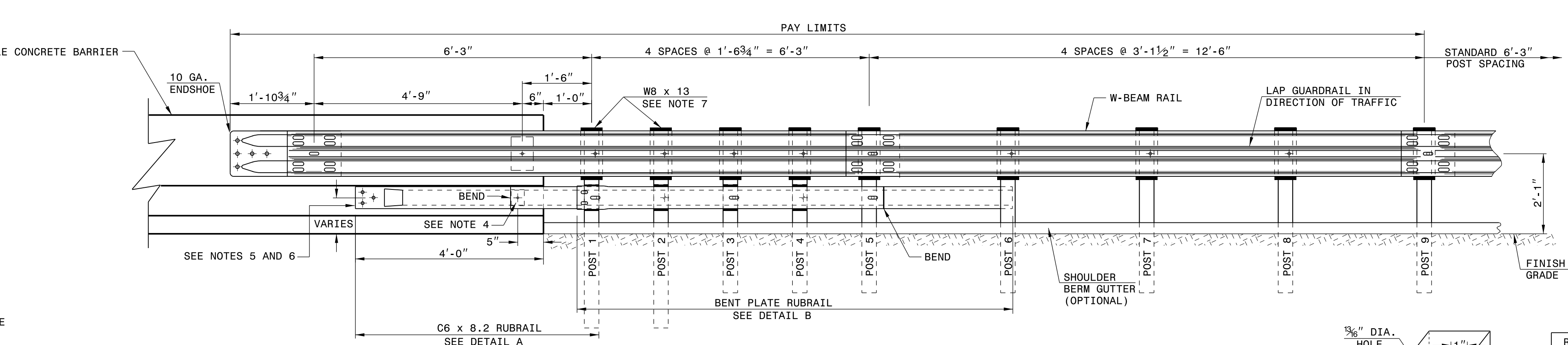
SECTION C-C



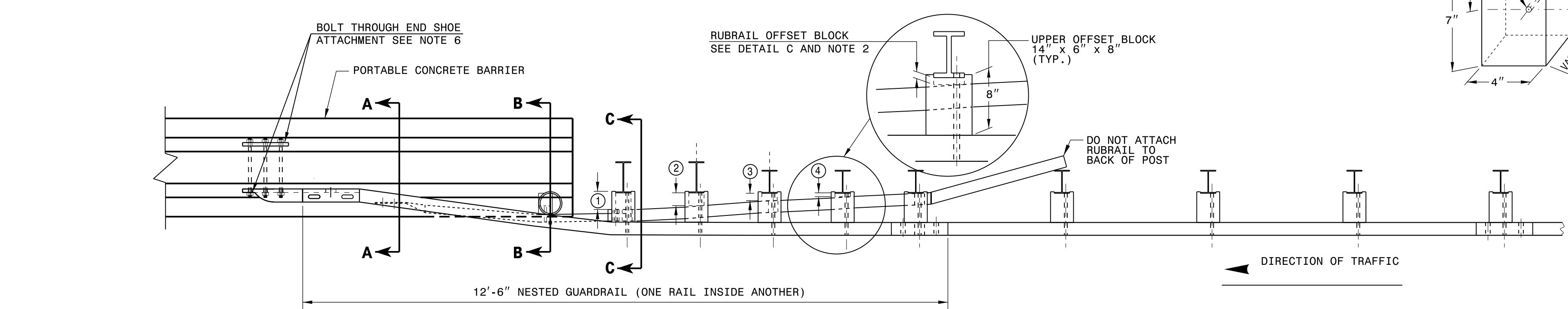
PLAN



DETAIL F
W8 X 13 X 7'-6"
STEEL POST

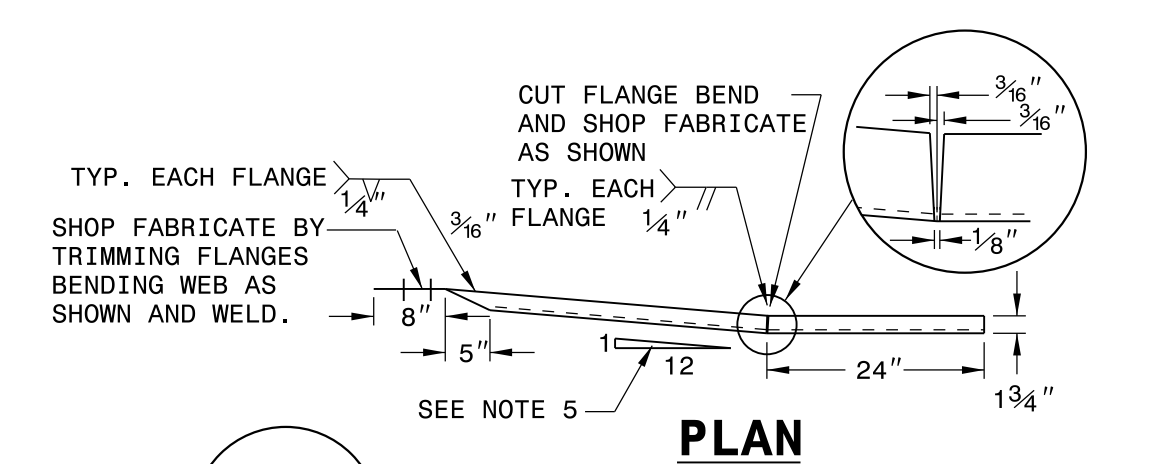


ELEVATION

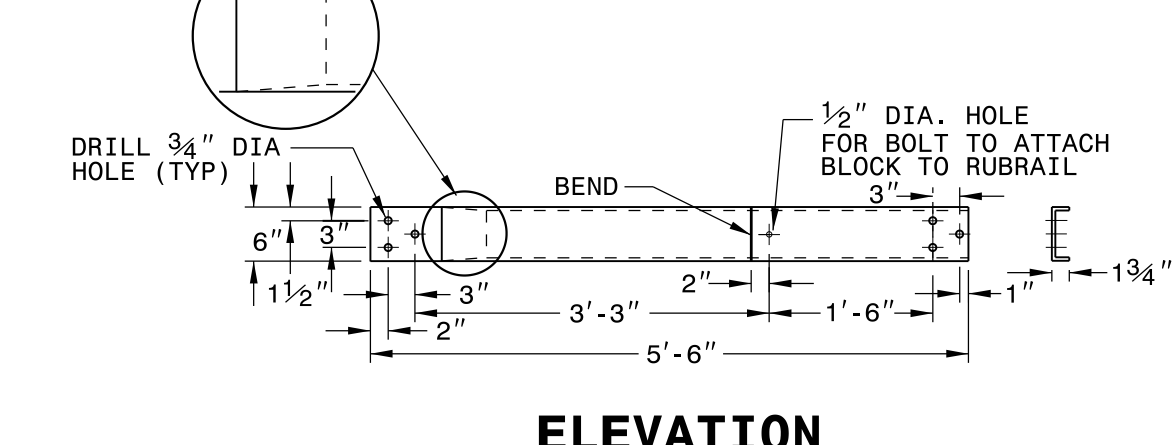


PLAN

- GENERAL NOTES:**
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
 - RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 5/8" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A 5/8" x 4 1/2" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
 - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" x 1 1/4" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
 - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER.
 - SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE JERSEY SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
 - ANCHORAGE:
 - AT PORTABLE CONCRETE BARRIER, ANCHOR RUBRAIL USING THREE 5/8" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS.
 - AT PORTABLE CONCRETE BARRIER, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD-DOWN PLATE AS SHOWN. INSTALL THE W-BEAM END SHOE BEHIND THE NESTED W-BEAM ELEMENTS.
 - POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.

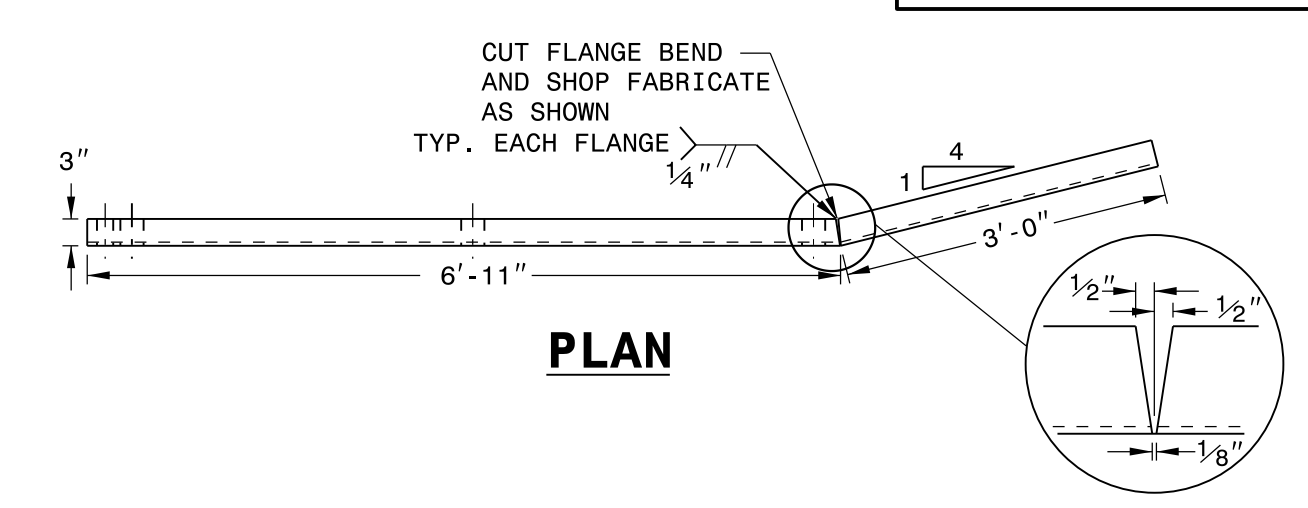


PLAN



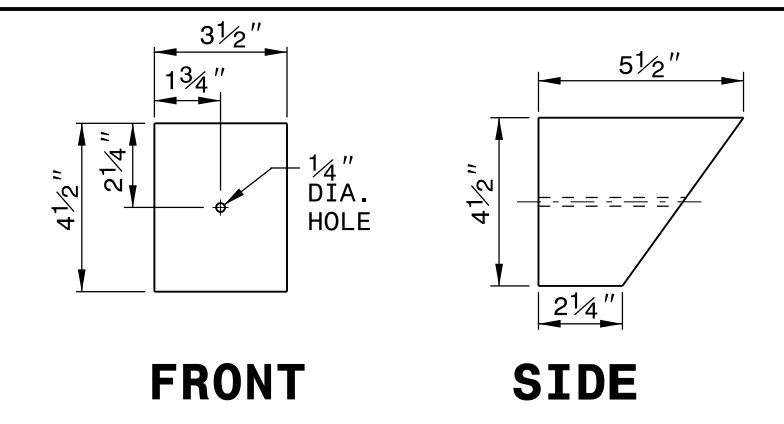
ELEVATION

DETAIL B
BENT PLATE RUBRAIL



PLAN

DETAIL E
LAG BOLT



FRONT **SIDE**
DETAIL D
SLOPED RUBRAIL BLOCKOUT

NOTES FOR 4 BOLT HOLD DOWN PLATE

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1/4" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

4 BOLT HOLD DOWN PLATE

PART SECTION OF BARRIER OR RAIL THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE

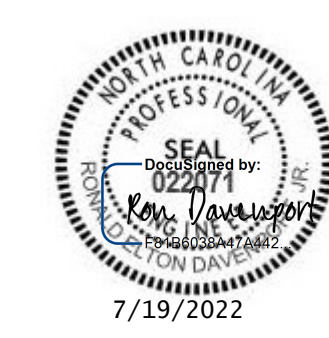
RUBRAIL BLOCKS 7" HIGH x 4" WIDE

POST	THICKNESS	BOLT LENGTH
①	4 1/4"	9"
②	3 1/4"	5" *
③	2"	6"
④	1"	3" *

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

DETAIL C
RUBRAIL BLOCKOUT

02-OCT-2018 14:39 S:\Contracts\Contractors\Special Details\Howerton\Temporary B-77 to PCB.dgn Jhowerton AT USD-292595



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

TEMPORARY GUARDRAIL ANCHOR UNIT TYPE B-77

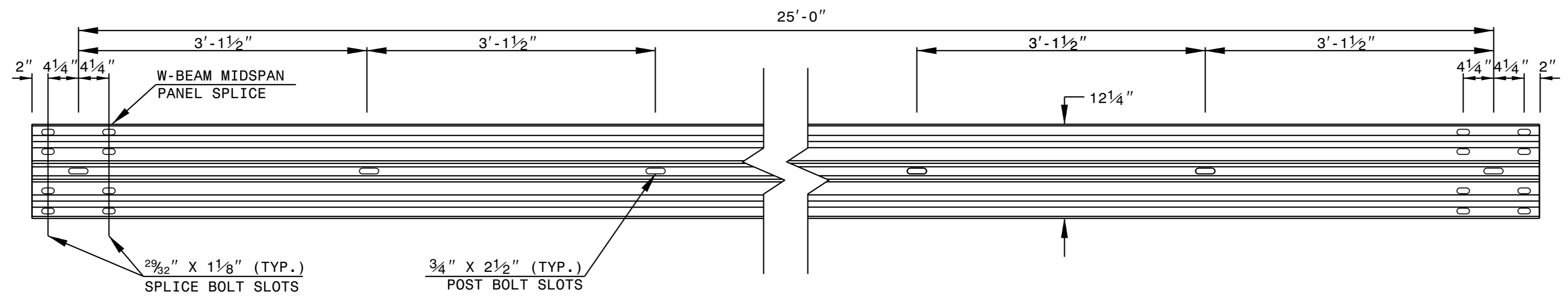
ORIGINAL BY: E.E. WARD DATE: 04-07-04
 MODIFIED BY: J.S. Howerton DATE: 10-02-18
 CHECKED BY: DATE: _____
 FILE SPEC.: _____

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

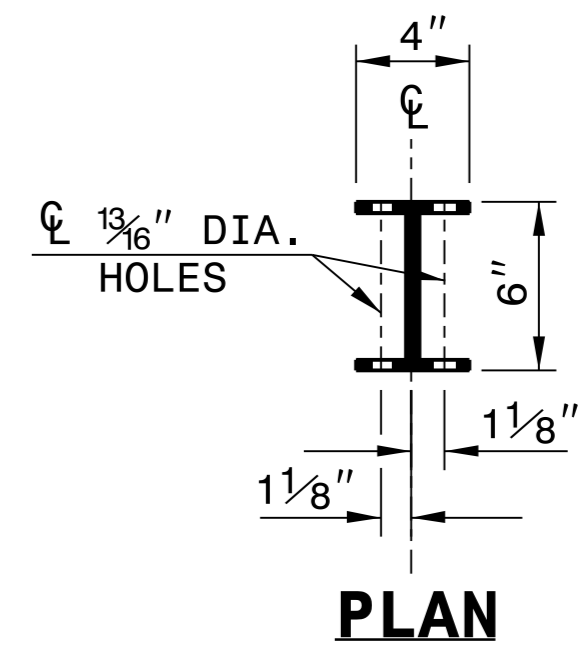
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

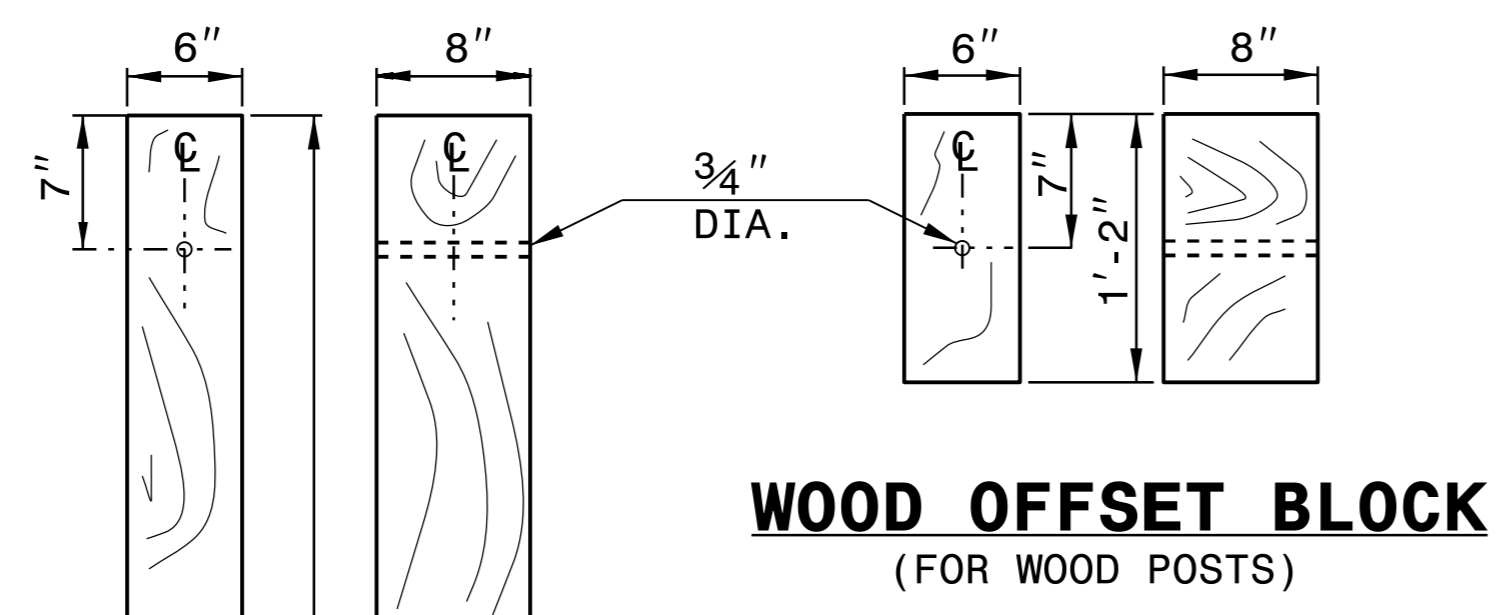
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



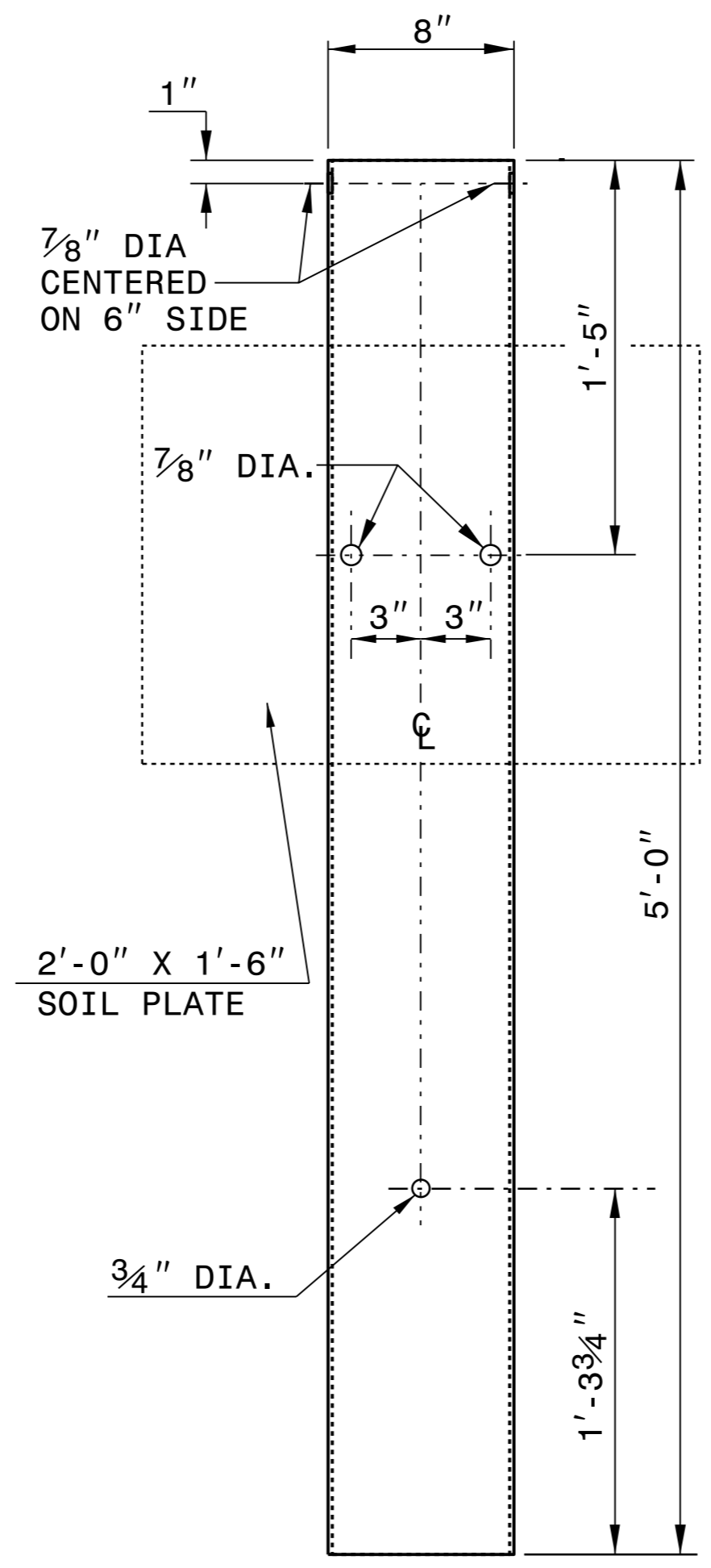
PLAN



**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

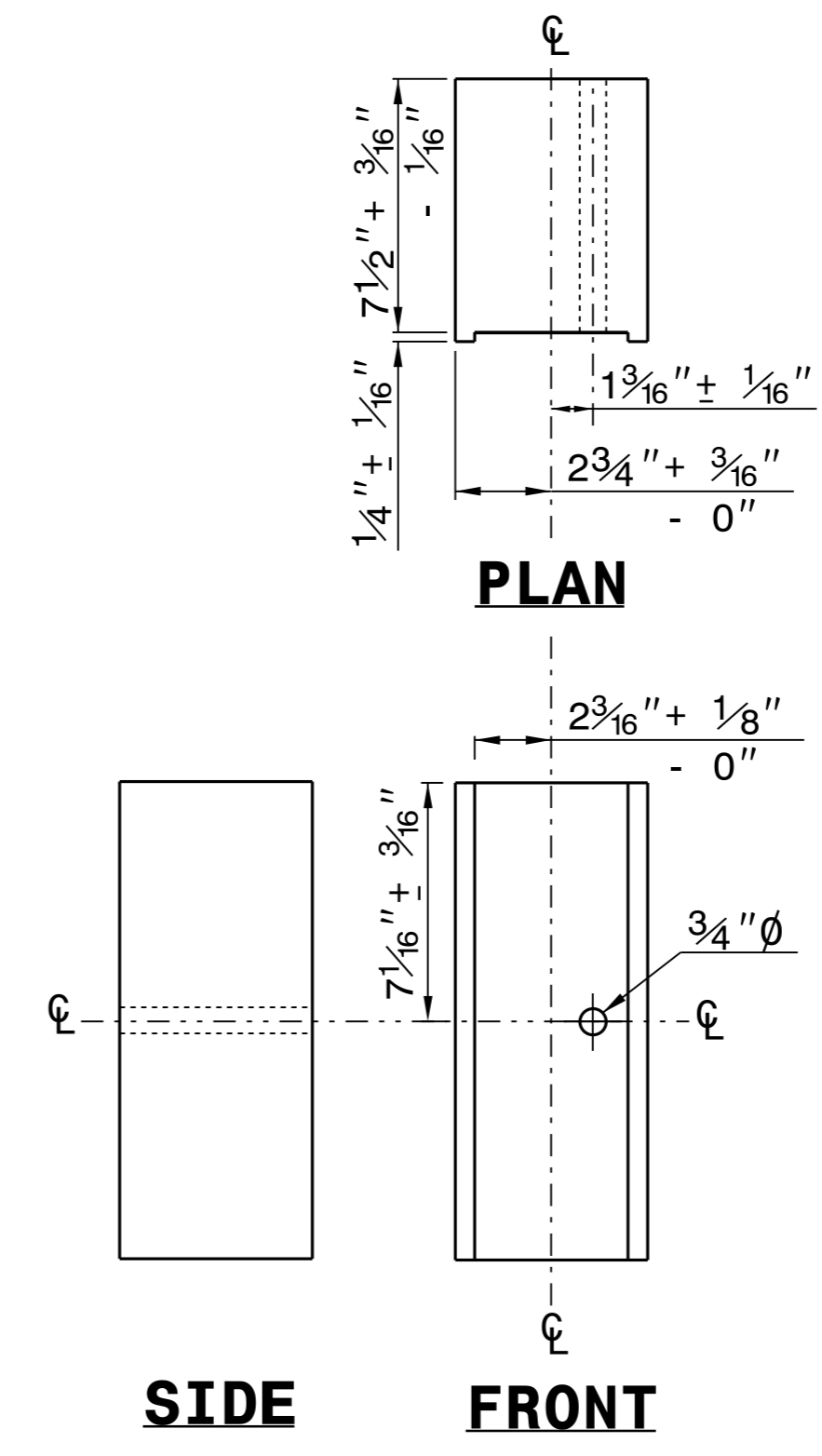
**STANDARD
LINE POST**

**SHORT WOOD
BREAKAWAY POST**



**STEEL TUBE
TS 6"x8"x0.1875"**

SYSTEM PARTS

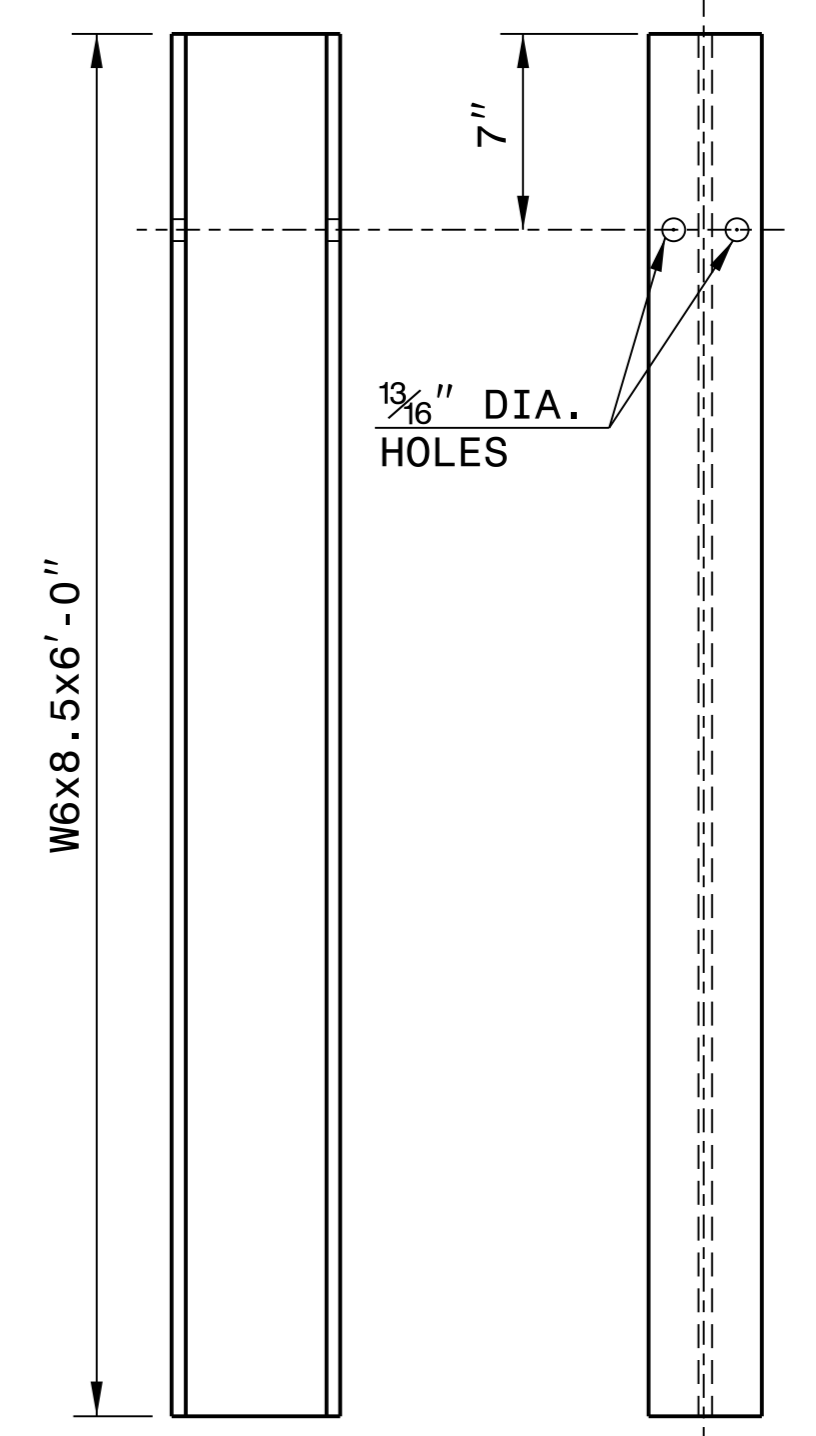


PLAN

SIDE

FRONT

**ROUTED
OFFSET BLOCK**



SIDE

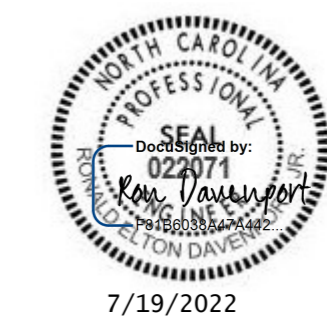
FRONT

"W6" STEEL POST

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____