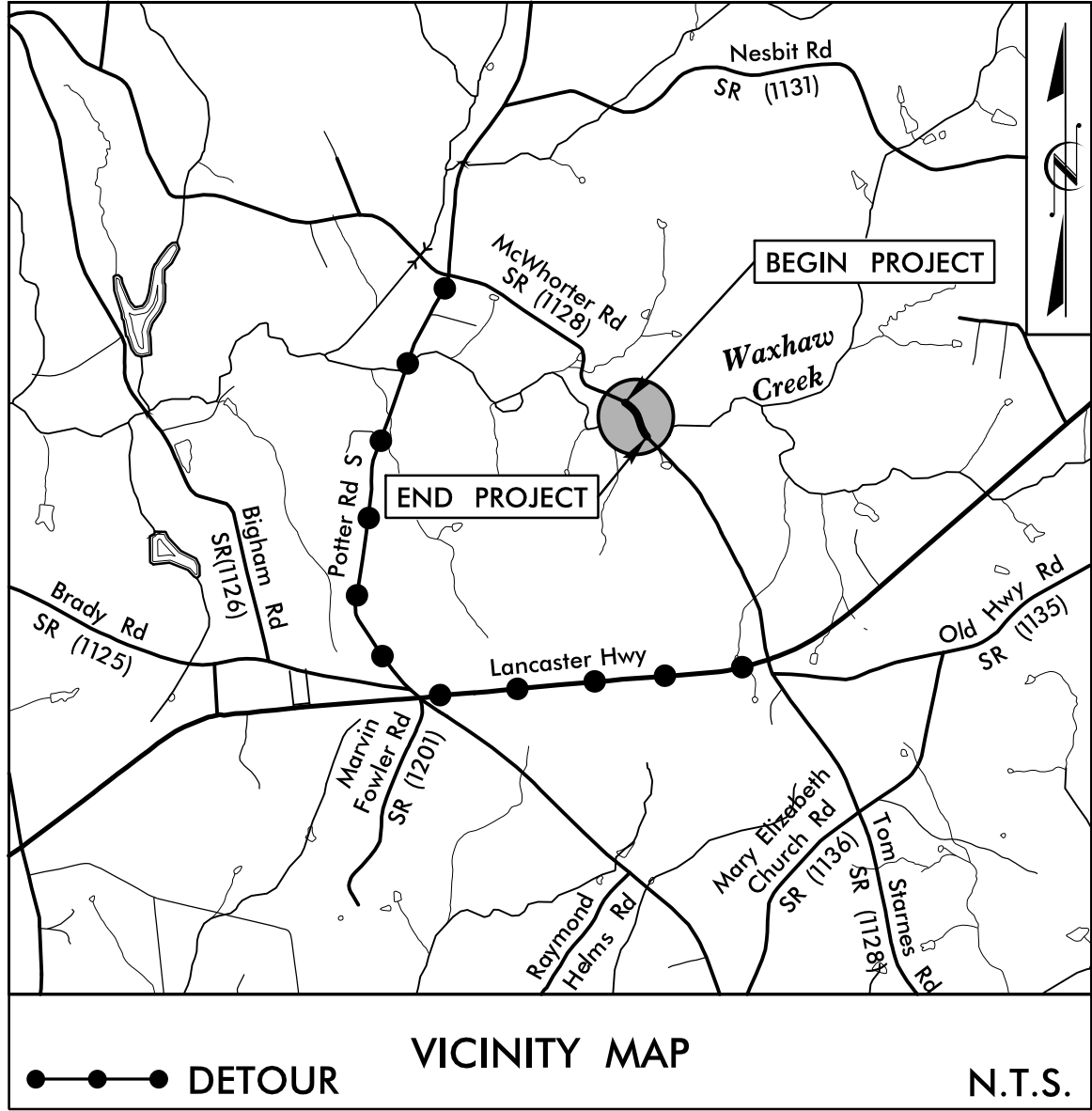


12/5/2017
R:\Roadway\Proj\SH\17BP10C1_rdy_psh01_tsh.dgn
mabdelaziz

CONTRACT: DJ00267

PROJECT WBS: 17BP.10.C.1

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet



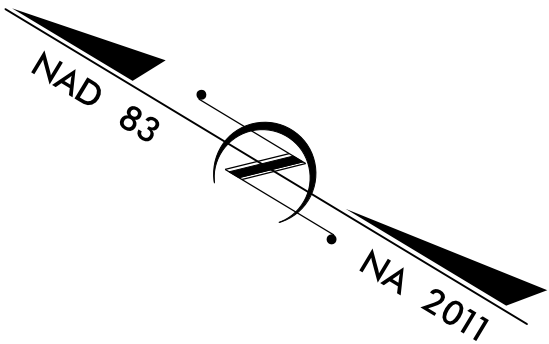
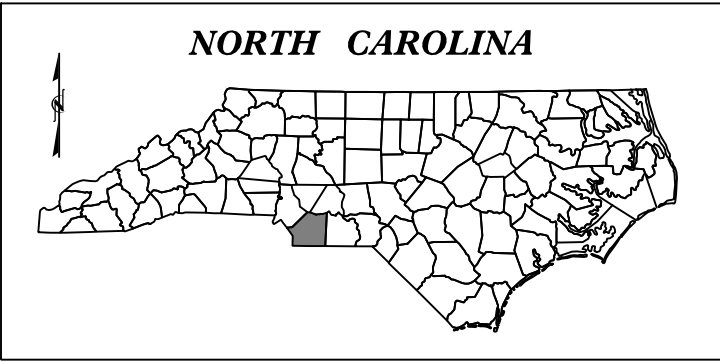
FINAL PLANS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS UNION COUNTY

LOCATION: PIPE #189 OVER WAXHAW CREEK ON SR 1128 (McWHORTER RD)

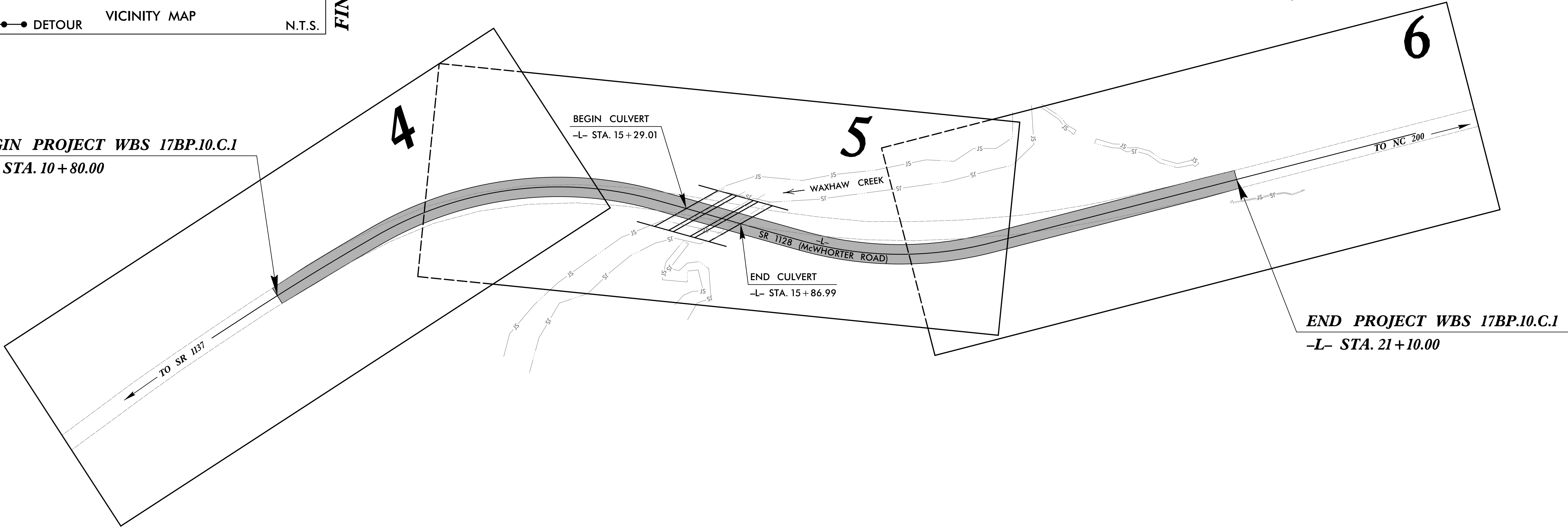
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.C.1	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.C.1		P.E.	
17BP.10.C.1		ROW & UTILITIES	
17BP.10.C.1		CONSTRUCTION	



BEGIN PROJECT WBS 17BP.10.C.1

-L- STA. 10 + 80.00



END PROJECT WBS 17BP.10.C.1

-L- STA. 21 + 10.00

DESIGN EXCEPTION APPROVED FOR MINIMUM HORIZONTAL CURVE RADIUS.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 990

ADT 2025 = 1980

DHV = N/A

D = N/A

T = 6%

V = 55 MPH

FUNC. CLASSIFICATION:
LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT WBS 17BP.10.C.1 = 0.184 MILES

LENGTH OF STRUCTURE PROJECT WBS 17BP.10.C.1 = 0.011 MILES

TOTAL LENGTH OF PROJECT WBS 17BP.10.C.1 = 0.195 MILES

NCDOT CONTACT: GARLAND HAYWOOD, PE
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:



STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

2018 STANDARD SPECIFICATIONS

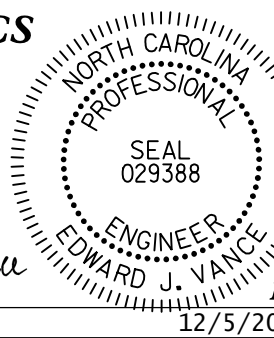
RIGHT OF WAY DATE:
JANUARY 20, 2017

LETTING DATE:
JANUARY 17, 2018

NIKKI T. HONEYCUTT, PE
PROJECT ENGINEER

MAAMOON K. ABDELAZIZ
PROJECT DESIGNER

HYDRAULICS ENGINEER



DocuSigned by:

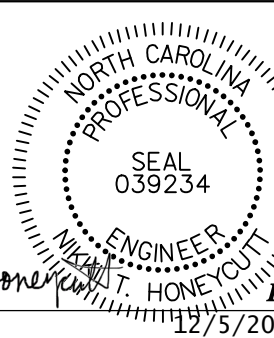
Edward J. Vance

SIGNATURE:

P.E.

12/5/2017

ROADWAY DESIGN ENGINEER



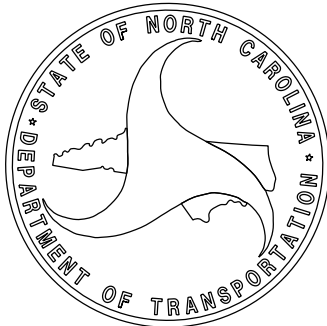
DocuSigned by:

Nikki T. Honeycutt

SIGNATURE:

P.E.

12/5/2017





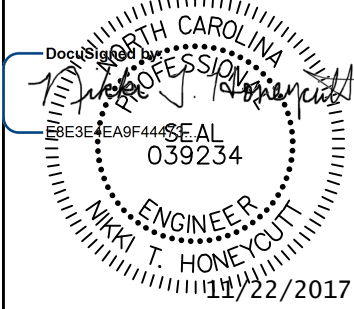
STV Engineers, Inc.
300 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.
17BP10.CJ

SHEET NO.
1A

RW SHEET NO.

ROADWAY DESIGN ENGINEER



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
3	SUMMARIES AND TYPICAL SECTIONS SHEET
4-6	PLAN AND PROFILE SHEETS
TMP-1	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-10	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL
UO-1 THRU UO-4	UTILITIES BY OTHERS PLANS
X-1 THRU X-7	CROSS-SECTIONS
C-1 THUR C-3	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES:	2018 SPECIFICATIONS EFFECTIVE: 01-01-2018
GRADE LINE: GRADING AND SURFACING:	THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.
CLEARING:	CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
SUPERELEVATION:	ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.
SHOULDER CONSTRUCTION:	ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.
GUARDRAIL:	THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.
RIGHT-OF-WAY MARKERS:	ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY THE DIVISION.

STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS	EFF. January, 2018
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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.01	Work Zone Advance Warning Signs
1110.02	Temporary Lane Closures
1101.03	Temporary Road Closures
1110.01	Stationary Work Zone Signs - Mounting Height & Lateral Clearance
1145.01	Barricades - Type III
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Guide For Temporary Berms And Slope Drain
1630.06	Special Stilling Basin
1631.01	Matting Installation
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
1635.01	Rock Pipe Inlet Sediment Trap Type A
1635.02	Rock Pipe Inlet Sediment Trap Type B

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

PROJECT REFERENCE NO.	SHEET NO.
17BP10CJ	1B

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
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	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite R/W Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage / Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
Single Tree	
Single Shrub	

VEGETATION:

*S.U.E. = Subsurface Utility Engineering

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line LOS B (S.U.E.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

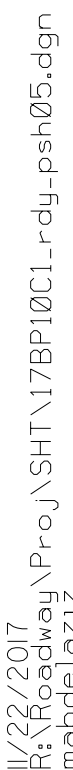
Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

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



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1200	CFS
DESIGN FREQUENCY	=	10	YRS
DESIGN HW ELEVATION	=	585.4	FT
BASE DISCHARGE	=	2230	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	587.7	FT
OVERTOPPING DISCHARGE	=	1500	CFS
OVERTOPPING FREQUENCY	=	10+	YRS
OVERTOPPING ELEVATION	=	586.4	FT

DATE OF SURVEY = 5/19/2016
W.S.ELEVATION AT DATE OF SURVEY = 577.5 FT

PROPOSED GRADE

EXISTING GROUND

REMOVE EXISTING CULVERTS

BEGIN CULVERT
-L- STA 15+30.89

END CULVERT
-L- STA 15+85.76

PI = 16+00.00
EL = 587.35'
VC = 120'
K = 159
DS = 60 MPH

PI = 17+70.00
EL = 585.54'
VC = 220'
K = 62
DS = 35 MPH **

PI = 14+00.00 LT
EI = 584.50

PI = 16+25.00 RT
EI = 581.83

PI = 17+00.00 RT
EI = 582.20

LOW POINT
STA 17+26.40
ELEV 586.36

10'-8" X 6'-11" CSP ARCH CULVERT

12'-8" X 8'-1" CSP ARCH CULVERT (BURIED 1')

10'-8" X 6'-11" CSP ARCH CULVERT

(-) 0.3077%

(-) 0.800%

(-) 0.3077%

(-) 1.0647%

(-) 1.0647%

(+) 2.4629%

(-) 1.0647%

(+) 2.0000%

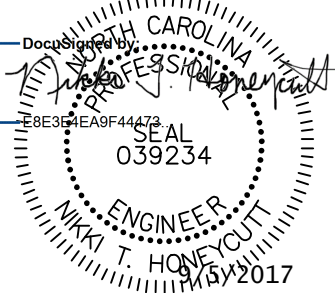
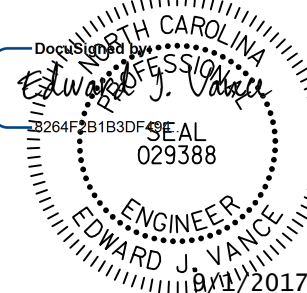
(+) 0.5000%

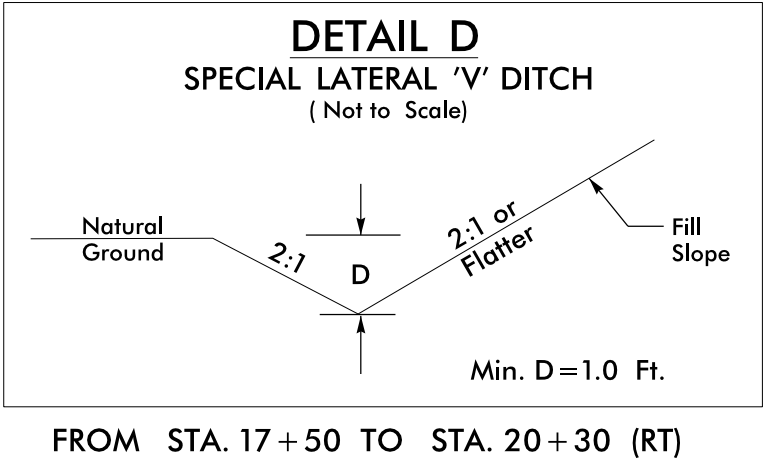
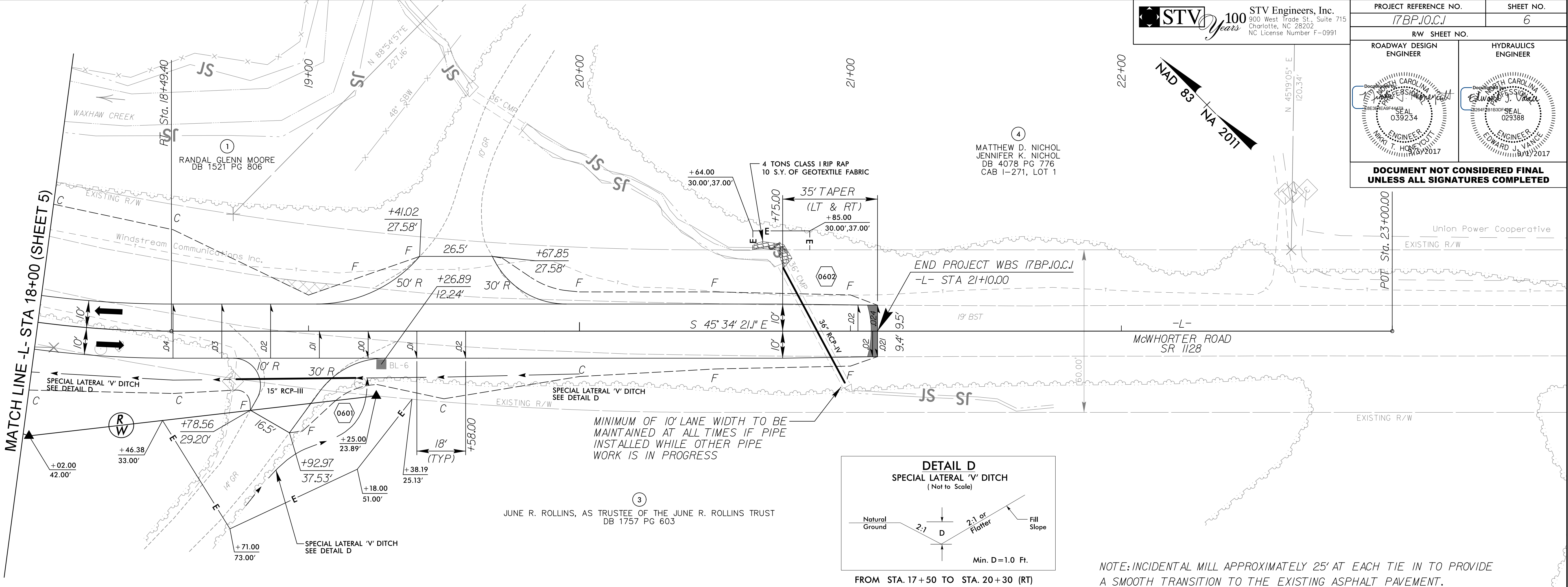
** NOTE:
THE DESIGN SPEED SHOWN FOR VERTICAL CURVES
ARE UP TO 20 MPH LESS THAN THE OVERALL
DESIGN SPEED PER THE SUB-REGIONAL TIER GUIDELINES.

13+00 14+00 15+00 16+00 17+00 18+00

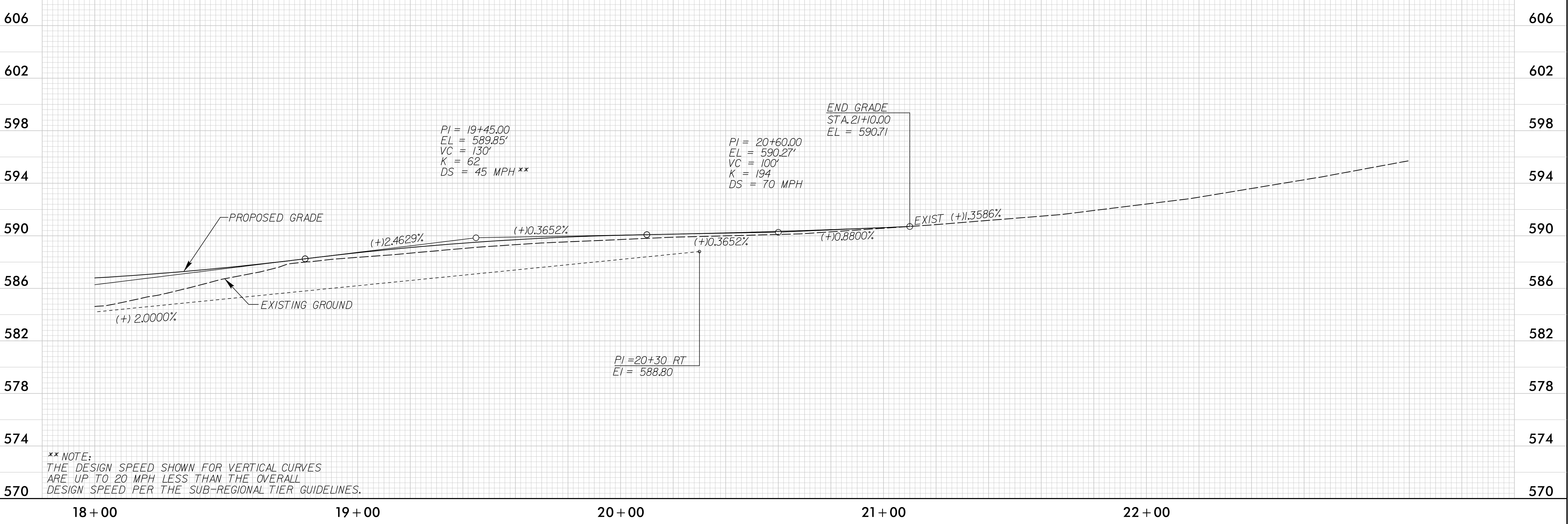
8/17/99

STV Engineers, Inc.
300 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.		SHEET NO.
17BP10.C.J		6
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



NOTE: INCIDENTAL MILL APPROXIMATELY 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.



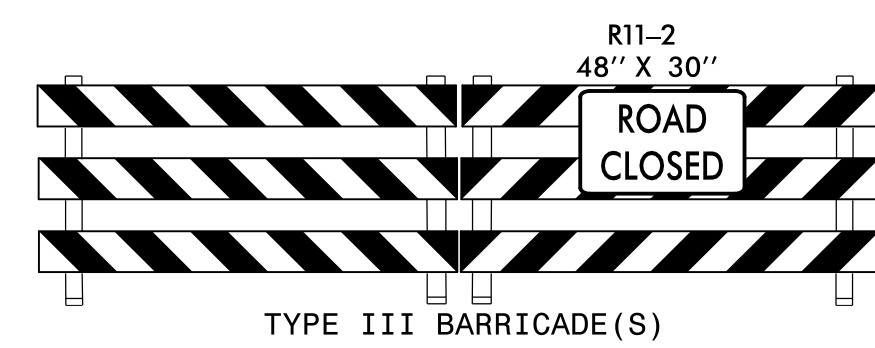
8/17/2017
R:\Projects\17BP10.C.J\17BP10.C.J_r.dwg
mabdel012

DOCUMENT NO. 1

EBS10000F44473

NORTH CAROLINA
BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
WIKKI T. HONEYCUTT

SEAL
039234



R11-3
60" x 30"

ROAD CLOSED
1 MILE AHEAD
LOCAL TRAFFIC ONLY

M4-10R
48" x 18"

DETOUR

TYPE III BARRICADE



ROAD
CLOSED
AHEAD

W20-3
48" X 48"

C

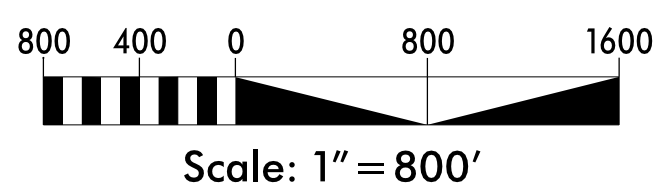
McWhorter Rd

DETOUR M4-8
24" X 12"

← M5-1 L
21" X 15"

J

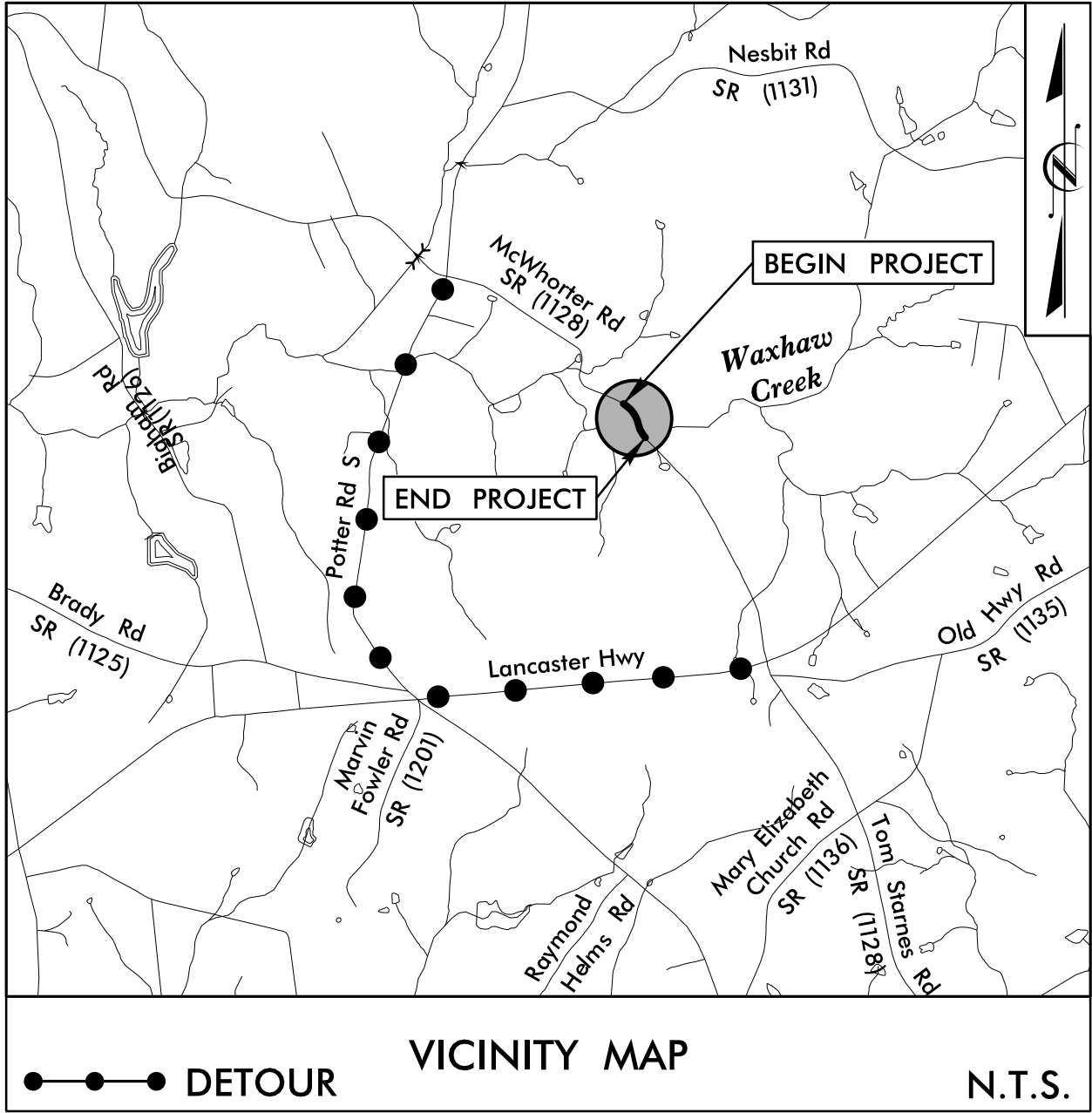
SEE ROADWAY STD DWG 1101.03, SHEET 1 OF 9 FOR
ADVANCE WARNING AND BARRICADE PLACEMENT.



12/5/2017 1:55:56 PM \\nas\cadd\psh\ec\17BP10C1\EC_PSH_01.TSH.dgn
model: 1712

PROJECT WBS: 17BP.10.C.1

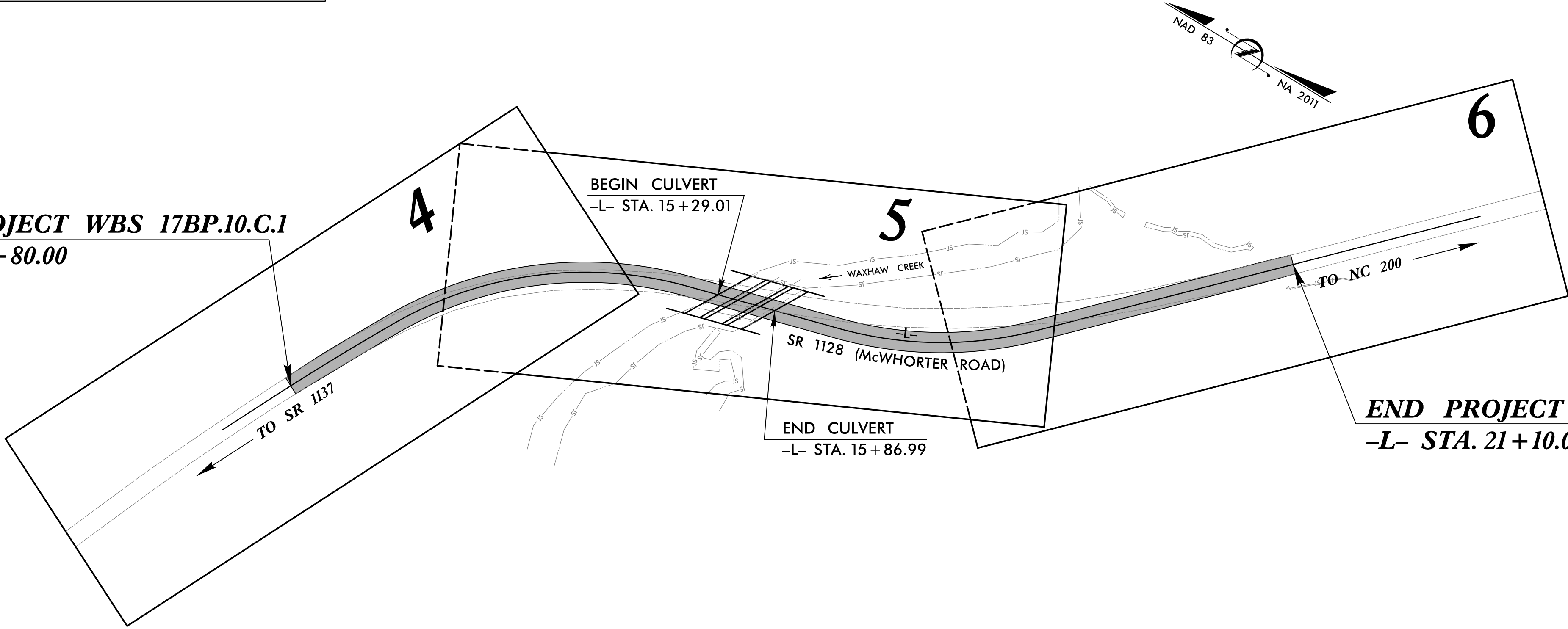
CONTRACT: DJ00267



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
UNION COUNTY

LOCATION: PIPE #189 OVER WAXHAW CREEK ON SR 1128 (McWHORTER RD)
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

BEGIN PROJECT WBS 17BP.10.C.1
-L- STA. 10 + 80.00



END PROJECT WBS 17BP.10.C.1
-L- STA. 21 + 10.00

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.C.1	EC-1	11
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.C.1		P.E.	
17BP.10.C.1		ROW & UTILITIES	
17BP.10.C.1		CONSTRUCTION	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSO
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	TSF
1622.01	Temporary Berms and Slope Drains	TSF
1650.02	Silt Basin Type B	TSF
1633.01	Temporary Rock Silt Check Type-A	TSF
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TSF
1633.02	Temporary Rock Silt Check Type-B	TSF
	Wattle/Coir Fiber Wattle	TSF
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	TSF
1634.01	Temporary Rock Sediment Dam Type-A	TSF
1634.02	Temporary Rock Sediment Dam Type-B	TSF
1635.01	Rock Pipe Inlet Sediment Trap Type-A	TSF
1635.02	Rock Pipe Inlet Sediment Trap Type-B	TSF
1630.04	Stilling Basin	TSF
1630.06	Special Stilling Basin	TSF
	Rock Inlet Sediment Trap:	TSF
1632.01	Type A	TSF
1632.02	Type B	TSF
1632.03	Type C	TSF
	Skimmer Basin	TSF
	Tiered Skimmer Basin	TSF
	Infiltration Basin	TSF

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

THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

303(d) IMPAIRED WATER(S) EXIST
ON THIS PROJECT
303(d) Impaired Water Zone(s) Exist
From Sta. 10 + 80.00
to Sta. 21 + 10.00
Refer To E. C. Special Provisions
for Special Considerations.

GRAPHIC SCALE



PLANS

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



STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

2018 STANDARD SPECIFICATIONS

Designed by:

EDWARD VANCE, P.E.

0161

NAME

LEVEL III CERTIFICATION NO.

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

PHIL SUGGS, CPESC

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 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

PROJECT REFERENCE NO.	SHEET NO.
17BP10.C1	EC-2
RW SHEET NO.	
 STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

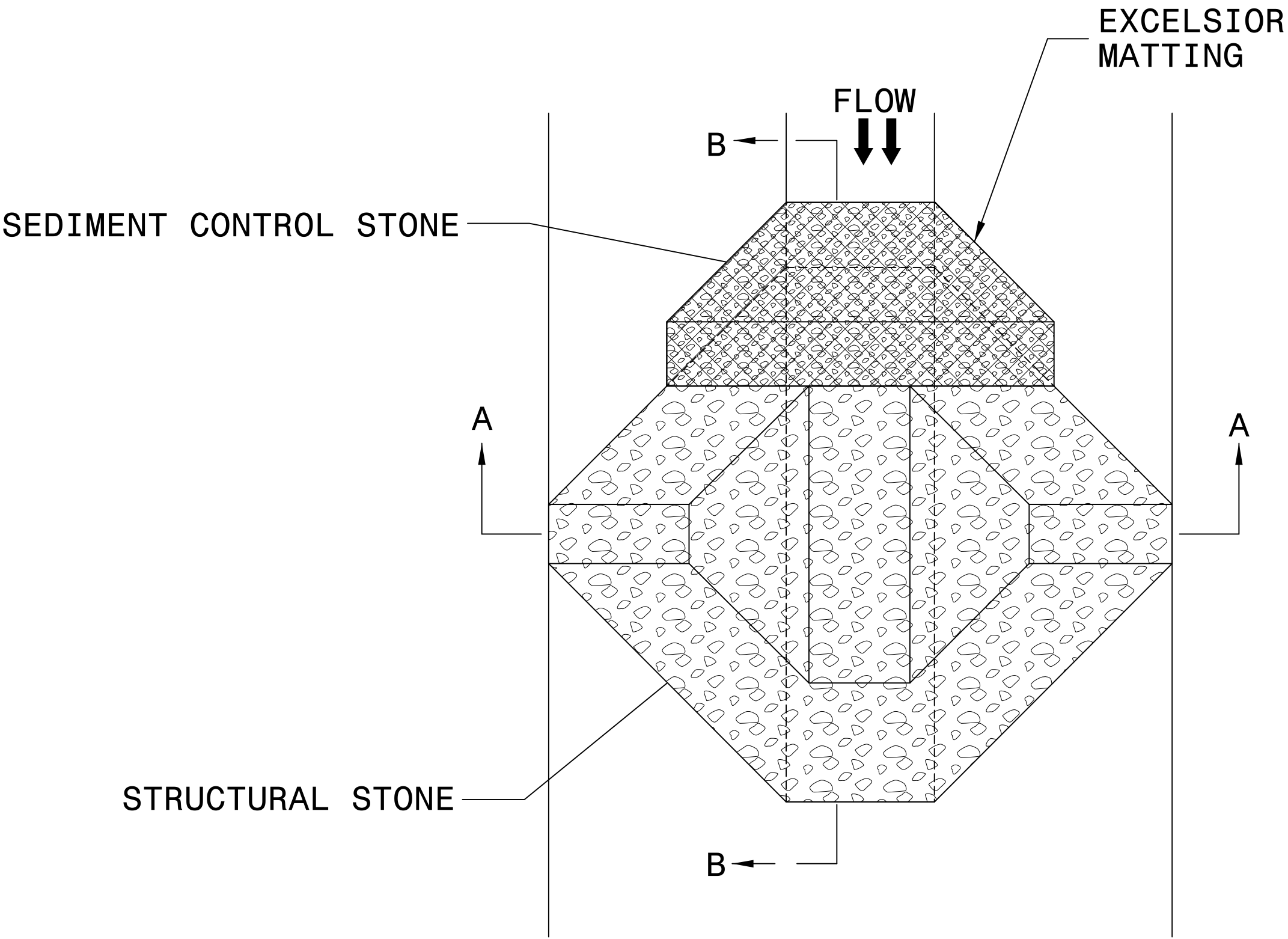
NOTES

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

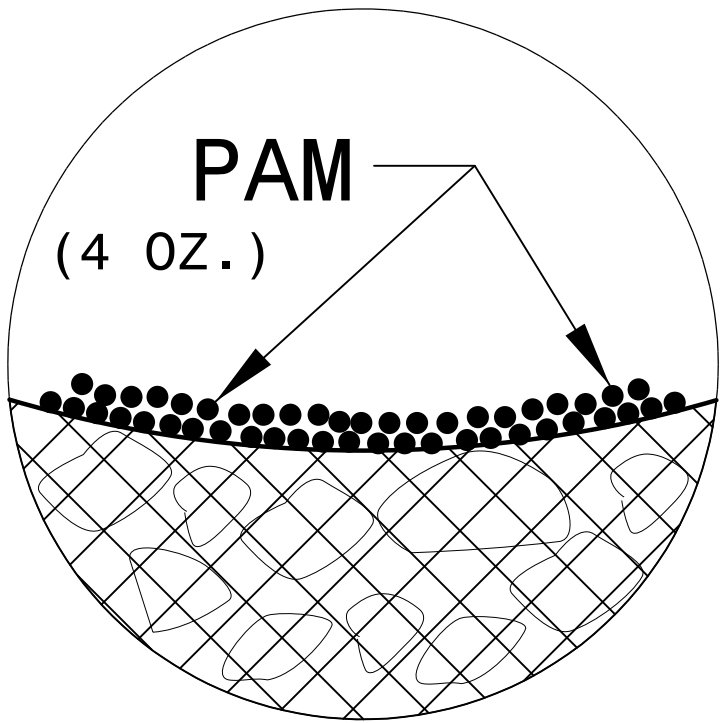
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

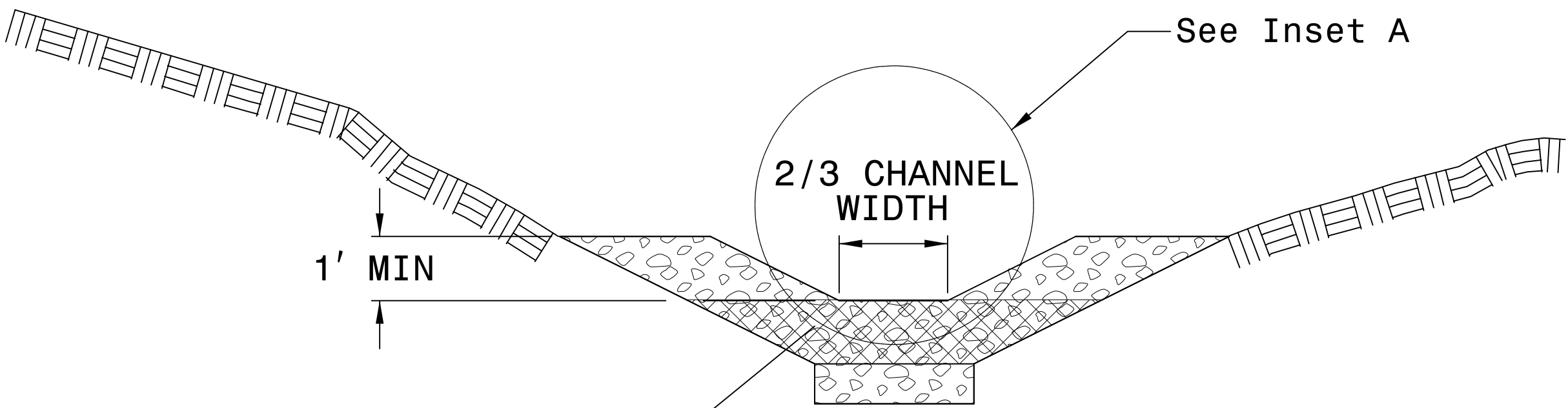
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



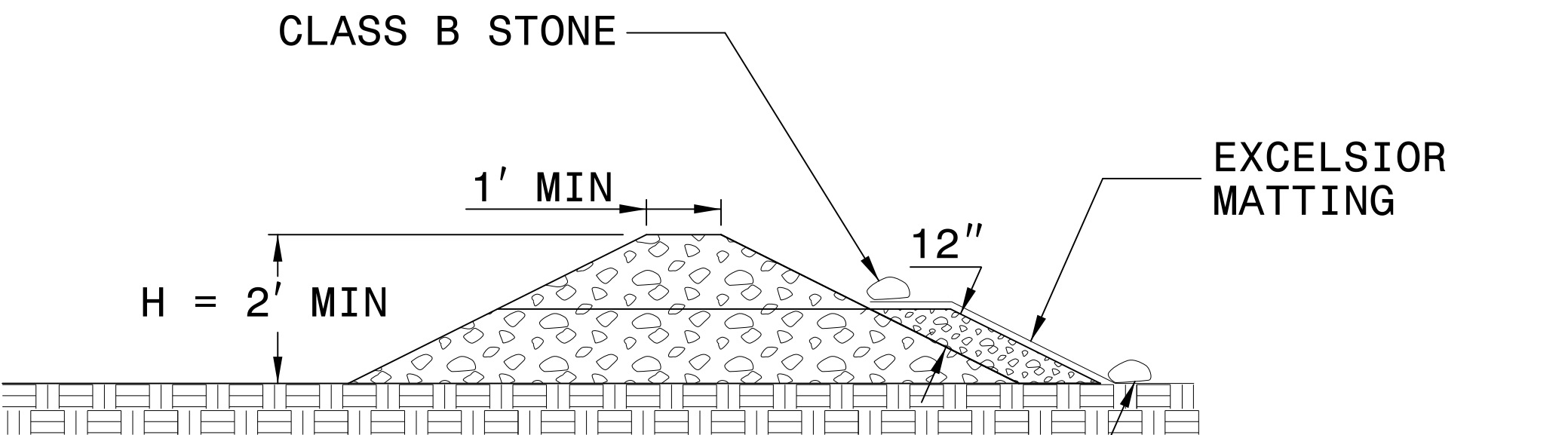
PLAN



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

r:\hydraulics\cadd\psheec\17BP10C1_EC_PSH_02.dgn

8/31/2017

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMENT MAT

[illegible]

PROJECT REFERENCE NO.	SHEET NO.
17BP10CJ	EC-3
 STV Engineers, Inc. 900 West Irade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0CJ	EC-3A
RW SHEET NO.	
STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

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.

Stabilization for this project shall comply with the time frame guidelines as specified 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. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity. Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

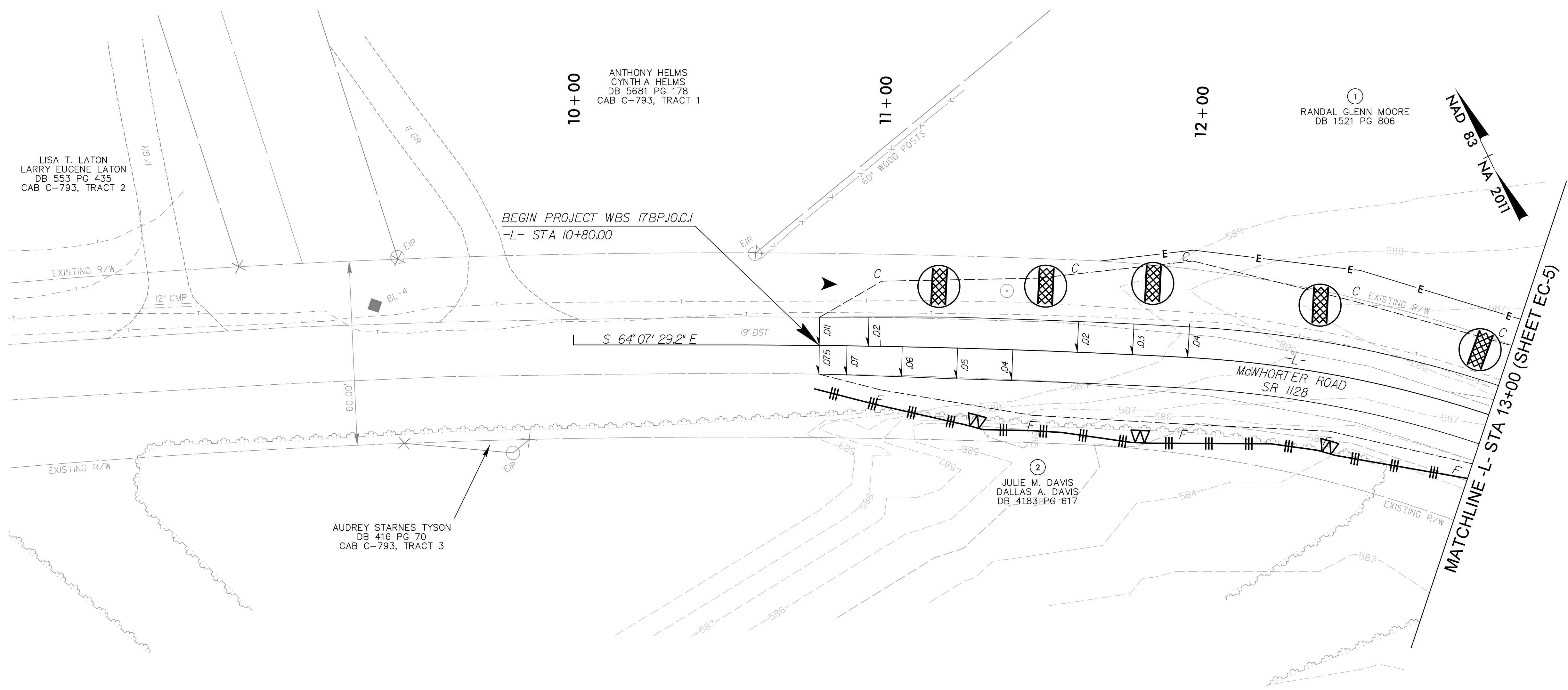
r:\Hydraulics\cadd\oshNec\17BPJ0CJ_EC_PSH_03A.dgn

8/31/2017

PROJECT REFERENCE NO.	SHEET NO.
<i>17BPJ0.CJ</i>	<i>EC-4/CONST.4</i>
R/W SHEET NO.	
 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

BRIDGE #890189
SCALE: 1"=20'

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4



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.

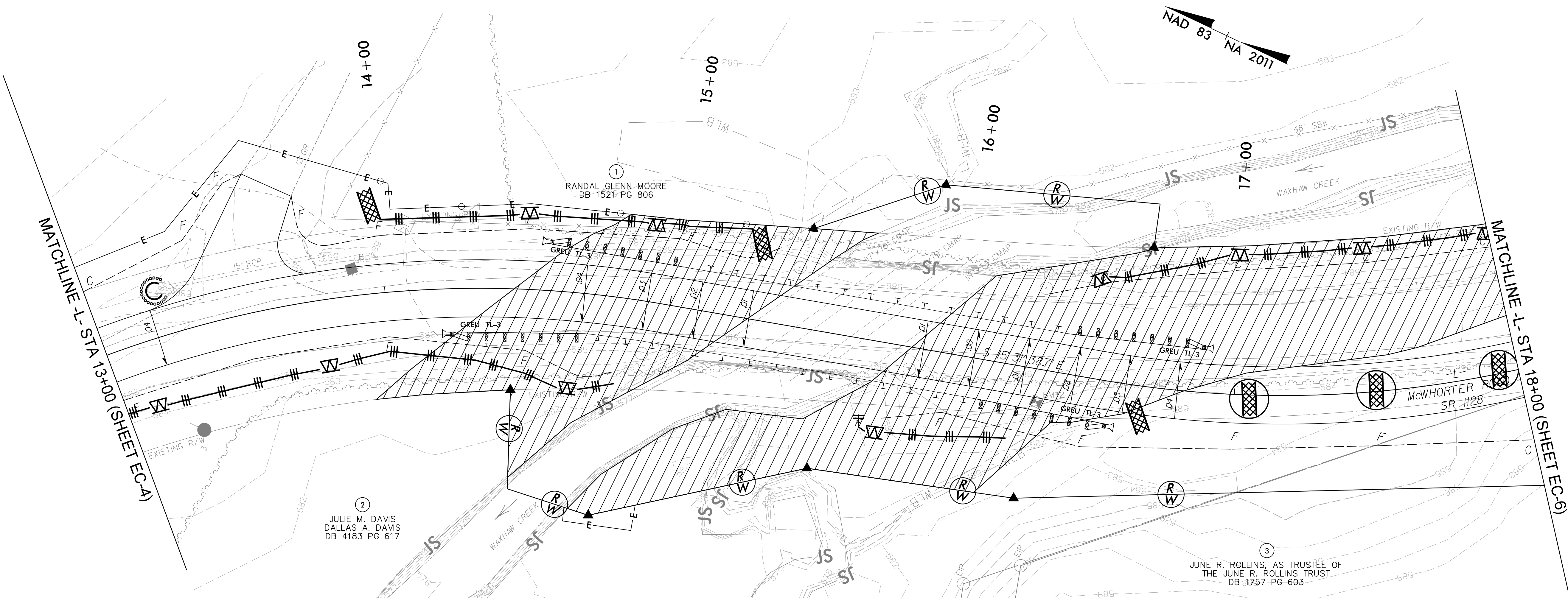
NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0C.I	EC-5/CONST.5
RW SHEET NO.	
STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

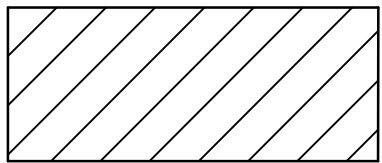
BRIDGE #890189
SCALE: 1"=20'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5



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.



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

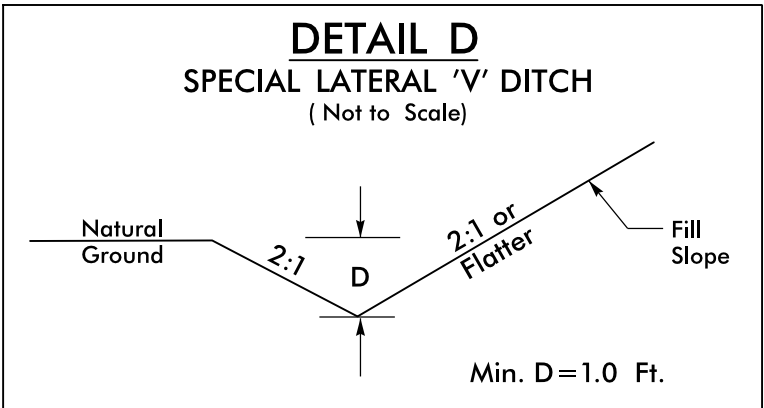
r:\hyd\raul\es\cadd\psheac\17BPJ0C1_EC_PSH_05.dgn

8/31/2017

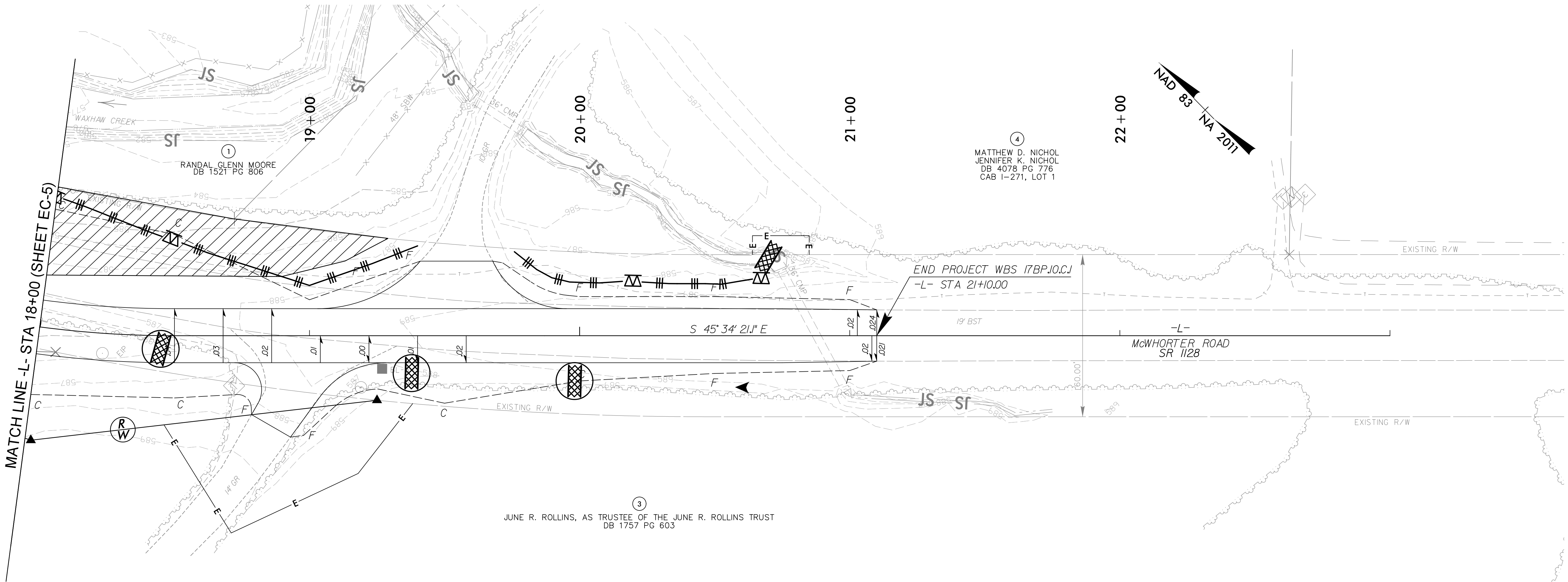
PROJECT REFERENCE NO.	SHEET NO.
17BP10.C1	EC-6/CONST.
RW SHEET NO.	
STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number E-0991	

BRIDGE #890189
SCALE: 1"=20'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 6

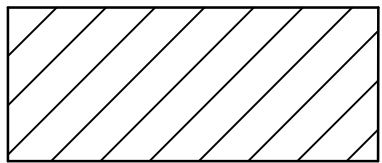


FROM STA. 17+50 TO STA. 20+30 (RT)



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.



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

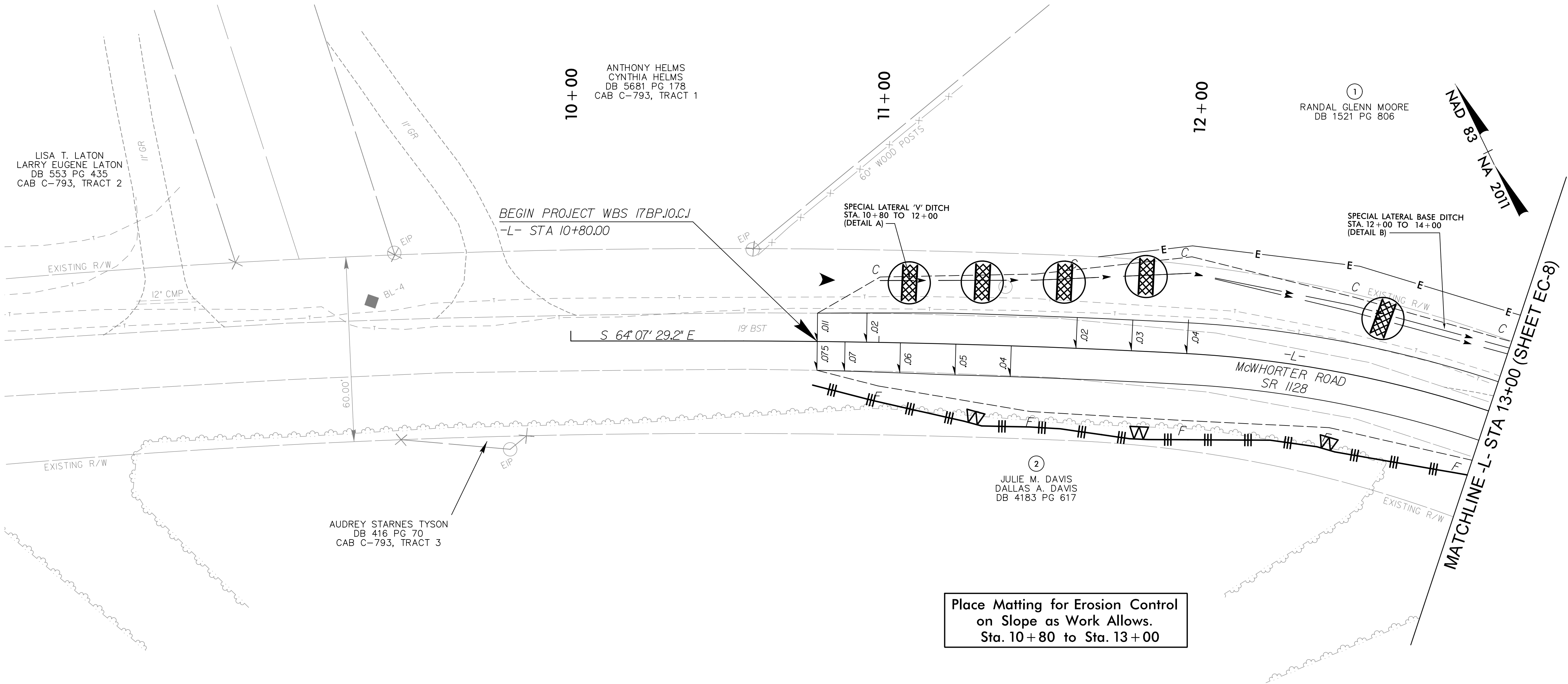
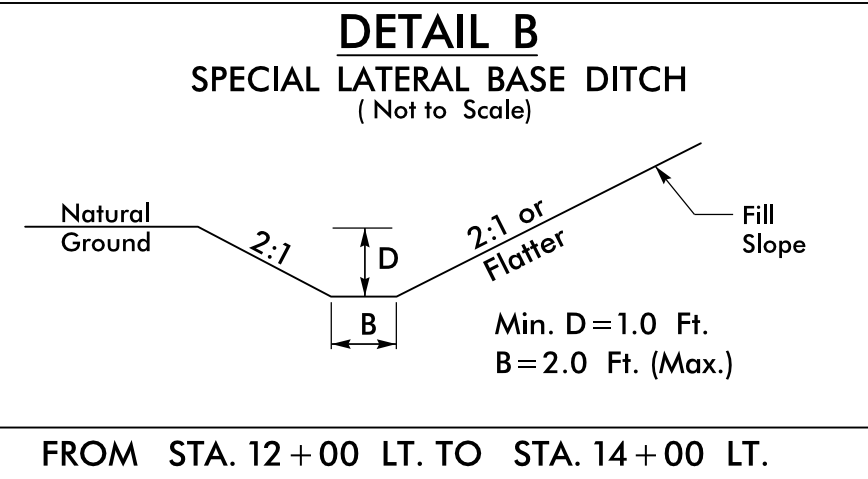
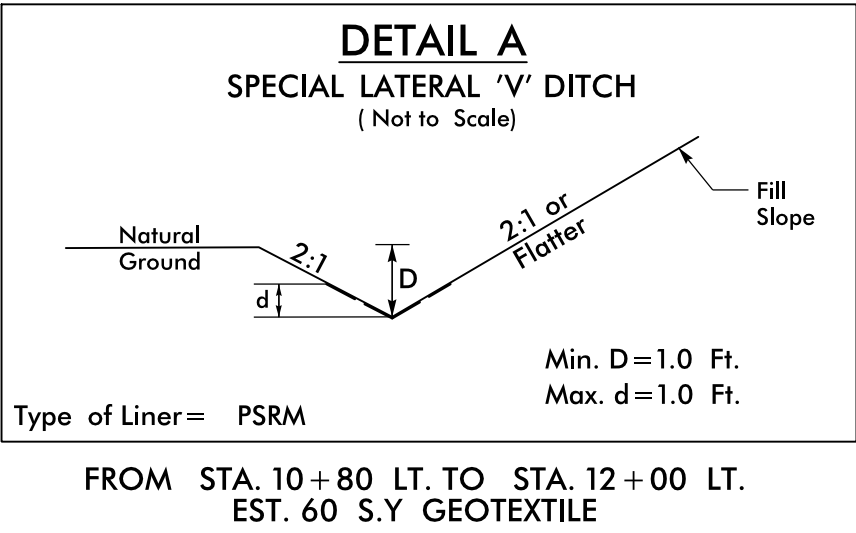
r:\hydraulics\cadd\psheec\17BP10C1_EC_PSH_06.dgn

8/31/2017

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ0.CJ	EC-7/CONST.4
RW SHEET NO.	
STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

BRIDGE #890189
SCALE: 1"=20'

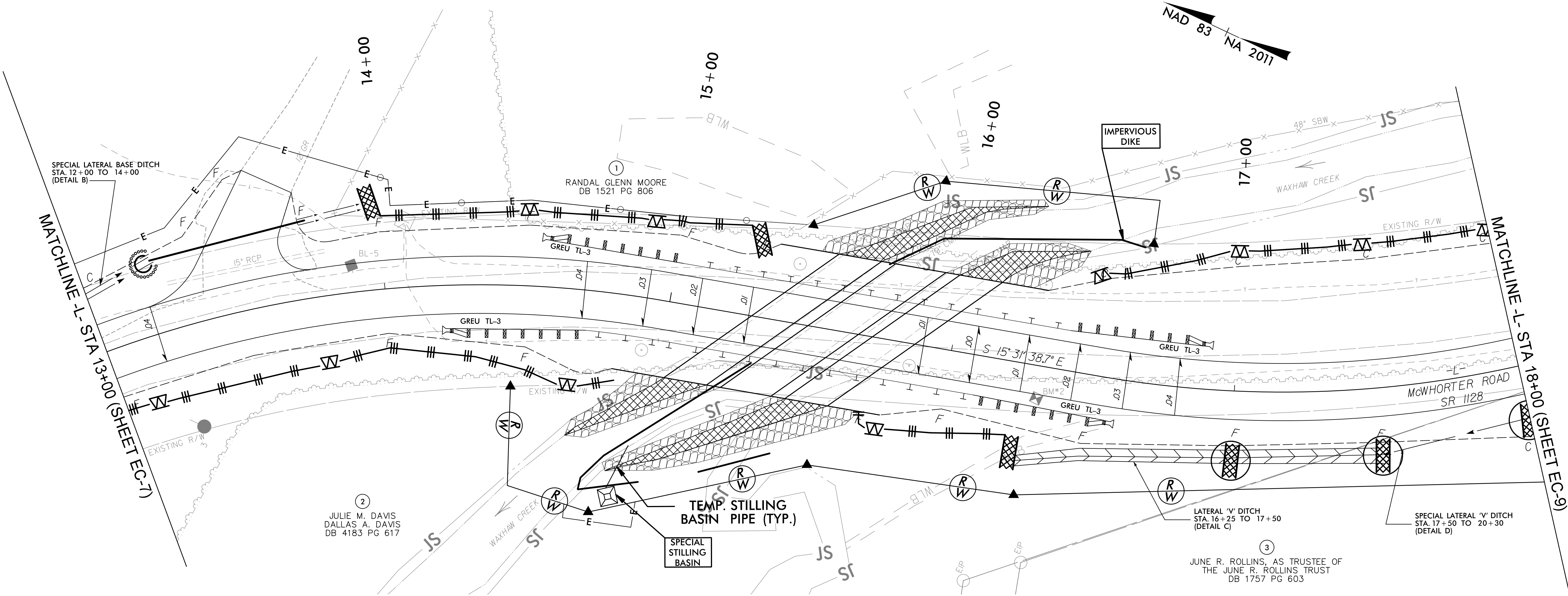
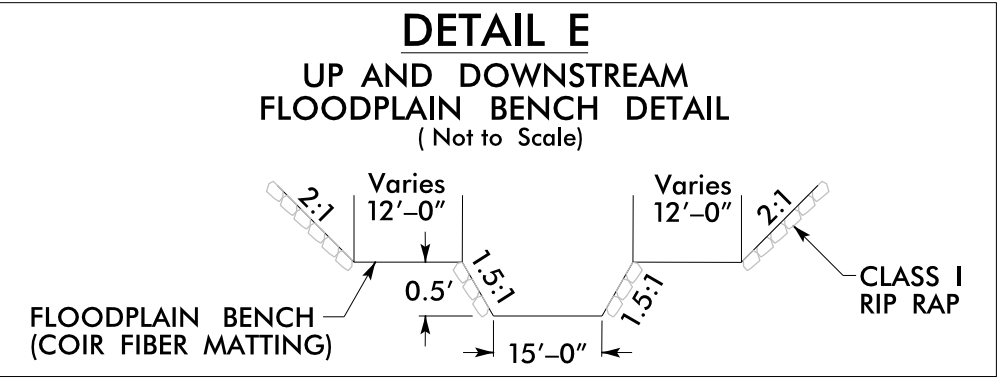
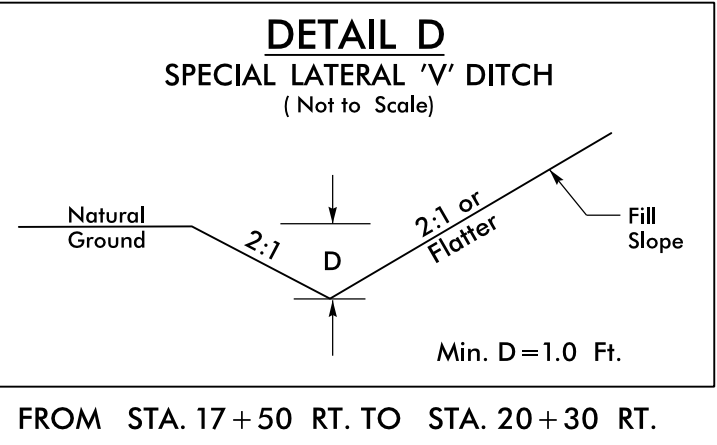
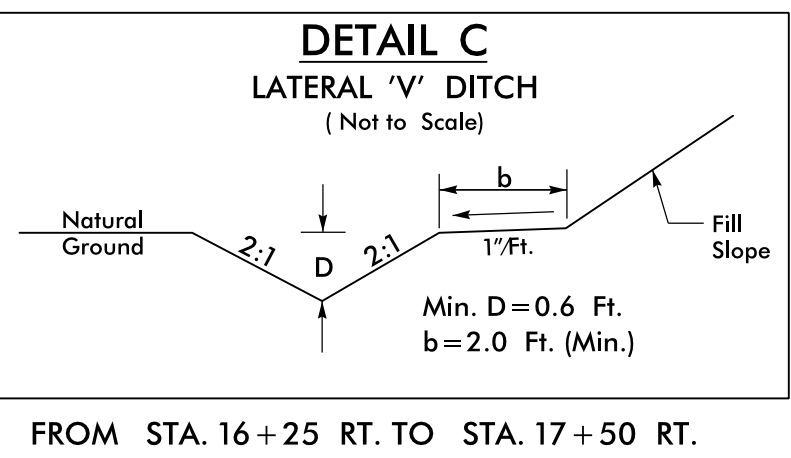
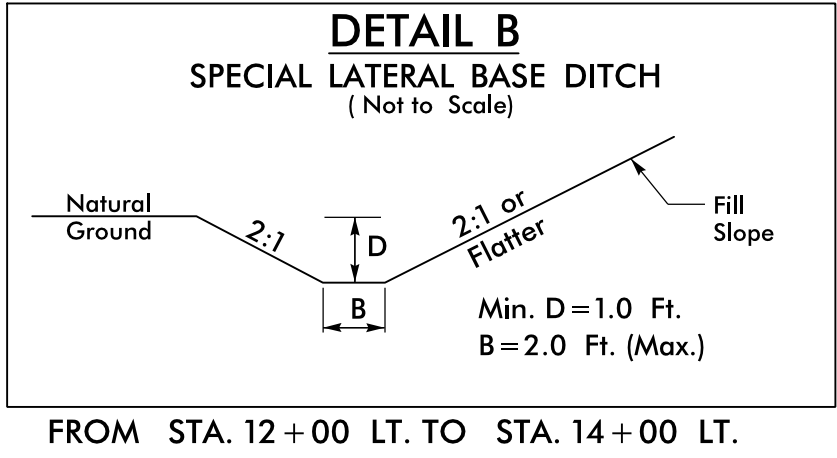
FINAL EROSION CONTROL FOR
CONSTRUCTION SHEET 4



PROJECT REFERENCE NO.	SHEET NO.
17BPJOC.I	EC-8/CONST.5
RW SHEET NO.	
STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

BRIDGE #890189
SCALE: 1"=20'

FINAL EROSION CONTROL FOR
CONSTRUCTION SHEET 5



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.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

INSTALL PERMANENT DITCHES
DURING C&G PHASE

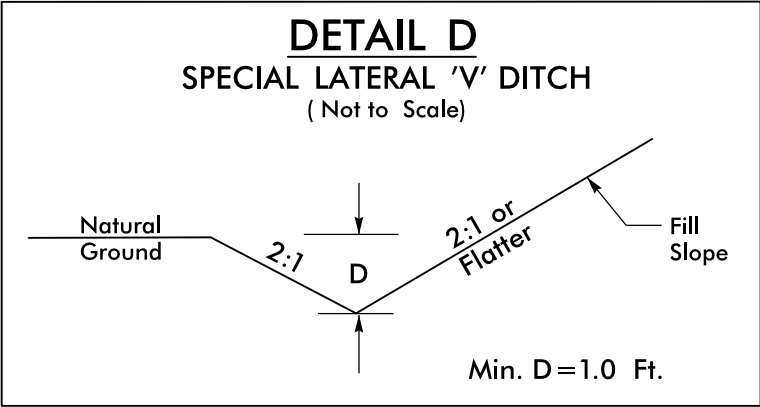
r:\hydraulics\cadd\psheec\17BPJOC.I_EC_PSH_08.dgn

11/22/2017

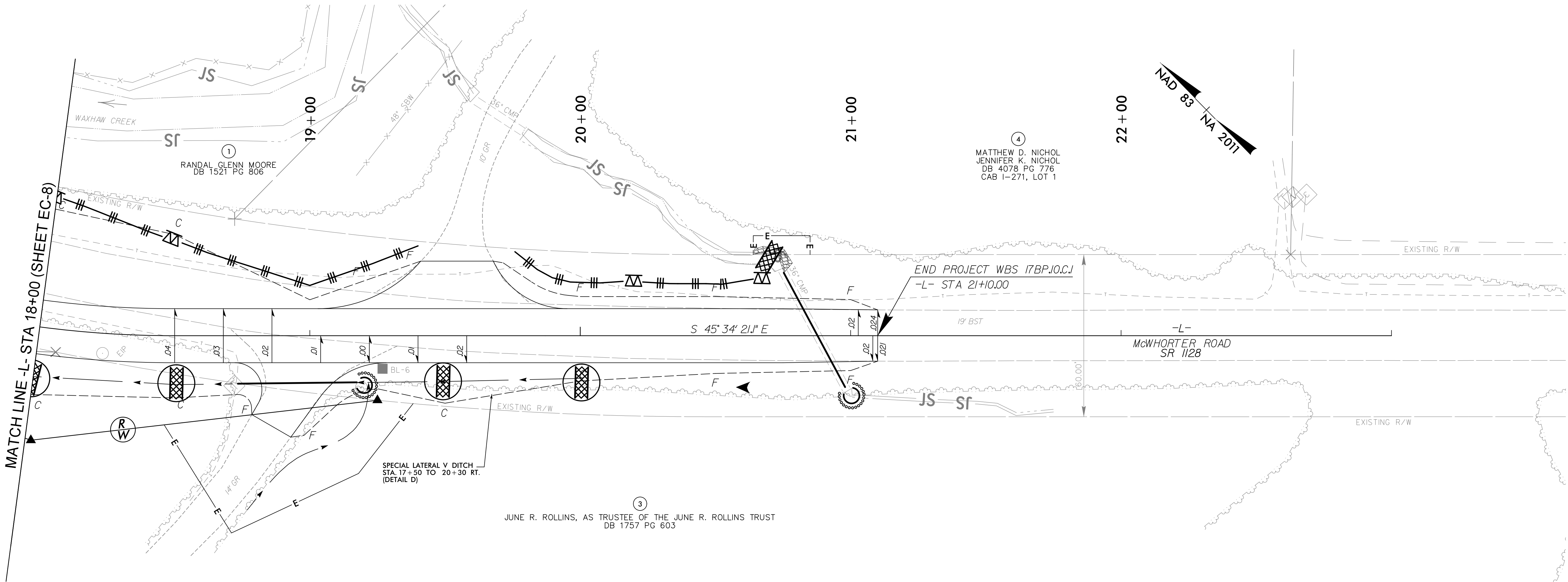
PROJECT REFERENCE NO.	SHEET NO.
17BP10.C1	EC-9/CONST.6
RW SHEET NO.	
STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

BRIDGE #890189
SCALE: 1"=20'

FINAL EROSION CONTROL FOR
CONSTRUCTION SHEET 6



FROM STA. 17+50 TO STA. 20+30 (RT)



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.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

r:\hydraulics\cadd\psheec\17BP10C1_EC_PSH_09.dgn

8/31/2017

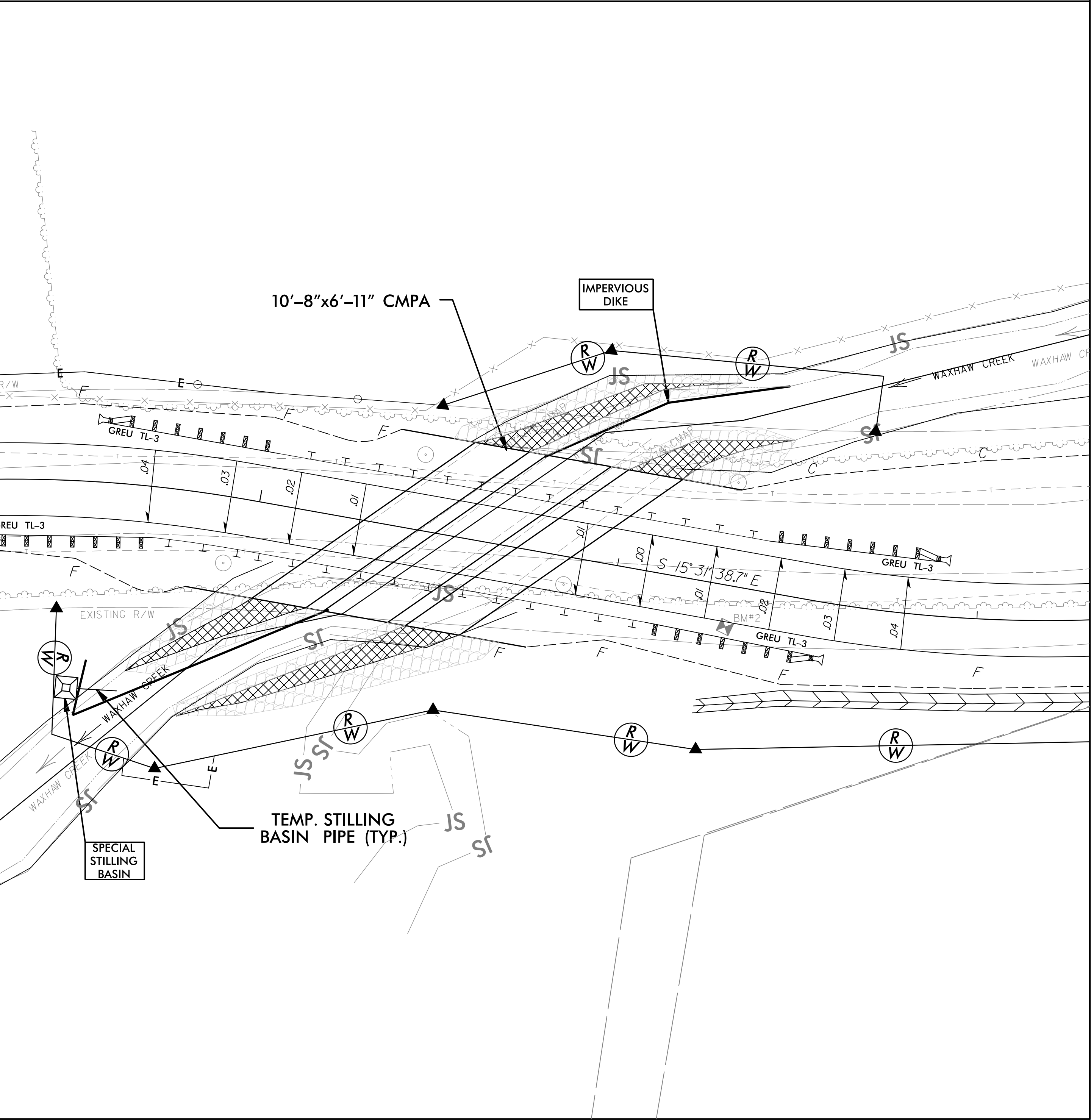
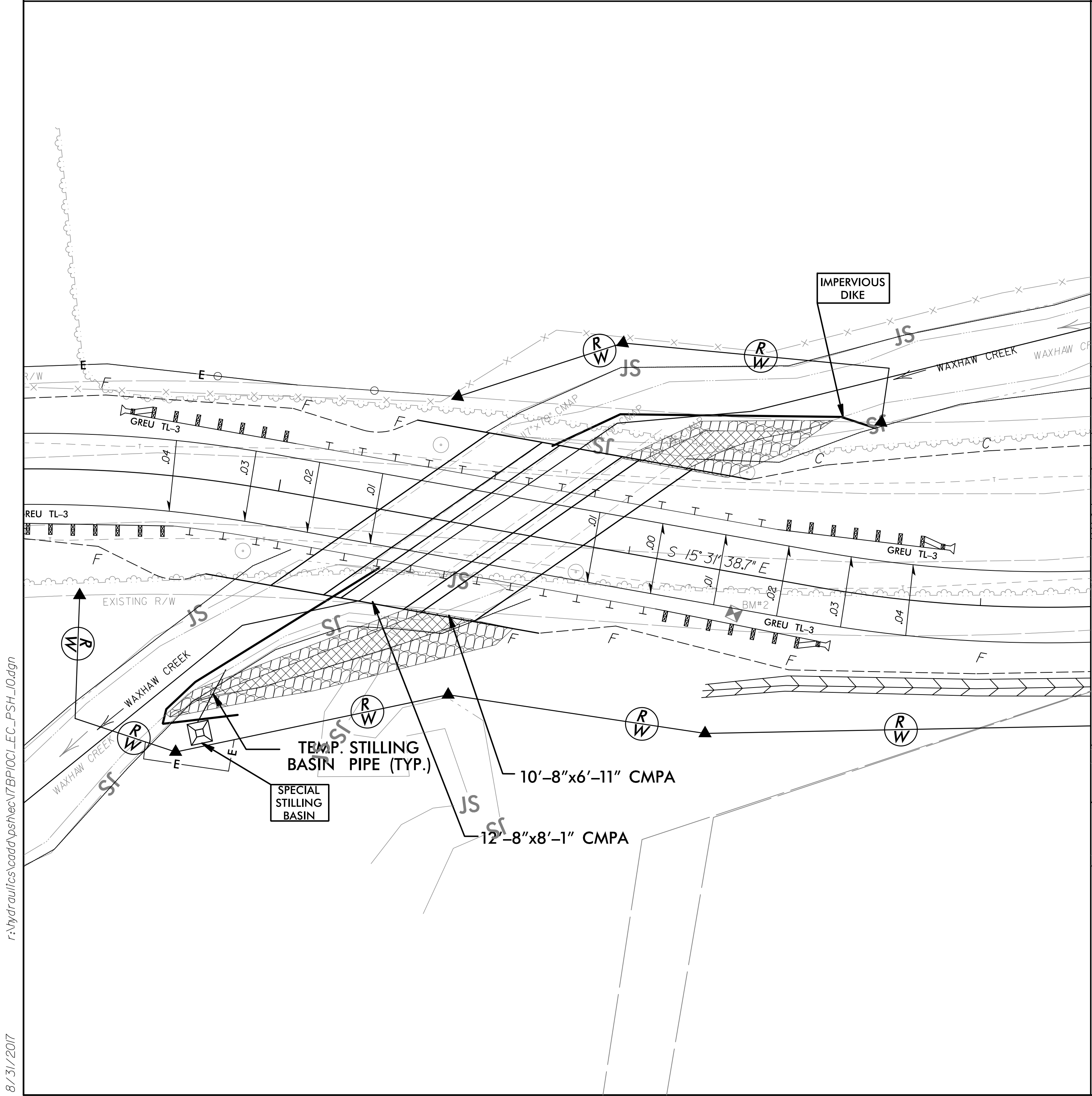
CULVERT CONSTRUCTION SEQUENCE STA. 15+58 -L-

PHASE I

1. UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT CULVERT CONSTRUCTION.
2. CONSTRUCT IMPERVIOUS DIKES, DIVERTING FLOW TO EXISTING BARREL 1.
3. CONSTRUCT SPECIAL STILLING BASINS, DEWATER AREA BEHIND IMPERVIOUS DIKES.
4. CONSTRUCT BARRELS 2&3 OF PROPOSED PIPE ARCH CULVERT.
5. CONSTRUCT THE WING WALLS FOR BARREL 2&3 OF THE PROPOSED CULVERT, AND ANY NECESSARY EMBANKMENT IMPROVEMENTS.

PHASE II

6. SHIFT IMPERVIOUS DIKES TO DIVERT FLOW THOUGH COMPLETED BARRELS
7. DEWATER AND REMOVE SILT FROM EXISTING BARREL 1, CONSTRUCT BARREL 1.
5. CONSTRUCT THE WING WALLS FOR BARREL 1 OF THE PROPOSED CULVERT, AND ANY NECESSARY EMBANKMENT IMPROVEMENTS.
8. REMOVE DIKES & STILLING BASINS, COMPLETE DRAINAGE, INCLUDING INLET/OUTLET IMPROVEMENTS.
9. COMPLETE ROADWAY.



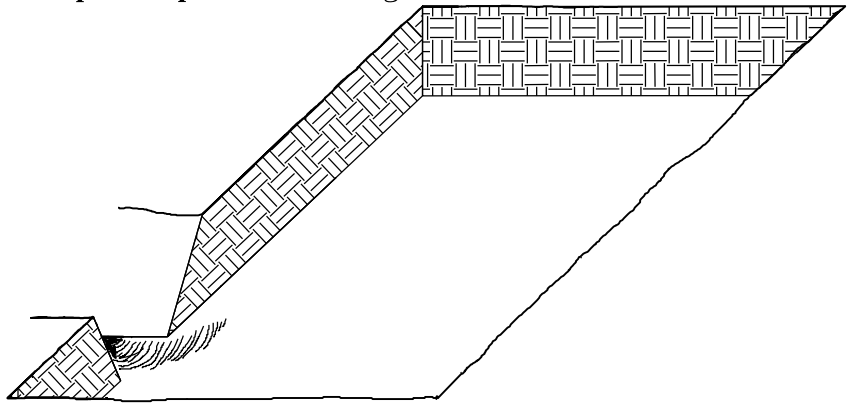
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.C.1	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

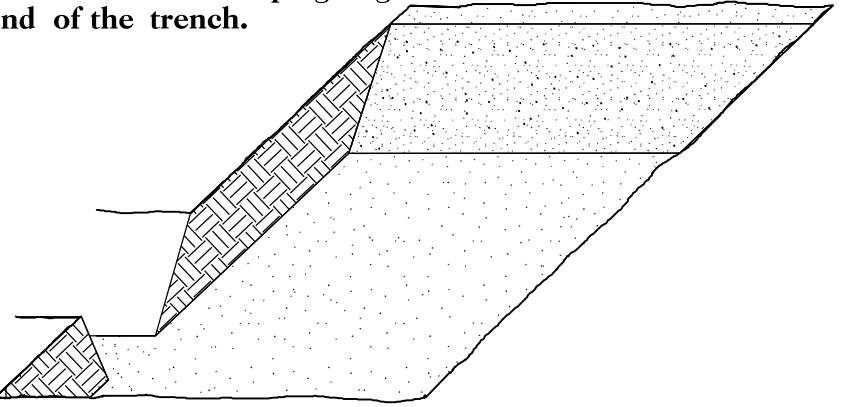
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

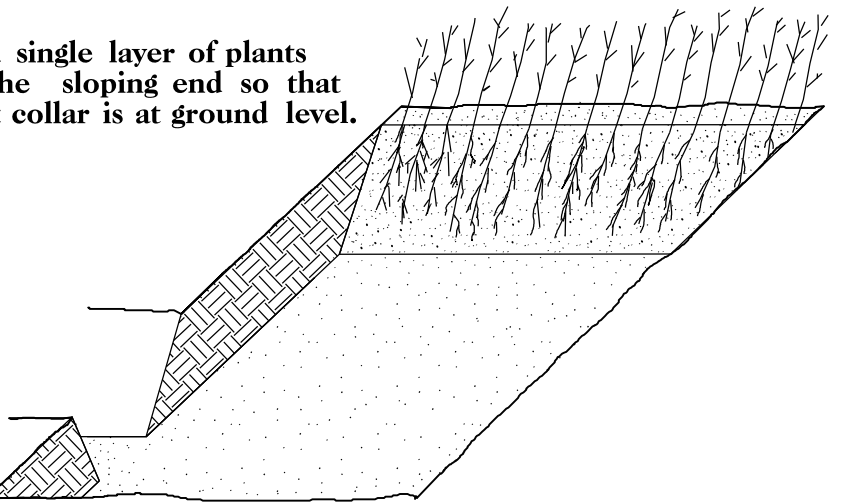
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



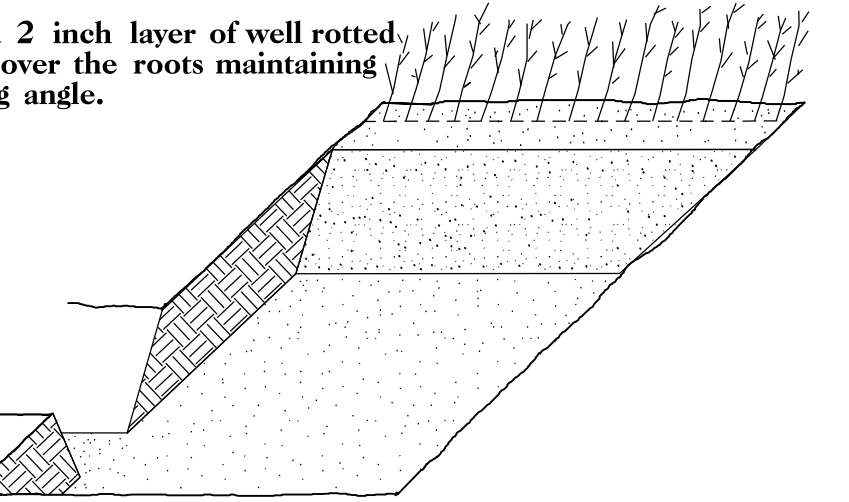
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

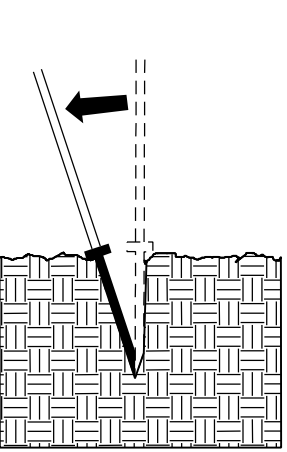


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

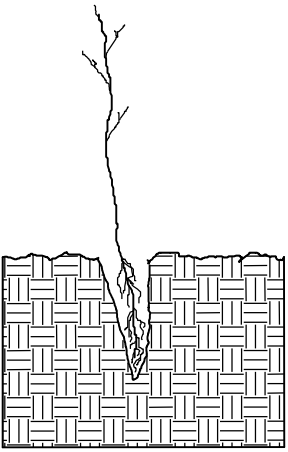


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

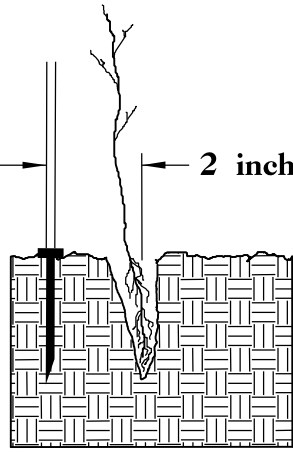
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



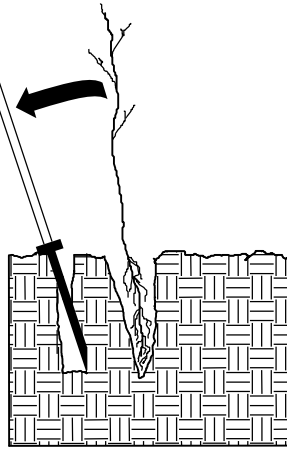
1. Insert planting bar as shown and pull handle toward planter.



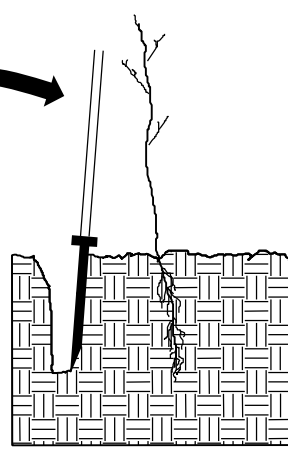
2. Remove planting bar and place seedling at correct depth.



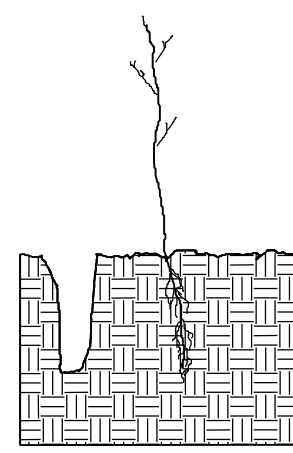
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

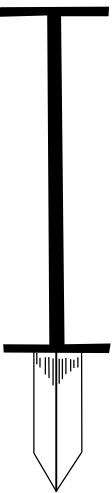
PLANTING BAG

During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR

Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING

All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- ☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25 0	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25 0	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
25 0	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25 0	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

12/4/2017
r:\Utilities\UBO Plans\7BP\OC\utl_uoi.dgn
madelaz12

CONTRACT: DJ00267

PROJECT WBS: 17BP.10.C.1

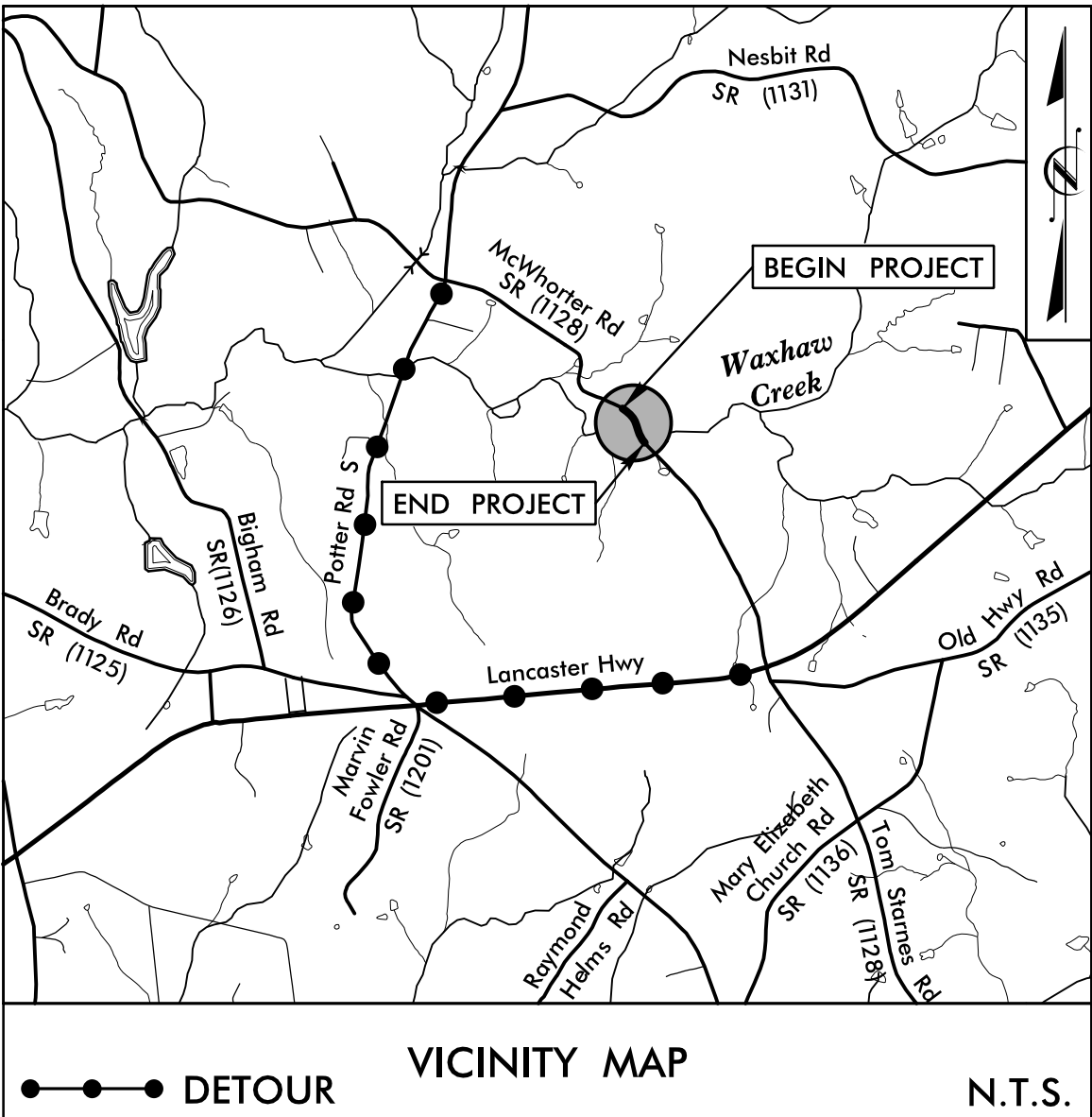
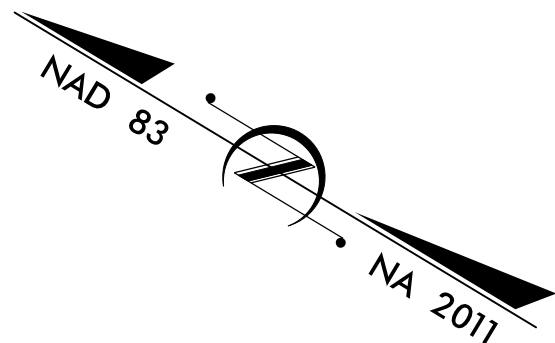
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
17BP.10.C.1	UO-1

UTILITIES BY OTHERS PLANS
UNION COUNTY

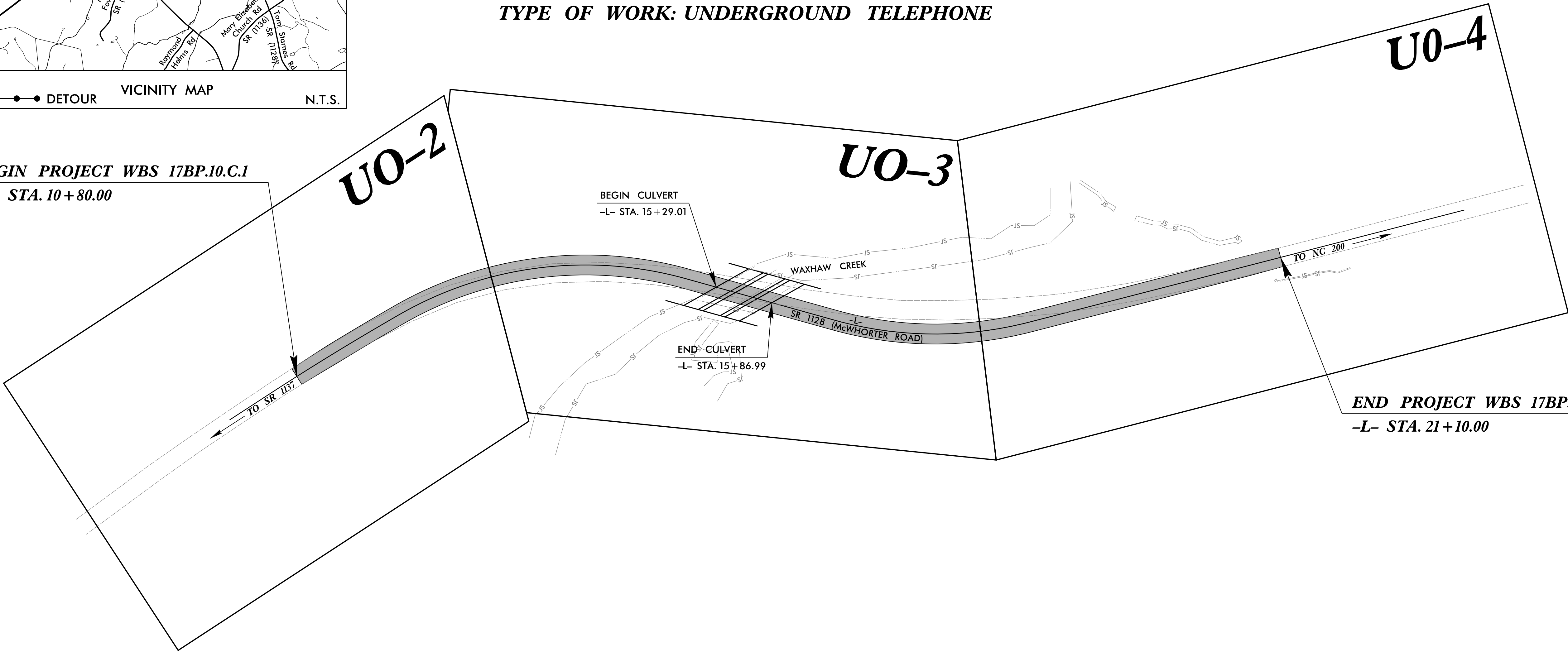
LOCATION: PIPE #189 OVER WAXHAW CREEK
ON SR 1128 (McWHORTER RD)

TYPE OF WORK: UNDERGROUND TELEPHONE



BEGIN PROJECT WBS 17BP.10.C.1

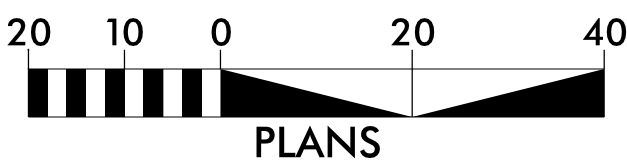
-L- STA. 10 + 80.00



END PROJECT WBS 17BP.10.C.1

-L- STA. 21 + 10.00

GRAPHIC SCALES

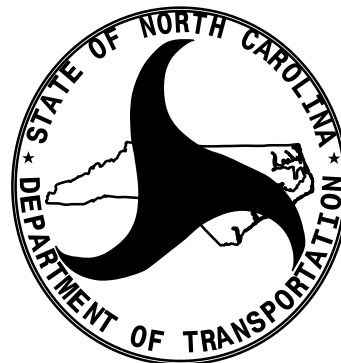


INDEX OF SHEETS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
UO-1	TITLE SHEET
UO-2 THRU UO-4	UTILITIES BY OTHERS PLANS

UTILITY OWNERS ON PROJECT

- (1) TELEPHONE - WINDSTREAM
(2) UNION POWER COOPERATIVE



PREPARED FOR THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING
SECTION

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

_____	UTILITIES SECTION ENGINEER
_____	UTILITIES SQUAD LEADER PROJECT ENGINEER
Reece Schuler, PE	UTILITIES PROJECT DESIGNER

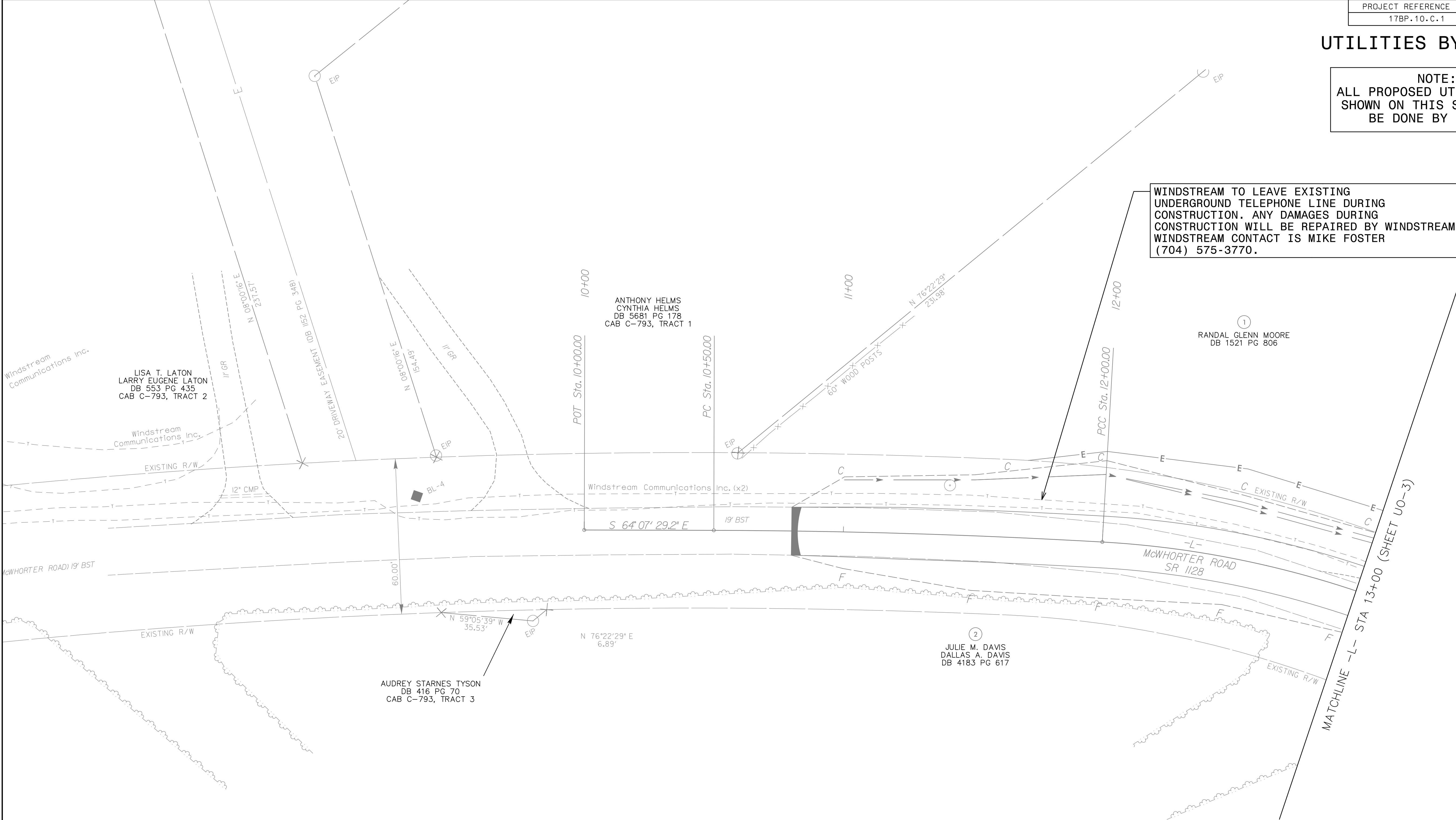
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.10.C.1	U0-2

UTILITIES BY OTHERS

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

WINDSTREAM TO LEAVE EXISTING
UNDERGROUND TELEPHONE LINE DURING
CONSTRUCTION. ANY DAMAGES DURING
CONSTRUCTION WILL BE REPAIRED BY WINDSTREAM.
WINDSTREAM CONTACT IS MIKE FOSTER
(704) 575-3770.

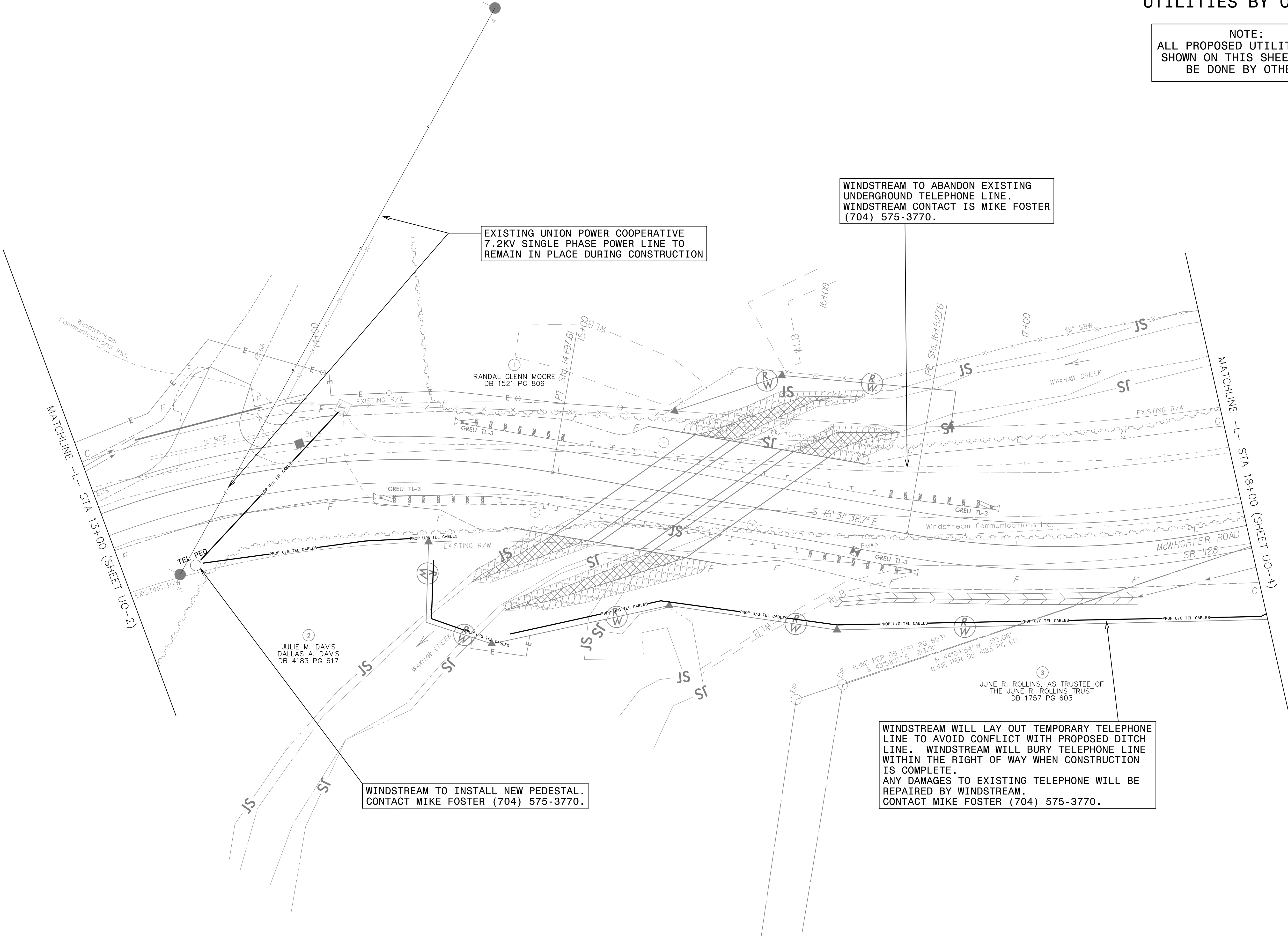


5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.10.C.1	U0-3

UTILITIES BY OTHERS

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



EXISTING UNION POWER COOPERATIVE
7.2KV SINGLE PHASE POWER LINE TO
REMAIN IN PLACE DURING CONSTRUCTION

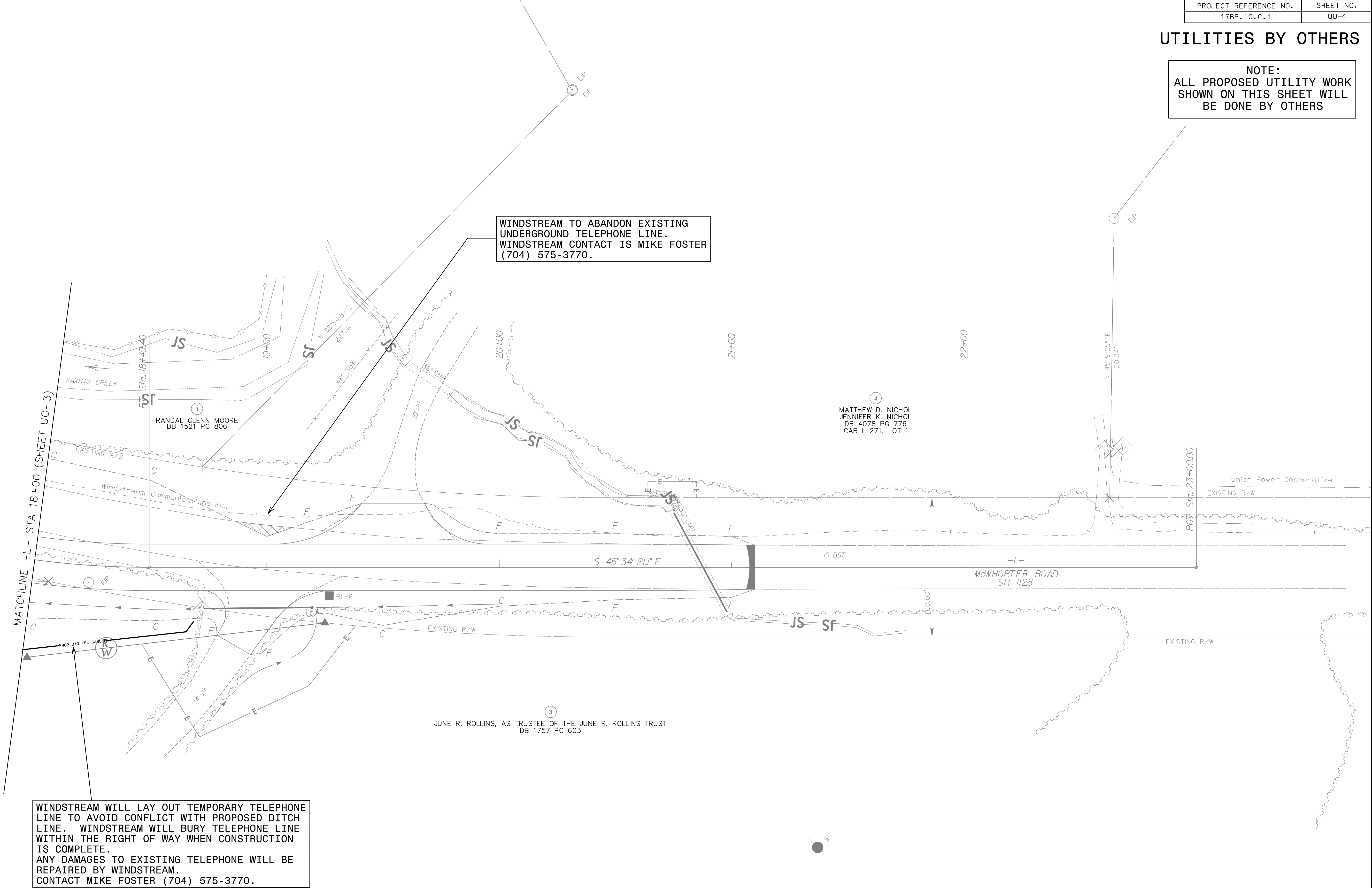
WINDSTREAM TO ABANDON EXISTING
UNDERGROUND TELEPHONE LINE.
WINDSTREAM CONTACT IS MIKE FOSTER
(704) 575-3770.

WINDSTREAM TO INSTALL NEW PEDESTAL.
CONTACT MIKE FOSTER (704) 575-3770.

WINDSTREAM WILL LAY OUT TEMPORARY TELEPHONE
LINE TO AVOID CONFLICT WITH PROPOSED DITCH
LINE. WINDSTREAM WILL BURY TELEPHONE LINE
WITHIN THE RIGHT OF WAY WHEN CONSTRUCTION
IS COMPLETE.
ANY DAMAGES TO EXISTING TELEPHONE WILL BE
REPAIRED BY WINDSTREAM.
CONTACT MIKE FOSTER (704) 575-3770.

UTILITIES BY OTHERS

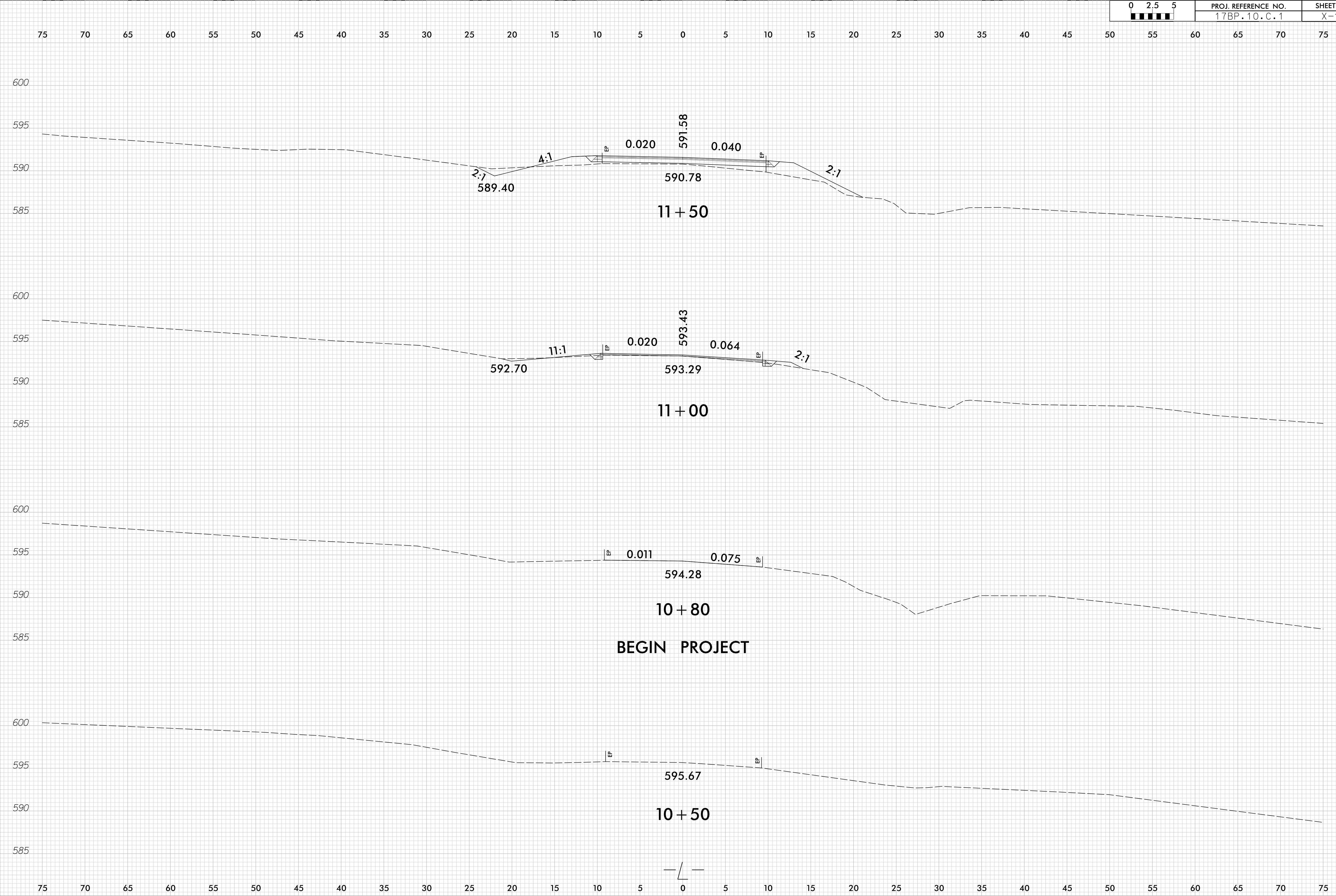
NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS



8/23/99

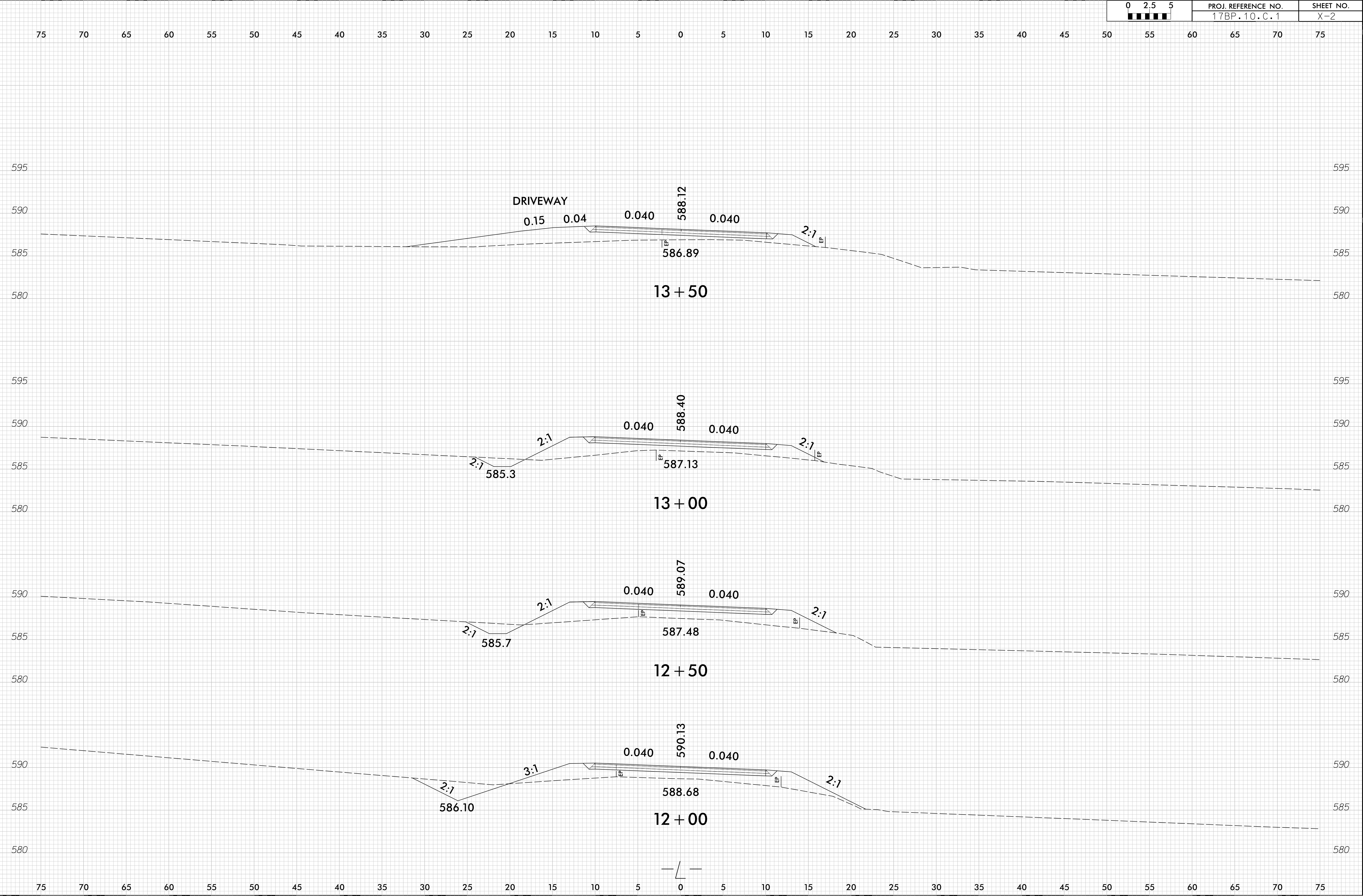
8/31/2017
R:\Roadway\Xsc\17BP10C1-rdy-xp1.L.dgn
mab061a212

02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-1



8/23/99

02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-2

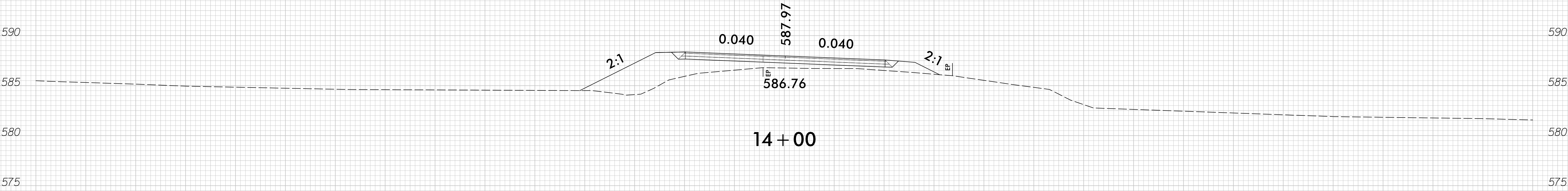
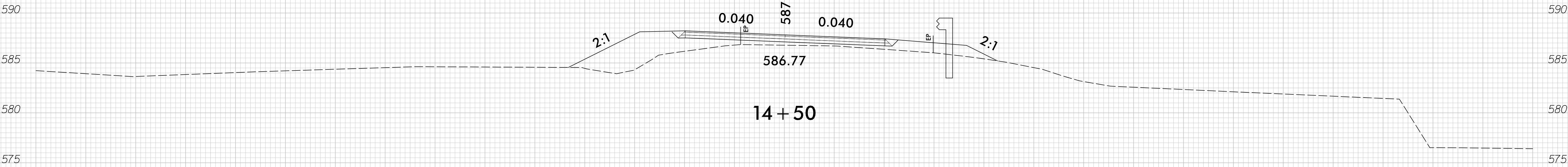
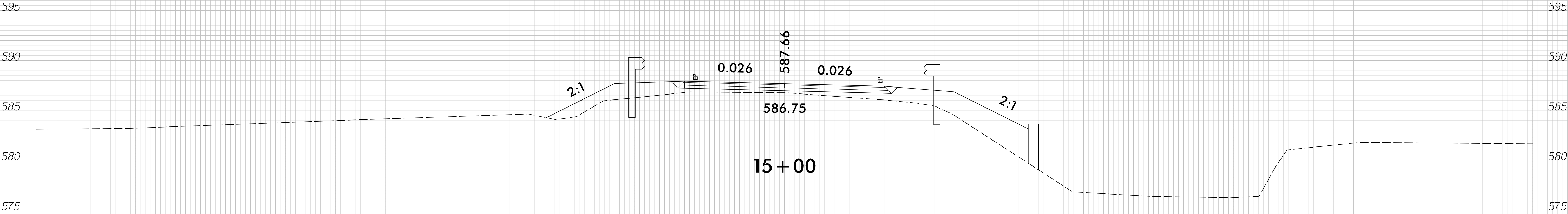


8/31/2017
R:\Roadway\Xsc\17BP10C1-rdy-xp1.L.dgn
mab061a212

8/23/99

02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-3

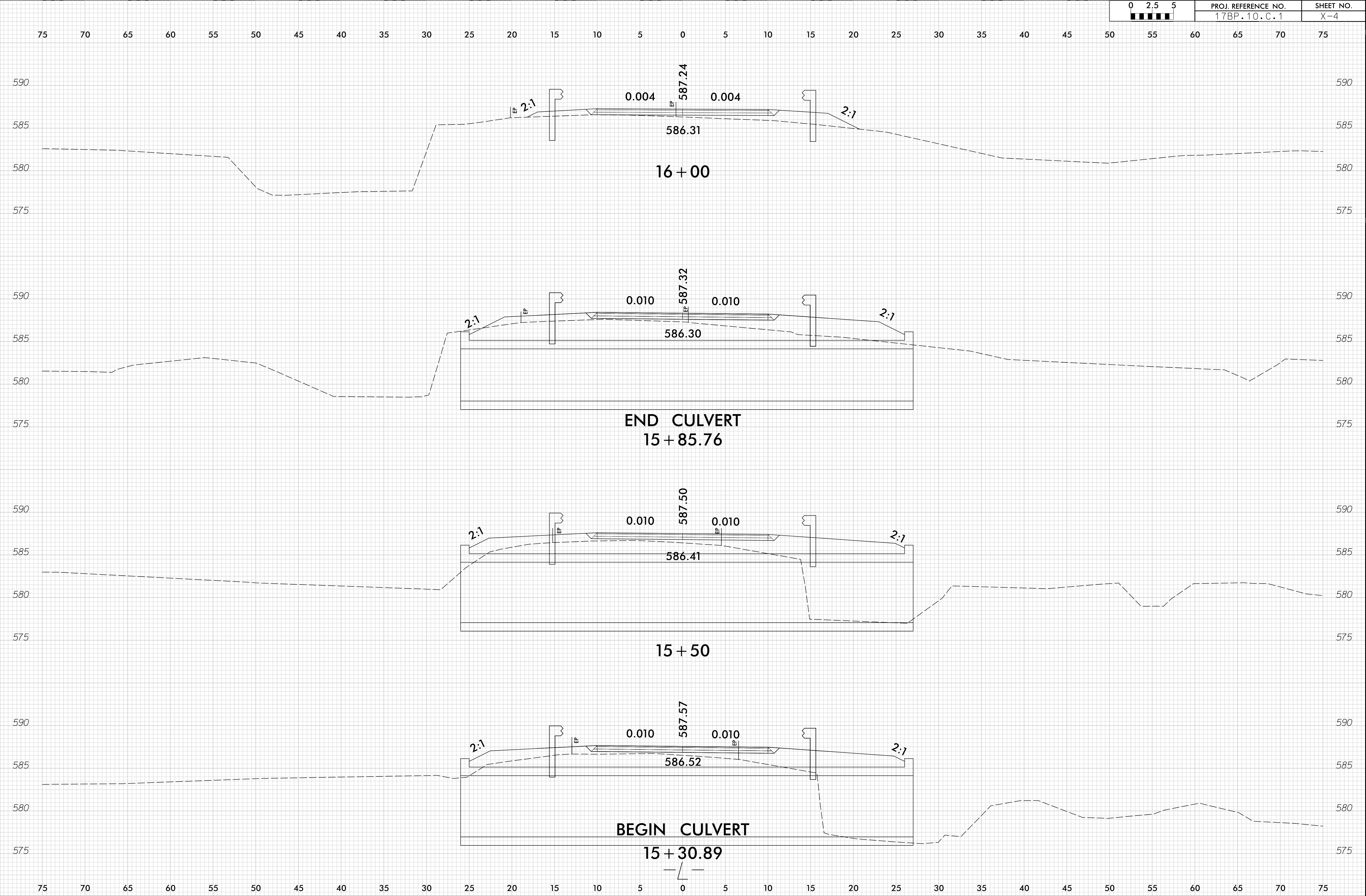
757065605550454035302520151050051015202530354045505560657075



757065605550454035302520151050051015202530354045505560657075

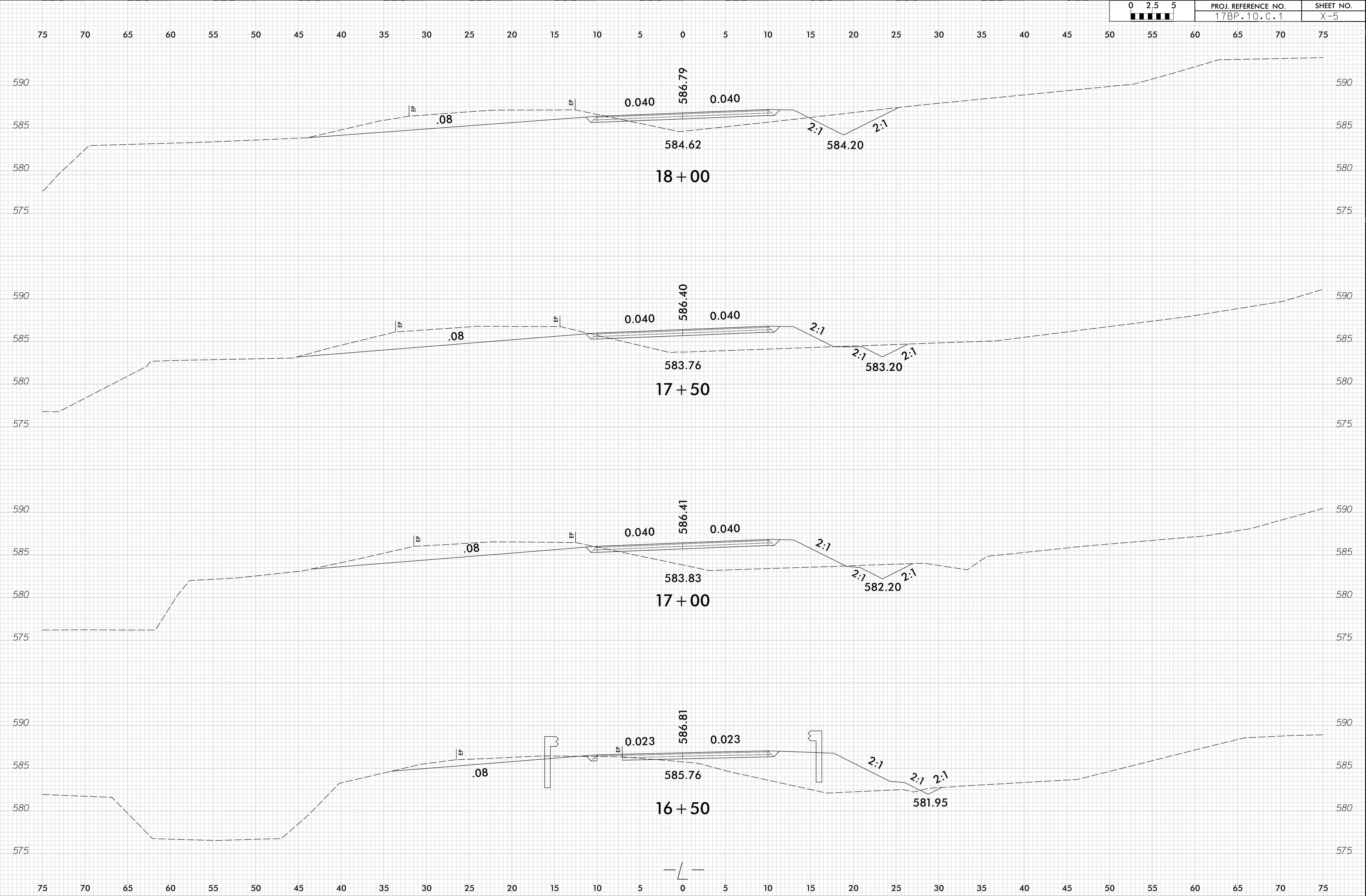
8/23/99

02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-4



8/23/99

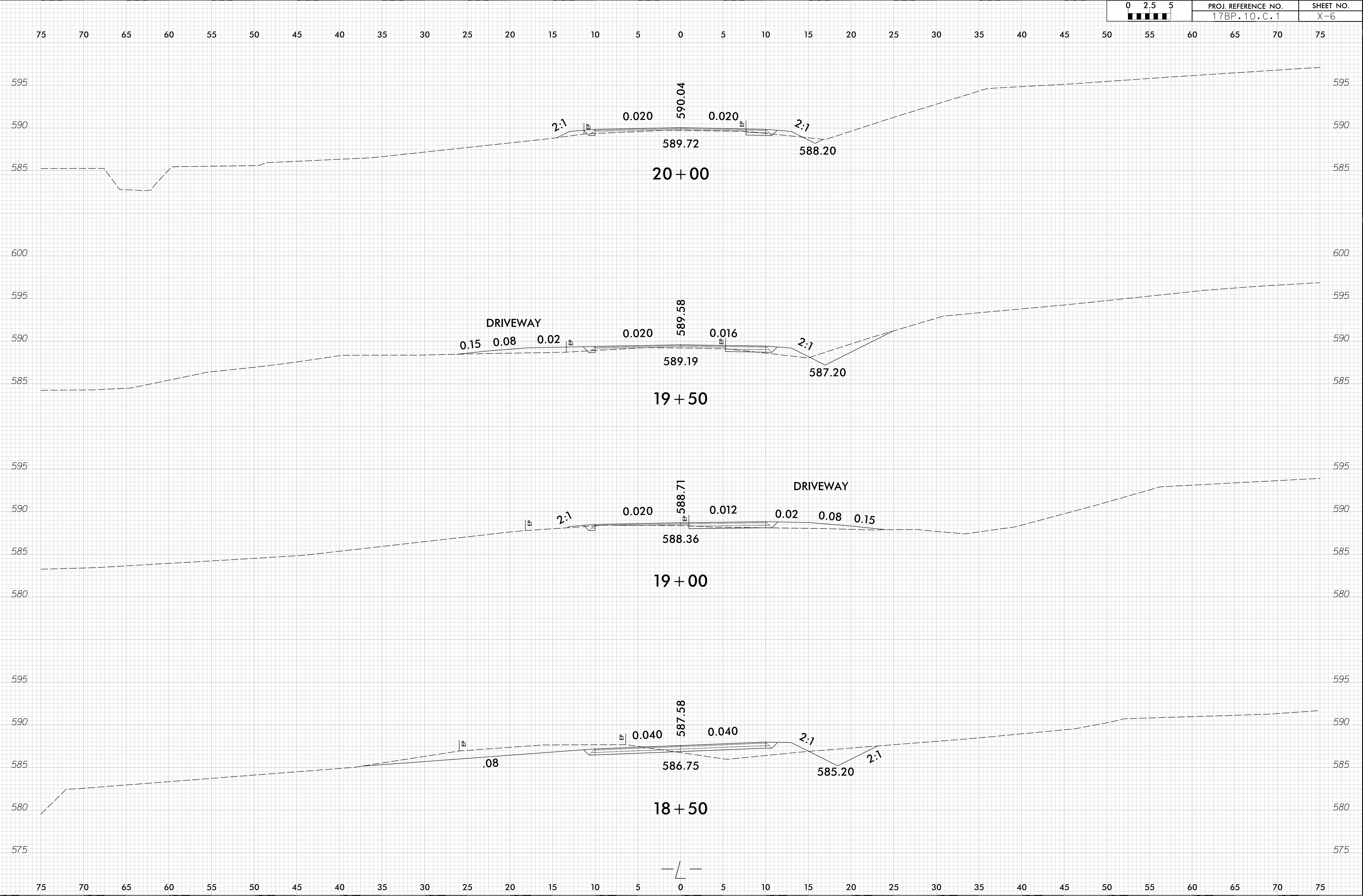
02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-5



8/23/99

8/31/2017
R:\Roadway\Xsc\17BP10C1-rdy-xp1.L.dgn
mab061a212

02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-6



8/23/99

02.55	PROJ. REFERENCE NO.	SHEET NO.
	17BP.10.C.1	X-7

75

70

65

60

55

50

45

40

35

30

25

20

15

10

5

0

5

10

15

20

25

30

35

40

45

50

55

60

65

70

75

595

590

585

595

590

585

595

590

585

595

590

585

580

591.33

21 + 50

0.024

0.021

590.71

21 + 10

END PROJECT

590.62

0.020

0.020

590.58

21 + 00

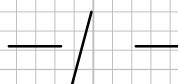
590.27

0.020

0.020

590.05

20 + 50



8/31/2017
R:\Roadway\Xsc\17BP10C1-rd-j-xp1.L.dgn
mab061a212