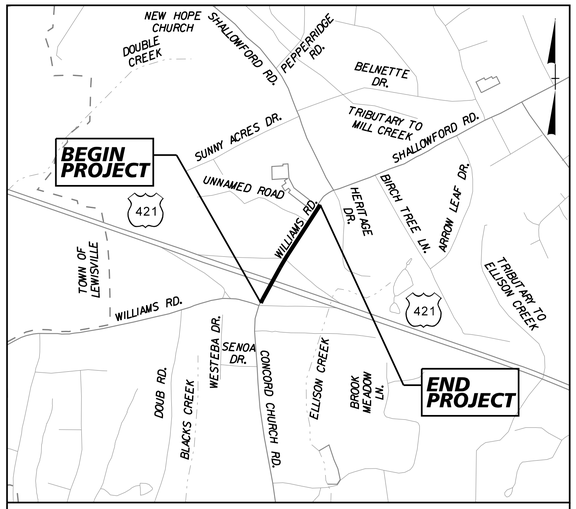
09/08/99

TIP PROJECT: U-5617



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

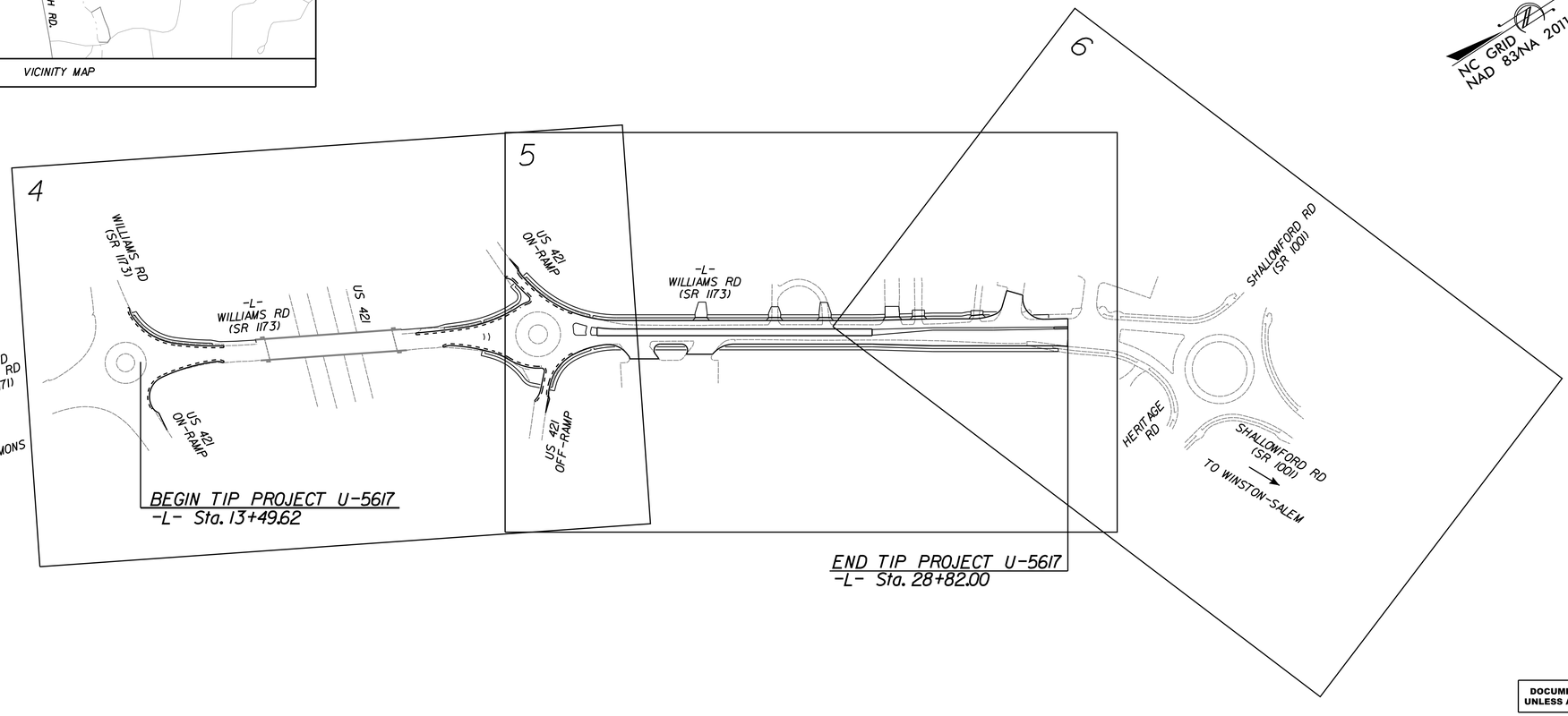
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5617	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47082.1.1	STBGDA-1173(005)	P.E.
47082.2.1	STBGDA-1173(005)	RIGHT-OF-WAY
47082.3.1	STBGDA-1173(005)	CONSTRUCTION

LOCATION: *SR 1173 (WILLIAMS RD) FROM THE ROUNDABOUT AT CONCORD CHURCH RD SOUTH OF THE BRIDGE OVER US 421 TO THE ROUNDABOUT AT SR 1001 (SHALLOWFORD RD)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND SIGNING*

NC GRID
NAD 83/NA 2011



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

V = 40 MPH

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5617 = 0.290 MILES

TOTAL LENGTH TIP PROJECT U-5617 = 0.290 MILES

PLANS PREPARED FOR THE TOWN OF LEWISVILLE BY:

Kimley»Horn © 2020

NC LICENSE #F-0102
FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2020 STANDARD SPECIFICATIONS

LETTING DATE:

JEFFREY W. MOORE, P.E.
PROJECT ENGINEER

T. HUNTER SABINS, E.I.T.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049194 ENGINEER JEFFREY W. MOORE
1/29/2020

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049452 ENGINEER JEFFREY W. MOORE
1/28/2020

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/27/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5617	1-A

ROADWAY DESIGN ENGINEER

REVISIONS

U-5617
FORSYTH COUNTY

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, LIST OF ROADWAY STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND MISCELLANEOUS DETAILS
2C-1 THRU 2C-4	CURB RAMP DETAILS
2C-5	DETAIL FOR GUARDRAIL INSTALLATION (IN LIEU OF SHEET 6 OF 8)
2C-6	DETAIL FOR MINIMUM DEPTH CONCRETE CATCH BASIN
3B-1	SUMMARY OF EARTHWORK AND GUARDRAIL
3D-1	SUMMARY OF DRAINAGE QUANTITIES
3P-1	PARCEL INDEX SHEET
4 THRU 6	PLAN SHEETS
7	PROFILE SHEET
L1.0 THRU L2.1	LANDSCAPE PLANS AND DETAILS
TMP-1 THRU TMP-9	TRANSPORTATION MANAGEMENT PLANS
PSP-1 THRU PSP-2	PAVEMENT MARKING AND SIGNING PLANS
EC-1A THRU EC-11	EROSION CONTROL PLANS
UC-1 THRU UC-5	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1 THRU X-7	CROSS-SECTIONS

GENERAL NOTES

2018 SPECIFICATIONS

EFFECTIVE: 01-16-18

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

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

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 FOOT 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.

GUARDRAIL:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE :

WINDSTREAM COMMUNICATIONS
DUKE ENERGY
CITY OF WINSTON SALEM

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS:

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS IN ACCORDANCE WITH STD 848.05 AND/OR DETAILS IN THE PLANS.

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
200.03	METHOD OF CLEARING - METHOD III
225.02	GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT
300.01	METHOD OF PIPE INSTALLATION
654.01	PAVEMENT REPAIRS
838.01	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS - 15" THRU 48" PIPE 90 SKEW
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES
840.01	BRICK CATCH BASIN - 12" THRU 54" PIPE
840.02	CONCRETE CATCH BASIN - 12" THRU 54" PIPE
840.03	FRAME, GRATES AND HOOD - FOR USE ON STANDARD CATCH BASIN
840.14	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
840.18	CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.22	FRAMES AND WIDE SLOT SAG GRATES
840.25	ANCHORAGE FOR FRAMES - BRICK OR CONCRETE OR PRECAST
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
840.45	PRECAST DRAINAGE STRUCTURE
840.54	MANHOLE FRAME AND COVER
840.66	DRAINAGE STRUCTURE STEPS
840.72	PIPE COLLAR
846.01	CONCRETE CURB, GUTTER AND CURB & GUTTER
848.01	CONCRETE SIDEWALK
848.02	DRIVEWAY TURNOUT - RADIUS TYPE
848.04	STREET TURNOUT
848.05	CURB RAMP - PROPOSED CURB & GUTTER
852.01	CONCRETE ISLANDS
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

1/27/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5617	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

REVISIONS

1/27/2020

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed 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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

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 & 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New 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
- 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
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

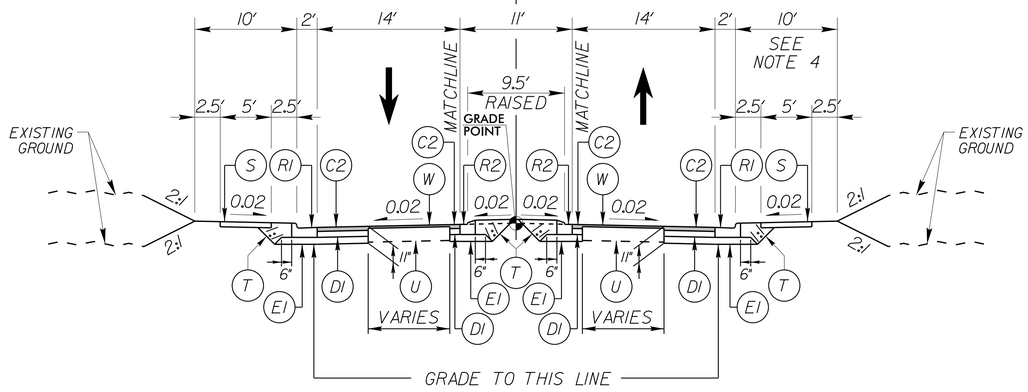
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

REVISIONS

5/14/99

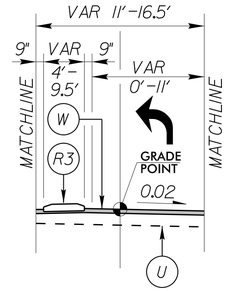
1/27/2020

℄ –L– WILLIAMS RD (SR 1173)



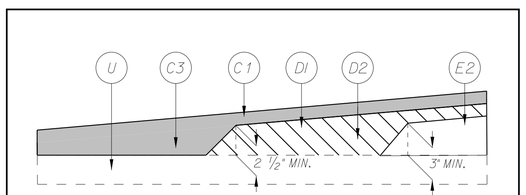
TYPICAL SECTION NO. 1

–L– STA 20+63.14 TO 28+82.00

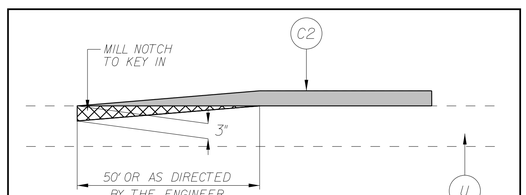


TYPICAL SECTION NO. 1A

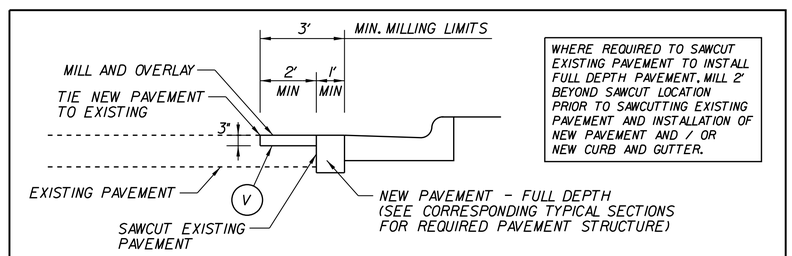
–L– STA 25+59.00 TO 28+59.00



WEDGING DETAIL (W) FOR RESURFACING



PROFILE KEY-IN DETAIL (V)



MILLING AND SAWCUT DIMENSION DETAIL

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	2A-1

ROADWAY DESIGN ENGINEER

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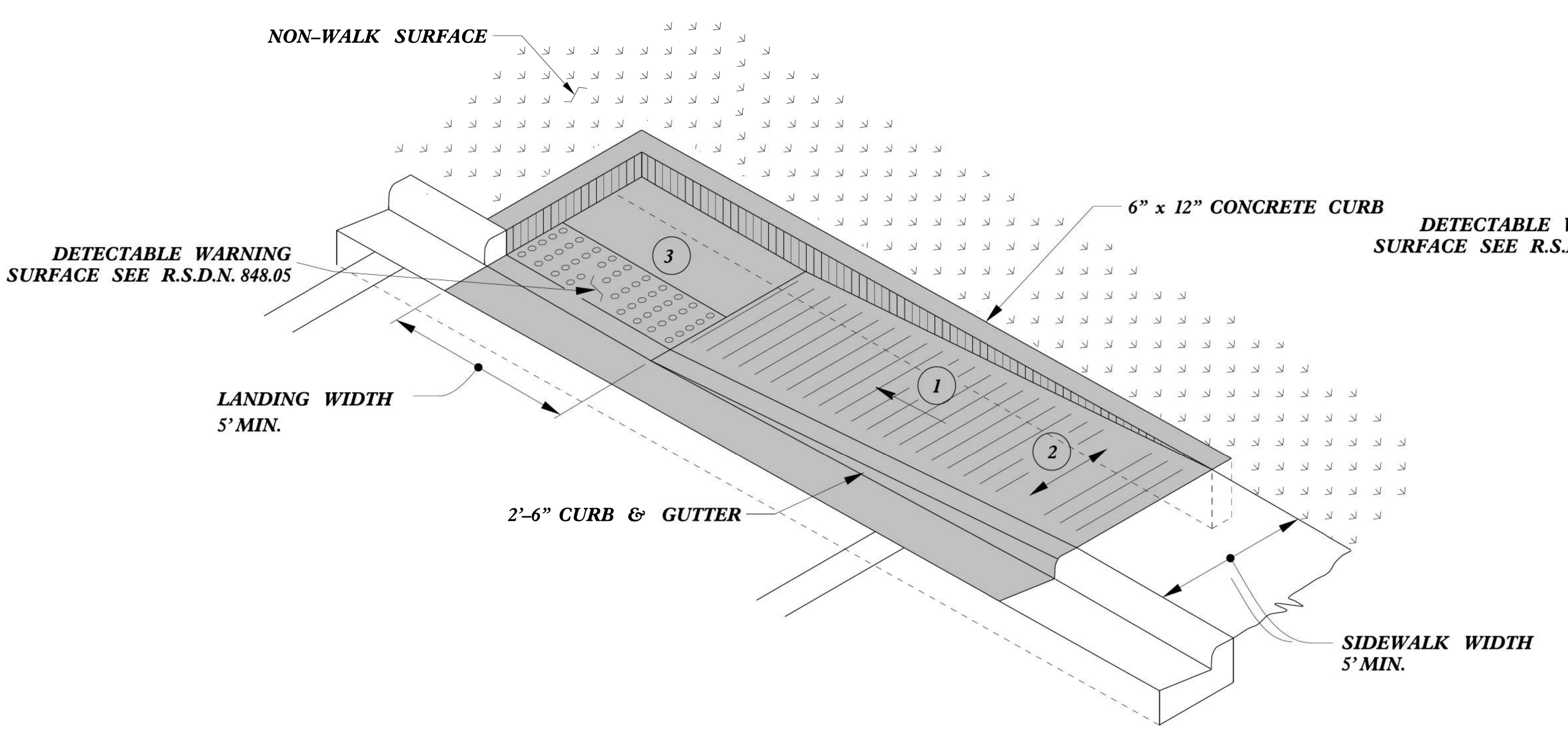
PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROPOSED 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	PROPOSED 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.
DI	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROPOSED 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" OR GREATER THAN 5.5" IN DEPTH.
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 1'-6" CONCRETE CURB & GUTTER
R3	PROPOSED 5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
S	PROPOSED 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING ASPHALT PAVEMENT
W	WEDGING

NOTES:
1. FOR FILL OR CUT SLOPE HEIGHTS ≤ 5', USE 4:1 SLOPES
   FOR FILL OR CUT SLOPE HEIGHTS 5' ≤ 10', USE 3:1 SLOPES
   FOR FILL OR CUT SLOPE HEIGHTS ≥ 10', USE 2:1 SLOPES
2. SEE PLANS AND CROSS SECTIONS FOR MEDIAN TYPES AND LOCATIONS AND FOR CONCRETE CURB & GUTTER LOCATIONS OUTSIDE THE TYPICAL SECTION RANGE
3. EXISTING PAVEMENT TO BE REMOVED IN PROPOSED GRASS MEDIAN AREAS. SAWCUT AND REMOVE EXIST ASPHALT PAVEMENT TO PROVIDE 1' MINIMUM WIDTH OF FULL DEPTH PAVEMENT. SEE "MILLING AND SAWCUT DIMENSION DETAIL"
4. USE 4' BERM WIDTH FROM –L– STA 13+49.62 TO 14+85.96 RT AND FROM –L– STA 18+50.33 TO 19+11.70 RT.
5. PAVEMENT EDGE SLOPES 1:1 UNLESS OTHERWISE INDICATED

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5617	2C-1



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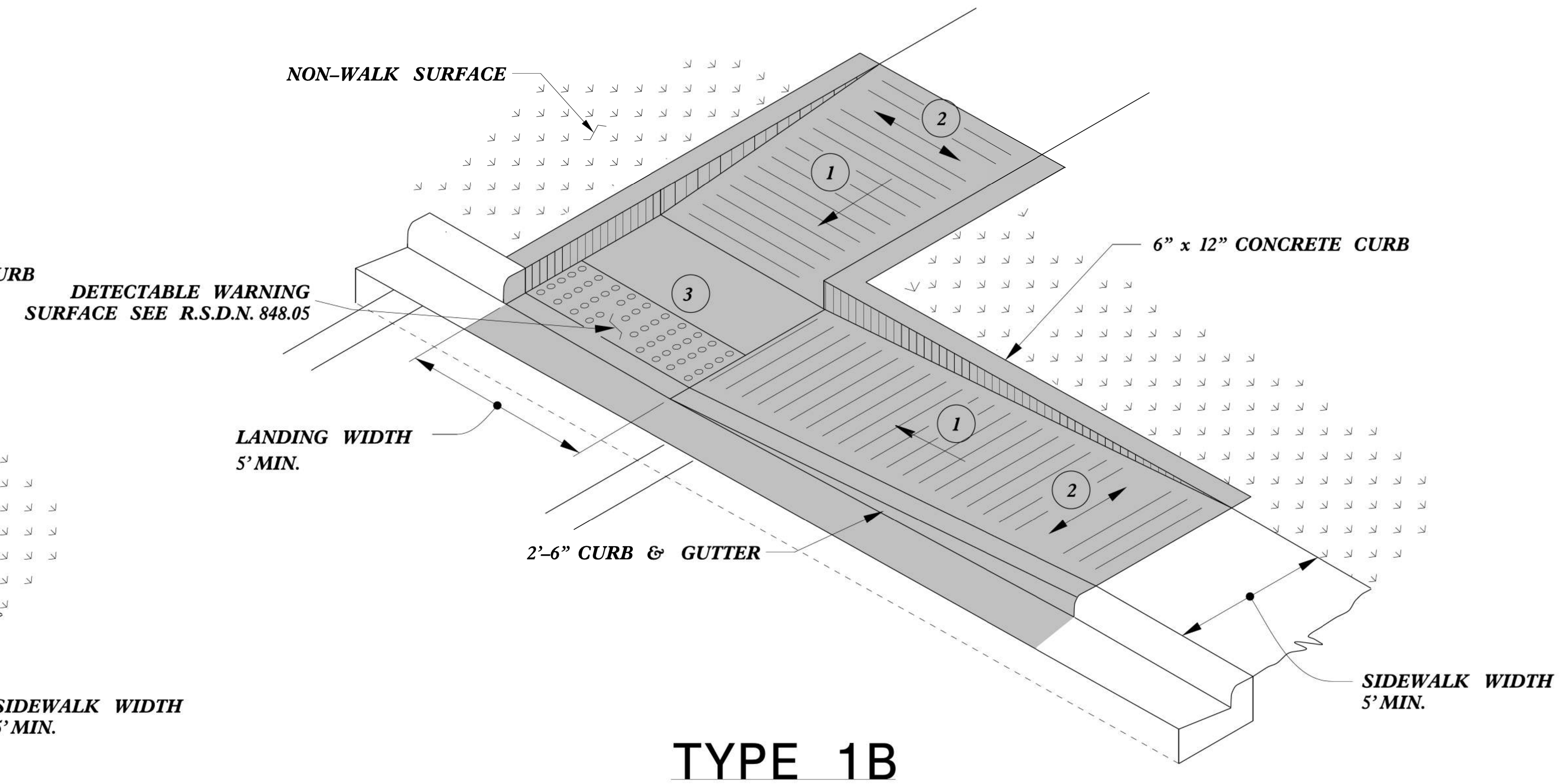

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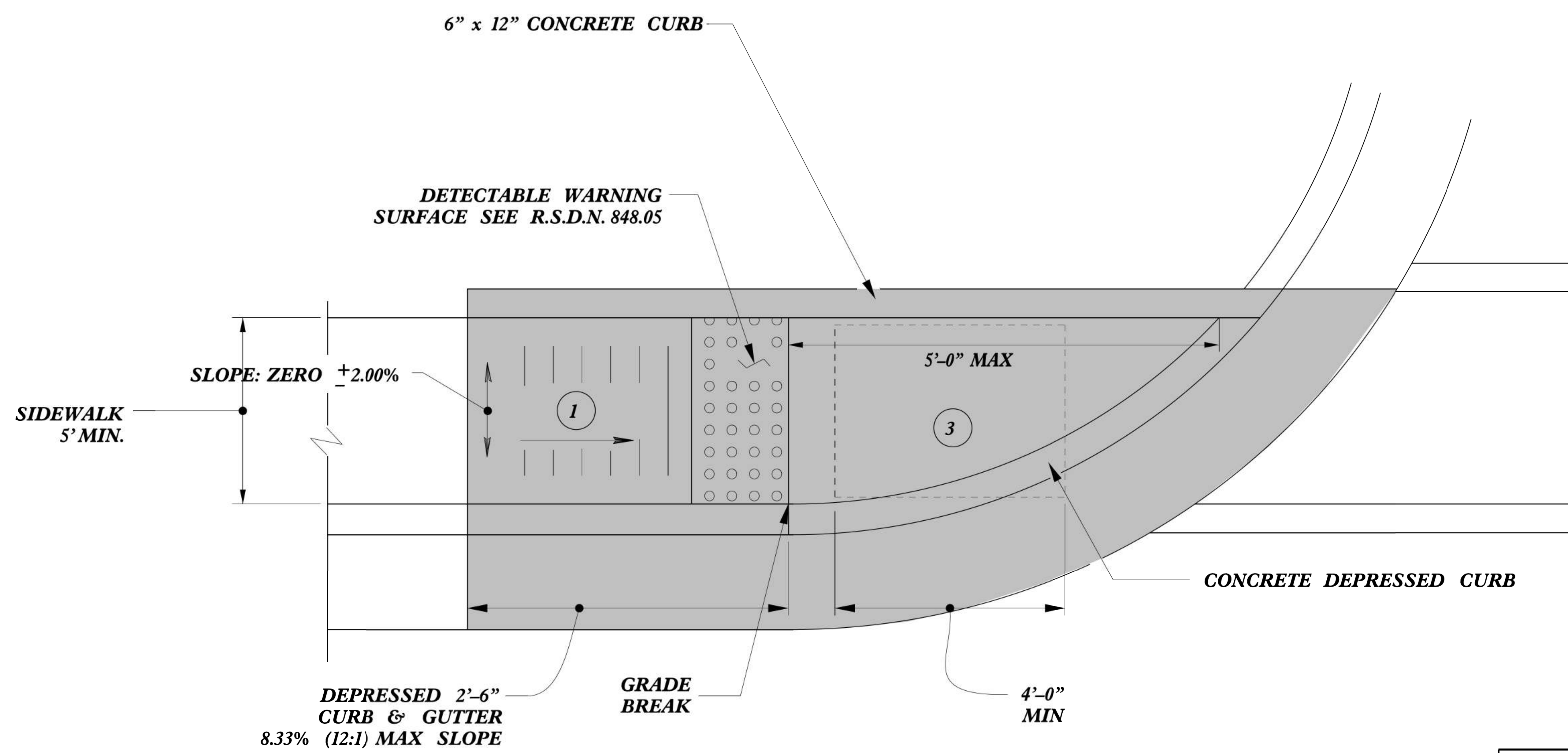


TYPE 1

PAY LIMITS FOR 1 CURB RAMP

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'–0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CURB RAMPS

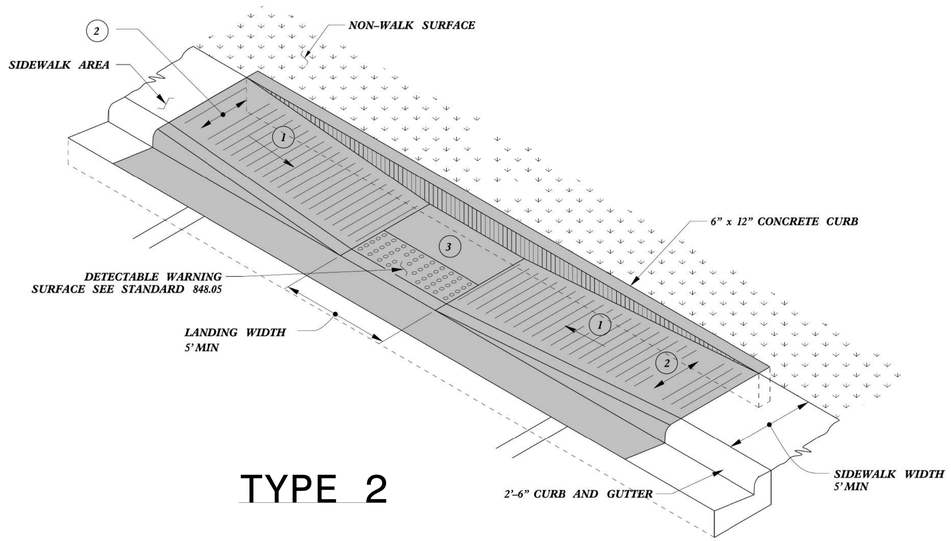
Directional Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

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

5/14/99

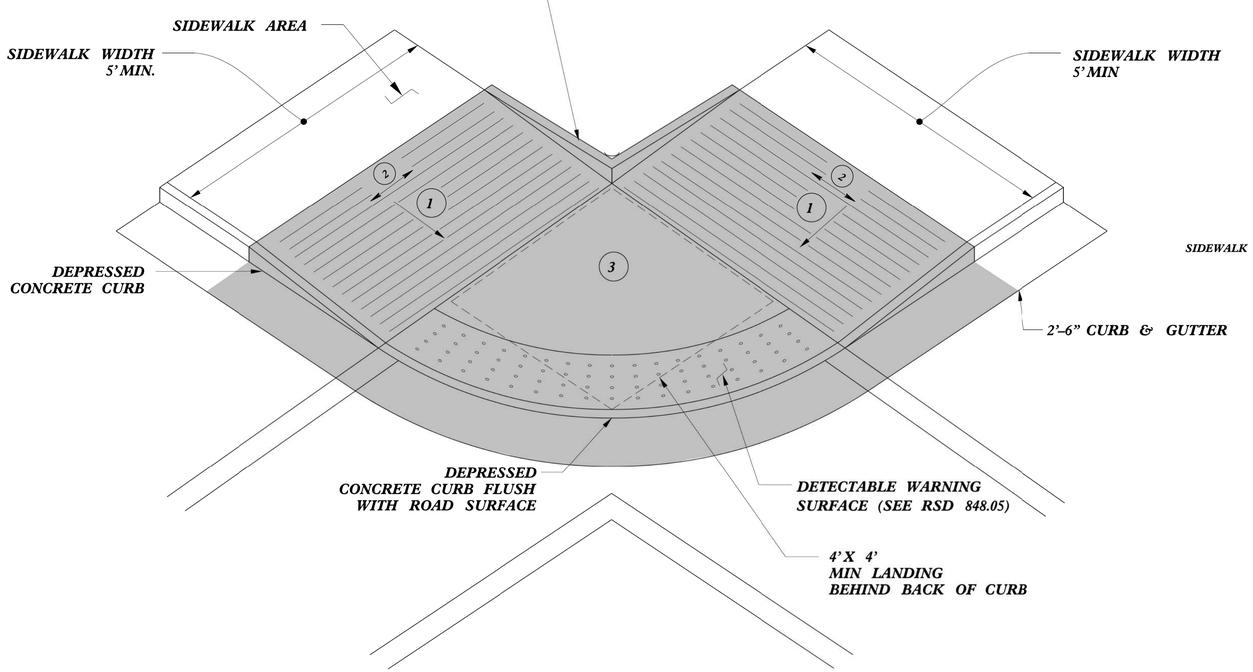
PROJECT REFERENCE NO.	SHEET NO.
U-5617	2C-2



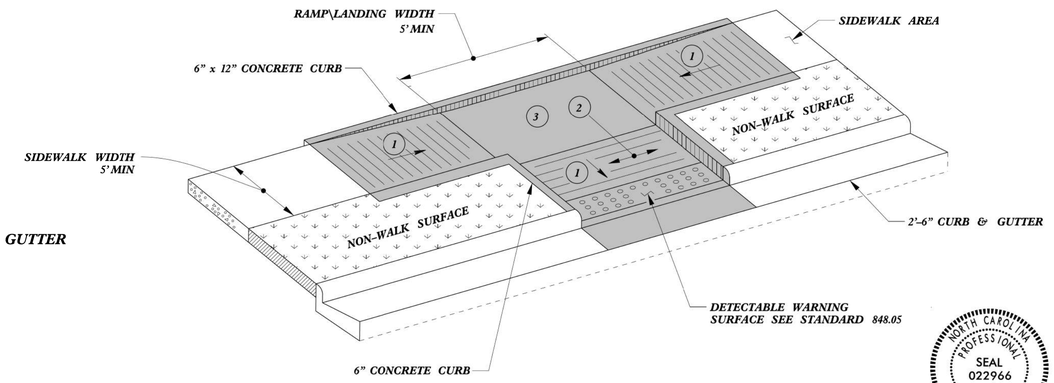
TYPE 2

PAY LIMITS FOR 1 CURB RAMP

1. *8.33% (12:1) MAX RAMP SLOPE*
2. *CROSS SLOPE: 2.00%*
3. *CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*



TYPE 2A



TYPE 3

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CURB RAMPS

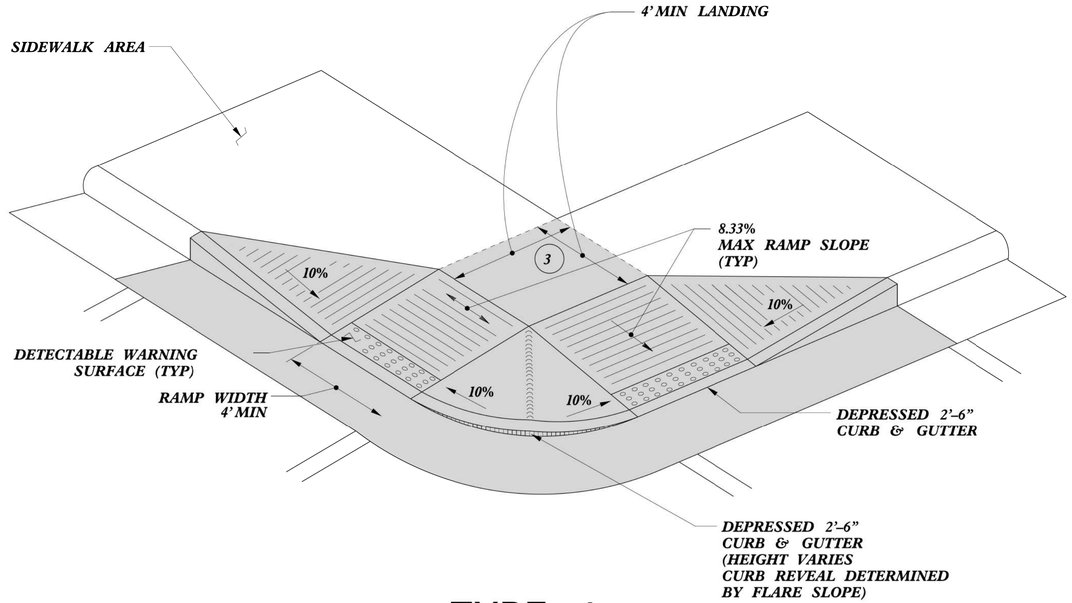
Parallel Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

$$$$USERNAME$$$$ $$$$SYSTIME$$$$ $$$$DGNS$$$$

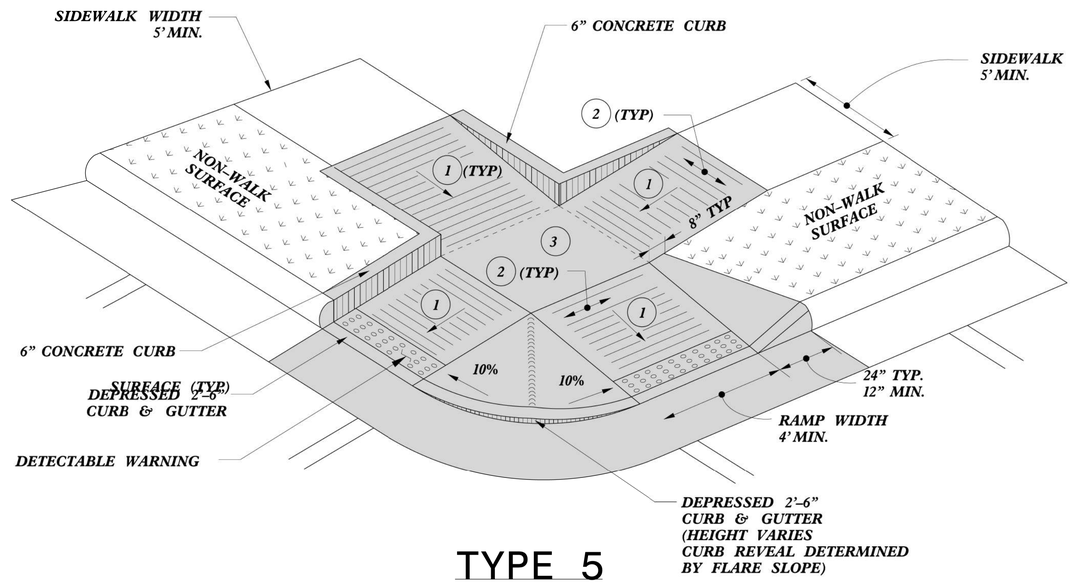
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5617	2C-3

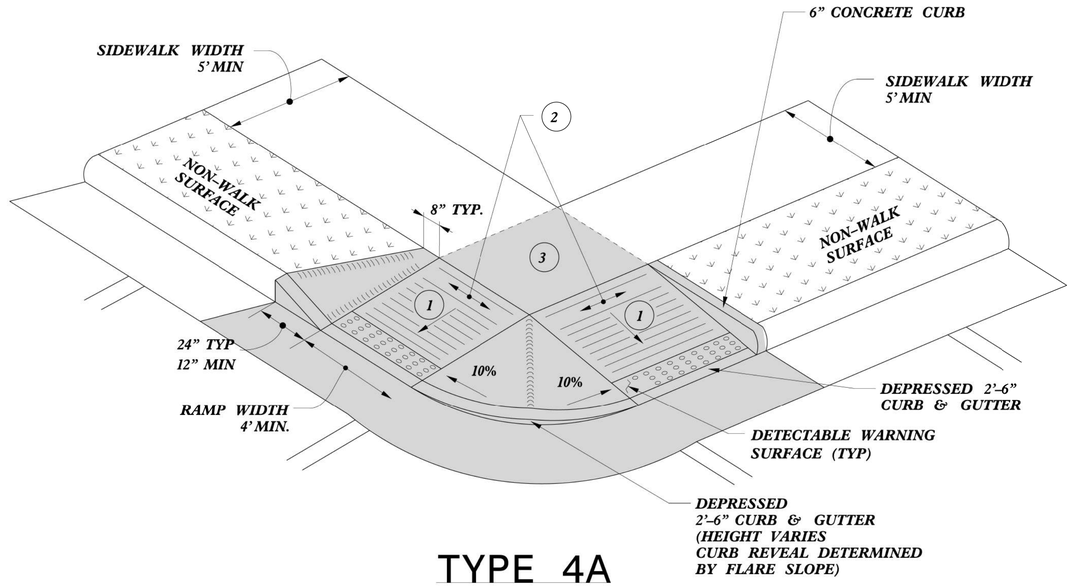


TYPE 4

PAY LIMITS FOR 2 CURB RAMPS



TYPE 5



TYPE 4A

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

(1) 8.33% (12:1) MAX RAMP SLOPE

(2) CROSS SLOPE: 2.00%

(3) CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CURB RAMPS

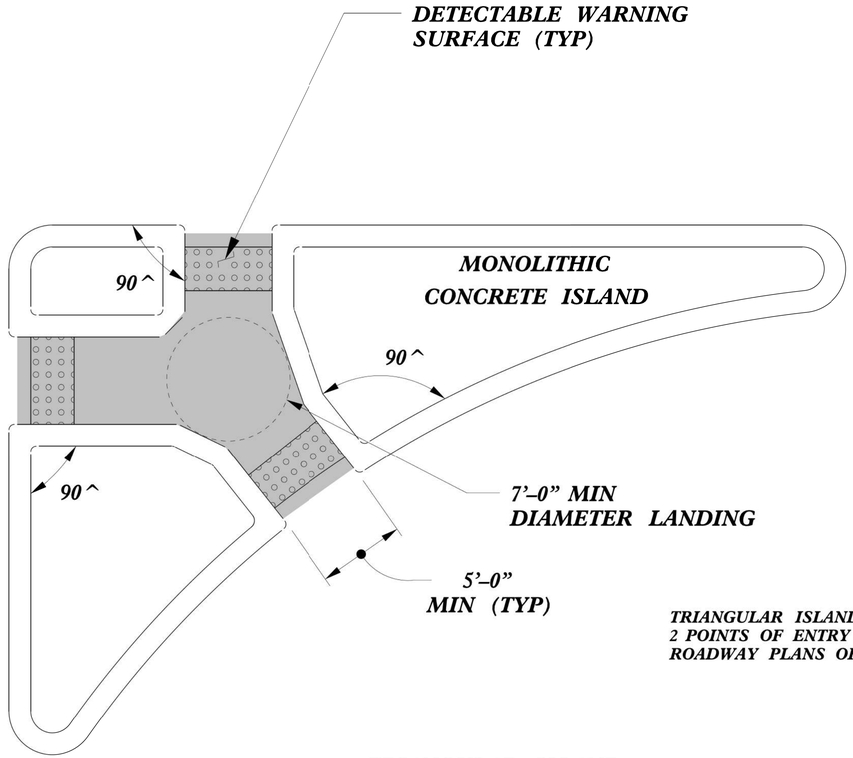
Shared Landing

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

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

5/14/99

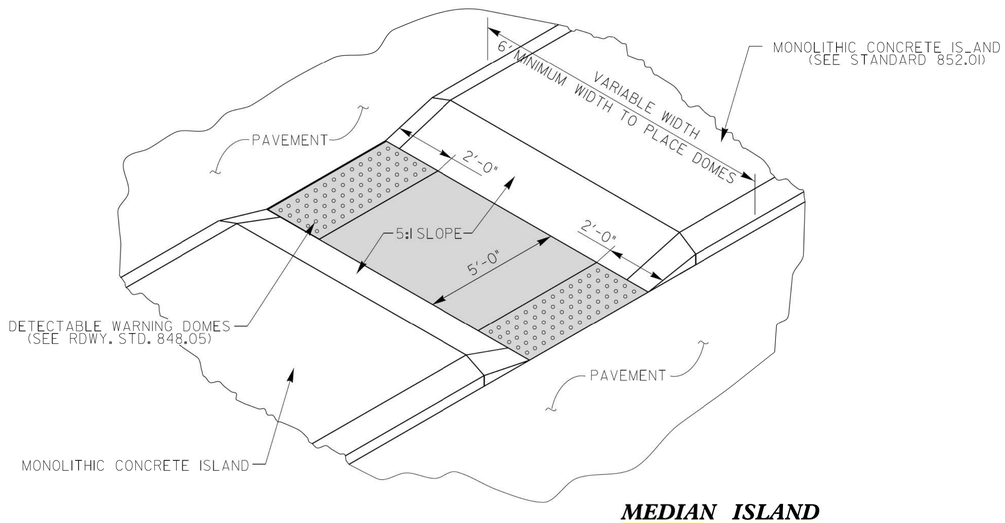
PROJECT REFERENCE NO.	SHEET NO.
U-5617	2C-4



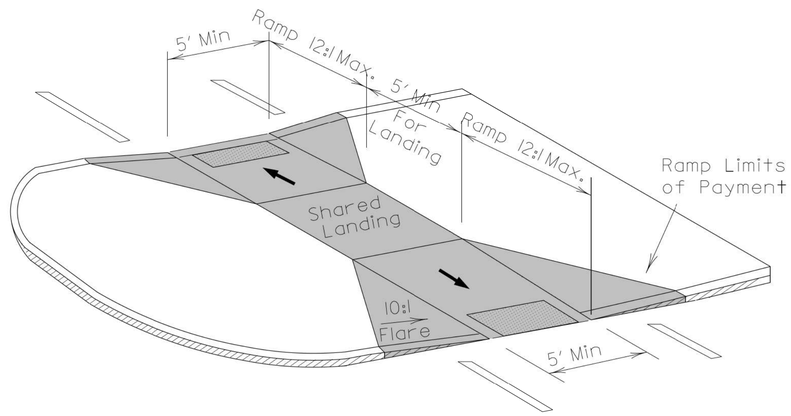
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

TRIANGULAR ISLAND WITH CUT THROUGH



MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

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CURB RAMPS

Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

$$$$SYSTEM$$$$
$$$$USERNAME$$$$
$$$$DGNFILE$$$$
$$$$PLOTSCALE$$$$
$$$$PLOTDATE$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-5617	2C-5

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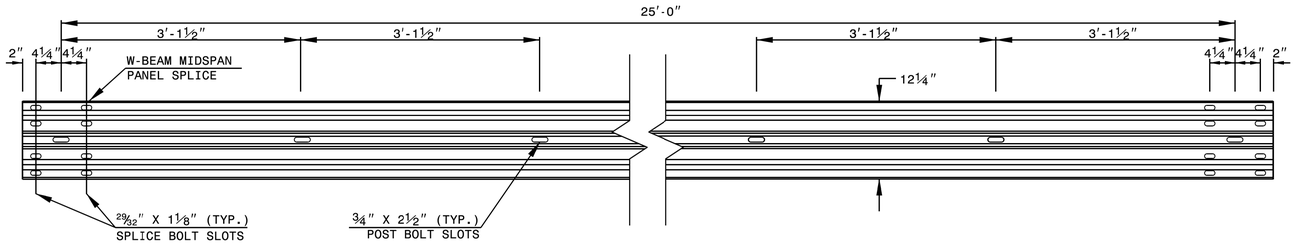
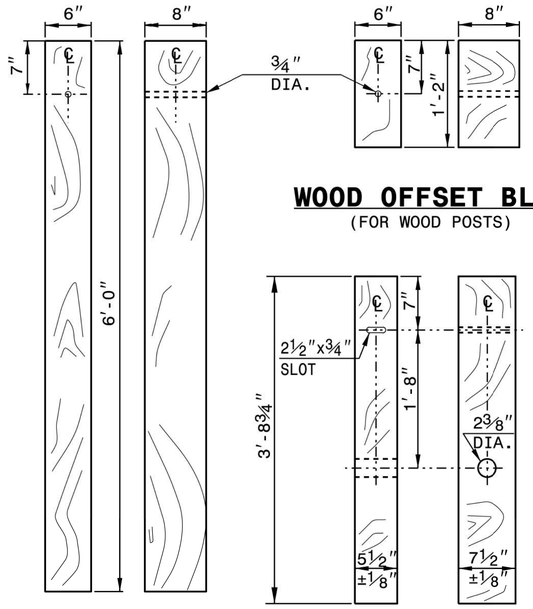
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



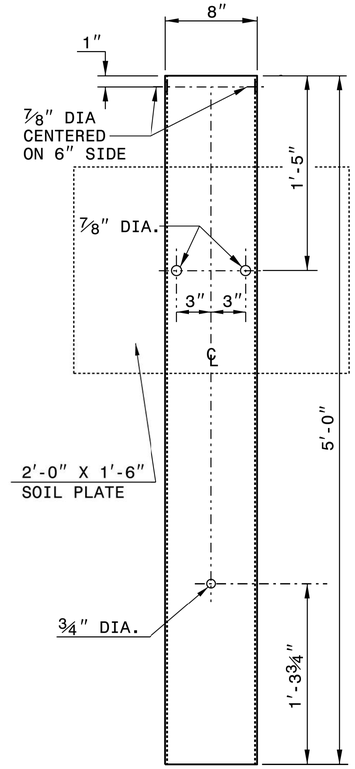
STANDARD W-BEAM GUARDRAIL



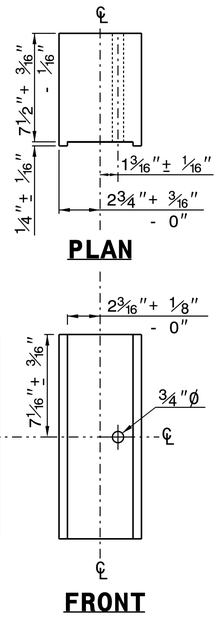
STANDARD LINE POST

WOOD OFFSET BLOCK
(FOR WOOD POSTS)

SHORT WOOD BREAKAWAY POST



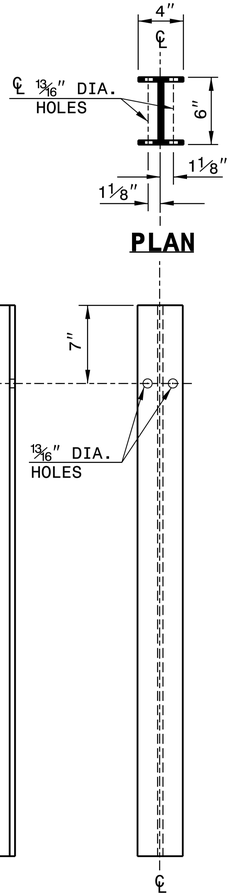
STEEL TUBE
TS 6"x8"x0.1875"



PLAN

SIDE **FRONT**

ROUTED OFFSET BLOCK



PLAN

SIDE **FRONT**

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

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.: _____

5/14/99

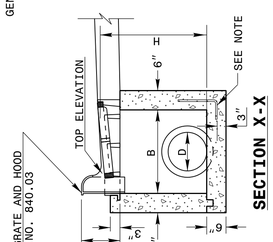
PROJECT REFERENCE NO.	SHEET NO.
U-5617	2C-6

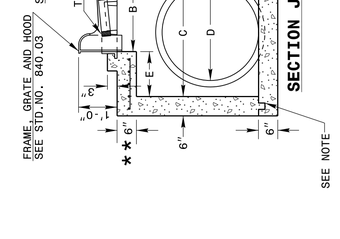
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

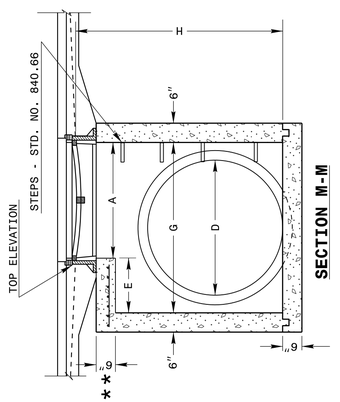
ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

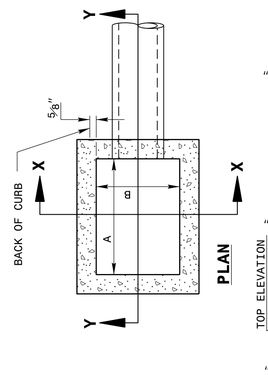
SHEET 1 OF 2 **840D02**

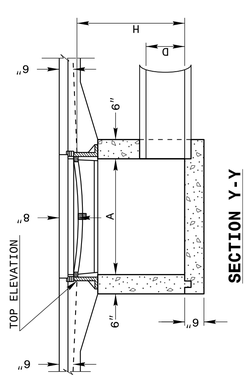
GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.

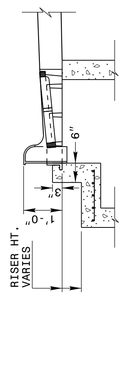










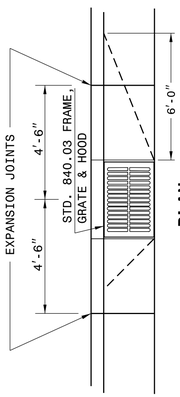


DETAIL SHOWING METHOD OF RISER CONSTRUCTION

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

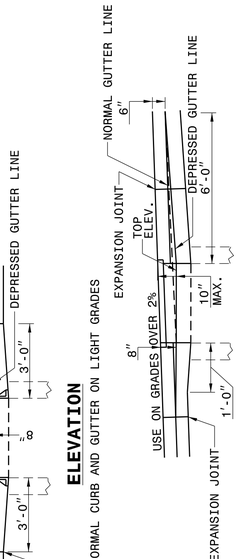
ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2 **840D02**

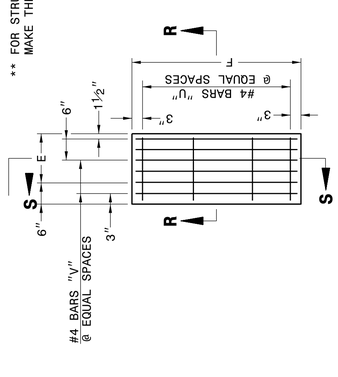


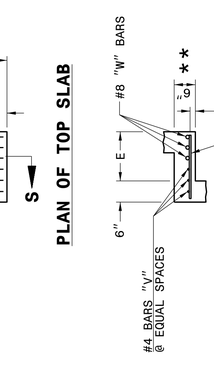
PLAN
CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES

ELEVATION
NORMAL CURB AND GUTTER ON LIGHT GRADES



ELEVATION
NORMAL CURB AND GUTTER ON STEEP GRADES





NORMAL CURB AND GUTTER ON STEEP GRADES

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION		BARS-U		BARS-V			CU.YDS. CONC. IN BOX		DEDUCTIONS ONE PIPE	
PIPE	SPAN A	WIDTH B	WIDTH C	SPAN G	MIN. HEIGHT H	E	F	NO.	LENGTH	NO.	LENGTH	TOTAL LBS.	TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H C.M.	R.C.
D																
12"	3'-0"	2'-2"			2'-0"								0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			2'-3"								0.235	0.829	0.023	0.026
18"	3'-0"	2'-2"			2'-6"								0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-1"								0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"	2	4'-1"	39	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"	3	4'-7"	43	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"	4	5'-2"	47	0.200	0.543	1.738	0.180	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	4	5'-9"	51	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"	5	6'-4"	56	0.289	0.802	2.387	0.297	0.401
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"	5	7'-0"	61	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"	6	7'-8"	66	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"	6	8'-3"	72	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"	7	8'-10"	78	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"	7	9'-6"	84	0.544	1.760	4.062	0.713	1.010

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Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: s:Special Details/jhowerton/840d02.dgn

COMPUTED BY: THS DATE: 10/02/2019
CHECKED BY: JWM DATE: 01/27/2020

PROJECT REFERENCE NO.	SHEET NO.
U-5617	3B-1

Kimley»Horn
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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

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REVISIONS

U-5617 SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT EXCAVATION	EMBT + 25%	BORROW	WASTE
PHASE 1					
-L- STA 13+49.62 TO 28+82.00 (LT)	666	0	181	0	485
PHASE 2					
-L- STA 13+49.62 TO 28+82.00 (RT)	282	0	1096	814	0
PHASE 3					
-L- STA 21+00.00 TO 26+00.00 (MEDIAN)	70	0	71	1	0
TOTAL	1018	0	1348	815	485
EARTH WASTE TO REPLACE BORROW				-485	-485
PROJECT TOTALS	1018	0	1348	330	0
EST.5% FOR REPLACING TOPSOIL ON BORROW PITS				17	
GRAND TOTALS	1018	0	1348	347	0
SAY	1100	0		400	

U-5617 GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE TL-3
NG = NON-GATING IMPACT ATTENUATOR TYPE TL-3

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350			TERMINAL SECTIONS	REMOVE AND RESET EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-2	TYPE III	CAT-1	EA	G	NG				
-L-	14+85.70	15+10.70	LT	25.00'			15+45.64		7'	10'	25'		1'		1							12.50'		RETAIN EXIST STRUCTURE ANCHOR UNIT
-L-	18+13.72	18+38.72	LT	25.00'				17+85.17	7'	10'		25'		1'	1							12.50'		RETAIN EXIST STRUCTURE ANCHOR UNIT
			SUBTOTAL	50.00'											2									
	LESS ANCHOR DEDUCTIONS																							
	GREU TL-2	2 @ 25'	=	50.00'																				
			TOTAL	0											2							25.00'		
			SAY	0																				

ADDITIONAL GUARDRAIL POSTS = 4 EA

1/27/2020

DL84067

COMPUTED BY: ANN DATE: 02/14/2019

CHECKED BY: DWT DATE:

PROJECT NO.	SHEET NO.
U-5617	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
L 13+65	42	RT	0402		920.7			
			0402	0401		917.7	917.0	
L 13+89	32	LT	0404		923.1			
			0404	0403		920.8	912.0	
L 19+50	33	LT	0408		924.2			
			0408	0407		920.7	920.3	
L 18+31	14	LT	0409		923.4			
			0409	0408		921.2	920.7	
L 19+42	36	RT	0411		923.5			
			0411	0410		920.9	920.5	
L 18+81	18	RT	0412		923.4			
			0412	0411		921.2	920.9	
L 20+61	62	RT	0414		925.8			
			0414	0413		921.3	920.0	
L 20+50	50	RT	0415		924.7			
			0415	0414		921.7	921.3	
L 20+30	73	LT	0418		925.0			
			0418	0417		922.0	921.9	
L 20+50	42	LT	0419		924.7			
			0419	0418		922.2	922.0	
			0420	0419		924.3	922.2	
L 21+31	23	RT	0501		926.6			
			0501	0414		923.9	923.0	
L 22+15	22	RT	0502		927.9			
			0502	0501		924.9	923.9	
L 23+50	22	RT	0503		930.5			
			0503	0502		927.5	924.9	
L 25+00	22	RT	0505		932.5			
			0505	0504		929.5	928.8	
L 28+21	34	RT	0507		933.9			
			0507	0506		932.4	931.2	
L 28+21	24	RT	0508		937.5			
L 28+21	16	RT	0509		937.9			
L 21+25	22	LT	0510		926.5			
			0510	0419		923.5	922.5	0.4
L 23+00	21	LT	0511		929.5			
			0511	0510		925.3	923.5	
L 25+00	22	LT	0512		932.5			
			0512	0511		929.5	295.3	
L 26+50	24	LT	0513		934.6			
			0513	0512		931.6	929.5	
L 22+77	16	LT						
L 23+99	16	LT						
L 24+84	14	LT						
L 26+07	16	LT						
L 27+31	23	LT						
L 20+63	52	RT						
L 21+10	27	RT						
L 22+04	17	RT						
L 23+02	15	RT						

LINE & STATION	FROM	TO	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 12 (.064)	C. S. PIPE 15 (.064)	C. S. PIPE 18 (.064)	C. S. PIPE 24 (.064)
L 13+65	0402																	
	0402	0401		44													
L 13+89	0404																	
	0404	0403												60		
L 19+50	0408																	
	0408	0407		12													
L 18+31	0409																	
	0409	0408																
L 19+42	0411																	
	0411	0410		20													
L 18+81	0412																	
	0412	0411																
L 20+61	0414																	
	0414	0413																
L 20+50	0415																	
	0415	0414																
L 20+30	0418																	
	0418	0417																
L 20+50	0419																	
	0419	0418																
	0420	0419														16	
L 21+31	0501																	
	0501	0414																
L 22+15	0502																	
	0502	0501																
L 23+50	0503																	
	0503	0502																
L 25+00	0505																	
	0505	0504		24													
L 28+21	0507																	
	0507	0506																
L 28+21	0508																	
L 28+21	0509																	
L 21+25	0510																	
	0510	0419																
L 23+00	0511																	
	0511	0510																
L 25+00	0512																	
	0512	0511																
L 26+50	0513																	
	0513	0512																
L 22+77																	
L 23+99																	
L 24+84																	
L 26+07																	
L 27+31																	
L 20+63																	
L 21+10																	
L 22+04																	
L 23+02																	
SHEET TOTALS				100											60	16	
PROJECT TOTALS				100											60	16	

LINE & STATION	FROM	TO	R. C. PIPE CLASS III 12	III 15	III 18	III 24	III 30	III 36	III 42	III 48	R. C. PIPE CLASS IV 12	IV 15	IV 18	IV 24	IV 30	IV 36	IV 42	IV 48	R. C. PIPE CLASS V 12	V 15	V 18	V 24	V 30	V 36	V 42	V 48
L 13+65	0402																								
	0402	0401																								
L 13+89	0404																								
	0404	0403																								
L 19+50	0408																								
	0408	0407																								
L 18+31	0409																								
	0409	0408										120													
L 19+42	0411																								
	0411	0410																								
L 18+81	0412																								
	0412	0411										64													
L 20+61	0414																								
	0414	0413										40													
L 20+50	0415																								
	0415	0414										16													
L 20+30	0418																								
	0418	0417											48												
L 20+50	0419																								
	0419	0418											36												
	0420	0419																								
L 21+31	0501																								
	0501	0414										80													
L 22+15	0502																								
	0502	0501										84													
L 23+50	0503																								
	0503	0502										136													
L 25+00	0505																								
	0505	0504																								
L 28+21	0507																								
	0507	0506			16																				
L 28+21	0508																								
L 28+21	0509																								
L 21+25	0510																								
	0510	0419										76													
L 23+00	0511																								
	0511	0510										176													
L 25+00	0512																								
	0512	0511										200													
L 26+50	0513																								
	0513	0512										148													
L 22+77																										
L 23+99																										
L 24+84																										
L 26+07																										
L 27+31																										
L 20+63																										
L 21+10																										
L 22+04																										
L 23+02																										
SHEET TOTALS					16							1140	84												
PROJECT TOTALS					16							1140	84												

LINE & STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
L 13+65	0402				1			1			1	
	0402	0401											
L 13+89	0404				1				1			
	0404	0403											
L 19+50	0408				1			1		1		
	0408	0407											
L 18+31	0409				1				1			
	0409	0408											
L 19+42	0411				1				1			
	0411	0410											
L 18+81	0412				1				1			
	0412	0411											
L 20+61	0414				1							
	0414	0413	0.700										
L 20+50	0415				1			1			1	
	0415	0414											
L 20+30	0418				1							
	0418	0417											
L 20+50	0419				1					1		
	0419	0418											
	0420	0419											
L 21+31	0501				1						1	
	0501	0414											
L 22+15	0502				1			1			1	
	0502	0501											
L 23+50	0503				1			1			1	
	0503	0502											
L 25+00	0505				1			1			1	
	0505	0504											
L 28+21	0507												
	0507	0506											
L 28+21	0508				1			1			1	
L 28+21	0509												
L 21+25	0510				1			1		1		
	0510	0419											
L 23+00	0511				1			1		1		
	0511	0510											
L 25+00	0512				1			1		1		
	0512	0511											
L 26+50	0513				1			1		1		
	0513	0512											
L 22+77													
L 23+99													
L 24+84													
L 26+07													
L 27+31													
L 20+63													
L 21+10													
L 22+04													
L 23+02													
SHEET TOTALS			0.700			19			11	4	6	7	
PROJECT TOTALS			0.700			19			11	4	6	7	

LINE & STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	CB. SPECIAL DETAIL STD. NO. 840D02	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30
L 13+65	0402															
	0402	0401														
L 13+89	0404				1												
	0404	0403														
L 19+50	0408															
	0408	0407														
L 18+31	0409				1												
	0409	0408														
L 19+42	0411				1												
	0411	0410														
L 18+81	0412				1												
	0412	0411														
L 20+61	0414		1	1														
	0414	0413														
L 20+50	0415															
	0415	0414														
L 20+30	0418					1					1						
	0418	0417														
L 20+50	0419				1												
	0419	0418														
	0420	0419														
L 21+31	0501				1												
	0501	0414														
L 22+15	0502															
	0502	0501														
L 23+50	0503															
	0503	0502														
L 25+00	0505															
	0505	0504														
L 28+21	0507															
	0507	0506														
L 28+21	0508															
L 28+21	0509															
L 21+25	0510															
	0510	0419														
L 23+00	0511															
	0511	0510														
L 25+00	0512															
	0512	0511														
L 26+50	0513															
	0513	0512														
L 22+77																	
L 23+99																	
L 24+84																	
L 26+07																	
L 27+31																	
L 20+63																	
L 21+10																	
L 22+04																	
L 23+02																	
SHEET TOTALS			1	1	6	1					1						
PROJECT TOTALS			1	1	6	1					1						

LINE & STATION	FROM	TO	J.B. STD. 840.31 OR STD. 840.32	STEEL FRAME WITH TWO GRATES STD. 840.37	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 13+65	0402																
	0402	0401																
L 13+89	0404																	NCDOT Special Min Depth CB Std. No. 840D02
	0404	0403											2					
L 19+50	0408																
	0408	0407																
L 18+31	0409																	NCDOT Special Min Depth CB Std. No. 840D02
	0409	0408																
L 19+42	0411																	NCDOT Special Min Depth CB Std. No. 840D02
	0411	0410																
L 18+81	0412																	NCDOT Special Min Depth CB Std. No. 840D02
	0412	0411																
L 20+61	0414																
	0414	0413																
L 20+50	0415																
	0415	0414																
L 20+30	0418																
	0418	0417																
L 20+50	0419																	NCDOT Special Min Depth CB Std. No. 840D02
	0419	0418																
	0420	0419												2				
L 21+31	0501																	NCDOT Special Min Depth CB Std. No. 840D02
	0501	0414																
L 22+15	0502																
	0502	0501																
L 23+50	0503																
	0503	0502																
L 25+00	0505																
	0505	0504																
L 28+21	0507															0.4465		
	0507	0506																
L 28+21	0508																
L 28+21	0509				1	1											
L 21+25	0510																
	0510	0419																
L 23+00	0511																
	0511	0510																
L 25+00	0512																
	0512	0511																
L 26+50	0513																
	0513	0512																
L 22+77																	21	12" RCP
L 23+99																	25	12" RCP
L 24+84																	18	12" RCP
L 26+07																	76	12" RCP
L 27+31																	22	12" RCP
L 20+63																	49	15" RCP W/ HW
L 21+10																	60	15" RCP
L 22+04																	126	15" RCP
L 23+02																	70	15" RCP
SHEET TOTALS						1	1						2	2		0.4465	467	
PROJECT TOTALS						1	1						2	2		0.4465	467	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

PROJ. REFERENCE NO.	SHEET NO.
U-5617	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME	DEED BOOK
1	4, 5	STAHURA CONVEYOR PRODUCTS. INC	DB 1952 PG 2924
2	4, 5	CHESTER GRAY WHITE	DB 1568 PG 643
3	5	RICHARD P. STAHURA, JR. & HOLLY E. STAHURA	DB 1814 PG 3654
4	5	GARY T. YORK	DB 2003 PG 1967
5	5	KENT CORPORATION	DB 1535 PG 1023, DB 3208 PG 1477
6	5	JM ELECTRIC, LLC	DB 3327 PG 3832
7	5	TERRI MOSER	DB 1958 PG 1724
8	5, 6	KENT CORPORATION	DB 1628 PG 3860
9	5, 6	JM ELECTRIC, LLC	DB 2151 PG 2503
10	5, 6	ROBERT E. MOSER & LINDA DULL MOSER	DB 2946 PG 1959

PARCEL No.	SHEET No.	PROPERTY OWNER NAME	DEED BOOK

PROJECT REFERENCE NO.	SHEET NO.
U-5617	4

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

RW SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 024436, JEFFREY W. MOORE, 1/28/2020
HYDRAULICS ENGINEER — SEAL 045813, DERRICK W. TURNER, 1/29/2020

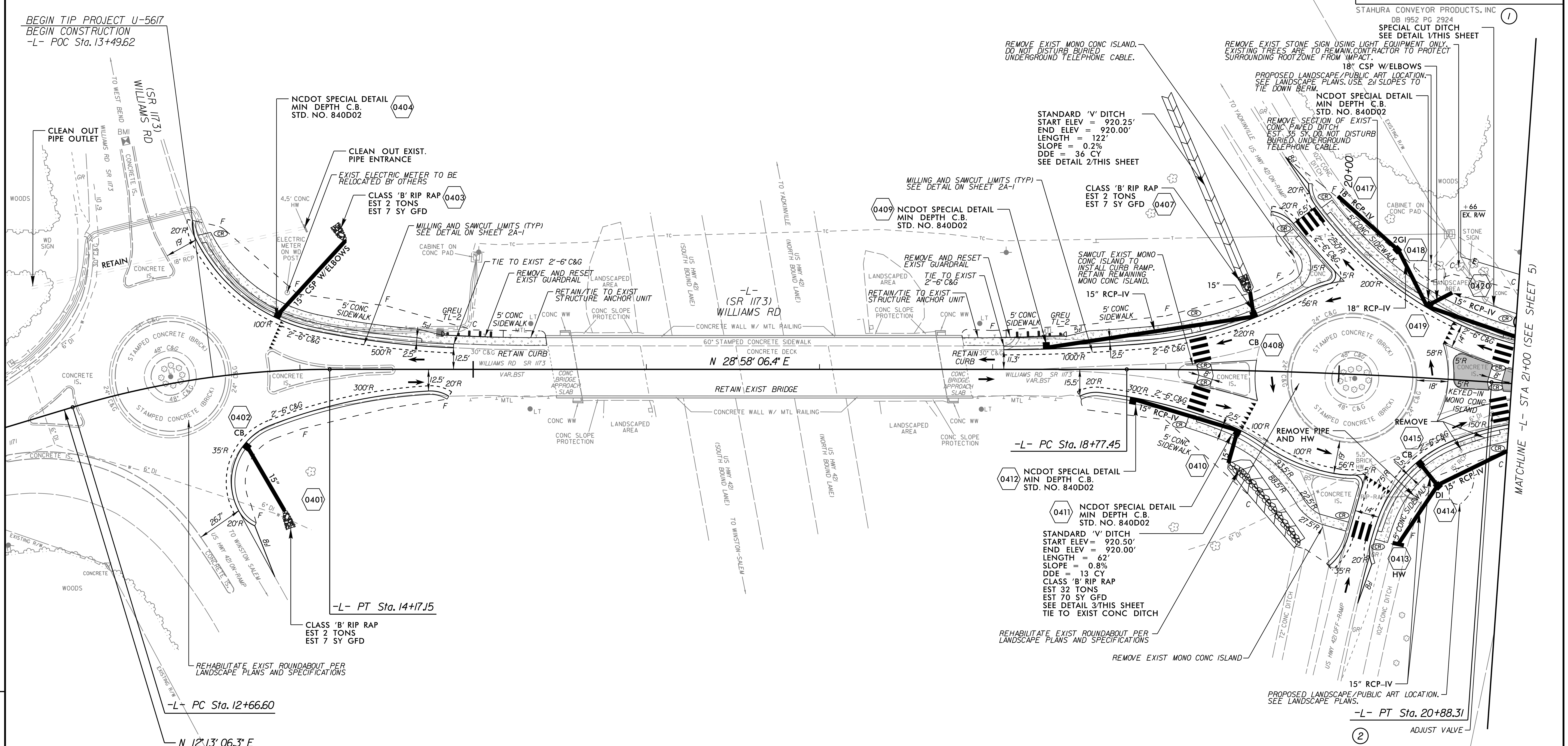
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

-L-

PI Sta 13+42.41	PI Sta 19+82.92
Δ = 16° 45' 00.1" (RT)	Δ = 4° 01' 37.6" (RT)
D = 11° 07' 31.4"	D = 1° 54' 35.5"
L = 150.56'	L = 210.86'
T = 75.82'	T = 105.47'
R = 515.00'	R = 3,000.00'

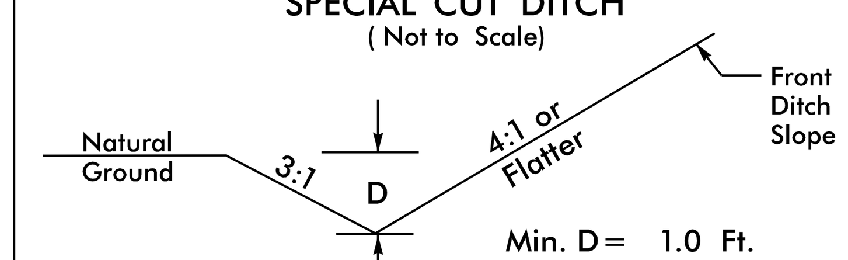


NC GRID NAD 83/NA 2011
15+00
BEGIN TIP PROJECT U-5617
BEGIN CONSTRUCTION
-L- POC Sta. 13+49.62
CLEAN OUT PIPE OUTLET
(SR 1173) WILLIAMS RD
NCDOT SPECIAL DETAIL MIN DEPTH C.B. STD. NO. 840D02 (0404)
CLEAN OUT EXIST. PIPE ENTRANCE
EXIST ELECTRIC METER TO BE RELOCATED BY OTHERS
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GFD (0403)
MILLING AND SAWCUT LIMITS (TYP) SEE DETAIL ON SHEET 2A-1
TIE TO EXIST 2'-6" C&G
REMOVE AND RESET EXIST GUARDRAIL
RETAIN/TIE TO EXIST STRUCTURE ANCHOR UNIT
15" CSP W/ELBOWS
RETAIN CURB
-L- (SR 1173) WILLIAMS RD
N 28° 58' 06.4" E
RETAIN EXIST BRIDGE
60" STAMPED CONCRETE SIDEWALK
CONCRETE WALL W/ MTL RAILING
-L- PT Sta. 14+17.15
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GFD (0401)
(0402) CB
REHABILITATE EXIST ROUNDABOUT PER LANDSCAPE PLANS AND SPECIFICATIONS
-L- PC Sta. 12+66.60
N 12° 13' 06.3" E
STAHURA CONVEYOR PRODUCTS, INC DB 1952 PG 2924 (1)
SPECIAL CUT DITCH SEE DETAIL 1/THIS SHEET
REMOVE EXIST MONO CONC ISLAND. DO NOT DISTURB BURIED UNDERGROUND TELEPHONE CABLE.
REMOVE EXIST STONE SIGN USING LIGHT EQUIPMENT ONLY. EXISTING TREES ARE TO REMAIN. CONTRACTOR TO PROTECT SURROUNDING ROOTZONE FROM IMPACT.
18" CSP W/ELBOWS
PROPOSED LANDSCAPE/PUBLIC ART LOCATION. SEE LANDSCAPE PLANS. USE 2:1 SLOPES TO TIE DOWN BERM.
NCDOT SPECIAL DETAIL MIN DEPTH C.B. STD. NO. 840D02
REMOVE SECTION OF EXIST CONC PAVED DITCH EST 35 SY. DO NOT DISTURB BURIED UNDERGROUND TELEPHONE CABLE.
STANDARD 'V' DITCH START ELEV = 920.25' END ELEV = 920.00' LENGTH = 122' SLOPE = 0.2% DDE = 36 CY SEE DETAIL 2/THIS SHEET
MILLING AND SAWCUT LIMITS (TYP) SEE DETAIL ON SHEET 2A-1
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GFD (0407)
(0409) NCDOT SPECIAL DETAIL MIN DEPTH C.B. STD. NO. 840D02
REMOVE AND RESET EXIST GUARDRAIL
TIE TO EXIST 2'-6" C&G
RETAIN/TIE TO EXIST STRUCTURE ANCHOR UNIT
SAWCUT EXIST MONO CONC ISLAND TO INSTALL CURB RAMP. RETAIN REMAINING MONO CONC ISLAND.
15" RCP-IV
18" RCP-IV
20+00
(0417) (0418) (0419) (0420) (0408) (0410) (0415) (0414) (0413)
REMOVE PIPE AND HW
REMOVE
-L- PC Sta. 18+77.45
(0412) NCDOT SPECIAL DETAIL MIN DEPTH C.B. STD. NO. 840D02
(0411) NCDOT SPECIAL DETAIL MIN DEPTH C.B. STD. NO. 840D02
STANDARD 'V' DITCH START ELEV= 920.50' END ELEV = 920.00' LENGTH = 62' SLOPE = 0.8% DDE = 13 CY CLASS 'B' RIP RAP EST 32 TONS EST 70 SY GFD SEE DETAIL 3/THIS SHEET TIE TO EXIST CONC DITCH
REHABILITATE EXIST ROUNDABOUT PER LANDSCAPE PLANS AND SPECIFICATIONS
REMOVE EXIST MONO CONC ISLAND
15" RCP-IV
PROPOSED LANDSCAPE/PUBLIC ART LOCATION. SEE LANDSCAPE PLANS.
-L- PT Sta. 20+88.31
ADJUST VALVE
MATCHLINE -L- STA 21+00 (SEE SHEET 5)

(2) CHESTER GRAY WHITE
DB 1568 PG 643

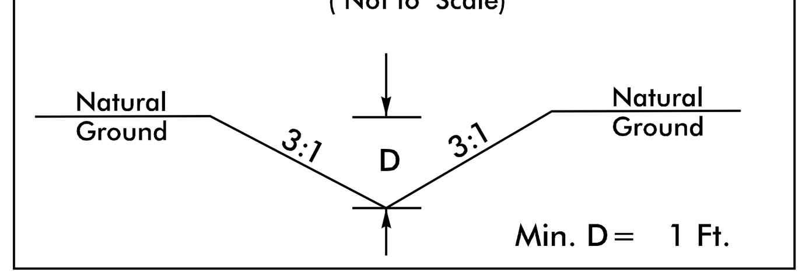
TAYLOR OIL COMPANY
DB 2383 PG 810

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



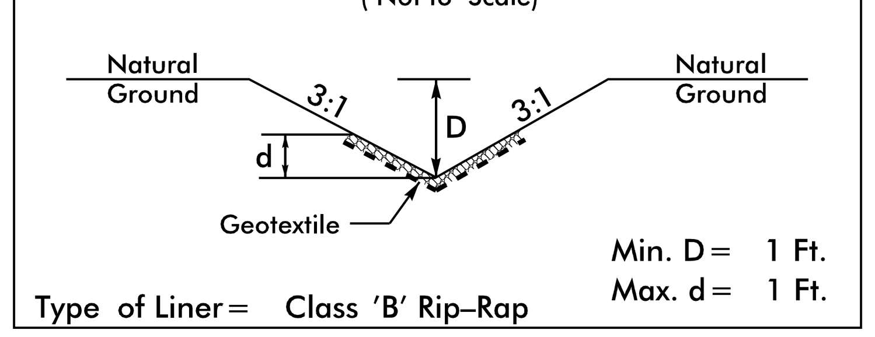
FROM STA. 20+62.42 TO STA. 21+00 -L- LT

DETAIL 2
STANDARD 'V' DITCH
(Not to Scale)



STA. 19+48 -L- LT

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



FROM STA. 19+40 TO STA. 19+80 -L- RT

FILL SCOUR HOLE AT END OF CONCRETE SPILLWAY AT 20+30 -L- 431' RT OUTFALL WITH CLASS I RIP RAP TO PROTECT AGAINST FUTURE SCOUR.
EST 7 TON
EST 5 SY GFD

FOR PROFILE SEE SHEET 7

1/27/2020

5/14/99

REVISIONS

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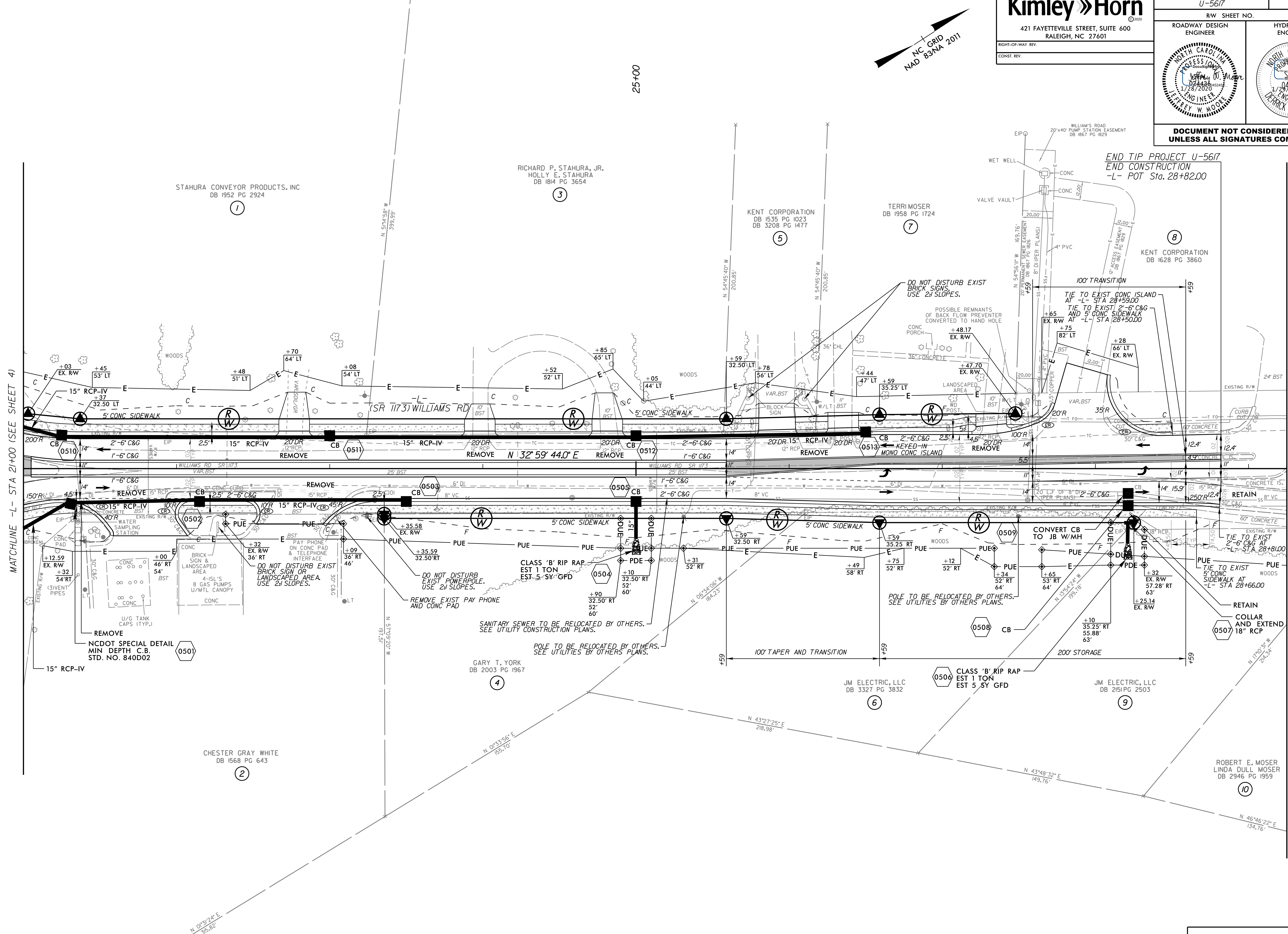
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 1/28/2020
NORTH CAROLINA PROFESSIONAL SEAL 045813 ENGINEER DERRICK W. TURNER 1/29/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NC GRID NAD 83/NA 2011
25+00
END TIP PROJECT U-5617
END CONSTRUCTION
-L- POT Sta. 28+82.00
STAHURA CONVEYOR PRODUCTS, INC DB 1952 PG 2924 (1)
CHESTER GRAY WHITE DB 1568 PG 643 (2)
RICHARD P. STAHURA, JR. HOLLY E. STAHURA DB 1814 PG 3654 (3)
GARY T. YORK DB 2003 PG 1967 (4)
KENT CORPORATION DB 1535 PG 1023 DB 3208 PG 1477 (5)
JM ELECTRIC, LLC DB 3327 PG 3832 (6)
TERRI MOSER DB 1958 PG 1724 (7)
KENT CORPORATION DB 1628 PG 3860 (8)
JM ELECTRIC, LLC DB 2151 PG 2503 (9)
ROBERT E. MOSER LINDA DULL MOSER DB 2946 PG 1959 (10)
MATCHLINE -L- STA 21+00 (SEE SHEET 4)
MATCHLINE -L- STA 29+25 (SEE SHEET 6)
(SR 1173) WILLIAMS RD
N 32°59' 44.0" E
DO NOT DISTURB EXIST BRICK SIGNS. USE 2:1 SLOPES.
TIE TO EXIST CONC ISLAND AT -L- STA 28+59.00
TIE TO EXIST 2'-6" C&G AND 5' CONC SIDEWALK AT -L- STA 28+50.00
100' TRANSITION
100' TAPER AND TRANSITION
200' STORAGE
NCDOT SPECIAL DETAIL MIN DEPTH C.B. STD. NO. 840D02
15" RCP-IV
REMOVE
DO NOT DISTURB EXIST BRICK SIGN OR LANDSCAPED AREA. USE 2:1 SLOPES.
DO NOT DISTURB EXIST POWERPOLE. USE 2:1 SLOPES.
REMOVE EXIST PAY PHONE AND CONC PAD
SANITARY SEWER TO BE RELOCATED BY OTHERS. SEE UTILITY CONSTRUCTION PLANS.
POLE TO BE RELOCATED BY OTHERS. SEE UTILITIES BY OTHERS PLANS.
CLASS 'B' RIP RAP EST 1 TON EST 5 SY GFD
CONVERT CB TO JB W/MH
TIE TO EXIST 2'-6" C&G AT -L- STA 28+81.00
TIE TO EXIST 5' CONC SIDEWALK AT -L- STA 28+66.00
RETAIN
COLLAR AND EXTEND 18" RCP
KEYED-IN MONO CONC ISLAND
WILLIAM'S ROAD 20'x40' PUMP STATION EASEMENT DB 1867 PG 1829
POSSIBLE REMNANTS OF BACK FLOW PREVENTER CONVERTED TO HAND HOLE
5' CONC SIDEWALK
WATER SAMPLING STATION
U/G TANK CAPS (TYP.)
PAY PHONE ON CONC PAD & TELEPHONE INTERFACE
BRICK SIGN & LANDSCAPED AREA
4-ISL'S 8 GAS PUMPS U/MTL CANOPY
0501 0502 0503 0504 0505 0506 0507 0508 0509 0510 0511 0512 0513

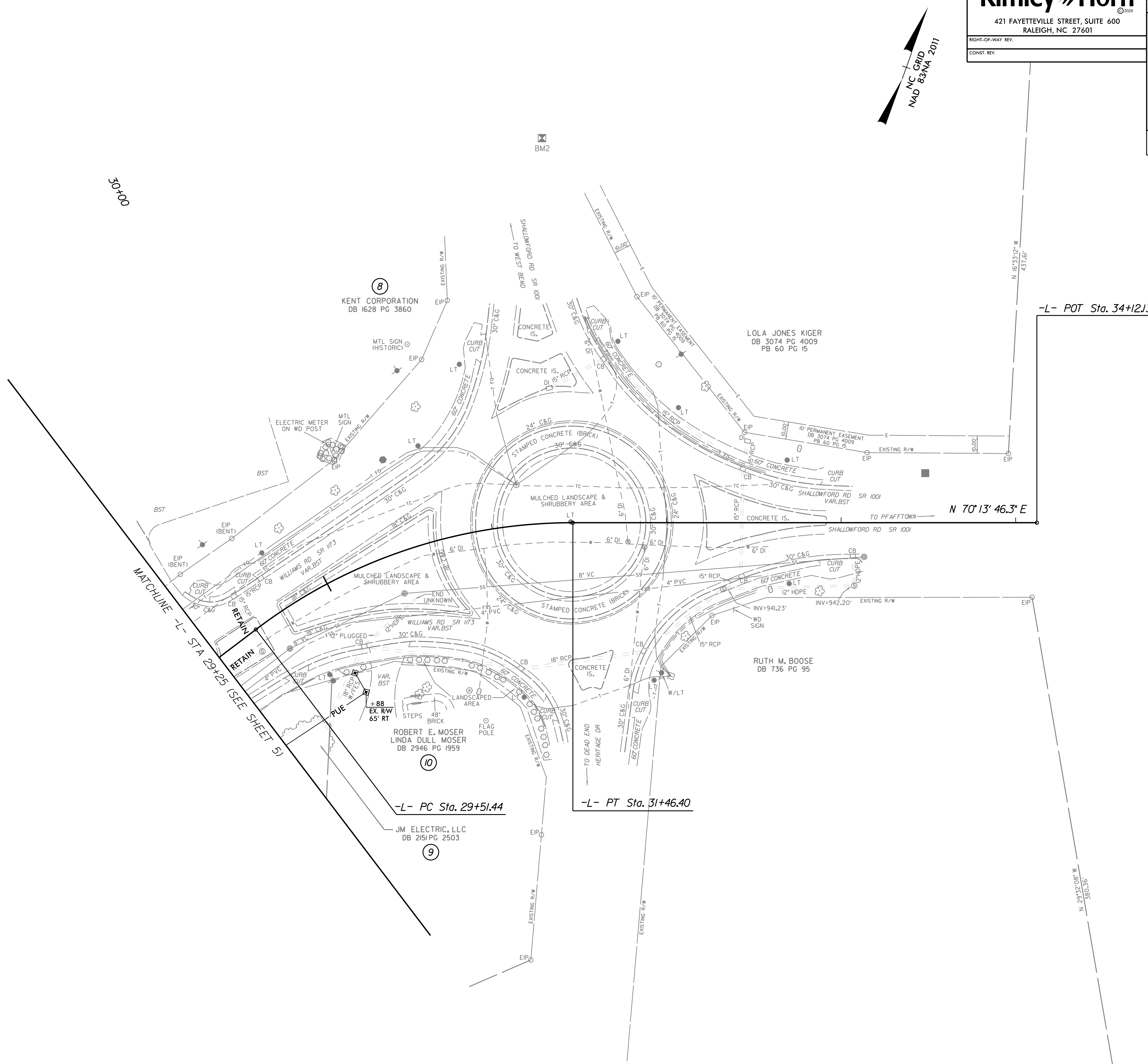
1/27/2020

FOR PROFILE SEE SHEET 7

5/14/99

REVISIONS

-L-
PI Sta 30+52.50
△ = 37° 14' 02.3" (RT)
D = 19° 05' 54.9"
L = 194.96'
T = 101.06'
R = 300.00'



Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 1/28/2020

NORTH CAROLINA PROFESSIONAL SEAL 045813 ENGINEER DERRICK W. TURNER 1/29/2020

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1/27/2020

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045613 ENGINEER JEFFREY W. MOORE
1/28/2020

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045613 ENGINEER PATRICK W. TURNER
1/29/2020

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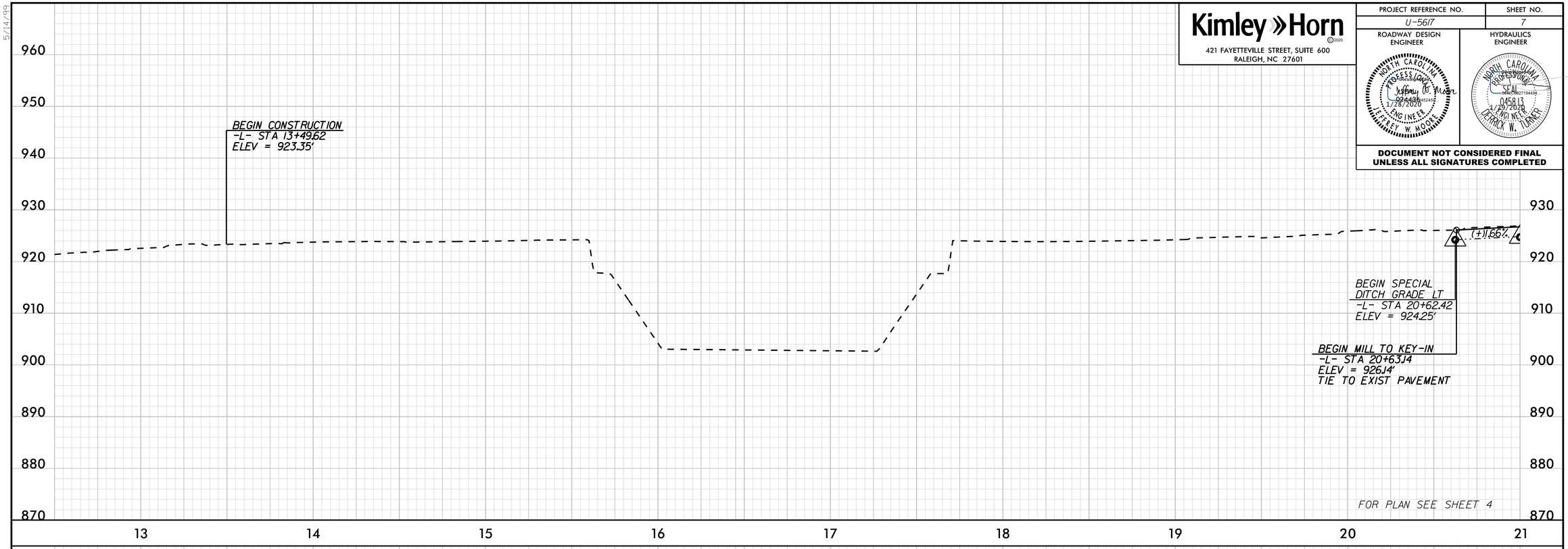

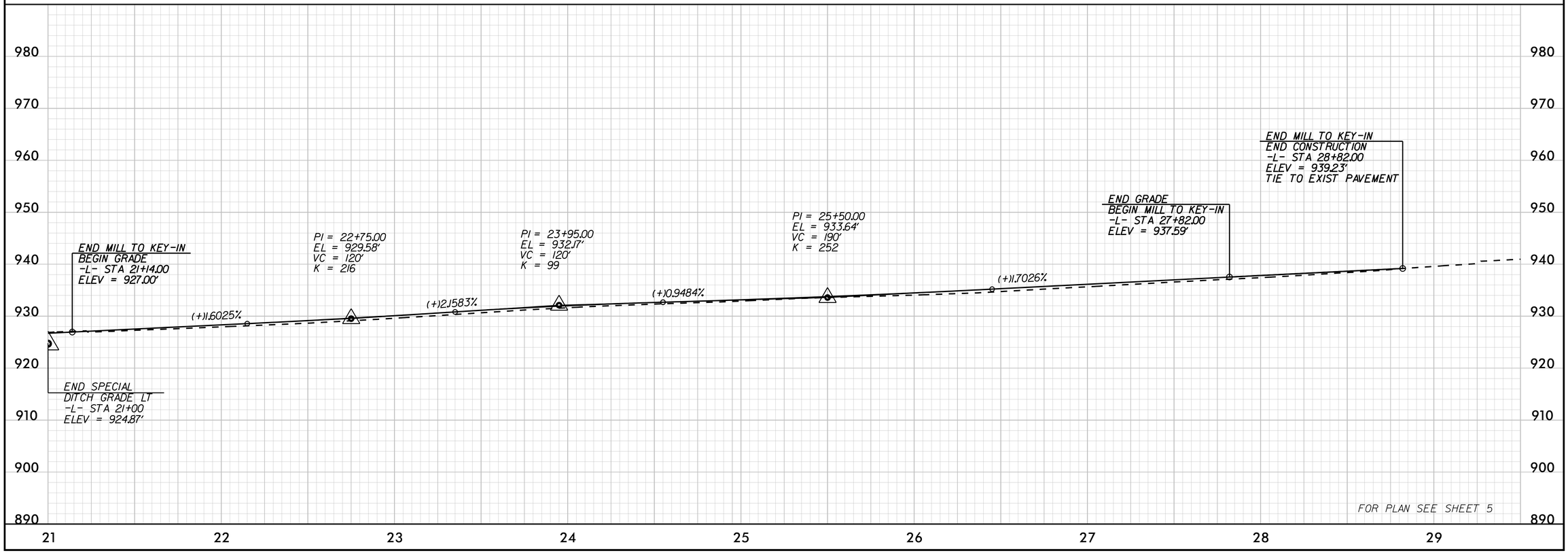

1/27/2020

GENERAL LANDSCAPE NOTES:

1. THE CONTRACT INCLUDES ALL DEMOLITION REQUIRED TO COMPLETE JOB, AND TO REMOVE AND TO DISPOSE OF ITEMS FROM SITE COMPLETELY IN ACCORDANCE WITH LOCAL LAWS. DO NOT BURN OR BURY ANY DEMOLITION ITEMS ON SITE. CONTRACTOR IS RESPONSIBLE FOR MAKING SITE VISIT TO DETERMINE AND VERIFY ALL DEMOLITION REQUIREMENTS PRIOR TO BIDDING. CONTRACTOR SHALL RECYCLE OR DISPOSE OF WASTE PRODUCTS AND PLANT CONTAINERS OFF-SITE IN A RESPONSIBLE MANNER.
2. NOTE NOT USED.
3. THE CONTRACTOR SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE EXISTING ADJACENT PLANTS, FACILITIES & STRUCTURES THAT ARE TO REMAIN. THE CONTRACTOR SHALL RESTORE DISTURBED AREAS TO THEIR ORIGINAL CONDITION TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT AND OWNER. ADJACENT STREETS & SIDEWALKS SHALL BE MAINTAINED IN A CLEAN CONDITION, MUD & DUST-FREE.
4. EXISTING UTILITIES SHOWN ON LANDSCAPE DRAWINGS ARE FOR CONTRACTOR'S CONVENIENCE ONLY. SEE ROADWAY DRAWINGS FOR UTILITY INFORMATION. THE CONTRACTOR MUST LOCATE & VERIFY ALL SUCH INFORMATION, INCLUDING INFORMATION NOT SHOWN ON PLANS, BY CONTACTING THE INDIVIDUAL UTILITY COMPANY & INVESTIGATING THE SITE TO DETERMINE THE EXACT LOCATION OF UTILITY LINES & STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS OWN EXPENSE, AND TO THE SATISFACTION OF THE PROJECT OWNER & THE UTILITY OWNER, DAMAGE TO ANY UTILITY CAUSED BY HIS WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER & THE UTILITY OWNER OF ANY DAMAGE TO ANY UTILITY BY HIS OPERATION.
5. CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE JOB SITE PRIOR TO START OF CONSTRUCTION. IF DISCREPANCIES ARE FOUND, NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY FOR CLARIFICATION.
6. ALL EXISTING SIGNAGE TO REMAIN UNLESS NOTED OTHERWISE OR SPECIFIED.
7. PLANT SPECIES ARE SELECTED FOR HARDINESS IN LOCAL CLIMATE. PERMANENT IRRIGATION IS NOT PART OF THIS CONTRACT. PLANTS ARE TO BE WATERED BY CONTRACTOR DURING ESTABLISHMENT PERIOD. SEE PROJECT SPECIAL PROVISIONS FOR ACTUAL REQUIREMENTS.
8. EXISTING CONDITIONS SHOWN ARE BASED ON SURVEY INFORMATION PROVIDED BY OTHERS. IF A DISCREPANCY IS ENCOUNTERED, CONTRACTOR IS TO NOTIFY LANDSCAPE ARCHITECT FOR CLARIFICATION PRIOR TO BEGINNING WORK.

TREE PROTECTION NOTES:

1. ALL TREES THAT ARE TO REMAIN, WITHIN OR DIRECTLY ADJACENT TO THE LIMITS OF WORK MUST BE PROTECTED WITH TREE PROTECTION FENCING AS REQUIRED BY THE TOWN OF YOUNGSVILLE. FENCING IS TO BE INSTALLED PRIOR TO CONSTRUCTION, MAINTAINED THROUGHOUT, AND REMOVED ONLY AT THE END OF THE PROJECT.
2. NONE OF THE FOLLOWING SHALL OCCUR WITHIN THE ROOT ZONE OF A TREE WITHOUT PERMISSION OF LANDSCAPE ARCHITECT OR PROJECT ARBORIST: ALTERATION OR DISTURBANCE TO EXISTING GRADE; STAGING OR STORAGE OF CONSTRUCTION MATERIALS, EQUIPMENT, SOIL OR DEBRIS; TRENCHING; OR DISPOSAL OF ANY LIQUIDS.
3. NO HEAVY EQUIPMENT SHALL BE USED WITHIN THE DRIP LINE OF AN EXISTING TREE.
4. APPROVED EXCAVATIONS WITHIN THE DRIP LINE SHALL PROCEED WITH CARE BY USE OF HAND TOOLS OR EQUIPMENT DESIGNED FOR PRUNING. ALL ROOTS ENCOUNTERED SHALL BE CUT CLEANLY WITHOUT RIPPING. CONTRACTOR SHALL SUBMIT TO PROJECT LANDSCAPE ARCHITECT DATA FOR PRUNING EQUIPMENT AND PRUNING METHODS FOR APPROVAL PRIOR TO TRENCHING.
5. NO ROOTS GREATER THAN 2 INCHES IN DIAMETER SHALL BE CUT WITHOUT PERMISSION OF LANDSCAPE ARCHITECT OR PROJECT ARBORIST. EXPOSED ROOTS 2 INCHES AND LARGER IN DIAMETER SHALL BE WRAPPED IN BURLAP OR OTHER APPROVED MATERIAL AND KEPT MOIST AT ALL TIMES.
6. IF THERE ARE ANY TREE CONFLICTS ON THIS JOB SITE PERMIT HOLDER MUST SUSPEND ALL WORK THAT CONTRIBUTES TO THE CONFLICT AND IMMEDIATELY CONTACT LANDSCAPE ARCHITECT OR PROJECT ARBORIST FOR DIRECTION AND CLEARANCE TO CONTINUE THE CONFLICTING WORK.
7. TREES THAT ARE PROTECTED SHALL BE THOROUGHLY WATERED AS REQUIRED TO KEEP ROOTS MOIST FROM APRIL THROUGH SEPTEMBER.

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	L1.0

R/W SHEET NO.

LANDSCAPE ARCHITECT

NORTH CAROLINA LANDSCAPE ARCHITECT Daniel Scott Greenberg 1997 PROFESSIONAL 01/28/2020 DANIEL S. GREENBERG

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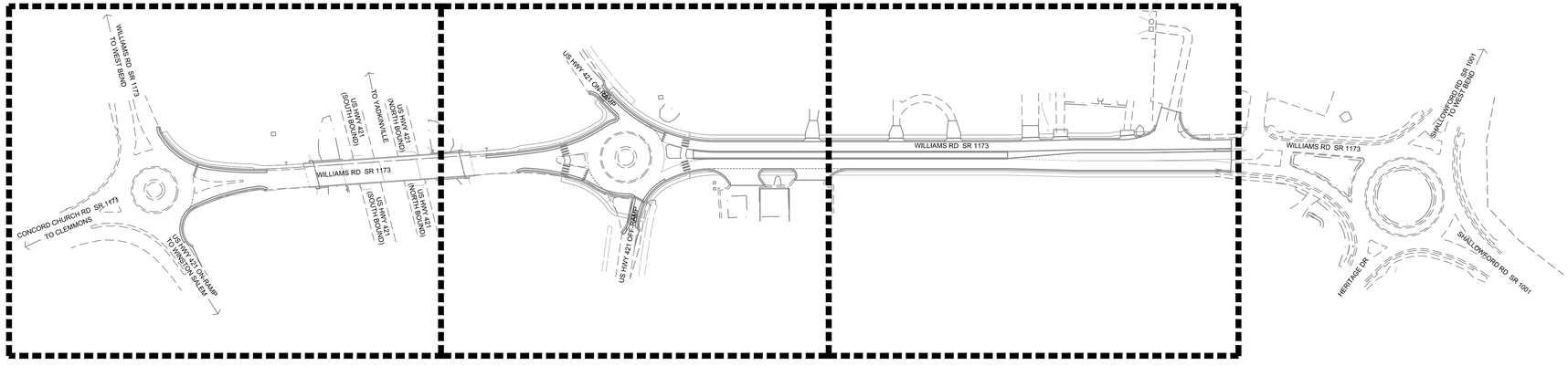
L1.1 - ENLARGED LANDSCAPE PLAN

L1.2 - ENLARGED LANDSCAPE PLAN

L1.3 - ENLARGED LANDSCAPE PLAN



GRAPHIC SCALE IN FEET
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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	L1.1
RW SHEET NO.	

LANDSCAPE ARCHITECT

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
DANIEL S. GREENBERG
Da Greenberg
1997
01/28/2020

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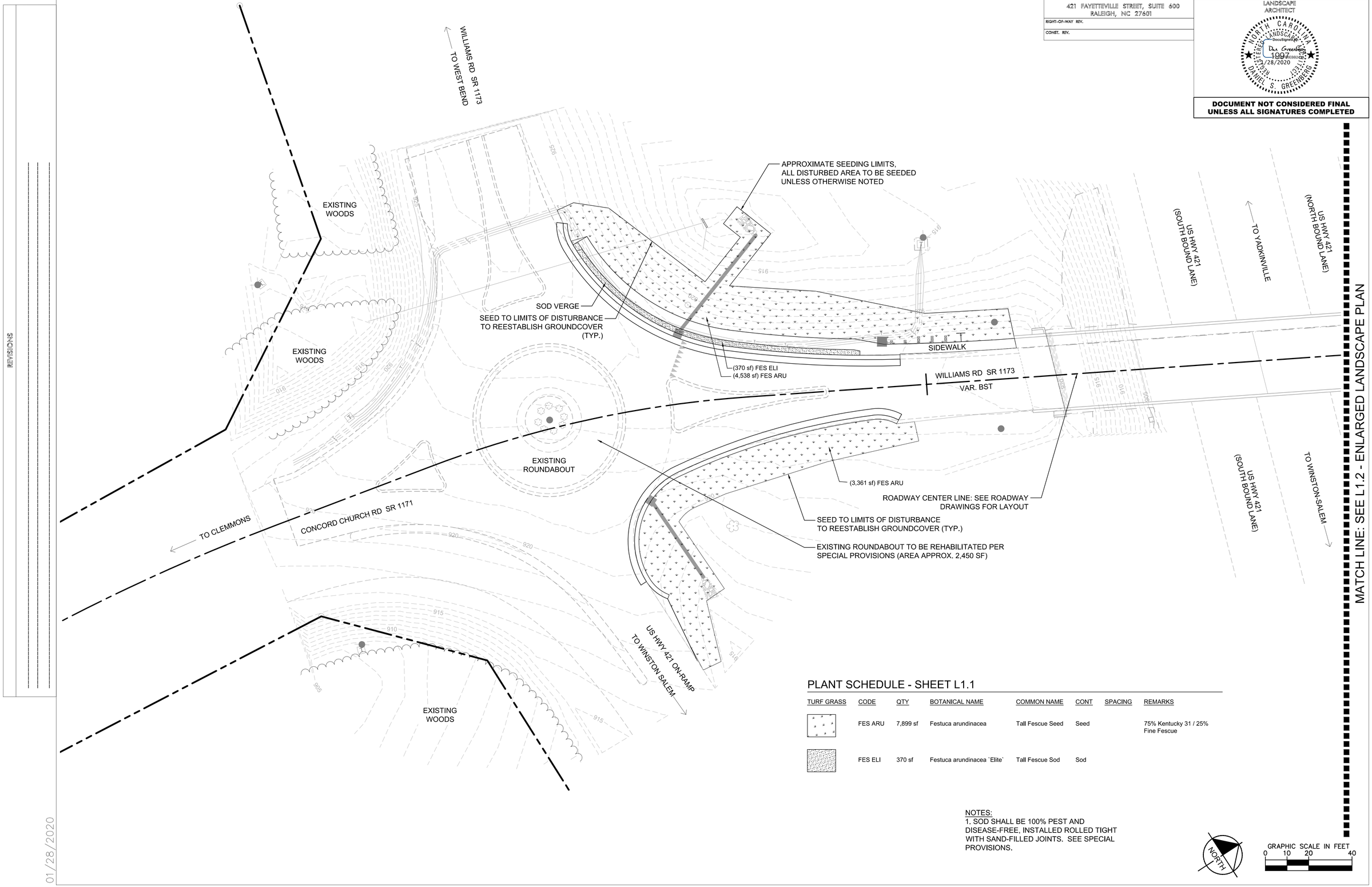

PLANT SCHEDULE - SHEET L1.1

TURF GRASS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING	REMARKS
	FES ARU	7,899 sf	Festuca arundinacea	Tall Fescue Seed	Seed		75% Kentucky 31 / 25% Fine Fescue
	FES ELI	370 sf	Festuca arundinacea `Elite`	Tall Fescue Sod	Sod		

NOTES:
1. SOD SHALL BE 100% PEST AND DISEASE-FREE, INSTALLED ROLLED TIGHT WITH SAND-FILLED JOINTS. SEE SPECIAL PROVISIONS.

NORTH

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	L1.2
R/W SHEET NO.	
LANDSCAPE ARCHITECT	

NORTH CAROLINA LICENSED LANDSCAPE ARCHITECT 1997 DANIEL S. GREENBERG — DocuSigned by: Dan Greenberg 1/28/2020

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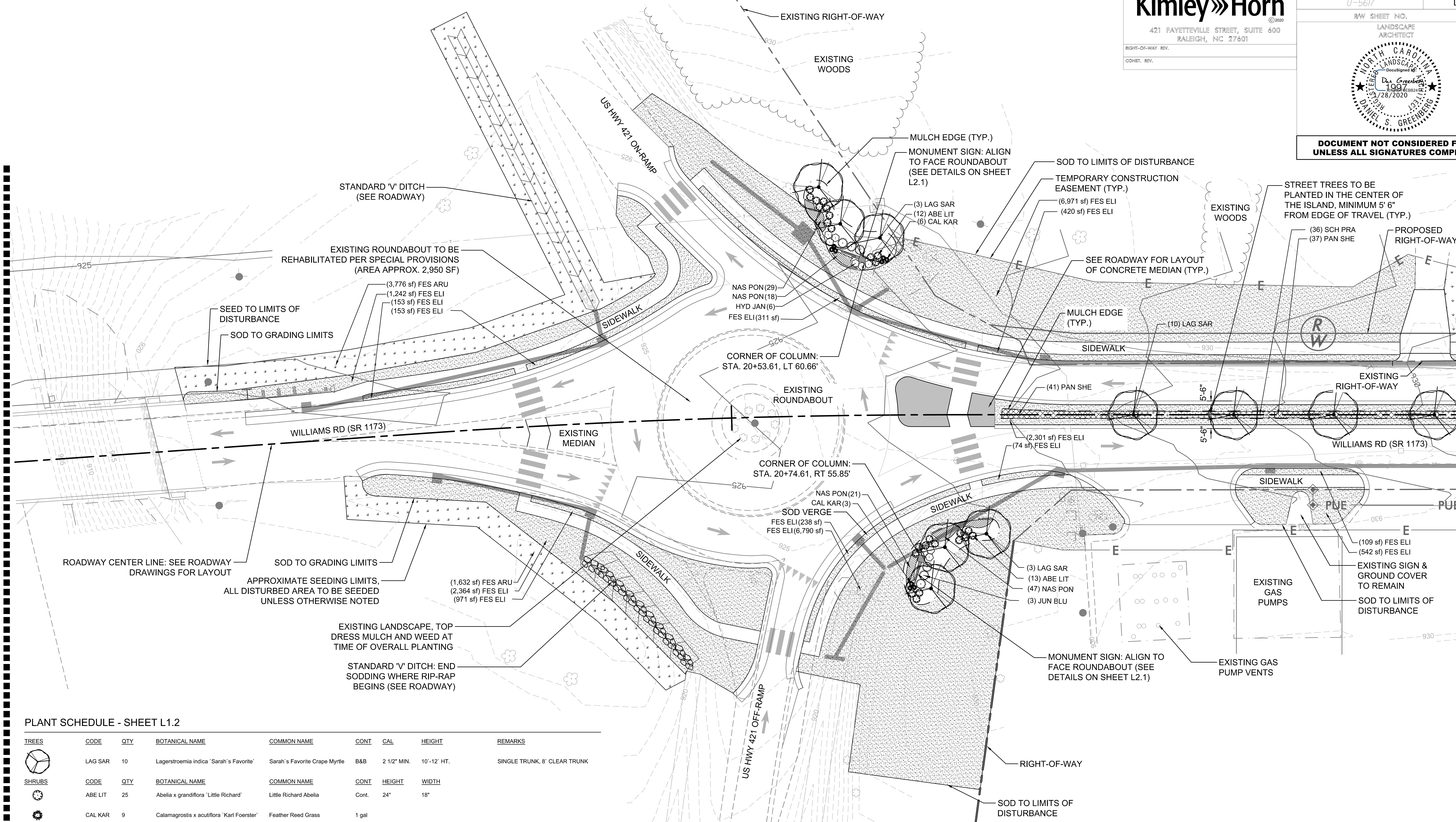
REVISIONS

MATCH LINE: SEE L1.1 - ENLARGED LANDSCAPE PLAN

MATCH LINE: SEE L1.3 - ENLARGED LANDSCAPE PLAN



PLANT SCHEDULE - SHEET L1.2

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HEIGHT		REMARKS
	LAG SAR	10	Lagerstroemia indica `Sarah`s Favorite`	Sarah`s Favorite Crape Myrtle	B&B	2 1/2" MIN.	10`-12` HT.		SINGLE TRUNK, 8` CLEAR TRUNK
SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	HEIGHT	WIDTH		
	ABE LIT	25	Abelia x grandiflora `Little Richard`	Little Richard Abelia	Cont.	24"	18"		
	CAL KAR	9	Calamagrostis x acutiflora `Karl Foerster`	Feather Reed Grass	1 gal				
	HYD JAN	9	Hydrangea paniculata `Jane`	Little Lime Hydrangea	Cont.	24-30"	18"		
	JUN BLU	6	Juniperus chinensis `Blue Point`	Blue Point Juniper	Cont.	36" MIN.	18"		
GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT			SPACING	
	NAS PON	115	Nassella tenuissima `Pony Tails`	Mexican Feathergrass	1 gal			15" o.c.	
	PAN SHE	78	Panicum virgatum `Shenandoah`	Switch Grass	1 gal			24" o.c.	
	SCH PRA	73	Schizachyrium scoparium `Prairie Blues`	Little Bluestem Grass	1 gal			24" o.c.	
TURF GRASS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT			SPACING	REMARKS
	FES ARU	5,408 sf	Festuca arundinacea	Tall Fescue Seed	Seed				75% Kentucky 31 / 25% Fine Fescue
	FES ELI	23,103 sf	Festuca arundinacea `Elite`	Tall Fescue Sod	Sod				

NOTES:
1. SOD SHALL BE 100% PEST AND DISEASE-FREE, INSTALLED ROLLED TIGHT WITH SAND-FILLED JOINTS. SEE SPECIAL PROVISIONS.

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	L1.3

RW SHEET NO.

RIGHT-OF-WAY REV.

CONST. REV.

LANDSCAPE ARCHITECT

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT DANIEL S. GREENBERG 1997 Professional 01/28/2020

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REVISIONS

MATCH LINE: SEE L1.2 - ENLARGED LANDSCAPE PLAN

RICHARD P. STAHURA, JR.
HOLLY E. STAHURA
DB 1814 PG 3654

KENT CORPORATION
DB 1535 PG 1023
DB 3208 PG 1477

TERRI MOSER
DB 1958 PG 1724

PROPERTY LINE

TEMPORARY CONSTRUCTION EASEMENT (TYP.)

PROPOSED RIGHT-OF-WAY

EXISTING WOODS

(2,667 sf) FES ARU
(249 sf) FES ELI

(1,635 sf) FES ARU

(1,994 sf) FES ARU
(219 sf) FES ELI

(431 sf) FES ARU
(49 sf) FES ELI

(1,331 sf) FES ARU
(208 sf) FES ELI

(779 sf) FES ARU
(14 sf) FES ELI

(834 sf) FES ARU

SOD TO LIMITS OF DISTURBANCE

SIDEWALK

(37) SCH PRA
(38) PAN SHE
(154 sf) FES ELI
(39) PAN SHE
(49) SCH PRA
(38) SCH PRA

5'-6"

WILLIAMS RD (SR 1173)

STA. 25+00

SOD VERGE

SEE ROADWAY FOR LAYOUT OF CONCRETE MEDIAN (TYP.)

CB

PUE

DUE

PDE

(1,362 sf) FES ELI
(14,158 sf) FES ARU

PERMANENT UTILITY EASEMENT (TYP.)

STREET TREES TO BE PLANTED IN THE CENTER OF THE ISLAND, 5' 6" FROM EDGE OF TRAVEL (TYP.)

DRAINAGE UTILITY EASEMENT (TYP.)

PROPERTY LINE

SEED TO LIMITS OF DISTURBANCE TO REESTABLISH GROUNDCOVER (TYP.)

TEMPORARY CONSTRUCTION EASEMENT (TYP.)

PERMANENT UTILITY EASEMENT (TYP.)

PERMANENT DRAINAGE EASEMENT (TYP.)

SEEDING TO EXTEND TO LIMITS OF DISTURBANCE TO REESTABLISH GROUNDCOVER

JM ELECTRIC, LLC
DB 3327 PG 3832

JM ELECTRIC, LLC

PLANT SCHEDULE - SHEET L1.3

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HEIGHT	REMARKS
	LAG SAR	6	Lagerstroemia indica `Sarah`s Favorite`	Sarah`s Favorite Crape Myrtle	B&B	2 1/2" MIN.	10`-12` HT.	SINGLE TRUNK, 8` CLEAR TRUNK

GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING
	PAN SHE	77	Panicum virgatum `Shenandoah`	Switch Grass	1 gal	24" o.c.
	SCH PRA	124	Schizachyrium scoparium `Prairie Blues`	Little Bluestem Grass	1 gal	24" o.c.

TURF GRASS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING	REMARKS
	FES ARU	23,829 sf	Festuca arundinacea	Tall Fescue Seed	Seed		75% Kentucky 31 / 25% Fine Fescue
	FES ELI	2,256 sf	Festuca arundinacea `Elite`	Tall Fescue Sod	Sod		

NOTES:
1. SOD SHALL BE 100% PEST AND DISEASE-FREE, INSTALLED ROLLED TIGHT WITH SAND-FILLED JOINTS. SEE SPECIAL PROVISIONS.

NORTH

GRAPHIC SCALE IN FEET
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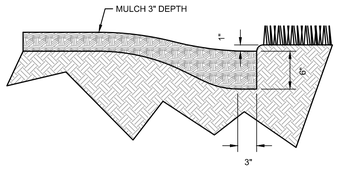
01/28/2020

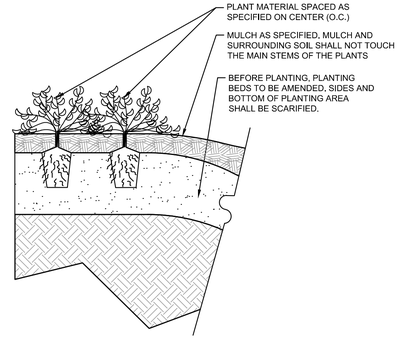


PLANTING BED TRENCH EDGING NOTE:

1. TRENCH EDGE SHALL BE LOCATED BETWEEN PLANTING BED AND ALL TURF OR NATIVE GRASS AREAS.
2. TRENCH EDGE SHALL BE CONSTRUCTED ALONG ALL HARDSCAPE AREAS FOR SIMILAR CONDITION.
3. MAINTAIN POSITIVE DRAINAGE IN ALL PLANTING BEDS.
4. SEE PLANT SCHEDULE FOR TYPE OF MULCH.

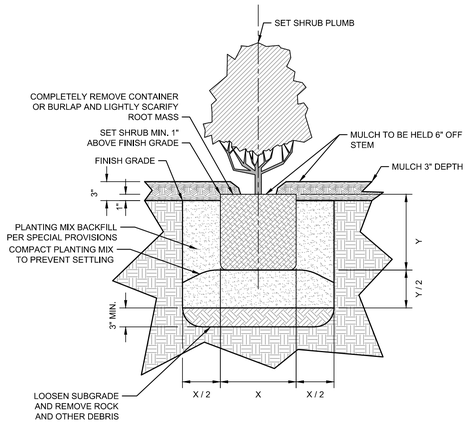
1 PLANTING BED TRENCH EDGING

NTS



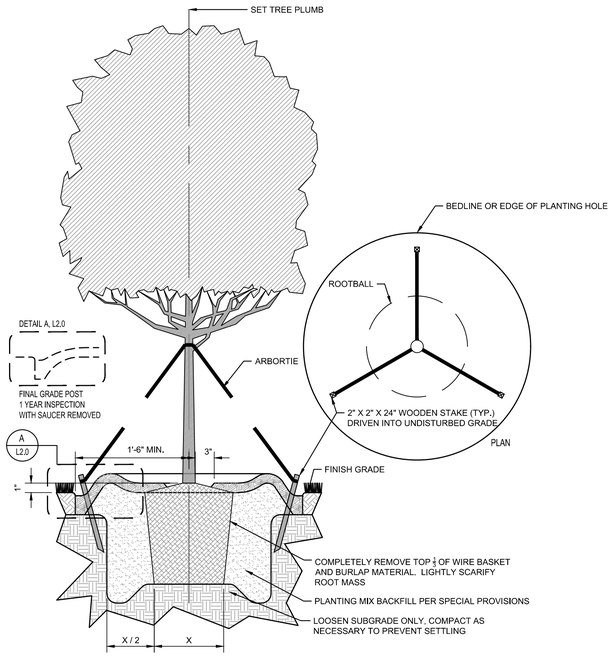
2 ANNUAL/PERENNIAL PLANTING DETAIL

NTS



3 TYPICAL SHRUB PLANTING

NTS



TREE PLANTING NOTES:

1. SET TREE MIN. 3" ABOVE SURROUNDING FINISH GRADE, MEASURED AT BASE OF TRUNK.
2. MAINTAIN 6" CLEAR RADIUS AREA SURROUNDING WOODY TRUNK

4 TYPICAL TREE PLANTING & GUYING

NTS

GENERAL PLANTING NOTES:

1. ALL PLANTS MUST BE HEALTHY, VIGOROUS MATERIAL, FREE OF PESTS AND DISEASE.
2. ALL PLANTS MUST BE CONTAINER GROWN OR BALLED AND BURLAPPED AS INDICATED IN THE PLANT SCHEDULE.
3. ALL TREES MUST HAVE A STRAIGHT TRUNK, FULL CANOPY AND MEET ALL REQUIREMENTS SPECIFIED.
4. ALL PLANTS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE, DURING, AND AFTER INSTALLATION.
5. CONTRACTOR SHALL TAG ALL TREES (AS DESIGNATED IN THE MASTER PLANT LIST) AT THE NURSERY FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO PURCHASE OF THESE MATERIALS.
6. ALL SHADE TREES ADJACENT TO PEDESTRIAN WALKWAYS SHALL BE BRANCHED 8' PER ANSI Z60.1 STANDARDS FOR HEIGHT OF BRANCHING - STREET TREES. ALL SHADE TREES LOCATED WITHIN VEHICLE SIGHT TRIANGLES SHALL BE BRANCHED MIN. 8' (MEASURED FROM ADJACENT PROJECTED CURB LINE ELEVATION) PER ANSI Z60.1 STANDARDS FOR HEIGHT OF BRANCHING - STREET TREES.
7. ALL PLANTING BEDS AND TREE RINGS MUST BE COMPLETELY MULCHED AS SPECIFIED IN SPECIAL PROVISIONS.
8. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THE LANDSCAPE PLANS. ANY FIELD ADJUSTMENTS OR QUANTITY ADJUSTMENTS MUST BE AUTHORIZED PRIOR TO PLANTING.
9. THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING (INCLUDING BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZING, ETC.) OF THE PLANTING AREAS AND LAWN UNTIL SUBSTANTIAL COMPLETION.
10. THE CONTRACTOR SHALL COMPLETELY GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE (1) YEAR BEGINNING ON THE DATE OF SUBSTANTIAL COMPLETION. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS BEFORE OR AT THE END OF THE GUARANTEE PERIOD.
11. THE LANDSCAPE ARCHITECT SHALL APPROVE THE STAKING LOCATION OF ALL PLANTING BEDS AND SOD LINES PRIOR TO INSTALLATION.
12. AFTER BEING DUG AT THE NURSERY SOURCE, ALL TREES IN LEAF SHALL BE ACCLIMATED FOR TWO (2) WEEKS UNDER A MIST SYSTEM PRIOR TO INSTALLATION.
13. ANY PLANT MATERIAL WHICH DIES, TURNS BROWN, OR DEFOLIATES (PRIOR TO SUBSTANTIAL COMPLETION OF THE WORK) SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY, AND SIZE AND MEETING ALL PLANT LIST SPECIFICATIONS.
14. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
15. SAFE, CLEARLY MARKED PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
16. PLANT QUANTITIES ON PLANS ARE CALCULATED TO FILL THE BEDS BASED ON INFORMATION PROVIDED. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE COVERAGE OF ALL PLANTING BEDS AT SPACING SHOWN.
17. ROOT FLARE SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE, AS BORN TO PREVIOUS GRADE AND GROWING CONDITIONS.
18. ALL ROOT BALLS REMOVED FROM CONTAINERS SHALL BE SCARIFIED PRIOR TO BACKFILLING.
19. ALL STRAPPING AND TOP 1/3 OF WIRE BASKET MUST BE CUT AWAY AND REMOVED FROM B&B ROOT BALL PRIOR TO BACKFILLING. REMOVE TOP 1/3 OF THE BURLAP FROM ROOT BALL.
20. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL SUB-BASE AND CONSTRUCTION DEBRIS; REMOVE COMPACTED SOIL AND ADD 24" NEW TOPSOIL OR UNCOMPACT AND AMEND THE TOP 24" OF EXISTING SOIL TO MEET TOPSOIL PLANTING MIX STANDARDS FOR TREES. SEE DETAILS THIS SHEET AND SPECIAL PROVISIONS.
21. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES & ORDINANCES REGARDING LANDSCAPING. GENERAL CONTRACTOR IS TO CLEAN THE ENTIRE SITE OF ALL CONSTRUCTION DEBRIS AND TO RAKE ENTIRE SITE.
22. CONTRACTOR SHALL MAINTAIN LANDSCAPING FOR AT LEAST 30 DAYS AFTER SODDING AND 60 DAYS AFTER SEEDING, OR AS LONG AS IS NECESSARY TO ESTABLISH UNIFORM STAND OF THE SPECIFIED GRASSES, UNTIL SUBSTANTIAL COMPLETION OF THE PROJECT, OR UNTIL ACCEPTANCE OF THE LAWNS, WHICHEVER IS LATER.

PLANT SCHEDULE - FULL PROJECT

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HEIGHT		REMARKS
	LAG SAR	16	Lagerstroemia indica `Sarah`s Favorite`	Sarah`s Favorite Crape Myrtle	B&B	2 1/2" MIN.	10`-12` HT.		SINGLE TRUNK, 8` CLEAR TRUNK
SHRUBS	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	**HEIGHT**	**WIDTH**	**SPACING**	**REMARKS**
	ABE LIT	25	Abelia x grandiflora `Little Richard`	Little Richard Abelia	Cont.	24"	18"	36" o.c.	
	CAL KAR	9	Calamagrostis x acutiflora `Karl Foerster`	Feather Reed Grass	1 gal			24" o.c.	
	HYD JAN	9	Hydrangea paniculata `Jane`	Little Lime Hydrangea	Cont.	24-30"	18"	36" o.c.	
	JUN BLU	6	Juniperus chinensis `Blue Point`	Blue Point Juniper	Cont.	36" MIN.	18"	48" o.c.	
GROUND COVERS	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**			**SPACING**	**REMARKS**
	NAS PON	115	Nassella tenuissima `Pony Tails`	Mexican Feathergrass	1 gal			15" o.c.	
	PAN SHE	155	Panicum virgatum `Shenandoah`	Switch Grass	1 gal			24" o.c.	
	SCH PRA	160	Schizachyrium scoparium `Prairie Blues`	Little Bluestem Grass	1 gal			24" o.c.	
TURF GRASS	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**			**SPACING**	**REMARKS**
	FES ARU	37,136 sf	Festuca arundinacea	Tall Fescue Seed	Seed				75% Kentucky 31 / 25% Fine Fescue
	FES ELI	25,480 sf	Festuca arundinacea `Elite`	Tall Fescue Sod	Sod				

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RIGHT-OF-WAY REV.

CONST. REV.

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U-5617	L2.0

RW SHEET NO.

LANDSCAPE ARCHITECT

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT DANIEL S. GREENBERG 1997 01/28/2020

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REVISIONS

01/28/2020

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LANDSCAPE ARCHITECT

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT DANIEL S. GREENBERG Date Granted 1997 01/28/2020

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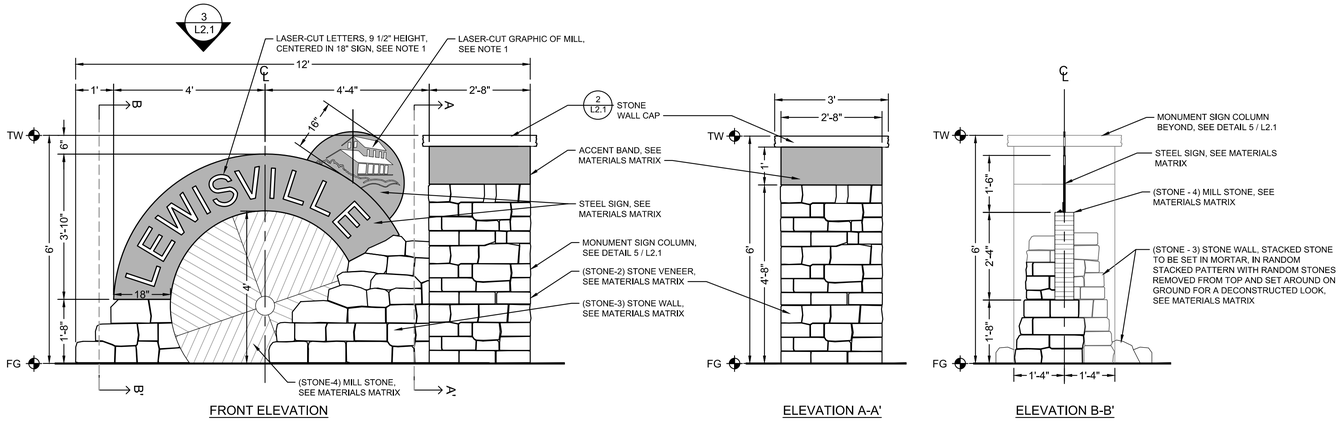
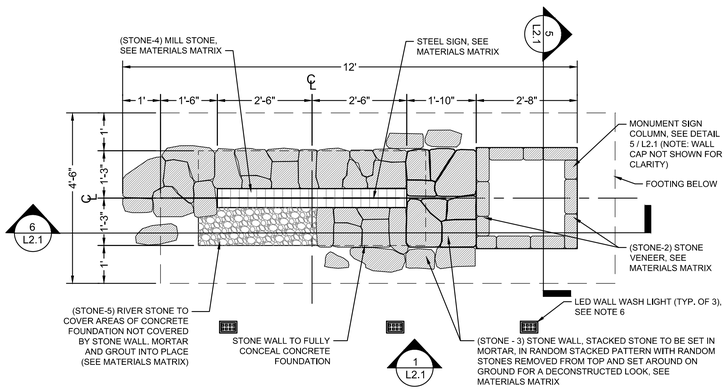


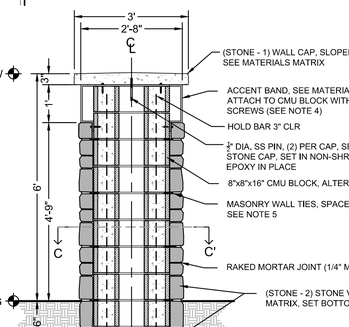
1 MONUMENT SIGN - ELEVATIONS

SCALE: 1/2"=1'-0" ELEVATION



2 STONE WALL CAP

SCALE: 1 1/2"=1'-0" DETAIL



NOTES:

1. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF COMPLETE SIGN INCLUDING HARDWARE, MATERIALS, DIMENSIONS, AND FINAL SIGN PANEL LAYOUT FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO FABRICATION.

2. MONUMENT SIGN DETAILS ON THIS SHEET REFERENCE THE SIGN ON WEST SIDE OF WILLIAMS ROAD. THE SIGN ON EAST SIDE OF WILLIAMS ROAD IS TO BE BUILT IN OPPOSITE LAYOUT.

3. WALL MATERIALS ARE SUMMARIZED IN TABLE ON THIS SHEET. FOR FURTHER INFORMATION SEE PROJECT SPECIAL PROVISIONS.

4. FIELD MEASUREMENT OF COLUMN BLOCK AND STONE VENEER SHALL BE TAKEN PRIOR TO FABRICATION OF ACCENT BAND TO ENSURE PROPER FIT.

5. MASONRY WALL TIES TO BE STAINLESS STEEL (TYPE 316), TIE-2R ANCHOR SYSTEM BY HOHMANN & BARNARD, INC. OR APPROVED EQUAL.

6. EACH MONUMENT SIGN IS TO HAVE (3) LED WALL-WASH LIGHTS INSTALLED IN FRONT, DESIGN OF LIGHTING, INCLUDING BUT NOT LIMITED TO LAYOUT, WIRING, CONNECTIONS AND CONTROLS, IS TO BE PROVIDED IN SHOP DRAWINGS AND COORDINATED WITH DUKE ENERGY & THE TOWN OF LEWISVILLE. LIGHTS ARE TO BE POSITIONED FOR EVEN LIGHTING OF MONUMENT SIGN.

3 MONUMENT SIGN - PLAN

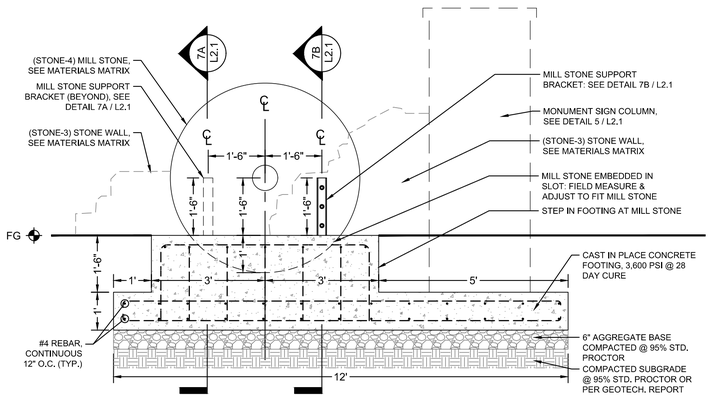
SCALE: 1/2"=1'-0" PLAN

4 MONUMENT SIGN - FOUNDATION PLAN

SCALE: 1/2"=1'-0" PLAN

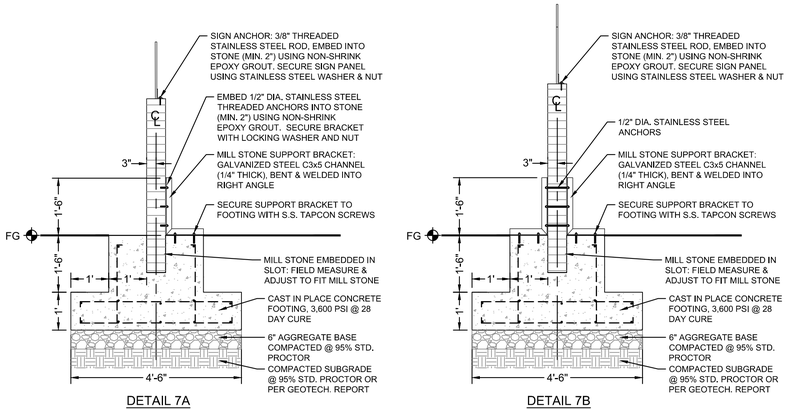
5 MONUMENT SIGN - COLUMN

SCALE: 1/2"=1'-0" DETAIL



6 MONUMENT SIGN - FOUNDATION

SCALE: 1/2"=1'-0" SECTION



ITEM	LOCATION	MATERIAL	COLOR	FINISH	SIZE	COMMENTS
STONE-1	WALL CAPS	GRANITE	WHITE MOUNT AIRY GRANITE	THERMAL (TOP) COLD SPLIT (EDGES) SAWN (BOTTOM)	36" SQUARE 2.5" THICK	BASIS OF DESIGN: WHITE MOUNT AIRY GRANITE BY NC GRANITE CORPORATION (www.ncgranite.com)
STONE-2	COLUMN VENEER	GRANITE COBBLE	PEWTER	CUT AND TUMBLED	4x11x4" NOMINAL	BASIS OF DESIGN: PEWTER COBBLE BY SOUTHERN STONE SUPPLY (www.southernstonesupply.com)
STONE-3	WALL STONE	FIELDSTONE	CHOCOLATE GRAY	SPLIT FINISH WITH TEXTURED FACE	4x11x4" & 8x11x4" NOM.	BASIS OF DESIGN: CHOCOLATE GRAY WALL STONE BY SOUTHERN STONE SUPPLY (www.southernstonesupply.com)
STONE-4	MILL STONE	GRANITE	WHITE MOUNT AIRY GRANITE	ROUGH-HEWN WITH FLAME FINISH	5' DIAMETER 2" THICK	MILL STONE FROM MEADOWS MILLS, NORTH WILKESBORO, NC
STONE-5	EXPOSED FOOTING	RIVER STONE	RANGE OF TANS AND GRAYS	SMOOTH FINISH	1"-3" RANGE	BASIS OF DESIGN: CANYON RIVER STONES BY SOUTHERN STONE SUPPLY (www.southernstonesupply.com)
ACCENT BAND	COLUMN TOP	STEEL	COLOR TO MATCH CORE-TEN STEEL	POWDER COAT	32" SQUARE x 12" HEIGHT x 3/8" THICK	FIELD MEASURE EACH COLUMN PRIOR TO FABRICATION TO ENSURE PROPER FIT
STEEL SIGN	WALL SIGN	STEEL	COLOR TO MATCH CORE-TEN STEEL	POWDER COAT	PER DETAILS	LASER-CUT LETTERING & GRAPHICS

7 MONUMENT SIGN - FOUNDATION SECTION

SCALE: 1/2"=1'-0" SECTION

8 MONUMENT SIGN - MATERIALS MATRIX

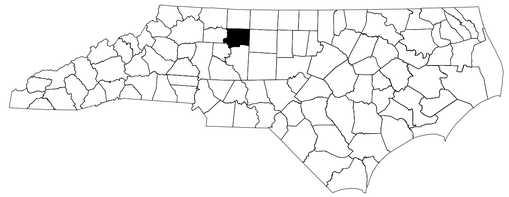
REVISIONS

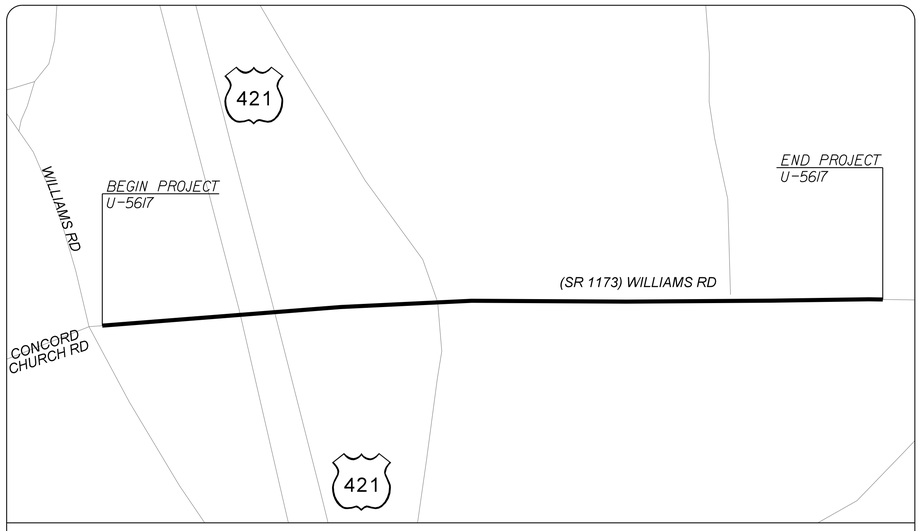
01/28/2020

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

FORSYTH COUNTY





VICINITY MAP

INDEX OF SHEETS

SHEET NO.
TMP-1

U-5617

01/28/20 DATE SUBMITTED
SUBMITTAL:
- [ ] STAGING CONCEPT
- [ ] MIDPOINT
- [ ] PRE-FINAL
- [X] FINAL

Kimley»Horn

JEFF MOORE, P.E. *TRAFFIC CONTROL PROJECT ENGINEER*

EVAN PARROTT, E.I. *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*

TIP PROJECT:

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

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

JOSEPH E. HUMMER *STATE TRAFFIC MANAGEMENT ENGINEER*

J.P. COUCH, P.E. *TRAFFIC CONTROL PROJECT ENGINEER*

RANDY E. OGBURN *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*

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

*APPROVED:*_____
*DATE:*_____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 1/28/2020

K:\RAL_Roadway\0138\3000 - U-5617 Lewisville\Plan\WZTC\Plan Sheets\U5617_tcp_1sht.dgn

1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1170.01	POSITIVE PROTECTION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS - (TEMPORARY & PERMANENT)
1253.01	SNOWPLOWABLE RAISED PAVEMENT MARKERS
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS
1264.02	PLACEMENT OF OBJECT MARKERS
1267.01	FLEXIBLE DELINEATOR INSTALLATION
1267.02	FLEXIBLE DELINEATOR SPACING

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW PANEL (TYPE C)
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

PAVEMENT MARKING LINES

PA - PAINT (4" WHITE, 2X)	EDGELINE
PB - PAINT (4" YELLOW, 2X)	EDGELINE
PC - PAINT (4" WHITE, 2X)	10' SKIP
PD - PAINT (4" WHITE, 2X)	3'-9'/SP MINISKIP
PE - PAINT (4" WHITE, 2X)	SOLID LANE LINE
PH - PAINT (4" YELLOW, 2X)	SINGLE CENTER LINE
PI - PAINT (4" YELLOW, 2X)	DOUBLE CENTER LINE
PS - PAINT (12" WHITE, 2X)	GORELINE
P10 - PAINT (12" WHITE, 2X)	3'-9'/SP MINISKIP (ROUNDABOUTS ONLY)

PAVEMENT MARKING SYMBOLS

QN - PAINT 2X (24" YIELD LINE TRIANGLE)

Kimley»Horn

APPROVED:_____ DATE:_____

NORTH CAROLINA PROFESSIONAL ENGINEER JEFFREY W. MOORE 024430 1/28/2020

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

ROADWAY STANDARD DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-1B

MANAGEMENT STRATEGIES

PROPOSED IMPROVEMENTS ALONG WILLIAMS RD (SR 1173) WILL BE CONSTRUCTED WHILE MAINTAINING TRAFFIC AND USING TEMPORARY TRAFFIC PATTERNS WITH TEMPORARY LANE CLOSURES. LOCAL ACCESS TO RESIDENTS AND BUSINESSES WILL BE MAINTAINED AT ALL POSSIBLE TIMES DURING CONSTRUCTION.

GENERAL NOTES

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

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

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
-L- (SR 1173) WILLIAMS RD	DAILY 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM

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

ROAD NAME
-L- (SR 1173) WILLIAMS RD

HOLIDAY

1. FOR UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE TOWN OF LEWISVILLE PUBLIC WORKS.
2. FOR NEW YEAR'S DAY, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY AND 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
9. FOR "STREET PARTY," OCCURRING AT SHALLOWFORD SQUARE ON THE THIRD SATURDAY OF JUNE, BETWEEN THE HOURS OF 5:00 P.M. THE FRIDAY BEFORE THE "BEACH BLAST" AND 9:00 A.M. ON THE MONDAY FOLLOWING THE "STREET PARTY."

TIME RESTRICTIONS (CONT.)

10. FOR "THE LEWISVILLE CHRISTMAS PARADE" ON THE SECOND SUNDAY OF DECEMBER, BETWEEN THE HOURS OF 5:00 P.M. THE FRIDAY BEFORE "THE LEWISVILLE CHRISTMAS PARADE" AND 9:00 A.M. THE MONDAY FOLLOWING "THE LEWISVILLE CHRISTMAS PARADE."

C) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
-L- (SR 1173) WILLIAMS RD	ANYTIME

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

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

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

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

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

TRAFFIC PATTERN ALTERATIONS

L) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

N) PROVIDE PERMANENT SIGNING

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

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
-L- (SR 1173) WILLIAMS RD	PAINT	NONE

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

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

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

MISCELLANEOUS

V) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

W) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.

Kimley»Horn

APPROVED: _____ DATE: _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024434 JEFFREY W. MOORE 1/28/2020

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

TRANSPORTATION OPERATIONS PLAN

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-3

PHASING

PHASE I

WHILE MAINTAINING TRAFFIC IN THE EXISTING PATTERN USING RSD 1101.04 FOR SHOULDER CLOSURES AND RSD 1101.02 FOR LANE CLOSURES AS NECESSARY IN CONJUCTION WITH THE TEMPORARY LANE CLOSURE DETAILS IN THESE PLANS, PERFORM THE FOLLOWING AS SHOWN ON SHEETS TMP-4 THRU TMP-5;

STEP 1: INSTALL ADVANCE WARNING SIGNS IN ACCORDANCE WITH RSD 1101.01

STEP 2: REMOVE EXISTING MONOLITHIC ISLANDS AND REPLACE WITH TEMPORARY GRAVEL

STEP 3: PERFORM WIDENING, CONSTRUCT CURB AND GUTTER AND MONOLITHIC ISLAND, REHABILITATE EXISTING ROUNDABOUTS PER LANDSCAPE PLANS AND SPECIFICATIONS, AND INSTALL ASSOCIATED DRAINAGE UP TO BUT NOT INCLUDING THE FINAL ASPHALT SURFACE COURSE

NOTE: PROVIDE WEDGING AS NEEDED TO MAINTAIN POSITIVE DRAINAGE AND SMOOTH TRANSITIONS

PHASE II

WHILE MAINTAINING TRAFFIC USING RSD 1101.02 FOR TEMPORARY LANE CLOSURES IN CONJUCTION WITH THE TEMPORARY LANE CLOSURE DETAILS IN THESE PLANS, PERFORM THE FOLLOWING AS SHOWN ON SHEETS TMP-6 THRU TMP-7:

STEP 1: INSTALL TEMPORARY PAVEMENT MARKINGS, REMOVE CONFLICTING MARKINGS, AND SHIFT TRAFFIC ONTO NEW PATTERN

STEP 2: PERFORM WIDENING, CONSTRUCT CURB AND GUTTER AND MONOLITHIC ISLAND, REHABILITATE EXISTING ROUNDABOUTS PER LANDSCAPE PLANS AND SPECIFICATIONS, AND INSTALL ASSOCIATED DRAINAGE UP TO BUT NOT INCLUDING THE FINAL ASPHALT SURFACE COURSE

NOTE: PROVIDE WEDGING AS NEEDED TO MAINTAIN POSITIVE DRAINAGE AND SMOOTH TRANSITIONS

PHASE III

WHILE MAINTAINING TRAFFIC USING RSD 1101.02 FOR TEMPORARY LANE CLOSURES IN CONJUCTION WITH THE TEMPORARY LANE CLOSURE DETAILS IN THESE PLANS, PERFORM THE FOLLOWING, AS SHOWN ON SHEETS TMP-8 & TMP-9:

STEP 1: INSTALL TEMPORARY PAVEMENT MARKINGS, REMOVE CONFLICTING MARKINGS, AND SHIFT TRAFFIC ONTO NEW PATTERN

STEP 2: CONSTRUCT MEDIAN AND MONOLITHIC ISLANDS

STEP 3: INSTALL FINAL ASPHALT SURFACE COURSE, INSTALL FINAL PAVEMENT MARKINGS AND MARKERS, REMOVE ALL TRAFFIC CONTROL DEVICES AND OPEN ALL LANES TO TRAFFIC

NOTE: PROVIDE WEDGING AS NEEDED TO MAINTAIN POSITIVE DRAINAGE AND SMOOTH TRANSITIONS

Kimley»Horn

APPROVED:_____ DATE:_____

NORTH CAROLINA PROFESSIONAL ENGINEER JEFFREY W MOORE 024436 1/28/2020

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

PHASING

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-4

NC GRID
NAD 83/11

15

20

(SR 1173)
WILLIAMS RD

BEGIN CONSTRUCTION
-L- STA. 13+47

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

0403

15"

0404

US 421

US 421

-L-
(SR 1173)
WILLIAMS RD

COMPLETE SAWCUT, MILLING, PAVING, AND CURB AND GUTTER CONSTRUCTION USING TEMPORARY LANE CLOSURES AND FLAGGING OPERATION AS NEEDED AS SHOWN ON SHEET TMP-4A

US 421 ON-RAMP

COMPLETE SAWCUT, MILLING, PAVING, AND CURB AND GUTTER CONSTRUCTION USING TEMPORARY LANE CLOSURES AND FLAGGING OPERATION AS NEEDED AS SHOWN ON SHEET TMP-4B

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

0407

15"

15" RCP-IV

A

0409

0408

COMPLETE SAWCUT, MILLING, PAVING, AND CURB AND GUTTER CONSTRUCTION USING TEMPORARY LANE CLOSURES AND FLAGGING OPERATION AS NEEDED AS SHOWN ON SHEET TMP-4C

A

0417

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

18" RCP-IV

0418

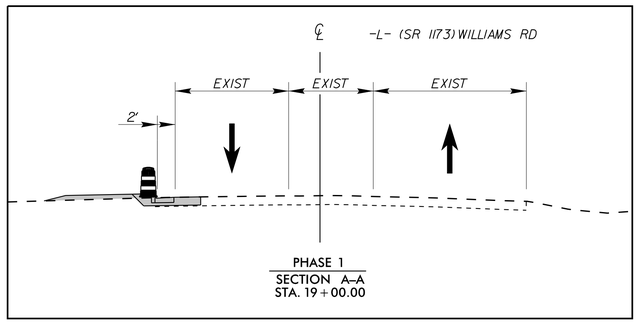
18" RCP-IV

0420

15" RCP-IV

MATCHLINE -L- STA 21+00 (SEE SHEET TMP-5)

US 421 EXIT-RAMP



PHASE 1
SECTION A-A
STA. 19+00.00

WORK AREA

WEDGING

Kimley»Horn

APPROVED: _____ DATE: _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MODES
DocuSigned by: Jeffrey W. Modes
1/28/2020

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

PHASE 1
TRAFFIC CONTROL
DETAILS

1/27/2020

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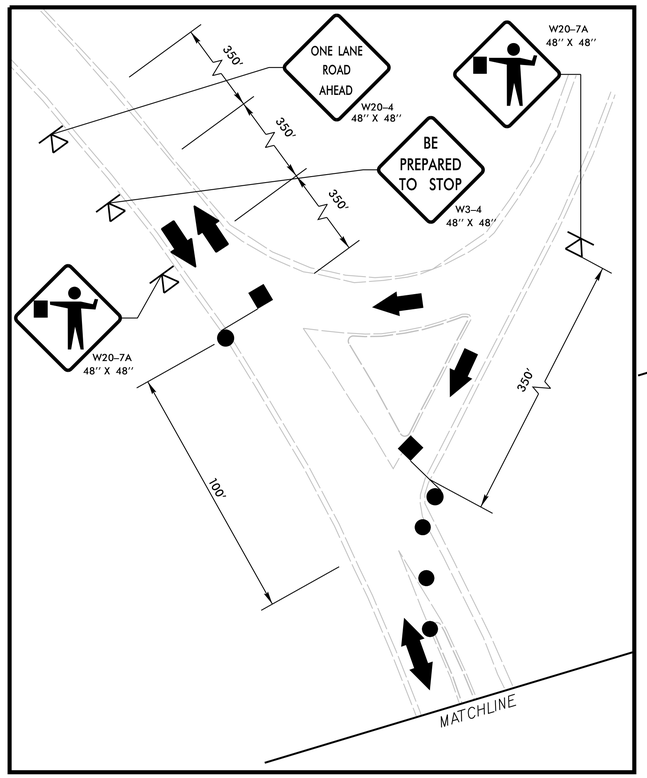
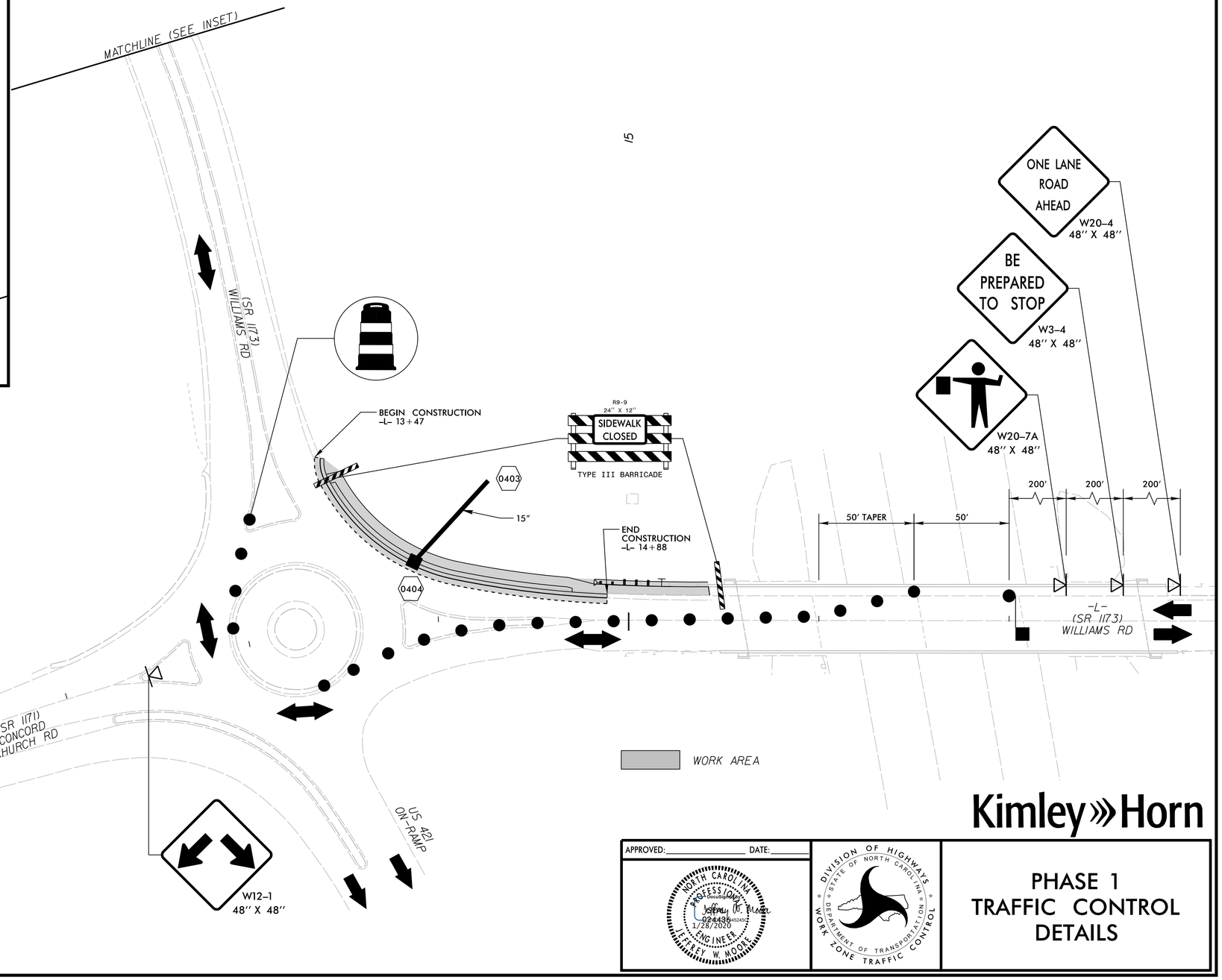
PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-4A

TEMPORARY LANE CLOSURE CONDITION

NC GRID NAD 83/11





Kimley»Horn

APPROVED:_____ DATE:_____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE — Jeffrey W. Moore 1/28/2020

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

PHASE 1 TRAFFIC CONTROL DETAILS

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-4B

TEMPORARY LANE CLOSURE CONDITION

NC GRID
NAD 83/11

ONE LANE ROAD AHEAD
W20–4
48'' X 48''

BE PREPARED TO STOP
W3–4
48'' X 48''

W20–7 A
48'' X 48''

–L–
(SR 1173)
WILLIAMS RD

US 421
ON RAMP

BEGIN CONSTRUCTION
–L– 19+59

R9-9
24'' X 12''
SIDEWALK CLOSED
TYPE III BARRICADE

0417

REMOVE CONCRETE ISLAND AND PROVIDE TEMPORARY GRAVEL AS NEEDED TO ACCOMMODATE TURNING MOVEMENTS AND MAINTAIN A 12' TRAVELWAY AND 5' BUFFER FROM THE WORK AREA

18" RCP-IV

18" RCP-IV

15" RCP-IV

15" RCP–IV

0510

END CONSTRUCTION
–L– 21+37

ONE LANE ROAD AHEAD
W20–4
48'' X 48''

BE PREPARED TO STOP
W3–4
48'' X 48''

W20–7 A
48'' X 48''

50' TAPER

50'

–L–
(SR 1173)
WILLIAMS RD

200'
200'
200'
100'
100' TAPER

200'
200'
200'

REMOVE CONCRETE ISLAND AND PLACE TEMPORARY GRAVEL TO ACCOMMODATE LEFT TURNS

US 421
EXIT RAMP

350'
350'
350'

W20–7 A
48'' X 48''

BE PREPARED TO STOP
W3–4
48'' X 48''

ONE LANE ROAD AHEAD
W20–4
48'' X 48''

WORK AREA

TEMPORARY GRAVEL

Kimley»Horn

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NORTH CAROLINA
PROFESSIONAL
SEAL
024436
ENGINEER
JEFFREY W. MOORE
1/28/2020

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

PHASE 1 TRAFFIC CONTROL DETAILS

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-4C

TEMPORARY LANE CLOSURE CONDITION

NC GRID
NAD 83/11

ONE LANE ROAD AHEAD
W20–4
48″ X 48″

BE PREPARED TO STOP
W3–4
48″ X 48″

W20–7 A
48″ X 48″

R9-9
24″ X 12″
SIDEWALK CLOSED
TYPE III BARRICADE

END CONSTRUCTION
–L– STA. 19+58

MAINTAIN A 12′ TRAVEL LANE MINIMUM ON US 421 RAMP

US 421 ON RAMP

20

–L– STA. 19+99

0407

BEGIN CONSTRUCTION
–L– STA. 17+82

–L– STA. 18+06

15″

15″ RCP–IV

0409

0408

–L–
(SR 1173)
WILLIAMS RD

200′ 200′ 200′ 100′ TAPER 100′ TAPER

ONE LANE ROAD AHEAD
W20–4
48″ X 48″

BE PREPARED TO STOP
W3–4
48″ X 48″

W20–7A
48″ X 48″

50′ TAPER 50′

200′ 200′ 200′

W12–1
48″ X 48″

US 421 EXIT RAMP

350′ 350′ 350′

W20–7 A
48″ X 48″

BE PREPARED TO STOP
W3–4
48″ X 48″

ONE LANE ROAD AHEAD
W20–4
48″ X 48″

WORK AREA

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024437 JEFFREY W. MOORE
Jeffrey W. Moore
1/28/2020

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

PHASE 1 TRAFFIC CONTROL DETAILS

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1/27/2020

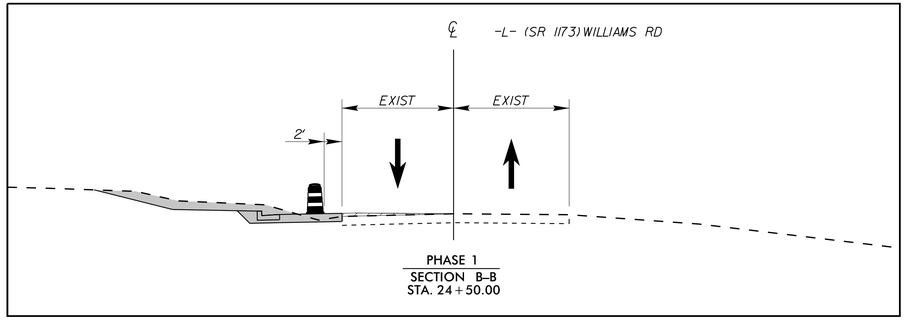
PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-5

NC GRID
NAD 83/11

25

MATCHLINE -L- STA 21+00 (SEE SHEET 4)

15" RCP-IV
0510
-L-
(SR 1173) WILLIAMS RD
15" RCP-IV
15" RCP-IV
0511
0512
15" RCP-IV
CB
0513
B
R9-9
24" x 12"
SIDEWALK
CLOSED
TYPE III BARRICADE
END CONSTRUCTION
-L- STA. 28+50
B



PHASE 1
SECTION B-B
STA. 24+50.00

WORK AREA
WEDGING

Kimley»Horn

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 11/28/2020

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

PHASE 1 TRAFFIC CONTROL DETAILS

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-6

NC GRID
NAD 83/11

15

(SR 1173)
WILLIAMS RD

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

COMPLETE SAWCUT, MILLING, PAVING, AND CURB AND GUTTER CONSTRUCTION USING TEMPORARY LANE CLOSURES AND FLAGGING OPERATION AS NEEDED AS SHOWN ON SHEET TMP-6A

US 421

US 421

-L-
(SR 1173)
WILLIAMS RD

0402

15"

0401

BEGIN CONSTRUCTION
-L- STA. 13+51

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

PI
TIE TO EXIST
PAVEMENT MARKINGS
-L- STA 20+97.65

20

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

C

R=85'

PA

0412

0411

15" RCP-IV

C

15"

0410

0415

11'

15"
RCP-IV

0414

MATCHLINE -L- STA 21+00 (SEE SHEET TMP-7)

COMPLETE SAWCUT, MILLING, PAVING, AND CURB AND GUTTER CONSTRUCTION USING TEMPORARY LANE CLOSURES AND FLAGGING OPERATION AS NEEDED AS SHOWN ON SHEET TMP-6B

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

0413

15" RCP-IV

COMPLETE SAWCUT, MILLING, PAVING, AND CURB AND GUTTER CONSTRUCTION USING TEMPORARY LANE CLOSURES AND FLAGGING OPERATION AS NEEDED AS SHOWN ON SHEET TMP-6B

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

℄ -L- (SR 1173) WILLIAMS RD

EXIST EXIST EXIST

2'

PHASE 2
SECTION C-C
STA. 19+00.00

WORK AREA

WEDGING

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NORTH CAROLINA
PROFESSIONAL
SEAL
024453
ENGINEER
JEFFREY W. MOORE

Jeffrey W. Moore
1/28/2020

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

PHASE 2
TRAFFIC CONTROL DETAILS

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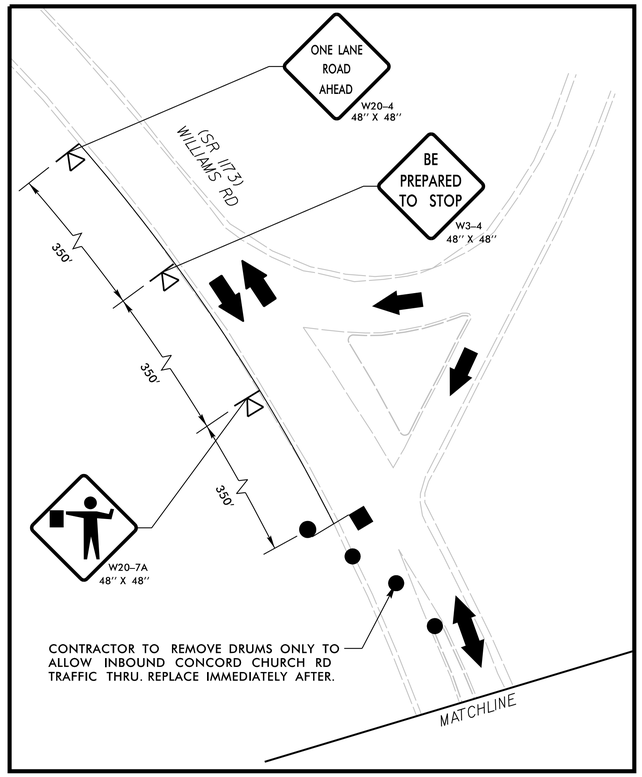
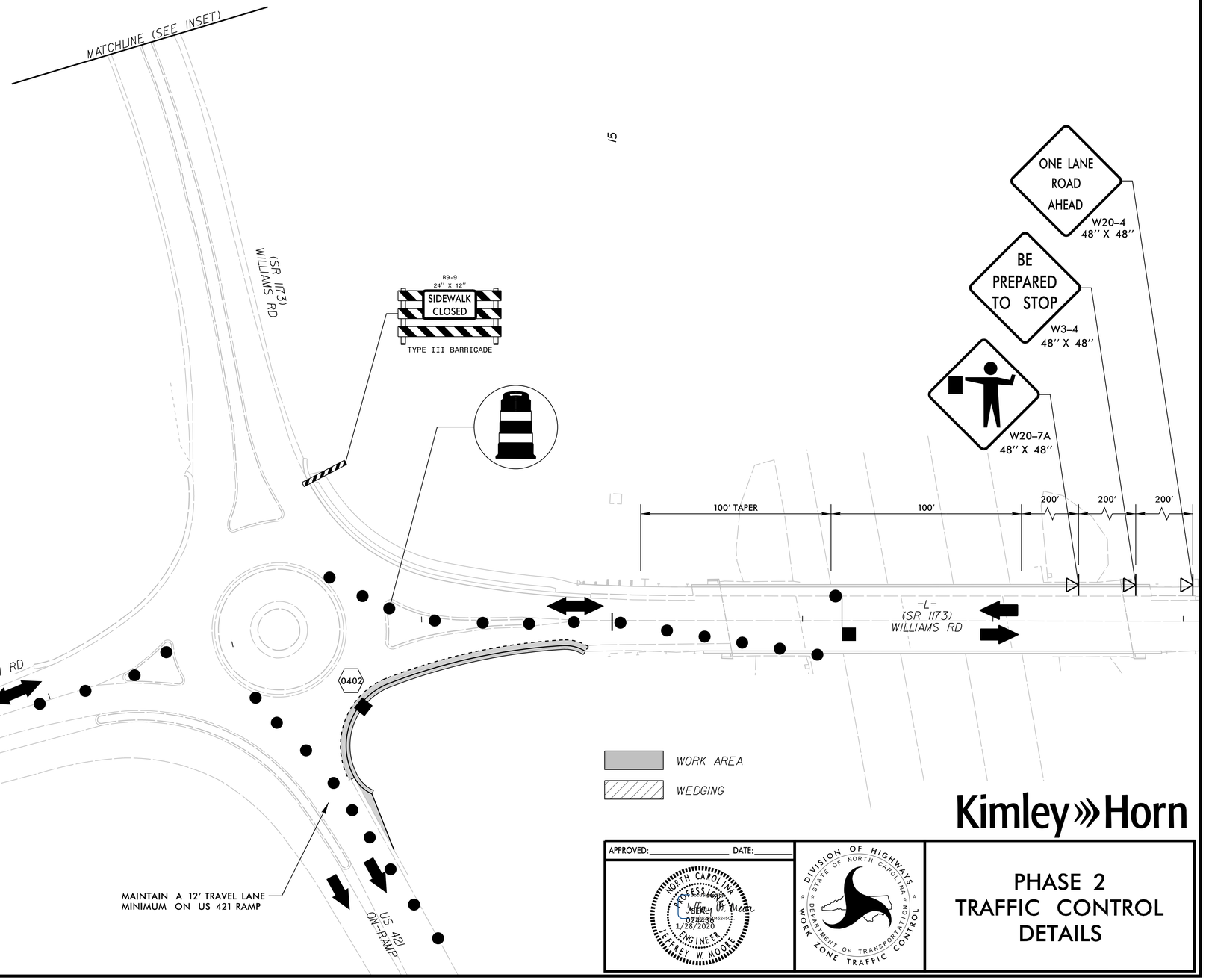
1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-6A

TEMPORARY LANE CLOSURE CONDITION

NC GRID NAD 83/11





15

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 1/28/2020

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

PHASE 2 TRAFFIC CONTROL DETAILS

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-6B

TEMPORARY LANE CLOSURE CONDITION

NC GRID NAD 83/11

ONE LANE ROAD AHEAD
W20–4
48″ X 48″

BE PREPARED TO STOP
W3–4
48″ X 48″

W20–7 A
48″ X 48″

R9-9
24″ X 12″
SIDEWALK CLOSED
TYPE III BARRICADE

-L-
(SR 1173)
WILLIAMS RD

20+00

0410 0411 0412 0413 0414 0415

END CONSTRUCTION
-L- STA. 20+67

BEGIN CONSTRUCTION
-L- STA. 18+49

USING TEMPORARY GRAVEL PLACED IN PHASE 1
MAINTAIN A 12′ MINIMUM TRAVEL LANE
AND A 5′ MINIMUM CLEAR ZONE FROM
ACTIVE WORK AREAS

200′ 200′ 200′ 50′ 50′ TAPER

15′

215′ SHIFT

12′ MIN

350′

200′ 200′ 200′

WORK AREA

Kimley»Horn

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PROFESSIONAL ENGINEER SEAL 027456 1/28/2020 JEFFREY W. MOORE

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

PHASE 2 TRAFFIC CONTROL DETAILS

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-7

NC GRID
NAD 83/11

25

MATCHLINE -L- STA 21+00 (SEE SHEET 6)

TIE TO EXIST
PAVEMENT MARKINGS
-L- STA 21+77.00

R=2500'

PI

-L-
(SR 1173) WILLIAMS RD

D

PI

11'

11'

12'

0501

0502

0503

0504

0505

0506

0507

0508

0509

15" RCP-IV

15" RCP-IV

15"

15" RCP-IV

PA

PE

PI

R=2500'

PD

COLLAR
AND EXTEND
18" RCP

TRAFFIC
SHIFT
AHEAD

W31-1
48" X 48"
-L- STA. 23+33

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

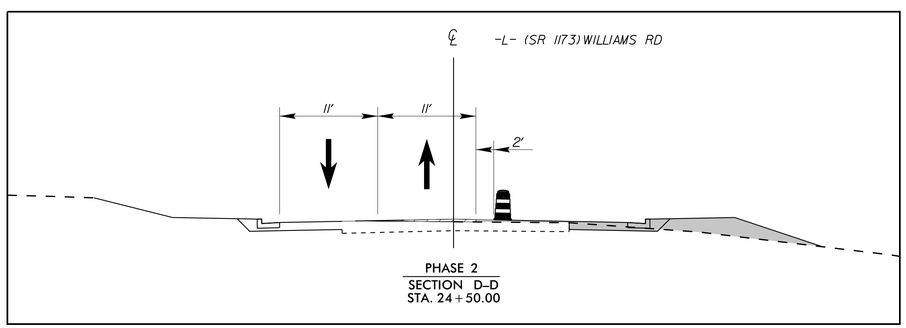
R9-9
24" X 12"
SIDEWALK
CLOSED
TYPE III BARRICADE

W1-4R
48" X 48"
-L- STA. 24+74

MAINTAIN AT LEAST ONE DRIVEWAY ACCESS
AT ALL TIMES DURING CONSTRUCTION

END CONSTRUCTION
TIE TO EXIST PAVEMENT MARKINGS
-L- STA 28+81.00

205' SHIFT



PHASE 2
SECTION D-D
STA. 24+50.00

WORK AREA

WEDGING

Kimley»Horn

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 1/28/2020

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

PHASE 2
TRAFFIC CONTROL
DETAILS

1/27/2020

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PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-8

NC GRID
NAD 83/11

15

20

(SR 1173)
WILLIAMS RD

US 421

US 421

-L-
(SR 1173)
WILLIAMS RD

PH

QN

P10

PS

PS

P10

MATCHLINE -L- STA 21+00 (SEE SHEET TMP-9)

WORK AREA

WEDGING

Kimley»Horn

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NORTH CAROLINA
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SEAL
024438
ENGINEER
JEFFREY W. MOORE
1/28/2020

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

PHASE 3
TRAFFIC CONTROL
DETAILS

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1/27/2020

PROJ. REFERENCE NO.	SHEET NO.
U-5617	TMP-9

NC GRID
NAD 83/11

25

MATCHLINE -L- STA 21+00 (SEE SHEET 8)

11'
11'
11'
11'
11'

PH
E
PH
PD
PE
PE
E

TIE TO EXIST
PAVEMENT MARKINGS
-L- STA 21+01.25

END CONSTRUCTION
-L- STA. 28+59

℄ -L- (SR 1173) WILLIAMS RD

11'
2'
2'
11'

PHASE 3
SECTION E-E
STA. 24+50.00

WORK AREA
WEDGING

Kimley»Horn

APPROVED: _____ DATE: _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024438 JEFFREY W. MOORE
1/28/2020

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

PHASE 3
TRAFFIC CONTROL DETAILS

1/27/2020
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5/14/99

REVISIONS

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	PSP-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL ENGINEER 024436 JEFFREY W. MOORE 1/28/2020

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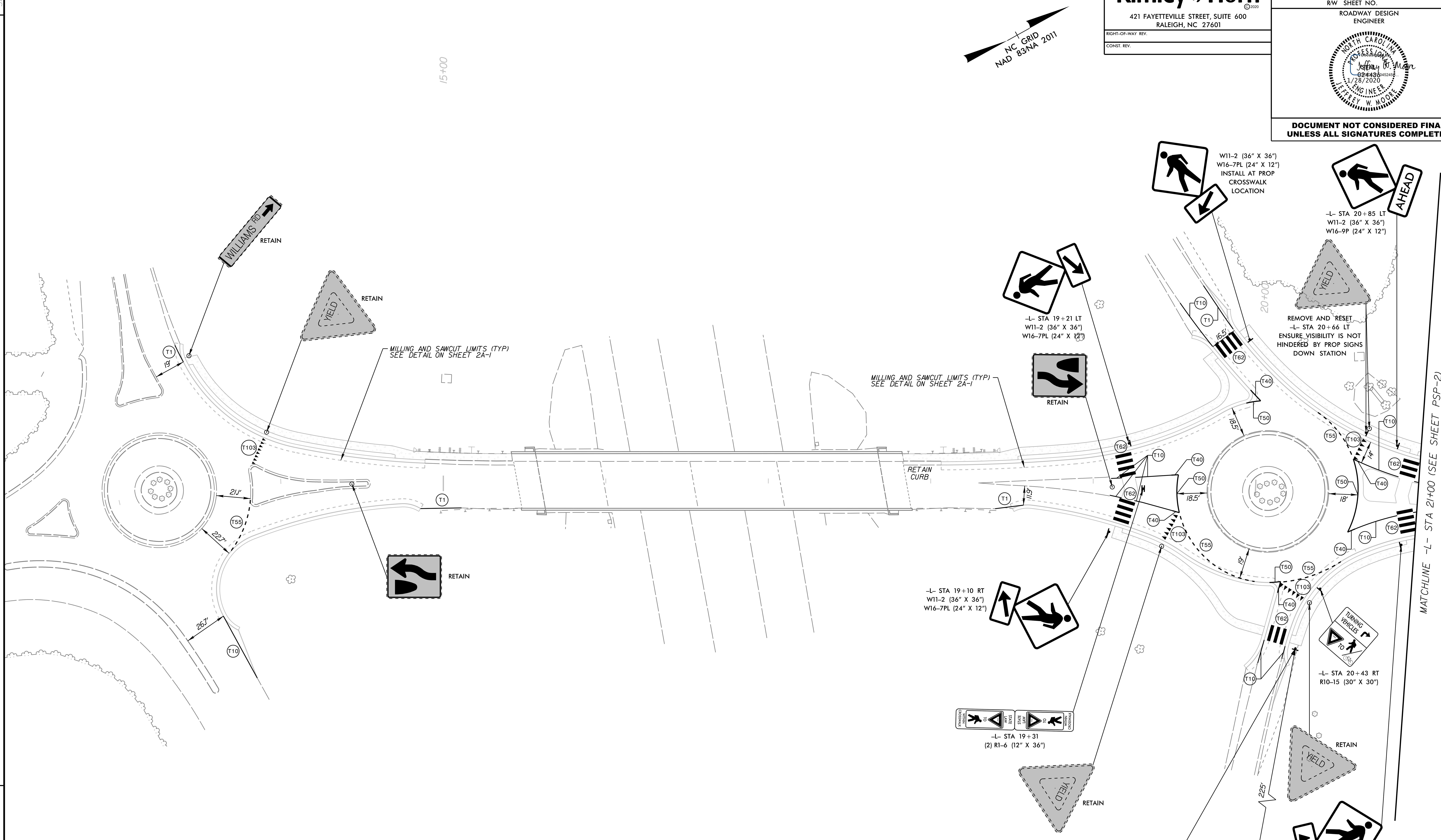

PAVEMENT MARKING LINES

T1 - THERMOPLASTIC (4" WHITE, 90 MILS) EDGELINE
T2 - THERMOPLASTIC (4" WHITE, 90 MILS) SOLID LANE LINE
T4 - THERMOPLASTIC (4" WHITE, 90 MILS) 3' x 9'/SP MINISKIP
T5 - THERMOPLASTIC (4" WHITE, 90 MILS) 2' x 6'/SP MINISKIP
T10 - THERMOPLASTIC (4" YELLOW, 90 MILS) EDGELINE
T40 - THERMOPLASTIC (8" WHITE, 90 MILS) GORELINE
T50 - THERMOPLASTIC (12" WHITE, 90 MILS) GORELINE
T55 - THERMOPLASTIC (12" WHITE, 90 MILS) 3' x 3'/SP MINISKIP
T62 - THERMOPLASTIC (24" WHITE, 90 MILS) CROSSWALK LINE

PAVEMENT MARKING SYMBOLS

T70 - THERMOPLASTIC (LEFT TURN ARROW) (90 MILS)
T94 - THERMOPLASTIC (SHARROW, HEATED-IN-PLACE) (90 MILS)
T103 - THERMOPLASTIC (24" YIELD LINE TRIANGLE) (90 MILS)
T114 - THERMOPLASTIC (FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW) (90 MILS)

PAVEMENT MARKING NOTES

NOTES:
1. CONTRACTOR TO TIE PROPOSED MARKINGS TO EXISTING MARKINGS AT PROJECT LIMITS AND WHERE IDENTIFIED.
2. CONTRACTOR SHALL REPLACE ANY DAMAGED MARKINGS.
3. CONTRACTOR SHALL MILL ANY EXISTING MARKINGS OR SYMBOLS IN CONFLICT WITH PROPOSED MARKINGS.

1/27/2020

5/14/99

REVISIONS

1/27/2020

MATCHLINE -L- STA 21+00 (SEE SHEET PSP-2)

25+00

NC GRID
NAD 83/NA 2011

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	PSP-2

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024439 JEFFREY W. MOORE
DocuSigned by: Jeffrey W. Moore
1/28/2020

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-L- STA 21+01 LT
W11-2 (36" X 36")
W16-7PL (24" X 12")

REMOVE

-L- STA 22+01 LT
W3-2 (30" X 30")

WINSTON-SALEM
N. WILKESBORO

REMOVE AND RESET
-L- STA 23+44 LT

JCT 421 RETAIN

20 MPH RETAIN

-L- STA 25+59

-L- STA 27+59

-L- STA 28+82

T10 T114 T94 T5 T4 T70 T2 T1

14' 11' 5.5' 12.4' 4.9' 15.9'

-L- STA 26+59

-L- STA 21+03
(2) R1-6 (12" X 36")

ONE WAY
STOP

-L- STA 23+08 RT
R6-1 (36" X 12")
R1-1 (30" X 30")

ADOPT A HIGHWAY
MEMORY OF CHARLIE HAUSER

REMOVE AND RESET
-L- STA 24+30 RT

15 MPH

REMOVE AND RESET
-L- STA 26+25 RT

REMOVE AND RESET
-L- STA 27+47 RT

SUBWAY
SUBWAY
SUBWAY

REMOVE AND RESET
-L- STA 27+65 RT

REMOVE AND RESET
-L- STA 28+16 RT

REVISIONS

5/14/99

NARRATIVE

Project Description

The Town of Lewisville proposes to widen SR 1173 (Williams Road) and implement a Complete Street design from the roundabout at Concord Church Road south of the bridge over US 421 to the roundabout at SR 1001 (Shallowford Road). Approximately 2.21 acres will be disturbed during the construction of this project. Also, approximately 1.45 acres will be vegetatively stabilized with grass and permanent plantings.

SR 1173 (Williams Road) is located in Forsyth County, Lewisville, NC. Approximately 0.29 miles of SR 1173 (Williams Road) will be widened to 14' lanes with an 11' median and sidewalk on both sides.

Site Description

The site is generally flat and contains some drainage ways that are bordered by moderate slopes. Land use along the proposed roadway widening is residential and commercial. The majority of the existing drainage from the project site sheet flows off the road into the roadside ditches. This drainage primarily flows south into tributaries of Ellison Creek which flows to Ellison Creek, then to the Yadkin River. An introduction of new drainage patterns is not anticipated. Pre-construction runoff equals Post-construction runoff for all existing system outlets that are to be retained. The fill slopes and drainage ditches around the project appear to be stable and do not show signs of significant erosion soils.

Soils

The soil types throughout the project limits are mostly sandy loams (CIB, FaB, and Ud).

IMPERVIOUS AND PERVIOUS SURFACES IN U-5617 (WILLIAMS RD GATEWAY) DISTURBED AREAS

PROPOSED IMPERVIOUS SURFACE = 0.84 AC
PROPOSED PERVIOUS SURFACE = 1.45 AC

⇨ DIRECTION OF FLOW

PROJECT DENUDED AREAS

Total Disturbed Area (shaded) = 2.29 acres

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 11/28/2020

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EC-1/EC-3

EC-2/EC-4

NC GRID
NAD 83/NA 2011

WILLIAMS RD (SR 1173)

-L- WILLIAMS RD (SR 1173)

US 421

US 421 ON-RAMP

US 421 OFF-RAMP

CONCORD CHURCH RD (SR 1171)

TO CLEMMONS

SHALLOWFORD RD (SR 1001)

HERITAGE RD

TO WINSTON-SALEM

1/27/2020

5/14/99

REVISIONS

LEGEND

- CONSTRUCTION LIMIT — C F
- LIMITS OF DISTURBANCE (SHADED)
- TEMPORARY SEDIMENT FENCE
- SILT FENCE OUTLET
- TEMPORARY CHECK DAM
- TEMPORARY ROCK SILT CHECK, TYPE A
- INLET PROTECTION DEVICE
- TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT
- CONCRETE WASHOUT STRUCTURE

NPDES GENERAL STORMWATER PERMIT 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.

NOTE: CONTRACTOR SHALL PROVIDE SOIL STABILIZATION ON SLOPES STEEPER THAN 3:1 AND ON THE SLOPES OF DITCHES, SWALES, AND DIVERSIONS WITHIN 7 DAYS. ALL OTHER SLOPES SHALL BE STABILIZED WITHIN 14 DAYS AS REQUIRED BY NPDES GENERAL STORMWATER PERMIT. REFER TO CROSS SECTIONS.

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RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL ENGINEER 024435 JEFFREY W. MOORE 1/28/2020

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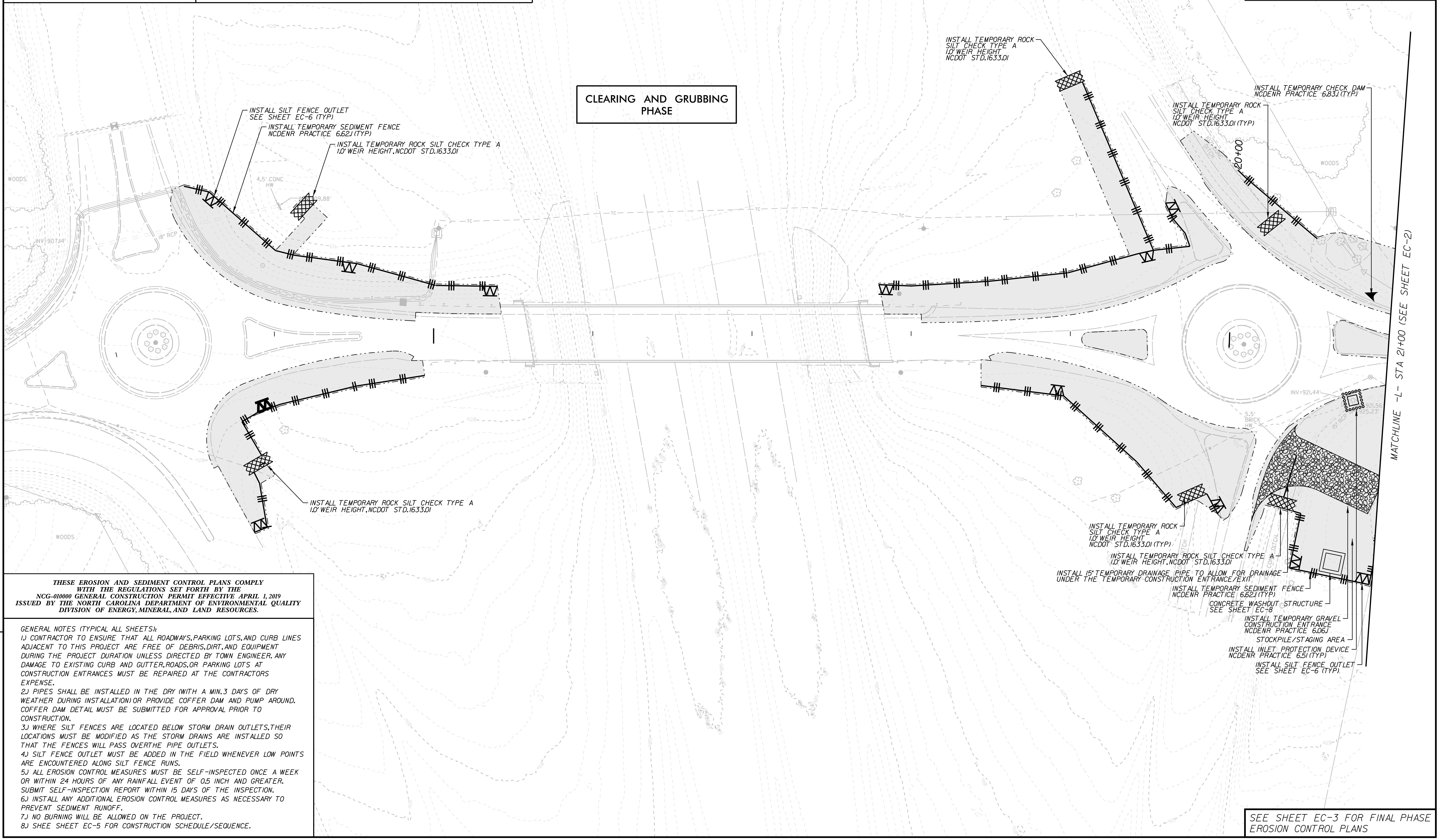
NC GRID NAD 83/NA 2011
CLEARING AND GRUBBING PHASE
INSTALL SILT FENCE OUTLET SEE SHEET EC-6 (TYP)
INSTALL TEMPORARY SEDIMENT FENCE NCDENR PRACTICE 6.62.1 (TYP)
INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT, NCDOT STD.1633.01
INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT NCDOT STD.1633.01
INSTALL TEMPORARY CHECK DAM NCDENR PRACTICE 6.83.1 (TYP)
INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT NCDOT STD.1633.01 (TYP)
20+00
WOODS
MATCHLINE -L- STA 21+00 (SEE SHEET EC-2)
INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT, NCDOT STD.1633.01
INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT NCDOT STD.1633.01 (TYP)
INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT, NCDOT STD.1633.01
INSTALL 15" TEMPORARY DRAINAGE PIPE TO ALLOW FOR DRAINAGE UNDER THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT
INSTALL TEMPORARY SEDIMENT FENCE NCDENR PRACTICE 6.62.1 (TYP)
CONCRETE WASHOUT STRUCTURE SEE SHEET EC-8
INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE NCDENR PRACTICE 6.06.1
STOCKPILE/STAGING AREA
INSTALL INLET PROTECTION DEVICE NCDENR PRACTICE 6.51 (TYP)
INSTALL SILT FENCE OUTLET SEE SHEET EC-6 (TYP)
WOODS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

GENERAL NOTES (TYPICAL ALL SHEETS):

1) CONTRACTOR TO ENSURE THAT ALL ROADWAYS, PARKING LOTS, AND CURB LINES ADJACENT TO THIS PROJECT ARE FREE OF DEBRIS, DIRT, AND EQUIPMENT DURING THE PROJECT DURATION UNLESS DIRECTED BY TOWN ENGINEER. ANY DAMAGE TO EXISTING CURB AND GUTTER, ROADS, OR PARKING LOTS AT CONSTRUCTION ENTRANCES MUST BE REPAIRED AT THE CONTRACTORS EXPENSE.
2) PIPES SHALL BE INSTALLED IN THE DRY (WITH A MIN. 3 DAYS OF DRY WEATHER DURING INSTALLATION) OR PROVIDE COFFER DAM AND PUMP AROUND. COFFER DAM DETAIL MUST BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.
3) WHERE SILT FENCES ARE LOCATED BELOW STORM DRAIN OUTLETS, THEIR LOCATIONS MUST BE MODIFIED AS THE STORM DRAINS ARE INSTALLED SO THAT THE FENCES WILL PASS OVERTHE PIPE OUTLETS.
4) SILT FENCE OUTLET MUST BE ADDED IN THE FIELD WHENEVER LOW POINTS ARE ENCOUNTERED ALONG SILT FENCE RUNS.
5) ALL EROSION CONTROL MEASURES MUST BE SELF-INSPECTED ONCE A WEEK OR WITHIN 24 HOURS OF ANY RAINFALL EVENT OF 0.5 INCH AND GREATER. SUBMIT SELF-INSPECTION REPORT WITHIN 15 DAYS OF THE INSPECTION.
6) INSTALL ANY ADDITIONAL EROSION CONTROL MEASURES AS NECESSARY TO PREVENT SEDIMENT RUNOFF.
7) NO BURNING WILL BE ALLOWED ON THE PROJECT.
8) SHEE SHEET EC-5 FOR CONSTRUCTION SCHEDULE/SEQUENCE.

1/27/2020

SEE SHEET EC-3 FOR FINAL PHASE EROSION CONTROL PLANS

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1/27/2020

MATCHLINE -L- STA 21+00 (SEE SHEET EC-1)

25+00

NC GRID
NAD 83/NA 2011

CLEARING AND GRUBBING PHASE

INSTALL TEMPORARY CHECK DAM NCDENR PRACTICE 6.83J (TYP.)

INSTALL INLET PROTECTION DEVICE NCDENR PRACTICE 6.5I (TYP)

INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT NCDOT STD.1633.01 (TYP)

INSTALL TEMPORARY SEDIMENT FENCE NCDENR PRACTICE 6.62J (TYP)

INSTALL SILT FENCE OUTLET SEE SHEET EC-6 (TYP)

INSTALL TEMPORARY ROCK SILT CHECK TYPE A 1.0' WEIR HEIGHT NCDOT STD.1633.01 (TYP)

SEE SHEET EC-4 FOR FINAL PHASE EROSION CONTROL PLANS

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024435 JEFFREY W. MOORE 1/28/2020

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ROADWAY DESIGN
ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 1/28/2020

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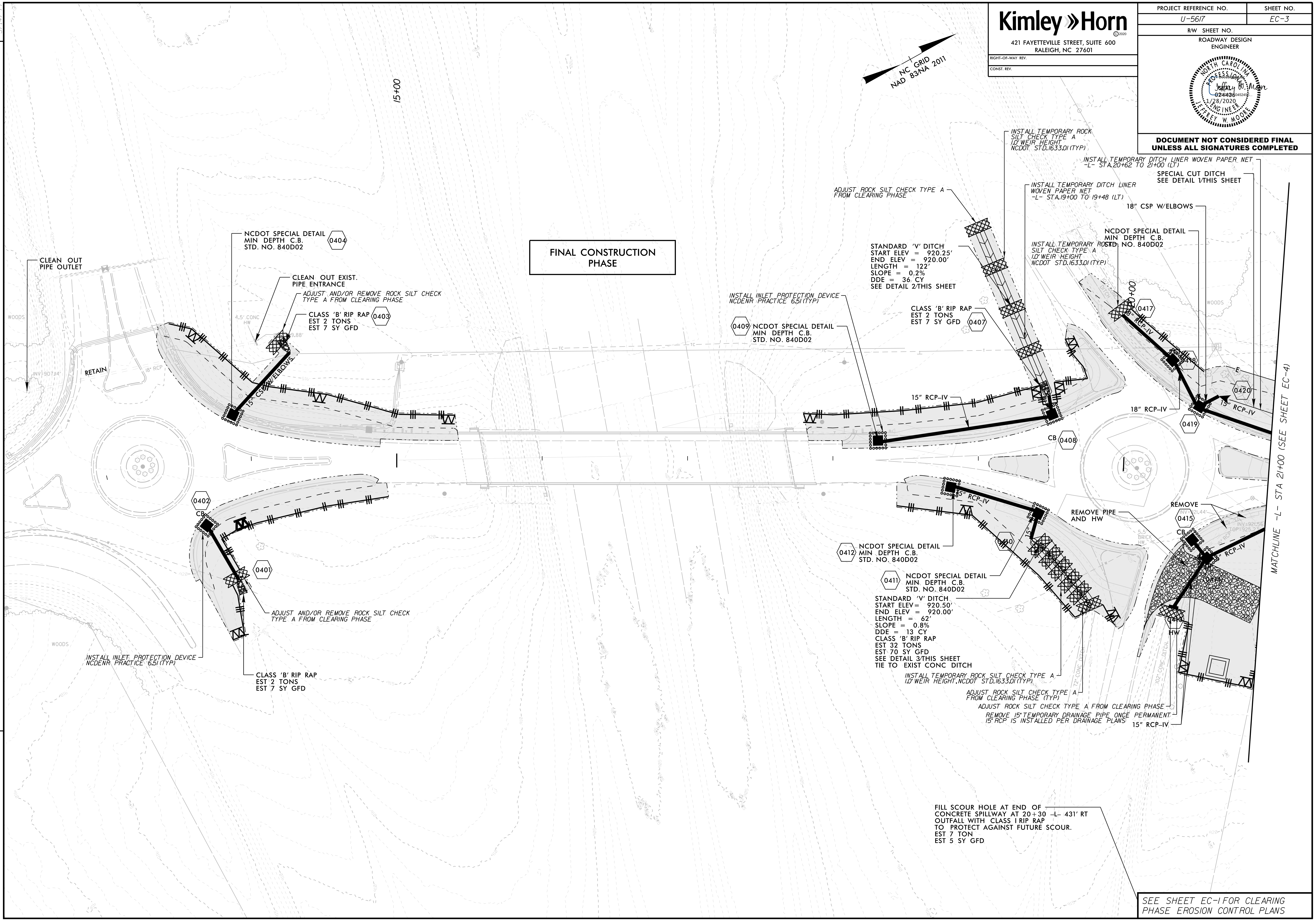

NC GRID
NAD 83/NA 2011
15+00
FINAL CONSTRUCTION
PHASE
CLEAN OUT
PIPE OUTLET
RETAIN
NCDOT SPECIAL DETAIL
MIN DEPTH C.B.
STD. NO. 840D02
0404
CLEAN OUT EXIST.
PIPE ENTRANCE
ADJUST AND/OR REMOVE ROCK SILT CHECK
TYPE A FROM CLEARING PHASE
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GFD
0403
15" CSP W/ELBOWS
WOODS
0402
CB
0401
ADJUST AND/OR REMOVE ROCK SILT CHECK
TYPE A FROM CLEARING PHASE
INSTALL INLET PROTECTION DEVICE
NCDENR PRACTICE 6.51 (TYP)
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GFD
STANDARD 'V' DITCH
START ELEV = 920.25'
END ELEV = 920.00'
LENGTH = 122'
SLOPE = 0.2%
DDE = 36 CY
SEE DETAIL 2/THIS SHEET
ADJUST ROCK SILT CHECK TYPE A
FROM CLEARING PHASE
INSTALL TEMPORARY ROCK
SILT CHECK TYPE A
1.0' WEIR HEIGHT
NCDOT STD.1633.01 (TYP)
INSTALL TEMPORARY DITCH LINER
WOVEN PAPER NET
-L- STA.19+00 TO 19+48 (LT)
INSTALL TEMPORARY ROCK
SILT CHECK TYPE A
1.0' WEIR HEIGHT
NCDOT STD.1633.01 (TYP)
STD. NO. 840D02
INSTALL TEMPORARY DITCH LINER WOVEN PAPER NET
-L- STA.20+62 TO 21+00 (LT)
SPECIAL CUT DITCH
SEE DETAIL 1/THIS SHEET
18" CSP W/ELBOWS
NCDOT SPECIAL DETAIL
MIN DEPTH C.B.
INSTALL INLET PROTECTION DEVICE
NCDENR PRACTICE 6.51 (TYP)
0409
NCDOT SPECIAL DETAIL
MIN DEPTH C.B.
STD. NO. 840D02
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GFD
0407
15" RCP-IV
CB
0408
0417
0420
18" RCP-IV
0419
15" RCP-IV
15" RCP-IV
0412
NCDOT SPECIAL DETAIL
MIN DEPTH C.B.
STD. NO. 840D02
0411
NCDOT SPECIAL DETAIL
MIN DEPTH C.B.
STD. NO. 840D02
STANDARD 'V' DITCH
START ELEV= 920.50'
END ELEV = 920.00'
LENGTH = 62'
SLOPE = 0.8%
DDE = 13 CY
CLASS 'B' RIP RAP
EST 32 TONS
EST 70 SY GFD
SEE DETAIL 3/THIS SHEET
TIE TO EXIST CONC DITCH
REMOVE PIPE
AND HW
REMOVE
0415
CB
RCP-IV
HW
INSTALL TEMPORARY ROCK SILT CHECK TYPE A
1.0' WEIR HEIGHT, NCDOT STD.1633.01 (TYP)
ADJUST ROCK SILT CHECK TYPE A
FROM CLEARING PHASE (TYP)
ADJUST ROCK SILT CHECK TYPE A FROM CLEARING PHASE
REMOVE 15" TEMPORARY DRAINAGE PIPE ONCE PERMANENT
15" RCP IS INSTALLED PER DRAINAGE PLANS
15" RCP-IV
MATCHLINE -L- STA 21+00 (SEE SHEET EC-4)
FILL SCOUR HOLE AT END OF
CONCRETE SPILLWAY AT 20+30 -L- 431' RT
OUTFALL WITH CLASS I RIP RAP
TO PROTECT AGAINST FUTURE SCOUR.
EST 7 TON
EST 5 SY GFD

SEE SHEET EC-1 FOR CLEARING PHASE EROSION CONTROL PLANS

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MATCHLINE -L- STA 21+00 (SEE SHEET EC-3)

25+00

NC GRID
NAD 83/NA 2011

FINAL CONSTRUCTION PHASE

15" RCP-IV

CB (0510)

REMOVE

CB (0511)

15" RCP-IV

REMOVE

CB (0512)

15" RCP-IV

REMOVE

CB (0513)

REMOVE

REMOVE (BROKEN UP CONCRETE)

CB (0503)

CB (0505)

REMOVE

15" RCP-IV

CB (0502)

PUE

15" RCP-IV

PUE

RETAIN

RETAIN

CONVERT CB TO JB W/MH (0509)

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GFD (0504)

PDE

INSTALL SILT FENCE OUTLET
SEE SHEET EC-6 (TYP)

ADJUST AND/OR REMOVE ROCK SILT CHECK
TYPE A FROM CLEARING PHASE

INSTALL INLET PROTECTION DEVICE
NCDENR PRACTICE 6.51 (TYP)

REMOVE
NCDOT SPECIAL DETAIL
MIN DEPTH C.B.
STD. NO. 840D02 (0501)

15" RCP-IV

CB (0508)

RETAIN

COLLAR AND EXTEND 18" RCP (0507)

ADJUST AND/OR REMOVE ROCK SILT CHECK
TYPE A FROM CLEARING PHASE

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GFD (0506)

SEE SHEET EC-2 FOR CLEARING PHASE EROSION CONTROL PLANS

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R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024435 JEFFREY W. MOORE 11/28/2020

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CONSTRUCTION SCHEDULE/SEQUENCE

CONSTRUCTION SPECIFICATIONS

1. Please refer to the Erosion and Sediment Control plans for detailed construction scheduling and sequencing.
2. Obtain plan approval and other applicable permits including grading permits for borrow site. Refer to Section 230 "Borrow Excavation" in the 2018 NCDOT Standard Specifications.
3. Flag the work limits for protection.
4. Hold preconstruction conference at least one week prior to starting construction and invite NCDEQ. NCDEQ LQS contact number is (919) 791-4200.
5. Prior to any land disturbing (including demolition) activities, install temporary gravel construction entrance/exits, concrete washout structures, inlet protection, and silt fence as shown on the erosion control plans.
6. In accordance with the erosion control plans and traffic control plans: install erosion control measures. During any land disturbing activity, mud mats shall be used within wetlands to minimize impacts and tracking. After erosion control measures are in place, grade roadway. After grading is complete, install erosion control matting/liner as noted in the plans.
7. Complete final grading for roadway improvemnts and stabilize with gravel.
8. Backfill around culvert, place concrete/asphalt, and build shoulders.
9. Finish grading of slopes, topsoil critical areas and permanently vegetate, seed and mulch. See this sheet forseeding plan and seed mixes for Riparian Buffer and Wetland areas.
10. All graded areas will be seeded, fertilized and mulched according to NCDOT specifications to maintain a vigorous, dense, vegetative cover within 21 calendar days or sooner of completion of any phase of grading. If work on the project ceases for more than the aforementioned length of time, all disturbed areas shall have temporary vegetative ground cover established and erosion control devices maintained. All bare soils are to be stabilized under conditions outlined in the current NPDES permit or sooner.
11. After seeding is established, the contractor shall call NCDEQ and arrange for a final site inspection. Upon approval, all temporary erosion control measures shall be removed from the project.
12. All erosion and sediment control practices will be inspected weekly and after rainfall events. Needed repairs will be made immediately to restore sediment containment.
13. All applicable erosion and sediment control must be maintained until a vigorous stand of permanent ground cover is established and permanent vegetation is well established.
14. Site includes approximately 1.45 acres of permanent vegetation area.
15. After site is stabilized, construction staging and material area stockpile areas and all other erosion control devices shall be removed, restored as existing, and permanently vegetated as described in the maintenance and vegetative plan.
16. The previous 30 days of self-inspection records, rain gauge, approval certificate/letter, approved plan, and NPDES permit will be kept on site near the main construction entrance for the entirety of the project.

MAINTENANCE

Follow the construction sequence throughout project development. When changes in construction activities are needed, amend the sequence schedule in advance to maintain management control.

Notification of Land Resources Sediment and Erosion Control Self-Inspection Program:

The Sedimentation Pollution Control Act was amended in 2006 to require that persons responsible for land-disturbing activities inspect a project after each phase of the project to make sure that the approved erosion and sedimentation control plan is being followed. Rules detailing the documentation of these inspections took effect October 1, 2010. The self-inspection program is separate from the weekly self-monitoring program of the NPDES Stormwater Permit for Construction Activities.

The focus of the self-inspection report is the installation/maintenance of erosion and sedimentation control measures according to the approved plan. The inspections must be conducted after each phase of the project, and continue until permanent ground cover is established in accordance with NCGS 113A-54.1 and 15A NCAC 4B.0131.

The Self-Inspection Report form is available as a Word Document and PDF from at http://portal.ncdenr.org/web/lr/erosion. If you have questions or cannot access the form, please contact NCDEQ Land Quality Section at (919) 791-4200.

MAINTENANCE PLAN

1. The Contractor shall check all erosion and sediment control practices for stability and operation following every runoff producing rainfall but in no case less than once every week. Any needed repairs will be made immediately by the Contractor to maintain all practices as designed. Also per National Pollutant Discharge Elimination System (NPDES) general stormwater permit, a rain gauge must be installed on site. The rain gauge must be kept onsite and inspections by the contractor must be made and logged after every one inch of rainfall and once a week.
2. The Contractor shall remove sediment from behind silt fence when it becomes 0.5 feet deep at the fence. Silt fence will be repaired as necessary to maintain a barrier.
3. The Contractor shall remove sediment from sediment basin when storage capacity has been approximately 50% filled. Gravel will be cleaned or replaced when the sediment pool no longer drains properly.
4. The Contractor shall fertilize, reseed as necessary, and mulch all seeded areas according to specifications in the vegetative plan to maintain a vigorous, dense vegetative cover.
5. The angle for graded slopes and fills shall be no greater than the angle that can be retained by vegetative cover or other adequate erosion-control devices or structures. In any event, slopes left exposed will, within 7 or 14 calendar days of completion of any phase of grading, be planted or otherwise provided with temporary ground cover, devises or structures sufficient to restrain erosion. Permanent groundcover will be provided for all disturbed areas within 15 working days or no more than 90 calendar days (whichever is shorter) following completion of construction.
6. The Town of Lewisville contact is Hank Perkins (336) 945-1028.

RIP RAP (6.15)

CONSTRUCTION SPECIFICATIONS

Subgrade Preparation - Prepare the subgrade for riprap and filter to the required lines and grades shown on the plans. Compact any fill required in the subgrade to a density approximating that of the surrounding undisturbed material or overfill depressions with riprap. Remove brush, trees, stumps and other objectional material. Cut the subgrade sufficiently deep that the finished grade of the riprap will be at the elevation of the surrounding area. Channels should be excavated sufficiently to allow placement of the riprap in a manner such that the finished inside dimensions and grade of the riprap meet design specifications.

Sand and gravel filter blanket - Place the filter blanket immediately after the ground foundation is prepared. For gravel, spread filter stone in a uniform layer to the specified depth. Where more than one layer of filter material is used, spread the layers with minimal mixing.

Synthetic filter fabric - Place the cloth filter directly on the prepared foundation. Overlap the edges by at least 12 inches, and space anchor pins every 3 ft along the overlap. Bury the upstream end of the cloth a minimum of 12 inches below ground and where necessary, bury the lower end of the cloth or overlap with the next section as required. Take care not to damage the cloth when placing riprap. If damage occurs remove the riprap and repair the sheet by adding another layer of filter material with a minimum overlap of 12 inches around the damaged area. If extensive damage is suspected, remove and replace the entire sheet.

Where large stones are used or machine placement is difficult, a 4-inch layer of fine gravel or sand may be needed to protect the filter cloth.

Stone Placement - Placement of riprap should follow immediately after placement of the filter. Place riprap so that it forms a dense, well-graded mass of stone with a minimum of voids. The desired disbribution of stones throughout the mass may be obtained by selective loading at the quarry and controlled dumping during final placement. Place riprap to its full thickness in one operation. Do not place riprap by dumping through chutes or other methods that cause segregation of stone sizes. Take care not to dislodge the underlying base or filter when placing the stones.

The finished slope should be free of pockets of small stone or clusters of large stones. Hand placing may be necessary to achieve the proper distribution of stone sizes to produce a relatively smooth, uniform surface. The finished grade of the riprap should blend with the surrounding area. No overfall or protrusion of riprap should be apparent.

MAINTENANCE

Inspect channels at regular intervals as well as after major rains, and make repairs promptly. Give special attention to the outlet and inlet sections and other points where concentrated flow enters. Carefully check stability at road crossings and look for indications of piping, scour holes, or bank failures. Make repairs immediately. Maintain all vegetation adjacent to the channel in a healthy, vigorous condition to protect the area from erosion and scour during out-of-bank flow. Control of weed and brush growth may be needed in some locations.

LAND GRADING (6.02)

CONSTRUCTION SPECIFICATIONS

1. Construct and maintain all erosion and sedimentation control practices and measures in accordance with the approved sedimentation control plan and construction schedule.

2. Remove good topsoil, as determined by a Geotechnical Engineer from areas to be graded and filled, and preserve it for use in finishing the grading of all critical areas.

3. Scarify areas to be topsoiled to a minimum depth of 2 inches before placing topsoil.

4. Clear and grub areas to be filled to remove trees, vegetation, roots, or other objectionable material that would affect the planned stability of the fill.

5. Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.

6. Place all fill in layers not to exceed 9 inches in thickness, and compact the layers as required to reduce erosion, slippage, settlement, or other related problems.

7. Do not incorporate frozen material or soft or highly compressible materials into fill slopes.

8. Do not place fill on a frozen foundation, due to possible subsidence and slippage.

9. Keep diversions and other water conveyance measures free of sediment during all phases of development.

10. Handle seeps or springs encountered during construction in accordance with approved methods.

11. Permanently stabilize all graded areas immediately after final grading is completed on each area in the grading plan. Apply temporary stabilization measures on all graded areas when work is to be interrupted or delayed for 15 working days or longer.

12. Show topsoil stockpiles, borrow areas, and spoil areas on the plans, and make sure they are adequately protected from erosion. Include final stabilization of these areas in the plan.

MAINTENANCE

Periodically check all graded areas and the supporting erosion and sedimentation control practices, especially after heavy rainfalls. Promptly remove all sediment from diversion and other water-disposal practices. If washouts or breaks occur, repair them immediately. Prompt maintenance of small eroded areas before they become significant gullies is an essential part of an effective erosion and sedimentation control plan.

VEGETATIVE PLAN (6.10 AND 6.11)

SEEDING SCHEDULE

Shoulders, Side Ditches, Slopes (3:1)

Date	Type	Planting Rate
Aug.15-Nov.1	Tall Fescue	250 lbs./acre
Nov.1-Mar.1	Tall Fescue & Abruzzi Rye	250 lbs./acre 25 lbs./acre
Mar.1-Apr.15	Tall Fescue	250 lbs./acre
Apr.15-Jun.15	Hulled Common Bermudagrass	12 lbs./acre
Jun.15-Aug.15	Tall Fescue & Browntop Millet *** or Sorghum-Sudan Hybrids ***	60 lbs./acre 35 lbs./acre 30 lbs./acre
	Slopes (3:1 to 2:1)	
Mar.1-Jun.1	Sericea Lespedeza (scarified) and	50 lbs./acre
(Mar.1-Apr.15)	Add Tall Fescue	60 lbs./acre
(Mar.1-Jun.30)	or Add Weeping Lovegrass	5 lbs./acre
(Mar.1-Jun.30)	or Add Hulled Common Bermudagrass	8 lbs./acre
Jun.1-Sep.1	Tall Fescue *** & Browntop Millet ***	60 lbs./acre 35 lbs./acre
	or Sorghum-Sudan Hybrids ***	30 lbs./acre
Sep.1-Mar.1	Sericea Lespedeza (unhulled-unscarified) & Tall Fescue	70 lbs./acre 50 lbs./acre
(Nov.1-Mar.1)	Add Abruzzi Rye	25 lbs./acre

Consult Conservation Engineer or Soil Conservation Service for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those which do well under local conditions; other seeding rate combinations are possible.

*** Temporary - Reseed according to optimum season for desired permanent vegetation per Section 6.10 . Do not allow temporary cover to grow over 12 inches in height before mowing, otherwise, fescue may be shaded out.

SEEDING SPECIFICATIONS

1) After rough grading is completed, till soil in areas to be seeded and planted to a depth of six inches.
2) Apply agricultural lime, fertilizer, and superphosphate to disturbed areas to be vegetated.
   A minimum of 2 tons limestone/acre with 3 tons limestone /acre in clay soils or per soils test
   35 lbs.10-10-10 fertilizer/1000 sq.ft.(1500 lbs/acre)
   40 lbs.50% superphosphate/1000 sq.ft.(1750 lbs/acre)
3) Disk nutrients into soil to a depth of six inches until surface is uniform and free of large dirt clods.
4) Seeding permanent grass.
   3.0 lbs.KY-31 tall fescue/1000 sq.ft.(130 lbs./acre) during February 15 through May 15 or August 15 through November 15.
   -OR-
   3.0 lbs.KY-31 tall fescue and 2.0 lbs.annual ryegrass/1000 sq.ft.during November 15 through February 15.
5) Mulch seeded area with small grain straw at 90 lbs/1000 sq.ft.(2 tons/acre). Spread uniformly. Approximately 1/2 of ground surface should be visible to avoid blocking sunlight to seedlings. Mulch shall be applied by the crimping and mulching application technique. Tack mulch with asphalt emulsion at a rate of 400 gallons emulsion per acre of straw.
6) Mulch around shubbery and trees with pine straw to depth of 3 inches.
7) Temporary cover
   1.0 lbs.brown top millet/1000 sq.ft.May through August 25.
   -OR-
   1.0 lbs.annual ryegrass/1000 sq.ft.August 25 through April.
6) Maintenance: Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

NOTE: For Riparian Buffer areas, see tables above.

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027426 JEFFREY W. MOORE 1/28/2020

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024245 JEFFREY W. MOORE
Jeffrey W. Moore
12/28/2020

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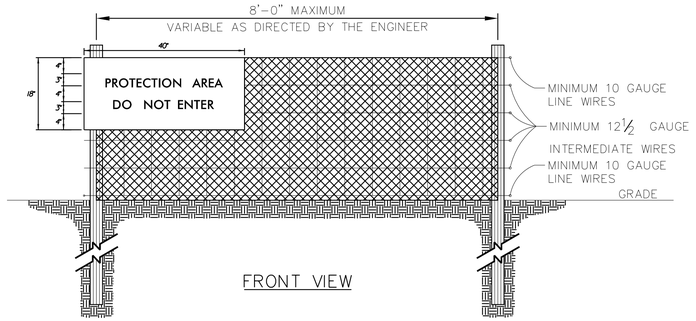
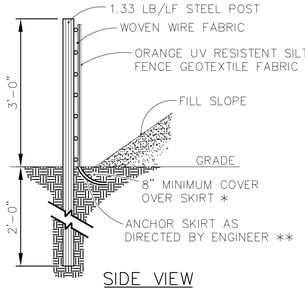


FRONT VIEW



SIDE VIEW

* FOR REPAIR OF SILT FENCE FAILURES USE SILT FENCE OUTLET DETAIL

** ANCHOR SKIRT FOLLOWING SKIRT TRENCH REQUIREMENTS, PER NCDENR EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FIGURE 6.62A (6.62.5). SKIRT MUST BE TRENCHED IN, AT A MINIMUM, 8" VERTICALLY AND 4" HORIZONTALLY.

NOTE:
USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.

TEMPORARY SILT FENCE

CONSTRUCTION SPECIFICATIONS

1. Use a synthetic filter fabric of at least 95% by weight of polyolefins or polyester, which is certified by the manufacturer or supplier as conforming to the requirements in ASTM D 6461, which is shown in part in Table 6.62b.

Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120 F.

2. Ensure that posts for sediment fences are 1.25 lb/linear ft minimum steel with a minimum length of 5 feet. Make sure that steel posts have projections to facilitate fastening the fabric.

3. For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.

CONSTRUCTION

1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabrics.

2. Ensure that the height of the sediment fence does not exceed 24 inches above the ground surface. (Higher fences may impound volumes of water sufficient to cause failure of the structure.)

3. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with 4 feet minimum overlap to the next post.

4. Support standard strength filter fabric by wire mesh fastened securely to upslope side of the posts. Extend the wire mesh support to the bottom of the trench. Fasten the wire reinforcement, then fabric on the upslope side of the fence post. Wire or plastic zip ties should have minimum 50 pound tensile strength.

5. When a wire mesh support fence is used, space posts a maximum of 8 feet apart. Support posts should be driven securely into the ground a minimum of 24 inches.

6. Extra strength filter fabric with 6 feet post spacing does not require wire mesh support fence. Securely fasten the filter fabric directly to posts. Wire or plastic zip ties should have minimum 50 pound tensile strength.

7. Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upslope from the barrier (Figure 6.62a).

8. Place 12 inches of the fabric along the bottom and side of the trench.

9. Backfill the trench with soil placed over the filter fabric and compact. Thorough compaction of the backfill is critical to silt fence performance.

10. Do not attach filter fabric to existing trees.

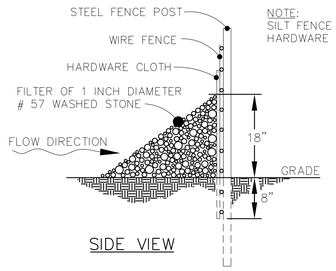
MAINTENANCE

Inspect sediment fences and fence outlets at least once a week and after each rainfall. Make any required repairs immediately.

Should the fabric of a sediment fence collapse, tear, decompose or become ineffective, replace it promptly. Replace burlap every 60 days.

Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid undermining the fence during cleanout.

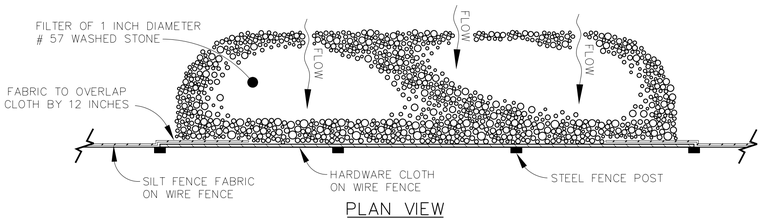
Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.



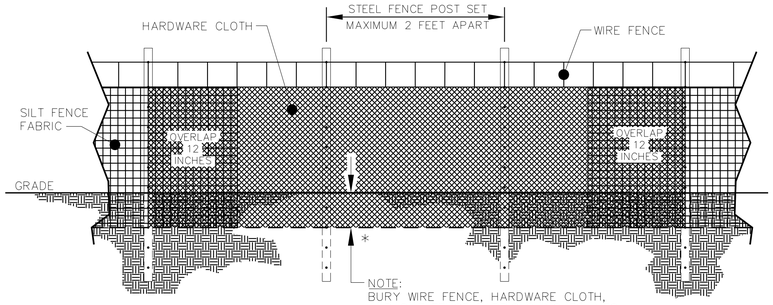
SIDE VIEW

NOTE:
USE SILT FENCE OUTLETS ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND THERE IS A LOW AREA. USE AS A REPAIR OF SILT FENCE FAILURES.

* ANCHOR SKIRT FOLLOWING SKIRT TRENCH REQUIREMENTS, PER NCDENR EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FIGURE 6.62A (6.62.5). SKIRT MUST BE TRENCHED IN, AT A MINIMUM, 8" VERTICALLY AND 4" HORIZONTALLY.



PLAN VIEW



FRONT VIEW

STANDARD SILT FENCE OUTLET

CONSTRUCTION SPECIFICATIONS

MATERIALS

1. Use a synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polyethylene yarn which is certified by the manufacturer or supplier as conforming to the requirements shown in the table below.

Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120 degrees F.

2. Ensure that posts for sediment fences are 1.33 lb/linear ft steel with a minimum length of 4 ft. Make sure that steel posts have projections to facilitate fastening the fabric.

3. For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.

CONSTRUCTION

1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabrics.

2. Ensure that the height of the sediment fence does not exceed 18 inches above the ground surface. (Higher fences may impound volumes of water sufficient to cause failure of the structure).

3. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with overlap to the next post.

4. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts using heavy duty wire staples at least 1 inch long, or the wires. Extend the wire mesh support to the bottom of the trench.

5. When a wire mesh support fence is used, space posts a maximum of 8 ft apart. Support posts should be driven securely into the ground to a minimum of 18 inches on the downslope side of the trench.

6. Extra strength filter fabric with 6-ft post spacing does not require wire mesh support fence. Staple or wire the filter fabric directly to posts.

7. Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upslope from the barrier.

8. Adjust spacing to place posts at low points along the fence line.

9. Backfill the trench with compacted soil or gravel placed over the filter fabric.

10. Do not attach filter fabric to existing trees.

11. Fasten support wire fence to upslope side of posts, extending 6 inches into the trench.

12. Attach continuous length of fabric to upslope side of fence posts. Avoid joints, particularly at low points in the fence line. When joints are necessary, fasten fabric securely support posts and overlap to the next post.

MAINTENANCE

Inspect sediment fences and fence outlets at least once a week and after each rainfall. Make any required repairs immediately.

Should the fabric of a sediment fence collapse, tear, decompose or become ineffective, replace it promptly. Replace burlap every 60 days.

Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid undermining the fence during cleanout.

Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

5/14/99

REVISIONS

1/27/2020

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 1/28/2020

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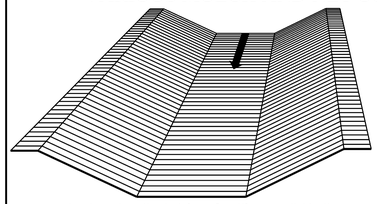
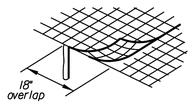
VARIOUS MULCH AND NET CONSTRUCTION SPECIFICATIONS



In channels, roll out strips of netting parallel to the direction of flow and over the protective mulch.



Join strips by anchoring and overlapping.

CONSTRUCTION SPECIFICATIONS

SYNTHETIC ROVING

Use North American Green PS 300 permanent erosion control matting or equivalent product approved by engineer.

Synthetic roving is wound into a cylindrical package so that it can be continuously withdrawn from the center using a compressed air ejector. Roving expands into a mat or glass fibers as it contacts the soil surface. It is often used over a straw mulch, but must still be tacked with asphalt.

Spread roving uniformly over the area at a rate of 0.25 to 0.35 lb/sq yd. Anchor with asphalt immediately after application, at a rate of 450 gallons per acre.

As a channel lining, and at other sites of concentrated flow, the roving mat must be further anchored to prevent undermining. It may be secured with stakes placed at intervals no greater than 10 ft along the drainageway, and randomly throughout its width, but not more than 10 ft apart. As an option to staking, the roving can be buried to a depth of 5 inches at the upgrade end and at intervals of 50 ft along the length of the channel.

NETS AND MATS

Nets alone generally provide little moisture conservation benefits and only limited erosion protection. Therefore, they are usually used in conjunction with an organic mulch such as straw.

Except when wood fiber slurry is used, netting should always be installed over the mulch. Wood fiber may be sprayed on top of an installed net.

Mats, including "excelsior" (wood fiber) blankets, are considered protective mulches and may be used alone, on erodible soils, and during all times of the year. Place the matting in firm contact with the soil and staple securely.

INSTALLATION OF NETTING AND MATTING

Products designed to control erosion should be installed in accordance with manufacturer's instructions. Any mat or blanket-type product used as a protective mulch should provide cover of at least 30% of the surface where it is applied. Installation is illustrated below.

1. Apply lime, fertilizer and seed before laying the net or mat. If open-weave netting is used, lime may be incorporated before installing the net and fertilizer and seed sprayed on afterward.

2. Start laying the net from the top of the channel or slope and unroll it down the grade. Allow netting to lay loosely on the soil but without wrinkles-do not stretch.

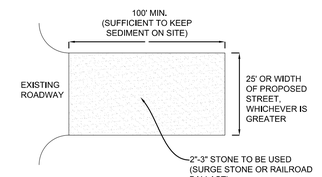
3. To secure the net, bury the upslope end in a slot or trench no less than 6 inches deep, cover with soil, and tamp firmly. Staple the net every 12 inches across the top end and every 3 ft around the edges and bottom. Where 2 strips of net are laid side by side, the adjacent edges should be overlapped 3 inches and stapled together. Each strip of netting should also be stapled down the center, every 3 ft. Do not stretch the net when applying staples.

4. To join two strips, cut a trench to anchor the end of the new net. Overlap the end of the previous roll 18 inches, as shown below, and staple every 12 inches just below the anchor slot.

MAINTENANCE

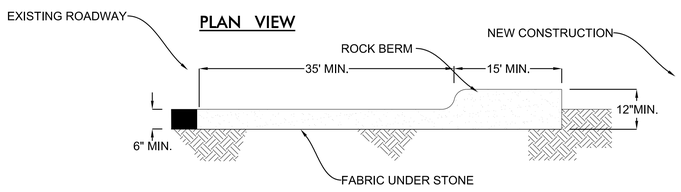
Inspect all mulches, nets, and mats at least weekly and after each significant (1/2 inch or greater) rain fall event repair immediately. Good contact with the ground must be maintained, and erosion must not occur beneath the nets and mats. Any ares of the nets and mats that are damaged or not in close contact with the ground shall be repaired and stapled. If erosion occurs due to poorly controlled drainage, the problem shall be fixed and eroded area protected. Where erosion is observed, apply additional mulch. If washout occurs, repair the clope grade, reseed and reinstall mulch. Monitor and repair mats and liners as necessary until ground cover is established.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT (6.06.1)



NOTES:

PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
2. Place the stone to the specific grade and dimensions shown on the plans, and smooth it.
3. Provide drainage to carry water to a sediment trap or other suitable outlet.
4. Use geotextile fabrics because they improve stability of the foundation in locations subject to seepage or high water table.
5. Use 2-3" coarse aggregate base course or larger.
6. Payment shall be made at the contract unit price per ton "Erosion Control Stone, Class A."

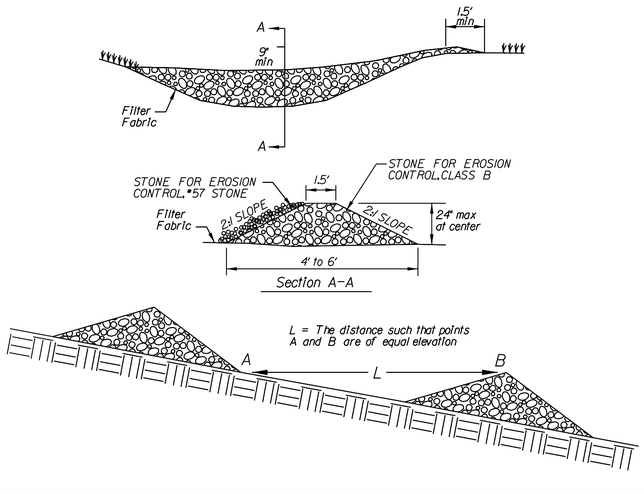
MAINTENANCE

Maintain the stone pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.

Installation: Avoid curves in public roads and steep slopes. Remove all vegetation and other objectionable material from the foundation area. Grade and crown foundation for positive drainage.

If the slope toward the road exceeds 2%, construct a ridge, 6 to 8 inches high with 3:1 side slopes, across the foundation approximately 15 feet from the entrance to divert runoff away from the public road.

TEMPORARY CHECK DAM DETAIL (6.83)



NOTE:
Check dams to be installed as indicated on plan or if grade is steeper per plan detail.

CONSTRUCTION SPECIFICATIONS

1. Place stone to the lines and dimensions shown in the plan on a filter fabric foundation.
2. Keep the center stone section at least 9 inches below natural ground level where the dam abuts the channel banks.
3. Extend stone at least 1.5 ft beyond the ditch banks to keep overflow water from cutting around the ends of the check dam.
4. Set spacing between dams to assure that the elevation at the top of the lower dam is the same as the toe elevation of the upper dam.
5. Protect the channel downstream from the lowest check dam, considering that water will flow over and around the dam.
6. Make sure that the channel reach above the most upstream dam is stable.
7. Ensure that channel appurtenances, such as culvert entrances below check dams, are not subject to damage or blockage from displaced stones.

MAINTENANCE

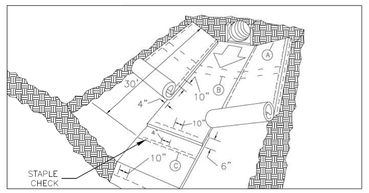
Inspect check dams and channels for damage after each runoff event.

Anticipate submergence and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, install a protective riprap liner in that portion of the channel.

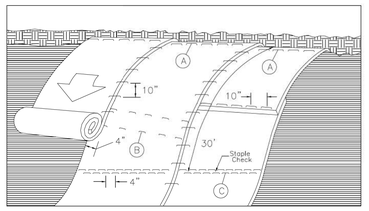
Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.

5/14/99

REVISIONS



MATTING IN DITCHES



MATTING ON SLOPES

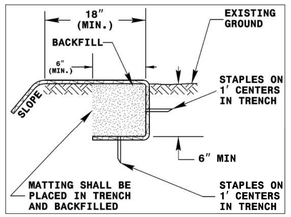


DIAGRAM (A)

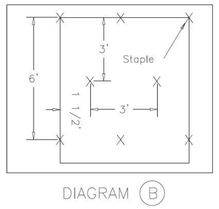


DIAGRAM (B)

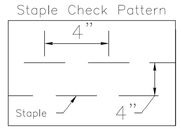


DIAGRAM (C)

NOTES

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

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

NOT TO SCALE

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

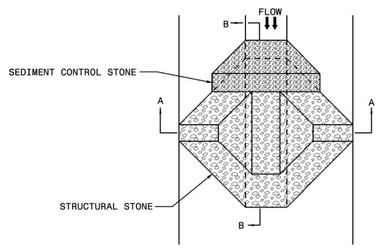
1-18

ROADWAY STANDARD DRAWING FOR
MATTING INSTALLATION

SHEET 1 OF 1
1631.01

MAINTENANCE:

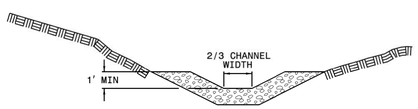
1. Inspect Rolled Erosion Control Products (RECP) at least weekly and after each significant (1/2 inch or greater) rain fall event repair immediately.
2. Good contact with the ground must be maintained, and erosion must not occur beneath the RECP.
3. Any areas of the RECP that are damaged or not in close contact with the ground shall be repaired and stapled.
4. If erosion occurs due to poorly controlled drainage, the problem shall be fixed and the eroded area protected.
5. Monitor and repair the RECP as necessary until ground cover is established.



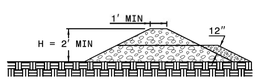
PLAN

NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.



SECTION A-A



SECTION B-B

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

1-18

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE A

SHEET 1 OF 1
1633.01

MAINTENANCE

Inspect rock silt checks and channels for damage after each runoff event.

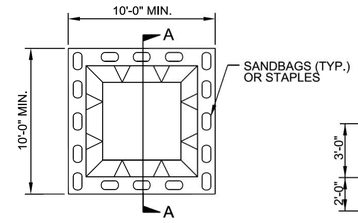
Anticipate submergence and deposition above the rock silt check and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between silt checks, install a protective riprap liner in that portion of the channel.

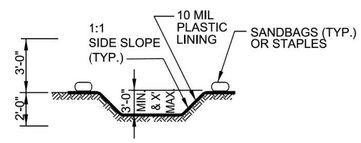
Remove sediment accumulated behind the darock silt checks as needed to prevent damage to channel vegetation, allow the channel to drain through the stone silt check, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.

1/27/2020

WITH LINER, NO GRAVEL APPROACH

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER





SECTION A-A

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

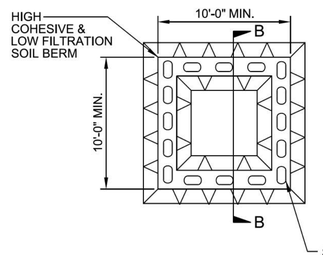
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

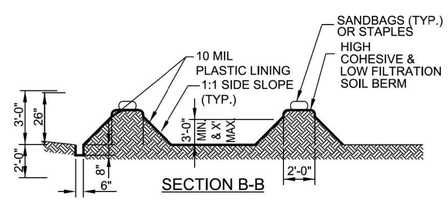
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

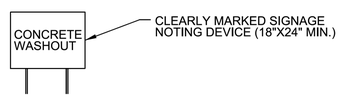
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

[redacted]

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-8

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 1/28/2020

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REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052405 JEFFREY W. MOORE 11/28/2020

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HARDWARE CLOTH AND GRAVEL INLET PROTECTION DETAIL (6.51.1)

CONSTRUCTION SPECIFICATIONS

1. As synthetic fabric, use a previous sheet of nylon, polyester, or ethylene yarn - extra strength (50 lb/1 inch minimum) - that contains ultraviolet ray inhibitors and stabilizers. Fabric should be sufficiently porous to provide adequate drainage of the temporary sediment pool. Burlap may be used for short-term applications. It must be replaced every 60 days.

2. Cut fabric from a continuous roll to eliminate joints.

3. For stakes, use 5-foot steel posts. Steel posts are incidental to sediment control fence pay item.

4. Space stakes evenly around the perimeter of the inlet a maximum of 4 ft apart, and securely drive them into the ground, approximately 24 inches deep.

5. Place a 2 foot flap of wire mesh under the gravel for anchoring.

6. Fasten fabric securely to the stakes and frame. Joints must be overlapped to the next stake.

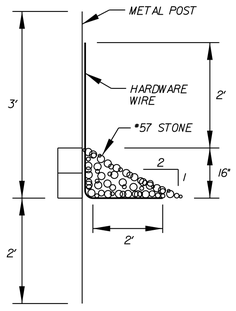
7. The top of the frame and fabric must be well below the ground elevation downslope from the drop inlet to keep runoff from bypassing the inlet. It may be necessary to build a temporary dike on the down slope side of the structure to prevent bypass flow. Material from within the sediment pool may be used for diking.

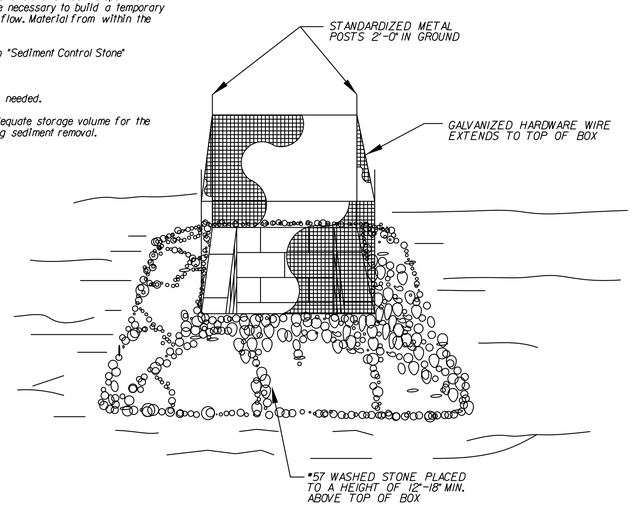
8. "57 Stone shall be paid for at the contract unit price per ton "Sediment Control Stone"

MAINTENANCE

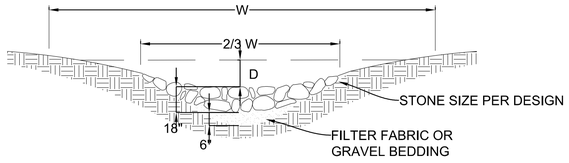
Inspect the fabric barrier after each rain and make repairs as needed.

Remove sediment from the pool area as necessary to provide adequate storage volume for the next rain. Take care not to damage or undercut the fabric during sediment removal.

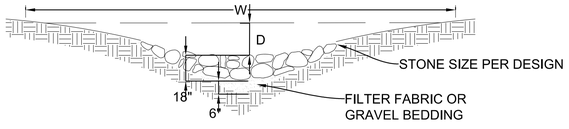




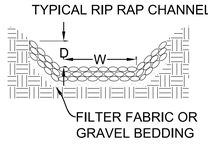
RIPRAP CHANNELS (6.31)



PARABOLIC-SHAPED WATERWAY WITH STONE CENTER DRAIN
(SHAPED BY BULLDOZER)



V-SHAPED WATERWAY WITH STONE CENTER DRAIN
(SHAPED BY MOTOR GRADER)



TRAPEZOIDAL

TABLE

STONE CLASSIFICATION	RIP RAP DEPTH
A	9"
B	18"
CLASS 1	24"
CLASS 2	24"-36"

NOTE:
1. TO BE USED WHERE EXCESSIVE STORMWATER VELOCITIES PROHIBIT VEGETATIVE LININGS.
2. SIZE OF STONE MUST BE DETERMINED BY APPROPRIATE DESIGN PROCEDURE.
3. DIMENSIONS FOR D & W VARIES ACCORDING TO DESIGN.
4. RIP RAP DEPTH AS PER DESIGN OR REFER TO TABLE.

CONSTRUCTION SPECIFICATIONS

1. Clear the foundation area of trees, stumps, roots, loose rock, and other objectionable material.
2. Excavate the cross section to the lines and grades of the foundation of the liner as shown on the plans. Bring over-excavated areas to grade by increasing the thickness of the liner or by backfilling with moist soil compacted to the density of the surrounding material.
3. Rock riprap linings: Practice 6.15, Riprap.
4. Place filters, beddings, and foundation drains to line and grade in the manner specified. Place filter and bedding materials immediately after slope preparation. For synthetic filter fabrics, overlap the downstream edge by at least 12 inches with the upstream edge which is buried a minimum 12 inches in a trench. See figure 6.14a, page 6.14.6. Space anchor pins every 3 feet along the overlap. Spread granular materials in a uniform layer. When more than one gradation is required, spread the layers so there is minimal mixing. Filter material should consist of at least 3 inches of material on all sides of the drain pipe. The drain pipe conduit should be a minimum of 4 inches in diameter. Acceptable materials include perforated, continuous, closed-joint conduits of clay, concrete, metal, plastic, or other suitable material (Practice 6.81, Subsurface Drain).

5. Perform all channel construction to keep erosion and water pollution to a minimum. Immediately upon completion of the channel, vegetate all disturbed areas or otherwise protect them against soil erosion. Where channel construction will take longer than 30 days, stabilize channels by reaches.

MAINTENANCE

Inspect channels at regular intervals as well as after major rains, and make repairs promptly. Give special attention to the outlet and inlet sections and other points where concentrated flow enters. Carefully check stability at road crossings, and look for indications of piping, scour holes, or bank failures. Make repairs immediately. Maintain all vegetation adjacent to the channel in a healthy, vigorous condition to protect the area from erosion and scour during out-of-bank flow.

REVISIONS

5/14/99

1/27/2020

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024436 JEFFREY W. MOORE 11/28/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

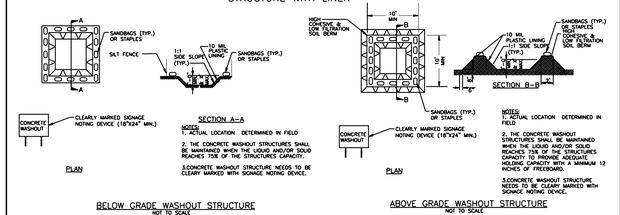
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

5/14/99

REVISIONS

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
U-5617	EC-11

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE
Jeffrey W. Moore
11/28/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be documented in the manner described:

Item to Document	Documentation Requirements
(a) Each E&SC Measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC Plan.	Initial and date each E&SC Measure on a copy of the approved E&SC Plan or complete, date and sign an inspection report that lists each E&SC Measure shown on the approved E&SC Plan. This documentation is required upon the initial installation of the E&SC Measures or if the E&SC Measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC Plan.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC Measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC Measures.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation

In addition to the E&SC Plan documents above, the following items shall be kept on the site and available for agency inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This general permit as well as the certificate of coverage, after it is received.

(b) Records of inspections made during the previous 30 days. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

(c) All data used to complete the Notice of Intent and older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that must be reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(a) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(b) Anticipated bypasses and unanticipated bypasses.

(c) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

1/27/2020

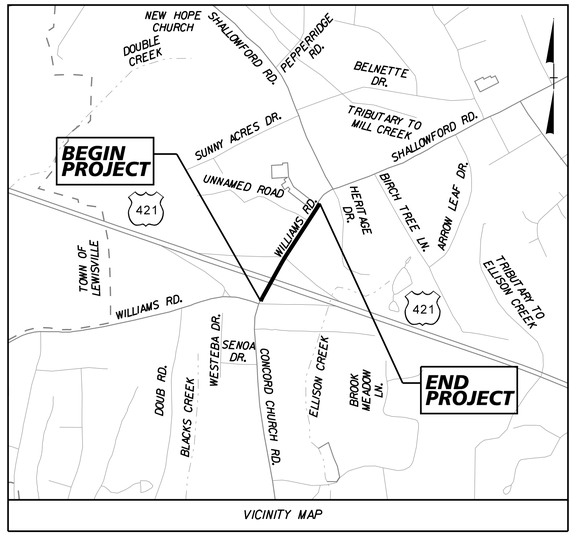
09/06/99

TIP PROJECT: U-5617

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-5617	UC-1

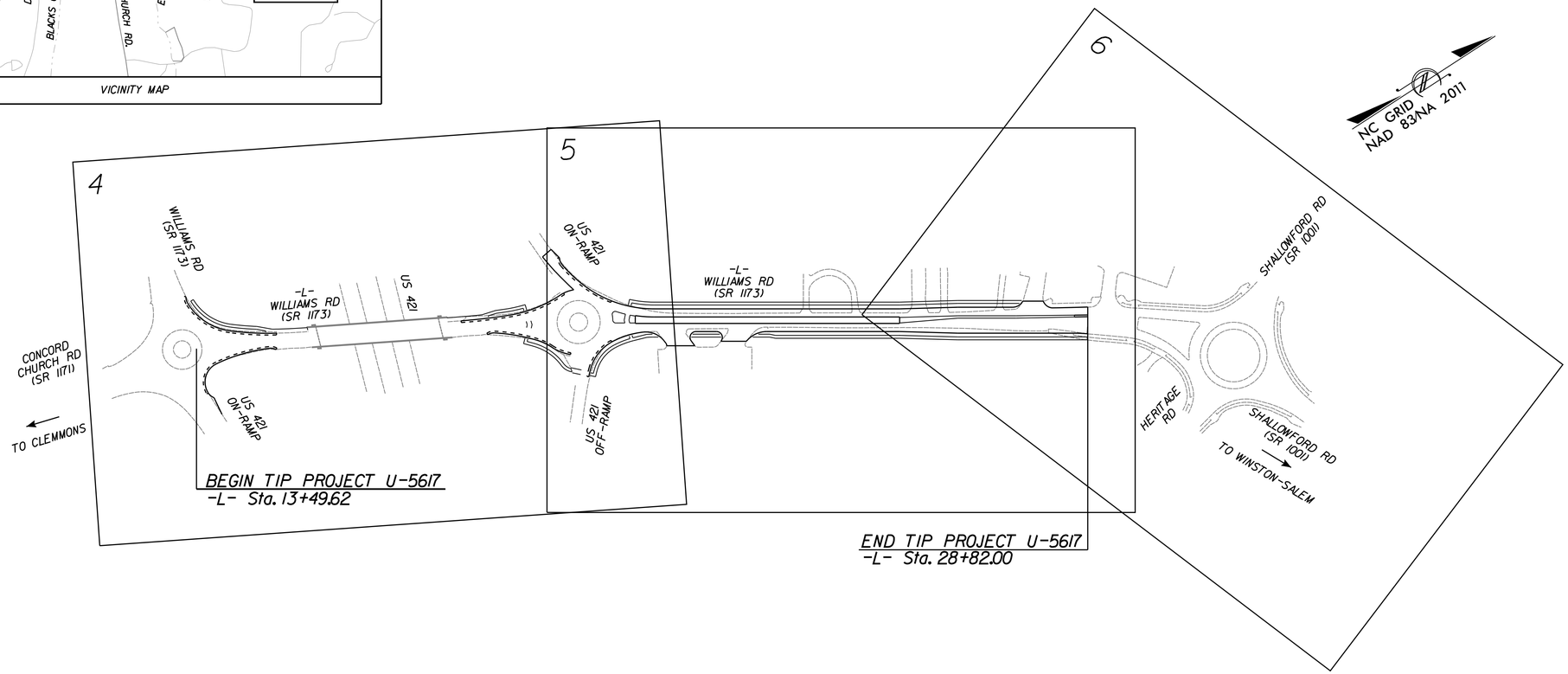
UTILITY CONSTRUCTION PLANS
FORSYTH COUNTY



VICINITY MAP

LOCATION: SR 1173 (WILLIAMS RD) FROM THE ROUNDABOUT AT CONCORD CHURCH RD SOUTH OF BRIDGE OVER US 421 TO THE ROUNDABOUT AT SR 1001 (SHALLOWFORD RD)

TYPE OF WORK: UTILITIES



BEGIN TIP PROJECT U-5617
-L- Sta. 13+49.62

END TIP PROJECT U-5617
-L- Sta. 28+82.00

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

WATER AND SEWER OWNERS ON PROJECT

(1) SEWER: WINSTON-SALEM/FORSYTH COUNTY UTILITIES COMMISSION

(2) WATER: WINSTON-SALEM/FORSYTH COUNTY UTILITIES COMMISSION

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027441 TODD M. LEWIS

11/26/2019 P.E.

SIGNATURE:

PREPARED IN THE OFFICE OF:
ENGINEERING DIVISION
CITY OF WINSTON-SALEM
P.O. BOX 2511
WINSTON-SALEM, NC 27102
PHONE: (336) 727-8000
FAX: (336) 727-2361

TODD M. LEWIS, P.E. PROJECT ENGINEER

2/21/2019

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5617	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown)
- 11 1/4 Degree Bend
- 22 1/2 Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Reducer
- Gate Valve
- Tapping Valve
- Blowoff Assembly
- Fire Hydrant
- Relocate Fire Hydrant
- Remove Fire Hydrant
- Water Meter
- Relocate Water Meter
- Remove Water Meter

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown)
- Manhole (Sized per Note)
- Sanitary Sewer Cleanout

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Thrust Block
- Air Release Valve
- Encasement by Open Cut
- Encasement
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

- *Underground Power Line
- *Underground Telephone Cable
- *Underground Telephone Conduit
- *Underground Fiber Optics Telephone Cable
- *Underground TV Cable
- *Underground Fiber Optics TV Cable
- *Underground Gas Pipeline — GAS GAS GAS
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line — W
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line
- Underground Unknown Utility Line
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

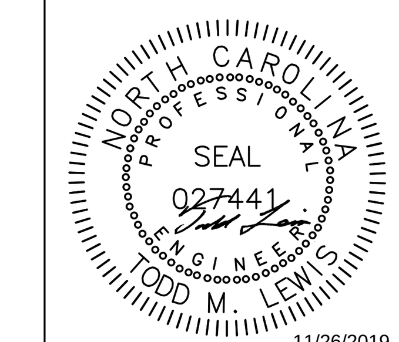
*For Existing Utilities

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

REVISIONS

REV: 2/1/2012

PROJECT REFERENCE NO.	SHEET NO.
U-5617	UC-3



11/26/2019
UTILITY CONSTRUCTION NOTES ONLY

UTILITY CONSTRUCTION

8/17/99

REVISIONS

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING UTILITIES BELONG TO CITY OF WINSTON SALEM (CITY/COUNTY UTILITIES).CONTACT IS TODD LEWIS, SENIOR-CIVIL ENGINEER, 336-747-6842, TODDL@CITYOFWS.ORG.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

UTILITIES

1. PRIOR TO CONSTRUCTION, NOTIFY ALL UTILITY OWNERS WHOSE FACILITIES MAY BE AFFECTED TO DETERMINE UTILITY LOCATIONS. THE CONTRACTOR SHALL PROTECT ALL UTILITIES FROM DAMAGE CAUSED BY HIS OPERATIONS OR THOSE OF HIS AGENTS. THE CONTRACTOR SHALL HOLD THE CITY HARMLESS FOR ANY THIRD-PARTY INCONVENIENCE CREATED BY WORK OF HIS OWN FORCES OR THAT OF HIS AGENTS.

2. IN THE EVENT OF DAMAGE TO EXISTING UTILITIES, CONTRACTOR SHALL STOP WORK IMMEDIATELY, TAKE NECESSARY PRECAUTIONS TO PREVENT INJURY OR FURTHER DAMAGE, AND NOTIFY PROPER AUTHORITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING/REPAIRING ALL EXISTING STRUCTURES, CONDUITS, OR OTHER UTILITIES DAMAGED BY CONTRACTOR'S OPERATIONS.

·FOR UTILITY LOCATE MEMBERS, CALL NORTH CAROLINA ONE-CALL @ 1-800-632-4949.
·FOR LOCATES OF UTILITIES NOT MEMBERS OF NORTH CAROLINA ONE-CALL CONTACT THE SPECIFIC UTILITY COMPANY.

3. CONTRACTOR SHALL ANTICIPATE HAND DIGGING AROUND EXISTING WATER SERVICES, SANITARY SEWER LATERALS, AND OTHER UTILITIES.

4. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS. SUBMITTED SEPARATELY.

5. FOR TRAFFIC CONTROL PLANS, SEE TRANSPORTATION MANAGEMENT PLANS. SUBMITTED SEPARATELY.

WATER AND SEWER

1. THE MOST CURRENT EDITION OF THE CITY OF WINSTON-SALEM TECHNICAL SPECIFICATIONS AND DETAIL DRAWINGS FOR WATER LINE AND SANITARY SEWER LINE CONSTRUCTION WILL GOVERN ALL WATER AND SANITARY SEWER CONSTRUCTION AND INSTALLATION IN COMPLIANCE WITH THE RULES AND REGULATIONS OF THE NCDEQ, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION, AND APPLICABLE PLUMBING CODES, UNLESS NCDOT STANDARDS AND SPECIFICATIONS ARE MORE CONSERVATIVE.

2. WATER MAIN DEPTH OF COVER ON PROFILES IS ASSUMED UNLESS OTHERWISE NOTED. CONTRACTOR SHALL CONFIRM PRIOR TO CONSTRUCTION.

3. FOR STANDARD CURB AND GUTTER STREETS: HYDRANTS, WATER METERS AND SEWER CLEANOUTS SHALL BE PLACED 1-FOOT, 2-INCHES BEHIND BACK OF CURB (MEASURING TO CENTER OF HYDRANT, METER BOX AND CLEANOUT). PLACEMENT MUST BE TOTALLY OUT OF ALL SIDEWALKS.

4. FOR VALLEY CURB AND GUTTER STREETS: HYDRANTS, WATER METERS AND SEWER CLEANOUTS SHALL BE PLACED 5 FEET BEHIND THE CURB. PLACEMENT MUST BE TOTALLY OUT OF ALL SIDEWALKS.

5. FOR RIBBON PAVEMENT STREETS: HYDRANTS, WATER METERS AND SEWER CLEANOUTS SHALL BE PLACED 5 FEET INSIDE OF THE RIGHT-OF-WAY. PLACEMENT MUST BE AT LEAST 2 FEET AWAY FROM ALL DITCHES.

6. DENSITY TESTS BY AN INDEPENDENT TESTING LAB ARE TO BE MADE AS DIRECTED BY THE CITY INSPECTOR AT THE OWNER'S EXPENSE.

7. ANY WORK PERFORMED THAT IS NOT SPECIFICALLY CALLED OUT ON THE PLANS SHALL BE CONSIDERED EXTRA WORK AND BE PAID AT AN AGREED UPON PRICE BETWEEN THE OWNER AND THE CONTRACTOR.

8. CONTRACTOR IS RESPONSIBLE FOR FURNISHING BYPASS PUMPING FOR EXISTING SANITARY SEWER MAINS OR SERVICES AS NECESSARY DURING CONSTRUCTION. CONTRACTOR SHALL GIVE CCU A MINIMUM OF 48 HOURS NOTICE PRIOR TO BEGINNING SUCH CONSTRUCTION. TRAFFIC CONTROL MEASURES, ROAD RAMPS, ETC. SHALL BE PROVIDED AS REQUIRED TO ACCOMMODATE BYPASS OPERATIONS.

WATER

1. CONTRACTOR SHALL ABANDON EXISTING WATER MAIN IN PLACE EXCEPT WHERE REMOVAL IS REQUIRED FOR PROPOSED WORK OR WHERE NOTED. WITHIN THE RIGHT-OF-WAY OF NCDOT MAINTAINED ROADS, CONTRACTOR SHALL FILL ABANDONED WATER MAINS WITH FLOWABLE FILL. ABANDON EXISTING WATER MAINS PER NCDOT 2018 STANDARD SPECIFICATION SECTION 1530.

2. EXISTING WATER MAIN SHALL REMAIN IN SERVICE UNTIL PROPOSED WATER MAIN HAS BEEN TESTED, DISINFECTED AND APPROVED.

3. EXISTING WATER SERVICES AND FIRE HYDRANTS SHALL BE CONNECTED TO PROPOSED WATER MAIN AFTER PROPOSED WATER MAIN HAS BEEN TESTED, DISINFECTED AND APPROVED. AS SPECIFICALLY INDICATED BY PLANS, ALL RELOCATED FIRE HYDRANTS SHALL MEET OR EXCEED THE MOST CURRENT EDITION OF THE CITY OF WINSTON-SALEM'S SPECIFICATIONS. CONTRACTOR SHALL LEAVE THE OLD WATER METERS IN THE WATER METER BOX FOR PICK UP BY THE CITY/COUNTY UTILITIES, OR AS NOTED ON THE DRAWINGS.

4. FOR ALL WATER SERVICES TO BE CONNECTED TO THE PROPOSED WATER MAIN, CONTRACTOR SHALL REPLACE ALL WATER SERVICE PIPING WHICH IS NOT TYPE K COPPER OR IS IN POOR CONDITION, AS DIRECTED BY THE ENGINEER. TO DETERMINE WATER SERVICE PIPING MATERIAL AND CONDITION, CONTRACTOR SHALL EXPOSE, IN THE PRESENCE OF THE ENGINEER, EACH WATER SERVICE AT THE TIE TO THE EXISTING MAIN, APPROXIMATELY TWO FEET FROM THE METER ON THE WATER MAIN SIDE, AND APPROXIMATELY TWO FEET FROM THE METER BOXES ON THE SERVICE SIDE.

5. FOR ALL WATER SERVICES TO BE DISTURBED BY CONSTRUCTION, CONTRACTOR SHALL REPLACE WATER METER BOXES WHICH DO NOT MEET THE REQUIREMENTS OF THE CAST IRON METER BOX FOR 5/8" AND 1" METERS DETAIL, AS DIRECTED BY THE ENGINEER. TO DETERMINE COMPLIANCE OF THE WATER METER BOXES, CONTRACTOR SHALL EXPOSE, IN THE PRESENCE OF THE ENGINEER, EACH WATER METER BOX. CONTRACTOR SHALL LOCATE NEW WATER METER BOX PER 3/4" AND 1" WATER CONNECTION DETAIL (C-47 - C-49). CITY/COUNTY UTILITIES WILL PROVIDE THE NEW WATER METER BOXES TO THE CONTRACTOR.

6. WATER VALVES ABANDONED IN PLACE SHALL BE ABANDONED IN THE CLOSED POSITION.

7. PROVIDE CONCRETE THRUST BLOCKS AT ALL WATER MAIN BENDS, TEES, AND CAPS UNLESS OTHERWISE NOTED.

8. FOR ALL WATER SERVICES DISTURBED BY CONSTRUCTION, IF THE WATER SERVICE IS ACTIVE, THEN RECONNECT; IF THE WATER SERVICE IS INACTIVE, THEN REMOVE. REMOVAL SHALL INCLUDE TURNING OFF CORPORATION COCK AT THE MAIN AND PHYSICALLY CUTTING THE PIPE AT THE MAIN.

9. ALL TRANSITION COUPLINGS WILL BE DUCTILE IRON FITTINGS PER CITY OF WINSTON SALEM TECHNICAL SPECIFICATIONS.

8/17/99

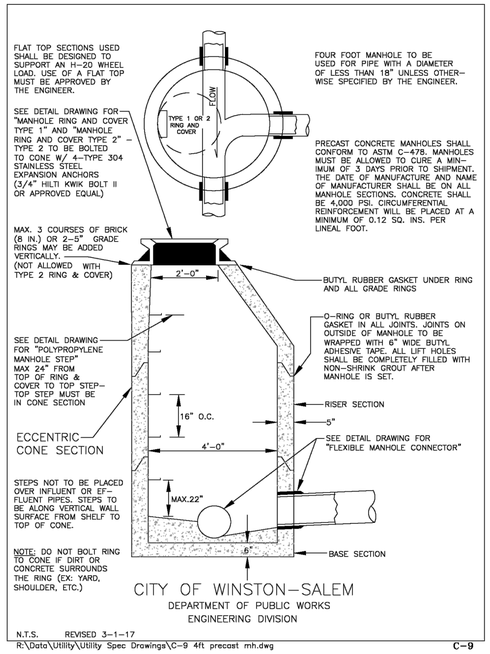
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-5617	UC-3A

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027441 TODD M. ISENHOUR 11/26/2019

4' Precast Reinforced Concrete Manhole

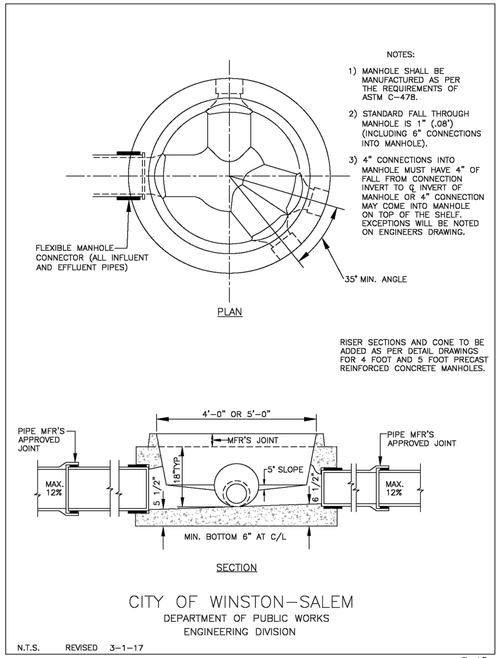


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-9 4ft precast mh.dwg **C-9**

Precast Reinforced Concrete Manhole with Precast Invert

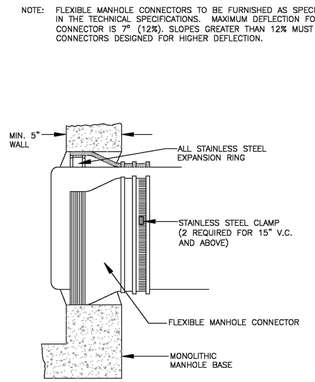


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-15 precast mh with precast invert.dwg **C-15**

Flexible Manhole Connector

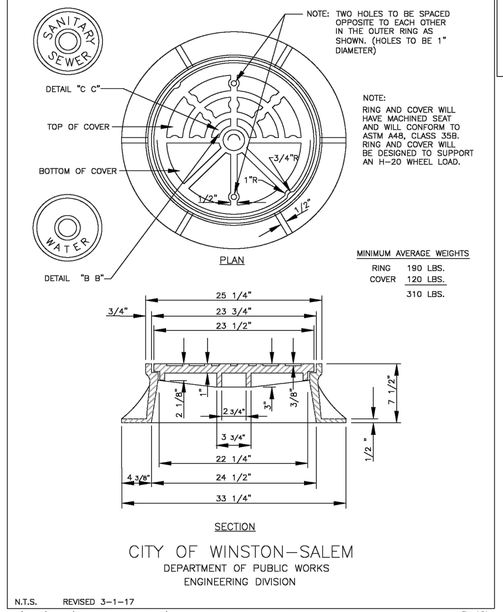


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-16 flexible mh connector.dwg **C-16**

Manhole Ring and Cover (Type 1)

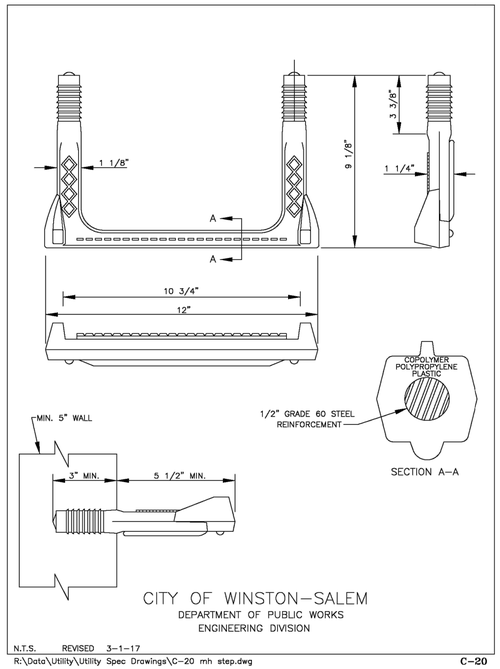


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-17 mh ring & cover type 1.dwg **C-17**

Polypropylene Manhole Step

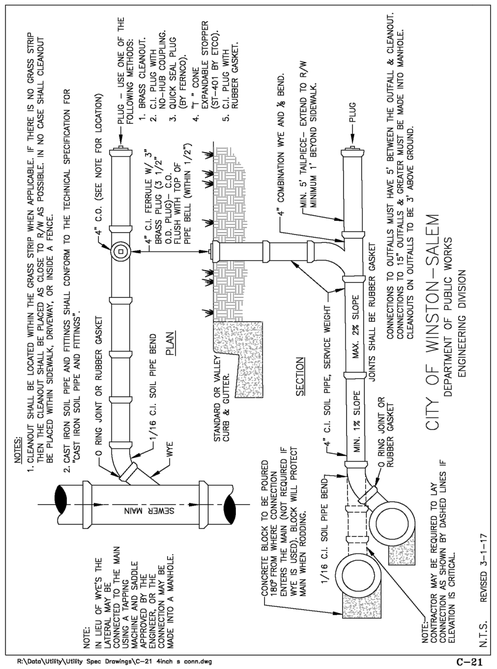


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-20 mh step.dwg **C-20**

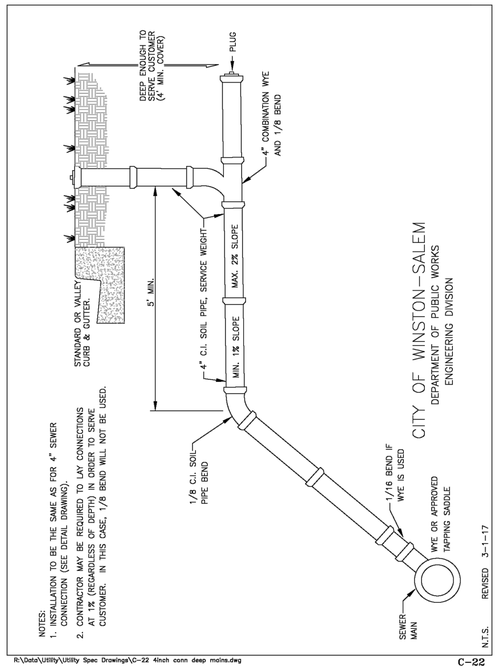
4" Sewer Connection



CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

R:\Data\Utility\Utility Spec Drawings\C-21 4inch s conn.dwg **C-21**

4" Sewer Connection for Deep Mains

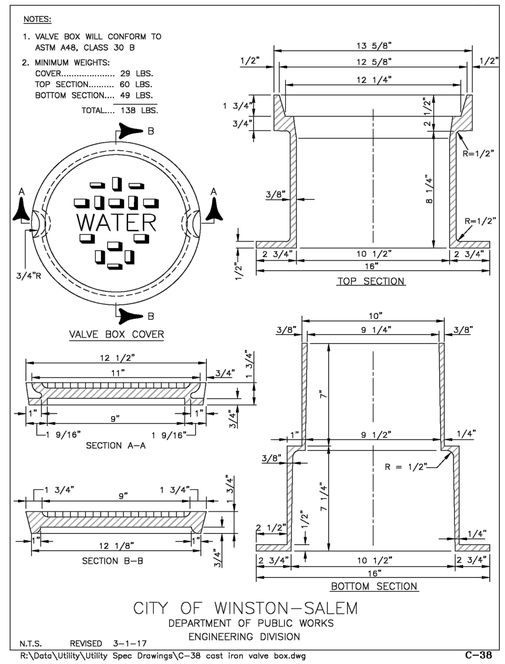


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-22 4inch conn deep mains.dwg **C-22**

Cast Iron Valve Box



CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

R:\Data\Utility\Utility Spec Drawings\C-38 cast iron valve box.dwg **C-38**

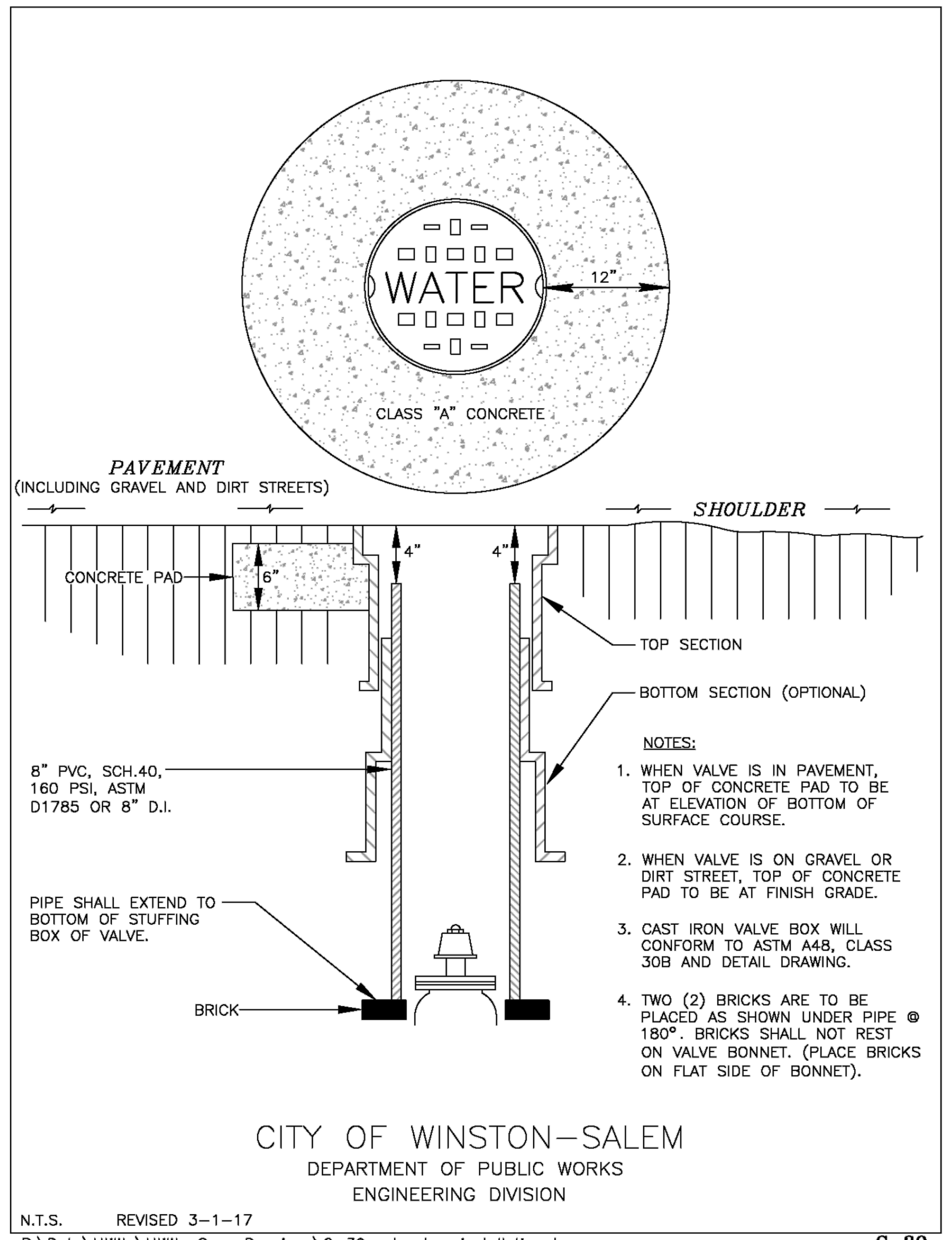
PROJECT REFERENCE NO.	SHEET NO.
U-5617	UC-3B

UTILITY CONSTRUCTION PLANS ONLY

8/17/99

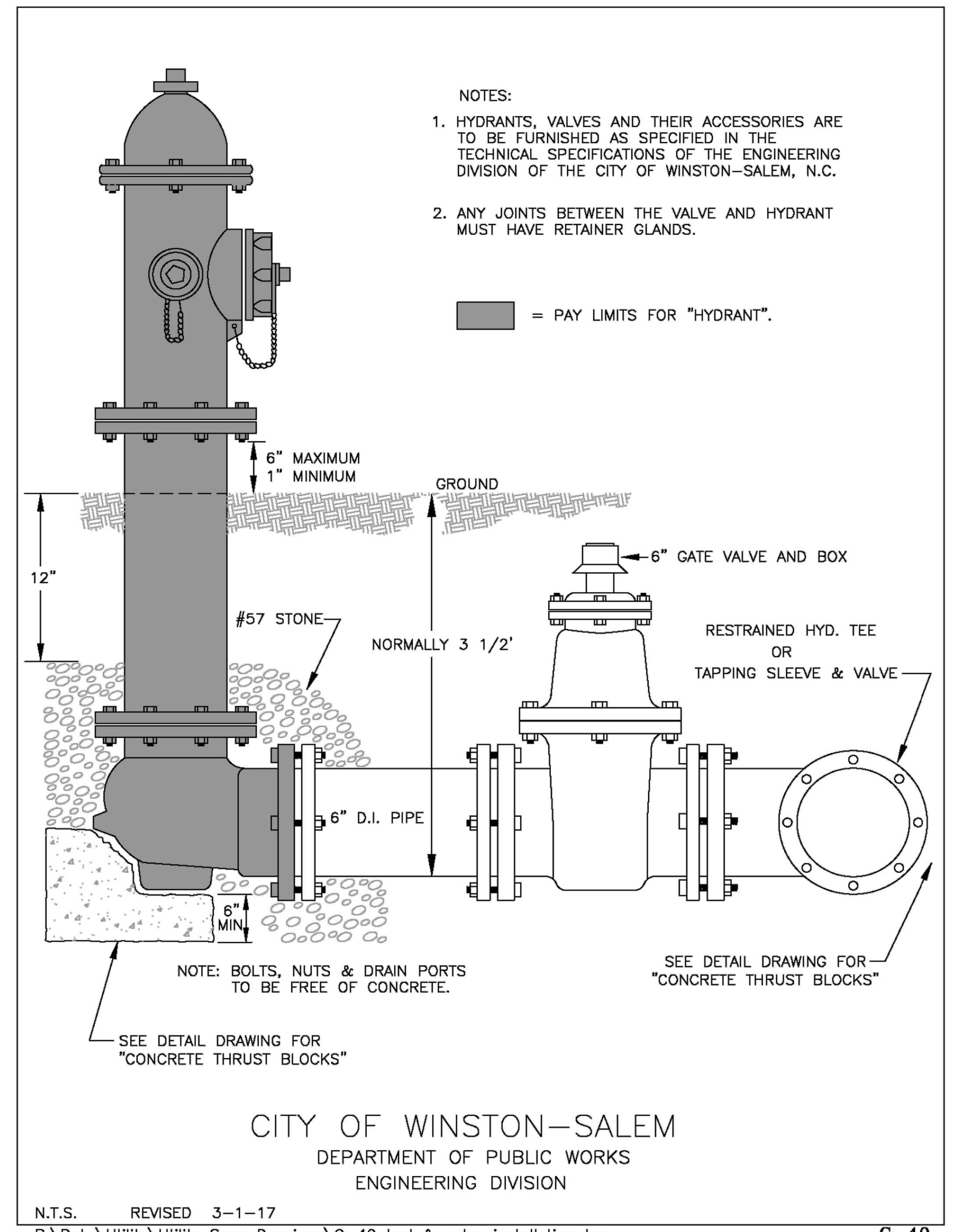
REVISIONS

Valve Box Installation



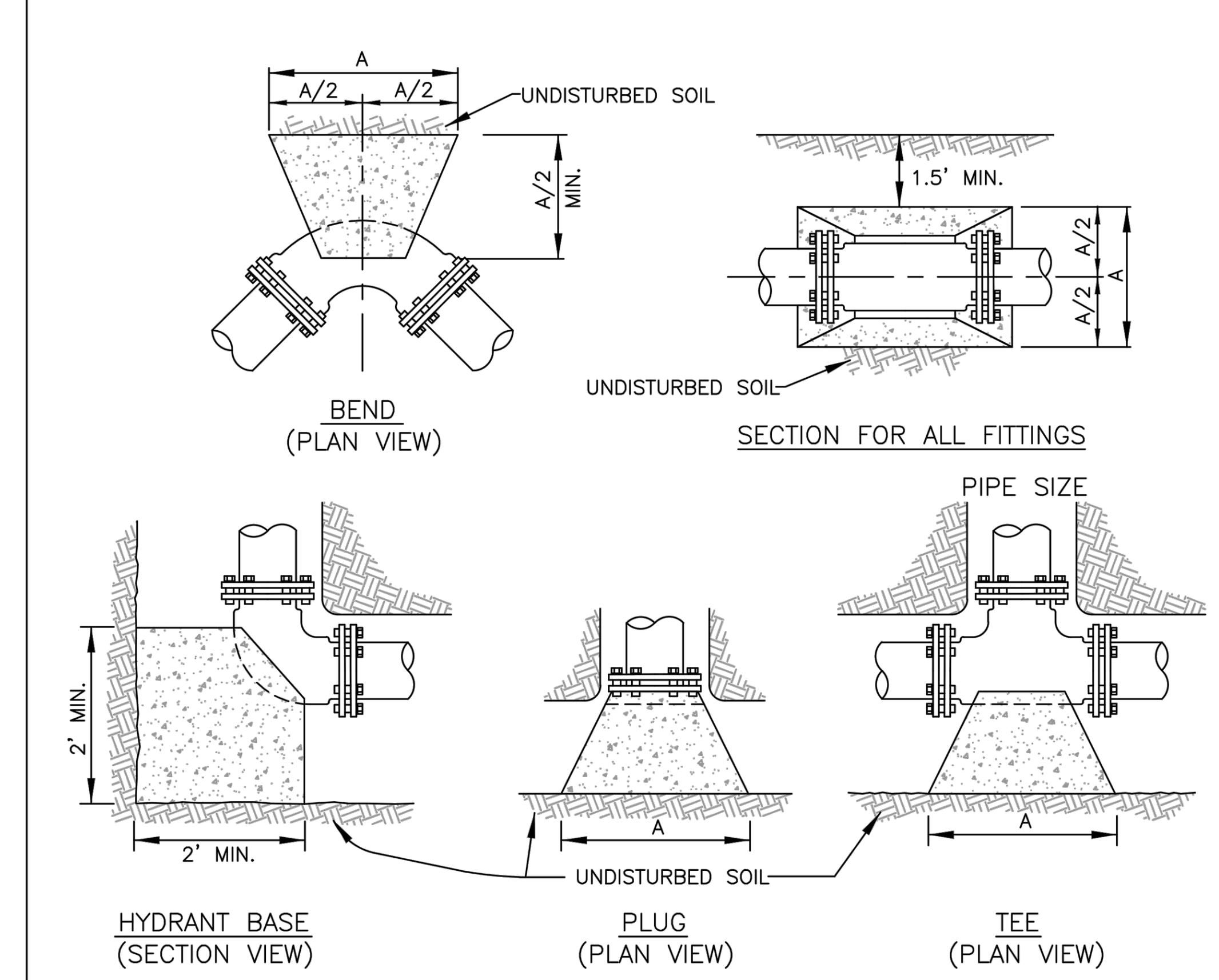
R:\Data\Utility\Utility Spec Drawings\C-39 valve box installation.dwg C-39

Hydrant and Valve Installation



R:\Data\Utility\Utility Spec Drawings\C-40 hyd & valve installation.dwg C-40

Concrete Thrust Block



MINIMUM "A" DIMENSION (FEET)

FITTING	PIPE SIZE (INCHES)									
	2	4	6	8	12	16	20	24	30	36
90° BEND	1.0	2.0	2.5	3.5	5.0	6.5	8.0	10.0	12.0	14.5
45° BEND	1.0	1.5	2.0	2.5	4.0	5.0	6.0	7.0	9.0	10.5
22 1/2° BEND	0.5	1.0	1.5	2.0	3.0	3.5	4.5	5.0	6.5	7.5
11 1/4° BEND	0.5	1.0	1.0	1.5	2.0	2.5	3.0	4.0	4.5	5.5
PLUG/TEE	1.0	1.5	2.5	3.0	4.5	5.5	7.0	8.0	10.0	12.0

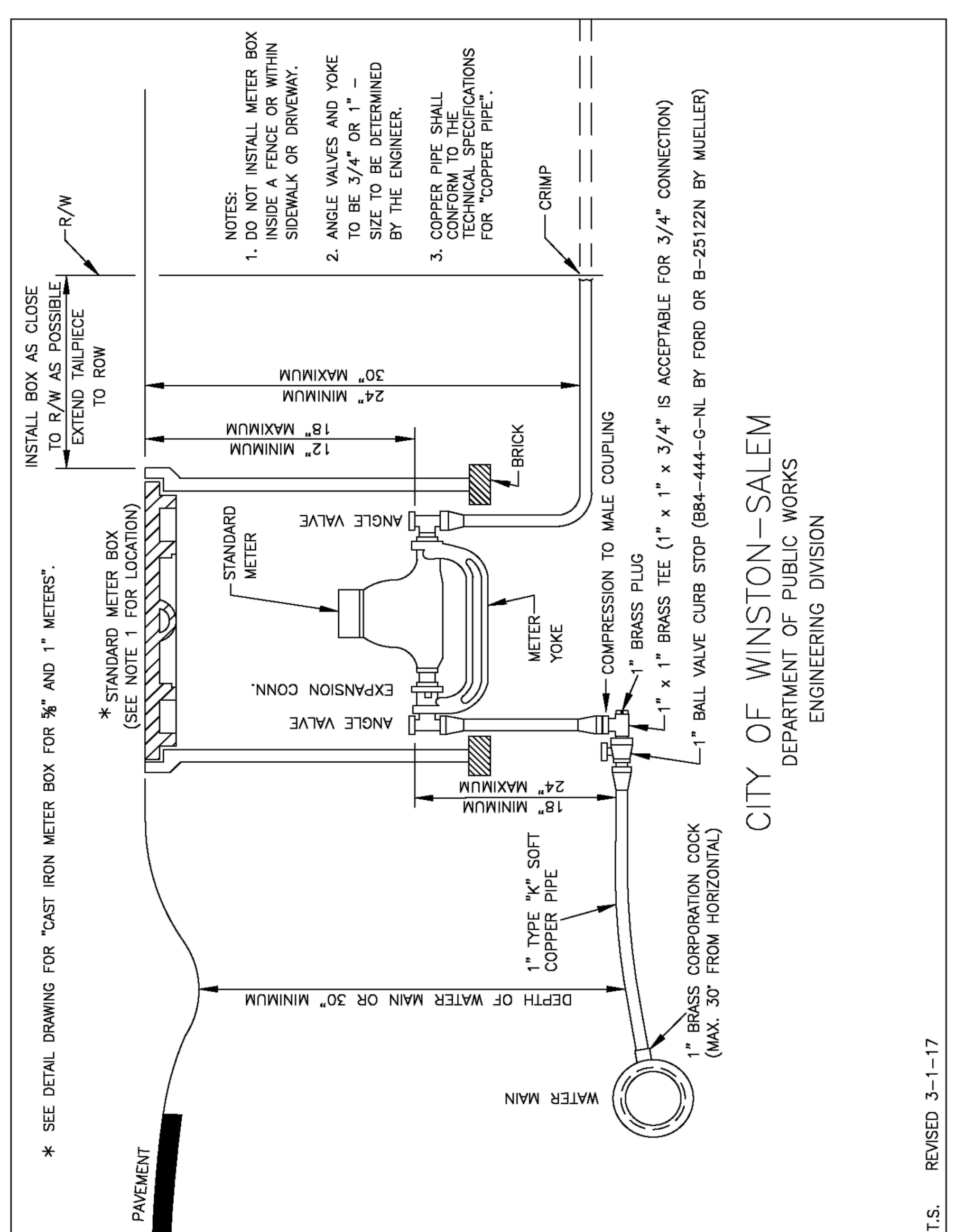
NOTE: ABOVE DIMENSIONS BASED ON THE FOLLOWING: 250 PSI WATER PRESSURE AND 2000 LB/SQ FT SOIL BEARING CAPACITY (SOFT CLAY)

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17

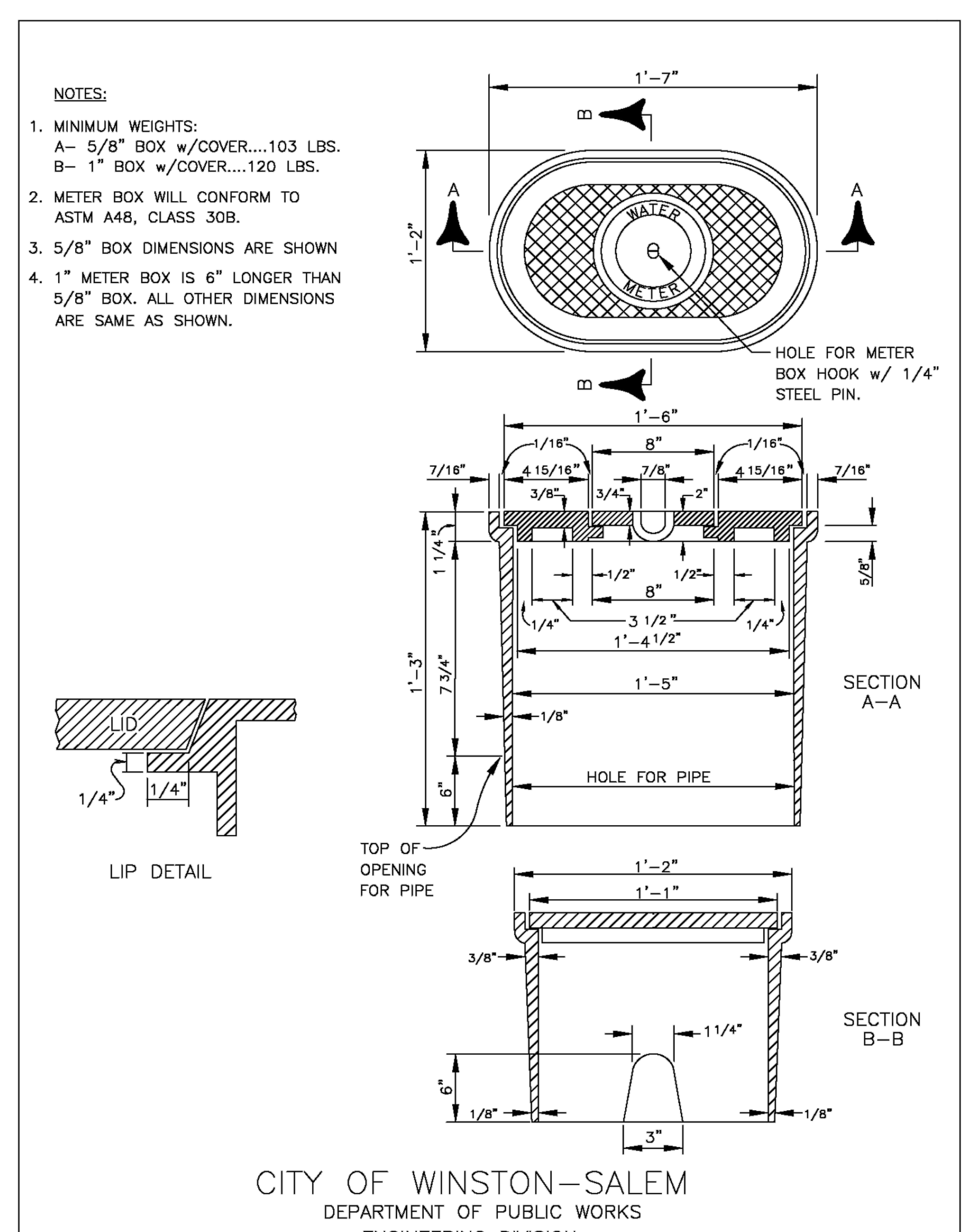
R:\Data\Utility\Utility Spec Drawings\C-42 concrete thrust block horizontal.dwg C-42

3/4" and 1" Water Connection (Without Curb & Gutter / Single Family)



R:\Data\Utility\Utility Spec Drawings\C-48 w conn without c & g.dwg C-48

Cast Iron Meter Box for 5/8" and 1" Meters



R:\Data\Utility\Utility Spec Drawings\C-50 cast iron meter box.dwg C-50

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

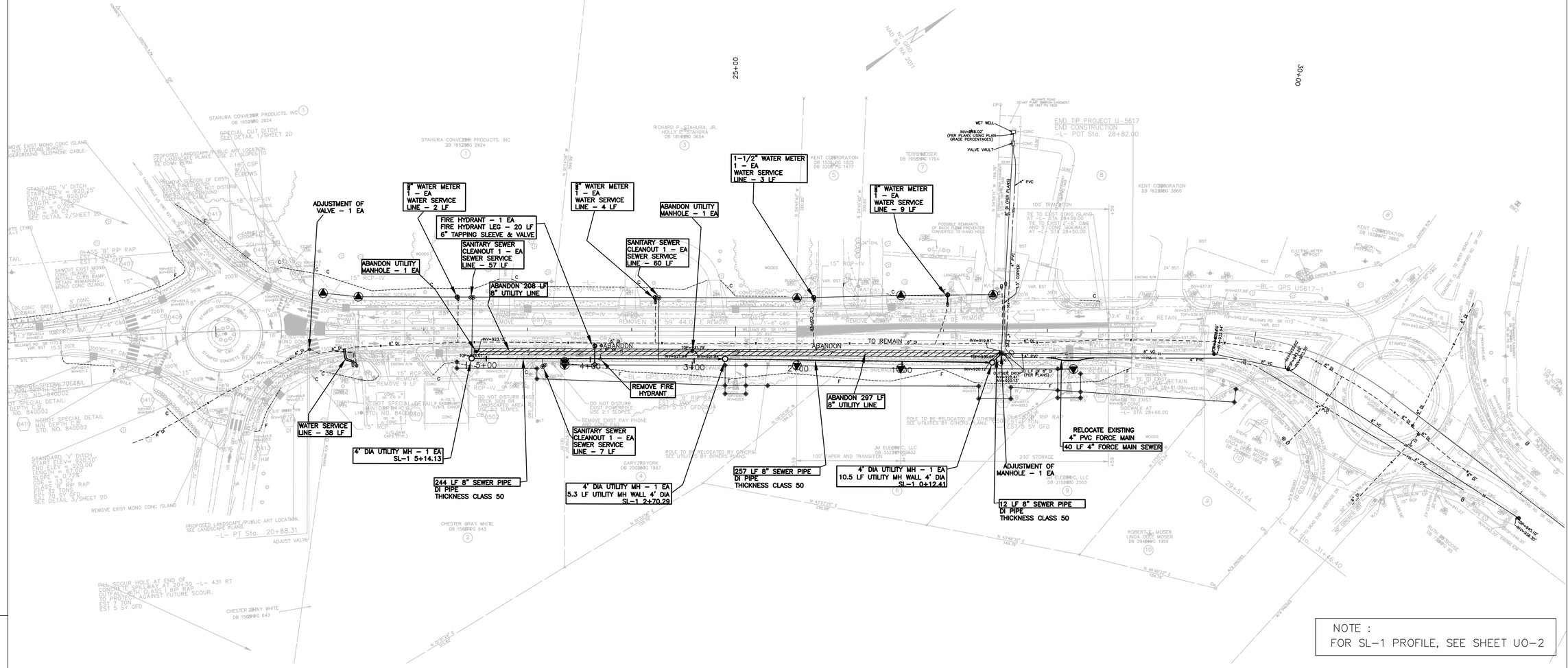
PROJECT REFERENCE NO.	SHEET NO.
U-5617	UC-4

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027441 TODD M. LOMINICK 11/26/2019

25' 0 25' 50'

REVISIONS



CITY OF WINSTON–SALEM
PERMIT NUMBER
WATER _____
SEWER 3015
DATE _____

8" D.I. SEWER MAIN
RELOCATION – PROJECT 75379

9379

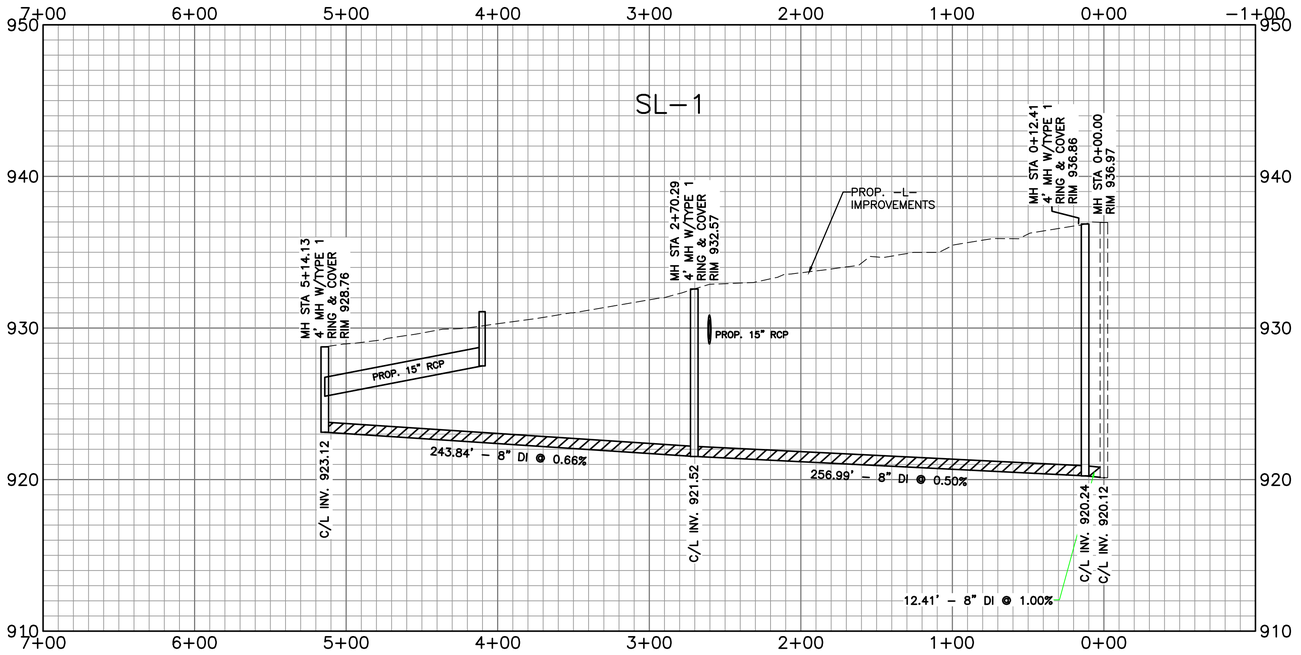
PROJECT REFERENCE NO.	SHEET NO.
U-5617	UC-5

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027441 ENGINEER TODD M. LOMIS 11/26/2019

25' 0 25' 50'

REVISIONS



NOTES :

1. FOR SL-1 PLAN, SEE SHEET UO-1
2. PROPOSED GRADES ARE APPROXIMATE. SEE ROADWAY PROFILE AND X-SECTIONS.

8" D.I. SEWER MAIN RELOCATION - PROJECT 75379

9379

PROJECT REFERENCE NO.	SHEET NO.
U-5617	U0-1

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

NC GRID
NAD 83/NA 2011

WINDSTREAM COMMUNICATIONS TO INSTALL PROP PEDESTALS TO SPLICE BACK TO EXISTING CABLES

WINDSTREAM COMMUNICATIONS TO ENSURE PROP UNDERGROUND CABLES ARE A MINIMUM OF 6' DEEP AT THIS LOCATION TO AVOID CONFLICT WITH PROP DRAINAGE. ENSURE AT LEAST 2' SEPARATION VERTICALLY FROM PROP DRAINAGE PIPE.

WINDSTREAM COMMUNICATIONS TO ABANDON EXIST CABLES BETWEEN EXIST AND PROP PEDESTALS

WINDSTREAM COMMUNICATIONS TO INSTALL PROP UNDERGROUND CABLES A MINIMUM OF 6' DEEP

WINDSTREAM COMMUNICATIONS TO INSTALL PROP UNDERGROUND CABLE TO REPLACE ABANDONED 400 PAIR COPPER CABLE A MINIMUM OF 4.5' DEEP. ENSURE AT LEAST 2' SEPARATION VERTICALLY FROM PROP DRAINAGE PIPE AND ENSURE AT LEAST 5' SEPARATION HORIZONTALLY FROM END OF PROP DRAINAGE PIPE.

WINDSTREAM COMMUNICATIONS TO ABANDON EXIST 400 PAIR COPPER CABLE BETWEEN BEGIN AND END TIE POINTS OF PROP CABLE. PLACE PROP PEDESTALS OR BURIED SPLICES AS NEEDED TO TIE INTO EXIST CABLE.

STAHURA CONVEYOR PRODU
DB 1952 PG 2924

TAYLOR OIL COMPANY
DB 2383 PG 810

(2)
CHESTER GRAY WHITE
DB 1568 PG 643

MATCHLINE -L- STA 21+00 (SEE SHEET U0-2)

K:\RAL_Roadway\0138\3000 - U-5617 Lawlsvl\lieVPlan\Utilities\U5617_psh_u0_1.dgn

1/11/2021

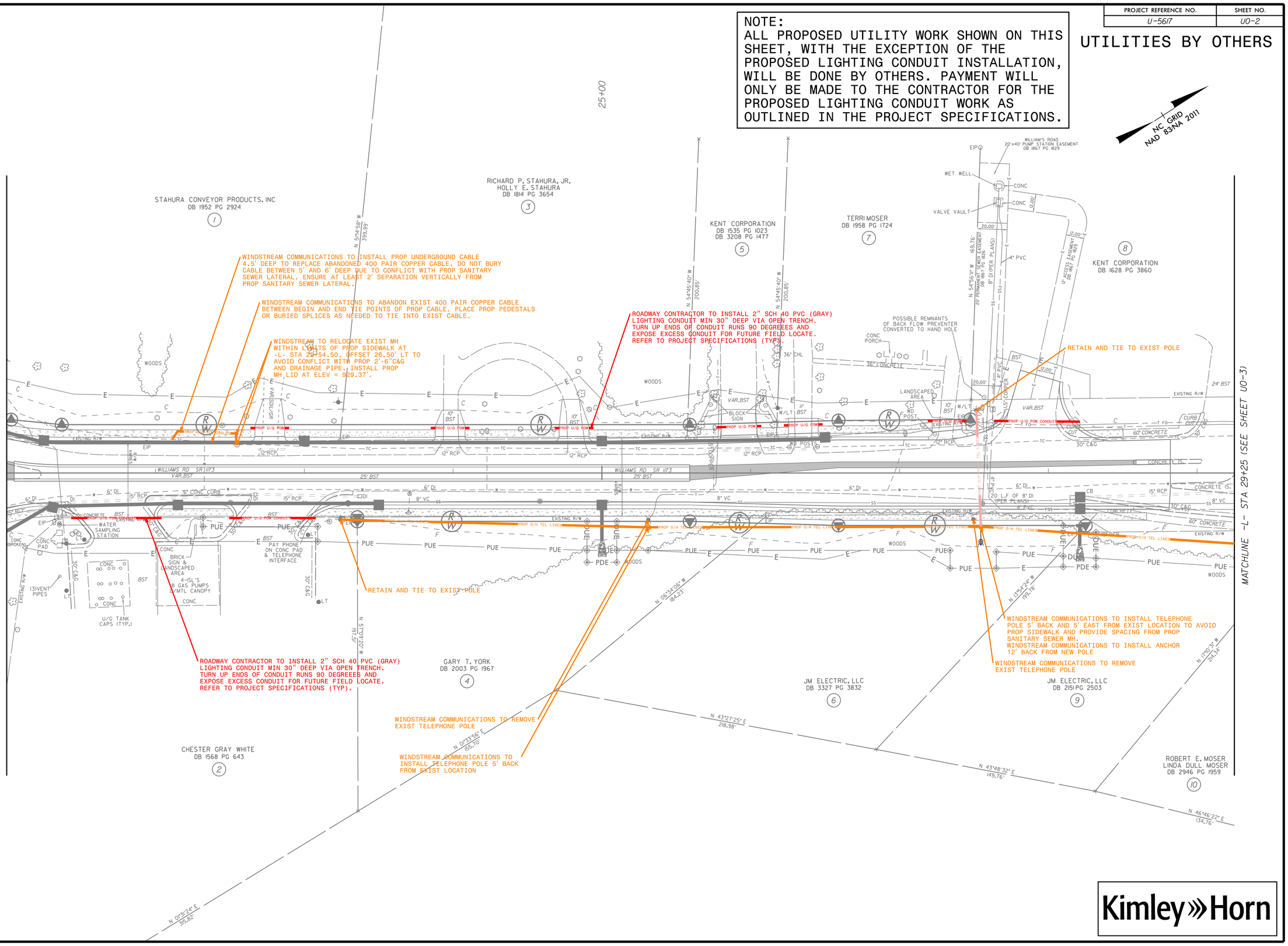
Kimley»Horn

PROJECT REFERENCE NO.	SHEET NO.
U-5617	U0-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET, WITH THE EXCEPTION OF THE PROPOSED LIGHTING CONDUIT INSTALLATION, WILL BE DONE BY OTHERS. PAYMENT WILL ONLY BE MADE TO THE CONTRACTOR FOR THE PROPOSED LIGHTING CONDUIT WORK AS OUTLINED IN THE PROJECT SPECIFICATIONS.

NC GRID
NAD 83/NA 2011

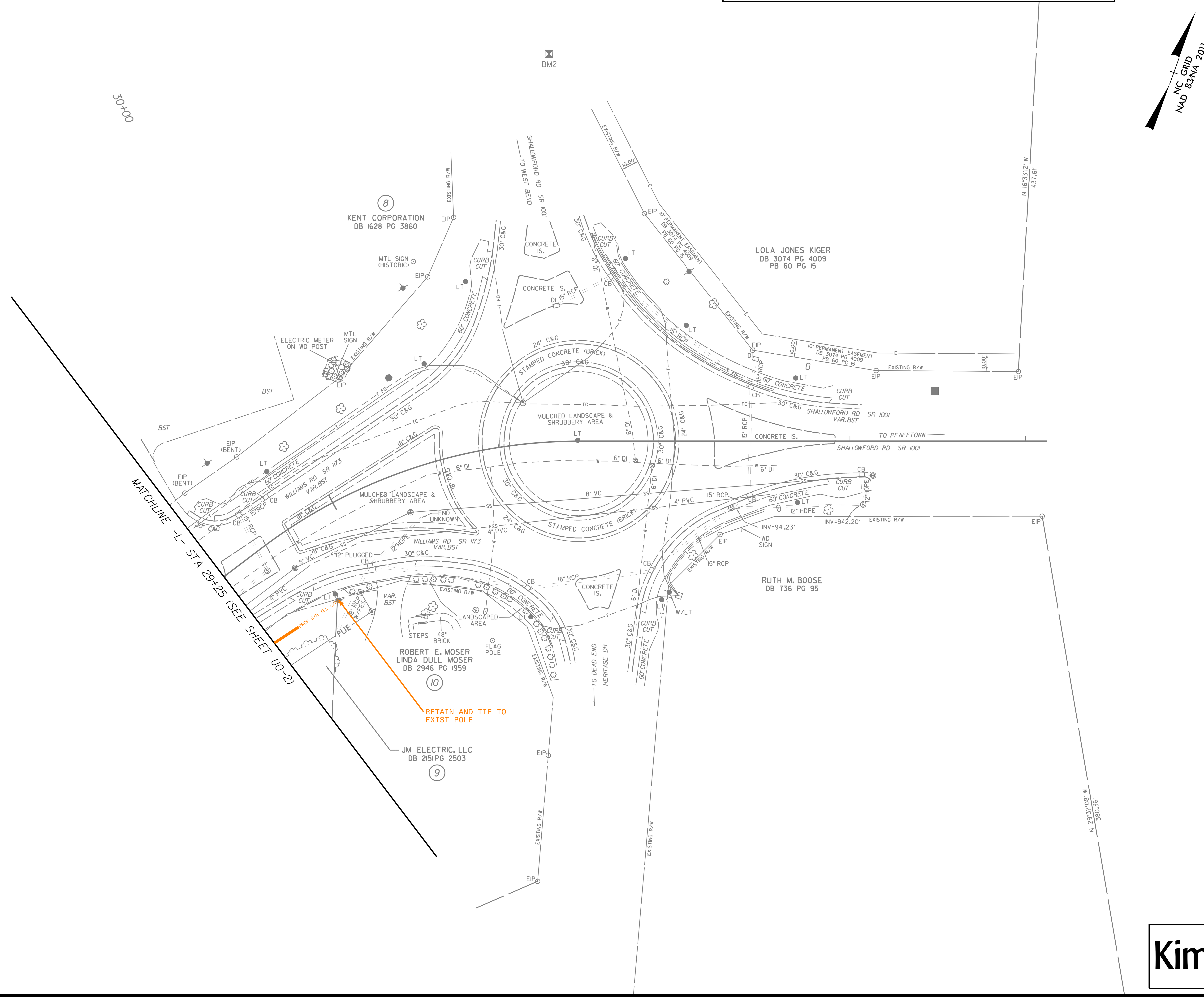


Kimley»Horn

PROJECT REFERENCE NO.	SHEET NO.
U-5617	UO-3

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



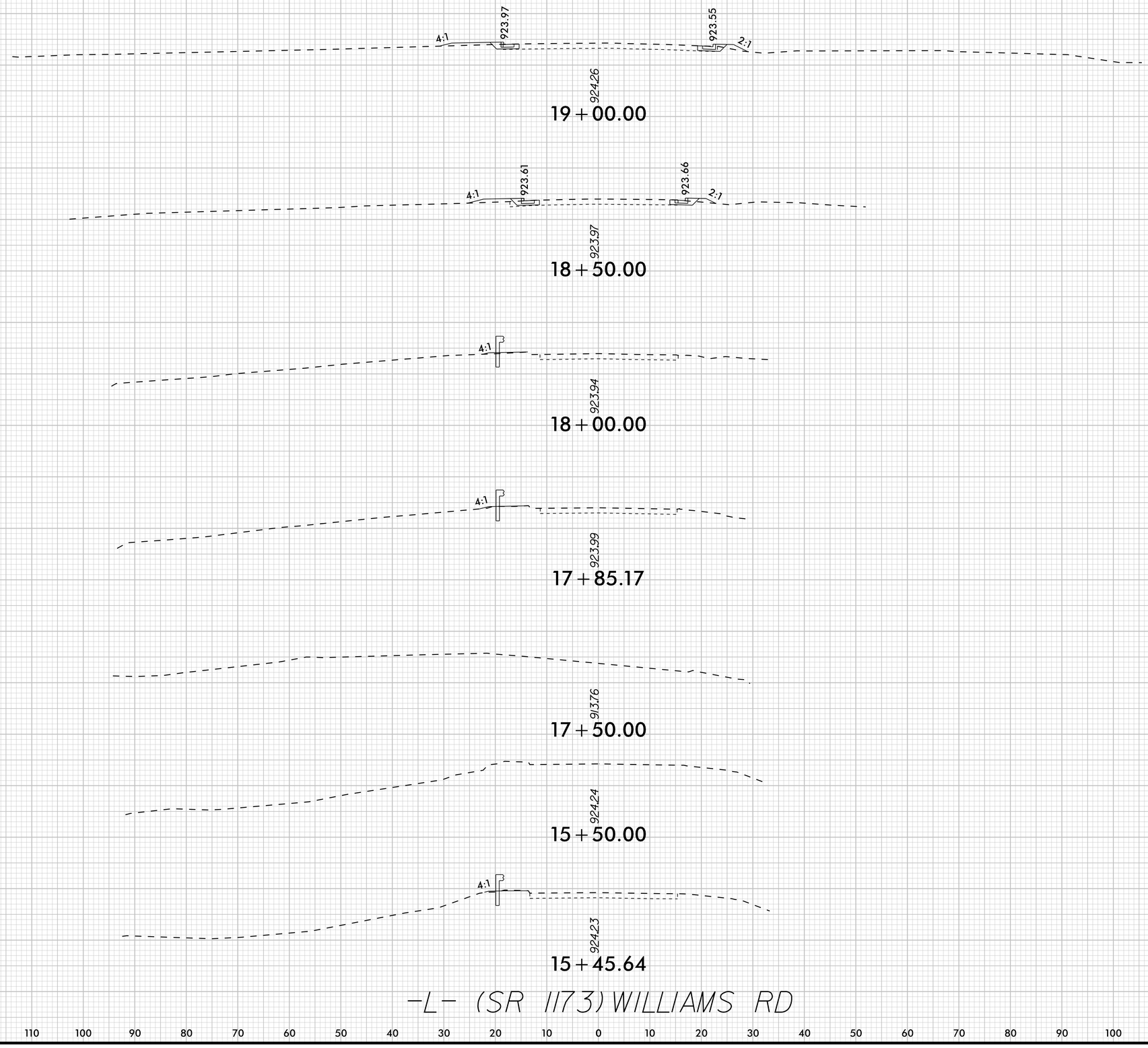
Kimley»Horn

K:\RAL_Roadway\01381300 - U-5617 Lewisville\Plan\Utilities\U5617_psh_uo_3.dgn
1/11/2021

8/23/99

0 5 10

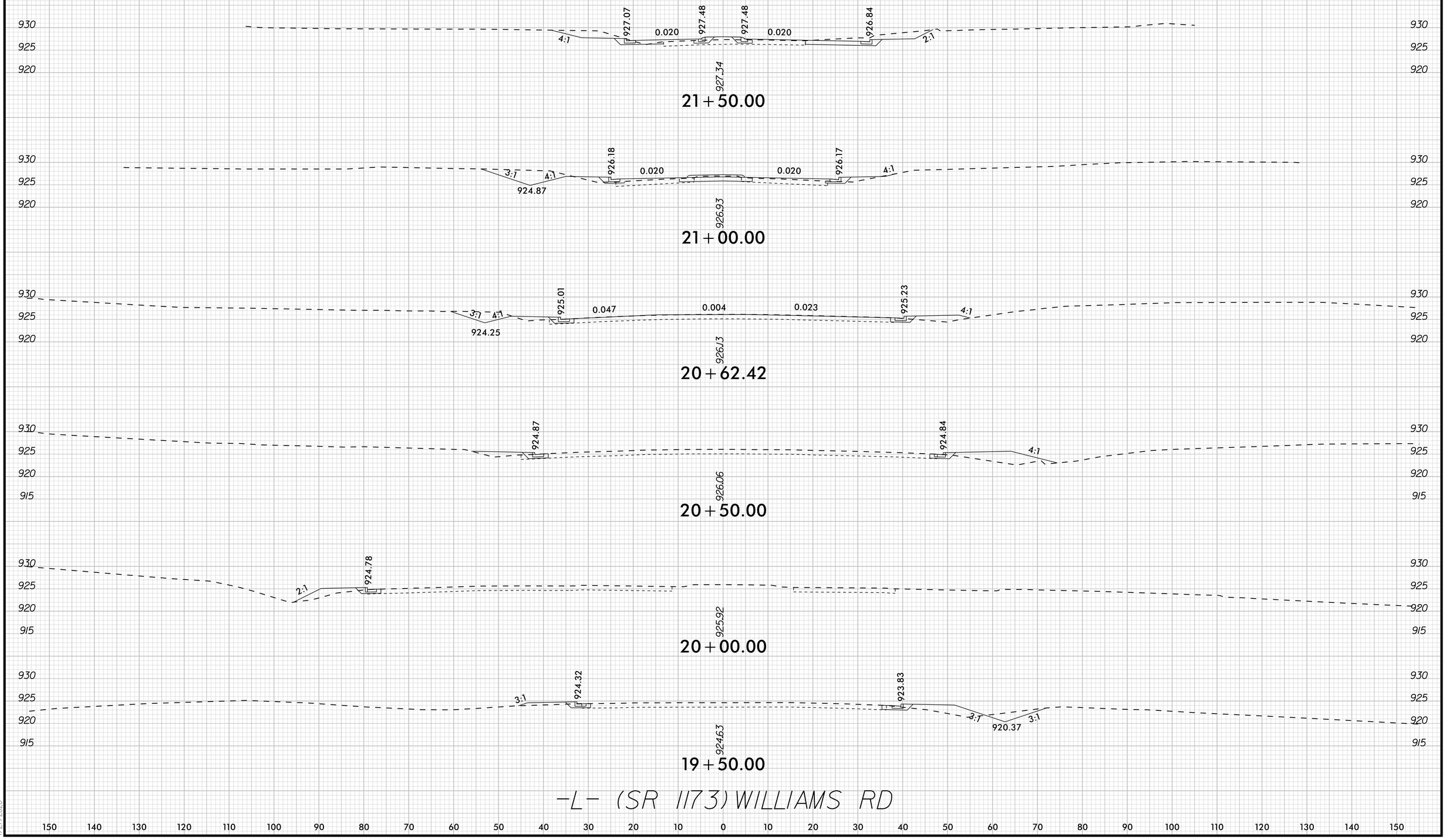
PROJ. REFERENCE NO.	SHEET NO.
U-5617	X-2



1/27/2020

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5617	X-3

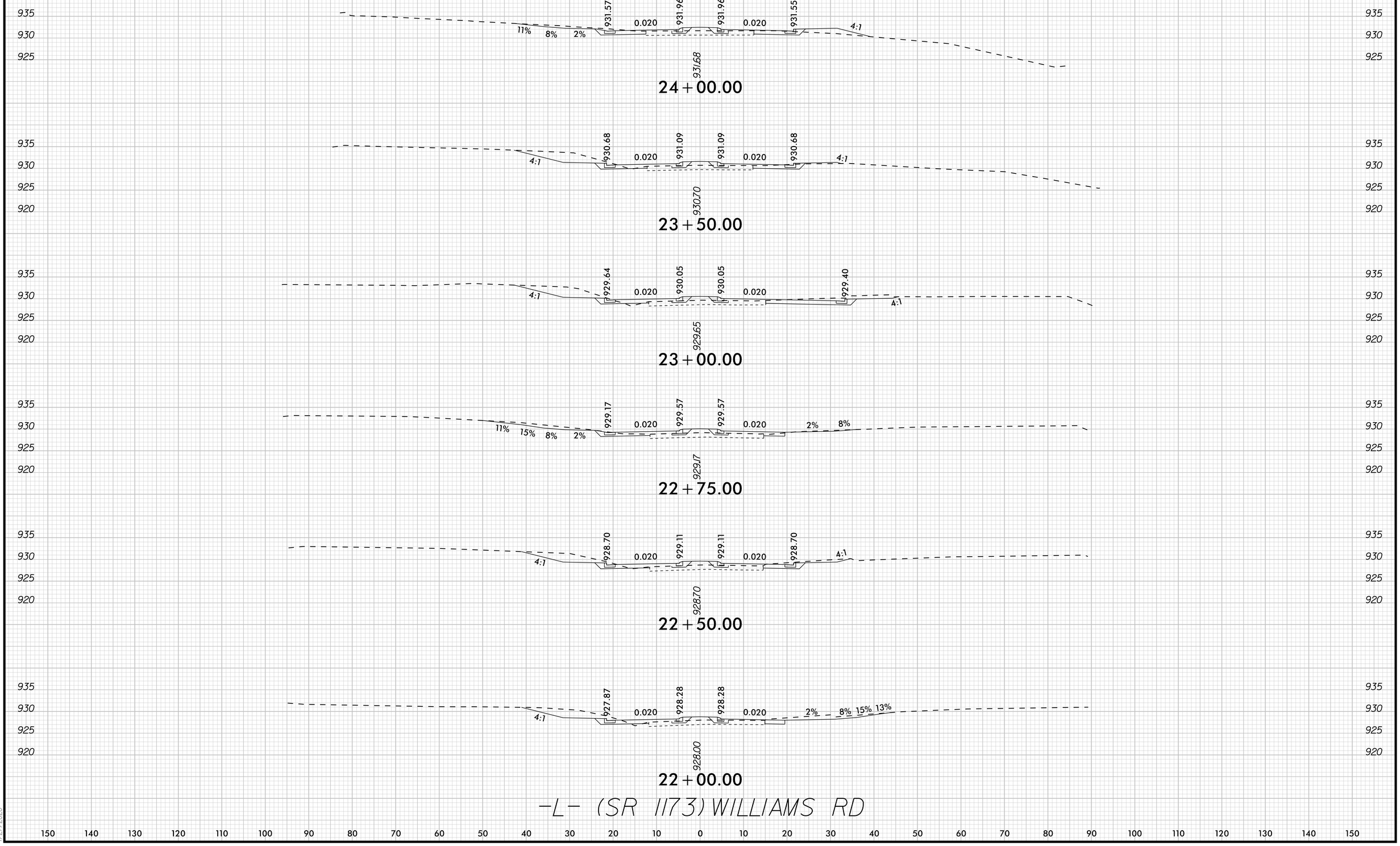


11/27/2020

8/23/99

0 5 10

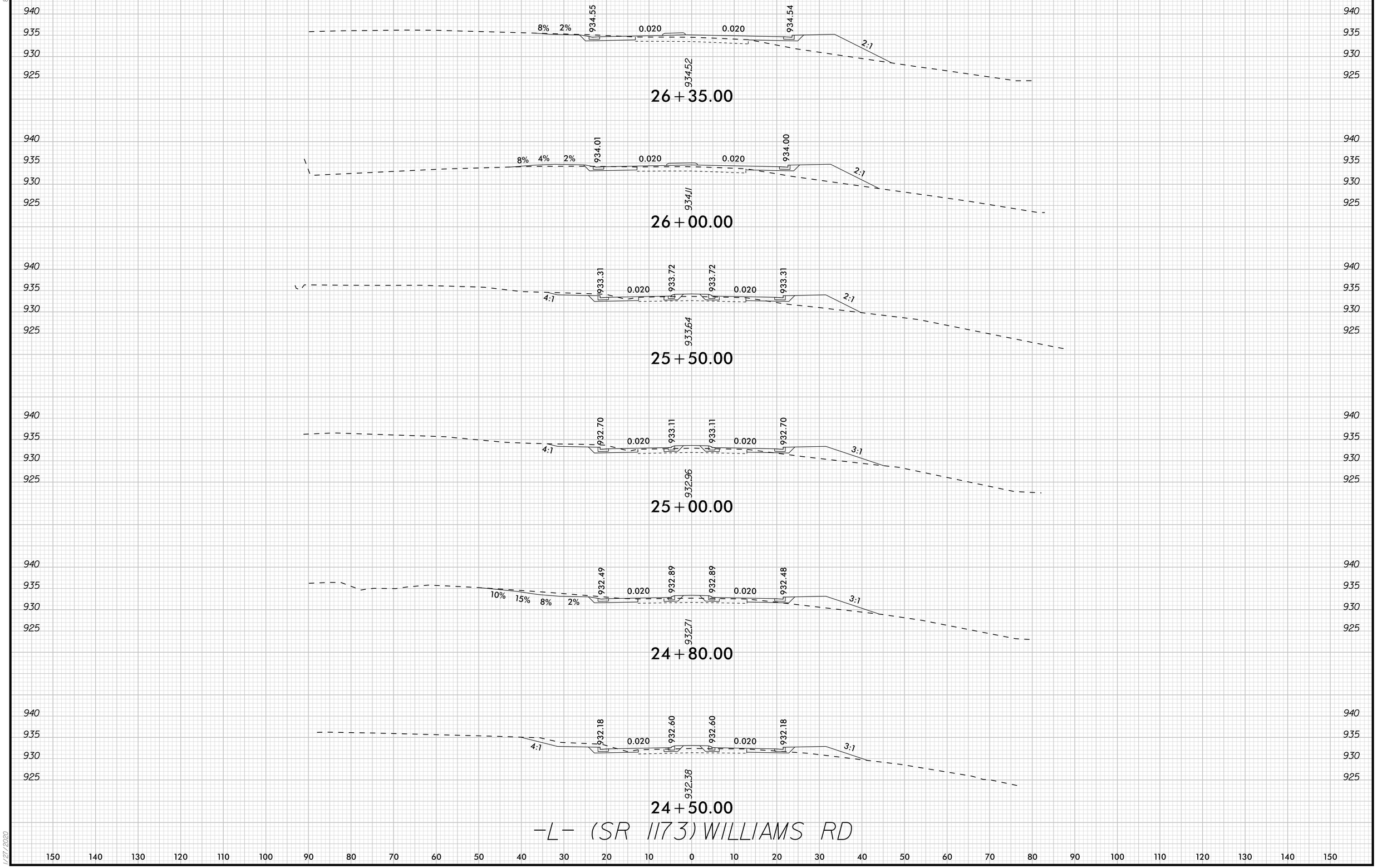
PROJ. REFERENCE NO.	SHEET NO.
U-5617	X-4



12/7/2020

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5617	X-5



1/27/2020

8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-5617	X-7

940
935

941.01

29+50.00

940
935
930

939.63

29+00.00

945
940
935
930

0.021 0.007 0.028 938.70

939.23

28+82.00

-L- (SR 1173) WILLIAMS RD

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

12/1/2020