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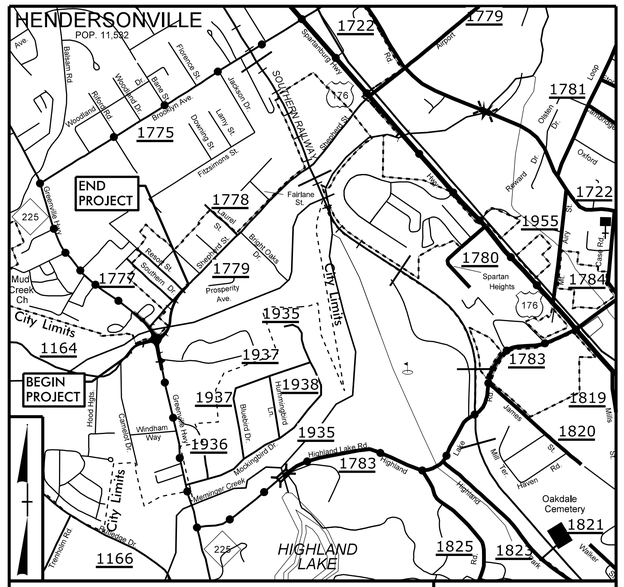
09/08/99

TIP PROJECT: U-5105

CONTRACT: DN00650

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

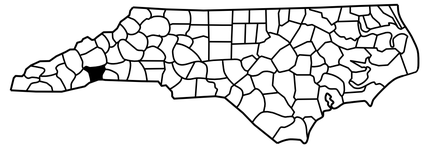
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

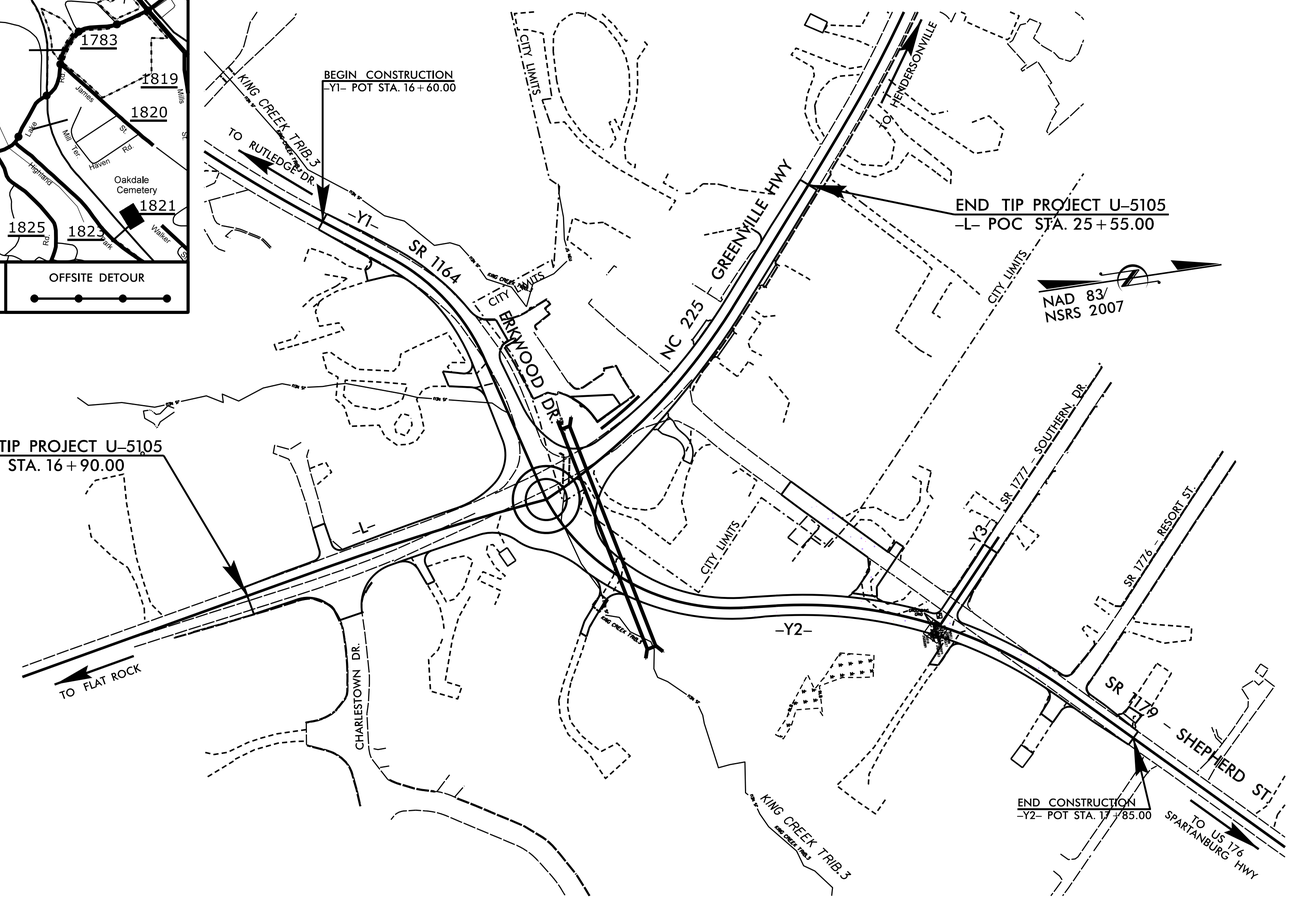
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5105	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
41903.1.1		P.E.
41903.2.2		R/W, UTL.
41903.3.3		CONST

LOCATION: HENDERSONVILLE – NC 225/SR 1164 (ERKWOOD DRIVE) /SR 1779 (SHEPHERD STREET) – INTERSECTION IMPROVEMENTS

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERT, & LIGHTING





THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1632.03	Rock Inlet Sediment Trap Type C	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle	
	Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

CALYX™
ENGINEERS + CONSULTANTS
Formerly Mulkey Engineers & Consultants
7500 EAST INDEPENDENCE BOULEVARD, SUITE 100
CHARLOTTE, NC 28227
phone: 704.537.7300
CALYXengineers.com
NC License # F-1333

Prepared In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Designed by:

JAMES R. HOPSON JR. — *NAME*
3736 — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

7/12/2018
R:\Environmental\Design\U5105_hyd_EC_tsh.dgn
default

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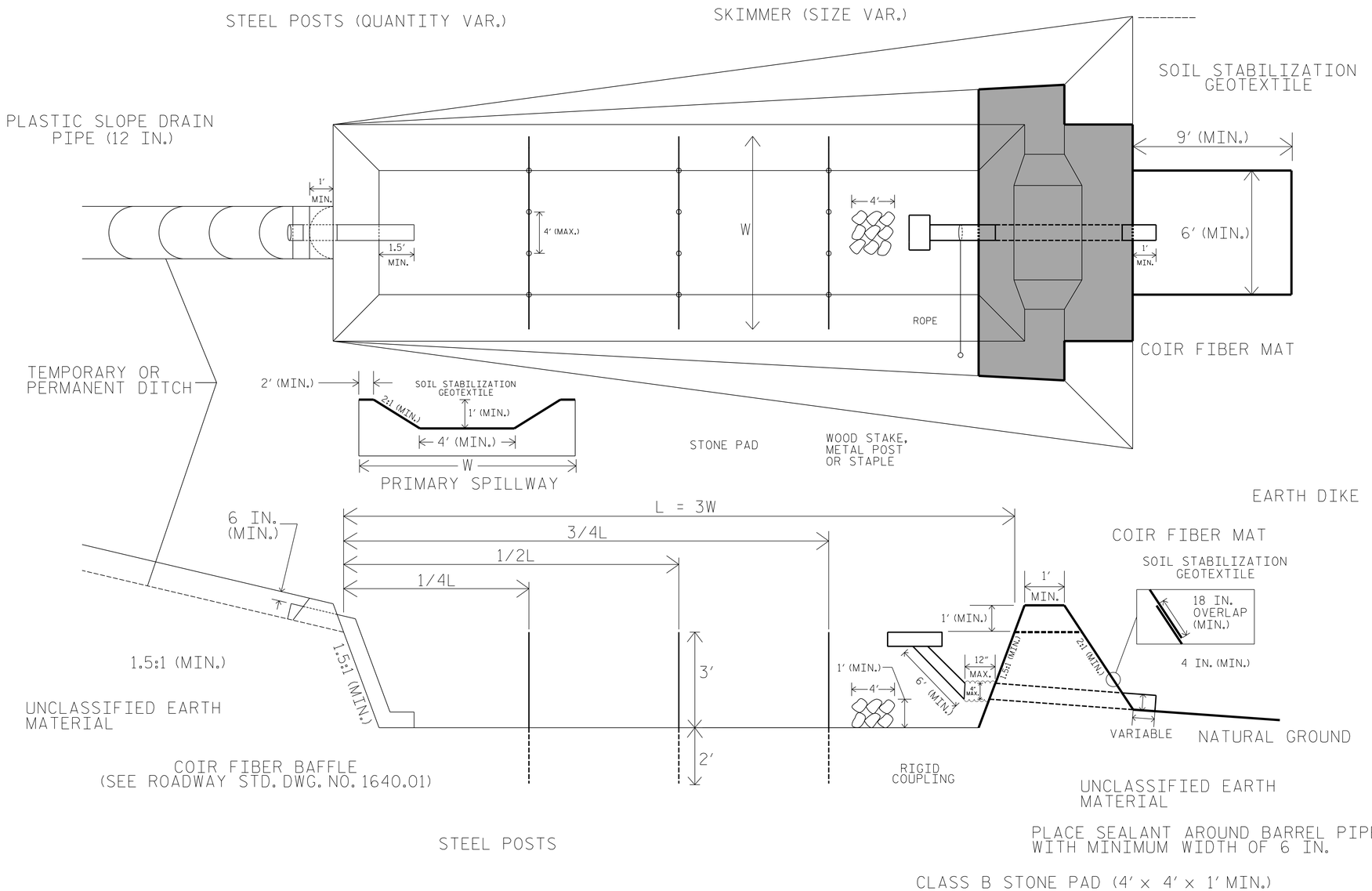
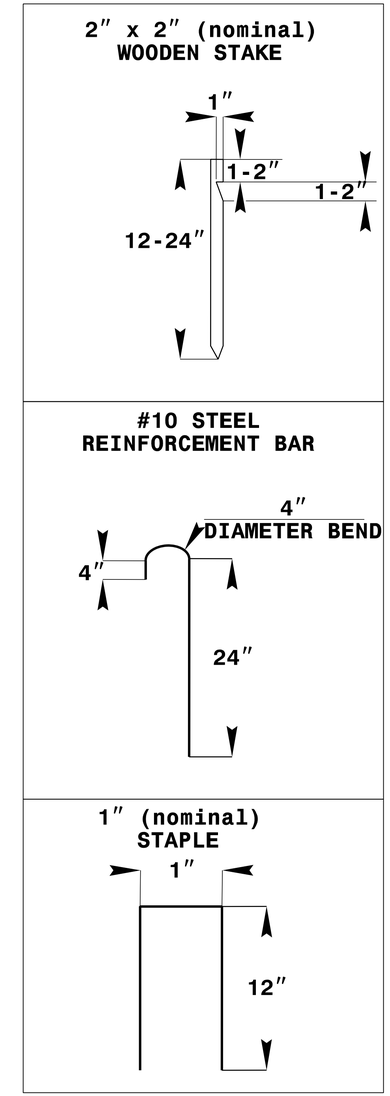
U-5105	EC-2
R/W SHEET NO.	

SKIMMER BASIN WITH BAFFLES DETAIL





COIR FIBER MAT ANCHOR OPTIONS

NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE PRIMARY SPILLWAY WEIR LENGTH (FT.) USING Q/0.8, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

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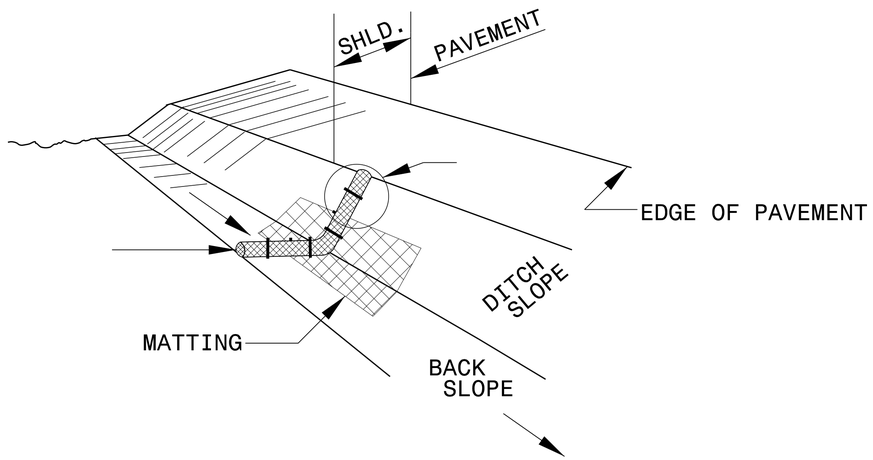
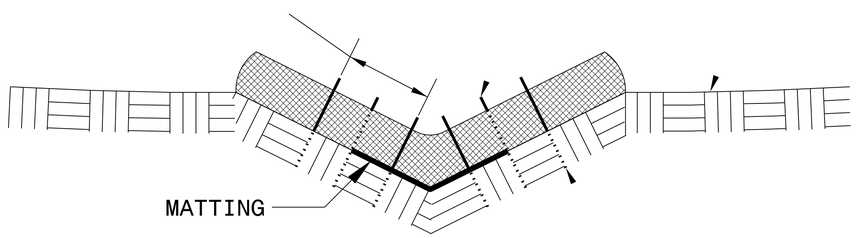
R/W SHEET NO.	

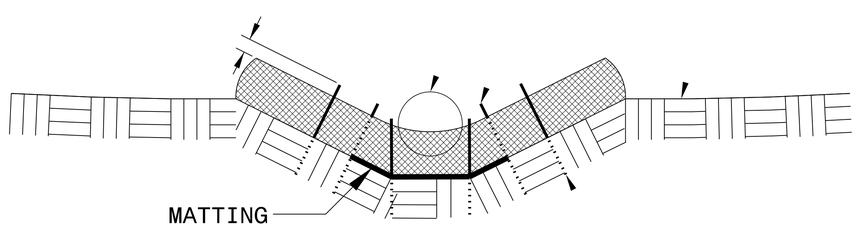
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

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

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

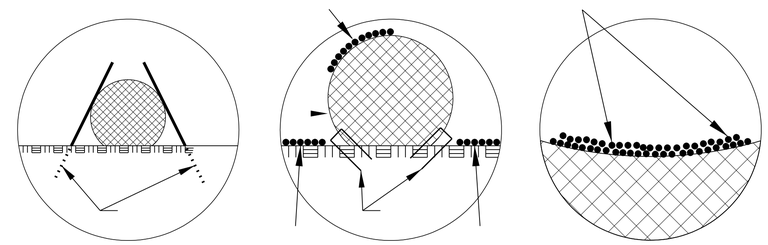
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

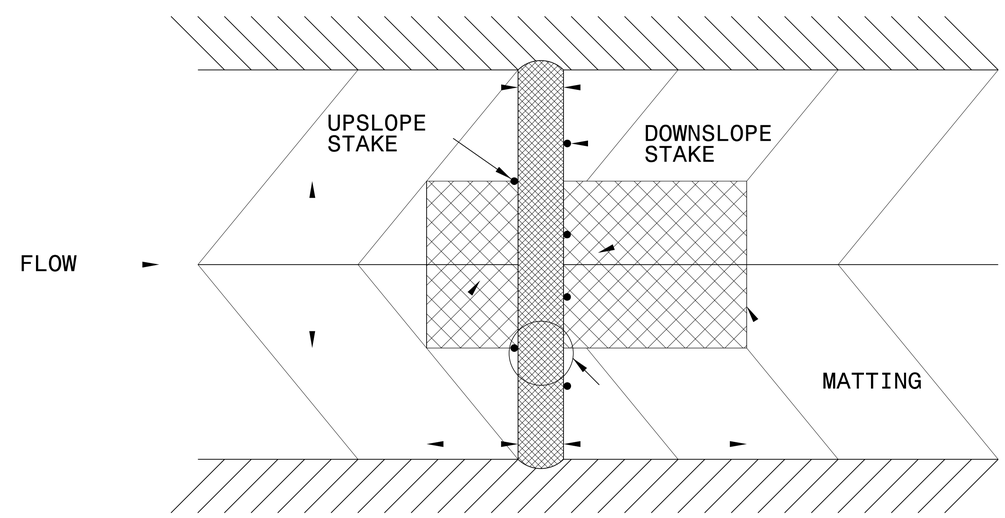
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.





TOP VIEW

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	19+20	20+00	RT	280
4	-L-	21+30	22+15	RT	165
4	-Y2-	10+65	12+00	LT	200
4	-Y2-	12+00	14+00	LT	305
				SUBTOTAL	950
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					
				TOTAL	950
				SAY	950

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L- & -Y1-	16+50L	19+59Y1	LT	1245
4	-Y2-	10+25	11+90	RT	645
4	-Y2-	14+00	15+00	LT	140
4	-Y2-	15+60	16+25	LT	185
				SUBTOTAL	2215
		ADDITIONAL PSRM TO BE INSTALLED			
				TOTAL	2215
				SAY	2215

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	EC-3A

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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.

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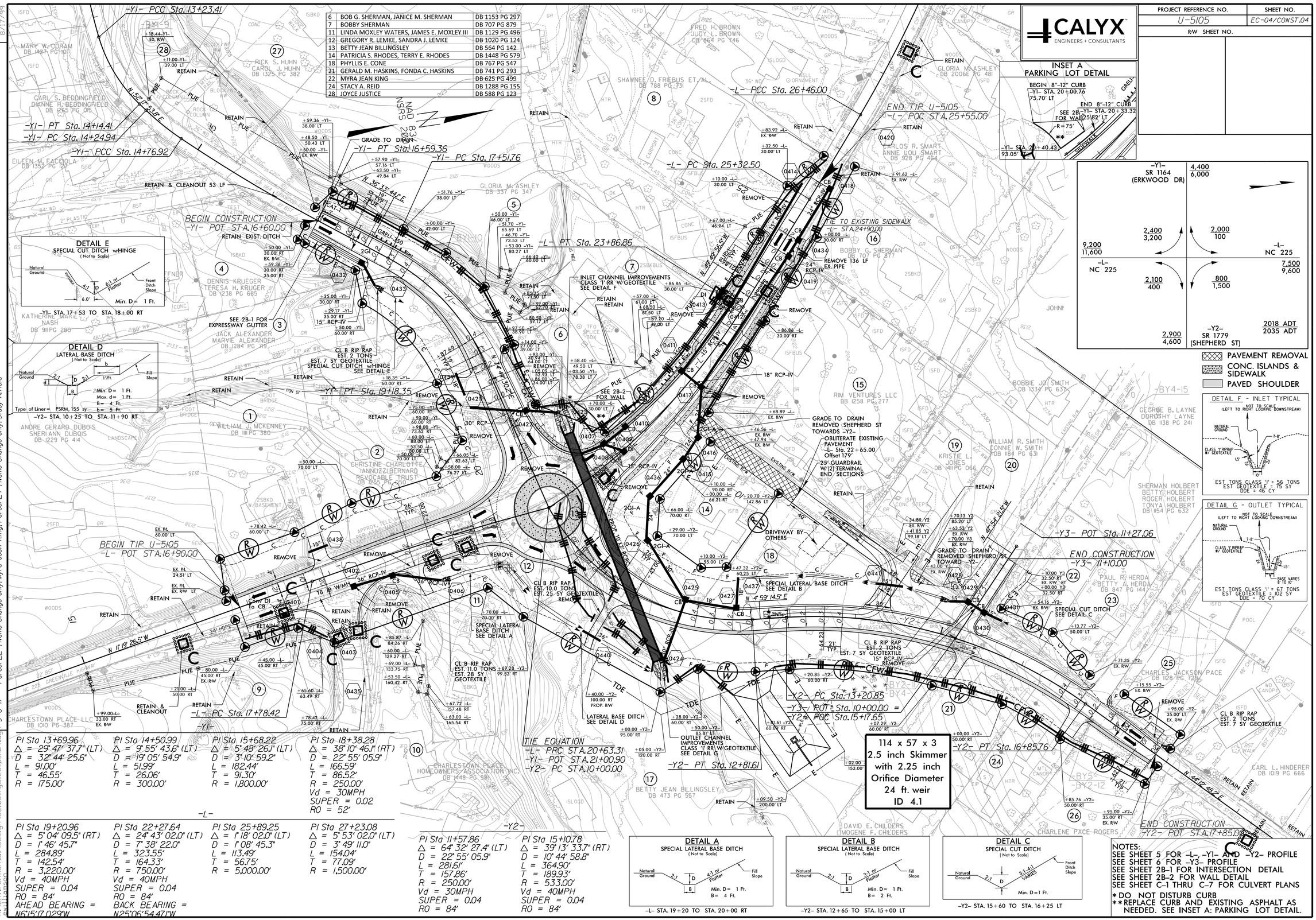
6	BOB G. SHERMAN, JANICE M. SHERMAN	DB 1153 PG 297
7	BOBBY SHERMAN	DB 707 PG 879
11	LINDA MOXLEY WATERS, JAMES E. MOXLEY III	DB 1129 PG 496
12	GREGORY R. LEMKE, SANDRA J. LEMKE	DB 1020 PG 124
13	BETTY JEAN BILLINGSLEY	DB 564 PG 142
14	PATRICIA S. RHODES, TERRY E. RHODES	DB 1448 PG 579
18	PHYLLIS E. CONE	DB 767 PG 547
21	GERALD M. HASKINS, FONDA C. HASKINS	DB 741 PG 293
22	MYRA JEAN KING	DB 625 PG 499
24	STACY A. REID	DB 1288 PG 155
28	JOYCE JUSTICE	DB 588 PG 123



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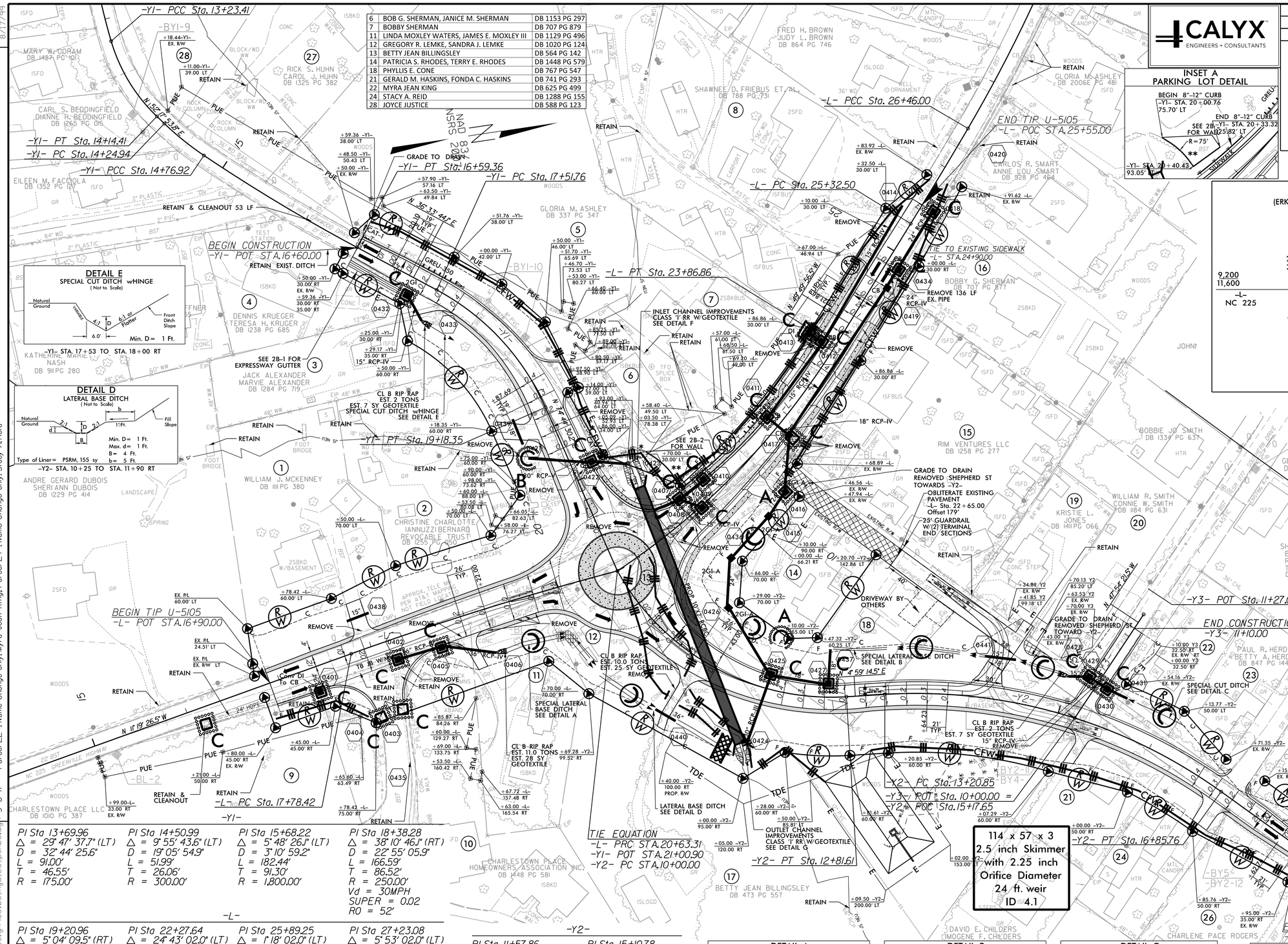
-Y1- PCC Sta. 13+23.41
-Y1- PT Sta. 14+14.41
-Y1- PC Sta. 14+24.94
-Y1- PCC Sta. 14+76.92
GRADE TO DRAIN
-Y1- PT Sta. 16+59.36
-Y1- PC Sta. 17+51.76
RETAIN & CLEANOUT 53 LF
BEGIN CONSTRUCTION
-Y1- POT STA.16+60.00
RETAIN EXIST. DITCH
-L- PT Sta. 23+86.86
-Y1- PT Sta. 19+18.35
BEGIN TIP U-5105
-L- POT STA.16+90.00
-L- PC Sta. 17+78.42
-L- PCC Sta. 26+46.00
END TIP U-5105
-L- POC STA.25+55.00
-L- PC Sta. 25+32.50
TIE TO EXISTING SIDEWALK
-L- STA.24+90.00
-Y3- POT Sta. 11+27.06
END CONSTRUCTION
-Y3- POC 11+10.00
-Y2- PC Sta.13+20.85
-Y3- POT Sta. 10+00.00 =
-Y2- POC Sta.15+17.65
-Y2- PT Sta. 16+85.76
END CONSTRUCTION
-Y2- POT STA.17+85.00
-Y2- PT Sta. 12+81.61
TIE EQUATION
-L- PRC STA.20+63.31
-Y1- POT STA.21+00.90
-Y2- PC STA.10+00.00
114 x 57 x 3
2.5 inch Skimmer
with 2.25 inch
Orifice Diameter
24 ft. weir
ID = 4.1
GRADE TO DRAIN
REMOVED SHEPHERD ST
TOWARDS -Y2-
OBLITERATE EXISTING
PAVEMENT
-L- Sta. 22+65.00
Offset 179'
25' GUARDRAIL
W/(2) TERMINAL
END SECTIONS
DRIVEWAY BY
OTHERS
GRADE TO DRAIN
REMOVED SHEPHERD ST
TOWARD -Y2-
SPECIAL LATERAL BASE DITCH
SEE DETAIL B
SPECIAL CUT DITCH
SEE DETAIL C
CL B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
15" RCP-IV
REMOVE
CL B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
INLET CHANNEL IMPROVEMENTS
CLASS "I" RR W/GEOTEXTILE
SEE DETAIL F
OUTLET CHANNEL
IMPROVEMENTS
CLASS "I" RR W/GEOTEXTILE
SEE DETAIL G
SPECIAL LATERAL BASE DITCH
SEE DETAIL A
LATERAL BASE DITCH
SEE DETAIL D
SEE 2B-1 FOR
EXPRESSWAY GUTTER
SEE 2B-2
FOR WALL
CL B RIP RAP
EST. 10.0 TONS
EST. 25 SY GEOTEXTILE
CL B-RIP RAP
EST. 11.0 TONS
EST. 28 SY
GEOTEXTILE
CL B RIP RAP
EST. 10.0 TONS
EST. 25 SY GEOTEXTILE
CL B RIP RAP
EST. 7 SY GEOTEXTILE
15" RCP-IV
REMOVE
CL B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
18" RCP-IV
24" RCP-IV
EX. PIPE
REMOVE 136 LF
EX. PIPE
Conv DI
To CB
RETAIN & CLEANOUT
RETAIN
REMOVE
PUE
TDE
GREELEY HIGHWAY
NC 225
N 41°19' 26.5" W
N 44°15' 48.2" E
N 25°06' 54.47" W
N 36° 33' 44" E
N 52° 13' 53" E
N 41°54' 21.5" W
N 47°54' 21.5" W
N 4°59' 14.5" E
MARY W. CORAM
DB 1427 PG 101
RICK S. HUHN
CAROL J. HUHN
DB 1325 PG 382
CARL S. BEODINGFIELD
DIANNE H. BEODINGFIELD
DB 1265 PG 015
EILEEN M. FACCIOLA
DB 1352 PG 127
GLORIA M. ASHLEY
DB 337 PG 347
DENNIS KRUEGER
TERESA H. KRUGER
DB 1238 PG 685
KATHERINE MARIE NASH
DB 911 PG 280
JACK ALEXANDER
MARVIE ALEXANDER
DB 1284 PG 719
ANDRE GERARD DUBOIS
SHERI ANN DUBOIS
DB 1229 PG 414
WILLIAM J. MCKENNEY
DB 1111 PG 380
CHRISTINE CHARLOTTE
IANNUZZI BERNARD
REVOCABLE TRUST
DB 1255 PG 050
CHARLESTOWN PLACE LLC
DB 1010 PG 387
CHARLESTOWN PLACE
HOMEOWNERS ASSOCIATION INC.
DB 1448 PG 581
BETTY JEAN BILLINGSLEY
DB 473 PG 557
FRED H. BROWN
JUDY L. BROWN
DB 864 PG 746
SHAWNEE D. FRIEBUS ET. AL.
DB 788 PG 731
CARLOS R. SMART
ANNIE LOU SMART
DB 928 PG 484
BOBBY G. SHERMAN
DB 707 PG 877
RIM VENTURES LLC
DB 1258 PG 277
KRISTIE L. JONES
DB 1411 PG 066
WILLIAM R. SMITH
CONNIE W. SMITH
DB 1184 PG 631
GEORGE B. LAYNE
DOROTHY LAYNE
DB 1138 PG 241
SHERMAN HOLBERT
BETTY HOLBERT
ROGER HOLBERT
TONYA HOLBERT
DB 1154 PG 632
PAUL R. HERDA
BETTY A. HERDA
DB 847 PG 144
CHARLES JACKSON PACE
DB 1128 PG. 729
CARL L. HINDERER
DB 1015 PG 666
DAVID E. CHILDERS
IMOGENE F. CHILDERS
CHARLENE PACE ROGERS
GLORIA M. ASHLEY
DB 2006E PG 481
BOBBIE JO SMITH
DB 1334 PG 631
JOHN
-BYI-9
-BYI-10
-BL-2
-BL-4
-BY2-10
-BY4-
-BY5-
-BY2-12
-BY4-15
2GI
2GI-A
2GI-B
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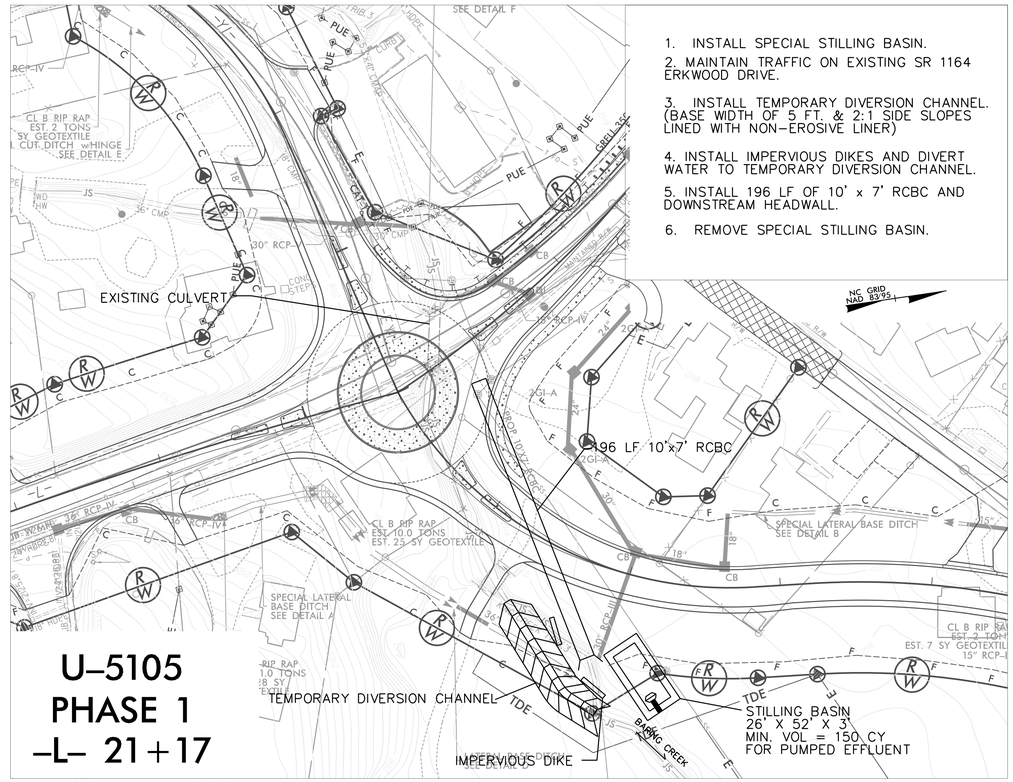
PROJECT REFERENCE NO.	SHEET NO.
U-5105	EC-6
R/W SHEET NO.	



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PROJECT REFERENCE NO.	SHEET NO.
U-5105	EC-7
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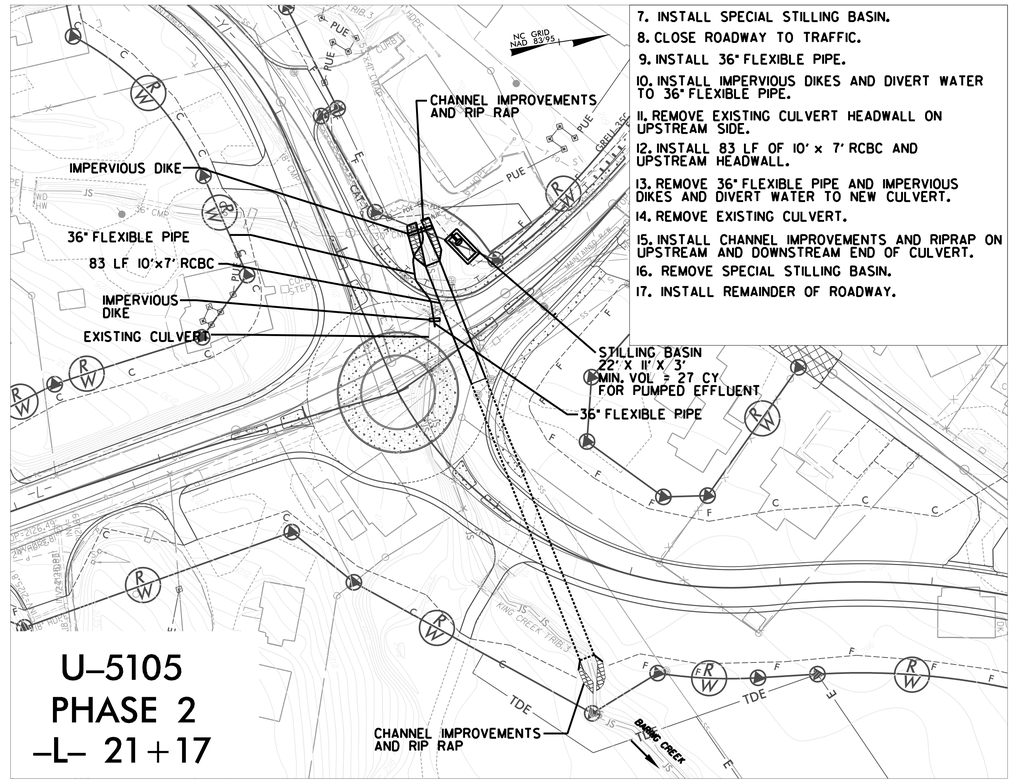

7. INSTALL SPECIAL STILLING BASIN.
8. CLOSE ROADWAY TO TRAFFIC.
9. INSTALL 36" FLEXIBLE PIPE.
10. INSTALL IMPERVIOUS DIKES AND DIVERT WATER TO 36" FLEXIBLE PIPE.
11. REMOVE EXISTING CULVERT HEADWALL ON UPSTREAM SIDE.
12. INSTALL 83 LF OF 10' x 7' RCBC AND UPSTREAM HEADWALL.
13. REMOVE 36" FLEXIBLE PIPE AND IMPERVIOUS DIKES AND DIVERT WATER TO NEW CULVERT.
14. REMOVE EXISTING CULVERT.
15. INSTALL CHANNEL IMPROVEMENTS AND RIPRAP ON UPSTREAM AND DOWNSTREAM END OF CULVERT.
16. REMOVE SPECIAL STILLING BASIN.
17. INSTALL REMAINDER OF ROADWAY.

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U-5105

CONTRACT:

$$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DON$$$$$$$$$$$$$$$$$$
$$$$$USERNME$$$

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
U-5105	SIGN-1

APPROVED: DocuSigned by: Brendan Lehan 3B1708E2F7B54CD...

DATE: 2/26/2018

Prepared In the Offices of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com
License No. F-0669

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045256 ENGINEER BRENDAN A. LEHAN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNING PLAN
HENDERSON COUNTY

LOCATION: NC 225 (GREENVILLE HIGHWAY) AT SR 1164 (ERKWOOD DR.) AND SR 1779 (SHEPHERD ST)

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903	SUPPORTS, 3LB STEEL U-CHANNEL	400	L.F.
4102000000	904	SIGN ERECTION, TYPE E	22	EA.
4129000000	906	RELOCATE SIGN, TYPE E	4	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	5	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	4	EA.

GENERAL NOTES

1 WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
2 ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
3 ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
4 WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL
5 IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
6 THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR 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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E', AND 'F' SIGNS ON 'U' CHANNEL POSTS
910.40	SINGLE LANE ROUNDABOUT SIGNING, WITH PEDESTRIANS

PAY ITEM NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. RELOCATE SIGN, TYPE E
3. DISPOSAL OF SUPPORT, U-CHANNEL
4. CONTACT NCDOT TRAFFIC SERVICES FOR REMOVAL AND REPLACEMENT

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	SIGN QUANTITIES
SIGN-3	SIGN (EXISTING) DETAIL
SIGN-4	SIGN (PROPOSED) DETAIL

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5105	SIGN-2
R/W SHEET NO.	

Prepared In the Offices of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com
License No. F-0669

SIGNING DESIGN ENGINEER
DocuSigned by: Brendan Lehan
B1708E2F7B54CD...
NORTH CAROLINA PROFESSIONAL SEAL 045256 ENGINEER BRENDAN A. LEHAN
2/26/2018

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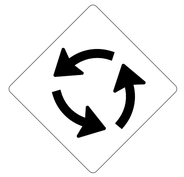
401
QUANTITY REQ'D N/A(Existing)

AXLE
WEIGHT
LIMIT
13000 LBS

ONE 'U' POST PER SIGN

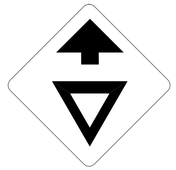
402 QUANTITY REQ'D 4



W2-6
30" X 30"

ONE 'U' POST PER SIGN

403 QUANTITY REQ'D 4



W3-2
30" X 30"

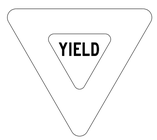
ONE 'U' POST PER SIGN

404
QUANTITY REQ'D N/A (Existing)

SPEED
LIMIT
35

ONE 'U' POST PER SIGN

405 QUANTITY REQ'D 8



R1-2
36" X 36"
X 36"

ONE 'U' POST PER SIGN

406 QUANTITY REQ'D 4

R6-4
30" X 24"

ONE 'U' POST PER SIGN

408 QUANTITY REQ'D 2

M6-2
21" X 15"

ONE 'U' POST PER SIGN

409 QUANTITY REQ'D 2

M1-5
24" X 24"

ONE 'U' POST PER SIGN

410 QUANTITY REQ'D 1

M3-1
24" X 12"

ONE 'U' POST PER SIGN

411 QUANTITY REQ'D 1

M3-3
24" X 12"

ONE 'U' POST PER SIGN

$TIME$ $$F
LN $$$$$$$$$$
$ZONE$ $$$$$$$$$$
$LZONE$ $$$$$$$$$$

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	SIGN-3
R/W SHEET NO.	

Prepared In the Offices of:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
www.mottmac.com
License No. F-0669

SIGNING DESIGN ENGINEER

DocuSigned by: Brendan Lehan
FB3708E2F7B54CD...

NORTH CAROLINA PROFESSIONAL SEAL 045256 ENGINEER BRENDAN A. LEHAN

2/26/2018

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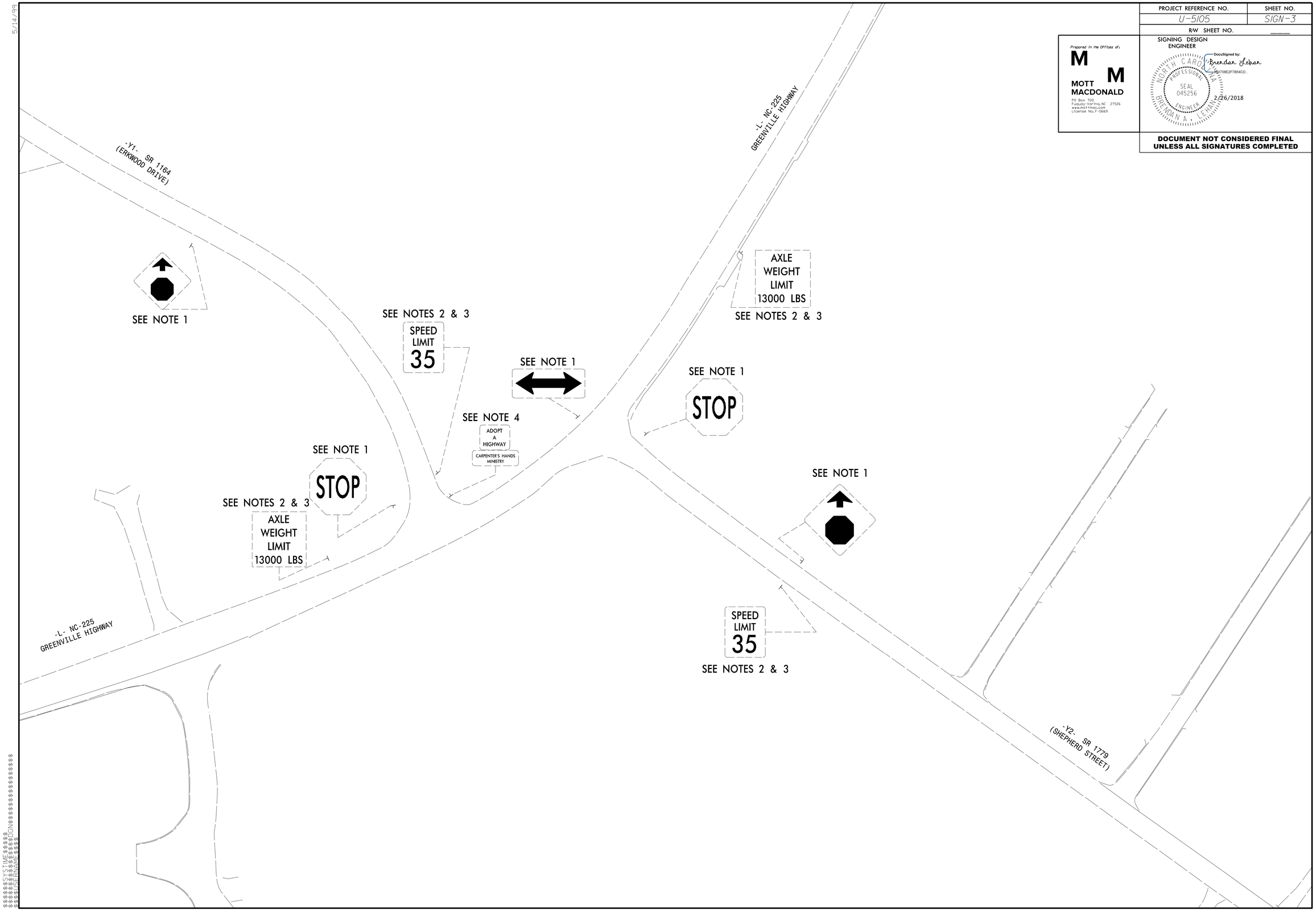

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5105	SIGN-4
R/W SHEET NO.	

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SIGNING DESIGN ENGINEER
DocuSigned by: Brendan Lehan
NORTH CAROLINA PROFESSIONAL SEAL 045256 ENGINEER BRENDAN A. LEHAN
2/26/2018

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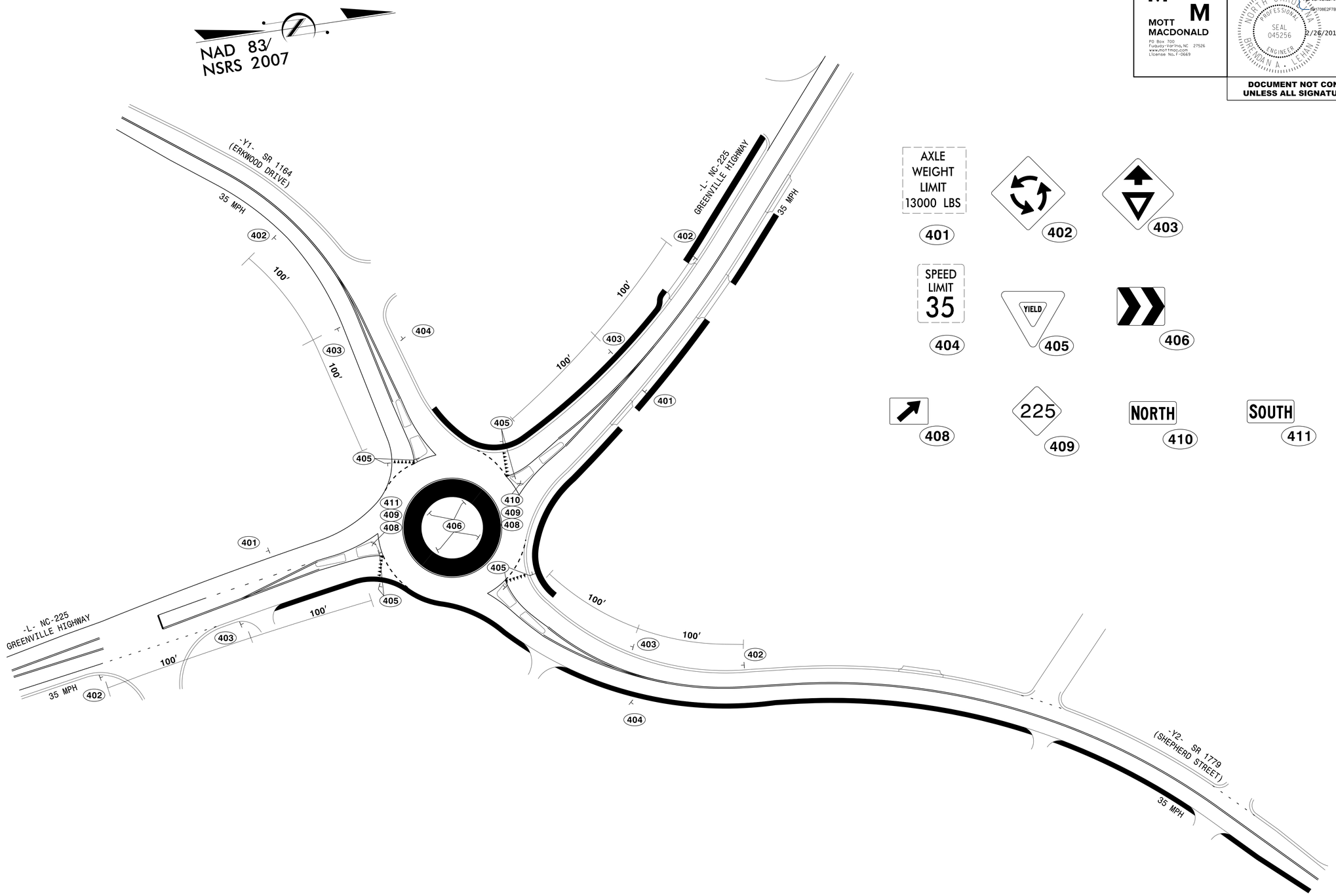

TIP PROJECT: U-5105

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-5105	UC-1

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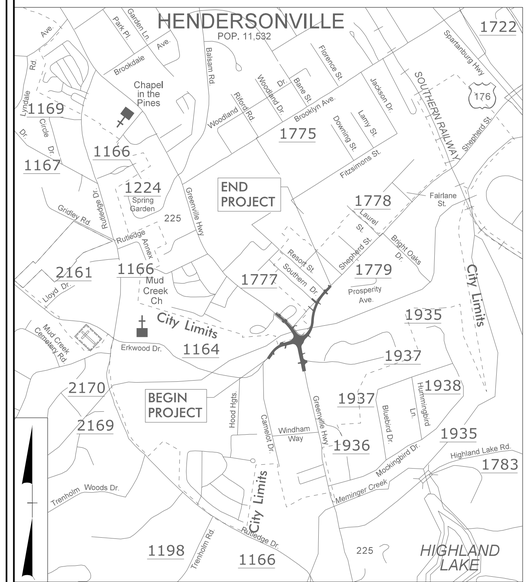
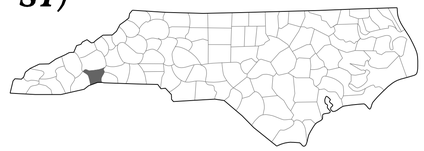
UTILITY CONSTRUCTION PLANS
HENDERSON COUNTY

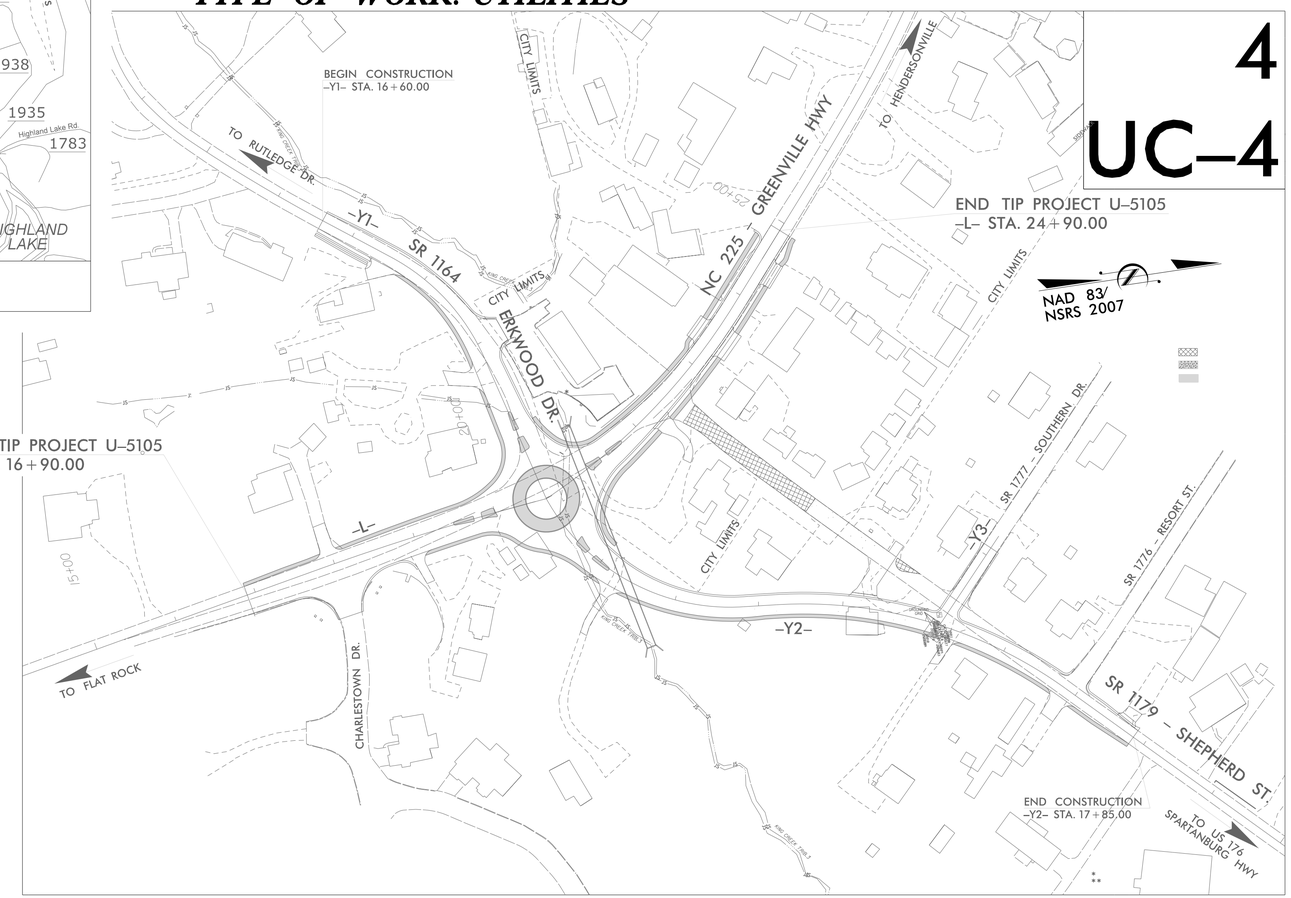
LOCATION: NC 225 (GREENVILLE HWY) INTERSECTION IMPROVEMENTS FROM SR 1164 (ERKWOOD DR) TO SR 1779 (SHEPHERD ST)

TYPE OF WORK: UTILITIES



VICINITY MAP





A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HENDERSONVILLE.

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

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

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3D	DETAILS
UC-4	UTILITY CONSTRUCTION SHEET
UC-5 THRU UC-7	PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

TOWN OF HENDERSONVILLE - WATER AND SEWER

PREPARED IN THE OFFICE OF:

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227
Ph. (704) 814-4407

Ronald B. Wilkins, P.E.	UTILITIES PROJECT MANAGER
Clint L. Stevens, P.E.	UTILITIES PROJECT ENGINEER
Ronald B. Wilkins, P.E.	UTILITIES PROJECT DESIGNER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 18193 ENGINEER RONALD B. WILKINS

DocuSigned by: Ronald B. Wilkins
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5/21/2018 7:13:09 AM EDT

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Ted Adams	DIVISION CONTACT #1
Mitchell Bishop	DIVISION CONTACT #2
Bob Golding	DIVISION CONTACT #3
Steve Cannon, PE	DIVISION CONTACT #4

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-2

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 12" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — 12" SS
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown) — PROP O/H POW LINES
- Trenchless Installation — 12" TL INSTALL
- Encasement by Open Cut — 24" ENCAS BY OC
- Encasement — 24" ENCASEMENT
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note
- Pay Item Note

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 — P
- *Underground Telephone Cable — T
- *Underground Telephone Conduit — TC
- *Underground Fiber Optics Telephone Cable — T FO
- *Underground TV Cable — TV
- *Underground Fiber Optics TV Cable — TV FO
- *Underground Gas Pipeline — G
- 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 — FSS
- Underground Unknown Utility Line — ?UTL
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

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

REV: 2/1/2012

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UTILITY CONSTRUCTION

HINDE ENGINEERING
License No. C-2839
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-3
DESIGNED BY: RBW	
DRAWN BY: RBW	
CHECKED BY: CLS	
APPROVED BY: RBW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins
7/18/2018 11:38:30 AM EDT

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 THE CITY OF HENDERSONVILLE, N.C. THE CONTACT PERSON FOR THE CITY IS MR. BRENT DETWILER, PE AND HE CAN BE REACHED AT (828) 697-3060

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. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. 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:

1. WATER LINE AND SEWER LINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF HENDERSONVILLE STANDARD DETAILS AND THE PROJECT SPECIAL PROVISIONS.

2. PRIOR TO FINAL ACCEPTANCE OF THE WATER AND SEWER LINE WORK THE CONTRACTOR SHALL PROVIDE SURVEYED AS-BUILT RECORD DRAWINGS.

3. ANY PROPOSED CHANGES TO WATER OR SEWER LINE WORK SHALL BE APPROVED IN ADVANCE IN WRITING BY THE ENGINEER.

4. FLUSHING, DISINFECTING AND TESTING OF WATER LINES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS.

5. TESTING OF SANITARY SEWER PIPING AND MANHOLES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS.

6. ALL MANHOLES SHALL BE PRECAST WITH PRECAST BASES. NO DOGHOUSE MANHOLES WILL BE ALLOWED ON THIS PROJECT.

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-3A

DESIGNED BY: RBW
DRAWN BY: JNA
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins 5308BF7AF145423...
5/17/2018 4:30:19 PM EDT

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513

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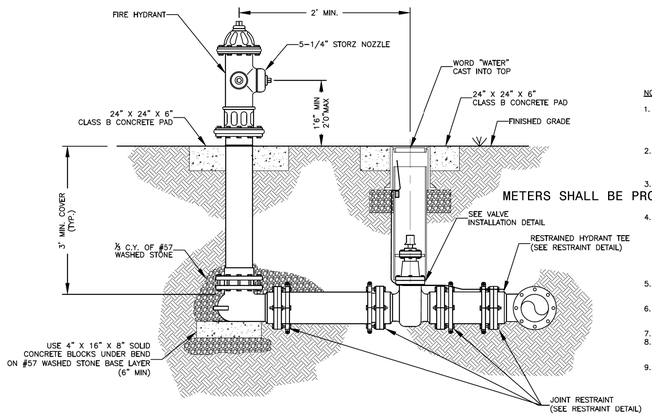

METERS SHALL BE PROVIDED BY THE CONTRACTOR ROCKY MOUNT.

NOTES:

1. FIRE HYDRANT SHALL BE MUELLER CENTURION OR APPROVED EQUAL TESTED BY AWWA STANDARDS TO 350 PSI WORKING PRESSURE WITH 5-1/4 STORZ NOZZLE.
2. ALL VALVES AND HYDRANTS SHALL HAVE M. J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
3. FIRE HYDRANT SHALL BE FACTORY PAINTED YELLOW. PAINT SHALL BE APPROVED BY THE ENGINEER BEFORE PRODUCT IS ACCEPTED.
4. HYDRANT VALVE SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE MAIN, BUT DO NOT PLACE VALVE IN PROPOSED OR EXISTING CURB AND GUTTER. IF THE STREET IS SOIL AND NO PAVING IS TO BE DONE AT THIS TIME, THE LOCATION OF THE VALVE IS TO BE DETERMINED BY THE ENGINEER.
5. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
6. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY THE ENGINEER.
7.
8. GATE VALVE AND BOX SHALL BE IN ACCORDANCE WITH STANDARD DETAIL.
9. HYDRANT EXTENSIONS AND/OR OFFSETS SHALL BE APPROVED BY THE ENGINEER.

12 / WD-4 FIRE HYDRANT STANDARD INSTALLATION

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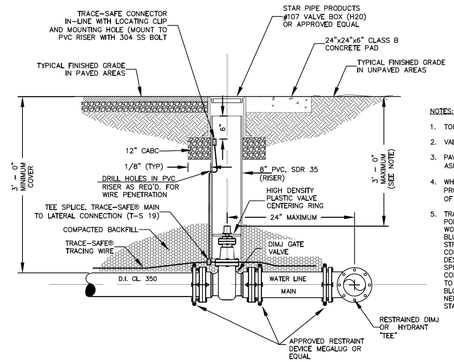

NOTES:

1. TOP OF COVER SHALL BE STAMPED "WATER"
2. VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR PAVED SURFACES.
3. PAVEMENT REPAIR SHALL MATCH EXISTING ROAD PAVING SECTION. SEE NCDOT ASPHALT REPAIR DETAIL # 654.01.
4. WHEN OPERATING NUT DEPTH EXCEEDS 3'-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2" SQUARE OPERATING NUT. TOP OF NUT SHALL BE WITHIN 5" TO 9" OF FINISHED GRADE.
5. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC., OR APPROVED EQUIVALENT, AND PRODUCED IN THE UNITED STATES OF AMERICA.

5 / WD-2 VALVE INSTALLATION DETAIL

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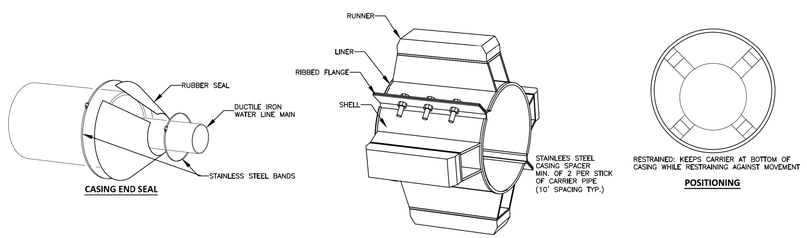
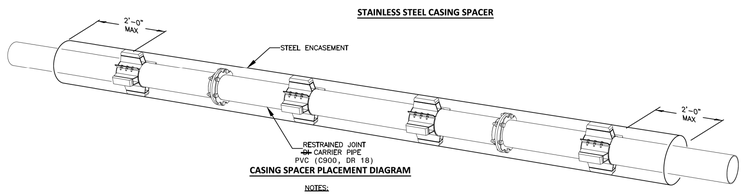




NOTES:

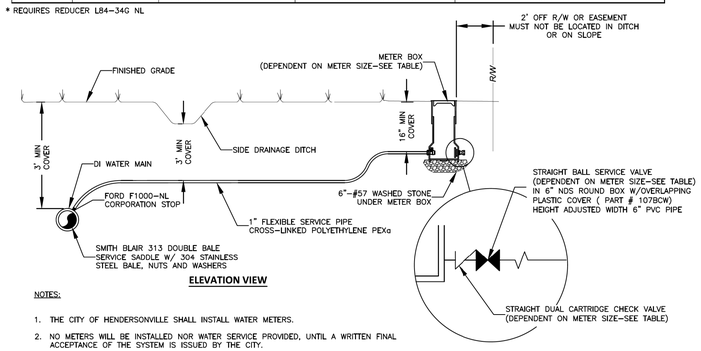
1. RESTRAINED POSITIONING TO BE USED AT ALL TIMES.
2. CARRIER PIPE JOINTS SHALL BE MECHANICALLY RESTRAINED.
3. STAINLESS STEEL CASING SPACERS SHALL BE STYLE CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO. OF YORKVILLE, IL OR ENGINEER APPROVED EQUIVALENT.
4. CASING END SEAL SHALL BE STYLE CCES AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO. OF YORKVILLE, IL OR ENGINEER APPROVED EQUIVALENT.

16 / WD-5 CARRIER PIPE IN STEEL ENCASEMENT

NOT TO SCALE 04/04/18 △1

METER SIZE	METER BOX SIZE	METER BOX	STRAIGHT BALL SERVICE VALVE	STRAIGHT DUAL CARTRIDGE CHECK VALVE
3/4" *	3/4"	FORD CB111-233-NL	FORD B81-233W-NL	HHC81-333-NL
1"	1"	FORD CB111-444-L-T-NL	FORD B81-344W-NL	HHC81-444-NL

* REQUIRES REDUCER L84-34G NL



NOTES:

1. THE CITY OF HENDERSONVILLE SHALL INSTALL WATER METERS.
2. NO METERS WILL BE INSTALLED NOR WATER SERVICE PROVIDED, UNTIL A WRITTEN FINAL ACCEPTANCE OF THE SYSTEM IS ISSUED BY THE CITY.
3. EXTEND TRACER WIRE FROM MAIN TO METER BOX. WIRE NOT SHOWN FOR CLARITY. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET, PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE SHALL BE TERMINATED IN METER BOX AT MOUNTED TRACE-SAFE® LOCATING CLIP, MOUNTED A MAXIMUM OF 3" FROM TOP OF BOX WITH 304 SS BOLT. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC., OR EQUIVALENT APPROVED BY ENGINEER, AND PRODUCED IN THE UNITED STATES OF AMERICA.

8 / WD-2 MINIMUM SERVICE LINE: 1" SERVICE LATERAL INSTALLATION

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USER: rbwilkins
PLANSHEET: 69

PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-3B
DESIGNED BY: RBW	
DRAWN BY: JNA	
CHECKED BY: CLS	
APPROVED BY: RBW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	6/7/2018 9:23:31 AM EDT
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 10719 ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins 3D8BF7AF145423...

UTILITY CONSTRUCTION

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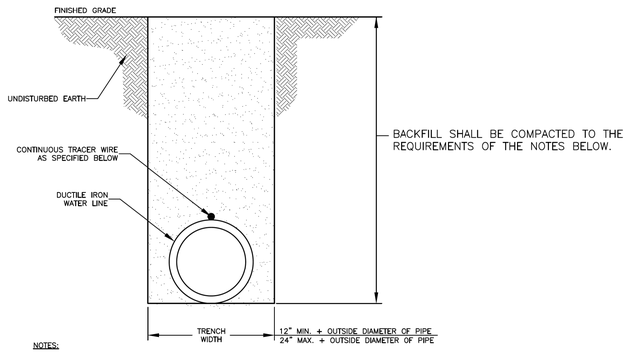

NOTES:

1. TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS-OF-WAY SHALL BE BE BACKFILLED WITH COMMON BACKFILL MATERIAL CONSISTING OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS AND TAMPED THOROUGHLY. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS. MATERIAL SHALL BE FREE OF ROOTS, STONES, AND DEBRIS. ALL MATERIAL SHALL HAVE AN IN-PLACE DENSITY OF AT LEAST 85% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR) OR AS APPROVED BY THE ENGINEER. COMMON BACKFILL SHALL NOT CONTAIN STONE BLOCKS, BROKEN CONCRETE, MASONRY RUBBLE, OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED DURING FILLING. SNOW, ICE, AND FROZEN SOIL WILL NOT BE PERMITTED.

   WHERE EXCAVATED MATERIAL, AFTER REMOVAL OF ROCKS, STUMPS, PLANT MATERIAL, AND OTHER EXTRANEOUS MATERIAL AND PROPER DEWATERING, DRYING, PROTECTION, AND STORAGE OF THE EXCAVATION BY THE CONTRACTOR, CANNOT BE PREPARED TO MEET THE REQUIREMENTS FOR COMMON BACKFILL, DUE TO THE NATURE OF THE MATERIAL (E.G., EXCESSIVE ROCK, MUCK, ORGANICS, CLAY, SILT, OR OTHER MATERIAL), AND AS DETERMINED BY THE ENGINEER, THE UNACCEPTABLE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AND REPLACED BY IMPORTED BACKFILL MEETING THE REQUIREMENTS OF STRUCTURAL BACKFILL. IMPORTED STRUCTURAL BACKFILL SHALL BE FREE OF ORGANICS, ROOTS OR OTHER DELETERIOUS MATERIALS AND SHALL NOT CONTAIN MORE THAN FIVE PERCENT (BY WEIGHT) ORGANIC MATERIAL, HAVE A PLASTICITY INDEX (PI) GREATER THAN 25, OR HAVE A MAXIMUM DRY DENSITY LESS THAN 90 POUNDS PER CUBIC FOOT. IMPORTED STRUCTURAL FILL SHOULD CONSIST OF MATERIAL CLASSIFIED AS ML, CL, SC, OR SM, OR BETTER PER ASTM D-2487 AND BE CAPABLE OF BEING COMPACTED TO 85% STANDARD PROCTOR.

2. THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.

3. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC. AND PRODUCED IN THE UNITED STATES OF AMERICA.

   TRACER WIRE SHALL BE EXTENDED ALONG ALL WATER LINES, FITTINGS, VALVES, SERVICES, AND HYDRANTS. LOCATING CLIPS SHALL BE PROVIDED AT ALL VALVES, HYDRANT VALVES AND METER BOXES. THE CONTRACTOR SHALL DUCT TAPE TRACER WIRE ON CROWN OF WATER LINE EVERY FIVE FEET.

WATER TRENCH CONSTRUCTION OUTSIDE PAVEMENT

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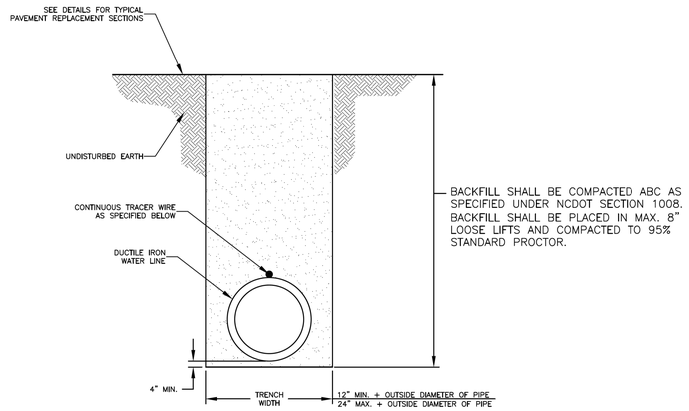

NOTES:

1. THIS TRENCH BACKFILL DETAIL APPLIES TO AREAS UNDER PAVEMENT AND AREAS WHERE THE TRENCH IS WITHIN FIVE (5) FEET OF THE EDGE OF PAVEMENT.

2. COMPACTION OF THE BACKFILL SHALL BE ACHIEVED THROUGH THE USE OF AN APPROVED VIBRATORY PLATE TAMPER OR ROLLER.

3. COMPACTION TESTING OF THE BACKFILL SHALL BE PROVIDED, DIRECTED AND COORDINATED BY THE OWNER. INTERVALS OF TESTING SHALL BE AT THE TOTAL DISCRETION OF THE OWNER AND MAY BE CHANGED AT ANY TIME.

   IF A TEST DOES NOT PASS, THE CONTRACTOR SHALL REMOVE THE DEFECTIVE BACKFILL, REDO THE WORK AND THE AREA WILL BE RETESTED. THE CONTRACTOR SHALL BE AWARE OF THE LEVEL OF COMPACTION REQUIRED.

   IF THE WORK IS SUSPECT TO BE DEFECTIVE BY THE OWNER, THE WORK SHALL BE RETESTED.

   THE WATER CONTENT OF THE BACKFILL MATERIAL SHALL ALSO BE TESTED AND RECORDED FOR EACH TEST COMPLETED. THE CONTRACTOR WILL BE ALLOWED TO ADD WATER TO THE BACKFILL MATERIAL IN ORDER TO OBTAIN THE OPTIMUM WATER CONTENT. HOWEVER, THE CONTRACTOR WILL NOT BE ALLOWED TO UTILIZE THE ADDITION OF WATER AS A MEANS OF COMPACTION. FURTHERMORE, SHOULD THE BACKFILL MATERIAL BE FOUND TO HAVE WATER CONTENT RATIOS WHICH IN THE OPINION OF THE ENGINEER OR THE OWNER PREVENTS THE APPROPRIATE COMPACTION OF THE TRENCH, THE CONTRACTOR SHALL REMOVE ALL DEFECTIVE MATERIAL AND UNDERTAKE THE NECESSARY CORRECTIVE WORK.

4. THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.

5. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC. AND PRODUCED IN THE UNITED STATES OF AMERICA.

   TRACER WIRE SHALL BE EXTENDED ALONG ALL WATER LINES, FITTINGS, VALVES, SERVICES, AND HYDRANTS. LOCATING CLIPS SHALL BE PROVIDED AT ALL VALVES, HYDRANT VALVES AND METER BOXES. THE CONTRACTOR SHALL DUCT TAPE TRACER WIRE ON CROWN OF WATER LINE EVERY FIVE FEET.

WATER TRENCH CONSTRUCTION UNDER PAVEMENT

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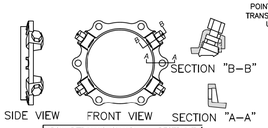
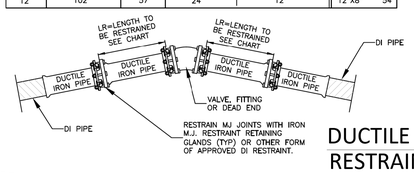


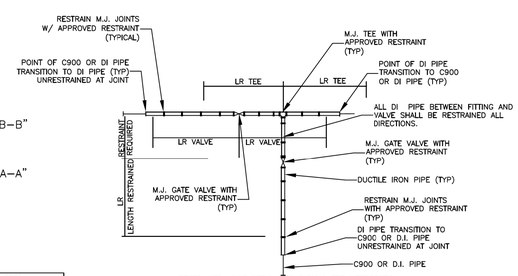
IRON RETAINING GLAND M.J. RESTRAINT			
NOMINAL PIPE SIZE	WEDGES QUANTITY	BOLTS QUANTITY	PRESS RATING
6"	3	6	350
8"	4	6	350
12"	8	8	350

8" SIZE SHOWN 6" & 12" SIMILAR
IRON RETAINING GLAND M.J. RESTRAINT

LR (MIN. LENGTH OF RESTRAINT EACH DIRECTION OF THRUST IN LINEAR FEET)
Based on 200 psig pressure, Safety Factor of 2.0:1, BARE DI PIPE AND ML Soil, 3.5' cover
Chart does not apply to pipes wrapped in polyethylene wrap

PIPE SIZE	VALVES DEAD ENDS TEES	90° ELBOWS	45° ELBOW & CROSSES	22-1/2° ELBOWS	REDUCER
6"	55'	31'	13'	7'	8"X2" 67'
8"	72'	40'	17'	8'	8"X6" 30'
12"	102'	57'	24'	12'	12"X8" 54'





RESTRAINED JOINT DETAIL FOR TYPICAL TEE INTERSECTION
4 WAY INTERSECTION SIMILARLY RESTRAINED

NOTES:

1. THRUST RESTRAINT SHALL BE INSTALLED ON DUCTILE IRON WATER DISTRIBUTION LINES 6" THRU 12" DIAMETER IN THE MANNER SHOWN.

2. IRON RETAINING GLAND M.J. RESTRAINT OR OTHER FORMS OF IRON RESTRAINT SHALL NOT BE USED ON PVC PIPE.

3. PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINED JOINT PIPE FOR THE PROPER LENGTH.

4. COMPACT FITTINGS ARE ACCEPTABLE FOR USE WITH IRON RETAINING GLAND M.J. RESTRAINT AND OTHER FORMS OF DI RESTRAINT.

5. THE MINIMUM LENGTH OF RESTRAINT INDICATED SHALL REQUIRE ALL JOINTS WITHIN THE LR DISTANCE TO BE RESTRAINED.

6. RESTRAINT SYSTEM SHALL BE INSPECTED AND APPROVED PRIOR TO BACKFILLING.

7. RESTRAINT SYSTEMS MAY VARY BASED UPON THE ENGINEERS' DESIGN AS SHOWN ON THE PLAN AND PROFILE SHEETS.

8. GRIPPER RING AND FIELD LOK GASKETS ARE AN ACCEPTABLE METHOD OF RESTRAINT ON DUCTILE IRON PIPE ONLY.

9. TRACKER WIRE NOT SHOWN FOR CLARITY. WIRE SHALL BE INSTALLED PER OTHER DETAILS.

DUCTILE IRON PIPE RESTRAINT DETAIL

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-3C
DESIGNED BY: RBW	
DRAWN BY: JNA	
CHECKED BY: CLS	
APPROVED BY: RBW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 10757 ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins 30B8F7AF145423
6/7/2018 9:13:33 AM EDT

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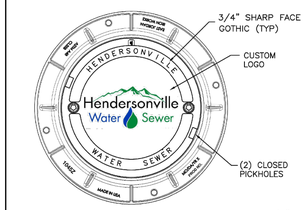
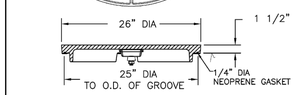
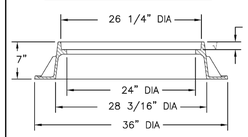
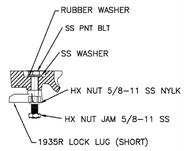




MANHOLE COVER



MANHOLE CASTING



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NOTE:
COVER SHALL BEAR THE WORDS:
"SANITARY SEWER"

REVISION	DATE	BY

NO SCALE

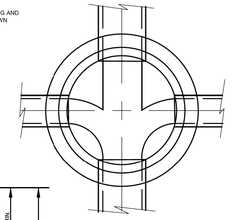
CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 14B
ITEM NO.
WATERTIGHT, LOCKING MANHOLE CASTING & COVER

DWG. NO. 10

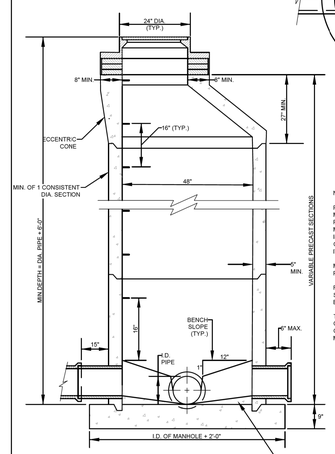
NOTE:
IF TOP STEP IS IN 24" DIA. OPENING, IT MAY PROJECT NO MORE THAN 3-1/2".

SEE DRAWINGS:
NO. 13 FOR GRADE ADJUSTMENT.
NOS. 14 AND 15 FOR CASTING DETAILS.
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING.

MANHOLE CASTING AND COVER NOT SHOWN



PLAN



SECTION

CONCRETE WITH STEEL TROWL FINISH OR PRECAST INVERT CHANNELS AND BENCH.

NOTES:

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL.

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

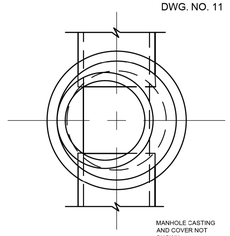
REVISION	DATE	BY

NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 10
ITEM NO.
PRECAST MANHOLE SEWER 8"-21"

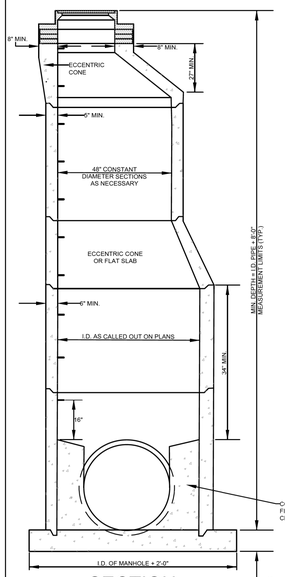
DWG. NO. 11

SEE DRAWINGS:
NO. 13 FOR GRADE ADJUSTMENT
NOS. 14 AND 15 FOR CASTING DETAILS
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING



PLAN

MANHOLE CASTING AND COVER NOT SHOWN



SECTION

NOTES:

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL. IF TOP STEP IS IN 24" DIA. OPENING IT MAY PROJECT NO MORE THAN 3-1/2".

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

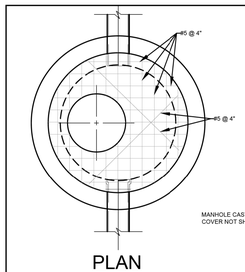
CONCRETE WITH STEEL TROWL FINISH OR PRECAST INVERT CHANNELS AND BENCH.

REVISION	DATE	BY

NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 11
ITEM NO.
PRECAST MANHOLE SEWERS 24" THRU 48"

DWG. NO. 12

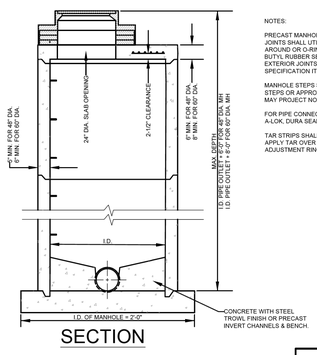


MANHOLE I.D.
48" FOR SEWERS 8" THRU 21"
60" FOR SEWERS 24" THRU 36"

SEE DRAWINGS:
NO. 13 FOR GRADE ADJUSTMENT.
NOS. 14 AND 15 FOR CASTING DETAILS.
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING

MANHOLE CASTING & COVER NOT SHOWN

PLAN



SECTION

CONCRETE WITH STEEL TROWL FINISH OR PRECAST INVERT CHANNELS & BENCH.

NOTES:

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL. IF TOP STEP IS IN 24" DIA. OPENING IT MAY PROJECT NO MORE THAN 3-1/2".

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

REVISION	DATE	BY

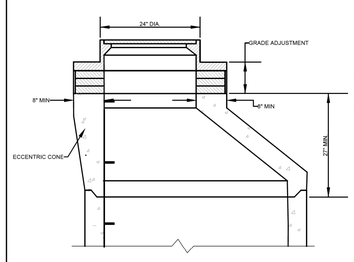
NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 12
ITEM NO.
SHALLOW PRECAST MANHOLE

DWG. NO. 13

NOTE:
IF TOP STEP IS IN 24" DIA. OPENING, IT MAY PROJECT NO MORE THAN 3-1/2".

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL MEET ASTM C443.



MIN. HEIGHT 6" - ANY COMBINATION OF PRECAST RINGS AND/OR SEWER MANHOLE BRICK.

MAX. HEIGHT 12" - ANY COMBINATION OF PRECAST RINGS AND/OR SEWER MANHOLE BRICK - BRICK COURSES NOT TO EXCEED TWO.

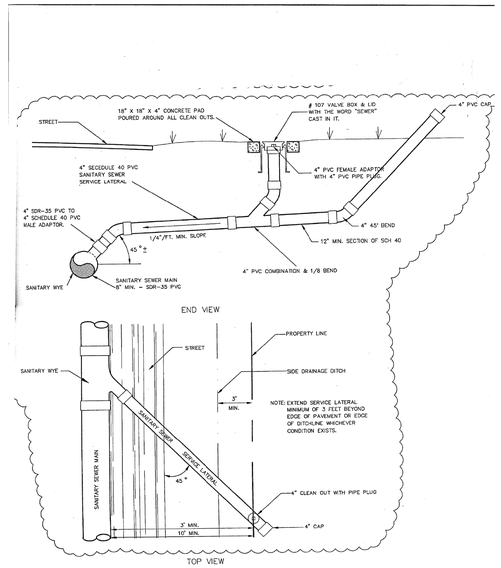
APPLY 3/4" CEMENT MORTAR TO INSIDE OF PRECAST RINGS AND/OR MANHOLE BRICK. APPLY 1/2" BITUMINOUS SEAL TO OUTSIDE OF PRECAST RINGS AND/OR MANHOLE BRICK. CONTRACTOR SHALL APPLY TAR OVER CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

NOTE:
THIS DETAIL APPLIES FOR ECCENTRIC CONE SECTIONS OR PRECAST FLAT SLAB TOP.

REVISION	DATE	BY

NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 13
ITEM NO.
MANHOLE GRADE ADJUSTMENT DETAIL



TYPICAL 4" SEWER SERVICE LATERAL AND CLEAN OUT DETAILS.
NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-3D

DESIGNED BY: RBW
DRAWN BY: JNA
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 019257 ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins
2/20/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513

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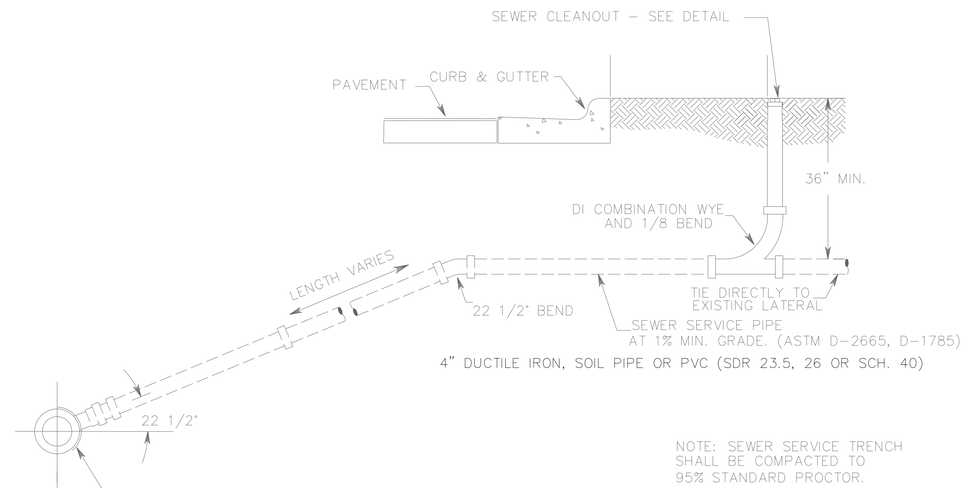
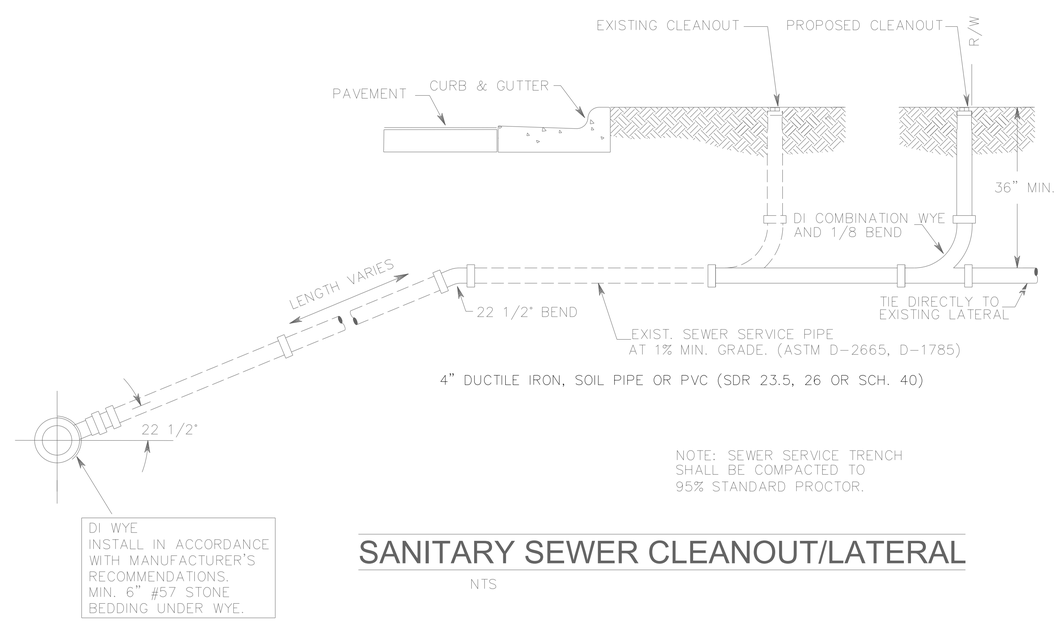


NOTE: SEWER SERVICE TRENCH SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

SANITARY SEWER CLEANOUT/LATERAL

NTS



NOTE: SEWER SERVICE TRENCH SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

SANITARY SEWER CLEANOUT/LATERAL

NTS

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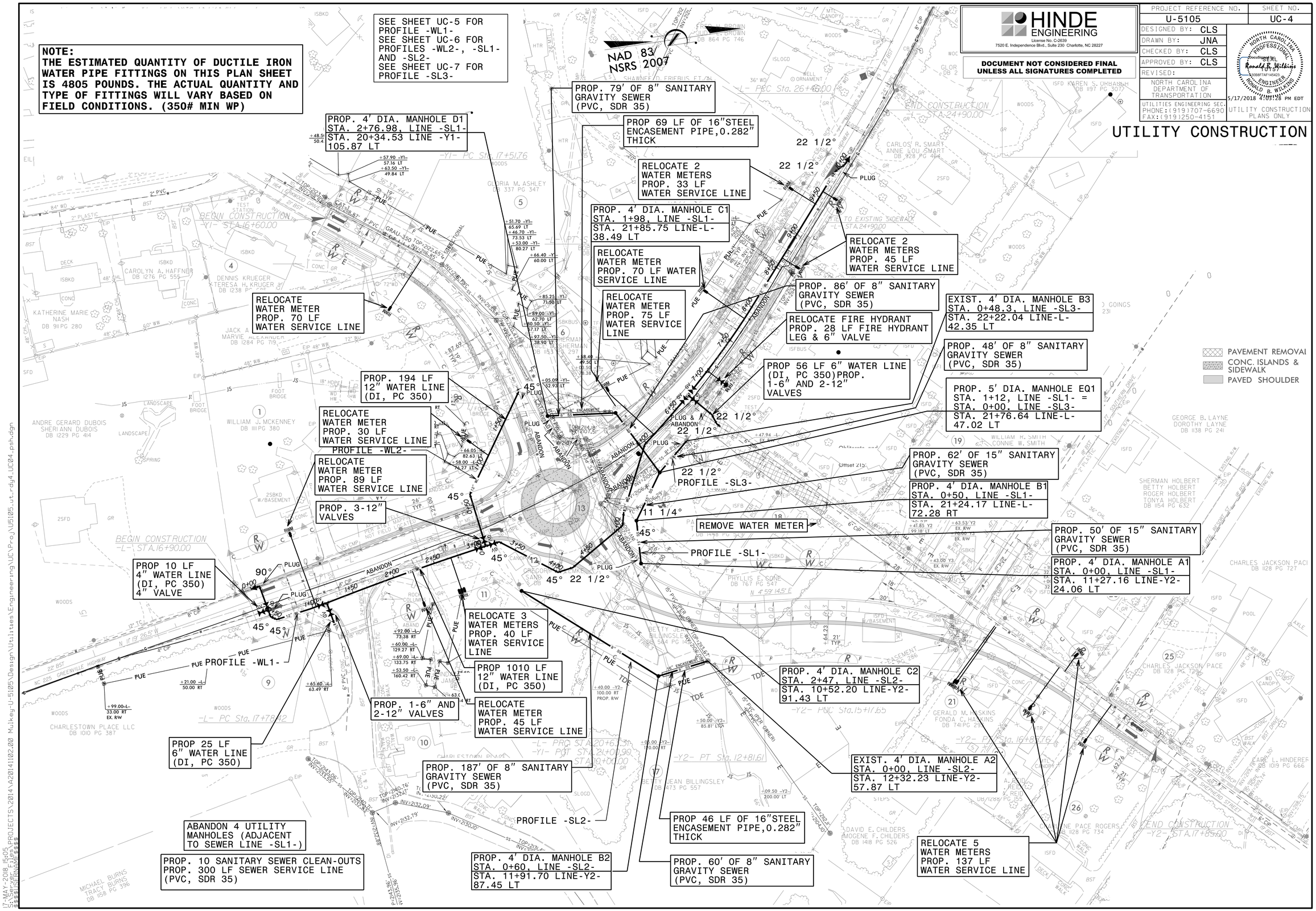

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-4

DESIGNED BY: CLS
DRAWN BY: JNA
CHECKED BY: CLS
APPROVED BY: CLS
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 10197 ENGINEER RONALD B. WILKINS
5/17/2018 4:03:28 PM EDT
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-5

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License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

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DESIGNED BY: RBW
DRAWN BY: RBW
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER RONALD B. WILKINS 041880
DocuSigned by: Ronald B. Wilkins
DOBBF7AF145425...
5/17/2018 4:03:28 PM EDT

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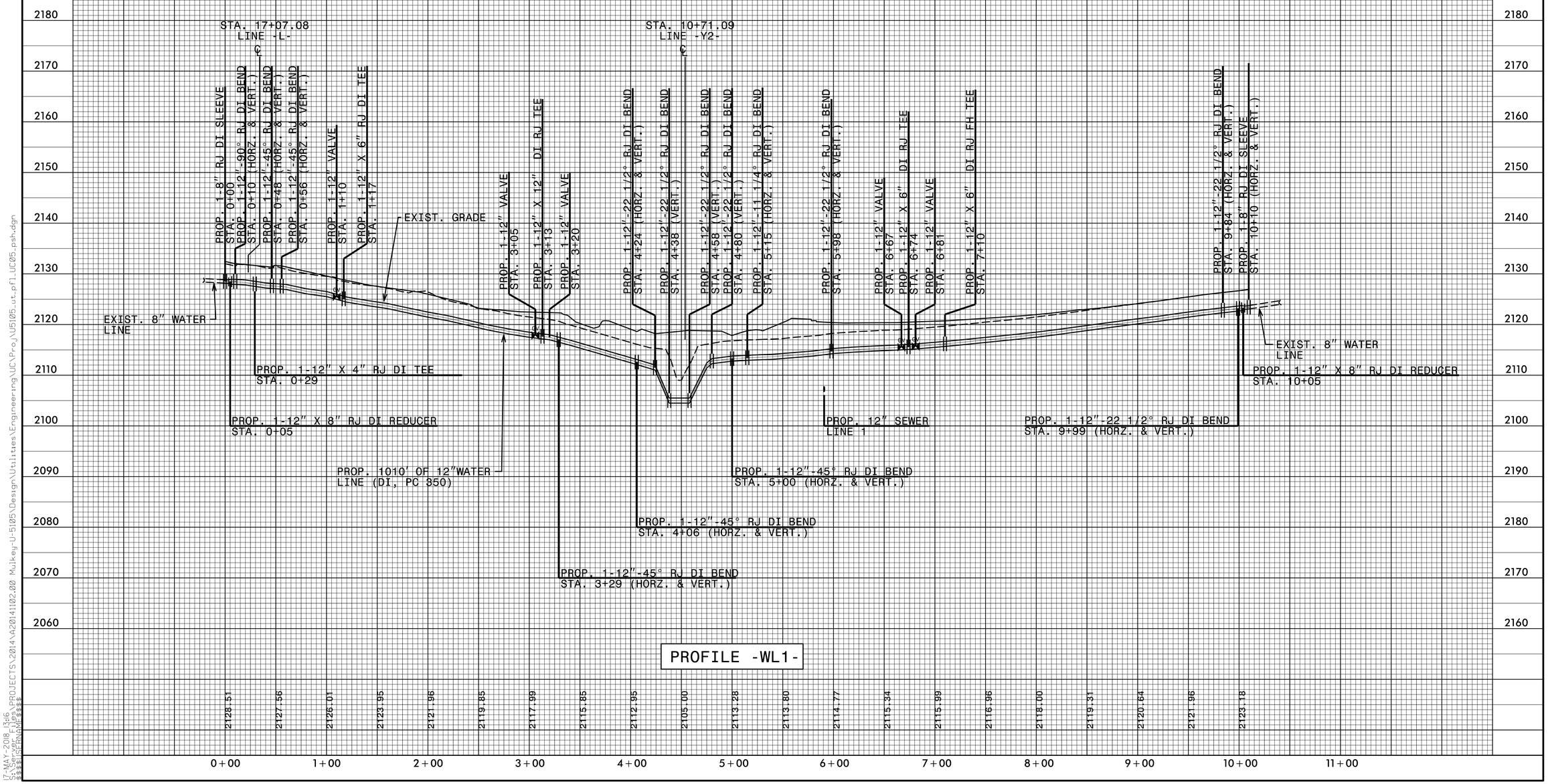
UTILITY CONSTRUCTION



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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-4

DESIGNED BY: CLS
DRAWN BY: JNA
CHECKED BY: CLS
APPROVED BY: CLS
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

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License No. C-2639
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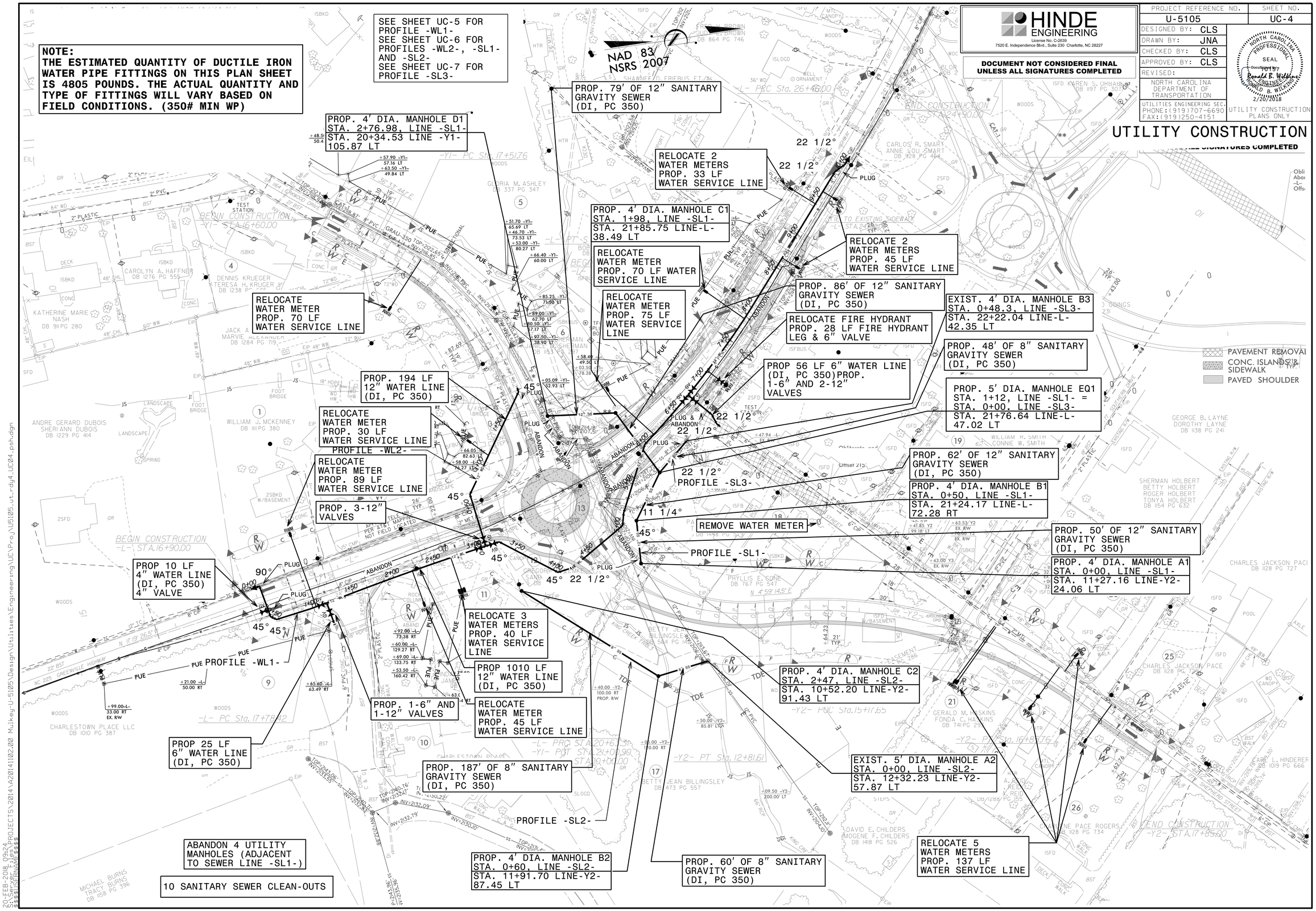
NORTH CAROLINA PROFESSIONAL SEAL 030351 ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins
2/20/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-5

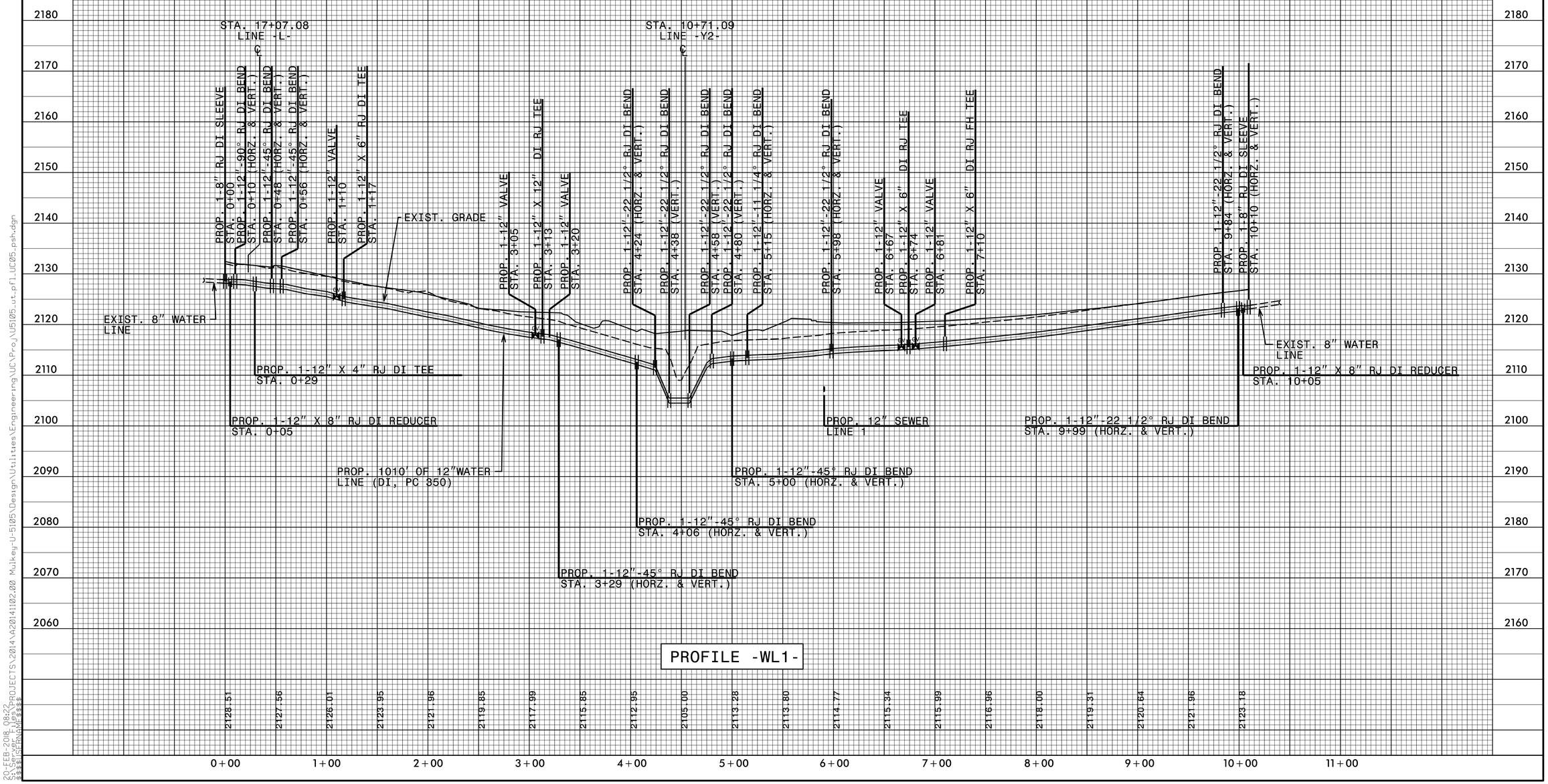
DESIGNED BY: RBW
DRAWN BY: RBW
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 10157 ENGINEER RONALD B. WILKINS
Docu Signed by: Ronald B. Wilkins
2/20/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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License No. C-2839
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-6

DESIGNED BY: RBW
DRAWN BY: RBW
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

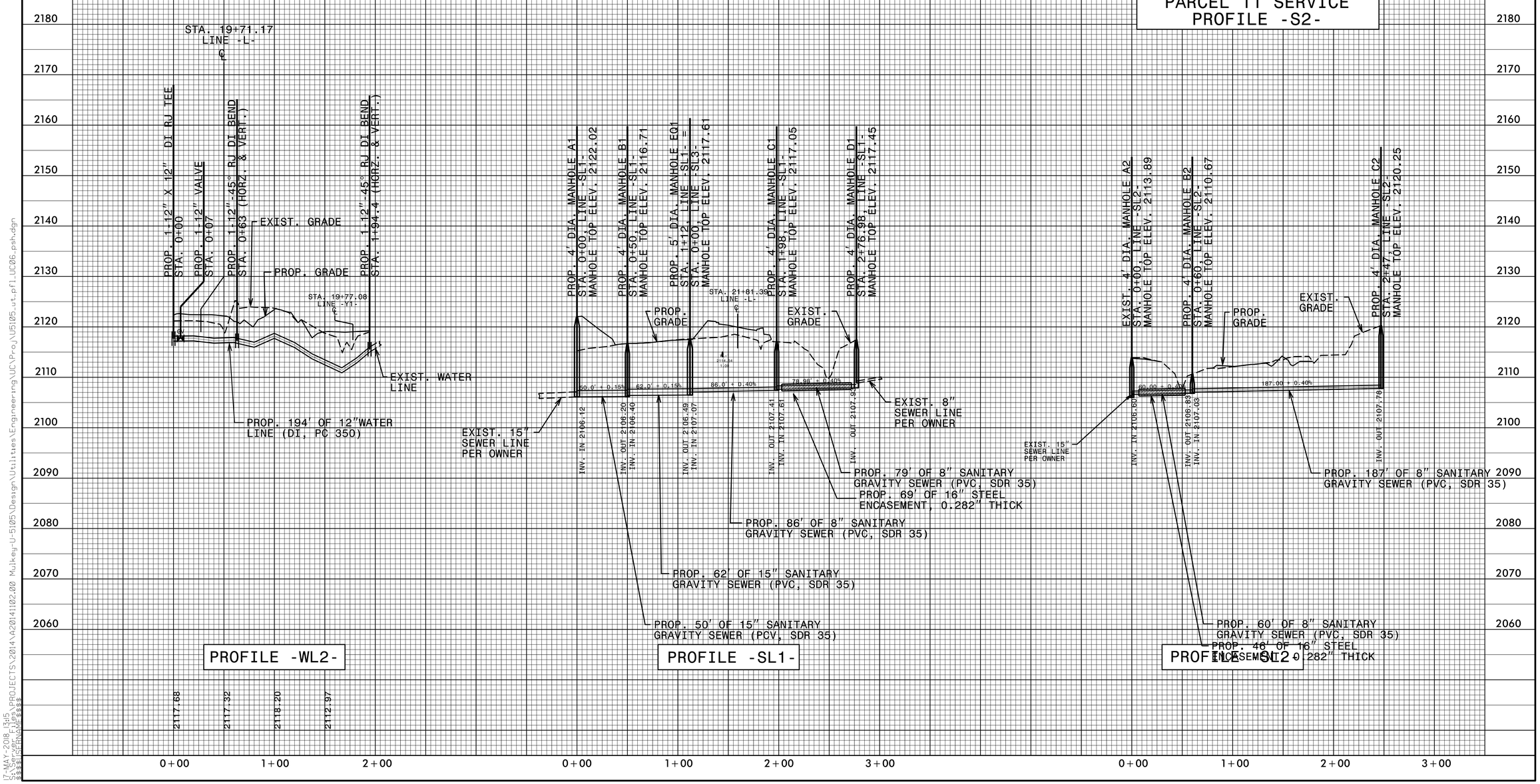
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins
5/17/2018 4:03:28 PM EDT

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

PROP. 8" SEWER MAIN PARCEL 11 SERVICE PROFILE -S2-



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PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-6

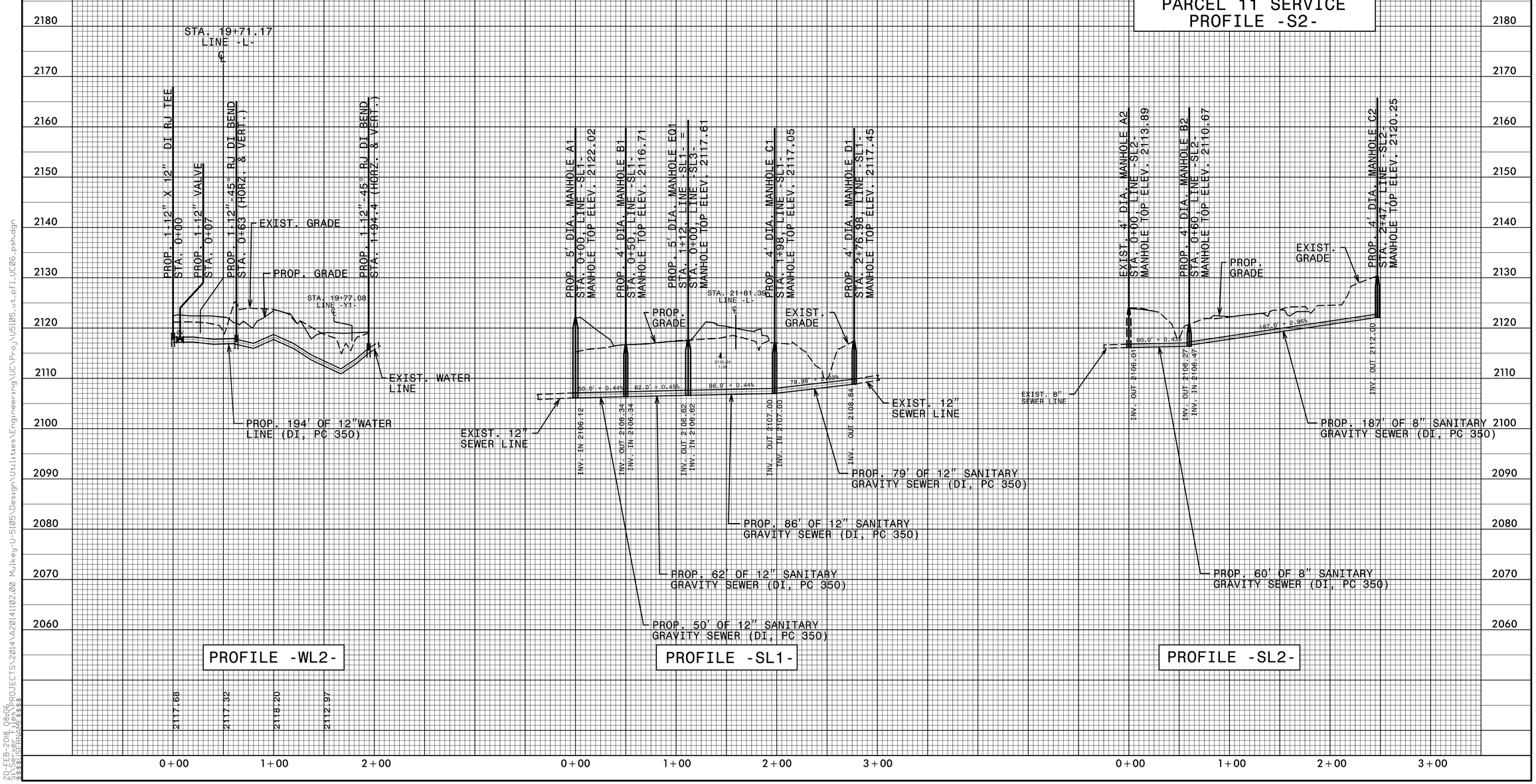
DESIGNED BY: RBW
DRAWN BY: RBW
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 10157 ENGINEER RONALD B. WILKINS
2/20/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION


PROP. 8" SEWER MAIN
PARCEL 11 SERVICE
PROFILE -S2-

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License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

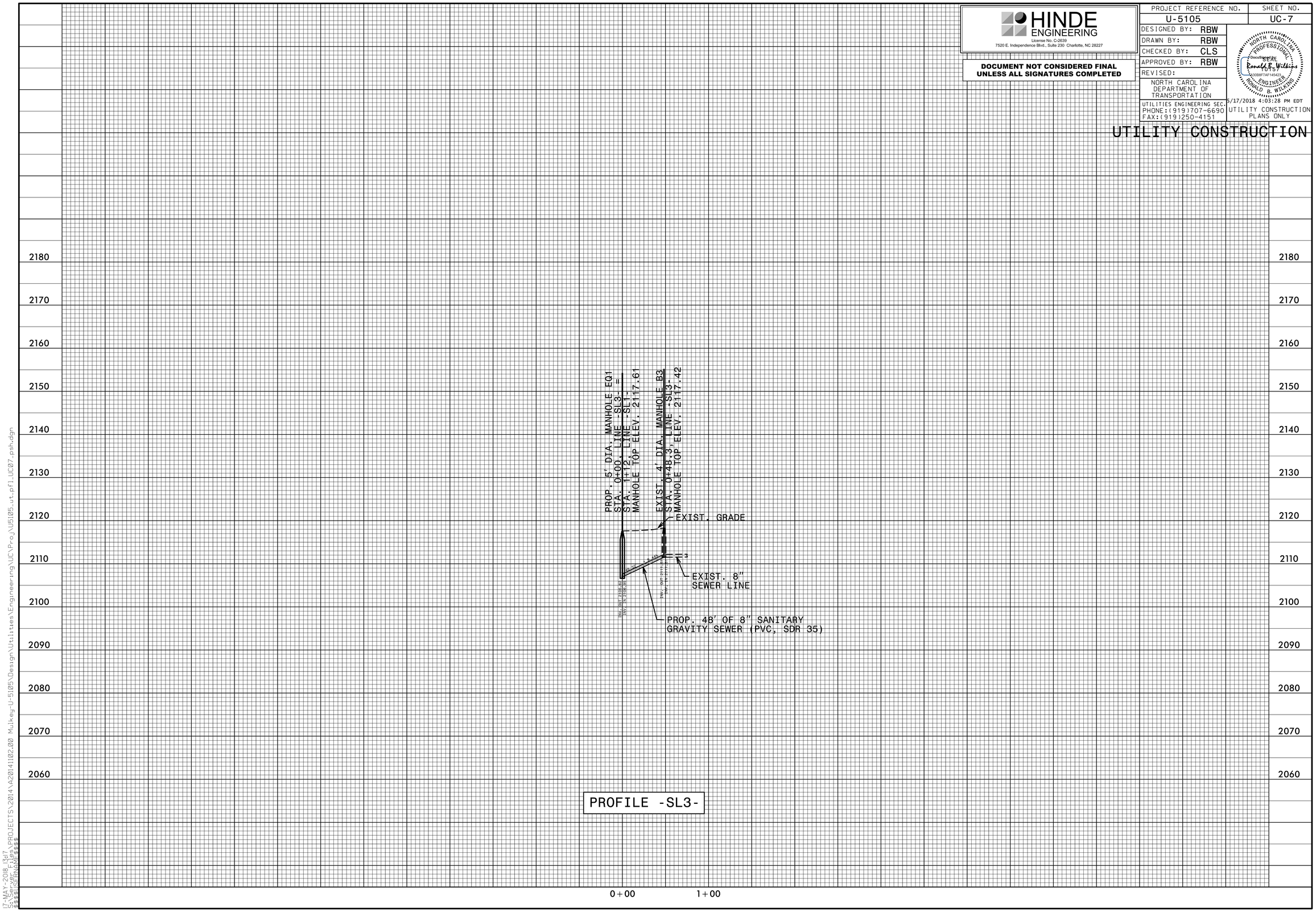
PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-7

DESIGNED BY: RBW
DRAWN BY: RBW
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 10157 ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins
A30B8F7AF145423
5/17/2018 4:03:28 PM EDT
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-7

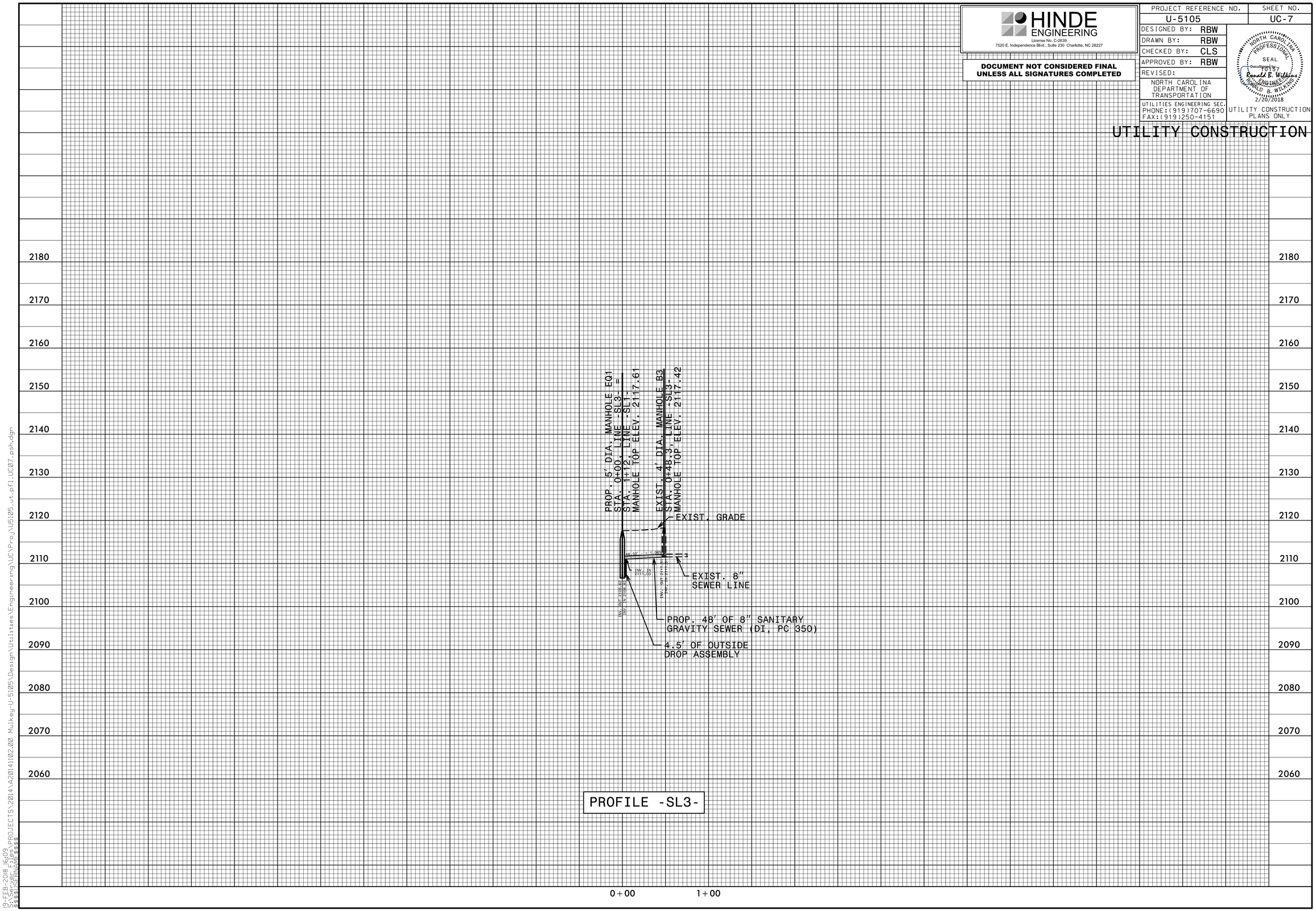
DESIGNED BY: RBW
DRAWN BY: RBW
CHECKED BY: CLS
APPROVED BY: RBW
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 10157 ENGINEER RONALD B. WILKINS
2/20/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



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TIP PROJECT: U-5105

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

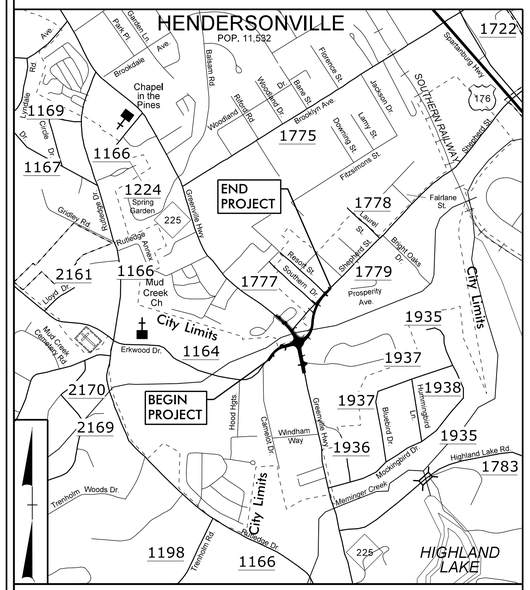
T.I.P. NO.	SHEET NO.
U-5105	UO-1

UTILITIES BY OTHERS PLANS
HENDERSON COUNTY

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

LOCATION: NC 225 (GREENVILLE HWY) INTERSECTION IMPROVEMENTS FROM SR 1164 (ERKWOOD DR) TO SR 1779 (SHEPHERD ST)

TYPE OF WORK: POWER, TELECOM & GAS RELOCATIONS



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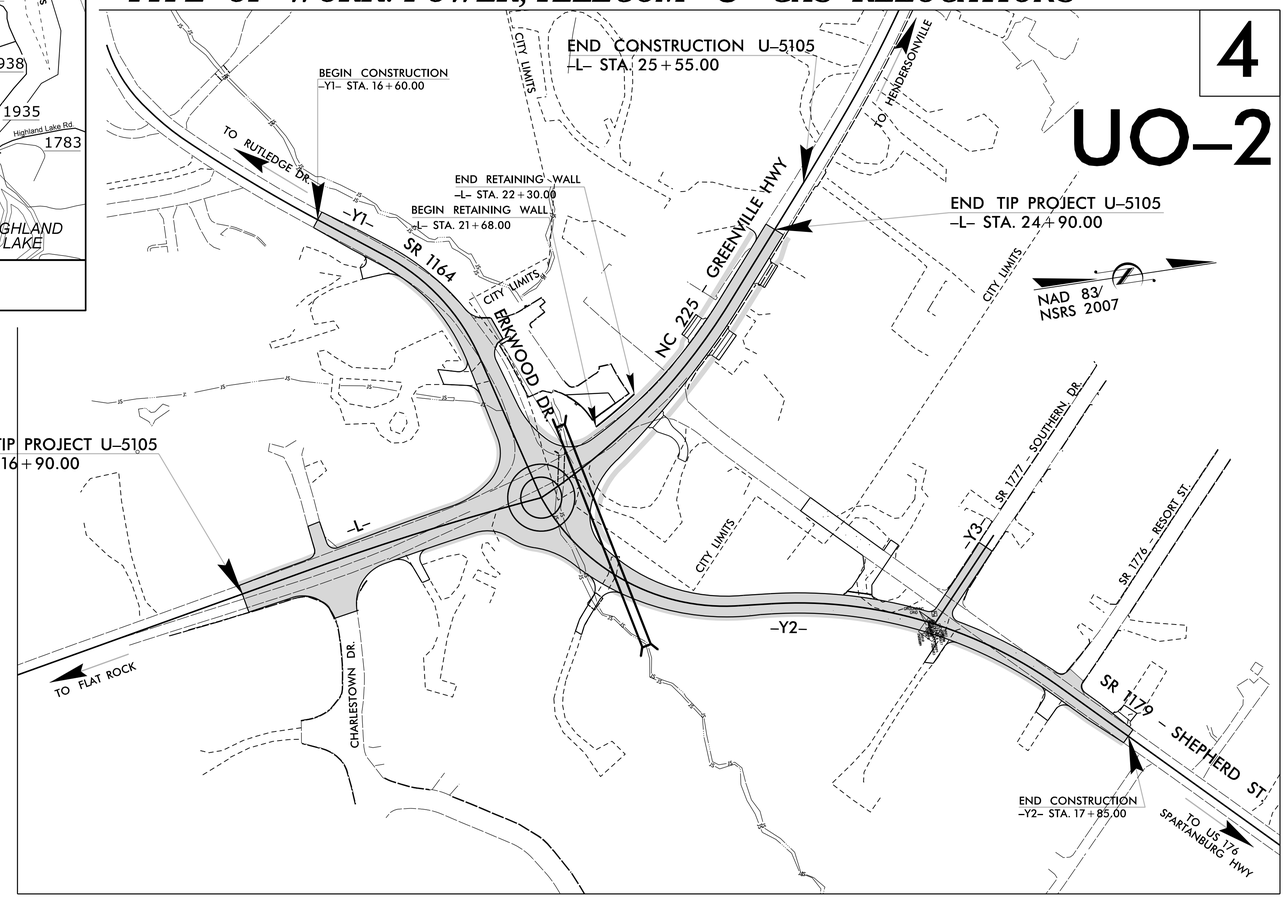

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HENDERSONVILLE.

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) POWER DISTRIBUTION - DUKE ENERGY
(B) TELECOM - AT&T
(C) TELECOM - MORRIS BROADBAND
(D) GAS - PSNC GAS COMPANY

PREPARED IN THE OFFICE OF:

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227
(704) 814-4407

Michael E. Davis	UTILITY COORDINATION PROJECT MANAGER
Todd E. Butner	PROJECT UTILITY COORDINATOR
James N. Arnold	PROJECT UTILITY DESIGNER

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Ted Adams	DIVISION CONTACT #1
Bob Golding	DIVISION CONTACT #2
Mitchell Bishop	DIVISION CONTACT #3
Steve Cannon, PE	DIVISION CONTACT #4

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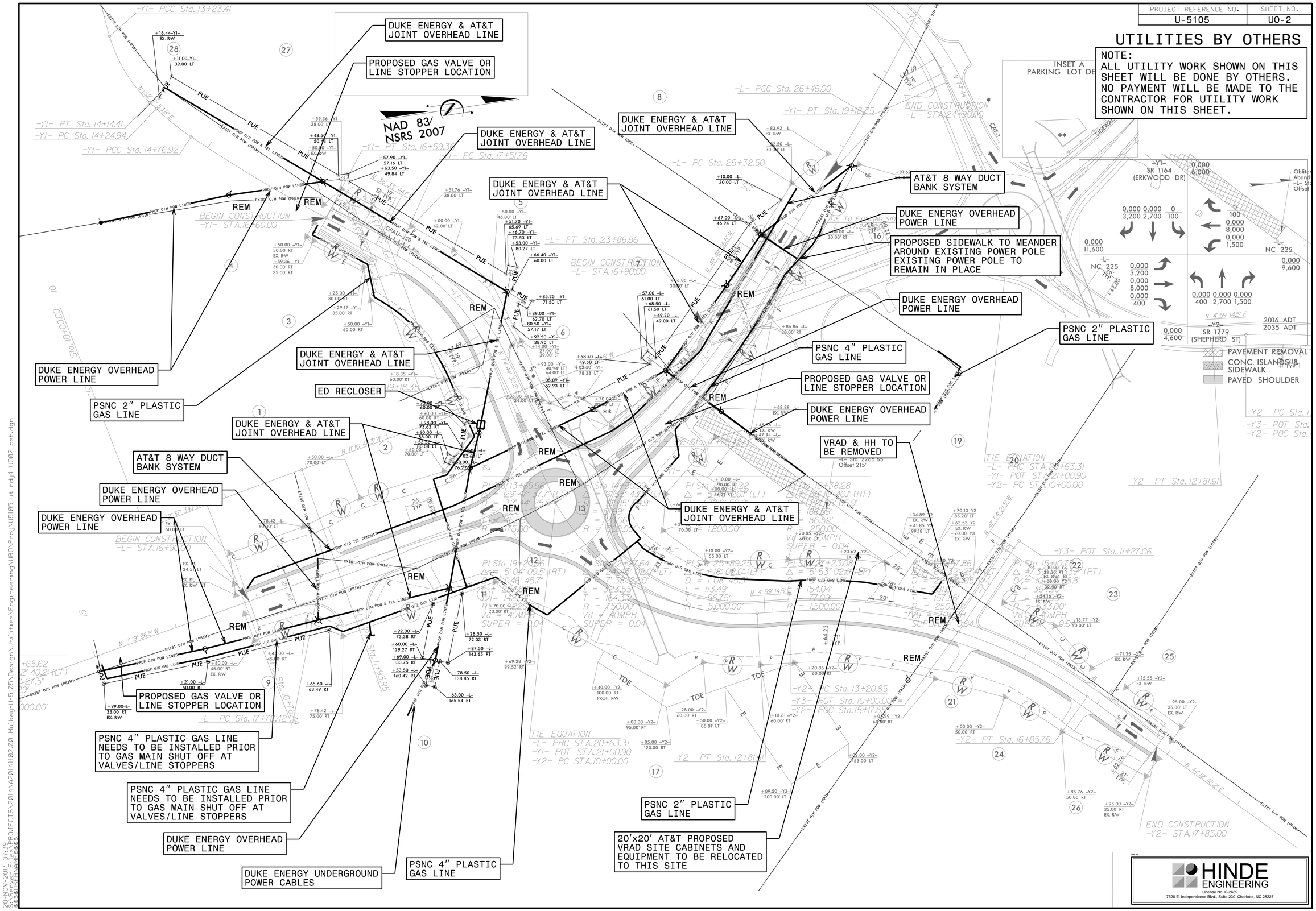
PROJECT REFERENCE NO.	SHEET NO.
U-5105	U0-2

UTILITIES BY OTHERS

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



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