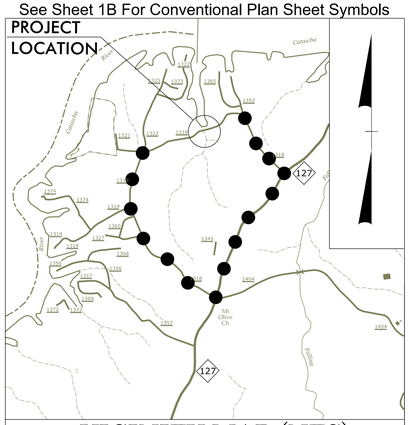
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01/16/24

PROJECT: BP-018-4124

CONTRACT: DL00402

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Plan Sheet Symbols



VICINITY MAP (NTS)
OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

LOCATION: *REPLACE DAMAGED 103" X 71" CMAP PIPE ON SR 1318 (39TH AVE. DR. NW)*

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

WETLAND AND SURFACE WATER IMPACTS PERMIT

BUFFER IMPACTS PERMIT

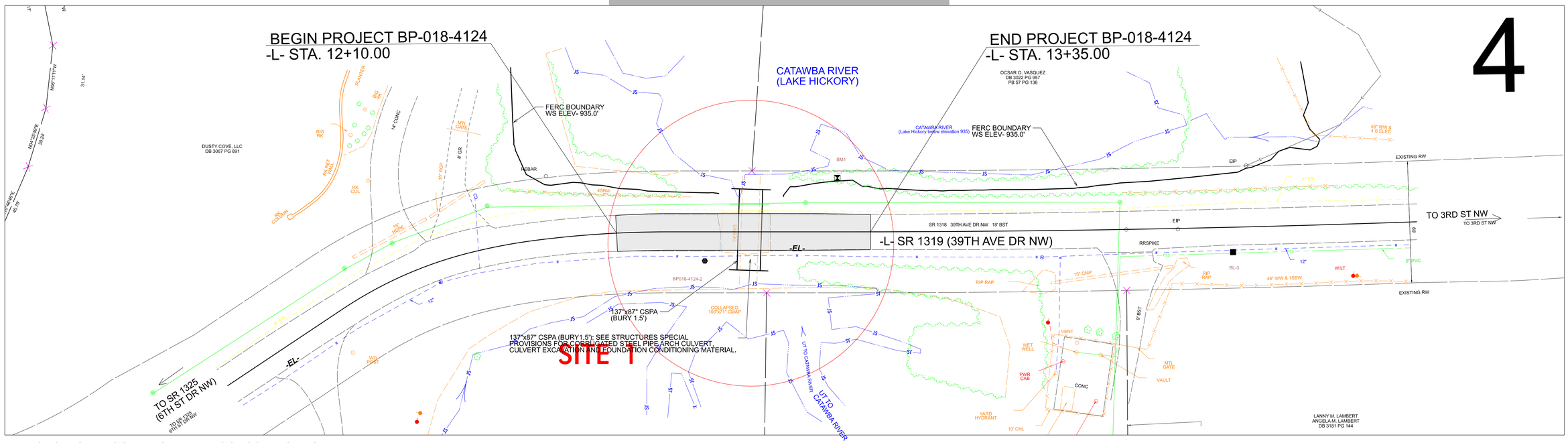
NAD 83/ 2011

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP-018-4124	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP-018-4124		PE
BP-018-4124		R/W
BP-018-4124		UTIL.
BP-018-4124		CONST.

PERMIT DRAWING
SHEET 1 OF 9

4



THIS IS NOT A CONTROLLED ACCESS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CITY OF HICKORY.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 20 10 0 20 40
PROFILE (HORIZONTAL): 20 10 0 20 40
PROFILE (VERTICAL): 4 2 0 4 8

DESIGN DATA

ADT 2026 = 800
ADT 2046 = 1000
V = 40 MPH
FUNC CLASS = LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BP-018-4124 = 0.024 MILES

TOTAL LENGTH OF PROJECT BP-018-4124 = 0.024 MILES

TGS ENGINEERS
201 W. MARION ST.
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NORTH CAROLINA DEPARTMENT OF TRANSPORATION
DIVISION 12
1710 E. MARION ST.
SHELBY, NC 28152

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NA

LETTING DATE: December 8, 2026

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN R. TURNER, PE
PROJECT DESIGN ENGINEER

BRYAN SOWELL, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

11/13/2026

Signed by: John W. Twisdale, Jr.
SIGNATURE *P.E.*

NORTH CAROLINA PROFESSIONAL SEAL 024897 ENGINEER John W. Twisdale II

ROADWAY DESIGN ENGINEER

11/13/2026

DocuSigned by: Jimmy Terry
SIGNATURE *P.E.*

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

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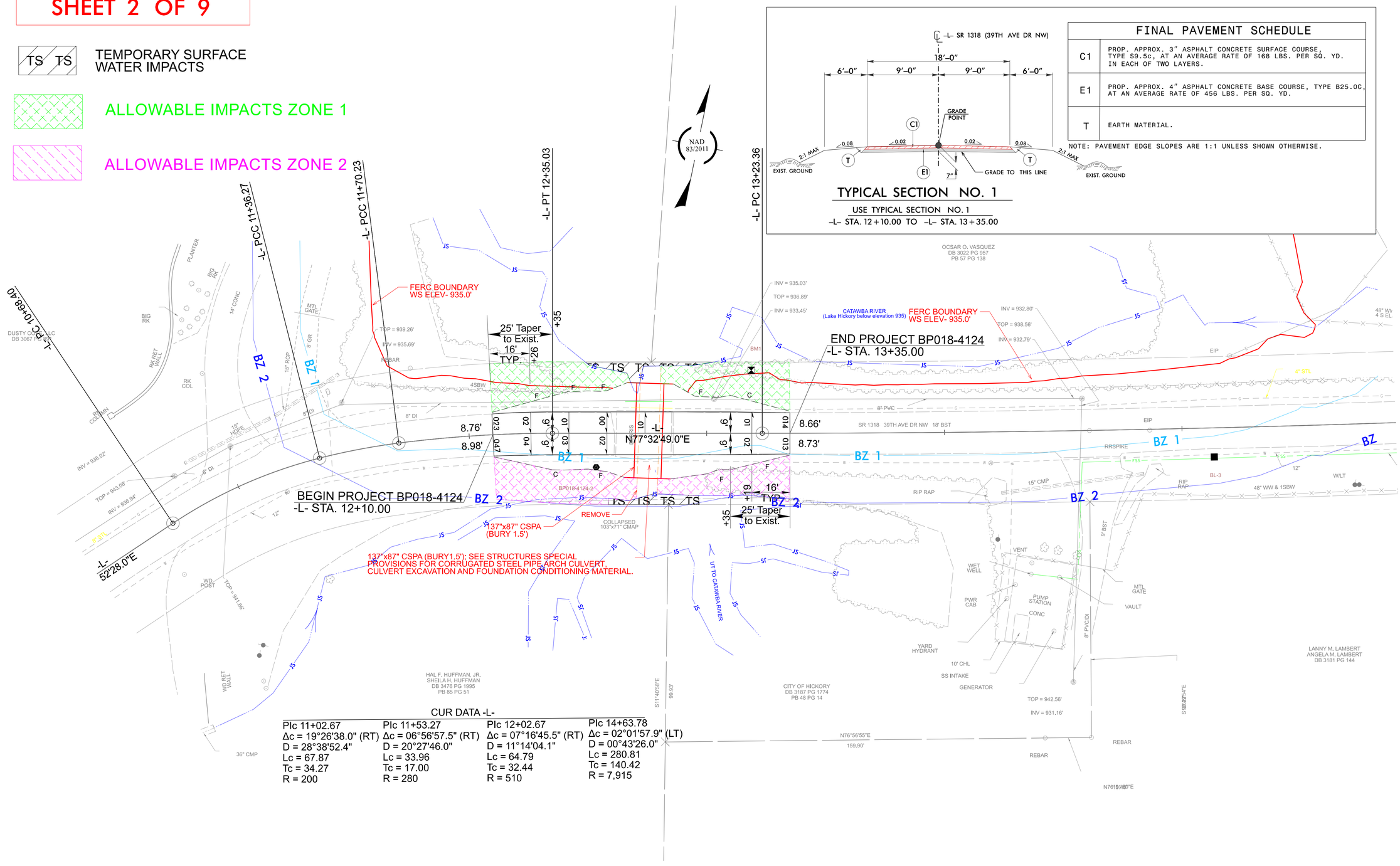
11/14/23

PERMIT DRAWING
SHEET 2 OF 9

TS TS TEMPORARY SURFACE WATER IMPACTS

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5c, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.

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

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 12+10.00 TO -L- STA. 13+35.00

CUR DATA -L-

PIc 11+02.67	PIc 11+53.27	PIc 12+02.67	PIc 14+63.78
Δc = 19°26'38.0" (RT)	Δc = 06°56'57.5" (RT)	Δc = 07°16'45.5" (RT)	Δc = 02°01'57.9" (LT)
D = 28°38'52.4"	D = 20°27'46.0"	D = 11°14'04.1"	D = 00°43'26.0"
Lc = 67.87	Lc = 33.96	Lc = 64.79	Lc = 280.81
Tc = 34.27	Tc = 17.00	Tc = 32.44	Tc = 140.42
R = 200	R = 280	R = 510	R = 7,915

BP-018-4124

04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION CATAWBA COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035018 ENGINEER JIMMY L. TIGRY

11/13/2026

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024897 ENGINEER John W. Tweddell, Jr.

11/13/2026

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
PH: 704-487-1555
CORP. LICENSE NO.: C-0275

REVISIONS

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11/14/23

PERMIT DRAWING SHEET 3 OF 9

TS TS TEMPORARY SURFACE WATER IMPACTS

ALLOWABLE IMPACTS ZONE 1

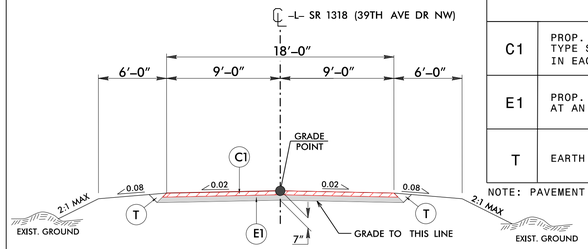
ALLOWABLE IMPACTS ZONE 2

NAD 83/2011

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5c, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.

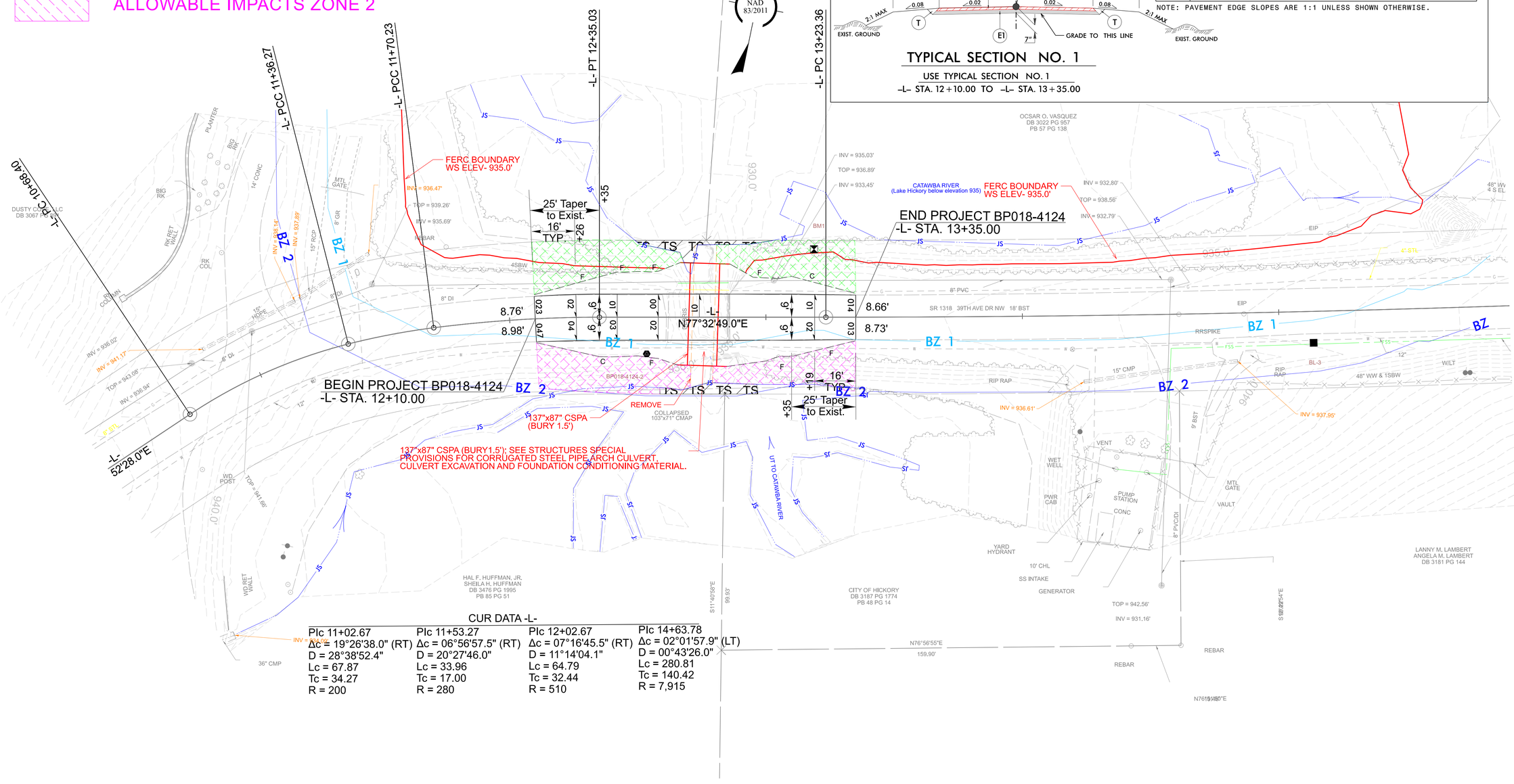
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 12+10.00 TO -L- STA. 13+35.00



CUR DATA -L-

PIc 11+02.67	PIc 11+53.27	PIc 12+02.67	PIc 14+63.78
Δc = 19°26'38.0" (RT)	Δc = 06°56'57.5" (RT)	Δc = 07°16'45.5" (RT)	Δc = 02°01'57.9" (LT)
D = 28°38'52.4"	D = 20°27'46.0"	D = 11°14'04.1"	D = 00°43'26.0"
Lc = 67.87	Lc = 33.96	Lc = 64.79	Lc = 280.81
Tc = 34.27	Tc = 17.00	Tc = 32.44	Tc = 140.42
R = 200	R = 280	R = 510	R = 7,915

BP-018-4124

04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CATAWBA COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035018 ENGINEER JIMMY L TERRY
Jimmy Terry
11/13/2026

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024897 ENGINEER John W. Tweddell, Jr.
John W. Tweddell, Jr.
11/13/2026

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

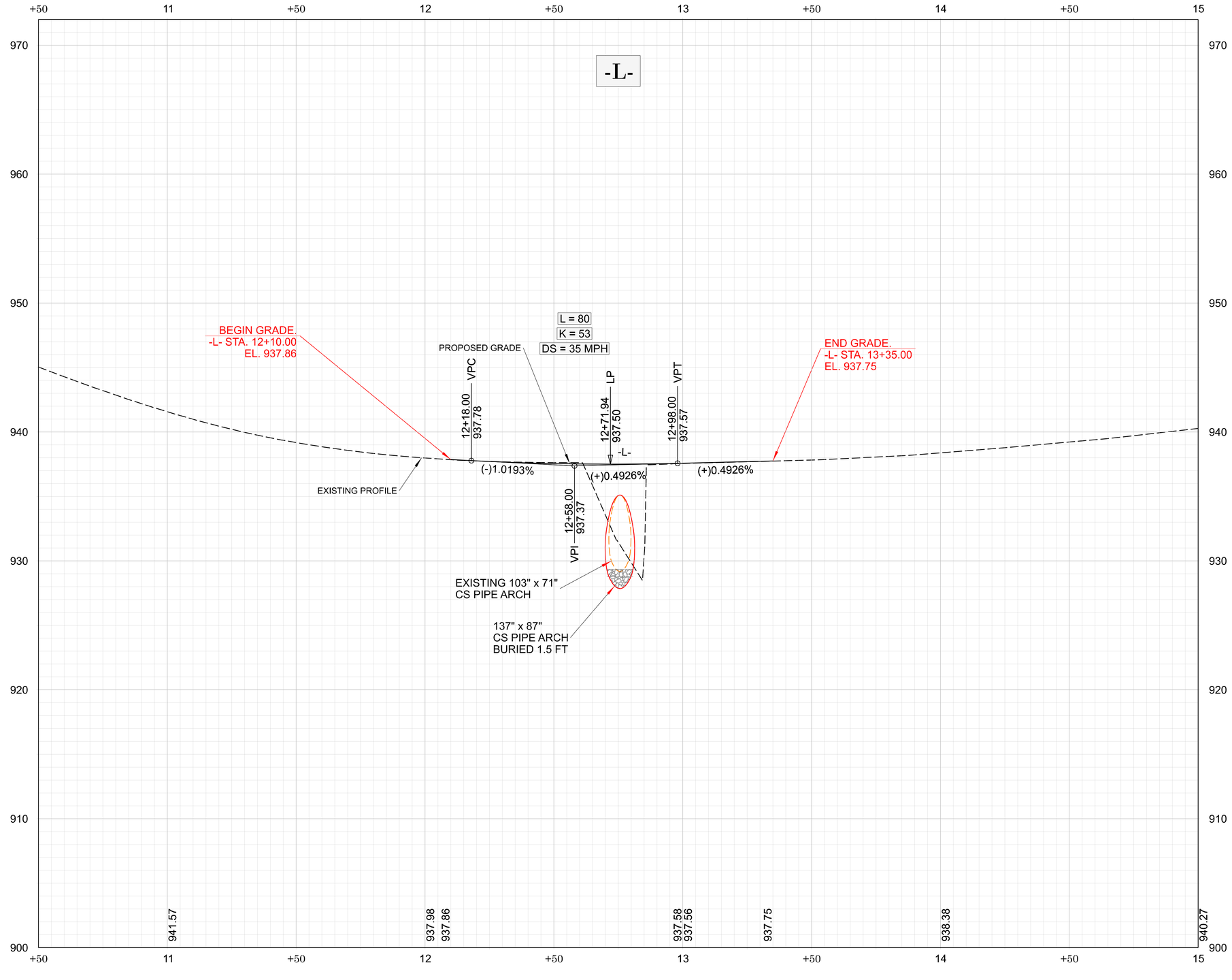
TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
PH: 704-487-1660
CORP. LICENSE NO.: C-0275

REVISIONS

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11/14/23

PERMIT DRAWING SHEET 4 OF 9



FOR -L- PLAN, SEE SHEET 04

BP-018-4124

005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CATAWBA COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 ENGINEER JIMMY L. TIGRET
11/13/2026

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024897 ENGINEER John W. Tweddell Jr.
11/13/2026

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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PREPARED BY

TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
(704) 487-1555
CORP. LICENSE NO.: C-0275

REVISIONS

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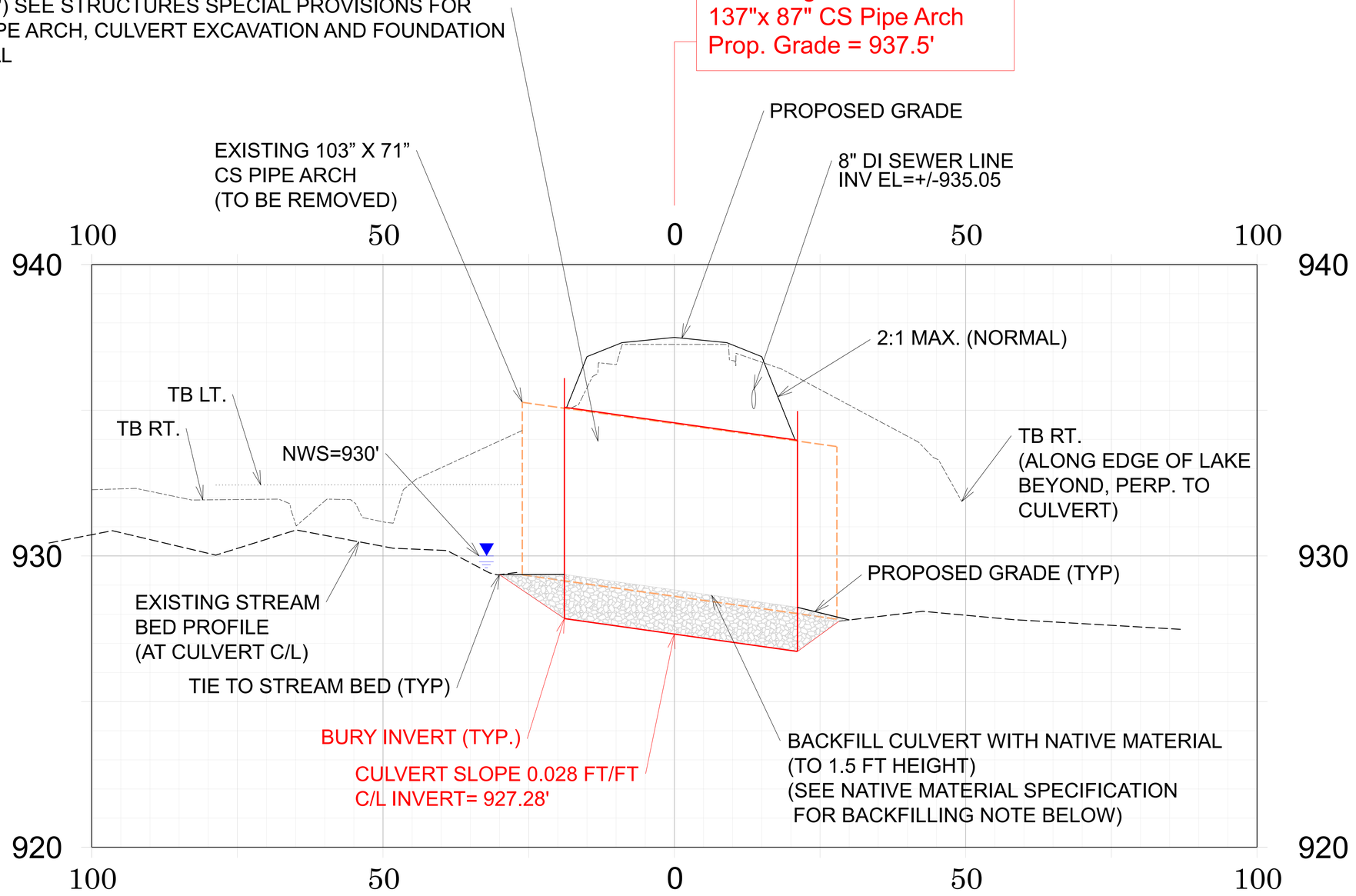
11/15/23

BP-018-4124
00X

PERMIT DRAWING
SHEET 5 OF 9

137"x87" CSPA (BURY 1.5') SEE STRUCTURES SPECIAL PROVISIONS FOR CORRUGATED STEEL PIPE ARCH, CULVERT EXCAVATION AND FOUNDATION CONDITIONING MATERIAL

C/L -L- STA. 12+75.62
Skew Angle= +/-90 DEG.
137"x 87" CS Pipe Arch
Prop. Grade = 937.5'



CULVERT PROFILE

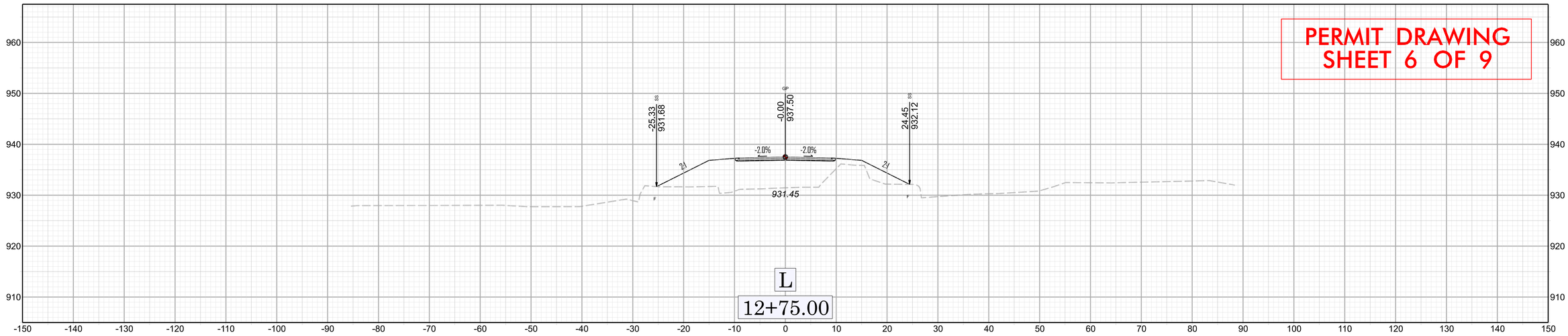
SCALE: 1″ = 20′ HORZ., 1″ = 4′ VERT.

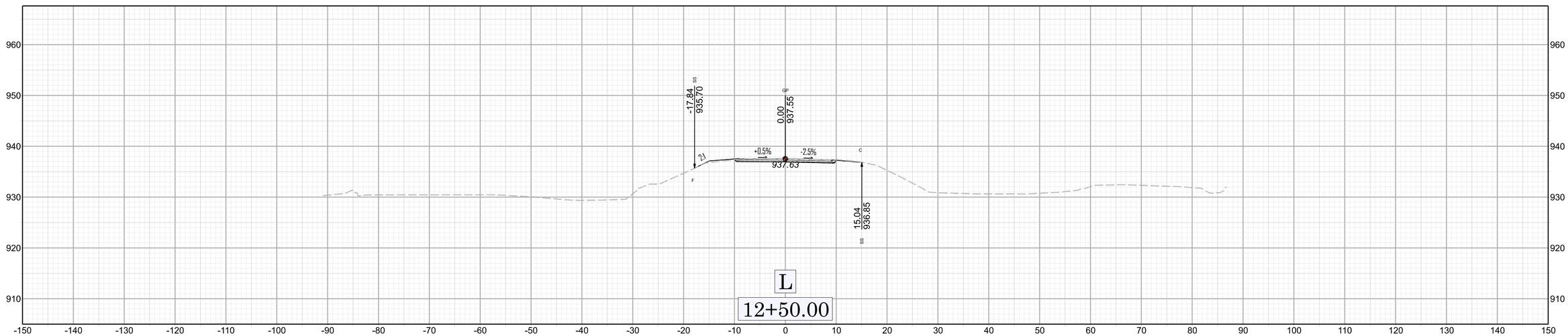
NATIVE MATERIAL SPECIFICATION FOR BACKFILLING NOTE

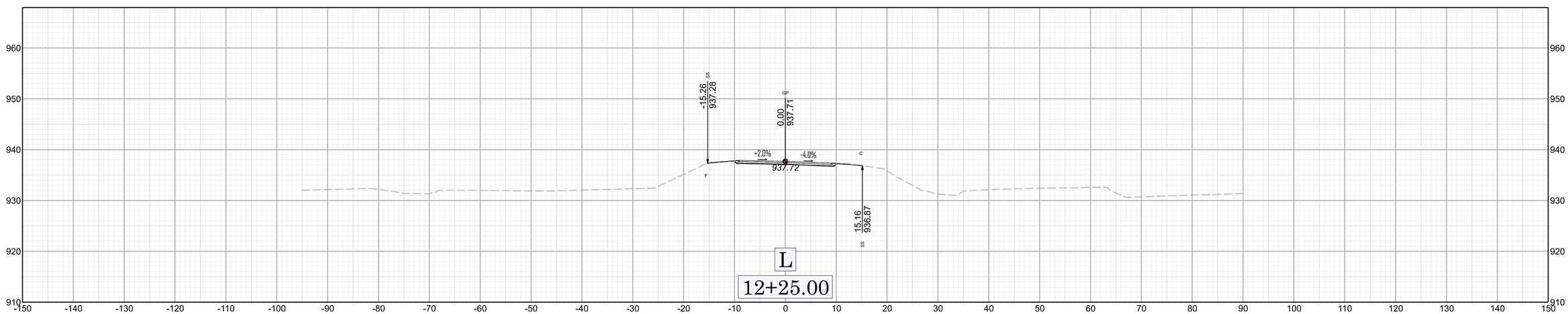
The Engineer, in consultation with DEO staff, shall review all material to be used as backfill prior to conducting the backfill activity. Backfill shall consist of native material only unless the Engineer, in consultation with DEO staff, determines that (1) the native material is unsuitable, or (2) additional material is required to supplement the native material. The chosen backfill material shall not have adverse effects to aquatic life, aquatic life passage, or water quality. Native material consists of material that is excavated from the stream bed or floodplain at the project site during culvert construction.

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PERMIT DRAWING
SHEET 6 OF 9







BP-018-4124

Docusign Envelope ID: 844E4B7F-3FC9-86F0-82F3-528D29CFFFCD

11/14/23

PERMIT DRAWING
SHEET 7 OF 9

0 10 20

X 02

BP-018-4124

Docusign Envelope ID: 844E4B7F-3FC9-86F0-82F3-528D29CFFFCD

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Stream Name	WETLAND IMPACTS					SURFACE WATER IMPACTS				
				Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 12+58 to 12+97 RT	Temporary Dewatering	UT to Catawba River							0.003		5	
1	-L- 12+49 to 13+03 LT	Temporary Dewatering	Catawba River (Lake Hickory)							0.003		55	
TOTALS:				0.000	0.000	0.000	0.000	0.000	0.000	0.006	0	60	0

NOTES:

1. No impacts reported for culvert in the area of breached roadway embankment (12+83).
2. Impacts at pipe outlet are within Lake Hickory, 55' linear feet of shoreline temporarily impacted.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
8/20/2026
Catawba County
BP-018-4124

Docusign Envelope ID: 844E4B7F-3FC9-86F0-82F3-528D29CFFFCD

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Stream ID	IMPACTS									BUFFER REPLACEMENT	
				TYPE			ALLOWABLE			MITIGABLE				
				ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 12+76 LT	137"x 87" CSPA	Catawba River		X		1564		1564					
			(Lake Hickory)											
1	-L- 12+76 RT	137"x 87" CSPA	Catawba River		X			1461	1461					
			(Lake Hickory)											
TOTALS:							1564	1461	3025	0	0	0	0	0

NOTES:
Total Allowable Buffer Impacts = 3025 SF (0.069 Ac)
Total Mitigable Buffer Impacts = 0 SF (0.000 Ac)

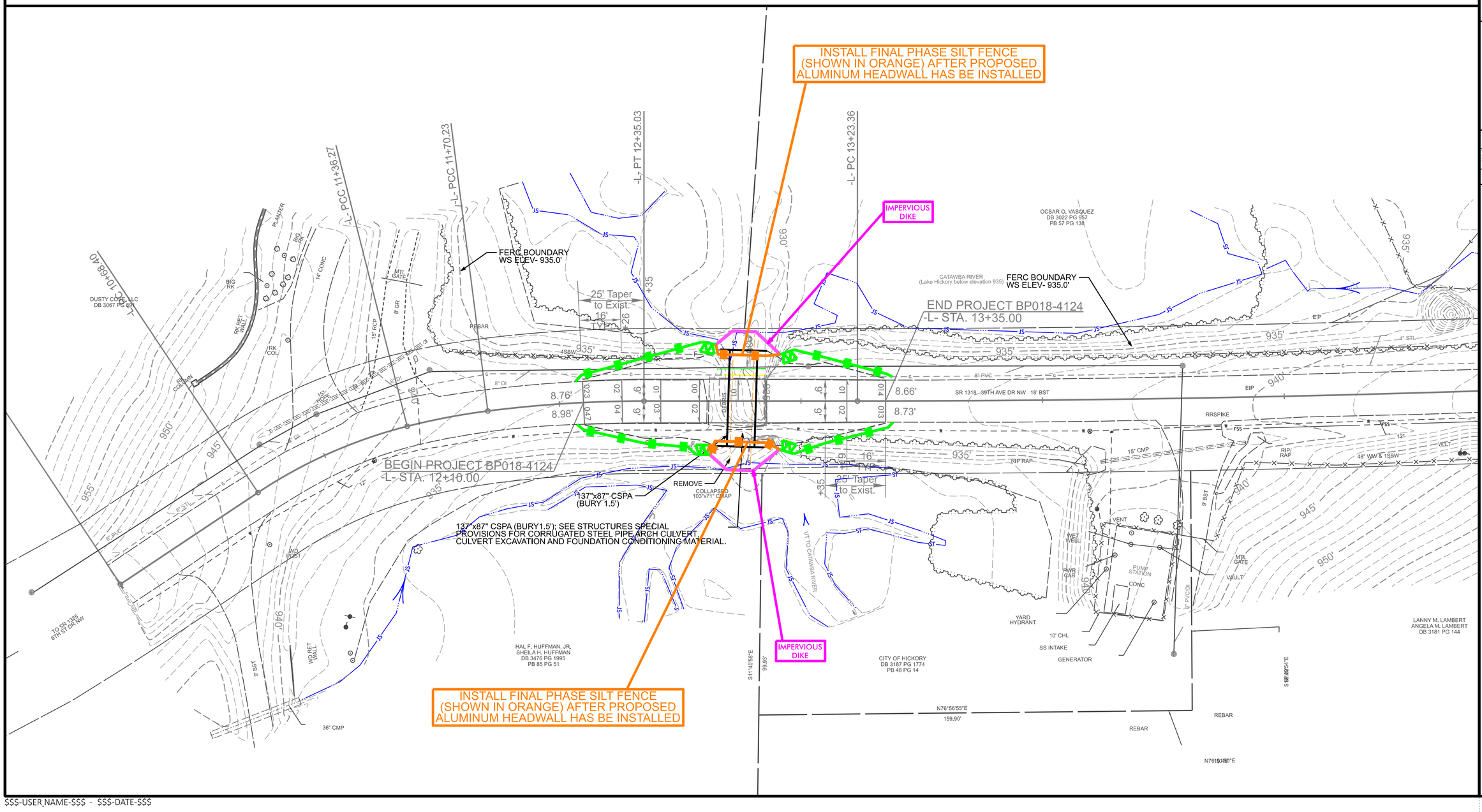
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/02/26
Catawba County
BP-018-4124

Docusign Envelope ID: 844E4B7F-3FC9-86F0-82F3-528D29CFFFCD

11/14/23

CULVERT CONSTRUCTION SEQUENCE STA. 12 + 76 –L–

1. CLOSE SR 1318 (39TH AVE DR NW) TO TRAFFIC AS SHOWN IN TRAFFIC MANAGEMENT PLANS.
2. INSTALL PERIMETER EROSION CONTROL DEVICES AS SHOWN.
3. INSTALL IMPERVIOUS DIKES (TEMPORARY SHORING) AS SHOWN.
4. DEWATER WORKSITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
5. REMOVE COLLAPSED 103" X 71" CMAP.
6. INSTALL PROPOSED 137" X 87" CSPA CULVERT.
7. INSTALL 2ND PHASE SILT FENCE ABOVE ALUMINUM HEADWALLS AS SHOWN IN ORANGE.
8. REMOVE IMPERVIOUS DIKES.
9. COMPLETE ROADWAY CONSTRUCTION.



BP-018-4124

EC-01

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CATAWBA COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

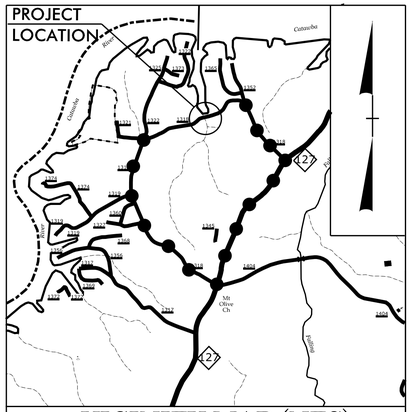
TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
(704) 487-1500
CORP. LICENSE NO.: C-0275

REVISIONS

Docusign Envelope ID: 844E4B7F-3FC9-86F0-82F3-528D29CFFFCD

TIP PROJECT: BP-018-4124

CONTRACT: DL00402



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
CATAWBA COUNTY

LOCATION: REPLACE DAMAGED 103" X71" CMAP PIPE ON SR 1318 (39TH AVE. DR NW)

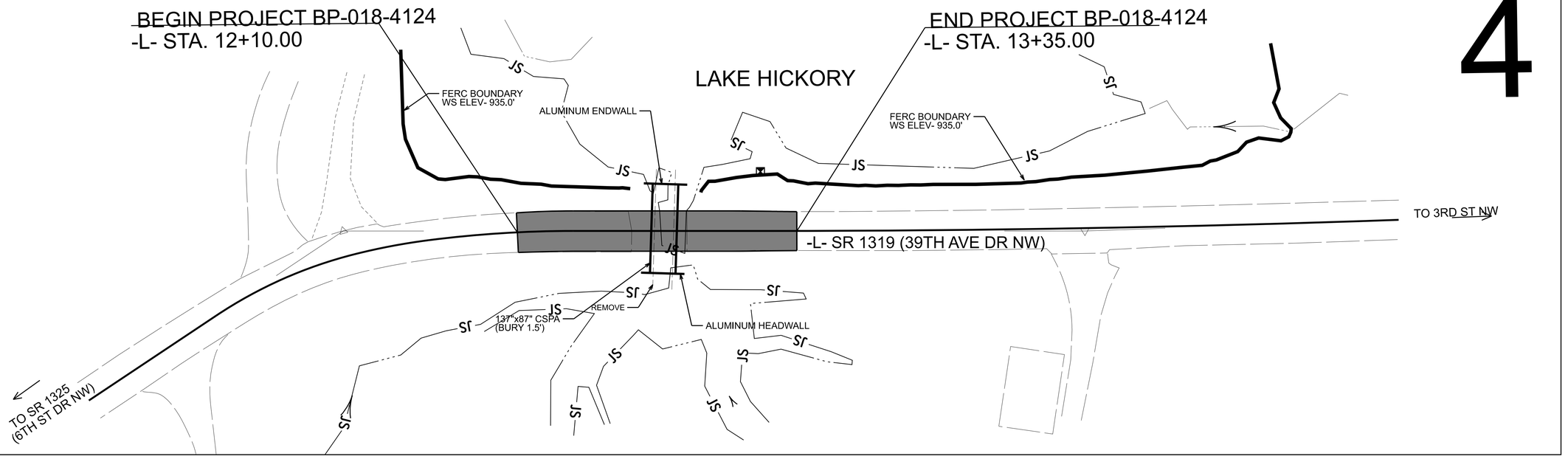
TYPE OF WORK: WATER LINE RELOCATION

NAD 83/ 2011

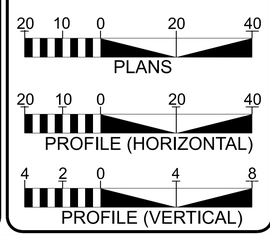
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP-018-4124	1	

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

4



GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UC–1	*TITLE SHEET*
UC–2	*UTILITY SYMBOLOGY*
UC–3	*NOTES*
UC–3A	*DETAILS*
UC–4	*UTILITY PLAN & PROFILE SHEEET*

WATER AND SEWER OWNERS ON PROJECT

(A) CITY OF HICKORY

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 30499 ENGINEER BOBBY C HOUSER

9/21/2026

PREPARED IN THE OFFICE OF

TGS ENGINEERS

201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C–0275

CHAD HOUSER P.E. UTILITY DESIGN ENGINEER

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

BRYAN SOWELL P.E. DIVISION PROJECT TEAM LEAD

WARREN ANDERSON DIVISION UTILITIES COORDINATOR

Docusign Envelope ID: 844E4B7F-3FC9-86F0-82F3-528D29CFFFCD

06/16/22

UTILITY CONSTRUCTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 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(WT)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PRFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RRFP

PROPOSED SEWER SYMBOLS

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

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal
- Utility Line by Others (Type as Shown) — OH POW
- Trenchless Installation — TRENCHLESS WL
- Encasement Method — OPEN CUT
- Encasement
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- 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 — 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 G
- •Underground Water Line — W
- Aboveground Water Line — A/G Water W
- •Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer SS
- •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)

BP-018-4124

UC | 2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY



UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY: BCH
DRAWN BY: ADC
CHECKED BY:
APPROVED BY:
REVISED:

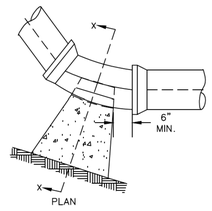
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

REVISIONS

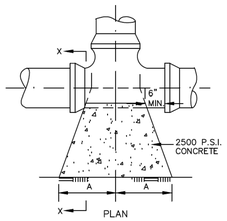
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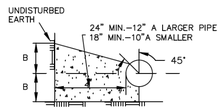
PROJECT TYPICAL DETAILS



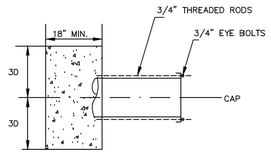
BENDS



TEES



BENDS & TEES



PLAN & ELEVATION

PLUGS

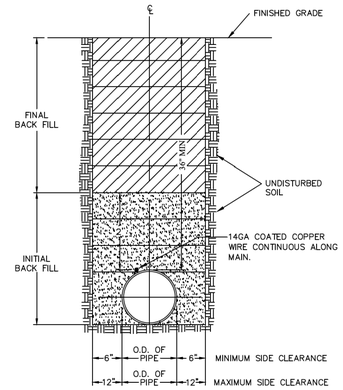
NOTES:
1. DEAD MAN RESTRAINED W/ 2–3/4" ALL THREAD RODS 3" TO 8" AND 4–3/4" ALL THREAD RODS 12" TO 16"

PIPE	11 1/4° BEND		22 1/2° BEND		45° BEND		90° BEND		TEE	
SIZE	A	B	C	D	A	B	A	B	A	B
6	9	10	12	10	16	10	20	10	10	12
8	12	13	16	13	22	13	26	13	13	16
12	16	21	22	21	28	21	32	21	18	24
16	21	27	30	27	36	27	44	27	24	32

ALL DIMENSIONS IN TABLE ARE IN INCHES.
NOTE: WHERE WORKING PRESSURES EXCEED 150 PSI. AWWA STANDARDS SHALL APPLY.

NOT TO SCALE

HICKORY	CITY OF HICKORY		
	THRUST BLOCK FOR WATER MAINS (150 PSI WORKING PRESSURE)	DATE: 2–1–07	SHEET 1 OF 1 STD. NO. 504



TYPICAL TRENCH BOTTOM DIMENSIONS FOR: DUCTILE IRON, C–900 PVC, AND CONCRETE PIPE

TRENCH DETAIL
CLASS D FLAT SUBGRADE

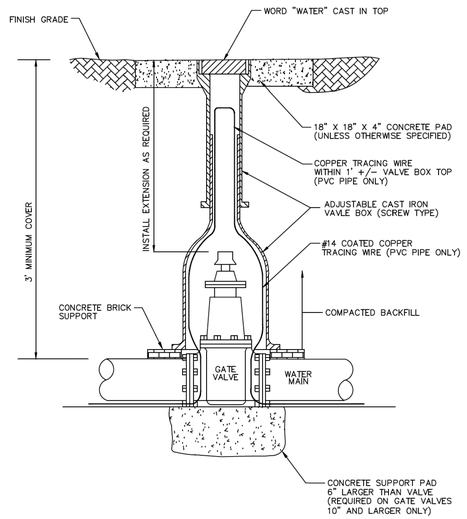
DEPTH OF BEDDING MATERIAL BELOW PIPE

D	d (MIN.)
27" & SMALLER	6"
30" – 60"	12"
66" & LARGER	18"

NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 2" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILLED MATERIAL SHALL BE SUITABLE MATERIAL.
4. BACK FILL SHALL BE COMPACTED IN 6" LAYERS IN TRAFFIC AREAS, 12" LAYERS IN NON–TRAFFIC AREAS USING VIBRATORY EQUIPMENT.

NOT TO SCALE

HICKORY	CITY OF HICKORY		
	WATER LINE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS	DATE: 2–1–07	SHEET 1 OF 1 STD. NO. 508



NOT TO SCALE

HICKORY	CITY OF HICKORY		
	VERTICAL GATE VALVE ASSEMBLY	DATE: 2–1–07	SHEET 1 OF 1 STD. NO. 513

UTILITY CONSTRUCTION

BP-018-4124

UC | 3A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY



UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY: BCH
DRAWN BY: ADC
CHECKED BY:
APPROVED BY:
REVISED:

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
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9/21/2026

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06/16/22

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 2024.

2. THE EXISTING UTILITIES BELONG TO CITY OF HICKORY.

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. ALL PROPOSED WATER LINE 4 TO 12 INCHES IN DIAMETER, SHALL BE DUCTILE IRON PIPE - PRESSURE CLASS 350.

2. ALL PROPOSED STEEL ENCASEMENTS SHALL BE SMOOTH WALL WITH A MINIMUM THICKNESS OF 0.188 INCHES FOR 12" AND SMALLER OR 0.25 INCHES FOR LARGER THAN 12".

3. ALL WATER LINE FITTINGS 4 TO 12 INCHES IN DIAMETER, SHALL BE PRESSURE CLASS 350 DUCTILE IRON RESTRAINED JOINT IN ACCORDANCE WITH ANSI A21.10 / AWWA C110 AND ANSI A21.4 / AWWA C104.

4. WATER LINE UTILIZING RESTRAINED JOINTS SHALL BE TYTON JOINT, HP LOK, AMERICAN "FAST GRIP", US PIPE "FIELD-LOK" OR APPROVED EQUAL.

5. ALL WATERLINE SHALL HAVE COATED TRACER WIRE NO SMALLER THAN 14 AWG SOLID COPPER.

6. ALL VALVES - 2" THROUGH 12" SHALL BE RESILIENT WEDGE GATE, CAST IRON BODY, CONFORMING TO AWWA C509, LATEST VERSION. SEALING MECHANISM SHALL PROVIDE ZERO LEAKAGE AT THE WATER WORKING PRESSURE AGAINST THE LINE FLOW FROM EITHER DIRECTION AND BE DESIGNED SUCH THAT NO EXPOSED METAL SEAMS, EDGES, SCREWS, ETC. ARE WITHIN THE WATERWAY IN THE CLOSED POSITION. THE GATE SHALL NOT BE WEDGED INTO A POCKET NOR SLIDE ACROSS THE SEATING SURFACE TO OBTAIN TIGHT CLOSURE. ALL INTERNAL AND EXTERNAL FERROUS SURFACES OF THE VALVE, INCUDING THE INTERIOR OF THE GATE, SHALL BE COATED WITH A PROTECTIVE COATING CONFORMING TO AWWA C550, LATEST VERSION. COATING SHALL BE APPLIED TO CASTINGS PRIOR TO ASSEMBLY TO ASSURE ALL EXPOSED AREAS WILL BE COVERED. VALVES SHALL BE RATED AT 200 PSI WORKING PRESSURE. UNLESS OTHERWISE NOTED, UNDERGROUND VALVES SHALL HAVE AN OPERATING NUT AND EXPOSED VALVES SHALL HAVE HAND WHEEL OPERATOR. OPERATING NUT SHALL BE 2"X2", OPEN LEFT.

7. EACH VALVE BURIED IN THE GROUND SHALL BE PROVIDED WITH AN APPROVED TYPE OF VALVE BOX AND COVER. THE BOXES SHALL BE ADJUSTABLE SCREW TYPE 24-INCH OR 36-INCH.

8. ALL VALVE BOXES SHALL BE SET LEVEL WITH THE GROUND AND HAVE A CONCRETE COLLAR PLACED AROUND IT. VALVE BOX SHALL BE FIVE AND ONE QUARTER (5 ¼) INCH CAST IRON WITH WATER STAMPED LID. THE VALVE BOX SHALL ALSO BE OF THE SCREW TYPE NATURE TO ALLOW FOR FURTHER ADJUSTMENT IN HEIGHT.

9. PROVIDE THRUST RESTRAINT ON THE EXISTING WATER LINE WHERE TIE-INS ARE MADE AS NECESSARY.

10. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.

11. ANY BENDS OF PVC WATER PIPE NOT SPECIFICALLY CALLED OUT WITH A 90, 45, 22.5, OR 11.25 DEGREE BEND FITTING, SHALL BE CONSTRUCTED BY A RADIAL BEND OF THE PIPE AS NOTED ON THE PLANS OR IN ACCORDANCE WITH PIPE MANUFACTURER'S SPECIFICATIONS (WHICHEVER IS MORE STRINGENT) - OR A COMBINATION OF BEND FITTINGS AND A RADIAL BEND OF THE PIPE. DEFLECTION OF THE PIPE JOINTS ON PVC PIPE MATERIAL IS NOT AN ACCEPTABLE METHOD OF PIPE BENDING.

13. ALL MATERIALS, EQUIPMENT, LABOR, AND WORKSMANSHIP SHALL BE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

14. UTILITY OWNER MUST BE PRESENT FOR ANY TESTING OR CONNECTIONS TO THE EXISTING SYSTEM INCLUDING BUT NOT LIMITED TO ALL TAPS AND TEMPORARY CONSTRUCTION CONNECTIONS. A NOTICE OF 72 HOURS MUST BE PROVIDED.

BP-018-4124

UC | 3

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY



UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

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DESIGNED BY: BCH

DRAWN BY: ADC

CHECKED BY:

APPROVED BY:

REVISED:

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



9/21/2026

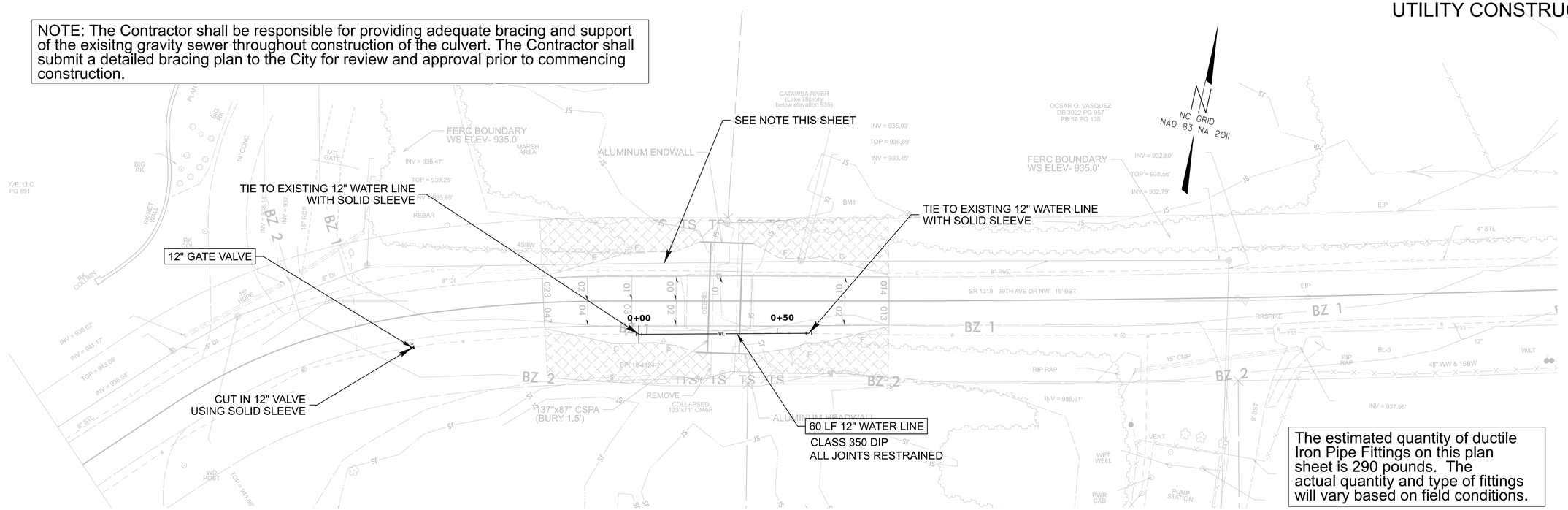
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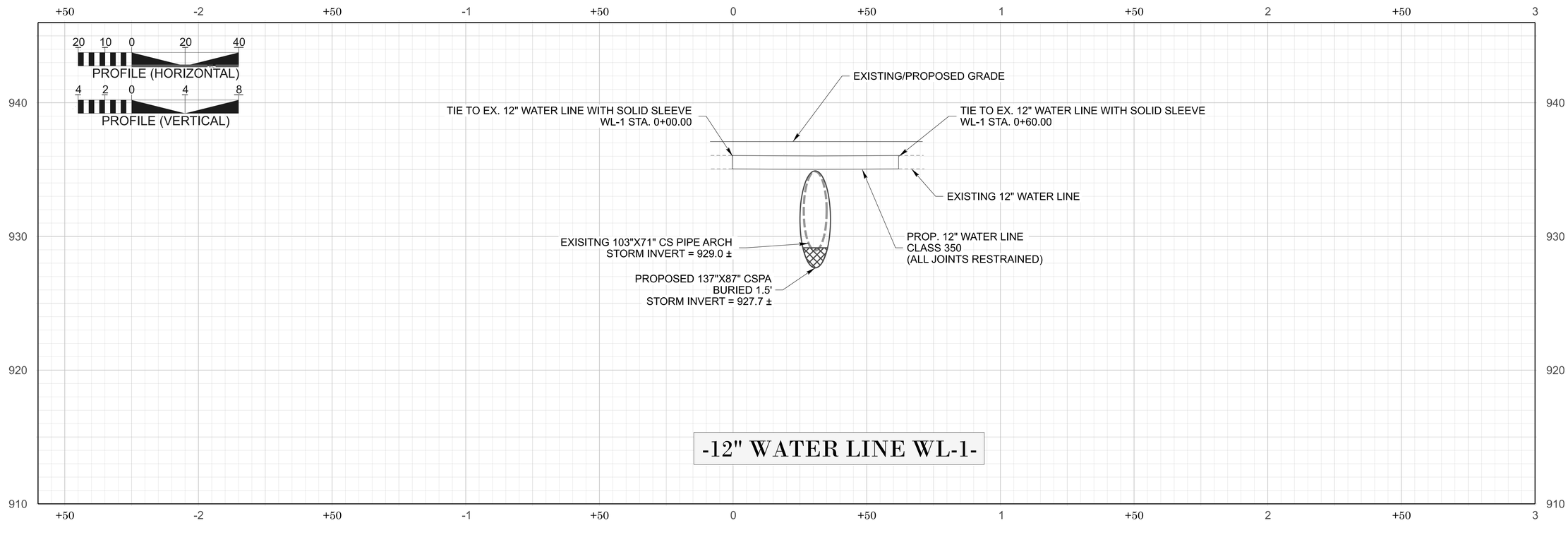
10/28/24

UTILITY CONSTRUCTION

NOTE: The Contractor shall be responsible for providing adequate bracing and support of the exisitng gravity sewer throughout construction of the culvert. The Contractor shall submit a detailed bracing plan to the City for review and approval prior to commencing construction.



The estimated quantity of ductile Iron Pipe Fittings on this plan sheet is 290 pounds. The actual quantity and type of fittings will vary based on field conditions.



-12" WATER LINE WL-1-

REVISIONS

BP-018-4124

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION -- COUNTY

UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

INCOMPLETE PLANS

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APPROVED BY:

REVISED:

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

NORTH CAROLINA PROFESSIONAL SEAL 30499 ENGINEER BOBBY C HOUSER

9/21/2026

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03/07/25

UTILITIES BY OTHERS

PNG TO CUT AND CAP EXISTING GAS LINE DURING CULVERT REPLACEMENT AND REPAIR AFTER PROJECT IS COMPLETE

NAD 83/2011

-L- PC 10+68.40

-L- PCC 11+36.27

-L- PCC 11+70.23

-L- PT 12+35.03

-L- PC 13+23.36

DUSTY CO., LLC
DB 3067 PG 1

BIG RK

PLANTER

RK RET WALL

RK COL

14 COL

MTL GATE

6" GR

INV = 938.15'

INV = 937.89'

15" RCP

BZ 2

BZ 1

FERC BOUNDARY
WS ELEV- 935.0'

MARSH AREA

INV = 936.47'

TOP = 939.26'

INV = 935.69'

REBAR

CATAWBA RIVER
(Lake Hickory)
below elevation 935)

OCSAR O. VASQUEZ
DB 3022 PG 957
PB 57 PG 138

INV = 935.03'

TOP = 936.89'

INV = 933.45'

25' Taper to Exist. 16' TYP.

+35

+26

BM1

END PROJECT BP018-4124
-L- STA. 13+35.00

INV = 932.80'

TOP = 938.56'

INV = 932.79'

EIP

4" STL

4SBW

8" DI

8" PVC

8.76'

8.98'

8.66'

8.73'

-L-
N77°32'49.0"E

-EL-

SR 1318 39TH AVE DR NW 18' BST

RRSPIKE

RIP RAP

15" CMP

BL-3

12"

W/LT

48" WW & 15BW

INV = 937.95'

9' BST

BEGIN PROJECT BP018-4124
-L- STA. 12+10.00

REMOVE
COLLAPSED
103"x71" CMAP

137"x87" CSPA
(BURY 1.5')

137"x87" CSPA (BURY1.5'); SEE STRUCTURES SPECIAL PROVISIONS FOR CORRUGATED STEEL PIPE-ARCH CULVERT, CULVERT EXCAVATION AND FOUNDATION CONDITIONING MATERIAL.

INV = 936.61'

VENT

WET WELL

PWR CAB

PUMP STATION

CONC

VAULT

MTL GATE

8" PVC/DI

YARD HYDRANT

10' CHL

SS INTAKE

GENERATOR

TOP = 942.56'

INV = 931.16'

REBAR

REBAR

N76°19'45"E

N76°56'55"E
159.90'

S11°40'58"E
99.93'

S18°27'54"E

-L-
52°28.0"E
-EL-

INV = 936.02'

INV = 941.17'

TOP = 943.06'

INV = 939.94'

8" STL

12"

WD RET WALL

WD POST

TOP = 941.66'

INV = 934.09'

36" CMP

HAL F. HUFFMAN, JR.
SHEILA H. HUFFMAN
DB 3476 PG 1995
PB 85 PG 51

CITY OF HICKORY
DB 3187 PG 1774
PB 48 PG 14

UT TO CATAWBA RIVER

LANNY M. LAMBERT
ANGELA M. LAMBERT
DB 3181 PG 144

BP018-4124-2

BP-018-4124

RDY-04 | UO-1

ALL PROPOSED 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.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CATAWBA COUNTY

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS