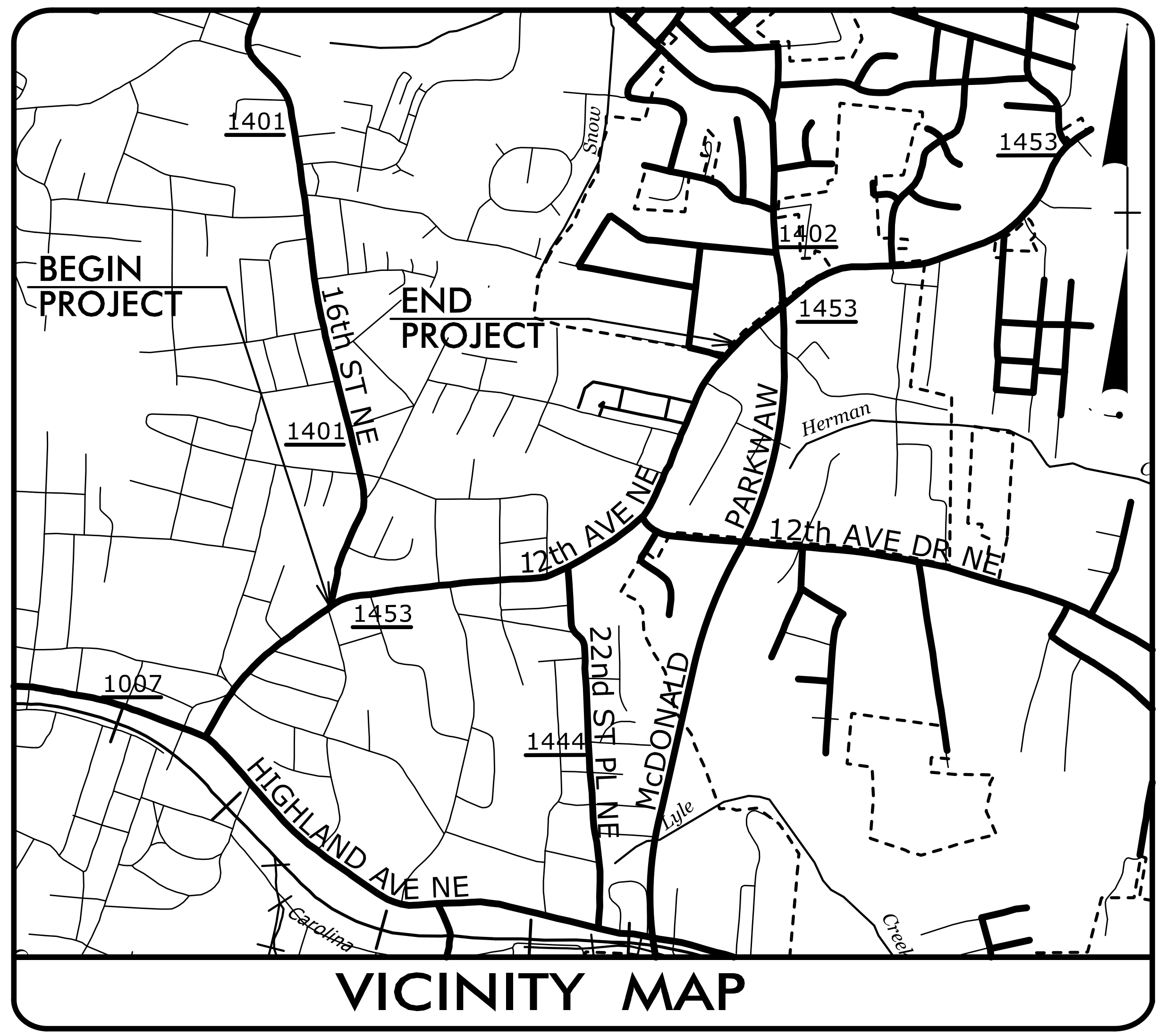
09/08/99

TIP PROJECT: BL-0066

9/24/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Roadway\Proj\BL-0066_Rdy_tsh.dgn
User:cpruett

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



VICINITY MAP

STATE OF NORTH CAROLINA
CATAWBA COUNTY

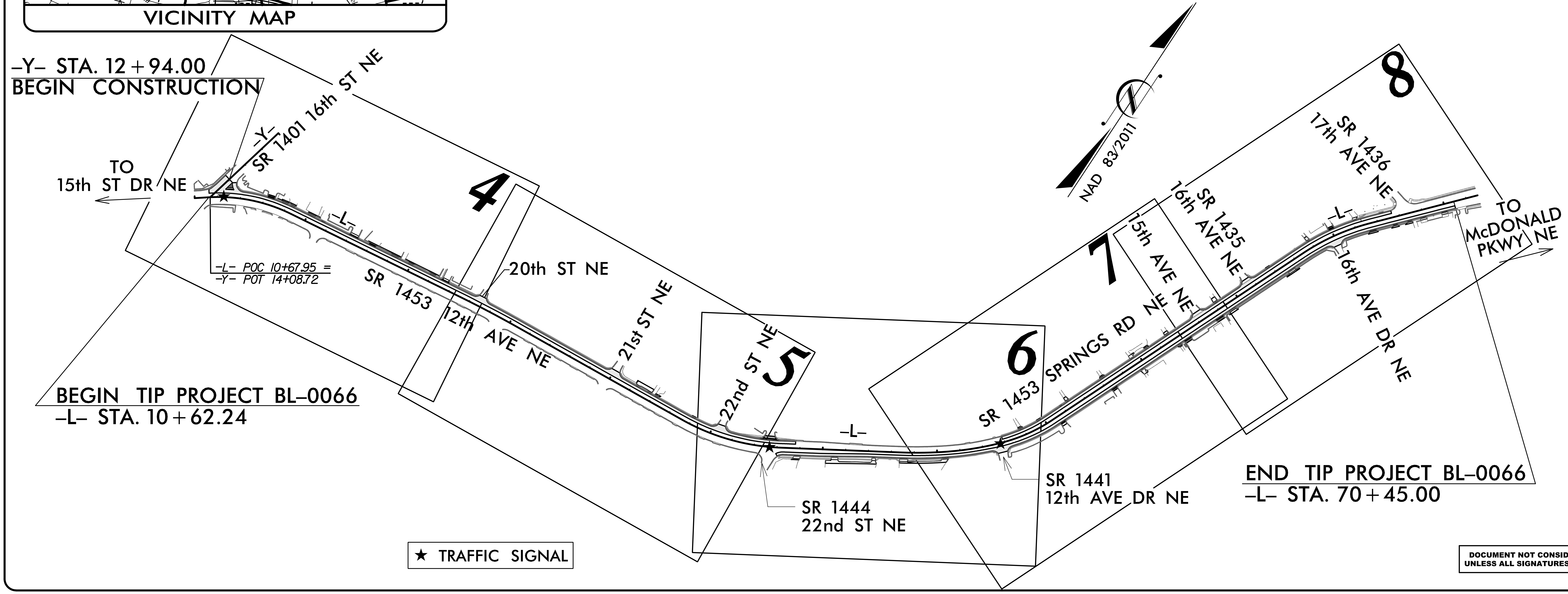
CITY OF HICKORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BL-0066	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50628.1.1	1143028	PE
50628.2.1	1143028	RW
50628.2.2	1143028	UTIL.
50628.3.1	1143028	CONST.

LOCATION: SIDEWALKS ALONG BOTH SIDES OF SR 1453 (12th AVE. NE/SPRINGS RD NE) BETWEEN SR 1401 (16th ST NE/SANDY RIDGE RD) AND McDONALD PARKWAY NE

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



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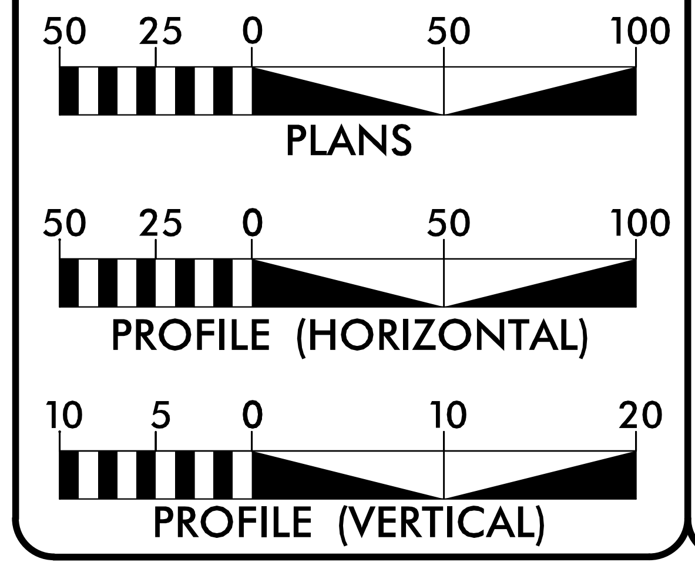
GRAPHIC SCALES



PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BL-0066 = 1.133 MILES
TOTAL LENGTH TIP PROJECT BL-0066 = 1.133 MILES

CITY CONTACT: KELLY WINKLER, PE

PLANS PREPARED BY:

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

PLANS PREPARED FOR:

HICKORY
North Carolina
Life. Well Crafted.
76 N CENTER ST
HICKORY, NC 28601

RIGHT OF WAY DATE:
OCTOBER 25, 2024

LETTING DATE:
OCTOBER 15, 2026

2024 STANDARD SPECIFICATIONS

JIMMY L. TERRY, PE
PROJECT ENGINEER

CLINTON B. PRUETT, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

9/24/2026
Signed by:
David B. Petty
400EEF4863B6465...
SIGNATURE: ***P.E.***

SEAL 038697 DAVID B. PETTY

ROADWAY DESIGN ENGINEER

9/24/2026
DocuSigned by:
Jimmy Terry
FD39F3882594D0...
SIGNATURE: ***P.E.***

SEAL 35018 JIMMY L. TERRY

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	1A

ROADWAY DESIGN ENGINEER

DocuSigned by: Jimmy Terry
FD39F38882E94D0...
SEAL 35018
JIMMY L. TERRY
4/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EFF. 08-11-2025
REV. 11-26-2025

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-2	SPECIAL DETAILS - METHOD OF PIPE INSTALLATION
2C-3	SPECIAL DETAILS - CONCRETE SIDEWALK
3B-1	ROADWAY AND DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
RW01 THRU RW08	SURVEY CONTROL SHEETS
PMP-1 THRU PMP-6	PAVEMENT MARKING AND SIGNING PLANS
EC-1 THRU EC-23	EROSION CONTROL PLANS
SIG-1.0 THRU SIG-4.3	SIGNAL PLANS
UC-1 THRU UC-8	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-20	CROSS-SECTIONS

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

CLEARING:

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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

SUBSURFACE DRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CITY OF HICKORY, DUKE ENERGY, BRIGHTSPEED, SEGRA, METRONET, AND RIPPLE FIBER.

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.06.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk (Use Detail in Lieu of Standard for Sheet 1 of 1)
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.06	Curb Ramp (Use Details in Lieu of Standards for Sheets 9 and 10 of 13)
852.01	Concrete Islands

4/2/2026
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PROJECT REFERENCE NO.	SHEET NO.
BL-0066	1B

05/20/24

Note: Not to Scale

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

BOUNDARIES AND PROPERTY:

State Line	———
County Line	—— - ——
Township Line	—— - ——
City Line	—— - ——
Reservation Line	—— · —— · ——
Property Line	——— ———
Existing Iron Pin (EIP)	⊙ EIP
Computed Property Corner	✕
Existing Concrete Monument (ECM)	⊡ ECM
Parcel / Sequence Number	(123)
Existing Fence Line	—✕——✕——✕—
Proposed Woven Wire Fence	——○——
Proposed Chain Link Fence	——□——
Proposed Barbed Wire Fence	——◇——
Existing Wetland Boundary	– – – WLB – – –
Proposed Wetland Boundary	—— WLB ——
Existing Endangered Animal Boundary	—— EAB ——
Existing Endangered Plant Boundary	—— EPB ——
Existing Historic Property Boundary	—— HPB ——
Known Contamination Area: Soil	☠ — S — ☠ — S —
Potential Contamination Area: Soil	☠ — S — ☠ — S —
Known Contamination Area: Water	☠ — W — ☠ — W —
Potential Contamination Area: Water	☠ — W — ☠ — W —
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙ S
Well	○ W
Small Mine	⚒
Foundation	▭
Area Outline	▭
Cemetery	▭ †
Building	▭
School	▭
Church	▭ ✝
Dam	———

HYDROLOGY:

Stream or Body of Water	———
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	—— JS ——
Buffer Zone 1	—— BZ 1 ——
Buffer Zone 2	—— BZ 2 ——
Flow Arrow	←——
Disappearing Stream	——>——
Spring	○~~~
Wetland	⩛
Proposed Lateral, Tail, Head Ditch	⇐ FLOW
False Sump	◁▷

RAILROADS:

Standard Gauge	┼┼┼┼┼┼ CSX TRANSPORTATION
RR Signal Milepost	⊙ MILEPOST 35
Switch	▭ SWITCH
RR Abandoned	—+— —+— —+—
RR Dismantled	———————

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	⬡
Primary Horiz and Vert Control Point	⬢
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⊙▲
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◈
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⊙▲
Existing Right of Way Line	——— ——— —
Proposed Right of Way Line	——(R/W)——
Existing Control of Access Line	——(C/A)——
Proposed Control of Access Line	——(C/A)——
Proposed ROW and CA Line	——(R/W C/A)——
Existing Easement Line	—— E ——
Proposed Temporary Construction Easement	—— E ——
Proposed Temporary Drainage Easement	—— TDE ——
Proposed Permanent Drainage Easement	—— PDE ——
Proposed Permanent Drainage/Utility Easement	—— DUE ——
Proposed Permanent Utility Easement	—— PUE ——
Proposed Temporary Utility Easement	—— TUE ——
Proposed Aerial Utility Easement	—— AUE ——

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	— — — — —
Existing Curb	———
Proposed Slope Stakes Cut	– – – C – – –
Proposed Slope Stakes Fill	– – – F – – –
Proposed Curb Ramp	(CR)
Existing Metal Guardrail	—T——T——T—
Proposed Guardrail	—T——T——T—
Existing Cable Guiderail	—▯——▯——▯—
Proposed Cable Guiderail	—▯——▯——▯—
Equality Symbol	◕
Pavement Removal	▨

VEGETATION:

Single Tree	✿
Single Shrub	✿
Hedge	﹏﹏﹏
Woods Line	⌒⌒⌒⌒⌒
Orchard	✿ ✿ ✿ ✿
Vineyard	Vineyard

EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	) CONC WW (

MINOR:

Head and End Wall	CONC HW
Pipe Culvert	— — — — —
Footbridge	>———————<
Drainage Box: Catch Basin, DI or JB	☐ CB
Paved Ditch Gutter	— — — — —
Storm Sewer Manhole	Ⓢ
Storm Sewer	—— S ——

UTILITIES:

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

POWER:

Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	-●-
Proposed Joint Use Pole	-○-
Power Manhole	Ⓟ
Power Line Tower	⊠
Power Transformer	☐
U/G Power Cable Hand Hole	HH
H-Frame Pole	●—●
U/G Power Line Test Hole (SUE - LOS A)*	⊗
U/G Power Line (SUE - LOS B)*	– – – – P – – – –
U/G Power Line (SUE - LOS C)*	—— – – P – – ——
U/G Power Line (SUE - LOS D)*	—— P ——

TELEPHONE:

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

WATER:

Water Manhole	Ⓦ
Water Meter	⬭
Water Valve	⊗
Water Hydrant	⊙
U/G Water Line Test Hole (SUE - LOS A)*	⊗
U/G Water Line (SUE - LOS B)*	– – – – W – – – –
U/G Water Line (SUE - LOS C)*	—— – – W – – ——
U/G Water Line (SUE - LOS D)*	—— W ——
Above Ground Water Line	A/G Water

TV:

TV Pedestal	C
TV Tower	⊗
U/G TV Cable Hand Hole	HH
U/G TV Test Hole (SUE - LOS A)*	◕
U/G TV Cable (SUE - LOS B)*	– – – – TV – – – –
U/G TV Cable (SUE - LOS C)*	—— – – TV – – ——
U/G TV Cable (SUE - LOS D)*	—— TV ——
U/G Fiber Optic Cable (SUE - LOS B)*	– – – – TV FO – – –
U/G Fiber Optic Cable (SUE - LOS C)*	—— – – TV FO – ——
U/G Fiber Optic Cable (SUE - LOS D)*	—— TV FO ——

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

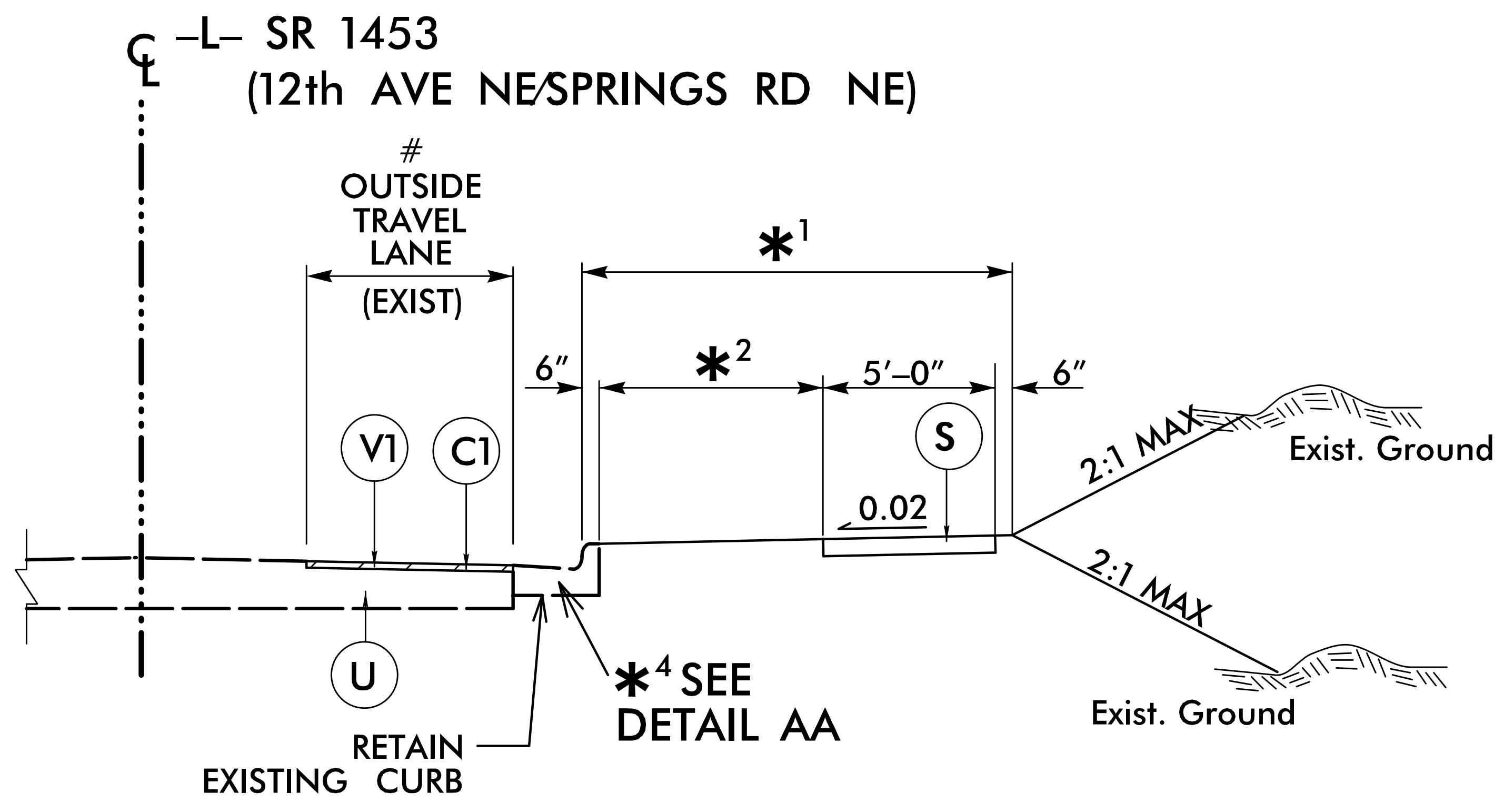
Utility Pole	●
Utility Pole with Base	⊡
Utility Located Object	⊙
Utility Traffic Signal Box	S
Utility Unknown U/G Line (SUE - LOS B)*	—— ?UTL ——
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	(UST)
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	☢
Abandoned According to Utility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

6/2/99

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1 ½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	2′-6″ CONCRETE CURB & GUTTER
R2	8″ X 12″ CONCRETE CURB
R3	5″ MONOLITHIC CONCRETE ISLAND - SURFACE MOUNTED
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	1 ½″ MILLLING

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

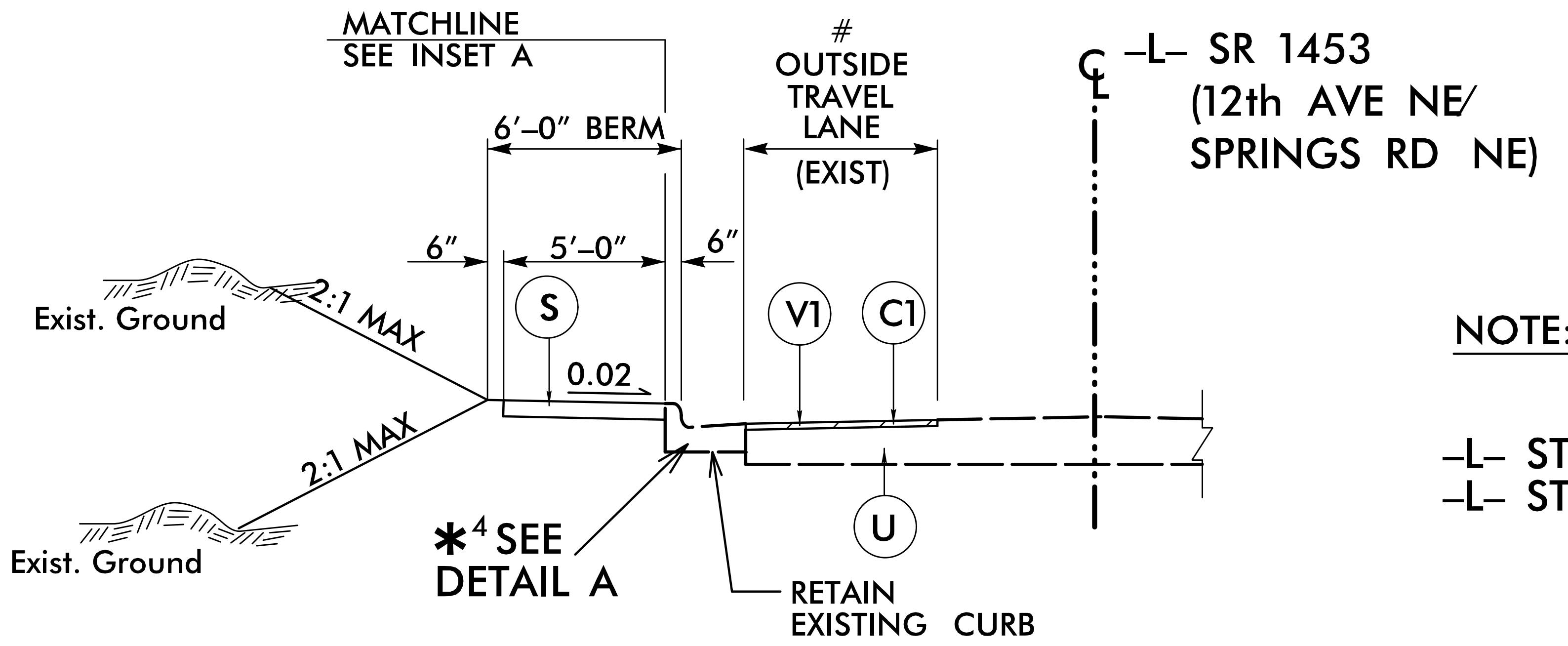


TYPICAL SECTION NO. 2

STATION TO STATION	✱1 BERM WIDTH	✱2 WIDTH
–L– STA. 38+07.85 TO –L– STA. 41+45.00, RT	12′–6″	6′–6″
–L– STA. 41+45.00 TO –L– STA. 41+95.00, RT	12′–6″ TO 14′–0″	6′–6″ T0 8′–0″
–L– STA. 41+95.00 TO –L– STA. 42+36.10, RT	14′–0″	8′–0″
–L– STA. 43+31.67 TO –L– STA. 43+82.00, RT	13′–0″	7′–0″
–L– STA. 62+38.00 TO –L– STA. 62+87.00, RT	10′–6″	4′–6″

NOTE: TRANSITION BETWEEN TYP. SECT. NO.1
AND TYP. SECT. NO.2 AS FOLLOWS:

–L– STA. 42+36.10 TO –L– STA. 42+46.10, RT
–L– STA. 43+21.67 TO –L– STA. 43+31.67, RT
–L– STA. 43+82.00 TO –L– STA. 44+07.00, RT
–L– STA. 62+13.00 TO –L– STA. 62+38.00, RT
–L– STA. 62+87.00 TO –L STA. 63+12.00, RT

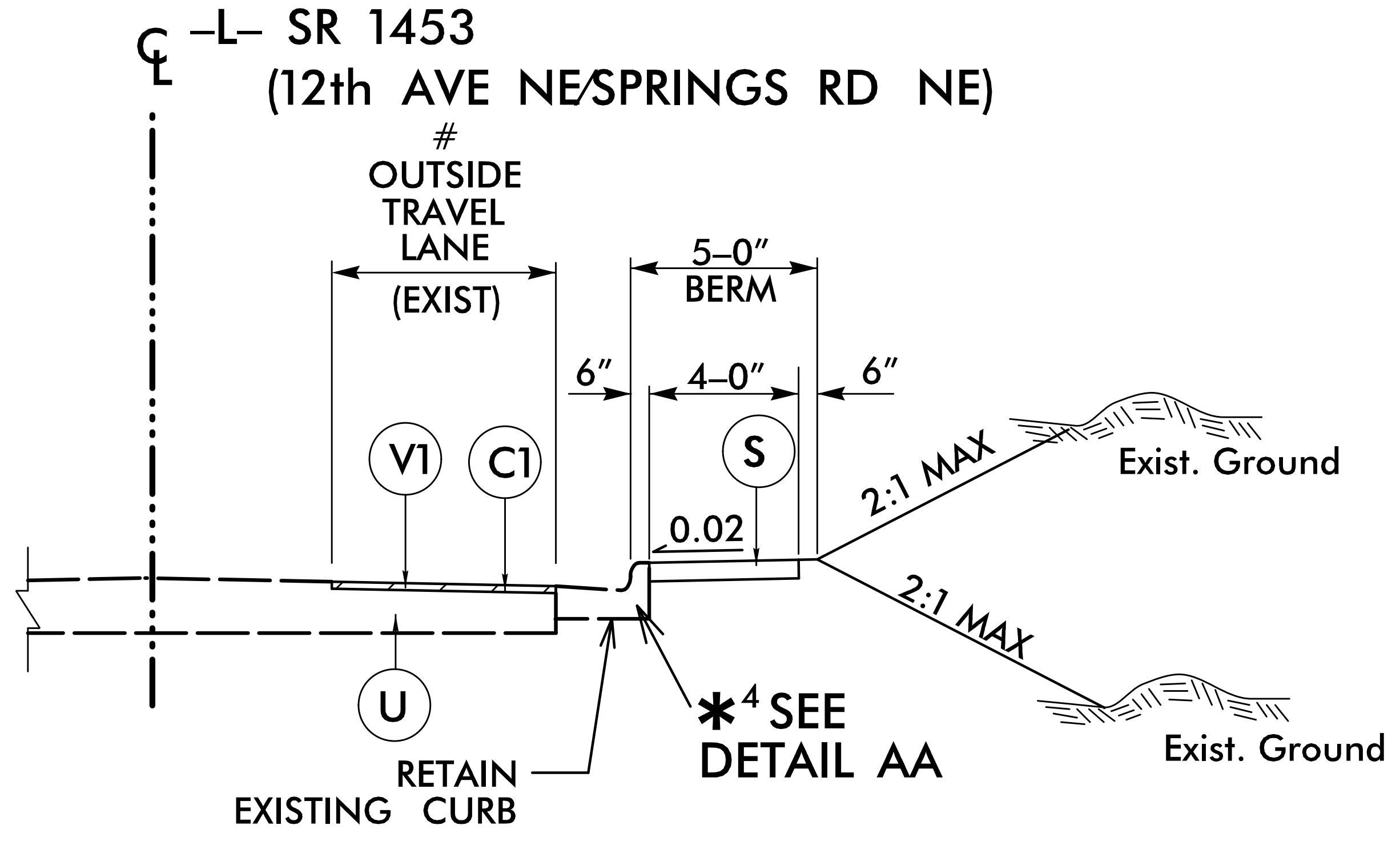


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA. 10+64.14 TO –L– STA. 38+80.45, LT
–L– STA. 47+92.25 TO –L– STA. 66+33.00, LT

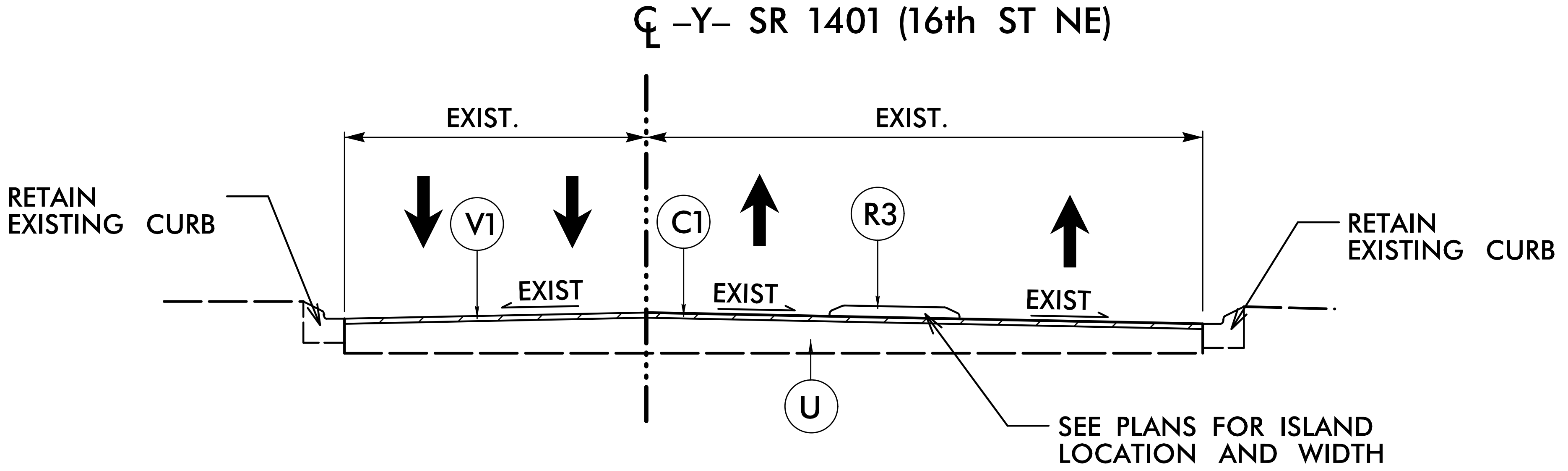
–L– STA. 42+46.10 TO –L– STA. 43+21.67, RT (MIRRORED)
–L– STA. 44+07.00 TO –L– STA. 45+47.09, RT (MIRRORED)
–L– STA. 47+52.04 TO –L– STA. 62+13.00, RT (MIRRORED)
–L– STA. 63+12.00 TO –L– STA. 70+20.00, RT (MIRRORED)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 45+47.09 TO –L– STA. 47+52.04, RT
–L– STA. 58+11.28, RT (POLE LOCATION)
–L– STA. 59+11.46, RT (POLE LOCATION)
–L– STA. 59+93.63, RT (POLE LOCATION)
–L– STA. 61+45.68, RT (POLE LOCATION)
–L– STA. 62+83.57, RT (POLE LOCATION)
–L– STA. 65+38.70, RT (POLE LOCATION)
–L– STA. 67+02.80, RT (POLE LOCATION)
NOTE: SEE DETAIL B PSH. 8 FOR SIDEWALK AT POLES



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

–Y– STA. 12+94.00 TO –Y– STA. 13+60.94

MILL AND RESURFACE THE OUTSIDE
TRAVEL LANE AS FOLLOWS:

–L– STA. 10+64.14 TO –L– STA. 38+80.45, LT
–L– STA. 37+99.04 TO –L– STA. 70+45.00, RT
–L– STA. 47+92.25 TO –L– STA. 67+68.85, LT

NOTE: TRANSITION BETWEEN TYP. SECT. NO.1
AND EXISTING AS FOLLOWS:

–L– STA. 66+33.00 TO –L– STA. 66+58.00, LT
–L– STA. 70+20.00 TO –L– STA. 70+45.00, RT (MIRRORED)

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	2A-1

ROADWAY & PAVEMENT DESIGN
ENGINEER

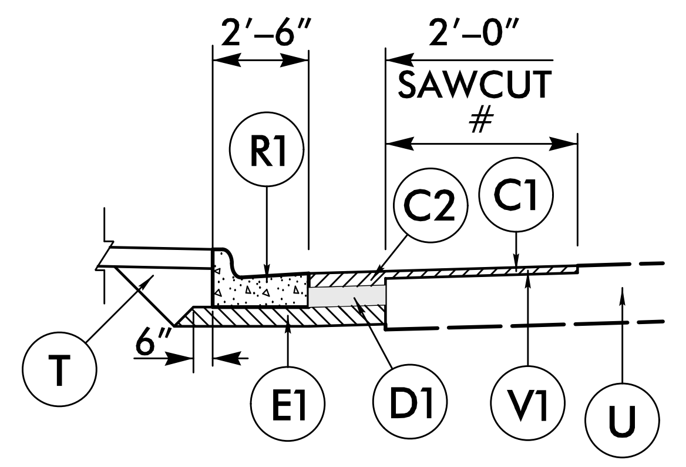
DocuSigned by:
Jimmy Terry
FD39F38882E94D0...
35018
JIMMY L. TERRY
5/15/2026

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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

DETAIL AA

MIRRORED FOR RT SIDE



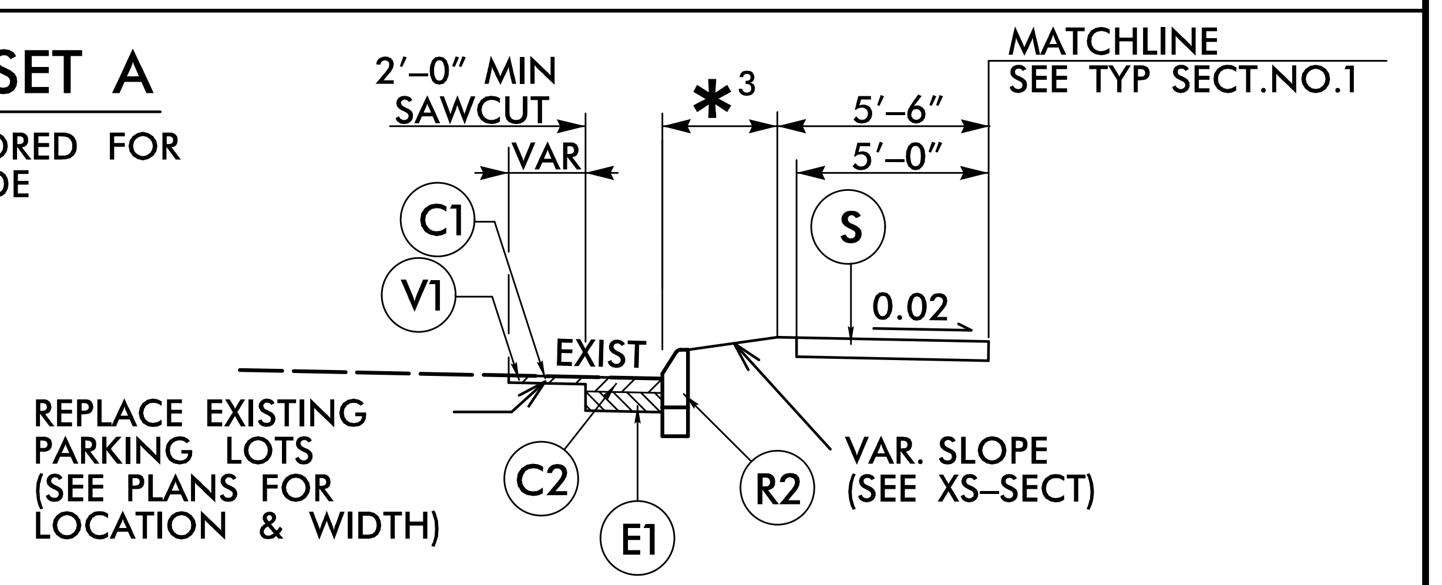
✱4
REPLACE EXISTING CURB BETWEEN THE FOLLOWING
STATIONS: SEE PLANS FOR DRIVEWAY LOCATIONS

–L– STA. 15+61.13 TO –L– STA. 15+86.14, LT
–L– STA. 16+90.41 TO –L– STA. 17+50.46, LT
–L– STA. 21+37.61 TO –L– STA. 21+93.03, LT
–L– STA. 37+07.16 TO –L– STA. 38+15.95, LT
–L– STA. 50+87.08 TO –L– STA. 51+41.08, LT

–L– STA. 45+15.41 TO –L– STA. 45+52.48, RT
–L– STA. 50+42.92 TO –L– STA. 50+82.61, RT
–L– STA. 53+10.12 TO –L– STA. 53+55.23, RT
–L– STA. 56+61.71 TO –L– STA. 57+42.89, RT
–L– STA, 58+54.48 TO –L– STA. 59+16.23, RT
–L– STA. 62+31.54 TO –L– STA. 62+83.70, RT

INSET A

MIRRORED FOR
RT SIDE

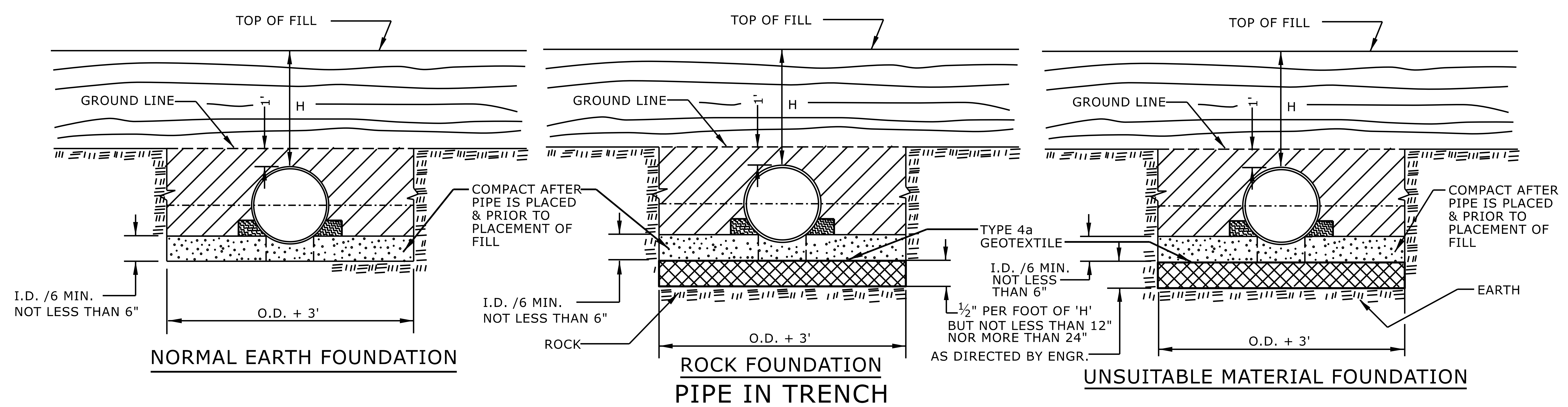


USE INSET A

✱3	STATION TO STATION
1′–6″	–L– STA. 19+38.83 TO –L– STA. 19+48.68, LT
2′–0″	–L– STA. 15+32.18 TO –L– STA. 15+54.29, LT –L– STA. 19+76.78 TO –L– STA. 19+86.42, LT
2′–3″	–L– STA. 20+09.95 TO –L– STA. 20+18.81, LT –L– STA. 20+84.68 TO –L– STA. 20+92.98, LT –L– STA. 66+89.07 TO –L– STA. 66+92.91, RT –L– STA. 67+54.21 TO –L– STA. 67+61.37, RT –L– STA. 68+16.44 TO –L– STA. 68+25.69, RT
2′–6″	–L– STA. 13+54.17 TO –L– STA. 13+75.76, LT –L– STA. 14+03.40 TO –L– STA. 14+15.94, LT –L– STA. 18+28.81 TO –L– STA. 19+04.06, LT –L– STA. 31+34.03 TO –L– STA. 31+71.87, LT
2′–9″	–L– STA. 14+34.32 TO –L– STA. 14+37.93, LT –L– STA. 17+88.95 TO –L– STA. 17+94.41, LT –L– STA. 67+84.10 TO –L– STA. 67+87.95, RT
3′–0″	–L– STA. 43+71.44 TO –L– STA. 43+82.00, RT –L– STA. 65+41.65 TO –L– STA. 66+53.64, RT
3′–0″ TO 6′–6″	–L– STA. 43+82.00 TO –L– STA. 44+07.69, RT
3′–9″ TO 7′–6″	–L– STA. 54+78.81 TO –L– STA. 54+88.29, LT
4′–0″	–L– STA. 21+17.43 TO –L– STA. 21+35.25, LT –L– STA. 31+11.15 TO –L– STA. 31+15.20, LT –L– STA. 40+14.37 TO –L– STA. 40+38.58, RT
6′–6″	–L– STA. 44+07.69 TO –L– STA. 45+18.44, RT
9′–0″	–L– STA. 40+67.57 TO –L– STA. 42+16.16, RT –L– STA. 42+32.16 TO –L– STA. 42+35.87, RT
11′–0″	–L– STA. 54+89.66 TO –L– STA. 54+96.44, RT

5/15/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Roadway\Proj\BL-0066_Rdy-typ.dgn
User:cpruett

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	2C-1

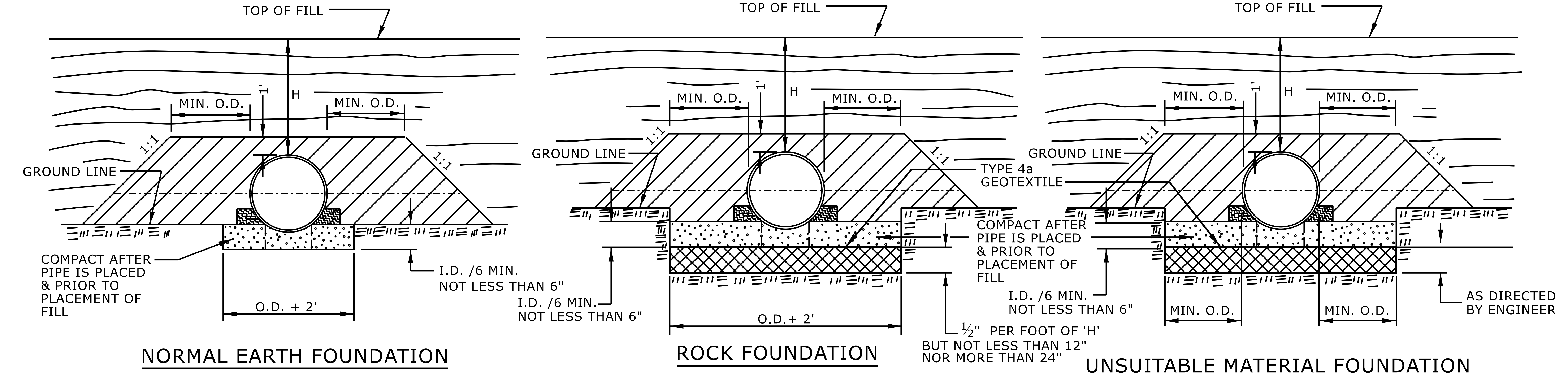

TOP OF FILL
GROUND LINE
1'
H
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D. /6 MIN. NOT LESS THAN 6"
O.D. + 3'
TYPE 4a GEOTEXTILE
I.D. /6 MIN. NOT LESS THAN 6"
½" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24"
AS DIRECTED BY ENGR.
ROCK
EARTH

NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE IN TRENCH


TOP OF FILL
GROUND LINE
MIN. O.D.
1'
H
1:1
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D. /6 MIN. NOT LESS THAN 6"
O.D. + 2'
TYPE 4a GEOTEXTILE
½" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24"
AS DIRECTED BY ENGINEER

NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

≋	APPROVED SUITABLE LOCAL MATERIAL.
▩	TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
░	LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

-·-·-·-·-	SPRINGLINE OF PIPE
▨	SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
ıı≡ıı≡ ıı≡ıı	UNDISTURBED EARTH MATERIAL
▩	SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01

NICOLE M. HACKLER
033144
4/20/2026

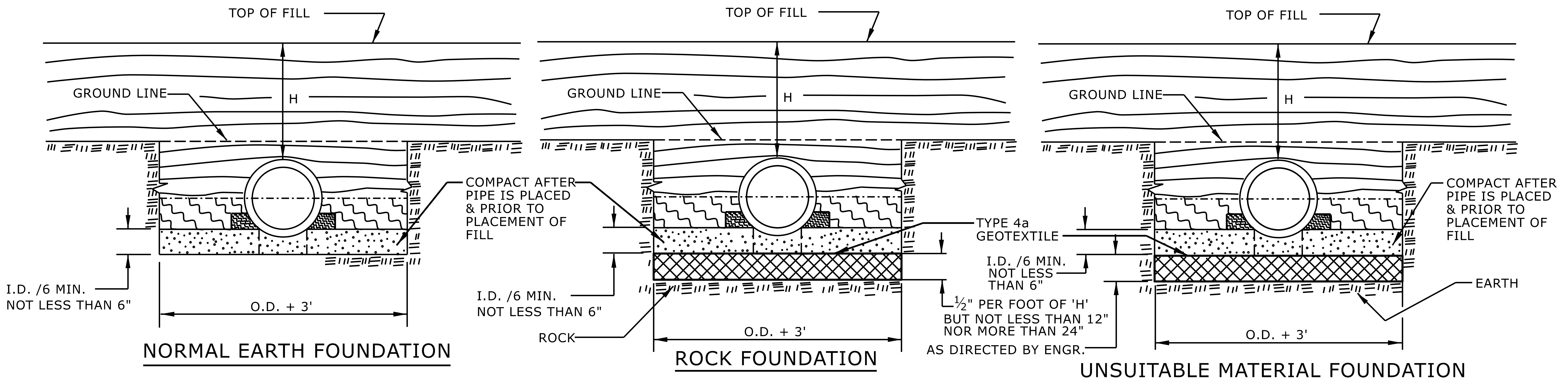
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	2C-2

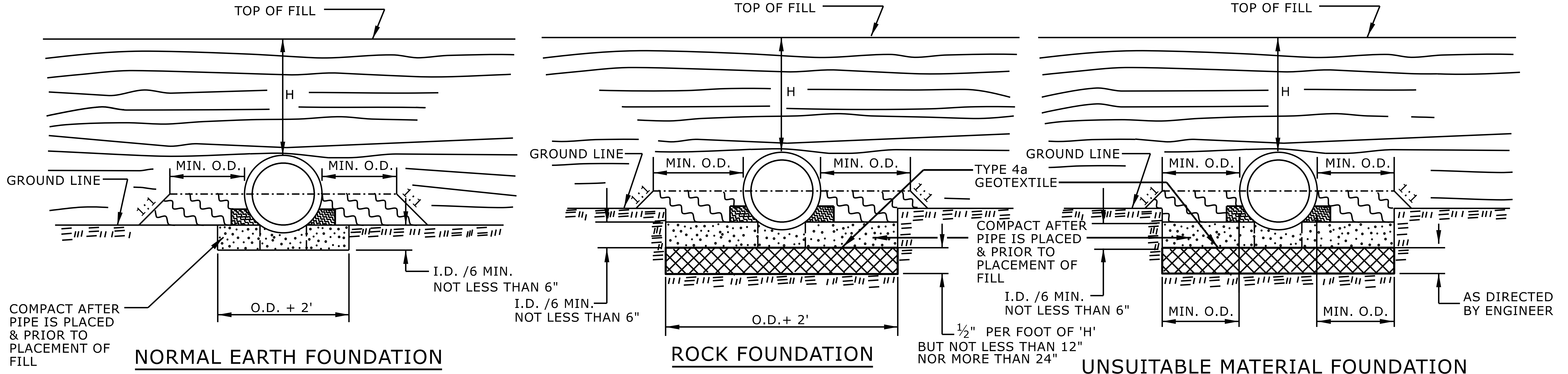

TOP OF FILL
GROUND LINE
H
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D. /6 MIN. NOT LESS THAN 6"
O.D. + 3'
TYPE 4a GEOTEXTILE
I.D. /6 MIN. NOT LESS THAN 6"
ROCK
½" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24"
AS DIRECTED BY ENGR.
EARTH

NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE IN TRENCH


TOP OF FILL
H
GROUND LINE
MIN. O.D.
1:1
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D. /6 MIN. NOT LESS THAN 6"
O.D. + 2'
TYPE 4a GEOTEXTILE
½" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24"
AS DIRECTED BY ENGINEER

NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

▤ APPROVED SUITABLE LOCAL MATERIAL.

■ TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

░ LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

-·-·-·-·- SPRINGLINE OF PIPE

▧ SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

≡ UNDISTURBED EARTH MATERIAL

▩ SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2
300.01

NICOLE M. HACKLER
033144
4/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

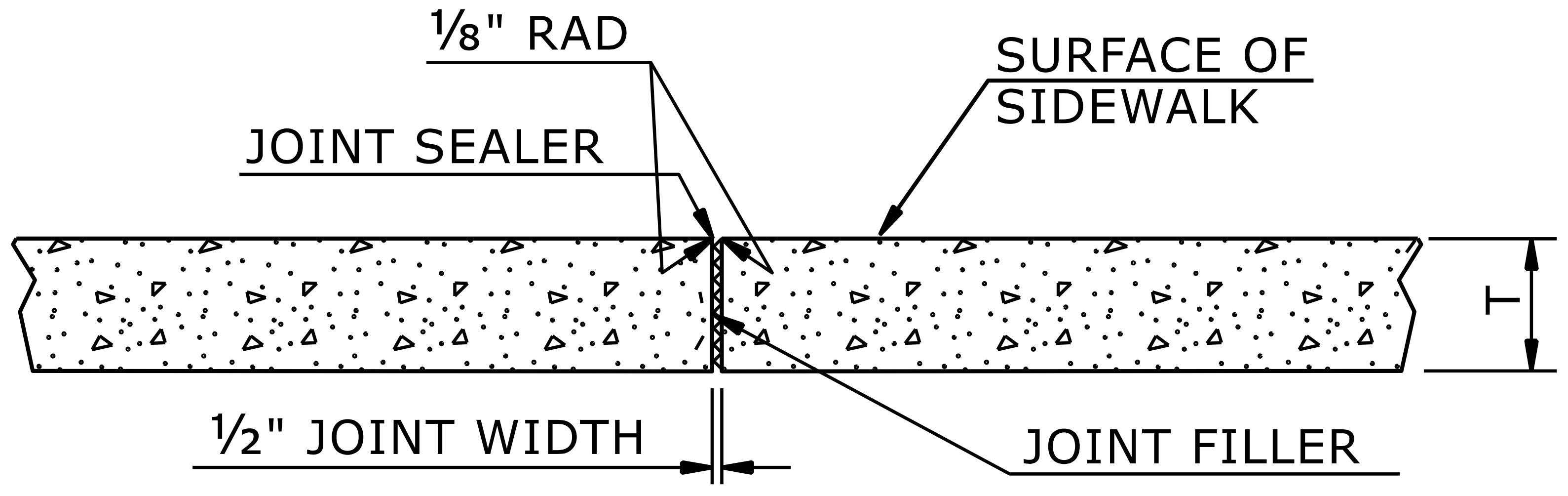
PROJECT REFERENCE NO.	SHEET NO.
BL-0066	2C-3

NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND
4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

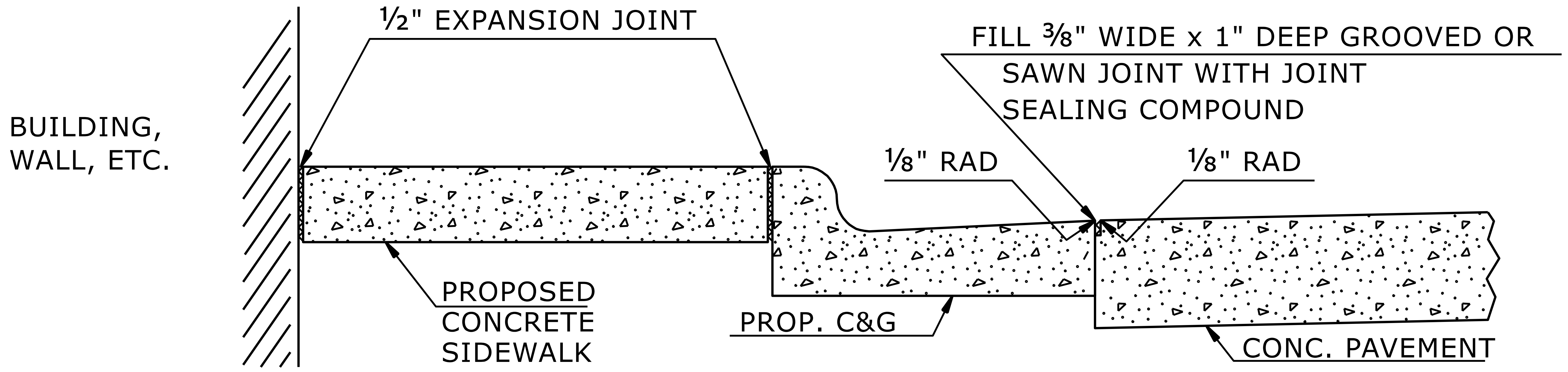
PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII
IN THE CONCRETE SIDEWALK AT 5' INTERVALS.
ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50'
INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED
WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.06 FOR CURB RAMP LOCATION
REQUIREMENTS AND CONSTRUCTION GUIDELINES.



T = SIDEWALK THICKNESS

TRANSVERSE EXPANSION JOINT
IN SIDEWALK


½" EXPANSION JOINT
FILL ⅜" WIDE x 1" DEEP GROOVED OR SAWN JOINT WITH JOINT SEALING COMPOUND
BUILDING, WALL, ETC.
⅛" RAD
⅛" RAD
PROPOSED CONCRETE SIDEWALK
PROP. C&G
CONC. PAVEMENT

DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

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

ROADWAY DETAIL DRAWING FOR
CONCRETE SIDEWALK

SHEET 1 OF 1
848D01

NICOLE M. HACKLER
033144
4/20/2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

COMPUTED BY: SGM DATE: 2/5/2026
CHECKED BY: DATE:

PROJECT NO.	SHEET NO.
BL-0066	3B-1

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
-L- 10+64.14, LT	-L- 38+80.45, LT	253		81		172
SUBTOTAL 1		253		81		172
-L- 37+99.04, RT	-L- 70+45.00, RT	421		185		236
SUBTOTAL 2		421		185		236
-L- 47+92.55, LT	-L- 66+58.00, LT	296		35		261
SUBTOTAL 3		296		35		261
TOTALS:		970		301		669
LOSS DUE TO CLEARING & GRUBBING		-350				-350
ADDITIONAL UNDERECUT			200			200
PROJECT TOTALS:		620	200	301		519
GRAND TOTALS:		620	200	301		519
SAY		700	200			

Note: Approximate quantities only. Unclassified Excavation and Clearing and Grubbing will be paid for at the contract lump sum price for grading.

Note: Earthwork quantities are calculated by TGS Engineers. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

COMPUTED BY: ZACHARY RICHARD, PE DATE: 9/4/2024
CHECKED BY: DAVID PETTY, PE DATE: 9/4/2024

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0') EACH	A 5.0' THRU 10.0' LIN.FT	B 10.0' AND ABOVE LIN.FT	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	CONVERT EXISTING D.I. TO J.B.	ADJUST M.H.						CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	ABBREVIATIONS C.B. CATCH BASIN N.D.I. NARROW DROP INLET D.I. DROP INLET G.D.I. GRATED DROP INLET G.D.I.(N.S.) (NARROW SLOT) J.B. JUNCTION BOX M.H. MANHOLE T.B.D.I. TRAFFIC BEARING DROP INLET T.B.J.B. TRAFFIC BEARING JUNCTION BOX REMARKS
L 19+46	41 LT	0401		1150.7																																															1										1	1											
		0401	0402		1147.0	1146.8			4								X	X																																																						
L 19+46	36 LT	0402		1150.5																																																											1										
L 49+69	39 RT	0701		1146.2																																															1										1	1											
		0701	0702		1143.2	1141.9			48								X	X																																																						
L 50+14	41 RT	0702		1144.9																																															1										1	1											
L 50+18	36 RT	0703		1144.5																																																											1										
L 52+71	34 RT	0704																																																														1									Adjust MH Top as necessary
L 53+66	35 RT	0705																																																														1									Adjust MH Top as necessary
L 55+00	35 RT	0706																																																														1									Adjust MH Top as necessary
L 68+58	38 RT	0801																																																														1									Adjust MH Top as necessary
L 69+44	38 RT	0802																																																														1									Adjust MH Top as necessary
L 49+95	36 RT																																																																							49	Remove 15" RCP
L 50+17	36 RT																																																																					0.045			15" Pipe Plug
TOTALS									52																																										3										3	3	2	5						0.045		49	

COMPUTED BY: D. Matthew Brewer DATE: 02/19/2025
CHECKED BY: D. Matthew Brewer DATE: 02/19/2025

PROJECT NO.	SHEET NO.
BL-0066	3G-1

(9-17-24)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

***UD = Underdrain**
***BD = Blind Drain**
***SD = Subsurface Drain**

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU1	12	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

***ASU(1/2) = Aggregate Subgrade (Type 1 or 2)**
***AST = Aggregate Stabilization**
****Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.**

PROJ. REFERENCE NO.	SHEET NO.
BL-0066	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	1811 12TH, LLC
2	4	JERRY M. LEDFORD, CAROLYN M. LEDFORD
3	4	JEWELS, LLC
4	4	ADVANCE STORES COMPANY, INC.
5	4	RRTM PROPERTIES, LLC
6	4	CASA NOSTRA, INC.
7	4 & 5	BOULEVARD EAST, LLC
8	5	LUTHERAN HOME HICKORY PROPERTY, INC.
9	5	RRTM PROPERTIES, LLC
10	5	ASE INVESTMENTS, LLC
11	5	PEH PROPERTIES, LLC
12	5 & 6	HAMPTON 570, INC.
13	6	ST. STEPHEN'S LUTHERAN CHURCH, ELCA HICKORY NC
14	6	COOK'S CORNER PROPERTIES, LLC
15	6	MILLERS LUTHERAN CHURCH
16	6 & 7	ST. STEPHEN'S EVANGELICAL LUTHERAN CHURCH
17	7	ST. STEPHENS LUTHERAN CHURCH, MISSOURI SYNOD OF HICKORY
18	7	CITY OF HICKORY
19	7	EVERETTE A. HOUSTON, MARTHA M. HOUSTON
20	7	JESSE G. WATERS REVOCABLE TRUST
21	7	LINN R. GARDNER, CYNTHIA W. GARDNER
22	7	STEADFAST HOLDINGS, INC.
23	7 & 8	H5 RENTALS, LLC
24	7	ST. STEPHENS LUTHERAN CHURCH MISSOURI SYNOD OF HICKORY, NC
25	7 & 8	DHRUVKUMAR K. PATEL
26	8	CHARLES A. MORETZ ESTATE
27	8	PAULINE S. MORETZ HEIRS
28	8	BURTONS WJ, LLC; ROPPS. LLC
29	8	SAXON PROPERTIES, LLC
30	8	ROBUST PROPERTIES, LLC
31	8	AL CROUSE OFFICE, LLC
32	8	SAXON PROPERTIES, LLC
33	8	CHRIST CHURCH GLOBAL, INC.
34	8	BOBBY A. LITTLE CONSTRUCTION CO., INC.
35	8	ANNA M. WARD
36	8	EARL E. PROPST HEIRS, DORIS P. FASTENAU
37	8	CATAWBA COUNTY

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DocuSigned by: Jimmy Terry FD39F38882E94D0... SEAL 35018 JIMMY L. TERRY 5/15/2026	Signed by: David B. Petty 400EFF4863B6465... SEAL 038697 DAVID B. PETTY 5/15/2026

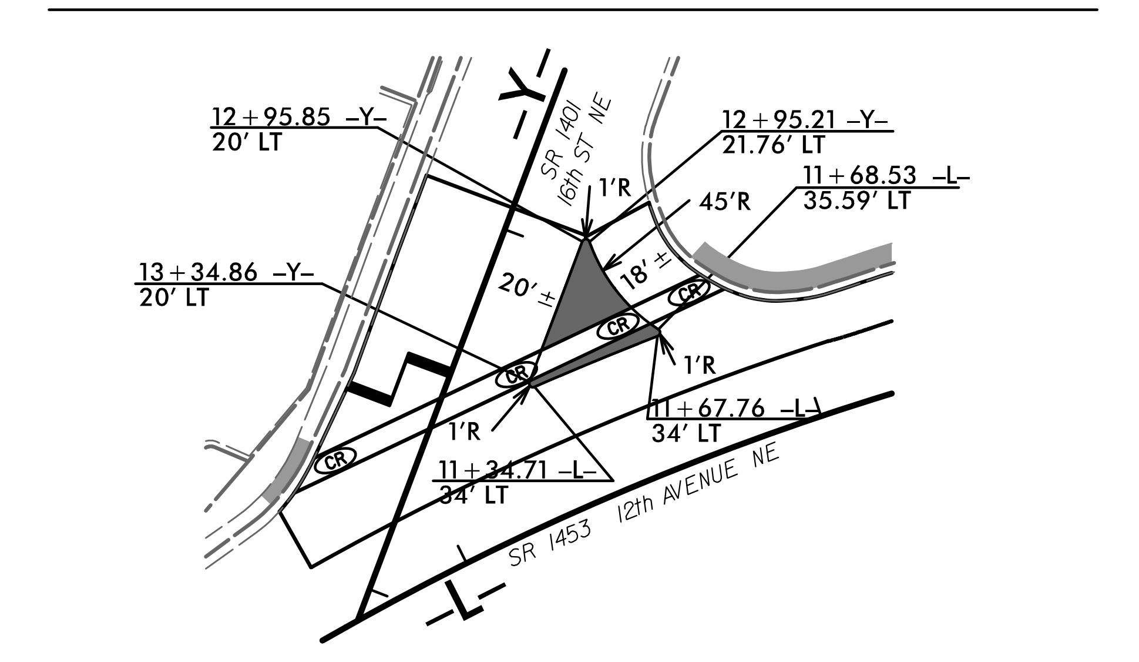
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

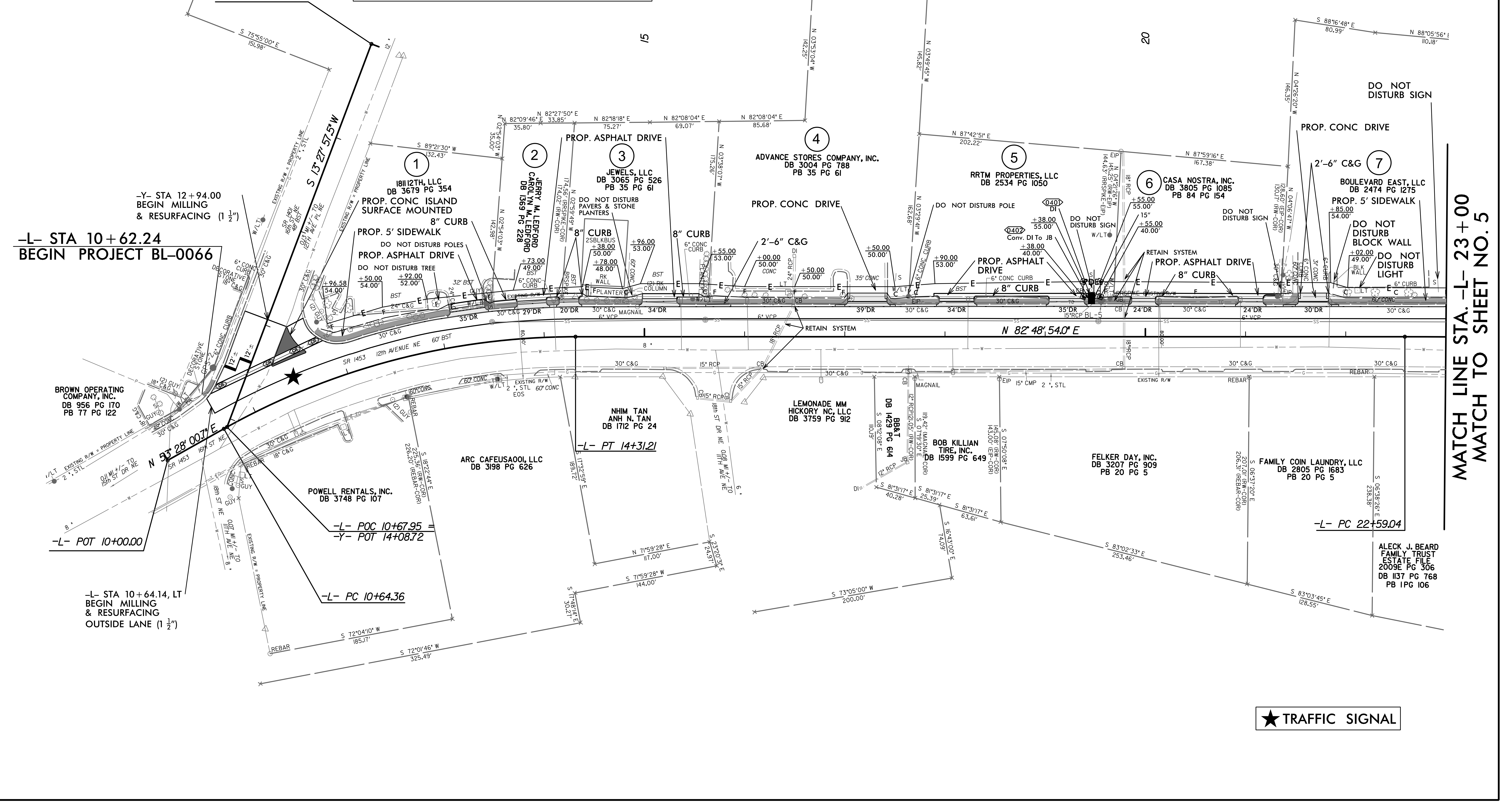
-L- CURVE DATA

PI Sta 12+51.91	PI Sta 23+92.20
Δ = 29° 20′ 53.2″ (RT)	Δ = 3° 11′ 42.5″ (RT)
D = 7° 59′ 59.9″	D = 1° 12′ 00.0″
L = 366.85′	L = 266.26′
T = 187.55′	T = 133.17′
R = 716.20′	R = 4,774.65′

DETAIL – CONCRETE ISLAND



NOTE:
CONTRACTOR TO RECONSTRUCT C&G TO MATCH EXISTING CONDITIONS ON ALL APPLICABLE DRIVEWAY TIE-INS.



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User:cpruett

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

SEAL 35018
JIMMY L. TERRY
5/15/2026

HYDRAULICS ENGINEER

SEAL 038697
DAVID B. PETTY
5/15/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

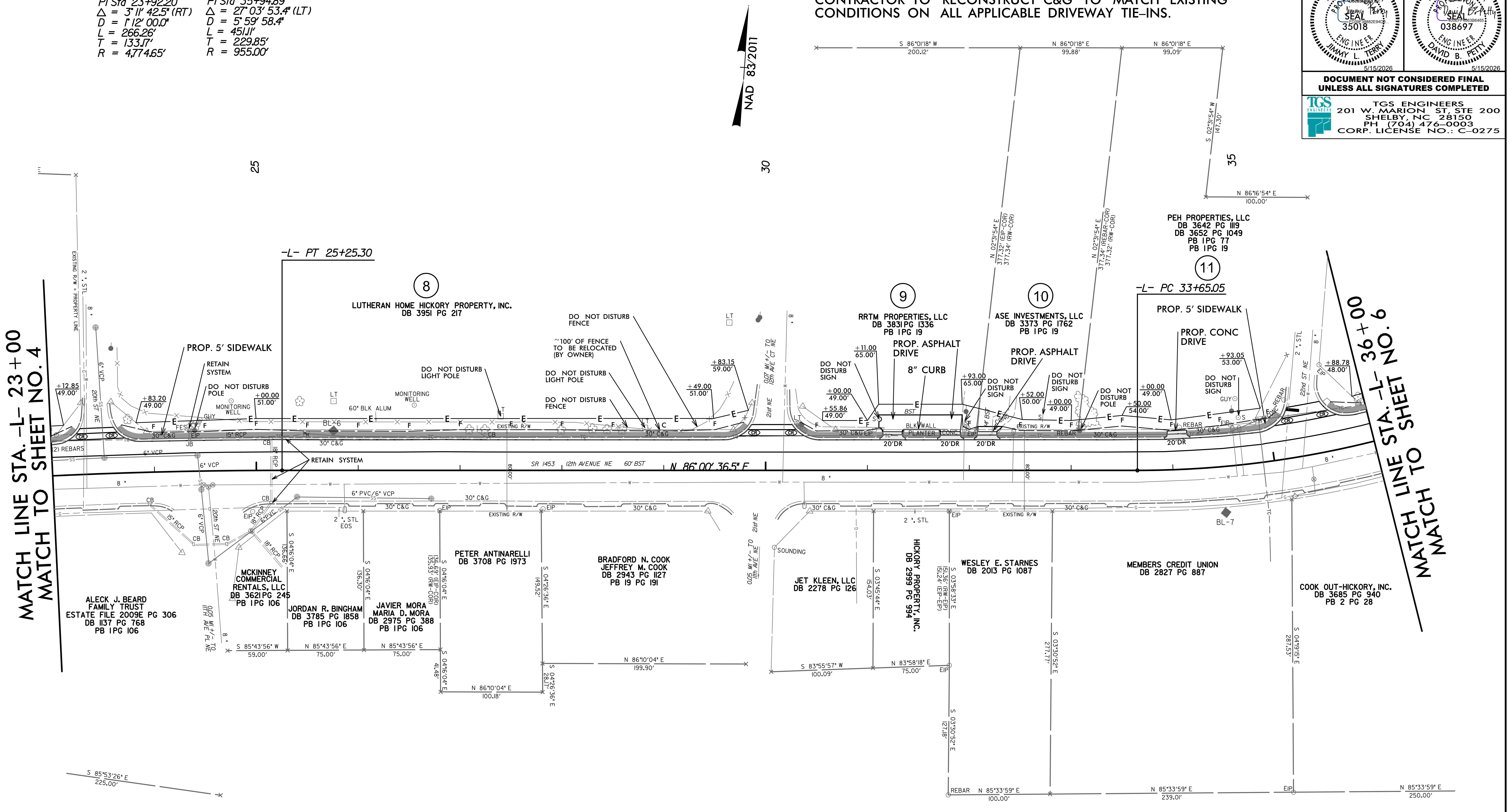
8/17/99

REVISIONS

-L- CURVE DATA

PI Sta 23+92.20	PI Sta 35+94.89
Δ = 3° 11' 42.5" (RT)	Δ = 27° 03' 53.4" (LT)
D = 1° 12' 00.0"	D = 5° 59' 58.4"
L = 266.26'	L = 451.11'
T = 133.17'	T = 229.85'
R = 4,774.65'	R = 955.00'

NOTE:
CONTRACTOR TO RECONSTRUCT C&G TO MATCH EXISTING CONDITIONS ON ALL APPLICABLE DRIVEWAY TIE-INS.



5/15/2026
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
DocuSigned by:
Jimmy Terry
FD39F38882E94D0...
SEAL 35018
JIMMY L. TERRY
4/20/2026

HYDRAULICS ENGINEER
Signed by:
David B. Petty
400EFF4863B6465...
SEAL 038697
DAVID B. PETTY
4/20/2026

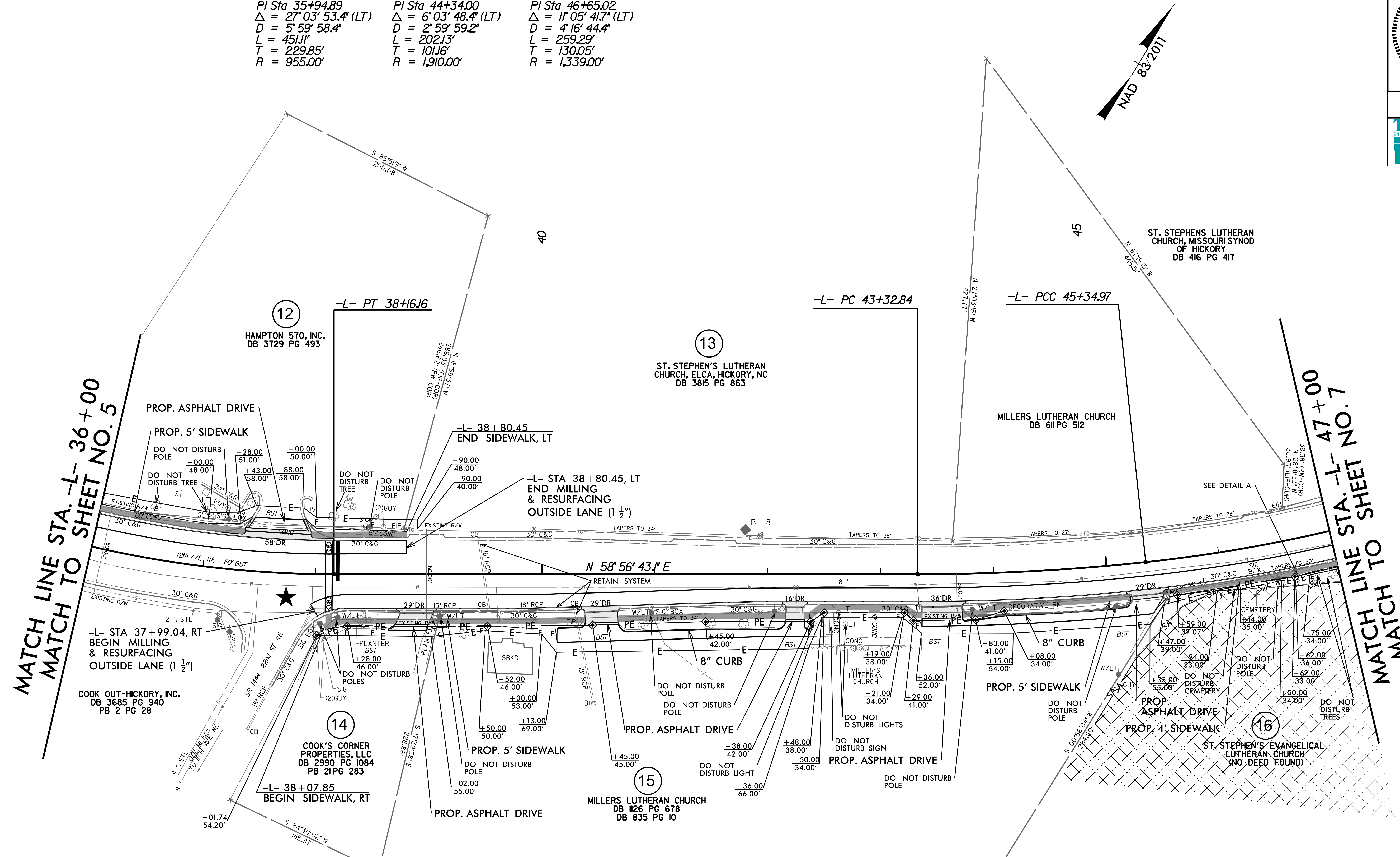
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NOTE:
CONTRACTOR TO RECONSTRUCT C&G TO MATCH EXISTING CONDITIONS ON ALL APPLICABLE DRIVEWAY TIE-INS.

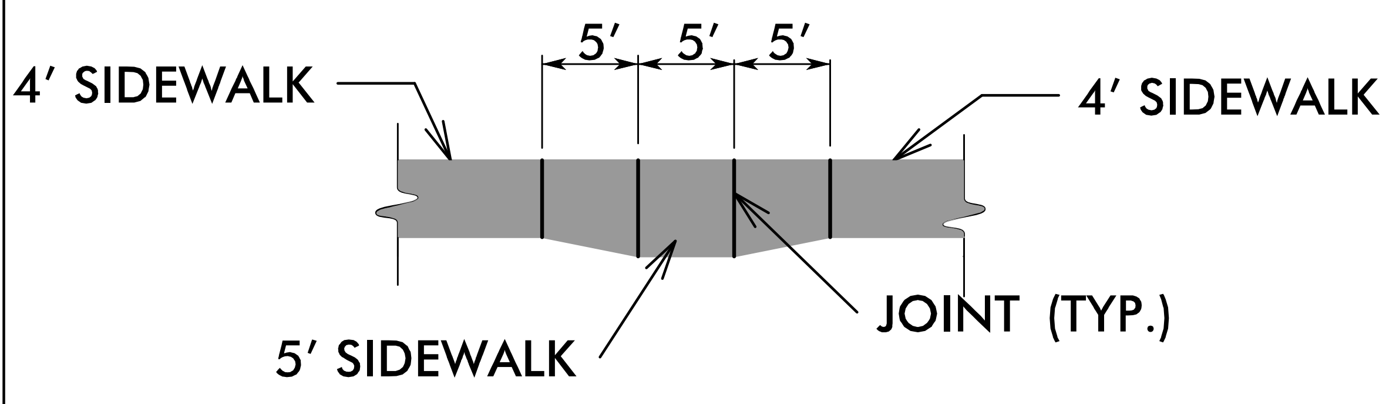
-L- CURVE DATA

PI Sta 35+94.89	PI Sta 44+34.00	PI Sta 46+65.02
Δ = 27° 03′ 53.4″ (LT)	Δ = 6° 03′ 48.4″ (LT)	Δ = 11° 05′ 41.7″ (LT)
D = 5° 59′ 58.4″	D = 2° 59′ 59.2″	D = 4° 16′ 44.4″
L = 451.11′	L = 202.13′	L = 259.29′
T = 229.85′	T = 101.16′	T = 130.05′
R = 955.00′	R = 1,910.00′	R = 1,339.00′



★ TRAFFIC SIGNAL

DETAIL A



▨ ESA – ENVIRONMENTAL SENSITIVE AREA

3/27/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Roadway\Proj\BL-0066_Rdy_psh_06.dgn
userpruett

8/17/99

REVISIONS

NOTE:
CONTRACTOR TO RECONSTRUCT C&G TO MATCH EXISTING
CONDITIONS ON ALL APPLICABLE DRIVEWAY TIE-INS.

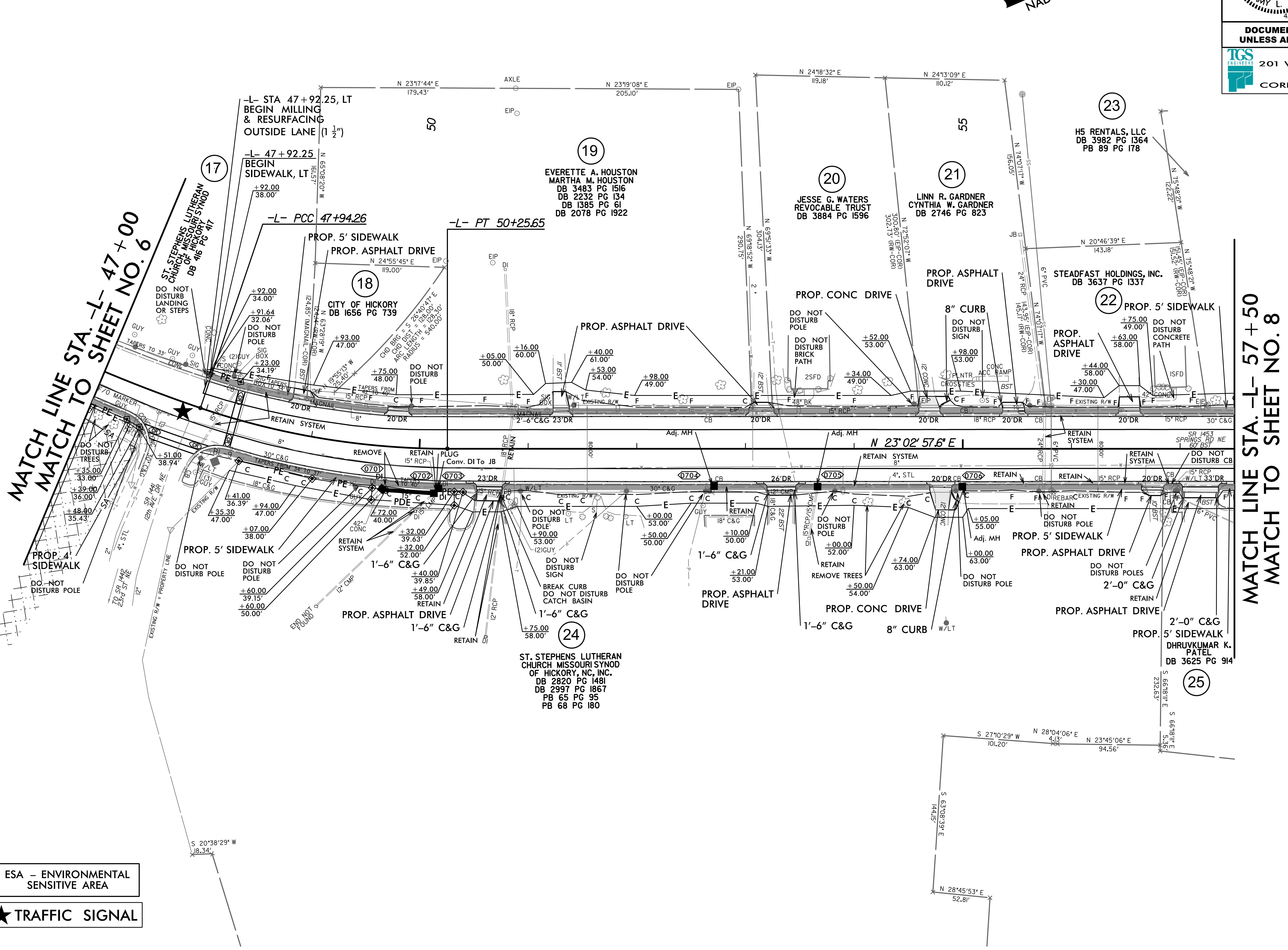
-L- CURVE DATA

PI Sta 46+65.02	PI Sta 49+11.00
Δ = 11° 05′ 41.7″ (LT)	Δ = 18° 44′ 15.4″ (LT)
D = 4° 16′ 44.4″	D = 8° 05′ 52.4″
L = 259.29′	L = 231.39′
T = 130.05′	T = 116.74′
R = 1,339.00′	R = 707.54′

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DocuSigned by: Jimmy Terry SEAL 35018 FD39F38882E94D0... JIMMY L. TERRY 4/20/2026	Signed by: David B. Petty SEAL 038697 400EFF4863B6465... DAVID B. PETTY 4/20/2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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



▨ ESA - ENVIRONMENTAL SENSITIVE AREA

★ TRAFFIC SIGNAL

4/20/2026
X:\Municipalities\Hickory\Proj\BL-0066 - Springs Rd\Roadway\Proj\BL-0066_Rdy_psh_07.dgn
Userpruett

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	8
R/W SHEET NO.	

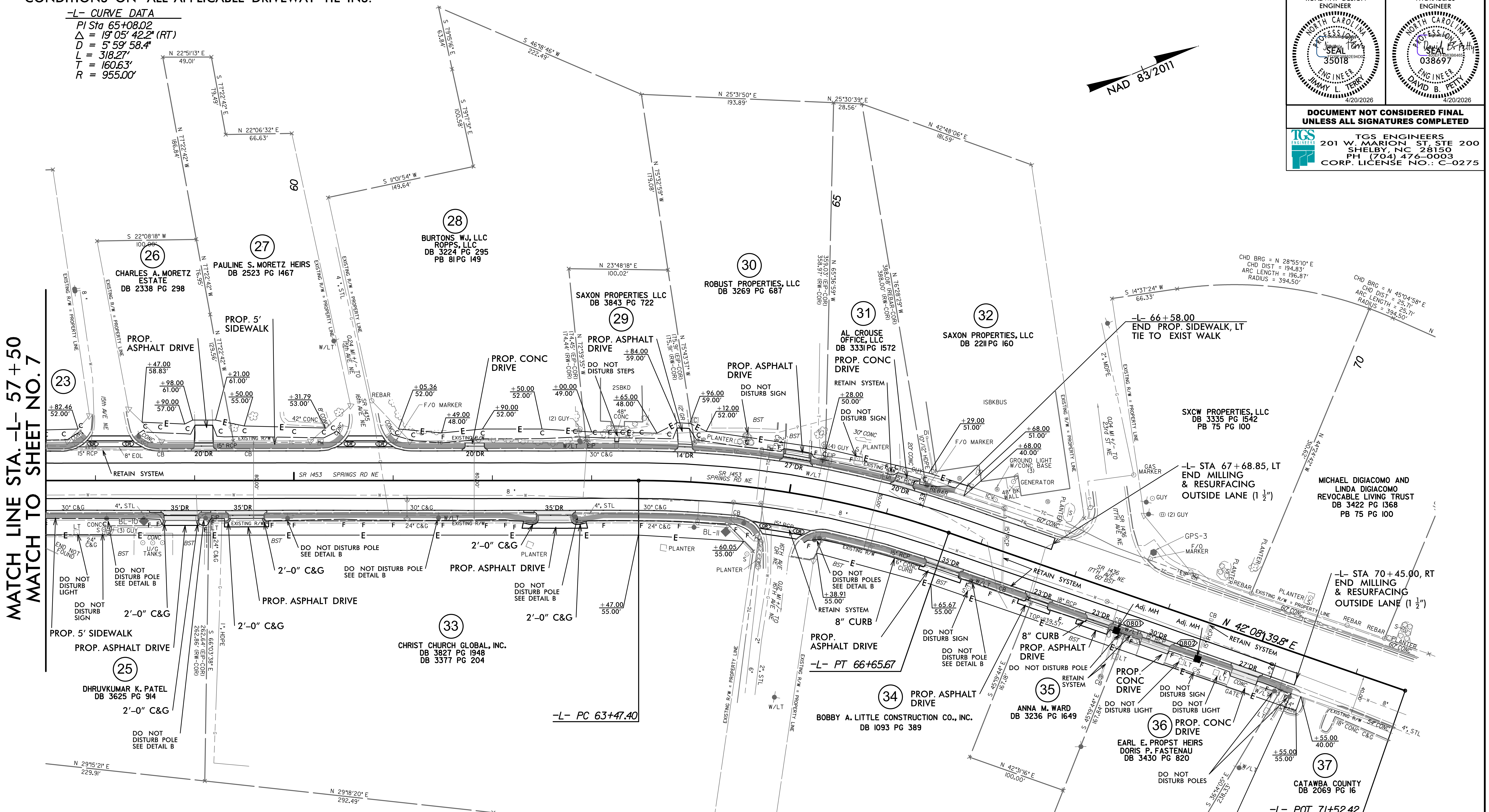
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DocuSigned by: Jimmy Terry SEAL 35018 JIMMY L. TERRY FD39F38882E94D0... 4/20/2026	Signed by: David B. Petty SEAL 038697 DAVID B. PETTY 400EFF4863B6465... 4/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

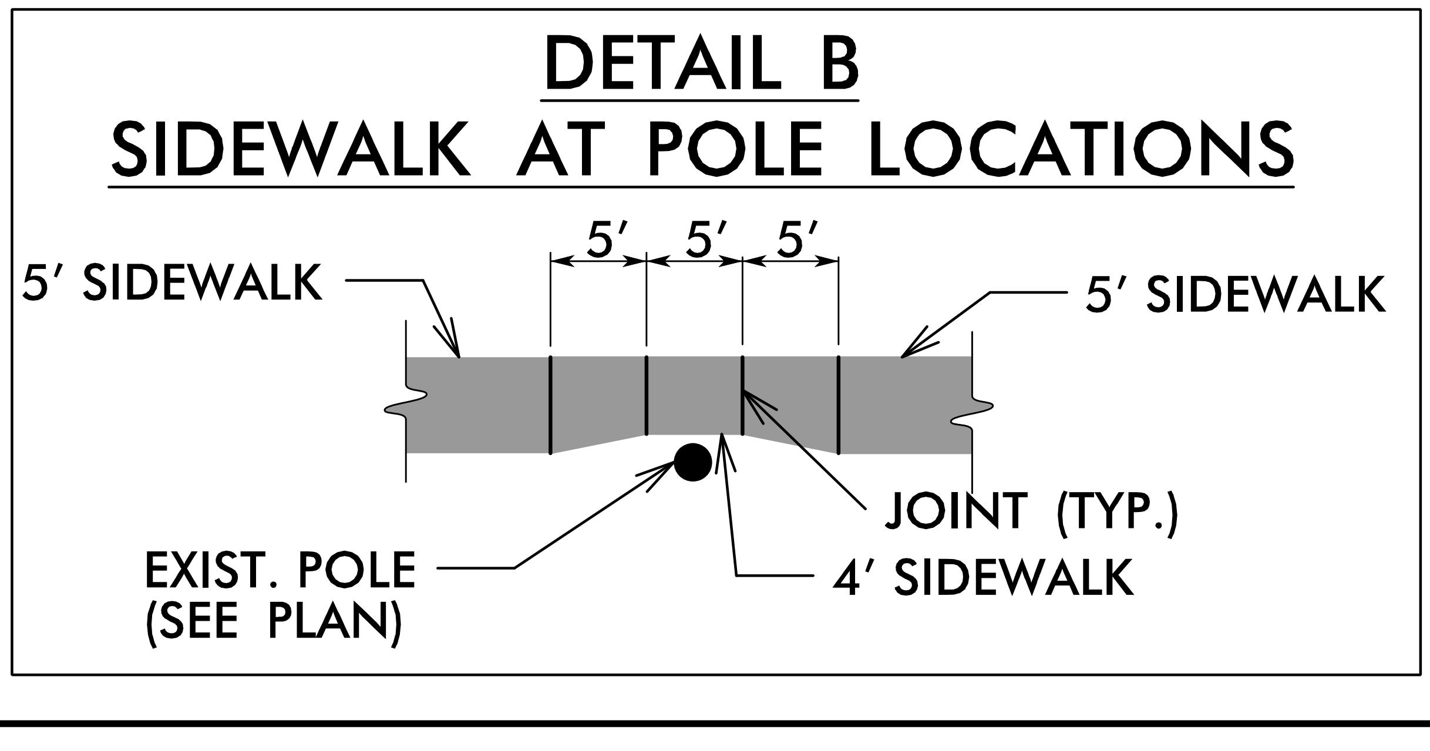
TGS ENGINEERS
201 W. MARION ST, STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NOTE:
CONTRACTOR TO RECONSTRUCT C&G TO MATCH EXISTING CONDITIONS ON ALL APPLICABLE DRIVEWAY TIE-INS.

-L- CURVE DATA
PI Sta 65+08.02
Δ = 19° 05′ 42.2″ (RT)
D = 5° 59′ 58.4″
L = 318.27′
T = 160.63′
R = 955.00′



MATCH LINE STA. -L- 57+50
MATCH TO SHEET NO. 7
REVISIONS
8/17/99
NAD 83/2011
60
65
70
23
+82.46 52.00′
26
CHARLES A. MORETZ ESTATE DB 2338 PG 298
27
PAULINE S. MORETZ HEIRS DB 2523 PG 1467
28
BURTONS WJ, LLC ROPPS, LLC DB 3224 PG 295 PB 81 PG 149
29
SAXON PROPERTIES LLC DB 3843 PG 722
30
ROBUST PROPERTIES, LLC DB 3269 PG 687
31
AL CROUSE OFFICE, LLC DB 3331 PG 1572
32
SAXON PROPERTIES, LLC DB 2211 PG 160
SXCW PROPERTIES, LLC DB 3335 PG 1542 PB 75 PG 100
MICHAEL DIGIACOMO AND LINDA DIGIACOMO REVOCABLE LIVING TRUST DB 3422 PG 1368 PB 75 PG 100
25
DHRUVKUMAR K. PATEL DB 3625 PG 914
33
CHRIST CHURCH GLOBAL, INC. DB 3827 PG 1948 DB 3377 PG 204
34
BOBBY A. LITTLE CONSTRUCTION CO., INC. DB 1093 PG 389
35
ANNA M. WARD DB 3236 PG 1649
36
EARL E. PROPST HEIRS DORIS P. FASTENAU DB 3430 PG 820
37
CATAWBA COUNTY DB 2069 PG 16
PROP. ASPHALT DRIVE
PROP. 5′ SIDEWALK
PROP. CONC DRIVE
DO NOT DISTURB STEPS
DO NOT DISTURB SIGN
RETAIN SYSTEM
DO NOT DISTURB POLE SEE DETAIL B
DO NOT DISTURB POLES SEE DETAIL B
DO NOT DISTURB LIGHT
2′-0″ C&G
8″ CURB
SR 1453 SPRINGS RD NE
SR 1436 17TH AVE NE
15TH AVE NE
16TH AVE NE
-L- 66+58.00 END PROP. SIDEWALK, LT TIE TO EXIST WALK
-L- STA 67+68.85, LT END MILLING & RESURFACING OUTSIDE LANE (1 ½″)
-L- STA 70+45.00, RT END MILLING & RESURFACING OUTSIDE LANE (1 ½″)
-L- PC 63+47.40
-L- PT 66+65.67
-L- POT 71+52.42
N 42° 08′ 39.8″ E
GPS-3
GENERATOR
GROUND LIGHT W/CONC BASE (3)
ISBKBUS
EXISTING R/W = PROPERTY LINE


DETAIL B
SIDEWALK AT POLE LOCATIONS

-L- STA 70+45.00
END PROJECT BL-0066
END PROP. SIDEWALK, RT
TIE TO EXIST WALK

3/27/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Roadway\Proj\BL-0066_Rdy_psh_08.dgn

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2/2025

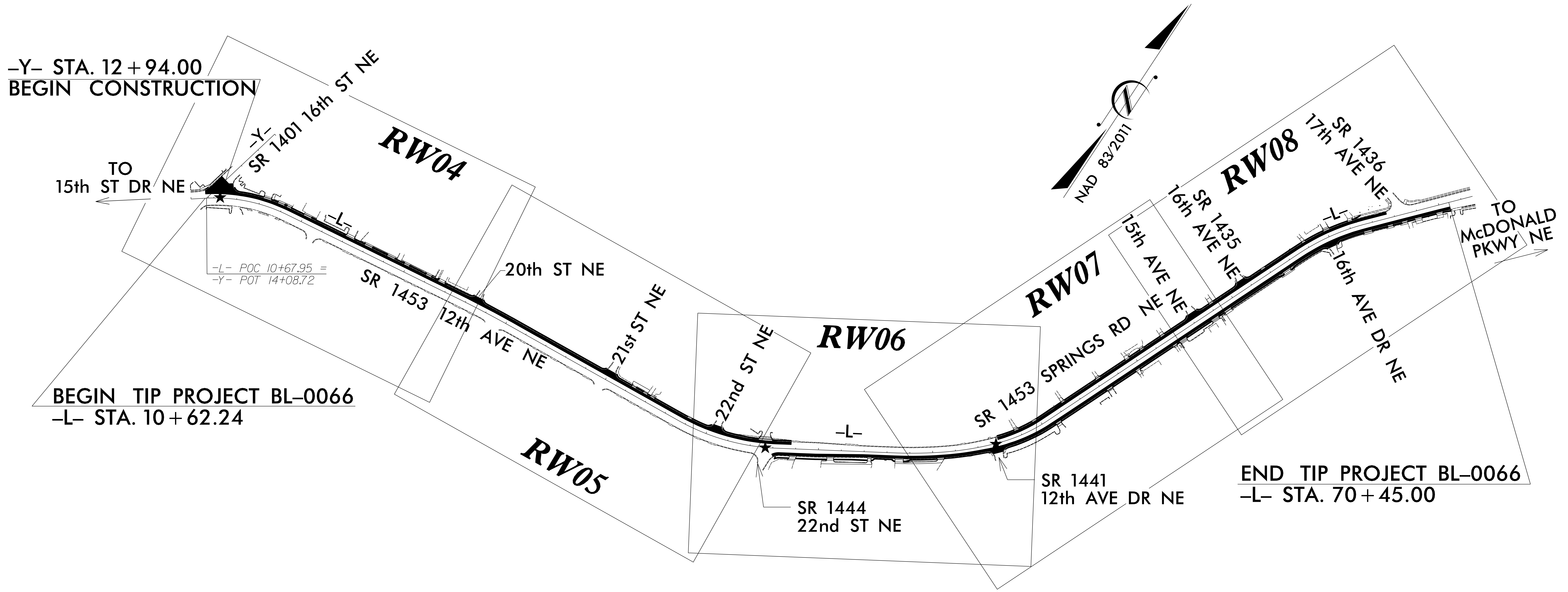
TIP PROJECT: BL-0066

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BL-0066	RW01	9

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

CATAWBA COUNTY (CITY OF HICKORY)



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
TGS ENGINEERS FOR MONUMENT "GPS2"
WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 733,089.598(ft) EASTING: 1,316,443.637(ft)
ELEVATION: 1,162.16(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99985976
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"GPS2" TO -L- STATION 10+00.00 IS
S 18° 55' 38.72" W 103.025(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 10/25/2024

LETTING DATE: 10/15/2026

PROFESSIONAL LAND SURVEYOR

SEAL L-4775 MATHEW T. CORNWELL

Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

SIGNATURE: Date:

12-FEB-2025 14:34
S:\Surveyors\projects\municipal\Hickory\BL-0066\2025 RW STAKING\MTC\BL-0066 RW\bl0066_ls_rw01.dgn
mcornwell AT MCORNWELLLAPTOP

2/2025

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW02C-1

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...
3/4/2025

SEAL L-4775

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	732992.144	1316410.219							
LINE			N 53°28'00.7" E	64.36					
PC	733030.457	1316461.934							
CURVE			N 68°08'27.4" E	362.86	29°20'53.2"(RT)	07°59'59.9"	366.85	187.55	716.20
PT	733165.557	1316798.701							
LINE			N 82°48'54.0" E	827.82					
PC	733269.096	1317620.023							
CURVE			N 84°24'45.2" E	266.23	03°11'42.5"(RT)	01°12'00.0"	266.26	133.17	4774.65
PT	733295.017	1317884.986							
LINE			N 86°00'36.5" E	839.75					
PC	733353.447	1318722.700							
CURVE			N 72°28'39.8" E	446.93	27°03'53.4"(LT)	05°59'58.4"	451.11	229.85	955.00
PT	733488.008	1319148.893							
LINE			N 58°56'43.1" E	516.68					
PC	733754.540	1319591.520							
CURVE			N 55°54'48.9" E	202.04	06°03'48.4"(LT)	02°59'59.2"	202.13	101.16	1910.00
PCC	733867.769	1319758.844							
CURVE			N 47°20'03.9" E	258.88	11°05'41.7"(LT)	04°16'44.4"	259.29	130.05	1339.00
PCC	734043.219	1319949.206							
CURVE			N 32°25'05.3" E	230.36	18°44'15.4"(LT)	08°05'52.4"	231.39	116.74	707.54
PT	734237.678	1320072.701							
LINE			N 23°02'57.6" E	1321.75					
PC	735453.908	1320590.196							
CURVE			N 32°35'48.7" E	316.80	19°05'42.2"(RT)	05°59'58.4"	318.27	160.63	955.00
PT	735720.810	1320760.866							
LINE			N 42°08'39.8" E	486.75					
POT	736081.713	1321087.475							

I, Matthew T. Cornwell, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 10/16/2023
Datum/Epoch: NAD83/2011
Published/Fixed-control use: N/A
Localized around: GPS2
Northing: 733089.598
Easting: 1316443.637
Combined grid factor: 0.99985976
Geoid model: GEOID18
Units: US Survey Feet

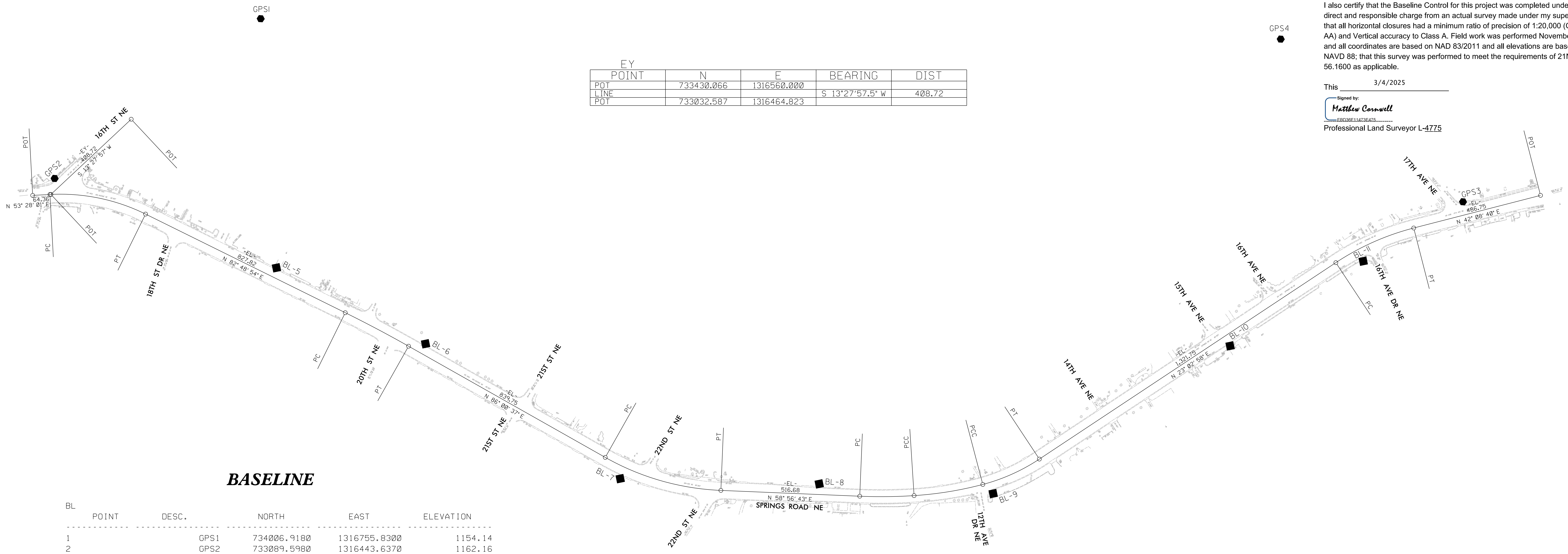
I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed November 2023, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3/4/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...
Professional Land Surveyor L-4775

EY

POINT	N	E	BEARING	DIST
POT	733430.066	1316560.000		
LINE			S 13°27'57.5" W	408.72
POT	733032.587	1316464.823		



BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	GPS1	734006.9180	1316755.8300	1154.14
2	GPS2	733089.5980	1316443.6370	1162.16
5	BL-5	733267.1611	1317314.4116	1151.30
6	BL-6	733337.2979	1317932.6025	1147.99
7	BL-7	733318.1826	1318812.4302	1156.32
8	BL-8	733709.6240	1319440.5081	1146.76
9	BL-9	734036.1191	1319999.8632	1148.82
10	BL-10	734979.1673	1320432.5036	1142.60
11	BL-11	735514.4200	1320671.9999	1144.83
3	GPS3	735902.9510	1320860.0490	1140.37
4	GPS4	736033.6390	1319961.6650	1128.79

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

12-FEB-2025 14:32
S:\Surveyors\Projects\municipal\Hickory\BL-0066\2025 RW STAKING\MTC\BL-0066 RW\bl0066_ls_rw02c-1.dgn
mcornwell AT MCORNWELLAPTOP

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW02D-1

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

SEAL
L-4775
MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Matthew T. Cornwell, PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 3/4/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

Professional Land Surveyor L-4775

REVISIONS

2/2025

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	732992.1439	1316410.2189
PC	10+64.36	733030.4573	1316461.9339
PT	14+31.21	733165.5574	1316798.7011
PC	22+59.04	733269.0962	1317620.0232
PT	25+25.30	733295.0173	1317884.9860
PC	33+65.05	733353.4470	1318722.6998
PT	38+16.16	733488.0076	1319148.8934
PC	43+32.84	733754.5397	1319591.5199
PCC	45+34.97	733867.7688	1319758.8440
PCC	47+94.26	734043.2185	1319949.2063
PT	50+25.65	734237.6783	1320072.7006
PC	63+47.40	735453.9084	1320590.1959
PT	66+65.67	735720.8096	1320760.8657
POT	71+52.42	736081.7128	1321087.4749

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	733430.0659	1316559.9999
POT	14+08.72	733032.5867	1316464.8233

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

12-FEB-2025 10:43
S:\Surveyors\projects\municipal\Hickory\BL-0066\2025 RW STAKING\MTC\BL-0066 RW\bl0066_ls_rw02d-1.dgn
mcornwell AT MCORNWELLLAPTOP

2/2025

REVISIONS

04-MAR-2025 10:10
S:\Surveyors\projects\municipal\Hickory\BL-0066\2025 RW STAKING\MTC\BL-0066 RW\bl0066_ls_rw03e-1.dgn
mcornwell AT MCORNWELLLAPTOP

PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW03E-1

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

SEAL L-4775 MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I , Matthew T. Cornwell , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed February 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3/4/2025.

Signed by:
Matthew Cornwell
EBD36F11473E475...
Professional Land Surveyor L-4775

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST	
L	19+38.00	-55.00	733283.5111	1317294.6284	MAGNAIL
L	19+38.00	-40.00	733268.6289	1317296.5045	PAINT MARK
L	19+55.00	-55.00	733285.6373	1317311.4949	
L	19+55.00	-40.00	733270.7551	1317313.3710	
L	38+01.74	54.20	733433.8124	1319163.7380	CONC MON
L	38+28.00	46.00	733454.7074	1319182.7644	
L	39+52.00	46.00	733518.6735	1319288.9922	
L	40+45.00	45.00	733567.5048	1319368.1471	MAGNAIL
L	41+45.00	42.00	733621.6604	1319452.2671	
L	42+38.00	42.00	733669.6350	1319531.9379	
L	42+50.00	34.00	733682.6787	1319538.0911	
L	43+21.00	34.00	733719.3045	1319598.9151	
L	43+29.00	41.00	733717.4346	1319609.3795	
L	43+83.00	41.00	733746.4195	1319656.2102	MAGNAIL
L	44+08.00	34.00	733766.1531	1319673.7988	
L	45+59.00	32.07	733857.2205	1319797.6821	
L	46+62.00	33.00	733924.8030	1319878.6684	
L	47+35.00	33.00	733976.8648	1319932.3628	
L	47+48.00	35.43	733984.7564	1319943.3805	MAGNAIL
L	47+91.64	-32.06	734062.6810	1319923.5937	CONC MON
L	47+92.00	-34.00	734064.2349	1319922.3869	MAGNAIL
L	48+23.00	-34.19	734086.7624	1319941.5193	
L	48+41.00	36.39	734056.6686	1320007.8547	
L	49+07.00	38.00	734112.3940	1320049.3250	
L	49+60.00	39.15	734159.9474	1320078.6885	
L	49+60.00	50.00	734154.7950	1320088.2314	MAGNAIL
L	49+72.00	40.00	734170.7527	1320085.3606	
L	50+32.00	52.00	734223.1644	1320123.0365	
L	50+32.00	39.63	734228.0095	1320111.6495	
L	50+40.00	39.85	734235.2826	1320114.9889	

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 2025.

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW04

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

SEAL L-4775

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

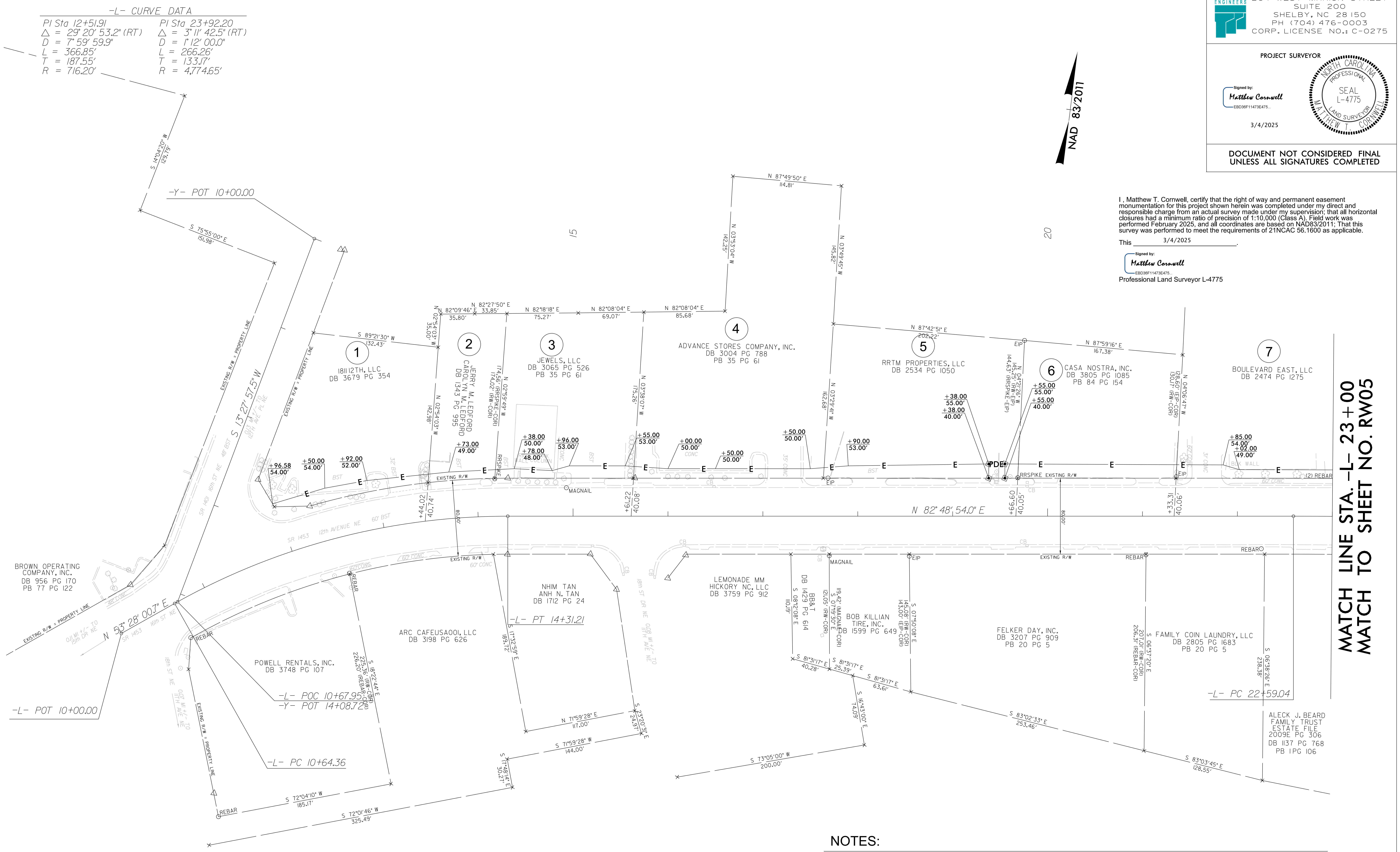
I , Matthew T. Cornwell, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed February 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3/4/2025.

Signed by:
Matthew Cornwell
EBD36F11473E475...
Professional Land Surveyor L-4775

REVISIONS

2/2025



MATCH LINE STA. -L- 23+00
MATCH TO SHEET NO. RW05

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 2025.

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW05

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

NORTH CAROLINA PROFESSIONAL SEAL L-4775 MATTHEW T. CORNWELL

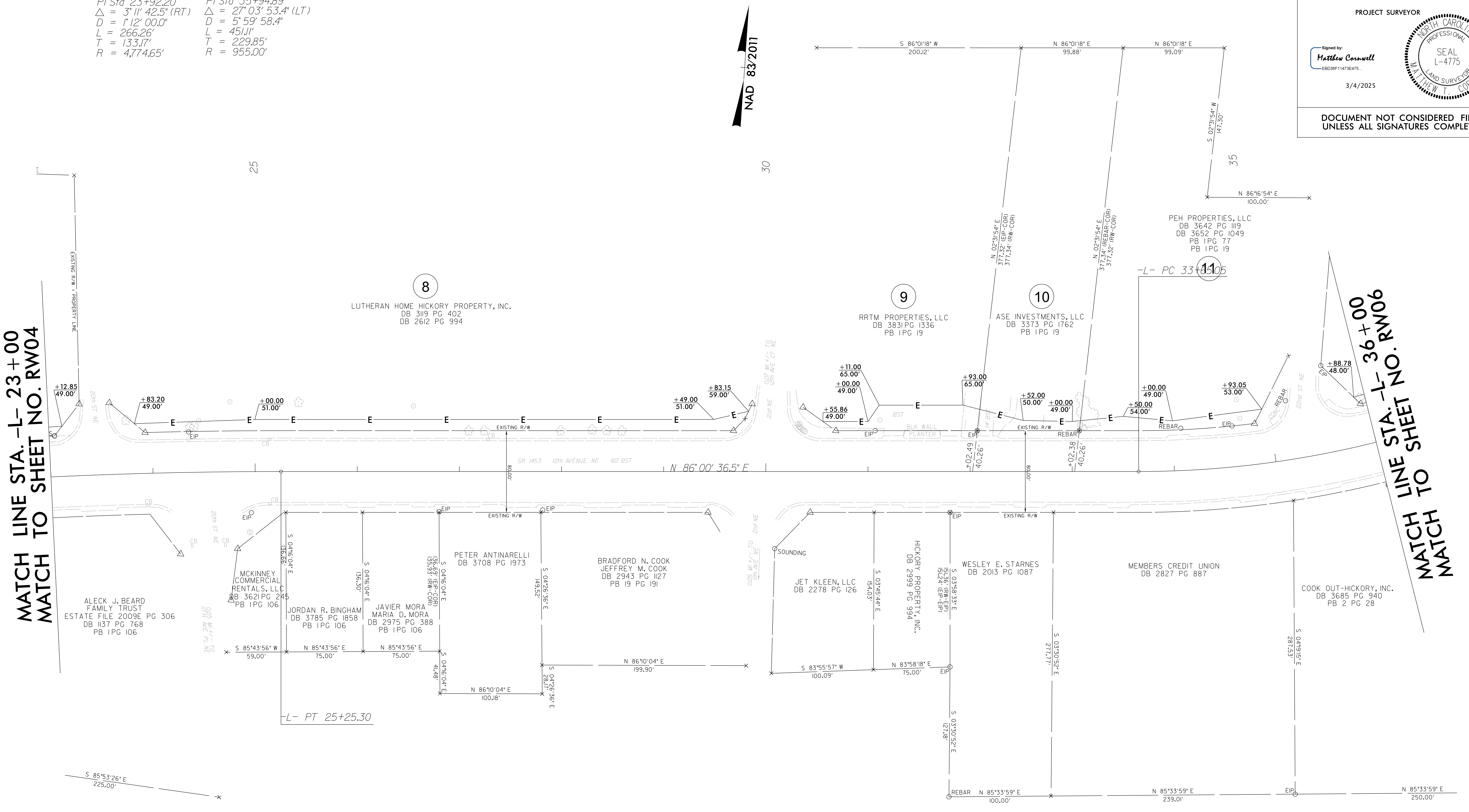
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

2/2025

-L- CURVE DATA

PI Sta 23+92.20	PI Sta 35+94.89
△ = 3° 11' 42.5" (RT)	△ = 27° 03' 53.4" (LT)
D = 1° 12' 00.0"	D = 5° 59' 58.4"
L = 266.26'	L = 451.11'
T = 133.17'	T = 229.85'
R = 4,774.65'	R = 955.00'



I, Matthew T. Cornwell, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed February 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3/4/2025.

Signed by:
Matthew Cornwell
EBD36F11473E475...

Professional Land Surveyor L-4775

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 2025.

Docusign Envelope ID: 4551D2C0-4385-85D1-82F6-343CAF4691F1

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW06

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...

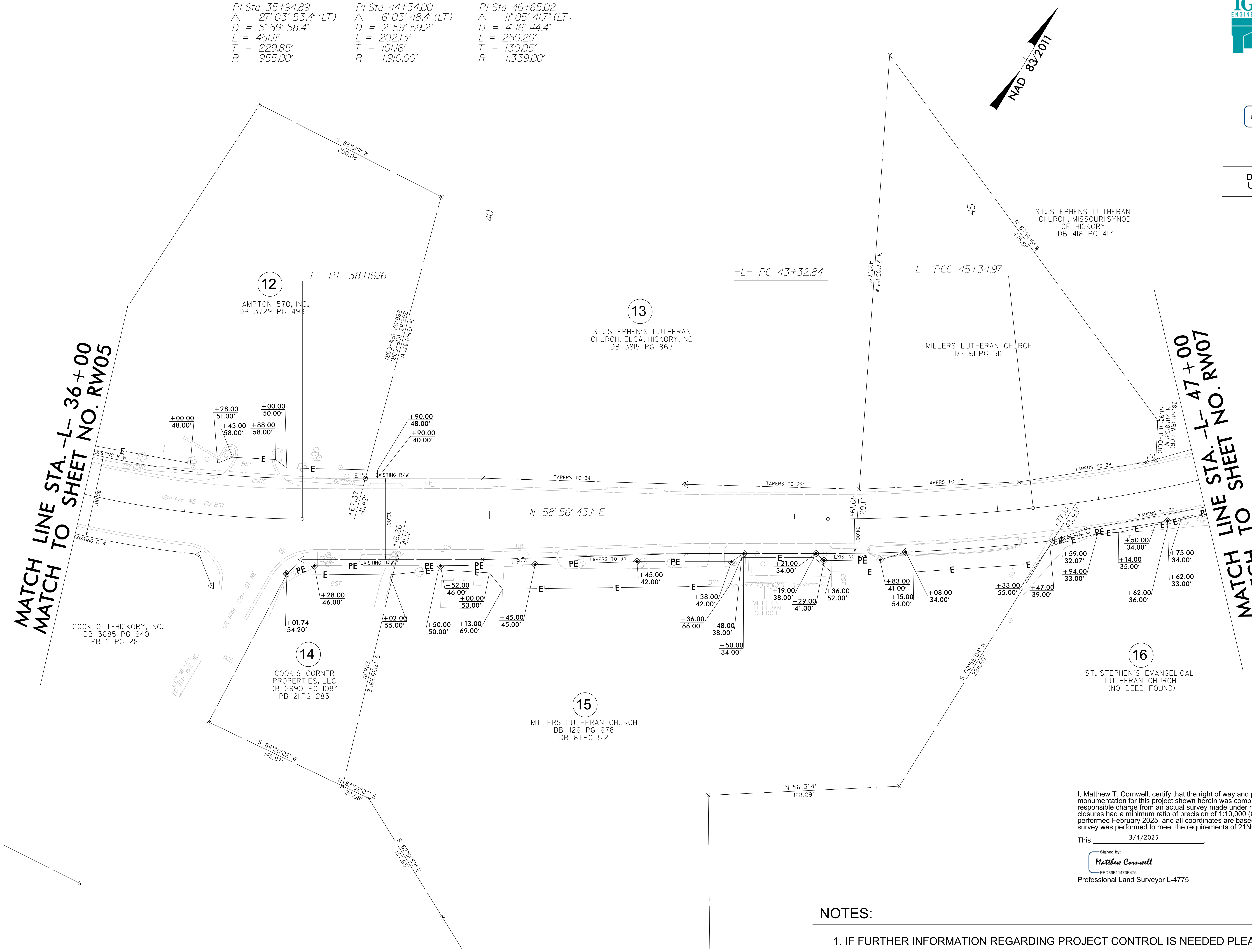
SEAL L-4775 MATTHEW T. CORNWELL

3/4/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L- CURVE DATA

PI Sta 35+94.89	PI Sta 44+34.00	PI Sta 46+65.02
Δ = 27° 03′ 53.4″ (LT)	Δ = 6° 03′ 48.4″ (LT)	Δ = 11° 05′ 41.7″ (LT)
D = 5° 59′ 58.4″	D = 2° 59′ 59.2″	D = 4° 16′ 44.4″
L = 451.11′	L = 202.13′	L = 259.29′
T = 229.85′	T = 101.16′	T = 130.05′
R = 955.00′	R = 1,910.00′	R = 1,339.00′



I, Matthew T. Cornwell, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed February 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3/4/2025.

Signed by:
Matthew Cornwell
EBD36F11473E475...
Professional Land Surveyor L-4775

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 2025.

REVISIONS

2/2025

12-FEB-2025 13:35
S:\Surveyors\Projects\municipal\Hickory\BL-0066\2025 RW STAKING\MTC\BL-0066 RW\bl0066_ls_rw06.dgn
mcornwell AT MCORNWELLLAPTOP

2/2025

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW07

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

SEAL L-4775 MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Matthew T. Cornwell, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed February 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

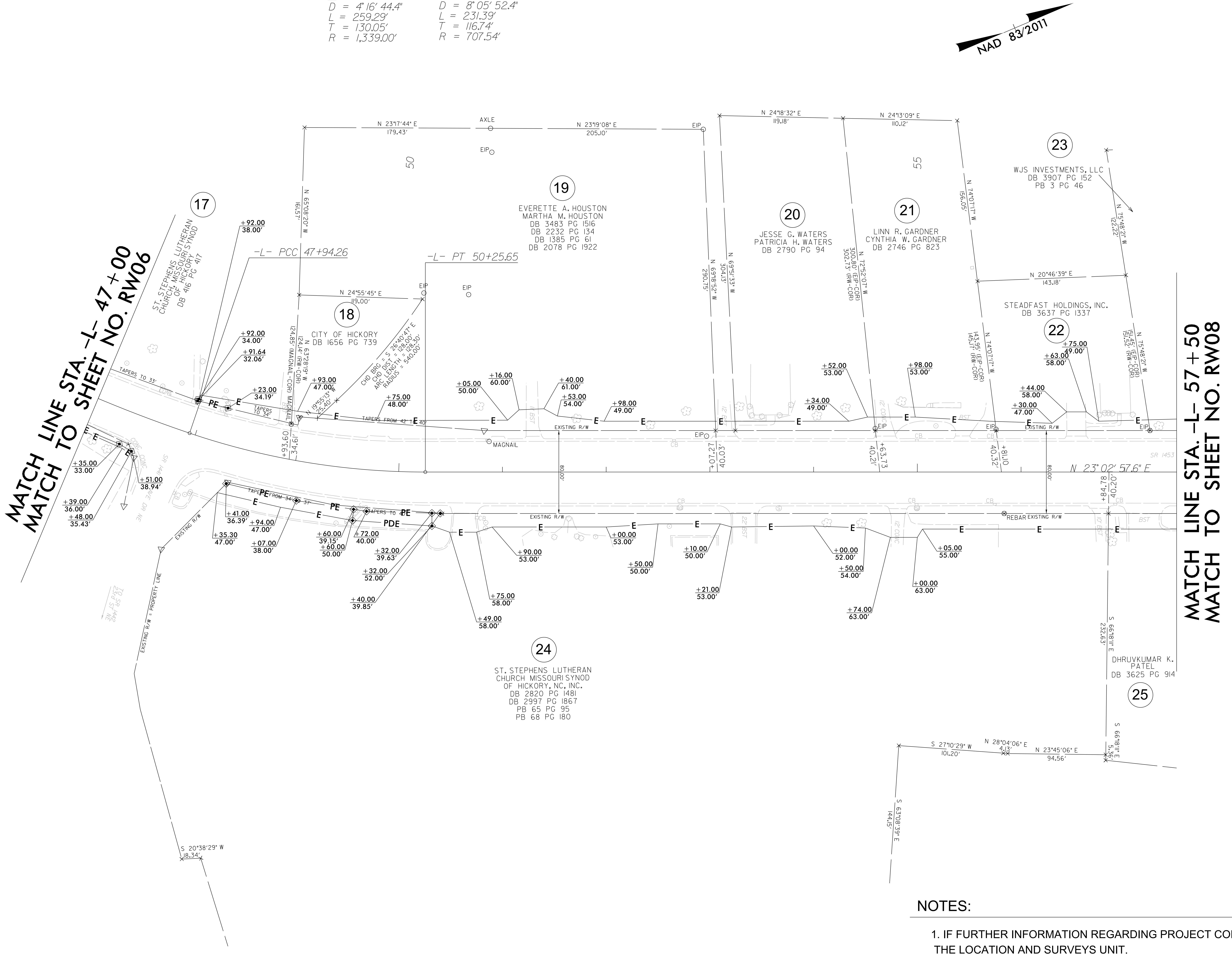
This 3/4/2025.

Signed by:
Matthew Cornwell
EBD36F11473E475...

Professional Land Surveyor L-4775

-L- CURVE DATA

PI Sta 46+65.02	PI Sta 49+11.00
Δ = 11° 05′ 41.7″ (LT)	Δ = 18° 44′ 15.4″ (LT)
D = 4° 16′ 44.4″	D = 8° 05′ 52.4″
L = 259.29′	L = 231.39′
T = 130.05′	T = 116.74′
R = 1,339.00′	R = 707.54′



NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 2025.

04-MAR-2025 10:20
S:\Surveyors\projects\municipal\Hickory\BL-0066\2025 RW STAKING\MTC\BL-0066 RW\bl0066_ls_rw07.dgn
mcornwell AT MCORNWELLLAPTOP

2/2025

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	RW08

Location and Surveys

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT SURVEYOR

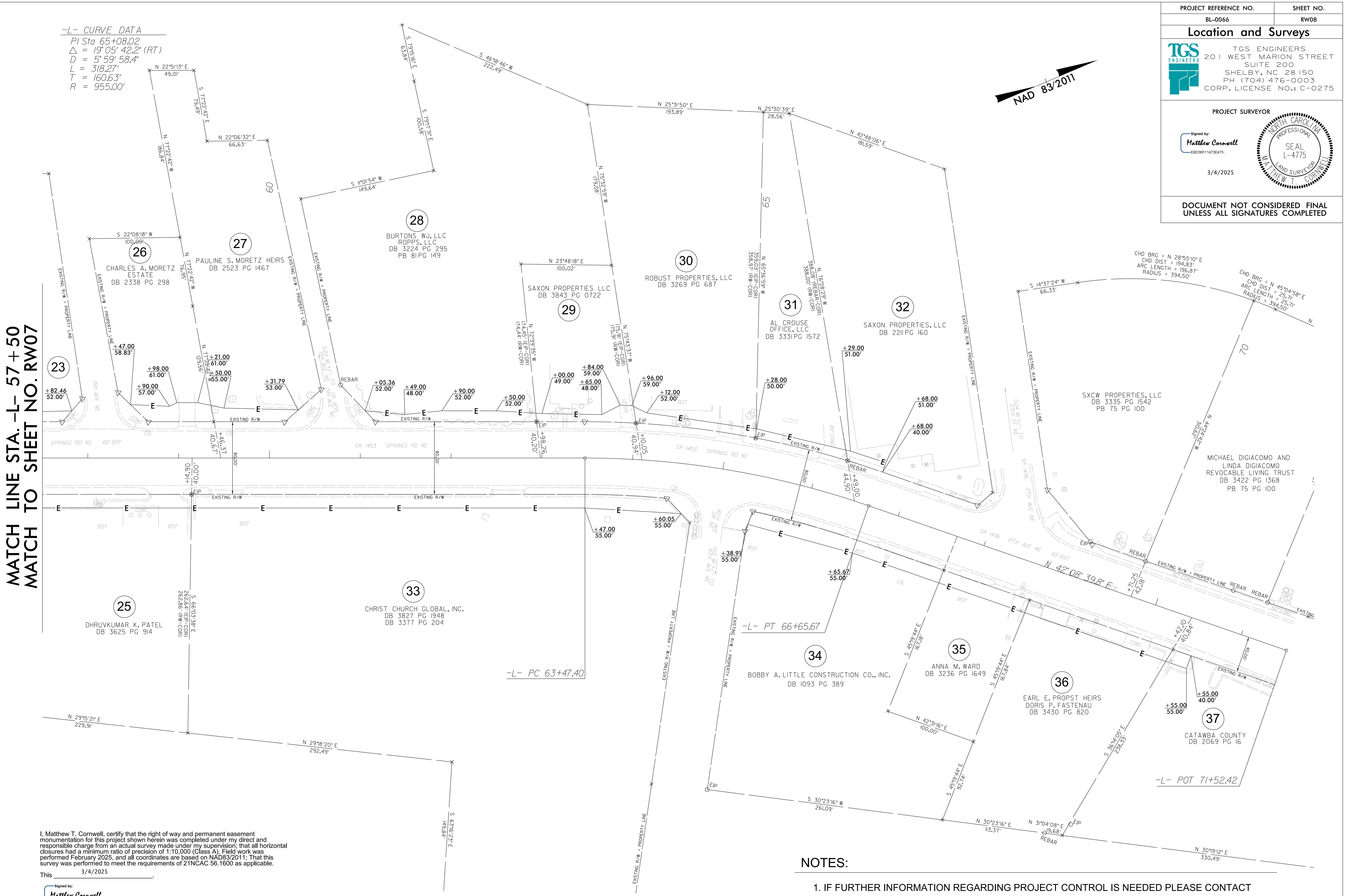
Signed by:
Matthew Cornwell
EBD36F11473E475...

3/4/2025

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS



I, Matthew T. Cornwell, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed February 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3/4/2025.

Signed by:
Matthew Cornwell
EBD36F11473E475...
Professional Land Surveyor L-4775

NOTES:

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3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 2025.

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mcornwell AT MCORNWELLLAPTOP

T.I.P.: BL-0066

TIP NO.	SHEET NO.
BL-0066	PMP-1

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 4/22/2026

SEAL

SEAL 043251 DON A. PARKER

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

STATE OF NORTH CAROLINA
CATAWBA COUNTY

PAVEMENT MARKING AND SIGNING PLAN
CITY OF HICKORY

LOCATION: SIDEWALKS ALONG BOTH SIDES OF SR 1453 (12th AVE. NE/SPRINGS RD NE) BETWEEN SR 1401 (16th ST NE/SANDY RIDGE RD) AND McDONALD PARKWAY

GENERAL NOTES PAVEMENT MARKINGS

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

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- SR 1453 12th AVE NE/SPRINGS RD	THERMOPLASTIC	POLYCARBONATE H-SHAPED MARKERS
-Y- SR 1401 16th ST NE	THERMOPLASTIC	POLYCARBONATE H-SHAPED MARKERS

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

E) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

F) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

I) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.

M) SEE ROADWAY PLANS FOR ALTERNATE CURB RAMP DESIGNS WHEN INDICATED ON PAVEMENT MARKING DETAIL SHEETS.

GENERAL NOTES SIGNING

- SIGNS FURNISHED BY CONTRACTOR
- 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.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- STREET SIGNS TO BE PROVIDED BY CITY OF HICKORY.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKINGS	
THERMOPLASTIC (4",90 MILS)	
T1	(4") WHITE EDGELINE
T2	(4") WHITE SOLID LANE LINE
T3	(4") 10 FT. WHITE SKIP
T13	(4") YELLOW DOUBLE CENTER
THERMOPLASTIC (8", 90 MILS)	
T46	(8") WHITE CROSSWALK LINE
THERMOPLASTIC (24", 90 MILS)	
T61	(24") WHITE STOPBAR
T62	(24") WHITE CROSSWALK LINE
THERMOPLASTIC PAVEMENT MARKING SYMBOLS AND CHARACTERS	
T71	RIGHT TURN ARROW (90 MIL)
T72	STRAIGHT ARROW (90 MIL)
T73	COMBO. LEFT/STRAIGHT ARROW (90 MIL)
T74	COMBO. RIGHT/STRAIGHT ARROW (90 MIL)
T100	ALPHANUMERIC CHARACTER (90 MIL)
GENERIC PAVEMENT MARKING ITEM (SEE SPECIAL PROVISION)	
T103	(24") YIELD LINE TRIANGLE (90 MIL)
PAVEMENT MARKERS - SNOWPLOWABLE (POLYCARBONATE H-SHAPED)	
ME	YELLOW & YELLOW
MF	CRYSTAL & RED

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 2024 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
910.20	SCHOOL MARKED AND UNMARKED CROSSWALKS / SPEED REDUCTION REQUIREMENTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING AND SIGNING PLAN TITLE, GENERAL NOTES, INDEX OF SHEETS, FINAL PAVEMENT MARKING SCHEDULE, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND SUMMARY OF SIGNING QUANTITIES.
PMP-1A	REVISED ROADWAY STANDARD DRAWING (1205D01)
PMP-1B	REVISED ROADWAY STANDARD DRAWING (1250D01)
PMP-1C	TYPE 'E' SIGNS
PMP-2 THRU PMP-6	PAVEMENT MARKING AND SIGNING DETAIL

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN	187	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	276	L.F.
4102000000	904	SIGN ERECTION, TYPE E	20	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	14	EA.

PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

4/22/2026
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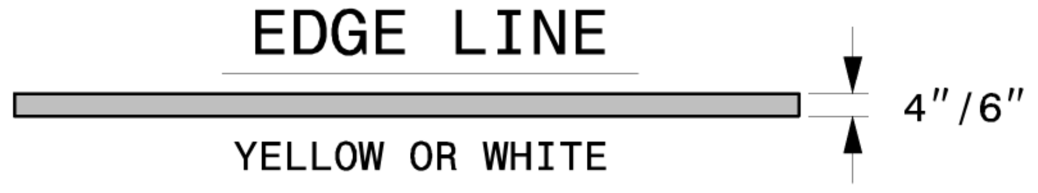
User:cbrannan

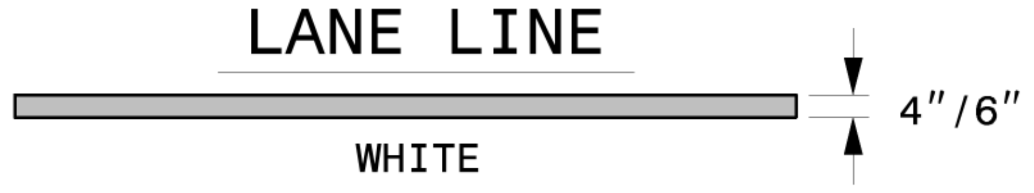
PROJECT REFERENCE NO.	SHEET NO.
BL-0066	PMP-1A

CONTINUOUS LINES

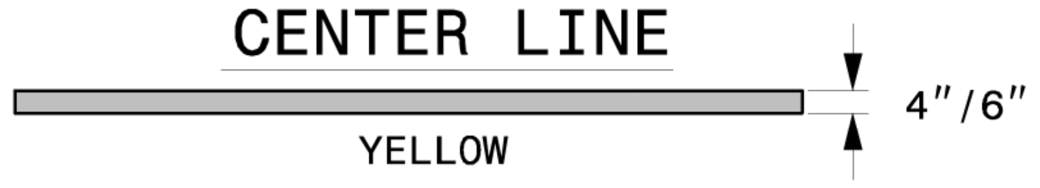
EDGE LINE



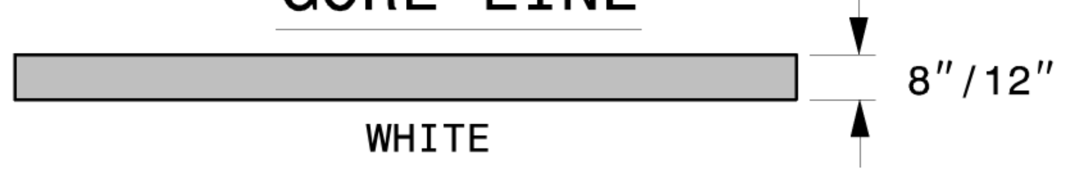
LANE LINE



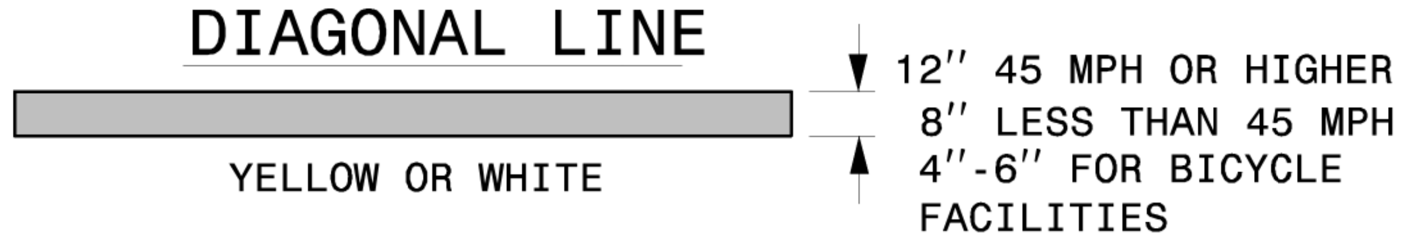
CENTER LINE



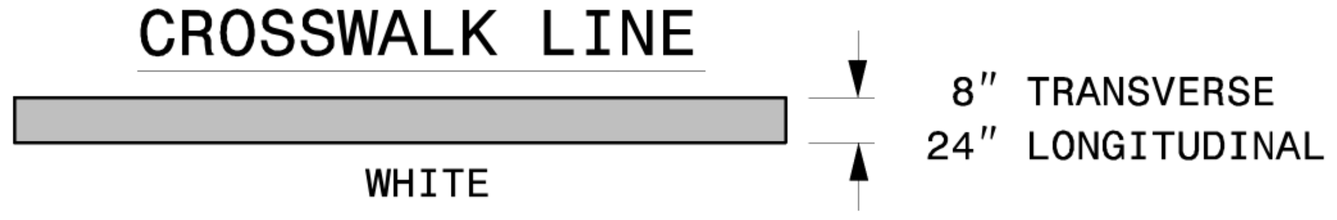
GORE LINE



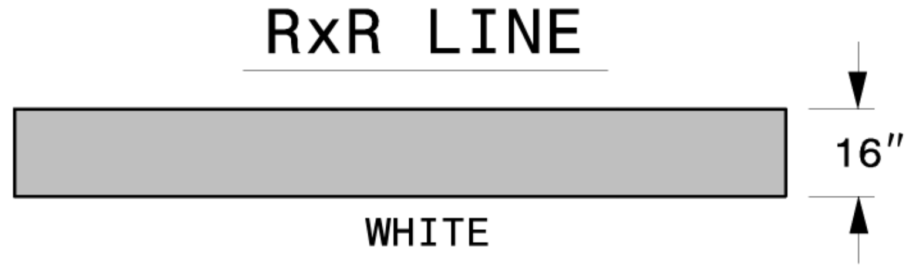
DIAGONAL LINE



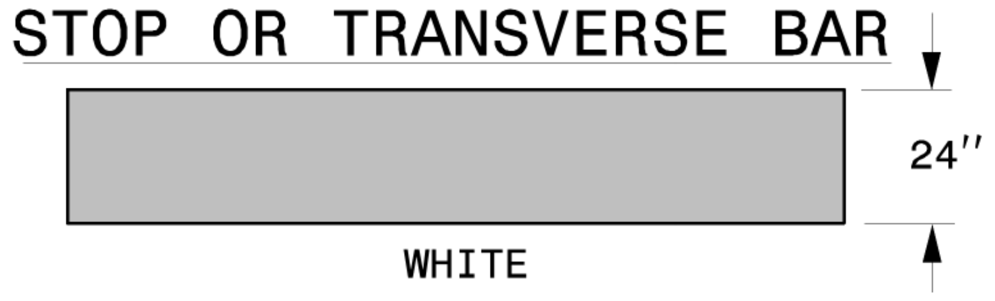
CROSSWALK LINE



RxR LINE

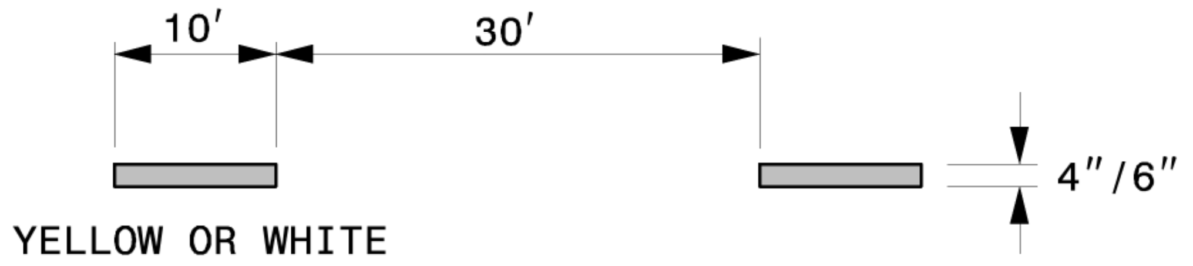


STOP OR TRANSVERSE BAR



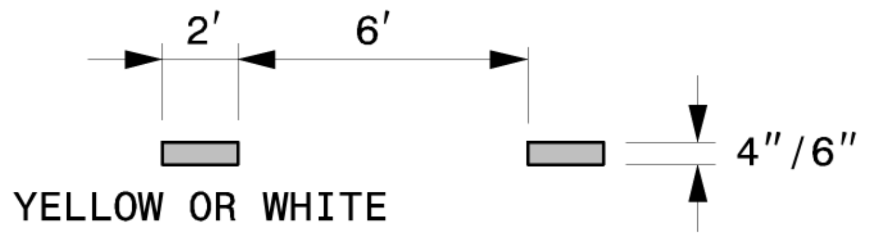
10′-30′/SP SKIP LINE

UNLESS OTHERWISED SHOWN, USE 10′-30′/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.



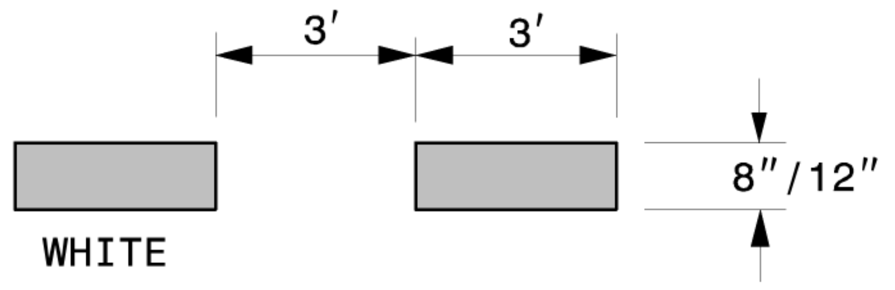
2′-6′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 2′-6′/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND BICYCLE LANE EXTENSIONS.



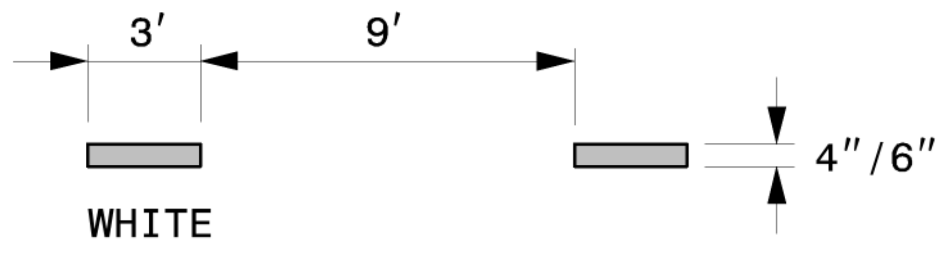
3′-3′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-3′/SP MINI-SKIPS FOR THE WHITE EDGE LINE ENTENSIONS AT ROUNDABOUTS.



3′-9′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-9′/SP MINI-SKIPS FOR MINI-SKIP LANE LINES, LINE EXTENSIONS THROUGH TAPERS, AND MINI-SKIPS USED FOR BICYCLE LANE LINES.



GENERAL NOTES:

1- USE 6″ LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS ″WIDE″ ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

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

ROADWAY DETAIL DRAWING FOR
PAVEMENT MARKINGS
LINE TYPES AND OFFSETS

SHEET 1 OF 2
1205D01

Signed by:
Matthew V Springer, PE
BC60F6E8B584403...
042546
MATTHEW V. SPRINGER
4/20/2026

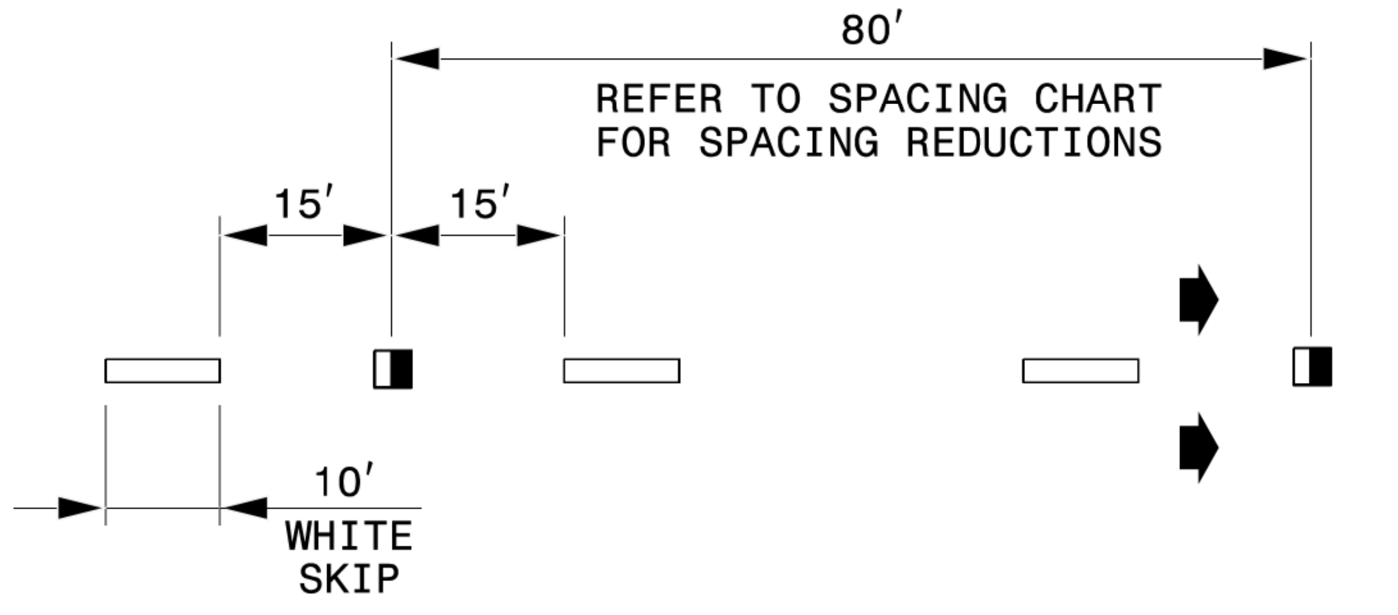
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

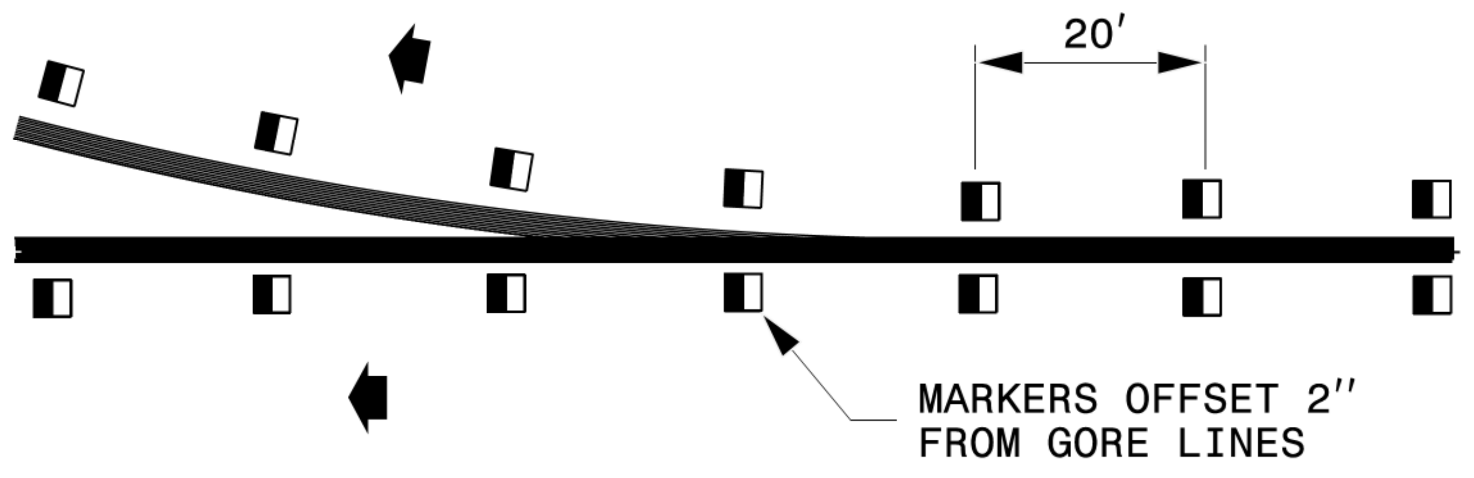
ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	PMP-1B

10′-30′/SP SKIP LINE

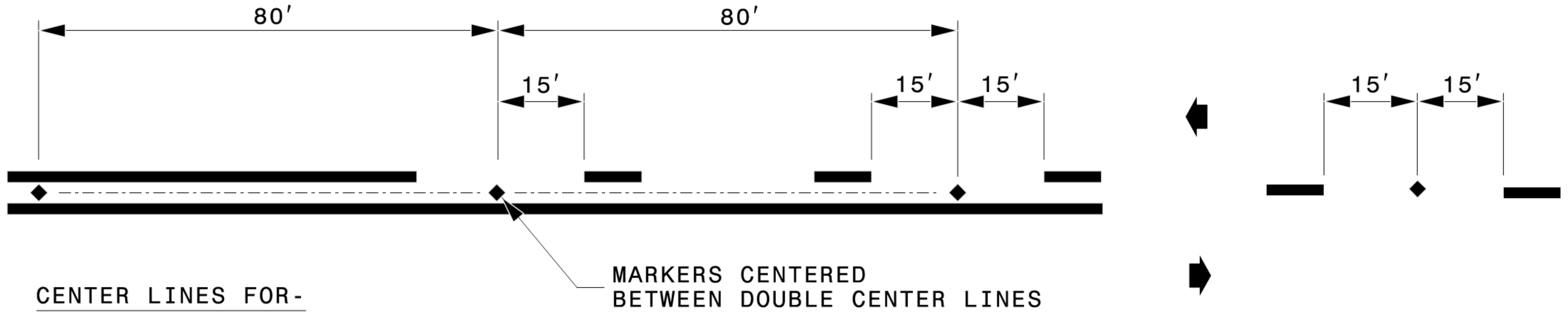


GORE LINES



YELLOW CENTER LINES

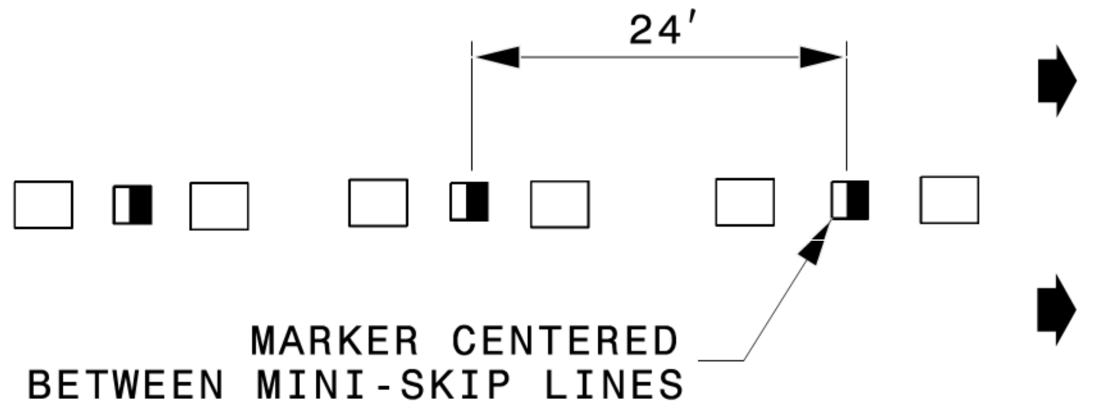
REFER TO SPACING CHART
FOR SPACING REDUCTIONS



CENTER LINES FOR-

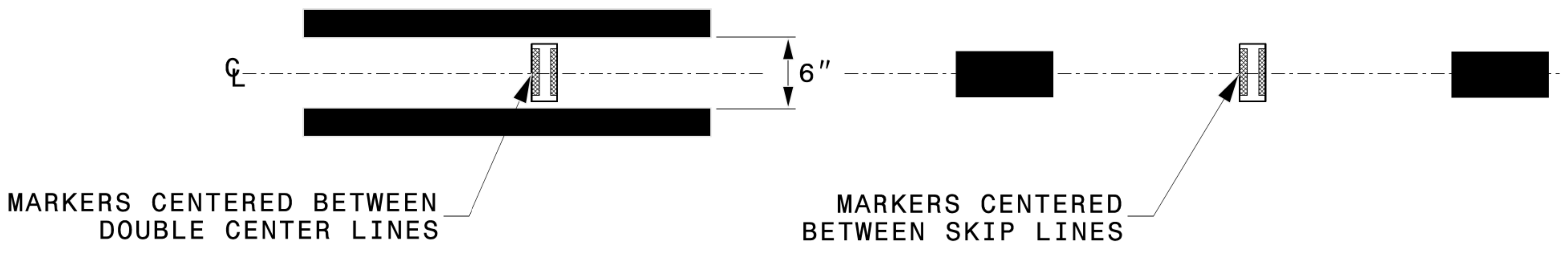
TWO-LANE, TWO-WAY ROADWAYS
UNDIVIDED ROADWAYS
TWO-WAY LEFT TURN LANES

3′-9′/SP MINI-SKIP LINE



DETAIL OF PAVEMENT MARKER PLACEMENT

RAISED REFLECTIVE PAVEMENT MARKERS



LEGEND

◨	CRYSTAL/RED PAVEMENT MARKER
◆	YELLOW/YELLOW PAVEMENT MARKER
➧	DIRECTION OF TRAFFIC FLOW

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

ROADWAY DETAIL DRAWING FOR
RAISED PAVEMENT MARKERS
INSTALLATION SPACING

SHEET 2 OF 3
1250D01

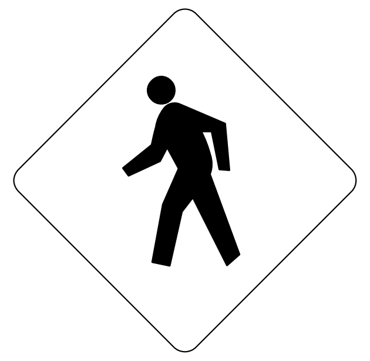
Matthew V. Springer, PE
042546
MATTHEW V. SPRINGER
4/20/2026

CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

401 QUANTITY REQ'D 1

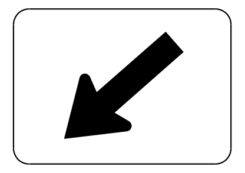


36 X 36
W11-2

YELLOW/GREEN REFLECTIVE SHEETING

ONE "U" POSTS PER SIGN

402 QUANTITY REQ'D 1

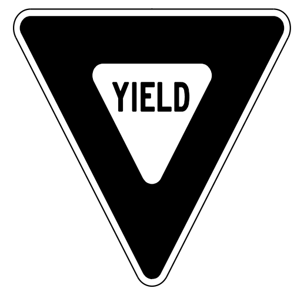


21 X 15
W16-7PL

YELLOW/GREEN REFLECTIVE SHEETING

MOUNT BELOW SIGN 401
IN 1 INSTALLATION

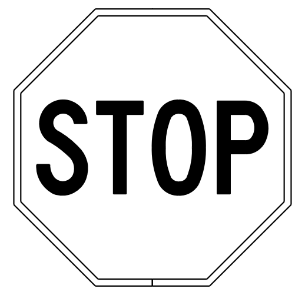
403 QUANTITY REQ'D 1



48 X 48 X 48
R1-2

ONE "U" POSTS PER SIGN

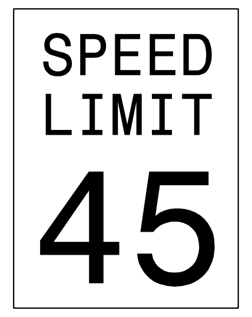
404 QUANTITY REQ'D 7



36 X 36
R1-1

ONE "U" POSTS PER SIGN

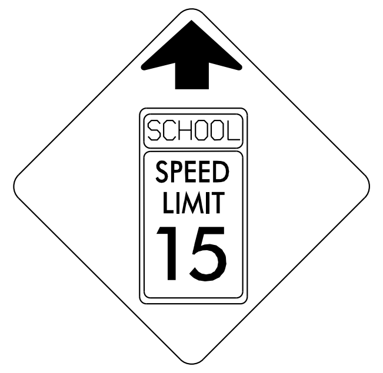
405 QUANTITY REQ'D 2



30 X 36
R2-1

ONE "U" POST PER SIGN

406 QUANTITY REQ'D 2

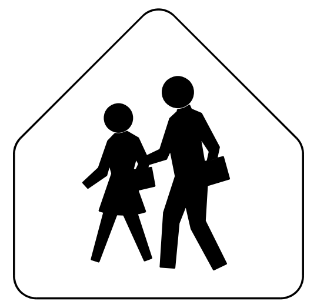


36 X 36
S4-5

YELLOW/GREEN REFLECTIVE SHEETING

ONE "U" POSTS PER SIGN

407 QUANTITY REQ'D 2

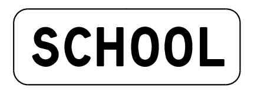


36 X 36
S1-1

YELLOW/GREEN REFLECTIVE SHEETING

ONE "U" POSTS PER SIGN

408 QUANTITY REQ'D 4



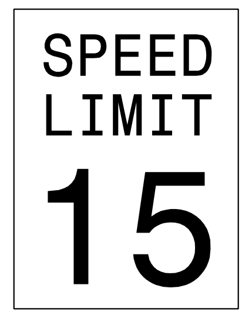
24 X 9
S4-3P

YELLOW/GREEN REFLECTIVE SHEETING

MOUNT BELOW SIGN 407
IN 2 INSTALLATIONS

MOUNT ABOVE SIGN 409
IN 2 INSTALLATIONS

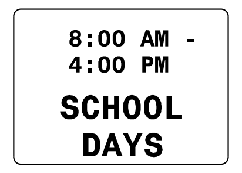
409 QUANTITY REQ'D 2



30 X 36
R2-1

ONE "U" POST PER SIGN

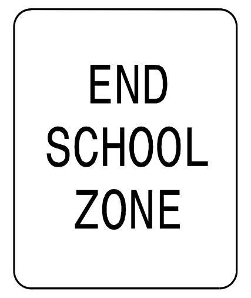
410 QUANTITY REQ'D 2



SNC4-1a

MOUNT BELOW SIGN 409
IN 2 INSTALLATIONS

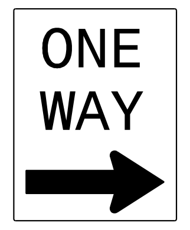
411 QUANTITY REQ'D 2



24 X 30
S5-2

ONE "U" POSTS PER SIGN

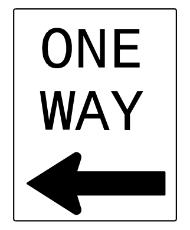
412 QUANTITY REQ'D 1



24 X 30
R6-2R

ONE "U" POSTS PER SIGN

413 QUANTITY REQ'D 1



24 X 30
R6-2L

MOUNT BACK-TO-BACK WITH SIGN 412
IN 1 INSTALLATION

TIP NO.	SHEET NO.
BL-0066	PMP-1C

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 4/22/2026

SEAL

SEAL 043251 DON A. PARKER

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

TGS ENGINEERS
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

TYPE "E" SIGNS

4/22/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Traffic\Pavement Markings\BL-0066_Sgn_PMP_01A.dgn
User:cbrannan

NOTE:

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. ALL PROPOSED SIGNS TO BE MOUNTED ON ONE U-CHANNEL POST UNLESS OTHERWISE NOTED

TIP NO.	SHEET NO.
BL-0066	PMP-2

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DATE: 4/22/2026

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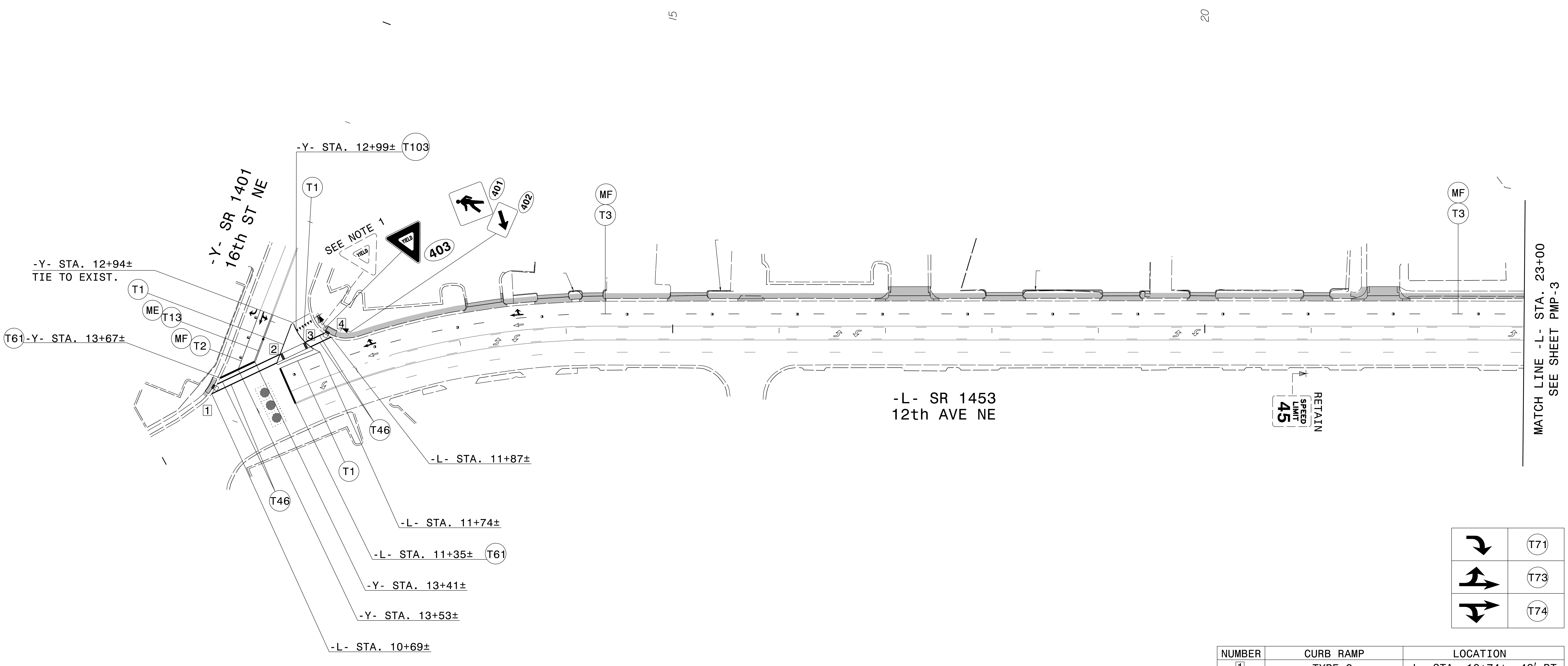
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275



⤵	T71
↱	T73
⇄	T74

NUMBER	CURB RAMP	LOCATION
1	TYPE 2	-L- STA. 10+74±, 42′ RT
2	TYPE 7	-L- STA. 11+40±, 39′ RT
3	TYPE 7	-L- STA. 11+64±, 40′ LT
4	TYPE 1A	-L- STA. 11+85±, 44′ LT

PAVEMENT MARKING AND SIGNING DETAIL

4/22/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Traffic\Pavement Markings\BL-0066_Sgn_PMP_02.dgn
User:cbrannan

NOTE:

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL

2. ALL PROPOSED SIGNS TO BE MOUNTED ON ONE U-CHANNEL POST UNLESS OTHERWISE NOTED

TIP NO.	SHEET NO.
BL-0066	PMP-3

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 4/22/2026

SEAL

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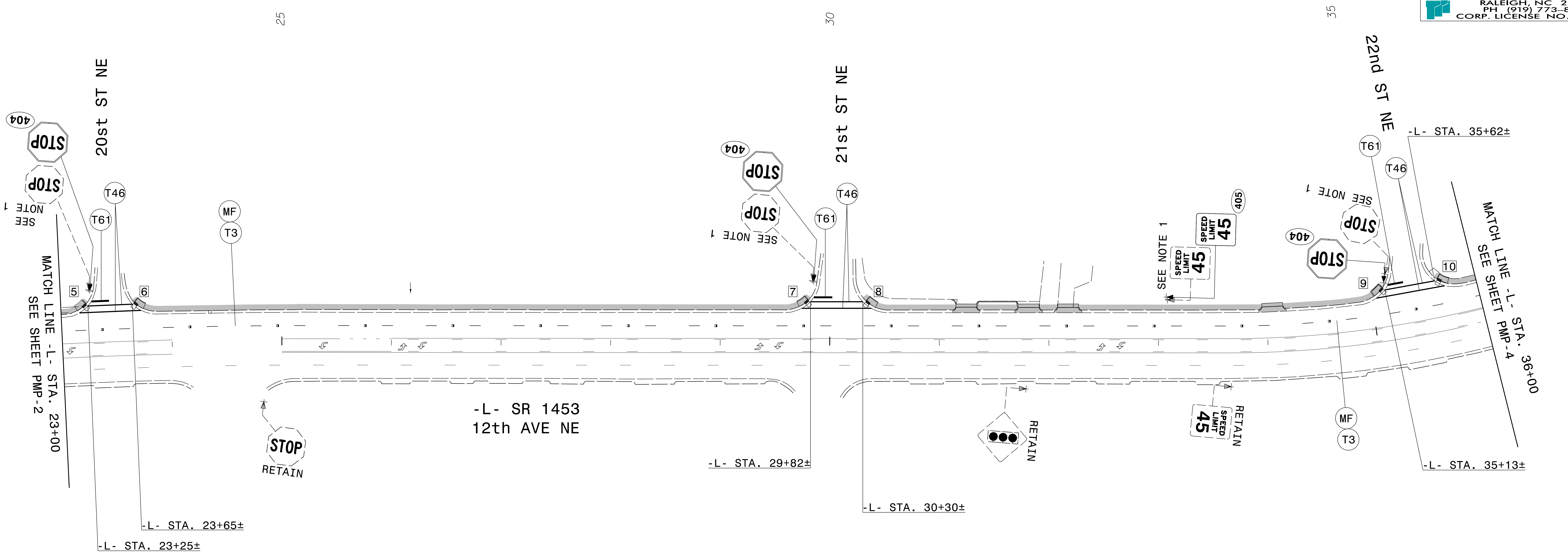
TGS ENGINEERS
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275



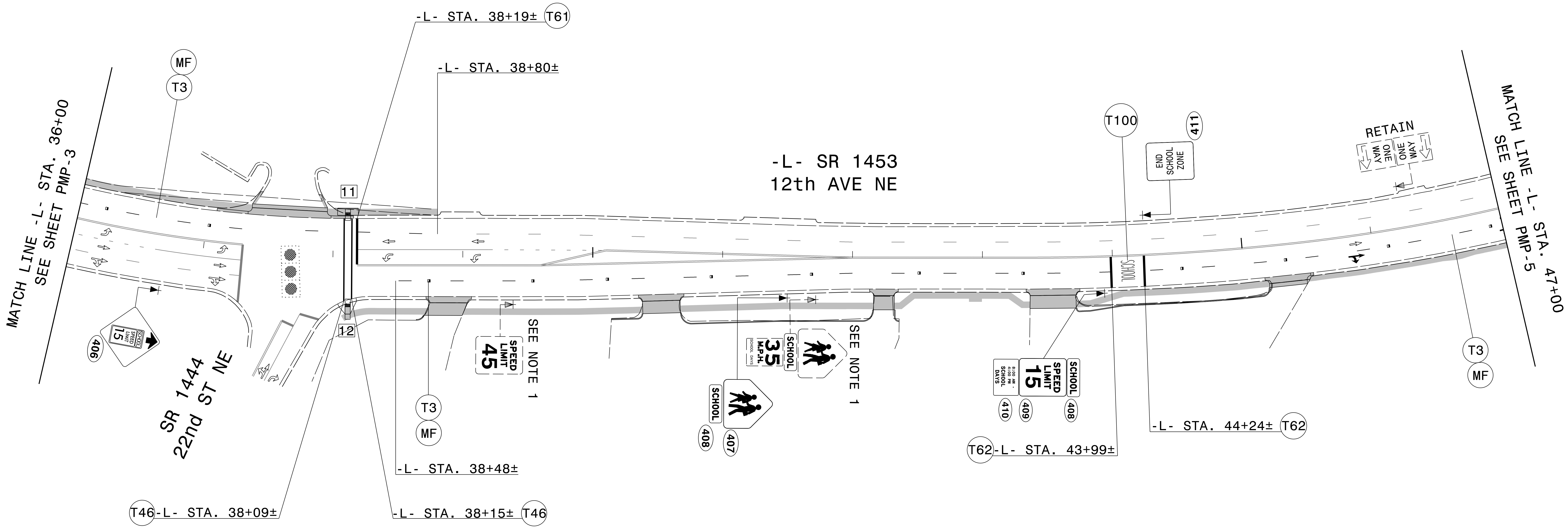
NUMBER	CURB RAMP	LOCATION
5	TYPE 1A	-L- STA. 23+21±, 40' LT
6	TYPE 1A	-L- STA. 23+68±, 40' LT
7	TYPE 1A	-L- STA. 29+79±, 40' LT
8	TYPE 1A	-L- STA. 30+35±, 40' LT
9	TYPE 1A	-L- STA. 35+10±, 40' LT
10	TYPE 1A	-L- STA. 35+66±, 40' LT

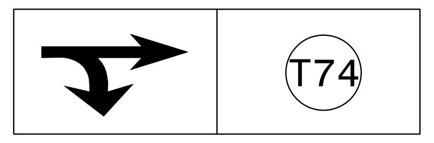
PAVEMENT MARKING AND SIGNING DETAIL

4/22/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Traffic\Pavement Markings\BL-0066_Sgn_PMP_03.dgn
User:cbrannan

NOTE:

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. ALL PROPOSED SIGNS TO BE MOUNTED ON ONE U-CHANNEL POST UNLESS OTHERWISE NOTED





NUMBER	CURB RAMP	LOCATION
11	TYPE 1A	-L- STA. 38+12±, 32′ LT
12	TYPE 1A	-L- STA. 38+12±, 35′ RT

TIP NO.	SHEET NO.
BL-0066	PMP-4

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75DB9E90ADEF440...

DATE: 4/22/2026

SEAL

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(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

PAVEMENT MARKING AND SIGNING DETAIL

4/22/2026
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User:cbrannan

TIP NO.	SHEET NO.
BL-0066	PMP-5

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DATE: 4/22/2026

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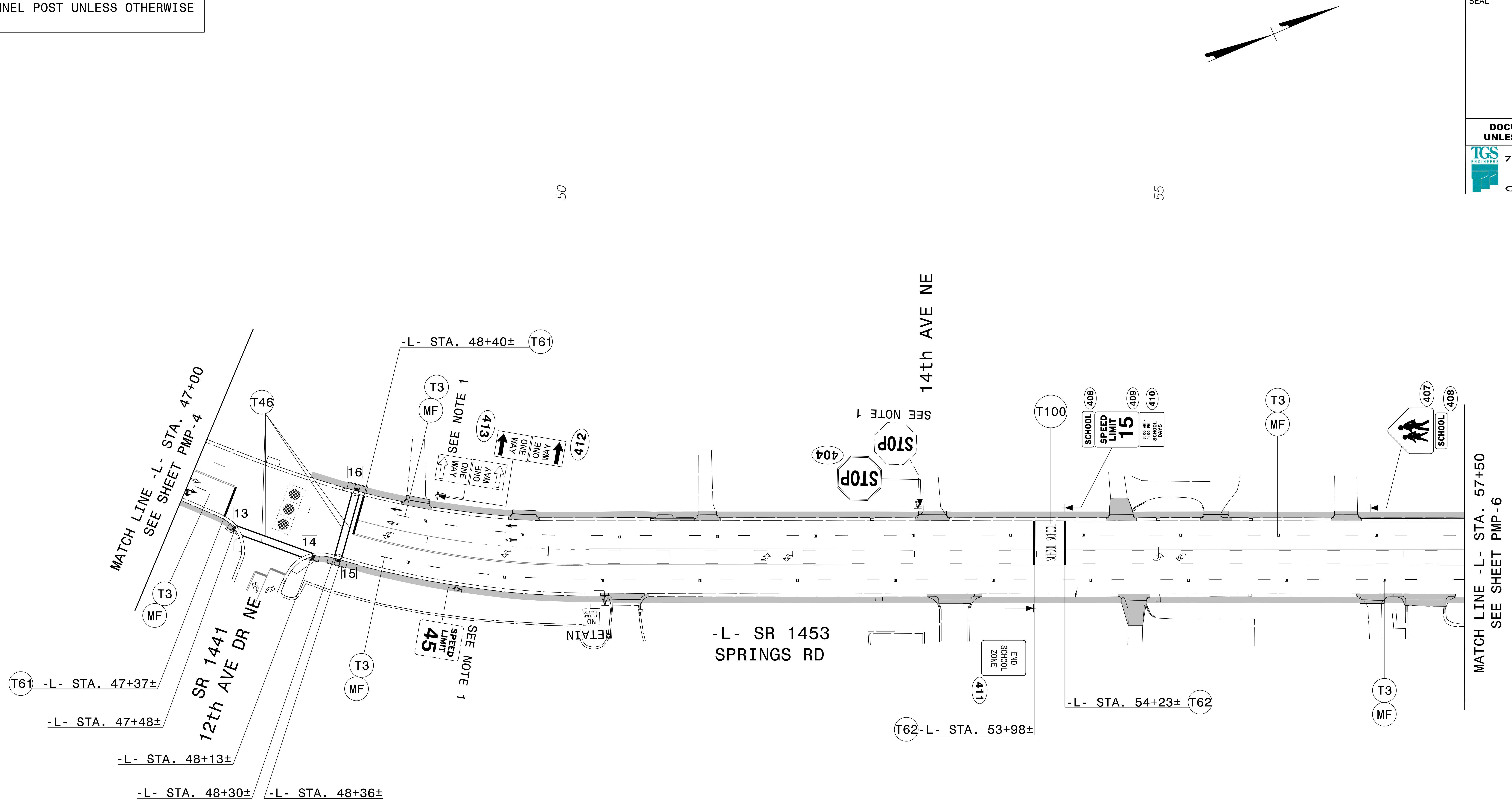
TGS ENGINEERS
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

NOTE:

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. ALL PROPOSED SIGNS TO BE MOUNTED ON ONE U-CHANNEL POST UNLESS OTHERWISE NOTED



→	T72
↰	T74
SCHOOL	T100

NUMBER	CURB RAMP	LOCATION
13	TYPE 1	-L- STA. 47+48±, 33' RT
14	TYPE 1	-L- STA. 48+13±, 33' RT
15	TYPE 2	-L- STA. 48+33±, 29' RT
16	TYPE 2	-L- STA. 48+33±, 29' LT

PAVEMENT MARKING AND SIGNING DETAIL

4/22/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Traffic\Pavement Markings\BL-0066_Sgn_PMP_05.dgn
User:cbrannan

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TIP NO.	SHEET NO.
BL-0066	PMP-6

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DATE: 4/22/2026

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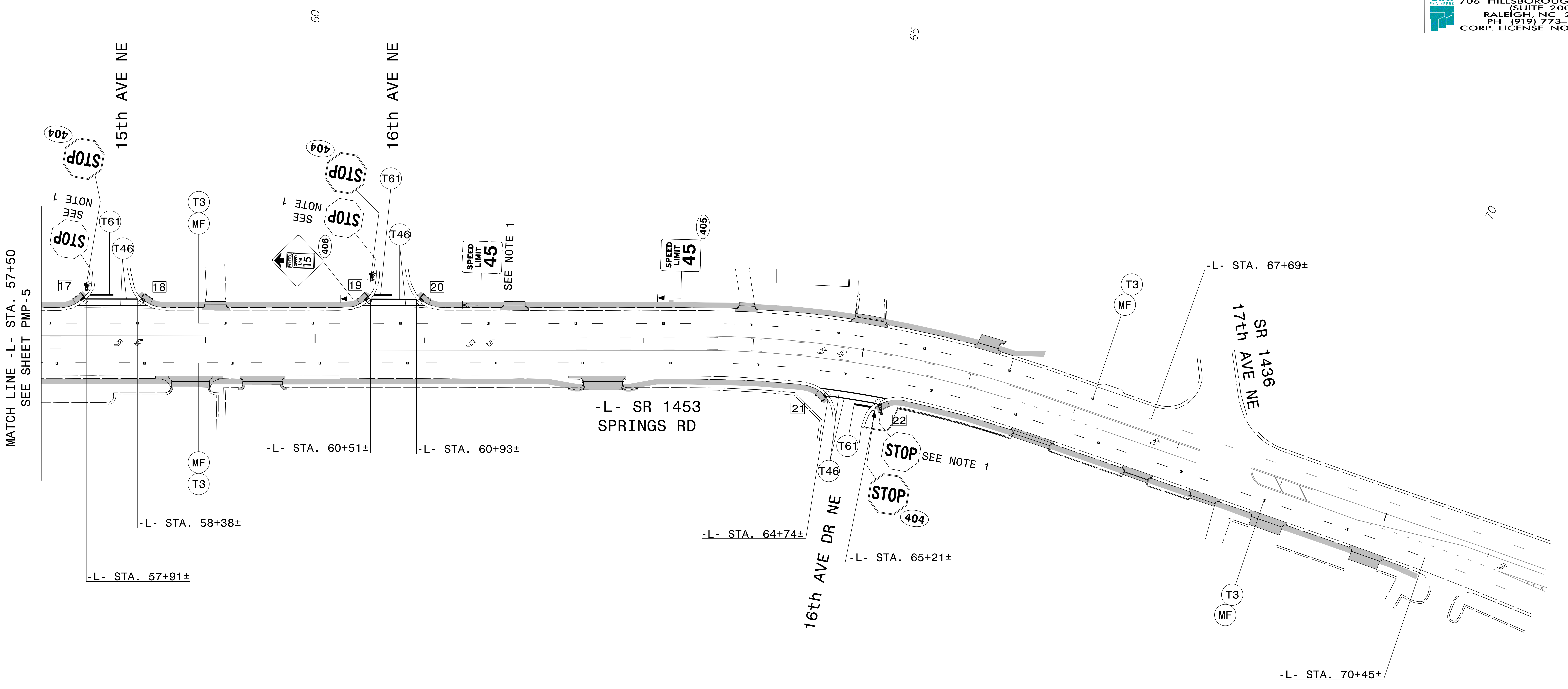
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

NOTE:

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. ALL PROPOSED SIGNS TO BE MOUNTED ON ONE U-CHANNEL POST UNLESS OTHERWISE NOTED



NUMBER	CURB RAMP	LOCATION
17	TYPE 1A	-L- STA. 57+88±, 39′ LT
18	TYPE 1A	-L- STA. 58+42±, 39′ LT
19	TYPE 1A	-L- STA. 60+48±, 39′ LT
20	TYPE 1A	-L- STA. 60+96±, 39′ LT
21	TYPE 1A	-L- STA. 64+71±, 39′ RT
22	TYPE 1A	-L- STA. 65+23±, 39′ RT

PAVEMENT MARKING AND SIGNING DETAIL

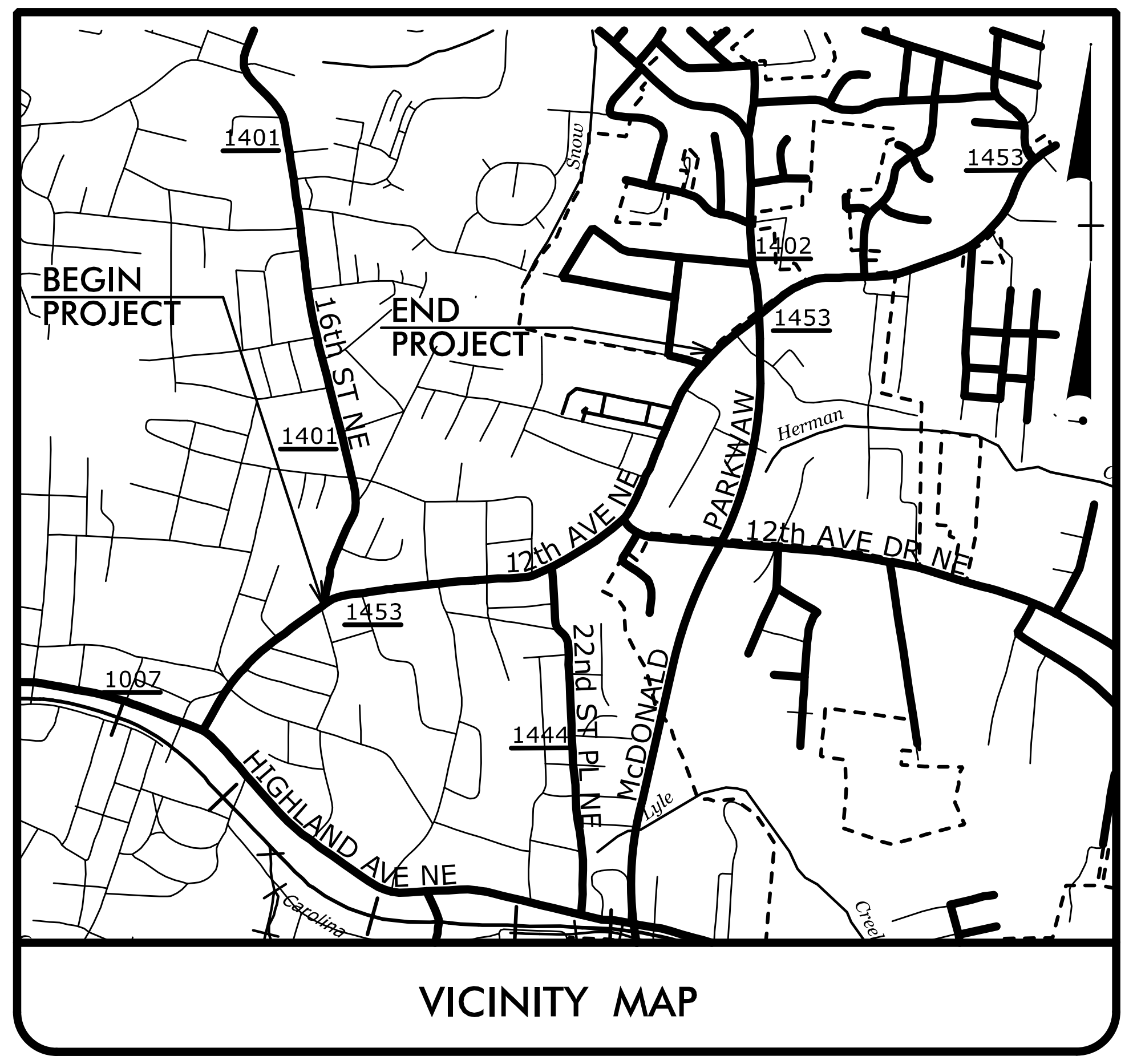
4/22/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Traffic\Pavement Markings\BL-0066_Sgn_PMP_06.dgn
User:cbrannan

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	BL-0066	EC-1

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

CATAWBA COUNTY

PLAN FOR PROPOSED
EROSION CONTROL



VICINITY MAP

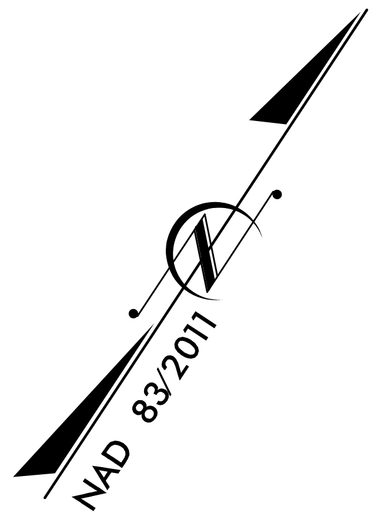
LOCATION: SIDEWALKS ALONG BOTH SIDES OF SR 1453 (12TH AVE NE/SPRINGS RD NE) BETWEEN SR 1401 (16TH ST NE/SANDY RIDGE RD) AND MCDONALD PARKWAY NE

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

EROSION AND SEDIMENT CONTROL MEASURES

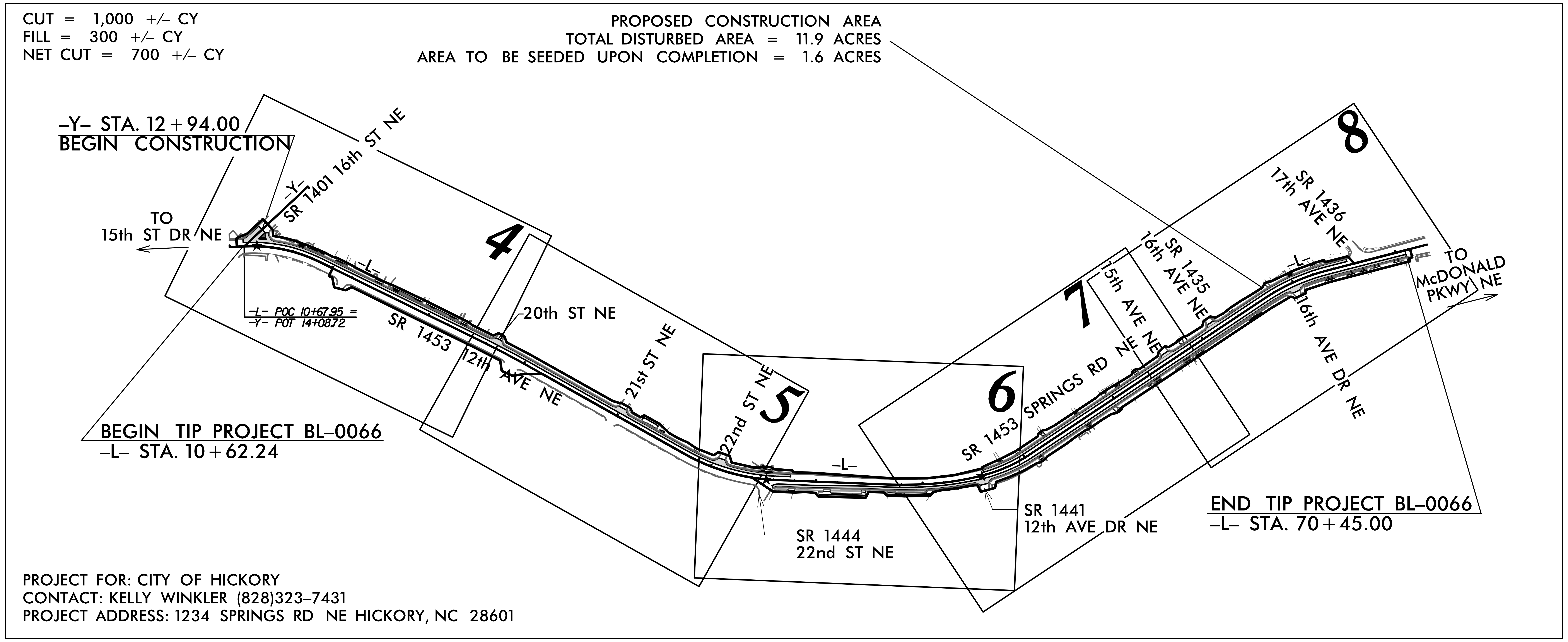
Refer to NC DEQ Erosion & Sediment Control Planning & Design Manual

Std. #	Description	Symbol
6.20	Temporary Diversion	→ TD →
6.22	Diversion Dike (Perimeter Protection)	→ CWD →
6.32	Temporary Slope Drains	⊤ ← ←
6.41	Outlet Stabilization Structures	▨ ▽▽
6.41 + 6.86	Outlet Stabilization Structures with Flocculants	◯
6.51	Hardware Cloth & Gravel Inlet Protection	▣
6.54	Rock Donut Inlet Protection (Temporary)	▣
6.55	Rock Pipe Inlet Protection	∪
6.61	Sediment Basin (Riser Basin)	▭
6.62	Sediment Fence (Silt Fence)	—III—III—III—
6.64	Skimmer Sediment Basin	▭
6.64	Tiered Skimmer Sediment Basin	▭▭
6.66	Compost Sock	) — EW — — CFW —
6.66 + 6.86	Compost Sock with Flocculants	◯
6.83	Check Dams	▶



CUT = 1,000 +/- CY
FILL = 300 +/- CY
NET CUT = 700 +/- CY

PROPOSED CONSTRUCTION AREA
TOTAL DISTURBED AREA = 11.9 ACRES
AREA TO BE SEEDED UPON COMPLETION = 1.6 ACRES



PROJECT FOR: CITY OF HICKORY
CONTACT: KELLY WINKLER (828)323-7431
PROJECT ADDRESS: 1234 SPRINGS RD NE HICKORY, NC 28601

GRAPHIC SCALE

25 0 50

PLANS
1″=50′

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

Prepared In the Office of:

TGS ENGINEERS
201 W. MARION ST-STE 200
SHELBY, NC 28150

Designed by:

Andrew H. Cochrane, PE
NAME

Reviewed In the Office of:

NC DEQ - MOORESVILLE REGIONAL
610 EAST CENTER AVE.
MOORESVILLE, NC 28115

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

5/15/2026
s\Hickory\BL-0066 - Springs Rd\Drainage\Erosion Control - DEQ\Microstation\BL-0066_EC_dsn_EC-01_TSH.dgn
User:acochrane

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-2

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

PROJECT DETAILS

6.06

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

Definition A graveled area or pad located at points where vehicles enter and leave a construction site.

Purpose To provide a buffer area where vehicles can drop their mud and sediment to avoid transporting it onto public roads, to control erosion from surface runoff, and to help control dust.

Conditions Where Practice Applies Wherever traffic will be leaving a construction site and moving directly onto a public road or other paved off-site area. Construction plans should limit traffic to properly constructed entrances.

Design Criteria **Aggregate Size**—Use 2-3 inch washed stone.

Dimensions of gravel pad—
Thickness: 6 inches minimum
Width: 12-feet minimum or full width at all points of the vehicular entrance and exit area, whichever is greater
Length: 50-feet minimum

Location—Locate construction entrances and exits to limit sediment from leaving the site and to provide for maximum utility by all construction vehicles (Figure 6.06a). Avoid steep grades, and entrances at curves in public roads.

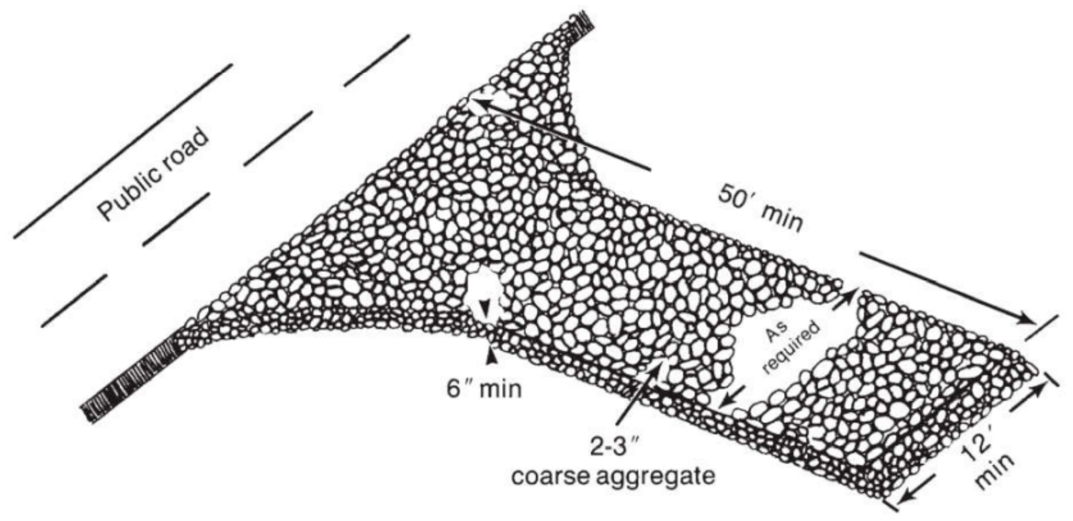


Figure 6.06a Gravel entrance/exit keeps sediment from leaving the construction site (modified from Va SWCC).

6.41

OUTLET STABILIZATION STRUCTURE

Definition A structure designed to control erosion at the outlet of a channel or conduit.

Purpose To prevent erosion at the outlet of a channel or conduit by reducing the velocity of flow and dissipating energy.

Conditions Where Practice Applies This practice applies where the discharge velocity of a pipe, box culvert, diversion, open channel, or other water conveyance structure exceeds the permissible velocity of the receiving channel or disposal area.

Planning Considerations The outlets of channels, conduits, and other structures are points of high erosion potential because they frequently carry flows at velocities that exceed the allowable limit for the area downstream. To prevent scour and undermining, an outlet stabilization structure is needed to absorb the impact of the flow and reduce the velocity to non-erosive levels. A riprap-lined apron is the most commonly used practice for this purpose because of its relatively low cost and ease of installation. The riprap apron should be extended downstream until stable conditions are reached even though this may exceed the length calculated for design velocity control.

Riprap-stilling basins or plunge pools reduce flow velocity rapidly. They should be considered in lieu of aprons where pipe outlets are cantilevered or where high flows would require excessive apron length (Figure 6.41a). Consider other energy dissipaters such as concrete impact basins or paved outlet structures where site conditions warrant.

Alternative methods of energy dissipation can be found in Hydraulic Design of Energy Dissipaters for Culverts and Channels, Hydraulic Engineering Circular No. 14, U.S. Department of Transportation, Federal Highway Administration.

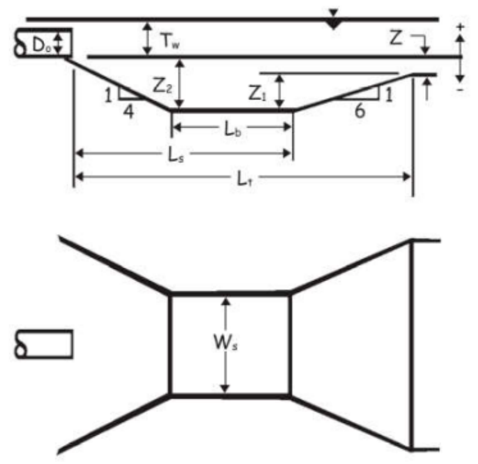
The installation of a culvert in a stream is subject to the conditions of a U.S. Army Corps of Engineers 404 Permit and a N.C. Division of Water Quality 401 Certification. These permit conditions may not allow the use of a riprap apron, and may require that the bottom of the culvert be buried below the natural stream bed elevation. A pre-formed scour pool or plunge pool should be considered in these situations. Plunge pool designs in streams should not use a cantilevered outlet because it would pose a barrier to migration of aquatic life through the culvert. Reducing the outlet velocity may require a combination of techniques, including a culvert with a flat bottom, a downstream cross vane to create tail-water at the pipe outlet, and/or a preformed scour pool.

Design Criteria **Capacity**—10-year, peak runoff or the design discharge of the water conveyance structure, whichever is greater.

Tail-water depth—Determine the tail-water depth immediately below the culvert or pipe outlet based on the design discharge. The ratio of tail-water depth to pipe diameter must be determined in order to select the appropriate riprap apron or plunge pool design method.

Plunge Pools—Two plunge pool methods are presented in Appendix 8.06, the USDA Plunge Pool Design at Submerged Pipe Spillway Outlets, and the USDA Riprap Lined Plunge Pool for Cantilevered Outlet. Software from the Federal Highway Administration can be downloaded at http://www.fhwa.dot.gov/engineering/hydraulics/software.cfm. Excel spreadsheets for the USDA methods are available through the Land Quality web-site at http://www.dlr.enr.state.nc.us/pages/links.htm.

Figure 6.41a Typical plunge pool design showing variable dimensions.



Riprap Aprons size—The apron length and width can be determined according to the tail-water condition. If the water conveyance structure discharges directly into a well-defined channel, extend the apron across the channel bottom and up the channel banks to an elevation of 0.5 foot above the maximum tail-water depth or to the top of the bank, whichever is less (Figure 6.41c).

Determine the maximum allowable velocity for the receiving stream, and design the riprap apron to reduce flow to this velocity before flow leaves the apron. Calculate the apron length for velocity control or use the length required to meet stable conditions downstream, whichever is greater.

Grade—Ensure that the apron has zero grade. There should be no overfall at the end of the apron; that is, the elevation of the top of the riprap at the downstream end should be the same as the elevation of the bottom of the receiving channel or the adjacent ground if there is no channel.

Alignment—The apron should be straight throughout its entire length, but if a curve is necessary to align the apron with the receiving stream, locate the curve in the upstream section of riprap.

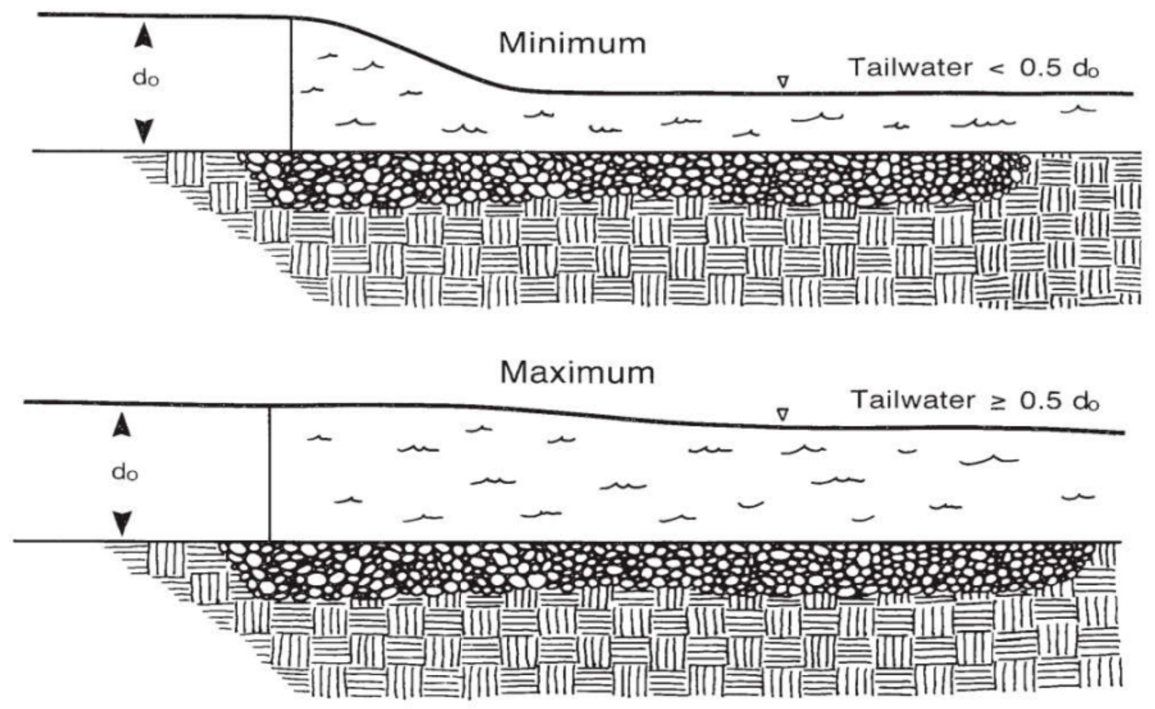


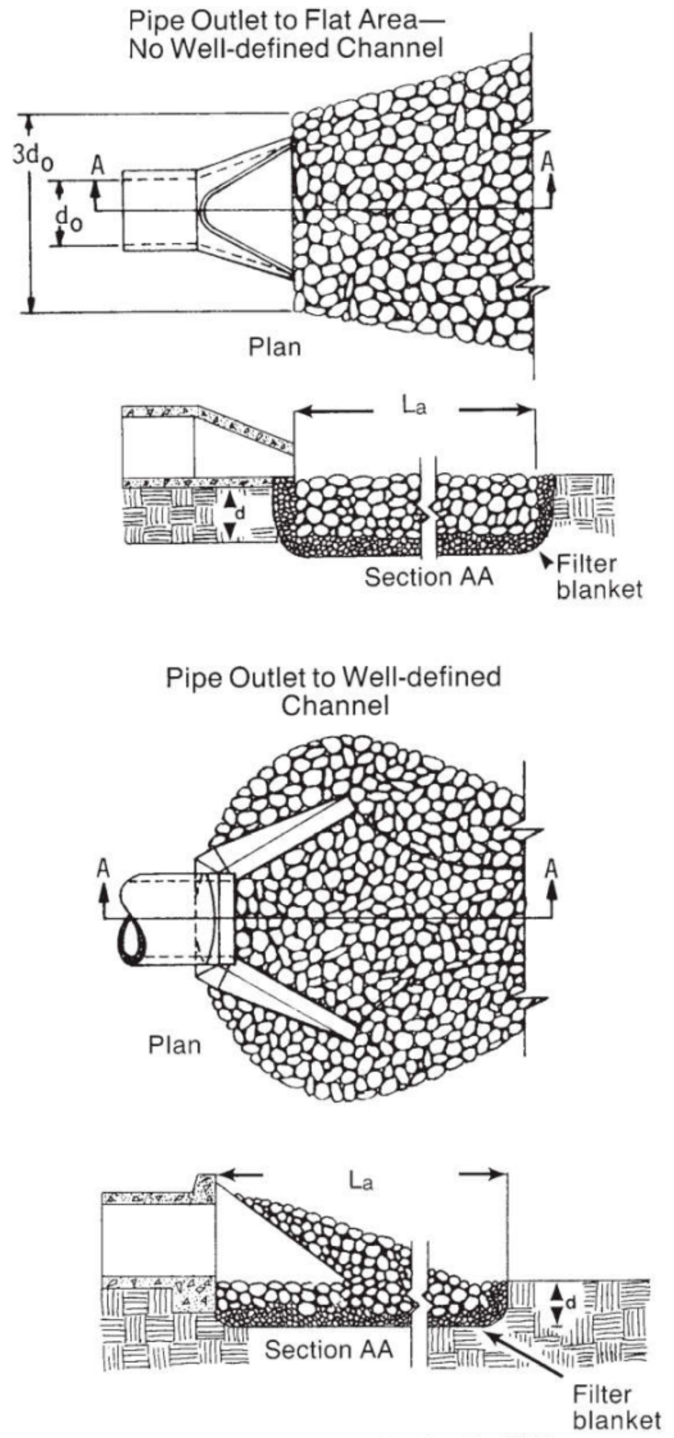
Figure 6.41b Stage showing maximum and minimum tailwater condition.

Materials—Ensure that riprap consists of a well-graded mixture of stone. Larger stone should predominate, with sufficient smaller sizes to fill the voids between the stones. The diameter of the largest stone size should be no greater than 1.5 times the d_{50} size.

Thickness—Make the minimum thickness of riprap 1.5 times the maximum stone diameter.

Stone quality—Select stone for riprap from field stone or quarry stone. The stone should be hard, angular, and highly weather-resistant. The specific gravity of the individual stones should be at least 2.5.

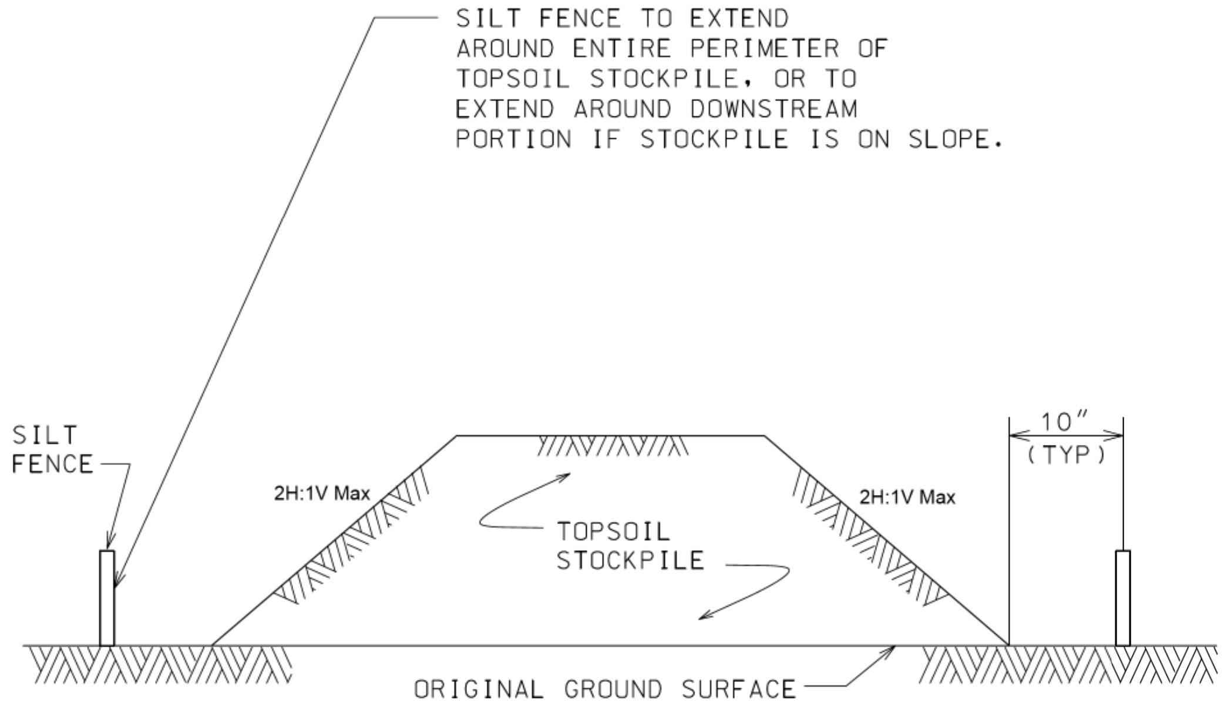
Filter—Install a filter to prevent soil movement through the openings in the riprap. The filter should consist of a graded gravel layer or a synthetic filter cloth. Design filter blankets by the method described in Practice 6.15, *Riprap*.



Notes

1. L_a is the length of the riprap apron.
2. d = 1.5 times the maximum stone diameter but not less than 6″.
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6″ above the maximum tailwater depth or to the top of the bank, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 6.41c Riprap outlet protection (modified from Va SWCC).



NOTES:

1. AN ON–SITE DRAINAGE SWALE SHALL BE LOCATED BETWEEN THE TOPSOIL STOCKPILE AND OFF–SITE PROPERTY.
2. REFERENCE IS MADE TO THE SILT FENCE DETAIL FOR MATERIALS AND INSTALLATION METHODS.
3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, IT SHALL BE STABILIZED WITH BURLAP MATTING OR SEEDED WITHIN 7 DAYS OF COMPLETION TO MINIMIZE EROSION.
4. INSPECTION OF SILT FENCES SHALL BE AT LEAST ONCE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF 1/2″. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. SEDIMENT TRAPPED BY THE FENCES SHALL BE REMOVED AND PROPERLY DISPOSED OF WHENEVER SIGNIFICANT ACCUMULATION OCCURS.
6. SILT FENCES SHALL BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN ELIMINATED AND SHALL BE REMOVED ONLY WHEN DIRECTED BY THE CITY.

NOT TO SCALE

DATE: 3–31–09

TEMPORARY
TOPSOIL
STOCKPILE
DETAIL

F–3

SEEDING NOTES

SCALE = NTS

1. AREAS TO BE SEEDED SHALL BE DEFINED AS ALL AREAS WITHIN GRADING LIMITS THAT ARE NOT OCCUPIED BY PAVING, CRUSHED STONE SURFACING, OR STRUCTURES. SEEDING SHALL INCLUDE FINAL SHAPING, LIMING, FERTILIZATION, AND SEEDING.
2. THE CONTRACTOR SHALL DELIVER A SATISFACTORY STAND OF PERENNINAL GRASS. THIS SATISFACTORY STAND SHALL PROVIDE FULL COVER OVER AREAS TO BE SEEDED. THE STAND SHALL BE ALIVE AND GROWING, WITH NO BARE SPOTS LARGER THAN 3/4 SQUARE YARD WITHIN A RADIUS OF TEN FEET.
3. PERMANENT SEEDING MIXTURE (GENTLE SLOPES, AVERAGE SOILS, LOW MAINTENANCE)

SEEDING MIXTURE SPECIES	RATE (#/acre)
TALL FESCUE	80
KENTUCKY BLUEGRASS	10
KOREAN LESPEDEZA	40

PERMANENT SEEDING MIXTURE (STEEP SLOPES, LOW MAINTENANCE)

SEEDING MIXTURE SPECIES	RATE (#/acre)
TALL FESCUE	100
SERICEA LESPEDEZA	30
KOBE LESPEDEZA	10
RYE (GRAIN)	10
RYE (GRAIN)	10

NOTES: SERICEA LESPEDEZA SEED SHALL BE UNSCARIFIED.
SLOPES 3:1 AND STEEPER SHALL BE STABILIZED USING NORTH AMERICAN GREEN C125 COCONUT MATRIX OR EQUAL.

4. FERTILIZER SHALL BE 10-10-10 COMPLETE FERTILIZE OF UNIFORM COMPOSITION.
5. LIME SHALL BE AGRICULTURAL GRADE GROUND LIMESTONE WITH NOT LESS THAN 88 F CALCIUM CARBONATE CONTENT.
   LIME SHALL BE SPREAD AT A RATE OF 2000 POUNDS PER ACRE.
   FERTILIZER SHALL BE SPREAD UNIFORMLY AT A RATE OF 1000 POUNDS PER ACRE, AND SHALL BE INCORPORATED INTO SOIL TO A DEPTH OF AT LEAST 2 INCHES BY DISKING HARROWING. FERTILIZER MAY BE INCORPORATED AS PART OF TILLAGE OPERATION.
6. IMMEDIATELY AFTER FERTILIZING AND SEEDING HAVE BEEN COMPLETED, ENTIRE AREA SHALL BE COMPACTED BY MEANS OF CULTIPACKER, ROLLER, OR APPROVED EQUIPMENT.
7. PARTICULAR ATTENTION SHALL BE GIVEN TO EMBANKMENTSS AND SWALES TO PROVIDE PROTECTION FROM EROSION AND PROVIDE MOWABLE SLOPES AND SWALES.
8. IF NECESSARY, TOPS AND TOES OF EMBANKMENTS AND SWALES SHALL BE TREATED WITH A CUTBACK ASPHALT AND STRAW EMULSION OR HYDROSEEDED.
9. GROUND COVER SHALL BE ESTABLISHED ON EXPOSED SLOPES WITHIN 15 WORKING DAYS BUT NO MORE THAN 21 CALENDER DAYS OF COMPLETION OF ANY PHASE OF GRADING. PERMANENT GROUND COVER SHALL BE ESTABLISHED ON ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDER DAYS FOLLOWING COMPLETION OF CONSTRUCTION.
10. TEMPORARY SEEDING SCHEDULE SHALL BE USED WHEN NECESSARY TO MEET THE TIME LIMITATION ON GROUND COVER.

TEMP. SEEDING NOTES

TEMPORARY SEEDING SCHEDULE
SUMMER (MAY 1 - AUG. 15)
SOIL AMENDMENTS : APPLY 2000 #/acre GROUND AGRICULTURAL LIMESTONE AND 750 #/acre 10-10-10 FERTILIZER
- SEED WITH GERMAN MILLET AT RATE OF 40 #/acre OR SMALL-STEMMED SUNDANGRASS AT RATE OF 50 #/acre
- APPLY 4000 #/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL.

TEMPORARY SEEDING SCHEDULE
FALL (AUG. 15 - DEC. 30)
SOIL AMENDMENTS : APPLY 2000 #/acre GROUND AGRICULTURAL LIMESTONE AND 1000 #/acre 10-10-10 FERTILIZER
- SEED WITH RYE (GRAIN) AT RATE OF 120 #/acre.
APPLY 4000 #/acre STRAW. ANCHOR STRAW BY TACKING WITH
- ASPHALT, NETTING, OR A MULCH ANCHORING TOOL.

CONSTRUCTION SCHEDULE

1. Obtain plan approval and other applicable permits.
2. Flag or stake the work limits.
3. Notify NCDEQ and hold pre-construction conference at least one week prior to starting construction.
4. Resolve any utility conflicts which may be revealed by NC One Call.
5. Install the Temporary Silt Fence and Compost Sock as shown on plans.
6. Ensure that the entire perimeter is protected from silt runoff.
7. Perform clearing and grubbing for the site.
8. Perform rough grading for the site.
9. Install all drainage improvements as shown on the roadway plans.
10. Perform Temporary Seeding and Mulching according to the Erosion Control Special Provisions.
11. Dress up and reshape the shoulders, ditches, and other earthen areas and permanently stabilize the project according to the plans.
12. **BEFORE proceeding to step 13, consult with a representative of the Land Quality Section to obtain approval before removing any erosion control devices.**
13. After approval by the Land Quality Section, remove all temporary measures and install permanent vegetation on the disturbed areas according to the Erosion Control Special Provisions.
14. Estimated time to stabilize site: 12 months

Ground Stabilization

Soil stabilization shall be achieved on any area of a site where land disturbing activities have temporarily or permanently ceased according to the following schedule:

1. All slopes should be stabilized with matting and all perimeter dikes, swales ditches, perimeter slopes and all slopes steeper than 3 horizontal to one vertical (3:1) shall be provided temporary or permanent stabilization with ground cover as soon as practicable but in any event within 7 calendar days from the last land disturbing activity.

2. All other disturbed areas shall be provided temporary or permanent stabilization with ground cover as soon as practicable but in any event within 14 calendar days from the last land disturbing activity.

Maintenance Requirements

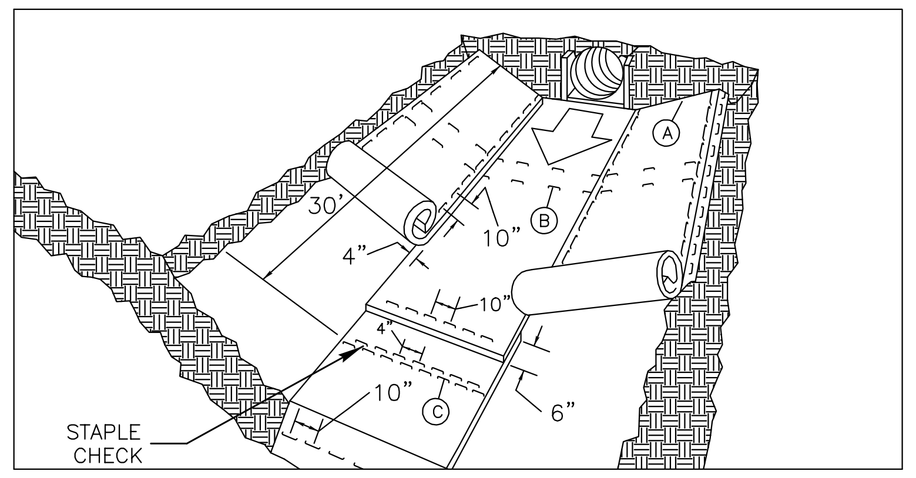
All erosion control measures shall be inspected at least weekly and after each significant (1/2" or greater) rainfall. Trapped sediment shall be properly removed from the erosion control measure and disposed of properly.

General Notes

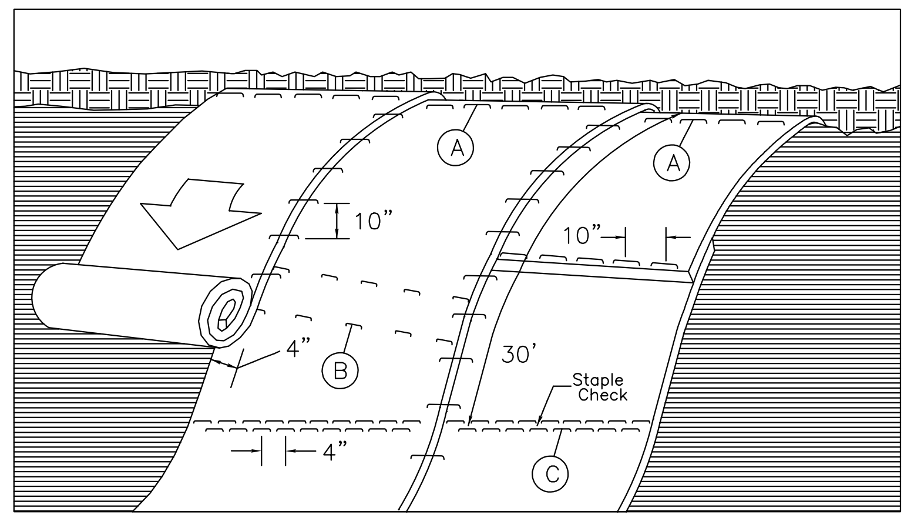
1. This project is located within the Catawba Basin.
2. The Limits of Disturbed Area for the project are shown on the plans.
3. Any off-site borrow and waste required for this project must come from a site with an approved erosion control plan, a site regulated under the Mining Act of 1971, or a landfill regulated by the Division of Solid Waste Management. Trash/debris from demolition activities or generated by any activities on site must be disposed of at a facility regulated by the Division of Solid Waste Management or per Division of Solid Waste Management or Division of Water Resources rules and regulations.
4. If stockpiling of dirt on roadways is necessary, sand must be used as the base. Cleanup of roadways must occur immediately after line installation.
5. For maintenance responsibility contact Kelly Winkler (828)323-7431

MATTING INSTALLATION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



MATTING IN DITCHES



MATTING ON SLOPES

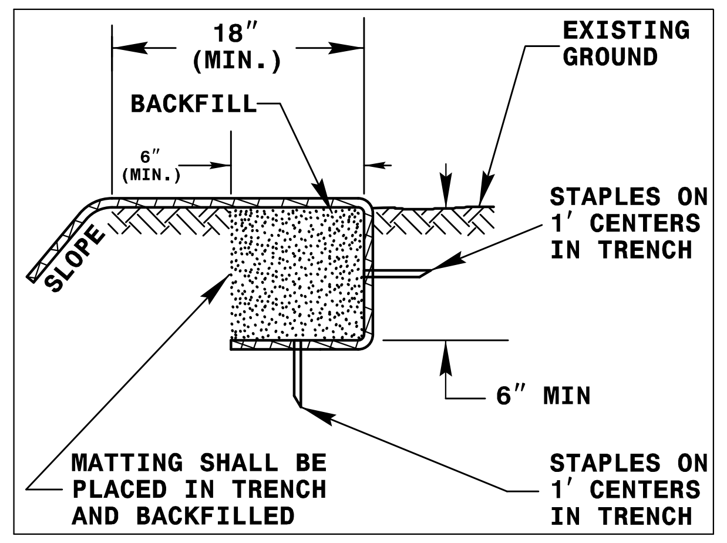

18" (MIN.)
EXISTING GROUND
BACKFILL
6" (MIN.)
SLOPE
STAPLES ON 1' CENTERS IN TRENCH
6" MIN
MATTING SHALL BE PLACED IN TRENCH AND BACKFILLED
STAPLES ON 1' CENTERS IN TRENCH

DIAGRAM Ⓐ

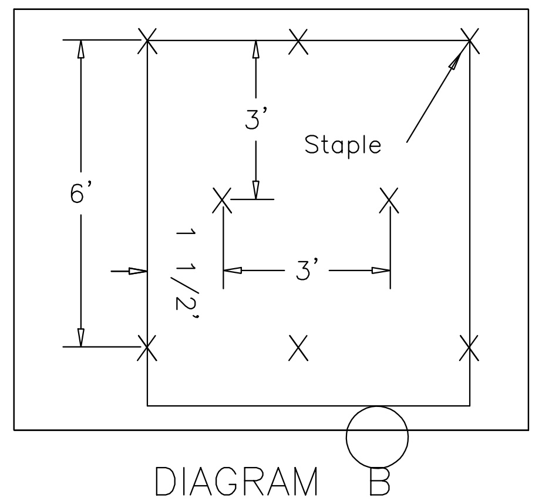


DIAGRAM B

Staple Check Pattern

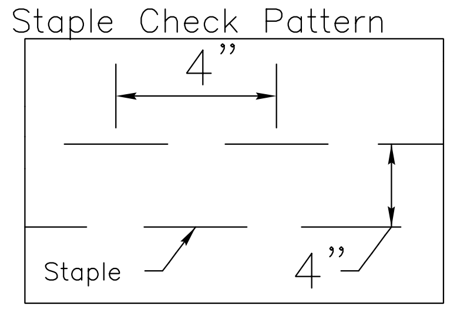


DIAGRAM Ⓒ

NOTES:

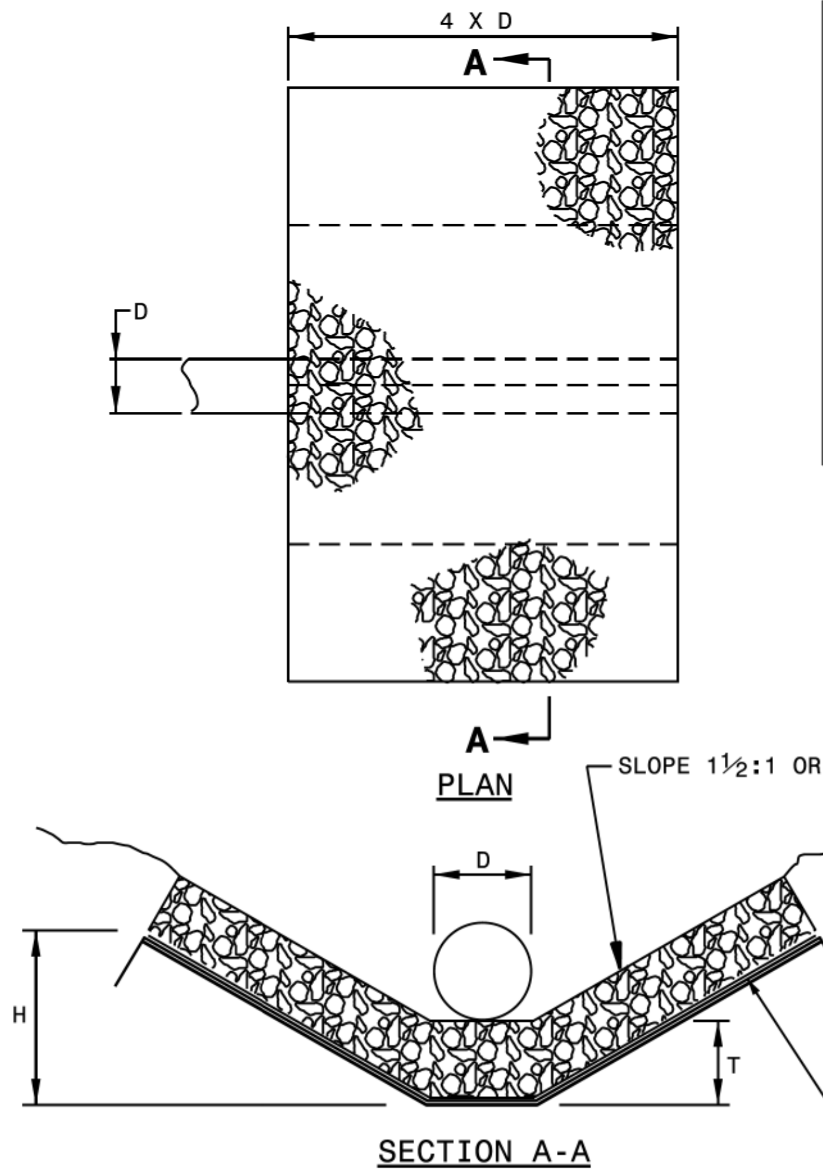
THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

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

NOT TO SCALE

D	OUTLET W/DITCH					OUTLET W/O DITCH				
	CLASS 'B' RIP RAP		CLASS I RIP RAP			CLASS 'B' RIP RAP		CLASS I RIP RAP		
	TONS	GEO-TEXTILE (S.Y.)	S.Y.	TONS	GEO-TEXTILE (S.Y.)	TONS	GEO-TEXTILE (S.Y.)	S.Y.	TONS	GEO-TEXTILE (S.Y.)
12"	2	5	5	2	5	1	4	2	1	4
15"	2	7	7	3	7	1	5	3	2	6
18"	3	10	9	4	10	2	7	4	2	8
24"	5	14	15	7	15	3	11	7	4	12
30"	8	21	21	11	22	5	16	11	7	17
36"	11	28	29	15	30	7	22	16	10	23
42"	15	37	39	20	39	10	28	22	13	30
48"	-	-	49	26	50	-	-	28	17	38
54"	-	-	60	33	62	-	-	36	21	47
60"	-	-	73	40	75	-	-	44	26	56
66"	-	-	87	48	89	-	-	54	32	67
72"	-	-	102	57	104	-	-	64	38	78

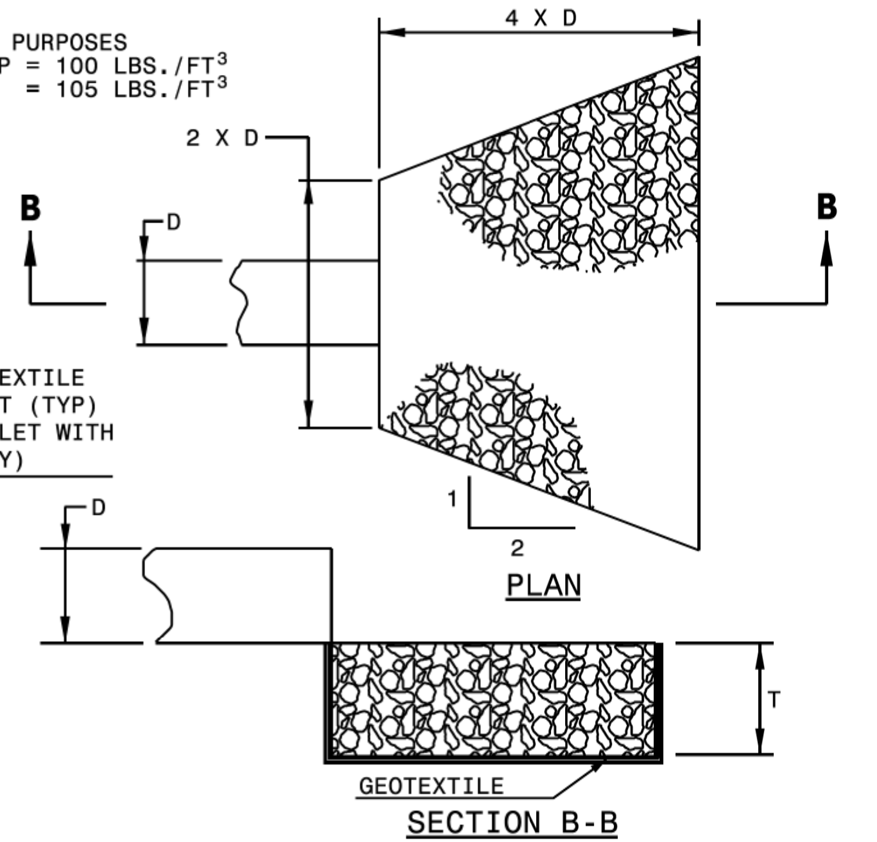
NOTE:
FOR CALCULATION PURPOSES
CLASS 'B' RIP RAP = 100 LBS./FT^3
CLASS I RIP RAP = 105 LBS./FT^3


4 X D
A
D
A
PLAN
SLOPE 1½:1 OR FLATTER
D
H
T
TUCK GEOTEXTILE MIN OF 1FT (TYP) (PIPE OUTLET WITH DITCH ONLY)
GEOTEXTILE

SECTION A-A

PIPE OUTLET WITH DITCH

H= RIP RAP TO TOP OF PIPE (MAX. H = D + T)
T= 18" CLASS I RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS
T= 12" CLASS 'B' RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS
KEY-IN RIP-RAP



SECTION B-B

PIPE OUTLET WITHOUT DITCH

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

1-24

ROADWAY STANDARD DRAWING FOR
GUIDE FOR RIP RAP AT PIPE OUTLETS

SHEET 1 OF 1
876.02

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-2A

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

PROJECT DETAILS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-2B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

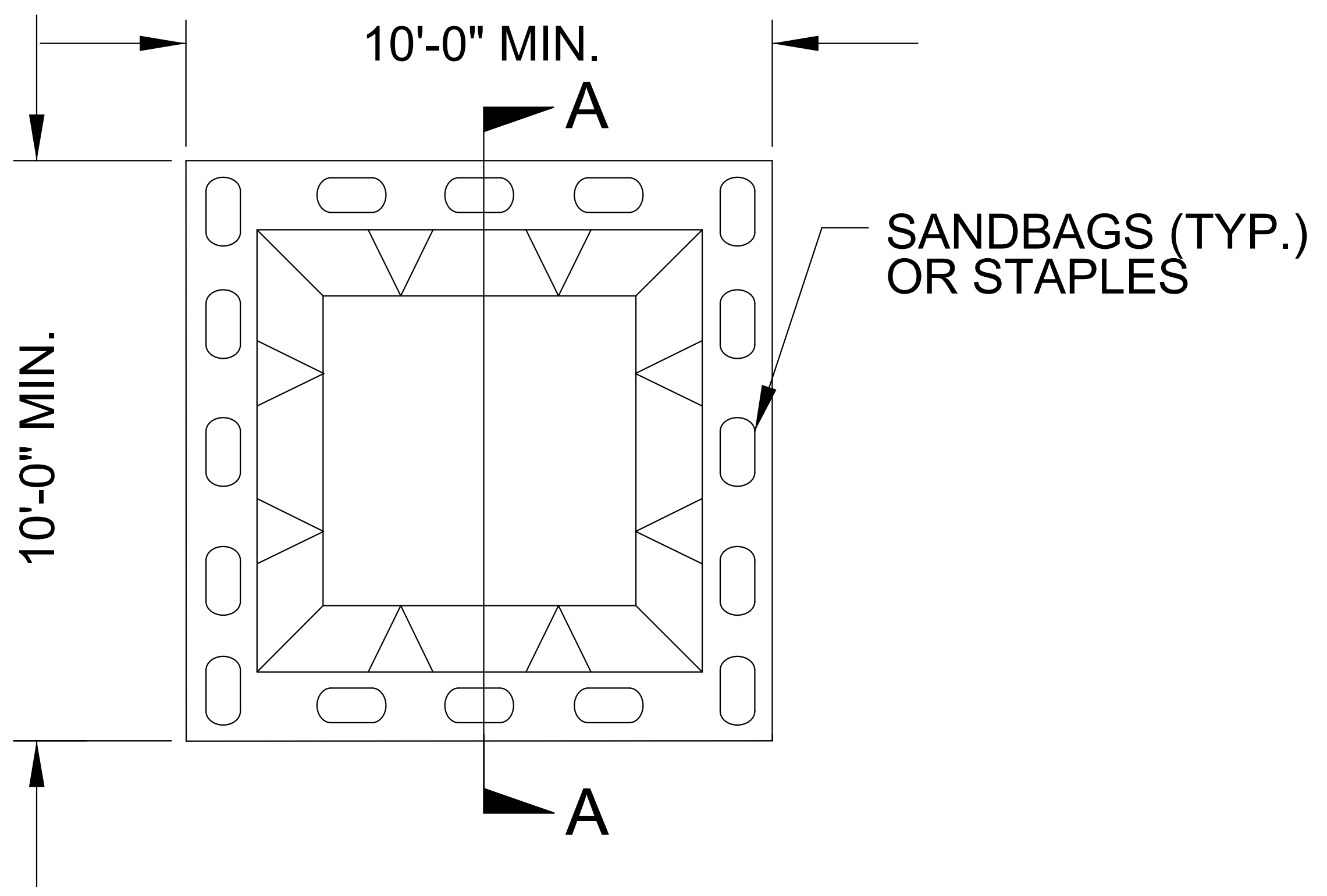
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	—III——III—
1606.01	Special Sediment Control Fence	▽▽▽▽
1622.01	Temporary Berms and Slope Drains	⊤ ← ←
1630.02	Silt Basin Type B	▨
1630.03	Temporary Silt Ditch	—TSD—
1630.04	Stilling Basin	▭
1630.05	Temporary Diversion	→ TD →
1630.06	Special Stilling Basin	⊠
1630.07	Skimmer Basin	▭
1630.08	Tiered Skimmer Basin	▭ ▭
1630.09	Earthen Dam with Skimmer	⬡
	Infiltration Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A ▣
1632.02	Type B	B ▣
1632.03	Type C	C ▣

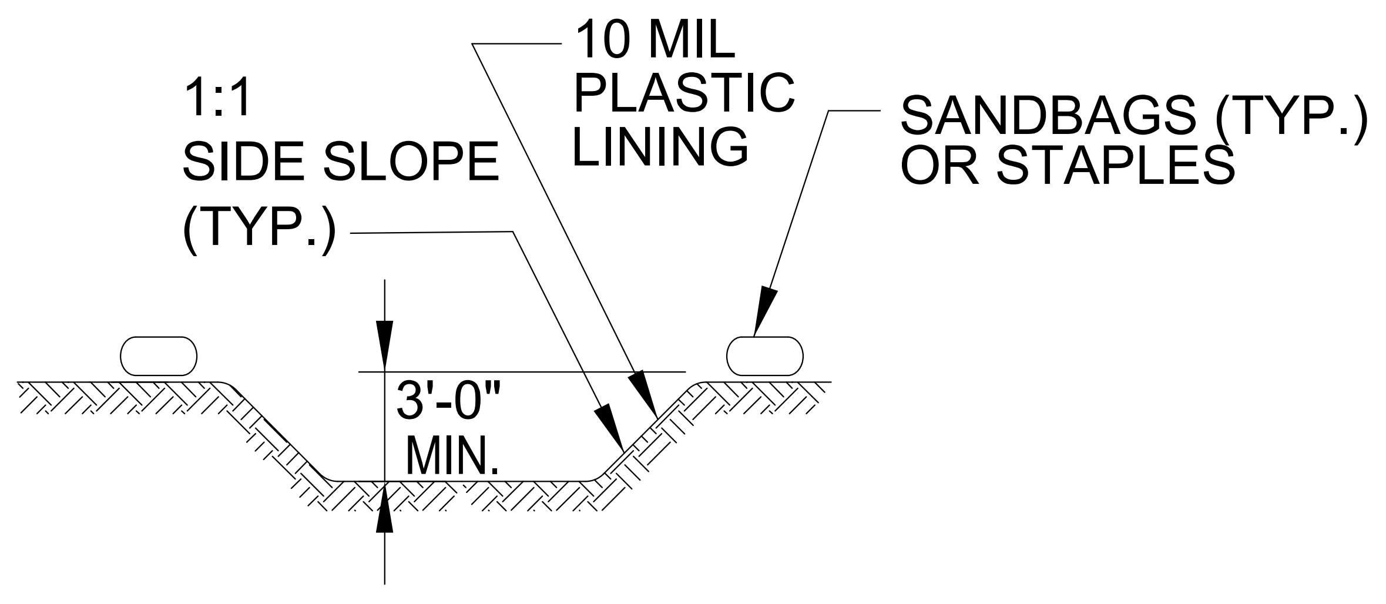
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	▩
1633.02	Temporary Rock Silt Check Type B	►
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	◎
1634.01	Temporary Rock Sediment Dam Type A	▦
1634.02	Temporary Rock Sediment Dam Type B	◧
1635.01	Rock Pipe Inlet Sediment Trap Type A	A ◡
1635.02	Rock Pipe Inlet Sediment Trap Type B	B ◡
1636.01	Excelsior Wattle Check	☾
1636.01	Excelsior Wattle Check with Flocculant	(☾)
1636.01	Coir Fiber Wattle Check	<
1636.01	Coir Fiber Wattle Check with Flocculant	(<)
1636.02	Silt Fence Excelsior Wattle Break	⊢EW⊣
	Silt Fence Coir Fiber Wattle Break	⊢CFW⊣
1636.03	Excelsior Wattle Barrier	—EW—EW—EW—
1636.03	Coir Fiber Wattle Barrier	—CFW—CFW—CFW—

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-02C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

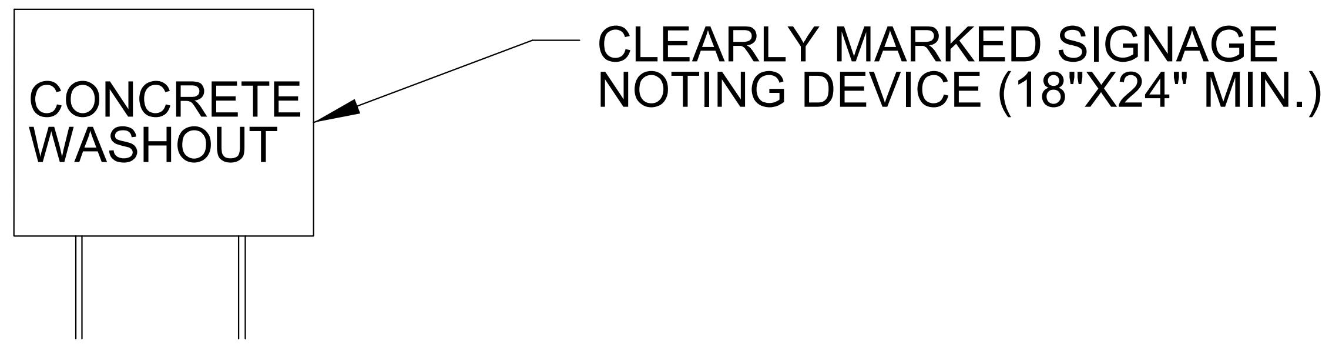
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



BELOW GRADE WASHOUT STRUCTURE

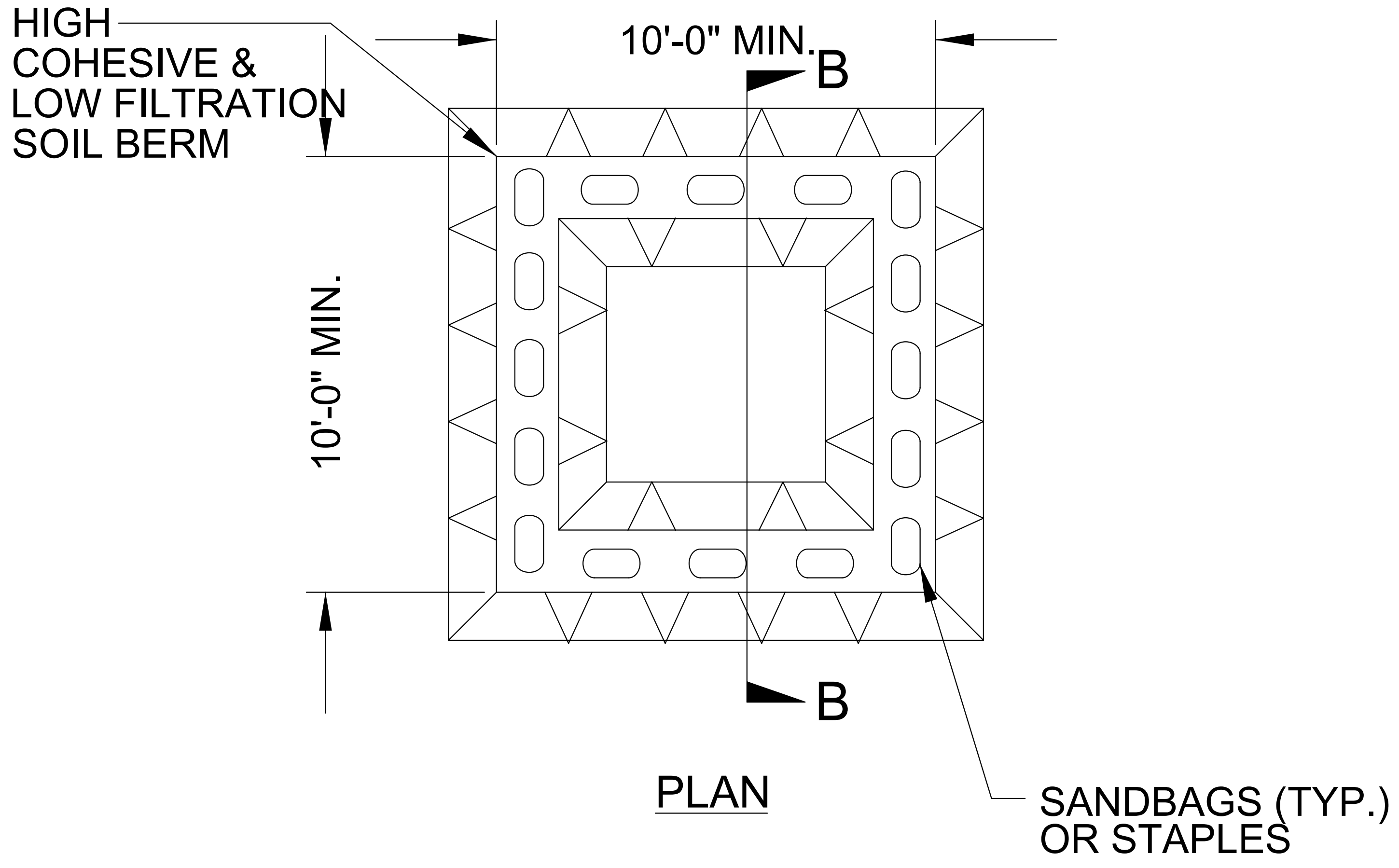
NOT TO SCALE

NOTES:

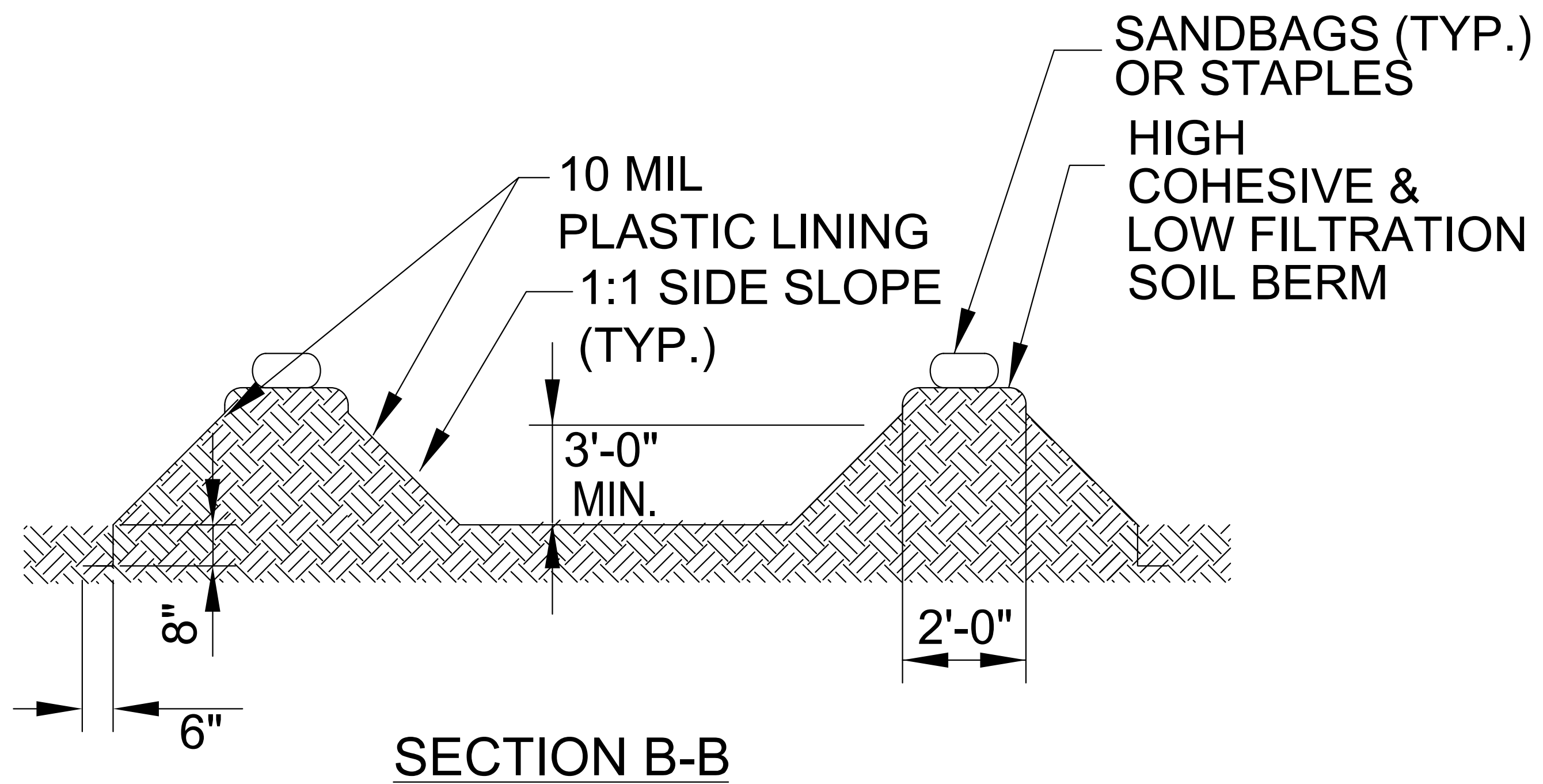
1. ACTUAL LOCATION DETERMINED IN FIELD

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

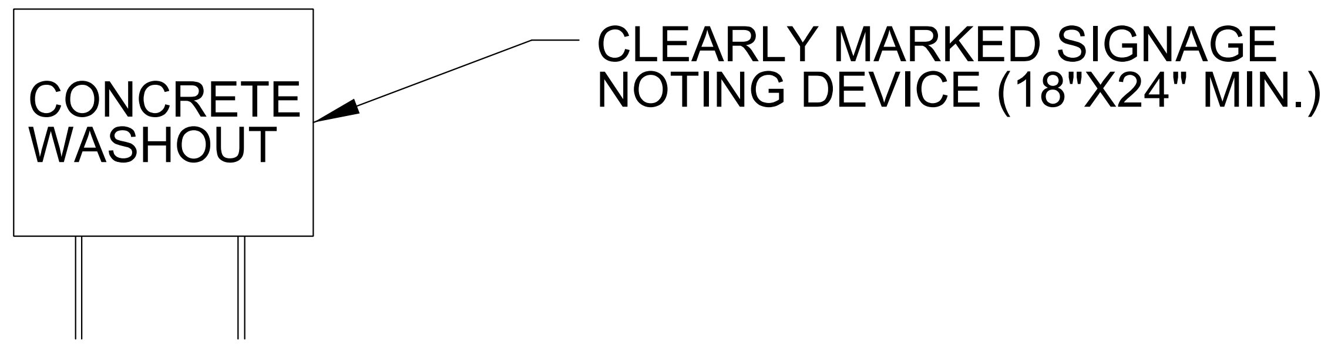
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.



PLAN



SECTION B-B



ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

NOTES:

1. ACTUAL LOCATION DETERMINED IN FIELD

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

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

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-02D
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

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

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

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

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

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

GROUND STABILIZATION SPECIFICATION

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

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

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

EQUIPMENT AND VEHICLE MAINTENANCE

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

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

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

PAINT AND OTHER LIQUID WASTE

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

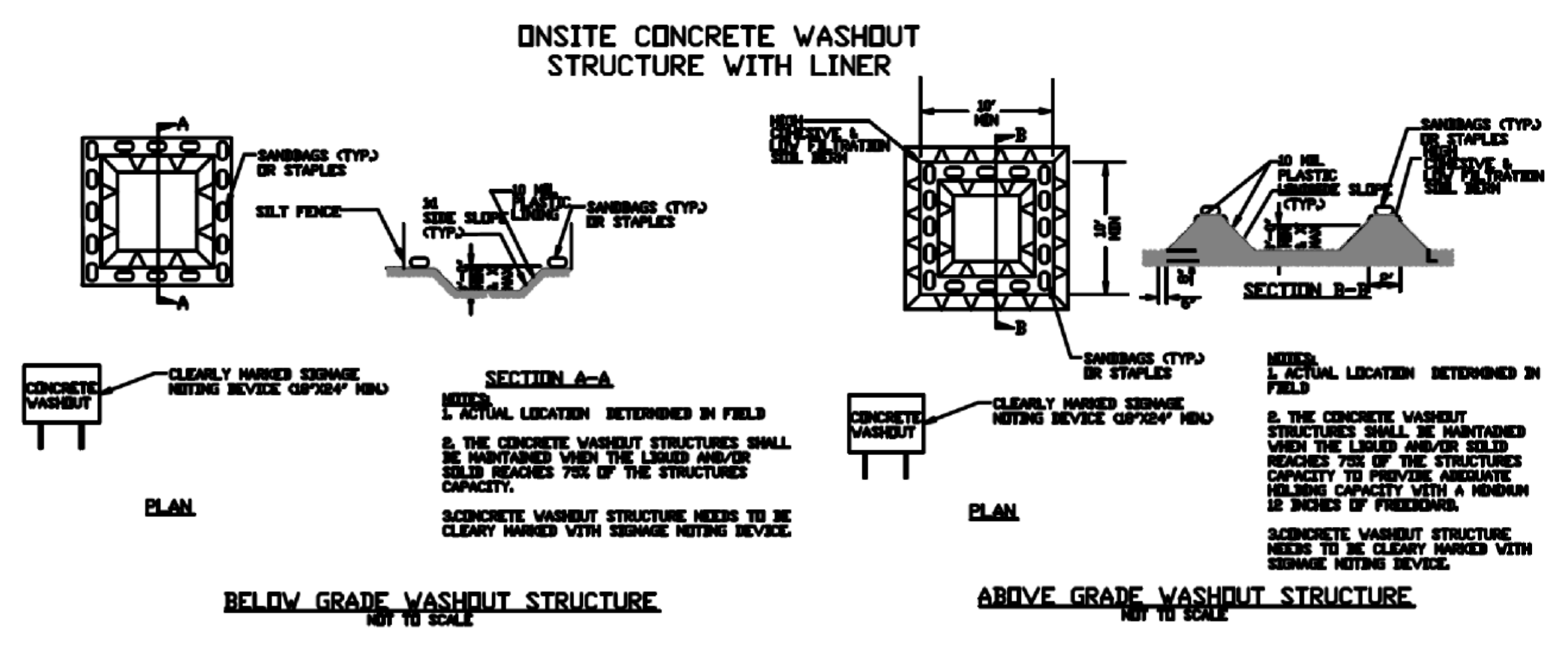
PORTABLE TOILETS

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

EARTHEN STOCKPILE MANAGEMENT

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

NORTH CAROLINA
Environmental Quality


ONSITE CONCRETE WASHOUT
STRUCTURE WITH LINER
A
A
SANDBAGS (TYP.) OR STAPLES
SILT FENCE
3:1 SIDE SLOPE (TYP.)
10 MIL PLASTIC LINING
SANDBAGS (TYP.) OR STAPLES
CONCRETE WASHOUT
CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)
SECTION A-A
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.
PLAN
BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE
HIGH COHESIVE & LOW PERMEABILITY FILTRATION SOIL BERM
10' MIN
10' MIN
B
B
SANDBAGS (TYP.) OR STAPLES
10 MIL PLASTIC LINING
SANDBAGS (TYP.) OR STAPLES
HIGH COHESIVE & LOW FILTRATION SOIL BERM
SECTION B-B
CONCRETE WASHOUT
CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)
PLAN
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.
ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

CONCRETE WASHOUTS

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

HERBICIDES, PESTICIDES AND RODENTICIDES

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

HAZARDOUS AND TOXIC WASTE

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

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

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

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

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

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

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

2. Additional Documentation to be Kept on Site

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

(a) This General Permit as well as the Certificate of Coverage, after it is received.

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

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

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

(b) Oil spills if:

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

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

(d) Anticipated bypasses and unanticipated bypasses.

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

2. Reporting Timeframes and Other Requirements

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

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

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,

(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,

(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,

(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,

(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and

(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA
Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

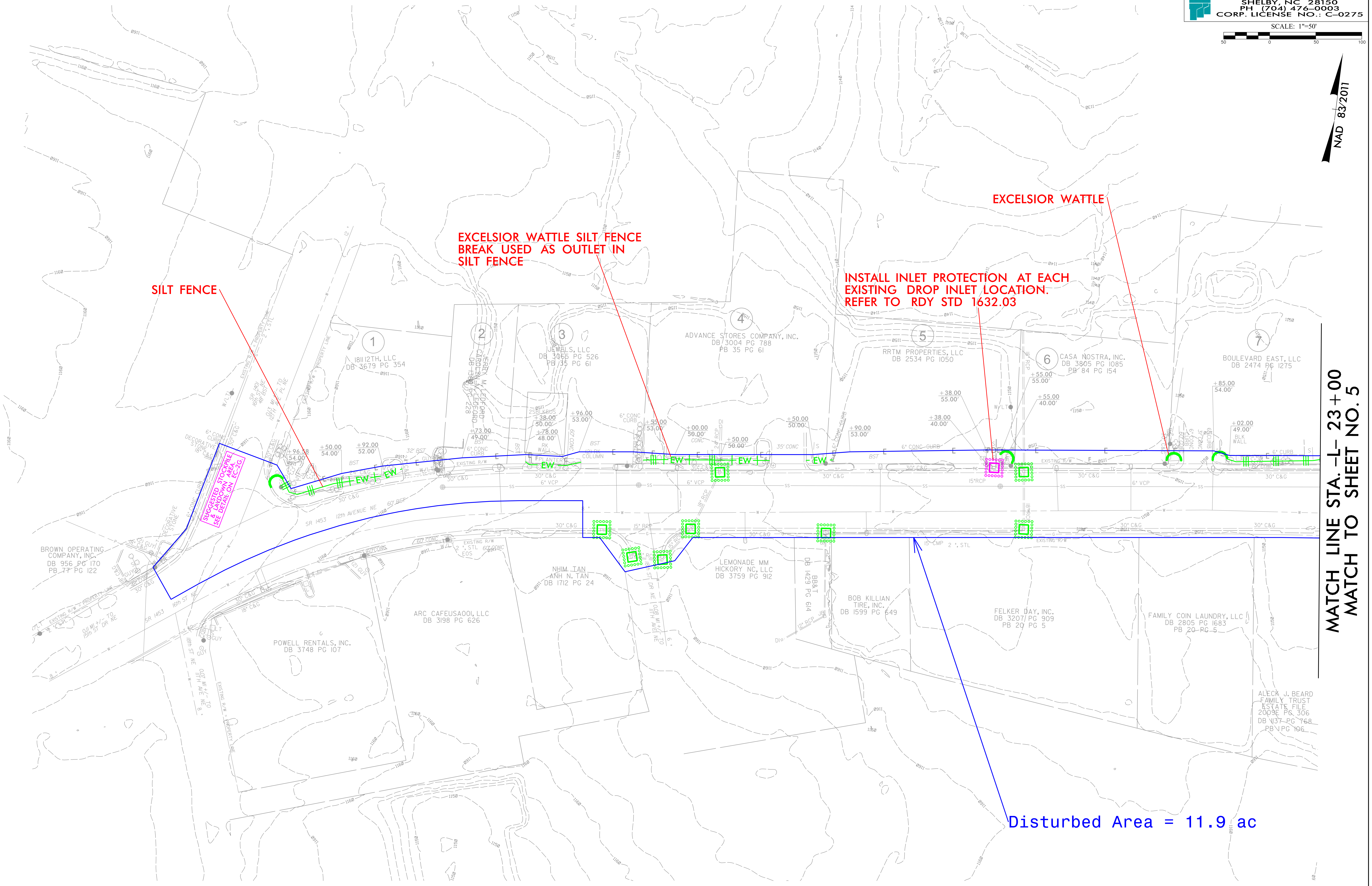
PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
CLEARING & GRUBBING PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-04/CONST.4

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

SCALE: 1"=50'



PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
CLEARING & GRUBBING PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-05/CONST.5

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

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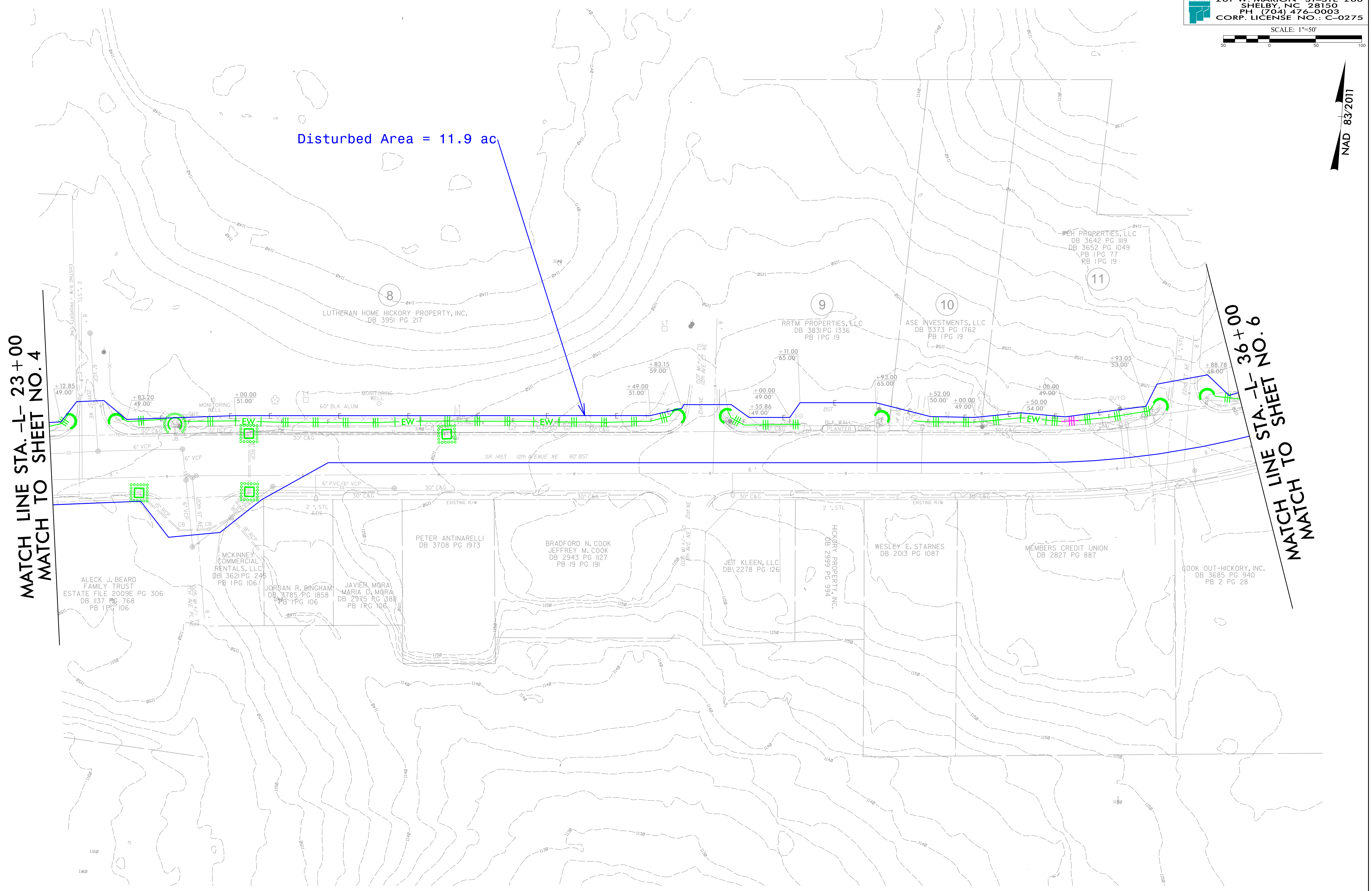

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
CLEARING & GRUBBING PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-06/CONST.6

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

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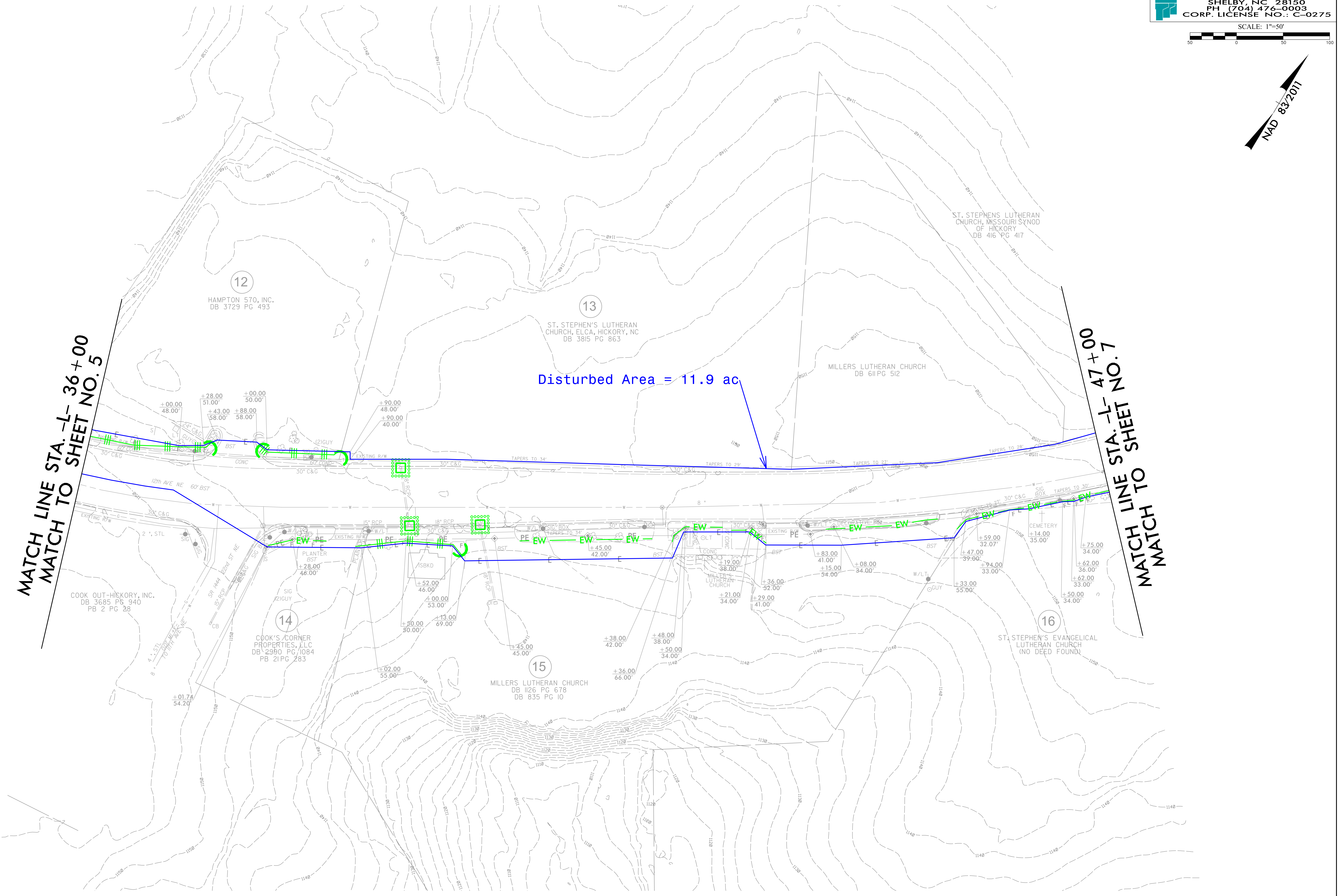

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
CLEARING & GRUBBING PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-07/CONST.7

TGS ENGINEERS
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SHELBY, NC 28150
PH (704) 476-0003
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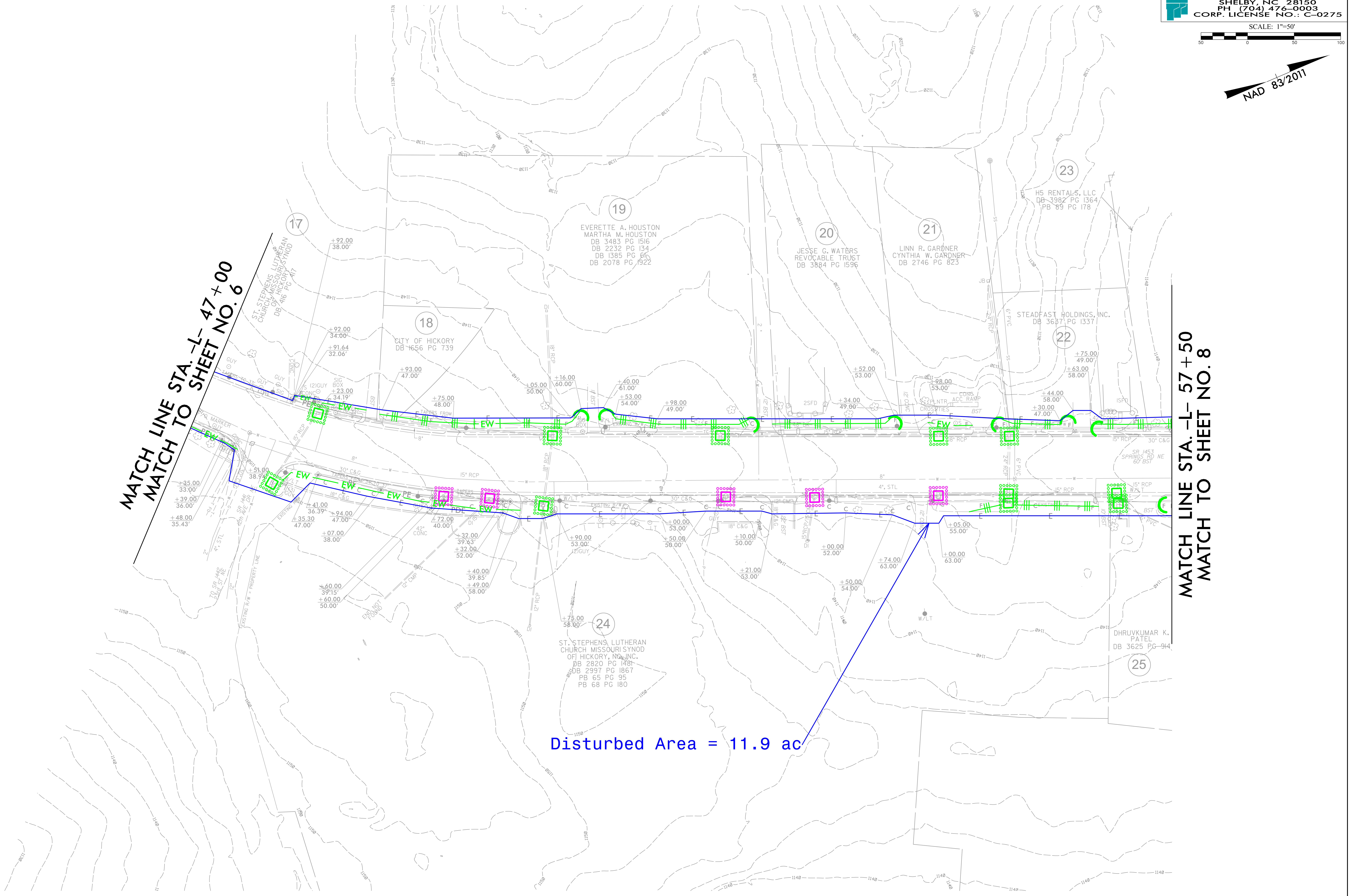

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
CLEARING & GRUBBING PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-08/CONST.8

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

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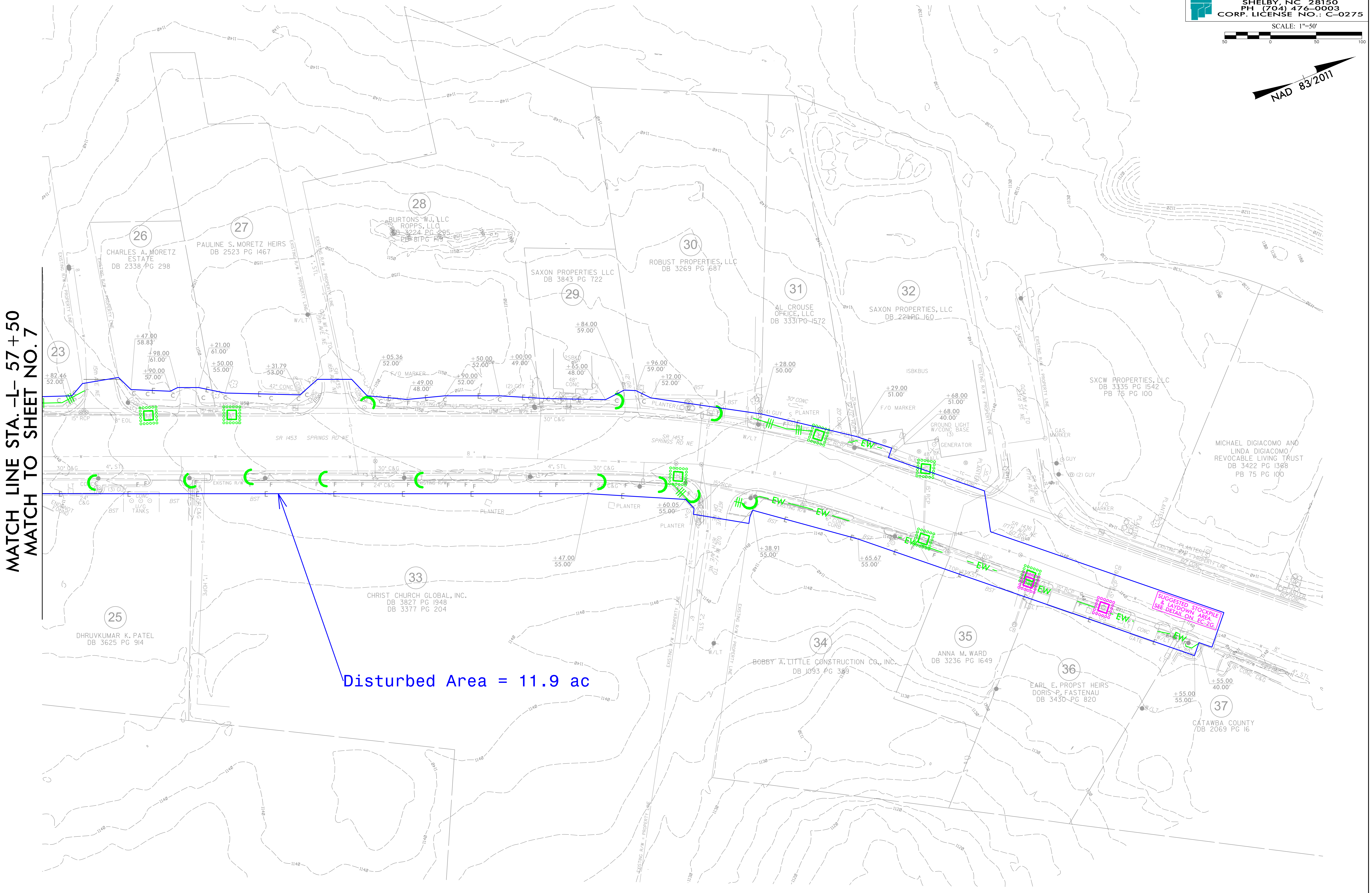

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL EC ITEMS ARE NOT NEEDED IN INTERMEDIATE PHASE

SEE TITLE SHEET FOR LEGEND

INTERMEDIATE PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-09/CONST.4

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

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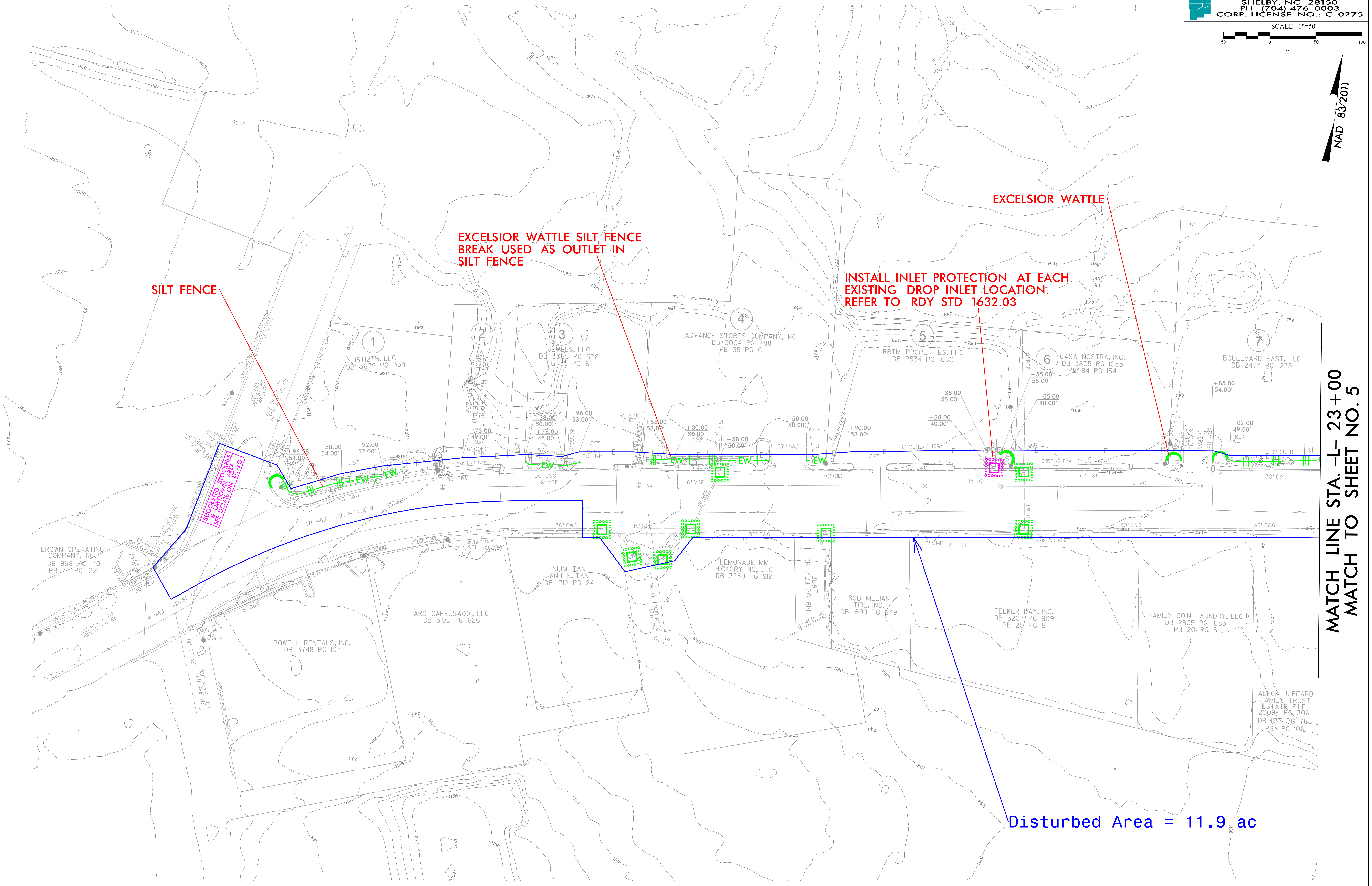

SILT FENCE

EXCELSIOR WATTLE SILT FENCE BREAK USED AS OUTLET IN SILT FENCE

INSTALL INLET PROTECTION AT EACH EXISTING DROP INLET LOCATION. REFER TO RDY STD 1632.03

EXCELSIOR WATTLE

MATCH LINE STA. -L- 23+00
MATCH TO SHEET NO. 5

Disturbed Area = 11.9 ac

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PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL EC ITEMS ARE NOT NEEDED IN INTERMEDIATE PHASE

SEE TITLE SHEET FOR LEGEND

INTERMEDIATE PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-10/CONST.5

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

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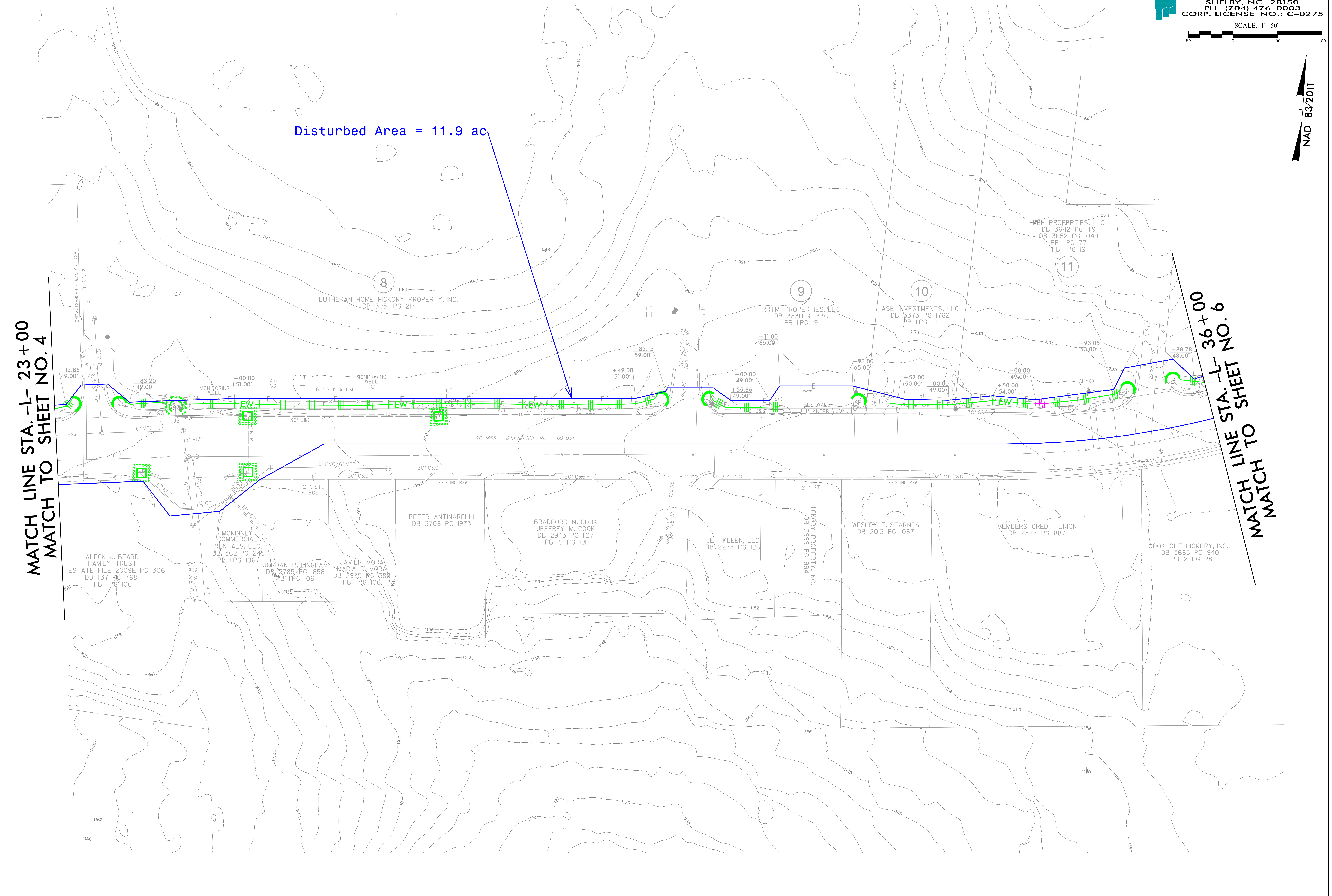

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL EC ITEMS ARE NOT NEEDED IN INTERMEDIATE PHASE

SEE TITLE SHEET FOR LEGEND

INTERMEDIATE PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-II/CONST.6

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

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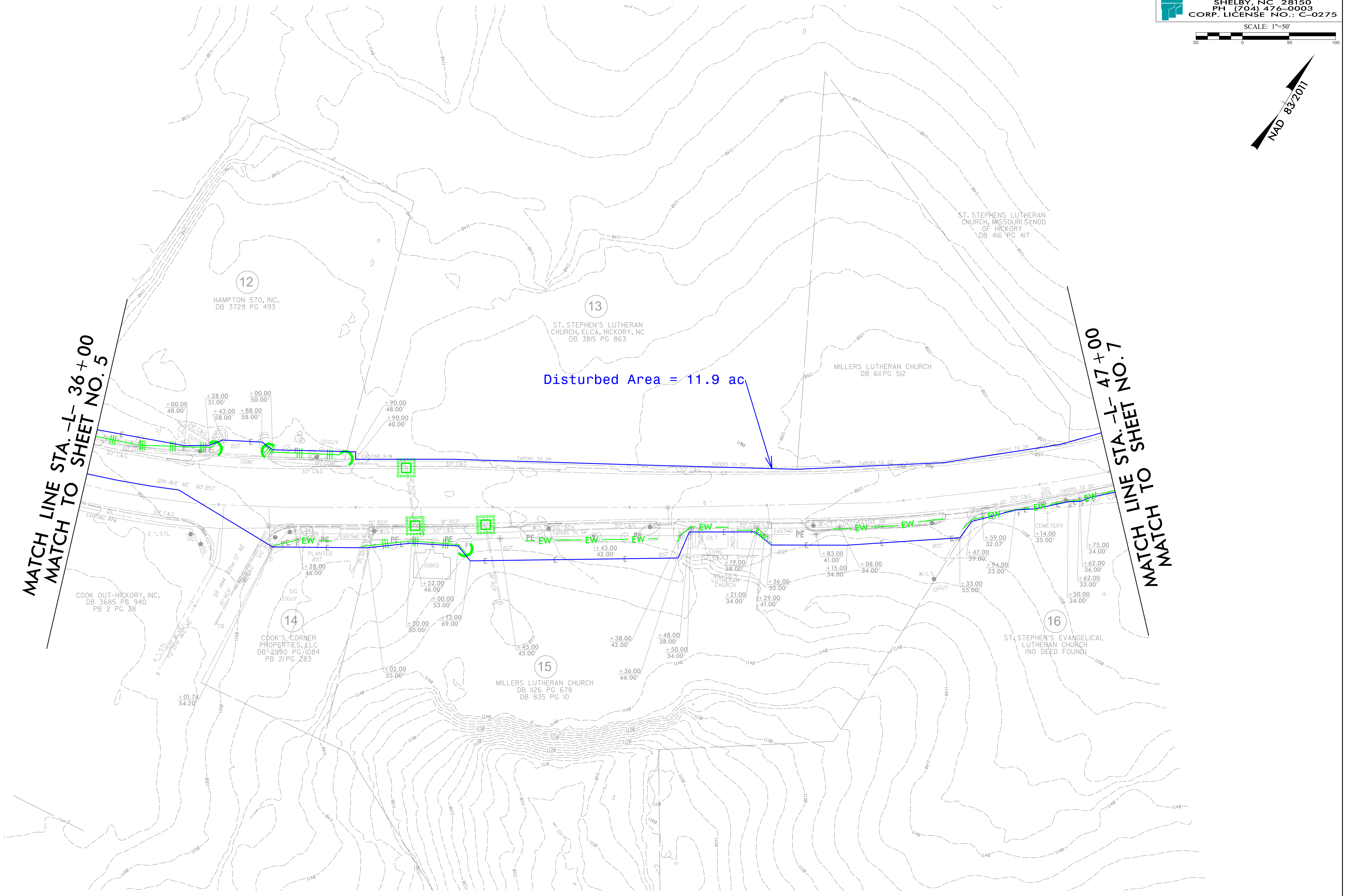

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL EC ITEMS ARE NOT NEEDED IN INTERMEDIATE PHASE

SEE TITLE SHEET FOR LEGEND
INTERMEDIATE PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-12/CONST.7

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

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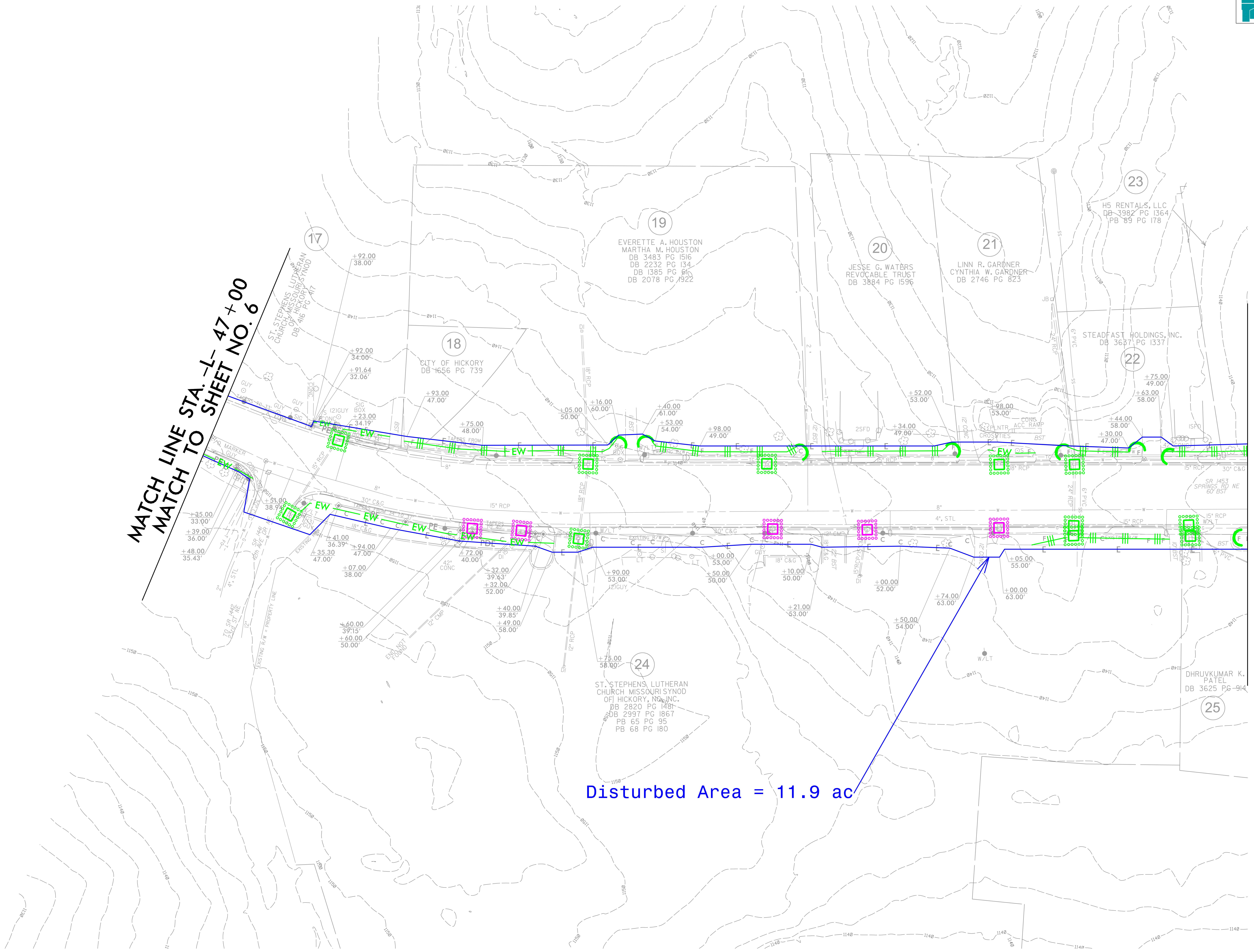

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL EC ITEMS ARE NOT NEEDED IN INTERMEDIATE PHASE

SEE TITLE SHEET FOR LEGEND
INTERMEDIATE PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-13/CONST.8

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

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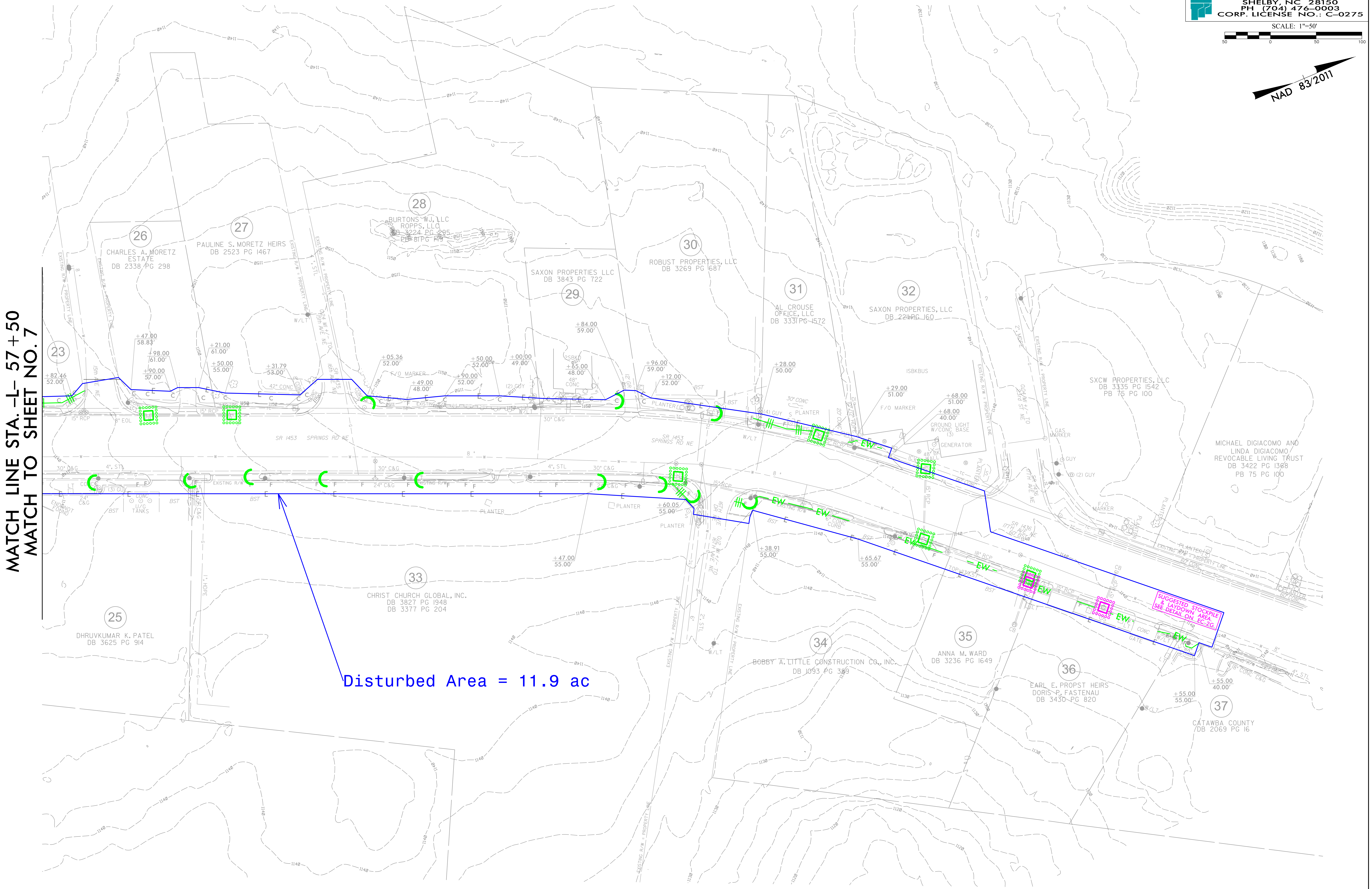


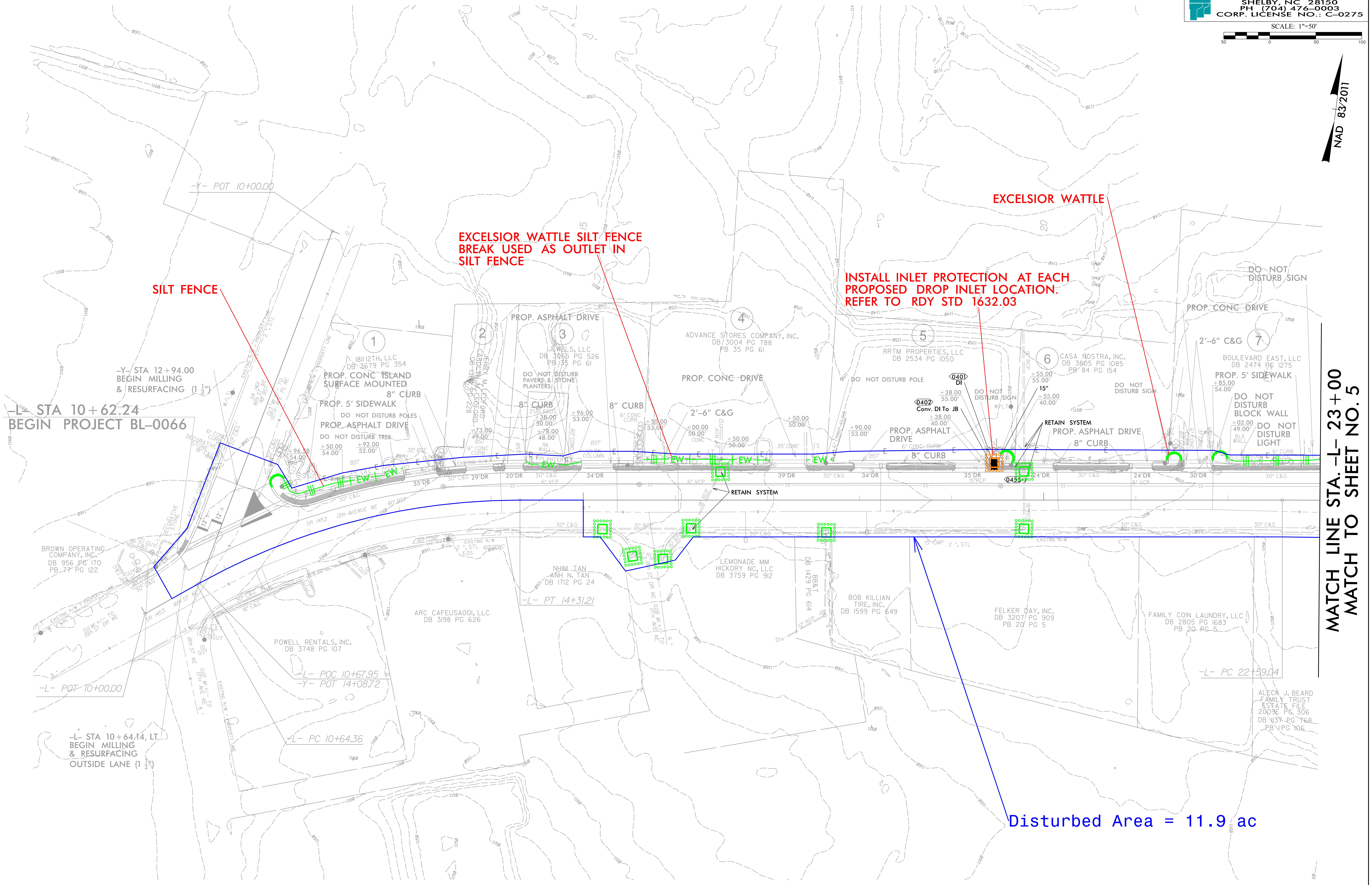
PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-14/CONST.4

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

SCALE: 1"=50'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NAD 83/2011
SILT FENCE
EXCELSIOR WATTLE SILT FENCE BREAK USED AS OUTLET IN SILT FENCE
INSTALL INLET PROTECTION AT EACH PROPOSED DROP INLET LOCATION. REFER TO RDY STD 1632.03
EXCELSIOR WATTLE
-L- STA 10+62.24
BEGIN PROJECT BL-0066
-Y- STA 12+94.00
BEGIN MILLING & RESURFACING (1 ½")
-Y- POT 10+00.00
-L- POT 10+00.00
-L- POC 10+67.95
-Y- POT 14+08.72
-L- PC 10+64.36
-L- PT 14+31.21
-L- PC 22+59.04
-L- STA 10+64.14, LT
BEGIN MILLING & RESURFACING OUTSIDE LANE (1 ½")
1 1811 12TH, LLC DB 3679 PG 354
2 JERRY M. LEDFORD
3 JEWELS, LLC DB 3066 PG 526 PB 35 PG 61
4 ADVANCE STORES COMPANY, INC. DB 3004 PG 788 PB 35 PG 61
5 RRTM PROPERTIES, LLC DB 2534 PG 1050
6 CASA NOSTRA, INC. DB 3805 PG 1085 PB 84 PG 154
7 BOULEVARD EAST, LLC DB 2474 PG 1275
PROP. CONC ISLAND SURFACE MOUNTED 8" CURB
PROP. 5' SIDEWALK
PROP. ASPHALT DRIVE
DO NOT DISTURB POLES
DO NOT DISTURB TREE
DO NOT DISTURB PAVERS & STONE PLANTERS
PROP. CONC DRIVE
DO NOT DISTURB POLE
DO NOT DISTURB SIGN
DO NOT DISTURB BLOCK WALL
DO NOT DISTURB LIGHT
8" CURB
2'-6" C&G
RETAIN SYSTEM
0401 DI
0402 Conv. DI To JB
0455
EW
12th AVENUE NE
SR 1453
BROWN OPERATING COMPANY, INC. DB 956 PG 170 PB 77 PG 122
POWELL RENTALS, INC. DB 3748 PG 107
ARC CAFEUSAOOI, LLC DB 3198 PG 626
NHIM TAN ANH N. TAN DB 1712 PG 24
LEMONADE MM HICKORY NC, LLC DB 3759 PG 912
BB&T DB 1429 PG 614
BOB KILLIAN TIRE, INC. DB 1599 PG 649
FELKER DAY, INC. DB 3207 PG 909 PB 20 PG 5
FAMILY COIN LAUNDRY, LLC DB 2805 PG 1683 PB 20 PG 5
ALECK J. BEARD FAMILY TRUST ESTATE FILE 2009E PG 306 DB 1137 PG 768 PB 1 PG 106
Disturbed Area = 11.9 ac

MATCH LINE STA. -L- 23+00
MATCH TO SHEET NO. 5

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-15/CONST.5

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

SCALE: 1"=50'

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-16/CONST.6

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

SCALE: 1"=50'
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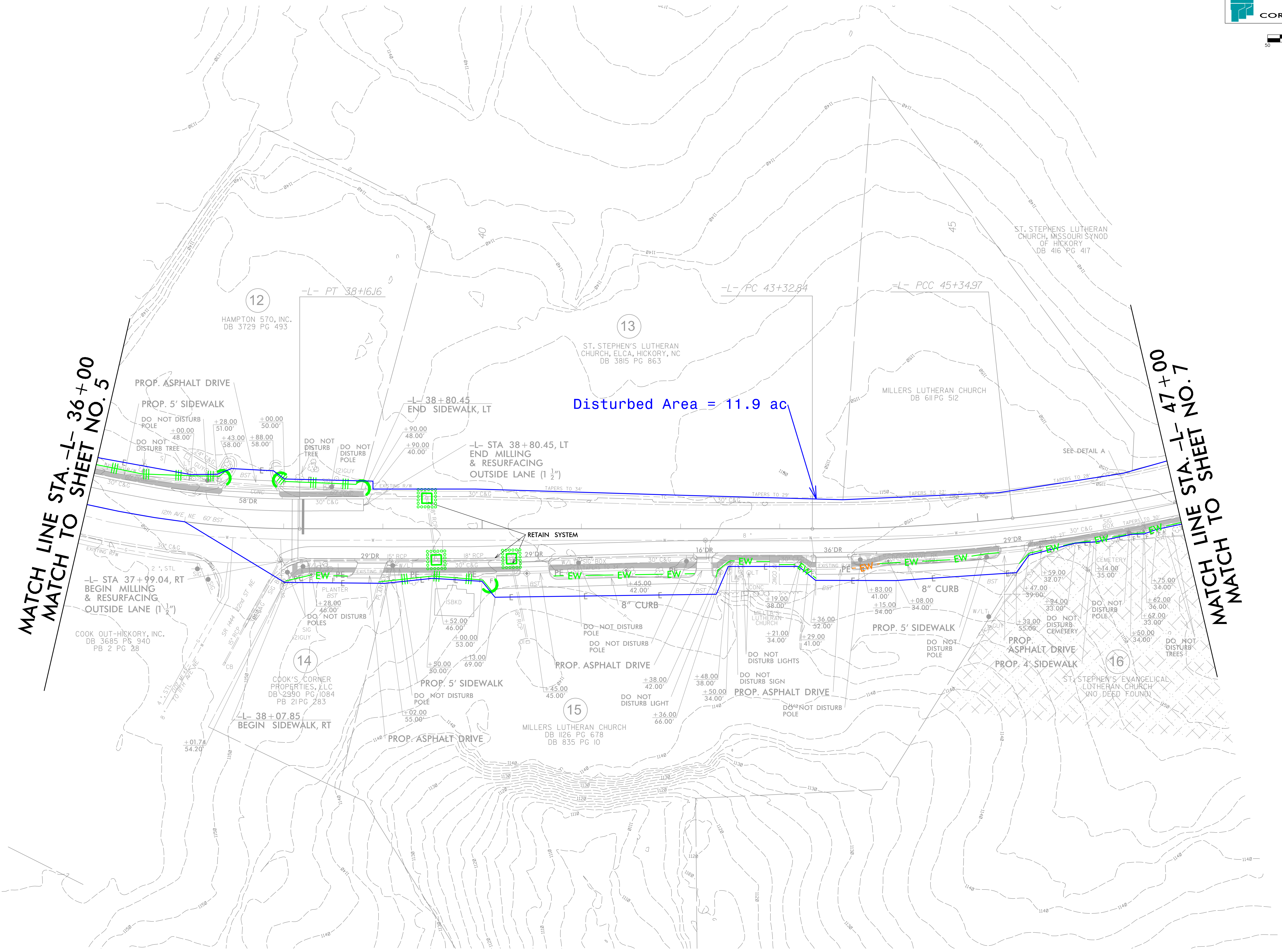
NAD 83/2011



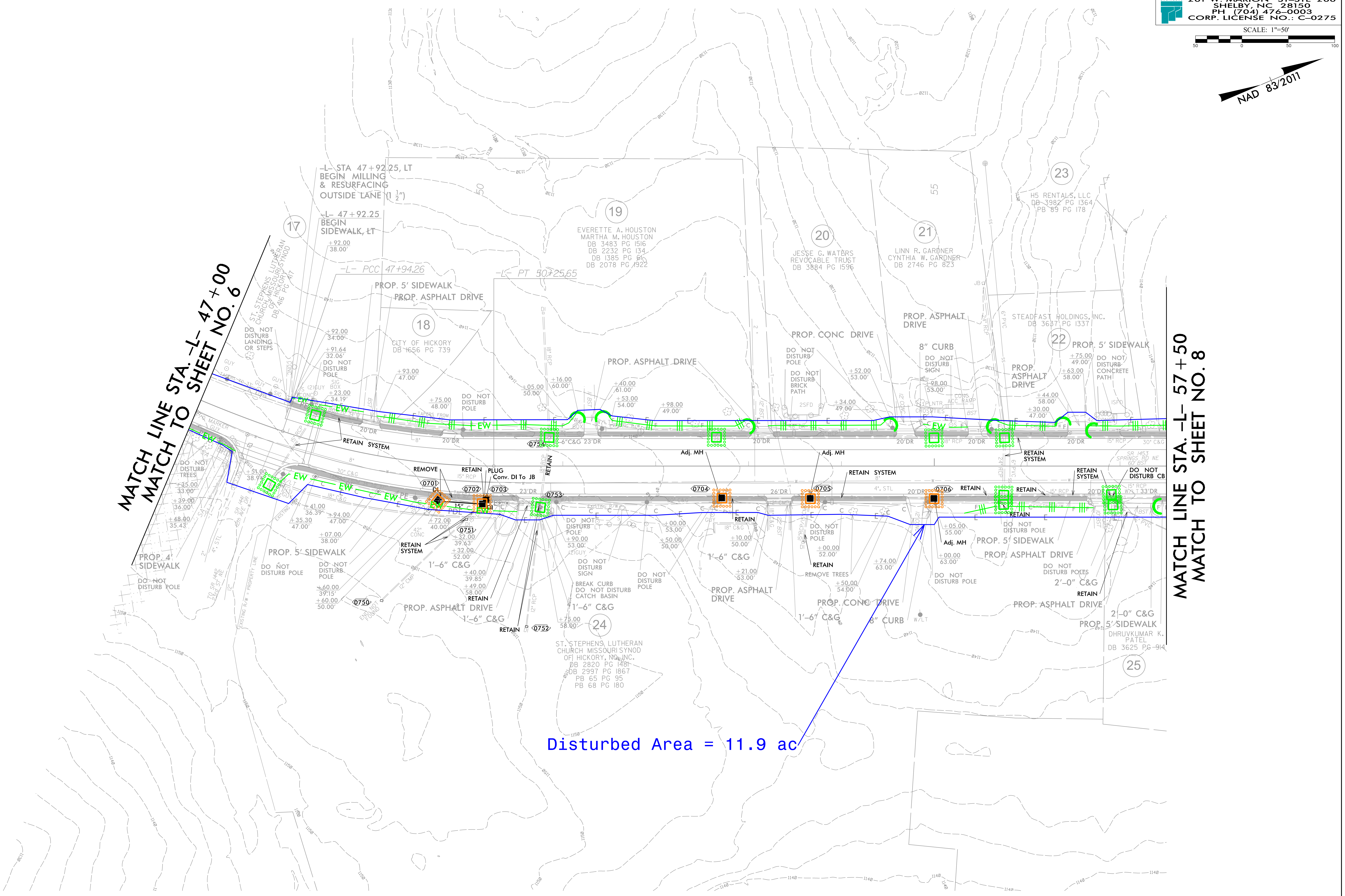
PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-17/CONST.7

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

SCALE: 1"=50'

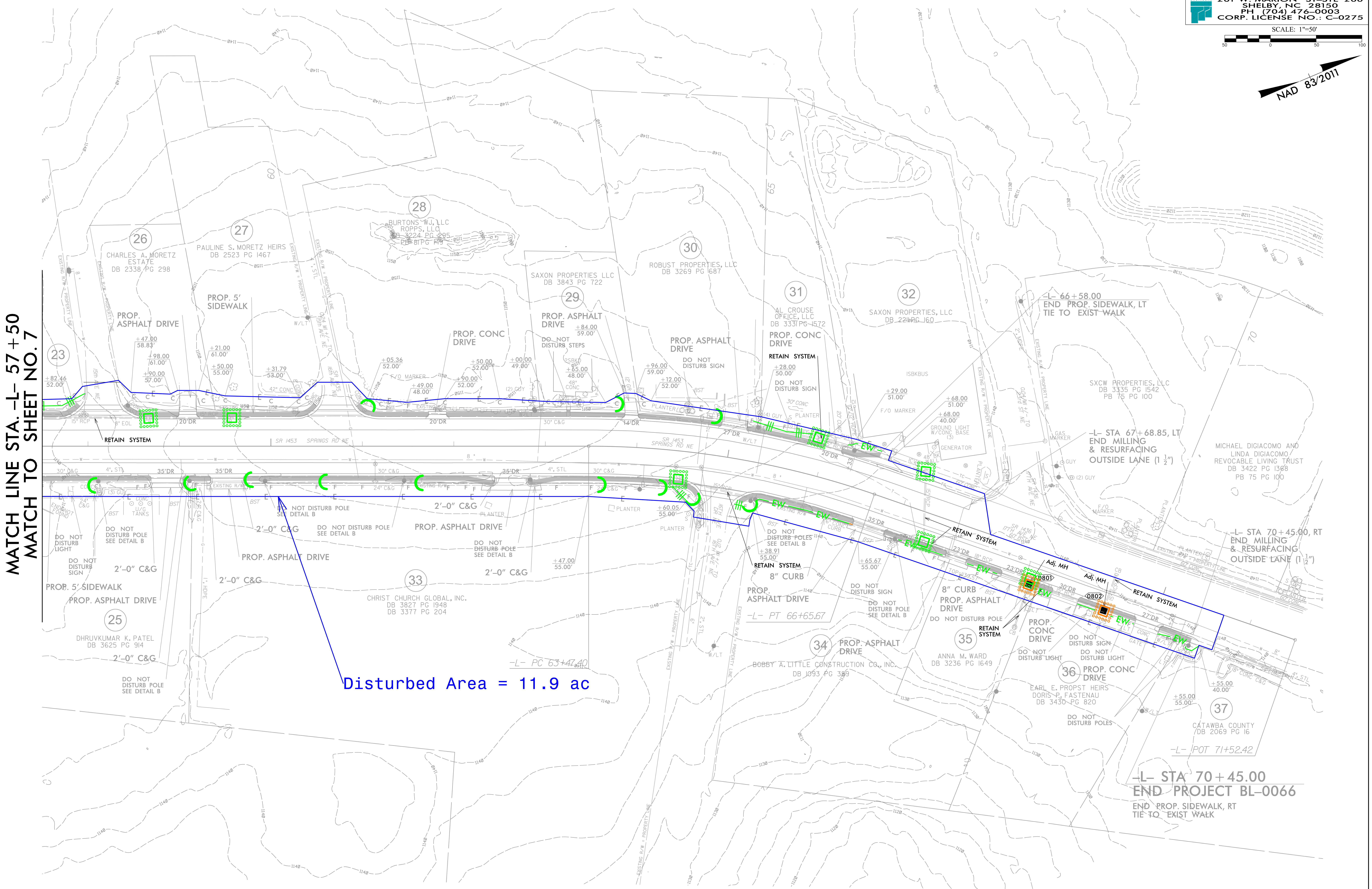


PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

SEE TITLE SHEET FOR LEGEND
FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-18/CONST.8

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



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PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL DRAINAGE AREAS ARE VERY SMALL OR DRAIN TO EXISTING DEVICES

SEE TITLE SHEET FOR LEGEND
DRAINAGE AREAS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-19/CONST.4

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

SCALE: 1"=50'
50 0 50 100

NAD 83/2011
-Y- POT 10+00.00
-Y- STA 12+94.00 BEGIN MILLING & RESURFACING (1 1/2")
-L- STA 10+62.24 BEGIN PROJECT BL-0066
1811 12TH, LLC DB 3679 PG 354
PROP. CONC ISLAND SURFACE MOUNTED
8" CURB
PROP. 5' SIDEWALK
DO NOT DISTURB POLES
PROP. ASPHALT DRIVE
DO NOT DISTURB TREE
PROP. ASPHALT DRIVE
JEWELS, LLC DB 3066 PG 526 PB 35 PG 61
DO NOT DISTURB PAVERS & STONE PLANTERS
8" CURB
ADVANCE STORES COMPANY, INC. DB 3004 PG 788 PB 35 PG 61
PROP. CONC DRIVE
2'-6" C&G
RRTM PROPERTIES, LLC DB 2534 PG 1050
0.42 AC
DO NOT DISTURB POLE
0401 DI
0402 Conv. DI To JB
DO NOT DISTURB SIGN
15"
RETAIN SYSTEM
PROP. ASPHALT DRIVE
8" CURB
0455
CASA NOSTRA, INC. DB 3805 PG 1085 PB 84 PG 154
DO NOT DISTURB SIGN
PROP. ASPHALT DRIVE
8" CURB
DO NOT DISTURB SIGN
PROP. CONC DRIVE
2'-6" C&G
BOULEVARD EAST, LLC DB 2474 PG 1275
PROP. 5' SIDEWALK
DO NOT DISTURB BLOCK WALL
DO NOT DISTURB LIGHT
EW
RETAIN SYSTEM
SR 1453 12th AVENUE NE
BROWN OPERATING COMPANY, INC. DB 956 PG 170 PB 77 PG 122
NHIM TAN ANH N. TAN DB 1712 PG 24
LEMONADE MM HICKORY NC, LLC DB 3759 PG 912
BOB KILLIAN TIRE, INC. DB 1599 PG 649
FELKER DAY, INC. DB 3207 PG 909 PB 20 PG 5
FAMILY COIN LAUNDRY, LLC DB 2805 PG 1683 PB 20 PG 5
ARC CAFEUSA001, LLC DB 3198 PG 626
POWELL RENTALS, INC. DB 3748 PG 107
-L- PT 14+31.21
-L- POC 10+67.95
-Y- POT 14+08.72
-L- POT 10+00.00
-L- PC 10+64.36
-L- PC 22+59.04
-L- STA 10+64.14, LT BEGIN MILLING & RESURFACING OUTSIDE LANE (1 1/2")
ALECK J. BEARD FAMILY TRUST ESTATE FILE 2009E PG 306 DB 1137 PG 768 PB 1 PG 106
MATCH LINE STA. -L- 23+00
MATCH TO SHEET NO. 5

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL DRAINAGE AREAS ARE VERY SMALL OR DRAIN TO EXISTING DEVICES

SEE TITLE SHEET FOR LEGEND

DRAINAGE AREAS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-20/CONST.5

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

SCALE: 1"=50'

PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

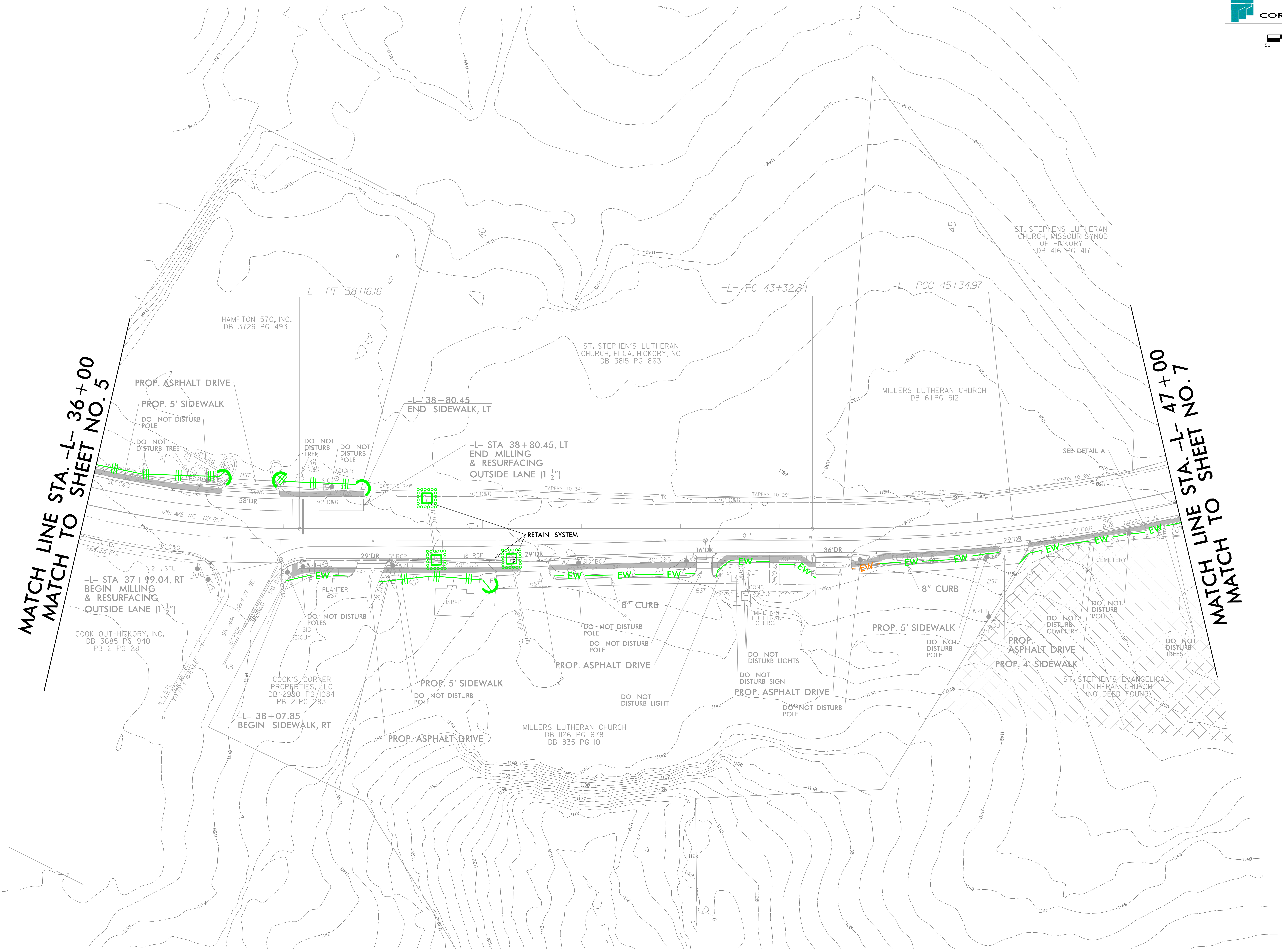
ADDITIONAL DRAINAGE AREAS ARE VERY SMALL OR DRAIN TO EXISTING DEVICES

SEE TITLE SHEET FOR LEGEND
DRAINAGE AREAS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-21/CONST.6

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

SCALE: 1"=50'



PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

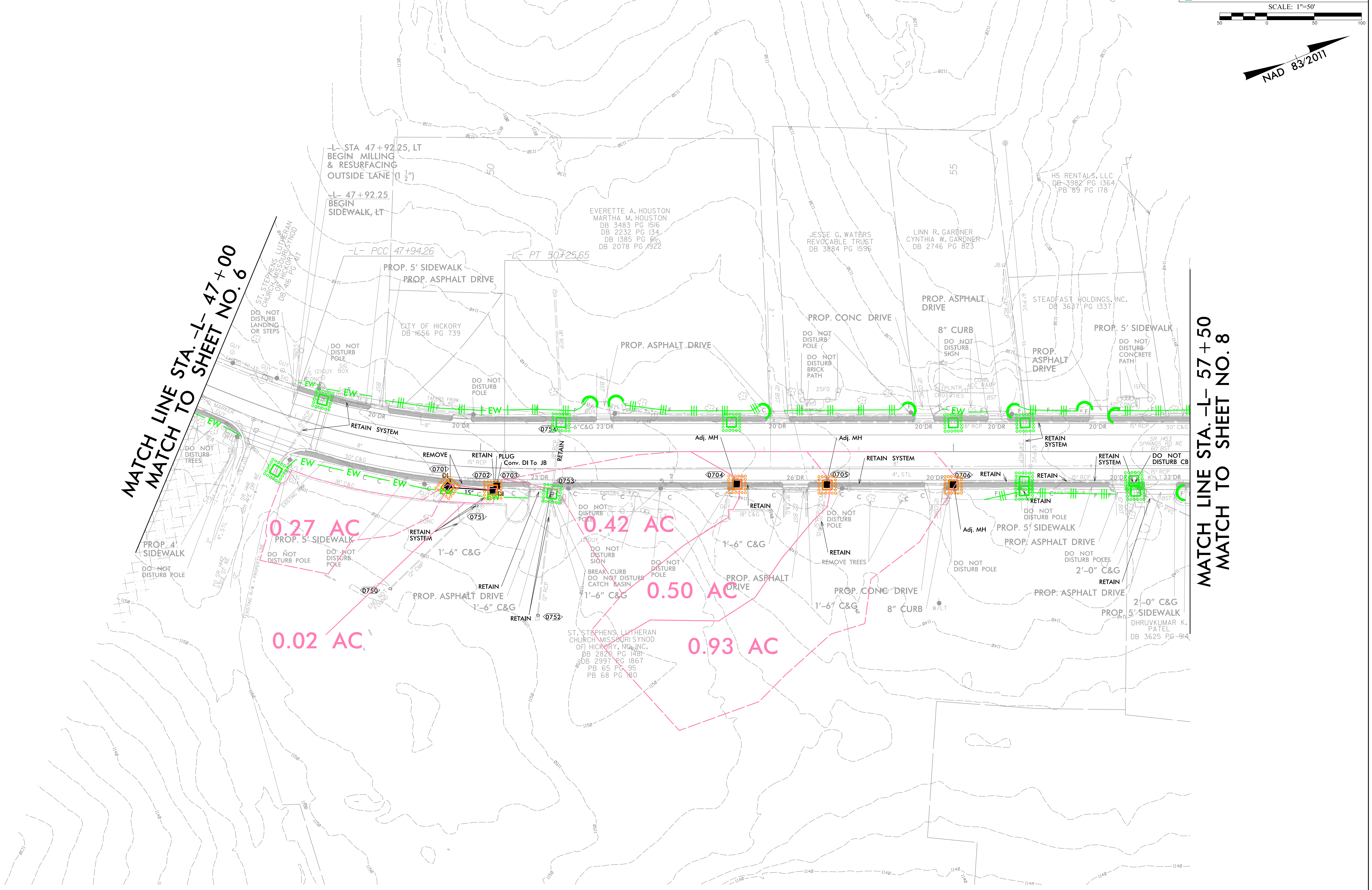
ADDITIONAL DRAINAGE AREAS ARE VERY SMALL OR DRAIN TO EXISTING DEVICES

SEE TITLE SHEET FOR LEGEND

DRAINAGE AREAS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-22/CONST.7

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



PURPLE ITEMS IN CG PHASE ONLY
GREEN ITEMS IN BOTH PHASES
ORANGE ITEMS IN FINAL PHASE ONLY

ADDITIONAL DRAINAGE AREAS ARE VERY SMALL OR DRAIN TO EXISTING DEVICES

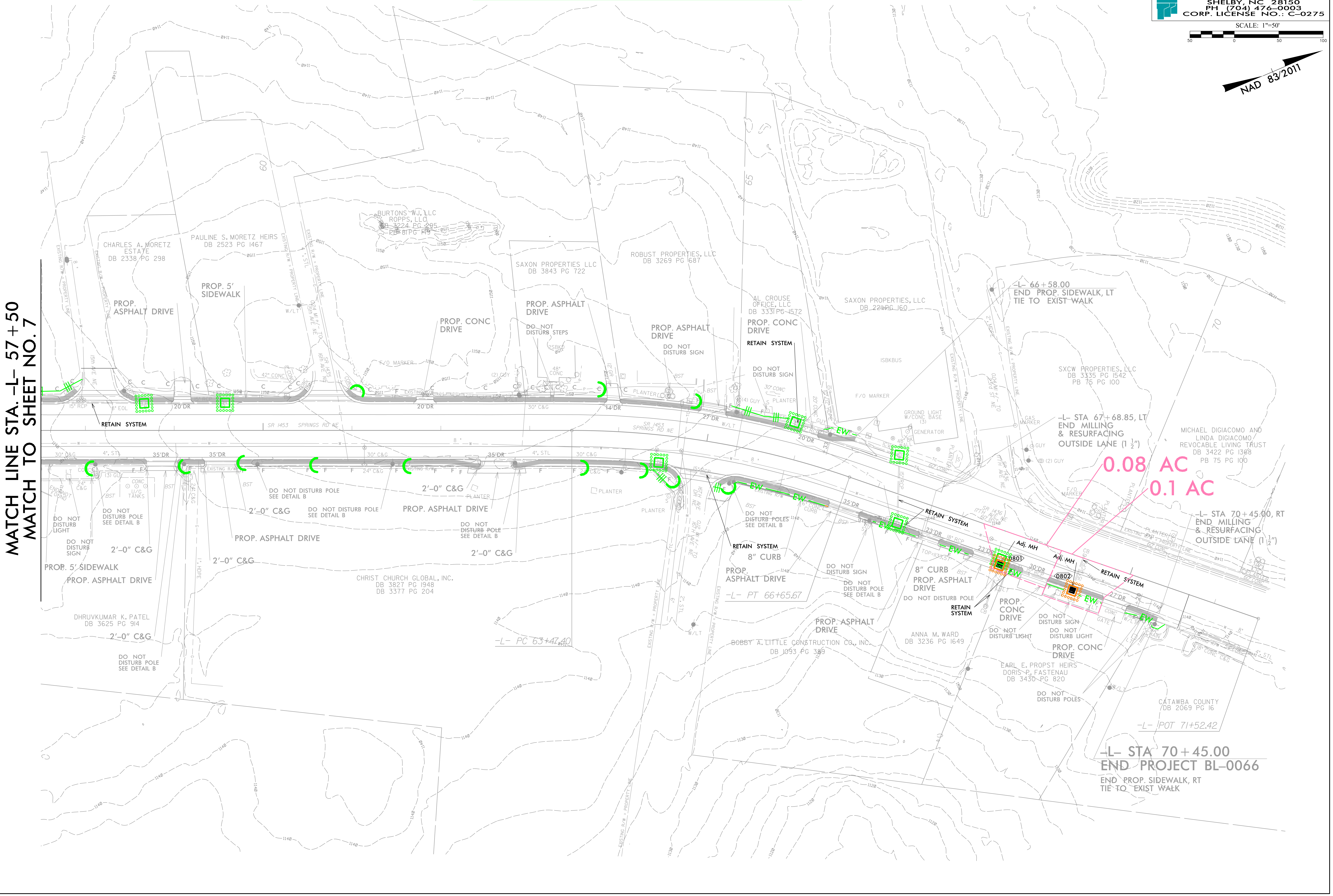
SEE TITLE SHEET FOR LEGEND

DRAINAGE AREAS

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	EC-23/CONST.8

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

SCALE: 1"=50'


50
0
50
100
NAD 83/2011
MATCH LINE STA. -L- 57+50
MATCH TO SHEET NO. 7
CHARLES A. MORETZ ESTATE DB 2338 PG 298
PAULINE S. MORETZ HEIRS DB 2523 PG 1467
BURTONS WJ, LLC ROPPS, LLC DB 3224 PG 295 PB 81 PG 119
SAXON PROPERTIES LLC DB 3843 PG 722
ROBUST PROPERTIES, LLC DB 3269 PG 687
AL CROUSE OFFICE, LLC DB 3331 PG 1572
SAXON PROPERTIES, LLC DB 2214 PG 160
SXCW PROPERTIES, LLC DB 3335 PG 1542 PB 75 PG 100
MICHAEL DIGIACOMO AND LINDA DIGIACOMO REVOCABLE LIVING TRUST DB 3422 PG 1368 PB 75 PG 100
CHRIST CHURCH GLOBAL, INC. DB 3827 PG 1948 DB 3377 PG 204
DHRUVKUMAR K. PATEL DB 3625 PG 914
BOBBY A. LITTLE CONSTRUCTION CO., INC. DB 1093 PG 389
ANNA M. WARD DB 3236 PG 1649
EARL E. PROPST HEIRS DORIS P. FASTENAU DB 3430 PG 820
CATAWBA COUNTY DB 2069 PG 16
PROP. ASPHALT DRIVE
PROP. 5' SIDEWALK
PROP. CONC DRIVE
DO NOT DISTURB STEPS
DO NOT DISTURB SIGN
RETAIN SYSTEM
DO NOT DISTURB POLE SEE DETAIL B
DO NOT DISTURB LIGHT
2'-0" C&G
8" CURB
SR 1453 SPRINGS RD NE
-L- 66+58.00 END PROP. SIDEWALK, LT TIE TO EXIST WALK
-L- STA 67+68.85, LT END MILLING & RESURFACING OUTSIDE LANE (1 1/2")
-L- STA 70+45.00, RT END MILLING & RESURFACING OUTSIDE LANE (1 1/2")
0.08 AC
0.1 AC
Adj. MH
0801
0802
EW
-L- PT 66+65.67
-L- PC 63+47.40
-L- POT 71+52.42
-L- STA 70+45.00
END PROJECT BL-0066
END PROP. SIDEWALK, RT TIE TO EXIST WALK

09/08/99

TIP PROJECT: BL-0066

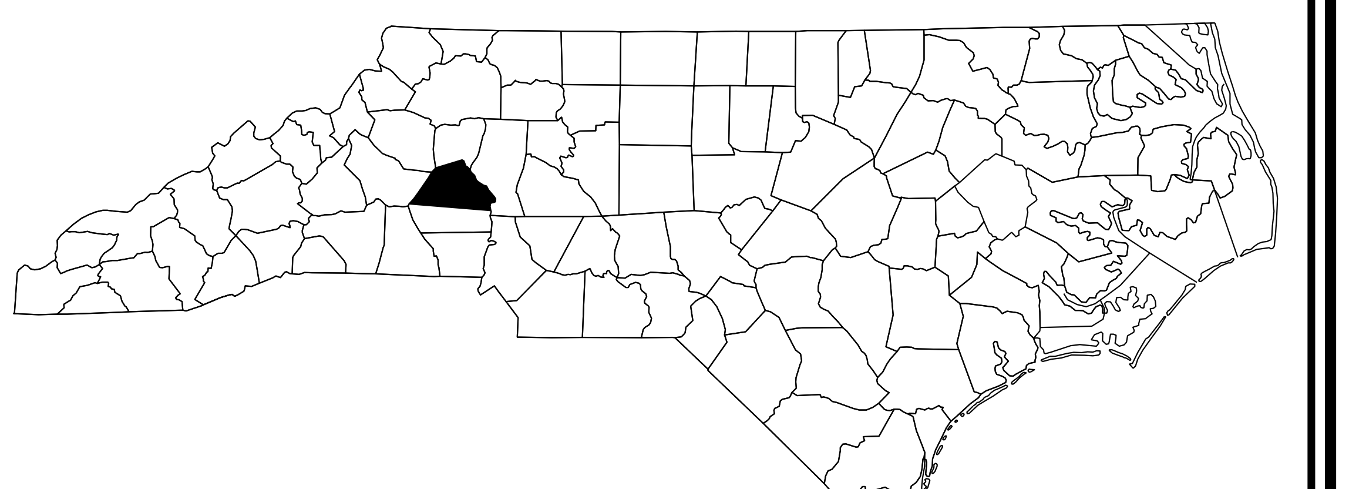
CONTRACT:

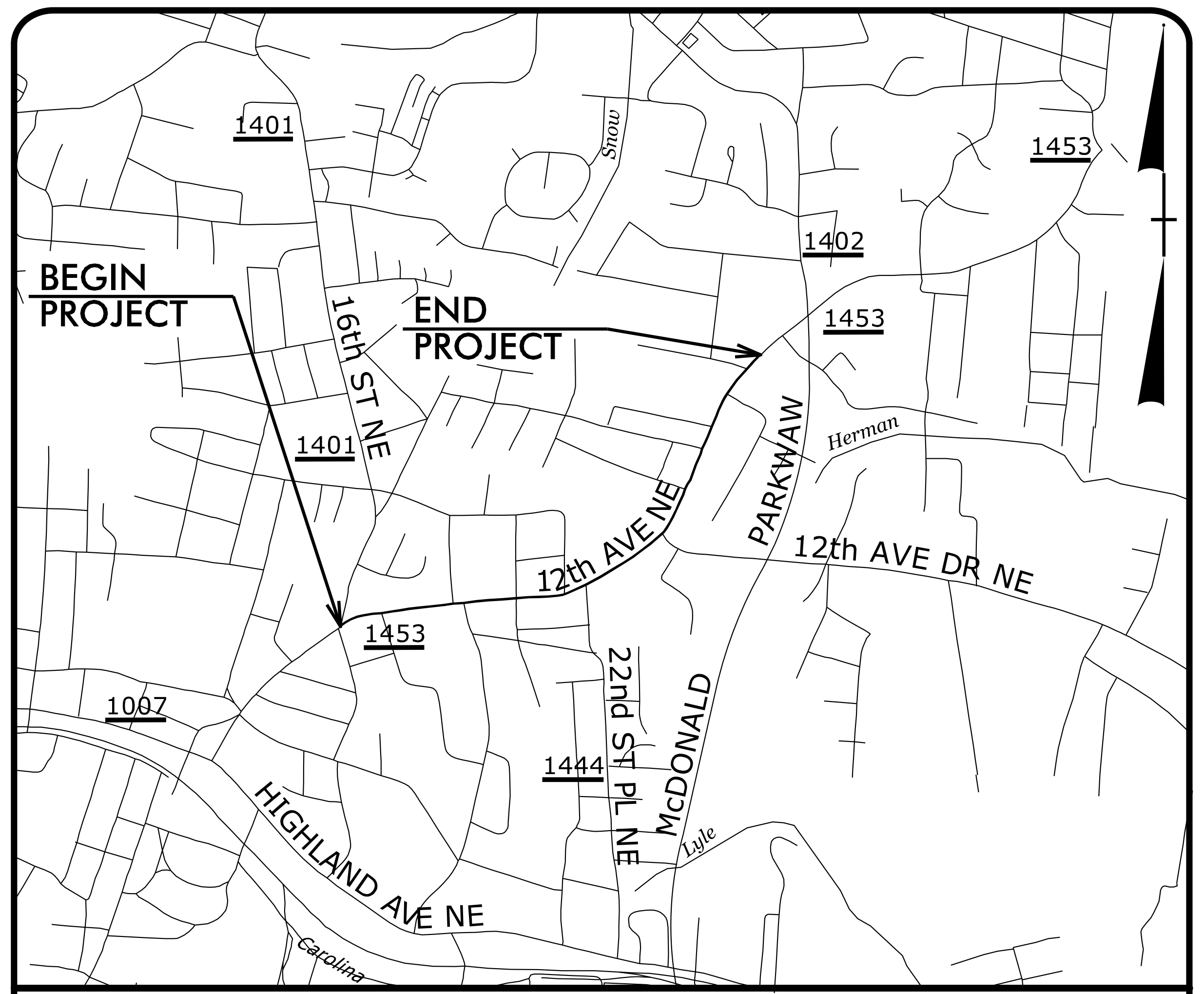
38536.53

Project No.	Sheet No.
BL-0066	Sig. 1.0

STATE OF NORTH CAROLINA
CATAWBA COUNTY

CITY OF HICKORY

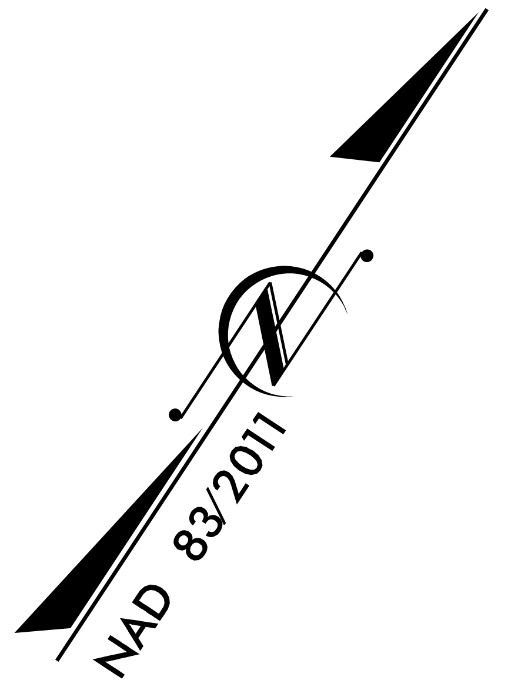


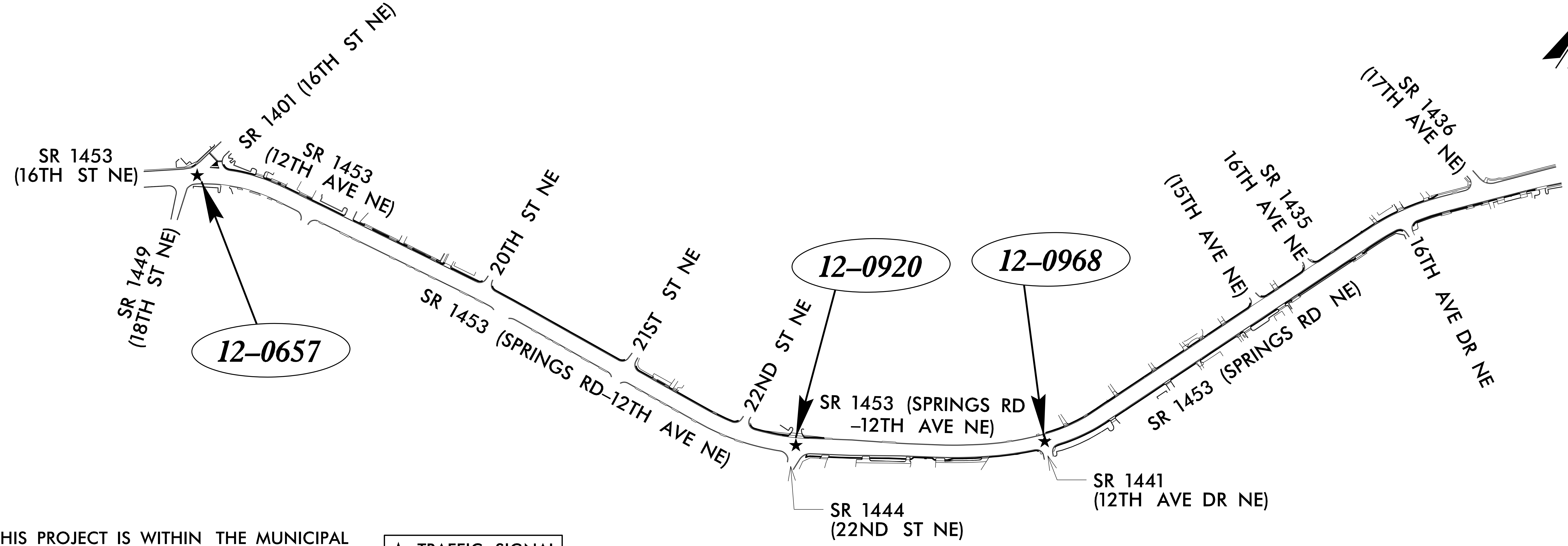


VICINITY MAP

LOCATION: SIDEWALKS ALONG BOTH SIDES OF SR 1453 (12th AVE. NE/SPRINGS RD NE) BETWEEN SR 1401 (16th ST NE/SANDY RIDGE RD) AND McDONALD PARKWAY NE

TYPE OF WORK: TRAFFIC SIGNALS





THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF HICKORY.

★ TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF PLANS

Sheet #	Reference #	Location /Description
Sig. 1.0	--------	Title Sheet
Sig. 2.0–2.4	12–0657	SR 1453 (16th St. NE & 12th Ave. NE) at SR 1401 (16th St. NE) and SR 1449 (18th St. NE)
Sig. 3.0–3.3	12–0920	SR 1453 (12th Ave. NE) at 22nd St. NE /Private Drive
Sig. 4.0–4.3	12–0968	SR 1453 (12th Ave. NE /Springs Rd. NE) at SR 1441 (12th Ave. Dr. NE)

LEGEND

##-#### SIGNAL INVENTORY NUMBER

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS UNIT

Contacts:

R. Nicholas Zinser, PE – Western Region Signals Engineer

Todd Joyce, PE – Signal Equipment Design Engineer

CITY CONTACT: WILL HAMBLIN

PLANS PREPARED BY:	PLANS PREPARED FOR:
vhb 940 Main Campus Drive Suite 500 Raleigh, NC 27606 NC License No. C-3705	HICKORY North Carolina Life. Well Crafted. 76 N CENTER ST HICKORY, NC 28601
Refer to Roadway Standard Drawings NCDOT" dated January 2024 and Standard Specifications for Roads and Structures" dated January 2024.	JIMMY L. TERRY, PE PROJECT ENGINEER JIANXIN (JUSTINE) MA, PE, PTOE, PTP PROJECT DESIGN ENGINEER

SEAL

SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...
SIGNATURE
1/6/2026
DATE

DIVISION OF HIGHWAYS

TRANSPORTATION MOBILITY AND SAFETY DIVISION

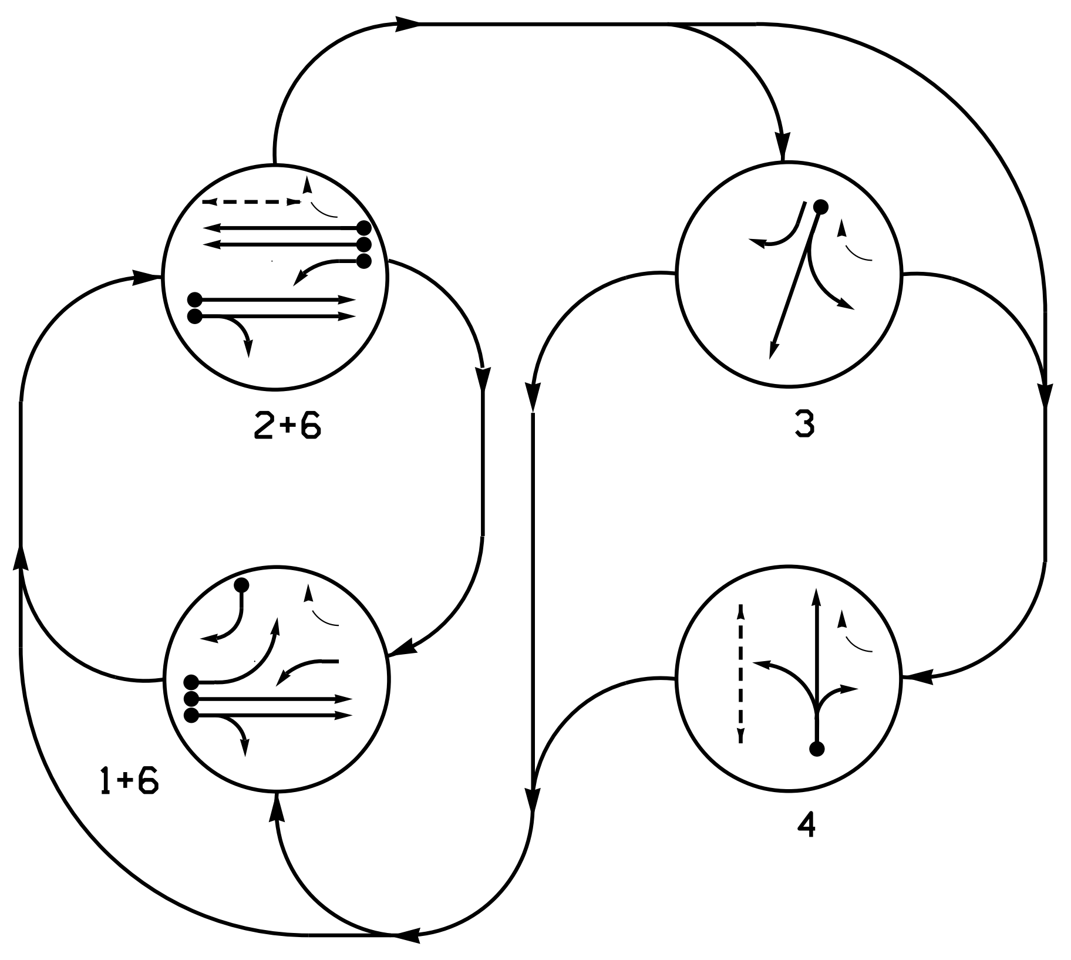
TSMO Unit

750 N. Greenfield Parkway, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig.2.0

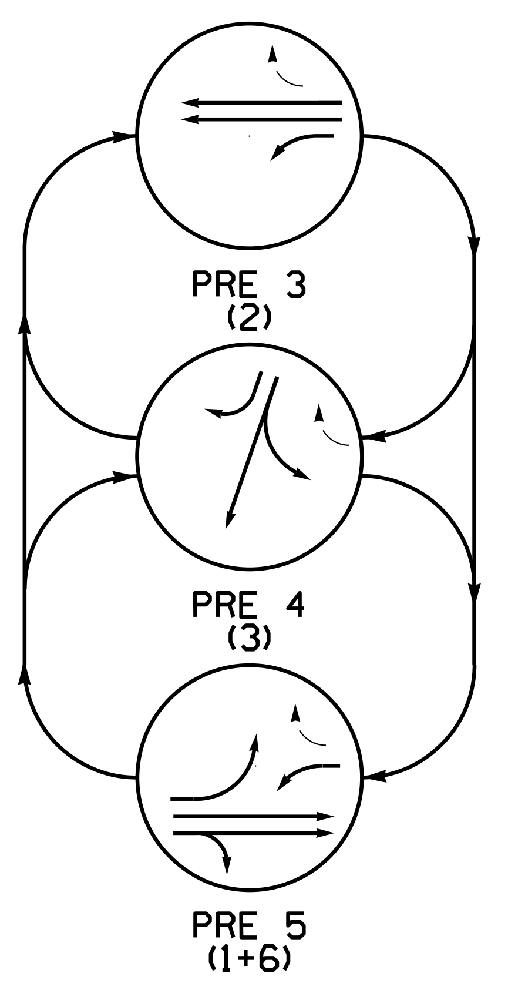
4 Phase
Fully Actuated
Hickory Signal System With EVP

PHASING DIAGRAM



EV PREEMPT PHASES

(Medium Priority)



PHASING DIAGRAM DETECTION LEGEND

●— DETECTED MOVEMENT
←— UNDETECTED MOVEMENT (OVERLAP)
←– – UNSIGNALIZED MOVEMENT
←– – → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 3	PHASE 4	PRE 3	PRE 4	PRE 5	FLASH
11	←	←R	←R	←R	←R	←R	←	←R
21	←FY	←FY	←R	←R	←FY	←R	←FY	←R
22, 23	R	G	R	R	G	R	R	R
31	R	R	←G	R	R	←G	R	R
32	R / →	R	G	R	R	G	R	R
41	R	R	R	←G	R	R	R	R
42	R	R	R	G	R	R	R	R
61, 62	G	G	R	R	R	R	G	R
P21, P22	DW	W	DW	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	W	DW	DW	DW	DRK
* Sign D	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

*Only "ON" during Phase 4 Walk and PED Clear.

SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

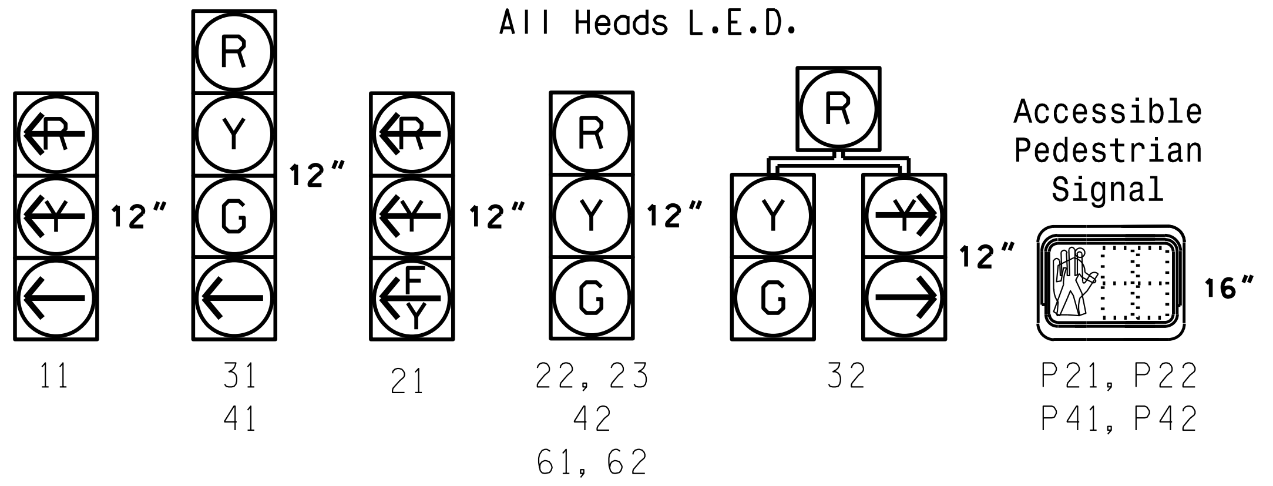
INDUCTIVE LOOPS						DETECTOR PROGRAMMING														
							TIMING		OPERATION MODE										STATUS	
									0	1	2	3	4	5	6	7				
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	ASSIGNED PHASE	DELAY	EXTEND (STRETCH)	VEHICLE	PEDESTRIAN	1 CALL	STOP A	STOP B	PROT/PER LEFT	PROT/PER THROUGH	AND	SWITCH	SYSTEM LOOPS	NEW	EXISTING
1A	6X60	EXISTING	0	-	X	1	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
1B	6X40	2-4-2	0	X	-	1	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2A	6X6	4	300	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2B	6X6	4	300	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2C	6X40	2-4-2	0	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
3A	6X40	2-4-2	0	X	-	3	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
4A	6X60	EXISTING	0	-	X	4	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6A	6X6	4	300	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6B	6X6	4	300	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X

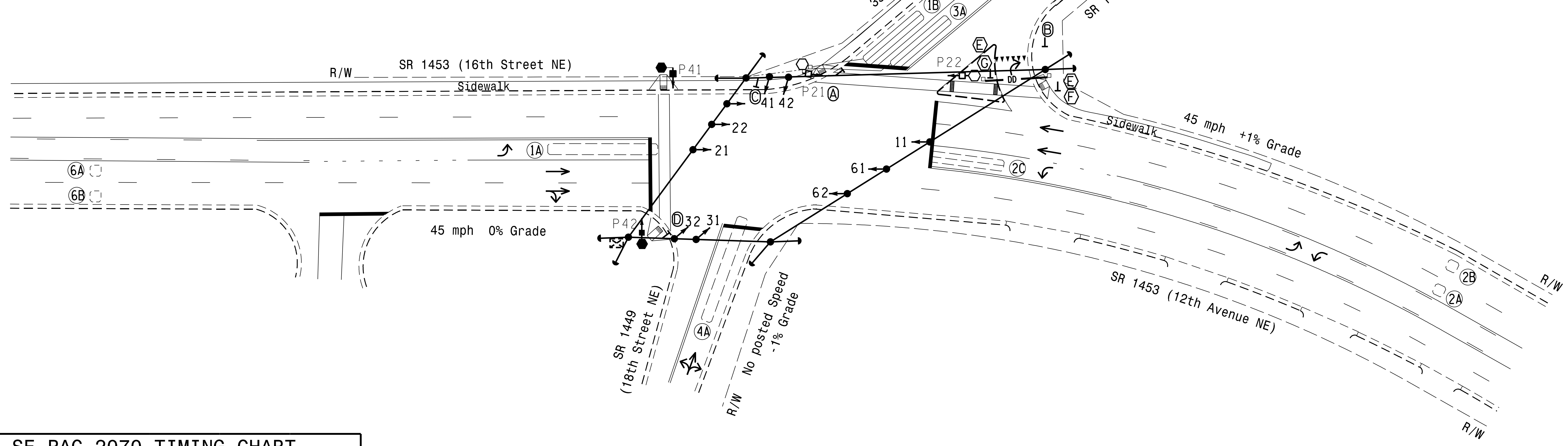
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Refer to Pavement Marking Plans for pavement markings.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Replace existing pushbuttons with APS Pushbuttons.
11. This intersection features accessible pedestrian signals utilizing percussive tone walk indications.
12. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
13. City of Hickory # 1002

SIGNAL FACE I.D.

All Heads L.E.D.





LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
○—)	Signal Pole with Guy	●—◗
○—◡	Signal Pole with Sidewalk Guy	●—◒
▭	Inductive Loop Detector	⌐ - - ¬
☒	Controller & Cabinet	⌜×⌟
□	Junction Box	■
- · - · -	2-in Underground Conduit	— · — · —
N/A	Right of Way	— — — —
→	Directional Arrow	→
N/A	Curb Ramp	⏢
⬡	Type II Signal Pedestal	⬢
— DD —	Directional Drill	N/A
⟨A⟩	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ
⟨B⟩	"YIELD" Sign (R1-2)	Ⓑ
⟨C⟩	" TURNING TRAFFIC MUST YIELD TO PEDESTRIANS" Sign	Ⓒ
⟨D⟩	"NO TURN ON RED " Blankout Sign	Ⓓ
⟨E⟩	Pedestrian Crossing Sign (W11-2)	Ⓔ
⟨F⟩	Left Downward Diagonal Arrow Plaque (W16-7L)	Ⓕ
⟨G⟩	Right Downward Diagonal Arrow Plaque (W16-7R)	Ⓖ

SE-PAC 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	6
Min Green *	7	12	7	7	12
Passage Gap *	2.0	6.0	2.0	2.0	6.0
Maximum Green *	30	50	30	30	50
Yellow Change	3.0	4.5	3.7	3.2	4.5
Red Clear	3.9	2.2	2.4	3.2	2.2
Walk *	-	7	-	7	-
Pedestrian Clear	-	16	-	20	-
Advance Walk	-	7	-	7	-
Added Initial *	-	1.5	-	-	1.5
Maximum Initial *	-	34	-	-	34
Time Before Reduction *	-	0	-	-	0
Time To Reduce *	-	15	-	-	15
Minimum Gap	-	3.0	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	LOCK
Dual Entry	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all phases should not be lower than 4 seconds.

SE-PAC Preemption

FUNCTION	PRE 3	PRE 4	PRE 5
MIN GRN / WLK	1	1	1
EXIT PHASES	2+6	2+6	2+6
DELAY	0	0	0
MXCALL	120	120	120
SEL PED CLR	20	20	20
SEL YEL / 10	45*	45*	45*
SEL RED / 10	22*	22*	22*
TRACK GREEN	0	0	0
TRK PED CLR	0	0	0
TRK YEL / 10	0	0	0
TRK RED / 10	0	0	0
DWELL GRN	12	12	12
RET PED CLR	0	0	0
RET YEL / 10	0*	0*	0*
RET RED / 10	0*	0*	0*
PREEMPT EXTEND **	2	2	2

* Time defaults to time used for phase during normal operation.
** Program extend time on Optical Detector Unit.

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 16th Street.
P22	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 16th Street.
P41	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 16th Street.
P42	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 16th Street.

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1453 (16th St NE &
12th Ave NE) at
SR 1401 (16th St NE)
and SR 1449 (18th St NE)
Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

SCALE
0 40'
1"=40'

REVISIONS	INIT.	DATE

SEAL
SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...

SIGNATURE	DATE
Jianxin Ma	1/6/2026

SIG. INVENTORY NO. 12-0657

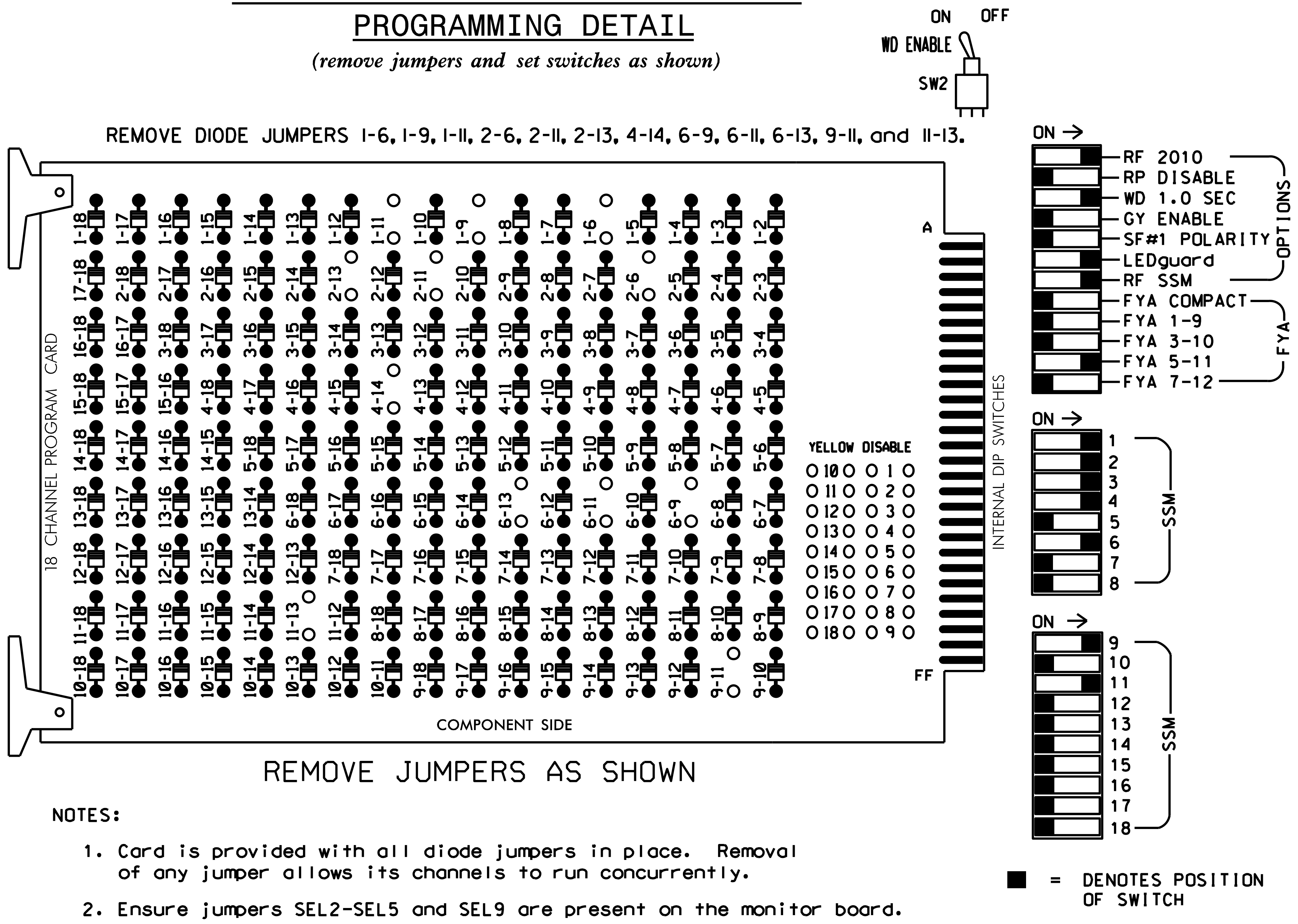
38536.53

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig 2.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 2-6, 2-11, 2-13, 4-14, 6-9, 6-11, 6-13, 9-11, and 11-13.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phases 2 and 6 Green/Don't Walk.
3. Enable simultaneous gap-out feature for all phases.
4. Program phases 2 and 6 for volume density operation.
5. The cabinet and controller are part of the Hickory Signal System.

EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................SE-PAC2070
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX FILE
LOAD SWITCHES USED......S1,S2,S3,S4,S5,S6,S8,AUX S1,AUX S4
PHASES USED.............1,2,2PED,3,4,4PED,6
OVERLAP A...............✱
OVERLAP B...............NOT USED
OVERLAP C...............✱
OVERLAP D...............NOT USED
✱ SEE SHEET 2 FOR OVERLAP PROGRAMMING

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4		S5		S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3		4		14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4		4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	22,23	P21, P22	31	32	41	42	P41, P42	NU	61,62	NU	NU	NU	NU	32	NU	NU	21★	NU	NU
RED		128		116	116	101	101			134					✱					
YELLOW		129		117	117	102	102			135										
GREEN		130		118	118	103	103			136										
RED ARROW	125																	A114		
YELLOW ARROW	126														A122			A115		
FLASHING YELLOW ARROW																		A116		
GREEN ARROW	127			118		103									A123					
✋			113					104												
🚶			115					106												

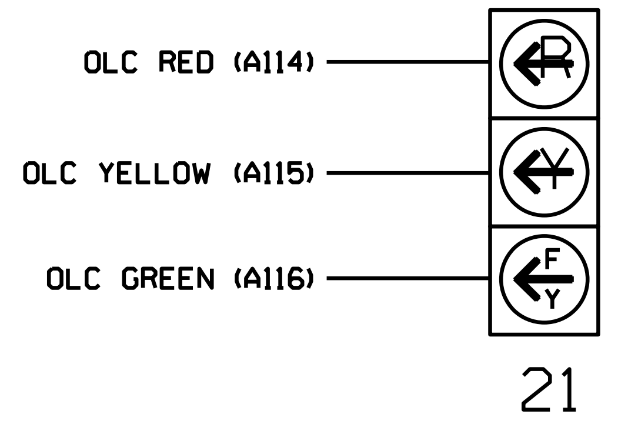
NU = Not Used

✱ Denotes install load resistor. See load resistor installation detail below.

★ See pictorial of head wiring in detail below.

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



NOTE: See sheet 2 for Protected & Permitted Phases programming.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	SLOT EMPTY	Ø 1 1A	Ø 2 2A	Ø 2 2C	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	SLOT EMPTY	FS DC ISOLATOR
	L		Ø 1 1B	Ø 2 2B	NOT USED	NOT USED	NOT USED						Ø4 PED DC ISOLATOR		ST DC ISOLATOR
"J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	CH. 3 PRE-3	CH. 1 PRE-4	SLOT EMPTY
	L		Ø 6 6B										CH. 4 PRE-5	CH. 2 UNUSED	

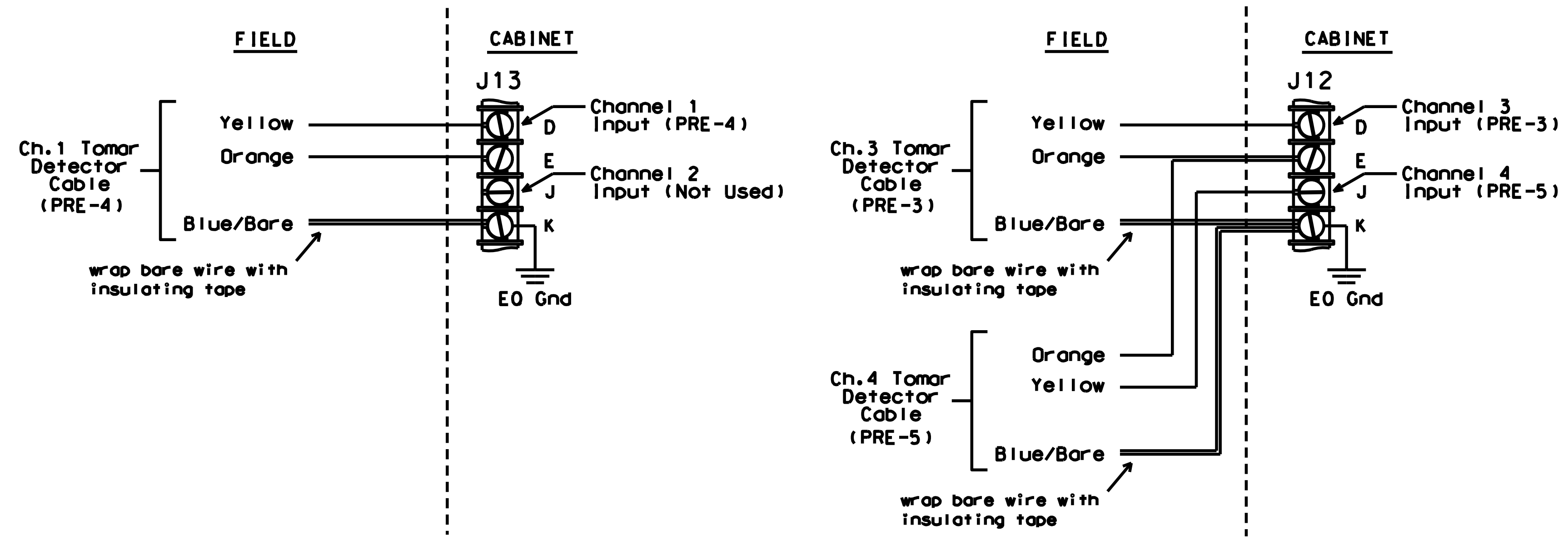
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME
PRE 3,4,5 = EV PREEMPTS

4 CHANNEL TOMAR OSP CARD
INSERT CARD INTO
SLOT J13

TYPICAL TOMAR FIELD WIRE DETAIL

(input file, rear view)


FIELD
CABINET
J13
Ch.1 Tomar Detector Cable (PRE-4)
Yellow
Orange
Blue/Bare
D
E
J
K
Channel 1 Input (PRE-4)
Channel 2 Input (Not Used)
wrap bare wire with insulating tape
EO Gnd
FIELD
CABINET
J12
Ch.3 Tomar Detector Cable (PRE-3)
Yellow
Orange
Blue/Bare
wrap bare wire with insulating tape
Ch.4 Tomar Detector Cable (PRE-5)
Orange
Yellow
Blue/Bare
wrap bare wire with insulating tape
D
E
J
K
Channel 3 Input (PRE-3)
Channel 4 Input (PRE-5)
EO Gnd

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
1A	TB2-5,6	I2U	39	3	1	3	
1B	TB2-7,8	I2L	43	4	1	10	
2A	TB2-9,10	I3U	63	5	2		
2B	TB2-11,12	I3L	76	6	2		
2C	TB4-1,2	I4U	47	7	2		
3A	TB4-5,6	I5U	58	9	3	3	
4A	TB4-9,10	I6U	41	11	4	10	
6A	TB3-5,6	J2U	40	21	6		
6B	TB3-7,8	J2L	44	22	6		
PED PUSH BUTTONS							
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED		
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED		

NOTE:
INSTALL DC ISOLATOR IN INPUT FILE SLOT I12.

INPUT FILE POSITION LEGEND: J2L

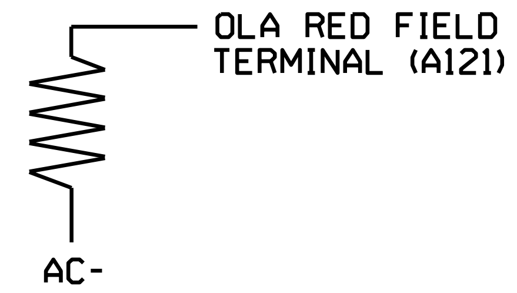
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0657
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail - Sheet 1 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1453 (16th St NE &
12th Ave NE) at
SR 1401 (16th St NE)
and SR 1449 (18th St NE)

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

SEAL

SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...

1/6/2026
DATE

SIG. INVENTORY NO. 12-0657

38536.53

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig 2.2

FLASHING YELLOW ARROW PROTECTED/PERMISSIVE SEQUENCE FOR OVERLAP C, AND PARENT PHASE PROGRAMMING FOR OVERLAP A

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
SE-PAC UNIT DATA          PRESS # DESIRED

 1-STARTUP & MISC       6-ALT SEQUENCES
 2-REMOTE FLASH         7-PORT 1 DATA
 3-OVERLAP STANDARD     8-I/O MISC
 4-OVERLAP SPECIAL      9-SIG DRV OUT
 5-RING STRUCTURE

                              F-PRIOR MENU
```

Enter parent phase '1' →

```
SE-PAC OVERLAP - A              (0-NO/1-YES)

 OVL PHASES:  100000000 0000000
    PHS/CHN:  123456789 0123456789 01234
 OVL CHN(S):  000000000 000100000 00000


A-UP B-DN D-DspChn   E-EDIT  F-PRIOR MENU
```

PRESS "B" TWICE

DO NOT enter any OVL PHASES! →

```
SE-PAC OVERLAP - C              (0-NO/1-YES)

 OVL PHASES:  000000000 0000000
    PHS/CHN:  123456789 0123456789 01234
 OVL CHN(S):  000000000 000001000 00000


A-UP B-DN D-DspChn   E-EDIT  F-PRIOR MENU
```

OVERLAP PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

ALL RED FLASH STARTUP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
EPAC UNIT DATA            PRESS # DESIRED

 1- STARTUP & MISC      6- ALT SEQUENCES
 2- REMOTE FLASH        7- PORT 1 DATA
 3- OVERLAP STANDARD    8- I/O MISC
 4- OVERLAP SPECIAL     9- SIG DRV OUT
 5- RING STRUCTURE
                                 F- PRIOR MENU
```

```
EPAC STARTUP & MISC
STARTUP TIME.:  6 (SEC) STATE: 1 (0-FL
RED REV/10...: 40 (TSEC)            1-RED)
AUTO PED CLR.:  0 (0-NO  1-YES)
STOP T RESET.:  0 (0-NO  1-YES)
ALT SEQUENCE.:  0 (0-18)
I'NAT'L SEQ  :  0 (0-NO  1-YES)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

STARTUP PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

REMOTE FLASH PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
EPAC UNIT DATA            PRESS # DESIRED

 1- STARTUP & MISC      6- ALT SEQUENCES
 2- REMOTE FLASH        7- PORT 1 DATA
 3- OVERLAP STANDARD    8- I/O MISC
 4- OVERLAP SPECIAL     9- SIG DRV OUT
 5- RING STRUCTURE
                              F- PRIOR MENU
```

```
EPAC FLASH      TST-A=FLSH: 0  (0-NO/1-YES)
 FLSH 2=Y, 3=S: 111101000 0001010000 00000
 ALT FLSH     : 101001000 0001000000 00000
       CHN/PHS: 123456789 0123456789 01234
   ENTRY PHASE: 010001000 0000000
    EXIT PHASE: 010001000 0000000
    FIELD NAME: CHN 1/LSW 1/PHS 1 V DRVR
A-UP  B-DN  C-LT  D-RT          F-PRIOR MENU
```

REMOTE FLASH PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

PROTECTED AND PERMISSIVE PHASES FOR FLASHING YELLOW ARROW

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
SE-PAC UNIT DATA          PRESS # DESIRED

 1-STARTUP & MISC       6-ALT SEQUENCES
 2-REMOTE FLASH         7-PORT 1 DATA
 3-OVERLAP STANDARD     8-I/O MISC
 4-OVERLAP SPECIAL      9-SIG DRV OUT
 5-RING STRUCTURE

                              F-PRIOR MENU
```

PROTECTED PHASES →
PERMISSIVE PHASES →

```
SE-PAC OVLP.A...B...C...D...E...F...G...H.
   TR GRN   0   0   0   0   0   0   0   0
   YEL/10  40  40  40  40  40  40  40  40
   RED/10  20  20  20  20  20  20  20  20
   -G/Y     0   0   5   0   0   0   0   0
   +GRN     0   0   6   0   0   0   0   0
 (-) #-PH G/Y KILLS OVLP= (+) #-PH G STRT
 A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

NOTE: THIS PROGRAMMING IS REQUIRED FOR SIGNAL HEAD 21 SO THAT THE FLASHING YELLOW ARROW TURNS ON EXCLUSIVELY DURING PERMITTED GREEN PHASE 6.

PPLT DEFINITION PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

INIT & N.A. RESP PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu, press '3' (Phase Data)

```
SE-PAC PHASE DATA         PRESS # DESIRED

 1-VEHICLE TIMES        6-N.LOCK & MISC
 2-DENSITY TIMES        7-SPEC. SEQUENCE
 3-PEDEST. TIMES        8-SPEC. DETECTOR
 4-INIT & N.A. RESP     9-PHASE COPY
 5-V & P RECALLS        0-MISC PED OPTIONS

                              F-PRIOR MENU
```

→

Phases 5,7 & 8 NOT used!

```
PHASE......1...2...3...4...5...6...7...8...9
 INITIAL   1   6   1   1   0   6   0   0   0
 NA RESP   0   1   0   2   0   1   0   0   0


CODES.......0....1....2....3....4....5....6
 INITIAL   NONE INACT RED  YEL  GRN  DRK  G/DW
 NA RESP   NONE  NA1  NA2 BOTH  ---  ---  ---
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

INIT & N.A. RESP programming complete.

VHB Engineering NC, P.C. (C-3705)
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919.829.0328

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail - Sheet 2 of 4

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0657
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1453 (16th St NE &
12th Ave NE) at
SR 1401 (16th St NE)
and SR 1449 (18th St NE)

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

SEAL
SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...
1/6/2026
DATE

SIG. INVENTORY NO. 12-0657

38536.53

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig 2.3

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

SELECT ⑦ FROM MAIN MENU

- PREEMPT 3 -

```
SE-PAC PREEMPT DATA       PRESS # DESIRED

1- ALL PREEMPTS        5- PREEMPT 4
2- PREEMPT 1           6- PREEMPT 5
3- PREEMPT 2           7- PREEMPT 6
4- PREEMPT 3           8- LOAD DEFAULT
```

```
SE-PAC PREEMPT 3          PRESS # DESIRED

1- MISCELLANEOUS       4- PEDEST. STATUS
2- INTERVAL TIMES      5- OVERLAP STATUS
3- VEHICLE STATUS      6- LOW PRIORITY
                                 F-PRIOR MENU
```

```
SE-PAC PREEMPT 3 MISC DATA (0-NO & 1-YES)
 TEST.:   0  N-LOCK:   0  LINK PE#:   0
 DELAY:   0  EXTEND:   0  DURATION:   0
             MXCALL: 120  LOCK OUT:   0
PHASE....1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6
 EXIT    0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0
 CALLS   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 3 menu, then*
select 2 – Interval Times

```
SE-PAC PREEMPT 3 INTERVAL TIMES
 SEL PED CLR:  20     TRK YEL/10 :  00
 SEL YEL/10 :  45     TRK RED/10 :  00
 SEL RED/10 :  22     DWELL GREEN:  12
 TRACK GREEN:  00     RET PED CLR:  00
 TRK PED CLR:  00     RET YEL/10 :  00
                      RET RED/10 :  00
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 3 menu, then*
select 3 – Vehicle Status

```
SE-PAC PREEMPT 3 VEHICLE STATUS
PHASE....1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6
 TRK GRN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 DWELL   0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 (0-RED.1-GRN.2-FLR.3-FLY.4-DARK.5-FLG)
 CYCLE   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    (0-NO..1-ACT..2-MN REC..3-MX REC)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 3 menu, then*
select 5 – Overlap Status

```
SE-PAC PREEMPT 3 OVERLAP STATUS
PHASE....A.B.C.D.E.F.G.H.I.J.K.L.M.N.O.P
 TRK GRN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 DWELL   0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0
 (0-RED.1-GRN.2-FLR.3-FLY.4-DARK.5-FLG)
 CYCLE   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
              (0-NO..1-ACT)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** as needed to return*
*to **SE–PAC** preempt data menu*

NOTE: options 4 and 6 not used for Preempt 3.
Be sure values are set at default = 0

- PREEMPT 4 -

```
SE-PAC PREEMPT DATA       PRESS # DESIRED

1- ALL PREEMPTS        5- PREEMPT 4
2- PREEMPT 1           6- PREEMPT 5
3- PREEMPT 2           7- PREEMPT 6
4- PREEMPT 3           8- LOAD DEFAULT
```

```
SE-PAC PREEMPT 4          PRESS # DESIRED

1- MISCELLANEOUS       4- PEDEST. STATUS
2- INTERVAL TIMES      5- OVERLAP STATUS
3- VEHICLE STATUS      6- LOW PRIORITY
                                 F-PRIOR MENU
```

```
SE-PAC PREEMPT 4 MISC DATA (0-NO & 1-YES)
 TEST.:   0  N-LOCK:   0  LINK PE#:   0
 DELAY:   0  EXTEND:   0  DURATION:   0
             MXCALL: 120  LOCK OUT:   0
PHASE....1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6
 EXIT    0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0
 CALLS   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 4 menu, then*
select 2 – Interval Times

```
SE-PAC PREEMPT 4 INTERVAL TIMES
 SEL PED CLR:  20     TRK YEL/10 :  00
 SEL YEL/10 :  45     TRK RED/10 :  00
 SEL RED/10 :  22     DWELL GREEN:  12
 TRACK GREEN:  00     RET PED CLR:  00
 TRK PED CLR:  00     RET YEL/10 :  00
                      RET RED/10 :  00
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 4 menu, then*
select 3 – Vehicle Status

```
SE-PAC PREEMPT 4 VEHICLE STATUS
PHASE....1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6
 TRK GRN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 DWELL   0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
 (0-RED.1-GRN.2-FLR.3-FLY.4-DARK.5-FLG)
 CYCLE   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    (0-NO..1-ACT..2-MN REC..3-MX REC)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** as needed to return*
*to **SE–PAC** preempt data menu*

NOTE: options 4,5,6 not used for Preempt 4.
Be sure values are set at default = 0

- PREEMPT 5 -

```
SE-PAC PREEMPT DATA       PRESS # DESIRED

1- ALL PREEMPTS        5- PREEMPT 4
2- PREEMPT 1           6- PREEMPT 5
3- PREEMPT 2           7- PREEMPT 6
4- PREEMPT 3           8- LOAD DEFAULT
```

```
SE-PAC PREEMPT 5          PRESS # DESIRED

1- MISCELLANEOUS       4- PEDEST. STATUS
2- INTERVAL TIMES      5- OVERLAP STATUS
3- VEHICLE STATUS      6- LOW PRIORITY
                                 F-PRIOR MENU
```

```
SE-PAC PREEMPT 5 MISC DATA (0-NO & 1-YES)
 TEST.:   0  N-LOCK:   0  LINK PE#:   0
 DELAY:   0  EXTEND:   0  DURATION:   0
             MXCALL: 120  LOCK OUT:   0
PHASE....1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6
 EXIT    0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0
 CALLS   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 5 menu, then*
select 2 – Interval Times

```
SE-PAC PREEMPT 5 INTERVAL TIMES
 SEL PED CLR:  20     TRK YEL/10 :  00
 SEL YEL/10 :  45     TRK RED/10 :  00
 SEL RED/10 :  22     DWELL GREEN:  12
 TRACK GREEN:  00     RET PED CLR:  00
 TRK PED CLR:  00     RET YEL/10 :  00
                      RET RED/10 :  00
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 5 menu, then*
select 3 – Vehicle Status

```
SE-PAC PREEMPT 5 VEHICLE STATUS
PHASE....1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6
 TRK GRN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 DWELL   1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
 (0-RED.1-GRN.2-FLR.3-FLY.4-DARK.5-FLG)
 CYCLE   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    (0-NO..1-ACT..2-MN REC..3-MX REC)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** – return to Preempt 5 menu, then*
select 5 – Overlap Status

```
SE-PAC PREEMPT 5 OVERLAP STATUS
PHASE....A.B.C.D.E.F.G.H.I.J.K.L.M.N.O.P
 TRK GRN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 DWELL   0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0
 (0-RED.1-GRN.2-FLR.3-FLY.4-DARK.5-FLG)
 CYCLE   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
              (0-NO..1-ACT)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

*select **F** as needed to return*
*to **SE–PAC** preempt data menu*

NOTE: options 4 and 6 not used for Preempt 5.
Be sure values are set at default = 0

- ALL PREEMPTS -

```
SE-PAC PREEMPT DATA       PRESS # DESIRED

1- ALL PREEMPTS        5- PREEMPT 4
2- PREEMPT 1           6- PREEMPT 5
3- PREEMPT 2           7- PREEMPT 6
4- PREEMPT 3           8- LOAD DEFAULT
```

```
SE-PAC ALL PREEMPTS DATA

RING TIMES......1......2......3......4
 MIN GRN/WLK    1      1      0      0
PRIORITY...FL....1/2..2/3..3/4..4/5..5/6.
 STATUS    0      1     0     0     0     0
CODES........0-NO....1-YES..............
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

end of programming

Program extend time on optical detector units for 2.0 sec for PRE3, PRE4, and PRE5.

ADVANCE WALK PED PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu, press '3' (Phase Data)

```
SE-PAC PHASE DATA         PRESS # DESIRED

 1-VEHICLE TIMES        6-N.LOCK & MISC
 2-DENSITY TIMES        7-SPEC. SEQUENCE
 3-PEDEST. TIMES        8-SPEC. DETECTOR
 4-INIT & N.A. RESP     9-PHASE COPY
 5-V & P RECALLS        0-MISC PED OPTIONS
                                F-PRIOR MENU
```

```
PHASE......1...2...3...4...5...6...7...8
 WOFF/10   0  70   0  70   0   0   0   0
 MODE      0   0   0   0   0   0   0   0
WOFF MODE: 0-ADVANCE WALK  1-DELAY WALK



A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

Advance Walk PED programming complete.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0657
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail - Sheet 3 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1453 (16th St NE &
12th Ave NE) at
SR 1401 (16th St NE)
and SR 1449 (18th St NE)

Division 12 | Catawba County | Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

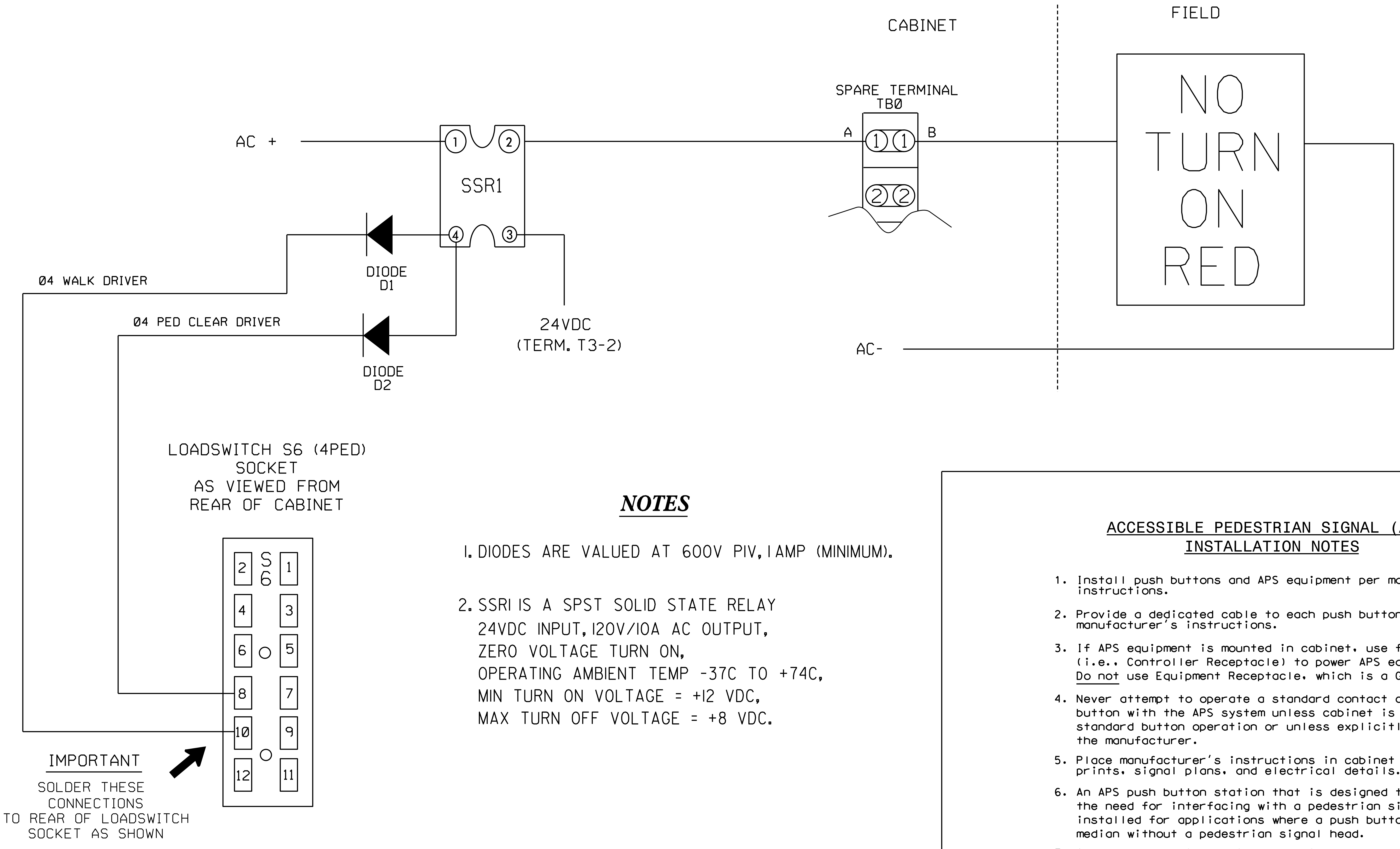
REVISIONS	INIT.	DATE

SEAL
SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...
1/6/2026
DATE

SIG. INVENTORY NO. 12-0657

38536.53



NOTES

1. DIODES ARE VALUED AT 600V PIV, 1 AMP (MINIMUM).

2. SSR1 IS A SPST SOLID STATE RELAY
   24VDC INPUT, 120V/10A AC OUTPUT,
   ZERO VOLTAGE TURN ON,
   OPERATING AMBIENT TEMP -37C TO +74C,
   MIN TURN ON VOLTAGE = +12 VDC,
   MAX TURN OFF VOLTAGE = +8 VDC.

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
4. Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that point in both directions of travel shall be installed if the median separates two parallel crosswalks.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0657
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

Electrical Detail - Sheet 4 of 4

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
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919.829.0328

ELECTRICAL AND PROGRAMMING DETAILS FOR:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1453 (16th St NE &
12th Ave NE) at
SR 1401 (16th St NE)
and SR 1449 (18th St NE)

Division 12 Catawba County Hickory

PLAN DATE: January 2026	REVIEWED BY: G. Pierro
PREPARED BY: J. Ma	REVIEWED BY: L. Britt

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...

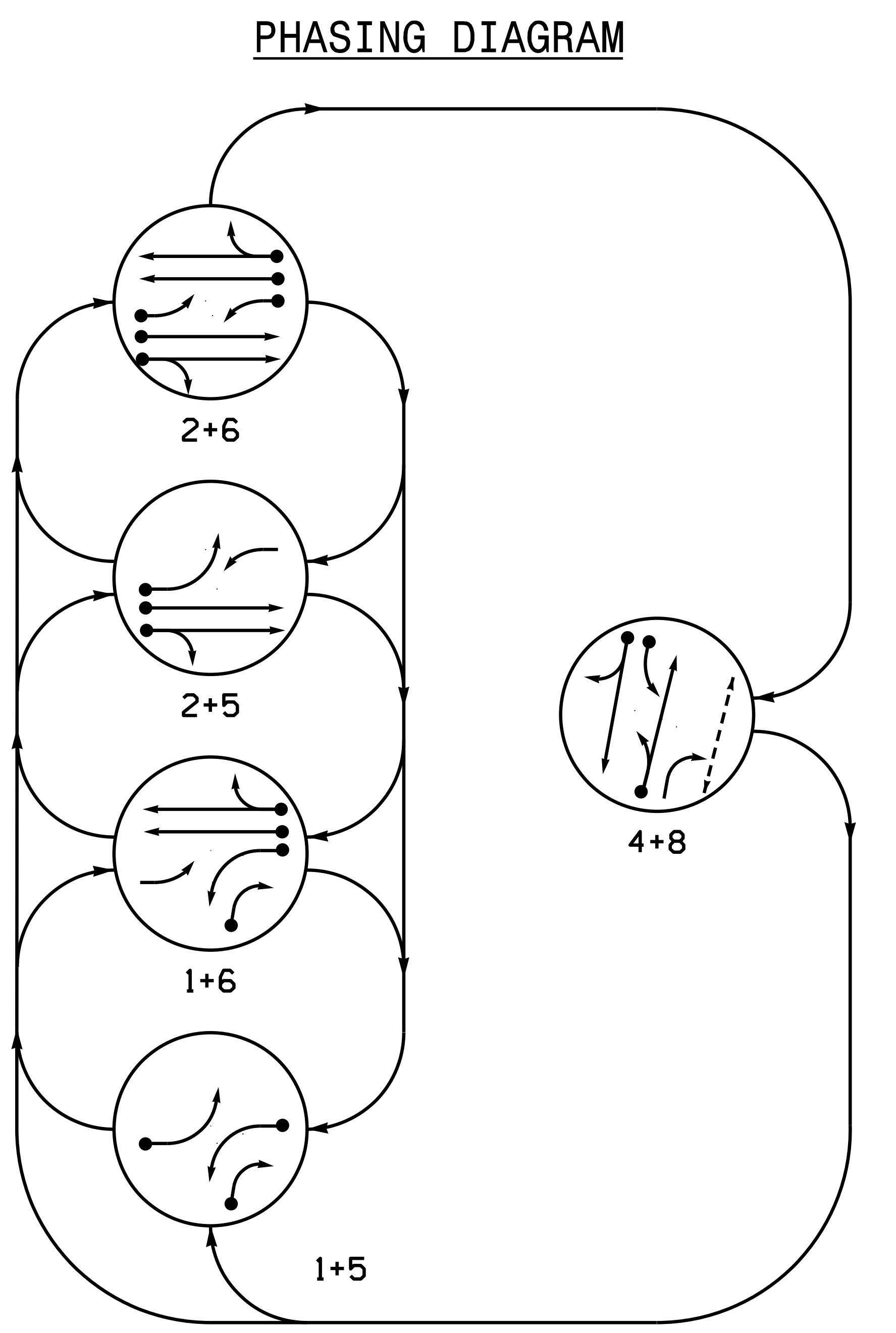
1/6/2026
DATE

SIG. INVENTORY NO. 12-0657

38536.53

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig.3.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

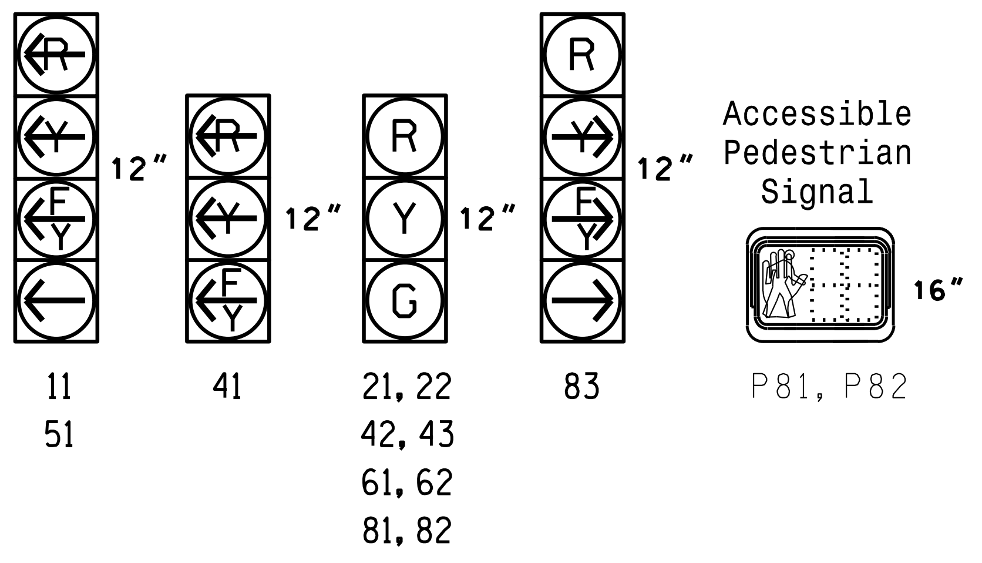
←●	DETECTED MOVEMENT
←	UNDETECTED MOVEMENT (OVERLAP)
← – –	UNSIGNALIZED MOVEMENT
← – – →	PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	4+8	FLASH
11	←	←	←F/Y	←F/Y	←R	←R
21,22	R	R	G	G	R	R
41	←R	←R	←R	←R	←F/Y	←R
42,43	R	R	R	R	G	R
51	←	←F/Y	←	←F/Y	←R	←R
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R
83	→	→	R	R	F/Y→	R
P81, P82	DW	DW	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

INDUCTIVE LOOPS						DETECTOR PROGRAMMING														
						ASSIGNED PHASE	TIMING		OPERATION MODE 0	1	2	3	4	5	6	7	SWITCH	SYSTEM LOOPS	STATUS	
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING		DELAY	EXTEND (STRETCH)	VEHICLE	PEDESTRIAN	1 CALL	STOP A	STOP B	PROT/PER LEFT	PROT/PER THROUGH	AND			NEW	EXISTING
1A	6X40	2-4-2	0	X	-	1	5.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
1B	6X70	2	0	-	X	1	15.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2A	6X6	4	300	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2B	6X6	4	300	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
4A	6X40	2-4-2	0	-	X	4	3.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
4B	6X40	2-4-2	0	-	X	4	10.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
5A	6X40	2-4-2	0	X	-	5	5.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	X	-
6A	6X6	6	290	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6B	6X6	6	290	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
8A	6X50	2	0	-	X	8	3.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X

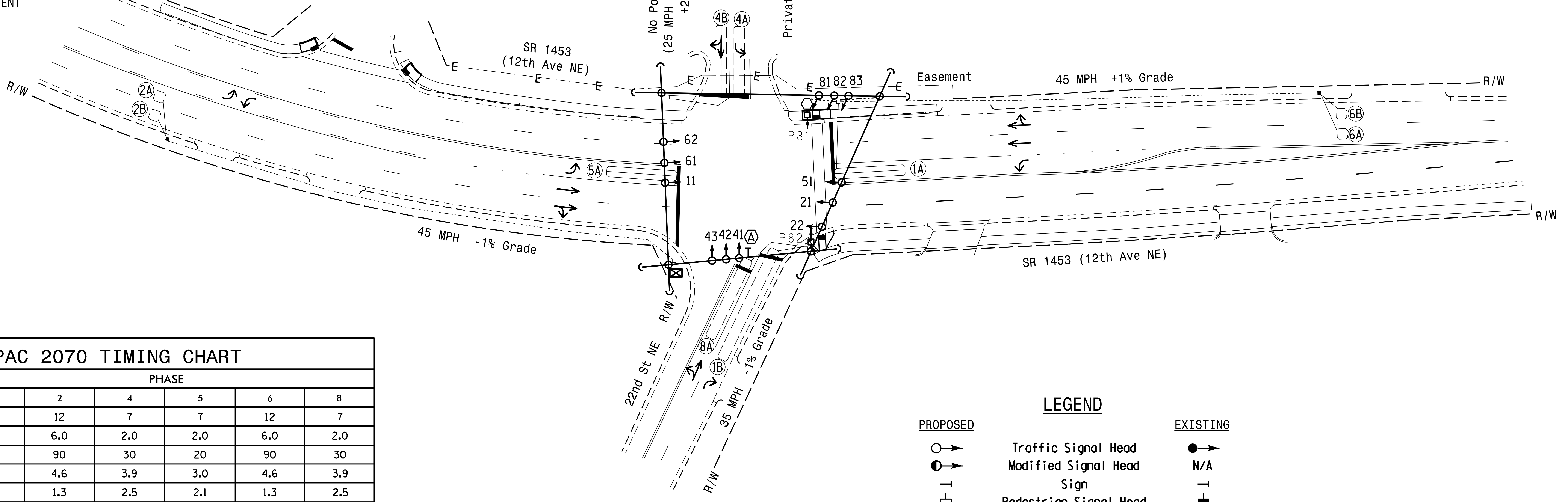
ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P81	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 12th Avenue.
P82	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 12th Avenue.

5 Phase
Fully Actuated
Hickory City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Refer to Pavement Marking Plans for pavement markings.
6. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning on red.
8. The new controller shall be 2070 LX controller running SE-PAC2070, Version 5.2.2, purchased from Mobotrex.
9. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
10. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
11. Replace all existing lead-in cable.
12. Replace all existing signal wood poles and guys.
13. Renumber existing loop 8B as 1A.
14. This intersection features accessible pedestrian signals utilizing percussive tone walk indications.
15. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
16. City of Hickory # 1003



SE-PAC 2070 TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green *	7	12	7	7	12	7
Passage Gap *	2.0	6.0	2.0	2.0	6.0	2.0
Maximum Green *	20	90	30	20	90	30
Yellow Change	3.0	4.6	3.9	3.0	4.6	3.9
Red Clear	2.3	1.3	2.5	2.1	1.3	2.5
Walk *	-	-	-	-	-	7
Pedestrian Clear	-	-	-	-	-	17
Advance Walk	-	-	-	-	-	5
Added Initial *	-	1.5	-	-	1.5	-
Maximum Initial *	-	34	-	-	33	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
☐↓	Pedestrian Signal Head With Push Button & Sign	■↓
○—)	Signal Pole with Guy	●—◗
○—⌣	Signal Pole with Sidewalk Guy	●—◡
▭	Inductive Loop Detector	⌐ – – ¬
☒	Controller & Cabinet	⛶
☐	Junction Box	■
– · – · –	2-in Underground Conduit	– · – · –
N/A	Right of Way	— — — —
→	Directional Arrow	→
N/A	Curb Ramp	⏢
⬡	Type II Signal Pedestal	⬢
⬡A	Left "TURNING VEHICLES" Yield "TO" Pedestrians Sign (R10-15L)	Ⓐ

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SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1453 (12th Ave NE)
at
22nd St NE / Private Drive

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

SCALE 0 40
1"=40'

REVISIONS	INIT.	DATE

SEAL
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JIANXIN MA

DocuSigned by:
Jianxin Ma
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1/6/2026
DATE

SIG. INVENTORY NO. 12-0920

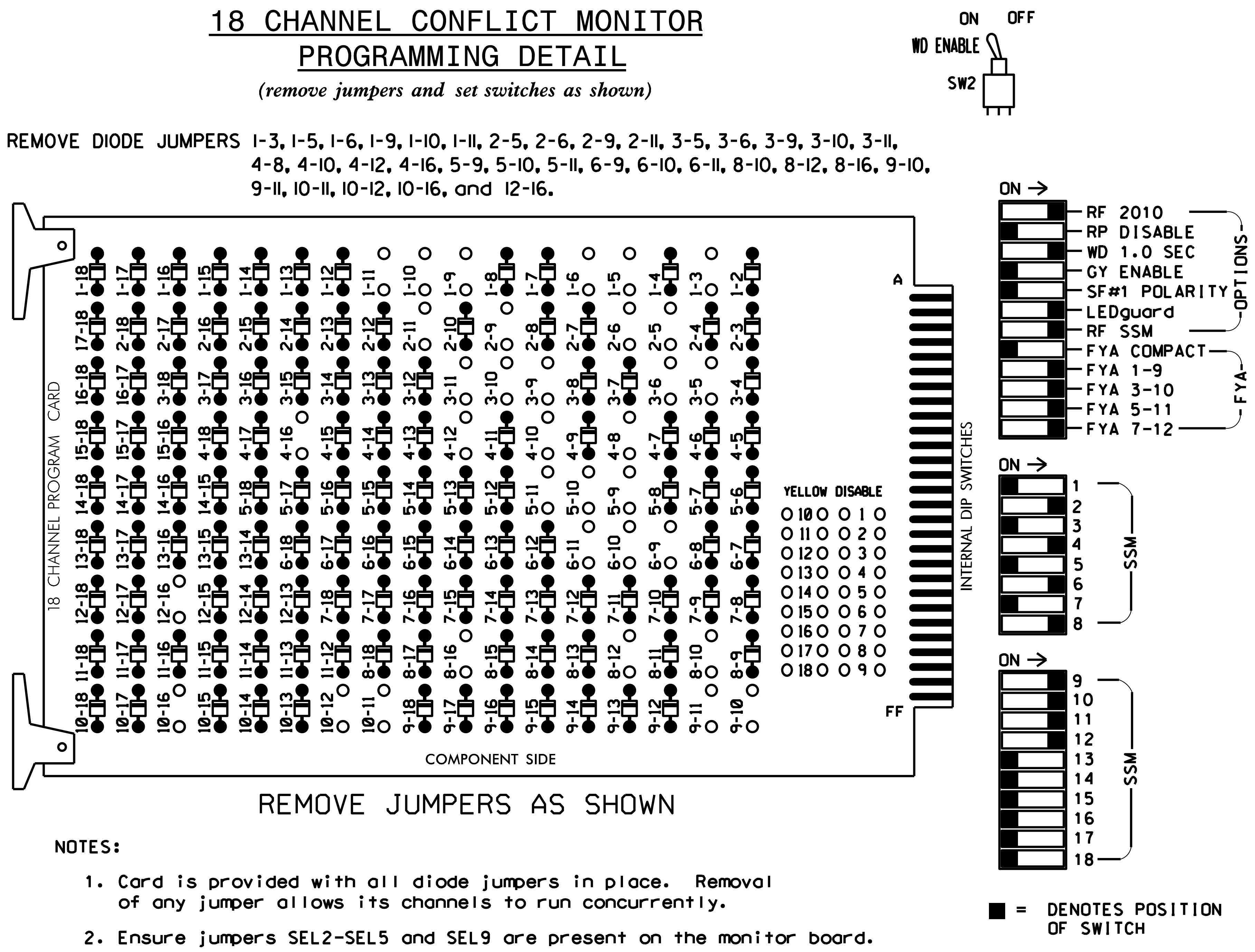
38536.53

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig.3.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-3, 1-5, 1-6, 1-9, 1-10, 1-11, 2-5, 2-6, 2-9, 2-11, 3-5, 3-6, 3-9, 3-10, 3-11, 4-8, 4-10, 4-12, 4-16, 5-9, 5-10, 5-11, 6-9, 6-10, 6-11, 8-10, 8-12, 8-16, 9-10, 9-11, 10-11, 10-12, 10-16, and 12-16.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phases 2 and 6 green/Don't Walk.
3. Enable simultaneous gap-out feature for all phases.
4. Program phases 4 and 8 for dual entry.
5. Program phases 2 and 6 for volume density operation.
6. The cabinet and controller are part of the Hickory Signal System.

EQUIPMENT INFORMATION

CONTROLLER..............2070LX-MoboTrex
CABINET.................332 W/ AUX
SOFTWARE................SE-PAC2070 (version 5.2.2)
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1,S2,S4,S5,S7,S8,S11,S12,
AUX S1,AUX S2,AUX S4,AUX S5
PHASES USED.............1,2,4,5,6,8,8PED
OVERLAP A...............*
OVERLAP B...............*
OVERLAP C...............*
OVERLAP D...............*
OVERLAP E...............NOT USED
OVERLAP F...............NOT USED
OVERLAP G...............*

* SEE SHEET 2 FOR OVERLAP PROGRAMMING

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	OLG	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	83★	42,43	NU	51★	61,62	NU	NU	81,82	P81, P82	11★	83★	NU	51★	41★	NU
RED		128			101			134			107			A124				
YELLOW	*	129		*	102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118			133											
✋												110						
🚶												112						

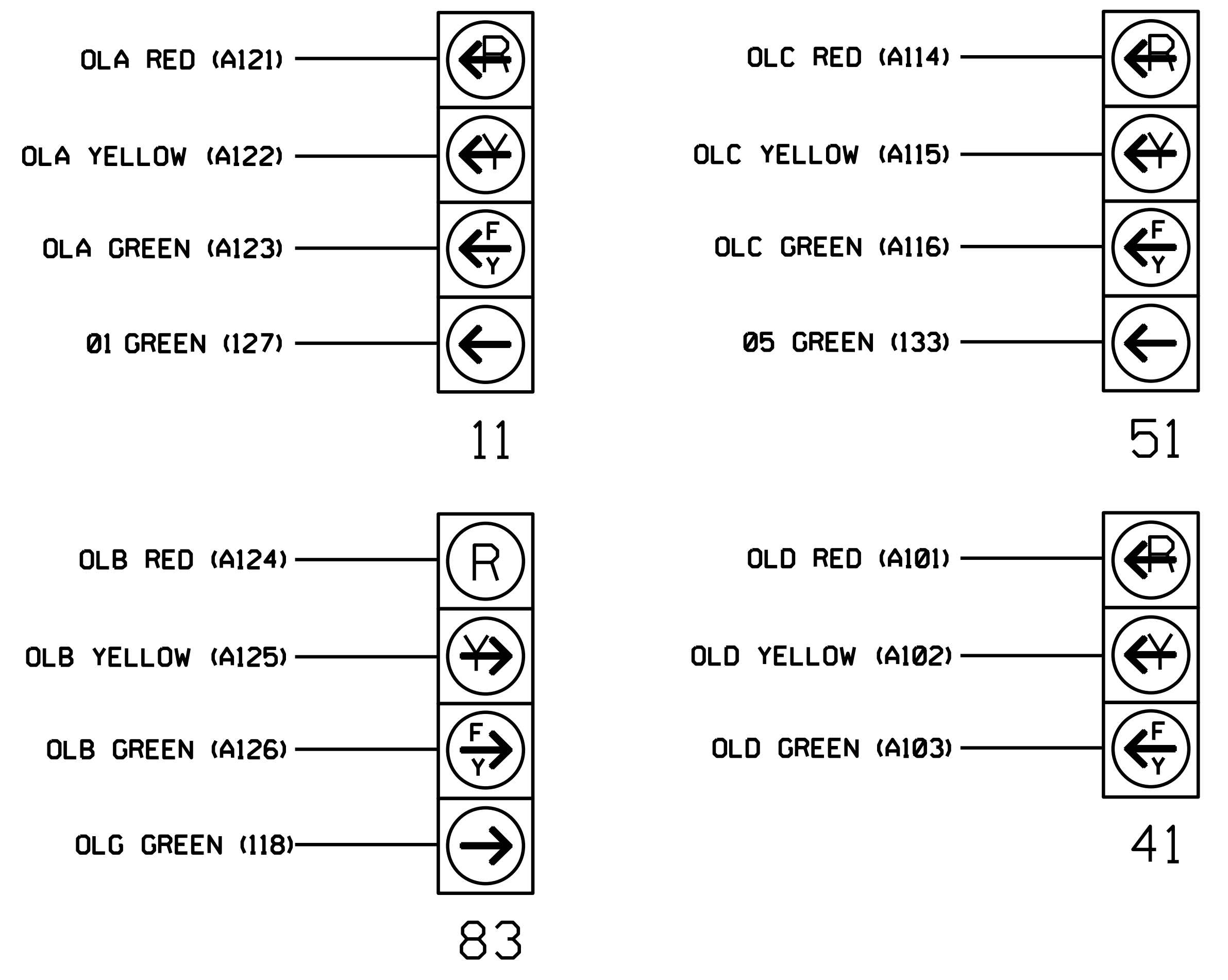
NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø 1 1A	ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	FS DC ISOLATOR
	L	NOT USED	ø 2 2B				ø 4 4B							ø8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	ø 5 5A	ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED	ø 6 6B				ø 1 1B							

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
1A	TB2-1,2	I1U	56	1	1	5	
1B	TB7-3,4	J7L	79	34	1	15	
2A	TB2-5,6	I2U	39	3	2		
2B	TB2-7,8	I2L	43	4	2		
4A	TB4-9,10	I6U	41	11	4	3	
4B	TB4-11,12	I6L	45	12	4	10	
5A	TB3-5,6	J2U	40	21	5	5	
6A	TB3-9,10	J3U	64	23	6		
6B	TB3-11,12	J3L	77	24	6		
8A	TB7-1,2	J7U	66	33	8	3	
PED PUSH BUTTONS							
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED		

NOTE:
INSTALL DC ISOLATOR IN INPUT FILE SLOT I13.

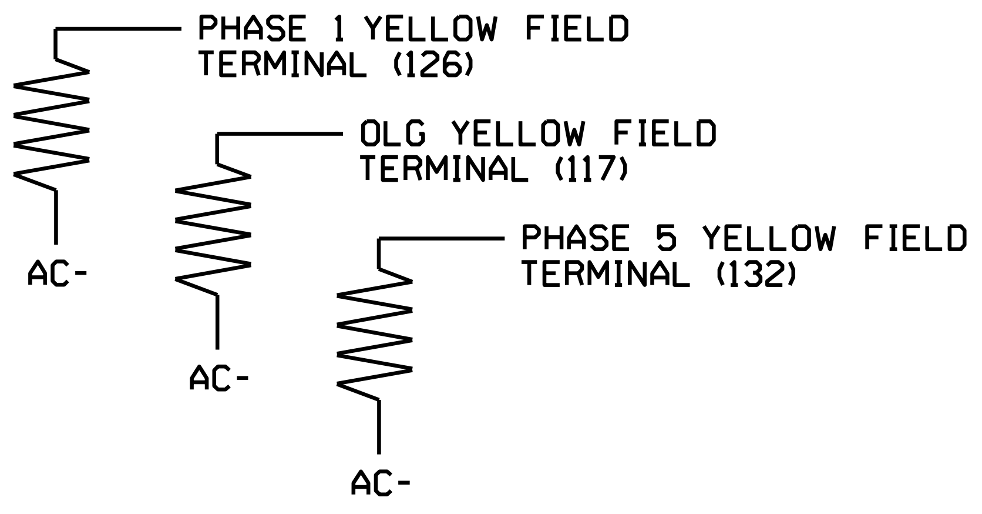
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)


PHASE 1 YELLOW FIELD TERMINAL (126)
AC-
OLG YELLOW FIELD TERMINAL (117)
AC-
PHASE 5 YELLOW FIELD TERMINAL (132)
AC-

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0920
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

vhb

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Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1453 (12th Ave NE)
at
22nd St NE / Private Drive

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

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1/6/2026
DATE

SIG. INVENTORY NO. 12-0920

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig.3.2

OVERLAP PROGRAMING DETAIL

1. From Main Menu select `4 - UNIT DATA`
2. From UNIT DATA Submenu select `3 - OVERLAP DATA`

Use Up/Dn/Left/Right keys to position cursor on the desired Overlap.
Use the NEXT key to select the overlap type.
Press the ENT key and then program as per the Overlap screen(s) shown.

```
OVERLAP DATA

   A: FYA   E: ---   I: ---   M: ---
   B: FYA   F: ---   J: ---   N: ---
   C: FYA   G: STD   K: ---   O: ---
   D: FYA   H: ---   L: ---   P: ---

 PREV/NEXT TO CYCLE
```

OVERLAP A

Use Up/Dn/Left/Right keys to position cursor
on Overlap 'A', use the NEXT key to select
'FYA', then press ENT

```
FYA OVERLAP - A                  MIN PERM: 1
       PHASES..12345678 90123456
  PROT PHASES: 10000000 00000000 DELAY/10
  PERM PHASES: 01000000 00000000    FYA: 0
  -PED PHASES: 00000000 00000000 -PED: 30
     OVERLAPS..ABCDEFGH IJKLMNOP
PROT OVERLAPS: x0000000 00000000
PERM OVERLAPS: x0000000 00000000
```

NOTICE
FYA = 0

Press ESC

OVERLAP B

Use Up/Dn/Left/Right keys to position cursor
on Overlap 'B', use the NEXT key to select
'FYA', then press ENT

```
FYA OVERLAP - B                  MIN PERM: 1
       PHASES..12345678 90123456
  PROT PHASES: 00000000 00000000 DELAY/10
  PERM PHASES: 00000001 00000000    FYA: 0
  -PED PHASES: 00000000 00000000 -PED: 30
     OVERLAPS..ABCDEFGH IJKLMNOP
PROT OVERLAPS: 0x000010 00000000
PERM OVERLAPS: 0x000000 00000000
```

NOTICE
FYA = 0

Press ESC

OVERLAP C

Use Up/Dn/Left/Right keys to position cursor
on Overlap 'C', use the NEXT key to select
'FYA', then press ENT

```
FYA OVERLAP - C                  MIN PERM: 1
       PHASES..12345678 90123456
  PROT PHASES: 00001000 00000000 DELAY/10
  PERM PHASES: 00000100 00000000    FYA: 0
  -PED PHASES: 00000000 00000000 -PED: 30
     OVERLAPS..ABCDEFGH IJKLMNOP
PROT OVERLAPS: 00x00000 00000000
PERM OVERLAPS: 00x00000 00000000
```

NOTICE
FYA = 0

Press ESC

OVERLAP D

Use Up/Dn/Left/Right keys to position cursor
on Overlap 'D', use the NEXT key to select
'FYA', then press ENT

```
FYA OVERLAP - D                  MIN PERM: 1
       PHASES..12345678 90123456
  PROT PHASES: 00100010 00000000 DELAY/10
  PERM PHASES: 00010001 00000000    FYA: 0
  -PED PHASES: 00000000 00000000 -PED: 30
     OVERLAPS..ABCDEFGH IJKLMNOP
PROT OVERLAPS: 00000000 00000000
PERM OVERLAPS: 000x0000 00000000
```

NOTICE
FYA = 0

Press ESC

OVERLAP G

Use Up/Dn/Left/Right keys to position cursor
on Overlap 'G', use the NEXT key to select
'STD', then press ENT

```
OVERLAP - G         12345678 90123456
          PARENTS: 10000000 00000000
     +GRN PHASES: 00000000 00000000
     -G/Y PHASES: 00000000 00000000
     -PED PHASES: 00000000 00000000
 TRAIL GREEN STANDARD:   0  YEL/10:  0
 TRAIL GREEN  PREEMPT:   0  RED/10:  0
```

END OVERLAP PROGRAMMING

LOAD SWITCH MAPPING DETAIL

1. From Main Menu select `4 - UNIT DATA`
2. From UNIT DATA Submenu select `9 - OUTPUT MAPPING`

USE ENTER AND NEXT KEYS
TO MAP 'LDSW 4' AS 'OLG'.

```
OUTPUT MAPPING                 EDIT MODE: LDSW
                                E-TOGGLE MODE
LDSW ..1..  ..2..  ..3..  ..4..  ..5..  ..6..
RED   PH1    PH2    PD2   [OLG]   PH4    PD4
YEL    -      -      -      -      -      -
GRN    -      -      -      -      -      -
FIO    1      2      3      4      5      6
PREV/NEXT TO CYCLE        D-DISPLAY COMPAT
```

LOAD SWITCH MAPPING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0920
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

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Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1453 (12th Ave NE)
at
22nd St NE / Private Drive

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy.Garner.NC 27529

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SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...
1/6/2026
DATE

SIG. INVENTORY NO. 12-0920

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig 3.3

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
4. Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that point in both directions of travel shall be installed if the median separates two parallel crosswalks.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

INIT & N.A. RESP PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu, press '3' (Phase Data)

```
PHASE MENU

 1-VEHICLE DATA          6-SPEC. SEQUENCE+
 2-DENSITY TIMES+        7-DETECTOR DATA
 3-PEDESTRIAN DATA       8-PHASE & BANK COPY
[4-INIT & N.A. RESP+]    9-SELECT PHASE BANK
 5-N.LOCK & MISC+

  '+' DENOTES BANKABLE DATA
```

```
PHASE ......1...2...3...4...5...6...7...8
 INITIAL     1   6   0   1   1   6   0   1
 NA RESP     0   1   0   2   0   1   0   2
 UPDT GRN    0   0   0   0   0   0   0   0

CODES .....0....1....2...3...4...5...6
 INIL     NONE  INACT RED YEL GRN DRK G/DW
 NA RSP   NONE  NA1   NA2 1&2 --- --- ---
```

INIT & N.A. RESP PROGRAMMING COMPLETE

ALL RED FLASH STARTUP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
UNIT DATA              PRESS # DESIRED

[1- STARTUP & MISC]        6 -  ALT SEQUENCES
 2- REMOTE FLASH           7- PORT 1 DATA
 3- OVERLAP STANDARD       8- I/O MISC
 4- OVERLAP SPECIAL        9- SIG DRV OUT
 5- RING STRUCTURE
                                F- PRIOR MENU
```

```
STARTUP  &  MISC
STARTUP  TIME . : 6 (SEC) STATE:  2  (0-FL
RED   REV/10 . . . : 40 (TSEC)          1-RED)
AUTO  PED CLR . :  0 (0-NO  1-YES)      2-RAF)
STOP  T RESET . :  0 (0-NO  1-YES)
SEQUENCE . . . . . :  1 (1-19)
SPECIAL SEQ      :  0 (SEE HELP)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

STARTUP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0920
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

ADVANCE WALK PED PROGRAMMING DETAIL

(program controller as shown below)

1. From Main Menu select 3 - PHASE DATA
2. From PHASE DATA Submenu select 3 - PEDESTRIAN DATA
3. From PEDESTRIAN DATA Submenu 3 - PED OFFSET+

```
PHASE ......1...2...3...4...5...6...7...8
 WOFF/10    0   0   0   0   0   0   0  50
 MODE       0   0   0   0   0   0   0   0


CODES:  * 0 - ADVANCE  1 - DELAY
```

ADVANCE WALK PED PROGRAMMING COMPLETE

REMOTE FLASH PROGRAMMING DETAIL

(program controller as shown below)

1. From Main Menu select 4 - UNIT DATA
2. From UNIT DATA Submenu select 2 - REMOTE FLASH
3. From FLASH Submenu select 1 - FLASH SETTINGS

```
FLASH SETTINGS          TEST-A AS FLASH: 0

LDSW:  123456789 0123456789 0123456789 012
 FLSH:  110110110 0101101100 0000000000 000
  ALT:  100100010 0101100000 0000000000 000

0-DARK   1-RED   2-YELLOW  3-STEADY YELLOW
```

PRESS 'F' TO RETURN TO FLASH

4. From REMOTE FLASH Submenu select 2 - ENTRY/EXIT PHASES

```
FLASH ENTRY/EXIT PHASES

      PHASES:  12345678 90123456
       ENTRY:  01000100 00000000
         EXIT:  01000100 00000000
```

REMOTE FLASH PROGRAMMING COMPLETE

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1453 (12th Ave NE)
at
22nd St NE / Private Drive

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

SEAL

SEAL 033108 JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...

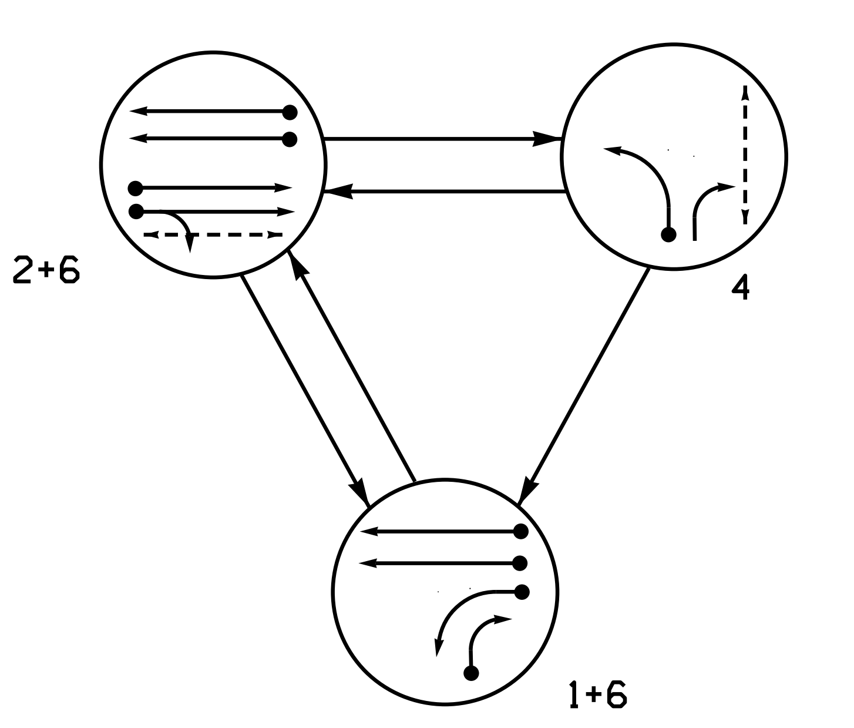
1/6/2026
DATE

SIG. INVENTORY NO. 12-0920

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig.4.0

3 Phase
Fully Actuated
Hickory Signal System

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

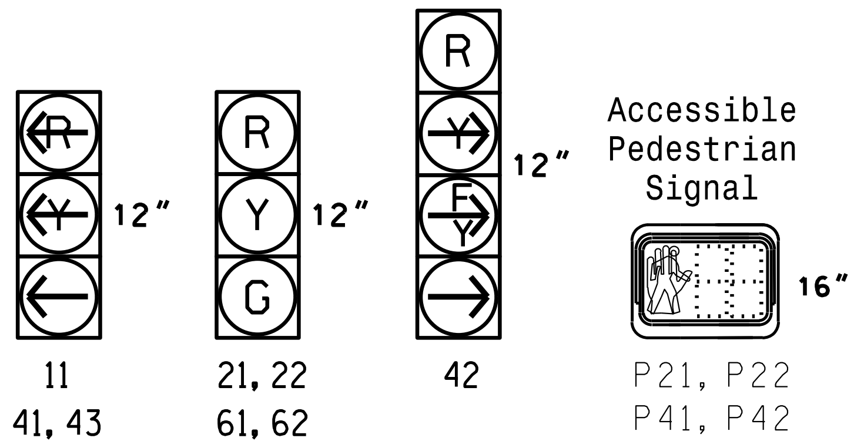
- ●── DETECTED MOVEMENT
- ◄── UNDETECTED MOVEMENT (OVERLAP)
- ◄ ─ ─ UNSIGNALIZED MOVEMENT
- ◄─ ─ ─► PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+6	PHASE 2+6	PHASE 4	PHASE FLASH
11	←	~~←R~~	~~←R~~	~~←R~~
21,22	R	G	R	R
41,43	~~←R~~	~~←R~~	←	~~←R~~
42	→	R	$\overset{F}{\underset{Y}{\rightarrow}}$	R
61,62	G	G	R	R
P21, P22	DW	W	DW	DRK
P41, P42	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

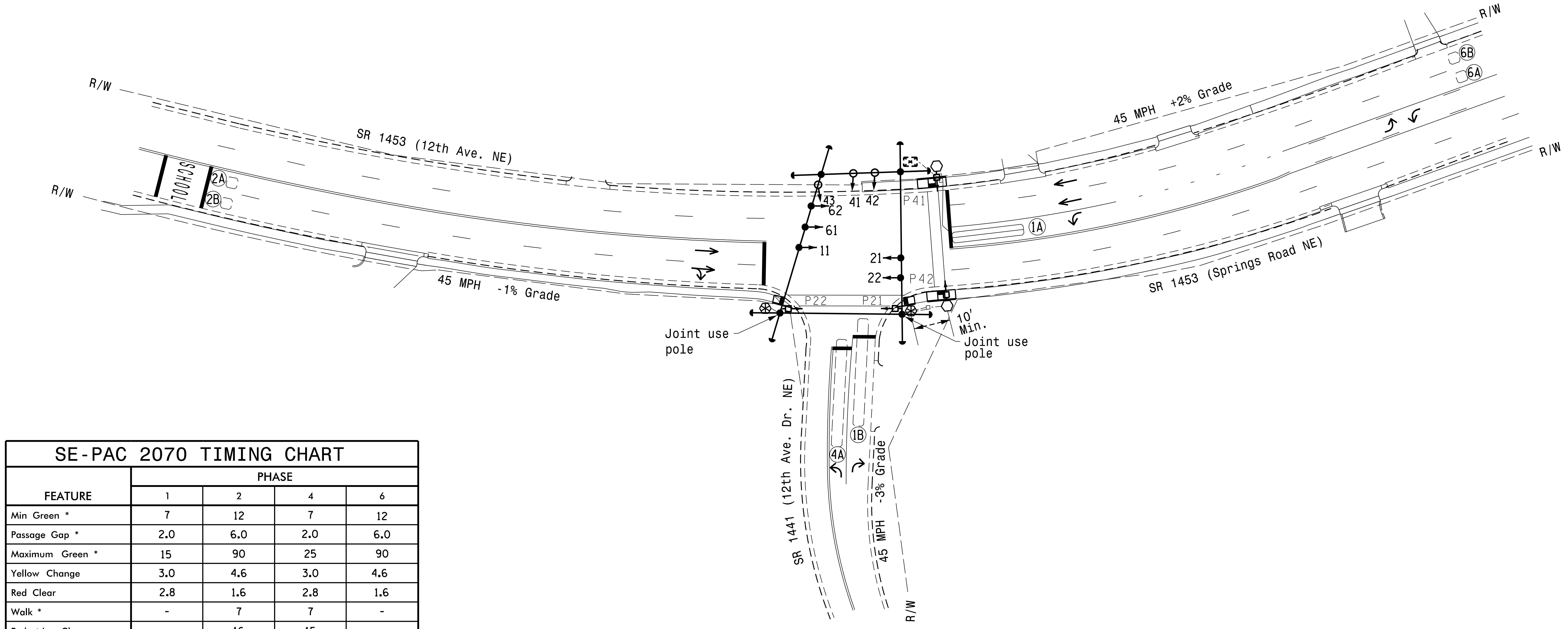
INDUCTIVE LOOPS: LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	DETECTOR PROGRAMMING: ASSIGNED PHASE	TIMING: DELAY	TIMING: EXTEND (STRETCH)	OPERATION MODE 0: VEHICLE	1: PEDESTRIAN	2: 1 CALL	3: STOP A	4: STOP B	5: PROT/PER LEFT	6: PROT/PER THROUGH	7: AND	SWITCH	SYSTEM LOOPS	STATUS: NEW	STATUS: EXISTING
1A	6X40	2-4-2	0	X	-	1	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
1B	6X60	1	0	-	X	1	15.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2A	6X6	5	300	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2B	6X6	5	300	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
4A	6X60	1	0	-	X	4	3.0 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6A	6X6	5	294	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6B	6X6	5	294	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 12th Avenue Drive.
P22	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross 12th Avenue Drive.
P41	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Springs.
P42	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Springs.

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Refer to Pavement Marking Plans for pavement markings.
6. In the event of loop replacement, refer to the current TSMO Design Manual and submit a Plan of Record to the Signal Design Section.
7. Renumber the existing loop 8A as 4A.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. This intersection features accessible pedestrian signals utilizing percussive tone walk indications.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. City of Hickory # 1004



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
☐	Pedestrian Signal Head With Push Button & Sign	■
○─○	Signal Pole with Guy	●─●
○─○	Signal Pole with Sidewalk Guy	●─●
▭	Inductive Loop Detector	⌶
☒	Controller & Cabinet	☒
☐	Junction Box	■
- · - · -	2-in Underground Conduit	- · - · -
N/A	Right of Way	— — —
→	Directional Arrow	→
N/A	Curb Ramp	△
⬡	Type II Signal Pedestal	⬢
⊛	Type I Pushbutton Post	⊛

SE-PAC 2070 TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Min Green *	7	12	7	12
Passage Gap *	2.0	6.0	2.0	6.0
Maximum Green *	15	90	25	90
Yellow Change	3.0	4.6	3.0	4.6
Red Clear	2.8	1.6	2.8	1.6
Walk *	-	7	7	-
Pedestrian Clear	-	16	15	-
Advance Walk	-	7	4	-
Added Initial *	-	1.5	-	1.5
Maximum Initial *	-	34	-	34
Time Before Reduction *	-	15	-	15
Time To Reduce *	-	30	-	30
Minimum Gap	-	3.0	-	3.0
Recall Mode	-	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	LOCK
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

38536.53

VHB Engineering NC, P.C. (C-3705)
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Signal Upgrade

Prepared for the Offices of:
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1453 (12th Ave NE / Springs Rd NE)
at
SR 1441 (12th Ave Dr NE)

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

SCALE
0 40
1"=40'

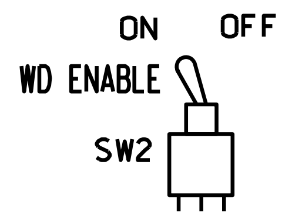
SEAL
SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...
1/6/2026
DATE

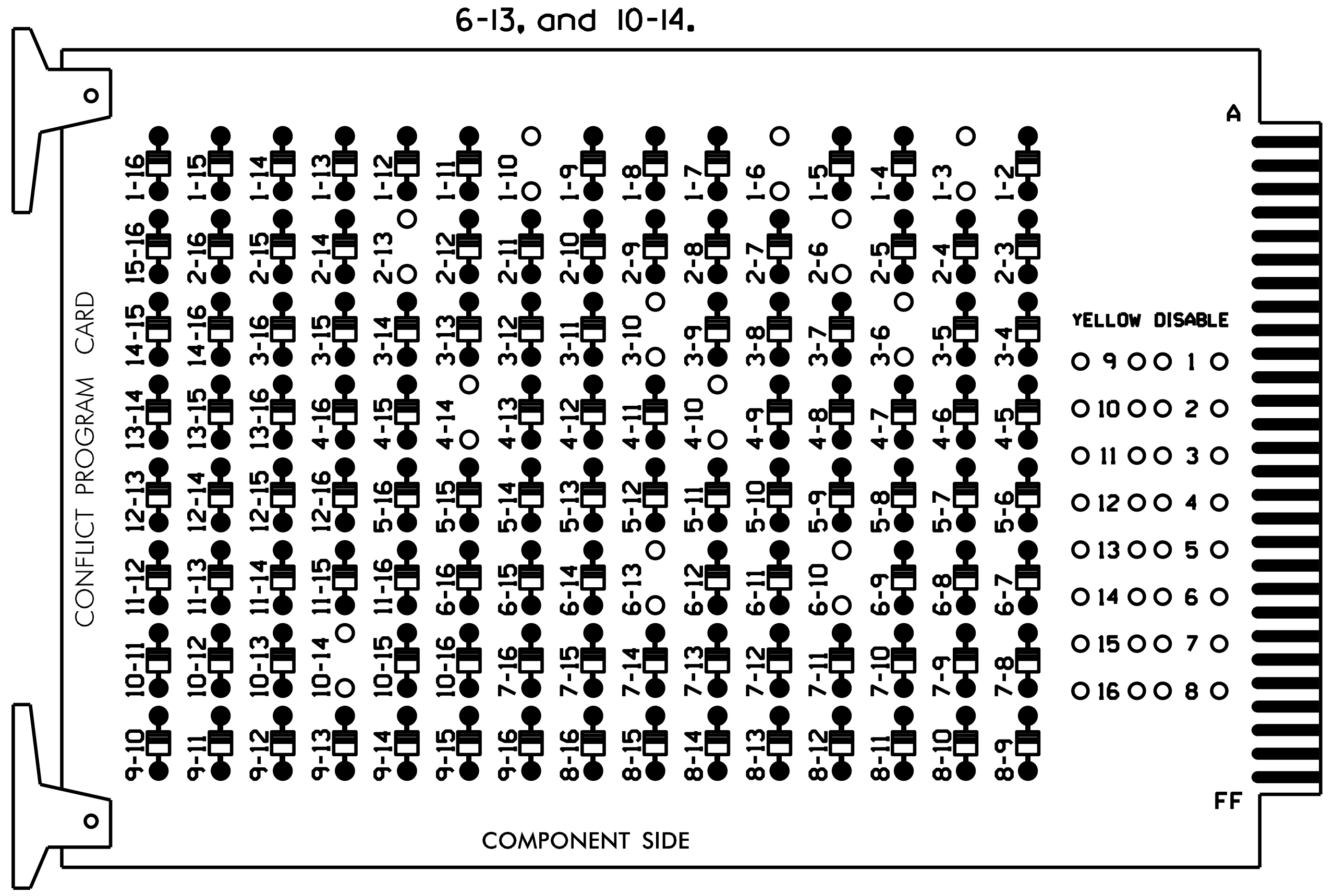
SIG. INVENTORY NO. 12-0968

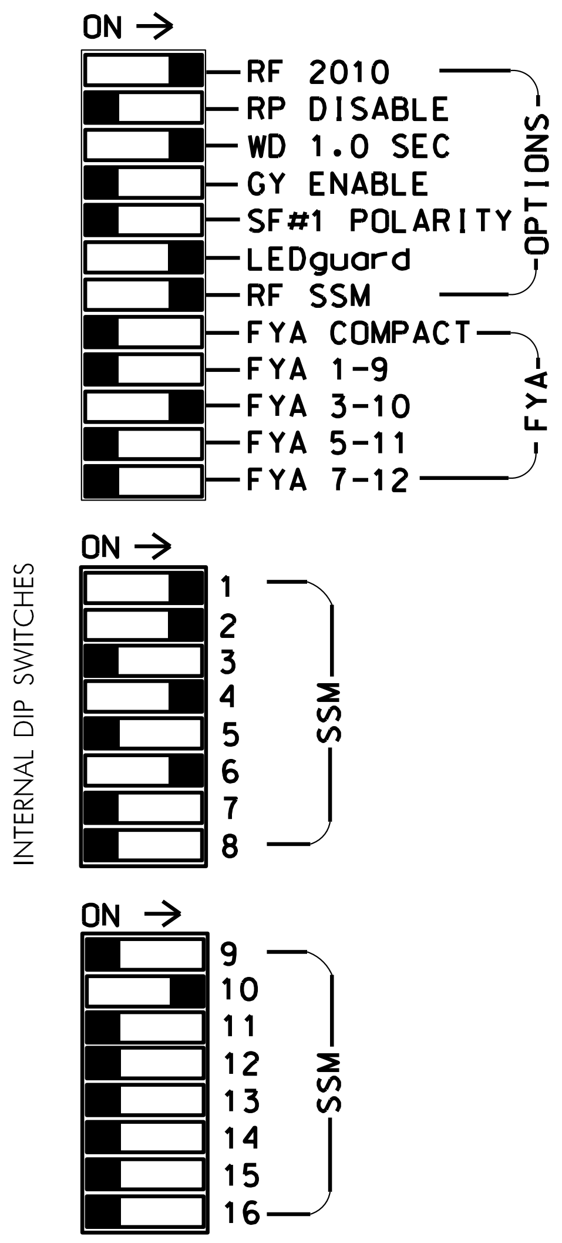
16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-3, 1-6, 1-10, 2-6, 2-13, 3-6, 3-10, 4-10, 4-14, 6-10, 6-13, and 10-14.





REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phases 2 and 6 Green/Don't Walk.
3. Enable simultaneous gap-out feature for all phases.
4. Program phases 2 and 6 for volume density operation.
5. The cabinet and controller are part of the Hickory Signal System.

EQUIPMENT INFORMATION

CONTROLLER.............2070
CABINET.................332 W/ AUX
SOFTWARE...............SE-PAC2070
CABINET MOUNT..........BASE
OUTPUT FILE POSITIONS...18 WITH AUX FILE
LOAD SWITCHES USED......S1,S2,S2P,S3,S4,S4P,S6,S10
PHASES USED............1,2,2PED,4,4PED,6
OVERLAP A...............NOT USED
OVERLAP B...............✻
OVERLAP C...............NOT USED
OVERLAP D...............NOT USED
OVERLAP E...............NOT USED
OVERLAP F...............NOT USED
OVERLAP G...............✻

✻ SEE SHEET 2 FOR OVERLAP PROGRAMMING

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig 4.1

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	OLG	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	42★	41,43	P41, P42	NU	61,62	NU	NU	NU	NU	NU	42★	NU	NU	NU	NU
RED		128						134						A124				
YELLOW		129		✻				135										
GREEN		130						136										
RED ARROW	125				101													
YELLOW ARROW	126				102									A125				
FLASHING YELLOW ARROW														A126				
GREEN ARROW	127			118	103													
✋			113			104												
🚶			115			106												

NU = Not Used

✻ Denotes install load resistor. See load resistor installation detail below.

★ See pictorial of head wiring in detail below.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	SLOT EMPTY	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	SLOT EMPTY	FS DC ISOLATOR
	L		Ø 1 1B	Ø 2 2B									Ø4 PED DC ISOLATOR		ST DC ISOLATOR
"J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø 6 6B				NOT USED								

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
1A	TB2-5,6	I2U	39	3	1		
1B	TB2-7,8	I2L	43	4	1	15	
2A	TB2-9,10	I3U	63	5	2		
2B	TB2-11,12	I3L	76	6	2		
4A	TB5-9,10	J6U	42	31	4	3	
6A	TB3-5,6	J2U	40	21	6		
6B	TB3-7,8	J2L	44	22	6		
PED PUSH BUTTONS							
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED		
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED		

NOTE:

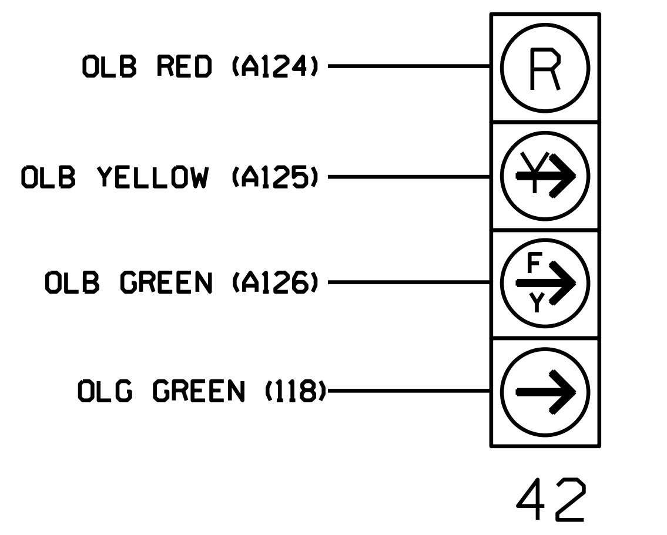
INSTALL DC ISOLATOR IN INPUT FILE SLOT I12.

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)

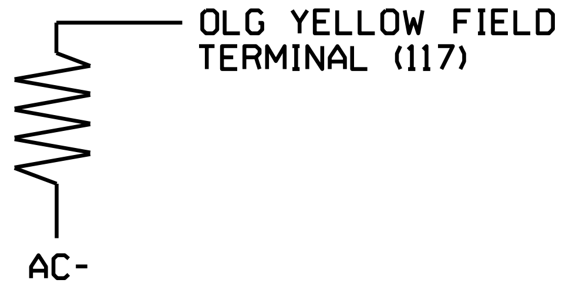


NOTE: See sheet 2 for Protected & Permitted Phases programming.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0968
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1453 (12th Ave NE / Springs Rd NE)
at
SR 1441 (12th Ave Dr NE)

Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

SEAL
SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...
1/6/2026
DATE

SIG. INVENTORY NO. 12-0968

38536.53

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig.4.2

FLASHING YELLOW ARROW PROTECTED/PERMISSIVE SEQUENCE FOR OVERLAPS B & G

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
SE-PAC UNIT DATA          PRESS # DESIRED

 1-STARTUP & MISC     6-ALT SEQUENCES
 2-REMOTE FLASH       7-PORT 1 DATA
 3-OVERLAP STANDARD   8-I/O MISC
 4-OVERLAP SPECIAL    9-SIG DRV OUT
 5-RING STRUCTURE

                           F-PRIOR MENU
```

DO NOT
enter any
OVL PHASES! →

```
SE-PAC OVERLAP - B             (0-NO/1-YES)

 OVL PHASES:  000000000 0000000
    PHS/CHN:  123456789 0123456789 01234
 OVL CHN(S):  000000000 000010000 00000


A-UP B-DN D-DspChn   E-EDIT  F-PRIOR MENU
```

PRESS "B" FIVE TIMES

```
SE-PAC OVERLAP - G             (0-NO/1-YES)

 OVL PHASES:  100000000 0000000
    PHS/CHN:  123456789 0123456789 01234
 OVL CHN(S):  001000000 000000000 00000


A-UP B-DN D-DspChn   E-EDIT  F-PRIOR MENU
```

OVERLAP PROGRAMMING COMPLETE
PRESS 'F' TO RETURN TO UNIT DATA

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

PROTECTED AND PERMISSIVE PHASES FOR FLASHING YELLOW ARROW

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
SE-PAC UNIT DATA         PRESS # DESIRED

 1-STARTUP & MISC    6-ALT SEQUENCES
 2-REMOTE FLASH      7-PORT 1 DATA
 3-OVERLAP STANDARD  8-I/O MISC
 4-OVERLAP SPECIAL   9-SIG DRV OUT
 5-RING STRUCTURE

                          F-PRIOR MENU
```

```
SE-PAC OVLP.A...B...C...D...E...F...G...H.
   TR GRN   0   0   0   0   0   0   0   0
   YEL/10  40  40  40  40  40  40  40  40
   RED/10  20  20  20  20  20  20  20  20
   -G/Y     0   1   0   0   0   0   0   0
   +GRN     0   4   0   0   0   0   0   0
 (-) #-PH G/Y KILLS OVLP= (+) #-PH G STRT
 A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

PROTECTED PHASES → -G/Y
PERMISSIVE PHASES → +GRN

NOTE: THIS PROGRAMMING IS REQUIRED FOR SIGNAL HEAD 42 SO THAT THE SOLID GREEN ARROW TURNS ON EXCLUSIVELY DURING PROTECTED GREEN PHASE 1, AND THE FLASHING YELLOW ARROW TURNS ON EXCLUSIVELY DURING PERMITTED GREEN PHASE 4.

PPLT DEFINITION PROGRAMMING COMPLETE
PRESS 'F' TO RETURN TO UNIT DATA

INIT & N.A. RESP PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu, press '3' (Phase Data)

```
 SE-PAC PHASE DATA        PRESS # DESIRED

  1-VEHICLE TIMES        6-N.LOCK & MISC
  2-DENSITY TIMES        7-SPEC. SEQUENCE
  3-PEDEST. TIMES        8-SPEC. DETECTOR
  4-INIT & N.A. RESP     9-PHASE COPY
  5-V & P RECALLS        0-MISC PED OPTIONS

                               F-PRIOR MENU
```

Phases
3, 5, 7, & 8 →
NOT used!

```
PHASE......1...2...3...4...5...6...7...8...9
 INITIAL   1   6   0   1   0   6   0   0   0
 NA RESP   0   1   0   2   0   1   0   0   0


CODES.......0....1....2....3....4....5....6
 INITIAL   NONE INACT RED  YEL  GRN  DRK  G/DW
 NA RESP   NONE  NA1  NA2 BOTH  ---  ---  ---
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

INIT & N.A. RESP programming complete.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0968
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

VHB Engineering NC, P.C. (C-3705)
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P: 919-829-0328

Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1453 (12th Ave NE / Springs Rd NE)
at
SR 1441 (12th Ave Dr NE)

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 033108
JIANXIN MA

DocuSigned by:
Jianxin Ma
827F1953081444F...

DATE 1/6/2026

SIG. INVENTORY NO. 12-0968

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	Sig 4.3

ALL RED FLASH STARTUP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
EPAC UNIT DATA            PRESS # DESIRED

1- STARTUP & MISC      6- ALT SEQUENCES
2- REMOTE FLASH        7- PORT 1 DATA
3- OVERLAP STANDARD    8- I/O MISC
4- OVERLAP SPECIAL     9- SIG DRV OUT
5- RING STRUCTURE
                            F- PRIOR MENU
```

```
EPAC STARTUP & MISC
STARTUP TIME.:  6 (SEC) STATE: 1 (0-FL
RED REV/10...: 40 (TSEC)           1-RED)
AUTO PED CLR.:  0 (0-NO  1-YES)
STOP T RESET.:  0 (0-NO  1-YES)
ALT SEQUENCE.:  0 (0-18)
I'NAT'L SEQ  :  0 (0-NO  1-YES)
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

STARTUP PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

REMOTE FLASH PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
EPAC UNIT DATA            PRESS # DESIRED

1- STARTUP & MISC      6- ALT SEQUENCES
2- REMOTE FLASH        7- PORT 1 DATA
3- OVERLAP STANDARD    8- I/O MISC
4- OVERLAP SPECIAL     9- SIG DRV OUT
5- RING STRUCTURE
                            F- PRIOR MENU
```

```
EPAC FLASH     TST-A=FLSH: 0  (0-NO/1-YES)
 FLSH 2=Y, 3=S: 111101000 0000100000 00000
 ALT FLSH     : 101001000 0000000000 00000
       CHN/PHS: 123456789 0123456789 01234
   ENTRY PHASE: 010001000 0000000
    EXIT PHASE: 010001000 0000000
    FIELD NAME: CHN 1/LSW 1/PHS 1 V DRVR
A-UP  B-DN  C-LT  D-RT          F-PRIOR MENU
```

REMOTE FLASH PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
4. Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that point in both directions of travel shall be installed if the median separates two parallel crosswalks.

ADVANCE WALK PED PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu, press '3' (Phase Data)

```
SE-PAC PHASE DATA       PRESS # DESIRED

 1-VEHICLE TIMES       6-N.LOCK & MISC
 2-DENSITY TIMES       7-SPEC. SEQUENCE
 3-PEDEST. TIMES       8-SPEC. DETECTOR
 4-INIT & N.A. RESP    9-PHASE COPY
 5-V & P RECALLS       0-MISC PED OPTIONS

                            F-PRIOR MENU
```

```
PHASE......1...2...3...4...5...6...7...8
 WOFF/10   0  70   0  40   0   0   0   0
 MODE      0   0   0   0   0   0   0   0
WOFF MODE: 0-ADVANCE WALK  1-DELAY WALK



A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU
```

Advance Walk PED programming complete.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 12-0968
DESIGNED: January 2026
SEALED: 1/6/2026
REVISED: N/A

Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1453 (12th Ave NE / Springs Rd NE)
at
SR 1441 (12th Ave Dr NE)

Division 12 Catawba County Hickory

PLAN DATE:	January 2026	REVIEWED BY:	G. Pierro
PREPARED BY:	J. Ma	REVIEWED BY:	L. Britt

REVISIONS	INIT.	DATE

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SEAL

SEAL 033108 JIANXIN MA

DocuSigned by:
Jianxin Ma
827E1953081444F...

1/6/2026
DATE

SIG. INVENTORY NO. 12-0968

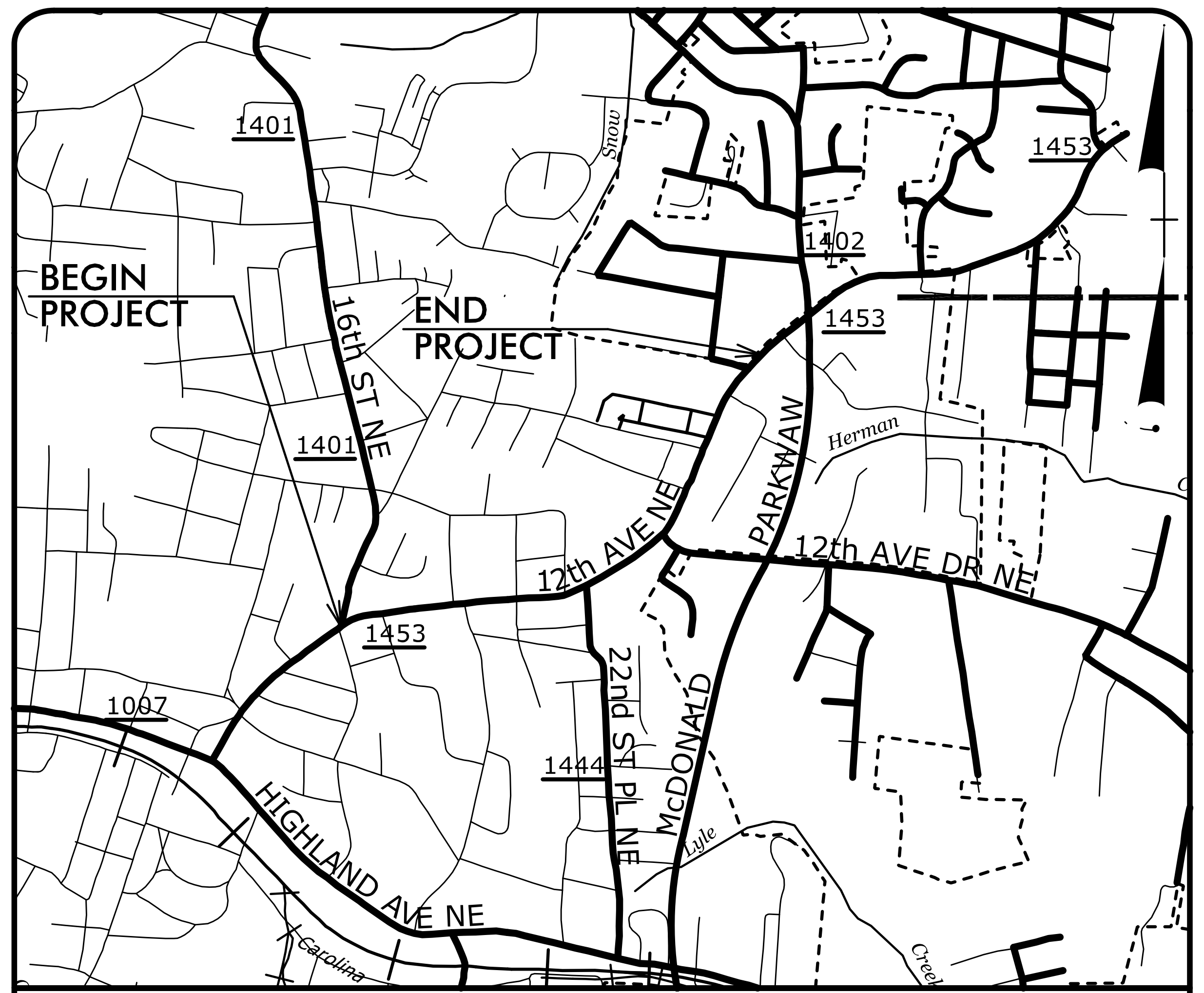
38536.53

TIP PROJECT: BL-0066

T.I.P. NO.	SHEET NO.
BL-0066	UC-1

CITY OF HICKORY

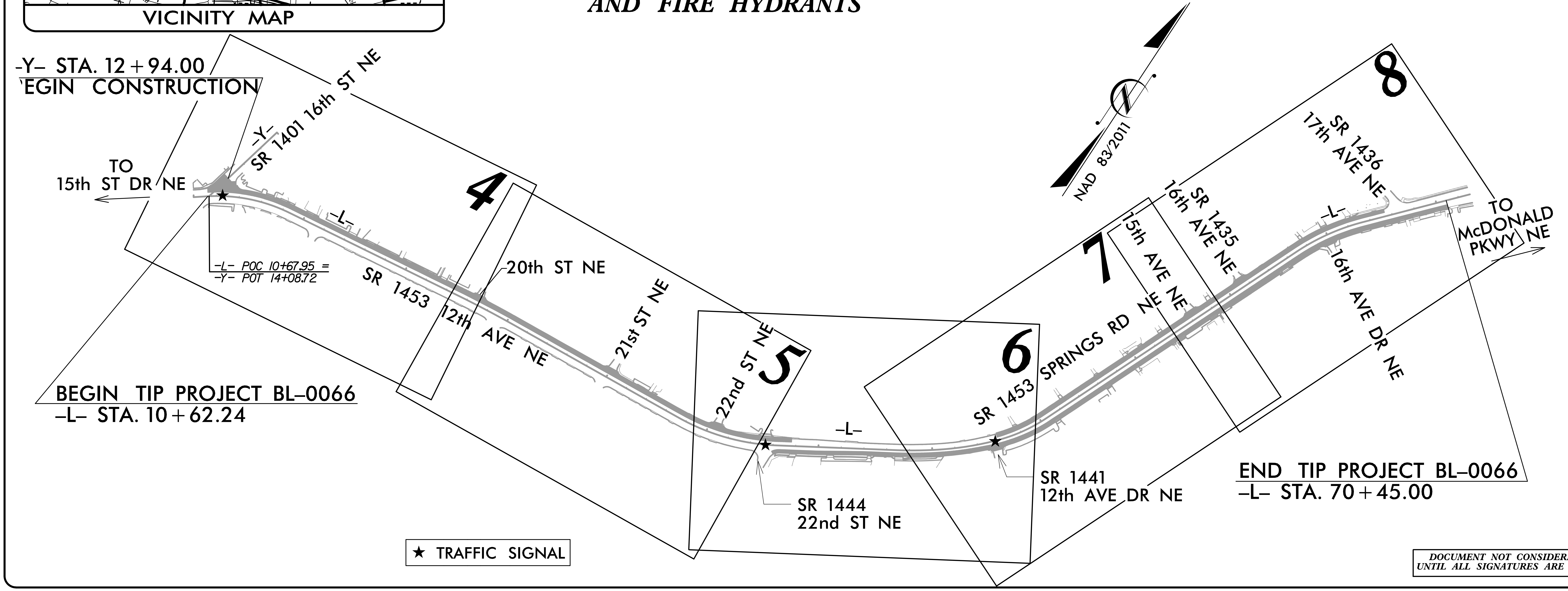
UTILITY CONSTRUCTION PLANS
CATAWBA COUNTY



VICINITY MAP

LOCATION: SIDEWALKS ALONG BOTH SIDES OF SR 1453 (12th AVE. NE/SPRINGS RD NE) BETWEEN SR 1401 (16th ST NE/SANDY RIDGE RD) AND MCDONALD PARKWAY NE

TYPE OF WORK: RELOCATION OF WATER METERS AND FIRE HYDRANTS



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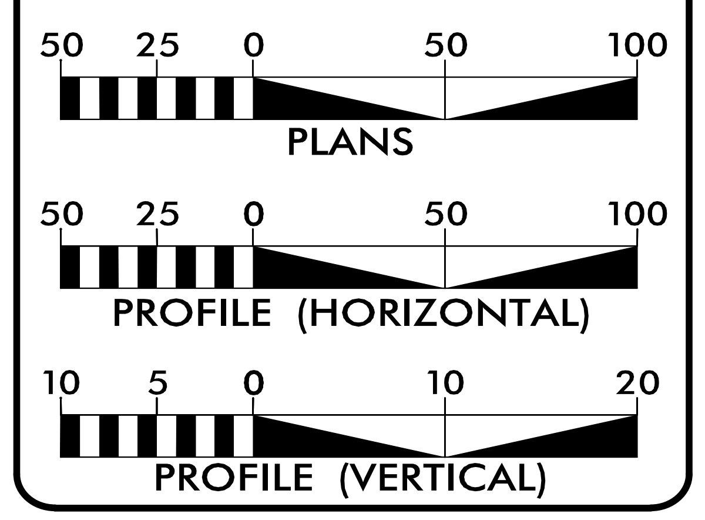
GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4 THRU UC-8	UTILITY CONSTRUCTION SHEET

WATER AND SEWER OWNERS ON PROJECT

(A) CITY OF HICKORY

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 PE, PLS *UTILITIES DESIGN ENGINEER*

SEAL

Bobby Chad Houser
30499
4/17/2026

CITY OF HICKORY

76 North Center St
Hickory, NC 28601
PHONE (919) 707-6690
FAX (919) 250-4151

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	NOTE
Pay Item Note	PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	●
Utility Pole with Base	□
H-Frame Pole	
Power Transmission Line Tower	⊠
Water Manhole	Ⓦ
Power Manhole	Ⓟ
Telephone Manhole	Ⓣ
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	◇
Gas Meter	
Located Miscellaneous Utility Object	○
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.
*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line	SS
Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	⬭
Water Valve	⊗
Fire Hydrant	
Sanitary Sewer Cleanout	⊕

*For Existing Utilities

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

REV: 2/1/2012

4/17/2026
1:27:24 PM
-0066 - Springs Rd\Utilities\Engineering\UC\Proj\BL-0066_Ut_sym_UC2_psh.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-3

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

CITY
OF HICKORY

Bobby Chad Houser
BOBBY C HOUSER
30489
4/17/2026

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

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UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE THE CITY OF HICKORY ENGINEERING DEPARTMENT MANUAL OF PRACTICE

2. THE EXISTING UTILITIES BELONG TO THE 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 OWNER.

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 OWNER.

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. 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.

2. ALL MATERIALS, EQUIPMENT, LABOR, AND WORKSMANSHIP SHALL BE IN ACCORDANCE WITH CITY OF HICKORY STANDARDS AND NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES FOR PROPOSED WATER LINES. IN THE EVENT OF CONFLICT BETWEEN STANDARDS, THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY.

3. 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.

4. IF IT IS DETERMINED THAT ADJUSTING AN EXISTING MANHOLE SHALL CAUSE SIGNIFICANT DAMAGE OR THAT THE STRUCTURAL INTEGRITY OF A GIVEN MANHOLE IS IN QUESTION, THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY.

5. EXISTING WATER SERVICE LINES WHICH ARE GALVANIZED OR IN WHICH THE EXISTING SERVICE COUPLING IS BENEATH THE PROPOSED EDGE OF PAVEMENT SHALL BE INSTALLED FROM THE WATER MAIN TO THE METER.

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-3A

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

CITY
OF HICKORY

Bobby Chad Houser
30499
BOBBY C HOUSER
4/17/2026

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

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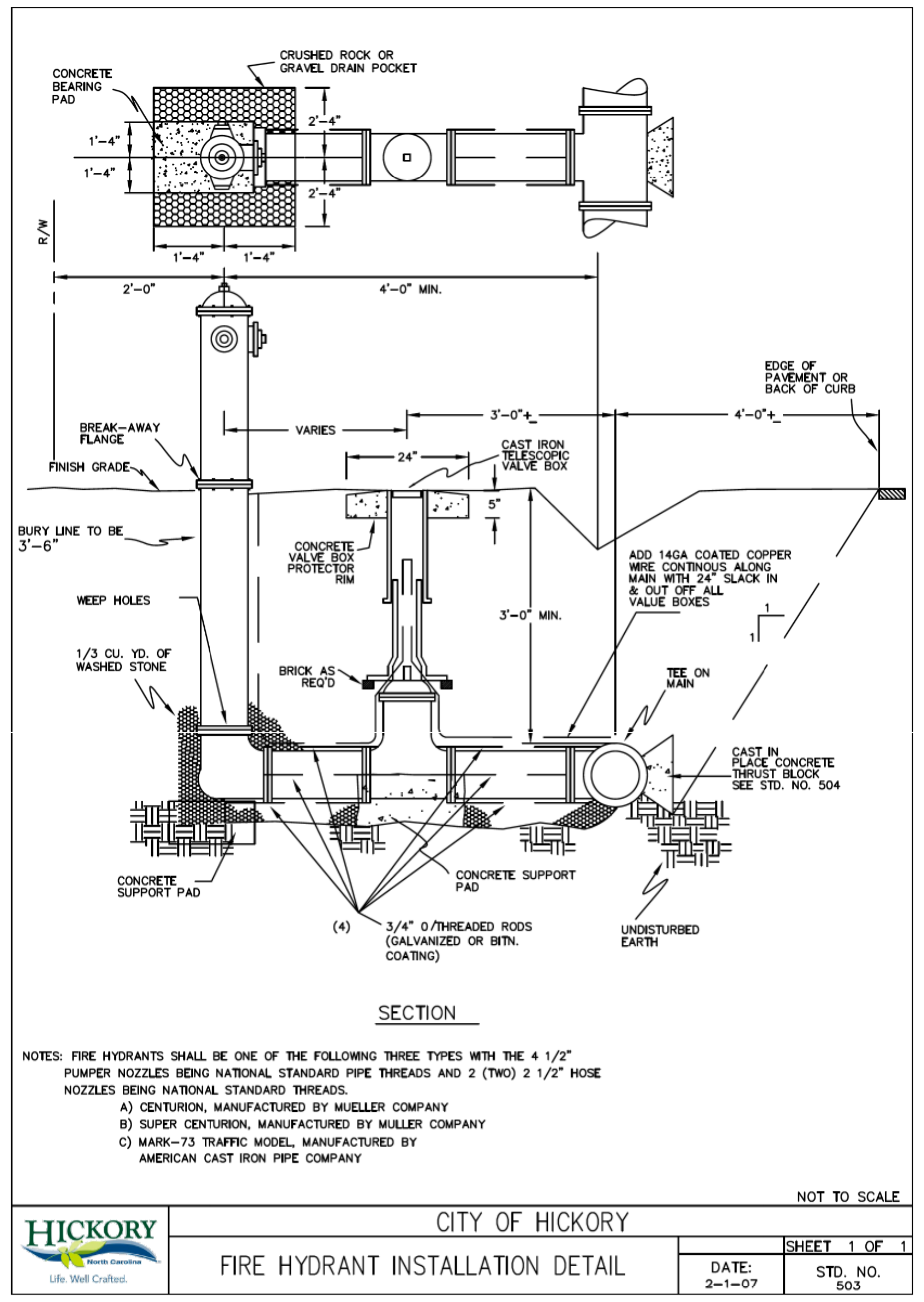
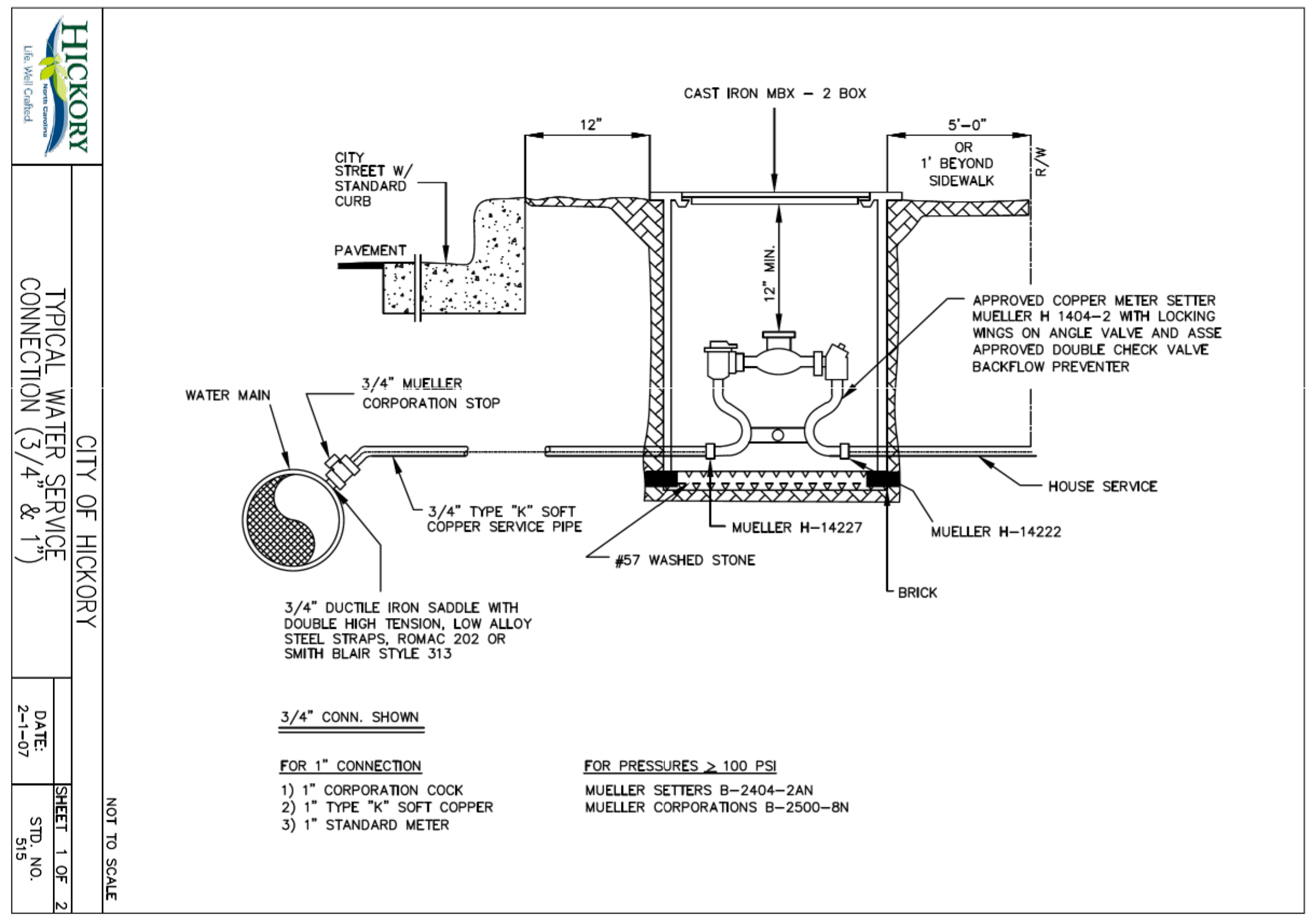
PROJECT TYPICAL DETAILS


CRUSHED ROCK OR GRAVEL DRAIN POCKET
CONCRETE BEARING PAD
2'-4"
1'-4"
1'-4"
2'-4"
R/W
1'-4"
1'-4"
2'-0"
4'-0" MIN.
EDGE OF PAVEMENT OR BACK OF CURB
VARIES
3'-0"±
4'-0"±
BREAK-AWAY FLANGE
24"
CAST IRON TELESCOPIC VALVE BOX
FINISH GRADE
5"
BURY LINE TO BE 3'-6"
CONCRETE VALVE BOX PROTECTOR RIM
ADD 14GA COATED COPPER WIRE CONTINOUS ALONG MAIN WITH 24" SLACK IN & OUT OFF ALL VALUE BOXES
WEEP HOLES
3'-0" MIN.
1
1
1/3 CU. YD. OF WASHED STONE
BRICK AS REQ'D
TEE ON MAIN
CAST IN PLACE CONCRETE THRUST BLOCK SEE STD. NO. 504
CONCRETE SUPPORT PAD
CONCRETE SUPPORT PAD
(4) 3/4" 0/THREADED RODS (GALVANIZED OR BITN. COATING)
UNDISTURBED EARTH
SECTION

NOTES: FIRE HYDRANTS SHALL BE ONE OF THE FOLLOWING THREE TYPES WITH THE 4 1/2" PUMPER NOZZLES BEING NATIONAL STANDARD PIPE THREADS AND 2 (TWO) 2 1/2" HOSE NOZZLES BEING NATIONAL STANDARD THREADS.
- A) CENTURION, MANUFACTURED BY MUELLER COMPANY
- B) SUPER CENTURION, MANUFACTURED BY MULLER COMPANY
- C) MARK-73 TRAFFIC MODEL, MANUFACTURED BY AMERICAN CAST IRON PIPE COMPANY

NOT TO SCALE

HICKORY North Carolina Life. Well Crafted.
CITY OF HICKORY
FIRE HYDRANT INSTALLATION DETAIL
DATE: 2-1-07
SHEET 1 OF 1
STD. NO. 503


CAST IRON MBX - 2 BOX
12"
5'-0" OR 1' BEYOND SIDEWALK
R/W
CITY STREET W/ STANDARD CURB
PAVEMENT
12" MIN.
APPROVED COPPER METER SETTER MUELLER H 1404-2 WITH LOCKING WINGS ON ANGLE VALVE AND ASSE APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTER
WATER MAIN
3/4" MUELLER CORPORATION STOP
HOUSE SERVICE
3/4" TYPE "K" SOFT COPPER SERVICE PIPE
MUELLER H-14227
MUELLER H-14222
#57 WASHED STONE
BRICK
3/4" DUCTILE IRON SADDLE WITH DOUBLE HIGH TENSION, LOW ALLOY STEEL STRAPS, ROMAC 202 OR SMITH BLAIR STYLE 313

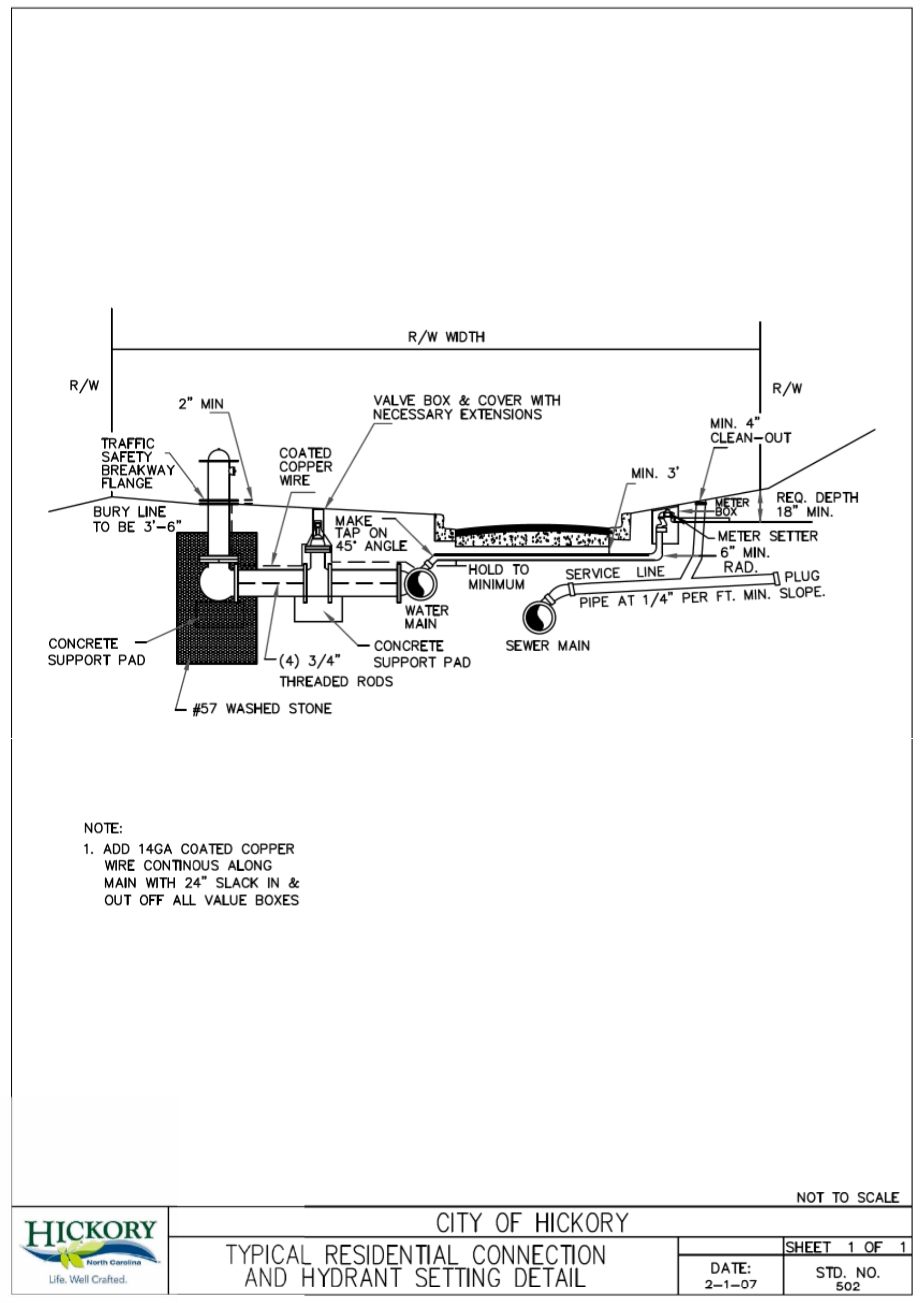
3/4" CONN. SHOWN

FOR 1" CONNECTION
1) 1" CORPORATION COCK
2) 1" TYPE "K" SOFT COPPER
3) 1" STANDARD METER

FOR PRESSURES ≥ 100 PSI
MUELLER SETTERS B-2404-2AN
MUELLER CORPORATIONS B-2500-8N

NOT TO SCALE

HICKORY North Carolina Life. Well Crafted.
CITY OF HICKORY
TYPICAL WATER SERVICE CONNECTION (3/4" & 1")
DATE: 2-1-07
SHEET 1 OF 2
STD. NO. 515



NOTE:
1. ADD 14GA COATED COPPER WIRE CONTINOUS ALONG MAIN WITH 24" SLACK IN & OUT OFF ALL VALUE BOXES

NOT TO SCALE

HICKORY North Carolina Life. Well Crafted.
CITY OF HICKORY
TYPICAL RESIDENTIAL CONNECTION AND HYDRANT SETTING DETAIL
DATE: 2-1-07
SHEET 1 OF 1
STD. NO. 502

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-4

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

CITY OF HICKORY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 30499
Bobby Chad Houser
BOBBY C HOUSER
4/17/2026

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UTILITY CONSTRUCTION

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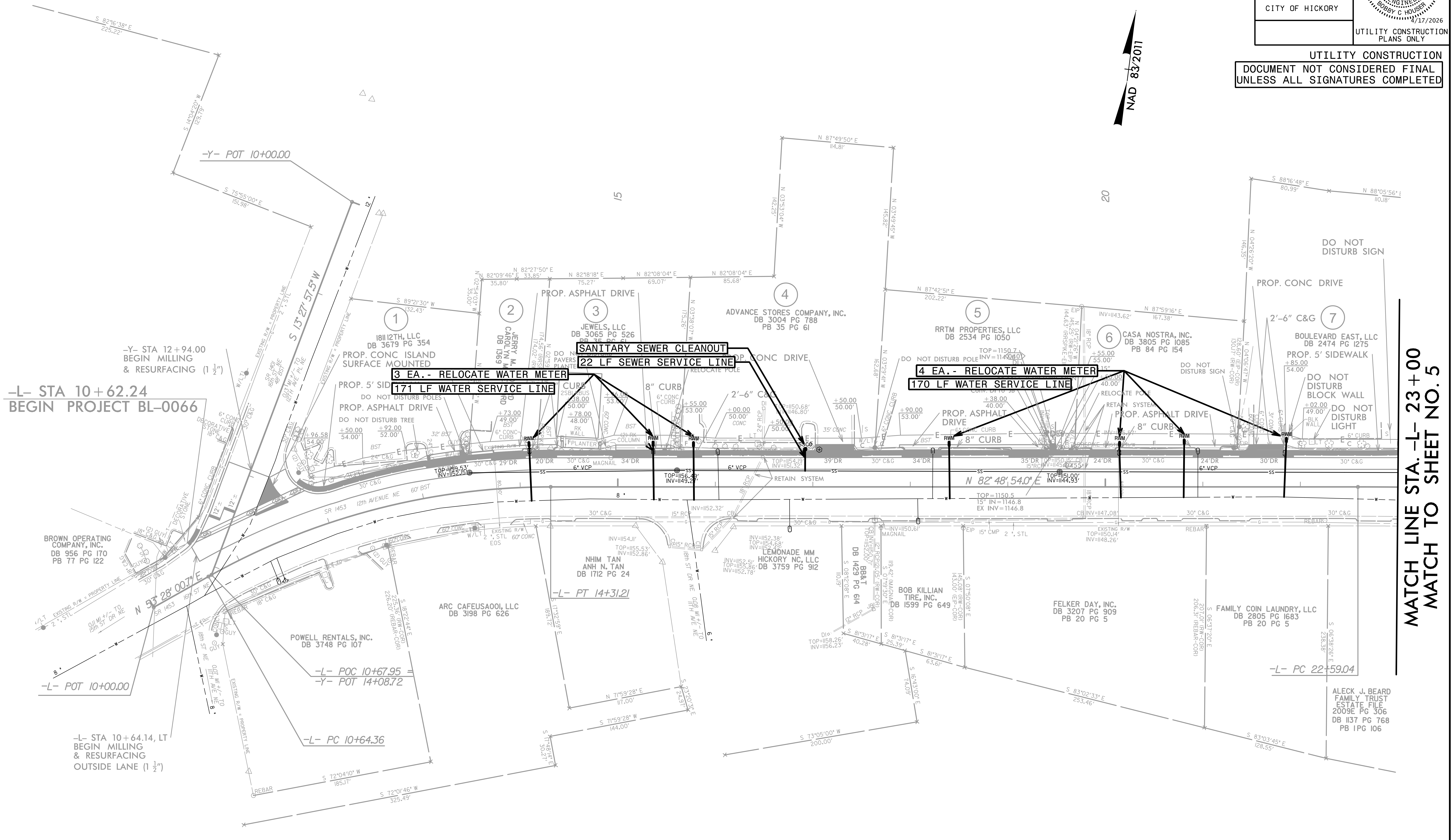

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-5

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

CITY OF HICKORY

BOBBY C HOUSER
030499
4/17/2026

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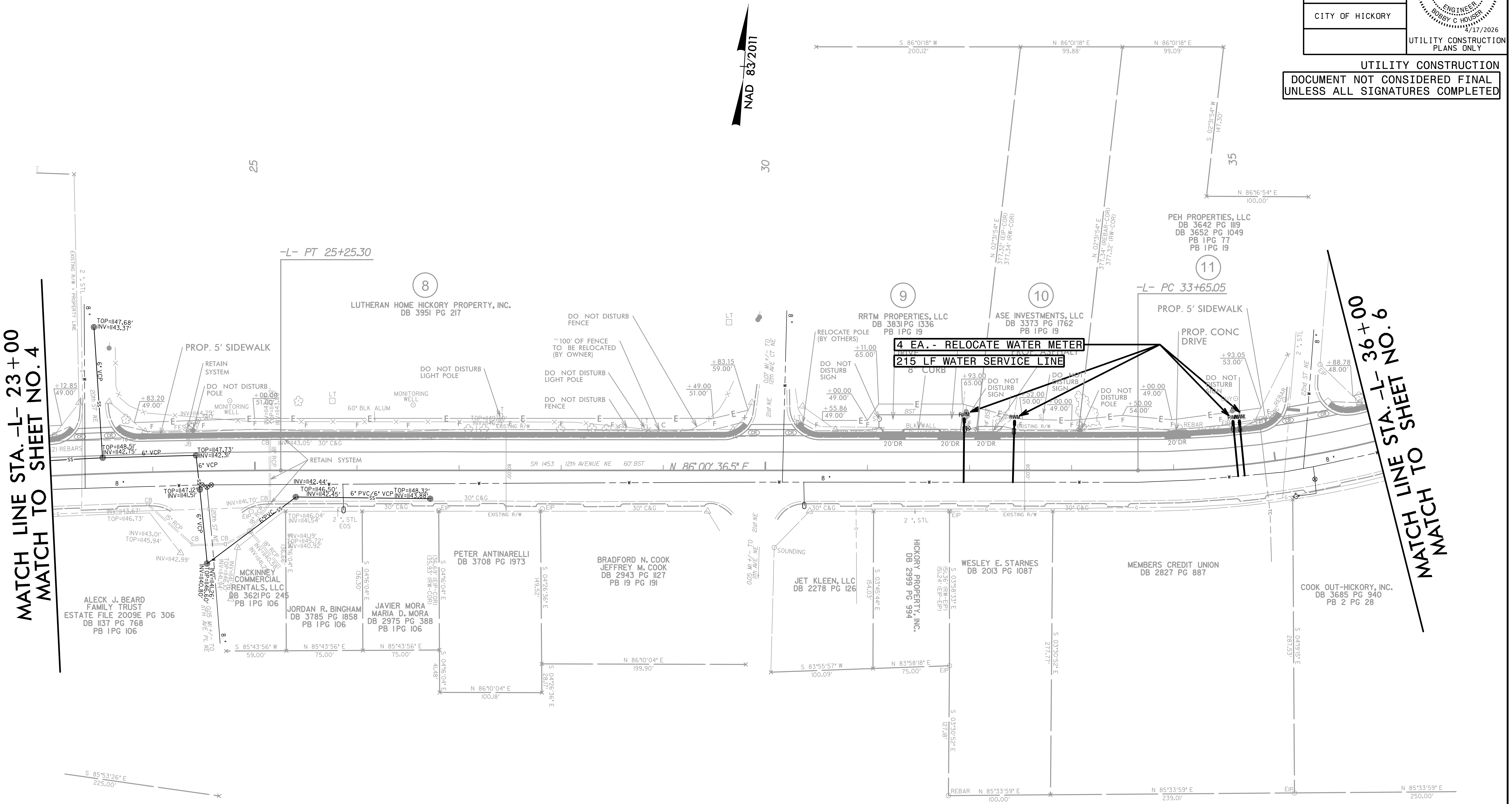
NAD 83/2011
MATCH LINE STA. -L- 23+00
MATCH TO SHEET NO. 4
MATCH LINE STA. -L- 36+00
MATCH TO SHEET NO. 6
25
30
35
-L- PT 25+25.30
-L- PC 33+65.05
SR 1453 12th AVENUE NE 60' BST
N 86°00' 36.5" E
4 EA.- RELOCATE WATER METER
215 LF WATER SERVICE LINE
8 LUTHERAN HOME HICKORY PROPERTY, INC. DB 3951 PG 217
9 RRTM PROPERTIES, LLC DB 3831 PG 1336 PB 1 PG 19
10 ASE INVESTMENTS, LLC DB 3373 PG 1762 PB 1 PG 19
11 PEH PROPERTIES, LLC DB 3642 PG 1119 DB 3652 PG 1049 PB 1 PG 77 PB 1 PG 19
PROP. 5' SIDEWALK
PROP. CONC DRIVE
RETAIN SYSTEM
DO NOT DISTURB POLE
DO NOT DISTURB LIGHT POLE
DO NOT DISTURB FENCE
DO NOT DISTURB SIGN
~100' OF FENCE TO BE RELOCATED (BY OWNER)
RELOCATE POLE (BY OTHERS)
MONITORING WELL
60' BLK ALUM
EXISTING R/W
30' C&G
20'DR
TOP=1147.68' INV=1143.37'
TOP=1148.51' INV=1142.75'
TOP=1147.73' INV=1142.31'
TOP=1147.12' INV=1141.51'
TOP=1146.50' INV=1142.45'
TOP=1148.32' INV=1143.88'
INV=1142.44'
6" VCP
6" PVC/6" VCP
8"
ALECK J. BEARD FAMILY TRUST ESTATE FILE 2009E PG 306 DB 1137 PG 768 PB 1 PG 106
MCKINNEY COMMERCIAL RENTALS, LLC DB 3621 PG 245 PB 1 PG 106
JORDAN R. BINGHAM DB 3785 PG 1858 PB 1 PG 106
JAVIER MORA MARIA D. MORA DB 2975 PG 388 PB 1 PG 106
PETER ANTINARELLI DB 3708 PG 1973
BRADFORD N. COOK JEFFREY M. COOK DB 2943 PG 1127 PB 19 PG 191
JET KLEEN, LLC DB 2278 PG 126
HICKORY PROPERTY, INC. DB 2999 PG 994
WESLEY E. STARNES DB 2013 PG 1087
MEMBERS CREDIT UNION DB 2827 PG 887
COOK OUT-HICKORY, INC. DB 3685 PG 940 PB 2 PG 28
S 86°01'18" W 200.12'
N 86°01'18" E 99.88'
N 86°01'18" E 99.09'
N 86°16'54" E 100.00'
S 85°43'56" W 59.00'
N 85°43'56" E 75.00'
N 85°43'56" E 75.00'
N 86°10'04" E 100.18'
N 86°10'04" E 199.90'
S 83°55'57" W 100.09'
N 83°58'18" E 75.00'
N 85°33'59" E 100.00'
N 85°33'59" E 239.01'
N 85°33'59" E 250.00'
S 85°53'26" E 225.00'
20th ST NE
21st NE
22nd ST NE
SOUNDING

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-6

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

CITY OF HICKORY

SEAL 30499
Bobby Chad Houser
BOBBY C HOUSER
4/17/2026

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

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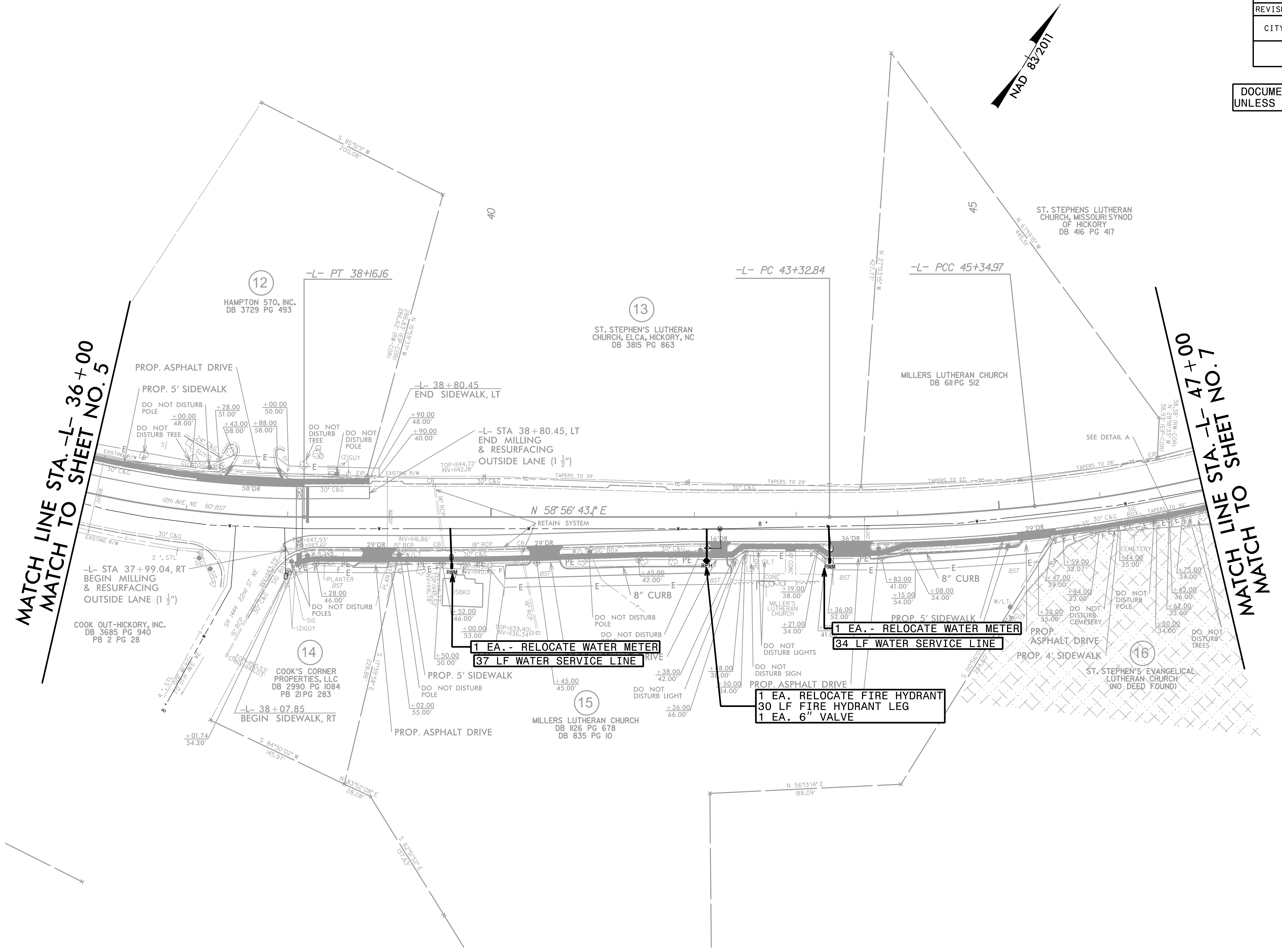


1 EA.- RELOCATE WATER METER
37 LF WATER SERVICE LINE

1 EA. RELOCATE FIRE HYDRANT
30 LF FIRE HYDRANT LEG
1 EA. 6" VALVE

1 EA.- RELOCATE WATER METER
34 LF WATER SERVICE LINE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-7

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

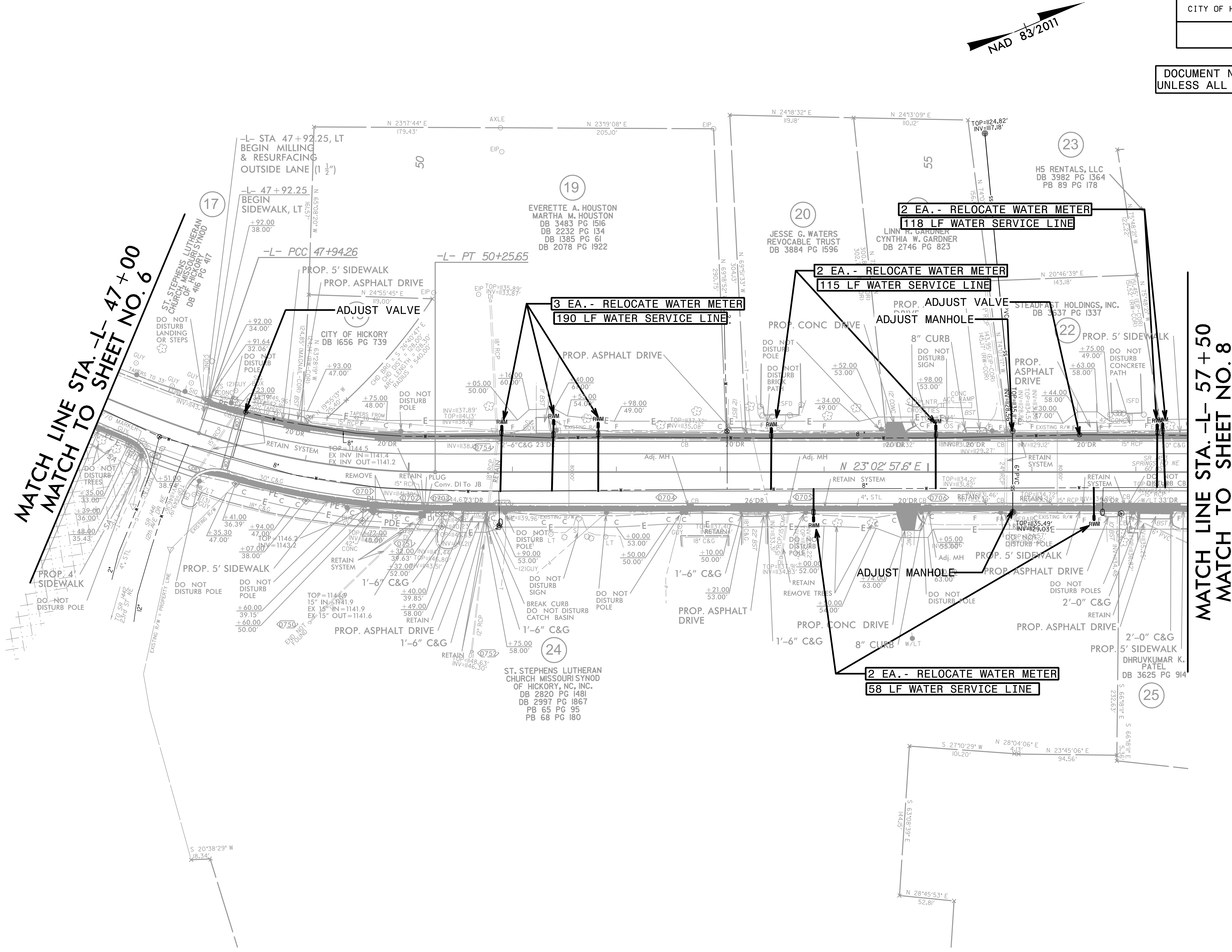
CITY OF HICKORY

Bobby Chad Houser
BOBBY C HOUSER
30499
4/17/2026

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/14/99

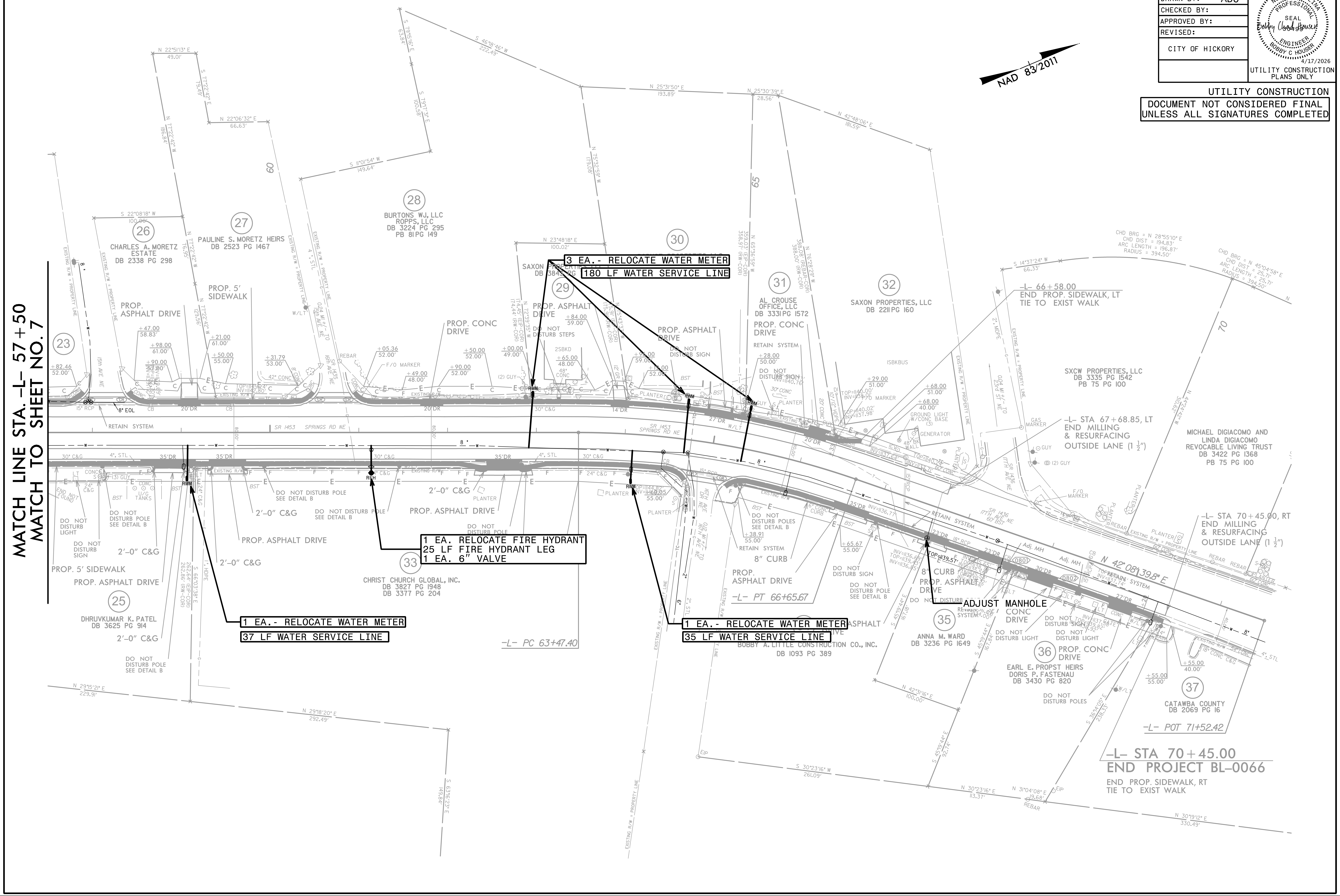
PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UC-8

DESIGNED BY: BCH
DRAWN BY: ADC
CHECKED BY:
APPROVED BY:
REVISED:
CITY OF HICKORY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
Bobby C Houser
BOBBY C HOUSER
4/17/2026

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED


NAD 83/2011
MATCH LINE STA. -L- 57+50
MATCH TO SHEET NO. 7
3 EA.- RELOCATE WATER METER
180 LF WATER SERVICE LINE
1 EA. RELOCATE FIRE HYDRANT
25 LF FIRE HYDRANT LEG
1 EA. 6" VALVE
1 EA.- RELOCATE WATER METER
37 LF WATER SERVICE LINE
1 EA.- RELOCATE WATER METER
35 LF WATER SERVICE LINE
ADJUST MANHOLE
SR 1453 SPRINGS RD NE
N 42°08'39.8" E
-L- PC 63+47.40
-L- PT 66+65.67
-L- POT 71+52.42
-L- 66+58.00 END PROP. SIDEWALK, LT TIE TO EXIST WALK
-L- STA 67+68.85, LT END MILLING & RESURFACING OUTSIDE LANE (1 1/2")
-L- STA 70+45.00, RT END MILLING & RESURFACING OUTSIDE LANE (1 1/2")
-L- STA 70+45.00
END PROJECT BL-0066
END PROP. SIDEWALK, RT TIE TO EXIST WALK
23
25 DHRUVKUMAR K. PATEL DB 3625 PG 914
26 CHARLES A. MORETZ ESTATE DB 2338 PG 298
27 PAULINE S. MORETZ HEIRS DB 2523 PG 1467
28 BURTONS WJ, LLC ROPPS, LLC DB 3224 PG 295 PB 81 PG 149
29 SAXON PROPERTIES DB 3848 PG
30
31 AL CROUSE OFFICE, LLC DB 3331 PG 1572
32 SAXON PROPERTIES, LLC DB 2211 PG 160
SXCW PROPERTIES, LLC DB 3335 PG 1542 PB 75 PG 100
MICHAEL DIGIACOMO AND LINDA DIGIACOMO REVOCABLE LIVING TRUST DB 3422 PG 1368 PB 75 PG 100
33 CHRIST CHURCH GLOBAL, INC. DB 3827 PG 1948 DB 3377 PG 204
BOBBY A. LITTLE CONSTRUCTION CO., INC. DB 1093 PG 389
35 ANNA M. WARD DB 3236 PG 1649
36 EARL E. PROPST HEIRS DORIS P. FASTENAU DB 3430 PG 820
37 CATAWBA COUNTY DB 2069 PG 16
PROP. ASPHALT DRIVE
PROP. CONC DRIVE
PROP. 5' SIDEWALK
2'-0" C&G
DO NOT DISTURB POLE SEE DETAIL B
DO NOT DISTURB SIGN
DO NOT DISTURB LIGHT
DO NOT DISTURB STEPS
RETAIN SYSTEM
8" CURB
RWM
RFH
8"
CHD BRG = N 28°55'10" E CHD DIST = 194.83' ARC LENGTH = 196.87' RADIUS = 394.50'
CHD BRG = N 45°04'58" E CHD DIST = 25.71' ARC LENGTH = 25.71' RADIUS = 394.50'

09/08/99

TIP PROJECT: BL-0066

STATE OF NORTH CAROLINA
CATAWBA COUNTY

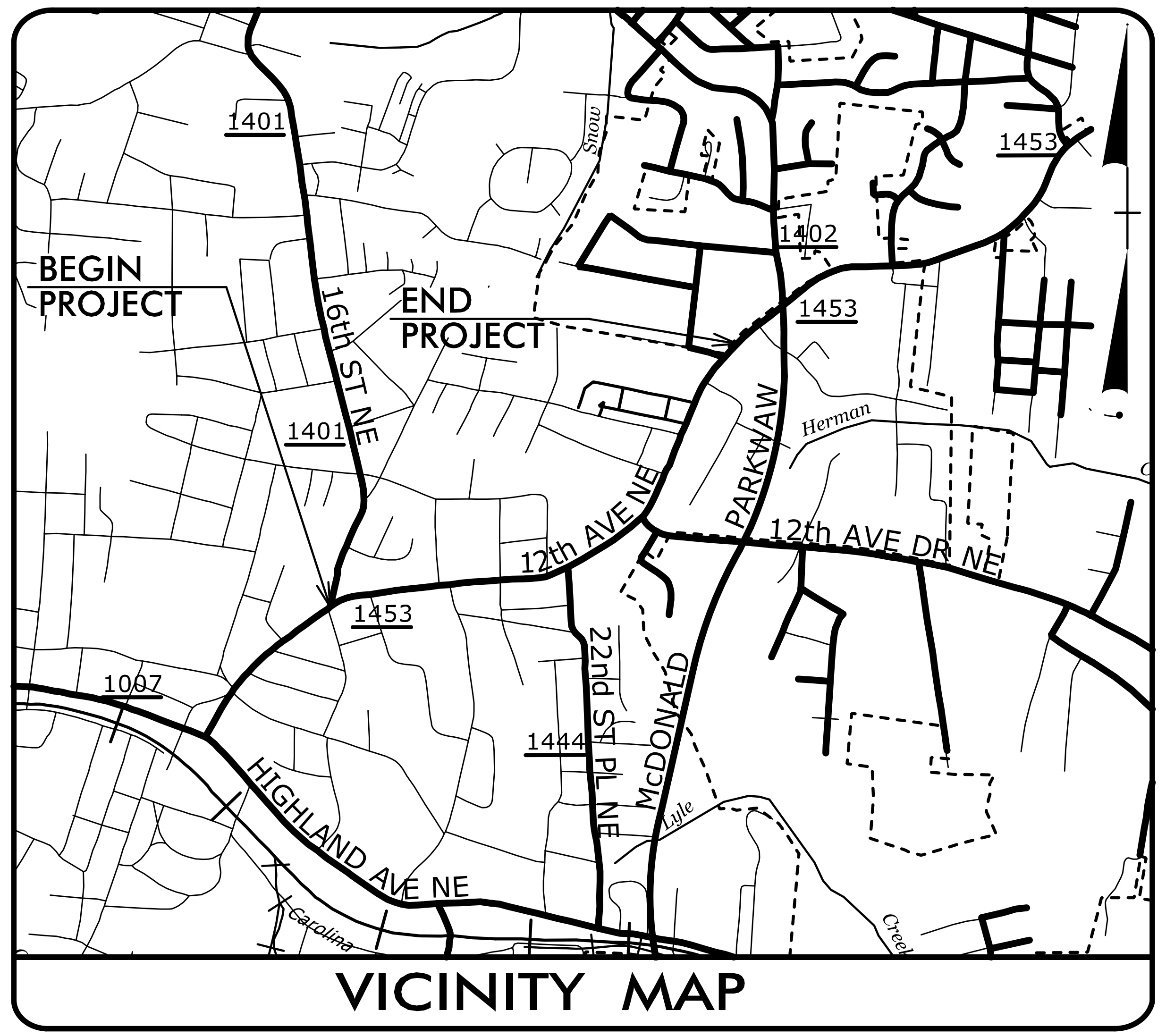
T.I.P. NO.	SHEET NO.
BL-0066	UO-1

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.

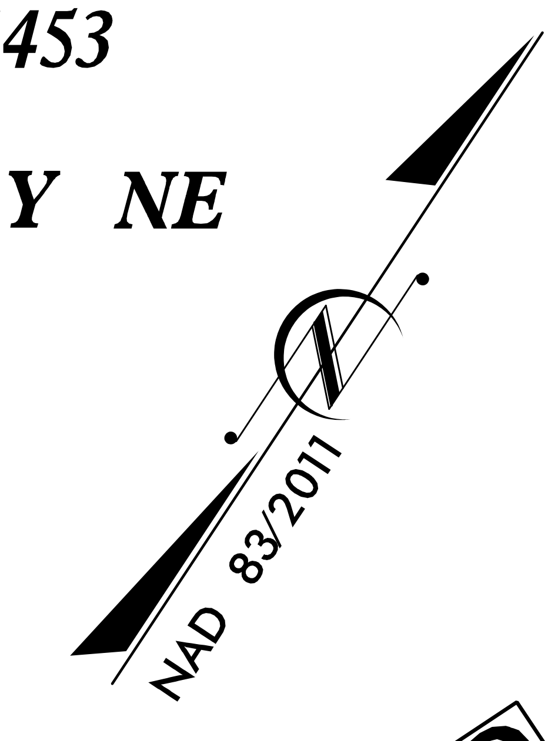
UTILITIES BY OTHERS PLANS
CITY OF HICKORY

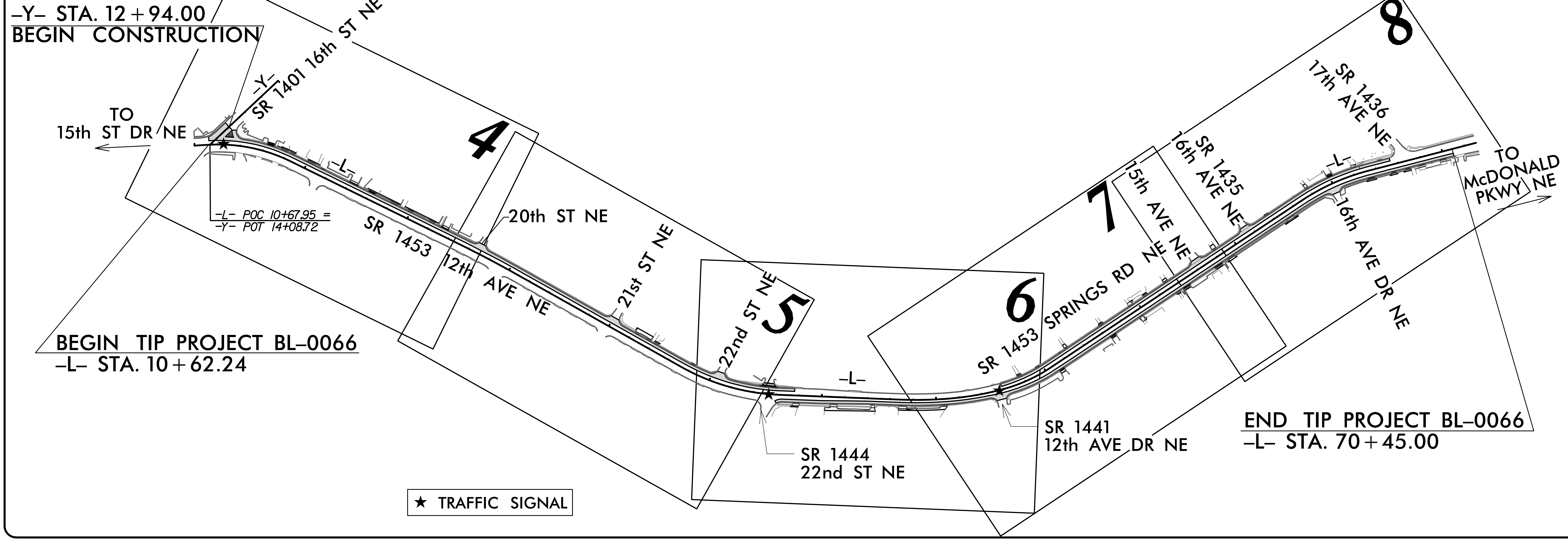
LOCATION: SIDEWALKS ALONG BOTH SIDES OF SR 1453 (12th AVE. NE/SPRINGS RD. NE.) BETWEEN SR 1401 (16th NE/SANDY RIDGE RD.) AND McDONALD PARKWAY NE

TYPE OF WORK: POWER & COMMUNICATIONS

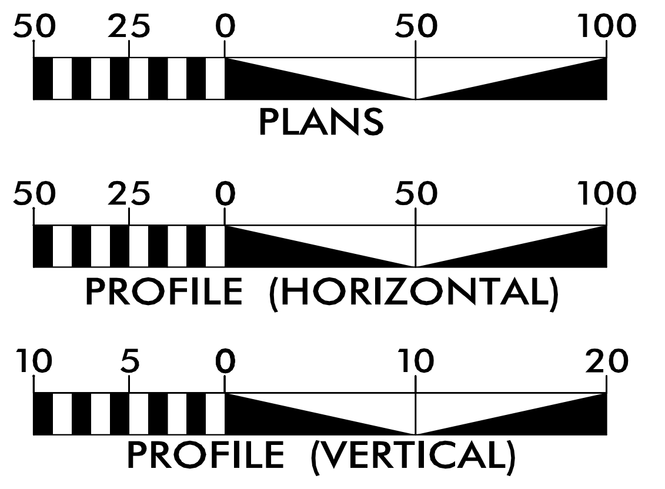


VICINITY MAP





GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO-1	*TITLE SHEET*
UO-2 – UO-6	*UBO PLAN SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) POWER – DUKE ENERGY

(B) COMMUNICATIONS – BRIGHTSPEED

(C) COMMUNICATIONS – SEGRA

(D) COMMUNICATIONS – METRONET

(E) COMMUNICATIONS – RIPPLE FIBER

PREPARED IN THE OFFICE OF:

TELICS
119 BROOKSTOWN AVE.
SUITE 305
WINSTON-SALEM, NC 27101
(336) 705-8844

CORY WOOD	*UTILITY PROJECT MANAGER*
CORY WOOD	*PROJECT UTILITY COORDINATOR*

DIVISION OF HIGHWAYS
DIVISION 12

1710 E. MARION ST.
SHELBY, NC 28151

WARREN ANDERSON *DIVISION UTILITY ENGINEER*

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	U0-2

THIS SHEET CORRESPONDS TO RDY-4

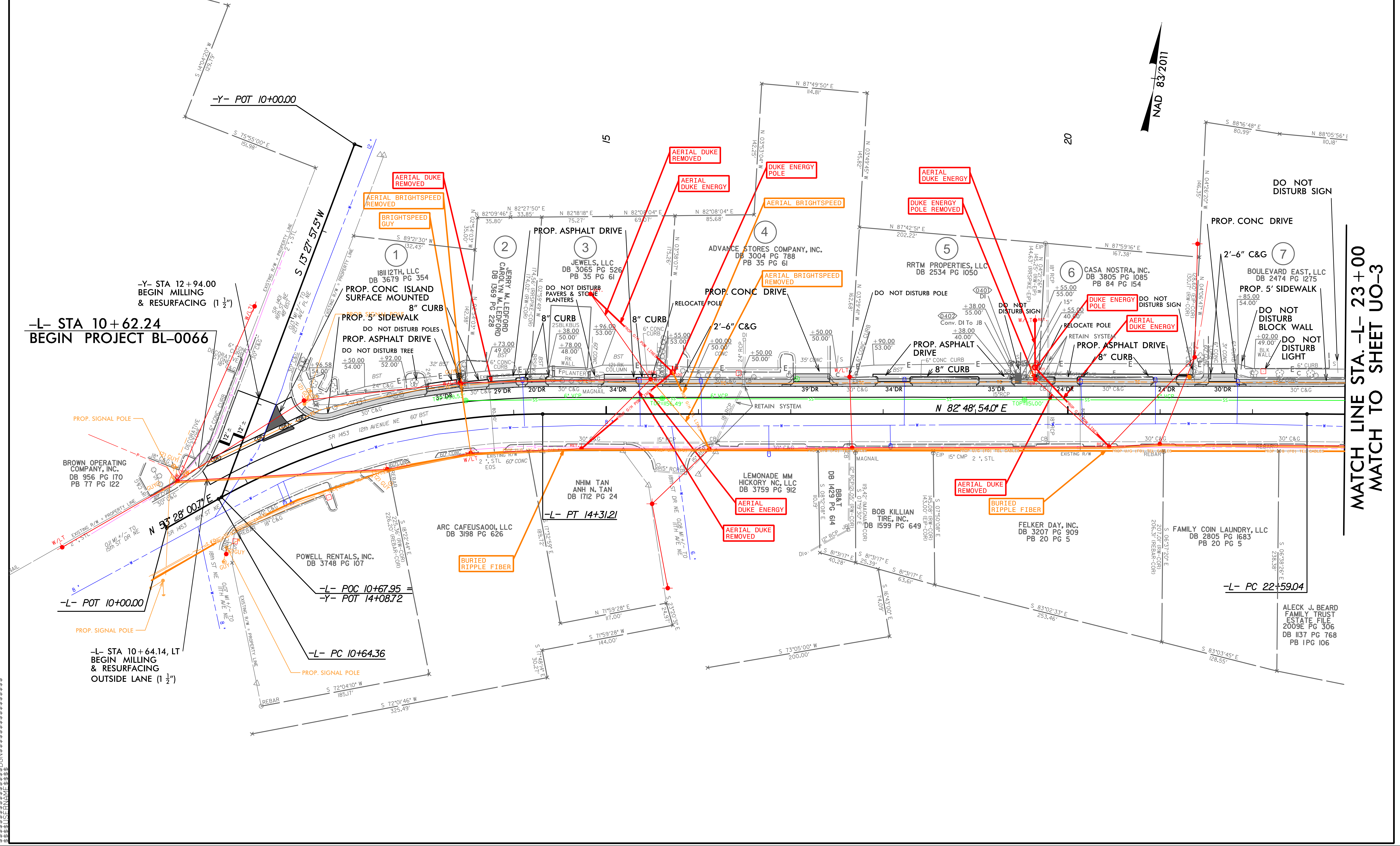
UTILITIES BY OTHERS

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

5/14/99

-L- CURVE DATA

PI Sta 12+51.91	PI Sta 23+92.20
Δ = 29° 20′ 53.2″ (RT)	Δ = 3° 11′ 42.5″ (RT)
D = 7° 59′ 59.9″	D = 1° 12′ 00.0″
L = 366.85′	L = 266.26′
T = 187.55′	T = 133.17′
R = 716.20′	R = 4,774.65′


NAD 83/2011
-Y- POT 10+00.00
-L- STA 10+62.24
BEGIN PROJECT BL-0066
-Y- STA 12+94.00
BEGIN MILLING & RESURFACING (1 ½″)
S 13° 27′ 57.5″ W
N 53° 28′ 00.7″ E
N 82° 48′ 54.0″ E
15
20
AERIAL DUKE REMOVED
AERIAL BRIGHTSPEED REMOVED
BRIGHTSPEED GUY
AERIAL DUKE ENERGY
DUKE ENERGY POLE
AERIAL BRIGHTSPEED
DUKE ENERGY POLE REMOVED
BURIED RIPPLE FIBER
PROP. SIGNAL POLE
① 1811 12TH, LLC DB 3679 PG 354
② JERRY M. LEDFORD CAROLYN M. LEDFORD DB 1369 PG 228
③ JEWELS, LLC DB 3065 PG 526 PB 35 PG 61
④ ADVANCE STORES COMPANY, INC. DB 3004 PG 788 PB 35 PG 61
⑤ RRTM PROPERTIES, LLC DB 2534 PG 1050
⑥ CASA NOSTRA, INC. DB 3805 PG 1085 PB 84 PG 154
⑦ BOULEVARD EAST, LLC DB 2474 PG 1275
PROP. CONC ISLAND SURFACE MOUNTED
8″ CURB
PROP. 5′ SIDEWALK
DO NOT DISTURB POLES
PROP. ASPHALT DRIVE
DO NOT DISTURB TREE
PROP. ASPHALT DRIVE
DO NOT DISTURB PAVERS & STONE PLANTERS
RELOCATE POLE
PROP. CONC DRIVE
2′-6″ C&G
DO NOT DISTURB POLE
DO NOT DISTURB SIGN
RELOCATE POLE
RETAIN SYSTEM
DO NOT DISTURB SIGN
PROP. CONC DRIVE
DO NOT DISTURB BLOCK WALL
DO NOT DISTURB LIGHT
RETAIN SYSTEM
SR 1453 12th AVENUE NE
BROWN OPERATING COMPANY, INC. DB 956 PG 170 PB 77 PG 122
POWELL RENTALS, INC. DB 3748 PG 107
ARC CAFEUSA001, LLC DB 3198 PG 626
NHIM TAN ANH N. TAN DB 1712 PG 24
LEMONADE MM HICKORY NC, LLC DB 3759 PG 912
BB&T DB 1429 PG 614
BOB KILLIAN TIRE, INC. DB 1599 PG 649
FELKER DAY, INC. DB 3207 PG 909 PB 20 PG 5
FAMILY COIN LAUNDRY, LLC DB 2805 PG 1683 PB 20 PG 5
ALECK J. BEARD FAMILY TRUST ESTATE FILE 2009E PG 306 DB 1137 PG 768 PB 1PG 106
-L- POT 10+00.00
-L- POC 10+67.95 = -Y- POT 14+08.72
-L- STA 10+64.14, LT BEGIN MILLING & RESURFACING OUTSIDE LANE (1 ½″)
-L- PC 10+64.36
-L- PT 14+31.21
-L- PC 22+59.04
MATCH LINE STA. -L- 23+00 MATCH TO SHEET U0-3

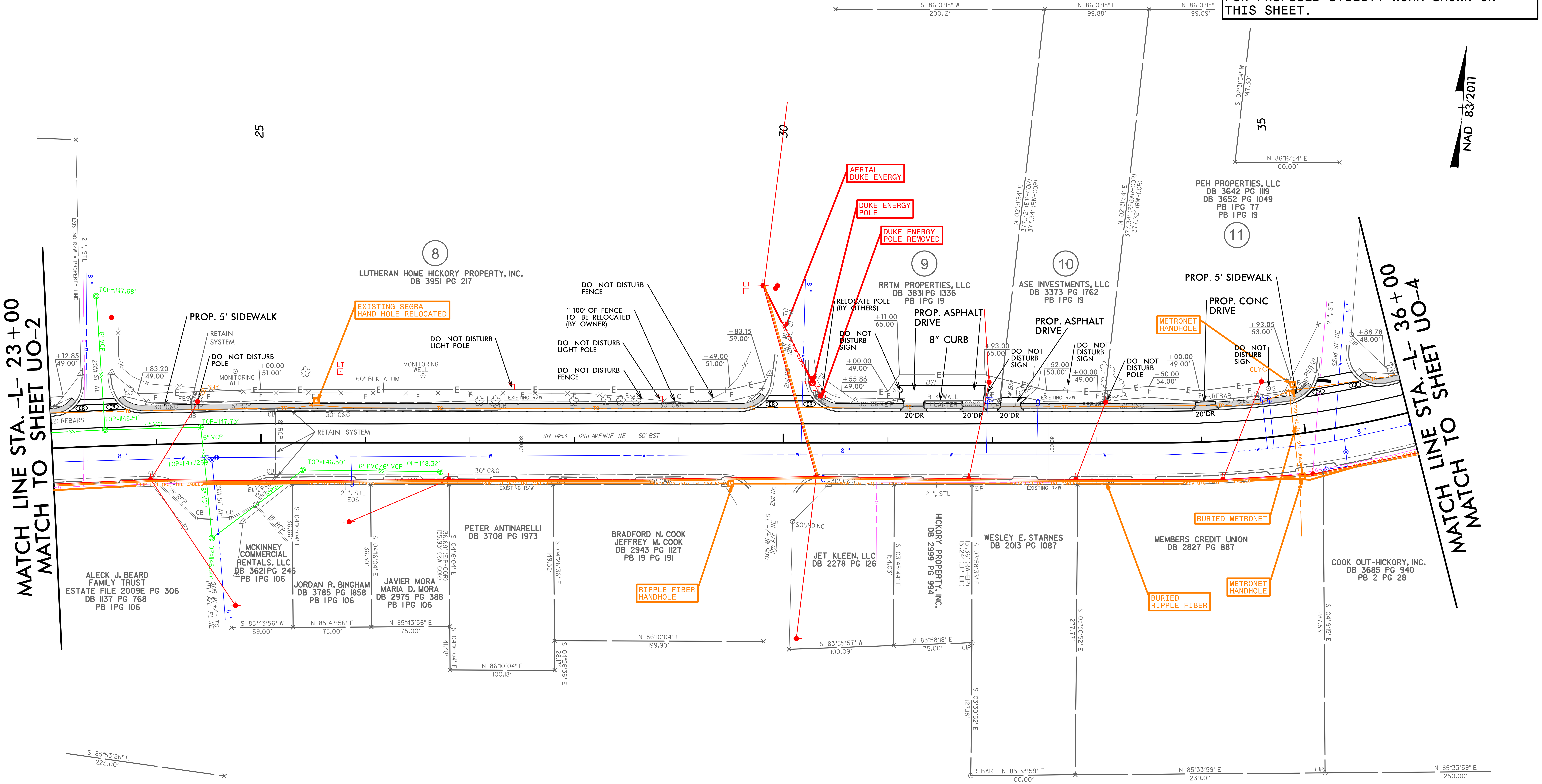
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UO-3

THIS SHEET CORRESPONDS TO RDY-5

UTILITIES BY OTHERS

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



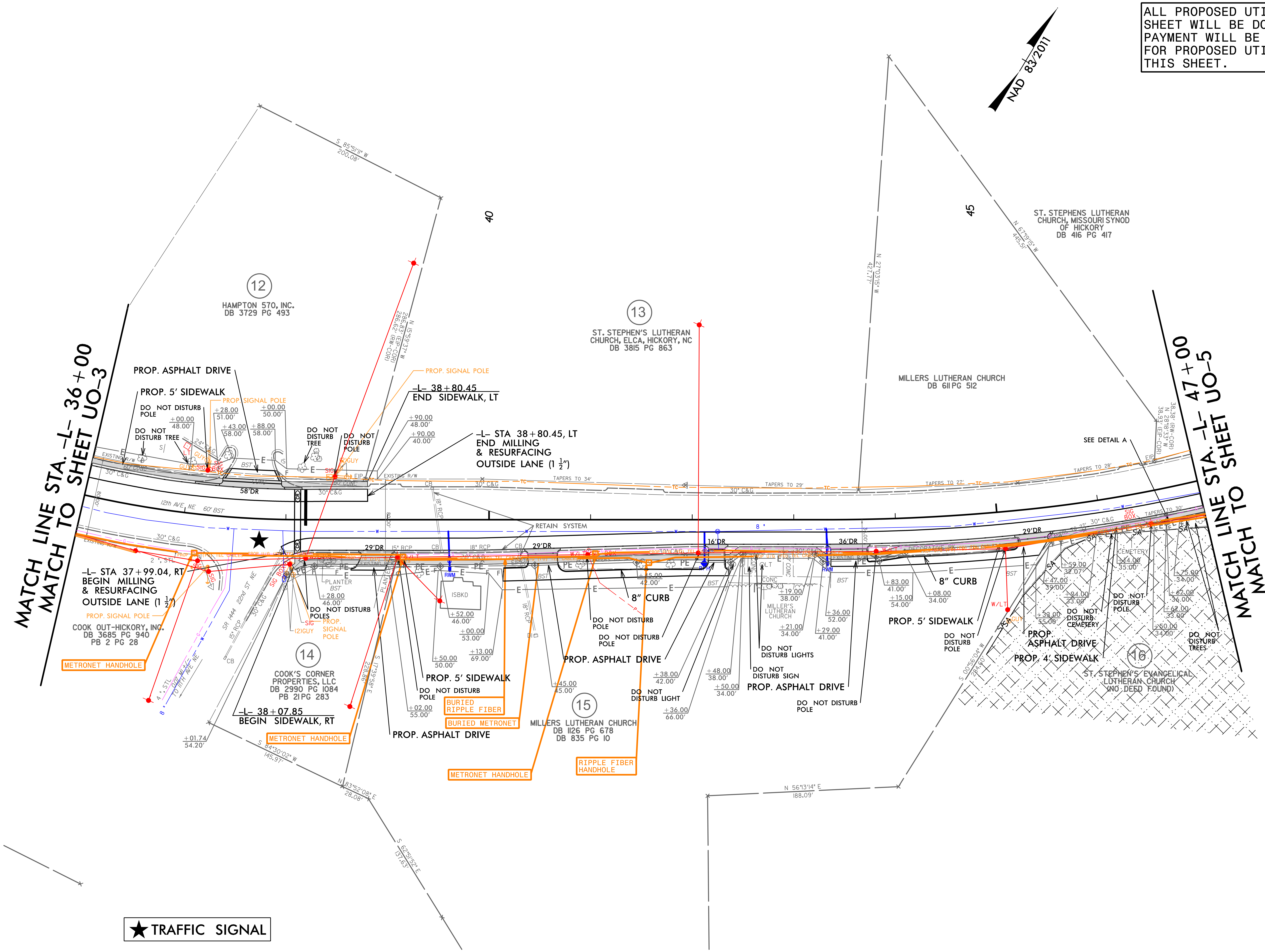
$$$$$SYSTIME$$$$
$$$$$USERNAME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UO-4
THIS SHEET CORRESPONDS TO RDY-6	

UTILITIES BY OTHERS

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



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

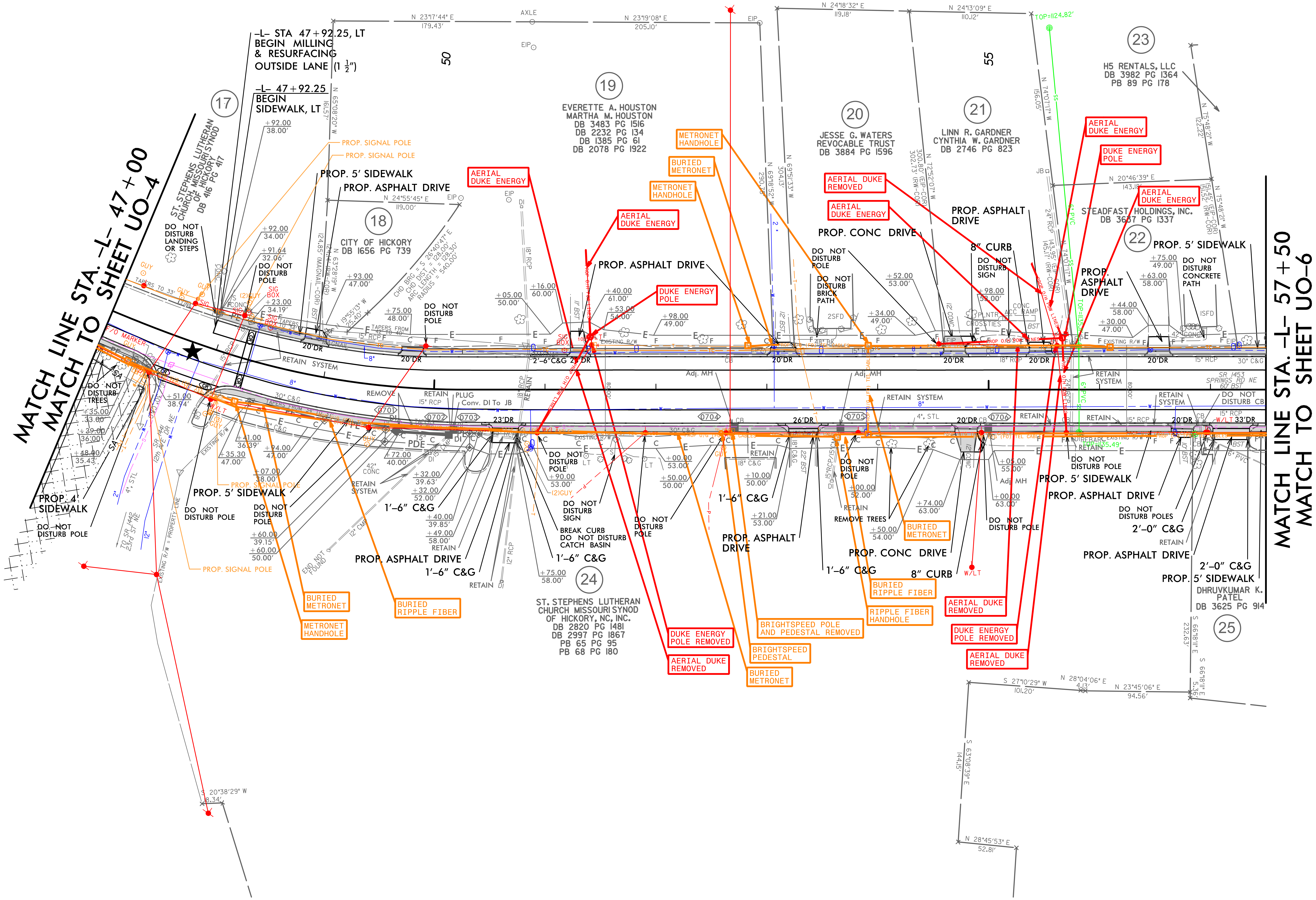
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UO-5

THIS SHEET CORRESPONDS TO RDY-7

UTILITIES BY OTHERS

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


NAD 83/2011
MATCH LINE STA. -L- 47+00
MATCH TO SHEET UO-4
MATCH LINE STA. -L- 57+50
MATCH TO SHEET UO-6
-L- STA 47+92.25, LT
BEGIN MILLING & RESURFACING OUTSIDE LANE (1 1/2")
-L- 47+92.25
BEGIN SIDEWALK, LT
ST. STEPHENS LUTHERAN CHURCH MISSOURI SYNOD OF HICKORY DB 416 PG 417
CITY OF HICKORY DB 1656 PG 739
EVERETTE A. HOUSTON MARTHA M. HOUSTON DB 3483 PG 1516 DB 2232 PG 134 DB 1385 PG 61 DB 2078 PG 1922
JESSE G. WATERS REVOCABLE TRUST DB 3884 PG 1596
LINN R. GARDNER CYNTHIA W. GARDNER DB 2746 PG 823
H5 RENTALS, LLC DB 3982 PG 1364 PB 89 PG 178
STEADFAST HOLDINGS, INC. DB 3637 PG 1337
ST. STEPHENS LUTHERAN CHURCH MISSOURI SYNOD OF HICKORY, NC, INC. DB 2820 PG 1481 DB 2997 PG 1867 PB 65 PG 95 PB 68 PG 180
DHRUVKUMAR K. PATEL DB 3625 PG 914
17
18
19
20
21
22
23
24
25
50
55
PROP. SIGNAL POLE
PROP. 5' SIDEWALK
PROP. ASPHALT DRIVE
PROP. CONC DRIVE
PROP. 4' SIDEWALK
8" CURB
1'-6" C&G
2'-0" C&G
2'-6" C&G
DO NOT DISTURB POLE
DO NOT DISTURB LANDING OR STEPS
DO NOT DISTURB TREES
DO NOT DISTURB SIGN
DO NOT DISTURB BRICK PATH
DO NOT DISTURB CONCRETE PATH
DO NOT DISTURB POLES
DO NOT DISTURB CB
BREAK CURB DO NOT DISTURB CATCH BASIN
REMOVE TREES
RETAIN SYSTEM
AERIAL DUKE ENERGY
DUKE ENERGY POLE
AERIAL DUKE REMOVED
DUKE ENERGY POLE REMOVED
METRONET HANDHOLE
BURIED METRONET
BURIED RIPPLE FIBER
RIPPLE FIBER HANDHOLE
BRIGHTSPEED POLE AND PEDESTAL REMOVED
BRIGHTSPEED PEDESTAL
SR 1453 SPRINGS RD NE
TO SR 1440 23rd ST NE
20'DR
23'DR
26'DR
33'DR
W/LT

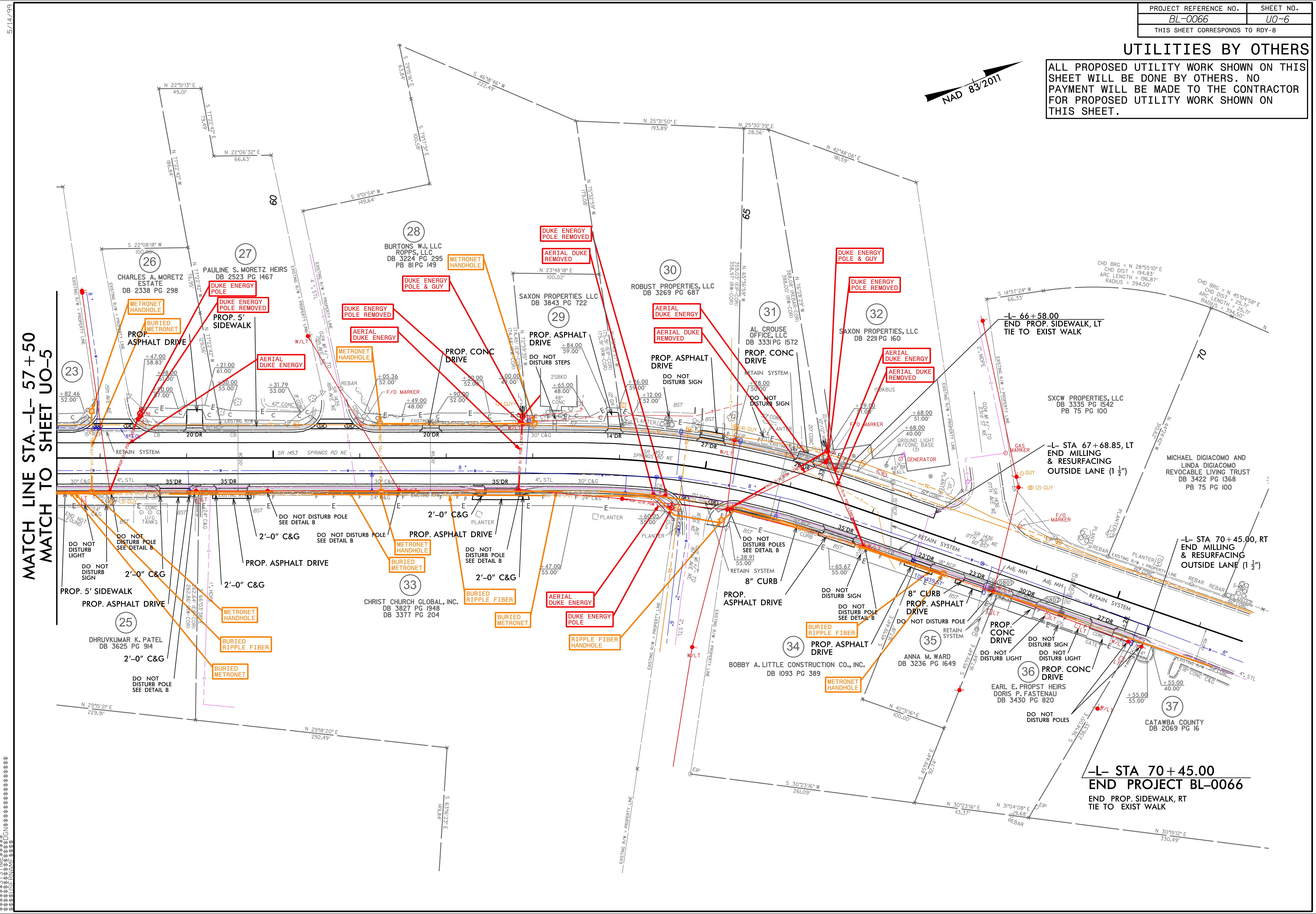
$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
BL-0066	UO-6

THIS SHEET CORRESPONDS TO RDY-8

UTILITIES BY OTHERS

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



PROJ. REFERENCE NO.	SHEET NO.
BL-0066	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L, LT	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+64.14	0	0
11+82.33	0	0
12+00.00	0	1
12+50.00	0	6
13+00.00	0	4
13+25.00	4	0
13+50.00	4	0
14+00.00	10	1
14+20.00	8	0
14+50.00	6	0
15+10.00	11	0
15+50.00	8	0
15+70.00	2	1
16+00.00	2	2
16+50.00	0	2
17+10.00	9	1
17+50.00	9	0
18+00.00	14	0
18+50.00	12	0
19+10.00	15	0
19+50.00	8	0
20+00.00	9	0
20+50.00	9	1
21+00.00	9	1
21+60.00	20	0
22+00.00	6	0
22+50.00	1	0
23+00.00	0	0
24+00.00	0	1
24+50.00	0	1
25+00.00	0	2
25+50.00	0	2
26+00.00	0	1
26+50.00	0	1
27+00.00	0	2
27+50.00	0	3
28+00.00	0	3
28+50.00	0	2
29+00.00	0	1
29+50.00	0	1
30+50.00	0	3
31+00.00	0	1
31+25.00	8	0
31+50.00	10	0
31+80.00	9	0
32+00.00	5	1
32+15.00	3	1
32+50.00	6	1
33+00.00	0	1
33+50.00	0	4
34+00.00	6	4
34+50.00	6	2
35+00.00	0	3
36+00.00	0	3
36+50.00	0	0
37+00.00	0	0
37+50.00	9	0
38+00.00	12	3
38+50.00	3	3
38+80.45	0	0

Station L, RT	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
37+99.04	0	0
38+50.00	0	2
38+90.00	11	1
39+50.00	16	1
40+00.00	0	8
40+50.00	21	8
41+00.00	23	10
41+50.00	3	19
42+00.00	3	23
42+25.00	9	7
42+50.00	8	1
43+50.00	31	3
44+00.00	18	8
44+50.00	5	14
45+00.00	5	10
45+30.00	10	3
45+60.00	9	0
46+00.00	0	2
46+50.00	0	3
47+40.00	1	1
48+50.00	2	0
48+85.00	1	0
49+00.00	0	0
49+50.00	1	0
49+75.00	0	0
50+00.00	1	0
50+60.00	20	0
51+00.00	12	0
51+30.00	1	0
51+50.00	2	0
52+00.00	5	0
52+50.00	4	0
53+10.00	2	0
53+40.00	5	0
54+00.00	10	0
54+50.00	4	0
54+70.00	1	0
54+85.00	6	0
55+00.00	6	0
55+45.00	0	0
56+00.00	0	0
56+50.00	0	2
56+75.00	4	1
57+10.00	13	0
57+50.00	8	0
58+10.00	0	0
58+50.00	0	0
58+90.00	7	0
59+10.00	5	0
59+50.00	12	0
60+00.00	11	1
60+50.00	0	2
60+70.00	0	1
61+00.00	0	2
61+50.00	0	3
61+90.00	0	2
62+50.00	14	1
63+00.00	12	0
63+50.00	0	2
63+90.00	0	2
64+50.00	0	3
65+00.00	0	1
65+50.00	0	3
66+10.00	0	6
66+60.00	10	2
67+00.00	8	0
67+50.00	0	1
67+70.00	4	0
68+00.00	5	1
68+40.00	7	1
69+00.00	21	0
69+50.00	8	0
70+00.00	9	0
70+45.00	7	0

Station L, LT	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
47+92.55	0	0
48+50.00	0	4
48+85.00	7	2
49+00.00	3	0
49+50.00	0	2
49+75.00	3	0
50+00.00	3	0
50+60.00	0	2
51+00.00	1	1
51+30.00	9	0
51+50.00	5	2
52+00.00	0	5
52+50.00	0	1
53+10.00	10	0
53+40.00	5	1
54+00.00	0	2
54+50.00	0	2
54+70.00	4	0
54+85.00	3	1
55+00.00	0	1
55+45.00	8	0
56+00.00	10	0
56+50.00	11	0
56+75.00	5	0
57+10.00	0	1
57+50.00	2	1
58+10.00	3	0
58+50.00	2	0
58+90.00	8	0
59+10.00	15	0
59+50.00	27	0
60+00.00	7	0
60+50.00	4	0
61+00.00	1	0
61+50.00	1	0
61+90.00	8	0
62+50.00	18	0
63+00.00	12	0
63+50.00	9	0
63+90.00	23	0
64+50.00	33	0
65+00.00	9	0
65+50.00	8	1
66+10.00	11	1
66+58.00	8	0

Approximate quantities only. Unclassified excavation and clearing and grubbing will be paid for at the lump sum price for "Grading".

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-2

2/10/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Roadway\XSC\BL-0066_Rdy_xpl_L.dgn
User:smelvin

Docusign Envelope ID: 4551D2C0-4385-85D1-82F6-343CAF4691F1

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-3

6/23/16

2/10/2026
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User:smelvin

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-4

2/10/2026
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User:smelvin

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-5

2/10/2026
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User:smelvin

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-6

2/10/2026
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User:smelvin

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-7

6/23/16

2/10/2026
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User:smelvin

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-8

6/23/16

2/10/2026
X:\Municipalities\Hickory\BL-0066 - Springs Rd\Roadway\XSC\BL-0066_Rdy_xpl_L.dgn
User:smelvin

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-9

6/23/16

2/10/2026
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User:smelvin

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-10

2/10/2026
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User:smelvin

Docusign Envelope ID: 4551D2C0-4385-85D1-82F6-343CAF4691F1

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-11

6/23/16

2/10/2026
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User:smelvin

Docusign Envelope ID: 4551D2C0-4385-85D1-82F6-343CAF4691F1

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-12

6/23/16

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User:smelvin

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-13

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-14

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	BL-0066	X-15

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	BL-0066	X-20

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