

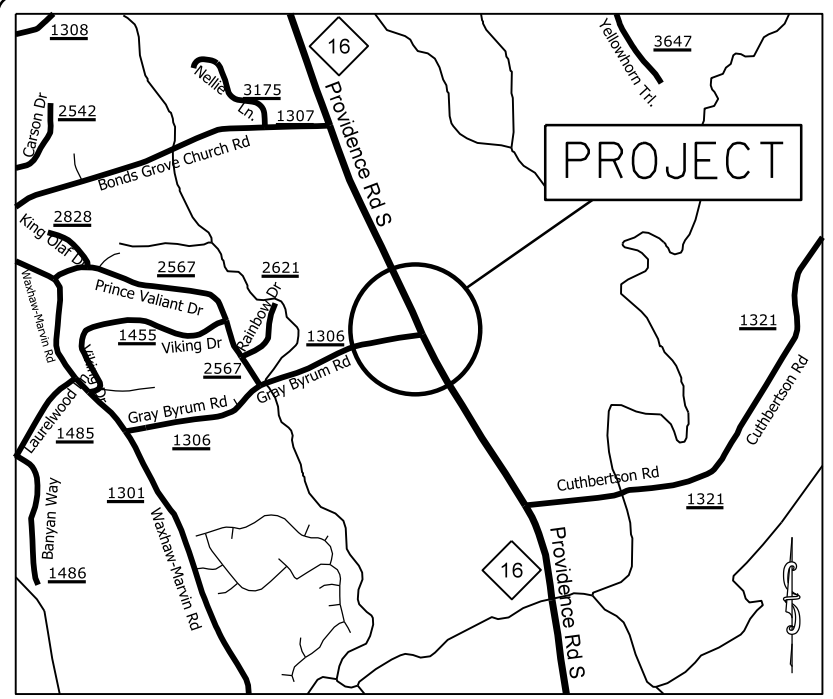
PROJECT: 44856.3.12 TIP: W-5710L

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	44856.3.12	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44856.1.12	HSIP-0016(062)	P.E.	
44856.2.12	HSIP-0016(062)	R/W	
44856.3.12	HSIP-0016(062)	CONST.	

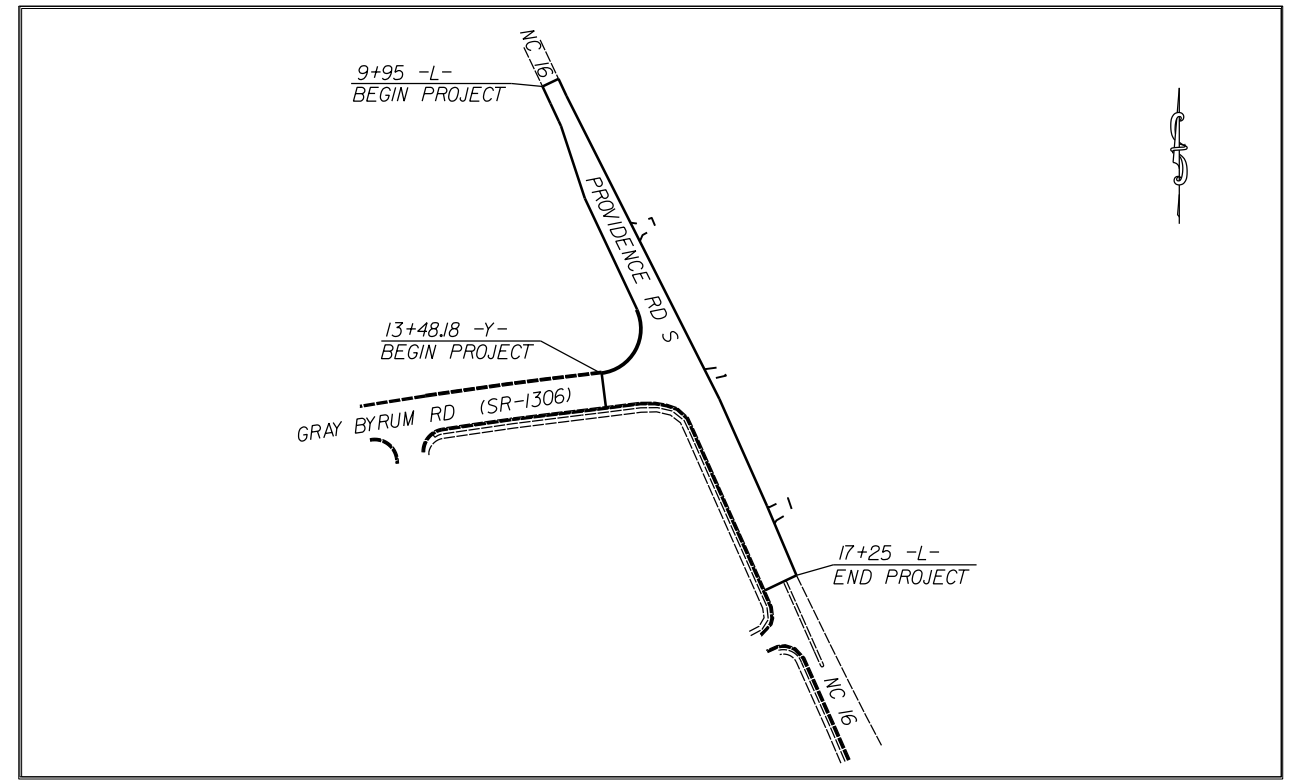
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
UNION COUNTY

LOCATION: NC 16 (PROVIDENCE RD S) AT GRAY BYRUM ROAD (SR-1306)

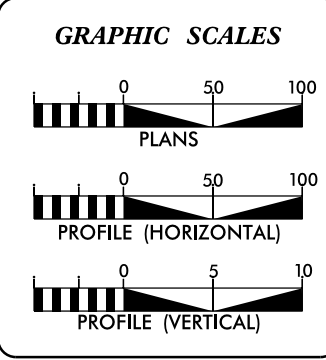
TYPE OF WORK: GRADING, PROFILE MILLING, PAVING, CONCRETE CURB AND GUTTER, THERMOPLASTIC PAVEMENT MARKINGS, and SIGNAL INSTALLATION



VICINITY MAP NOT TO SCALE



CLEARING ON THIS PROJECT SHALL BE TO THE LIMITS ESTABLISHED BY METHOD III AS DESCRIBED IN THE NCDOT STANDARD DRAWINGS



DESIGN DATA

ADT N/A	=	
ADT N/A	=	
DHV	=	N/A %
D	=	N/A %
T	=	N/A %
V	=	N/A MPH

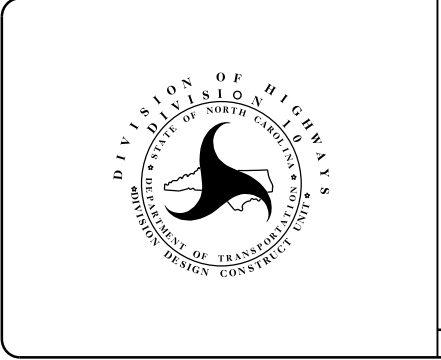
PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 44856.3.12	=	0.14	MILES
TOTAL LENGTH OF STATE PROJECT 44856.3.12	=	0.14	MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
DIVISION TEN
DIVISION DESIGN / CONSTRUCT UNIT

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	DONALD HARWARD PROJECT ENGINEER
LETTING DATE:	DONALD HARWARD PROJECT DESIGN ENGINEER

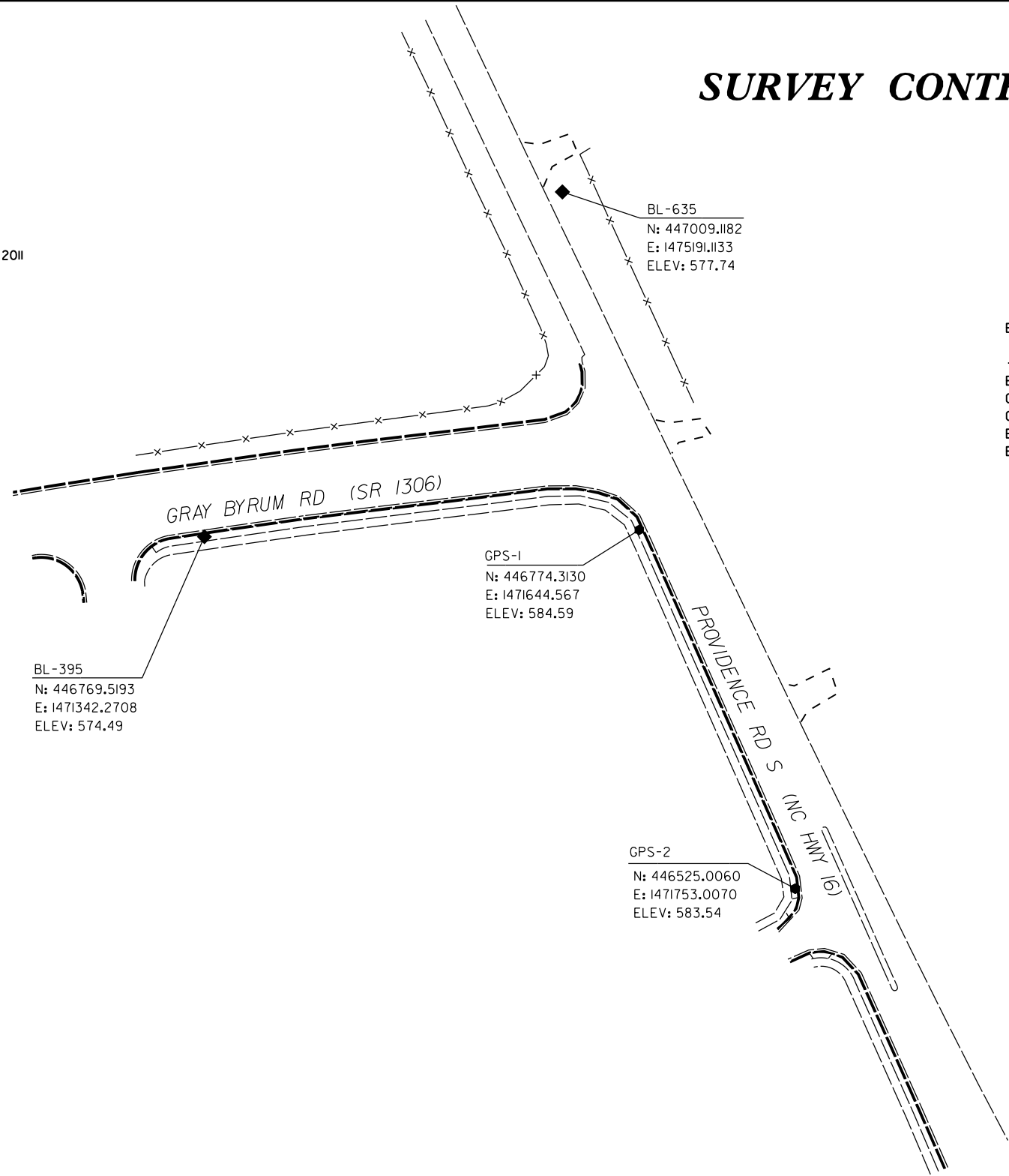


ROADWAY DESIGN ENGINEER

Don Harward
Signature

SIGNATURE A92E75CC0FFB43B

SURVEY CONTROL SHEET



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL-634	IRON PIN & CAP	446144.2036	1471938.9708	572.92	OUTSIDE PROJECT LIMITS	
GPS-2	MAG NAIL	446525.0060	1471753.0070	583.54	17+55.50	39.48' RT
GPS-1	MAG NAIL	446774.3130	1471644.5670	584.59	14+83.80	30.08' RT
BL-635	IRON PIN & CAP	447009.1182	1471591.1133	577.74	12+48.84	22.72' LT
BL-395	MAG NAIL	446769.5193	1471342.2708	574.49	13+58.03	305.01' RT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 446744.313(ft) EASTING: 1471644.567(ft) ELEVATION: 584.59(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988507

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO L- STATION 9+50.00 IS N 22° 15' 52" W 534.64'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY THE DIVISION IO DDC UNIT. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE DIVISION IO DDC UNIT.

BL-634
 N: 446144.2036
 E: 1471938.9708
 ELEV: 572.92

TURN LANES AT NC 16 (PROVIDENCE RD.S)
AND GRAY BYRUM (SR-1306)

SCALE	1"=50'		REVISIONS
DATE	1-2019		
DWG. BY	JCB		
DESIGN BY	JDH		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
44856.3J2	1B
F.A. PROJECT NO. HSIP-0016(062)	

RIGHT OF WAY, EASEMENT AND PROPOSED ALIGNMENT SHEET

L			
TYPE	STATION	NORTH	EAST
POT	9+50.00	447269.0954	1471442.0016
POT	19+76.60	446342.4227	1471883.7947

Y			
TYPE	STATION	NORTH	EAST
PC	10+00.00	446772.5987	1471187.6977
PT	13+48.12	446821.2644	1471532.3671
POT	14+65.48	446835.0923	1471648.9134

I, Barry D. Davis, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item, R/W and Easement Staking, was performed under my responsible charge meeting NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures as of 2017. Those standards can be found at <https://connect.ncdot.gov/resources/Location/Pages/>.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from survey control established under my supervision; that the depicted property data shown herein were surveyed under my supervision; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (see deeds for final determination).

Witness my signature, registration number and seal this 21st day of March 2019

Barry D. Davis, _____ DocuSigned by: _____ PLS# L-4384
Professional Land Surveyor

Barry Davis
0E2AAE4F48174DC...



ROW IRON PIN AND CAP				
ALIGN	STATION	OFFSET	NORTH	EAST
L	13+14.00	30.00	446927.6154	1471571.5679
L	13+22.00	-30.00	446946.2149	1471629.1705
L	13+22.00	-55.00	446956.9736	1471651.7371
L	14+92.00	-30.00	446792.7621	1471702.3294
L	14+92.00	-58.00	446804.8118	1471727.6040

ROW IRON PIN AND CAP				
ALIGN	STATION	OFFSET	NORTH	EAST
Y	13+45.00	-25.00	446845.7213	1471526.3168

PERMANENT UTILITY EASEMENT				
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+58.85	30.00	446977.4011	1471547.8325
L	15+08.00	-77.00	446798.5458	1471751.6402
L	15+16.15	-30.00	446770.9629	1471712.7222
L	15+28.00	-80.00	446781.7835	1471762.9551
L	15+36.44	-30.00	446752.6433	1471721.4561
L	15+40.43	62.15	446709.3876	1471639.9881

PERMANENT UTILITY EASEMENT				
ALIGN	STATION	OFFSET	NORTH	EAST
Y	13+39.92	-25.00	446845.1170	1471521.2548
Y	13+84.04	25.00	446800.6715	1471570.9891

NOTES:

- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
- THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY THE DIVISION IO DDC UNIT. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE DIVISION IO DDC UNIT.

TURN LANES AT NC 16 (PROVIDENCE RD.S)
AND GRAY BYRUM (SR-1306)

SCALE	1"=50'		REVISIONS
DATE	1-2019		
DWG. BY	JCB		
DESIGN BY	JDH		
APPROVED	JDH		

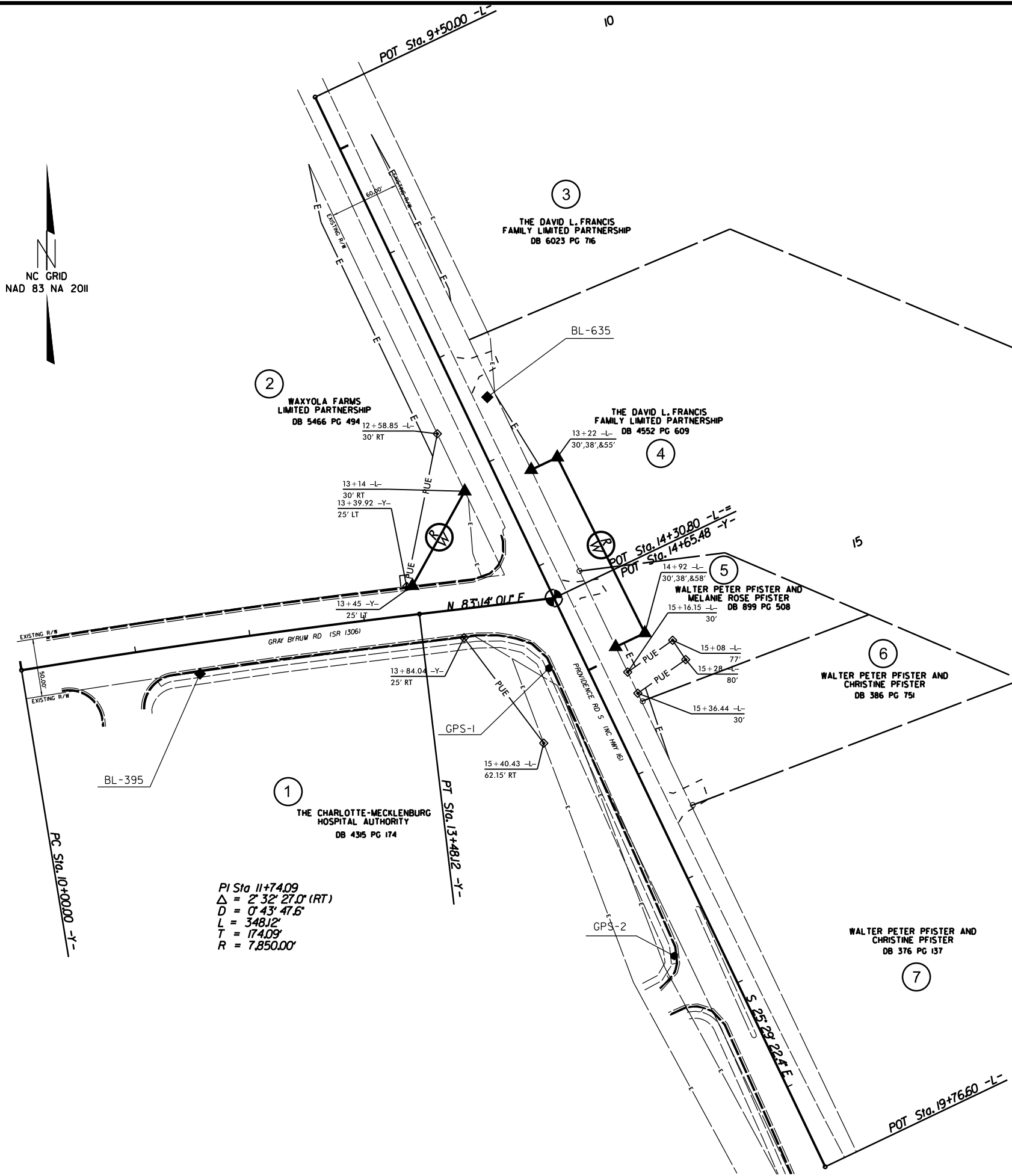
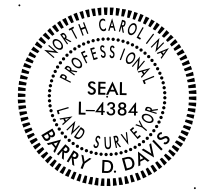
PROJECT NO.	SHEET NO.
44856.3.12	1C
F.A. PROJECT NO. HSIP-0016(062)	

I, Barry D. Davis, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item, R/W and Easement Staking, was performed under my responsible charge meeting NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures as of 2017. Those standards can be found at <https://connect.ncdot.gov/resources/Location/Pages/>.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from survey control established under my supervision; that the depicted property data shown herein were surveyed under my supervision; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (see deeds for final determination)

Witness my signature, registration number and seal this 21st day of March 2019

Barry D. Davis, Professional Land Surveyor
 DocuSigned by: Barry Davis PLS# L-4384
 0E2AAE4F48174DC...

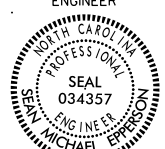


PI Sta 11+74.09
 $\Delta = 2^\circ 32' 27.0''$ (RT)
 $D = 0^\circ 43' 47.6''$
 $L = 348.12'$
 $T = 174.09'$
 $R = 7,850.00'$

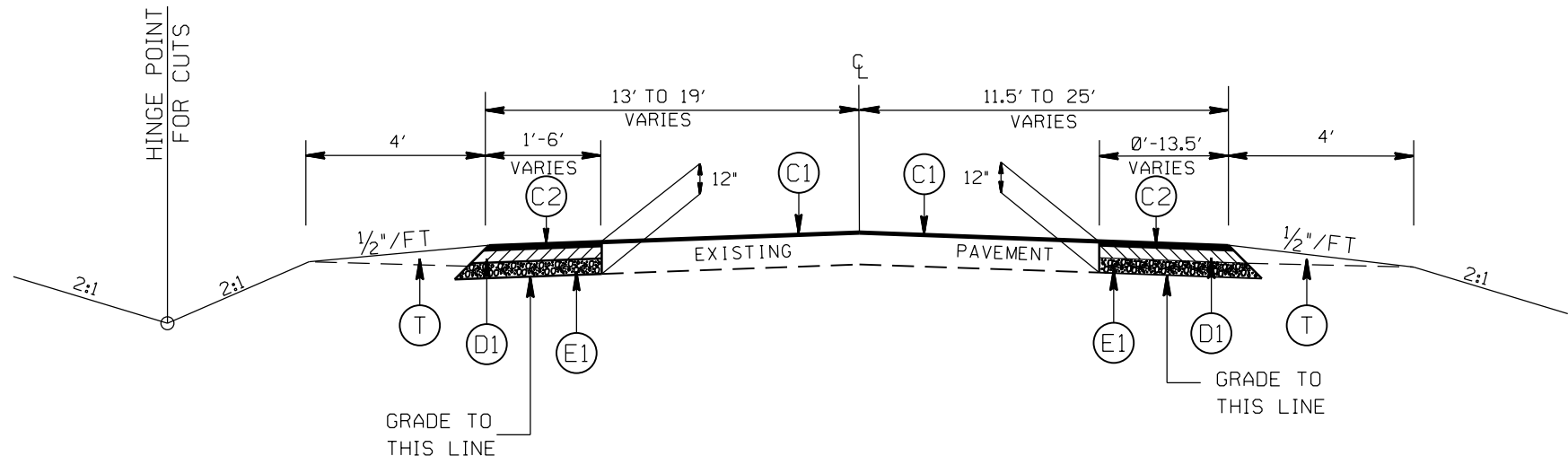
TURN LANES AT NC 16 (PROVIDENCE RD.S) AND GRAY BYRUM (SR-1306)

SCALE	1"=50'		REVISIONS
DATE	1-2019		
DWG. BY	JCB		
DESIGN BY	JDH		
APPROVED	JDH		

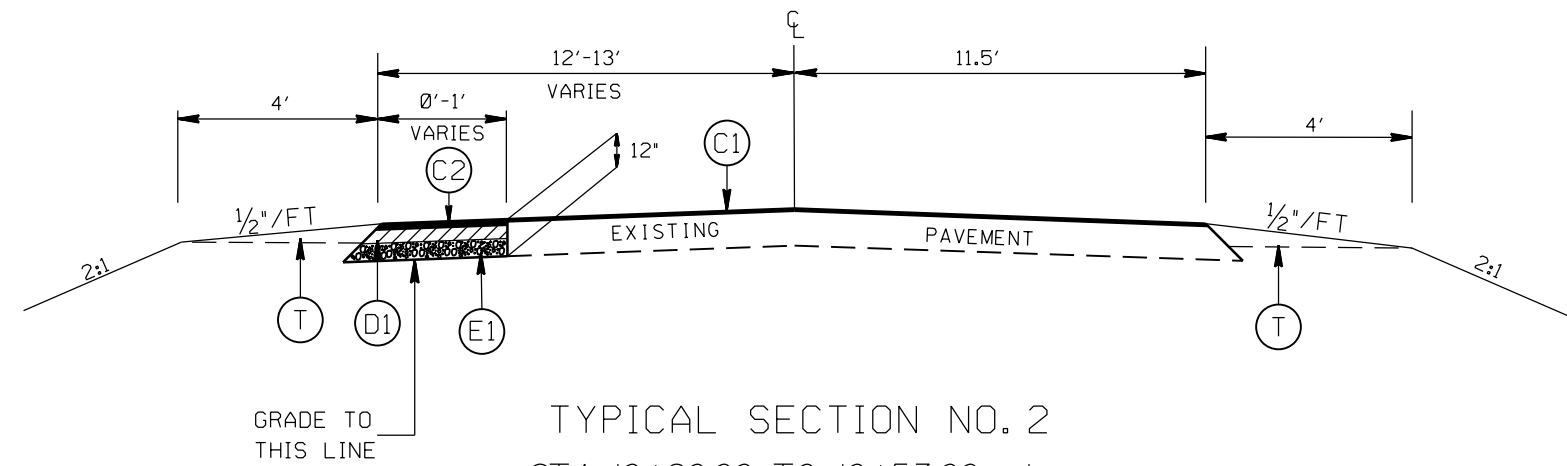
ROADWAY DESIGN ENGINEER



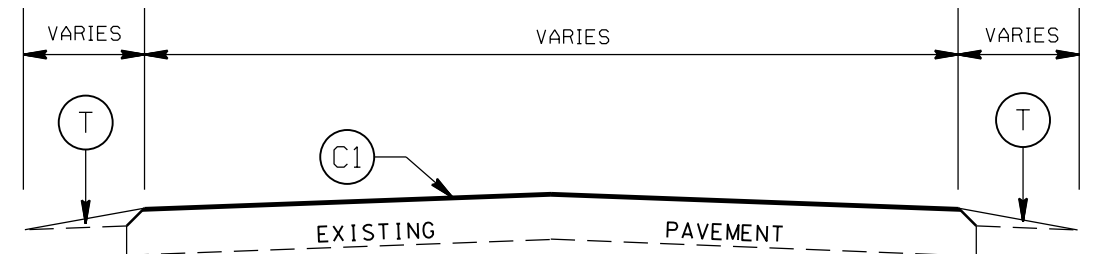
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TYPICAL SECTION NO. 3
STA. 10+53.00 TO 13+15.92 -L-



TYPICAL SECTION NO. 2
STA. 10+20.00 TO 10+53.00 -L-



TYPICAL SECTION NO. 1
STA. 9+95.00 TO 10+20.00 -L-

PAVEMENT SCHEDULE

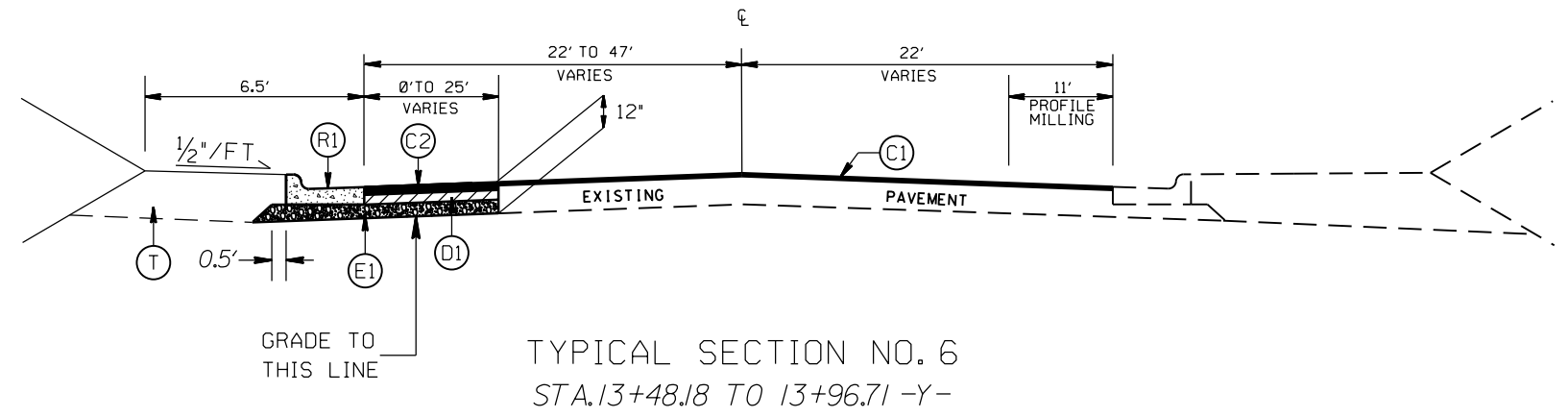
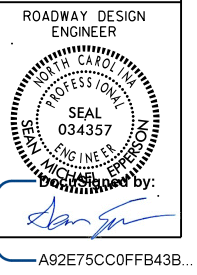
(C1)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
(D1)	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
(E1)	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
(R1)	PROP. 2'-6" CURB & GUTTER
(T)	EARTH MATERIAL

TURN LANES AT NC 16 (PROVIDENCE RD.S) AND GRAY BYRUM (SR-1306)

SCALE	1"=50'
DATE	1-2019
DWG. BY	JCB
DESIGN BY	JDH
APPROVED	JDH

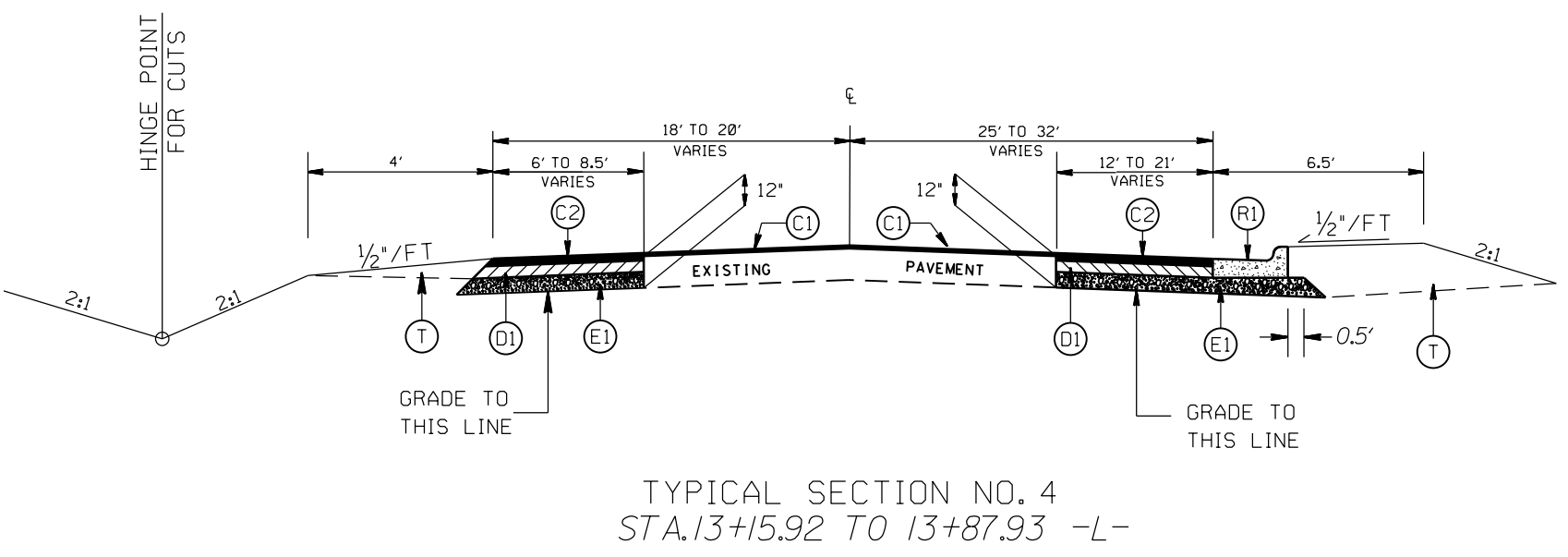
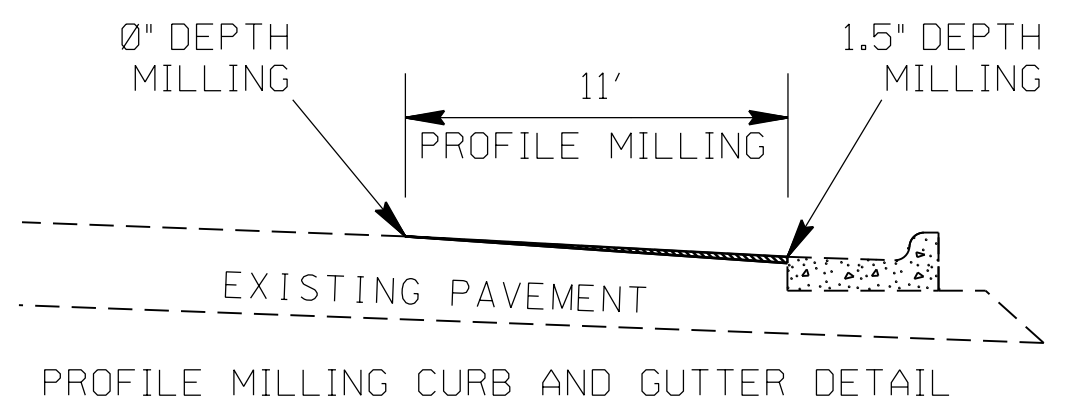
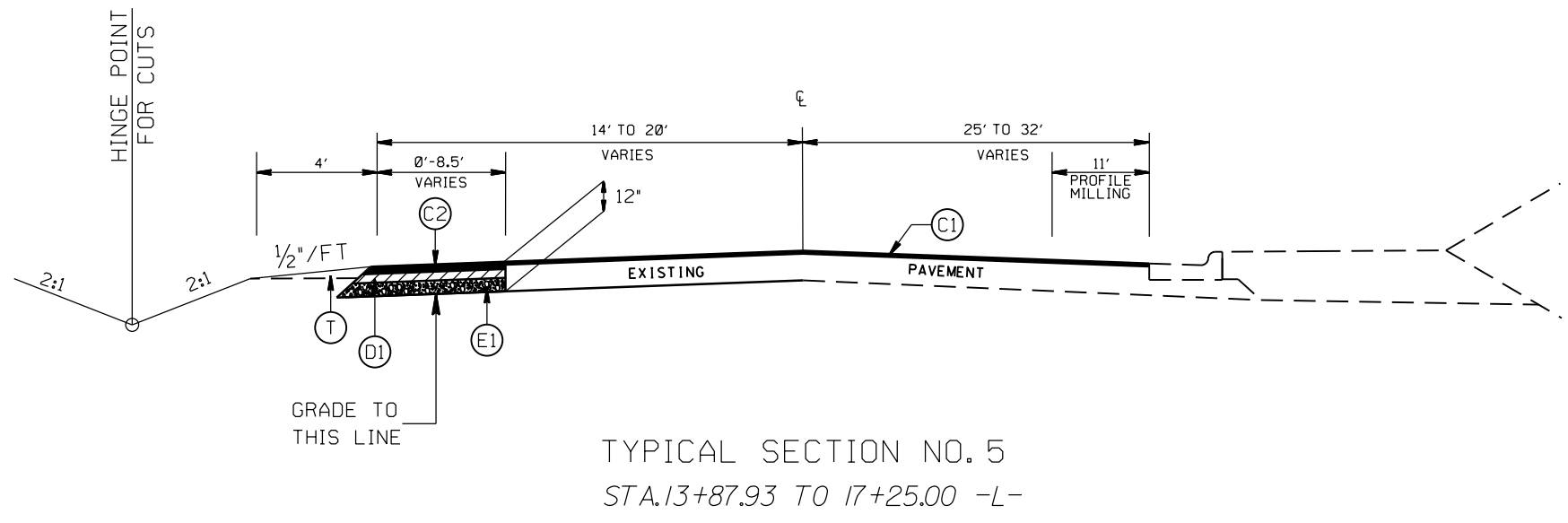


REVISIONS	



PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
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(R1)	PROP. 2'-6" CURB & GUTTER
(T)	EARTH MATERIAL



TURN LANES AT NC 16 (PROVIDENCE RD.S) AND GRAY BYRUM (SR-1306)

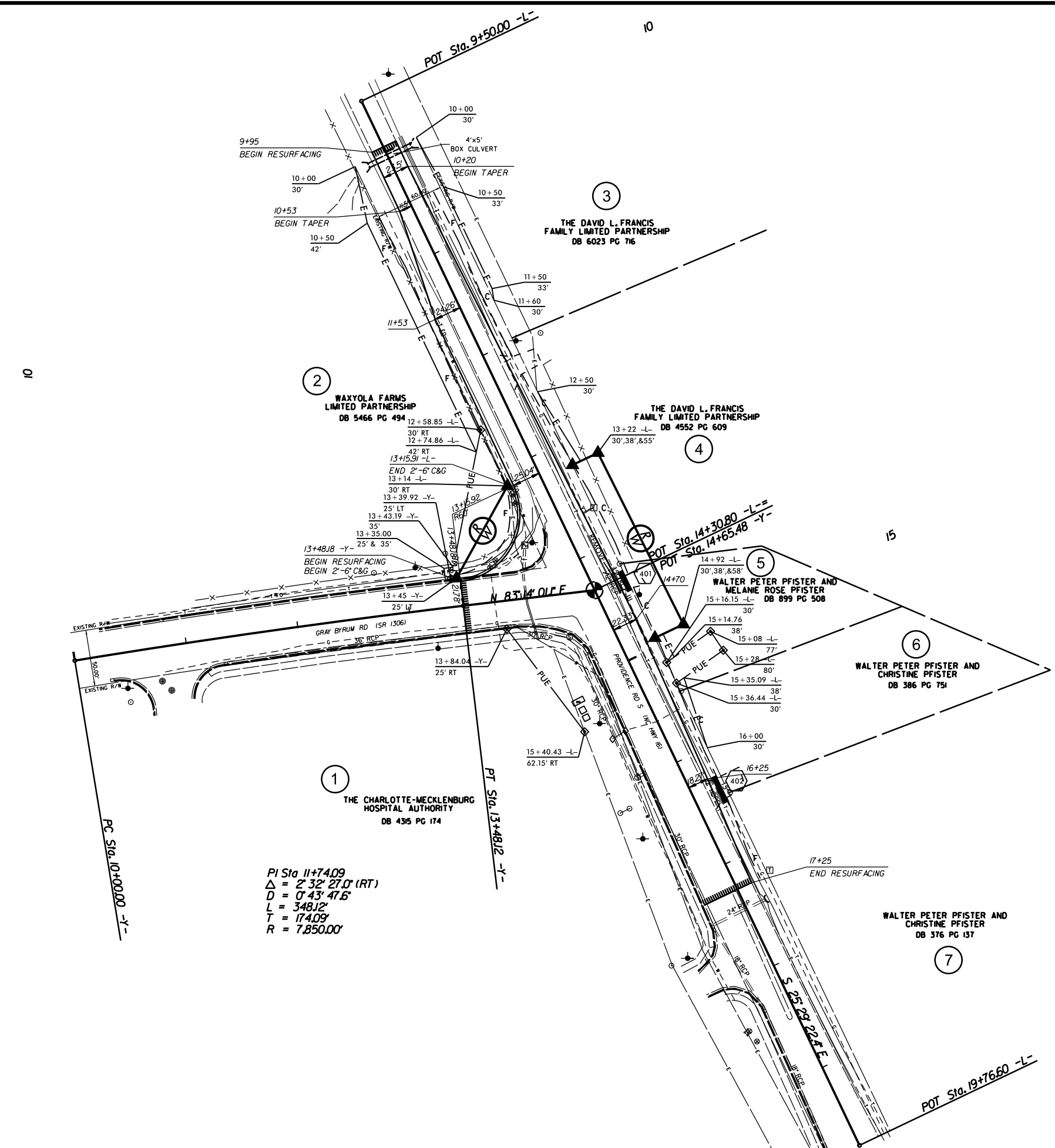
SCALE	r=50'		REVISIONS
DATE	1-2019		
DWG. BY	JCB		
DESIGN BY	JDH		
APPROVED	JDH		

ROADWAY DESIGN ENGINEER

Seal 034357

Designed by: *[Signature]*

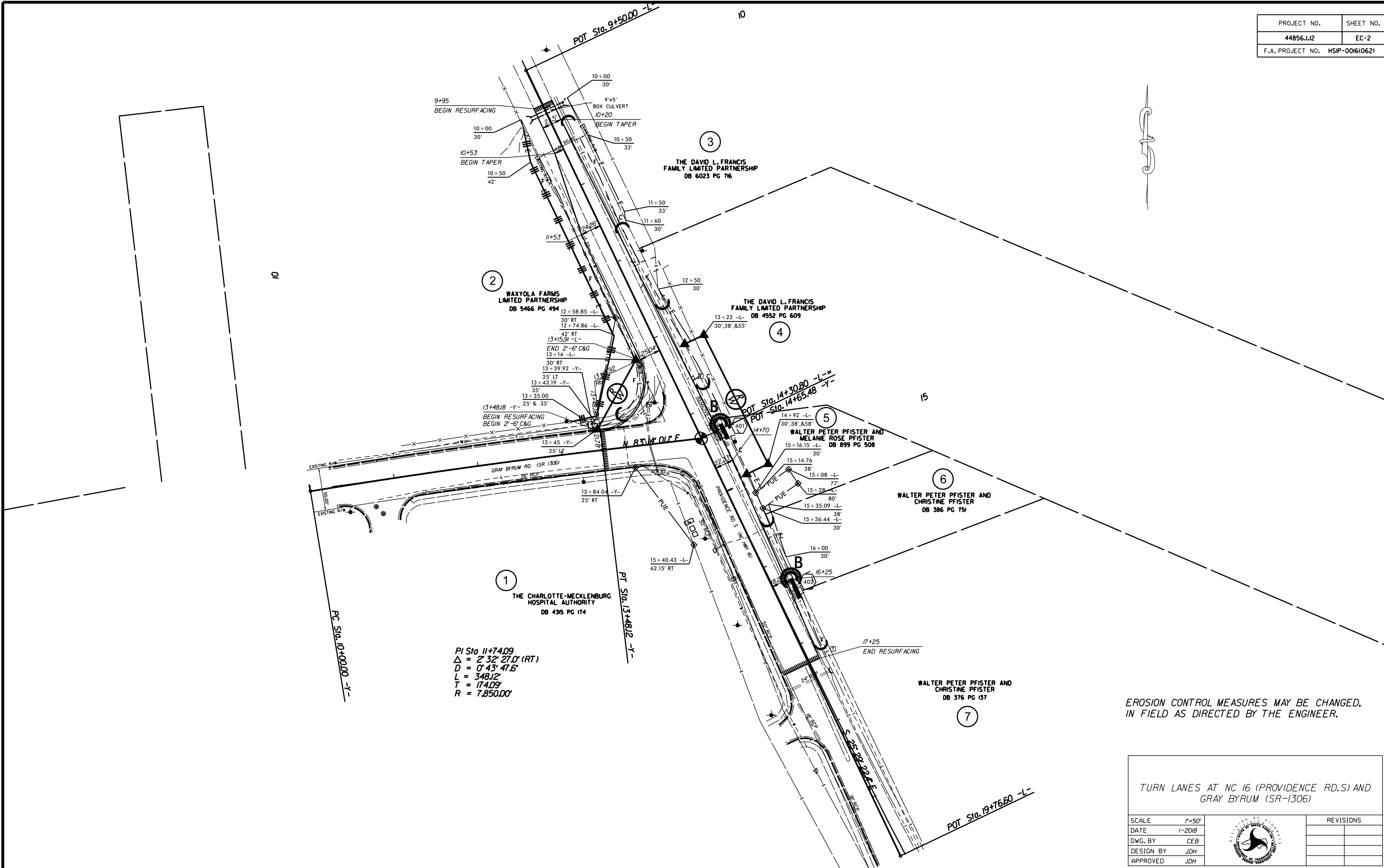
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PI Sta 11+74.09
 $\Delta = 2^\circ 32' 27.0''$ (RT)
 $D = 0' 43' 47.6''$
 $L = 348.12'$
 $T = 174.09'$
 $R = 7,850.00'$

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

TURN LANES AT NC 16 (PROVIDENCE RD.S) AND GRAY BYRUM (SR-1306)	
SCALE	1"=50'
DATE	01-2019
DWG. BY	CEB
DESIGN BY	JDH
APPROVED	JDH
REVISIONS	



EROSION CONTROL MEASURES MAY BE CHANGED, IN FIELD AS DIRECTED BY THE ENGINEER.

TURN LANES AT NC 16 (PROVIDENCE RD.S) AND GRAY BYRUM (SR-1306)

SCALE	1"=50'		REVISIONS
DATE	1-2018		
DWG. BY	CEB		
DESIGN BY	JDH		
APPROVED	JDH		

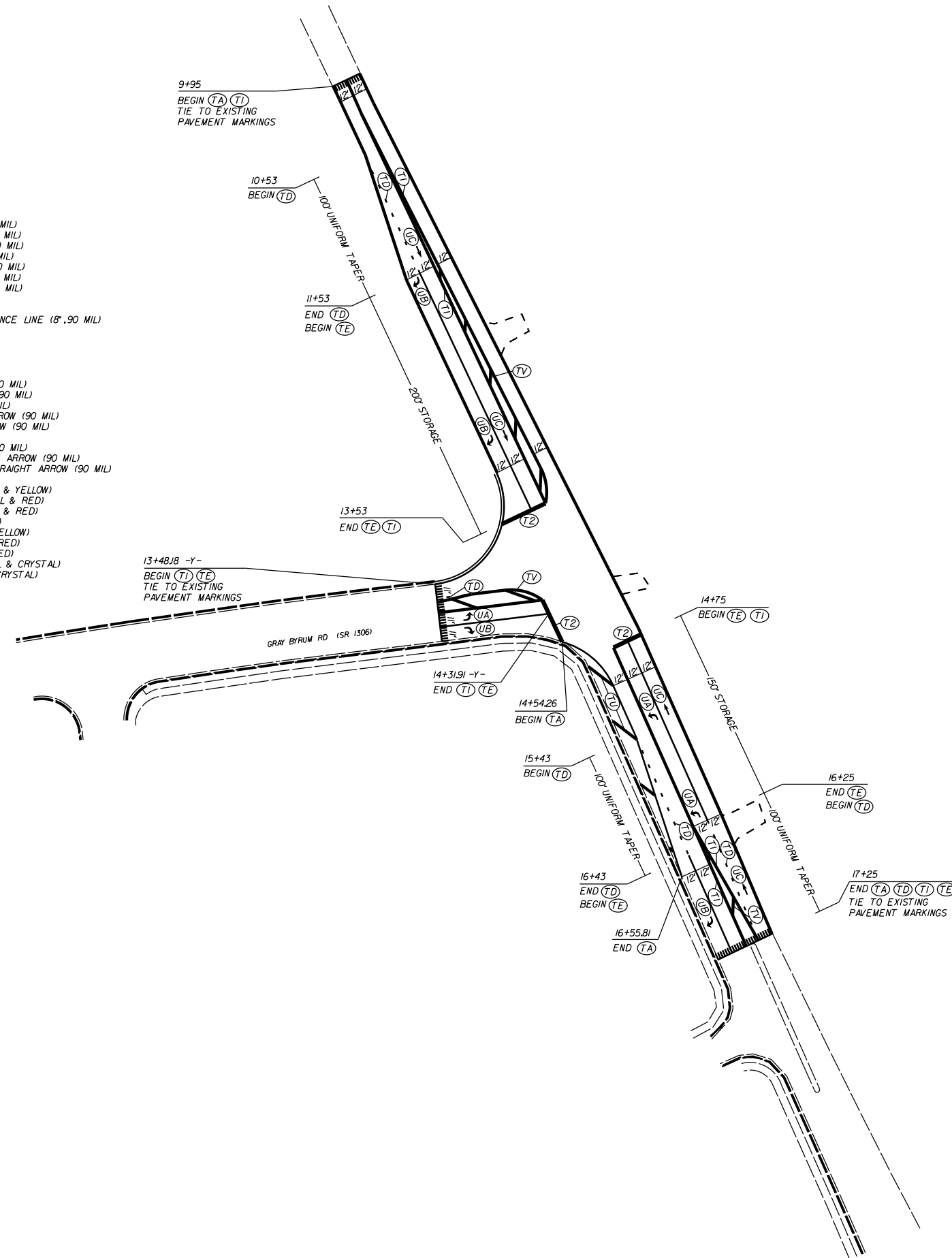
PAVEMENT MARKING SCHEDULE

PAVEMENT MARKING LINES

- | | |
|--|---|
| TA - WHITE EDGELINE (4'.90 MIL) | TU - WHITE DIAGONAL (12'.90 MIL) |
| TB - YELLOW EDGELINE (4'.90 MIL) | TV - YELLOW DIAGONAL (12'.90 MIL) |
| TC - 10FT. WHITE SKIP (4'.90 MIL) | TI - WHITE LINE, RR X (16'.90 MIL) |
| TD - 3FT.-9FT./SP WHITE MINISKIP (4'.90 MIL) | T2 - WHITE STOPBAR (24'.90 MIL) |
| TE - WHITE SOLID LANE LINE (4'.90 MIL) | T3 - WHITE CROSSWALK LINE (24'.90 MIL) |
| TF - 10FT. YELLOW SKIP (4'.90 MIL) | T4 - WHITE RUMBLE STRIP (4".240 MIL) |
| TH - YELLOW SINGLE CENTER (4'.90 MIL) | T5 - YELLOW RUMBLE STRIP (4".240 MIL) |
| TJ - YELLOW DOUBLE CENTER (4'.90 MIL) | T6 - WHITE EDGELINE (6'.90 MIL) |
| TK - 3FT.-9FT./SP WHITE MINISKIP (6'.90 MIL) | T7 - YELLOW EDGELINE (6'.90 MIL) |
| TL - WHITE SOLID LANE LINE (6'.90 MIL) | T8 - 2FT.-6FT./SP WHITE MINISKIP (4'.90 MIL) |
| TM - 10FT. YELLOW SKIP (6'.90 MIL) | T9 - 2FT.-6FT./SP YELLOW MINISKIP (4'.90 MIL) |
| TN - WHITE GORELINE (8'.90 MIL) | T10 - 3FT.-3FT./SP WHITE MINISKIP (12'.90 MIL) |
| TO - WHITE DIAGONAL (8'.90 MIL) | T11 - 2FT.-6FT./SP WHITE MINISKIP (6'.90 MIL) |
| TP - YELLOW DIAGONAL (8'.90 MIL) | T12 - 2FT.-6FT./SP YELLOW MINISKIP (6'.90 MIL) |
| TQ - WHITE CROSSWALK LINE (8'.90 MIL) | T13 - 3FT.-9FT./SP WHITE MINISKIP (8'.90 MIL) |
| TR - WHITE SOLID LANE LINE (8'.90 MIL) | T14 - 3FT.-9FT./SP WHITE MINISKIP (12'.90 MIL) |
| TS - WHITE GORELINE (12'.90 MIL) | T15 - YELLOW SINGLE CENTER (6'.90 MIL) |
| TT - WHITE SOLID LANE LINE (12'.90 MIL) | T16 - YELLOW DOUBLE CENTER (6'.90 MIL) |
| | T17 - 3FT.-3FT./SP WHITE MINISKIP ENTRANCE LINE (8'.90 MIL) |

PAVEMENT MARKING SYMBOLS

- | | |
|--|--|
| UA - LEFT TURN ARROW (90 MIL) | UU - FISH-HOOK STRAIGHT ARROW (90 MIL) |
| UB - RIGHT TURN ARROW (90 MIL) | UV - FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL) |
| UC - STRAIGHT ARROW (90 MIL) | UW - FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL) |
| UD - COMBO. LEFT/STRAIGHT ARROW (90 MIL) | UX - FISH-HOOK LEFT/RIGHT ARROW (90 MIL) |
| UE - COMBO. RIGHT/STRAIGHT ARROW (90 MIL) | UY - FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL) |
| UF - COMBO. LEFT/RIGHT ARROW (90 MIL) | UZ - FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL) |
| UG - COMBO. LEFT/RIGHT/STRAIGHT ARROW (90 MIL) | |
| UH - HANDICAP PARKING (90 MIL) | WA - FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL) |
| UI - ALPHANUMERIC CHAR. (90 MIL) | WB - FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL) |
| UJ - BICYCLE SYMBOL (90 MIL) | WC - FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL) |
| UK - BICYCLE STRAIGHT ARROW (90 MIL) | |
| UL - BICYCLE CHAR. (90 MIL) | MA - PERMANENT RAISED MARKER (YELLOW & YELLOW) |
| UM - 12" YIELD LINE TRIANGLE (90 MIL) | MB - PERMANENT RAISED MARKER (CRYSTAL & RED) |
| UN - 24" YIELD LINE TRIANGLE (90 MIL) | MC - PERMANENT RAISED MARKER (YELLOW & RED) |
| UO - BICYCLE LEFT ARROW (90 MIL) | MD - PERMANENT RAISED MARKER (YELLOW) |
| UP - MERGE ARROW (90 MIL) | ME - SNOWPLOWABLE MARKER (YELLOW & YELLOW) |
| UQ - RAMP ARROW SYMBOL (90 MIL) | MF - SNOWPLOWABLE MARKER (CRYSTAL & RED) |
| UR - SHARROW (90 MIL) | MG - SNOWPLOWABLE MARKER (YELLOW & RED) |
| US - BICYCLE LOOP DETECTOR (90 MIL) | ML - PERMANENT RAISED MARKER (CRYSTAL & CRYSTAL) |
| UT - U-TURN ARROW (90 MIL) | MO - SNOWPLOWABLE MARKER (CRYSTAL & CRYSTAL) |



PROJECT NO.	SHEET NO.
44856.3J2	PMP-1
F.A. PROJECT NO. HSP-0075(004)	

ROADWAY DESIGN ENGINEER

SEAL 034357

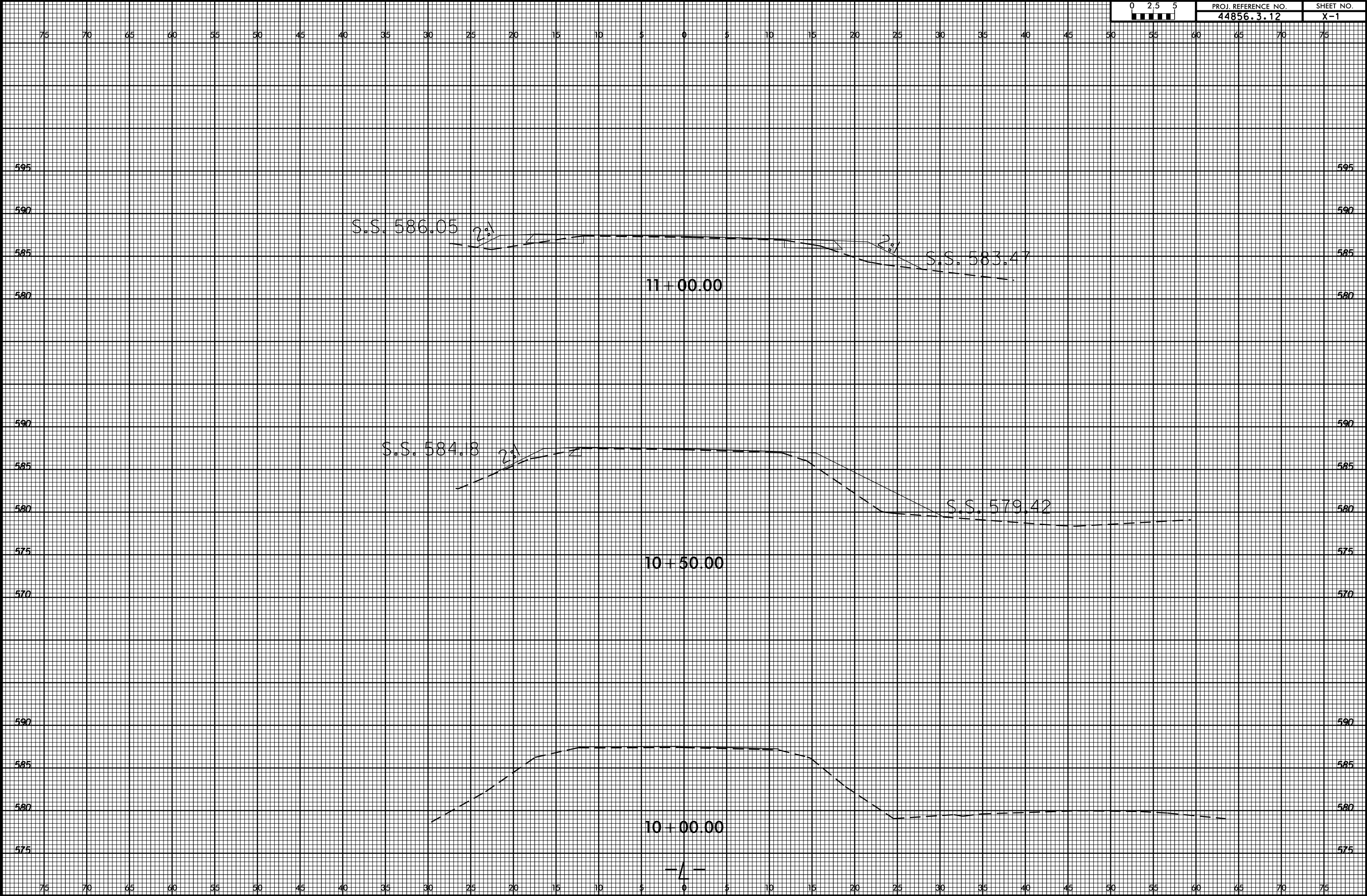
ENGINEER MICHAEL J. ...

Drawn by: [Signature]

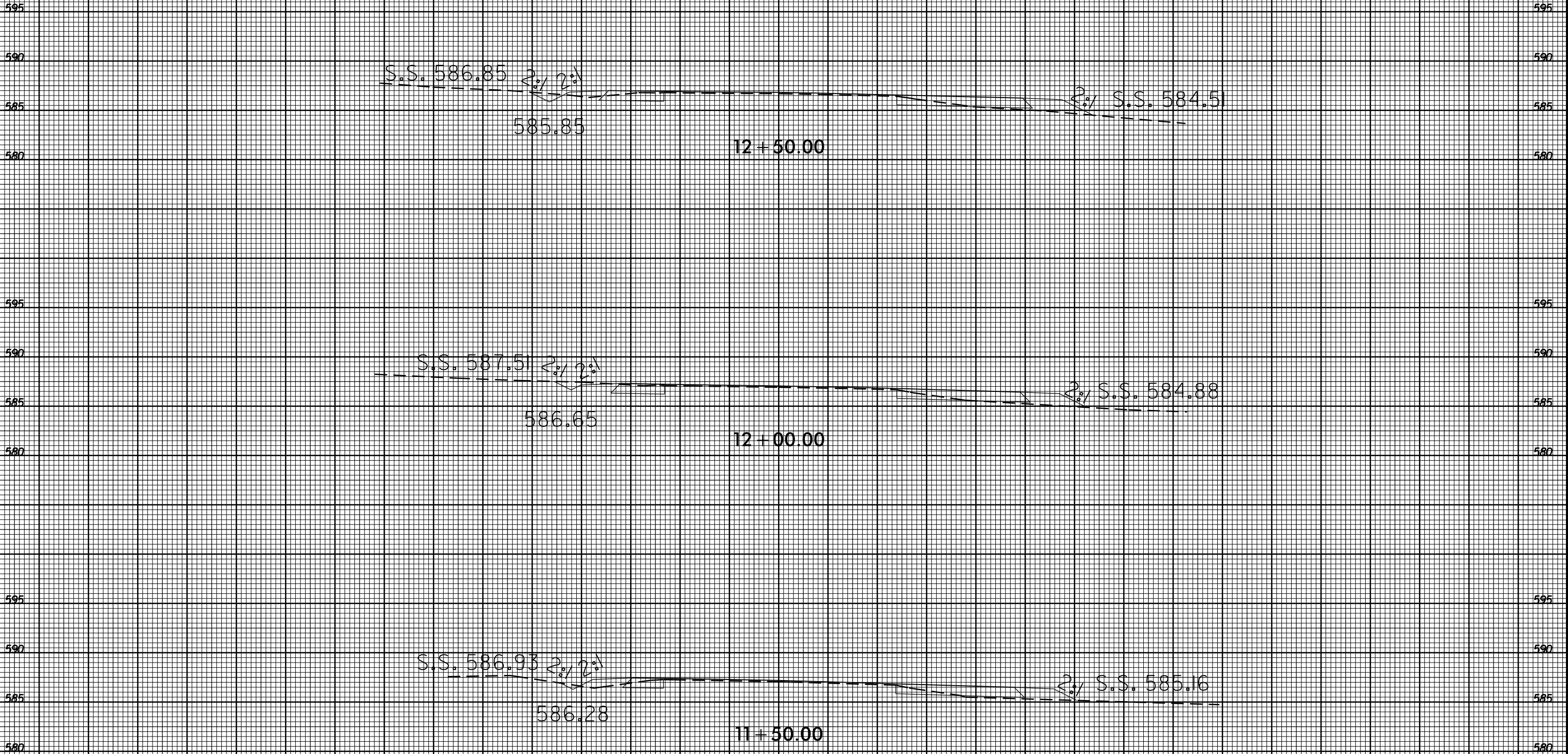
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TURN LANES AT NC 16 (PROVIDENCE RD) AND GRAY BYRUM (SR-1306)	
SCALE	1"=50'
DATE	01-2019
DWG. BY	CEB
DESIGN BY	JDH
APPROVED	JDH
REVISIONS	

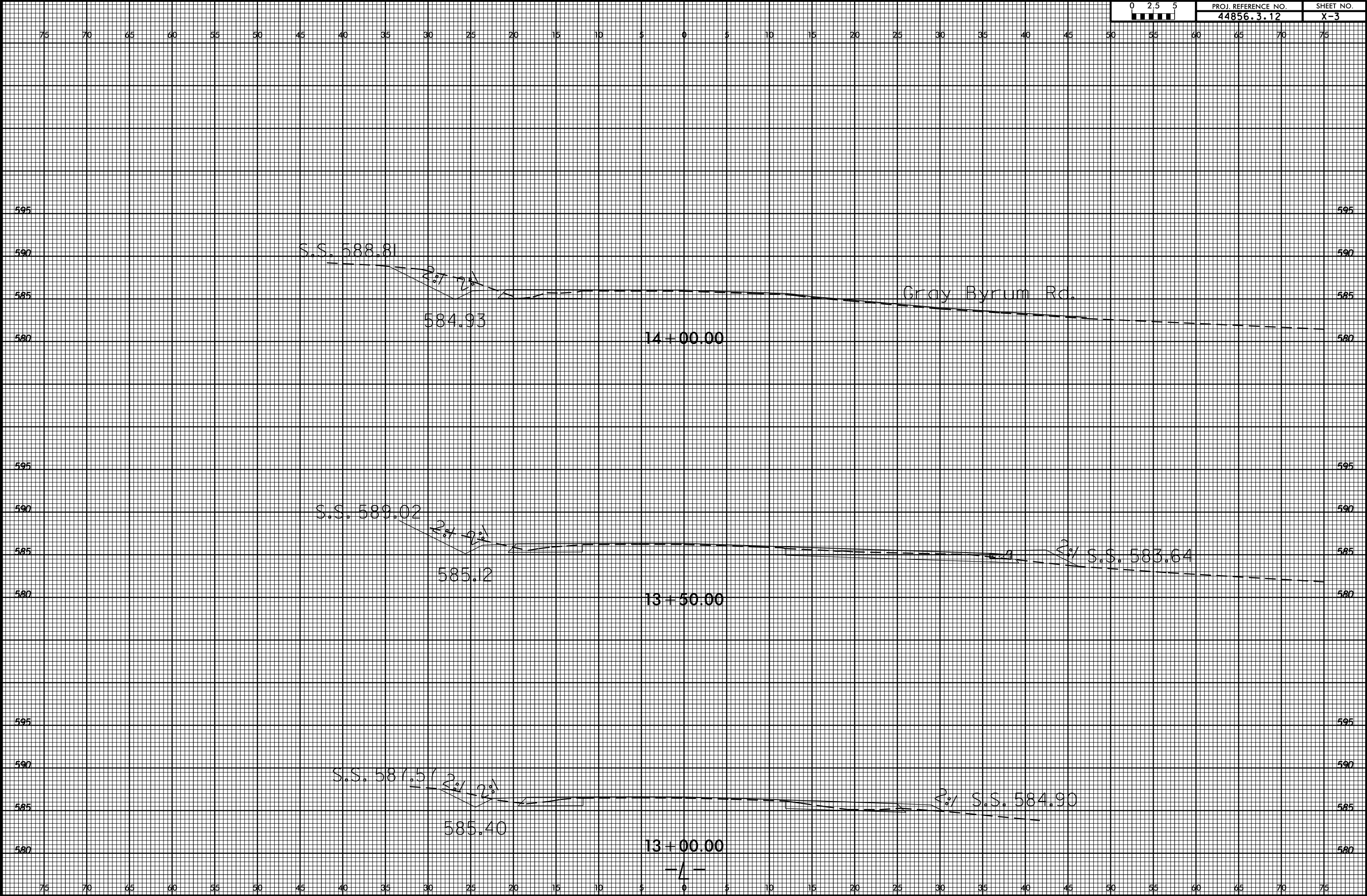


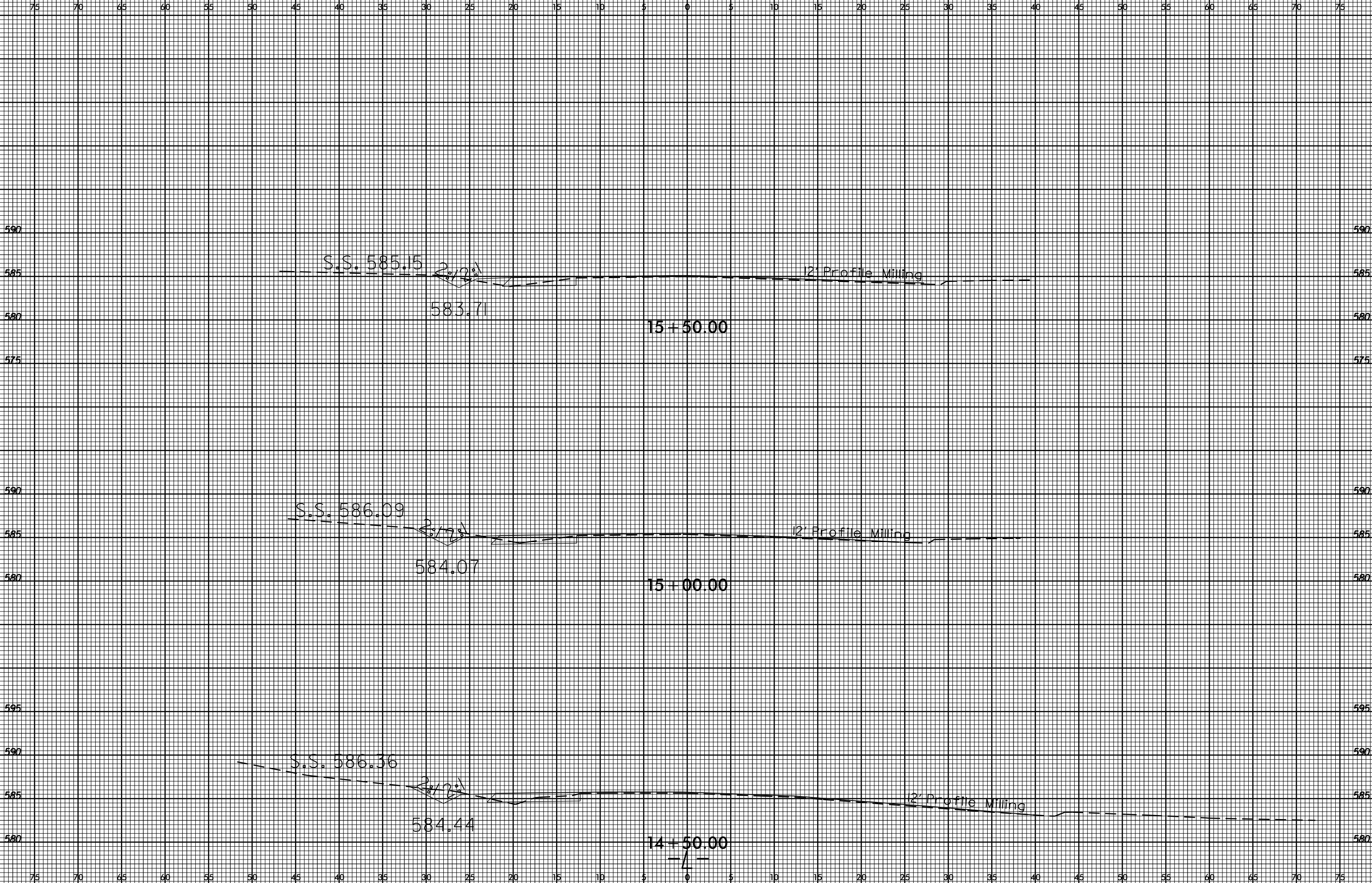


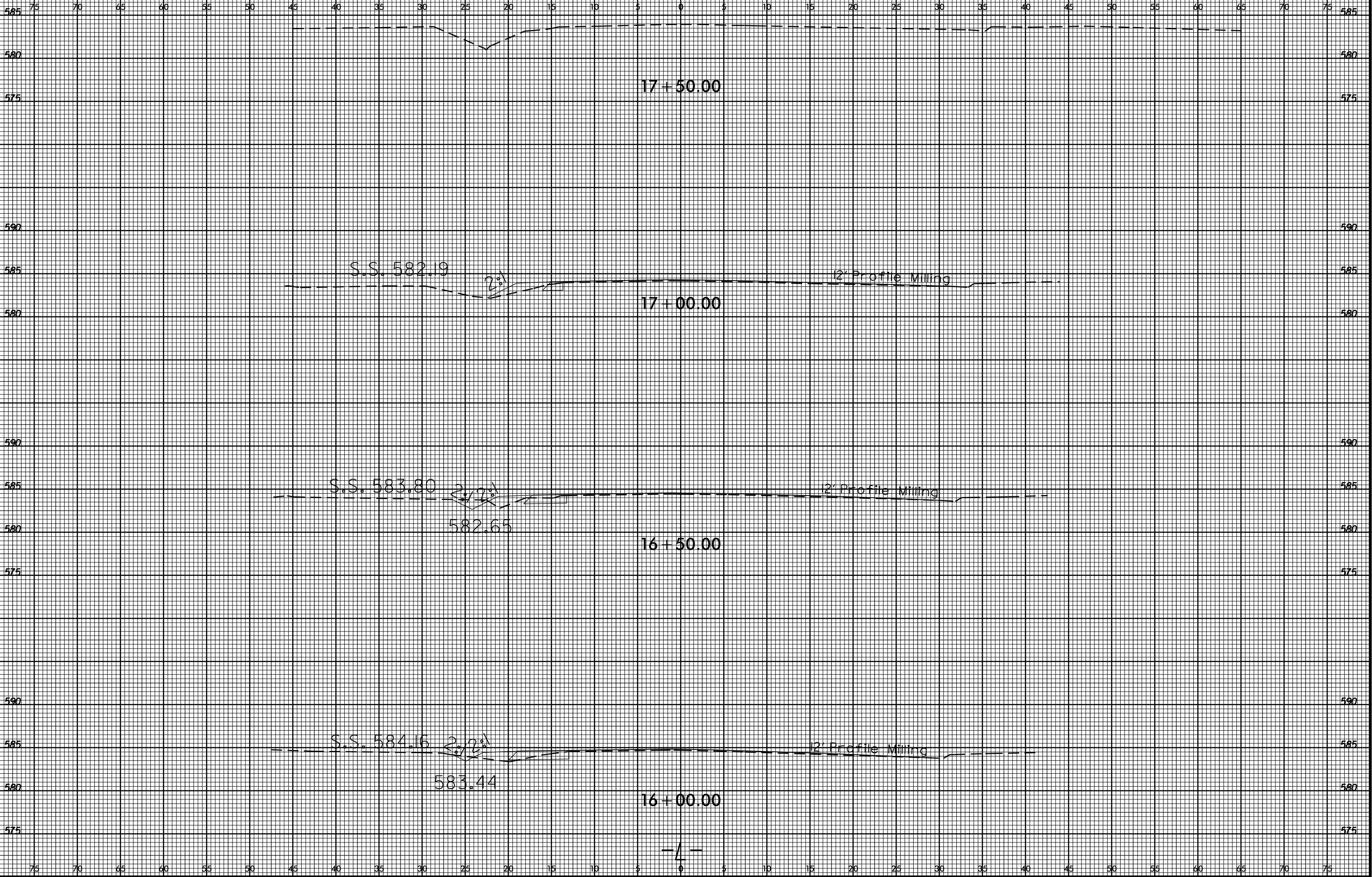
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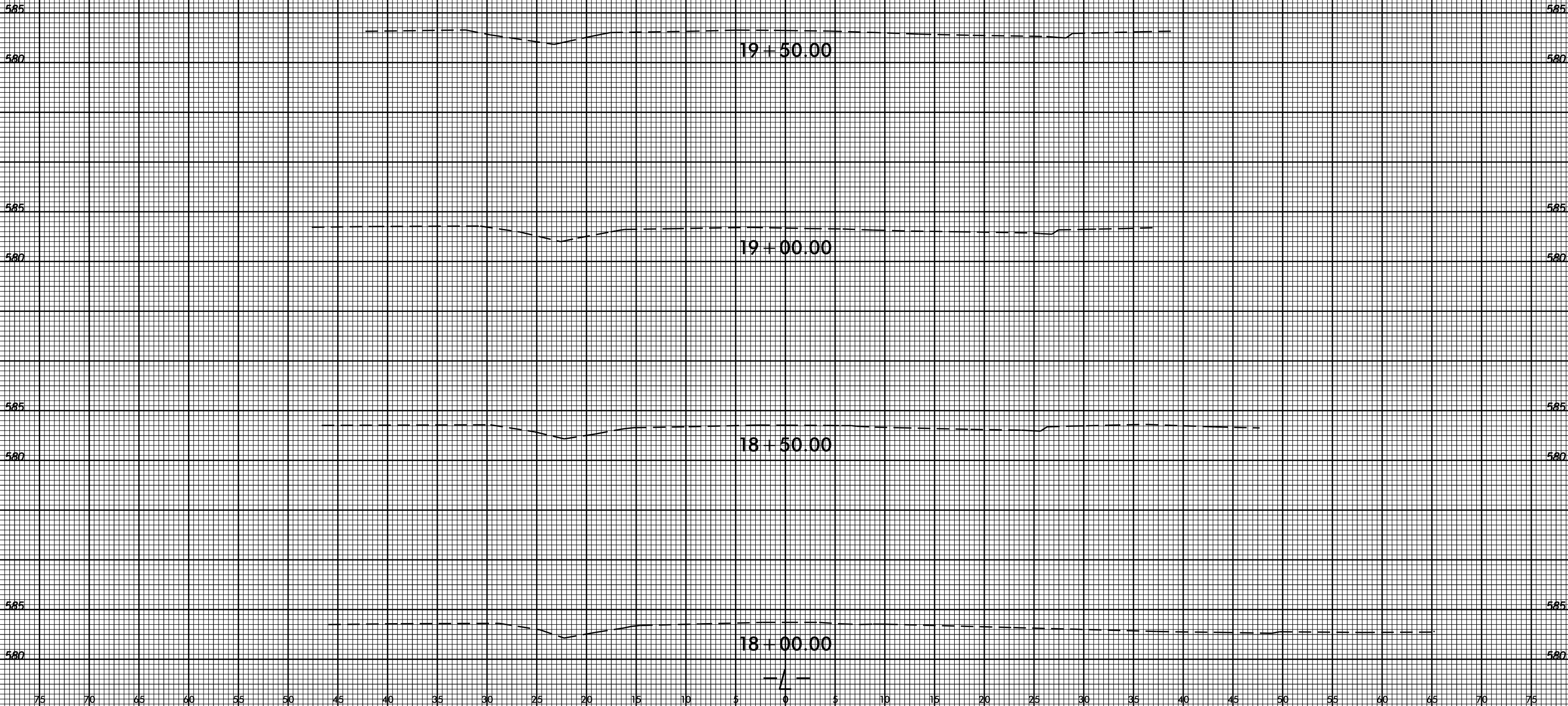




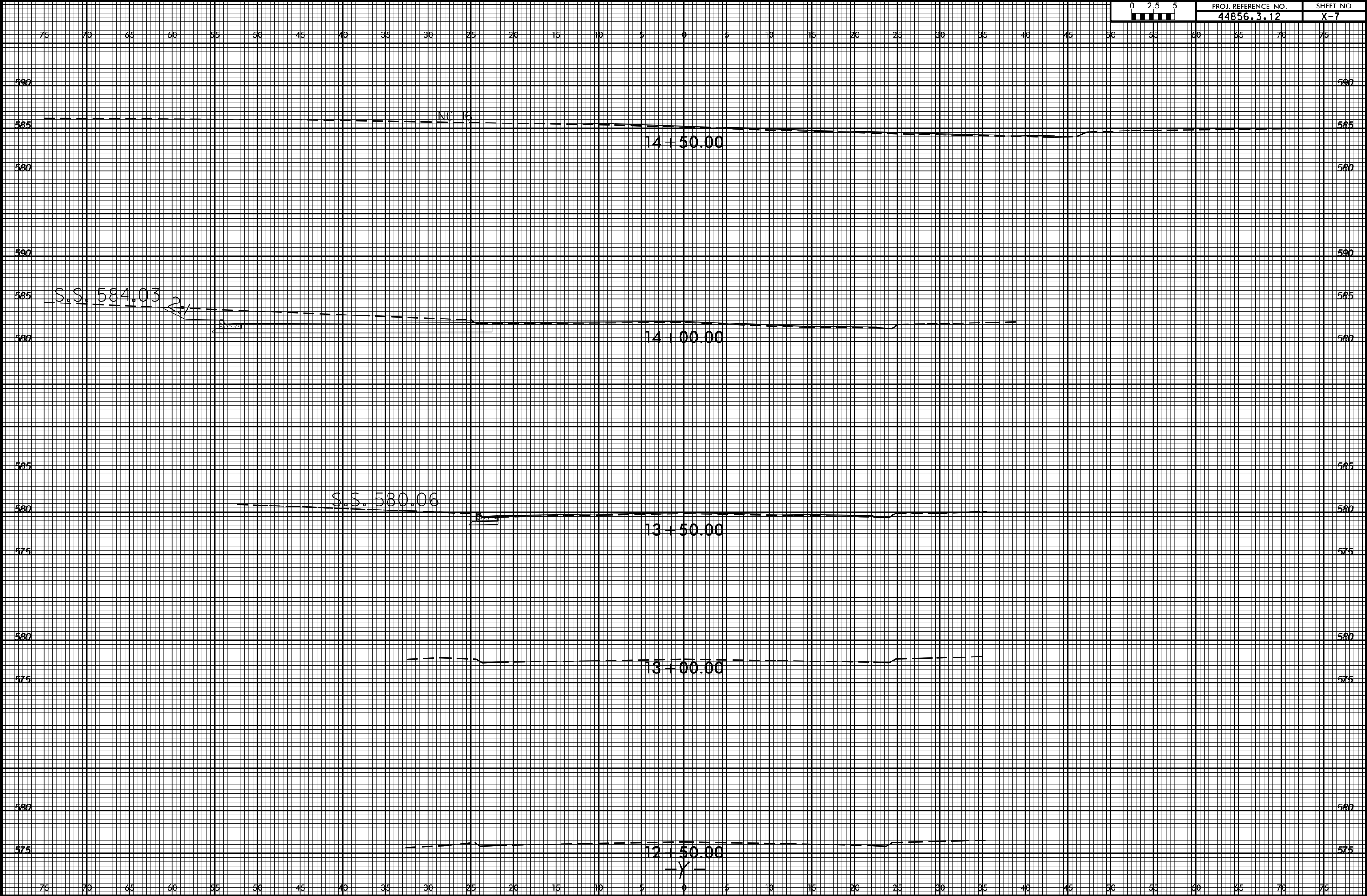




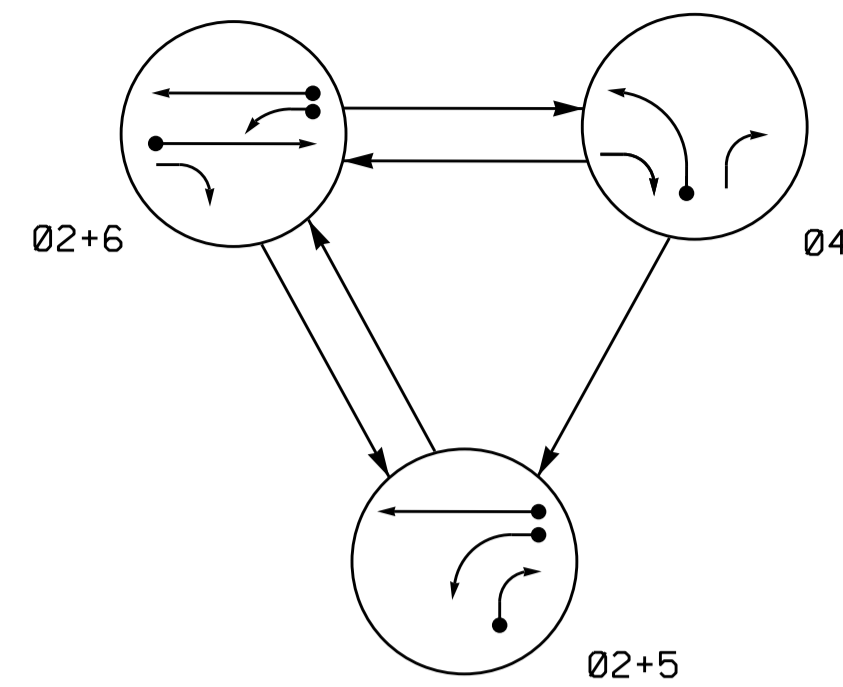
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PHASING DIAGRAM

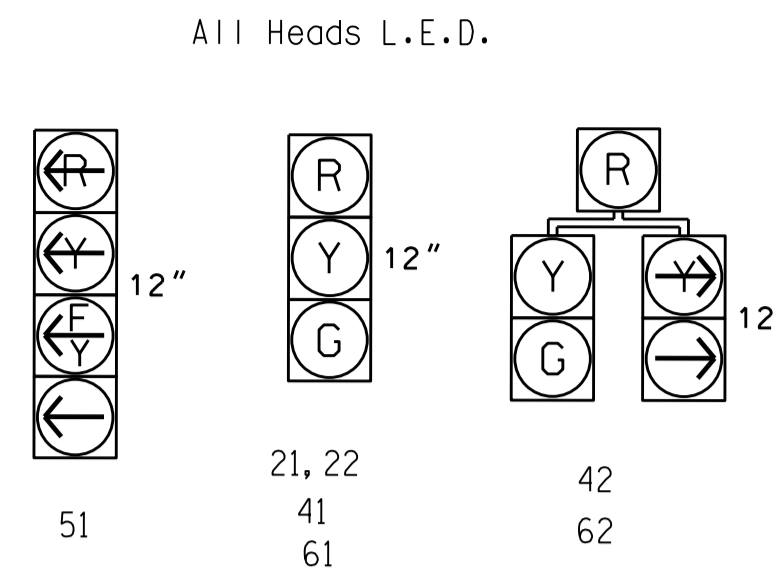


PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- - - UNSIGNALIZED MOVEMENT
- ⚡ PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE			
	02+5	02+6	04	FLASH
21, 22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	F	F	R	Y
61	R	G	R	Y
62	R	G	R	Y

SIGNAL FACE I.D.

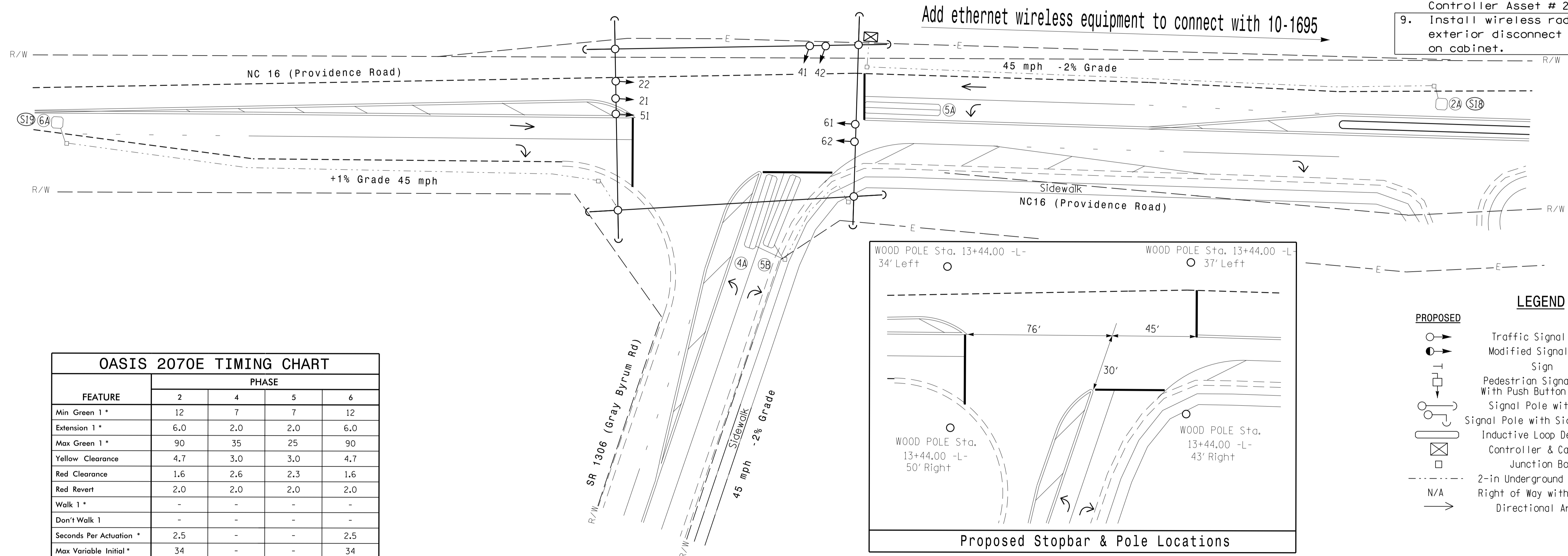


OASIS 2070E LOOP & DETECTOR INSTALLATION												
INDUCTIVE LOOPS						DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S18	6X6	300	4	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5B	6X40	0	2-4-2	Y	2	Y	Y	-	-	3	-	Y
6A/S19	6X6	300	4	Y	5	Y	Y	-	-	15	-	Y
					6	Y	Y	-	-	-	-	Y

3-Phase Fully Actuated NC 16 (Providence Road) CLS

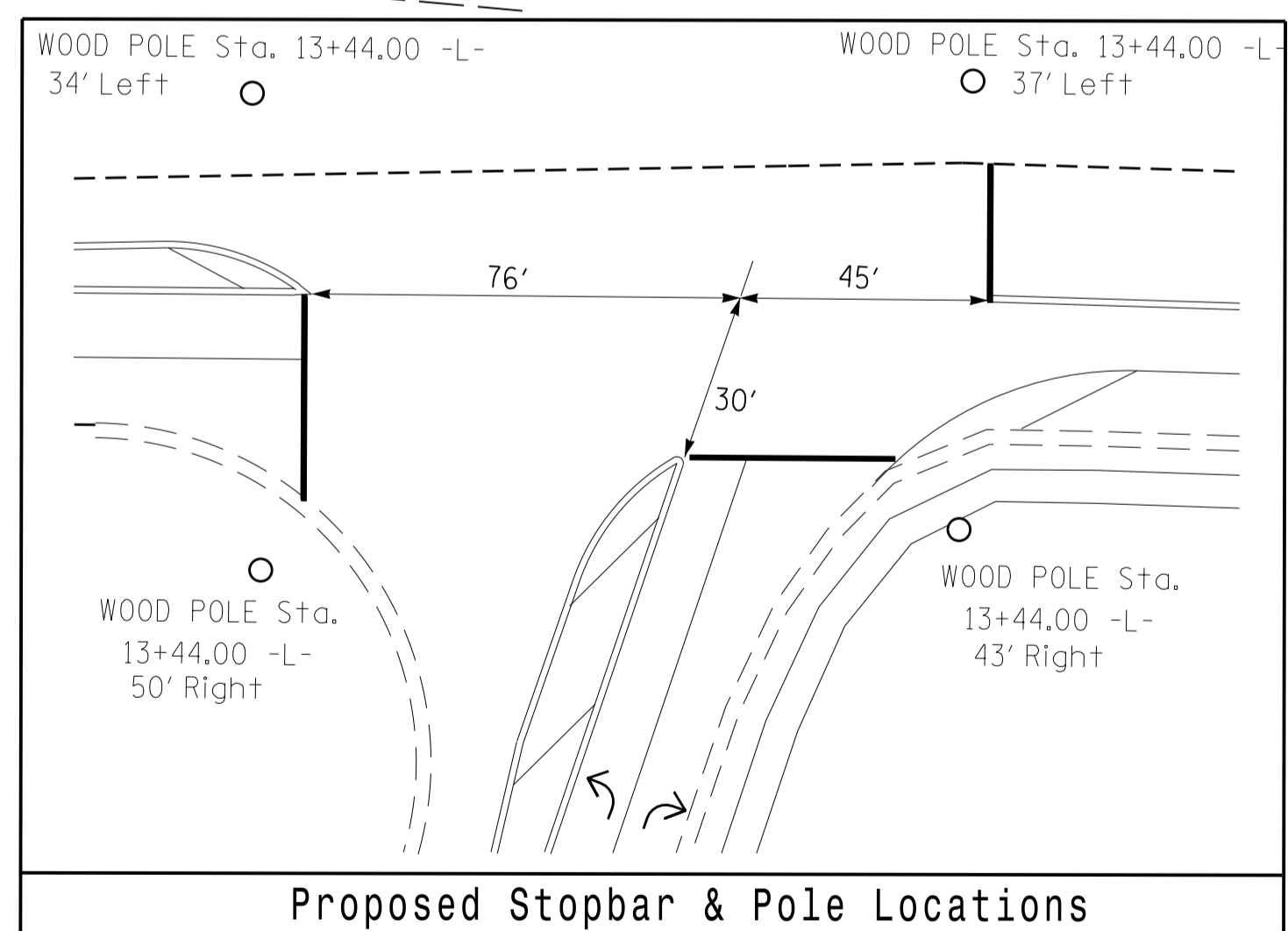
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 2314.
- Install wireless radio modem with exterior disconnect switch located on cabinet.



OASIS 2070E TIMING CHART				
FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	90	35	25	90
Yellow Clearance	4.7	3.0	3.0	4.7
Red Clearance	1.6	2.6	2.3	1.6
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5
Max Variable 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	YELLOW	-	-	YELLOW
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.



LEGEND	
PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
● → Modified Signal Head	— 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	- - - Right of Way with Marker
→ Directional Arrow	→

New Installation

Prepared In the Offices of:

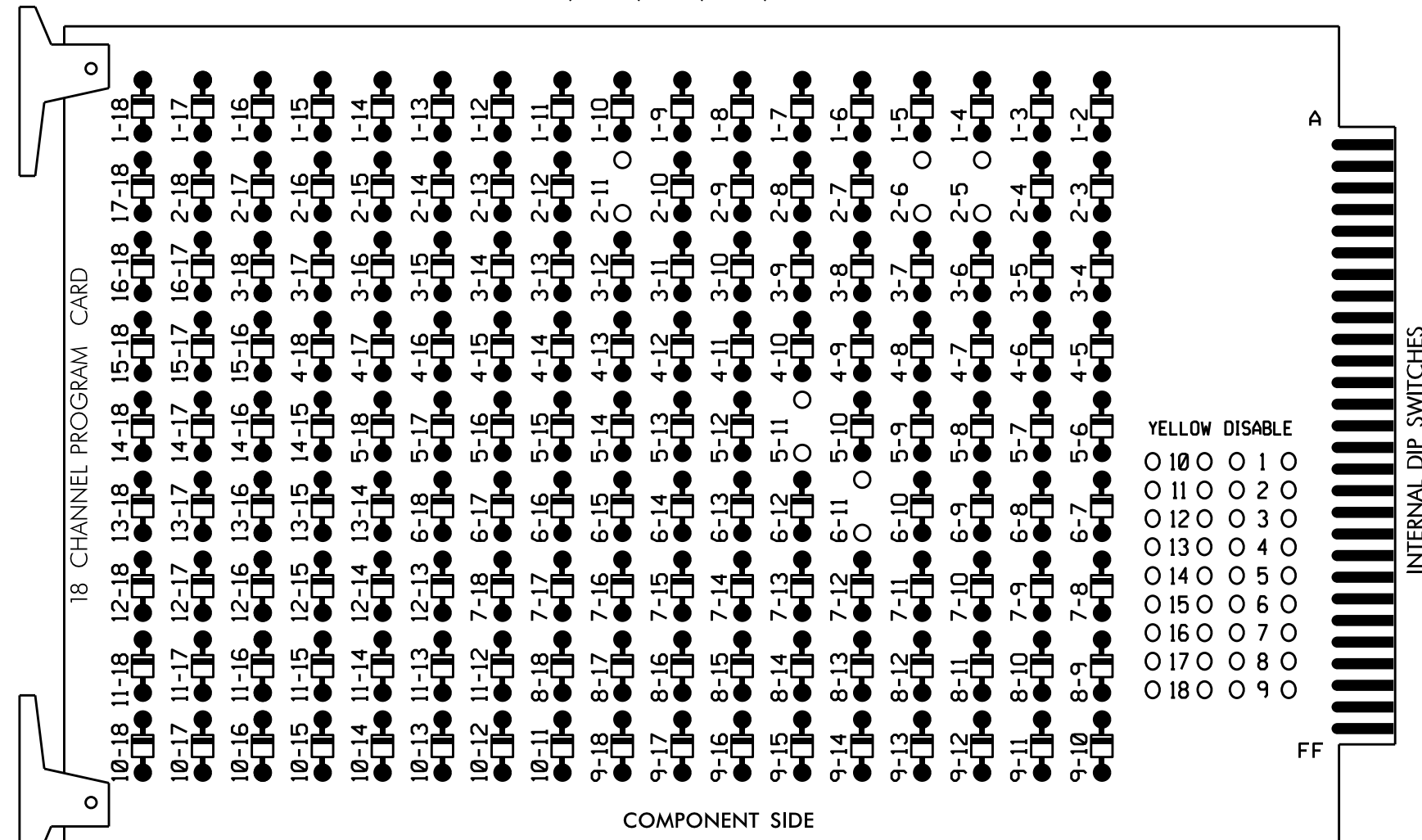
NC 16 (Providence Road) at SR 1306 (Gray Byrum Road)
 Division 10 Union County Waxhaw
 PLAN DATE: December 2018 REVIEWED BY:
 PREPARED BY: C. Pierce REVIEWED BY:
 REVISIONS: INIT. DATE
 SCALE: 1" = 30'
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL: J. G. WILLIAMS, ENGINEER, 024393
 DATE: 1/9/2019
 SIG. INVENTORY NO. 10-2314

09-JAN-2019 11:26 S:\MT\56504\115_Sig\115_Sig\115_Sig\115_Sig.dgn - NC 16 at Gray Byrum Rd - 2314 - sig.dgn, 201812xx.dgn

**EDI MODEL 2018ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)

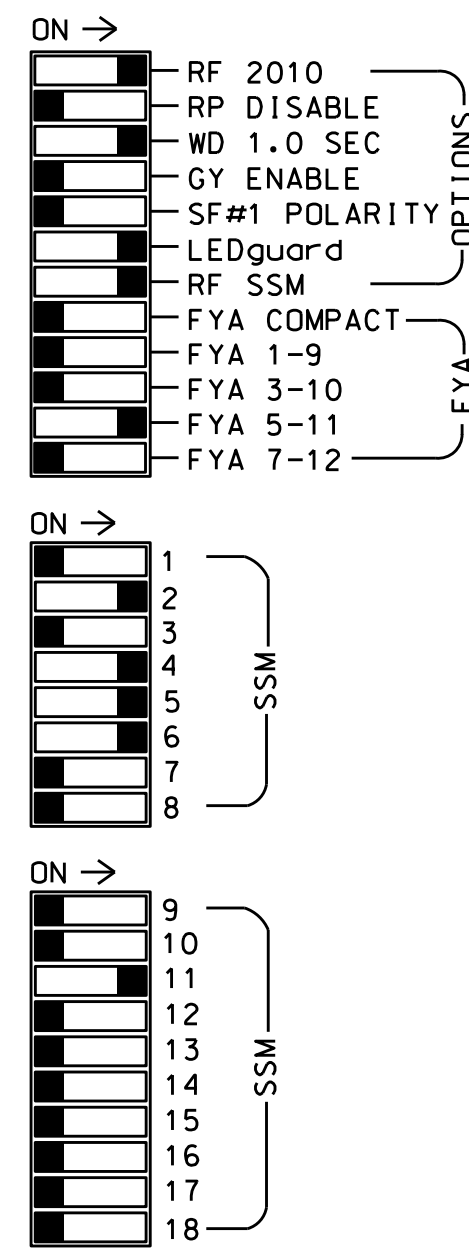
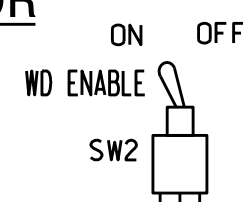
REMOVE DIODE JUMPERS 2-5, 2-6, 2-11, 5-11, and 6-11.



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.



■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Startup In Green.
5. Program phases 2 and 6 for Yellow Flash.
6. The cabinet and controller are part of the NC 16 (Providence Road) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S4
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

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.	NU	21,22	NU	NU	41,42	62	NU	42	51*	61,62	NU	NU	NU	NU	NU	51*	NU	NU	
RED		128			101			*		134									
YELLOW		129			102					135									
GREEN		130			103					136									
RED ARROW																		A114	
YELLOW ARROW						102		132											A115
FLASHING YELLOW ARROW																			A116
GREEN ARROW						103		133	133										

NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅2/SYS	2A/S18	∅3	∅4	∅5	∅6/SYS	∅7	∅8	∅9	∅10	∅11	∅12	∅13	∅14
L	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
U	∅5	∅5	∅6/SYS	∅7	∅8	∅9	∅10	∅11	∅12	∅13	∅14	∅15	∅16	∅17
L	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

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

⊗ Wired Input - Do not populate slot with detector card

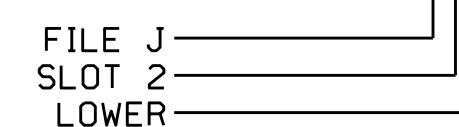
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S18	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5A ¹	TB3-1,2	J1U	55	17	5	5	Y	Y			15
		I4U	47	9	22	2	Y	Y	Y		3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A/S19	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			

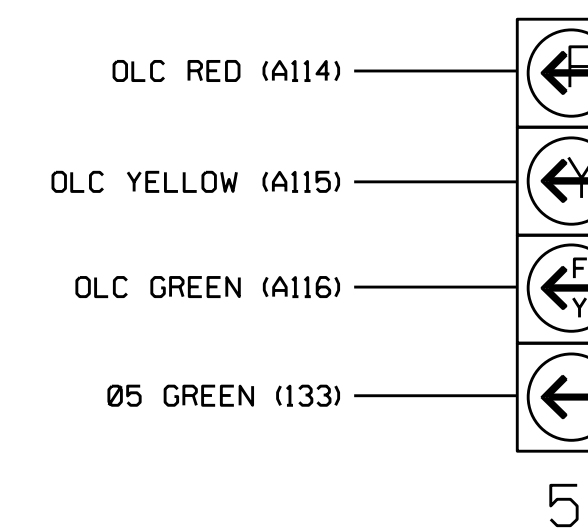
¹Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND:



FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



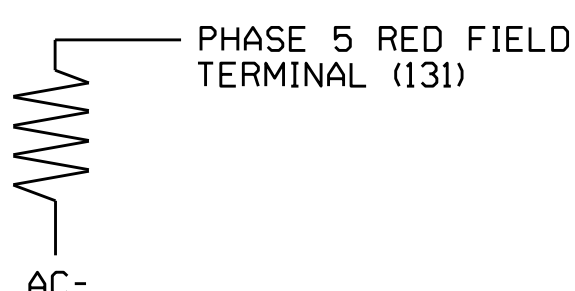
NOTE

The sequence display for signal head 51 requires special logic programming. See sheet 2 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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



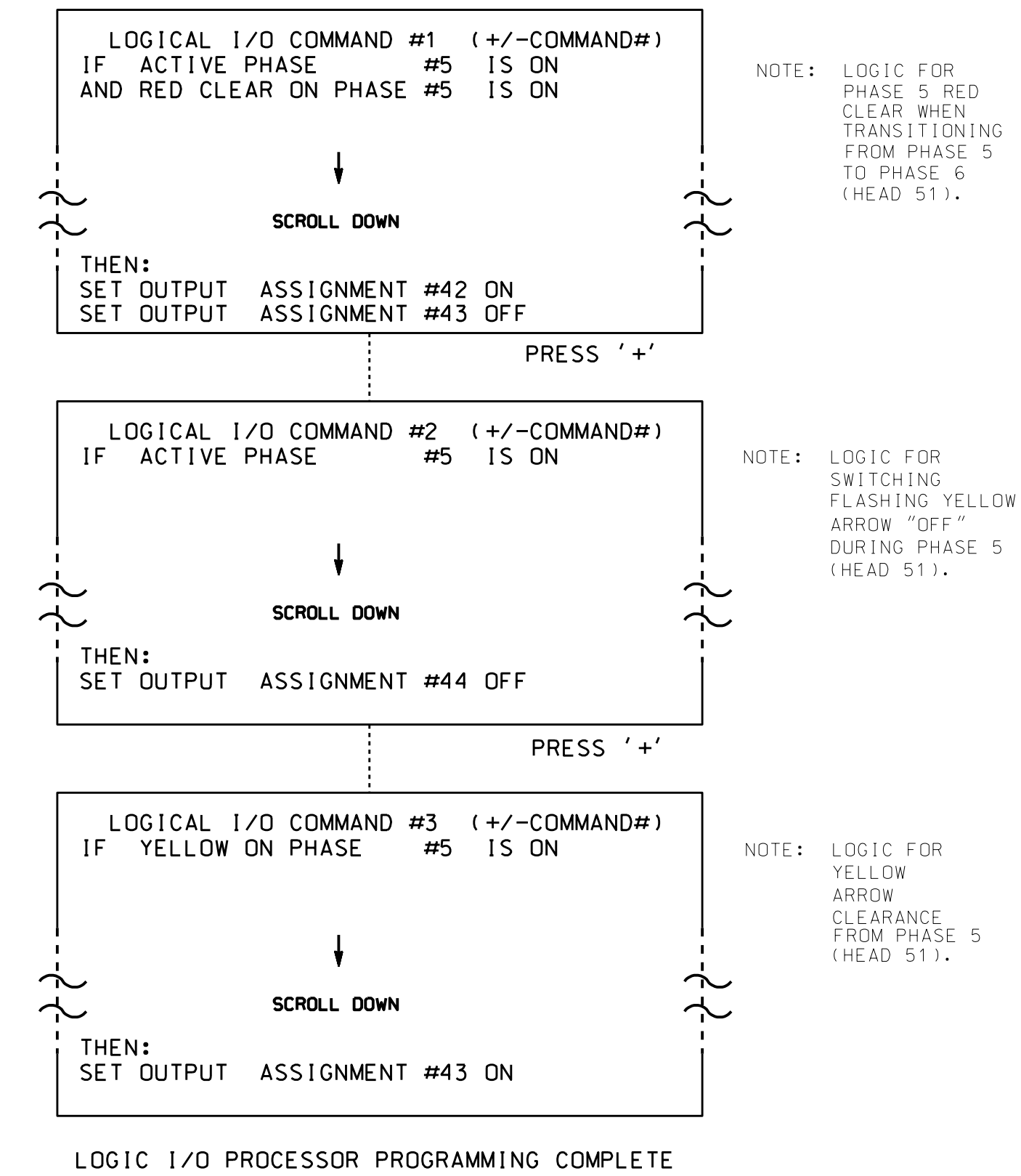
Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	NC 16 (Providence Road) at SR 1306 (Gray Byrum Road)		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036833 RYAN W. HOUGH
	Division 10 Union County Waxhaw PLAN DATE: January 2019 REVIEWED BY: PREPARED BY: S. Armstrong REVIEWED BY:	REVISIONS INIT. DATE	

**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE: 12345678910111213141516
 VEH OVL PARENTS: XX
 VEH OVL NOT VEH:
 VEH OVL NOT PED:
 VEH OVL GRN EXT:
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN ← NOTICE GREEN FLASH
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 GREEN EXTENSION (0-255 SEC)...0
 YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
 RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
 OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 10-2314
 DESIGNED: December 2018
 SEALED: 1/9/2019
 REVISED: N/A

1/11/2019 08:59 S:\ITS\SIG\10-2314\Sig\10-2314_Sig.dgn

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	NC 16 (Providence Road) at SR 1306 (Gray Byrum Road)		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL SEAL 036833 ENGINEER RYAN W. HOUGH
	Division 10 Union County Waxhaw	PLAN DATE: January 2019 REVIEWED BY:	
	REVISIONS	INIT. DATE	DocuSigned by: Ryan W. Hough 1/11/2019 430320FA22054C3 DATE
			SIG. INVENTORY NO. 10-2314