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09/08/99

See Sheet 1A For Index of Sheets

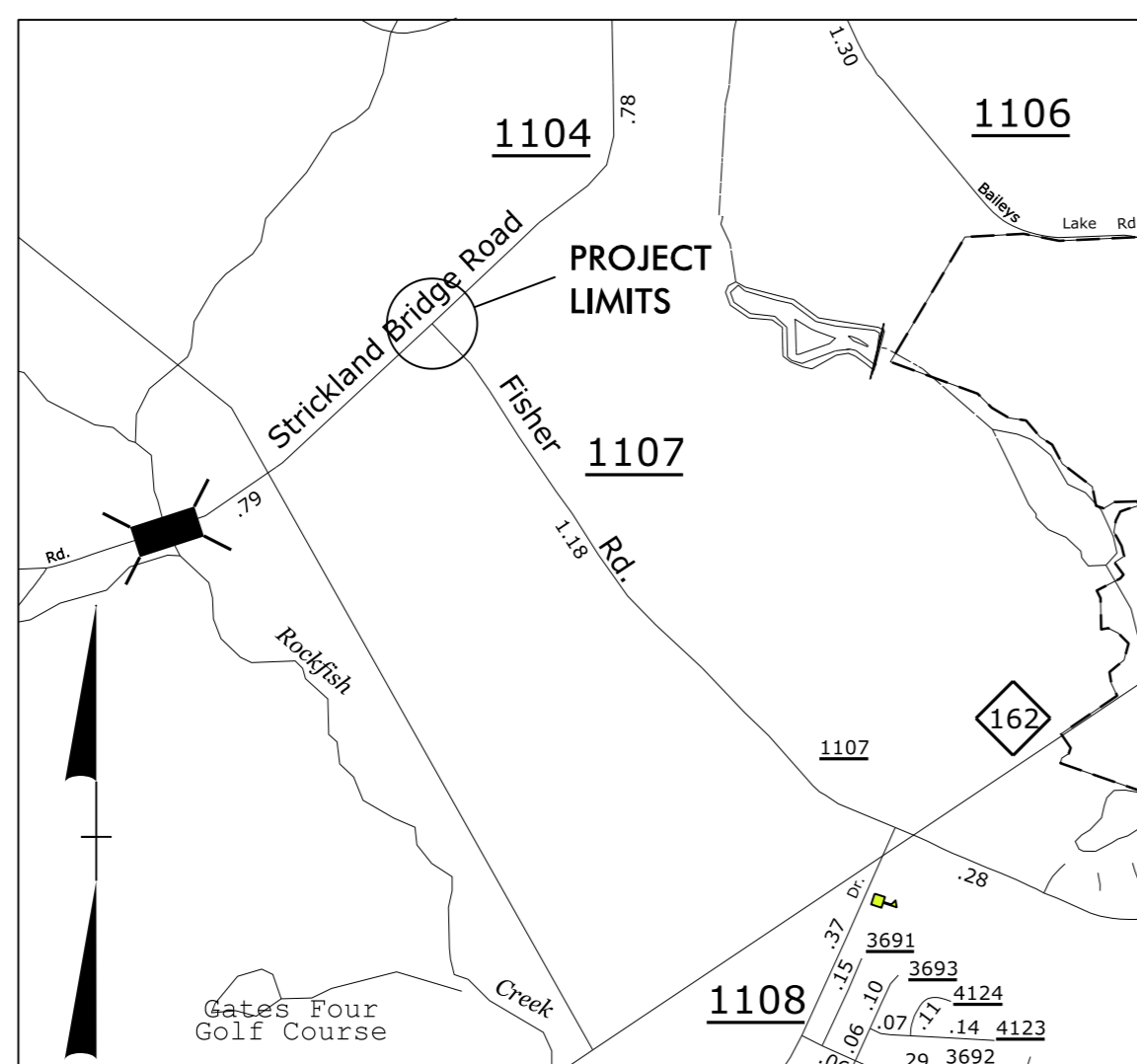
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	47429	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47429		PE, CONSTR	

CUMBERLAND COUNTY

**LOCATION: STRICKLAND BRIDGE ROAD (SR 1104)
AT FISHER ROAD (SR 1107)**

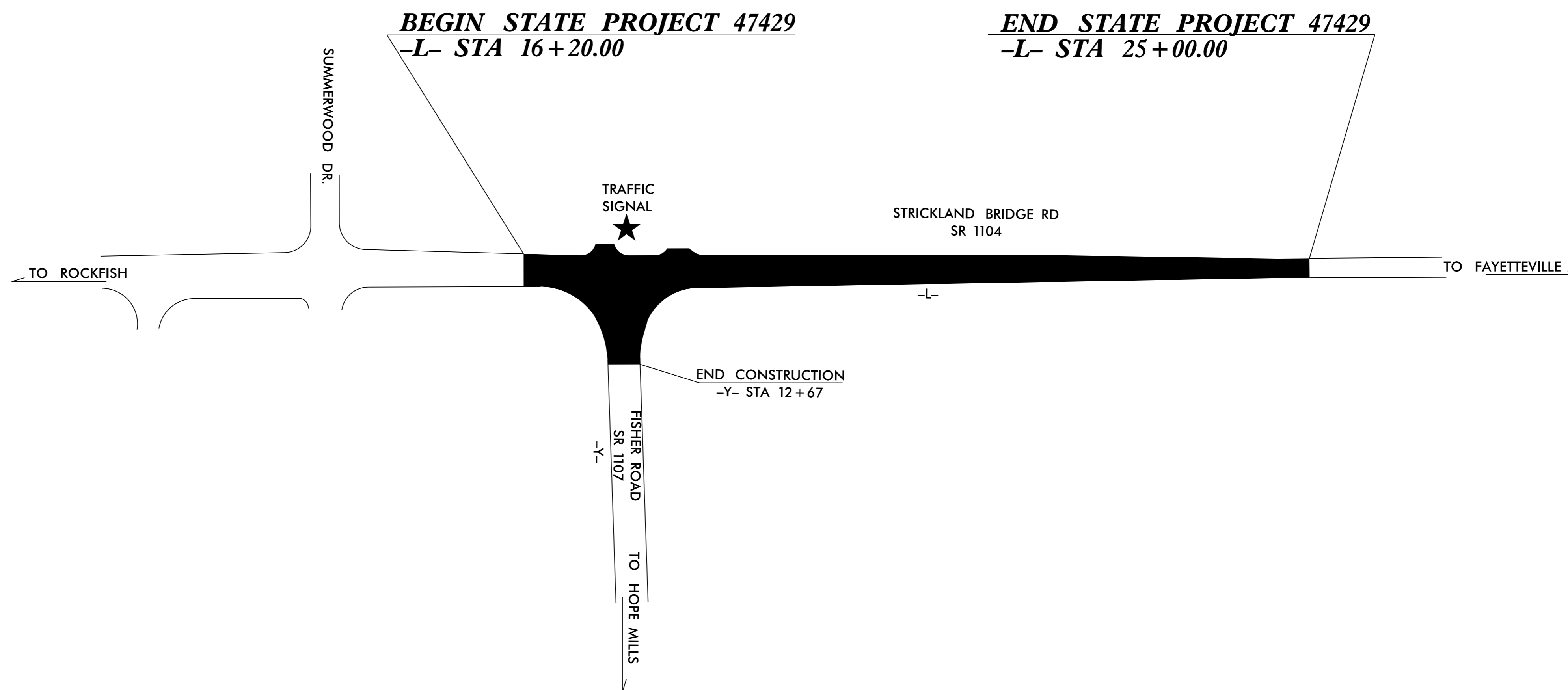
TYPE OF WORK: WIDENING, PAVING, SIGNALS AND PAVEMENT MARKINGS



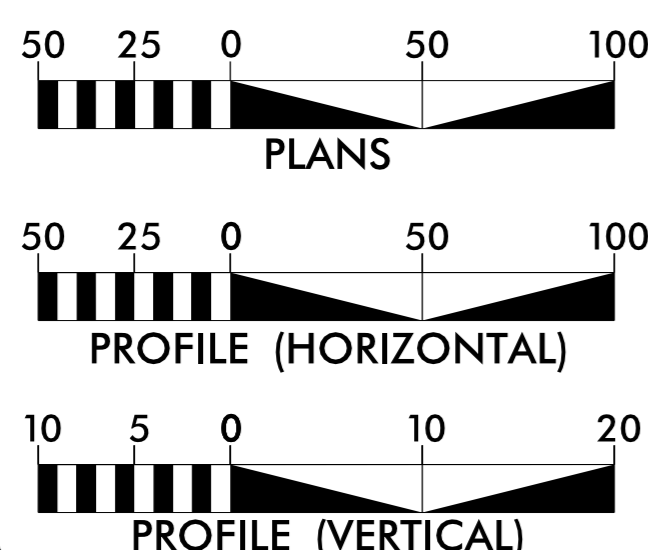
47429

WBS:

CONTRACT: DF00198



GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 14,900

PROJECT LENGTH

TOTAL PROJECT LENGTH = 0.167 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
431 Transportation Dr., Fayetteville NC, 28301

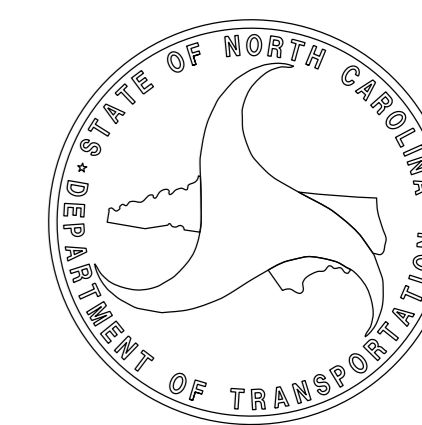
2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NA

LETTING DATE:
FEBRUARY 21, 2018

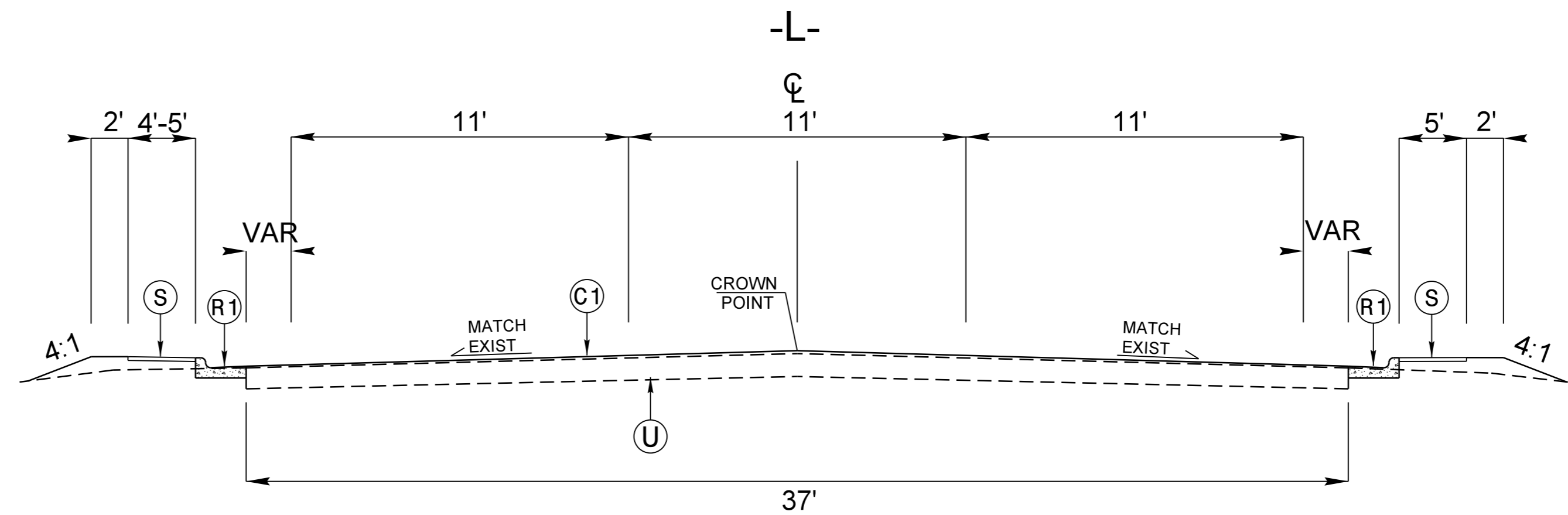
SEAN MATUSZEWSKI
PROJECT ENGINEER

NEIL BUTLER
PROJECT DESIGN ENGINEER

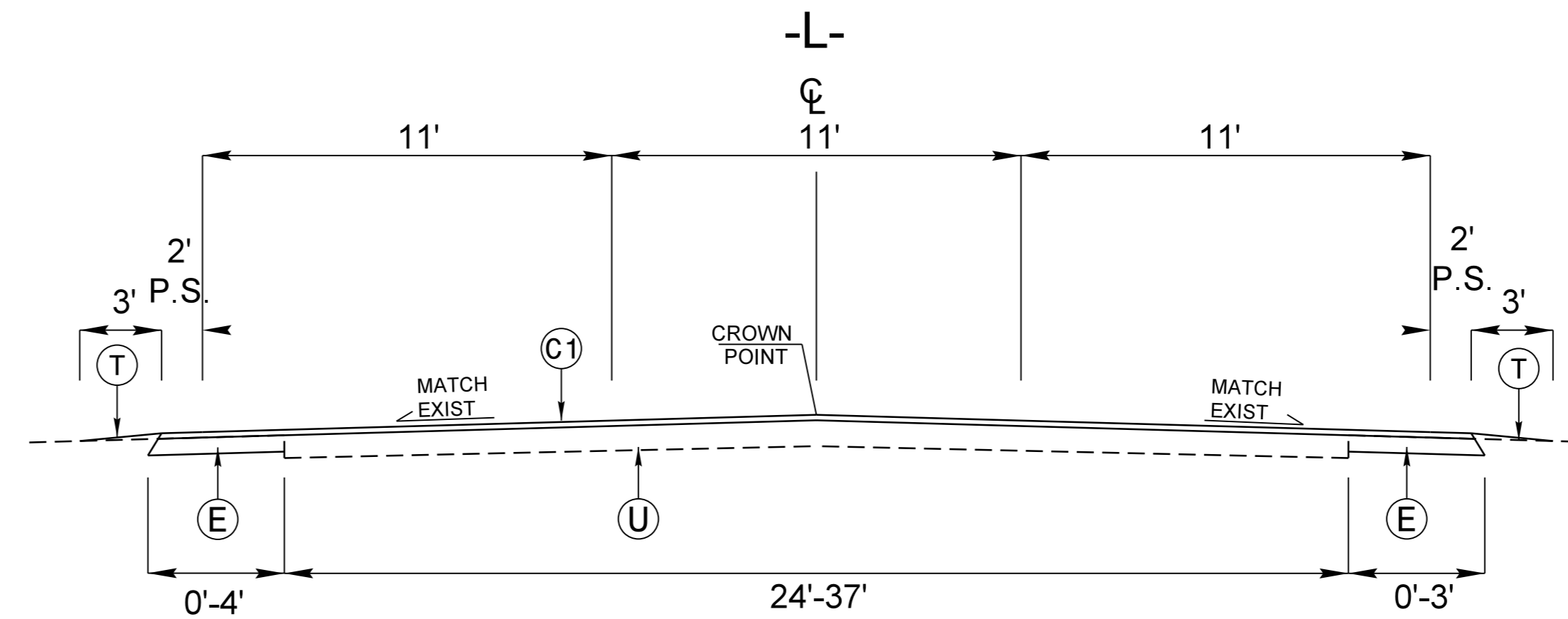


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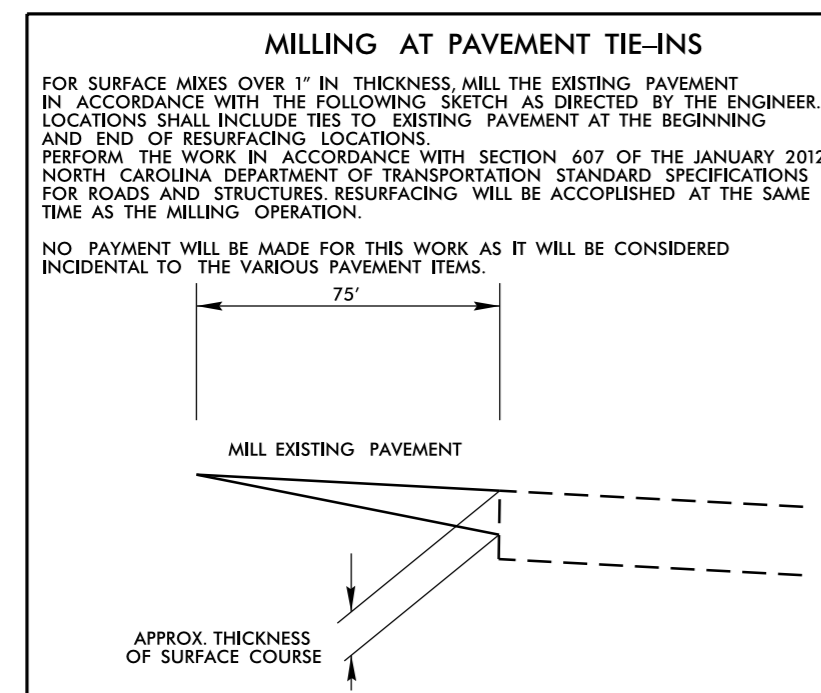
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROPOSED 2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	ASB
U	EXISTING PAVEMENT



TYPICAL SECTION NO. 1
 -L- STA 16+20.00 - 18+30.00
 -Y- STA 12+68.00 - 13+50.00



TYPICAL SECTION NO. 2
 -L- STA 18+30.00 - 25+00.00



Contractor shall coordinate with the Division Six Traffic Services Unit (910 364-0606) for placement of all pavement markings.

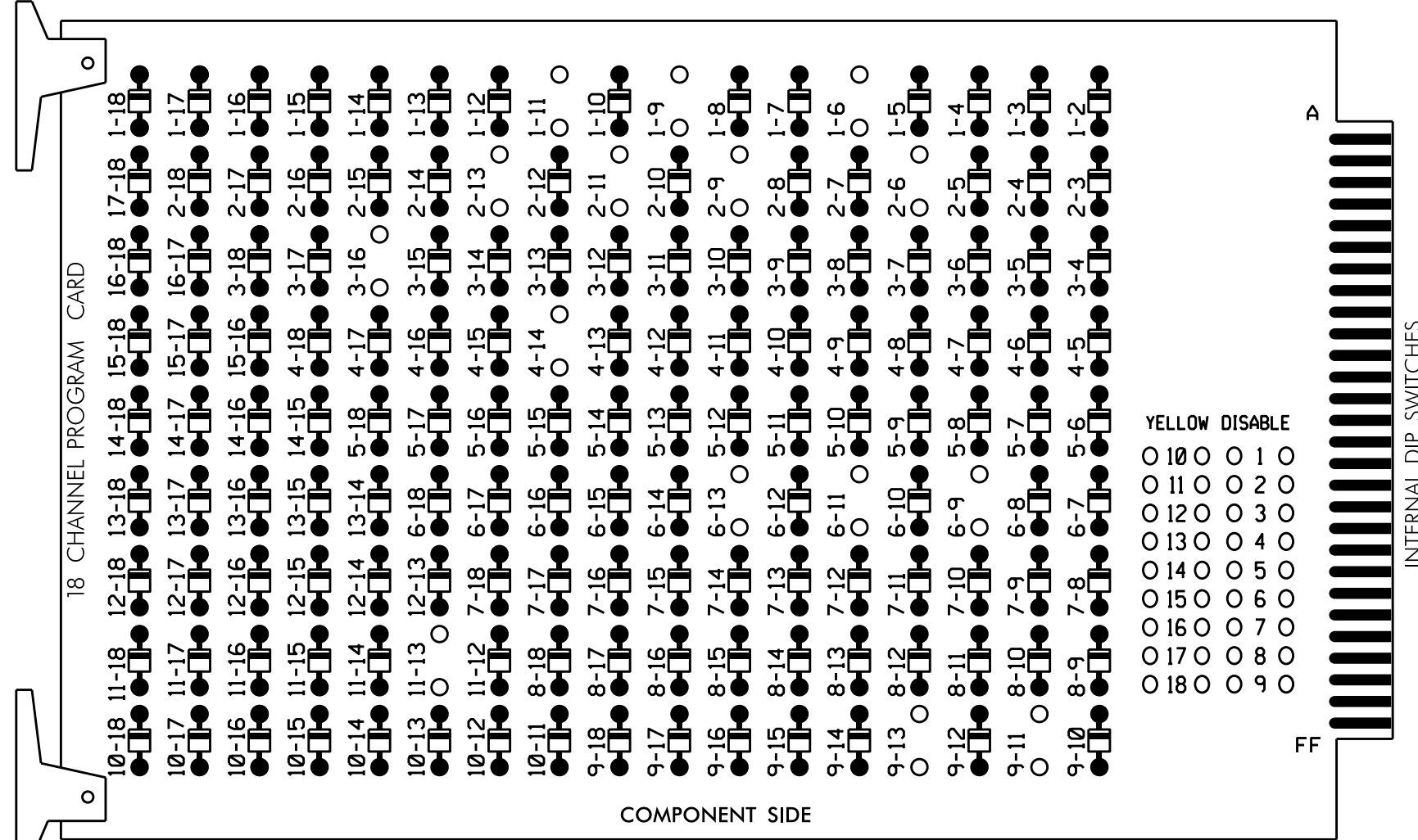
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 6/2/99

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

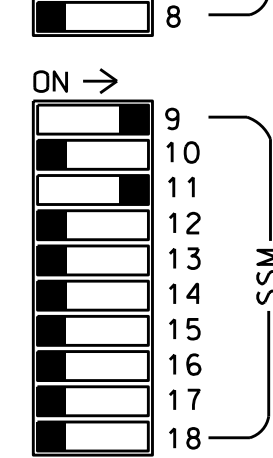
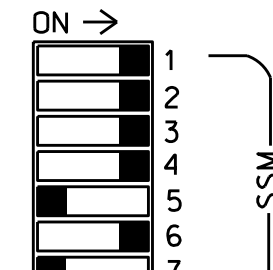
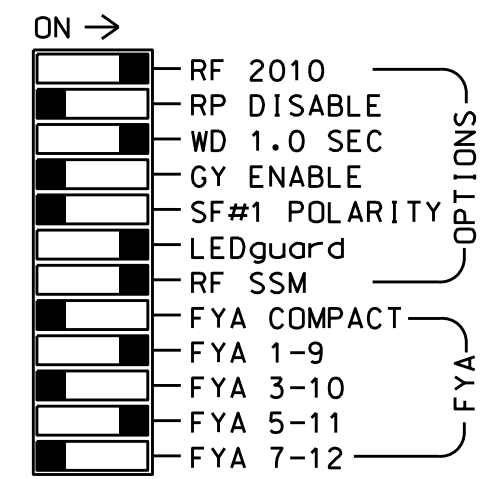
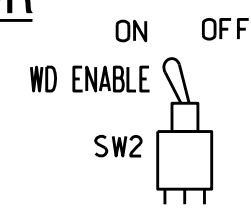
REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 2-6, 2-9, 2-11, 2-13, 3-16, 4-14, 6-9, 6-11, 6-13, 9-11, 9-13 and 11-13.



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.



■ = 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. Program controller to start up in phase 2 Walk and phase 6 Green.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S8,S12,
 AUX S1,AUX S4
 PHASES USED.....1,2,2 PED,3,3 PED,4,4 PED,6
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

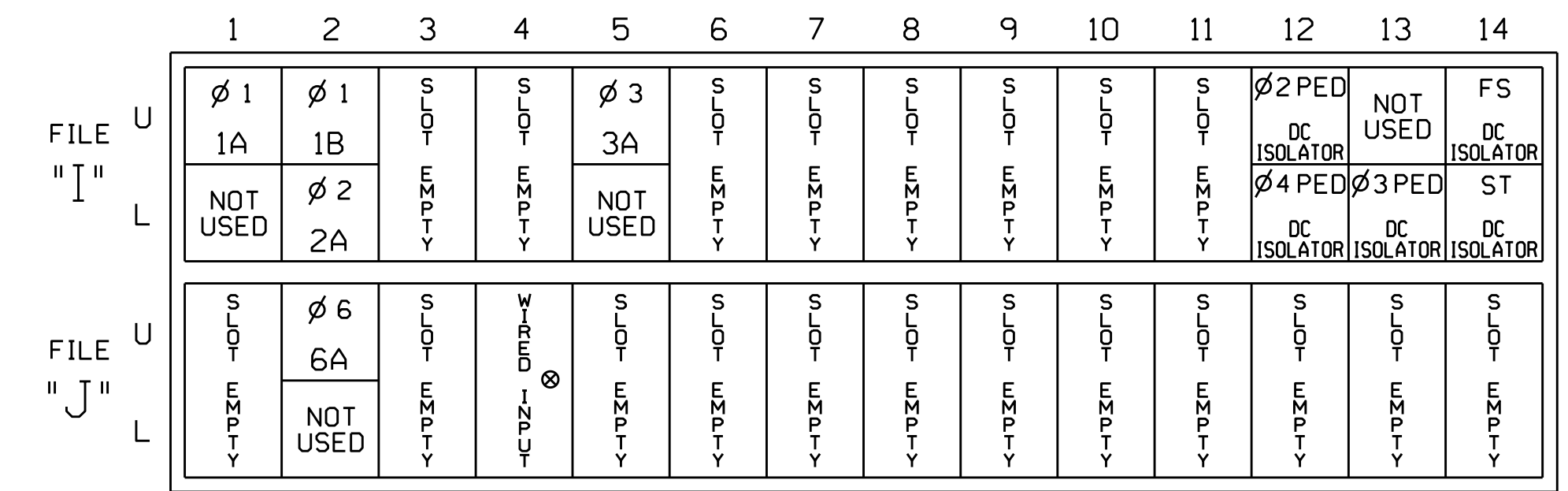
SIGNAL HEAD HOOK-UP CHART

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	3 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	11	32	22,23	P21, P22	31	32	41	42	P41, P42	NU	61,62	NU	NU	NU	P31, P32	11	NU	NU	21
RED	*	128		116	116	101	101			134									
YELLOW		129		117	117	102	102			135									
GREEN		130		118	118	103	103			136									
RED ARROW													A121					A114	
YELLOW ARROW	126												A122					A115	
FLASHING YELLOW ARROW													A123					A116	
GREEN ARROW	127	127			118		103												
Hand				113				104					110						
Walking				115				106					112						

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)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

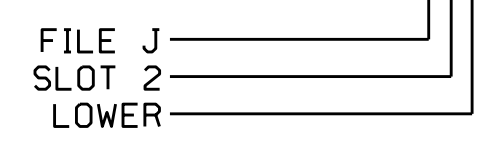
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES		3		G
2A	TB2-5,6	I2U	39	2	1	YES		15		S
	TB2-7,8	I2L	43	12	2	YES			X	N
3A	TB4-5,6	I5U	58	3	3	YES		3		S
	TB3-5,6	J2U	40	6	6	YES			X	N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P31,P32	TB8-8,9	I13L	70	PED 8	3 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

* Add jumper from I1-W to J4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L

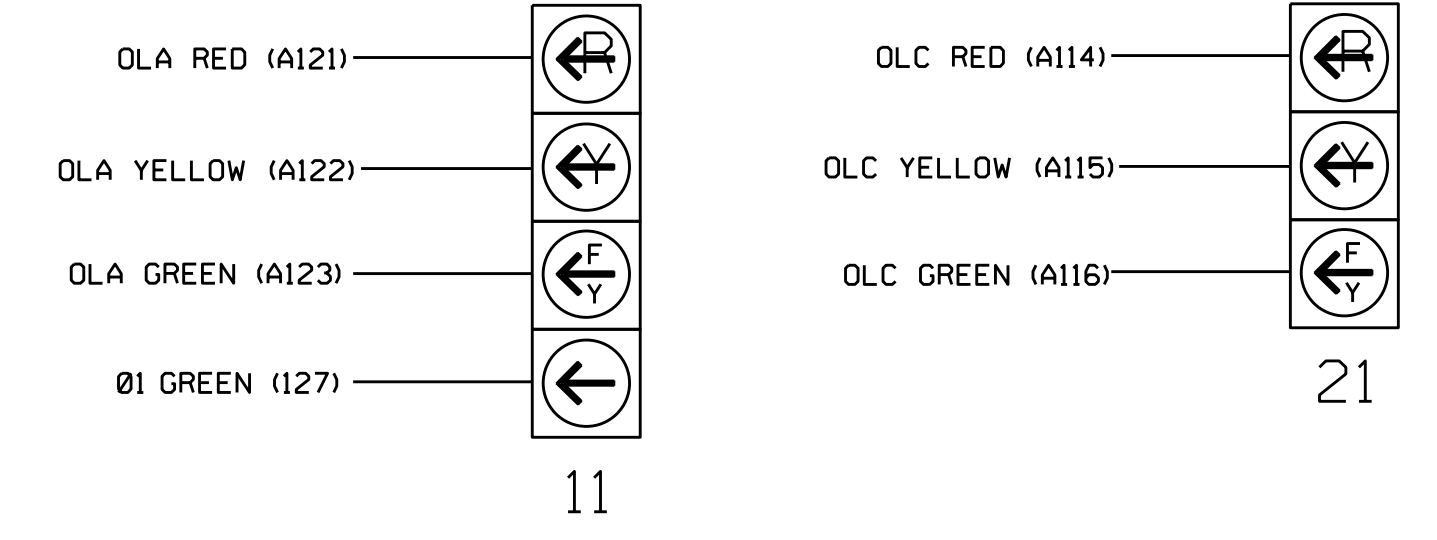


SPECIAL DETECTOR NOTE

For loop 4A, install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

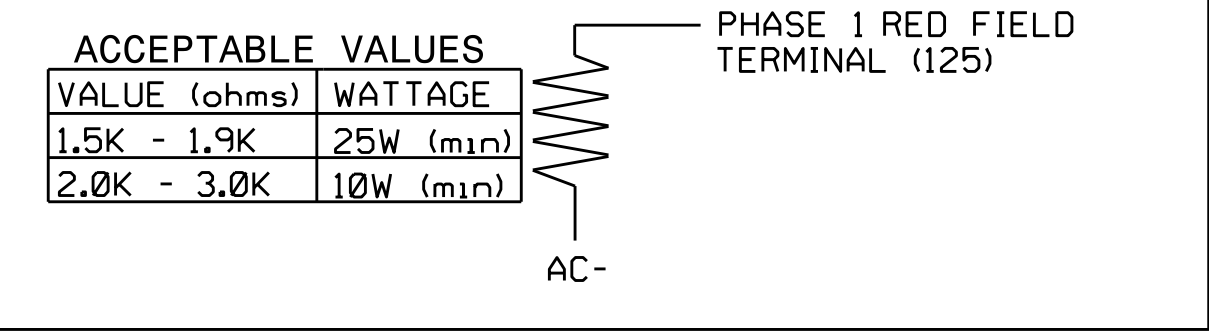
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL SUPERSEDES THE DETAIL SEALED ON 11/28/17

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1374
 DESIGNED: September 2017
 SEALED: 1/24/2018
 REVISED:

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)



Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For: SR 1104 (Strickland Bridge Rd) at SR 1107 (Fisher Rd)

Prepared In the Offices of: [Logo]

Division 6 Cumberland County Fayetteville

PLAN DATE: January 2018 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by: D. Todd Joyce 1/29/2018

SIG. INVENTORY NO. 06-1374

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: [Signature]

20-1116-2018_01-14
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 C:\Users\cstrickland

ECONOLITE ASC/3-2070 PED 3 PROGRAMMING ASSIGNMENT DETAIL

(program controller as shown)

1. From Main Menu select 6. DETECTORS
2. From DETECTOR Submenu select 3. PED DETECTOR INPUT ASSIGNMENT

PED DET PHASE ASSIGNMENT MODE: NTCIP								
PHASE	1	2	3	4	5	6	7	8
DETECTOR	0	2	8	4	0	6	0	0
PHASE	9	10	11	12	13	14	15	16
DETECTOR	0	0	0	0	0	0	0	0

← NOTICE PED DETECTOR 8
ASSIGNED TO PHASE 3

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD SWITCH ASSIGN									
PHASE /OVLP	TYPE	DIMMING			---FLASH---				
		R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	Y	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	Y	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	O	.	.	.	+	A	R	X
10	2	O	.	.	.	+	A	R	X
11	3	O	.	.	.	-	A	R	.
12	4	O	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	3	P	.	.	.	-	A	.	.

NOTICE PHASE 3 PED
ASSIGNED TO LD SWITCH 16 →

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE:	PPLT FYA
PROTECTED LEFT TURN....	PHASE 1
OPPOSING THROUGH.....	PHASE 2
FLASHING ARROW OUTPUT.....	CH9 ISOLATE
DELAY START OF: FYA..0.0	CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE.....	0

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

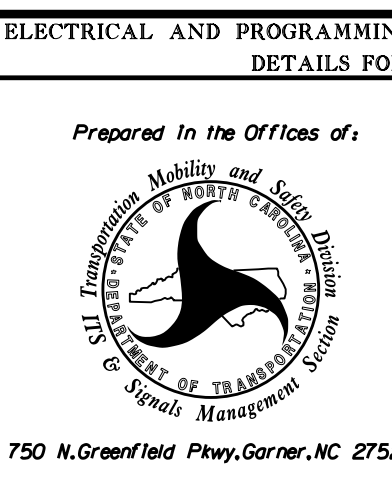
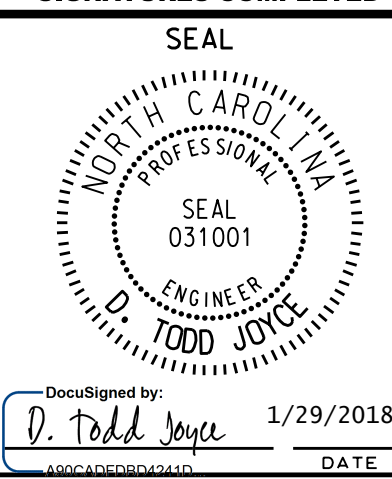
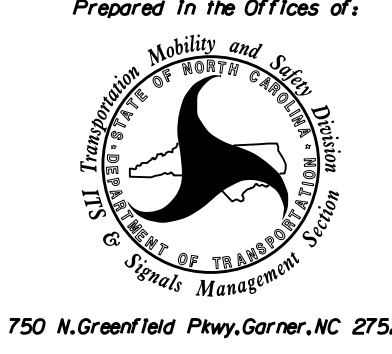
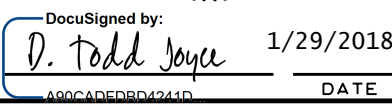
TMG VEH OVLP...[C] TYPE:	OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
INCLUDED	X
PROTECT	
PED PRTC	
NOT OVLP	
FLSH GRN	1
LAG X PH	
LAG 2 PH	
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0	

END PROGRAMMING

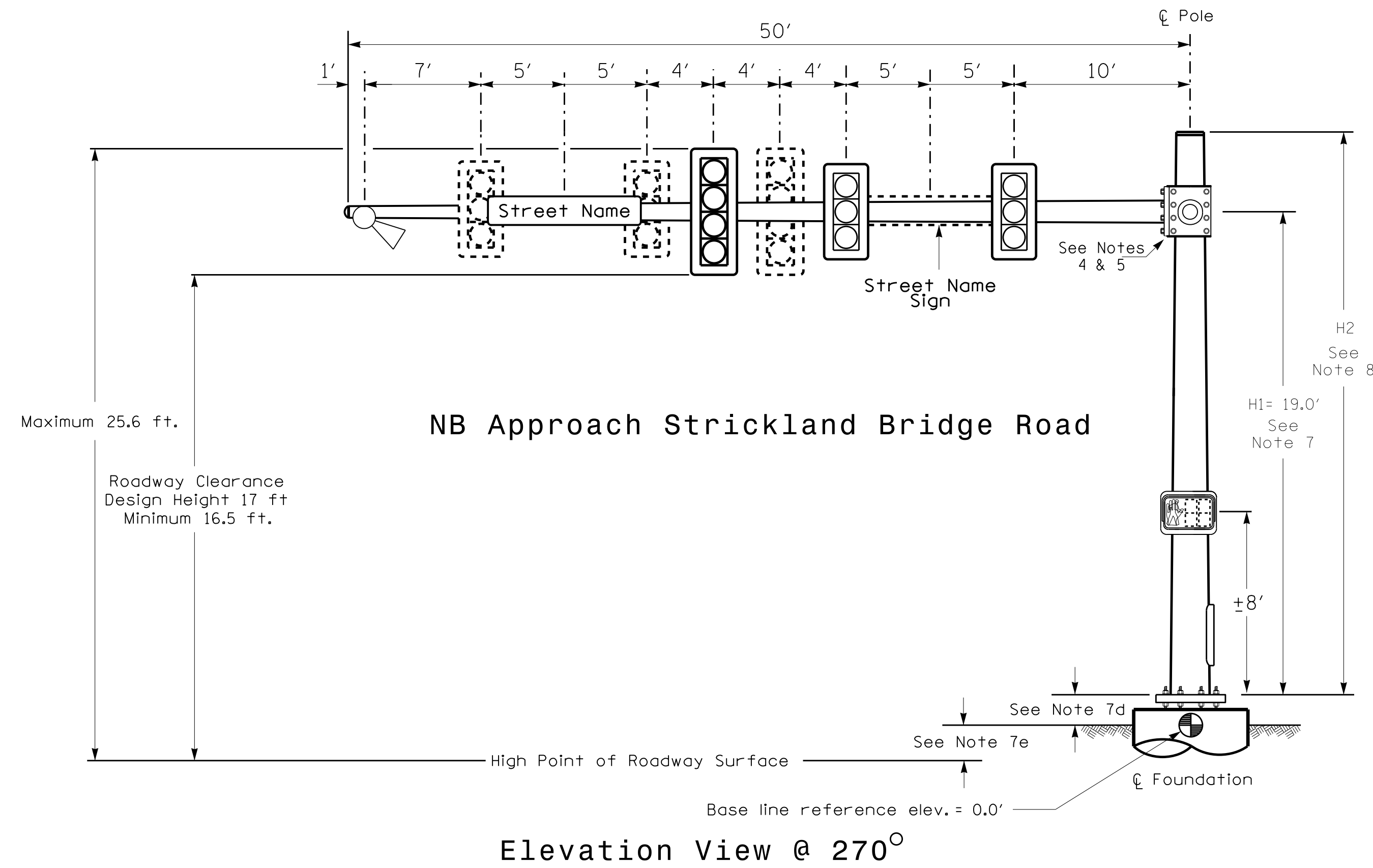
THIS ELECTRICAL DETAIL
SUPERSEDES THE DETAIL
SEALED ON 11/28/17

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-1374
DESIGNED: September 2017
SEALED: 1/24/2018
REVISED:

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Electrical Detail - Sheet 2 of 2		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
	ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1104 (Strickland Bridge Rd) at SR 1107 (Fisher Rd)	SEAL 
Prepared In the Offices of: 	Division 6 Cumberland County Fayetteville PLAN DATE: November 2017 REVIEWED BY: T. Joyce PREPARED BY: C. Strickland REVIEWED BY:	SEAL 031001 ENGINEER TODD JOYCE
	REVISIONS INIT. DATE	DocuSigned by:  1/29/2018
		SIG. INVENTORY NO. 06-1374

Design Loading for METAL POLE NO. 1, MAST ARM A



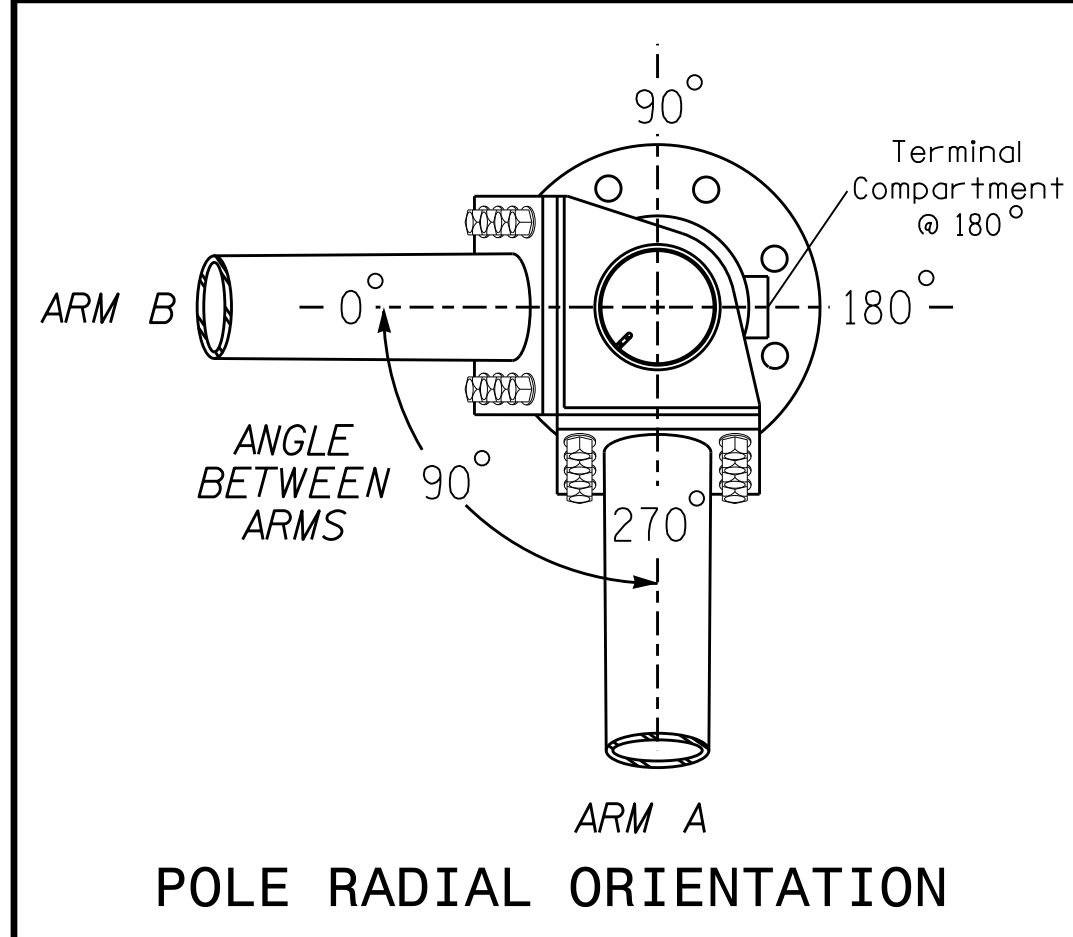
SPECIAL NOTE
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.2 ft.	-0.6 ft.
Elevation difference at Edge of travelway or face of curb	-0.2 ft.	-0.6 ft.

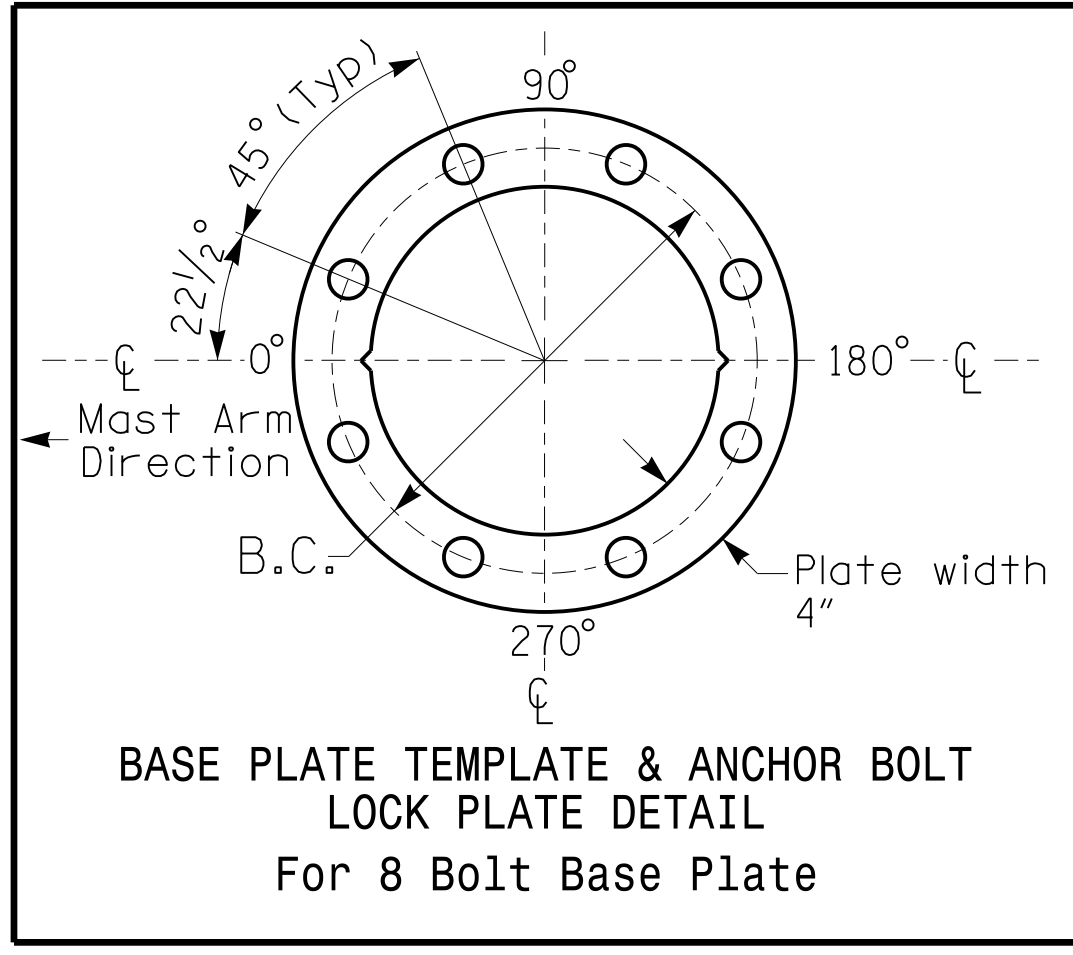
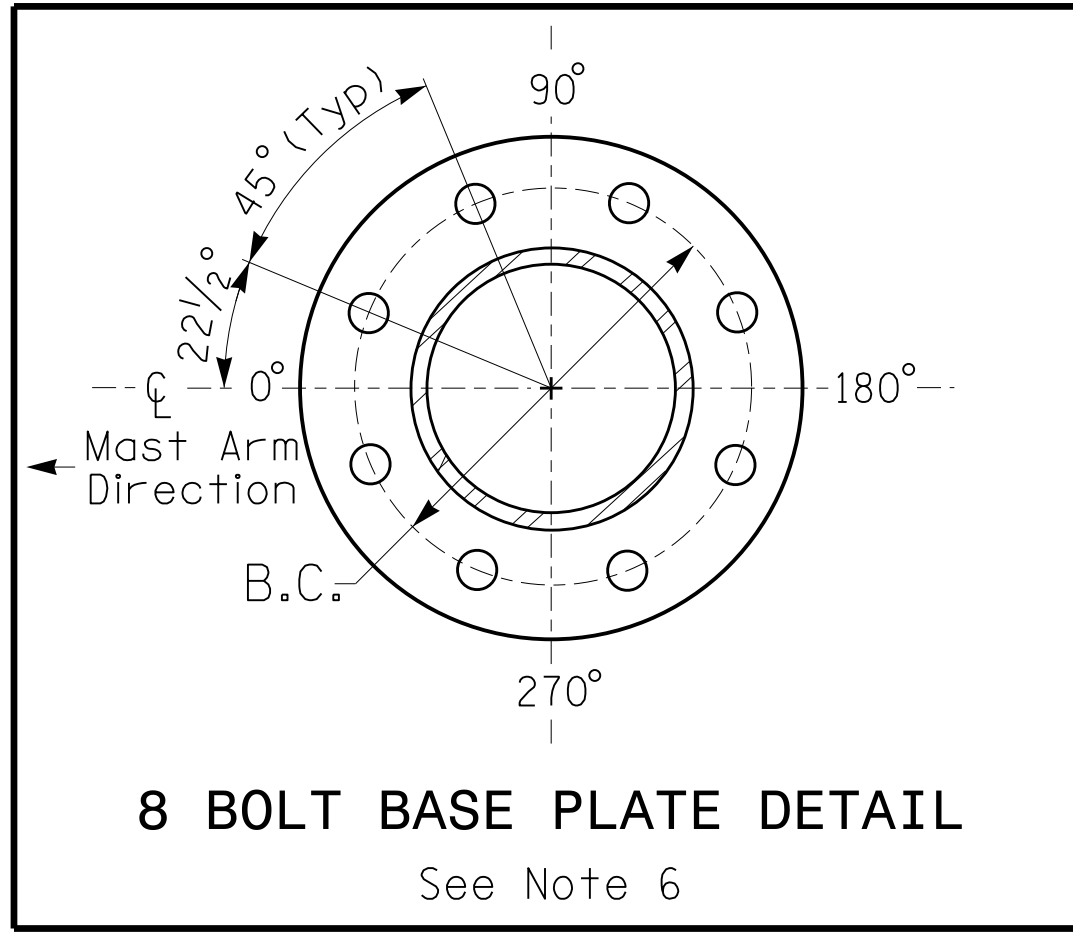
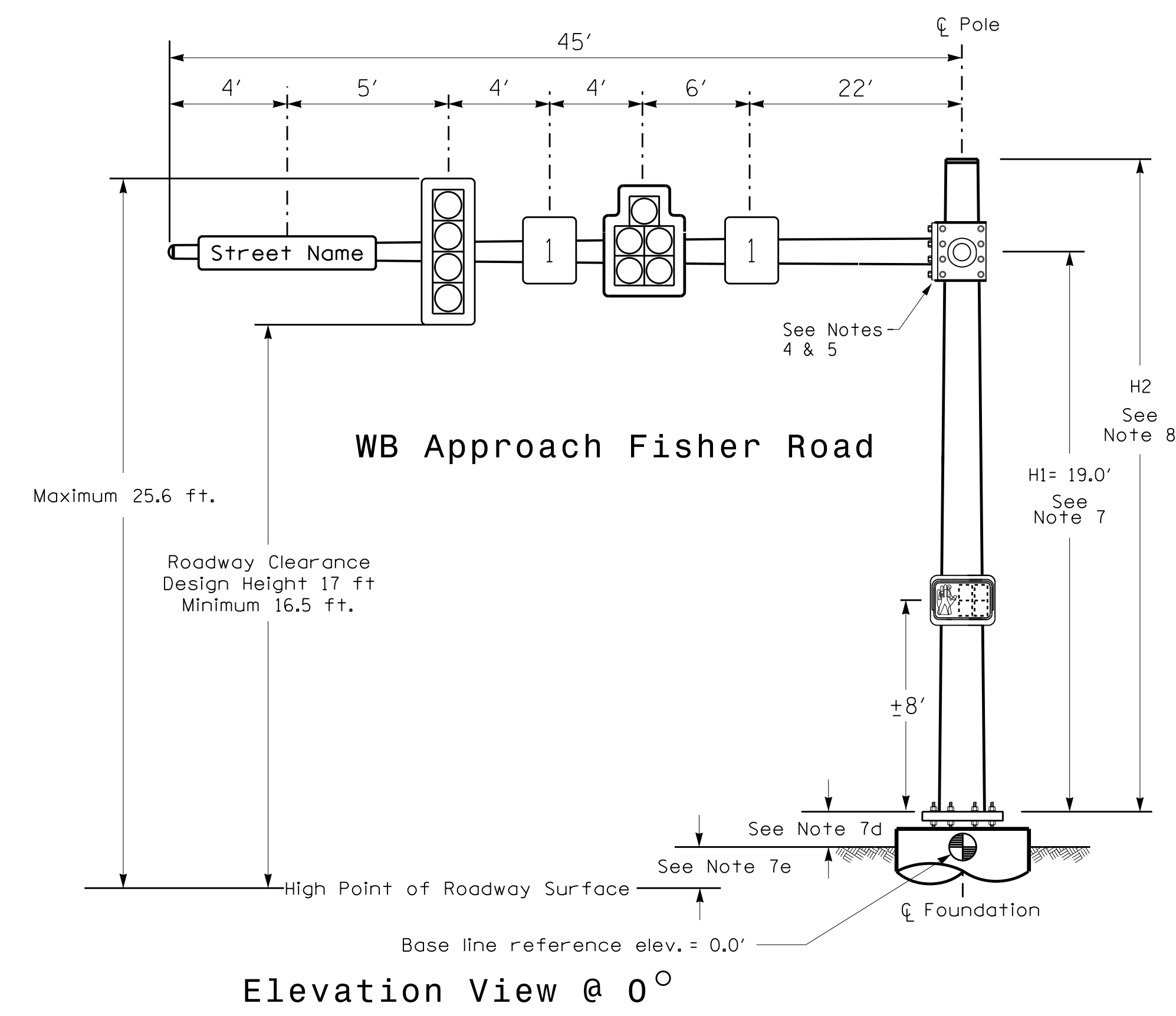
MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-5" SECTION-WITH BACKPLATE	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4" SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3" SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	PEDESTRIAN SIGNAL HEAD WITH MOUNTING HARDWARE	2.2 S.F.	18.5" W X 17.0" L	21 LBS
	SIGN RIGID MOUNTED	5.0 S.F.	24.0" W X 30.0" L	11 LBS
	STREET NAME SIGN RIGID MOUNTED	12.0 S.F.	18.0" W X 96.0" L	27 LBS
	OUT OF PAVEMENT DETECTOR	2.0 S.F.	12.0" W X 12.0" L	10 LBS



- NOTES**
- DESIGN REFERENCE MATERIAL**
- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2012 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Design Loading for METAL POLE NO. 1, MAST ARM B



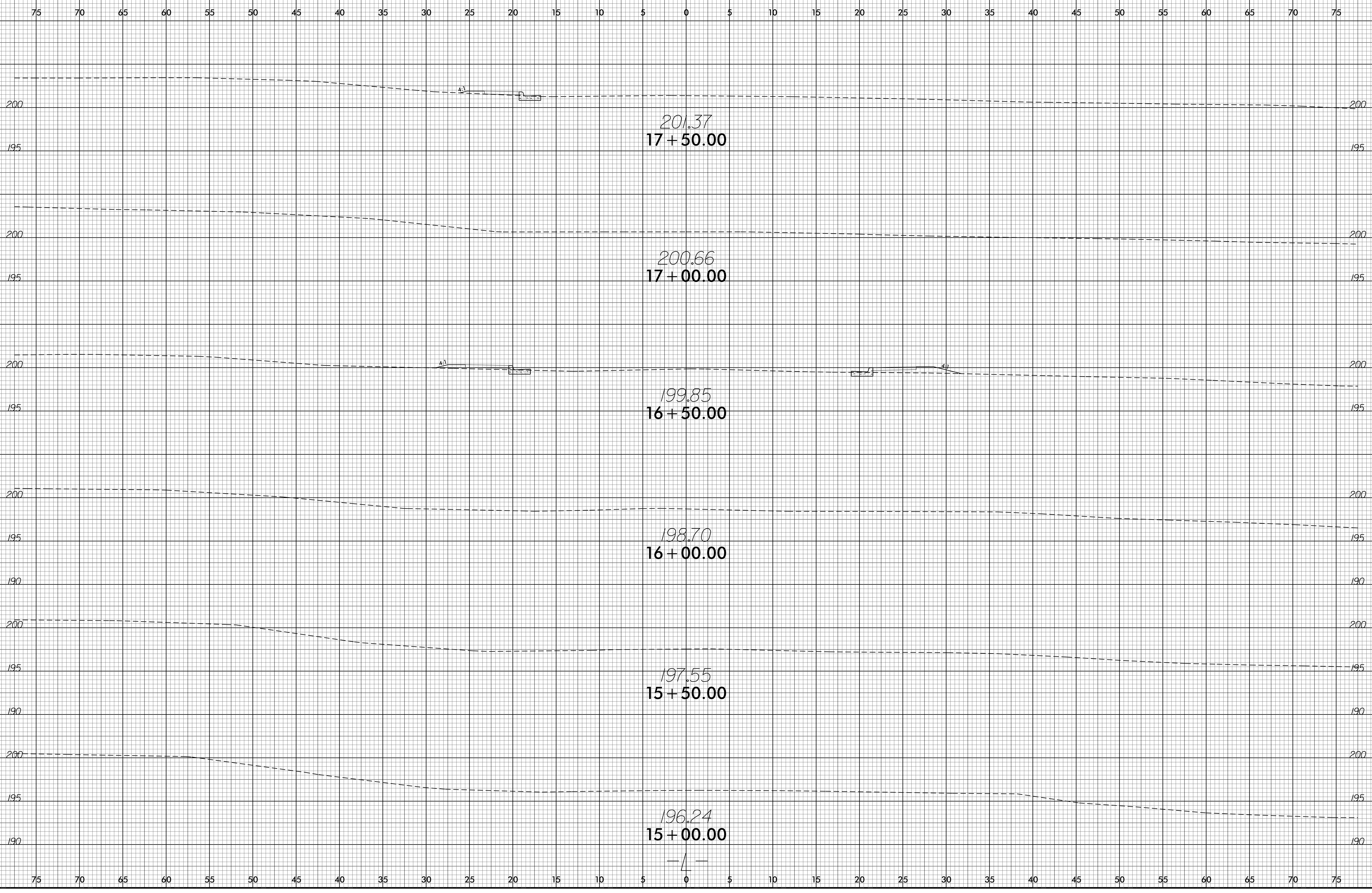
- DESIGN REQUIREMENTS**
- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
 - Design all signal supports using stress ratios that do not exceed 0.9.
 - The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
 - A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
 - Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
 - The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
 - If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
 - The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
 - The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

NCDOT Wind Zone 3 (110 mph)

	SR 1104 (Strickland Bridge Road) at SR 1107 (Fisher Road)	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042608 M. CHAN, E. LEBLANC
	Division 6 Cumberland County Fayetteville PLAN DATE: September 2017 REVIEWED BY: MEL PREPARED BY: [Signature] REVIEWED BY:	
SCALE 0 N/A N/A	REVISIONS INIT. DATE	Documented by: [Signature] 11/21/2017 DATE SIG. INVENTORY NO. 06-1374

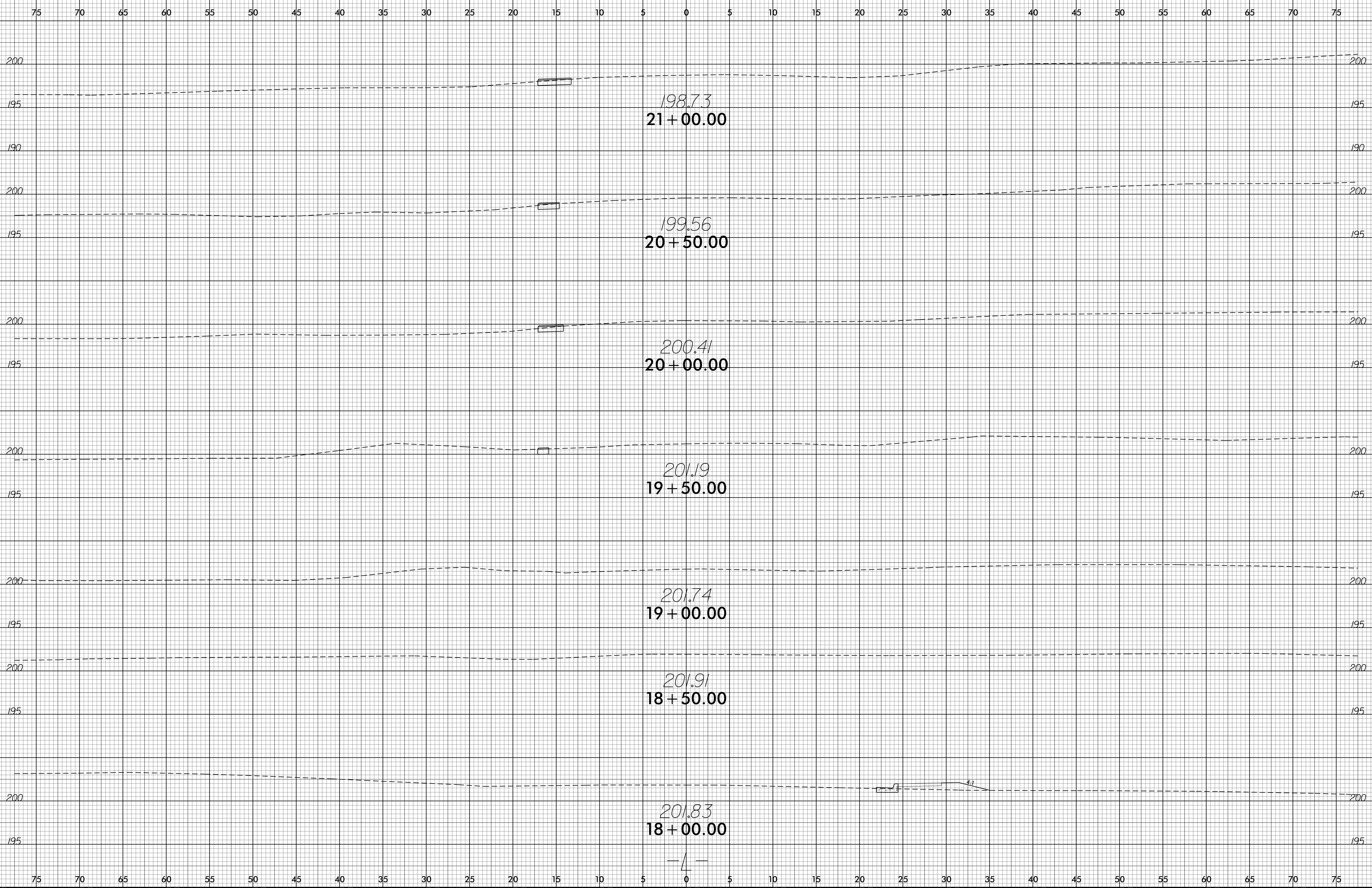
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6/23/16

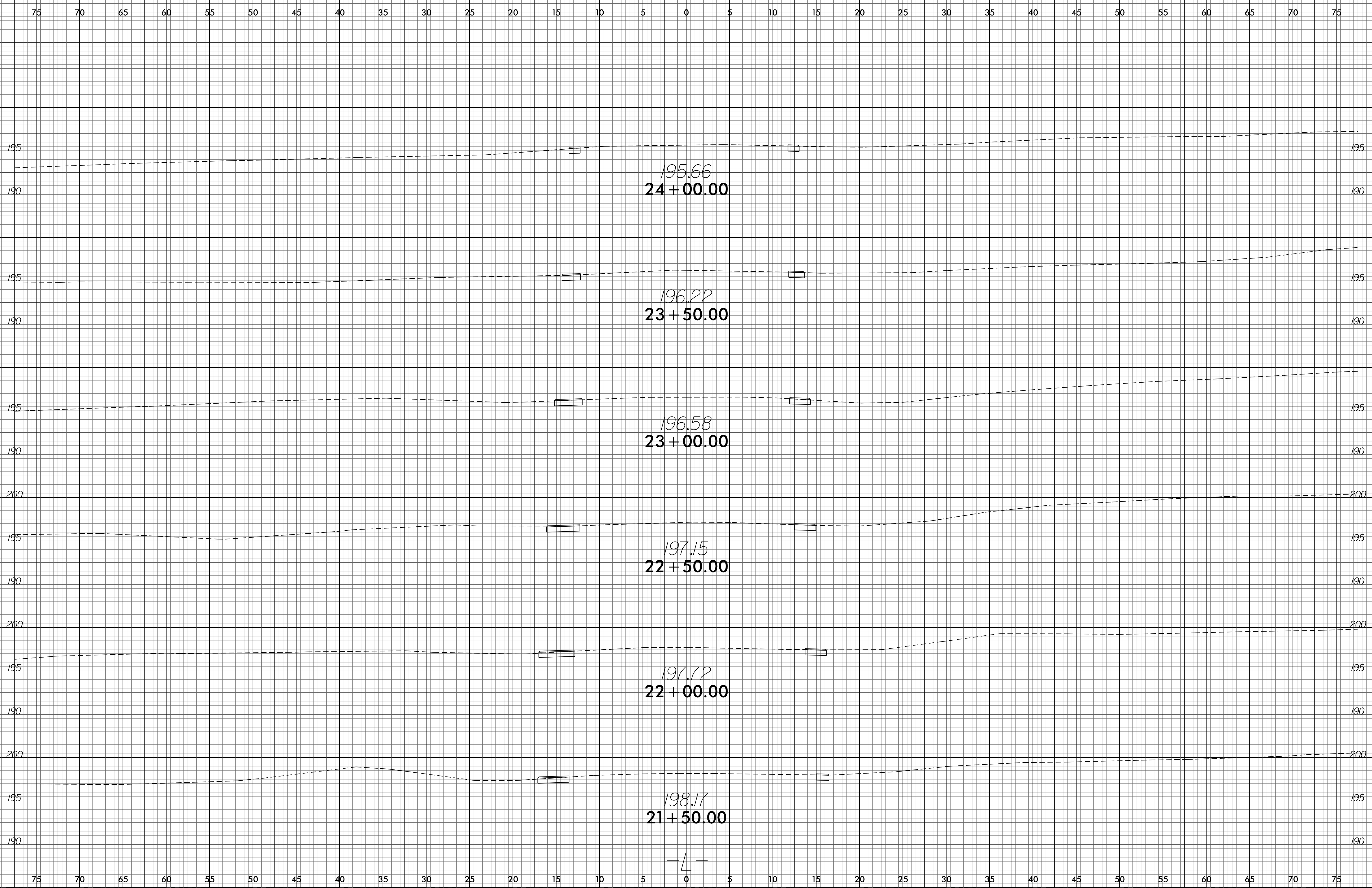


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6/23/16



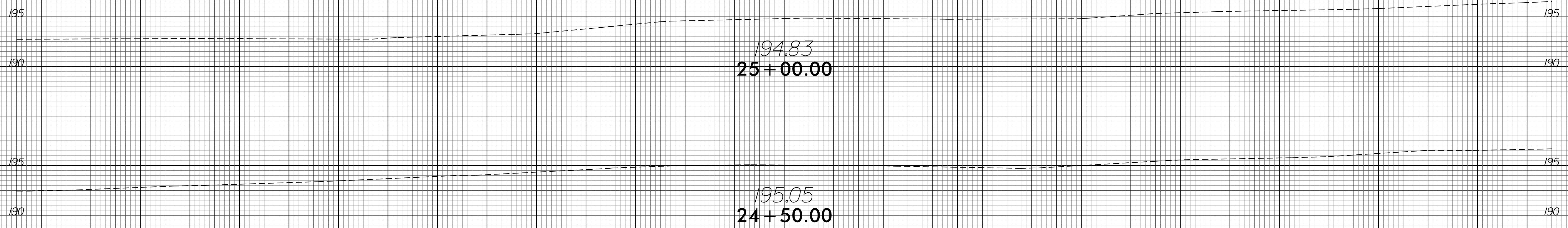
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	47429	X-4

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