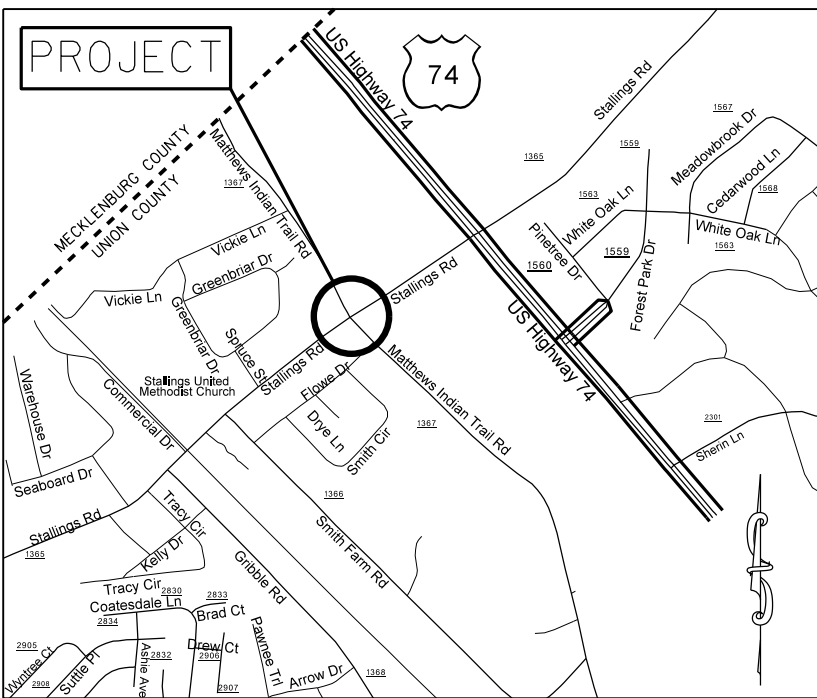


PROJECT: 45340.3.15 TIP:W-52100



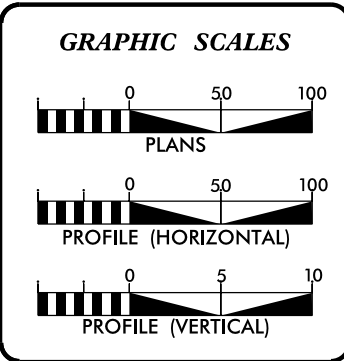
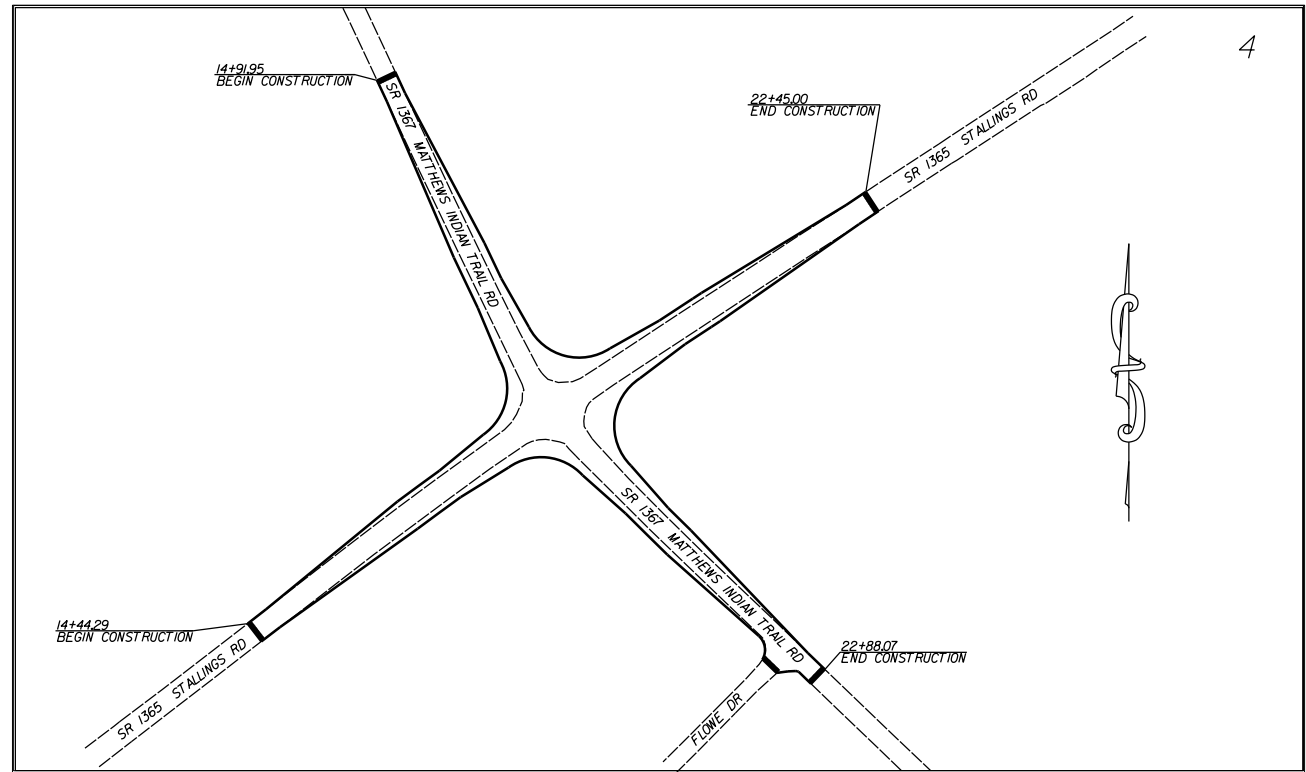
VICINITY MAP NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
UNION COUNTY

LOCATION: INTERSECTION OF STALLINGS ROAD(SR 1365) AND MATTHEWS INDIAN TRAIL ROAD(SR 1367)

TYPE OF WORK: GRADING, PAVING, MILLING, DRAINAGE, THERMOPLASTICPAVEMENT MARKING, AND METAL POLE WITH DUAL MAST ARM TRAFFIC SIGNAL.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	45340.3.15	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
45340.1.FD15	HSIP-1365(3)	P.E.	
45340.2.FD15	HSIP-1365(3)	R/W	
45340.3.15	HSIP-1365(003)	CONST.	



DESIGN DATA

ADT	=	
ADT	=	
DHV	=	%
D	=	%
T	=	%
V	=	MPH

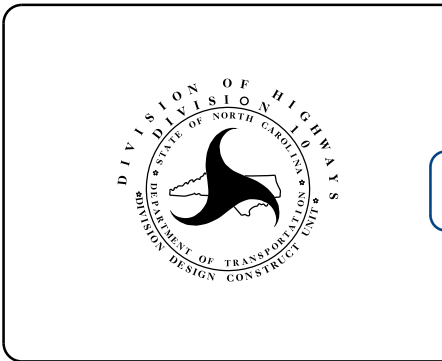
PROJECT LENGTH

LENGTH OF ROADWAY PROJECT	=	0.30	MILES
TOTAL LENGTH OF STATE PROJECT	=	0.30	MILES

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

2012 STANDARD SPECIFICATIONS

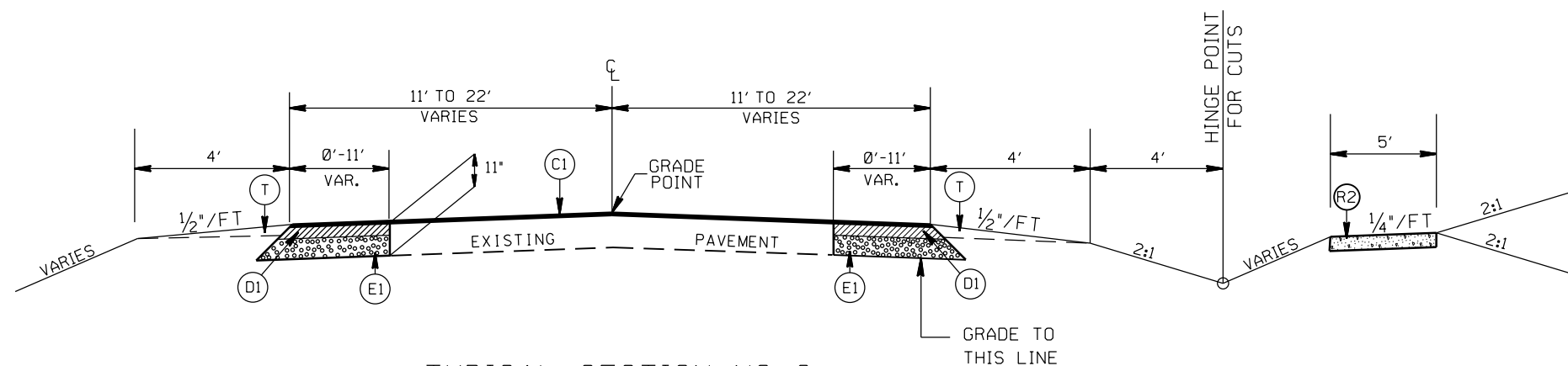
RIGHT OF WAY DATE: December 22, 2015	RANDY BOWERS PROJECT ENGINEER
LETTING DATE: June 8, 2016	DONALD HARWARD PROJECT DESIGN ENGINEER



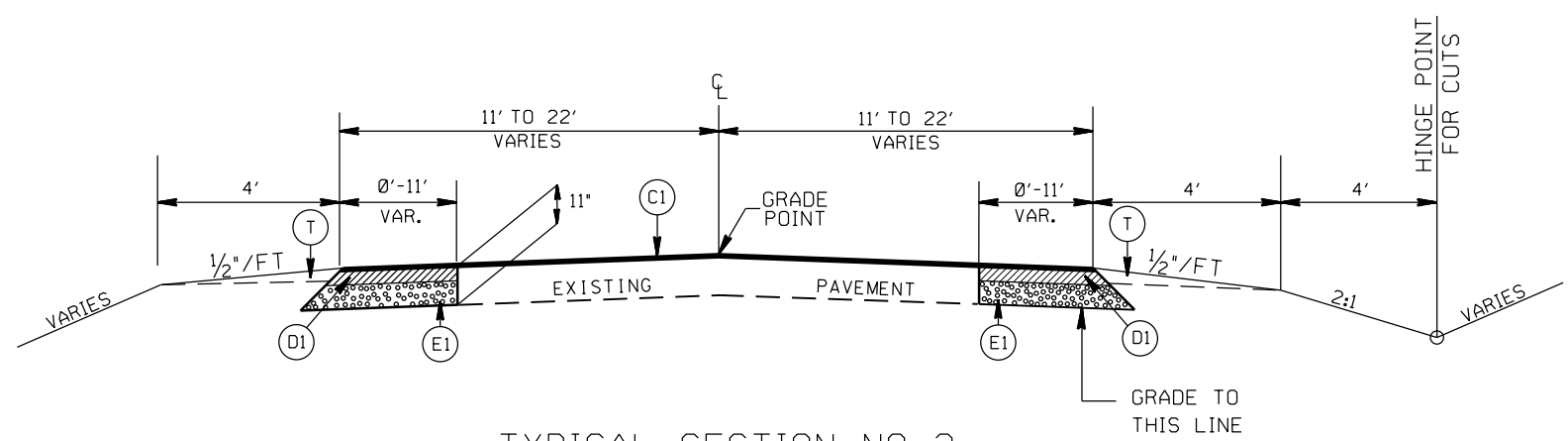
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

DocuSigned by:
Randy Bowers 5/16/2016

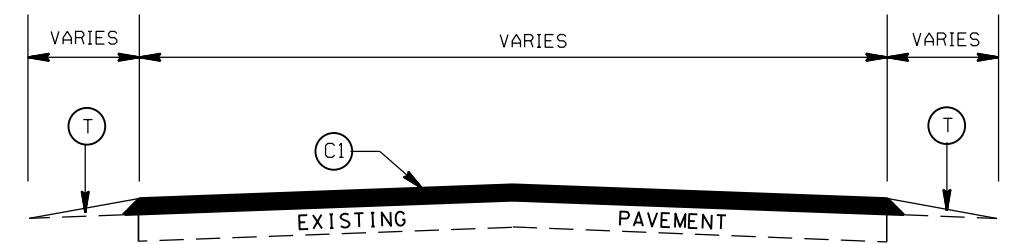
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APPROVED BY
DDC ENGINEER DATE



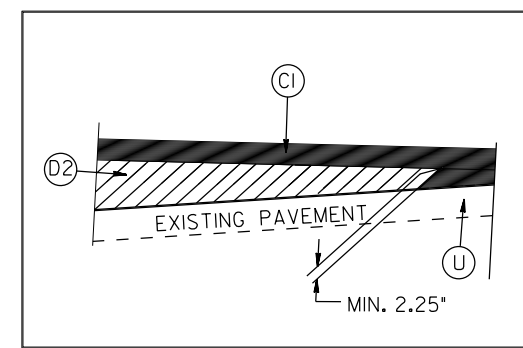
TYPICAL SECTION NO. 3
STA. 15+50.00 TO 21+82.21 -L-



TYPICAL SECTION NO. 2
STA. 14+69.29 TO 15+50.00 -L-
STA. 21+82.21 TO 22+20.00 -L-
STA. 15+16.95 TO 22+63.07 -Y-



TYPICAL SECTION NO. 1
STA. 14+44.29 TO 14+69.29 -L-
STA. 22+20.00 TO 22+45.00 -L-
STA. 14+91.95 TO 15+16.95 -Y-
STA. 22+63.07 TO 22+88.07 -Y-



WEDGING DETAIL

PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 1 1/2" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
(D2)	PROP. VARIABLE DEPTH ASPHALT CONC. INTERMEDIATE COURSE.
(E1)	PROP. APPROX. 5.5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
(R2)	PROP. 4" THICK 5' WIDE CONC. SIDEWALK
(T)	EARTH MATERIAL
(U)	EXISTING PAVEMENT

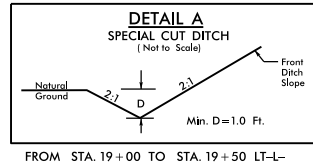
LEFT TURN LANES AT THE
INTERSECTION OF STALLINGS RD.(SR 1365)
AND MATTHEWS INDIAN TRIAL RD.(SR 1367)
IN UNION COUNTY

SCALE	-NA-
DATE	01/2015
DWG. BY	TBL
DESIGN BY	JDH
APPROVED	RWB



REVISIONS	

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	45340.315	4	
F.A. PROJECT NO. HSIP-1365(3)			



-Y-
 PI Sta 18+85.77
 $\Delta = 19' 18" 19.8" (LT)$
 $D = 9' 32" 57.5"$
 $L = 202.7'$
 $T = 102.05'$
 $R = 600.00'$

-L-
 PI Sta 20+93.68
 $\Delta = 0' 09" 18.5" (RT)$
 $D = 0' 07" 12.4"$
 $L = 129.16'$
 $T = 64.58'$
 $R = 47,700.00'$

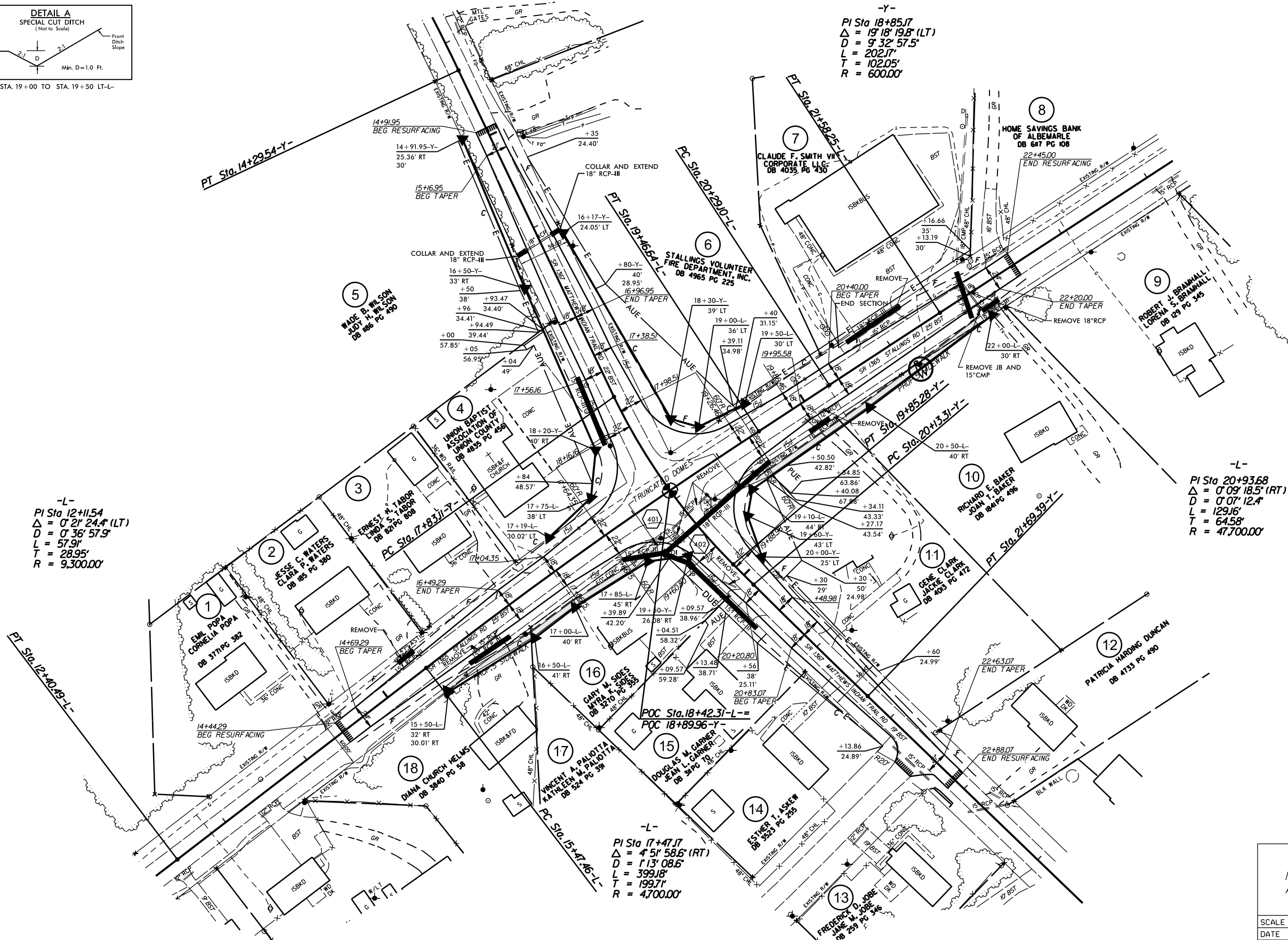
-Y-
 PI Sta 20+91.35
 $\Delta = 1' 07" 04.2" (LT)$
 $D = 0' 42" 58.3"$
 $L = 156.08'$
 $T = 78.04'$
 $R = 8,000.00'$

-L-
 PI Sta 12+11.54
 $\Delta = 0' 21" 24.4" (LT)$
 $D = 0' 36" 57.9"$
 $L = 57.9'$
 $T = 28.95'$
 $R = 9,300.00'$

-L-
 PI Sta 17+47.77
 $\Delta = 4' 51" 58.6" (RT)$
 $D = 1' 13" 08.6"$
 $L = 399.18'$
 $T = 199.71'$
 $R = 4,700.00'$

LEFT TURN LANES AT THE
 INTERSECTION OF STALLINGS RD.(SR 1365)
 AND MATTHEWS INDIAN TRIAL RD.(SR 1367)
 IN UNION COUNTY

SCALE	1"=50'		REVISIONS
DATE	02/2015		
DWG. BY	TBL		
DESIGN BY	JDH		
APPROVED	RWB		



STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	45340.315	EC-2	
F.A. PROJECT NO. HSIP-1365(3)			



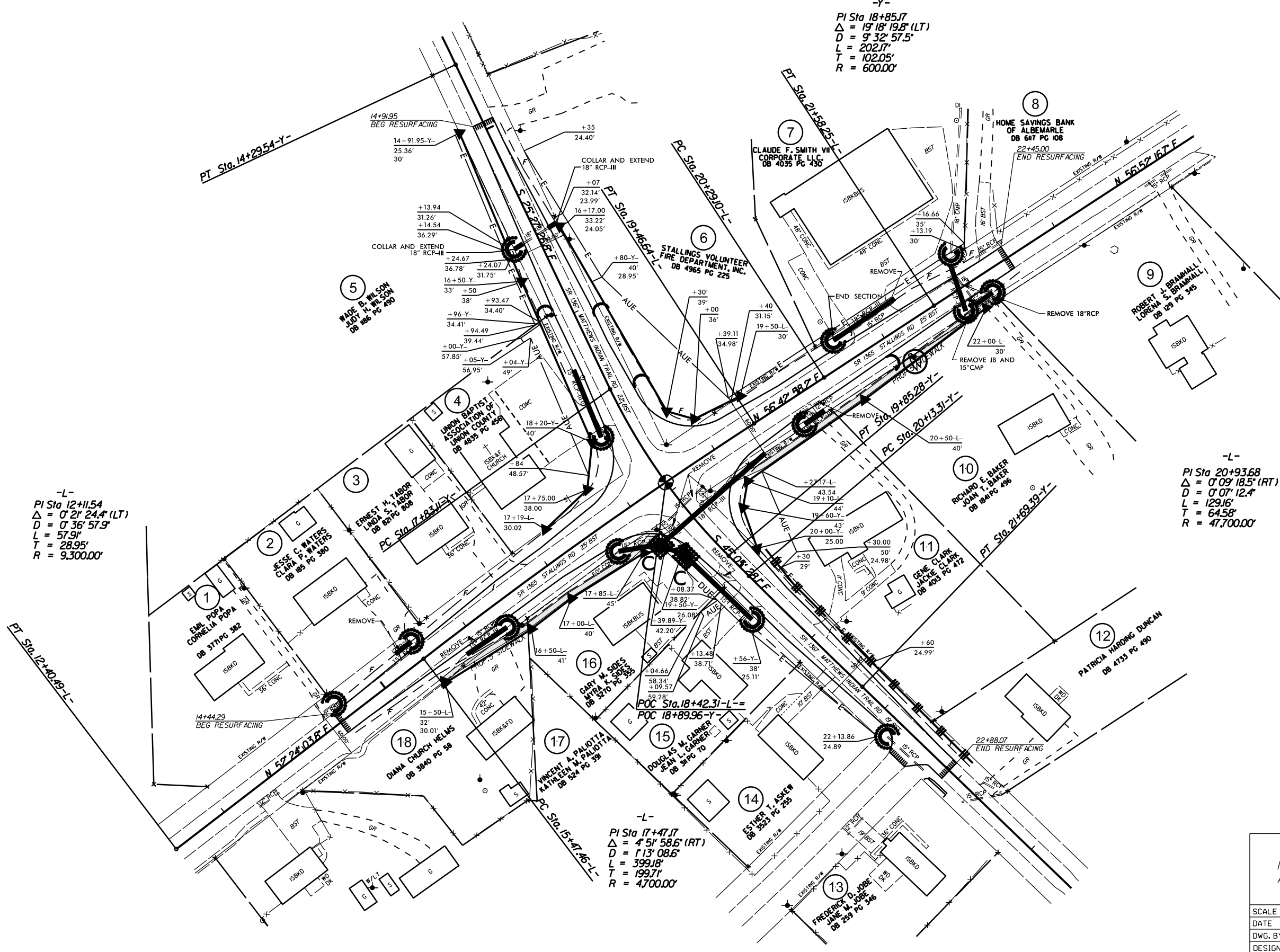
-Y-
 PI Sta 18+85.77
 $\Delta = 19' 18" 19.8" (LT)$
 $D = 9' 32" 57.5"$
 $L = 202.7'$
 $T = 102.05'$
 $R = 600.00'$

-L-
 PI Sta 20+93.68
 $\Delta = 0' 09" 18.5" (RT)$
 $D = 0' 07" 12.4"$
 $L = 129.16'$
 $T = 64.58'$
 $R = 47,700.00'$

-Y-
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 $\Delta = 1' 07" 04.2" (LT)$
 $D = 0' 42" 58.3"$
 $L = 156.08'$
 $T = 78.04'$
 $R = 8,000.00'$

-L-
 PI Sta 12+11.54
 $\Delta = 0' 21" 24.4" (LT)$
 $D = 0' 36" 57.9"$
 $L = 57.9'$
 $T = 28.95'$
 $R = 9,300.00'$

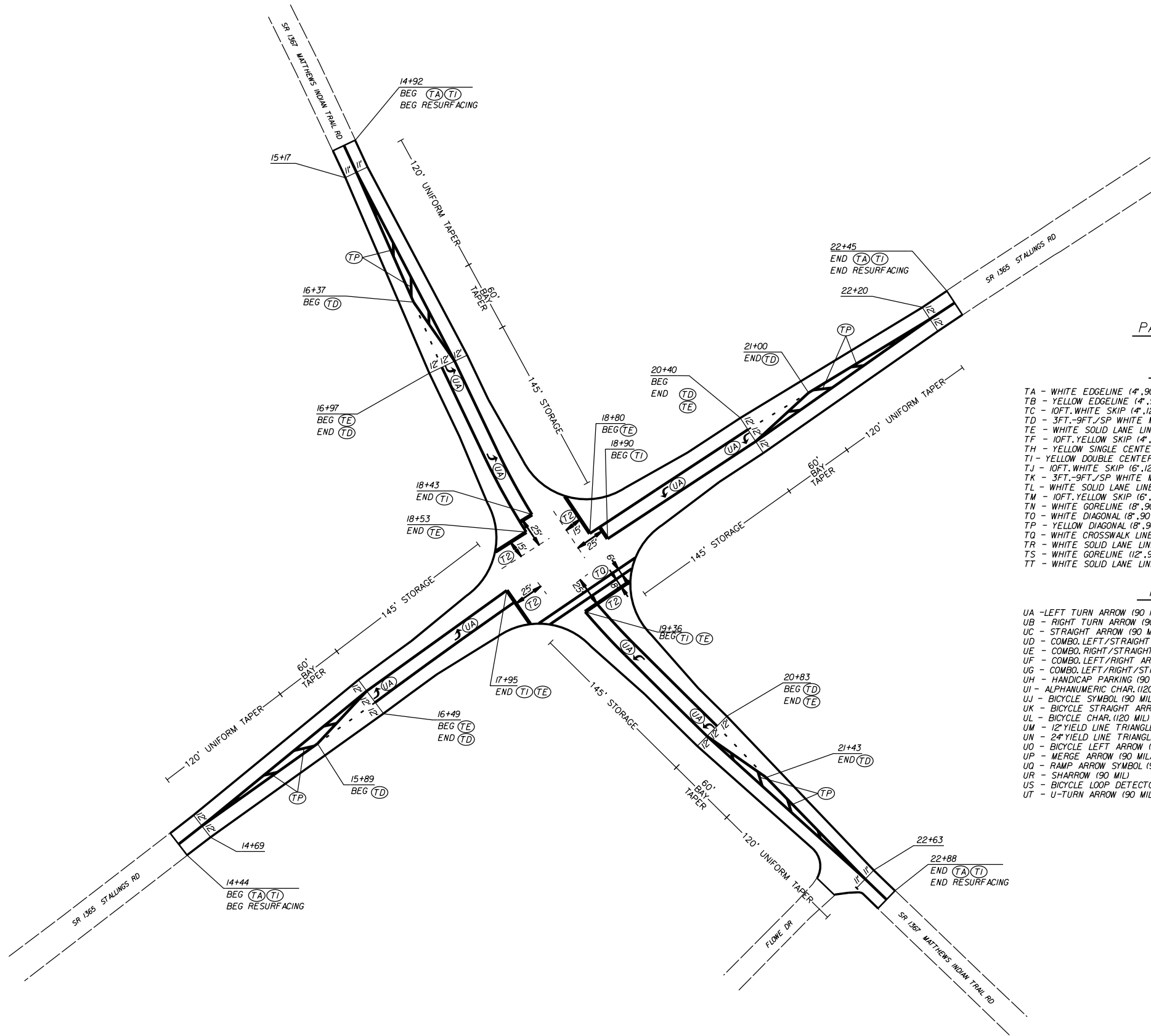
-L-
 PI Sta 17+47.77
 $\Delta = 4' 51" 58.6" (RT)$
 $D = 1' 13" 08.6"$
 $L = 399.18'$
 $T = 199.71'$
 $R = 4,700.00'$



LEFT TURN LANES AT THE
 INTERSECTION OF STALLINGS RD.(SR 1365)
 AND MATTHEWS INDIAN TRAIL RD.(SR 1367)
 IN UNION COUNTY

SCALE	1"=50'		REVISIONS
DATE	02/2015		
DWG. BY	TBL		
DESIGN BY	JDH		
APPROVED	RWB		

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	45340.3/5	PMP-1	
F.A. PROJECT NO. HSIP-1365(3)			



PAVEMENT MARKING LINES

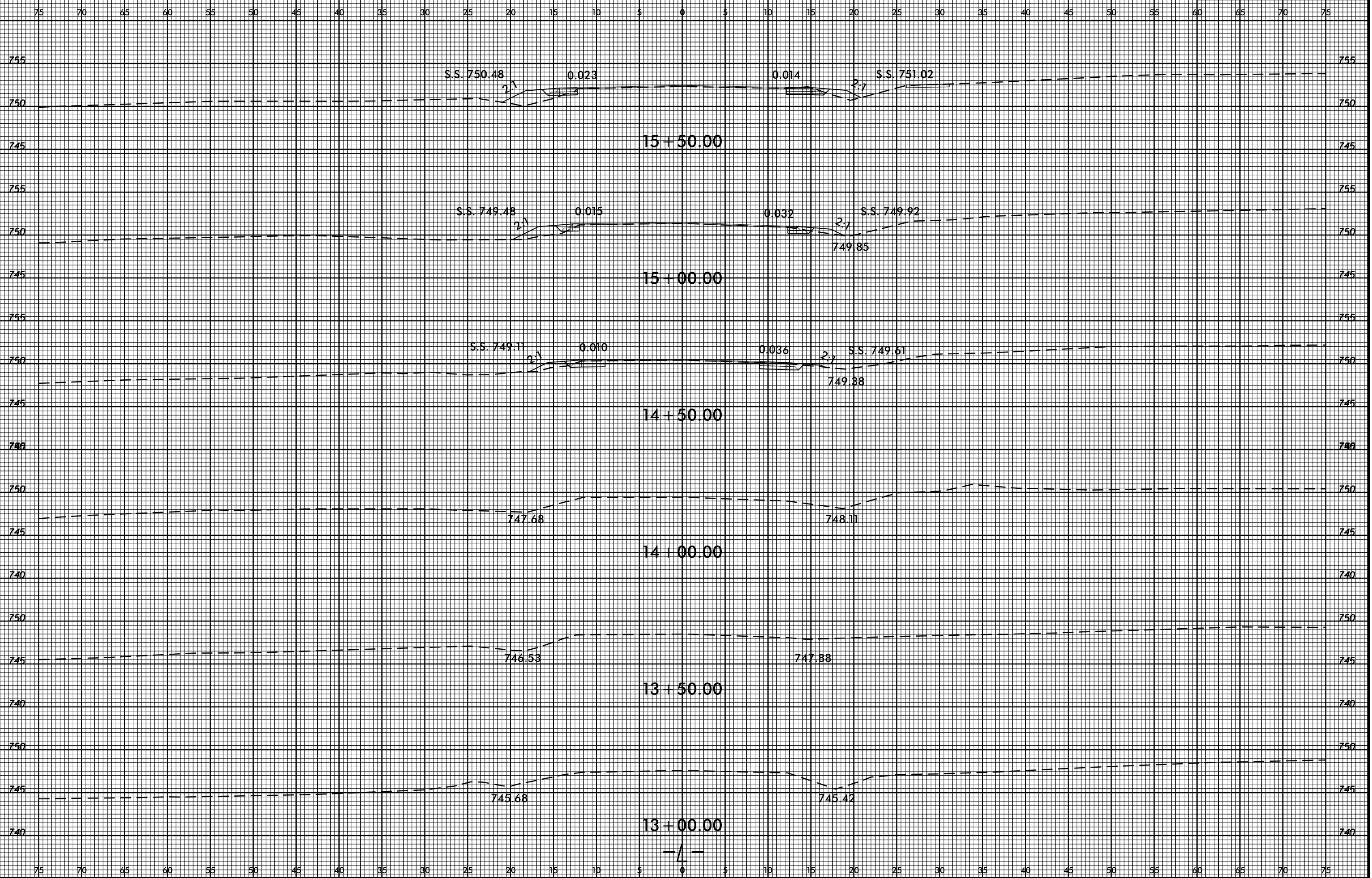
- | | |
|--|---|
| TA - WHITE EDGELINE (4', 90 MIL) | TU - WHITE DIAGONAL (12', 90 MIL) |
| TB - YELLOW EDGELINE (4', 90 MIL) | TV - YELLOW DIAGONAL (12', 90 MIL) |
| TC - 10FT. WHITE SKIP (4', 120 MIL) | TW - WHITE LINE, R/R X (16', 120 MIL) |
| TD - 3FT.-9FT./SP WHITE MINISKIP (4', 120 MIL) | TX - WHITE STOPBAR (24', 120 MIL) |
| TE - WHITE SOLID LANE LINE (4', 120 MIL) | TY - WHITE CROSSWALK LINE (24', 120 MIL) |
| TF - 10FT. YELLOW SKIP (4', 120 MIL) | TZ - WHITE RUMBLE STRIP (4', 240 MIL) |
| TH - YELLOW SINGLE CENTER (4', 120 MIL) | T1 - YELLOW RUMBLE STRIP (4', 240 MIL) |
| TI - YELLOW DOUBLE CENTER (4', 120 MIL) | T2 - WHITE EDGELINE (6', 90 MIL) |
| TJ - 10FT. WHITE SKIP (6', 120 MIL) | T3 - YELLOW EDGELINE (6', 90 MIL) |
| TK - 3FT.-9FT./SP WHITE MINISKIP (6', 120 MIL) | T4 - 2FT.-6FT./SP WHITE MINISKIP (4', 120 MIL) |
| TL - WHITE SOLID LANE LINE (6', 120 MIL) | T5 - 2FT.-6FT./SP YELLOW MINISKIP (4', 120 MIL) |
| TM - 10FT. YELLOW SKIP (6', 120 MIL) | T6 - 3FT.-3FT./SP WHITE MINISKIP (12', 120 MIL) |
| TN - WHITE DIAGONAL (8', 90 MIL) | T7 - WHITE GORELINE (8', 90 MIL) |
| TO - WHITE DIAGONAL (8', 90 MIL) | T8 - 2FT.-6FT./SP WHITE MINISKIP (6', 120 MIL) |
| TP - WHITE CROSSWALK LINE (8', 120 MIL) | T9 - 2FT.-6FT./SP YELLOW MINISKIP (6', 120 MIL) |
| TQ - WHITE CROSSWALK LINE (8', 120 MIL) | T10 - 3FT.-9FT./SP WHITE MINISKIP (12', 120 MIL) |
| TR - WHITE SOLID LANE LINE (8', 120 MIL) | T11 - 3FT.-9FT./SP WHITE MINISKIP (12', 120 MIL) |
| TS - WHITE GORELINE (12', 90 MIL) | T12 - 3FT.-9FT./SP WHITE MINISKIP (12', 120 MIL) |
| TT - WHITE SOLID LANE LINE (12', 120 MIL) | T13 - 3FT.-9FT./SP WHITE MINISKIP (12', 120 MIL) |
| | T14 - 3FT.-9FT./SP WHITE MINISKIP (12', 120 MIL) |
| | T15 - YELLOW SINGLE CENTER (6', 120 MIL) |
| | T16 - YELLOW DOUBLE CENTER (6', 120 MIL) |
| | T17 - 3FT.-3FT./SP WHITE MINISKIP ENTRANCE LINE (8', 120 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. (120 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. (120 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) |

LEFT TURN LANES AT THE INTERSECTION OF STALLINGS RD.(SR 1365) AND MATTHEWS INDIAN TRAIL RD.(SR 1367) IN UNION COUNTY

SCALE	r=50'		REVISIONS
DATE	01/20/15		
DWG. BY	TBL		
DESIGN BY	JDH		
APPROVED	RWB		

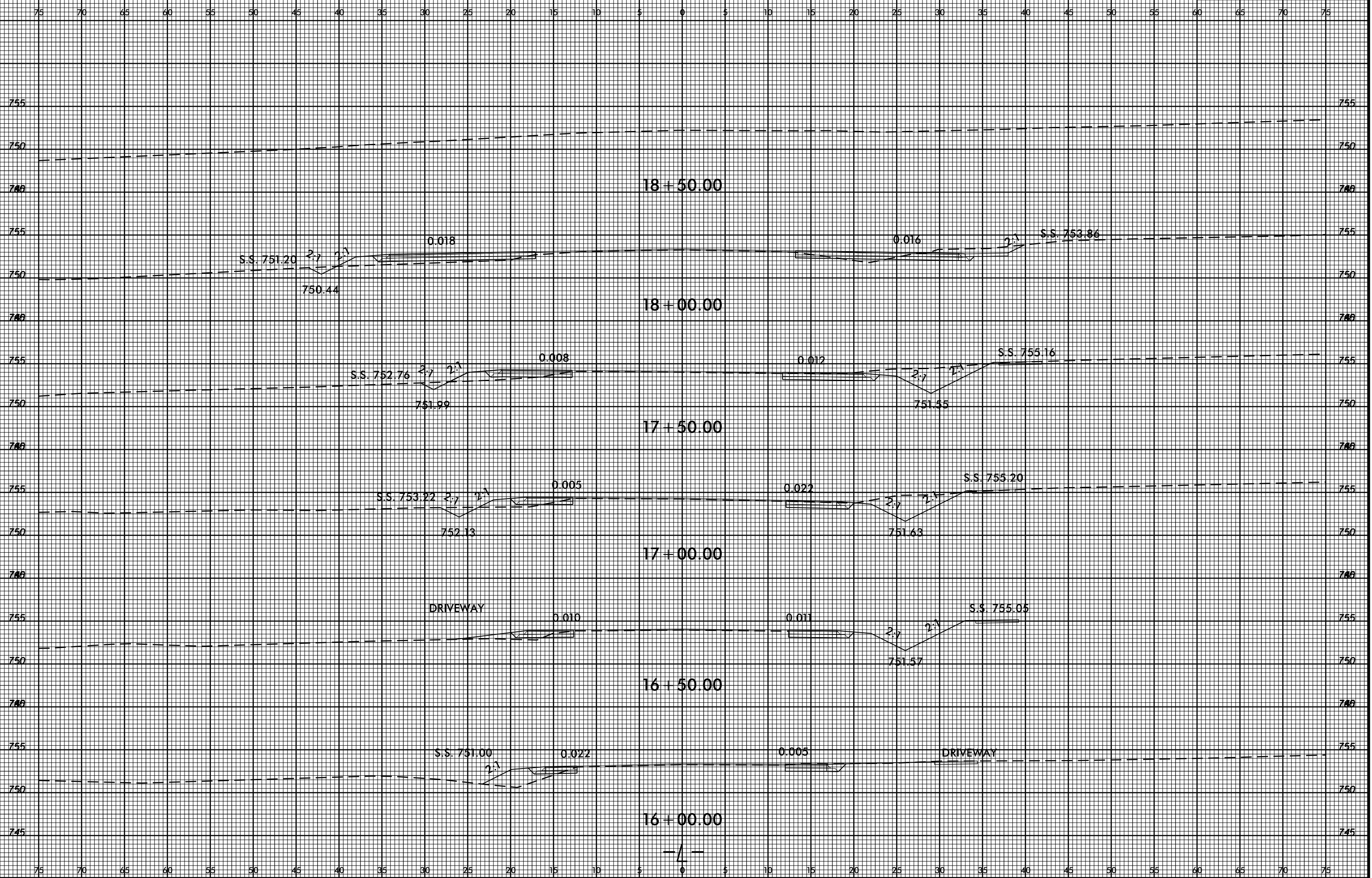


8/23/99



PROJ. REFERENCE NO.
45340.3.15

SHEET NO.
X-2



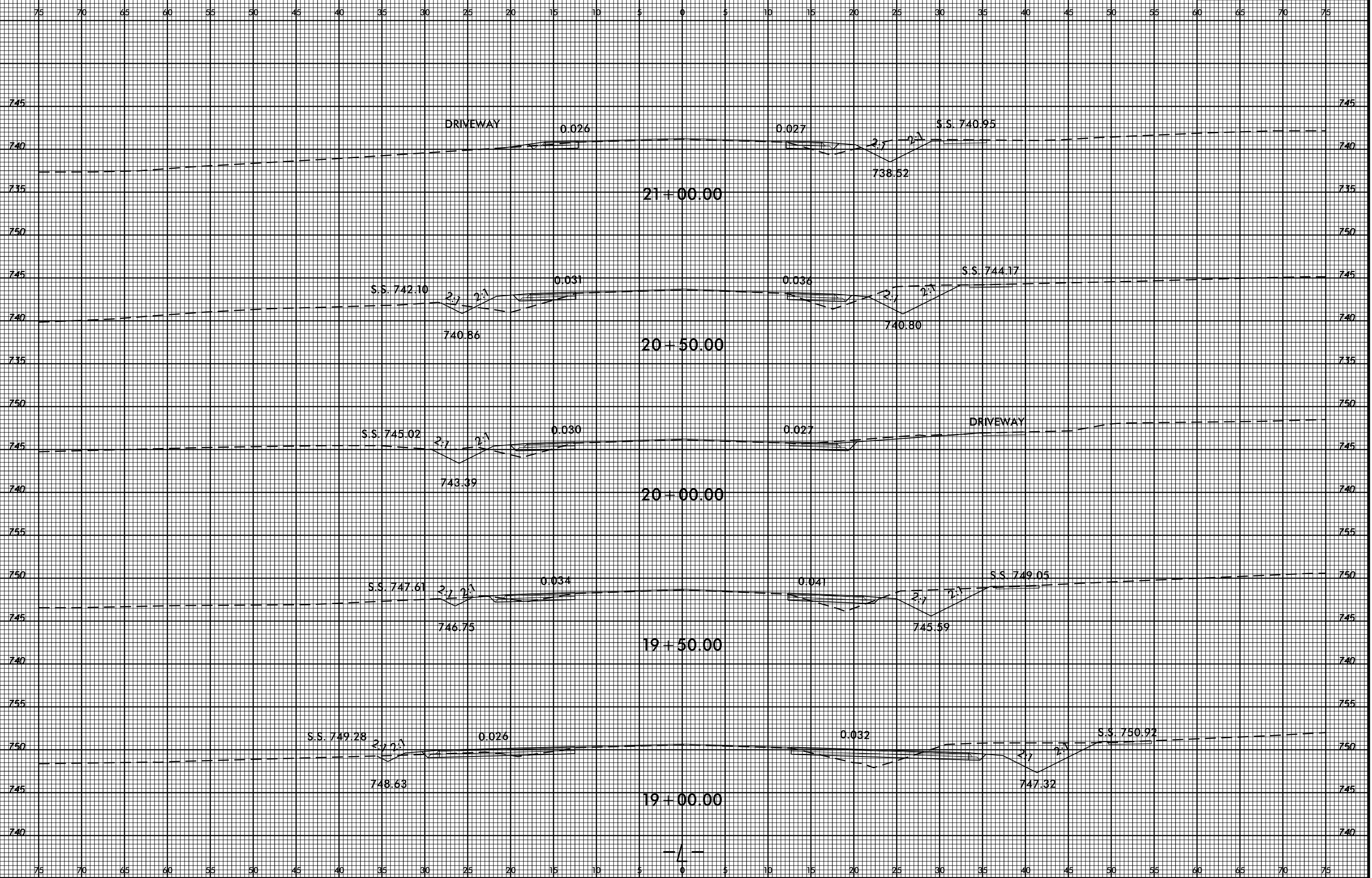
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8/23/99

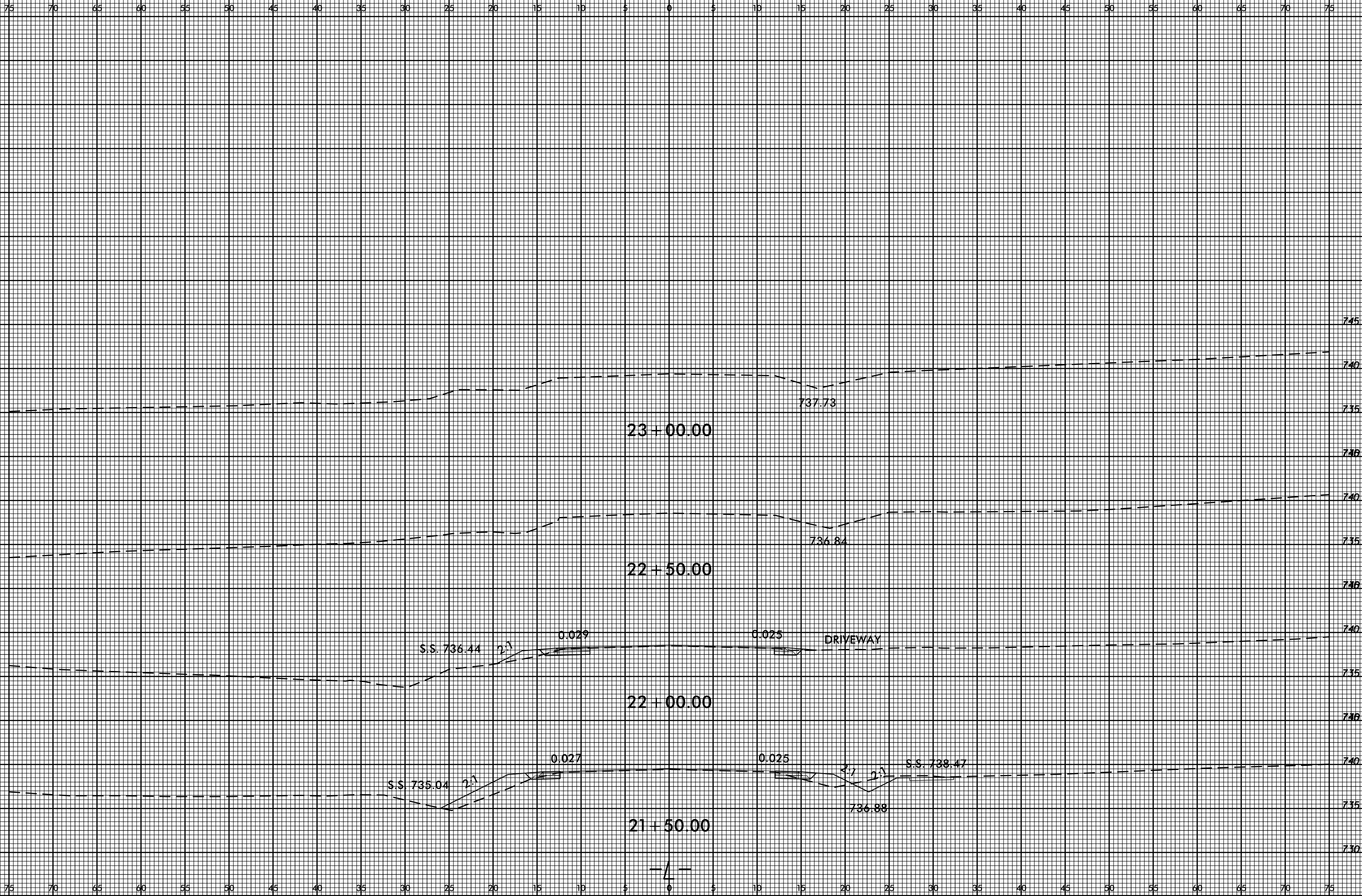


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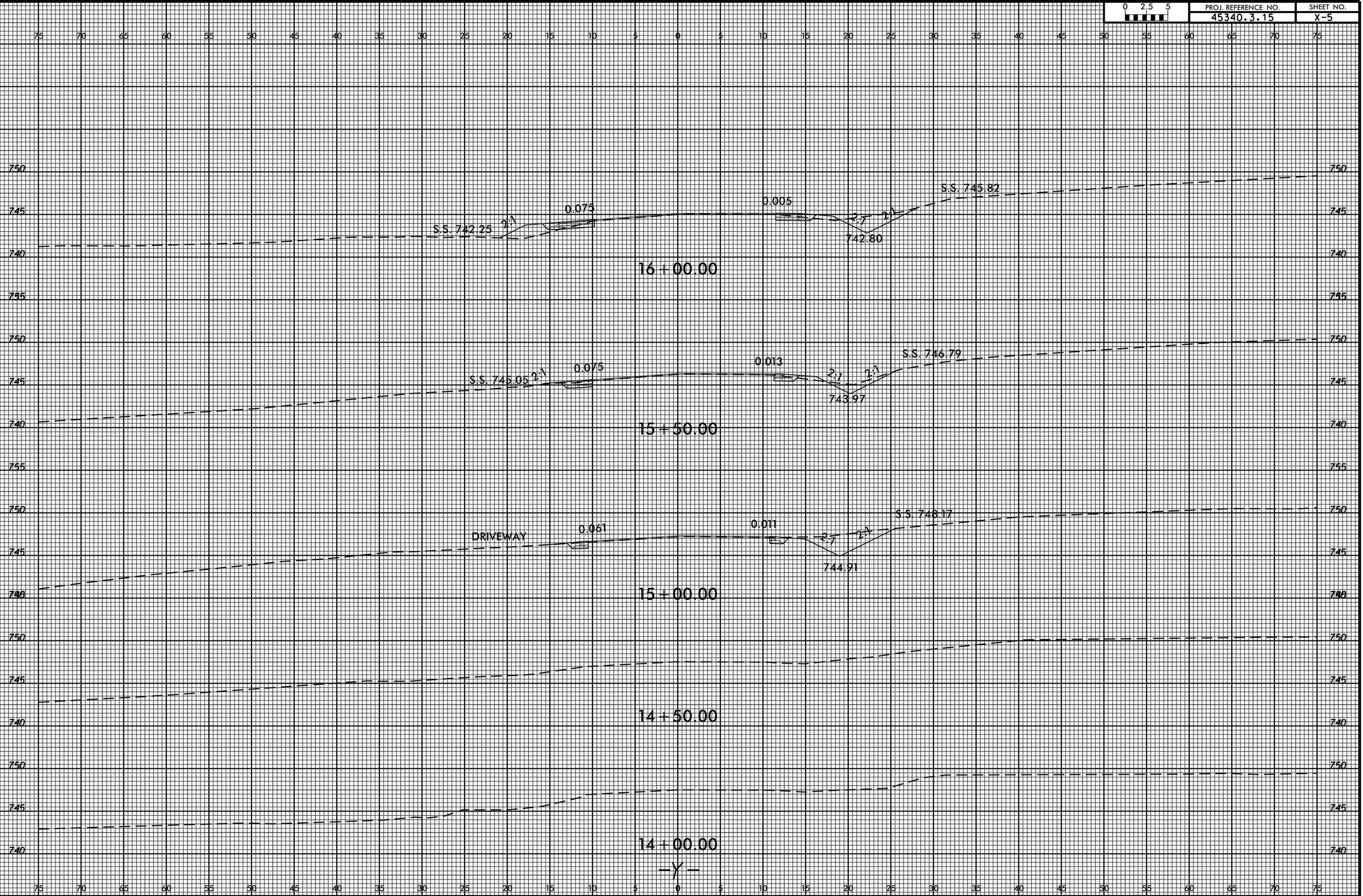
SHEET NO.
X-3

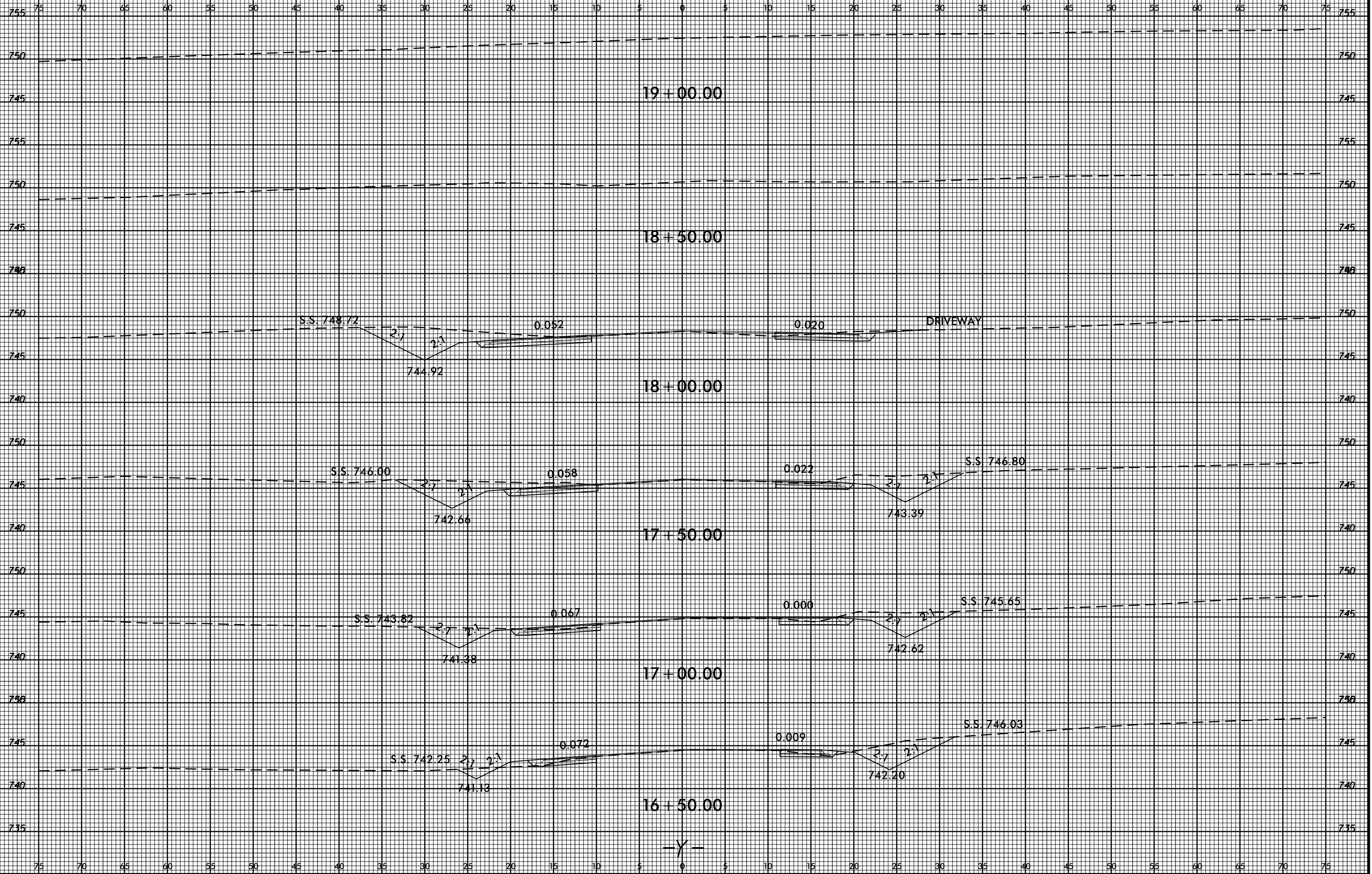


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24-MAR-2016 10:40
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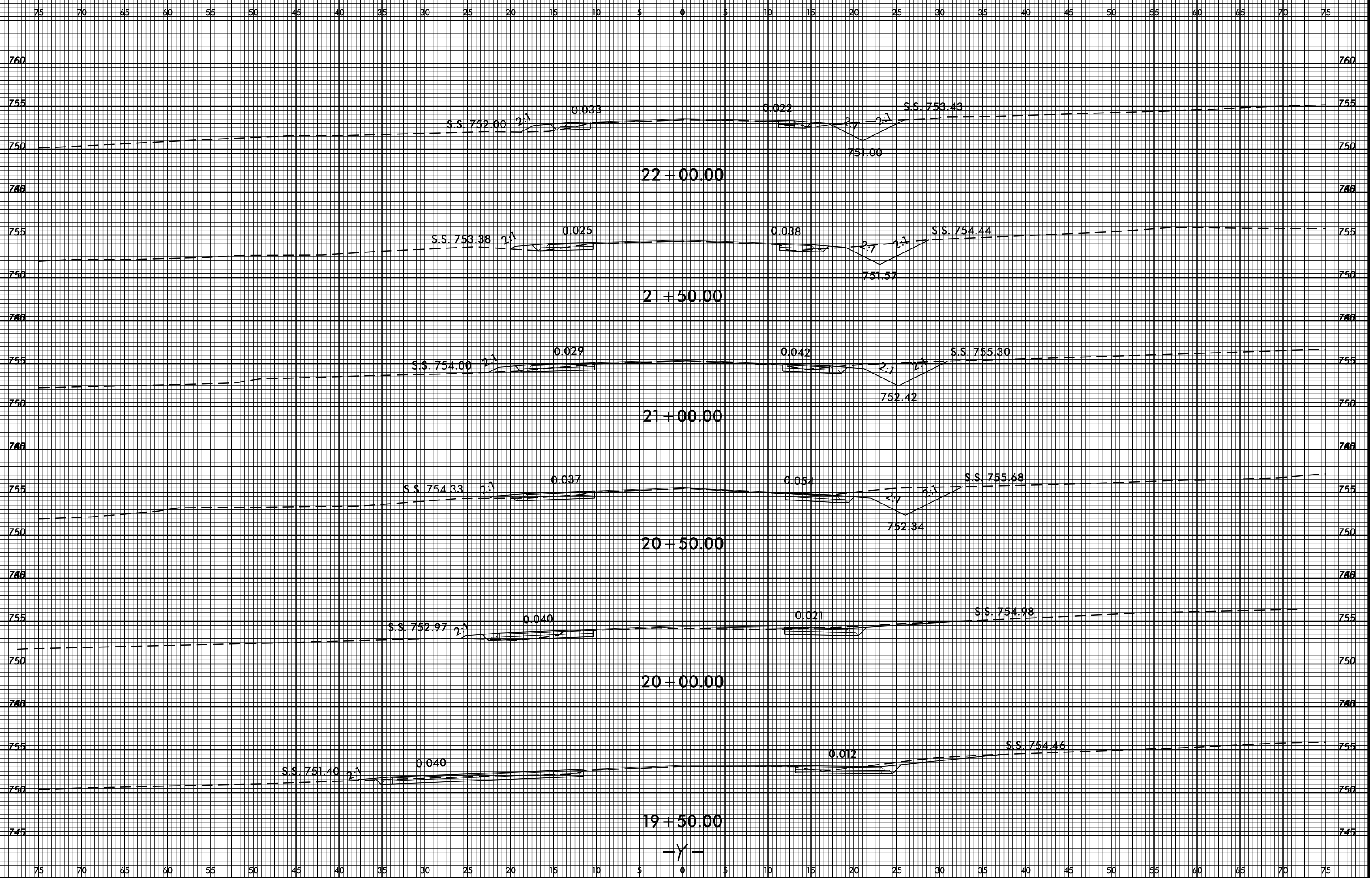
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8/23/99



PROJ. REFERENCE NO.
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SHEET NO.
X-7



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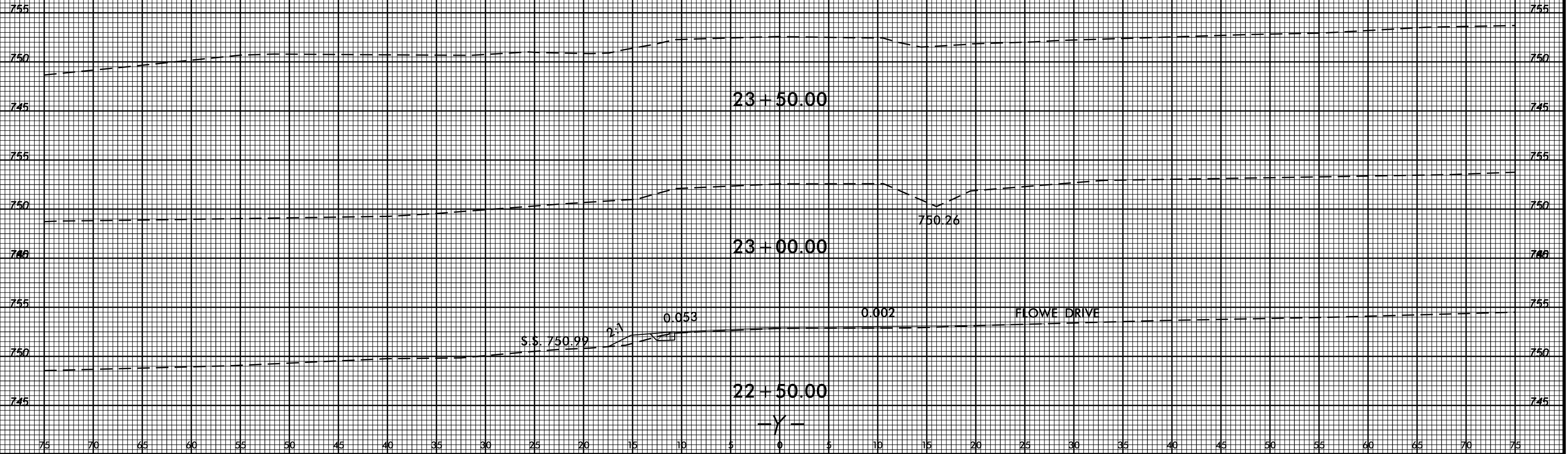
8/23/99



PROJ. REFERENCE NO.
45340.3.15

SHEET NO.
X-8

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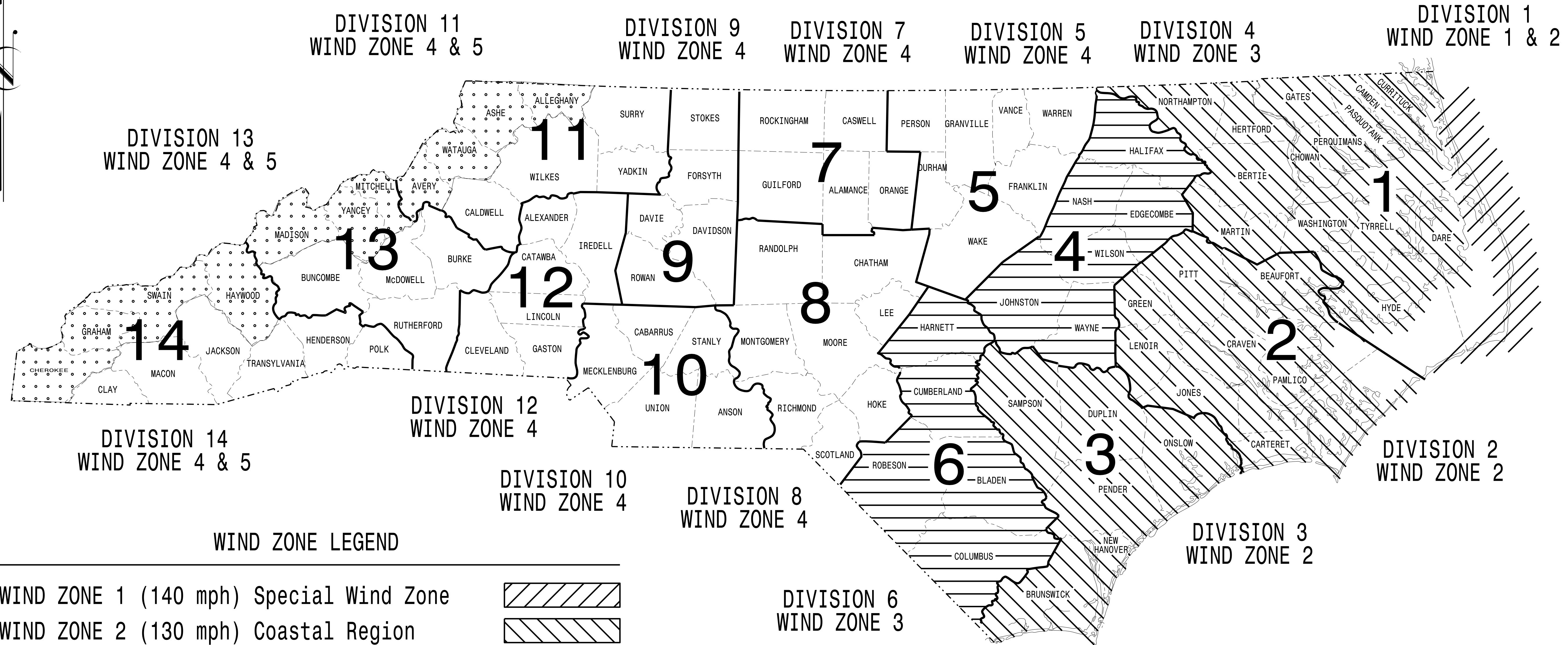
24-MAR-2016 10:52
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NCDOT METAL POLE STANDARDS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT NO. W-5210 O	SHEET NO. Sig. M1
-------------------------	----------------------

STANDARD DRAWINGS FOR METAL POLES



WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone		
WIND ZONE 2 (130 mph) Coastal Region		
WIND ZONE 3 (110 mph) Eastern Region		
WIND ZONE 4 (90 mph) Central & Mtn. Region		
WIND ZONE 5 (120 mph) Special Wind Zone		

<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Designed in conformance
with the latest
2012 Interim to the
5th Edition 2009

AASHTO

Standard Specifications for
Structural Supports for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8,9	Standard Strain Pole Foundations

NCDOT CONTACTS:
MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

G. A. FULLER, P.E. - STATE ITS AND SIGNALS ENGINEER

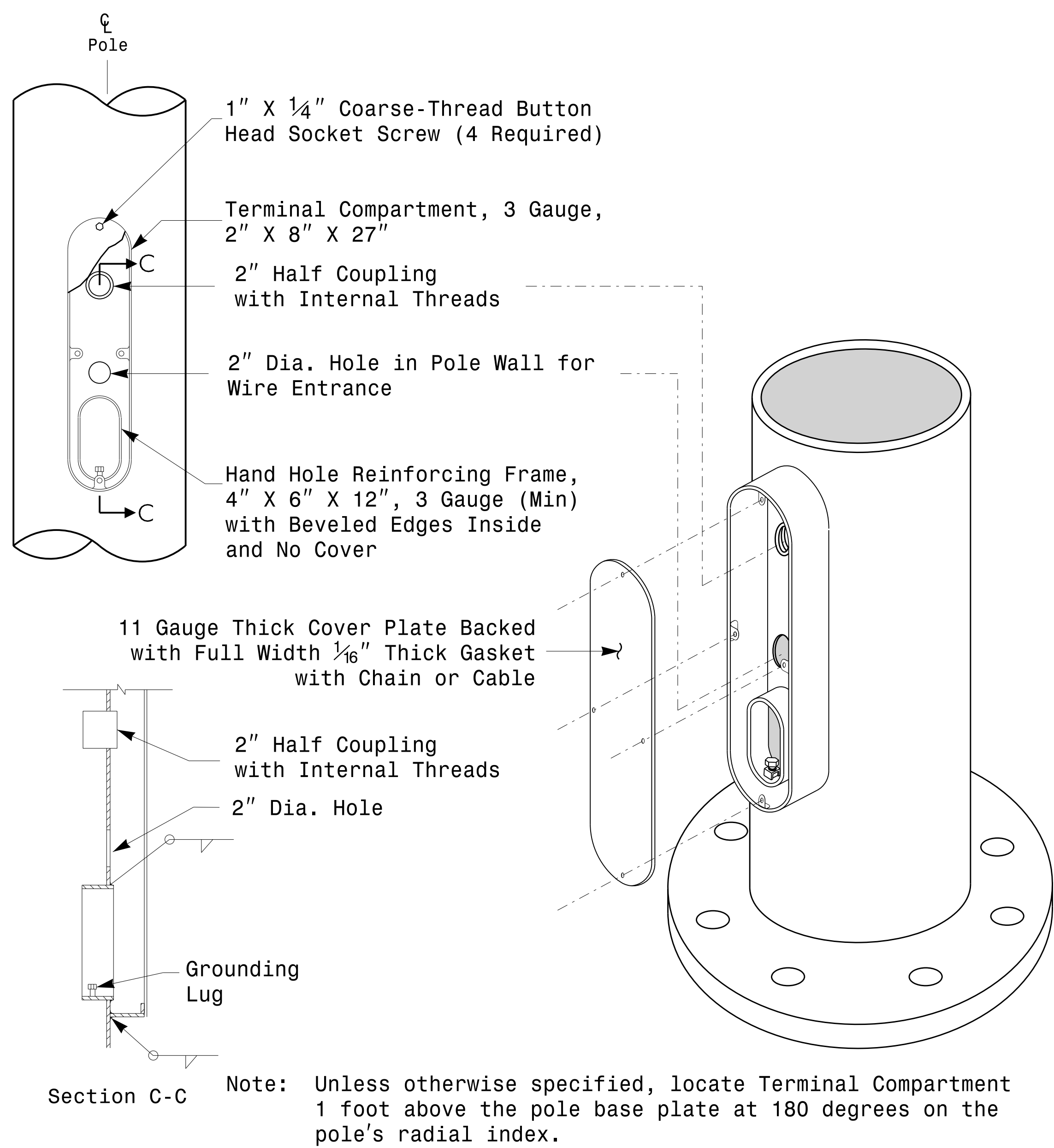
G. G. MURR, JR., P.E. - STATE SIGNALS ENGINEER

D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

C.F. ANDREWS - ITS AND SIGNALS JOURNEY STRUCTURAL ENGINEER

SEAL

Designed by:
Debesh C. Sarkar
44EBE32E147E4C4...
DATE
8/26/2014



Terminal Compartment Detail

MFG _____	MFG. DATE: MM/YY _____
SHAFT D/T/L/Y _____	
ARM-A D/T/L/Y _____	
ARM-B D/T/L/Y _____	
A.B. DIA./B.C./L/Y _____	
NCDOT STANDARD _____	

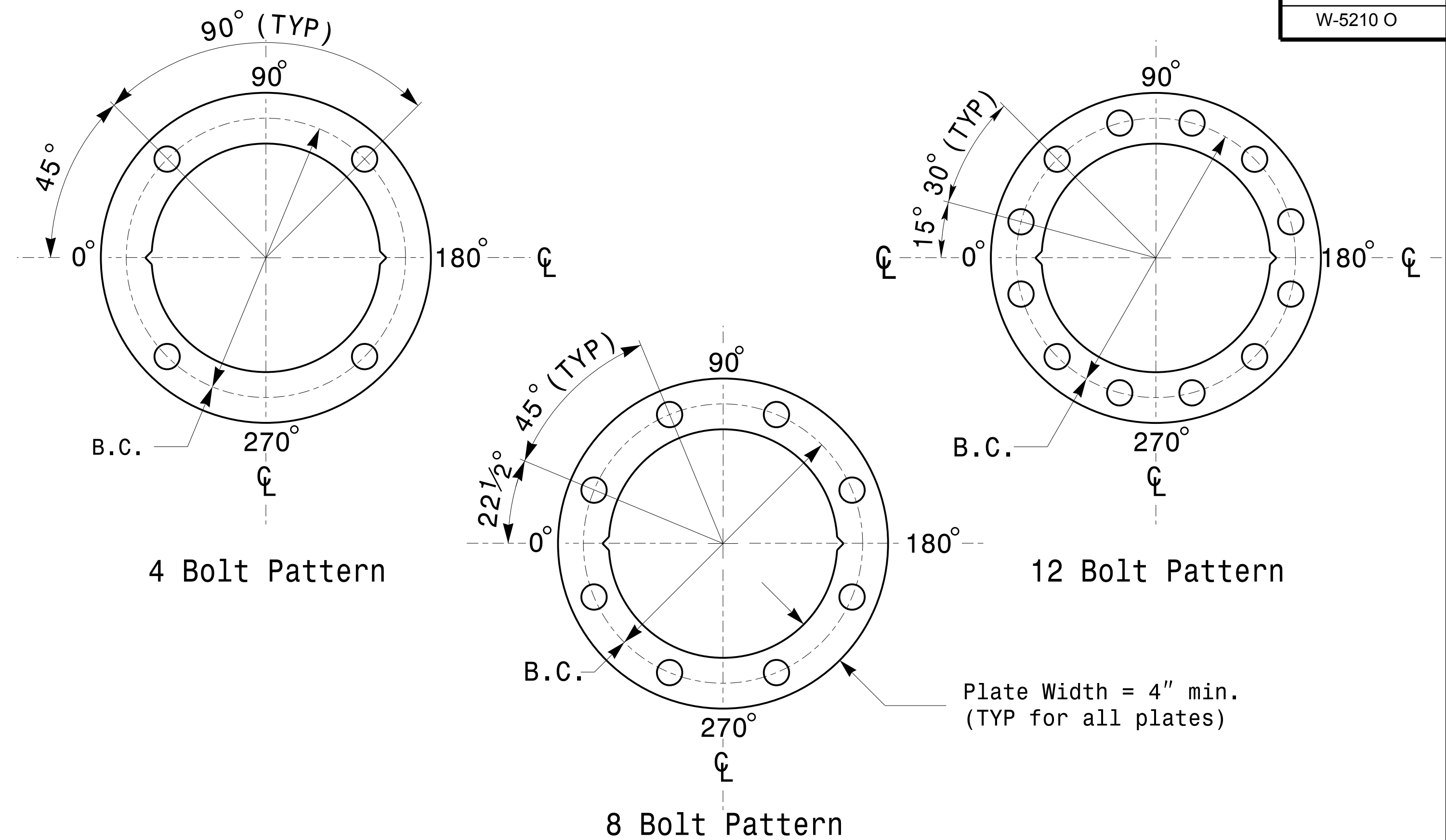
Shaft I.D. Tag
(Provide on Strain Poles and Mast Arm Poles)

- Notes:
- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
 - 2) A.B. = Anchor Bolt
 - 3) B.C. = Bolt Circle of Anchor Bolts
 - 4) If Custom Design, use "NCDOT STANDARD" line for pole I.D. number and Signal Inv. Number.
 - 5) See drawing M4 for mounting positions of I.D. tags.

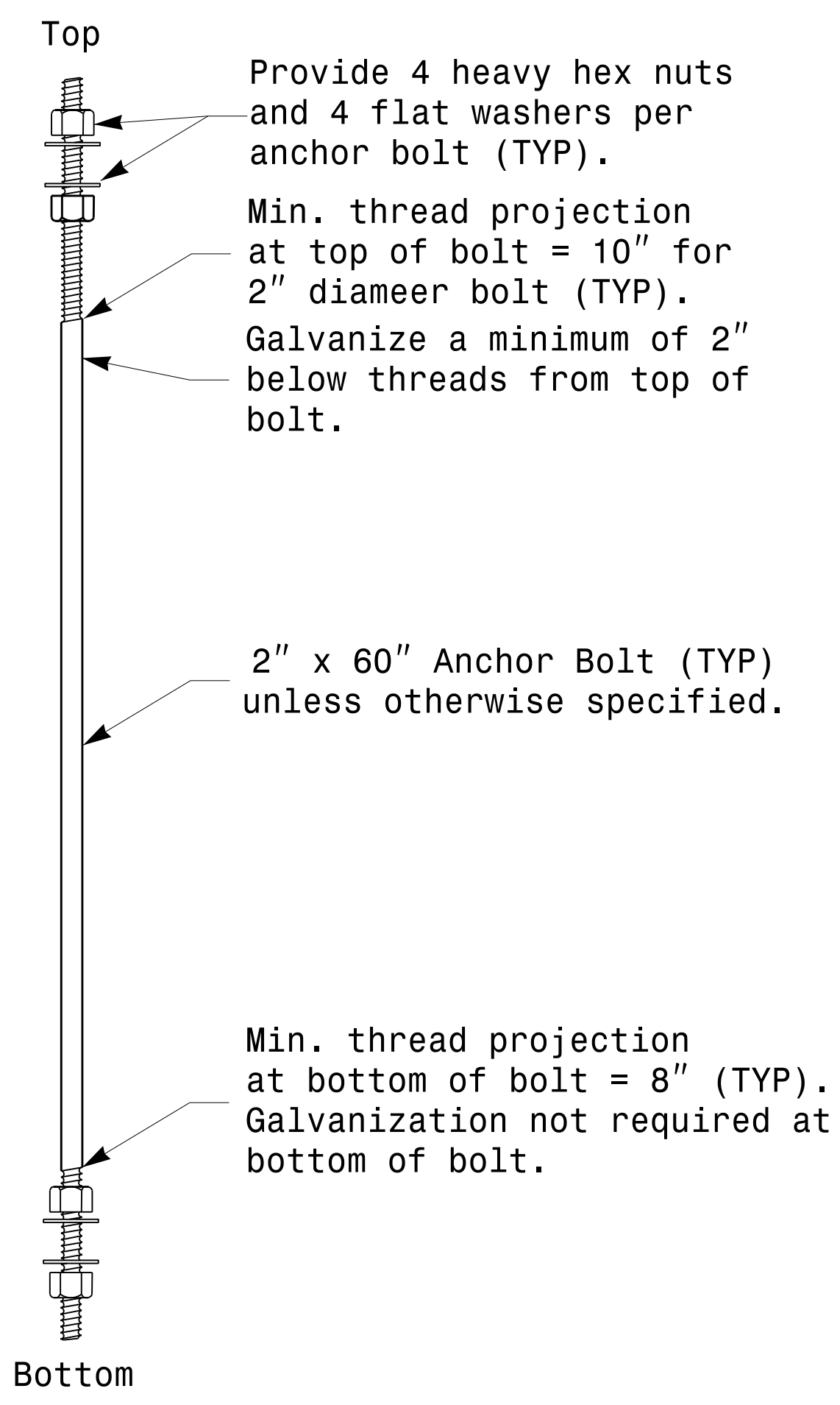
Identification Tag Details

MFG _____	MFG. DATE: MM/YY _____
SECTION D/T/L/Y _____	
NCDOT STANDARD _____	

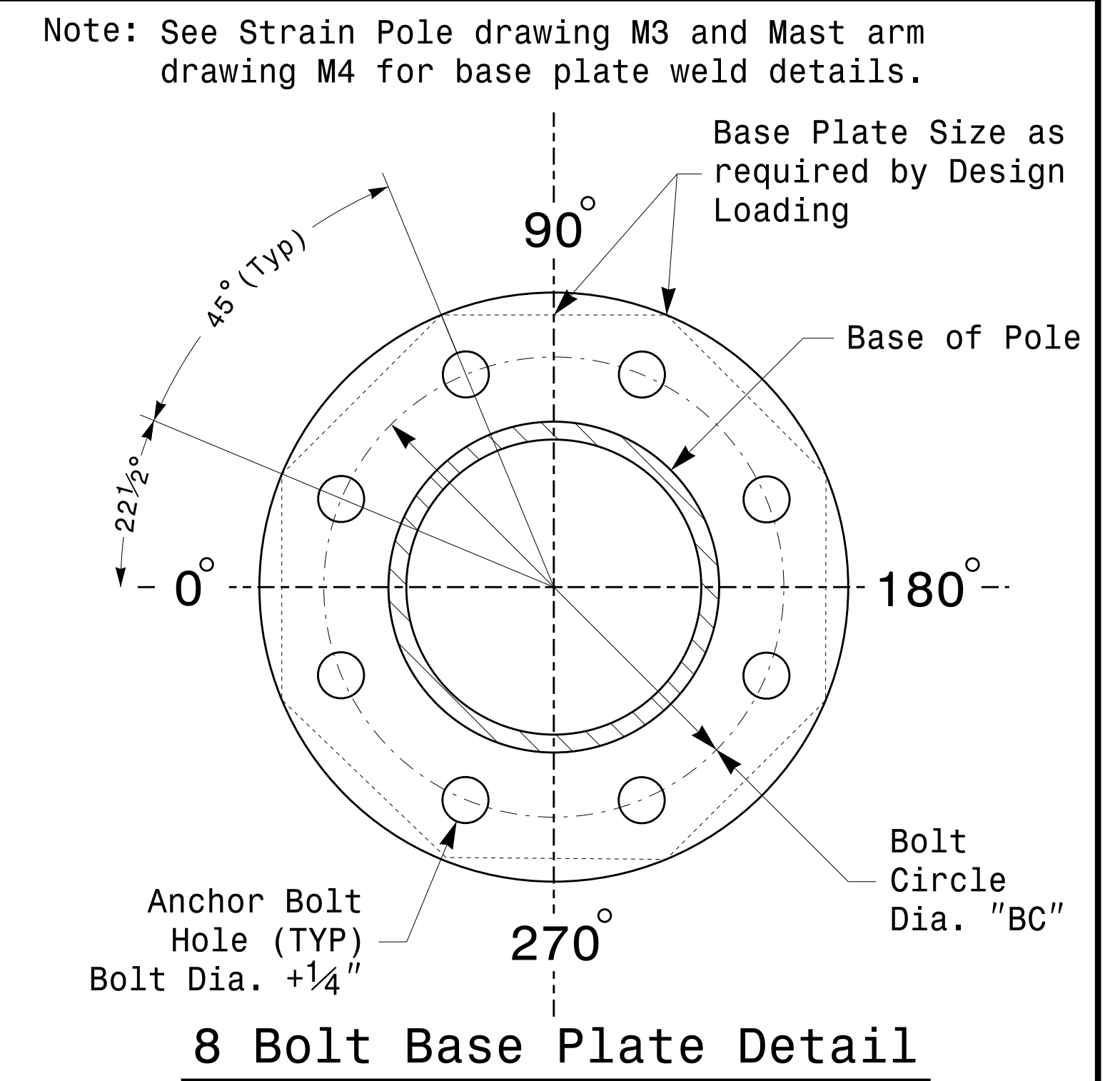
Arm I.D. Tag
(Provide on each section of a multi-section mast arm)



Construct Templates and Plates from 1/4" min. thick Steel. Galvanizing is not required.
Base Plate Template and Anchor Bolt Lock Plate Details



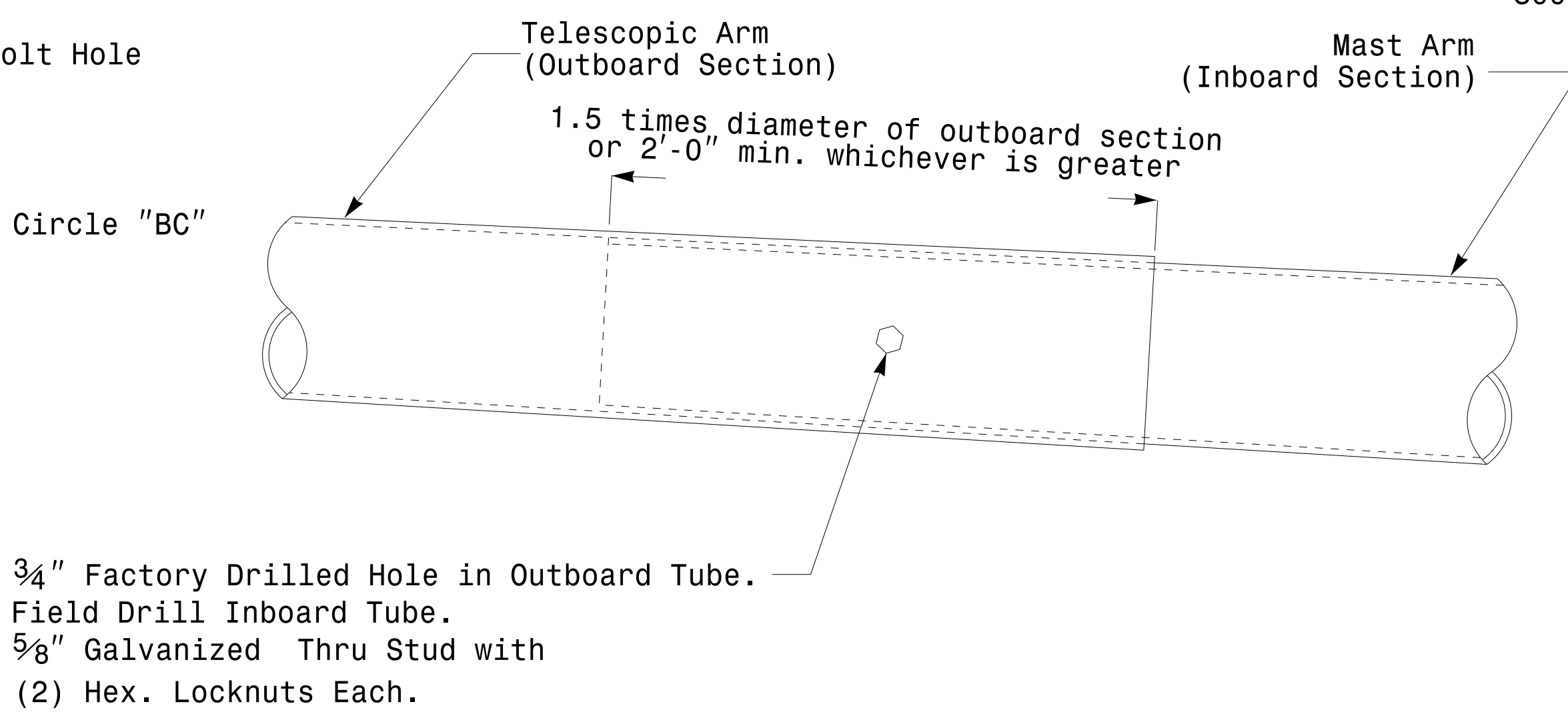
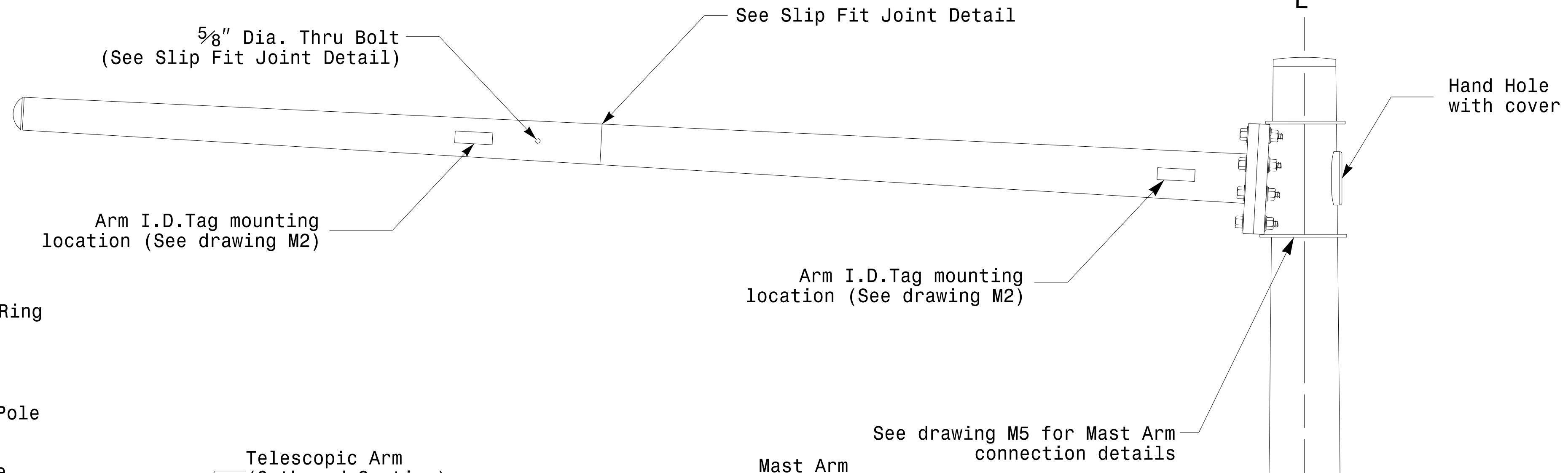
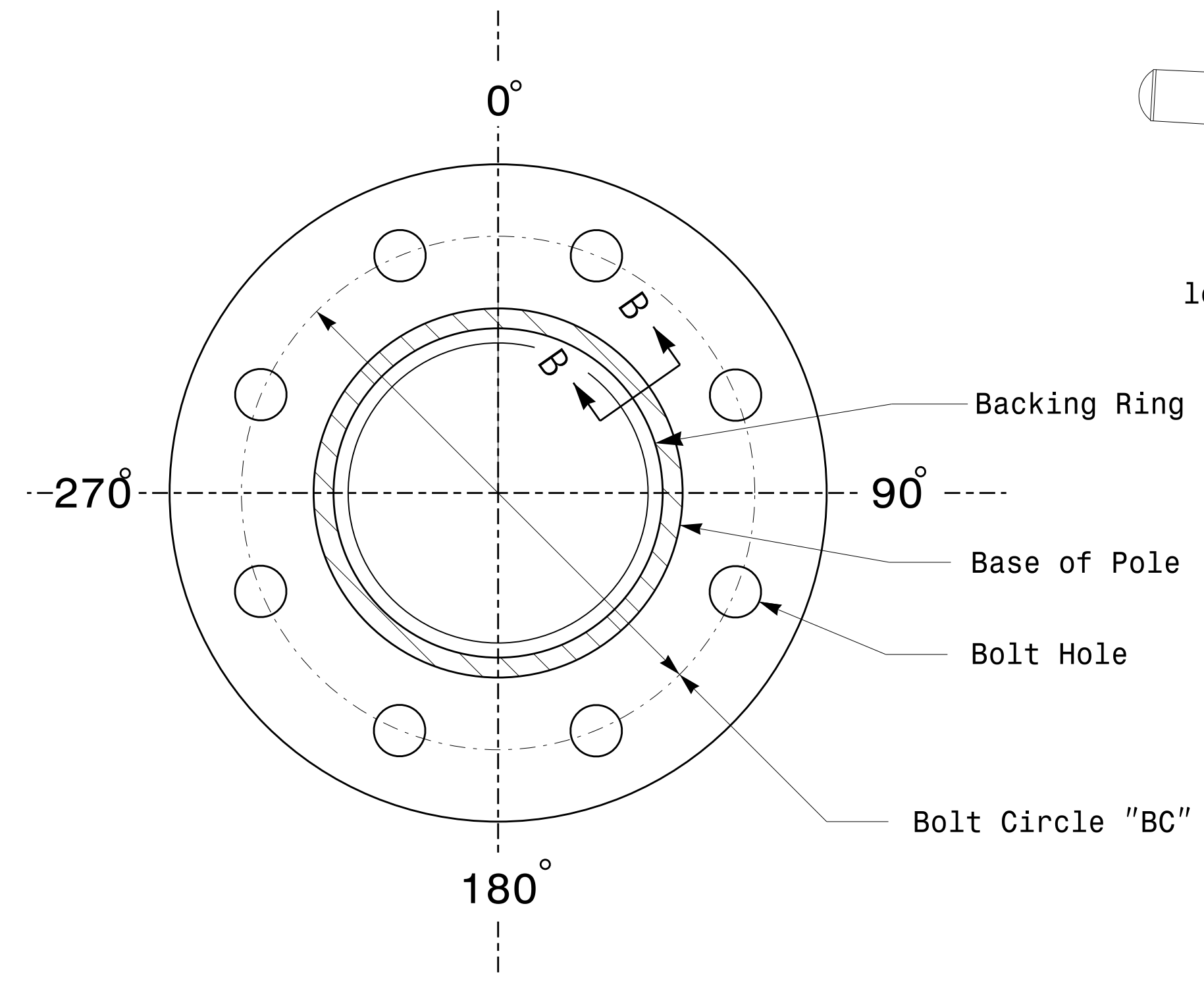
Anchor Bolt Detail



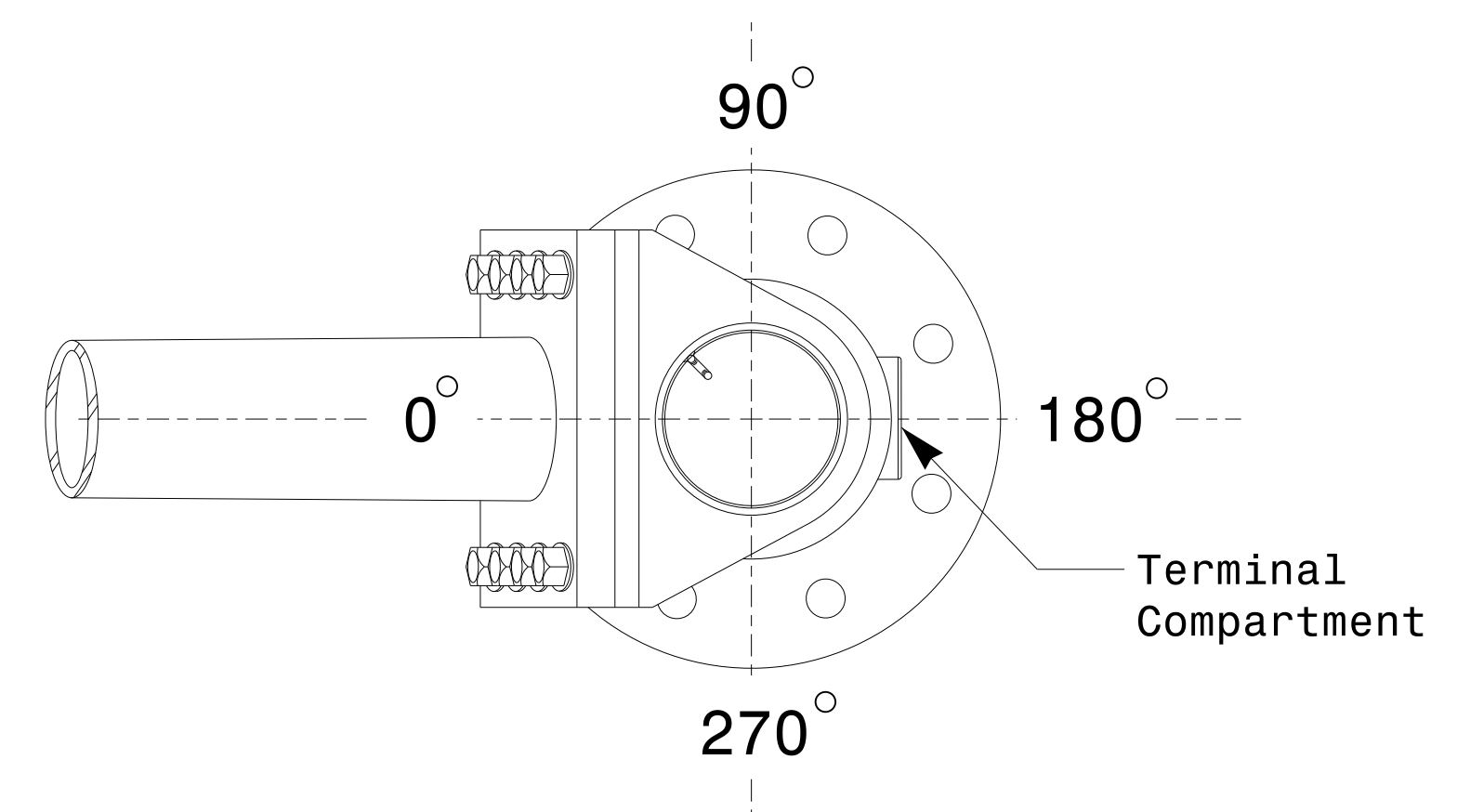
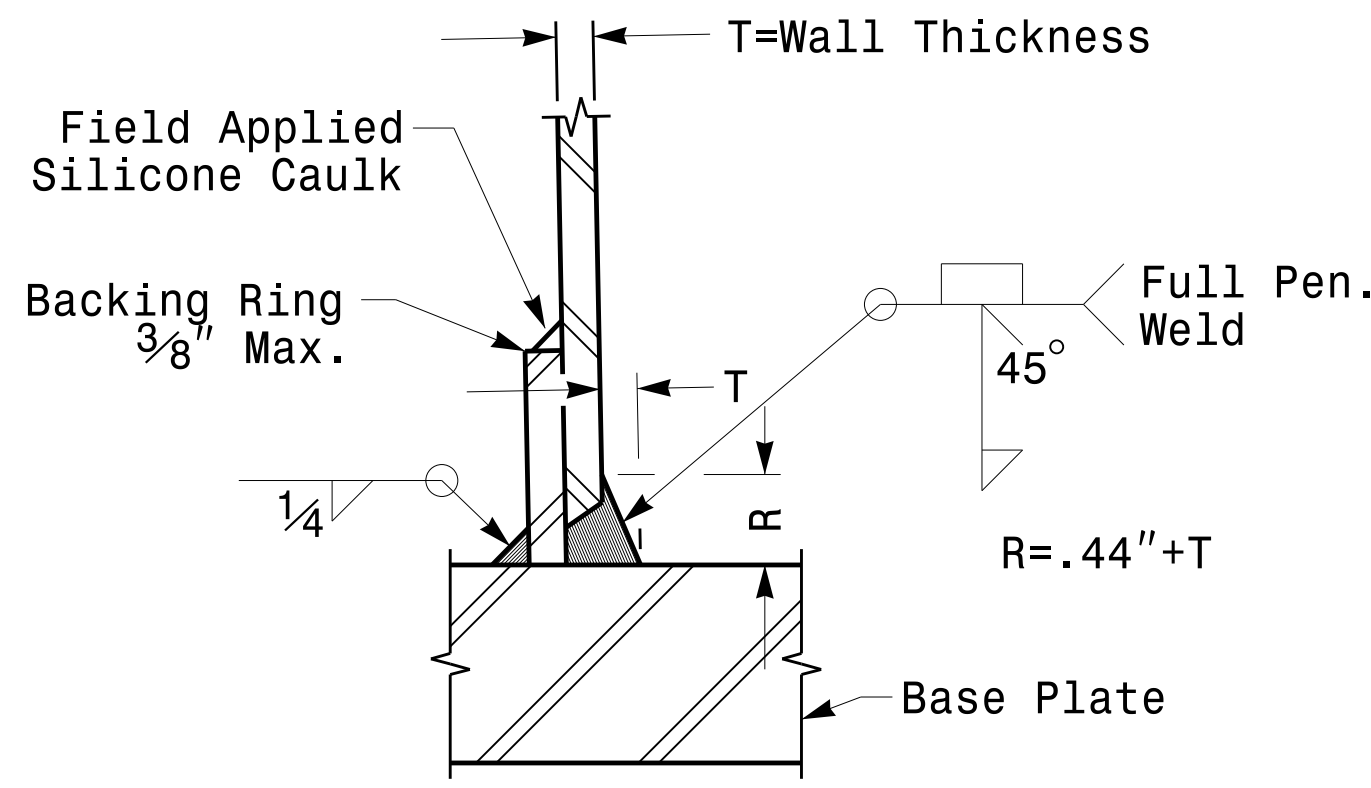
	Typical Fabrication Details Common To All Metal Poles		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: NONE	REVISIONS: _____ INIT.: _____ DATE: _____	DocuSign by: Dinesh C. Sarkar 4486320147644 8/26/2014 DATE: _____ SIG. INVENTORY NO. _____	

06-AUG-2014 08:55
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 Top | Lowy

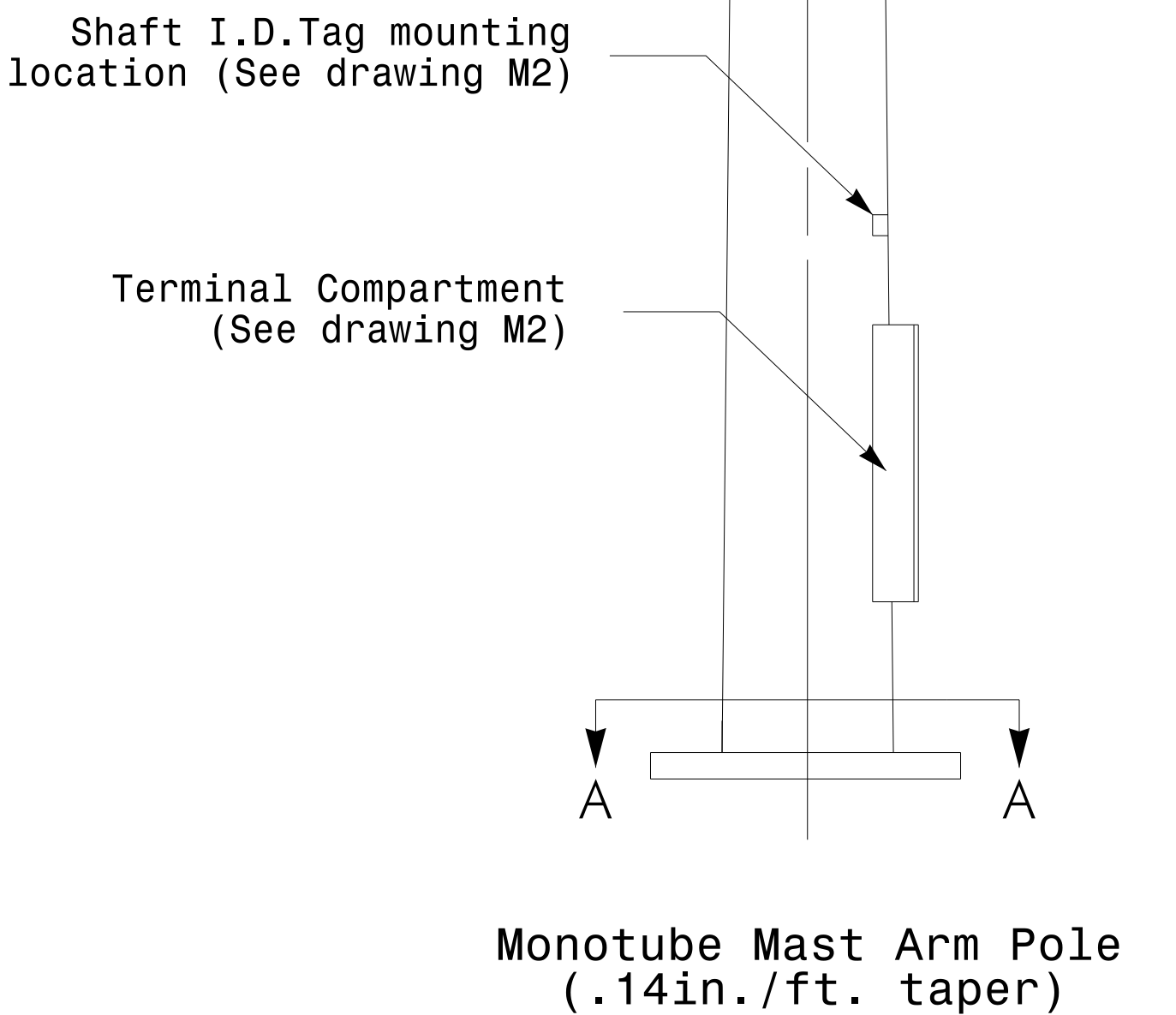
Fabrication Details – All Poles



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation

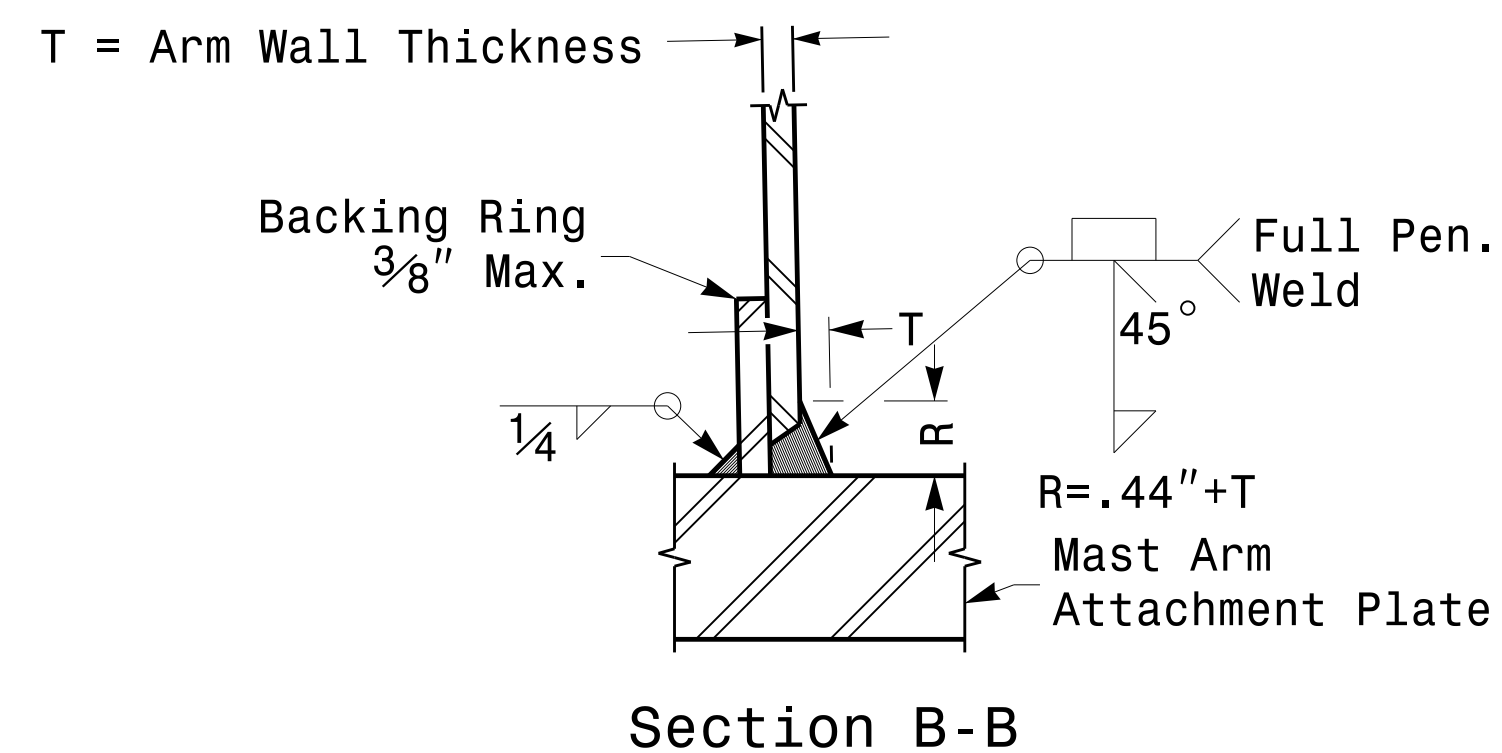
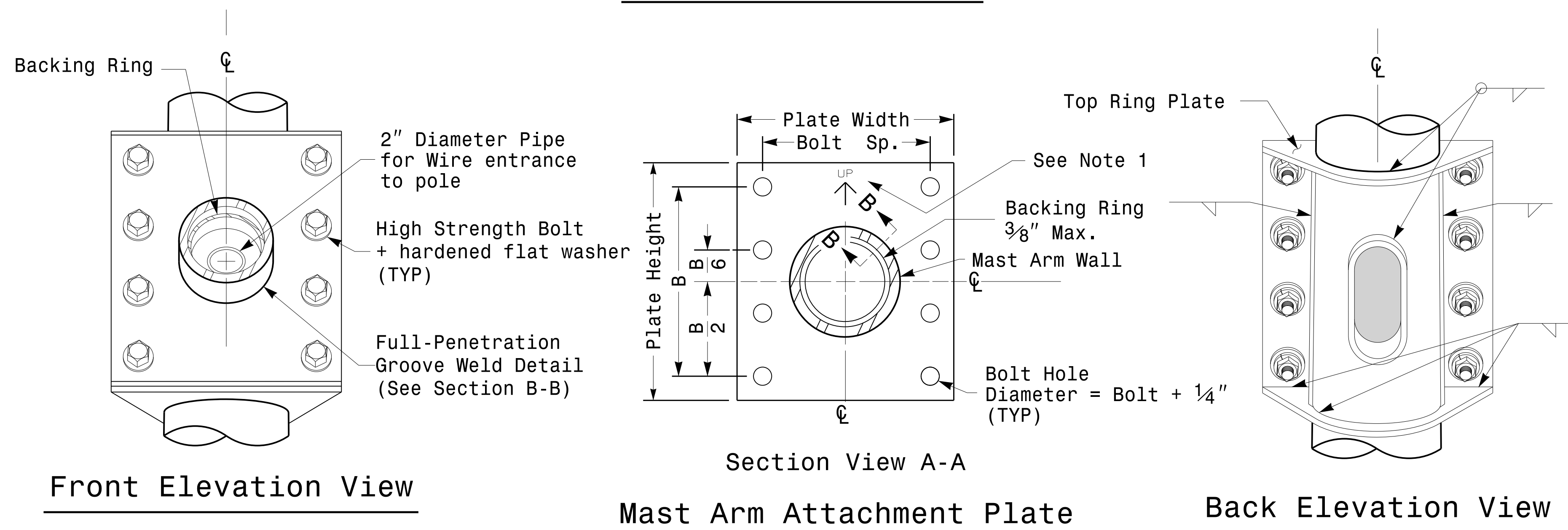
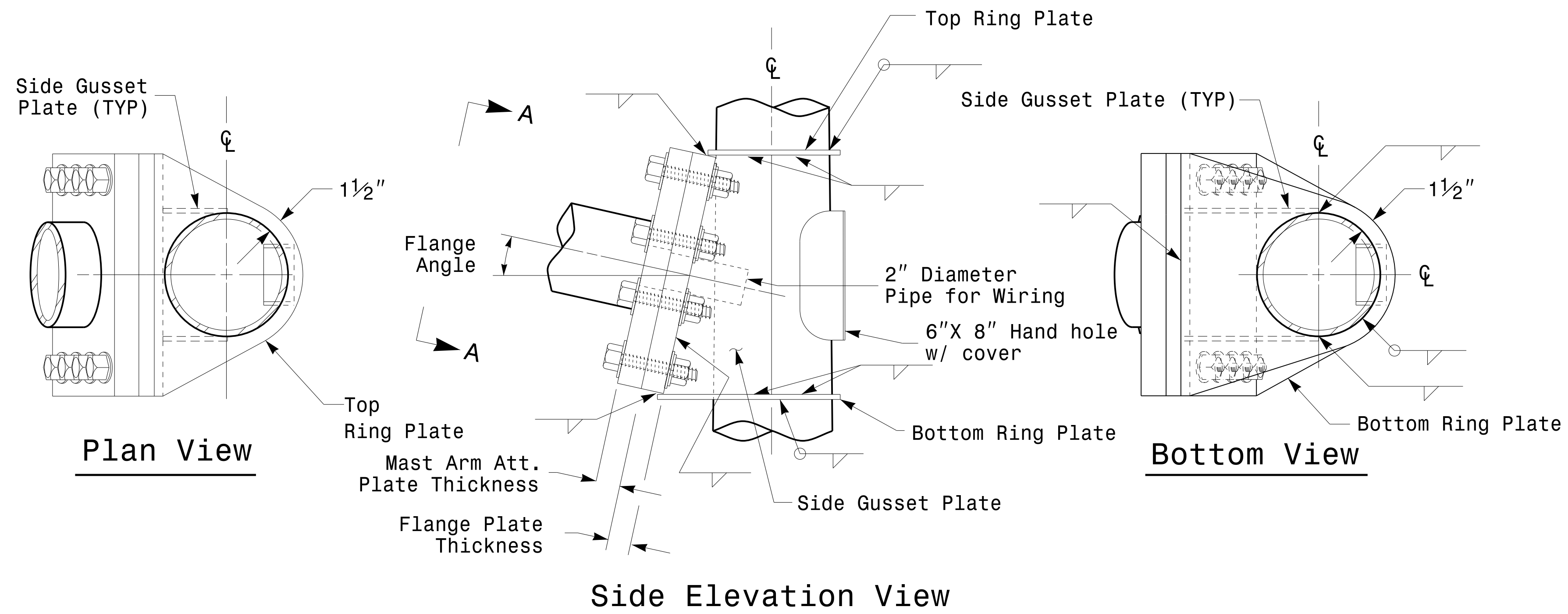


<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details for Mast Arm Poles</p>		
	<p>PLAN DATE: AUGUST 2013</p> <p>PREPARED BY: N. BITTING</p> <p>SCALE: 0 NA NONE</p>	<p>DESIGNED BY: C.F. ANDREWS</p> <p>REVIEWED BY: D.C. SARKAR</p>	

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Fabrication Details – Mast Arm Poles

Welded Ring Stiffened Mast Arm Connection



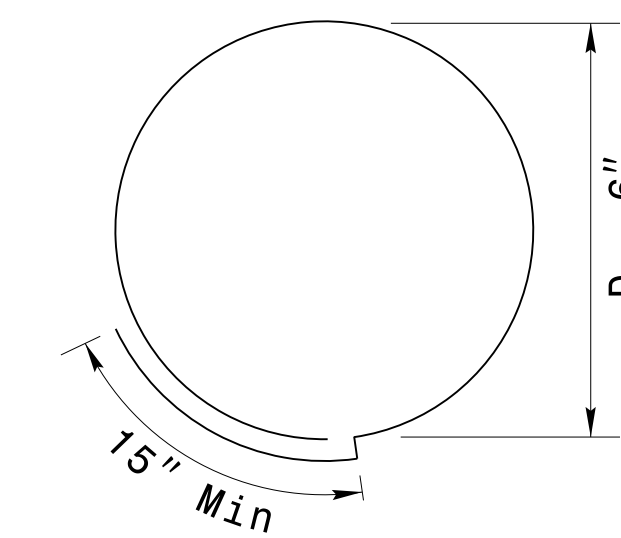
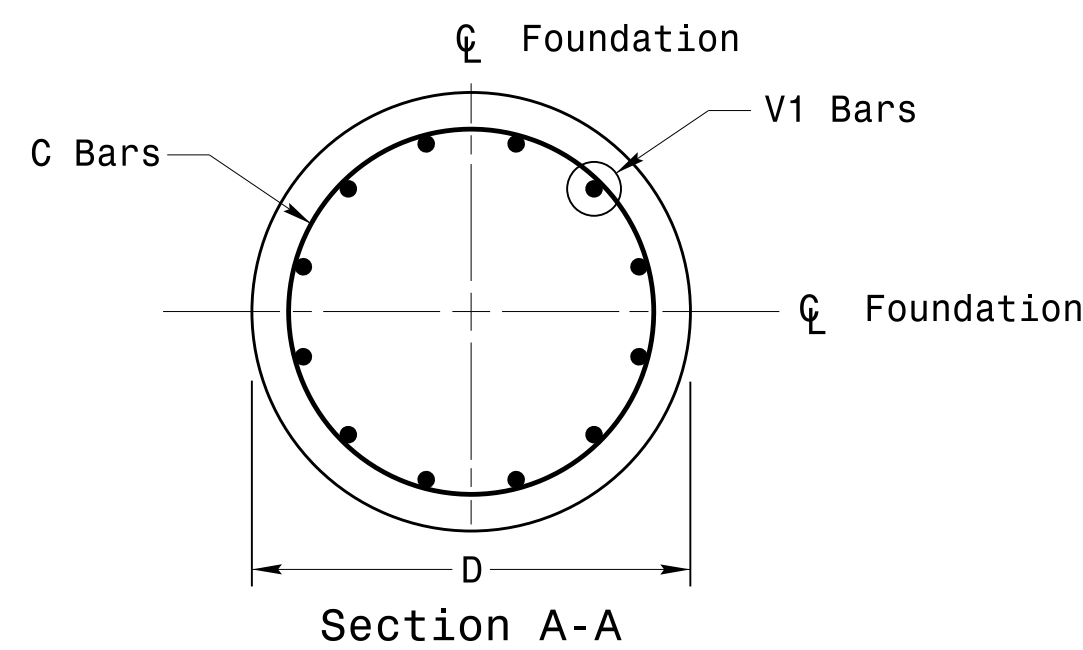
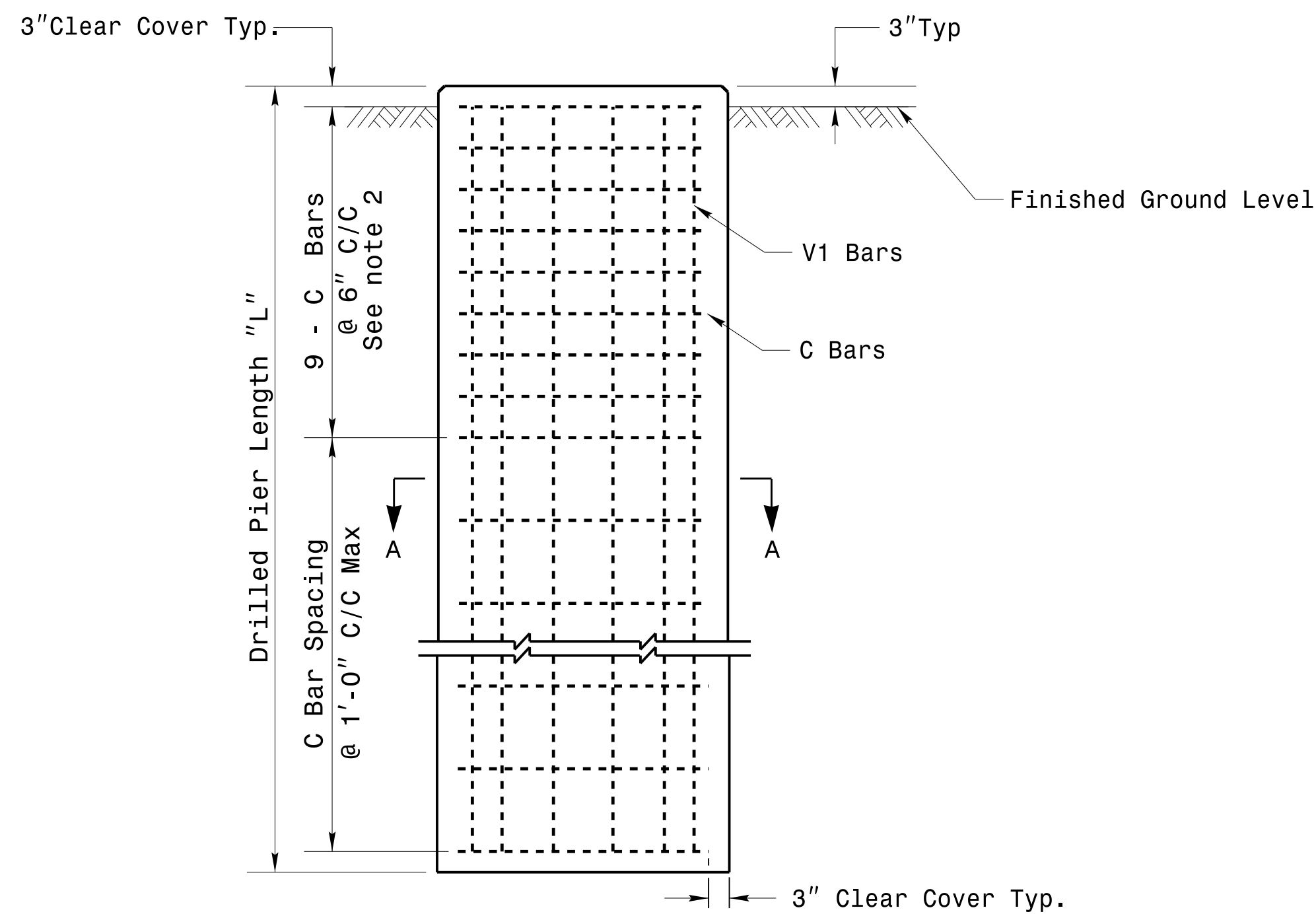
Full-Penetration Groove Weld Detail

Notes:

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Designer is responsible for providing appropriate drainage points.

	<p>Fabrication Details For Mast Arm Connection To Pole</p>		
	<p>PLAN DATE: AUGUST 2013</p>	<p>DESIGNED BY: C.F. ANDREWS</p>	
<p>SCALE: 0 NA NONE</p>	<p>PREPARED BY: N. BITTING</p>	<p>REVIEWED BY: D.C. SARKAR</p>	<p>INIT. DATE</p>
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>			<p>DocuSign by: D. C. Sarkar 8/26/2014</p>

Reinforcing Steel Bars



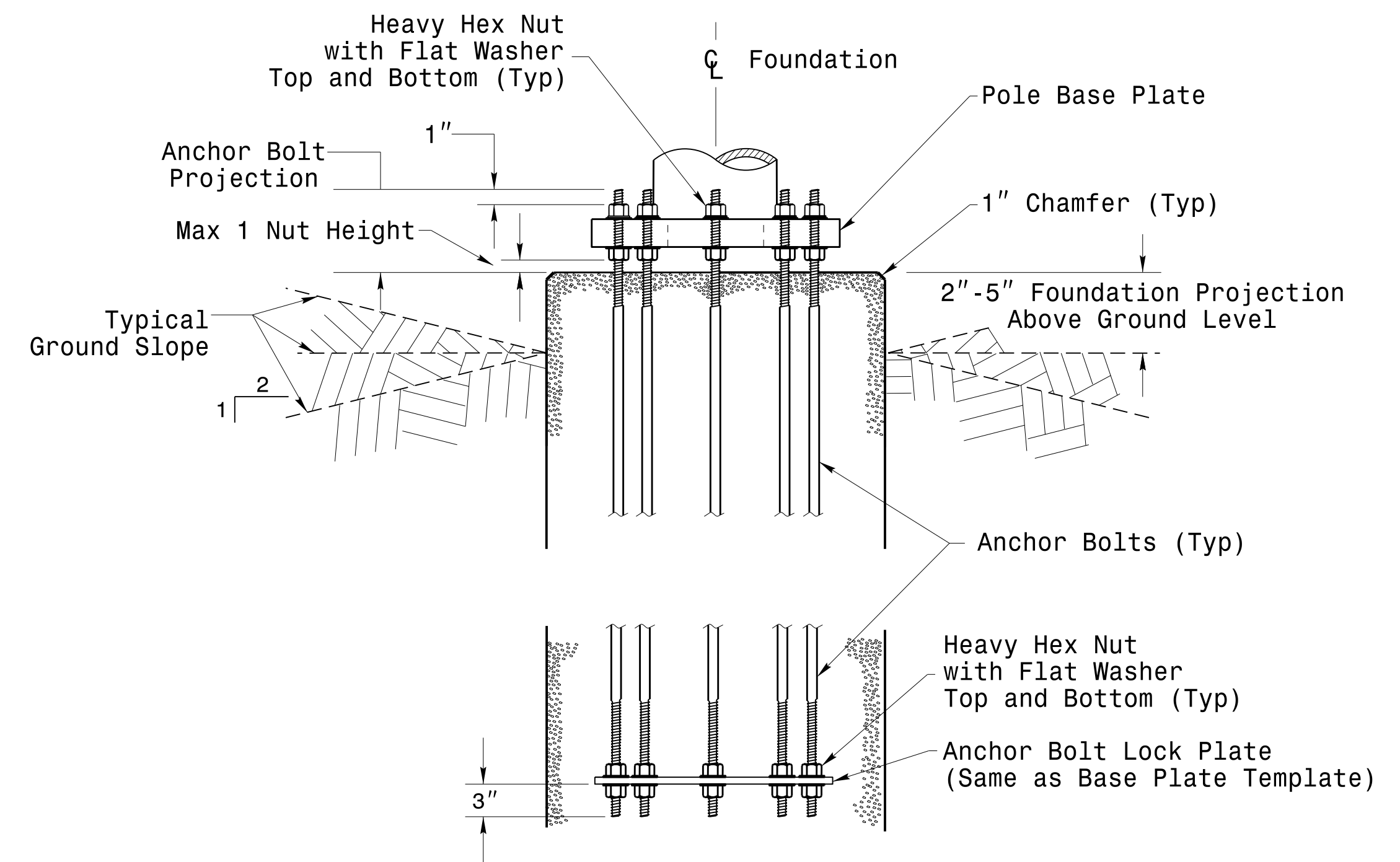
Typical "C" Bars

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)						
Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
48"	.465 x L	V1	***	#8	STR.	**
		C	*	#4	CIR.	12'-6"

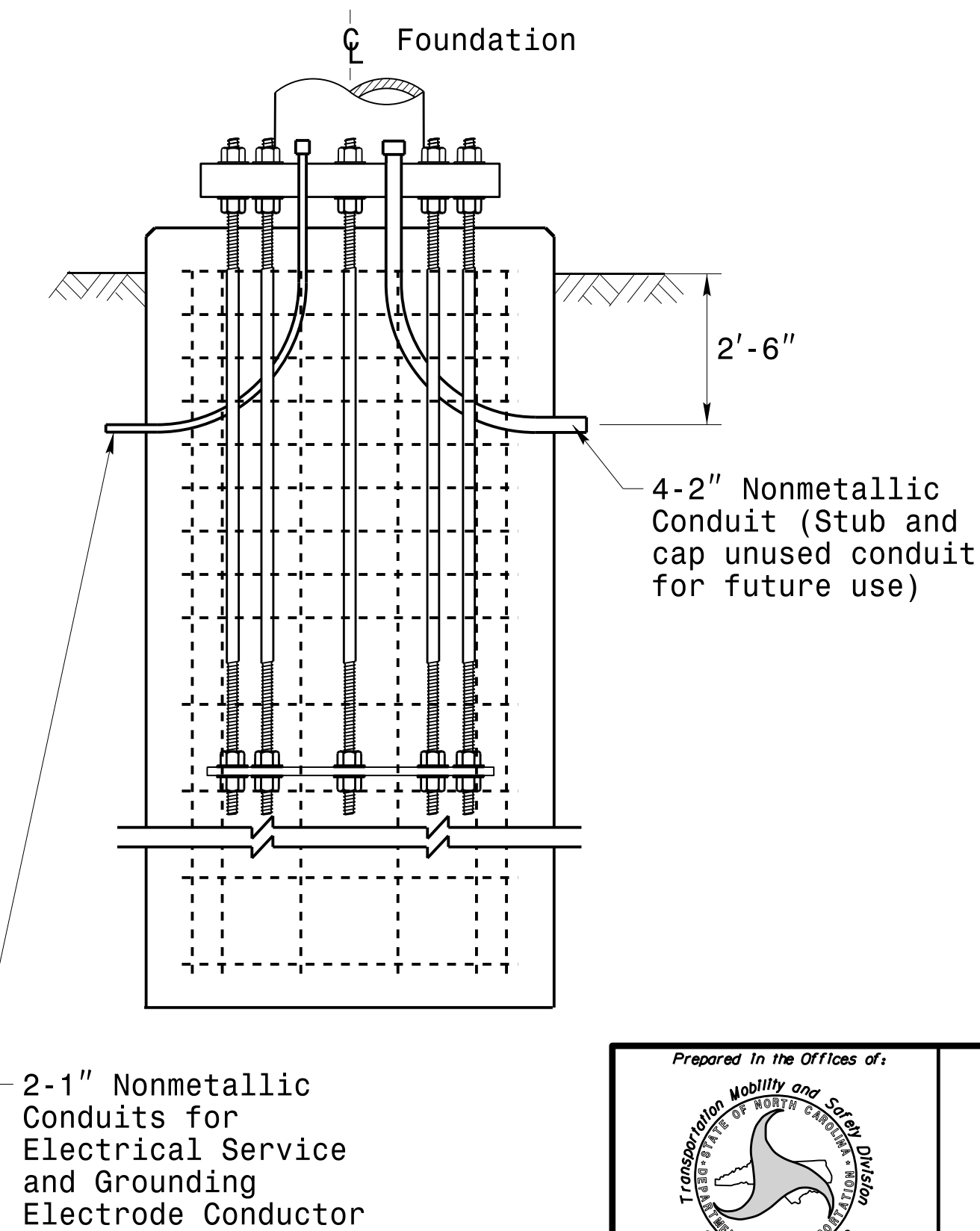
* See Note No. 1
 ** See Note No. 3
 *** See Note No. 4

Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



Typical Foundation Conduit Details



Notes

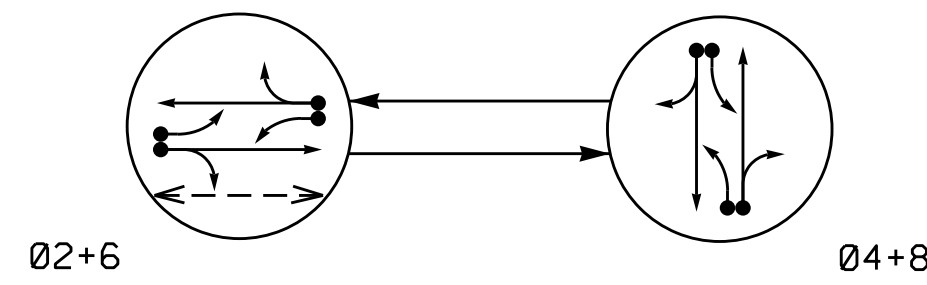
- The number of C-bars is based on foundation depth and/or as required. For standard foundations, see sheets M 8 and M 9 for details.
- Circular tie reinforcing rings may be vertically adjusted by +/- 3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
- The length of V1-bars is based on foundation depth. For standard foundations, see sheets M 8 and M 9 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/- 3" to facilitate the installation of electrical conduit entering into the cage.
- Provide vertical reinforcement as required per design. See sheets M 8 and M9 for details.

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 J.pallawcy

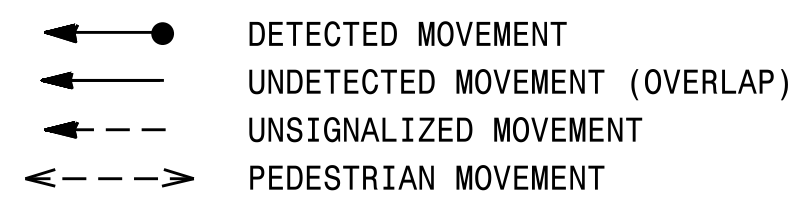
Construction Details – Foundations

	Construction Details Foundations		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS:	INIT. DATE:	SEAL INVENTORY NO.

PHASING DIAGRAM

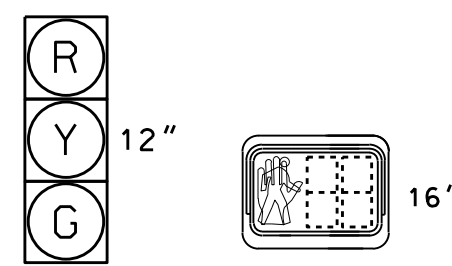


PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

All Heads L.E.D.



21, 22 P21, P22
41, 42
61, 62
81, 82

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø4+8	PEDESTAL
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK

W - Walk
DW - Don't Walk
DRK - Dark

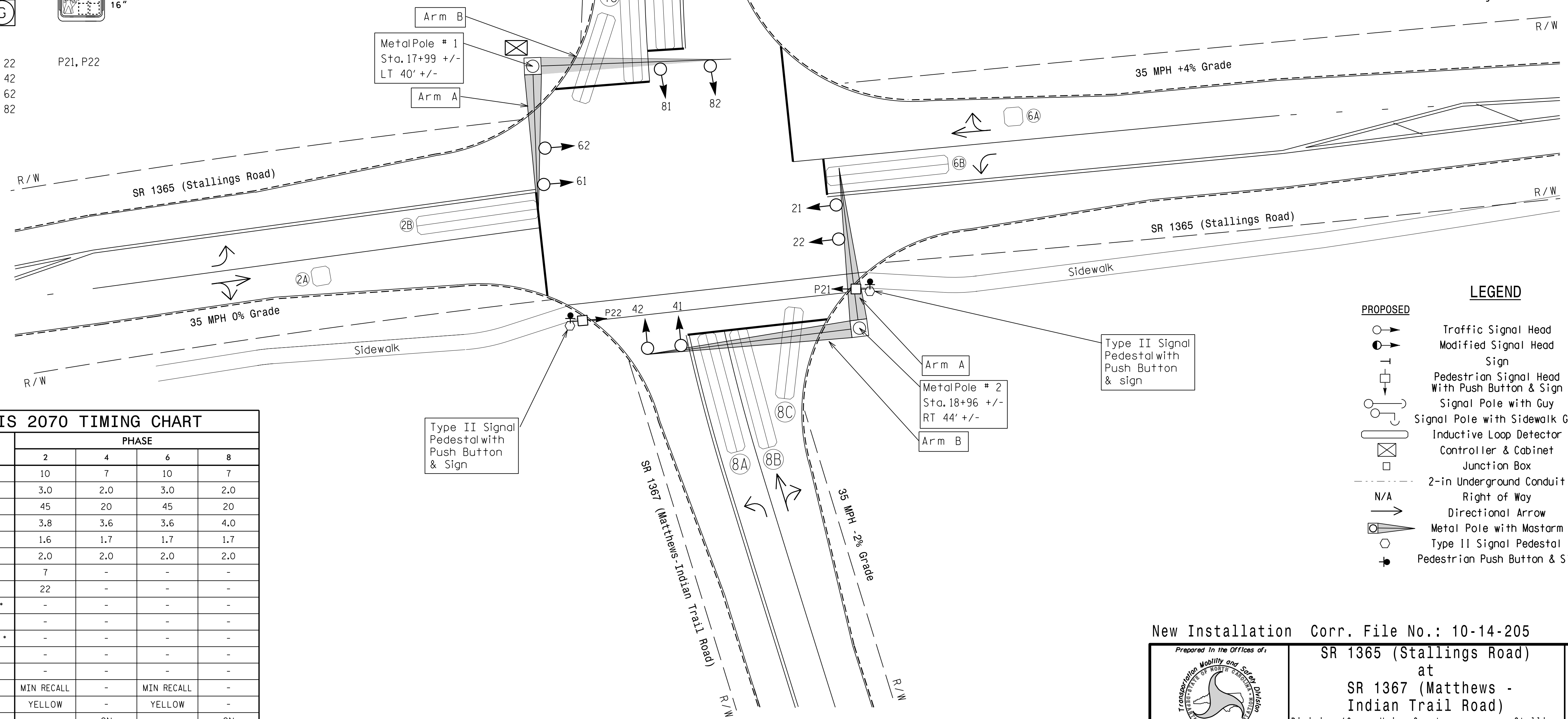
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	3	Y	2	Y	Y	-	-	-	-	Y
2B	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
4C	6X30	+5	2-4-2	Y	4	Y	Y	-	-	15	-	Y
6A	6X6	70	3	Y	6	Y	Y	-	-	-	-	Y
6B	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
8A	6x40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y
8C	6X30	+5	2-4-2	Y	8	Y	Y	-	-	15	-	Y

2 Phase
Fully Actuated
Isolated

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.

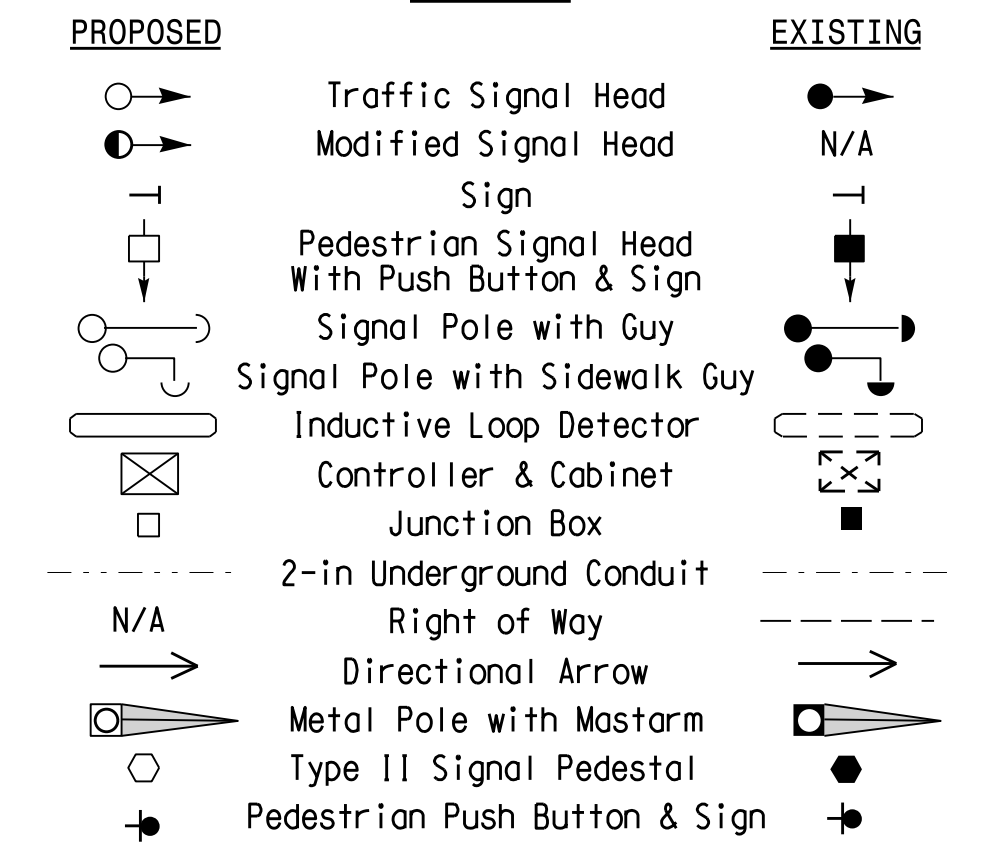


OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	20	45	20
Yellow Clearance	3.8	3.6	3.6	4.0
Red Clearance	1.6	1.7	1.7	1.7
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	7	-	-	-
Don't Walk 1	22	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
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



New Installation Corr. File No.: 10-14-205

SR 1365 (Stallings Road)
at
SR 1367 (Matthews - Indian Trail Road)

Division 10 Union County Stallings

PLAN DATE: February 2015 REVIEWED BY: T. Williams

PREPARED BY: M. Mahbooba REVIEWED BY:

750 N. Greenfield Pkwy, Garner, NC 27529

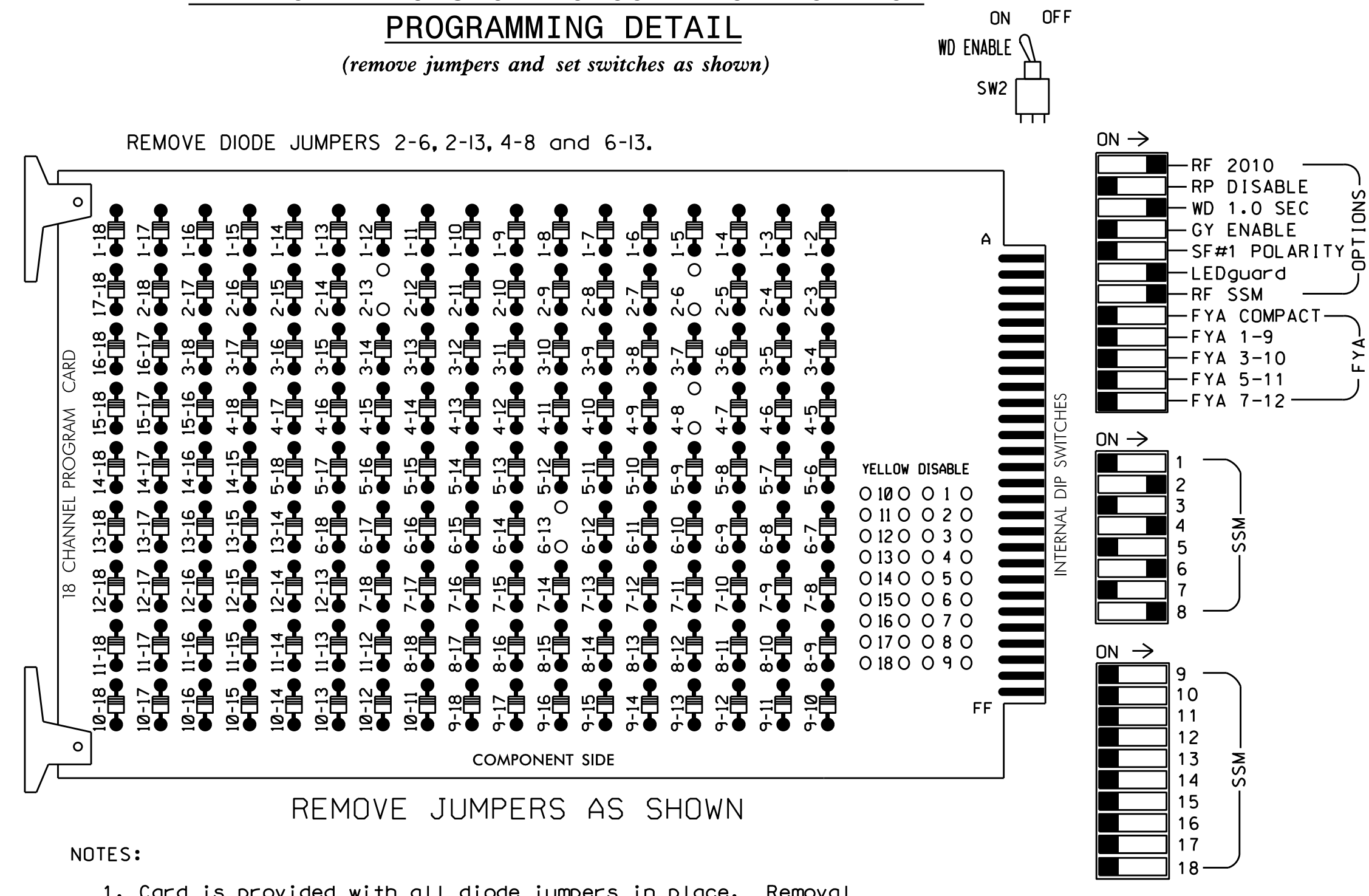
SCALE: 1" = 20'

REVISIONS: _____ INIT. DATE

SIG. INVENTORY NO. 10-2181

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EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL
(remove jumpers and set switches 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 unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Start Up In Green.
5. Program phase 2 for 'STARTUP PED CALL'.
6. Program phases 2 and 6 for Yellow Flash.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 (12 STD; 6 AUX.)
 LOAD SWITCHES USED.....S2,S3,S5,S8,S11
 PHASES USED.....2,2 PED,4,6,8
 OVERLAPS.....NONE

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	P21, P22	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		
Hand icon													113					
Walking person icon													115					

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2	∅ 4	∅ 4	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2 PED	FS	FS
L	2A	2B				4A	4B					DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅ 6	∅ 6	∅ 6	∅ 6	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8
L	6A	6B				8A	8B							

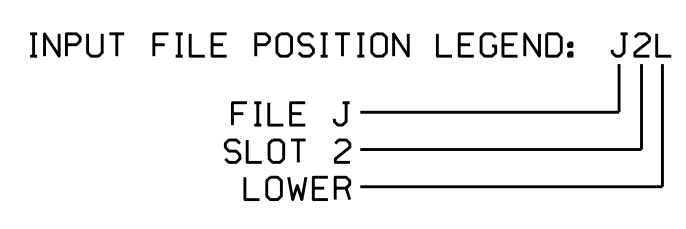
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
8C	TB7-1,2	J7U	66	28	38	8	Y	Y			15
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					

NOTE: INSTALL DC ISOLATOR IN INPUT FILE SLOT I12



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 10-2181
 DESIGNED: February 2015
 SEALED: 2/23/15
 REVISED: N/A

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

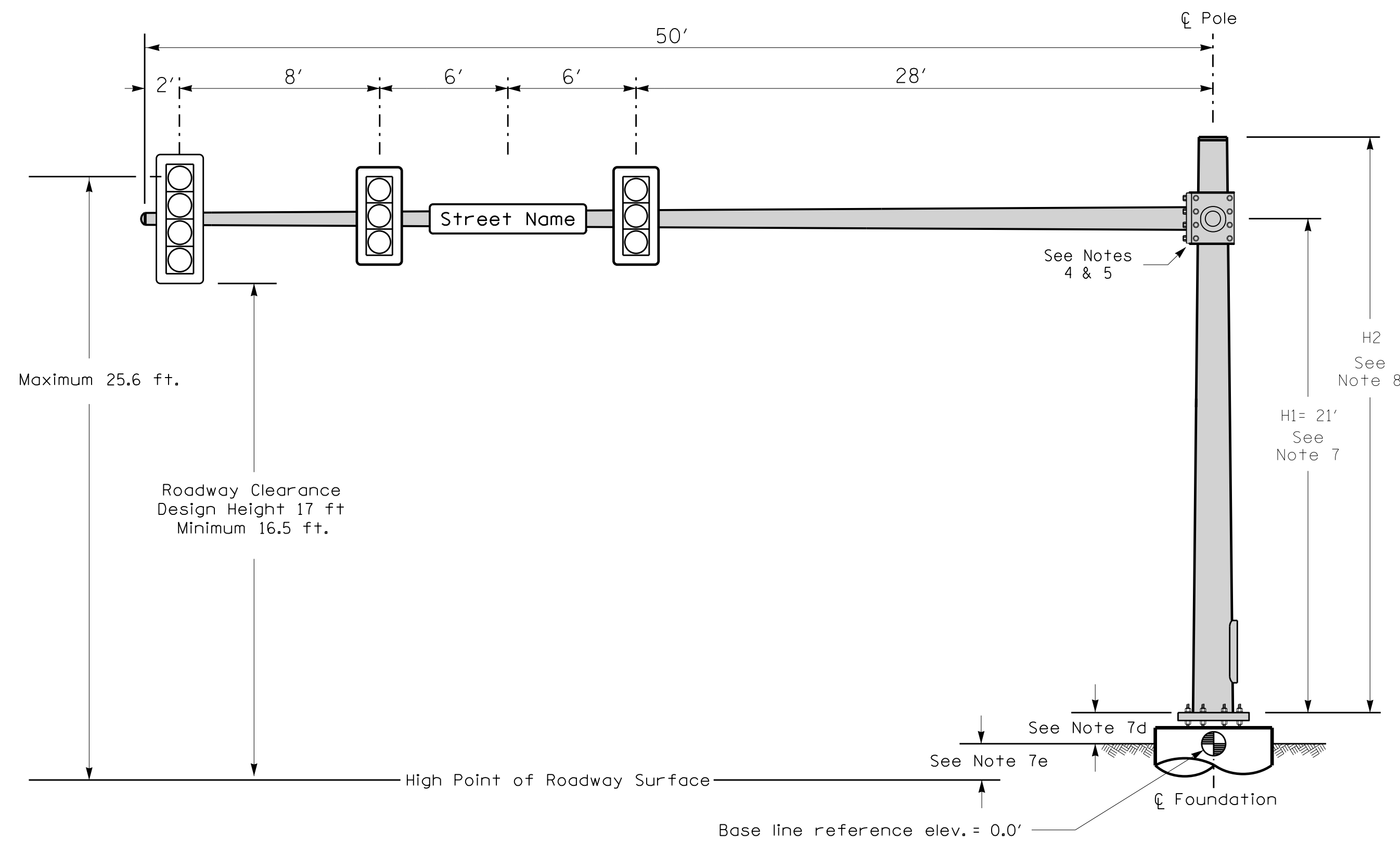
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

Electrical Detail

Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 1365 (Stallings Road) at SR 1367 (Matthews - Indian Trail Road)	SEAL PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN
	Division 10 Union County Stallings	PLAN DATE: February 2015 REVIEWED BY: T. Joyce PREPARED BY: B. SIMMONS REVIEWED BY:	DocuSigned by: George C. Brown 2/27/2015 DATE
REVISIONS		INIT. DATE	SIG. INVENTORY NO. 10-2181

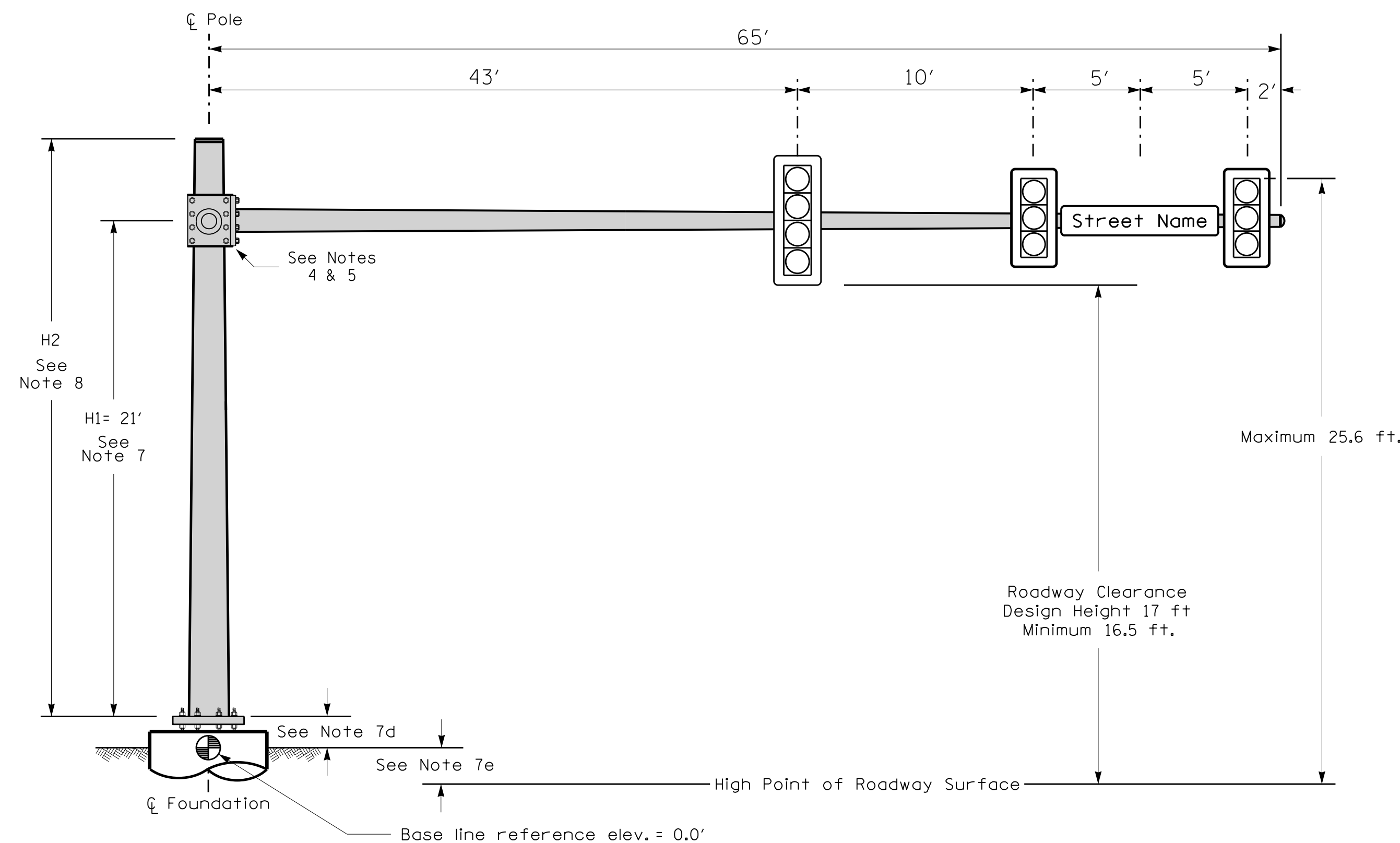
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Design Loading for METAL POLE NO. 1, MAST ARM A



Elevation View @ 270°

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



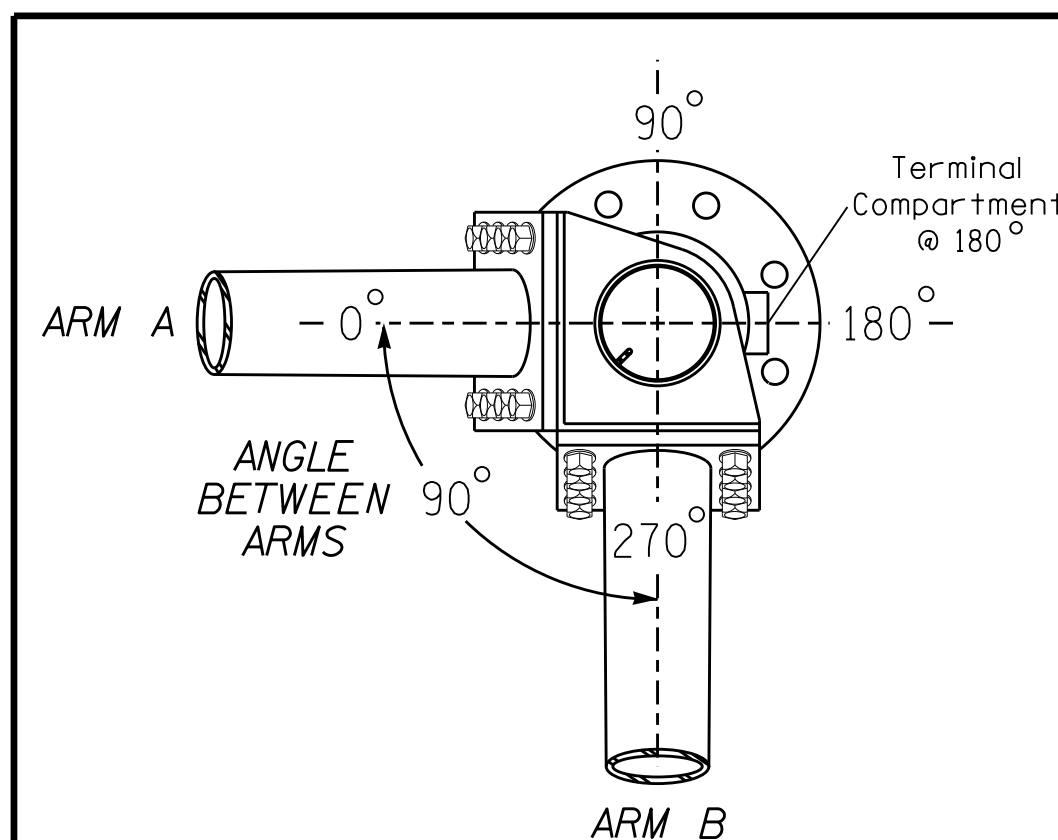
Elevation View @ 0°

SPECIAL NOTE

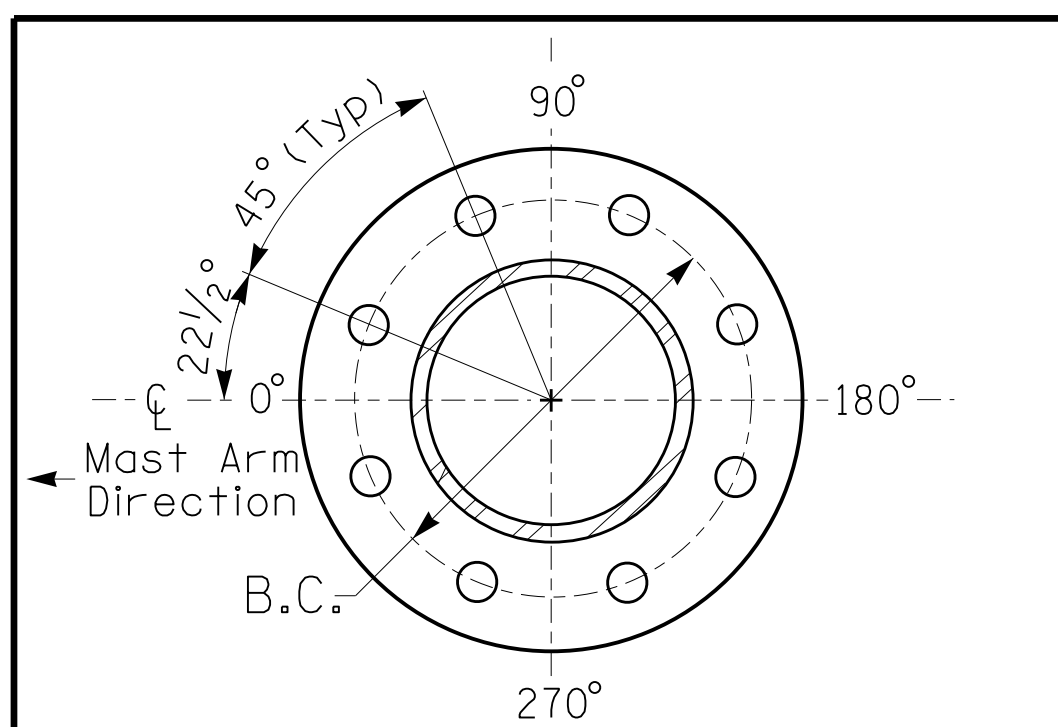
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

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	+1.6 ft.	-0.9 ft.
Elevation difference at Edge of travelway or face of curb	+0.3 ft.	+0.8 ft.

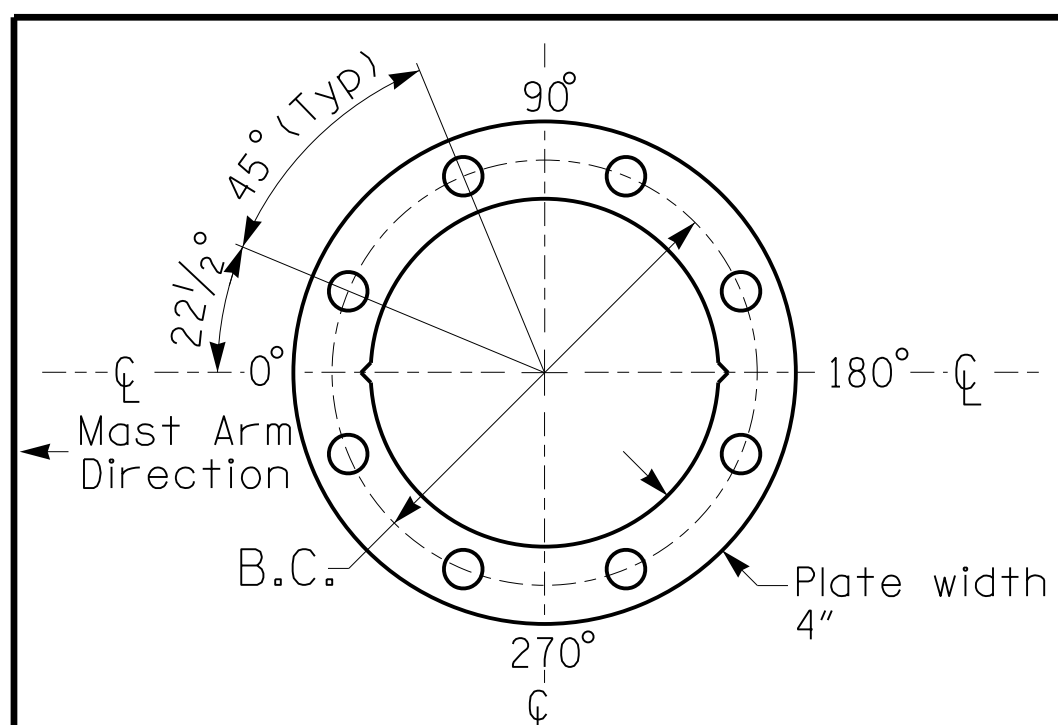


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHEET NO.
W-5210 0	Sig.3

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
[Symbol]	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
[Symbol]	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
[Symbol]	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 5th Edition 2009 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.

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.

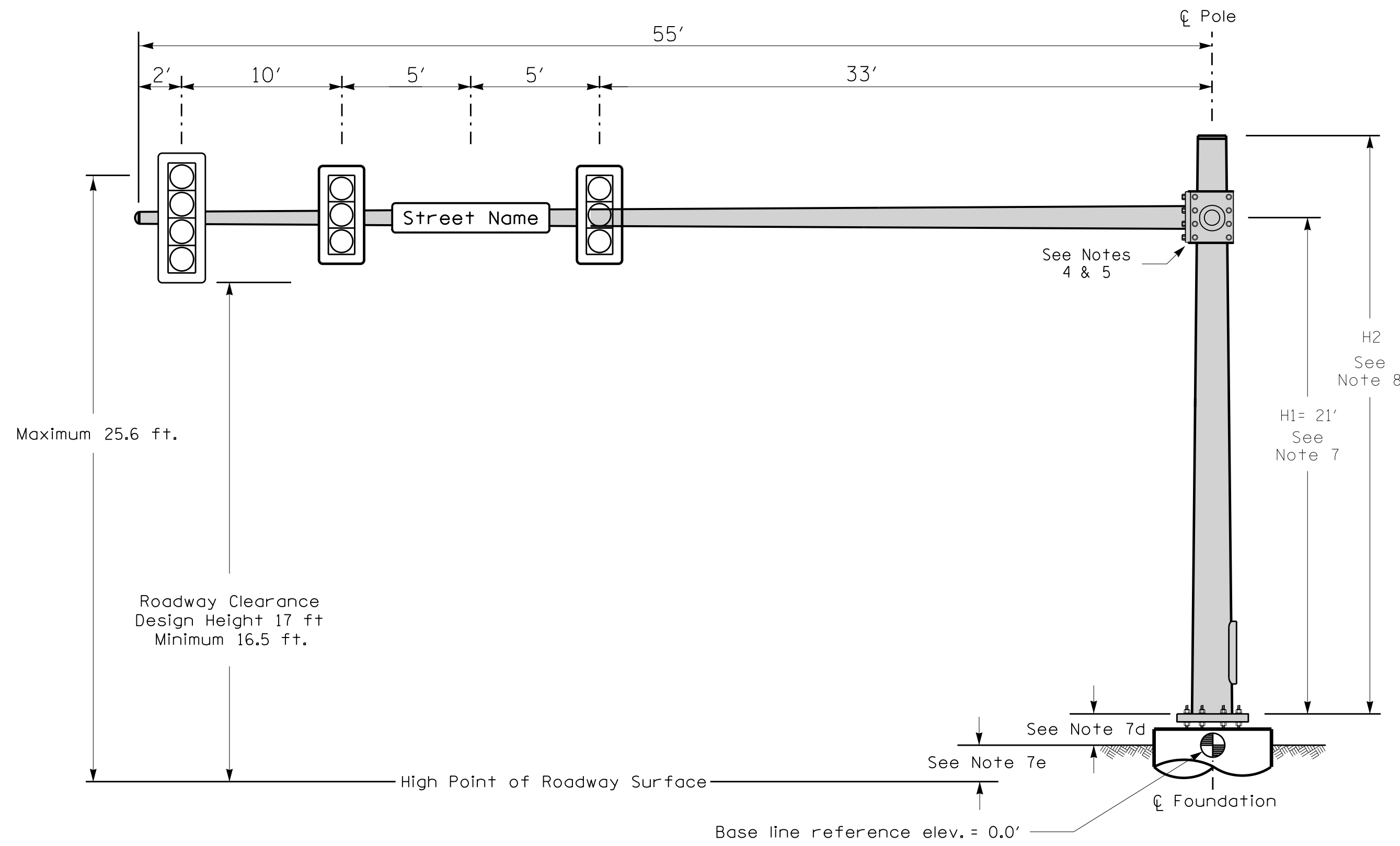
All metal poles and arms should be BLACK in color as specified in the project special provisions.

NCDOT Wind Zone 4 (90 mph)

	SR 1365 (Stallings Road) at SR 1367 (Matthews - Indian Trail Road)	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024393 J. WILLIAMS
	Division 10 Union County Stallings PLAN DATE: February 2015 REVIEWED BY: T. Williams PREPARED BY: M. Mahbooba REVIEWED BY:	
SCALE 0 N/A N/A	REVISIONS INIT. DATE	SIGNED BY: J. Williams DATE: 3/3/2015 SIG. INVENTORY NO. 10-2181

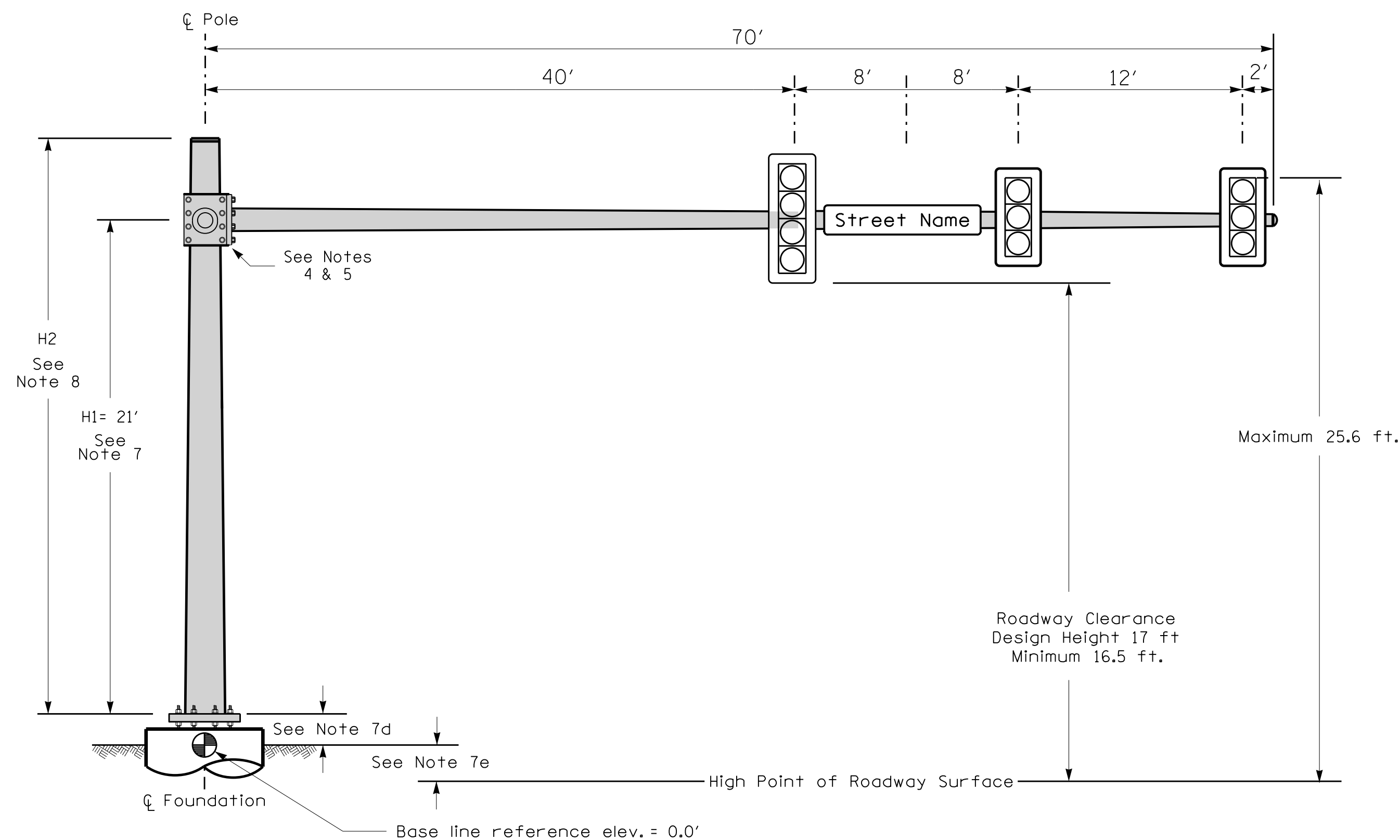
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Design Loading for METAL POLE NO. 2, MAST ARM A



Elevation View @ 270°

Design Loading for METAL POLE NO. 2, MAST ARM B



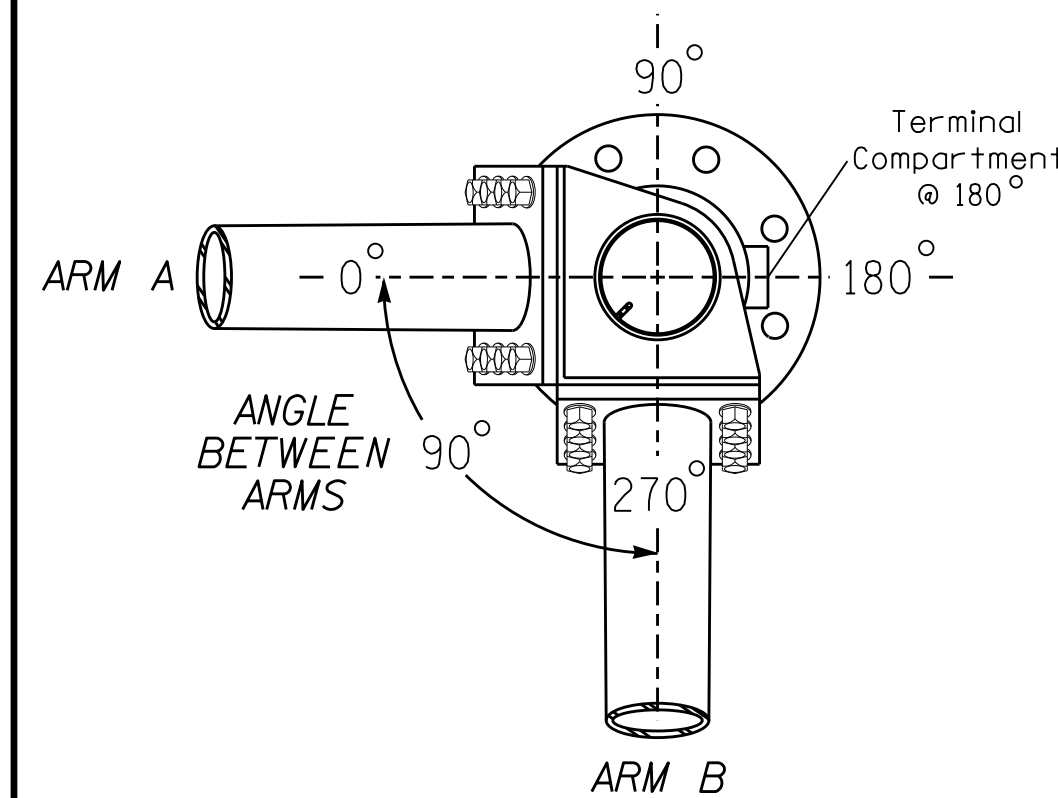
Elevation View @ 0°

SPECIAL NOTE

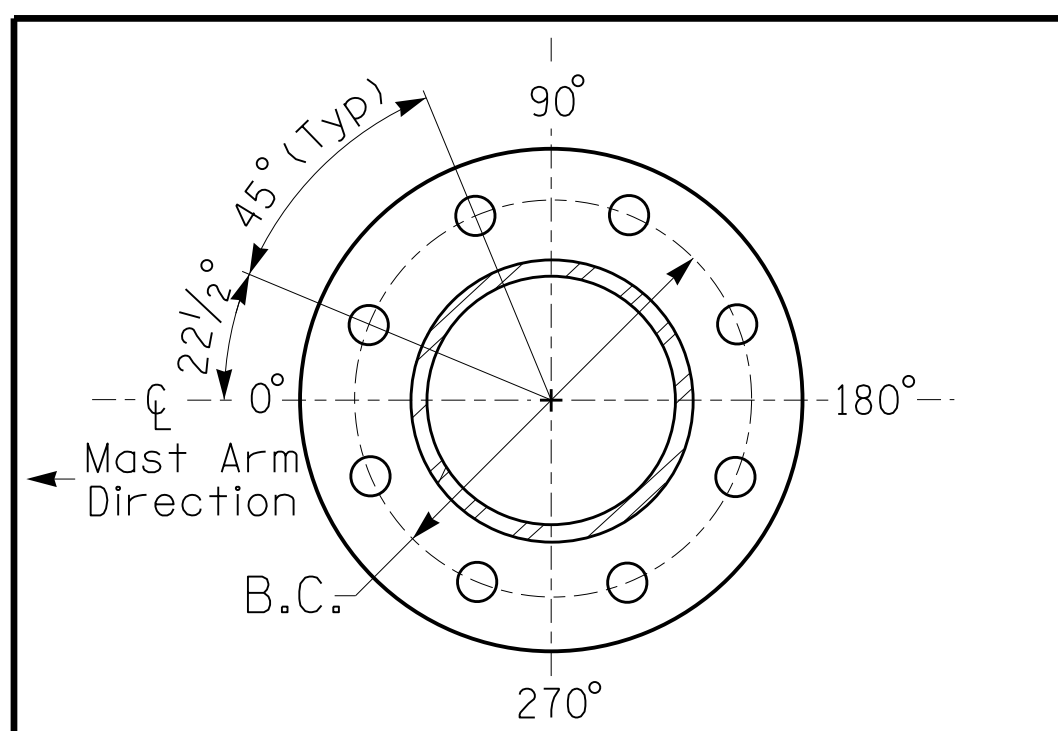
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole A	Pole B
Baseline reference point at Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-1.3 ft.	+1.6 ft.
Elevation difference at Edge of travelway or face of curb	-0.4 ft.	+0.4 ft.

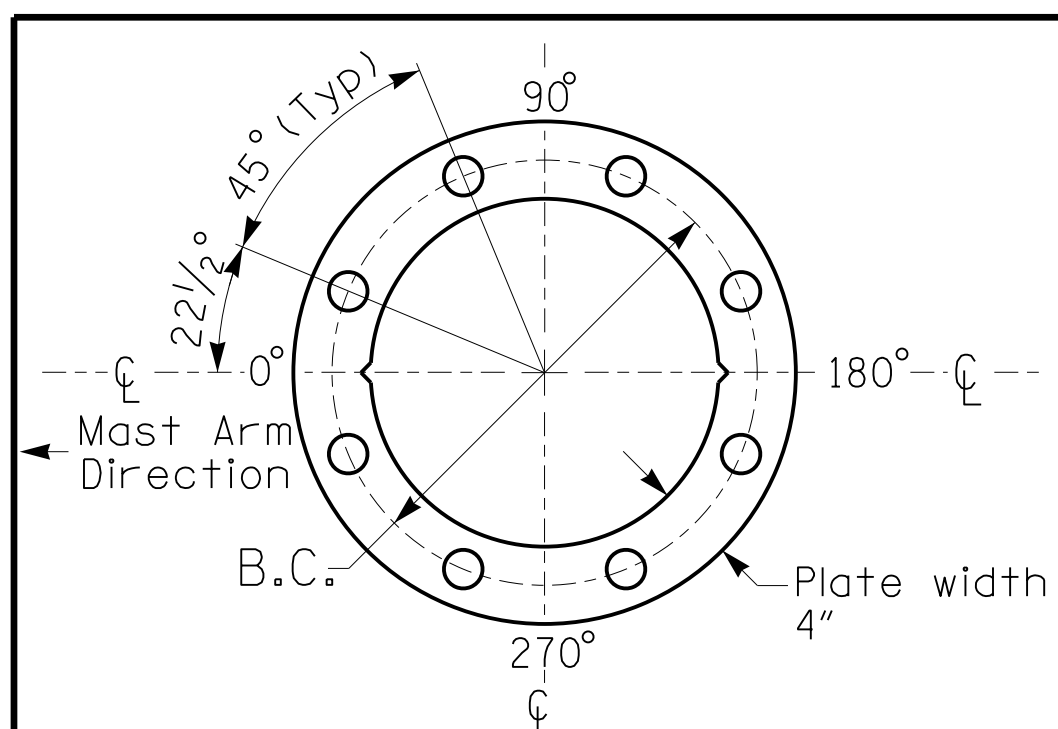


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL For 8 Bolt Base Plate

METAL POLE No. 2

PROJECT REFERENCE NO.	SHEET NO.
W-5210 0	Sig.4

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
[Symbol]	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
[Symbol]	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
[Symbol]	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 5th Edition 2009 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
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 - The 2012 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.

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.

All metal poles and arms should be BLACK in color as specified in the project special provisions.

NCDOT Wind Zone 4 (90 mph)

	SR 1365 (Stallings Road) at SR 1367 (Matthews - Indian Trail Road)	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024393 J. WILLIAMS
	Division 10 Union County Stallings PLAN DATE: February 2015 REVIEWED BY: T. Williams PREPARED BY: M. Mahbooba REVIEWED BY:	
SCALE 0 N/A N/A	REVISIONS INIT. DATE	SIGNED BY: J. Williams DATE: 3/3/2015 SIG. INVENTORY NO. 10-2181

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