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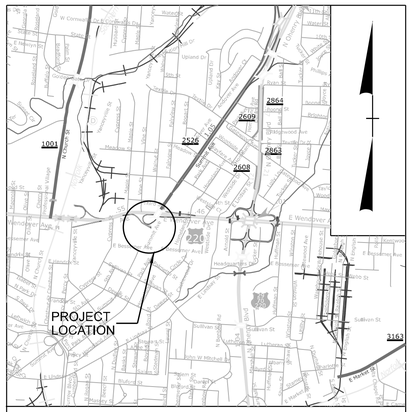
09/08/99

TIP PROJECT: W-5807A

CONTRACT: DG00653

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

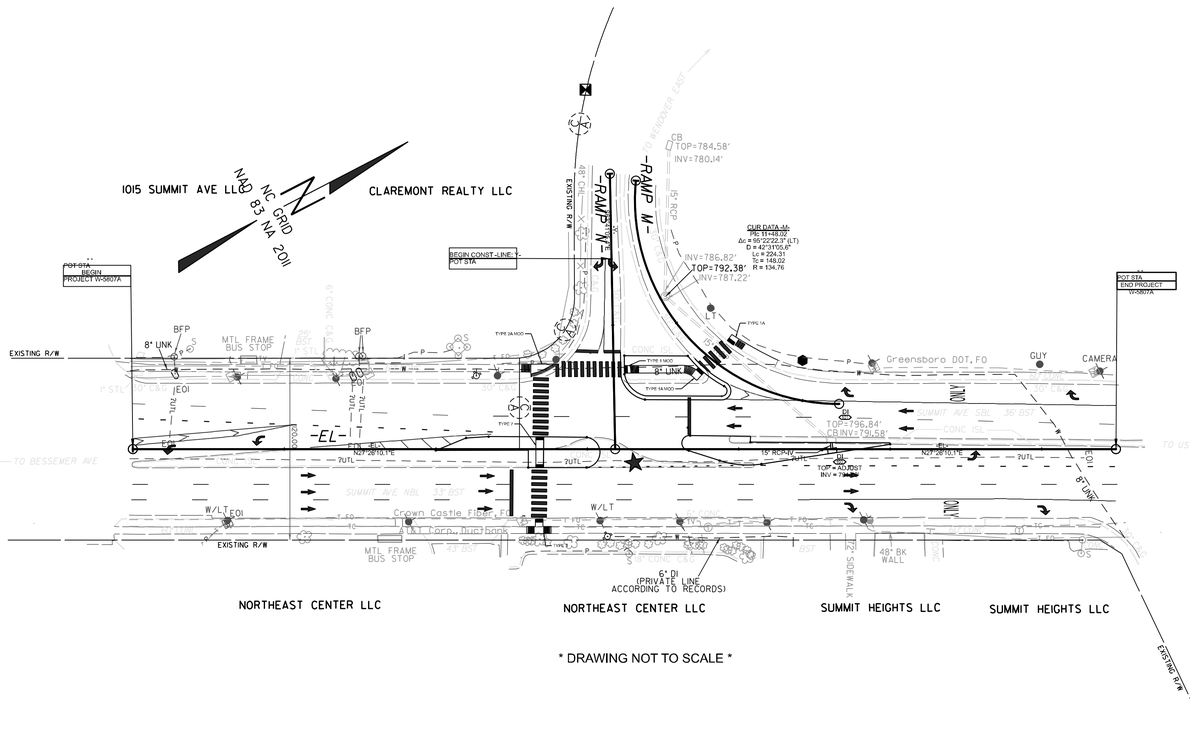
GUILFORD COUNTY

LOCATION: *SR-2526 (SUMMIT AVE.) AT US 70 (WENDOVER AVE.) EAST EXIT AND ON RAMP*

TYPE OF WORK: *SIDEWALK, CURB & GUTTER, SIGNAL, AND PAVING*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5807A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
48952.1.2	2526004	PE
48952.2.2	2526004	R/W
48952.3.2	2526004	CONSTRUCTION



* DRAWING NOT TO SCALE *

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60

PLANS

DESIGN DATA

ADT 2021 = 19500
ADT 2043 = 29000
K = N/A %
D = N/A %
T = N/A % *
V = 40 MPH
* TTST =N/A DUAL N/A
FUNC CLASS =
MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY SAFETY PROJECT W-5807A = 0.123 MILES

TOTAL LENGTH SAFETY PROJECT W-5807A = 0.123 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: SEPTEMBER 5, 2024

CHAD REIMAKOSKI
PROJECT ENGINEER

JAMES B. YATES, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

N/A

P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

DocuSigned by: James B. Yates 1E16507EA7A04AE...

08/13/2024

P.E.

SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 056425 ENGINEER James B. Yates

DEPARTMENT OF TRANSPORTATION • STATE OF NORTH CAROLINA •

5/26/20

W-5807A
1A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 056425 ENGINEER James B. Yates

DocuSigned by: James B. Yates 02/17/2024
1E16507EA7A04AE...

INDEX OF SHEETS

GENERAL NOTES: 2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

COMMUNICATIONS	-	AT&T CHARTER / SPECTRUM
NATURAL GAS	-	PIEDMONT NATURAL GAS
WATER / SEWER	-	CITY OF GREENSBORO
POWER	-	DUKE ENERGY

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
225.02	Guide for Grading Subgrade - Secondary and Local
225.06	Method of Grading Sight Distance at Intersections
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
DIVISION 8 - INCIDENTALS	
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
848.01	Concrete Sidewalk
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
852.10	Median Construction - with Curb and Gutter

5/26/20

W-5807A
1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

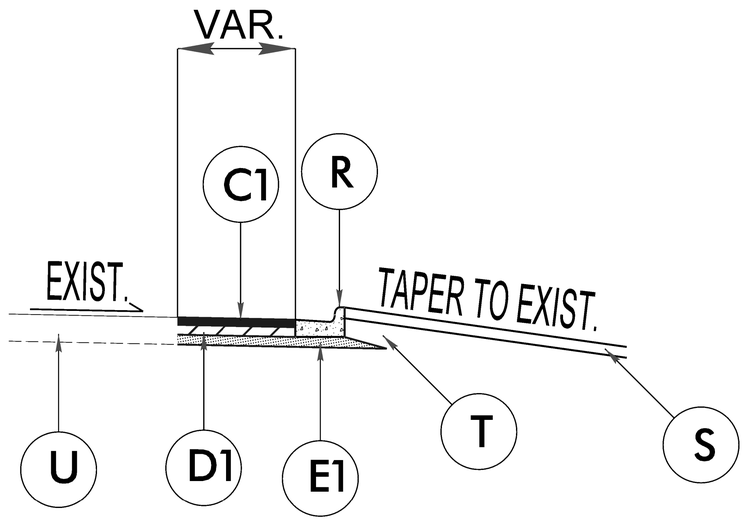
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE - LOS B)* — PUTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

5/26/20

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
R	PROPOSED 2'-6" C&G
S	4" CONCRETE SIDEWALK (CONCRETE ISLAND)
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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



NEW C&G DETAIL

W-5807A

TYP. 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
GUILFORD COUNTY

DIVISION 7 DDC UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 056425 ENGINEER James B. Yates

02/17/2021

DocuSigned by: James B. Yates 1E16507EA7A04AE...

PREPARED BY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

12/06/07

COMPUTED BY: JAMES B. YATES	DATE: 10/28/2023
CHECKED BY: CHAD REIMAKOSKI	DATE: 10/28/2023

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
W-5807A	3

SUMMARY OF QUANTITIES

PAY ITEM #	SECTION #	QUANTITY	UNIT	DISCRIPTION
0000100000-N	800	1	LS	MOBILIZATION
0000400000-N	801	1	LS	CONSTRUCTION SURVEYING
0063000000-N	SP	1	LS	GRADING
0448200000-E	310	6	LF	15" RC PIPE CULV IV
1491000000-E	610	20	TON	ASP CONC BASE CRS B25.0C
1519000000-E	610	20	TON	ASP CONC INTR CRS I19.0C
1523000000-E	610	20	TON	ASP CONC SURF CRS S9.5C
1575000000-E	620	4	TON	BINDER ASP PLANT MIX
2286000000-N	840	1	EA	MASNRY DRAINAGE STRUCT
2535000000-E	846	60	LF	8" X 12" CONCRETE CURB & GUTTER
2549000000-E	846	135	LF	2'-6" CONC CURB & GUTTER
2591000000-E	848	40	SY	4" CONCRETE SIDEWALK
2605000000-N	848	7	EA	CONCRETE CURB RAMPS
2624700000-E	852	207	SY	4" CONC ISLAND COVER
2655000000-E	852	225	SY	5" MONO CONC ISLDS (KEY IN)
4400000000-E	SP	80	SF	STATIONARY WORK ZONE SIGNS
4405000000-E	1110	240	SF	PORTABLE WORK ZINE SIGNS
4415000000-N	1115	2	EA	FLASHING ARROW BOARD
4430000000-N	1130	60	EA	DRUMS
4447000000-E	SP	36	LF	PEDESTRIAN CHANNELIZATION DEVICES
4510000000-N	1190	16	HR	LAW ENFORCEMENT
4688000000-E	1205	1015	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)
4700000000-E	1205	360	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)
4710000000-E	1205	424	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)
4721000000-E	1205	8	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (90 MILS)
4725000000-E	1205	20	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4850000000-E	1250	150	LF	REMOVAL OF PAVEMENT MARKINGS (4")
4860000000-E	1250	80	LF	REMOVAL OF PAVEMENT MARKINGS (8")
4870000000-E	1250	24	LF	REMOVAL OD PAVEMENT MARKINGS (24")
6000000000-E	1605	65	LF	TEMPORARY SILT FENCE
6012000000-E	1610	2	TON	SEDIMENT CONTROL STONE
6071010000-E	SP	20	LF	WATTLE
6084000000-E	1660	0.1	ACR	SEEDING AND MULCHING

PAY ITEM #	SECTION #	QUANTITY	UNIT	DISCRIPTION
6132000000-E	SP	1	EA	GENERIC EROSION CONTROL ITEM (FABRIC INSERT INLET PROTECTION)
7048500000-E	1705	4	EA	16" PEDEST SIG HEAD 1 SEC W/CD
7060000000-E	1705	1650	LF	SIGNAL CABLE
7120000000-E	1705	7	EA	VEHICLE SIGNAL HD (12", 3 SECT)
7279000000-E	1715	300	LF	TRACER WIRE
7288000000-E	1715	100	LF	PAVED TRENCH (1, 2")
7300000000-E	1715	375	LF	UNPAVED TRENCH (1, 2")
7300000000-E	1715	60	LF	UNPAVED TRENCH (2, 2")
7301000000-E	1715	500	LF	DIRECT DRILL (2, 2")
7324000000-N	1716	8	EA	JUNCT BOX (STD SIZE)
7348000000-N	1716	4	EA	JUNCT BOX (OVER-SIZED, HVY-DUTY)
7432000000-E	1722	1	EA	2" RISER WITH HEAT SHRINK TUBING
7444000000-E	1725	500	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	3100	LF	LEAD-IN CABLE(14-2)
7528000000-N	1730	1455	LF	DROP CABLE
7541000000-N	1731	1	EA	MODIFIED SPLICE ENCLOSURE
7552000000-N	1731	1	EA	INTERCONNECT CENTER
7566000000-N	1733	4	EA	DELINEATOR MARKER
7613000000-N	SP	1	EA	SOIL TEST
7614100000-E	SP	6	CY	DRILLED PIER FOUND
7631000000-N	SP	1	EA	MAST ARM W/ MTL POLE DES
7636000000-N	1745	4	EA	SIGN FOR SIGNALS
7642100000-N	1743	1	EA	TYPE I POST W/ FOUNDATION
7642200000-N	1743	4	EA	TYPE II PED W/ FOUNDATION
7684000000-E	1750	1	EA	SIGNAL CABINET FOUND
7696000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 270E, BASE MOUNTED)
7744000000-N	1751	5	EA	DETECTOR CARD (TYPE 170)
7901000000-N	1753	1	EA	CBNT BASE EXTENDER
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM (METAL POLE WITH TRIPLE MAST ARM)
7985000000-N	SP	1	EA	ETHERNET EDGE SWITCH

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-EL-	11+32.50	13+94.00	LT	85
-EL-	12+61.00	15+00.00	CL	171
-Y-	11+20.21	11+33.00	LT	84
			TOTAL:	340
			SAY:	340

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, OR PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE PVC	CAAP 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-EL- 14+61	RT	100																													
		100	101		791.78'	791.68'																			6						
-EL- 14+61	LT	101		796.84'	791.58'																										
TOTAL																									6						

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		O.T.C.B. STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	GDI (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TB D.I., STD. 840.35	M.H. FRAME AND COVER STD 840.54		15" CS PIPE ELBOWS		CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-EL- 14+61						1									1	1																						
-EL- 14+61																																						
TOTAL						1									1	1																						

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

W-5807A

PSH	4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
GUILFORD COUNTY

DIVISION 7 DDC UNIT

ROADWAY DESIGN ENGINEER

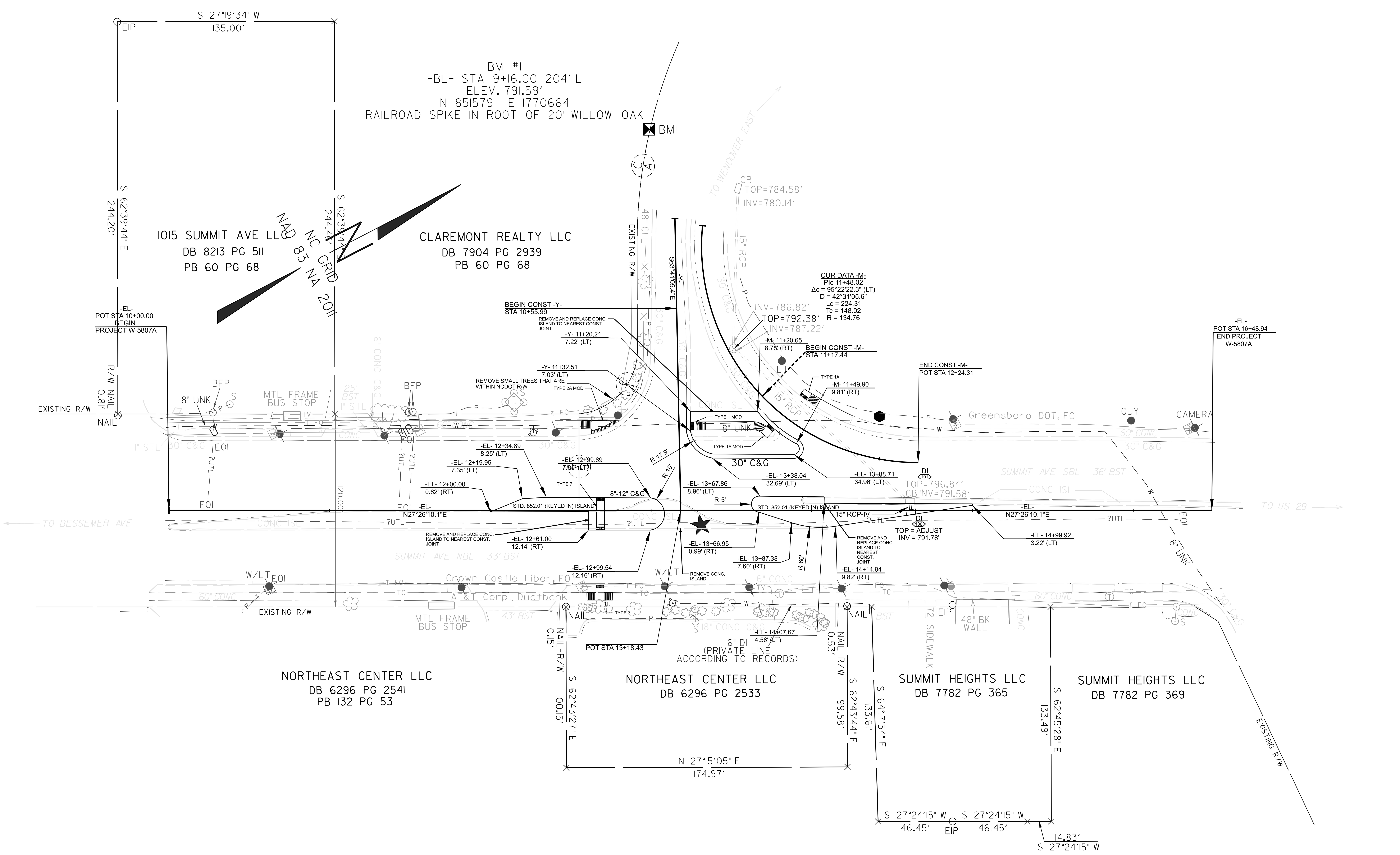
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 056425 James B. Yates

James B. Yates 04/18/2024

PREPARED BY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Scale: 1"= 30'



BM #1
-BL- STA 9+16.00 204' L
ELEV. 791.59'
N 851579 E 1770664
RAILROAD SPIKE IN ROOT OF 20" WILLOW OAK
BMI
S 27°19'34" W
135.00'
EIP
S 62°39'44" E
244.20'
S 62°39'44" E
244.46'
1015 SUMMIT AVE LLC
DB 8213 PG 511
PB 60 PG 68
NAD 83 NC GRID NA 2011
CLAREMONT REALTY LLC
DB 7904 PG 2939
PB 60 PG 68
EXISTING R/W
TO WENDOVER EAST
CB
TOP=784.58'
INV=780.14'
15" RCP
CUR DATA -M-
PI= 11+48.02
Δc = 95°22'22.3" (LT)
D = 42°31'05.6"
Lc = 224.31
Tc = 148.02
R = 134.76
INV=786.82'
TOP=792.38'
INV=787.22'
BEGIN CONST -Y-
STA 10+55.99
REMOVE AND REPLACE CONC. ISLAND TO NEAREST CONST. JOINT
-Y- 11+20.21
7.22' (LT)
-M- 11+20.65
8.78' (RT)
BEGIN CONST -M-
STA 11+17.44
-Y- 11+32.51
7.03' (LT)
REMOVE SMALL TREES THAT ARE WITHIN NCDOT R/W
TYPE 2A MOD
TYPE 1A
-M- 11+49.90
9.81' (RT)
END CONST -M-
POT STA 12+24.31
-EL-
POT STA 10+00.00
BEGIN
PROJECT W-5807A
-EL-
POT STA 16+48.94
END PROJECT
W-5807A
R/W-NAIL
0.81'
NAIL
BFP
8" UNK
MTL FRAME
BUS STOP
TYPE 1 MOD
8" UNK
TYPE 1A MOD
30" C&G
Greensboro DOT FO
GUY
CAMERA
EOI
-EL- 12+34.89
8.25' (LT)
-EL- 12+19.95
7.35' (LT)
-EL- 12+99.69
7.85' (LT)
R 17.9'
R 10'
-EL- 13+67.86
8.96' (LT)
-EL- 13+38.04
32.69' (LT)
-EL- 13+88.71
34.96' (LT)
DI
TOP=796.84'
CB INV=791.58'
-EL- 12+00.00
0.82' (RT)
TYPE 7
8"-12" C&G
R 5'
SUMMIT AVE SBL 36' BST
STD. 852.01 (KEYED IN) ISLAND
STD. 852.01 (KEYED IN) ISLAND
-EL-
N27°26'10.1"E
-EL-
N27°26'10.1"E
15" RCP-IV
DI
TOP = ADJUST
INV = 791.78'
TO US 29
TO BESSEMER AVE
REMOVE AND REPLACE CONC. ISLAND TO NEAREST CONST. JOINT
-EL- 12+61.00
12.14' (RT)
-EL- 13+66.95
0.99' (RT)
-EL- 13+87.38
7.60' (RT)
REMOVE AND REPLACE CONC. ISLAND TO NEAREST CONST. JOINT
-EL- 14+99.92
3.22' (LT)
SUMMIT AVE NBL 33' BST
-EL- 12+99.54
12.16' (RT)
R 60'
-EL- 14+14.94
9.82' (RT)
REMOVE CONC. ISLAND
W/LT
Crown Castle Fiber FO
AT&T Corp. Ductbank
EXISTING R/W
MTL FRAME
BUS STOP
TYPE 3
NAIL
NAIL
EIP
48" BK
WALL
12" SIDEWALK
-EL- 14+07.67
4.56' (LT)
POT STA 13+18.43
6" DI
(PRIVATE LINE
ACCORDING TO RECORDS)
NAIL-R/W
0.15'
NAIL-R/W
0.53'
NORTHEAST CENTER LLC
DB 6296 PG 2541
PB 132 PG 53
NORTHEAST CENTER LLC
DB 6296 PG 2533
SUMMIT HEIGHTS LLC
DB 7782 PG 365
SUMMIT HEIGHTS LLC
DB 7782 PG 369
S 62°43'27" E
100.15'
S 62°43'44" E
99.58'
S 64°17'54" E
133.61'
S 62°45'28" E
133.49'
N 27°15'05" E
174.97'
S 27°24'15" W
46.45'
S 27°24'15" W
46.45'
EIP
14.83'
S 27°24'15" W
EXISTING R/W
8" UNK

REVISIONS

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
W5807A	RW2C-1

Location and Surveys

GEL SOLUTIONS

111-C CREEKRIDGE ROAD
GREENSBORO, NC 27406

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. Icenhour, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 6/07/2021
Datum/Epoch:NAD83/ NA 2011
Published/Fixed-control use: NA
Localized around: U5851-3
Northing:857007.582
Easting:1769210.626
Combined grid factor:0.99995003
Geoid model:12BNC
Units:US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 6/08/2021 to 6/10/2021 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 9th day of JUNE, 2023.

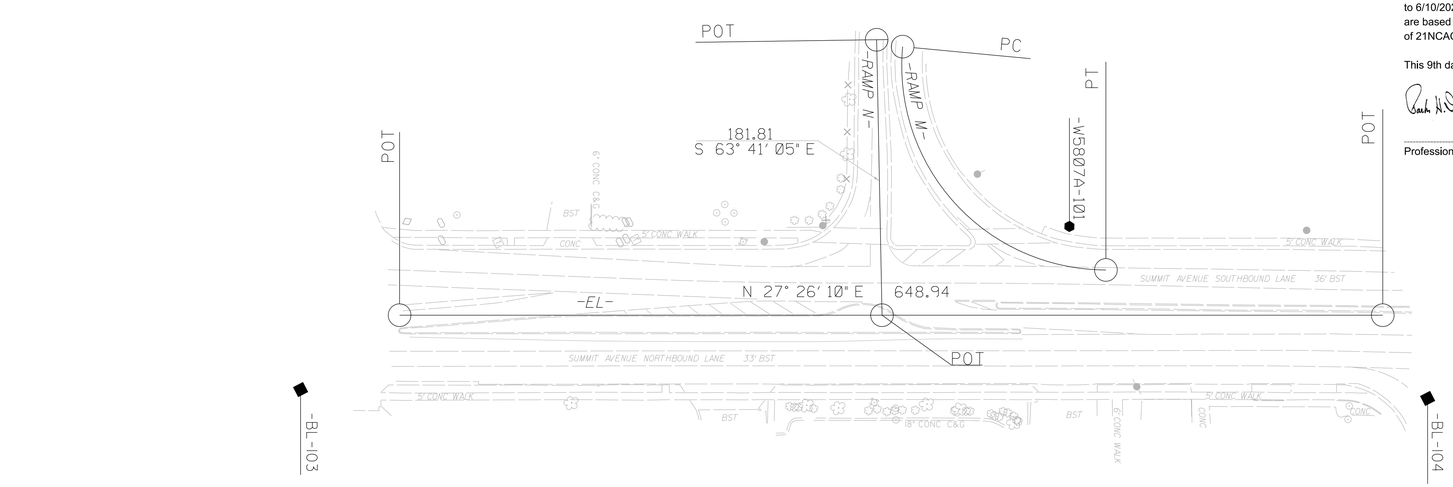
Digitally signed by Parks Icenhour
Date: 2023.06.09 17:06:05 -04'00'

Professional Land Surveyor L-3996

NC GRID NAD 83 NA 2011

-W5807A-102

BM #1
-BL- STA 9+16.00 204' L
ELEV. 791.59'
N 851579 E 1770664
RAILROAD SPIKE IN ROOT OF 20" WILLOW OAK



SEE SHEET RW2C-3
FOR FURTHER
ALIGNMENT DETAILS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

08-JUN-2023 16:51
Z:\Client Files\K-R\NCDOT\NCDOT - 2021 Projects\ncdot02721 w5807a.con_gel\Submittal\W5807A_LS_RW2C-1.dgn
Andy Smith AT ANDYSMITH-GEG

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BL

POINT	DESC.	NORTH	EAST	ELEVATION
103	BL-103	851123.5300	1770750.3940	793.07
101	W5807A-101	851623.5130	1770888.6870	796.82
104	BL-104	851781.0580	1771098.3390	797.72

```
**************************************
BM1       ELEVATION = 791.59
N 851579      E 1770664
RAILROAD SPIKE IN ROOT OF 20" WILLOW OAK
**************************************
```

PROJECT REFERENCE NO.	SHEET NO.
W5807A	RW2C-2

Location and Surveys

GEL SOLUTIONS
111-C CREEKRIDGE ROAD
GREENSBORO, NC 27406

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR

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Combined grid factor:0.99995003
Geoid model:12BNC
Units:US SURVEY FEET

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This 21 day of JUNE, 2021.

2021.06.21 17:30:36 -04'00'

Professional Land Surveyor L-3996

NOTES:

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21-JUN-2021 13:02
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Andy Smith AT ANDYSMITH-GEG

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL

POINT	N	E	BEARING	DIST
POT	851204.135	1770736.957		
LINE			N 27°26'10.1" E	648.94
POT	851780.085	1771035.962		

RAMPM

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	851580.493	1770732.643							
CURVE			N 75°07'21.7" E	199.30	95°22'22.3"(LT)	42°31'05.6"	224.31	148.02	134.76
PT	851631.663	1770925.259							

RAMPN

POINT	N	E	BEARING	DIST
POT	851567.350	1770720.718		
LINE			S 63°41'05.4" E	181.81
POT	851486.752	1770883.685		

PROJECT REFERENCE NO.	SHEET NO.
W5807A	RW2C-3

Location and Surveys

GEL SOLUTIONS
111-C CREEKRIDGE ROAD
GREENSBORO, NC 27406

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

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This 21 day of JUNE, 2021.

2021.06.21 17:33:07 -04'00'

Professional Land Surveyor L-3996

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21-JUN-2021 13:09
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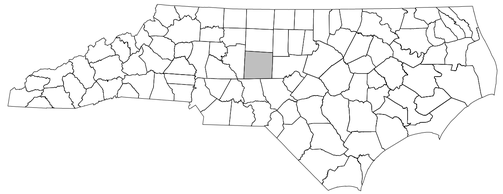
Andy Smith AT ANDYSMITH-GEG

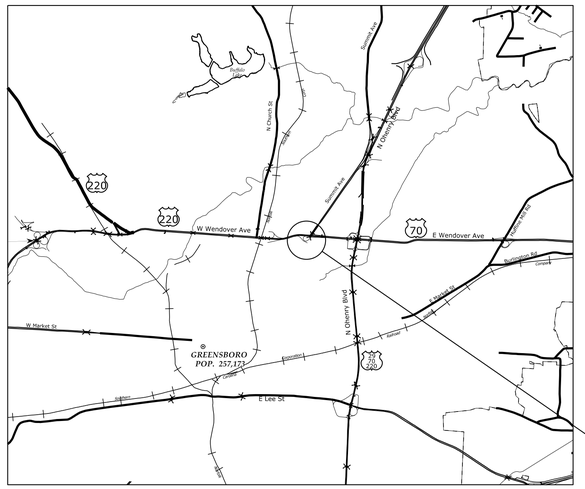
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

GUILFORD COUNTY



SR 2526 (SUMMIT AVENUE) AT EASTBOUND US 220 (WENDOVER AVENUE) RAMPS IN GREENSBORO



PROJECT LOCATION

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET
TMP-1A	ROADWAY STANDARD DRAWINGS, LEGEND, AND PHASING
TMP-2	GENERAL NOTES
TMP-3	LONG TERM LANE CLOSURE DETAIL

SHEET NO.
TMP-1

TIP PROJECT: W-5807A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

KEN THORNEWELL, JR, PE

JUSTIN BEAVER, PE

NCDOT CONTACTS:

KEN THORNEWELL, JR, PE
PROJECT ENGINEER

JUSTIN BEAVER, PE
PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

APPROVED: DocuSigned by: Kenneth C. Thornewell Jr., P.E. 1E991EF27373405...

DATE: 02/21/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 044089 ENGINEER KENNETH C. THORNEWELL JR.

2/16/2024
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User:jdbeaverl

PROJ. REFERENCE NO.	SHEET NO.
W-5807A	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS
1205.15	PAVEMENT MARKINGS - SUPERSTREETS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

PHASING

STEP I

USING RSD 1101.01, SHEET 2 OF 3, INSTALL WORK ZONE ADVANCE WARNING SIGNS ON -L- SUMMIT AVE AND -Y- OFF-RAMP.

USING 1101.01, SHEET 3 OF 19, PERFORM CURB RAMP AND CONCRETE ISLAND WORK ALONG -Y-. CLOSE SIDEWALK ACCESS AS NEEDED WITH PEDESTRIAN CHANNELIZING DEVICES.

STEP II

USING TMP-3, CLOSE BOTH INSIDE LANES ALONG -L- SUMMIT AVE AND LEFT TURN LANE ALONG -Y- OFF-RAMP.

PERFORM SIGNAL FOUNDATION AND MEDIAN WORK ALONG -L-. KEEP INSIDE LANES CLOSED AS NEEDED UNTIL SIGNAL FOUNDATION IS COMPLETE.

KEEP THE LEFT TURN ALONG -Y- OFF RAMP CLOSED WHILE CONSTRUCTING THE SIGNAL.

STEP III

USING RSD 1101.02, SHEET 3 OF 19, AND LAW ENFORCEMENT AS NEEDED, FINISH SIGNAL AND MEDIAN CURB CONSTRUCTION.

KEEP THE LEFT TURN ALONG -Y- OFF RAMP CLOSED UNTIL SIGNAL IS OPERATIONAL.

STEP IV

UPON COMPLETION OF CONSTRUCTION, REMOVE ALL TRAFFIC CONTROL DEVICES AND ACTIVATE SIGNAL.

APPROVED: DocuSigned by: Kenneth C. Thornewell Jr., P.E. 1E991EF2737405...

DATE: 02/21/2024

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044089 KENNETH C. THORNEWELL JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

2/21/2024
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User:jdbeaver

PROJ. REFERENCE NO.	SHEET NO.
W-5807A	TMP-2

GENERAL NOTES / LOCAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

ANY ROAD

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

B) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
SUMMIT ROAD	Any Day 6:00 AM to 9:00 PM	20 MIN FOR SIGNAL WORK

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

H) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

I) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

J) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

K) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

L) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

M) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

N) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

O) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

P) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

Q) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES DRUMS PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

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

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

T) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.

MANAGEMENT STRATEGIES

TRAFFIC MANAGEMENT STRATEGIES:
- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- RAMP CLOSURES / RELOCATION

TRAFFIC / INCIDENT MANAGEMENT & SPEED ENFORCEMENT STRATEGIES:
- COORDINATION WITH STATE TRAFFIC OPERATIONS CENTER (STOC)
- DEDICATED (PAID) LAW ENFORCEMENT

CONTRACTING & INNOVATIVE CONTRUCTION STRATEGIES:
- INTERMEDIATE CONTRACT TIMES / LIQUIDATED DAMAGES

APPROVED: DocuSigned by: Kenneth C. Thornewell Jr., P.C. 1E991EF27373405...

DATE: 02/21/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 044089 ENGINEER KENNETH C. THORNEWELL JR.

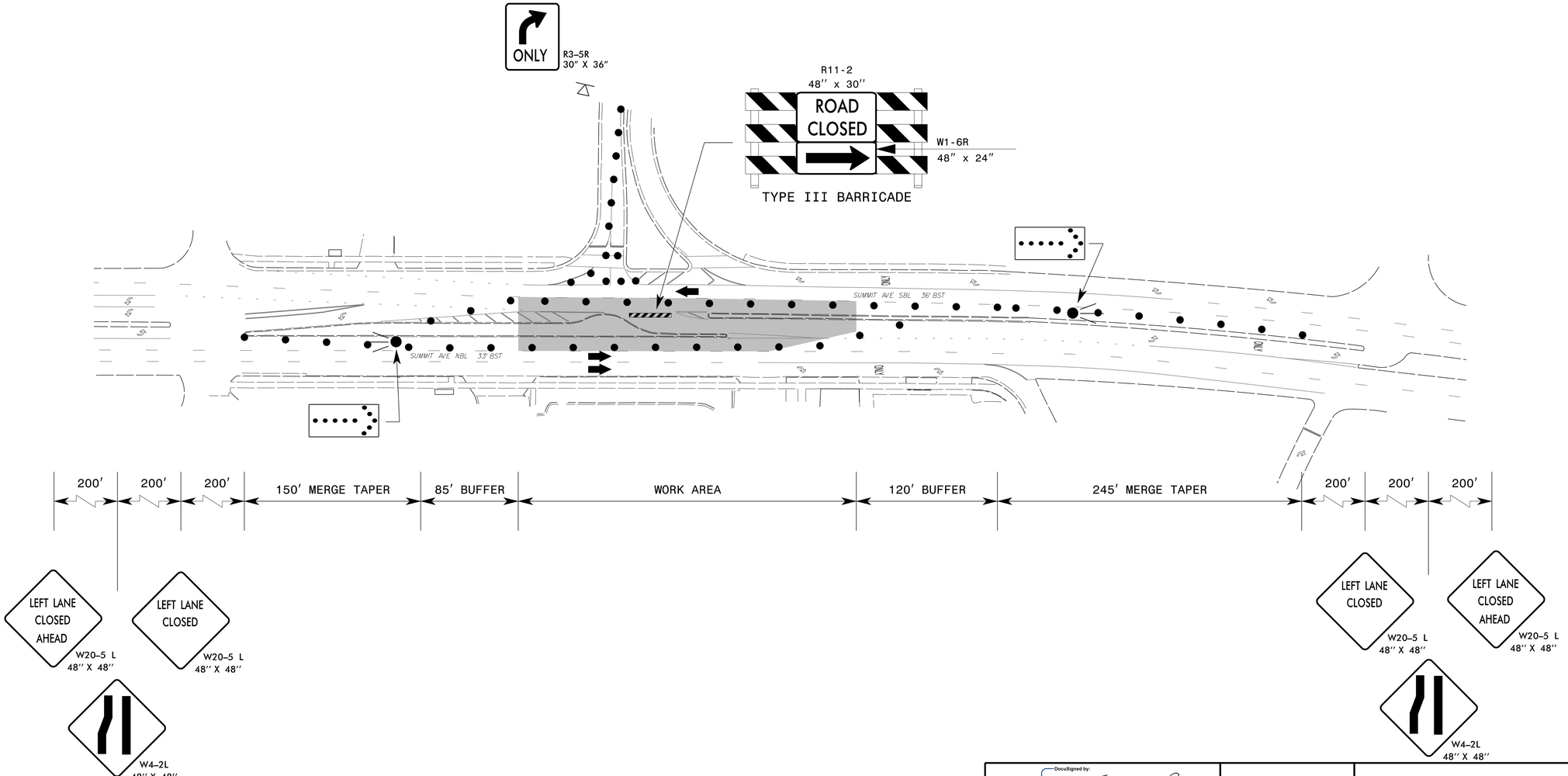
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

GENERAL NOTES

2/21/2024
S:\TMU\WZTC\DesignGroup2\Beaver\W-5807A (In House)\W-5807A_TMP-2-Notes.dgn
User:jdbeaver

PROJ. REFERENCE NO.	SHEET NO.
W-5807A	TMP-03



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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

LONG TERM LANE CLOSURE DETAILS

2/2/2024
S:\TMU\WZTC\DesignGroup2\Beaver\W-5807A (In House)\W-5807A_TMP-3-Long Term LC Details.dgn
User:jdbeaver

09/08/99

TIP PROJECT: W-5807A

CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5807A	PMP-1	PMP-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT MARKING PLAN
GUILFORD COUNTY

LOCATION: *SR 2526 (SUMMIT AVENUE) AT EASTBOUND US 220 (WENDOVER AVENUE) RAMPS IN GREENSBORO*

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN ROADWAY STANDARD DRAWINGS - DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AN BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

-STD. NO-	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVMENT MARKINGS - INTERSECTIONS
1205.05	TURN LANES
1205.06	LANE DROPS
1205.08	SYMBOLS AND WORD MESSAGES
1205.09	PAINTED ISLANDS

GENERAL NOTES

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

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

ROAD NAME	MARKING
ALL	THERMOPLASTIC

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

C) REMOV&R.EPLACE ANY CONFLICTING / DAMAGED PAVEMENT MARKING LINES .

INDEX

PLAN PREPARED BY: NCDOT DDC UNIT

CHAD REIMAKOSKI — DDC ENGINEER

JAMES B. YATES, PE — PROJECT DESIGN ENGINEER

PERMANENT PAVEMENT MARKING & MARKER SCHEDULE

TIP Project # W-5807A

THERMOPLASTIC(6", 90 MILS)

T20	(6") WHITE EDGELINE		97LF
T20	(6") WHITE EDGELINE	From Sta.14+27 -EL- to Sta. 16+45 -EL-	218LF
T22	(6") 10 FT. WHITE SKIP	From Sta.10+00 -EL- to Sta. 14+47 -EL-	112LF
T22	(6") 10 FT. WHITE SKIP	From Sta.10+00 -EL- to Sta. 16+45 -EL-	161LF
T22	(6") 10 FT. WHITE SKIP	From Sta.10+00 -EL- to Sta. 16+45 -EL-	161LF
T23	(6") 3 FT. - 9 FT./SP WHITE MINISKIP		60LF
T23	(6") 3 FT. - 9 FT./SP WHITE MINISKIP	From Sta.14+07 -EL- to Sta. 16+45 -	60LF
T30	(6") YELLOW EDGELINE		19LF
T34	(6") 2 FT. - 6 FT./SP YELLOW MINISKIP		27LF

TOTAL (6", 90 MILS) 1015 LF

THERMOPLASTIC (12", 90 MILS)

T50	(12") WHITE GORELINE		46LF
T50	(12") WHITE GORELINE	From Sta.10+00 -EL- to Sta. 11+06 -EL-	106LF
T50	(12") WHITE GORELINE	From Sta.10+00 -EL- to Sta. 11+06 -EL-	106LF
T50	(12") WHITE GORELINE	From Sta.11+52 -RAMPM- to Sta. 11+85 -	33LF
T50	(12") WHITE GORELINE	From Sta.13+91 -EL- to Sta. 14+24 -EL-	33LF
T52	(12") YELLOW DIAGONAL		36LF

TOTAL (12", 90 MILS) 360 LF

THERMOPLASTIC PAVEMENT MARKING CHARACTER (90 MILS)

T100	ALPHANUMERIC CHAR. (90 MIL)	--ONLY X 2--	8EA

THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS)

T70	LEFT TURN ARROW	3EA
T71	RIGHT TURN ARROW	5EA
T72	STRAIGHT ARROW	12EA

TOTAL PAVEMENT MARKING SYMBOLS (90 MILS) 20 EA

THERMOPLASTIC GENERIC PAVEMENT MARKING ITEM (1205)

T61	WHITE STOPBAR (24", 90 MIL)	84LF
T62	WHITE CROSSWALK LINE (24", 90 MIL)	340LF

TOTAL GENERIC PAVEMENT MARKING ITEM (1205) 424 LF

5/26/20

W-5807A

PMP 2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
GUILFORD COUNTY

DIVISION 7 DDC UNIT

ROADWAY DESIGN ENGINEER

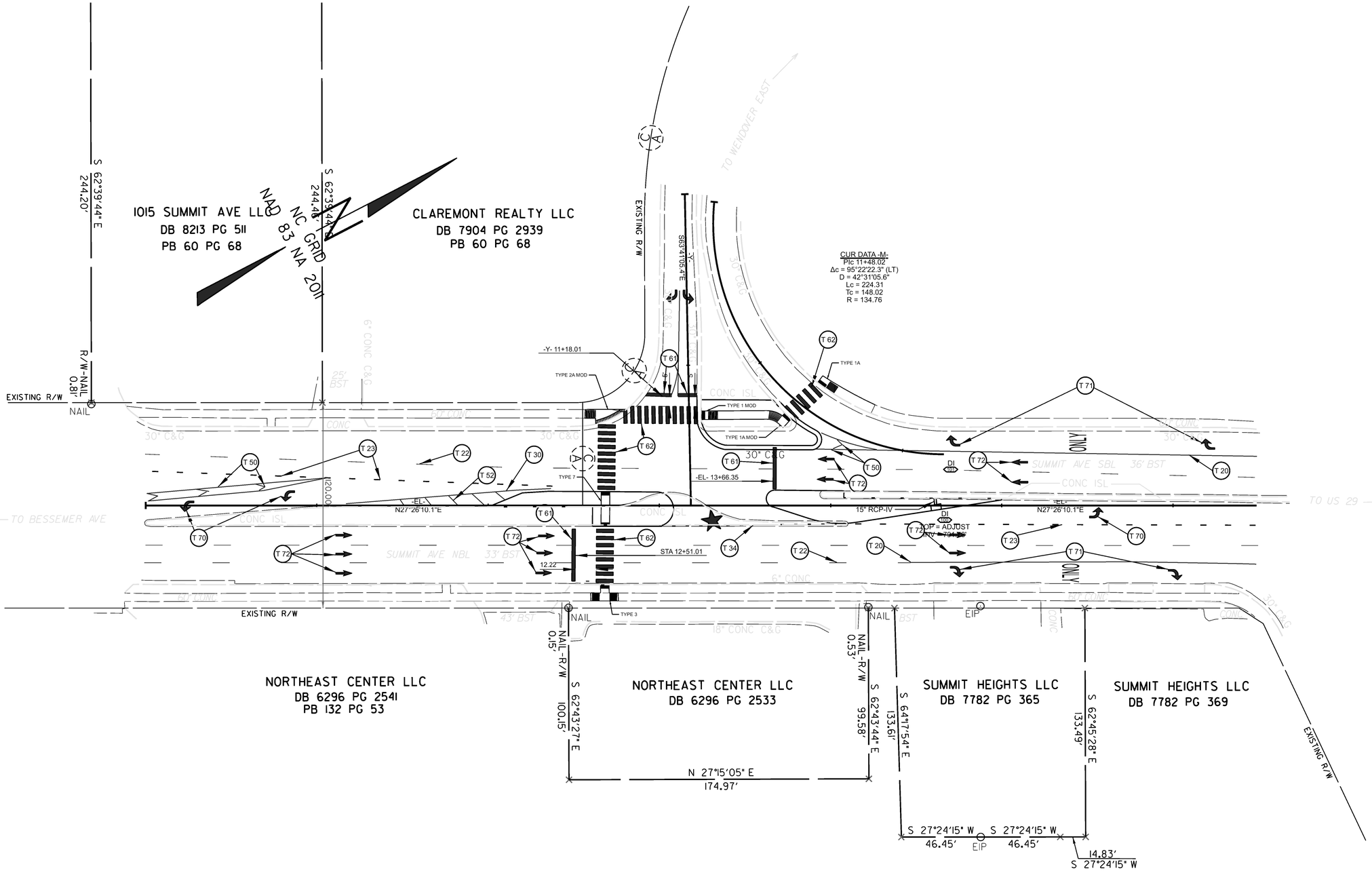
NORTH CAROLINA PROFESSIONAL SEAL 056425 ENGINEER James B. Yates
02/17/2021
Docusigned by: James B. Yates
1E16507EA7A04AE

PREPARED BY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Scale: 1"= 30'

REVISIONS



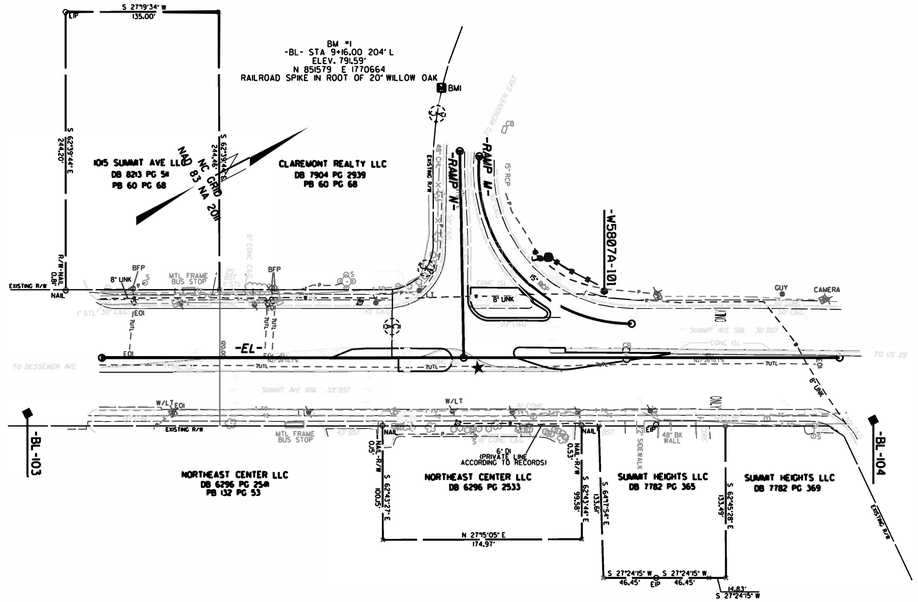
TIP PROJECT: W-5807A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5807A	EC-1	EC-4

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
48952.1.2	2526004	PE
48952.2.2	2526004	R/W
48952.3.2	2526004	CONSTRUCTION



* DRAWING NOT TO SCALE *

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	EW CFW
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

0' 5' 20'
Scale: 1"= 20'

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared in the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Designed by:

James B. Yates, PE — *4523*
NAME — *LEVEL III CERTIFICATION NO.*

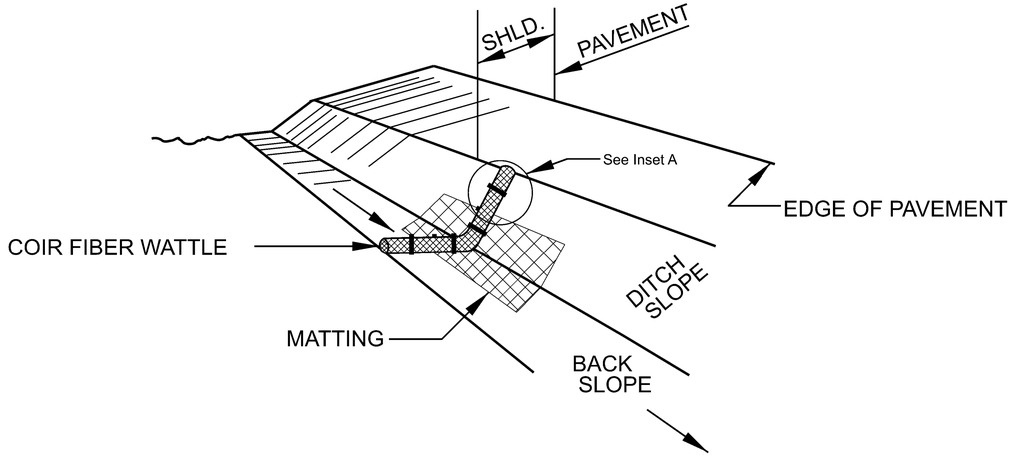
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

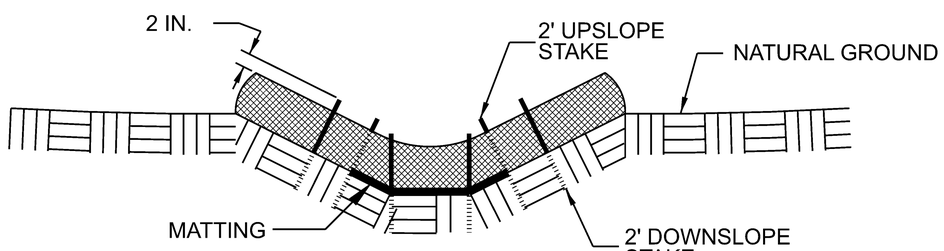
PROJECT REFERENCE NO.	SHEET NO.
W-5807A	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE DETAIL



ISOMETRIC VIEW

CROSS SECTION
VEE DITCH



CROSS SECTION
TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

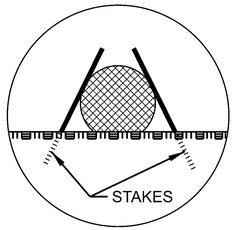
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

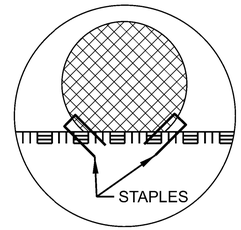
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

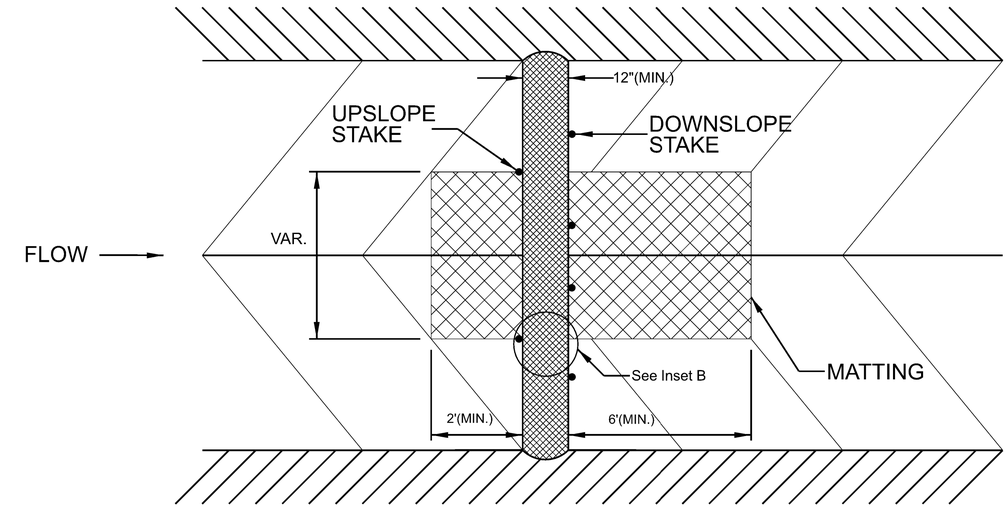
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5807A	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
W-5807A	EC-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BM #1
-BL- STA 9+16.00 204' L
ELEV. 791.59'
N 851579 E 1770664
RAILROAD SPIKE IN ROOT OF 20" WILLOW OAK

INSTALL FABRIC INSERT INLET PROTECTION IN CATCH BASIN AT BOTTOM OF RAMP

1015 SUMMIT AVE LLC
DB 8213 PG 511
PB 60 PG 68

CLAREMONT REALTY LLC
DB 7904 PG 2939
PB 60 PG 68

NORTHEAST CENTER LLC
DB 6296 PG 2541
PB 132 PG 53

NORTHEAST CENTER LLC
DB 6296 PG 2533

SUMMIT
DB 778

S 62°39'44" E
244.20'

S 62°39'44" E
244.48'

NAD 83 NC GRID NA 2011

R/W-NAIL
0.81'

NAIL

EXISTING R/W

BFP

8" UNK

MTL FRAME BUS STOP

25' BST

1" STL

30" C&G

EOI

?UTL

-EL-

EOI -EL-
N27°26'10.1"E

120.00

TO BESSEMER AVE

CONC ISL

SUMMIT AVE NBL 33' BST

W/LT

60" CONC

-BL-103

MILLING LIMITS
-EL- 11+95.15

MILLING LIMITS
-Y- 11+09.07

MILLING LIMITS
-EL- 12+55.04

TYPE 2A MOD

TYPE 7

TYPE 3

-RAMP M-

-RAMP N-

-Y-
S63°41'05.4"E

EXISTING R/W

48" CHL

CB

TO WENDOVER EAST

15" RCP

30" C&G

CUR DATA -M-
PIc 11+48.02
Δc = 95°22'22.3" (LT)
D = 42°31'05.6"
Lc = 224.31
Tc = 148.02
R = 134.76

TOP=792.38'

-W5807A-101

MILLING LIMITS
-M- 11+17.44

TYPE 1A

TYPE 1 MOD

8" UNK

TYPE 1A MOD

WATTLE ON CATCH BASINS

15" RCP-IV

DI
101
TOP = ADJUST
INV = 794.79'

6" DI
(PRIVATE LINE
ACCORDING TO RECORDS)

NAIL-R/W
0.15'

NAIL-R/W
0.53'

S 62°43'2
100.15'

S 62°43'
99.58'

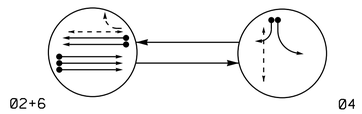
S 64°17'
133.6

72" SIDEWALK

PROJECT REFERENCE NO.	SHEET NO.
W-5807A	Sig 1

2 Phase
Fully Actuated
(Greensboro Signal System)

PHASING DIAGRAM



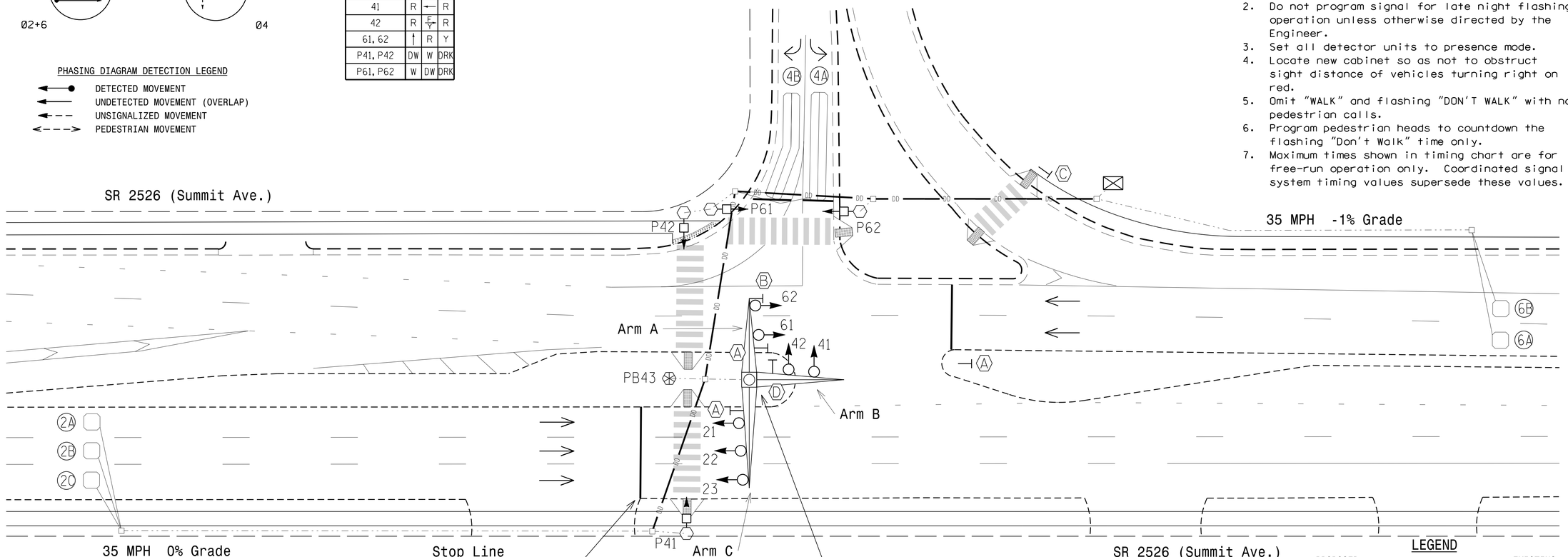
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 04	FLASH
21, 22, 23	↑	R	Y
41	R	←	R
42	R	←	R
61, 62	↑	R	Y
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green *	10	7	10
Gap, Extension *	5.0	2.0	5.0
Maximum Green 1 *	60	30	60
Maximum Green 2 *	0	0	0
Yellow Clear	3.9	3.0	3.9
Red Clear	1.9	2.9	1.9
Walk *	-	10	10
Pedestrian Clear	-	25	11
Green/Ped Delay	-	3	3
Added Initial *	1.0	-	1.5
Maximum Initial *	24	-	24
Time Before Reduction *	15	-	15
Time To Reduce *	30	-	30
Minimum Gap	3.0	-	3.0
Recall Mode	MIN RECALL	-	MIN RECALL
Lock Calls	YES	NO	YES
Dual Entry	-	-	-
Simultaneous Gap	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.

LOOP & DETECTOR UNIT INSTALLATION CHART

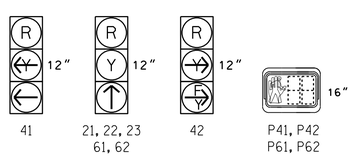
TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

INDUCTIVE LOOPS					DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD
2A	6X6	200	4	X	2	-	-	-	X	X	X	-	X
2B	6X6	200	4	X	2	-	-	-	X	X	X	-	X
2C	6X6	200	4	X	2	-	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	X	4	-	-	-	X	X	-	-	X
4B	6X40	0	2-4-2	X	4	-	15	-	X	X	-	-	X
6A	6X6	200	4	X	6	-	-	-	X	X	X	-	X
6B	6X6	200	4	X	6	-	-	-	X	X	X	-	X

This plan supersedes the plans signed and sealed on 11/22/22 and 4/12/23.

SIGNAL FACE I.D.

All Heads L.E.D.



SIGNS

PROPOSED		EXISTING
A	No U-Turn/No Left Turn Sign (R3-18)	A
B	No Right Turn Sign (R3-1)	B
C	Pedestrian Crossing Sign (W11-2) w/ Diagonal Arrow Plaque (W16-7pL)	C
D	Right "TURNING VEHICLES" Yield "TO" Pedestrians Sign (R10-15R)	D

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
	Metal Pole with Mastarm	
	Type I Pushbutton Post	
	Type II Signal Pedestal	
DD	Directional Drill	N/A

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 2526 (Summit Avenue)
at
US 70 EB-US 220 SB
(East Wendover Avenue) Ramps

Division 7 Guilford County Greensboro

PLAN DATE: January 2024 REVIEWED BY:
PREPARED BY: J.A. Lohr REVIEWED BY:

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

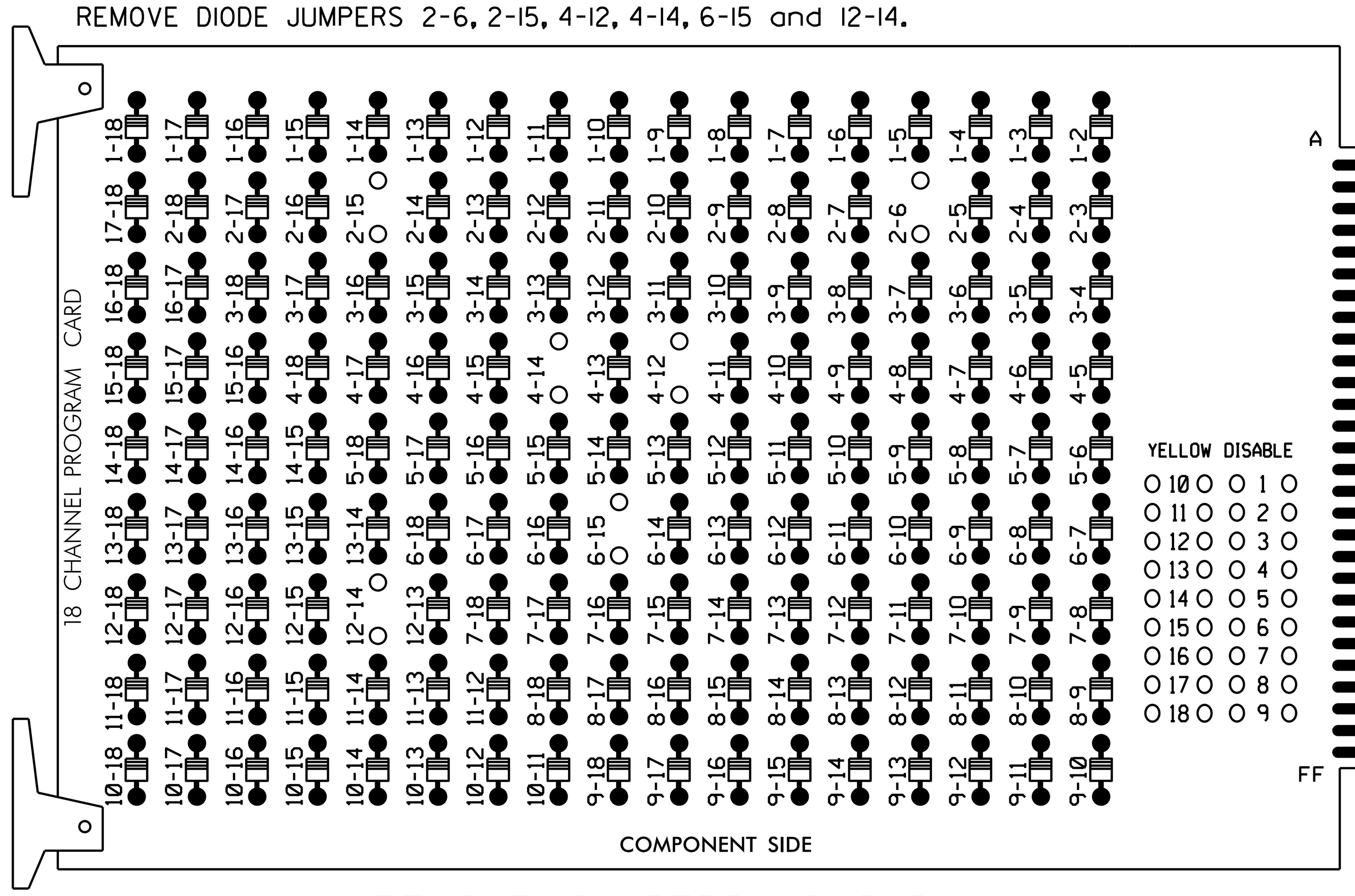
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. TIEMEIER
DocuSigned by: 01/29/2024
DATE
SIG. INVENTORY NO. 07-0638

29-JAN-2024,18:01
S:\Traffic\Signals\Signal Design Section\Control Regions\Div 7\W-5807A\070638_sig_dsn_20240129.dgn

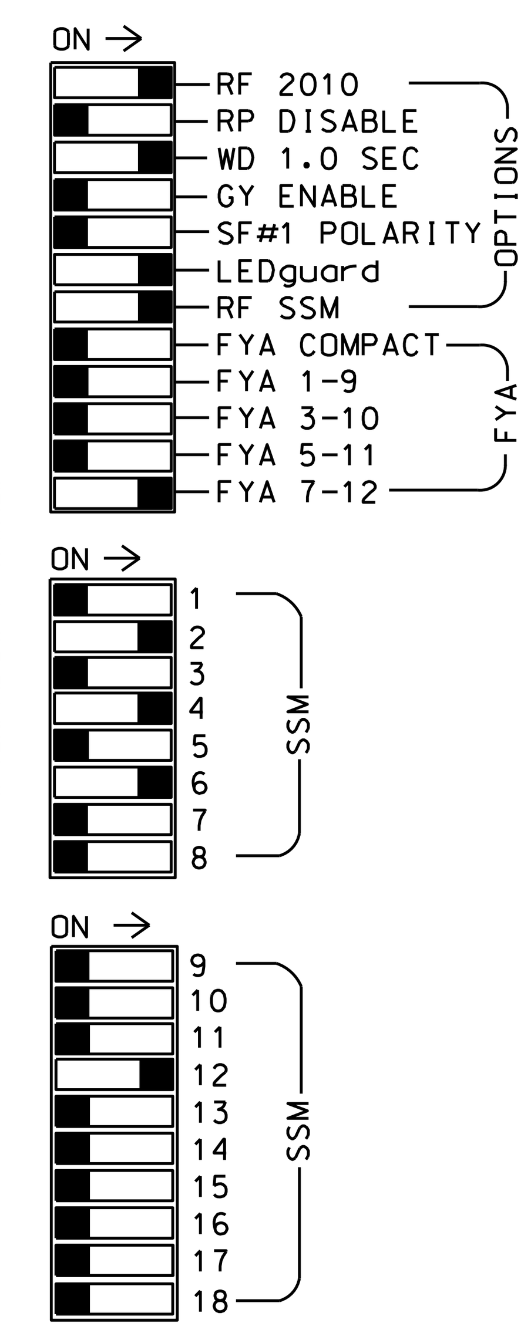
18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-6, 2-15, 4-12, 4-14, 6-15 and 12-14.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

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. Ensure Conflict Monitor Ethernet port is connected to a Switch port located within the cabinet.

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. Initialize database in Naztec 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
3. Initialize I/O "C1-C11-ABC IO Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
4. Program phases 2 and 6 for Start Up In Green.
5. Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
6. Ensure "Local Flash Start" feature is set to "DRK".
7. Ensure "InhFYARedSt feature is set to "ON".
8. Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

   FROM MAIN MENU->1->8->7 (I/O LOGIC)

Result	Src.Fcn	TimeOp	Time
I208 =	01208	DLY	1

9. The cabinet and controller are part of the City of Greensboro Signal System.

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, 22,23	NU	NU	41	P41, P42	NU	61,62	P61, P62	NU	NU	NU	NU	NU	NU	NU	42★	NU
RED		128			101			134									A101	
YELLOW		129						135										
GREEN																		
RED ARROW																		
YELLOW ARROW					102												A102	
FLASHING YELLOW ARROW																	A103	
GREEN ARROW		130			103			136										
(Don't Walk hand symbol)						104			119									
(Walk pedestrian symbol)						106			121									

NU = Not Used

★ See pictorial of head wiring in detail below.

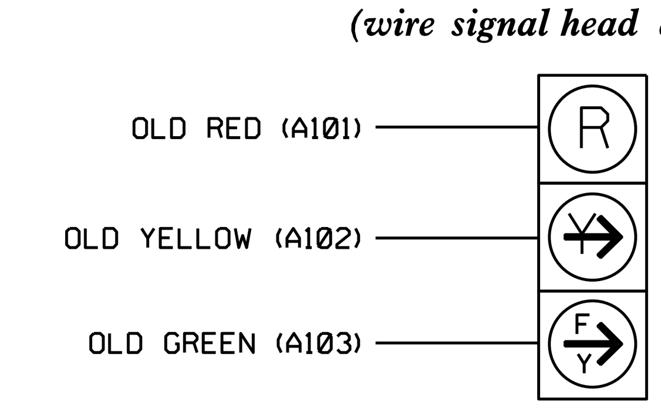
EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................TRAFFICWARE APOGEE
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 (12-STD, 6-AUX)
LOAD SWITCHES USED......S2,S5,S6,S8,S9,AUX S5
PHASES USED.............2,4,4 PED,6,6 PED
OVERLAP A...............NOT USED
OVERLAP B...............NOT USED
OVERLAP C...............NOT USED
OVERLAP D...............*

* See Overlap Programming Detail Sheet 2.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal head as shown)



42

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	SLOT EMPTY	Ø2 2A	Ø2 2C	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
"I"	L		Ø2 2B	NOT USED			Ø4 4B						Ø4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
"J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
"J"	L		Ø6 6B												

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
2A	TB2-5,6	I2U	39	2	2				X	X	X
2B	TB2-7,8	I2L	43	3	2				X	X	X
2C	TB2-9,10	I3U	63	4	2				X	X	X
4A	TB4-9,10	I6U	41	8	4				X	X	
4B	TB4-11,12	I6L	45	9	4		15		X	X	
6A	TB3-5,6	J2U	40	16	6				X	X	X
6B	TB3-7,8	J2L	44	17	6				X	X	X
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED						
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED						

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

This Plan Supersedes Electrical Details Sealed on 11/23/2022 and 4/13/2023

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0638
DESIGNED: January 2024
SEALED: 1/29/2024
REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 2526 (Summit Avenue)
at
US 70 EB-US 220 SB
(East Wendover Avenue) Ramps

Division 7 Guilford County Greensboro

PLAN DATE: January 2024 REVIEWED BY:
PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS INIT. DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division, ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 031001
D. TODD JOYCE

DocuSigned by: D. Todd Joyce 02/01/2024
DATE

SIG. INVENTORY NO. 07-0638

PROJECT REFERENCE NO.	SHEET NO.
W-5807A	Sig. 3

OVERLAP PROGRAMMING DETAIL FOR OVERLAP D

(program controller as shown below)

FROM MAIN MENU PRESS "1" CONTROLLER AND THEN "5" OVERLAPS

```
Overlaps
1.General Parms
2.Program
3.Status
```

```
General Overlap Parameters
        Lock Inhibit OFF
   Confl Lock Enable OFF
    Parent P Clrncs ON
Extra Included Phases OFF
 InhibitLockInterval ALWAYS
```

PRESS "ESC"

```
Overlaps
1.General Parms
2.Program
3.Status
```

```
Enter Overlap # 4

then press Enter
```

```
Overlap D-4
1.Program Parms
2.Confl Prog+
3.Program Parms+
```

```
Ovrlp D-4    Ps....................
Included Ps    4  0  0  0  0  0  0  0
Modifier Ps    0  0  0  0  0  0  0  0
Type:NORMAL Grn:  0  Yel: 3.5  Red: 1.5
```

END OF OVERLAP PROGRAMMING DETAIL

CHANNEL & I/O PROGRAMMING DETAIL FOR FYA OPERATION

(program controller as shown below)

This programming takes the output that drives a Flashing Yellow Arrow and makes it flash.

FROM MAIN MENU, KEYSTROKES 1-8

```
           Channel & I/O
1.Chan  1-16  4.Chan+  1-16 7.IO Logic
2.chan 17-24  5.chan+ 17-24 8.IO Viewer
3.Chan Parms  6.IO Parms    9.IO UserMap
```

PRESS THE RIGHT ARROW KEY UNTIL THE SCREEN AT RIGHT APPEARS

```
     Chan.1...2...3...4...5...6...7...8 >
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   .   .
Flash Grn .   .   .   .   .   .   .   .
Inhibit Red Flash In
 Preempt  .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   0   0
```

```
     Chan.9..10..11..12..13..14..15..16
Flash Red .   .   .   .   .   .   .   .
Flash Yel .   .   .   .   .   .   .   .
Flash Grn .   .   .   X   .   .   .   .   ←
Inhibit Red Flash In
 Preempt  .   .   .   .   .   .   .   .
Olap Ovrd 0   0   0   0   0   0   0   0
```

Program the controller as shown above.

CHANNEL & I/O PROGRAMMING COMPLETE

GREEN DELAY PROGRAMMING DETAIL FOR LEADING PEDESTRIAN INTERVAL OPERATION

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-1

```
           Channel & I/O
1.Times      4.Ring,Start,Concur 7.Times+
2.Options    5.Call,Inh,Redirect 8.Copy
3.Options+   6.Alt Progs+        9.AdvWarn
```

PRESS "+" KEY ONCE

```
Options+        P..1..2..3..4..5..6..7..8 >
      Ped Delay -  .  .  .  .  .  .  .  .
Red Rest On Gap    .  .  .  .  .  .  .  .
   Conflicting P   0  0  0  0  0  0  0  0
   Grn/Ped Delay   0  0  0  3  0  3  0  0   ←
 Omit Yel, Yel P   0  0  0  0  0  0  0  0
 Ped Out/Ovrlp P   0  0  0  0  0  0  0  0
 StartYel,Next P + 0  0  0  0  0  0  0  0
```

CHANNEL & I/O PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

This Plan Supersedes Electrical Details Sealed on 11/23/2022 and 4/13/2023

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0638
DESIGNED: January 2024
SEALED: 1/29/2024
REVISED: N/A

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Transportation Mobility and Safety Division, ITS & Signals Management Section — State of North Carolina Department of Transportation
750 N.Greenfield Pkwy,Garner,NC 27529

SR 2526 (Summit Avenue)
at
US 70 EB-US 220 SB
(East Wendover Avenue) Ramps

Division 7 | Guilford County | Greensboro

PLAN DATE: January 2024	REVIEWED BY:
PREPARED BY: Zarrar Zafar	REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

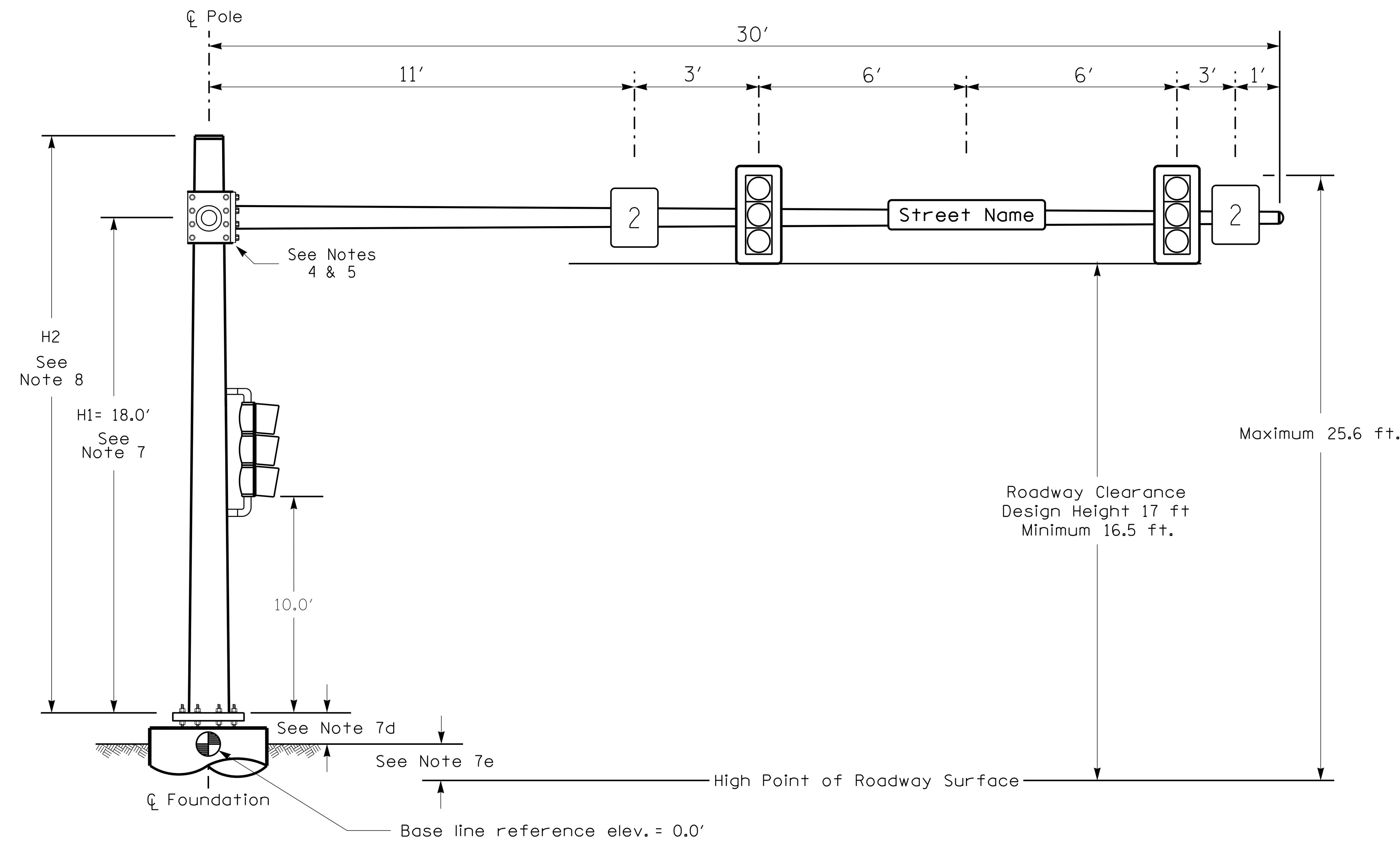
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE
DocuSigned by: D. Todd Joyce 02/01/2024
A90CADFDBD4241D...
DATE

SIG. INVENTORY NO. 07-0638

PROJECT REFERENCE NO.	SHEET NO.
W-5807A	Sig 4

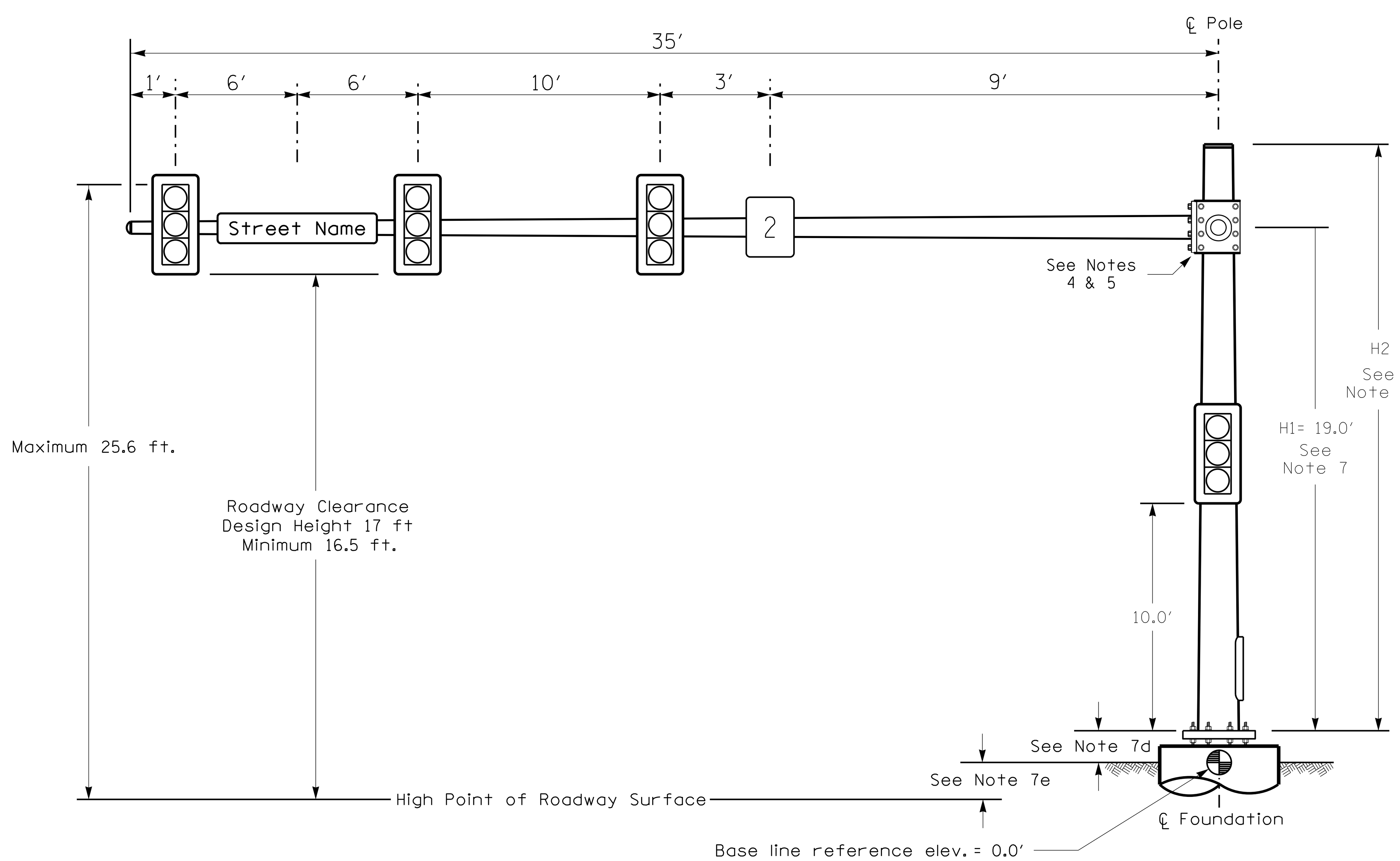
METAL POLE No. 1

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



Elevation View @ 0°

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



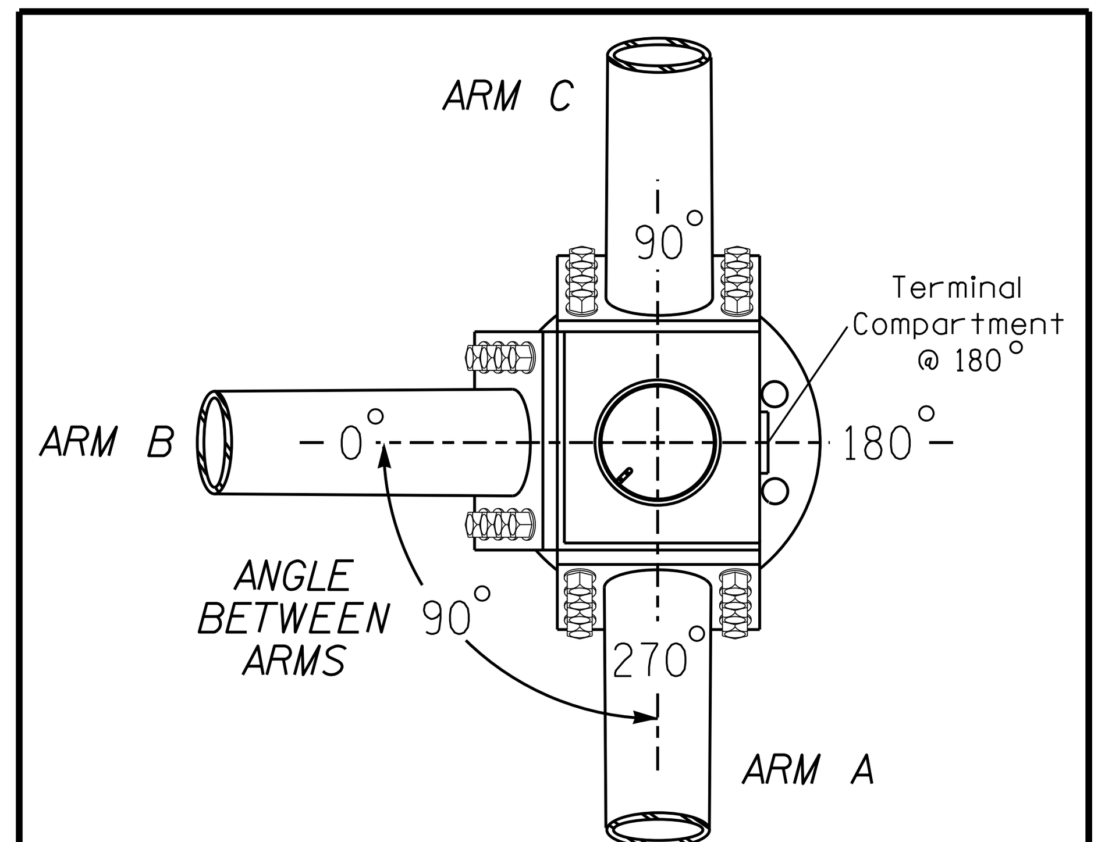
Elevation View @ 270°

SPECIAL NOTE

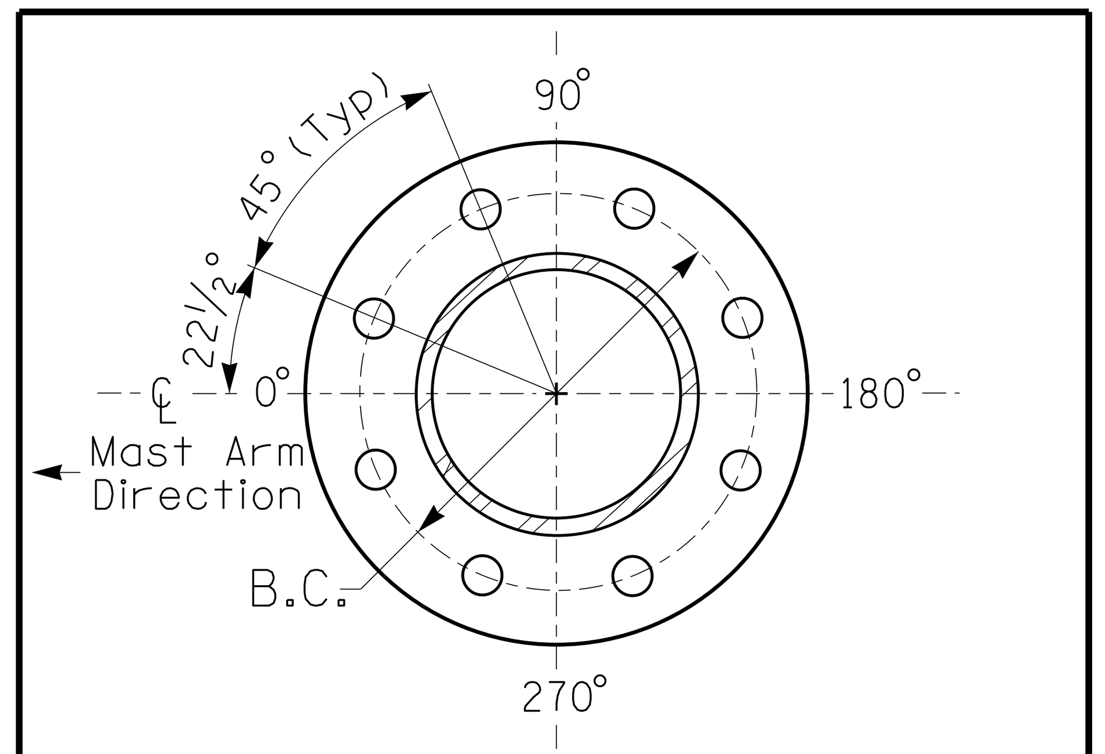
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

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	-0.6 ft.	+0.2 ft.
Elevation difference at Edge of travelway or face of curb	-0.6 ft.	+0.1 ft.

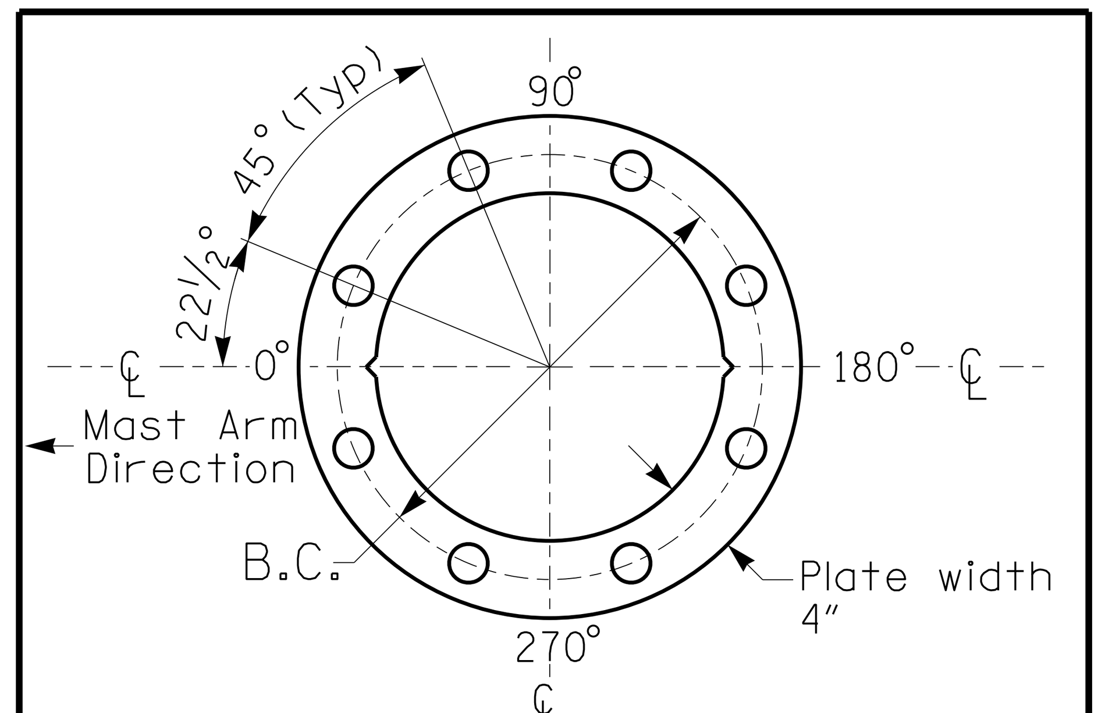


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



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

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
(signal head)	RIGID MOUNTED SIGNAL HEAD 12″-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5″W X 52.5″L	60 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0″W X 36.0″L	14 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0″W X 96.0″L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2024 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 REQUIREMENTS

2. 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.
3. Design all signal supports using force ratios that do not exceed 0.9.
4. 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.
5. 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.
6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
7. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
8. 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.
9. 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) 814-5000.
10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

This plan supersedes the plan signed and sealed on 3/9/23.

NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SR 2526 (Summit Avenue)
at
US 70 EB-US 220 SB
(East Wendover Avenue) Ramps

Division 7 Guilford County Greensboro

PLAN DATE: January 2024 REVIEWED BY:
PREPARED BY: J.A. Lohr REVIEWED BY:

SCALE 0 N/A
N/A

REVISIONS	INIT.	DATE

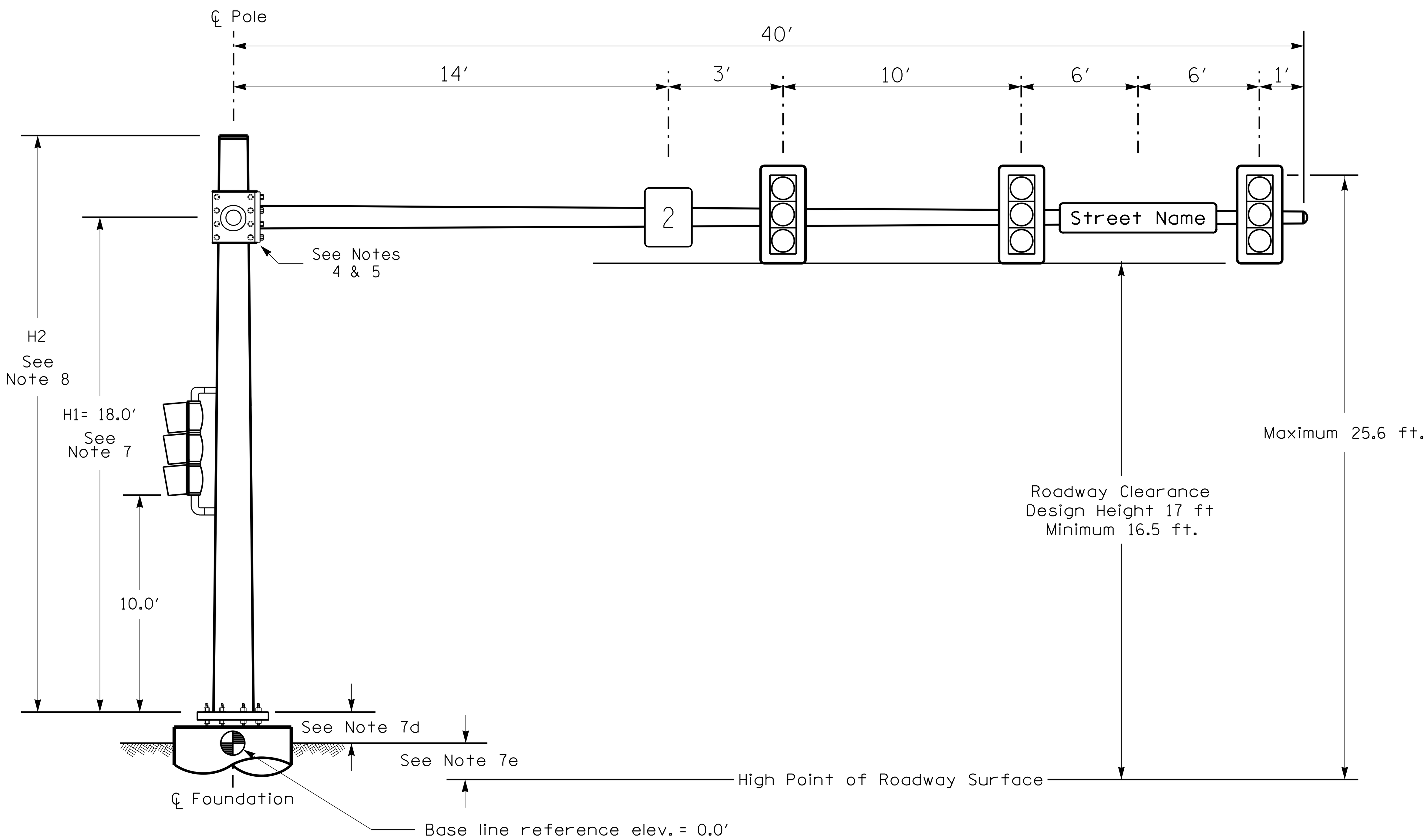
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

02/05/2024
DATE

SIG. INVENTORY NO. 07-0638

05-FEB-2024 13:22
S:*ITS&SU*ITS Signals*Signal Design Section*Central Region*Div 7*W-5807A*070638_sig_mp_20230309.dgn
jalohr

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



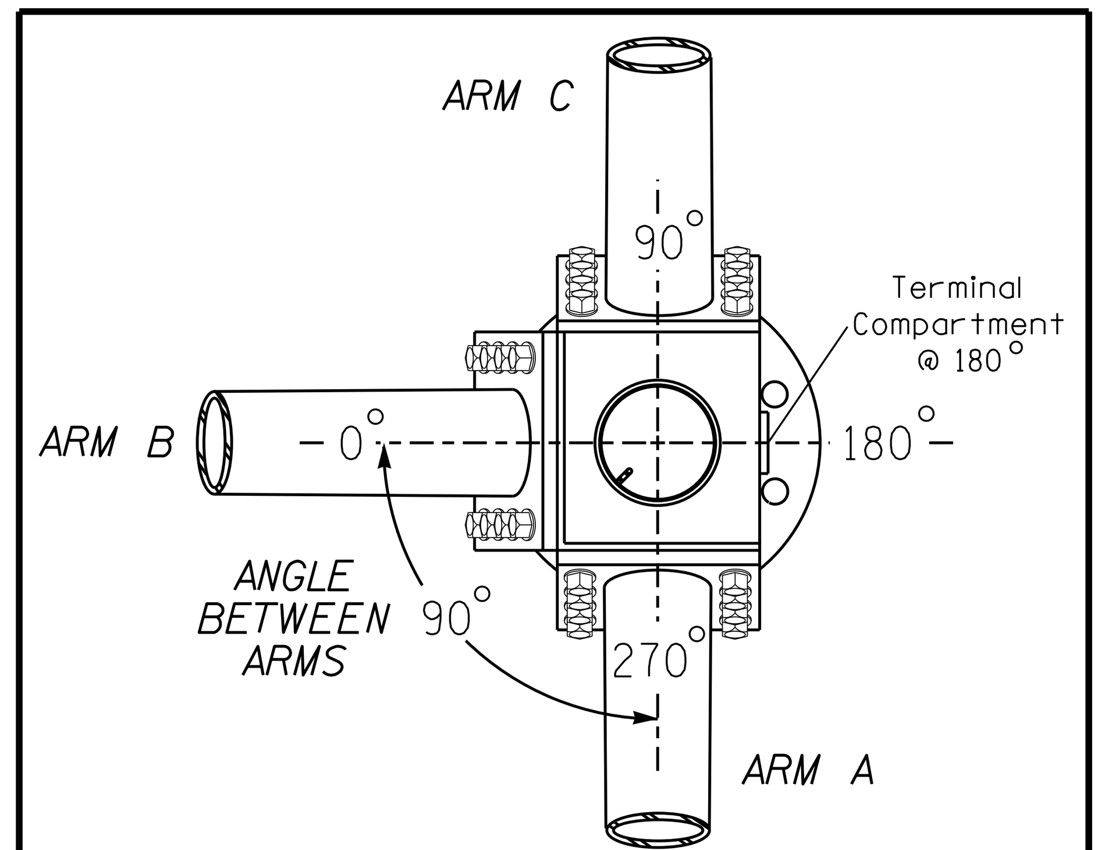
Elevation View @ 0°

SPECIAL NOTE

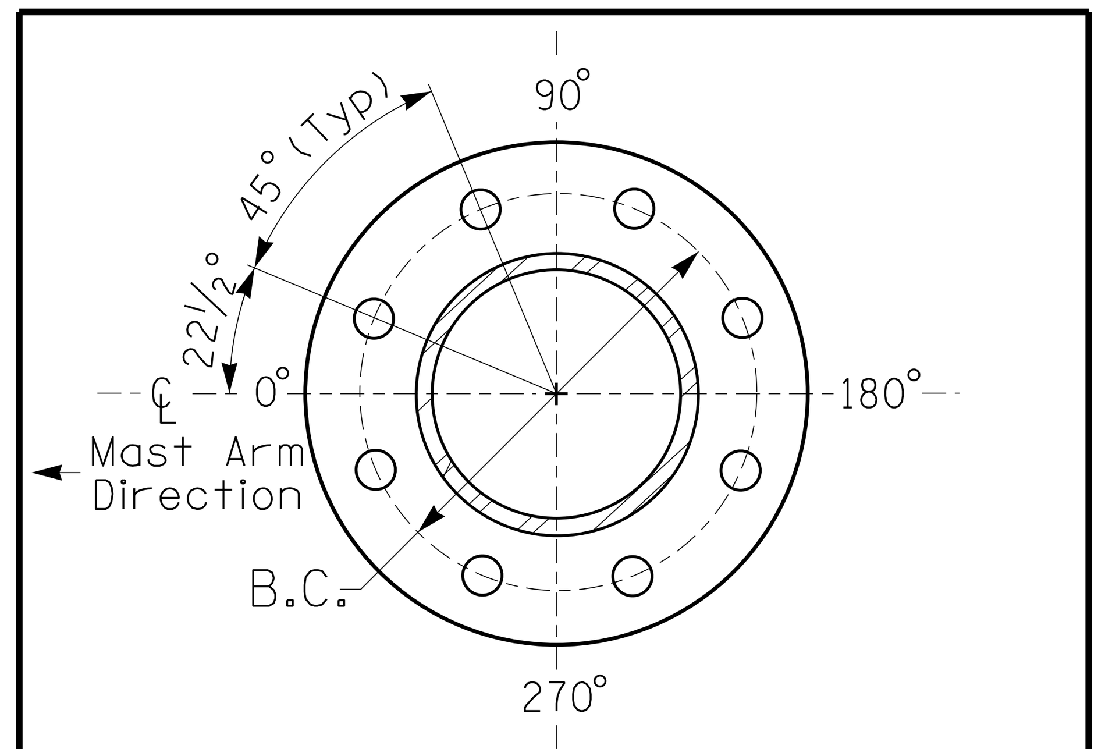
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

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

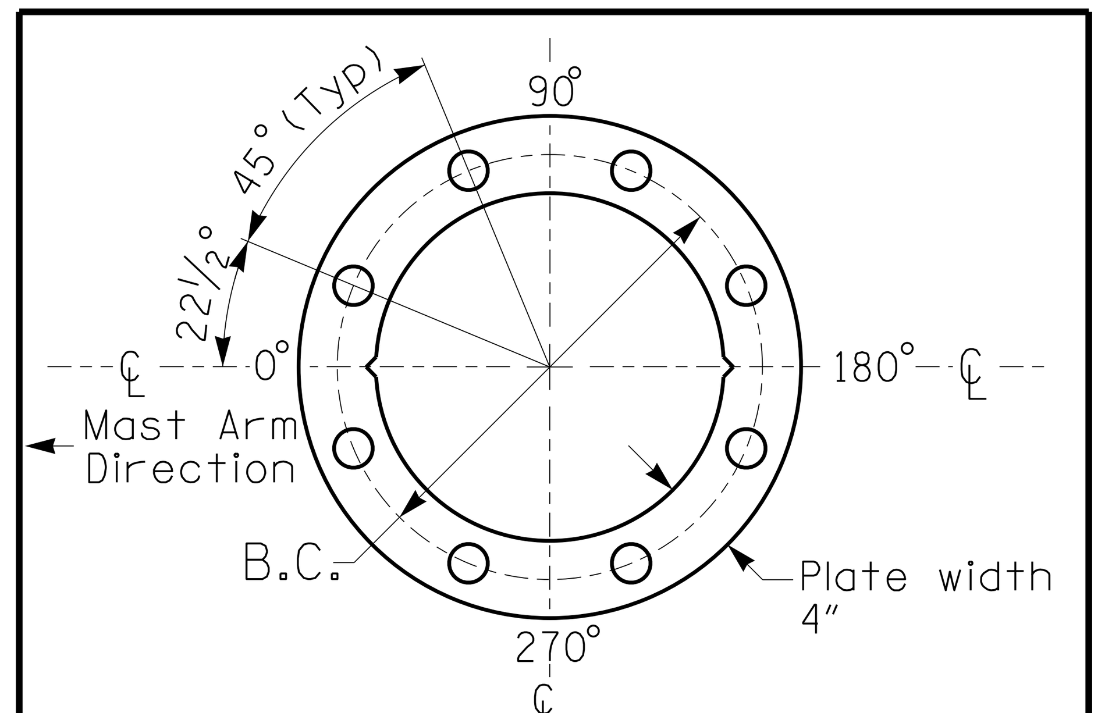


POLE RADIAL ORIENTATION



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-5807A	Sig 5

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
(signal head)	RIGID MOUNTED SIGNAL HEAD 12″-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5″W X 52.5″L	60 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0″W X 36.0″L	14 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0″W X 96.0″L	36 LBS

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This plan supersedes the plan signed and sealed on 3/9/23.

NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SCALE 0 N/A N/A

SR 2526 (Summit Avenue) at US 70 EB-US 220 SB (East Wendover Avenue) Ramps

Division 7 Guilford County Greensboro

PLAN DATE: January 2024 REVIEWED BY:
PREPARED BY: J.A. Lohr REVIEWED BY:

REVISIONS INIT. DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

02/05/2024 DATE

SIG. INVENTORY NO. 07-0638

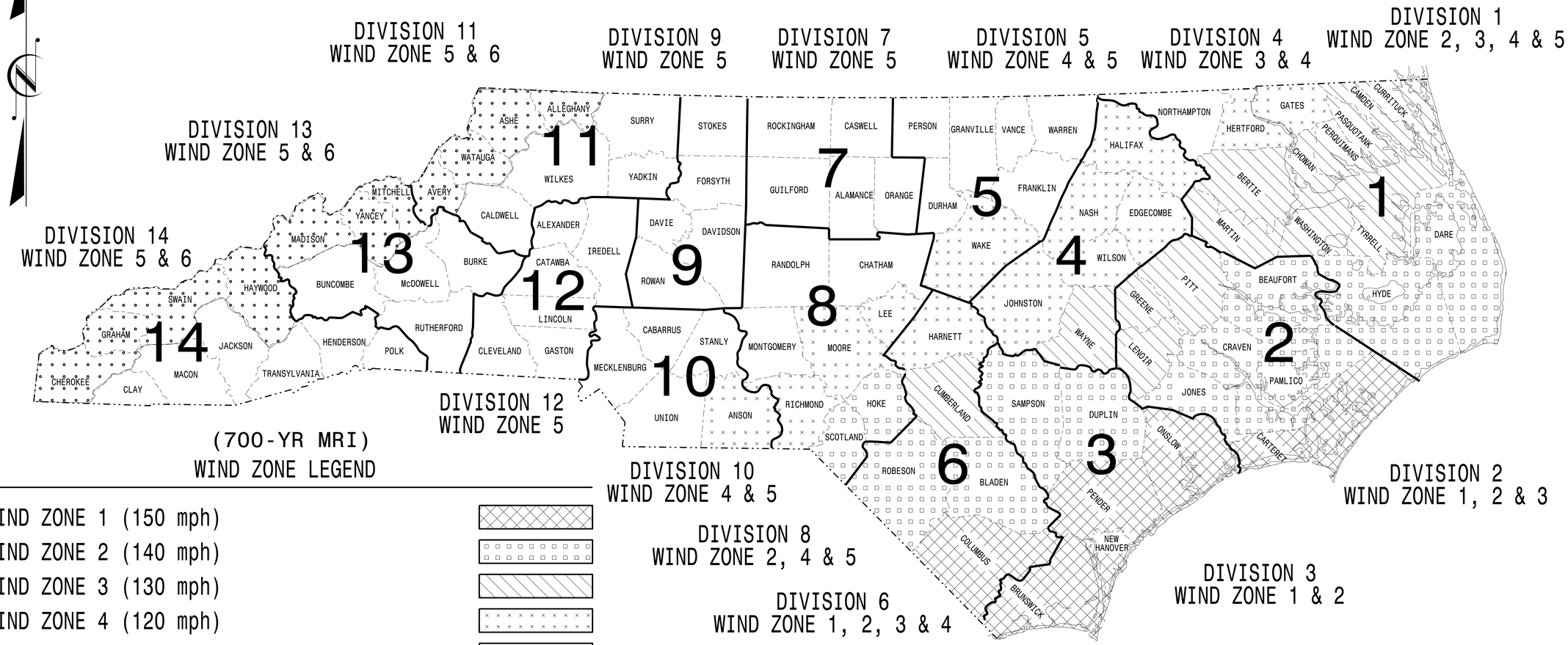
05-FEB-2024 13:24 S:\ITS&SU\ITS Signals\Signal Design Section\Central Region\Div 7\W-5807A\070638_sig_mp_20230309.dgn jalohr

PROJECT I.D.NO.	SHEET NO.
W-5807A	Sig.M1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

NCDOT METAL POLE STANDARDS



(700-YR MRI)
WIND ZONE LEGEND

WIND ZONE 1 (150 mph)	
WIND ZONE 2 (140 mph)	
WIND ZONE 3 (130 mph)	
WIND ZONE 4 (120 mph)	
WIND ZONE 5 (110 mph)	
WIND ZONE 6 (135 mph) Special Wind Zone	

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

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.
Garner, NC 27529

Designed in conformance with the latest 2020 Interim to the 1st Edition 2015

AASHTO LRFD

Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

DRAWING NUMBER	DESCRIPTION
Sig. M 1A	Statewide Wind Zone Map (700–yr MRI)
Sig. M 1B	Statewide Wind Zone Map (10–yr MRI)
Sig. M 2	Typical Fabrication Details–All Metal Poles
Sig. M 3	Typical Fabrication Details–Strain Poles
Sig. M 4	Typical Fabrication Details–Mast Arm Poles
Sig. M 5	Typical Fabrication Details–Mast Arm Connection
Sig. M 6	Typical Fabrication Details–Strain Pole Attachments
Sig. M 7	Construction Details–Foundations
Sig. M 8	Standard Strain Pole Foundation–All Soil Conditions
Sig. M 9	Typical Fabrication Details–CCTV Camera Poles

MOBILITY AND SAFETY DIVISION – TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

D.Y. ISHAK – STATE SIGNALS ENGINEER

K. DURIGON, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

B. WALKER, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

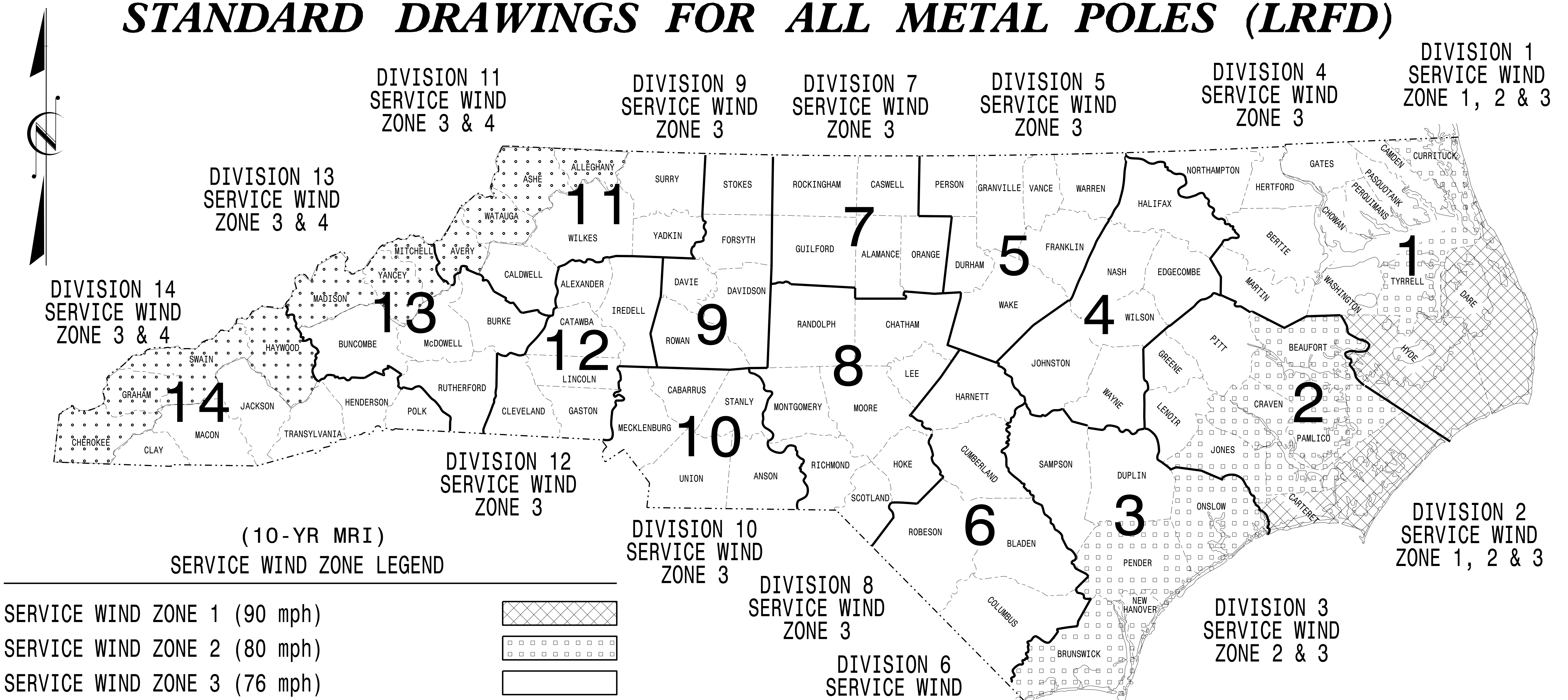
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

NCDOT METAL POLE STANDARDS

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



(10-YR MRI)
SERVICE WIND ZONE LEGEND

SERVICE WIND ZONE 1 (90 mph)
SERVICE WIND ZONE 2 (80 mph)
SERVICE WIND ZONE 3 (76 mph)
SERVICE WIND ZONE 4 (85) SPECIAL REGION

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

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

Designed in conformance with the latest 2020 Interim to the 1st Edition 2015

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Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

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Sig. M 7	Construction Details-Foundations
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NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION - TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

D.Y. ISHAK - STATE SIGNALS ENGINEER

K. DURIGON, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

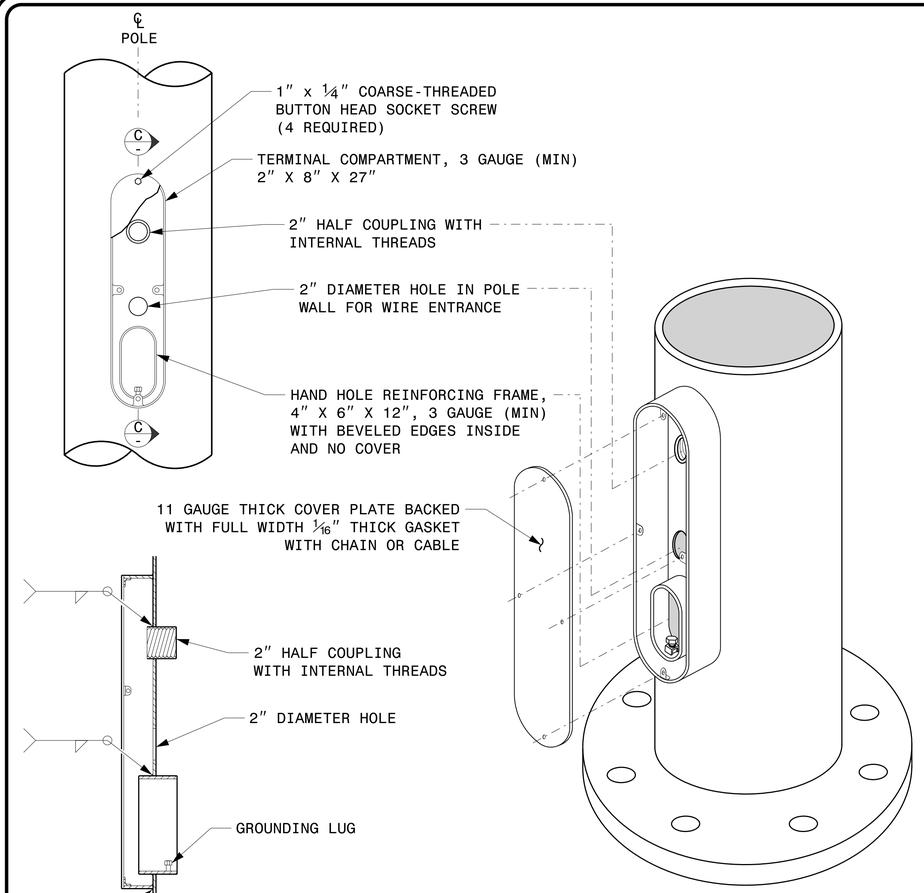
B. WALKER, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by: Kevin Durigon
4B23DC79B3784DA...
SIGNATURE

09/21/2023
DATE



SECTION C-C

NOTE: UNLESS OTHERWISE SPECIFIED, LOCATE TERMINAL COMPARTMENT 1 FOOT ABOVE THE POLE BASE AT 180 DEGREES ON THE POLE'S RADIAL INDEX.

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 SIG. INV. NO. _ _ _ _ _ _ _ _
NCDOT POLE NO. _ _ _ _ _ _ _ _

SHAFT I.D. TAG
(PROVIDE ON SHAFT OF STRAIN POLES
AND MAST ARM POLE SHAFT)

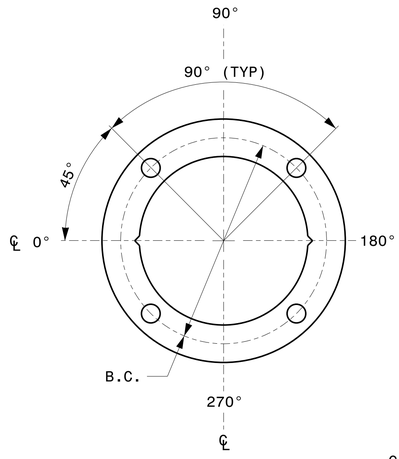
MFG _____ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT SIG. INV. NO. _ _ _ _ _ _ _ _
NCDOT POLE NO. _ _ _ _ _ _ _ _

ARM I.D. TAG
(PROVIDE ON EACH SECTION OF
A MULTI-SECTION MAST ARM)

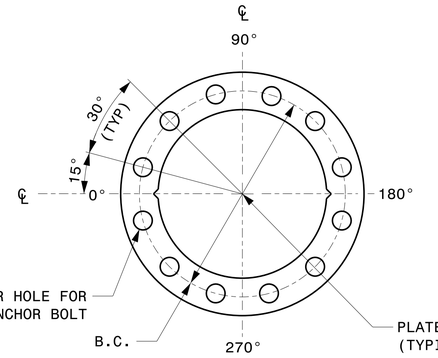
NOTES:

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 STANDARD DESIGN, INCLUDE CASE NUMBER IN ADDITION TO POLE NUMBER ON "NCDOT POLE NO." LINE.
5. SIGNAL INV. NUMBER AND POLE I.D. NUMBER. SEE DRAWING M3 AND M4 FOR MOUNTING POSITIONS OF I.D. TAGS.

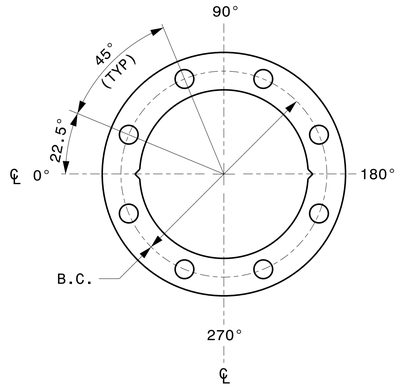
IDENTIFICATION TAG DETAILS



4 BOLT PATTERN



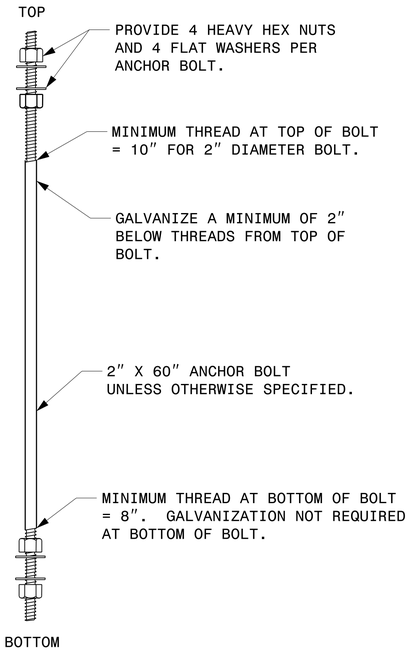
12 BOLT PATTERN



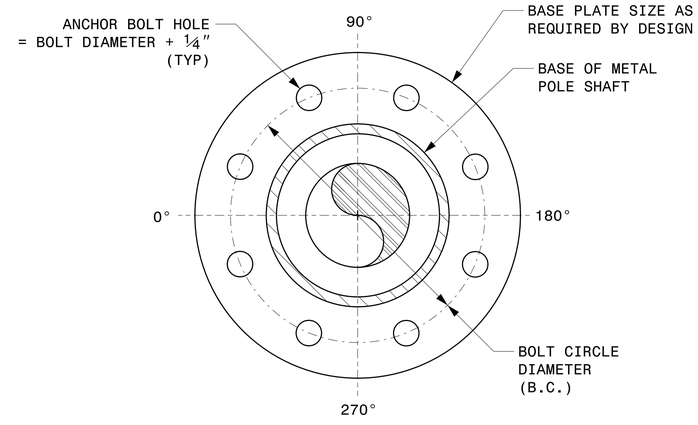
8 BOLT PATTERN

CONSTRUCT TEMPLATES AND PLATES FROM ¼″ (MIN) THICK STEEL. GALVANIZING IS NOT REQUIRED.

BASE PLATE TEMPLATE AND ANCHOR BOLT LOCK PLATE DETAILS



ANCHOR BOLT DETAIL



NOTE: BASE PLATE MAY BE CIRCULAR, OCTAGONAL, SQUARE OR RECTANGULAR IN SHAPE.

TYPICAL BASE PLATE DETAIL

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M2

Fabrication Details – All Metal Poles

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

SCALE 0 NA NONE

Typical Fabrication Details
For
All Metal Poles

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F.ANDREWS
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

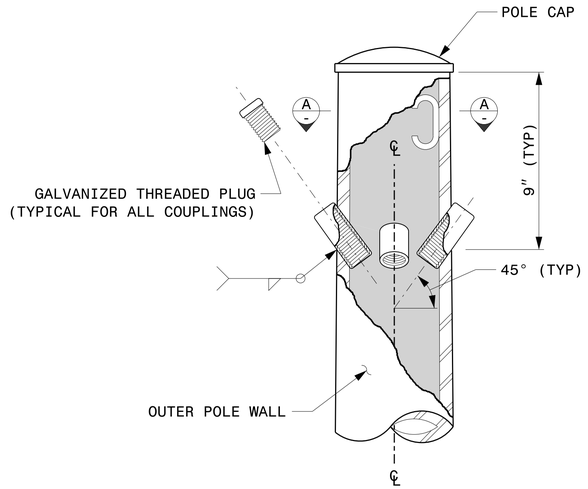
03-OCT-2023 12:24
S:\TTSSUM\TIS\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRFD\2024 Sig-M2 Std. Fabrication Details-All Poles.dgn
kcdurigon

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M3

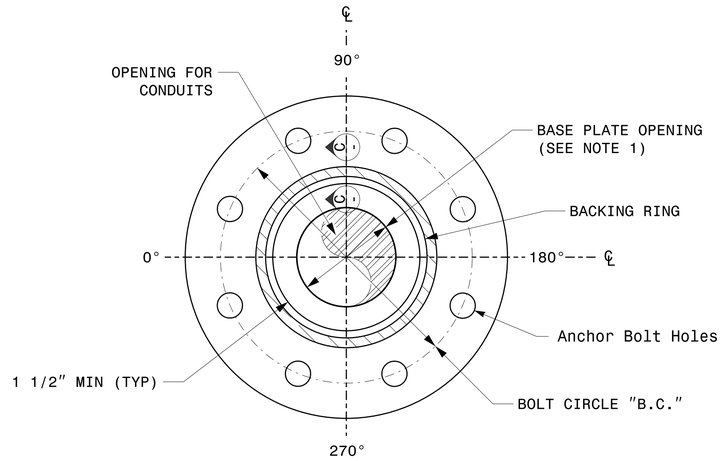
Fabrication Details — Strain Poles

NOTE:

1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".

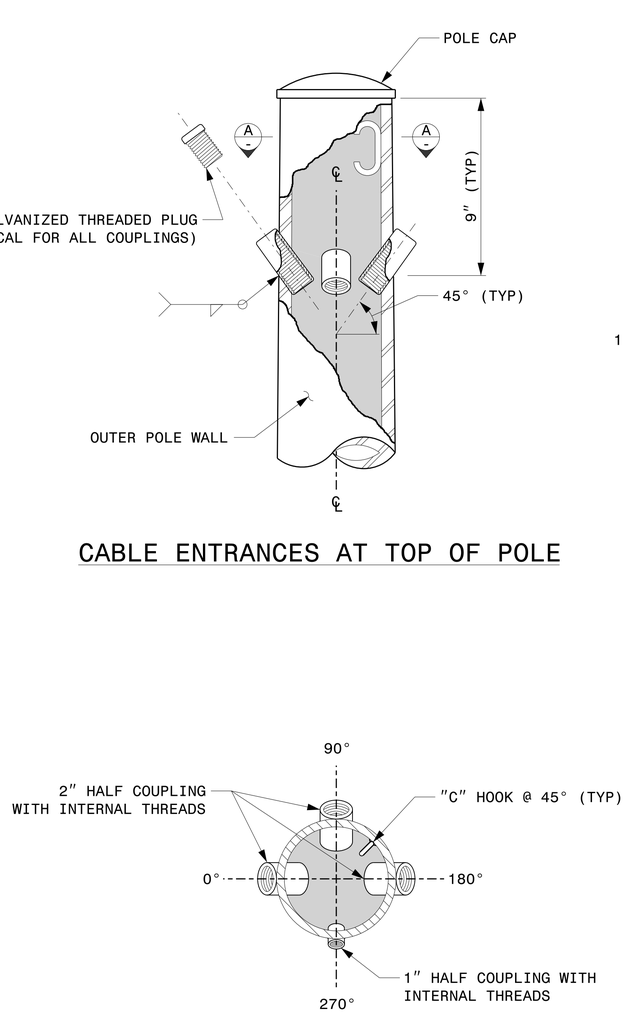


CABLE ENTRANCES AT TOP OF POLE



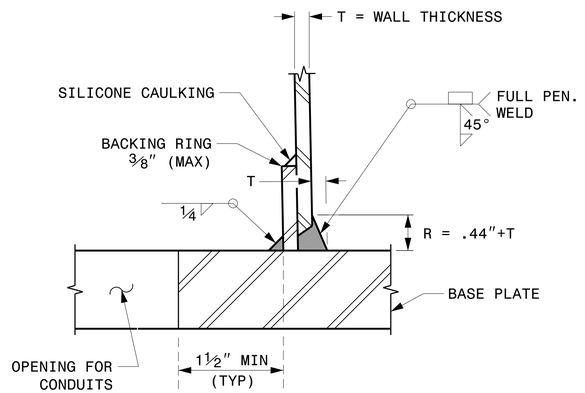
SECTION B-B

POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)



SECTION A-A

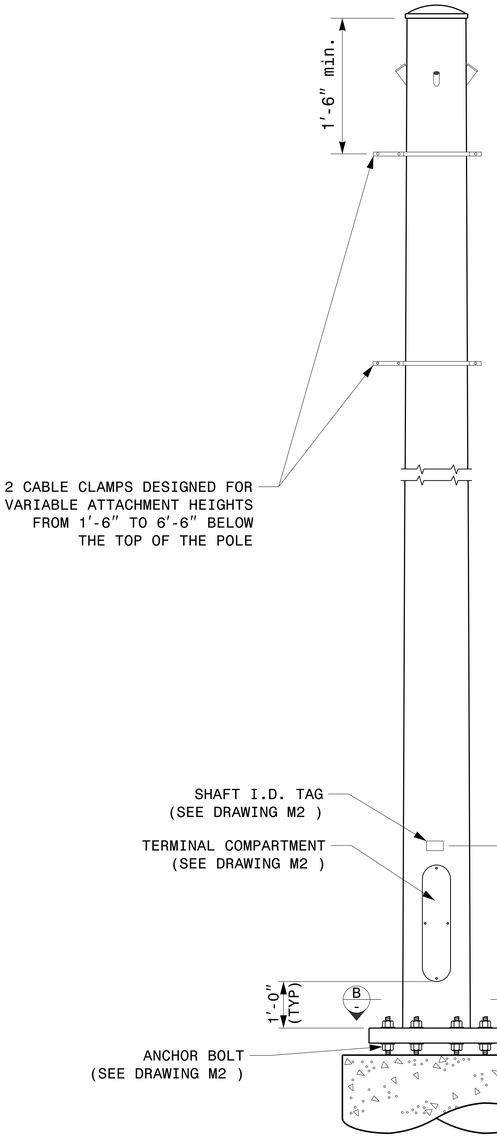
RADIAL ORIENTATION OF FACTORY INSTALLED ACCESSORIES AT TOP OF POLE



SECTION C-C

(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL



MONOTUBE STRAIN POLE

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

Typical Fabrication Details
For
Strain Poles

PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	K.C. DURIGON
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SCALE
0 NA
NONE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

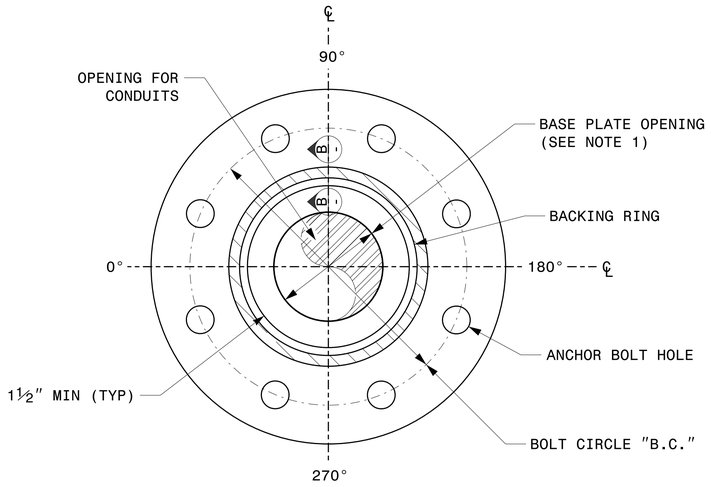
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M4

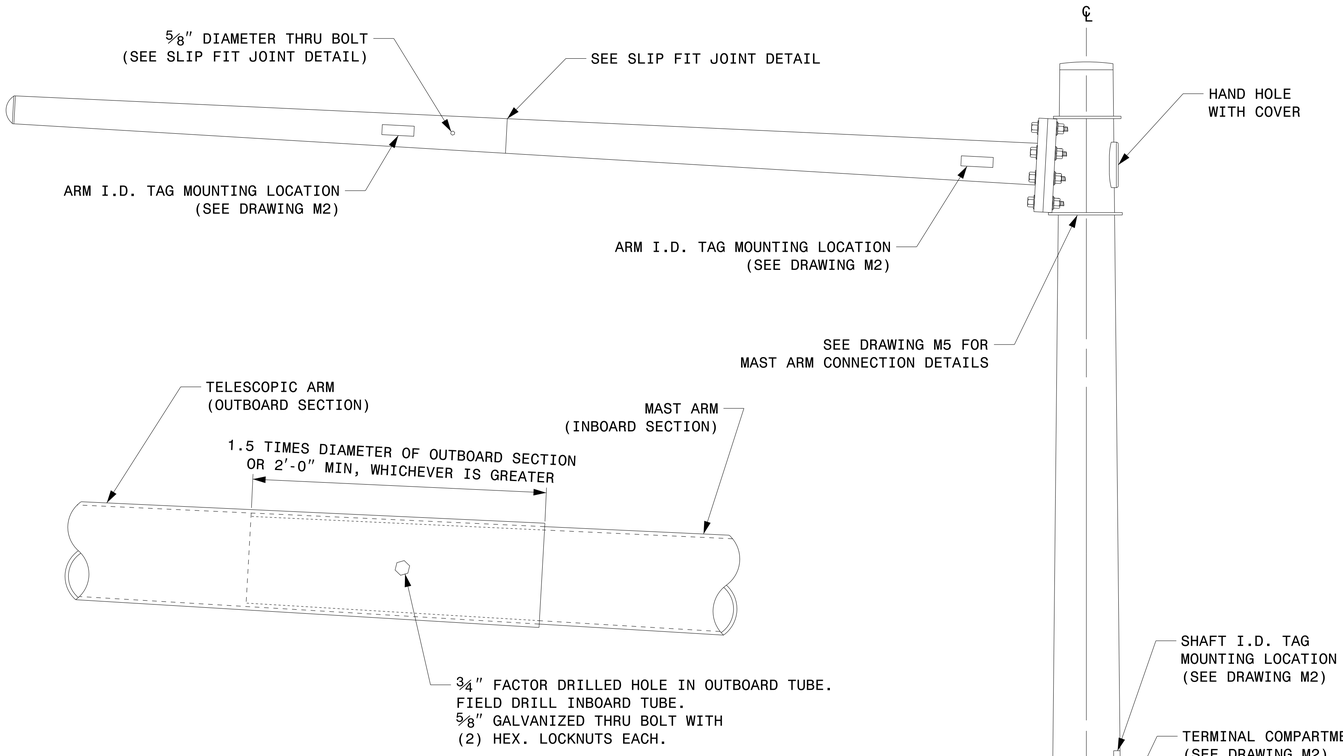
Fabrication Details – Mast Arm Poles

NOTE:

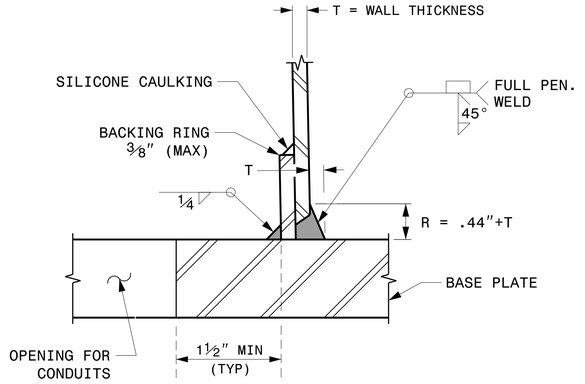
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".



SECTION A-A
POLE BASE PLATE DETAILS

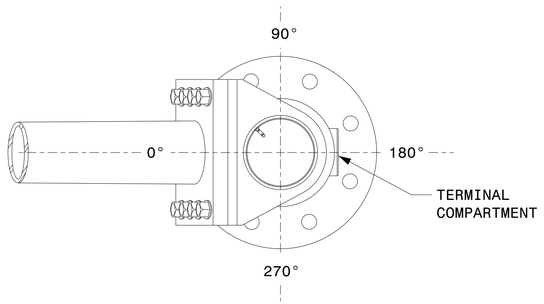


SLIP FIT JOINT DETAIL FOR MAST ARM

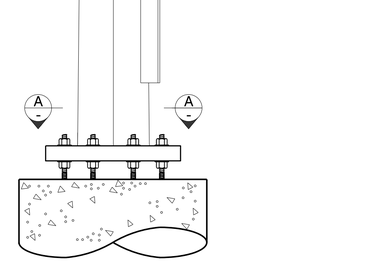


SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL



MAST ARM RADIAL ORIENTATION



MAST ARM POLE

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

SCALE
0 NA
NONE

Typical Fabrication Details For Mast Arm Poles

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

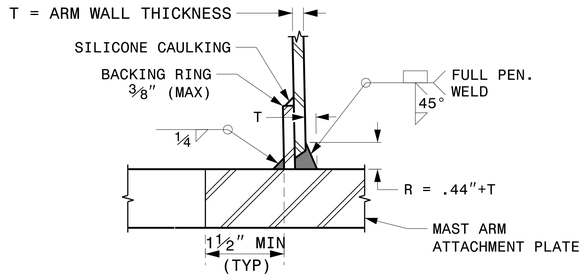
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

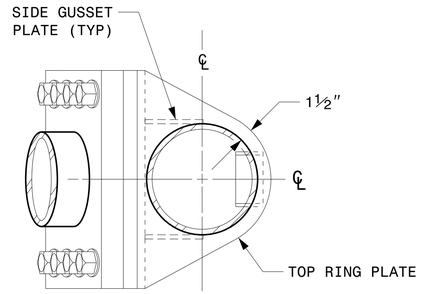
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M5



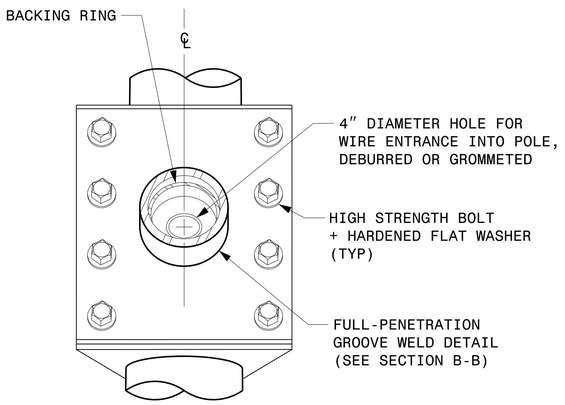
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



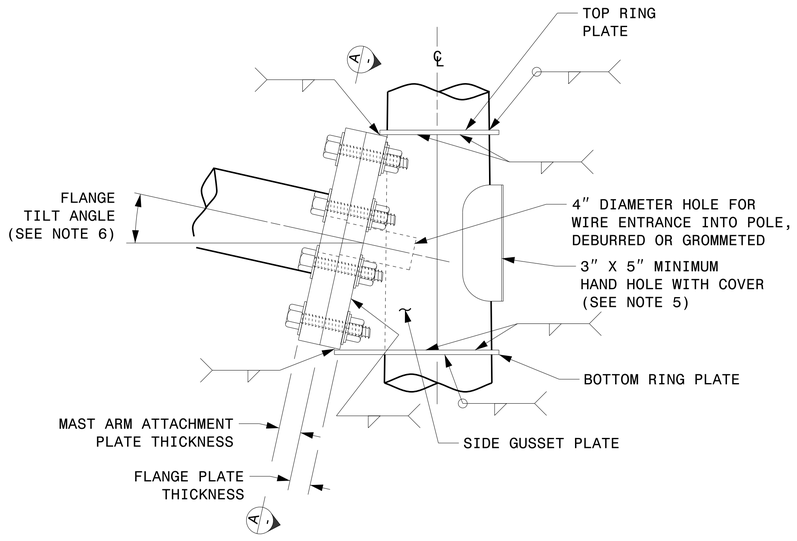
PLAN VIEW

NOTES:

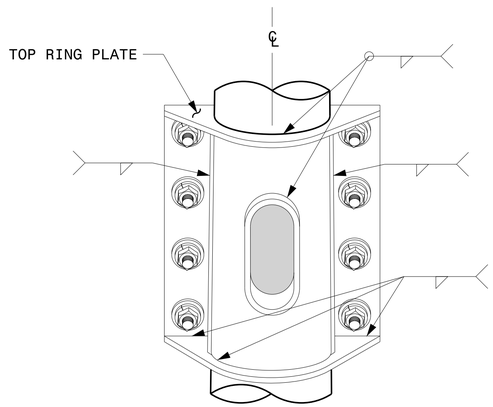
1. PROVIDE A PERMANENT MEANS OF IDENTIFICATION ABOVE THE MAST ARM TO INDICATE PROPER ATTACHMENT ORIENTATION OF THE MAST ARM.
2. DESIGNER WILL DETERMINE THE SIZE OF ALL STRUCTURAL COMPONENTS, PLATES, FASTENERS, AND WELDS SHOWN UNLESS THEY ARE ALREADY SPECIFIED.
3. FABRICATOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE HOLES AT DRAINAGE POINTS TO DRAIN GALVANIZING MATERIALS.
4. FOR MINIMUM EDGE DISTANCE AND NOMINAL BOLT HOLE SIZE, FOLLOW THE LATEST AISC STEEL CONSTRUCTION MANUAL.
5. PROVIDE UPPER HANDHOLE AS NECESSARY WHEN SHAFT EXTENSIONS ARE REQUIRED FOR LUMINAIRE ARMS OR CAMERA. FOR POLES WITHOUT LUMINAIRES/CAMERA, WIRING CAN BE DONE THROUGH THE TOP OF POLE.
6. ALLOWABLE RANGE OF FLANGE TILT ANGLE WILL VARY FROM 0° TO AS REQUIRED.



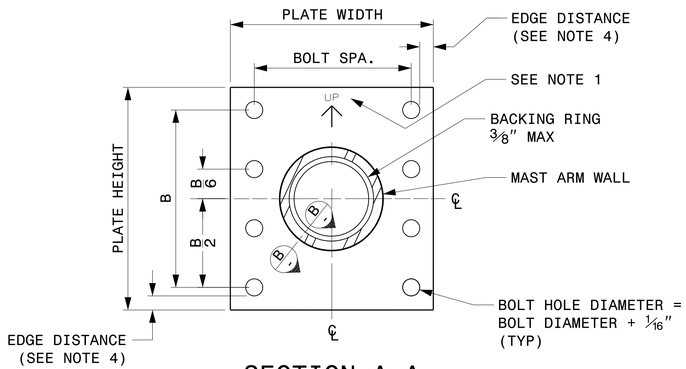
FRONT ELEVATION VIEW



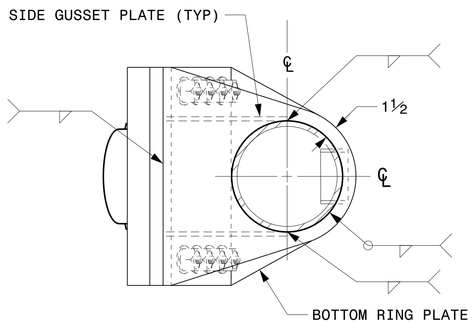
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
Mast Arm Connection To Pole

PLAN DATE: SEPTEMBER 2023	DESIGNED BY: C.F. ANDREWS
PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

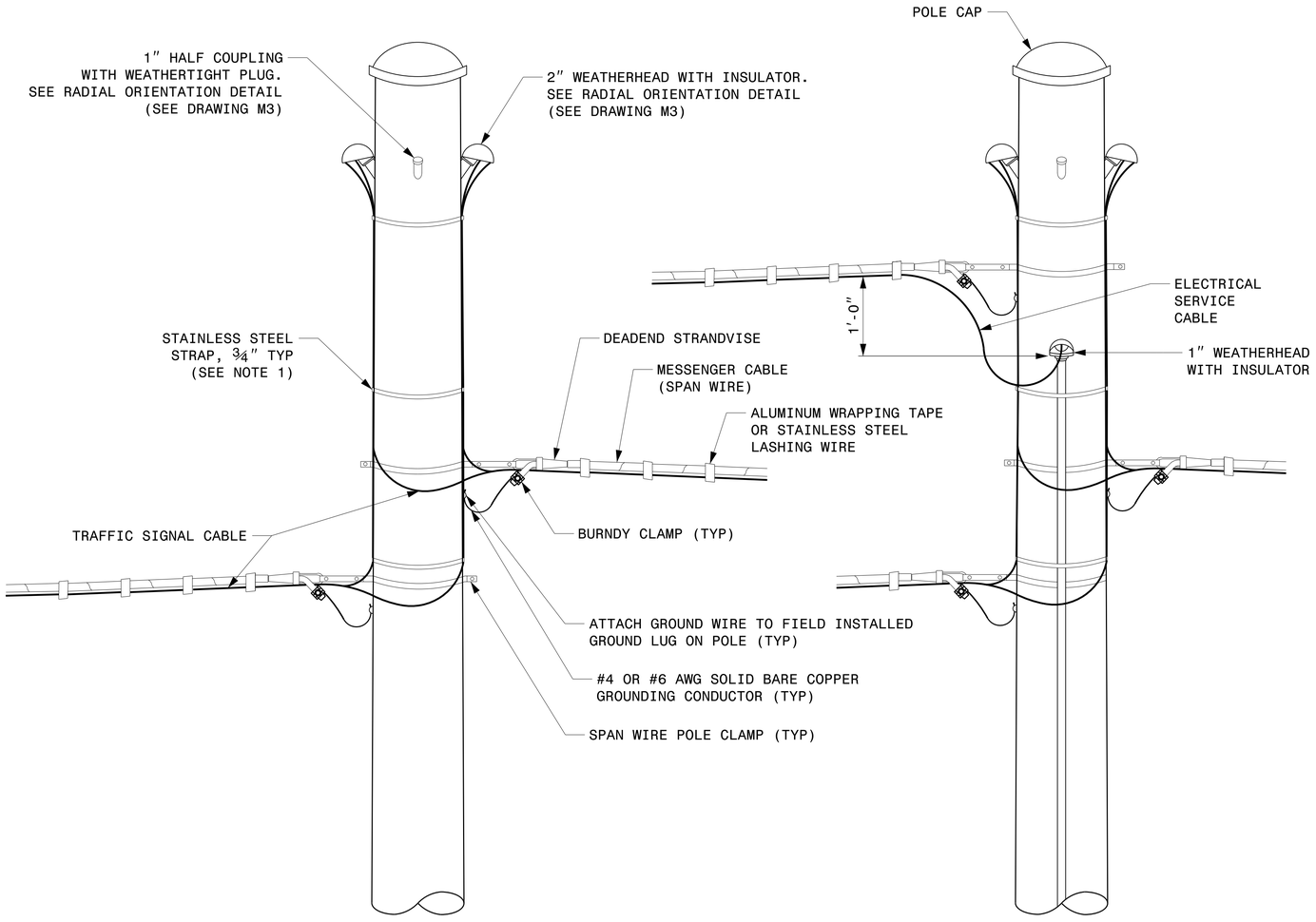
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

Fabrication Details – Mast Arm Connection

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M6

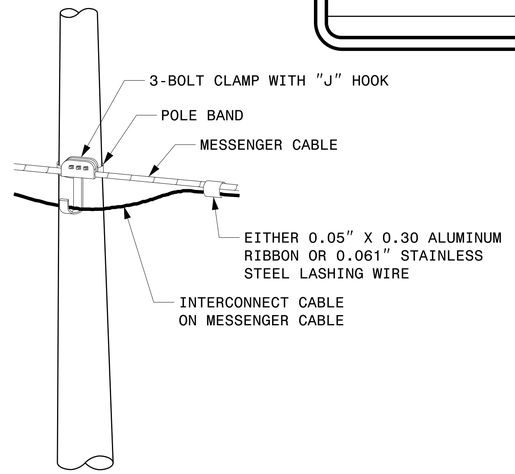
Fabrication Details – Strain Pole Attachments



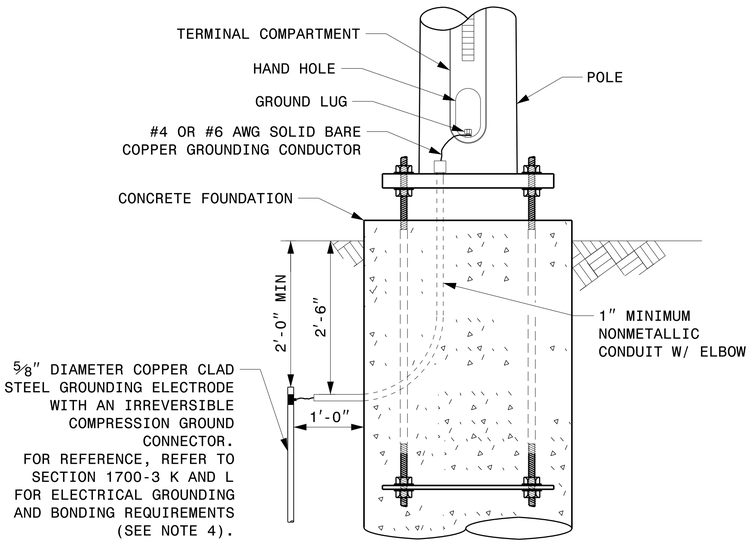
STRAIN POLE ATTACHMENTS

NOTES:

1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH ¾″ STAINLESS STEEL STRAPS WHEN THE DISTANCE BETWEEN SPAN WIRE ATTACHMENT CLAMP AND WEATHERHEADS EXCEEDS 3′-0″.
2. PROVIDE MINIMUM TWO SPAN WIRE POLE CLAMPS PER POLE.
3. IT IS PROHIBITED TO ATTACH TWO SPAN WIRES AT ONE POLE CLAMP.
4. FOR GENERAL REQUIREMENTS, REFER TO NCDOT STANDARD SPECIFICATIONS FOR ROADWAY AND STRUCTURES, JANUARY 2024.



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM

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

SCALE
0 NA
NONE

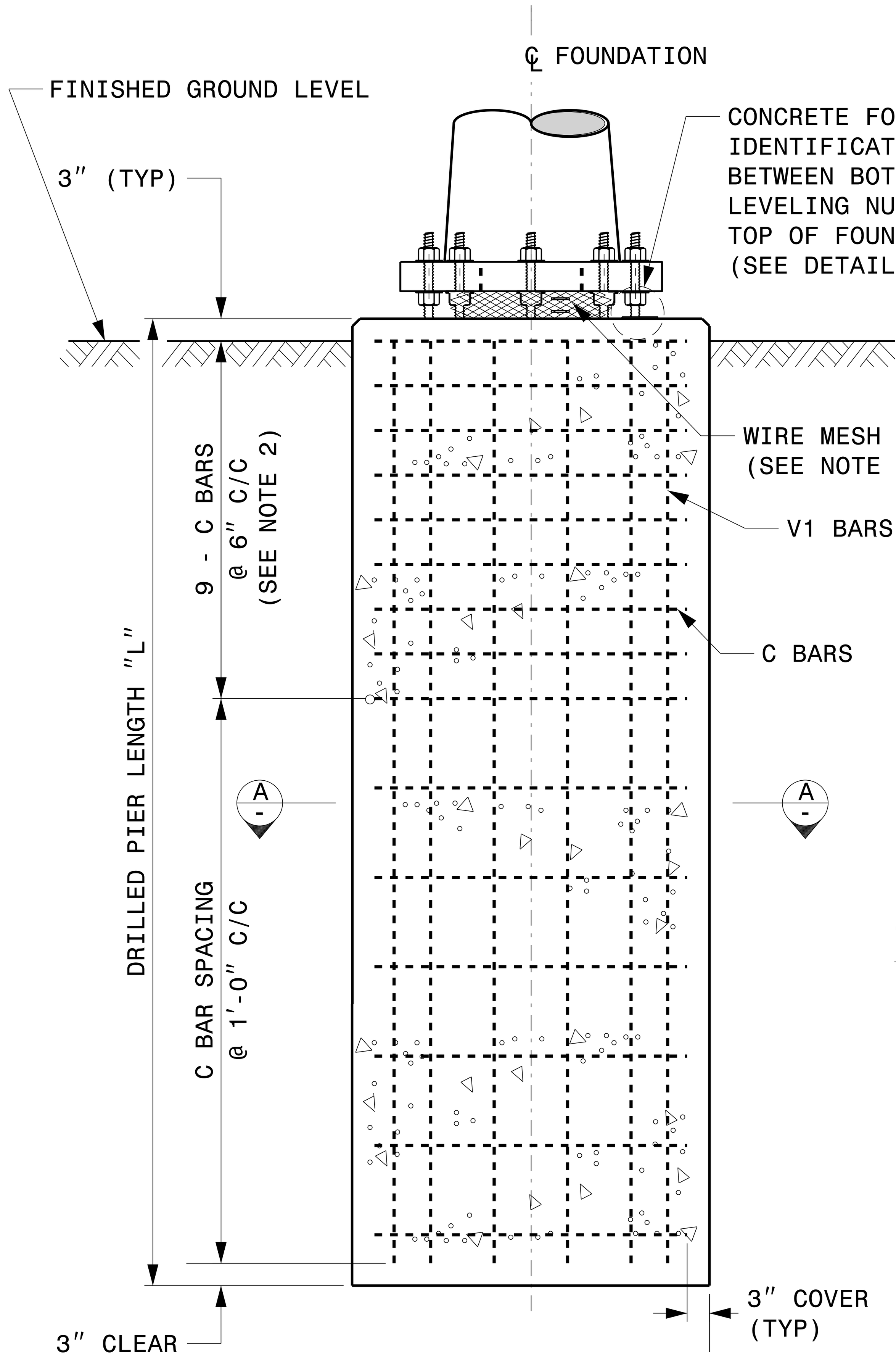
Typical Fabrication Details For Strain Pole Attachments

PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR

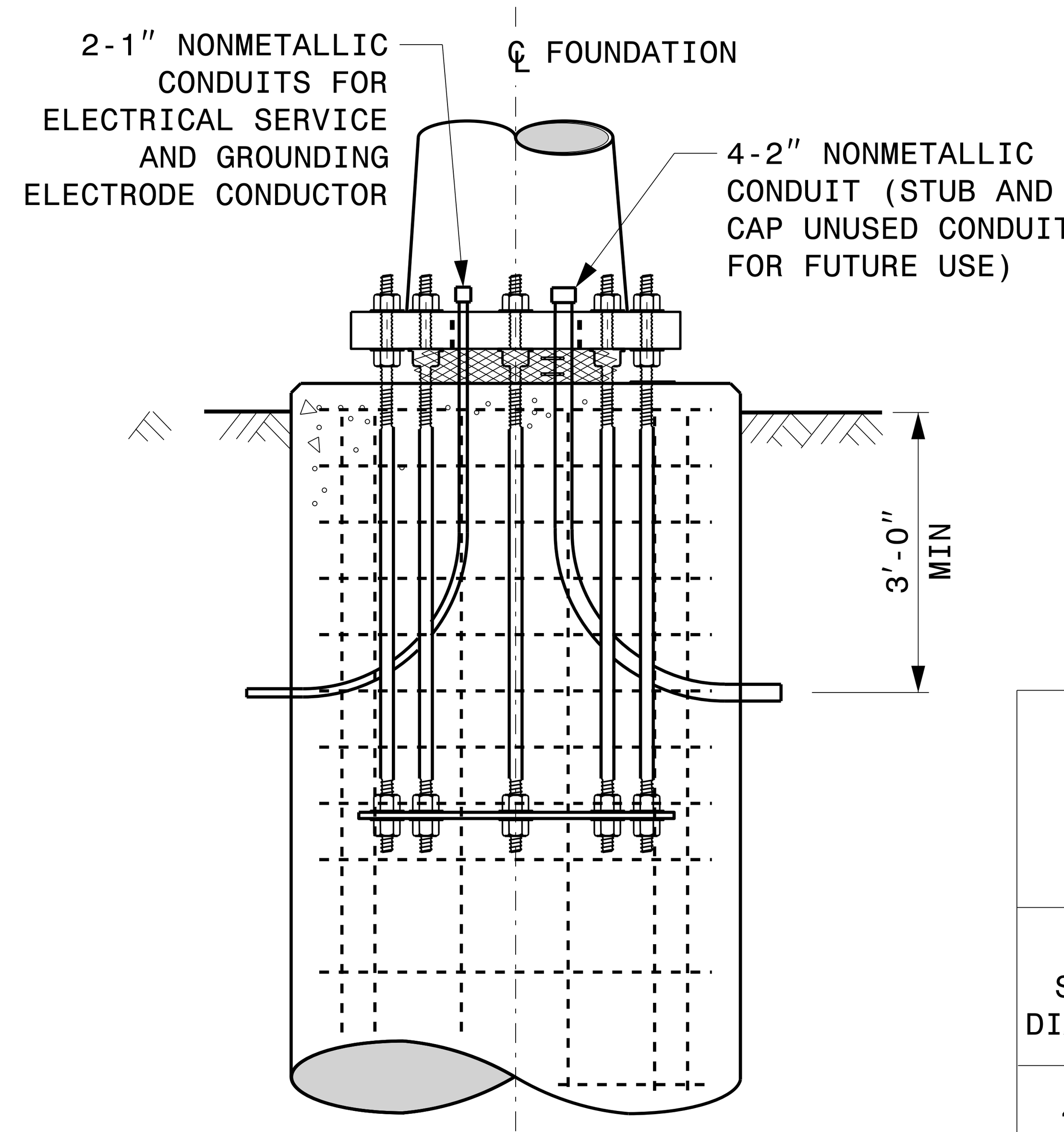
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE



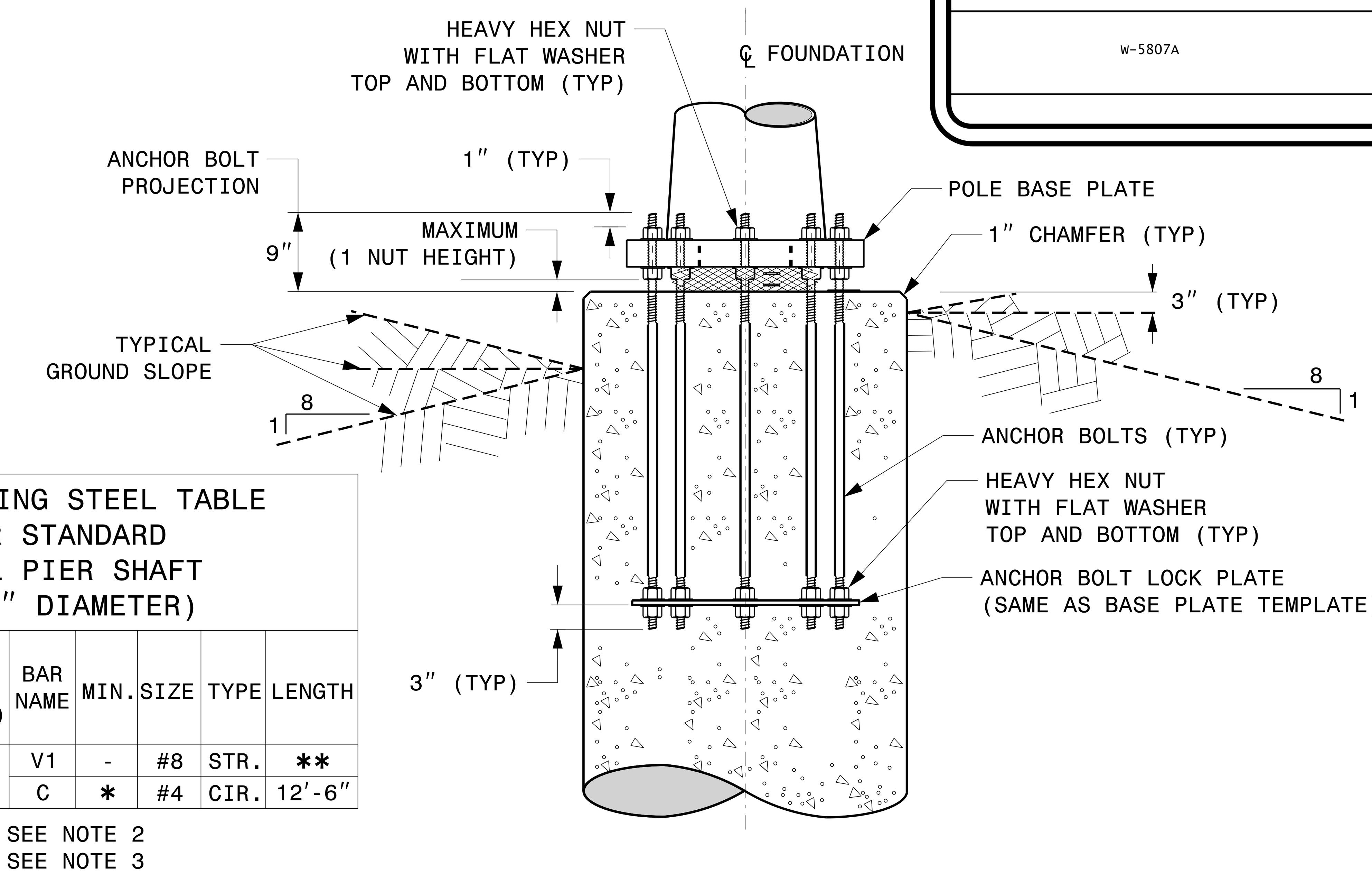
CONCRETE SHAFT ELEVATION



TYPICAL FOUNDATION CONDUIT DETAILS

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)						
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN.	SIZE	TYPE	LENGTH
4'-0"	.465 X L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* SEE NOTE 2
** SEE NOTE 3

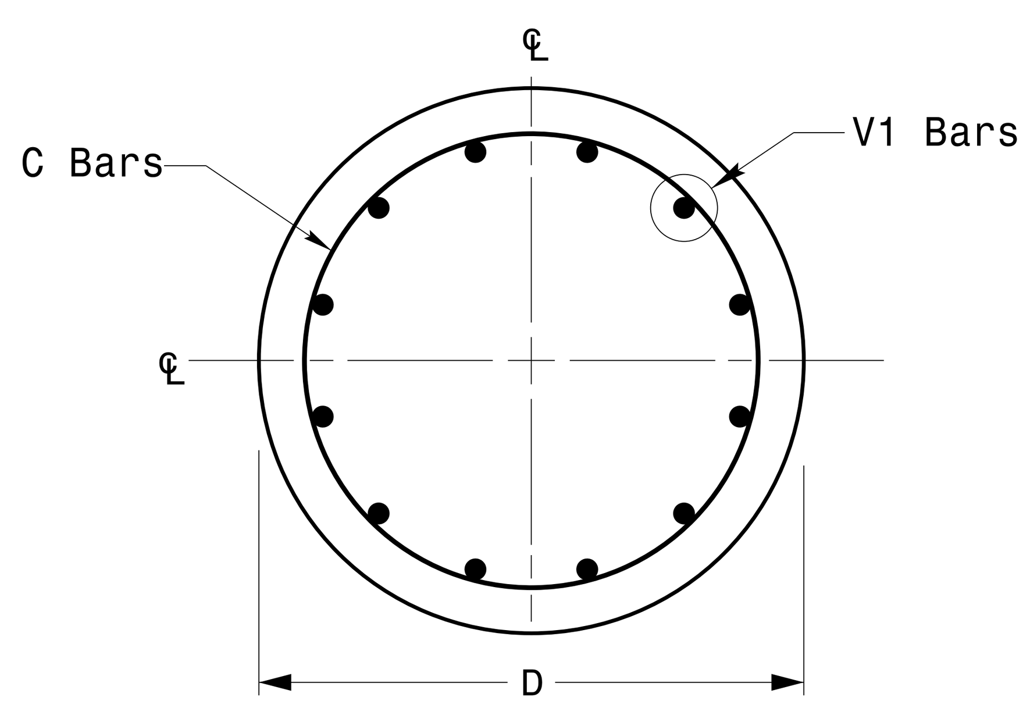


TYPICAL FOUNDATION ANCHOR BOLT DETAILS
(REINFORCING CAGE NOT SHOWN FOR CLARITY)

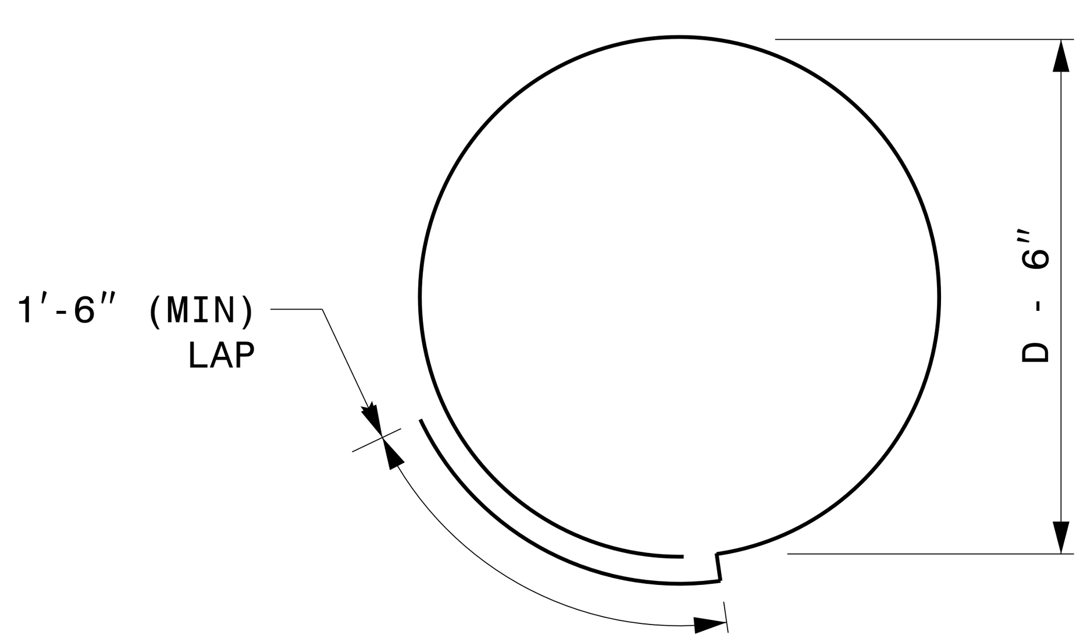
GENERAL NOTES:

1. IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
2. 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.
3. FOR STANDARD FOUNDATIONS, SEE SHEET SIG. M8 FOR DETAILS. VERTICAL REINFORCING BARS (V1) MAY BE HORIZONTALLY ADJUSTED BY +/-3" TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING INTO THE CAGE.
4. PROVIDE 2" TO 5" FOUNDATION PROJECTION ABOVE GROUND LEVEL, DEPENDING ON THE GROUND SLOPE.
5. UNLESS OTHERWISE SHOWN, FOUNDATION DESIGNS ARE BASED ON NON-SLOPING LEVEL GROUND SURFACES WITH SLOPE RATIOS OF 8:1 (H:V) OR FLATTER. IF ACTUAL GROUND LINE SLOPES ARE STEEPER, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
6. CONSTRUCT FOUNDATIONS IN ACCORDANCE WITH NCDOT STANDARD PROVISIONS SP09 R005- FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES. ALL APPLICABLE 2024 NCDOT STANDARD SPECIFICATIONS ARE REFERENCED IN THIS PROVISION. REFER TO THE NCDOT RESOURCES/SPECIFICATIONS PAGE LOCATED ON THE CONNECT NCDOT WEBSITE.

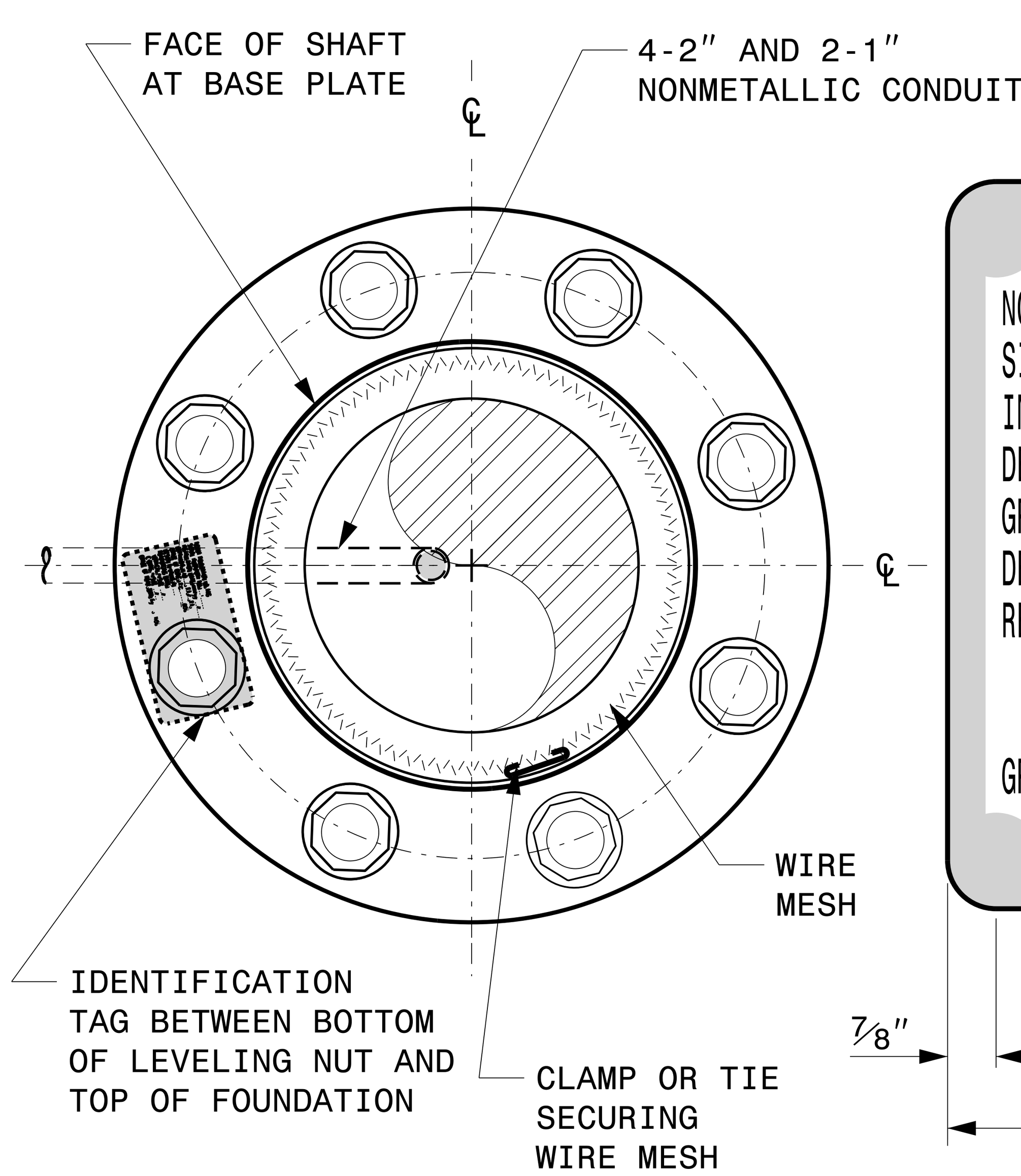
   https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx
7. USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f'c=4500 psi (MIN) AFTER 28 DAYS.
8. USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
9. LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT'S ENTRY POINT.
10. PROVIDE TWO LAYERS OF 4 MESH GALVANIZED WELDED 23 GAUGE (0.025) 6" WIDE AROUND PIPES UNDER THE BASE PLATE AND SECURE IT WITH TIES IF NECESSARY.
11. PREFERRED LOCATION FOR THE I.D. TAG IS AS SHOWN IN DETAIL-A: DIRECTLY ABOVE THE CONDUIT ENTERING THE FOUNDATION.



SECTION A-A

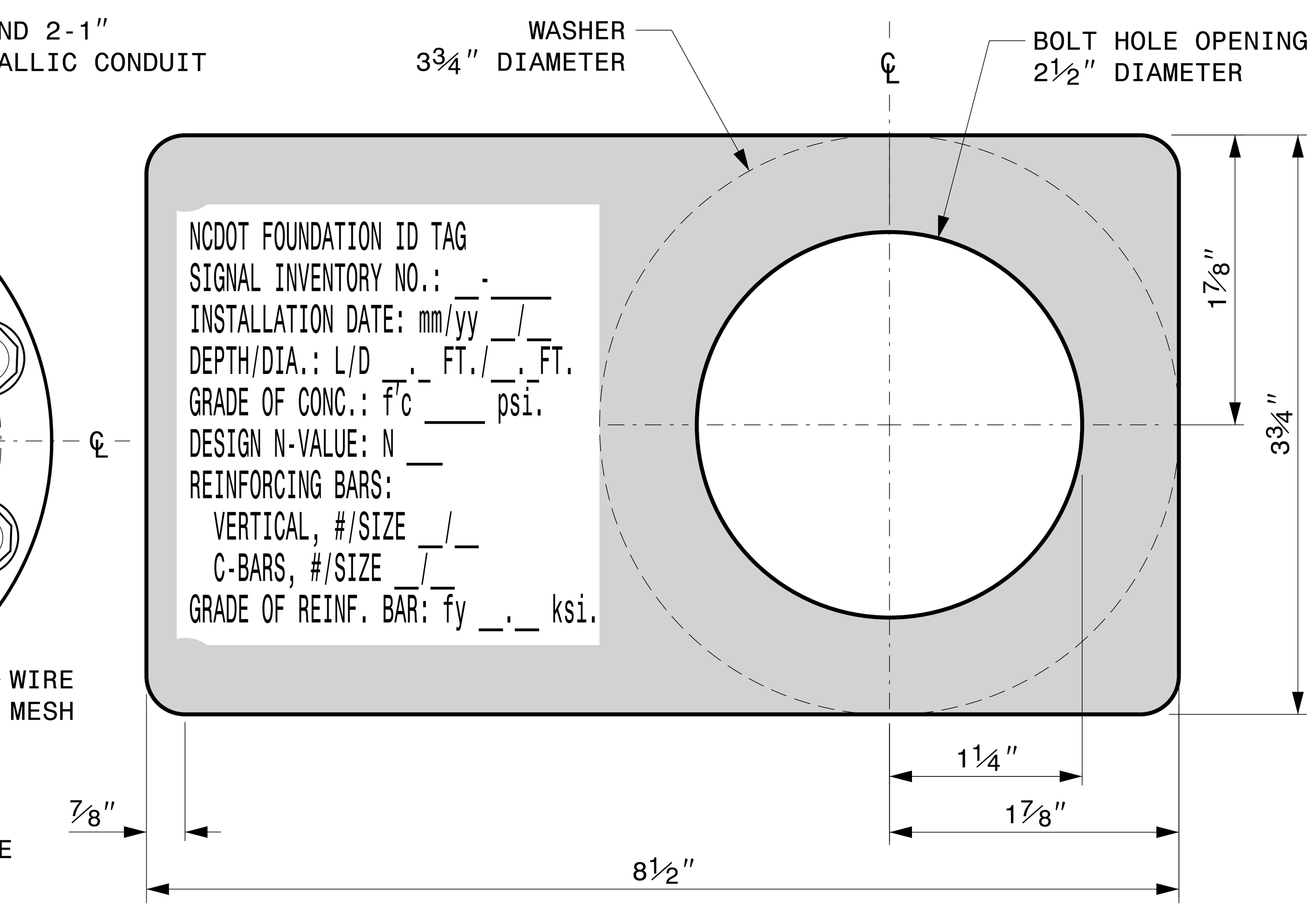


TYPICAL "C" BAR DETAIL



D = DIAMETER
L = LENGTH / DEPTH
mm = MONTH
yy = YEAR

DETAIL-A



CONCRETE FOUNDATION IDENTIFICATION TAG DETAILS

PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M7

Construction Details – Foundations

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

SCALE 0 NA
NONE

Construction Details For Foundations

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR
REVISIONS INIT. DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by: Kevin Durigon
4B23DC79B3784DA
SIGNATURE
09/21/2023
DATE

SOIL CONDITION

STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) – Feet							Reinforcement			
			Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Axial (kip)	Shear (kip)	Moment (ft–kip)	Medium N–Value 4–8	Stiff N–Value 9–15	Very Stiff N–Value 16–30	Hard N–Value >30	Loose N–Value 4–10	Medium N–Value 11–30	Dense N–Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
S26L1	26	22	2	9	210	19.5	12.5	9	6.5	15.5	14.5	13	8	12	4	12
S26L2	26	23	2	10	240	19.5	12	9	6.5	15.5	14.5	13	8	12	4	12
S26L3	26	25	2	11	260	20.5	12	10	8	16	15	13	8	12	4	12
S30L1	30	22	2	9	230	19	11	9	7	15.5	14	12.5	8	12	4	12
S30L2	30	23	2	10	270	20	12	10	8	16	14.5	13	8	12	4	12
S30L3	30	25	2	11	290	21	12	10	8	17	15	13.5	8	12	4	12
S30H1	30	25	3	13	355	23	13	11	9	18	16.5	14.5	8	12	4	12
S30H2	30	29	3	15	405	25	14	11	9	19	17.5	15.5	8	14	4	12
S30H3	30	29	3	16	430	26	15	12	9	20	18	16	8	14	4	6
S35L1	35	22	3	8	260	19.5	12	10	8	15.5	14.5	13	8	12	4	12
S35L2	35	23	3	10	300	21	12	10	8	16.5	15	13.5	8	12	4	12
S35L3	35	25	3	10	320	21.5	13	10	8	17	15.5	14	8	12	4	12
S35H1	35	25	3	12	390	23.5	14	11	9	18	17	15	8	14	4	12
S35H2	35	29	4	14	460	26	15	12	9	20	18	16	8	14	4	6
S35H3	35	29	4	16	495	28.5	15	13.5	10	21.5	19	17	8	14	4	6

48" DIAMETER FOUNDATION CONCRETE VOLUME (CUBIC YARDS) = (0.465) x DRILLED PIER LENGTH

GENERAL NOTES:

1. VALUES SHOWN IN THE "REACTIONS AT THE POLE BASE" COLUMN REPRESENT THE MINIMUM ACCEPTABLE CAPACITY ALLOWED FOR DESIGN USING A COMBINED FORCE RATIO (CFR) OF 1.00.
2. USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
3. FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.

FOUNDATION SELECTION:

1. PERFORM A STANDARD PENETRATION TEST AT EACH PROPOSED FOUNDATION SITE TO DETERMINE "N" VALUE.
2. SELECT THE APPROPRIATE WIND ZONE FROM M1 DRAWING.
3. SELECT THE SOIL TYPE (CLAY OR SAND) THAT BEST DESCRIBES THE SOIL CHARACTERISTICS.
4. GET THE APPROPRIATE STANDARD POLE CASE NUMBER FROM THE PLANS OR FROM THE ENGINEER.
5. SELECT THE APPROPRIATE COLUMN UNDER "STANDARD FOUNDATIONS" BASED ON SOIL TYPE AND "N" VALUE. SELECT THE APPROPRIATE ROW BASED ON THE POLE LOAD CASE.
6. THE FOUNDATION DEPTH IS THE VALUE SHOWN IN THE "STANDARD FOUNDATIONS" CATEGORY WHERE THE COLUMN AND THE ROW INTERSECT.
7. USE CONSTRUCTION PROCEDURES AND DESIGN METHODS PRESCRIBED BY FHWA-NHI-10-016 MANUAL FOR DRILLED SHAFTS.

Standard Strain Pole Foundation – All Soil Conditions

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

SCALE 0 NA
NONE

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

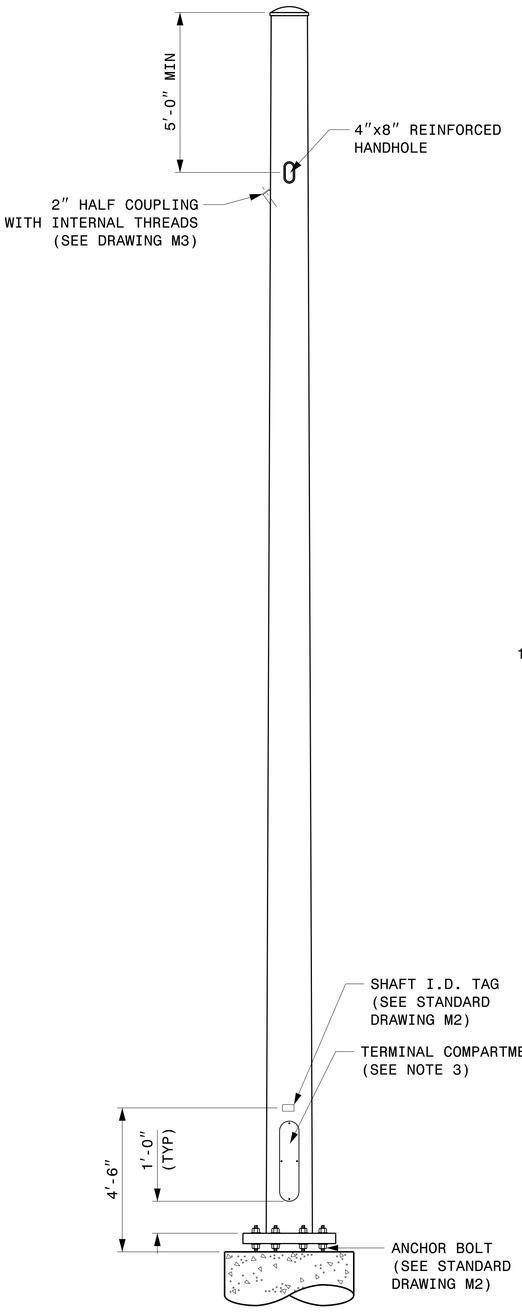
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
4B23DC79B3784DA
SIGNATURE
09/21/2023
DATE

03-OCT-2023 12:48
S:*ITS&SU*ITS Signals*Signal Design Section*Structures*Drawings*2024 Metal Pole Std Drawings for LRFD*2024 Sig.M8 Std. Strain Pole Found.-Saturated Soil Condition.dgn
kcdurigon

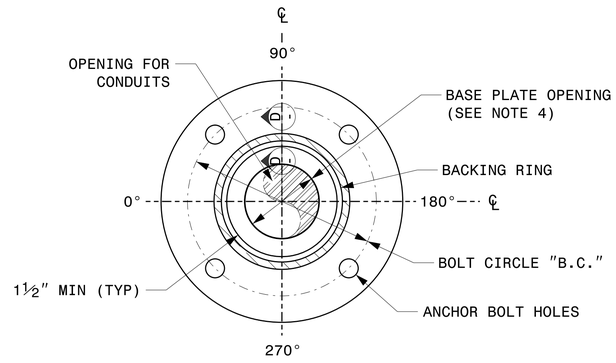
PROJECT I.D. NO.	SHEET NO.
W-5807A	Sig.M9

Fabrication Details – CCTV Camera Poles

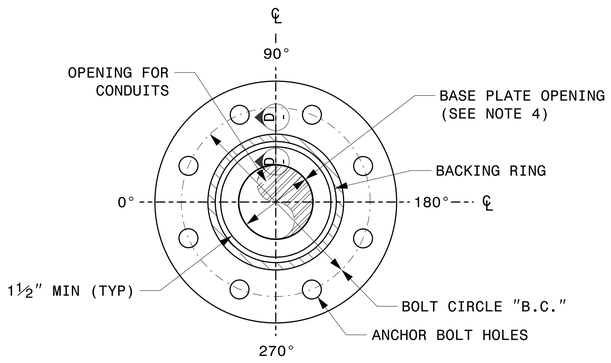


CCTV CAMERA POLE

(NOT TO SCALE)

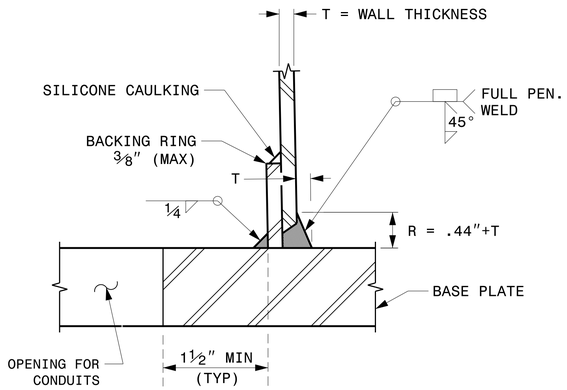


4 BOLT PATTERN
FOR POLES UP TO 40'



8 BOLT PATTERN
FOR POLES TALLER THAN 40'

BASE PLATE DETAILS



SECTION D-D

(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL

NOTES:

1. THIS DRAWING PROVIDES BASIC DETAILS FOR CCTV POLES. PROJECT REQUIREMENTS MAY REQUIRE SPECIAL FACTORY PREPS THAT ARE NOT SHOWN ON THESE DETAILS.
2. DETAILS FOR INTERNAL CAMERA LOWERING SYSTEMS ARE NOT SHOWN.
3. POLE MOUNTED CABINETS MAY REQUIRE MODIFICATIONS TO THE LOWER HANDHOLE OPENING TO MOUNT CABINETS. 4" X 8" REINFORCED HANDHOLES ARE ACCEPTABLE OPTIONS, AND MAY BE PREFERRED.
4. OPENING IN POLE BASE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".
5. USE COMPACT SECTION CRITERIA D/T RATIO PER AASHTO LTS-LRFD 1ST EDITION SECTION 5.7.2.

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

SCALE
0 NA
NONE

Typical Fabrication Details For CCTV Poles

PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	K.C. DURIGON
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	C.F. ANDREWS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE