



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

February 8, 2018

**Addendum No. 1**

RE: Contract # C204069

WBS # 43608.3.3

STATE FUNDED

**Wake County (I-5506)**

I-40 and SR-1002 (Aviation Parkway) Interchange

**February 20, 2018 Letting**

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revision has been made to the Cross-Section plans:

Sheet No.	Revisions
X-1B	There were 2 sheets X-1A in the original plans. The second X-1A sheet should have been X-1B

Please void the second X-1A sheet in your plans and staple the New X-1B sheet thereto.

The following revision has been made to the plans:

Sheet No.	Revisions
SIGN-1	Revised the Summary of Quantities to reflect the below noted quantity changes
SIG-11.3 and SIG-11.4	New Sheets to provide the loading diagram for "Metal Pole No. 5 and 6"
SIG-16.2 and SIG-16.3	New Sheet to provide the loading diagram for "Metal Pole No. 7 and 8 and Metal Pole No. 9"

Please void sheet No. SIGN-1 in your plans and staple the revised sheet thereto. Please staple new sheet Nos. SIG-11.3 and SIG-11.4 after existing Sheet No. SIG-11.2 and New Sheet Nos. SIG-16.2 and SIG-16.3 after existing Sheet No. SIG-16.1

*Mailing Address:*  
NC DEPARTMENT OF TRANSPORTATION  
CONTRACT STANDARDS AND DEVELOPMENT  
1591 MAIL SERVICE CENTER  
RALEIGH, NC 27699-1591

*Telephone:* (919) 707-6900  
*Fax:* (919) 250-4127  
*Customer Service:* 1-877-368-4968

*Location:*  
1020 BIRCH RIDGE DR.  
RALEIGH, NC 27610

*Website:* www.ncdot.gov

The following revisions have been made to the proposal:

<b>Page No.</b>	<b>Revisions</b>
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated 02-08-2018".
G-6	Revised to add a new sentence to "Intermediate Contract Time Number 9 and Liquidated Damages"
G-10	Revised the list of line #'s for Signing in the project special provision entitled "Specialty Items"

Please void the Proposal Cover and Pages G-6 and G-10 in your proposal and staple the revised pages thereto.

On the item sheets the following pay items have been deleted and new items added:

<b><u>Item</u></b>	<b><u>Description</u></b>	<b><u>Old Quantity</u></b>	<b><u>New Quantity</u></b>
129-4109000000-N-904	Sign Erection, Type A (Overhead)	15 EA	<b>DELETED</b>
130-4109000000-N-904	Sign Erection, Type B (Overhead)	3 EA	<b>DELETED</b>
355-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 60+42-Y-	<b>NEW ITEM</b>	Lump Sum
356-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 84+00-Y-	<b>NEW ITEM</b>	Lump Sum
357-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 111+35-Y-	<b>NEW ITEM</b>	Lump Sum
358-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 123+03-Y- (Sta 10+12-RPA-)	<b>NEW ITEM</b>	Lump Sum
359-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 149+00-Y-	<b>NEW ITEM</b>	Lump Sum
360-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 171+68-Y-	<b>NEW ITEM</b>	Lump Sum
361-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 59+00-L-	<b>NEW ITEM</b>	Lump Sum
362-40821000000-N-906	Supports, Overhead Sign Structure @ Sta. 25+85-RPC-	<b>NEW ITEM</b>	Lump Sum

The Contractor's bid must not include the deleted pay items and must include the new pay items.

The Expedite File has been updated to reflect these revisions. Please download the Expedite Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

The contract will be prepared accordingly.

I-5506 (C204069)

Wake County

Sincerely,

DocuSigned by:

*Ronald E. Davenport, Jr.*

F81B6038A47A442...

Ronald E. Davenport, Jr., PE  
State Contract Officer

RED/jag  
Attachments

cc: Mr. Lamar Sylvester, PE  
Mr. Joey Hopkins PE  
Mr. Chris Werner, PE  
Mr. Jon Weathersby, PE  
Mr. Ken Kennedy, PE  
Ms. Lori Strickland  
Project File (2)

Mr. Ray Arnold, PE  
Ms. Theresa Canales, PE  
Mr. Mike Gwyn  
Ms. Jaci Kincaid  
Ms. Penny Higgins  
Mr. Mitchell Dixon

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH, N.C.

PROPOSAL

**INCLUDES ADDENDUM No. 1 DATED 02-08-2018**

DATE AND TIME OF BID OPENING: **FEBRUARY 20, 2018 AT 2:00 PM**

CONTRACT ID      C204069  
WBS                43608.3.3

FEDERAL-AID NO. STATE FUNDED  
COUNTY            WAKE  
T.I.P. NO.         I-5506  
MILES               0.854  
ROUTE NO.         I 40  
LOCATION            I-40 AND SR-1002 (AVIATION PARKWAY) INTERCHANGE.

TYPE OF WORK     GRADING, DRAINAGE, PAVING, ITS, AND STRUCTURES.

**NOTICE:**

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

**BIDS WILL BE RECEIVED AS SHOWN BELOW:**

**THIS IS A ROADWAY & STRUCTURE PROPOSAL**

**5% BID BOND OR BID DEPOSIT REQUIRED**

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If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **5:00 A.M.** the Thursday before Independence Day and **1:00 A.M.** the Wednesday after Independence Day.

6. For **Labor Day**, between the hours of **5:00 A.M.** Friday and **1:00 A.M.** Wednesday.
7. For **Thanksgiving**, between the hours of **5:00 A.M.** Tuesday and **1:00 A.M.** Tuesday.
8. For **Christmas**, between the hours of **5:00 A.M.** the Friday before the week of Christmas Day and **1:00 A.M.** the following Wednesday after the week of Christmas Day.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures are not required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated herein and place traffic in the existing traffic pattern.

The liquidated damages are **Two Thousand Five Hundred Dollars (\$ 2,500.00)** per fifteen (15) minute time period.

**INTERMEDIATE CONTRACT TIME NUMBER 9 AND LIQUIDATED DAMAGES:**

(2-20-07)

108

SP1 G14 D

The Contractor shall complete the required work of installing, maintaining and removing the traffic control devices for road closures and restoring traffic to the existing traffic pattern. The Contractor shall not close **I-40** during the following time restrictions:

**DAY AND TIME RESTRICTIONS**

**Monday thru Friday  
5:00 A.M. to 12:00 A.M.**

**Saturday and Sunday  
6:00 A.M. to 1:00 A.M.**

The time of availability for this intermediate contract time will be the time the Contractor begins to install traffic control devices required for road closures according to the time restrictions stated herein.

**Only directional closures of I40 shall be permitted, and only for bridge demolition and girder installation operations.**

The completion time for this intermediate contract time will be the time the Contractor is required to complete the removal of traffic control devices required for the road closures according to the time restrictions stated herein and restore traffic to the existing traffic pattern.

The liquidated damages are **Five Thousand Dollars (\$ 5,000.00)** per fifteen (15) minute time period.

**SPECIALTY ITEMS:**

(7-1-95)(Rev. 1-17-12)

108-6

SP1 G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the 2018 Standard Specifications).

Line #	Description
101 - 110	Guardrail
111 - 113	Fencing
119 - 138 & 355 - 362	Signing
160 - 171 & 173 - 174	Long-Life Pavement Markings
172	Removable Tape
180 - 182	Work Zone Pavement Markings
185 - 186	Permanent Pavement Markers
190 - 216	Lighting
217 - 234	Utility Construction
235 - 265 & 267 - 268	Erosion Control
266	Reforestation
269 - 328	Signals/ITS System
337 - 338 & 340	Drilled Piers

**FUEL PRICE ADJUSTMENT:**

(11-15-05) (Rev. 2-18-14)

109-8

SP1 G43

Revise the 2018 Standard Specifications as follows:

**Page 1-83, Article 109-8, Fuel Price Adjustments**, add the following:

The base index price for DIESEL #2 FUEL is \$ **1.9853** per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

The pay items and the fuel factor used in calculating adjustments to be made will be as follows:

Description	Units	Fuel Usage Factor Diesel
Unclassified Excavation	Gal/CY	0.29
Borrow Excavation	Gal/CY	0.29
Class IV Subgrade Stabilization	Gal/Ton	0.55
Aggregate Base Course	Gal/Ton	0.55
Sub-Ballast	Gal/Ton	0.55
Asphalt Concrete Base Course, Type _____	Gal/Ton	2.90
Asphalt Concrete Intermediate Course, Type _____	Gal/Ton	2.90
Asphalt Concrete Surface Course, Type _____	Gal/Ton	2.90
Open-Graded Asphalt Friction Course	Gal/Ton	2.90
Permeable Asphalt Drainage Course, Type _____	Gal/Ton	2.90
Sand Asphalt Surface Course, Type _____	Gal/Ton	2.90
Aggregate for Cement Treated Base Course	Gal/Ton	0.55
Portland Cement for Cement Treated Base Course	Gal/Ton	0.55
____" Portland Cement Concrete Pavement	Gal/SY	0.245
Concrete Shoulders Adjacent to ____" Pavement	Gal/SY	0.245

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
<b>ROADWAY ITEMS</b>						
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUB- BING	2 ACR		
0005	0022000000-E	225	UNCLASSIFIED EXCAVATION	85,000 CY		
0006	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (50+61.09 -L-)	Lump Sum	L.S.	
0007	0036000000-E	225	UNDERCUT EXCAVATION	3,700 CY		
0008	0106000000-E	230	BORROW EXCAVATION	65,000 CY		
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	10,800 CY		
0010	0141000000-E	240	BERM DITCH CONSTRUCTION	450 LF		
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	23,730 SY		
0012	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	4,410 SY		
0013	0192000000-N	260	PROOF ROLLING	10 HR		
0014	0195000000-E	265	SELECT GRANULAR MATERIAL	2,900 CY		
0015	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZA- TION	13,700 SY		
0016	0199000000-E	SP	TEMPORARY SHORING	5,105 SF		
0017	0248000000-N	SP	GENERIC GRADING ITEM MEDIA FILTER BASIN NO 1	Lump Sum	L.S.	
0018	0248000000-N	SP	GENERIC GRADING ITEM MEDIA FILTER BASIN NO 2	Lump Sum	L.S.	

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0019	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	1,180	TON	
0020	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	3,700	SY	
0021	0342000000-E	310	*** SIDE DRAIN PIPE (30")	84	LF	
0022	0342000000-E	310	*** SIDE DRAIN PIPE (42")	180	LF	
0023	0342000000-E	310	*** SIDE DRAIN PIPE (48")	16	LF	
0024	0343000000-E	310	15" SIDE DRAIN PIPE	1,928	LF	
0025	0344000000-E	310	18" SIDE DRAIN PIPE	560	LF	
0026	0345000000-E	310	24" SIDE DRAIN PIPE	992	LF	
0027	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (15")	6	EA	
0028	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (18")	2	EA	
0029	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (15", V)	2,056	LF	
0030	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (18", V)	600	LF	
0031	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (24", V)	604	LF	
0032	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (30", V)	248	LF	
0033	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (42", V)	52	LF	
0034	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	140	LF	



County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	324 LF		
0036	0396000000-E	310	42" RC PIPE CULVERTS, CLASS III	52 LF		
0037	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	2,212 LF		
0038	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	232 LF		
0039	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	556 LF		
0040	0582000000-E	310	15" CS PIPE CULVERTS, 0.064" THICK	160 LF		
0041	0594000000-E	310	24" CS PIPE CULVERTS, 0.064" THICK	84 LF		
0042	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")	8 EA		
0043	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (24", 0.064")	2 EA		
0044	0995000000-E	340	PIPE REMOVAL	2,189 LF		
0045	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0046	1044000000-E	501	LIME TREATED SOIL (SLURRY METHOD)	23,420 SY		
0047	1099500000-E	505	SHALLOW UNDERCUT	3,500 CY		
0048	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	7,000 TON		
0049	1110000000-E	510	STABILIZER AGGREGATE	500 TON		
0050	1115000000-E	SP	GEOTEXTILE FOR PAVEMENT STABILIZATION	10,650 SY		
0051	1121000000-E	520	AGGREGATE BASE COURSE	32,700 TON		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0052	1165000000-E	540	PORTLAND CEMENT FOR CEMENT TREATED BASE COURSE	1,293 TON		
0053	1176000000-E	542	SOIL CEMENT BASE	23,420 SY		
0054	1187000000-E	542	PORTLAND CEMENT FOR SOIL CEMENT BASE	1,293 TON		
0055	1209000000-E	543	ASPHALT CURING SEAL	7,030 GAL		
0056	1220000000-E	545	INCIDENTAL STONE BASE	200 TON		
0057	1297000000-E	607	MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/2")	1,200 SY		
0058	1297000000-E	607	MILLING ASPHALT PAVEMENT, **** DEPTH (3")	28,800 SY		
0059	1330000000-E	607	INCIDENTAL MILLING	3,190 SY		
0060	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	7,850 TON		
0061	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	14,010 TON		
0062	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	850 TON		
0063	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	11,830 TON		
0064	1524200000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5D	5,110 TON		
0065	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	1,770 TON		
0066	1577000000-E	620	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX	295 TON		
0067	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	540 TON		
0068	1840000000-E	665	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	5,750 LF		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0069	2000000000-N	806	RIGHT-OF-WAY MARKERS	59 EA		
0070	2022000000-E	815	SUBDRAIN EXCAVATION	722 CY		
0071	2033000000-E	815	SUBDRAIN FINE AGGREGATE	361 CY		
0072	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	2,150 LF		
0073	2070000000-N	815	SUBDRAIN PIPE OUTLET	5 EA		
0074	2077000000-E	815	6" OUTLET PIPE	30 LF		
0075	2143000000-E	818	BLOTTING SAND	20 TON		
0076	2209000000-E	838	ENDWALLS	9.4 CY		
0077	2253000000-E	840	PIPE COLLARS	2 CY		
0078	2275000000-E	SP	FLOWABLE FILL	59 CY		
0079	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	109 EA		
0080	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	39.8 LF		
0081	2352000000-N	840	FRAME WITH GRATE, STD 840.**** (840.D13)	2 EA		
0082	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	11 EA		
0083	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	1 EA		
0084	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	30 EA		
0085	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	4 EA		
0086	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	4 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0087	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	26 EA		
0088	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	22 EA		
0089	2396000000-N	840	FRAME WITH COVER, STD 840.54	6 EA		
0090	2407000000-N	840	STEEL FRAME WITH TWO GRATES, STD 840.37	1 EA		
0091	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	1 EA		
0092	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	13 EA		
0093	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	2,920 LF		
0094	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	10,340 LF		
0095	2577000000-E	846	CONCRETE EXPRESSWAY GUTTER	240 LF		
0096	2591000000-E	848	4" CONCRETE SIDEWALK	2,000 SY		
0097	2605000000-N	848	CONCRETE CURB RAMPS	28 EA		
0098	2619000000-E	850	4" CONCRETE PAVED DITCH	44 SY		
0099	2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	1,740 SY		
0100	2752000000-E	SP	GENERIC PAVING ITEM MEDIAN HAZARD PROTECTION	114 LF		
0101	3030000000-E	862	STEEL BEAM GUARDRAIL	6,675 LF		
0102	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	62.5 LF		
0103	3060000000-E	862	STEEL BEAM GUARDRAIL, DOUBLE FACED	87.5 LF		
0104	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0105	3210000000-N	862	GUARDRAIL END UNITS, TYPE CAT-1	9 EA		
0106	3215000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE III	2 EA		
0107	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	13 EA		
0108	3317000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE B-77	4 EA		
0109	3360000000-E	863	REMOVE EXISTING GUARDRAIL	5,869 LF		
0110	3435000000-N	SP	GENERIC GUARDRAIL ITEM EXTRA LENGTH GUARDRAIL POSTS (8' STEEL)	70 EA		
0111	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	3,420 LF		
0112	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	187 EA		
0113	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	105 EA		
0114	3628000000-E	876	RIP RAP, CLASS I	891 TON		
0115	3635000000-E	876	RIP RAP, CLASS II	186 TON		
0116	3649000000-E	876	RIP RAP, CLASS B	223 TON		
0117	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	3,212 SY		
0118	3659000000-N	873	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON	1 EA		
0119	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	11 CY		
0120	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDATIONS	1 CY		
0121	4057000000-E	SP	OVERHEAD FOOTING	107 CY		
0122	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	10,217 LB		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0123	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	1,614 LB		
0124	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	1,146 LF		
0125	4078000000-E	903	SUPPORTS, 2-LB STEEL U-CHANNEL	1 EA		
0126	4096000000-N	904	SIGN ERECTION, TYPE D	5 EA		
0127	4102000000-N	904	SIGN ERECTION, TYPE E	73 EA		
0128	4108000000-N	904	SIGN ERECTION, TYPE F	5 EA		
0131	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	12 EA		
0132	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	3 EA		
0133	4114000000-N	904	SIGN ERECTION, MILEMARKERS	1 EA		
0134	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (A)	6 EA		
0135	4138000000-N	907	DISPOSAL OF SUPPORT, STEEL BEAM	6 EA		
0136	4149000000-N	907	DISPOSAL OF SIGN SYSTEM, OVER- HEAD	4 EA		
0137	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	5 EA		
0138	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U- CHANNEL	61 EA		
0139	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	810 SF		
0140	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	1,800 SF		
0141	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	454 SF		
0142	4415000000-N	1115	FLASHING ARROW BOARD	15 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0143	442000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	10	EA	
0144	442200000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	240	DAY	
0145	442300000-N	SP	WORK ZONE DIGITAL SPEED LIMIT SIGNS	6	EA	
0146	443000000-N	1130	DRUMS	540	EA	
0147	443400000-N	SP	SEQUENTIAL FLASHING WARNING LIGHTS	100	EA	
0148	444500000-E	1145	BARRICADES (TYPE III)	200	LF	
0149	445500000-N	1150	FLAGGER	60	DAY	
0150	446500000-N	1160	TEMPORARY CRASH CUSHIONS	6	EA	
0151	447000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	4	EA	
0152	448000000-N	1165	TMA	8	EA	
0153	449000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	6,910	LF	
0154	450000000-E	1170	REMOVE & RESET PORTABLE CONCRETE BARRIER	1,400	LF	
0155	450500000-E	1170	REMOVE & RESET PORTABLE CONCRETE BARRIER (ANCHORED)	4,570	LF	
0156	450700000-E	1170	WATER FILLED BARRIER	777	LF	
0157	451000000-N	1190	LAW ENFORCEMENT	1,200	HR	
0158	460000000-N	SP	GENERIC TRAFFIC CONTROL ITEM ADA BARRICADE (SAFETY RAIL)	12	EA	
0159	465000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	2,380	EA	
0160	468500000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	7,485	LF	

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0161	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	6,628 LF		
0162	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	22,334 LF		
0163	4690000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)	7,594 LF		
0164	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	994 LF		
0165	4697000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	1,281 LF		
0166	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	827 LF		
0167	4702000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS)	1,423 LF		
0168	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	701 LF		
0169	4721000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	12 EA		
0170	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	110 EA		
0171	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)	1,617 LF		
0172	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	3,053 LF		
0173	4780000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (8") (II)	85 LF		
0174	4805000000-N	1205	COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (II)	3 EA		
0175	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	92,930 LF		



County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0176	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	1,540	LF	
0177	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	1,420	LF	
0178	4840000000-N	1205	PAINT PAVEMENT MARKING CHARAC- TER	112	EA	
0179	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	333	EA	
0180	4847500000-E	SP	WORK ZONE PERFORMANCE PAVEMENT MARKING LINES, 6"	42,145	LF	
0181	4847600000-E	SP	WORK ZONE PERFORMANCE PAVEMENT MARKING LINES, 12"	3,040	LF	
0182	4848000000-E	SP	WORK ZONE TRAFFIC PATTERN MASKING	737,000	SF	
0183	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	5,000	LF	
0184	4875000000-N	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	20	EA	
0185	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	289	EA	
0186	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	453	EA	
0187	4935000000-N	1267	FLEXIBLE DELINEATORS (CRYSTAL)	77	EA	
0188	4940000000-N	1267	FLEXIBLE DELINEATORS (YELLOW)	73	EA	
0189	4950000000-N	1267	FLEXIBLE DELINEATORS (YELLOW & RED)	10	EA	
0190	5000000000-E	1401	*** HIGH MOUNT STANDARD (70')	3	EA	
0191	5010000000-E	1401	100' HIGH MOUNT STANDARD	2	EA	
0192	5020000000-N	1401	PORTABLE DRIVE UNIT	1	EA	
0193	5025000000-E	SP	HIGH MOUNT FOUNDATIONS	27.8	CY	

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0194	5045000000-N	1404	LIGHT STANDARDS, TYPE MTL ***** (30' SA, 10' ARM)	20	EA	
0195	5050000000-N	1404	LIGHT STANDARDS, TYPE MTL ***** (45' SA, 15' ARM)	23	EA	
0196	5070000000-N	SP	STANDARD FOUNDATION ***** (R1)	38	EA	
0197	5070000000-N	SP	STANDARD FOUNDATION ***** (R2)	5	EA	
0198	5120000000-N	1407	ELECTRIC SERVICE POLE **** ***** (30' CLASS 4)	1	EA	
0199	5125000000-E	1407	ELECTRIC SERVICE LATERAL ***** (3 #1/0 USE)	100	LF	
0200	5155000000-E	1409	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")	405	LF	
0201	5160000000-E	1409	ELECTRICAL DUCT, TYPE JA, SIZE ***** (3")	1,128	LF	
0202	5160000000-E	1409	ELECTRICAL DUCT, TYPE JA, SIZE ***** (4")	345	LF	
0203	5175000000-E	1410	** #6 W/G FEEDER CIRCUIT (2)	520	LF	
0204	5180000000-E	1410	** #4 W/G FEEDER CIRCUIT (2)	700	LF	
0205	5185000000-E	1410	** #2 W/G FEEDER CIRCUIT (2)	170	LF	
0206	5210000000-E	1410	** #6 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5)	7,480	LF	
0207	5215000000-E	1410	** #4 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5)	5,910	LF	

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0208	5220000000-E	1410	** #2 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1.5)	3,020	LF	
0209	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ***** ELECTRICAL JUNCTION BOXES PC18	57	EA	
0210	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ***** ELECTRICAL JUNCTION BOXES PC30	7	EA	
0211	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ***** ELECTRICAL JUNCTION BOXES PC36	1	EA	
0212	5270000000-N	SP	GENERIC LIGHTING ITEM COMMUNICATION GATEWAY	1	EA	
0213	5270000000-N	SP	GENERIC LIGHTING ITEM CONTROL NODE	73	EA	
0214	5270000000-N	SP	GENERIC LIGHTING ITEM HIGH MOUNT LUMINAIRE - LED	30	EA	
0215	5270000000-N	SP	GENERIC LIGHTING ITEM LIGHTING CONTROL SYSTEM	1	EA	
0216	5270000000-N	SP	GENERIC LIGHTING ITEM ROADWAY LIGHT STANDARD LUMINAI RE - 285W LED	43	EA	
0217	5882000000-N	SP	GENERIC UTILITY ITEM 16 INCH INSERTION VALVE	1	EA	
0218	5882000000-N	SP	GENERIC UTILITY ITEM 16 INCH LINE STOP	1	EA	
0219	5882000000-N	SP	GENERIC UTILITY ITEM ARV MANHOLE ASSEMBLY (POTABLE WATER)	1	EA	
0220	5882000000-N	SP	GENERIC UTILITY ITEM BYPASS CONNECTION ASSEMBLY ABANDONMENT	2	EA	
0221	5882000000-N	SP	GENERIC UTILITY ITEM COMBINATION AIR VALVE ASSEMBLY (SANITARY)	1	EA	

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0222	5882000000-N	SP	GENERIC UTILITY ITEM CONNECTION TO EXISTING 16-INCH WATER MAIN	2 EA		
0223	5882000000-N	SP	GENERIC UTILITY ITEM CONNECTION TO EXISTING 6-INCH FORCE MAIN	2 EA		
0224	5882000000-N	SP	GENERIC UTILITY ITEM THRUST COLLAR	6 EA		
0225	5888000000-E	SP	GENERIC UTILITY ITEM 16 INCH CLASS 350 DUCTILE IRON WATER DISTRIBUTION PIPE	600 LF		
0226	5888000000-E	SP	GENERIC UTILITY ITEM 16-INCH CLASS 350 DUCTILE IRON CARRIER PIPE	45 LF		
0227	5888000000-E	SP	GENERIC UTILITY ITEM 16-INCH ENCASEMENT PIPE, BY OPEN CUT	45 LF		
0228	5888000000-E	SP	GENERIC UTILITY ITEM 16-INCH RESTRAINED JOINT ADDER FOR DUCTILE IRON WATER PIPE	410 LF		
0229	5888000000-E	SP	GENERIC UTILITY ITEM 30-INCH ENCASEMENT PIPE, BY OPEN CUT	45 LF		
0230	5888000000-E	SP	GENERIC UTILITY ITEM 6-INCH C-900 DR 18 PVC CARRIER PIPE	45 LF		
0231	5888000000-E	SP	GENERIC UTILITY ITEM 6-INCH C-900 DR 18 PVC RE- TRAINED JOINT FORCE MAIN	800 LF		
0232	5888000000-E	SP	GENERIC UTILITY ITEM ABANDON EXISTING 16-INCH WATER DISTRIBUTION PIPE	565 LF		
0233	5906000000-E	SP	GENERIC UTILITY ITEM DUCTILE IRON FITTINGS	3,700 LB		
0234	5912000000-N	SP	GENERIC UTILITY ITEM REMOVAL OF TEMPORARY BYPASS PIPING	Lump Sum	L.S.	
0235	6000000000-E	1605	TEMPORARY SILT FENCE	14,975 LF		

County: Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0236	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	600 TON		
0237	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	3,675 TON		
0238	6012000000-E	1610	SEDIMENT CONTROL STONE	2,725 TON		
0239	6015000000-E	1615	TEMPORARY MULCHING	41 ACR		
0240	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	2,400 LB		
0241	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEED- ING	14 TON		
0242	6024000000-E	1622	TEMPORARY SLOPE DRAINS	2,235 LF		
0243	6029000000-E	SP	SAFETY FENCE	200 LF		
0244	6030000000-E	1630	SILT EXCAVATION	7,500 CY		
0245	6036000000-E	1631	MATTING FOR EROSION CONTROL	23,000 SY		
0246	6037000000-E	SP	COIR FIBER MAT	100 SY		
0247	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	2,400 SY		
0248	6042000000-E	1632	1/4" HARDWARE CLOTH	4,950 LF		
0249	6045000000-E	SP	*** TEMPORARY PIPE (36")	65 LF		
0250	6070000000-N	1639	SPECIAL STILLING BASINS	4 EA		
0251	6071010000-E	SP	WATTLE	1,388 LF		
0252	6071020000-E	SP	POLYACRYLAMIDE (PAM)	960 LB		
0253	6071030000-E	1640	COIR FIBER BAFFLE	2,200 LF		
0254	6071050000-E	SP	*** SKIMMER (1-1/2")	7 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0255	6071050000-E	SP	*** SKIMMER (2")	3 EA		
0256	6084000000-E	1660	SEEDING & MULCHING	41 ACR		
0257	6087000000-E	1660	MOWING	21 ACR		
0258	6090000000-E	1661	SEED FOR REPAIR SEEDING	400 LB		
0259	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	1.25 TON		
0260	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	1,025 LB		
0261	6108000000-E	1665	FERTILIZER TOPDRESSING	30.5 TON		
0262	6111000000-E	SP	IMPERVIOUS DIKE	100 LF		
0263	6114500000-N	1667	SPECIALIZED HAND MOWING	10 MHR		
0264	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	25 EA		
0265	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	4 EA		
0266	6123000000-E	1670	REFORESTATION	0.25 ACR		
0267	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE CLEANOUT	40 EA		
0268	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE	20 EA		
0269	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	10 EA		
0270	7060000000-E	1705	SIGNAL CABLE	12,855 LF		
0271	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	59 EA		
0272	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	19 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0273	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	4 EA		
0274	7252000000-E	1710	MESSENGER CABLE (1/4")	1,300 LF		
0275	7264000000-E	1710	MESSENGER CABLE (3/8")	2,700 LF		
0276	7279000000-E	1715	TRACER WIRE	12,800 LF		
0277	7300000000-E	1715	UNPAVED TRENCHING (***** (1, 2")	8,000 LF		
0278	7300000000-E	1715	UNPAVED TRENCHING (***** (2, 2")	8,450 LF		
0279	7300100000-E	1715	UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN	2,500 LF		
0280	7301000000-E	1715	DIRECTIONAL DRILL (***** (1, 2")	750 LF		
0281	7301000000-E	1715	DIRECTIONAL DRILL (***** (2, 2")	1,225 LF		
0282	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	62 EA		
0283	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEA- VY DUTY)	21 EA		
0284	7360000000-N	1720	WOOD POLE	10 EA		
0285	7372000000-N	1721	GUY ASSEMBLY	32 EA		
0286	7396000000-E	1722	1/2" RISER WITH WEATHERHEAD	2 EA		
0287	7408000000-E	1722	1" RISER WITH WEATHERHEAD	3 EA		
0288	7420000000-E	1722	2" RISER WITH WEATHERHEAD	13 EA		
0289	7430000000-N	1722	HEAT SHRINK TUBING RETROFIT KIT	3 EA		
0290	7432000000-E	1722	2" RISER WITH HEAT SHRINK TUBING	2 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0291	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	10,650	LF	
0292	7456000000-E	1726	LEAD-IN CABLE (***** (14-2)	30,550	LF	
0293	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (144)	9,250	LF	
0294	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (36)	4,275	LF	
0295	7528000000-E	1730	DROP CABLE	1,775	LF	
0296	7540000000-N	1731	SPLICE ENCLOSURE	8	EA	
0297	7541000000-N	1731	MODIFY SPLICE ENCLOSURE	2	EA	
0298	7552000000-N	1731	INTERCONNECT CENTER	7	EA	
0299	7566000000-N	1733	DELINEATOR MARKER	23	EA	
0300	7576000000-N	SP	METAL STRAIN SIGNAL POLE	4	EA	
0301	7588000000-N	SP	METAL POLE WITH SINGLE MAST ARM	4	EA	
0302	7590000000-N	SP	METAL POLE WITH DUAL MAST ARM	2	EA	
0303	7613000000-N	SP	SOIL TEST	9	EA	
0304	7614100000-E	SP	DRILLED PIER FOUNDATION	54	CY	
0305	7631000000-N	SP	MAST ARM WITH METAL POLE DE- SIGN	5	EA	
0306	7636000000-N	1745	SIGN FOR SIGNALS	38	EA	
0307	7642100000-N	1743	TYPE I POST WITH FOUNDATION	3	EA	
0308	7642200000-N	1743	TYPE II PEDESTAL WITH FOUND- ATION	5	EA	
0309	7675000000-N	1747	LED BLANKOUT SIGN	1	EA	



County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0310	7684000000-N	1750	SIGNAL CABINET FOUNDATION	4 EA		
0311	7852000000-N	1751	DETECTOR CARD (NEMA TS-2)	30 EA		
0312	7960000000-N	SP	METAL POLE FOUNDATION REMOVAL	4 EA		
0313	7972000000-N	SP	METAL POLE REMOVAL	4 EA		
0314	7980000000-N	SP	GENERIC SIGNAL ITEM 2.4GHZ BROADBAND ETHERNET RADIO	3 EA		
0315	7980000000-N	SP	GENERIC SIGNAL ITEM ANALOG CCTV CAMERA ASSEMBLY	1 EA		
0316	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV ELECTRICAL SERVICE	2 EA		
0317	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV METAL POLE (40')	1 EA		
0318	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV WOOD POLE (60')	1 EA		
0319	7980000000-N	SP	GENERIC SIGNAL ITEM DIGITAL CCTV CAMERA ASSEMBLY	1 EA		
0320	7980000000-N	SP	GENERIC SIGNAL ITEM FIBER OPTIC VIDEO TRANSCIEVER W/DATE RECEIVER	1 EA		
0321	7980000000-N	SP	GENERIC SIGNAL ITEM FIELD EQUIPMENT CABINET	2 EA		
0322	7980000000-N	SP	GENERIC SIGNAL ITEM FIELD VIDEO ENCODER	1 EA		
0323	7980000000-N	SP	GENERIC SIGNAL ITEM JUNCTION BOX (SPECIAL OVER- SIZED, HEAVY DUTY)	7 EA		
0324	7980000000-N	SP	GENERIC SIGNAL ITEM MODIFY ETHERNET RADIO INSTALL- ATION	1 EA		
0325	7980000000-N	SP	GENERIC SIGNAL ITEM NEMA TS-2, TYPE I CABINET, BASE MOUNTED, W/2070LN2 CONT- ROLLER	4 EA		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0326	7980000000-N	SP	GENERIC SIGNAL ITEM REMOVE RADIO INSTALLATION	2 EA		
0327	7980000000-N	SP	GENERIC SIGNAL ITEM SOIL TEST FOR CCTV METAL POLE	1 EA		
0328	7992000000-E	SP	GENERIC SIGNAL ITEM DRILLED PIER FOUNDATION FOR CCTV METAL POLE	6 CY		
0355	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (60+42 -Y-)	Lump Sum	L.S.	
0356	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (84+00 -Y-)	Lump Sum	L.S.	
0357	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (111+35 -Y-)	Lump Sum	L.S.	
0358	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (123+03 -Y-)	Lump Sum	L.S.	
0359	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (149+00 -Y-)	Lump Sum	L.S.	
0360	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (171+68 -Y-)	Lump Sum	L.S.	
0361	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (59+00 -L-)	Lump Sum	L.S.	
0362	4082100000-N	906	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (25+85 -RPC-)	Lump Sum	L.S.	
<b>CULVERT ITEMS</b>						
0329	8126000000-N	414	CULVERT EXCAVATION, STA ***** (67+46.44-Y-)	Lump Sum	L.S.	

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0330	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	45 TON		
0331	8196000000-E	420	CLASS A CONCRETE (CULVERT)	72.4 CY		
0332	8245000000-E	425	REINFORCING STEEL (CULVERT)	10,265 LB		
<b>STRUCTURE ITEMS</b>						
0333	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ***** (50+61.09-L-)	Lump Sum	L.S.	
0334	8065000000-N	SP	ASBESTOS ASSESSMENT	Lump Sum	L.S.	
0335	8096000000-E	450	PILE EXCAVATION IN SOIL	240 LF		
0336	8097000000-E	450	PILE EXCAVATION NOT IN SOIL	160 LF		
0337	8105520000-E	411	3'-0" DIA DRILLED PIERS IN SOIL	29.82 LF		
0338	8105620000-E	411	3'-0" DIA DRILLED PIERS NOT IN SOIL	75 LF		
0339	8112730000-N	450	PDA TESTING	1 EA		
0340	8115000000-N	411	CSL TESTING	1 EA		
0341	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	30,049 SF		
0342	8161000000-E	420	GROOVING BRIDGE FLOORS	33,031 SF		
0343	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	317.3 CY		
0344	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (50+61.09-L-)	Lump Sum	L.S.	
0345	8217000000-E	425	REINFORCING STEEL (BRIDGE)	55,201 LB		

County : Wake

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0346	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	4,610 LB		
0347	8280000000-E	440	APPROX ..... LBS STRUCTURAL STEEL	1,197,800 LS		
0348	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP12X53)	40 EA		
0349	8364000000-E	450	HP12X53 STEEL PILES	530 LF		
0350	8475000000-E	460	TWO BAR METAL RAIL	563.94 LF		
0351	8517000000-E	460	1'-**X ***** CONCRETE PARA-PET (1'-2" X 3'-3")	579.55 LF		
0352	8531000000-E	462	4" SLOPE PROTECTION	1,035 SY		
0353	8654000000-N	SP	DISC BEARINGS	Lump Sum	L.S.	
0354	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
			<b>Total Amount Of Bid For Entire Project :</b>			

1625/Feb07/Q2980456.01/D1646312230000/E360

**STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS**

<b>PROJ. REFERENCE NO.</b>	<b>SHEET NO.</b>
I-5506	X-1B

Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

**CROSS-SECTION SUMMARY**


Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt
Y LT	(cu. yd.)	(cu. yd.)	Rpa	(cu. yd.)	(cu. yd.)	Rpb	(cu. yd.)	(cu. yd.)	Srpd	(cu. yd.)	(cu. yd.)	Y5 LT	(cu. yd.)	(cu. yd.)
102+00.00	49	8	23+50.00	500	0	19+80.00000	3308	0	11+52.40	1	4	12+50.00	0	0
102+50.00	43	6	24+00.00	335	5	20+32.17000	3747	0				13+00.00	22	0
103+00.00	40	6	24+50.00	92	181	20+80.00000	3378	0	Station	Uncl. Exc.	Embt	13+25.00	18	0
103+50.00	39	7	25+00.00	0	701	21+50.00000	4108	0	Y1	(cu. yd.)	(cu. yd.)	13+50.00	19	1
104+00.00	37	8	25+50.00	1	1252	22+20.00000	2102	91				13+75.00	13	1
104+50.00	38	8	25+97.12	1	1370	22+97.93487	436	1865	10+35.65	0	0	14+00.00	13	1
105+00.00	30	10				23+58.15324	0	2438	11+10.79	31	0	14+25.00	18	1
105+50.00	19	11	Station	Uncl. Exc.	Embt	24+16.53688	0	2322	11+50.00	16	16	14+50.00	25	1
			Lpb	(cu. yd.)	(cu. yd.)	24+72.51000	0	2792	12+00.00	21	57	14+75.00	47	2
Station	Uncl. Exc.	Embt				25+25.36009	0	3698	12+50.00	18	57	15+01.46	70	4
Y LT	(cu. yd.)	(cu. yd.)	10+00.00	0	0	25+64.61689	0	3742	12+84.89	9	26			
108+50.00	51	9	10+52.31	59	22	26+56.07	0	9752	13+00.00	4	10	Station	Uncl. Exc.	Embt
109+00.00	158	18	11+02.02	35	26				13+50.00	19	26	Y5 RT	(cu. yd.)	(cu. yd.)
109+50.00	207	16	11+51.29	19	41	Station	Uncl. Exc.	Embt	13+71.33	11	6			
110+00.00	194	13	12+02.89	12	43	Rpc	(cu. yd.)	(cu. yd.)				12+50.00	0	0
110+50.00	161	18	12+43.70	12	39				Station	Uncl. Exc.	Embt	13+00.00	12	0
111+00.00	261	22	12+90.00	189	59	20+00.00	0	0	Y3 LT	(cu. yd.)	(cu. yd.)	13+25.00	23	1
111+50.00	368	26	13+30.00	615	25	20+50.00	20	10				13+50.00	33	3
112+00.00	381	26	13+80.00	1883	0	21+00.00	21	17	10+40.65	0	0	13+75.00	34	6
112+50.00	615	19	14+30.00	2967	0	21+50.00	22	25	10+75.00	1	31	14+00.00	38	6
113+00.00	721	18	14+50.00	1341	0	22+00.00	16	28	11+00.00	2	18	14+25.00	49	4
113+50.00	544	19	15+00.00	1802	51	22+50.00	9	55	11+50.00	10	22	14+50.00	83	2
114+00.00	397	20	15+50.00	126	352	23+00.00	6	95				14+75.00	134	2
114+50.00	177	21	16+00.00	18	1252	23+50.00	4	108	Station	Uncl. Exc.	Embt	15+01.46	169	4
115+00.00	20	17	16+50.00	0	2079	24+00.00	10	91						
115+50.00	22	8	17+00.00	0	2745	24+50.00	22	66	Y3 RT	(cu. yd.)	(cu. yd.)	Station	Uncl. Exc.	Embt
115+72.32	11	1	17+50.00	0	3796	25+00.00	32	94						
			18+00.00	0	4879	25+50.00	37	384	10+35.11	0	0	Y6 LT	(cu. yd.)	(cu. yd.)
			19+23.50	0	13337	26+00.00	34	691	10+75.00	1	90			
Station	Uncl. Exc.	Embt				26+50.00	23	662	11+00.00	3	43	10+34.89	0	0
Rpa	(cu. yd.)	(cu. yd.)	Station	Uncl. Exc.	Embt	27+00.00	7	480	11+50.00	20	51	10+70.00	4	3
13+35.00	0	0	Rpb	(cu. yd.)	(cu. yd.)	27+50.00	0	336	Station	Uncl. Exc.	Embt	11+00.00	12	1
13+50.00	43	2				28+00.00	0	359				11+20.00	12	0
14+00.00	242	8	10+00.00000	0	0	28+50.00	0	437	Y4 LT	(cu. yd.)	(cu. yd.)	Station	Uncl. Exc.	Embt
14+50.00	286	15	10+34.35209	20	2	28+68.82	0	169						
15+00.00	336	26	10+84.35019	30	1				10+40.00	0	0	Y6 RT	(cu. yd.)	(cu. yd.)
15+50.00	441	31	11+34.33242	39	0	Station	Uncl. Exc.	Embt	10+50.00	19	0			
16+00.00	497	24	11+84.25644	58	0				10+75.00	35	1	10+34.89	0	0
16+50.00	488	13	12+34.18356	269	0	*Lpc/Rpc	(cu. yd.)	(cu. yd.)	11+00.00	40	3	10+70.00	4	21
17+00.00	533	6	12+84.26196	568	0	26+00.00	6	28	11+25.25	54	4	11+00.00	16	10
17+50.00	608	3	13+34.54404	766	0	26+50.00	18	65				11+20.00	19	1
18+00.00	687	1	13+85.15349	903	0	27+00.00	18	84	Station	Uncl. Exc.	Embt			
18+50.00	815	5	14+32.49788	822	4	27+50.00	6	129	Y4 RT	(cu. yd.)	(cu. yd.)			
19+00.00	919	15	14+81.54278	764	33	28+00.00	0	138						
19+50.00	1104	32	15+30.28173	1201	63	28+50.00	0	56	10+40.00	0	0			
20+00.00	1294	66	15+80.00000	2301	56				10+50.00	24	0			
20+50.00	1356	104	16+30.00000	3450	20	Station	Uncl. Exc.	Embt	10+75.00	45	1			
21+00.00	1374	121	16+80.00000	4342	0				11+00.00	56	4			
21+50.00	1222	73	17+32.17000	4789	0	Srpd	(cu. yd.)	(cu. yd.)	11+25.25	76	5			
22+00.00	808	12	17+80.00000	3788	0									
22+50.00	504	0	18+30.00000	3011	0	10+00.00	0	0						
23+00.00	485	0	18+80.00000	2389	0	10+50.00	7	28						
			19+30.00000	2633	0	11+00.00	4	47						
						11+50.00	11	66						

\* NOTE: RPC Cross Section were used to run LPC earthwork.

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN  
WAKE COUNTY

LOCATION: I-40 AND SR 1002 (AVIATION PARKWAY) INTERCHANGE

TIP NO. I-5506	SHEET NO. SIGN-1
APPROVED: <i>Michael T. Rzepka</i>	
DATE: 1/25/2018	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

T.I.P.: I-5506

CONTRACT: C204069

**INDEX**

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	SUPPORT INFORMATION
SIGN-3	'E' TYPE SIGNS 'F' TYPE SIGNS AND MILEMARKER SHEET
SIGN-4-4P	SIGN DESIGNS AND OVERHEAD DETAILS
SIGN-5-5G	SIGN DETAIL SHEETS

*Pam's*

**ROADWAY STANDARD DRAWING**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
901.10	TYPE 'A' SIGNS
901.20	TYPE 'B' SIGNS
901.50	ARROWS AND SHIELDS
901.70	SIGN STRINGERS AND SUPPORT SPACING
901.80	SIGN MOUNTING DETAILS FOR TYPE A AND TYPE B SIGNS
903.10	GROUND MOUNTED SIGN SUPPORTS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.20	SECONDARY SIGN MOUNTING
904.30	SUPPLEMENTAL SIGN MOUNTING
904.40	MILEPOST AND PLACEMENT
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON *U* CHANNEL POSTS
910.30	SIGNING SIGNALIZED AND UNSIGNALIZED SUPERSTREET

**SUMMARY OF QUANTITIES**

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.		
4048000000	902	11	C.Y.
4054000000	902	1	C.Y.
4057000000	SP	107	C.Y.
4060000000	903	10217	LB.
4066000000	903	1614	LB.
4072000000	903	1146	LF.
4078000000	903	1	EA.
4096000000	904	5	EA.
4102000000	904	73	EA.
4108000000	904	5	EA.
4110000000	904	12	EA.
4110000000	904	3	EA.
4114000000	904	1	EA.
4116100000	904	6	EA.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4082100000	906		LS.
4138000000	907	6	EA.
4149000000	907	4	EA.
4152000000	907	5	EA.
4155000000	907	61	EA.

**GENERAL NOTES**

- SIGNS FURNISHED BY STATE
- CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
- ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE GRADE C REFLECTIVE SHEETING.
- DO NOT BEGIN FABRICATION FOR TYPES A & B SIGNS MOUNTED ON OVERHEAD STRUCTURES OR STEEL SUPPORTS UNTIL "S" DIMENSIONS HAVE BEEN FIELD VERIFIED.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

PLAN REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

A. ALQUDWAH, P.E. SIGNING & DELINEATION REGIONAL ENGINEER  
W. JOHNSON SIGNING & DELINEATION PROJECT DESIGN ENGINEER



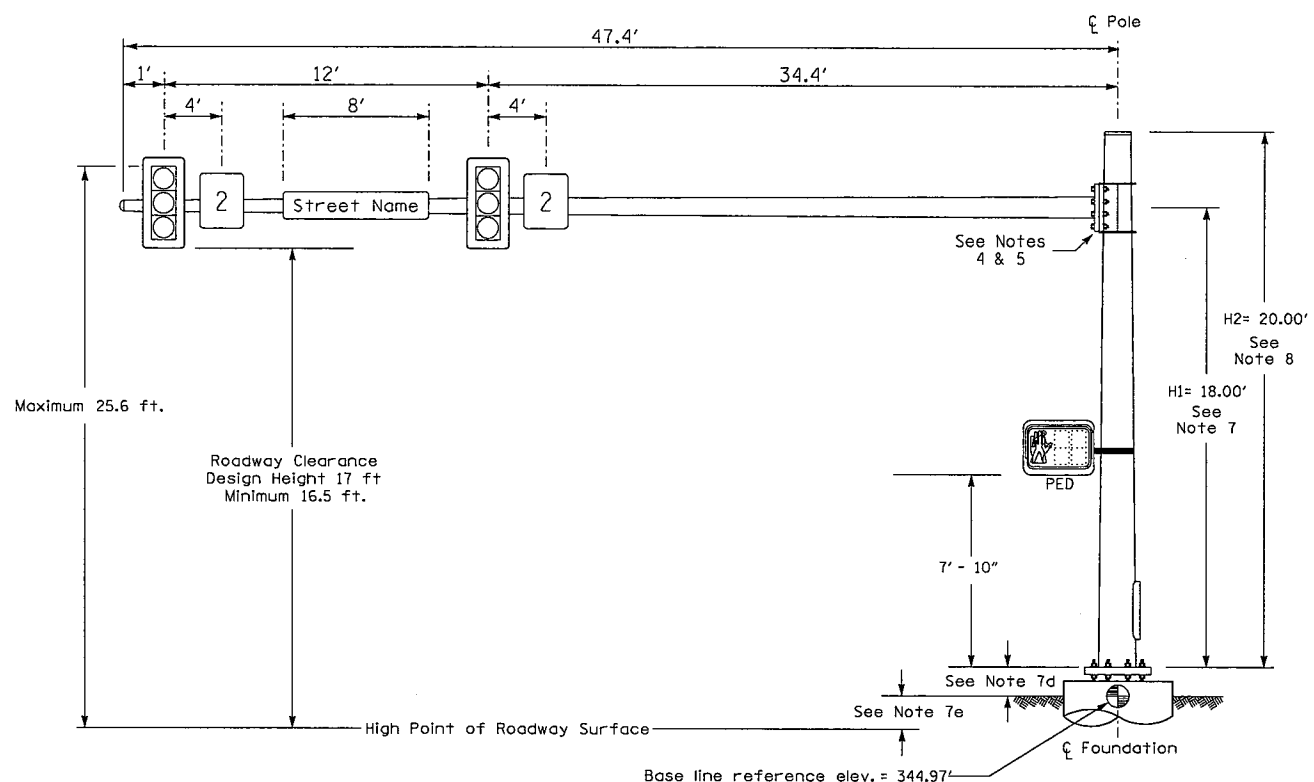
PLAN PREPARED BY: HDR/ICA

M. T. RZEPKA, P.E. PROJECT ENGINEER  
Y. MARIOTTE DESIGN ENGINEER



555 Fayetteville St.  
Suite 900  
Raleigh, NC 27601  
NC License No: P-0258

Design Loading for METAL POLE NO. 5

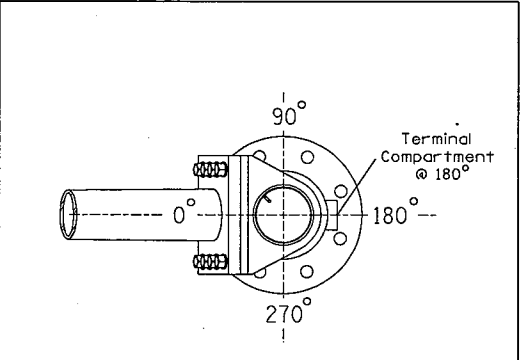


Elevation View

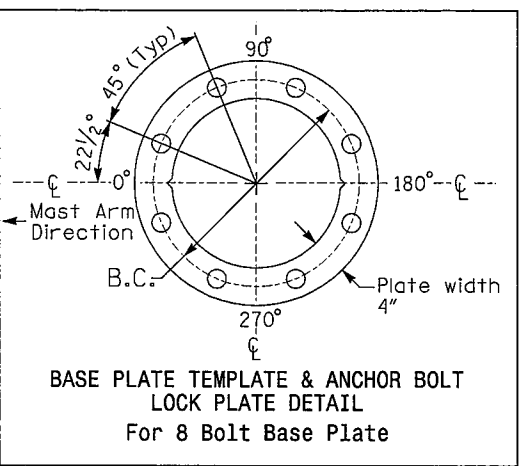
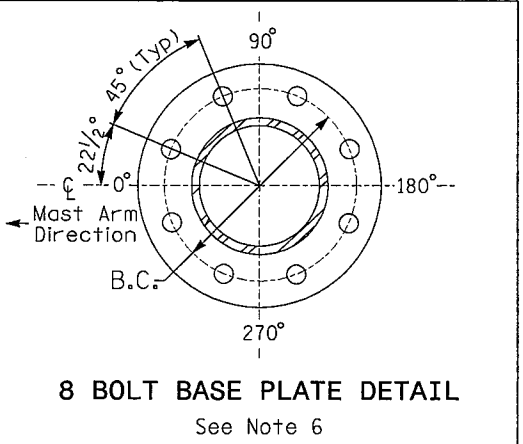
**SPECIAL NOTE**  
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available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

**Elevation Data for Mast Arm Attachment (H1)**

Elevation Differences for:	Pole 5
Baseline reference point at $\phi$ Foundation @ ground level	344.97 ft.
Elevation difference at High point of roadway surface	-1.03 ft.
Elevation difference at Edge of travelway or face of curb	-1.43 ft.



POLE RADIAL ORIENTATION



METAL POLE No. 5

PROJECT REFERENCE NO.	SHEET NO.
I-5506	SIG-11.3

**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
(Pedestrian Signal)	PEDESTRIAN SIGNAL HEAD WITH MOUNTING HARDWARE	2.2 S.F.	18.5" W X 17.0" L	21 LBS
(Sign)	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS

NOTES

- DESIGN REFERENCE MATERIAL**
- Design the traffic signal structure and foundation in accordance with:
    - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
    - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
    - The 2018 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 the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
  - Design all signal supports using stress ratios that do not exceed 0.9.
  - The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
  - A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
  - Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
  - The mast arm attachment height (H1) shown is based on the following design assumptions:
    - 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.
  - The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
    - Mast arm attachment height (H1) plus 2 feet, or
    - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
  - If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
  - The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
  - The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

NCDOT Wind Zone 4 (90 mph)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: Transportation Mobility and Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1002 (Aviation Parkway) at I-40 EB Ramps

Division 5 Wake County Morrisville

PLAN DATE: NOVEMBER 2017 REVIEWED BY: D. HARRIS

PREPARED BY: R. MUNCEY REVIEWED BY: B. WATSON

SCALE: 0 N/A

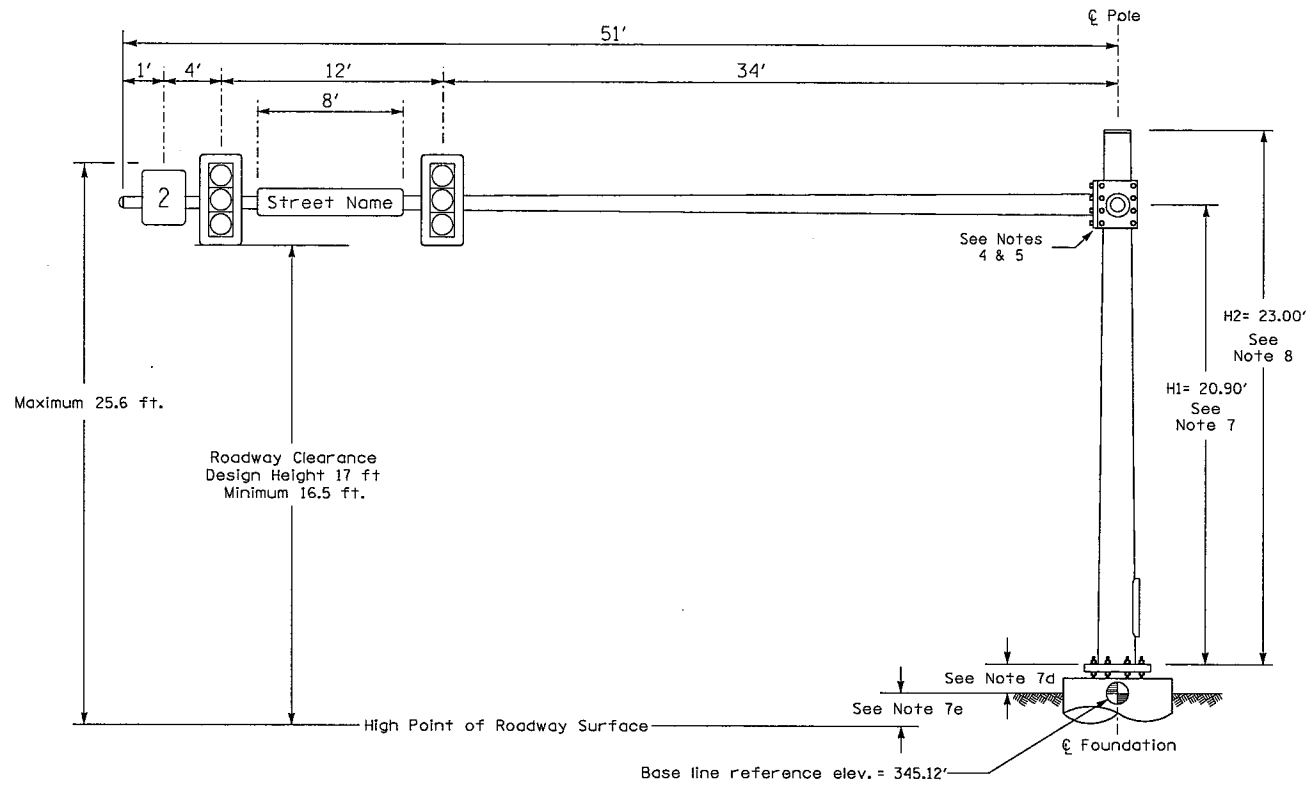
Signature: Betsy L. Watson DATE: 12/1/2017

SIG. INVENTORY NO. 05-1735

Professional Engineer Seal: Betsy L. Watson, No. 29449

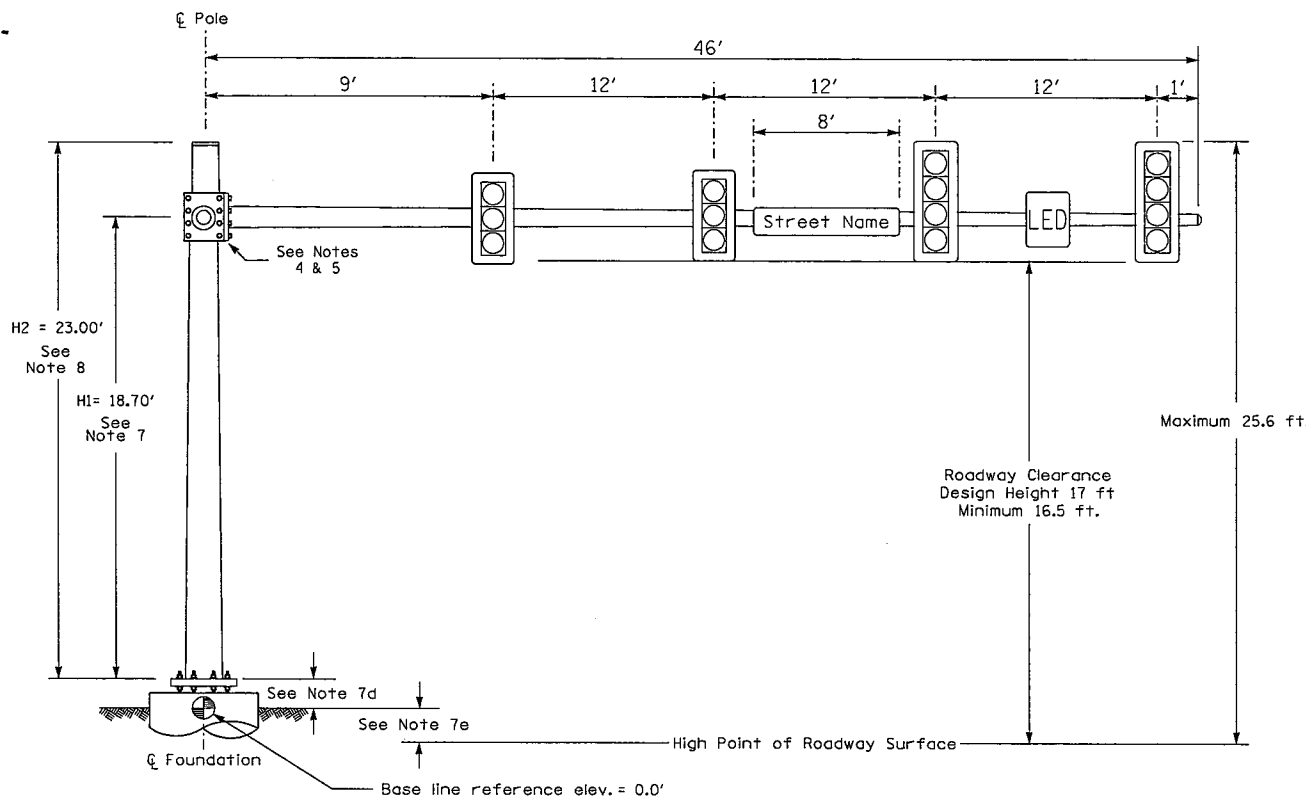
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**Design Loading for METAL POLE NO. 6, MAST ARM A**



Elevation View @ 270°

**Design Loading for METAL POLE NO. 6, MAST ARM B**



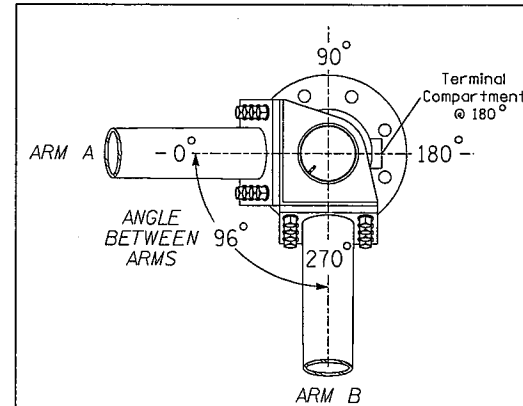
Elevation View @ 0°

**SPECIAL NOTE**

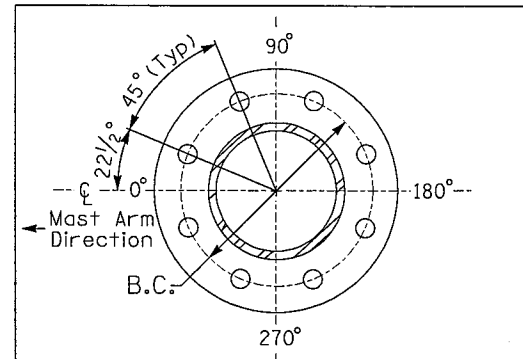
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

**Elevation Data for Mast Arm Attachment (H1)**

Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at $\phi$ Foundation @ ground level	345.12 ft.	345.12 ft.
Elevation difference at High point of roadway surface	+1.89 ft.	-0.80 ft.
Elevation difference at Edge of travelway or face of curb	+1.43 ft.	-0.34 ft.

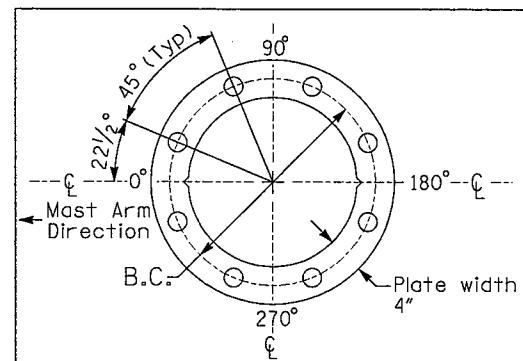


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



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

**METAL POLE No. 6**

PROJECT REFERENCE NO.	SHEET NO.
I-5506	SIG-11.4

**MAST ARM LOADING SCHEDULE**

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"X4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"X3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0"W X 36.0"L	14 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0"W X 96.0"L	36 LBS
	L.E.D. BLANKOUT SIGN RIGID MOUNTED	5.0 S.F.	24.0"W X 36.0"L	110 LBS

**NOTES**

**DESIGN REFERENCE MATERIAL**

- Design the traffic signal structure and foundation in accordance with:
  - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
  - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
  - The 2018 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**

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
  - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
  - Signal heads are rigidly mounted and vertically centered on the mast arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is 0.75 feet above the ground elevation.
  - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
  - Mast arm attachment height (H1) plus 2 feet, or
  - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



NCDOT Wind Zone 4 (90 mph)

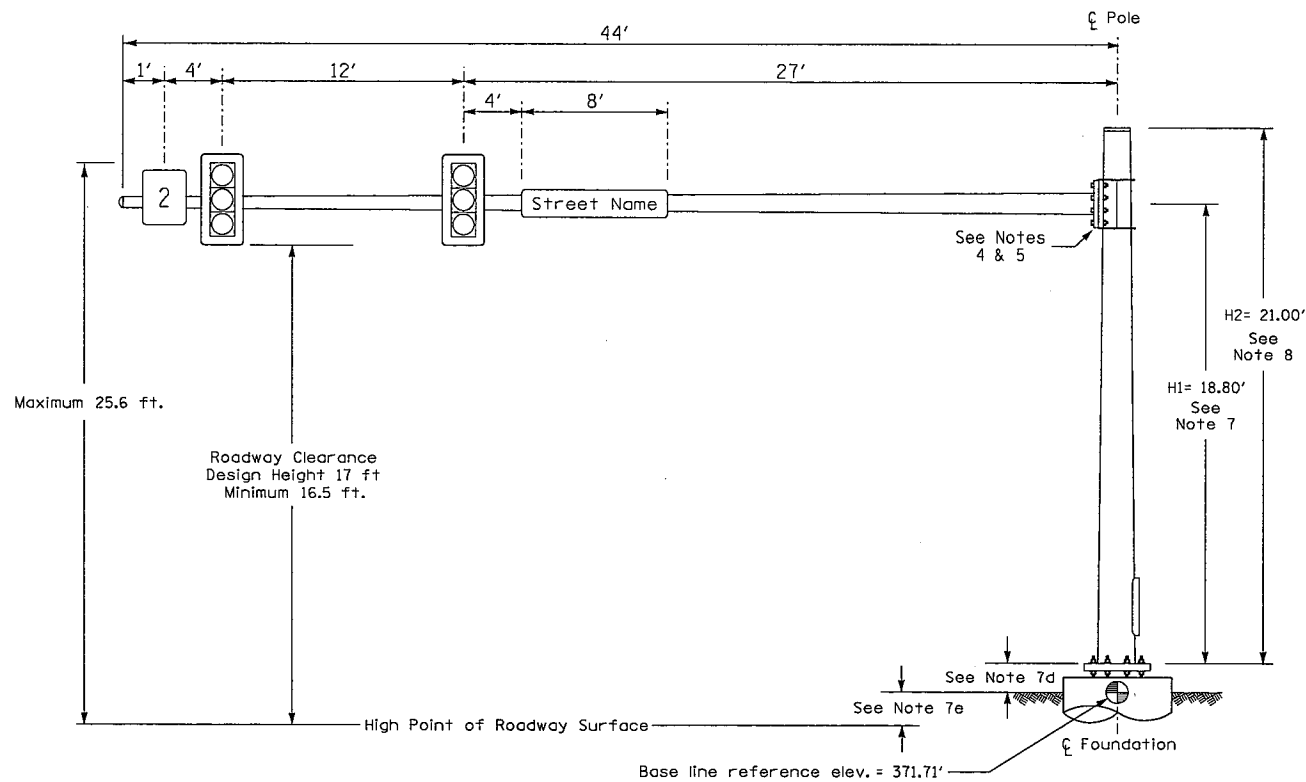
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	SR 1002 (Aviation Parkway) at I-40 WB Ramps		
	Division 5 Wake County Morrisville PLAN DATE: NOVEMBER 2017 REVIEWED BY: D. HARRIS PREPARED BY: R. MUNCEY REVIEWED BY: B. WATSON	REVISIONS INIT. DATE	
SCALE: 0 N/A N/A	SIGNATURE:		SIG. INVENTORY NO. 05-1735

DATE: 11-17-17 OFFICE: Signal Design Section Metal Pole I-5506 SIG-dsr\_Metal\_Pole\_06.dgn

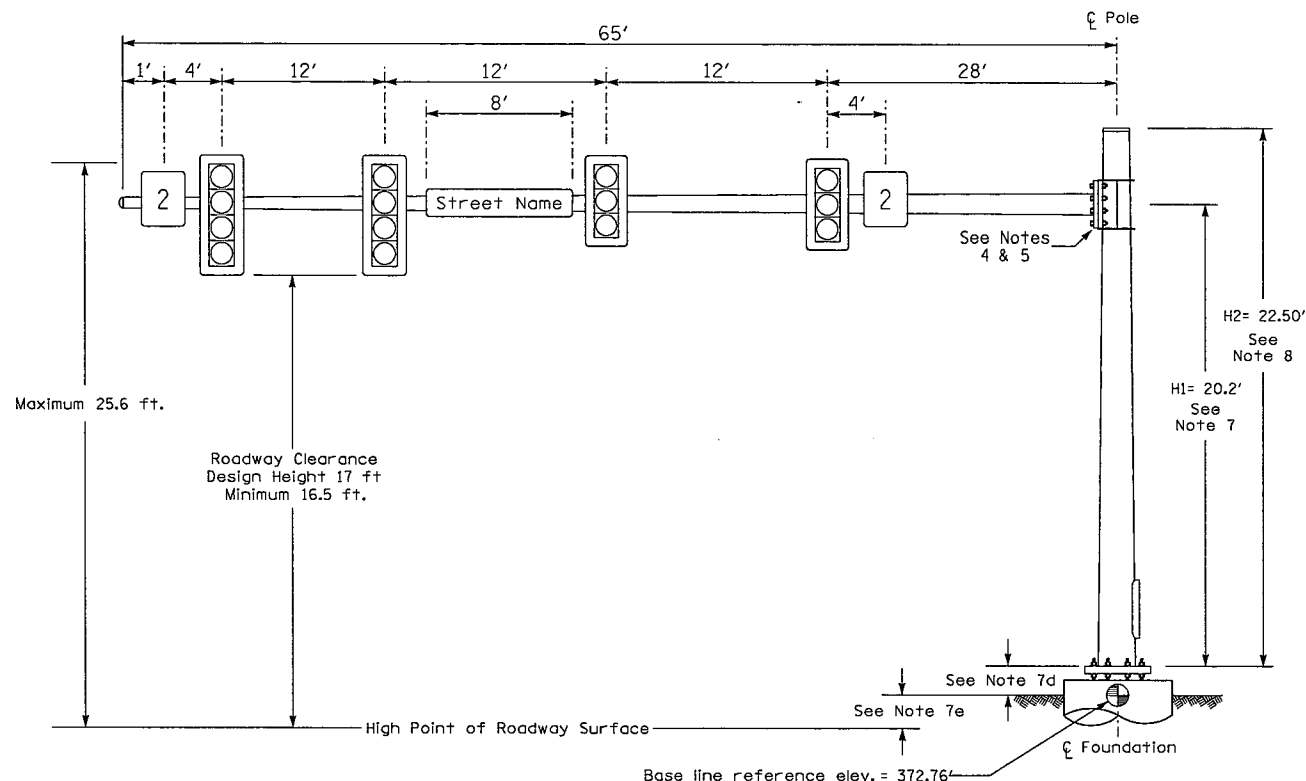


**Design Loading for METAL POLE NO. 7**



**Elevation View**

**Design Loading for METAL POLE NO. 8**



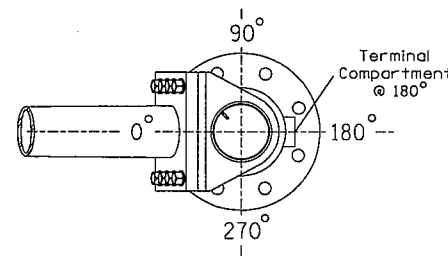
**Elevation View**

**SPECIAL NOTE**

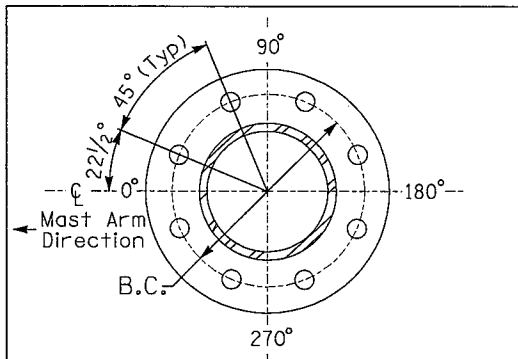
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

**Elevation Data for Mast Arm Attachment (H1)**

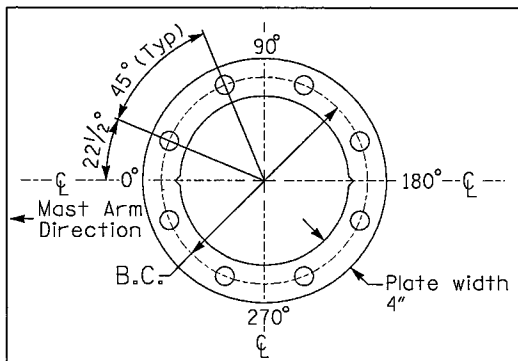
Elevation Differences for:	Pole 7	Pole 8
Baseline reference point at $\phi$ Foundation @ ground level	369.25 ft.	372.76 ft.
Elevation difference at High point of roadway surface	+3.19 ft.	+0.39 ft.
Elevation difference at Edge of travelway or face of curb	+2.74 ft.	+1.18 ft.



**POLE RADIAL ORIENTATION**



**8 BOLT BASE PLATE DETAIL**



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

**METAL POLE No. 7 and 8**

PROJECT REFERENCE NO.	SHEET NO.
I-5506	SI6-16.2

**MAST ARM LOADING SCHEDULE**

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0"W X 36.0"L	14 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0"W X 96.0"L	36 LBS

**NOTES**

**DESIGN REFERENCE MATERIAL**

- Design the traffic signal structure and foundation in accordance with:
  - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
  - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
  - The 2018 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**

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
  - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
  - Signal heads are rigidly mounted and vertically centered on the mast arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is 0.75 feet above the ground elevation.
  - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
  - Mast arm attachment height (H1) plus 2 feet, or
  - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

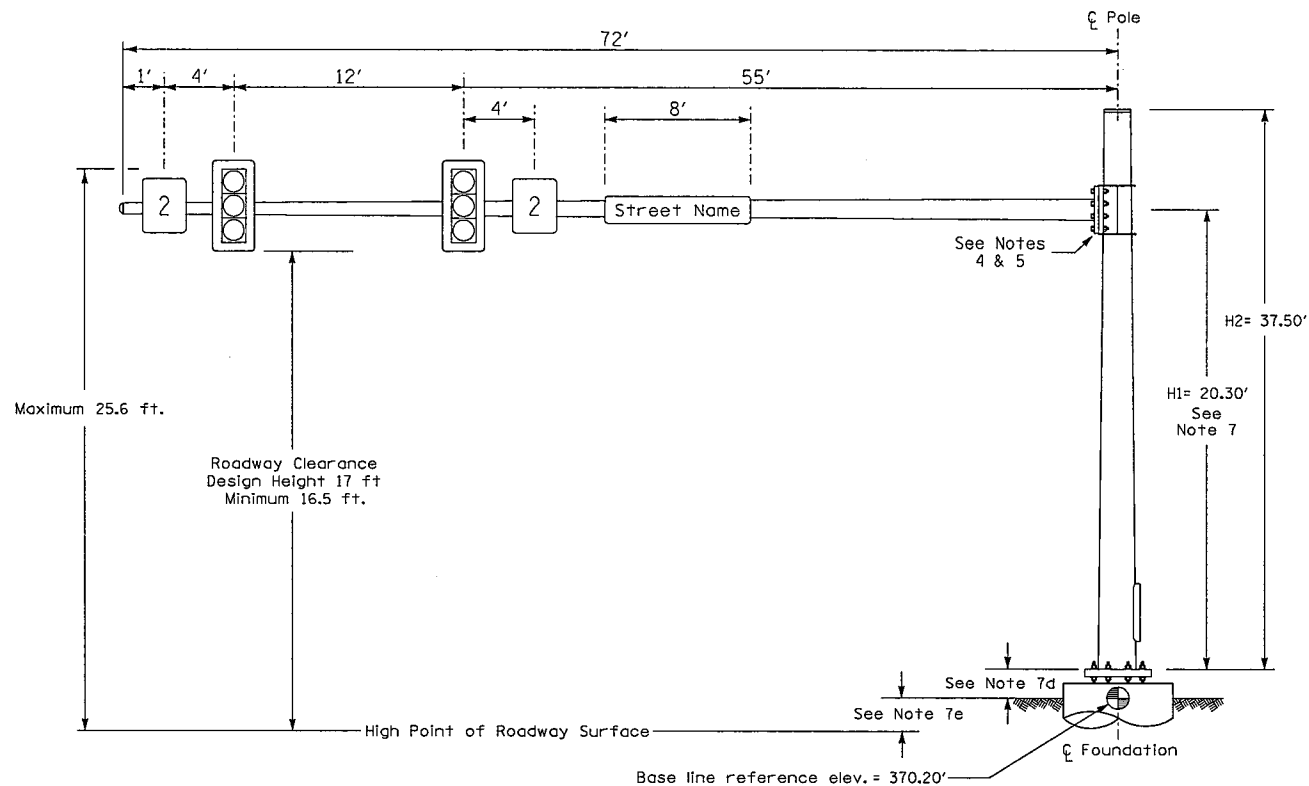


NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	SR 1002 (Aviation Parkway) at I-40 WB Ramps	
	Division 5 Wake County Morrisville PLAN DATE: NOVEMBER 2017 PREPARED BY: B. MUNCEY SCALE: N/A	REVIEWED BY: D. HARRIS REVIEWED BY: B. WATSON REVISIONS: _____ INIT. DATE: _____
DATE: 11-17-17 DRAWN BY: B. MUNCEY	Signature of B. Watson DATE: 12/1/2017	SIGNATURE: _____ DATE: _____ SIG. INVENTORY NO. 05-1309

### Design Loading for METAL POLE NO. 9



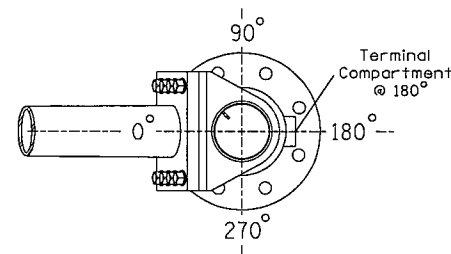
Elevation View

### SPECIAL NOTE

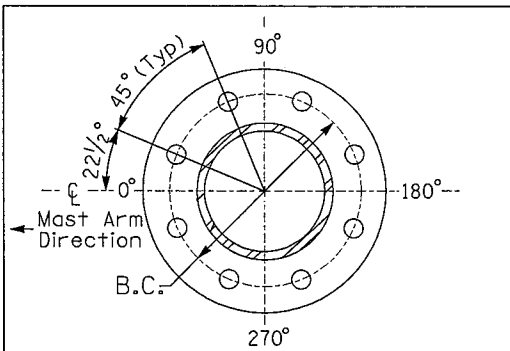
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

#### Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 9
Baseline reference point at $\phi$ Foundation @ ground level	367.99 ft.
Elevation difference at High point of roadway surface	+4.99 ft.
Elevation difference at Edge of travelway or face of curb	+4.27 ft.

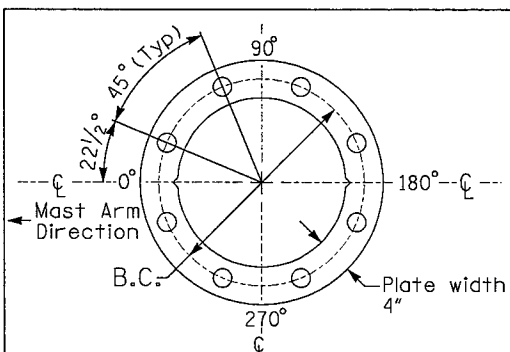


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



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

### METAL POLE No. 9

PROJECT REFERENCE NO.	SHEET NO.
I-5506	SIG-16.3

#### MAST ARM LOADING SCHEDULE

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

#### NOTES

##### DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
  - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
  - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
  - The 2018 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

- 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.
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	Division 5 PLAN DATE: NOVEMBER 2017 PREPARED BY: R. MUNCEY	Wake County Morrisville REVIEWED BY: D. HARRIS REVIEWED BY: B. WATSON
SCALE: N/A N/A	REVISIONS: _____ INIT.: _____ DATE: _____	Signature: _____ DATE: 12/1/2017 SIG. INVENTORY NO.: 05-1309