



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

April 04, 2019

**Addendum No. 1**

RE: Contract # C202581

WBS # 38664.3.3

FA# STPDA-0537(2)

**Orange-Durham Counties**

SR-1838/SR-2220 FROM US-15/501 IN ORANGE COUNTY TO SR-1113  
IN DURHAM COUNTY

**April 16, 2019 Letting**

To Whom It May Concern:

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

The following revisions have been made to the Roadway plans:

Sheet No.	Revisions
1A	Revised SHEET NUMBER to list SIG-1 thru SIG-4 to reflect the addition of 2 sheets listed below.

Please void the above listed sheet in your plans and staple the revised sheet thereto.

The following revisions have been made to the Signal plans:

Sheet No.	Revisions
Sheets SIG-1 and SIG-2	Revised to correct labels/notes
New Sheets SIG-3 and SIG-4	Sheets added to provide additional details

Please void the above listed existing sheets in your plans and staple the revised sheets thereto. Staple New sheets SIG-3 and SIG-4 after revised Sheet SIG-2 in your plans.

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:  
  
F81B6038A47A442...

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

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

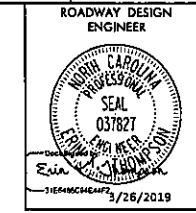
Location:  
1020 BIRCH RIDGE DR.  
RALEIGH, NC 27610

Website: www.ncdot.gov

RED/jjr  
Attachments

cc: Mr. Lamar Sylvester, PE  
Mr. Joey Hopkins, PE  
Mr. Mike Mills, PE  
Mr. Ron Hancock, PE  
Mr. Jon Weathersbee, PE  
Mr. Ken Kennedy, PE  
Mr. Mitchell Dixon

Mr. Ray Arnold, PE  
Mr. Jamie Lancaster, PE  
Mr. Mike Gwyn  
Ms. Lori Strickland  
Ms. Jaci Kincaid  
Ms. Penny Higgins  
Project File (2)



**INDEX OF SHEETS**

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-7	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND MISCELLANEOUS DETAILS
2B-1 THRU 2B-2	INTERSECTION DETAILS
2B-3	BUS PULL-OFF DETAIL
2C-1 THRU 2C-7	CURB RAMP, STEEL COVER, BDO 12" PIPE, CONVERT CB TO JB W/ MH, AND SPLIT RAIL FENCE DETAILS
2D-1	DRAINAGE DETAILS
3B-1 THRU 3B-2	ROADWAY SUMMARY SHEETS
3D-1 THRU 3D-3	DRAINAGE SUMMARY SHEETS
3G-1	GEOTECHNICAL SUMMARY SHEET
3P-1	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
9 THRU 11	-L- PROFILE SHEETS
12 THRU 15	-Y- & -S- PROFILE SHEETS
TMP-1 THRU TMP-9	TRANSPORTATION MANAGEMENT PLANS
TMP-17 THRU TMP-22	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-6	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
EC-13 THRU EC-19	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-12	SIGNING PLANS
SIG-1 THRU SIG-4	SIGNAL PLANS
UC-1 THRU UC-10	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION INDEX
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-27	CROSS SECTIONS

**GENERAL NOTES**

**GENERAL NOTES: SPECIFICATIONS**  
EFFECTIVE: 01-16-2018

**GRADE LINE:**  
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.

**CLEARING:**

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

**SUPERELEVATION:**

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

**SHOULDER CONSTRUCTION:**

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

**SIDE ROADS:**

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**GENERAL NOTES CONT.**

**SUBSURFACE DRAINS:**

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

**UNDERDRAINS:**

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

**DRIVEWAYS:**

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

**STREET TURNOUT:**

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS.

**TEMPORARY SHORING:**

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

**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  
 (A) POWER: DUKE ENERGY; DON DANIELS 919-687-3136  
 (B) WATER/SEWER: OWASA; NICK PARKER 919-537-4201  
 (C) WATER/SEWER: CITY OF DURHAM; JEFF LECKY 919-560-4326  
 (D) TELEPHONE: AT&T; BRENDA PENDERGRAFT 919-942-6631  
 (E) FIBER: CHARTER CABLE; GEORGE STOTLER 919-427-5506  
 (F) GAS: PSNC; DUNCAN WARREN 919-367-2715

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**RIGHT-OF-WAY MARKERS:**

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED 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.

**ROCK**

ROCK IS ANTICIPATED BETWEEN PROJECT LIMITS. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

**LIST OF ROADWAY STANDARD DRAWINGS**

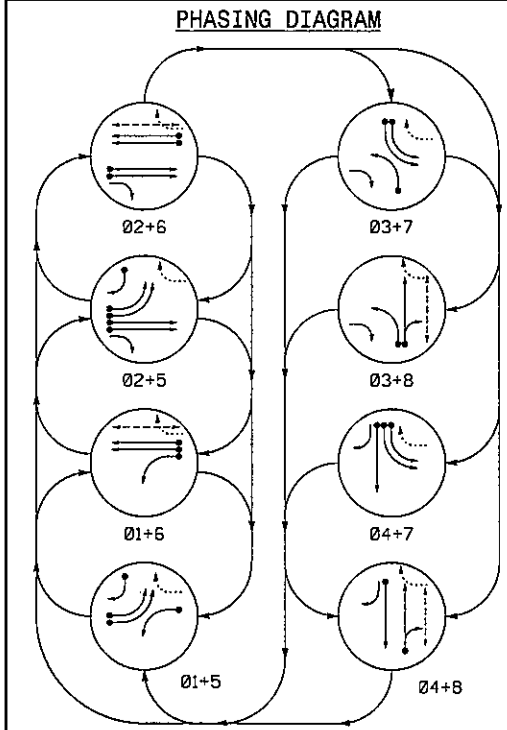
EFF. 01-16-2018

2018 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:

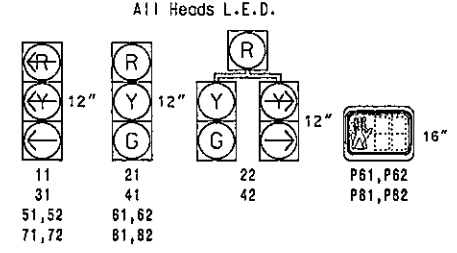
STD. NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
654.01	Pavement Repairs
<b>DIVISION 8 - INCIDENTALS</b>	
815.02	Subsurface Drain
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15' thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15' thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12' thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12' thru 54" Pipe
840.02	Concrete Catch Basin - 12' thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12' thru 30" Pipe
840.15	Brick Drop Inlet - 12' thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.25	Anchorage for Frames - Brick, Concrete or Precast
840.31	Concrete Junction Box - 12' thru 66" Pipe
840.32	Brick Junction Box - 12' thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

K:\VRL\_Roadway\0103162290 - EB-4707 Part AV\Plan\Plan Sheets\EB-4707\_Jdy.JSH.dgn 3/26/2019



SIGNAL FACE	PHASE							
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3+7	Ø 3+8	Ø 4+7	Ø 4+8
11	-	-	-	-	-	-	-	-
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31	-	-	-	-	-	-	-	-
41	R	R	R	R	R	R	G	R
42	R	R	R	R	R	R	G	R
51,52	-	-	-	-	-	-	-	-
61,62	R	G	R	G	R	R	R	Y
71,72	-	-	-	-	-	-	-	-
81,82	R	R	R	R	R	R	G	R
P61,62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	DW	DRK

SIGNAL FACE I.D.



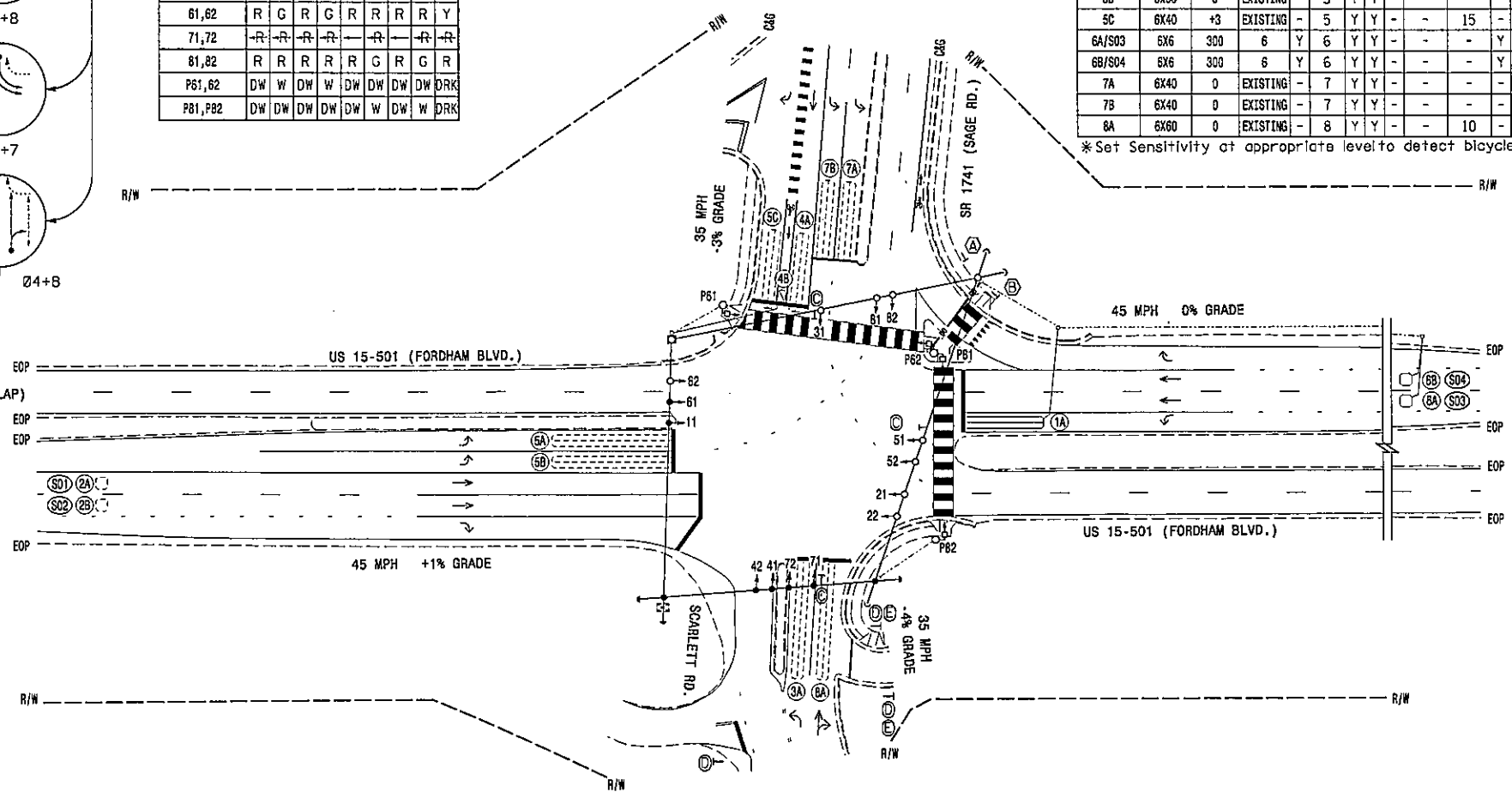
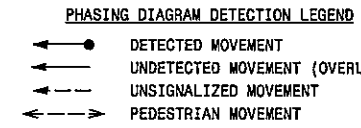
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
1A	6x40	0	2-4-2	Y	1	Y	Y	-	-	-
2A/S01	6x6	300	EXISTING	-	2	Y	Y	-	-	Y
2B/S02	6x6	300	EXISTING	-	2	Y	Y	-	-	Y
3A	6x60	0	EXISTING	-	3	Y	Y	-	-	-
4A	6x60	+2	EXISTING	-	4	Y	Y	-	-	-
4B	4x6	0	EXISTING	-	4	Y	Y	-	-	Y
5A	6x60	0	EXISTING	-	5	Y	Y	-	-	-
5B	6x60	0	EXISTING	-	5	Y	Y	-	-	-
5C	6x40	+3	EXISTING	-	5	Y	Y	-	15	-
6A/S03	6x6	300	6	Y	6	Y	Y	-	-	Y
6B/S04	6x6	300	6	Y	6	Y	Y	-	-	Y
7A	6x40	0	EXISTING	-	7	Y	Y	-	-	-
7B	6x40	0	EXISTING	-	7	Y	Y	-	-	-
8A	6x60	0	EXISTING	-	8	Y	Y	-	10	-

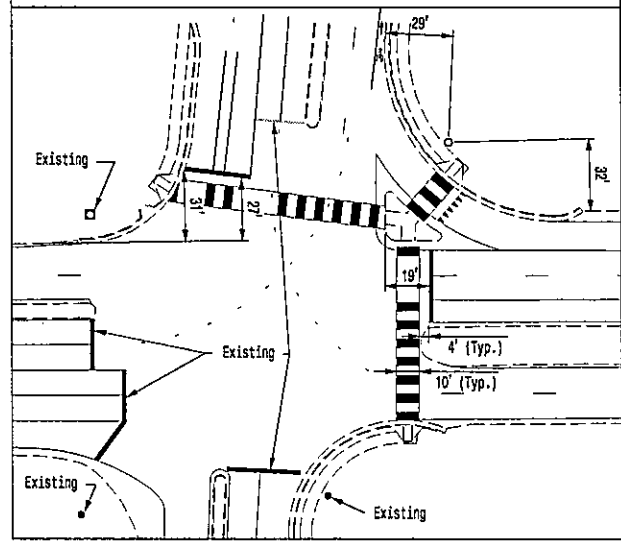
8 Phase Fully Actuated (Chapel Hill-Carrboro Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Install backplates for signal heads numbered 11, 21, 22, 51, 52, 61 and 62.
- Reposition existing signal head 61.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing, unless otherwise shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Paint new bicycle markings (as shown on page 9C.05 of the 2009 edition of the MUTCD) in the center of new loop 4C.



STOP LINE AND POLE LOCATION DIAGRAM

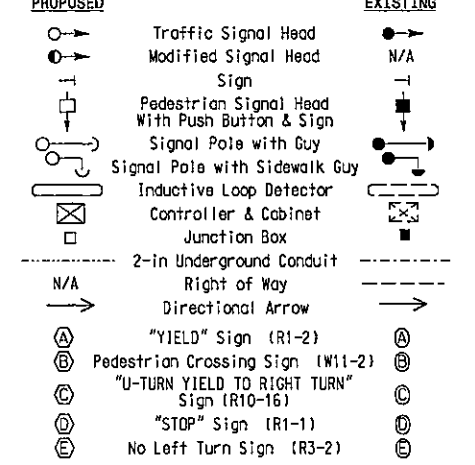


OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1"	7	12	7	7	7	12	7	7
Extension 1"	2.0	6.0	1.0	2.0	1.0	6.0	1.0	1.0
Max Green 1"	20	90	20	25	20	90	20	20
Yellow Clearance	3.0	4.4	3.0	4.1	3.0	4.5	3.0	4.1
Red Clearance	3.6	1.9	2.9	2.5	3.8	1.8	3.9	2.3
Walk 1"	-	-	-	-	-	7	-	7
Don't Walk 1	-	-	-	-	-	23	-	21
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND



Signal Upgrade

Prepared For: US 15-501 (Fordham Boulevard) At SR 1741 (Sage Road) / Scarlett Road

Division 7 Orange County Chapel Hill

PLAN DATE: February 2019 REVIEWED BY: S. Phillips

PREPARED BY: S. Pennington REVIEWED BY:

REVISIONS: INIT. DATE

SCALE: 1"=40'

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032607

SIGNATURE: S. PHILLIPS DATE: 3/19/2019

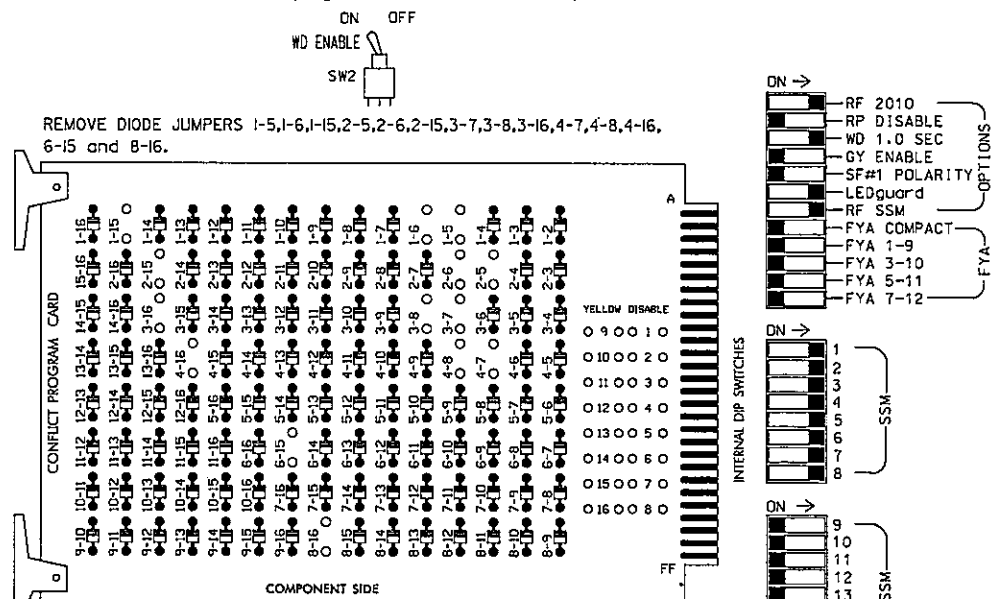
SIG. INVENTORY NO. 07-0370

PLANS PREPARED IN THE OFFICE OF: **Kimley Horn**  
 NC License #F-0102  
 421 Fayetteville Street, Suite 600  
 Raleigh, NC 27601  
 (919) 677-2000

3/18/2019 3:55:10 PM susan.pennington K:\MILL\_TPTD\SIGNAL\S01\032607 EB-4707A-4-4 Signal Design\07-0370-2019.dgn

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

### NOTES

- 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.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Chapel Hill-Carrboro Signal System.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE DASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S6P,S7,S8,S8P  
 PHASES USED.....1,2,3,4,5,6,6 PED,7,8,8 PED  
 OVERLAPS.....NONE

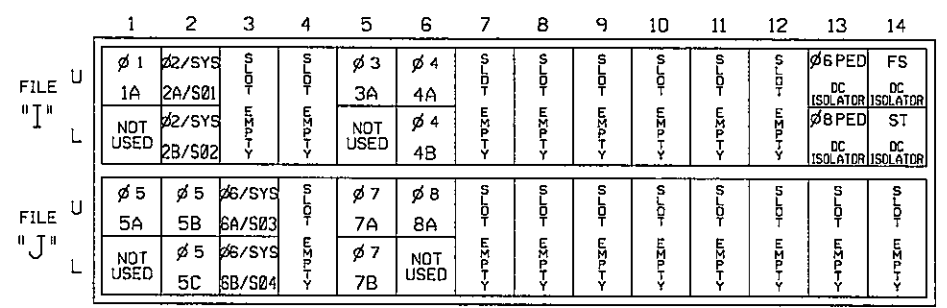
### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P		
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED		
SIGNAL HEAD NO.	11	21,22	NU	22	31	41,42	NU	42	51,52	61,62	P61, P62	71,72	81,82	P81, P82
RED		128				101				134			107	
YELLOW		129				102				135			108	
GREEN		130				103				136			109	
RED ARROW	125				116				131			122		
YELLOW ARROW	126			117	117			132	132			123		
GREEN ARROW	127			118	118			133	133			124		
												119		110
												121		112

NU = Not Used

### INPUT FILE POSITION LAYOUT

(front view)



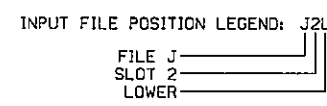
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A/S01	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S02	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	Y	Y				
4A	TB4-9,10	I6U	41	3	4	Y	Y				
4B	TB4-11,12	I6L	45	7	14	Y	Y				
5A	TB3-1,2	J1U	55	17	5	Y	Y				
5B	TB3-5,6	J2U	40	2	6	Y	Y				
5C	TB3-7,8	J2L	44	6	16	Y	Y				15
6A/S03	TB3-9,10	J3U	64	26	38	6/SYS	Y	Y			
6B/S04	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	Y	Y				
7B	TB5-7,8	J5L	57	19	7	Y	Y				
8A	TB5-9,10	J6U	42	4	8	Y	Y				10
PEO PUSH BUTTONS											
P61,P62	TB8-7,9	I13U	68	30		PED 6					
P81,P82	TB8-8,9	I13L	70	32		PED 8					

NOTE:  
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 113.



### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0370  
 DESIGNED: February 2019  
 SEALED: 3/19/2019  
 REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 15-501 (Fordham Boulevard) At SR 1741 (Sage Road)/Scarlett Road

Division 7 Orange County Chapel Hill

PLAN DATE: February 2019 REVIEWED BY: S. Phillips  
 PREPARED BY: S. Pennington REVIEWED BY:

REVISIONS INIT. DATE

3/19/2019

750 N. Greenfield Pkwy, Garner, NC 27529

PLANS PREPARED BY THE OFFICE OF: **Kimley-Horn**  
 NC License #P-0102  
 421 Fayetteville Street, Suite 600  
 Raleigh, NC 27601  
 (919) 617-2000

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032607

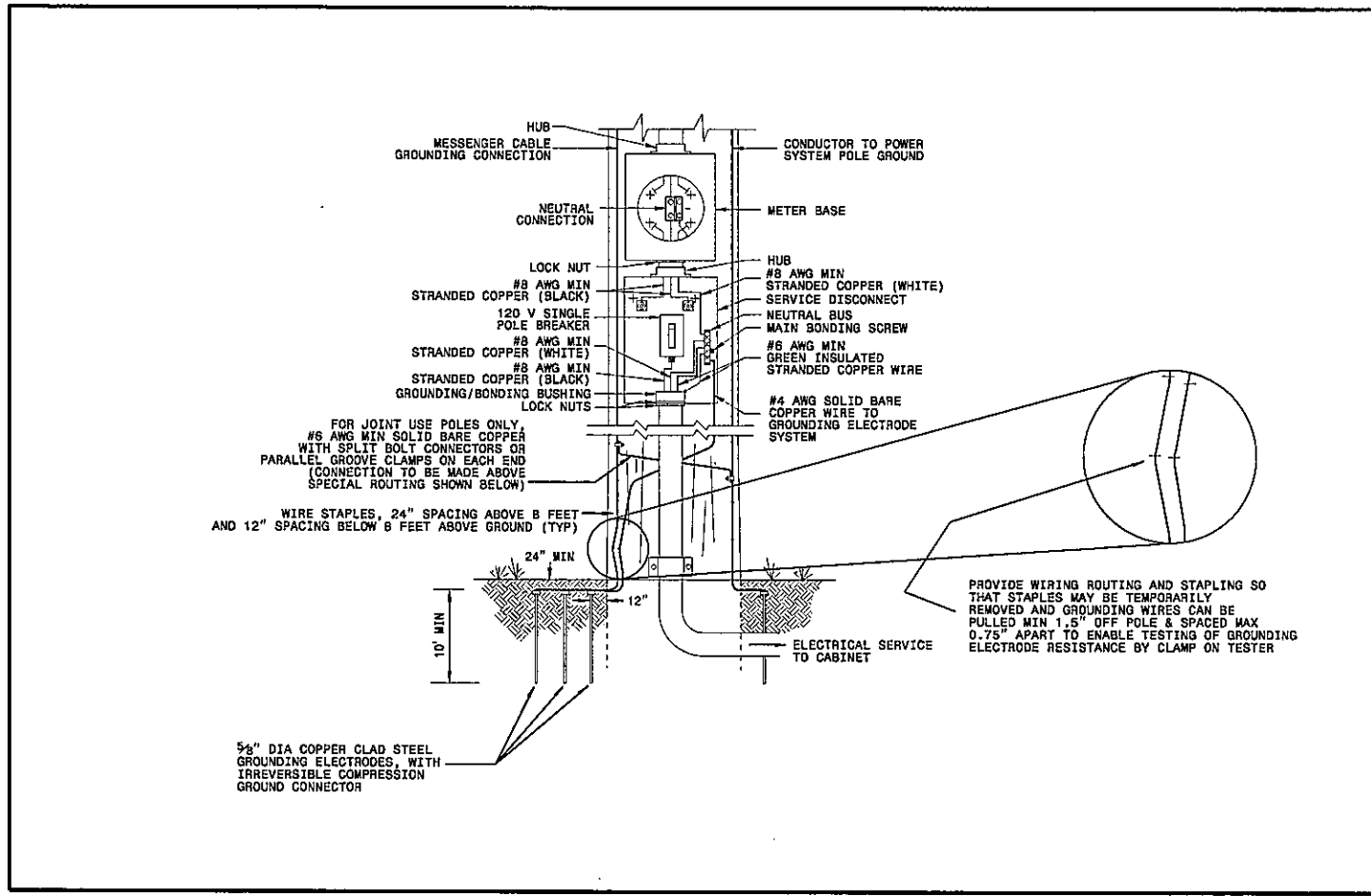
SIG. INVENTORY NO. 07-0370

K:\P&L\_P\TDR\_SIGNALS\01108290 EB4707A.dwg - Signal - 03/19/2019 3:35:11 PM

STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

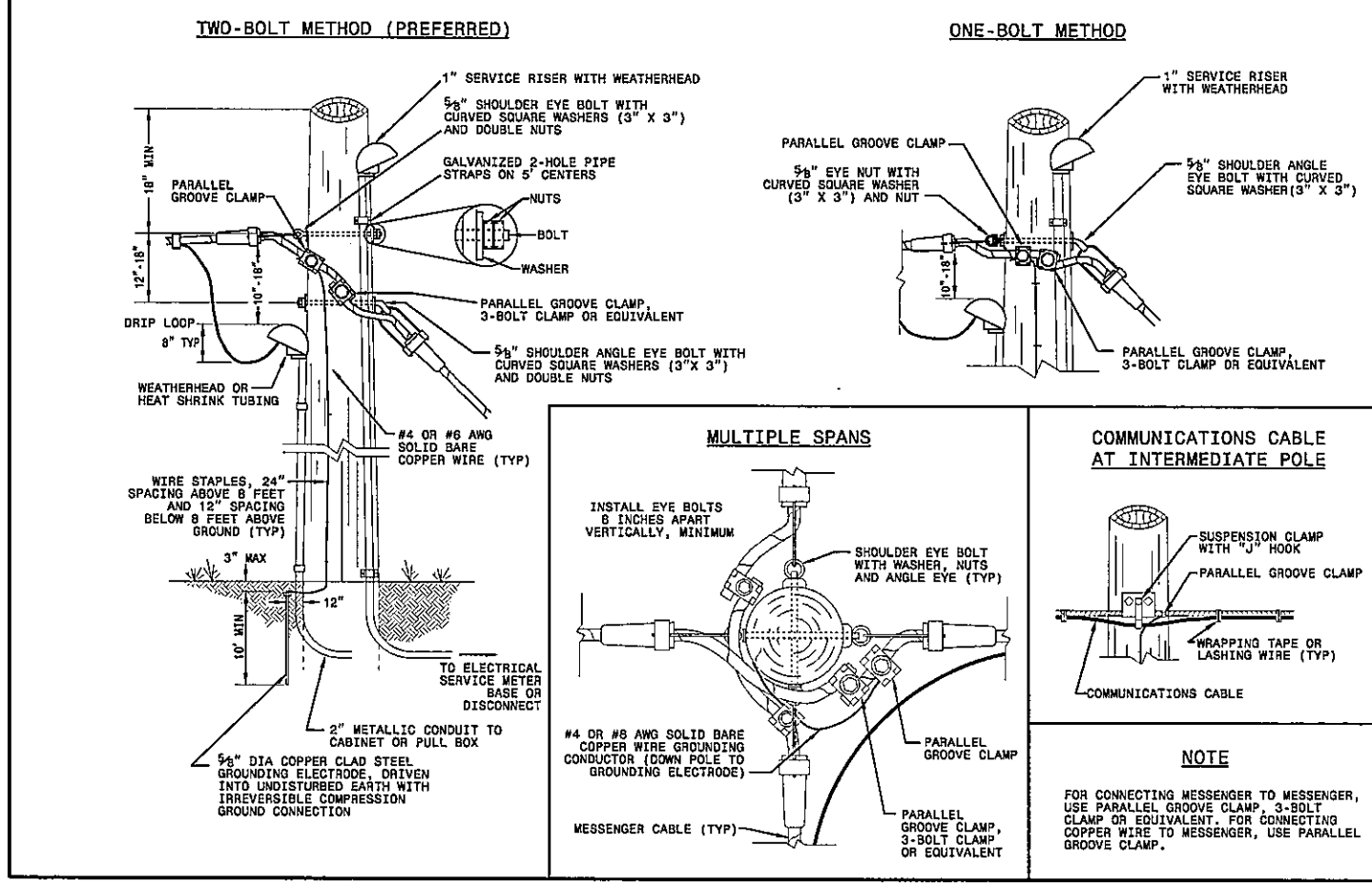
ENGLISH STANDARD DRAWING FOR  
**ELECTRICAL SERVICE GROUNDING**  
GROUNDING AND BONDING

SHEET 1 OF 1  
**1700D01**



**TWO-BOLT METHOD (PREFERRED)**

**ONE-BOLT METHOD**



STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**WOOD POLES**  
METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1  
**1720D01**

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

See Plate for Title

Prepared in the Offices of:

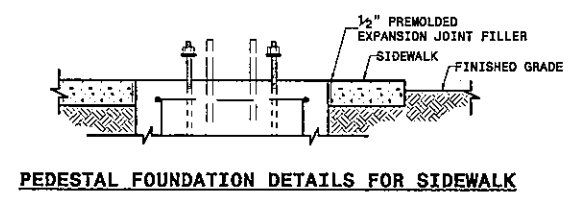
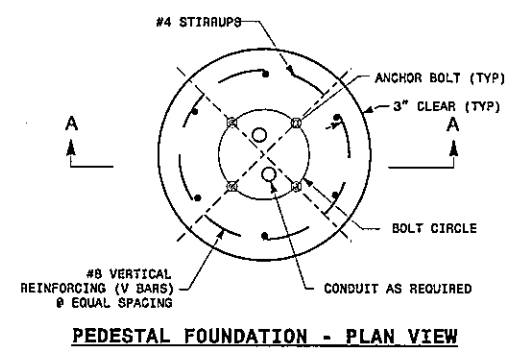
750 N. Greenfield Parkway  
Garner, NC 27529

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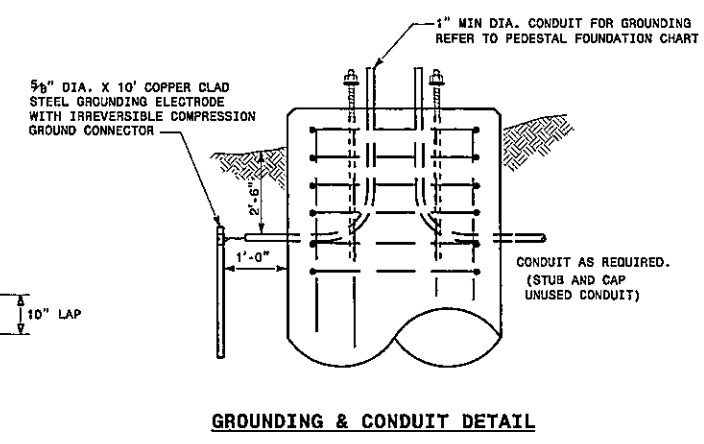
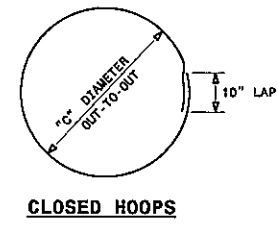
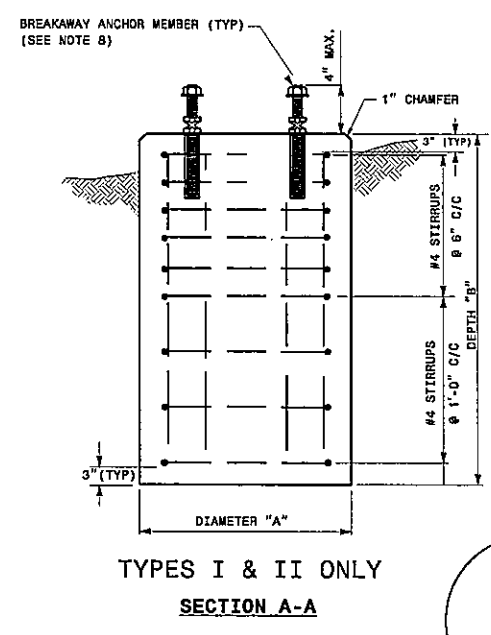
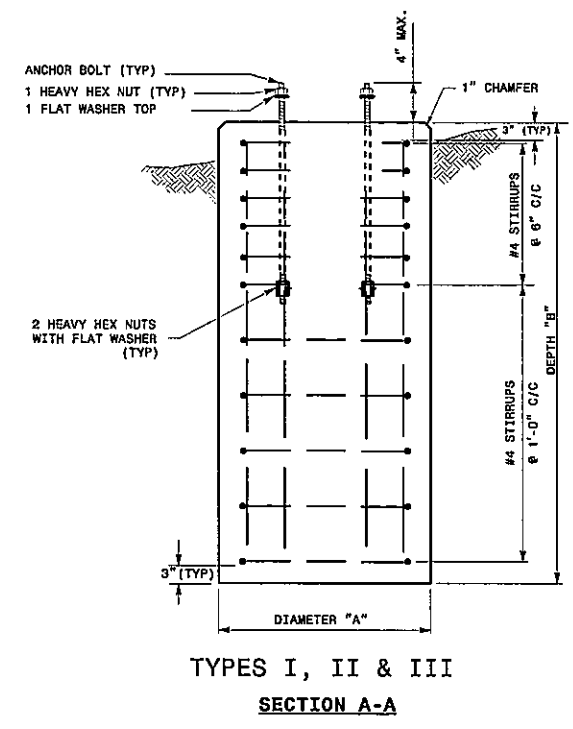
MOHD A. ASLAMI  
ENGINEER  
032108

DATE

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- NOTES:**
1. CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
  2. COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
  3. USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF  $F'c = 3000$  PSI (MIN.).
  4. USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
  5. GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
    - A. SANDY TYPE SOIL
    - B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
    - C. WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
  6. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
  7. ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
  8. USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



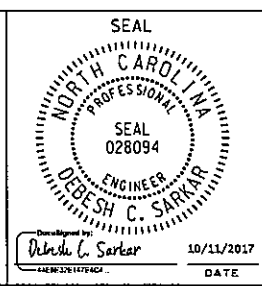
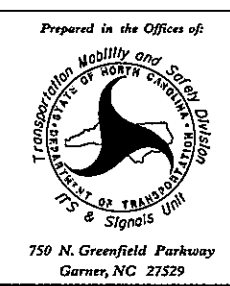
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

TYPE	V-BAR				STIRRUP							TOTAL STEEL WEIGHT LBS
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	
					VERTICAL ON 6" CENTERS	SPACING ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	7'-2"	2'-0"	0'-10"	53	175

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.  
 1-18  
 ENGLISH STANDARD DRAWING FOR  
**PEDESTALS**  
 FOUNDATIONS

SHEET 1 OF 1  
**1743D01**

See Plate for Title



DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

750 N. Greenfield Parkway  
 Garner, NC 27529

10/11/2017  
 DATE

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