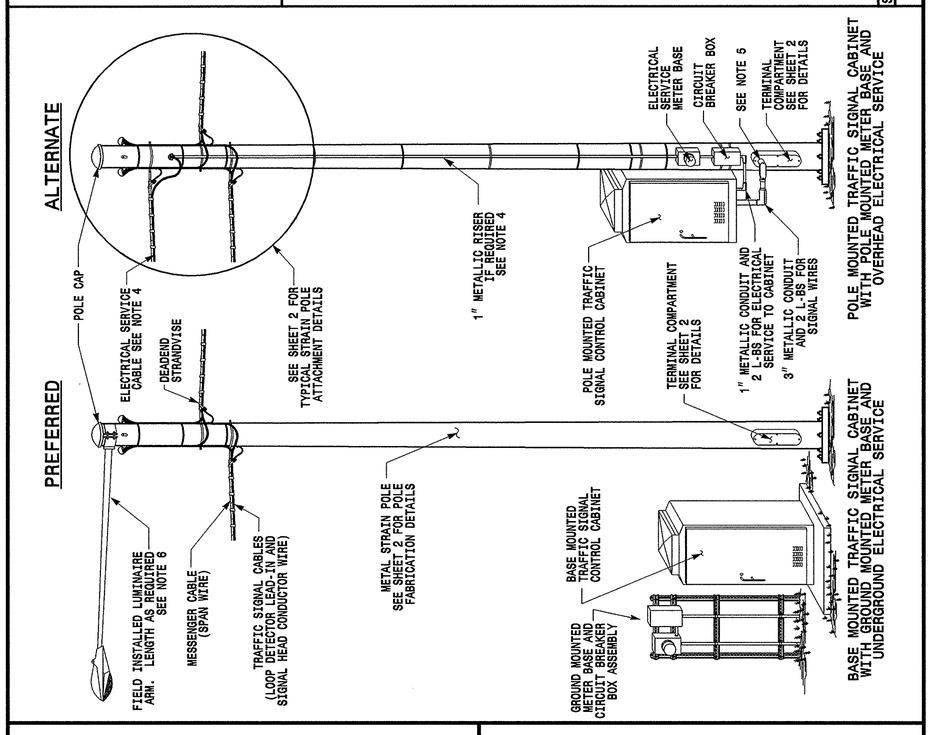
PROJECT REFERENCE NO.	SHEET NO.

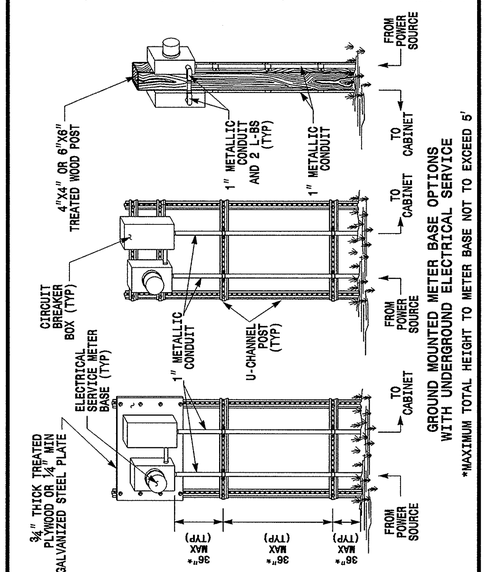
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

METAL POLES
ELECTRICAL SERVICE AND SIGNAL CABINET MOUNTING OPTIONS

SHEET 1 OF 3
1740.01





GENERAL NOTES

1. WHEN TRAFFIC SIGNALS ARE INSTALLED USING METAL SIGNAL SUPPORTS:
   - ROUTE MOUNTED CABINETS ARE THE PREFERRED CABINET OPTION.
   - ROUTE POWER SOURCE UNDERGROUND AND USE GROUND MOUNTING OPTIONS SHOWN ABOVE TO INSTALL METER BASE AND CIRCUIT BREAKER BOX IF POSSIBLE.
2. LOCATE THE METER BASE ASSEMBLY NEAR THE SIGNAL CABINET IN A MANNER THAT WILL ALLOW EASY ACCESS TO THE CIRCUIT BREAKER BOX.
3. INSTALL METER BASE ASSEMBLIES AS SHOWN ABOVE. ENSURE 1" METALLIC CONDUITS ARE PROPERLY SECURED BETWEEN THE METER BASE ASSEMBLIES AND THE GROUND TO MINIMIZE DAMAGE POTENTIAL. REFER TO ROADWAY STANDARD DRAWING 1751.02 FOR ELECTRICAL SERVICE DETAILS.
4. INSTALL ELECTRICAL SERVICE ENTRANCE CONDUCTOR AS SHOWN WHEN UNDERGROUND SOURCE IS NOT AN OPTION. METER BASE AND CIRCUIT BREAKER BOX MAY BE INSTALLED ON THE POLE WHEN POLE MOUNTED CABINETS ARE SPECIFIED FOR THE INSTALLATION. SEE SHEET 2 FOR ADDITIONAL INSTALLATION DETAILS.
5. FOR POLE MOUNTED CABINETS, USE A FACTORY DRILLED HOLE IN THE TERMINAL COMPARTMENT TO PROVIDE ACCESS FOR SIGNAL WIRES ENTERING THE POLE FROM THE CABINET. FIELD DRILLED HOLES ARE ACCEPTABLE ONLY IF APPROVED BY THE ENGINEER.
6. SEE ROADWAY STANDARD DRAWING 1406.01 (LIGHT STANDARD LUMINAIRES) FOR LUMINAIRE INSTALLATIONS.

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ENGLISH STANDARD DRAWING FOR

METAL POLES
ELECTRICAL SERVICE AND SIGNAL CABINET MOUNTING OPTIONS

SHEET 1 OF 3
1740.01

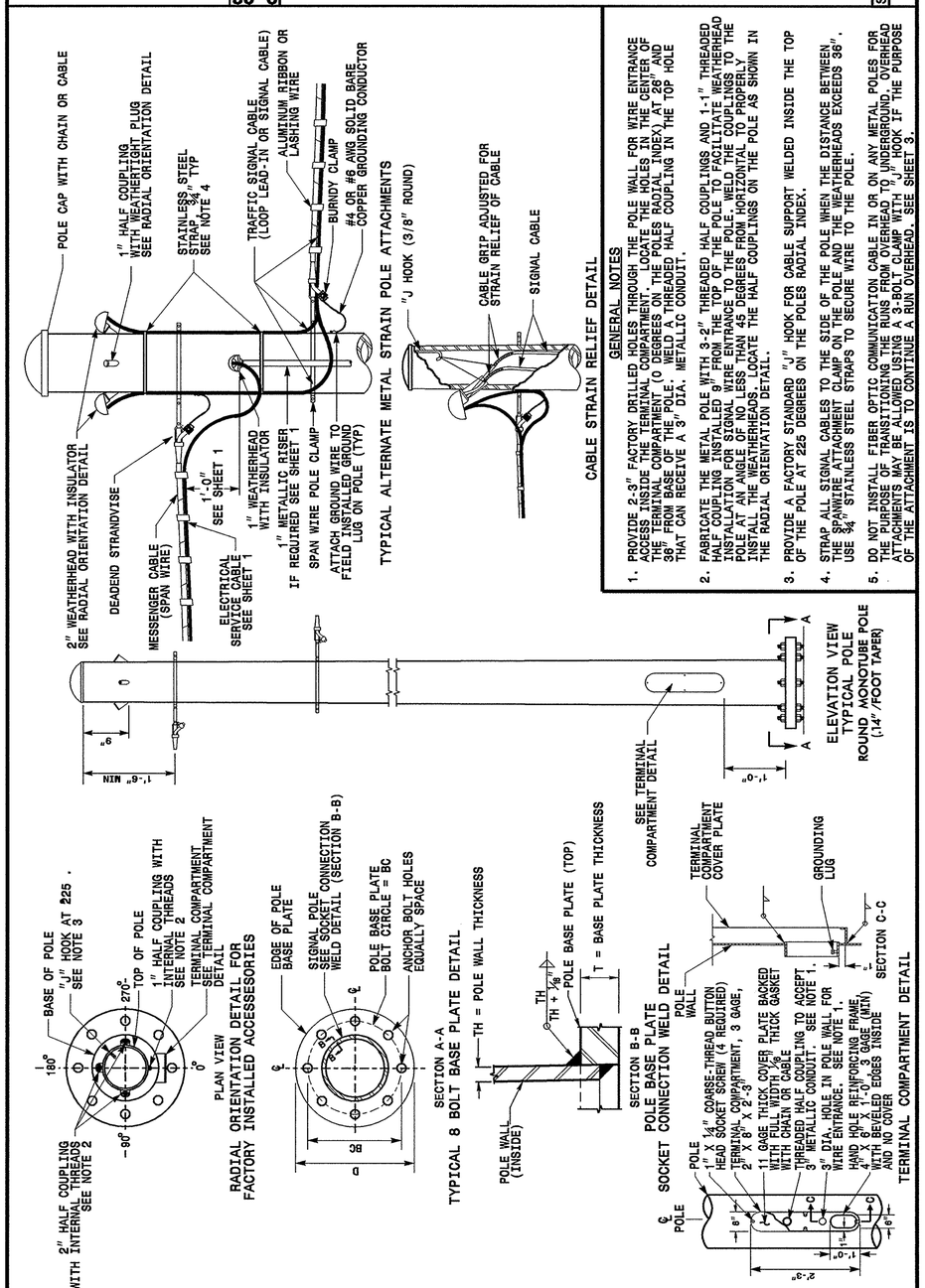
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

9-03

ENGLISH STANDARD DRAWING FOR

METAL POLES
FABRICATION AND ATTACHMENT DETAILS

SHEET 2 OF 3
1740.01



GENERAL NOTES

1. PROVIDE 2-3" FACTORY DRILLED HOLES THROUGH THE POLE WALL FOR WIRE ENTRANCE ACCESS INSIDE THE TERMINAL COMPARTMENT. LOCATE THE HOLES IN THE CENTER OF THE TERMINAL COMPARTMENT (0 DEGREES TANGENTIAL) AND AT 180 DEGREES FROM THE POLE'S RADIAL INDEX, AT 28" AND 38" FROM BASE OF THE POLE. DRILL A 1" HOLE IN THE HALF COUPLING IN THE TOP HOLE THAT CAN RECEIVE A 1/8" DIA. METALLIC CONDUIT.
2. FABRICATE THE METAL POLE WITH 3-2" THREADED HALF COUPLINGS AND 1-1" THREADED HALF COUPLING INSTALLED 9" FROM THE TOP OF THE POLE TO FACILITATE WEATHERHEAD INSTALLATION FOR SIGNAL WIRE ENTRANCE TO THE POLE. WELD THE COUPLINGS TO THE POLE AT AN ANGLE OF NO LESS THAN 45 DEGREES FROM HORIZONTAL TO PROPERLY INSTALL THE WEATHERHEADS. LOCATE THE HALF COUPLINGS ON THE POLE AS SHOWN IN THE RADIAL ORIENTATION DETAIL.
3. PROVIDE A FACTORY STANDARD "J" HOOK FOR CABLE SUPPORT WELDED INSIDE THE TOP OF THE POLE AT 225 DEGREES ON THE POLES RADIAL INDEX.
4. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WHEN THE DISTANCE BETWEEN THE WEATHERHEAD ATTACHMENT CLAMP ON THE POLE AND THE WEATHERHEADS EXCEEDS 36". USE 3/4" WIDE STAINLESS STEEL STRAPS TO SECURE WIRE TO THE POLE.
5. DO NOT INSTALL FIBER OPTIC COMMUNICATION CABLE IN OR ON ANY METAL POLES FOR THE PURPOSE OF TRANSITIONING THE RUNS FROM OVERHEAD TO UNDERGROUND. OVERHEAD ATTACHMENTS MAY BE ALLOWED USING A 3-BOLT CLAMP WITH "J" HOOK IF THE PURPOSE OF THE ATTACHMENT IS TO CONTINUE A RUN OVERHEAD. SEE SHEET 3.

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RALEIGH, N.C.

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ENGLISH STANDARD DRAWING FOR

METAL POLES
FABRICATION AND ATTACHMENT DETAILS

SHEET 2 OF 3
1740.01

Structural Engineer	Electrical Engineer
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR	NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON DEAN
SIGNATURE 9.23.03 DATE	SIGNATURE 9-24-03 DATE

Standard Drawings

Traffic Management and Signal Systems Unit
122 N. McDowell St., Raleigh, NC 27603

See Plate for Title

Original: 2002 Standards

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PROJECT REFERENCE NO.	SHEET NO.

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

9-03

ENGLISH STANDARD DRAWING FOR

METAL POLES

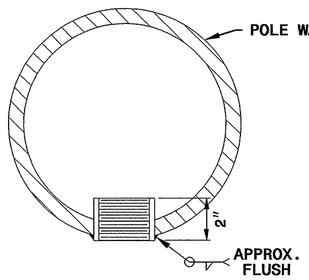
MISCELLANEOUS DETAILS

SHEET 3 OF 3

1740.01

MOUNTING POINT DETAIL

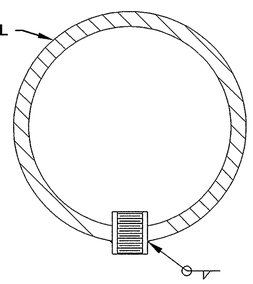
CABLE ENTRANCE IN TERMINAL COMPARTMENT



HALF COUPLING WITH INTERNAL 3" THREADS TO ACCEPT 3" METALLIC CONDUIT

SEE GENERAL NOTE NO. 1 ON SHEET 2 OF THIS STANDARD DRAWING FOR FABRICATION DETAILS.

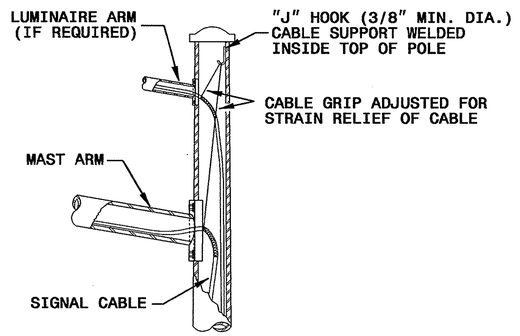
CABLE ENTRANCES AT TOP OF POLE



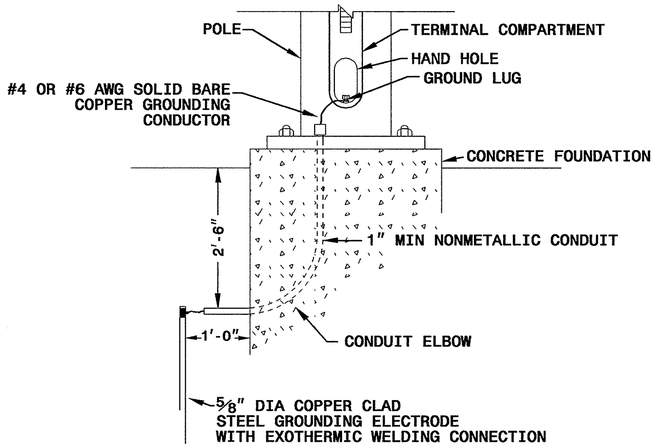
HALF COUPLINGS WITH INTERNAL 1" & 2" THREADS TO ACCEPT 1" & 2" METALLIC CONDUITS

SEE GENERAL NOTE NO. 2 ON SHEET 2 OF THIS STANDARD DRAWING FOR FABRICATION DETAILS.

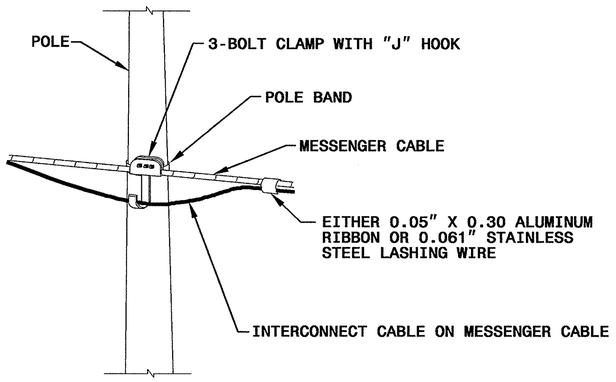
CABLE STRAIN RELIEF



METAL POLE GROUNDING DETAIL



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



STATE OF NORTH CAROLINA
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RALEIGH, N.C.

9-03

ENGLISH STANDARD DRAWING FOR

METAL POLES

MISCELLANEOUS DETAILS

SHEET 3 OF 3

1740.01

Structural Engineer	Electrical Engineer
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR	NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON L. DEAN
SIGNATURE D. Sarkar DATE 9.19.2003	SIGNATURE DATE 9/22/03

Standard Drawings

Traffic Management and Signal Systems Unit
122 N. McDowell St., Raleigh, NC 27603

See Plate for Title

Original: 2002 Standards

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PROJECT REFERENCE NO.	SHEET NO.

STATE OF
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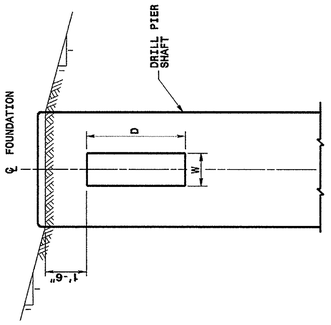
DIVISION OF HIGHWAYS
RALEIGH, N.C.

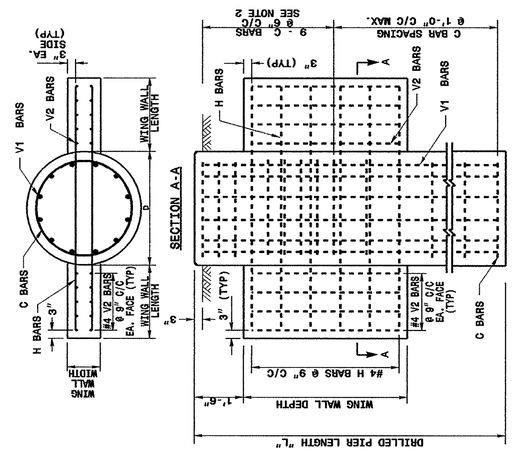
ENGLISH STANDARD DRAWING FOR
METAL POLE FOUNDATIONS
REINFORCING CAGE DETAILS

SHEET 1 OF 2
1742.01

NOTES

1. THE NUMBER OF C-BARS IS BASED ON FOUNDATION DEPTH. SEE FOUNDATION SELECTION TABLES.
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. THE LENGTH OF V1-BARS IS BASED ON FOUNDATION DEPTH. SEE FOUNDATION SELECTION TABLES.
4. THE QUANTITIES FOR STEEL AND CONCRETE SHOWN IN THE WING WALL DETAILS CHART REFLECT THE AMOUNT OF MATERIAL FOR 1 PAIR OF WING WALLS (2 WING WALLS PER DRILL PIER SHAFT.)
5. CONCRETE DRILL PIER SHAFT VOLUME (CU. YDS.):
   FOR 42" DIA.= .356XL
   FOR 48" DIA.= .485XL
6. DEFORM REINFORCING STEEL TO CONFORM TO ASTM A615 GRADE 60. TIES MAY BE DEFORMED OR PLAIN.
7. CAST CONCRETE AGAINST UNDISTURBED SOIL.
8. DO NOT ERECT TRAFFIC SIGNAL STRUCTURES BEFORE THE CONCRETE IN THE FOUNDATION HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
9. MAKE PROVISIONS FOR DRAINAGE OF WATER FROM INSIDE OF THE METAL SUPPORT.
10. FOR OTHER DETAILS REGARDING CONSTRUCTION OF CONCRETE FOUNDATION SEE PROJECT SPECIAL PROVISIONS.
11. IN CASE OF ANY CROSS SLOPES, GRADE AROUND THE FOUNDATION AS FOLLOWS:





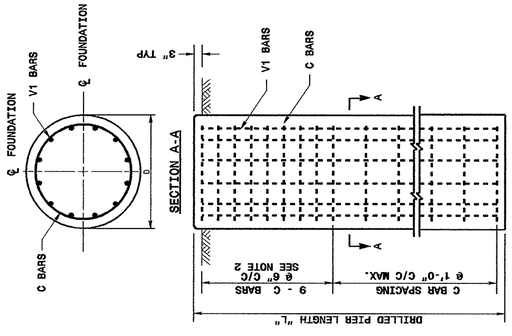
REINFORCING STEEL TABLE FOR STANDARD 42" and 48" DRILL PIER SHAFT WITH TYPE 1 AND TYPE 2 WING WALLS

Wing Wall Type	Drill Pier Shaft Dia. (in.)	Reinforcing Steel Bar Mark	No.	Size	Type	Length
TYPE 1	42"	V2	12	#4	STR.	2'-8"
		H	8	#4	STR.	8'-0"
		C	*	#4	CIR.	10'-9"
		V1	9	#8	STR.	**
TYPE 2	42"	V2	16	#4	STR.	4'-8"
		H	12	#4	STR.	9'-0"
		C	*	#4	CIR.	10'-9"
		V1	12	#8	STR.	**
TYPE 2	48"	V2	16	#4	STR.	4'-8"
		H	12	#4	STR.	9'-0"
		C	*	#4	CIR.	12'-8"

* See Construction Note No. 1.
** See Construction Note No. 2.
See Construction Note No. 3.

WING WALL DETAILS

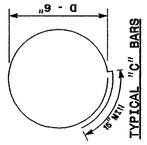
Wing Wall Type	Wing Wall Length (Ft.)	Wing Wall Width (Ft.)	Wing Wall Depth (Ft.)	Concrete Volume (Cu. Yds.)
TYPE 1	1'-6"	1'-0"	3'-0"	.4
TYPE 2	3'-0"	1'-0"	3'-0"	1.2



REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (42" & 48" DIAMETER)

SHAFT DIA. (in.)	VOLUME OF CONC. (cu. yds.)	BAR MARK	No.	Size	Type	Length
42"	.356 x L	V1	9	#8	STR.	**
		C	*	#4	CIR.	10'-9"
48"	.485 x L	V1	12	#8	STR.	**
		C	*	#4	CIR.	12'-8"

* See Construction Note No. 1.
** See Construction Note No. 2.



STATE OF
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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
METAL POLE FOUNDATIONS
REINFORCING CAGE DETAILS

SHEET 1 OF 2
1742.01

STATE OF
NORTH CAROLINA
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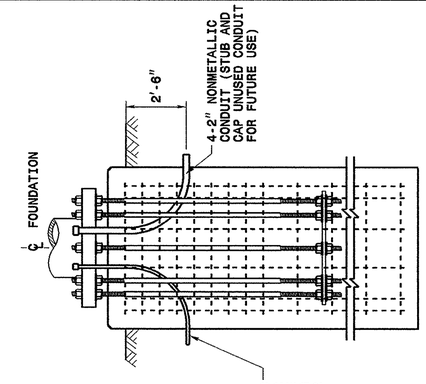
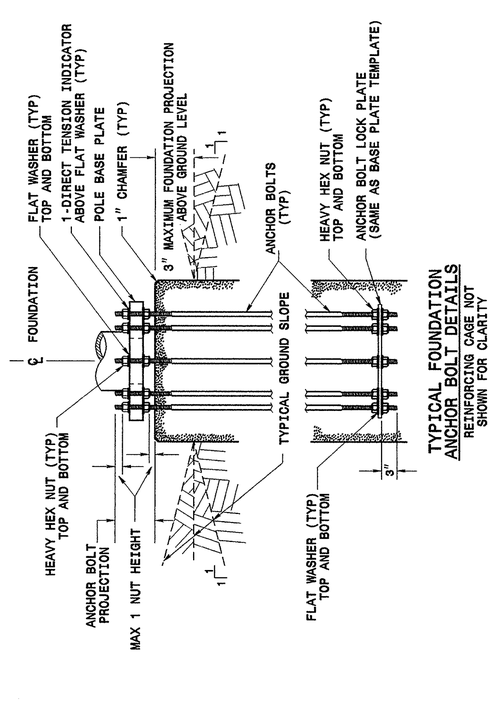
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
METAL POLE FOUNDATIONS
INSTALLATION DETAILS

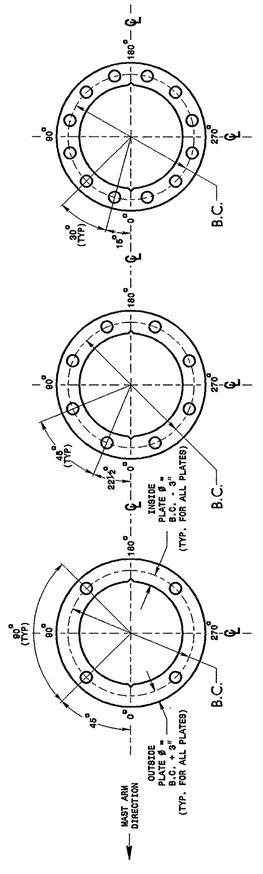
SHEET 2 OF 2
1742.01



TYPICAL FOUNDATION
CONDUIT DETAILS



TYPICAL FOUNDATION
ANCHOR BOLT DETAILS
REINFORCING CAGE NOT SHOWN FOR CLARITY



FOR 8 BOLT BASE PLATE
FOR 12 BOLT BASE PLATE
FOR 4 BOLT BASE PLATE
⅜" THICK STEEL. GALVANIZING IS NOT REQUIRED.
CONSTRUCT TEMPLATES AND PLATES FROM
BASE PLATE TEMPLATE AND ANCHOR BOLT LOCK PLATE DETAILS

Structural Engineer	Electrical Engineer
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR	NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON J. DEAN
D. SarKar 9.12.03	Milton J. Dean 9/18/03
SIGNATURE DATE	SIGNATURE DATE

Standard Drawings
Traffic Management and Signal Systems Unit
122 N. McDowell St., Raleigh, NC 27603

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