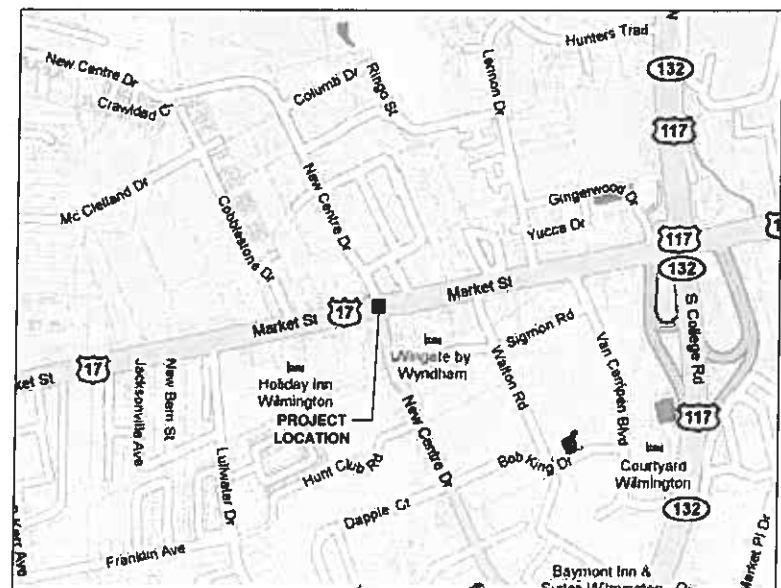


# CITY OF WILMINGTON, NORTH CAROLINA

PROJECT PLANS FOR THE CONSTRUCTION OF  
RED TRAFFIC LIGHT MONITORING FACILITIES  
AT THE INTERSECTION OF  
MARKET ST. / US 17 AT NEW CENTRE DR.

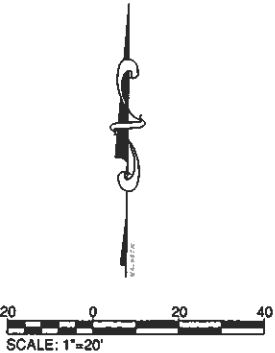
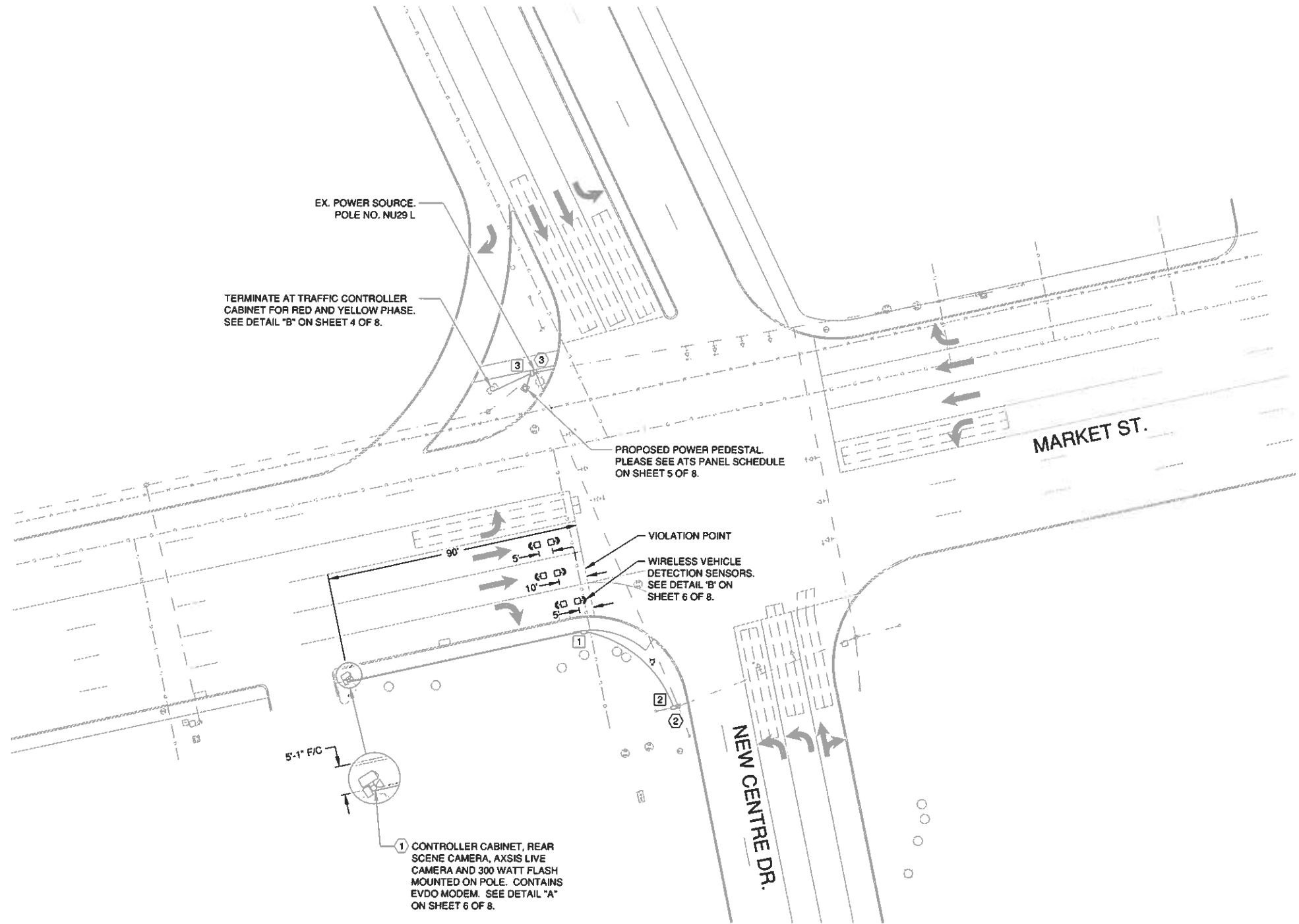


### SHEET INDEX

SHEET NO.	SITE ID	DESCRIPTION
1		COVER SHEET
2	WI009	INTERSECTION PLAN - EB MARKET ST. / US 17 AT NEW CENTRE DR.
3		WIRE SCHEMATIC
4-8		ATS STANDARD DETAILS

NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION

LEGEND	
	CONDUIT
	DIRECTIONAL BORE
	REAR MONITOR CAMERA ON ATS POLE
	WIRELESS VEHICLE DETECTION SENSORS
	PULL/JUNCTION BOX
	PHOTO ENFORCEMENT SIGN
	EXISTING CONDUIT



NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION

1ST SUBMITTAL  
DESIGNED BY: SM  
DATE: 09-28-10  
APPROVED BY:  
APPROVAL DATE:

LEGEND	
	CONDUIT
	DIRECTIONAL BORE
	REAR MONITOR CAMERA ON ATS POLE
	WIRELESS VEHICLE DETECTION SENSORS
	PULL/ JUNCTION BOX
	PHOTO ENFORCEMENT SIGN
	EXISTING CONDUIT

CONDUIT & CONDUCTOR SCHEDULE

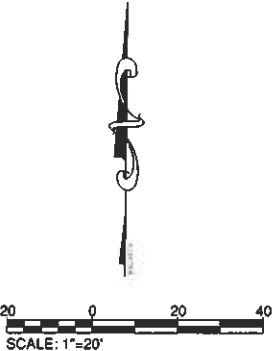
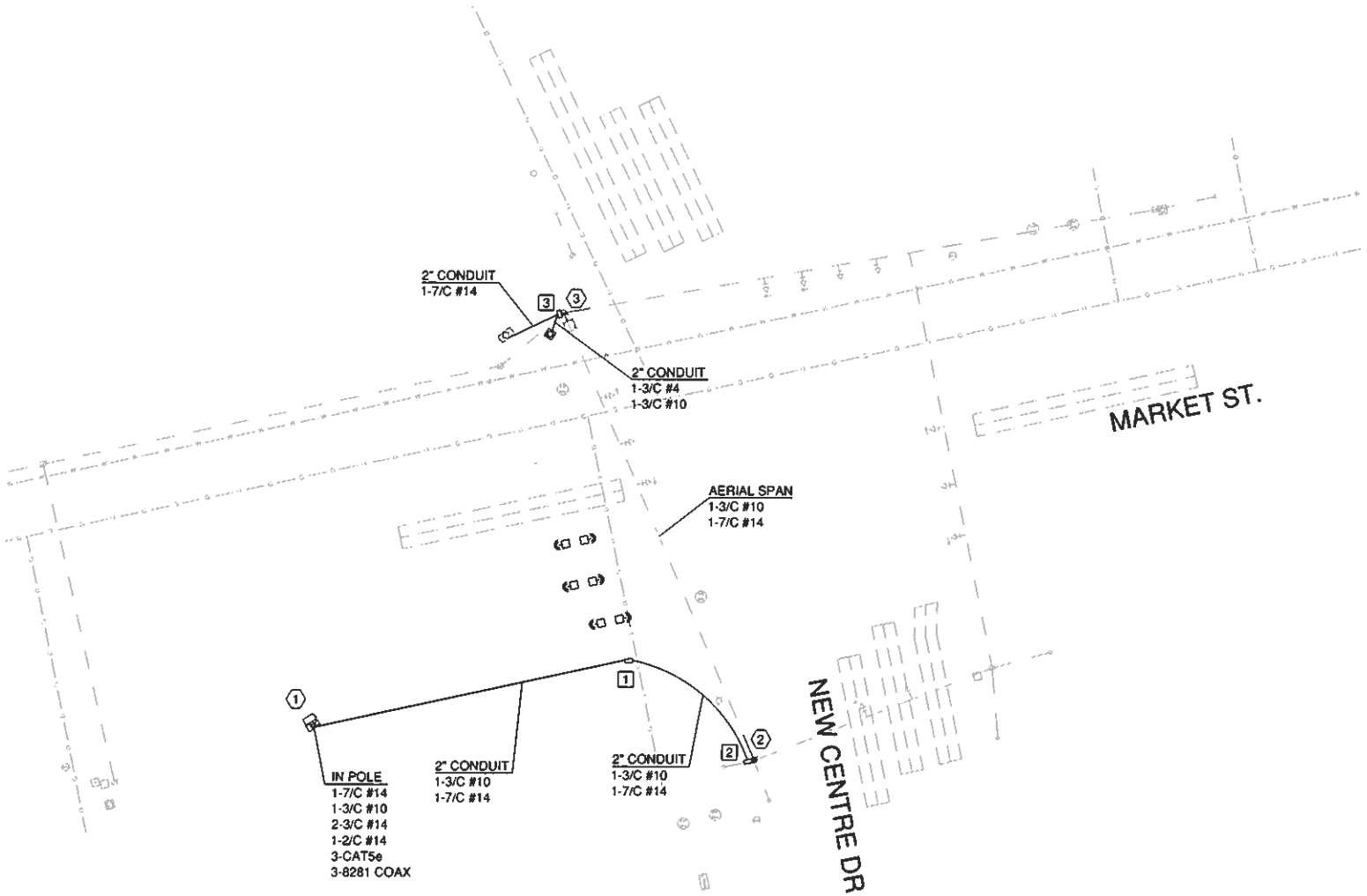
CONDUIT					CONDUCTORS											REMARKS			
FROM	TO	CENTER TO CENTER DISTANCE	2"	3"	REMARKS	FROM	TO	CENTER TO CENTER DISTANCE	POWER					CONTROL					
									3/C #4	3/C #10	3/C #14	3/C #16	2/C #18	CAT5E	7/C #14		8281 COAX	IMSA 60-2	2/C #22 SYNC
①	①	84'	94'			①	①	84'		1-94'					1-94'				
①	②	42'	52'			①	②	42'		1-52'					1-52'				
②	③	129'			AERIAL SPAN	②	③	129'		1-139'					1-139'				
③	Ⓜ	5'	15'			③	Ⓜ	5'		1-15'					1-15'				
③	Ⓜ	14'	24'			③	Ⓜ	14'	1-24'										
						①	CONT	20'		1-20'	2-20'		1-20'	3-20'	1-20'	3-20'		1-20'	CONDUCTORS IN POLE TO CONTROLLER.
TOTALS			185'			TOTALS			24'	320'	40'		20'	60'	320'	60'		20'	

CONT = NEW ATS CONTROLLER

ALL WIRES SHALL BE THWN

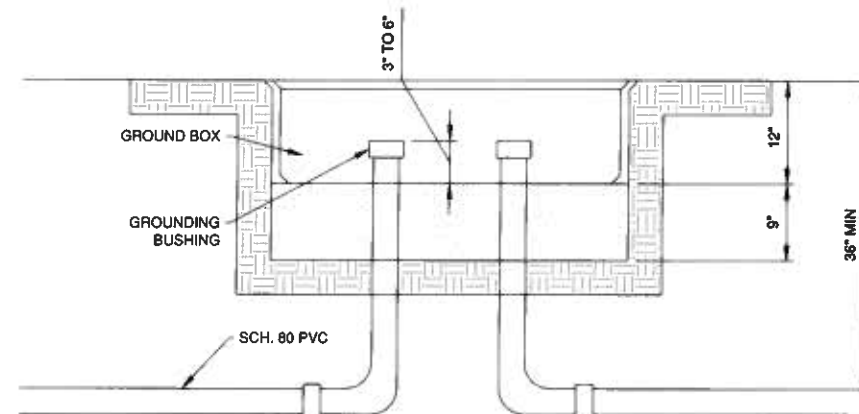
POLE SCHEDULE

POST NUMBER	LOCATION		BASE	POLE	
	APPROACH	OFFSET FROM CENTER S/B	OFFSET FROM F/C	# OF FOUND. CONCRETE (CU. YDS.)	HEIGHT TYPE
1	WB MARKET ST / US 17	90'	5'-1"	1	1.09 20' ALUM
2	SB NEW CENTRE DR.	7' ±	6' ±	-	EX. - EX.
TOTAL				1.09	

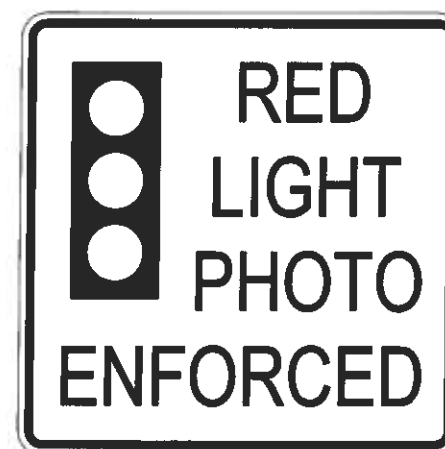


### GENERAL & CONSTRUCTION NOTES

1. SEPARATE RIGHT-OF-WAY PERMITS ARE REQUIRED FOR WORK WITHIN PUBLIC AGENCY RIGHT-OF-WAY. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING APPLICATION PERMITS & FEES, AND COMPLY WITH ALL PUBLIC REQUIREMENTS.
2. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE BASED ON AVAILABLE INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT DESIGNATED AGENCY TO LOCATE ALL UNDERGROUND UTILITIES 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE TO APPLY AND OBTAIN AN APPROVED TRAFFIC CONTROL PLAN IN ACCORDANCE WITH MUTCD AND LOCAL STANDARDS AS REQUIRED.
4. CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE ALL DISTURBED AREAS TO ORIGINAL CONDITION TO AGENCY SATISFACTION AT NO ADDITIONAL COMPENSATION.
5. CONTRACTOR SHALL TERMINATE ALL POWER CIRCUITS INTO ATS CABINET(S).
6. INSTALL INLINE 30 AMP FUSE INSIDE HAND HOLE ON ATS CAMERA POLES.
7. INSTALL FOUNDATION POLE AND GROUNDING WIRE FOR ATS EQUIPMENT. SEE LOCATIONS IN DRAWINGS AND POLE FOUNDATION DETAIL.
8. INSTALL PULL/JUNCTION BOX OF THE REQUIRED SIZE AND TYPE PER LOCAL AGENCY STANDARDS.
9. SCHEDULE 80 PVC CONDUIT TO BE BORED UNDER ROADWAY - 36" COVER MINIMUM. SEE SIZES AND LOCATION IN DRAWINGS.
10. CONTRACTOR SHALL CALL NCDOT AND CITY TRAFFIC SIGNAL SUPERVISOR AT LEAST 72 HOURS IN ADVANCE TO COORDINATE THE POWER DROP INTO THE AGENCIES METER PEDESTAL.
11. THE CONTRACTOR SHALL HAVE A LEVEL II IMSA CERTIFIED TECHNICIAN / ELECTRICIAN ON-SITE AT ALL TIMES DURING CONSTRUCTION. CONDUCTOR SPLICES AND TERMINATIONS SHALL BE MADE BY A QUALIFIED JOURNEYMAN ELECTRICIAN, WHO HAS SUCCESSFULLY COMPLETED A RECOGNIZED FOUR (4) YEAR APPRENTICESHIP PROGRAM UNDER THE DIRECT SUPERVISION OF A JOURNEYMAN ELECTRICIAN.
12. TERMINATE RED & YELLOW PHASE WIRES TO AGENCIES RED & YELLOW PHASE CONDUCTORS IN THE NEAREST TRAFFIC CONTROLLER CABINET. SEE CONDUCTOR RED & YELLOW PHASE CONNECTION DETAIL. CONTRACTOR SHALL CONTACT NCDOT AND THE CITY TRAFFIC SIGNAL SUPERVISOR AND CITY POLICE DEPARTMENT FOR ON-SITE ASSISTANCE WITH RED & YELLOW PHASE ISOLATION CONNECTION. ALLOW 24 HOURS ADVANCE NOTICE BEFORE CONNECTION.
13. WILMINGTON SHALL PROVIDE AND INSTALL "PHOTO ENFORCED" SIGN (S) IN ACCORDANCE WITH MUTCD, AND AS PER NORTH CAROLINA CONSTRUCTION & TRAFFIC STANDARD DETAILS.
14. CONTRACTOR SHALL TRIM EXISTING TREES TO IMPROVE LINE OF SIGHT NEEDED. CONTRACTOR SHALL NOTIFY THE AGENCIES AND OBTAIN APPROVAL PRIOR TO TRIMMING.
15. AT LOCATIONS WHERE EXISTING ENFORCEMENT EQUIPMENT MAY EXIST, CONTRACTOR SHALL COORDINATE WITH THE OWNER AND ATS PROJECT MANAGER FOR REMOVAL & SALVAGE.
16. CONTRACTOR SHALL COORDINATE WITH NCDOT AND CITY TRAFFIC SIGNAL SUPERVISOR AND LAW ENFORCEMENT TO HAVE AN OFFICER PRESENT WHEN TRAFFIC SIGNAL POWER IS TURNED OFF FOR CONNECTION TO POWER PEDESTAL.
17. CONNECT POLE TO SOLID BARE BOND GROUND & GROUNDING ROD (OR COIL 25' OF NO. 6 BARE COPPER) IN POLE FOUNDATION & TO SYSTEM GROUND BONDED BACK TO ATS CABINET.
18. CONTRACTOR SHALL PLACE THE POLES / FOUNDATIONS IN A LOCATION TO MAINTAIN A 5' CLEAR SPACE FROM THE OVERHEAD POWER LINES.
19. CONTRACTOR TO LABEL EACH END OF ALL CABLE RUNS.
20. CONTRACTOR TO INSTALL AND LEAVE IN PLACE NYLON DRAW STRING IN ALL CONDUIT RUNS.

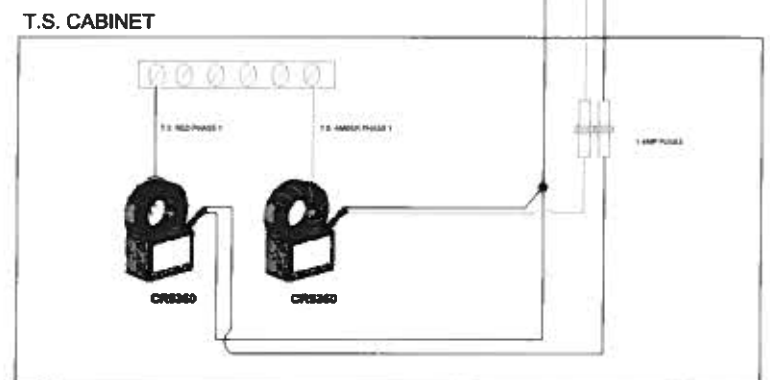
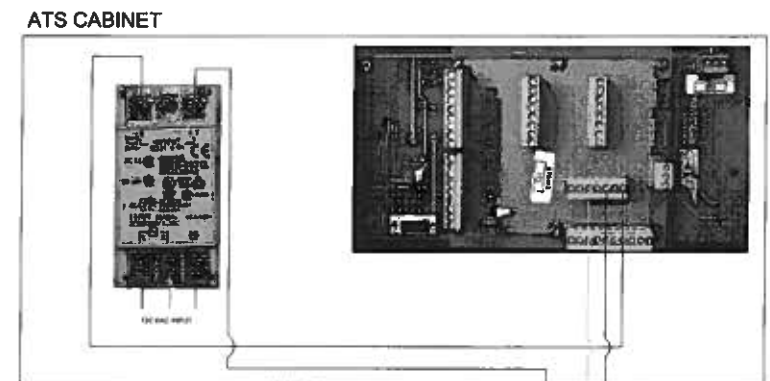


DETAIL "A"  
TYPICAL JUNCTION BOX DETAIL



DETAIL "B"

PROPOSED SIGN TO BE INSTALLED BY WILMINGTON



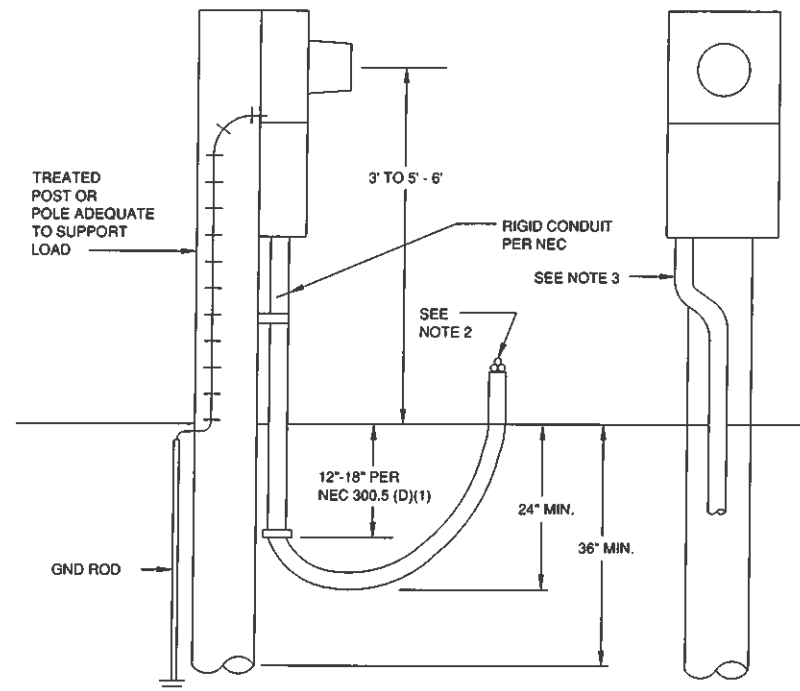
DETAIL "C"  
CR 9350 MAGNETIC MODULE WIRING DETAIL

CR MAGNETICS: MODEL NUMBER CR 9350-ACA-0.35  
THESE MODULES ARE CURRENT SWITCHES THAT ARE 100% NON INVASIVE.  
THEY ARE CONFIGURED NORMALLY OPEN AND ENABLED WHEN THE PHASE CURRENT  
PASSED THROUGH THE OPENING IS AT OR EXCEEDS 350 MILLI AMPS.

WHEN THE MODULE IS ACTIVATED, +12VDC IS PASSED BACK TO THE PHASE INPUTS OF THE ATS UNIT.

FROM THE RLC POLE, RUN 3 CONDUCTORS TO THE TRAFFIC CONTROLLER CABINET.

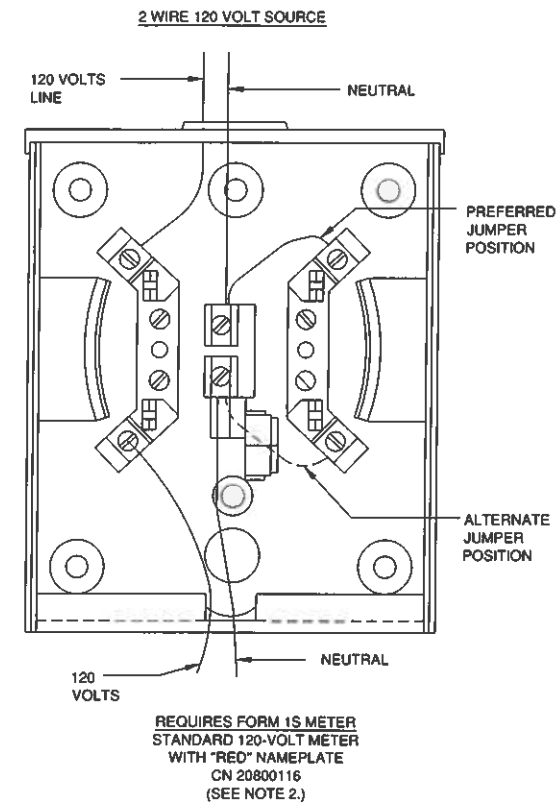
- 1) +12 VDC  
2) RED PHASE INPUT  
3) AMBER PHASE INPUT  
4) 1 AMP IN-LINE FUSES



**NOTES:**

1. CUSTOMER FURNISHES ALL ITEMS EXCEPT METER. INSTALLATION IS TO BE MADE BY ELECTRICIAN TO MEET N.E.C. AND LOCAL ORDINANCES.
2. CUSTOMER'S ELECTRICIAN TO SUPPLY CONDUCTORS (SEPARATE CONDUCTORS - NO SHEATHED CABLES!) FROM SOURCE SIDE LUGS OF METER BASE TO 5' MINIMUM BEYOND END OF CONDUIT RISER. CONDUCTOR ENDS TO BE CAPPED TO PREVENT WATER ENTRY.
3. CONDUIT TO BE INSTALLED IN DESIGNATED SPACE IN PANEL AS REQUIRED BY NEC 230.7.

**DETAIL "A"**  
**METER PEDESTAL DETAIL**

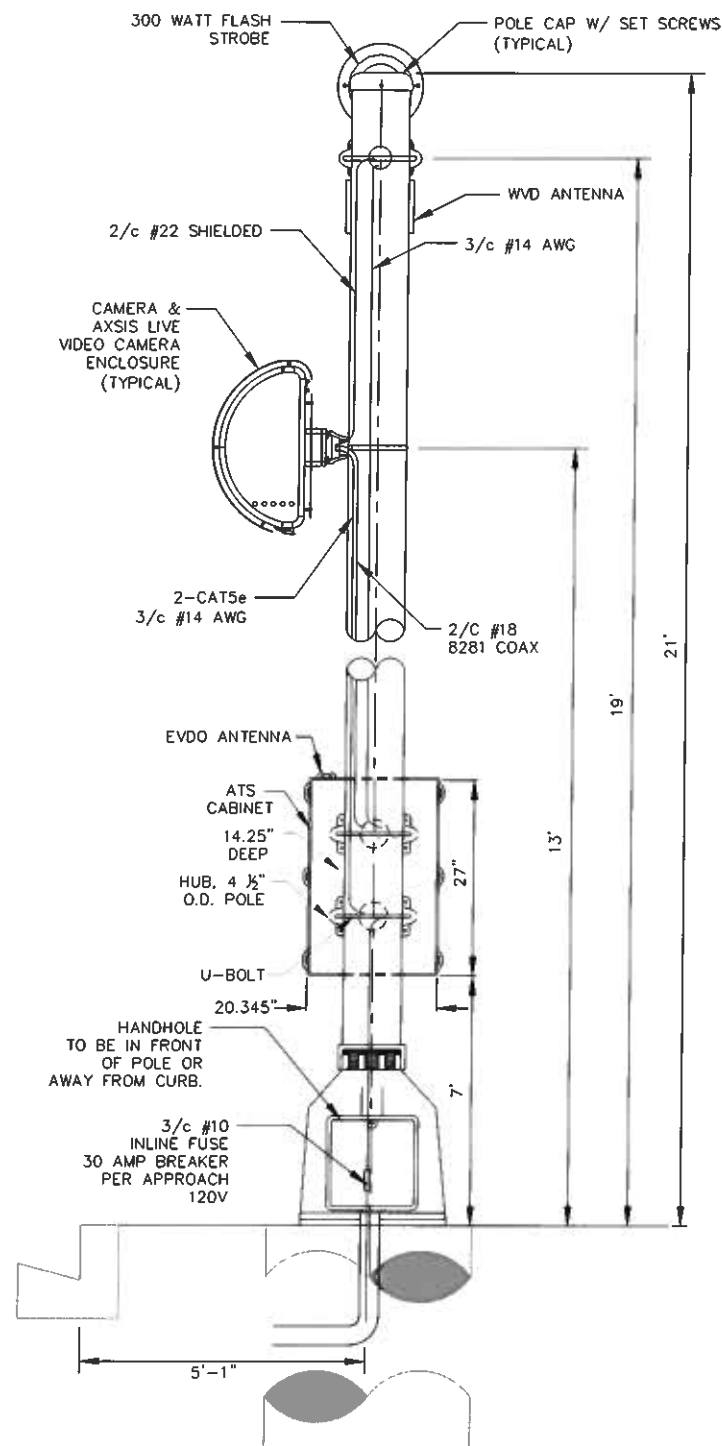


**NOTES:**

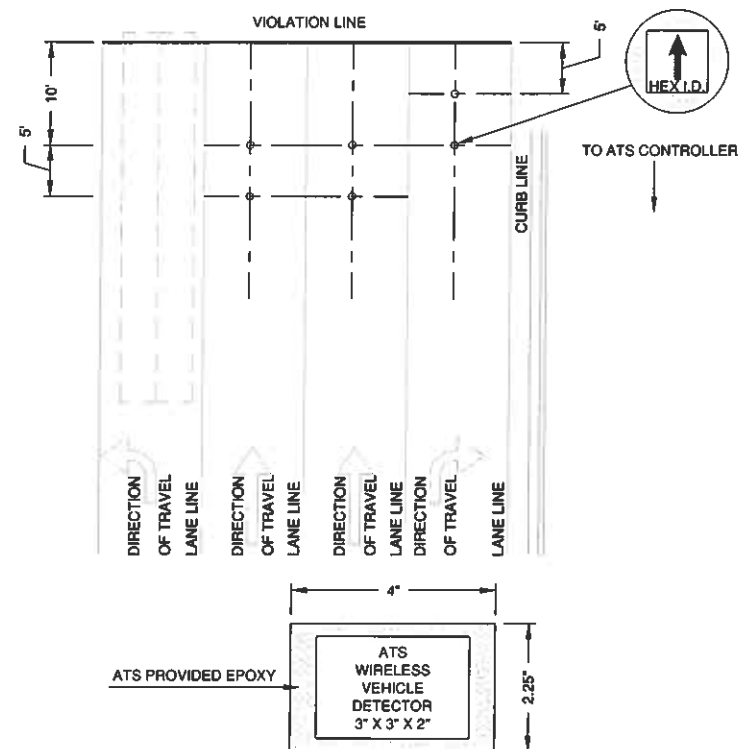
1. WHERE THE CUSTOMER'S METER BASE IS NOT WIRED AS SHOWN ON THIS DRAWING, AN ELECTRICAL CONTRACTOR SHOULD REWIRE THE BASE AND THE COMPANY WILL INSTALL THE APPLICABLE METER.
2. INSTALLING A 2S METER IN A SOCKET WIRED FOR A 1S METER WILL RESULT IN APPROXIMATELY 50% METER REGISTRATION.

**ATS PANEL SCHEDULE**

MANUFACTURE - SQUARE OR EQUAL						12 CIRCUIT, 100 AMP RATING				SINGLE PHASE, 120/240V					
22 KA/C			70 MAIN BREAKER			LOCATION - METER PEDESTAL									
LOAD	CONDUIT	WIRE	TRIP	1P/2P	VOLTS	DESCRIPTION	CKT	CKT	DESCRIPTION	VOLTS	1P/2P	TRIP	WIRE	CONDUIT	LOAD
			30A	2P		SURGE ARRESTOR	1	2	RLC	120	1P	30A	#10	2"	2135
							3	4	SPACE						
						SPACE	5	6	SPACE						
						SPACE	7	8	SPACE						
						SPACE	9	10	SPACE						
						SPACE	11	12	SPACE						
TOTAL LOAD: 2135 WATTS						TOTAL AMPS: 20 AMPS									



DETAIL "A"  
SEE POLE ① ON SHEET 2 OF 8.  
20'-4.5" O.D. SCHEDULE 80  
(6061 T6 ALUMINUM ALLOY)



DETAIL "B"  
WVD DETAIL - EB MARKET ST.

#### ATS WIRELESS VEHICLE DETECTORS (WVD) INSTALLATION:

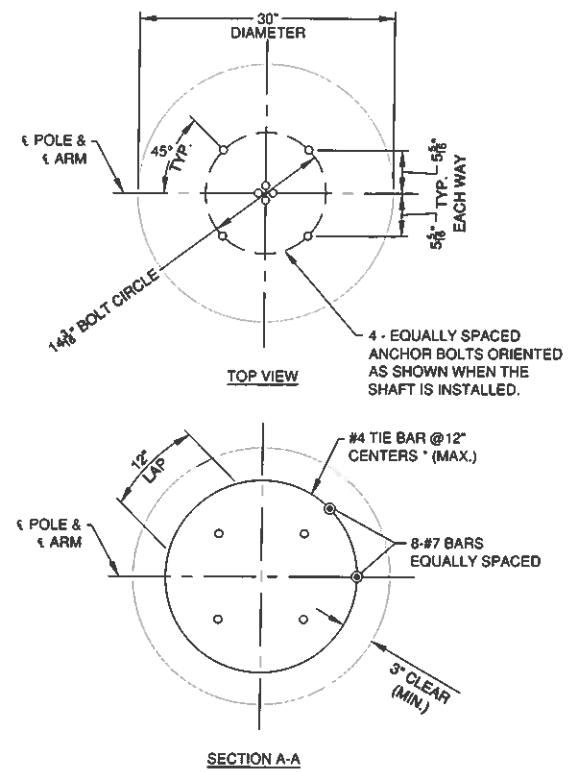
TRAILING WVD'S 10' FROM VIOLATION LINE, MIDDLE OF THE LANE.  
LEADING WVD'S 15' FROM VIOLATION LINE, MIDDLE OF THE LANE.

\* DEDICATED RIGHT TURNS ONLY -  
TRAILING WVD'S 5' FROM VIOLATION LINE, MIDDLE OF THE LANE.  
LEADING WVD'S 10' FROM VIOLATION LINE, MIDDLE OF THE LANE.

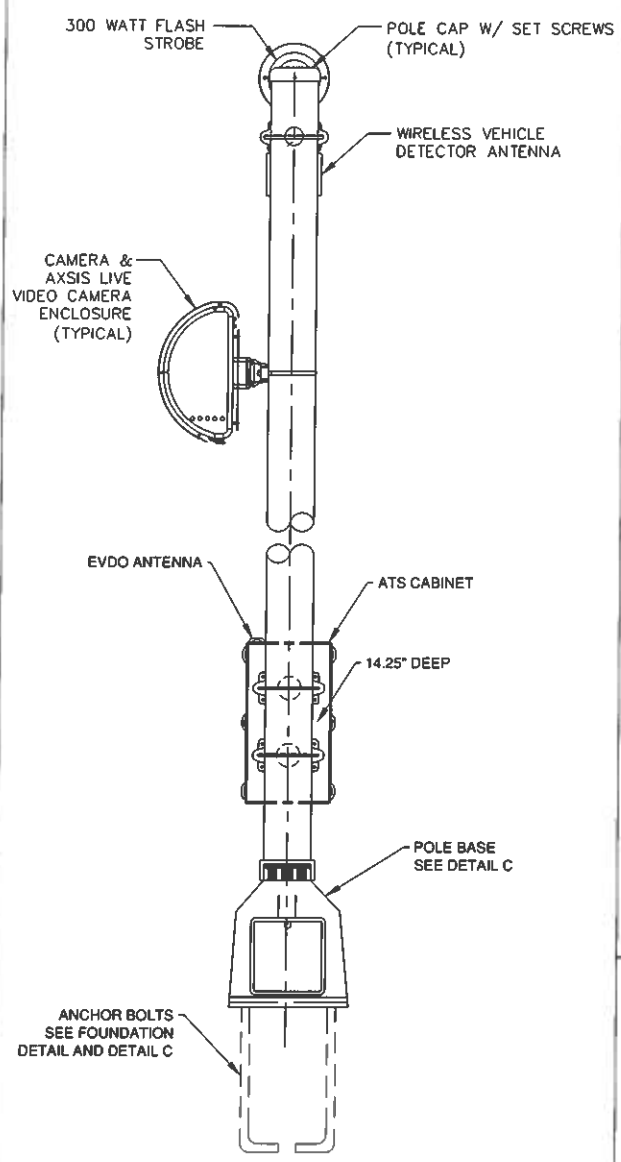
1. MEASURE & MARK DEAD CENTER OF EACH LANE FROM VIOLATION LINE.  
(SEE DETAIL "B")
2. MEASURE AND MARK 10', 15' & 5' FOR DEDICATED RIGHT TURN LANES FROM VIOLATION LINE.  
(SEE DETAIL "B")
3. 4" CORE DRILL CENTER OF MARKS @ A DEPTH OF 2.25".  
JACK HAMMER/CHISEL OUT ASPHALT AS REQUIRED.  
(SEE IMAGES 1-4 ON SHEET 8 OF 8.)
4. RECORD HEX ID FOR EACH WVD IN EXACT LOCATION PER LANE.  
RECORD (RED HEX ID INPUT) ON THE DRAWING TO THE LEFT.  
(SEE IMAGE 5 ON SHEET 8 OF 8.)
5. VACUUM, WASH AND HEAT HOLE PRIOR TO EPOXY FILL.  
(SEE IMAGE 6 ON SHEET 8 OF 8.)
6. USE MANUFACTURERS EPOXY FILLER ONLY  
(TO BE SUPPLIED BY ATS).
  - A. FILL BOTTOM OF 4" CORE DRILLER HOLE #1 / 8" WITH EPOXY.  
(SEE IMAGE 7 ON SHEET 8 OF 8.)
  - B. INSERT WVD WITH ORIENTATION ARROW IN THE SAME DIRECTION AS VEHICLE TRAVEL.  
(SEE IMAGES 8 & 9 ON SHEET 8 OF 8.)
  - C. STEP BACK AND VIEW ARROW ORIENTATION IS PARALLEL TO DIVIDER STRIPING.
  - D. INSURE YOU HAVE HEX ID RECORDED.  
(SEE IMAGE 5 ON SHEET 8 OF 8.)
  - E. FILL HOLE WITH REMAINING EPOXY TO ROAD SURFACE LEVEL.  
(SEE IMAGES 10, 11 ON SHEET 8 OF 8.)

NOTE: THIS EPOXY WILL CURE "HARD" IN APPROXIMATELY 3 MINUTES.

7. ATS WVD SHALL NOT BE PLACED SO AS TO DAMAGE VEHICLE DETECTION LOOP WIRES.



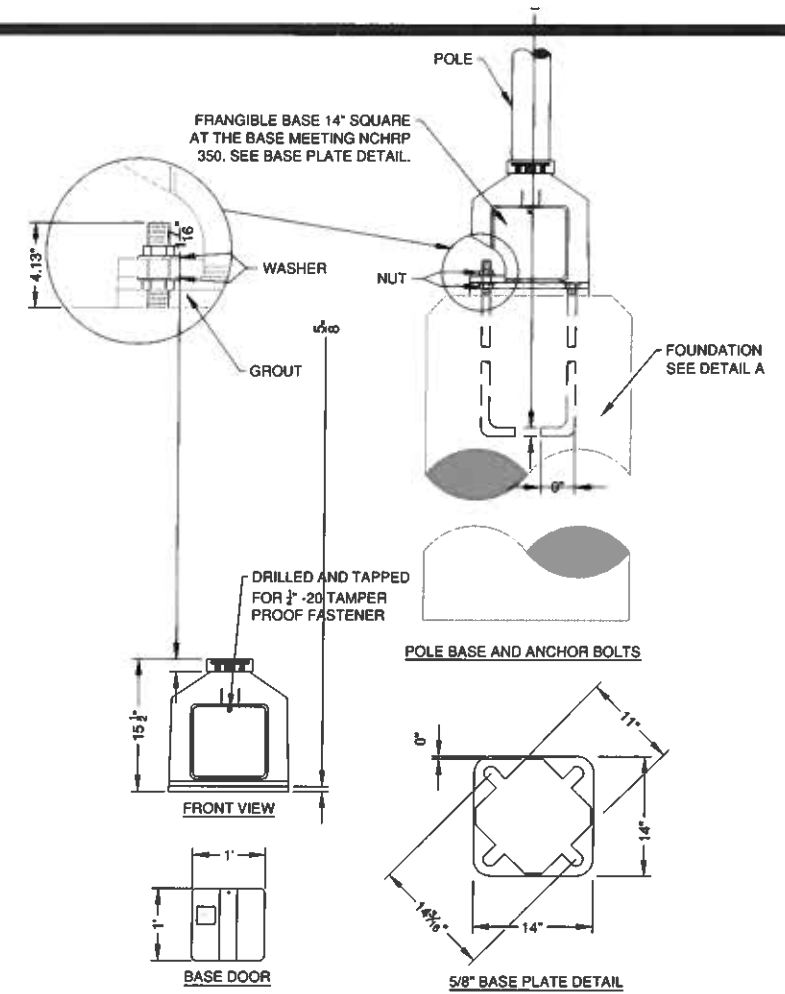
**DETAIL "A"**  
**ALUMINUM POLE CONCRETE FOUNDATION DETAIL**



**DETAIL "B"**  
**TYPICAL ALUMINUM POLE DETAIL**

**GENERAL NOTES:**

- DESIGN SHALL BE IN ACCORDANCE WITH 2001 (4TH) EDITION AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS AND INTERIMS.
- POLE MATERIAL SHALL BE SCHEDULE 80 ALUMINUM POLE FABRICATED USING 6061-T6 ALUMINUM ALLOY, THREADED ONE END NPT CUT TO LENGTH.
- ANCHOR BOLTS SHALL BE PER ASTM F1554 GRADE 55 KSI.
- REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 KSI.
- CONCRETE SHALL BE CLASS IV (DRILLED SHAFT) WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI FOR ALL ENVIRONMENTAL CLASSIFICATIONS.
- ALL NUTS, BOLTS, WASHERS AND THREADED BARS/STUDS SHALL BE GALVANIZED PER F2329-05.
- UNLESS OTHERWISE NOTED ON THE PLANS, LOCATE HANDHOLE 180 DEGREES FROM CURB & GUTTER (FACING SIDEWALK).
- PROVIDE 2 NUTS AND 2 WASHERS WITH EACH ANCHOR BOLT.
- ANCHOR BOLT THREADS SHALL BE TAPED PRIOR TO POURING CONCRETE. THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE. AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT. THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.
- ALL EXPOSED FOUNDATION SHALL BE FINISHED SMOOTH AND SHALL BE FLUSH WITH ADJACENT SIDEWALKS WHEN APPLICABLE.



**DETAIL "C"**  
**POLE BASE DETAIL**

**DETAIL "D"**  
**POLE DETAIL**

POLE DATA									
POLE TUBE			POLE BASE			ANCHOR BOLT			
POLE O.D. (IN)	LENGTH (FT)	WALL THK (IN)	SQUARE (FT)	BOLT CIRCLE (FT)	THK (IN)	DIA (IN)	LENGTH (IN)	HOOK (IN)	THREAD LENGTH (IN)
4.50	20.00	0.337	14.00	14.18	0.63	1.00	42.00	4.00	4.13

NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION



IMAGE #1



IMAGE #2



IMAGE #3

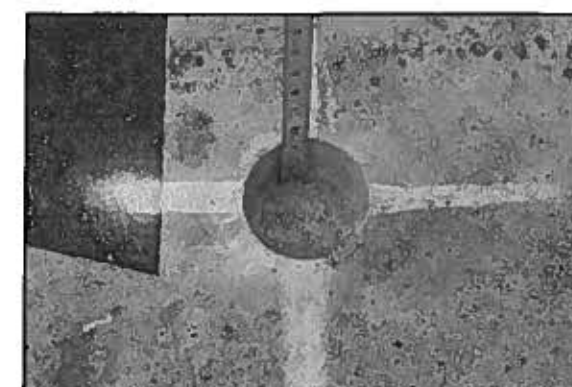


IMAGE #4



IMAGE #5



IMAGE #6



IMAGE #7



IMAGE #8



IMAGE #9



IMAGE #10

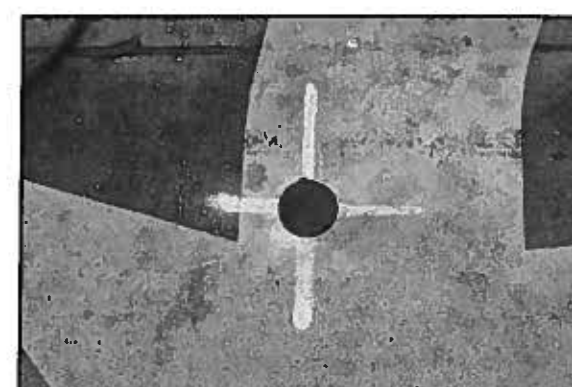


IMAGE #11