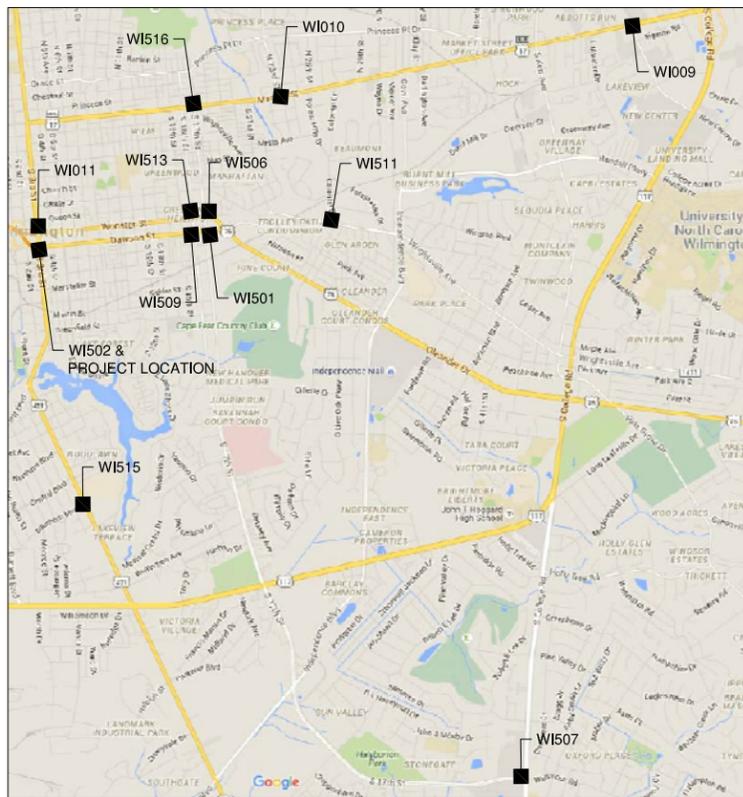


GOVERNING SPECIFICATIONS:  
 THE MOST CURRENT EDITION OF NORTH CAROLINA DEPARTMENT  
 OF TRANSPORTATION "STANDARD SPECIFICATIONS" AND  
 "SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL  
 PROVISIONS" HEREIN SHALL GOVERN, WHERE APPLICABLE.

# CITY OF WILMINGTON, NORTH CAROLINA

## PROJECT PLANS FOR THE CONSTRUCTION OF RED TRAFFIC LIGHT MONITORING FACILITIES AT THE INTERSECTION OF US 76 / DAWSON ST AT 3RD ST

VICINITY MAP



### SHEET INDEX

SHEET NO.	SITE ID	DESCRIPTION
1		COVER SHEET
2	WI517	INTERSECTION PLAN
3		ATS STANDARD DETAILS
4		REAR POLE DETAILS
5		WVD PHOTOS / DETAIL

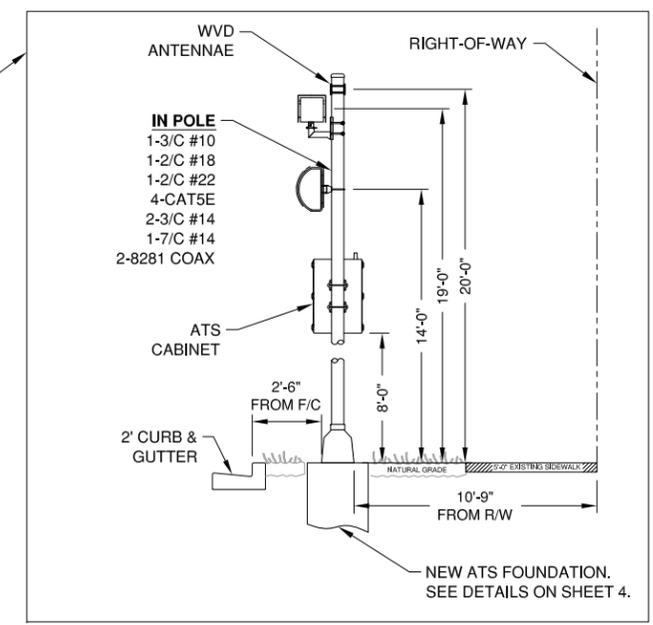
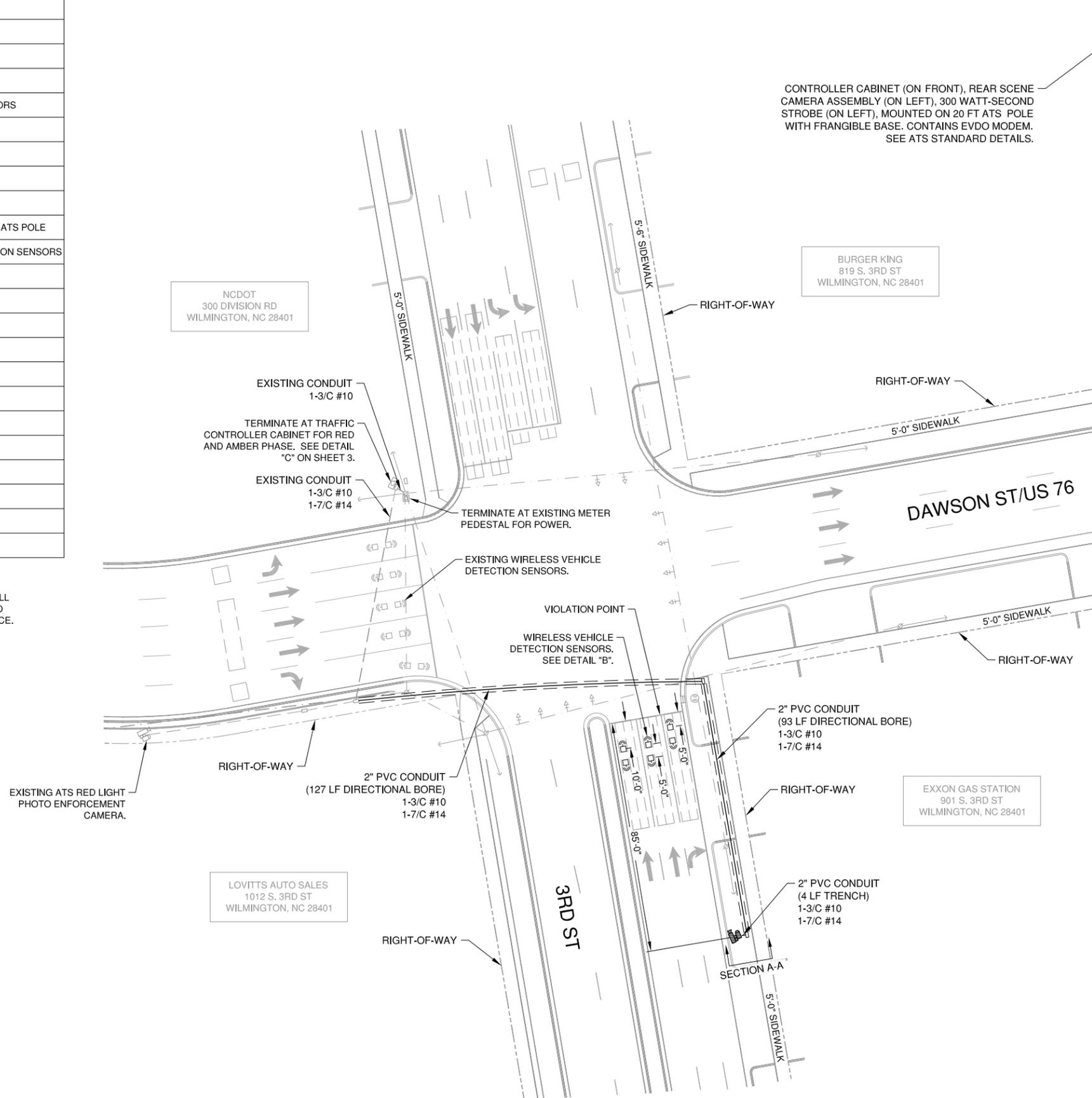


NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION

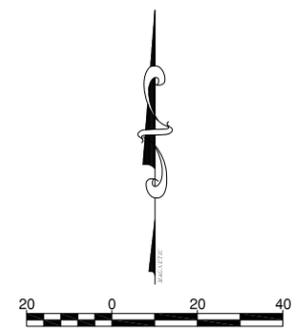
# LEGEND

	UNDERGROUND CONDUIT (TRENCH)
	DIRECTIONAL BORE
	REAR MONITOR CAMERA ON ATS POLE
	WIRELESS VEHICLE DETECTION SENSORS
	17" x 30" PULL/JUNCTION BOX
	PHOTO ENFORCEMENT SIGN
	ATS METER POLE
	ATS METER PEDESTAL
	EXISTING REAR MONITOR CAMERA ON ATS POLE
	EXISTING WIRELESS VEHICLE DETECTION SENSORS
	EXISTING UNDERGROUND CONDUIT
	EXISTING STREET LIGHT
	EXISTING FIRE HYDRANT
	EXISTING SIGNAL HEAD
	EXISTING MANHOLE
	EXISTING PULL/JUNCTION BOX
	EXISTING LOOPS
	EXISTING TRAFFIC CONTROLLER
	EXISTING METER PEDESTAL
	EXISTING WOOD POLE
	EXISTING CONCRETE POLE
	EXISTING SIGN

- NOTES:
- CONTRACTOR SHALL VERIFY THE LOCATION OF ALL CONFLICTING UNDERGROUND UTILITIES PRIOR TO DIRECTIONAL DRILL AND MAINTAIN 2 FT CLEARANCE.
  - EARTH TO GROUND RESISTANCE NEEDS TO BE 25 OHMS OR ADDITIONAL GROUNDING RODS MAY BE NEEDED.



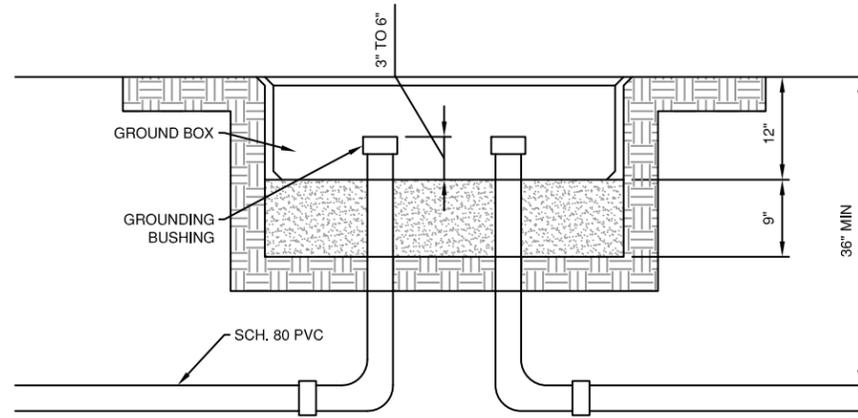
SECTION A-A



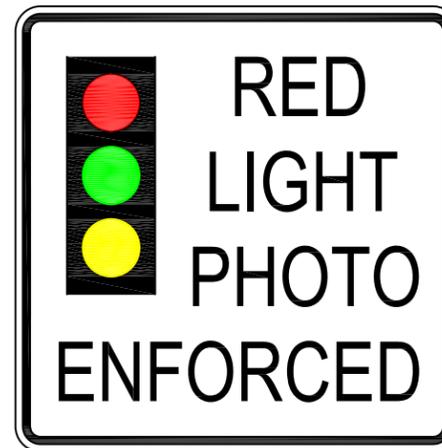
NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION

**GENERAL & CONSTRUCTION NOTES**

- 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.
- 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.
- CONTRACTOR SHALL BE RESPONSIBLE TO APPLY AND OBTAIN AN APPROVED TRAFFIC CONTROL PLAN IN ACCORDANCE WITH MUTCD AND LOCAL STANDARDS AS REQUIRED.
- CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE ALL DISTURBED AREAS TO ORIGINAL CONDITION TO AGENCY SATISFACTION AT NO ADDITIONAL COMPENSATION.
- CONTRACTOR SHALL TERMINATE ALL POWER CIRCUITS INTO ATS CABINET.
- INSTALL INLINE 30 AMP FUSE INSIDE HAND HOLE ON ATS CAMERA POLES.
- INSTALL FOUNDATION POLE AND GROUNDING WIRE FOR ATS EQUIPMENT. SEE LOCATIONS IN DRAWINGS AND POLE FOUNDATION DETAIL.
- INSTALL PULL/JUNCTION BOX OF THE REQUIRED SIZE AND TYPE PER LOCAL AGENCY STANDARDS.
- SCHEDULE 80 PVC CONDUIT TO BE BORED UNDER ROADWAY - 36" COVER MINIMUM. SEE SIZES AND LOCATION IN DRAWINGS.
- 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.
- 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.
- 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.
- WILMINGTON SHALL PROVIDE AND INSTALL "PHOTO ENFORCED" SIGN (S) IN ACCORDANCE WITH MUTCD, AND AS PER NORTH CAROLINA CONSTRUCTION & TRAFFIC STANDARD DETAILS.
- CONTRACTOR SHALL TRIM EXISTING TREES TO IMPROVE LINE OF SIGHT NEEDED. CONTRACTOR SHALL NOTIFY THE AGENCIES AND OBTAIN APPROVAL PRIOR TO TRIMMING.
- AT LOCATIONS WHERE EXISTING ENFORCEMENT EQUIPMENT MAY EXIST, CONTRACTOR SHALL COORDINATE WITH THE OWNER AND ATS PROJECT MANAGER FOR REMOVAL & SALVAGE.
- 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.
- 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.
- CONTRACTOR SHALL PLACE THE POLES / FOUNDATIONS IN A LOCATION TO MAINTAIN A 5' CLEAR SPACE FROM THE OVERHEAD POWER LINES.
- CONTRACTOR TO LABEL EACH END OF ALL CABLE RUNS.
- CONTRACTOR TO INSTALL AND LEAVE IN PLACE NYLON DRAW STRING IN ALL CONDUIT RUNS.

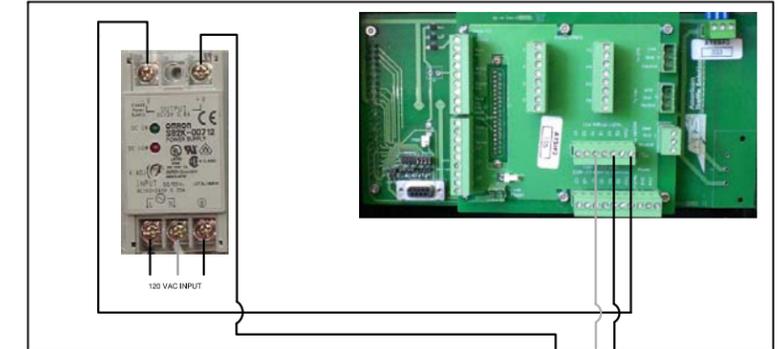


**DETAIL "A"**  
**TYPICAL JUNCTION BOX DETAIL**

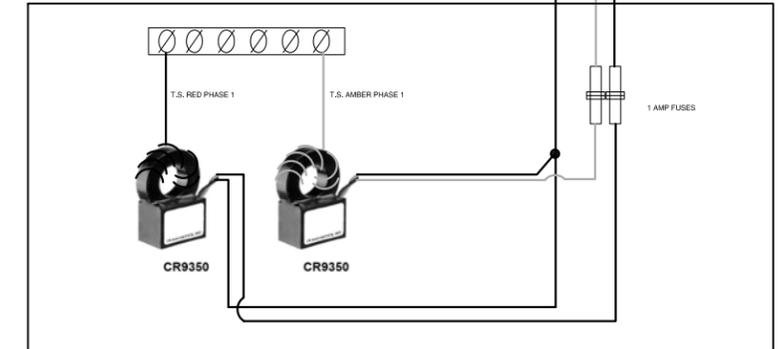


**DETAIL "B"**  
**PROPOSED SIGN TO BE INSTALLED BY WILMINGTON**

**ATS CABINET**



**T.S. CABINET**



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.

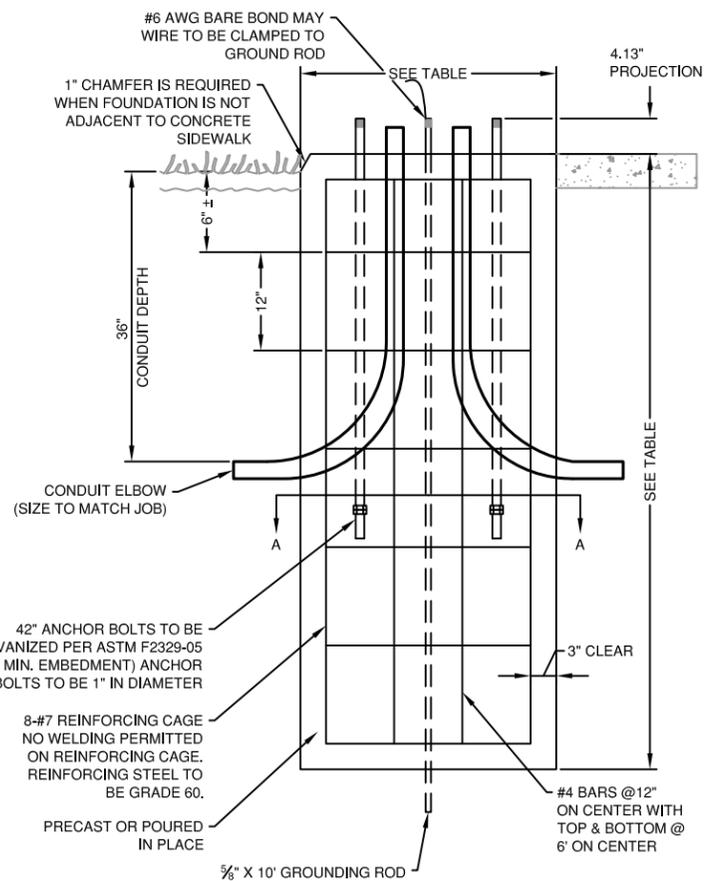
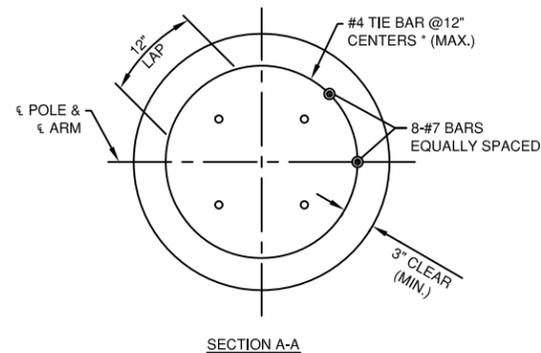
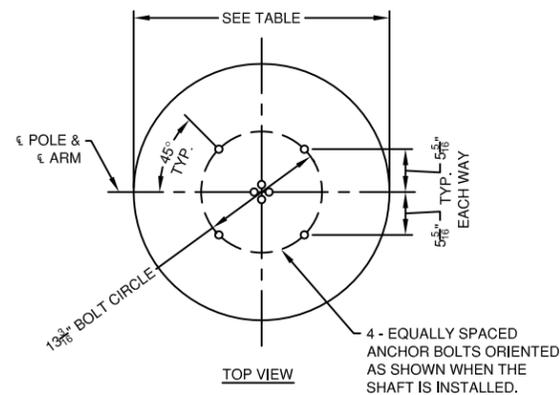
FROM THE RLC POLE, RUN 3 CONDUCTORS TO THE TRAFFIC CONTROLLER CABINET.  
1) +12 VDC  
2) RED PHASE INPUT  
3) AMBER PHASE INPUT  
4) 1 AMP IN-LINE FUSES

**DETAIL "C"**  
**CR 9350 MAGNETIC MODULE WIRING DETAIL**

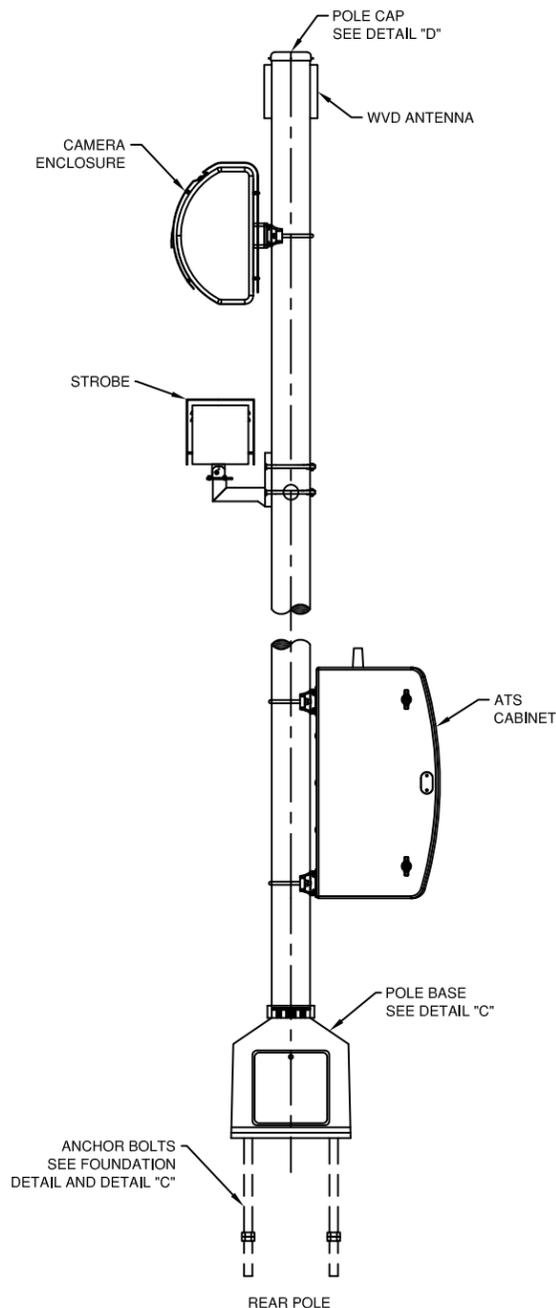
**ATS PANEL SCHEDULE**

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	EXISTING RLC	120	1P	30A	#10	2"	2135
						SPACE	3	4							
						SPACE	5	6	RLC	120	1P	30A	#10	2"	2135
						SPACE	7	8							
						SPACE	9	10							
						SPACE	11	12							

TOTAL LOAD: 2135 WATTS      TOTAL AMPS: 30 AMPS (PER RLC)



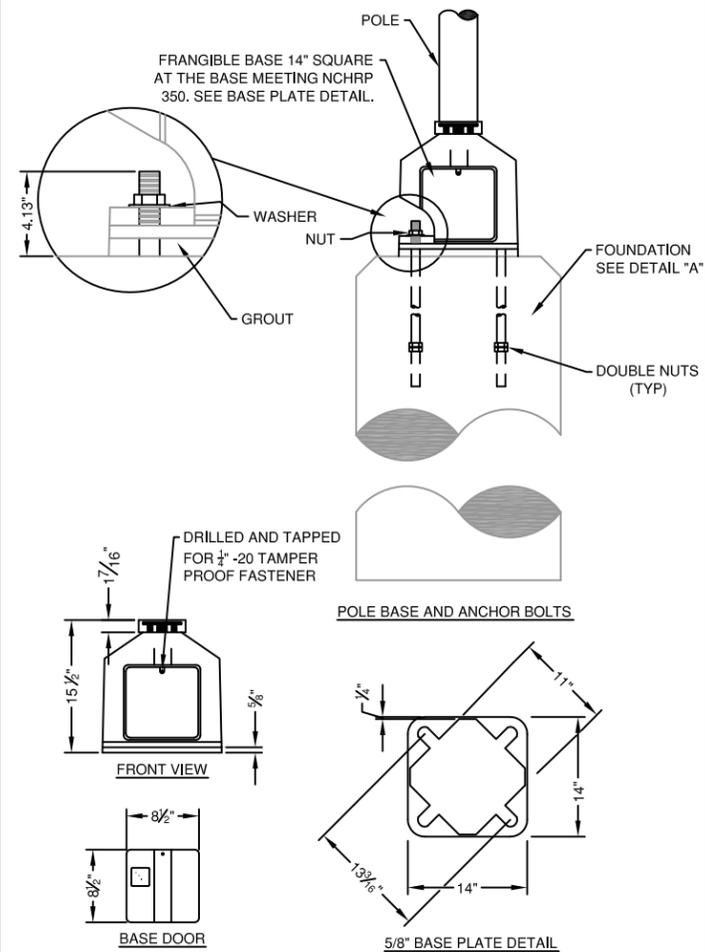
**DETAIL "A"**  
ALUMINUM POLE CONCRETE FOUNDATION DETAIL



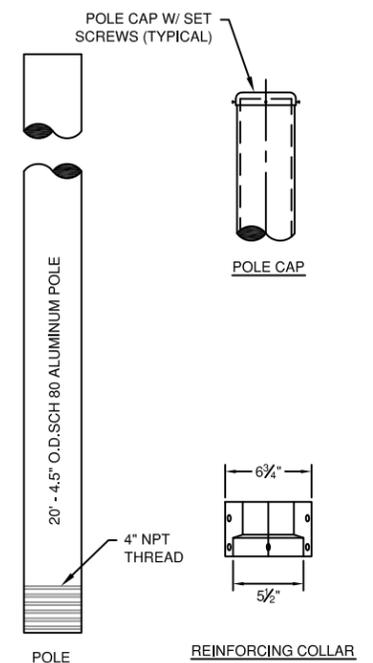
**DETAIL "B"**  
TYPICAL ALUMINUM POLE DETAIL

**GENERAL NOTES:**

- DESIGN SHALL BE IN ACCORDANCE WITH 2009 (5TH) 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.
- 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 NUT AND WASHER 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			FOUNDATION		
POLE O.D. (IN)	LENGTH (FT)	WALL THK (IN)	SQUARE (IN)	BOLT CIRCLE (IN)	THK (IN)	DIA (IN)	LENGTH (IN)	THREAD LENGTH (IN)	WIDTH (IN)	DEPTH (IN)
4.50	20.00	0.337	14.00	13.18	0.63	1.00	42.00	3.5	24.00	60.00

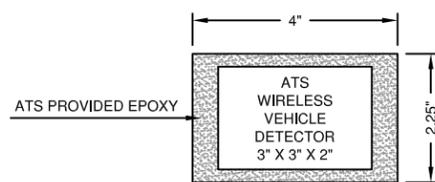
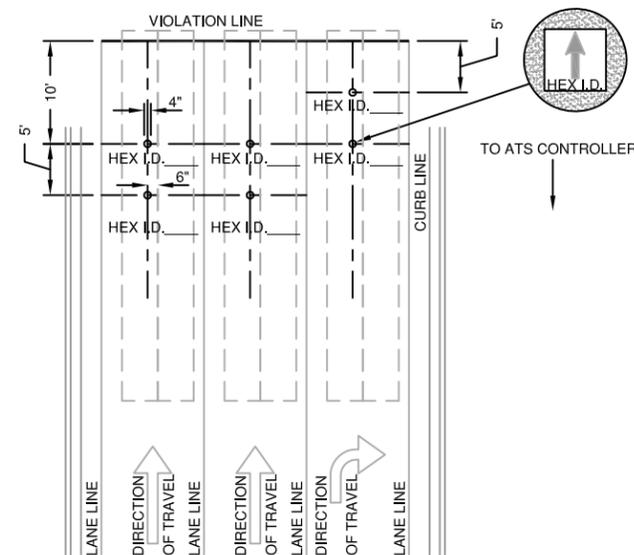
**REAR POLE DETAILS**  
US 76 / DAWSON ST AT 3RD ST  
WILMINGTON, NC

NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION

**1ST SUBMITTAL**  
DESIGNED BY: JB  
DATE: 11/09/15  
APPROVED BY:  
APPROVAL DATE:

JOB NUMBER  
**1259**  
SITE ID(S)  
WI517

SHEET NUMBER  
**4**  
OF 5 SHEETS



**DETAIL "A"  
WIRELESS VEHICLE DETECTION SENSORS**



IMAGE #1



IMAGE #2



IMAGE #3

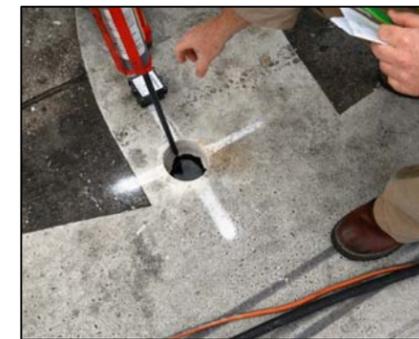


IMAGE #4



IMAGE #5



IMAGE #6



IMAGE #7

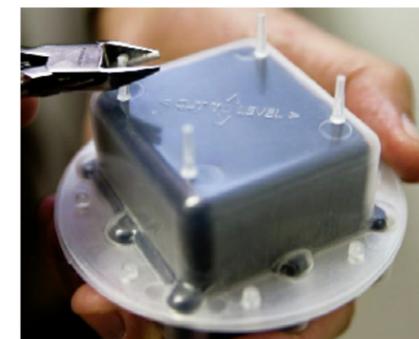


IMAGE #8



**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 "A")
2. MEASURE AND MARK 10', 15' & 5' FOR DEDICATED RIGHT TURN LANES FROM VIOLATION LINE. (SEE DETAIL "A")
3. 4" CORE DRILL CENTER OF MARKS @ A DEPTH OF 2½". JACK HAMMER/CHISEL OUT ASPHALT AS REQUIRED. (SEE IMAGES 1-3 ON THIS SHEET)
4. RECORD HEX ID FOR EACH WVD IN EXACT LOCATION PER LANE. RECORD (RED HEX ID INPUT) ON THE INTERSECTION PLAN. (SEE IMAGE 5 ON THIS SHEET)
5. VACUUM, WASH AND HEAT HOLE TO DRY MOISTURE IF NEEDED PRIOR TO EPOXY FILL. ENSURE THAT THE HOLE IS DRY AND COOL AS MOISTURE AND HEAT MAY IMPEDE THE CURING OF THE EPOXY. (SEE IMAGE 3 ON THIS SHEET)
6. TRIM SENSOR SHELL LEGS TO LEVEL AS NEEDED. ENSURE THAT THE SENSOR SHELL MUST REACH THE REQUIRED HEIGHT OF 3/8" TO 1/2". (SEE IMAGE 8)

**7. USE MANUFACTURERS EPOXY FILLER ONLY (TO BE SUPPLIED BY ATS).**

- A. FILL BOTTOM OF 4" CORE DRILLED HOLE WITH APPROXIMATELY 1" OF EPOXY. (SEE IMAGE 4 ON THIS SHEET)
- B. INSERT WVD WITH ORIENTATION ARROW IN THE SAME DIRECTION AS VEHICLE TRAVEL. WHEN PLACING THE SENSOR, IT MUST BE PRESSED DOWN FIRMLY TO PUSH OUT ANY AIR POCKETS, AND TO ENSURE THAT IT DOES NOT FLOAT UP WHEN THE REMAINING EPOXY IS APPLIED TO COMPLETELY COVER THE SENSOR. (SEE IMAGES 6 & 9 ON THIS SHEET)
- C. ENSURE THE SENSOR IS DRY AND CLEAN
- D. ENSURE THE SENSOR IS LEVEL.
- E. ENSURE THE LABEL IS VISIBLE, AND THAT YOU HAVE HEX ID RECORDED. (SEE IMAGE 5 ON THIS SHEET)
- F. FILL HOLE WITH REMAINING EPOXY TO ROAD SURFACE LEVEL. COMPLETELY COVERING THE SENSOR AND ITS SHELL. (SEE IMAGES 10 & 11 ON THIS SHEET)
- G. PROTECT THE EDGE OF THE CORE BY PLACING EPOXY AROUND THE EDGE OF THE ASPHALT.
8. ATS WVD SHALL NOT BE PLACED SO AS TO DAMAGE VEHICLE DETECTION LOOP WIRES.

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

NO.	BY	DATE	REVISION	NO.	BY	DATE	REVISION