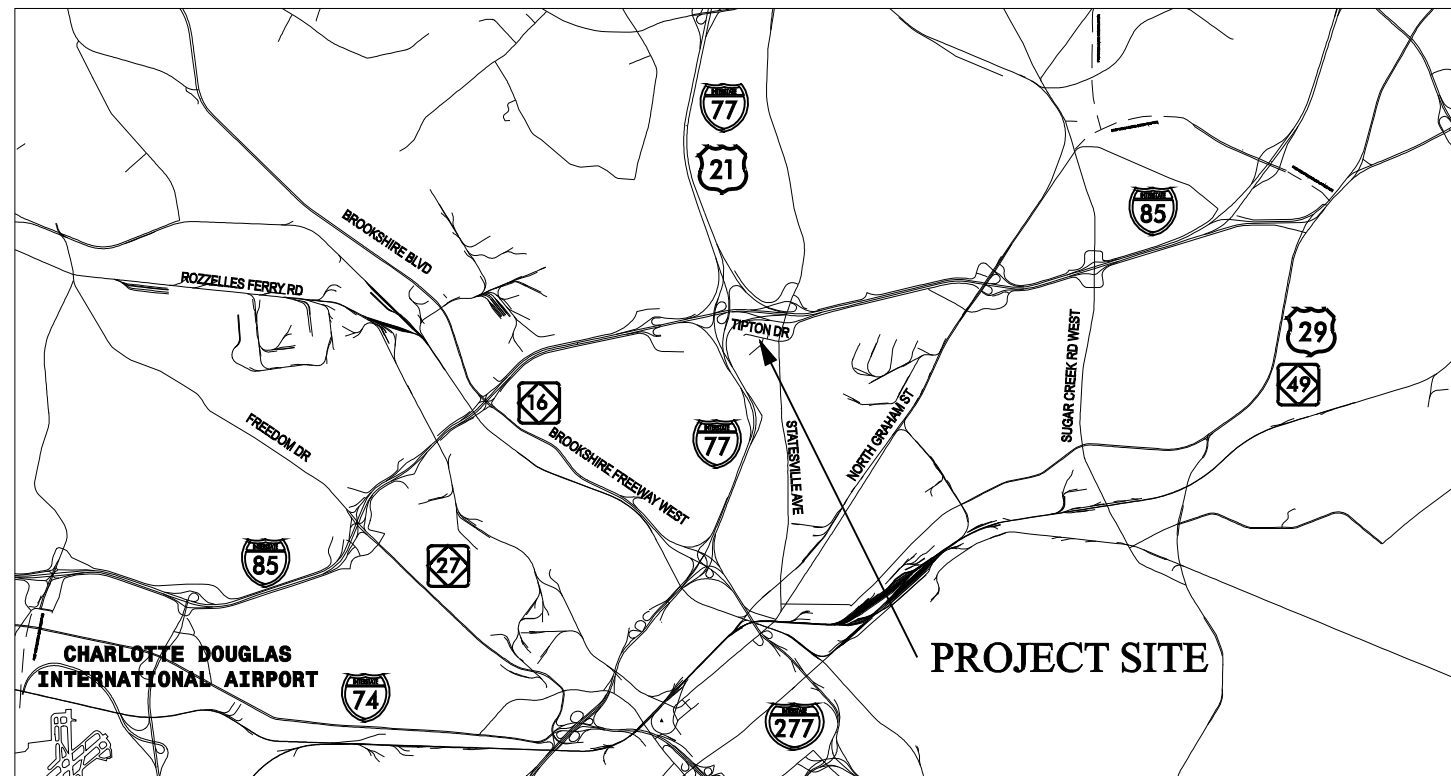
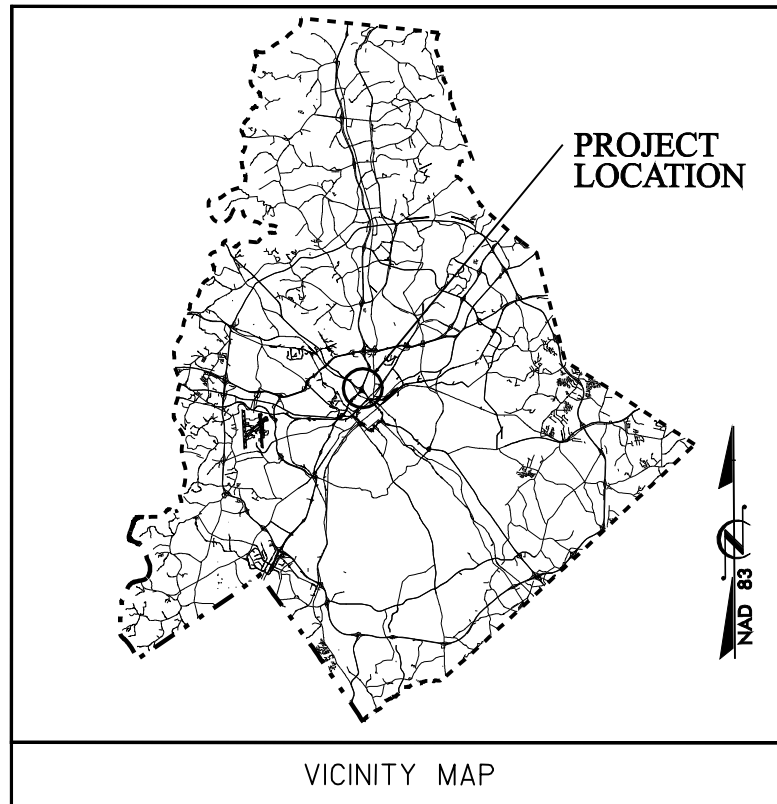


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED IMPROVEMENTS
ITS SYSTEM for METROLINA
REGIONAL TRANSPORTATION MANAGEMENT CENTER

MRTMC LIGHTNING AND SURGE PROTECTION
SYSTEM IMPROVEMENT



FINAL PLANS

04 / 05 / 2011

TIP PROJECT:

2006 STANDARD SPECIFICATIONS

LETTING DATE: SEE CONTRACT DOCUMENTS

PROJECT LENGTH = N/A



2327 Tipton Drive, Charlotte, NC, 28206

NCDOT CONTACTS:
METROLINA REGIONAL TRANSPORTATION MANAGEMENT CENTER

ANN LORSCHIEDER, PE, PTOE - REGIONAL ITS ENGINEER

ATKINS

5200 SEVENTY-SEVEN CENTER DRIVE, SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275
NC BEES # F-0328

H. ALFRED BADGETT, PE - PBS&J PROJECT MANAGER
BRAD SLOCUM, EI - PBS&J PROJECT ENGINEER

SEAL



H. Alfred Badgett PE
04-05-2011
SIGNATURE DATE

ROADWAY STANDARD DRAWINGS

INDEX OF SHEETS



THE FOLLOWING ROADWAY STANDARDS AS THEY APPEAR IN "ROADWAY STANDARD DRAWINGS" PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE ARE HEREBY CONSIDERED A PART OF THESE PLANS:

1	.....	TITLE SHEET
2	.....	INDEX OF SHEETS
3	.....	SUMMARY OF QUANTITIES
4	.....	GENERAL NOTES /LEGEND
5	.....	SITE PLAN
6	.....	RADIO TOWER PLAN DETAIL
7	.....	RADIO TOWER GROUND CONNECTION DETAIL
8	.....	RADIO HUT SURGE PROTECTION DETAIL
9	.....	GATE MOTOR PLAN DETAIL
10	.....	GATE MOTOR ELEVATION DETAIL
11	.....	BUILDING LAYOUT
12	.....	COMMUNICATIONS ROOM LAYOUT DETAIL
13	.....	ELECTRICAL ROOM DETAIL
14-15	.....	WIRING DETAILS
16	.....	ONE LINE ELECTRICAL DIAGRAM

STD. NO.	TITLE
1715.01	UNDERGROUND CONDUIT- TRENCHING
1716.01	JUNCTION BOXES

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ATKINS
5200 SEVENTY-SEVEN CENTER DRIVE
SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275
NC BEES # F-0326

 <small>Prepared for the Office of: Mecklenburg County 2327 Tipton Drive Charlotte, NC 28206</small>	INDEX OF SHEETS		 <small>SEAL 19962 ENGINEER H. ALFRED BUDGETT, P.E.</small>
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB		
SCALE NTS	REVISIONS	INIT.	DATE
SIGNATURE		DATE	
		04-05-2011	
CADD Filename: Index of Sheets.dgn			

ITEM	UNIT	PLAN SHEET									
		5	6	7	8	9	10	11	12	13	TOTAL
MOBILIZATION	LS	1	0	0	0	0	0	0	0	0	1
GROUND ROD ASSEMBLY (30', 5/8" COPPER CLAD STEEL)	EA	0	2	0	0	1	0	0	0	0	3
ELECTRICAL CONDUIT (EMT) (1")	LF	0	0	0	1	0	0	2	0	8	11
ELECTRICAL CONDUIT (EMT) (2")	LF	0	0	0	0	0	0	12	0	16	28
ELECTRICAL CONDUIT (PVC) (2")	LF	205	10	0	0	0	0	0	0	0	215
ELECTRICAL CONDUIT (RGS) (2")	LF	0	6	0	0	0	0	0	0	0	6
ELECTRICAL CONDUIT (FMT) (1")	LF	0	0	0	0	0	3	0	0	0	3
ELECTRICAL CONDUCTORS (NO. 2 AWG GROUND WIRE)	LF	0	150	0	0	0	0	4	0	0	154
ELECTRICAL CONDUCTORS (NO. 4 AWG GROUND WIRE)	LF	180	328	0	3	89	4	16	0	16	636
ELECTRICAL CONDUCTORS (3/0 INSULATED CONDUCTOR)	LF	0	54	0	0	0	0	0	0	0	54
ELECTRICAL CONDUCTORS (NO. 2 AWG INSULATED CONDUCTOR)	LF	0	620	0	0	0	0	24	0	32	676
ELECTRICAL CONDUCTORS (NO. 6 AWG INSULATED CONDUCTOR)	LF	0	0	0	25	6	8	30	0	68	137
ELECTRICAL CONDUCTORS (NO. 8 AWG INSULATED CONDUCTOR)	LF	0	0	0	276	0	0	30	729	30	1065
ELECTRICAL JUNCTION BOXES	EA	0	0	0	0	0	1	0	0	1	2
GFCI OUTLETS	EA	0	0	0	0	0	1	0	0	0	1
GENERIC SIGNAL ITEM (COVER PLATES)	LS	0	0	0	0	0	1	0	0	0	1
SURGE PROTECTION DEVICES (T-1/RS-232)	EA	0	0	0	0	0	0	0	13	0	13
SURGE PROTECTION DEVICES (RS-485/AUDIO)	EA	0	0	0	17	0	0	0	17	0	34
SURGE PROTECTION DEVICES (24V DC)	EA	0	0	0	0	0	0	3	0	3	6
SURGE PROTECTION DEVICES (120 VOLT)	EA	0	0	0	0	1	1	0	0	2	4
SURGE PROTECTION DEVICES (120/240 VOLTS)	EA	0	0	0	1	0	0	0	0	0	1
SURGE PROTECTION DEVICES (120/208 VOLTS)	EA	0	0	0	0	0	0	2	0	2	4
SURGE PROTECTION DEVICES (277/480 VOLTS)	EA	0	0	0	0	0	0	0	0	2	2
JUNCTION BOX (STANDARD SIZE)	EA	0	3	0	0	0	0	0	0	0	3
TRANSFORMER (277/480 TO 120/240 STEP DOWN)	EA	0	1	0	0	0	0	0	0	0	1
DISCONNECT/SAFETY SWITCH	EA	0	1	0	0	0	0	0	0	0	1
ELECTRICAL CIRCUIT BREAKERS	LS	0	0	0	0	0	0	0	0	1	1

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ATKINS
 5200 SEVENTY-SEVEN CENTER DRIVE
 SUITE 500
 CHARLOTTE, NORTH CAROLINA 28217
 (704) 522-7275
 NC BEES # F-0326

 Prepared for the Office of: Mecklenburg County COUNTY OF TRANSPORTATION Transportation Management Office 2327 Tipton Drive Charlotte, NC 28206	SUMMARY OF QUANTITIES		 SEAL 19962 H. Alfred Baggett, P.E.
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	REVISIONS _____ _____ _____		INIT. DATE _____ _____
SCALE NTS	SIGNATURE DATE _____ 04-05-2011		CAD File name: Quantities.dgn

LEGEND

—FO—	NEW FIBER OPTIC COMMUNICATIONS CABLE		NEW SIDEWALK GUY ASSEMBLY	■	EXISTING OVERSIZED OR SPECIAL-SIZED JUNCTION BOX
—EXT—	EXISTING COMMUNICATIONS CABLE		EXISTING SIDEWALK GUY ASSEMBLY	⊙	EXISTING COMMUNICATIONS MANHOLE
—REM—	EXISTING COMMUNICATIONS CABLE TO BE REMOVED		NEW CONTROLLER AND CABINET	EOP	EDGE OF PAVEMENT
—	NEW AND EXISTING AERIAL GUY ASSEMBLY		EXISTING CONTROLLER AND CABINET	BOC	BACK OF CURB
— · · · · ·	NEW CONDUIT		NEW SPLICE CABINET	EOL	EDGE OF LANE
— · · · · ·	EXISTING CONDUIT		EXISTING SPLICE CABINET	▶■	EXISTING CCTV CAMERA ASSEMBLY
—DD—	NEW DIRECTIONAL DRILLED CONDUIT		NEW AERIAL SPLICE ENCLOSURE		
—B&J—	NEW BORED AND JACKED CONDUIT		EXISTING AERIAL SPLICE ENCLOSURE		
—	RAILROAD TRACK		NEW UNDERGROUND SPLICE ENCLOSURE IN NEW SPECIAL-SIZED JUNCTION BOX		
—W—	EXISTING WATER LINE		NEW UNDERGROUND SPLICE ENCLOSURE IN EXISTING SPECIAL-SIZED JUNCTION BOX		
-x-x-	FENCE		EXISTING UNDERGROUND SPLICE ENCLOSURE IN EXISTING SPECIAL-SIZED JUNCTION BOX		
○	NEW WOOD POLE		NEW CABLE STORAGE RACKS (SNOW SHOES)		
●	EXISTING WOOD POLE		EXISTING CABLE STORAGE RACKS (SNOW SHOES)		
□	NEW METAL POLE		NEW STANDARD JUNCTION BOX		
□	EXISTING METAL POLE		EXISTING STANDARD JUNCTION BOX		
SP	SIGNAL POLE		NEW OVERSIZED OR SPECIAL-SIZED JUNCTION BOX		
—)	NEW STANDARD GUY ASSEMBLY				
—)	EXISTING STANDARD GUY ASSEMBLY				

ABBREVIATIONS

CMUD CHARLOTTE MECKLENBURG UTILITIES DEPARTMENT

GENERAL NOTES

1. THESE PLANS WERE PREPARED FROM THE ORIGINAL BUILDING PLANS AND FIELD INVESTIGATIONS IN JANUARY 2011. ACTUAL CONDITIONS IN THE FIELD AT THE TIME OF CONSTRUCTION MAY BE DIFFERENT FROM THOSE SHOWN IN THE PLANS.
2. THE FIELD LOCATION OF ANY ITEM TO BE INSTALLED AS PART OF THIS PROJECT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. THE PLAN SHEETS HAVE BEEN DEVELOPED AS CLOSE TO SCALE AS PRACTICAL. ACTUAL FIELD CONDITIONS, HOWEVER, SHALL PROVIDE THE BASIS FOR APPLYING THE WORK SHOWN.
4. THE ROADWAY STANDARD DRAWINGS AND THE DETAILS PROVIDED IN THIS PLAN SET SHALL ALL APPLY TO ALL WORK REQUIRED IN THIS PROJECT. WHETHER A PARTICULAR DETAIL IS SPECIFICALLY REFERENCED TO A WORK ITEM OR NOT, IN THE EVENT OF A CONFLICT, THE ORDER OF PRECEDENCE SHALL BE: THE PROJECT SPECIAL PROVISIONS, THE PLAN SET - INCLUDING DETAILS, SUPPLEMENTAL SPECIFICATIONS, THE STANDARD SPECIFICATIONS, AND THEN THE ROADWAY STANDARD DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING THE PROPER DETAILS.
5. ALL WORK SHOWN ON THESE PLANS SHALL BE PERFORMED BY THE CONTRACTOR UNLESS IT IS SPECIFICALLY NOTED THAT THE WORK WILL BE PERFORMED BY OTHERS.
6. ALL SURGE PROTECTION DEVICES FOUND ALREADY CONNECTED TO ANY PANEL SHALL BE REMOVED AND DELIVERED TO THE BUILDING ENGINEER AS SHOWN IN PLANS.
7. ALL ELECTRICAL WORK SHALL BE CONDUCTED BY A LICENSED ELECTRICIAN.
8. ALL SPD'S SHALL BE LOCATED AS CLOSE TO THE PANELS AS POSSIBLE.
9. ALL AC POWER SPD'S SHALL BE CONNECTED DIRECTLY TO THE DISTRIBUTION BUS BARS IN ACCORDANCE WITH NEC PRACTICE USING #6 AWG CABLES THAT INCLUDE ALL PHASE WIRES, NEUTRAL, AND EARTH.
10. THE AC POWER SPD'S PROCURED SHALL BE UL 1449 3RD EDITION WITH THE MINIMUM SPECIFICATION LISTED IN THE PROJECT SPECIFICATIONS DOCUMENT.
11. ALL DATA AND COMMUNICATIONS SPD'S SHALL BE DIN RAIL MOUNTED.
12. ALL DIN RAILS SHALL BE CONNECTED DIRECTLY TO THE EARTHING SYSTEM BY THE SHORTEST ROUTE POSSIBLE.
13. ALL ELECTRICAL CONDUCTORS SHALL BE INSULATED UNLESS NOTED AS "BARE".

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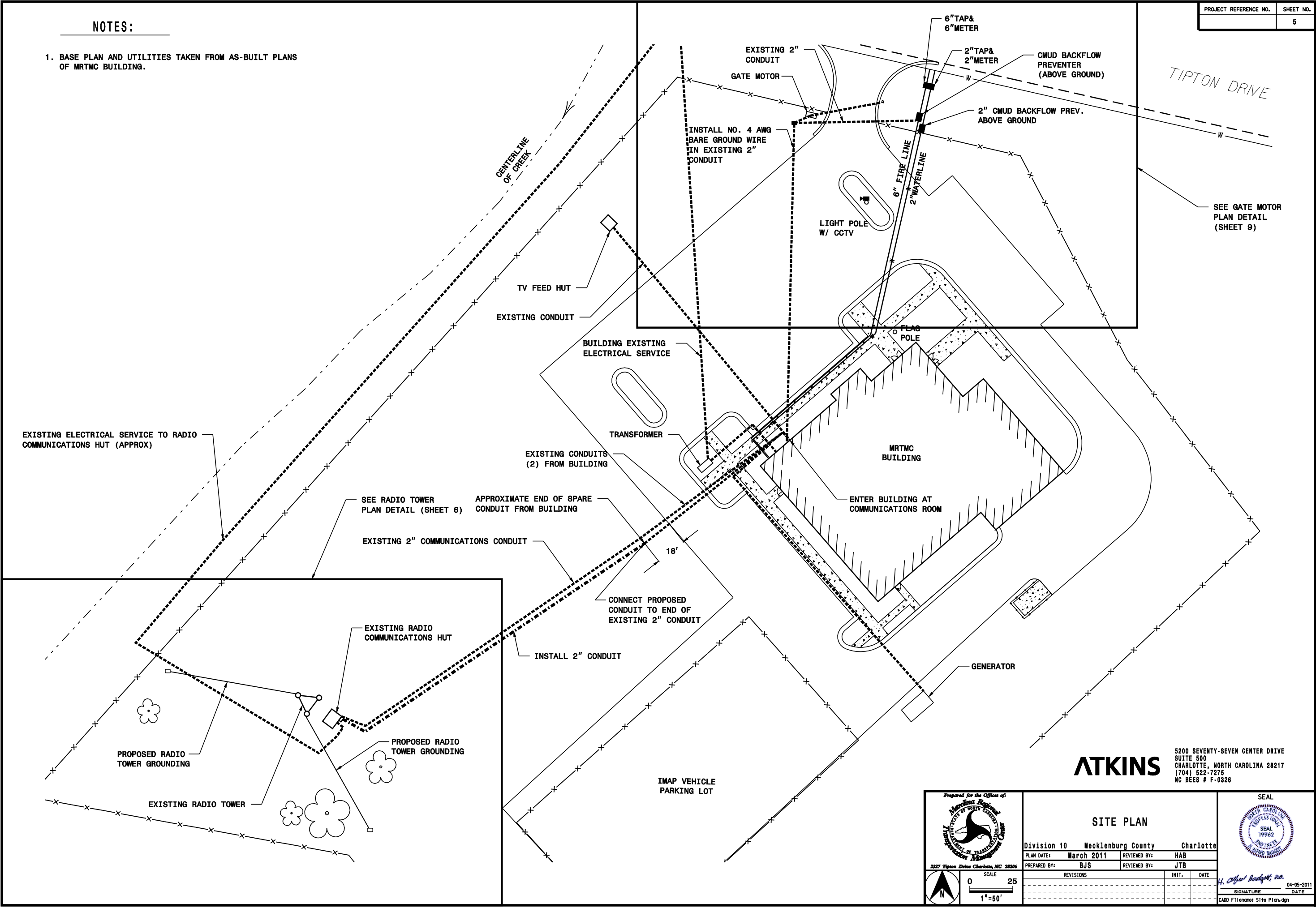
5200 SEVENTY-SEVEN CENTER DRIVE
SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275
NC BEES # F-0326

 <small>Prepared for the Office of: Mecklenburg County Department of Transportation 2327 Tipton Drive Charlotte, NC 28206</small>	GENERAL NOTES / LEGEND		 <small>SEAL 19962 H. Alfred Badgett, P.E.</small>
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB		
SCALE	REVISIONS	INIT.	DATE
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NOTES:

1. BASE PLAN AND UTILITIES TAKEN FROM AS-BUILT PLANS OF MRTMC BUILDING.



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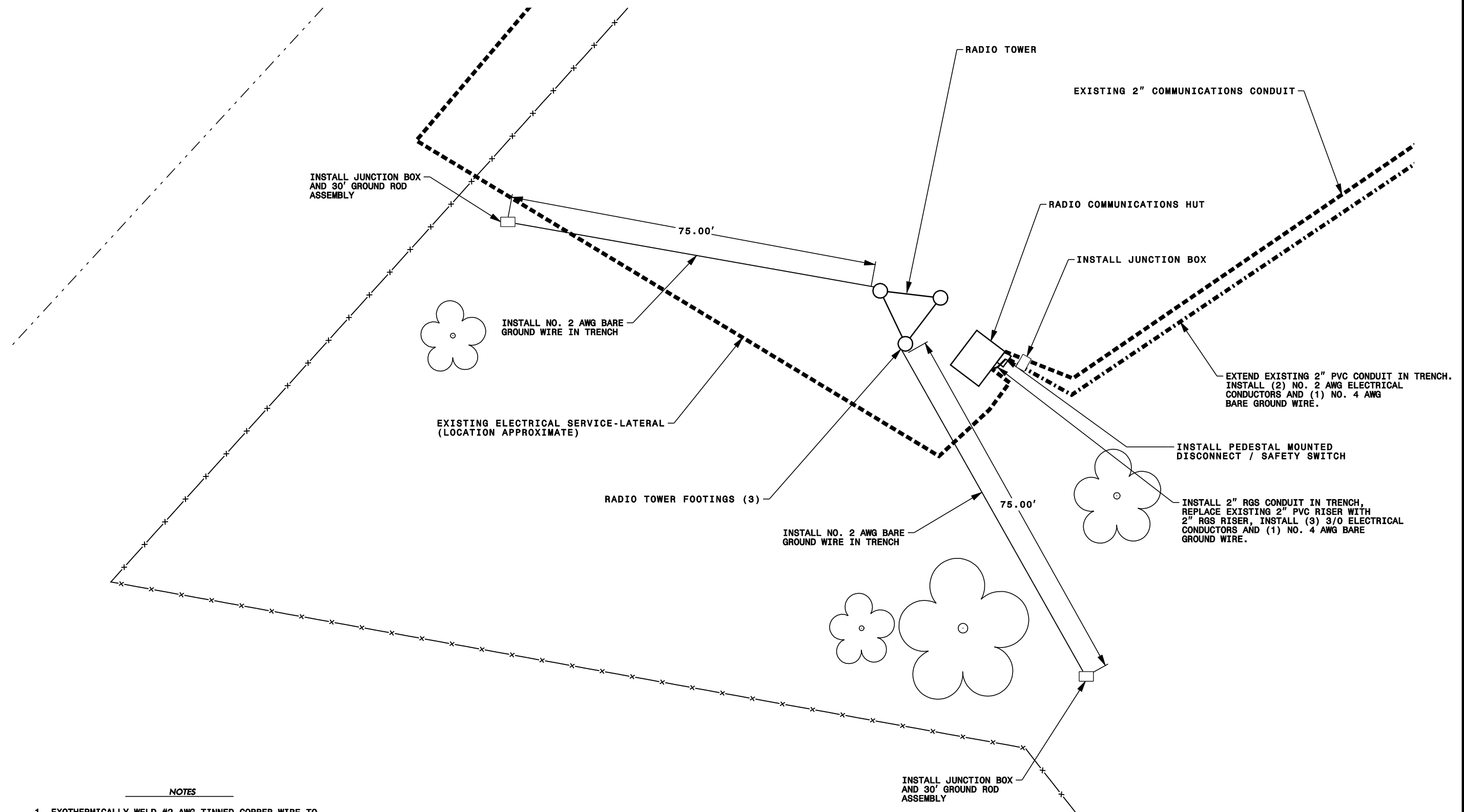
 2327 Tipton Drive Charlotte, NC 28206

SCALE
 0 25
 1"=50'

SITE PLAN	
Division 10	Mecklenburg County Charlotte
PLAN DATE: March 2011	REVIEWED BY: HAB
PREPARED BY: BJS	REVIEWED BY: JTB
REVISIONS	INIT. DATE

SEAL

 H. Alfred Baggett, P.E.
 SIGNATURE DATE
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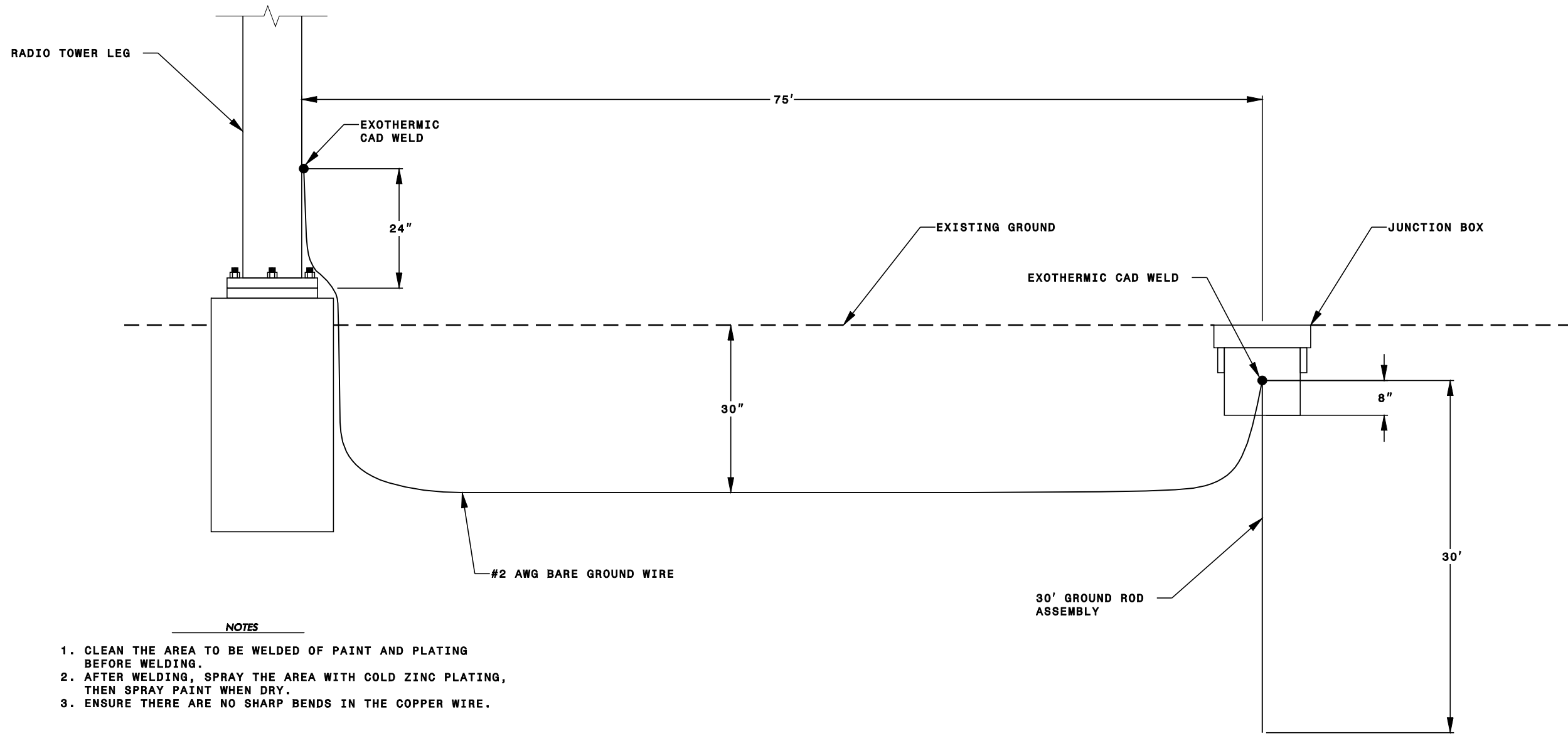
NOTES

1. EXOTHERMICALLY WELD #2 AWG TINNED COPPER WIRE TO APPROPRIATE LEG OF TOWER AT ONE END AND TO THE HEAD OF THE DRIVEN GROUND ROD ASSEMBLY AT THE OTHER. (SEE RADIO TOWER GROUND CONNECTION DETAIL)
2. INSTALL NEW ELECTRICAL SERVICE FROM MAIN BUILDING AND DISCONNECT ELECTRICAL SERVICE FROM DUKE POWER TO RADIO HUT BEFORE INSTALLING RADIO TOWER GROUNDING SYSTEM.

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	Division 10	Mecklenburg County		Charlotte
	PLAN DATE: March 2011	REVIEWED BY: HAB		
PREPARED BY: BJS	REVIEWED BY: JTB			
SCALE: 1"=20'	REVISIONS	INIT.	DATE	

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NOTES

1. CLEAN THE AREA TO BE WELDED OF PAINT AND PLATING BEFORE WELDING.
2. AFTER WELDING, SPRAY THE AREA WITH COLD ZINC PLATING, THEN SPRAY PAINT WHEN DRY.
3. ENSURE THERE ARE NO SHARP BENDS IN THE COPPER WIRE.

NOTES

1. EACH GROUND ROD ASSEMBLY SHALL CONSIST OF 3 X 10' SECTIONS.
2. GROUND ROD SHALL BE DRIVEN THROUGH BOX ALLOWING FOR ACCESS TO THE TOP OF THE GROUND ROD FOR ONGOING TESTS AND MEASUREMENTS USING A "CLAMP-ON" METER.
3. USE NON-CONDUCTIVE JUNCTION BOX AND COVER.

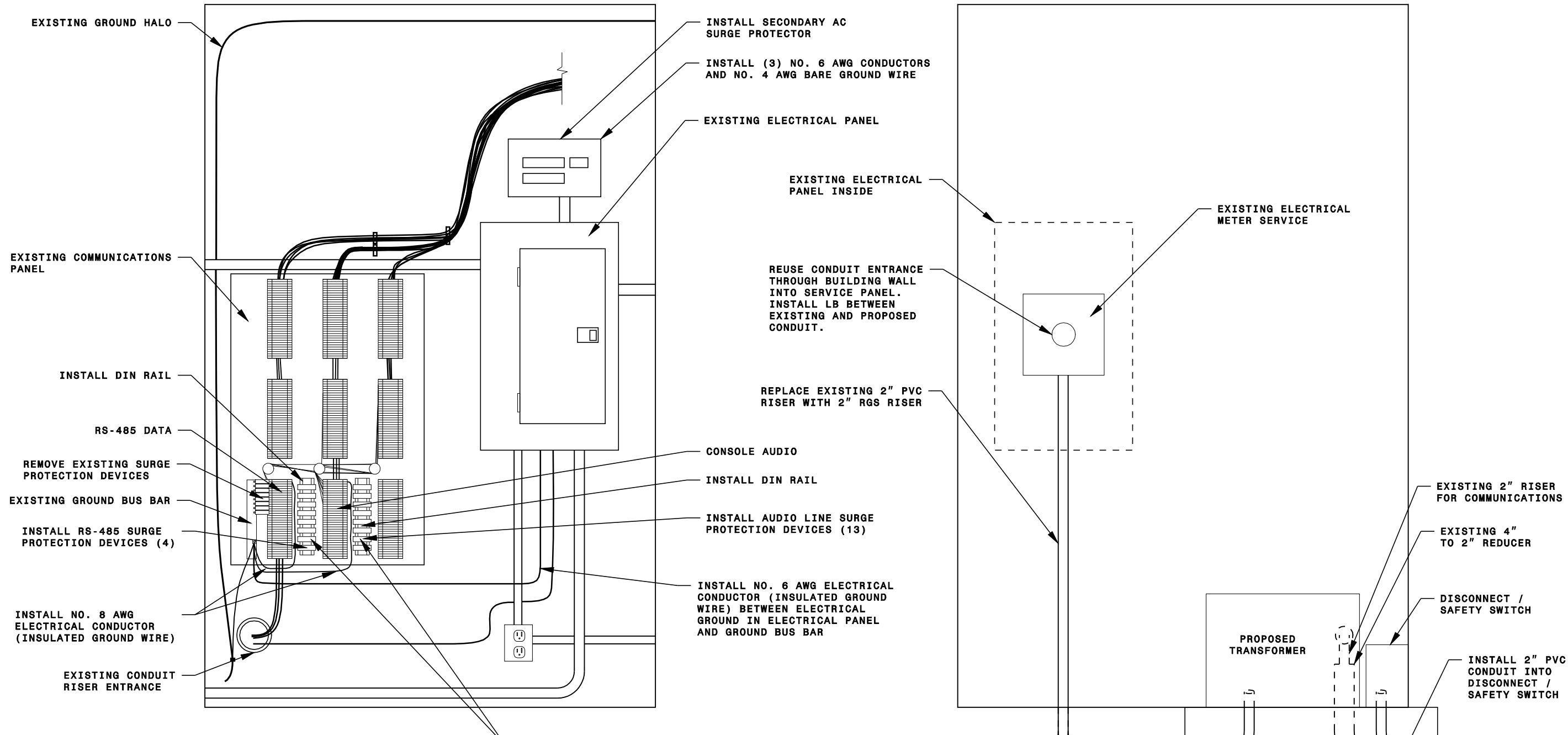
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 Prepared for the Office of: Mecklenburg County DIVISION OF TRANSPORTATION 2327 Tipton Drive Charlotte, NC 28206	RADIO TOWER GROUND CONNECTION DETAIL		 SEAL 19962 H. Alfred Baggett, P.E.
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	SCALE: NTS REVISIONS: _____ INIT. DATE _____ _____	
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RADIO HUT
SOUTH INSIDE WALL

RADIO HUT
SOUTH OUTSIDE WALL



- CONSTRUCTION NOTES:**
1. MINIMIZE DOWNTIME OF RADIO HUT POWER. COORDINATE WORK WITH ENGINEER.
 2. REPLACE EXISTING SURGE PROTECTION DEVICES FROM RS-485 DATA.
 3. INSTALL CONSOLE AUDIO SURGE PROTECTION DEVICE.
 4. INSTALL SECONDARY AC SURGE PROTECTOR.
 5. BOND SURGE PROTECTION DEVICES TO HUT GROUNDING SYSTEM.
 6. INSTALL NEW ELECTRICAL SERVICE FROM MAIN BUILDING.
 7. REMOVE EXISTING ELECTRICAL SERVICE.
 8. REMOVE BACK-UP DROP CORD.

INSTALL (8) NO. 8 AWG CONDUCTORS TO EACH SPD DEVICE

CAP AND ABANDON EXISTING 2" PVC CONDUIT

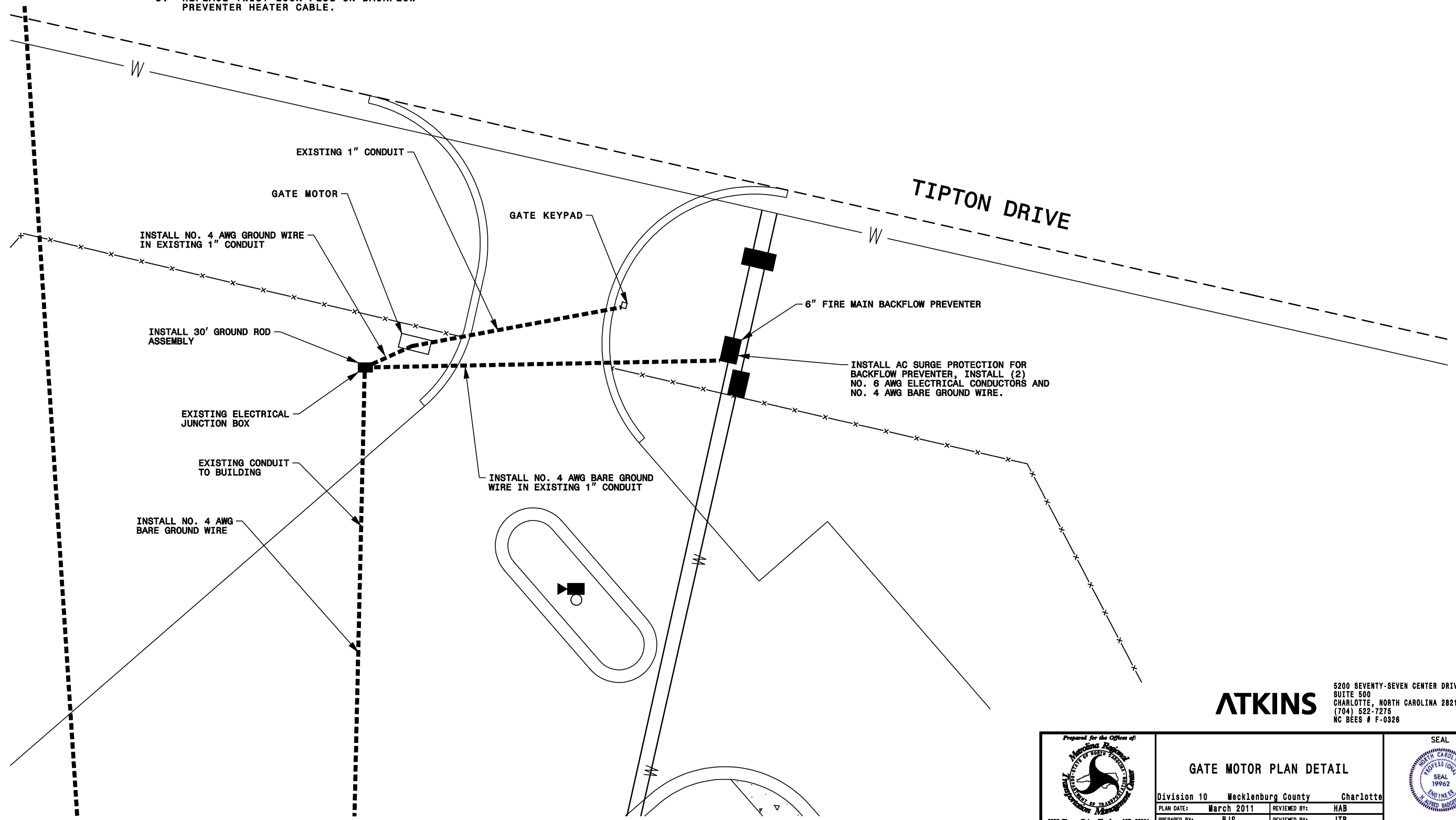
INSTALL 2" PVC CONDUIT, INSTALL (3) 3/0 AWG ELECTRICAL CONDUCTORS AND (1) NO. 4 AWG BARE GROUND WIRE

	RADIO HUT SURGE PROTECTION DETAIL		
	Division 10 Mecklenburg County Charlotte		
PLAN DATE: March 2011	REVIEWED BY: HAB		
PREPARED BY: BJS	REVIEWED BY: JTB		
SCALE: NTS	REVISIONS:	INIT.	DATE
		5200 SEVENTY-SEVEN CENTER DRIVE SUITE 500 CHARLOTTE, NORTH CAROLINA 28217 (704) 522-7275 NC BEES # F-0326	

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NOTES:

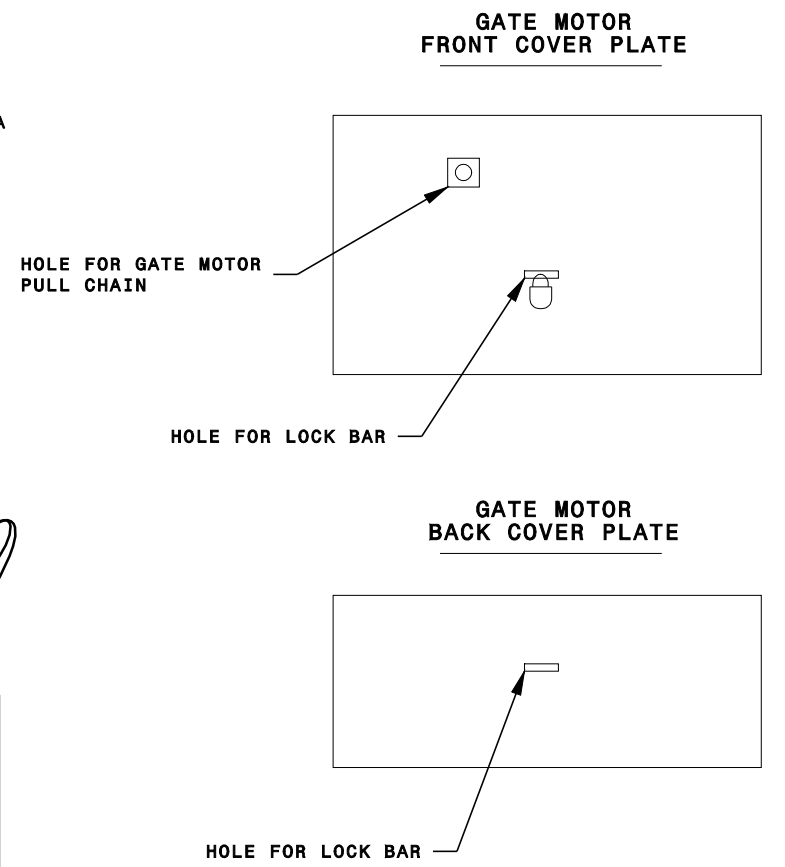
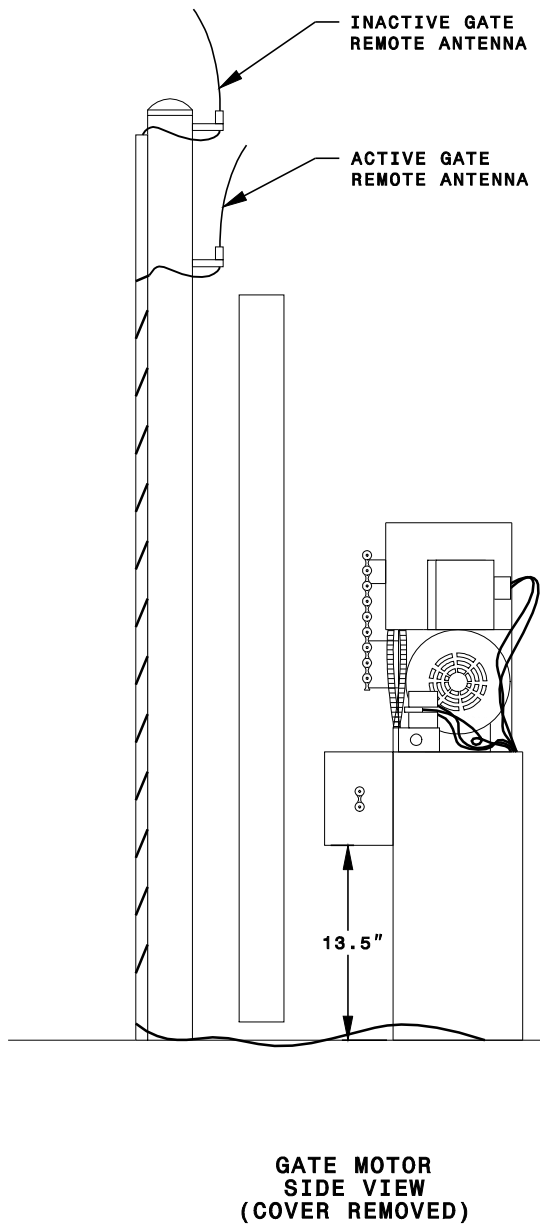
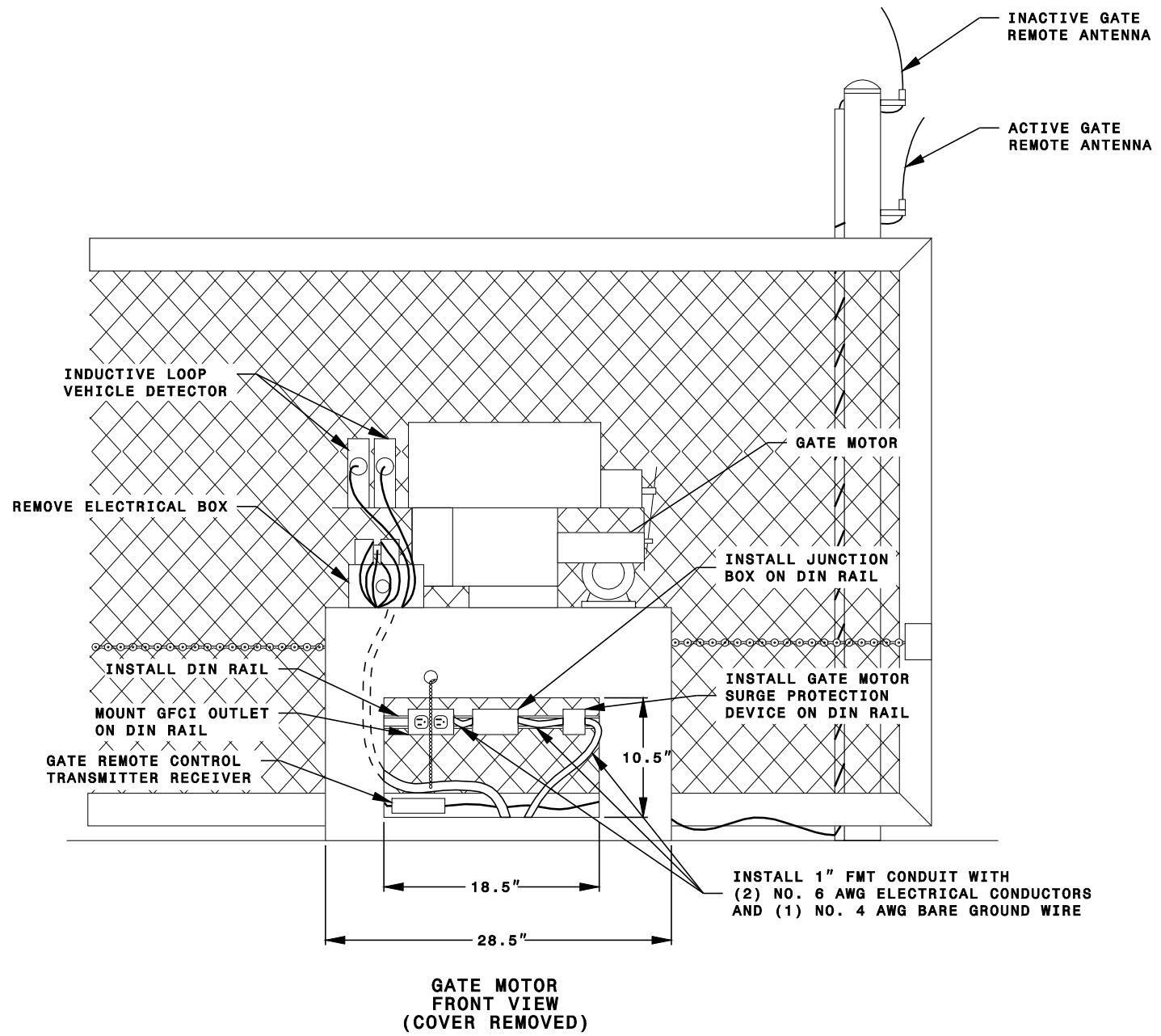
1. INSTALL GROUND ROD IN EXISTING PULLBOX.
2. TIE GROUND FROM GATE MOTOR DIN RAIL TO GROUND ROD IN EXISTING PULLBOX.
3. INSTALL SURGE PROTECTION DEVICE ON WOOD 4x4 POLE INSIDE 6" FIRE MAIN BACKFLOW PREVENTER HOUSING.
4. TIE GROUND FROM BACKFLOW PREVENTER TO GROUND ROD IN EXISTING JUNCTION BOX.
5. REPLACE TWIST-LOCK PLUG ON BACKFLOW PREVENTER HEATER CABLE.



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	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	<table border="1"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REVISIONS	INIT.	DATE								
REVISIONS	INIT.	DATE												
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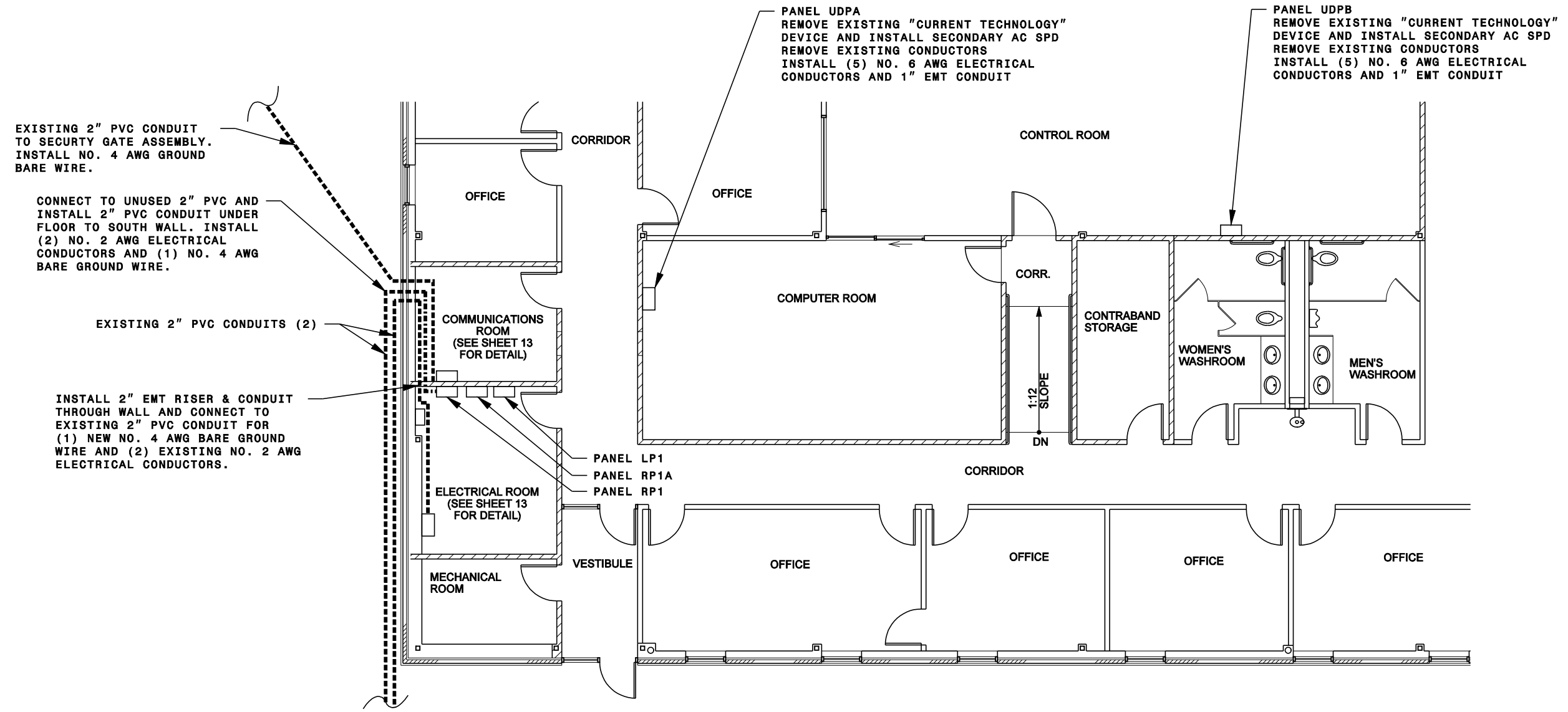
NOTES

1. FURNISH AND INSTALL TWO NEW REMOVABLE AND LOCKABLE COVER PLATES FOR EXPOSED AREA BELOW GATE MOTOR TO PROTECT DEVICES FROM WEATHER AND VANDALISM. VERIFY COVER PLATE DIMENSIONS TO ENSURE FIT.
2. GROUND SURGE PROTECTION DEVICE TO NO. 4 BARE GROUND WIRE.
3. PLUG EXISTING POWER SUPPLIES FOR REMOTE CONTROL TRANSMITTERS INTO GFCI OUTLET.
4. SPLICE AC POWER TO GATE MOTOR, LOOP DETECTORS AND OTHER USES IN ELECTRICAL JUNCTION BOX.

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	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	SCALE: NTS REVISIONS: _____ INIT. DATE: _____ _____ _____	
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NOTES:

- GROUND SURGE PROTECTION DEVICES TO BUILDING GROUND.

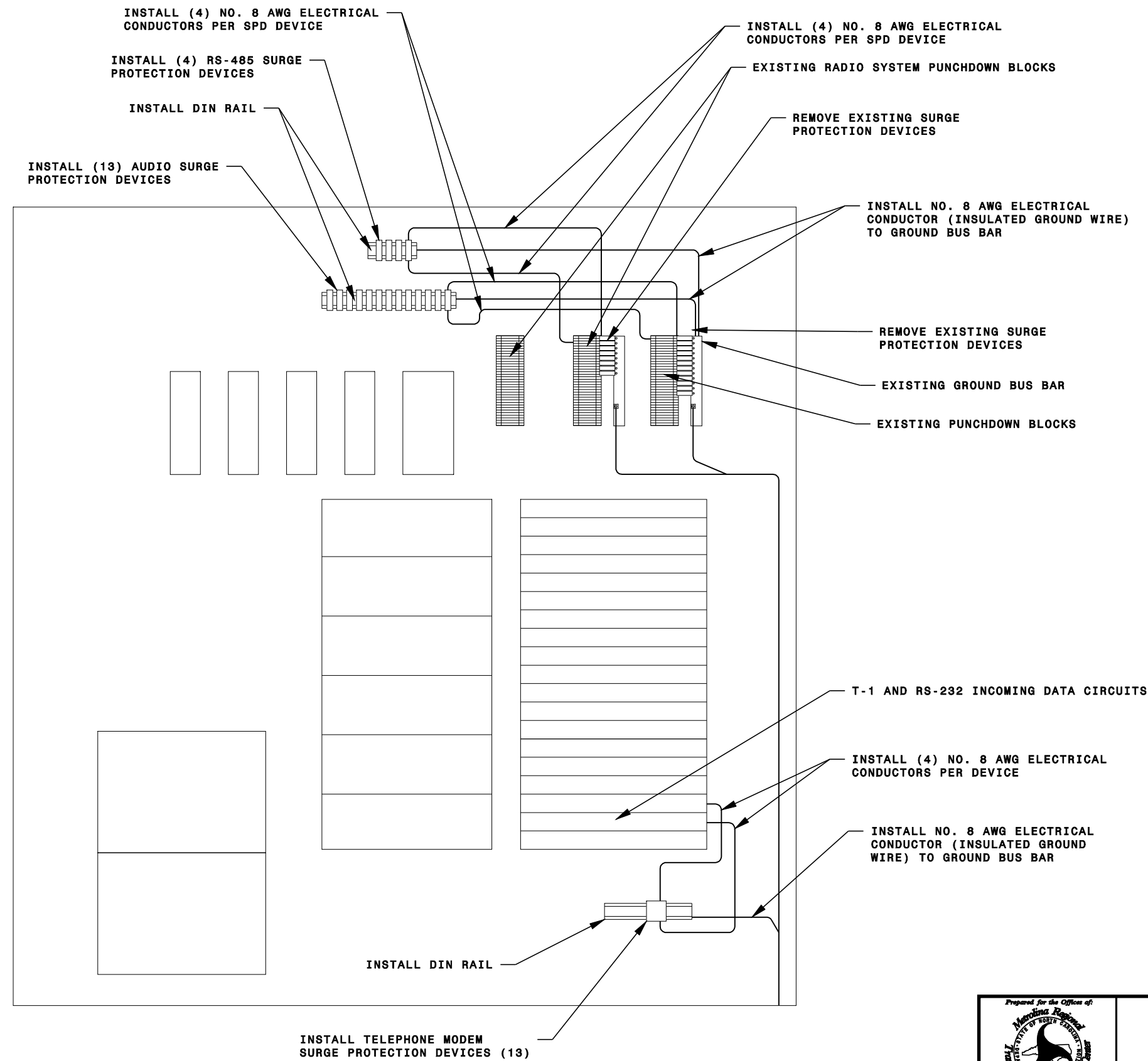
INSTALL GENERATOR ENUNCIATOR
SPDS (3) AND (5) NO. 8 AWG
ELECTRICAL CONDUCTORS
FOR EACH SBD IN
GENERATOR HOUSING
(OUTSIDE OF BUILDING)
SEE ALSO SHEET 5 FOR
LOCATION)

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NC BEES # F-0326

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 Prepared for the Office of: Mecklenburg County DEPARTMENT OF TRANSPORTATION Transportation Management Office 2327 Tipton Drive Charlotte, NC 28206	BUILDING LAYOUT		 SEAL 19962 H. Alfred Baggett, P.E.											
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	<table border="1"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REVISIONS	INIT.	DATE								
REVISIONS	INIT.	DATE												
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**COMMUNICATIONS ROOM WALL
ELEVATION VIEW**



INSTALL (4) NO. 8 AWG ELECTRICAL CONDUCTORS PER SPD DEVICE

INSTALL (4) RS-485 SURGE PROTECTION DEVICES

INSTALL DIN RAIL

INSTALL (13) AUDIO SURGE PROTECTION DEVICES

INSTALL (4) NO. 8 AWG ELECTRICAL CONDUCTORS PER SPD DEVICE

EXISTING RADIO SYSTEM PUNCHDOWN BLOCKS

REMOVE EXISTING SURGE PROTECTION DEVICES

INSTALL NO. 8 AWG ELECTRICAL CONDUCTOR (INSULATED GROUND WIRE) TO GROUND BUS BAR

REMOVE EXISTING SURGE PROTECTION DEVICES

EXISTING GROUND BUS BAR

EXISTING PUNCHDOWN BLOCKS

T-1 AND RS-232 INCOMING DATA CIRCUITS

INSTALL (4) NO. 8 AWG ELECTRICAL CONDUCTORS PER DEVICE

INSTALL NO. 8 AWG ELECTRICAL CONDUCTOR (INSULATED GROUND WIRE) TO GROUND BUS BAR

INSTALL DIN RAIL

INSTALL TELEPHONE MODEM SURGE PROTECTION DEVICES (13)



NOTES:

- GROUND SURGE PROTECTION DEVICES TO GROUND BUS BAR.

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NC BEES # F-0326

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23633

 Prepared for the Office of: Mecklenburg County DEPARTMENT OF TRANSPORTATION Transportation Management Office 2327 Tipton Drive Charlotte, NC 28206	COMMUNICATIONS ROOM LAYOUT DETAIL		SEAL  SEAL 19962 H. Alfred Badgett, P.E.
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	SCALE: NTS REVISIONS: _____ INIT. DATE: _____ _____ _____		SIGNATURE: _____ DATE: 04-05-2011 CADD Filename: Comm Room Layout.dgn

POWER ROOM
NORTHWEST WALL

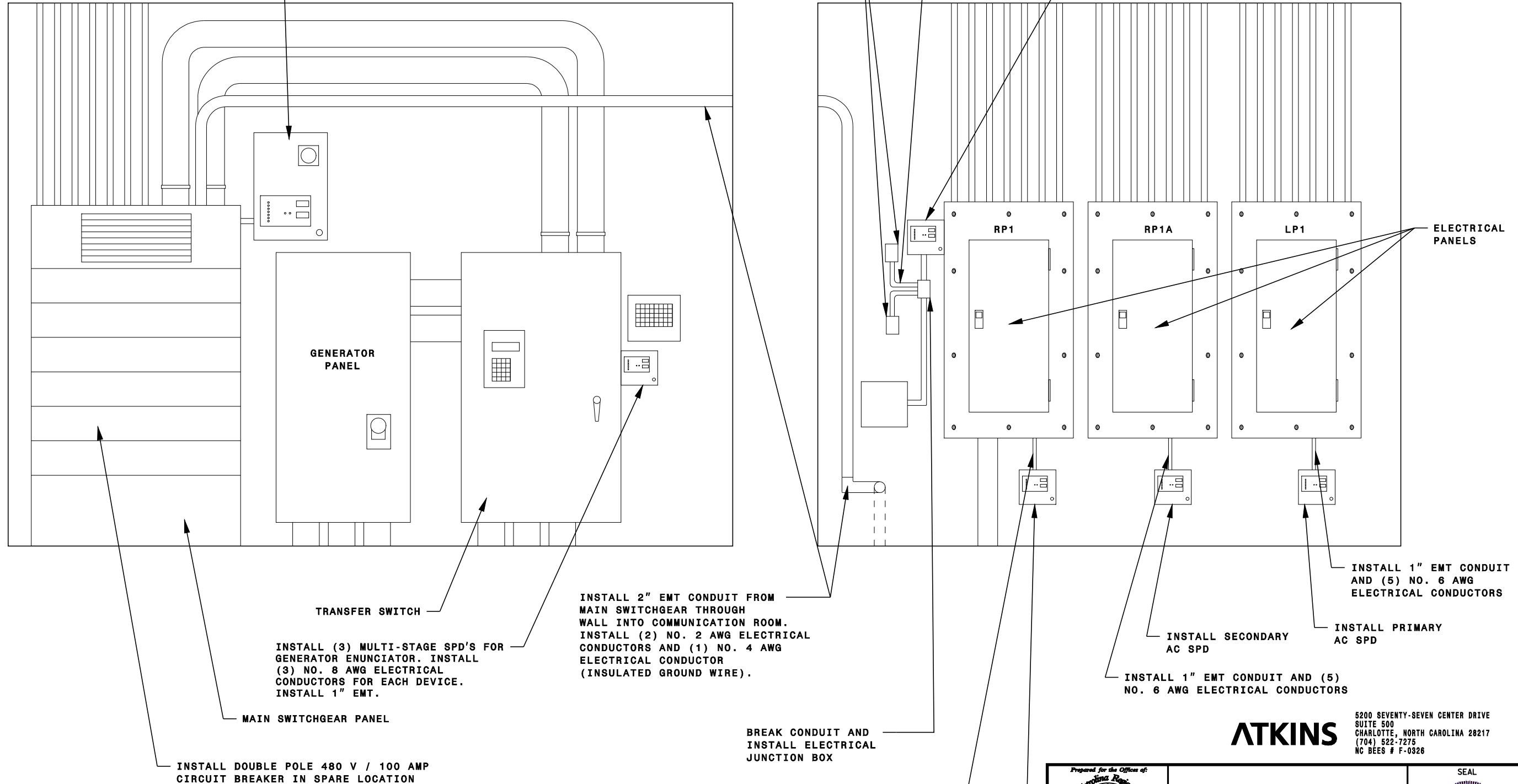
POWER ROOM
NORTHEAST WALL

REMOVE EXISTING "CURRENT TECHNOLOGIES" DEVICE AND INSTALL PRIMARY AC SPD, INSTALL (5) NO. 6 AWG ELECTRICAL CONDUCTORS

INSTALL SBDS (2) FOR GATE MOTOR AND BACKFLOW PREVENTER. FOR EACH DEVICE INSTALL (2) NO. 6 AWG ELECTRICAL CONDUCTORS AND (1) NO. 4 AWG BARE GROUND WIRE

INSTALL 1" EMT CONDUITS TO NEW SBDS

REMOVE EXISTING "CURRENT TECHNOLOGIES" SPD DEVICE. INSTALL 1" EMT CONDUIT FROM ELECTRICAL JUNCTION BOX TO RP1.



GENERATOR PANEL

MAIN SWITCHGEAR PANEL

TRANSFER SWITCH

INSTALL DOUBLE POLE 480 V / 100 AMP CIRCUIT BREAKER IN SPARE LOCATION

INSTALL (3) MULTI-STAGE SPD'S FOR GENERATOR ENUNCIATOR. INSTALL (3) NO. 8 AWG ELECTRICAL CONDUCTORS FOR EACH DEVICE. INSTALL 1" EMT.

INSTALL 2" EMT CONDUIT FROM MAIN SWITCHGEAR THROUGH WALL INTO COMMUNICATION ROOM. INSTALL (2) NO. 2 AWG ELECTRICAL CONDUCTORS AND (1) NO. 4 AWG ELECTRICAL CONDUCTOR (INSULATED GROUND WIRE).

BREAK CONDUIT AND INSTALL ELECTRICAL JUNCTION BOX

INSTALL 1" EMT CONDUIT AND (5) NO. 6 AWG ELECTRICAL CONDUCTORS

INSTALL SECONDARY AC SPD

RP1

RP1A

LP1

ELECTRICAL PANELS

INSTALL 1" EMT CONDUIT AND (5) NO. 6 AWG ELECTRICAL CONDUCTORS



INSTALL SECONDARY AC SPD

INSTALL PRIMARY AC SPD

INSTALL 1" EMT CONDUIT AND (5) NO. 6 AWG ELECTRICAL CONDUCTORS

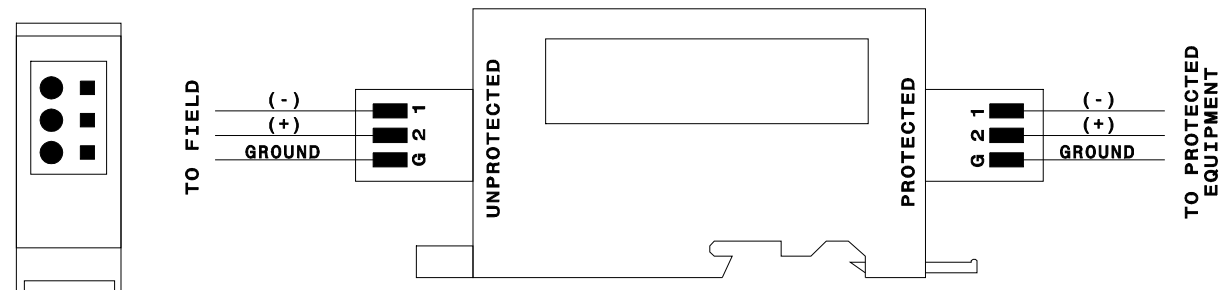
ATKINS

5200 SEVENTY-SEVEN CENTER DRIVE
SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275
NC BEES # F-0326

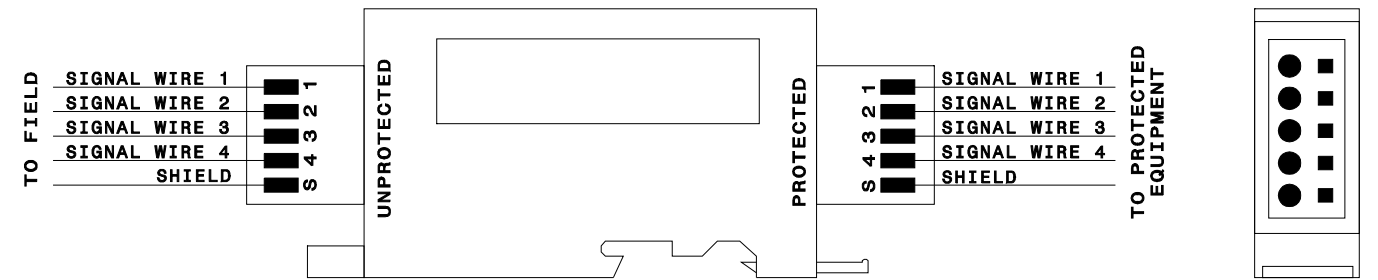
 Prepared for the Office of: Mecklenburg County Department of Transportation 2327 Tipton Drive Charlotte, NC 28206	ELECTRICAL ROOM DETAIL		 SEAL 19962 H. Alfred Bredgett, P.E.
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	SCALE: NTS REVISIONS: _____ INIT. DATE _____ SIGNATURE: _____ DATE: 04-05-2011	

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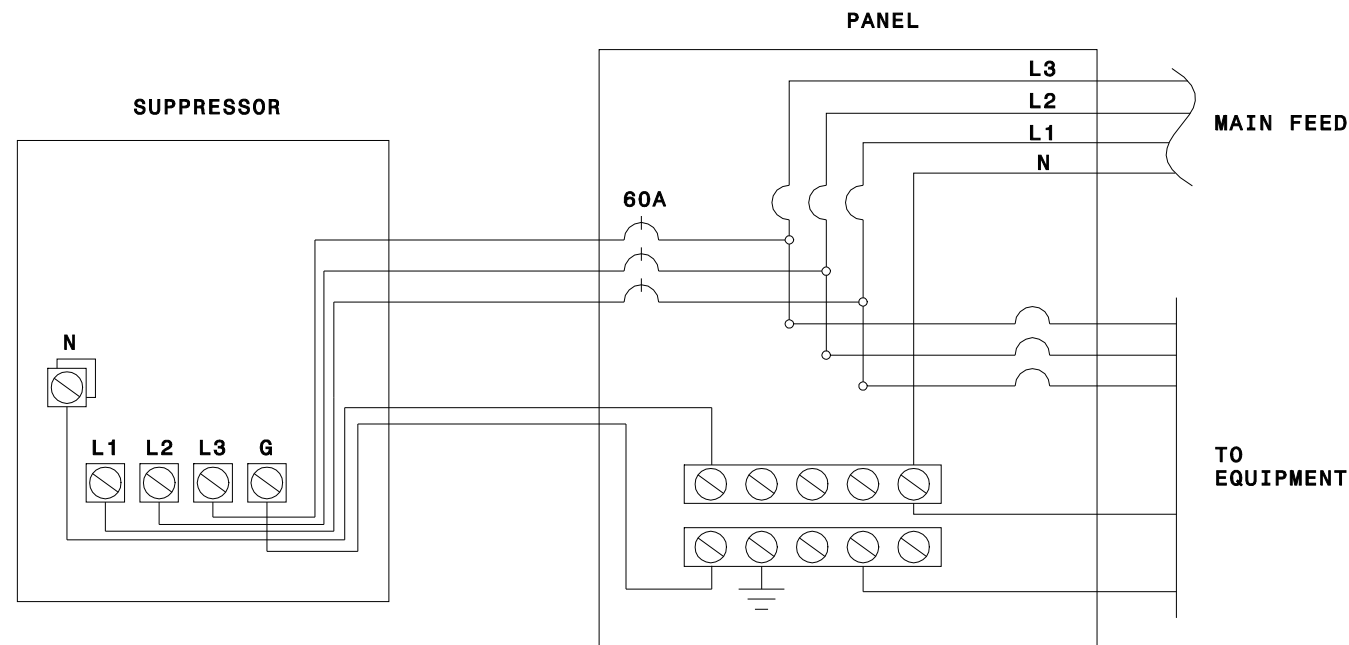
120V AC POWER SURGE SUPPRESSION DEVICE
FOR DIN RAIL DEVICE WIRING DIAGRAM



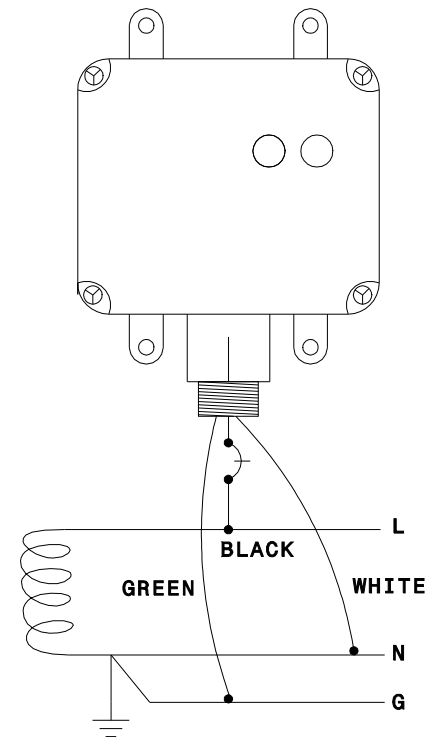
RS-232, T-1, RS-485 SURGE SUPPRESSION DEVICE
FOR DIN RAIL DEVICE WIRING DIAGRAM AND 24V DC CIRCUITS





120/208V THREE PHASE SURGE PROTECTION DEVICE
FOR 4W WYE FOR RP1, RP1A, LP1, UDPA, UDPB &
277/480V THREE PHASE 4W WYE FOR MAIN SWITCHGEAR
WIRING DIAGRAM

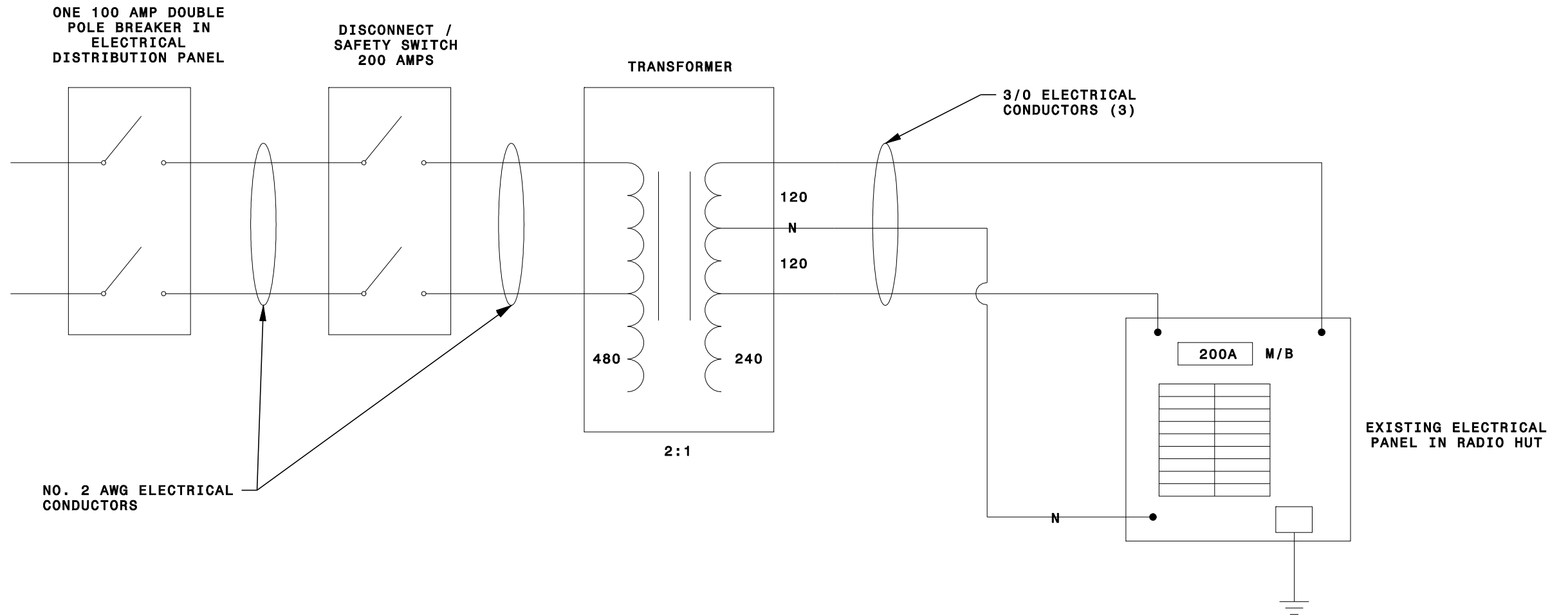


SURGE PROTECTION DEVICE FOR
SINGLE PHASE AC POWER 120V



ATKINS
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SUITE 500
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(704) 522-7275
NC BEES # F-0326

 Prepared for the Office of: Mecklenburg County DEPARTMENT OF TRANSPORTATION Transportation Management Center 2327 Tipton Drive Charlotte, NC 28206	WIRING DETAILS		 SEAL 19962 H. Alfred Baggett, P.E.
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	SCALE: NTS REVISIONS: _____ INIT. DATE _____ _____ _____	
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NO. 2 AWG ELECTRICAL CONDUCTORS

3/0 ELECTRICAL CONDUCTORS (3)

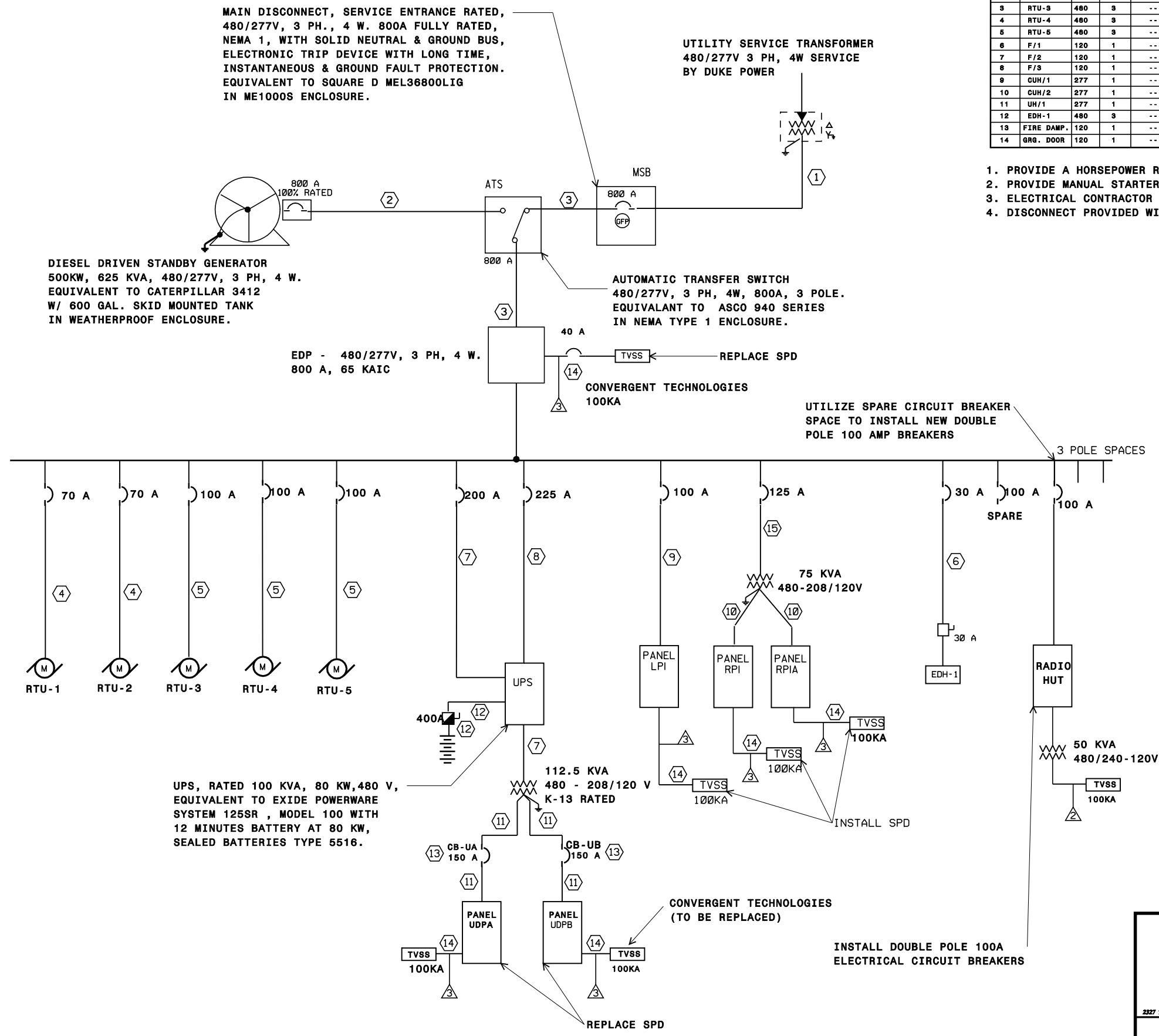
EXISTING ELECTRICAL PANEL IN RADIO HUT

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 SUITE 500
 CHARLOTTE, NORTH CAROLINA 28217
 (704) 522-7275
 NC BEES # F-0326

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 Prepared for the Office of: Mecklenburg County DIVISION OF TRANSPORTATION Maintenance Office 2327 Tipton Drive Charlotte, NC 28206	WIRING DETAILS		 SEAL 19962 H. Alfred Baggett, P.E.
	Division 10 Mecklenburg County Charlotte PLAN DATE: March 2011 REVIEWED BY: HAB PREPARED BY: BJS REVIEWED BY: JTB	REVISIONS INIT. DATE	
SCALE NTS	SIGNATURE DATE 04-05-2011		CAD File name: Wiring Detail15.dgn

EXISTING ELECTRICAL DISTRIBUTION ONE LINE DIAGRAM



MECHANICAL EQUIPMENT CONNECTION SCHEDULE										
ITEM NO.	DESCRIPT.	VOLTS	PH	KVA	HP	FLA	CIRCUIT	FEEDER	DISCONNECT SWITCH	REMARKS
1	RTU-1	480	3	--	--	82.3	EDP-1	SEE ONE-LINE	DISCONNECT PROVIDED BY MECH.	
2	RTU-2	480	3	--	--	82.3	EDP-2	SEE ONE-LINE	DISCONNECT PROVIDED BY MECH.	
3	RTU-3	480	3	--	--	81.8	EDP-3	SEE ONE-LINE	DISCONNECT PROVIDED BY MECH.	
4	RTU-4	480	3	--	--	81.8	EDP-4	SEE ONE-LINE	DISCONNECT PROVIDED BY MECH.	
5	RTU-5	480	3	--	--	81.8	EDP-5	SEE ONE-LINE	DISCONNECT PROVIDED BY MECH.	
6	F/1	120	1	--	--	5.8	RP1A-2	2# 12, 1# 12 GROUND. 1/2"	C.	NOTE 2
7	F/2	120	1	--	--	5.8	RP1A-4	2# 12, 1# 12 GROUND. 1/2"	C.	NOTE 2
8	F/3	120	1	--	--	4.4	RP1A-6	2# 12, 1# 12 GROUND. 1/2"	C.	NOTE 2
9	CUH/1	277	1	--	--	14.4	LP1-16	2# 10, 1# 10 GROUND. 3/4"	C.	NOTE 4
10	CUH/2	277	1	--	--	14.4	LP1-18	2# 10, 1# 10 GROUND. 3/4"	C.	NOTE 4
11	UH/1	277	1	--	--	18.1	LP1-12	2# 10, 1# 10 GROUND. 3/4"	C.	NOTE 4
12	EDH-1	480	3	--	--	24.1	EDP-11	SEE ONE-LINE	30 A, 3 P, 30 AF, NEMA 1	
13	FIRE DAMP.	120	1	--	--	2.0	RP1A-3	2# 12, 1# 12 GROUND. 1/2"	C.	NOTE 1
14	GRG. DOOR	120	1	--	--	5.8	RP1A-1	2# 12, 1# 12 GROUND. 1/2"	C.	NOTE 2

1. PROVIDE A HORSEPOWER RATED SWITCH (HUBBELL 1221-1) AS A LOCAL DISCONNECT.
2. PROVIDE MANUAL STARTER SQUARE "D" CLASS 2501-F01 NEXT TO MOTOR.
3. ELECTRICAL CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO THE EQUIPMENT LISTED ABOVE.
4. DISCONNECT PROVIDED WITH EQUIPMENT. CONNECTION BY ELECTRICAL CONTRACTOR.

EXISTING ONE-LINE KEY NOTES:

1. PROVIDE 2 SETS OF 4 # 600KCM, IN 4" CONDUIT AND SPARE 4" CONDUIT
2. PROVIDE 2 SETS OF 4 # 600KCM, 1 # 4/0 GROUND IN 4" CONDUIT, SPARE 4" CONDUIT AND 2 - 1" CONDUITS.
3. PROVIDE 2 SETS OF 4 # 600KCM, 1 # 4/0 GROUND IN 4" CONDUIT.
4. PROVIDE 3 # 4, 1 # 8 GROUND IN 1" CONDUIT.
5. PROVIDE 3 # 2, 1 # 8 GROUND IN 1 - 1/4" CONDUIT.
6. PROVIDE 3 # 8, # 8 GROUND, 3/4" CONDUIT.
7. PROVIDE 3 # 4/0, 1 # 4 GROUND IN 2" CONDUIT.
8. PROVIDE 3 # 4/0, 1 # 4 GROUND IN 2" CONDUIT.
9. PROVIDE 4 # 3, 1 # 8 GROUND IN 1-1/4" CONDUIT.
10. PROVIDE 4 # 1/0, 1 # 6 GROUND IN 2" CONDUIT.
11. PROVIDE 5 # 2/0 (2 NEUTRALS) & 1#6 GROUND, IN 2" CONDUIT.
12. PROVIDE 2 # 500KCMILL IN 2-1/2" CONDUIT.
13. CIRCUIT BREAKERS "CB-UA" AND "CB-UB" SHALL BE 480 V, 3P 22 KAIC, IN NEMA 1 ENCLOSURE.
14. PROVIDE 4 # 8, # 8 GROUND, 1" CONDUIT.
15. PROVIDE 3 # 1, 1 # 4 GROUND IN 1 1/2" CONDUIT.

PROPOSED ONE-LINE KEY NOTES:

1. PROVIDE (4) #2 AWG ELECTRICAL CONDUCTOR AND (1) #4 AWG GROUND WIRE
2. PROVIDE (4) #3/0 AWG ELECTRICAL CONDUCTOR AND (1) #4 AWG GROUND WIRE
3. PROVIDE (4) #6 AWG ELECTRICAL CONDUCTOR AND (1) #6 AWG GROUND WIRE

ATKINS
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CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275
NC BEES # F-0326

<p>Prepared for the Office of: Mecklenburg County Department of Transportation 2327 Tipton Drive Charlotte, NC 28206</p>	<p>ONE LINE ELECTRICAL DIAGRAM</p>				<p>SEAL 19962 ENGINEER N.C. BOARD OF ELECTRICAL ENGINEERS</p>
	<p>Division 10 Mecklenburg County Charlotte</p>		<p>PLAN DATE: March 2011 REVIEWED BY: HAB</p>		
	<p>PREPARED BY: BJS</p>		<p>REVIEWED BY: JTB</p>		
	<p>SCALE NTS</p>	<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>	

4. *Official Signature* 04-05-2011
CADD Filename: One Line Wiring.dgn

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