CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CFX ITS Design Standards

April 2020

CENTRAL
FLORIDA
EXPRESSWAY
AUTHORITY

ITS DESIGN STANDARDS

FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS ON THE STATE HIGHWAY SYSTEM

APRIL 2020

CENTRAL FLORIDA EXPRESSWAY AUTHORITY
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GENERAL NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE CENTRAL FLORIDA EXPRESSWAY AUTHORITY (CFX) 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

2. THESE PLANS REFLECT CONDITIONS KNOWN DURING PLAN DEVELOPMENT. IN THE EVENT ACTUAL PHYSICAL CONDITIONS PREVENT THE APPLICATION OR THE PROGRESSION OF ANY WORK SPECIFIED IN THESE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND PRIOR TO ANY FURTHER WORK ACTIVITY.

3. IN ORDER TO MINIMIZE IMPACT TO LANDSCAPING MATERIAL, THE CONTRACTOR SHALL EXERCISE CAUTION THROUGH LANDSCAPING LIMITS DURING ALL PHASES OF CONSTRUCTION ACTIVITY. ANY LANDSCAPE MATERIAL DAMAGED DURING THE CONSTRUCTION PROCESS SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL AVOID AND/OR PROTECT ALL TREES AND ROOTS BY HAND DIGGING AS NECESSARY. ANY TREES, SHRUBS OR VEGETATION DAMAGED BY THE CONTRACTOR SHALL BE REPLACED IN KIND AT NO COST TO CFX.

4. CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH ALL OTHER CONTRACTORS OPERATING WITHIN THE PROJECT AREA.

5. THE CONTRACTOR SHALL EXERCISE ALL APPROPRIATE SAFETY MEASURES WHEN WORKING IN OR AROUND AREAS OF OVERHEAD ELECTRICAL/TRANSMISSION LINES OR UNDERGROUND UTILITIES. HAND DIGGING SHALL BE USED AROUND ALL KNOWN AND LOCATED UTILITIES.

6. FLORIDA STATUTE 556 REQUIRES CONTRACTORS TO CALL SUNSHINE STATE ONE-CALL OF FLORIDA, INC., AT 1-800-432-4770, NO LESS THAN 2 OR MORE THAN 5 BUSINESS DAYS BEFORE BEGINNING ANY EXCAVATION OR DEMOLITION. NOT ALL UTILITY AGENCIES/OWNERS ARE MEMBERS OF SUNSHINE STATE ONE-CALL OF FLORIDA, INC.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE CITY OF ORLANDO NOISE ORDINANCE CHAPTER 42.

8. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL TOLLS INCURRED FROM USING CFX'S SYSTEM IN TRANSPORTING WORKERS, EQUIPMENT OR MATERIALS TO AND FROM THE SITE OF WORK AT NO ADDITIONAL COST TO CFX. CONTRACTOR SHALL ACCESS THE PROJECT BY EXISTING RAMPS. NO ACCESS WILL BE ALLOWED THROUGH THE RIGHT-OF-WAY FENCE UNLESS APPROVED BY CFX. NO U-TURNS SHALL BE PERMITTED IN THE MEDIAN. VIOLATORS WILL FACE IMMEDIATE TERMINATION OF CONTRACT.

9. VIBRATORY ROLLERS SHALL NOT BE ALLOWED FOR COMPACTION OPERATIONS OF PAVEMENT, SOILS, ETC. ABOVE FIBER OPTIC CABLES (AT&T, MCI WORLD COM, CFX FIBER OPTIC, ETC). THE LOCATION OF ALL PROPOSED EQUIPMENT TO BE INSTALLED SHALL BE CONSIDERED TO BE APPROXIMATE.

10. POLE LOCATIONS SHOWN ON PLANS WHICH ARE IN CONFLICT WITH LIGHTING, UTILITIES, DRIVEWAYS, WHEELCHAIR RAMP, ETC. MAY BE ADJUSTED SLIGHTLY(+/- 5') AS DIRECTED BY THE CONSTRUCTION ENGINEER. THE ENGINEER OF RECORD MUST APPROVE EXTREME LOCATION CHANGES.

11. THE WORK CORRIDOR SHALL BE RESTORED TO PRE-WORK CONDITIONS.

12. ALL CONCRETE GUTTERS SHALL BE MAINTAINED OR RESTORED TO PRE-WORK CONDITIONS.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATIONS OF EXISTING ROADWAY LIGHTING CONDUIT PRIOR TO INSTALLATION OF POLE FOUNDATIONS.

14. FOR ALL OVERHEAD SIGN STRUCTURES, THE CONTRACTOR SHALL EXERCISE ALL APPROPRIATE SAFETY MEASURES WHEN WORKING IN OR AROUND THESE AREAS. CAUTION SHALL BE TAKEN IN RESPECT TO MAINTAINING THE POWER FEED AND GROUNDING CIRCUITRY. ALL FEATURES SHALL BE RESTORED TO ORIGINAL PRE-WORK CONDITIONS.

15. THE CONTRACTOR SHALL HAND DIG THE FIRST 4' AT EACH POLE INSTALLATION LOCATION. BACKFILLING AROUND POLE SHALL CONFORM TO SECTION 125 OF THE LATEST FDOT STANDARD SPECIFICATIONS.

16. CONTRACTOR SHALL TAKE ALL NECESSARY PROTECTIVE MEASURES ARE TAKEN TO SAFEGUARD EXISTING UTILITIES DURING FIBER/EQUIPMENT INSTALLATIONS.

17. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, NATIONAL ELECTRIC SAFETY CODE, AND THE STATE OF FLORIDA D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. IN ADDITION ALL ELECTRICAL MATERIALS SHALL MEET CFX SPECIFICATION 639A.

18. ALL APPLICABLE PROVISIONS OF EXISTING UTILITY EASEMENTS WILL BE ADHERED TO BY THE CONTRACTOR.

19. PULLING INSTRUCTIONS FOR POWER CONDUCTORS: CONNECT PULLING DEVICES TO COPPER WIRE AND NOT TO JACKET AND MEET MANUFACTURERS REQUIREMENTS. USE PULLING COMPOUND PER MANUFACTURES REQUIREMENTS. ALL BENDS SHALL NOT BE LESS THAN RECOMMENDED BY N.E.C. OR N.E.S.C. FOR CABLE USED.

20. ALL MISCELLANEOUS WORK NECESSARY IN THE SHOULDER AREA TO CONSTRUCT ITS POLES, PULL BOXES, ETC. (I.E. GRADING, SODDING, CLEARING AND GRUBBING, GUARDRAIL OR FENCE RESETTING) IS CONSIDERED INCIDENTAL, AND IS TO BE INCLUDED IN THE COST OF RELATED WORK. ALL DISTURBED AREAS SHALL BE SODDED. THE CONTRACTOR SHALL HAUL ALL EXCESS EXCAVATION AND WASTE MATERIALS OFF-SITE. REMOVAL OF THESE MATERIALS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF RELATED WORK.

21. THE CONTRACTOR SHALL ESTABLISH, STAKE AND PAINT POLE LOCATIONS WITH THE USE OF A FLORIDA REGISTERED LAND SURVEYOR. IF, DURING THE CONSTRUCTION PROCESS, THE STAKES AND/OR PAINTED MARKS ARE OBLITERATED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE THE POLE LOCATIONS RE-ESTABLISHED BY A FLORIDA REGISTERED LAND SURVEYOR. NO ADDITIONAL PAYMENT WILL BE ALLOWED.

22. VEGETATION SHALL BE REMOVED OR CUT BACK AS DIRECTED BY THE CONSTRUCTION ENGINEER TO PROVIDE ADEQUATE SIGHT DISTANCE FOR ALL CAMERA LOCATIONS. VEGETATION REMOVAL AND TRIMMING SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE OF THE POLE.

23. A GROUNDING SYSTEM IS REQUIRED FOR ALL ITS CABINETS, POLES AND STRUCTURES. INSTALLATION SHALL BE IN ACCORDANCE WITH CFX SPECIFICATION 620A AND THE LATEST CFX ITS DESIGN STANDARDS.

24. THE CONTRACTOR SHALL MAINTAIN THE EXISTING FIBER OPTIC NETWORK WITHIN THE LIMITS OF CONSTRUCTION. AT NO TIME SHALL THERE BE ANY LOSS OF COMMUNICATIONS OR DATA ALONG THE CFX FIBER OPTIC NETWORK. ANY CONSTRUCTION ACTIVITIES WITHIN TEN FEET OF THE FIBER OPTIC NETWORK SHALL BE PERFORMED ON ONE SIDE OF THE ROAD AT A TIME. THE CONTRACTOR SHALL REVIEW CFX SPECIFICATIONS 603A & 631 FOR OTHER FON PRESERVATION DETAILS.

25. ALL OF THE GENERAL NOTES FOR THE CONTRACT CONSTRUCTION DOCUMENT SET WILL APPLY TO THIS PLAN SET.

26. PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL FORWARD A COMPLETE SET OF AS-BUILT PLANS WITH ALL CHANGES MARKED IN RED TO THE ENGINEER. THE AS-BUILTS SHALL CONTAIN ACCURATELY DIMENSIONED LOCATIONS FOR FIBER OPTIC CABLE, PULL BOXES, POWER SERVICES, CONDUITS, STRUCTURES, AND FIELD COMPONENTS. THE AS-BUILT PLANS SHALL INCLUDE A RECORD OF THE COLOR DESIGNATIONS OF ALL HDPE CONDUIT USED, AS WELL AS FIBER SPLICING AND PORT ASSIGNMENTS. THIS SUBMITTAL SHALL BE IN BOTH ELECTRONIC AND PAPER FORMAT. THE CONTRACTOR SHALL REVIEW CFX SPECIFICATION 612 FOR ALL GEOLOCATION AND DOCUMENTATION REQUIEMENTS.

27. ALL ELECTRICAL EQUIPMENT SHALL BE WEATHERPROOF. ANY OPENINGS WHICH MAY ALLOW WATER TO ENTER, SHALL BE SEALED INSIDE AND OUT WITH SILICONE. PLACE SILICONE SEALANT AROUND THE OUTSIDE EDGE OF THE DISCONNECT WHERE THE ENCLOSURE COMES INTO CONTACT WITH THE CONCRETE PEDESTAL. SEAL AROUND THE TOP AND SIDES OF THE DISCONNECT AND LEAVE THE BOTTOM EDGE UNSEALED. SILICONE SEAL-INSIDE AND OUT- ANY SMALL HOLES (LESS THAN 1/10TH OF INCH) TO INHIBIT WATER AND PEST INTRUSION.

28. THE MIXING OF LINE (SUPPLY SIDE) AND LOAD (EQUIPMENT SIDE) SHALL NOT OCCUR IN EITHER THE CONDUITS OR PULL BOXES.

29. IN ACCORDANCE WITH N.E.C. IDENTIFY ALL CIRCUITS AND EQUIPMENT WITH "LAMICOID TAGS".

30. THE LOCATION OF THE CONDUCTORS, CONDUITS, JUNCTION BOXES, SERVICE POINTS, AND CONTROLLER BOXES ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE LOCAL CONDITIONS AND EXISTING UTILITY LOCATIONS. CONDUIT SHALL BE PLACED WITHIN EXISTING RIGHT-OF-WAY.

31. ALL SYMBOLS FOR ROADWAY LIGHTING ARE SHOWN FOR REFERENCE ONLY.

32. AERIAL PHOTOGRAPHY IN THESE PLANS MAY NOT REPRESENT CURRENT SITE CONDITIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE PROJECT SITE PRIOR TO BIDDING.

33. THE CONTRACTOR SHALL ACQUIRE ALL PERMITS BY OTHER AGENCIES FOR INSTALLATION OF INFRASTRUCTURE NOT ON CFX FACILITIES. NO ADDITIONAL TIME OR MONEY WILL BE ALLOTTED.

34. MAINTENANCE OF TRAFFIC:

A. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO CFX FOR APPROVAL WHICH CONSISTS OF UNMODIFIED FDOT DESIGN STANDARDS (600 SERIES); OTHERWISE THE CONTRACTOR MUST PROVIDE A TRAFFIC CONTROL PLAN WHICH IS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF FLORIDA. ONCE APPROVED BY CFX, THE TRAFFIC CONTROL PLAN MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES. ALL COSTS ASSOCIATED WITH THE MAINTENANCE OF TRAFFIC SHALL BE INCLUDED IN PAY ITEM 102-1 MAINTENANCE OF TRAFFIC (LUMP SUM).

B. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH FDOT DESIGN STANDARDS, INDEX 102-600 SERIES.

C. LANE WIDTH SHALL NOT BE LESS THAN 11 FEET. LANES SHALL BE PROPERLY DELINEATED DURING ALL PHASES OF CONSTRUCTION.

D. THE FOLLOWING REGULATORY SPEED LIMITS SHALL BE MAINTAINED DURING CONSTRUCTION:
SR 408 (EAST-WEST EXPRESSWAY) 55 MPH TO 65 MPH
SR 528 (MARTIN ANDERSEN BEACHLINE EXPRESSWAY) 55 MPH TO 70 MPH
SR 417 (CENTRAL FLORIDA GREENEWAY) 70 MPH
SR 429 (DANIEL WEBSTER WESTERN BELTWAY) 70 MPH
SR 429 (WEKIVA PARKWAY) 70 MPH
SR 451 (WESTERN EXPRESSWAY EXTENSION) 45 MPH TO 65 MPH
SR 414 (MAITLAND BOULEVARD EXTENSION) 65 MPH

E. FOR ADDITIONAL SIGN INFORMATION, INCLUDING SIZES, REFER TO STANDARD HIGHWAY SIGNS MANUAL SPECIFIED IN THE MUTCD

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A LAW ENFORCEMENT OFFICER DURING ALL LANE CLOSURE OPERATIONS AND DURING ALL NIGHT OPERATIONS.

G. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE ALL UNUSED BARRICADES, SIGNS, AND/OR WARNING DEVICES TO THE APPROPRIATE STORAGE FACILITY UPON COMPLETION OF THEIR USE FOR THE DESIGNED TRAFFIC CONTROL OPERATION. DURING RESTRICTED HOURS OF OPERATION, UNUSED MOT SIGNS MAY REMAIN IN PLACE, BUT SHALL NOT FACE TRAFFIC AND SHALL BE COMPLETELY COVERED SO AS NOT TO BE READABLE.

H. THE CONTRACTOR IS ADVISED THAT LANE CLOSURES ARE PERMITTED AT THE FOLLOWING TIMES:
SR 408 - FLORIDA TURNPIKE TO I-4: 9 PM TO 6 AM
SR 408 - I-4 TO SR 417: 10 PM TO 6 AM
SR 408 - SR 417 TO SR 50: 11 PM TO 6 AM
SR 417 - I-DRIVE TO FLORIDA'S TURNPIKE : 11 PM TO 6 AM
SR 417 - FLORIDA'S TURNPIKE TO ORANGE/SEMINOLE COUNTY LINE: 10 PM TO 6 AM
SR 429 - SEIDEL RD SR 46: 10 PM TO 6 AM
SR 414 - SR 429/ 414 SYSTEMS INTERCHANGE TO US 441: 9 PM TO 6 AM
SR 451 - SR 429 TO US 441: 9 PM TO 6 AM
SR 453 - SR 429 TO SR 46: 9 PM TO 6 AM
SR 528 - BOGGY CREEK RD TO SR 417: 11 PM TO 6 AM
SR 528 - SR 417 TO SR 520: 10 PM TO 6 AM
THE CONTRACTOR IS ADVISED THAT LANE CLOSURES ARE NOT PERMITTED FROM 5:00 A.M. TO 11:00 P.M. ON THE RAMPS. IF THE DIRECTOR OF CONSTRUCTION OR CFX DESIGNEE DETERMINES ANY LANE CLOSURE IS CAUSING EXTENDED TRAFFIC CONGESTION, THE DIRECTOR OF CONSTRUCTION OR CFX DESIGNEE MAY DIRECT THE CONTRACTOR TO OPEN THE LANE CLOSURE UNTIL TRAFFIC RETURNS TO AN ACCEPTABLE FLOW. EITHER THE DIRECTOR OF CONSTRUCTION OR CFX DESIGNEE WILL DETERMINE WHEN THE FLOW OF TRAFFIC IS ACCEPTABLE.

I. DELAY COSTS TO THE CONTRACTOR WILL RESULT IF ALL TRAVEL LANES AND RAMPS ARE NOT OPEN TO TRAFFIC DURING THE TIMES OUTSIDE OF THE PERMITTED LANE CLOSURE HOURS. THE CONTRACTOR SHALL PLAN OPERATIONS SUCH THAT ALL EQUIPMENT AND MATERIALS INSTALLED BY THE CONTRACTOR FOR LANE CLOSURES ARE REMOVED FROM THE CLEAR ZONE AND TRAVEL LANES ARE REOPENED TO TRAFFIC. FOR MAINLINE AND RAMP CLOSURES THAT OCCUR OUTSIDE THE PERMITTED LANE CLOSURE HOURS, A LANE RENTAL FEE WILL BE ASSESSED TO THE CONTRACTOR IN THE AMOUNT OF $1,000 PER LANE/RAMP FOR EACH MINUTE THAT ANY LANE/RAMP IS NOT OPEN TO TRAFFIC.

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GENERAL NOTES (CONTINUED):

J. LANE RENTAL FEES WILL BE ASSESSED AND WILL CONTINUE TO ACCRUE UNTIL SUBJECT LANE/RAMP IS OPEN TO A TRAFFIC FLOW AS RECORDED BY CFX. CFX SHALL HAVE THE RIGHT TO APPLY AS PAYMENT ON SUCH FEES ANY MONEY THAT IS DUE TO THE CONTRACTOR BY CFX. AT THE DISCRETION OF THE DIRECTOR OF CONSTRUCTION AND/OR CFX DESIGNEE, LANE RENTAL FEES WILL NOT BE CHARGED FOR FAILURE TO OPEN TRAFFIC LANES/RAMPS IF SUCH CAUSE IS BEYOND THE CONTROL OF THE CONTRACTOR, I.E. CATASTROPHIC EVENTS, AND ACCIDENTS NOT RELATED OR CAUSED BY THE CONTRACTOR'S OPERATIONS.

K. CONTRACTOR SHALL COORDINATE WITH TOLL PLAZA MANAGERS 72 HOURS PRIOR TO PERFORMING ANY WORK WITHIN 2,000 FEET OF A TOLL PLAZA.

L. CFX PROPERTY AFFECTED BY THE CONSTRUCTION WORK SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN EXISTING PRE-CONSTRUCTION CONDITION UNLESS SPECIFICALLY EXEMPT IN THE PLANS. ALL COST SHALL BE INCIDENTAL TO EXISTING PAY ITEMS.

34. FON UTILITY WORK GUIDELINES:

A. NO CONTRACTOR SHALL BE PERMITTED TO ENTER THE MAINLINE OR RAMP PLAZAS WITHOUT PRIOR APPROVAL FROM CFX.

B. NO CONTRACTOR SHALL BE PERMITTED TO MOVE ANY PATCH PANEL CONNECTIONS UNLESS INDICATED ON THE PLANS AND WITHOUT PRIOR APPROVAL. ANY PATCH PANEL CHANGES SHALL BE DOCUMENTED IN WRITING.

C. FOR ALL WORK INVOLVING THE DISRUPTION OF LIVE NETWORK TRAFFIC, THE CONTRACTOR SHALL PROVIDE A HIGH LEVEL METHOD OF PROCEDURE (MOP) AT LEAST FOUR (4) WEEKS IN ADVANCE OF THE PRE-SPLICING MEETING. THIS MOP MUST BE REVIEWED AND APPROVED PRIOR TO BEGINNING WORK. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO FIBER OPTIC SPLICING PAY ITEMS.

D. A PRE-SPLICE MEETING SHALL BE HELD AT LEAST TWO (2) WEEKS IN ADVANCE OF THE PROPOSED SPLICING DATE.

E. A PRIMARY AND BACKUP EMERGENCY CONTACT SHALL BE PROVIDED AS WELL AS AN ESCALATION CONTACT BEFORE BEGINNING WORK.

F. THE CONTRACTOR SHALL VERIFY WITH THE CEI THAT THEY ARE IN POSSESSION OF THE MOST RECENT PLAN UPDATES BEFORE BEGINNING ANY WORK. ALL REQUESTS SHALL BE MADE THROUGH THE CEI TO THE GEC.

G. A CFX REPRESENTATIVE SHALL BE PRESENT ON-SITE WHEN SPLICING LIVE FIBER, OR "HOT CUTS", ARE TAKING PLACE.

I. ALL WORK INVOLVING THE SPLICING OR TESTING OF LIVE FIBERS IS TO BE PERFORMED OUTSIDE OF NORMAL BUSINESS HOURS (7AM-6PM MONDAY-FRIDAY) UNLESS APPROVED BY CFX.

35. CABINET EQUIPMENT IS NOT TO BE STACKED. THE WIRING DIAGRAMS SHOW BLOCKS ON TOP OF ONE ANOTHER FOR CLARITY ONLY.

36. FIBER OPTIC MANHOLE SPACING:
THE SPACING BETWEEN FIBER OPTIC MANHOLES (FOMH) INSTALLED IN A PAVED SHOULDER SHALL NOT EXCEED 1500'. SPACING BETWEEN FOMH INSTALLED IN AN UNPAVED SHOULDER SHALL NOT EXCEED 4000'.

37. ALL EQUIPMENT ASSOCIATED WITH WRONG WAY DRIVING (WWD) SHALL REMAIN OPERATIONAL AND SENDING INFORMATION TO THE RTMC ONE HUNDRED PERCENT OF THE TIME. THERE SHALL BE NO DOWN TIME ALLOWED FOR THE WWD SYSTEM WHILE THE RAMP IS OPEN TO TRAFFIC UNLESS APPROVED IN WRITING BY THE MANAGER OF TRAFFIC OPERATION.

38. CONTACT CFX ITS SYSTEMS ANALYST AND FON MAINTENANCE PROJECT MANAGER PRIOR TO ENTERING ANY FIBER OPTIC MANHOLE.

39. THE LOCATION OF ALL PROPOSED EQUIPMENT TO BE INSTALLED SHALL BE CONSIDERED TO BE APPROXIMATE.

CONDUIT:

1. THE BACKBONE FIBER OPTIC CONDUIT NETWORK SHALL BE MAINTAINED AT A CONSTANT HORIZONTAL AND VERTICAL LOCATION AS SHOWN IN THE ROADWAY CROSS SECTIONS OF THE ROADWAY PLANS, DRAINAGE PLANS, STRUCTURE PLANS AND OTHER PLAN COMPONENTS OF THIS PROJECT.

2. ALL FIBER OPTIC CONDUIT SHALL HAVE A "CFX FIBER OPTIC CABLE BURIED BELOW" WARNING TAPE CONTINUOUSLY RUN IN THE TRENCH 18" BELOW GRADE. IN ADDITION, ROUTE MARKERS INDICATING F.O. CABLE BURIED BELOW SHALL BE INSTALLED AT EACH MANHOLE ALONG THE FIBER ROUTE AND AT ANY TURNS IN THE CONDUIT RUN. FIBER OPTIC ROUTE MARKERS ARE NOT REQUIRED WHEN CONDUIT IS PLACED WITHIN A PAVED SHOULDER.

3. CONDUIT RUN SHALL NOT EXCEED 270° OF BENDS BETWEEN MANHOLES OR JUNCTION BOXES.

4. THE BLUE HDPE CONDUIT ENTERING A PROPOSED FIBER OPTIC MANHOLE (FOMH) SHOULD CONNECT TO THE BLUE 1" CONDUITS LOCATED INSIDE THE 4" STUBOUT. A 4" DUCT ORGANIZER IS REQUIRED FOR CONDUIT ENTRY INTO THE MANHOLES.

5. ALL HDPE CONDUIT CONNECTIONS SHALL BE JOINED WITH ELECTROFUSION COUPLERS.

6. ALL 1" HDPE CONDUITS SHALL BE SEALED AT BOTH ENDS WITH DUCT PLUGS. ALL POWER AND COMMUNICATION CONDUITS SHALL BE PROPERLY SEALED AT BOTH ENDS WITH DUCT SEALANT. ALL SPARE POWER CONDUITS SHALL BE FURNISHED WITH A PULL STRING FOR FUTURE USE.

7. MINIMUM REQUIRED CONDUIT BURY DEPTHS SHALL BE MAINTAINED WHERE CONFLICTS OCCUR WITH DRAINAGE OR OTHER UTILITIES PER THESE PLANS.

8. THE TONE WIRE FOR ALL ITS DEVICE LOCATIONS SHALL BE CONNECTED TO THE GROUNDING SYSTEM IN THE FIBER OPTIC MANHOLE AND 10 FEET OF TONE WIRE SHALL BE COILED IN THE FIBER OPTIC PULL BOX AT THE DEVICE LOCATION. THE TONE WIRE FOR THE 9-1" BACKBONE FON CONDUIT SHALL BE SPLICED CONTINUOUS IN THE FIBER OPTIC MANHOLES. SPLICING THE TONE WIRE FOR ALL ITS DEVICE LOCATIONS TO THE BACKBONE TONE WIRE WILL NOT BE PERMITTED. THE TONE WIRE SHALL NEVER BE STORED INSIDE THE DEVICE CABINET.

9. ALL CONDUIT TRENCHES SHALL BE BACK FILLED COMPLETELY TO PROVIDE SAFE CROSSING BY THE END OF EACH WORKING DAY OR WHENEVER THE WORK ZONE BECOMES INACTIVE. THE CONTRACTOR SHALL NOT OPEN ANY AREA THAT CANNOT BE BACK FILLED IN THE SAME DAY/NIGHT OPERATION.

10. IT SHOULD BE NOTED THAT NO TEST BORINGS WERE MADE WHERE CONDUIT RUNS ARE TO BE INSTALLED BY JACKING OR TRENCHING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE JOB SITE CONDITIONS BEFORE SUBMITTING BID PROPOSALS IN ACCORDANCE WITH SECTION 2-4 OF THE FDOT SPECIFICATIONS. THE CONTRACTOR SHALL HAND DIG THE FIRST 4' TO VERIFY POSSIBLE UTILITY CONFLICT AT UTILITY CROSSINGS.

11. ALL HARDWARE AND BRACKETS ASSOCIATED WITH BRIDGE-MOUNTED BRFG SHALL BE INCIDENTAL TO THE COST OF BRFG.

12. ALL UNDERGROUND HDPE CONDUIT SHALL BE SMOOTH WALL AND HAVE A RATING OF SDR-11 OR THICKER. ALL PVC CONDUIT SHALL BE RATED SCHEDULE 40 OR THICKER. ABOVE GROUND PVC IS REQUIRED TO BE SCHEDULE 80. ALL RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE HOT DIPPED GALVANIZED OR PAINTED PER CFX COLOR REQUIREMENTS AND THE PROCESS SPECIFIED IN THE FDOT SPEC. SECTION 649. BULLET RESISTANT CONDUIT SHALL BE PLACED IN BRIDGE CROSS LINE AND WHEN HUNG FROM HANGER SYSTEMS UNDER BRIDGES OR OVERPASSES. PER CFX SPECIFICATION 638. BRFG SHALL BE SIZED AND PAINTED PER CFX COLOR REQUIREMENTS AND THE PLANS.

13. AT DIRECTIONAL BORE LOCATIONS WHICH ARE CROSSING UTILITIES, THE CONTRACTOR IS REQUIRED TO LOCATE THE UTILITIES BY VVH METHODS IN ORDER TO AVOID CONFLICTS WITH EXISTING UTILITIES.

14. PROVIDE A MINIMUM OF 5 FOOT SEPERATION BETWEEN EXISTING AND PROPOSED CONDUIT.

PULL BOX:

1. FIBER OPTIC PULL BOXES AT EACH END OF THE TONE WIRE RUN SHALL INCLUDE A MINIMUM OF 10 LF OF GROUNDING ELECTRODES.

2. ALL FIBER OPTIC PULL BOXES SHALL HAVE "CFX FIBER" STAMPED ON THE COVER, ALL POWER PULL BOXES SHALL HAVE "CFX POWER" STAMPED ON THE COVER AND ALL GROUNDING PULL BOXES SHALL HAVE "CFX GROUNDING" ON THE COVER. ALL NON-FIBER OPTIC COMMUNICATIONS PULL BOXES SHALL HAVE "CFX COMM" ON THE COVER

3. MAXIMUM PULL BOX SPACING FOR POWER SERVICE ELECTRICAL WIRE SHALL BE 500'.

DMS:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATIONS OF EXISTING ROADWAY LIGHTING AND OTHER CFX CONDUIT PRIOR TO INSTALLATION OF DMS STRUCTURE FOUNDATIONS.

2. IN AREAS WHERE DIMENSIONS ARE NOT PROVIDED ON THE PLANS OR WHERE THE EXISTING MONUMENTS HAVE BEEN OBLITERATED THE CONTRACTOR SHALL ESTABLISH, STAKE AND PAINT DMS LOCATIONS WITH THE USE OF A FLORIDA REGISTERED LAND SURVEYOR. IF, DURING THE CONSTRUCTION PROCESS, THE STAKES AND/OR PAINTED MARKS ARE OBLITERATED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE THE DMS LOCATIONS RE-ESTABLISHED BY A FLORIDA REGISTERED LAND SURVEYOR. NO ADDITIONAL PAYMENT WILL BE ALLOWED.

3. DCS EQUIPMENT IS NOT TO UTILIZE THE GFCI RECEPTACLE FOR POWERING EQUIPMENT. THE CONTRACTOR SHALL POWER THE DCS EQUIPMENT FROM A CONTRACTOR FURNISHED UPS CONNECTED TO THE EXSITING "AUX" CIRCUIT OUTLET AS SHOWN IN THE BLOCK DIAGRAMS.

4. THE 3-LINE DMS SHALL BE POWERED BY A DEDICATED 120/240V CIRCUIT ORIGINATING FROM THE SAFETY DISCONNECT PANEL. THE DMS CONTROLLER SHALL BE POWERED FROM THE REMOTE POWER MANAGER LOCATED IN THE ITS CABINET.

5. THE FIBER OPTIC LOCATE WIRE IS NOT TO BE RUN INTO THE CABINET OR DMS HOUSING.

6. THE GALVANIZED RIGID STEEL CONDUITS TO BE LOCATED ON EACH OF THE OVERHEAD SIGN SHALL BE 2" FOR THE COMMUNICATIONS CABLE.

DCS:

1. AN FCC LICENSE IS REQUIRED FOR EACH NEW DCS LOCATION. IN ACCORDANCE WITH CFX SPECIFICATIONS 663-2.4.9, THE CONTRACTOR SHALL PROVIDE UPDATES ON THE APPLICATION FORM FOR ANY FIELD ADJUSTMENTS TO THE LOCATION (FCC FORM 601 SCHEDULE D) FOR EACH DCS LOCATION A MINIMUM OF 60 DAYS PRIOR TO STAND-ALONE TESTING AND SUBMIT TO CFX FOR PROCESSING.

2. A CFX SPECIFIC SCRIPT SHALL BE UPLOADED TO THE DCS READER DURING CONFIGURATION. A REQUEST SHALL BE SUBMITTED TO CFX TO OBTAIN THE CURRENT VERSION OF THE SCRIPT PRIOR TO CONFIGURATION.

FIBER OPTIC CABLE:

1. THE FIBER OPTIC CABLE INSTALLATION TECHNIQUES AND PROCEDURES SHALL BE AS SPECIFIED BY THE CABLE MANUFACTURER & INDUSTRY STANDARDS AND SHALL BE SUCH THAT THE OPTICAL AND MECHANICAL CHARACTERISTICS OF THE CABLES ARE NOT DEGRADED AT THE TIME OF INSTALLATION. THE CENTRAL STRENGTH MEMBER AND ARAMID YARN SHALL BE ATTACHED DIRECTLY TO THE PULLING EYE DURING CABLE PULLING. "BASKET GRIP" OR "CHINESE FINGER" TYPE ATTACHMENTS TO THE CABLE SHALL NOT EXCEED THE CABLES OUTSIDE TENSILE RATING ON ALL PULLS.

2. CONTRACTOR SHALL COORDINATE WITH CFX REPRESENTATIVE PRIOR TO DISCONNECTING ANY FIBERS AND ALL FIBER SPLICING.

3. UNDER NO CIRCUMSTANCES SHALL ENERGIZED CABLE BE PLACED IN THE SAME CONDUIT OR PULL BOX AS FIBER OPTIC CABLE.

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FIBER CABLE AND CONNECTION DISTRIBUTION:

BACKBONE CABLE:

EXISTING 8-1" HDPE CONDUITS WITH 72 SM FOC IN ORANGE CONDUIT FOR BACKBONE TRUNK CABLE AND 72 SM FOC IN BLUE CONDUIT FOR FEEDER TRUNK CABLE. THE TONE WIRE SHALL BE INSTALLED WITHIN YELLOW CONDUIT.

PROPOSED 9-1" HDPE CONDUITS WITH 72 SM FOC IN ORANGE CONDUIT FOR BACKBONE TRUNK CABLE AND 72 SM FOC IN BLUE CONDUIT FOR FEEDER TRUNK CABLE. THE TONE WIRE SHALL BE INSTALLED WITHIN BLACK CONDUIT W/RED STRIPES.

FEEDER DROP CABLE:

3-1" BLUE AND ORANGE HDPE CONDUITS W/ 1-12 SM DROP FOC IN BLUE CONDUIT. THE TONE WIRE SHALL BE INSTALLED WITHIN BLACK CONDUIT W/RED STRIPES.

TMS:

1. EACH TMS SENSOR SHALL READ ONE DIRECTION OF TRAVEL AS INDICATED IN THE PLANS. THIS SHALL INCLUDE ALL LANES IN THE DIRECTION, THROUGH LANES AND RAMP LANES (IF APPLICABLE).
2. WHEN MOUNTING MORE THAN ONE SENSOR PER LOCATION, ENSURE THAT THEY ARE ON DIFFERENT CHANNELS TO AVOID INTERFERENCE.
3. USE TMS MANUFACTURER CABLE AS REQUIRED FROM SENSOR TO CONTROLLER CABINET.

POWER CONNECTIONS:

1. POWER SUPPLY LOCATIONS HAVE BEEN COORDINATED WITH DUKE ENERGY AND ORLANDO UTILITIES COMMISSION. IT IS RECOMMENDED THAT THE CONTRACTOR CONTACT EACH RESPECTIVE POWER COMPANY CONTACT PERSON AS SOON AS POSSIBLE TO ENSURE ALL POWER SOURCES CAN BE INSTALLED AS SHOWN IN THE PLANS OR IN THE EVENT A PROPOSED POWER SOURCE IS NOT READILY AVAILABLE.
   a. OUC SERVICE: CONTRACTOR TO RUN UNDERGROUND CONDUIT TO THE BASE OF OUC POWER POLE AND SET A PULL BOX WITH APPROX. 30' OF ELECTRICAL SERVICE WIRE COILED INSIDE. THEN INSTALL RIGID CONDUIT UP THE OUC POLE TO A HEIGHT OF 25' WITH A WEATHER HEAD. CONTRACTOR TO PULL SERVICE WIRE THROUGH CONDUIT AND COIL EXCESS AROUND WEATHER HEAD. CONTACT OUC CUSTOMER SERVICE AT 407-423-9018 TO REQUEST FINAL CONNECTION.
   b. DUKE ENERGY SERVICE: CONTRACTOR TO RUN UNDERGROUND CONDUIT TO THE BASE OF PEDESTAL THAT EXISTS OR CONTRACTOR INSTALLS AND SET A PULL BOX WITH APPROX. 10' OF ELECTRICAL SERVICE WIRE COILED INSIDE. CONTACT DUKE ENERGY NEW CONSTRUCTION AT 800-700-8744 FOR FINAL CONNECTION BY DUKE ENERGY PERSONNEL.
2. CONNECTIONS TO EXISTING POWER METERS TO BE ACCOMPLISHED PER STATE AND LOCAL CODES. EACH POWER SERVICE METER ENCLOSURE SHALL BE CORRECTLY IDENTIFIED ON THE OUTSIDE FRONT BY A NON-FERROUS METAL OR PLASTIC PLATE PER DUKE ENERGY OR OUC STANDARDS. THE PLATE SHALL BE RIVETED TO THE METER ENCLOSURE. CONTRACTOR'S ELECTRICIAN TO PRE-EXAMINE EACH SITE TO DETERMINE THE FEASIBILITY OF CONNECTING TO THE PROPOSED POWER SOURCE. CONNECTIONS MUST BE MADE THROUGH AN EXISTING OR NEW BREAKER PANEL WITH THE APPROPRIATE CIRCUIT BREAKER. ALL MATERIALS, EQUIPMENT AND LABOR TO BE SUPPLIED FOR A COMPLETE CONNECTION AND IS TO BE PAID UNDER PAY ITEM NUMBER 639-1-11 AND 639-1-12.

UTILITIES:

1. THE CONTRACTOR SHALL NOTIFY THE POWER COMPANY AT LEAST 48 HOURS PRIOR TO ANY INSTALLATION THAT IS WITHIN 10 FEET OF ENERGIZED ELECTRICAL CONDUCTORS. THE POWER COMPANY, AT ITS OPTION, SHALL ASSIST THE CFX CONTRACTOR. COVER UP ENERGIZED CONDUCTORS AT THE INSTALLATION SITE, OR TAKE OTHER SAFETY PRECAUTIONS AS NECESSARY. EXTREME CAUTION SHALL BE EXERCISED AT ALL TIMES IN PERFORMANCE OF WORK AROUND THE PRIMARY HIGH VOLTAGE COMPONENTS. CONTRACTOR SHALL OBSERVE OSHA CLEARANCE REGULATIONS WHEN WORKING IN CLOSE PROXIMITY TO OVERHEAD POWER LINES.
2. THE LOCATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, ARE APPROXIMATE AND BASED ON THE INFORMATION FURNISHED TO THE ENGINEER BY THE UTILITY OWNER(S) AND ARE SHOWN AS NOTICE TO THE CONTRACTOR THAT UNDERGROUND UTILITIES EXIST. BEFORE EXCAVATING THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANY OWNER(S) AND REQUEST THEM TO LOCATE AND STAKE THEIR UNDERGROUND FACILITIES. UTILITIES ARE TO BE ADJUSTED BY OTHERS AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING UNDERGROUND UTILITIES VERTICALLY AND HORIZONTALLY (VVH) FOR ALL CONDUIT INSTALLATIONS. THE COST FOR THE VVH'S SHALL BE INCLUDED IN THE COST OF THE CONDUIT. WHEN BORING UNDER PAVEMENT, THE CONTRACTOR SHALL VERIFY DEPTH BY POT HOLING PRIOR TO SHOOTING THE BORE. ANY OTHER METHOD MUST BE APPROVED BY THE ENGINEER.
4. CONTRACTOR SHALL STAKE ALL POLE LOCATIONS AND REQUEST UTILITY COMPANIES TO LOCATE AND STAKE UNDERGROUND UTILITIES PRIOR TO EXCAVATING.
5. CONTRACTOR SHALL LOCATE AND PROTECT EXISTING CFX OWNER FIBER OPTIC CABLES AND BURIED ELECTRICAL LINES DURING THE INSTALLATION OF NEW CONDUIT AND PULL BOXES.

PAY ITEM NOTES:

NOTE TO EOR:
PAY ITEMS THAT DEVIATE FROM THE TSP'S AND SUMMARY OF PAY ITEMS AS STATED IN SECTION A OF THESE ITS DESIGN STANDARDS SHALL BE PROVIDED HERE AS A PAY ITEM NOTE. ALL PAY ITEM NOTES SHALL INCLUDE ALL WORK THE CONTRACTOR SHALL PERFORM, INCLUDING INCIDENTALS SO THAT NO ADDITIONAL COMPENSATION OR TIME CAN BE REQUESTED BY THE CONTRACTOR.

NOTE TO EOR:
ANY NOTE REMOVED FROM THESE SHEETS SHALL HAVE A PLACE HOLDER "NOTE REMOVED". NOTE NUMBERING SHALL NOT CHANGE.

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MAINTENANCE OF EXISTING FIBER OPTIC NETWORK:

1. THE CONSTRUCTION CONFLICTS SHOWN IN THE PLANS SHALL BE CONSIDERED THE MINIMUM NUMBER OF CONFLICTS WHICH CAN BE EXPECTED WITH THE EXISTING FON. THE CONTRACTOR SHALL DEVELOP A PLAN TO AVOID SUCH CONFLICTS AND MAINTAIN COMMUNICATIONS AT ALL TIMES. THIS PLAN SHALL BE SUBMITTED TO CFX FOR APPROVAL. THE PLAN SHALL INCLUDE SPECIFIC MEANS, METHODS AND QUANTITIES FOR ALL CONFLICT LOCATIONS.

SPECIAL NOTES:

1. THE CONTRACTOR SHALL IDENTIFY AN INDIVIDUAL FROM THE CONTRACTOR'S STAFF OR SUBCONTRACTOR'S STAFF TO BE RESPONSIBLE FOR THE PROTECTION AND LOCATING OF THE EXISTING FON DURING THIS CONSTRUCTION PROJECT. QUALIFICATIONS OF THIS INDIVIDUAL SHALL BE SUBMITTED FOR CFX APPROVAL.

2. SECTION 600 OF THE CFX SPECIFICATIONS ESTABLISHES THE MINIMUM TECHNICAL QUALIFICATIONS AND CERTIFICATIONS REQUIRED TO WORK ON CFX'S FIBER OPTIC NETWORK. ALL ITS TRAINING SHALL BE COORDINATED THROUGH CFX FOR AUTHORIZATION OF THE TRAINING AND ATTENDEES.

3. CONTINUOUS OPERATION OF EXISTING ITS DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, EXCEPT DURING RELOCATION OF DEVICE, AS GOVERNED BY CFX SPECIFICATIONS 603A.

4. SECTION 631 OF THE CFX SPECIFICATIONS ESTABLISHES THE GENERAL REQUIREMENTS FOR THE PROTECTION AND LOCATION OF THE EXISTING CFX FIBER OPTIC NETWORK (FON) SYSTEM.

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TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS														TOTAL THIS SHEET		GRAND TOTAL		REF. SHEET
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	
101-1	MOBILIZATION	LS																			
102-1	MAINTENANCE OF TRAFFIC	LS																			
600-100	TRAINING FOR TRAFFIC MONITORING STATION	EA																			
600-101	TRAINING FOR DATA COLLECTION SENSORS	EA																			
600-102	TRAINING FOR CCTV SYSTEM AND CAMERA LOWERING DEVICE	EA																			
600-103	TRAINING FOR DYNAMIC MESSAGE SIGNS	EA																			
600-104	TRAINING FOR FIBER OPTIC NETWORK	EA																			
600-105	TRAINING FOR SYSTEM AUXILIARIES	EA																			
603A-100	CONTINUOUS OPERATION OF EXISTING ITS DEVICES	LS																			
612-100	GEOLOCATION OF ITS EQUIPMENT AND INFRASTRUCTURE	LS																			
631-100	FIBER OPTIC CABLE INVENTORY	EA																			
631-101	FIBER OPTIC SPLICE HOUSING INVENTORY	EA																			
631-102	RADIODETECTION LOCATION DEVICE	EA																			
631-103	RADIODETECTION TRANSMITTER UNIT	EA																			
633-121-2	FIBER OPTIC CABLE (12 SM FIBER) (F&I)	LF																			
633-121-3	FIBER OPTIC CABLE (24 SM FIBER) (F&I)	LF																			
633-121-4	FIBER OPTIC CABLE (72 SM FIBER) (F&I)	LF																			
633-121-6	FIBER OPTIC CABLE (EXISTING-WITHDRAW & RELOCATE)	LF																			
633-141-4	FIBER OPTIC SPLICE ENCLOSURE (72 SPLICE) (F&I)	EA																			
633-141-5	FIBER OPTIC SPLICE ENCLOSURE (144 SPLICE) (F&I)	EA																			
633-141-6	FIBER OPTIC SPLICE ENCLOSURE (288 SPLICE) (F&I)	EA																			
633-141-7	FIBER OPTIC FUSION SPLICE	EA																			
633-141-8	EXISTING FIBER OPTIC SPLICE ENCLOSURE RE-ENTRY	EA																			
635-1-11	PULL BOX (F&I)	EA																			
635-1-12	SMALL FIBER OPTIC PULL BOX, 24" DIA, (F&I)	EA																			
635-1-13	LARGE FIBER OPTIC PULL BOX, 36" DIA, (F&I)	EA																			
635-1-14	JUNCTION BOX (SURFACE MOUNTED) (F&I)	EA																			
635-1-30	PULL BOX (ADJUST-ALL TYPES)	EA																			
635-1-60	PULL BOX (REMOVE-ALL TYPES)	EA																			
636-11	CONCRETE MANHOLE 4 X 4 X 4 (F&I)	EA																			
636-12	CONCRETE MANHOLE 4 X 6.5 X 6.5 (F&I)	EA																			
636-13	CONCRETE MANHOLE 4 X 6.5 X 6.5 (DOGHOUSE) (F&I)	EA																			
636-40	CONCRETE MANHOLE (ADJUST)	EA																			
636-60	CONCRETE MANHOLE (REMOVE)	EA																			
638-0001-0111	FO CONDUIT, 1-1" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0001-0211	FO CONDUIT, 2-1" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0001-0411	FO CONDUIT, 4-1" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0001-0811	FO CONDUIT, 8-1" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0001-0812	FO CONDUIT, 8-1" HDPE SDR 11 (TRENCH IN ASPHALT) (F&I)	LF																			
638-0001-0911	FO CONDUIT, 9-1" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0002-0111	FO CONDUIT, 1-2" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0002-0211	FO CONDUIT, 2-2" HDPE SDR 11 (TRENCH OR PLOW)	LF																			
638-0002-0213	FO CONDUIT, 2-2" HDPE SDR 11 (DIRECTIONAL BORE)	LF																			
638-0003-0911	FO CONDUIT, 8-1" & 1-2" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-0006-0116	CONDUIT (UNDERGROUND) (1" SCH 40 PVC) (F&I)	LF																			
638-0007-0116	CONDUIT (UNDERGROUND) (2" SCH 40 PVC) (F&I)	LF																			
638-0008-0116	CONDUIT (UNDERGROUND) (3" SCH 40 PVC) (F&I)	LF																			
638-0009-0117	CONDUIT (ABOVEGROUND) (1/2" RGS) (F&I)	LF																			
638-0010-0117	CONDUIT (ABOVEGROUND) (1" RGS) (F&I)	LF																			
638-0011-0117	CONDUIT (ABOVEGROUND) (2" RGS) (F&I)	LF																			
638-1400-0011	FO CONDUIT, 4" HDPE SDR 11 SLEEVE (TRENCH OR PLOW) (F&I)	LF																			
638-1401-0213	FO CONDUIT, 4" HDPE SDR 11 OUTER DUCT W/ 2-1" HDPE SDR 11 (DIRECTIONAL BORE) (F&I)	LF																			
638-1402-0113	FO CONDUIT, 4" HDPE SDR 11 OUTER DUCT W/ 1-2" HDPE SDR 11 (DIRECTIONAL BORE) (F&I)	LF																			
638-1403-0213	FO CONDUIT, 4" HDPE SDR 11 OUTER DUCT W/ 1-1" & 1-2" HDPE SDR 11 (DIRECTIONAL BORE) (F&I)	LF																			
638-1600-0011	FO CONDUIT, 6" HDPE SDR 11 SLEEVE (EMPTY CONDUIT) (TRENCH OR PLOW) (F&I)	LF																			
638-1601-0413	FO CONDUIT, 6" HDPE SDR 11 OUTER DUCT W/ 4-1" HDPE SDR 11 (DIRECTIONAL BORE) (F&I)	LF																			
638-1601-0811	FO CONDUIT, 6" HDPE SDR 11 OUTER DUCT W/8-1" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-1601-0813	FO CONDUIT, 6" HDPE SDR 11 OUTER DUCT W/8-1" HDPE SDR 11 (DIRECTIONAL BORE) (F&I)	LF																			
638-1603-0911	FO CONDUIT, 6" HDPE SDR 11 OUTER DUCT W/8-1" AND 1-2" HDPE SDR 11 (TRENCH OR PLOW) (F&I)	LF																			
638-( )-( )	SEE SPEC 638 FOR MORE PAY ITEMS	-																			
638-1A	TUBULAR ROUTE MARKER (FIBER)	EA																			
638-1B	TUBULAR ROUTE MARKER (POWER)	EA																			
638-2A	RADIODETECTION SIDE LEG TERMINATOR (SLT) PN 10/444150322	EA																			
638-200	TONE WIRE (UNDERGROUND) (IN CONDUIT) (F&I)	LF																			
639-1-11	ELECTRICAL POWER SERVICE ASSEMBLY (UNDERGROUND) (F&I)	AS																			
639-1-12	ELECTRICAL POWER SERVICE ASSEMBLY (OVERHEAD) (F&I)	AS																			

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TABULATION OF QUANTITIES (1 OF 4)

SHEET NO. A-5

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$DATE$ $TIME$ $FILE$

TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS														TOTAL THIS SHEET		GRAND TOTAL		REF. SHEET
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	
639-1-13	ELECTRICAL POWER SERVICE ASSEMBLY (ADJUST) (F&I)	AS																			
639-1-14	ELECTRICAL POWER SERVICE ASSEMBLY (REMOVE)	AS																			
639-2-11	ELECTRICAL SERVICE DISCONNECT (POLE) (F&I)	EA																			
639-2-12	ELECTRICAL SERVICE DISCONNECT (ADJUST)	EA																			
639-2-13	ELECTRICAL SERVICE DISCONNECT (REMOVE)	EA																			
639-2-14	ELECTRICAL POWER TRANSFORMER (F&I)	EA																			
639-2-15	ELECTRICAL POWER TRANSFORMER (REMOVE)	EA																			
639-3-01	ELECTRICAL CONDUCTORS (INSULATED) (NO.1) (F&I)	LF																			
639-3-02	ELECTRICAL CONDUCTORS (INSULATED) (NO.2) (F&I)	LF																			
639-3-04	ELECTRICAL CONDUCTORS (INSULATED) (NO.4) (F&I)	LF																			
639-3-06	ELECTRICAL CONDUCTORS (INSULATED) (NO.6) (F&I)	LF																			
639-3-08	ELECTRICAL CONDUCTORS (INSULATED) (NO.8) (F&I)	LF																			
639-3-10	ELECTRICAL CONDUCTORS (INSULATED) (NO.10) (F&I)	LF																			
639-3-12	ELECTRICAL CONDUCTORS (INSULATED) (NO.12) (F&I)	LF																			
639-3-100	ELECTRICAL CONDUCTORS (INSULATED) (NO.1/0) (F&I)	LF																			
639-3-200	ELECTRICAL CONDUCTORS (INSULATED) (NO.2/0) (F&I)	LF																			
639-3-300	ELECTRICAL CONDUCTORS (INSULATED) (NO.3/0) (F&I)	LF																			
663-74-141	DCS FIELD EQUIPMENT, 1 LANE (F&I)	EA																			
663-74-142	DCS FIELD EQUIPMENT, 2 LANES (F&I)	EA																			
663-74-143	DCS FIELD EQUIPMENT, 3 LANES (F&I)	EA																			
663-74-144	DCS FIELD EQUIPMENT, 4 LANES (F&I)	EA																			
663-74-145	DCS FIELD EQUIPMENT, 5 LANES (F&I)	EA																			
663-74-146	DCS FIELD EQUIPMENT, 6 LANES (F&I)	EA																			
663-74-147	DCS FIELD EQUIPMENT, 7 LANES (F&I)	EA																			
663-74-241	DCS FIELD EQUIPMENT, UPTO 3 ADDITIONAL LANES OF COVERAGE (F&I)	EA																			
663-74-440	DCS FIELD EQUIPMENT (RELOCATE)	EA																			
663-74-640	DCS FIELD EQUIPMENT (REMOVE)	EA																			
663-74-SP	DCS FIELD EQUIPMENT, SPARE PARTS KIT (FURNISH ONLY)	EA																			
664-1-40	TMS, POLE MOUNTED (F&I)	EA																			
664-1-41	TMS, TRUSS MOUNTED (F&I)	EA																			
664-2-42	TMS, 30' POLE (F&I)	EA																			
664-2-43	TMS, 40' POLE (F&I)	EA																			
664-3-144	TMS, COMPOSITE CABLE (FURNISH)	LF																			
664-4-145	TMS, POLE REMOVAL SHALLOW	EA																			
664-4-146	TMS, POLE REMOVAL DEEP	EA																			
664-4-147	TMS, ASSEMBLY (ADJUST)	EA																			
664-1-SP	TRAFFIC MONITORING STATION, SPARE PARTS KIT (FURNISH ONLY)	EA																			
668-11	ITS DEVICE CABINET (POLE MOUNTED) (HEAT SHIELD) (F&I)	EA																			
668-12	ITS DEVICE CABINET (BASE MOUNTED) (HEAT SHIELD) (F&I)	EA																			
668-13	ITS NEMA 3R INTERMEDIATE CABINET (POLE MOUNTED) (F&I)	EA																			
668-14	FULLY OPERABLE CYBERLOCK ASSY. (PER CABINET DOOR) (FURNISH ONLY)	EA																			
668-21	ITS NEMA 3R INTERMEDIATE CABINET (POLE MOUNTED) (INSTALL)	EA																			
668-22	CORBIN LOCK (PER CABINET) (REMOVE)	EA																			
668-40	ITS DEVICE CABINET (RELOCATE-ALL TYPES)	EA																			
668-60	ITS DEVICE CABINET (REMOVE-ALL TYPES)	EA																			
683-101	GIGABIT ETHERNET FIELD SWITCH (F&I)	EA																			
683-101SP	GIGABIT ETHERNET FIELD SWITCH (FURNISH ONLY)	EA																			
683-102	HARDENED TERMINAL SERVER (F&I)	EA																			
683-102SP	HARDENED TERMINAL SERVER (FURNISH ONLY)	EA																			
683-103	ETHERNET MEDIA CONVERTER (F&I)	EA																			
683-103SP	ETHERNET MEDIA CONVERTER (FURNISH ONLY)	EA																			
683-104	FIBER OPTIC PATCH PANEL, 12 PORT (F&I)	EA																			
683-105	FIBER OPTIC PATCH PANEL, 72 PORT (F&I)	EA																			
683-106	CUT-TO-LENGTH FIBER OPTIC JUMPER (F&I)	EA																			
683-201	UNINTERRUPTIBLE POWER SUPPLY (F&I)	EA																			
683-201SP	UNINTERRUPTIBLE POWER SUPPLY WITH TWO (2) BATTERIES (FURNISH ONLY)	EA																			
683-202	REMOTE POWER MANAGER/ENVIRONMENTAL SENSOR (F&I)	EA																			
683-202SP	REMOTE POWER MANAGER/ENVIRO. SENSOR ITS COMMANDER PART NO. 1RU8126MS-001 (FURNISH ONLY)	EA																			
683-203	COMMUNICATION RACK INSTALLATION (F&I)	EA																			
686-101	CCTV FIELD ASSEMBLY, (F&I)	EA																			
686-102	CCTV FIELD ASSEMBLY (FURNISH)	EA																			
686-103	CCTV FIELD ASSEMBLY (RELOCATE)	EA																			
686-104	CCTV FIELD ASSEMBLY (REMOVE)	EA																			
686-1-SP	CCTV SPARE PARTS KIT (FURNISH ONLY)	EA																			
686-201	CAMERA LOWERING SYSTEM & (25' POLE) (F&I)	EA																			
686-202	CAMERA LOWERING SYSTEM & (40' POLE) (F&I)	EA																			
686-203	CAMERA LOWERING SYSTEM (50' POLE) (F&I)	EA																			

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TABULATION OF QUANTITIES (2 OF 4)

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TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS														TOTAL THIS SHEET		GRAND TOTAL		REF. SHEET
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	
686-204	CAMERA LOWERING SYSTEM & (60' POLE) (F&I)	EA																			
686-205	CAMERA LOWERING SYSTEM (80' POLE) (F&I)	EA																			
686-206	CAMERA LOWERING SYSTEM (130' POLE) (F&I)	EA																			
686-207	DUAL CAMERA LOWERING SYSTEM & (XX' POLE PER PLANS)(F&I)	EA																			
686-301	CAMERA LOWERING SYSTEM (25' POLE) (RELOCATE)	EA																			
686-302	CAMERA LOWERING SYSTEM (40' POLE) (RELOCATE)	EA																			
686-303	CAMERA LOWERING SYSTEM (50' POLE) (RELOCATE)	EA																			
686-304	CAMERA LOWERING SYSTEM (60' POLE) (RELOCATE)	EA																			
686-305	CAMERA LOWERING SYSTEM (80' POLE) (RELOCATE)	EA																			
686-306	CAMERA LOWERING SYSTEM (130' POLE) (RELOCATE)	EA																			
686-307	CAMERA LOWERING SYSTEM POLE REMOVAL SHALLOW	EA																			
686-308	CAMERA LOWERING SYSTEM POLE REMOVAL DEEP	EA																			
686-309	DUAL CAMERA LOWERING SYSTEM & (XX' POLE PER PLANS)(RELOCATE)	EA																			
729-11	FULL COLOR DMS (LED) (3 LINE) (WALK-IN) (F&I)	EA																			
729-11SP	FULL COLOR DMS (LED) (3 LINE) (WALK-IN) (SPARE PARTS KIT)	EA																			
729-12	FULL COLOR DMS (LED) (3 LINE) (WALK-IN) (INSTALL ONLY)	EA																			
730-11	FULL COLOR ADMS (LED) (1 LINE) (FRONT ACCESS) (F&I)	EA																			
730-11SP	FULL COLOR ADMS (LED) (1 LINE) (FRONT ACCESS) (SPARE PARTS KIT)	EA																			
730-12	FULL COLOR ADMS (LED) (1 LINE) (FRONT ACCESS) (INSTALL ONLY)	EA																			
731-11	FULL COLOR ADMS (LED) (2 LINE) (FRONT ACCESS) (F&I)	EA																			
731-11SP	FULL COLOR ADMS (LED) (2 LINE) (FRONT ACCESS) (SPARE PARTS KIT)	EA																			
731-12	FULL COLOR ADMS (LED) (2 LINE) (FRONT ACCESS) (INSTALL ONLY)	EA																			
732-11	FULL COLOR DMS (LED) (1 LINE) (FRONT ACCESS) (F&I)	EA																			
732-11SP	FULL COLOR DMS (LED) (1 LINE) (FRONT ACCESS) (SPARE PARTS KIT)	EA																			
732-12	FULL COLOR DMS (LED) (1 LINE) (FRONT ACCESS) (INSTALL ONLY)	EA																			
733-11	FULL COLOR DMS (LED) (2 LINE) (FRONT ACCESS) (F&I)	EA																			
733-11SP	FULL COLOR DMS (LED) (2 LINE) (FRONT ACCESS) (SPARE PARTS KIT)	EA																			
733-12	FULL COLOR DMS (LED) (2 LINE) (FRONT ACCESS) (INSTALL ONLY)	EA																			
734-11	FULL COLOR DMS (LED) (2 LINE) (FRONT ACCESS) (F&I)	EA																			
734-11SP	FULL COLOR DMS (LED) (2 LINE) (FRONT ACCESS) (SPARE PARTS KIT)	EA																			
734-12	FULL COLOR DMS (LED) (2 LINE) (FRONT ACCESS) (INSTALL ONLY)	EA																			
740-89-12A	RFB WWDS COMPLETE (RADAR) (A/C POWER) (INSTALL)	EA																			
740-89-12B	RFB WWDS COMPLETE (LASER) (A/C POWER) (INSTALL)	EA																			
740-89-12C	RFB WWDS COMPLETE (RADAR) (A/C POWER), BLACK POWDER COAT FINISH MODEL NO. 2180-02650 (F&I)	EA																			
740-89-12D	RFB WWDS COMPLETE (LASER) (A/C POWER), BLACK POWDER COAT FINISH MODEL NO. 2180-02660 (F&I)	EA																			
740-89-12E	RFB WWDS COMPLETE (RADAR) (A/C POWER), ALUMINUM FINISH MODEL NO. 2180-02600 (F&I)	EA																			
740-89-12F	RFB WWDS COMPLETE (LASER) (A/C POWER), ALUMINUM FINISH MODEL NO. 2180-02610 (F&I)	EA																			
740-89-12G	RFB WWDS COMPLETE (RELOCATE)	EA																			
740-89-SP	RFB WWDS SPARE PARTS KIT (FURNISH ONLY)	EA																			

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TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS														TOTAL THIS SHEET		GRAND TOTAL		REF. SHEET
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	
633-121-2T	TEMPORARY FIBER OPTIC CABLE (12 SM FIBER) (F&I)	LF																			
633-121-4T	TEMPORARY FIBER OPTIC CABLE (72 SM FIBER) (F&I)	LF																			
633-121-5T	TEMPORARY FIBER OPTIC CABLE (144 SM FIBER) (F&I)	LF																			
633-141-3T	TEMPORARY FIBER OPTIC SPLICE ENCLOSURE	EA																			
633-141-4T	TEMPORARY FIBER OPTIC SPLICE	EA																			
635-1-15T	TEMPORARY SMALL FIBER OPTIC PULL BOX (F&I)	EA																			
635-1-16T	TEMPORARY LARGE FIBER OPTIC PULL BOX (F&I)	EA																			
638-001-0111T	TEMPORARY FIBER OPTIC CONDUIT (1-1" HDPE SDR 11) (TRENCH OR PLOW)	LF																			
638-001-0812	FIBER OPTIC CONDUIT (8-1" HDPE SDR 11) (IN ASPHALT)	LF																			
638-001-0911	FIBER OPTIC CONDUIT (9-1" HDPE SDR 11) (TRENCH OR PLOW)	LF																			
638-002-0111T	TEMPORARY FIBER OPTIC CONDUIT (1-2" HDPE SDR 11) (TRENCH OR PLOW)	LF																			
638-003-0911	FIBER OPTIC CONDUIT (8-1" HDPE SDR 11 AND 1-2" HDPE SDR 11) (TRENCH OR PLOW)	LF																			
638-140-0011T	TEMPORARY FIBER OPTIC, 4" HDPE SDR 11 SLEEEVE (EMPTY CONDUIT) TRENCH OR PLOW	LF																			
638-141-0213T	TEMPORARY FIBER OPTIC CONDUIT, 4" HDPE SDR 11 W/2-1" HDPE SDR 11 DIRECTIONAL BORE	LF																			
638-143-0211T	TEMPORARY FO CONDUIT, 4" HDPE SDR 11 W/ 1-1" AND 1-2" HDPE SDR 11, TRENCH OR PLOW	LF																			
638-143-0213T	TEMPORARY FO CONDUIT, 4" HDPE SDR 11 W/ 1-1" AND 1-2" HDPE SDR 11, DIRECTIONAL BORE	LF																			
638-240-0011T	TEMPORARY FIBER OPTIC, 4" SCHEDULE 40 PVC SPLIT SLEEVE (TRENCH OR PLOW)	LF																			
638-260-0011T	TEMPORARY FIBER OPTIC, 6" SCHEDULE 40 PVC SPLIT SLEEVE (TRENCH OR PLOW)	LF																			
4210-11T	TEMPORARY FIBER OPTIC MANHOLE (4'X4'X4') (F&I)	EA																			
4210-12T	TEMPORARY 4'X6.5'X6.5' CONCRETE MANHOLE (F&I)	EA																			
4210-13T	TEMPORARY DOGHOUSE FIBER OPTIC MANHOLE (4'X6.5'X6.5') (F&I)	EA																			

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UTILITY CONTACTS

UTILITY LOCATES PROVIDED BY NO-CUTS: 1-800-432-4770

CFX (FIBER)	WILLIAM COLLINS	407-690-5000
CFX FACILITIES MAINTENANCE	ICA	407-730-8923
CFX ROADWAY MAINTENANCE (SR429,SR414,SR451)	ICA	407-730-8923
CFX ROADWAY MAINTENANCE (SR408,SR417,SR528)	JCS	407-249-9122

ALL OTHER PROJECT SPECIFIC CONTACTS
SHALL BE COMPLETED BY THE DESIGNER

DISRUPTION OF COMMUNICATIONS OR ELECTRICAL TO TOLL PLAZA: IN THE EVENT COMMUNICATION OR POWER LOSS TO ANY TOLL PLAZA(S) SYSTEM WIDE, THE CONTRACTOR SHALL CONTACT THE FOLLOWING PERSONNEL.

DAVID WYNNE	David.Wynne@CFXway.com	407-690-5000
RAFAEL MILLAN	Rafael.Millan@CFXway.com	407-690-5000

OTHER CONTACTS

CITY OF APOPKA PUBLIC SERVICES-DESIGN ENGINEERING	407-703-1731
CITY OF OCOEE PUBLIC WORKS	407-905-3170
CITY OF ORLANDO TRANSPORTATION ENGINEERING	407-246-2281
CITY OF WINTER GARDEN PUBLIC SERVICES	407-656-2256
ORANGE COUNTY TRAFFIC ENGINEERING	407-836-7890

LEGEND

PROPOSED UNDERGROUND POWER 2" SCHEDULE 40 P.V.C UNDERGROUND CONDUIT WITH AWG XHHW STRANDED COPPER CIRCUIT INSULATED CONDUCTORS INSIDE (CONDUCTOR AND GROUND WIRE SIZES SHOWN ON DETAIL SHEETS) AND INSULATED GREEN STRANDED CU BOND WIRE CONNECTING ALL ITEMS.

DIRECTIONAL BORE CONDUIT

BRIDGE MOUNT CONDUIT

1-6" BULLET RESISTIVE FIBERGLASS (BRFG) CONDUIT ATTACHED TO BRIDGE E/W HDPE 9-1" CONDUITS

6" PVC, SCHEDULE 40 E/W 9-1" HDPE

3-1" HDPE CONDUITS (FEEDER)

9-1" HDPE CONDUITS (BACKBONE)

EXISTING 9-1" HDPE CONDUITS

PROPOSED BLACK STEEL PIPE (BSP) OR PROPOSED SPLIT BLACK STEEL PIPE (SBSP)

EXISTING BLACK STEEL PIPE (BSP) OR EXISTING SPLIT BLACK STEEL PIPE (SBSP)

OVERHEAD SIGN TRUSS AND STATIC SIGN PANELS TO BE INSTALLED BY SIGNING AND MARKING CONTRACTOR AS PART OF THE SIGNING AND PAVEMENT MARKING PLAN SET.

EXISTING POLE MOUNTED CABINET & CAMERA W/ LOWERING SYSTEM ON STEEL POLE W/ FOUNDATION

PROPOSED POLE MOUNTED CABINET & CAMERA W/ LOWERING SYSTEM ON STEEL POLE W/ NEW FOUNDATION

EXISTING FIBER OPTIC ROUND PULL BOX (OPENING 24" OR 36")

PROPOSED FIBER OPTIC ROUND PULL BOX (OPENING 24" OR 36")

EXISTING ELECTRIC OR GROUNDING PULL BOX (13"x24"x12"D)

PROPOSED ELECTRIC OR GROUNDING PULL BOX (13"x24"x12"D)

EXISTING FIBER OPTIC PULL BOX (17"x30"x12"D)

PROPOSED CONCRETE PEDESTAL FOR POWER SERVICE

EXISTING CONCRETE PEDESTAL FOR POWER SERVICE

EXISTING FIBER OPTIC MANHOLE

PROPOSED FIBER OPTIC MANHOLE (4'x4'x4')

PROPOSED FIBER OPTIC MANHOLE (4'x6.5'x6.5')

PROPOSED FIBER OPTIC MANHOLE WITH STUB-OUT (4'x4'x4')

PROPOSED FIBER OPTIC MANHOLE WITH STUB-OUT (4'x6.5'x6.5')

PROPOSED POLE MOUNTED CABINET TYPE 336S / NEMA 3R

PROPOSED GROUND MOUNTED CABINET TYPE 334

EXISTING POINT OF ELECTRICAL SERVICE

PROPOSED POINT OF ELECTRICAL SERVICE

PROPOSED DMS ELECTRICAL SERVICE EQUIPMENT ON H-FRAME SUPPORT WITH CONCRETE PAD.

PROPOSED TMS

PROPOSED TMS DETECTION ZONES (SYMBOL SHOULD BE PLACED OVER EACH LANE DETECTED)

DATA COLLECTION SENSOR ANTENNA SITE (# INDICATES NUMBER OF LANES READ, ARROW POINTS IN DIRECTION OF TRAVEL)

ABBREVIATIONS

BRFG = BULLET RESISTIVE FIBERGLASS OUTER DUCT

BSP = BLACK STEEL PIPE (USE W/PROPOSED CONDUITS)

SBSP = SPLIT BLACK STEEL PIPE (USE W/EXISITNG CONDUITS)

DCS = DATA COLLECTION SENSOR

DMS = DYNAMIC MESSAGE SIGN

FO = FIBER OPTIC

FOMH = FIBER OPTIC MANHOLE (SECTION J)

PVC = POLYVINYL CHLORIDE OUTER DUCT

E/W = EQUIPPED WITH

SDR = SIZE DIMENSION RATIO

COND.1 = CONDITION 1 CROSSING (SEE FIBER OPTIC TRENCHING DETAILS)

COND.2 = CONDITION 2 CROSSING (SEE FIBER OPTIC TRENCHING DETAILS)

TMS = TRAFFIC MONITORING STATION

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LEGEND AND UTILITY CONTACTS

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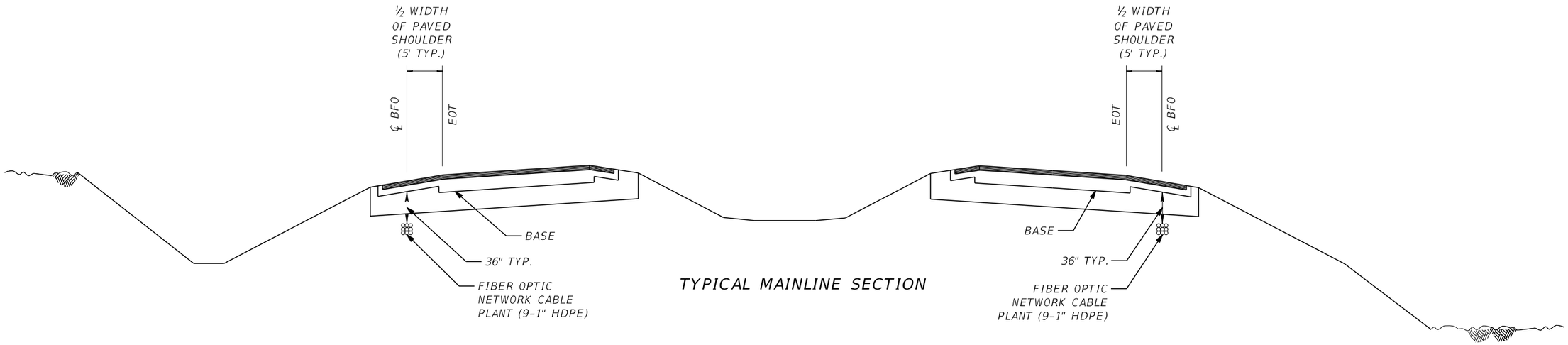
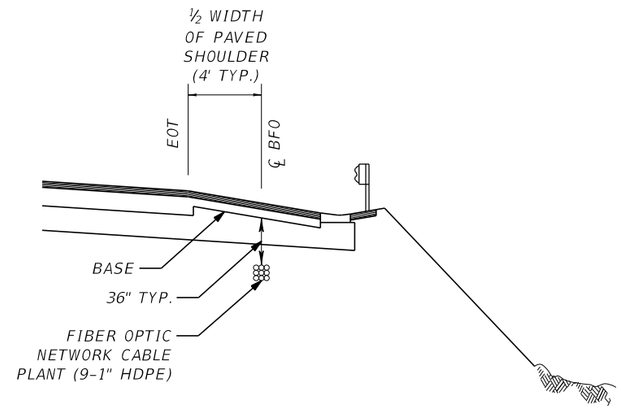


TYPICAL MAINLINE SECTION



TYPICAL MAINLINE/RAMP SECTION
WITH GUARDRAIL

NOTE:

1. WHEN FIBER OPTIC CONDUIT BANK IS INSTALLED, ONE OF THE 1" HDPE CONDUIT SHALL BE INSTALLED TO SLEEVE THE TONE WIRE. 8 HDPE CONDUITS SHALL BE RESERVED FOR FIBER OPTIC CABLE.

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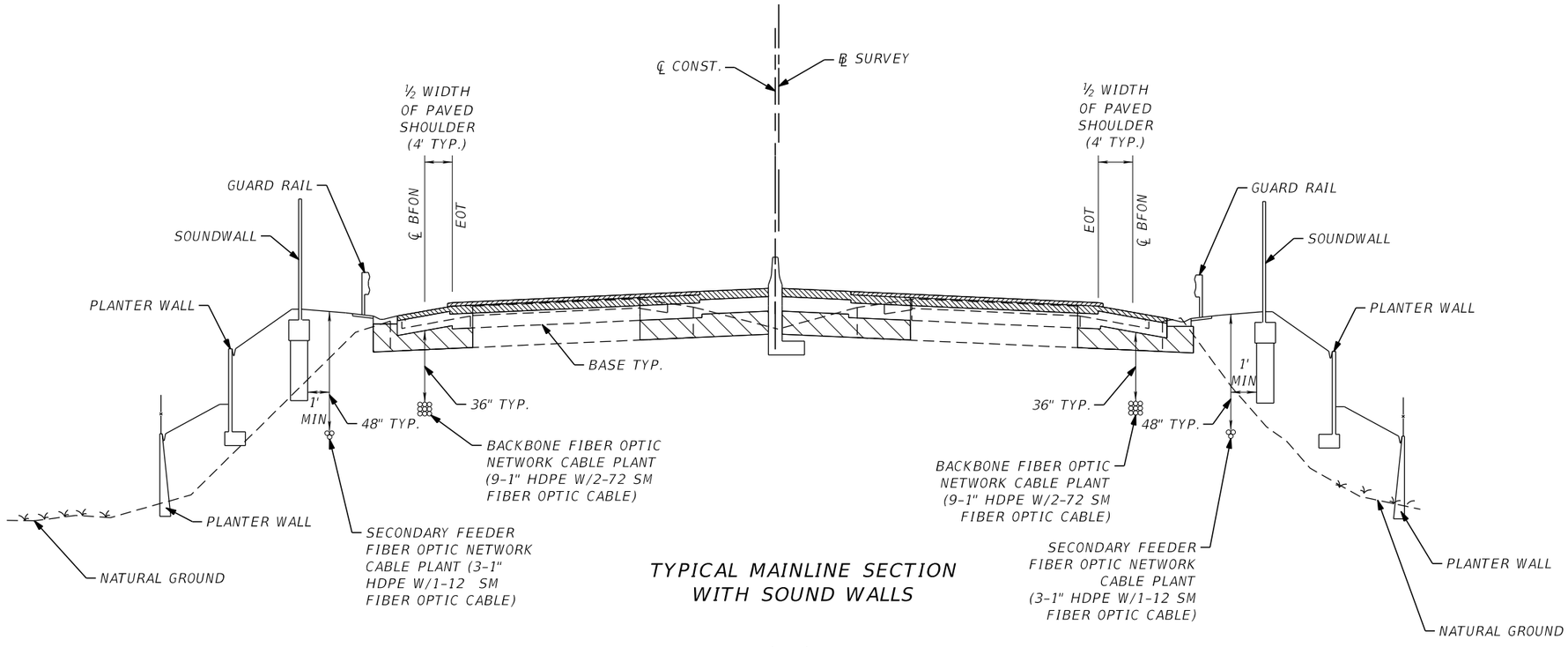
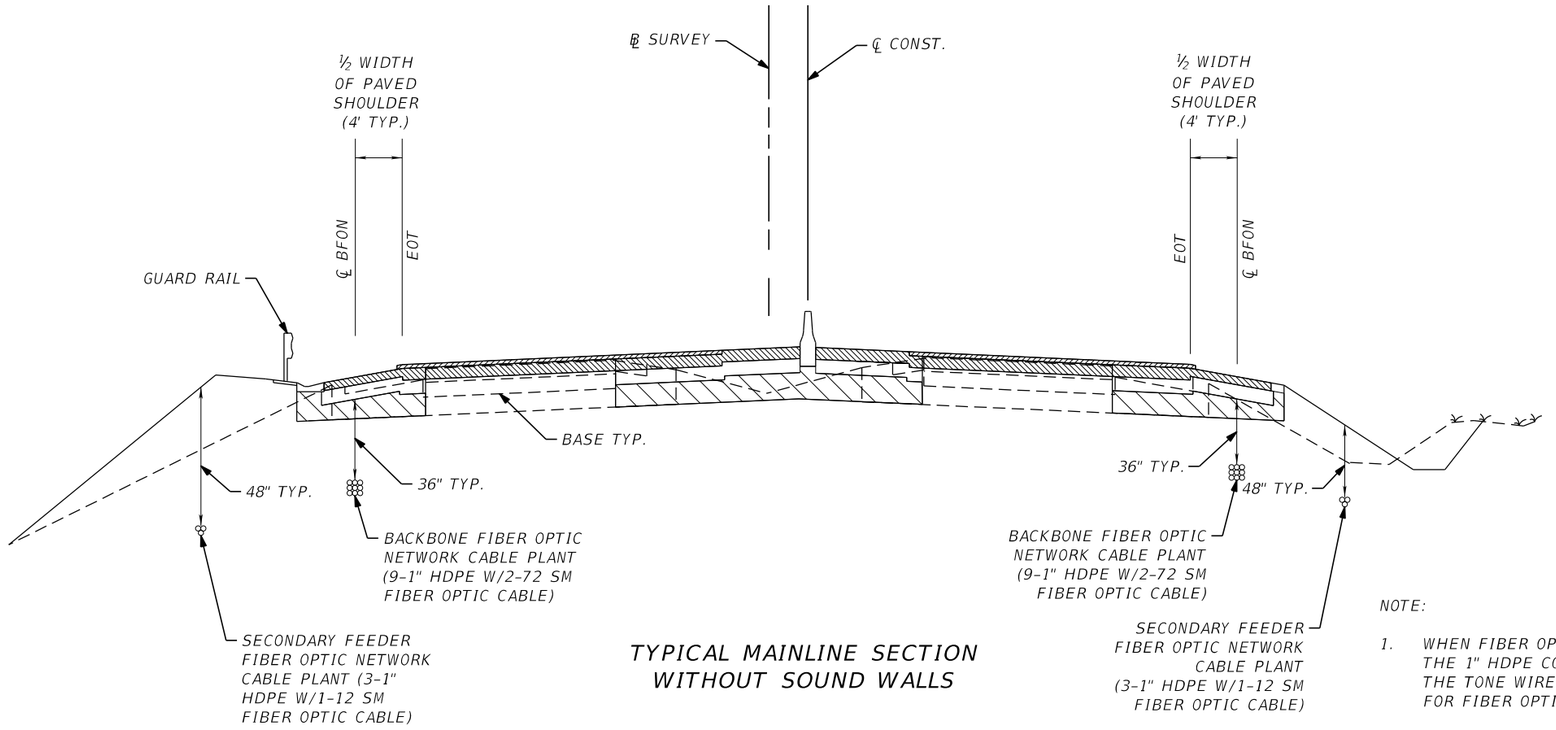


TYPICAL MAINLINE SECTION
WITH SOUND WALLS



TYPICAL MAINLINE SECTION
WITHOUT SOUND WALLS

NOTE:

1. WHEN FIBER OPTIC CONDUIT BANK IS INSTALLED, ONE OF THE 1" HDPE CONDUIT SHALL BE INSTALLED TO SLEEVE THE TONE WIRE. 8 HDPE CONDUITS SHALL BE RESERVED FOR FIBER OPTIC CABLE.

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FIBER OPTIC NETWORK TYPICAL MAINLINE SECTION WITH SECONDARY FEEDER

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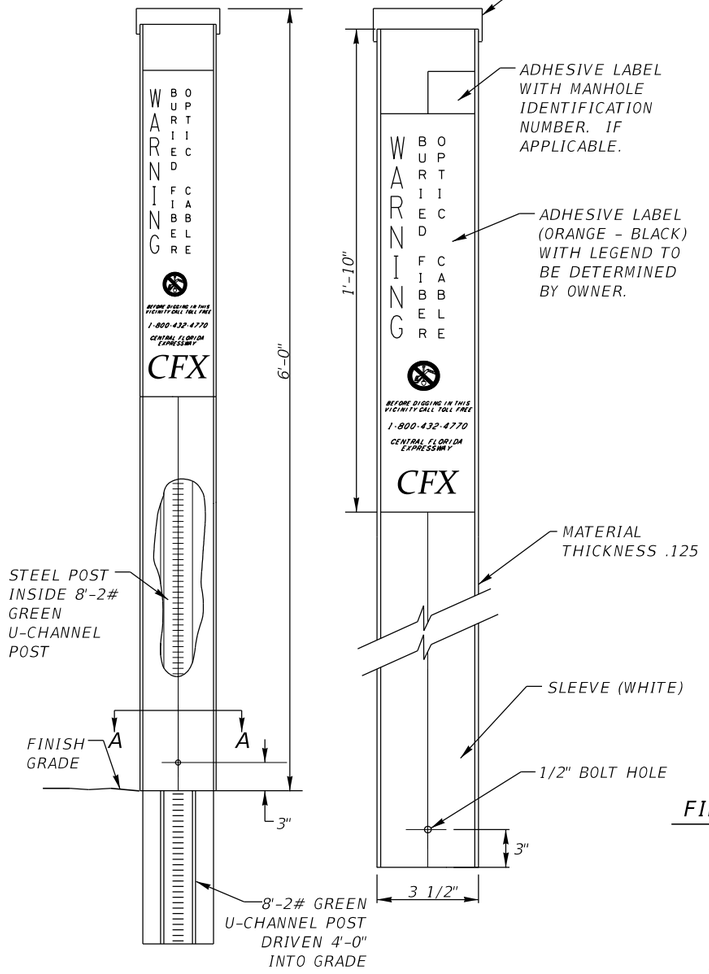
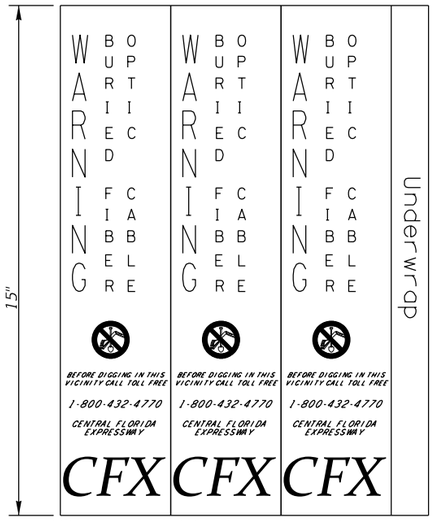
FIBER OPTIC ROUTE MARKER



FRONT VIEW
N.T.S

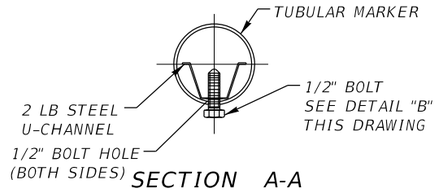
FRONT VIEW
N.T.S



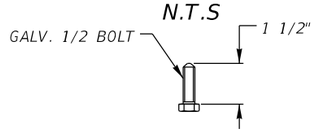
ROUTE MARKER LABEL DETAIL
N.T.S

NOTES:
1. ORANGE TAPE WITH BLACK LETTERS
2. TAPE TO READ: "CFX FIBER OPTIC CABLE BURIED BELOW"

FIBER OPTIC WARNING TAPE DETAIL
N.T.S



SECTION A-A
N.T.S

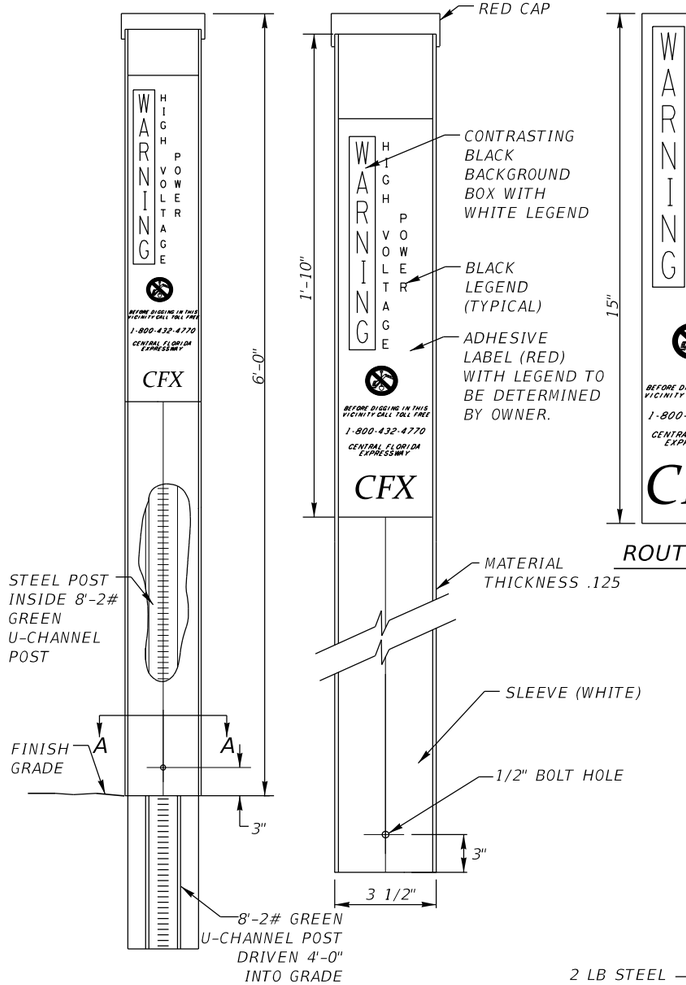


DETAIL B
N.T.S

NOTES:

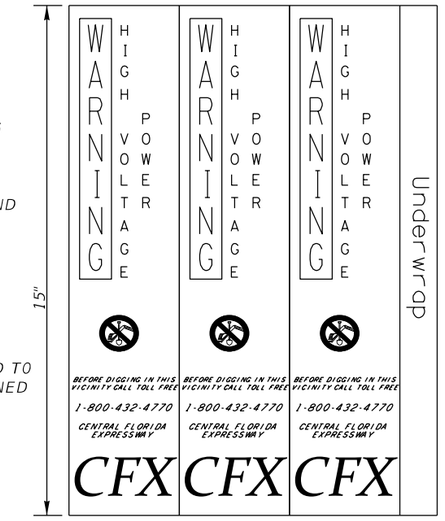
1. 8'-2#/FT. GREEN STEEL U-CHANNEL POST VULCAN UTILITY SIGNS & PRODUCTS PN 0550145 OR CFX APPROVED EQUAL.
2. 72" H-41-RF TUBULAR ROUTE MARKER VULCAN UTILITY SIGNS & PRODUCTS FIBER PN 0303381 OR CFX APPROVED EQUAL.
3. ROUTE MARKER WRAP DECAL, BLACK TEXT ON ORANGE BACKGROUND, VULCAN UTILITY SIGNS & PRODUCTS PN 0906529 OR CFX APPROVED EQUAL.

POWER ROUTE MARKER

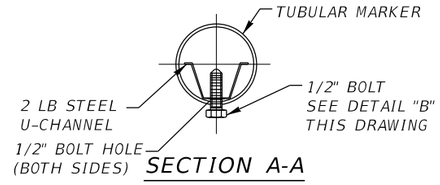


FRONT VIEW
N.T.S

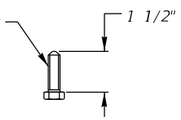
FRONT VIEW
N.T.S



ROUTE MARKER LABEL DETAIL
N.T.S



SECTION A-A
N.T.S



DETAIL B
N.T.S

NOTES:

1. 8'-2#/FT. GREEN STEEL U-CHANNEL POST VULCAN UTILITY SIGNS & PRODUCTS PN 0550145 OR CFX APPROVED EQUAL.
2. 72" H-41-RF TUBULAR ROUTE MARKER VULCAN UTILITY SIGNS & PRODUCTS PN 0303382 OR CFX APPROVED EQUAL.
3. ROUTE MARKER WRAP DECAL, BLACK TEXT ON RED BACKGROUND, VULCAN UTILITY SIGNS & PRODUCTS PN 0906530 OR CFX APPROVED EQUAL.

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FIBER OPTIC / POWER CABLE ROUTE MARKER DETAIL

SHEET NO. A-12

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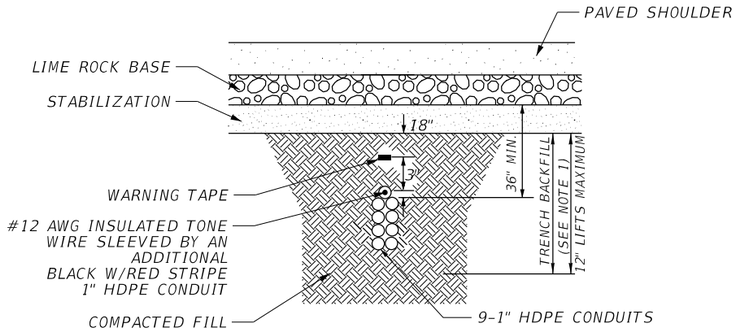
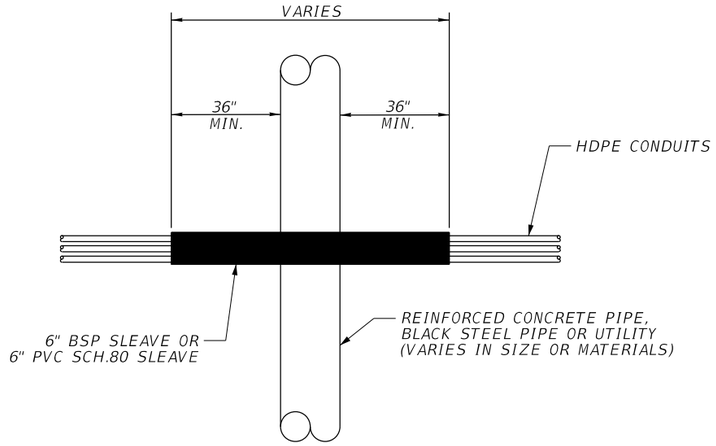


DETAIL "A"
TYPICAL BEDDING AND TRENCHING DETAIL

NOTE TO EOR:
FOR EXISTING INFRASTRUCTURE USE SBSP.
FOR NEW INFRASTRUCTURE USE BSP.

NOTES:

1. THE F.O. CONDUIT SHALL BE INSTALLED SUCH THAT IT MAINTAINS A SUBSTANTIALLY UNIFORM ALIGNMENT (+/- 4 INCHES) BOTH HORIZONTALLY AND VERTICALLY RELATIVE TO THE PAVED SHOULDER AS DETAILED IN THE TYPICAL MAINLINE SECTION.



APPLIES FOR ABOVE AND BELOW OBSTRUCTION DETAILS

DETAIL "D"
PLAN DETAIL AT STORM DRAIN PIPE OR UTILITY CROSSINGS

DETAIL "B"
TYPICAL BSP OR PVC SLEEVE TRENCH DETAIL TO ABOVE CROSS OBSTRUCTION

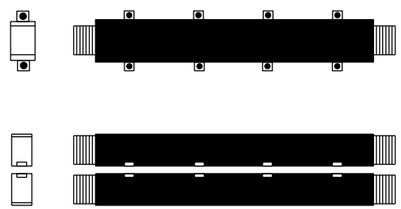
DETAIL "C"
TYPICAL BSP OR PVC SLEEVE TRENCH DETAIL TO BELOW CROSS OBSTRUCTION

NOTES:

1. HDPE SDR 11 SLEEVE TO EXTEND A MIN. OF 3' PAST ENDS OF OBSTRUCTION.
2. 6" HDPE SDR 11 SLEEVE SHALL BE SEALED AT BOTH ENDS WITH A NON SHRINK GROUT OR FOAM SEALANT AND WITH THE F.O. CONDUITS TO PREVENT THE INFILTRATION OF SURROUNDING FILL. METHOD AND MATERIALS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
3. F.O. CONDUITS MAY ALSO BE ROUTED UNDER OBSTRUCTIONS AS SHOWN IN CONDITION 2, IF MINIMUM COVERS SHOWN IN CONDITION 1 CAN NOT BE MET.
4. PROPOSED OBSTRUCTION CROSSING PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. OBSTRUCTION CROSSINGS ARE LABELED ON THE PLAN SHEETS AS COND. 1 FOR A CONDITION 1 CROSSING & COND. 2 FOR A CONDITION 2 CROSSING.
6. DURING ALL HDPE INTERDUCT INSTALLATION INSIDE PVC, HDPE SDR 11, BRFG CONDUIT THE CONTRACTOR SHALL USE POLYWATER FRONT END PACKS, PART NUMBERS J-27 OR J-55, AS APPROPRIATE, OR APPROVED EQUIVALENT AS PULLING LUBRICANT.
7. A MINIMUM HORIZONTAL CLEARANCE OF 12" SHALL BE MAINTAINED FROM ANY OBSTRUCTION.

ABBREVIATIONS

BRFG= BULLET RESISTIVE FIBERGLASS OUTER DUCT
BSP= BLACK STEEL PIPE
SBSP= SPLIT BLACK STEEL PIPE
HDPE= HIGH DENSITY POLYETHYLENE CONDUIT
FO= FIBER OPTIC
FOMH= FIBER OPTIC MANHOLE
PVC= POLYVINYL CHLORIDE OUTER DUCT
E/W= EQUIPPED WITH
SDR= SIZE DIMENSION RATIO
COND.1= CONDITION 1 CROSSING (SEE DETAIL 'B")
COND.2= CONDITION 2 CROSSING (SEE DETAIL 'B")
COND.3= CONDITION 3 CROSSING (SEE DETAIL 'B")



DETAIL "E"
SPLIT BLACK STEEL PIPE (SBSP) DETAIL

NOTES:

1. SCHEDULE 80 SPLIT BLACK STEEL PIPE IN 10' UNIDROM LENGTHS.
2. BLACK CONDUIT COUPLING.
3. PIPE SPLIT LONGITUDINALLY WITH PLASMA CUTTER IN ORDER TO PREVENT WARPING.
4. STEEL TABS WELDED AT APPROX. 2.5' CENTERS.
5. GALVANIZED NUTS AND BOLTS.

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TRENCHING AND UTILITY CROSSING DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					B-1

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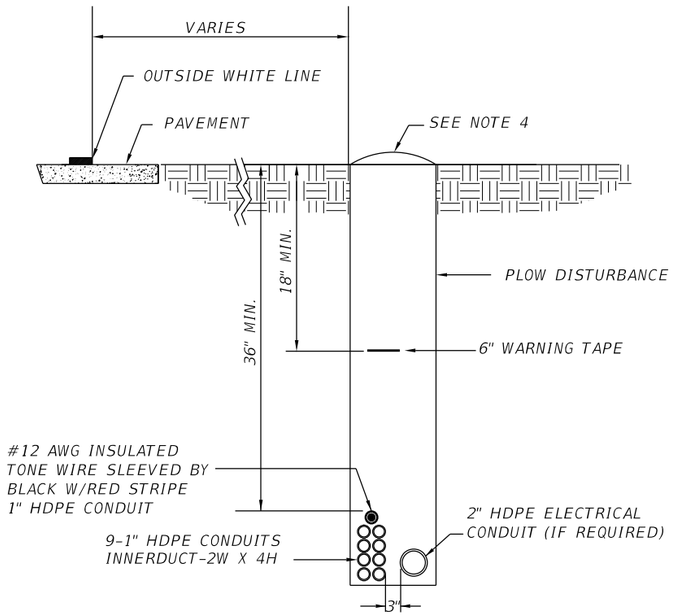
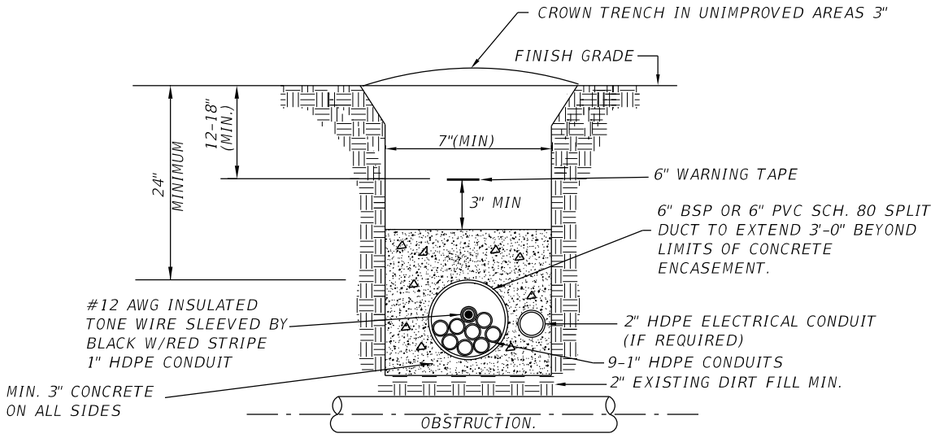


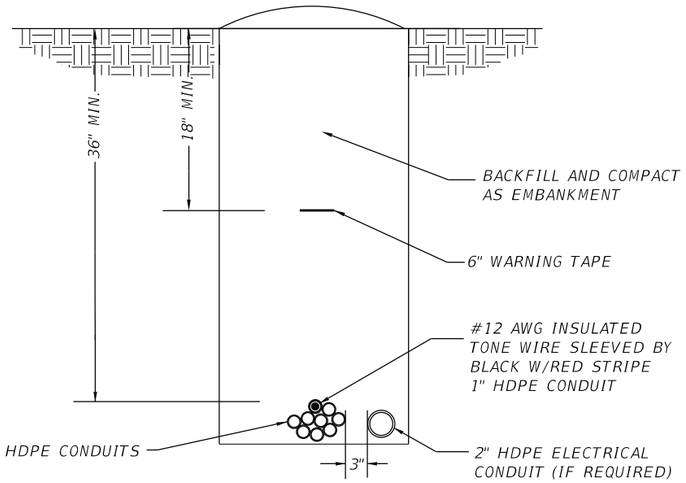
STANDARD CROSS SECTION OF PLOWED CONDUIT



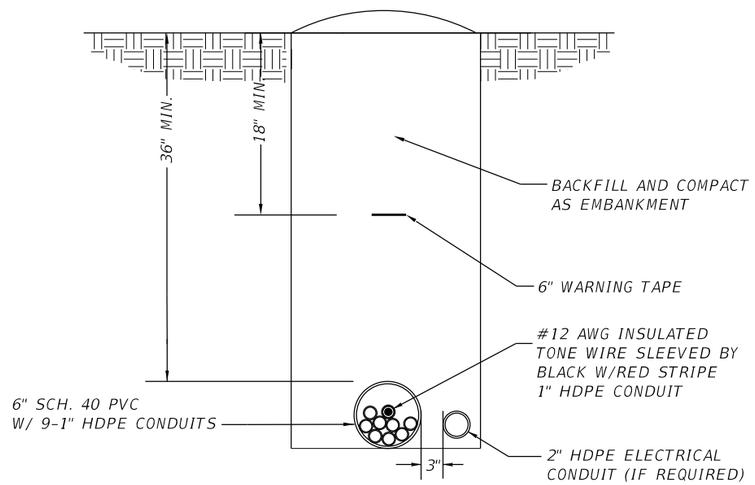
TYPICAL CROSSING WHERE OBSTRUCTION IS 35" TO 44" IN DEPTH.

NOTES:

1. A MINIMUM OF 2'- 0" SHALL BE MAINTAINED FROM EXISTING LANDSCAPE FEATURES. LANDSCAPE REPLACEMENT SHALL BE IN KIND AND SUBJECT TO THE APPROVAL OF CFX.
2. REPLACEMENT OF FILL, BASE, SURFACE (ASPHALT), CURB AND DRAINAGE STRUCTURES WILL BE IN ACCORDANCE WITH APPLICABLE COUNTY AND CITY UTILITY AND PUBLIC WORKS STANDARDS FOR COUNTY ROADS AND THE LATEST FDOT UTILITY ACCOMMODATION MANUAL.
3. CONSTRUCTION CORRIDOR SHALL BE RESTORED TO ORIGINAL OR IMPROVED CONDITION AND VERIFIED BY CFX OR THEIR APPROVED AGENTS.
4. ALL TRENCH WIDTHS SHALL BE WIDE ENOUGH TO ACCOMMODATE MECHANICAL COMPACTION EQUIPMENT FOR PROPER COMPACTION IN ACCORDANCE WITH FDOT STANDARD SPECS.
5. ALL TRENCHES SHALL BE BACKFILLED & COMPACTED BY THE END OF EACH WORK DAY.
6. CFX APPROVED JOINT COUPLINGS SHALL BE USED.
7. CONDUIT PATH WILL BE ROUTED TO AVOID ANY OBSTRUCTIONS SHOULD OBSTRUCTIONS BE ENCOUNTERED, THE FOLLOWING HIERARCHY WILL BE STRICTLY ADHERED TO:
   A. ROUTE CONDUIT AROUND OBSTRUCTION USING SWEEPING BENDS. IF THIS CANNOT BE ACCOMPLISHED, CONDUIT ROUTING WILL BE MADE UNDER THE OBSTRUCTION.
   B. IF THE ABOVE CANNOT BE ACCOMPLISHED, THEN USE OF ONE OF THE OBSTRUCTION DETAILS WILL BE ALLOWED. PRIOR TO COMMENCING DETAIL A OR B, OWNERS APPROVAL MUST BE OBTAINED. DETAIL A IS THE PREFERRED METHOD.
8. ALL CONCRETE SHALL BE IN ACCORDANCE WITH FDOT SPECIFICATION 347.



STANDARD CROSS SECTION OF OPEN TRENCH CONDUIT (NOT IN CASING)



STANDARD CROSS SECTION OF OPEN TRENCH CONDUIT (IN CASING)

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TRENCHING AND PLOWING DETAILS SINGLE CONDUIT BANK	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					B-2

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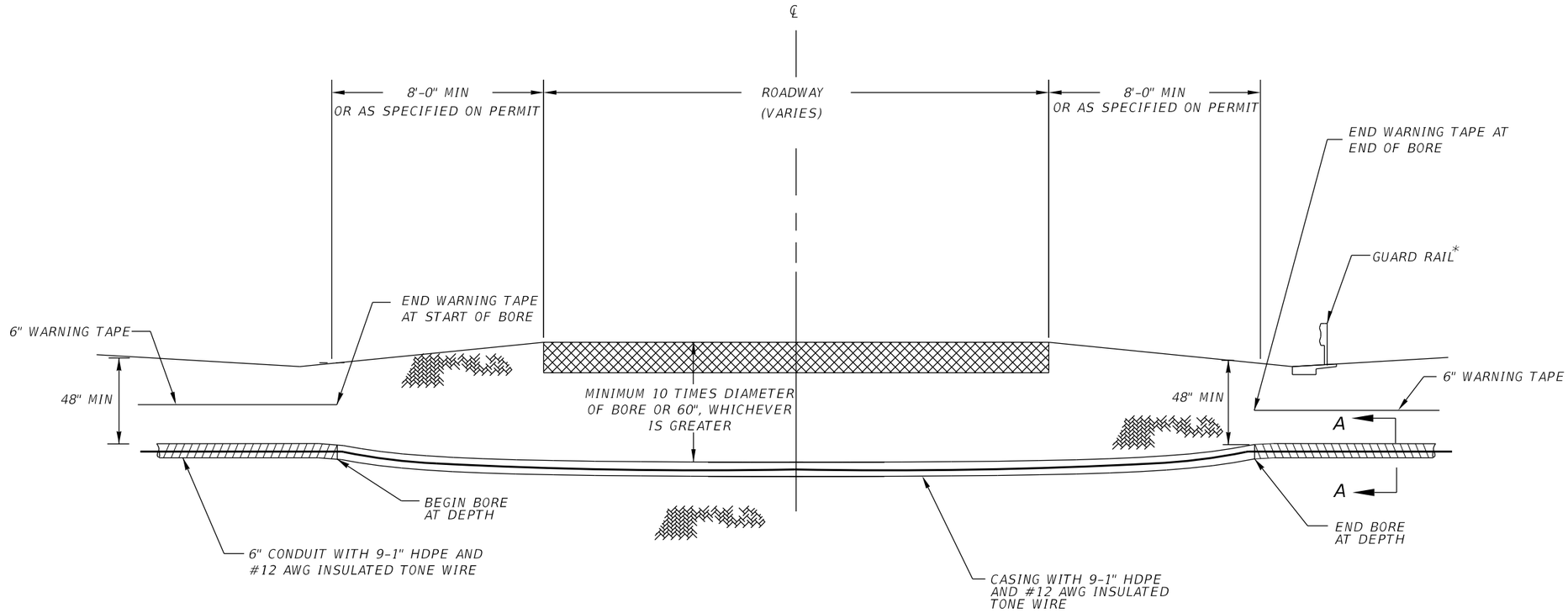
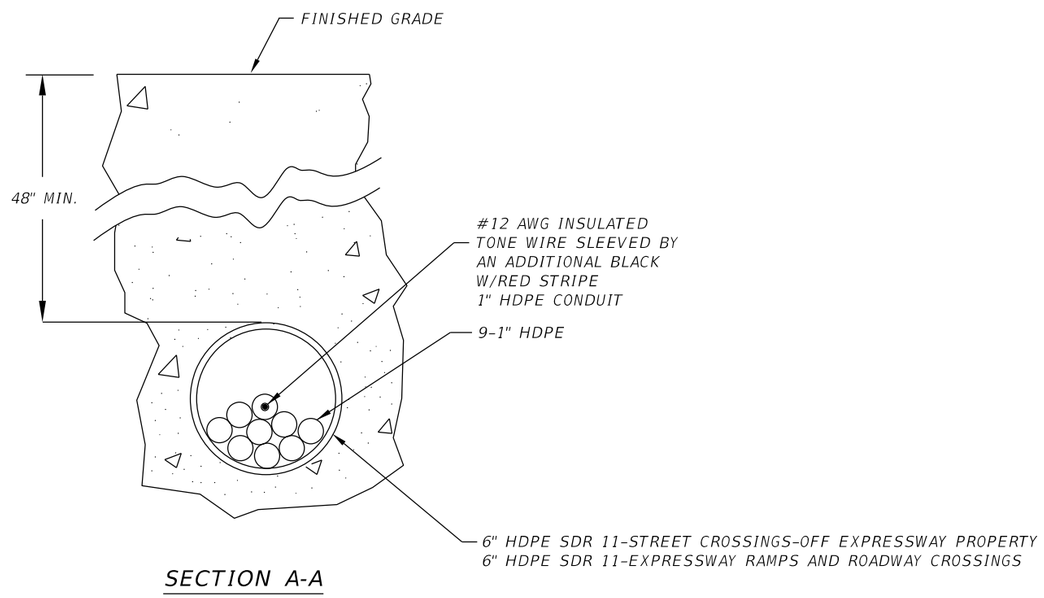


TYPICAL DIRECTIONAL BORE



SECTION A-A

NOTES:

1. UTILITY IN THE PATH OF THE BORE SHALL BE LOCATED AND THE DEPTH OF THE BORE CROSSING SHALL BE DELINEATED TO CROSS UNDER OR OVER UTILITY WITH 12" MINIMUM SEPARATION.
2. ALL ENDS OF BORES SHALL BE SEALED WITH NON-SHRINK GROUT OR FOAM SEALANT.
3. * IN CASES OF NEW OR EXISTING GUARD RAILS, SEE SHEET E-4.

NTS

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY
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DIRECTIONAL BORE DETAIL FIBER OPTIC BACKBONE CONDUIT

SHEET NO. B-3

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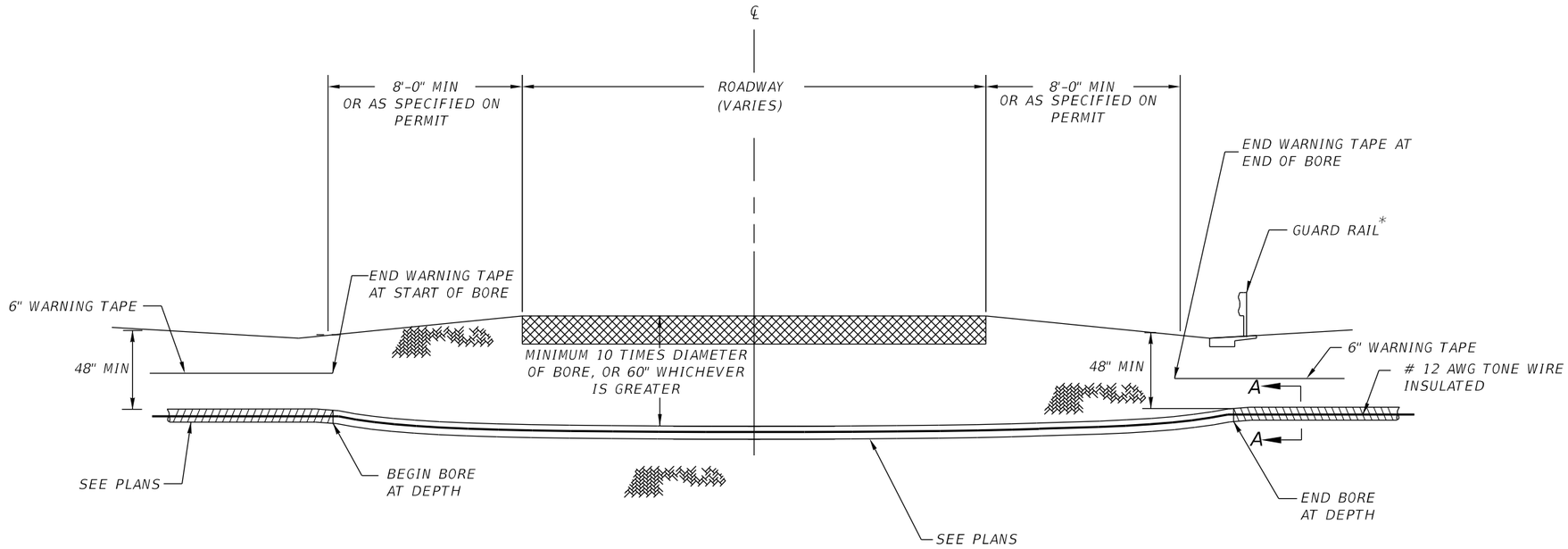

TYPICAL DIRECTIONAL BORE

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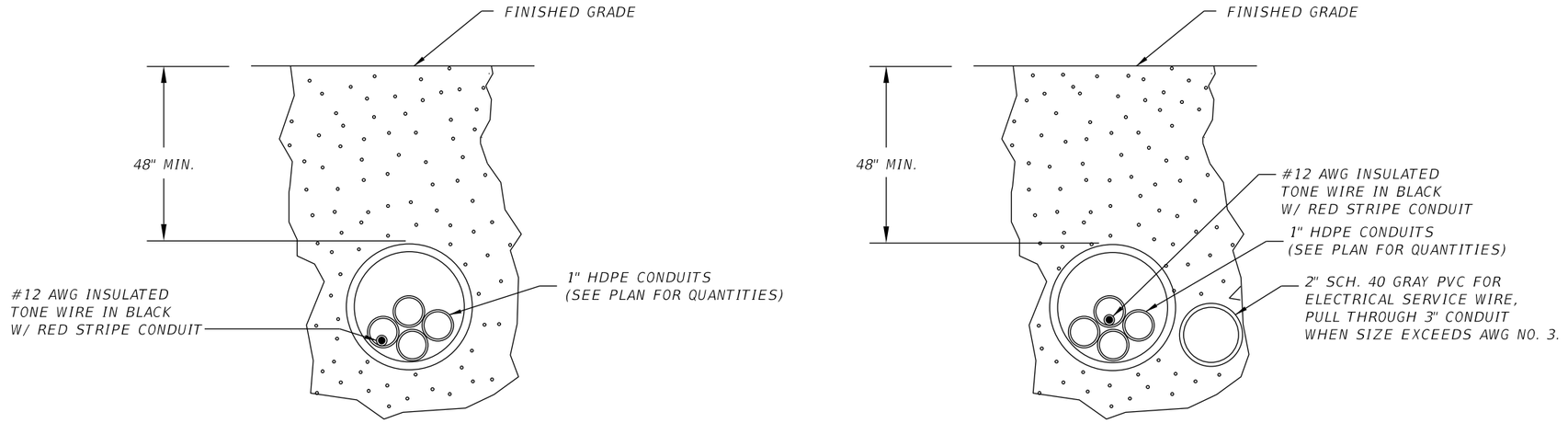

SECTION A-A

NOTES:

1. UTILITY IN THE PATH OF THE BORE SHALL BE LOCATED AND THE DEPTH OF THE BORE CROSSING SHALL BE DELINEATED TO CROSS UNDER OR OVER UTILITY WITH 12" MINIMUM SEPARATION.
2. ALL ENDS OF BORES SHALL BE SEALED WITH NON-SHRINK GROUT OR FOAM SEALANT.
3. * IN CASES OF NEW OR EXISTING GUARD RAILS, SEE SHEET E-4.

NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DIRECTIONAL BORE DETAIL ITS DEVICE DROP	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					B-4

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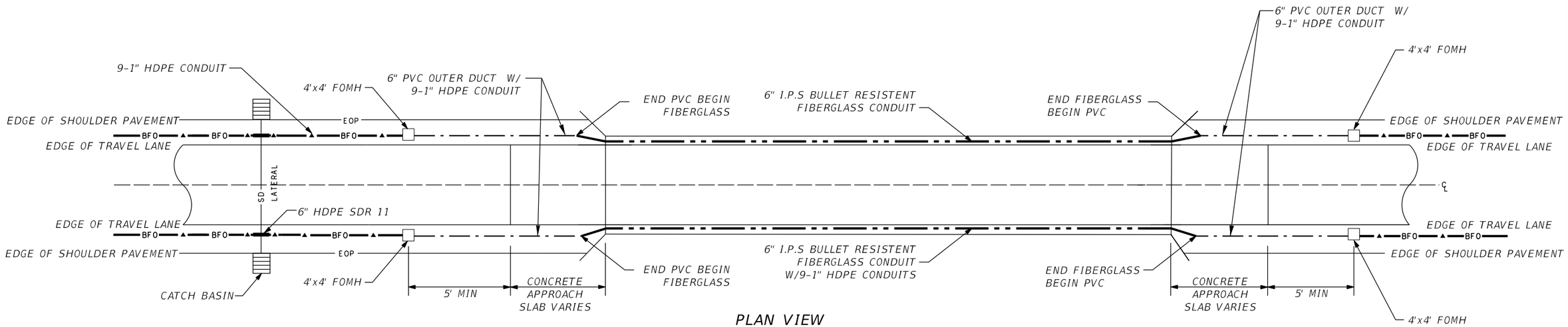
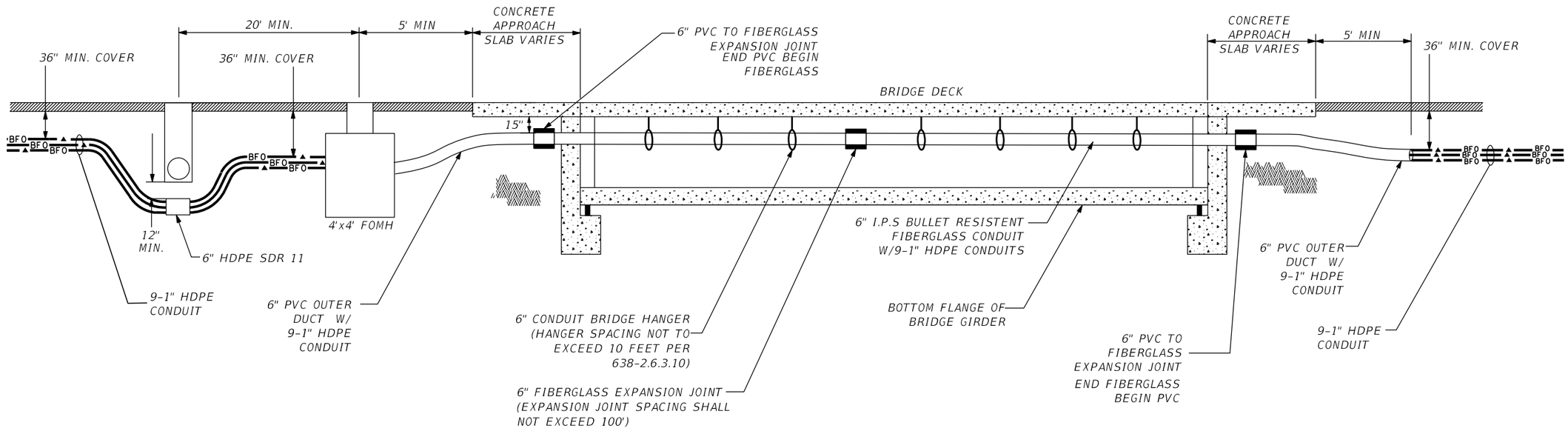
TYPICAL BRIDGE APPROACH ATTACHMENT DETAIL



PLAN VIEW



PROFILE

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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TYPICAL BRIDGE APPROACH DETAIL

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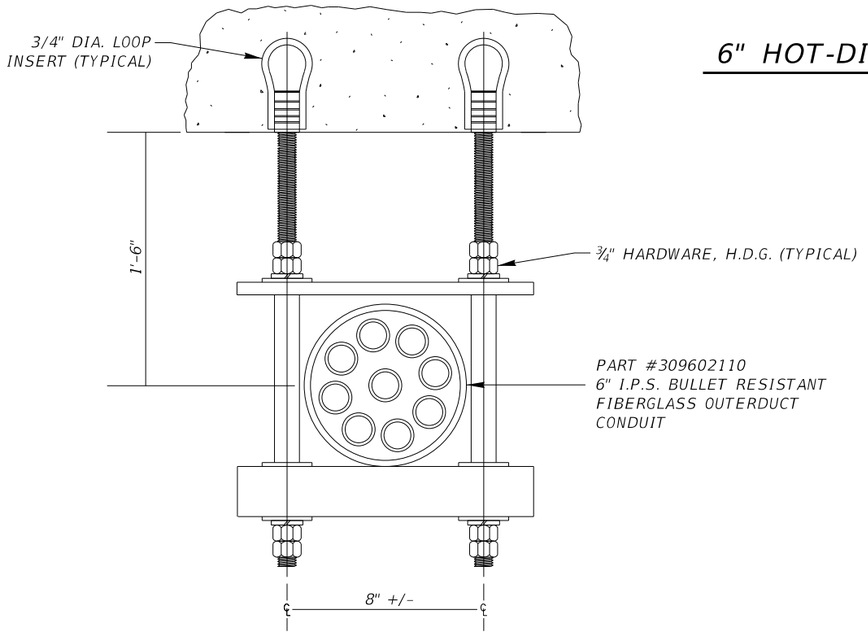
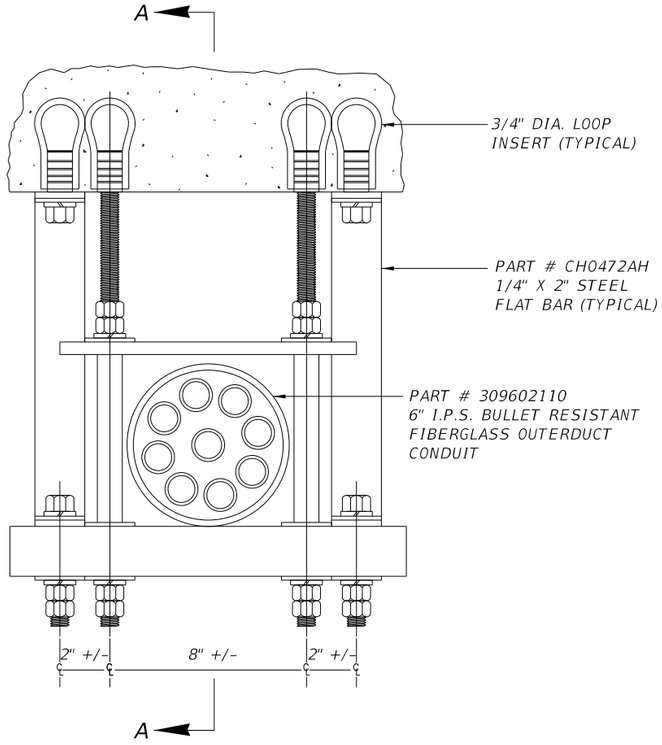
6" HOT-DIPPED GALVANIZED UNISTRUT BRIDGE HANGERS



INTERMEDIATE SUPPORT HANGER
PART #CHO472AG



ANCHOR POINT SUPPORT HANGER
PART #CHO472AH
FRONT VIEW

NOTES:

1. THE FIBER OPTIC CABLE (FOC) SHALL BE CONTAINED WITHIN A 6" DIAMETER I.P.S. BULLET RESISTANT FIBERGLASS OUTERDUCT CONDUIT AS MANUFACTURED BY OPTI-COM MANUFACTURING NETWORK, INC. (OMNI), PART #309602110 OR APPROVED EQUAL.

2. THE HANGER SUPPORT ASSEMBLIES SHALL BE OMNI PART #CHO472AG. THE HANGER ANCHOR ASSEMBLY SHALL BE OMNI PART #CHO472AH OR APPROVED EQUAL.

3. THE MAXIMUM ANCHORING HANGER SPACING SHALL NOT EXCEED 10 FEET AND THE EXPANSION JOINT SHALL BE PLACED AT EVERY 100 FEET MAXIMUM, OR WITHIN 5 FEET OF A PIER OR ABUTMENT PER SPECFICATION 638-2.6.3.10.

4. HANGER INSERTS SHALL BE 3/4" HOT DIP GALVANIZED LOOP INSERTS, HAVING A SAFE WORKING LOAD OF 1.5 KIP TENSION AND 2.7 KIP SHEAR MINIMUM. AT CONTRACTORS OPTION, OTHER METHODS OF SECURING HANGERS TO DECK UNDERSIDE MAY BE ACCEPTABLE PROVIDED THAT:

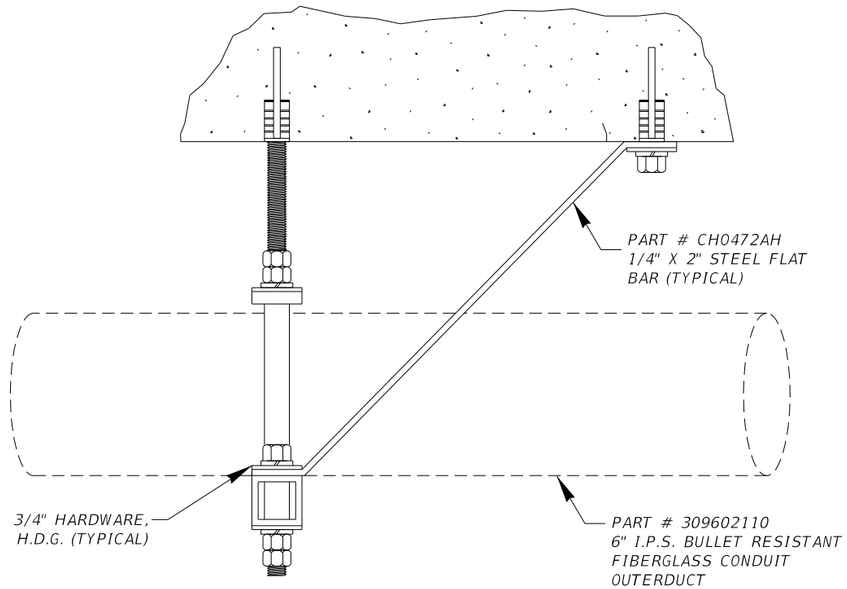
   A. CALCULATIONS FOR THE HANGER SYSTEM ARE INCLUDED.
   B. SHOP DRAWINGS ARE SIGNED AND SEALED BY A FLORIDA PROFESSIONAL ENGINEER AND ARE SUBMITTED FOR APPROVAL BY THE ENGINEER OF RECORD.

5. THE INSTALLATION OF HANGER INSERTS SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE FOLLOWING ITEMS:

   A. INSERT AND HANGER LAYOUT
   B. CATALOG CUTS FOR HANGER AND ANCHOR ASSEMBLIES.

7. INSERTS AND THREADED RODS ARE INCLUDED IN BRIDGE CONSTRUCTION. PAYMENT SHALL BE INCLUDED IN THE PRICE BID FOR SUPERSTRUCTURE CONCRETE FOR THE INDIVIDUAL BRIDGES. LOCATION OF INSERTS TO BE DETERMINED BY CONTRACTOR.



SECTION A-A

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	BRIDGE HANGER DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					C-2

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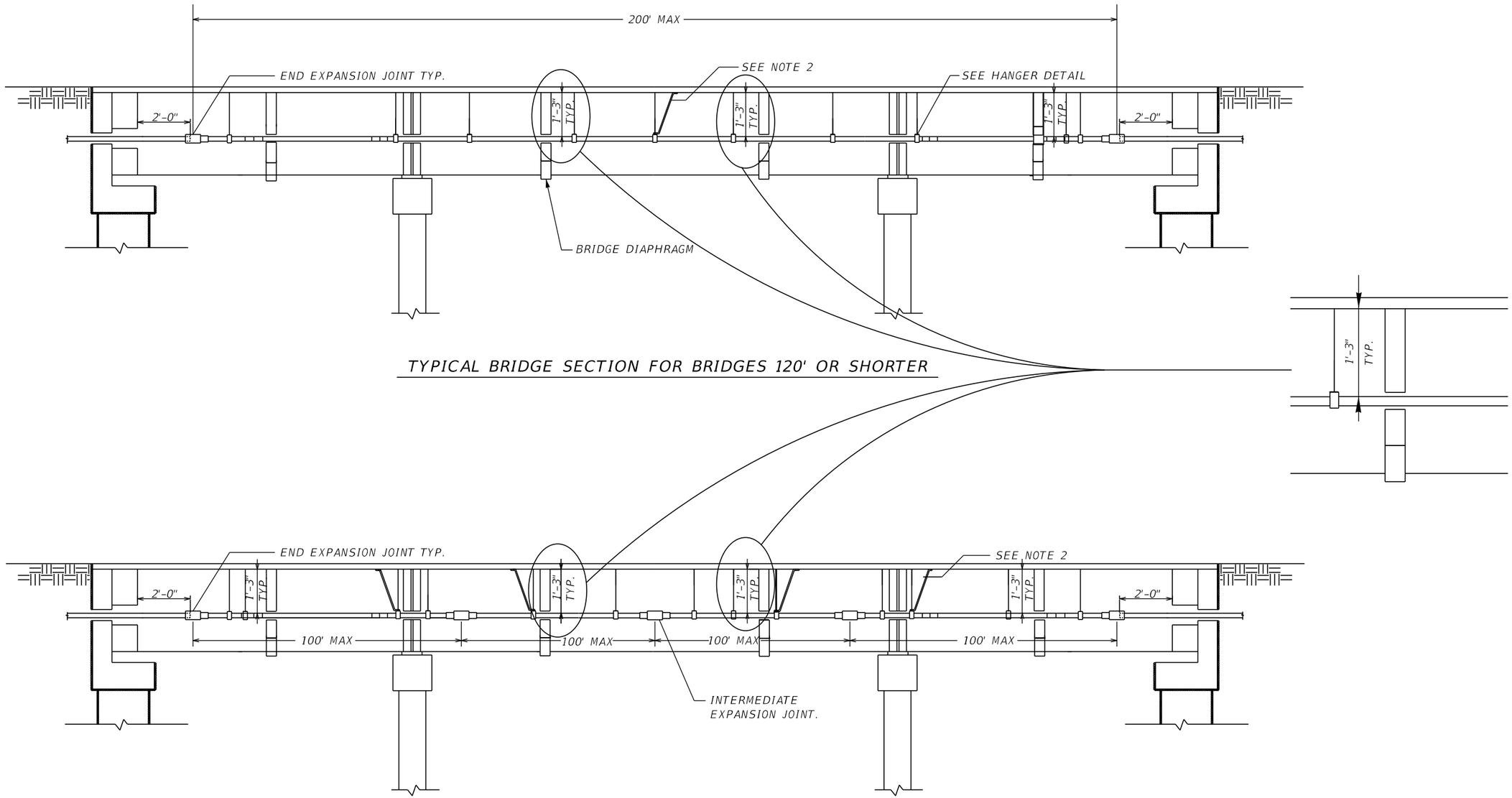

TYPICAL BRIDGE SECTION FOR BRIDGES 120' OR SHORTER

TYPICAL BRIDGE SECTION FOR BRIDGES 200' OR LONGER

NOTES:

1. SEE BRIDGE HANGER DETAIL SHEET FOR ANCHORING HANGER AND EXPANSION JOINT SPACING.
2. LATERAL MOVEMENT IS FIXED AT MID SPAN BETWEEN EXPANSION JOINT BY USE OF HANGER BRACE.

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBERGLASS EXPANSION JOINT DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					C-3

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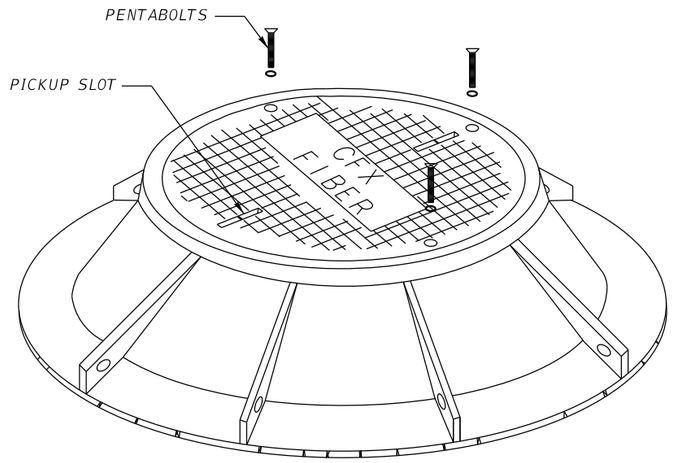
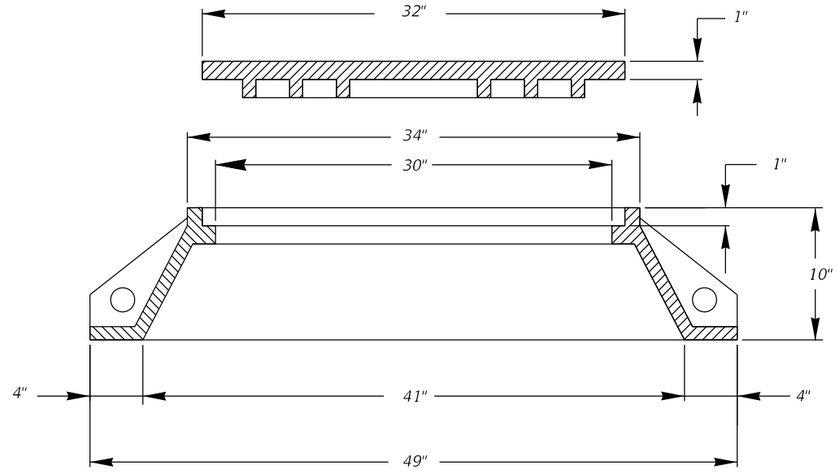
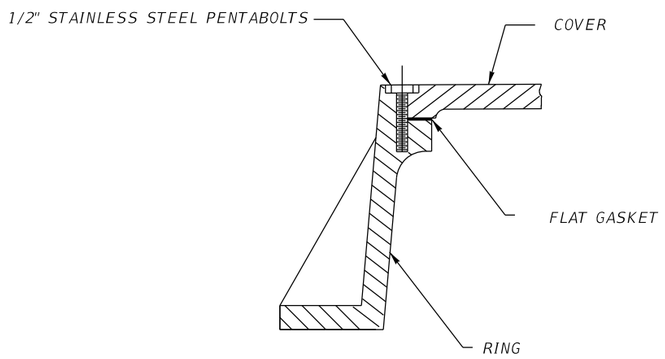


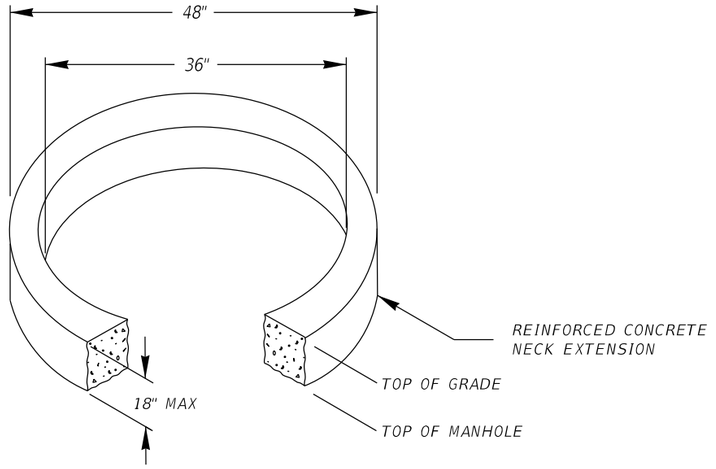
MANHOLE RING AND COVER



RING AND COVER DETAIL



BOLTED WATERTIGHT DETAIL



TYPICAL NECK EXTENSION DETAIL

NOTES:

1. EACH COVER TO HAVE (2) PICKUP SLOTS FOR REMOVING.
2. THE LETTERS "CFX FIBER" SHALL BE STAMPED ON COVER.
3. ACCESS HOLE: 30".
4. MANHOLE RING AND COVER SHALL CONFORM TO HS-20-44 TRAFFIC RATED-HEAVY DUTY LOAD RATING.
5. ANCHOR RING TO MANHOLE TOP SHALL BE SECURED BY 1/2" GALVANIZED BOLTS.
6. MANHOLE RING AND COVER TO BE WATERTIGHT AND GROUNDED TO COMMON GROUND.
7. ALL MATERIAL SHALL CONFORM TO ASTM-A48 CLASS 35B GRAY IRON.

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER OPTIC MANHOLE COVER DETAILS	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					D-1

$DATE$ $TIME$ $FILE$

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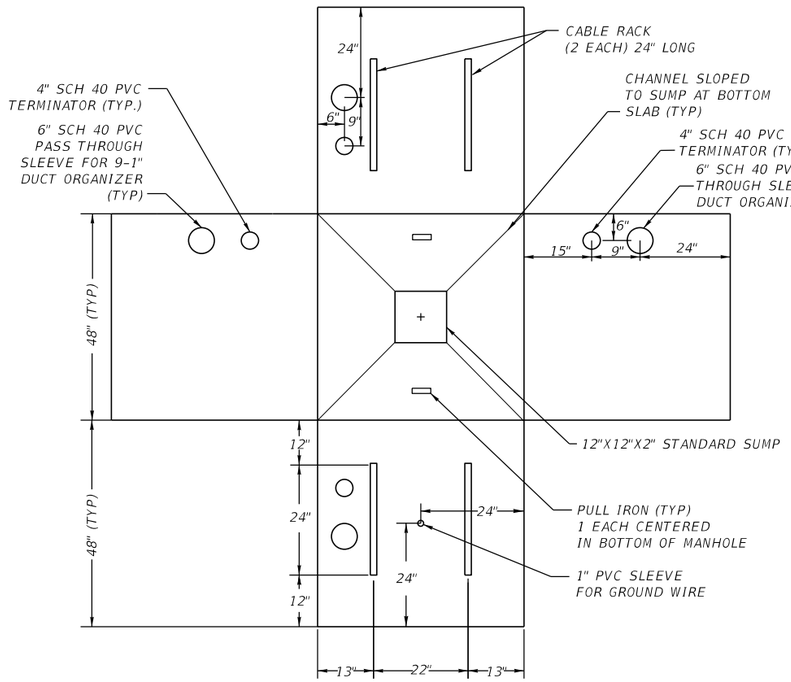


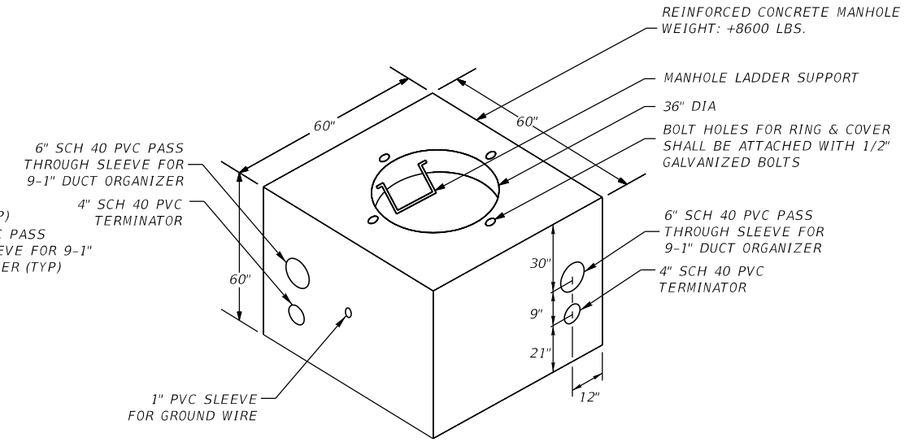
4'X4'X4' MANHOLE

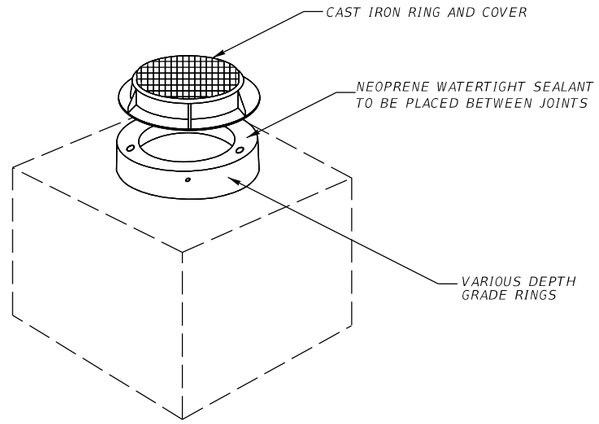
6" WALLS, TOP AND FLOOR
48" HEADROOM

DIMENSIONS SHOWN ARE INNER DIMENSIONS

NOTES:

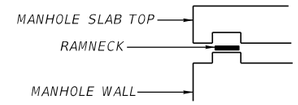
1. CONTRACTOR SHALL SUBMIT PRECAST CONCRETE MANHOLE AND RING WEIR CUT SHEETS AND CAPACITIES VERIFICATIONS FOR ENGINEER'S REVIEW AND APPROVAL
2. MANHOLE SHALL CONFORM TO HL93 FULL VEHICULAR LOADING.
3. ALL MANHOLES SHALL BE PROVIDED WITH AN INWESCO SERIES I-3600 OR EQUIVALENT LADDER THAT EXTENDS TO THE FLOOR.
4. ALL UNUSED ACCESS POINT SHALL BE EQUIPPED WITH COMPRESSION TYPE SNUG PLUGS OR PRECAST TERMINATORS.
5. ALL MANHOLES SHALL BE PLACED WITH COVER FLUSH WITH FINISHED GRADE ON PAVED SHOULDER. MANHOLE COVERS SHALL BE BOLTED IN PLACE WITH STAINLESS STEEL TAMPER-RESISTANT PENTABOLTS.
6. GROUND RODS SHALL BE INSTALLED OUTSIDE OF MANHOLE AND #6 BARE WIRE SHALL BE BROUGHT INTO MANHOLE THROUGH THE 1" PVC SLEEVE ON SIDE OF MANHOLE.
7. ALL MANHOLES SHALL HAVE 12" OF ½" CRUSHED ROCK PLACED UNDER MANHOLES.
8. ALL MANHOLE PENETRATIONS SHALL BE SEALED WITH NON SHRINK GROUT TO PREVENT WATER INGRESS.
9. MANHOLE WALL THICKNESS SHALL BE A MINIMUM OF 6".
10. RAMNECK SHALL BE USED TO SEAL ALL MANHOLE JOINTS.
11. CABLE RACKS SHALL BE INSTALLED USING 1/2" x 2½" GALVANIZED MACHINE BOLTS AND GALVANIZED ANCHORS CAST INTO THE WALLS. A MINIMUM OF EIGHT (8) CABLE RACK HOOKS FOR THE 4' X 4' X 4' MANHOLE AND A MINIMUM OF TWELVE (12) CABLE RACK HOOKS FOR THE 4' X 6.5' X 6.5' MANHOLE SHALL BE PROVIDED IN ACCORDANCE WITH 636-2.3.1.9.1. FIBER OPTIC CABLES SHALL BE STORED ON CABLE RACK HOOKS.





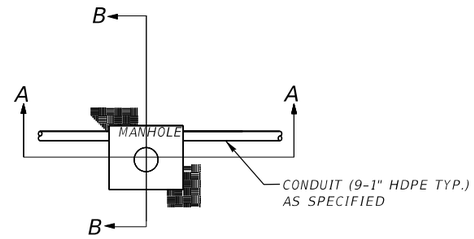
60" OD SQUARE MANHOLE

DIMENSIONS SHOWN ARE OUTER DIMENSIONS

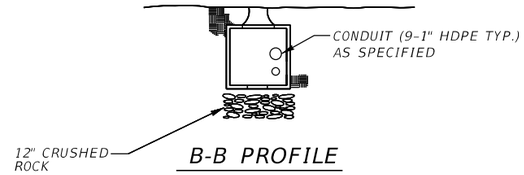


RING & COVER GENERAL NOTES - SEE SHEET D-1

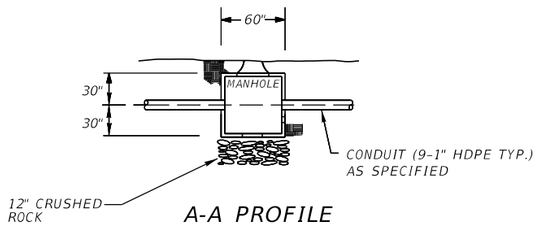
MANHOLE JOINT CONFIGURATION



PLAN



B-B PROFILE



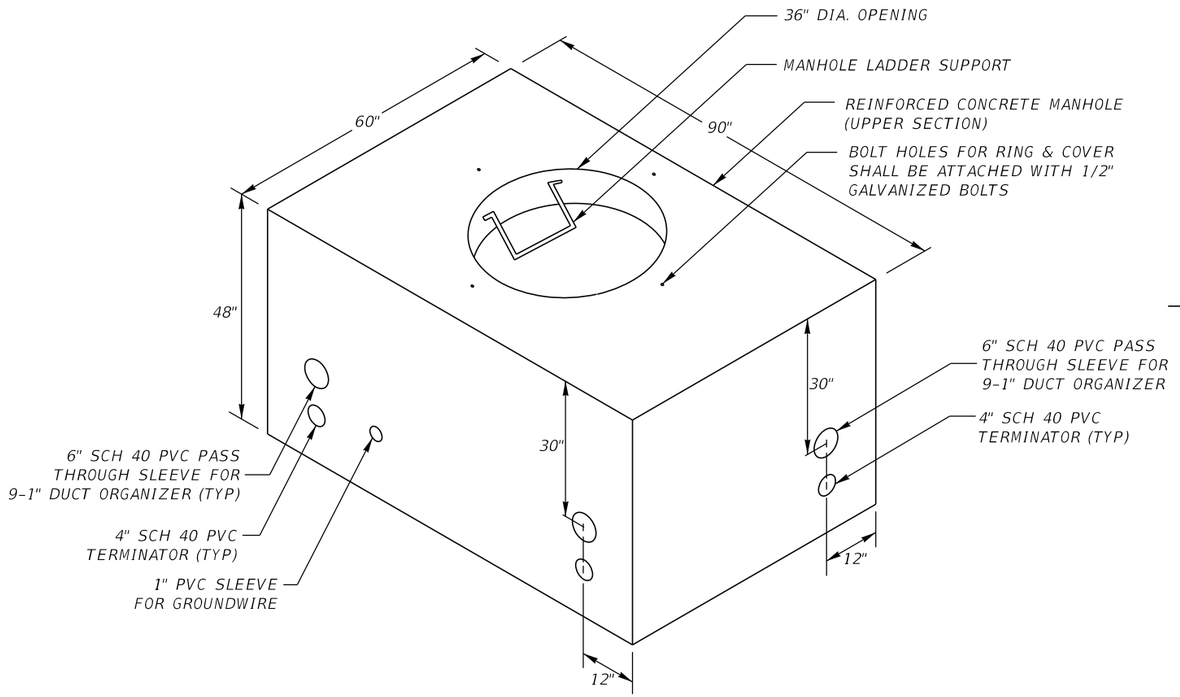
A-A PROFILE

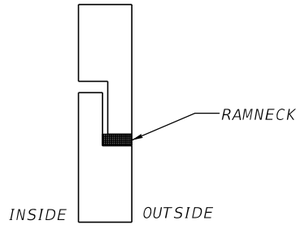
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER OPTIC MANHOLE DETAIL 4' X 4' X 4'	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					D-2

VERSION 7

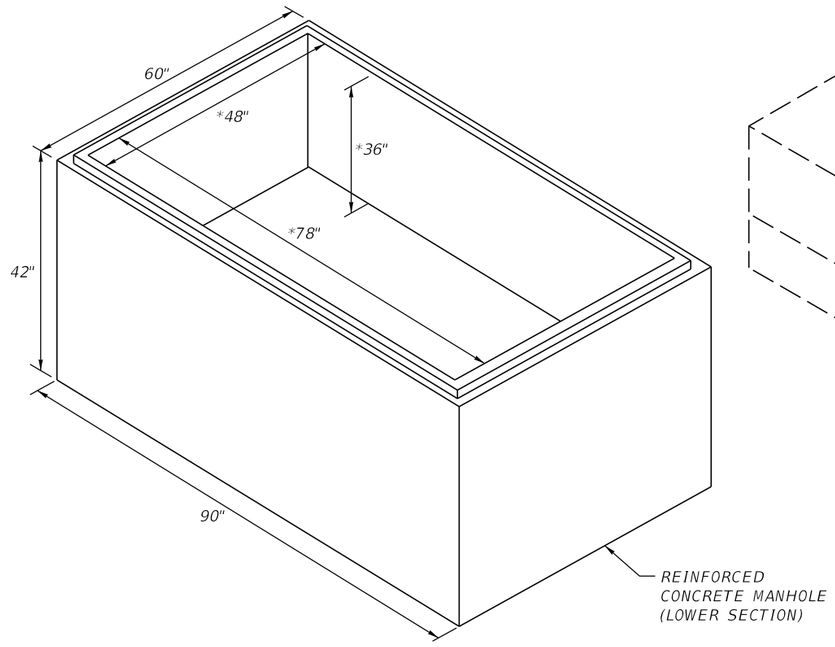
$DATE$ $TIME$ $FILE$

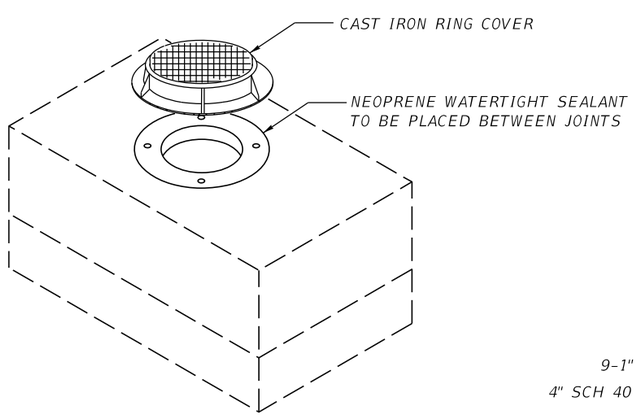




MANHOLE JOINT CONFIGURATION

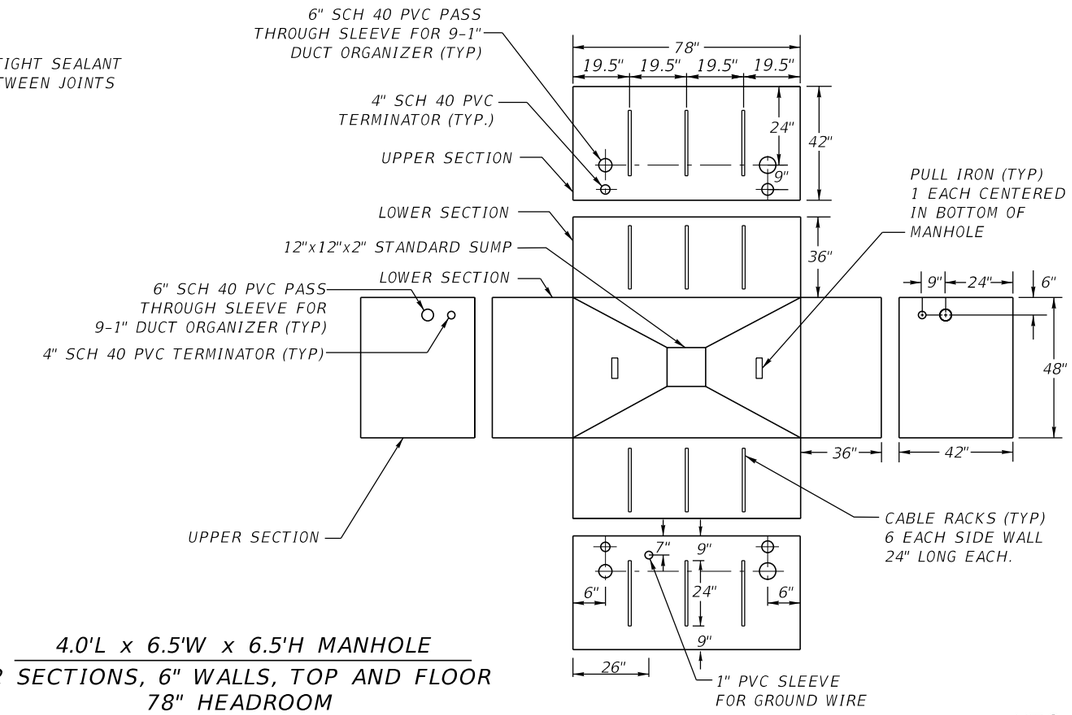
NOTES:
ADD NOTES FROM SHEET D-2





60"L X 90"W X 90"H OD RECTANGUALR MANHOLE
42"H LOWER & 48"H UPPER SECTION

DIMENSIONS SHOWN ARE OUTER DIMENSIONS
(*) INNER DIMENSIONS



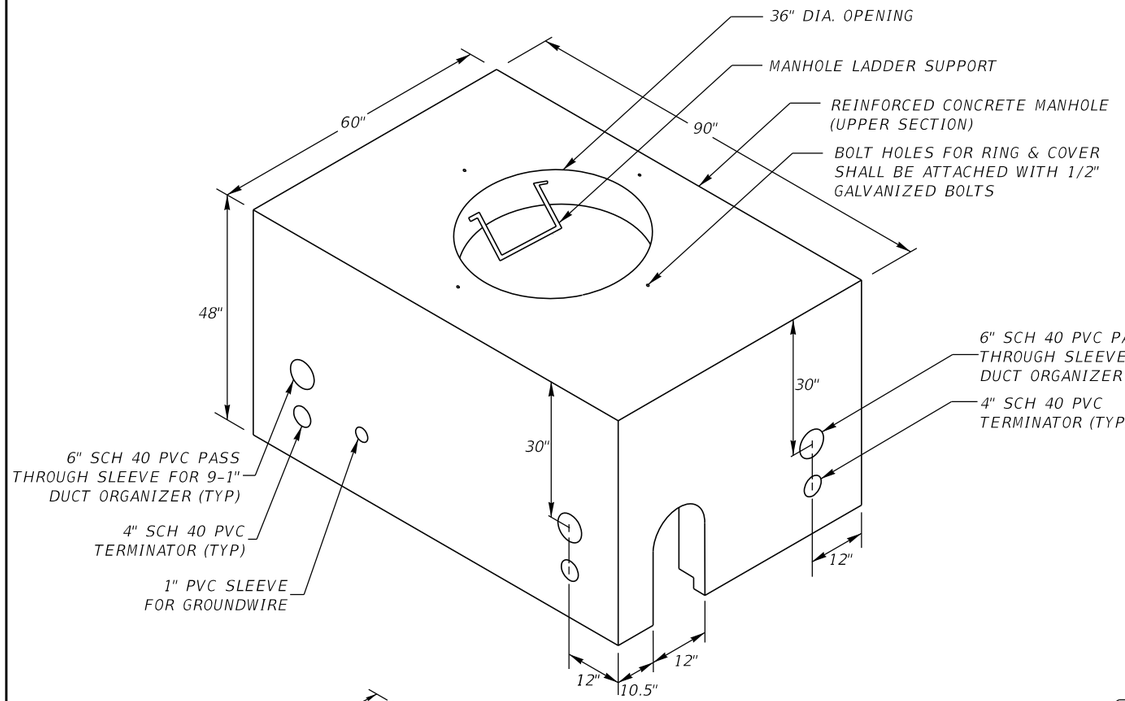
4.0'L x 6.5'W x 6.5'H MANHOLE
2 SECTIONS, 6" WALLS, TOP AND FLOOR
78" HEADROOM
DIMENSIONS SHOWN ARE INNER DIMENSIONS

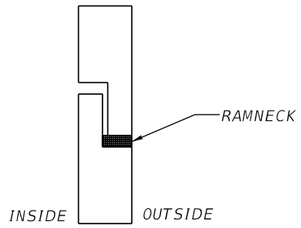
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER OPTIC MANHOLE DETAIL 4.0' X 6.5' X 6.5'	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					D-3

VERSION 7

$DATE$ $TIME$ $FILE$



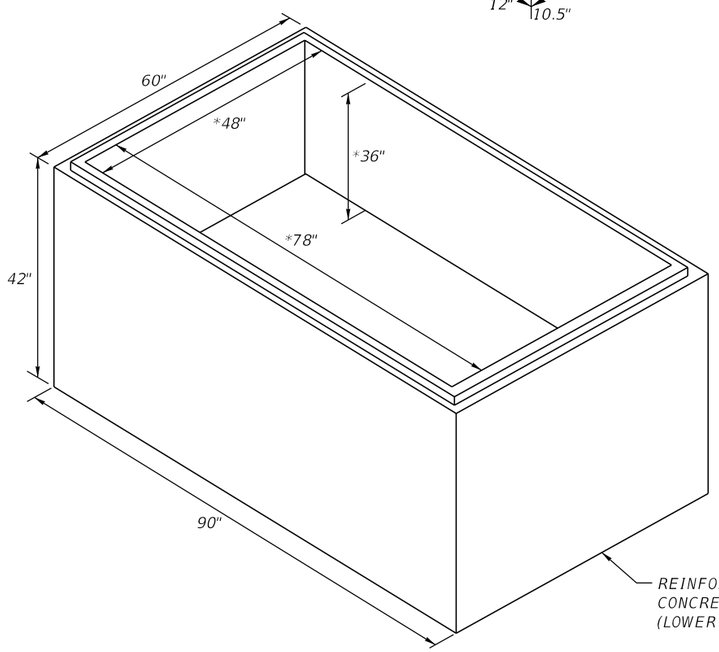


MANHOLE JOINT CONFIGURATION

NOTES:
ADD NOTES 1 THRU 11 FROM SHEET D-2

12. THE CONTRACTOR SHALL INSTALL THE TONE WIRE AND COIL 20' OF SLACK IN THE MANHOLE. THE CONTRACTOR SHALL ENSURE THAT NO DAMAGE OCCURS TO THE TONE WIRE DURING THE INSTALLATION PROCESS.

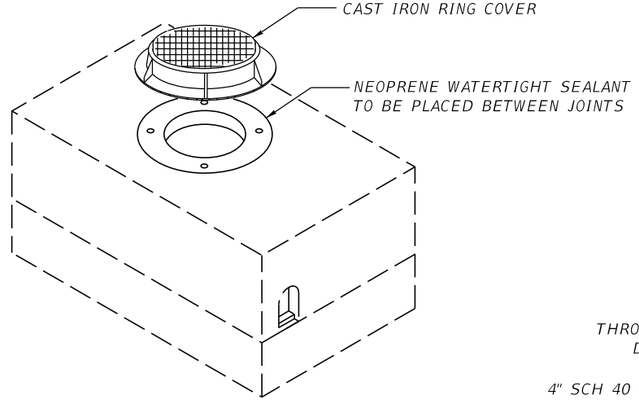
13. ALL CONDUITS TO EXTEND A MINIMUM OF 12" FROM THE INNERDUCT ORGANIZER.

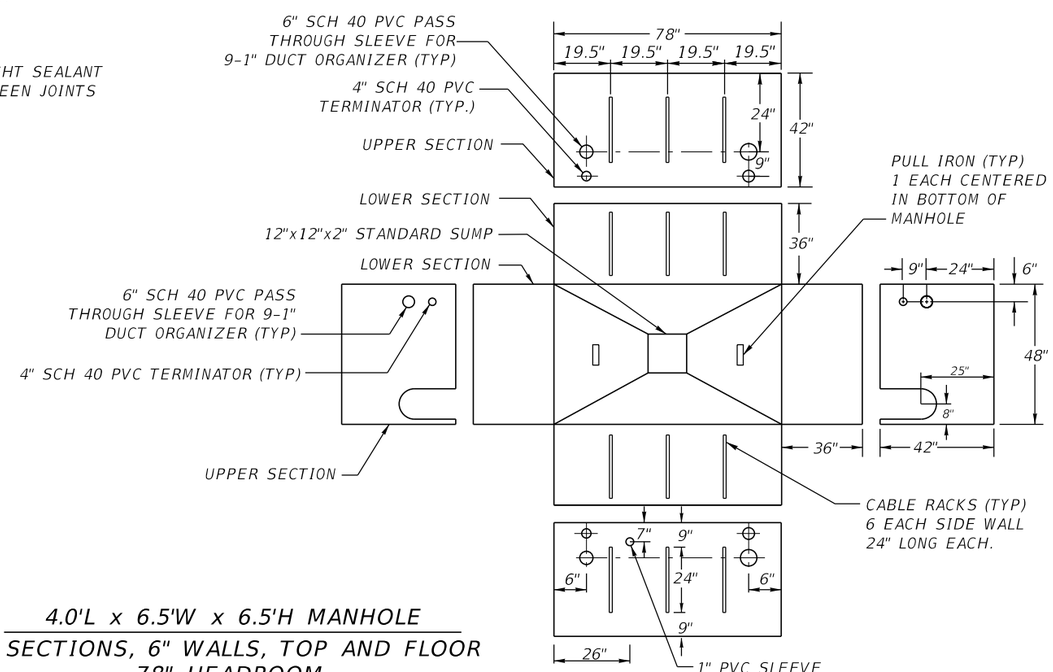


60"L X 90"W X 90"H OD RECTANGUALR MANHOLE

42"H LOWER & 48"H UPPER SECTION

DIMENSIONS SHOWN ARE OUTER DIMENSIONS
(*) INNER DIMENSIONS





4.0'L x 6.5'W x 6.5'H MANHOLE

2 SECTIONS, 6" WALLS, TOP AND FLOOR
78" HEADROOM

DIMENSIONS SHOWN ARE INNER DIMENSIONS

NTS

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY

FIBER OPTIC MANHOLE DETAIL 4.0' X 6.5' X 6.5' (DOGHOUSE)

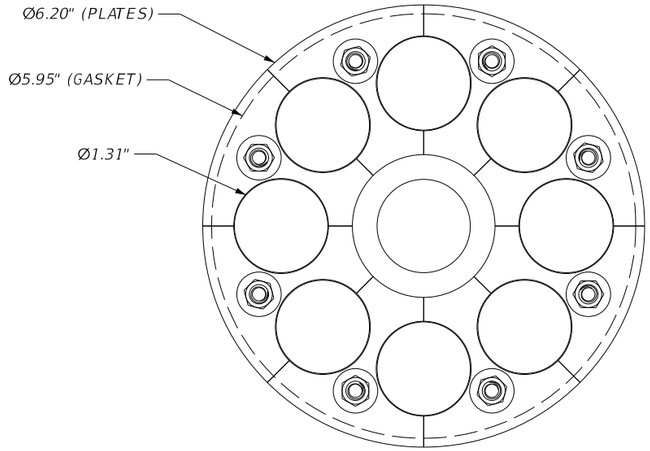
SHEET NO. D-4

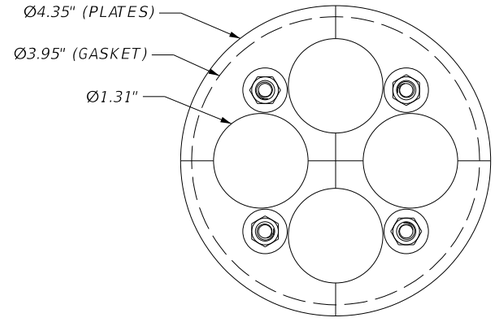
VERSION 7

$DATE$ $TIME$ $FILE$

TOP VIEW

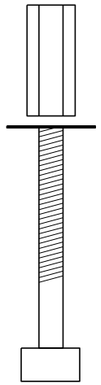
PLUG USES 8-3½" X ¼" STAINLESS STEEL BOLTS WITH COUPLER NUTS TO BOTH HOLD THE PIECE TOGETHER AND PROVIDE COMPRESSION WHEN INSTALLED.



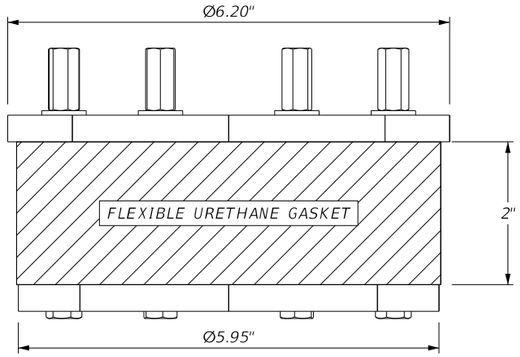


SIDE VIEW

GASKET IS SLIT AND PLATES ARE IN SECTIONS TO ALLOW UNFOLDING OF THE ENTIRE PLUG AND WRAPPING AROUND THE INNER CONDUITS.

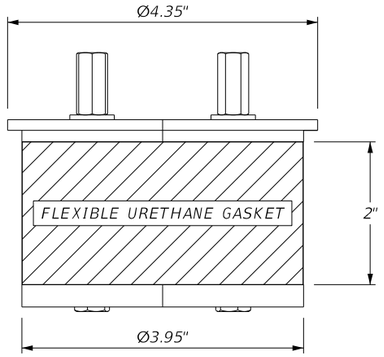


SZ-595-9131L



6"- 9(1") DUCT ORGANIZER

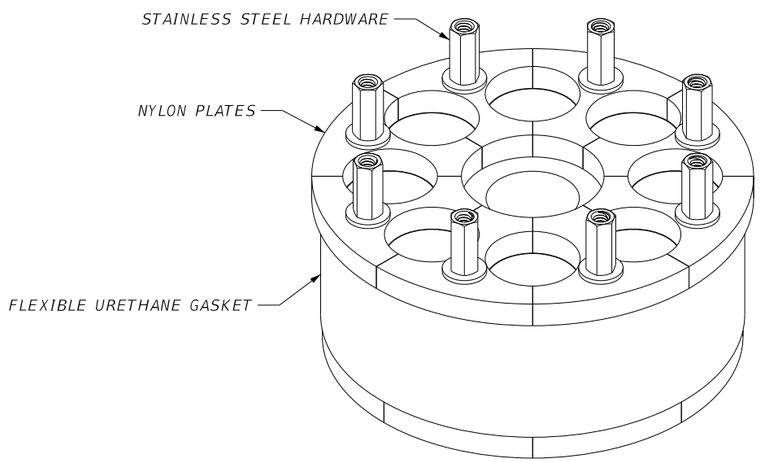
SZ-395-4131

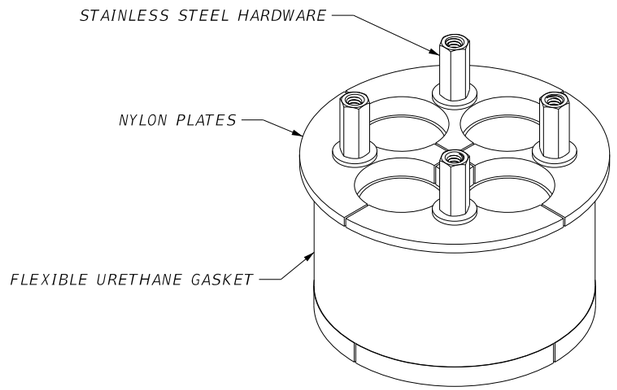


4"- 4(1") DUCT ORGANIZER

ISOMETRIC VIEW

HOLES THROUGH THE GASKET CAN BE FORMED TO ANY SIZE UP TO 1.315" DIAMETER.





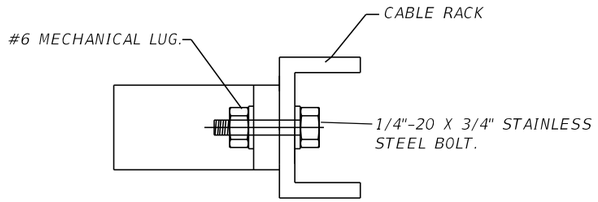
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER OPTIC MANHOLE INNERDUCT ORGANIZER	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					D-5

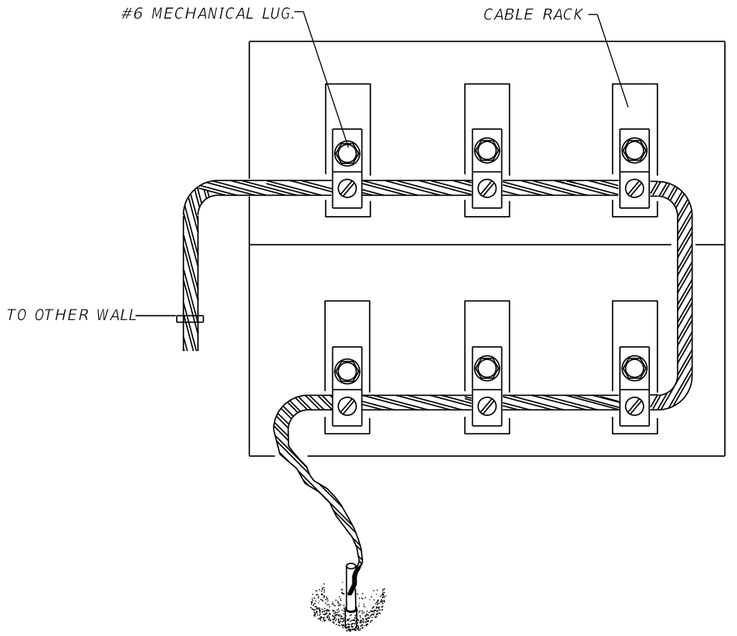
VERSION 7

$DATE$ $TIME$ $FILE$

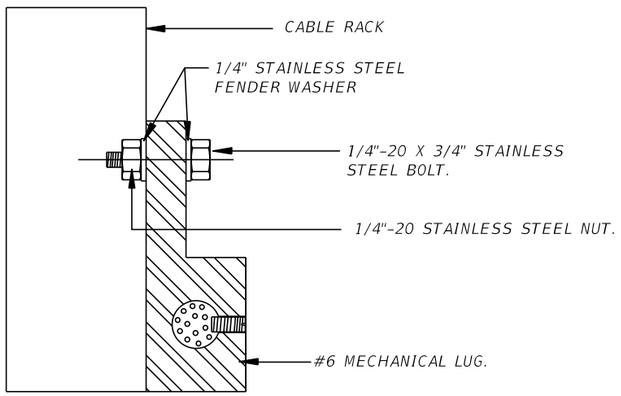
BONDING & GROUNDING DETAIL



MECHANICAL LUG
PLAN VIEW



MANHOLE GROUNDING
TYPICAL WALL



MECHANICAL LUG
PROFILE VIEW

NOTES:

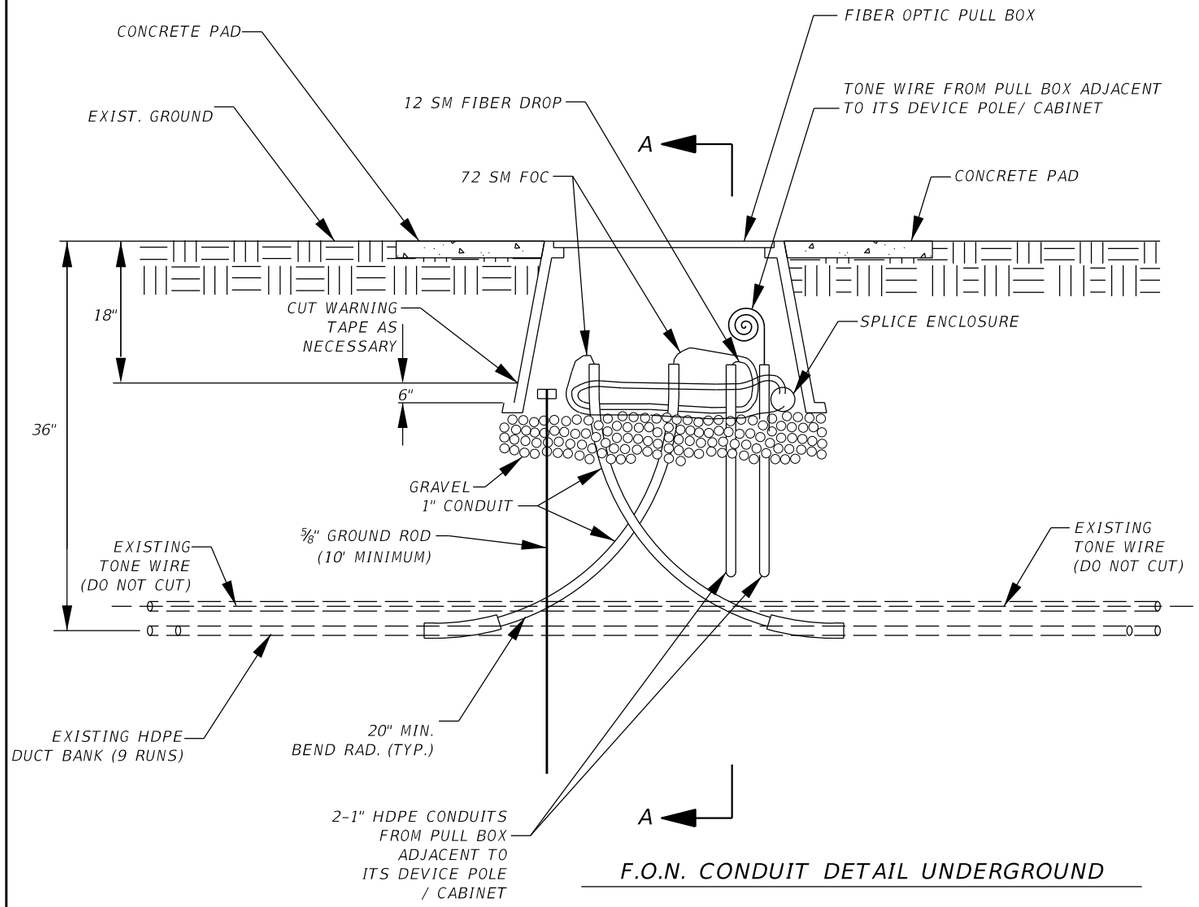
1. GROUND RODS SHALL HAVE A RESISTANCE TO GROUND NOT TO EXCEED 25 OHM.
2. ALL CONNECTIONS BETWEEN BARE COPPER GROUNDING WIRE AND GROUND ROD SHALL BE EXOTHERMIC WELD PER MANUFACTURER STANDARDS.
3. #6 AWG GROUND WIRE TO BE ROUTED THROUGH 1" PVC SLEEVE IN SIDEWALL OF MANHOLE AND EXOTHERMICALLY WELDED TO THE GROUNDING ELECTRODE.

NTS

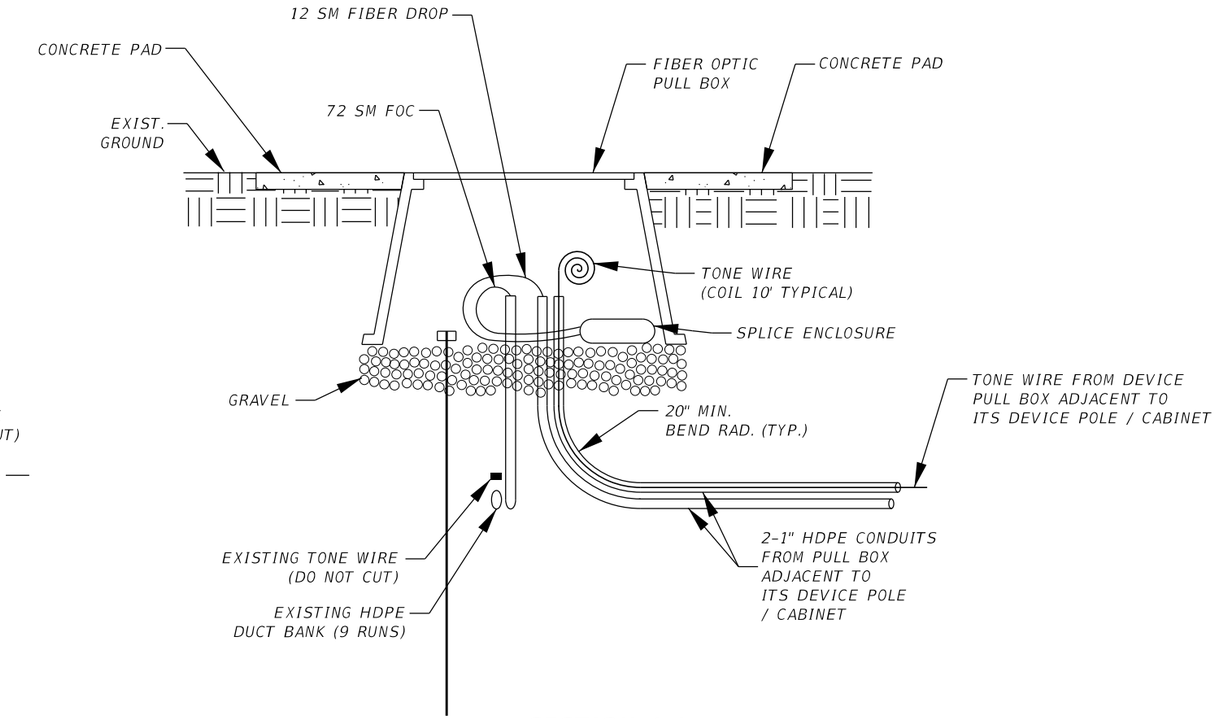
REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER OPTIC MANHOLE GROUNDING DETAILS	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					D-6

VERSION 7

$DATE$ $TIME$ $FILE$



F.O.N. CONDUIT DETAIL UNDERGROUND



SECTION A-A

NOTES:

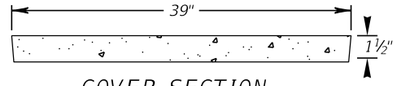
1. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING CONDUIT OR F.O.N. CABLE AND TONE WIRE. ANY DAMAGE SHALL BE REPLACED IN KIND AT THE CONTRACTORS EXPENSE.
2. EXTEND THE FEEDER BLUE CONDUIT INTO THE PULL BOX FOR THE 72 SM FIBER OPTIC CABLE.
3. INSTALLATION OF PULL BOX, ASSOCIATED EQUIPMENT AND MATERIALS SHALL BE PAID UNDER THE PULL BOX PAY ITEM.
4. EXTEND AND COIL TONE WIRE INTO PULL BOX. DO NOT SPLICE INTO EXISTING TONE WIRE.
5. FIBER GLASS LIDS SHALL BE 20,000 LB RATED.
6. TONE WIRE SHALL BE CONTINUOUS RUN FROM PULL BOX TO PULL BOX ADJACENT TO ITS DEVICE POLE/CABINET.
7. FIBER OPTIC PULL BOXES AT EACH END OF THE TONE WIRE RUN SHALL INCLUDE A MINIMUM OF 10 LF OF GROUNDING ELECTRODES.
8. THE TONE WIRE SHALL NOT ENTER INTO THE ITS CABINET BUT TERMINATE IN THE PULL BOX ADJACENT TO THE ITS DEVICE CABINET WITH A COIL OF 10 FEET.

NTS

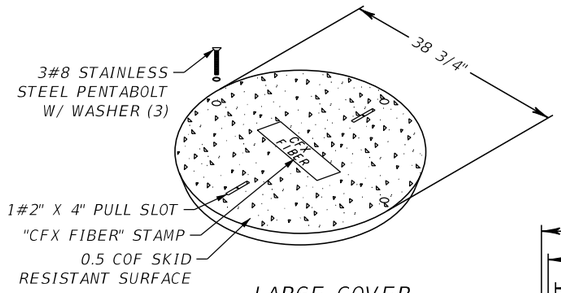
REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER OPTIC PULL BOX DETAIL TO DEVICE PULL BOX	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					E-1

$DATE$ $TIME$ $FILE$

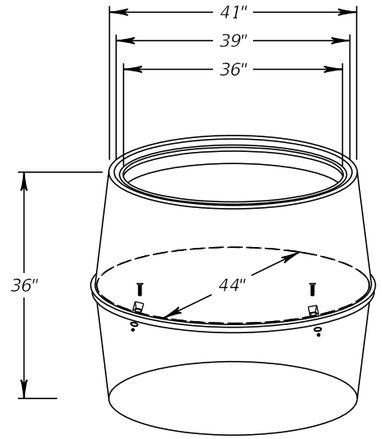
VERSION 7

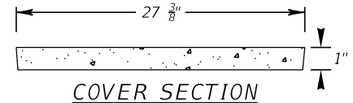


COVER SECTION

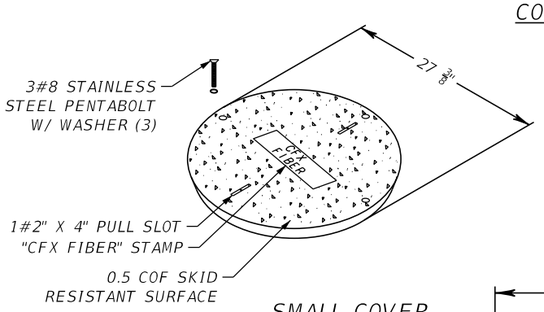


LARGE COVER

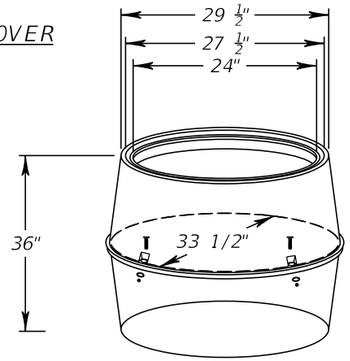




COVER SECTION

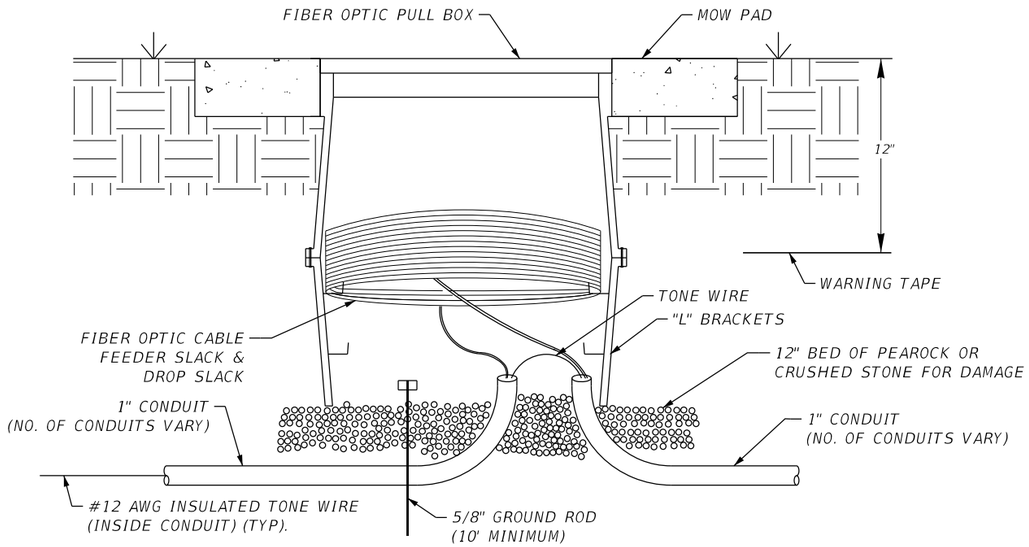


SMALL COVER

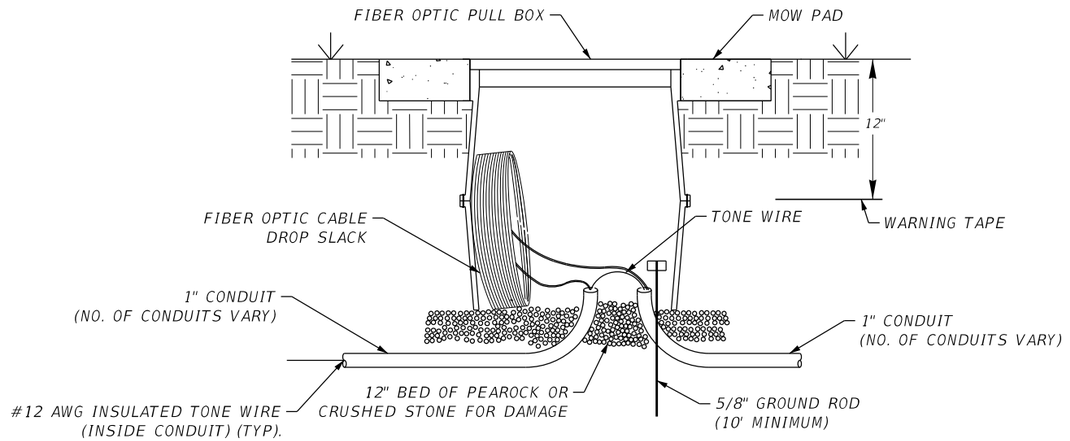


FIBER OPTIC PULL BOX NOTES:

1. SPARE FIBER OPTIC CABLE IS TO BE WOUND NEATLY AND CAREFULLY, AS NOT TO EXCEED THE MAXIMUM BENDING RADIUS OF THE FIBER OPTIC CABLE.
2. FIBER OPTIC PULL BOXES AT EACH END OF THE TONE WIRE RUN SHALL INCLUDE A MINIMUM OF 10 LF OF GROUNDING ELECTRODES.



FIBER OPTIC LARGE PULL BOX



FIBER OPTIC SMALL PULL BOX
(DEVICE PULL BOX)

NTS

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY

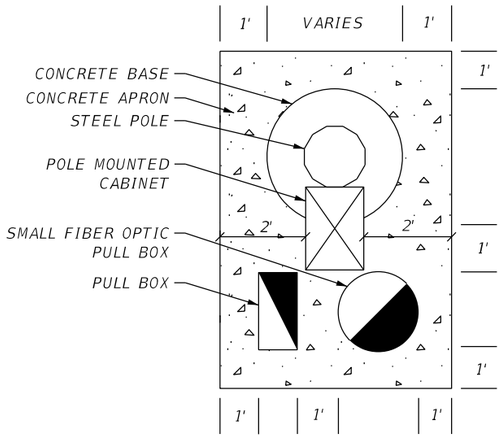
FIBER OPTIC PULL BOX DETAILS

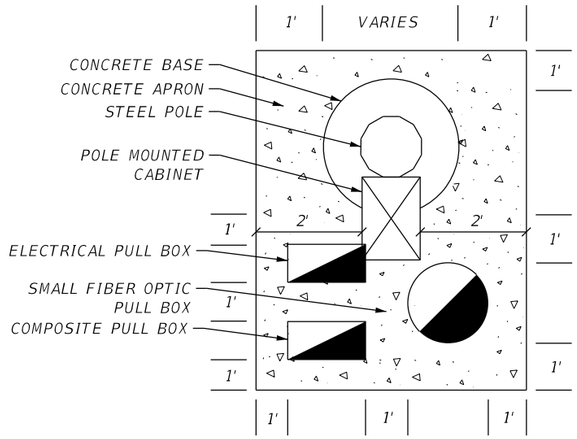
SHEET NO. E-2

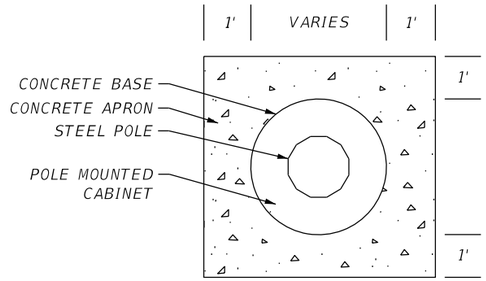
VERSION 7

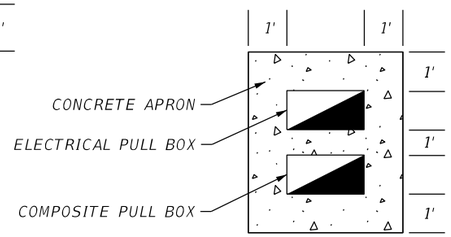
$DATE$ $TIME$ $FILE$

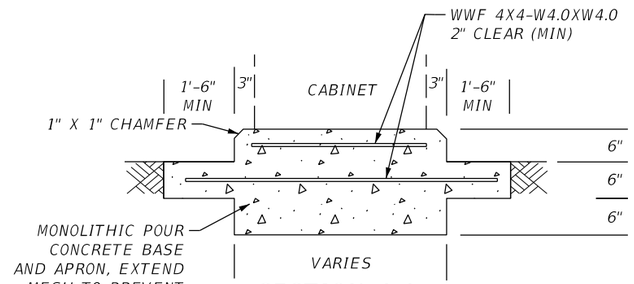
CONCRETE MOW PAD DETAILS



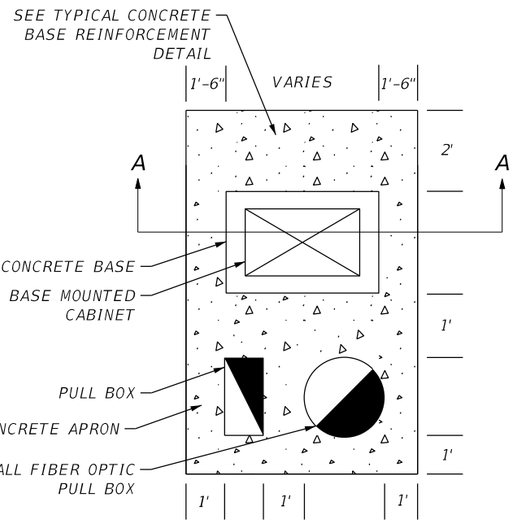


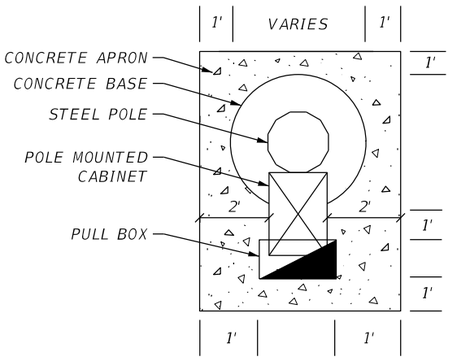


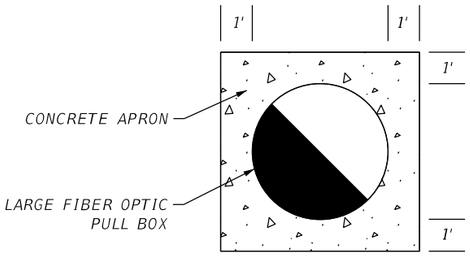


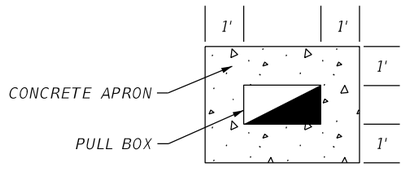


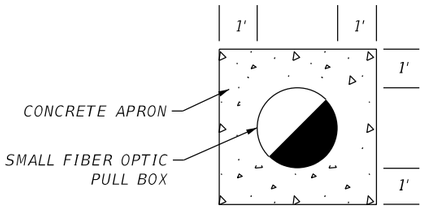
SECTION A-A

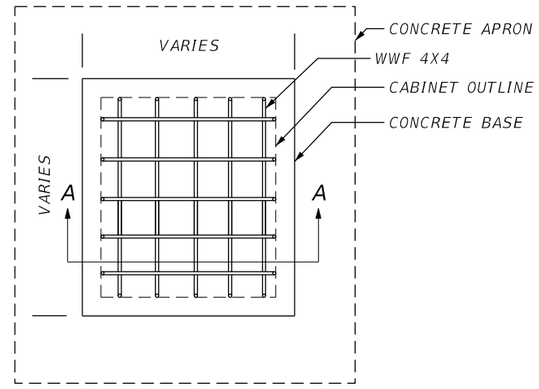












PLAN VIEW

NOTES:
1. ALL DIMENSIONS ARE MINIMUM REQUIRED SEPARATION.
2. ALL CONCRETE MOW PADS SHALL BE SIX (6) INCHES THICK. CABINET BASE SHALL EXTEND SIX (6) INCHES ABOVE GRADE.
3. MOW PADS SHALL BE SLOPED AWAY FROM THE CENTER OF CABINET, PULL BOXES AND POLES WITH A SLOPE 1/4" TO 1".
4. CONDUIT SWEEPS SHALL BE CAST IN PLACE FOR THE CABINET BASE AND POLE BASE. CONDUITS NOT SHOWN.

TYPICAL CONCRETE BASE REINFORCEMENT DETAILS

NOTE:
1. REINFORCEMENT STEEL SHALL BE ASTM A615, GRADE 60.

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TYPICAL CONCRETE PULL BOX MOW PAD DETAILS

SHEET NO. E-3

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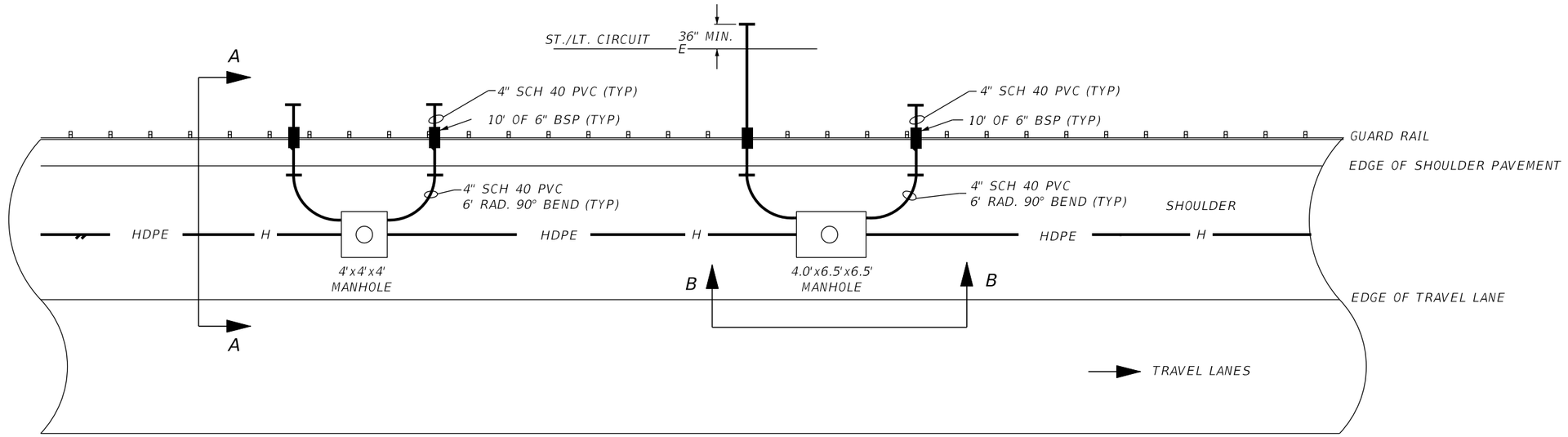
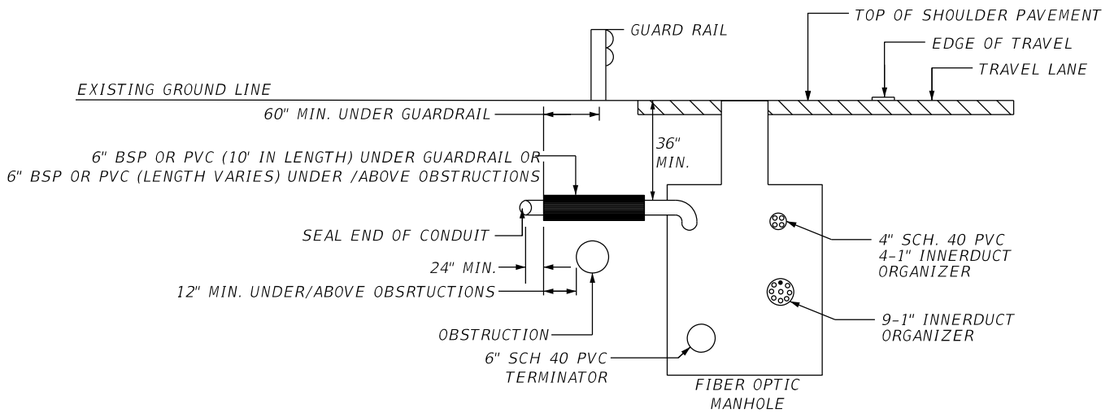
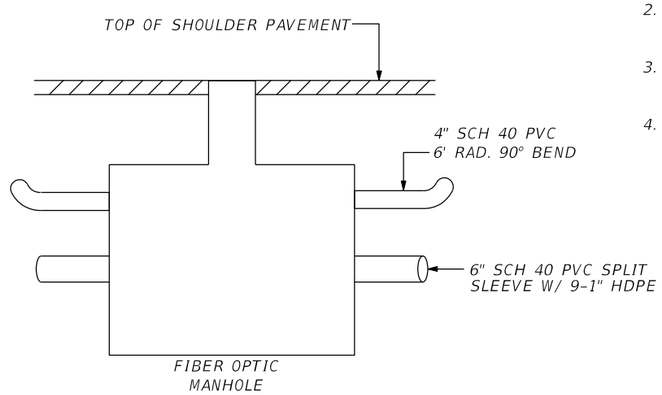
LATERAL CONDUIT FROM MANHOLE DETAIL



PLAN VIEW



SECTION A-A



SECTION B-B

NOTES:

1. ALL MANHOLES INSTALLED UNDER THE PAVED SHOULDER REQUIRE 4" LATERAL CONDUIT AS SHOWN IN DETAILS ABOVE.
2. THE 4" LATERAL CONDUIT SHALL BE EQUIPPED WITH 4-1" HDPE AND SHALL EXTEND A MINIMUM OF 24" BEYOND BSP.
3. LATERAL CONDUITS SHALL BE SEALED IN MANHOLE AND AT END OF CONDUIT.
4. PAYMENT FOR THE 4" SCH. 40 PVC 90° SWEEP LATERAL CONDUIT & 6" BSP SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE MANHOLE.

NOTE TO EOR:
FOR EXISTING INFRASTRUCTURE USE SBSP.
FOR NEW INFRASTRUCTURE USE BSP.

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FIBER OPTIC MANHOLE STUBOUT DETAIL

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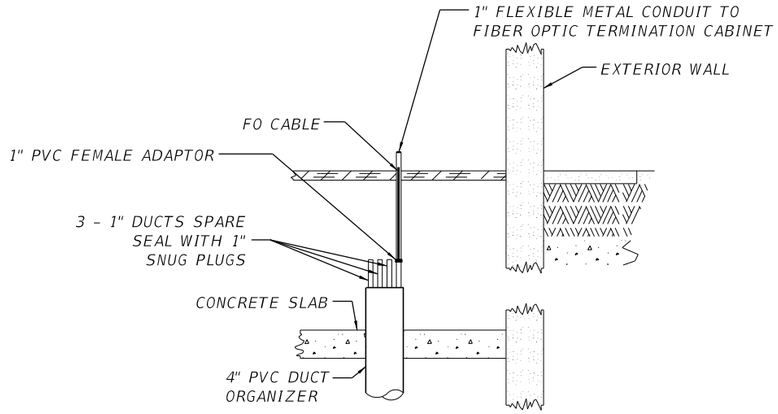
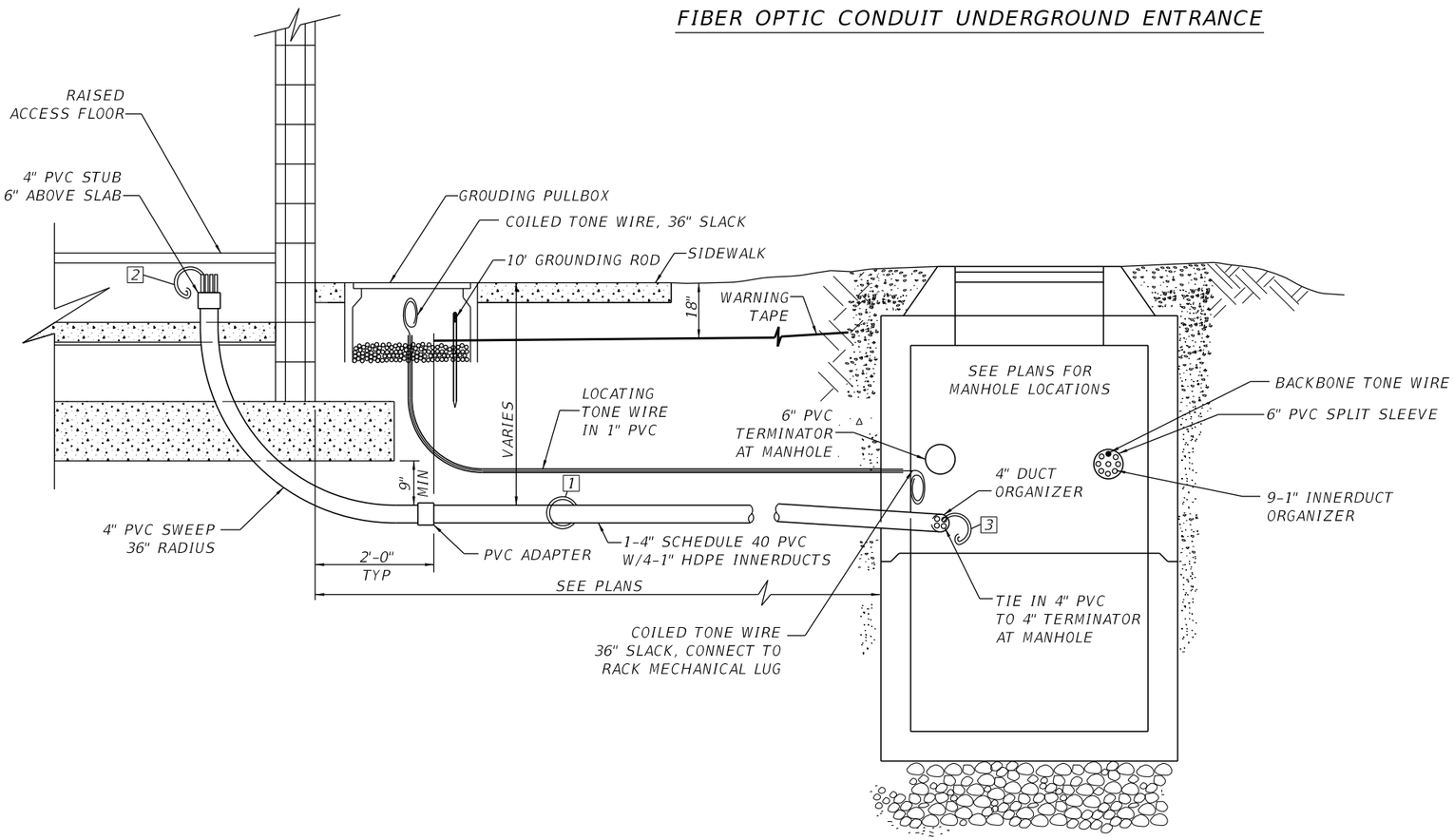


FIBER OPTIC CONDUIT UNDERGROUND ENTRANCE

NOTES:

1. HAND DIG AS NEEDED TO EXPOSE ANY EXISTING UTILITIES.
2. ALL CONDUITS TO EXTEND A MINIMUM OF 12" FROM THE INNERDUCT ORGANIZER.
3. IF CONDUIT TO BE INSTALLED IS LESS THAN 36" DEEP:
   A. USE RGC OR
   B. CONCRETE ENCASED WITH 3" OF 3000 PSI CONCRETE
4. ALL CONCRETE PENETRATIONS AROUND CONDUITS SHALL BE WATERPROOF.
5. PAYMENT FOR THE 9-1" INNERDUCT ORGANIZER SHALL BE CONSIDERED INCIDENTAL TO THE COST OF FON SYSTEM INSTALLATION.
6. LATERAL TONE WIRE SHALL BE LOCATED IN THE 1" PVC CONDUIT BETWEEN THE MANHOLE AND THE GROUNDING PULL BOX.



FIBER OPTIC CONDUIT JUNCTION BOX ENTRANCE AT TOLL PLAZA

REFERENCE NOTES:

[1] INSTALL FIBER OPTIC CABLE 72 SINGLE MODE.

[2] LEAVE 100' OF SLACK FIBER OPTIC CABLE COILED UNDER RAISED FLOOR.

[3] LEAVE 100' OF SLACK FIBER OPTIC CABLE COILED IN UTILITY VAULT.

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FIBER OPTIC NETWORK
TOLL PLAZA ENTRANCE DETAIL

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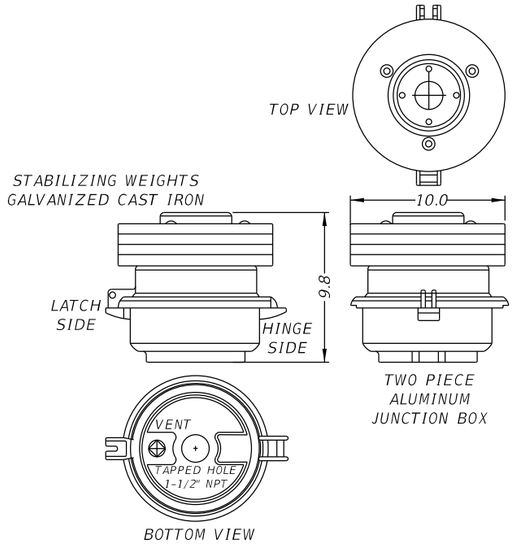
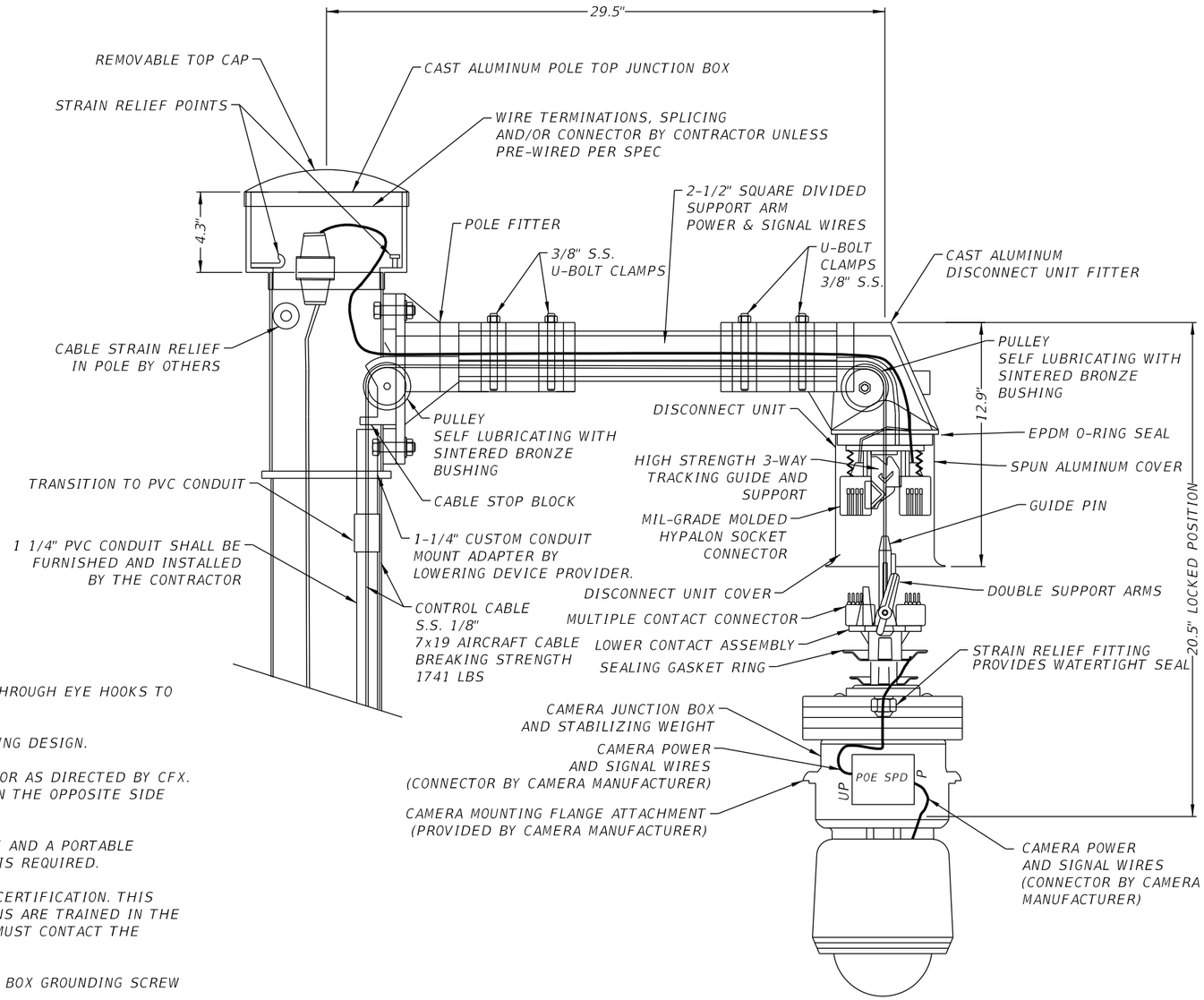


CAMERA JUNCTION BOX



NOTES:

1. INTERNAL CAMERA SUPPLY CABLES RUN THROUGH THE INSIDE OF THE POLE SHALL BE INSTALLED THROUGH EYE HOOKS TO PREVENT INTERFERENCE WITH LOWERING MECHANISM CABLE, UNLESS OTHERWISE NOTED.
2. CAMERA LOWERING DEVICE DETAILS ARE REPRESENTATIVE AND DO NOT REFLECT ACTUAL ENGINEERING DESIGN.
3. LOWERING ARM SHALL BE MOUNTED PERPENDICULAR TO THE ROADWAY OR AS SHOWN IN THE PLANS OR AS DIRECTED BY CFX. THE CCTV POLE SHALL BE POSITIONED SO THAT THE DOME ENCLOSURE CAN BE SAFELY LOWERED ON THE OPPOSITE SIDE OF THE HAND CRANK.
4. [MG]2 INC. PART NO. LWR5-100 FOR THE PORTABLE LOWERING TOOL WITH BOTH MANUAL HAND CRANK AND A PORTABLE ELECTRIC DRILL MOTOR WITH CUSTOM CLUTCH ADAPTER. ONE LOWERING TOOL PER EVERY 10 POLES IS REQUIRED.
5. [MG]2 INC. PART NO. CLDMG2-ON SITE IS FOR ON SITE INSTALLATION/OPERATION INSTRUCTION AND CERTIFICATION. THIS ENSURES THE PRODUCT IS ASSEMBLED CORRECTLY AND MORE IMPORTANTLY ALL NECESSARY PERSONS ARE TRAINED IN THE PROPER SAFE OPERATION OF THE SYSTEM. PRIOR TO ERECTING THE FIRST POLE THE CONTRACTOR MUST CONTACT THE LOWERING DEVICE SUPPLIER AND SCHEDULE FOR A FACTORY REPRESENTATIVE TO BE ON SITE.
6. THE SPD WITHIN THE CAMERA JUNCTION BOX SHALL BE ELECTRICALLY GROUNDED TO THE JUNCTION BOX GROUNDING SCREW BY A #10 GREEN INSULATED WIRE.
7. CAMERA LOWERING SYSTEM, [MG]2 INC. MODEL NOS. (DESIGNER TO ENTER MODEL # BASED OFF CFX SPECIFICATIONS) TO INCLUDE POLE TOP J-BOX, MOUNTING HARDWARE, LOWERING CABLE, MOLDED HYPALON CONTACT BLOCK, CAMERA J-BOX AND HOUSING.
8. CAMERA LOWERING DEVICE TO BE SHIPPED READY FOR POLE ATTACHMENT TO INCLUDE ADEQUATE CAT5e CABLE PRE-WIRED TO LOWERING DEVICE AT THE FACTORY. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADEQUATE CABLE LENGTH BETWEEN EACH CCTV LOWERING DEVICE ASSEMBLY.
9. CAMERA LOWERING DEVICE TO BE POWDER COATED FLAT BLACK BY MANUFACTURER.

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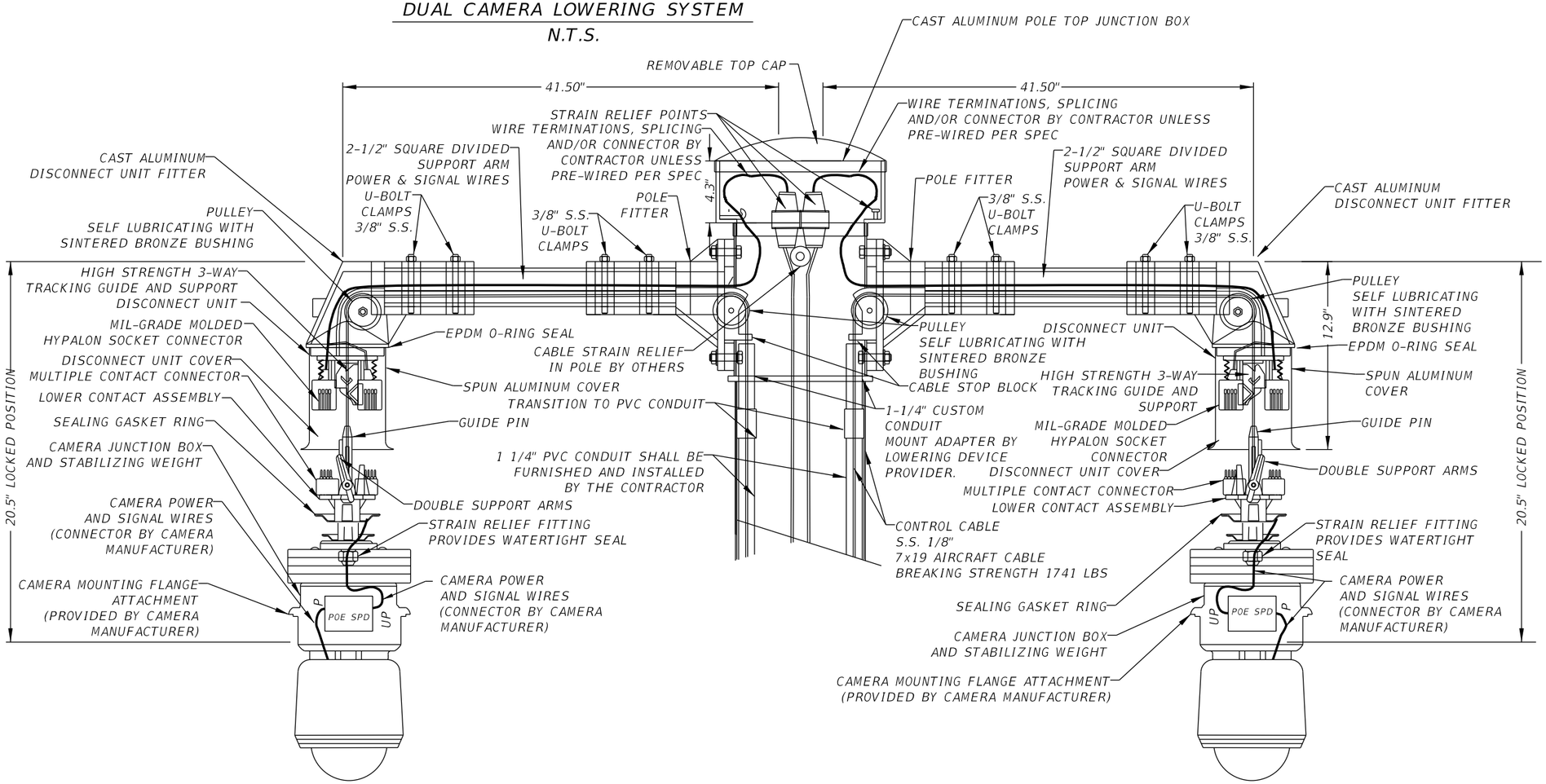
DUAL CAMERA LOWERING SYSTEM

N.T.S.



NOTES:

1. CAMERA LOWERING SYSTEM, [MG]2 INC. MODEL NOS. TO BE ENTERED BY DESIGNER BASED OFF CFX SPECIFICATIONS (DUAL) TO INCLUDE POLE TOP J-BOX, MOUNTING HARDWARE, LOWERING CABLE, MOLDED HYPALON CONTACT BLOCK, CAMERA J-BOX, HOUSING, CUSTOM XX FT AS INDICATED IN THE PLANS.

2. SEE SHEET F-1 FOR ADDITIONAL NOTES.

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DUAL CCTV CAMERA LOWERING DEVICE DETAIL

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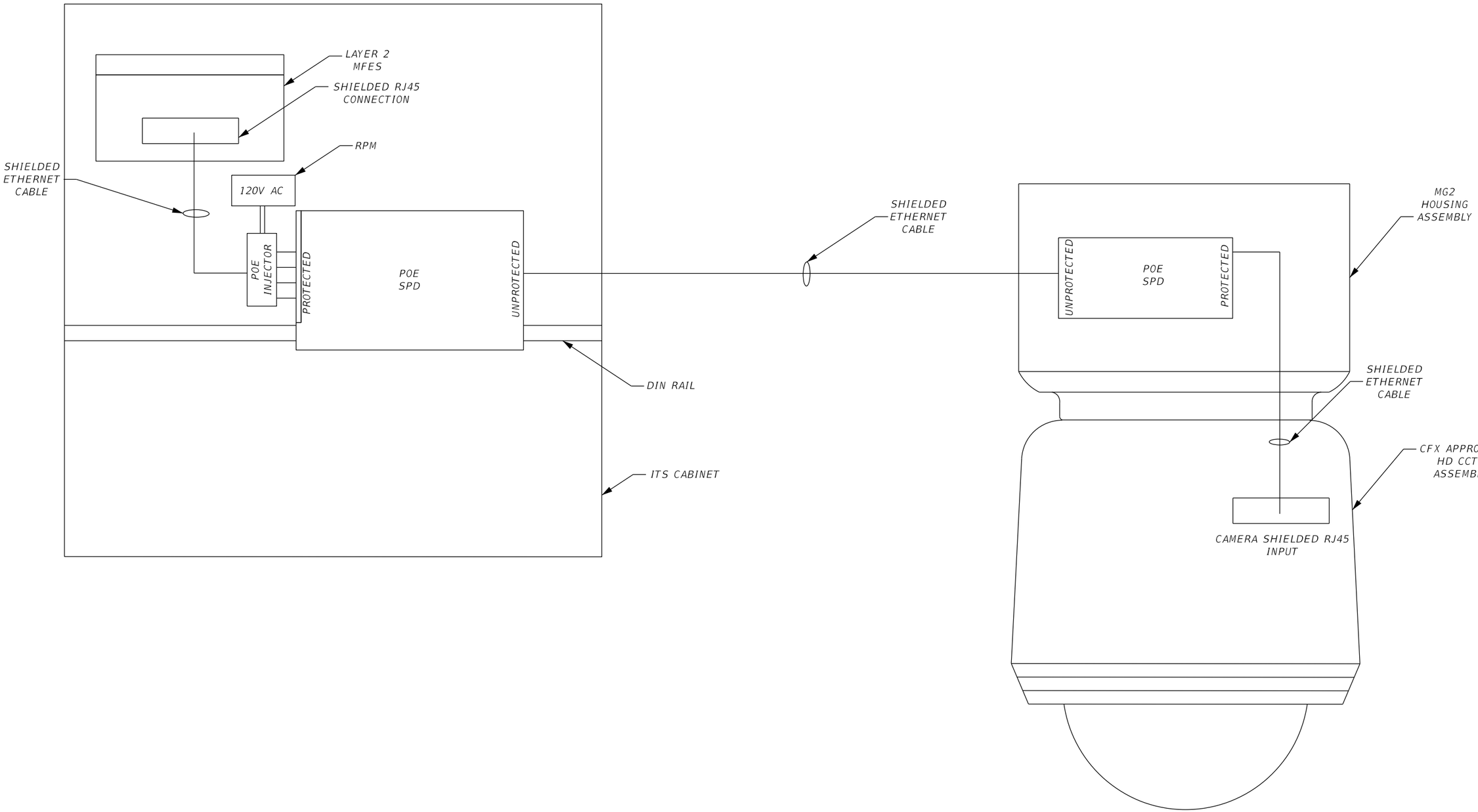
ITS CABINET TO CAMERA JUNCTION BOX WIRING DIAGRAM



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SERVICE POINT DETAIL

KEYED NOTES:

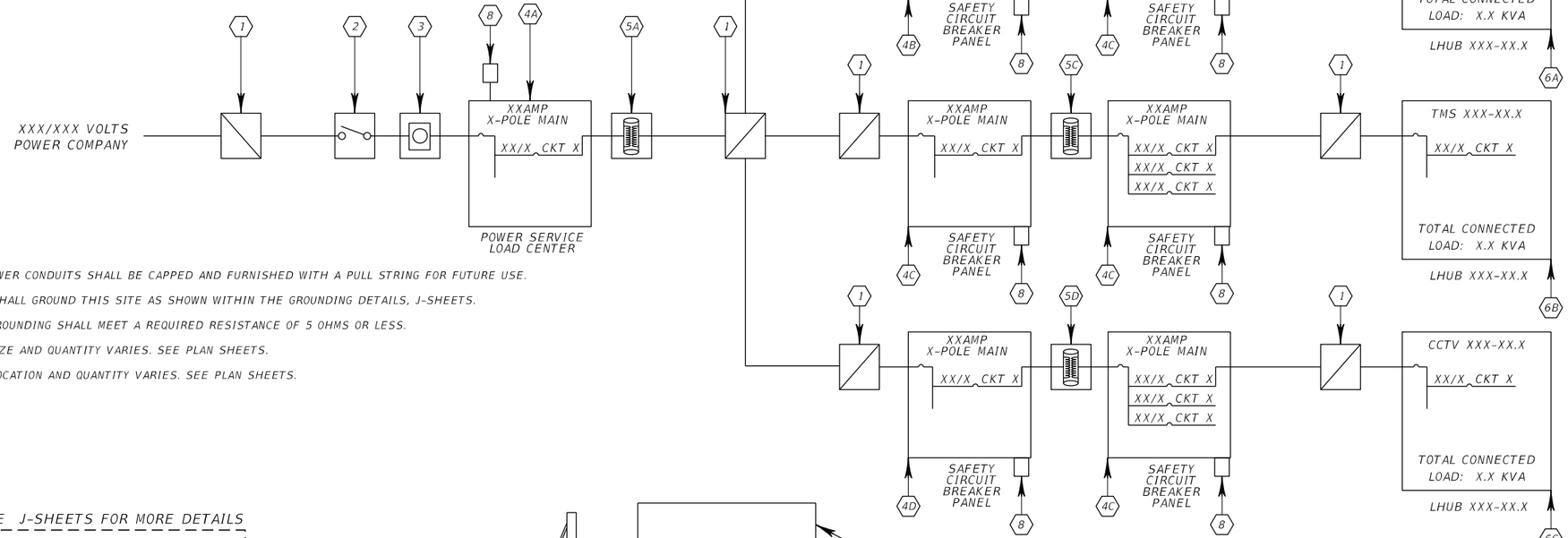
1. PULL BOX
2. XX AMP, XXX/XXXV NON-FUSED DISCONNECT (IF REQUIRED BY SERVICE PROVIDER).
3. METER SOCKET BY CONTRACTOR, METER BY POWER COMPANY (IF REQUIRED)
4A. XX AMP X-POLE, XXX/XXXV MAIN CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX) CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
4B. XX AMP X-POLE, XXX/XXXV SAFETY CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX) CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
4C. XX AMP X-POLE, XXX/XXXV SAFETY CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX) CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
4D. XX AMP X-POLE, XXX/XXXV SAFETY CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX) CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
5A. XFMR (X KVA) (XXX/XXXV PRIMARY, XXX/XXXV SECONDARY) (IF REQUIRED)
5B. XFMR (X KVA) (XXX/XXXV PRIMARY, XXX/XXXV SECONDARY) (IF REQUIRED)
5C. XFMR (X KVA) (XXX/XXXV PRIMARY, XXX/XXXV SECONDARY) (IF REQUIRED)
5D. XFMR (X KVA) (XXX/XXXV PRIMARY, XXX/XXXV SECONDARY) (IF REQUIRED)
6A. TYPE XXXX CABINET W/CIRCUIT BREAKER
6B. TYPE XXXX CABINET W/CIRCUIT BREAKER
6C. TYPE XXXX CABINET W/CIRCUIT BREAKER
7A. X'-X" CONDUIT TYPE XX
8. SURGE PROTECTION DEVICE
9. GROUND ROD

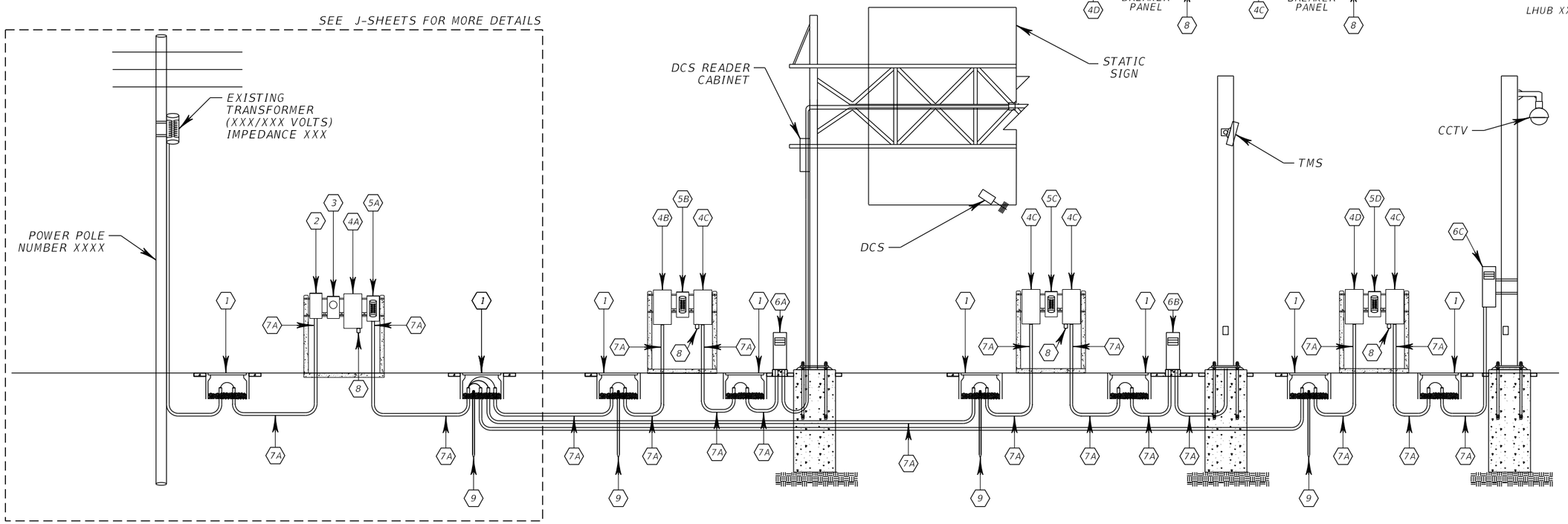
NOTES TO EOR:
1. THIS DETAIL IS FOR CADD LOOK AND FEEL REFERENCE ONLY. ALL VOLTAGES, CONDUITS, TRANSFORMERS, BREAKERS AND SPD's SHALL BE SIZED BY THE EOR.
2. MAXIMUM VOLTAGE THROUGHOUT THE POWER ASSEMBLY IS NOT TO EXCEED 480V.

NOTES:

1. ALL EMPTY POWER CONDUITS SHALL BE CAPPED AND FURNISHED WITH A PULL STRING FOR FUTURE USE.
2. CONTRACTOR SHALL GROUND THIS SITE AS SHOWN WITHIN THE GROUNDING DETAILS, J-SHEETS.
3. ELECTRICAL GROUNDING SHALL MEET A REQUIRED RESISTANCE OF 5 OHMS OR LESS.
4. CONDUCTOR SIZE AND QUANTITY VARIES. SEE PLAN SHEETS.
5. PULL BOXES LOCATION AND QUANTITY VARIES. SEE PLAN SHEETS.

ONE LINE DIAGRAM





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SERVICE POINT DETAIL

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DMS SERVICE POINT DETAIL

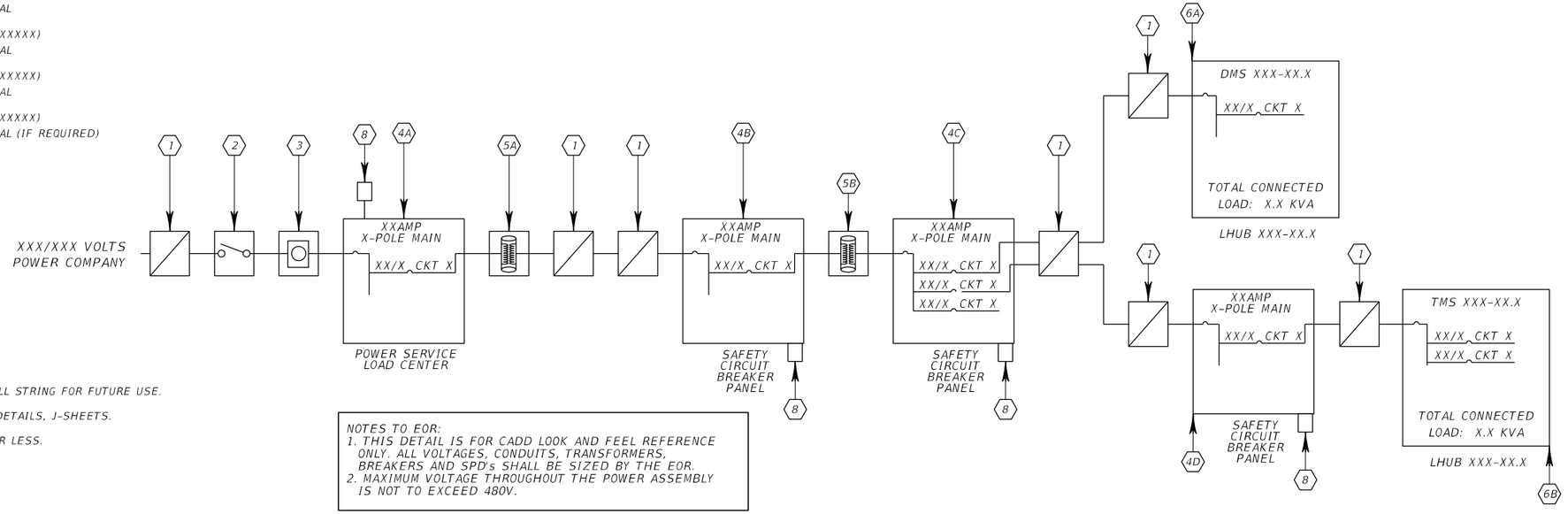
KEYED NOTES:

1. PULL BOX
2. XX AMP, XXX/XXXV NON-FUSED DISCONNECT (IF REQUIRED BY SERVICE PROVIDER).
3. METER SOCKET BY CONTRACTOR, METER BY POWER COMPANY (IF REQUIRED)
4A. XX AMP X-POLE, XXX/XXXV MAIN CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX)
CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
4B. XX AMP X-POLE, XXX/XXXV SAFETY CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX)
CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
4C. XX AMP X-POLE, XXX/XXXV SAFETY CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX)
CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL
4D. XX AMP X-POLE, XXX/XXXV SAFETY CIRCUIT BREAKER PANEL (MODEL #XXXXXXXX)
CONTRACTOR SHALL SUBMIT SQUARE-D MODEL NUMBER TO CFX FOR APPROVAL (IF REQUIRED)
5A. XFMR (X KVA) (XXX/XXXV PRIMARY, XXX/XXXV SECONDARY) (IF REQUIRED)
5B. XFMR (X KVA) (XXX/XXXV PRIMARY, XXX/XXXV SECONDARY) (IF REQUIRED)
6A. TYPE XXXX CABINET W/CIRCUIT BREAKER
6B. TYPE XXXX CABINET W/CIRCUIT BREAKER
7A. X'-X" CONDUIT TYPE XX
8. SURGE PROTECTION DEVICE
9. GROUND ROD

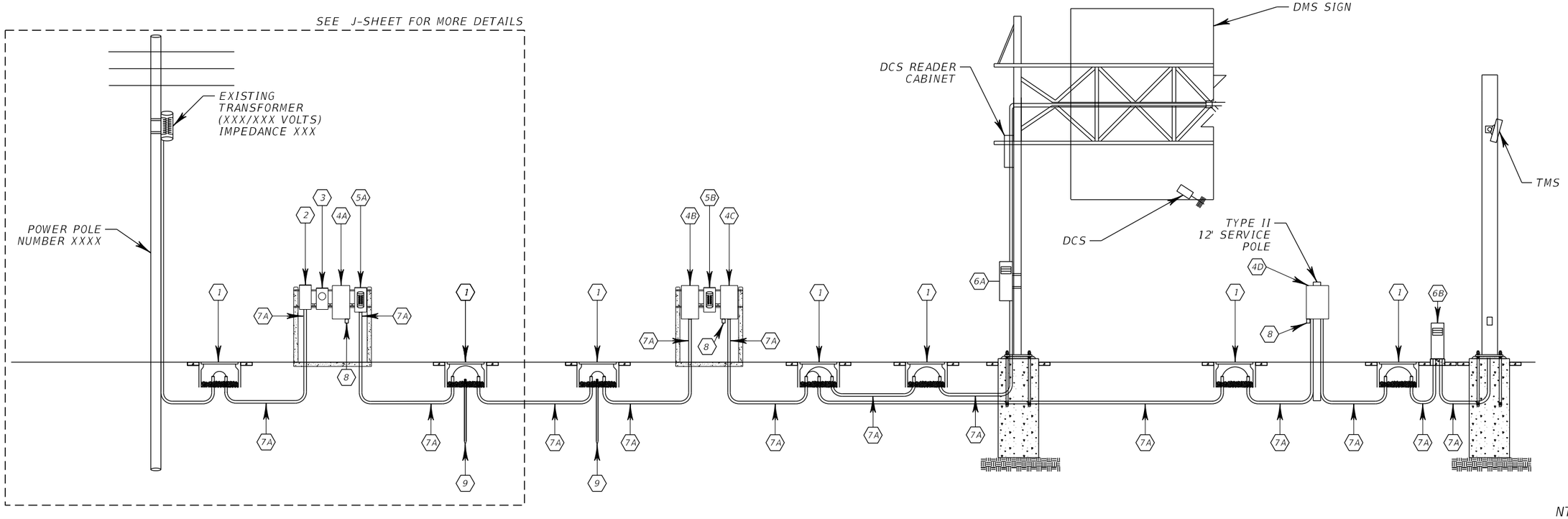
NOTES:

1. ALL EMPTY POWER CONDUITS SHALL BE CAPPED AND FURNISHED WITH A PULL STRING FOR FUTURE USE.
2. CONTRACTOR SHALL GROUND THIS SITE AS SHOWN WITHIN THE GROUNDING DETAILS, J-SHEETS.
3. ELECTRICAL GROUNDING SHALL MEET A REQUIRED RESISTANCE OF 5 OHMS OR LESS.
4. CONDUCTOR SIZE AND QUANTITY VARIES. SEE PLAN SHEETS.
5. PULL BOXES LOCATION AND QUANTITY VARIES. SEE PLAN SHEETS.

ONE LINE DIAGRAM



NOTES TO EOR:
1. THIS DETAIL IS FOR CADD LOOK AND FEEL REFERENCE ONLY. ALL VOLTAGES, CONDUITS, TRANSFORMERS, BREAKERS AND SPD's SHALL BE SIZED BY THE EOR.
2. MAXIMUM VOLTAGE THROUGHOUT THE POWER ASSEMBLY IS NOT TO EXCEED 480V.



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DMS SERVICE POINT DETAIL

SHEET NO. G-2

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ITS DEVICE AND CCTV CAMERA POLE, LOWERING SYSTEM & FOUNDATION GENERAL NOTES

1. DESIGN CRITERIA: DESIGNED IN ACCORDANCE WITH AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" 1ST EDITION, 2015. THE DESIGN WIND SPEED OF 150 MPH IS IN CONFORMANCE WITH THE FDOT "PLANS PREPARATION MANUAL" AND "STRUCTURES MANUAL" (CURRENT EDITION).

   THE STRUCTURE SHALL NOT EXCEED 1" DEFLECTION IN A 30 MPH (NON-GUST) WIND.

   FOUNDATION DESIGN PARAMETERS:
   (DETERMINED BY GEOTECHNICAL ENGINEER BASED ON SITE SPECIFIC BORINGS)

SOIL TYPE:C	XXXXX
SOIL LAYER THICKNESS:	XX FEET
SOIL FRICTION ANGLE:	XX DEGREES
SOIL WEIGHT (ASSUME SATURATED):	XX.X PCF
SLOPE (V:H)	X:X MAX

2. POLE SHAFT: THE POLE SHAFT SHALL BE 12 SIDED WITH A 4" CORNER RADIUS, HAVE A CONSTANT LINEAR TAPER OF 0.14 IN/FT, AND CONTAIN ONLY ONE LONGITUDINAL SEAM WELD. CIRCUMFERENTIAL WELDED TUBE BUTT SPLICES AND LAMINATED TUBES ARE NOT PERMITTED. LONGITUDINAL SEAM WELDS WITHIN 6" OF COMPLETE PENETRATION POLE TO BASE PLATE WELDS SHALL BE COMPLETE PENETRATION WELDS.

3. HAND HOLES: SEE DETAILS

4. CABLE SUPPORTS: ELECTRICAL CABLE GUIDES AND PARKING STAND (EYEBOLTS): TOP AND BOTTOM ELECTRICAL CABLE GUIDES SHALL BE LOCATED WITHIN THE POLE ALIGNED WITH EACH OTHER. ONE CABLE GUIDE SHALL BE POSITIONED 2" BELOW THE HANDHOLE AND THE OTHER SHALL BE POSITIONED 1" DIRECTLY BELOW THE TOP OF TENON. PARKING STANDS SHALL BE POSITIONED 2" BELOW THE TOP OF THE HANDHOLE.

5. ITS DEVICE AND CCTV POLE STRUCTURE MATERIALS SHALL BE AS FOLLOWS:

POLES	-> ASTM A1011 GRADE 50, 55, 60 OR 65 (LESS THAN ¼"), OR ASTM A572 GRADE 50, 55, 60 OR 65 (GREATER THAN OR EQUAL TO ¼"), OR ASTM A595 GRADE A (55 KSI YIELD) OR GRADE B (60 KSI YIELD)
STEEL PLATES & POLE CAP	-> ASTM A709 GRADE 50 OR ASTM A36
WELD METAL	-> E70XX
ANCHOR BOLTS	->ASTM F1554 GRADE 55 (MEETING THE REQUIREMENTS OF SUPPLEMENT S1)
NUTS FOR ANCHOR BOLTS	-> ASTM A563 GRADE A HEAVY HEX
WASHERS FOR ANCHOR BOLTS	-> ASTM F436 TYPE 1
HANDHOLE FRAME	-> ASTM A709 GRADE 36 OR ASTM A36
HANDHOLE COVER	-> ASTM A1011 GRADE 50, 55, 60 OR 65
STAINLESS STEEL SCREWS	-> AISI TYPE 316
NUT COVERS	-> ASTM B26 (319-F) OR PLASTIC COVERS
BOLTS	-> ASTM F3125, GRADE A325, TYPE 1
NUTS	-> ASTM A563 GRADE DH
WASHERS	-> ASTM F436, TYPE 1

6. ALL STEEL ITEMS SHALL BE HOT DIP GALVANIZED AS FOLLOWS:

ALL NUTS, BOLTS AND WASHERS	-> ASTM F2329
ALL OTHER STEEL ITEMS	-> ASTM A123

7. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.

8. CONCRETE SHALL BE CLASS IV (DRILLED SHAFT) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4 KSI FOR ALL ENVIRONMENTAL CLASSIFICATIONS.

9. INSTALL WIRE SCREEN AT THE BASE PLATE PER FDOT SPECIFCIATION 649-6. WIRE SCREEN SHALL BE PAINTED TO MATCH POLE COLOR.

10. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE (STEEL) ANSI/AWS D1.1 (CURRENT EDITION). FOR ADDITIONAL WELDING REQUIREMENTS SEE AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS LUMINAIRES AND TRAFFIC SIGNALS, SECTION 5.14, WELDED CONNECTIONS."

11. SHOP DRAWINGS FOR THIS STRUCTURE ARE REQUIRED AND ARE TO INCLUDE POLE AND TENON DESIGN CALCULATIONS AND DETAIL DRAWINGS SIGNED AND SEALED BY A FLORIDA REGISTERED P.E. FABRICATION SHALL NOT BEGIN UNTIL THESE SHOP DRAWINGS ARE APPROVED.

12. THE FOUNDATION FOR THE CCTV STRUCTURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 455 OF THE SPECIFICATIONS EXCEPT THAT NO PAYMENT FOR THE FOUNDATION SHALL BE MADE UNDER FDOT SPECIFICATIONS SECTION 455. (THE COST OF PROVIDING THE FOUNDATION SHALL BE INCLUDED IN THE PAY ITEM 686-XXX ITS POLE (FURNISH & INSTALL XX FT STEEL POLE WITH LOWERING DEVICE) AND 686-XXX ITS POLE FURNISH & INSTALL XX FT STEEL POLE WITH LOWERING DEVICE), THESE PAY ITEMS SHALL ALSO INCLUDE ANY INCIDENTAL ITEMS INCURRED IN FURNISHING AND INSTALLING THIS CCTV STRUCTURE.)

13. EXCEPT FOR ANCHOR BOLTS, ALL BOLT HOLE DIAMETERS SHALL BE EQUAL TO THE BOLT DIAMETER PLUS 1/16", PRIOR TO GALVANIZING. HOLE DIAMETERS FOR ANCHOR BOLTS SHALL NOT EXCEED THE BOLT DIAMETER PLUS ½".

14. THE STRUCTURE SHALL BE INSTALLED PLUMB.

15. THE STRUCTURE SHALL NOT BE ERECTED UNTIL THE FOUNDATION CONCRETE HAS ACHIEVED A MINIMUM OF 70% OF THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH.

16. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING CONDUIT OR FIBER OPTIC CABLE AND TONE WIRE. ANY DAMAGE SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.

17. POLE SHALL BE GALVANIZED ACCORDING TO SPECIFICATION 962 AND POWDER COATED FLAT BLACK OVER GALVANIZATION BY THE MANUFACTURER.

18. CONTRACTOR SHALL CONTACT UTILITY COMPANIES PRIOR TO FOUNDATION CONSTRUCTION AND FIELD VERIFY ADJACENT UTILITIES PRIOR TO DRILLING.

19. 100% OF FULL-PENETRATION GROOVE WELDS AND A RANDOM 25% OF PARTIAL PENETRATION GROOVE SHALL BE INSPECTED. FULL PENETRATION GROOVE WELDS SHALL BE PERFORMED BY RADIOGRAPHY OR ULTRASONICS.

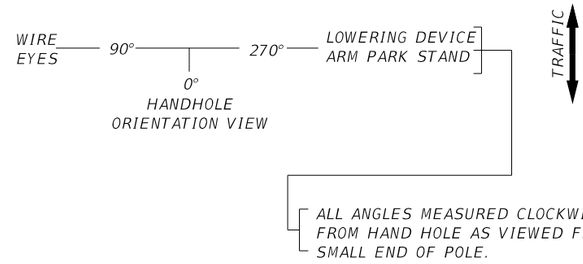
LOWERING DEVICE:

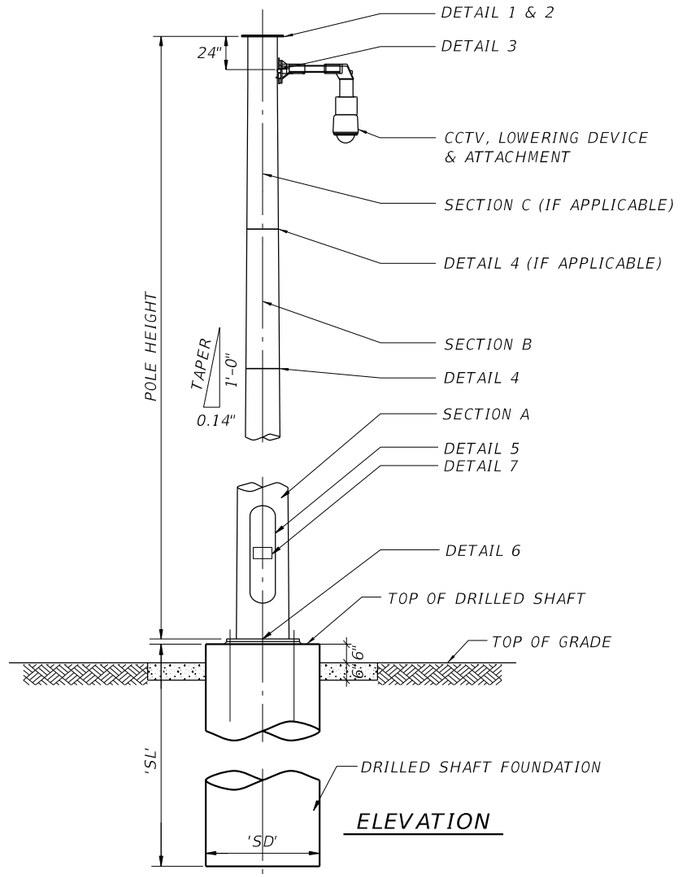
1. POLE TOP TENON: A TENON SHALL BE ATTACHED TO THE POLE TOP WITH MOUNTING HOLES AND SLOT AS REQUIRED FOR THE MOUNTING OF THE CAMERA-LOWERING SYSTEM. THE TENON SHALL BE OF DIMENSIONS NECESSARY TO FACILITATE CAMERA LOWERING DEVICE COMPONENT INSTALLATION. EACH SLOT SHALL BE PARALLEL TO THE POLE CENTERLINE FOR MOUNTING THE LOWERING DEVICE.

2. ALL CABLES SHALL BE SECURED IN A MANNER THAT PREVENTS THEM FROM INTERFERING WITH OR BEING DAMAGED BY THE LOWERING CABLE THAT MOVES WITHIN THE POLE.

3. SET ORIENTATION OF POLE SUCH THAT THE CAMERA LOWERING DEVICE ARM IS ORIENTED PERPENDICULAR TO THE ROADWAY OR AS DIRECTED BY THE ENGINEER. THE CCTV POLE SHALL BE POSITIONED SO THAT THE CAMERA CAN BE SAFELY LOWERED WITHOUT REQUIRING LANE CLOSURES

4. POLE SHALL INCLUDE LOWERING DEVICE WHICH INCLUDES TOP J-BOX, MOUNTING HARDWARE, LOWERING CABLE, CONTACT BLOCK, WATERPROOF ELECTRICAL CONNECTORS, CAMERA J-BOX, HOUSING AND STEEL POLE.





NOTE TO EOR:

1. THESE SHEETS ARE PROVIDED FOR REFERENCE ONLY. PROJECT SPECIFIC CONDITIONS SHALL BE CONSIDERED IN DESIGN.
2. SOIL BORING DATA SHALL BE PROVIDED WITH THE SUBMITTAL.

REVISIONS					
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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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ITS DEVICE & CCTV POLE STRUCTURE AND FOUNDATION (SHEET 1 OF 3)

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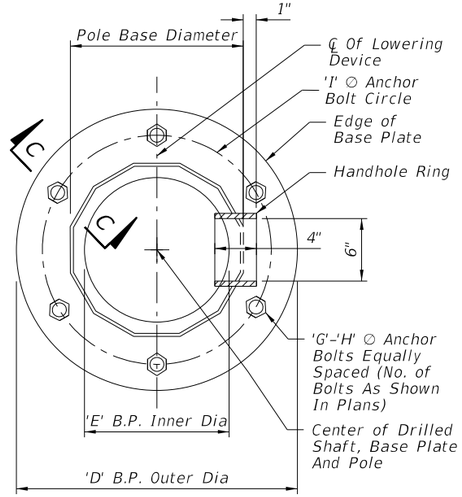
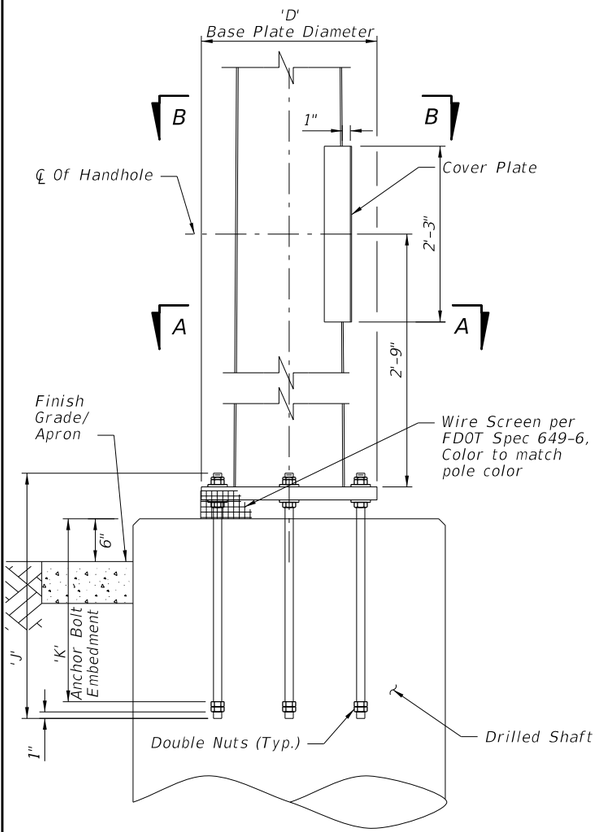
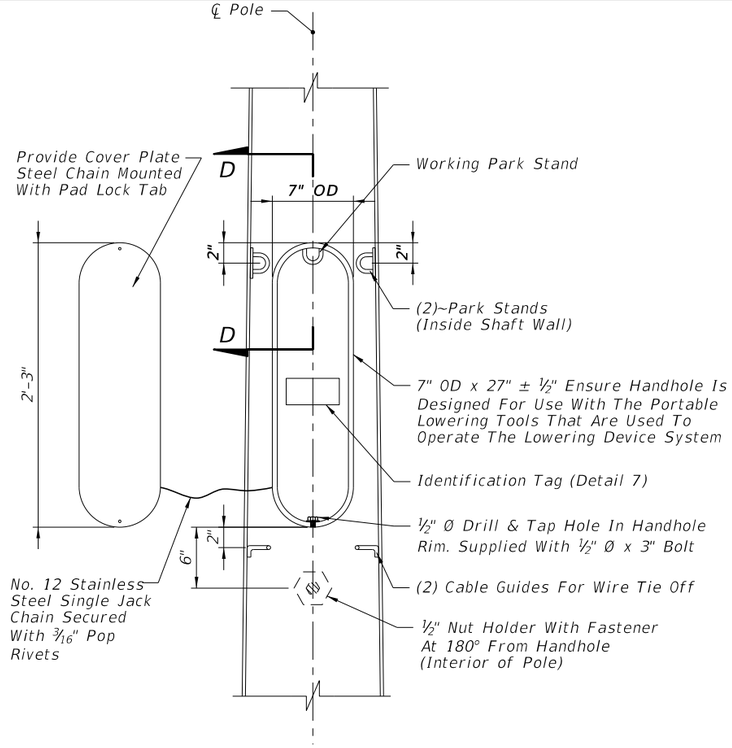


SECTION A-A

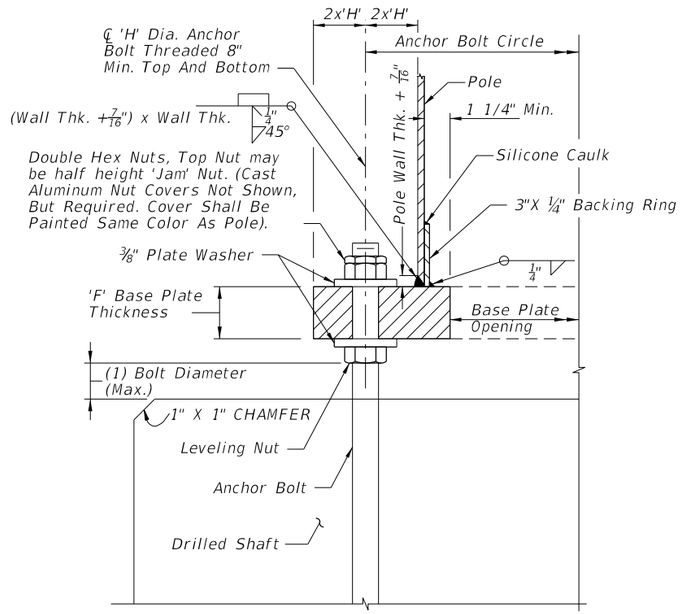


BASE PLATE AND ANCHORAGE ELEVATION
DETAIL 6

(Conduits, Reinforcement, and CSL Tubes Not Shown)

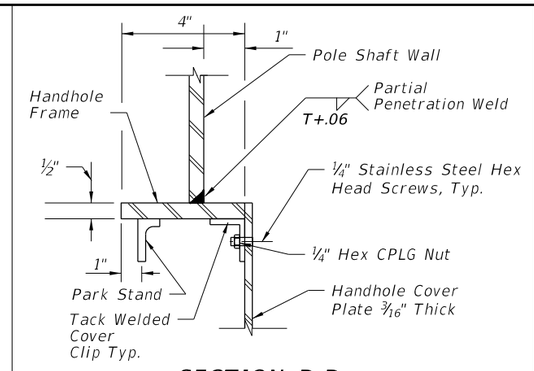


HANDHOLE DETAIL 5

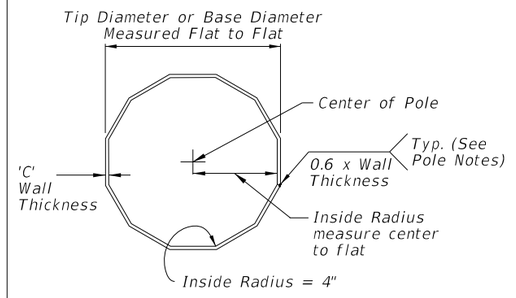


SECTION C-C

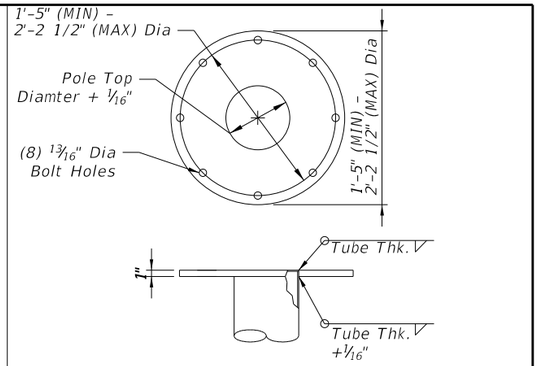
Note: Install all handhole and opening covers prior to shipping. For Poles with Lowering Device, install Pole Cap Plate when Tenon Assembly is not installed.



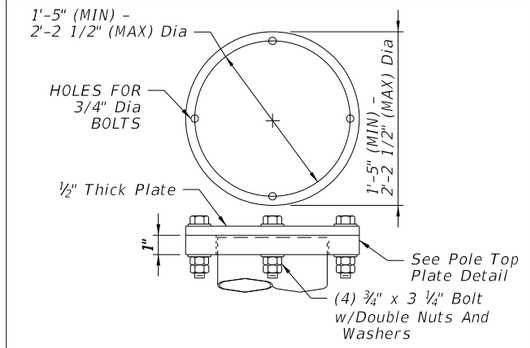
SECTION D-D



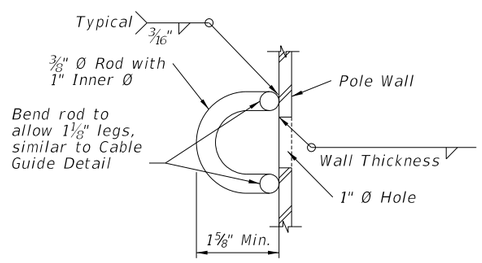
SECTION B-B



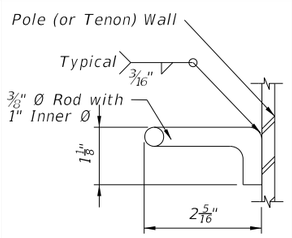
POLE TOP PLATE DETAIL 1



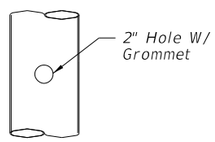
POLE CAP PLATE DETAIL 2
(POLE WITHOUT LOWERING DEVICE)



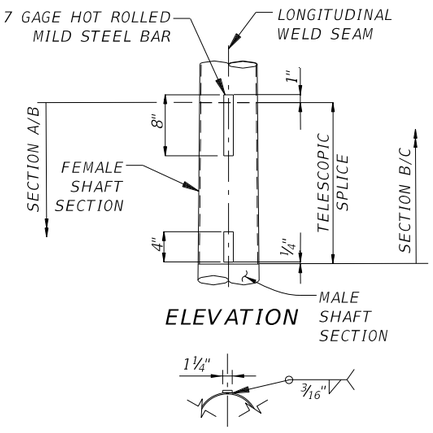
PARK STAND DETAIL



CABLE GUIDE DETAIL



DRILLED HOLE DETAIL 3



ELEVATION

PLAN

WELD REINFORCEMENT DETAIL 4

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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ITS DEVICE & CCTV POLE STRUCTURE AND FOUNDATION (SHEET 2 OF 3)

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NOTE:
1. MINIMUM POLE WALL THICKNESS 'C' SHALL NOT BE LESS THAN 3/16".
2. MINIMUM NUMBER OF ANCHOR BOLTS 'G' SHALL NOT BE LESS THAN 6.
3. MINIMUM ANCHOR BOLT DIAMETER 'H' SHALL NOT BE LESS THAN 1".
4. BASE PLATE THICKNESS 'F' SHALL NOT BE LESS THAN 2" INCHES FOR 30 OR 40 FOOT POLES AND 2 1/2" INCHES FOR LARGER POLES.
5. MINIMUM DIAMETER OF DRILLED SHAFT 'SD' SHALL NOT BE LESS THAN 3'-6".

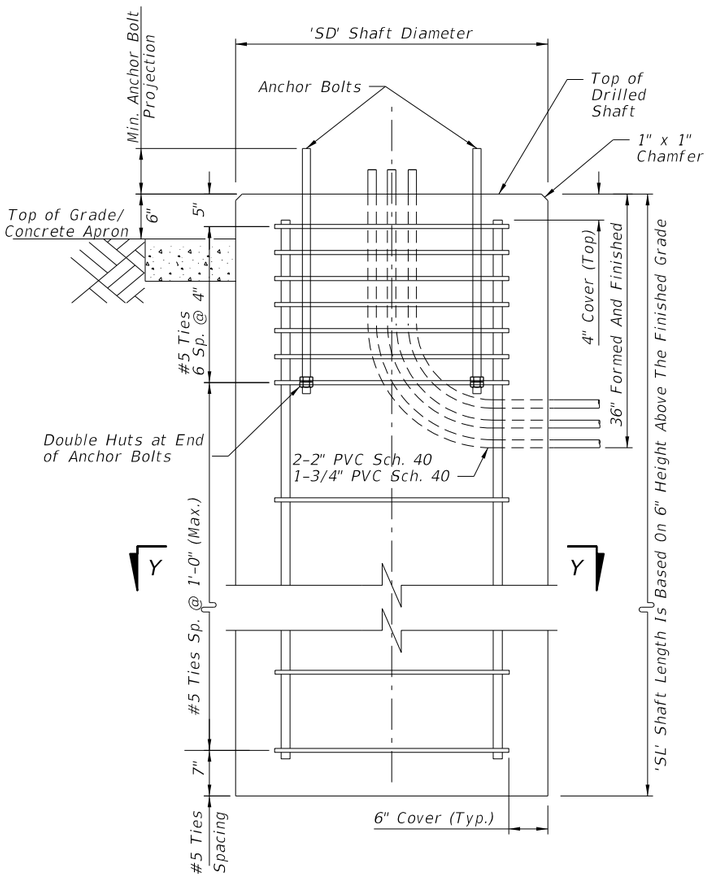
POLE VARIABLES

CCTV NO.	STATION	POLE HEIGHT	SECTION A TUBE				SECTION B TUBE				SECTION C TUBE				BASE PLATE						
			LENGTH	BASE DIAMETER	TIP DIAMETER	THICK	LENGTH	BASE DIAMETER	TIP DIAMETER	THICK	LENGTH	BASE DIAMETER	TIP DIAMETER	THICK	OUTSIDE DIAMETER	INSIDE DIAMETER	PLATE THICKNESS	NUMBER OF BOLTS	BOLT DIAMETER	BOLT CIRCLE DIAMETER	BOLT LENGTH
		(FT.)	(FT.)	(IN.)	(IN.)	C (IN.)	(FT.)	(IN.)	(IN.)	C (IN.)	(FT.)	(IN.)	(IN.)	C (IN.)	D (IN.)	E (IN.)	F (IN.)	G	H (IN.)	I (IN.)	J (IN.)
XXX-XX	XXX+XX	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTE: THE MINIMUM LENGTH OF ANY TELESCOPIC FIELD SPLICE FOR POLES SHALL BE 1.5 TIMES THE INSIDE DIAMETER OF THE EXPOSED END OF THE FEMALE SECTION. ADDITIONALLY, THE MINIMUM POLE SPLICE IS 2'-3" AT SECTION B FOR 80 FT HIGH POLE.

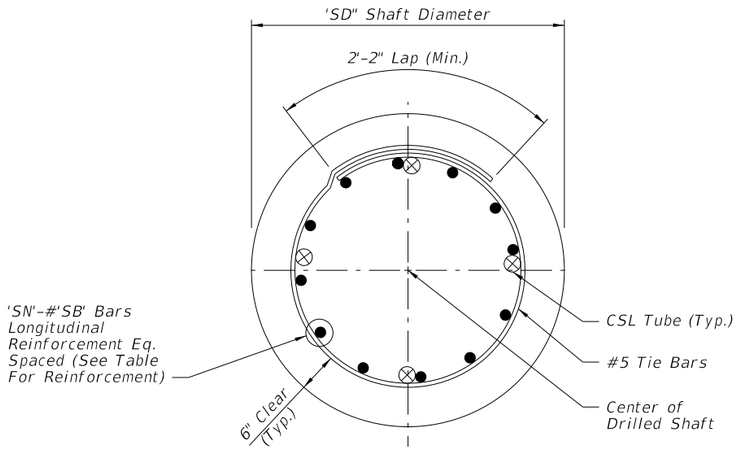
DRILLED SHAFT VARIABLES

CCTV NO.	STATION	SHAFT LENGTH	SHAFT DIAMETER	BAR SIZE	NUMBER OF BARS	BOLT EMBEDMENT
		SL (FT.)	SD (FT.)	SB	SN	K (IN.)
XXX-XX	XXX+XX	--	--	--	--	XX.X



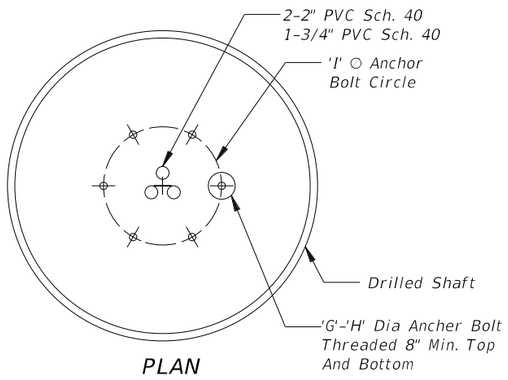
FOUNDATION ELEVATION

(CSL Tubes Not Shown)



SECTION Y-Y

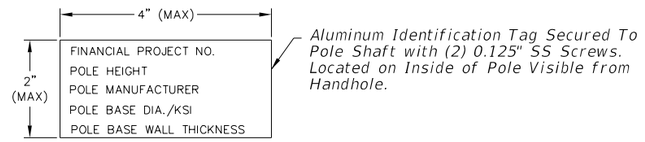
(Anchor Bolts and Conduits Not Shown)



PLAN

FOUNDATION DESIGN ASSUMPTIONS

REACTION ON FOUNDATION	POLE HEIGHT	
	XX (FT)	XX (FT)
OVERTURN	XX.XX kip-ft	XX.XX kip-ft
HORIZONTAL LOAD	X.XX kip	X.XX kip
AXIAL LOAD	X.XX kip	X.XX kip



IDENTIFICATION TAG DETAIL 7

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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ITS DEVICE & CCTV POLE STRUCTURE AND FOUNDATION (SHEET 3 OF 3)

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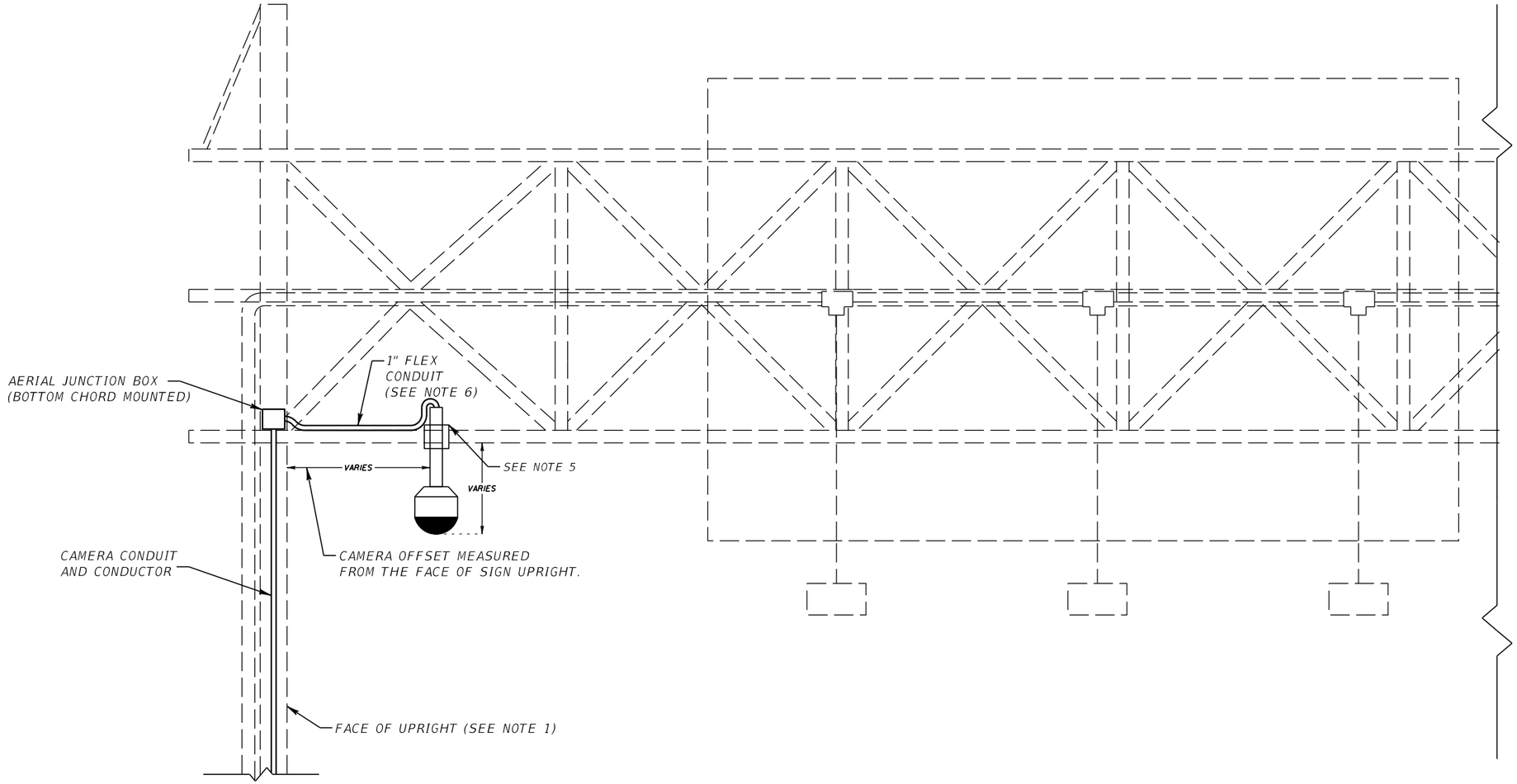

NOTES:

1. FOR PURPOSES OF THIS DETAIL, THE FACE OF UPRIGHT SHALL BE CONSIDERED THE SURFACE OF THE UPRIGHT NEAREST THE EDGE OF TRAVEL

2. AERIAL MOUNTED JUNCTION BOX FOR CAMERA CABLE SHALL BE 8"W X 8"H X 3"D (MIN.). JUNCTION BOX SHALL BE ATTACHED TO SIGN UPRIGHT IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.

3. ENSURE THE BOTTOM OF THE DOME OF THE CAMERA EXTENDS BENEATH THE CHORD TO WHICH IT IS MOUNTED BY A MINIMUM OF 1 FOOT AND NO MORE THAN 3 FEET.

4. GRAPHICAL REPRESENTATION OF BACK CHORD MOUNTING. FOR REFERENCE ONLY.

5. PTM01: PIPE THREAD ADAPTER-TYPE MOUNTING BRACKET. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

6. HORIZONTAL FLEXIBLE CONDUIT SHALL BE SECURED TO THE STRUCTURE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.

NOTE TO EOR:
TYPE OF CABINET SHALL BE DETERMINED BY THE DESIGNER.

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GROUNDING NOTES:

1. ALL GROUNDING CONNECTIONS MADE BETWEEN THE STRUCTURE AND GROUND RODS SHALL BE MADE USING #2 AWG SOLID CONDUCTOR TINNED BARE COPPER WIRE. THE CONNECTING WIRE SHALL BE BURIED PER CFX SPECIFICATIONS 620A-4.1 AND SHALL BE ATTACHED TO GROUND RODS USING EXOTHERMIC WELDS.

2. THE STRUCTURE SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 60 FEET OF THE STRUCTURE.

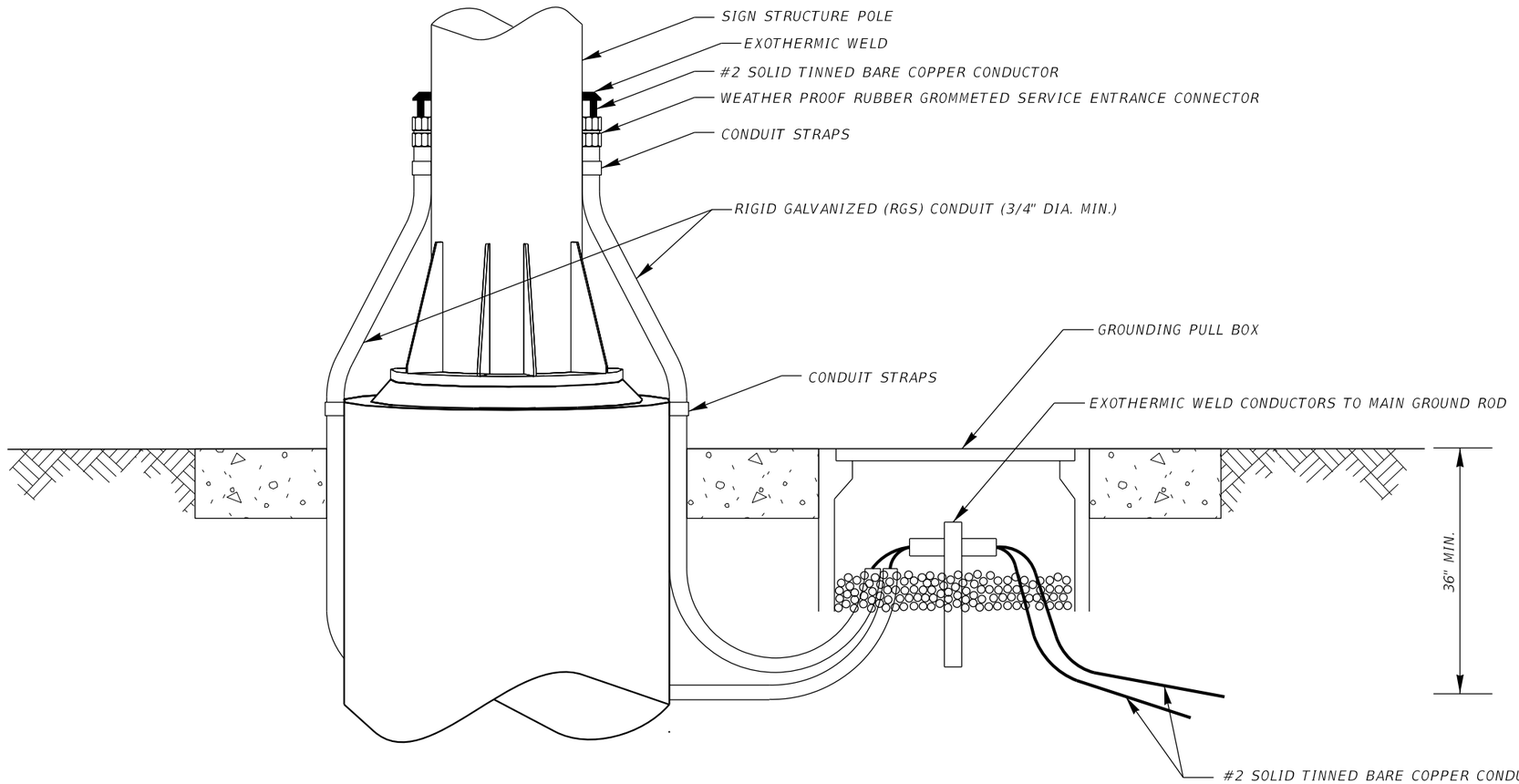
3. THE DMS ENCLOSURE SHALL BE GROUNDED TO THE SIGN STRUCTURE WITH A GROUNDING CONDUCTOR PER MANUFACTURER'S RECOMMENDATIONS.

4. FOR EXISTING STRUCTURES, GROUND WIRE LEADS SHALL BE EXOTHERMICALLY WELDED TO THE STRUCTURAL POLES. WELDS SHALL BE LOCATED ON THE SIDE OF THE STRUCTURAL POLE AT LEAST 1 FOOT ABOVE THE BOLT FLANGE. GRIND THROUGH GALVANIZED COATING TO EXPOSE BARE STEEL. ONCE BARE STEEL IS EXPOSED, WORK CALLED FOR IN THE REMAINDER OF THIS NOTE SHALL BE COMPLETED WITHOUT INTERRUPTION. HEAT BARE STEEL WITH TORCH FOR SEVERAL MINUTES AND MAKE WELD WHILE BARE STEEL IS WARM. AFTER WELD IS COMPLETE, COAT WELD AND ASSOCIATED STEEL WITH COLD GALVANIZING SPRAY WHILE WELD IS STILL WARM.

5. HALF-SPAN OR FULL-SPAN STRUCTURES SHALL BE EQUIPPED WITH COMPLETE GROUNDING ARRAYS ATTACHED TO EACH UPRIGHTS.

6. ALL CONDUIT DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS.

7. GROUNDING SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 620A.



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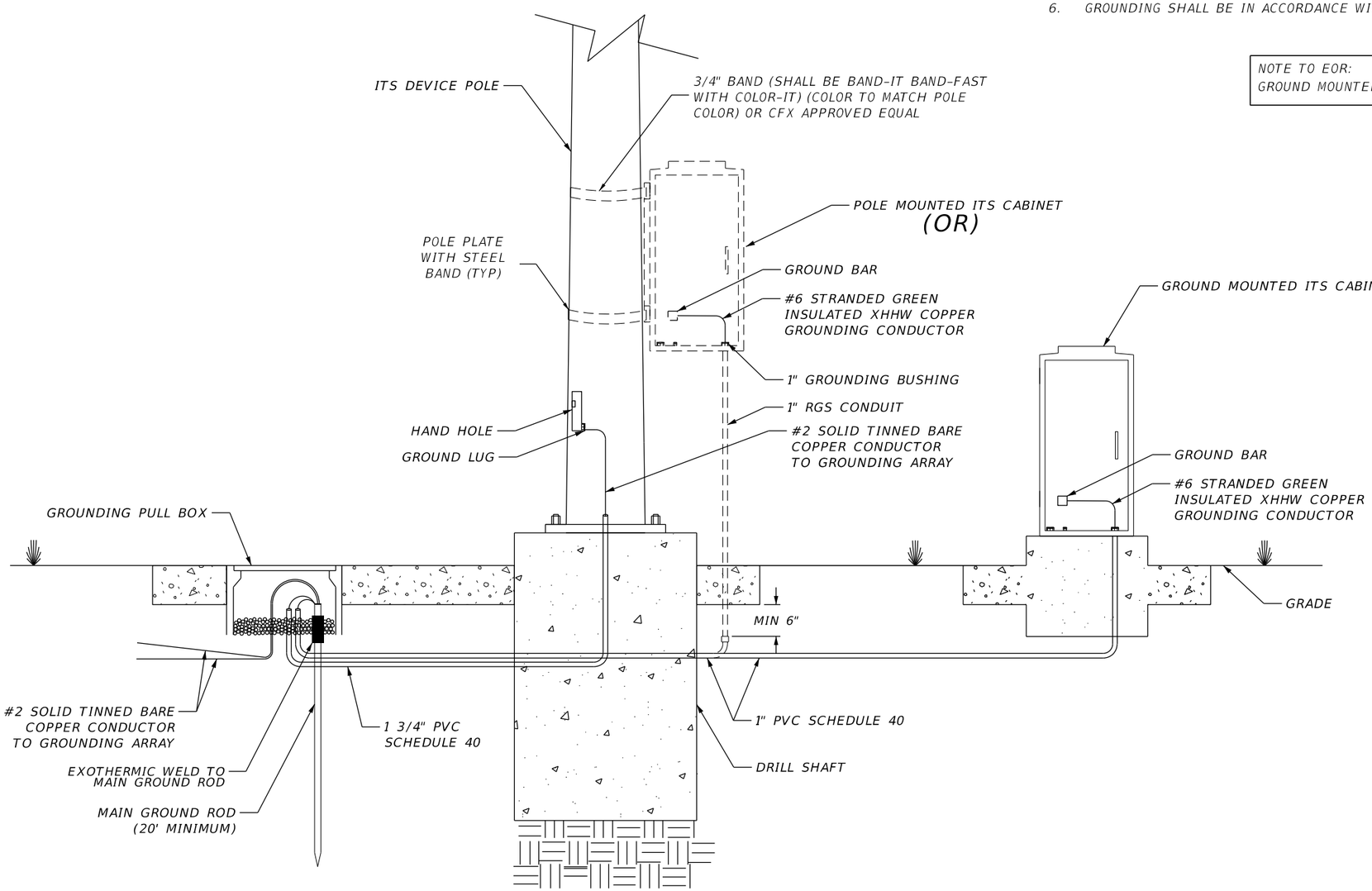
VERSION 7

GROUNDING NOTES:

1. ALL GROUNDING CONNECTIONS MADE BETWEEN THE STRUCTURE AND GROUND RODS SHALL BE MADE USING #2 AWG SOLID CONDUCTOR TINNED BARE COPPER WIRE. THE CONNECTING WIRE SHALL BE BURIED PER CFX SPECIFICATIONS 620A-4.1 AND SHALL BE ATTACHED TO GROUND RODS USING EXOTHERMIC WELDS.
2. THE STRUCTURE SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 60 FEET OF THE STRUCTURE.
3. FOR ITS DEVICE POLES, THE BOND WIRE SHALL BE AFFIXED TO THE POLE VIA A MECHANICAL CONNECTION USING A LUG, WHICH IS TO BE LOCATED INSIDE THE POLE WITHIN CLOSE PROXIMITY TO THE HAND HOLE.
4. GROUNDING PULL BOXES SHALL BE STAMPED WITH "CFX GROUNDING" ON TOP OF THE LID.
5. ALL CONDUIT DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS.
6. GROUNDING SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 620A.

NOTE TO EOR:
GROUND MOUNTED CABINET IS CFX PREFERED.



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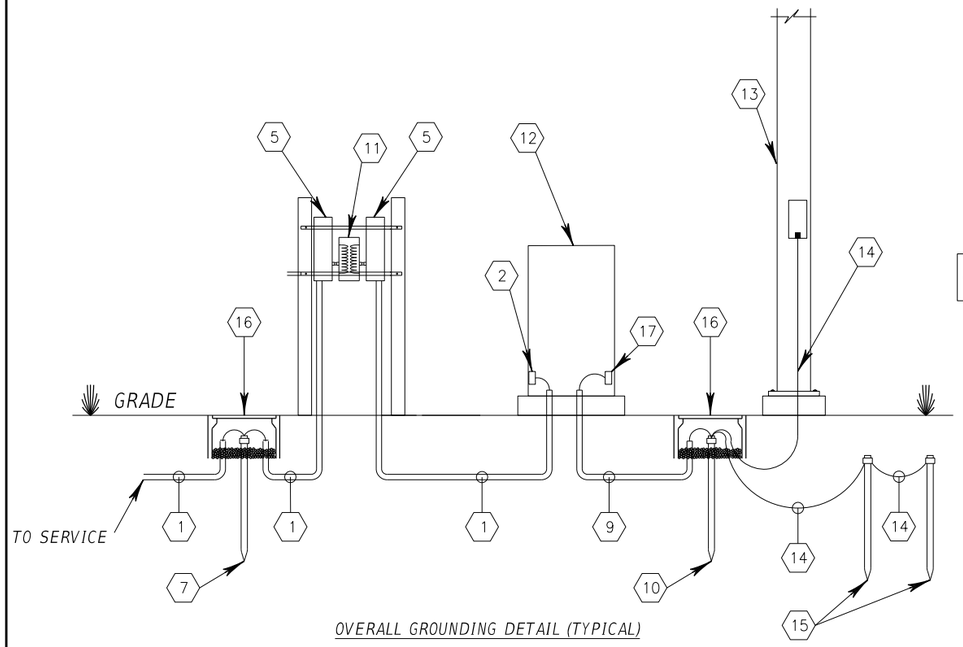
GENERAL NOTES

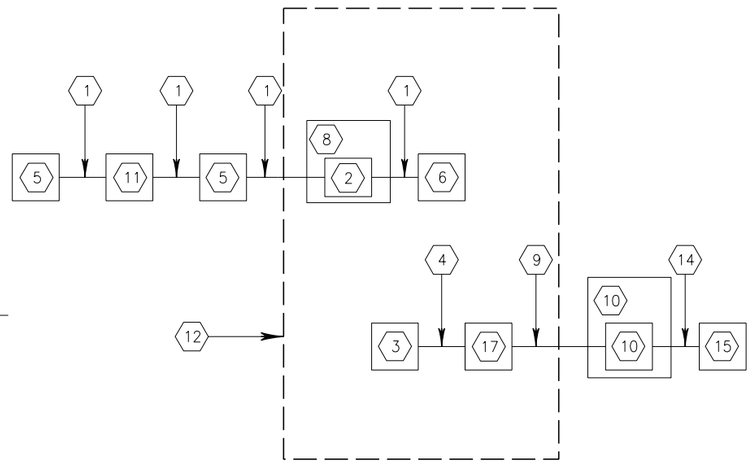
1. DESIGN INTENT OF THIS DRAWING IS TO PROVIDE AN OVERALL GROUNDING CONCEPT THAT SHOWS ALL GROUNDS FOR CABINETS, POLES, AND SERVICE.
2. THE POWER PANEL GROUND AND CABINET GROUND(EQUIPMENT/LIGHTNING) ARE TO BE ISOLATED FROM EACH OTHER.
3. SYSTEM SHOWN IS TO CLARIFY AND MEET THE INTENT OF NEC ARTICLE 250.
4. REFER TO THE OTHER SECTION-J SHEETS FOR ADDITIONAL GROUNDING DETAILS
5. NUMBER OF GROUND RODS WILL VARY DEPENDING ON SITE CONDITION. CONTRACTOR TO PROVIDE PROPER NUMBER OF GROUND RODS IN ORDER TO OBTAIN THE 5 OHM REQUIREMENT PER SPECIFICATION.
6. ALLOW 2 FEET OF SLACK FOR THE EQUIPMENT AND LIGHTNING GROUND CONDUCTOR, SO A CLAMP ON MEGGER CAN BE ATTACHED BETWEEN THE CABINET GROUND BAR AND MAIN GROUND ROD FOR THE GROUNDING ARRAY.

KEYED NOTES

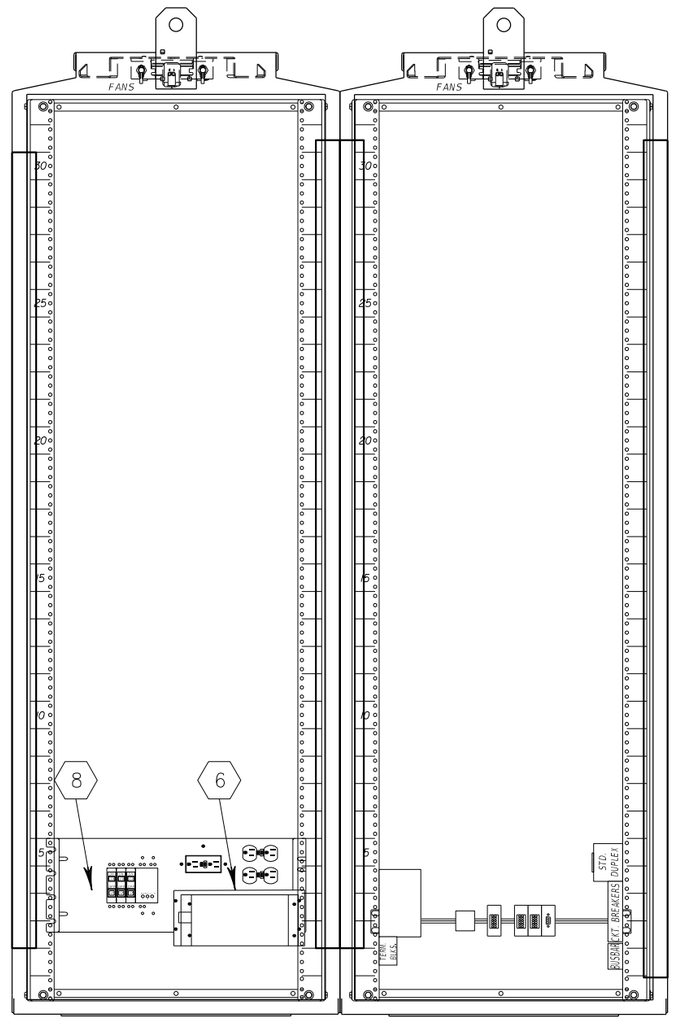
1. #6 GREEN INSULATED XHHW COPPER SERVICE GROUND CONDUCTOR.
2. POWER PANEL GROUND BAR.
3. SURGE PROTECTION DEVICE DIN RAIL MOUNTED INSIDE CABINET.
4. #10 GREEN INSULATED XHHW COPPER CONDUCTOR FROM DIN RAIL TO CABINET GROUND BAR.
5. SAFETY CIRCUIT BREAKER PANEL FOR AC POWER TO CABINET (IF REQUIRED).
6. CABINET MAIN POWER SPD (SURGE SUPPRESSION DEVICE).
7. SAFETY CIRCUIT BREAKER PANEL GROUND ROD.
8. POWER PANEL FOR ELECTRICAL OUTLETS, FANS, AND LIGHTS.
9. #6 GREEN INSULATED XHHW COPPER CABINET GROUND CONDUCTOR (EQUIPMENT/LIGHTNING).
10. GROUNDING ARRAY MAIN GROUND ROD.
11. STEP UP/STEP DOWN TRANSFORMER ASSEMBLY, GROUND PER NEC (IF REQUIRED). N-G BONDING SHALL OCCUR INSIDE THE TRANSFORMER.
12. ITS CABINET.
13. ITS DEVICE POLE.
14. #2 SOLID TINNED BARE COPPER GROUND CONDUCTOR.
15. GROUND RODS, SEE ITS DEVICE GROUNDING ARRAYS.
16. GROUNDING PULL BOX.
17. CABINET GROUND BAR (EQUIPMENT/LIGHTNING).



OVERALL GROUNDING DETAIL (TYPICAL)



CABINET GROUNDING COMPONENT AND WIRING DETAIL



CABINET EQUIPMENT LAYOUT

NOTE: NO NEUTRAL TO GROUND BOND SHALL BE MADE INSIDE THE CABINET

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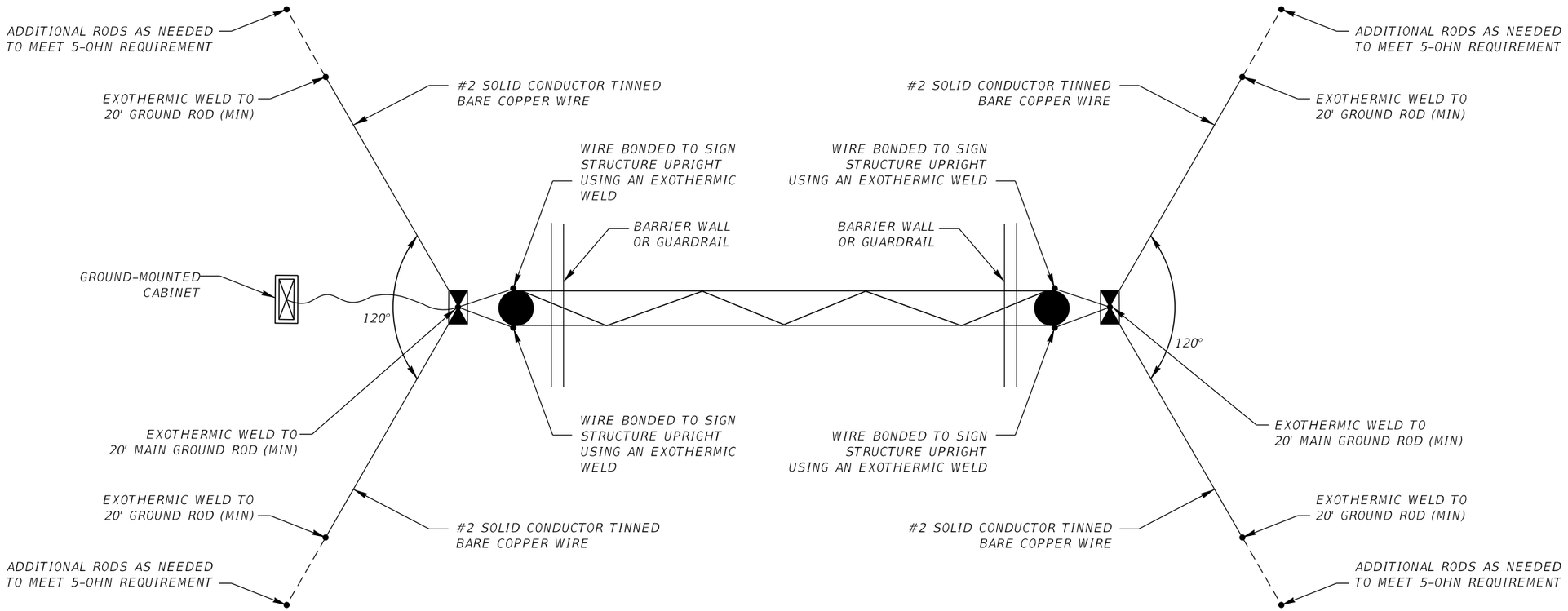

NOTES:

1. MAINTAIN FORTY FEET SPACING BETWEEN ALL GROUNDING RODS WITHIN ARRAY.
2. THE STRUCTURE SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 10 FEET OF THE STRUCTURE PER CFX SPECIFICATIONS 620A.

ROADWAY SPAN STRUCTURE WITH SINGLE-POLE UPRIGHTS

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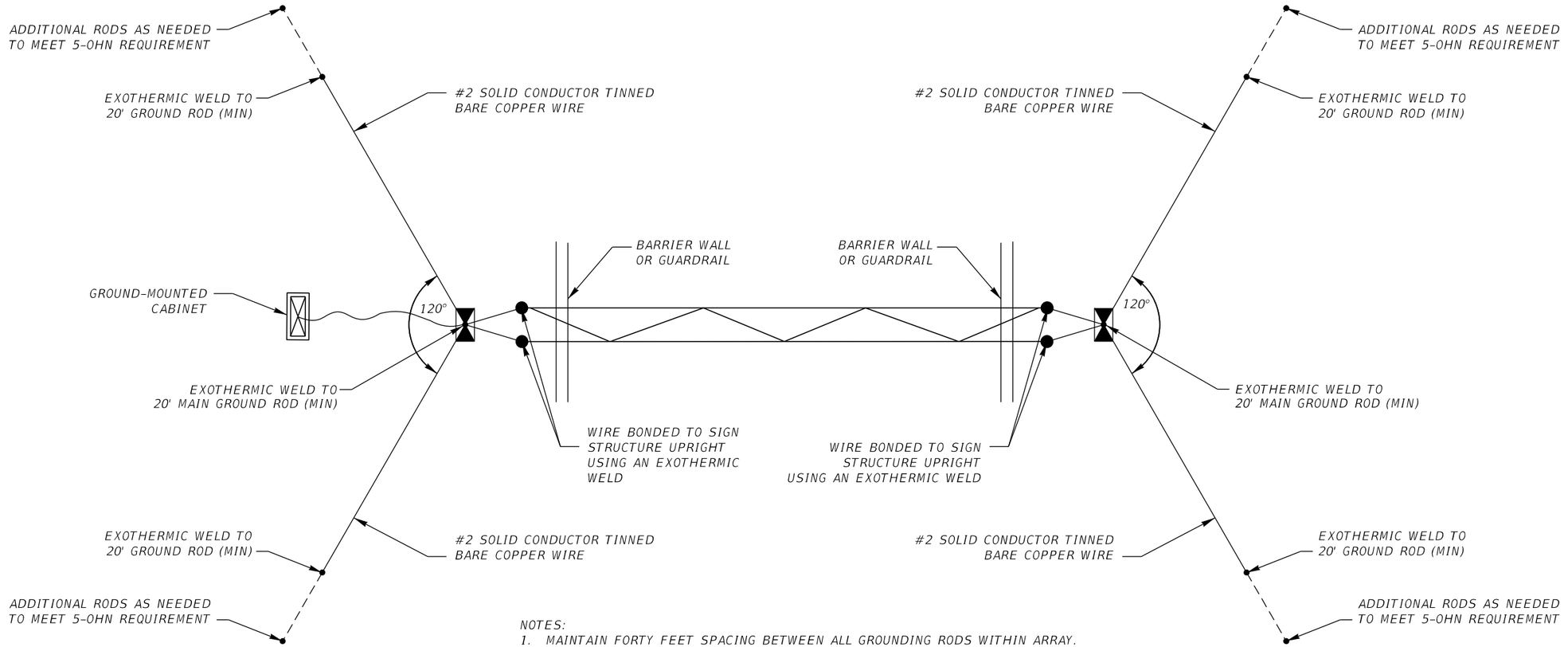

NOTES:

1. MAINTAIN FORTY FEET SPACING BETWEEN ALL GROUNDING RODS WITHIN ARRAY.
2. THE STRUCTURE SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 10 FEET OF THE STRUCTURE PER CFX SPECIFICATIONS 620A.

ROADWAY SPAN STRUCTURE WITH DUAL-POLE UPRIGHTS

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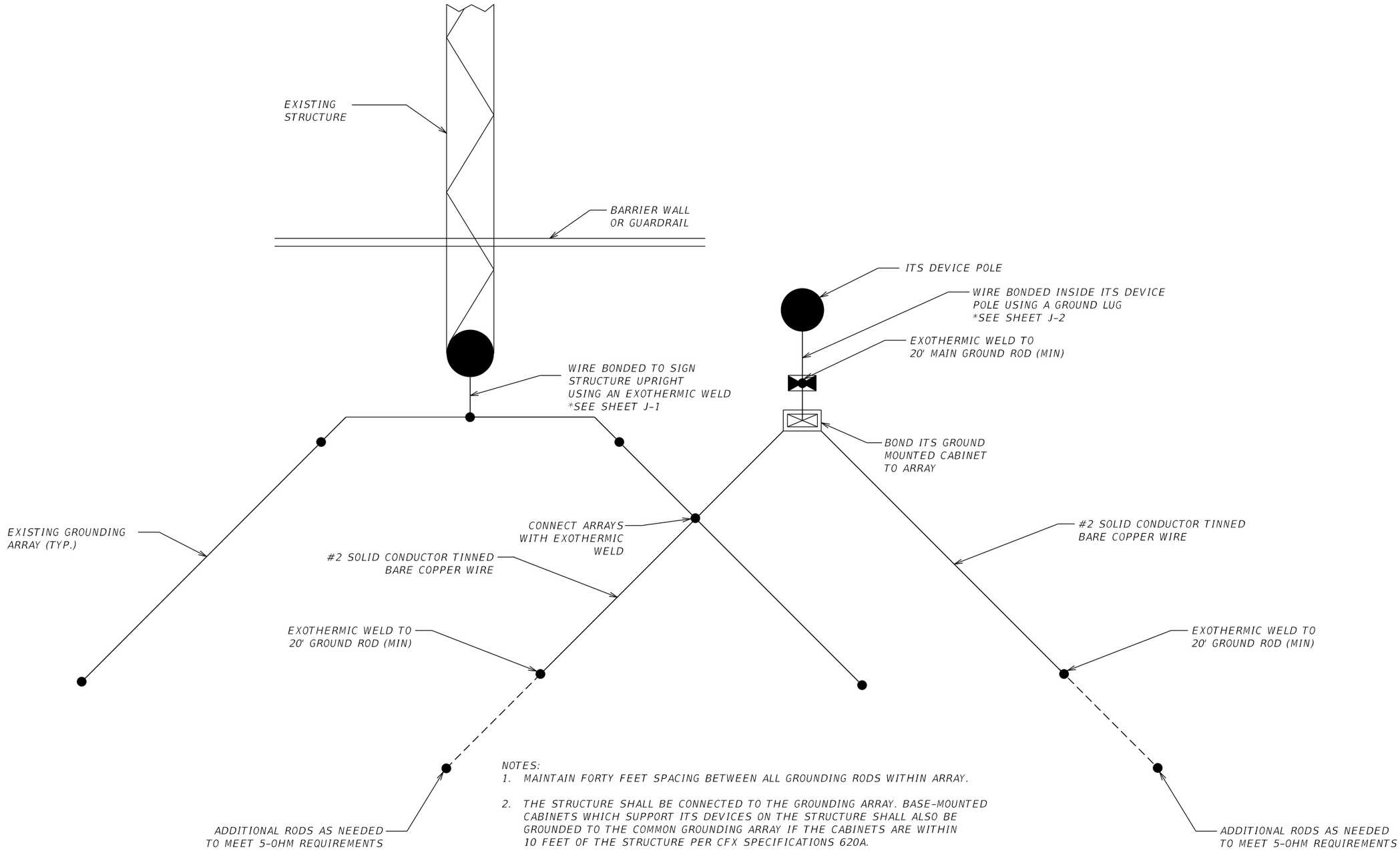


NOTES:

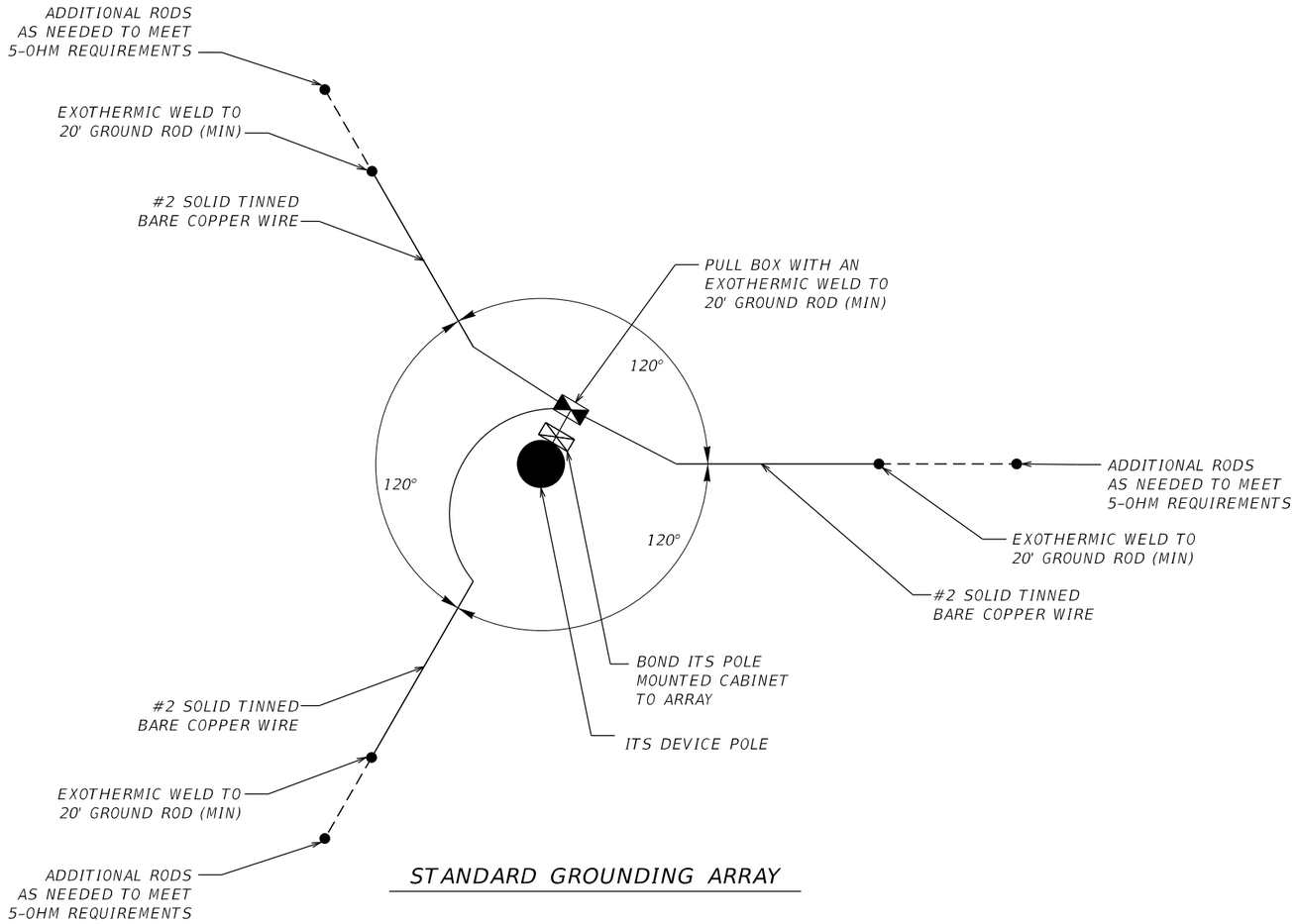
1. MAINTAIN FORTY FEET SPACING BETWEEN ALL GROUNDING RODS WITHIN ARRAY.
2. THE STRUCTURE SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 10 FEET OF THE STRUCTURE PER CFX SPECIFICATIONS 620A.

GROUNDING DETAIL IN PROXIMITY TO ITS SIGN STRUCTURE

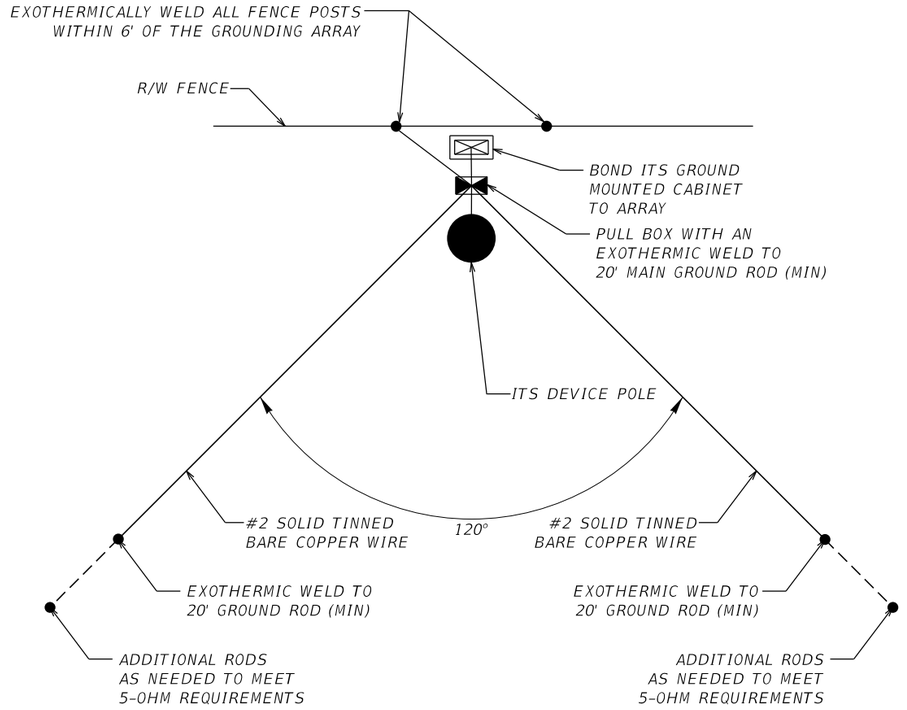
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	ITS DEVICE GROUNDING ARRAY (4 OF 5)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					J-6
						$DATE$ $TIME$ $FILE$				

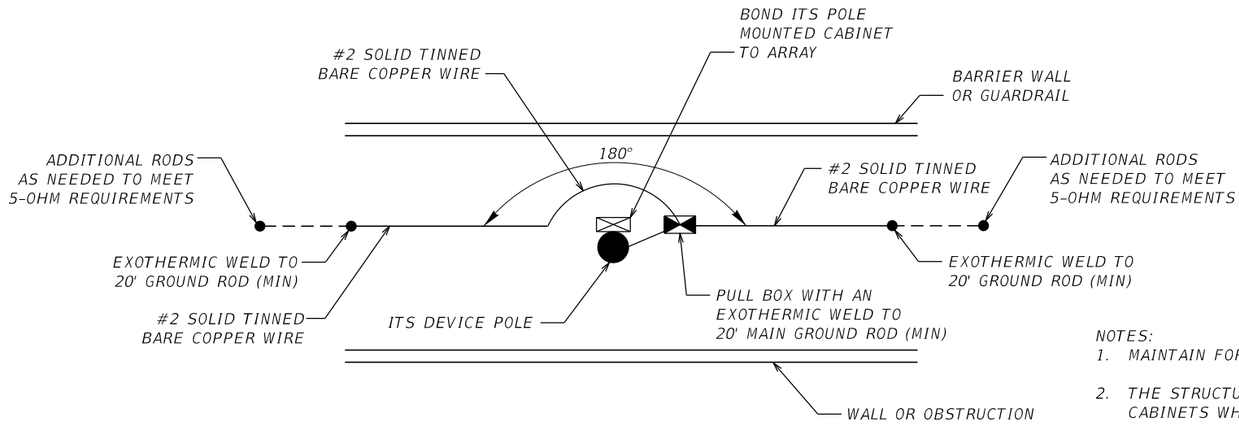
VERSION 7



STANDARD GROUNDING ARRAY



GROUNDING ARRAY - LIMITED R/W



GROUNDING ARRAY - LIMITED R/W

NOTES:

1. MAINTAIN FORTY FEET SPACING BETWEEN ALL GROUNDING RODS WITHIN ARRAY.
2. THE STRUCTURE SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 10 FEET OF THE STRUCTURE PER CFX SPECIFICATIONS 620A.

NTS

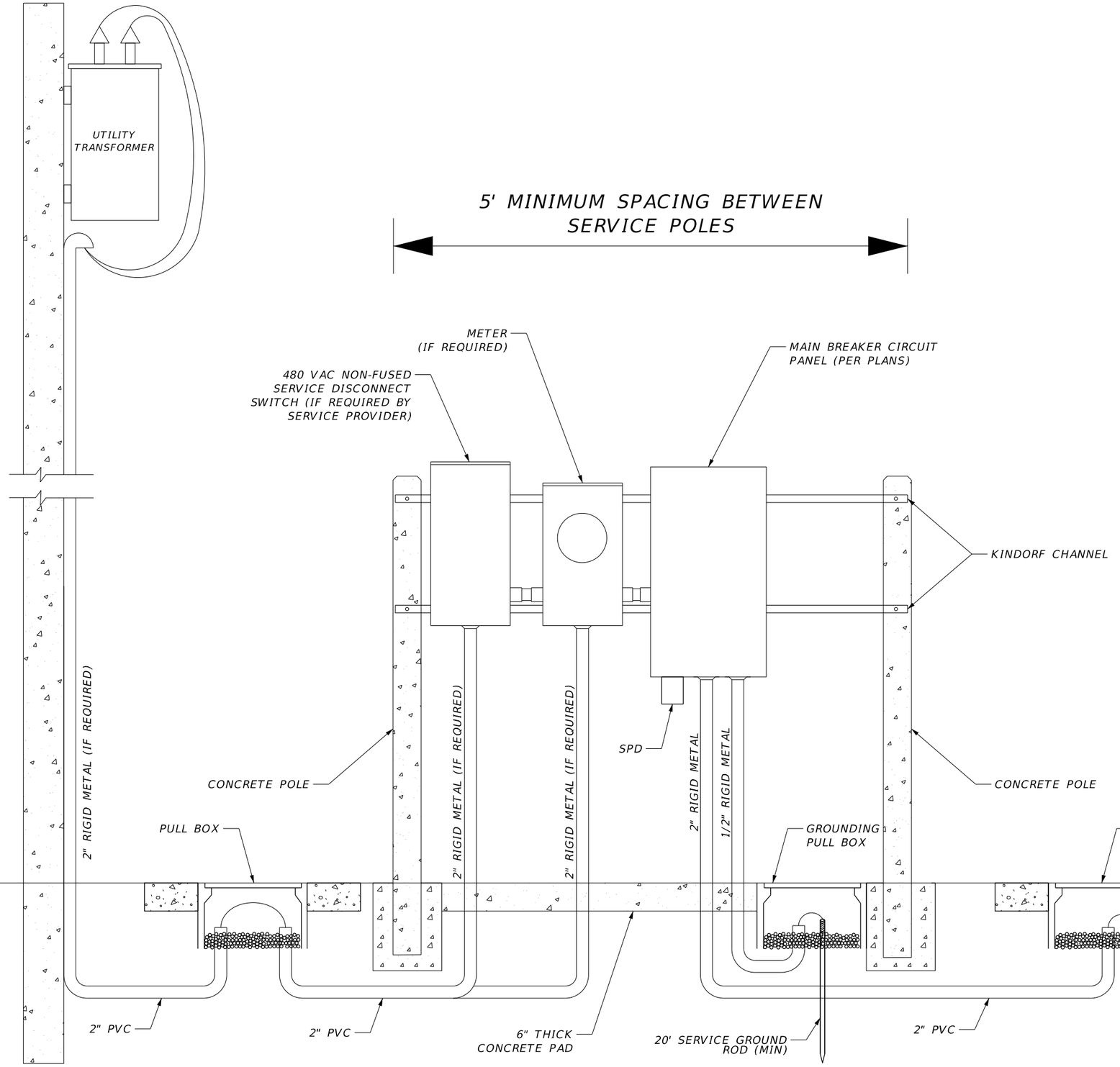
REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	ITS DEVICE GROUNDING ARRAY (5 OF 5)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					J-7

VERSION 7

$DATE$ $TIME$ $FILE$

NOTES:

1. THE ENCLOSURES SHALL BE NEMA 3R. THE SIDES AND TOP OF ALL EQUIPMENT MOUNTED TO THE H-FRAME ASSEMBLY SHALL BE SEALED WITH SILICONE. HOLES SMALLER THAN 1/8" SHALL BE SEALED WITH SILICONE SEALANT INSIDE AND OUT. DO NOT PLACE SILICONE AROUND THE BOTTOM OF THE DEVICE.
2. ENCLOSURES SHALL BE ATTACHED WITH RGS TO THE H-FRAME ASSEMBLY.
3. THE SPD SHALL HAVE A LED INDICATOR AND BE LIT TO SHOW PROTECTION.
4. A MAIN BREAKER IS REQUIRED IN ALL SERVICE PANELS WITH TWO OR MORE BRANCH BREAKERS.
5. ALL SERVICE EQUIPMENT SHALL BE U.L. APPROVED.
6. ALL EDGES TO HAVE ½" CHAMFER.
7. DO NOT DRILL OR PUNCH HOLES IN METER BASE. USE PROVIDED KNOCKOUTS.
8. MOUNT KINDORF CHANNEL USING ½" BOLT THROUGH POST OR LEAD ANCHOR AND BOLT. DO NOT USE POWER GUN TO SHOOT FASTENERS INTO POST. DO NOT USE PLASTIC ANCHORS.
9. KINDORF CHANNEL IS NOT TO EXTEND PAST THE OUTER SIDES OF THE H-FRAME CONCRETE POSTS.
10. CONCRETE POLES SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 639A-3.10.
11. RGS SHALL TRANSITION TO PVC NO LESS THAN 6" BELOW GRADE. A CFX APPROVED RGS TO PVC CONNECTOR MUST BE USED.
12. 6" THICK CONCRETE PAD SHALL BE A MINIMUM OF CLASS I NON -STRUCTURAL 2500 PSI CONCRETE.
13. GROUNDING SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 620A-2.2.



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

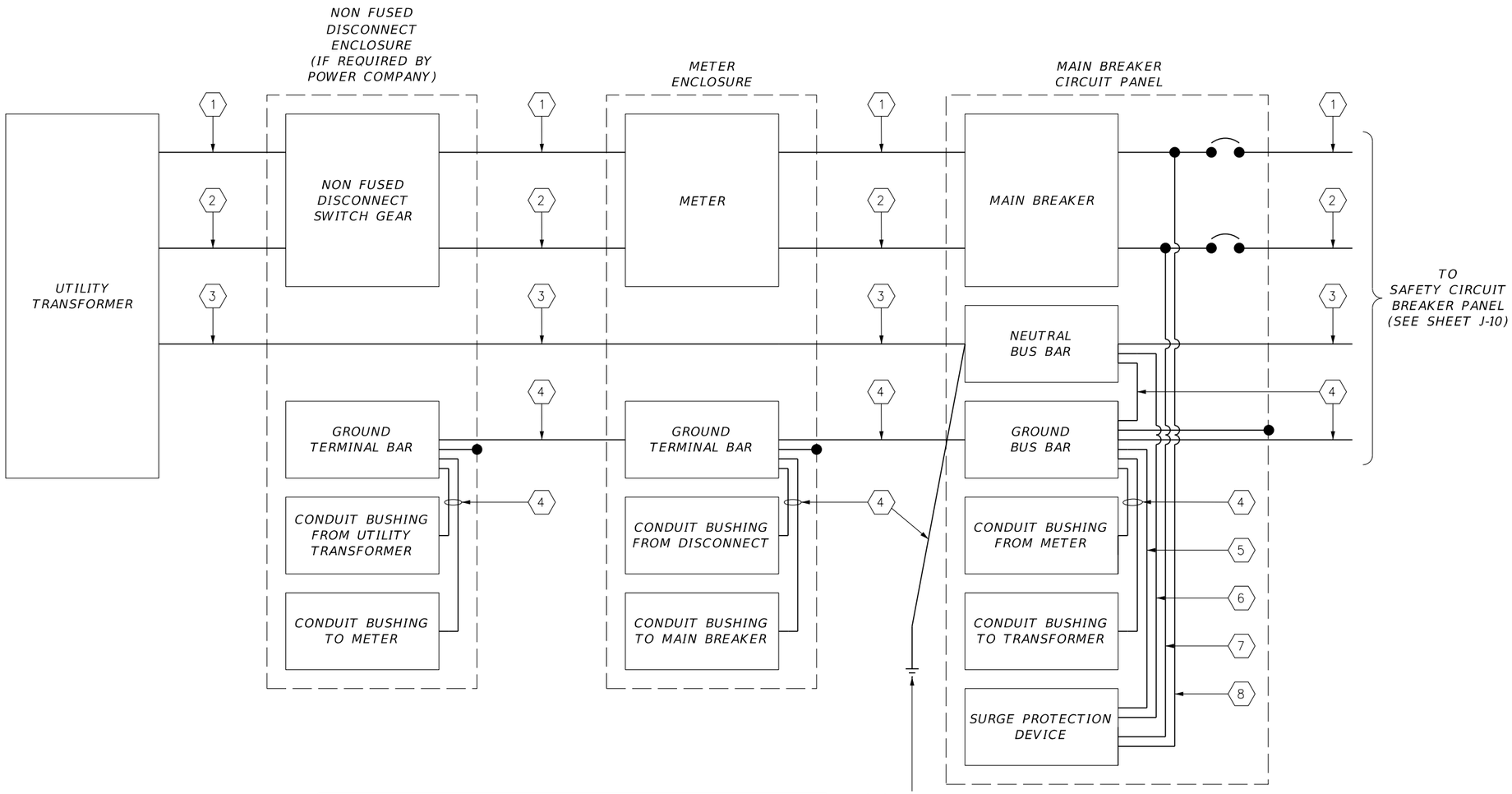
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ELECTRICAL SERVICE ASSEMBLY WITHOUT A TRANSFORMER

SHEET NO. J-8

VERSION 8

$DATE$ $TIME$ $FILE$



NOTES TO EOR:

1. CHANGE WIRING AS NEEDED TO MEET PROJECT REQUIREMENTS.
2. THIS IS FOR 120/240 AND 240/480 VAC APPLICATIONS.
3. UPDATE SHEET NUMBER REFERENCES ON THIS SHEET.

KEYED NOTES

1. BLACK INSULATED LOAD CONDUCTOR A
2. RED INSULATED LOAD CONDUCTOR B WHEN PROVIDED/REQUIRED
3. WHITE INSULATED NEUTRAL CONDUCTOR
4. GREEN INSULATED GROUND CONDUCTOR
5. SURGE PROTECTION DEVICE GROUND WIRE
6. SURGE PROTECTION DEVICE NEUTRAL WIRE
7. SURGE PROTECTION DEVICE LOAD WIRE B
8. SURGE PROTECTION DEVICE LOAD WIRE A

GENERAL NOTES

1. ALL CONDUCTORS ARE TO BE SIZED AS REQUIRED BY THE N.E.C. THE SMALLEST GROUND CONDUCTOR TO BE USED THROUGHOUT THE SERVICE ASSEMBLY IS #6 AWG COPPER XHHW.

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FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

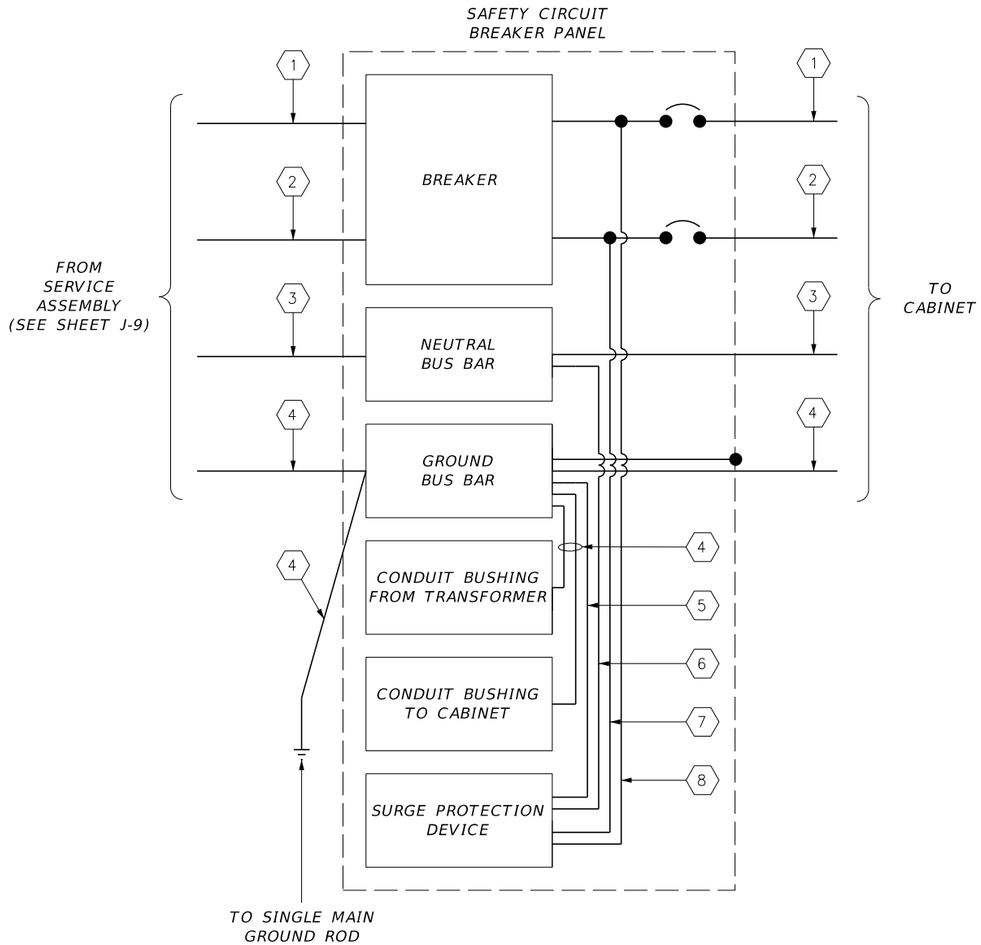
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ELECTRICAL SERVICE ASSEMBLY WITHOUT A STEP-UP TRANSFORMER WIRING DIAGRAM

SHEET NO. J-9

$DATE$ $TIME$ $FILE$

VERSION 8



NOTES TO EOR:

1. CHANGE WIRING AS NEEDED TO MEET PROJECT REQUIREMENTS.
2. THIS IS FOR 120/240 AND 240/480 VAC APPLICATIONS.
3. UPDATE SHEET NUMBER REFERENCES ON THIS SHEET.

GENERAL NOTES

1. ALL CONDUCTORS ARE TO BE SIZED AS REQUIRED BY THE N.E.C. THE SMALLEST GROUND CONDUCTOR TO BE USED THROUGHOUT THE SAFTEY DISCONNECT ASSEMBLY IS #6 AWG COPPER XHHW.
2. NO NEUTRAL TO GROUND BOND IS MADE IN THIS PANEL.

KEYED NOTES

1. BLACK INSULATED LOAD CONDUCTOR A
2. RED INSULATED LOAD CONDUCTOR B WHEN PROVIDED/REQUIRED
3. WHITE INSULATED NEUTRAL CONDUCTOR
4. GREEN INSULATED GROUND CONDUCTOR
5. SURGE PROTECTION DEVICE GROUND WIRE
6. SURGE PROTECTION DEVICE NEUTRAL WIRE
7. SURGE PROTECTION DEVICE LOAD WIRE B
8. SURGE PROTECTION DEVICE LOAD WIRE A

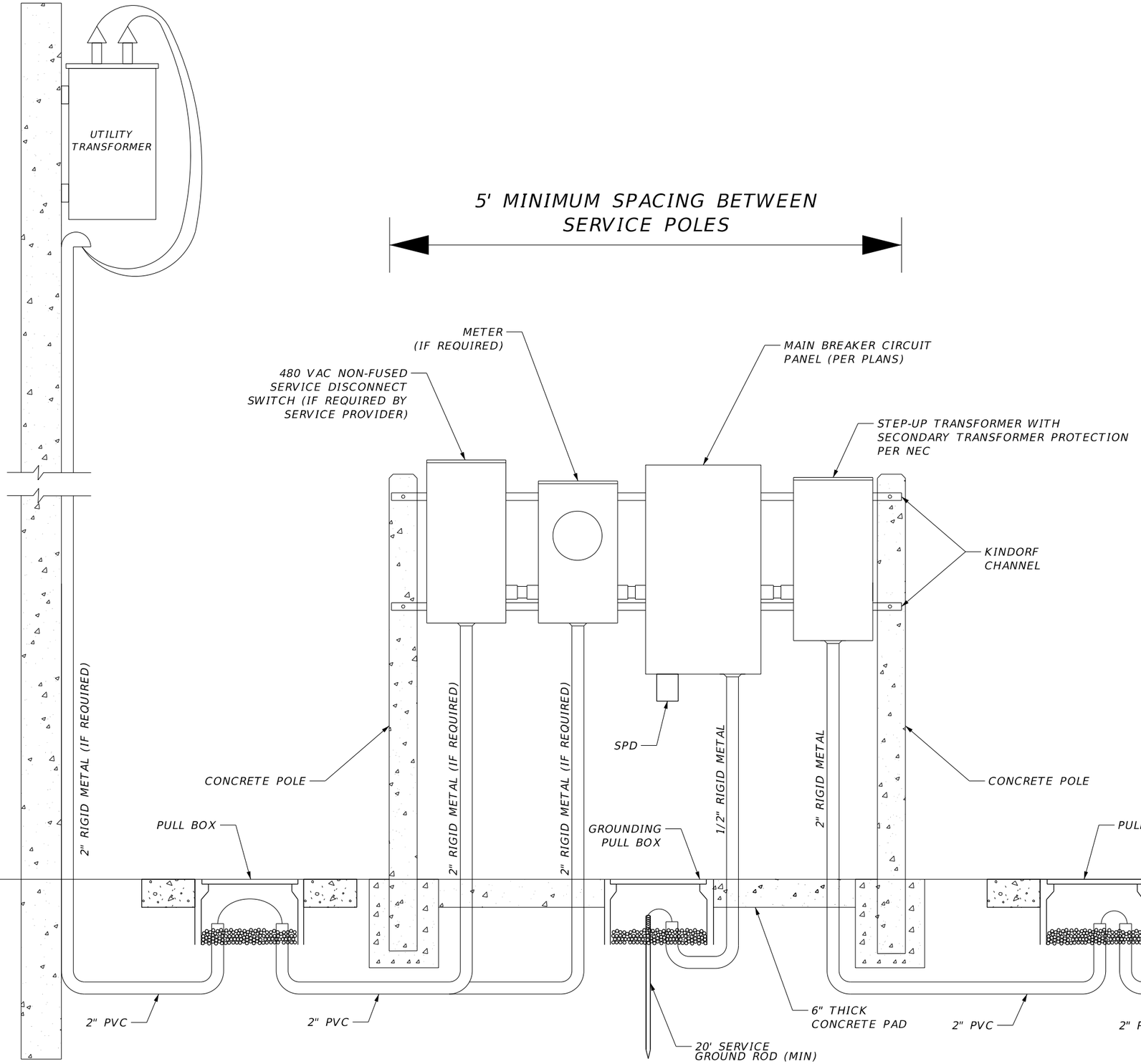
REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SAFETY PANEL WITHOUT A STEP-DOWN TRANSFROMER WIRING DIAGRAM	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					J-10

VERSION 8

$DATE$ $TIME$ $FILE$

NOTES:

1. THE ENCLOSURES SHALL BE NEMA 3R. THE SIDES AND TOP OF ALL EQUIPMENT MOUNTED TO THE H-FRAME ASSEMBLY SHALL BE SEALED WITH SILICONE. HOLES SMALLER THAN 1/8" SHALL BE SEALED WITH SILICONE SEALANT INSIDE AND OUT. DO NOT PLACE SILICONE AROUND THE BOTTOM OF THE DEVICE.
2. ENCLOSURES SHALL BE ATTACHED WITH RGS TO THE H-FRAME ASSEMBLY.
3. THE SPD SHALL HAVE A LED INDICATOR AND BE LIT TO SHOW PROTECTION.
4. A MAIN BREAKER IS REQUIRED IN ALL SERVICE PANELS WITH TWO OR MORE BRANCH BREAKERS.
5. ALL SERVICE EQUIPMENT SHALL BE U.L. APPROVED.
6. ALL EDGES TO HAVE ½" CHAMFER.
7. DO NOT DRILL OR PUNCH HOLES IN METER BASE. USE PROVIDED KNOCKOUTS.
8. MOUNT KINDORF CHANNEL USING ½" BOLT THROUGH POST OR LEAD ANCHOR AND BOLT. DO NOT USE POWER GUN TO SHOOT FASTENERS INTO POST. DO NOT USE PLASTIC ANCHORS.
9. KINDORF CHANNEL IS NOT TO EXTEND PAST THE OUTER SIDES OF THE H-FRAME CONCRETE POSTS.
10. CONCRETE POLES SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 639A-3.10.
11. RGS SHALL TRANSITION TO PVC NO LESS THAN 6" BELOW GRADE. A CFX APPROVED RGS TO PVC CONNECTOR MUST BE USED.
12. 6" THICK CONCRETE PAD SHALL BE A MINIMUM OF CLASS I NON -STRUCTURAL 2500 PSI CONCRETE.
13. GROUNDING SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 620A-2.2.
14. PROVIDE OVERCURRENT PROTECTION FOR THE SECONDARY WIRES OF THE TRANSFORMER AS REQUIRED BY N.E.C.



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

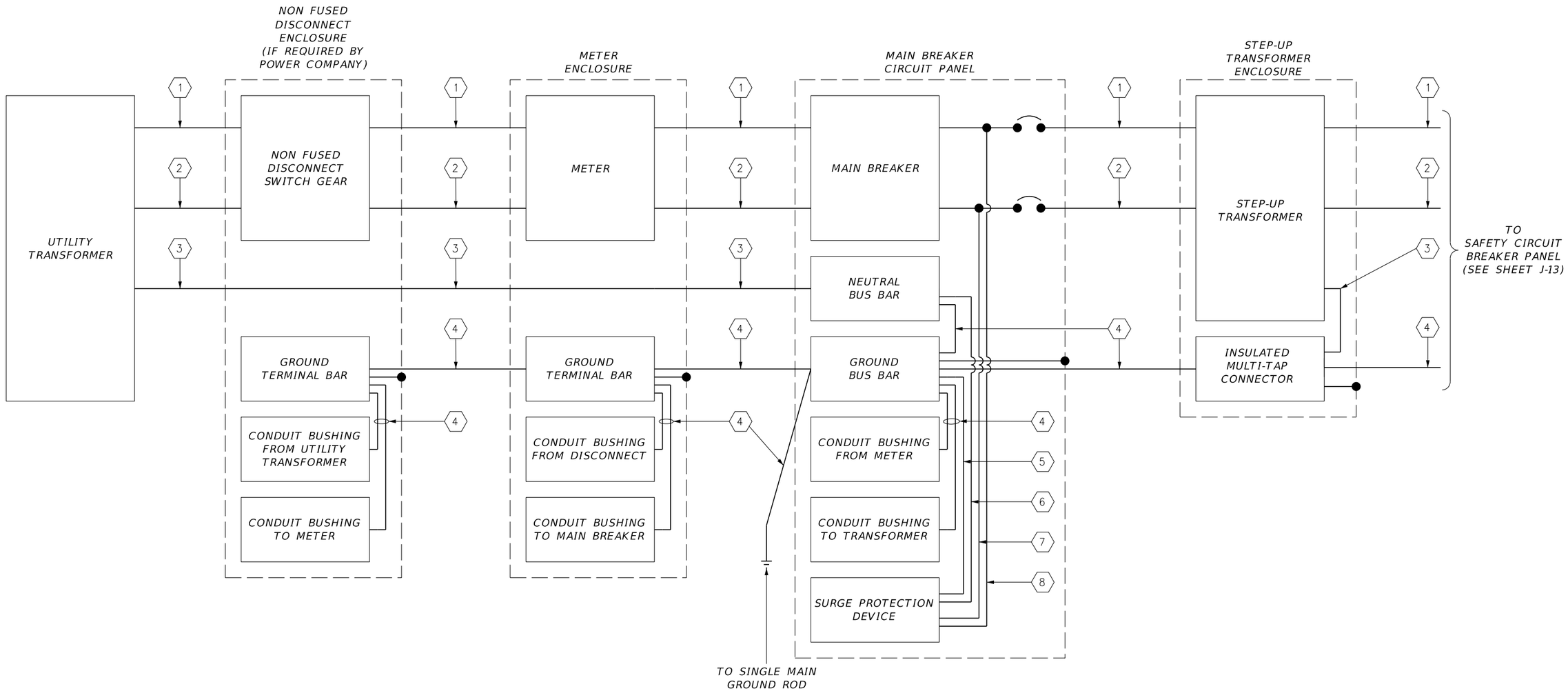
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ELECTRICAL SERVICE ASSEMBLY WITH A STEP-UP TRANSFOMER

SHEET NO. J-11

VERSION 8

$DATE$ $TIME$ $FILE$



NOTES TO EOR:

1. CHANGE WIRING AS NEEDED TO MEET PROJECT REQUIREMENTS.
2. THIS IS FOR 120/240 AND 240/480 VAC APPLICATIONS.
3. UPDATE SHEET NUMBER REFERENCES ON THIS SHEET.

GENERAL NOTES

1. ALL CONDUCTORS ARE TO BE SIZED AS REQUIRED BY THE N.E.C. THE SMALLEST GROUND CONDUCTOR TO BE USED THROUGHOUT THE SERVICE ASSEMBLY IS #6 AWG COPPER XHHW.

KEYED NOTES

1. BLACK INSULATED LOAD CONDUCTOR A
2. RED INSULATED LOAD CONDUCTOR B WHEN PROVIDED/REQUIRED
3. WHITE INSULATED NEUTRAL CONDUCTOR
4. GREEN INSULATED GROUND CONDUCTOR
5. SURGE PROTECTION DEVICE GROUND WIRE
6. SURGE PROTECTION DEVICE NEUTRAL WIRE
7. SURGE PROTECTION DEVICE LOAD WIRE B
8. SURGE PROTECTION DEVICE LOAD WIRE A

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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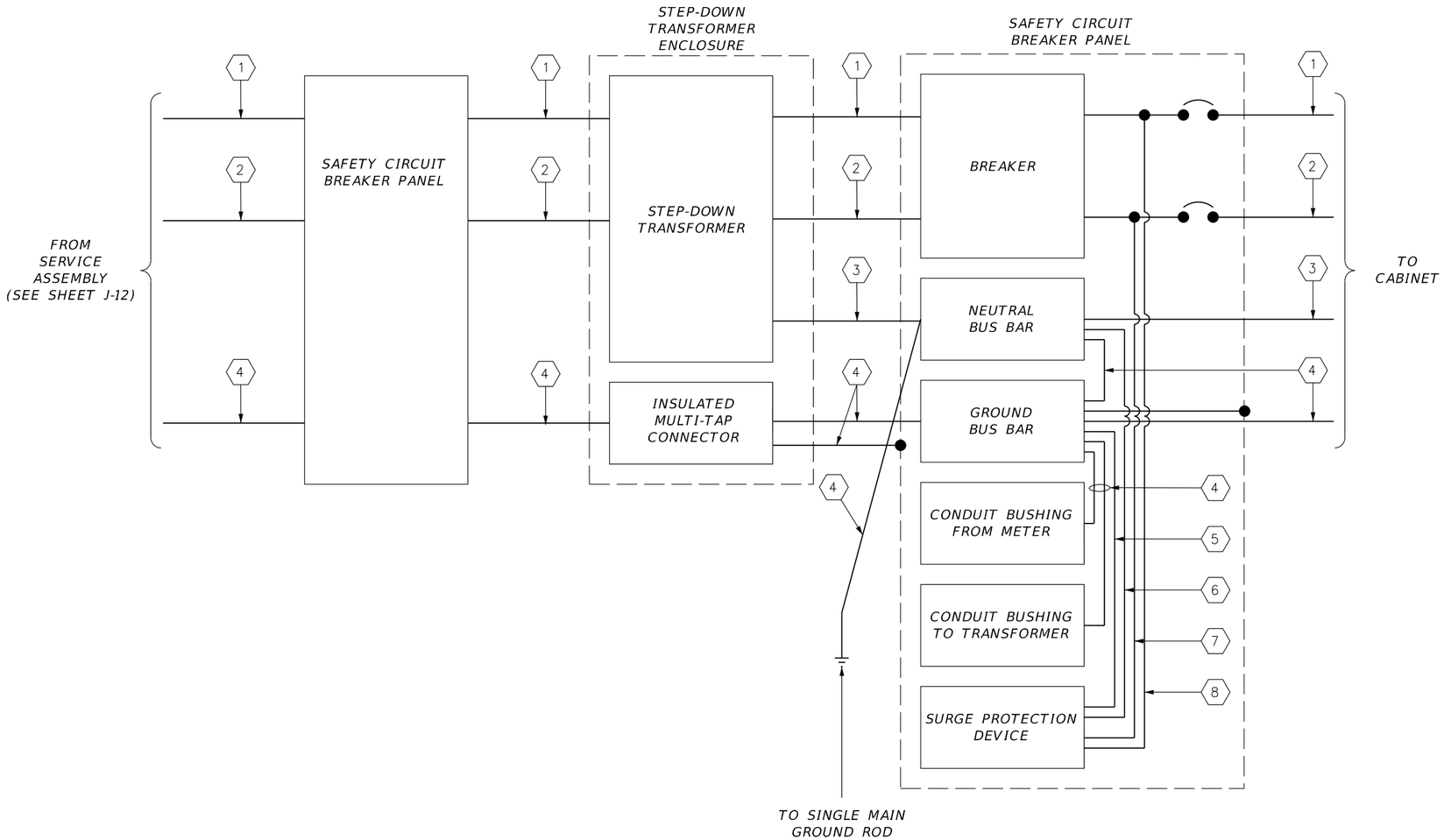
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ELECTRICAL SERVICE ASSEMBLY WITH A STEP-UP TRANSFORMER WIRING DIAGRAM

SHEET NO. J-12

VERSION 8



NOTES TO EOR:

1. CHANGE WIRING AS NEEDED TO MEET PROJECT REQUIREMENTS.
2. THIS IS FOR 120/240 AND 240/480 VAC APPLICATIONS.
3. UPDATE SHEET NUMBER REFERENCES ON THIS SHEET.

GENERAL NOTES

1. ALL CONDUCTORS ARE TO BE SIZED AS REQUIRED BY THE N.E.C. THE SMALLEST GROUND CONDUCTOR TO BE USED THROUGHOUT THE SAFTEY DISCONNECT ASSEMBLY IS #6 AWG COPPER XHHW.

KEYED NOTES

1. BLACK INSULATED LOAD CONDUCTOR A
2. RED INSULATED LOAD CONDUCTOR B WHEN PROVIDED/REQUIRED
3. WHITE INSULATED NEUTRAL CONDUCTOR
4. GREEN INSULATED GROUND CONDUCTOR
5. SURGE PROTECTION DEVICE GROUND WIRE
6. SURGE PROTECTION DEVICE NEUTRAL WIRE
7. SURGE PROTECTION DEVICE LOAD WIRE B
8. SURGE PROTECTION DEVICE LOAD WIRE A

REVISIONS					
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FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

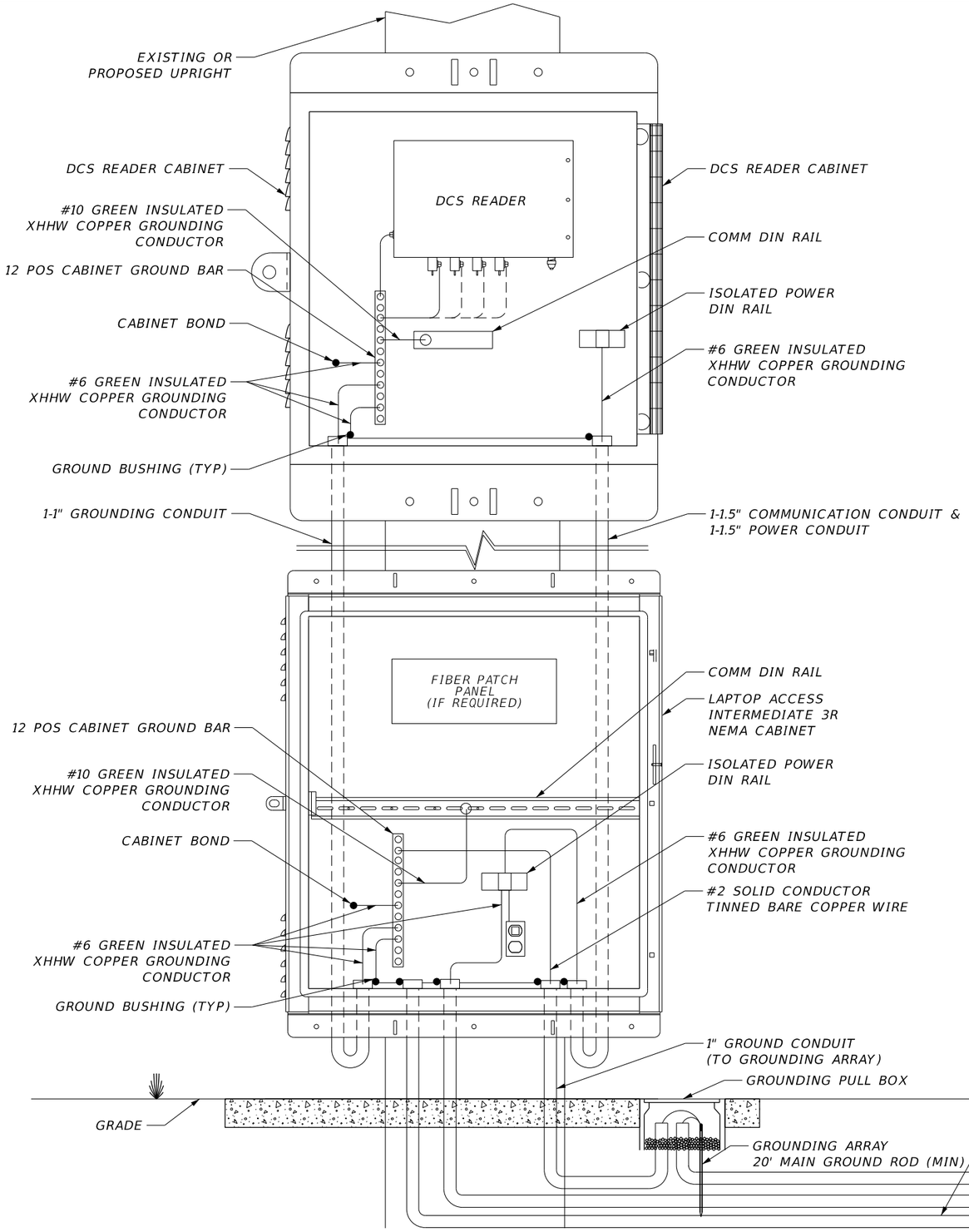
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SAFETY PANEL WITH A STEP-DOWN TRANSFORMER WIRING DIAGRAM

SHEET NO. J-13

VERSION 8

$DATE$ $TIME$ $FILE$



NOTES:
1. ALL STEEL PIPES SHALL BE GROUNDED.
2. NO NEUTRAL TO GROUND BONDS ARE TO BE MADE INSIDE THE CABINETS.
3. GROUNDING SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 620A.

NTS

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

DCS READER CABINET (1 OF 2)

SHEET NO. J-14

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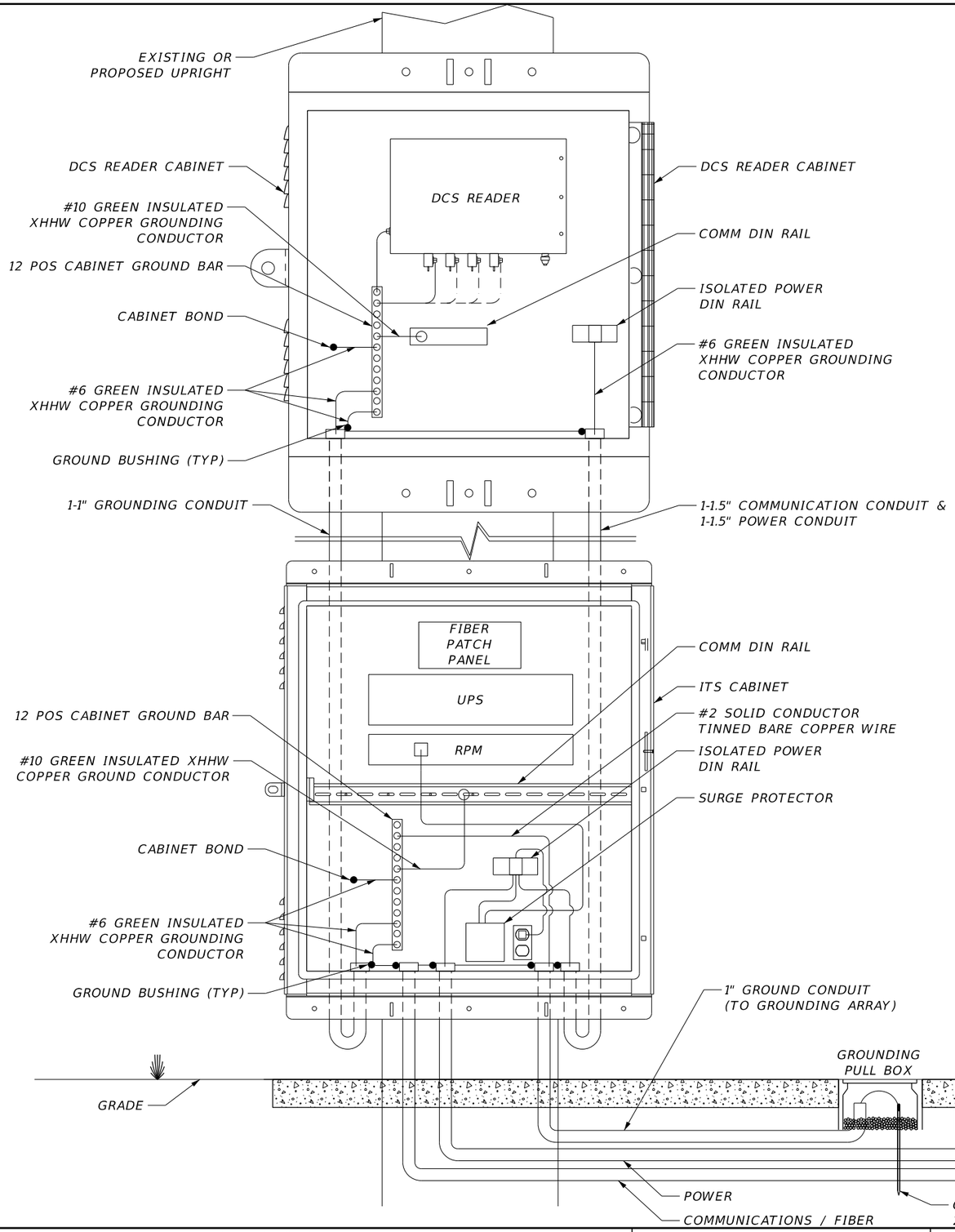

NOTES:
1. ALL STEEL PIPES SHALL BE GROUNDED.
2. NO NEUTRAL TO GROUND BONDS ARE TO BE MADE INSIDE THE CABINETS.
3. GROUNDING SHALL BE IN ACCORDANCE WITH CFX SPECIFICATIONS 620A.

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY

DCS READER CABINET (2 OF 2)

SHEET NO. J-15

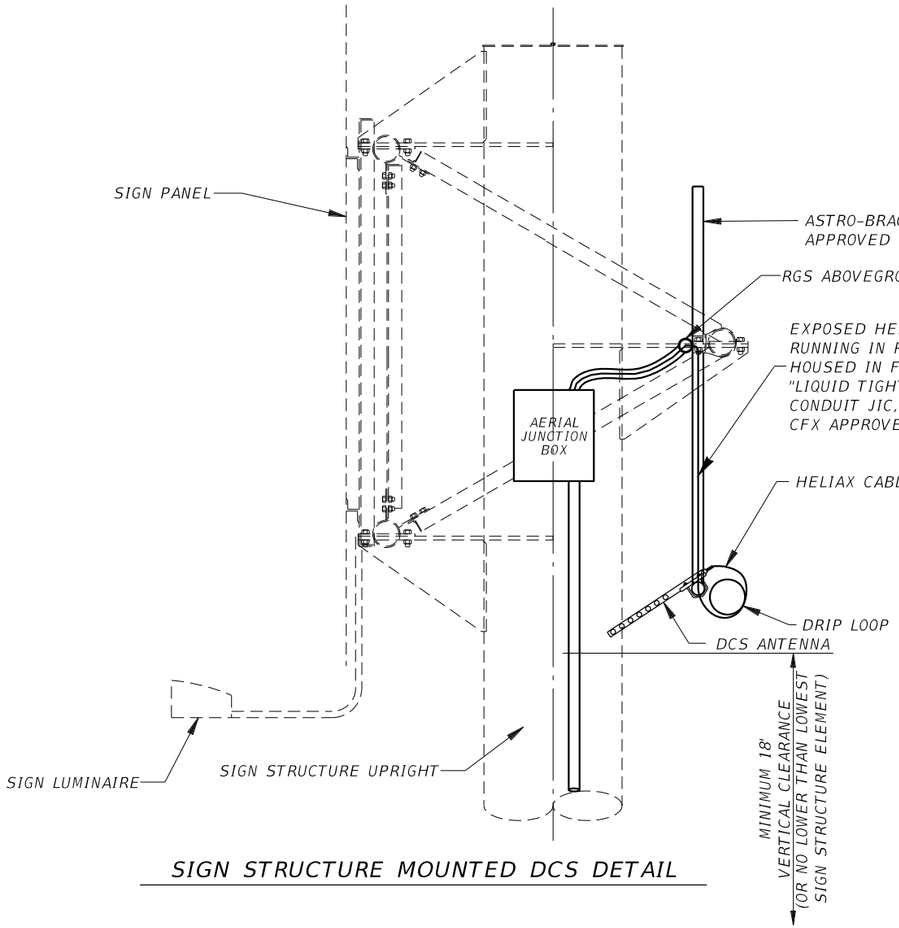
VERSION 7

$DATE$ $TIME$ $FILE$

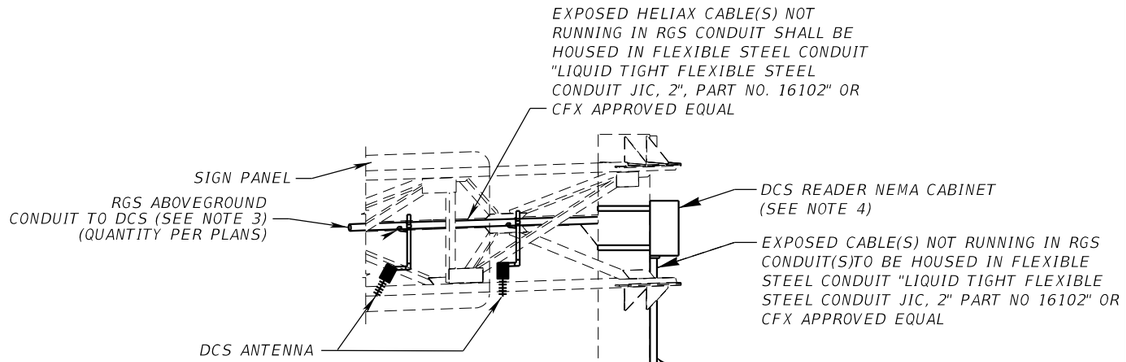
NOTES:

1. ANTENNA SHOWN MOUNTED TO BACK CORD, FRONT INSTALLATION MAY BE USED WHEN APPROVED BY CFX.

2. THE FLEX CONDUIT SHALL BE MECHANICALLY ATTACHED TO THE ASTRO-BRACKET. PLASTIC TIE-WRAPS ARE NOT ACCEPTABLE.



SIGN STRUCTURE MOUNTED DCS DETAIL



SIGN STRUCTURE MOUNTED DCS

NOTES:

1. DCS CABINET TO BE MOUNTED TO STRUCTURE UPRIGHT WITH 2 STAINLESS STEEL BANDS.

2. WHEN INSTALLING DCS EQUIPMENT TO EXISTING STRUCTURE, CARE SHALL BE TAKEN AS TO NOT DAMAGE ANY EXISTING EQUIPMENT ATTACHED TO THE SIGN STRUCTURE. ANY DAMAGED EQUIPMENT SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.

3. WHEN INSTALLING ABOVEGROUND CONDUIT ON SIGN STRUCTURES, THE CONDUIT SHALL BE ATTACHED TO THE BACK TRUSS CHORD TO MINIMIZE VISUAL IMPACT.

4. STAINLESS STEEL BANDS SHALL BE SIZED TO SUPPORT 3 TIMES THE WEIGHT OF THE CABINETS AND ITS CONTENTS.

5. SHOP DRAWINGS FOR THE DCS MOUNT WILL BE REQUIRED FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO FABRICATION. THE MOUNTING HARDWARE OF THE DSC SHALL BE SIZED TO SUPPORT 3 TIMES THE WEIGHT OF THE DCS, AND TO RESIST 3 TIMES THE WIND LOAD ON THE DCS DUE TO DESIGN WIND SPEED OF 150 MPH.

6. ANTENNA COLOR SHALL BE SUBMITTED TO CFX FOR APPROVAL.

7. CONDUIT SHALL ENTER THE POLE MOUNTED CABINET FROM THE BOTTOM.

8. IT IS THE INTENT OF THE ENGINEER TO PROVIDE A SAFE WORKING SPACE FOR THE FIELD TECHNICIANS.

NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS INSTALLATION ON SIGN STRUCTURES MOUNTING DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					K-1

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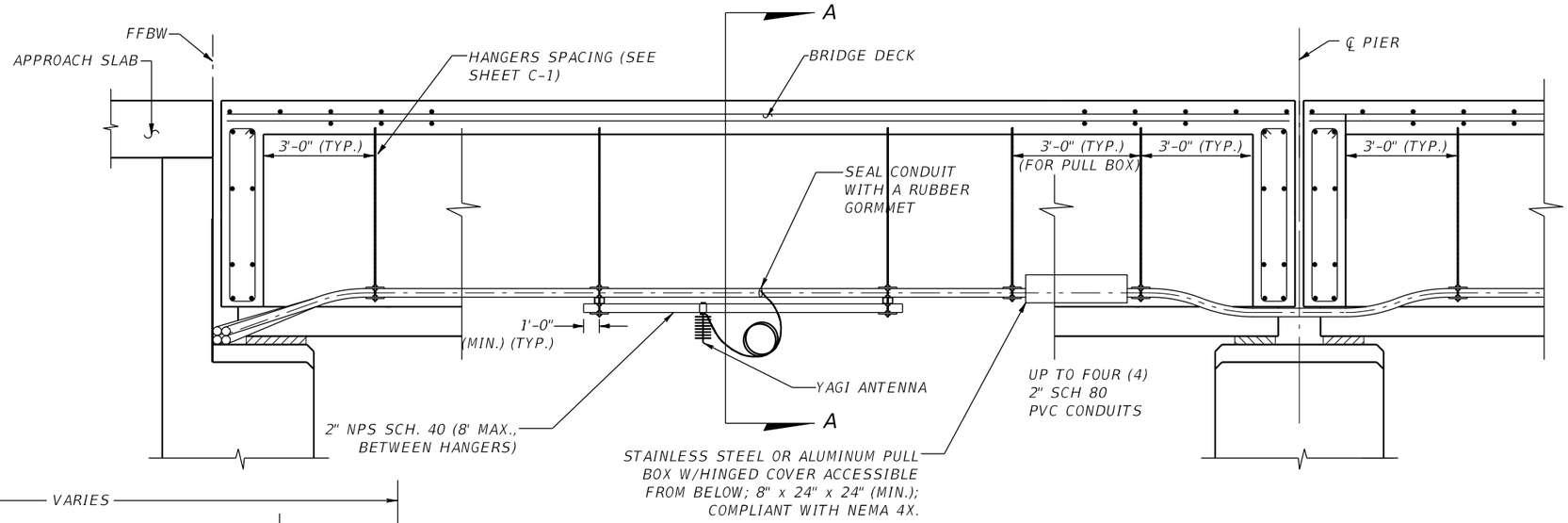
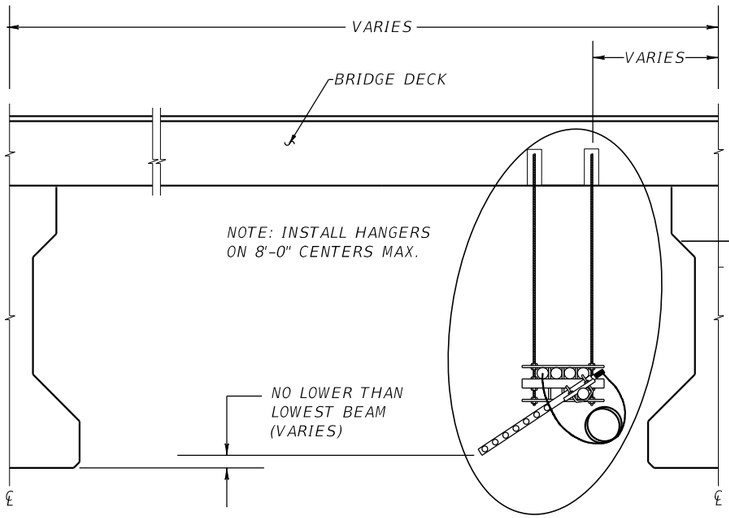


SECTION (THRU PIERS AND END BENTS) WITH ANTENNA HANGER

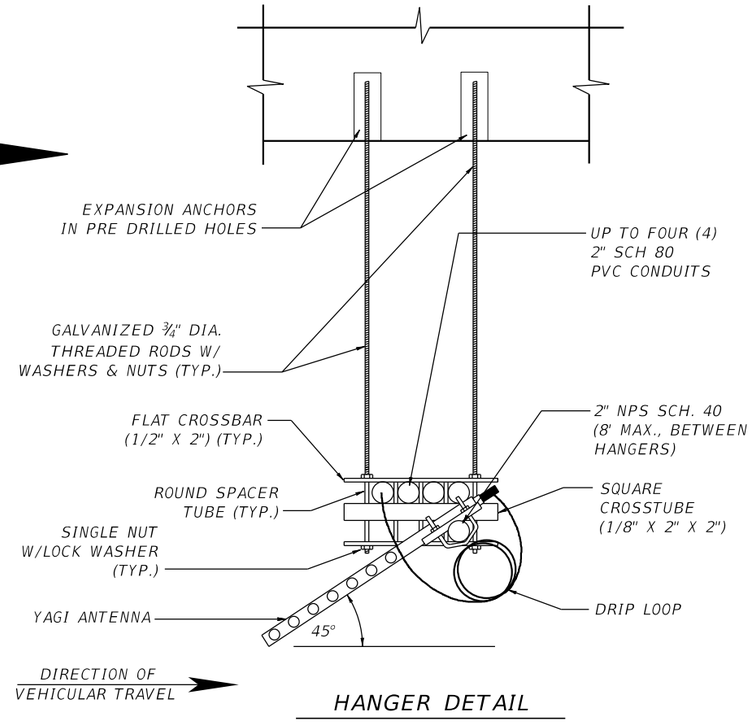
SEE HANGER DETAIL FOR UNDER BRIDGE DECK INSTALLATION



SECTION A-A

NOTES:

1. THE MECHANICAL EXPANSION ANCHORS INSTALLED IN PRE-DRILLED HOLES IN THE EXISTING BRIDGE DECK SHALL BE SIZED WITH A MINIMUM FACTOR OF SAFETY OF FOUR.
2. THE EXPANSION ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
3. THE THREADED RODS SHALL BE IN ACCORDANCE WITH ASTM A36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
4. 2" RDS SCH. 40 STRUCTURAL PIPE SHALL BE IN ACCORDANCE WITH ASTM A53 FOR STANDARD WEIGHT PIPE (SCHEDULE 40) AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123. THE PIPE SHALL BE SECURED TO THE HANGERS WITH U-BOLTS TO AVOID MOVEMENT AND ROTATION.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE HANGER SYSTEM FOR APPROVAL PRIOR TO FABRICATION. THE SHOP DRAWINGS SHALL INCLUDE, AT A MINIMUM, HANGER LAYOUT AND HANGER DETAILS. LOCATIONS OF EXPANSION JOINTS AND ANCHOR POINTS, MOUNTING DETAILS OF ANTENNA TO PIPE AND ALL OTHER DETAILS REQUIRED FOR INSTALLATION OF ANTENNAS, CONDUITS AND HANGERS.
6. THE FURNISHING AND INSTALLATION OF THE HANGER SYSTEM, CONDUITS, ANTENNAS AND RELATED HARDWARE SHALL BE PAID UNDER PAY ITEM SERIES 663-74-14X.
7. IF OTHER TYPE OF ANTENNA IS TO BE INSTALLED, THE CONTRACTOR SHALL SUBMIT DESIGN, SHOP DRAWINGS, AND DESIGN CALCULATIONS FOR APPROVAL BY CFX.



HANGER DETAIL

NTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

DCS BRIDGE MOUNTING DETAIL (STRAIGHT BRIDGE)

SHEET NO. K-2

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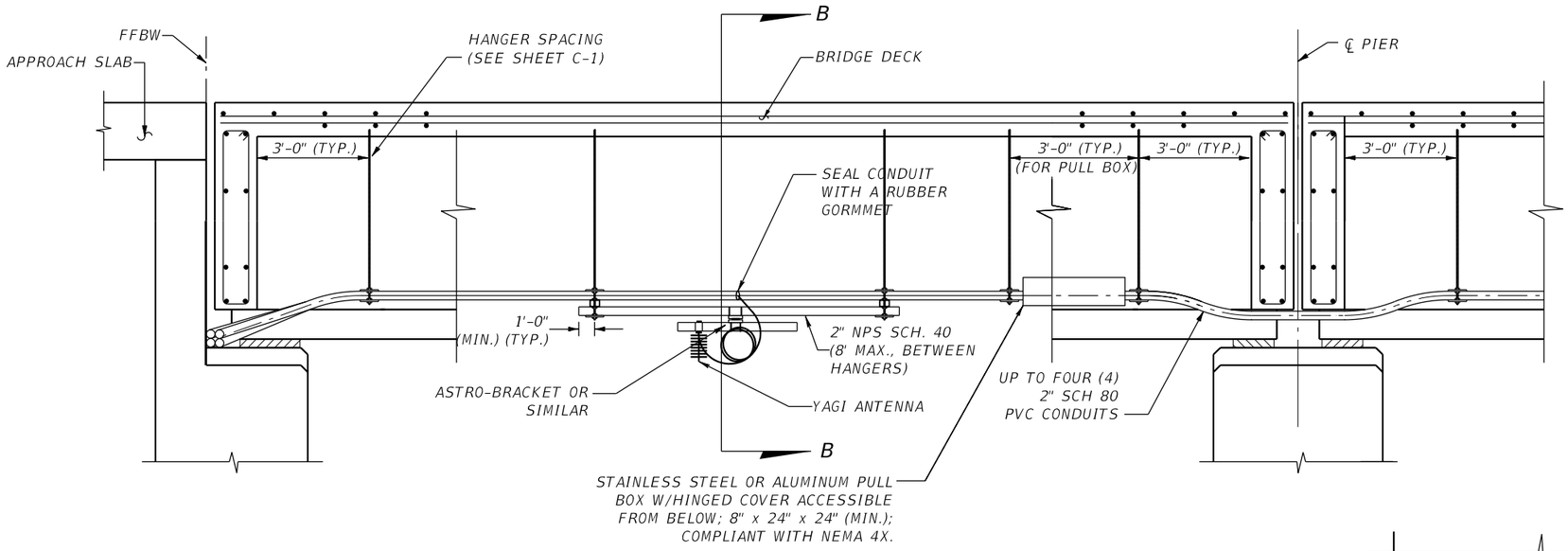
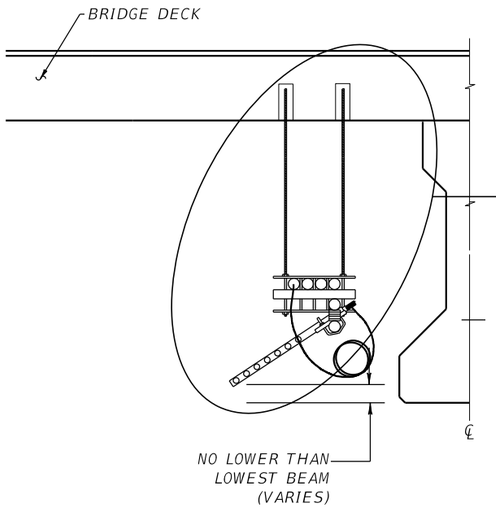


SECTION (THRU PIERS AND END BENTS)
WITH ANTENNA HANGER FOR SKEWED BRIDGES

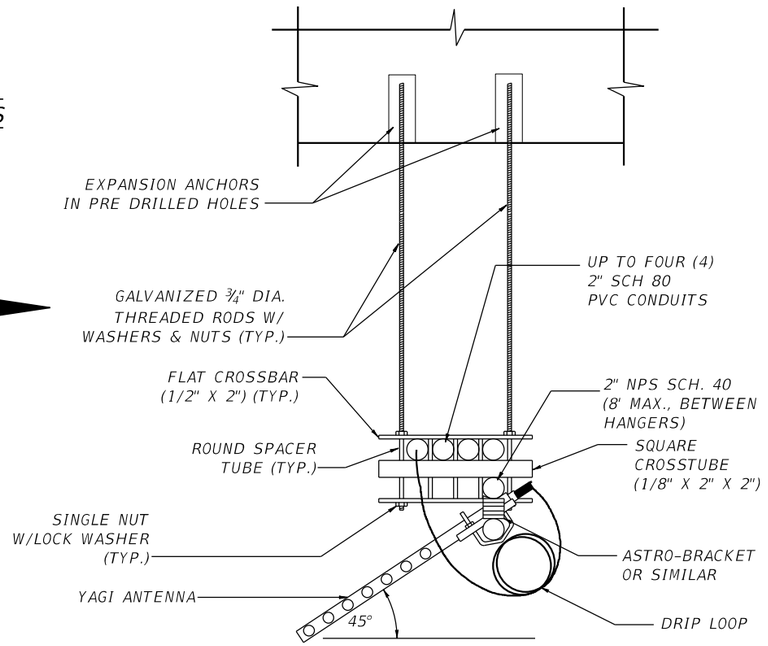
SEE HANGER DETAIL FOR UNDER BRIDGE DECK INSTALLATION



SECTION B-B
(SKEWED BRIDGE)

NOTES:

1. THE MECHANICAL EXPANSION ANCHORS INSTALLED IN PRE-DRILLED HOLES IN THE EXISTING BRIDGE DECK SHALL BE SIZED WITH A MINIMUM FACTOR OF SAFETY OF FOUR.
2. THE EXPANSION ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
3. THE THREADED RODS SHALL BE IN ACCORDANCE WITH ASTM A36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
4. 2" RDS SCH. 40 STRUCTURAL PIPE SHALL BE IN ACCORDANCE WITH ASTM A53 FOR STANDARD WEIGHT PIPE (SCHEDULE 40) AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123. THE PIPE SHALL BE SECURED TO THE HANGERS WITH U-BOLTS TO AVOID MOVEMENT AND ROTATION.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE HANGER SYSTEM FOR APPROVAL PRIOR TO FABRICATION. THE SHOP DRAWINGS SHALL INCLUDE, AT A MINIMUM, HANGER LAYOUT AND HANGER DETAILS. LOCATIONS OF EXPANSION JOINTS AND ANCHOR POINTS, MOUNTING DETAILS OF ANTENNA TO PIPE AND ALL OTHER DETAILS REQUIRED FOR INSTALLATION OF ANTENNAS, CONDUITS AND HANGERS.
6. THE FURNISHING AND INSTALLATION OF THE HANGER SYSTEM, CONDUITS, ANTENNAS AND RELATED HARDWARE SHALL BE PAID UNDER PAY ITEM SERIES 663-74-14X.
7. IF OTHER TYPE OF ANTENNA IS TO BE INSTALLED, THE CONTRACTOR SHALL SUBMIT DESIGN, SHOP DRAWINGS, AND DESIGN CALCULATIONS FOR APPROVAL BY CFX.



HANGER DETAIL
(SKEWED BRIDGE)

NTS

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY

DCS BRIDGE MOUNTING DETAIL (SKEWED BRIDGE)

SHEET NO. K-3

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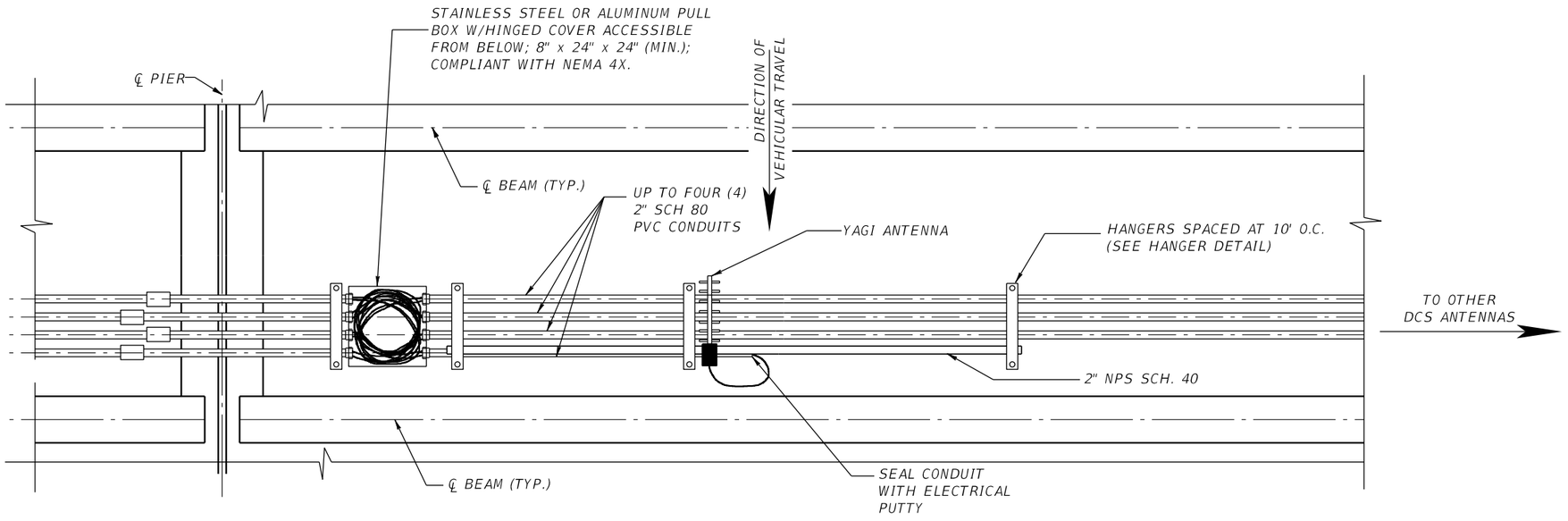
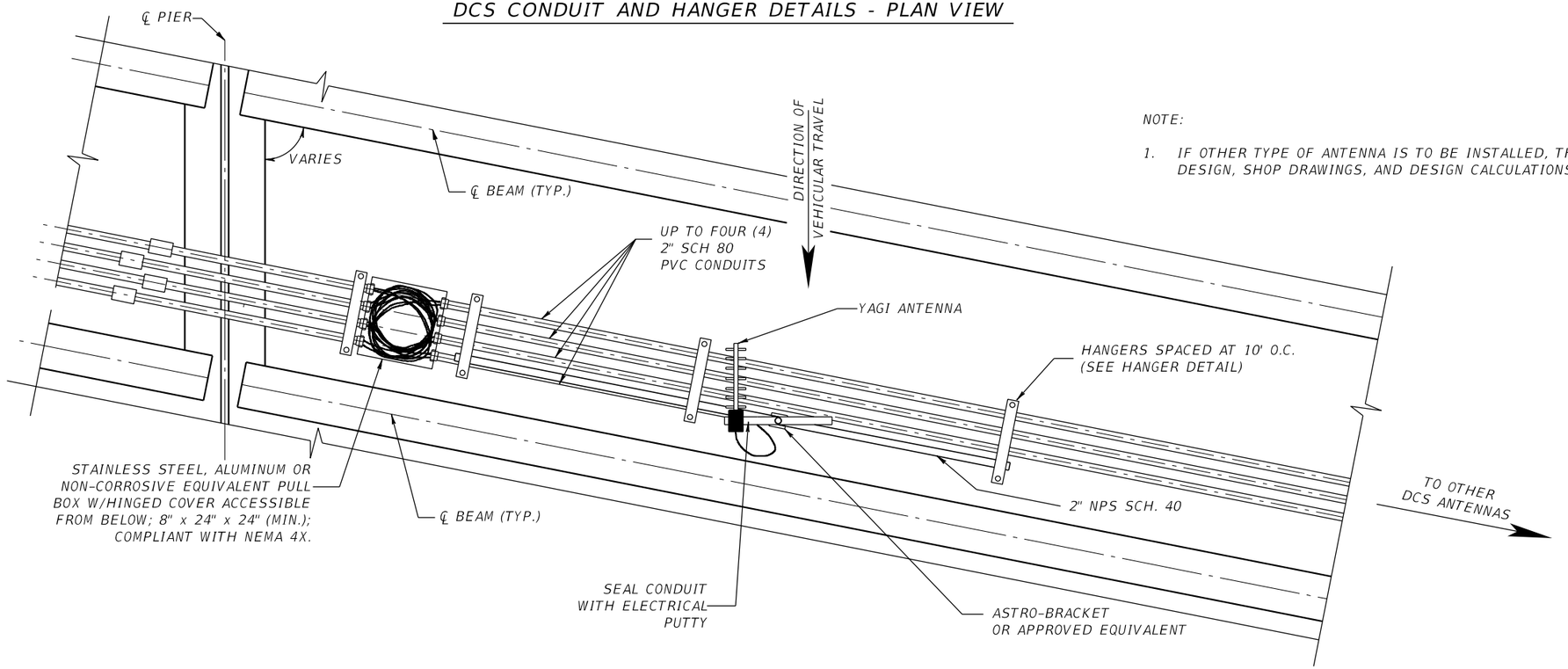


DCS CONDUIT AND HANGER DETAILS - PLAN VIEW



NOTE:

1. IF OTHER TYPE OF ANTENNA IS TO BE INSTALLED, THE CONTRACTOR SHALL SUBMIT DESIGN, SHOP DRAWINGS, AND DESIGN CALCULATIONS FOR APPROVAL BY CFX.

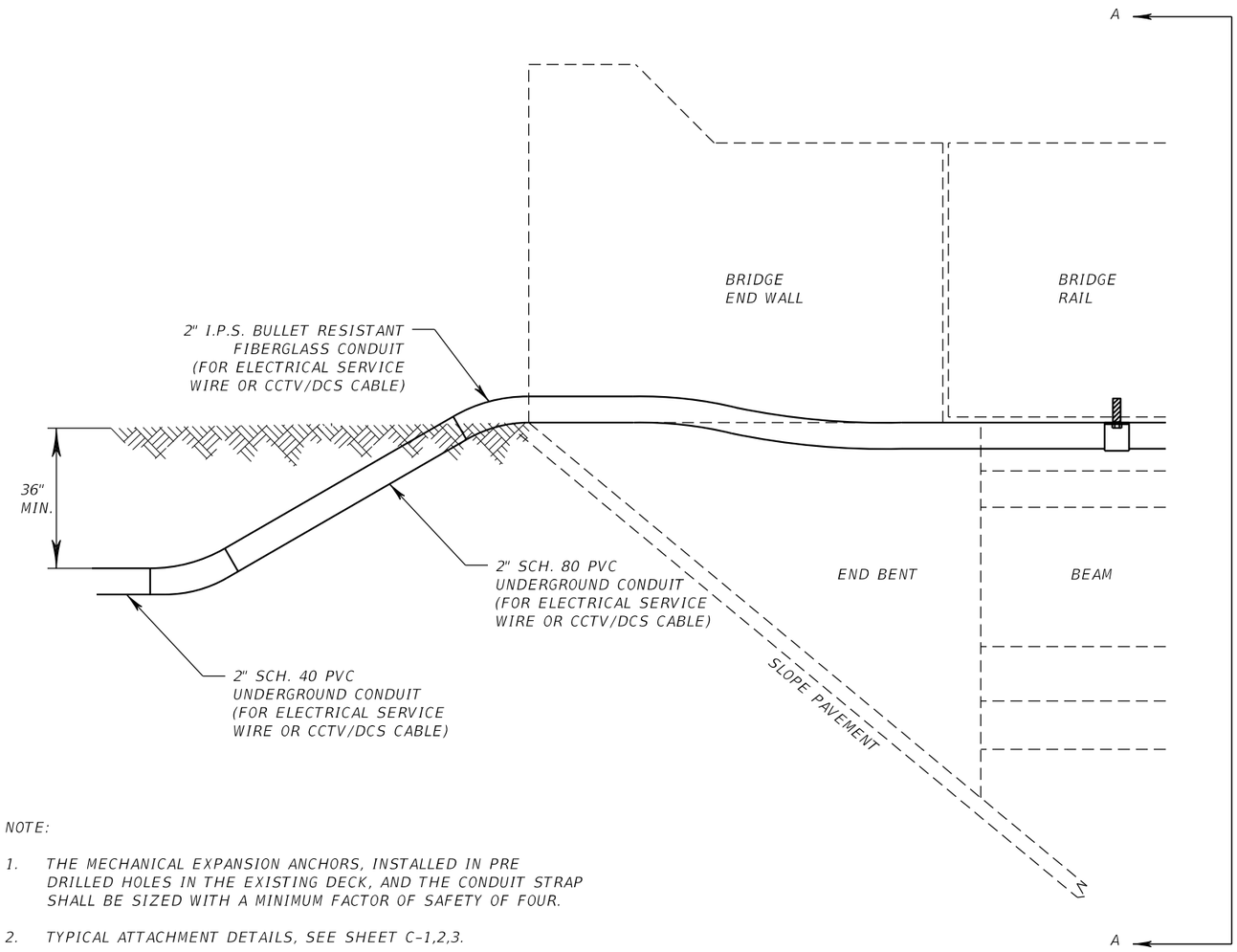
DCS CONDUIT AND HANGER DETAILS - PLAN VIEW
SKEWED BRIDGE

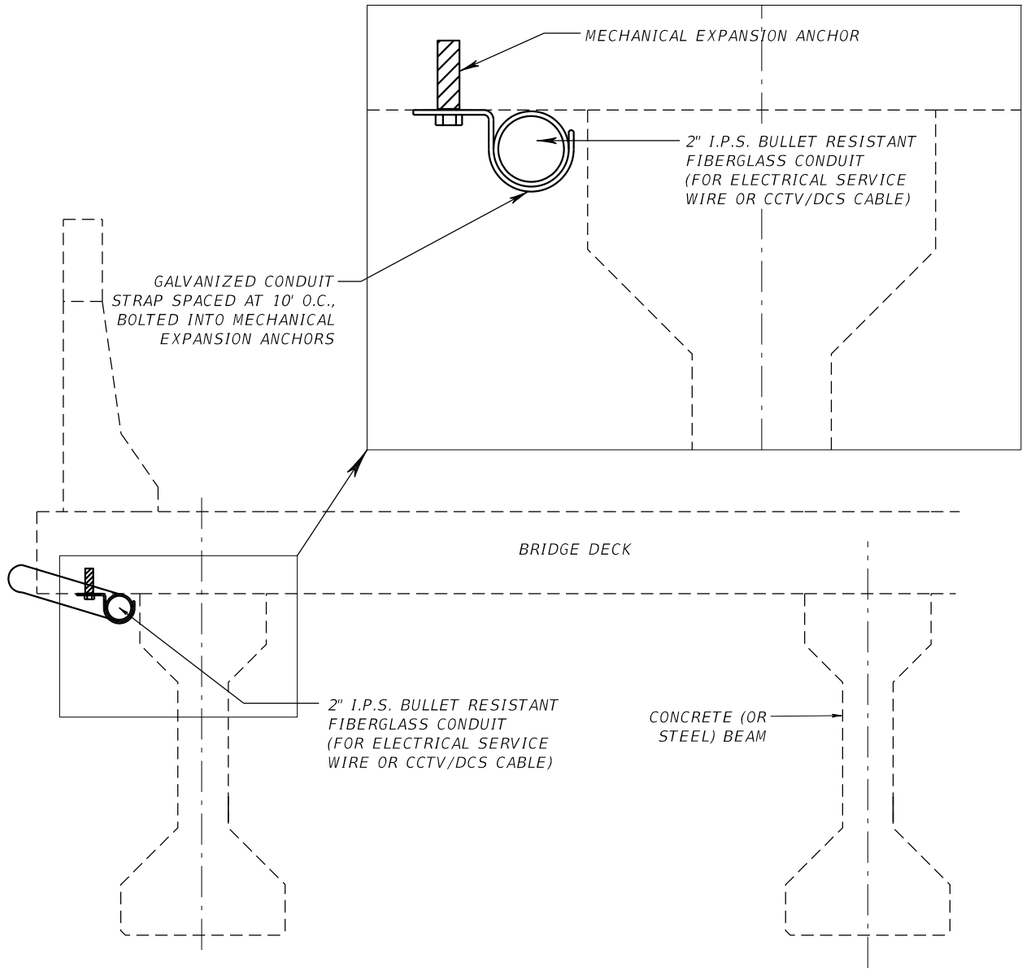
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS BRIDGE MOUNTED CONDUIT DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					K-4

VERSION 7

$DATE$ $TIME$ $FILE$





SECTION A-A

NOTE:

1. THE MECHANICAL EXPANSION ANCHORS, INSTALLED IN PRE DRILLED HOLES IN THE EXISTING DECK, AND THE CONDUIT STRAP SHALL BE SIZED WITH A MINIMUM FACTOR OF SAFETY OF FOUR.
2. TYPICAL ATTACHMENT DETAILS, SEE SHEET C-1,2,3.

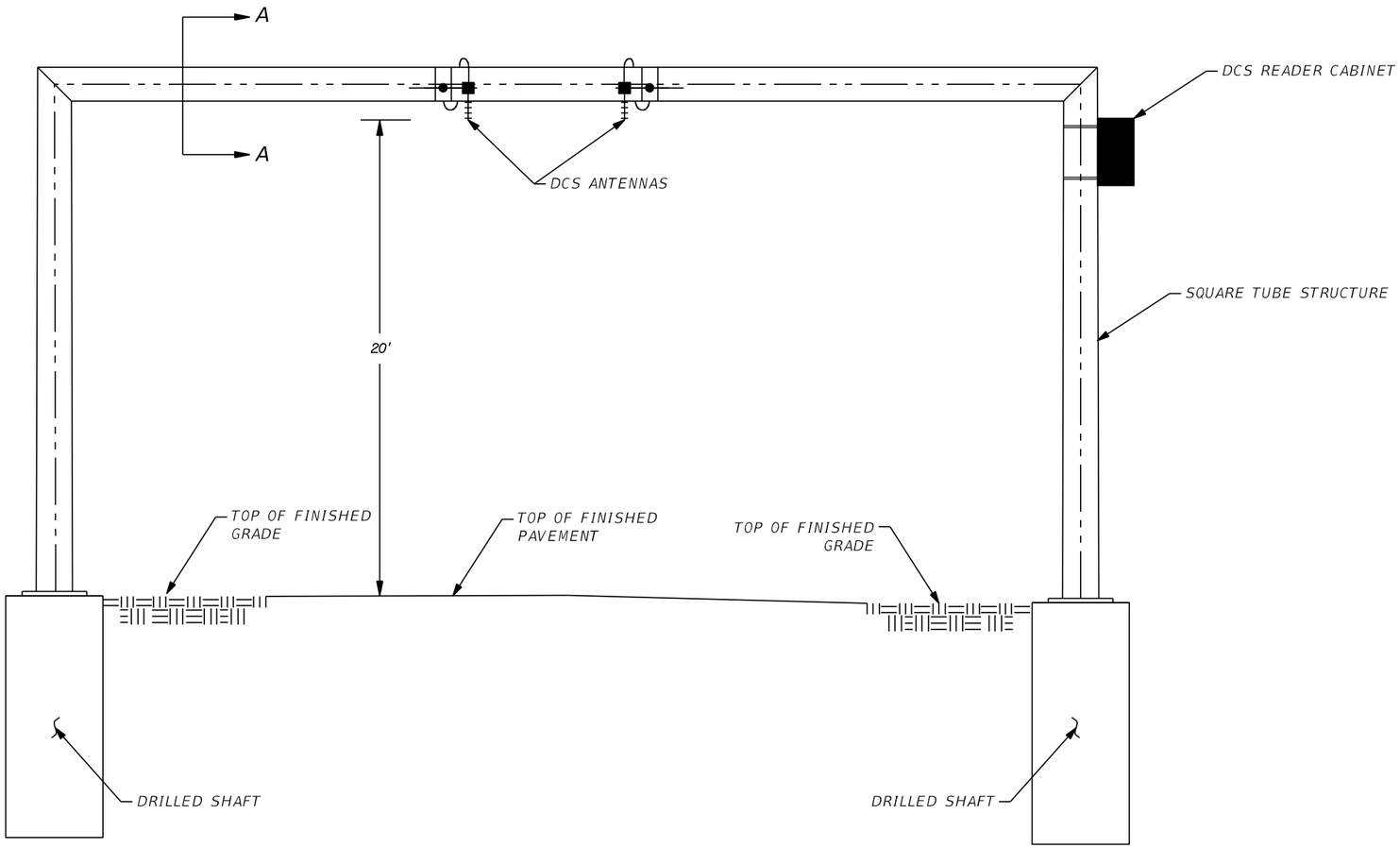
BRIDGE STRUCTURE MOUNTED CONDUIT FOR ELECTRICAL AND CCTV/DCS CABLES (TYPICAL)

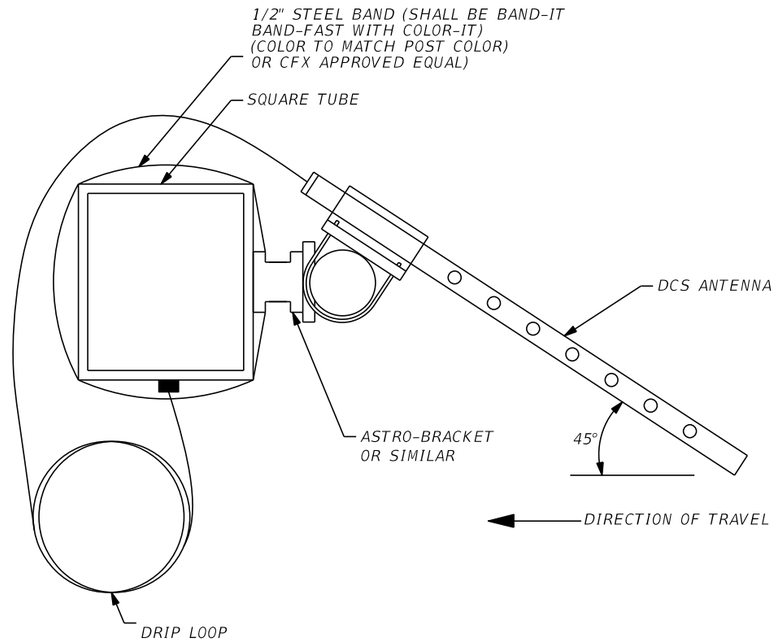
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS BRIDGE MOUNTED CONDUIT TRANSITION DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					K-5

$DATE$ $TIME$ $FILE$

VERSION 7





SECTION A-A

DCS ON STEEL TUBE STRUCTURE MOUNTING DETAIL

NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS STEEL TUBE STRUCTURE ANTENNA DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					K-6

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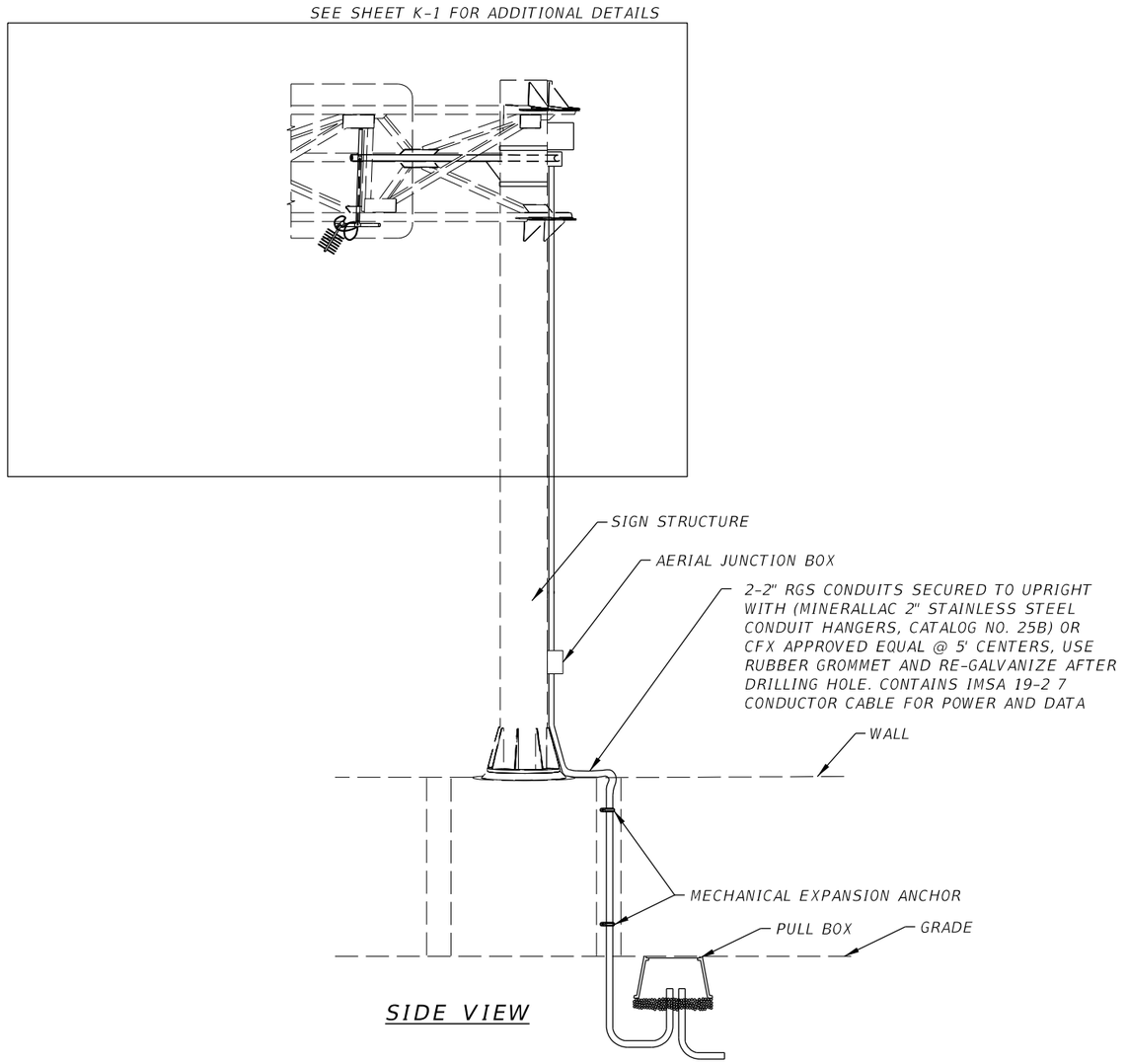
$DATE$ $TIME$ $FILE$

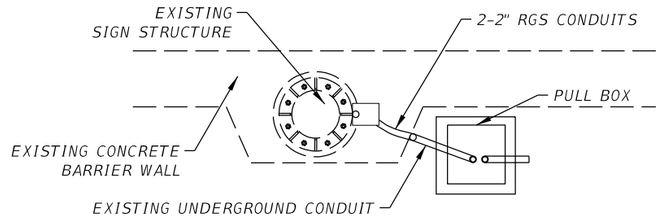
DCS MOUNTING DETAIL

SEE SHEET K-1 FOR ADDITIONAL DETAILS



SIDE VIEW

TOP VIEW



SIGN STRUCTURE MOUNTED DCS

NOTES:

1. WHEN NEW CONDUIT IS INSTALLED ON A PAINTED MECHANICAL STABILIZED EARTH (MSE) WALL OR OTHER PAINTED SURFACE, THE CONDUIT SHALL BE PAINTED TO MATCH THE EXISTING MSE WALL OR SURFACE. PAINT COLORS AND PAINTING PROCEDURES SHALL BE SUBMITTED TO CFX FOR APPROVAL PRIOR TO THE START OF PAINTING WORK.

NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	MSE WALL DCS MOUNTING DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					K-7

VERSION 7

$DATE$ $TIME$ $FILE$

NOTE TO EOR:
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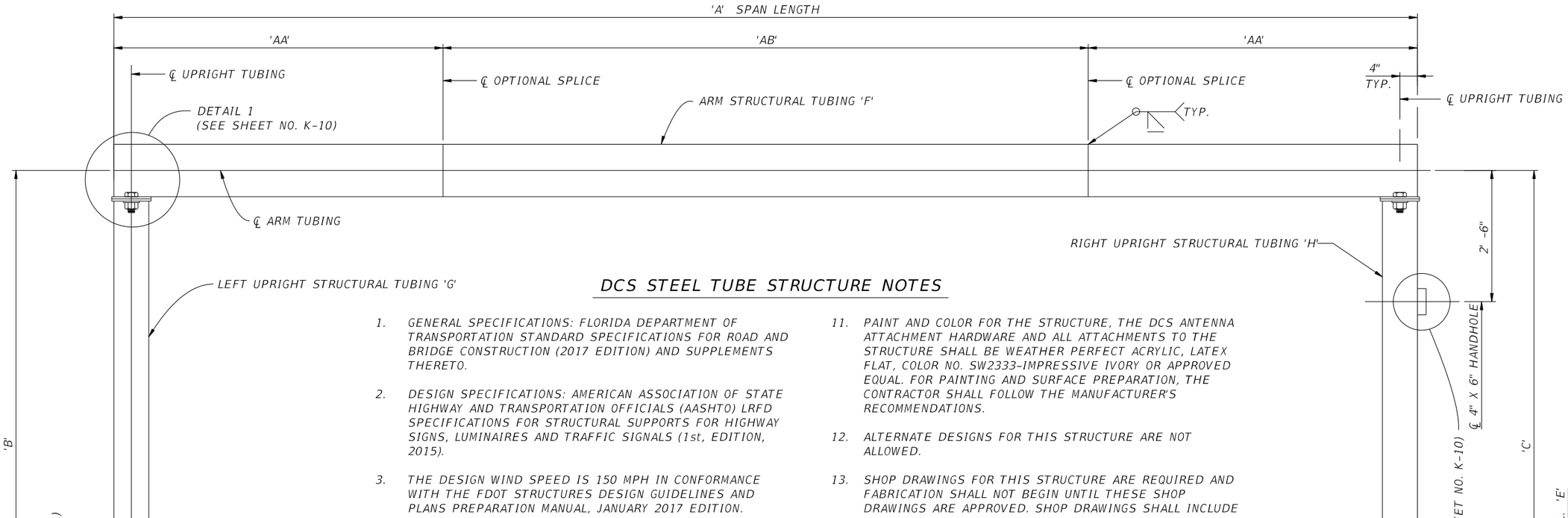


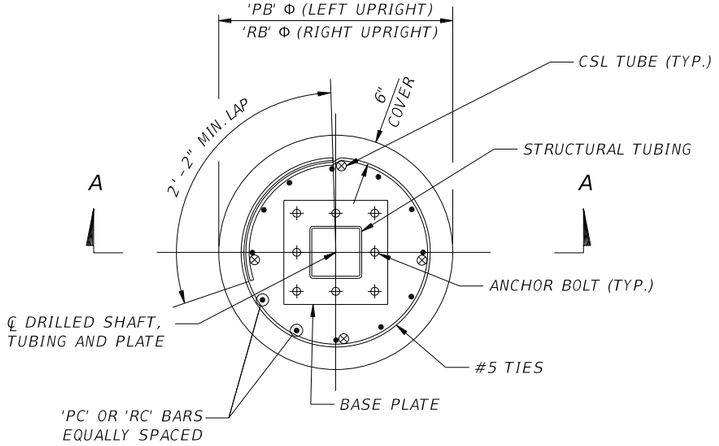
DCS STEEL TUBE STRUCTURE NOTES

1. GENERAL SPECIFICATIONS: FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2017 EDITION) AND SUPPLEMENTS THERETO.
2. DESIGN SPECIFICATIONS: AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (1st, EDITION, 2015).
3. THE DESIGN WIND SPEED IS 150 MPH IN CONFORMANCE WITH THE FDOT STRUCTURES DESIGN GUIDELINES AND PLANS PREPARATION MANUAL, JANUARY 2017 EDITION.
4. STRUCTURE MATERIALS SHALL BE AS FOLLOWS:
   STEEL STRUCTURAL TUBING: ASTM A500, GRADE B.
   STEEL PLATES: ASTM A709, GRADE 36
   WELD METAL: E70XX
   BOLTS (EXCEPT ANCHOR BOLTS): ASTM A307
   ANCHOR BOLTS: ASTM F1554, GRADE 55
   NUTS FOR ANCHOR BOLTS: ASTM A563, GRADE A, HEAVY HEX
5. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
6. CONCRETE SHALL BE CLASS IV (DRILLED SHAFT) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4 KSI FOR ALL ENVIRONMENTAL CLASSIFICATIONS.
7. GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5 KSI AND SHALL MEET THE REQUIREMENTS OF SECTION 934 OF FDOT SPECIFICATIONS.
8. HOLE DIAMETERS FOR ANCHOR BOLTS SHALL NOT EXCEED THE BOLT DIAMETER PLUS ½".
9. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE (STEEL) ANSI/AWS D1. 1 (CURRENT EDITION). ALL COMPLETE JOINT PENETRATION WELDS SHALL BE RADIOGRAPHICALLY OR ULTRASONICALLY INSPECTED. ALL WELDING PROCEDURES SHALL BE SUBMITTED FOR APPROVAL.
10. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER ASTM F2329.
11. PAINT AND COLOR FOR THE STRUCTURE, THE DCS ANTENNA ATTACHMENT HARDWARE AND ALL ATTACHMENTS TO THE STRUCTURE SHALL BE WEATHER PERFECT ACRYLIC, LATEX FLAT, COLOR NO. SW2333-IMPRESSIVE IVORY OR APPROVED EQUAL. FOR PAINTING AND SURFACE PREPARATION, THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
12. ALTERNATE DESIGNS FOR THIS STRUCTURE ARE NOT ALLOWED.
13. SHOP DRAWINGS FOR THIS STRUCTURE ARE REQUIRED AND FABRICATION SHALL NOT BEGIN UNTIL THESE SHOP DRAWINGS ARE APPROVED. SHOP DRAWINGS SHALL INCLUDE THE CONTRACTOR'S FIELD VERIFICATION OF ALL UPRIGHT HEIGHTS AND FOUNDATION ELEVATIONS NECESSARY TO INSURE MINIMUM VERTICAL CLEARANCES AS PER THESE PLANS. SHOP DRAWINGS SHALL ALSO INCLUDE ANCHOR BOLT ORIENTATION WITH RESPECT TO ℄ TRUSS AND THE DIRECTION OF TRAFFIC.
14. ALTERNATE SPLICE DETAILS SHALL REQUIRE SHOP DRAWINGS FROM CONTRACTOR, SIGNED AND SEALED BY A FLORIDA PROFESSIONAL ENGINEER, FOR REVIEW AND APPROVAL.
15. THE FOUNDATION FOR THE STRUCTURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH FDOT SECTION 455 OF THE SPECIFICATIONS EXCEPT THAT NO PAYMENT FOR THE FOUNDATION SHALL BE MADE UNDER FDOT SECTION 455. THE COST OF PROVIDING THE FOUNDATION SHALL BE INCLUDED IN THE PAY ITEM FOR PROVIDING THE COMPLETE STRUCTURE. PAYMENT FOR ANY INCIDENTAL ITEMS INCURRED IN FURNISHING AND INSTALLING THIS STRUCTURE SHALL BE INCLUDED IN THE PAY ITEM FOR PROVIDING THE COMPLETE STRUCTURE.
16. PROVIDE CAMBER ON THE ARM WITH THE MIDSPAN CAMBER VALUE AS INDICATED ON THE CAMBER DIAGRAM. SHOP DRAWINGS ARE REQUIRED, DETAILING METHOD TO OBTAIN THE ARM CAMBER, FOR REVIEW AND APPROVAL.
17. THE STRUCTURE MUST BE ASSEMBLED AFTER FIELD SURVEY OF ANCHOR BOLT LOCATIONS AND PRIOR TO PAINTING AND SHIPMENT TO THE SITE TO VERIFY CORRECT ORIENTATION AND ASSURE FIT UP. IT MAY BE DISASSEMBLED FOR SHIPPING. THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER BY PREASSEMBLY OR OTHER APPROVED METHODS THAT THE SPAN LENGTH OF THE STRUCTURE IN THE NO-LOAD CONDITION MATCHES within ½" OF THE FIELD MEASURED SPAN LENGTH BETWEEN FOUNDATIONS.

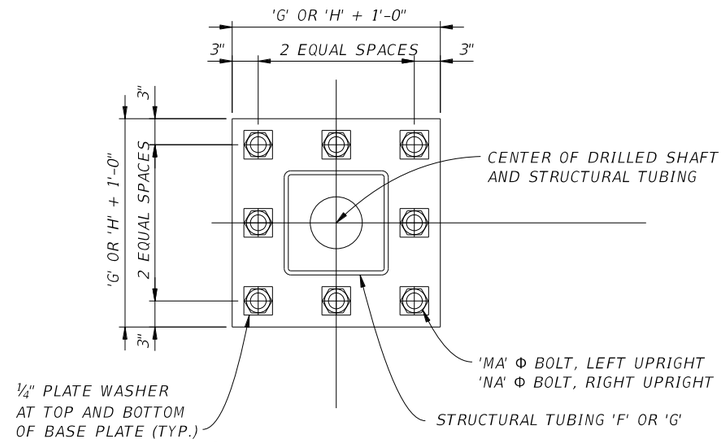
REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS STEEL TUBE STRUCTURE NOTES AND ELEVATIONS	SHEET NO. K-8

VERSION 7

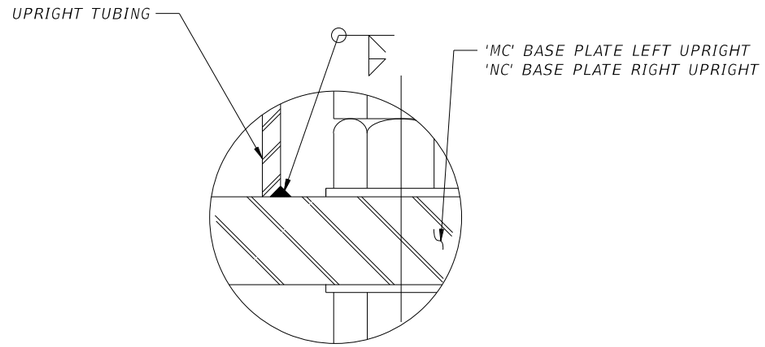
$DATE$ $TIME$ $FILE$



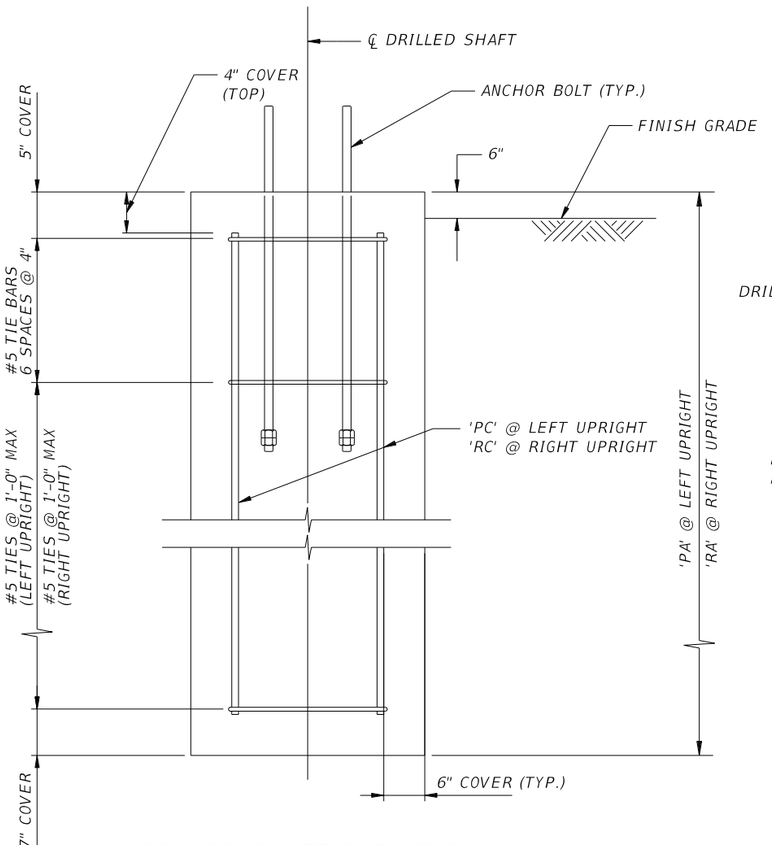
PLAN VIEW



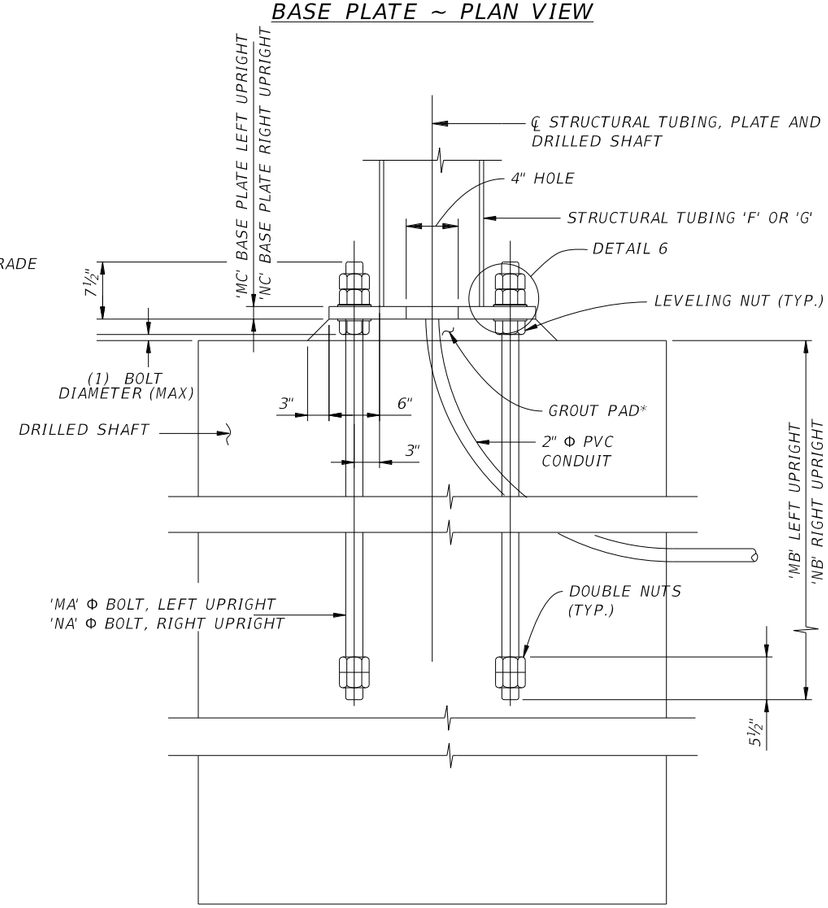
BASE PLATE ~ PLAN VIEW



DETAIL 6



DRILLED SHAFT ELEVATION



SECTION A-A
DETAIL 4

NOTE TO EOR:
THIS SHEET IS FOR REFERENCE ONLY

* PROVIDE ½" DRAINAGE SLOT IN GROUT PAD BETWEEN BOLTS (ONE PER FOUNDATION)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

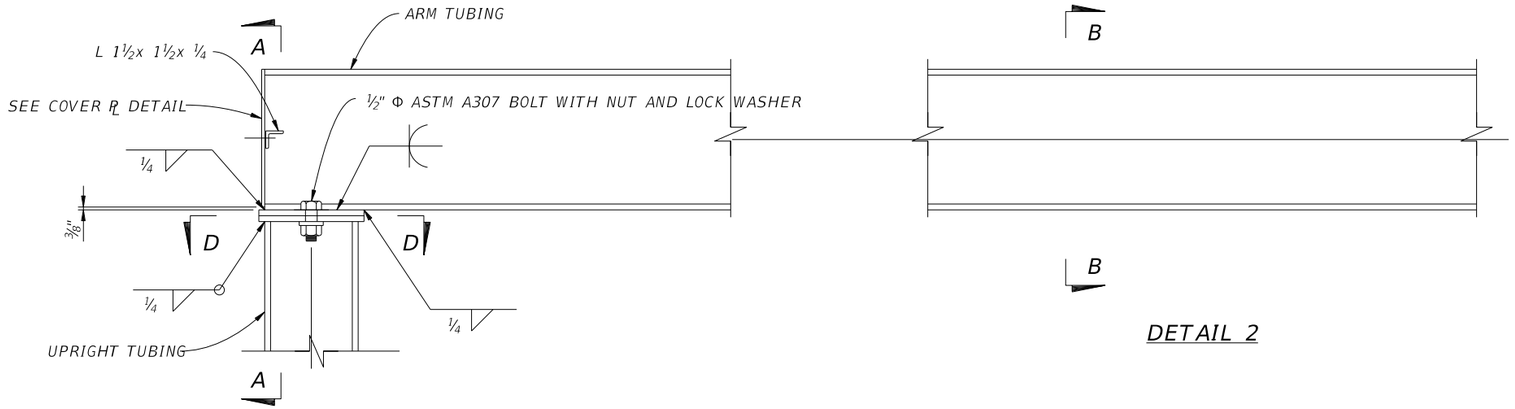
DCS STEEL TUBE STRUCTURE FOUNDATION DETAILS

SHEET NO. K-9

VERSION 7

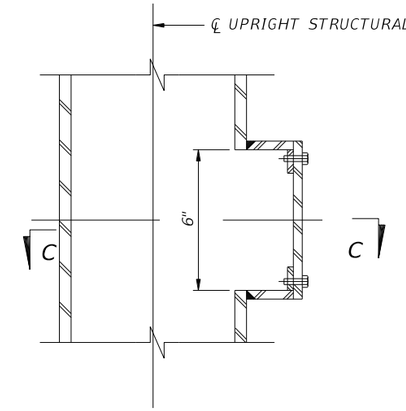
$DATE$ $TIME$ $FILE$

NOTE TO EOR:
THIS SHEET IS FOR REFERENCE ONLY



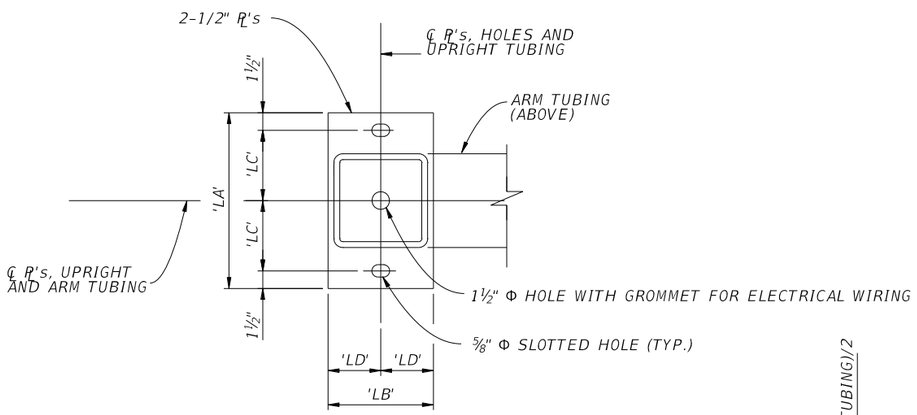
DETAIL 1

DETAIL 2

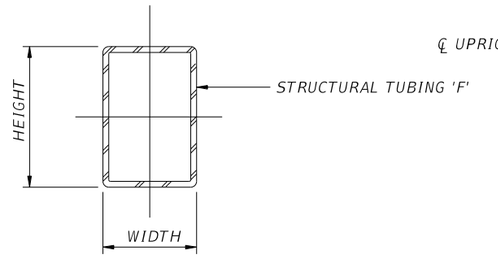


DETAIL 3

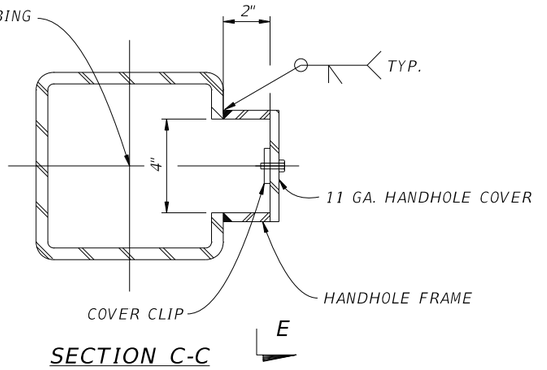
E



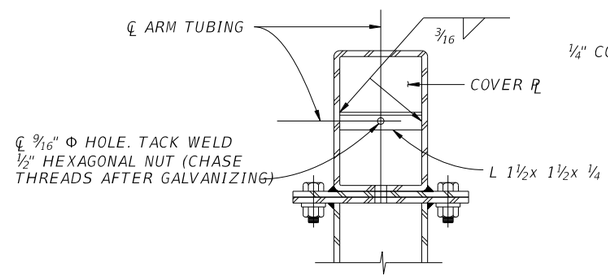
SECTION D-D



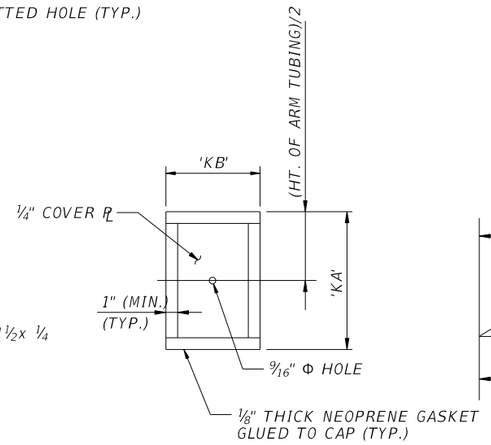
SECTION B-B



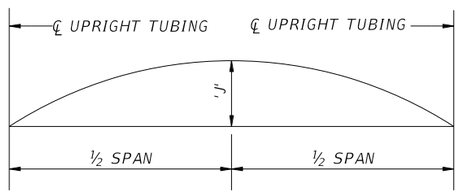
SECTION C-C



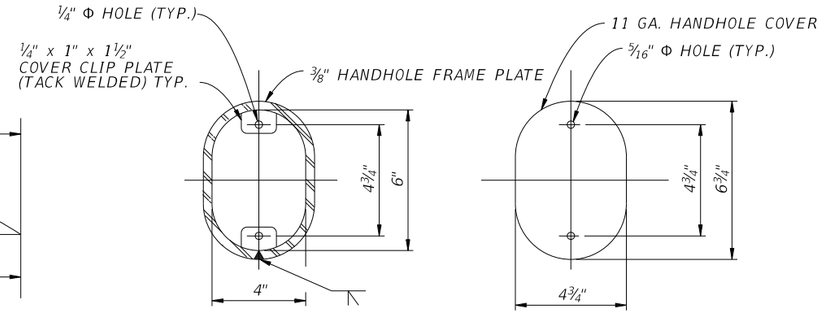
SECTION A-A



COVER PL DETAIL



CAMBER DIAGRAM



SECTION E-E

HANDHOLE COVER ELEVATION

HANDHOLE DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

DCS STEEL TUBE STRUCTURE MISCELLANEOUS DETAILS

SHEET NO. K-10

VERSION 7

$DATE$ $TIME$ $FILE$

FOR REFERENCE ONLY

TABLE OF DCS STEEL TUBE STRUCTURE VARIABLES

STRUCTURE NUMBER	STATION	DIMENSIONS					ELEVATIONS		MEMBER SIZES			
		A	AA	AB	B	C	D	E	F (ARM) Width x Ht. x Wall Thk.	G (LEFT UPRIGHT) Width x Ht. x Wall Thk.	H (RIGHT UPRIGHT) Width x Ht. x Wall Thk.	J (CAMBER)
DCS XXX-XX	XXX+XX	--	--	--	--	--	--	--	--x--x--	--x--x--	--x--x--	--

TABLE OF DCS STEEL TUBE STRUCTURE VARIABLES (CONT.)

STRUCTURE NUMBER	COVER PLATE		UPRIGHT CONNECTION				LEFT BASE CONNECTION			RIGHT BASE CONNECTION		
	KA	KB	LA	LB	LC	LD	MA	MB	MC	NA	NB	NC
DCS XXX-XX	--	--	--	--	--	--	--	--	--	--	--	--

TABLE OF DCS STEEL TUBE STRUCTURE VARIABLES (CONT.)

STRUCTURE NUMBER	LEFT DRILLED SHAFT			RIGHT DRILLED SHAFT		
	PA	PB	PC # / size	RA	RB	RC # / size
DCS XXX-XX	--	--	--	--	--	--

NOTE TO EOR:
1. THIS SHEET IS FOR REFERENCE ONLY.
2. BORING DATA SHALL BE PROVIDED WITH THE SUBMITTAL.

NOTES:

1. DESIGN WIND SPEED = 150 MPH
2. ERECTION IS THE CONTRACTOR'S RESPONSIBILITY.

FOUNDATION NOTES:

1. ASSUMPTIONS AND VALUES USED IN DESIGN:
   - SOIL TYPE= COHESIONLESS (SAND)
   - SOIL FRICTION ANGLE = 26 DEGREES
   - EFFECTIVE SOIL WEIGHT = 42.6 PCF
   - DESIGN WATER TABLE IS AT XX FT
2. THE ENGINEER SHALL IMMEDIATELY CONTACT THE ENGINEER OF RECORD IF DURING DRILLED SHAFT CONSTRUCTION SOIL CONDITIONS, SUCH AS MUCK OR VERY LOOSE SOIL, ARE ENCOUNTERED.

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS STEEL TUBE STRUCTURE TABLE OF VARIABLES	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					
										K-11

VERSION 7

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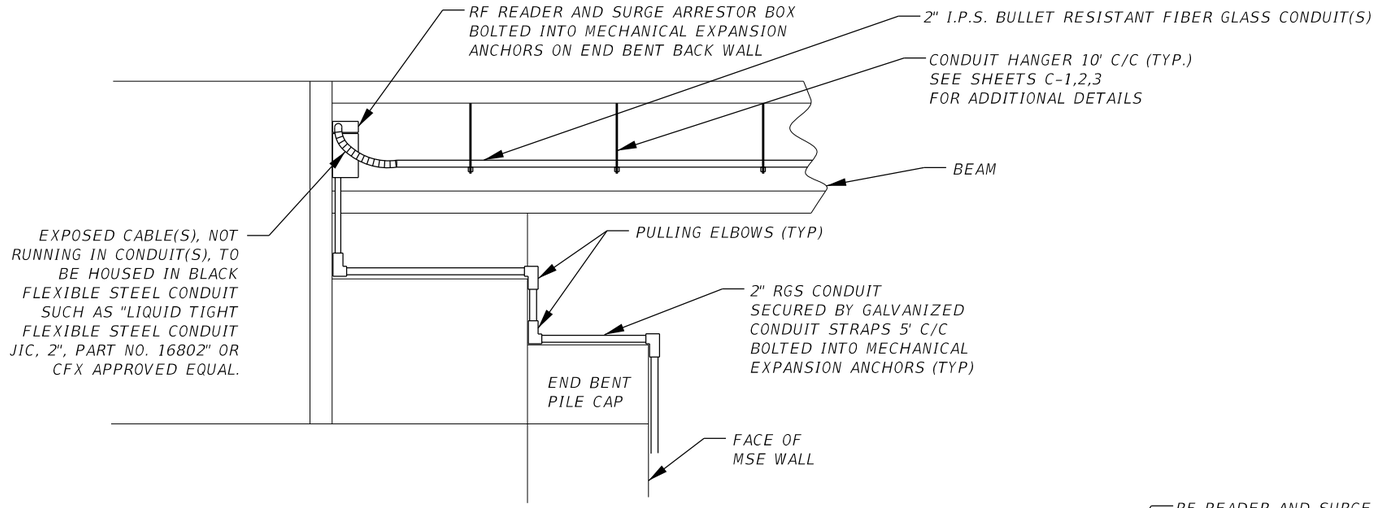
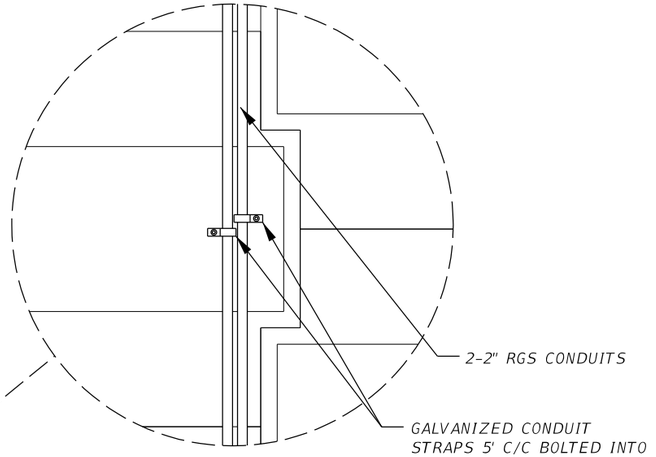
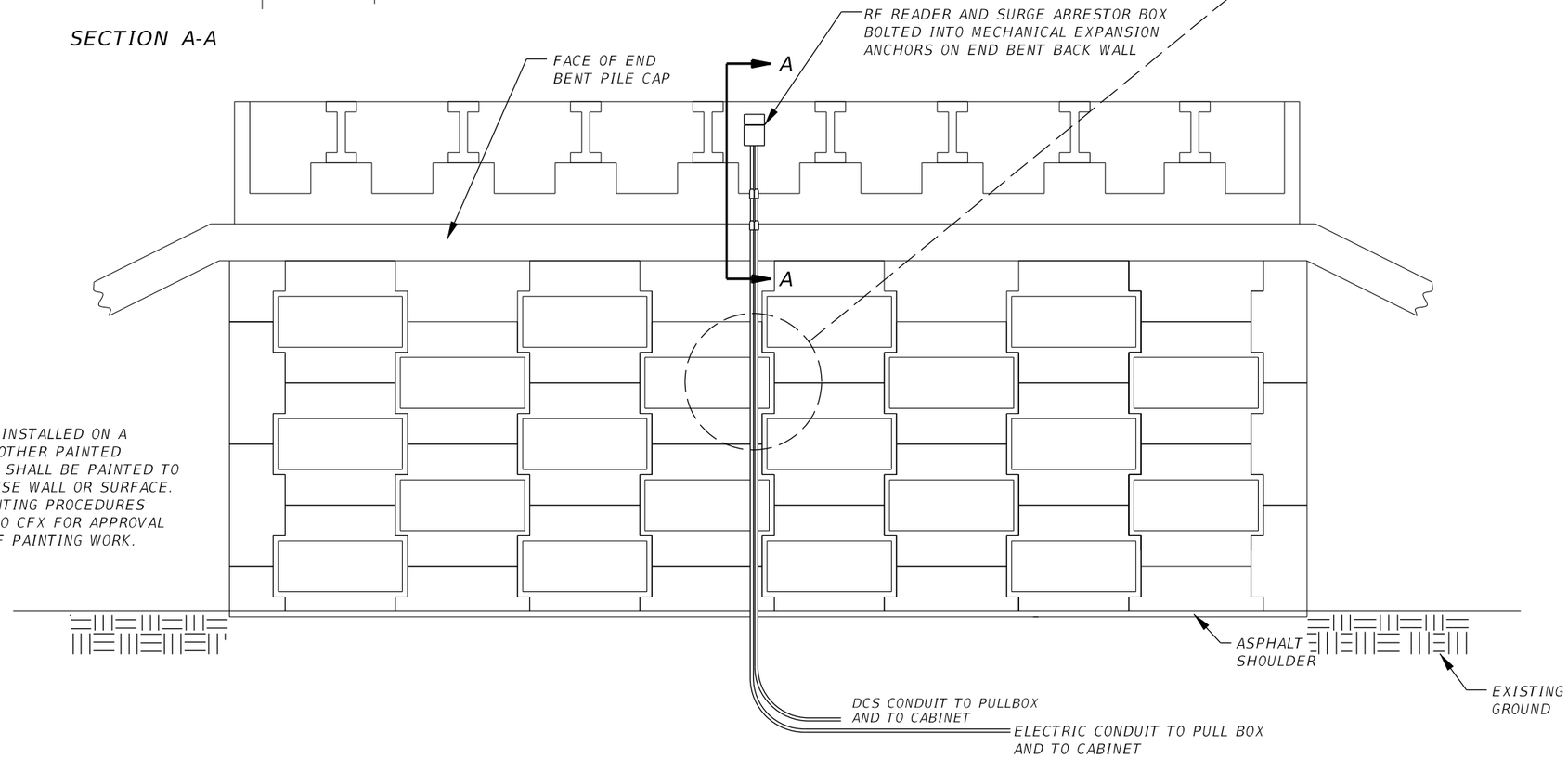
BRIDGE STRUCTURE MOUNTED DCS EQUIPMENT AND CONDUIT FOR ELECTRICAL AND DCS CABLES



SECTION A-A





NOTE:

1. WHEN NEW CONDUIT IS INSTALLED ON A PAINTED MSE WALL OR OTHER PAINTED SURFACE, THE CONDUIT SHALL BE PAINTED TO MATCH THE EXISTING MSE WALL OR SURFACE. PAINT COLORS AND PAINTING PROCEDURES SHALL BE SUBMITTED TO CFX FOR APPROVAL PRIOR TO THE START OF PAINTING WORK.

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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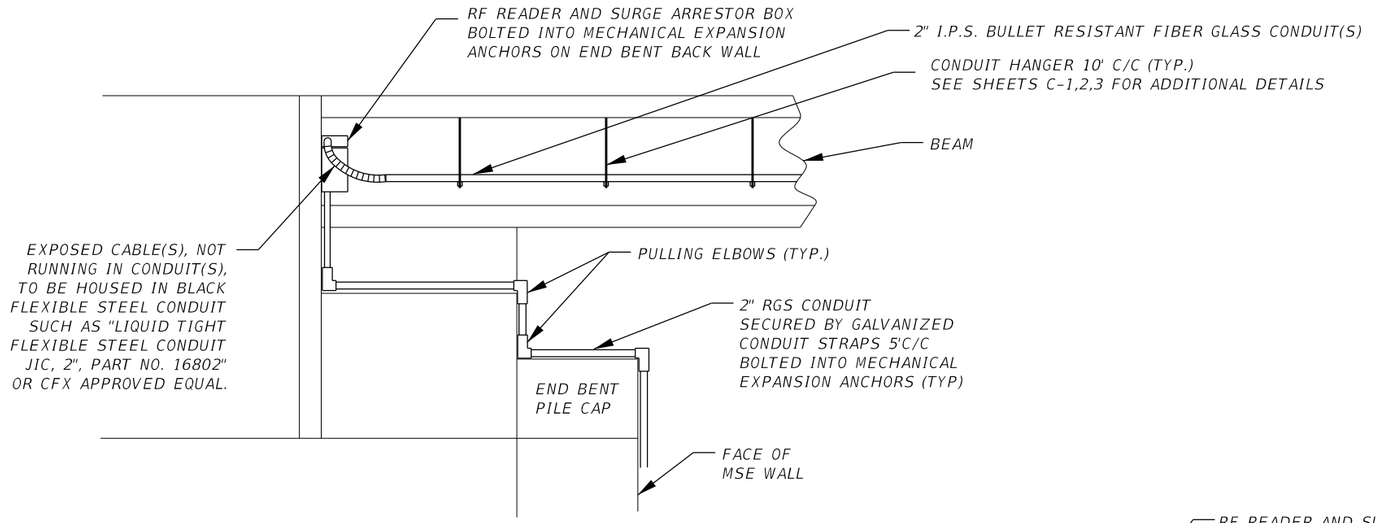
DCS DETAILS FOR BRIDGE STRUCTURE MOUNTED EQUIPMENT AND CONDUIT (1 OF 4)

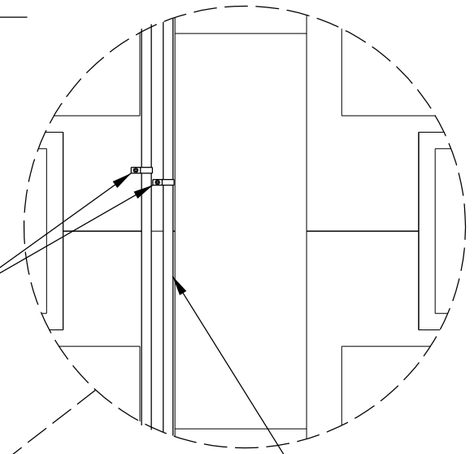
SHEET NO. K-12

VERSION 7

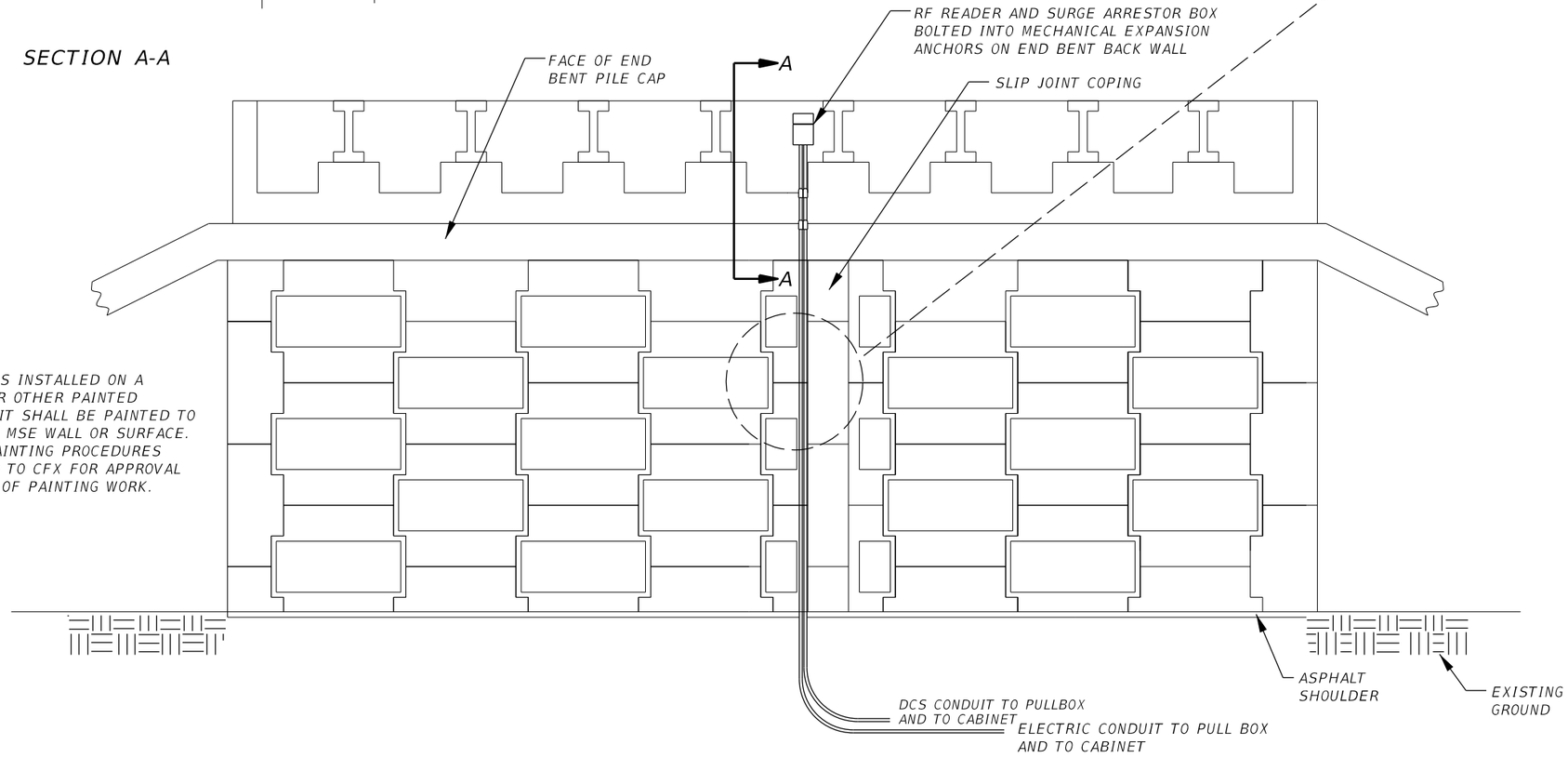
$DATE$ $TIME$ $FILE$

BRIDGE STRUCTURE MOUNTED EQUIPMENT AND CONDUIT FOR ELECTRICAL AND DCS CABLES





SECTION A-A



NOTE:

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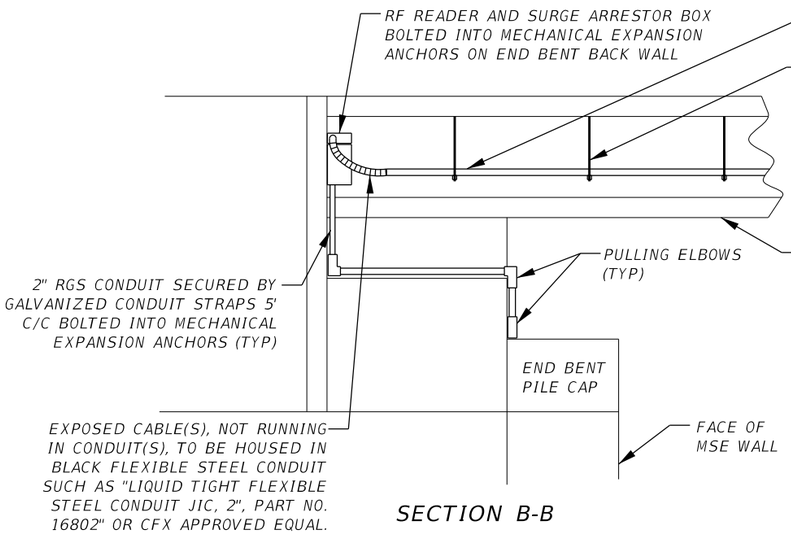
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS DETAILS FOR BRIDGE STRUCTURE MOUNTED EQUIPMENT AND CONDUIT (2 OF 4)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					K-13

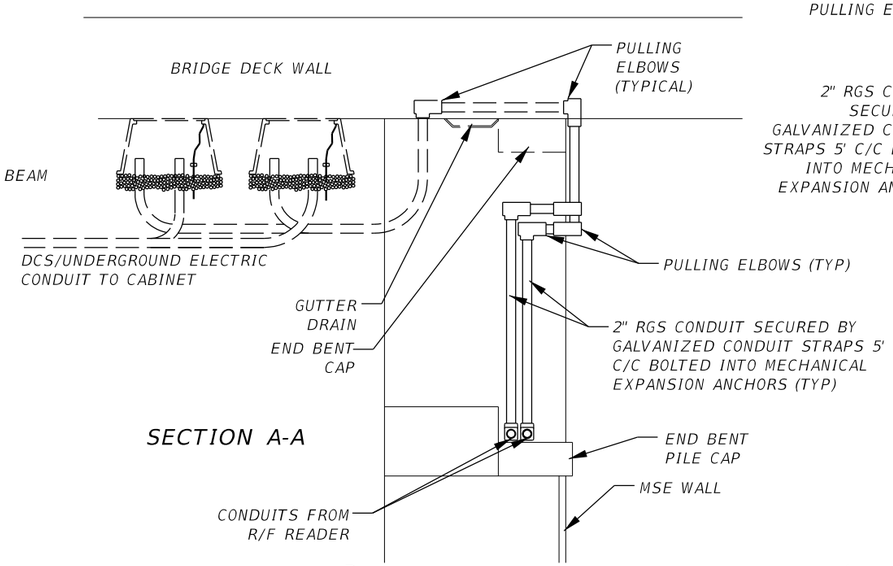
VERSION 7

$DATE$ $TIME$ $FILE$

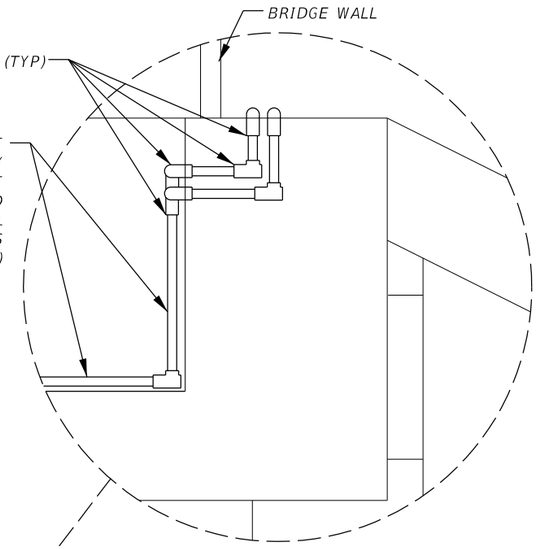
BRIDGE STRUCTURE MOUNTED EQUIPMENT AND CONDUIT FOR ELECTRICAL AND DCS CABLES

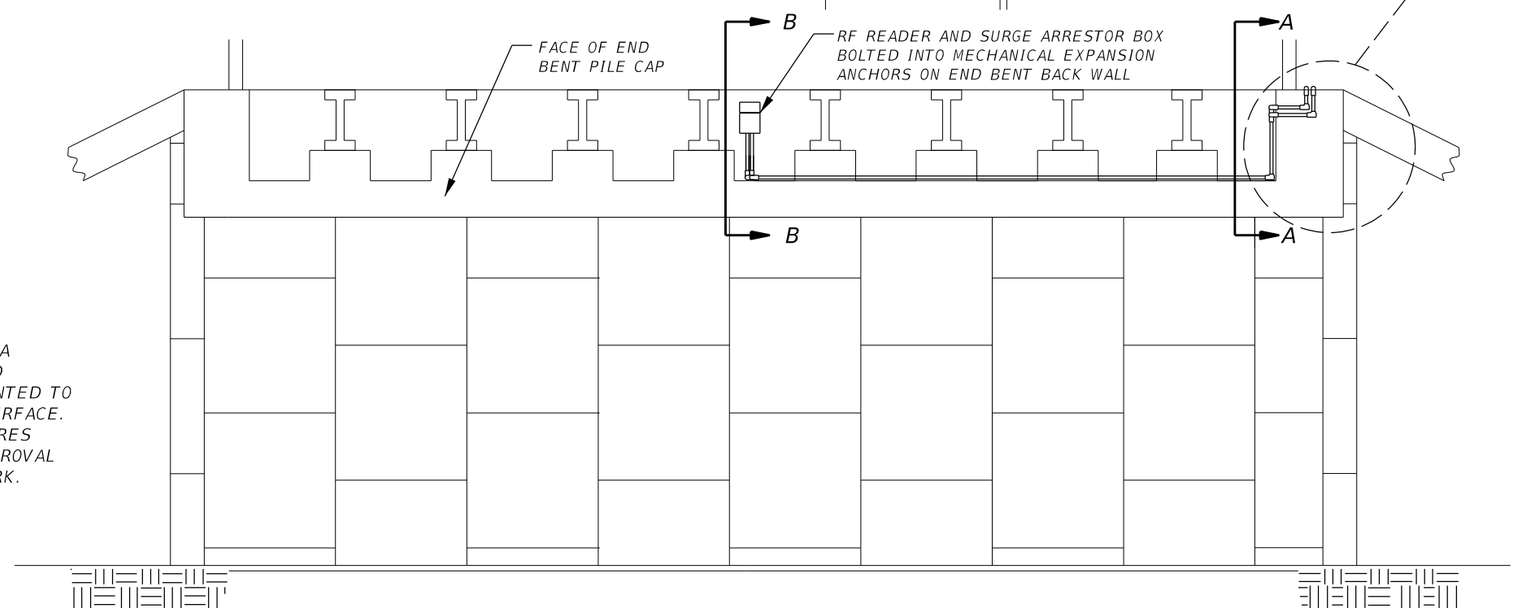


SECTION B-B



SECTION A-A





NOTE:

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NTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

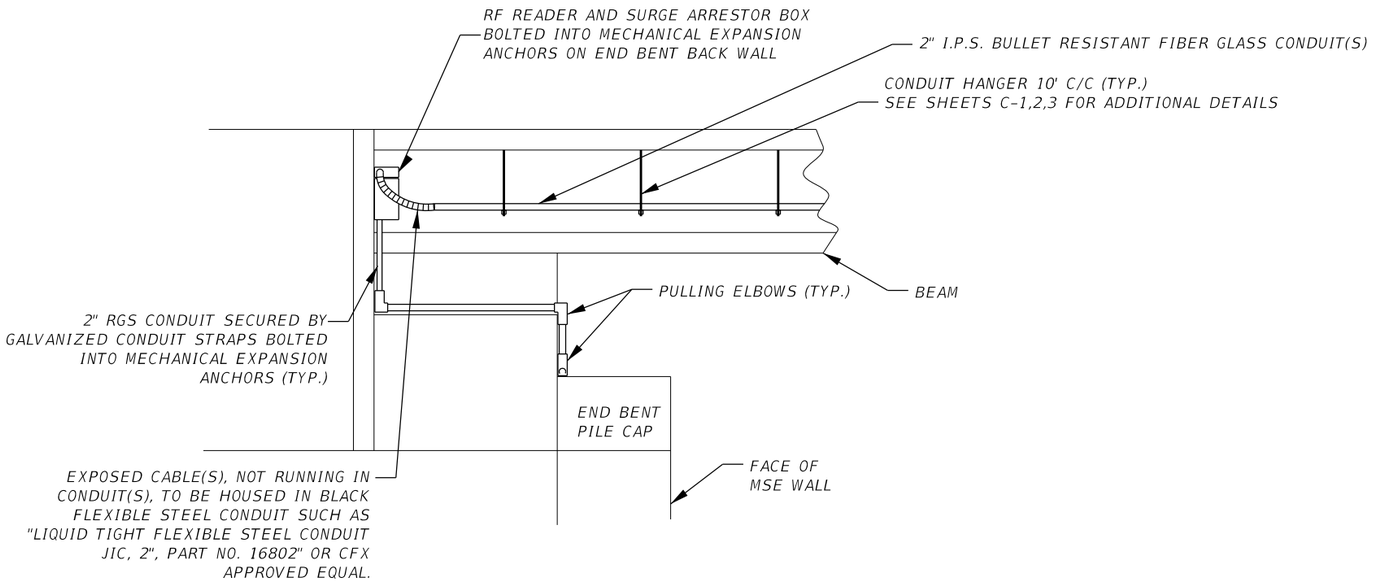
DCS DETAILS FOR BRIDGE STRUCTURE MOUNTED EQUIPMENT AND CONDUIT (3 OF 4)

SHEET NO. K-14

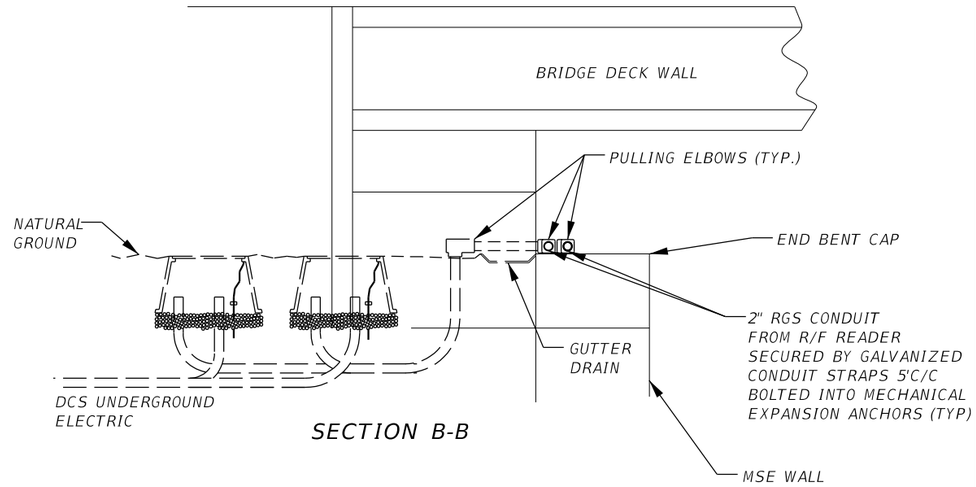
VERSION 7

$DATE$ $TIME$ $FILE$

BRIDGE STRUCTURE MOUNTED DCS EQUIPMENT AND CONDUIT FOR ELECTRICAL AND DCS CABLES



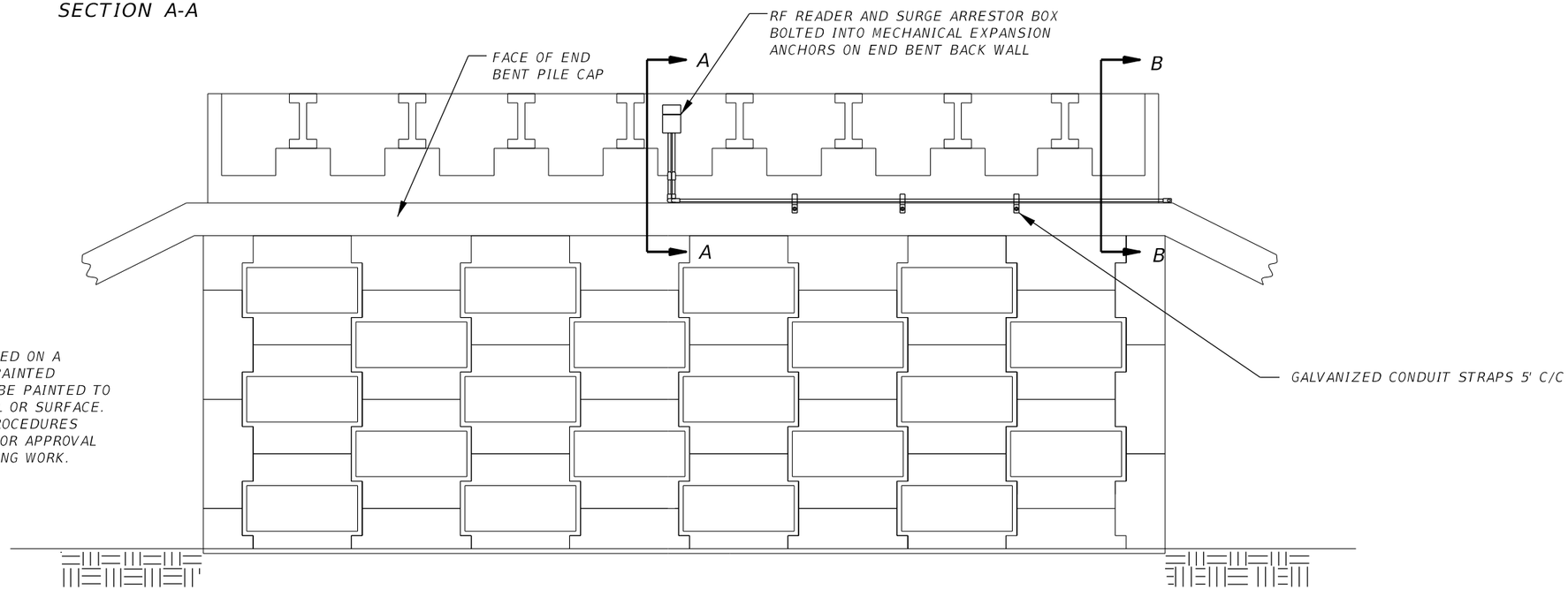
SECTION A-A



SECTION B-B

NOTE:

1. WHEN NEW CONDUIT IS INSTALLED ON A PAINTED MSE WALL OR OTHER PAINTED SURFACE, THE CONDUIT SHALL BE PAINTED TO MATCH THE EXISTING MSE WALL OR SURFACE. PAINT COLORS AND PAINTING PROCEDURES SHALL BE SUBMITTED TO CFX FOR APPROVAL PRIOR TO THE START OF PAINTING WORK.



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

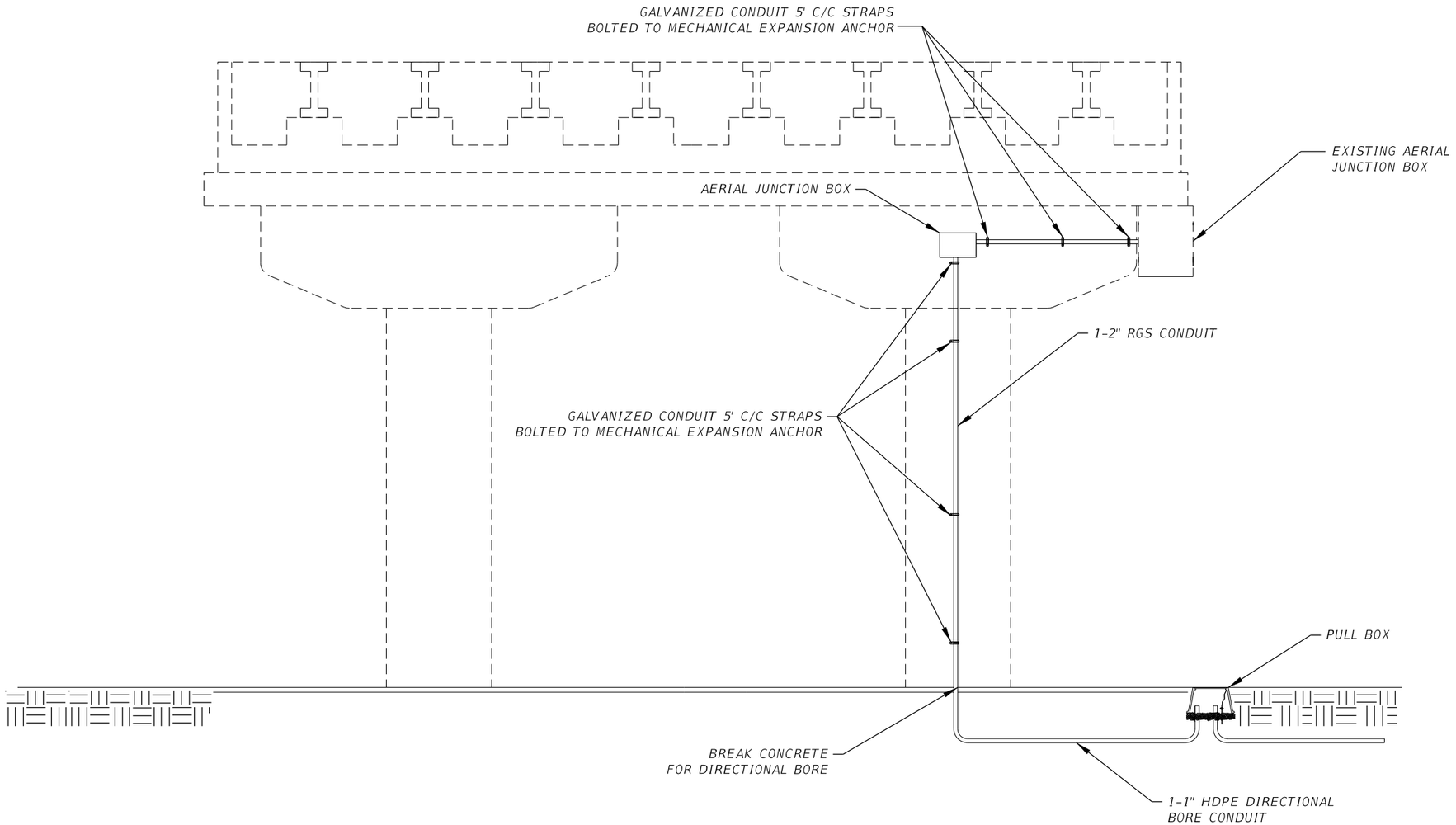
DCS DETAILS FOR BRIDGE STRUCTURE MOUNTED EQUIPMENT AND CONDUIT (4 OF 4)

SHEET NO. K-15

VERSION 7

$DATE$ $TIME$ $FILE$

BRIDGE STRUCTURE MOUNTED CONDUIT FOR FIBER OPTIC CABLE



NOTES:

1. WHEN NEW CONDUIT IS INSTALLED ON A PAINTED MSE WALL OR OTHER PAINTED SURFACE, THE CONDUIT SHALL BE PAINTED TO MATCH THE EXISTING MSE WALL OR SURFACE. PAINT COLORS AND PAINTING PROCEDURES SHALL BE SUBMITTED TO CFX FOR APPROVAL PRIOR TO THE START OF PAINTING WORK.

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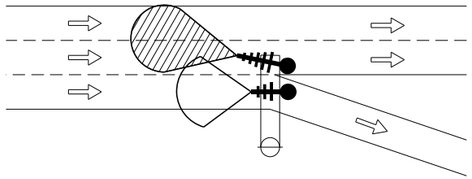
BRIDGE MOUNTED FIBER OPTIC CONDUIT DROP

SHEET NO. K-16

VERSION 7

$DATE$ $TIME$ $FILE$

OPTION 1



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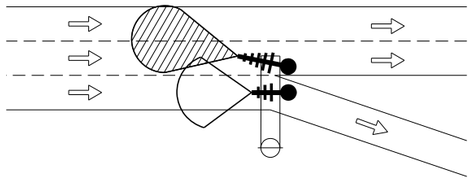
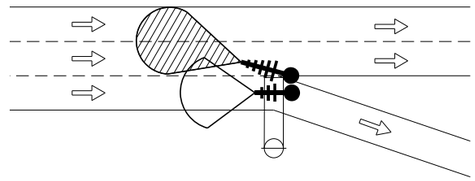


OPTION 3



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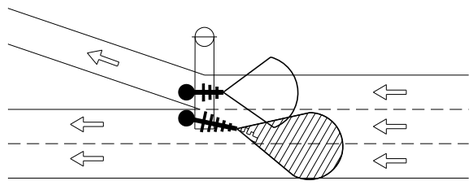

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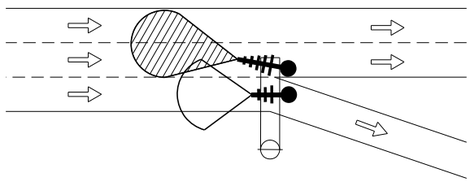

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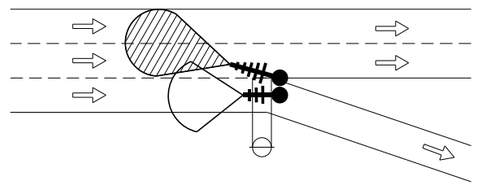
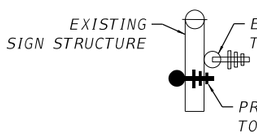


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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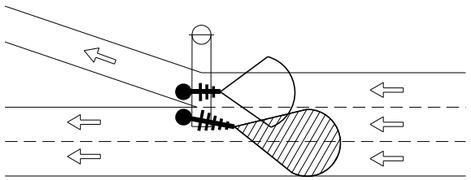
DCS COVERAGE AREA (1 OF 11)

SHEET NO.

K-17

VERSION 7

OPTION 7



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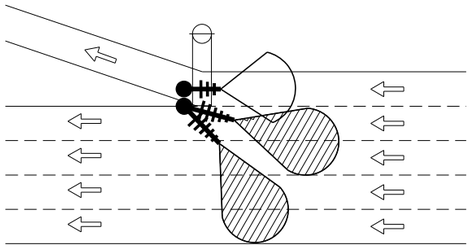

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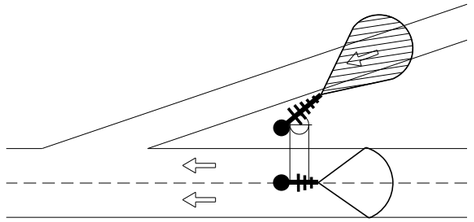

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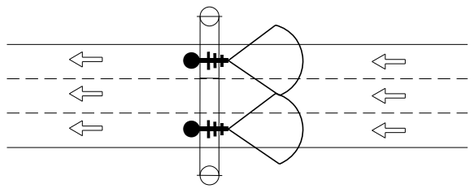

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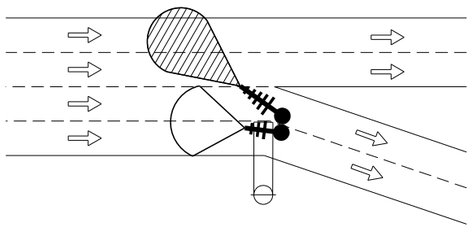

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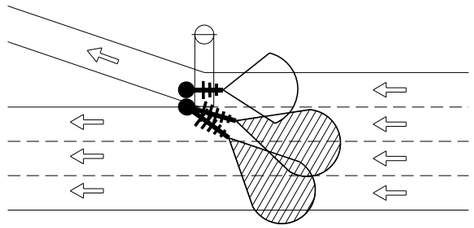
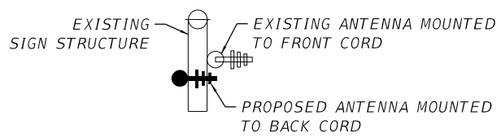


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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DCS COVERAGE AREA (2 OF 11)

SHEET NO.

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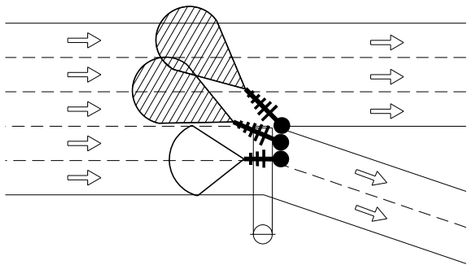
VERSION 7

OPTION 13



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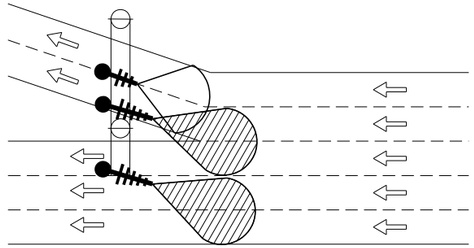

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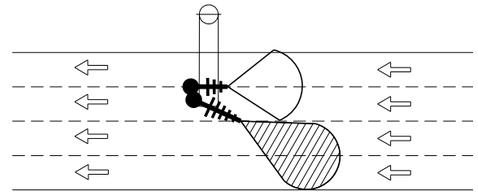

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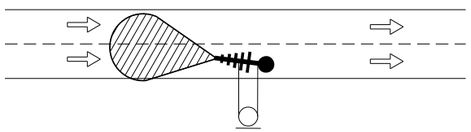

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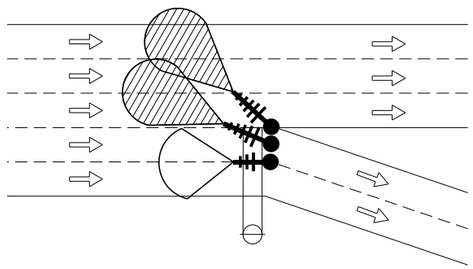

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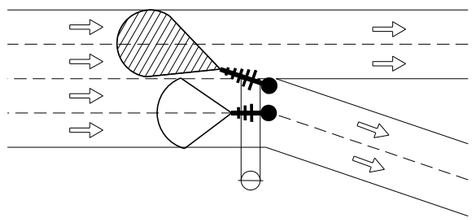
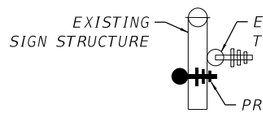


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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DCS COVERAGE AREA (3 OF 11)

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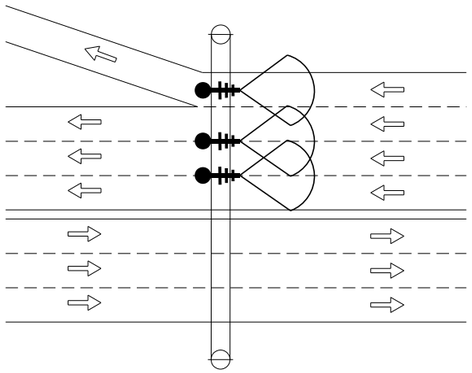
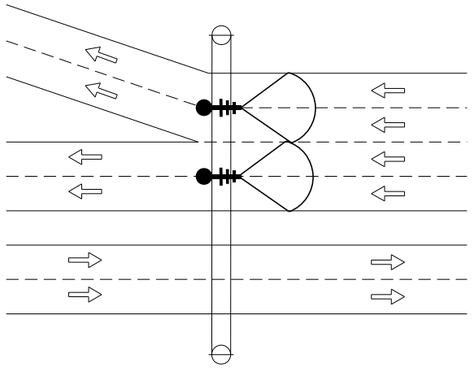
VERSION 7

OPTION 19



OPTION 20



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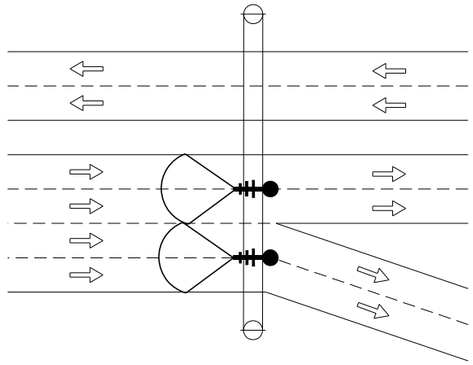

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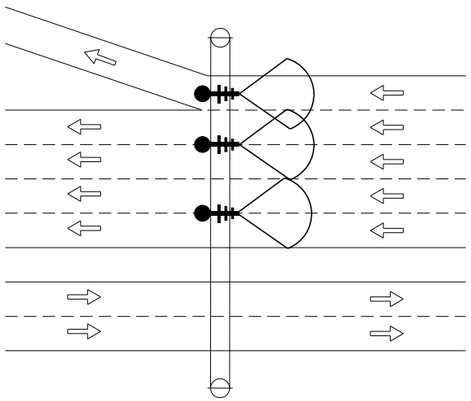

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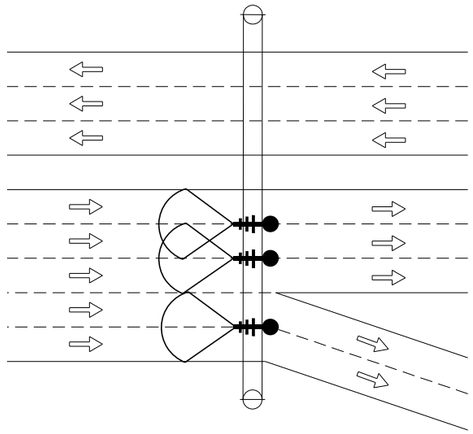

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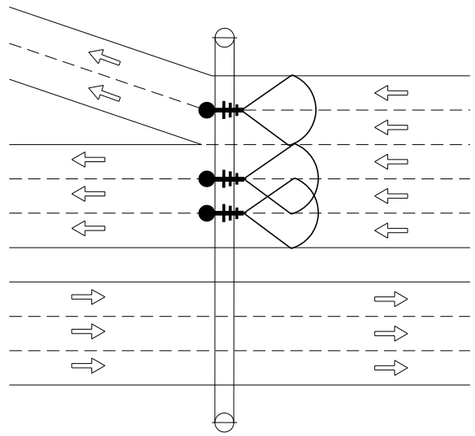
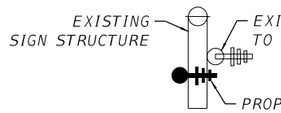


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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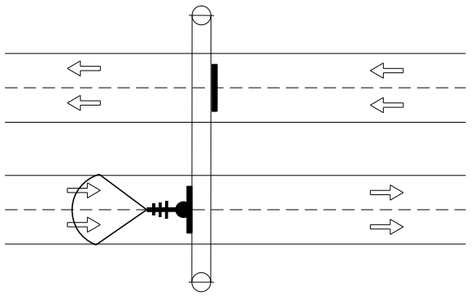
DCS COVERAGE AREA (4 OF 11)

SHEET NO.

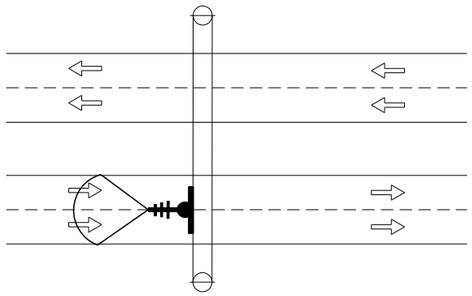
K-20

VERSION 7

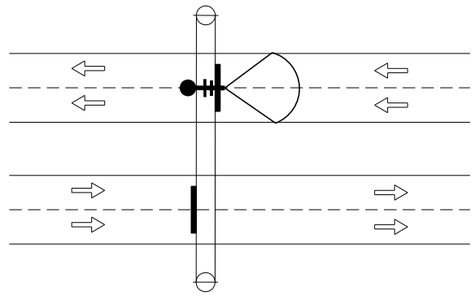
OPTION 25



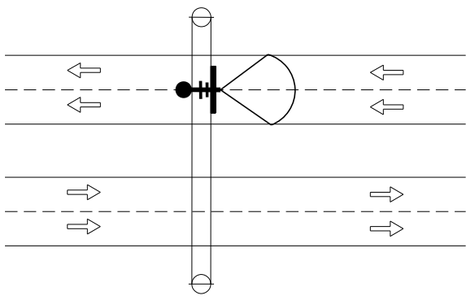
OPTION 26



OPTION 27



OPTION 28



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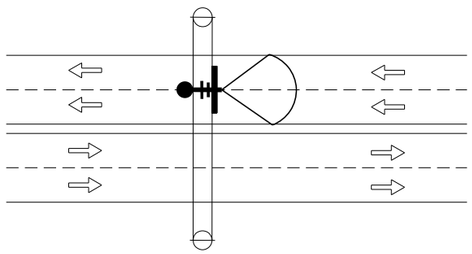
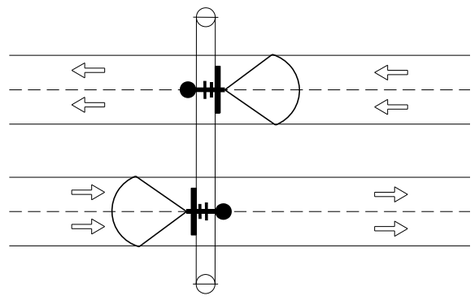


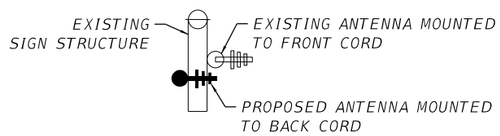
OPTION 30



LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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DCS COVERAGE AREA (5 OF 11)

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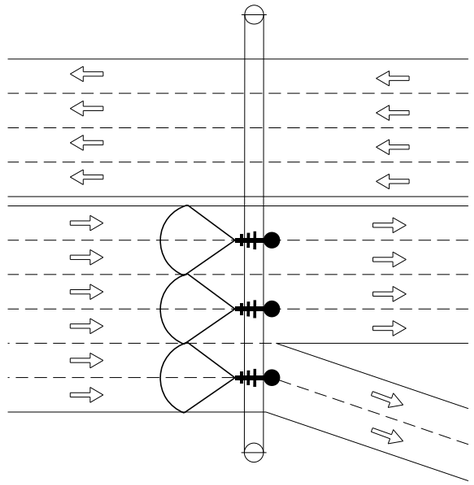
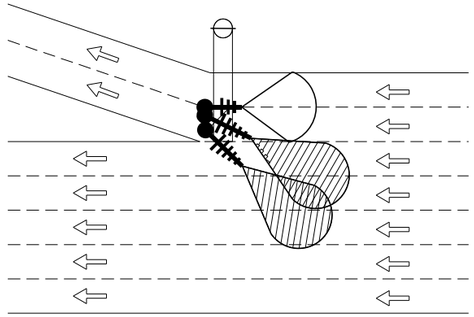
VERSION 7

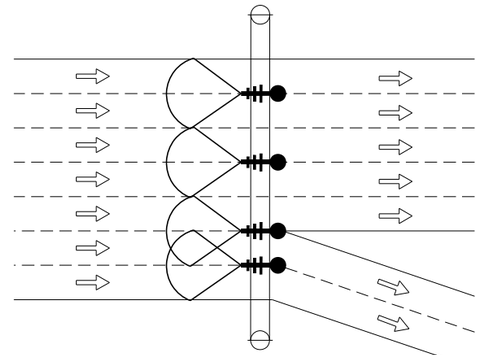
OPTION 31



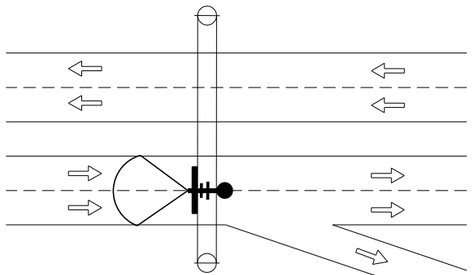
OPTION 32



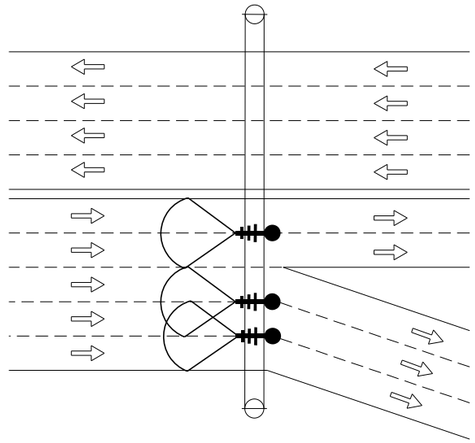
OPTION 33



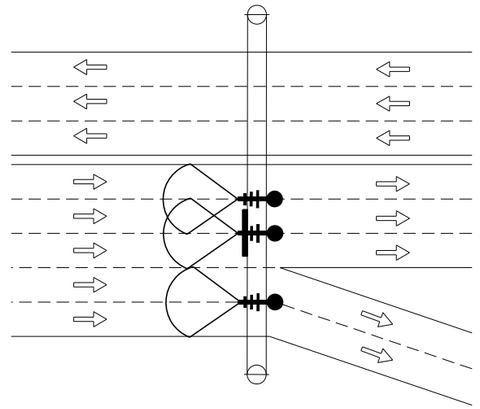
OPTION 34



OPTION 35



OPTION 36

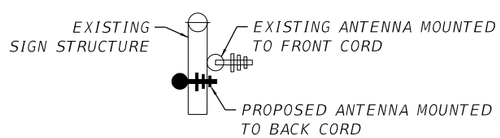


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

DATA COLLECTION SENSOR - COVERAGE AREA FOR 10db ANTENNA

DATA COLLECTION SENSOR - COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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DCS COVERAGE AREA (6 OF 11)

SHEET NO. K-22

VERSION 7

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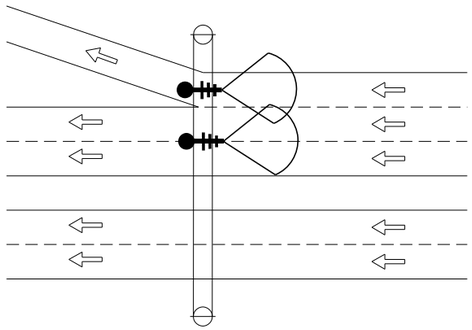
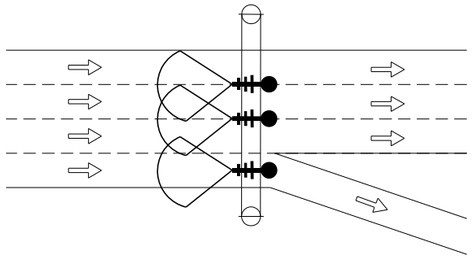
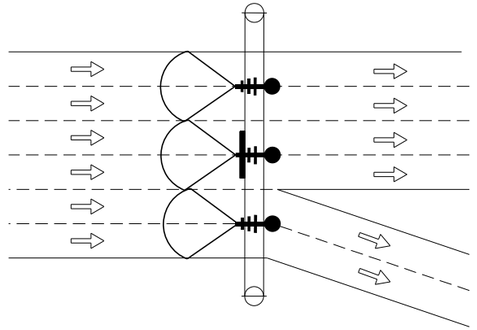
OPTION 37



OPTION 38



OPTION 39



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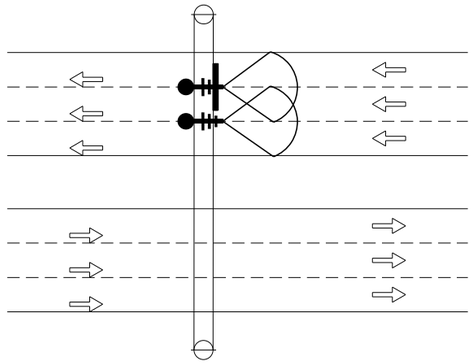

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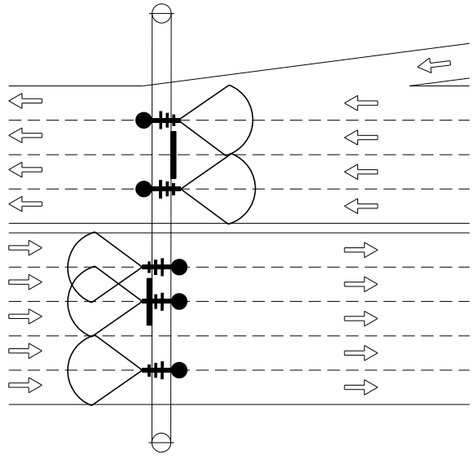

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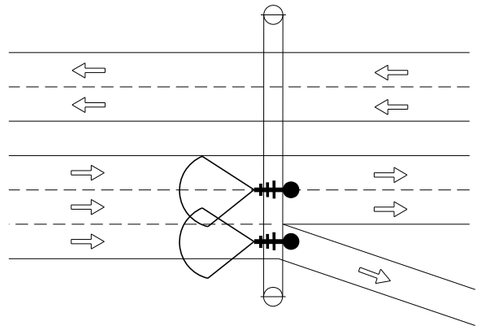
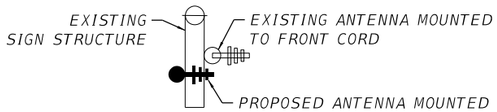


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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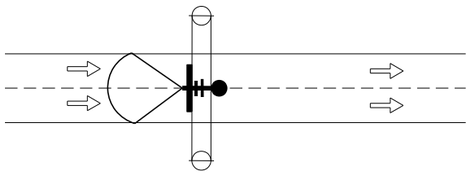
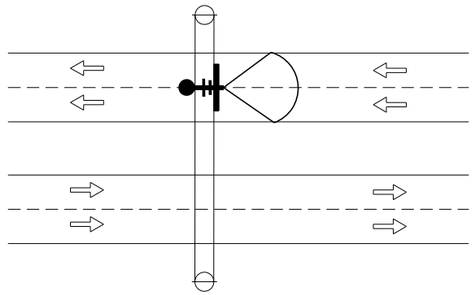
OPTION 43



OPTION 44



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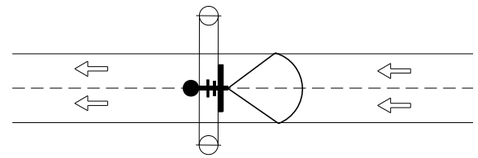

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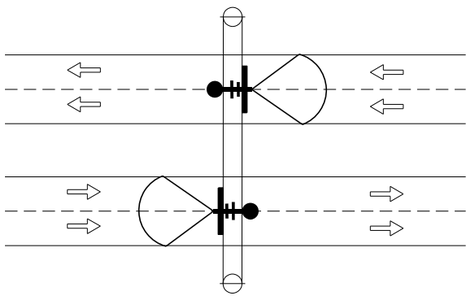

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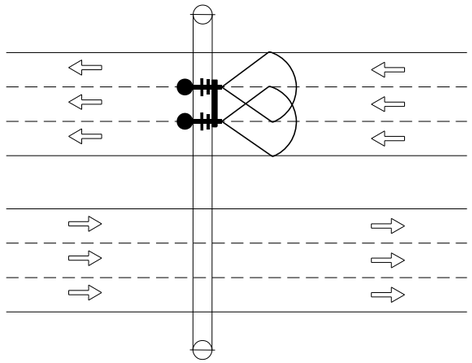
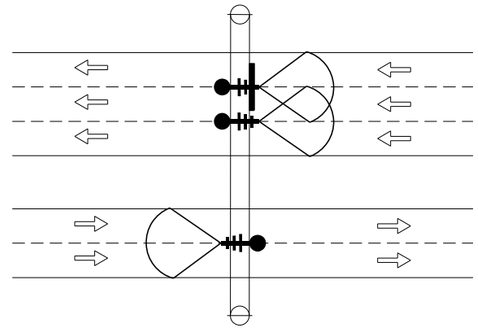


OPTION 48



LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA

EXISTING SIGN STRUCTURE

EXISTING ANTENNA MOUNTED TO FRONT CORD

PROPOSED ANTENNA MOUNTED TO BACK CORD

NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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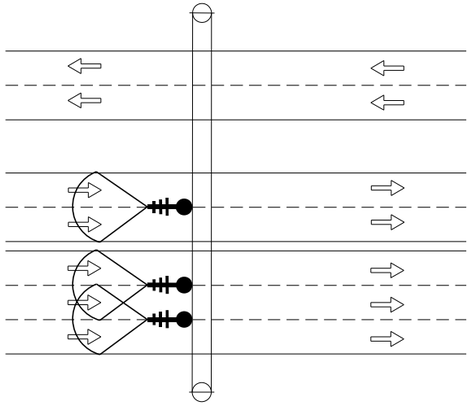
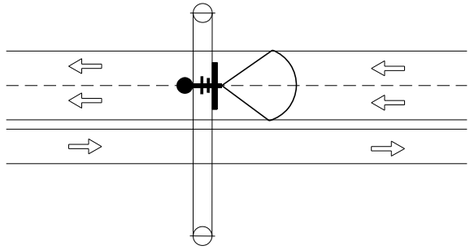
OPTION 49



OPTION 50



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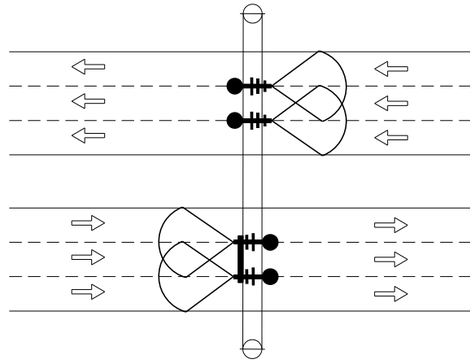
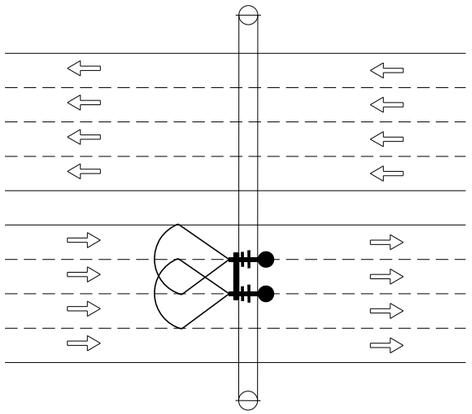


OPTION 52



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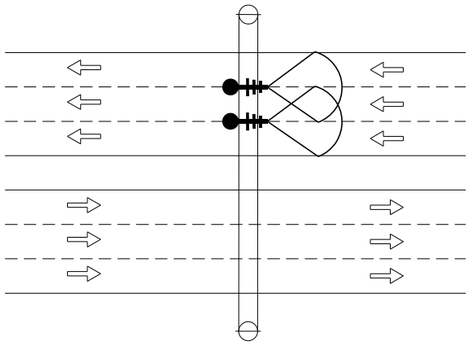
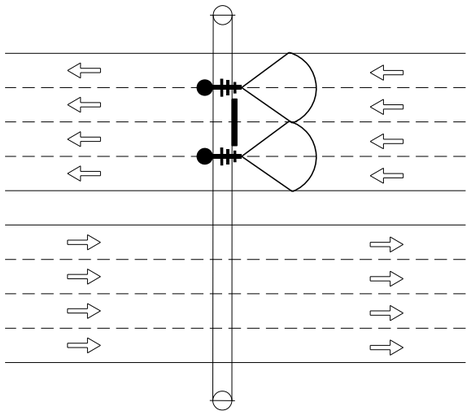


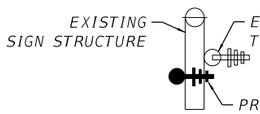
OPTION 54



LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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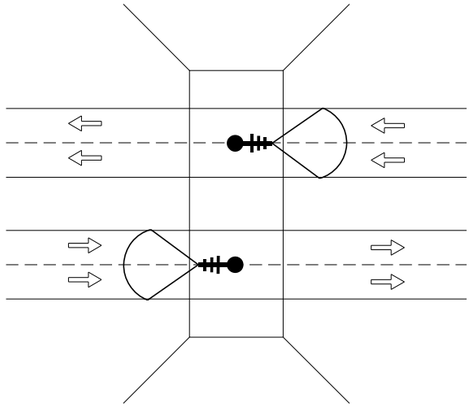
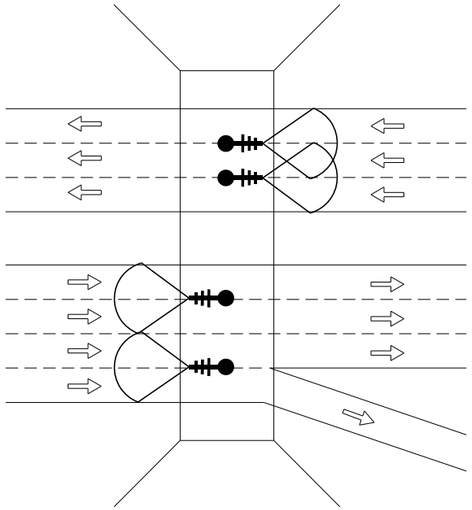
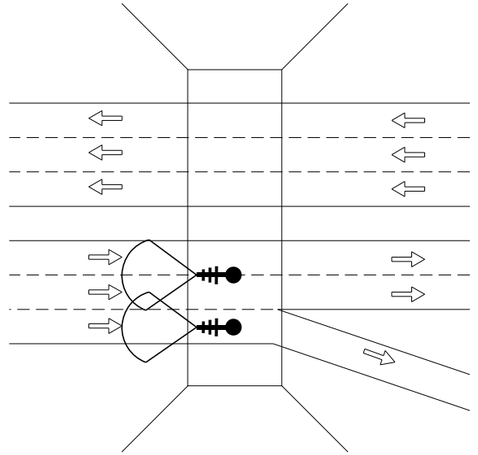
OPTION 55



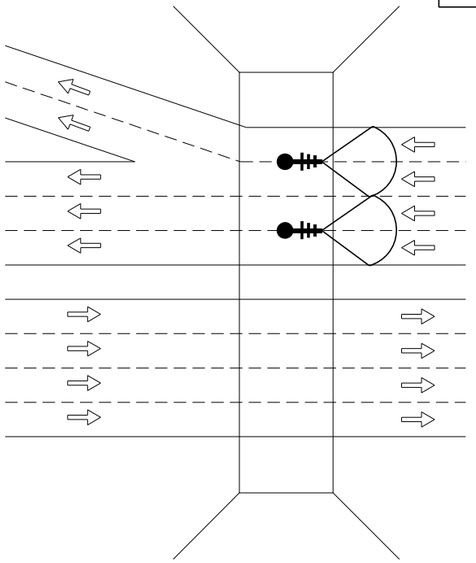
OPTION 56



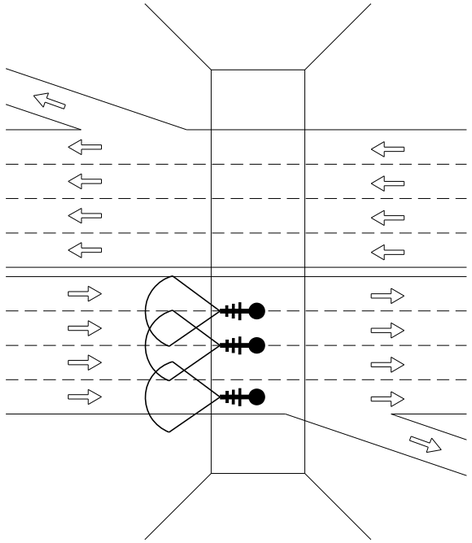
OPTION 57



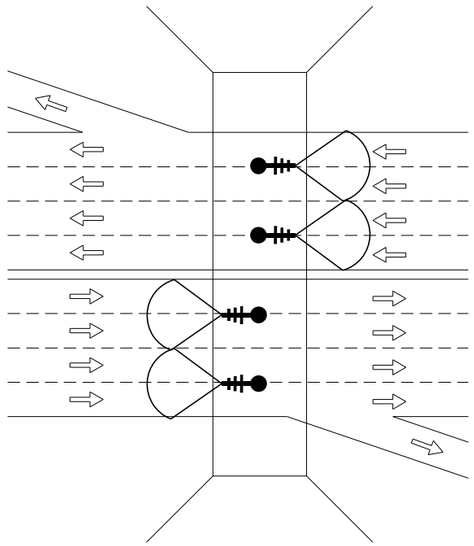
OPTION 58



OPTION 59



OPTION 60

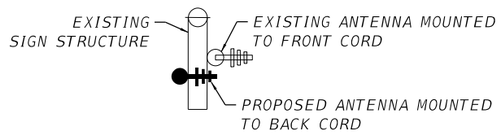


LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC

DATA COLLECTION SENSOR - COVERAGE AREA FOR 10db ANTENNA

DATA COLLECTION SENSOR - COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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DCS COVERAGE AREA (10 OF 11)

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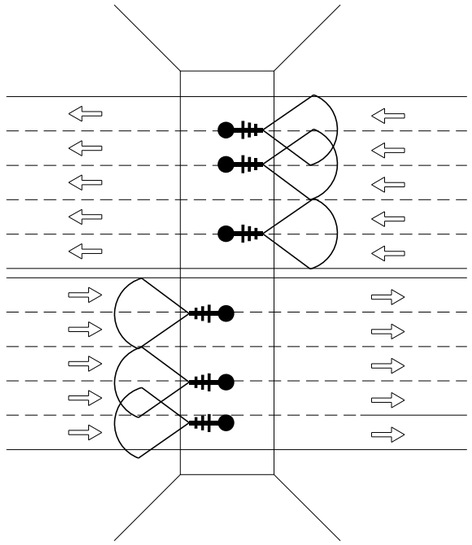
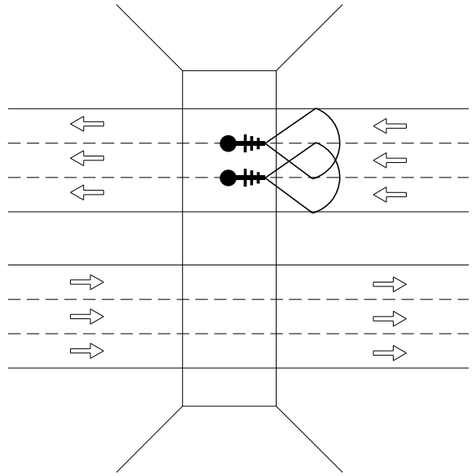
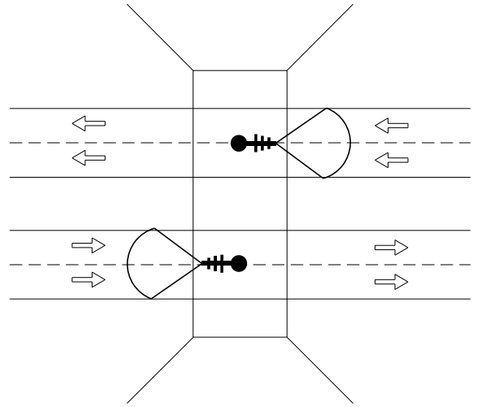
OPTION 61



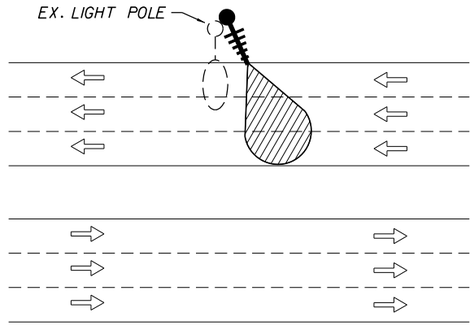
OPTION 62



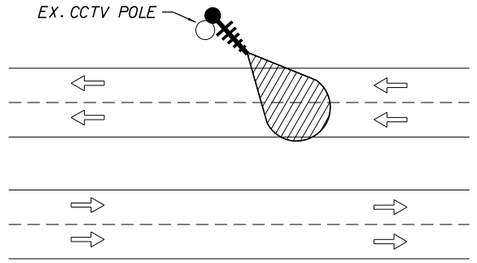
OPTION 63



OPTION 64

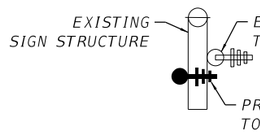


OPTION 65



LEGEND:

- EXISTING 10 or 16 dB (TO BE REMOVED)
- PROPOSED 10 dB
- PROPOSED 16 dB
- DMS
- DIRECTION OF TRAFFIC
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 10db ANTENNA
- DATA COLLECTION SENSOR – COVERAGE AREA FOR 16db ANTENNA



NOTES:

1. EXISTING ANTENNA REPLACEMENT MAY VARY. CONTRACTOR TO ENSURE PROPOSED ANTENNA IS INSTALLED ON BACK CORD OF SIGN STRUCTURE POINTING OPPOSITE THE DIRECTION OF TRAFFIC.
2. CONTRACTOR SHALL INSTALL DCS ANTENNAS OVER LANE STRIPE WHERE POSSIBLE. WHEN INSTALLATION OVER TRAVEL LANES IS NOT POSSIBLE DUE TO THE LENGTH OF THE STRUCTURE A HIGH GAIN 16 dB ANTENNA SHALL BE USED, TO MEET LANE ACCURACY REQUIREMENTS DEFINED IN CFX SPECIFICATIONS 663.

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DCS COVERAGE AREA (11 OF 11)

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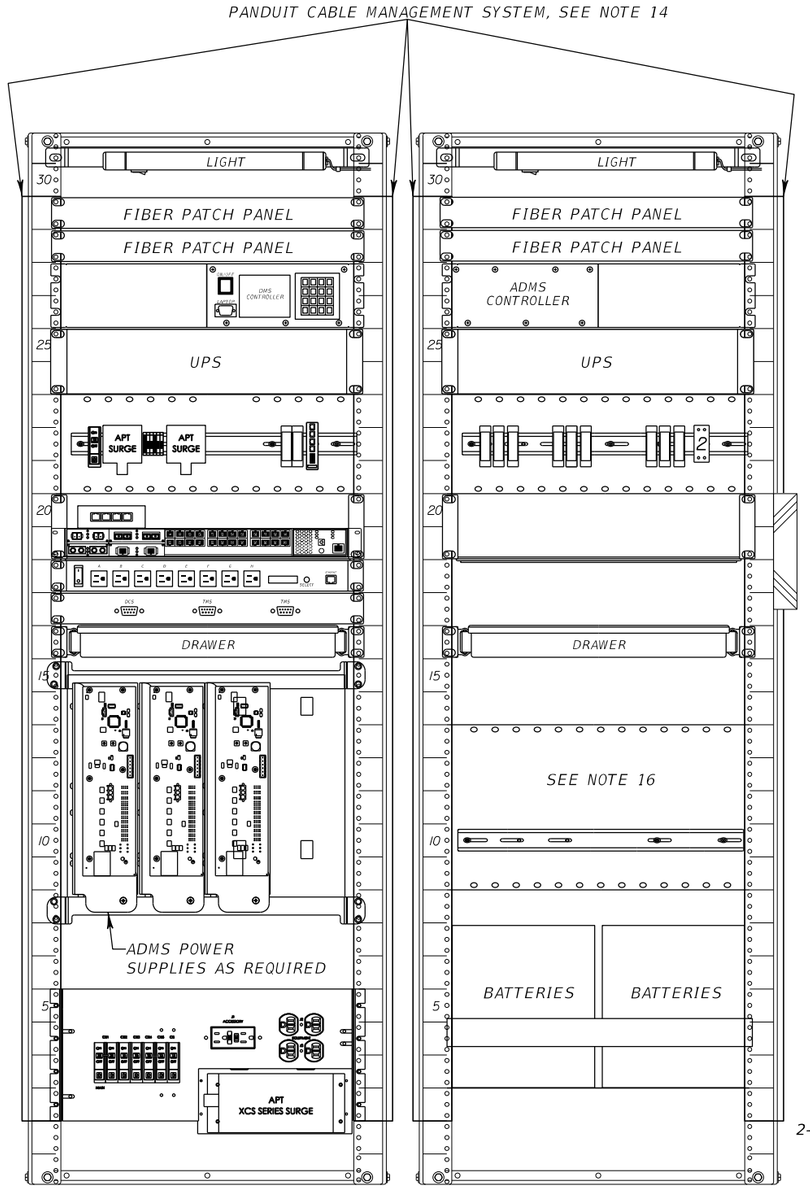
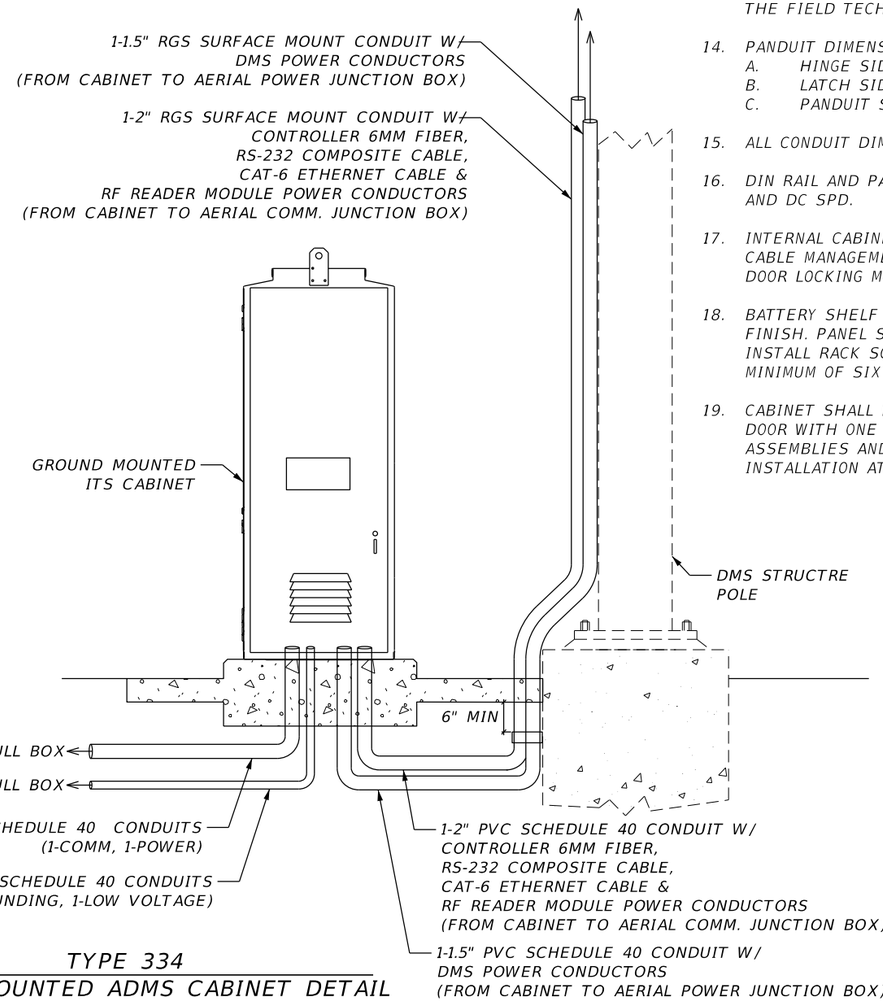


TYPE 334
GROUND MOUNTED ADMS CABINET LAYOUT

NOTES:

1. THE CABINET SHALL PROVIDE FOR RACK MOUNTING AND SHELVING OF ALL EQUIPMENT.
2. CABINETS SHALL BE TYPE 334 AND FABRICATED IN ACCORDANCE TO SECTION 668 OF CFX SPECIFICATIONS.
3. (SM) = SHELF MOUNT, (RM) = RACK MOUNT
4. BUS RATING SHALL BE A MINIMUM OF THE FULL ELECTRICAL LOAD WHEN ALL CABINET AND EXTERNAL POLE MOUNTED DEVICES ARE ACTIVE.
5. CABINET SPD MODELS SHALL BE AS FOLLOWS:

SPD 1 - ASCO # 107D046S15KXN4D0
SPD 2 - ASCO # 420120NP05NWAJ10 + APT SKIT1 IN-LINE SERIES KIT
SPD 3 - ADVANCED PROTECTION TECHNOLOGIES (APT) - APT SCAT5
SPD 4 - ASCO # 420120NP05NWAJ10 + APT SKIT1 IN-LINE SERIES KIT
SPD 5 - ASCO # 425120SP10AWAJ10



TYPE 334
GROUND MOUNTED ADMS CABINET DETAIL

6. CONDUIT RADIUS SHALL BE GREATER THAN FIBER OPTIC CABLE MINIMUM BENDING RADIUS.
7. 19" DOUBLE DIN RAIL SHALL BE GROUNDED PER MANUFACTURER'S RECOMMENDATIONS.
8. CONTRACTOR SHALL SUBMIT A CABINET LAYOUT/WIRING DIAGRAM FOR CFX APPROVAL.
9. FRONT FACE OF EQUIPMENT SHALL BE INSTALLED WITHIN THE CABINET FACING THE OPPOSITE DIRECTIONAL OF TRAVEL.
10. THE DIN RAIL MOUNTED RS-232 CONNECTOR SHALL BE CLEARLY LABELED AS "DCS READER MAINTENANCE PORT - RS-232". SUGGESTED VENDOR/PART NUMBER FOR THE RS-232 CONNECTOR: B&B ELECTRONIC DB9 MTB OR CFX APPROVED EQUAL.
11. GROUND MOUNTED DMS CABINETS SHALL BE PLACED ON A MONOLITHIC POUR CONCRETE EXTENDING SIX (6) INCHES ABOVE THE GRADE.
12. SLIDE OUT TRAY SHALL BE ORIENTED SUCH THAT THE TECHNICIAN SHALL NEVER HAVE THEIR BACK TO THE DIRECTION OF TRAVEL.
13. IT IS THE INTENT OF THE ENGINEER TO PROVIDE A SAFE WORKING SPACE FOR THE FIELD TECHNICIANS.
14. PANDUIT DIMENSIONS ARE AS FOLLOWS:
    A. HINGE SIDE OF CABINET; 1.26" WIDE BY 1.59" DEEP
    B. LATCH SIDE OF CABINET; 1.26" WIDE BY 1.12" DEEP
    C. PANDUIT SHALL VERTICALLY COVER RU's AS SHOWN
15. ALL CONDUIT DIMENSIONS SHOWN ARE MINIMUM.
16. DIN RAIL AND PANEL PROVIDED BY DAKTRONICS FOR DC BREAKERS, GROUND BUS AND DC SPD.
17. INTERNAL CABINET RACK ASSEMBLY SHALL BE ADJUSTED SO THAT THE PANDUIT CABLE MANAGEMENT SYSTEM IS NOT IN CONFLICT WITH THE CABINET INTERNAL DOOR LOCKING MECHANISM.
18. BATTERY SHELF SHALL BE OF 3/16" THICK 5052 ALUMINUM WITH FINE BRUSH FINISH. PANEL SHALL BE STANDARD 19" (1 RU). MOUNT SHELF BEHIND RACK RAIL. INSTALL RACK SCREWS FRONT TO BACK WITH LOCK WASHERS AND NUTS. INSTALL A MINIMUM OF SIX RACK SCREEWS, 4 TOP HOLES AND 2 BOTTOM HOLES.
19. CABINET SHALL BE PROVIDED WITH CYBERLOCK ASSEMBLY FOR EACH CABINET DOOR WITH ONE (1)CYBERLOCK KEY FOR EVERY 10 LOCKS. THE CYBERLOCK ASSEMBLIES AND KEYS SHALL BE PROVIDED TO CFX FOR PROGRAMMING AND INSTALLATION AT THEIR DISCRETION.

NTS

LEGEND:

- PORT SERVER
- BATTERY VOLTAGE SENSOR
- CCTV NEMA ENCLOSURE SPD
- MEDIA CONVERTER
- CLICK 202
- LAYER 2 ETHERNET SWITCH
- RS 232 DB9 MAINT. PORT
- REMOTE POWER MANAGER W/ ENVIRONMENTAL MONITOR

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

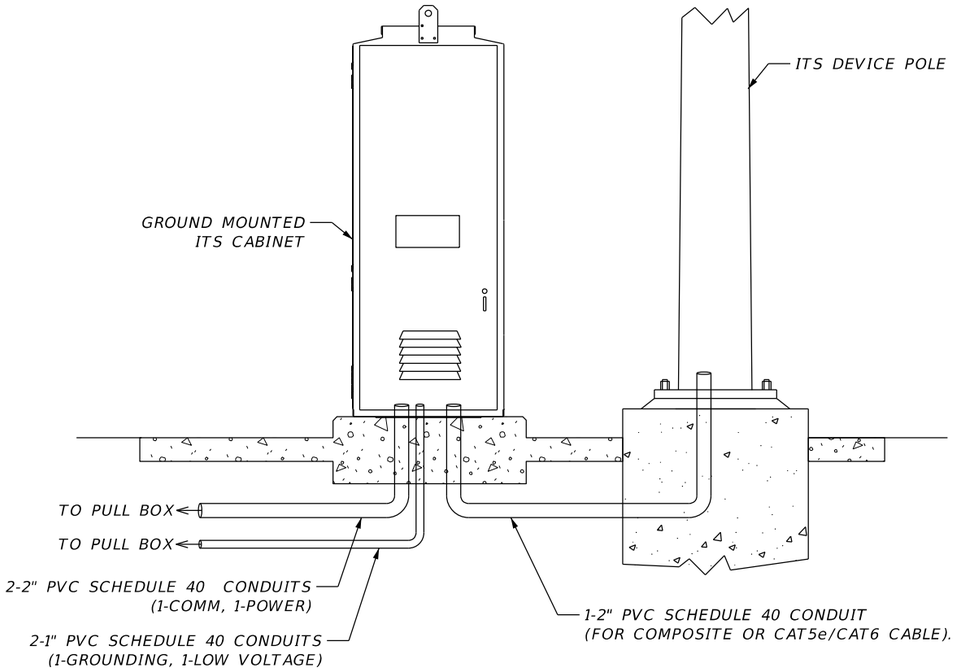
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ADMS CABINET LAYOUT DETAIL

SHEET NO. L-1

VERSION 8

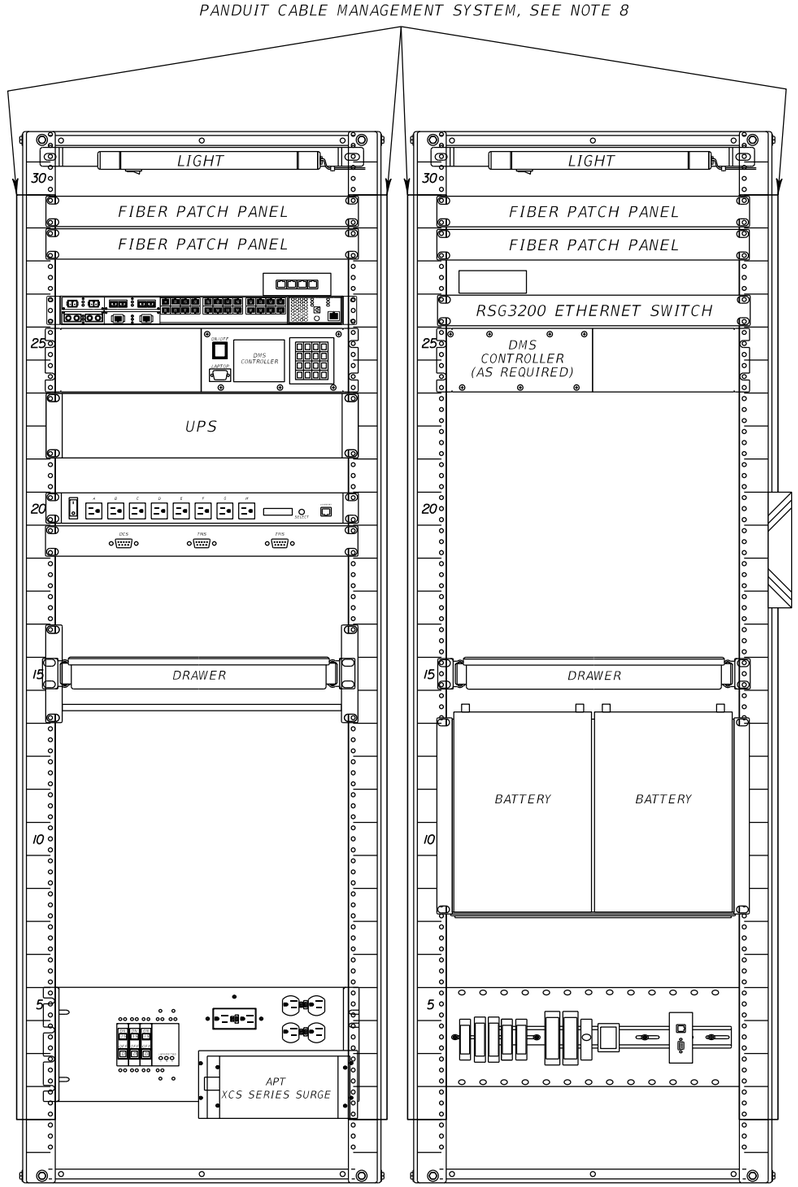
$DATE$ $TIME$ $FILE$



TYPE 334
GROUND MOUNTED ITS CABINET DETAIL

NOTES:

1. INTERNAL CABINET RACK ASSEMBLY SHALL BE ADJUSTED SO THAT THE PANDUIT CABLE MANAGEMENT SYSTEM IS NOT IN CONFLICT WITH THE CABINET INTERNAL DOOR LOCKING MECHANISM.
2. THE CABINET SHALL PROVIDE FOR RACK MOUNTING AND SHELVING OF ALL EQUIPMENT.
3. ALL ITS CABINETS SHALL MEET CFX SPECIFICATION 668.
4. GROUND MOUNT CABINETS SHALL BE PLACED ON A MONOLITHIC CONCRETE BASE 6" ABOVE GRADE.
5. ALL ITS CABINETS SLIDE OUT TRAYS SHALL BE ORIENTED SUCH THAT THE TECHNICIAN SHALL NEVER HAVE THEIR BACK TO THE DIRECTION OF TRAVEL.
6. ALL ITS CABINETS SHALL NEVER BE MOUNTED ON THE APPROACHING SIDE OF TRAFFIC.
7. IT IS THE INTENT OF THE ENGINEER TO PROVIDE A SAFE WORKING SPACE FOR THE FIELD TECHNICIANS AT ALL ITS CABINET LOCATIONS.
8. PANDUIT DIMENSIONS ARE AS FOLLOWS:
   A. HINGE SIDE OF CABINET; 1.26" WIDE BY 1.59" DEEP
   B. LATCH SIDE OF CABINET; 1.26" WIDE BY 1.12" DEEP
   C. PANDUIT SHALL VERTICALLY COVER 28 RU's AS SHOWN.
9. POE SHALL BE GROUNDED TO DIN RAIL.
10. ALL CONDUIT DIMENSIONS SHOWN ARE MINIMUM.
11. CABINET SHALL BE PROVIDED WITH CYBERLOCK ASSEMBLY FOR EACH CABINET DOOR WITH ONE (1)CYBERLOCK KEY FOR EVERY 10 LOCKS. THE CYBERLOCK ASSEMBLIES AND KEYS SHALL BE PROVIDED TO CFX FOR PROGRAMMING AND INSTALLATION AT THEIR DISCRETION.



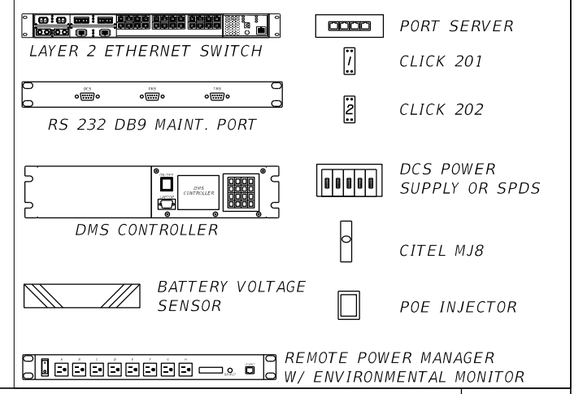
FRONT VIEW BACK VIEW

TYPE 334
ITS CABINET LAYOUT

NTS

NOTE TO EOR:
TYPE 334 ITS CABINET IS THE PREFERRED DEFAULT CABINET UNLESS OTHERWISE STATED IN THE PLANS. CFX APPROVAL IS REQUIRED FOR OTHER ALTERNATIVES.

LEGEND:



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

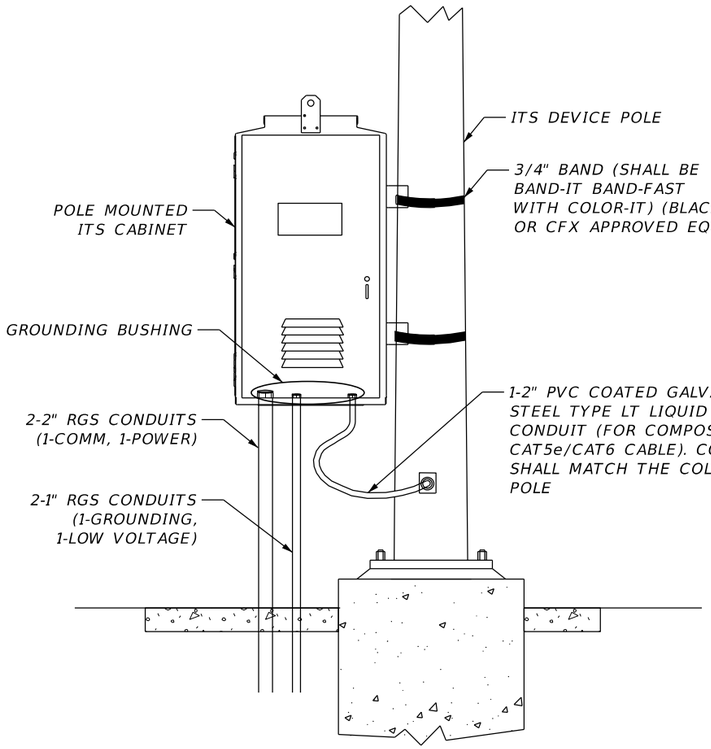
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

TYPE 334
ITS CABINET LAYOUT DETAIL

SHEET NO.
L-2

VERSION 8

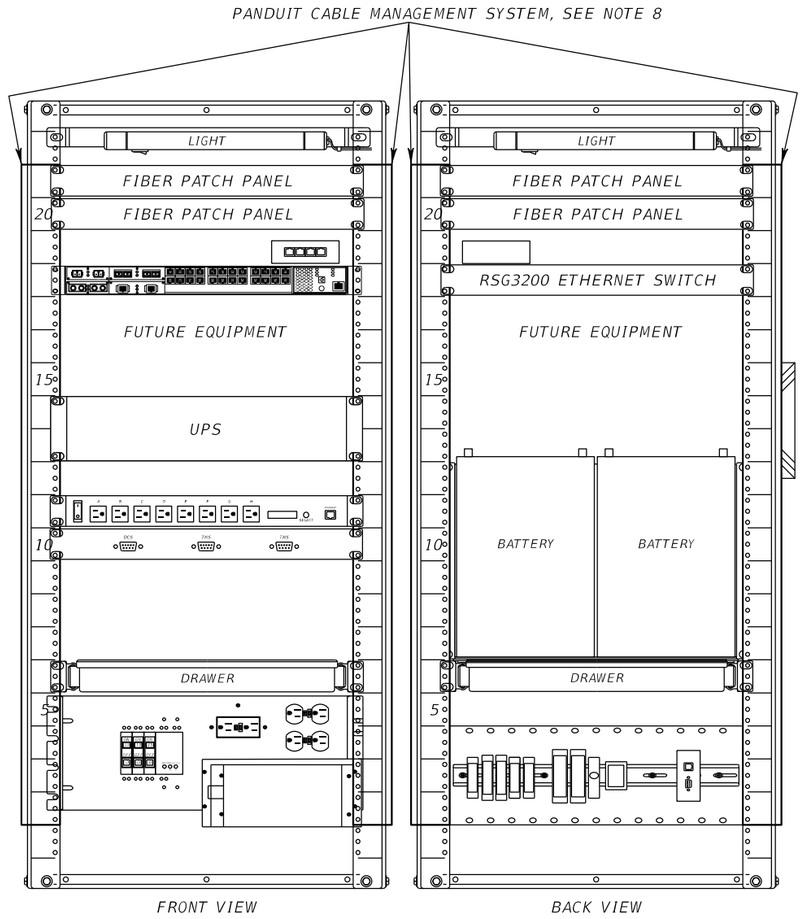
$DATE$ $TIME$ $FILE$



TYPE 336S
POLE MOUNTED ITS CABINET DETAIL

NOTES:

1. INTERNAL CABINET RACK ASSEMBLY SHALL BE ADJUSTED SO THAT THE PANDUIT CABLE MANAGEMENT SYSTEM IS NOT IN CONFLICT WITH THE CABINET INTERNAL DOOR LOCKING MECHANISM.
2. THE CABINET SHALL PROVIDE FOR RACK MOUNTING AND SHELVING OF ALL EQUIPMENT.
3. ALL ITS CABINETS SHALL MEET CFX SPECIFICATION 668.
4. POLE MOUNTED 336S CABINETS SHALL BE PLACED AS SHOWN THREE (3) FEET FROM BOTTOM OF CABINET TO GRADE. IF IMPRACTICAL DUE TO SITE GEOMETRICS, AN ALTERNATE LOCATION ADJACENT TO THE STRUCTURE SHALL BE DESIGNED FOR A CABINET PLACEMENT ON A TYPE II POLE WITH THE BOTTOM OF THE CABINET THREE (3) FEET FROM GRADE.
5. ALL ITS CABINETS SLIDE OUT TRAYS SHALL BE ORIENTED SUCH THAT THE TECHNICIAN SHALL NEVER HAVE THEIR BACK TO THE DIRECTION OF TRAVEL.
6. ALL ITS CABINETS SHALL NEVER BE MOUNTED ON THE APPROACHING SIDE OF TRAFFIC.
7. IT IS THE INTENT OF THE ENGINEER TO PROVIDE A SAFE WORKING SPACE FOR THE FIELD TECHNICIANS AT ALL ITS CABINET LOCATIONS.
8. PANDUIT DIMENSIONS ARE AS FOLLOWS:
   A. HINGE SIDE OF CABINET; 1.26" WIDE BY 1.59" DEEP
   B. LATCH SIDE OF CABINET; 1.26" WIDE BY 1.12" DEEP
   C. PANDUIT SHALL VERTICALLY COVER RU's AS SHOWN
9. POE SHALL BE GROUNDED TO DIN RAIL.
10. ALL CONDUIT DIMENSIONS SHOWN ARE MINIMUM.
11. CABINET SHALL BE PROVIDED WITH CYBERLOCK ASSEMBLY FOR EACH CABINET DOOR WITH ONE (1)CYBERLOCK KEY FOR EVERY 10 LOCKS. THE CYBERLOCK ASSEMBLIES AND KEYS SHALL BE PROVIDED TO CFX FOR PROGRAMMING AND INSTALLATION AT THEIR DISCRETION.



TYPE 336S
ITS CABINET LAYOUT

NOTE TO EOR:
TYPE 334 ITS CABINET IS THE PREFERRED DEFAULT CABINET UNLESS OTHERWISE STATED IN THE PLANS. CFX APPROVAL IS REQUIRED FOR OTHER ALTERNATIVES.

LEGEND:

- LAYER 2 ETHERNET SWITCH
- PORT SERVER
- CLICK 201
- CLICK 202
- RS 232 DB9 MAINT. PORT
- DCS POWER SUPPLY OR SPDS
- BATTERY VOLTAGE SENSOR
- CITEL MJ8
- POE INJECTOR
- REMOTE POWER MANAGER W/ ENVIRONMENTAL MONITOR

NTS

REVISIONS					
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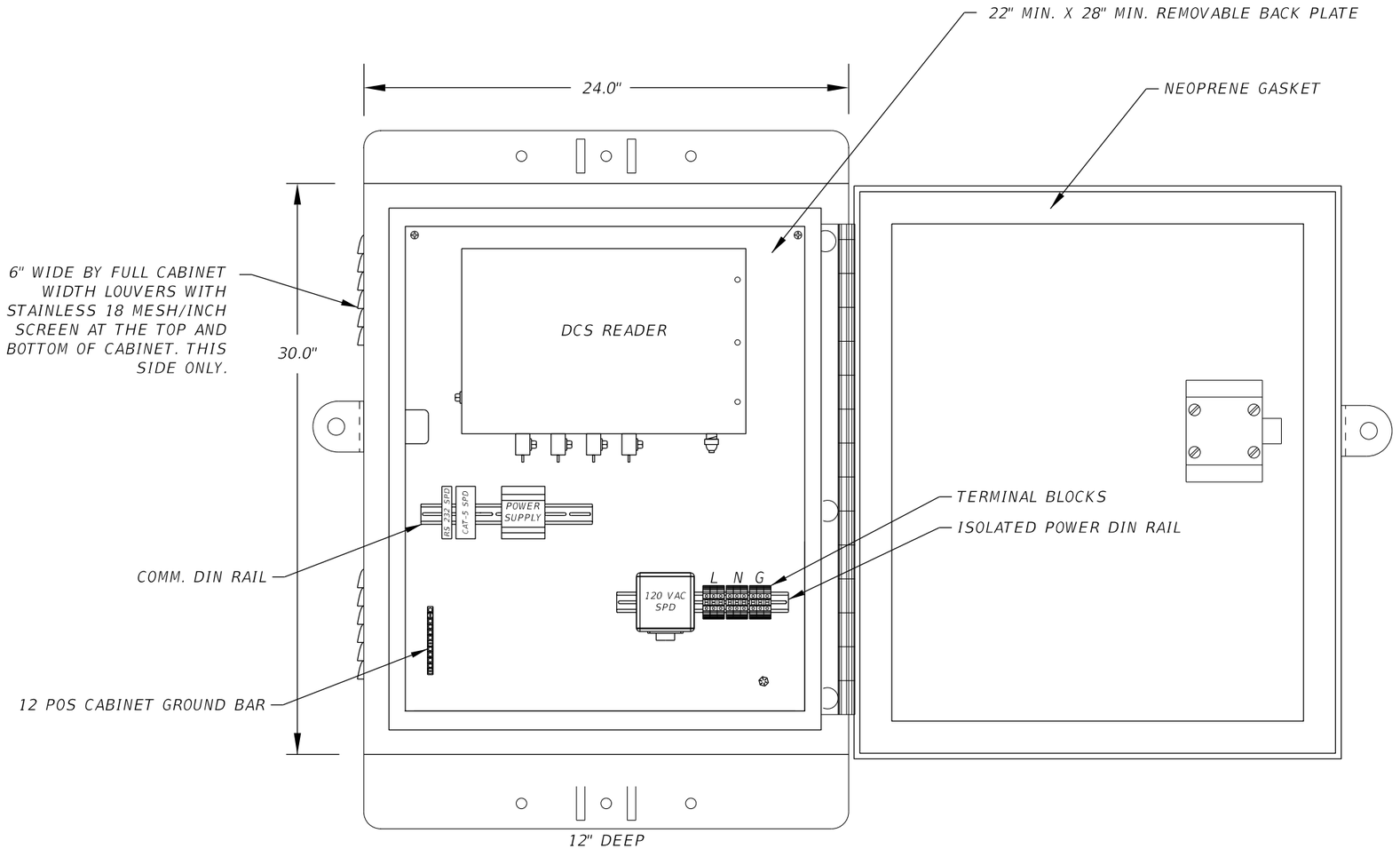
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

TYPE 336S
ITS CABINET LAYOUT DETAIL

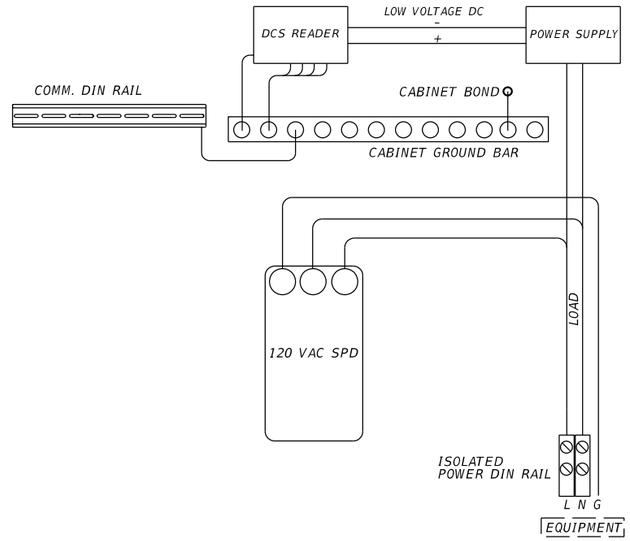
SHEET NO. L-3

VERSION 8

$DATE$ $TIME$ $FILE$



POLE / WALL MOUNTED CABINET (RF READER MODULE)



POWER WIRING DIAGRAM

NOTES:

1. CONTRACTOR TO SUBMIT A CABINET WIRING AND LAYOUT DIAGRAM FOR CFX APPROVAL PRIOR TO PROCUREMENT.
2. SEE WIRING DIAGRAM FOR EQUIPMENT TO BE INSTALLED IN THE CABINET.
3. DCS READER PORT ASSIGNMENT SHALL CONFIGURE LANE 1 TO PORT 1 FOR RIGHT MOST LANE OF TRAVEL.
4. DCS READER CAN ACCOMMODATE UP TO FOUR ANTENNAS.
5. NO NEUTRAL TO GROUND BOND SHALL OCCUR IN THE CABINET.
6. DCS READER CABINET SHALL BE POWERED BY THE RPM. REFER TO WIRING DIAGRAMS.

NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS READER NEMA CABINET LAYOUT DETAIL	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					L-4

VERSION 8

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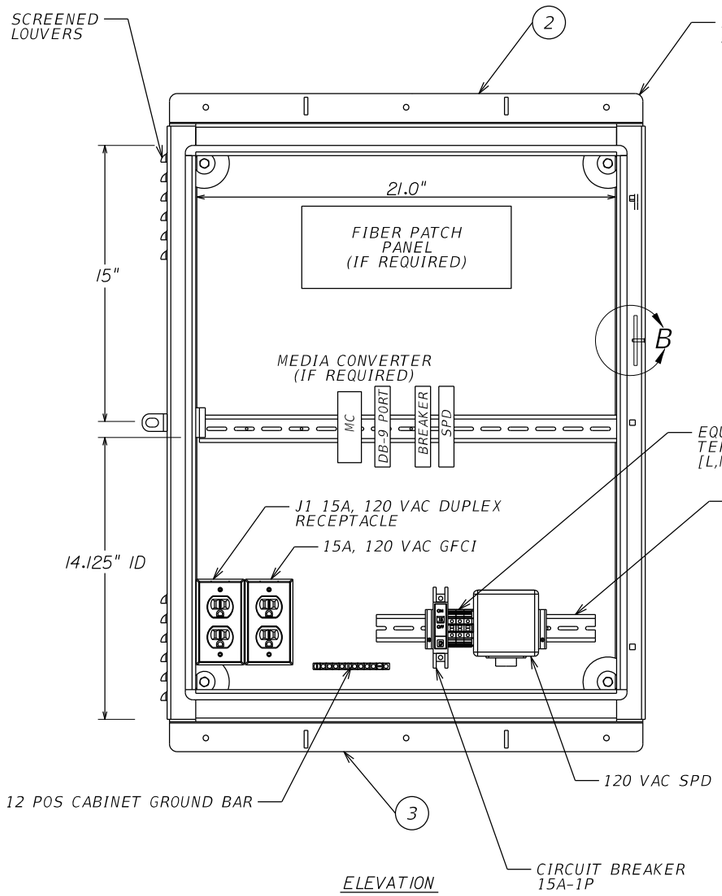
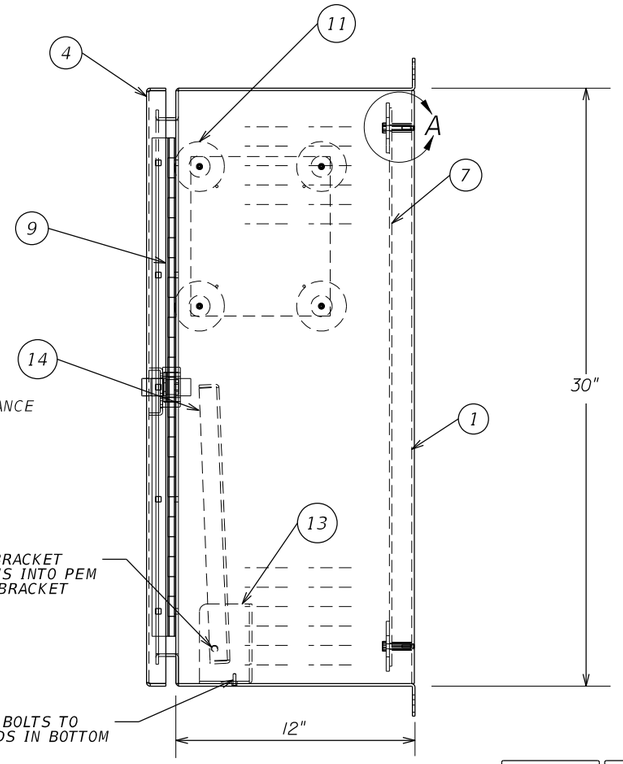
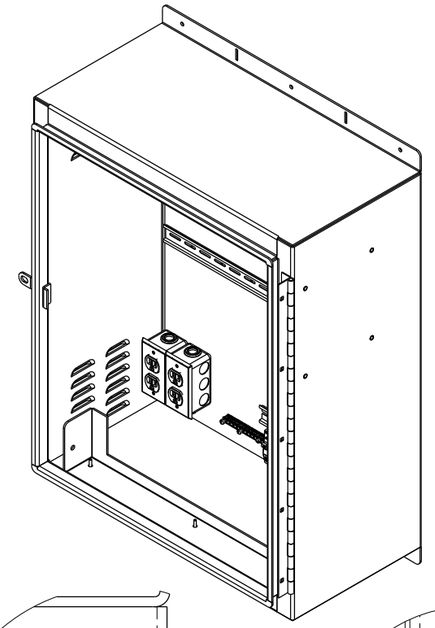
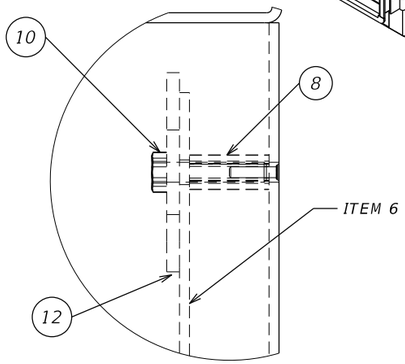


ELEVATION

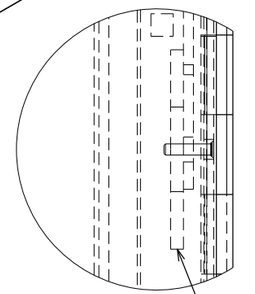


SIDEVIEW

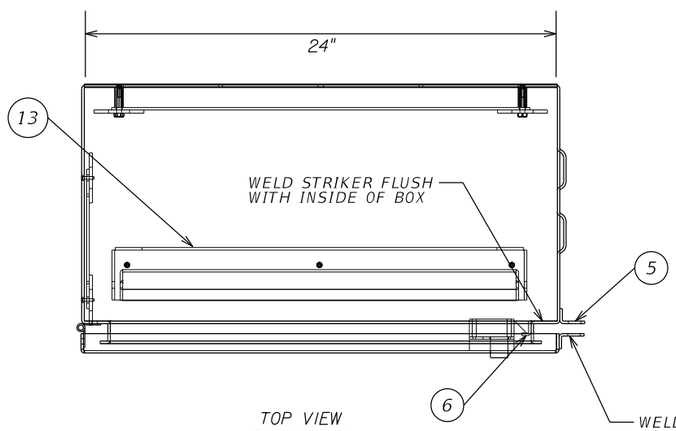




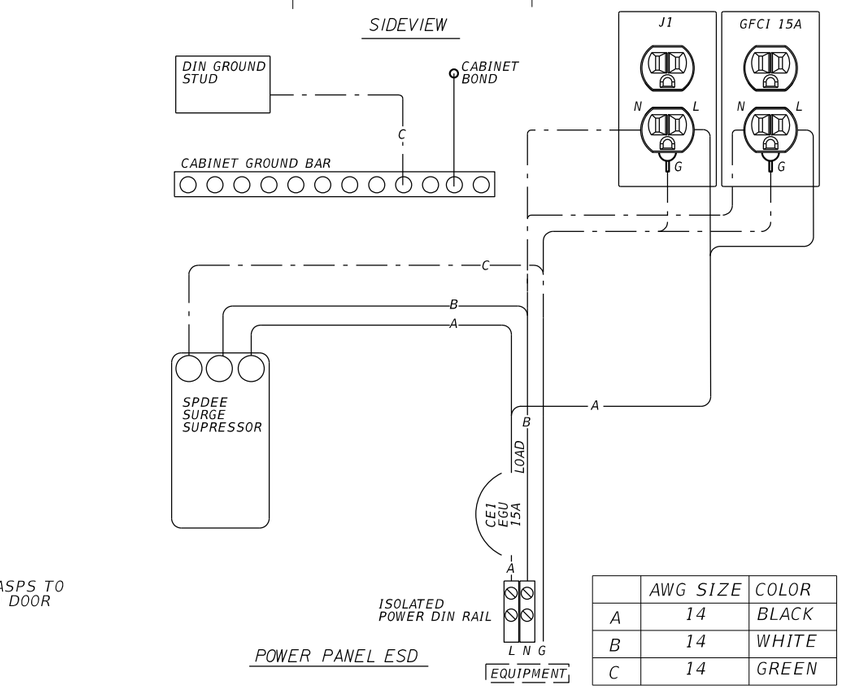
DETAIL A



DETAIL B



TOP VIEW



POWER PANEL ESD

	AWG SIZE	COLOR
A	14	BLACK
B	14	WHITE
C	14	GREEN

ITEM NO.	DESCRIPTION
1	BODY
2	END CAP
3	BOT-END-CAP
4	DOOR-ASSY
5	BDY-HASP
6	STRIKER
7	BACKPLATE-1
8	STANDOFF
9	HINGE-ASSY
10	HEX BOLT
11	BACK PLATE-2
12	FLAT WASHER TYPE B
13	FOLD-DN SHELF BRACKET
14	FOLD DOWN SHELF

NOTES:
1. ADD TERMINAL BLOCK IF REQUIRED.
2. TERMINATE EACH WIRE IN ITS OWN BLOCK.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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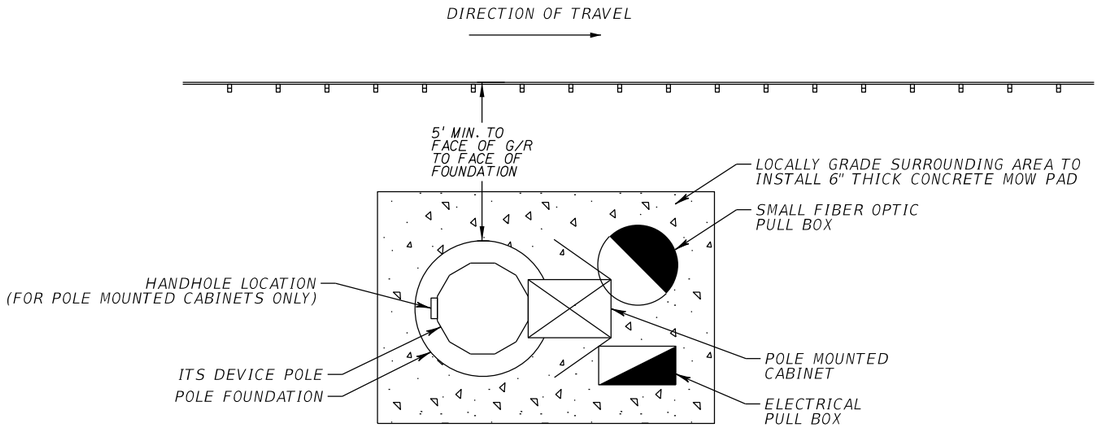
INTERMEDIATE NEMA 3R CABINET

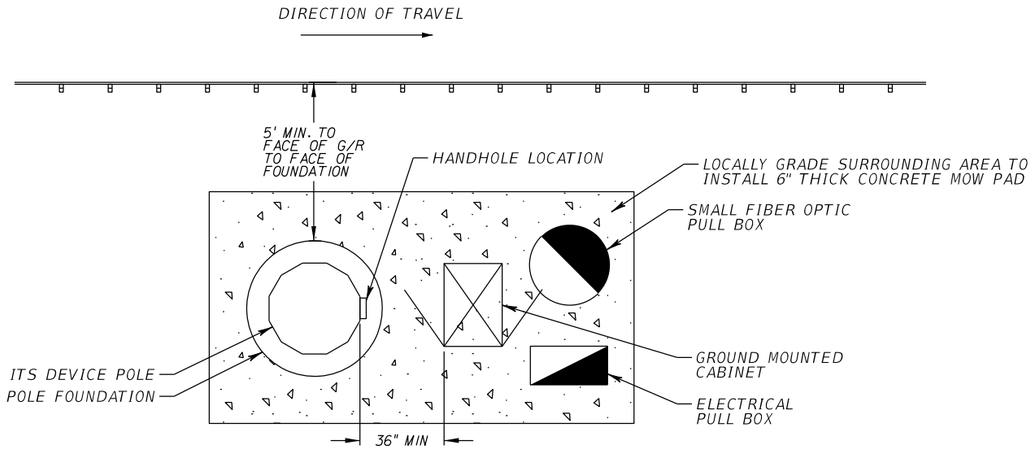
SHEET NO. L-5

VERSION 7

$DATE$ $TIME$ $FILE$

TYPICAL CABINET LOCATION DETAIL FOR SLOPES

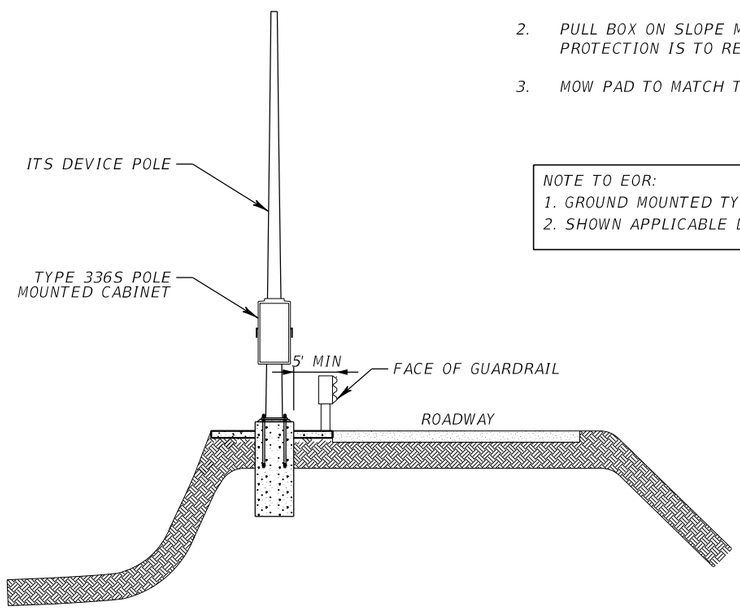


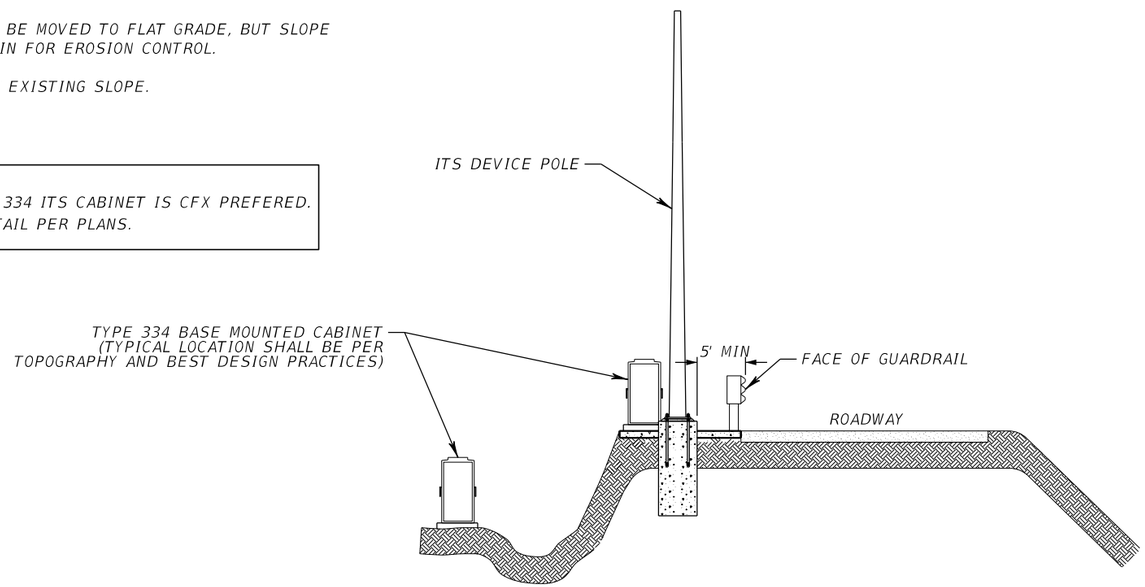


NOTES:

1. NUMBER OF PULL BOXES AND CONFIGURATION TO BE PER PLANS. MINIMUM SPACING IS TO BE MAINTAINED AS SHOWN.
2. PULL BOX ON SLOPE MAY BE MOVED TO FLAT GRADE, BUT SLOPE PROTECTION IS TO REMAIN FOR EROSION CONTROL.
3. MOW PAD TO MATCH THE EXISTING SLOPE.

NOTE TO EOR:
1. GROUND MOUNTED TYPE 334 ITS CABINET IS CFX PREFERED.
2. SHOWN APPLICABLE DETAIL PER PLANS.





NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TYPICAL CABINET LOCATION DETAIL FOR SLOPES	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					L-6

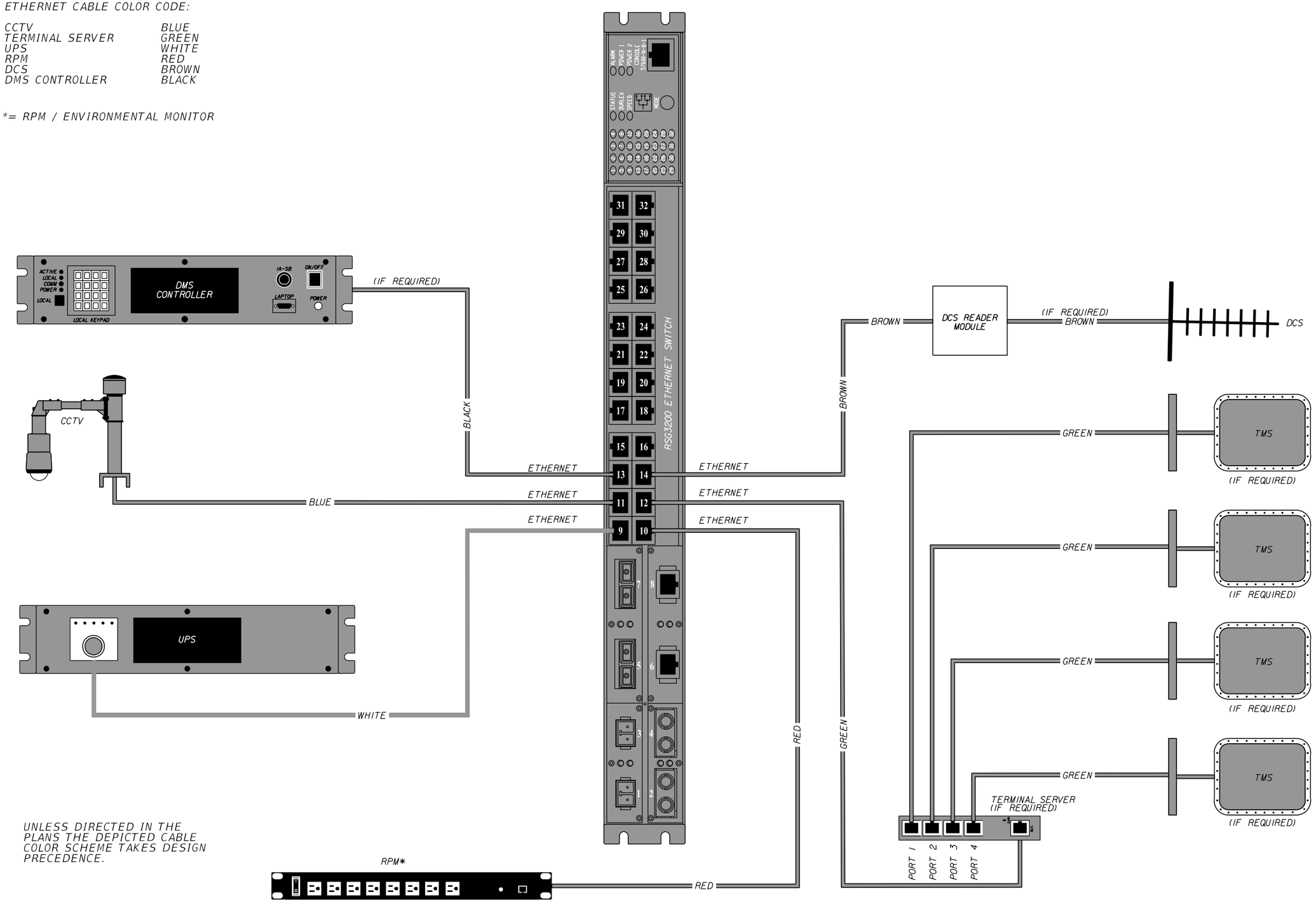
VERSION 7

$DATE$ $TIME$ $FILE$

ETHERNET CABLE COLOR CODE:

CCTV	BLUE
TERMINAL SERVER	GREEN
UPS	WHITE
RPM	RED
DCS	BROWN
DMS CONTROLLER	BLACK

*= RPM / ENVIRONMENTAL MONITOR



UNLESS DIRECTED IN THE PLANS THE DEPICTED CABLE COLOR SCHEME TAKES DESIGN PRECEDENCE.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ETHERNET SWITCH DETAIL

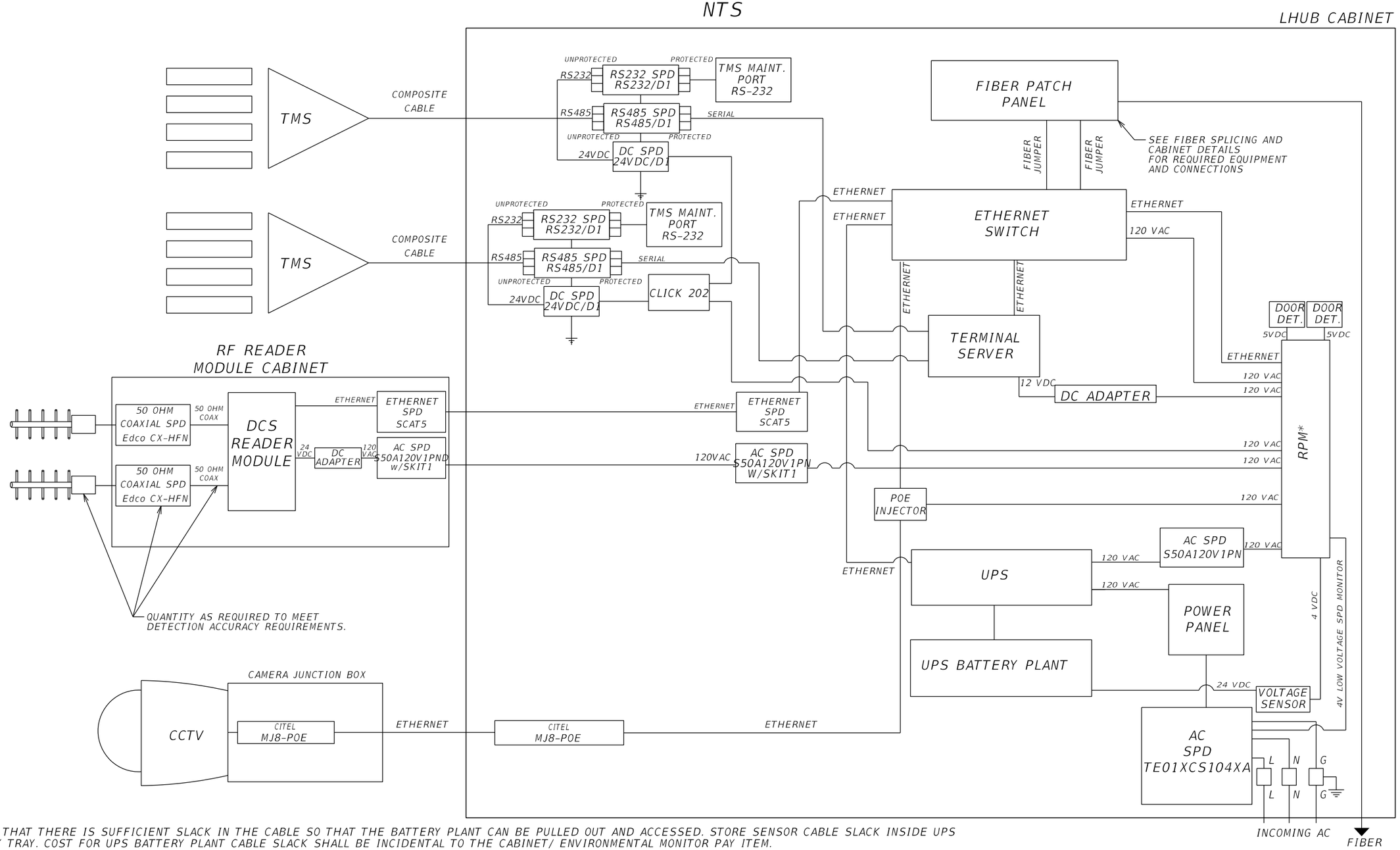
SHEET NO. L-7

VERSION 8

$DATE$ $TIME$ $FILE$

PROPOSED CCTV, DCS & 2 TMS CONNECTION DIAGRAM

NTS



NOTES:

1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. COST FOR UPS BATTERY PLANT CABLE SLACK SHALL BE INCIDENTAL TO THE CABINET/ ENVIRONMENTAL MONITOR PAY ITEM.
2. INSTALL DRY CONTACT AND WIRING CAPABLE OF REMOTE SNMP COMMUNICATIONS AS DIRECTED IN PLANS.

* = REMOTE POWER MANAGER W/ ENVIRONMENTAL MONITOR

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY
						$DATE$ $TIME$ $FILE$		

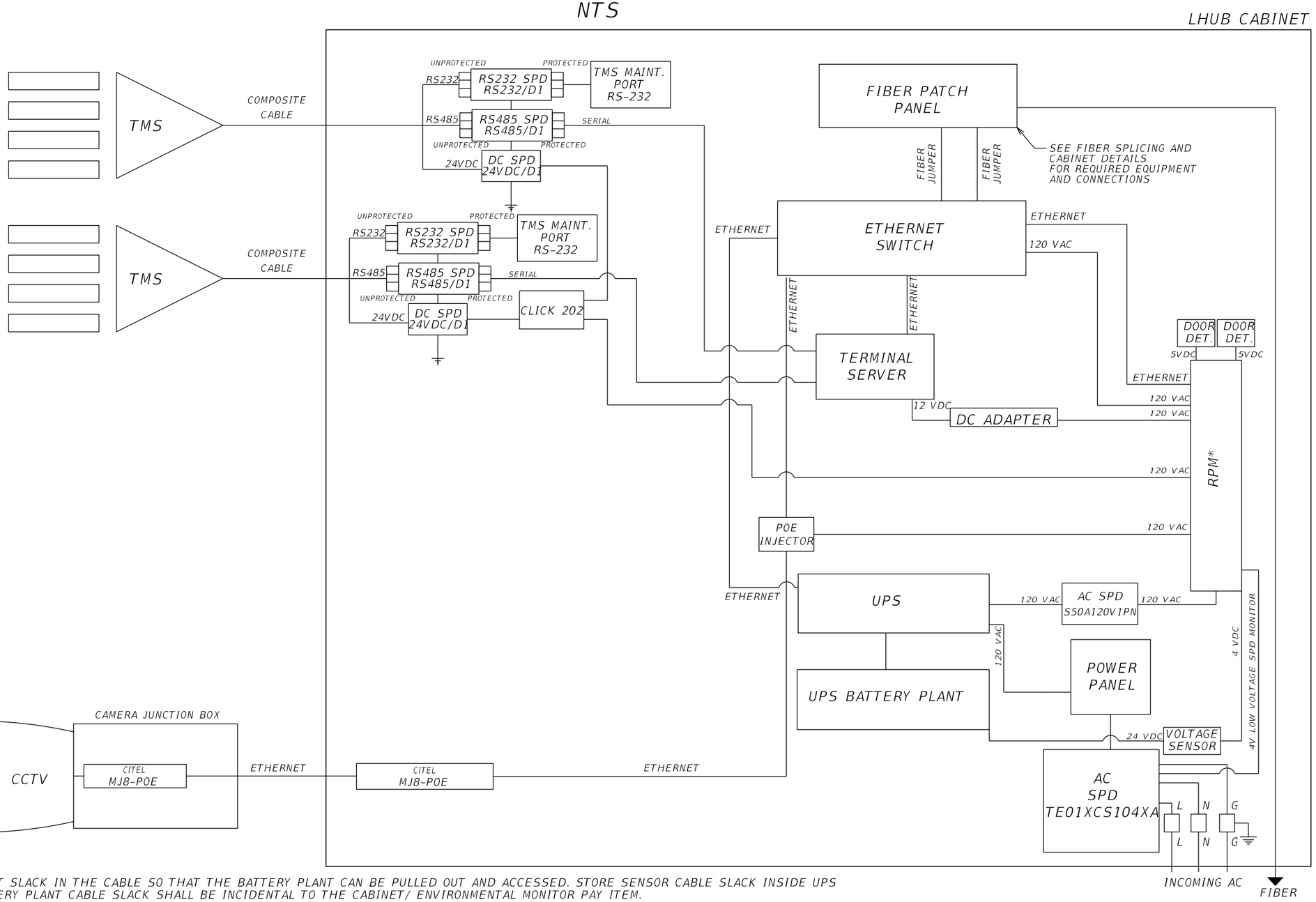
TYPICAL WIRING DIAGRAMS (1 OF 6)

SHEET NO. L-8

VERSION 8

PROPOSED CCTV & 2 TMS CONNECTION DIAGRAM

NTS



NOTES:

1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. COST FOR UPS BATTERY PLANT CABLE SLACK SHALL BE INCIDENTAL TO THE CABINET/ ENVIRONMENTAL MONITOR PAY ITEM.
2. INSTALL DRY CONTACT AND WIRING CAPABLE OF REMOTE SNMP COMMUNICATIONS AS DIRECTED IN PLANS.

* = REMOTE POWER MANAGER W/ ENVIRONMENTAL MONITOR

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY

TYPICAL WIRING DIAGRAMS (2 OF 6)

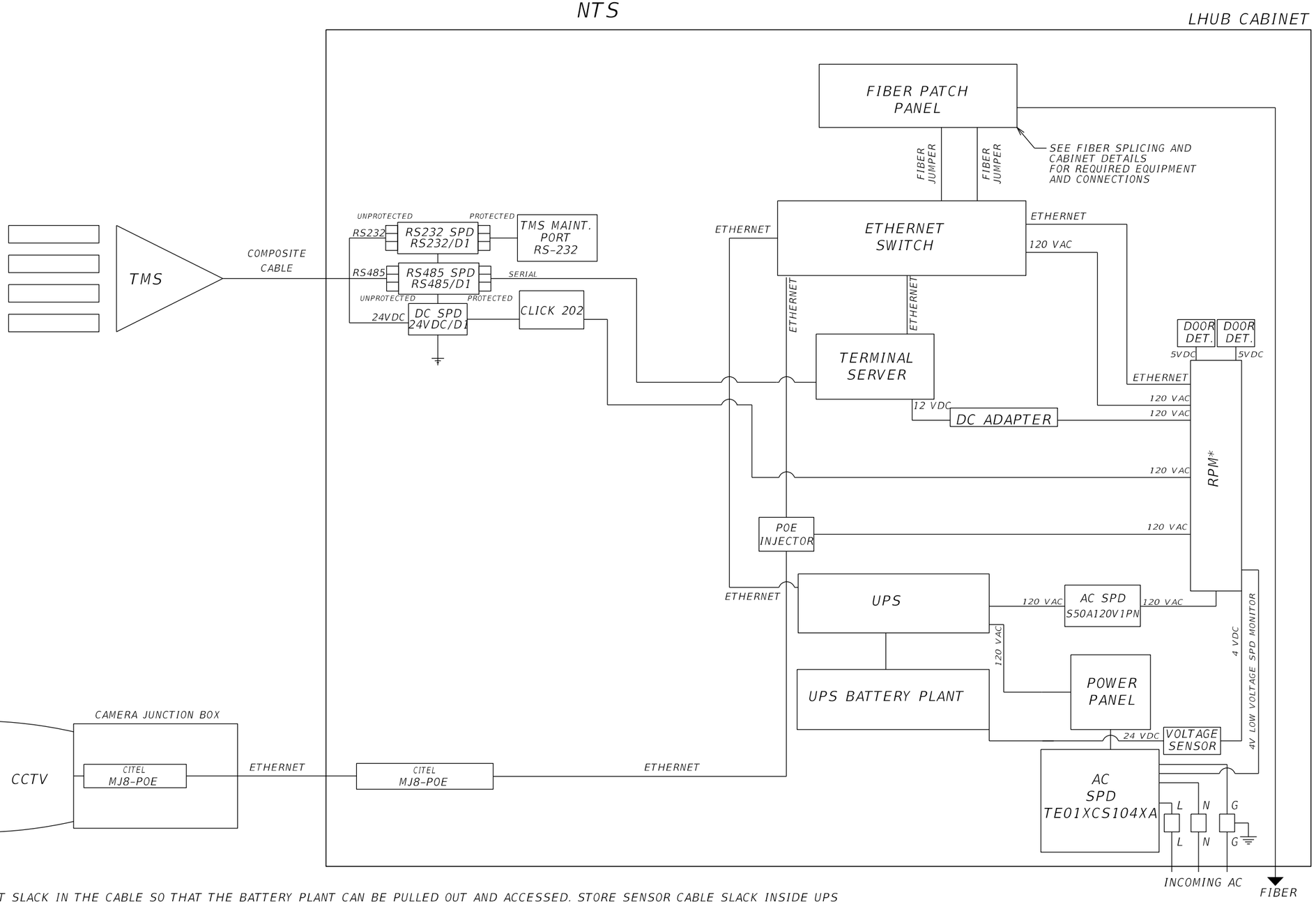
SHEET NO. L-9

VERSION 8

$DATE$ $TIME$ $FILE$

PROPOSED CCTV & TMS CONNECTION DIAGRAM

NTS



NOTES:

1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. COST FOR UPS BATTERY PLANT CABLE SLACK SHALL BE INCIDENTAL TO THE CABINET/ ENVIRONMENTAL MONITOR PAY ITEM.
2. INSTALL DRY CONTACT AND WIRING CAPABLE OF REMOTE SNMP COMMUNICATIONS AS DIRECTED IN PLANS.

* = REMOTE POWER MANAGER W/ ENVIRONMENTAL MONITOR

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR INFORMATIONAL PURPOSES ONLY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

TYPICAL WIRING DIAGRAMS (3 OF 6)

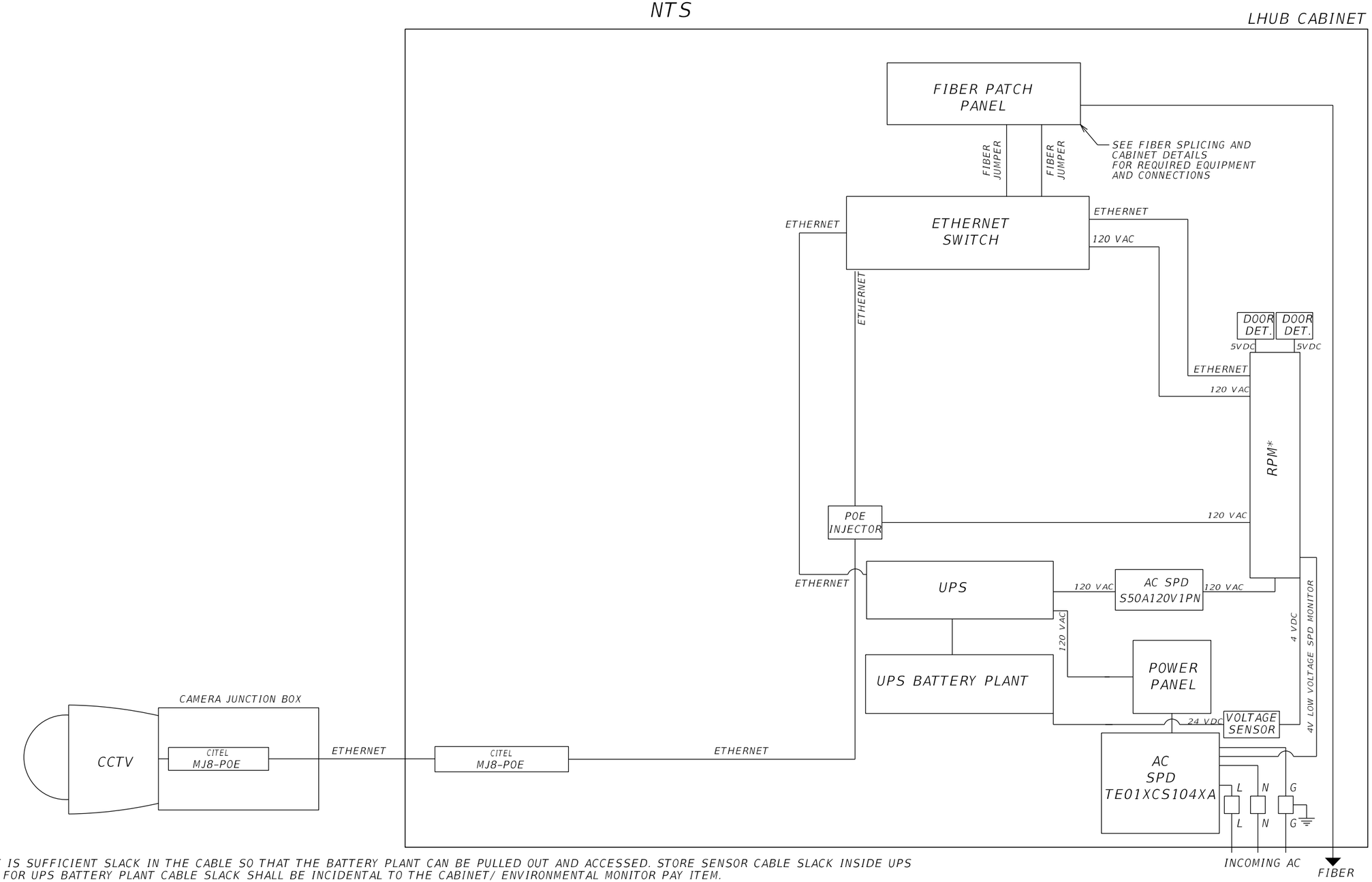
SHEET NO. L-10

VERSION 8

$DATE$ $TIME$ $FILE$

PROPOSED CCTV CONNECTION DIAGRAM

NTS



NOTES:

1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. COST FOR UPS BATTERY PLANT CABLE SLACK SHALL BE INCIDENTAL TO THE CABINET/ ENVIRONMENTAL MONITOR PAY ITEM.

2. INSTALL DRY CONTACT AND WIRING CAPABLE OF REMOTE SNMP COMMUNICATIONS AS DIRECTED IN PLANS.

* = REMOTE POWER MANAGER W/ ENVIRONMENTAL MONITOR

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

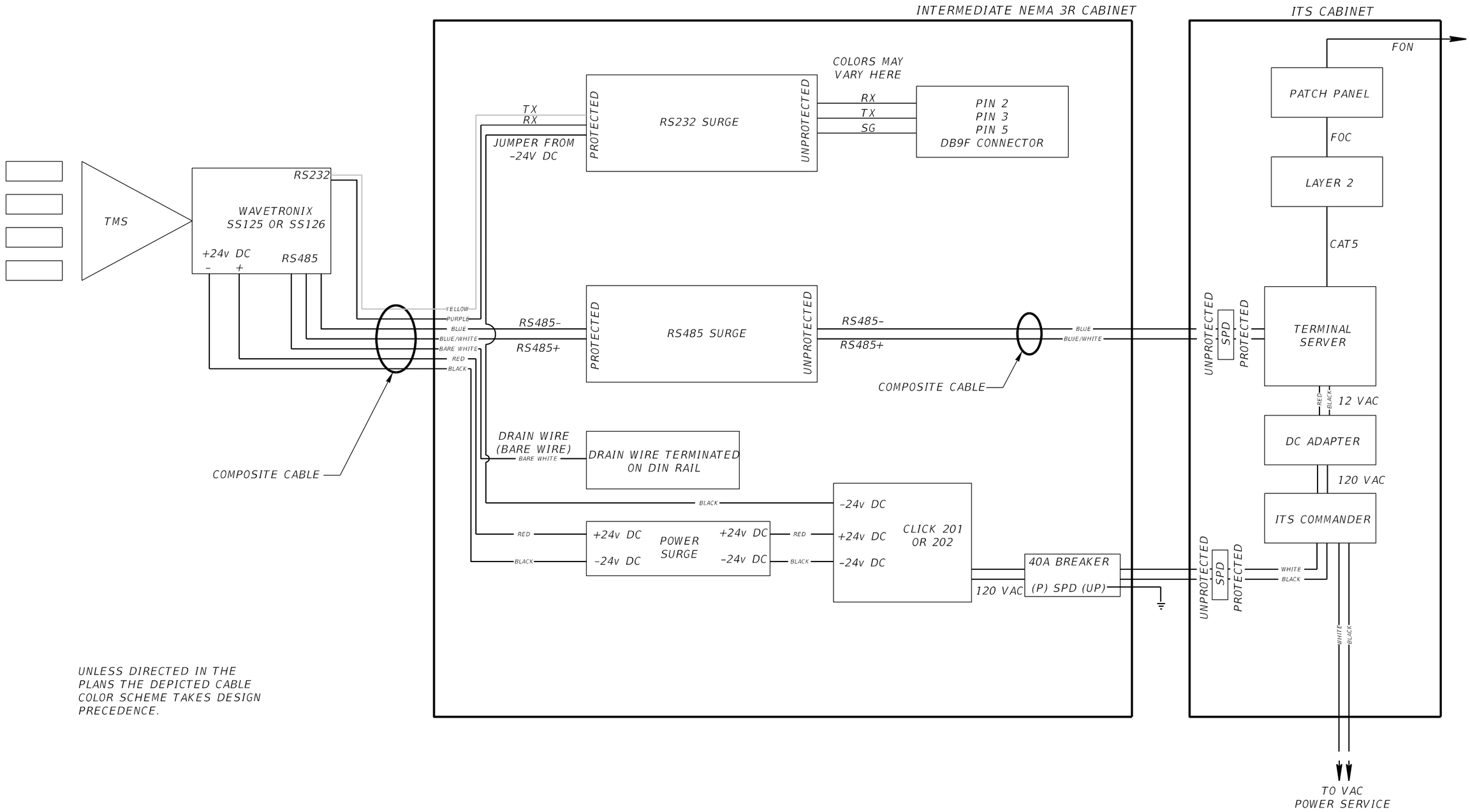
TYPICAL WIRING DIAGRAMS (4 OF 6)

SHEET NO. L-11

VERSION 8

$DATE$ $TIME$ $FILE$

USING WAVETRONIX CABLE
NTS



UNLESS DIRECTED IN THE PLANS THE DEPICTED CABLE COLOR SCHEME TAKES DESIGN PRECEDENCE.

REVISIONS					
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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

TYPICAL WIRING DIAGRAM
WAVETRONIX
(5 OF 6)

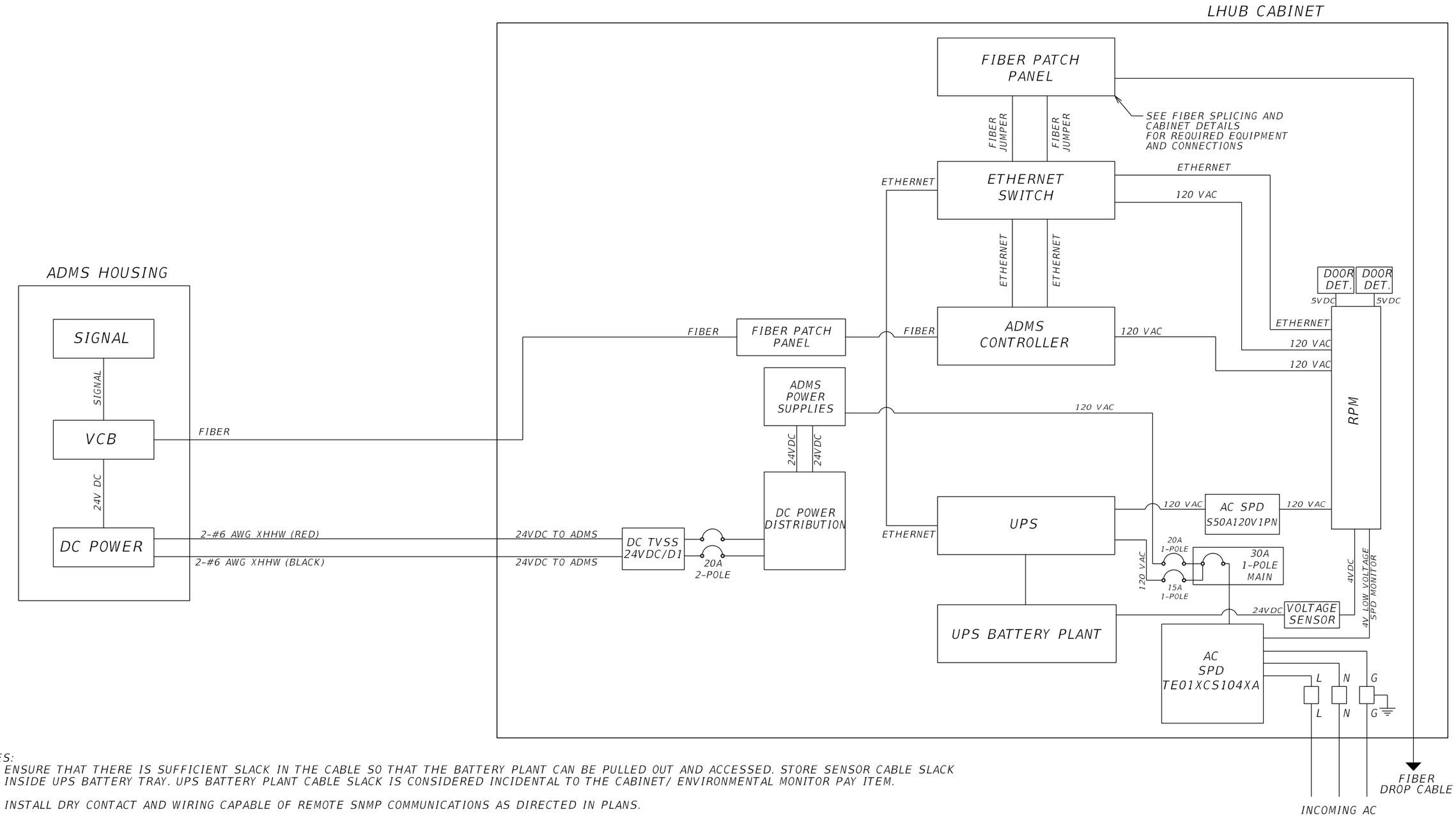
SHEET NO.

L-12

VERSION 7

$DATE$ $TIME$ $FILE$

PROPOSED 1-LINE ADMS CONNECTION DIAGRAM



NOTES:

1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. UPS BATTERY PLANT CABLE SLACK IS CONSIDERED INCIDENTAL TO THE CABINET/ ENVIRONMENTAL MONITOR PAY ITEM.
2. INSTALL DRY CONTACT AND WIRING CAPABLE OF REMOTE SNMP COMMUNICATIONS AS DIRECTED IN PLANS.
3. GROUND SHIELDED CABLE PER MANUFACTURER'S REQUIREMENTS.

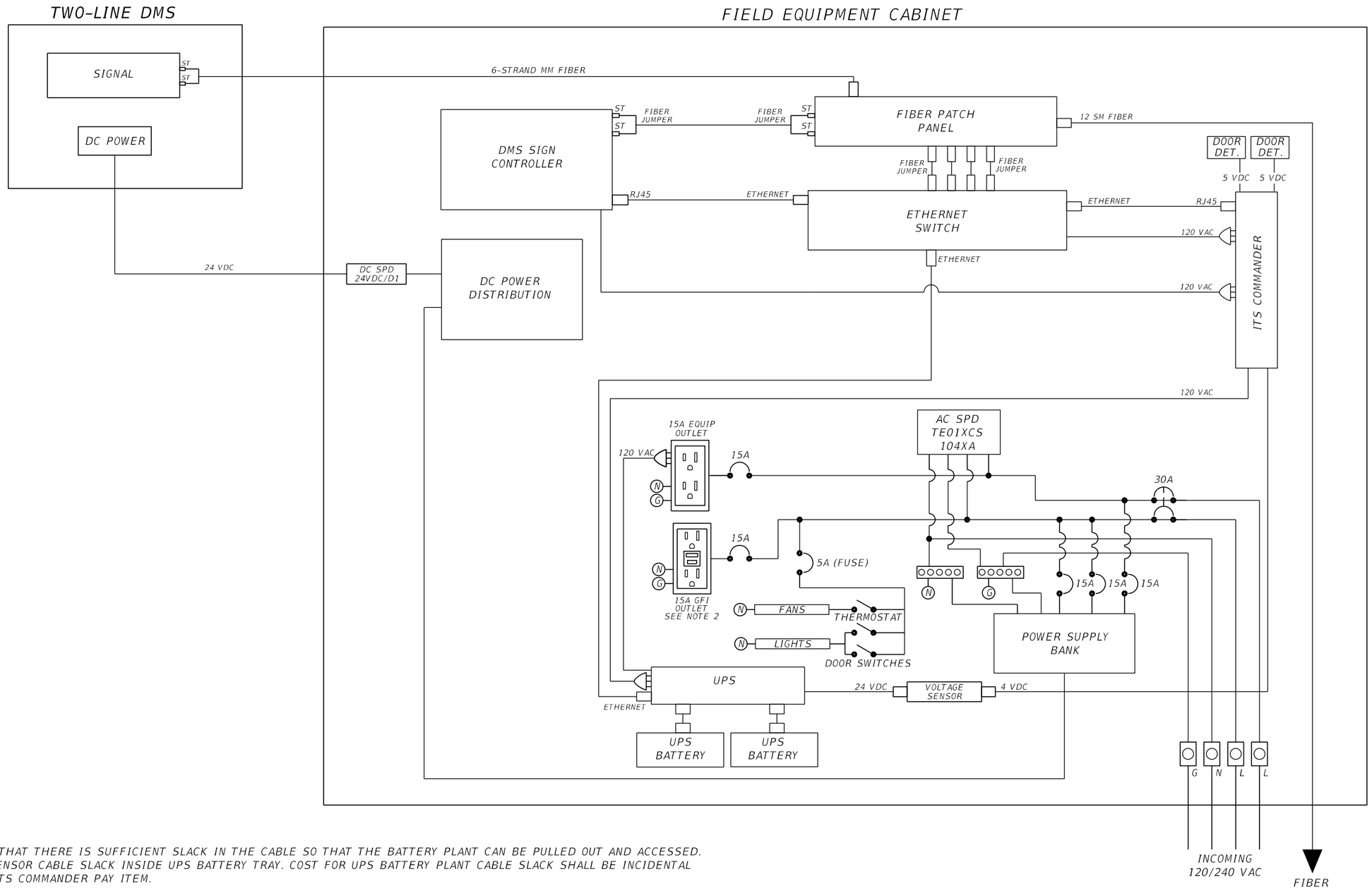
NTS

REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TYPICAL WIRING DIAGRAM 1 - LINE ADMS (6 OF 6)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION					L-13

VERSION 8

$DATE$ $TIME$ $FILE$

DUAL LINE DMS BLOCK DIAGRAM



NOTES:

1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. COST FOR UPS BATTERY PLANT CABLE SLACK SHALL BE INCIDENTAL TO THE ITS COMMANDER PAY ITEM.

2. ADD 'MAX 1000W' LABEL TO OUTLET.

REVISIONS					
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DUAL LINE DMS BLOCK DIAGRAM

SHEET NO. L-14

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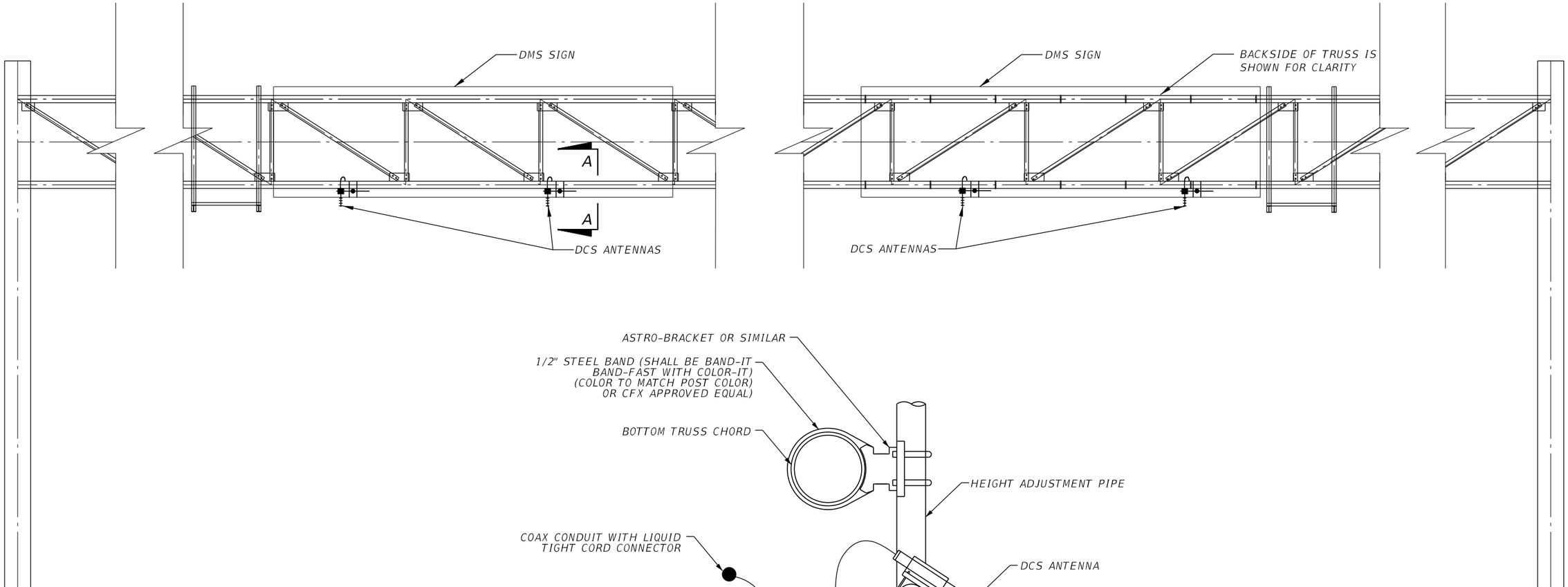
$DATE$ $TIME$ $FILE$

FULL SPAN BOX TRUSS DMS SIGN STRUCTURE DETAIL



SECTION A-A

NOTES:

1. THE DCS SHALL BE MOUNTED OVER LANE STRIPES PER DCS COVERAGE DETAILS.
2. CONTRACTOR SHALL ACHIEVE LANE ACCURACY REQUIREMENTS DEFINED IN SPECIFICATION 663.

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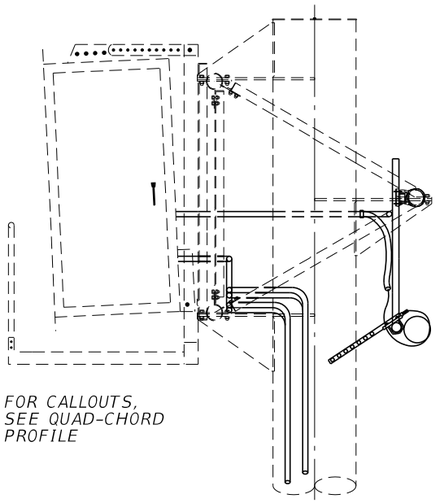
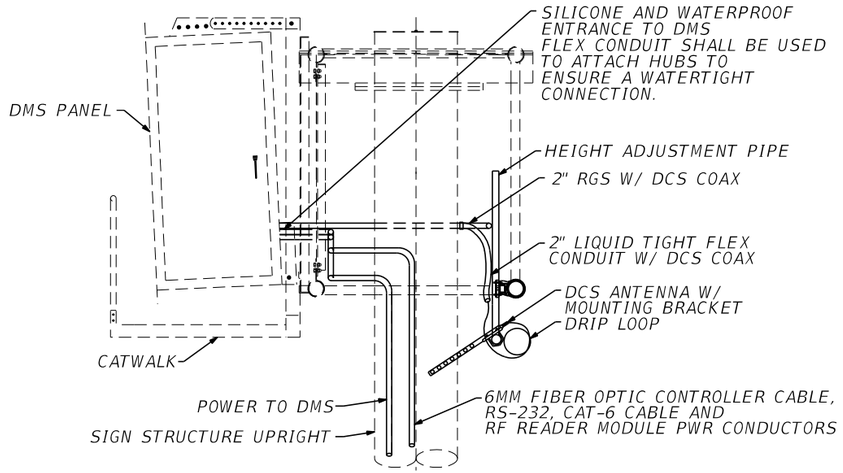


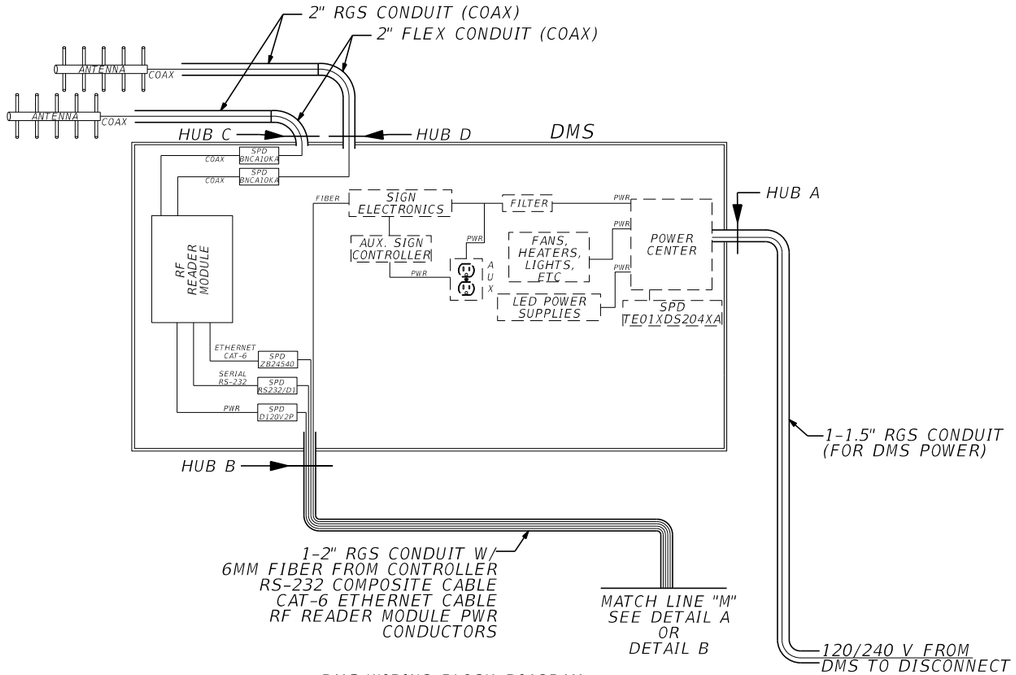
STRUCTURE POLE - TRI CHORD MOUNTED DMS (PROFILE)

SEE SHEET K-1 FOR ADDITIONAL DCM MOUNTING DETAILS

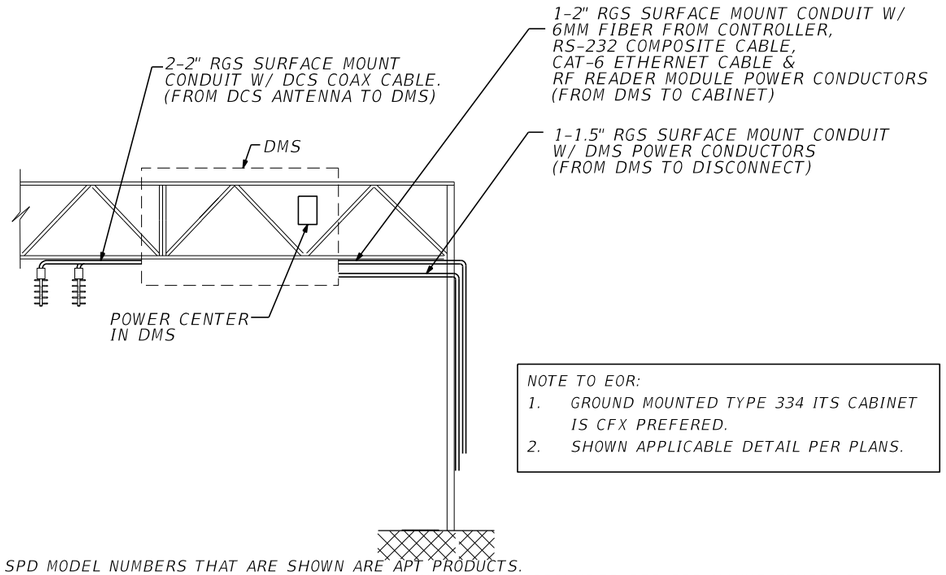


STRUCTURE POLE - QUAD CHORD MOUNTED DMS (PROFILE)

SEE SHEET K-1 FOR ADDITIONAL DCM MOUNTING DETAILS

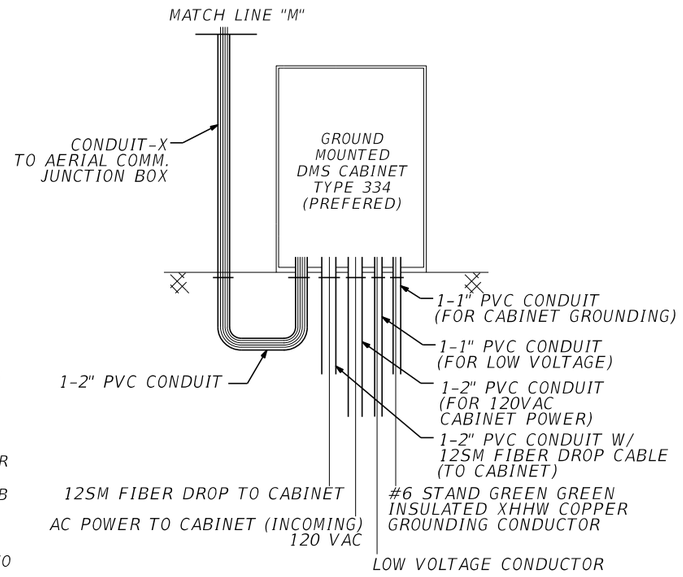


DMS WIRING BLOCK DIAGRAM

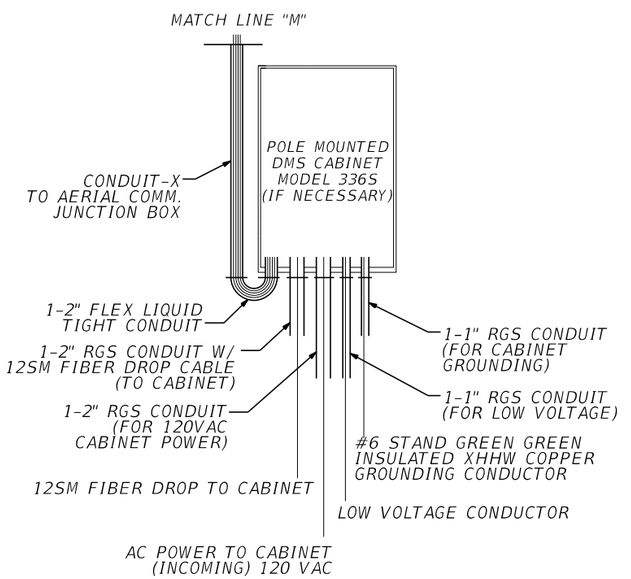


NOTE TO EOR:
1. GROUND MOUNTED TYPE 334 ITS CABINET IS CFX PREFERED.
2. SHOWN APPLICABLE DETAIL PER PLANS.

NOTES:
1. THE SPD MODEL NUMBERS THAT ARE SHOWN ARE APT PRODUCTS.
2. ALL SPD ARE TO BE MOUNTED ON A DIN RAIL. DIN RAIL SHALL BE GROUNDED PER SPD MANUFACTURER'S RECOMMENDATIONS.
3. PLAN REQUIREMENTS WILL VARY PER INSTALLATION. THE CONTRACTOR IS TO UTILIZE THIS DETAIL FOR CONSTRUCTION REQUIREMENTS BUT MUST BID EACH INSTALLATION AS REQUIRED BY THE PLAN SHEETS. NO ADDITIONAL COMPENSATION WILL BE GIVEN.
4. THE CONTRACTOR SHALL SUBMIT A DETAILED WIRE-BY-WIRE DIAGRAM FOR REVIEW AND APPROVAL BY CFX PRIOR TO INSTALLATION.
5. CONTRACTOR SHALL FURNISH RF READER PER SPECIFICATION 663.
6. CONTRACTOR TO ATTACH THE RS-232 MAINTENANCE CABLE TO THE DB-9 RS-232 PORT ON THE RF READER MODULE.
7. CONDUIT SHALL BE SECURED TO SIGN STRUCTURE WITH "MINERALLAC CONDUIT CLAMPS AT 5' CENTERS (CATALOG NO. 2SB (1"), 4SB (2"), 5SB (2") OR CFX APPROVED EQUAL). USE SILICONE LOCK TIGHT AFTER DRILLING HOLE.
8. POLE MOUNTED CABINET GROUNDING SHALL BE PER DCS SIGN STRUCTURE MOUNTING DETAIL AND OTHER APPLICABLE GROUNDING DETAILS.
9. LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL BE USED BETWEEN RGS CONDUIT TO JUNCTION BOX AND RGS CONDUIT TO DMS. ENTRANCE TO CONDUIT TO BE SEALED WITH A SIZED LIQUID TIGHT CORD CONNECTOR.
10. ANY POLE DRILLING FOR CABLE ENTRY SHALL BE SEALED USING RUBBER GROMMET. RE-GALVANIZE AND PAINT AFTER DRILLING.



DETAIL-A



DETAIL-B

REVISIONS					
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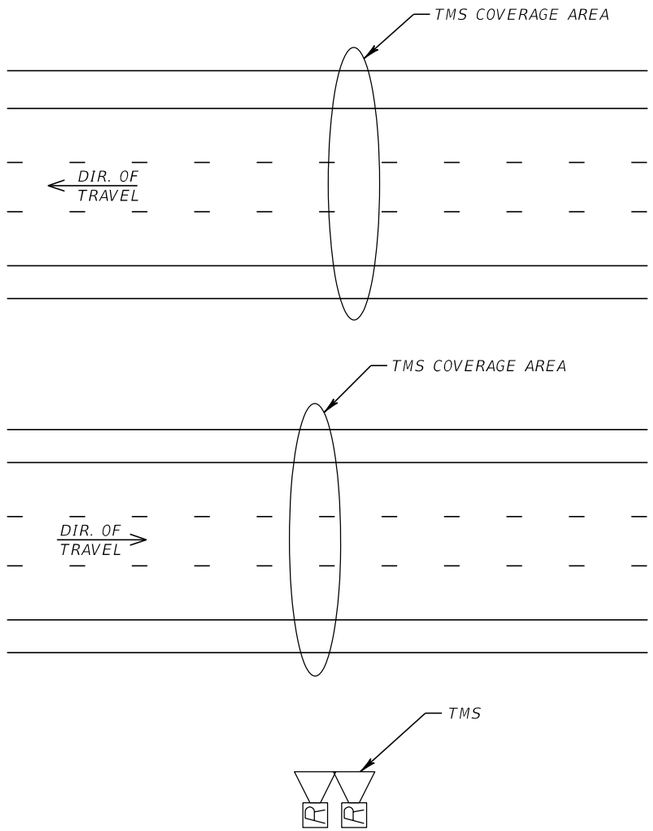
DCS AND THREE LINE DMS DEVICE CO-LOCATION DETAIL

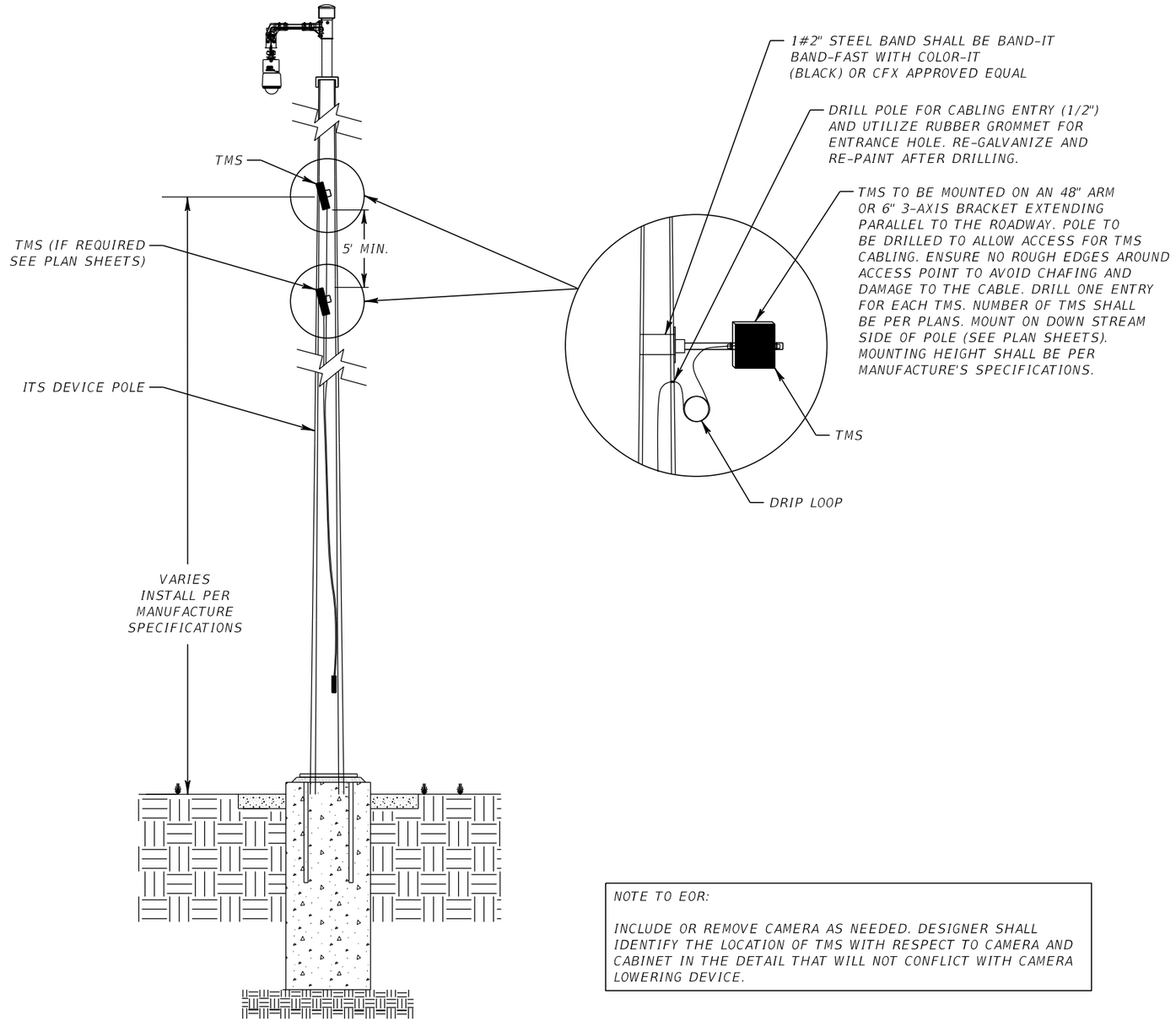
SHEET NO. M-2

VERSION 7

$DATE$ $TIME$ $FILE$

TYPICAL 4 & 6 LANE DIVIDED HIGHWAY





TYPICAL TMS INSTALLATION DETAILS SIDE VIEW

NOTE TO EOR:

INCLUDE OR REMOVE CAMERA AS NEEDED. DESIGNER SHALL IDENTIFY THE LOCATION OF TMS WITH RESPECT TO CAMERA AND CABINET IN THE DETAIL THAT WILL NOT CONFLICT WITH CAMERA LOWERING DEVICE.

NOTES:

1. ONLY MANUFACTURER CABLE SHALL BE USED FROM TMS DEVICE CABINET TO SURGE PROTECTORS IN CABINET.
2. POLE MOUNTED CABINET TO BE ORIENTED PER THE PLAN SHEETS.
3. SEE SHEETS J-SHEETS & L-SHEETS FOR ADDITIONAL CABINET, CONDUITS AND GROUNDING DETAILS

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TRAFFIC MONITORING STATIONS INSTALLATION DETAILS	SHEET NO.
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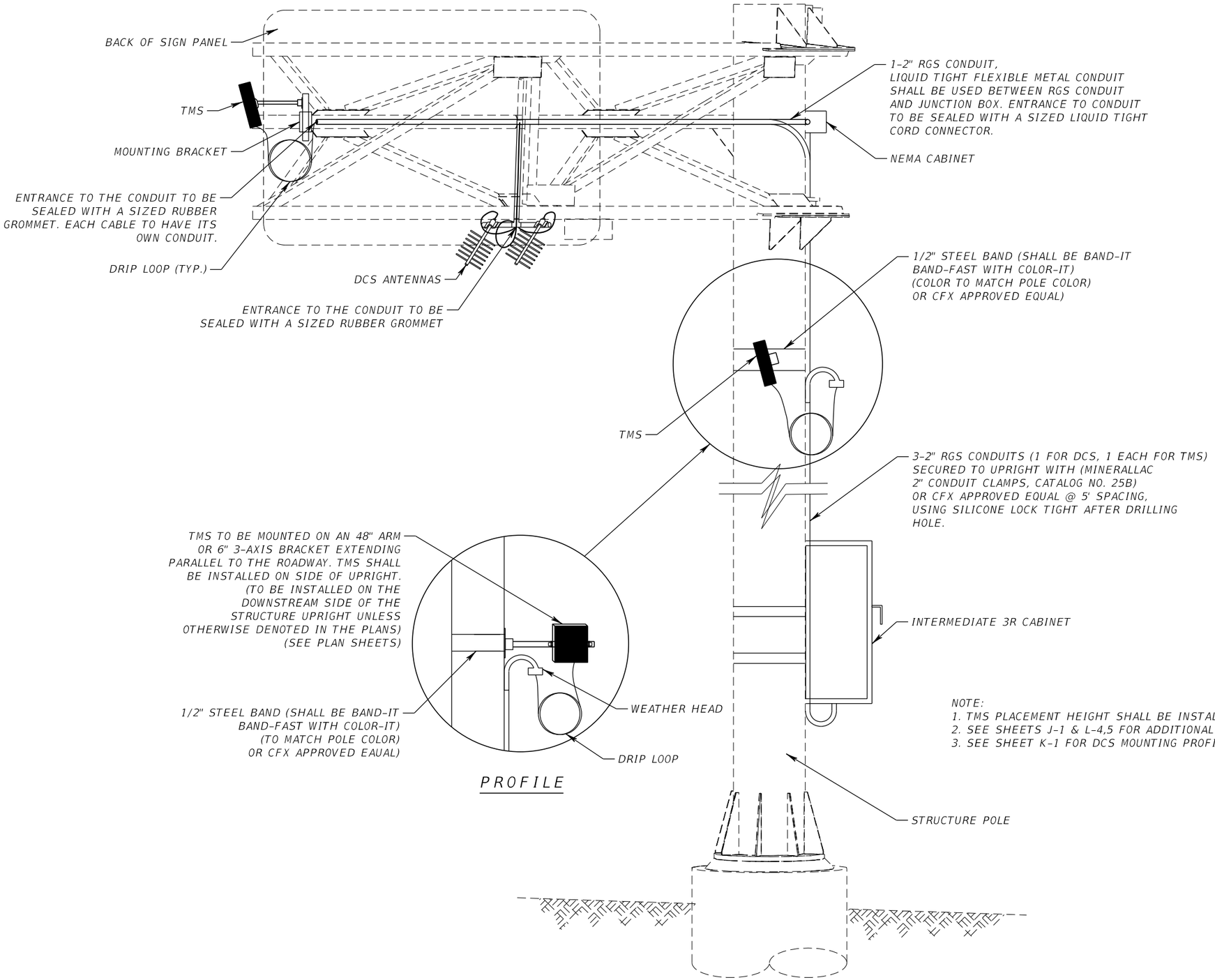

NOTE:
1. TMS PLACEMENT HEIGHT SHALL BE INSTALLED PER MANUFACTURE SPECIFICATIONS.
2. SEE SHEETS J-1 & L-4,5 FOR ADDITIONAL CABINET, CONDUIT AND GROUNDING DETAILS.
3. SEE SHEET K-1 FOR DCS MOUNTING PROFILE.

TYPICAL SIGN STRUCTURES WITH TMS & DCS INSTALLATION DETAILS

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TRAFFIC MONITORING STATIONS, DCS AND SIGN CO-LOCATION DETAILS	SHEET NO.
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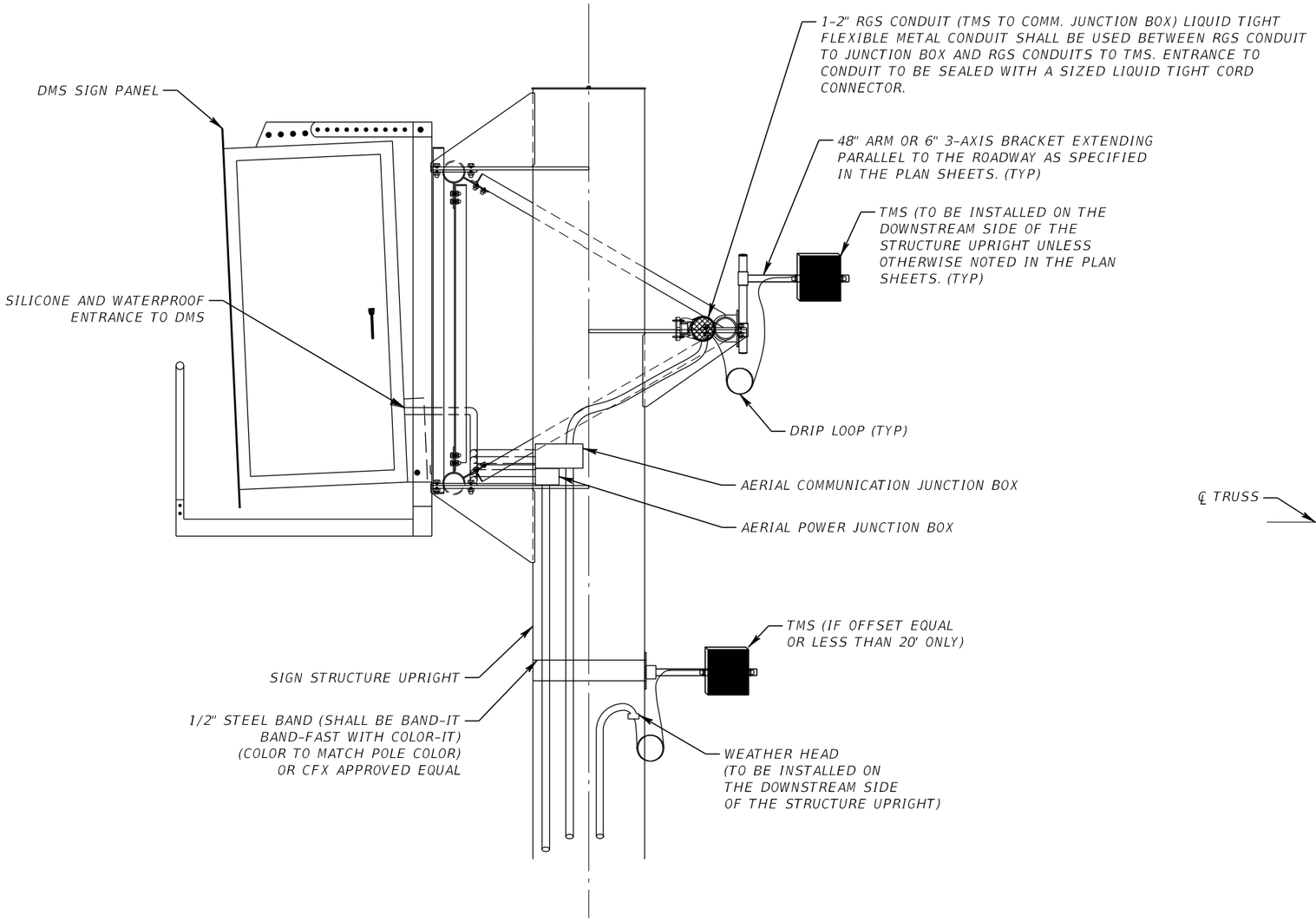

NOTES:
1. SENSOR SHOWN MOUNTED TO BACK CORD.
2. SEE SHEET M-2 FOR DMS WIRING DIAGRAM.

SIGN STRUCTURE MOUNTED TMS (PROFILE)

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REVISIONS						FOR INFORMATIONAL PURPOSES ONLY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TRAFFIC MONITORING STATIONS SIGN STRUCTURE MOUNTING DETAILS	SHEET NO.
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