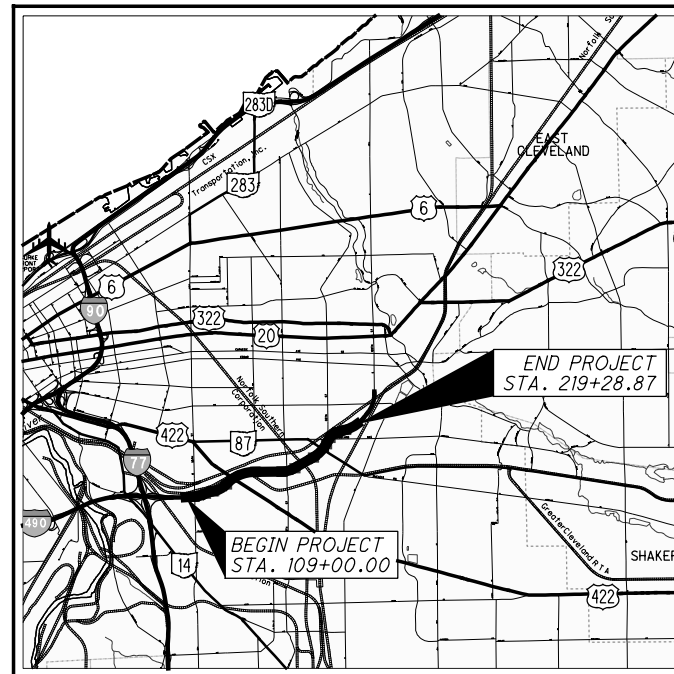


STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-IR490/ SR010-
2.09 / 19.28
CITY OF CLEVELAND
CUYAHOGA COUNTY



LOCATION MAP

LATITUDE: 41°29'08" LONGITUDE: 81°37'22"



PORTION TO BE IMPROVED	_____
INTERSTATE HIGHWAY	_____
FEDERAL ROUTES	_____
STATE ROUTES	_____
COUNTY & TOWNSHIP ROADS	_____
OTHER ROADS	_____

DESIGN DESIGNATION

CURRENT ADT (2017)	35,820
DESIGN YEAR ADT (2020)	48,230
DESIGN HOURLY VOLUME (2020)	3,580
DIRECTIONAL DISTRIBUTION	58%
TRUCKS (24 HOUR B&C)	6%
DESIGN SPEED	40 MPH
LEGAL SPEED	35 MPH
DESIGN FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE

<h2 style="text-align: center;">UNDERGROUND UTILITIES</h2> <p style="text-align: center;">CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.</p>	
 <p>OHIO Utilities Protection SERVICE</p> <p>(Non-members must be called directly)</p>	<p><i>Call Before You Dig</i></p> <p>1-800-362-2764</p>
<p style="text-align: center;">OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE</p> <p style="text-align: center;">1-800-925-0988</p>	



SIGNED: Dale P. Turkovich
DATE: 8/8/2019

INDEX OF SHEETS:

SEE SHEETS 2 - 3

BU-11
CPP DUCT BANK

PLAN PREPARED BY:

Michael Baker
INTERNATIONAL

1111 SUPERIOR AVENUE EAST, SUITE 2300
CLEVELAND, OHIO 44114



3100 E 45TH STREET, SUITE 306
CLEVELAND, OH 44127

[illegible]

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF THE CONSTRUCTION OF 2.09 MILES OF A NEW TWO- TO THREE-LANE BOULEVARD FROM E. 55TH ST. TO E. 93RD ST. WORK INCLUDES PAVEMENT, RAILROAD, STRUCTURES, DRAINAGE, WATERWORK, LIGHTING, POWER DISTRIBUTION, TRAFFIC CONTROL, LANDSCAPING, AND ADJUSTMENT OF EXISTING UTILITIES.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: 87.2 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: 87.2 ACRES
(AREA SERVICED BY COMBINED SEWER)

2016 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

FEDERAL PROJECT NO.
E140 (249)

PID NO.
96833

CONSTRUCTION PROJECT NO.
17-3000

RAILROAD INVOLVEMENT
NORFOLK SOUTHERN
GCRTA

**-IR490/SR010-
2.09/19.28**

	1
	159

RECORD PLANS

RECORD PLANS

RECORD PLANS

ISSUE NO.	RECORD DATE	PAGE NO.	SHEET TITLE
0	2019-08-08	1	TITLE SHEET
8	2024-09-10	2	INDEX OF SHEETS (1 OF 2)
2	2021-05-18	3	INDEX OF SHEETS (2 OF 2)
0	2019-08-08	4	CLEVELAND PUBLIC POWER NOTES 1 OF 9
0	2019-08-08	5	CLEVELAND PUBLIC POWER NOTES 2 OF 9
0	2019-08-08	6	CLEVELAND PUBLIC POWER NOTES 3 OF 9
0	2019-08-08	7	CLEVELAND PUBLIC POWER NOTES 4 OF 9
0	2019-08-08	8	CLEVELAND PUBLIC POWER NOTES 5 OF 9
0	2019-08-08	9	CLEVELAND PUBLIC POWER NOTES 6 OF 9
0	2019-08-08	10	CLEVELAND PUBLIC POWER NOTES 7 OF 9
0	2019-08-08	11	CLEVELAND PUBLIC POWER NOTES 8 OF 9
0	2019-08-08	12	CLEVELAND PUBLIC POWER NOTES 9 OF 9
1	2021-05-18	13	CPP LEGEND 1 OF 4
0	2019-08-08	14	CPP LEGEND 2 OF 4
1	2020-01-16	15	CPP LEGEND 3 OF 4
2	2019-12-04	16	CPP LEGEND 3 OF 4
0	2019-08-08	17	CABLE DIAGRAM - E. 55TH ST./OC BLVD.
0	2019-08-08	18	CABLE DIAGRAM - OC BLVD./KINSMAN RD.
1	2020-01-16	19	WIRING DIAGRAM - OC BLVD./KINSMAN RD.
0	2019-08-08	20	CABLE DIAGRAM - OC BLVD./E. 75TH ST./E. 79TH ST.
1	2020-01-16	21	WIRING DIAGRAM - OC BLVD./E. 75TH ST.
0	2019-08-08	22	CABLE DIAGRAM - OC BLVD./EVARTS RD.
1	2020-01-16	23	WIRING DIAGRAM - OC BLVD./EVARTS RD.
0	2019-08-08	24	CABLE DIAGRAM - OC BLVD./BUCKEYE RD.
1	2020-01-16	25	WIRING DIAGRAM - OC BLVD./BUCKEYE RD. WEST
1	2020-01-16	26	WIRING DIAGRAM - OC BLVD./BUCKEYE RD. EAST
1	2020-01-16	27	WIRING DIAGRAM - OC BLVD./BUCKEYE RD./E. 89TH ST.
1	2020-01-16	28	WIRING DIAGRAM - OC BLVD./E. 89TH ST./KENNEDY AVE.
0	2019-08-08	29	CABLE DIAGRAM - OC BLVD./WOODLAND AVE.
1	2020-01-16	30	WIRING DIAGRAM - OC BLVD./WOODLAND AVE.
1	2024-09-10	31	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 124+00.00 TO STA. 129+00.00
0	2019-08-08	32	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 129+00.00 TO STA. 134+00.00
1	2024-09-10	33	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 134+00.00 TO STA. 139+00.00
0	2019-08-08	34	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 139+00.00 TO STA. 144+00.00
0	2019-08-08	35	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 144+00.00 TO STA. 149+00.00
3	2024-09-10	36	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 149+00.00 TO STA. 154+00.00
0	2019-08-08	37	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 154+00.00 TO STA. 159+00.00
1	2021-05-18	38	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 159+00.00 TO STA. 164+00.00
1	2020-04-17	39	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 164+00.00 TO STA. 169+00.00
1	2020-04-17	40	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 169+00.00 TO STA. 174+00.00
0	2019-08-08	41	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 174+00.00 TO STA. 179+00.00
1	2019-12-04	42	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 179+00.00 TO STA. 184+00.00
0	2019-08-08	43	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 184+00.00 TO STA. 189+00.00
0	2019-08-08	44	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 189+00.00 TO STA. 194+00.00
0	2019-08-08	45	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 194+00.00 TO STA. 198+00.00
2	2020-01-16	46	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 198+00.00 TO STA. 203+00.00
1	2020-01-16	47	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 203+00.00 TO STA. 208+00.00
2	2024-09-10	48	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 208+00.00 TO STA. 213+00.00
1	2020-01-16	49	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 213+00.00 TO STA. 218+00.00
0	2019-08-08	50	CPP DUCT BANK PLAN - O.C. BLVD.: STA. 218+00.00 TO END
0	2019-08-08	51	CPP DUCT BANK PLAN - KINSMAN RD.: BEGIN TO STA. 10+50.00
3	2024-09-10	52	CPP DUCT BANK PLAN - KINSMAN RD.: STA. 10+50.00 TO STA. 16+00.00
0	2019-08-08	53	CPP DUCT BANK PLAN - KINSMAN RD.: STA. 16+00.00 TO END
1	2024-09-10	54	CPP DUCT BANK PLAN - E. 75TH ST.: BEGIN TO STA. 12+00.00
1	2020-04-17	55	CPP DUCT BANK PLAN - E. 75TH ST.: STA. 12+00.00 TO STA. 17+00.00

ISSUE NO.	RECORD DATE	PAGE NO.	SHEET TITLE
0	2019-08-08	56	CPP DUCT BANK PLAN - E. 75TH ST.: STA. 17+00.00 TO END
1	2024-09-10	57	CPP DUCT BANK PLAN - E. 79TH ST.: BEGIN TO STA. 16+00.00
1	2019-12-04	58	CPP DUCT BANK PLAN - E. 79TH ST.: STA. 16+00.00 TO STA. 21+00.00
0	2019-08-08	59	CPP DUCT BANK PLAN - E. 79TH ST.: STA. 21+00.00 TO END
0	2019-08-08	60	CPP DUCT BANK PLAN - RAWLINGS AVE.
1	2024-09-10	61	CPP DUCT BANK PLAN - BUCKEYE RD.: BEGIN TO STA. 28+50.00
0	2019-08-08	62	CPP DUCT BANK PLAN - BUCKEYE RD.: STA. 28+50.00 TO STA. 33+50.00
0	2019-08-08	63	CPP DUCT BANK PLAN - BUCKEYE RD.: STA. 33+50.00 TO END
2	2024-09-10	64	CPP DUCT BANK PLAN - O.C. BLVD. / E. 89TH ST. / KENNEDY AVE.
0	2019-08-08	65	CPP DUCT BANK PLAN - WOODLAND AVE.: BEGIN TO STA. 30+50.00
3	2024-09-10	66	CPP DUCT BANK PLAN - WOODLAND AVE.: STA. 30+50.00 TO STA. 35+50.00
1	2020-01-16	67	CPP DUCT BANK PLAN - WOODLAND AVE.: STA. 35+50.00 TO END
2	2024-09-10	68	CPP DUCT BANK PLAN - E. 89TH ST.: BEGIN TO STA. 26+00.00
0	2019-08-08	69	CPP DUCT BANK PLAN - E. 89TH ST.: STA. 26+00.00 TO END
1	2024-09-10	70	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH02 TO EMH04 & EMH04 TO EMH05
0	2019-08-08	71	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH05 TO EMH06 & EMH06 TO EMH40
0	2019-08-08	72	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH40 TO EMH07 & EMH07 TO EMH08
2	2024-09-10	73	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH08 TO EMH09 & EMH09 TO EMH11
1	2024-09-10	74	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH11 TO EMH13 & EMH13 TO EMH14
1	2021-05-18	75	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH14 TO EMH15 & EMH15 TO EMH16
1	2024-09-10	76	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH16 TO EMH17 & EMH17 TO EMH18
0	2019-08-08	77	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH18 TO EMH19 & EMH19 TO EMH20
2	2024-09-10	78	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH20 TO EMH22 & EMH22 TO EMH24
1	2024-09-10	79	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH24 TO EMH25 & EMH25 TO EMH26
1	2024-09-10	80	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH26 TO EMH27 & EMH27 TO EMH28
2	2024-09-10	81	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH28 TO EMH29 & EMH29 TO EMH30
1	2024-09-10	82	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH30 TO EMH31 & EMH31 TO EMH34
0	2019-08-08	83	CPP DUCT BANK PROFILES - O.C. BLVD.: EMH34 TO EMH37 & EMH37 TO OC2
2	2024-09-10	84	CPP DUCT BANK PROFILES - O.C. BLVD. LATERALS: EMH16, EMH17, EMH19, & EMH20
1	2024-09-10	85	CPP DUCT BANK PROFILES - O.C. BLVD. LATERALS: EMH24, EMH25, EMH26, & EMH27
1	2024-09-10	86	CPP DUCT BANK PROFILES - O.C. BLVD. LATERALS: EMH28, EMH29, EMH31, & EMH37
2	2024-09-10	87	CPP & CEI DUCT BANK PROFILES - O.C. BLVD. LATERALS: EMH24 TO PPB06 & CEI AT KINSMAN RD.
3	2024-09-10	88	CPP DUCT BANK PROFILES - KINSMAN RD.: EMH10 TO EMH11 & EMH11 LATERAL
2	2024-09-10	89	CPP DUCT BANK PROFILES - E. 75TH ST.: EP06 TO EMH18 & EMH18 TO EP07
2	2024-09-10	90	CPP DUCT BANK PROFILES - E. 79TH ST.: EMH21 TO EMH22 & EMH22 TO EMH23
0	2019-08-08	91	CPP DUCT BANK PROFILES - RAWLINGS AVE. & EVARTS RD.: EMH24 TO STUB & EMH28 TO EP08
2	2024-09-10	92	CPP DUCT BANK PROFILES - BUCKEYE RD.: EPI1 TO EMH30 & EMH30 TO EPI2
1	2024-09-10	93	CPP DUCT BANK PROFILES - WOODLAND AVE.: EMH33 TO EMH34 & EMH34 TO EMH35
1	2024-09-10	94	CPP DUCT BANK PROFILES - WOODLAND AVE.: EMH32 TO EMH33 & EMH35 TO EMH36
2	2024-09-10	95	CPP DUCT BANK PROFILES - E. 89TH ST. & KENNEDY AVE.: EMH34 TO EMH38 & EMH31 TO EPI6
2	2024-09-10	96	CPP DUCT BANK PROFILES - E. 89TH ST.: EMH38 TO EMH39 (DB88 & DB89)
2	2024-09-10	97	CPP DUCT BANK PROFILES - E. 89TH ST.: EMH38 TO EMH39 (DB90 & DB91)
1	2024-09-10	98	SUPPLEMENTAL CONDUIT PROFILES - KINSMAN RD. & E. 75TH ST.
2	2024-09-10	99	SUPPLEMENTAL CONDUIT PROFILES - E. 79TH ST. & EVARTS RD.
1	2024-09-10	100	SUPPLEMENTAL CONDUIT PROFILES - BUCKEYE RD. & WOODLAND AVE.
0	2019-08-08	101	CLEVELAND PUBLIC POWER DETAILS 1 OF 41
0	2019-08-08	102	CLEVELAND PUBLIC POWER DETAILS 2 OF 41
0	2019-08-08	103	CLEVELAND PUBLIC POWER DETAILS 3 OF 41
0	2019-08-08	104	CLEVELAND PUBLIC POWER DETAILS 4 OF 41
0	2019-08-08	105	CLEVELAND PUBLIC POWER DETAILS 5 OF 41
0	2019-08-08	106	CLEVELAND PUBLIC POWER DETAILS 6 OF 41
0	2019-08-08	107	CLEVELAND PUBLIC POWER DETAILS 7 OF 41
0	2019-08-08	108	CLEVELAND PUBLIC POWER DETAILS 8 OF 41
0	2019-08-08	109	CLEVELAND PUBLIC POWER DETAILS 9 OF 41
0	2019-08-08	110	CLEVELAND PUBLIC POWER DETAILS 10 OF 41

4	2020-04-17	DC038			
3	2020-01-16	DC031	8	2024-09-10	RECORD DRAWINGS
2	2019-12-04	DC024	7	2021-05-18	DC056
1	2019-09-10	DC018	6	2021-03-19	DC053
0	2019-08-08	RFC	5	2021-03-03	DC052
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
ISSUE RECORD			ISSUE RECORD		

CLEVELAND PUBLIC POWER GENERAL CONSTRUCTION NOTES

ALL CONSTRUCTION NOTES ARE MINIMUM DESIRABLE STANDARDS, ALL EXCEPTIONS TO BE APPROVED BY CPP REPRESENTATIVE TO COMPLY WITH SAFETY CODES AND REGULATIONS.

CONTACT OHIO UTILITIES PROTECTION SERVICE (OUPS), TWO WORKING DAYS PRIOR TO START OF CONSTRUCTION. IN OHIO, CALL TOLL FREE 1-800-362-2764. IT’S THE LAW.

UTILITIES SHOWN ARE FROM BEST AVAILABLE RECORDS AND FIELD INVESTIGATION, AND ARE NOT NECESSARILY COMPLETE OR EXACT. THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES WHETHER SHOWN ON THIS PLAN OR NOT.

PROPOSED WORK

- A. THE CONTRACTOR SHALL RELOCATE AND/OR REMOVE ALL OVERHEAD AND UNDERGROUND CLEVELAND PUBLIC POWER (CPP) FACILITIES OF THE CITY OF CLEVELAND, AS INDICATED IN THE PLANS OR AS DIRECTED BY THE ENGINEER ONLY AFTER CPP HAS VISIBLY CONFIRMED THAT SAID CPP FACILITIES HAVE BEEN DE-ENERGIZED & DISCONNECTED. THIS WORK SHALL BE PROPERLY COMPLETED, INCLUDING INCIDENTALS, AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED.
- B. ALL WORK IN THIS CONTRACT SHALL CONFORM TO THE LATEST NATIONAL ELECTRIC SAFETY CODE (NESC) AND OSHA, EXCEPT WHERE LOCAL REGULATIONS ARE MORE STRINGENT, IN WHICH CASE LOCAL REGULATIONS SHALL GOVERN. ALL WORK SHALL BE IN CONFORMANCE WITH CPP REGULATIONS.
- C. THE MAJOR ITEMS TO BE PERFORMED BY THE CONTRACTOR SHALL BE AS FOLLOWS:

FURNISH & INSTALL OVERHEAD POLE LINE CONSTRUCTION.

FURNISH & INSTALL UNDERGROUND CONDUIT BANK AND MANHOLE CONSTRUCTION INCLUDING CABLES.

REMOVAL OF OVERHEAD AND UNDERGROUND UTILITY FACILITIES WHERE DIRECTED TO.

ALL POWER CONDUIT RUNS ARE TO BE CONSTRUCTED BY USING 2", 4", 5", OR 6" PVC CONDUITS, AS DEPICTED ON THE PLANS, ENCASED WITH A 3" CONCRETE ENVELOPE, UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIFICATIONS. THE CONCRETE ENVELOPE IS TO BE 4000PSI (CITY OF CLEVELAND CONCRETE MIX). EACH CONDUIT SHALL HAVE A PULLING LINE INSTALLED WITH SLACK AT EACH END.

A RUGGED POLYETHYLENE MATERIAL WARNING TAPE CAPABLE OF RESISTING HIGH OR LOW PH CONDITIONS MUST BE PLACED ABOVE THE ELECTRICAL CONDUIT BANK. THIS WARNING TAPE IS TO BE SIX INCHES WIDE, RED IN COLOR, AND IMPRINTED WITH THE WORDS, "DANGER - BURIED HIGH VOLTAGE CABLES BELOW". THIS TAPE IS TO BE PLACED 6" ABOVE THE NEWLY INSTALLED DUCT BANK. THIS SHALL CONFORM WITH THE STANDARDS AS SET BY OHIO UTILITIES PROTECTION SERVICE (OUPS) . WARNING TAPE PAYMENT INCLUDED IN APPROPRIATE CONDUIT, PAY ITEM.

AS AN OPTION, CONTRACTOR MAY ELECT TO ENCASE CPP’S CONDUITS IN RED CONCRETE. BOTH METHODS ARE APPROVED BY CLEVELAND PUBLIC POWER (CPP) AND ARE RECOMMENDED BY OHIO UTILITIES PROTECTION SERVICE (OUPS). PAYMENT FOR TINTED DUCT CONCRETE, OR TINTED CONCRETE PROTECTIVE SLABS INCLUDED IN APPROPRIATE CONDUIT PAY ITEM.

PROPOSED WORK (CONT.)

THE TOP OF THE CONCRETE ENCASED CONDUIT ENVELOPE SHALL BE INSTALLED AT A MINIMUM DEPTH OF 3'-0" BELOW THE EXISTING AND/OR PROPOSED GRADES. THE TOTAL TRENCH DEPTH WILL BE BASED UPON THE CONDUIT FORMATION. THOSE CONDUITS THAT ARE CROSSING UNDER ANY RAILROAD OR RTA TRACKS, SHALL BE INSTALLED AT A MINIMUM DEPTH OF 60" FROM TOP OF RAIL TIES TO THE TOP OF CONCRETE ENVELOPE/STEEL CASING. SEE DRAWINGS ISSUED BY CLEVELAND PUBLIC POWER (CPP) FOR DETAILS.

VERTICAL AND HORIZONTAL CURVES SHALL HAVE A MINIMUM RADIUS OF NO LESS THAN 30 FEET. THESE CURVES ARE TO BE CONDUITS AS NOTED CONSTRUCTED BY USING THE APPROPRIATE 5° COUPLINGS, AND ASSOCIATED CHORD LENGTHS AS SHOWN ON THE PLAN VIEW AND/OR AS SHOWN ON THE CONDUIT CURVE CONSTRUCTION CHART. ANY OTHER CURVE DESIGN, FIELD CHANGES, OR THE USE OF PREFORMED RADIUS BENDS MUST BE APPROVED BY THE ENGINEERING DEPARTMENT OF CLEVELAND PUBLIC POWER (CPP).

ALL MANHOLES OUTSIDE WALLS AND CONDUITS RUNS ARE TO HAVE A MINIMUM CLEARANCE OF 5’ (FACE TO FACE), HORIZONTALLY FROM ALL WATER LINES. VERTICAL CLEARANCE SHALL BE AT A MINIMUM OF 1'-6" OR AS SHOWN ON THE PROFILE SHEETS. CLEARANCE BETWEEN OTHER UTILITIES SHALL BE 1 FOOT, UNLESS NOTED OTHERWISE. CPP’S DUCT BANK SHALL CROSS OVER OR UNDER OTHER UTILITIES AT AN ANGLE OF NO LESS THAN 45°.

ANY CONDUIT RUNS THAT ARE CROSSING ANY STEAM LINES SHALL HAVE A MINIMUM CLEARANCE OF 5’, OR AS SHOWN ON THE PROFILE SHEET OF THE PROJECT. IN THE EVENT THAT THIS CAN NOT BE ACCOMPLISHED, NOTIFY THE ENGINEERING DEPARTMENT OF CLEVELAND PUBLIC POWER (CPP) PRIOR TO THE INSTALLATION OF CONDUITS.

EACH NEWLY CONSTRUCTED MANHOLE SHALL BE FREE OF ALL FOREIGN OBJECTS AND DEBRIS. THE CONTRACTOR SHALL ALSO PROVIDE A PULLING LINE IN EACH OF THE NEW CONDUITS. ALL MANHOLE COVERS SHOULD BE INSCRIBED WITH THE CLEVELAND PUBLIC POWER LOGO "CPP". LETTERS SHALL HAVE A MINIMUM HEIGHT OF 2 INCHES.

THE CONTRACTOR SHALL PROVIDE CLEVELAND PUBLIC POWER (CPP) WITH AS-BUILT PLANS OF THE NEWLY INSTALLED CONDUIT SYSTEM, SHOWING BOTH VERTICAL AND HORIZONTAL LOCATIONS. THESE LOCATIONS SHALL BE AT 50’ INTERVALS (MAX). ALL COORDINATES AND ELEVATIONS ARE TO BE BASED ON THE STATE PLANE COORDINATE SYSTEM. IN ADDITION, THE CONTRACTOR SHALL PROVIDE AS-BUILT INFORMATION OF THE MANHOLES, INCLUDING BUT NOT LIMITED TO AS-BUILT PHOTOGRAPHS OF ALL INTERIOR SURFACES (WALLS, FLOORS AND CEILINGS). PAYMENT INCLUDED IN APPROPRIATE CONDUIT PAY ITEM.

DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN UTILITY CONTINUITY AT ALL TIMES.

BACKFILL MATERIAL AND BACKFILLING PROCEDURES

FOR ALL BACKFILL UNDER ROADWAY PAVEMENT, REFER TO FLOWABLE FILL SPECIFICATIONS IN THIS SHEET. FOR ALL OTHER LOCATIONS, THE BACKFILL MATERIAL USED SHALL BE CRUSHED LIMESTONE OR GRAVEL AS PER ODOT ITEM 304-AGGREGATE BASE. CRUSHED AIR-COOLED SLAG MEETING #304 GRADATION MAY BE USED WITH PRIOR WRITTEN APPROVAL OF THE CPP ENGINEERING DEPARTMENT. THE USE OF SAND OR #57 AGGREGATE AS A PREMIUM BACKFILL IS PROHIBITED. SAND MAY ONLY BE USED AS INDICATED ON THE PLAN DETAILS FOR ITEMS SUCH AS CONDUIT COVER. THE SAND MATERIAL SHALL BE NATURAL RIVER OR BANK SAND; FREE OF SILT, CLAY, LOAM, FRIABLE OR SOLUBLE MATERIALS AND ORGANIC MATTER. THE BACKFILL SHALL BE INSTALLED IN 4 INCH (4") LIFTS AND COMPACTED USING MECHANICAL MEANS ONLY. COMPACT TO WITHIN 12" OF SUBGRADE AND EACH LAYER OF BACKFILL TO 95% MAXIMUM DRY DENSITY AS DETERMINED BY STANDARD PROCTOR TEST (ASTM D698). THE USE OF WATER FOR COMPACTION IS PROHIBITED, E.G. FLOODING OR PUDDLING. SAND USED AS EMBANKMENT CONSTRUCTION AND AS BACKFILL AROUND STRUCTURES SHALL BE ODOT ITEM 203-EMBANKMENT OR MEETING THE REQUIREMENTS OF 703 - SPECIAL BACKFILL MATERIAL OF THE SECTION.

EMPLOY A PLACEMENT METHOD THAT DOES NOT DISTURB OR DAMAGE CONDUIT ENCASEMENT.

DO NOT BACKFILL OVER WET, FROZEN OR UNSTABLE SUBGRADE SURFACES.

FLOWABLE FILL SPECIFICATION FOR UTILITY TRENCHES

PART I - CERTIFICATE OF COMPLIANCE

MATERIAL MUST COME FROM A PLANT WITH A CURRENT CERTIFICATE OF COMPLIANCE DEMONSTRATING THE ABILITY OF THE MIX DESIGN TO MEET THE SPECIFIED REQUIREMENTS. CERTIFICATES IN EXCESS OF ONE YEAR WILL NOT BE ACCEPTED. CERTIFICATES MUST CONTAIN THE NAME OF SUPPLIER, DATE, CONTRACT NUMBER AND MIX DESIGN DATA ON EACH DELIVERY TICKET.

PART II - MATERIALS

ALL MATERIALS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS STATED HEREIN.

- CEMENT SHALL BE ASTM C-150 TYPE I.
- THE USE OF FLY ASH IS STRICTLY PROHIBITED.
- FINE AGGREGATE SHALL CONFORM TO ODOT SPECIFICATION 703.03. FINE AGGREGATE FOR MORTAR OR GROUT. (ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS MOST CURRENT EDITION). THE USE OF SPENT FOUNDRY SAND OR CORE SAND IS STRICTLY PROHIBITED.

PART III - PERFORMANCE ENHANCING ADMIXTURE

AN AIR-ENHANCING ADMIXTURE SHALL BE INCORPORATED IN THE MIX THAT WILL HAVE THE EFFECT OF LOWERING THE WATER/CEMENT RATIO TO BETWEEN 95 AND 105 LBS/CUBIC FOOT. THE AIR ENTRAINED CONTENT FOR THE MIX SHALL BE 30% TO ELIMINATE/MINIMIZE THE EXCESSIVE WATER AND SEGREGATION. COMPRESSIVE STRENGTHS SHALL HAVE A RANGE OF 50 PSI TO 100 PSI AT 28 DAYS.

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

CONCRETE DESIGN MIX (CITY OF CLEVELAND MIX)

UNDER THIS SECTION OF THESE SPECIFICATIONS THE CONTRACTOR IS REQUIRED TO SUBMIT A SEPARATE MIX DESIGN FOR EACH COMBINATION OF CEMENT TYPE, AGGREGATE TYPE, AND CONCRETE SUPPLIER THEY WILL USE UNDER THIS CONTRACT. EACH MIX SHALL BE DESIGNED IN ACCORDANCE WITH ASTM C94-94 OPTION C AND AS HEREIN MODIFIED.

MINIMUM COMPRESSIVE STRENGTH

4000 PSI FOR 28 DAYS COMPRESSIVE STRENGTH TEST. FOUR CYLINDERS WILL BE TAKEN AND TESED AS PER ASTM C-39-94. ONE TO BE TESTED AT SEVEN DAYS AND THE REMAINING THREE WILL BE TESTED AT TWENTY-EIGHT DAYS. ACCEPTANCE WILL BE BASED ON THE AVERAGE RESULTS OF THE THREE CYLINDERS.

MINIMUM CEMENT CONTENT

650 LBS. PER CUBIC YARD. THE CEMENT SHALL CONFORM TO ASTM C-150-94 OR C-595-94.

WATER CEMENT RATIO

0.45 MAXIMUM

SLUMP

NOMINAL THREE INCHES (3") AS PER ASTM C-94-94 (2"-4" ACTUAL). THE USE OF CHEMICAL ADMIXTURES MEETING ASTM C-494, TO INCREASE THE SLUMP TO A MAXIMUM OF 7", MAY BE USED WITH PRIOR WRITTEN APPROVAL OF THE DIVISION OF ENGINEERING AND CONSTRUCTION INSPECTOR. IF THIS OPTION IS SELECTED THE ADMIXTURE AND RESULTANT MAXIMUM SLUMP SHALL BE SUBMITTED FOR APPROVAL.

AIR CONTENT

FOUR PERCENT (4%) TO SEVEN AND ONE-HALF PERCENT (7-1/2 %) ASTM C-173-94 OR C-231-94.

AGGREGATE SIZE

NO. 57 FOR COARSE AGGREGATE SHALL BE LIMESTONE, GRAVEL OR CRUSHED AIR-COOLED BLAST FURNACE SLAG. BOTH COARSE AND FINE AGGREGATE AS PER ASTM C 33-94.

IF CRUSHED AIR-COOLED BLAST FURNACE SLAG IS USED IT SHALL MEET ALL OF THE REQUIREMENTS OF ODOT 703.01 AND ODOT 703.02. COPIES OF ALL TESTS AND CERTIFICATIONS FOR THE CRUSHED AIR-COOLED BLAST FURNACE SLAG, IF USED, SHALL BE SUBMITTED AS PART OF THE CONCRETE MIX DESIGN.

WHEN HIGH EARLY STRENGTH IS REQUIRED, ASTM C-150-94 TYPE III A CEMENT OR ADMIXTURES IN ACCORDANCE WITH ASTM C-494-94 SHALL BE USED.

PAVEMENT REPAIR

CONCRETE PAVEMENT

ALL PAVEMENT OPENINGS SHALL BE SAWED FULL DEPTH AND HAVE SMOOTH VERTICAL FACES. DOWELS SHALL BE REQUIRED AS PER DOWEL TABLE.

CONCRETE REPAVING SHALL BE PERFORMED IN SUCH A MANNER THAT THE ENTIRE LANE AND/OR SLAB IN WHICH THE REPAIR AREA IS LOCATED SHALL BE RESTORED. SHOULD ANY PORTION OF THE REPAIR AREA EXTEND INTO AN ADJACENT LANE AND/OR SLAB, THAT LANE OR SLAB SHALL ALSO BE REPAVED.

ASPHALT PAVEMENT

ALL PAVEMENT OPENINGS SHALL BE SAWED FULL DEPTH AND HAVE SMOOTH VERTICAL FACES. DOWELS SHALL BE REQUIRED AS PER DOWEL TABLE.

ASPHALT RESURFACING SHALL BE PERFORMED IN SUCH A MANNER THAT THE ENTIRE LANE IN WHICH THE REPAIRS ARE LOCATED SHALL BE RESTORED. SHOULD ANY PORTION OF THE REPAIR AREA EXTEND INTO AN ADJACENT LANE, THAT LANE SHALL ALSO BE RESURFACED. FOR PAVEMENTS WITH A WIDTH OF 40' OR LESS, A LANE SHALL BE CONSIDERED 1/2 THE PAVEMENT WIDTH.

EXTEND OVERCUT IN LONGITUDINAL DIRECTION TWO FEET (2') UNTO UNDISTURBED SUBGRADE.

BRICK PAVEMENT

ALL STREETS WITHIN THE CITY OF CLEVELAND THAT ARE CURRENTLY BRICK PAVED, SHALL BE REPLACED WITH BRICK, OR AS DIRECTED BY THE INSPECTOR REPRESENTING THE DIVISION OF ENGINEERING AND CONSTRUCTION OF THE CITY OF CLEVELAND.

THE CONTRACTOR UNDER THIS SECTION OF THE SPECIFICATIONS SHALL CONSTRUCT CONCRETE BASE, PAVEMENT, SIDEWALK, DRIVEWAY APRONS, CURB, CURB AND GUTTER SECTIONS, HANDICAP RAMPS, AND INTEGRAL RADIUS CURB AND WALK. THIS INCLUDES THE RESTORATION OF ALL ADJACENT SURFACES WHICH ARE DISTURBED BY THIS CONSTRUCTION AT NO COST TO THE CITY OF CLEVELAND AND/OR CLEVELAND PUBLIC POWER (CPP). CONTRACTOR SHALL TAKE ANY AND ALL MEASURES NECESSARY TO ENSURE CONCRETE IS NOT DEFACED WITH GRAFFITI, FOOT PRINTS, TIRE TRACKS, AND ROCKS, ETC. BY VANDALS.

SPECIFICATIONS

ALL WORK IN THIS CONTRACT SHALL CONFORM TO THE LATEST STATE OF OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIALS SPECIFICATIONS, NATIONAL ELECTRIC SAFETY CODE (NESC) AND OSHA REQUIREMENTS, EXCEPT WHERE LOCAL REGULATIONS ARE MORE STRINGENT, IN WHICH CASE LOCAL REGULATIONS SHALL GOVERN.

REGULATIONS GOVERNING THE LAYING OF CONCRETE

SIDEWALKS, APRONS, AND CURBING

CONCRETE WALKS SHALL BE OF ONE-COURSE CONSTRUCTION AND SHALL BE FOUR INCHES (4") IN THICKNESS, EXCEPT ALONG ARTERIAL AND COLLECTOR STREETS WHERE THEY MUST BE SIX INCHES (6") IN THICKNESS. CONCRETE FOR WALKS, CURBS, DRIVES, AND APRONS SHALL BE CLASS "C" CONCRETE AS PER ITEM 608 AND SPECIAL OF THE "SUPPLEMENTAL TO STATE SPECIFICATIONS FOR THE CITY OF CLEVELAND - 1967".

WHEN CONCRETE WALKS ARE LAID ON CLAY, EXTRA EXCAVATION TO A DEPTH OF ONE-AND-ONE-HALF INCHES (1 1/2") MUST BE MADE AND FILLED WITH SAND OR GRAVEL TO ACT AS A FOUNDATION TO THE FOUR INCHES OF SIDEWALK PROPER.

NO BLOCKS OF CONCRETE SHALL BE LARGER THAN SIX FEET (6') AND THE JOINTS MUST BE CUT BY THE USE OF AN APPROVED "GROOVING TOOL" MAKING A GROOVE ONE-FOURTH INCHES (1/4") DEEP. ALL EDGES SHALL BE ROUNDED WITH AN APPROVED "EDGING TOOL" TO A RADIUS OF ONE-FOURTH INCH (1/4").

EXISTING APRONS AND "DRIVE AREAS" OF THE WALK MUST BE CONSTRUCTED OF CONCRETE. APRONS AND THE AREA OF WALK OVER WHICH VEHICLES DRIVE MUST BE NO LESS THAN SIX INCHES (6") IN THICKNESS, AND MUST BE LAID IN ACCORDANCE WITH SUPPLEMENTAL TO STATE SPECIFICATIONS FOR THE CITY OF CLEVELAND.

AT ALL WATER-METER COVERS, GAS BOXES, HYDRANTS, OR OTHER OBSTRUCTIONS, NEATLY FITTED OPENINGS SHALL BE CUT IN THE SIDEWALK. NO WALK SHALL BE LAID UNTIL ALL THESE OBSTRUCTIONS HAVE BEEN RAISED OR LOWERED TO THE CORRECT ELEVATIONS.

NO OBSTRUCTIONS SHALL BE PLACED IN FRONT OF ANY CATCH-BASIN, FIRE HYDRANT, FIRE ALARM BOX OR LETTER BOX, OR NEAR ENOUGH TO THE SAME TO INTERFERE WITH THEIR USE.

NO CHANGE IN THE WIDTH OF THE WALK TO BE LAID SHALL BE MADE FROM THAT OF EXISTING WALKS ON THE STREET AT THE TIME WORK IS DONE UNDER THIS PERMIT, UNLESS SPECIALLY PERMITTED BY THE DIRECTOR OF PUBLIC SERVICE. TREES, LAWNS, AND SHRUBBERY SHALL NOT BE INTERFERED WITH OR DESTROYED BY ANY WORK PERFORMED BY THE CONTRACTOR. WALKS MUST BE LAID TO THE SAME GRADE AS EXISTING WALKS ON THE STREET, UNLESS PERMISSION FOR CHANGE OF GRADE IS OBTAINED FROM THE DIRECTOR OF PUBLIC SERVICE.

ONLY ONE-HALF (1/2) OF THE SIDEWALK IN THE BUSINESS DISTRICT CAN BE OBSTRUCTED AT ONE TIME, UNLESS CONTRACTOR HAS AN OBSTRUCTION PERMIT. GUTTERS MUST BE LEFT OPEN AT ALL TIMES.

THE SPACING BETWEEN THE WALK AND THE CURB LINE MUST BE GRADED TO ALLOW WATER DRAINAGE, AND MUST BE OF A GRADUAL SLOPE FROM THE WALK TO THE CURB LINE.

THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DIRT AND RUBBISH CAUSED BY HIS WORK.

FAILURE OF A CONTRACTOR TO COMPLY WITH THESE REGULATIONS SHALL RESULT IN THE WITHHOLDING OF FUTURE PERMITS AND SHALL SUBJECT THE HOLDER OF THIS PERMIT TO THE PENALTIES PRESCRIBED IN THE SIDEWALK ORDINANCE.

CURBING: CURBING SHALL CONFORM TO THE STANDARDS ESTABLISHED FOR SIZE AND QUALITY IN THE DISTRICT IN WHICH IT IS TO BE INSTALLED. CAST-IN-PLACE CONCRETE CURBS AND INTEGRAL CURBS, WHERE USED, SHALL CONFORM TO DETAIL PLAN NO. ME-246 OF THE CITY OF CLEVELAND.

COPIES OF THESE SPECIFICATIONS AND PLANS FOR PAVEMENT REPAIR AND LAYING OF CONCRETE SIDEWALKS MAY BE OBTAINED, UPON REQUEST, FROM THE DIVISION OF ENGINEERING AND CONSTRUCTION OF THE CITY OF CLEVELAND.

STUBBING DUCTS

USE CPP STANDARD DETAIL FOR STUBBING DUCTS. IF TERMINATION IS TEMPORARY, CAREFULLY CHIP EXISTING CONCRETE AWAY FROM DUCTS, ENSURE THAT END OF DUCT IS CUT SQUARE, REMOVE ALL BURRS AND INSTALL DUCT PLUG, NOT TAPE, UNTIL NEW DUCT IS TO BE CONNECTED.

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SCOPE OF WORK

- A. THE CONTRACTOR SHALL RELOCATE OR REMOVE ALL CLEVELAND PUBLIC POWER (CPP) FACILITIES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER ONLY AFTER CPP HAS VISIBLY CONFIRMED THAT SAID CPP FACILITIES HAVE BEEN DE-ENERGIZED & DISCONNECTED. THIS WORK SHALL BE PROPERLY COMPLETED, INCLUDING INCIDENTALS, AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED.
- B. THE MAJOR ITEMS OF WORK TO BE FURNISHED AND INSTALLED BY THE CONTACTOR SHALL BE AS FOLLOWS:

WORK BY THE PROJECT CONTRACTOR:

THE CONTRACTOR SHALL CONSTRUCT THE CPP UNDERGROUND POWER DISTRIBUTION NETWORK WITHIN THE PROJECT LIMITS. THIS WORK INCLUDES BUT IS NOT LIMITED TO:

- FURNISHING AND INSTALLING CONCRETE ENCASED PVC DUCT BANKS OF VARIOUS ARRANGEMENTS
- FURNISHING AND INSTALLING PRECAST AND BUILT-IN-PLACE ELECTRICAL VAULTS AND MANHOLES
- FURNISHING AND INSTALLING ELECTRICAL CABLES IN DUCTS AND INSTALLING CABLE ID TAGS ON CABLES IN MANHOLES AND ON LATERAL POLES.
- TESTING ELECTRICAL SYSTEM
- FURNISHING AND INSTALLING ELECTRICAL VAULT RACKING SYSTEMS WITHIN VAULTS AND MANHOLES
- FURNISHING AND INSTALLING ELECTRICAL SPLICES, TRAINING AND BONDING WITHIN VAULTS AND MANHOLES
- REMOVING EXISTING UNDERGROUND DUCT BANKS, VAULTS, MANHOLES AND PULLBOXES
- COORDINATING WITH CPP AND ITS CONTRACTORS
- REMOVING EXISTING CPP OWNED POWER POLES
- FURNISHING AND INSTALLING FRE (FIBER REINFORCED EPOXY) DUCT BANK SYSTEMS ACROSS BRIDGES INCLUDING BEAM SUPPORT SYSTEMS
- FURNISHING AND INSTALLING WOODEN POWER POLES FOR TRANSITIONS FROM UNDERGROUND TO OVERHEAD SYSTEMS AND WHERE OVERHEAD SYSTEMS ARE IMPACTED BY PROJECT CONTRACTOR'S WORK
- FURNISHING AND INSTALLING OVERHEAD ELECTRICAL CABLES, SPLICES AND HARDWARE

WORK BY CPP:

- ENERGIZING ELECTRICAL SYSTEM
- DE-ENERGIZING AND REMOVAL OF EXISTING ELECTRICAL CABLES WITHIN DUCTS

ALONG PORTIONS OF THE CORRIDOR THE PROJECT CONTRACTOR SHALL BE REQUIRED TO MAINTAIN THE EXISTING ELECTRICAL SYSTEM UNTIL COMPLETION AND ACTIVATION OF THE PROPOSED UNDERGROUND POWER SYSTEM. THE CONTRACTOR SHALL COORDINATE THE DETAILS OF THIS WORK WITH CPP.

CABLE MARKING (TAGGING)

FEEDER CABLE LOCATION IN CONDUIT BANK SHALL BE ASSIGNED BY CPP. EACH CABLE UPON ENTERING AND LEAVING MANHOLES SHALL BE MARKED WITH TAGS, INDICATING THE FEEDER NUMBER AND CABLE SIZE. THE LETTER SIZE SHALL BE 1/2 IN. HIGH MINIMUM BUT 1 IN. HIGH IS PREFERRED.

SUBMITTALS

IN ADDITION TO THE REQUIREMENTS OF CMS 105 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY CPP ENGINEERING DEPARTMENT ON ALL EQUIPMENT AND MATERIAL FURNISHED AND REQUIRED TO PERFORM THE WORK.

DEFINITIONS

WHENEVER IN THESE SPECIFICATIONS OR IN ANY DOCUMENT OR INSTRUCTIONS ON CONSTRUCTION WHERE THESE SPECIFICATIONS GOVERN. THE FOLLOWING TERMS (OR PRONOUNS IN PLACE OF THEM) ARE USED. THE INTENT AND MEANING SHALL BE INTERPRETED AS FOLLOWS: THE CITY OF CLEVELAND, IS THE DIRECTOR OF THE CITY OF CLEVELAND DEPARTMENT OF PUBLIC UTILITIES.

STATUS OF CITY INSPECTOR

INSPECTORS AS DESIGNATED BY THE CITY OF CLEVELAND SHALL BE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED. SUCH INSPECTING MAY EXTEND TO ALL OR ANY PART OF THE WORK, AND TO THE PREPARATION OR MANUFACTURE OF THE MATERIALS TO BE USED IN THE WORK. THE CITY INSPECTOR AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES SHALL GIVE WORK INSTRUCTIONS THROUGH THE PROJECT ENGINEER.

ITEM 625 - CONDUIT, CONCRETE ENCASED, AS PER PLAN (5" PVC AND/OR 5" FRE)

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR AND SHALL PROPERLY CONSTRUCT AND CONNECT TO MANHOLES, AS SHOWN ON THE PLANS OR AS DIRECTED, ALL NON-REINFORCED AND REINFORCED CONCRETE-ENCASED PVC AND FRE CONDUIT AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. ALL CONDUITS SHALL BE CONCRETE ENCASED UNLESS NOTED OTHERWISE.

B. CONDUIT AND FITTINGS

POLYVINYL CHLORIDE (PVC) CONDUIT SHALL CONFORM TO THE UL651 STANDARDS, 5 INCH IRON PIPE SIZE (I.P.S) WITH CONCRETE ENCASEMENT AS DETAILED ON PLANS. COUPLINGS SHALL BE SOCKET TYPE, END BELLS AT MANHOLE ENTRANCE, 5 DEGREE SWEEPS, 11-1/4 DEGREE TO 90 DEGREES INCLUDING FILED DEGREES ANGLE COUPLINGS, STANDARD COUPLINGS, VARIOUS BENDS AND PLUGS OR CAPS TO CLOSE UNUSED CONDUITS, SHALL BE MADE OF THE SAME MATERIAL AS THE CONDUIT. CONDUIT SPACERS SHALL BE AS SHOWN IN THE PLAN DETAILS. CONCRETE BLOCK SPACERS WILL NOT BE ACCEPTED.

FRE CONDUIT SHALL CONFORM TO UL 1684 AND UL1684A. FRE CONDUIT SHALL HAVE A MINIMUM WALL THICKNESS OF 0.110 INCHES. FRE CONDUIT SHALL HAVE A 5 INCH INSIDE DIAMETER EITHER CONCRETE ENCASED OR RACK MOUNTED AS INDICATED ON THE DRAWINGS. COUPLINGS SHALL HAVE A BELL ON ONE END AND A SPIGOT ON THE OTHER END. ALL COUPLINGS SHALL BE MADE OF THE SAME MATERIAL. EXPANSION FITTINGS SHALL BE PROVIDED ON ALL EXPOSED CONDUIT RUNS.

C. CONCRETE

CONCRETE USED FOR ENCASEMENT OF CONDUITS SHALL CONFORM TO ROADWAY PLAN GENERAL NOTE CONCRETE DESIGN MIX (CLEVELAND 650). 4000 PSI CITY OF CLEVELAND MIX.

D. INSTALLATION

CONDUIT SHALL BE INSTALLED BY THE BUILT-UP METHOD WITH JOINTS IN ADJACENT DUCTS STAGGERED. NECESSARY SPACERS SHALL BE PLACED NO GREATER THAN 8-FEET INTERVALS TO HOLD DUCTS IN THE DESIRED CONFIGURATION, WITH THE DUCT BANK BRACED SECURELY TO KEEP IT FROM SHIFTING AND FLOATING WHILE CONCRETE IS POURED. SEALER COMPOUND FURNISHED BY THE CONDUIT AND EACH SECTION SHALL BE TAPED SECURELY INTO PLACE IN THE PREVIOUS COUPLING TO OBTAIN JOINTS THAT ARE TIGHT AND LEAK-PROOF.

1. CONCRETE SHALL BE WORKED INTO THE SPACES BETWEEN DUCTS SO THAT THE CONDUIT BANK IS EFFECTIVELY ENCASED IN CONCRETE WITHOUT VOIDS OR EMPTY SPACES, REINFORCING RODS SHALL BE INSTALLED AS REQUIRED AND WHERE SHOWN ON THE PLANS.
2. CONDUIT WHICH IS CUT TO FIT SHORT SECTIONS SHALL BE DEBURRED ON THE DUCT END AND THE END OF THE BELL SHALL BE REAMED IN THE INSIDE DIAMETER FOR EACH ENTRY OF THE DUCT INTO COUPLING TO PRODUCE THE SAME JOINTING CONDITIONS AS PROVIDED BY FACTORY-MADE CONDUIT SECTIONS.
3. THE END BELLS SHALL BE GROUTED IN PLACE.
4. INSTALL PULLING LINE IN EACH CONDUIT.

ITEM 625 - CONDUIT, CONCRETE ENCASED, AS PER PLAN (5" PVC AND/OR 5" FRE) (CONT.)

E. BACKFILLING

REFER TO NOTES "BACKFILL MATERIAL AND BACKFILLING PROCEDURES" AND "FLOWABLE FILL SPECIFICATION FOR UTILITY TRENCHES".

F. MEASUREMENT

THE NUMBER OF FEET OF CONDUIT TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF FEET FURNISHED AND PLACED AND ACCEPTED IN ACCORDANCE WITH THESE SPECIFICATIONS, AS MEASURED ALONG THE AXIS OF THE CONDUIT LINE, INCLUDING FITTINGS.

G. PAYMENT

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACTOR PRICE BID PER FOOT UNDER ITEM 625 AS DESCRIBED BELOW, CLASSIFIED AS TO SIZE AND TYPE, WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR EXCAVATING AND FOR FURNISHING, HAULING, PLACING THE CONDUIT, FITTINGS, CAPPING, PULLING LINES, SPACERS, CONCRETE, REINFORCING STEEL, SHEETING AND BRACING, BACKFILL, PLASTIC CAUTION TAPE (OR RED TINTED CONCRETE), INCIDENTAL CONCRETE, REMOVAL OF ALL SURPLUS EXCAVATION AND DISCARDED MATERIAL, BREAKING AND RESTORATION OF EXISTING MANHOLE WALLS AND ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED. THESE ITEMS AS MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
625	FT	CONDUIT, CONCRETE ENCASED, AS PER PLAN, (XX)-5" PVC
625	FT	CONDUIT, CONCRETE ENCASED, AS PER PLAN, (XX)-5" FRE

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ITEM 632 - POWER CABLE MISC.: (VARIES)

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR MATERIALS, TOOLS AND EQUIPMENT FOR INSTALLING ALL UNDERGROUND POWER CABLES, AS SPECIFIED, REQUIRED OR SHOWN ON THE PLANS.

B. DETAILED SPECIFICATIONS

MEDIUM VOLTAGE CABLES - EPR URD

1. ALL ETHYLENE PROPYLENE RUBBER INSULATED URD CABLE IS MANUFACTURED, TESTED AND WARRANTED IN ACCORDANCE WITH:

- A. A.E.I.C CS-8 (LATEST VERSION)
B. ANSI/I.C.E.A S-94-649 (LATEST VERSION)

2. CHARACTERISTICS

- A. BARE ANNEALED COPPER CENTER CONDUCTOR, COMPACT CLASS B STRANDING PER ASTM B-3
B. 1/3 COPPER CONCENTRIC NEUTRAL
C. ETHYLENE PROPYLENE RUBBER INSULATION
D. AVERAGE MINIMUM INSULATION THICKNESS 220 MILS
E. POLYETHYLENE JACKET

15KV 133% 220-MIL INSULATION THICKNESS

3. FOR 3-PHASE APPLICATION:

- ITEM 1. 750KCMIL, 15KV 133%, EPR URD, 33% NEUTRAL
ITEM 2. 500KCMIL, 15KV 133%, EPR URD, 33% NEUTRAL
ITEM 3. 4/0 AWG, 15KV 133%, EPR URD, 33% NEUTRAL

C. MOLDED SPLICES

1. DESIGNED AND TESTED PER IEEE STANDARD 404.

2. VOLTAGE RATING:

- A. 15 KV CLASS (8.7 KV PHASE-TO-GROUND)
B. IMPULSE WITHSTAND : A = 110 KV, 1.2 X 50 MICROSECOND WAVE.
C. CORONA EXTINCTION VOLTAGE : A = 13 KV, MINIMUM, 3PC SENSITIVITY.
D. DC WITHSTAND : DURING INSTALLATION : 56 KV
E. DC WITHSTAND : 18 KV FOR XLPE INSULATED CABLES
45 KV FOR EPR INSULATED CABLES REFERENCE AEIC CS6 AND CS8, SECTION L.2.0

3. FOR STRAIGHT SPLICES:

SPLICE FOR 750 KCMIL, 15 KV URD, EPR URD, ELASTIMOLD 15 PCJ 1 M 2 380
SPLICE FOR 500 KCMIL, 15 KV URD, EPR URD, ELASTIMOLD 15 PCJ 1 LM 2 330
SPLICE FOR 4/0 AWG, 15 KV URD, EPR URD, ELASTIMOLD 15 PCJ 1 J 2 270
ITEMS 1, 2 AND 3 FOR SINGLE PHASE APPLICATIONS.

ITEM 632 - POWER CABLE MISC.: (VARIES) (CONT.)

D. CABLE SPLICING AND ACCESSORIES:

1. ELASTIMOLD; A THOMAS AND BETTS COMPANY OR EQUIVALENT APPROVED BY CPP ENGINEERING DEPARTMENT PRIOR TO PURCHASE AND INSTALLATION.
2. OBTAIN CABLE SPLICE KITS AND ACCESSORIES FROM A SINGLE SOURCE MANUFACTURER AND SHALL BE APPROVED BY CPP ENGINEERING DEPT.
3. SPLICE KITS: COMPLY WITH IEEE 404; TYPE AS RECOMMENDED BY CABLE OR SPLICING KIT MANUFACTURER FOR THE APPLICATION. SUBMIT TO CPP ENGINEERING DEPARTMENT FOR APPROVAL.
4. SPLICING PRODUCTS: AS RECOMMENDED, IN WRITING, BY SPLICING KIT MANUFACTURER FOR SPECIFIC SIZES, MATERIALS, RATINGS, AND CONFIGURATIONS OF CABLE CONDUCTORS. INCLUDE ALL COMPONENTS REQUIRED FOR COMPLETE SPLICE, WITH DETAILED INSTRUCTIONS. SUBMIT TO CPP ENGINEERING DEPARTMENT FOR APPROVAL.
5. HIGH-VOLTAGE TAPES: ETHYLENE/PROPYLENE RUBBER-BASED, 30-MIL SPLICING TAPE, RATED FOR 130 DEG C OPERATION. MINIMUM 1-1/2 INCH WIDE. VARIOUS SIZES. SUBMIT TO CPP ENGINEERING DEPARTMENT FOR APPROVAL.

E. CABLE LUBRICANT

USE MANUFACTURERS APPROVED PULLING COMPOUND OR LUBRICANTS FOR CABLE BEING INSTALLED THAT DO NOT DETERIORATE CONDUCTOR OR INSULATION.

ITEM 632 - POWER CABLE MISC.: (VARIES) (CONT.)

F. BONDING WIRE

1. BONDING CONDUCTOR: VARIES. SUBMIT TO CPP ENGINEERING DEPARTMENT FOR APPROVAL ON CASE BY CASE BASIS.
2. LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED.

G. CABLE PULLING

1. BEFORE STARTING CABLE INSTALLATION, THE DUCTS TO BE OCCUPIED SHOULD BE SELECTED THROUGHOUT THE ENTIRE LENGTH OF THE RUN AND THE DUCTS SELECTED MUST BE CHECKED TO SEE THAT THEY ARE CLEAN AND FREE FROM ALL OBSTRUCTIONS.
- A. PROOF CONDUITS PRIOR TO CONDUCTOR INSTALLATION BY PASSING A WIRE BRUSH MANDREL AND THEN A RUBBER DUCT SWAB THROUGH THE CONDUIT.
1. WIRE BRUSH MANDREL: CONSISTS OF A LENGTH OF BRUSH APPROXIMATELY THE SIZE OF THE CONDUIT INNER DIAMETER WITH STIFF STEEL BRISTLES AND AN EYE ON EACH END FOR ATTACHING THE PULL ROPES. IF AN OBSTRUCTION IS FELT, PULL THE BRUSH BACK AND FORTH REPEATEDLY TO BREAK UP THE OBSTRUCTION.
2. RUBBER DUCT SWAB: CONSISTS OF A SERIES OF RUBBER DISCS APPROXIMATELY THE SIZE OF THE CONDUIT INNER DIAMETER ON A LENGTH OF STEEL CABLE WITH AN EYE ON EACH END FOR ATTACHING THE PULL ROPES. PULL THE RUBBER DUCT SWAB THROUGH THE DUCT TO EXTRACT LOOSE DEBRIS FROM THE DUCT.
- B. USE PULLING MEANS, INCLUDING FISH TAPE, ROPE, AND BASKETWEAVE CABLE GRIPS, THAT DO NOT DAMAGE CABLES AND RACEWAYS. DO NOT USE ROPE HITCHES FOR PULLING ATTACHMENT TO CABLE.
- C. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM PULLING TENSIONS AND SIDEWALL PRESSURE VALUES.

ITEM 632 - POWER CABLE MISC.: (VARIES) (CONT.)

G. CABLE PULLING (CONT.)

- D. USE PULL-IN GUIDES, CABLE FEEDERS, AND DRAW-IN PROTECTORS AS REQUIRED TO PROTECT CABLES DURING INSTALLATION.
- E. DO NOT PULL CABLES WITH ENDS UNSEALED. SEAL CABLE ENDS WITH RUBBER TAPE.
- F. SUPPORT CABLES USING GALVANIZED STEEL CHANNEL AND PORCELAIN OR MAPLE BLOCKS.
2. IF REELS ARE LEFT IN THE STREET, WARNING LIGHTS SHALL BE PLACED AROUND THEM.
3. LUBRICANT SHALL BE APPLIED TO THE CABLE JUST BEFORE IT ENTERS THE FEEDING TUBE. A COATING ABOUT 1/6TH INCH THICK IS AMPLE. NO LUBRICANT SHALL BE APPLIED FIRST AND LAST 5-FEET OF CABLE FOR CONVENIENCE AND CLEANLINESS IN SPLICING.
4. THE REEL OF CABLE MUST BE PROPERLY PLACED AT THE FEEDING END TO CAUSE MINIMUM FLEXING OF THE CABLE. IT SHOULD ALWAYS BE LOCATED ON THE SIDE OF THE MANHOLE TOWARD WHICH THE CABLE IS PULLED.
5. WHERE THERE IS A BEND IN THE DUCT LINE, THE PULLING SET-UP, WHENEVER POSSIBLE, SHOULD BE PLANNED FOR FEEDING-IN AT THE MANHOLE NEAREST THE BEND.
6. THE AMOUNT OF SLACK IN THE CABLE AT THE FEEDING END SHALL BE REGULATED BY WORKERS STATIONED AT THE CABLE REEL SO THAT THE CABLE PASSES FREELY INTO THE FEEDING TUBE WITHOUT SCRAPING THE MANHOLE FRAME.
7. THE CABLE SHALL BE DRAWN INTO THE DUCT JUST FAST ENOUGH TO KEEP THE CABLE AND REEL MOVING SMOOTHLY AND SO THE CABLE CAN BE PROPERLY INSPECTED AND LUBRICATED.
8. EYES OR SEALS DAMAGED DURING PULLING SHALL BE REPAIRED UNLESS SPLICING FOLLOWS IMMEDIATELY.
9. WHEN THE CABLE IS CUT, UNLESS SPLICING IS TO BE DONE IMMEDIATELY, THE ENDS SHALL BE PREPARED AND SEALED BY AN APPROVED METHOD. ALL SEALED ENDS SHOULD BE RACKED HIGH.

H. CABLE RACKING AND TRAINING

1. RACK AND TRAIN CABLES ON CABLE RACK ASSEMBLIES CONSISTING OF HOT-DIP GALVANIZED, EXCEPT INSULATORS.
2. IDENTIFY CABLES PHASE AND CIRCUIT NUMBER OF EACH CONDUCTOR AT EACH SPLICE, TERMINATION, PULL POINT, AND JUNCTION BOX. ARRANGE IDENTIFICATION SO THAT IT IS UNNECESSARY TO MOVE THE CABLE OR CONDUCTOR TO READ THE IDENTIFICATION.

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ITEM 632 – POWER CABLE MISC.: (VARIES) (CONT.)

I. BONDING

1. MAINTAIN SHIELD CONTINUITY AND CONNECTIONS TO METAL CONNECTION HARDWARE AT ALL CONNECTION POINTS.
2. GROUNDING CONDUCTORS: ROUTE ALONG SHORTEST AND STRAIGHTEST PATHS POSSIBLE UNLESS OTHERWISE INDICATED OR REQUIRED BY CODE. AVOID OBSTRUCTING ACCESS OR PLACING CONDUCTORS WHERE THEY MAY BE SUBJECTED TO STRAIN, IMPACT OR DAMAGE.
3. BONDING STRAPS AND JUMPERS: INSTALL IN LOCATIONS ACCESSIBLE FOR INSPECTION AND MAINTENANCE EXCEPT WHERE ROUTED THROUGH SHORT LENGTHS OF CONDUIT.

A. BONDING TO STRUCTURE: BOND STRAPS DIRECTLY TO BASIC STRUCTURE, TAKING CARE NOT TO PENETRATE ANY ADJACENT PARTS.

J. TESTING

1. VISUAL AND MECHANICAL INSPECTIONS.
2. INSPECT EXPOSED CABLE SECTIONS FOR PHYSICAL DAMAGE.
3. INSPECT SHIELD GROUNDING AND CABLE SUPPORT. VISUALLY INSPECT CABLE TERMINATIONS PERFORMED BY CPP.
4. INSPECT COMPRESSION CONNECTORS FOR CORRECT CABLE MATCH AND IDENTIFICATION.
5. TESTING AGENCY: ENGAGE A QUALIFIED TESTING AGENCY TO PERFORM TESTS AND INSPECTIONS.
6. PERFORM THE FOLLOWING TESTS AND INSPECTIONS WITH THE ASSISTANCE OF A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE:

A. PERFORM EACH VISUAL AND MECHANICAL INSPECTION AND ELECTRICAL TEST STATED IN NETA ATS. CERTIFY COMPLIANCE WITH TEST PARAMETERS.

B. AFTER INSTALLING MEDIUM-VOLTAGE CABLES AND BEFORE ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST FOR COMPLIANCE WITH REQUIREMENTS.

C. PERFORM DIRECT-CURRENT HIGH POTENTIAL TEST OF EACH NEW CONDUCTOR ACCORDING TO NETA ATS, CH. 7.3.3. DO NOT EXCEED CABLE MANUFACTURER’S RECOMMENDED MAXIMUM TEST VOLTAGE.
7. MEDIUM-VOLTAGE CABLES WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
8. PREPARE TEST AND INSPECTION REPORTS.

K. MEASUREMENT

THE NUMBER OF FEET OF CABLE TO BE PAID FOR SHALL INCLUDE CABLE LENGTH IN DUCT PLUS LENGTH IN MANHOLES PER THE CABLE WIRING PLANS, INSTALLED IN PLACE INCLUDING CABLE RACKING, TRAINING, TESTING, CABLE TAGS, AND OTHER INCIDENTAL WORK.

ITEM 690 – SPECIAL MISC.: PRECAST ELECTRIC MANHOLE

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING COMPLETE IN PLACE PRECAST REINFORCED CONCRETE MANHOLE (VAULT) STRUCTURES IN ACCORDANCE WITH CLEVELAND PUBLIC POWER (CPP) REQUIREMENTS AND DESIGNED TO MEET OR EXCEED THE LATEST ASTM STANDARDS FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES (ASTM C858-10E1) AND MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST UTILITY STRUCTURES (ASTM 857-14) HS25 LOADING. THE FOLLOWING CPP DEVELOPED PLAN DETAILS HAVE BEEN INCLUDED IN THE PLAN SET FOR THIS WORK:

- SAMPLE INDIVIDUAL MANHOLE DETAILS INCLUDING WINDOW OPENING DETAILS AND LIST OF MANHOLE REQUIREMENTS
- TYPICAL INSTALLATION DETAILS
- SAMPLE PRECAST NECK RING SCHEDULE
- GENERAL UNDERGROUND CONSTRUCTION NOTES
- BACKFILL MATERIAL AND BACKFILLING PROCEDURES

IT IS NOTED THAT NUMEROUS UNDERGROUND UTILITIES ARE PRESENT ALONG THE CORRIDOR THAT COULD NECESSITATE CHANGES TO MANHOLE DEPTHS AND WINDOW DIMENSIONS. THE CONTRACTOR SHALL PERFORM UTILITY TEST HOLES AT ALL VAULT LOCATIONS PRIOR TO DEVELOPING SHOP DRAWINGS FOR ELECTRIC MANHOLES. IN ADDITION, THE CONTRACTOR WILL BE SUPPLYING AND INSTALLING ELECTRICAL RACK AND BOND SYSTEMS WITHIN THE MANHOLES. CABLE RACKING ASSEMBLIES SHALL CONSIST OF STEEL, HOT-DIP GALVANIZED STANCHIONS AND ARMS, AND PORCELAIN INSULATORS MANUFACTURED BY HUBBELL POWER SYSTEMS, INC OR APPROVED EQUIVALENT.

1. STANCHIONS: NOB-LOC; 1-3/4 INCH NOMINAL SIZE; DUIB SERIES FOR CABLE-ARM ATTACHMENT.
2. ARMS: 1.97 INCHES WIDE, LENGTHS RANGING FROM 3-7/8 INCHES WITH 400 LB MINIMUM CAPACITY TO 14-7/8 INCHES WITH 200 LB MINIMUM CAPACITY. ARMS SHALL BE ARRANGED FOR SECURE MOUNTING IN HORIZONTAL POSITION AT ANY VERTICAL LOCATION ON STANCHIONS.
3. INSULATORS: HIGH-GLAZE, DRY-PROCESS PORCELAIN ARRANGED FOR MOUNTING ON CABLE ARMS. THE CONTRACTOR SHALL COORDINATE MANHOLE WORK WITH CPP TO ENSURE COMPATIBILITY AND TIMELY COMPLETION OF RELATED WORK ELEMENTS.

SEALING DUCT ENDS IN MANHOLES: USE SEALING COMPOUND IN DUCT ENDS CONTAINING CABLES AND PLUGS IN SPARE DUCTS TO WITHSTAND AT LEAST 15 PSIG HYDROSTATIC PRESSURE. DUCT SEALING COMPOUND SHALL BE NON-HARDENING, SAFE FOR CONTACT WITH HUMAN SKIN, NOT DELETERIOUS TO CABLE INSULATION AND WORKABLE AT TEMPERATURES AS LOW AS 35 DEG F. CAPABLE OF WITHSTANDING TEMPERATURE OF 300 DEG F WITHOUT SLUMP, AND ADHERING TO CLEAN SURFACES OF PLASTIC DUCTS, METALLIC CONDUITS, CONDUIT COATINGS, CONCRETE, MASONRY, LEAD, CABLE SHEATHS, CABLE JACKETS, INSULATION MATERIALS AND COMMON METALS.

THE MANHOLES TO BE PAID WILL BE THE ACTUAL NUMBER COMPLETED AND ACCEPTED, INCLUDING CONCRETE LEVELING PAD, GROUND ROD (5/8 INCH X LENGTH, PER CPP DETAILS), CLAMP, GROUND WIRE, BONDING, RACK SYSTEM, NECK RINGS, CAP RINGS, PULLING IRONS, AND CASTINGS.

ITEM 690 – SPECIAL MISC.: PRECAST ELECTRIC MANHOLE (CONT.)

PAYMENT: THE WORK INCLUDED IN THIS ITEM AND THE CONTRACT UNIT PRICE FOR EACH MANHOLE BID UNDER “ITEM 690 MISC.: PRECAST ELECTRIC MANHOLE” IN PLACE, COMPLETED AND ACCEPTED, SHALL FORM THE BASIS OF PAYMENT AND SHALL CONSTITUTE FULL COMPENSATION FOR ALL EXCAVATION AND BACKFILL, FOR FURNISHING, HAULING AND PLACING ALL CASTINGS AND TYING EXISTING OR NEW DUCTS INTO MANHOLES INCLUDING RAISING OR LOWERING DUCTS, REINFORCING STEEL, CONCRETE BRICK AND CONCRETE MASONRY, PULLING IRONS, GROUND RODS, BONDING, RACK SYSTEM AND OTHER MATERIAL, ETC., AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THESE ITEMS. ALL MANHOLE CUT SHEETS SHALL BE APPROVED BY CPP ENGINEERING BEFORE THEY ARE CAST.

ITEM 690 – SPECIAL: BUILT-IN-PLACE ELECTRIC MANHOLE

THIS ITEM SHALL CONSIST OF THE REMOVAL OF EXISTING REINFORCED CONCRETE MANHOLES AND CONSTRUCTING COMPLETE REINFORCED CONCRETE MASONRY UNIT (CMU) CONCRETE MANHOLE (VAULT) STRUCTURES IN ACCORDANCE WITH CLEVELAND PUBLIC POWER (CPP) REQUIREMENTS. THE FOLLOWING CPP DEVELOPED PLAN DETAILS HAVE BEEN INCLUDED IN THE PLAN SET FOR THIS WORK:

- BUILT-IN-PLACE CMU MANHOLE DETAILS
- TIMBER BEAM SUPPORTING DETAILS
- TYPICAL INSTALLATION DETAILS
- GENERAL UNDERGROUND CONSTRUCTION NOTES
- BACKFILL MATERIAL AND BACKFILLING PROCEDURES

THE CONTRACTOR IS ALERTED THAT THE REMOVAL OF EXISTING MANHOLES AND CONSTRUCTION OF BUILT-IN-PLACE MANHOLES SHALL BE PERFORMED AROUND ENERGIZED CPP ELECTRICAL CIRCUITS. THE CONTRACTOR SHALL USE EXTREME CARE WHEN WORKING AROUND ACTIVE CPP LINES. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO TEMPORARILY SUPPORT THE EXISTING ACTIVE CPP FACILITIES WHILE CONSTRUCTING THE BUILT-IN-PLACE MANHOLES. THE CONTRACTOR SHALL COORDINATE ALL MANHOLE WORK WITH CPP TO ENSURE COMPATIBILITY AND TIMELY COMPLETION OF RELATED WORK ELEMENTS.

THE MANHOLES TO BE PAID WILL BE THE ACTUAL NUMBER COMPLETED AND ACCEPTED, INCLUDING, GROUND ROD (5/8” X LENGTH PER DETAILS – PER CPP), CLAMP, GROUND WIRE, BONDING, RACK SYSTEM, NECK RINGS, CAP RINGS, PULLING IRONS, AND CASTINGS.

PAYMENT: THE WORK INCLUDED IN THIS ITEM AND THE CONTRACT UNIT PRICE FOR EACH MANHOLE BID UNDER “ITEM 690 SPECIAL: BUILT-IN-PLACE ELECTRIC MANHOLE” IN PLACE, COMPLETED AND ACCEPTED, SHALL FORM THE BASIS OF PAYMENT AND SHALL CONSTITUTE FULL COMPENSATION FOR ALL EXCAVATION AND BACKFILL, MANHOLE REMOVAL, SUPPORT OF EXISTING FACILITIES, FOR FURNISHING, HAULING AND PLACING ALL CASTINGS AND TYING EXISTING OR NEW DUCTS INTO MANHOLES INCLUDING RAISING OR LOWERING DUCTS, REINFORCING STEEL, CONCRETE BRICK AND CONCRETE MASONRY, PULLING IRONS, GROUND RODS, BONDING, RACK SYSTEM, AND OTHER MATERIAL, ETC., AND FOR ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THESE ITEMS.

MAINTAIN EXISTING LIGHTING AND POWER

THE CONTRACTOR SHALL NOT INTERRUPT EXISTING LIGHTING AND POWER EXCEPT FOR SUCH PERIODS AS THE ENGINEER MAY REQUIRE FOR THE PROPER CONSTRUCTION OF NEW FACILITIES TO BE IN PLACE AND OPERATIONAL. FINAL CONNECTION SHALL BE MADE BY CPP AFTER ALL TESTING HAS BEEN CONDUCTED AND FACILITIES HAVE BEEN ACCEPTED BY CPP.

ITEM 625 – LIGHTING, MISC.: REMOVAL OF UTILITY FACILITIES

EXISTING CPP OR CEI UTILITY FACILITIES TO BE ABANDONED, INCLUDING BUT NOT LIMITED TO, SERVICE CONNECTIONS FOR BUILDINGS TO BE RAZED AS PART OF THE PROJECT, MUST BE DISCONNECTED AND REMOVED OR ABANDONED TO GROUND (ABANDONED IN PLACE). WOODEN POLES SHALL BE REMOVED IN THEIR ENTIRETY.

ALL EXISTING MATERIALS SHALL BE REMOVED AS INDICATED ON THE PLANS BUT NOT LIMITED TO: OVERHEAD POLE LINES, TRANSFORMERS, POLES, CROSSARMS, POLE LINE HARDWARE, PRIMARY AND SECONDARY CONDUCTORS, STREET LIGHT LUMINAIRES, UNDERGROUND CONDUITS AND CABLES, ETC., INCLUDING EXCAVATION AND BACKFILL INCIDENTAL TO THEIR REMOVAL. ALL EXISTING MATERIALS INDICATED ON THE PLANS TO BE REMOVED SHALL BE OFFERED TO CPP FOR THEIR USE. ALL MATERIALS NOT ACCEPTED BY CPP SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED.

ALL EXISTING MATERIALS INDICATED ON THE PLANS TO BE RELOCATED SHALL BE REMOVED BY THE CONTRACTOR, STORED IN A DRY LOCATION FOR RE-INSTALLATION PER CPP REQUIREMENTS.

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GENERAL OVERHEAD UTILITY POWER CONSTRUCTION

OC.01 SCOPE OF WORK

- A. ALL OVERHEAD CONSTRUCTION WORK UNDER THIS PART OF THE CONTRACT SHALL BE PERFORMED IN A SAFE, THOROUGH AND WORKMANLIKE MANNER IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE CONSTRUCTION DRAWINGS.
- B. THE LATEST EDITION OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) SHALL BE FOLLOWED EXCEPT WHERE LOCAL REGULATIONS ARE MORE STRINGENT, IN WHICH CASE LOCAL REGULATIONS SHALL GOVERN. ALL WORK SHALL BE IN CONFORMANCE WITH CPP REGULATIONS.
- C. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY OVERHEAD FACILITIES AND MISCELLANEOUS CONNECTIONS AND AS INDICATED ON THE PLANS AND POLE DETAILS.
- D. OVERHEAD DISTRIBUTION CIRCUITS SHALL BE CONSTRUCTED WITH NOT LESS THAN THE GRADE C STRENGTH REQUIREMENTS AS DESCRIBED IN SECTION 26, STRENGTH REQUIREMENTS, OF THE NESC WHEN SUBJECTED TO THE LOADS SPECIFIED IN NESC SECTION 25, LOADINGS FOR GRADES B AND C. DISTRIBUTION LINES THAT UNDERBUILD TRANSMISSION CIRCUITS OR THAT CROSS OVER LIMITED ACCESS HIGHWAYS AND RAILROAD TRACKS SHALL BE CONSTRUCTED WITH NOT LESS THAN THE GRADE B STRENGTH REQUIREMENTS AS DESCRIBED IN NESC SECTION 26.

OC.02 POLES

- A. POLES SHALL BE CLASS 3 OR BETTER AS INDICATED ON THE PLANS, WESTERN RED CEDAR, SOUTHERN PINE OR DOUGLAS FIR AND SHALL BE MANUFACTURED AND MARKED AND SHALL CONFORM IN TREATMENT AND LIMITATION OF DEFECTS FOR WOOD POLES, LATEST ANSI 05.1, EXCEPT AS NOTED BELOW. SUBMIT TO CPP ENGINEERING DEPARTMENT FOR APPROVAL.
1. SPIRAL GRAIN (TWIST GRAIN): NO POLE SHALL HAVE MORE THAN 1 TWIST IN ANY 20 FEET.
2. KNOTS: POLES WITH 3 OR MORE KNOTS IN A CLUSTER ARE NOT ACCEPTABLE.
3. SWEEP: SWEEP OF POLES SHALL BE MEASURED BETWEEN BUTT AND TOP OF POLE AND SHALL BE NO MORE THAN 1 INCH FOR EVERY 10 FEET OF TOTAL LENGTH.
4. SHORT CROOK: NO MORE THAN 1 INCH DEVIATION IN ANY FIVE-FOOT SECTION OF POLE WILL BE ALLOWED.
- B. ALL POLES SHALL BE INCISED OVER AN AREA STARTING FROM TWO FEET BELOW GROUND LINE AND EXTENDING TO ONE FOOT ABOVE GROUND LINE. ALL POLES SHALL BE MACHINE SHAVED FULL LENGTH ABOVE THE INCISED AREA. ALL POLES SHALL BE ROOFED AT A 15 DEGREE ANGLE, GAINED AND DRILLED AS DETAILED ON DRAWINGS AND IN ACCORDANCE WITH CPP DRAWING NO.1-2-1-3.
- C. PRESERVATION TREATMENT:
1. PRESERVATIVE: THE PRESERVATIVE USED IN THE TREATMENT OF POLES, CROSS ARMS AND CROSS ARM BRACES SHALL BE PENTACHLOROPHENOL MEETING THE REQUIREMENTS OF AWP A P35-16 OR LATEST. THE SOLVENT USED TO PREPARE SOLUTIONS OF PENTACHLOROPHENOL SHALL COMPLY WITH AWP A STANDARD P35-16 OR LATEST. ALL POLES SHALL BE BORED, ROOFED AND GAINED BEFORE TREATMENT.
2. PROCESS: ALL WOOD PRODUCTS SHALL BE FULL-LENGTH TREATED BY AN EMPTY-CELL PROCESS IN ACCORDANCE WITH AWP A T1 AND U1. POLES SHALL BE CLEAN AND DRY AFTER TREATMENT. BLEEDERS SHALL BE REJECTED.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.02 POLES (CONT.)

- C. PRESERVATION TREATMENT (CONT.):
3. THE PROCESS SHALL PRODUCE AND GUARANTEE AN AVERAGE MINIMUM FINAL RETENTION OF PRESERVATIVE IN POUNDS PER CUBIC FOOT OF WOOD IN ACCORDANCE WITH THE FOLLOWING:
- | | SOUTHERN | WESTERN | DOUGLAS FIR | DEEP |
|----------------|----------|---------|-------------|---------|
| PENETRATION | PINE | CEDAR | BRAND | INCISED |
| | | | AREA | AREA |
| INCHES | 3.0" | 0.5" | 0.75" | 2.5" |
| % OF SAPWOOD | 90% | 100% | 85% | 100% |
| RETENTION MIN. | 0.38 | 0.80 | 0.60 | 0.30 |

OC.03 POLE SETTING

- A. EXCEPT WHERE SPECIFIED OTHERWISE THE MINIMUM DEPTH FOR SETTING POLES SHALL BE AS FOLLOWS:
- | LENGTH
OF POLE
(FT) | SETTING
IN SOIL
(FT) | SETTING IN ALL
SOLID ROCK
(FT) |
|---------------------------|----------------------------|--------------------------------------|
| 30 | 5.5 | 3.5 |
| 35 | 6.0 | 4.0 |
| 40 | 6.0 | 4.0 |
| 45 | 6.5 | 4.5 |
| 50 | 7.0 | 4.5 |
| 55 | 7.5 | 5.0 |
| 60 | 8.0 | 5.0 |
| 65 | 8.5 | 6.0 |
| 70 | 9.0 | 6.0 |
| 75 | 9.5 | 6.5 |
| 80 | 10.0 | 6.5 |
| 85 | 10.5 | 7.0 |
| 90 | 11.0 | 7.5 |
| 95 | 11.0 | 7.5 |
| 100 | 11.0 | 7.5 |
| 105 | 12.0 | 8.0 |
| 110 | 12.0 | 8.0 |
- B. "SETTING IN SOIL" DEPTHS APPLY WHERE:
1. POLES ARE TO BE SET IN SOIL.
2. THERE IS A LAYER OF SOIL OF MORE THAN TWO (2) FEET IN DEPTH OVER SOLID ROCK.
3. THE HOLE IN SOLID ROCK IS NOT SUBSTANTIALLY VERTICAL OR THE DIAMETER OF THE HOLE AT THE SURFACE OF THE ROCK EXCEEDS APPROXIMATELY TWICE THE DIAMETER OF THE POLE AT THE SAME LEVEL.
- C. SETTING IN ALL SOLID ROCK" SPECIFICATIONS SHALL APPLY WHERE POLES ARE TO BE SET IN SOLID ROCK AND WHERE THE HOLE IS SUBSTANTIALLY VERTICAL, APPROXIMATELY UNIFORM IN DIAMETER AND LARGE ENOUGH TO PERMIT THE USE OF TAMPING BARS THE FULL DEPTH OF THE HOLE.
- D. WHERE THERE IS A LAYER OF SOIL TWO (2) FEET OR LESS IN DEPTH OVER SOLID ROCK, THE DEPTH OF THE POLE SHALL BE THE DEPTH OF THE SOIL IN ADDITION TO THE DEPTH SPECIFIED UNDER "SETTING IN ALL SOLID ROCK" PROVIDED, HOWEVER, THAT SUCH DEPTH SHALL NOT EXCEED THE DEPTH SPECIFIED UNDER "SETTING IN SOIL".

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.03 POLE SETTING (CONT.)

- E. WHERE THE POLE IS TO BE SET IN SOIL AND THE GROUND SLOPES AWAY FROM THE POLE PERPENDICULAR TO THE LINE, SETTING DEPTH SHALL BE INCREASED TO ACCOUNT FOR THE REDUCED VOLUME OF BEARING SOIL AT GROUND LINE. THE ADDITIONAL DEPTH OF SETTING SHALL BE EQUAL TO THE DROP IN ELEVATION IN 5 FEET MEASURED HORIZONTALLY.
- F. ON SLOPING GROUND, THE DEPTH OF THE HOLE ALWAYS SHALL BE MEASURED FROM THE LOW SIDE OF THE HOLE. WHERE MULTIPLE POLE STRUCTURES ARE PLACED ON SLOPING GROUND, UPHILL POLE SETTING DEPTHS SHALL BE INCREASED AS NECESSARY TO LEVEL THE POLE TOPS. CPP STD.2-9. DWG.8517.3.
- G. SET POLES IN AUGURED HOLES APPROXIMATELY 8 INCHES LARGER IN DIAMETER THAN THE POLE BUTT. OTHER METHODS OF POLE INSTALLATION SHALL BE APPROVED BY CPP ENGINEERING DEPARTMENT.
- H. POLES SHALL BE SET SO THAT ALTERNATE CROSS ARM GAINS FACE IN OPPOSITE DIRECTIONS, EXCEPT AT TERMINALS AND DEPENDS WHERE THE GAINS OF THE LAST TWO POLES SHALL BE ON THE SIDE FACING THE TERMINAL OR DEADENDED. ON UNUSUALLY LONG SPANS, THE POLES SHALL BE SET SO THAT THE CROSS ARM COMES ON THE SIDE OF THE POLE AWAY FROM THE LONG SPAN. WHERE POLE TOP PINS ARE USED, THEY SHALL BE ON THE OPPOSITE SIDE OF THE POLE FROM THE GAIN, WITH THE FLAT SIDE AGAINST THE POLE.
- I. RAKE AND OFFSET POLES SHALL BE SET IN ALIGNMENT AND PLUMB EXCEPT AT CORNERS, TERMINALS, ANGLES, JUNCTIONS, OR OTHER POINTS OF STRAIN, WHERE THEY SHALL BE SET AND RAKED AGAINST THE STRAIN SO THAT THE CONDUCTORS SHALL BE IN LINE.
- J. POLES SHALL BE RAKED AGAINST STRAIN NOT LESS THAN ONE INCH FOR EACH TEN FEET OF POLE LENGTH NOR MORE THAN TWO INCHES FOR EACH TEN FEET OF POLE LENGTH AFTER CONDUCTORS ARE INSTALLED AT THE REQUIRED TENSION.
- K. POLE BACKFILL MUST BE THOROUGHLY TAMPED THE FULL DEPTH. EXCESS DIRT MUST BE BANKED AROUND THE POLE. REMOVE EXCESS DIRT AND RESTORE SIDEWALK OR SOD AFTER SETTING.
- L. FIELD CUTTING OF WOOD POLES: WHERE NEW GAINS OR HOLES ARE REQUIRED, PAINT GAINS AND TREAT HOLES WITH 5 PERCENT PENTACHLOROPHENOL PRESERVATIVE COMPOUND.
- M. DO NOT CUT TOPS OF WOOD POLES EXCEPT UNDER VERY UNUSUAL CONDITIONS AND ONLY ON APPROVAL OF CPP ENGINEERING DEPARTMENT. IF CUTTING IS DEEMED NECESSARY, THE POLE TOP SHALL BE COVERED WITH A MASTIC TYPE CAP MANUFACTURED FOR THIS PURPOSE. DO NOT CUT THE BUTT OF WOOD POLES.
- N. UNUSED HOLES: IN WOOD POLES, PLUG UNUSED OR ABANDONED HOLES USING TREATED WOOD DOWELS. FOR HOLES IN USED POLES, WHERE THE HOLE HASS BEEN ENLARGED, TREAT THE HOLE WITH 5 PERCENT PENTACHLOROPHENOL PRESERVATIVE COMPOUND.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.04 POLE LINE HARDWARE

- A. ALL POLE LINE HARDWARE SHALL BE HOT-DIPPED GALVANIZED PER CMS 711.02, ROLLED, THREADED, BUFFER POINT, SQUARE HEADS, AND SQUARE NUTS. PROVIDE ALL EYENUTS EYE BOLTS, WASHERS, LOCKNUTS, CONNECTORS AS SHOWN ON THE DRAWINGS AND REQUIRED FOR A COMPLETE INSTALLATION. ALL HARDWARE SHALL BE UNIFORM WITH STANDARD THREADS AND SHALL BE IN ACCORDANCE WITH ASTM SPECIFICATION A-575 OR A-576. ALL POLE LINE HARDWARE SHALL BE NEW AND DESIGNED TO SERVE THE FUNCTION INTENDED.
- B. A 3 INCH BY 3 INCH (MINIMUM), SQUARE, CURVED WASHER SHALL BE USED ABUTTING THE POLE WHEN INSTALLING PRIMARY DEADEND, NEUTRAL DEADEND AND GUY ASSEMBLIES DIRECTLY TO THE POLE. THESE WASHERS MITIGATE THE CRUSHING OF WOOD FIBERS AND FACILITATE THE PERMITTED THE APPLIED LONGITUDINAL LOADS.
- C. POLE LINE HARDWARE SHALL BE MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, MACLEAN POWER SYSTEMS OR APPROVED EQUAL.

OC.05 LOCKNUTS

- A. A LOCKNUT SHALL BE INSTALLED WITH EACH NUT, EYENUT OR OTHER FASTENER ON ALL BOLTS OR THREADED HARDWARE SUCH AS INSULATOR PINS, UPSET BOLTS, DOUBLE ARMING BOLTS, ETC. REFER TO HARDWARE FOR ADDITIONAL REQUIREMENTS.
- B. LOCKNUTS SHALL BE INSTALLED ON ALL THREADED MATERIAL AND HARDWARE IN ADDITION TO NUTS AND WASHERS. THE THREADS ON INSTALLED BOLTS SHALL PROTRUDE PAST THE LOCK WASHERS A MINIMUM OF ONE INCH BUT NOT MORE THAN TWO INCHES.

OC.06 CROSS ARMS

- A. ALL CROSS ARMS SHALL BE MANUFACTURED FROM DOUGLAS FIR TIMBER AND MANUFACTURED IN ACCORDANCE WITH SPECIFICATION REA DT5-B.
- B. CROSS ARMS SHALL BE INCISED TO A DEPTH OF 1/8 INCH ON ALL SIX SIDES.
- C. DIMENSIONS AND DRILLING SHALL BE AS DETAILED ON THE DRAWINGS AND IN ACCORDANCE WITH CPP DRAWING NO. 8288-3.
- D. CROSS ARMS SHALL BE TREATED AS SPECIFIED IN OC.02 C; PENETRATION: THE PRESERVATIVE SHOULD PENETRATE ALL THE SAPWOOD. IT SHALL PENETRATE LONGITUDINALLY NOT LESS THAN ONE INCH FROM PINHOLES, BOLT HOLES AND FROM THE ENDS. EFFECTS OF TREATMENT AND CLEANLINESS: THE TREATING METHOD SHALL NOT INJURE THE WOOD. AFTER TREATMENT, CROSS ARMS SHALL BE REASONABLY CLEAN TO THE TOUCH AND SHOULD REMAIN SO. THE PROCESS SHALL COMPLY WITH AWP A STANDARDS P9 AND IN ACCORDANCE WITH AWP A T1 AND U1.
- E. PROVIDE A 4.5" GRID TYPE GAIN FOR EACH CROSSARM, DUCTILE IRON AND HOT DIPPED GALVANIZED PER CMS 711.02.

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GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.06 CROSS ARMS (CONT.)

F. DEADEND CLEVIS AND INSULATOR:

1. INSULATOR SHALL BE A PRIMARY SPOOL INSULATOR MADE BY WET PROCESS PORCELAIN AND SHALL CONFORM TO THE LATEST EEI-NEMA STANDARDS WITH RATING AND SIZE MEETING CLASS 53-5 REQUIREMENTS. COLOR SHALL BE BROWN GLAZED.
2. CLEVIS SHALL BE MADE OF HOT-DIPPED GALVANIZED 1/4" X 1-1/2" FLAT STEEL WITH 5/8" DIAMETER GALVANIZED STEEL BOLT WITH NON-FERROUS SELF-LOCKING COTTER AND AN ULTIMATE MECHANICAL STRENGTH OF 5000 POUNDS MINIMUM. ALL METAL PARTS SHALL BE HOT-DIPPED GALVANIZED PER CMS 711.02.
3. CLEVIS WITH INSULATOR ABOVE SHALL BE MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, MACLEAN POWER SYSTEMS OR APPROVED EQUAL.

OC.07 SIDE ARM BRACES

MATERIAL FOR BRACES SHALL BE WOOD SPECIES DOUGLAS FIR, 1"x1 3/4" RECTANGULAR CROSS-SECTION WITH 26" CENTER HOLE MEASUREMENT. ALL METAL PARTS SHALL BE HOT-DIPPED GALVANIZED PER CMS 711.02. CROSS ARM BRACES SHALL BE HUGHES BROTHERS, APITONG OR EQUAL. THERE ARE ALSO SEVERAL CROSS ARM AND ALLEY ARM BRACES DEPENDING ON THE REQUIRED POLE CONSTRUCTION.

OC.08 CONDUCTORS

A. OVERHEAD CONDUCTORS

1. EXISTING AND NEW CONDUCTORS MUST BE HANDLED WITH CARE. CONDUCTORS SHALL NOT BE TRAMPED ON NOR RUN OVER BY VEHICLES. EACH REEL SHALL BE EXAMINED AND THE WIRE SHALL BE INSPECTED FOR CUTS, KINKS, OR OTHER INJURIES. INJURED PORTIONS SHALL BE CUT OUT AND THE CONDUCTOR SPLICED. THE CONDUCTORS SHALL BE PULLED OVER SUITABLE ROLLERS OR STRINGING BLOCKS PROPERLY MOUNTED ON POLE OR CROSS ARM TO PREVENT BINDING WHILE STRINGING.
2. ALL CONDUCTORS SHALL BE CLEANED THOROUGHLY BY WIRE-BRUSHING BEFORE SPLICING OR THE INSTALLATION OF A CONNECTOR OR CLAMP. A SUITABLE OXIDATION INHIBITOR SHALL BE APPLIED BEFORE SPLICING OR APPLYING CONNECTORS OVER ALUMINUM CONDUCTOR. ALL SPLICING OF EXISTING OVERHEAD CONDUCTORS SHALL PER CPP REQUIREMENTS.
3. ALUMINUM CONDUCTOR STEEL REINFORCED (ACSR) ACSR CONDUCTOR SHALL BE MANUFACTURED TO CONFORM TO THE LATEST REVISION OF THE FOLLOWING ASTM SPECIFICATIONS:

A. ASTM-B230, HARD-DRAWN ALUMINUM WIRE FOR ELECTRICAL PURPOSED

B. ASTM-B232, CONCENTRIC-LAY STRANDED ALUMINUM CONDUCTORS, STEEL REINFORCED

C. ASTM-B261, ZINC COATED (CLASS "A") STEEL CORE WIRE FOR ALUMINUM CONDUCTORS

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.08 CONDUCTORS (CONT.)

BARE ACSR CONDUCTORS APPROVED FOR USE BY CPP INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

SIZE	ACSR STRAND	CODE NAME
#2 AWG	6/1	SPARATE
#1/0 AWG	6/1	RAVEN
#3/0 AWG	6/1	PIGEON
#4/0 AWG	6/1	PENGUIN
336.4 KCMIL	26/7	LINNET
477 KCMIL	26/7	HAWK
636 KCMIL	26/7	GROSBEAK

ACSR "COVERED" CONDUCTORS APPROVED FOR USE BY CPP INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

SIZE	ACSR STRAND	CODE NAME
#2 AWG	6/1	BEECH/XLP
#1/0 AWG	6/1	ALMOND/XLP
336.4 KCMIL	26/7	ASPEN/XLP

4. ALUMINUM TRIPLEX AND QUADRUPLX

- A. PHASE CONDUCTORS SHALL BE MANUFACTURED TO CONFORM TO THE LATEST REVISION OF ASTM-B231, CONCENTRICALLY-STRANDED CONDUCTORS.
- B. NEUTRAL CONDUCTOR SHALL BE MANUFACTURED TO CONFORM TO THE LATEST REVISION OF THE FOLLOWING ASTM SPECIFICATIONS:

1. ASTM-B230, HARD-DRAWN ALUMINUM WIRE FOR ELECTRICAL PURPOSES

2. ASTM-B232, CONCENTRIC-LAY STRANDED ALUMINUM CONDUCTORS, STEEL REINFORCED

3. ASTM-B261, ZINC COATED (CLASS "A") STEEL CORE WIRE FOR ALUMINUM CONDUCTORS, STEEL REINFORCED (ACSR)

ALUMINUM TRIPLEX WITH ACSR MESSENGER APPROVED FOR USE BY CPP INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

PHASE	CONDUCTOR	MESSENGER	ACSR	CODE
			STRAND	NAME
#4 AWG	7 STRAND	#4 AWG	6/1	PERIWINKLE/XLP
#2 AWG	7 STRAND	#2 AWG	6/1	CONCH/XLP
1/0 AWG	7 STRAND	1/0 AWG	6/1	NERITINA/XLP
4/0 AWG	18 STRAND	4/0 AWG	6/1	ZUZARA/XLP
336.4 KCMIL	19 STRAND	336.4 KCMIL	18/1	LIMPET/XLP

ALUMINUM QUADRUPLX WITH ACSR MESSENGER APPROVED FOR USE BY CPP INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

PHASE	CONDUCTOR	MESSENGER	ACSR	CODE
			STRAND	NAME
#4 AWG	7 STRAND	#4 AWG	6/1	HACKNEY/XLP
#2 AWG	7 STRAND	#2 AWG	6/1	PALOMINO/XLP
1/0 AWG	9 STRAND	1/0 AWG	6/1	COSTENA/XLP
4/0 AWG	18 STRAND	4/0 AWG	6/1	APPALOOSA/XLP
336.4 KCMIL	19 STRAND	336.4 KCMIL	18/1	BRONCO/XLP

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.08 CONDUCTORS (CONT.)

B. DEADEND GRIPS

PROVIDE PREFORMED DEADENDS FOR USE IN DEADENDING WEATHERPROOF COVERED COPPER OR ALUMINUM CONDUCTORS WITHOUT REMOVING THE INSULATION ON THE WIRE. THESE DEADENDS ARE TO BE MADE OF ALUMINUM ALLOY AND GENEROUSLY COATED WITH A DURABLE PVC, POLYMERIZED CHLOROBUTADIENE OR PLASTIC COATING OVER THE ENTIRE METAL SURFACE. EACH DEADEND GRIP MUST HAVE A TAG ATTACHED SHOWING MANUFACTURER'S NAME, CATALOG NUMBER, AND THE SIZE WIRE TO WHICH IT CAN BE ATTACHED. DEADEND GRIP SHALL BE A.B. CHANCE-HUBBELL POWER SYSTEMS TYPE PCAG OR APPROVED EQUAL.

C. DEADEND GRIPS FOR TRIPLEX

PROVIDE PREFORMED DEADENDS FOR USE IN DEADENDING TRIPLEX WIRE WITH ALUMINUM ALLOY NEUTRALS. THESE DEADENDS ARE TO BE MADE OF HARD DRAWN ALUMINUM CLAD STEEL WIRE (ASTM B-415-64T). EACH DEADEND GRIP SHALL HAVE A TAG ATTACHED SHOWING MANUFACTURER'S NAME, CATALOG NUMBER, AND THE SIZE WIRE WHICH IT CAN BE ATTACHED. DEADEND GRIP SHALL BE A.B. CHANCE-HUBBELL POWER SYSTEMS SUPERLOCK OR APPROVED EQUAL.

D. SECONDARY CLEVIS:

1. SECONDARY CLEVIS WITH ONE INSULATOR SPOOL COMPLETELY ASSEMBLED. SPOOLS MANUFACTURED BY WET PROCESS METHOD AND MEET ANSI CLASS 53-1. ALL METAL PARTS SHALL BE HOT-DIPPED GALVANIZED PER CMS 711.02.
2. CLEVIS SHALL BE AS DETAILED ON DRAWINGS AND MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, MACLEAN POWER SYSTEMS OR APPROVED EQUAL.

E. SECONDARIES:

1. OVERHEAD SECONDARY CONDUCTORS SHALL BE INSULATED WIRES OR MULTI CONDUCTOR SERVICE CABLE IN ACCORDANCE WITH NESC RULE 234C3. THE CONDUCTORS SHALL BE SAGGED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. SECONDARY AND SERVICE DROP CONDUCTORS SHALL BE INSTALLED SUCH THAT THE CLIMBING SPACE IS NOT OBSTRUCTED. THERE SHALL NOT BE MORE THAN ONE SPLICE PER CONDUCTOR IN ANY SPAN, AND SPLICING SHALL BE LOCATED AT LEAST TEN FEET FROM THE CONDUCTOR SUPPORT. WHERE THE SAME INSULATED CONDUCTORS OR SERVICE CABLES ARE TO BE USED FOR THE SECONDARY AND SERVICE DROP, THEY SHALL BE INSTALLED IN ONE CONTINUOUS RUN.

OC.09 SAGGING OF CONDUCTORS

- A. CONDUCTORS SHALL BE SAGGED IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURER'S RECOMMENDATION. ALL CONDUCTORS SHALL BE SAGGED EVENLY. THE AIR TEMPERATURE AT THE TIME AND PLACE OF SAGGING SHALL BE DETERMINED BY A CERTIFIED ETCHED GLASS THERMOMETER.
- B. THE SAG OF ALL CONDUCTORS AFTER STRINGING SHALL BE IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURER'S RECOMMENDATIONS.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.10 TAPS AND JUMPERS

- A. JUMPERS AND OTHER LEADS CONNECTED TO LINE CONDUCTORS SHALL HAVE SUFFICIENT SLACK TO ALLOW FREE MOVEMENT OF THE CONDUCTORS WITHOUT CAUSING THE JUMPERS TO BE PULLED FROM THEIR CONNECTORS. WHERE SLACK IS NOT SHOWN ON THE CONSTRUCTION DRAWINGS IT WILL BE PROVIDED BY AT LEAST TWO BENDS IN A VERTICAL PLANE, OR ONE IN A HORIZONTAL PLANE, OR THE EQUIVALENT.
- B. ALL LEADS ON EQUIPMENT SUCH AS TRANSFORMERS, LIGHTNING ARRESTERS, CUTOUTS, ETC. SHALL BE A MINIMUM OF #4 COPPER OR ACSR CONDUCTORS.

OC.11 SPLICES AND DEADENDS

CONDUCTORS SHALL BE SPLICED AND DEADENDED AS SHOWN ON THE CONSTRUCTION DRAWINGS. THERE SHALL BE NOT MORE THAN ONE SPLICE PER CONDUCTOR IN ANY SPAN AND SLICING SHALL BE LOCATED AT LEAST TEN FEET FROM THE CONDUCTOR SUPPORT.

OC.12 HOT-LINE CLAMPS AND CONNECTORS

CONNECTORS AND HOT-LINE CLAMPS SUITABLE FOR THE PURPOSE SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS AND ALSO IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. ON ALL HOT-LINE CLAMP INSTALLATIONS, THE CLAMP AND JUMPER SHALL BE SO INSTALLED SO THAT THEY ARE PERMANENTLY BONDED TO THE LOAD SIDE OF THE LINE, ALLOWING THE JUMPER TO BE DE-ENERGIZED WHEN THE CLAMP IS DISCONNECTED.

OC.13 DEADEND INSULATORS

INSULATORS SHALL BE 15 KV CLASS POLYMER DISTRIBUTION DEADEND OR SUSPENSION INSULATORS CONFORMING TO THE LATEST EDITION OF THE ANSI/IEEE STANDARDS 1024, IEC-1109 AND MANUFACTURED WITH ISO 9002-1994 AS MANUFACTURED BY HUBBELL/OHIO BRASS, COPPER OR EQUAL.

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GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.14 GUYS

- A. GUYS SHALL BE PLACED AND TIGHTENED BY TURNBUCKLE BEFORE THE CONDUCTORS ARE STRUNG AND SHALL BE ATTACHED TO THE POLE AND CONSTRUCTED AS SHOWN ON THE PLANS AND AS NOTED HERE AND AS PER CPP GUIDELINES.
- B. THE DISTANCE FROM THE POLE TO THE ANCHOR ROD (THE GUY LEAD) IS RECOMMENDED TO BE THE SAME DISTANCE AS FROM THE GROUND TO THE GUY ATTACHMENT ON THE POLE. THIS 1:1 GUY SLOPE IS ESPECIALLY RECOMMENDED ON DEADEND STRUCTURES.
- C. IF THE SEPARATION ON THE POLE BETWEEN ANY GUY ATTACHMENT BOLT OR HARDWARE AND ANY PHASE CONDUCTOR ATTACHMENT BOLT IS LESS THAN 15 INCHES, THEN A GUY STRAIN INSULATOR ASSEMBLY SHALL BE INSTALLED AT THE TOP OF THE GUY AND THE GUY WIRE SHALL BE EFFECTIVELY GROUNDED BELOW THE INSULATOR BY BONDING THE GUY WIRE TO THE SYSTEM NEUTRAL AND THE POLE GROUND IF PRESENT. ALTERNATIVELY, AN INSULATED EXTENSION LINK SHALL BE INSTALLED IN THE PRIMARY CONDUCTOR TAP, DEADEND, OR SUSPENSION ANGLE SUBASSEMBLY WHERE IT ATTACHES TO THE POLE.
- D. ALL ANCHORS AND RODS SHALL BE IN ACCORDANCE WITH CONSTRUCTION DRAWINGS AND IN LINE WITH AND IN THE OPPOSITE DIRECTION OF, THE RESULTANT STRAIN OF THE CONDUCTORS. ANCHOR ASSEMBLIES SHALL BE INSTALLED SO THAT APPROXIMATELY SIX INCHES OF THE ROD REMAIN OUT OF THE GROUND. IN CULTIVATED FIELDS OR OTHER LOCATIONS AS DEEMED NECESSARY, THE PROJECTION OF THE ANCHOR ROD ABOVE EARTH MAY BE INCREASED TO A MAXIMUM OF 12 INCHES TO PREVENT BURIAL OF THE ROD EYE. THE BACKFILL OF ALL ANCHOR HOLES MUST BE THOROUGHLY TAMPED THE FULL DEPTH.

E. GUY HOOKS:

GUY HOOK SHALL BE THE COMBINATION TYPE TO TERMINATE GUY WIRE OR FIBERGLASS GUY STRAIN INSULATOR, FOR USE ON ROUND OR FLAT SURFACES. HOOK SHALL BE MADE OF DUCTILE IRON AND SHALL BE HOT-DIPPED GALVANIZED AS PER CMS 711.02. GUY HOOK SHALL HAVE A MINIMUM ULTIMATE STRENGTH OF 35,000 LBS. GUY HOOK SHALL BE MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, MACLEAN POWER SYSTEMS OR APPROVED EQUAL.

F. GUY STRAIN INSULATOR:

GUY STRAIN INSULATOR SHALL HAVE A ROD LENGTH OF 36" THE FIBERGLASS ROD SHALL BE COATED IN SILICONE RUBBER. GUY STRAIN INSULATOR SHALL HAVE A MINIMUM ULTIMATE STRENGTH OF 30,000 LBS. GUY STRAIN INSULATOR SHALL BE MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, MACLEAN POWER SYSTEMS OR APPROVED EQUAL.

G. GUY WIRE STRAND:

1. GUY WIRE SHALL BE UTILITIES GRADE; TWISTED STRAND GALVANIZED COATED STEEL WIRE CONFORMING TO ASTM A475 CLASS B AND AS PER CMS 711.02.
2. THE STRAND WIRE SHALL BE A MINIMUM 3/8" DIAMETER CONFORMING TO ASTM A475.
3. THE ACTUAL TENSION OF THE CABLE SHALL BE DETERMINED BY THE GUY WIRE AND SHALL NEVER EXCEED 20 PERCENT OF THE BREAKING STRENGTH ON THE GUY CABLE USED.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.14 GUYS (CONT.)

H. ANCHOR RODS:

ANCHOR RODS SHALL BE COMPLETE WITH EYENUT, THREADED HOT-DIPPED GALVANIZED AS PER CMS 711.02. RODS SHALL BE A MINIMUM OF 1" DIA. X 7' LONG.

I. ANCHORS:

ANCHORS SHALL BE DOUBLE HELIX TYPE, 10" SIZE CAPABLE OF WITHSTANDING A GUY TENSION OF 7000 LBS AND SHALL BE HOT-DIPPED GALVANIZED AS PER CMS 711.02. ANCHORS SHALL BE MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, COOPER POWER SYSTEMS OR APPROVED EQUAL.

J. GUY GRIPS:

GUY GRIPS SHALL BE MADE OF HARD DRAWN ALUMINUM CLAD STEEL WIRE. THE HOLDING POWER OF THE GRIP SHALL BE IN EXCESS OF THE RATED BREAKING STRENGTH OF THE GUY WIRE ON WHICH IT CAN BE USED. EACH GUY GRIP SHALL HAVE A TAG ATTACHED SHOWING MANUFACTURER'S NAME, CATALOG NUMBER, AND THE SIZE GUY WIRE TO WHICH IT CAN BE ATTACHED.

K. GUY WIRE GUARDS (MARKERS):

GUARDS TO BE MADE OF RIGID VINYL AND SHALL COMPLETELY ENIRCLE THE GUY STRAND. THE CLAMPS MUST NOT WEAKEN THE GUARD AND SHALL BE YELLOW PLASTIC TYPE COMPLETE WITH GALVANIZED MOUNTING HARDWARE. GUARDS SHALL BE 8'-0" LONG. GUARDS SHALL BE MANUFACTURED BY: A.B CHANCE-HUBBELL POWER SYSTEMS, MACLEAN POWER SYSTEMS OR APPROVED EQUAL.

OC.15 GROUNDING, CPP STD. 9-2, DRAWING 8295

- A. GROUND RODS SHALL BE COPPERCLAD STEEL OR STAINLESS STEEL, UL LISTED, DRIVEN FULL LENGTH IN AN UNDISTURBED EARTH A MINIMUM OF 3 FEET FROM THE FACE OF THE POLE AS SHOWN ON THE PLANS IN ACCORDANCE WITH THE SPECIFICATIONS. THE TOP SHALL BE BURIED AT LEAST 12" BELOW THE SURFACE OF THE EARTH. THE MAXIMUM ACCEPTABLE EARTH RESISTANCE VALUE SHALL BE 20 OHMS.

IF THE 20 OHM MAXIMUM RESISTANCE IS EXCEEDED BY THE USE OF A SINGLE GROUND ROD A SECOND 5/8" DIAMETER BY 8 FOOT ROD SHALL BE COUPLED OR WELDED TO THE FIRST ROD AND DRIVEN INTO THE EARTH. IF THE MAXIMUM RESISTANCE IS STILL EXCEEDED A THIRD 5/8" DIAMETER BY 8 FOOT LONG ROD SHALL BE DRIVEN APPROXIMATELY 4' FROM INITIAL ROD AND CONNECTED IN PARALLEL WITH THE FIRST SET. PROCEDURE SHALL CONTINUE UNTIL RESISTANCE OF 20 OHMS OR LESS IS OBTAINED. THE GROUND WIRE SHALL BE ATTACHED TO THE ROD WITH A CLAMP AND SECURED TO THE POLE WITH COPPERCLAD ROLLED POINT STAPLES OF ADEQUATE SIZE TOP AND BOTTOM. THE GROUND WIRE SHALL BE COVERED BY A GROUND MOLDING. THE STAPLES ON THE GROUND MOLDING SHALL BE SPACED TWO FEET APART EXCEPT FOR THE FIRST EIGHT FEET ABOVE THE GROUND AND EIGHT FEET DOWN FROM THE TOP OF THE POLE WHERE THEY SHALL BE SIX INCHES APART. THE CONTRACTOR SHALL TEST EACH POLE AND MANHOLE GROUNDING SYSTEM PER CMS 625.19.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.15 GROUNDING, CPP STD. 9-2, DRAWING 8295 (CONT.)

- B. THE CONNECTION BETWEEN THE GROUND ROD AND THE SYSTEM NEUTRAL SHOULD BE MADE BY ONE CONTINUOUS PIECE OF CONDUCTOR (THE POLE GROUND WIRE), AND SHALL BE INSTALLED IN THE SHORTEST AND MOST DIRECT PATH ACCORDING TO THE CONSTRUCTION DRAWINGS. SPLICES, IF REQUIRED, SHALL BE MADE USING A COMPRESSION TYPE CONNECTOR AND SHALL BE INSTALLED A MINIMUM OF 6 INCHES ABOVE THE GROUND LINE. THE POLE GROUND WIRE SHALL BE CONNECTED TO THE SYSTEM NEUTRAL USING A COMPRESSION TYPE CONNECTOR.
- C. ALL EQUIPMENT SHALL HAVE AT LEAST 2 CONNECTIONS FROM THE FRAME, CASE, OR TANK TO THE MULTI-GROUNDED SYSTEM NEUTRAL CONDUCTOR AS SHOWN ON THE CONSTRUCTION DRAWINGS. THE POLE GROUND WIRE MAY BE USED FOR ONE OR BOTH OF THESE CONNECTIONS.
- D. ALL NEUTRAL CONDUCTORS ON THE POLE SHALL BE BONDED DIRECTLY TO EACH OTHER, AND CONNECTED TO THE POLE GROUND WIRE IF PRESENT. ALL EQUIPMENT GROUND WIRES, NEUTRAL CONDUCTORS, DOWNGUYS, MESSENGER WIRES, AND LIGHTNING-PROTECTION GROUND WIRES SHALL BE INTERCONNECTED AND ATTACHED TO A COMMON (POLE) GROUND WIRE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC).
- E. IN ADDITION TO GROUND ROD(S), EACH LINE POLE SHALL BE EQUIPPED WITH A "BUTT GROUND" AS DETAILED IN THE PLANS. THE BUTT GROUND SHALL BE CONSIDERED SUPPLEMENTARY AND SHALL BE SEPARATE FROM THE RESISTANCE TESTING SPECIFIED ABOVE. THE BUTT GROUND SHALL BE ATTACHED TO THE GROUND ROD. CPP STD. 9-1, DRAWING 8243.
- F. ELECTRICAL GROUNDING STANDARDS:
1. NO PHASE CONDUCTORS SHALL BE GROUNDED.
2. ALL TRANSFORMER CASES WHERE MOUNTED ON POLES OR CROSS ARMS SHALL BE BONDED TO THE POLE GROUND DOWN CONDUCTOR.
3. ALL STREET LIGHTING REGULATOR CASES SHALL BE BONDED TO THE POLE GROUND DOWN CONDUCTOR.
4. ALL METALLIC EQUIPMENT SUPPORTS, RACKS AND HOUSINGS SHALL BE BONDED TO THE POLE GROUND DOWN CONDUCTOR.
- G. THE NEUTRAL WIRES, DOWN GUYS AND LIGHTNING-PROTECTIVE EQUIPMENT SHALL BE INTERCONNECTED AND ATTACHED TO BONDED TO THE POLE GROUND DOWN CONDUCTOR.
- H. PROVIDE ALL GROUND RODS AND GROUND WIRES AS INDICATED ON THE DRAWINGS. ALL CONNECTIONS AT THE ROD SHALL BE MADE WITH A CAST BRONZE CLAMP HAVING BRONZE SET SCREW, ALL GROUNDING CLAMPS INSTALLED BELOW GRADE SHALL BE HEAVY DUTY CLAMP LISTED FOR DIRECT BURIAL. WIRE SHALL BE #4 COPPER WEATHERPROOF TYPE AND #3/0 COPPER. WEATHERPROOF TYPE WHERE DETAILED ON THE DRAWINGS IN MANHOLES. GROUND MOLDING SHALL BE WOOD OR PLASTIC MIN. 8 FOOT IN LENGTH OF SUFFICIENT WIDTH AND GROOVE DEPTH TO COMPLETELY ENCLOSE THE GROUNDING DOWN CONDUCTOR.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.16 MEDIUM VOLTAGE CABLE TERMINATIONS

- A. TERMINATION KITS SHALL TO CAPABLE OF PROPERLY TERMINATING 15KV CLASS SINGLE CONDUCTOR EPR INSULATED CABLE FOR OUTDOOR APPLICATIONS PER ASTM D2303. KITS SHALL ACCOMMODATE ANY COMMON FORM OF CABLE SHIELDING/CONSTRUCTION WITHOUT THE NEED FOR LIGHTING ADAPTORS OR ACCESSORIES. TERMINATIONS FOR SINGLE-CONDUCTOR CABLES SHALL CONSIST OF HOT OR COLD SHRINKABLE STRESS CONTROL AND OUTER NON-TRACKING INSULATION TUBINGS ALONG WITH A HIGH RELATIVE PERMITTIVITY STRESS RELIEF MASTIC FOR INSULATION SHIELD CUTBACK TREATMENT FOR ENVIRONMENTAL SEALING. PROVIDE PROPER CONNECTOR FOR TERMINATION TO CUTOUT. GROUND WIRE/SHIELD LEADS SHALL BE GROUNDED TO POLE GROUND. CABLE TERMINATORS SHALL BE BY RAYCHEM TYPE HVT-150 OR 3M QT SERIES OR EQUIVALENT APPROVED BY CPP ENGINEERING DEPARTMENT.
- B. CABLE SUPPORT BRACKET:
1. CABLE SUPPORT BRACKET SHALL BE COMPLETE FOR POLE MOUNTING, NON-METALLIC ARMS.
2. ALL STEEL MATERIALS AND HARDWARE SHALL BE HOT-DIPPED GALVANIZED AS PER CMS 711.02.
3. BRACKET SHALL BE ARRANGED AS DETAILED ON THE DRAWINGS.

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GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.17 LIGHTNING ARRESTER

- A. LIGHTNING ARRESTERS SHALL BE AN IEEE RISER POLE DISTRIBUTION ARRESTER; POLYMER HOUSED METAL OXIDE VARISTOR WITH TOP AND BOTTOM CONNECTION TERMINALS (NO PIG-TAILS). EXPULSION TYPE WILL NOT BE ACCEPTED. LIGHTNING ARRESTER SHALL CONFORM TO ALL APPLICABLE NEMA STANDARDS AND ANSI IEEE C62.11.
- B. TERMINALS:
1. THE TERMINALS SHALL BE STAINLESS STEEL TO BE COMPATIBLE TO BOTH COPPER AND ALUMINUM CONDUCTORS FROM #6 SOLID TO #2 STRANDED. INSULATING TOP CAP MUST BE FIRMLY ATTACHED OR CLIPPED TO THE TERMINAL AND MUST BE GUARANTEED TO STAY FIRMLY IN PLACE FOR THE LIFE OF THE ARRESTER.
2. BOTTOM TERMINAL SHALL BE STAINLESS STEEL TO BE COMPATIBLE TO BOTH COPPER AND ALUMINUM CONDUCTORS FROM #6 SOLID TO #2 STRANDED.
- C. DROPOUT DEVICE OR GROUND LEAD DISCONNECTOR:
- THE ARRESTER SHALL BE EQUIPPED WITH A NON-EXPLOSIVE DROP-OUT ASSEMBLY TO ISOLATE THE ARRESTER FROM THE GROUND LEAD IN EVENT OF FAILURE, AND TO GIVE A VISIBLE INDICATION OF FAILURE.
- D. CONSTRUCTION:
1. SEALING GASKETS MUST BE POSITIVE TO INSURE MOISTURE PROOF SEAL FOR THE LIFE OF THE ARRESTER.
2. LIGHTNING ARRESTERS SHALL BE RATED AS FOLLOWS: NOMINAL SYSTEM VOLTAGE 2.4KV, MAXIMUM 2.54KV,:11KV, MAX. 11KV :13.8KV, MAX. 14.63KV. EFFECTIVELY GROUNDED CIRCUIT. COORDINATE ARRESTER BRACKET WITH CROSS ARM SIZE.
- E. MOUNTING BRACKET:
1. A CROSS ARM MOUNTING BRACKET SHALL BE COMPLETE FOR POLE MOUNTING EACH ARRESTER TO ACCOMMODATE STANDARD CROSS ARM SECTIONS. STANDARD NEMA TYPE WITH LOCKNUTS FOR ARRESTER MOUNTING AND GROUND CLAMP. ALL MOUNTING HARDWARE & ARRESTERS SHALL BE PROVIDED AS A SINGLE UNIT BY THE SAME EQUIPMENT MANUFACTURER.
2. ALL STEEL MATERIALS AND HARDWARE SHALL BE HOT-DIPPED GALVANIZED AS PER CMS 711.02.
3. BRACKET SHALL BE ARRANGED AS DETAILED ON THE DRAWINGS.
- F. LIGHTNING ARRESTERS SHALL BE HUBBELL POWER SYSTEMS-OHIO BRASS TYPE PVR-OPTIMA, COOPER POWER SYSTEMS VARISTAR OR APPROVED EQUAL.

GENERAL OVERHEAD UTILITY POWER CONSTRUCTION (CONT.)

OC.18 FUSED CUTOUTS

STANDARD TYPE CUTOUT SHALL HAVE AN ALL COPPER CURRENT PATH WITH SILVER PLATED CONTACTS. TERMINALS SHALL BE TIN PLATED BRONZE FOR USE WITH COPPER OR ALUMINUM CONDUCTORS. LOAD BREAK HOOKS OF GALVANIZED STEEL AND MOUNTED ON TOP SUPPORT. ASSEMBLY COMPLETE WITH BIRD PROOFED ONE-PIECE SOLID POLYMER OR PORCELAIN INSULATOR, CAST BRONZE HINGE, STAINLESS STEEL SPRINGS FOR PROPER TOGGLE ACTION AND TO MAINTAIN CONTACT PRESSURE, HIGH STRENGTH FIBERGLASS FUSE TUBE AND 15KV, 110KV BIL. CUTOUTS SHALL BE TYPE C STYLE PER CPP RECOMMENDATIONS. ALL NON-STAINLESS STEEL MATERIALS AND HARDWARE SHALL BE HOT-DIPPED GALVANIZED AS PER CMS 711.02.CUTOUTS SHALL BE HUBBELL POWER SYSTEMS- CHANCE TYPE C, COOPER POWER SYSTEMS HX-CB OR APPROVED EQUAL. SUBMIT TO CPP ENGINEERING DEPARTMENT FOR APPROVAL ON A CASE BY CASE BASIS.

OC.19 FUSES FOR CUTOUTS

FUSES FOR CUTOUTS SHALL BE THE TYPE & STYLE COMPATIBLE WITH CUTOUT PROVIDED AND AS REQUIRED PER CPP RECOMMENDATIONS. EXACT AMPERE AND VOLTAGE RATING SHALL BE DETERMINED BY CPP. PROVIDE FUSES BY THE SAME MANUFACTURER AS THE CUTOUT.

THE POLE CONSTRUCTION REQUIREMENTS CAN VARY BY SITUATION. THEREFORE, THE POLE CONSTRUCTION DESIGN SHOULD BE SUBMITTED TO CPP ENGINEERING FOR REVIEW ON A CASE-BY-CASE BASIS.

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EMH02	PR. CPP MH 99-7 (8' X 12' X 10') STA. 12+55.00, 10.50' LT, E. 55TH ST.	EMH20	PR. CPP MH (8' X 12' X 8') STA. 177+90.00, 65.00' RT, O.C. BLVD.	EMH35	PR. CPP MH (6' X 8' X 7') STA. 34+91.00, 21.00' LT, WOODLAND AVE.	DB09	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 4/O-IC-CU-15KV CABLE	DB22	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS
EMH04	PR. CPP MH (6' X 8' X 7') STA. 129+60.00, 59.00' RT, O.C. BLVD.	EMH21	PR. CPP MH 115-9 (6' X 8' X 7') STA. 15+70.36, 25.50' LT, E. 79TH ST.	EMH36	PR. CPP MH (6' X 8' X 7') STA. 34+96.00, 31.00' RT, WOODLAND AVE.	DB10	PR. DUCT BANK, CONCRETE ENCASED (8) 5" PVC CONDUITS INSTALL (1) 4/O-IC-CU-15KV CABLE	DB23	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS INSTALL (3) 750KCMIL-IC-CU-15KV CABLES
EMH05	PR. CPP MH (6' X 8' X 7') STA. 132+99.71, 30.00' LT, O.C. BLVD.	EMH22	PR. CPP MH (8' X 12' X 12') STA. 18+28.40, 79.42' LT, E. 79TH ST. STA. 179+80.00, 65.00' RT, O.C. BLVD.	EMH37	PR. CPP MH (8' X 12' X 8') STA. 215+50.00, 53.00' RT, O.C. BLVD.	DB11	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (1) 4/O-IC-CU-15KV CABLE	DB23A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 750KCMIL-IC-CU-15KV CABLES
EMH06	PR. CPP MH (6' X 8' X 7') STA. 135+99.72, 40.00' LT, O.C. BLVD.	EMH23	PR. CPP MH 115-5 (6' X 8' X 7') STA. 21+31.00, 25.00' LT, E. 79TH ST.	EMH38	PR. CPP MH (6' X 8' X 7') STA. 23+94.00, 22.05' RT, E. 89TH ST. STA. 211+69.25, 59.77' LT, O.C. BLVD.	DB12	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB24	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH07	PR. CPP MH (6' X 8' X 7') STA. 141+45.00, 56.00' RT, O.C. BLVD.	EMH24	PR. CPP MH (8' X 12' X 10') STA. 183+61.00, 65.00' RT, O.C. BLVD. STA. 31+26.63, 56.98' LT, RAWLINGS AVE.	EMH39	PR. CPP MH (6' X 8' X 7') STA. 28+60.00, 21.50' RT, E. 89TH ST.	DB13	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB25	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH08	PR. CPP MH (6' X 8' X 7') STA. 145+35.00, 56.00' RT, O.C. BLVD.	EMH25	PR. CPP MH (8' X 12' X 8') STA. 187+50.00, 65.00' RT, O.C. BLVD.	EMH40	PR. CPP MH (6' X 8' X 7') STA. 139+50.00, 37.70' LT, O.C. BLVD.	DB14	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB26A	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH09	PR. CPP MH (6' X 8' X 7') STA. 149+50.00, 66.00' RT, O.C. BLVD.	EMH26	PR. CPP MH (8' X 12' X 8') STA. 191+50.00, 65.00' RT, O.C. BLVD.			DB15	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB26B	PR. DUCT BANK, BRIDGE MOUNTED (6) 5" FRE CONDUITS
EMH11	PR. CPP MH (8' X 12' X 9') STA. 13+32.01, 23.24' LT, KINSMAN RD. STA. 151+01.83, 71.20' RT, O.C. BLVD.	EMH27	PR. CPP MH (8' X 12' X 8') STA. 194+80.00, 65.00' RT, O.C. BLVD.			DB16A	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB26C	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH13	PR. CPP MH (6' X 8' X 7') STA. 153+30.00, 65.00' RT, O.C. BLVD.	EMH28	PR. CPP MH (8' X 12' X 8') STA. 198+70.00, 65.00' RT, O.C. BLVD. STA. 21+28.35, 14.10' RT, EVARTS RD.			DB16B	PR. DUCT BANK, BRIDGE MOUNTED (6) 5" FRE CONDUITS	DB27	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH14	PR. CPP MH (6' X 8' X 7') STA. 157+40.21, 56.00' RT, O.C. BLVD.	EMH29	PR. CPP MH (8' X 12' X 8') STA. 201+70.00, 65.00' RT, O.C. BLVD.			DB16C	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB28	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
EMH15	PR. CPP MH (6' X 8' X 7') STA. 162+90.82, 60.50' RT, O.C. BLVD.	EMH30	PR. CPP MH (8' X 12' X 9') STA. 205+25.00, 65.00' RT, O.C. BLVD. STA. 31+03.10, 101.56' LT, BUCKEYE RD.			DB17	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB29	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH16	PR. CPP MH (8' X 12' X 8') STA. 164+50.00, 65.00' RT, O.C. BLVD.	EMH31	PR. CPP MH (8' X 12' X 10') STA. 208+45.00, 65.00' RT, O.C. BLVD. STA. 20+28.10, 65.16' RT, E. 89TH ST.			DB18	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS	DB30	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
EMH17	PR. CPP MH (8' X 12' X 8') STA. 168+13.00, 65.00' RT, O.C. BLVD.	EMH32	PR. CPP MH (6' X 8' X 7') STA. 29+93.53, 22.50' RT, WOODLAND AVE.			DB19	PR. DUCT BANK, CONCRETE ENCASED (10) 5" PVC CONDUITS INSTALL (1) 4/O-IC-CU-15KV CABLE	DB31	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
EMH18	PR. CPP MH (8' X 12' X 9') STA. 172+13.00, 65.00' RT, O.C. BLVD. STA. 15+41.04, 87.33' RT, E. 75TH ST.	EMH33	PR. CPP MH (6' X 8' X 7') STA. 29+99.00, 23.50' LT, WOODLAND AVE.			DB20	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS INSTALL (1) 4/O-IC-CU-15KV CABLE	DB32	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS INSTALL (3) 750KCMIL-IC-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
EMH19	PR. CPP MH (8' X 12' X 8') STA. 174+85.00, 65.00' RT, O.C. BLVD.	EMH34	PR. CPP MH (8' X 12' X 10') STA. 32+98.50, 68.38' LT, WOODLAND AVE. STA. 212+00.00, 30.00' RT, O.C. BLVD.			DB21	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (1) 4/O-IC-CU-15KV CABLE	DB32A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 750KCMIL-IC-CU-15KV CABLES FOR CPP CIRCUIT SE-1333

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DB32B	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS
DB33	PR. DUCT BANK, CONCRETE ENCASED (10) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB34	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (1) 4/0-1C-CU-15KV CABLE
DB35	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB35A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB35B	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS
DB36	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB37	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB38	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB39	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB40	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB41	PR. DUCT BANK, CONCRETE ENCASED (8) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB42	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (1) 4/0-1C-CU-15KV CABLE
DB43	PR. DUCT BANK, CONCRETE ENCASED (8) 5" PVC CONDUITS
DB44	PR. DUCT BANK, CONCRETE ENCASED (12) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333

DB45	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT SE-1333
DB46	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB47	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB48	PR. DUCT BANK, CONCRETE ENCASED (9) 5" PVC CONDUITS
DB49	PR. DUCT BANK, CONCRETE ENCASED (5) 5" PVC CONDUITS
DB50	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB51	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB52	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB53	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB54	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB55	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB56	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB57	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB58	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB59	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325

DB59A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB59B	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB60	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB61	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB62	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB63	PR. DUCT BANK, CONCRETE ENCASED (8) 5" PVC CONDUITS
DB64	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB64A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB64B	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS
DB65	PR. DUCT BANK, CONCRETE ENCASED (12) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB66	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB66A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB66B	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS
DB67	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (1) 4/0-1C-CU-15KV CABLE
DB68	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS

DB69	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB69A	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB69B	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB70	PR. DUCT BANK, CONCRETE ENCASED (9) 5" PVC CONDUITS INSTALL (3) 500KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB71	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB72	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB73	PR. DUCT BANK, CONCRETE ENCASED (8) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB74	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (1) 4/0-1C-CU-15KV CABLE
DB75	PR. DUCT BANK, CONCRETE ENCASED (10) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES, (1) 4/0-1C-CU-15KV CABLE FOR CPP CIRCUIT ET-1325
DB76	PR. DUCT BANK, CONCRETE ENCASED (10) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB77	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB78	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB79	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB80	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS
DB81	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325

DB82	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB83	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS INSTALL (3) 750KCMIL-1C-CU-15KV CABLES FOR CPP CIRCUIT ET-1325
DB84	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB85	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB86	PR. DUCT BANK, CONCRETE ENCASED (6) 5" PVC CONDUITS
DB87	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS
DB88A	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB88B	PR. DUCT BANK, BRIDGE MOUNTED (1) 5" FRE CONDUIT
DB88C	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB89A	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB89B	PR. DUCT BANK, BRIDGE MOUNTED (1) 5" FRE CONDUIT
DB89C	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB90A	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB90B	PR. DUCT BANK, BRIDGE MOUNTED (1) 5" FRE CONDUIT
DB90C	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT

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DB91A	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB91B	PR. DUCT BANK, BRIDGE MOUNTED (1) 5" FRE CONDUIT
DB91C	PR. DUCT BANK, CONCRETE ENCASED (1) 5" PVC CONDUIT
DB92	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS
DB93	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB94	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB95	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB96	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB97	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB98	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB99	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB100	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB101	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB102	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS
DB103	PR. DUCT BANK, CONCRETE ENCASED (3) 5" PVC CONDUITS

DB104	PR. DUCT BANK, CONCRETE ENCASED (4) 5" PVC CONDUITS

EP01	PR. POWER POLE 60' TALL, CLASS 1, WOOD POLE STA. 14+05.00, 27.00' LT, KINSMAN RD.
EP02	PR. POWER & LIGHT POLE 55' TALL, CLASS 3, WOOD POLE STA. 14+58.96, 26.34' LT, KINSMAN RD.
EP03	PR. POWER & LIGHT POLE 55' TALL, CLASS 3, WOOD POLE STA. 16+07.18, 26.39' LT, KINSMAN RD.
EP04	NOT USED
EP05	PR. POWER & LIGHT POLE 55' TALL, CLASS 3, WOOD POLE STA. 17+74.43, 23.54' LT, KINSMAN RD.
EP06	PR. POWER & LIGHT POLE 60' TALL, CLASS 1, WOOD POLE STA. 14+48.93, 21.41' RT, E. 75TH ST.
EP07	PR. POWER POLE 60' TALL, CLASS 1, WOOD POLE STA. 17+40.00, 30.53' RT, E. 75TH ST.
EP08	PR. POWER POLE 55' TALL, CLASS 1, WOOD POLE STA. 22+10.00, 18.16' RT, EVARTS RD.
EP09	PR. POWER & LIGHT POLE 50' TALL, CLASS 3, WOOD POLE STA. 22+72.70, 15.25' RT, EVARTS RD.
EP10	PR. POWER & LIGHT POLE 65' TALL, CLASS 3, WOOD POLE STA. 28+16.27, 31.00' LT, BUCKEYE RD.
EP11	PR. POWER POLE 60' TALL, CLASS 1, WOOD POLE STA. 29+35.00, 31.00' LT, BUCKEYE RD.
EP12	PR. POWER POLE 60' TALL, CLASS 1, WOOD POLE STA. 31+96.00, 31.00' LT, BUCKEYE RD.
EP13	PR. POWER & LIGHT POLE 60' TALL, CLASS 3, WOOD POLE STA. 32+82.50, 30.86' LT, BUCKEYE RD.
EP14	PR. POWER & LIGHT POLE 60' TALL, CLASS 1, WOOD POLE STA. 34+43.48, 31.17' LT, BUCKEYE RD.
EP15	PR. POWER & LIGHT POLE 55' TALL, CLASS 3, WOOD POLE STA. 36+02.32, 29.42' LT, BUCKEYE RD.

EP16	PR. POWER POLE 60' TALL, CLASS 1, WOOD POLE STA. 19+90.00, 16.00' RT, E. 89TH ST.
EP17	PR. POWER POLE 55' TALL, CLASS 3, WOOD POLE STA. 19+75.44, 20.85' LT, E. 89TH ST.
EP18	PR. POWER POLE 65' TALL, CLASS 1, WOOD POLE STA. 30+02.80, 31.00' LT, WOODLAND AVE.
EP19	PR. POWER POLE 65' TALL, CLASS 1, WOOD POLE STA. 34+89.69, 39.25' LT, WOODLAND AVE.
EP20	PR. POWER POLE 60' TALL, CLASS 3, WOOD POLE STA. 35+19.42, 39.25' LT, WOODLAND AVE.
EP21	PR. POWER & LIGHT POLE 60' TALL, CLASS 3, WOOD POLE STA. 35+66.85, 38.25' LT, WOODLAND AVE.
EP22	PR. POWER & LIGHT POLE 60' TALL, CLASS 3, WOOD POLE STA. 37+38.74, 38.17' LT, WOODLAND AVE.
EP23	PR. POWER POLE 55' TALL, CLASS 3, WOOD POLE STA. 35+28.00, 31.00' RT, WOODLAND AVE.

OH01	PR. OVERHEAD ELECTRIC INSTALL 636-26/7-ACSR CONDUCTORS FOR CPP CIRCUIT SE-1333 TO BE INSTALLED BY CPP
OH02	PR. OVERHEAD ELECTRIC INSTALL 636-26/7-ACSR CONDUCTORS FOR CPP CIRCUIT SE-1333
OH03	PR. OVERHEAD ELECTRIC INSTALL 636-26/7-ACSR CONDUCTORS FOR CPP CIRCUIT SE-1333
OH04	PR. OVERHEAD ELECTRIC INSTALL 470-ACSR CONDUCTORS FOR CPP CIRCUIT ET-1325
OH05	PR. OVERHEAD ELECTRIC INSTALL 336-ACSR CONDUCTORS FOR CPP CIRCUIT ET-1325
OH06	PR. OVERHEAD ELECTRIC INSTALL 336-ACSR CONDUCTORS FOR CPP CIRCUIT ET-1325
OH07	PR. OVERHEAD ELECTRIC INSTALL 336-ACSR CONDUCTORS FOR CPP CIRCUIT ET-1325
OH08	PR. OVERHEAD ELECTRIC INSTALL 636-26-7-ACSR CONDUCTORS FOR CPP CIRCUIT ET-1325
OH09	PR. OVERHEAD ELECTRIC INSTALL 636-26-7-ACSR CONDUCTORS FOR CPP CIRCUIT ET-1325

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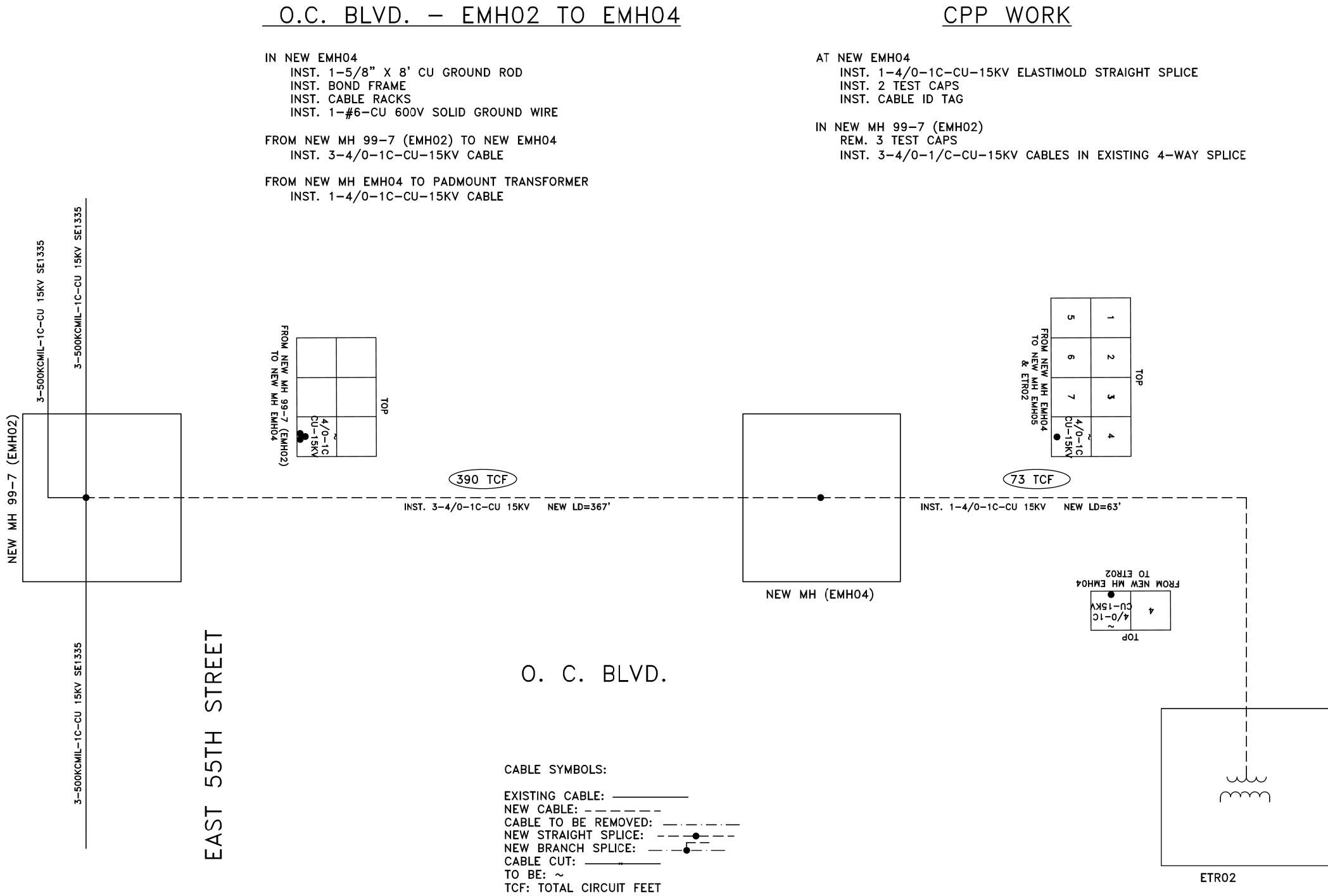
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RECORD PLANS

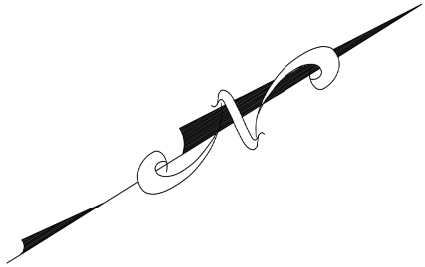
RECORD PLANS

ETR02	PR. PAD-MOUNTED TRANSFORMER STA. 107+09.40, 110.72' LT, QUADRANT RD. STA. 130+12.85, 58.51' RT, O.C. BLVD.	PPB03	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 13+20.00, 49.91' RT, KINSMAN RD. STA. 150+26.93, 88.07' RT, O.C. BLVD.	PDB03	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB01	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 11+52.79, 34.19' RT, KINSMAN RD. STA. 149+81.81, 73.77' LT, O.C. BLVD.	SDB01	PR. DUCT BANK, CONCRETE ENCASED (4) 4" PVC CONDUITS
ETR03	PR. PAD-MOUNTED TRANSFORMER STA. 13+14.51, 53.72' RT, KINSMAN RD. STA. 150+21.15, 84.33' RT, O.C. BLVD.	PPB04	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 13+96.00, 36.20' LT, KINSMAN RD. STA. 151+41.86, 123.31' RT, O.C. BLVD.	PDB04	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB02	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 13+64.75, 29.50' RT, KINSMAN RD. STA. 150+64.81, 122.48' RT, O.C. BLVD.	SDB02	PR. DUCT BANK, CONCRETE ENCASED (4) 4" PVC CONDUITS
ETR04	PR. PAD-MOUNTED TRANSFORMER STA. 15+31.08, 82.74' RT, E. 75TH ST. STA. 172+08.50, 75.00' RT, O.C. BLVD.	PPB05	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 18+17.63, 117.49' LT, E. 79TH ST. STA. 179+42.82, 71.87' RT, O.C. BLVD.	PDB05	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB03	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 14+97.00, 29.00' LT, E. 75TH ST. STA. 170+97.09, 110.13' RT, O.C. BLVD.	SDB03A	PR. DUCT BANK, CONCRETE ENCASED (4) 4" PVC CONDUITS
ETR05	PR. PAD-MOUNTED TRANSFORMER STA. 18+17.00, 83.10' LT, E. 79TH ST. STA. 179+75.30, 75.92' RT, O.C. BLVD.	PPB06	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 19+75.11, 88.19' RT, E. 79TH ST. STA. 181+70.34, 49.50' LT, O.C. BLVD.	PDB06	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB04	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 16+75.00, 29.00' LT, E. 75TH ST. STA. 170+95.41, 67.86' LT, O.C. BLVD.	SDB03B	PR. DUCT BANK, CONCRETE ENCASED (2) 4" PVC CONDUITS
ETR06	PR. PAD-MOUNTED TRANSFORMER STA. 31+13.34, 105.47' LT, BUCKEYE RD. STA. 205+29.33, 75.00' RT, O.C. BLVD.	PPB07	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 30+94.55, 69.39' RT, BUCKEYE RD. STA. 203+60.00, 73.79' RT, O.C. BLVD.	PDB07	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB05A	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 18+16.51, 65.00' LT, E. 79TH ST. STA. 179+92.31, 78.50' RT, O.C. BLVD.	SDB03C	PR. DUCT BANK, CONCRETE ENCASED (6) 4" PVC CONDUITS
ETR07	PR. PAD-MOUNTED TRANSFORMER STA. 32+81.69, 52.72' RT, WOODLAND AVE. STA. 210+84.57, 77.60' RT, O.C. BLVD.	PPB08	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 32+70.54, 62.26' RT, WOODLAND AVE. STA. 210+70.72, 72.71' RT, O.C. BLVD.	PDB08	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB05B	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 18+17.64, 67.87' LT, E. 79TH ST. STA. 179+89.74, 77.03' RT, O.C. BLVD.	SDB03D	PR. DUCT BANK, CONCRETE ENCASED (2) 4" PVC CONDUITS
		PPB09	PR. PLAZA PULL BOX (12" X 18" X 12") STA. 31+72.84, 93.36' LT, WOODLAND AVE. STA. 211+55.99, 89.96' LT, O.C. BLVD.	PDB09	PR. DUCT BANK, CONCRETE ENCASED (2) 5" PVC CONDUITS	SPB06A	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 19+86.29, 32.50' LT, E. 79TH ST. STA. 180+48.69, 84.98' LT, O.C. BLVD.	SDB04	PR. DUCT BANK, CONCRETE ENCASED (4) 4" PVC CONDUITS
						SPB06B	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 19+89.29, 32.50' LT, E. 79TH ST. STA. 180+49.20, 87.94' LT, O.C. BLVD.	SDB05	PR. DUCT BANK, CONCRETE ENCASED (4) 4" PVC CONDUITS
						SPB07	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 20+54.65, 73.80' LT, EVARTS RD. STA. 199+18.00, 39.08' LT, O.C. BLVD.	SDB06	PR. DUCT BANK, CONCRETE ENCASED (4) 4" PVC CONDUITS
						SPB08	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 21+78.07, 17.80' LT, EVARTS RD. STA. 199+18.00, 96.45' RT, O.C. BLVD.		
						SPB09	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 29+50.00, 37.00' RT, BUCKEYE RD. STA. 203+71.70, 73.89' LT, O.C. BLVD.		
						SPB10	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 31+20.00, 34.52' RT, BUCKEYE RD. STA. 203+96.39, 94.36' RT, O.C. BLVD.		
						SPB11	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 31+23.82, 54.81' RT, WOODLAND AVE. STA. 210+03.74, 57.82' LT, O.C. BLVD.		
						SPB12	PR. SUPP. PULL BOX (36" X 36" X 36") STA. 32+59.00, 55.00' RT, WOODLAND AVE. STA. 210+71.24, 59.09' RT, O.C. BLVD.		

2	2019-12-04	DC024
1	2019-09-10	DC018
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



O.C. BLVD. – KINSMAN RD.

IN NEW EMH11
INST. 1-5/8" X 8' CU GROUND ROD
INST. BOND FRAME
INST. CABLE RACKS
INST. 1-#6-CU 600V SOLID GROUND WIRE

FROM NEW EMH11 TO NEW CPP RISER POLE
INST. 3-750KCMIL-1C-CU-15KV CABLES

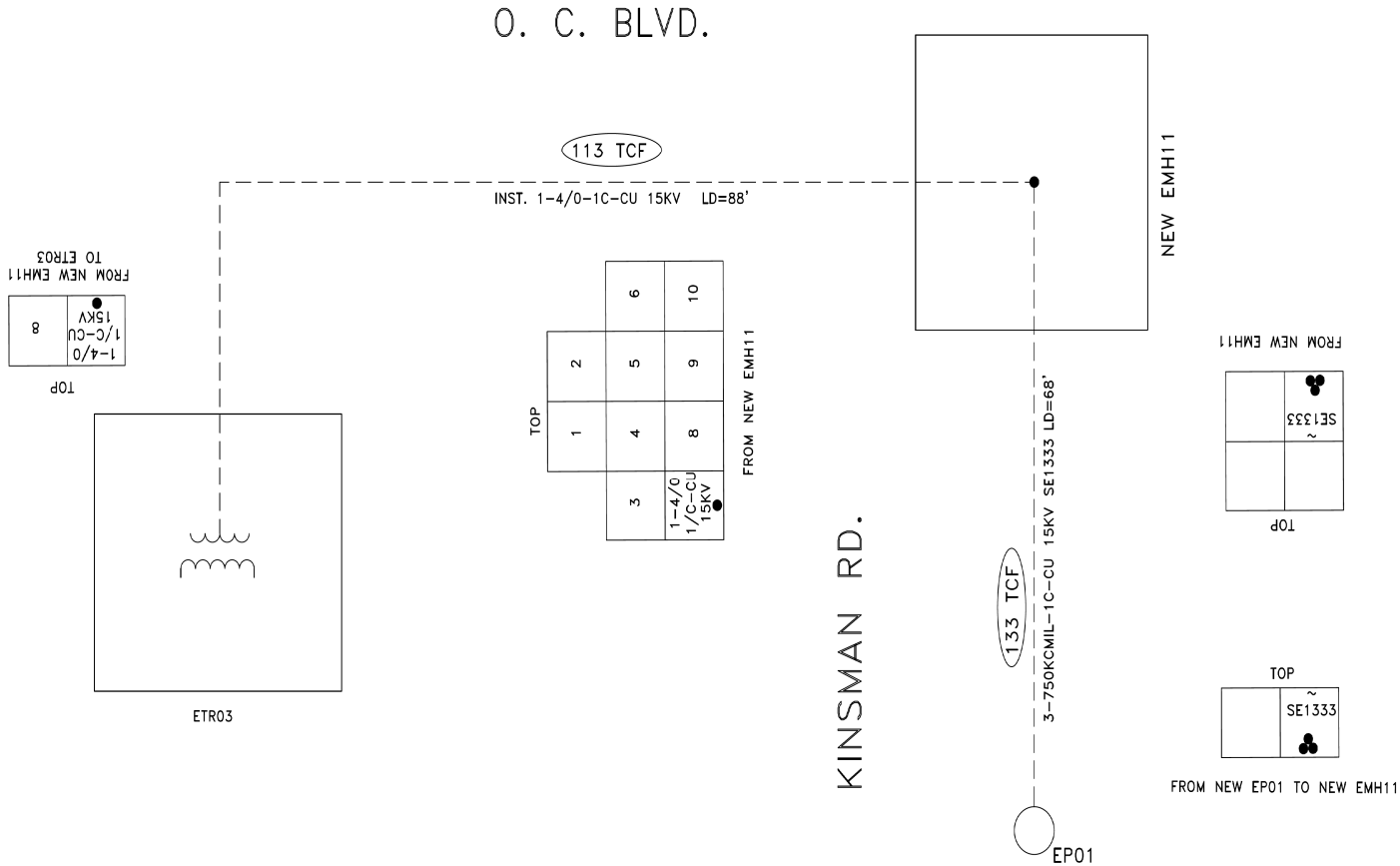
FROM NEW MH EMH11 TO PADMOUNT TRANSFORMER
INST. 1-4/0-1C-CU-15KV CABLE

CPP WORK

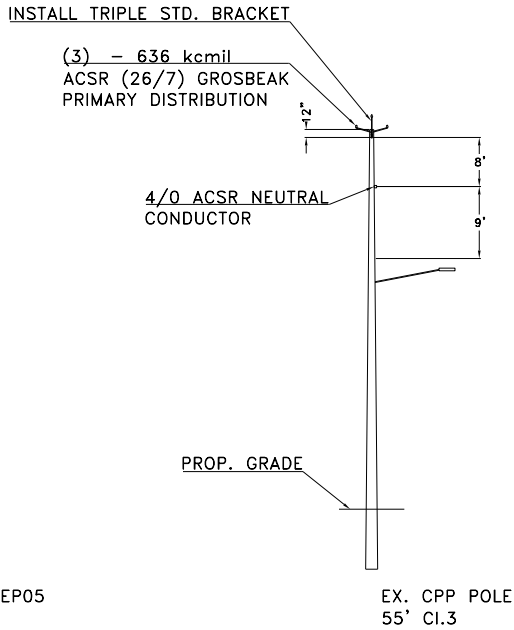
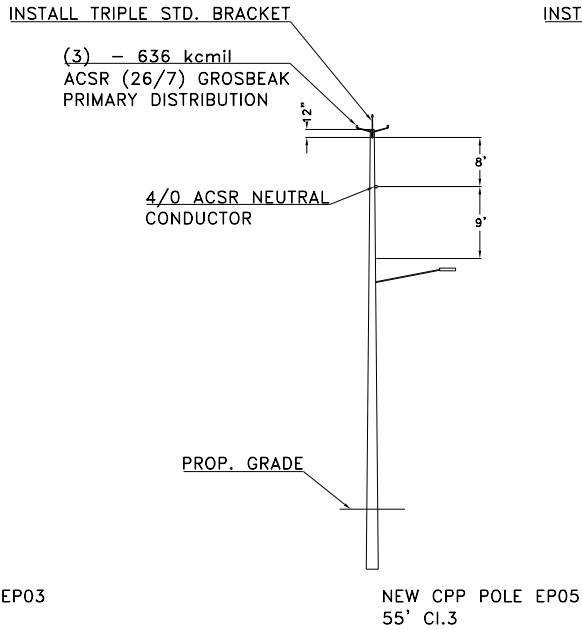
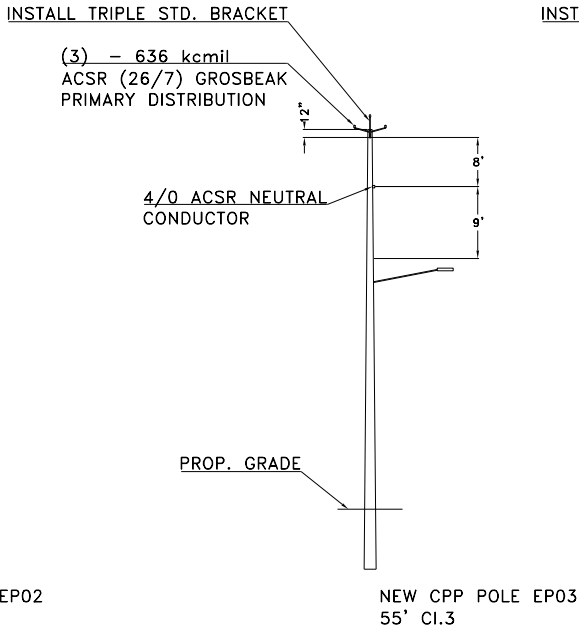
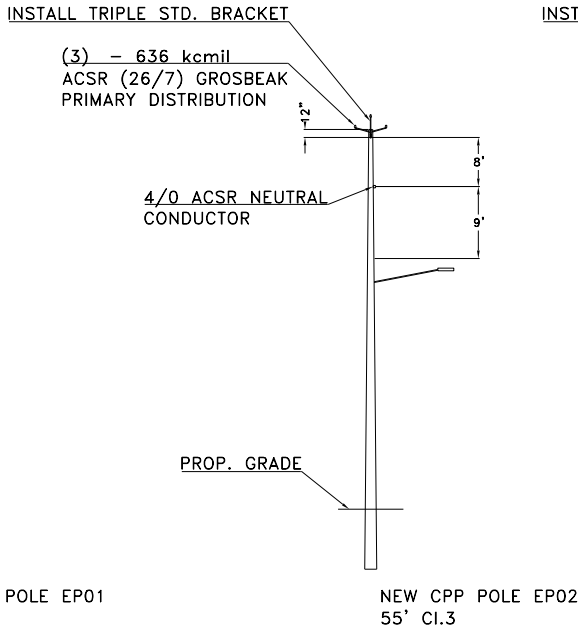
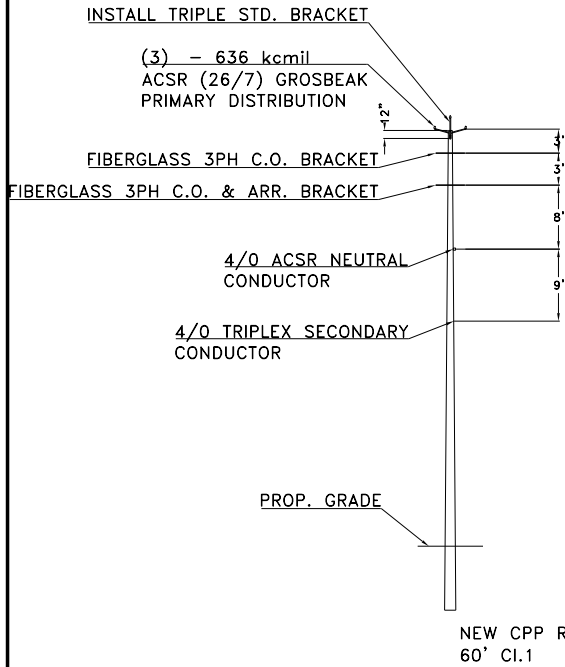
AT NEW EMH11
INST. 1-(750KCMIL-4/0)-1C-CU-15KV ELASTIMOLD STRAIGHT SPLICE
INST. 2 TEST CAPS
INST. CABLE ID TAGS

AT NEW RISER POLE
INST. 3-750KCMIL-1C-CU-15KV OUTDOOR TERMINATORS
INST. 3-750KCMIL-1C-CU-15KV 600A DISCONNECTS
TERMINATE 3-750KCMIL-1C-CU-15KV CABLES
INST. CABLE ID TAGS

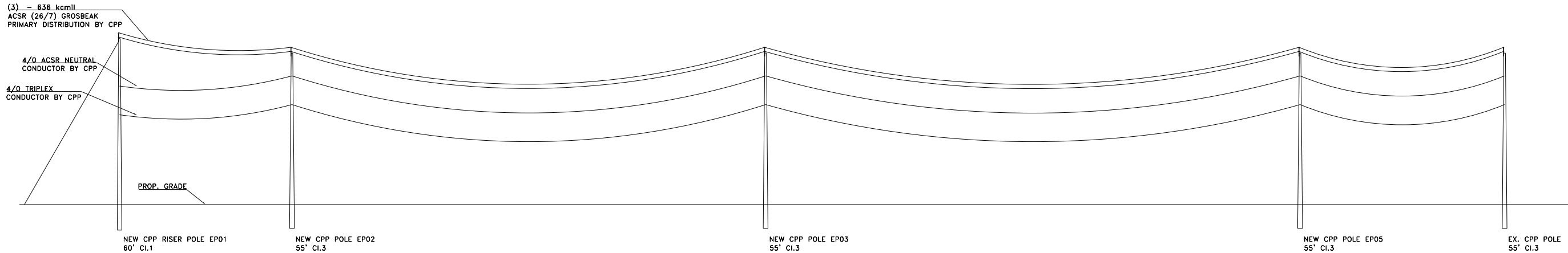
CABLE SYMBOLS:
EXISTING CABLE: _____
NEW CABLE: - - - - -
CABLE TO BE REMOVED: - - - - -
NEW STRAIGHT SPLICE: - - - - -
NEW BRANCH SPLICE: - - - - -
CABLE CUT: _____
TO BE: ~
TCF: TOTAL CIRCUIT FEET



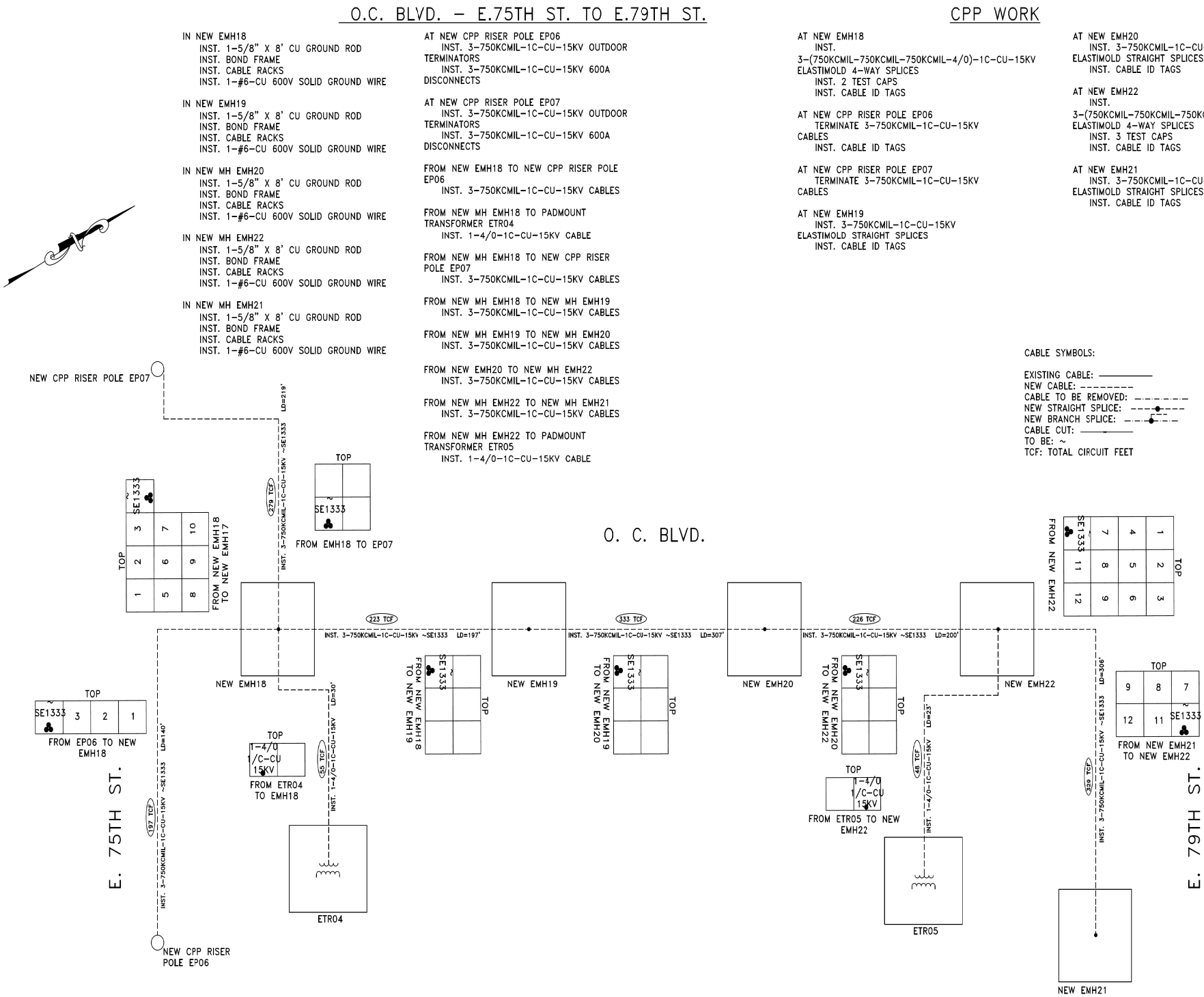
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



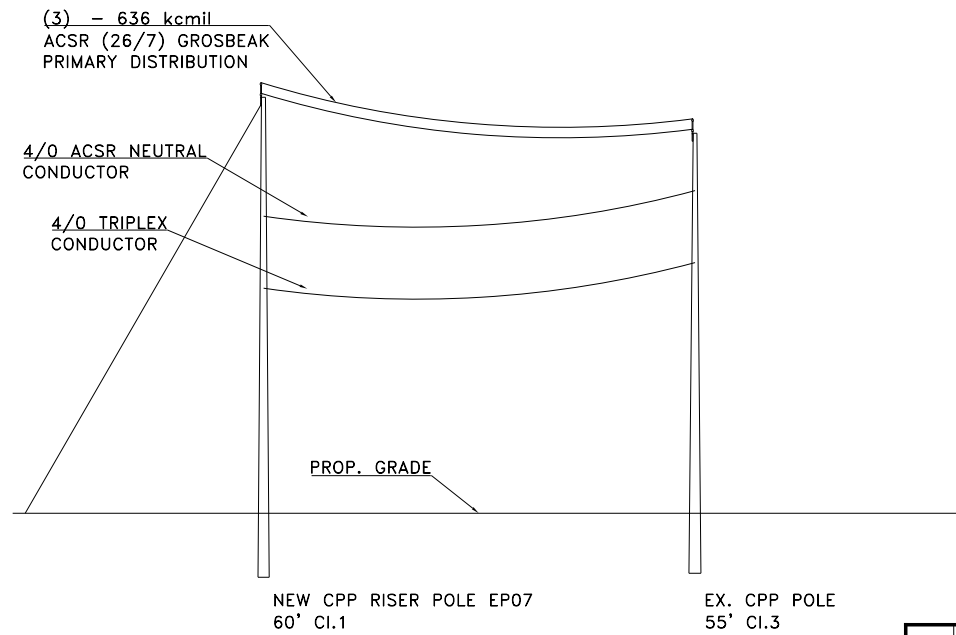
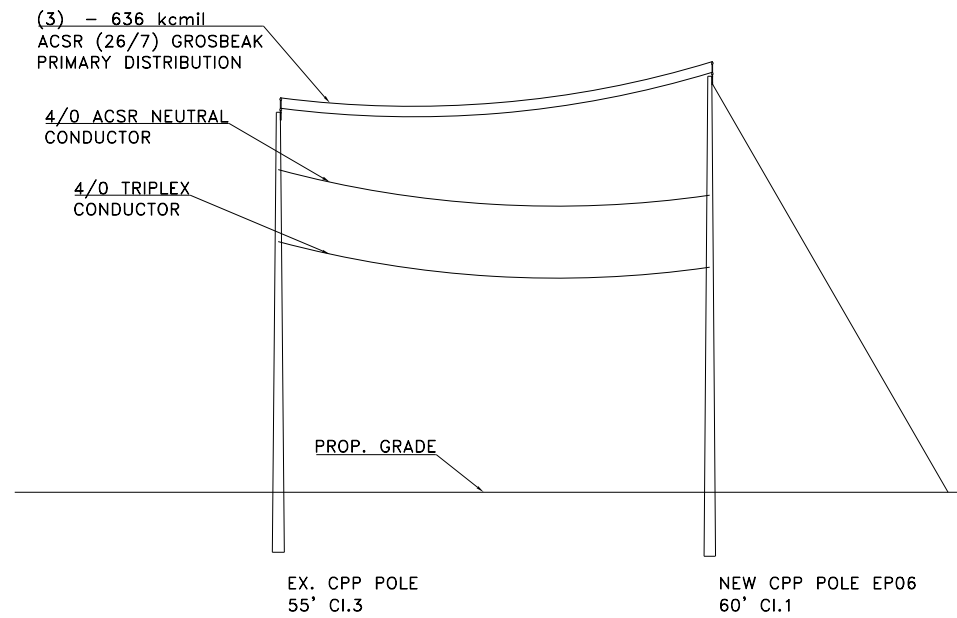
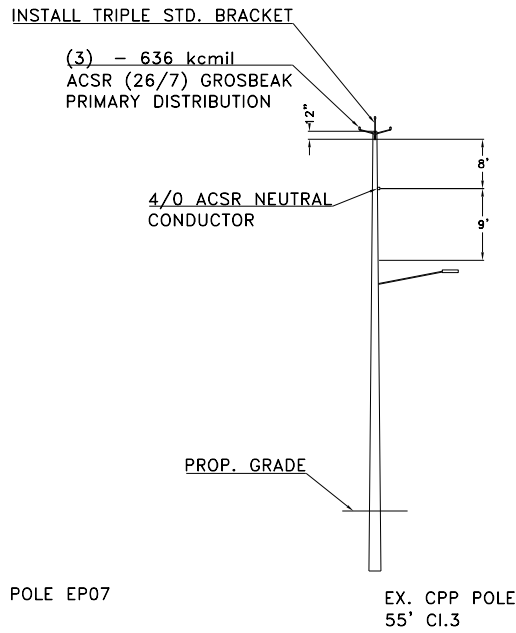
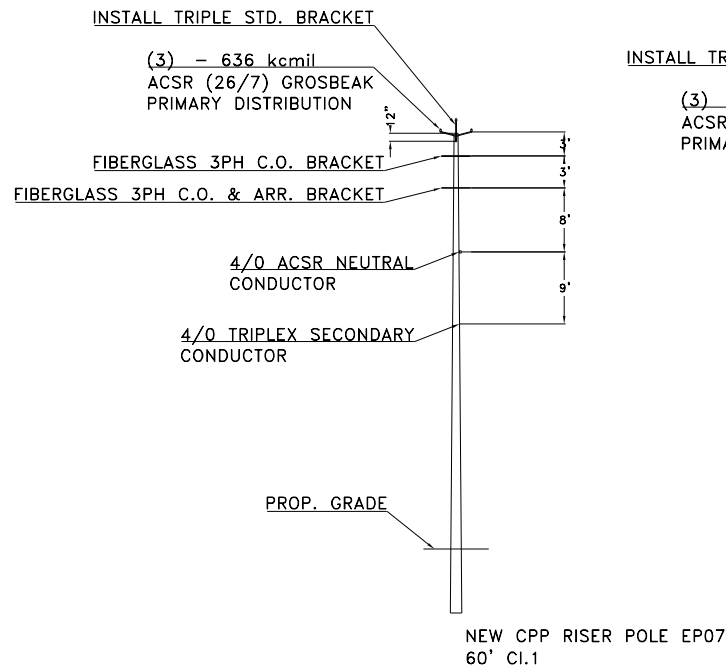
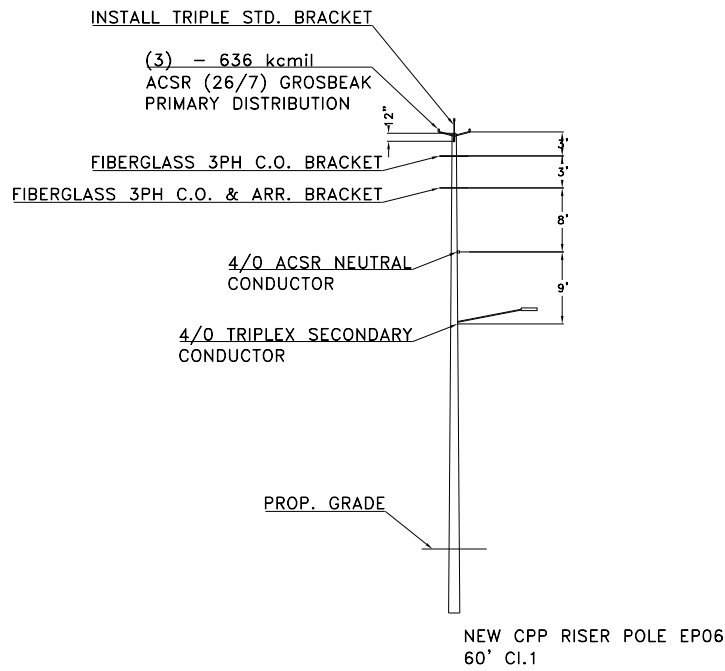
NOTE: CONTRACTOR TO SET POLES EP01, EP02, EP03, EP04 AND EP05 AND FRAME EP01 ONLY.
CPP TO FRAME REMAINING POLES AND INSTALL WIRING FROM EX. CPP POLE TO EP01.



NO.	DATE	DESCRIPTION
1	2020-01-16	DC031
0	2019-08-08	RFC
ISSUE RECORD		



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



1	2020-01-16	DC031
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

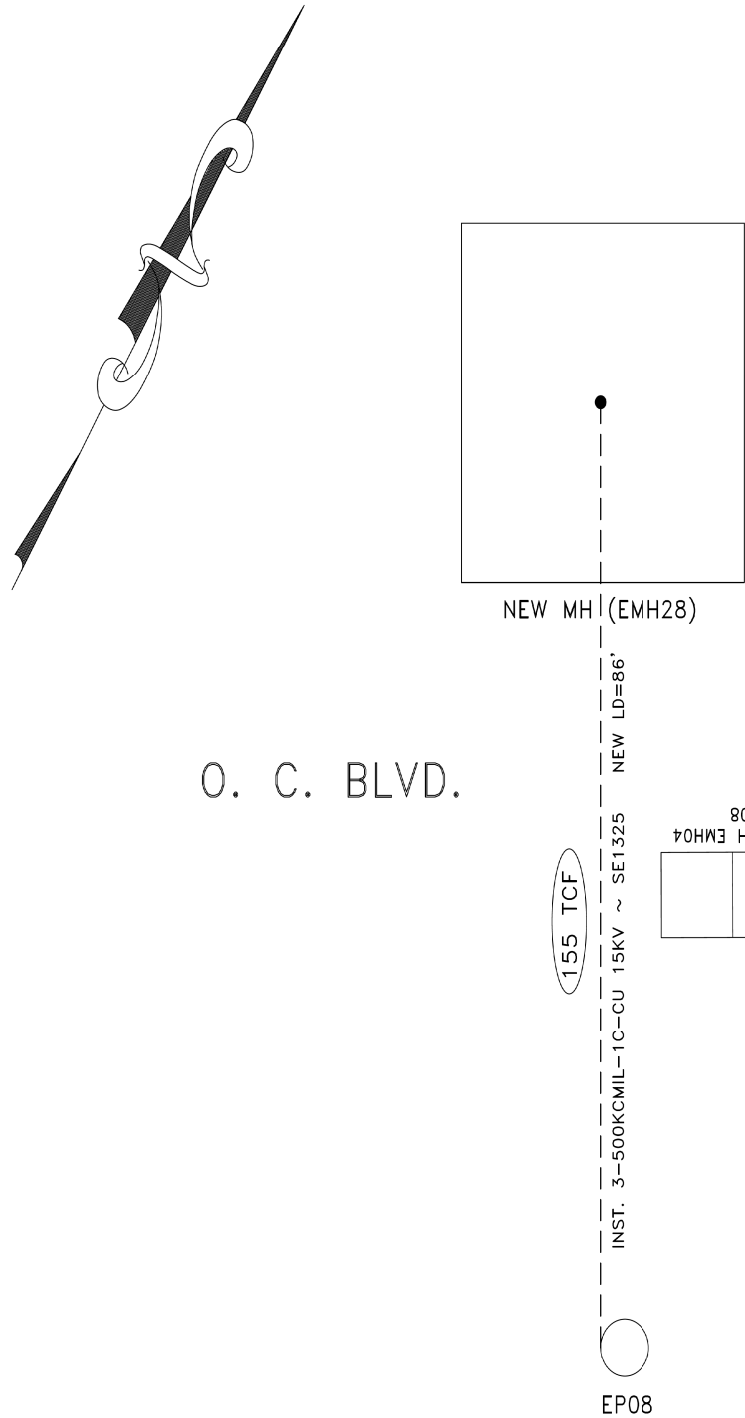
CUY-IR490/ SR010-
2.09 / 19.28

WIRING DIAGRAM - OC BLVD. / E. 75TH ST.

RECORD PLANS

RECORD PLANS

CALCULATED
DFT
CHECKED
TR



EVARTS RD.

EVARTS RD. – EMH28 TO EP08

IN NEW EMH28 INST. 1-5/8” X 8’ CU GROUND ROD
INST. BOND FRAME
INST. CABLE RACKS
INST. 1-#6-CU 600V SOLID GROUND WIRE

FROM NEW EMH28 TO EP08 INST. 3-500KCML-1C-CU-15KV CABLES

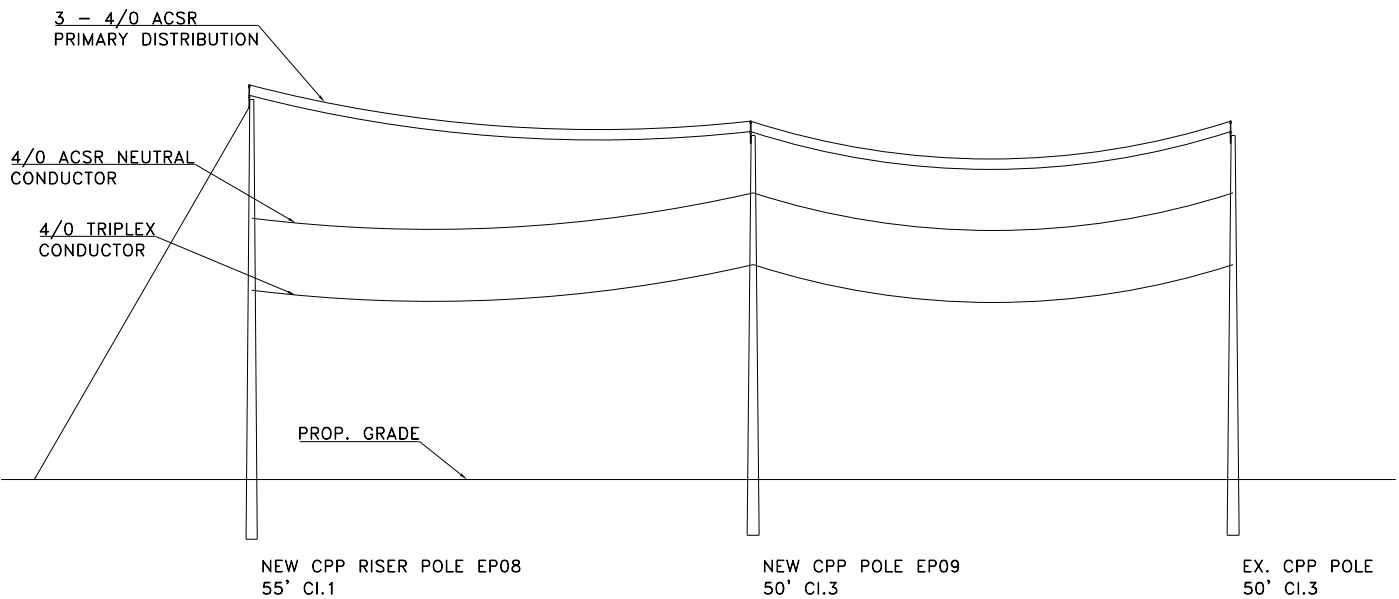
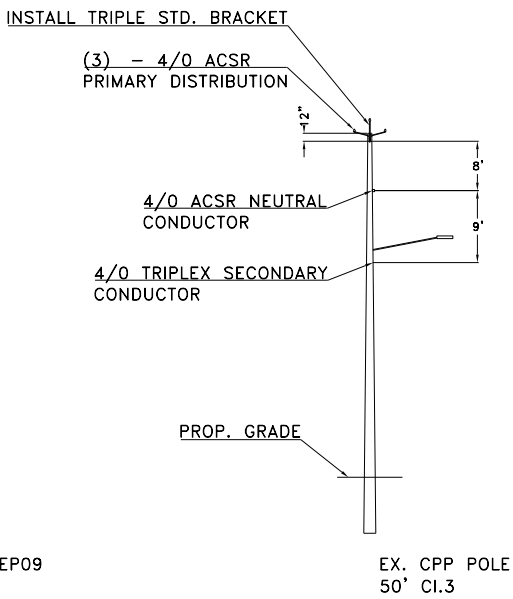
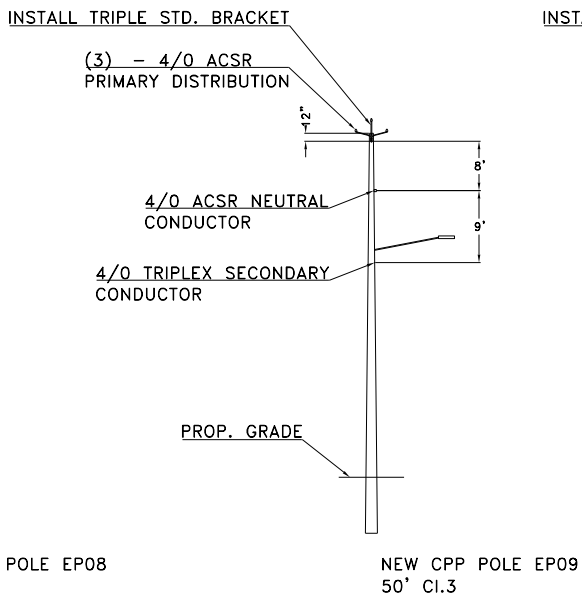
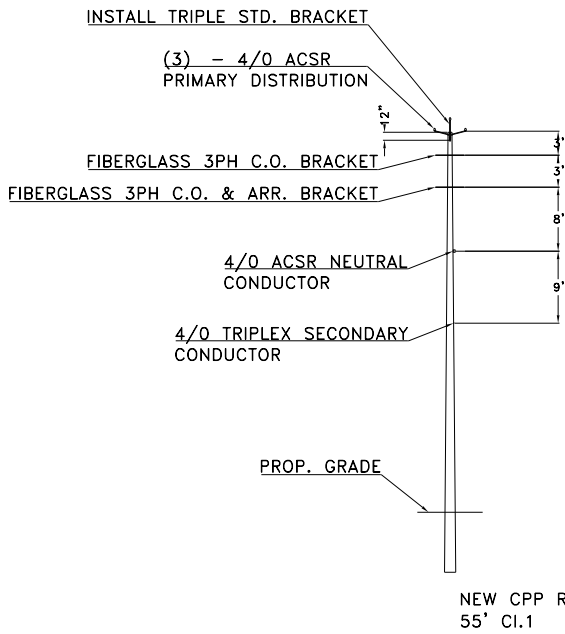
CPP WORK

IN NEW EMH28
CAP AND SEAL 3-500KCML-1C-CU-15KV CABLES

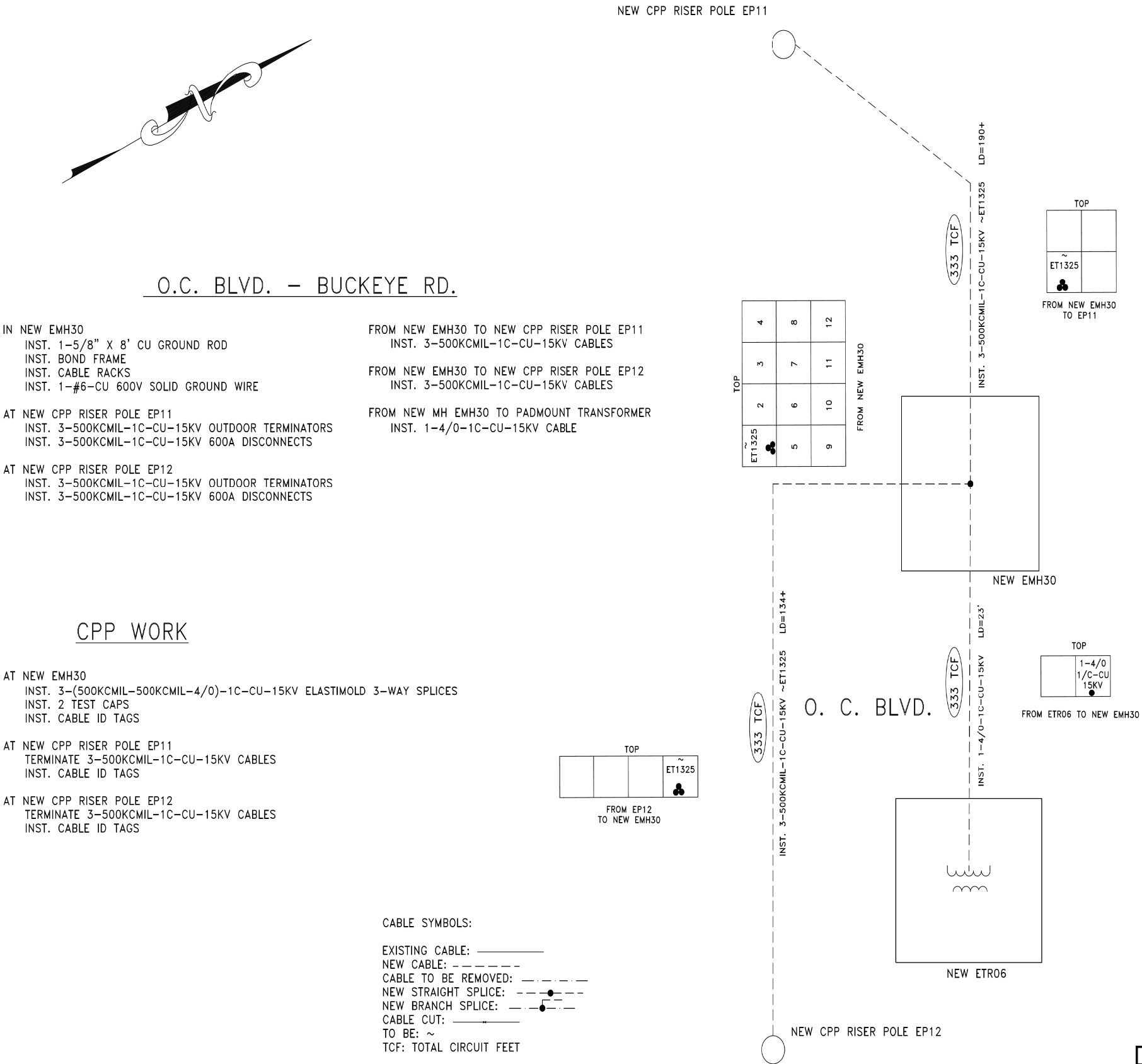
AT EP08 TERMINATE 3-500KCML-1C-CU-15KV CABLES

CABLE SYMBOLS:
EXISTING CABLE: _____
NEW CABLE: - - - - -
CABLE TO BE REMOVED: — · — · —
NEW STRAIGHT SPLICE: — — — — —
NEW BRANCH SPLICE: — — — — —
CABLE CUT: ———— ✂ ————
TO BE: ~
TCF: TOTAL CIRCUIT FEET

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NO.	DATE	DESCRIPTION
1	2020-01-16	DC031
0	2019-08-08	RFC
ISSUE RECORD		



IN NEW EMH30
INST. 1-5/8" X 8' CU GROUND ROD
INST. BOND FRAME
INST. CABLE RACKS
INST. 1-#6-CU 600V SOLID GROUND WIRE

AT NEW CPP RISER POLE EP11
INST. 3-500KCMIL-1C-CU-15KV OUTDOOR TERMINATORS
INST. 3-500KCMIL-1C-CU-15KV 600A DISCONNECTS

AT NEW CPP RISER POLE EP12
INST. 3-500KCMIL-1C-CU-15KV OUTDOOR TERMINATORS
INST. 3-500KCMIL-1C-CU-15KV 600A DISCONNECTS

FROM NEW EMH30 TO NEW CPP RISER POLE EP11
INST. 3-500KCMIL-1C-CU-15KV CABLES

FROM NEW EMH30 TO NEW CPP RISER POLE EP12
INST. 3-500KCMIL-1C-CU-15KV CABLES

FROM NEW MH EMH30 TO PADMOUNT TRANSFORMER
INST. 1-4/0-1C-CU-15KV CABLE

CPP WORK

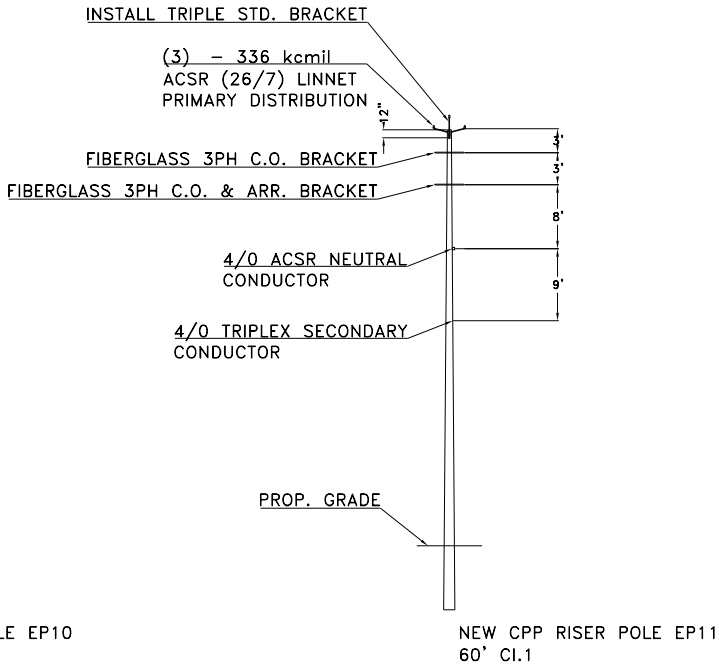
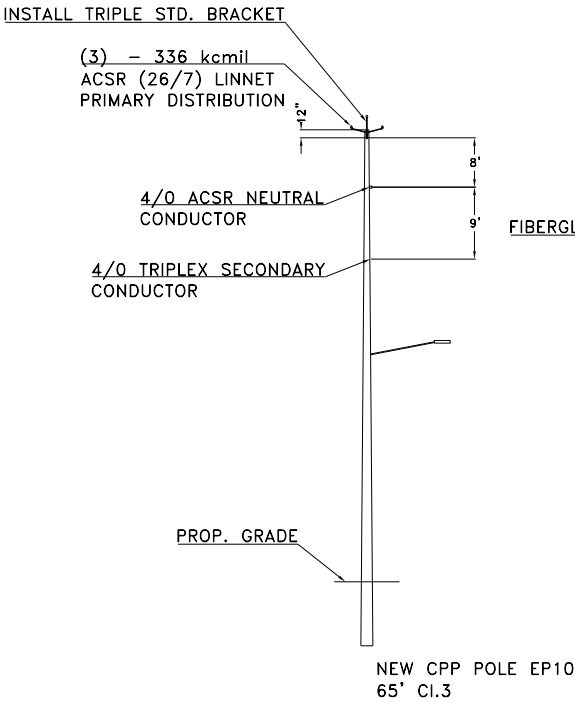
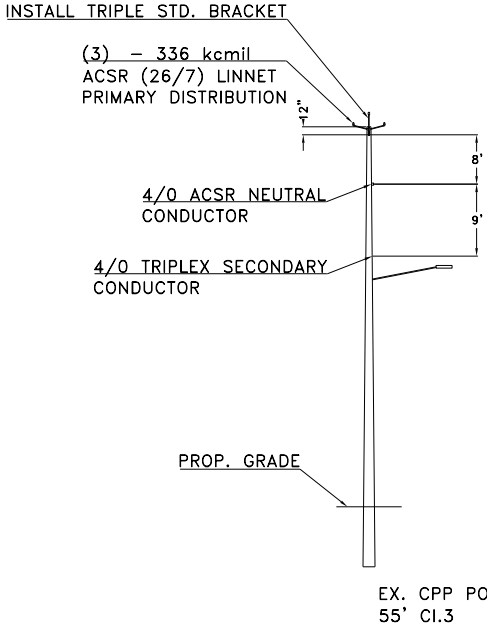
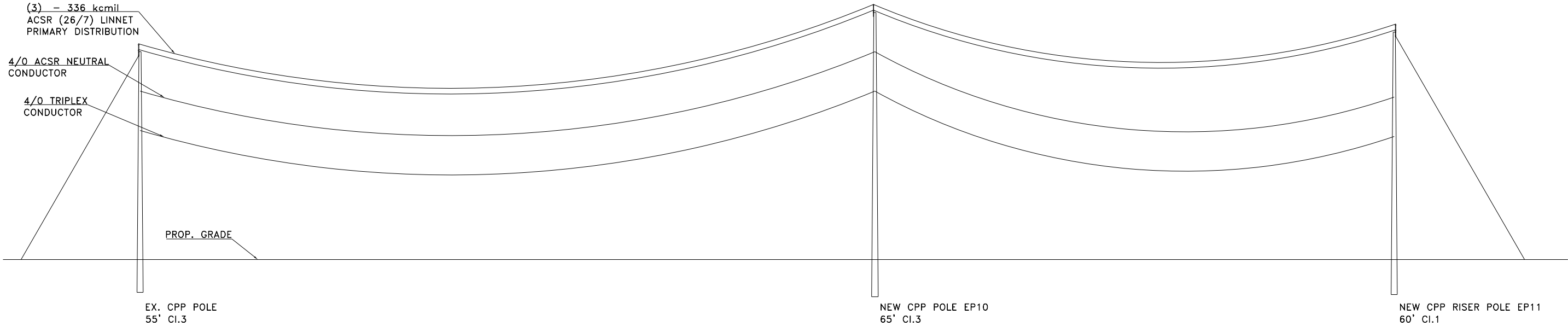
AT NEW EMH30
INST. 3-(500KCMIL-500KCMIL-4/0)-1C-CU-15KV ELASTIMOLD 3-WAY SPLICES
INST. 2 TEST CAPS
INST. CABLE ID TAGS

AT NEW CPP RISER POLE EP11
TERMINATE 3-500KCMIL-1C-CU-15KV CABLES
INST. CABLE ID TAGS

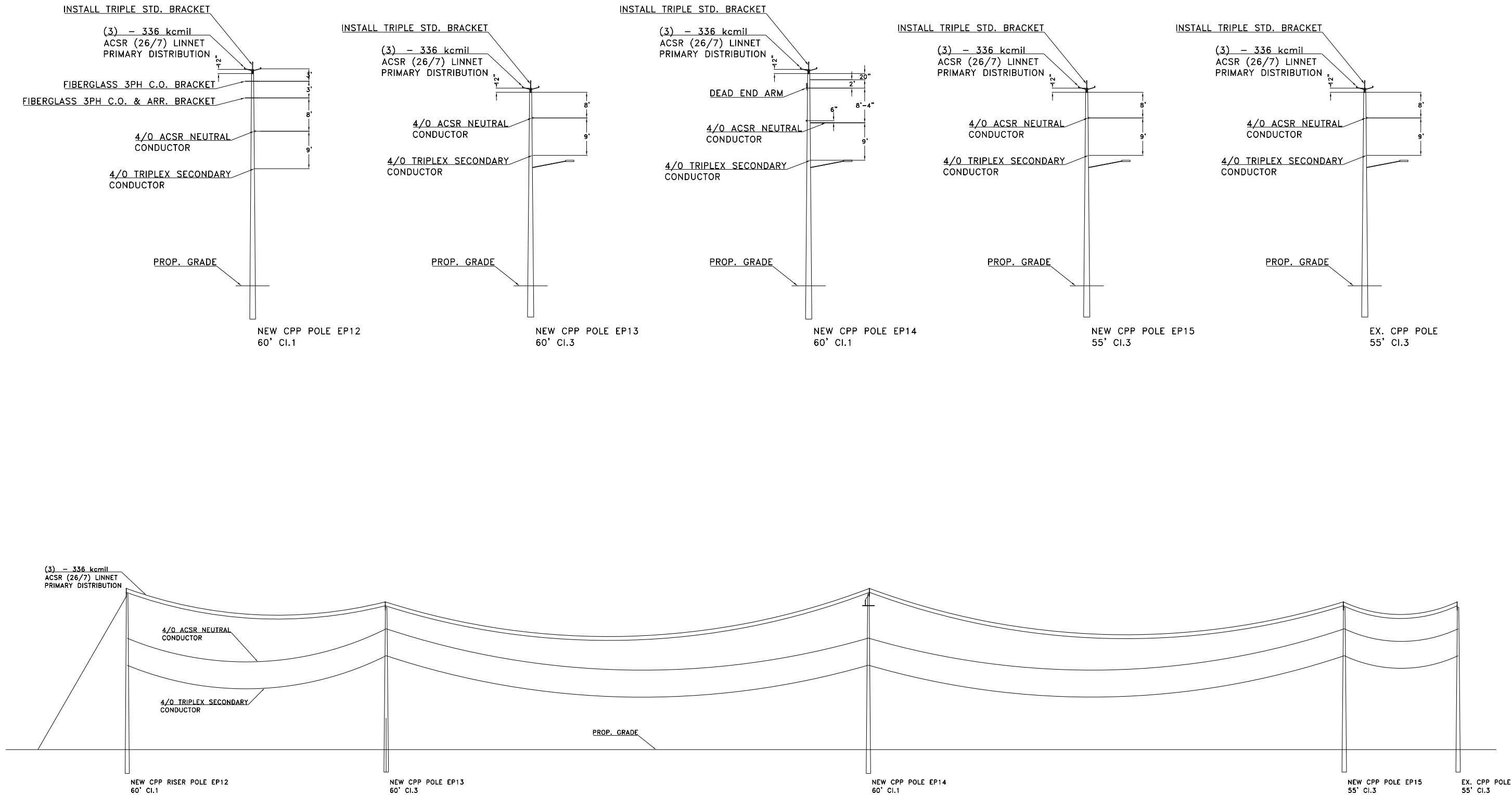
AT NEW CPP RISER POLE EP12
TERMINATE 3-500KCMIL-1C-CU-15KV CABLES
INST. CABLE ID TAGS

CABLE SYMBOLS:
EXISTING CABLE: _____
NEW CABLE: - - - - -
CABLE TO BE REMOVED: - . - . -
NEW STRAIGHT SPLICE: - - - - -
NEW BRANCH SPLICE: - - - - -
CABLE CUT: - - - - -
TO BE: ~
TCF: TOTAL CIRCUIT FEET

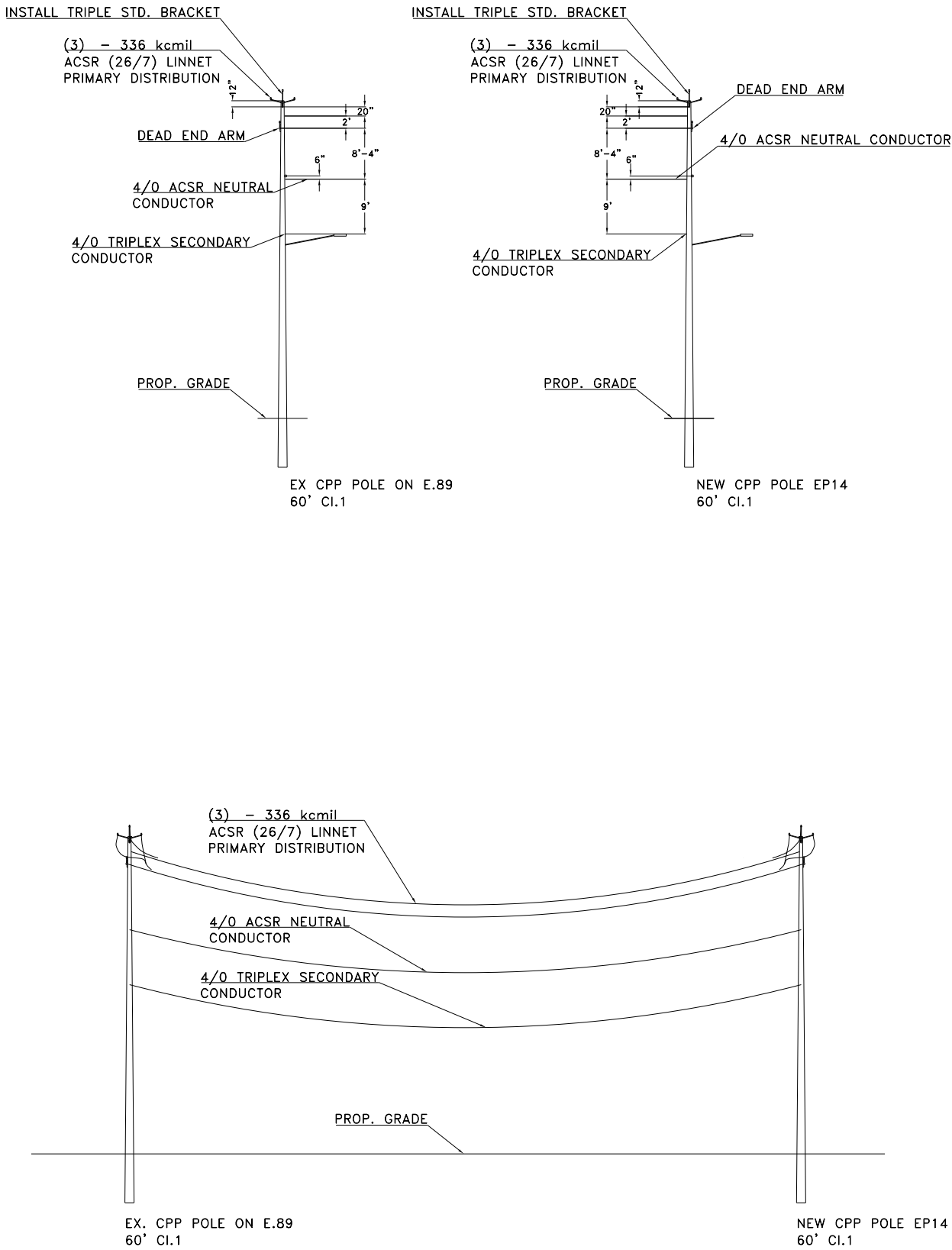
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



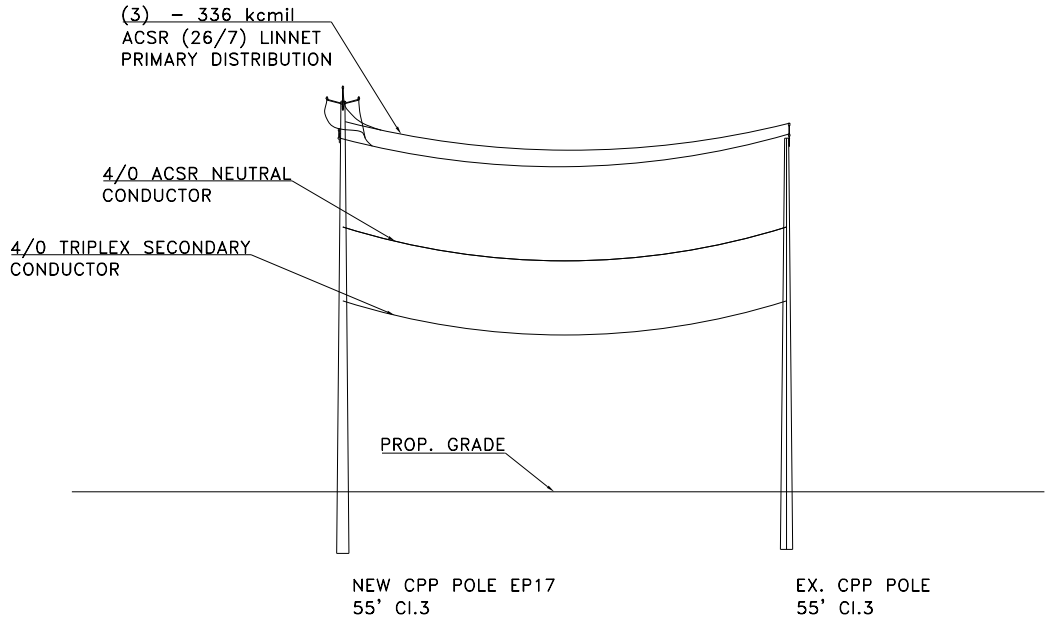
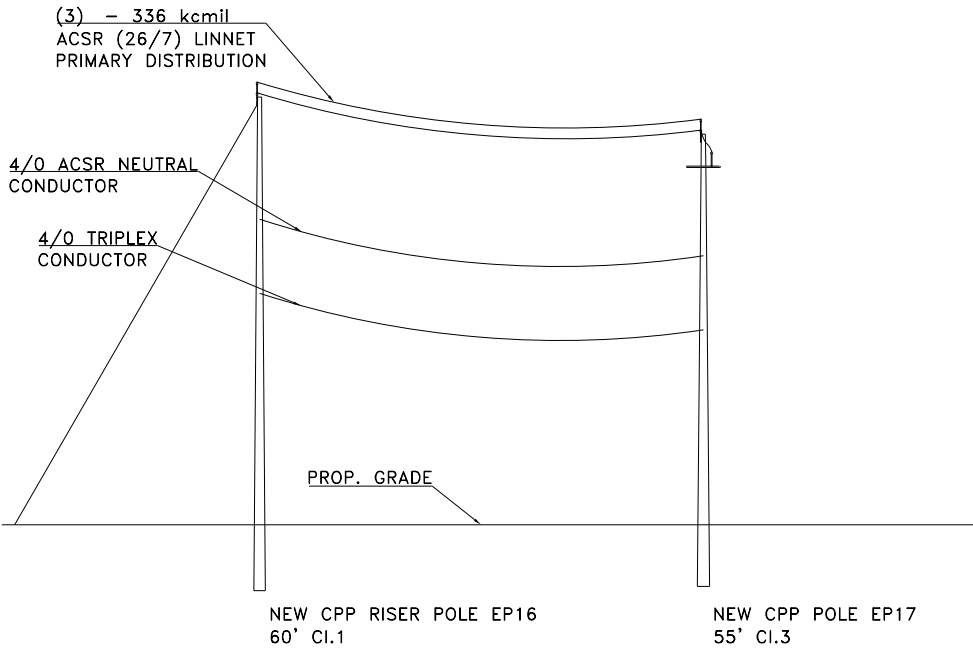
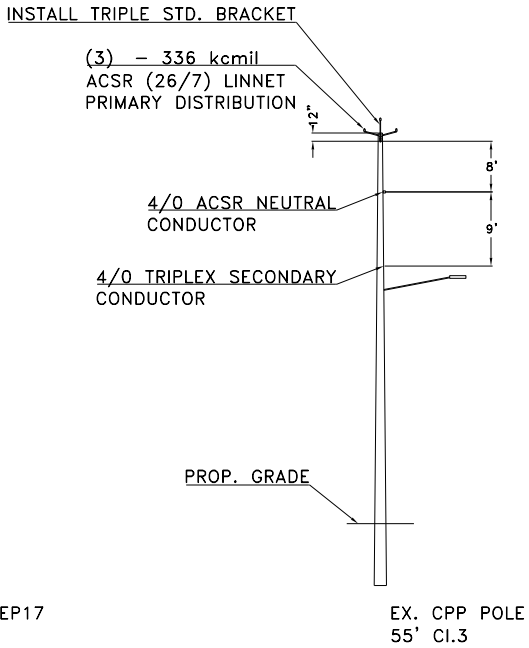
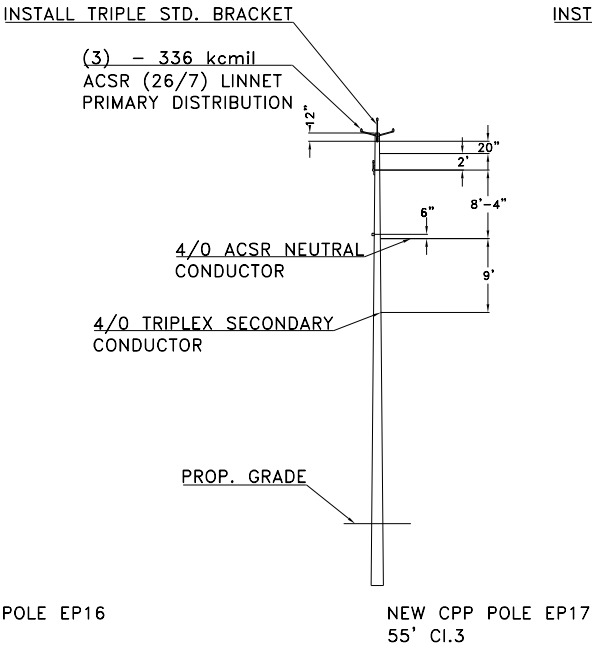
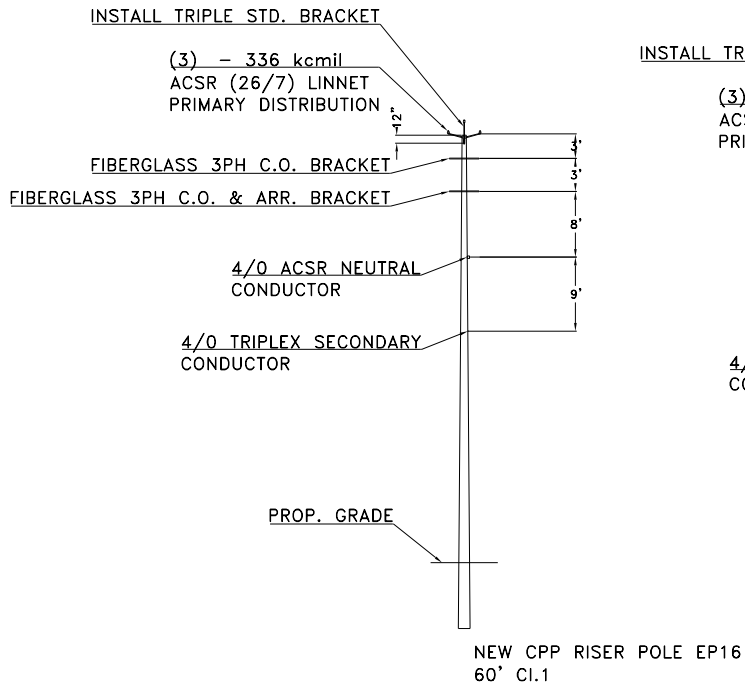
1	2020-01-16	DC031
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



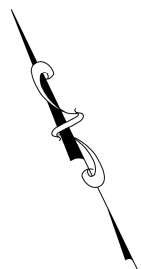
NO.	DATE	DESCRIPTION
1	2020-01-16	DC031
0	2019-08-08	RFC
ISSUE RECORD		



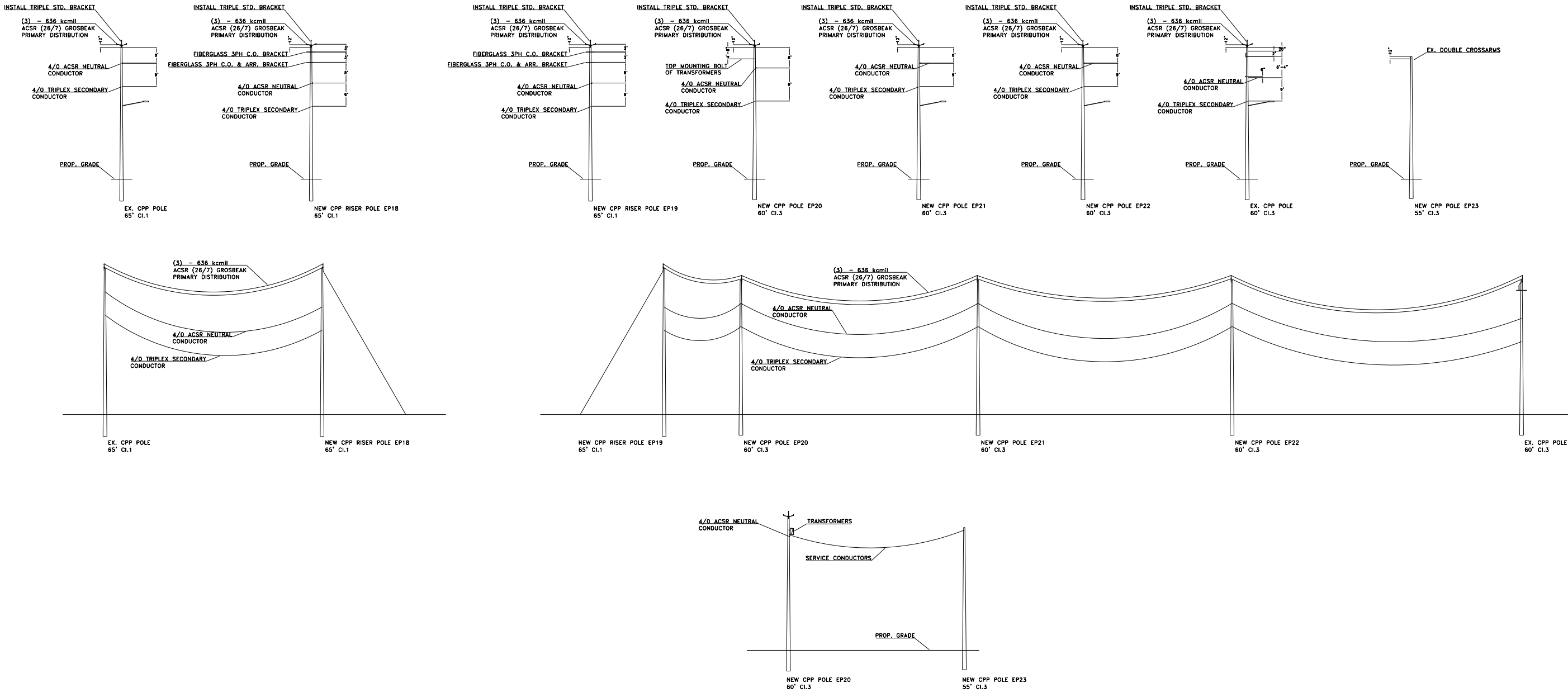
1	2020-01-16	DC031
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



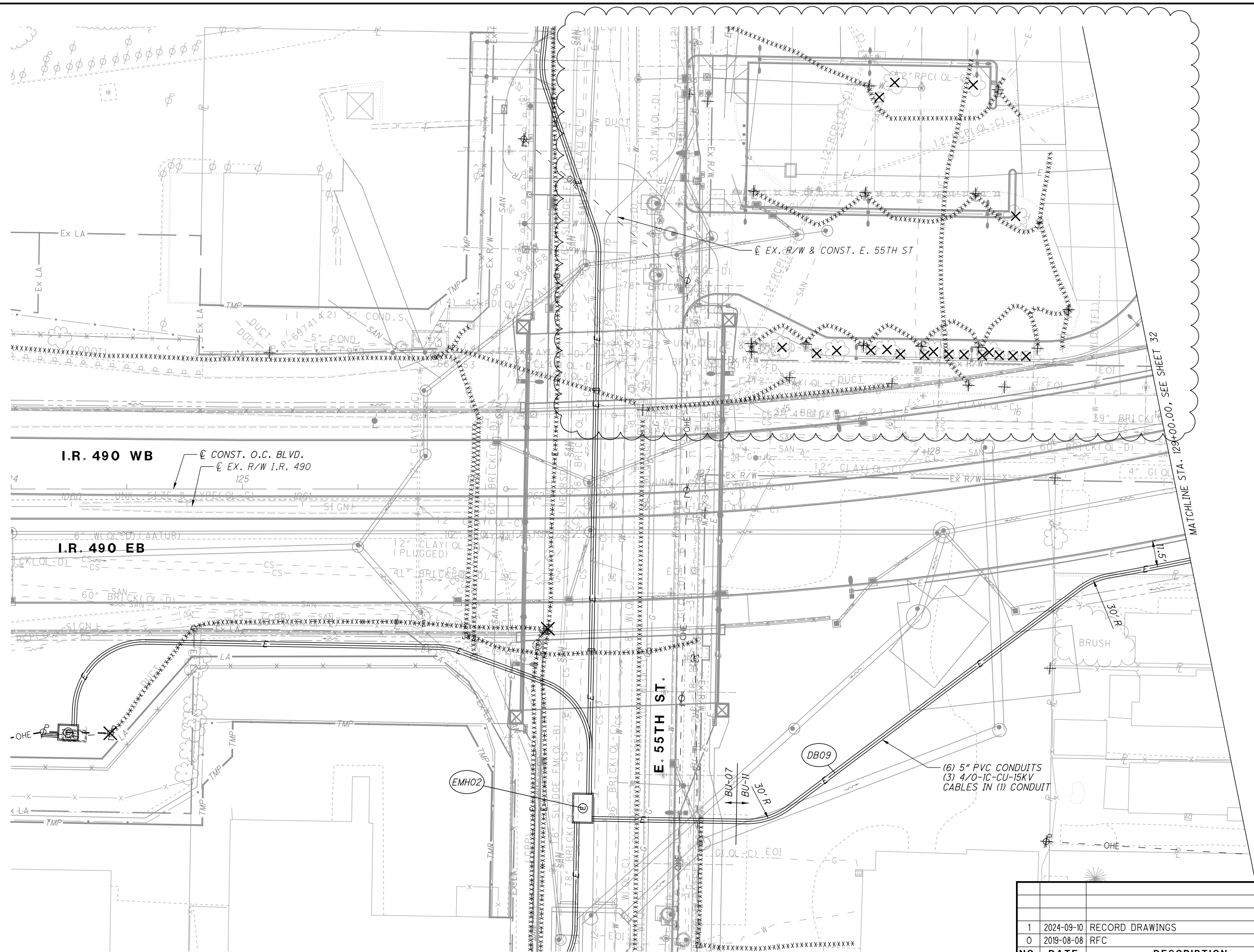
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0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



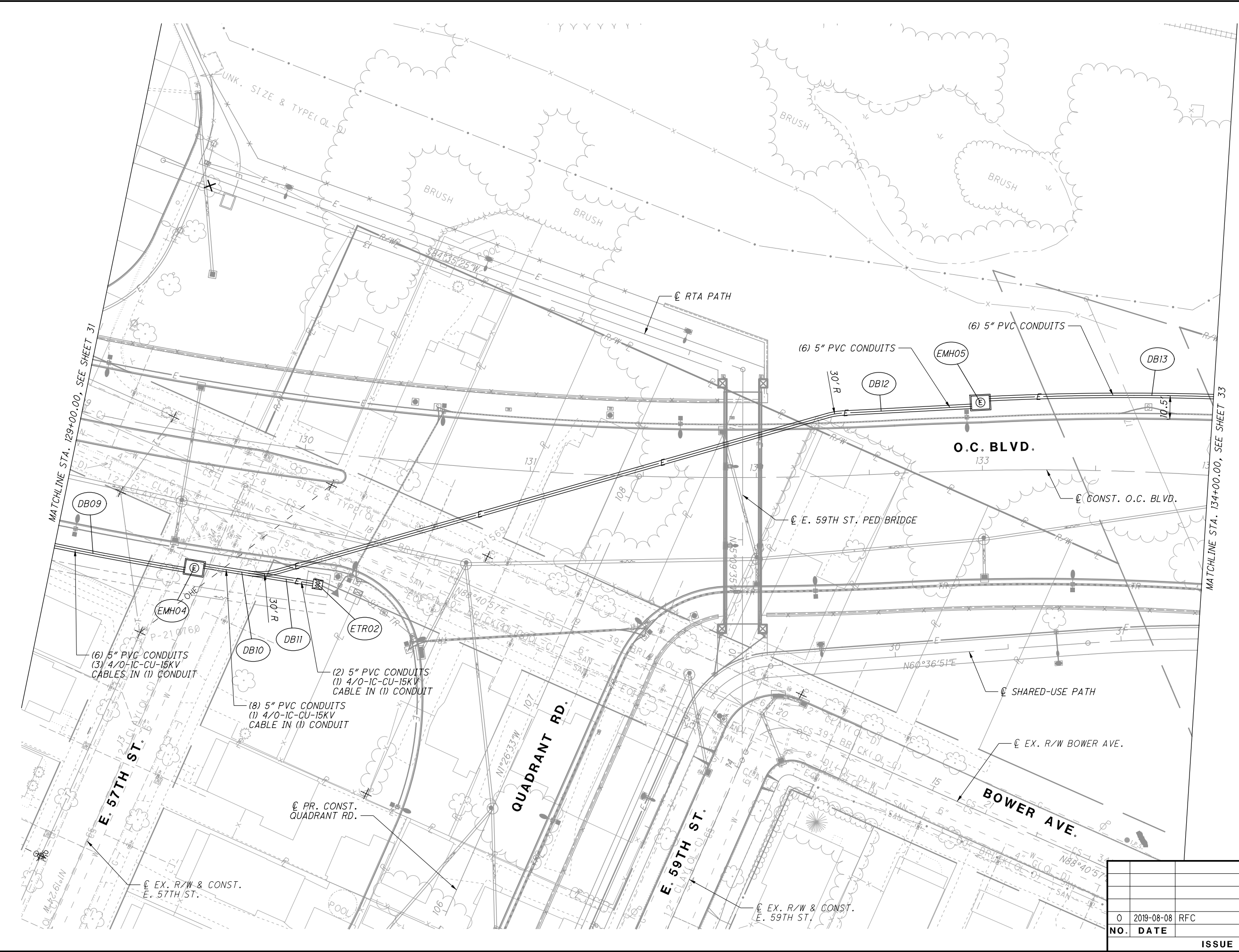
29
159



NO.	DATE	DESCRIPTION
1	2020-01-16	DC031
0	2019-08-08	RFC
ISSUE RECORD		



1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



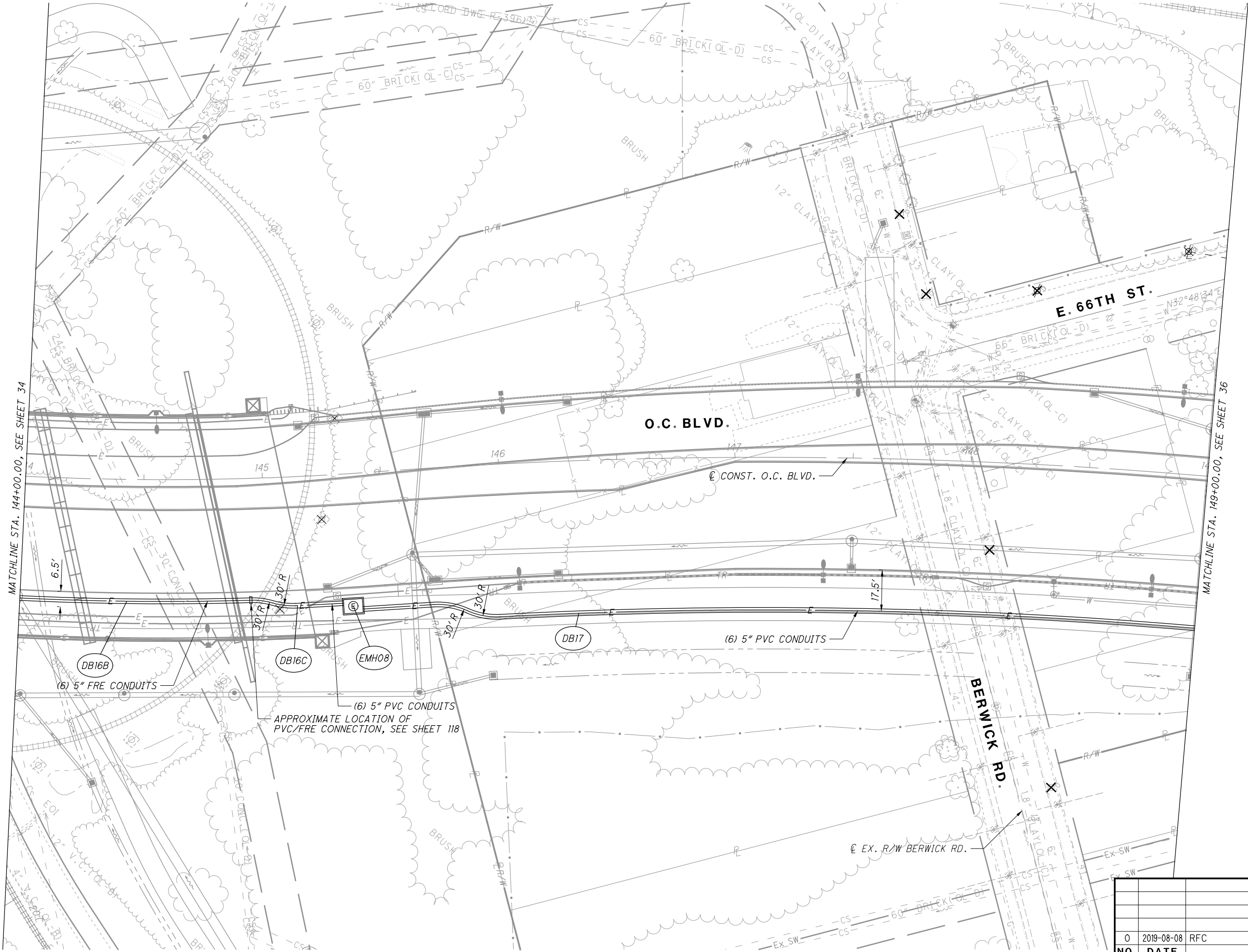
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		ISSUE RECORD	



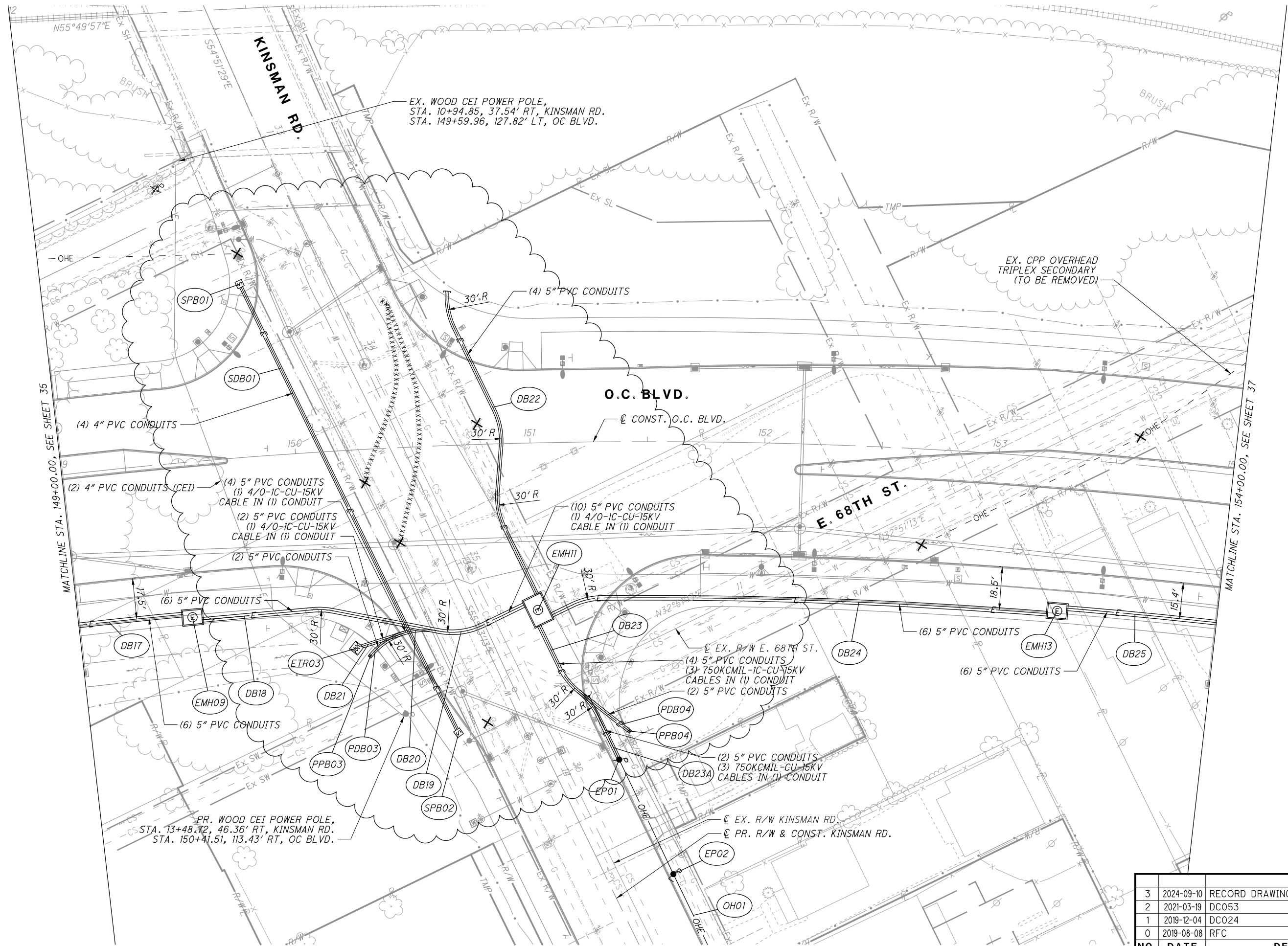
ISSUE RECORD		
NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC



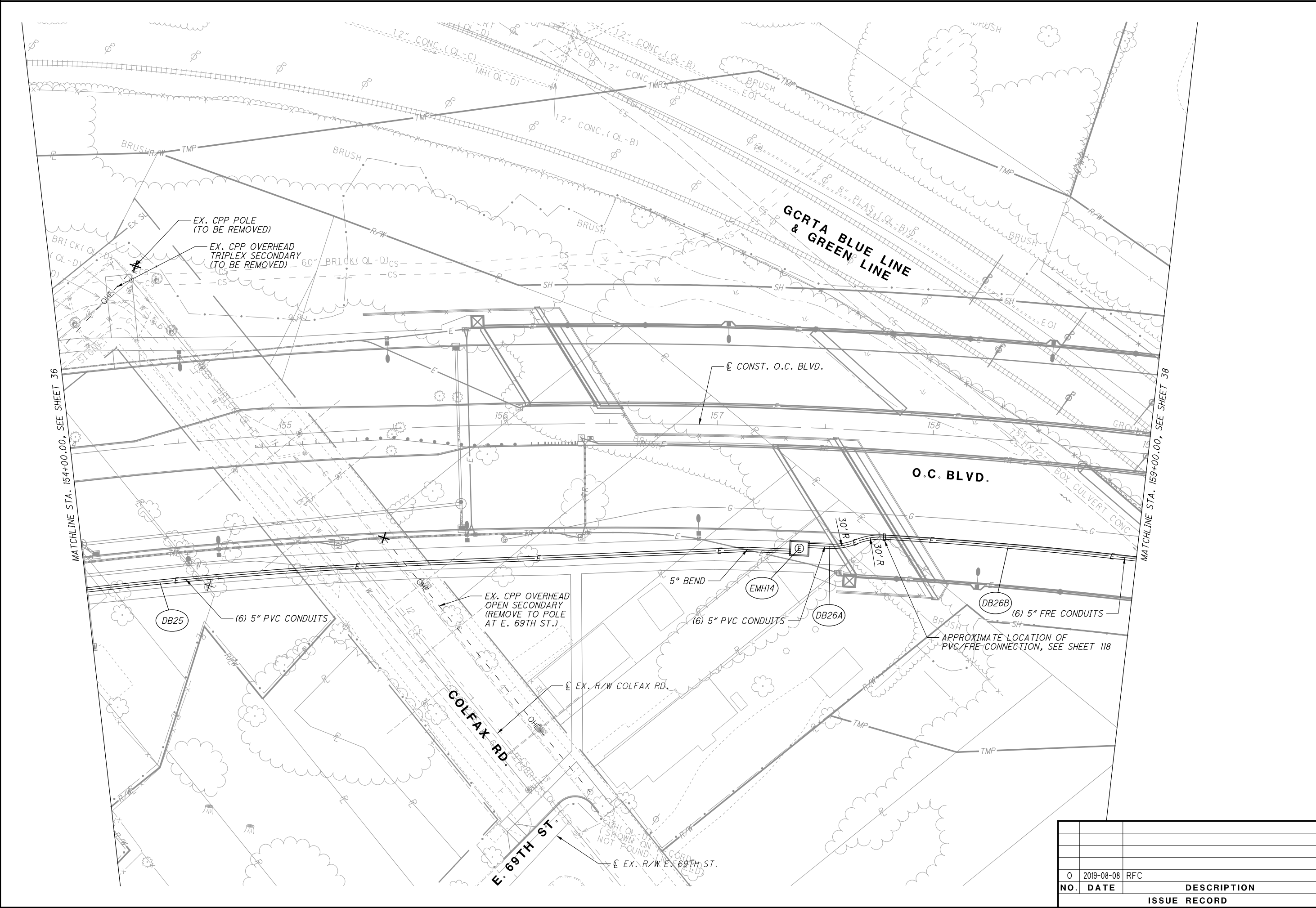
34
159



ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC



3	2024-09-10	RECORD DRAWINGS
2	2021-03-19	DC053
1	2019-12-04	DC024
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
37	2.09 / 19.28	
159		

CUY-IR490/ SR010-2.09 / 19.28

CPP DUCT BANK PLAN - O.C. BLVD.
STA. 154+00.00 TO STA. 159+00.00

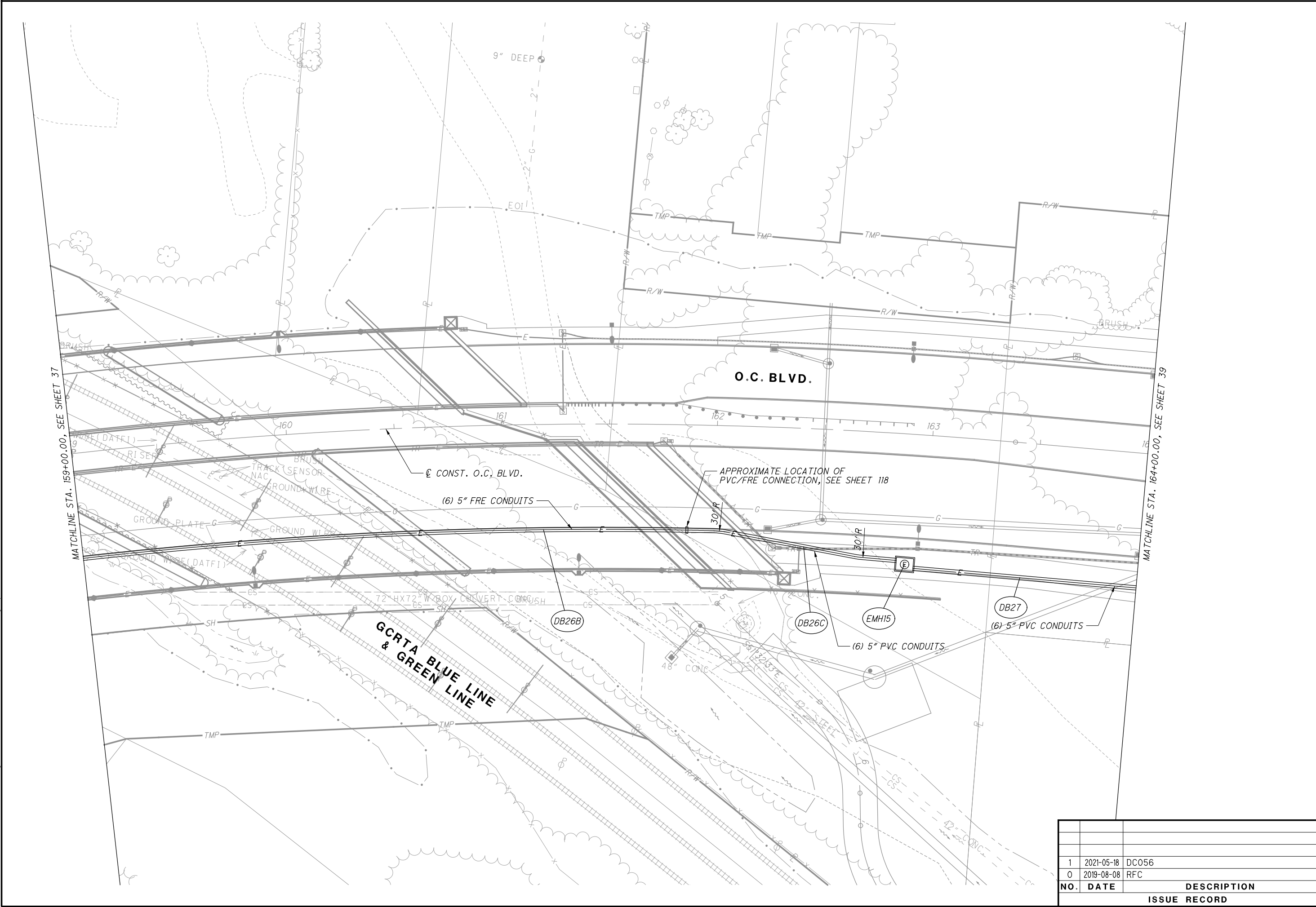
CALCULATED
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02040

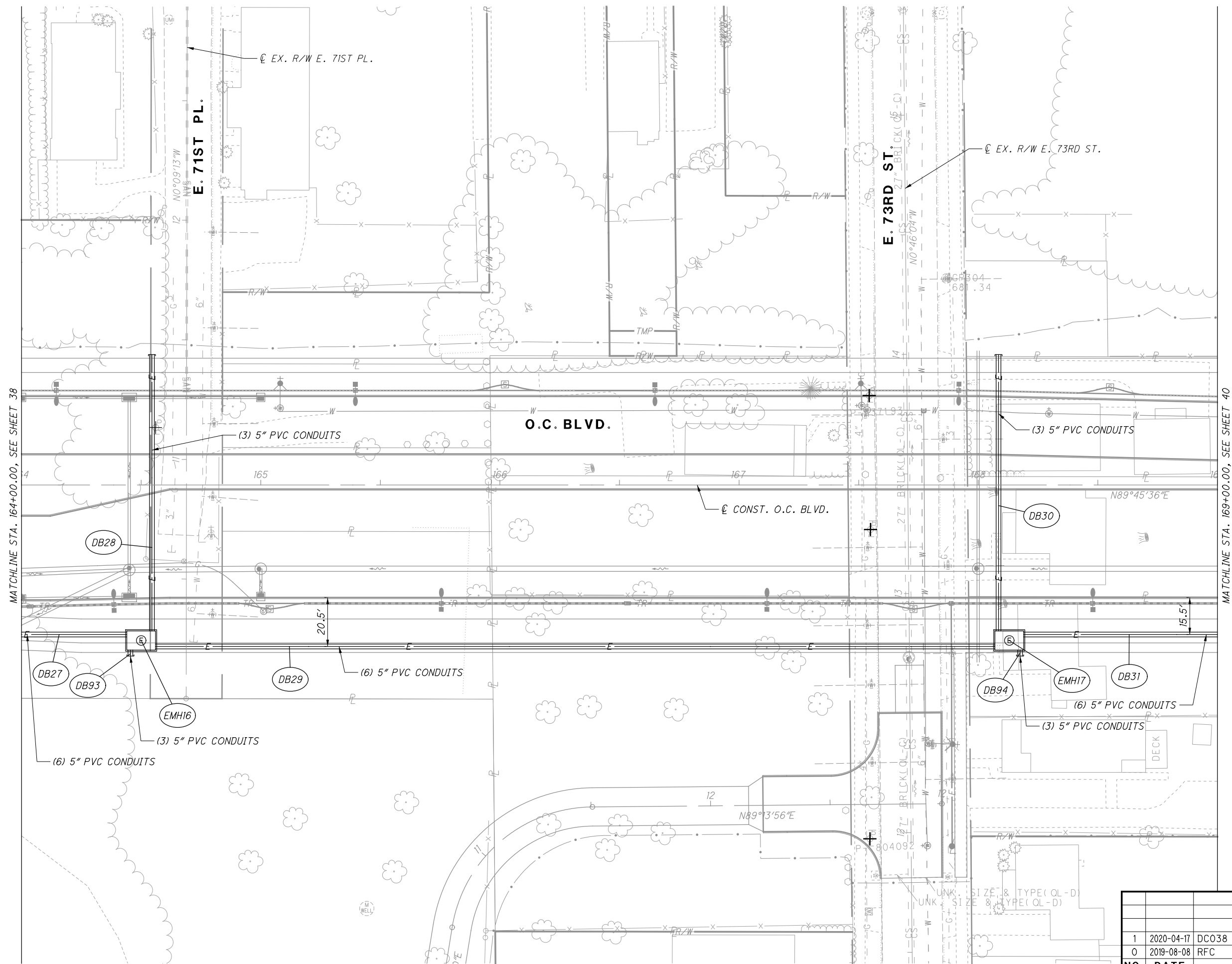
HORIZONTAL
SCALE IN FEET

RECORD PLANS

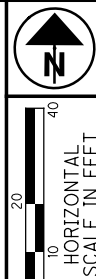
RECORD PLANS

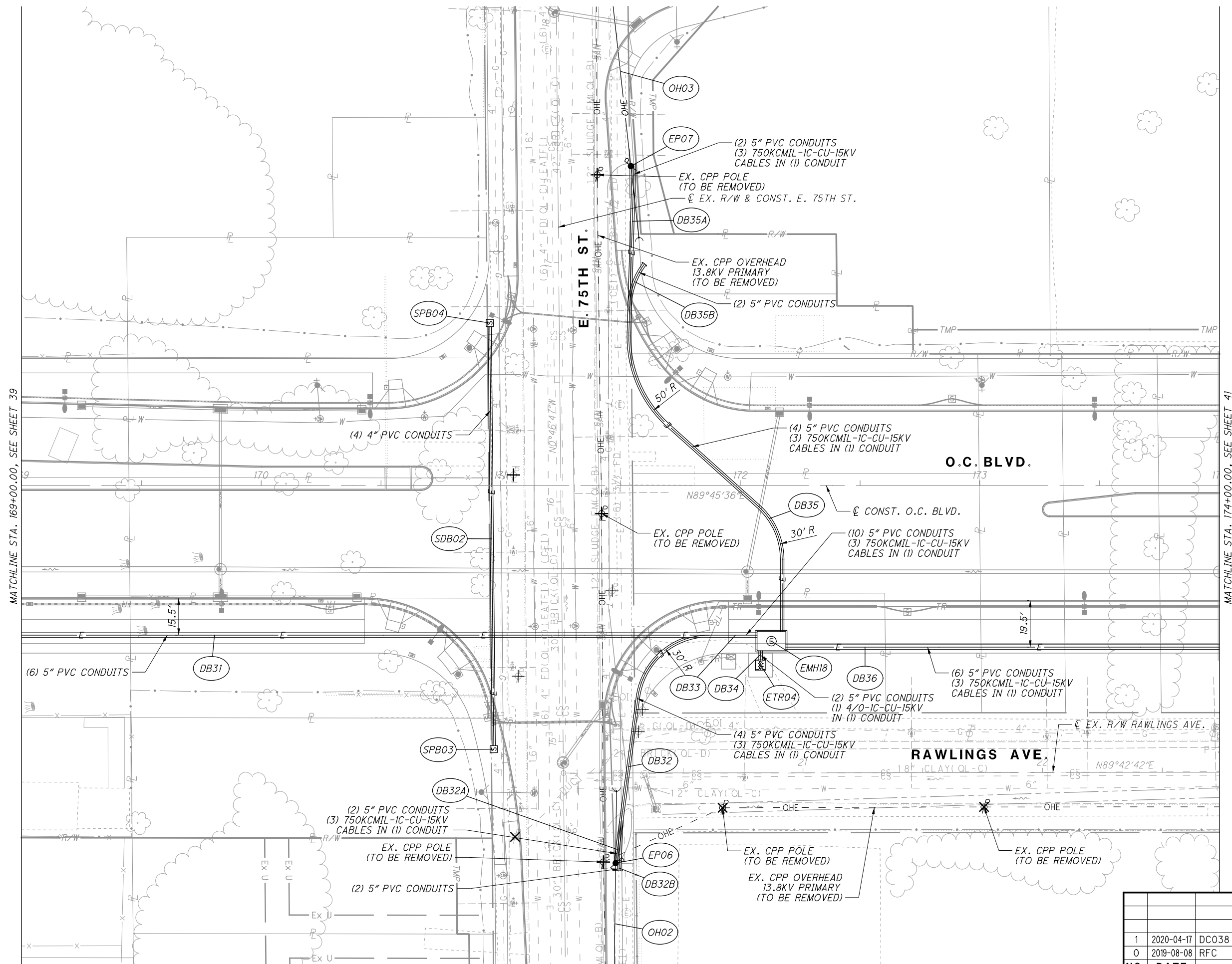


NO.	DATE	DESCRIPTION
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0	2019-08-08	RFC
ISSUE RECORD		



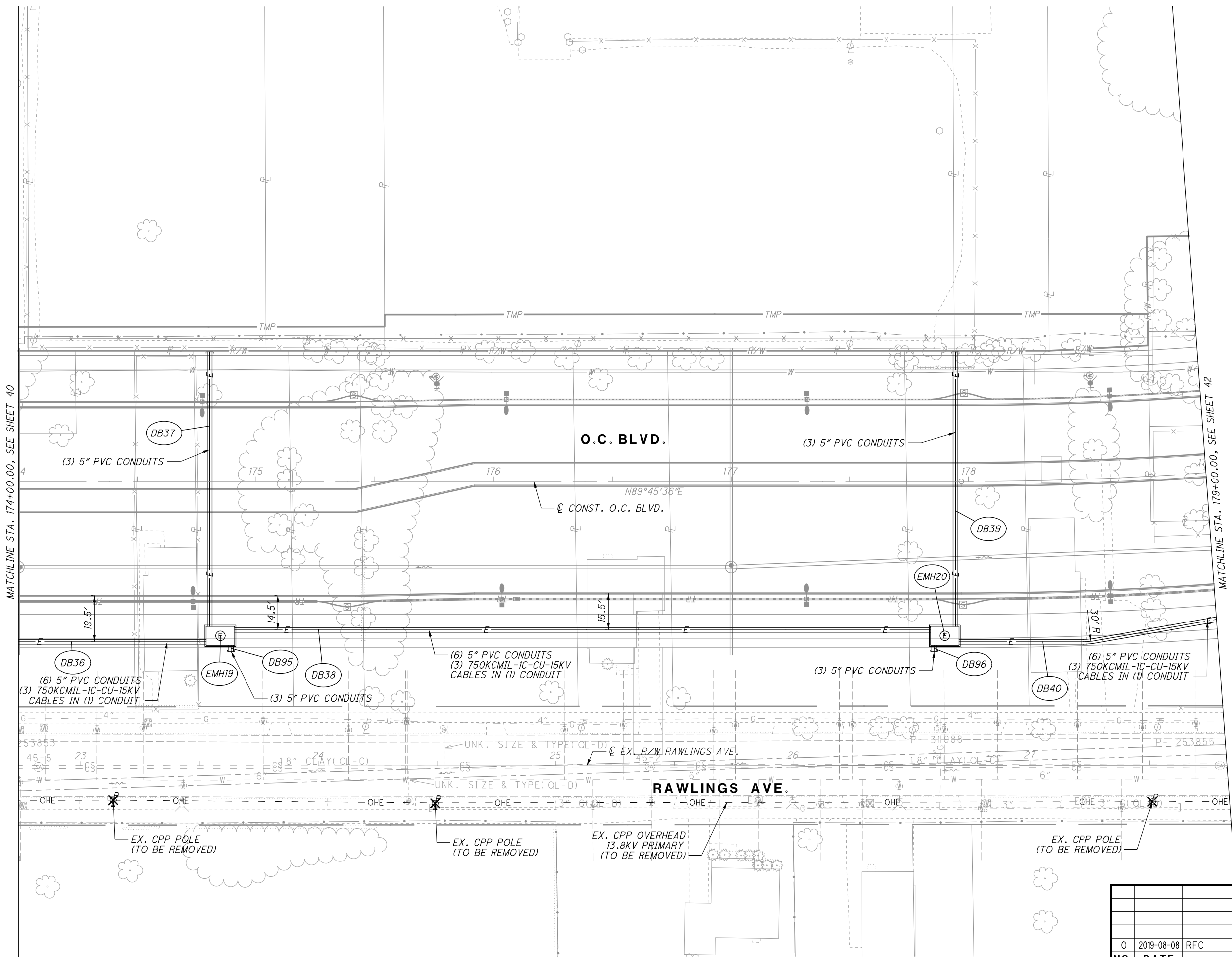
1	2020-04-17	DC038
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



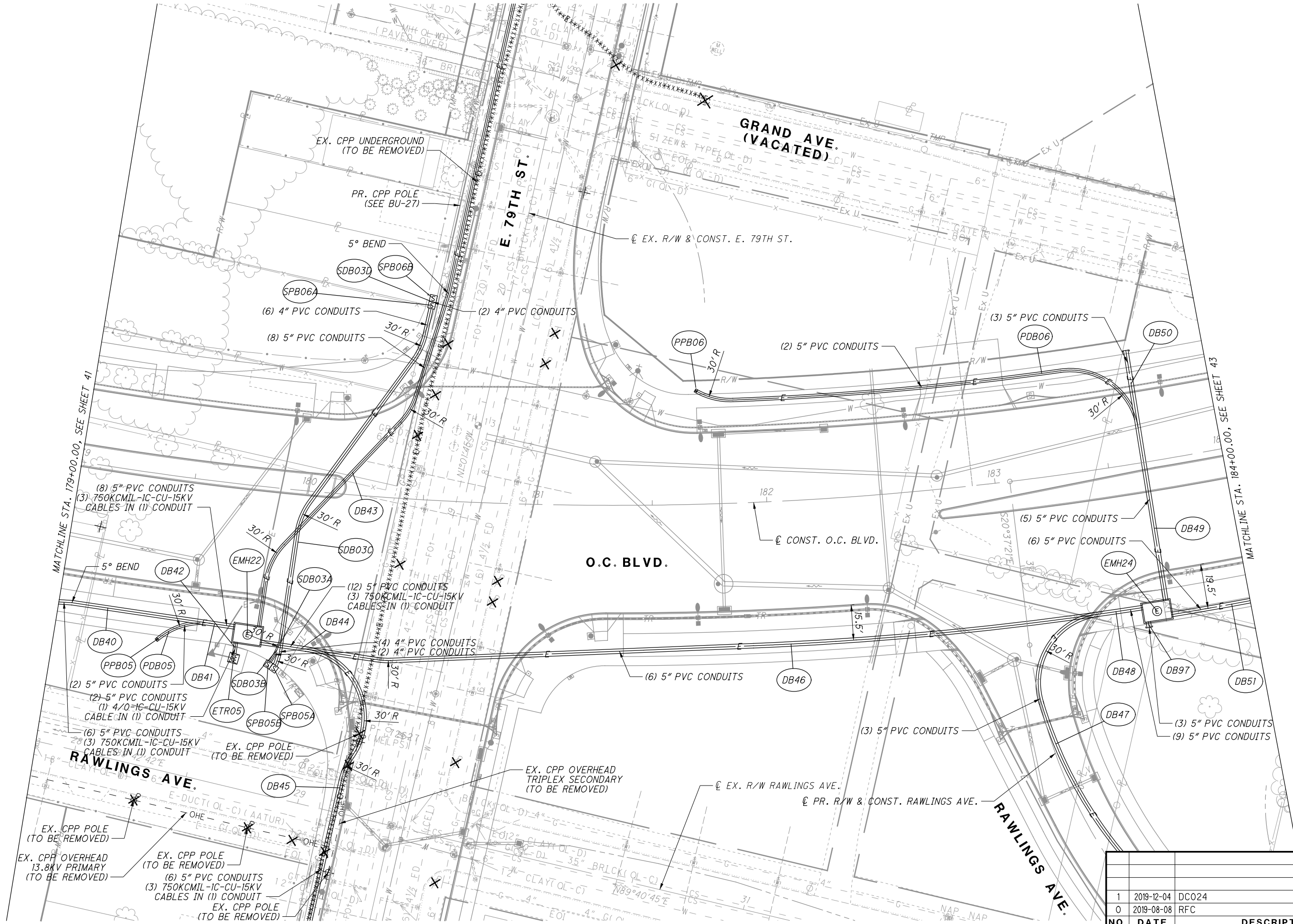


NOTE:
FOR PROPOSED POLES
WITHOUT CALLOUT BUBBLE
INFORMATION, SEE BU-27 -
STREET LEVEL LIGHTING.

1	2020-04-17	DC038
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC



ISSUE RECORD		
NO.	DATE	DESCRIPTION
1	2019-12-04	DC024
0	2019-08-08	RFC

CPP DUCT BANK PLAN - O.C. BLVD.
STA. 179+00.00 TO STA. 184+00.00

CUY-IR490/ SR010-
2.09 / 19.28

CALCULATED
DFT

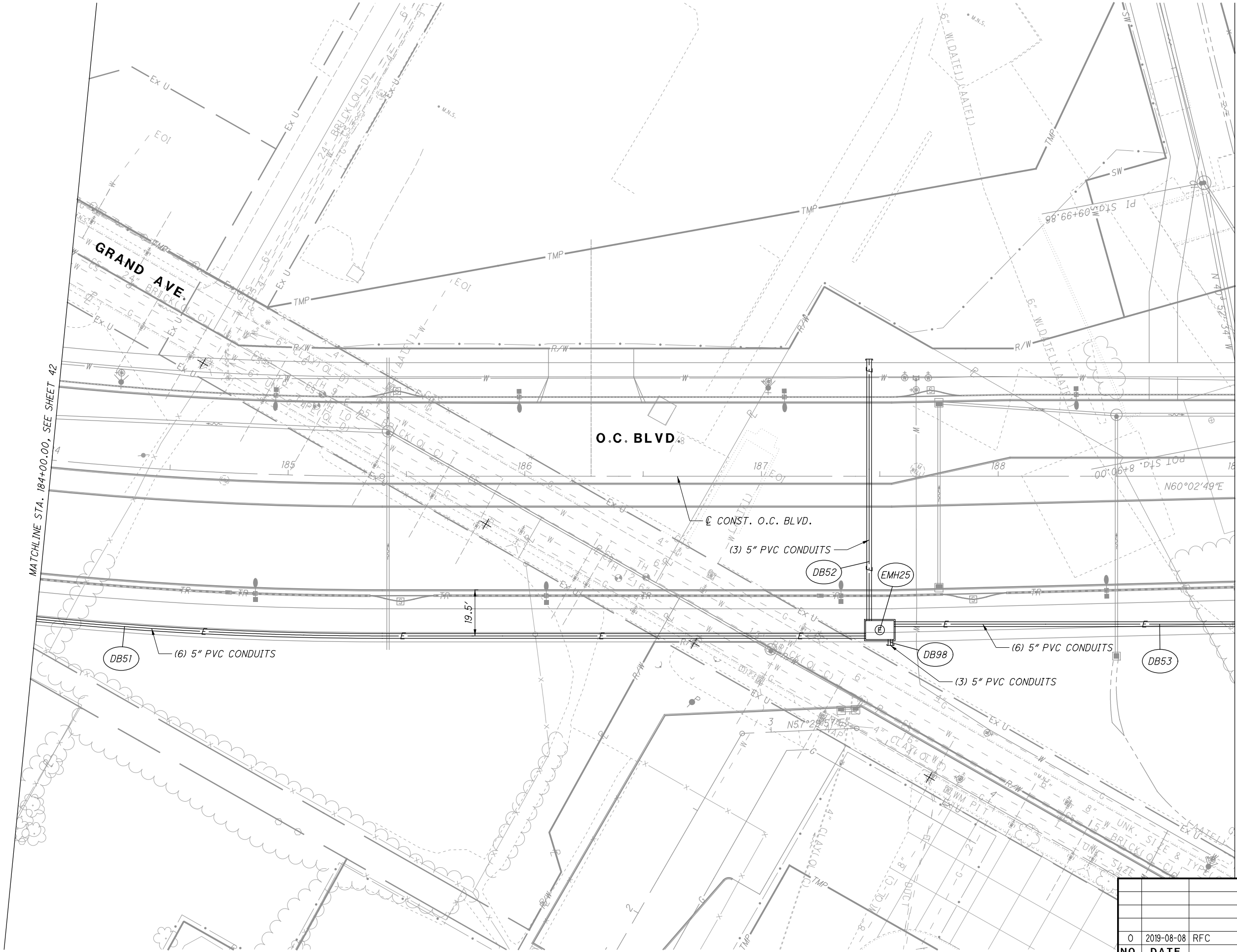
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0 20 40

HORIZONTAL
SCALE IN FEET

42

159



ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC

CPP DUCT BANK PLAN - O.C. BLVD.

STA. 184+00.00 TO STA. 189+00.00

CUY-IR490/ SR010-

2.09 / 19.28

CALCULATED
D.F.T.

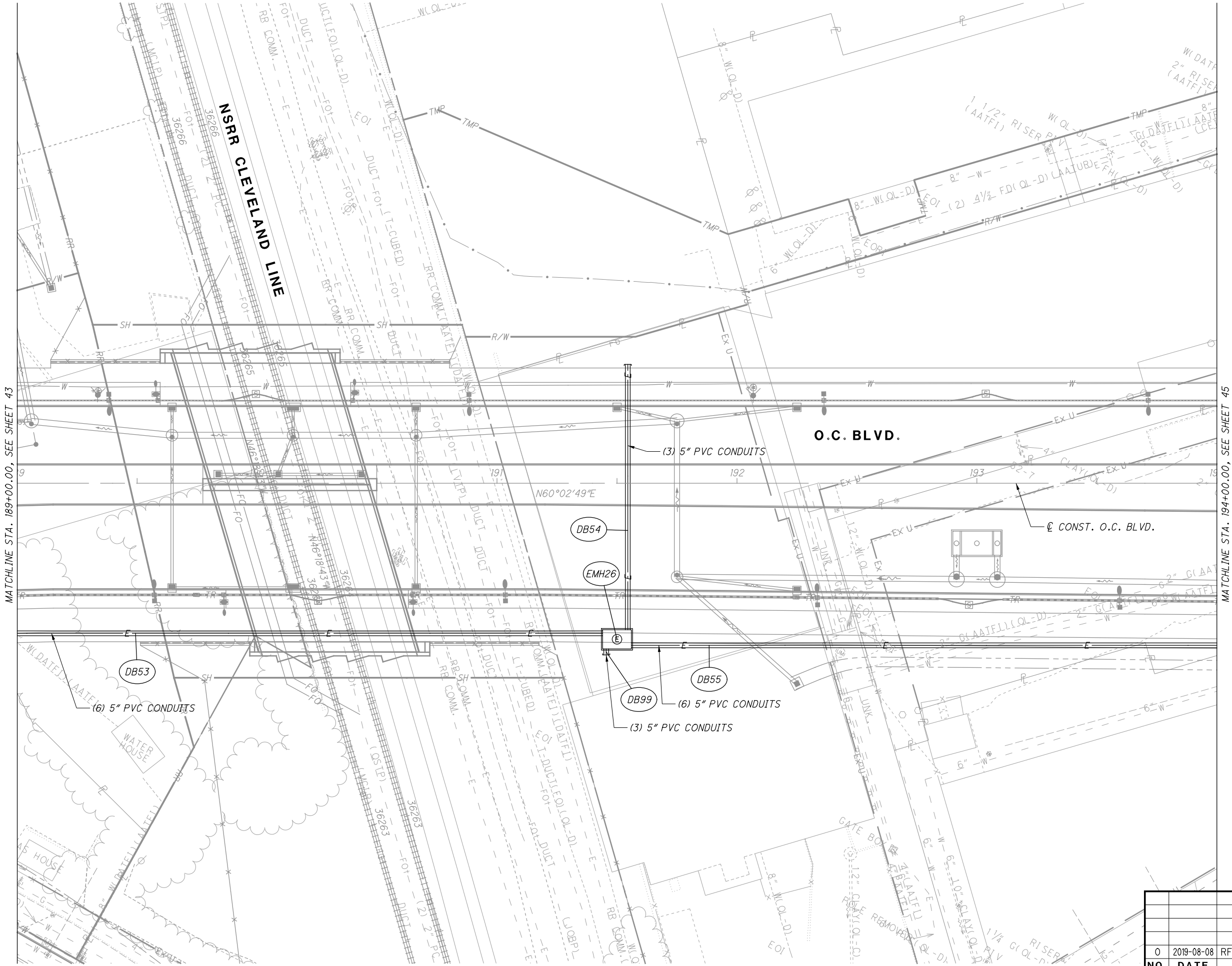
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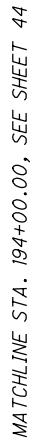
HORIZONTAL
SCALE IN FEET

40°

North Arrow



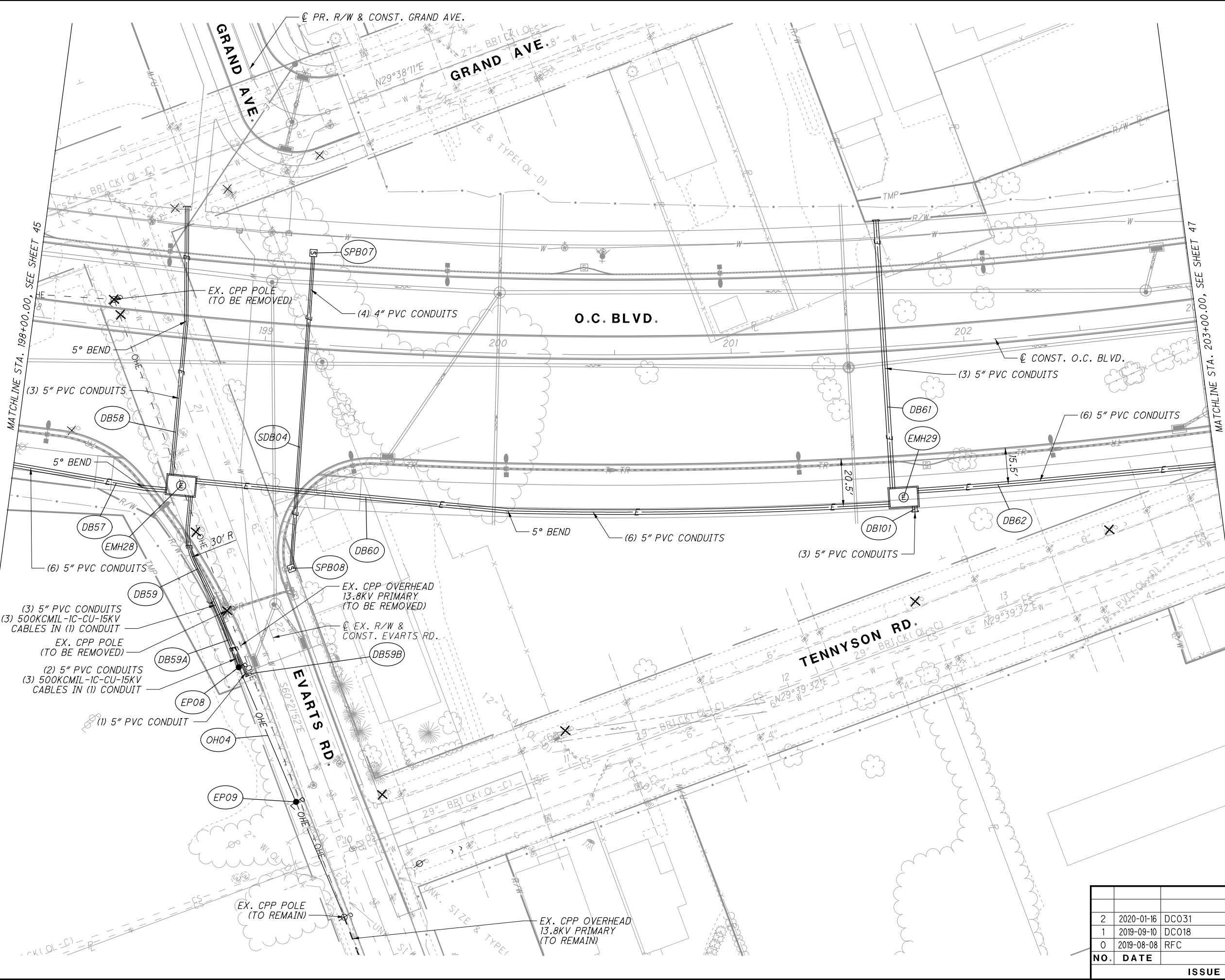
NO.		DATE	DESCRIPTION
0	2019-08-08	RFC	
			ISSUE RECORD



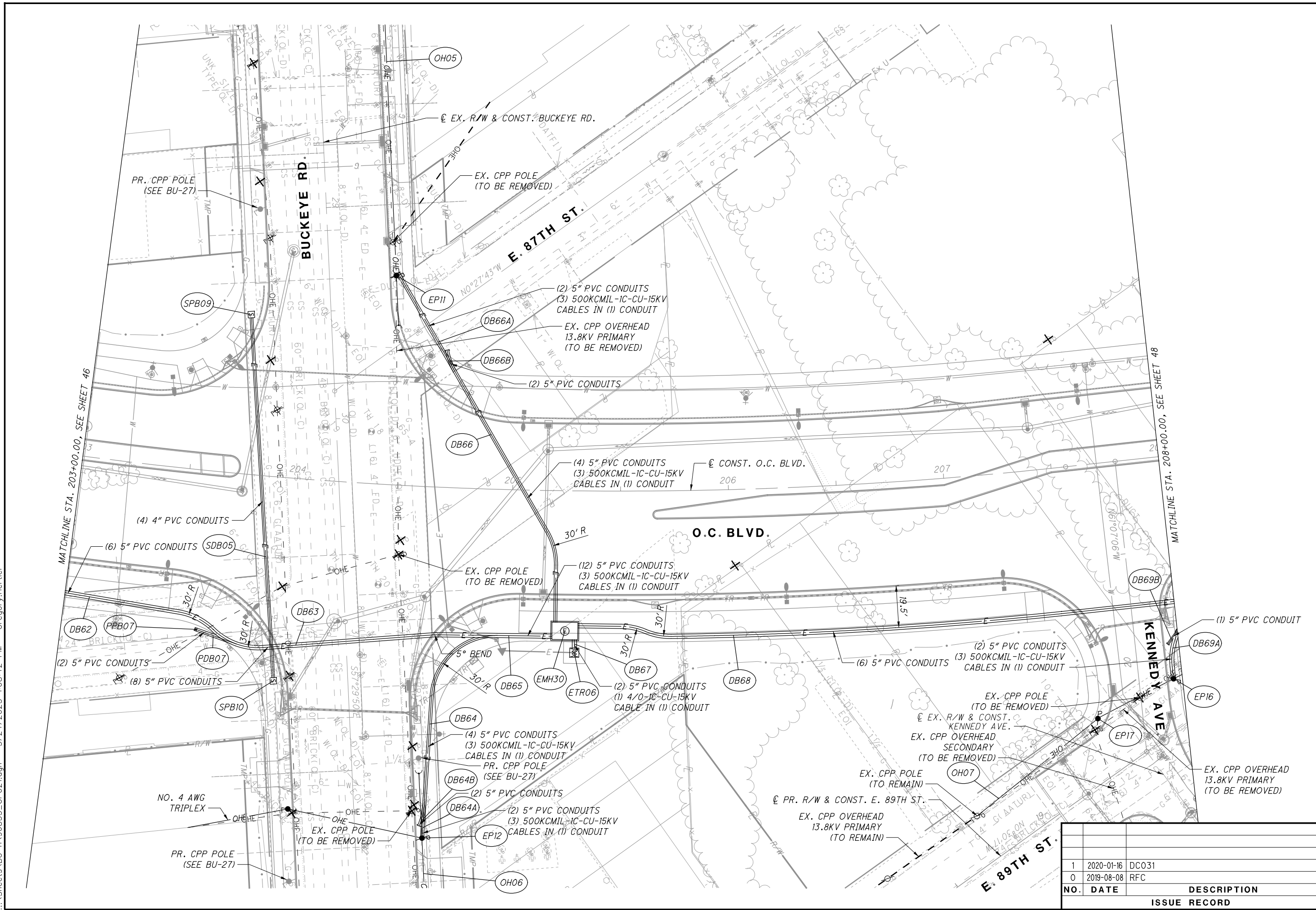
NOTE:
FOR PROPOSED POLES
WITHOUT CALLOUT BUBBLE
INFORMATION, SEE BU-27 -
STREET LEVEL LIGHTING.

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

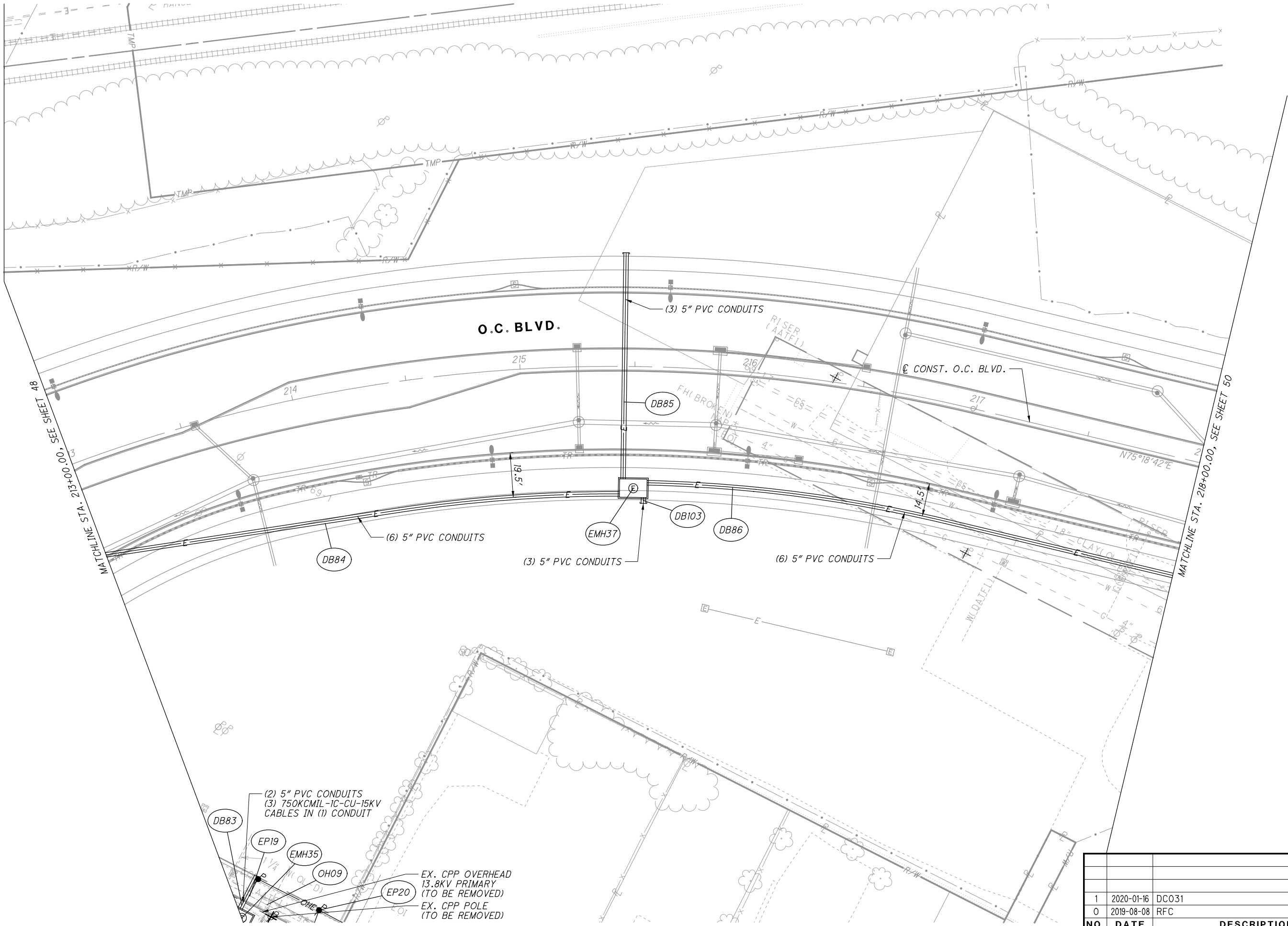




NO.	DATE	DESCRIPTION	
		ISSUE RECORD	
2	2020-01-16	DCO31	
1	2019-09-10	DCO18	
0	2019-08-08	RFC	



1	2020-01-16	DC031
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



ISSUE RECORD		
NO.	DATE	DESCRIPTION
1	2020-01-16	DC031
0	2019-08-08	RFC

CUY-IR490/ SR010-
2.09 / 19.28

CPP DUCT BANK PLAN - O.C. BLVD.
STA. 213+00.00 TO STA. 218+00.00

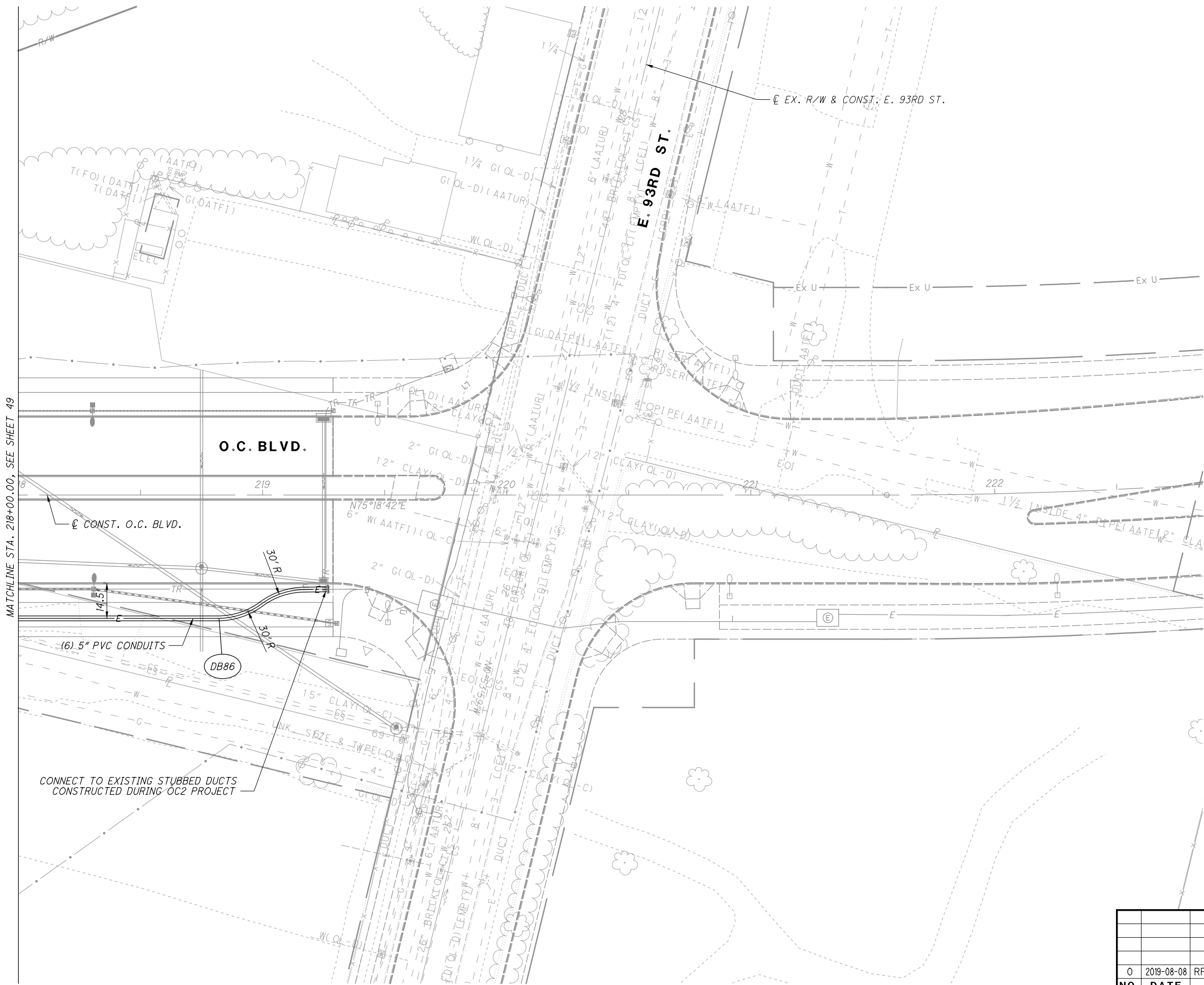
CALCULATED
D.F.T

CHECKED
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10
40

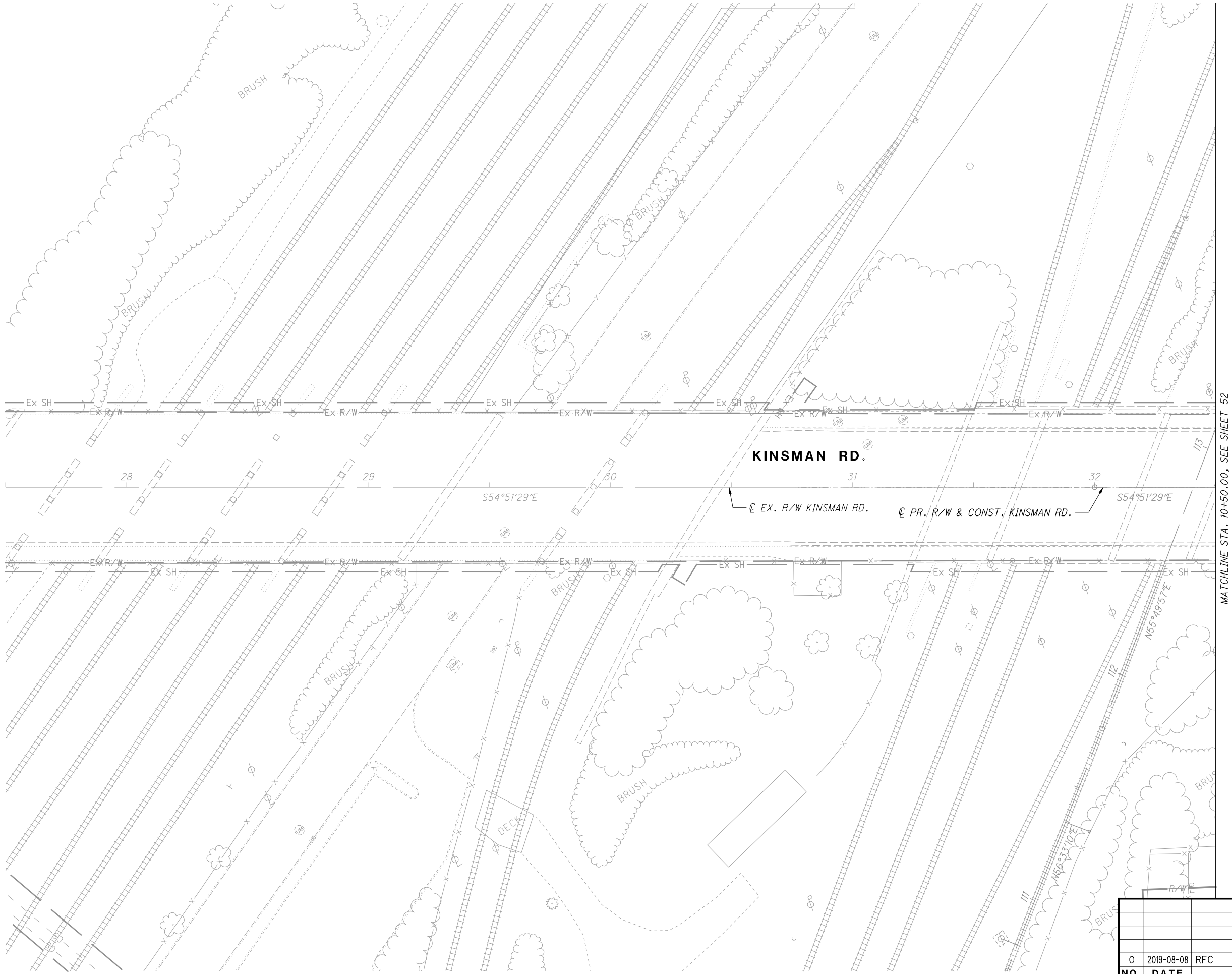
HORIZONTAL
SCALE IN FEET

RECORD PLANS

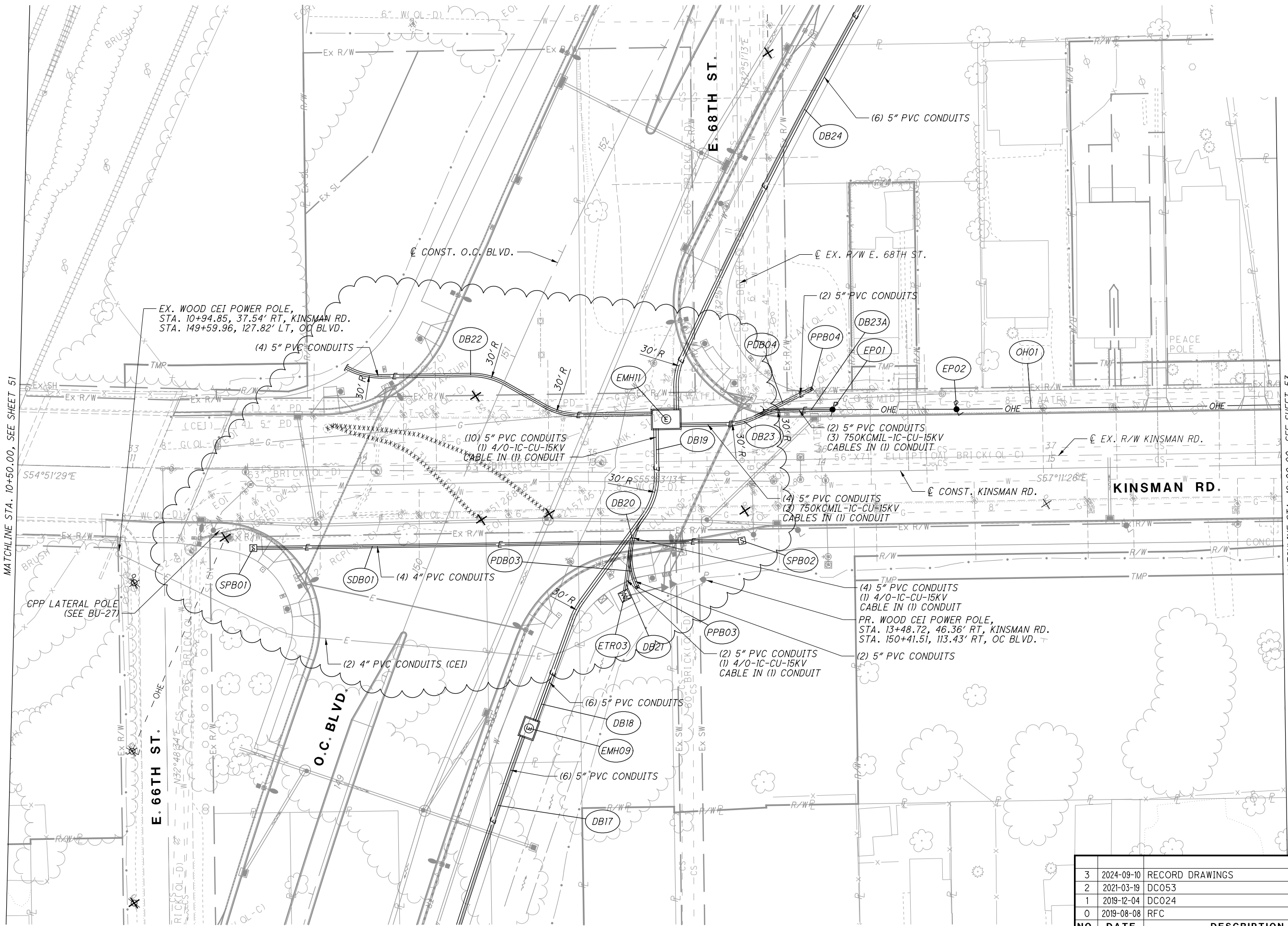


ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC

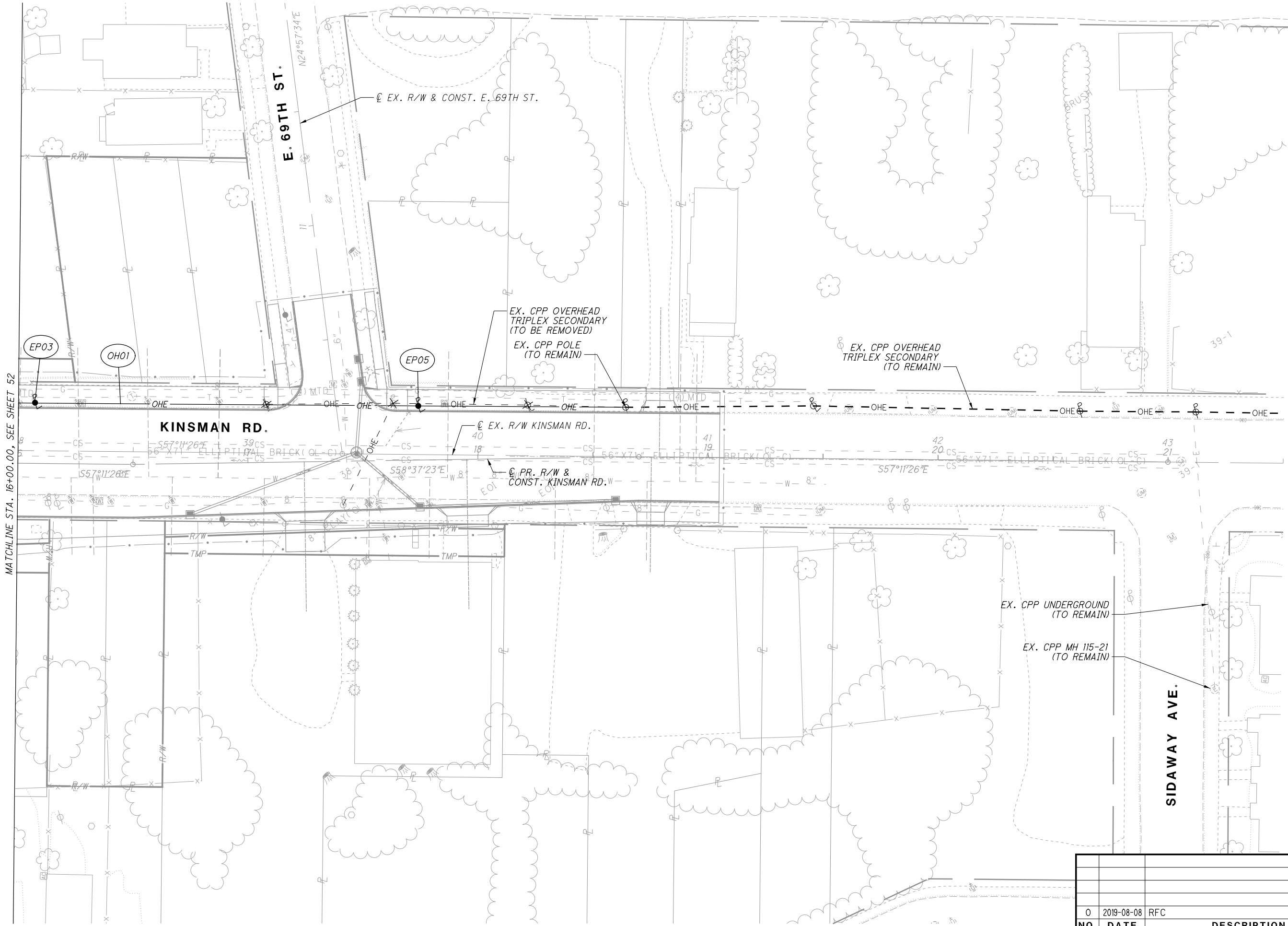




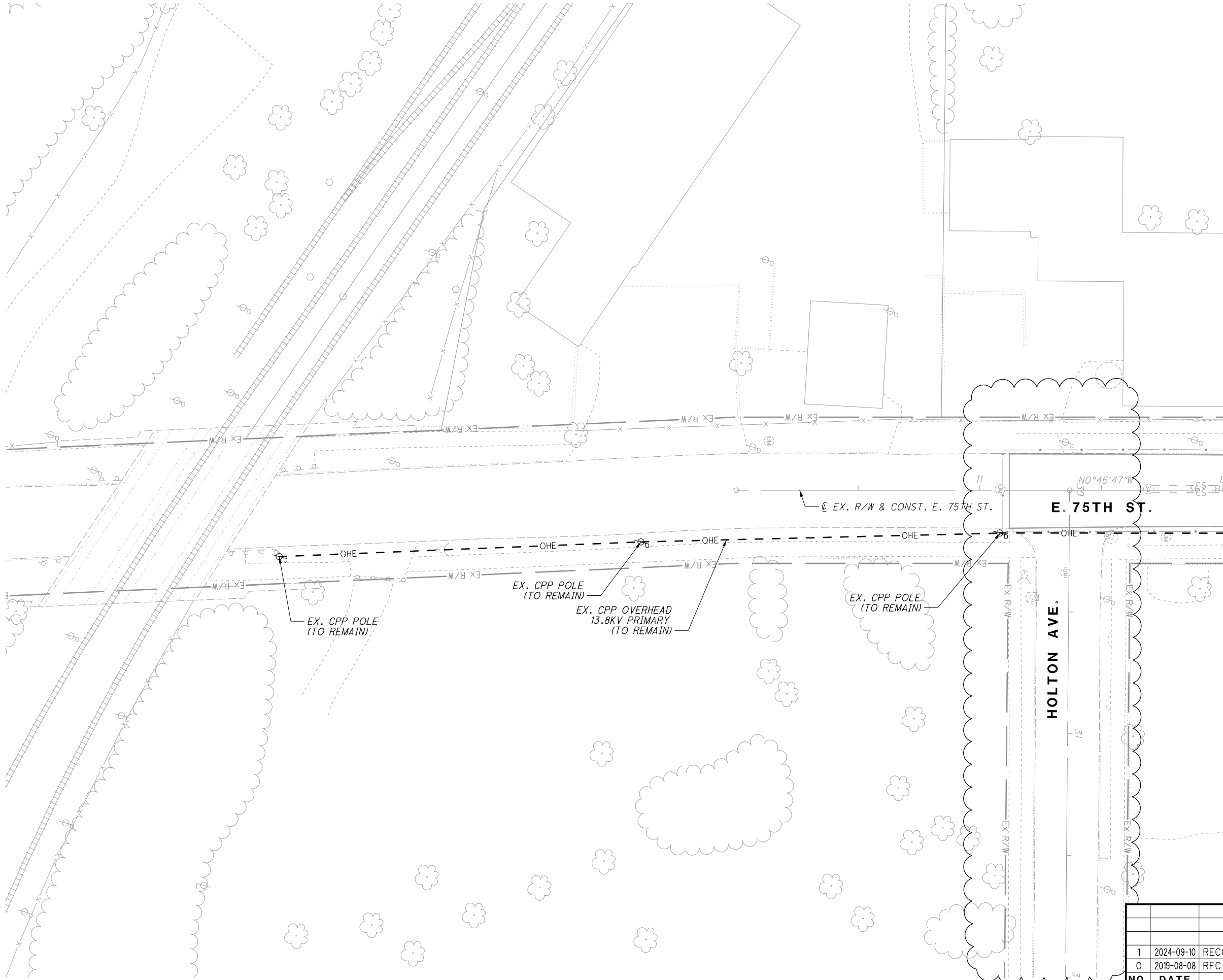
ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC



NO.	DATE	DESCRIPTION
3	2024-09-10	RECORD DRAWINGS
2	2021-03-19	DC053
1	2019-12-04	DC024
0	2019-08-08	RFC



ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC



MATCHLINE STA. 12+00.00, SEE SHEET 55

NO.		DATE	DESCRIPTION
1		2024-09-10	RECORD DRAWINGS
0		2019-08-08	RFC
ISSUE RECORD			

CUY-IR490/ SR010-2.09/ 19.28

RECORD PLANS

CPP DUCT BANK PLAN - E. 75TH ST. BEGIN TO STA. 12+00.00

RECORD PLANS

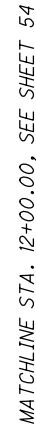
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D.F.T
CHECKED
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0 10 20 40
HORIZONTAL
SCALE IN FEET

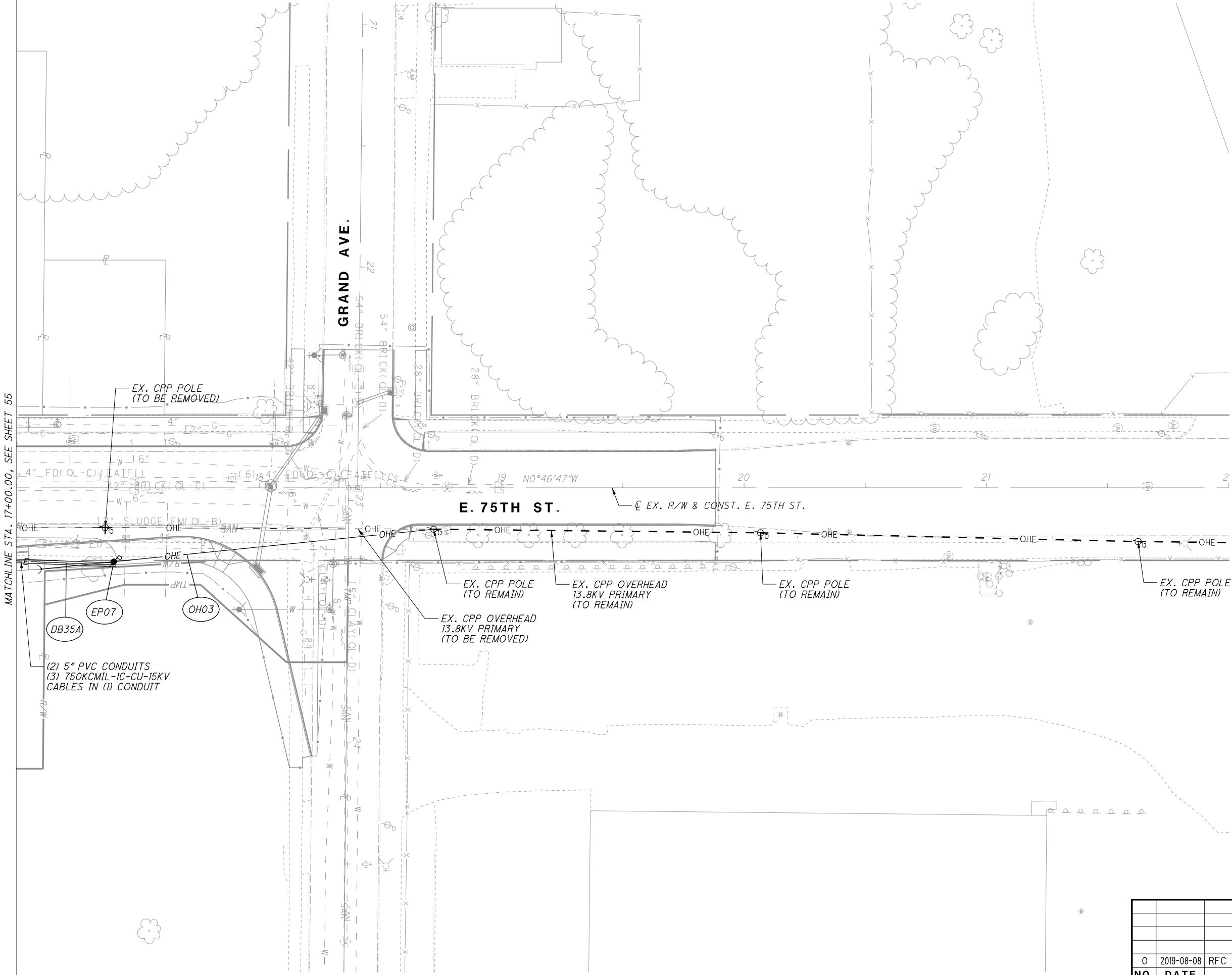
54
159

RECORD PLANS

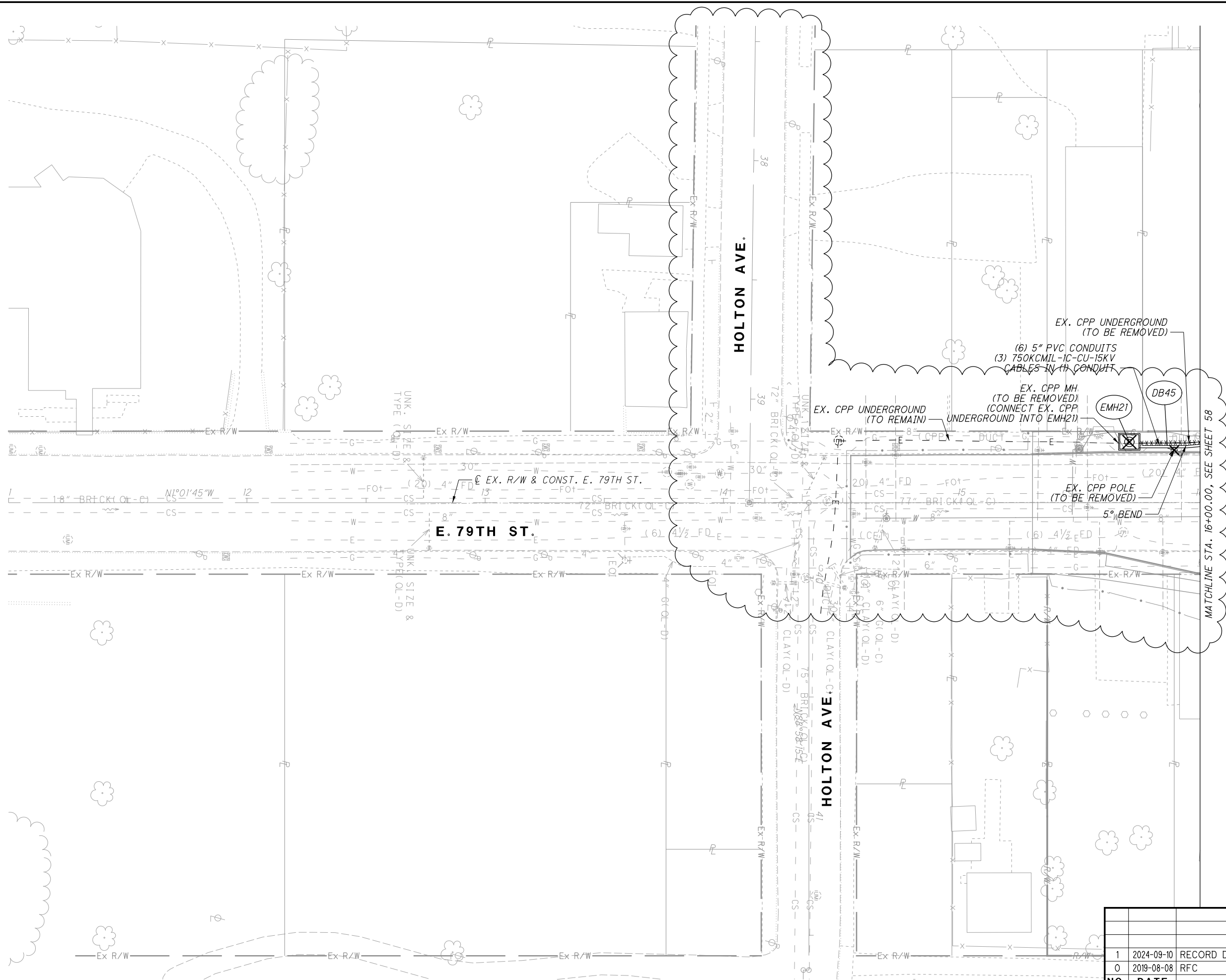




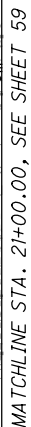
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0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



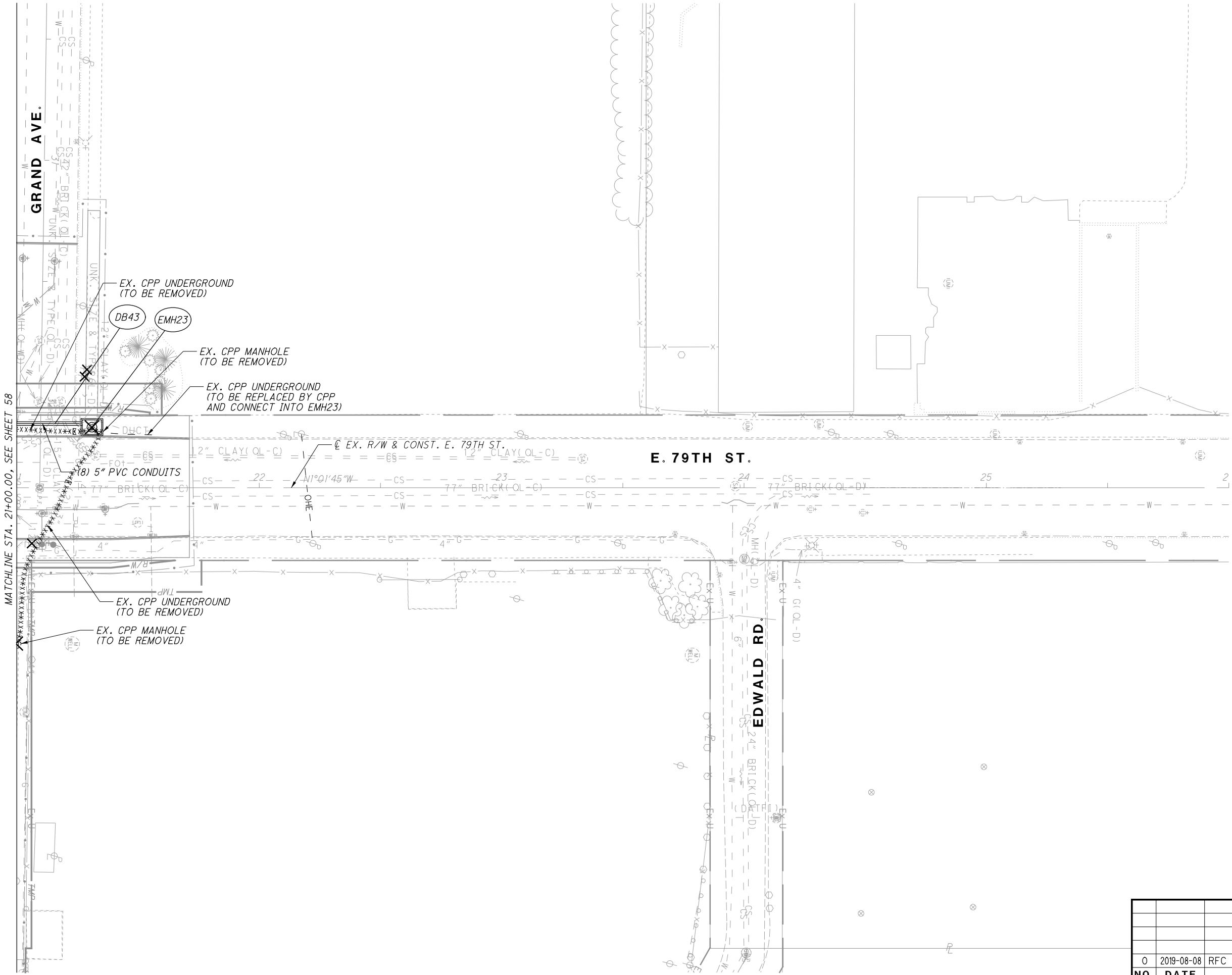
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



1	2019-12-04	DC024
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

CUY-IR490/ SR010-2.09 / 19.28

59159

DUCT BANK PLAN - E. 79TH ST.

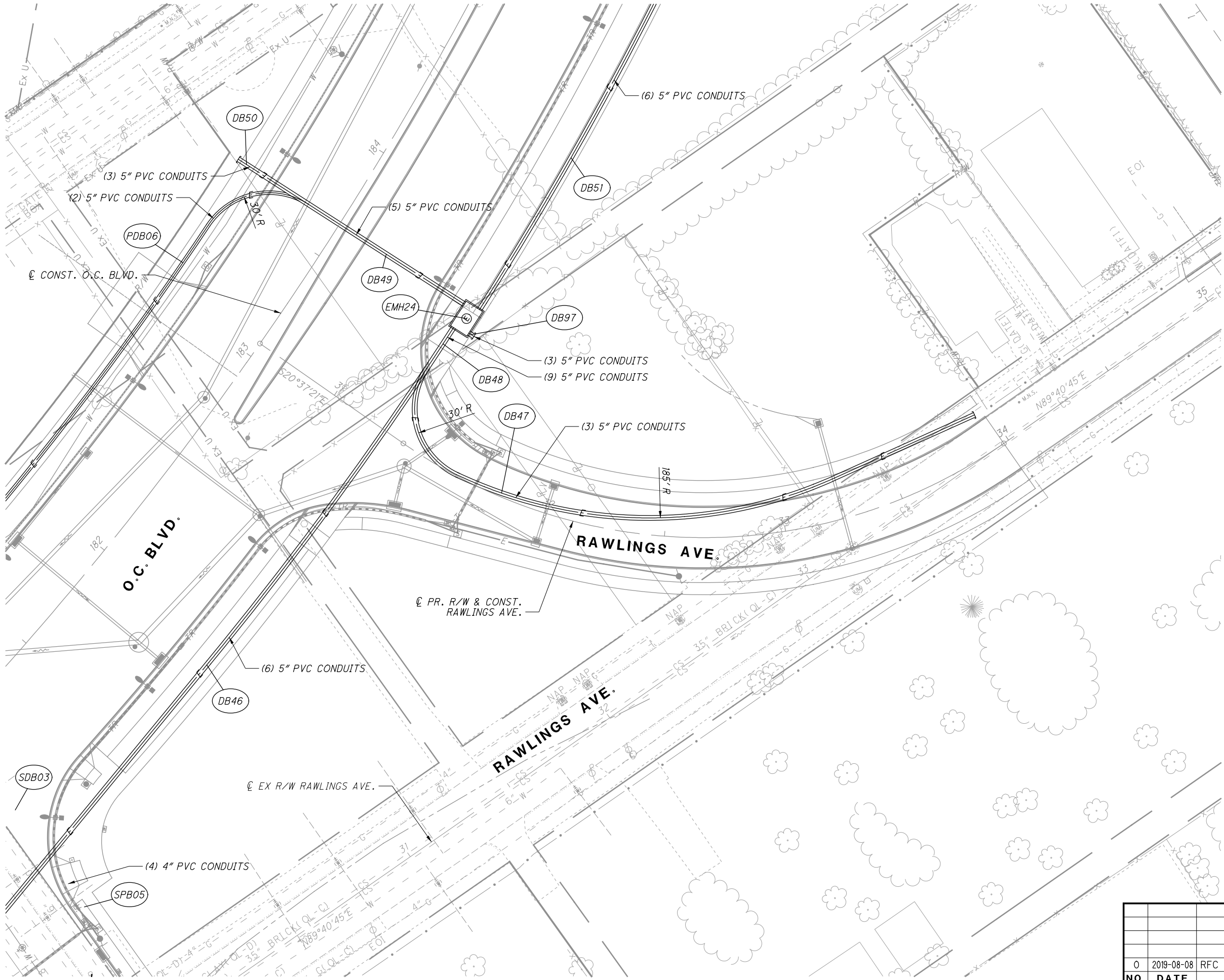
STA. 21+00.00 TO END

CALCULATED
D.F.T.
CHECKED
TR

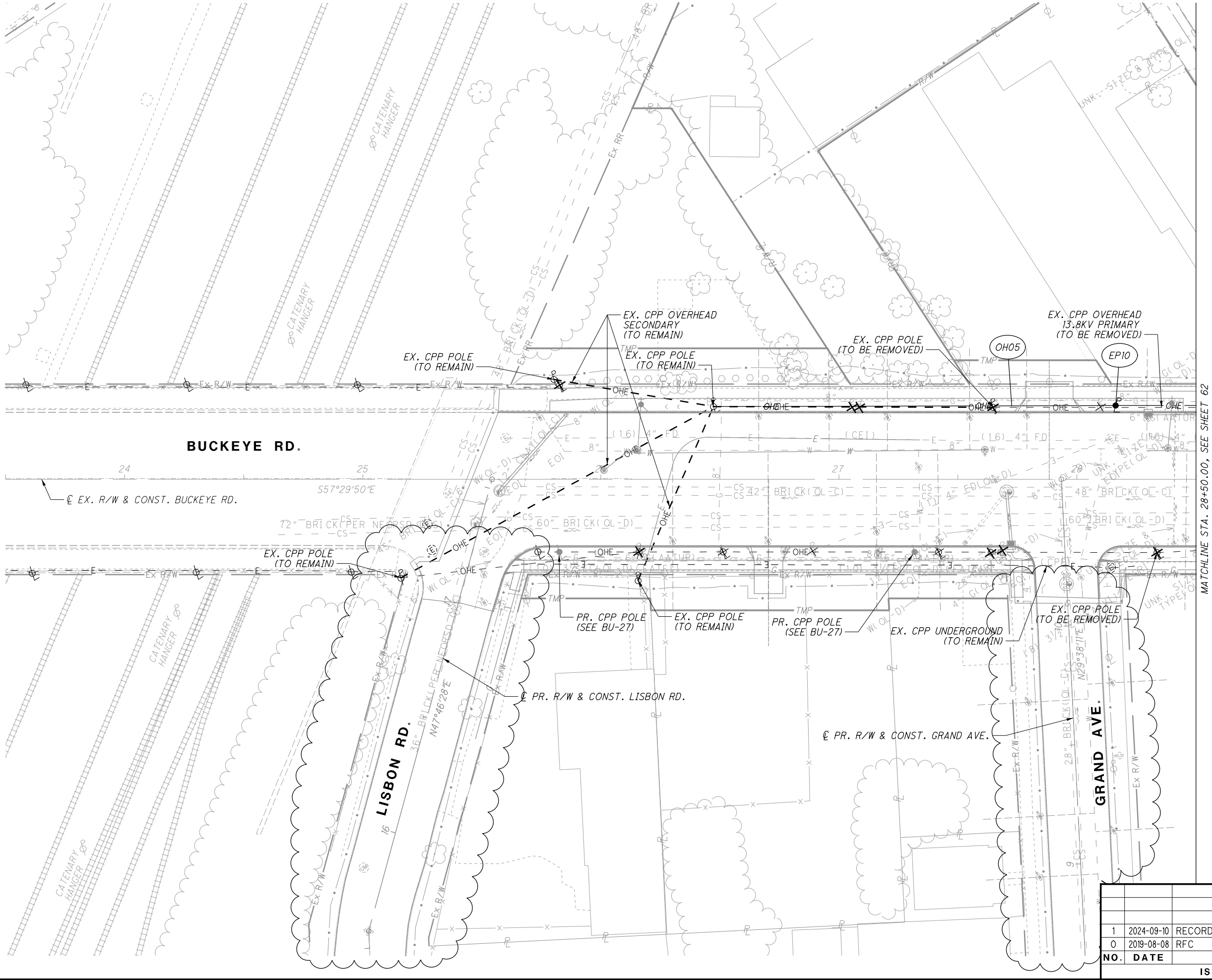
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HORIZONTAL
SCALE IN FEET

59159



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC
ISSUE RECORD		

CUY-IR490/ SR010-
2.09 / 19.28
CPP DUCT BANK PLAN - BUCKEYE RD.
BEGIN TO STA. 28+50.00

CALCULATED
DFT

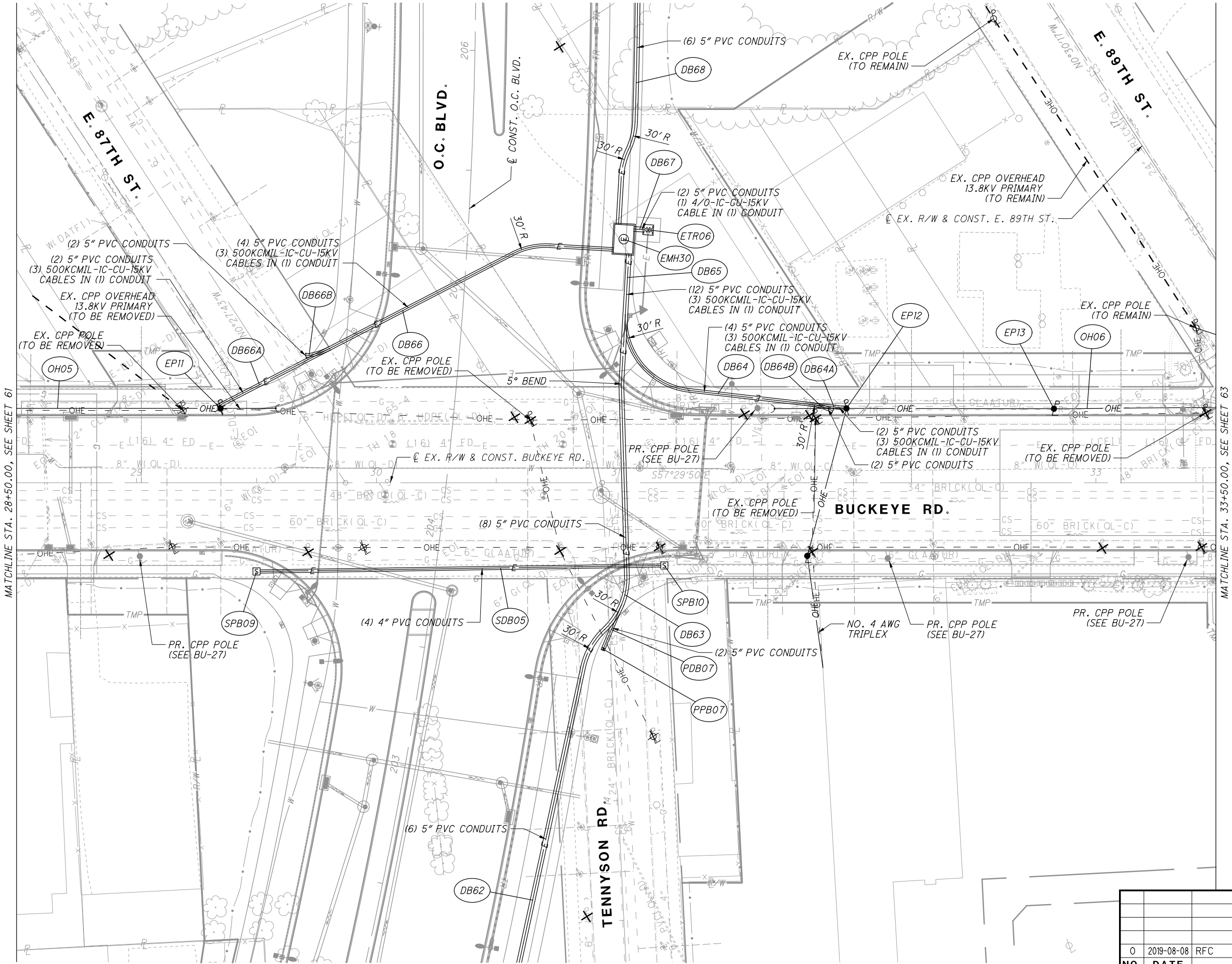
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02040

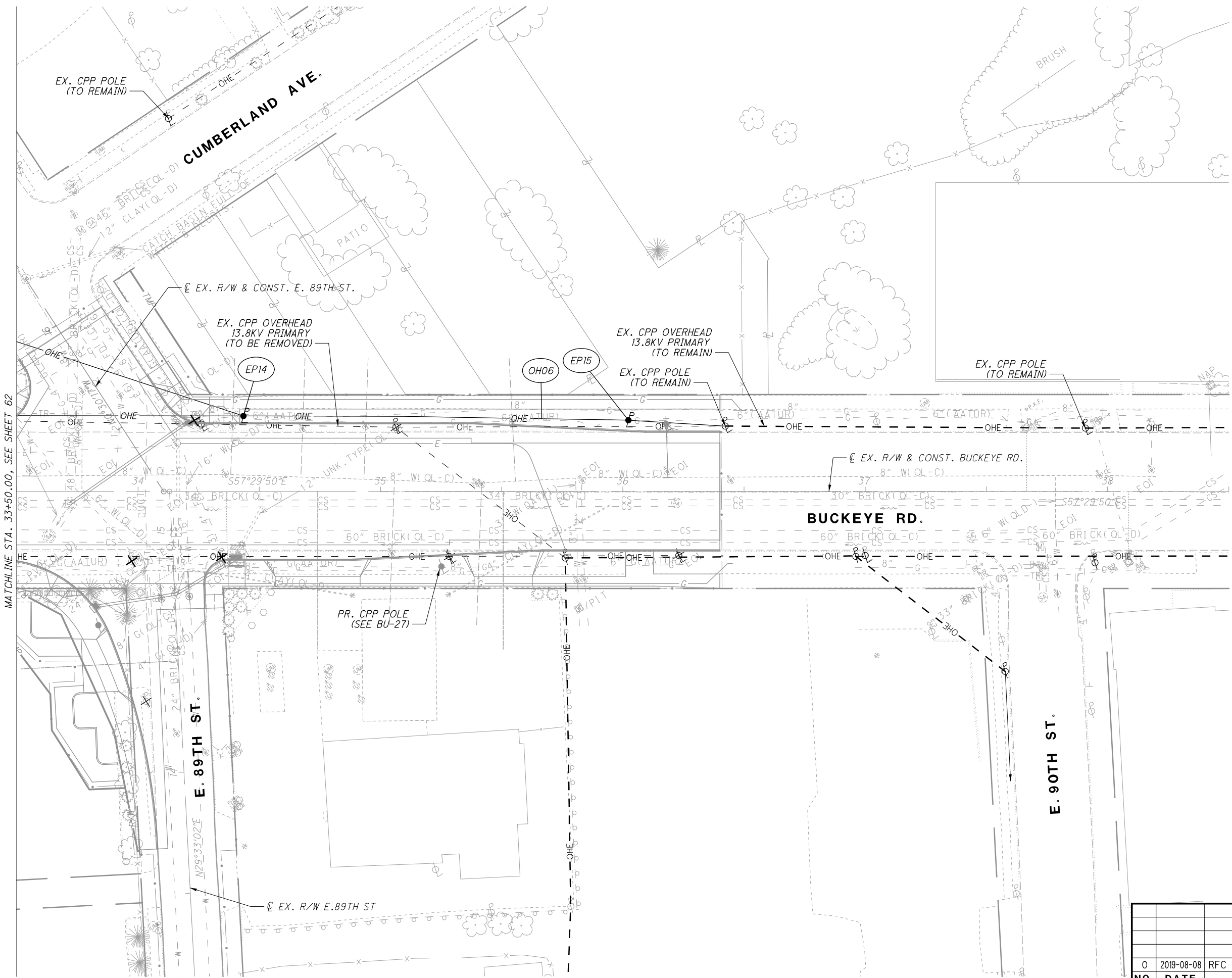
HORIZONTAL
SCALE IN FEET

61

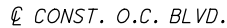
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NO.		DATE	DESCRIPTION
0	2019-08-08	RFC	
ISSUE RECORD			



NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



EX. CPP OVERHEAD
(TO BE REMOVED)

(3) 5" PVC CONDUITS

O.C. BLVD.

(9) 5" PVC CONDUITS
(3) 500KCMIL-1C-CU-15KV
CABLES IN (1) CONDUIT

(1) 5" PVC CONDUIT

— (6) 5" PVC CONDUITS

EX. CPP POLE
(TO REMAIN)

EX. CPP OVERHEAD
13.8KV PRIMARY
(TO REMAIN)

(6) 5" PVC CONDUITS
(3) 750KCMIL-1C-CU-15KV
CABLES IN (1) CONDUIT

-(3) 5" PVC CONDUITS

5" PVC CONDUITS
500KCMIL-1C-CU-15KV
CABLES IN (1) CONDUIT

(2) 5" PVC CONDUITS
(3) 500KCMIL-1C-CU-15
CABLES IN (1) CONDUIT

E. 89TH ST

KENNEDY AVE.

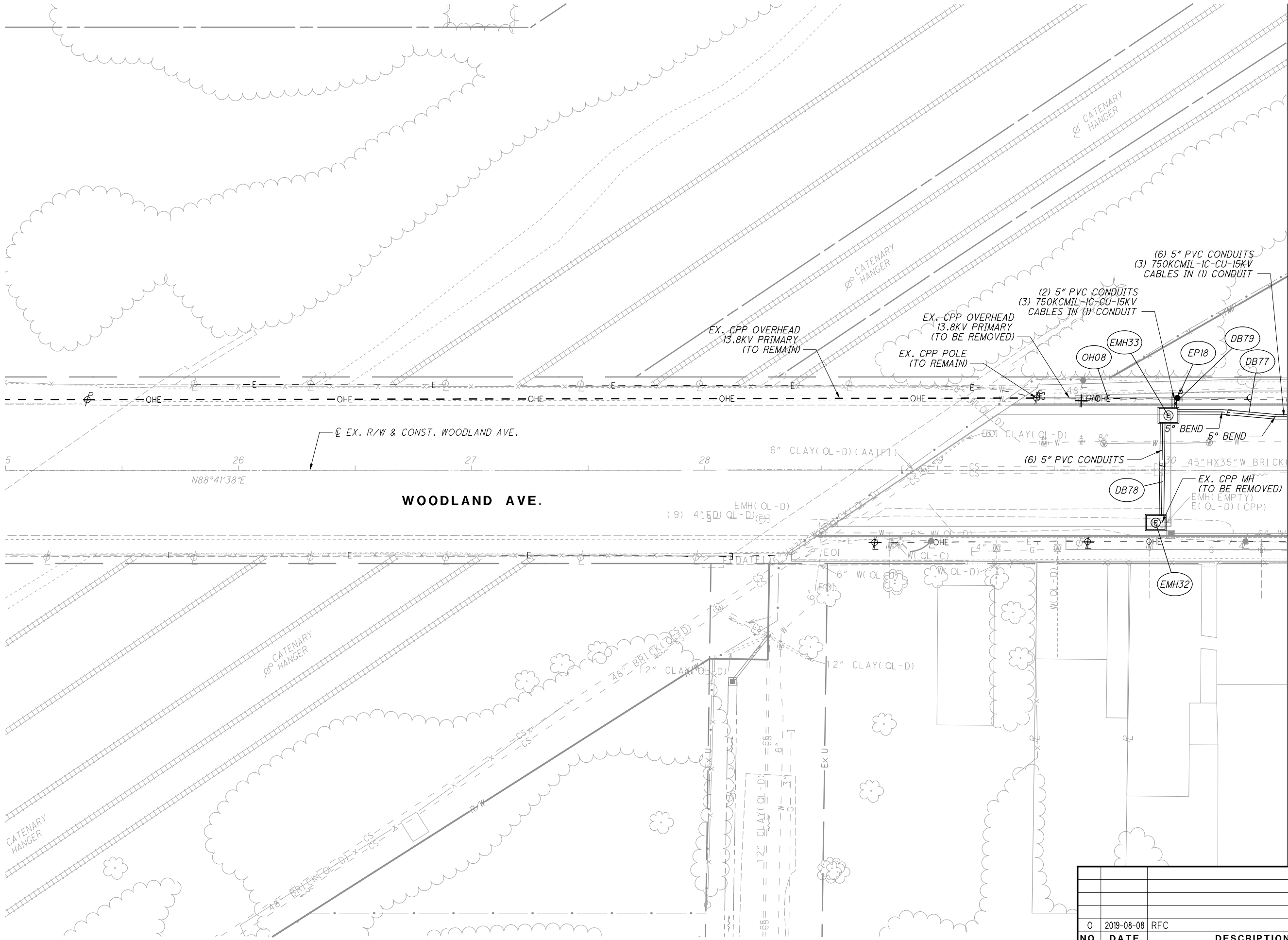
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(TO BE REMOVED)

EX. CPP OVERHEA
SECONDARY
(TO BE REMOVED)

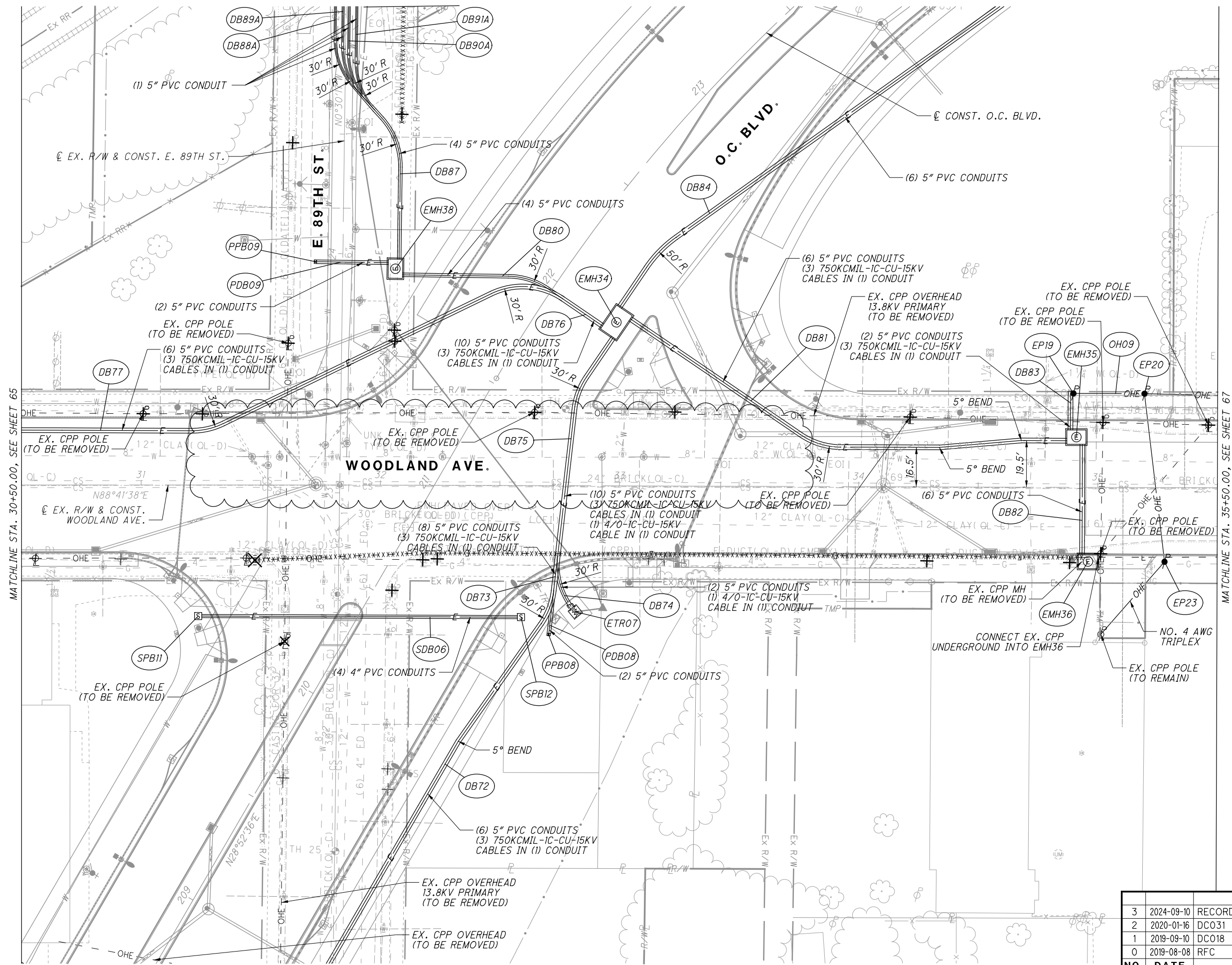
- EX. CPP OVERHEAD
13.8KV PRIMARY
(TO BE REMOVED)

—C PR. R/W & CONST. E. 89TH ST.

2	2024-09-10	RECORD DRAWINGS
1	2020-01-16	DC031
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

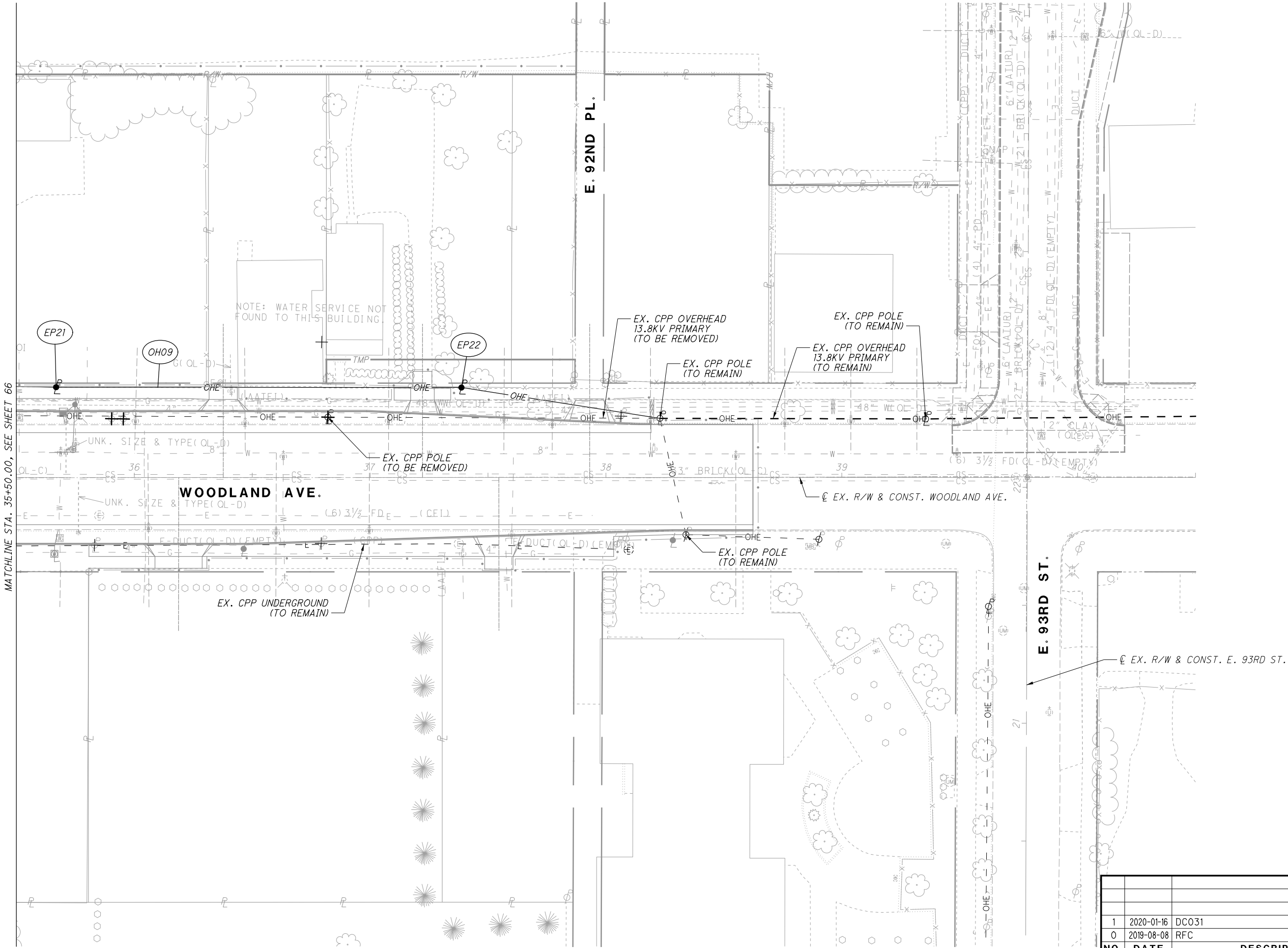


ISSUE RECORD		
NO.	DATE	DESCRIPTION
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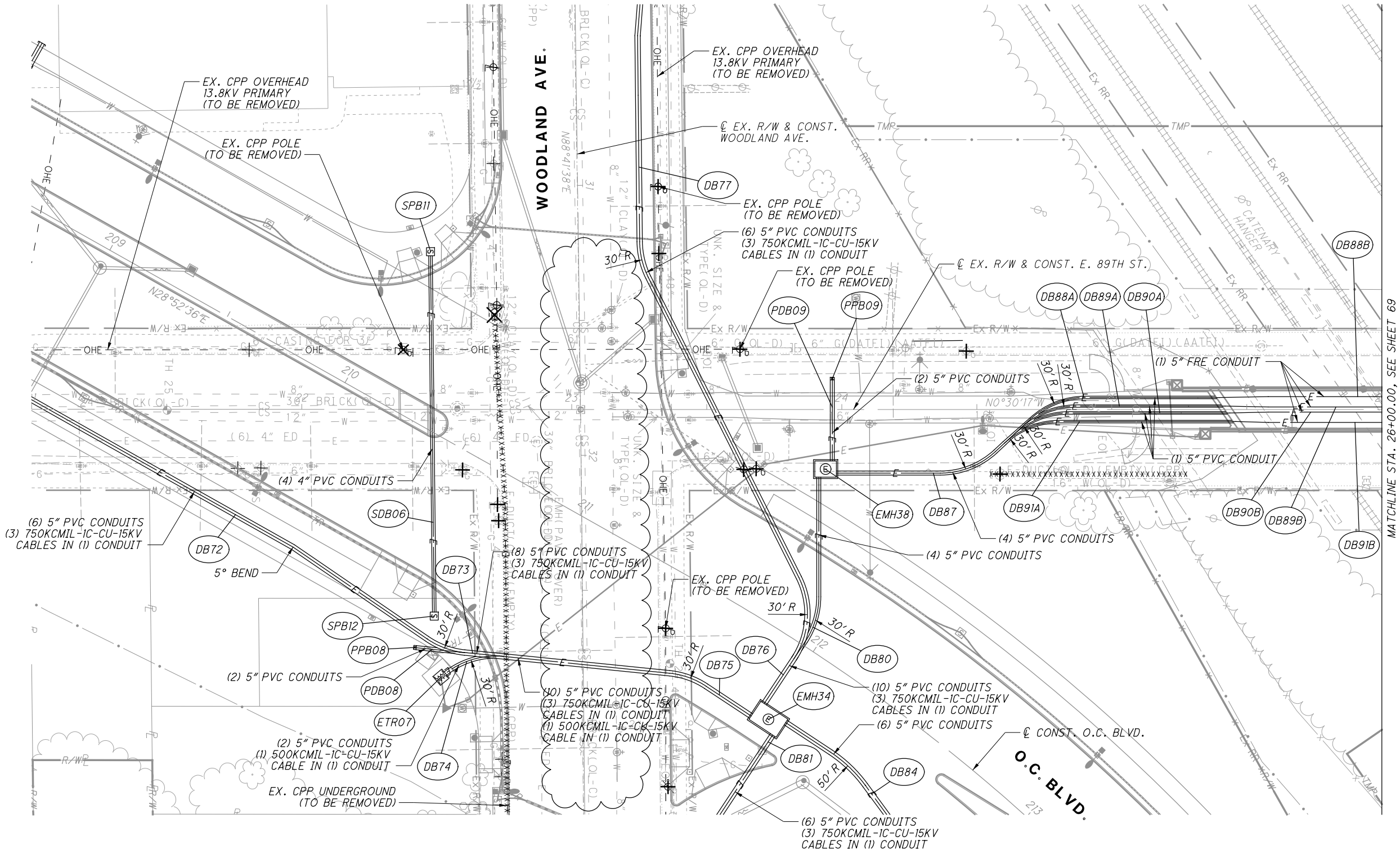


3	2024-09-10	RECORD DRAWINGS
2	2020-01-16	DC031
1	2019-09-10	DC018
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

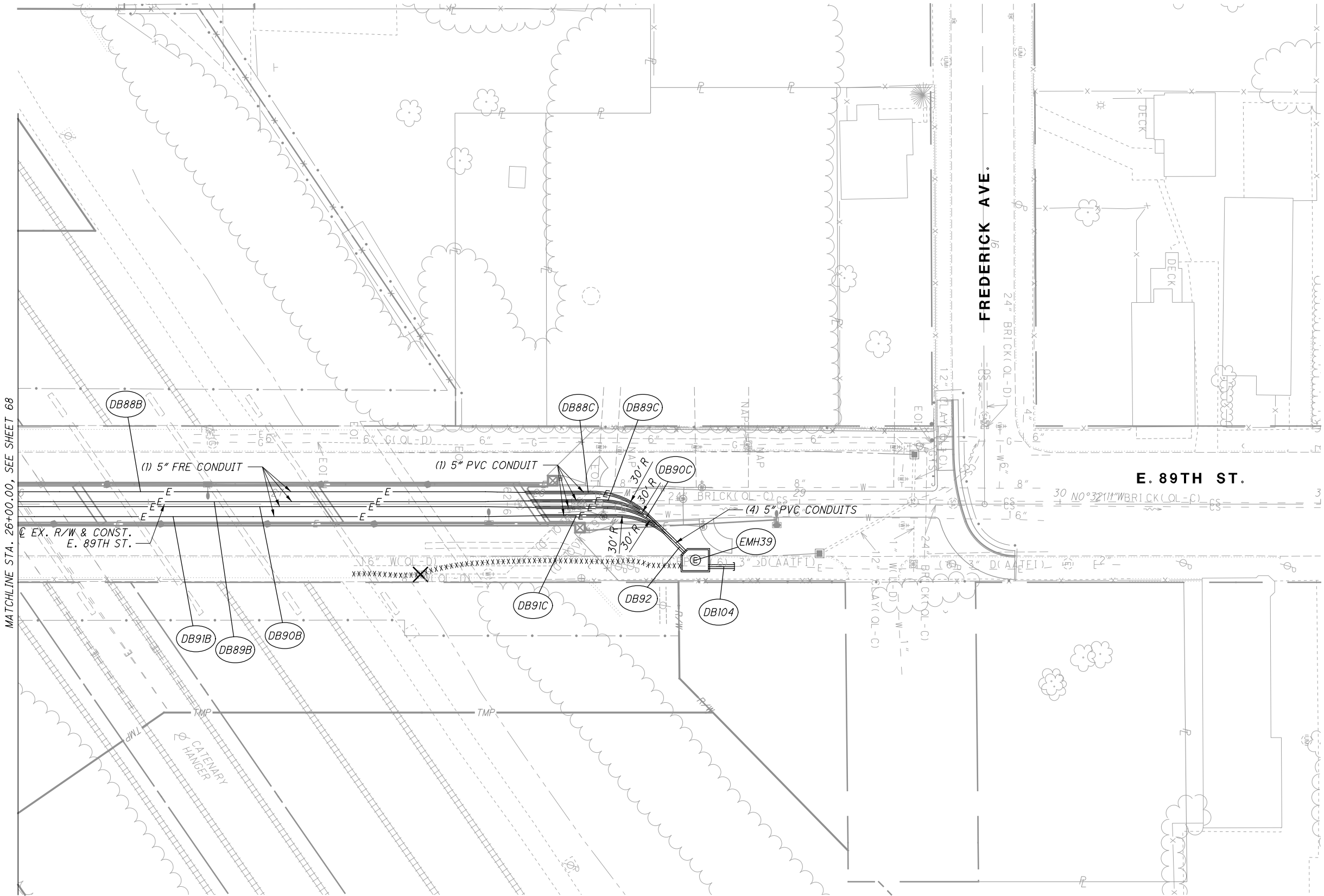




NO.	DATE	DESCRIPTION
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0	2019-08-08	RFC
ISSUE RECORD		

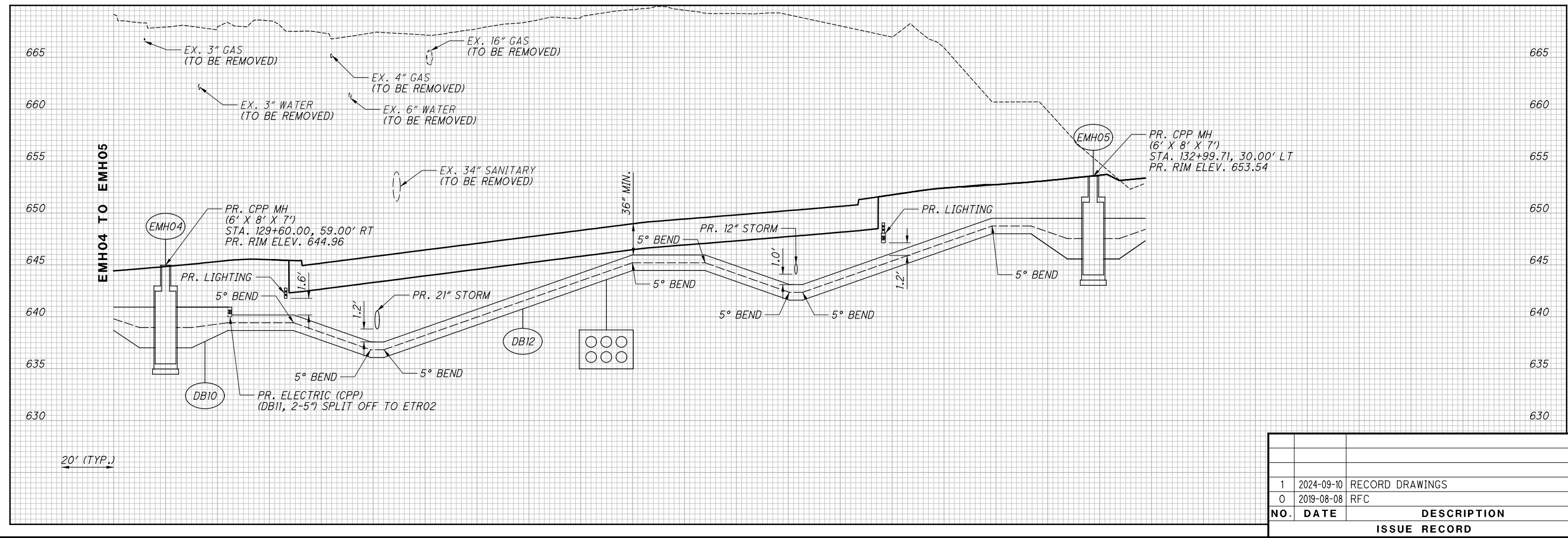
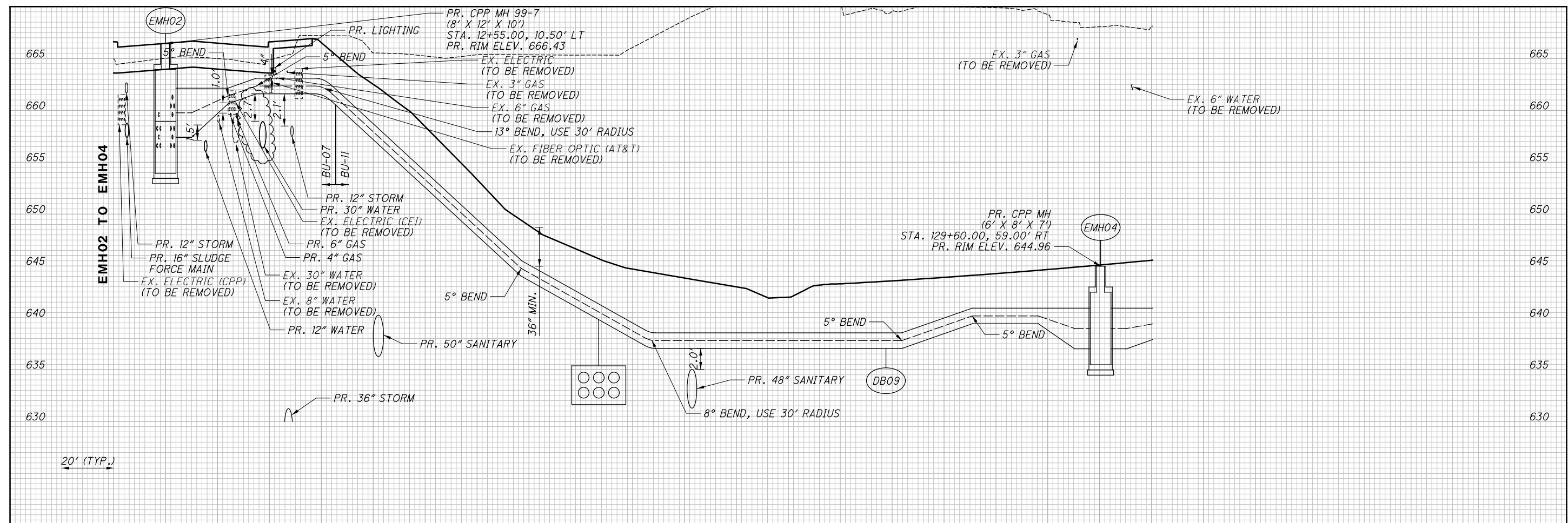


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0	2019-08-08	RFC	

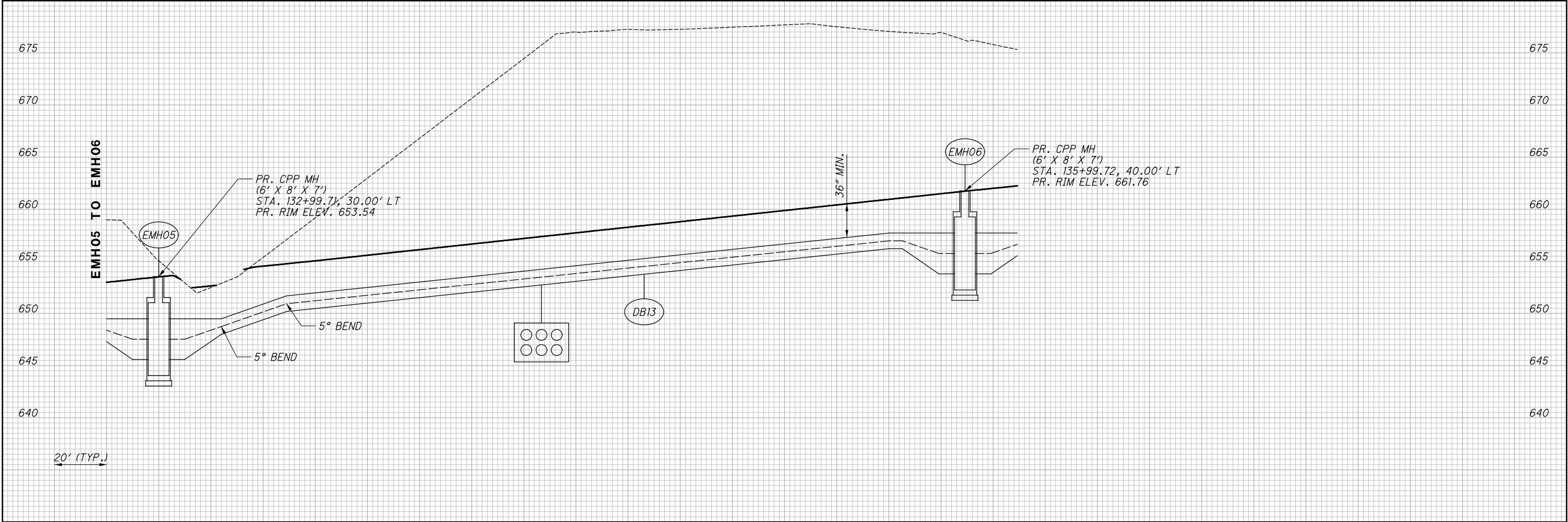
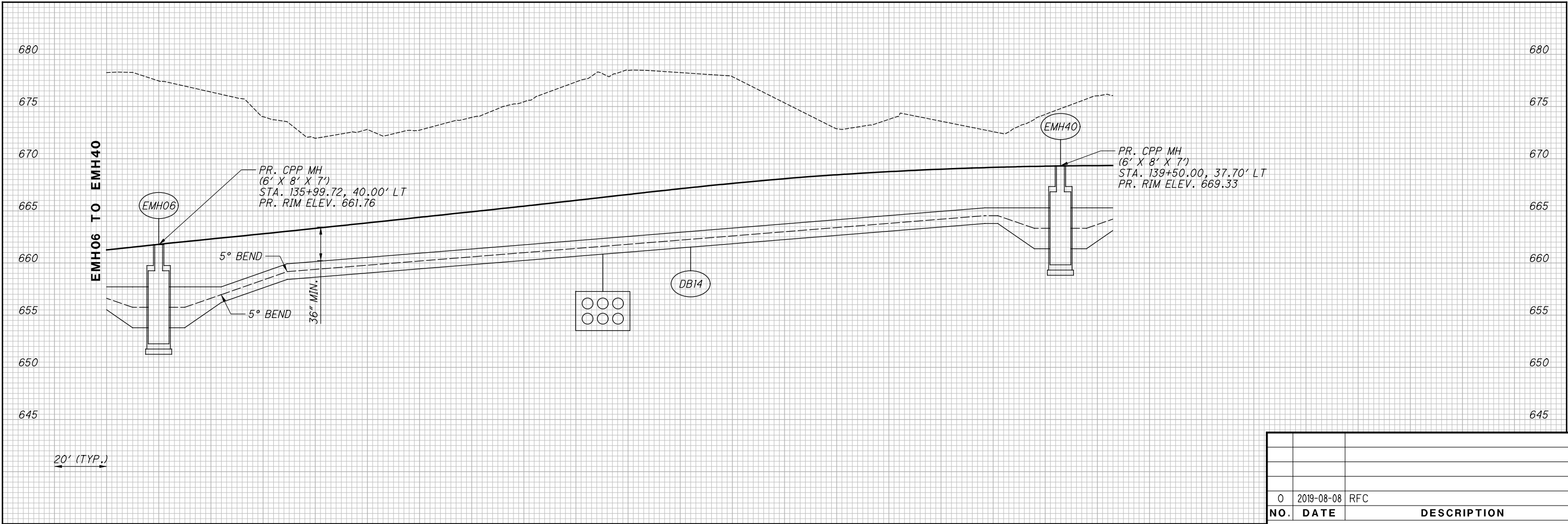


0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

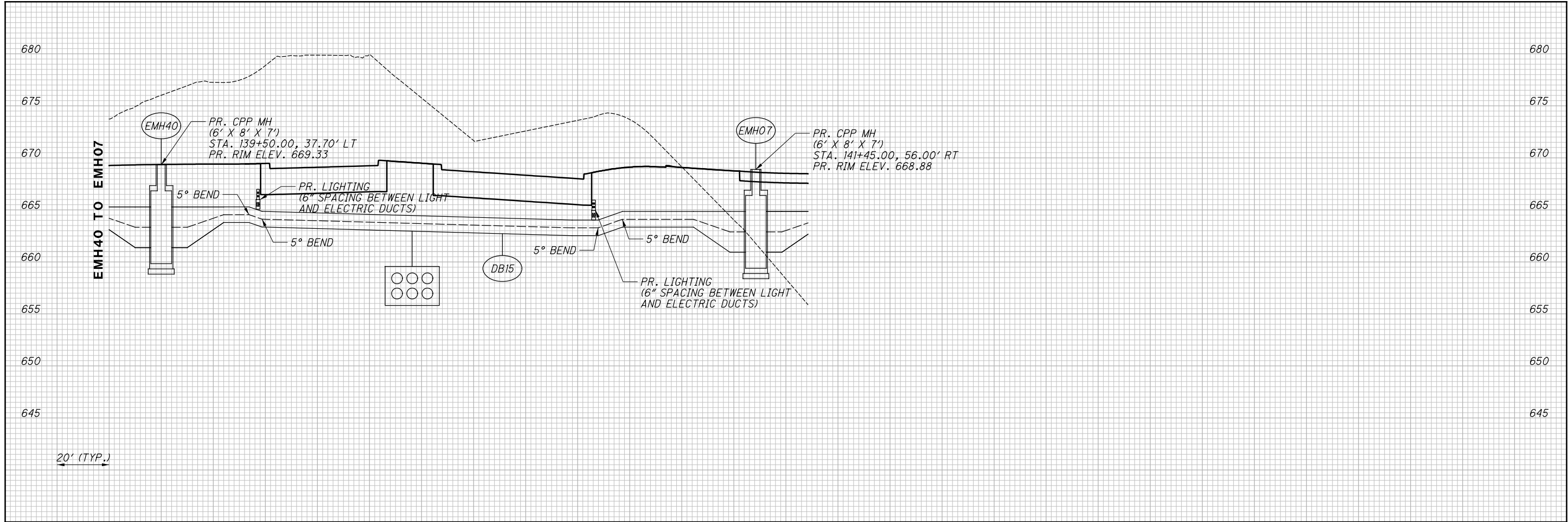
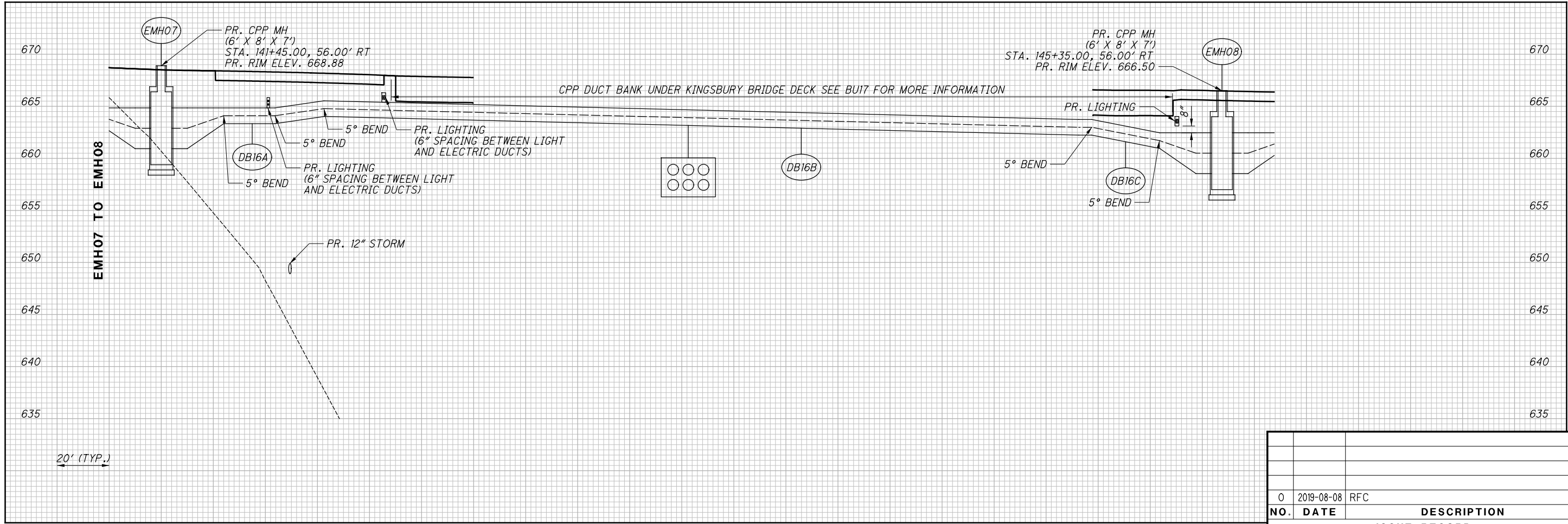




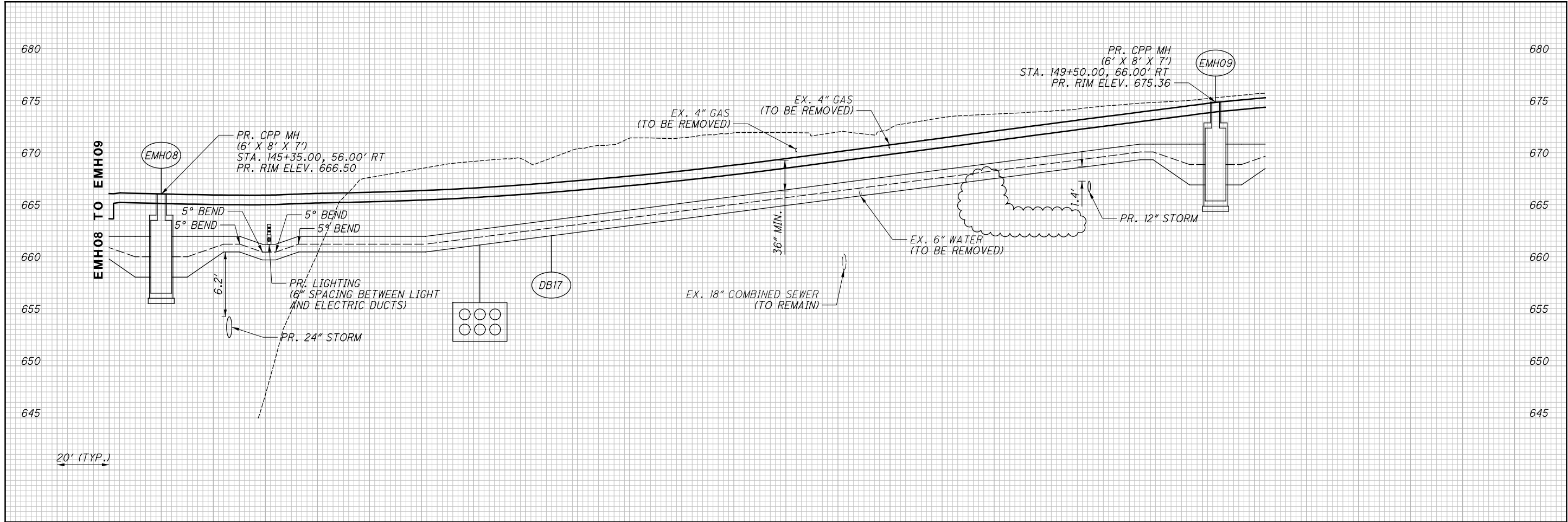
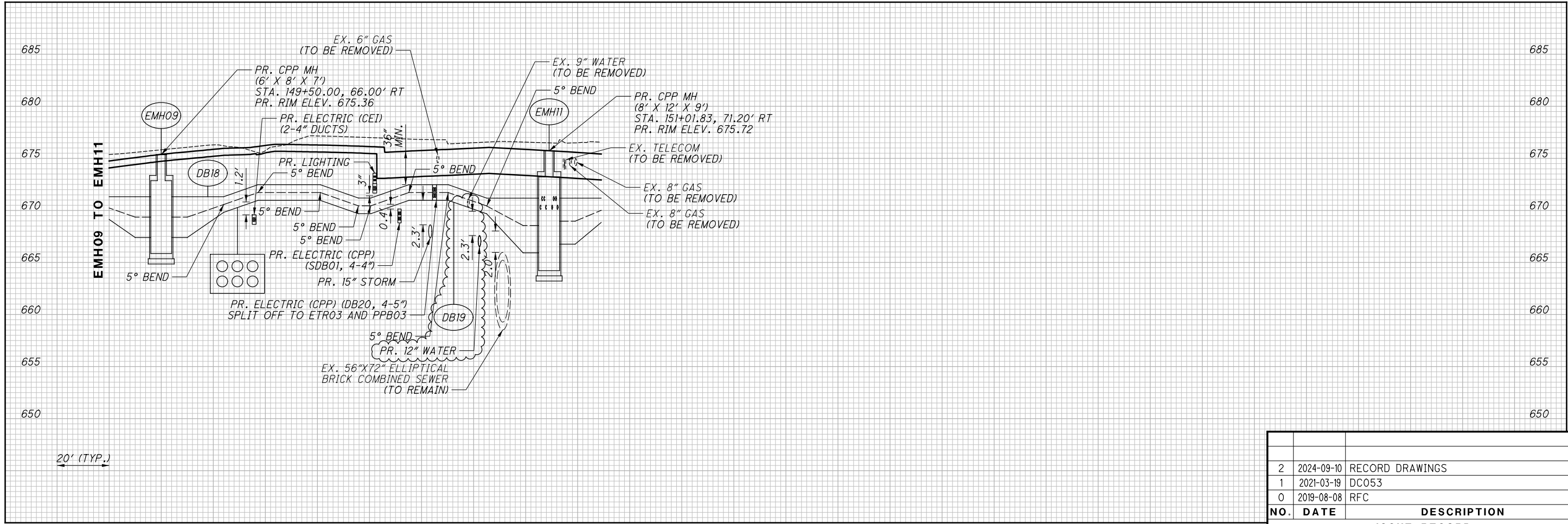
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0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



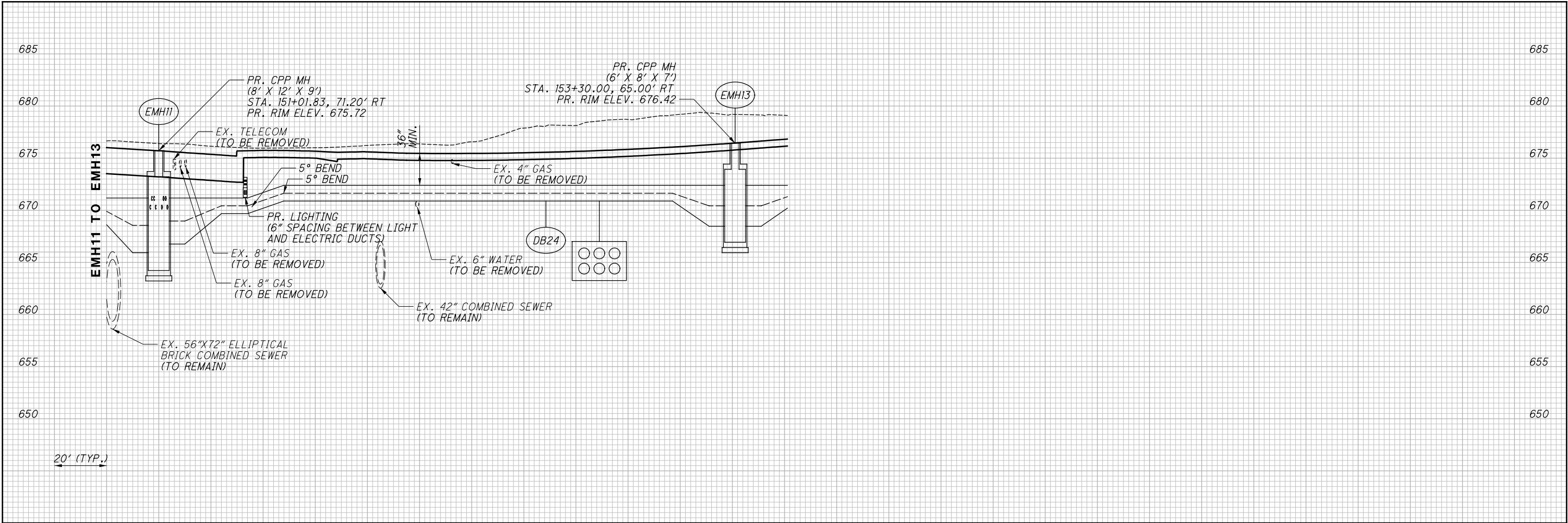
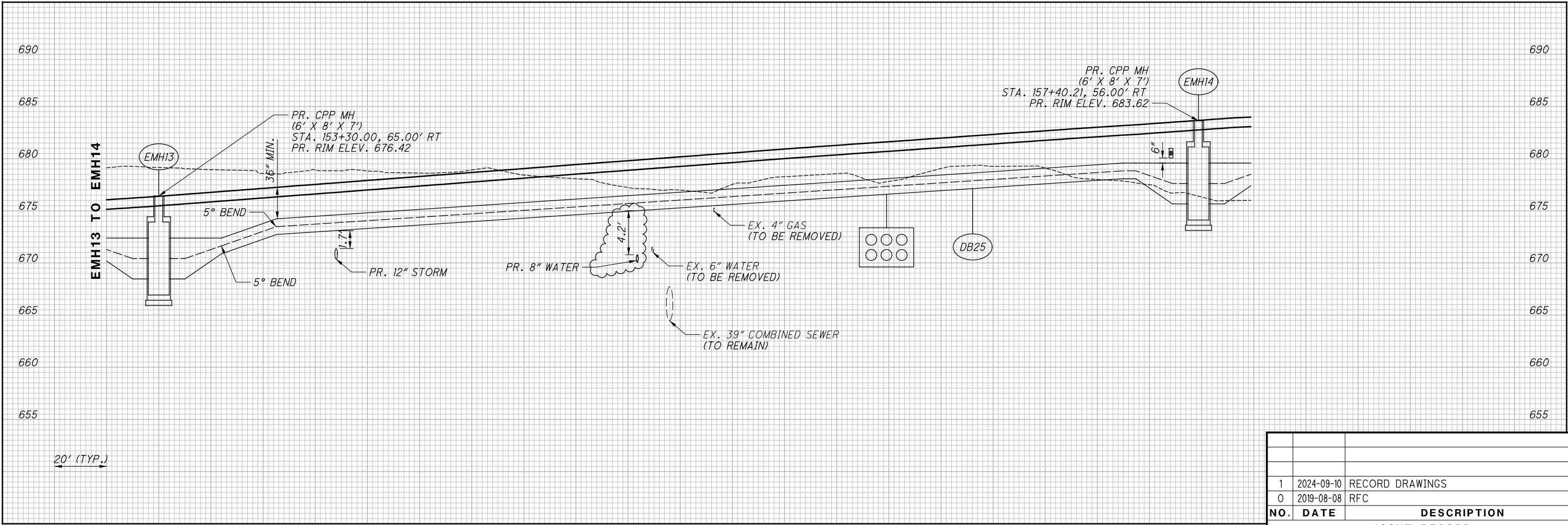
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NO.	DATE	DESCRIPTION
ISSUE RECORD		



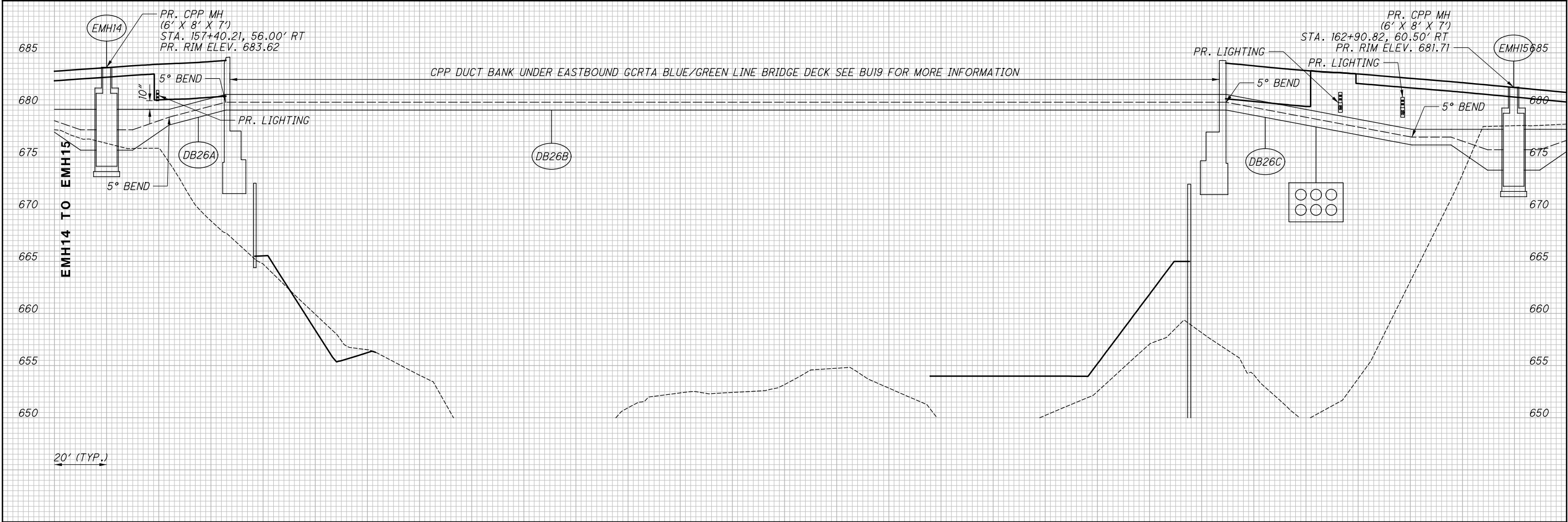
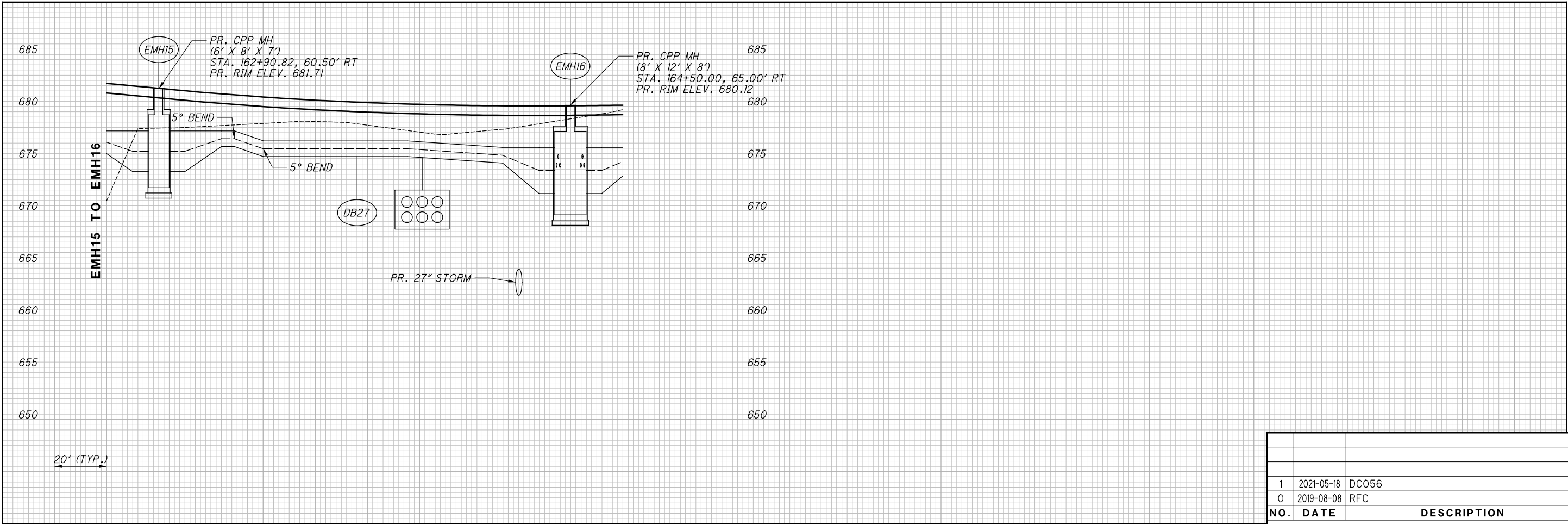
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NO.	DATE	DESCRIPTION
ISSUE RECORD		



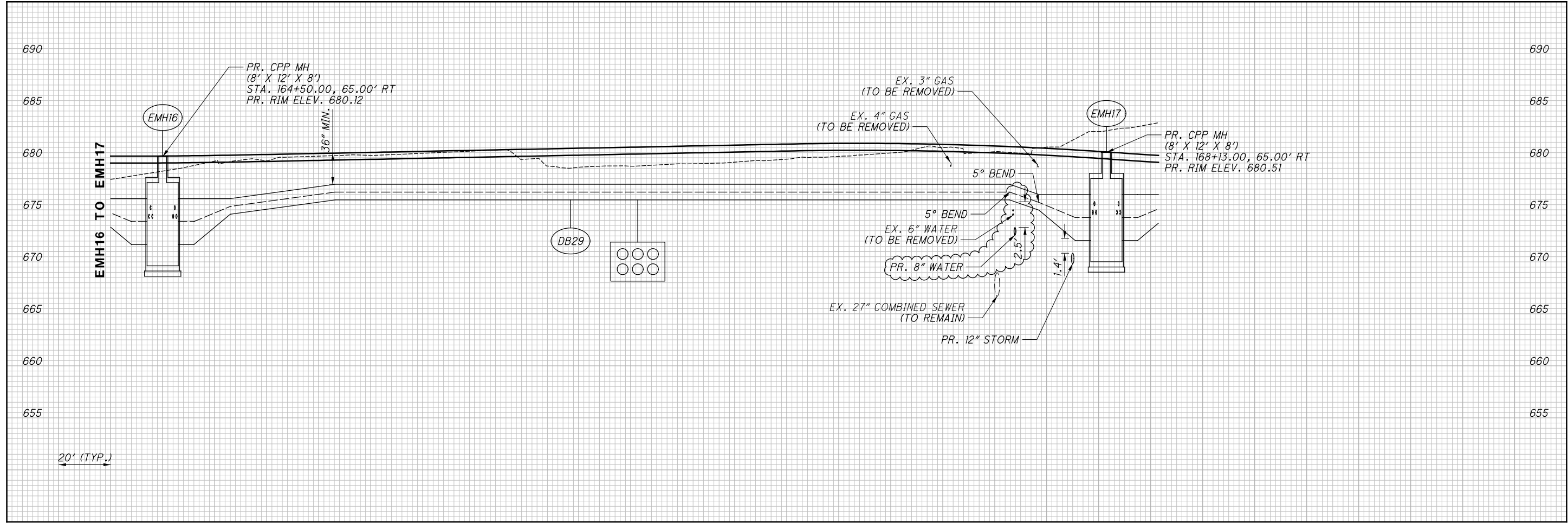
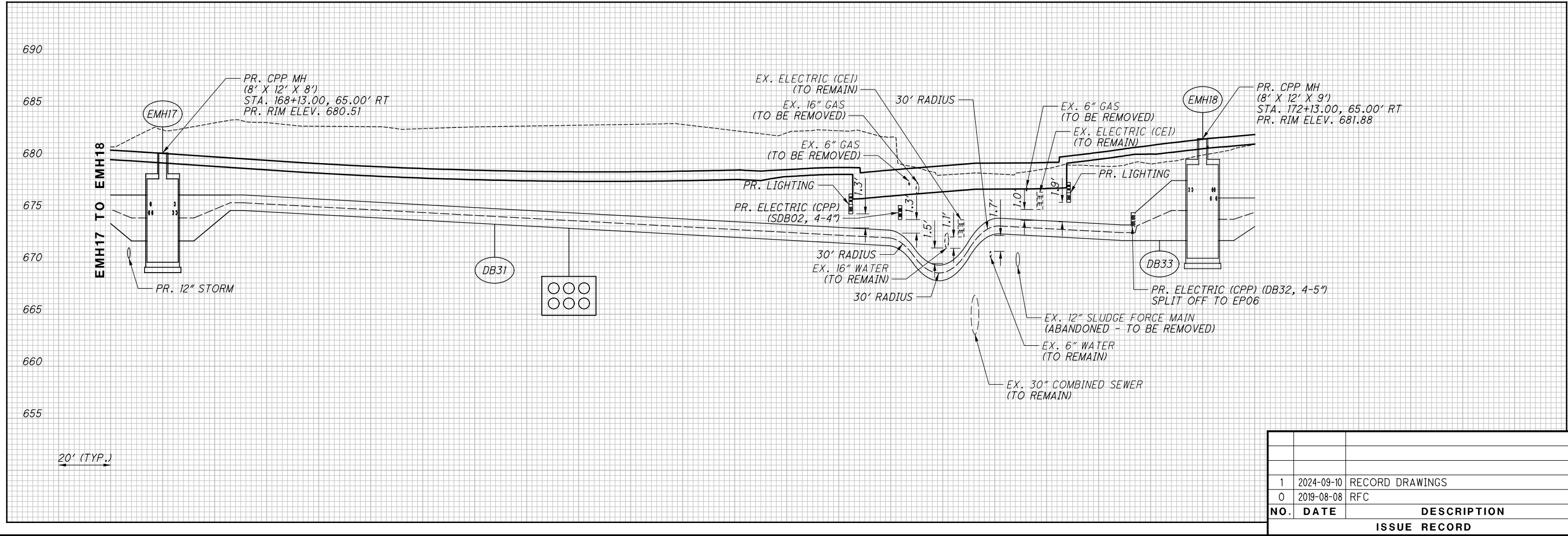
NO.	DATE	DESCRIPTION	
		ISSUE RECORD	
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1	2021-03-19	DC053	
0	2019-08-08	RFC	



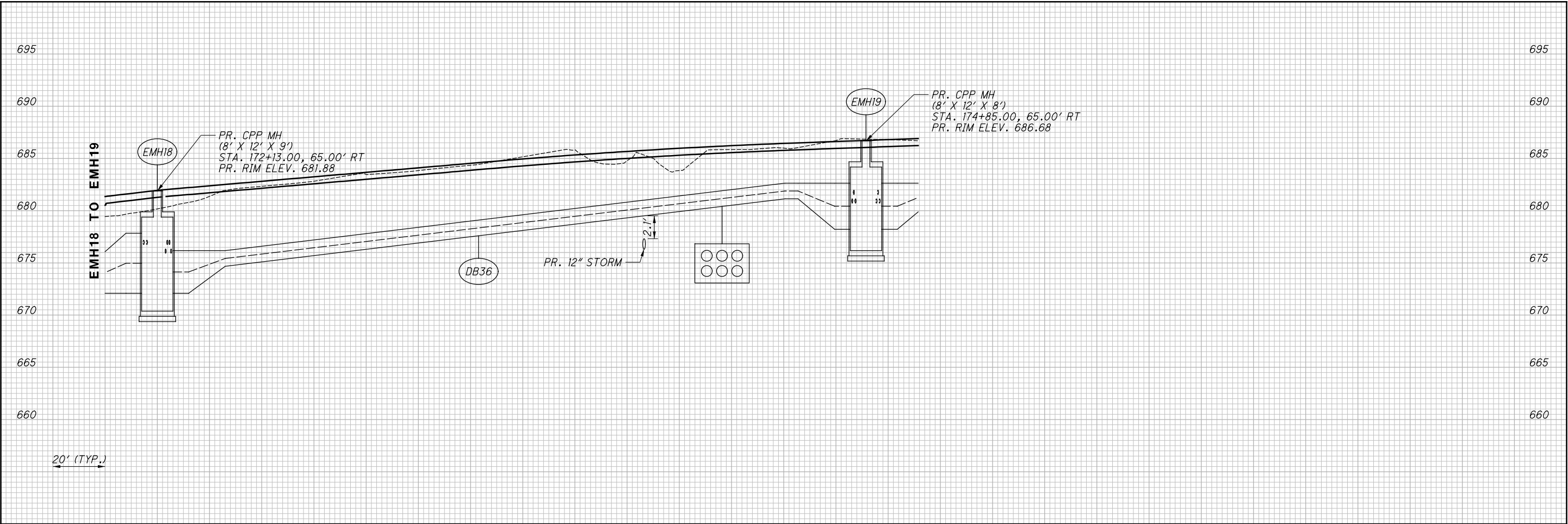
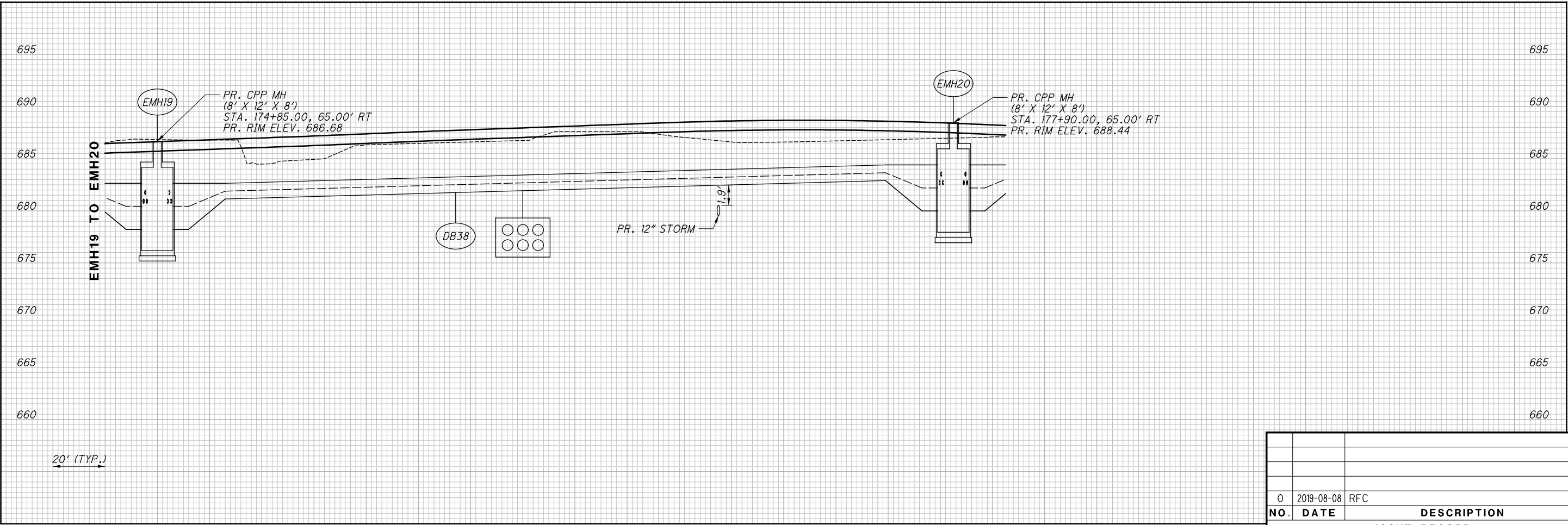
NO.	DATE	DESCRIPTION
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0	2019-08-08	RFC
ISSUE RECORD		



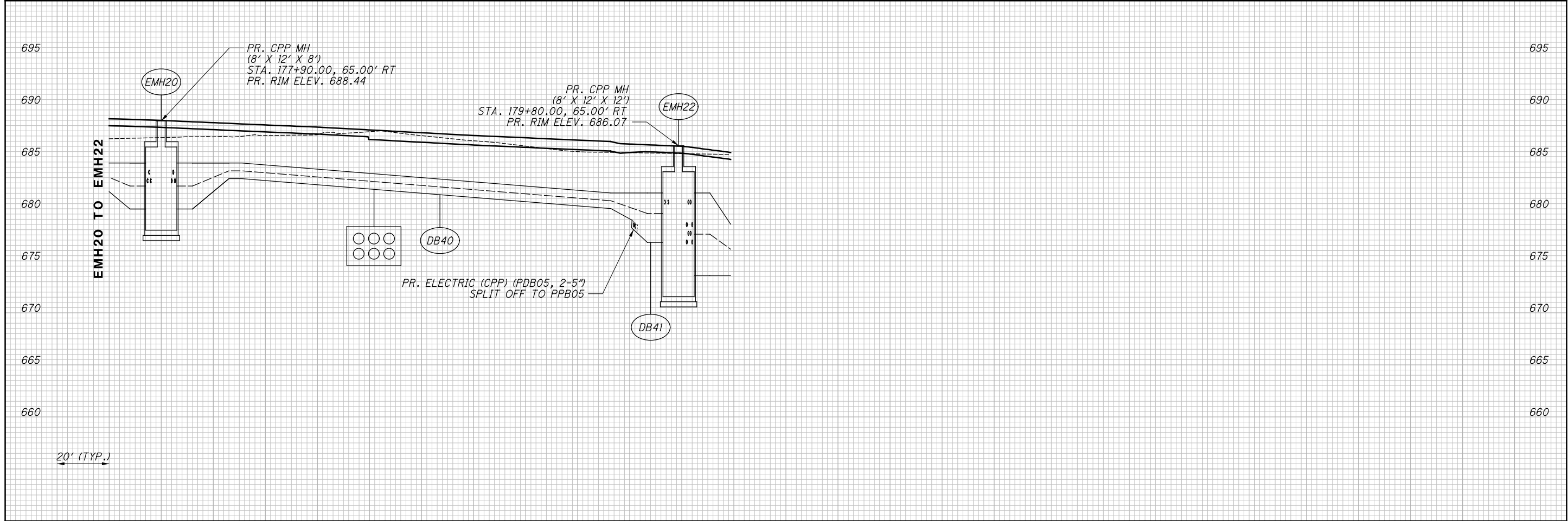
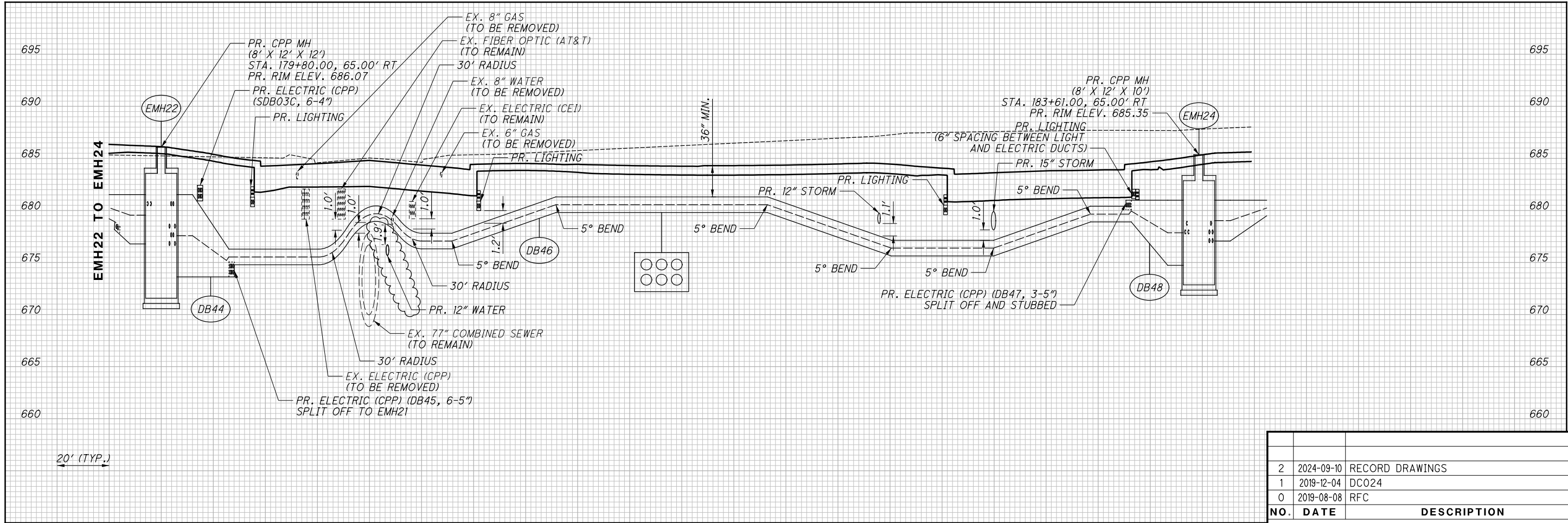
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ISSUE RECORD		



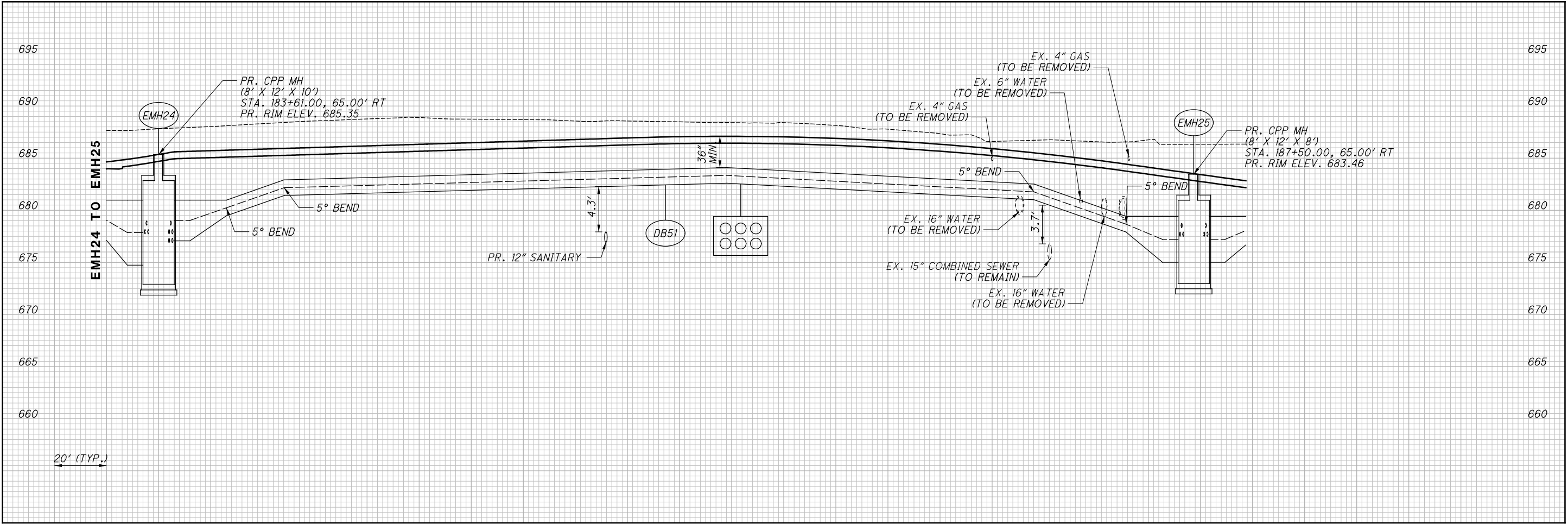
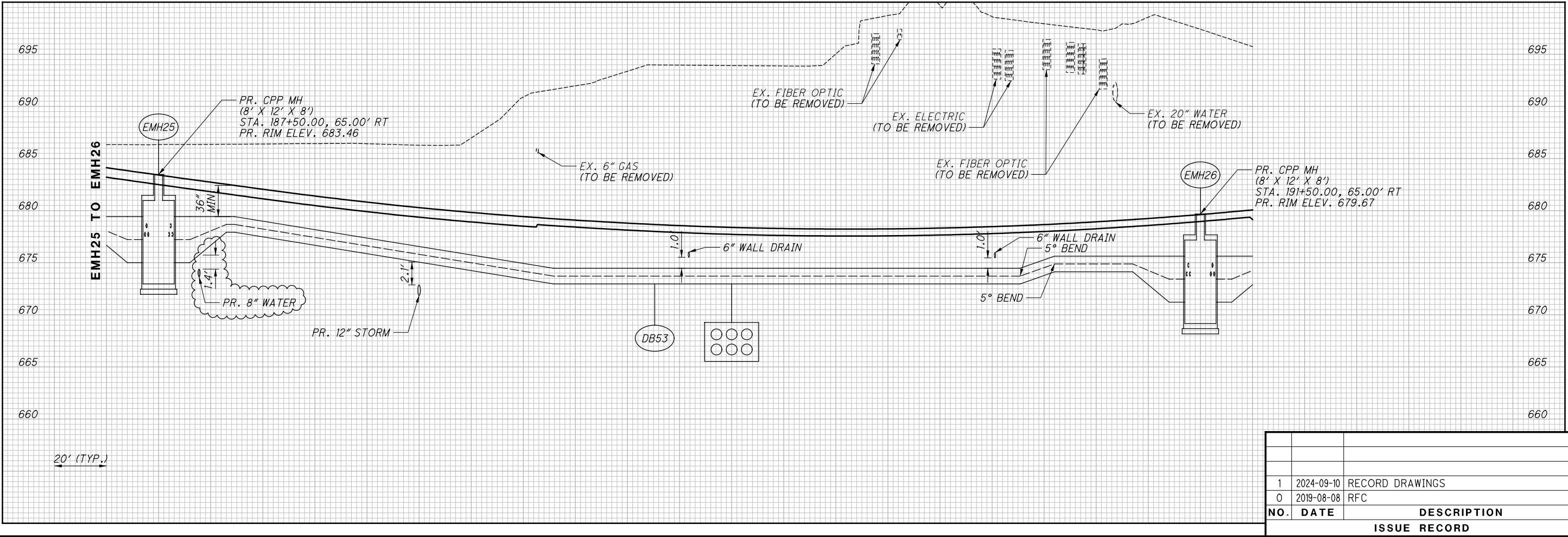
NO.		DATE	DESCRIPTION
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0	2019-08-08	RFC	
ISSUE RECORD			



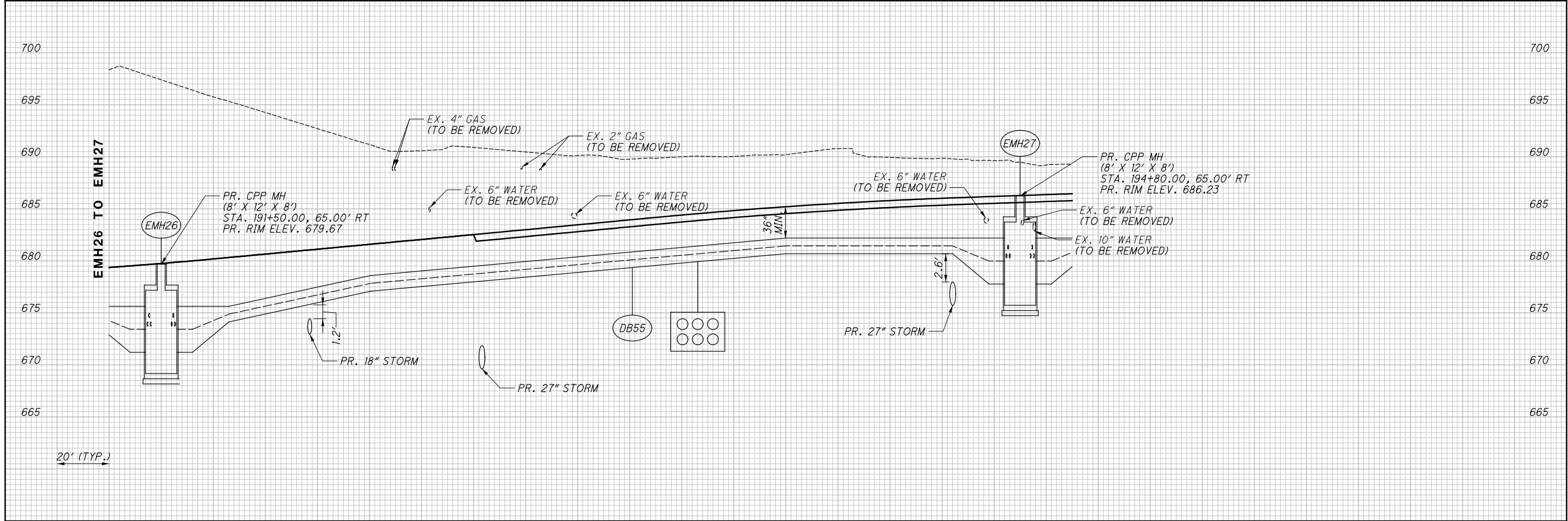
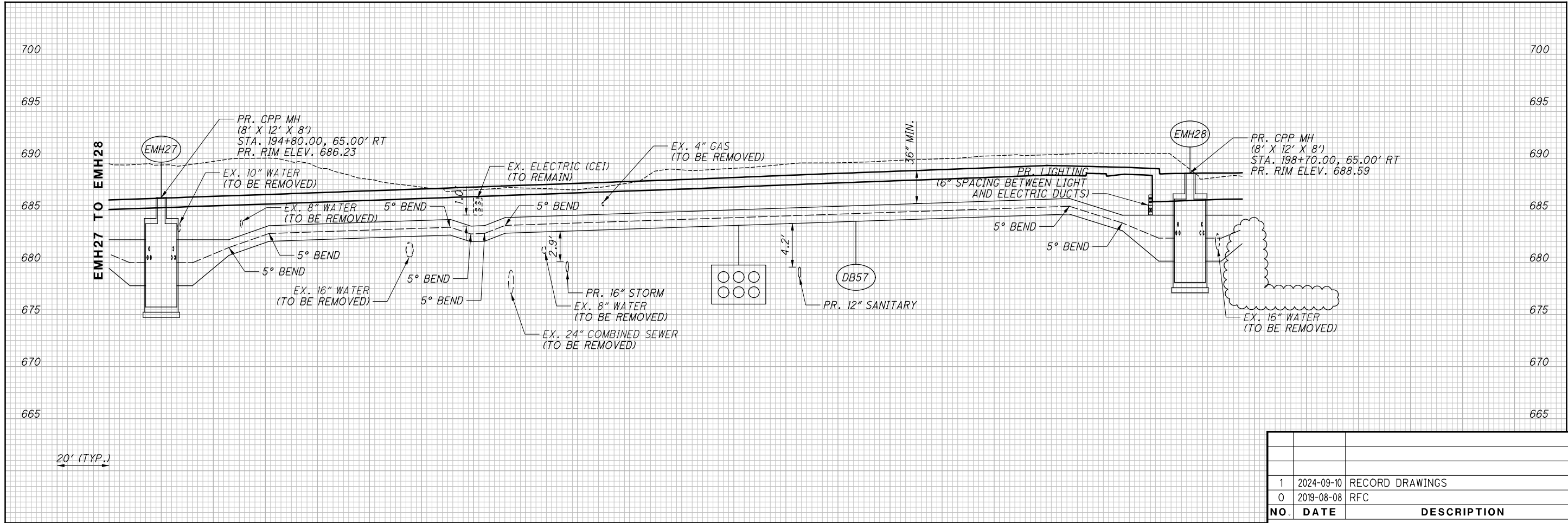
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



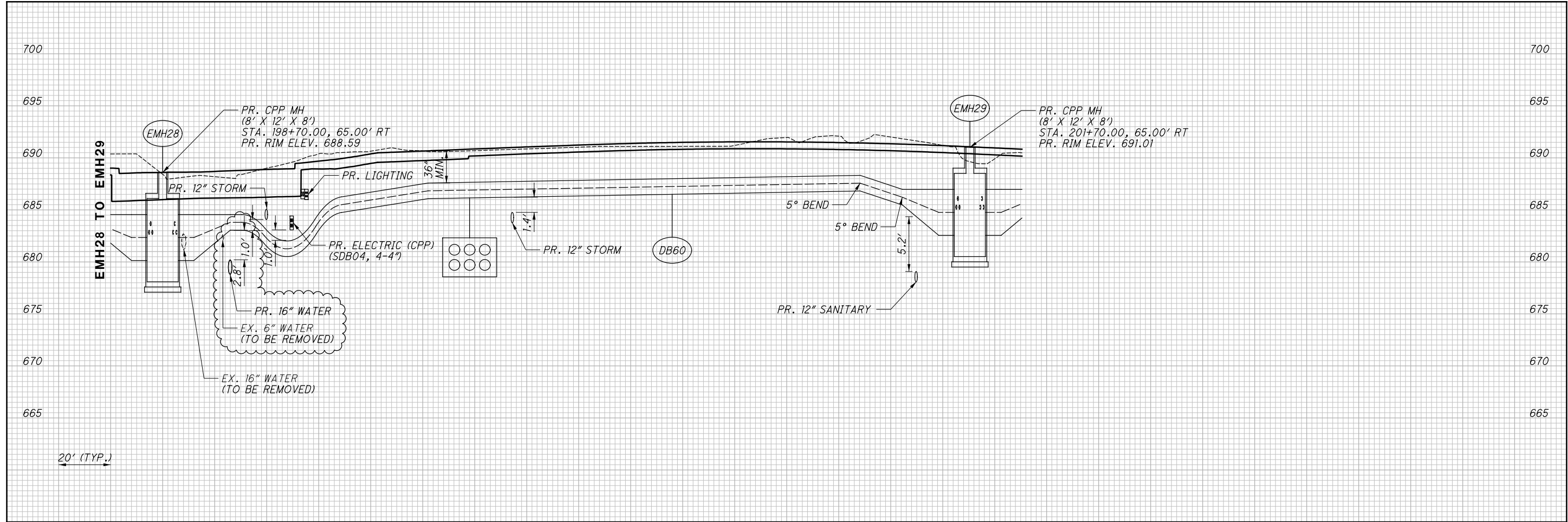
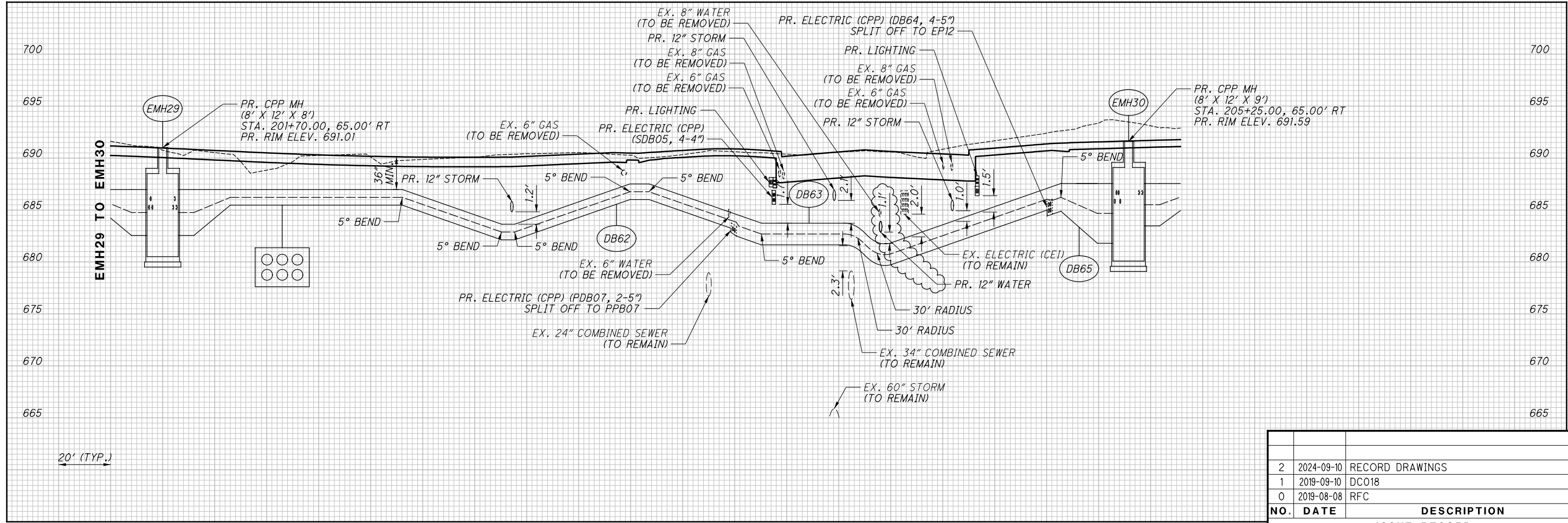
NO.	DATE	DESCRIPTION
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1	2019-12-04	DC024
0	2019-08-08	RFC



NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC



ISSUE RECORD		
NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC



NO.	DATE	DESCRIPTION
2	2024-09-10	RECORD DRAWINGS
1	2019-09-10	DC018
0	2019-08-08	RFC

ISSUE RECORD

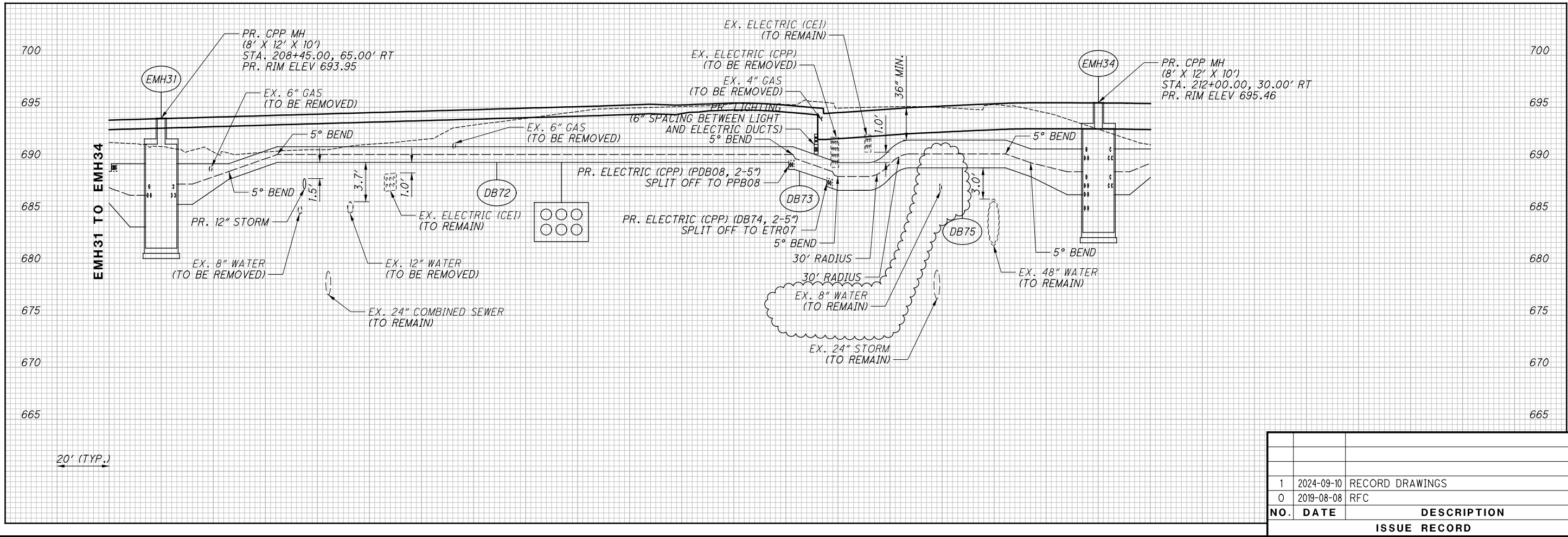
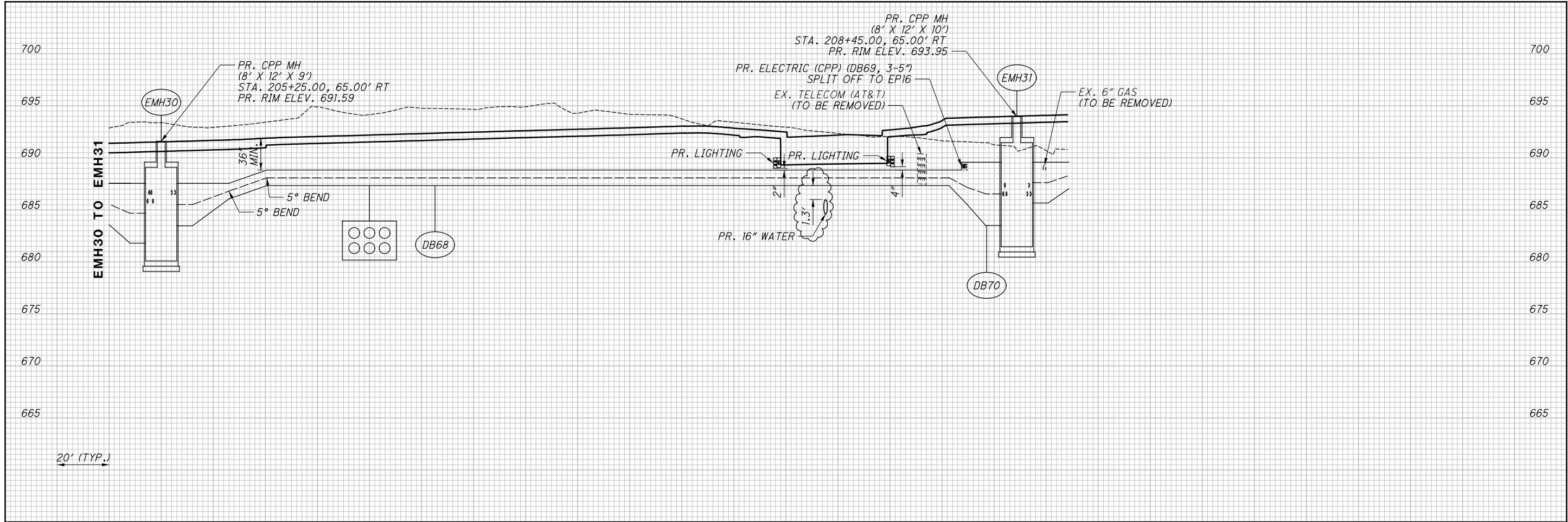
CUY-IR490/ SR010-
2.09 / 19.28

CPP DUCT BANK PROFILES - O.C. BLVD.
EMH28 TO EMH29 & EMH29 TO EMH30

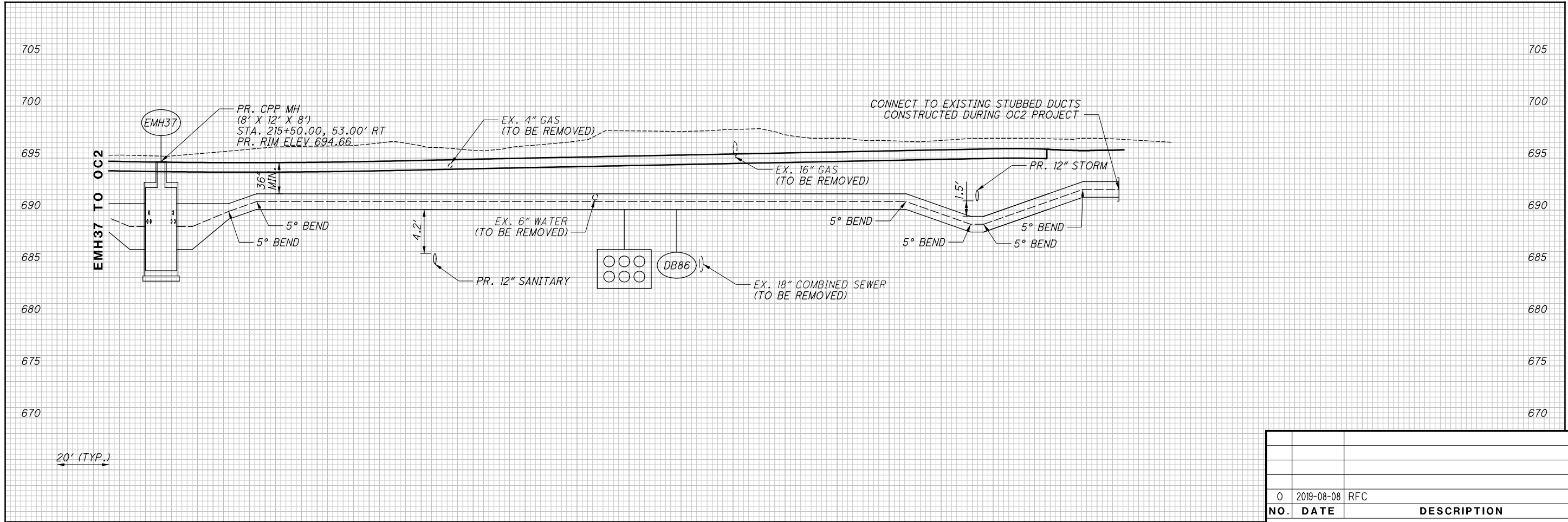
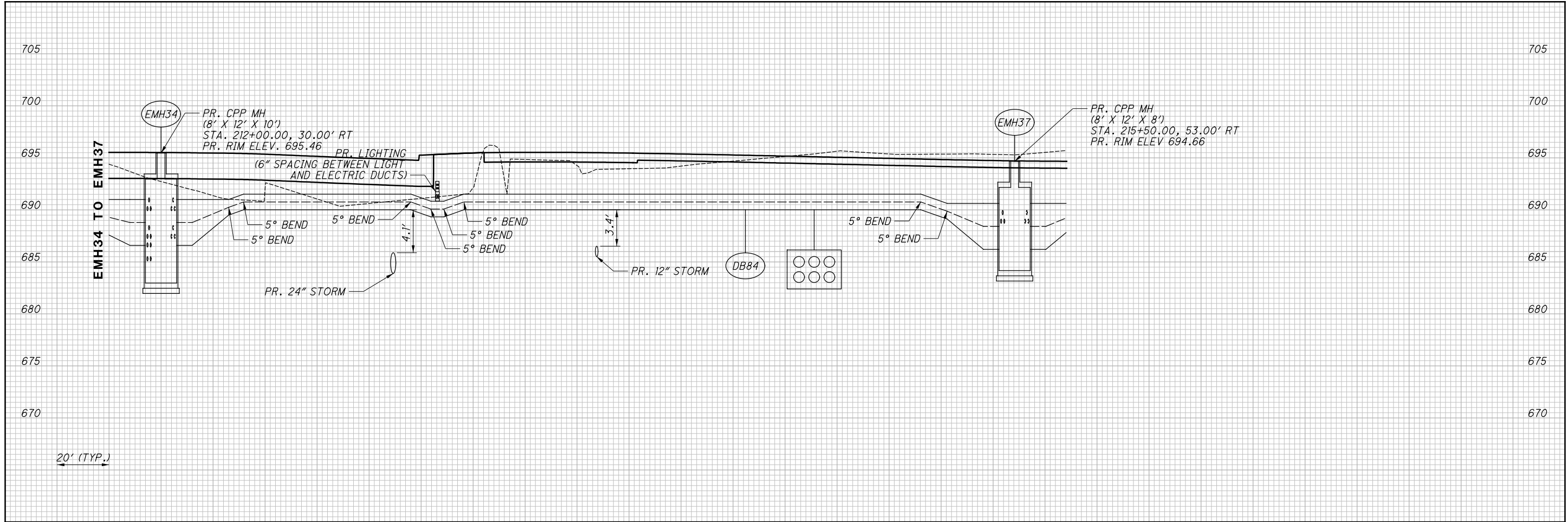
CALCULATED
DFT
CHECKED
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RECORD PLANS

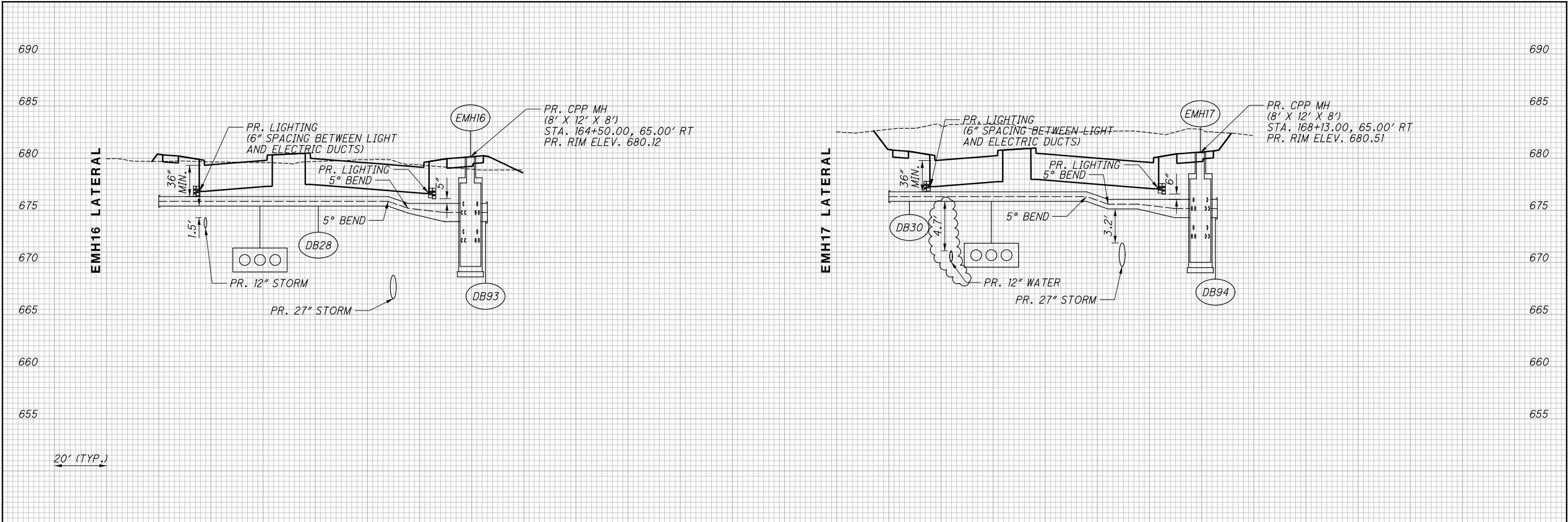
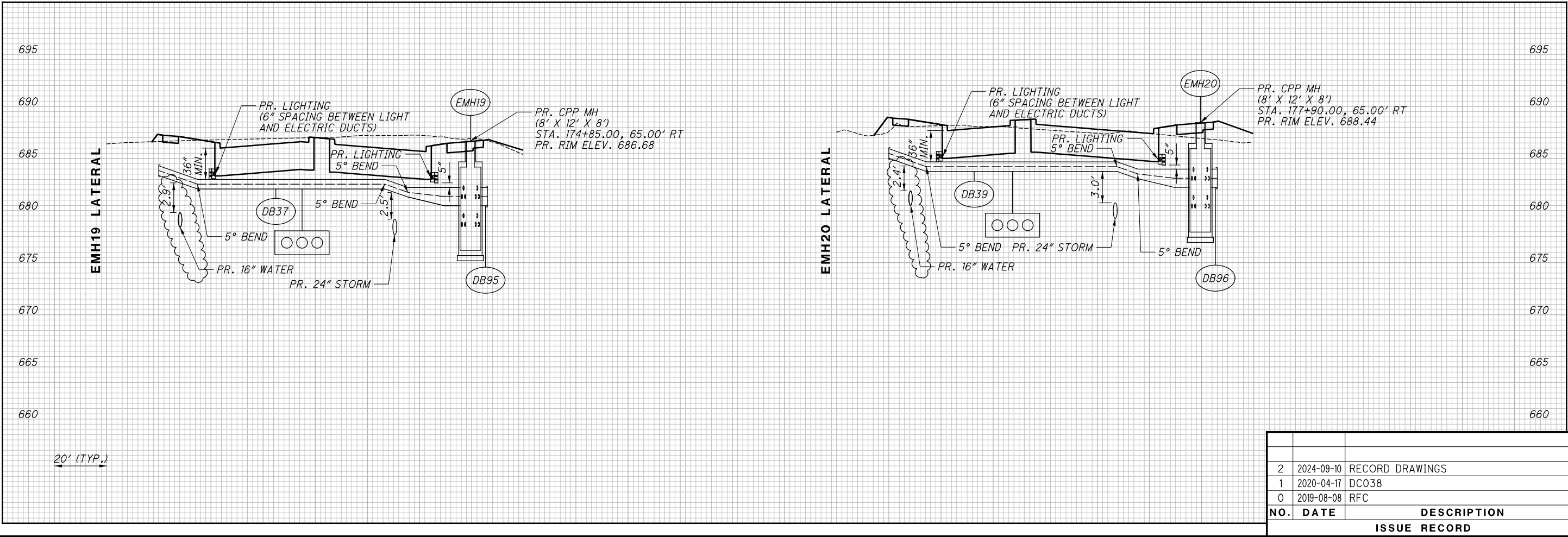
RECORD PLANS



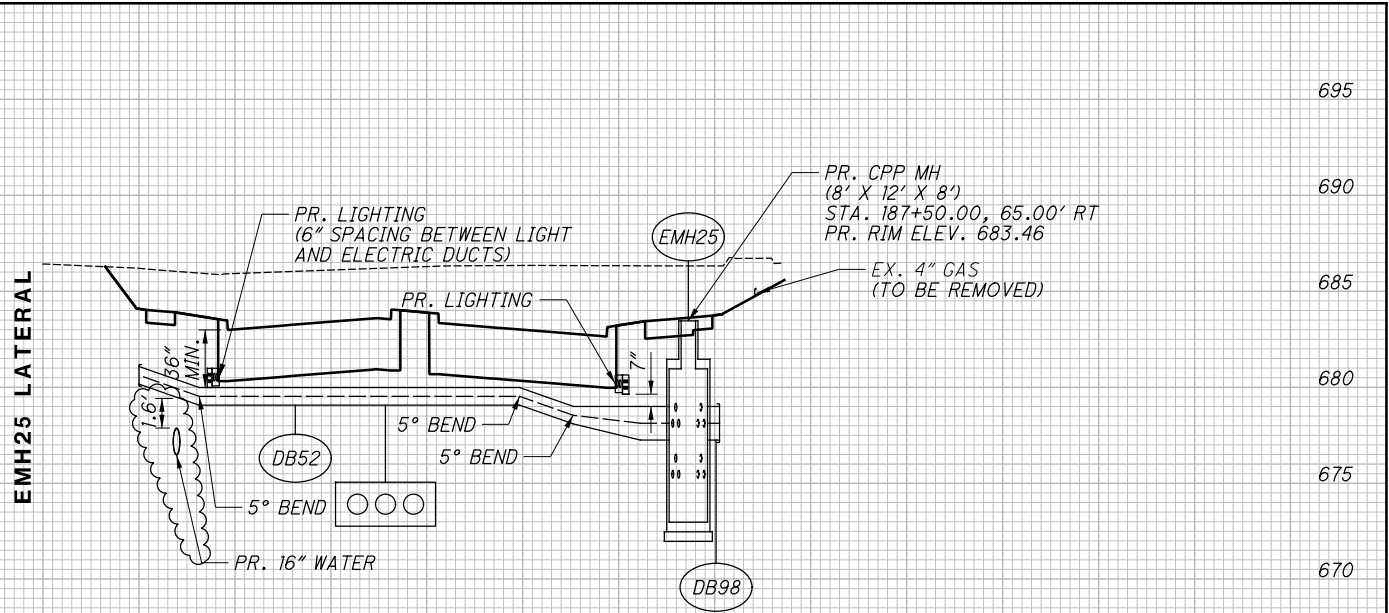
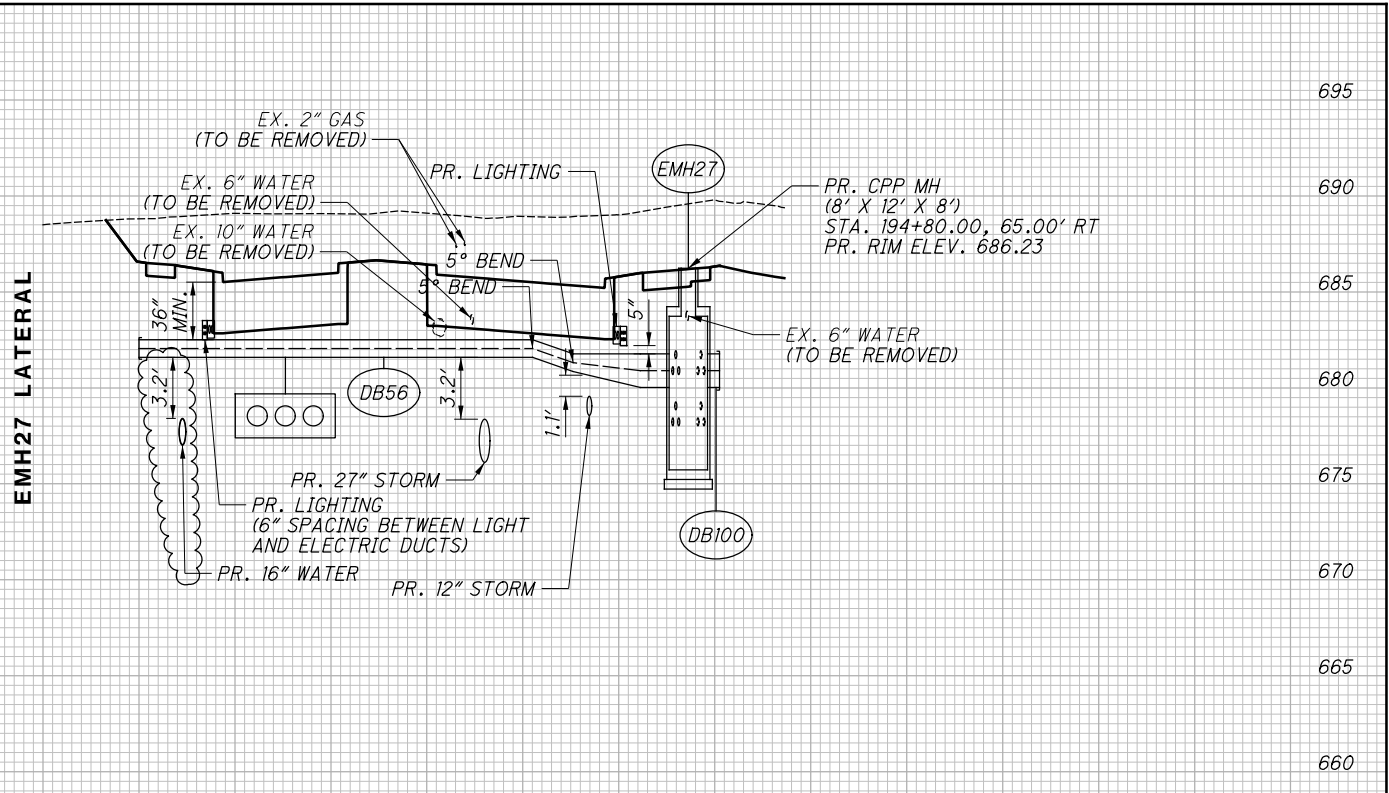
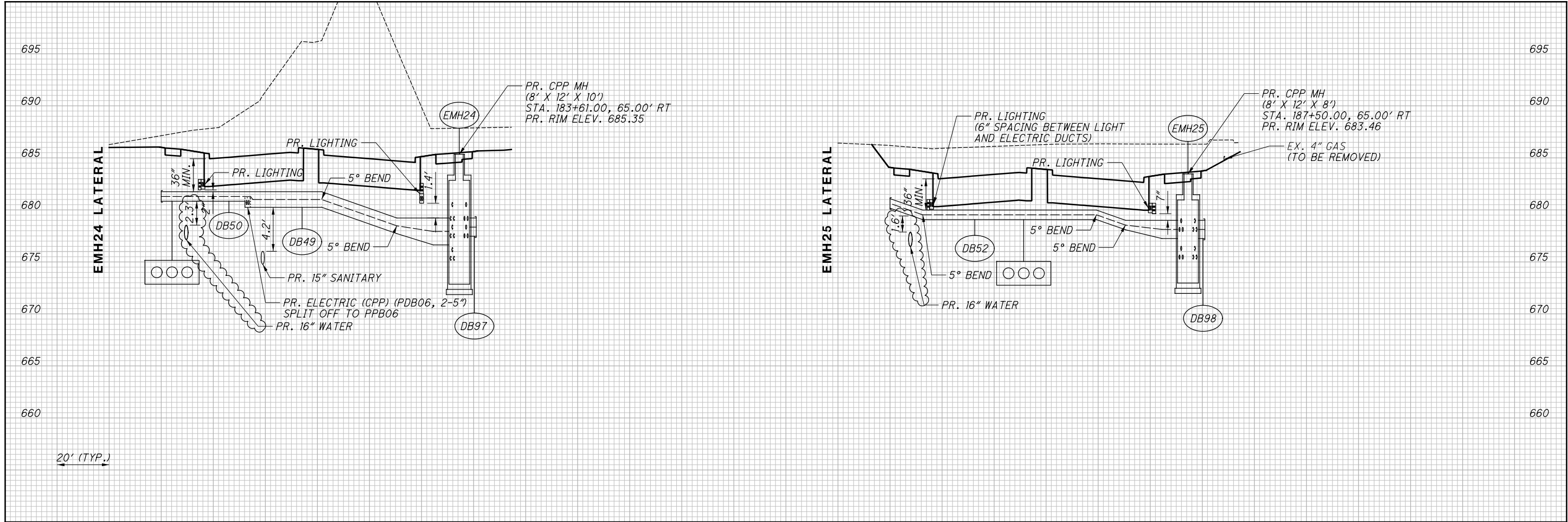
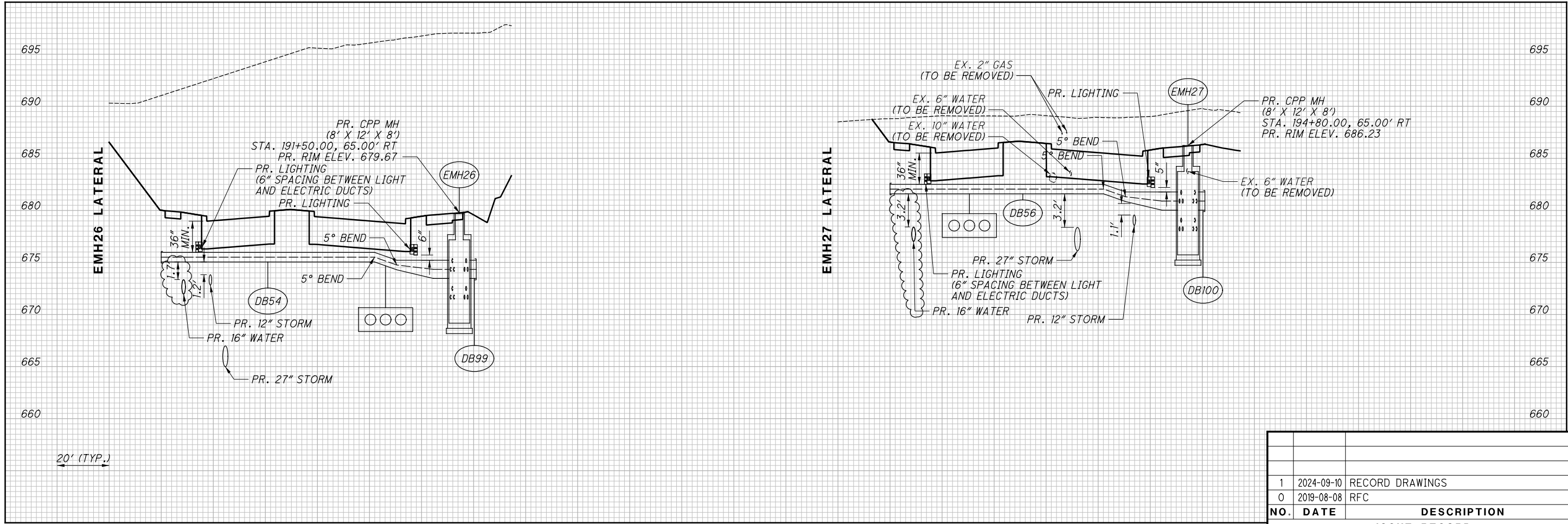
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0	2019-08-08	RFC



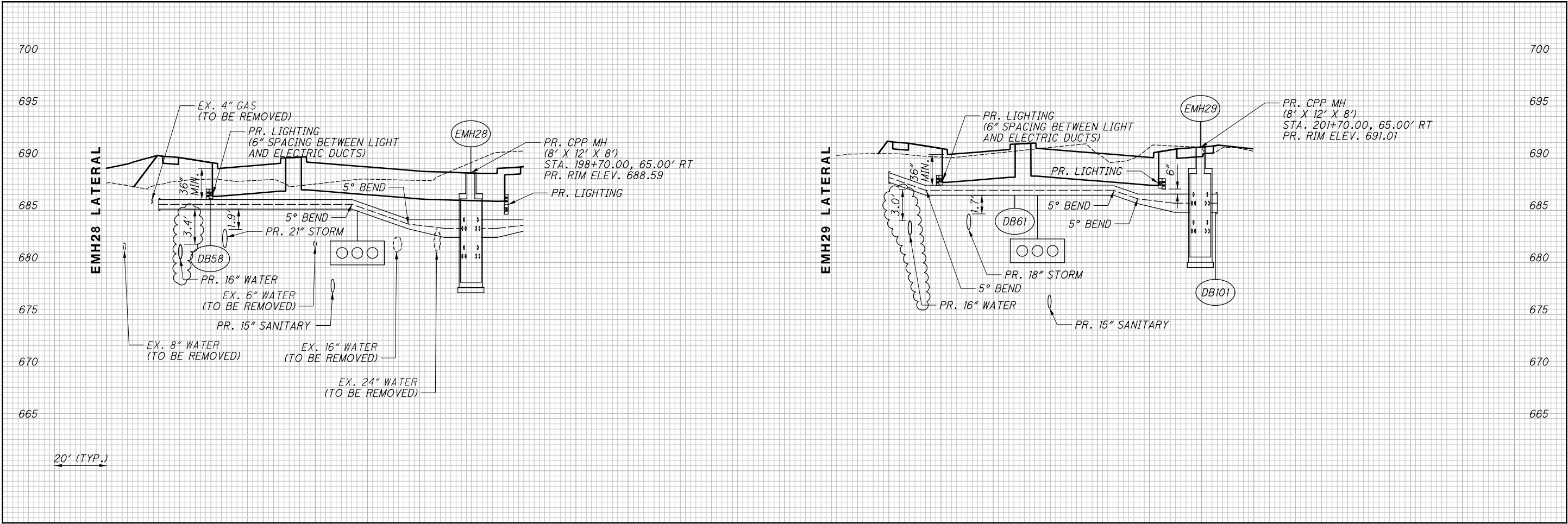
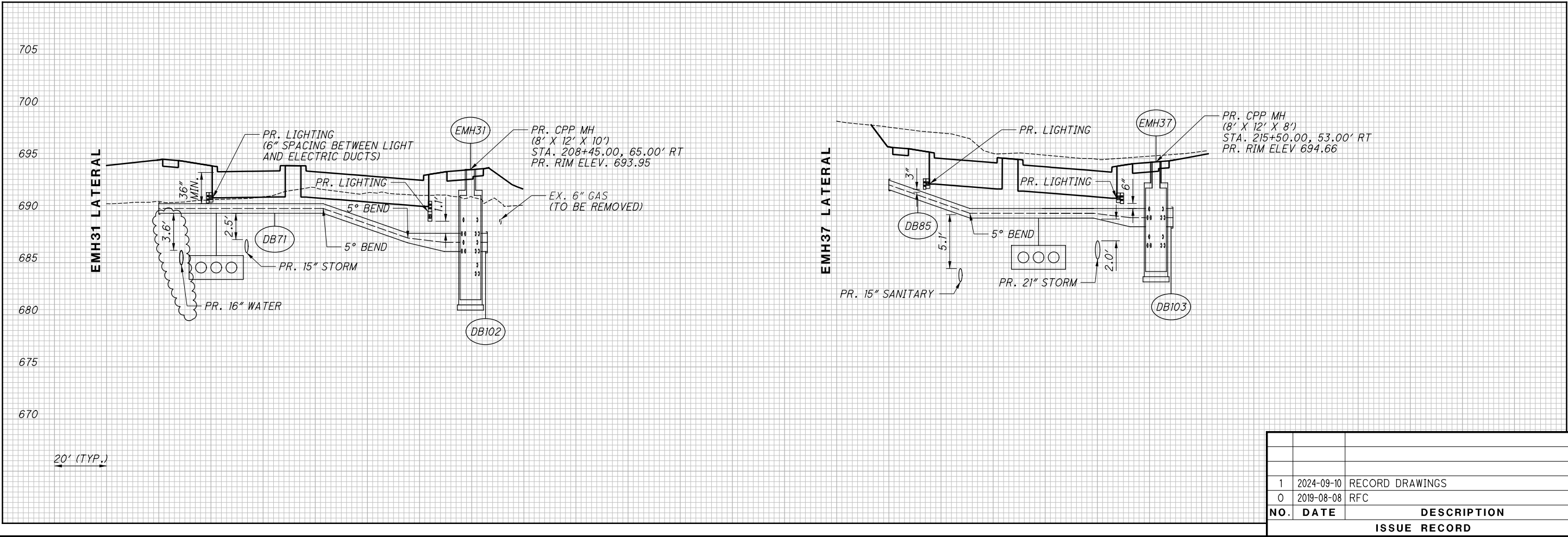
ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC



NO.	DATE	DESCRIPTION
2	2024-09-10	RECORD DRAWINGS
1	2020-04-17	DC038
0	2019-08-08	RFC
		ISSUE RECORD



NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC
ISSUE RECORD		



NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC

ISSUE RECORD

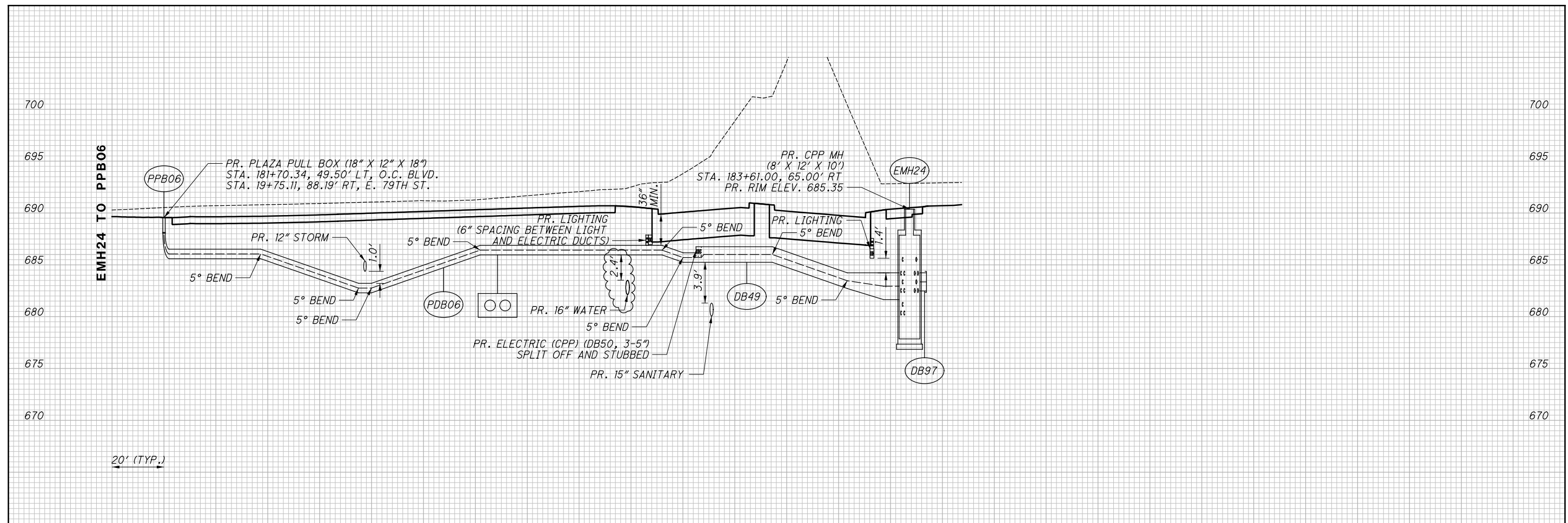
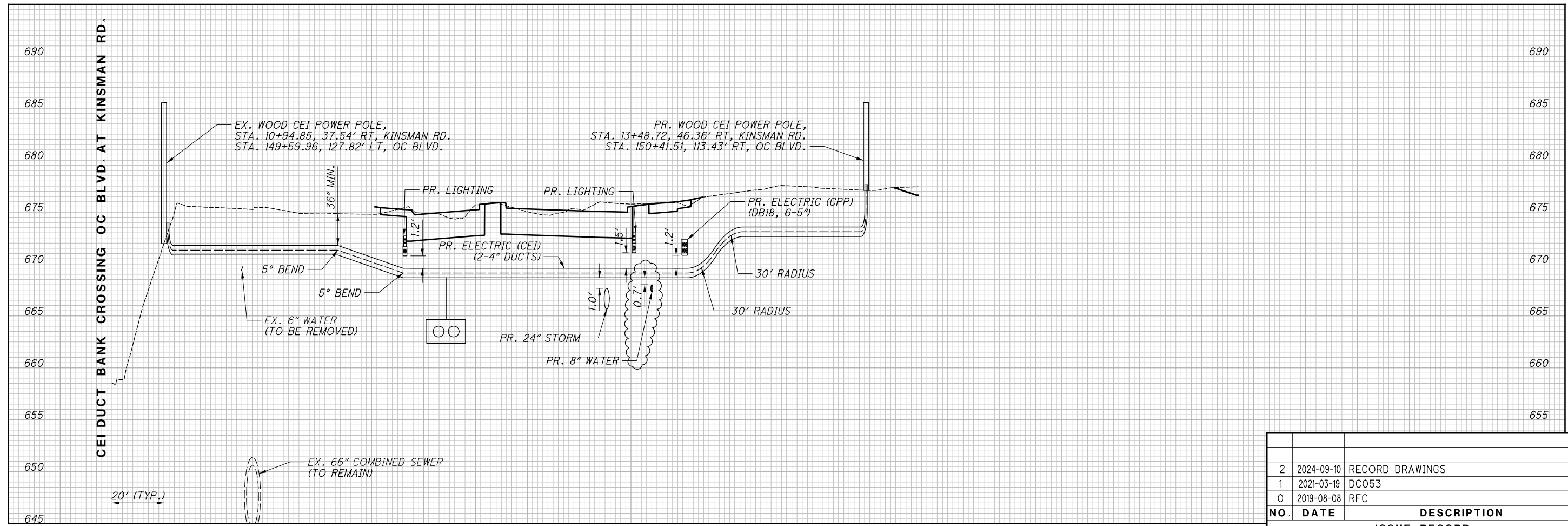
CUY-IR490/ SR010-
2.09 / 19.28

CPP DUCT BANK PROFILES - O.C. BLVD.
LATERALS: EMH28, EMH29, EMH31, & EMH37

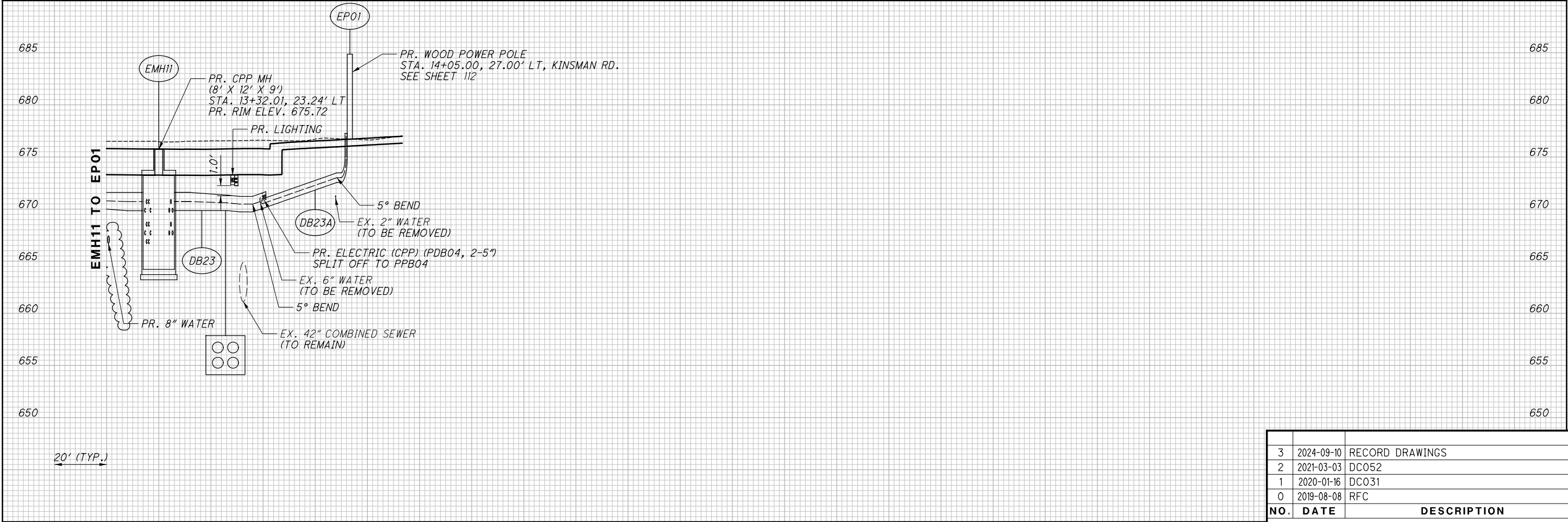
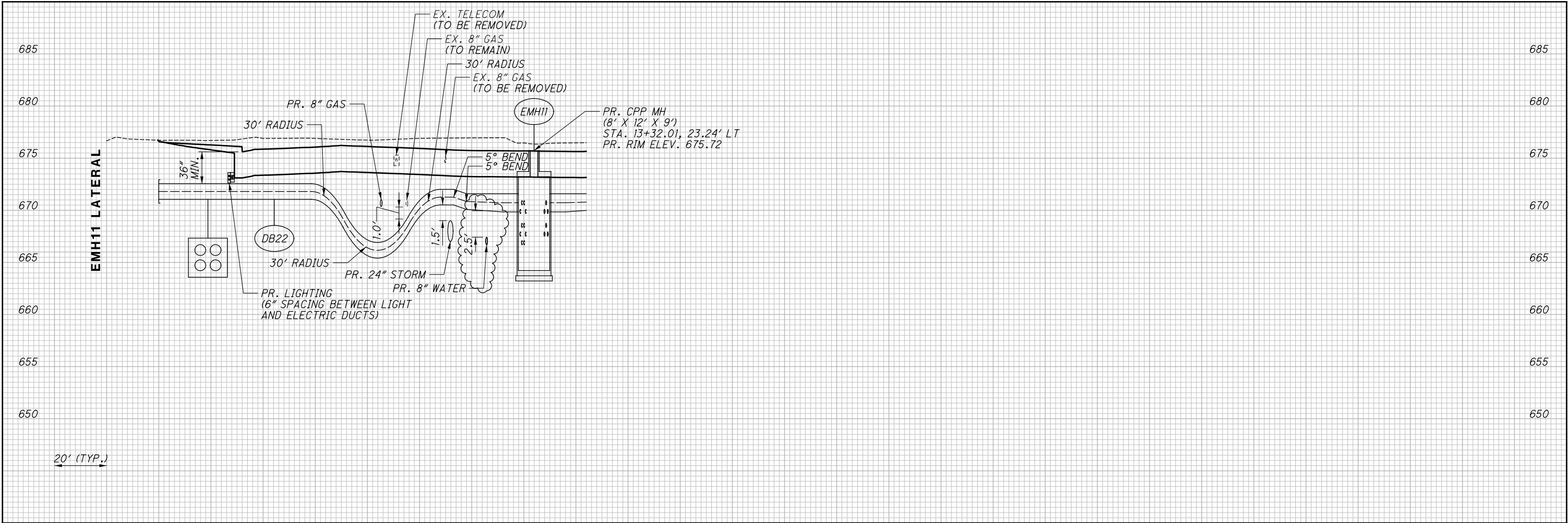
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RECORD PLANS

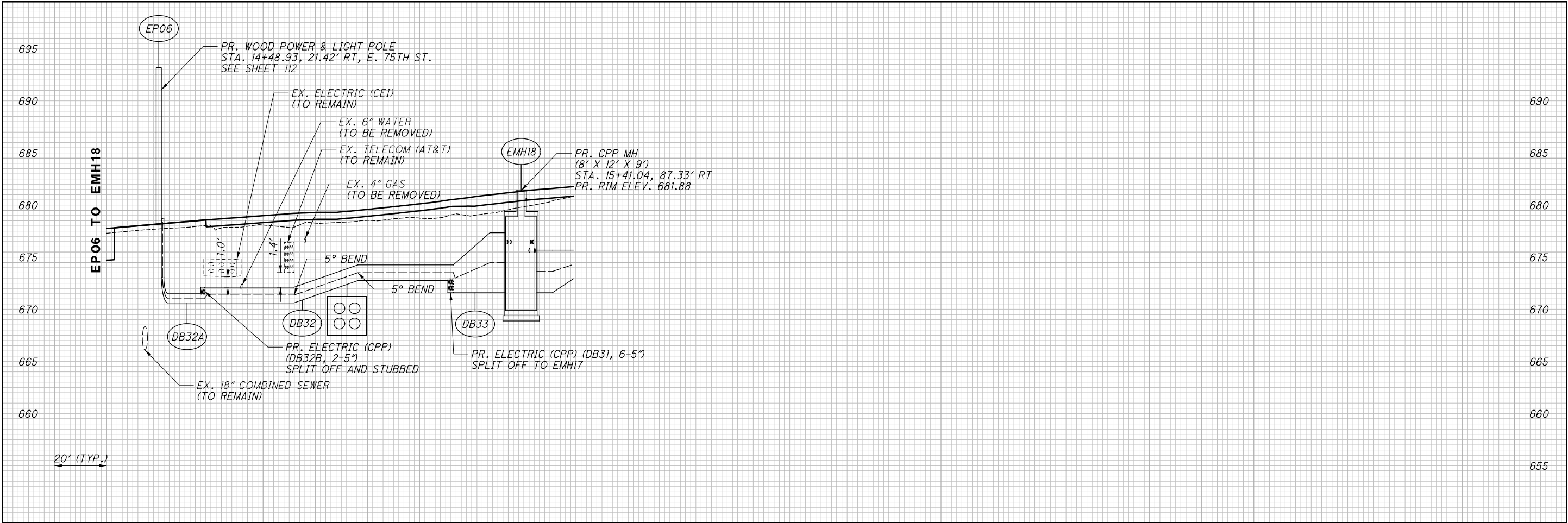
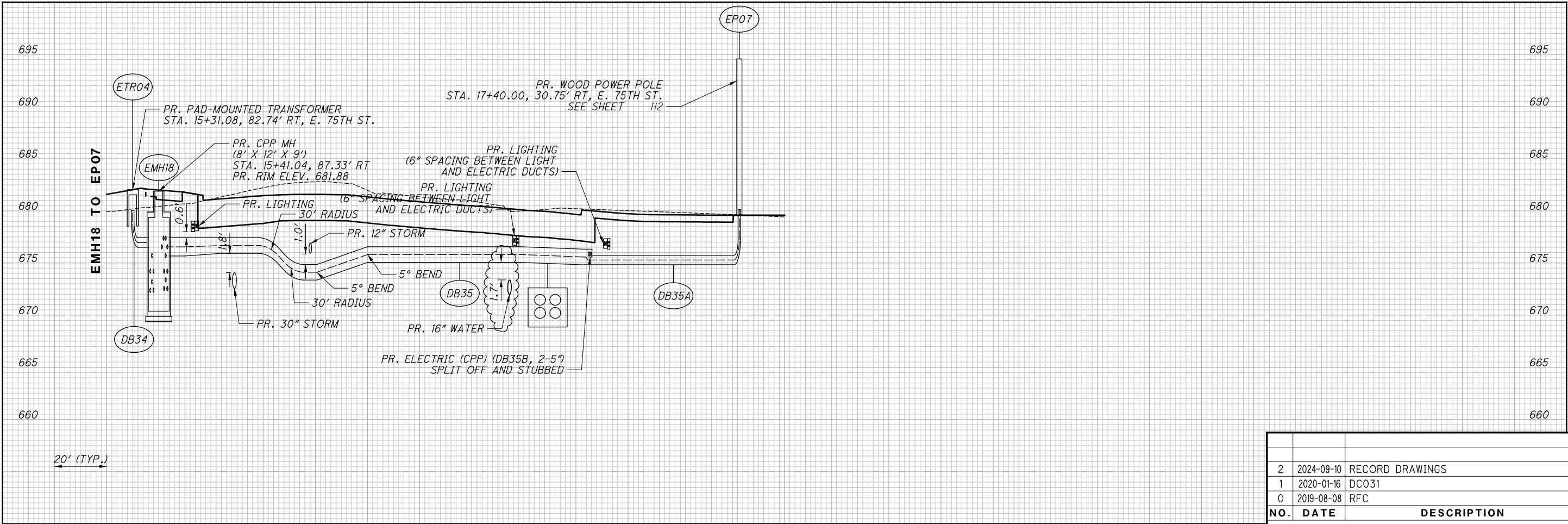
RECORD PLANS



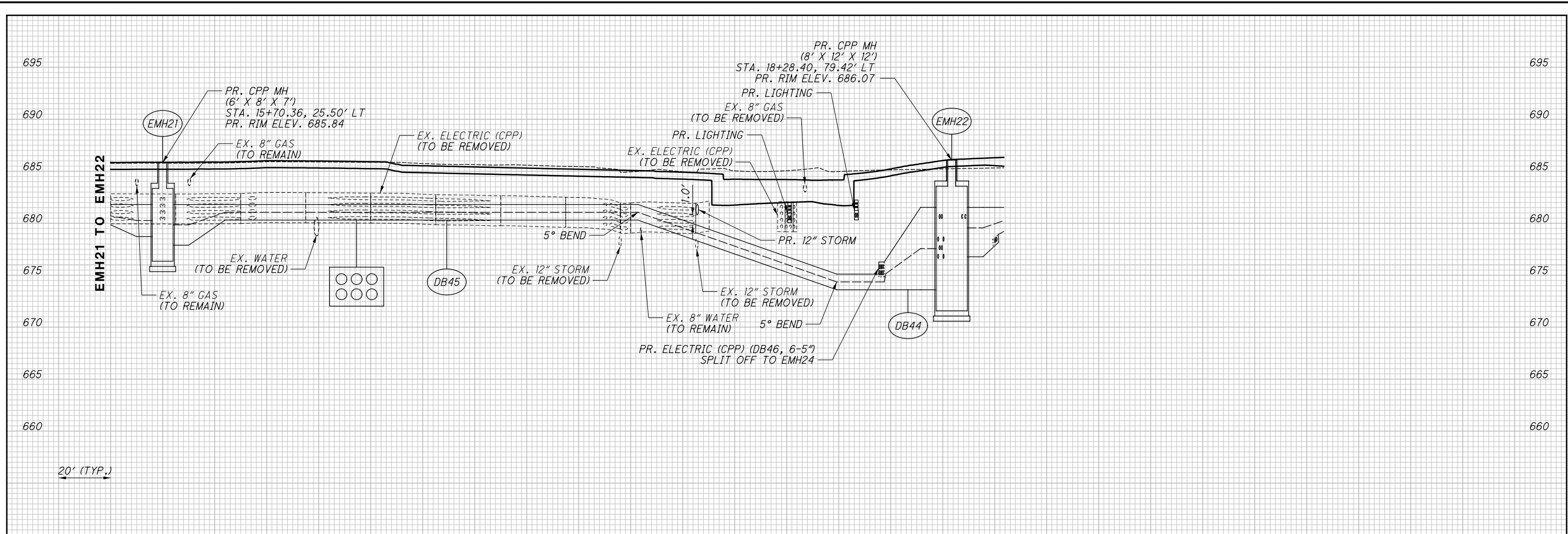
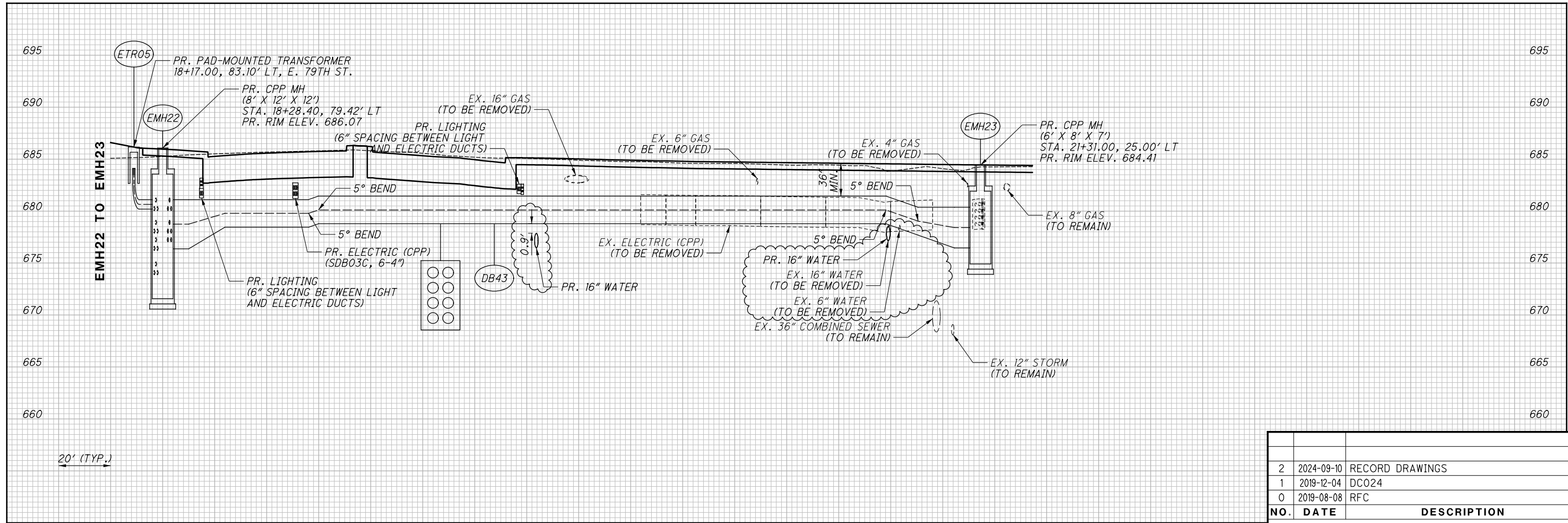
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1	2021-03-19	DC053
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NO.	DATE	DESCRIPTION
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2	2021-03-03	DC052
1	2020-01-16	DC031
0	2019-08-08	RFC

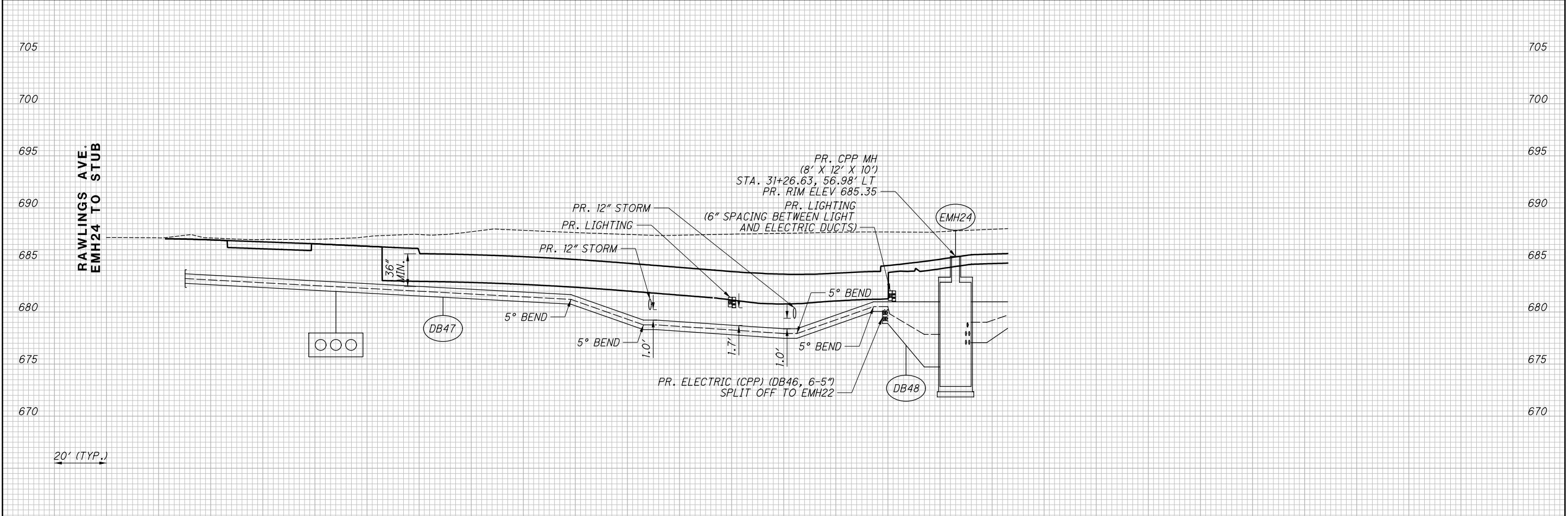
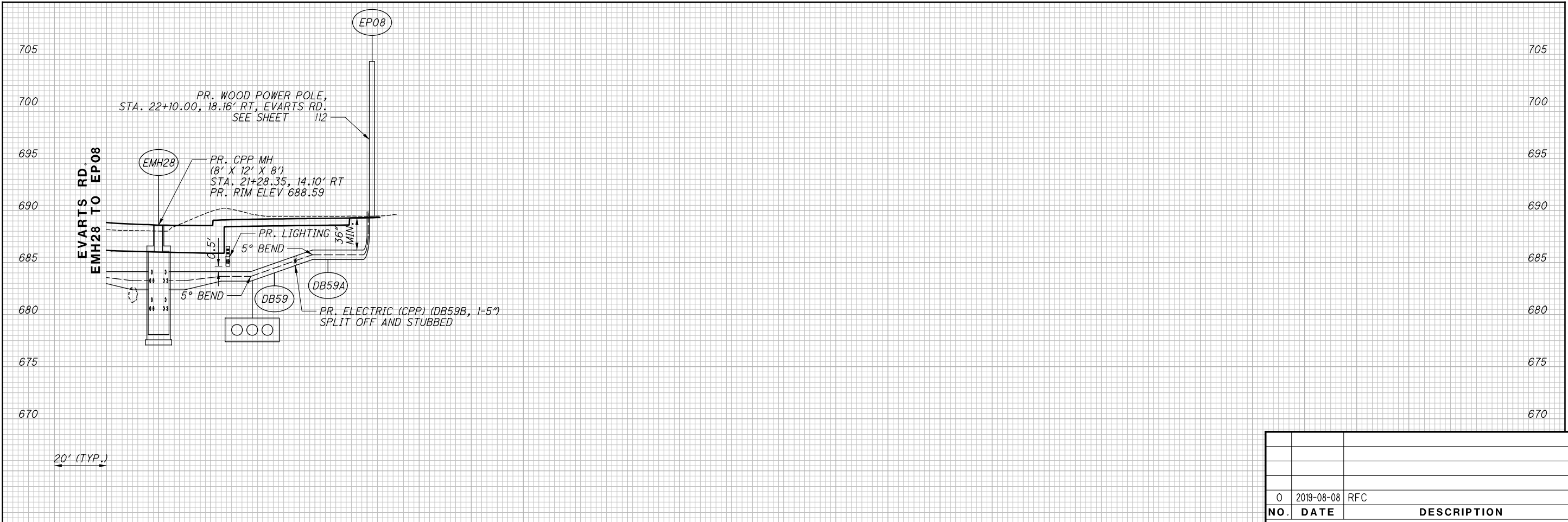


NO.	DATE	DESCRIPTION
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1	2020-01-16	DC031
0	2019-08-08	RFC
		ISSUE RECORD

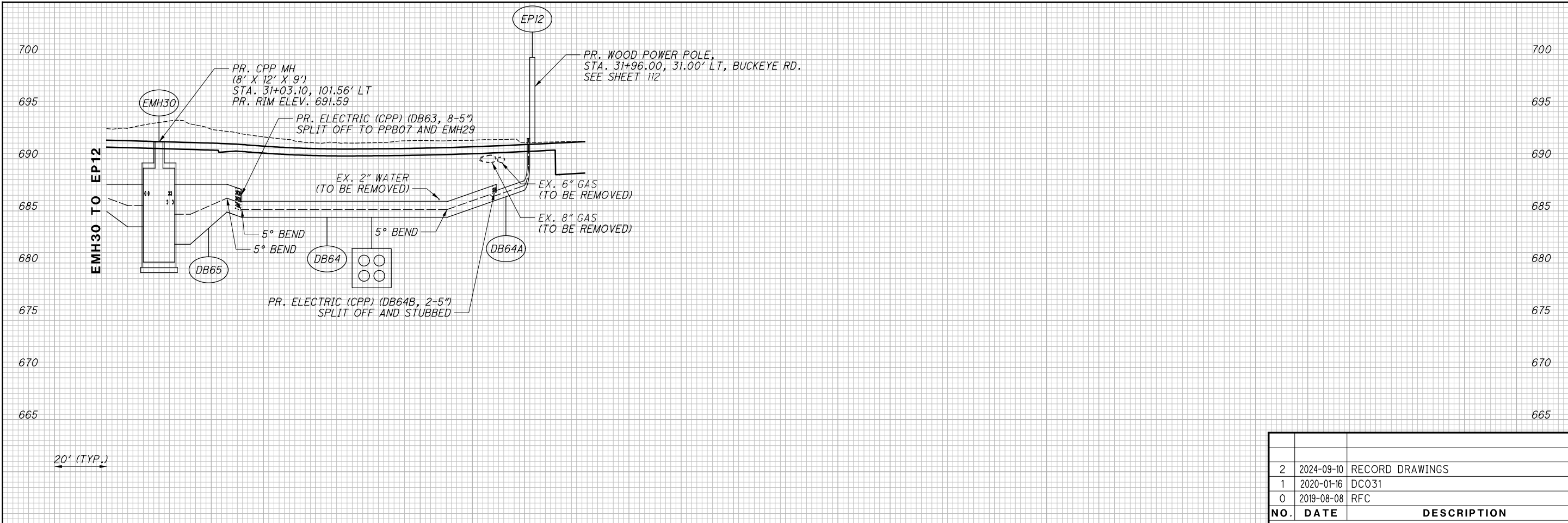
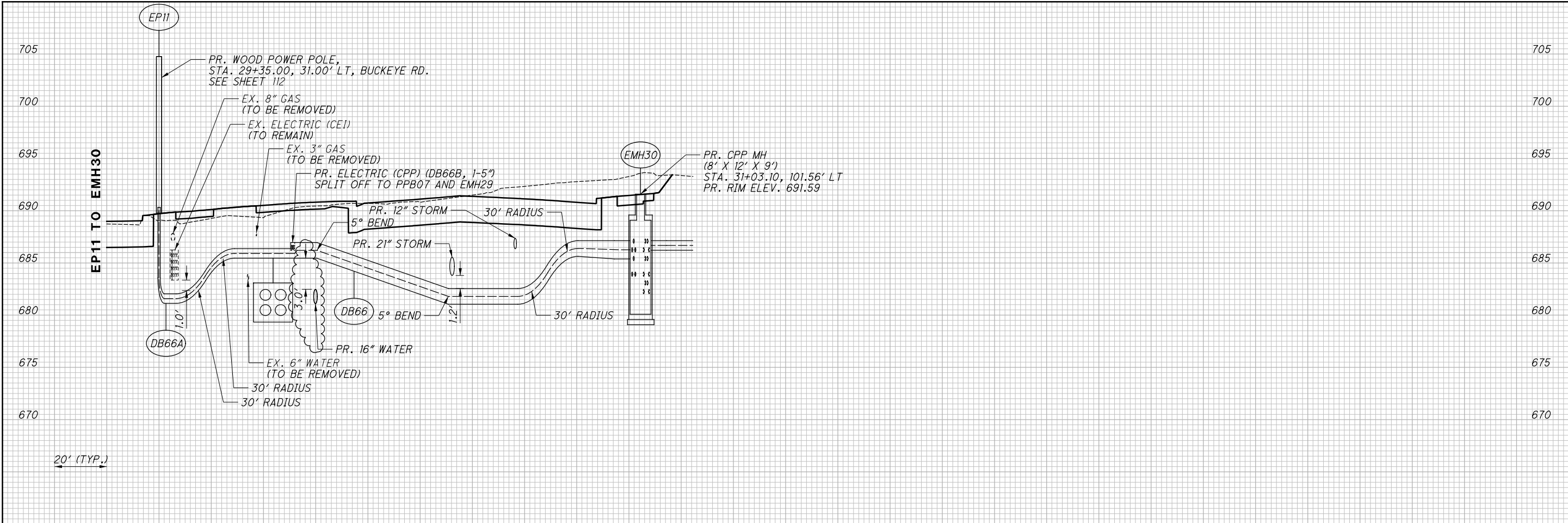


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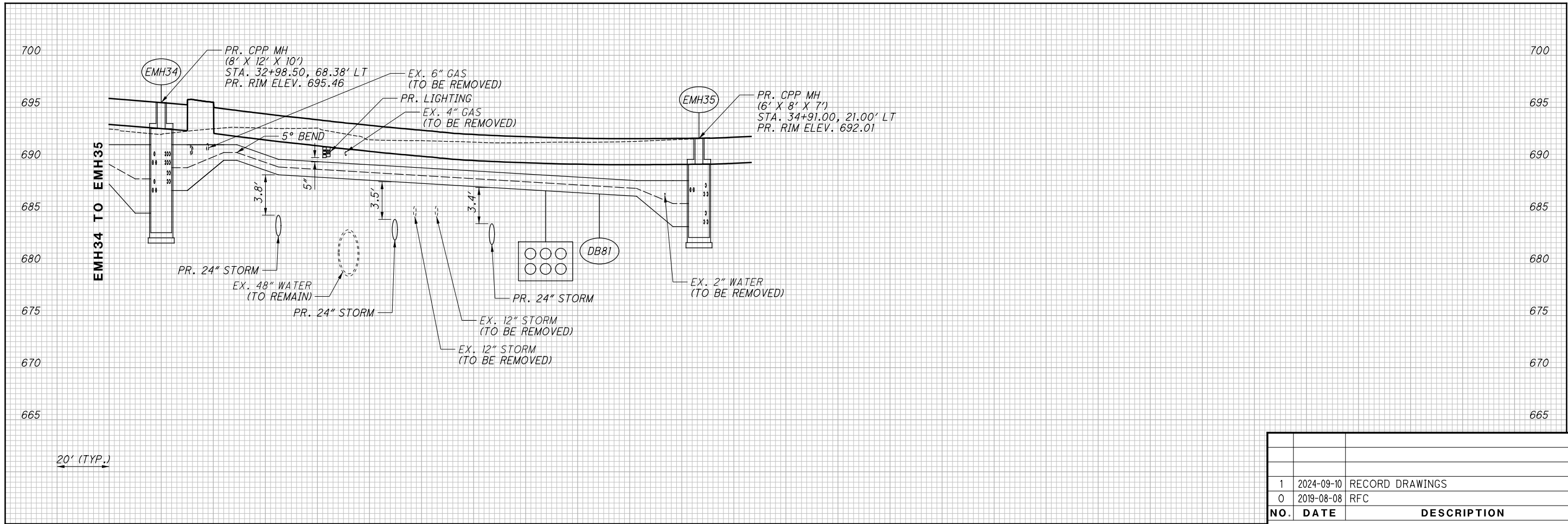
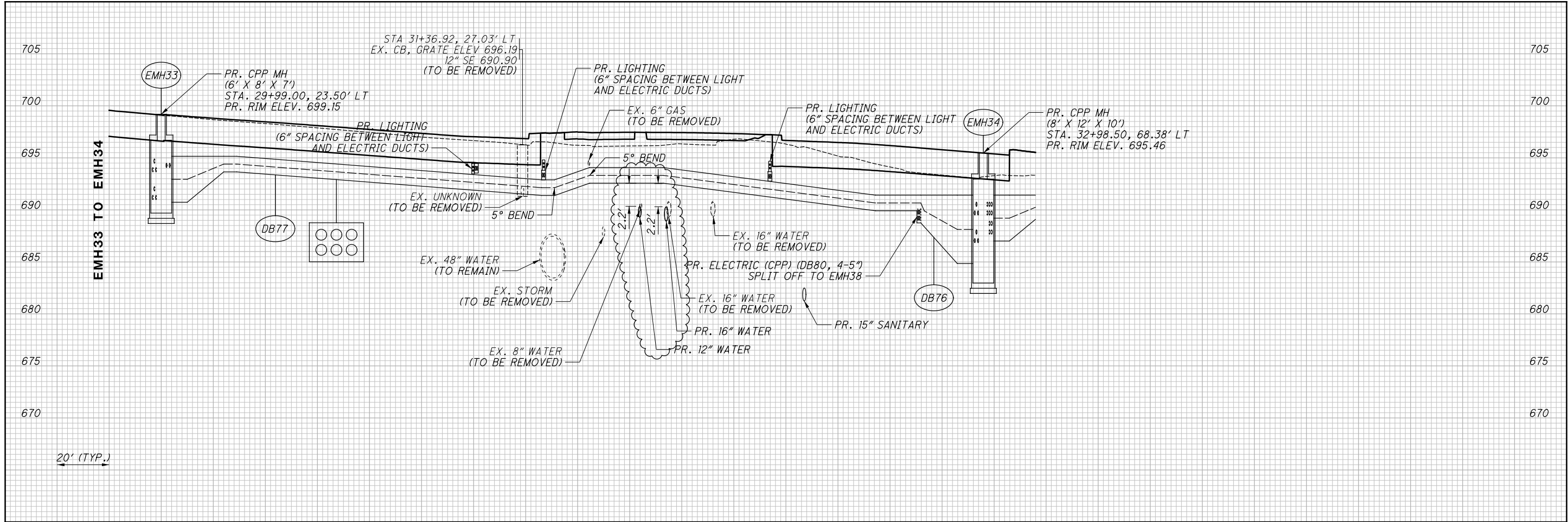
ISSUE RECORD



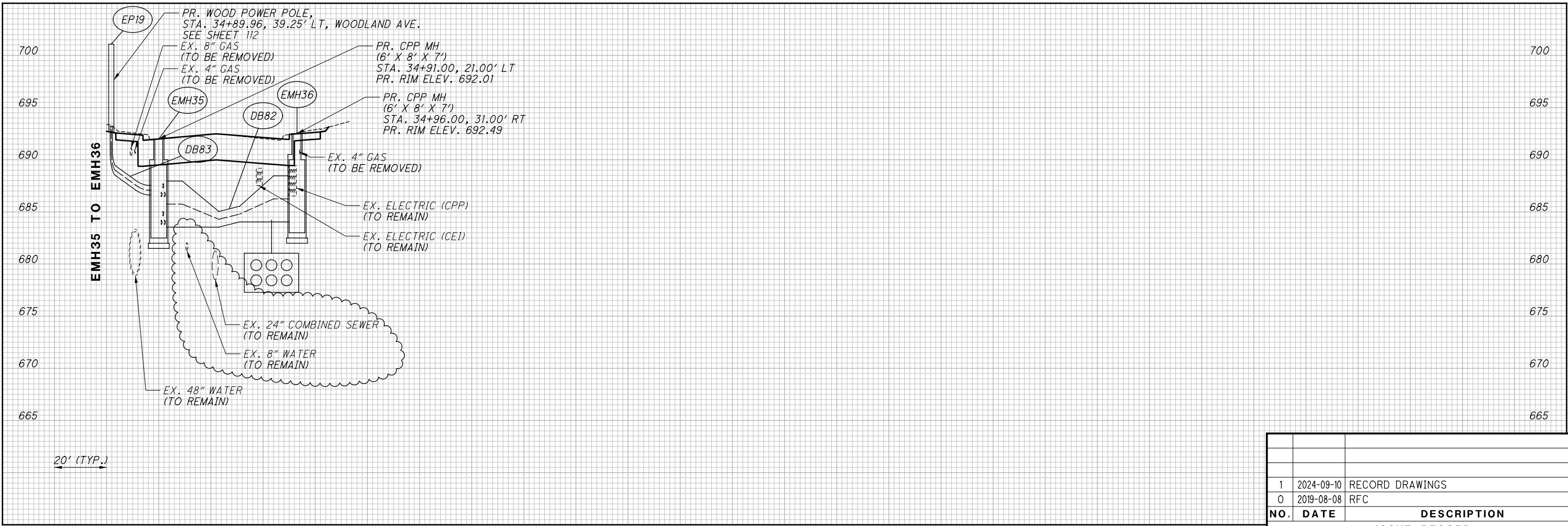
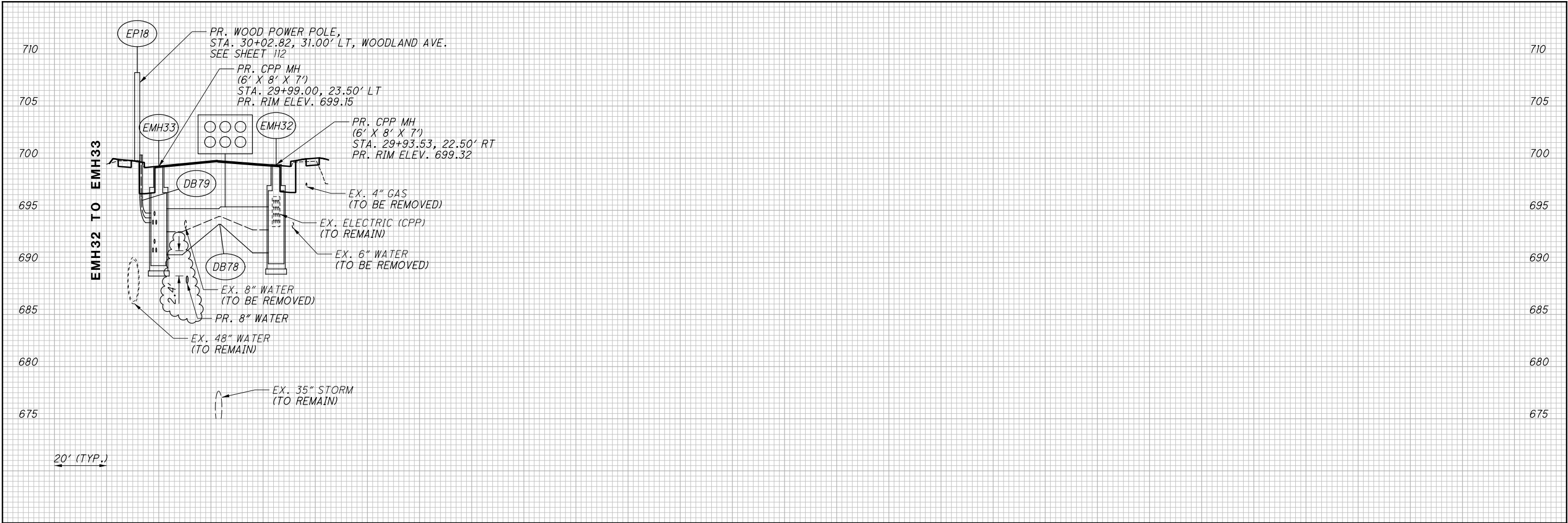
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0	2019-08-08	RFC
ISSUE RECORD		



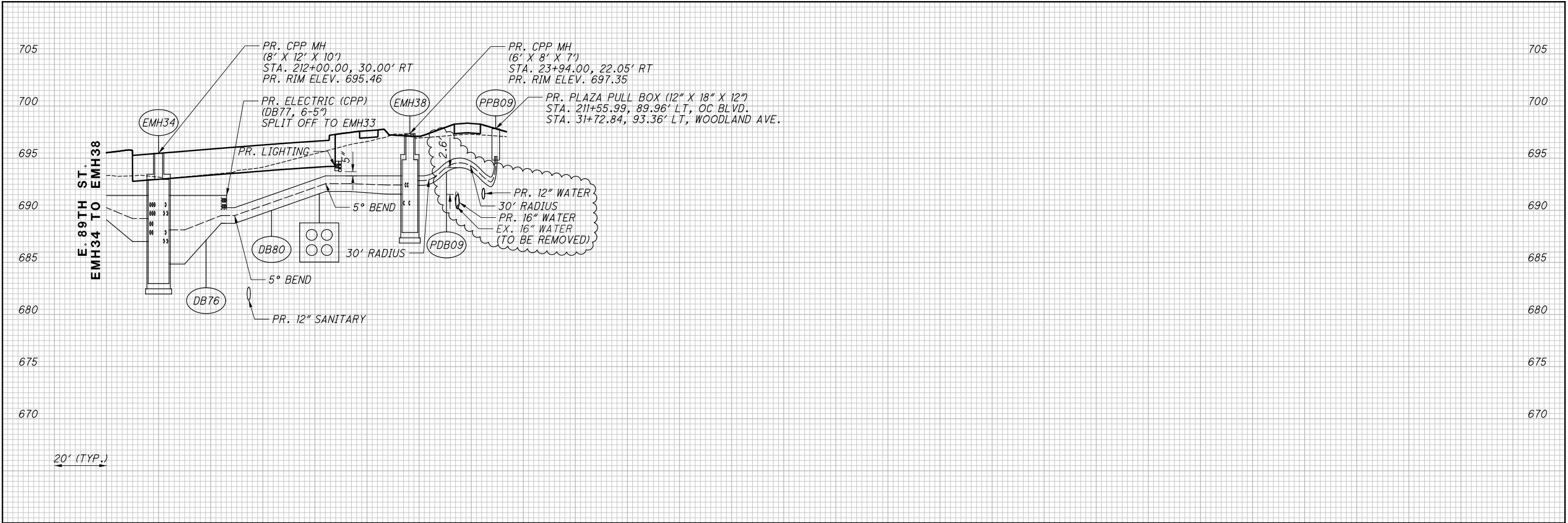
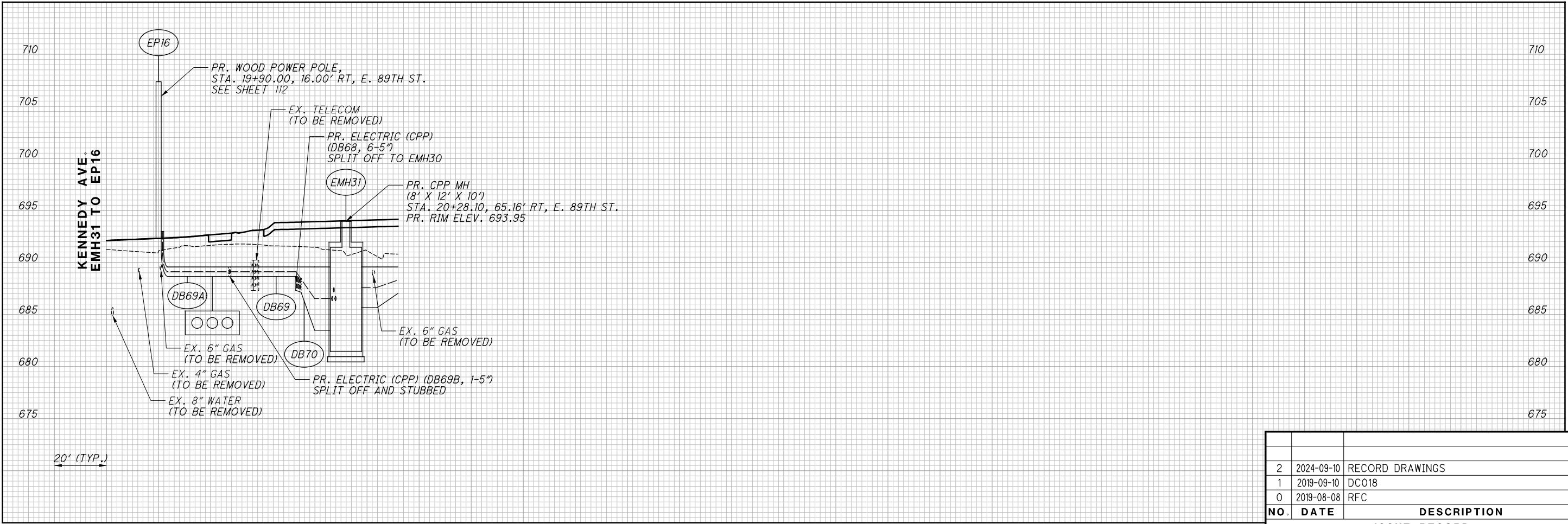
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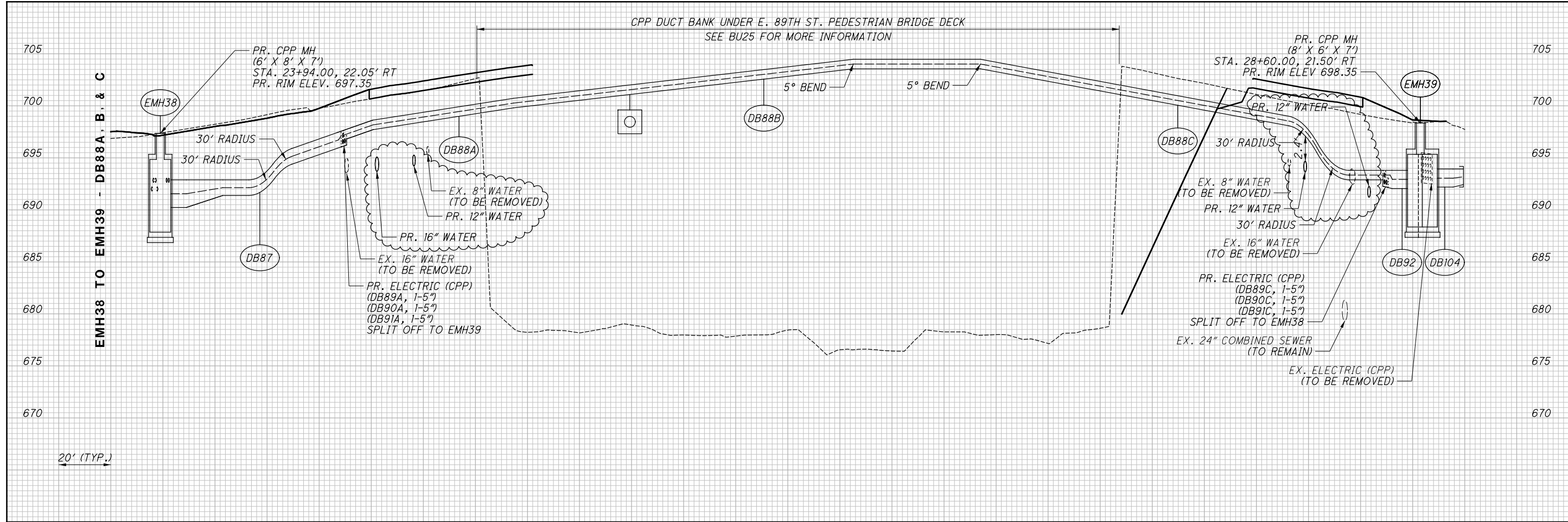
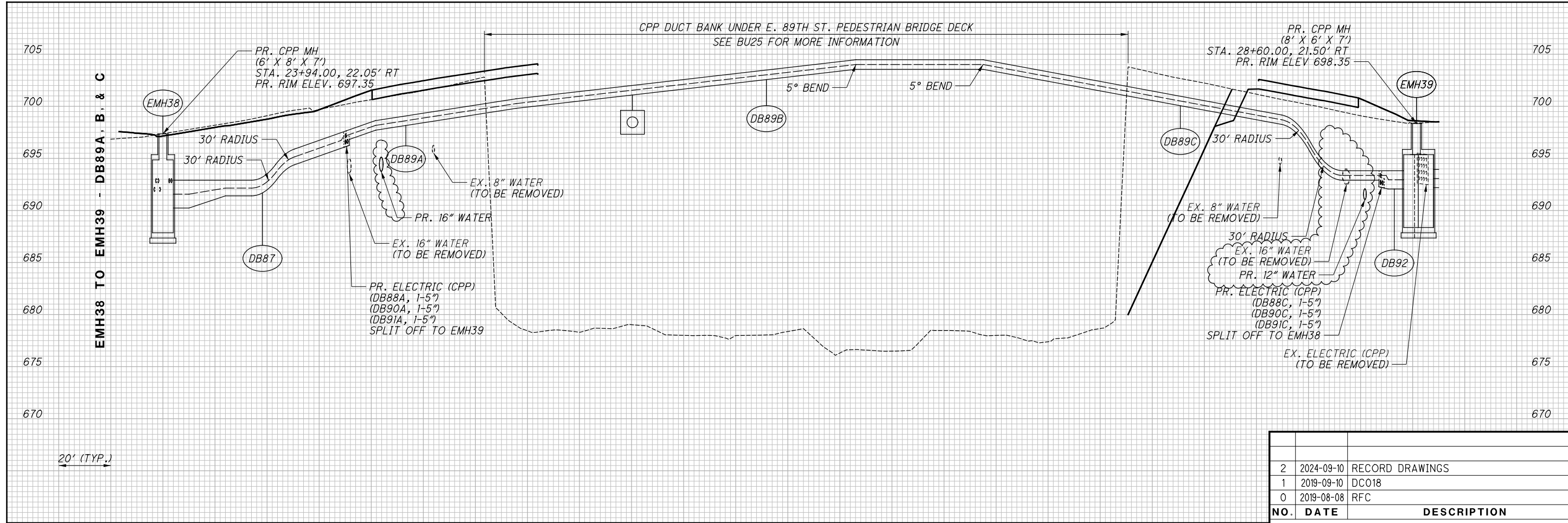
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ISSUE RECORD		



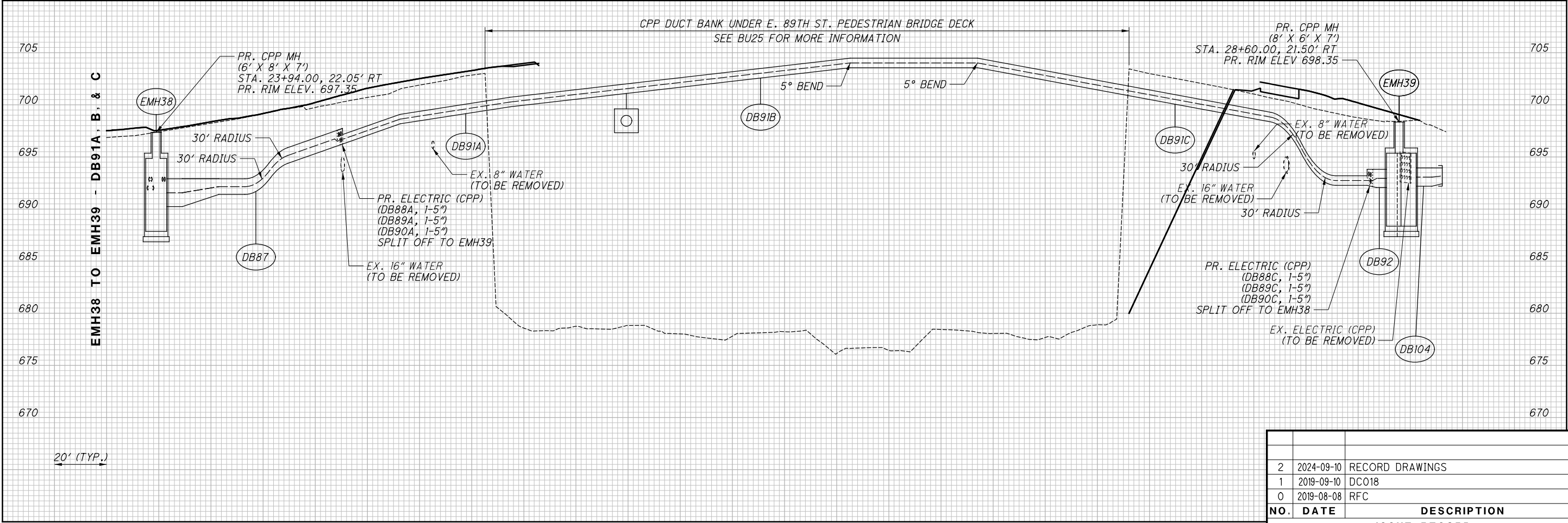
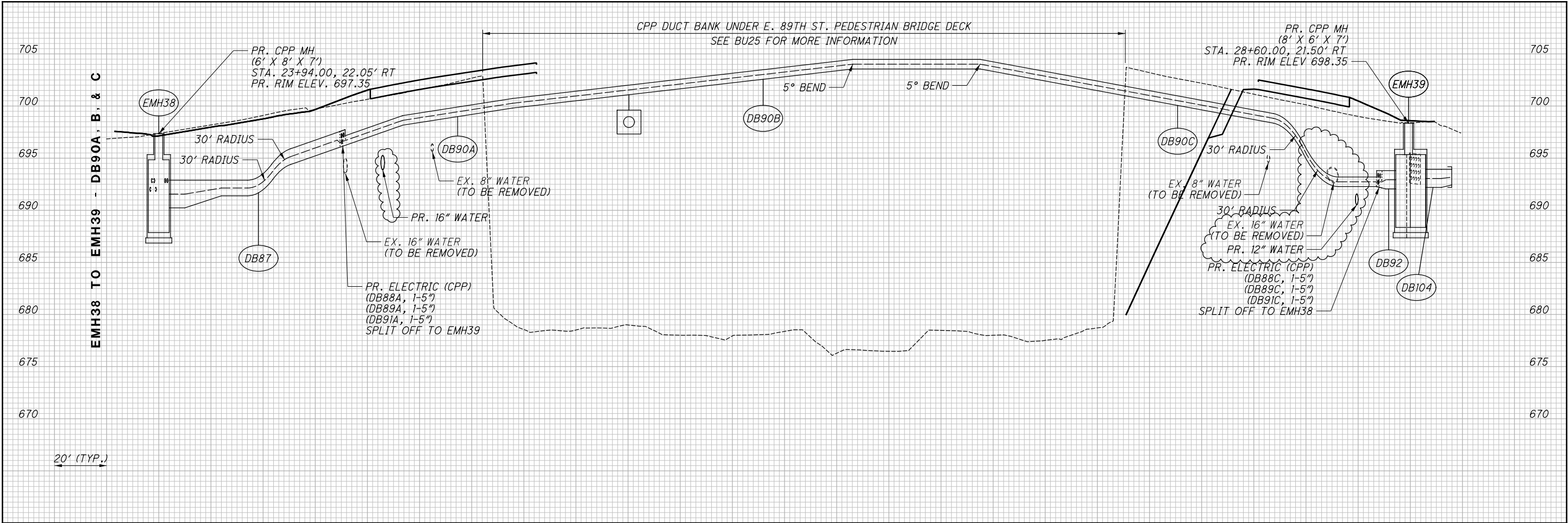
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ISSUE RECORD		



NO.	DATE	DESCRIPTION
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1	2019-09-10	DC018
0	2019-08-08	RFC
ISSUE RECORD		



NO.	DATE	DESCRIPTION
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1	2019-09-10	DC018
0	2019-08-08	RFC
ISSUE RECORD		



ISSUE RECORD		
NO.	DATE	DESCRIPTION
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1	2019-09-10	DC018
0	2019-08-08	RFC

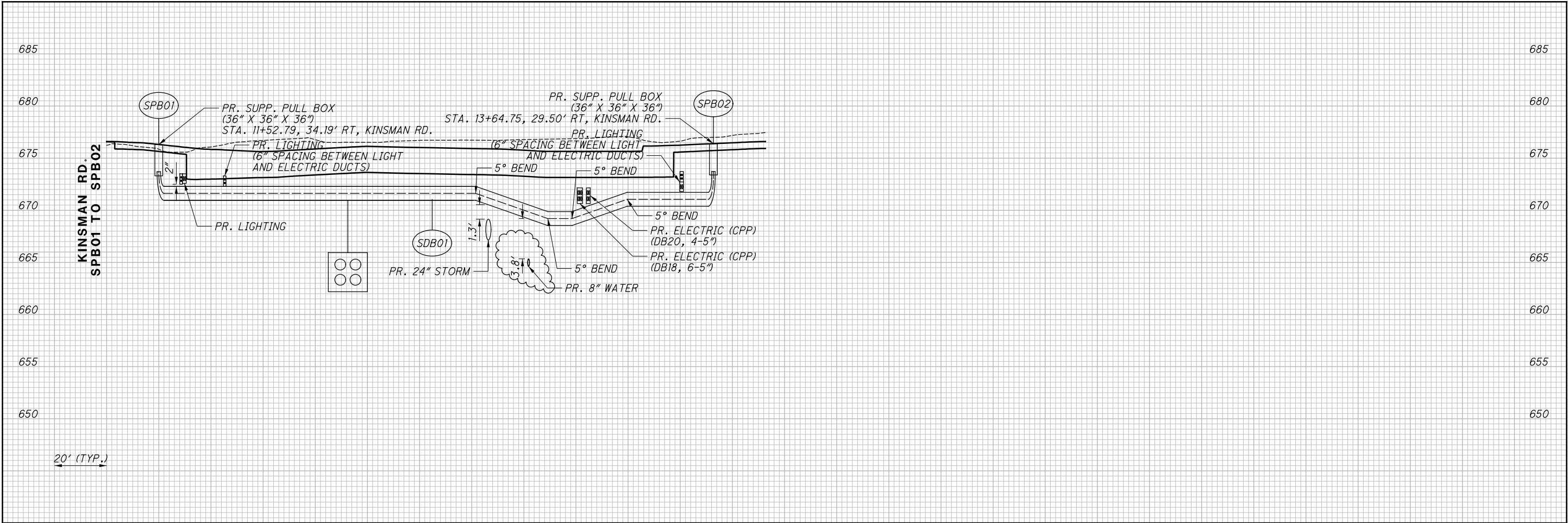
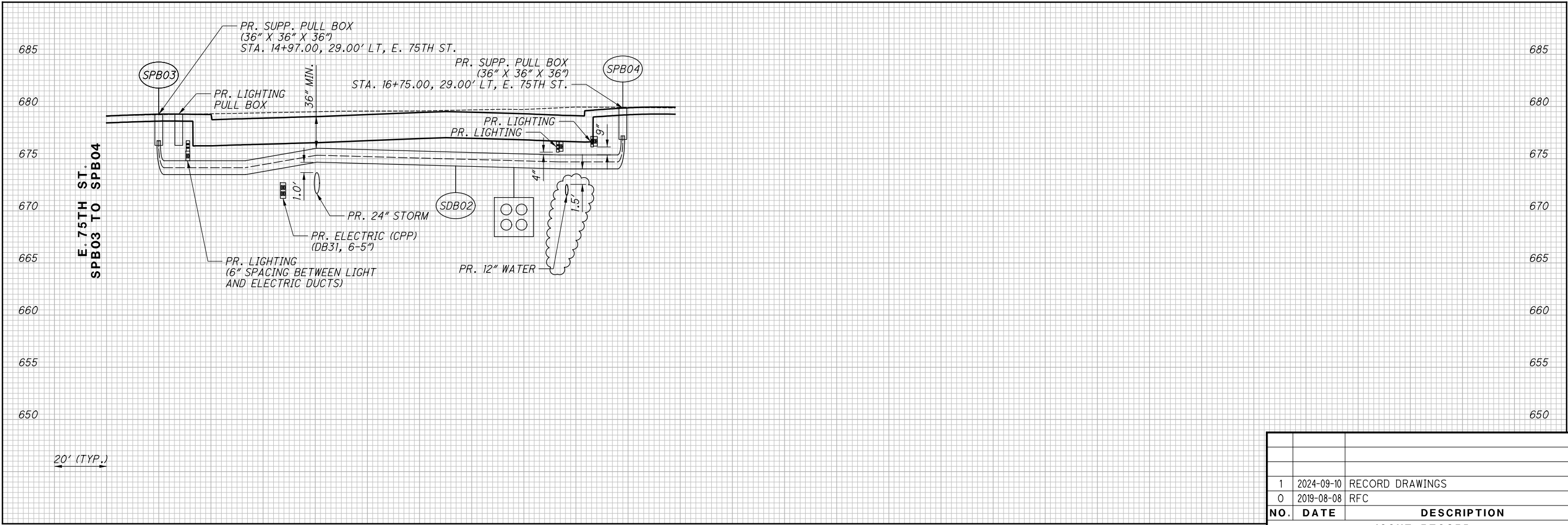
CUY-IR490/ SR010-
2.09 / 19.28

CPP DUCT BANK PROFILES - E. 89TH ST.
EMH38 TO EMH39 (DB90 & DB91)

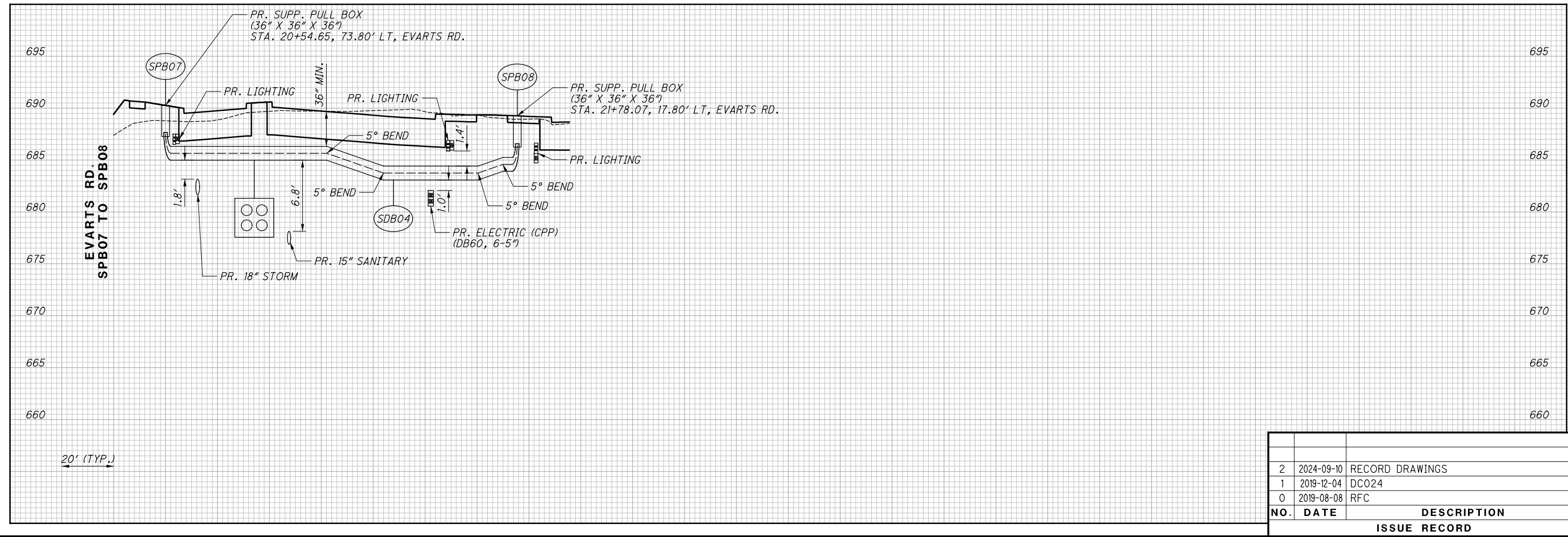
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RECORD PLANS

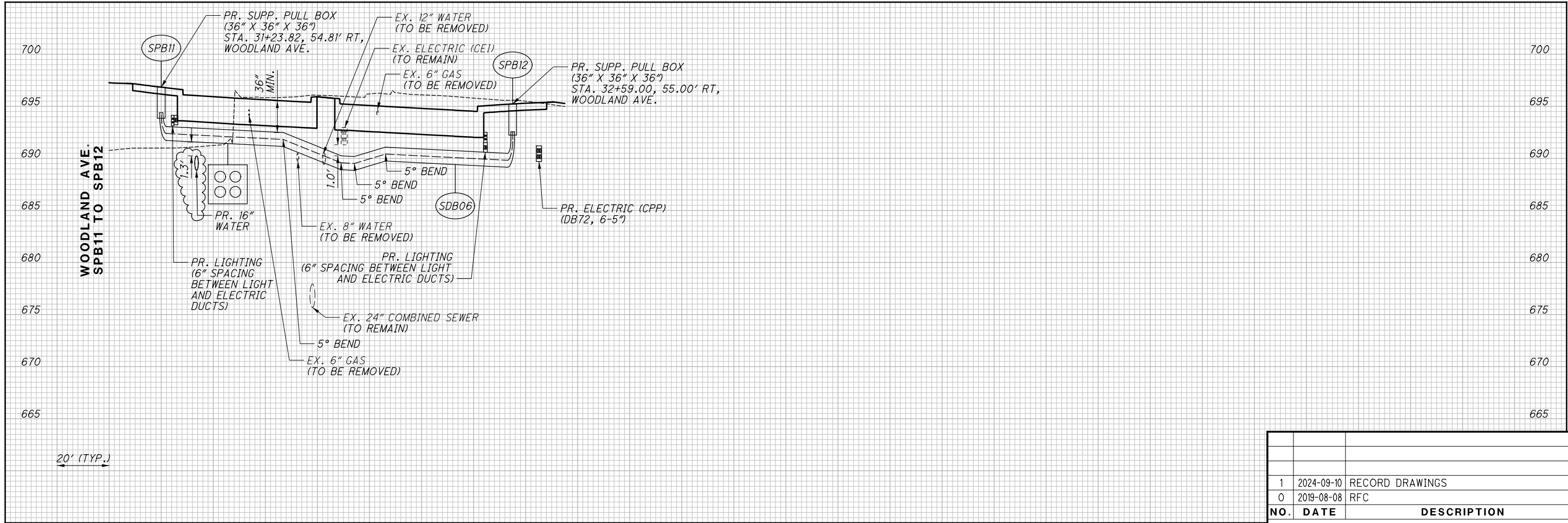
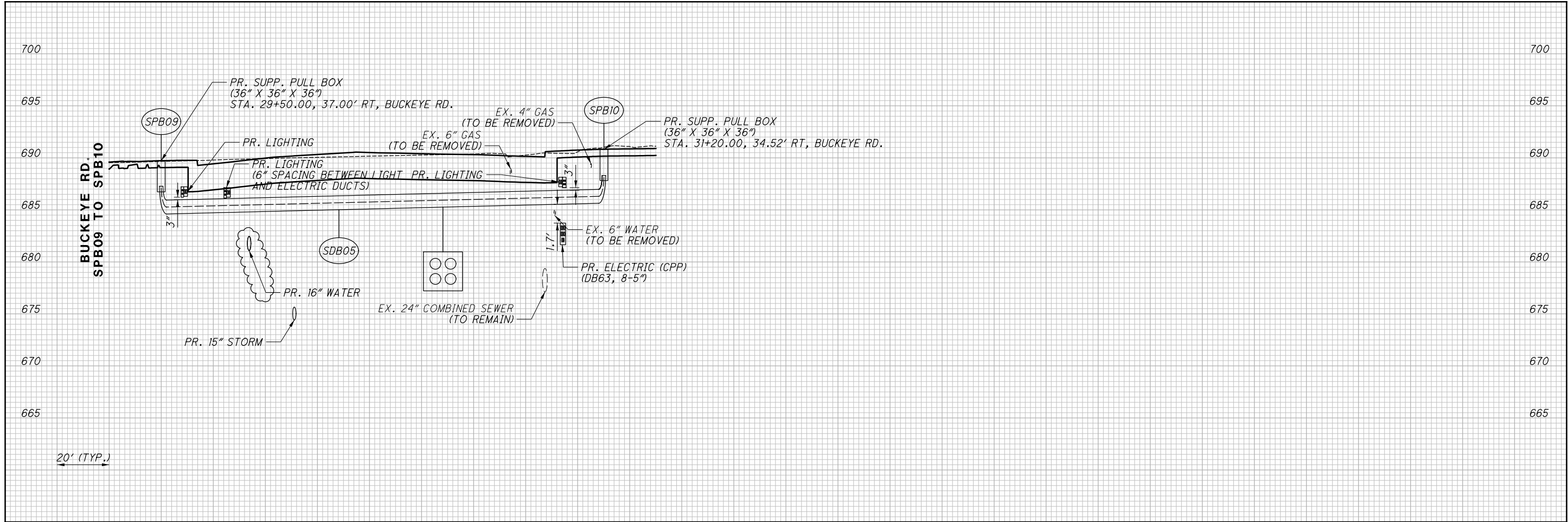
RECORD PLANS



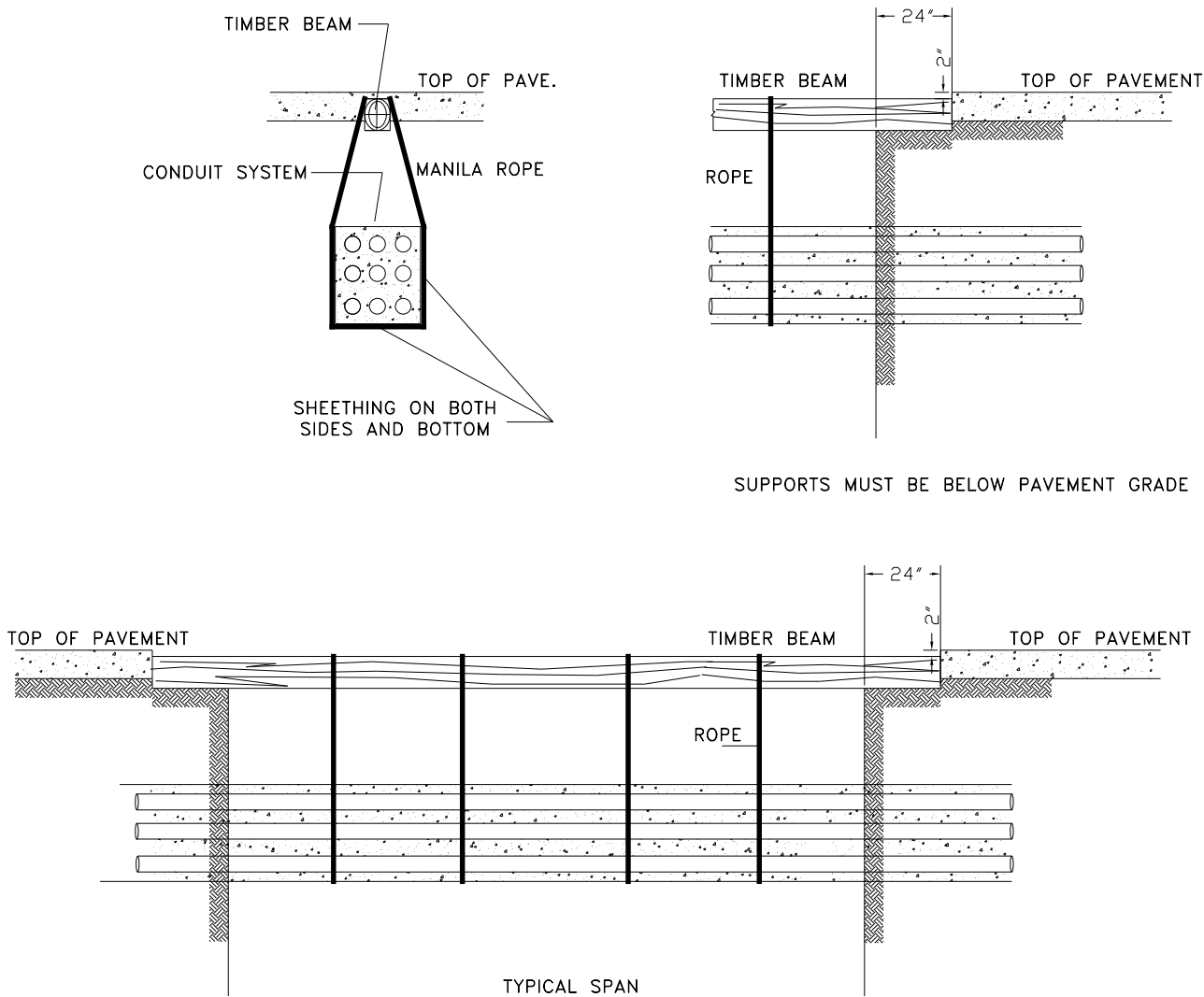
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0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NO.	DATE	DESCRIPTION
1	2024-09-10	RECORD DRAWINGS
0	2019-08-08	RFC



NOTES:

THIS APPLICATION IS DESIGNED TO ALLOW THE INSTALLATION OF A STEEL PLATE OVER THE OPENING DURING NON-WORKING HOURS. THE ABOVE CONDITIONS WITH THE STEEL PLATE PLACED ON THE TIMBERS IS NOT DESIGNED TO SUPPORT TRAFFIC CONDITIONS DURING THE WINTER MONTHS.

THIS APPLICATION MAY BE USED ON ANY AND ALL CONDUIT FORMATIONS

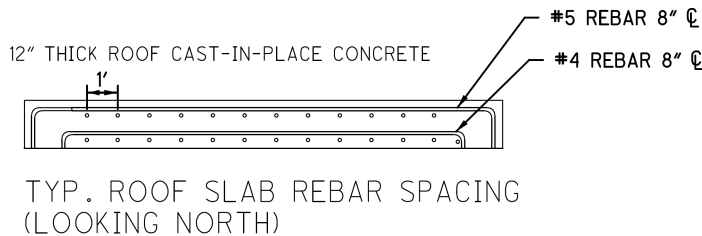
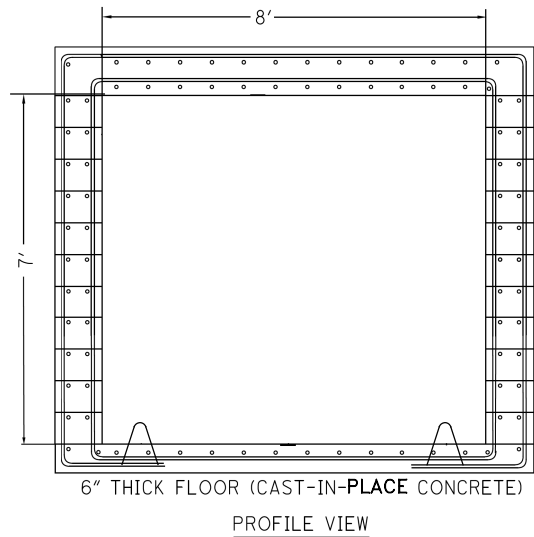
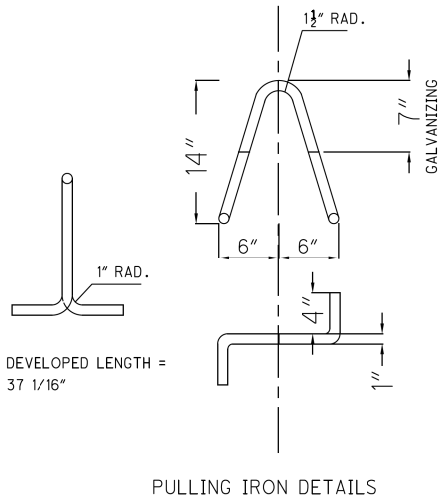
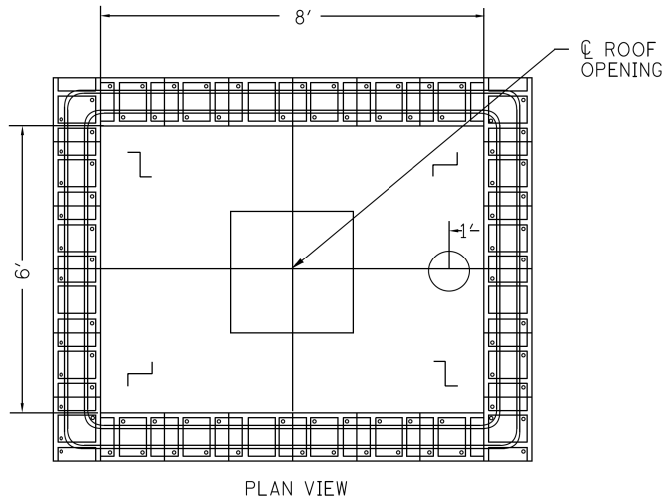
TIMBERS MUST SPAN OPEN TRENCH AS SHOWN ABOVE. SIZE TIMBER FOR LOAD BEING SUPPORTED.

USE 2" SHEETHING ON BOTH SIDES AND BOTTOM OF CONDUIT SYSTEM.

SIZE ROPE FOR LOAD BEING SUPPORTED.

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NO.	DATE	DESCRIPTION
ISSUE RECORD		

SAMPLE
BUILT-IN-PLACE CMU MANHOLES DETAILS
FOR 6'x8' 6'x10' 8'x10'
(6'x8' SHOWN)



MATERIAL - 1" DIA. HOT ROLLED STEEL

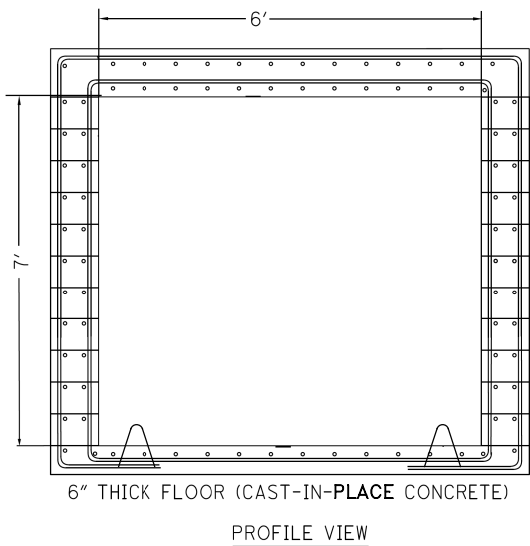
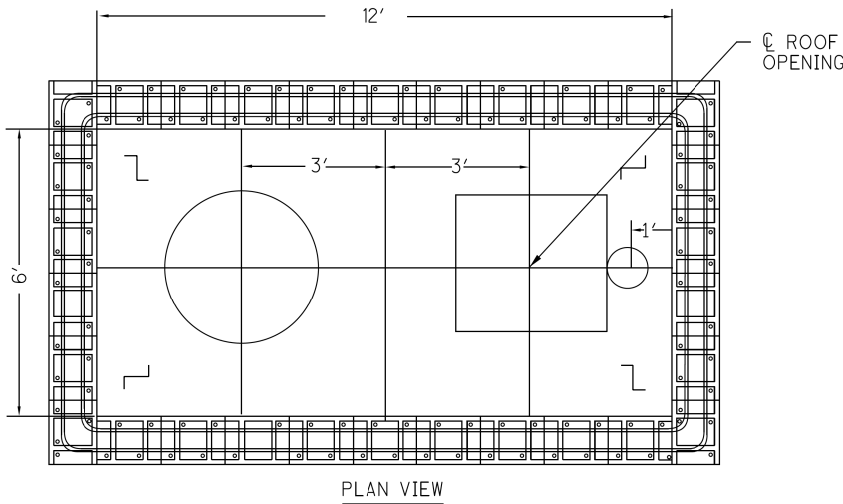
FOR BUILT IN PLACE MANHOLES, CABLE PULLING IRONS SHALL BE INSTALLED IN THE MANHOLE FLOOR 12" AWAY FROM THE WALL, DIRECTLY OPPOSITE ALL DUCT FORMATIONS AND 12" FROM THE ADJACENT WALL WHEN DUCTS ENTER THE MANHOLE AT RIGHT ANGLES.

SAMPLE C.M.U. MANHOLE DETAILS
SEE PLAN SPECIFIC CMU MANHOLE DETAILS
PRECAST SLAB DESIGN PER ASTM C858-10E1.

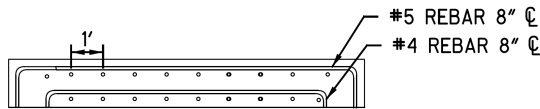
GENERAL NOTES:

- USE 12" X 8" X 16" REBAR BLOCKS (NORMAL WEIGHT, HIGH STRENGTH - 4000PSI)
- ALL VOIDS ARE TO BE FILLED WITH GROUT.
- EXTRA REINFORCEMENT TO BE INSTALLED AROUND ALL OPENINGS.
- HIGH STRENGTH CONCRETE TO BE USED IN FLOOR AND ROOF.
- OUTER RING REINFORCEMENT
A. #5 REBAR, 8" ON-CENTER
B. WALL REINFORCEMENT TO EXTEND INTO FLOOR AND ROOF WITH MINIMUM OVERLAP OF 26".
C. FLOOR AND ROOF REINFORCEMENT TO EXTEND INTO WALLS WITH MINIMUM OVERLAP OF 26".
- INNER RING REINFORCEMENT
A. #4 REBAR, 8" ON-CENTER
B. WALL REINFORCEMENT TO EXTEND INTO FLOOR AND ROOF WITH MINIMUM OVERLAP OF 30".
C. FLOOR AND ROOF REINFORCEMENT TO EXTEND INTO WALLS WITH MINIMUM OVERLAP OF 30".

SAMPLE
BUILT-IN-PLACE CMU MANHOLES DETAILS
FOR 6'x12' 8'x12'
(6'x12' SHOWN)

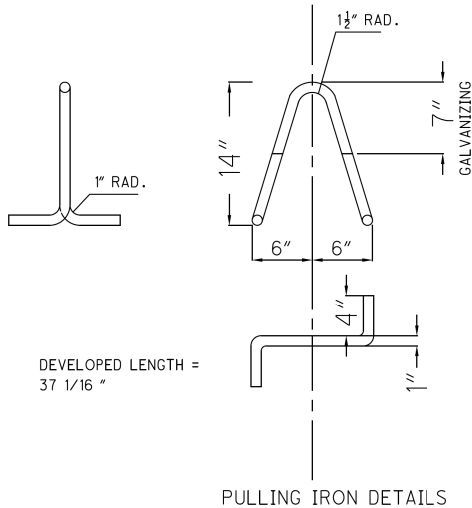


12" THICK ROOF CAST-IN-PLACE CONCRETE



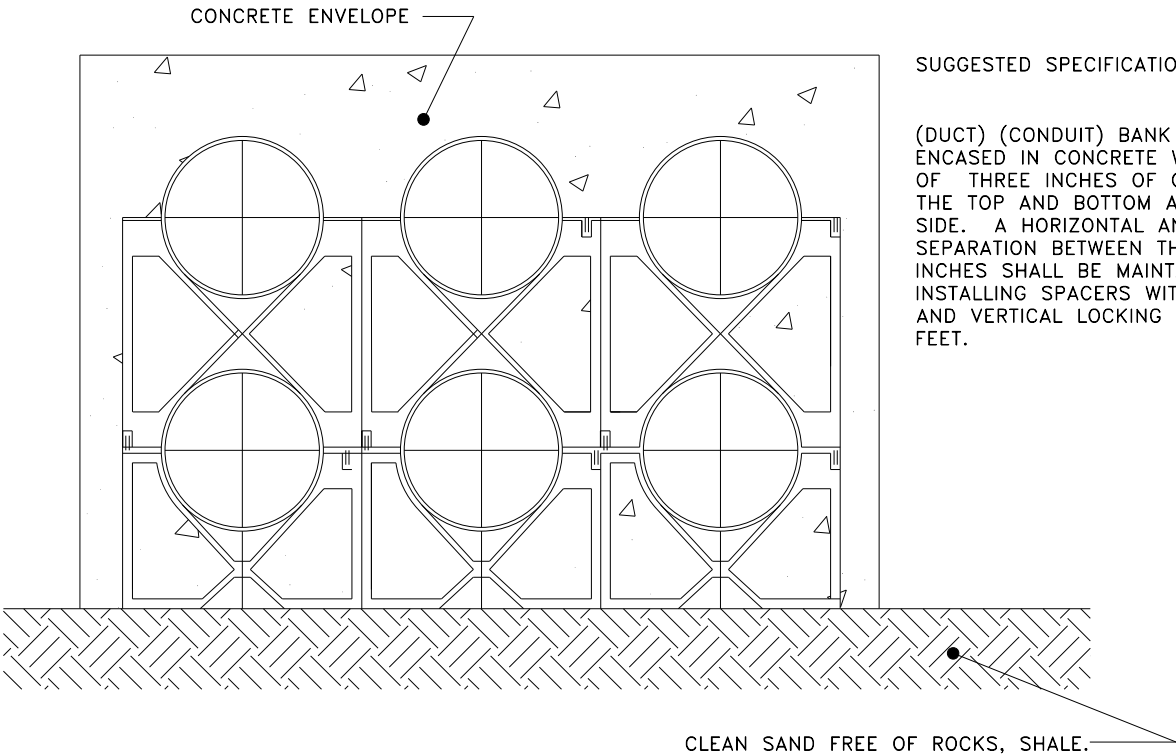
MATERIAL - 1" DIA. HOT ROLLED STEEL

FOR BUILT IN PLACE MANHOLES, CABLE PULLING IRONS SHALL BE INSTALLED IN THE MANHOLE FLOOR 12" AWAY FROM THE WALL, DIRECTLY OPPOSITE ALL DUCT FORMATIONS AND 12" FROM THE ADJACENT WALL WHEN DUCTS ENTER THE MANHOLE AT RIGHT ANGLES.



NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

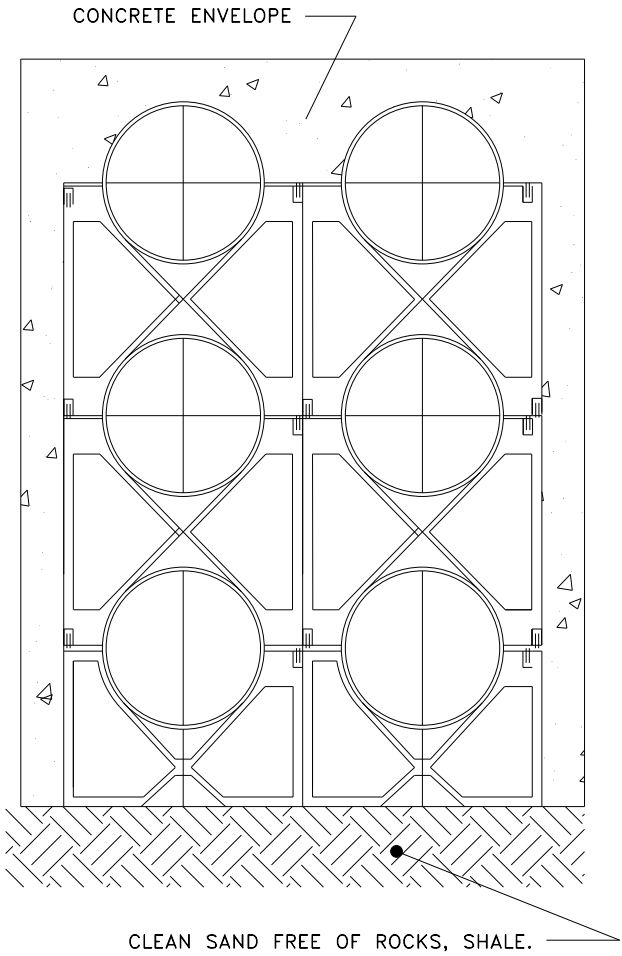
TYPICAL SNAP-LOC NONMETALLIC SPACER INSTALLATION



SUGGESTED SPECIFICATIONS

(DUCT) (CONDUIT) BANK SHALL BE ENCASED IN CONCRETE WITH A MINIMUM OF THREE INCHES OF CONCRETE AT THE TOP AND BOTTOM AND ON EACH SIDE. A HORIZONTAL AND VERTICAL SEPARATION BETWEEN THE DUCTS OF 2 INCHES SHALL BE MAINTAINED BY INSTALLING SPACERS WITH HORIZONTAL AND VERTICAL LOCKING INTERVALS OF 8 FEET.

TYPICAL SNAP-LOC NONMETALLIC SPACER INSTALLATION



SUGGESTED SPECIFICATIONS

(DUCT) (CONDUIT) BANK SHALL BE ENCASED IN CONCRETE WITH A MINIMUM OF THREE INCHES OF CONCRETE AT THE TOP AND BOTTOM AND ON EACH SIDE. A HORIZONTAL AND VERTICAL SEPARATION BETWEEN THE DUCTS OF 2 INCHES SHALL BE MAINTAINED BY INSTALLING SPACERS WITH HORIZONTAL AND VERTICAL LOCKING INTERVALS OF 8 FEET.

SNAP-LOC SPACERS ARE DESIGNED SPECIFICALLY FOR USE WITH NONMETALLIC DUCT.

THE SPACERS AND REBAR HOLDER ARE DESIGNED WITH A DOVETAIL TONGUE AND GROOVE FEATURE FOR EASY INSTALLATION.



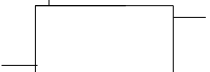
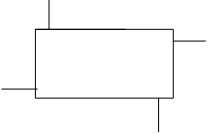

IF REQUIRED TO PERMANENTLY FIX THE POSITION OF A GROUP OF SPACERS AND/OR REBAR HOLDER THE FOLLOWING ARE RECOMMENDED PROCEDURES.

1. USE QUICK-SET CEMENT GLUE DURING ASSEMBLY OR SPOT GLUE AFTER ASSEMBLY TO SECURE
2. DURING ASSEMBLY DEFORM THE EDGE OF THE TONGUE OR GROOVE PORTION OF THE DOVETAIL SLIDE WITH A PAIR OF PLIERS OR SIMILAR TOOL. THIS DEFORMATION WILL CREATE AN INTERFERENCE RESTRICTING MOVEMENT.
3. AN ASSEMBLED SYSTEM MAY BE WIRED TOGETHER FOR ADDITIONAL SUPORT.

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BUILT-IN-PLACE CMU MANHOLES DETAILS
FOR 6'x12' 8'x12' (6'x12' SHOWN)

BUILT-IN-PLACE CMU MANHOLES DETAILS
FOR 6'x8' 6'x10' 8'x10' (6'x8' SHOWN)

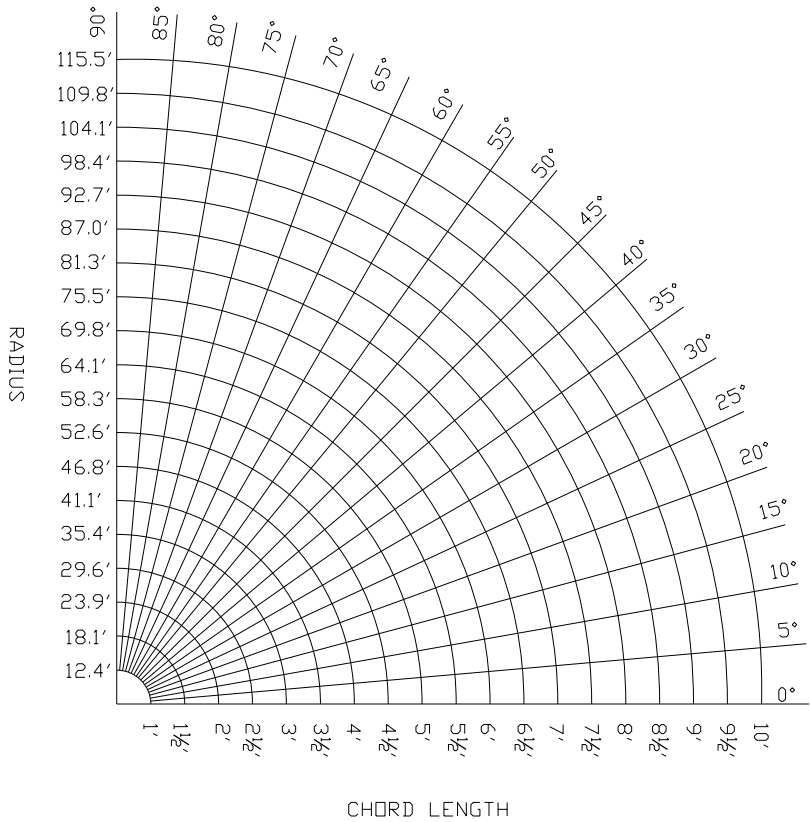
	No. OF DUCTS	No. LAT. DUCTS	4" DUCTS			5" DUCTS			6" DUCTS		
			WIDTH	LENGTH	HEAD ROOM	WIDTH	LENGTH	HEAD ROOM	WIDTH	LENGTH	HEAD ROOM
Straight Through 	2		6'	8'	7'	6'	8'	7'	6'	8'	7'
	4		6'	8'	7'	6'	8'	7'	6'	8'	7'
	6		6'	8'	7'	6'	8'	7'	6'	8'	7'
	8		6'	8'	7'	6'	8'	7'	6'	8'	7'
	9		6'	10'	7'	8'	10'	10'	8'	10'	10'
	12		8'	10'	7'	8'	10'	10'	8'	10'	10'
90 Deg. Corner 	2		6'	8'	7'	6'	8'	7'	6'	8'	7'
	4		6'	8'	7'	6'	8'	7'	6'	8'	7'
	6		6'	8'	7'	6'	8'	7'	6'	8'	7'
	8		6'	8'	7'	6'	8'	7'	6'	8'	7'
	9		8'	10'	7'	8'	10'	10'	8'	12'	10'
	12		8'	10'	7'	8'	10'	10'	Consult with UG Engineering		
3 Way * 	4	2	6'	12'	7'	6'	12'	7'			
	6	2	6'	12'	7'	8'	12'	7'			
	6	4	6'	12'	7'	8'	12'	7'			
	9	4	6'	12'	10'	8'	12'	10'			
	9	6	6'	12'	10'	8'	12'	10'			
	12	6	Consult with Underground Engineering						Consult with UG Engineering		
12	9	9									
	12	9									
4 Way * 	4	4	6'	12'	7'	6'	12'	7'			
	6	6	6'	12'	7'	8'	12'	10'			
	9	9	Consult with Underground Engineering						Consult with UG Engineering		
	12	12									
Angled Corner 	4		6'	8'	7'	8'	10'	7'			
	6		8'	10'	7'	8'	12'	7'			
	9		8'	10'	10'	8'	12'	10'	Consult with UG Engineering		
	12		8'	12'	10'	8'	12'	10'			

All dimensions given are minimum.
These manhole sizes are based on a cable bending radius of 25" or less.
For other variations please contact Underground Engineering for assistance.
* All lateral ducts are to be at an elevation different from those of the main run.

SPECIAL NOTE:
For additional manhole information see Norwalk Concrete Industries Precast Products Book for details.

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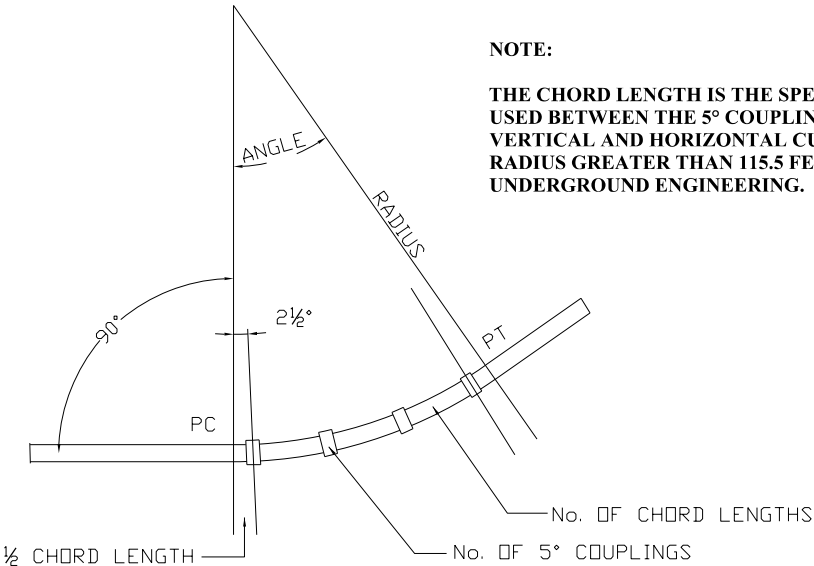
CONDUIT RADUIS CHART AND CHORD LENGTH DATA



ANGLE	5° COUPLINGS	No. OF CHORDS
10°	2	1
15°	3	2
20°	4	3
25°	5	4
30°	6	5
35°	7	6
40°	8	7
45°	9	8
50°	10	9
55°	11	10
60°	12	11
65°	13	12
70°	14	13
75°	15	14
80°	16	15
85°	17	16
90°	18	17

MIN. RADIUS	LENGTH OF CHORD
12.4'	1'
18.1'	1½'
23.9'	2'
29.6'	2½'
35.4'	3'
41.1'	3½'
46.8'	4'
52.6'	4½'
58.3'	5'
64.1'	5½'
69.8'	6'
75.5'	6½'
81.3'	7'
87.0'	7½'
95.7'	8'
98.4'	8½'
104.1'	9'
109.8'	9½'
115.5'	10'

TYPICAL CURVE CONSTURCTION USING 5° COUPLINGS



NOTE:
THE CHORD LENGTH IS THE SPECIFIED LENGTH OF DUCT TO BE USED BETWEEN THE 5° COUPLINGS TO CONSTRUCT BOTH VERTICAL AND HORIZONTAL CURVES. FOR CURVES HAVING A RADIUS GREATER THAN 115.5 FEET, PLEASE CONSULT WITH UNDERGROUND ENGINEERING.

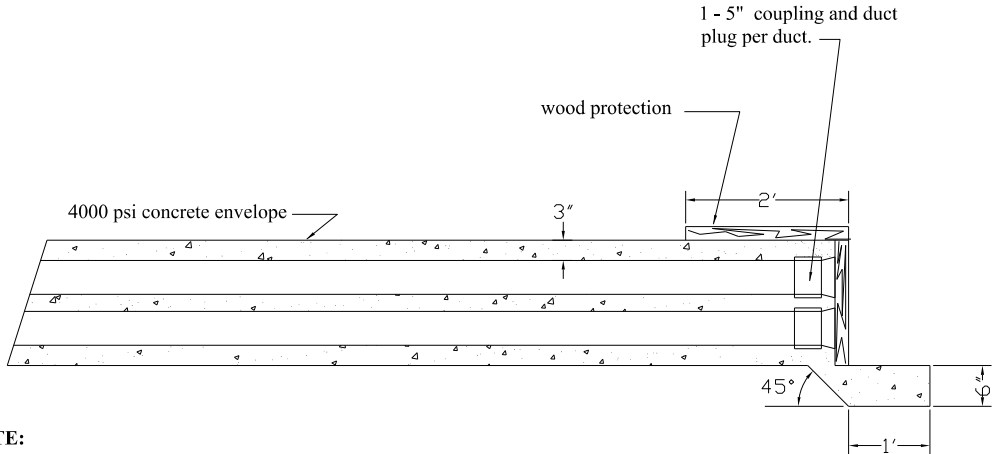


CONDUIT LENGTH	APPROX. OFFSET
1'	0'-1"
5'	0'-5"
10'	0'-10"
15'	1'-4"
20'	1'-9"

NOTE: OFFSET = APPROX. 1" PER CONDUIT FOOT

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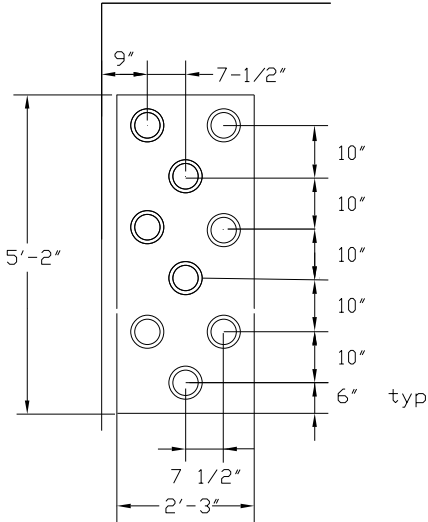
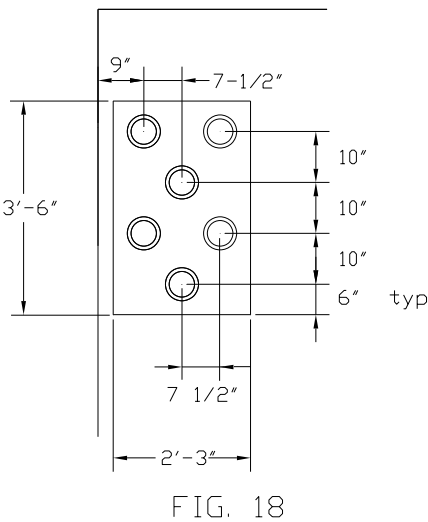
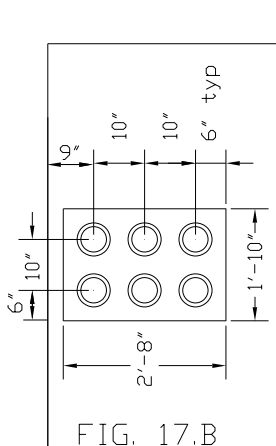
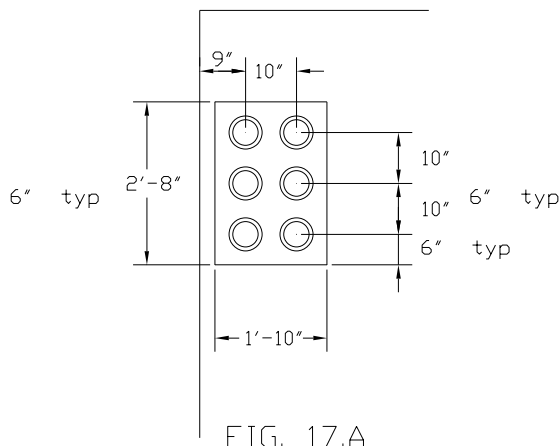
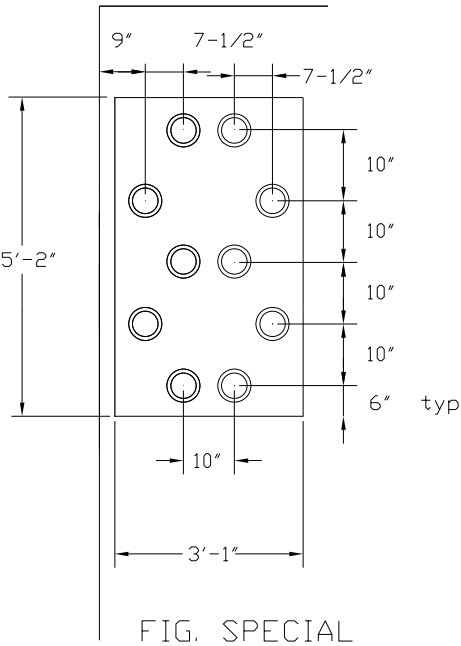
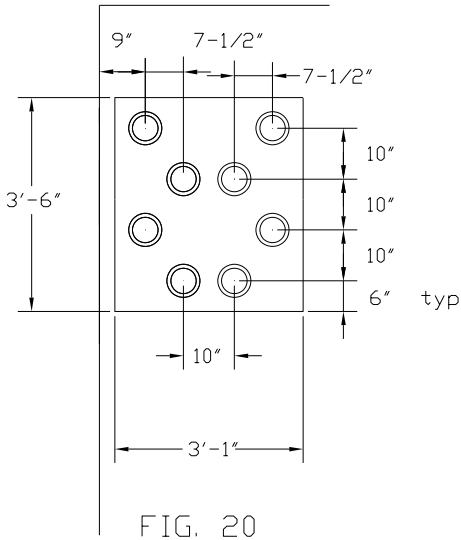
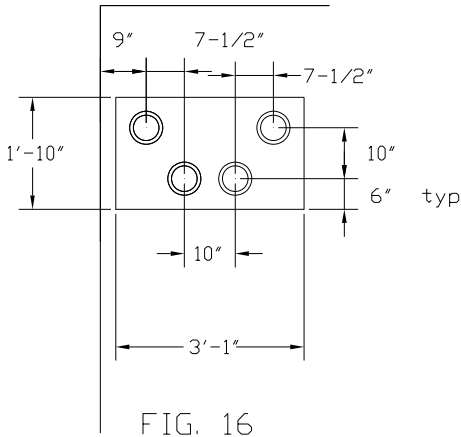
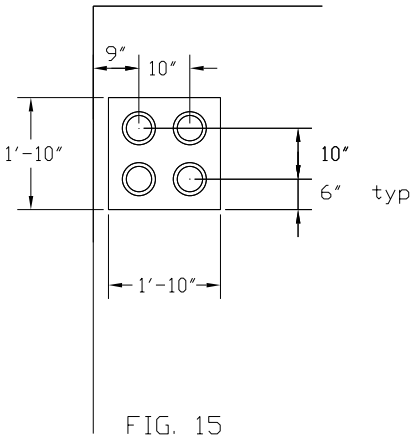
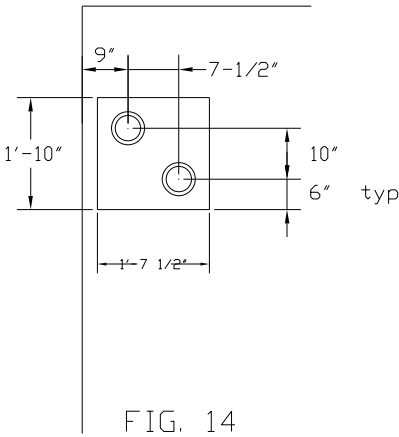
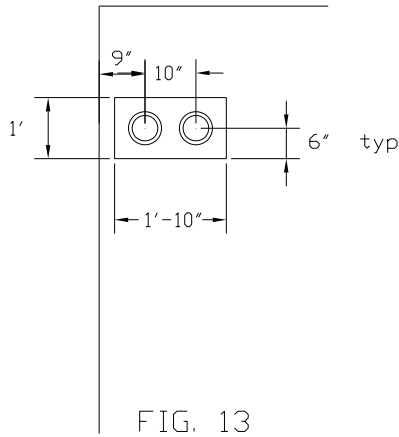
TYPICAL DETAIL FOR
STUBBING CONDUITS



NOTE:

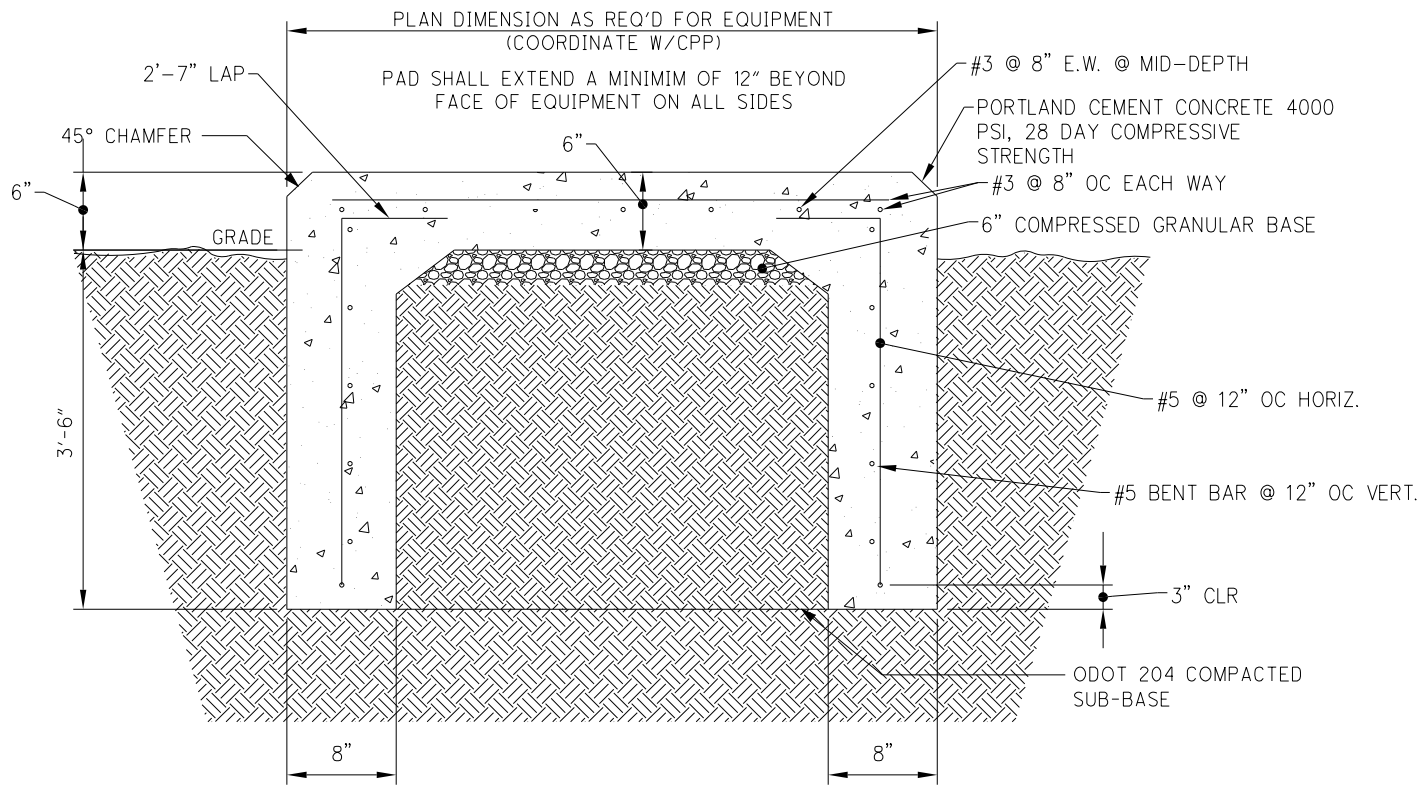
THIS TYPICAL DETAIL SHOULD BE USED IN THE INSTALLATION OF ALL
2", 4", 5", AND 6" DUCTS.

FOR THE HEIGHT AND WIDTH OF THE DUCT BANK SEE THE PLAN SHEETS
OF THE PROJECT.



- 1) All bell end formations are shown facing an inside wall.
- 2) The top row of bell ends shall be at a minimum of 24" below the ceiling line unless noted.
- 3) Bell ends shall not be installed by the precast manhole manufacturer. Should this be an option, please consult with Underground Engineering for details.
- 4) Formations are designed to be used in a standard 6' x 8' x 7' headroom manhole unless noted.

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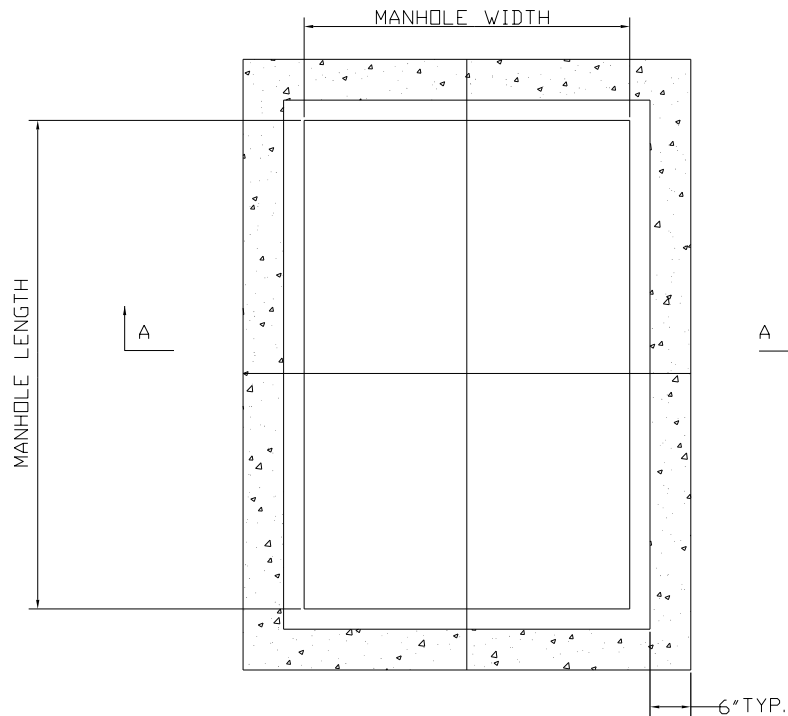
- GENERAL DETAIL NOTES:
- A. COORDINATE THE REQUIRED OPENING(S) IN THE EQUIPMENT BASE WITH THE EQUIPMENT BEING PROVIDED. TO BE APPROVED BY CPP ENGINEERING ON A CASE-BY-CASE BASIS.
 - B. SECTION INDICATES CONSTRUCTION OF FOOTING. THE FOOTING IS TO BE CONSTRUCTED ON ALL SIDES OF THE PAD

DETAIL-PADMOUNT TRANSFORMER CONCRETE BASE

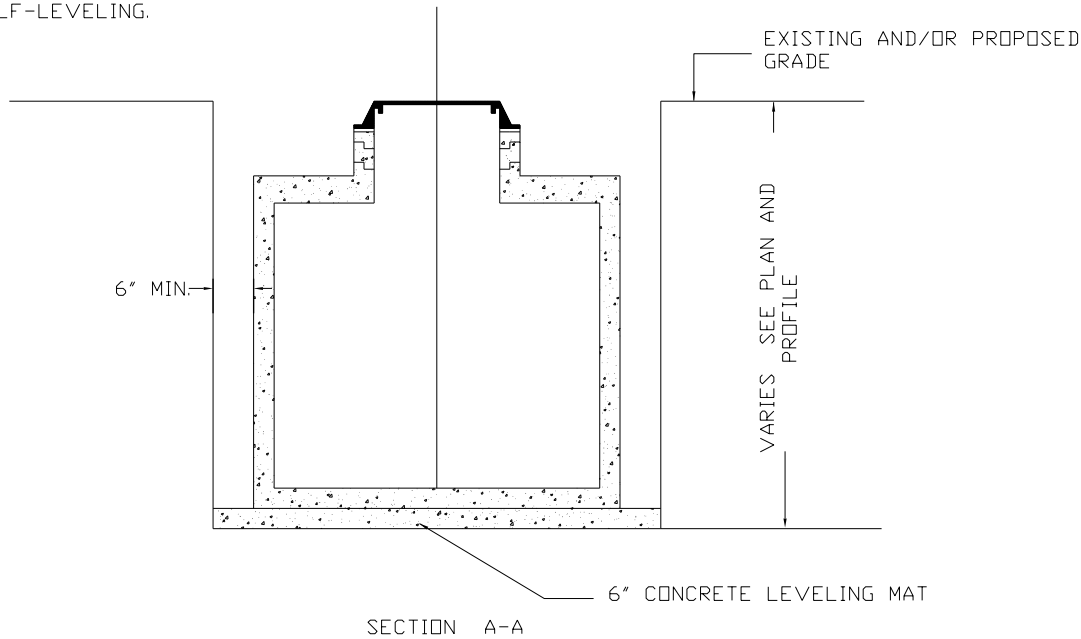
SCALE: NTS

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ISSUE RECORD		

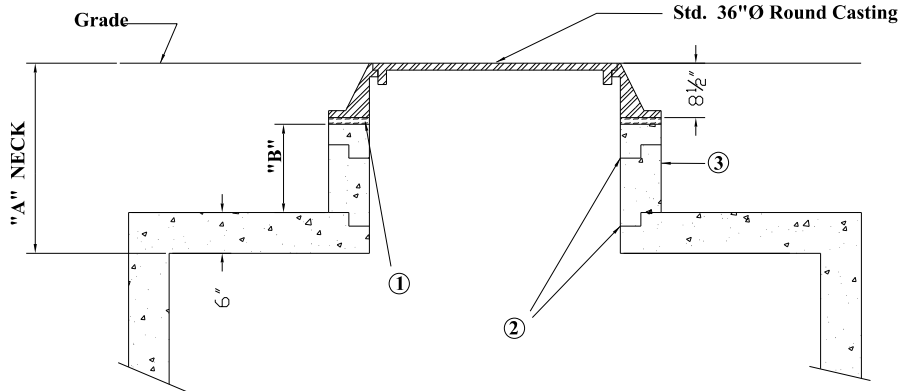
TYPICAL MANHOLE INSTALLATION DETAILS



NOTE: USE 4000 PSI CONCRETE. ADD SUFFICIENT AMOUNT OF WATER; MIX TO BE FLOWABLE AND SELF-LEVELING.



PRECAST NECK RING SCHEDULE



NOTES:

- 1 Bricks or blocks to be flush with inside face of neck rings.
- 2 Place sealant in all neck ring joints before assembly.
- 3 Apply 1/2" thick layer of waterproof mortar to outside surface of neck. Waterproofing additive to be added to mortar per manufacturer's recommendation.

"A" NECK	"B" NECK RING HEIGHT	PREFERRED RING COMBINATION
MINIMUM 2' - 6" *	15"	1 - 3" CAP RING 1 - 12" NECK RING
3' - 0"	21"	1 - 3" CAP RING 2 - 9" NECK RINGS
4' - 0"	33"	1 - 3" CAP RING 1 - 6" NECK RING 2 - 12" NECK RINGS

NOTE:

For intermediate neck heights, please consult with Underground Engineering.

CPP standard round cover and casting --- East Jordan Iron Works No. 1585.

* CPP minimum standard neck.

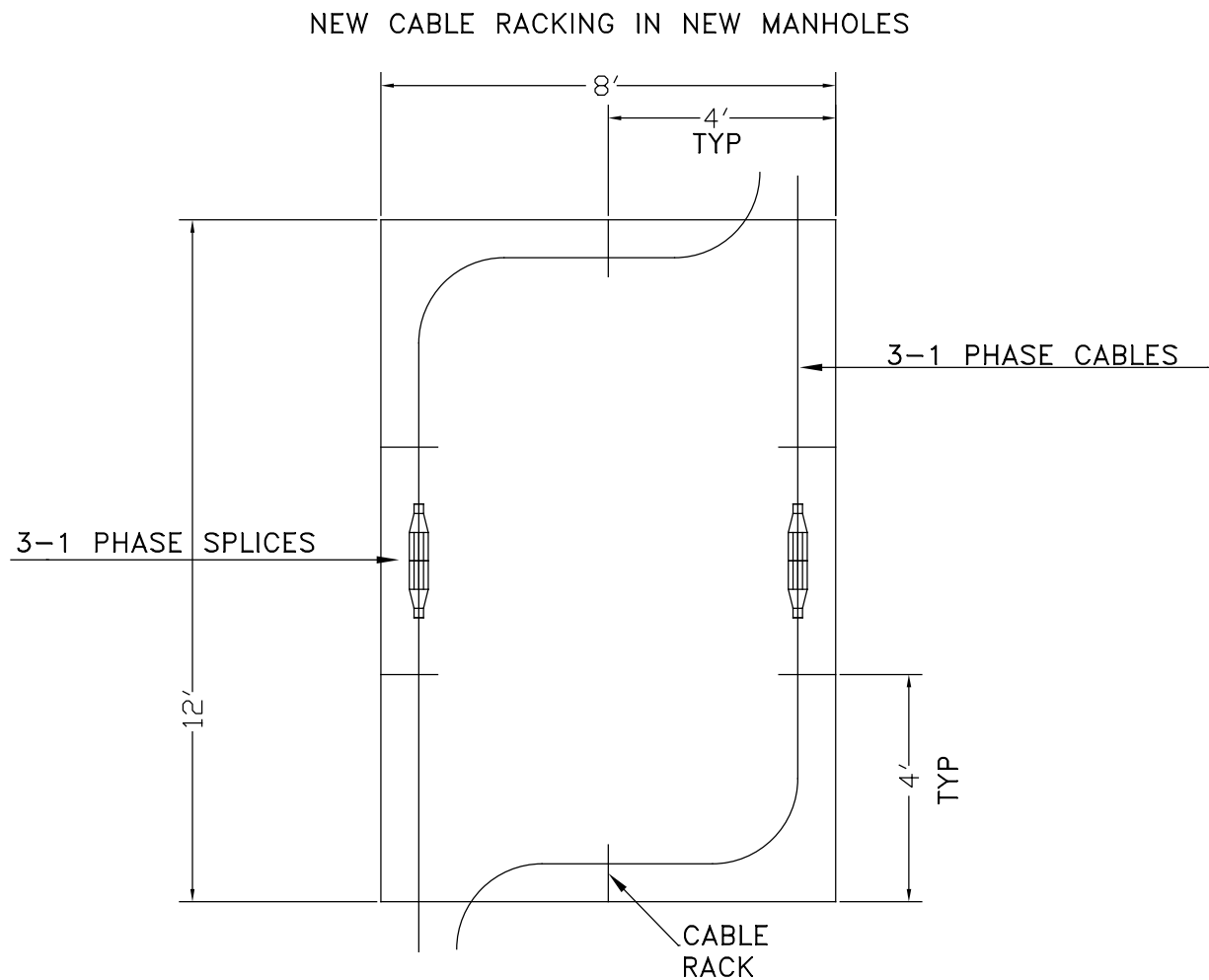
REVISED NECK RING SCHEDULE 7-22-11

RING SIZE (EFFECTIVE HEIGHT)	WEIGHT	NORWALK CONCRETE CATALOG NO.
3"	265#	R-3-37-C
6"	425#	R-6-37-N
9"	635#	R-9-37-N
12"	845#	R-12-37-N

NOTE:

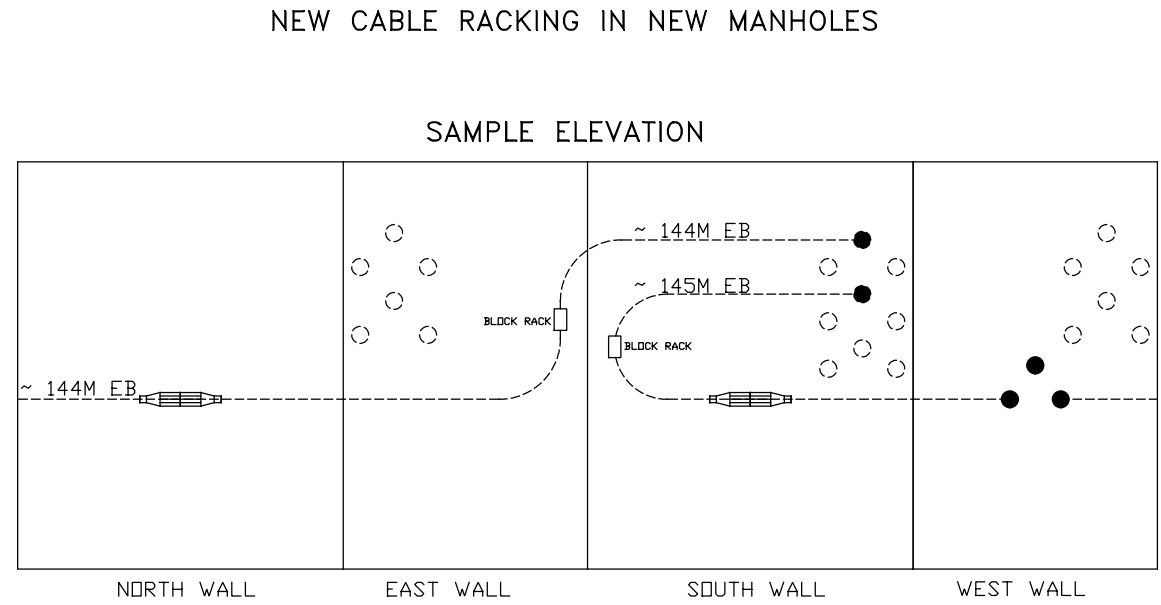
The use of cap rings and neck rings by other manufacturers must be equivalent to those of Norwalk Concrete Industries. See above for Norwalk cataloge numbers.

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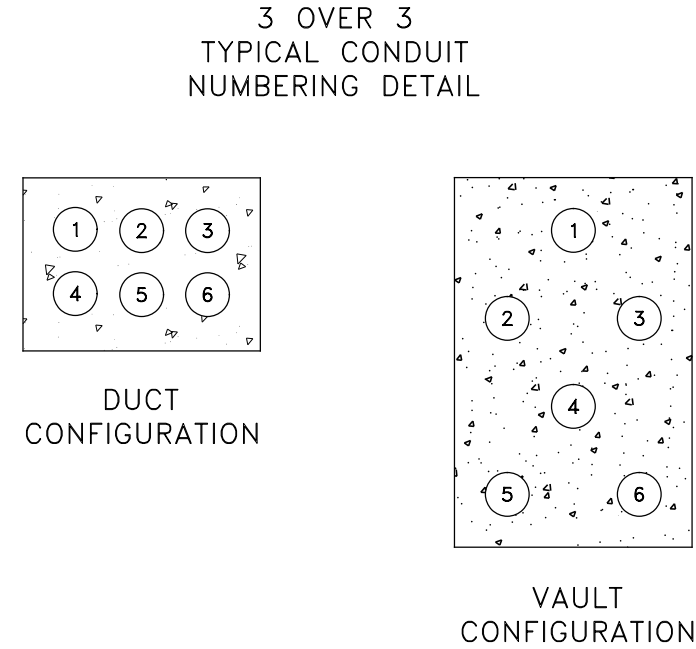


TYPICAL DETAIL OF CABLE RACKING IN NEW MANHOLES (LOOKING DOWN INTO MANHOLE). ALL MEASUREMENTS FROM INSIDE WALLS.

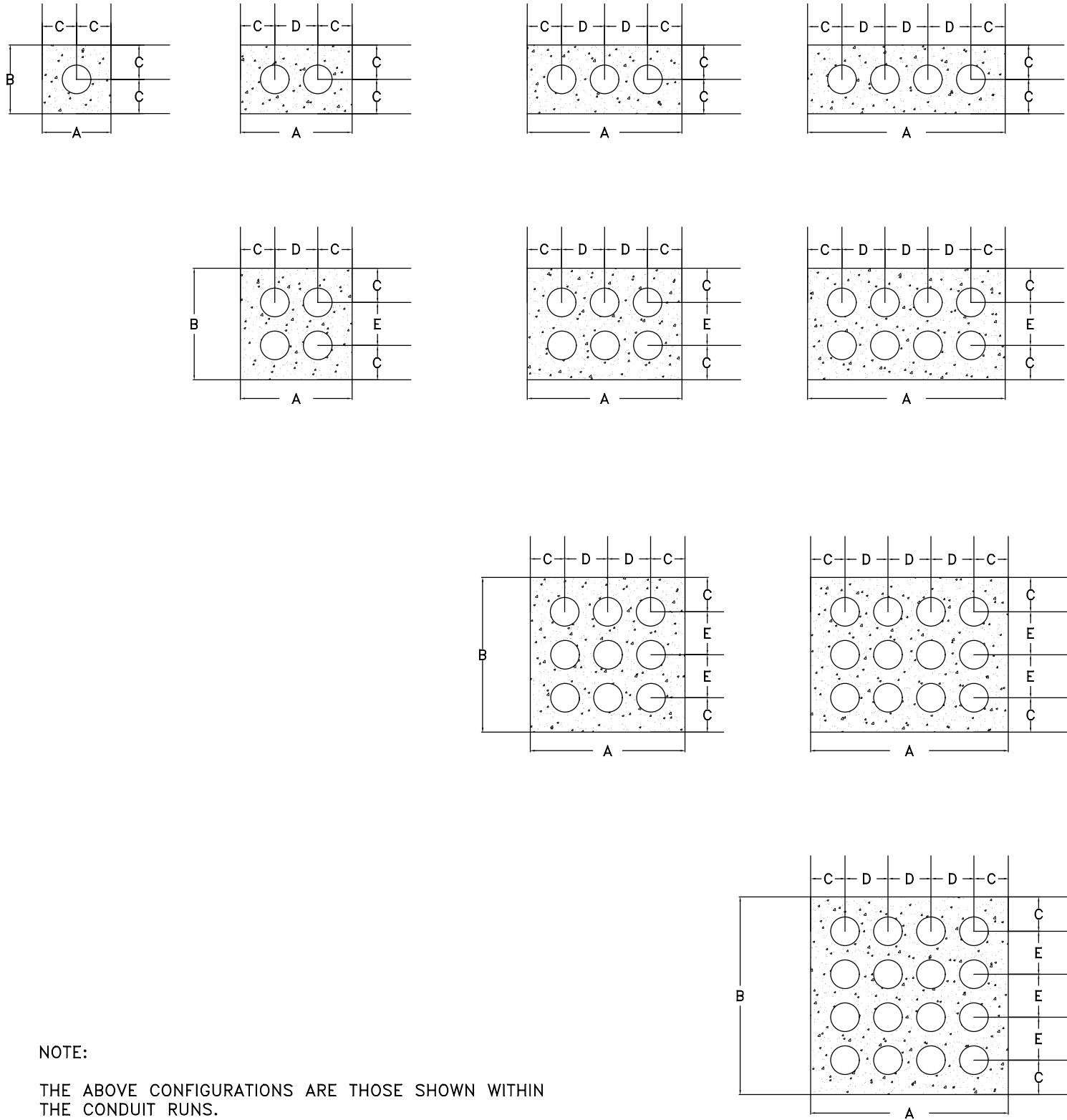
RACKS ARE FASTENED ON WALLS AT 6" FROM CEILING AND 6" ABOVE FLOOR.



- SAMPLE MATERIAL LIST
- 6-750KCMIL-1C-CU-15KV STRAIGHT SPLICES
 - 2-8" OFFSET BLOCK RACKS
 - 6-6' CABLE RACKS AND ASSOCIATED ARMS



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NOTE:

THE ABOVE CONFIGURATIONS ARE THOSE SHOWN WITHIN THE CONDUIT RUNS.

DIMENSIONS ARE BASED ON THE USE OF CARLON SNAP-LOC INTERMEDIATE AND BASE SPACERS.

SEE MANHOLE DETAILS FOR CONDUIT CONFIGURATION AT MANHOLE WALLS

NO REINFORCEMENT RODS ARE TO BE USED WITHIN THE CONDUIT FORMATIONS

TYPE W x H	4" PVC CONDUITS				
	A	B	C	D	E
1 x 1	10"	10"	5"	—	—
2 x 1	16.75"	10"	5"	6.75"	—
3 x 1	23.5	10"	5"	6.75"	—
4 x 1	30.25"	10"	5"	6.75"	—
2 x 2	16.75"	16.51"	5"	6.75"	6.51"
3 x 2	23.5	16.51"	5"	6.75"	6.51"
4 x 2	30.25"	16.51"	5"	6.75"	6.51"
3 x 3	23.5	23"	5"	6.75"	6.51"
4 x 3	30.25"	23"	5"	6.75"	6.51"
4 x 4	30.25"	29.5"	5"	6.75"	6.51"

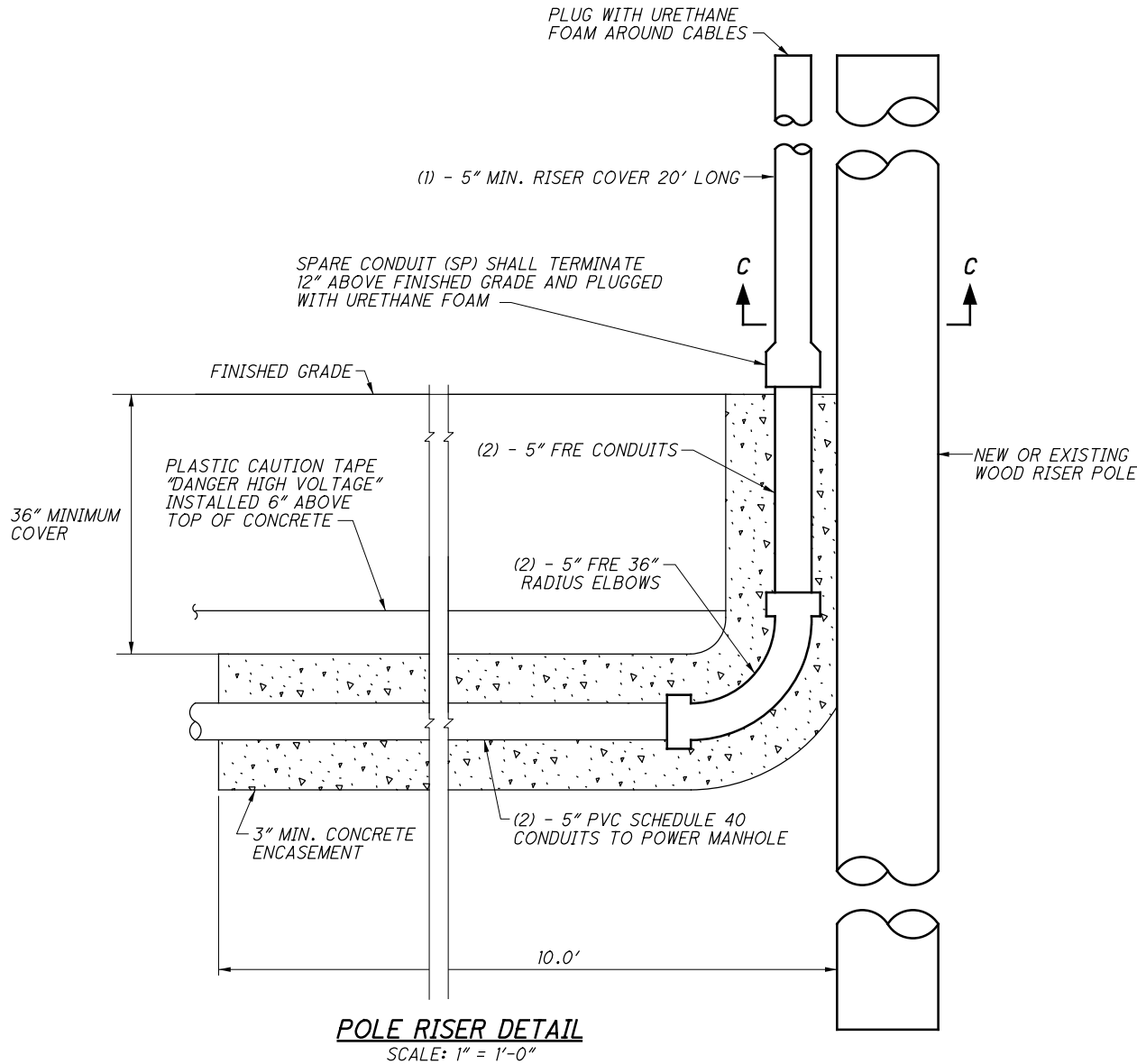
TYPE W x H	5" PVC CONDUITS				
	A	B	C	D	E
1 x 1	12"	12"	6"	—	—
2 x 1	19.81"	12"	6"	7.81"	—
3 x 1	27.62"	12"	6"	7.81"	—
4 x 1	35.43"	12"	6"	7.81"	—
2 x 2	19.81"	19.57"	6"	7.81"	7.57"
3 x 2	27.62"	19.57"	6"	7.81"	7.57"
4 x 2	35.43"	19.57"	6"	7.81"	7.57"
3 x 3	27.62"	27.14"	6"	7.81"	7.57"
4 x 3	35.43"	27.14"	6"	7.81"	7.57"
4 x 4	35.43"	34.71"	6"	7.81"	7.57"

TYPE W x H	6" PVC CONDUITS				
	A	B	C	D	E
1 x 1	13"	13"	6.5"	—	—
2 x 1	21.88"	13"	6.5"	8.88"	—
3 x 1	30.76"	13"	6.5"	8.88"	—
4 x 1	38.5"	13"	6.5"	8.88"	—
2 x 2	21.88"	21.64"	6.5"	8.88"	8.64"
3 x 2	30.76"	21.64"	6.5"	8.88"	8.64"
4 x 2	39.64"	21.64"	6.5"	8.88"	8.64"
3 x 3	30.76"	30.28"	6.5"	8.88"	8.64"
4 x 3	39.64"	30.28"	6.5"	8.88"	8.64"
4 x 4	39.64"	38.92"	6.5"	8.88"	8.64"

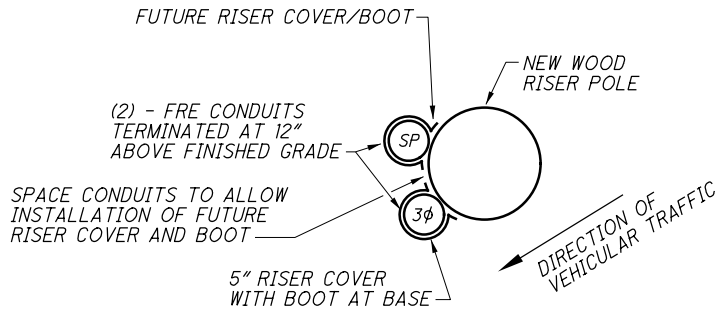
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

LEGEND:

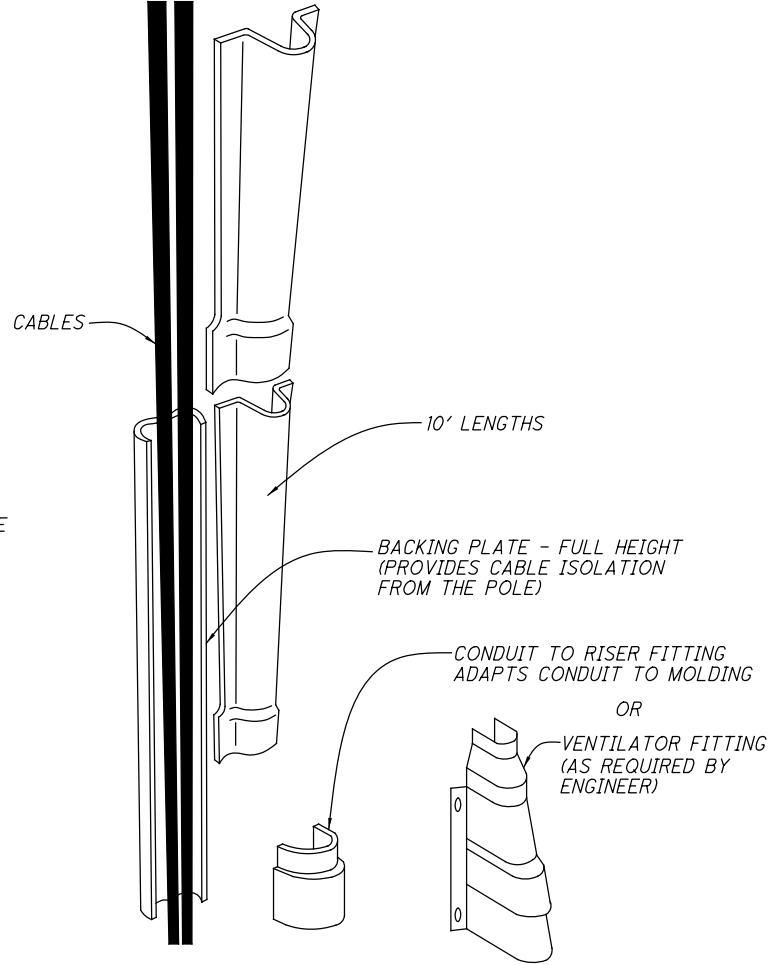
FRE - FIBERGLASS REINFORCED EPOXY CONDUIT
SP - SPARE



NOTES:
SEE RISER COVER DETAIL FOR
ADDITIONAL INFORMATION.



SECTION C-C
SCALE: 1" = 1'-0"

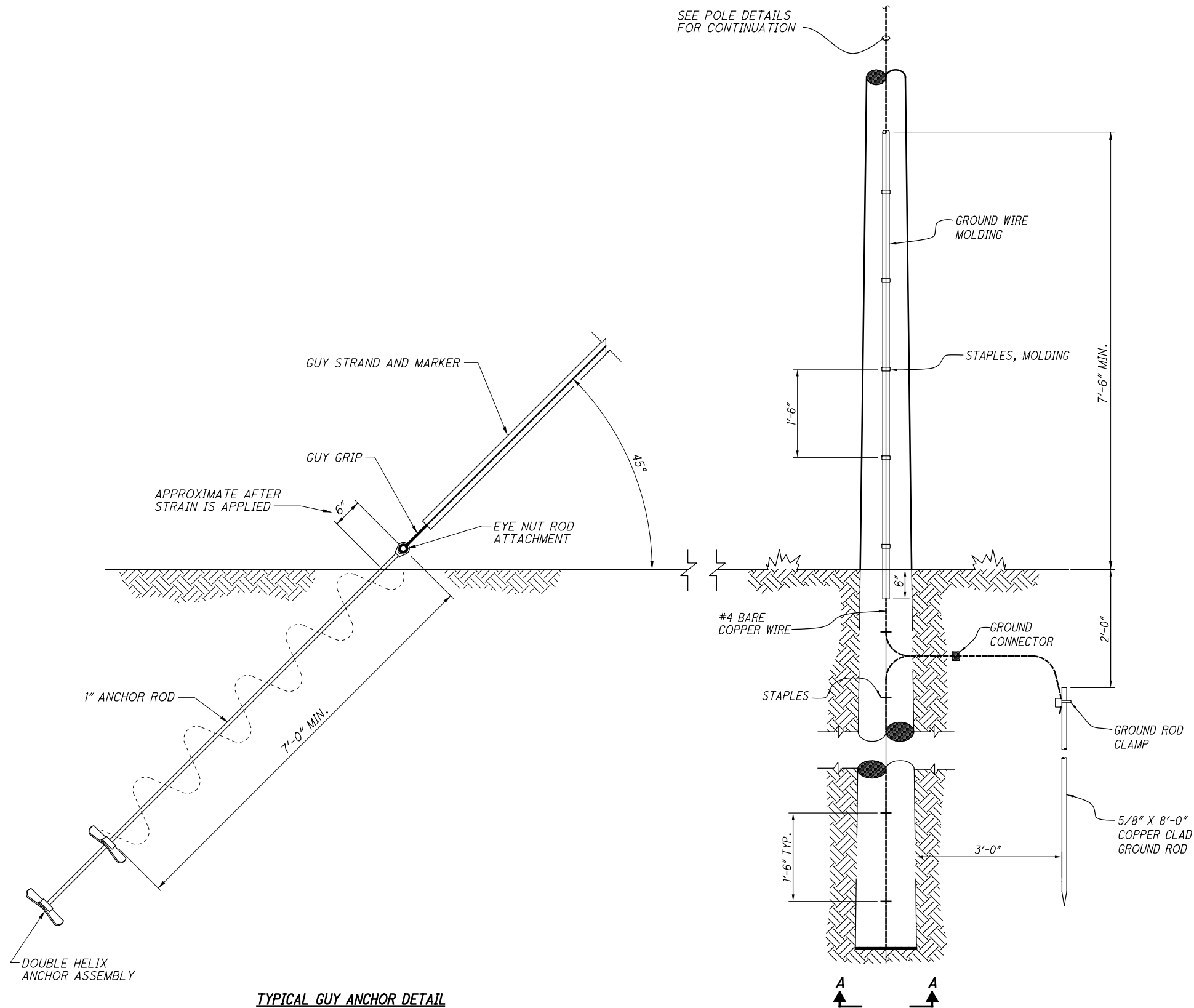


NOTES:

1. INSTALL VENTILATOR OR CONDUIT TO RISER FITTINGS AT THE BASE OF THE POLE.
2. NAIL BACKING PLATE SECTIONS TO THE SURFACE OF THE POLE. THREE NAIL HOLES PROVIDED IN EACH SECTION. PLACE THE "U" SECTIONS OVER THE CABLE AND BALL PLATE, WITH BELLED END AT THE BOTTOM, AND ATTACH USING 1/4" LAG BOLTS, GALVANIZED PER CMS 711.02
3. PRIME PV-MOLD SCHEDULE 40 POLE RISER SYSTEM OR EQUAL.
4. SIZE AS REQUIRED BY CONDUCTORS OR CONDUITS.
5. REFER TO POLE RISER DETAIL FOR ADDITIONAL INFORMATION.

RISER COVER DETAIL

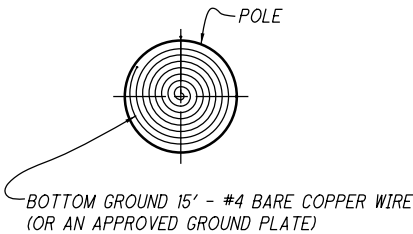
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



TYPICAL GUY ANCHOR DETAIL

NOTE:
REFER TO CPP POLE DETAIL.

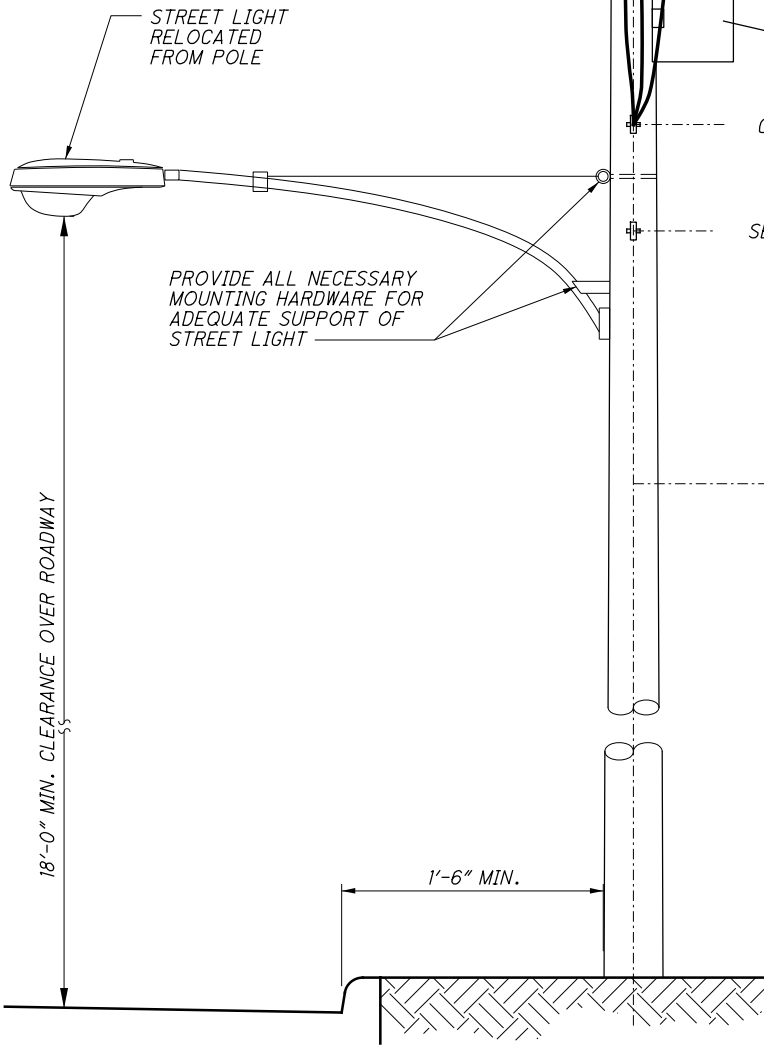
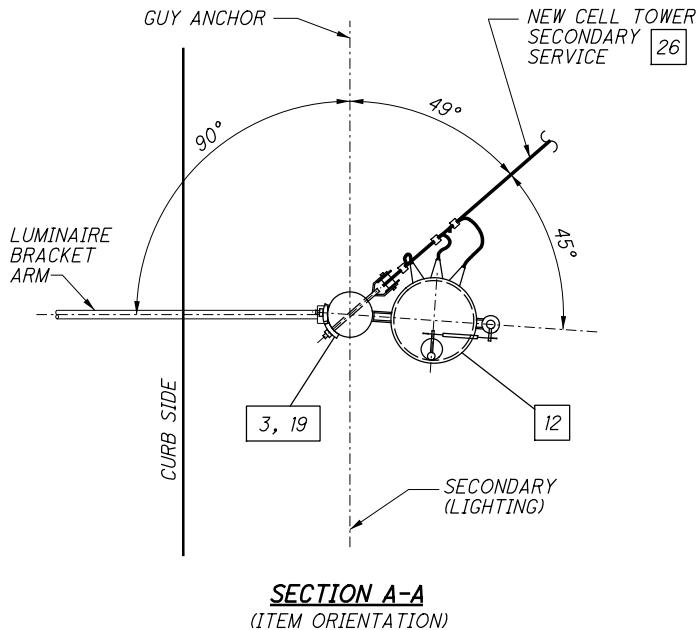
POLE GROUNDING DETAIL
(TYPICAL ALL POLES)



SECTION A-A

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

ITEM	MATERIAL
1	BOLT, MACHINE 5/8" x REQUIRED LENGTH
2	WASHER, 2 1/4" SQUARE
3	WASHER, 3" SQUARE, CURVED
4	BOLT, CARRIAGE, 1/2" x 4 1/2"
5	SCREW, LAG, 1/2" x 4" FETTER DRIVE AND POINT
6	CONNECTORS, GROUNDING NO. 4 AWG COPPER
7	EYE NUT 5/8", OVAL EYE
8	GUY HOOK
9	GUY STRAND
10	LIGHTNING ARRESTER, RELOCATED FROM POLE
11	CUTOUT, FUSE, OPEN LINK, RELOC. FROM POLE
12	TRANSFORMER, RELOCATED FROM POLE
13	CLAMP, DEAD END
14	JUMPERS, STRANDED, AS REQUIRED, NO. 4 AWG COPPER
15	GROUNDING JUMPER, NO. 4 AWG COPPER
16	BOLT DOUBLE ARMING, 5/8" x REQUIRED LENGTH
17	EXISTING PRIMARY CONDUCTORS
18	BRACE, WOOD, 26"
19	LOCKNUTS, SIZE AS REQUIRED
20	3 1/2" x 4 1/2" x 8' WOOD CROSSARM
21	INSULATOR SUSPENSION TYPE, DEADEND
22	EYE BOLT 5/8" x REQUIRED LENGTH
23	CLEVIS, SECONDARY, SWINGING, INSULATED
24	SPLICING SLEEVE
25	COMPRESSION SLEEVE CONNECTORS
26	#26 AWG. ALUMINUM AERIAL TRIPLEX CABLE ACSR
27	GUY STRAIN INSULATOR 36"
28	WASHER 5/8" ROUND FLAT
29	EXISTING SECONDARY (LIGHTING) CONDUCTORS
30	MACHINE BOLT 7/8" x REQUIRED LENGTH
31	LOCK WASHER 7/8"
32	WASHER SQ. CURVED 3 1/2" x 3/8" x 15/16" HOLE
33	WASHER 1/2" ROUND FLAT
34	GRID GAIN
35	GUY GRIP

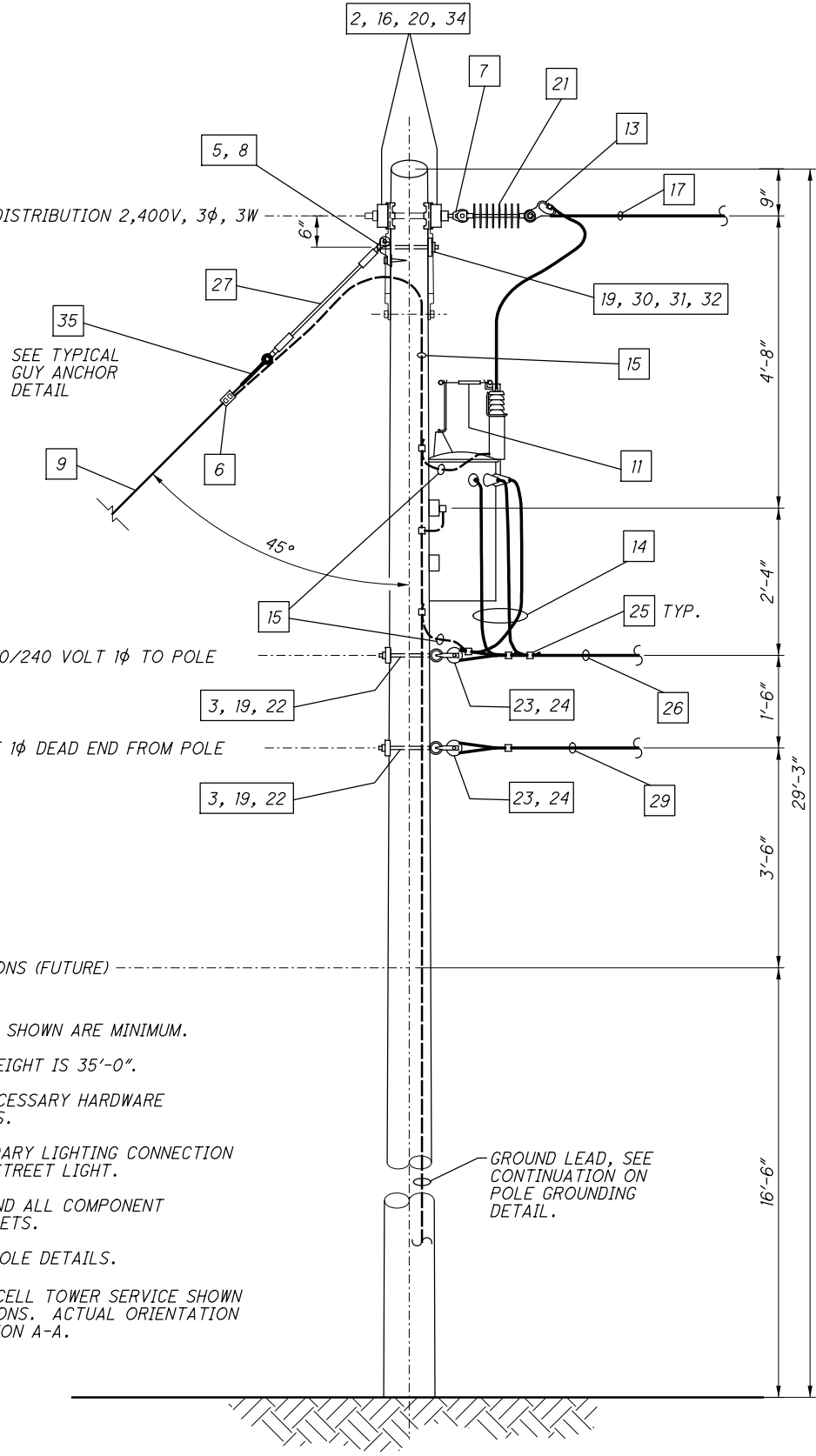


FRONT ELEVATION

- NOTES:**
- ALL DIMENSIONS SHOWN ARE MINIMUM.
 - MINIMUM POLE HEIGHT IS 35'-0".
 - PROVIDE ALL NECESSARY HARDWARE AND CONNECTORS.
 - PROVIDE SECONDARY LIGHTING CONNECTION TO RELOCATED STREET LIGHT.
 - BOND AND GROUND ALL COMPONENT MOUNTING BRACKETS.
 - REFER TO CPP POLE DETAILS.

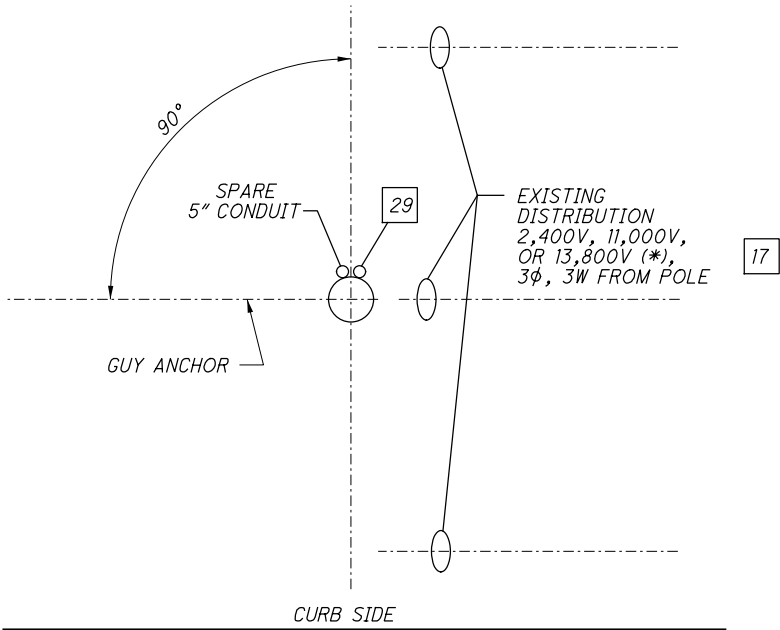
NOTE:
TRANSFORMER AND SECONDARY CELL TOWER SERVICE SHOWN FOR CLARITY ON POLE ELEVATIONS. ACTUAL ORIENTATION OF POLE ITEMS SHOWN IN SECTION A-A.

EXAMPLE CPP POLE DETAIL



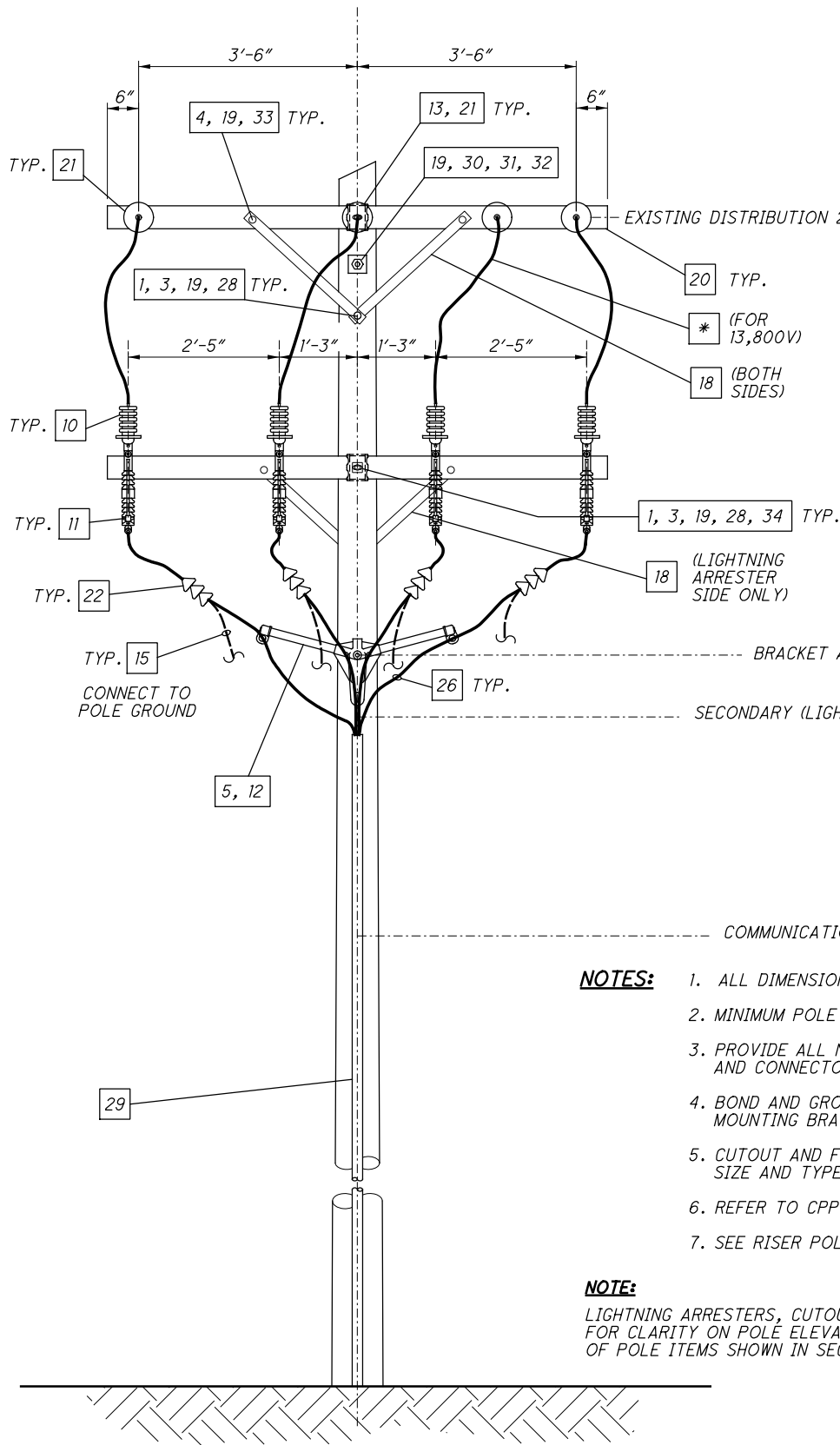
SIDE ELEVATION

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

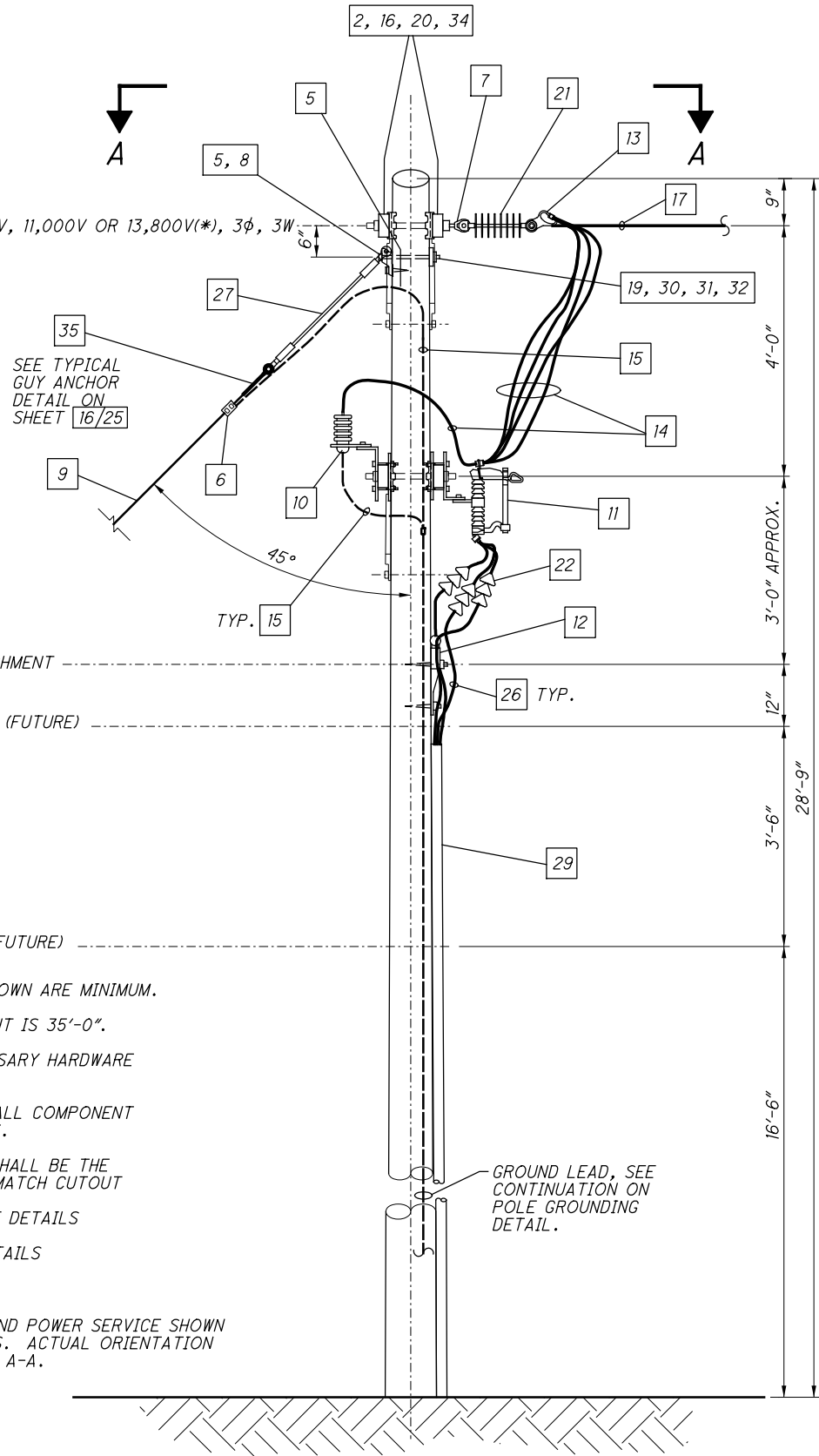


SECTION A-A
(ITEM ORIENTATION)
(LIGHTNING ARRESTERS, CUTOUPS AND
WOOD CROSSARMS NOT SHOWN FOR CLARITY)

ITEM	MATERIAL
1	BOLT, MACHINE 5/8" x REQUIRED LENGTH
2	WASHER, 2 1/4" SQUARE
3	WASHER, 3" SQUARE, CURVED
4	BOLT, CARRIAGE, 1/2" x 4 1/2"
5	SCREW, LAG, 1/2" x 4" FETTER DRIVE AND POINT
6	CONNECTORS, GROUNDING NO. 4 AWG COPPER
7	EYE NUT 5/8", OVAL EYE
8	GUY HOOK
9	GUY STRAND
10	LIGHTNING ARRESTER
11	CUTOUP, LOAD BREAK TYPE WITH FUSE (SEE NOTE 5)
12	CABLE SUPPORT ASSEMBLY
13	CLAMP, DEAD END
14	JUMPERS, STRANDED, AS REQUIRED, NO. 4 AWG COPPER
15	GROUNDING JUMPER, NO. 4 AWG COPPER
16	BOLT DOUBLE ARMING, 5/8" x REQUIRED LENGTH
17	EXISTING PRIMARY CONDUCTORS
18	BRACE, WOOD, 26"
19	LOCKNUTS, SIZE AS REQUIRED
20	3 1/2" x 4 1/2" x 8' WOOD CROSSARM
21	INSULATOR SUSPENSION TYPE, DEADEND
22	CABLE TERMINATOR
23	NOT USED
24	NOT USED
25	NOT USED
26	15 KV PRIMARY CABLE
27	GUY STRAIN INSULATOR 36"
28	WASHER 5/8" ROUND FLAT
29	RISER COVER
30	MACHINE BOLT 7/8" x REQUIRED LENGTH
31	LOCK WASHER 7/8"
32	WASHER SQ. CURVED 3 1/2" x 3/8" x 15/16" HOLE
33	WASHER 1/2" ROUND FLAT
34	GRID GAIN
35	GUY GRIP



FRONT ELEVATION



SIDE ELEVATION

- NOTES:**
1. ALL DIMENSIONS SHOWN ARE MINIMUM.
 2. MINIMUM POLE HEIGHT IS 35'-0".
 3. PROVIDE ALL NECESSARY HARDWARE AND CONNECTORS.
 4. BOND AND GROUND ALL COMPONENT MOUNTING BRACKETS.
 5. CUTOUP AND FUSE SHALL BE THE SIZE AND TYPE TO MATCH CUTOUP
 6. REFER TO CPP POLE DETAILS
 7. SEE RISER POLE DETAILS

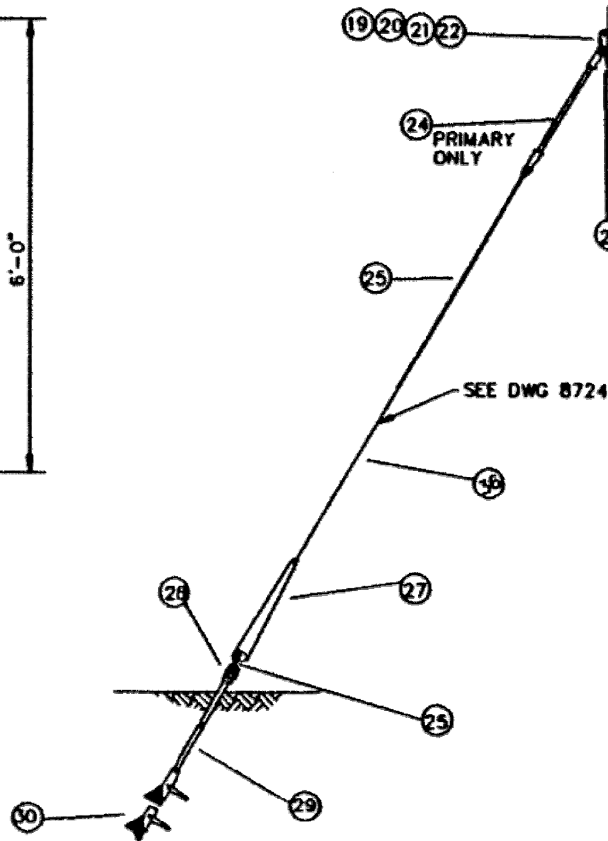
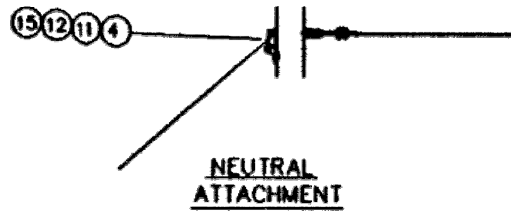
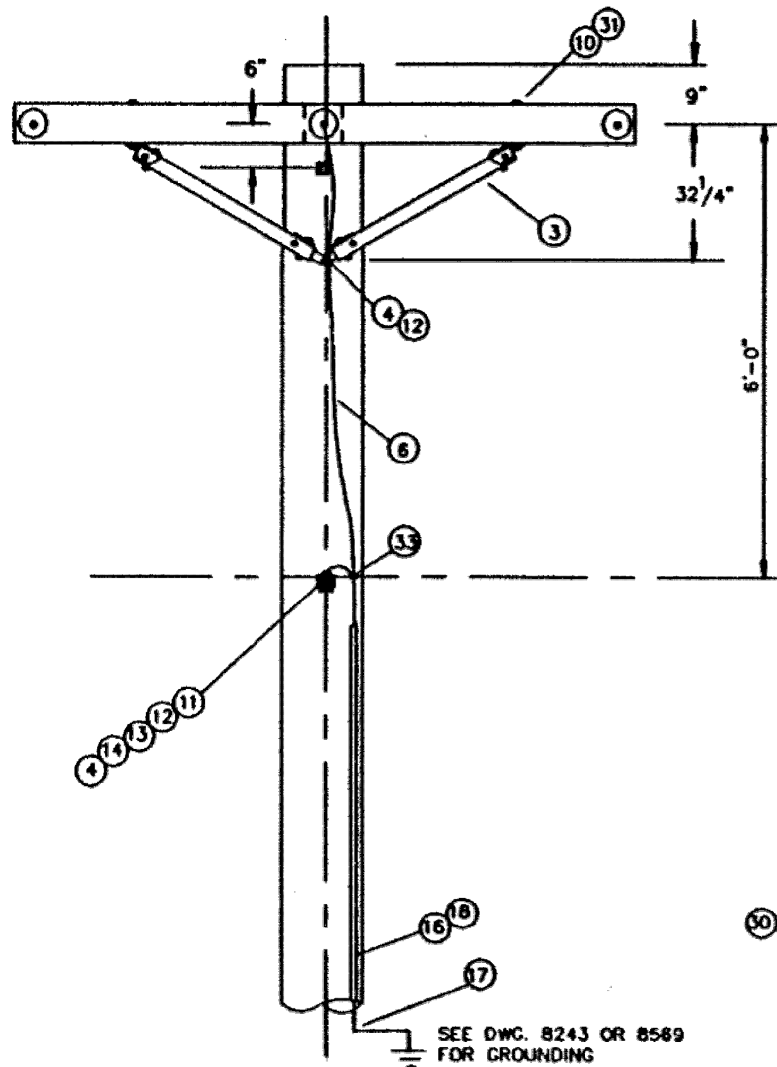
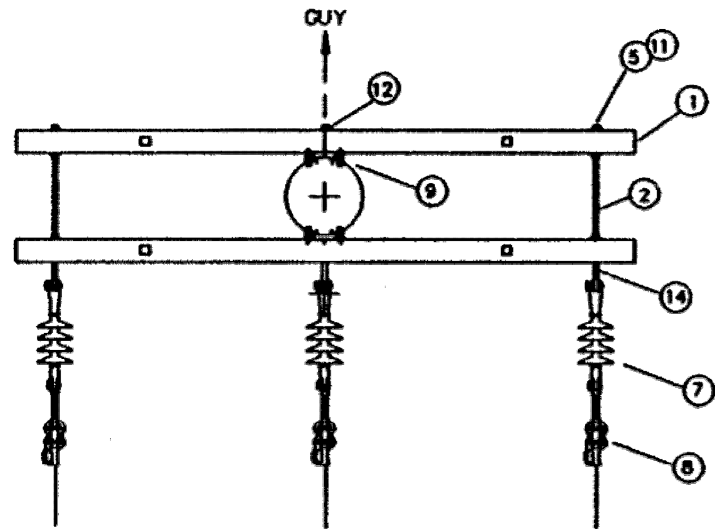
NOTE:
LIGHTNING ARRESTERS, CUTOUPS AND POWER SERVICE SHOWN FOR CLARITY ON POLE ELEVATIONS. ACTUAL ORIENTATION OF POLE ITEMS SHOWN IN SECTION A-A.

* - FOR 13,800V POWER SERVICE, 4W ARE REQUIRED WITH 1W SYSTEM NEUTRAL.

EXAMPLE CPP RISER POLE DETAIL

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

15 - 6



GUY DETAIL

BILL OF MATERIALS

ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	3 1/2 X 4 1/2 X 8'-0" STL PIN CROSSARM		2
2	DBL ARMING EYE BOLT, 5/8" X LENGTH REQ'D	JOSLYN J8814 TO J8828	3
3	WOOD BRACE, 60" SPAN	JOSLYN J8730W-R	4
4	BOLT, 5/8" X LENGTH REQ'D, MACHINE	JOSLYN J8808 TO 8824	5
5	WASHER, 5/8", ROUND FLAT	HUGHES RW3-80	8
6	#4 W.P. CU SOLID		AS REQ'D
7	INSULATORS, SUSPENSION 13KV, PDI-15 TYPE	O.B. 233194	3
8	DEADEND CLAMP	PER CONDUCTOR SIZE	3
9	GRID GAIN	FLAGG P122	2
10	BOLT, 1/2 X 6", MACHINE	JOSLYN J8708	4
11	SPRING WASHER, FOR 5/8" BOLT	JOSLYN J3540	3
12	WASHER, CURVED 11/16" HOLE 3X3X1/4	JOSLYN J113	4
13	CONNECTOR #4CU TO NEUTRAL/MESSENGER	PER NEUT/MESS SIZE	1
14	EYENUT FOR 5/8", OVALEYE	JOSLYN J1093	4
15	GUY HOOK	FLAGG P135A	1
16	WOOD MOULDING, 8' LENGTHS	HUGHES 2501.8	3
17	STAPLES, ROLLED	JOSLYN J6497	100
18	STAPLES, GALV.	HUGHES 2501.4	50
19	MACHINE BOLT 7/8" X LENGTH REQ'D.	JOSLYN J9062-9074	1
20	WASHER, SPRING FOR 7/8" BOLT	JOSLYN J3542	1
21	WASHER, SO. CURVED 3 1/2 X 3 1/2 X 3/8 15/16" HOLE	JOSLYN J6828	1
22	GUY HOOK, COMBINATION TYPE, MIN ULT. 35K	FLAGG P139	1
23	LAG SCREW, 3 X 1/2", FETTER DRIVE & POINT	JOSLYN J8753P	1
24	FIBERGLASS GUY STRAIN INSULATOR, 36", 30K MIN.	FLAGG 300-36	1
25	GUY GRIP	PER STRAND SIZE	4
26	GUY STRAND	PER ENGINEER	AS REQ'D.
27	GUY GUARD, PLASTIC 8' YELLOW	JOSLYN J1493Y	AS REQ'D.
28	EYENUT FOR 1" ANCHOR ROD	CHANCE 6562	2
29	ANCHOR ROD 7' X 1"	CHANCE 12334P	2
30	ANCHOR, SINGLE OR DOUBLE HELIX	CHANCE E102-08207 TO 0823	2
31	WASHER, 1/2, ROUND FLAT	JOSLYN J1095	4
32	DEADEND CLAMP	PER NEUT. SIZE	1
33	CONNECTOR #4 CU - #4 CU	BURNDY YC4CA	1

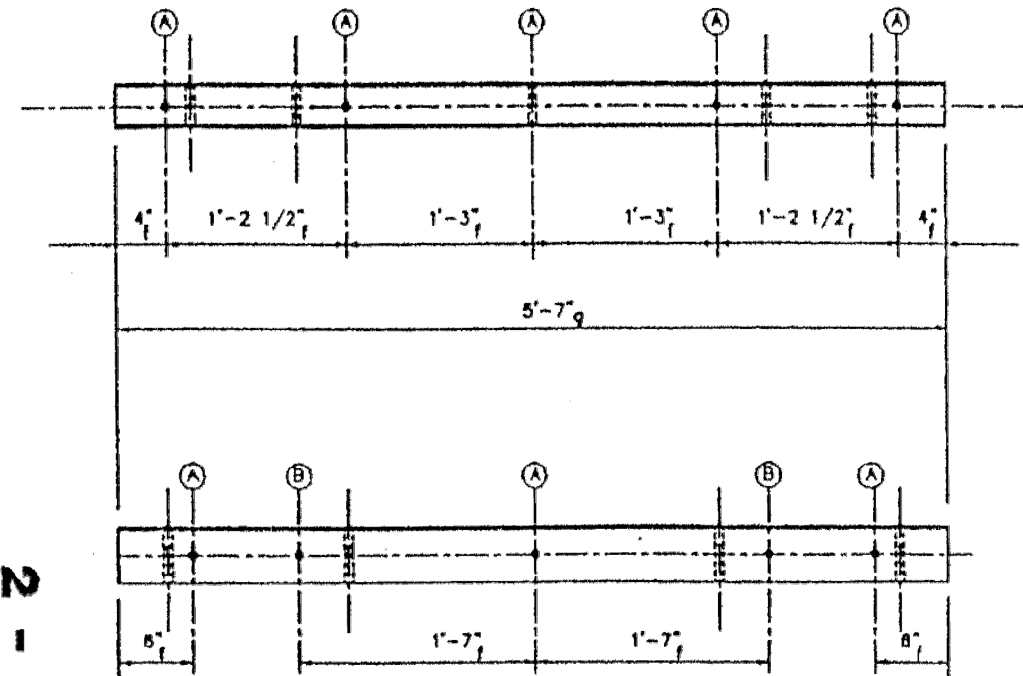
NOTE: 1. ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.
2. BOND ALL HAREWARE TO NEUTRAL.

NO.	DATE	DESCRIPTION
1	8/23/2019	ISSUED FOR CONSTRUCTION
2	12/26/19	REVISED FOR CH. 805
3	12/26/19	REVISED FOR CH. 805
4	12/26/19	REVISED FOR CH. 805
5	12/26/19	REVISED FOR CH. 805

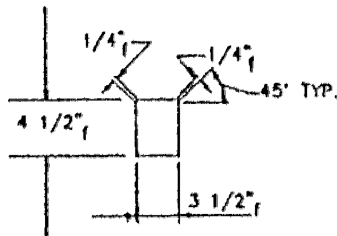
BECK POLYTECH	
CLEVELAND PUBLIC POWER	
THREE PH. DEADEND WOOD CROSSARM ASSEMBLY	
8564.3	

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

2 - 4



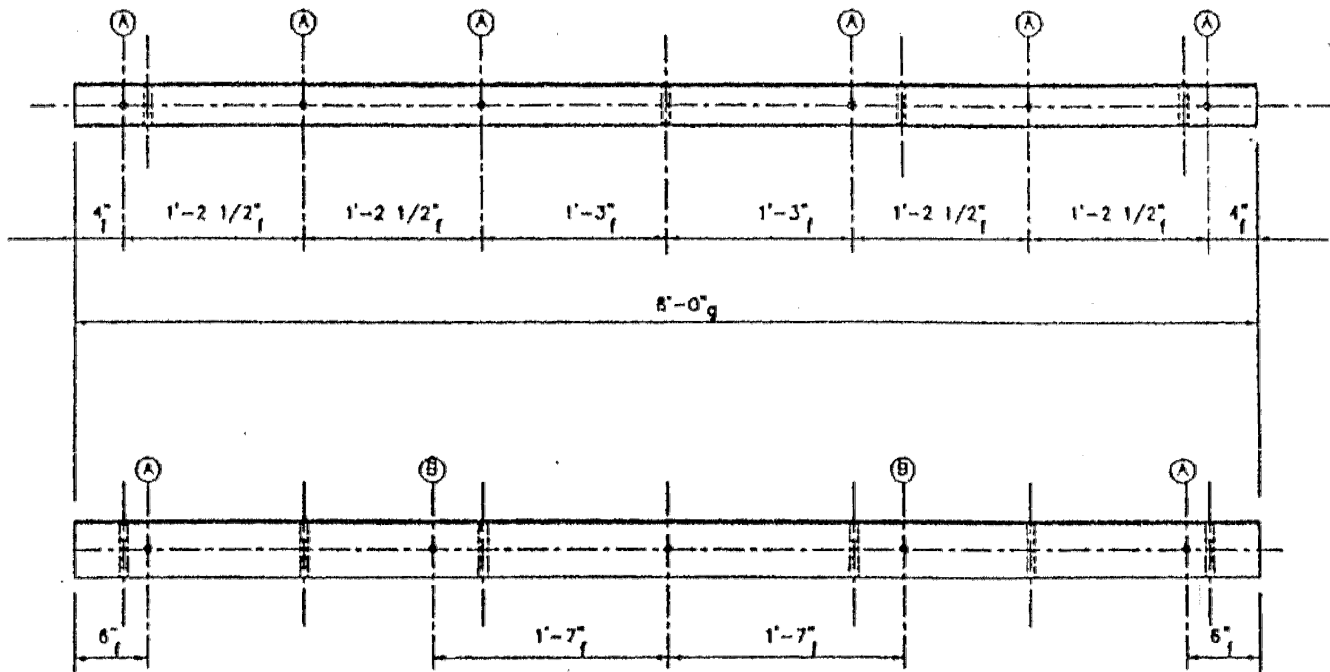
5'-7" CROSSARM



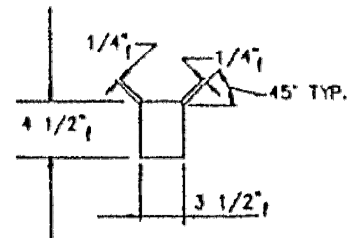
NO.	DATE	DESCRIPTION	BY	CHK	APP'D	REVISION
1	11/01/10	ADDED FOR CONSTRUCTION	LAC	LCH		
2	11/01/10	CHANGED FOR C.D. REV.	LAC	LCH		
3	11/01/10	ADDED FOR CONSTRUCTION	LCH	LCH		
4	11/01/10	ADDED FOR C.D.	LCH	LCH		

BECK POLYTECH INCORPORATED	
CLEVELAND PUBLIC POWER	
STANDARD CROSSARM FRAMING 5'-7" & 8'-0" CROSSARM	
Drawn by: E.C.R.	Checked by: J.P.C.
Rev'd by: L.C.G.	Rev'd by: J.P.C.
8288.3	

NOTE: THIS CROSSARM IS THE SAME AS REA
SPEC. DT-5B DWG. M-19 TYPE 04



8'-0" CROSSARM

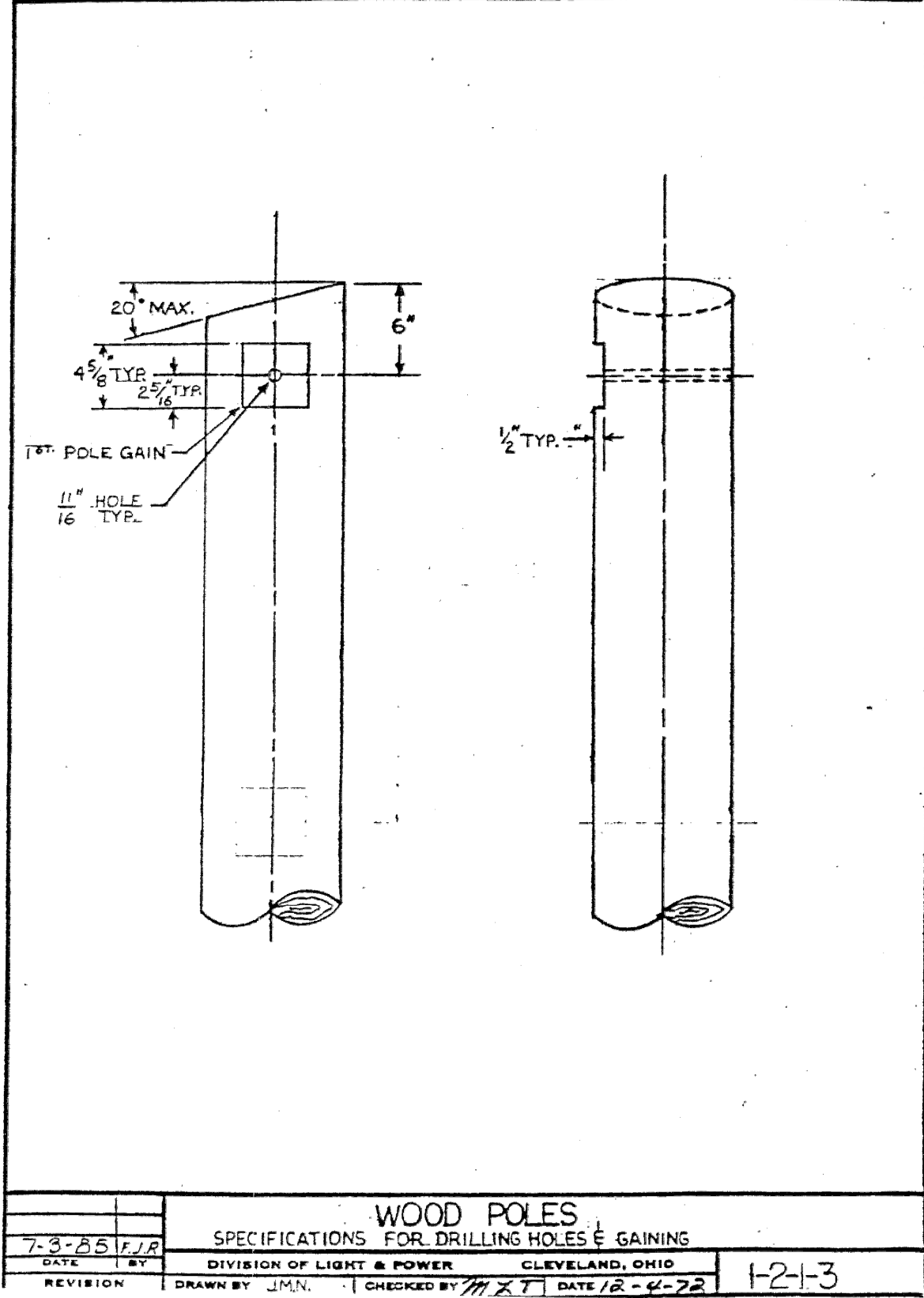


TOLERANCES SIZES OF HOLES

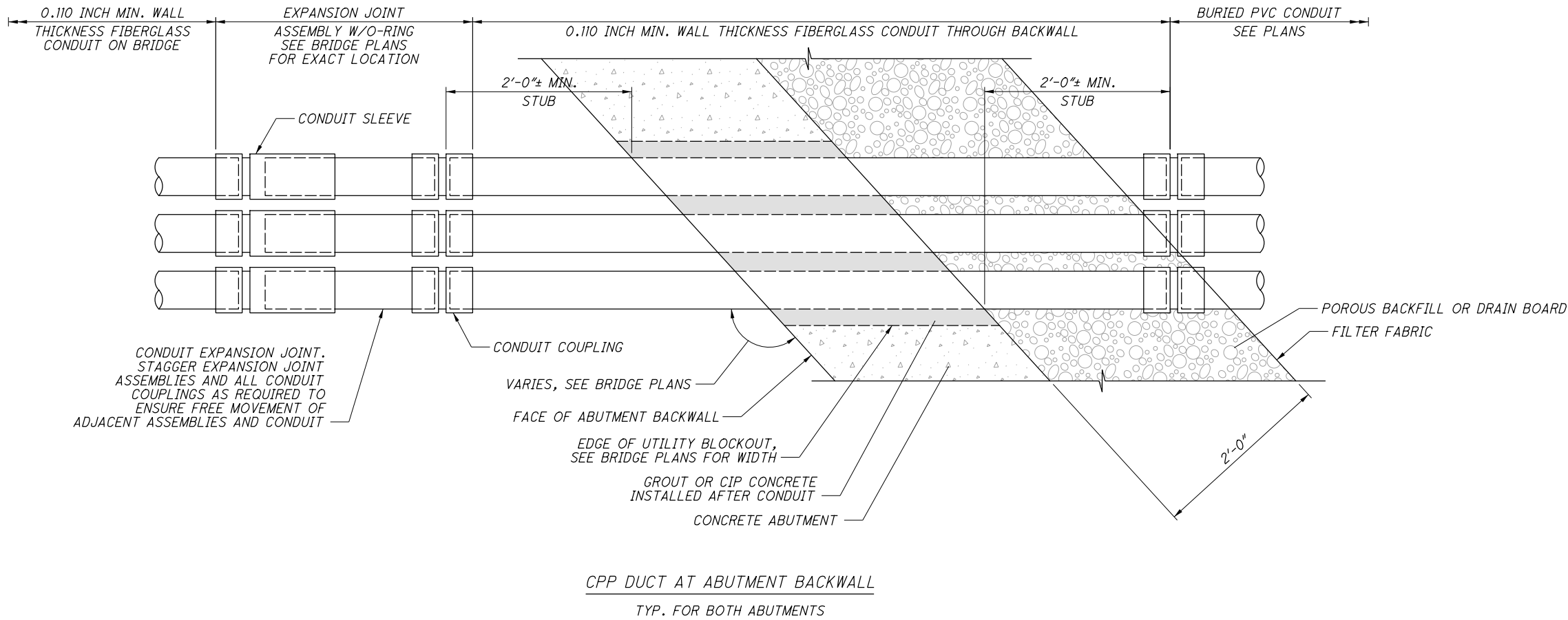
	NOMINAL	GO	NO GO
(A)	11/16"	5/8"	3/4"
(A)	7/16"	3/8"	1/2"

f ----- ± 1/8"
g ----- ± 1/4"

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

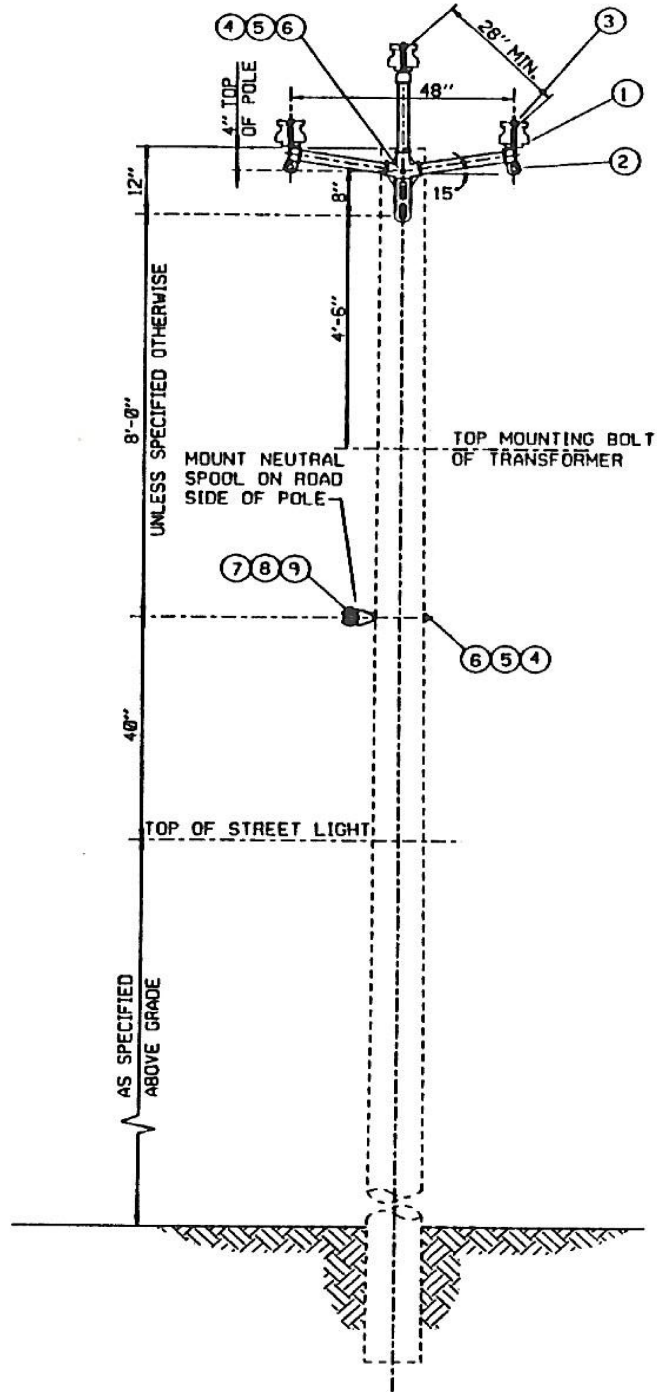


0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

4 - 1



NOTES:

- ① SPECIFY GROUNDING SEPARATELY

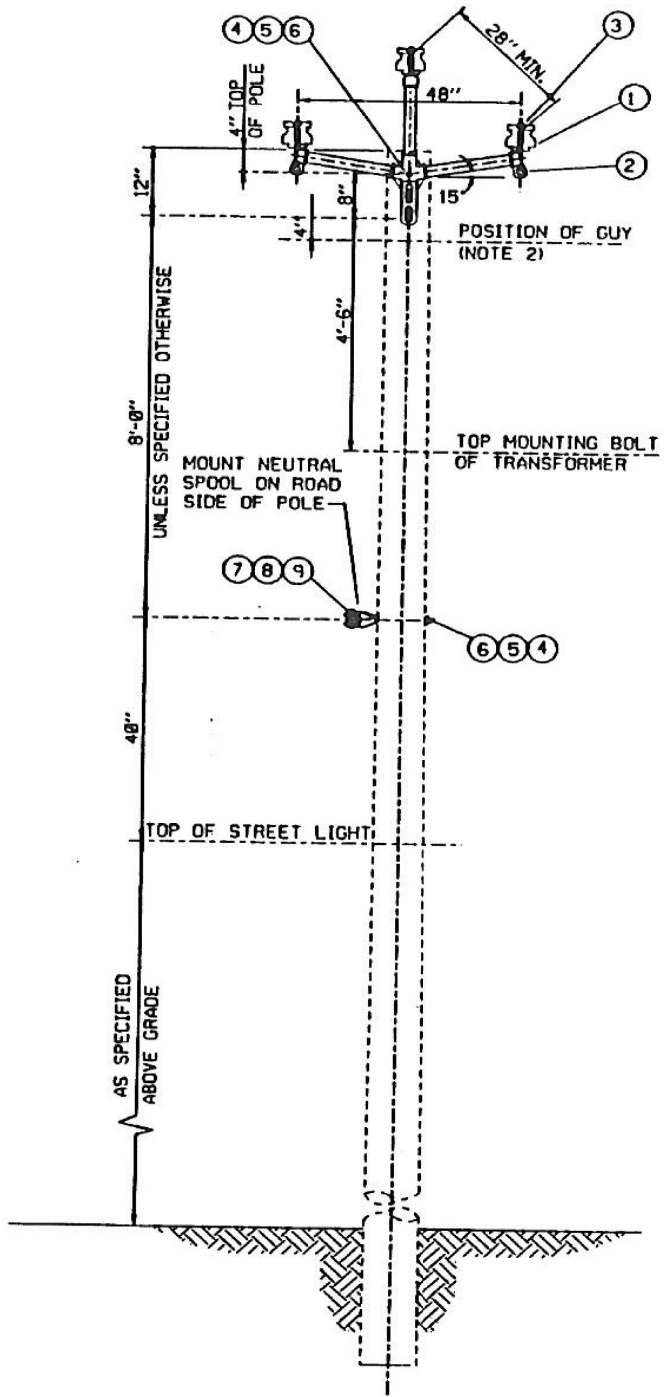
BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	INSULATOR, 15kv, PIN TYPE	PLP 366-S	3
2	TRIPLE STANDARD BRACKET	RELIABLE 6884-48-26P	1
3	TIE WIRE, PRIMARY	PER COND. SIZE	3
4	BOLT, 3/8" LENGTH REQ'D	JOSLYN J8808 TO 8824	3
5	WASHER, 2 1/4" x 2 1/4" x 3/8", 1 1/2" HOLE	JOSLYN J1076	3
6	LOCKNUT	JOSLYN J8582 TO 8584	AS REQ'D
7	CLEVIS, INSULATED SECONDARY	JOSLYN J250	1
8	INSULATOR, SPOOL	JOSLYN J101	1
9	TIE WIRE, NEUTRAL	PER NEUT. SIZE	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.

STANLEY CONSULTANTS		BECK POLYTECH	
CLEVELAND PUBLIC POWER		FIBERGLASS POLE TOP ASSEMBLY S/C TANGENT STRUCTURE	
DESIGNED BY: J. J. H. H.		CHECKED BY: J. J. H. H.	
DATE: 8-2-20		DATE: 8-2-20	
PROJECT NO: 8231.5		PROJECT NO: 8231.5	

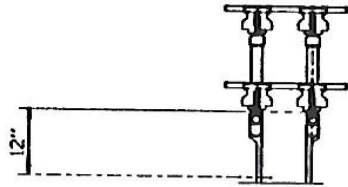
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

4 - 2



BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	INSULATOR, 15kV, PIN TYPE	PLP 366-S	6
2	TRIPLE STANDARD BRACKET	RELIABLE 6884-48-28P	2
3	TIE WIRE, PRIMARY DBL. SUPPORT TIES	PER COND. SIZE	3
4	BOLT, 1/2" x LENGTH REQ'D	JOSLYN J8808 10 8824	3
5	WASHER, 2 1/4" x 2 1/4" x 3/8", 1/8" HOLE	JOSLYN J1076	1
6	LOCKNUTS	JOSLYN J8582 10 8584	AS REQ'D
7	CLEVIS, INSULATED SECONDARY	JOSLYN J250	1
8	INSULATOR, SPOOL	JOSLYN J101	1
9	TIE WIRE NEUTRAL	PER NEUT. SIZE	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.



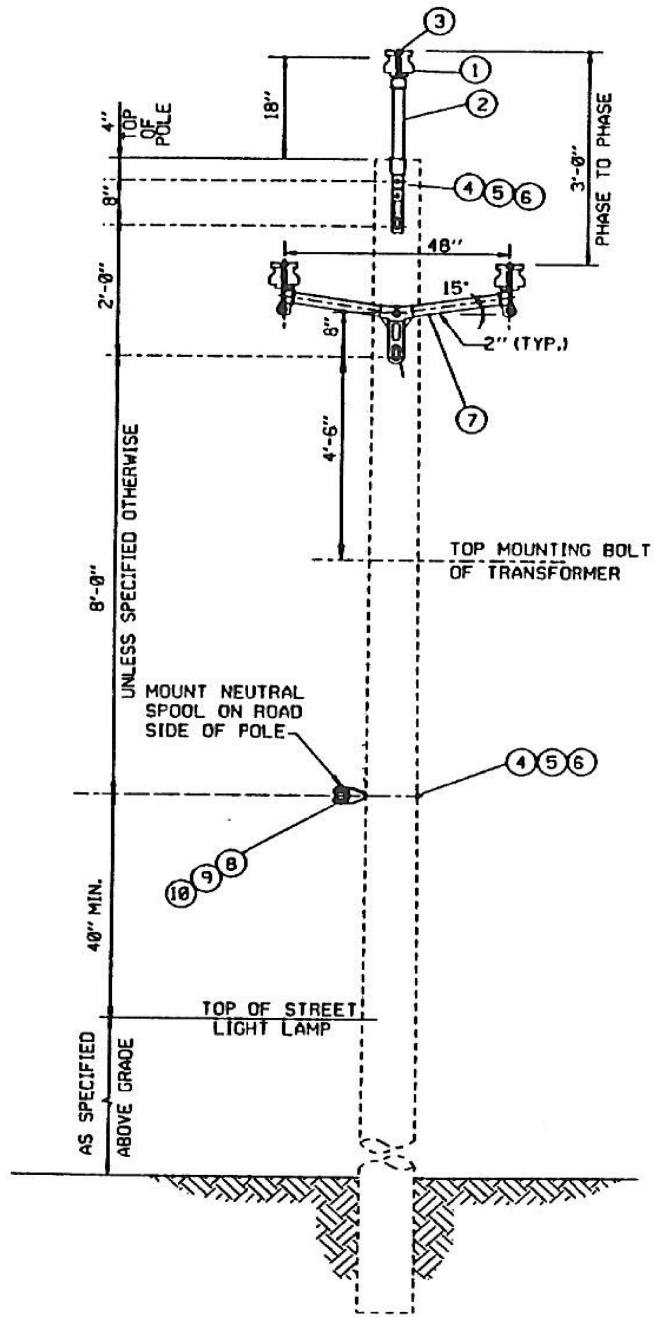
NOTES:

1. SPECIFY GROUNDING SEPARATELY
2. WHEN TRANSFORMER CUTOUT BRACKET IS MOUNTED ON GUY SIDE POSITION GUY 4" BELOW CUTOUT BRACKET.

STANLEY CONSULTANTS		BECK POLYTECH	
CLEVELAND PUBLIC POWER		FIBERGLASS POLE TOP ASSEMBLY S/C TANGENT STRUCTURE	
DRAWN BY: J.M.H. DATE: 8-2-90		CHECKED BY: J.M.H. DATE: 8-2-90	
REVISION		DATE	
1	7/21/90	TRANSFORMER MOUNTING	YES
2	8/23/90	GENERAL - STANLEY REVIEW	NO
3	8/28/90	ISSUED FOR CONSTRUCTION	NO
4	1/8/90	ISSUED FOR CONSTRUCTION	NO
5	1/1/90	ISSUED FOR CONSTRUCTION	NO
6	8/23/90	ISSUED FOR CONSTRUCTION	NO
7	8/23/90	ISSUED FOR CONSTRUCTION	NO

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

4 - 3



NOTES:
① SPECIFY GROUNDING SEPARATELY

BILL OF MATERIALS

ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	INSULATOR, 15kv, PIN TYPE	PP 366-S	3
2	POLE TOP PIN, FIBERGLASS, 18"	FLAGG 7561-618	1
3	TIE WIRE, CONDUCTOR	PER COND. SIZE	3
4	BOLT, 5/8" x LENGTH REQ'D	JOSLYN J8808 TO 8824	5
5	WASHER, 2 1/4" x 2 1/4" x 3/8", 1 1/8" HOLE	JOSLYN J1076	5
6	LOCKNUTS	JOSLYN J8582 TO 8584	AS REQ'D
7	DOUBLE STAND OFF BRACKET FIBERGLASS	FLAGG 7581-448	1
8	CLEVIS, INSULATED SECONDARY	JOSLYN J250	1
9	INSULATOR, SPOOL	JOSLYN J101	1
10	TIE WIRE NEUTRAL	PER NEUT. SIZE	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVLENT" WITH ENGINEER APPROVAL.

STANLEY CONSULTANTS

BECK POLYTECH

CLEVELAND PUBLIC POWER

FIBERGLASS POLE TOP ASSEMBLY
S/C LONGSPAN TANGENT

REVISION

DATE

DESCRIPTION

BY

APP'VD

REFERENCE DRAWINGS

NO.

DATE

BY

CH'G'G

DATE

BY

7/21/05

TRANSFORMER MOUNTING

RES

10/23/05

GENERAL - STANLEY REVIEWING

11/2/05

ISSUED FOR CONSTRUCTION

1/18/06

ISSUED FOR C/P BIDS

11/23/06

ISSUED FOR BIDD ADDENDUM 2

1/2/07

ISSUED FOR BID

SCALE

1" = 10'

DATE

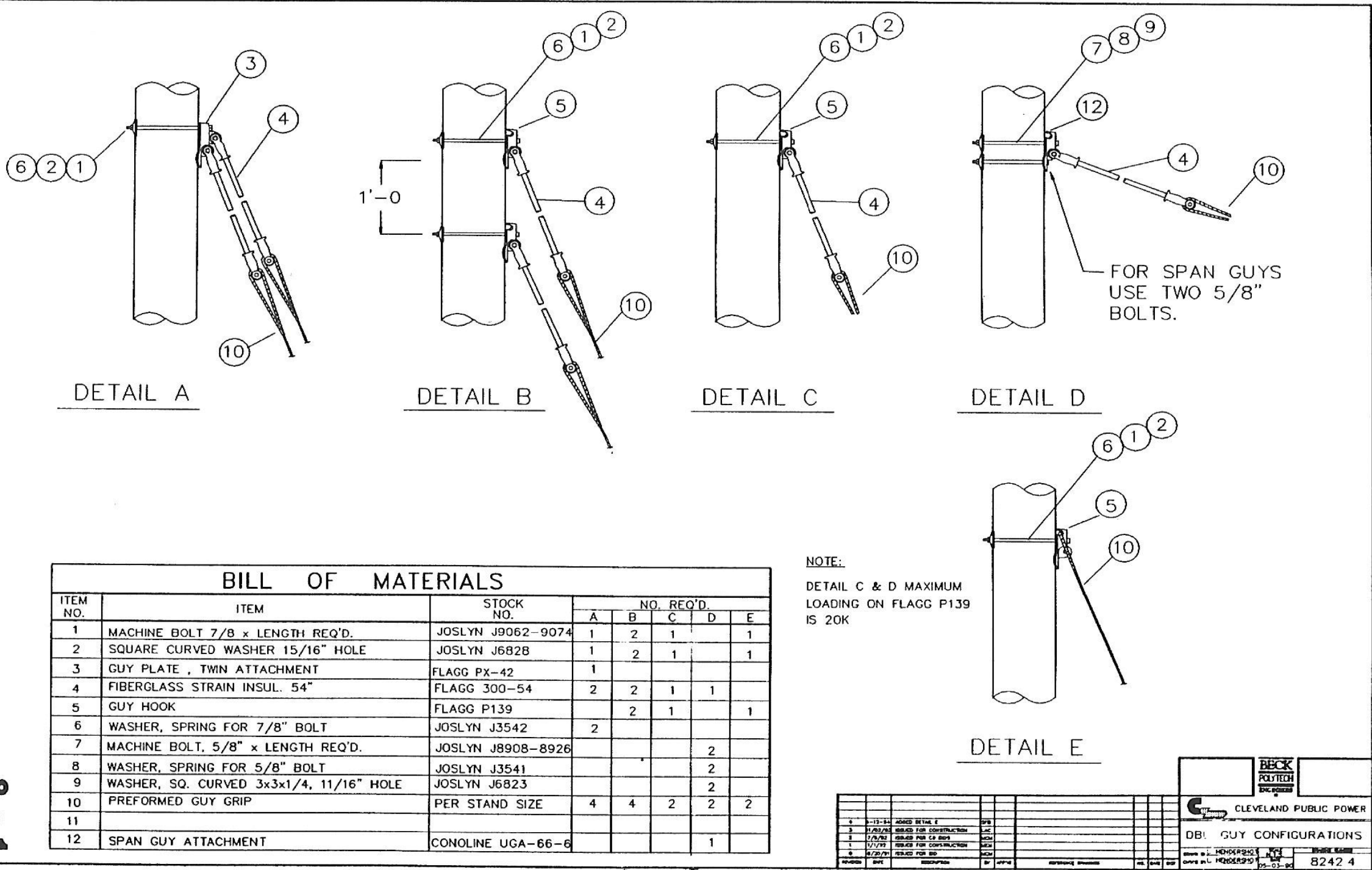
8/23/08

BY

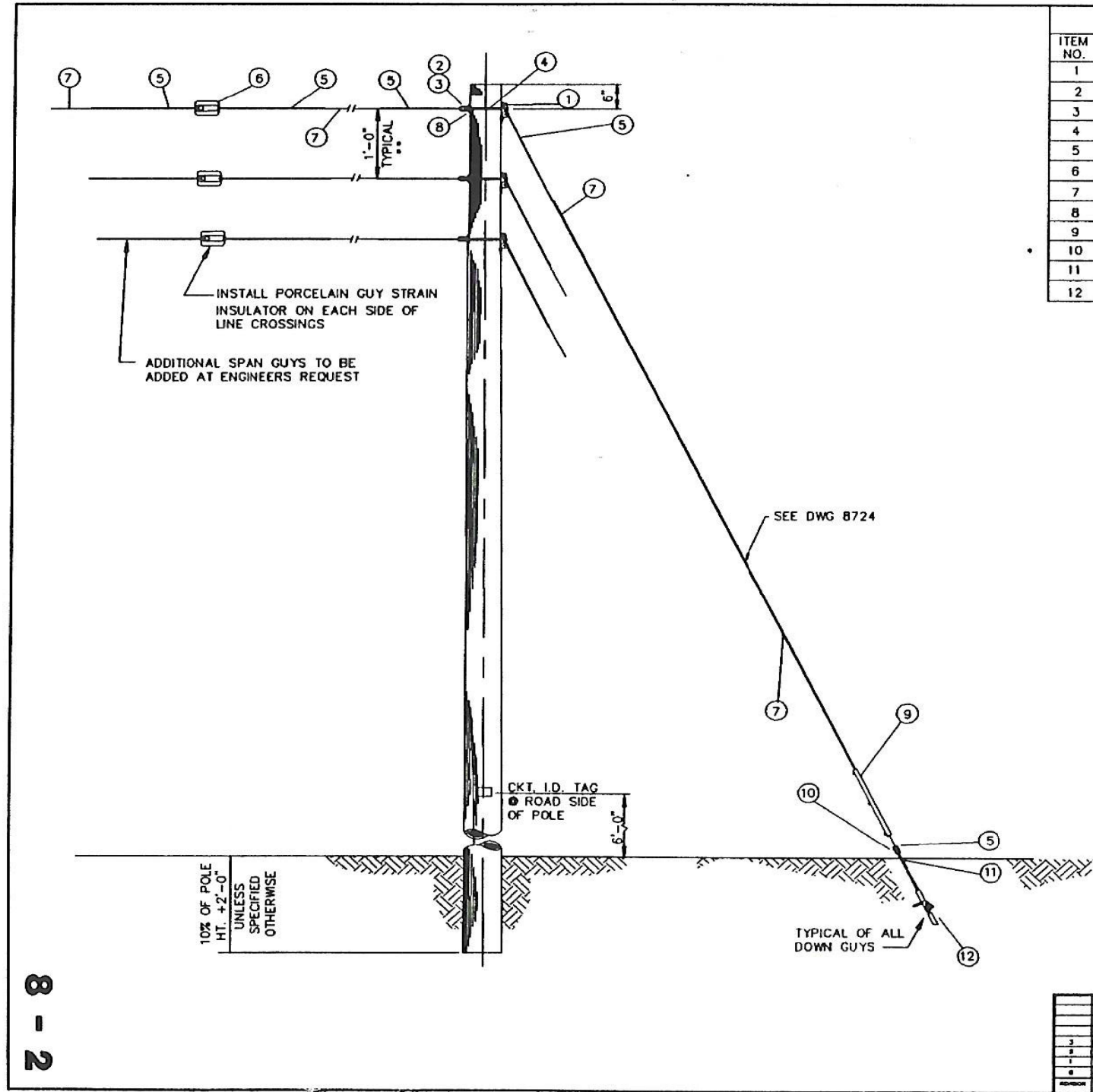
8232.5

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

8-1



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	GUY ATTACHMENT, MIN. ULT. 35K	FLAGG P135A	1 PER GUY
2	CLEVIS THIMBLE 5/8" PIN	JOSLYN J555	1
3	EYE NUT FOR 5/8" BOLT, OVALEYE	JOSLYN J1092	1 PER GUY
4	BOLT, MACHINE 5/8" X LENGTH REG'D	JOSLYN J8808 TO 8824	1 PER GUY
5	GUY GRIP	PER STRAND SIZE	1 PER GUY
6	PORCELAIN GUY STRAIN INSULATOR	PP 506	AS REQ'D
7	GUY STRAND	PER ENGINEER	AS REQ'D
8	SQUARD CURVED WASHER 11/16" HOLE 3X3X1/4	JOSLYN J113	1 PER GUY
9	GUYGUARD, PLASTIC 8FT., YELLOW	JOSLYN J1493Y	1 PER ROD
10	EYENUT FOR 1" ROD, TWNEYE	CHANCE 6562	1 PER GUY
11	ANCHOR ROD 1" X 7'	CHANCE 12334P	1 PER GUY
12	ANCHOR SINGLE OR DOUBLE HELIX	CHANCE E 102-0820/0823	1 PER GUY

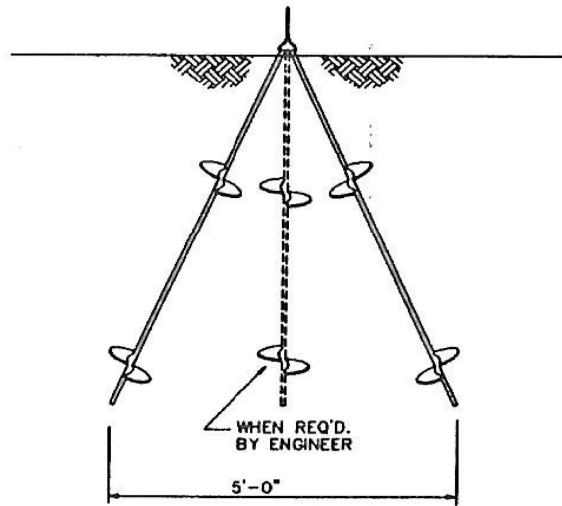
NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.
• TRIPLEYE NUT AS REQUIRED BY ENGINEER.
• • UNLESS SPECIFIED OTHERWISE BY ENGINEER

REVISION	DATE	DESCRIPTION	BY	APP'D	REFERENCE	ISSUE	REV
3	1/23/93	REVISED FOR CONSTRUCTION	SAC				
2	7/6/92	REVISED FOR CR BIDS	NEW				
1	1/1/92	REVISED FOR CONSTRUCTION	NEW				
0	4/20/91	REVISED FOR BID	NEW				

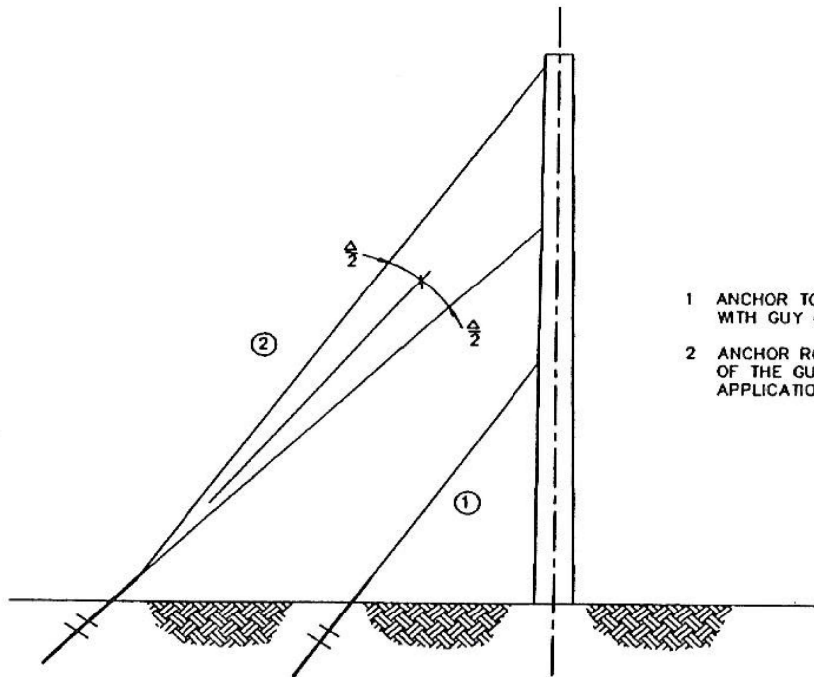
BECK POLYTECH ENGINEERS	
CLEVELAND PUBLIC POWER	
STUB POLE	
DESIGNED BY: ALC	DATE: 06-08-90
CHECKED BY:	DATE:
8244.3	

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

8 - 8



DETAIL "B"



DETAIL "A"

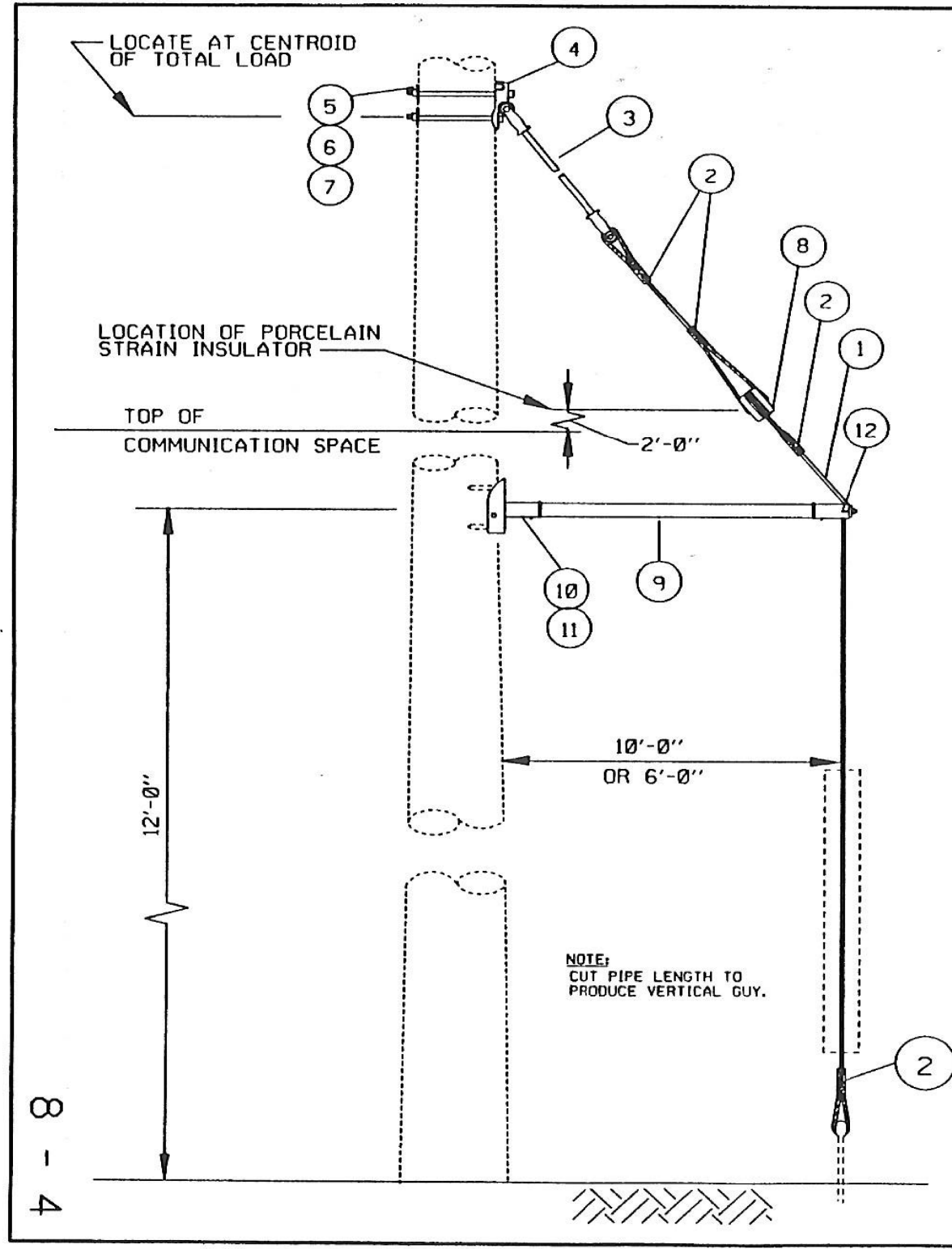
- 1 ANCHOR TO BE INSTALLED IN LINE WITH GUY OF SINGLE GUY APPLICATION
- 2 ANCHOR ROD TO BE INSTALLED ON BISECTOR OF THE GUYS WHEN USED IN A DOUBLE GUY APPLICATION.

NOTE:
ANCHORS SHOULD BE TESTED TO WITHSTAND THE LOADS AS INDICATED FOR CLASS (5) SOILS ON THE STAKING SHEETS.

REVISION	DATE	DESCRIPTION	BY	APP'D	REFERENCE STANDARD	NO.	DATE	REV.
3	11/28/20	REVISED FOR CONSTRUCTION	JAC					
2	7/1/21	REVISED FOR C9 BGS	MCN					
1	1/5/22	REVISED FOR CONSTRUCTION	MCN					
0	6/29/24	REVISED FOR BGS	MCN					

BECK POLYTECH ENGINEERS	
CLEVELAND PUBLIC POWER	
DOWN GUY INSTALLATION	
Scale: 1" = 10'-0"	Sheet No. 8287.3

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



BILL OF MATERIALS				
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D	
			8-4A	8-4B
1	GUY STRAND 20M			
1	GUY STRAND 12.5M			
2	GUY GRIP, FORMED TYPE	PER STRAND SIZE	4	4
3	FIBERGLASS STRAIN INSULATOR 54"	FLAGG 300-54	1	1
4	GUY PLATE	FLAGG PX37B	1	
4	GUY PLATE	FLAGG P139		1
5	MACHINE BOLT 7/8 X REQ'D LENGTH	JOSLYN J9062-9074	2	1
6	WASHER SPRING FOR 7/8 BOLT	JOSLYN J3542	2	1
7	WASHER SQUARE CURVED 3-1/2X3-1/2X3/8, 15/16 HOLE	JOSLYN J6828	2	1
8	PORCELAIN GUY STRAIN INSULATOR	PPS06	1	1
9	GALV. STEEL PIPE, PER REQ'D. LENGTH X 2 1/2" DIA., SCH. 40		1	1
10	POLE PLATE	JOSLYN J0521	1	1
11	LAG SCREW 1/2" x 4"	CHANCE 508754	3	3
12	END FITTING W/CLAMP, DOUBLE GUY	JOSLYN J0522	1	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.
* AS REQUIRED

FOR 6' GUY LEAD				
GUY STRAND	MAX. TOTAL LOADING			MIN POLE CLASS
	35' & 40' POLES	45' & 50' POLES	55' & 60' POLES	
A 20.0M	3000	2400	2000	2
B 12.5M	1900	1500	1300	3

FOR 10' GUY LEAD				
GUY STRAND	MAX. TOTAL LOADING			MIN POLE CLASS
	35' & 40' POLES	45' & 50' POLES	55' & 60' POLES	
A 20.0M	4800	4000	3300	1
B 12.5M	3000	2500	2100	2

NOTE: LOADS INCLUDE APPROPRIATE OVERLOAD CAPACITY FACTORS.
SPECIFY GUY GUARD, POLE BUTT SUPPORT, AND ANCHOR SEPARATELY.

STANLEY CONSULTANTS

BECK POLYTECH

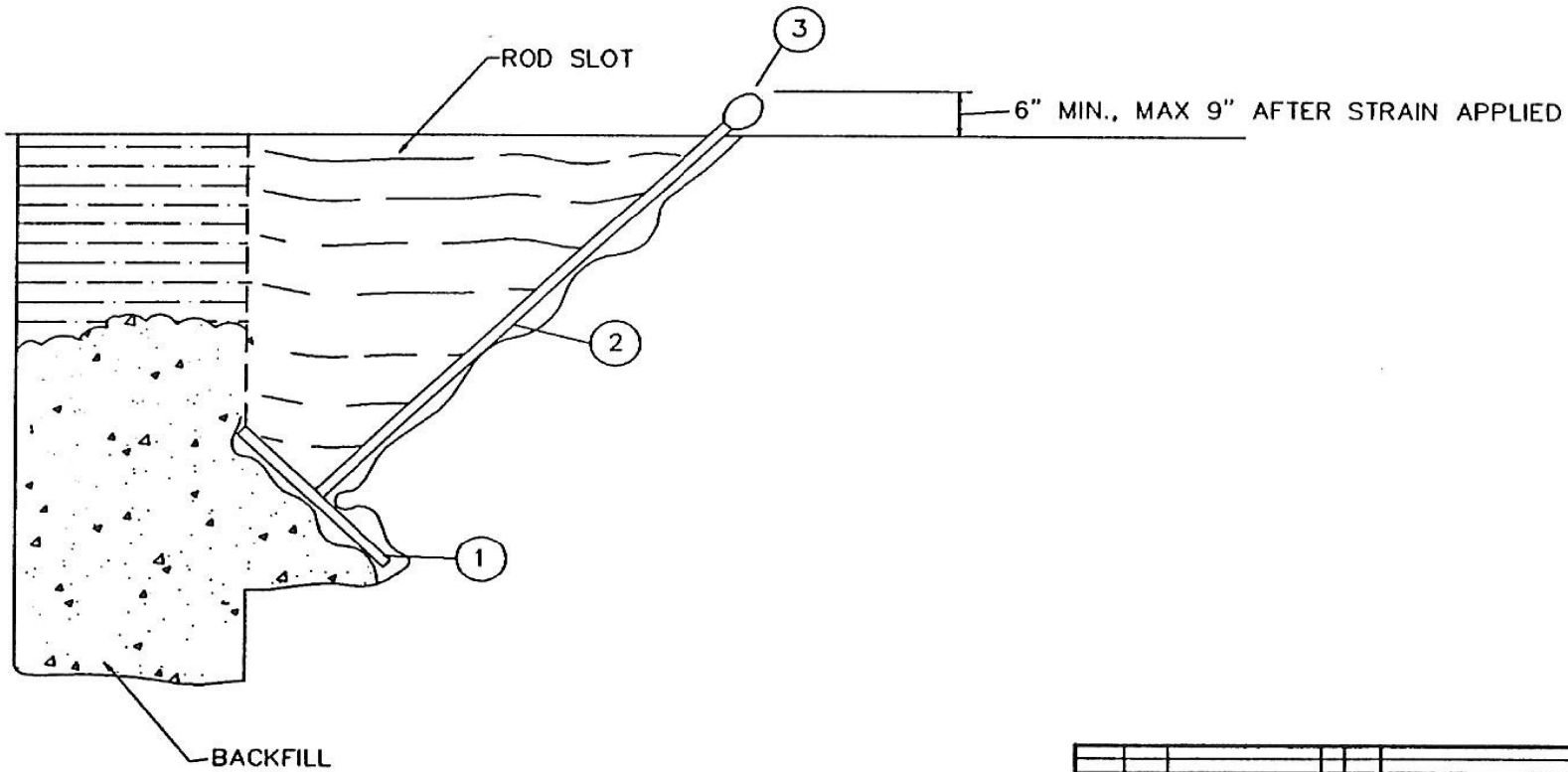
CLEVELAND PUBLIC POWER

SIDEWALK GUYS

8298.5


5	7/21/95	GENERAL - STANLEY REVIEWED	
4	6/23/95	GENERAL - STANLEY REVIEWED	
3	11/08/92	ISSUED FOR CONSTRUCTION	LAC
2	7/8/92	ISSUED FOR CONSTRUCTION	HEH
1	1/15/92	ISSUED FOR CONSTRUCTION	HEH
0	8/28/91	ISSUED FOR BID	HEH

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	CROSSPLATE ANCHOR	CHANCE X-24	1
2	ANCHOR ROD 1" x 7', TWINEYE	CHANCE 12334P	1
3	EYENUT FOR 1" ANCHOR ROD TWINEYE	CHANCE 6562	1
4			

ALL STOCK ITEMS ARE OR EQUIVALENT WITH ENGINEERS APPROVAL.

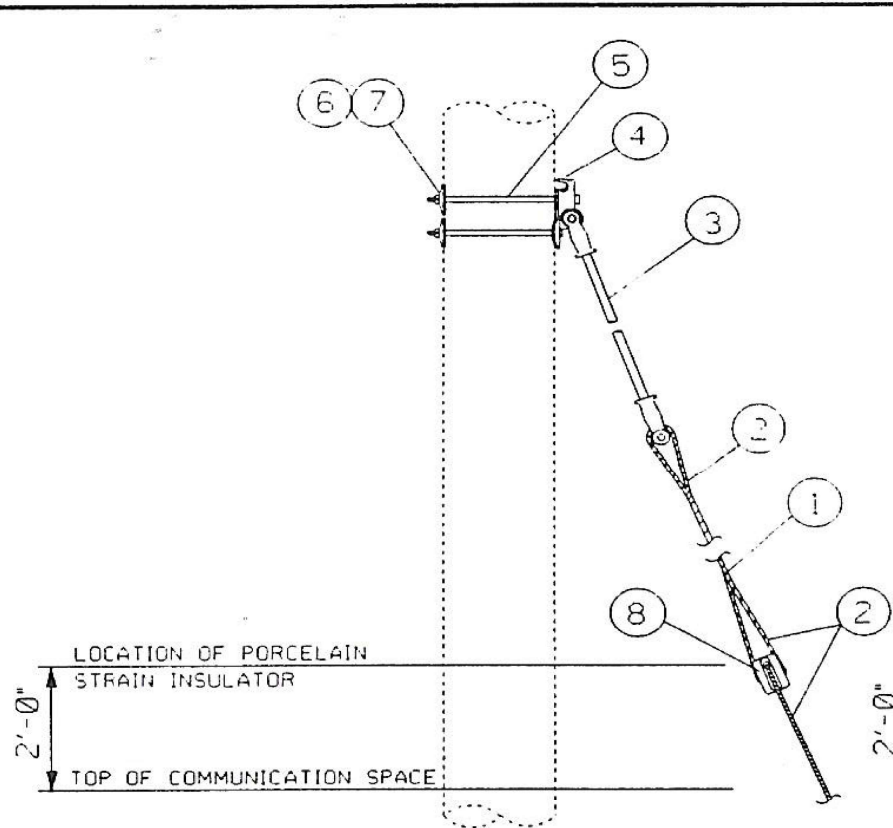
										 CLEVELAND PUBLIC POWER			
										EXPANDING ANCHOR			
										DRAWN BY: W.S.S. DATE: 06-27-97		PROJECT NUMBER: 8664 2	
NO.	DATE	DESCRIPTION	BY	APPROV.	REFERENCE DRAWINGS	NO.	DATE	BY					
2	01/26/97	CHG FOR CONSTRUCTION	LC										
3	07/26/97	CHG FOR P&ID	WSP										
4	08/27/97	CHG FOR CONSTRUCTION	WSP										

O	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

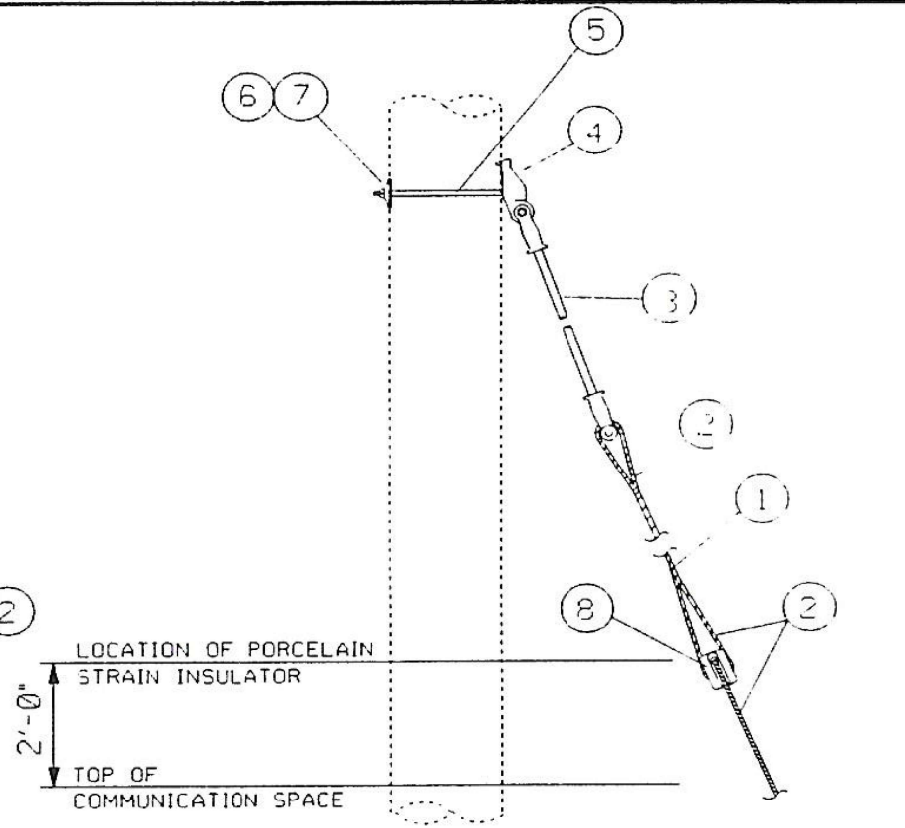
8-11

BILL OF MATERIALS					
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D		
			8-11A	8-11B	8-11C
1	GUY STRAND 20M		•	•	
1	GUY STRAND 12.5M				•
1	GUY STRAND 6M				
2	GUY GRIP, FORMED TYPE	PER STRAND SIZE	4	4	4
3	FIBERGLASS STRAIN INSULATOR 54"	FLAGG 300-54	1	1	1
4	GUY PLATE	FLAGG PX37B	1		
4	GUY PLATE	FLAGG P139		1	1
5	MACHINE BOLT 7/8 X REQ'D LENGTH	JOSLYN J9062-9074	2	1	
5	MACHINE BOLT 3/4 X REQ'D LENGTH	JOSLYN J8908-8926			1
6	WASHER SPRING FOR 7/8 BOLT	JOSLYN J3542	2	1	
6	WASHER SPRING FOR 3/4 BOLT	JOSLYN J3541			1
7	WASHER SQUARE CURVED 3-1/2X3-1/2X3/8, 15/16 HOLE	JOSLYN J6828	2	1	
7	WASHER SQUARE CURVED 3 X 3 X 1/4, 13/16 HOLE	JOSLYN J6823			1
8	PORCELAIN GUY STRAIN INSULATOR	PP506	1	1	1

• AS REQUIRED



ASSEMBLY 8-11A



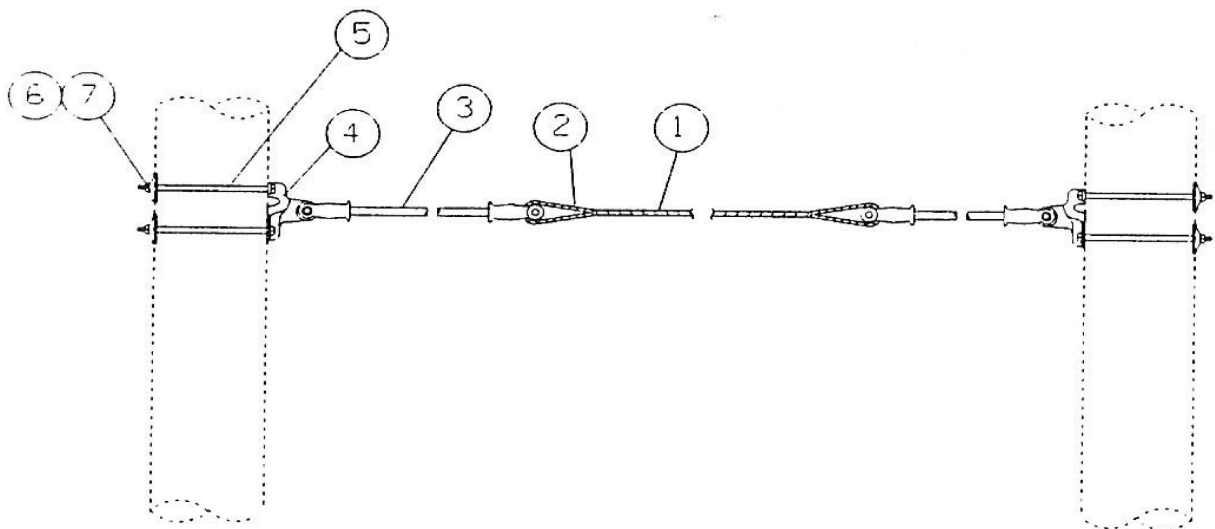
ASSEMBLY 8-11B
& 8-11C

NOTE:
1. SPECIFY GUY GUARD AND ANCHOR SEPARATELY

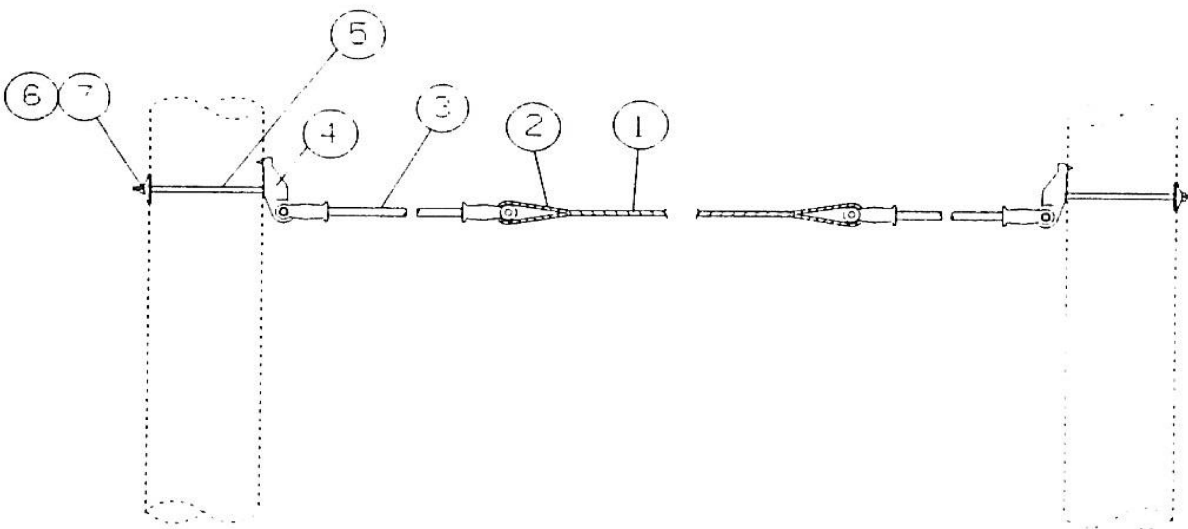
STANLEY CONSULTANTS									
CLEVELAND PUBLIC POWER									
INSULATED DOWN GUY									
CPPSTD40									

ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC

8-15



ASSEMBLY 8-15A



ASSEMBLY 8-15B & 8-15C

BILL OF MATERIALS

ITEM NO.	ITEM	STOCK NO.	NO. REQ'D		
			8-15A	8-15B	8-15C
1	GUY STRAND 20M		*		
1	GUY STRAND 12.5M			*	
1	GUY STRAND 6M				*
2	GUY GRIP, FORMED TYPE	PER STRAND SIZE	2	2	2
3	FIBERGLASS STRAIN INSULATOR 54"	FLAGG 300-54	2	2	2
4	GUY PLATE	FLAGG PX37B	2		
4	GUY PLATE	FLAGG P139		2	2
5	MACHINE BOLT 7/8 X REQ'D LENGTH	JOSLYN J9062-9074	4	2	
5	MACHINE BOLT 3/4 X REQ'D LENGTH	JOSLYN J8908-8926			2
6	WASHER SPRING FOR 7/8 BOLT	JOSLYN J3542	4	2	
6	WASHER SPRING FOR 3/4 BOLT	JOSLYN J3541			2
7	WASHER SQUARE CURVED 3-1/2X3-1/2X3/8, 15/16 HOLE	JOSLYN J6828	4	2	
7	WASHER SQUARE CURVED 3 X 3 X 1/4, 13/16 HOLE	JOSLYN J6823			2

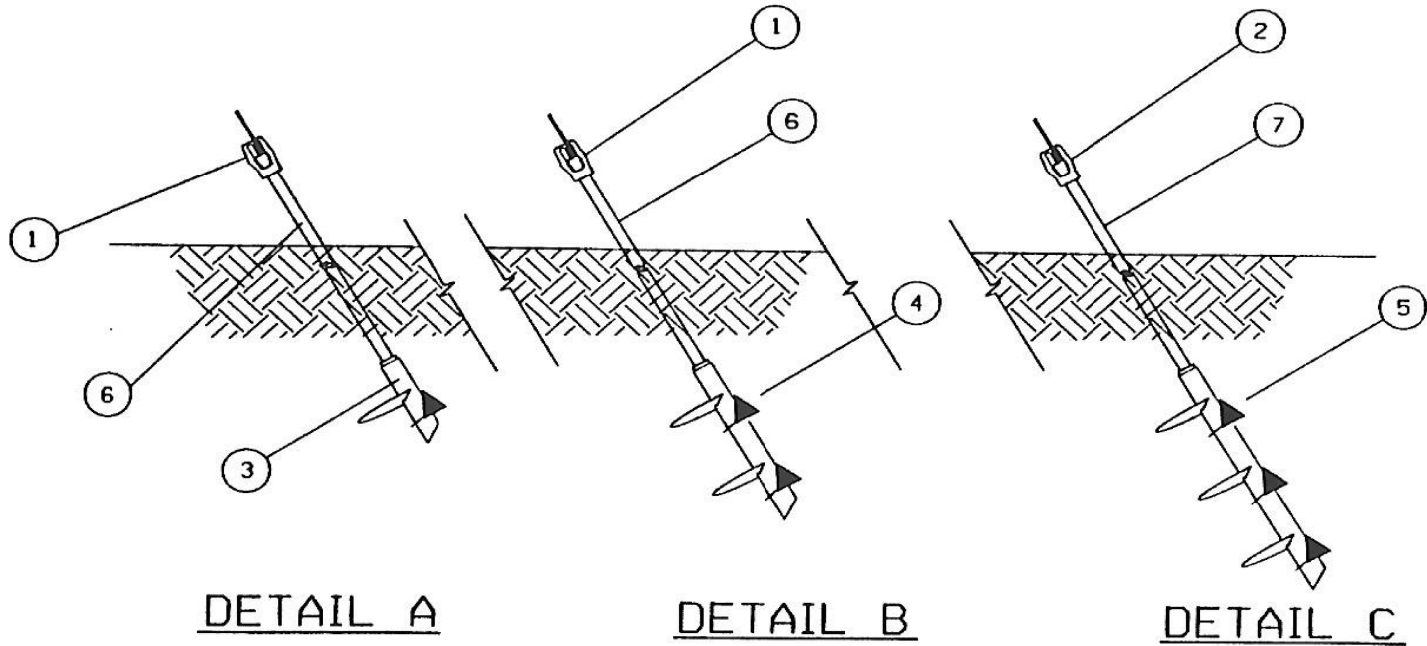
* AS REQUIRED

REVISION	DATE	DESCRIPTION	BY	APP'D	REFERENCE	NO.	DATE	BY

STANLEY CONSULTANTS	
CLEVELAND PUBLIC POWER	
INSULATED OVERHEAD GUY	
DATE: 08/23/19	PROJECT: CPPSTD42

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

8-17



BILL OF MATERIALS					
ITEM NO.	ITEM	STOCK NO.	NO. REQUIRED		
			A	B	C
1	TWINEYE NUT FOR 1" ANCHOR ROD	CHANCE 6562	1	1	
2	TRIPLEYE ADAPTER FOR 1 1/2" SHAFT	CHANCE C102-0025			1
3	ANCHOR - SINGLE HELIX, 10'	CHANCE E102-0820	1		
4	ANCHOR - DOUBLE HELIX, 10'	CHANCE E102-0823		1	
5	ANCHOR - TRIPLE HELIX, 14'	CHANCE C110-0504			1
6	ANCHOR ROD - 7'-0" X 1"	CHANCE 12334P	1	1	
7	ANCHOR SHAFT EXT. - 5'-0" X 1 1/2"	CHANCE C110-0470			2

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.

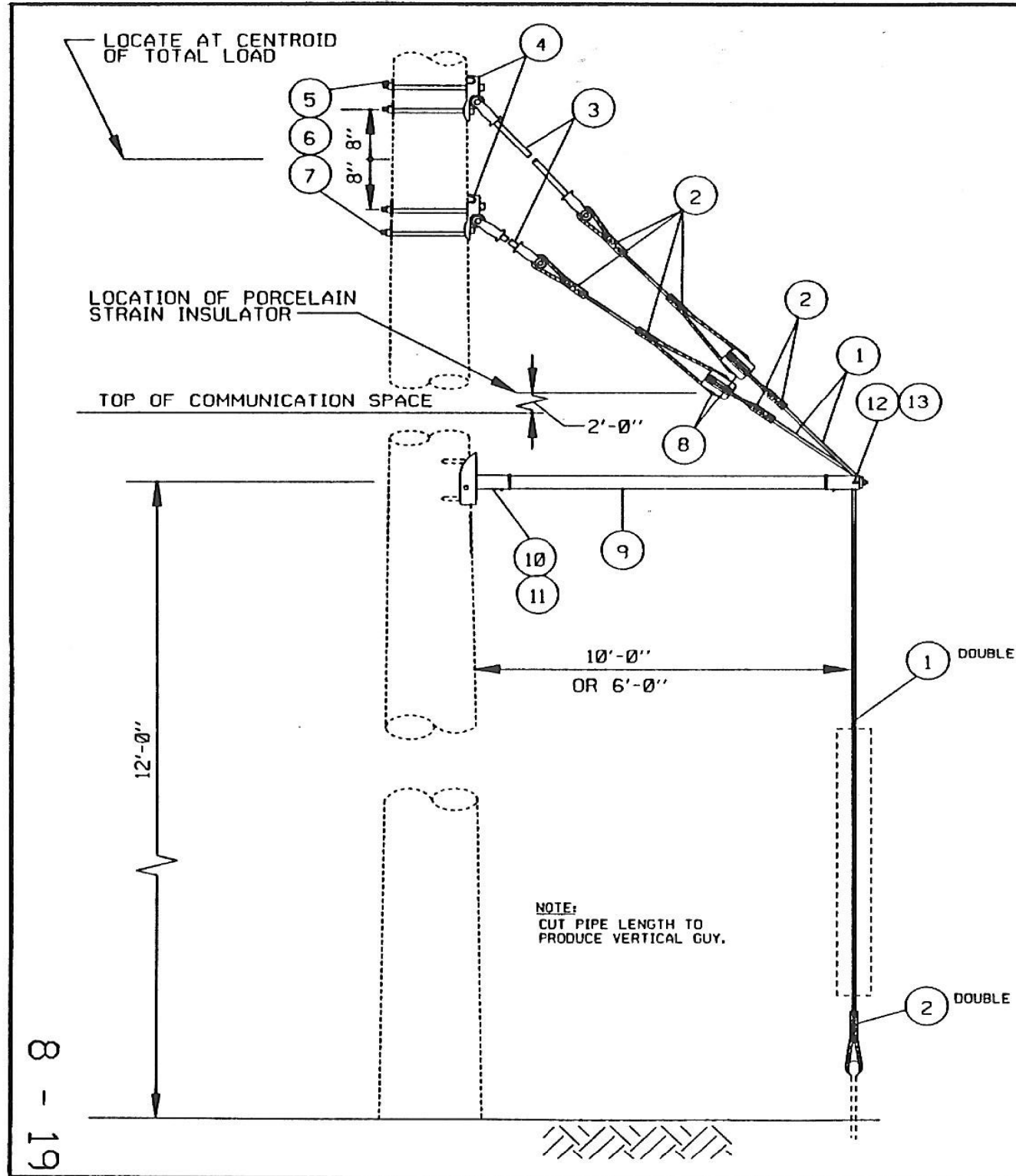
ULTIMATE HOLDING CAPACITY	
CLASS 6 SOIL	
A	12,000 LBS
B	20,000 LBS
C	60,000 LBS

NOTE: INSTALL EXTENSION RODS AS REQUIRED, TO DEVELOP HOLDING STRENGTH.

STANLEY CONSULTANTS									
CLEVELAND PUBLIC POWER									
POWER SCREW ANCHORS									
CPST07									

REVISION	DATE	DESCRIPTION	BY	APP	VS	REFERENCE DRAWINGS	NO.	DATE	DIST.

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	GUY STRAND 20M		*
2	GUY GRIP, FORMED TYPE	PER STRAND SIZE	8
3	FIBERGLASS STRAIN INSULATOR 54"	FLAGG 300-54	2
4	GUY PLATE	FLAGG PX37B	2
5	MACHINE BOLT 7/8 X REQ'D LENGTH	JOSLYN J9062-9074	4
6	WASHER SPRING FOR 7/8 BOLT	JOSLYN J3542	4
7	WASHER SQUARE CURVED 3-1/2X3-1/2X3/8, 15/16 HOLE	JOSLYN J6828	4
8	PORCELAIN GUY STRAIN INSULATOR	PPS06	2
9	GALV. STEEL PIPE, PER REQ'D. LENGTH X 2 1/2" DIA., SCH. 40	-	1
10	POLE PLATE	JOSLYN J0521	1
11	LAG SCREW 1/2" X 4"	CHANCE 508754	4
12	END FITTING W/CLAMP, DOUBLE GUY	JOSLYN J0522	1
13	GUY CLAMP	JOSLYN J931	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.
* AS REQUIRED

FOR 6' GUY LEAD				
GUY STRAND	35' & 40' POLES	MAX. TOTAL LOADING 45' & 50' POLES	55' & 60' POLES	MIN POLE CLASS
2x20M	6,100	4,900	4,000	H3

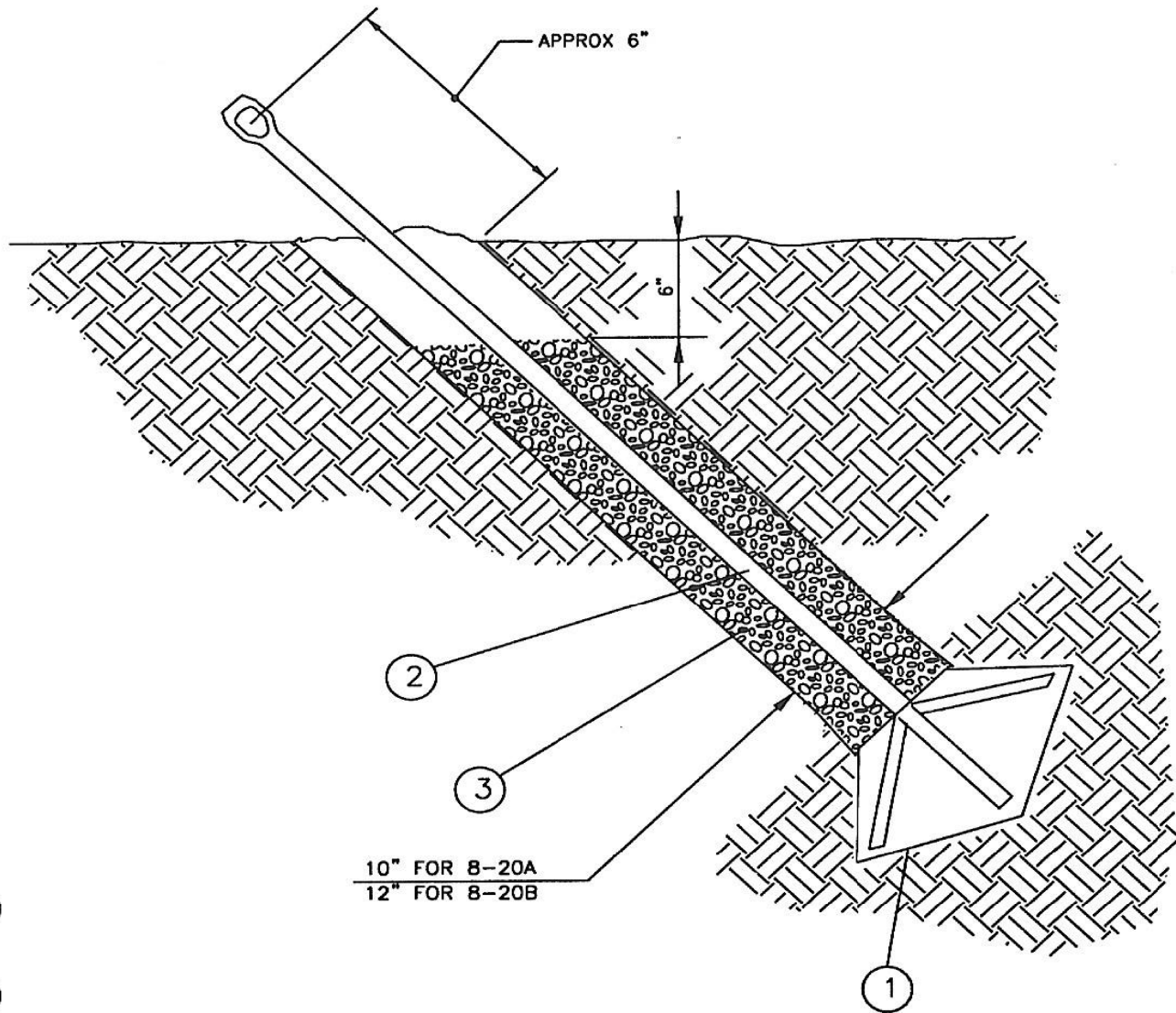
FOR 10' GUY LEAD				
GUY STRAND	35' & 40' POLES	MAX. TOTAL LOADING 45' & 50' POLES	55' & 60' POLES	MIN POLE CLASS
2x20M	6,500	8,000	6,700	H3

NOTE: LOADS INCLUDE APPROPRIATE OVERLOAD CAPACITY FACTORS.
SPECIFY GUY GUARD, POLE BUTT SUPPORT, AND ANCHOR SEPARATELY.

STANLEY CONSULTANTS									
CLEVELAND PUBLIC POWER									
HIGH CAPACITY SIDEWALK GUY									
CPP51033									

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

8-20



BILL OF MATERIALS				
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D	
			8-20A	8-20B
1	ANCHOR, EXPANDING, 200 SQ. IN., 10" HOLE	CHANCE 1082	1	--
1	ANCHOR, EXPANDING, 300 SQ. IN., 12" HOLE	CHANCE 1283-1	--	1
2	ROD, ANCHOR, 1" X 10'	CHANCE 5370	1	1
3	BACKFILL, CRUSHED ROCK	---	AS REQ'D	AS REQ'D

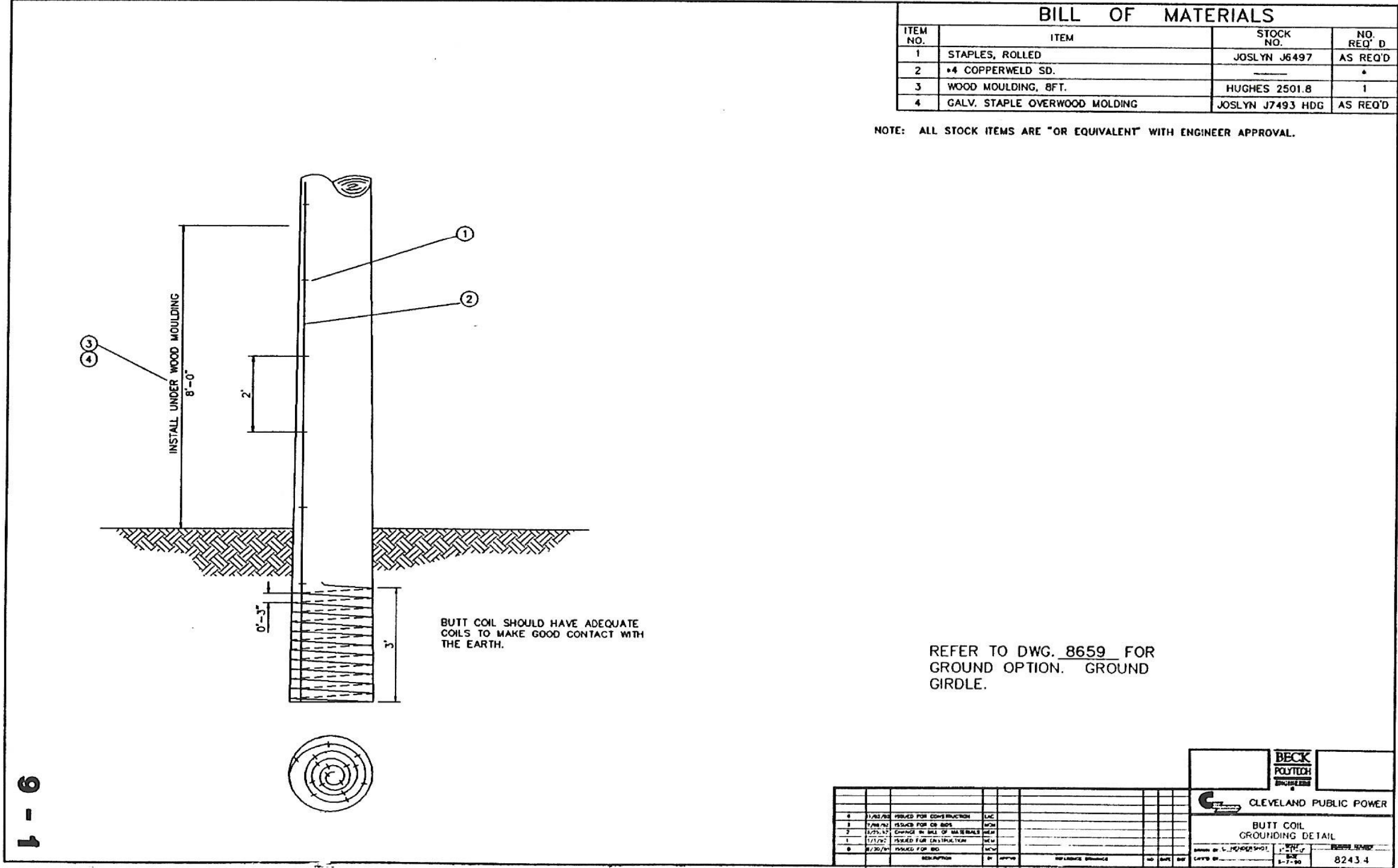
ULTIMATE HOLDING CAPACITY		
	CLASS 6 SOIL	CLASS 7 SOIL
8-20A	16,500 LBS	12,000 LBS
8-20B	21,500 LBS	16,000 LBS

NOTES:

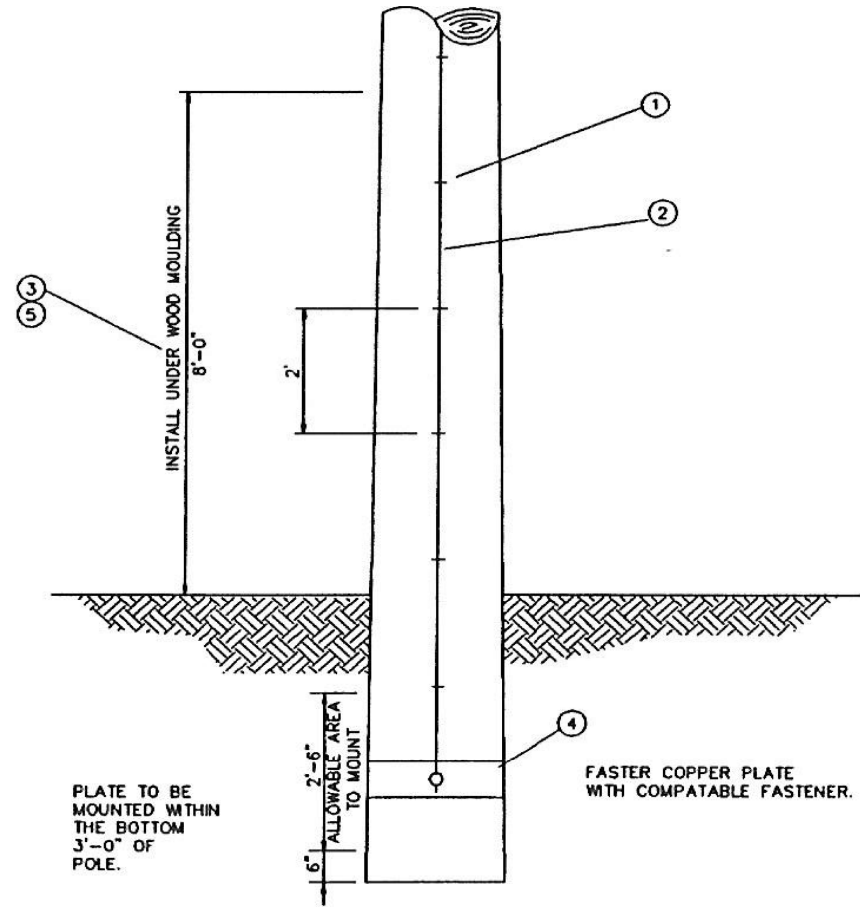
1. INSTALL ANCHOR PER MANUFACTURER'S RECOMMENDATIONS.
2. INSTALL ANCHOR AT SAME ANGLE AS GUY.
3. BACKFILL HOLE WITH CRUSHED ROCK COMPACTED IN 6 IN LAYERS. TOP 6" PER SITE RESTORATION REQUIREMENTS.

CLEVELAND PUBLIC POWER									
EXPANDING CONE ANCHOR									
0	7/11/88	FOR R1 ISSUE	AKC						8778.0
REVISION	DATE	DESCRIPTION	BY	APP'D	QUANTITY	NO.	DATE	BY	

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		




BILL OF MATERIALS

ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	STAPLES, ROLLED	JOSLYN J6497	AS REQ'D
2	•4 COPPERWELD SD.	—	•
3	WOOD MOULDING, 8FT.	HUGHES 2501.8	1
4	CROUND GIRDLE	HOMAC GG 288-E3	1
5	GALV. STAPLE OVER WOOD MOLDING	JOSLYN J7493 HDG	AS REQ'D

• AS REQUIRED

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.

										 CLEVELAND PUBLIC POWER									
										GROUND CIRCLE GROUNDING DETAIL									
3	1/18/82	READY FOR CONSTRUCTION	LAC							DRAWN BY: M. NEALE CHECKED BY: J. HANSEN DATE: 8/29/82									
1	7/26/82	READY FOR CONSTRUCTION	HOW							REVISION NUMBER: 8559 2									
0	8/27/82	READY FOR CONSTRUCTION	WLM																
DESCRIPTION BY: JPT-82										REVISION: 8559 2									

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



NOTES:

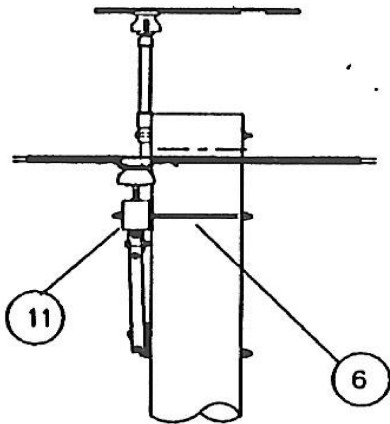
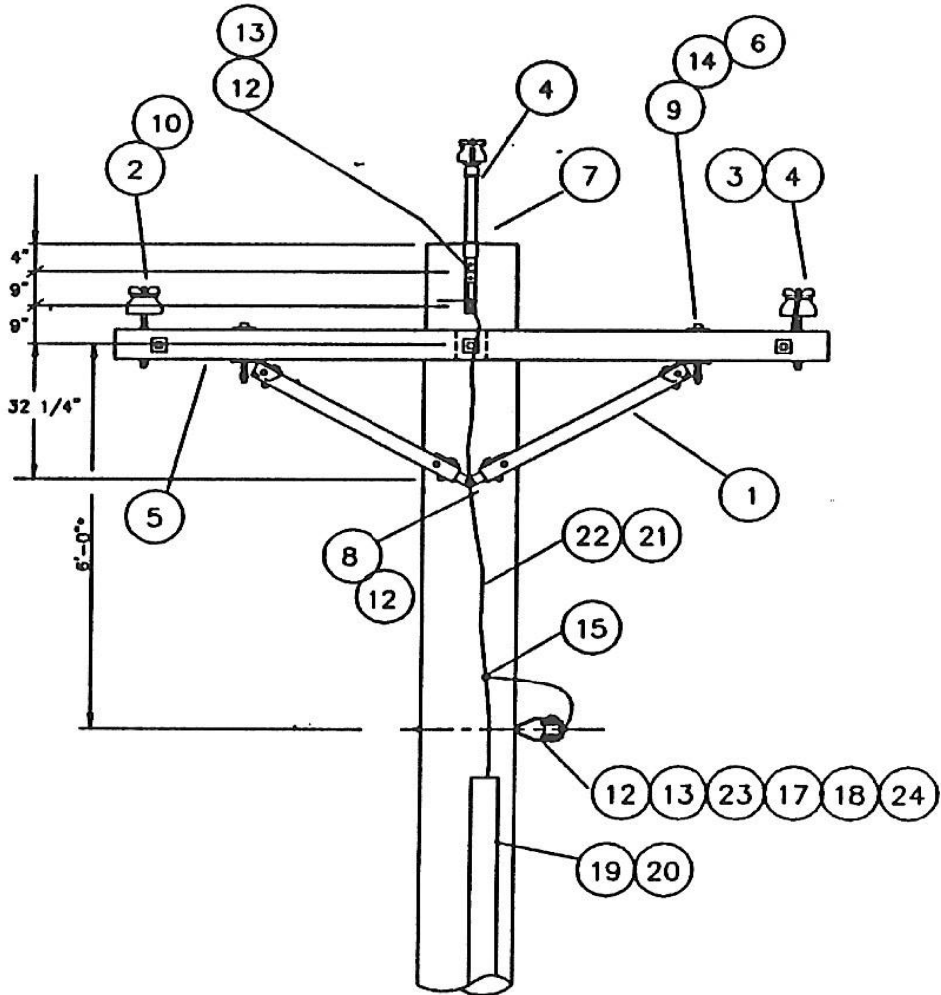
1. 2'-0" MAXIMUM SPACING FOR STAPLES OVER GROUND WIRE AND MOULDING.
2. GROUND WIRE TO CLEAR ALL HARDWARE BY 2" MINIMUM.
3. BOND POLE GROUND TO ALL NEUTRALS, SECONDARIES, UNINSULATED GUYS, STREETLIGHTS, AND EQUIPMENT.
4. BOND POLE GROUND TO COMMUNICATION MESSENGERS, IF PRESENT.
5. INSTALL MOULDING OVER POLE GROUND LOCATED ABOVE NEUTRAL.

[illegible]

0	2019-08-08	RFC
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15 - 1

• WITH TRANSFORMER INSTALLATION
INCREASE THIS SPACING BY 3'-0"
IF 100kva OR SMALLER ADD 4'-0"
IF LARGER THAN 100kva



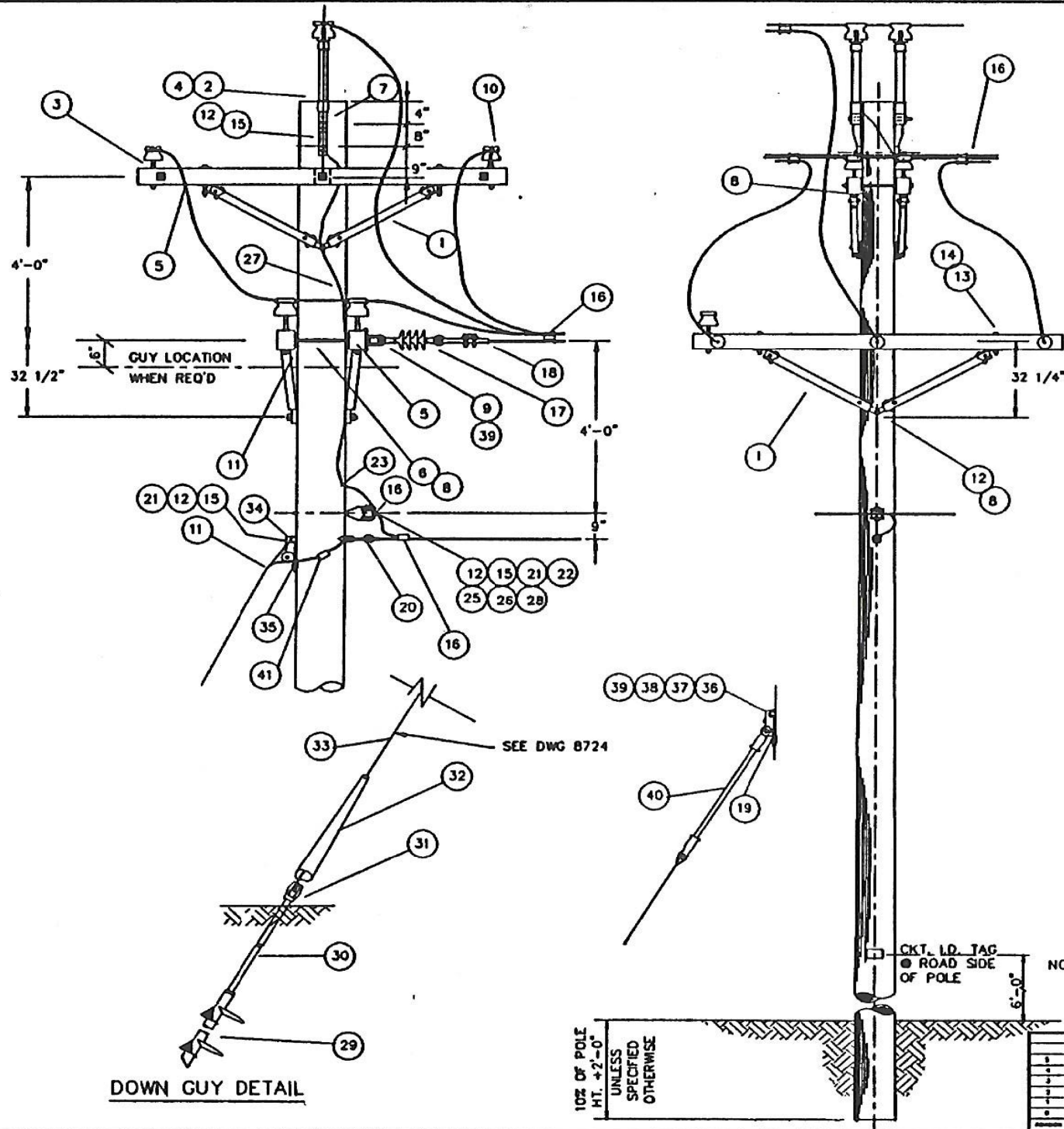
BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	WOOD BRACE, 60" SPAN	JOSLYN J4730W-R	1 PAIR
2	INSULATOR, 13 KV PIN TYPE	PP 366-3	3
3	STEEL PIN, 5/8" SHANK	JOSLYN J826	2
4	LINE GUARD (SEE NOTE 3)	-----	1 SET/PH
5	CROSSARM, 8" X 3 1/2" X 4 1/2" STL PIN	-----	1
6	WASHER, LOCK FOR 1/2" BOLT	JOSLYN J138	2
7	POLE TOP PIN, FIBERGLASS, 12"	FLAGG 7561-812	1
8	WASHER, 5/8", ROUND, FLAT	JOSLYN J1088	5
9	BOLT, MACHINE 1/2" X 6"	JOSLYN J8706	2
10	TIE WIRE, DOUBLE PIN	PER COND.	3
11	GRID GAIN	FLAGG PX122	1
12	BOLT, MACHINE 5/8" X LENGTH REQ'D.	JOSLYN J8808 - 24	5
13	WASHER, CURVED 11/16" HOLE, 3X3X1/4"	JOSLYN J1113	5
14	WASHER, 1/2", ROUND, FLAT	JOSLYN J1086	2
15	CONNECTOR, #4CU TO #4 CU	BURNDY YC4CA	1
16	CONNECTOR, #4CU TO NEUT./MESSENGER	PER NEUTRAL	1
17	CLEWS, INSULATED SECONDARY	JOSLYN J3540	1
18	INSULATOR SPOOL	JOSLYN J101	1
19	WOOD MOULDING, 8' LENGTHS	HUGHES 2501.8	3
20	STAPLES, GALV., OVER WOOD MOLDING	HUGHES 25014	50
21	STAPLES, ROLLED, OVER BARE COPPERWELD	JOSLYN J6497	100
22	#4 COPPERWELD SOLID S.D	-----	AS REQ'D.
23	NEUTRAL TIE WIRE	PER NEUT.	1
24	WASHER, SPRING, 5/8" BOLTHOLE	JOSLYN J3540	5

NOTE:
1. SEE DWG. 8243 OR 8569 FOR GROUNDING
2. BOND ALL HARDWARE TO NEUTRAL
3. LINE GUARD REQ'D. FOR SPANS OVER 200'

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NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

15 - 4



BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	WOOD BRACE, 60" SPAN	JOSLYN J4730W-R	4
2	INSULATOR, 13kV, PIN TYPE	PP 366-3	7
3	STEEL PIN, 5/8" DIA SHANK	JOSLYN J626	8
4	LINE GUARD, DOUBLE PIN	PER COND.	3 SET
5	CROSSARM, 8' 3 1/2 X 4 1/2, STL. PIN		4
6	DBL. ARMING BOLT, 5/8" X LENGTH REQ'D.	JOSLYN JB860 - 79	4
7	POLE TOP PIN, 12", , FIBERGLASS	FLAGG 7581-612	2
8	WASHER, 5/8", ROUND, FLAT	JOSLYN J-1078	18
9	EYENUT FOR 5/8" BOLT, OVALEYE	JOSLYN J1092	3
10	TIEWIRE, DOUBLE PIN SUPPORT TIE	PER COND.	4 SET
11	GRID GAIN	FLAGG PX122	4
12	BOLT, 5/8" X LENGTH REQ'D., MACHINE	JOSLYN JB808 - 24	8
13	BOLT, 1/2" X 6", MACHINE	JOSLYN JB8706	4
14	WASHER, 1/2", ROUND, FLAT	JOSLYN J1088	4
15	WASHER, CURVED 11/16" HOLE, 3 X 3 X 1/4"	JOSLYN J1113	4
16	IMPACT TAP CONNECTOR, WRE TO WRE	PER COND.	8
17	INSULATOR, SUSPENSION 13kV , PDI-15 TYPE	DB 401015-0215	3
18	CLAMP DEADEND, STRAIGHTLINE	PER COND.	3
19	LAG SCREW, 3x1/2, FETTERDRIVE, DRIVE POINT	JOSLYN JB753P	2
20	DEADEND CLAMP	PER NEUT. SIZE	1
21	WASHER, SPRING 5/8" BOLT HOLE	JOSLYN J3540	4
22	CONNECTOR #4 CU TO NEUTRAL	PER NEUT.	1
23	CONNECTOR #4 CU TO #4 CU	BURNDY 4C4CA	1
24	CONECTOR NEUT TO NEUT	PER NEUT. SIZE	1
25	CLEWS, INSULATED SECONDARY	JOSLYN J3540	1
26	INSULATOR SPOOL	JOSLYN J101	1
27	#4 SD CU	-	AS REQ'D.
28	NEUTRAL TIE WRE	PER NEUT. SIZE	1
29	ANCHOR, SINGLE OR DOUBLE HELIX	CHANCE E102-0820/0823	AS REQ'D.
30	ANCHOR ROD 7" x 1"	CHANCE 12334P	AS REQ'D.
31	EYENUT FOR 1" ANCHOR ROD, TWNEYE	CHANCE 6562	1 PER ROD
32	GUY GUARD, PLASTIC 8' YELLOW	JOSLYN J1493Y	AS REQ'D.
33	GUY STRAND	PER ENGINEER	AS REQ'D.
34	GUY HOOK	FLAGG P135A	1
35	ANCHOR SHACKLE 5/8" PIN	JOSLYN BT 3009	3
36	GUY HOOK, COMBINATION TYPE	FLAGG P139	1
37	MACHINE BOLT 7/8" X LENGTH REQ'D	JOSLYN J9062 TO 9074	1
38	WASHER, SPRING FOR 7/8" BOLT	JOSLYN J3542	1
39	WASHER SQ. CURVED 3 1/2 X 3 1/2 X 3/8	JOSLYN JB828	1
40	FIBERGLASS GUY STRAIN INSULATOR 54" 30kv	FLAGG P135A	1
41	NONTENSION SLEEVE	JOSLYN JB753P	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVANT" WITH ENGINEERS APPROVAL.
• • REQUIRES ANSI CLASS 55-5 WITH 11/16" R. SIDE GROOVE WHEN 636 CONDUCTOR WITH GUARD IS USED.

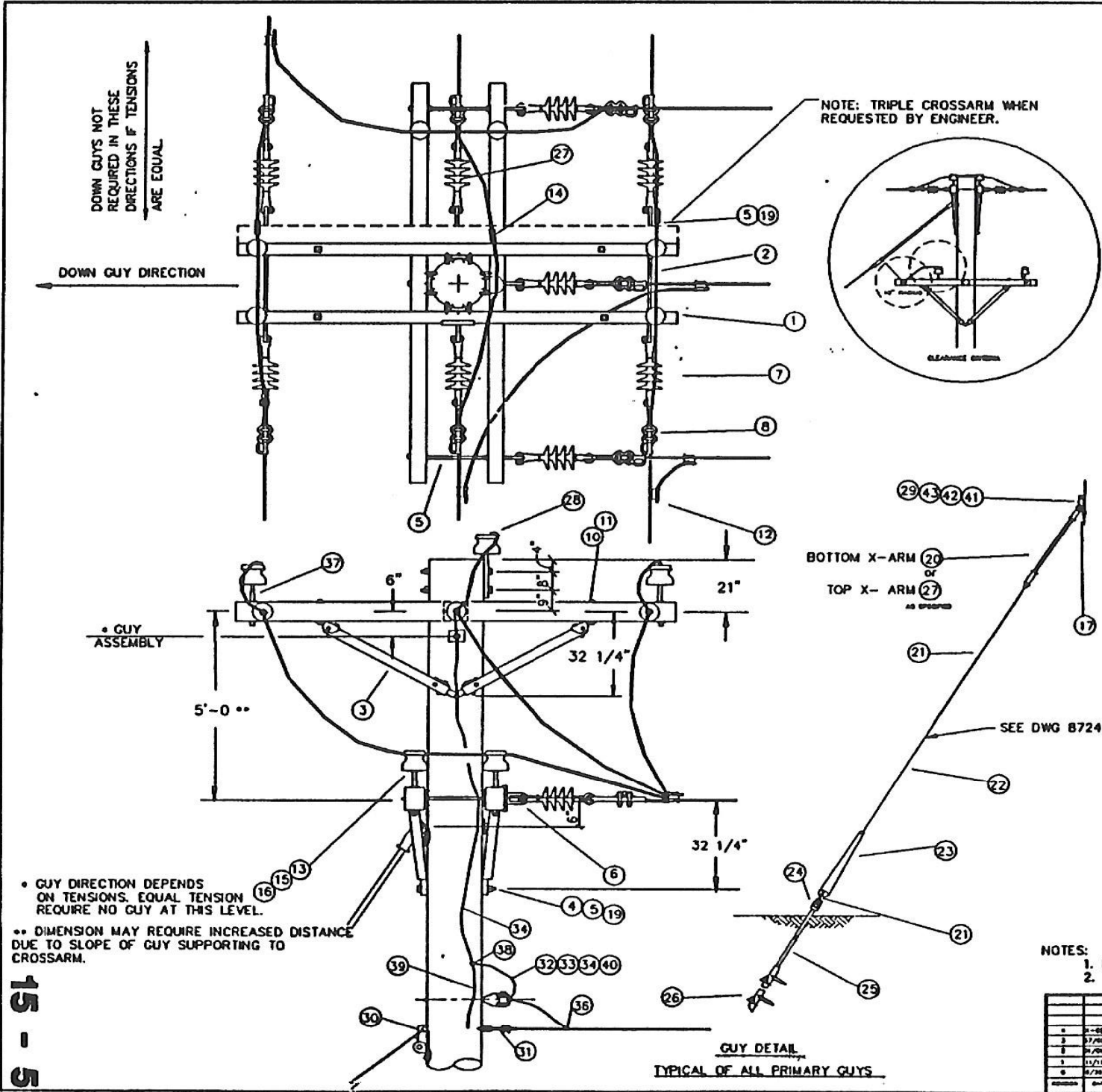
NOTES:

1. FOR GROUNDING SEE DWG. 8243 OR 8569
2. BOND ALL HARDWARE TO NEUTRAL
3. • SPANS OVER ROD 200' REQUIRE LINEGUARD

REV	DATE	DESCRIPTION	BY	APP'D	REFERENCE	NO.	DATE	REV
1	11-01-01	REVISED FOR CONSTRUCTION	JAC					
2	07/09/07	REVISED FOR C.D. 803	JAC					
3	01/07/08	REVISED FOR CONSTRUCTION	JAC					
4	11/19/07	REVISED FOR BDR, ADDITION	JAC					
5	08/21/08	REVISED FOR BDR, ADDITION	JAC					
6	01/07/08	REVISED FOR BDR	JAC					

BECK POLYTECH ELECTRICAL	
CLEVELAND PUBLIC POWER	
DBL. ARM / DBL. PIN ASSEMBLY WITH THREE PHASE D.E. BUCKARM	
BY JAC	DATE 8556.5

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



BILL OF MATERIALS			
ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	CROSSARM, WD., 3 1/2" X 4 1/2", STL PIN	-----	4
2	DBL. ARMING EYEBOLT, 5/8" X LENGTH REQ'D.	JOSLYN J9814 - 28	4
3	WOOD BRACE, 60" SPAN	JOSLYN J4730W-R	4 PAIR
4	BOLT, MACHINE, 5/8" X LENGTH REQ'D.	JOSLYN J8808 - 24	8
5	WASHER, 5/8", ROUND, CURVED	JOSLYN J1113	16
6	OVAL EYENUT, FOR 5/8" BOLT	JOSLYN J1092	10
7	INSULATORS, SUSPENSION 13kV, PDI TYPE	OB 401015-0215	9
8	DEADEND CLAMP, STRAIGHTLINE	PER COND.	9
9	GRID GAIN	FLAGG PX 122	4
10	BOLT, MACHINE, 1/2" X 8"	JOSLYN J8708	8
11	WASHER, 1/2", ROUND, FLAT	JOSLYN J1088	8
12	IMPACT CONNECTOR, LINE TO LINE	AMPACT	6
13	INSULATOR, 13kV PIN TYPE	PP 366-3	6
14	JUMPER SPLICE, NON-TENSION, PER COND.	PER COND. SIZE	3
15	STEEL PIN, 3/4" SHANK	JOSLYN J606	8
16	TIE WIRE, DBL PIN, PER COND SIZE	PER COND. SIZE	3
17	LAG SCREW, 3 X 1/2", FETTERDRIVE & POINT	JOSLYN J2742	2
18	WASHER, CURVED 11/16" HOLE 3 X 3 X 1/4"	JOSLYN J1113	8
19	SPRING WASHER FOR 5/8" BOLT	JOSLYN J3540	8
20	FIBERGLASS STRAIN INSUL. 36" 30k MIN	FLAGG 300-36	1
21	GUY GRIP	PER GUY STRAND	4
22	GUY STRAND	PER ENGINEER	AS REQ'D.
23	GUY GUARD, PLASTIC, 8" YELLOW	JOSLYN J1493Y	2
24	EYENUT FOR 1" ANCHOR ROD	CHANCE 6562	2
25	ANCHOR ROD 7" X 1"	CHANCE 12334P	2
26	ANCHOR SINGLE OR DOUBLE HELIX	E102-08207 - 0823	2
27	FIBERGLASS STRAIN INSUL 78" 30k MIN	FLAGG 300-78	1
28	TIE WIRE, SQL PIN	PER COND. SIZE	1
29	GUY HOOK, COMBINATION TYPE	FLAGG P139	1
30	GUY HOOK NEUTRAL	FLAGG P135A	1
31	DEADEND CLAMP	PER NEUT. SIZE	1
32	CLEWS SECONDARY INSULATED	JOSLYN J3540	1
33	INSULATOR SPOOL	JOSLYN J101	1
34	#4 CU SOLID S.D.	-	AS REQ'D.
35	CONNECTOR, #4 CU TO NEUTRAL	PER NEUT.	1
36	CONNECTOR NEUT. TO NEUT.	PER NEUT.	1
37	STEEL PIN 5/8" SHANK	JOSLYN J626	4
38	CONNECTOR #4 CU TO #4 CU	BURNDY YC4C4	1
39	WOOD MOULDING 8" LENGTH	HUGHES 2501.B	3
40	NEUTRAL TIE WIRE	PER NEUT. SIZE	1
41	MACHINE BOLT 7/8 X LENGTH REQ'D	JOSLYN J9062-9074	1
42	SPRING WASHER FOR 7/8 BOLT	JOSLYN J3542	1
43	CURVED SQ WASHER 3 1/2 X 3 1/2 X 3/8 15/16 HOLE	JOSLYN J6828	1

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEERS APPROVAL.

- NOTES:
1. BOND ALL HARDWARE TO NUTRAL
2. SEE DWG. B243 OR B569 FOR GROUNDING

NO.	DATE	DESCRIPTION	BY	CHKD	APP'D	REVISION
1	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
2	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
3	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
4	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
5	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
6	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
7	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
8	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
9	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
10	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
11	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
12	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
13	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
14	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
15	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
16	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
17	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
18	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
19	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
20	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
21	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
22	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
23	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
24	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
25	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
26	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
27	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
28	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
29	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
30	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
31	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
32	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
33	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
34	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
35	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
36	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
37	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
38	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
39	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
40	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
41	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
42	8/23/19	ISSUED FOR CONSTRUCTION	JCH			
43	8/23/19	ISSUED FOR CONSTRUCTION	JCH			

BECK
POLYTECH
ENGINEERS

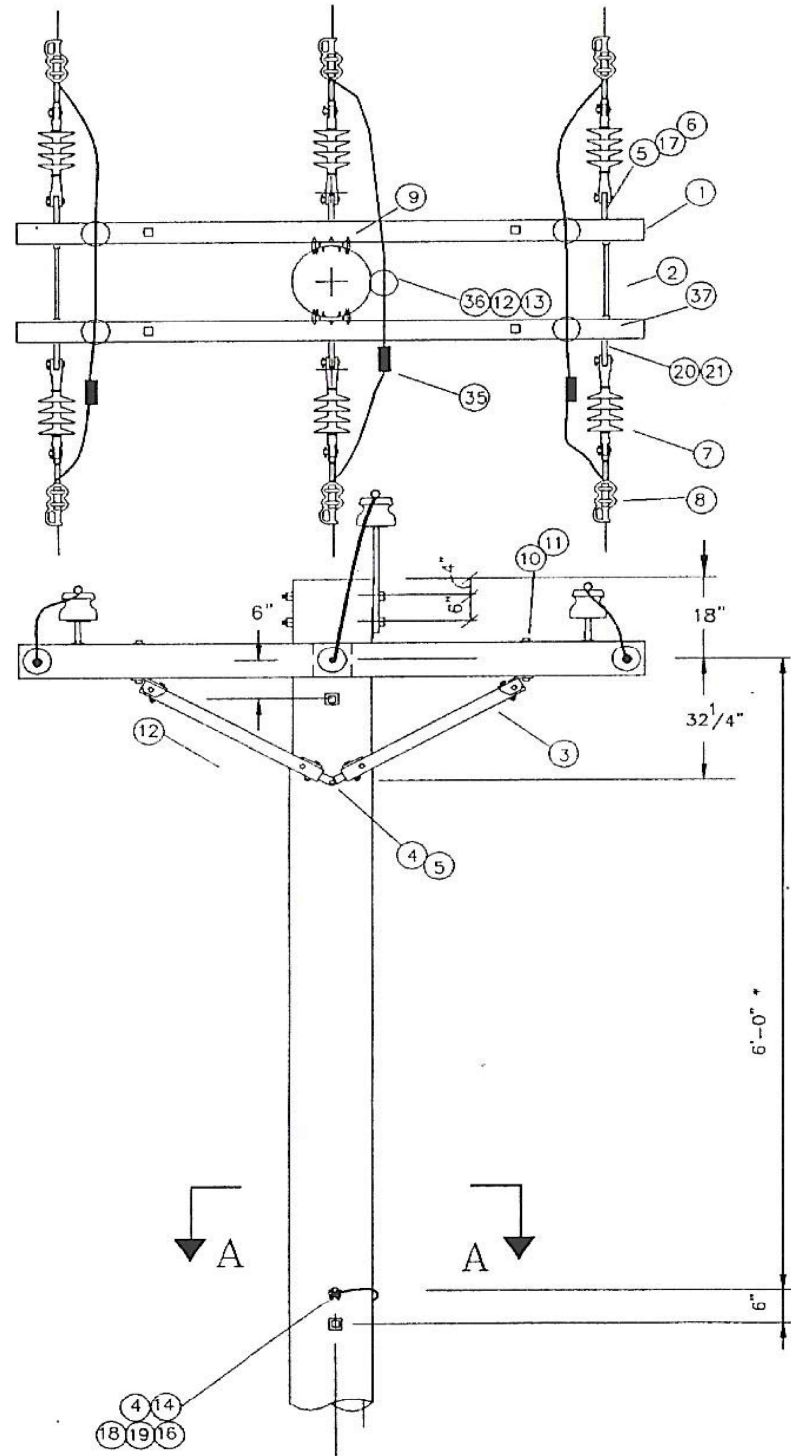
CLEVELAND PUBLIC POWER

THREE PHASE THREE WAY D.E.
WOOD ARM ASSEMBLY

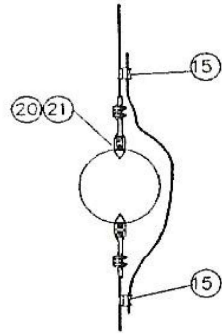
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NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

15 - 7



SECTION A - A



- NOTES:
1. GROUNDING TO BE SPECIFIED SEPARATELY.
 2. THIS ASSEMBLY ALSO USED FOR ANGLE CONSTRUCTION.

BECK
POLYTECH
ENGINEERS

REVISION	DATE	DESCRIPTION	BY	APP'D.	REFERENCE DRAWINGS	NO.	DATE	DIST.
5	9-23-96	ISSUED FOR CONSTRUCTION		RFOH				
4	11-02-92	ISSUED FOR CONSTRUCTION	LAC					
3	07/08/92	ISSUED FOR C9 BIDS	MCM					
2	01/01/92	ISSUED FOR CONSTRUCTION	MEM					
1	11/19/91	ISSUED FOR BID, ADDENDUM	MEM					
0	8/20/91	ISSUED FOR BID	MCM					

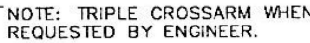
BILL OF MATERIALS

ITEM NO.	ITEM	STOCK NO.	NO. REQ'D
1	3 5/8 x 4 5/8 x 8'-0" STL. PIN CROSSARM		2
2	DBL. ARMING EYEBOLT, 5/8" X LENGTH REQ'D	JOSLYN J9614 TO J9626	2
3	WOOD BRACE, 60" SPAN	JOSLYN J4730W-R	2 PAIR
4	BOLT, 5/8 x LENGTH REQ'D, MACHINE	JOSLYN J8808 TO 8824	6
5	WASHER, 5/8". ROUND FLAT	JOSLYN J1086	4
6	#4 W.P. CU SOLID		AS REQ'D
7	INSULATORS, SUSPENSION 13KV, PDI-15 TYPE	OB 401015-0215	6
8	DEADEND CLAMP	PER CONDUCTOR SIZE	6
9	GRID GAIN	FLAGG PX122	2
10	BOLT, 1/2 X 6", MACHINE	JOSLYN J8706	4
11	WASHER, 1/2, ROUND FLAT	JOSLYN J1086	4
12	STEEL POLE TOP PIN 20"	JOSLYN J740	1
13	INSULATOR 13kv PIN TYPE	FLAGG PP366-3	5
14	DEADEND CLAMP	PER NEUT. SIZE	2
15	IMPACT CONNECTOR	PER NEUT. SIZE	1
16	LOCK NUT, FOR 5/8" BOLT	JOSLYN J3540	4
17	WASHER, LOCK FOR 1/2" BOLT	JOSLYN J138	4
18	WASHER, CURVED 11/16" HOLE 3X3X1/4	JOSLYN J113	4
19	CONNECTOR #4CU TO NEUTRAL/MESSENGER	PER NEUT/MESS SIZE	1
20	EYENUT FOR 5/8" BOLT OVALEYE	JOSLYN J1092	8
21	ANCHOR SHACKLE	JOSLYN J2742	8
22			
23			
24			
25			
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27			
28			
29			
30			
31			
32			
33			
34			
35	JUMPER SPLICE, NON-TENSION	PER COND. BURNDY YCS4R-45R	3
36	TIE WIRE, SGL PIN	PER COND SIZE	1
37	TIE WIRE, DBL PIN	PER COND SIZE	2
38	STEEL PIN 3/4" SHANK	JOSLYN J626	4
39			
40			
41			
42			
43			

NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEER APPROVAL.

C CLEVELAND PUBLIC POWER	
THREE PH. DBL DEADEND TANGENT WOOD CROSSARM ASSEMBLY	
DRAWN BY: TEJAK	SCALE: N.T.S.
CHK'D BY: RFOH	DATE: 09-23-96
DRAWING NUMBER: 8560-2	

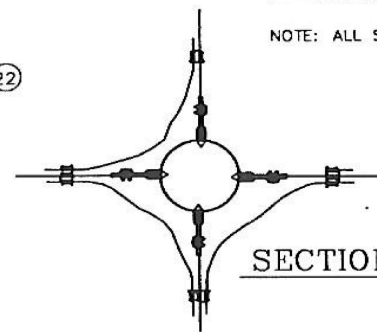
NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		



NOTE: ALL STOCK ITEMS ARE "OR EQUIVALENT" WITH ENGINEERS APPROVAL.

NOTES:

① SEE DWG 8243 OR 8569 FOR GROUNDING

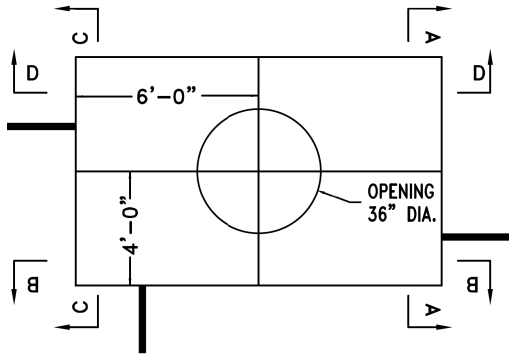


SECTION A - A

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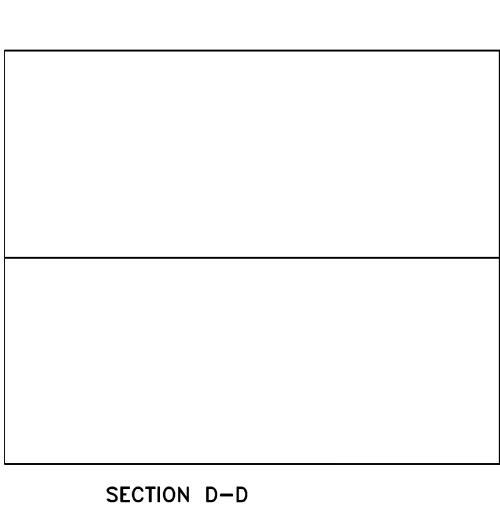
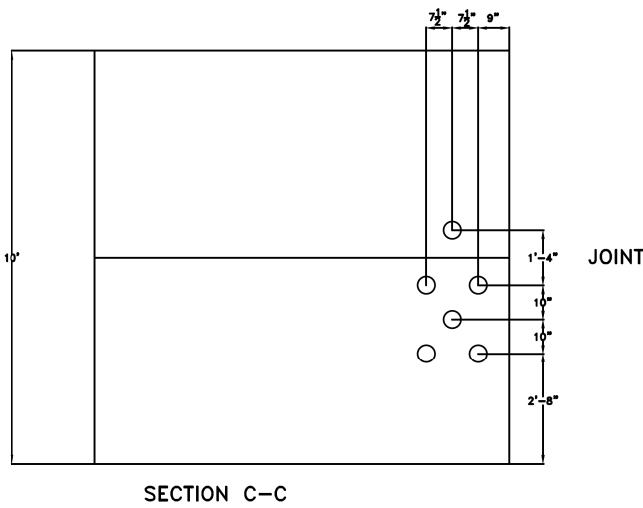
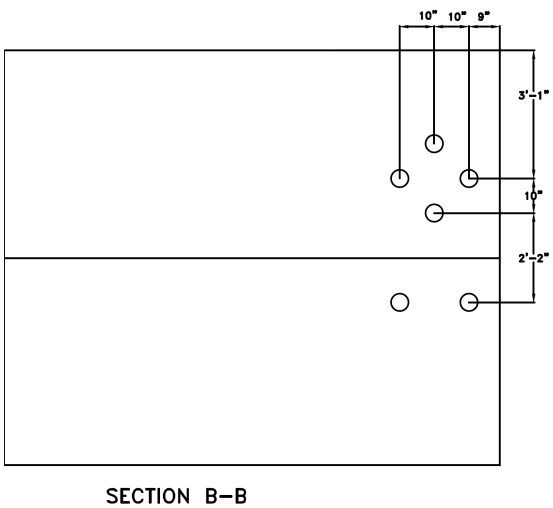
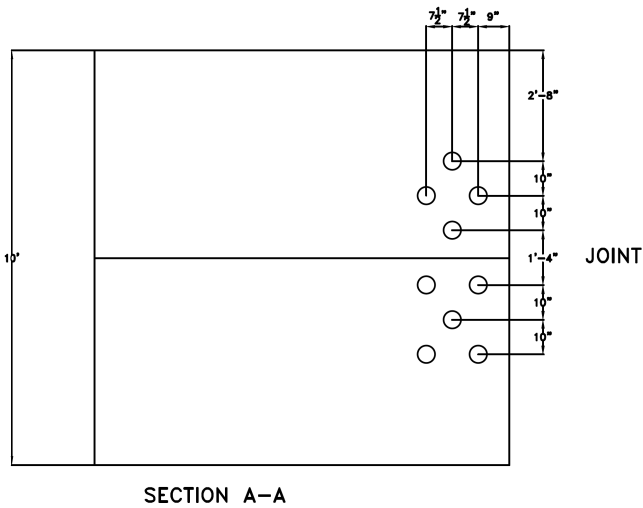
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

8'-0" WIDE	12'-0" LONG	10'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH 99-7 (EMH02)
LOCATION: STA. 12+55.00, 10.5 LT, E.55th ST.					

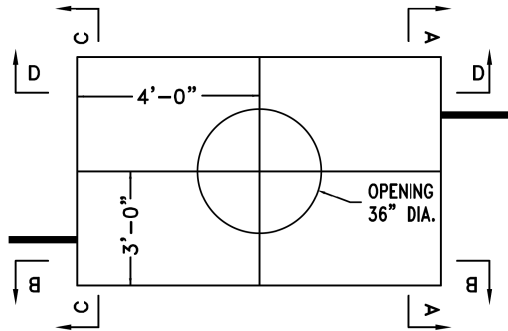
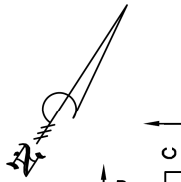


REQUIREMENTS:

- 1-36"Ø ROOF OPENING
- 21-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES

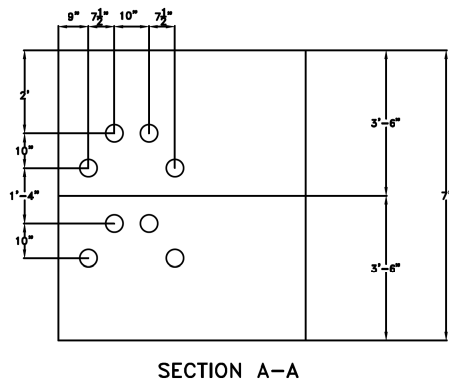


6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH04)
LOCATION: STA. 129+60.00, 59.0 RT, OC Blvd.					

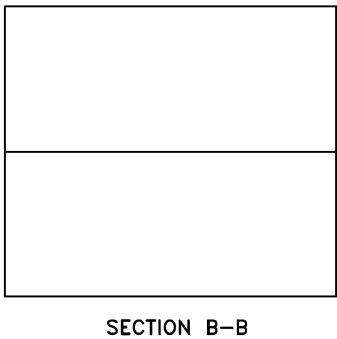


REQUIREMENTS:

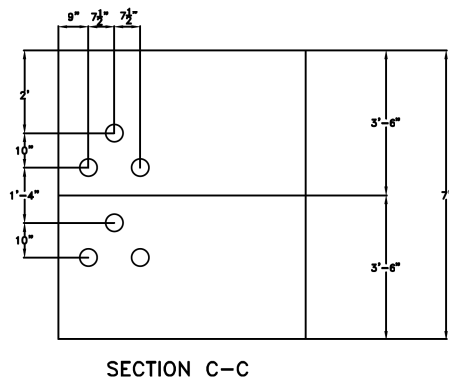
- 1-36"Ø ROOF OPENING
- 14-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



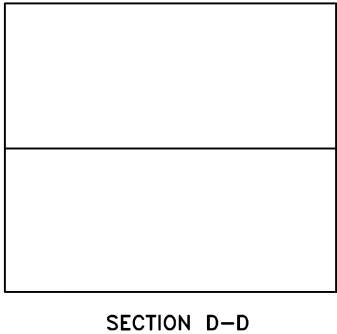
JOINT



SECTION B-B



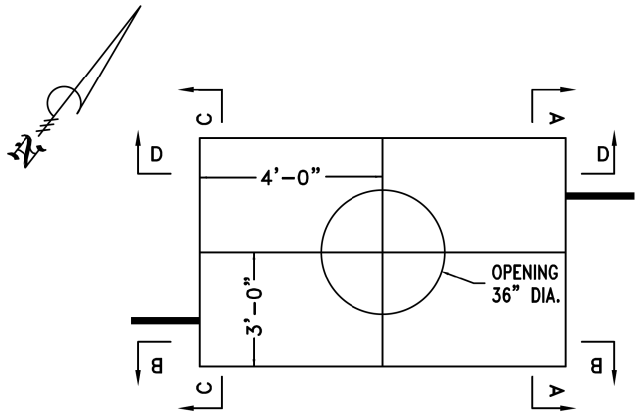
JOINT



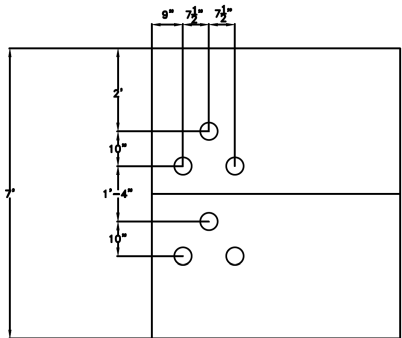
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH05)
LOCATION: STA. 132+99.71, 30.0 LT, OC Blvd.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 12-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

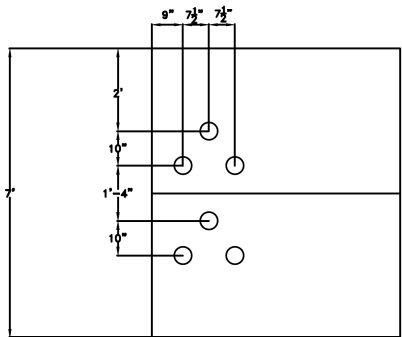


SECTION A-A

JOINT



SECTION B-B



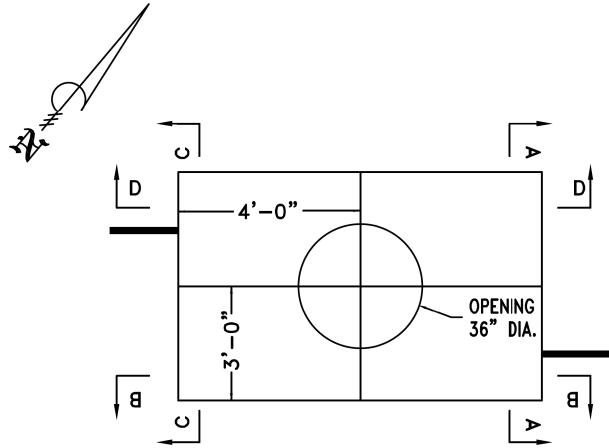
SECTION C-C

JOINT

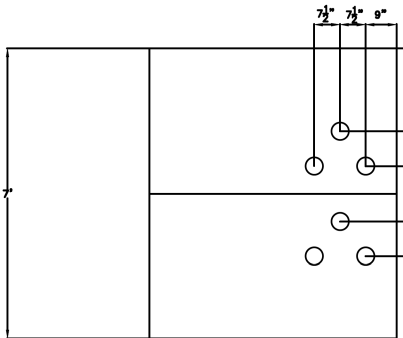


SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EM06)
LOCATION: STA. 135+99.72, 40.0 LT, OC Blvd.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 12-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

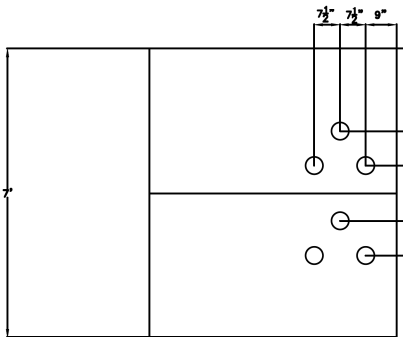


SECTION A-A

JOINT



SECTION B-B



SECTION C-C

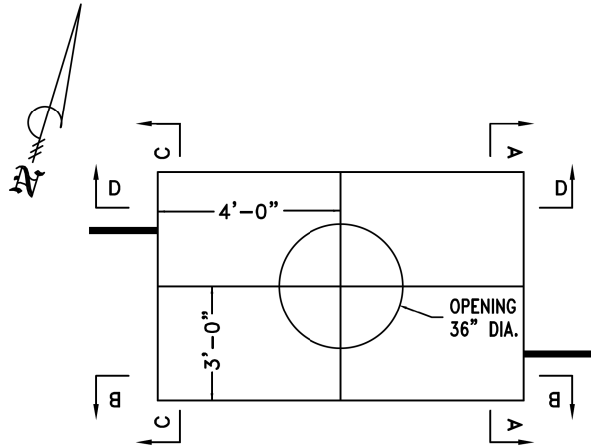
JOINT



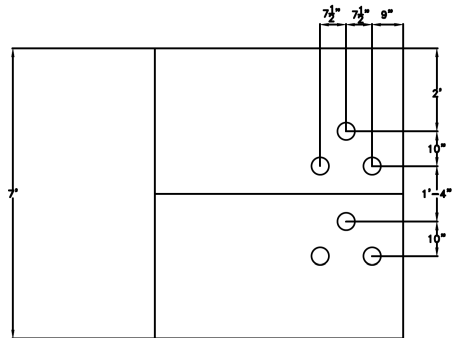
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH40)
LOCATION: STA. 139+50.00, 37.7 LT, OC Blvd.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 12-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

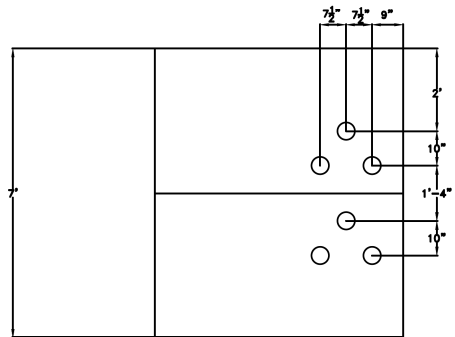


SECTION A-A

JOINT



SECTION B-B



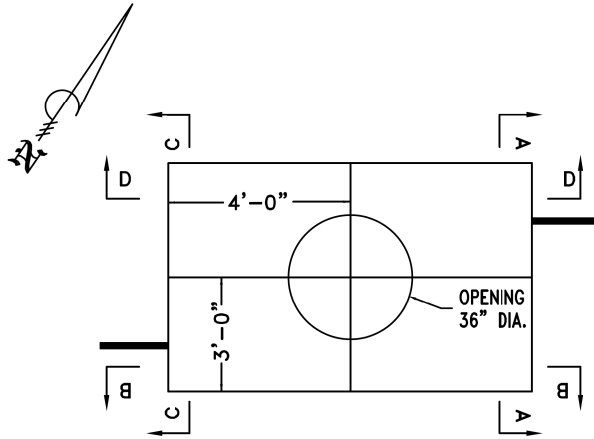
SECTION C-C

JOINT

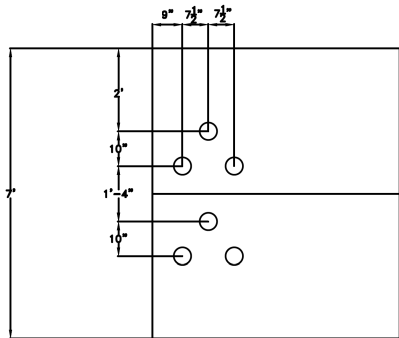


SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH07)
LOCATION: STA. 141+45.00, 56.0 RT, OC Blvd.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 12-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

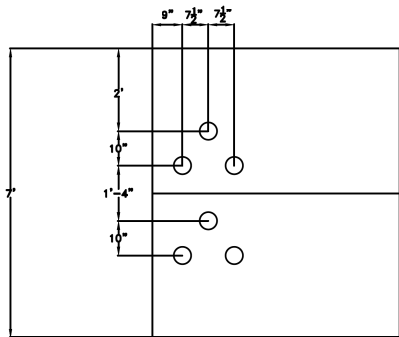


SECTION A-A

JOINT



SECTION B-B



SECTION C-C

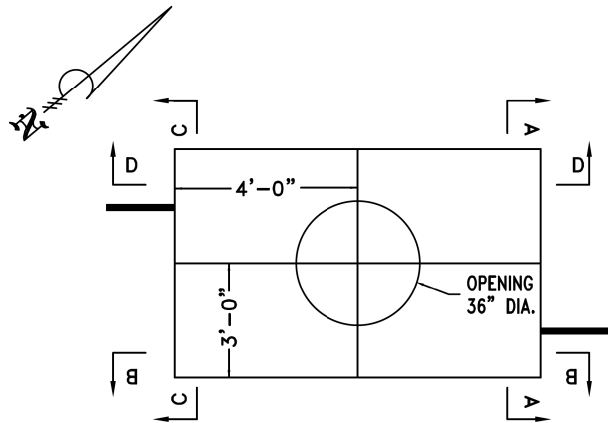
JOINT



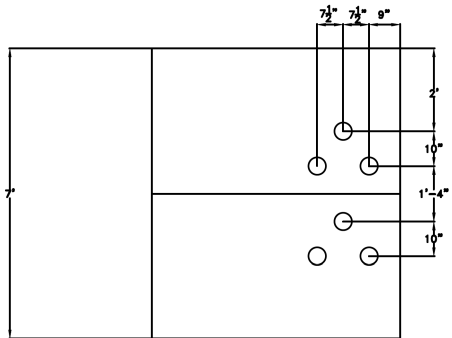
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EM08)
LOCATION: STA. 145+35.00, 56.0 RT, OC Blvd.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 12-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

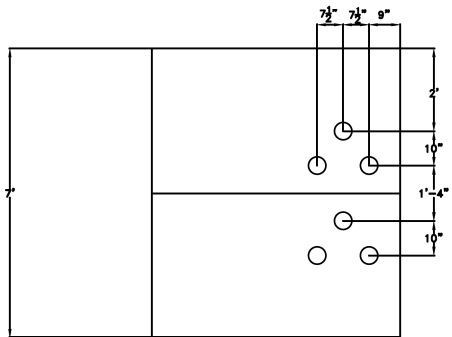


SECTION A-A

JOINT



SECTION B-B



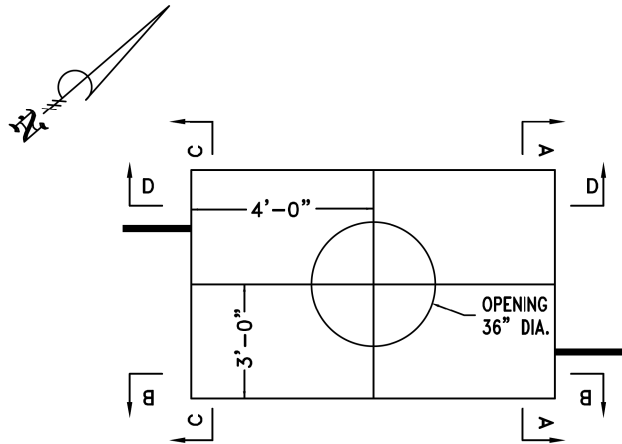
SECTION C-C

JOINT

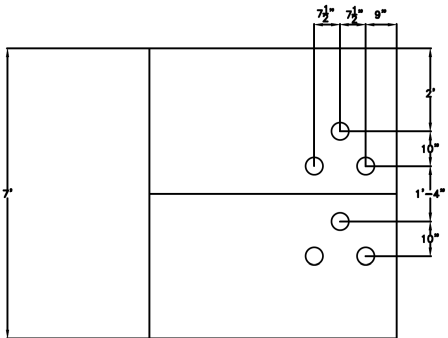


SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EM09)
LOCATION: STA. 149+50.00, 66.0 RT, OC Blvd.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 12-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

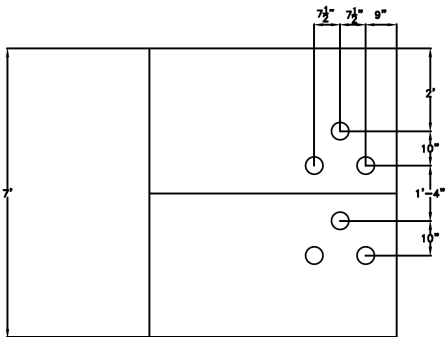


SECTION A-A

JOINT



SECTION B-B



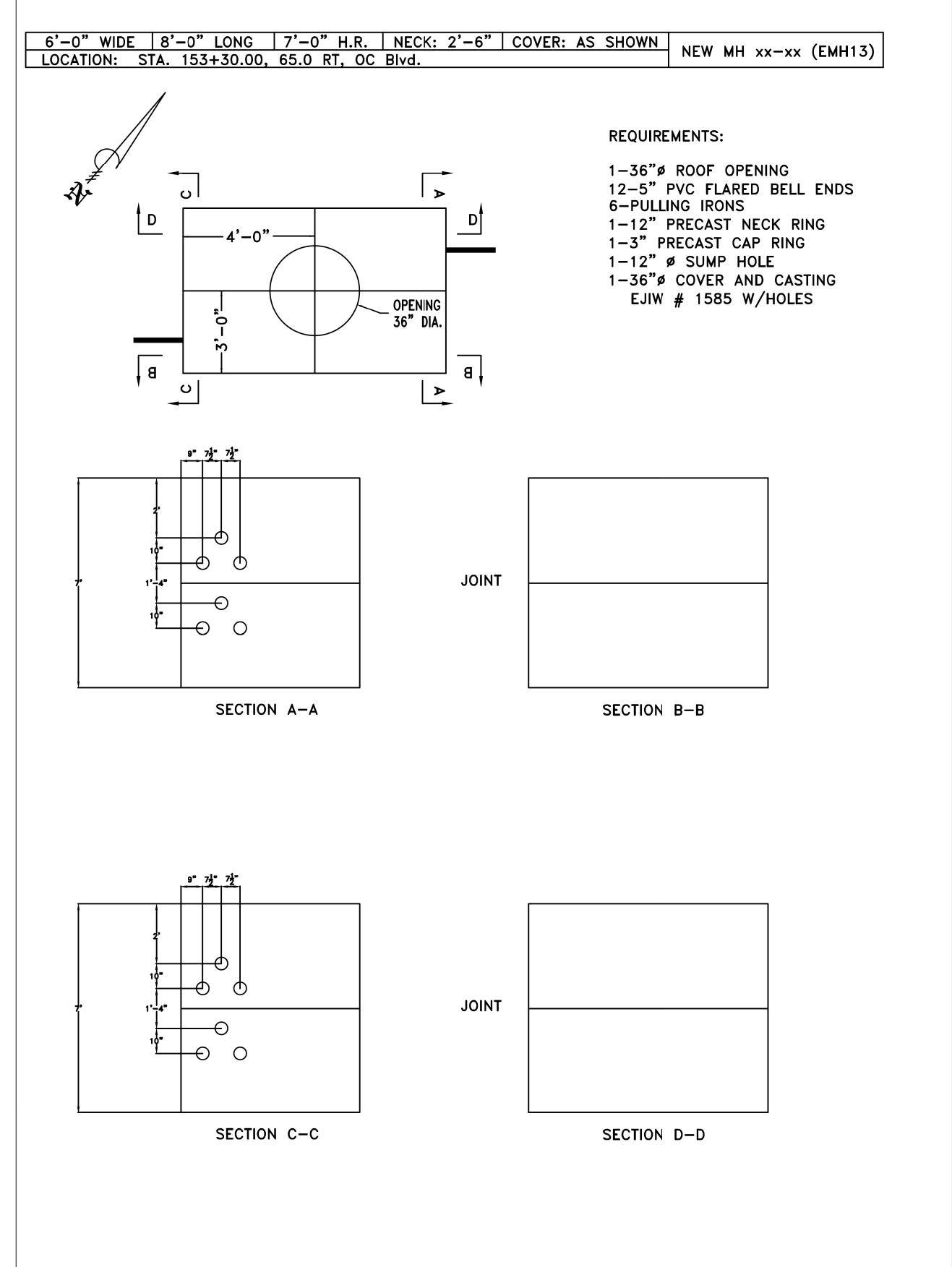
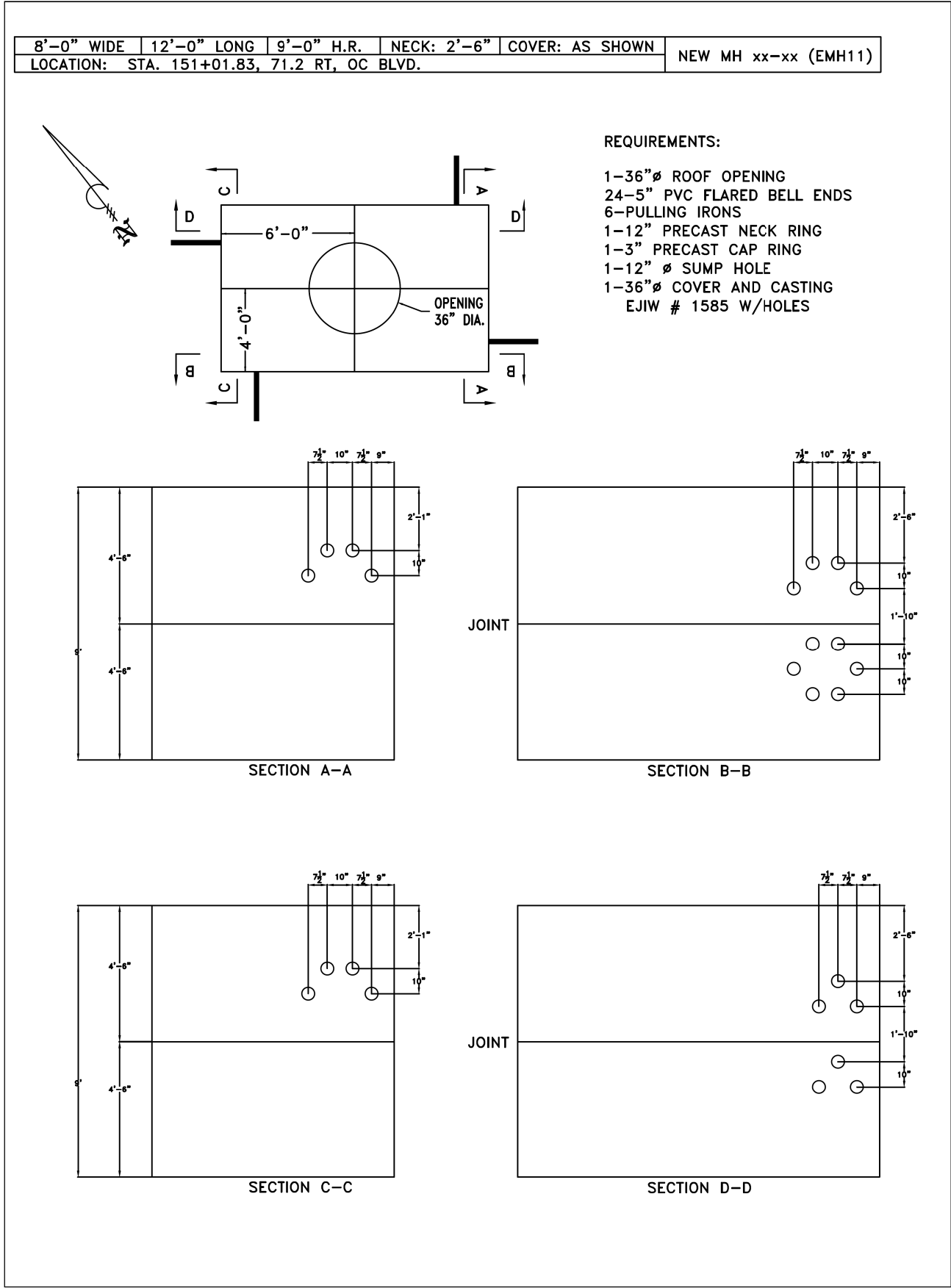
SECTION C-C

JOINT



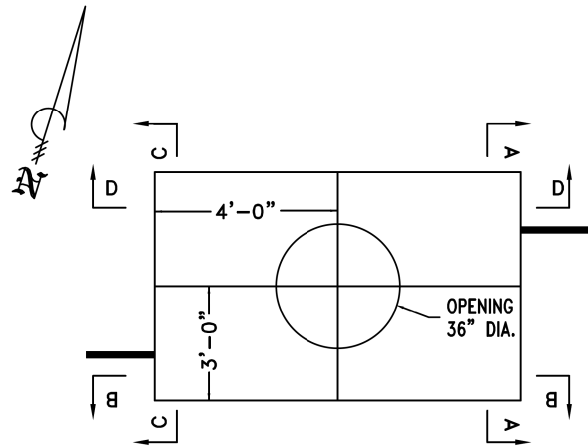
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		



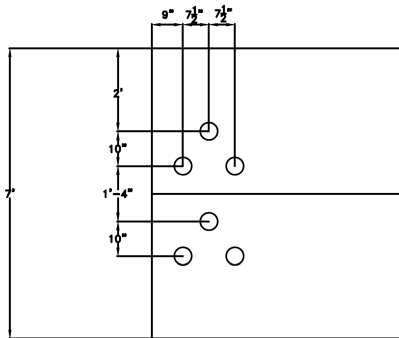
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH14)
LOCATION: STA. 157+40.21, 56.0 RT, OC Blvd.					



REQUIREMENTS:

- 1-36"Ø ROOF OPENING
- 12-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES

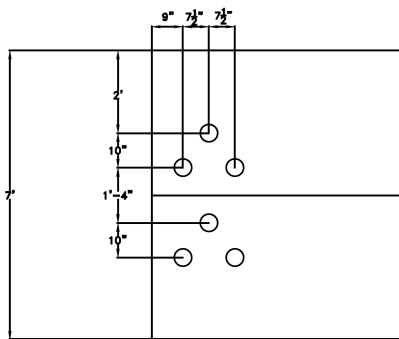


SECTION A-A

JOINT



SECTION B-B



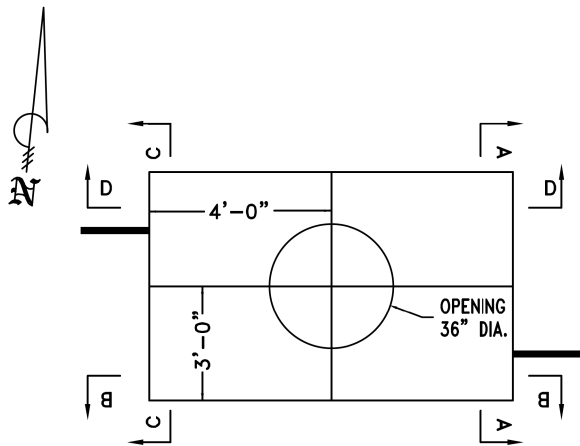
SECTION C-C

JOINT



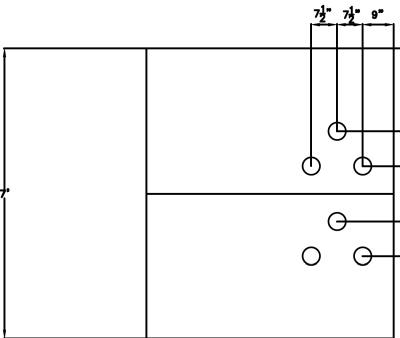
SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH15)
LOCATION: STA. 162+90.82, 60.50' RT, OC BLVD.					



REQUIREMENTS:

- 1-36"Ø ROOF OPENING
- 12-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES

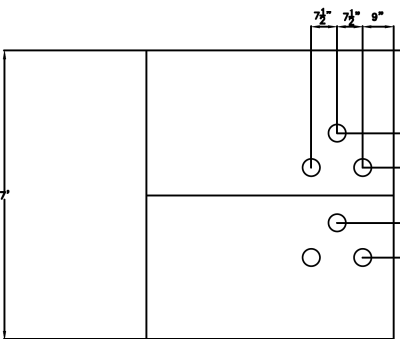


SECTION A-A

JOINT



SECTION B-B



SECTION C-C

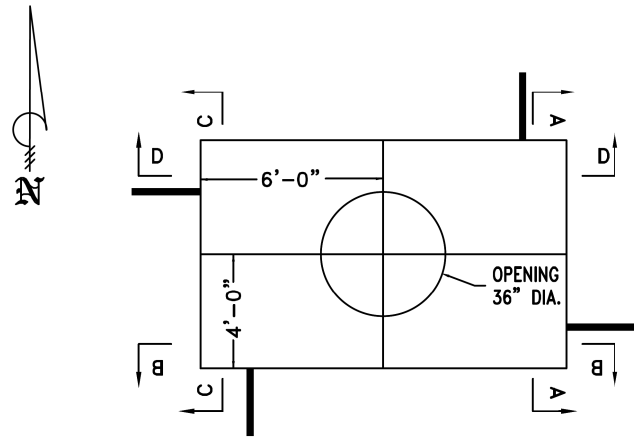
JOINT



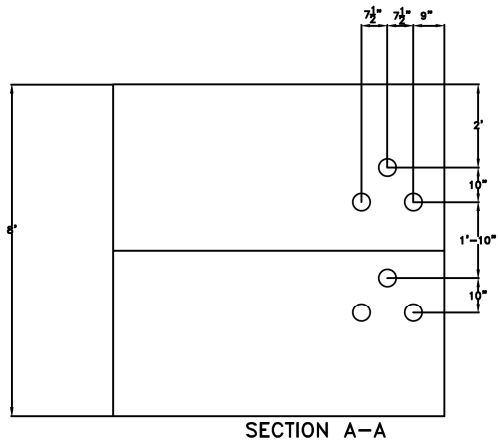
SECTION D-D

NO.	DATE	DESCRIPTION
1	2021-05-18	DC056
0	2019-08-08	RFC
ISSUE RECORD		

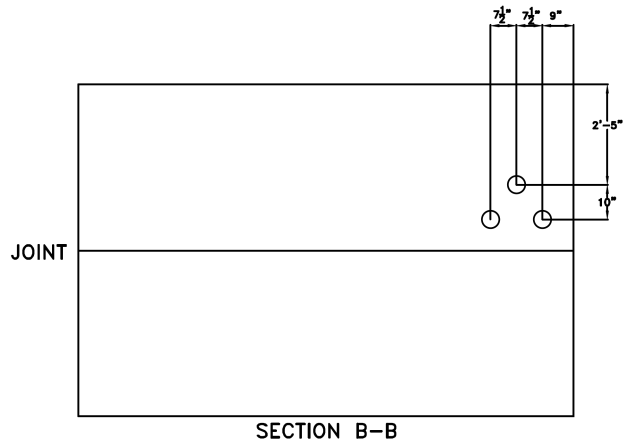
8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH16)
LOCATION: STA. 164+50.00, 65.0 RT, OC BLVD.					



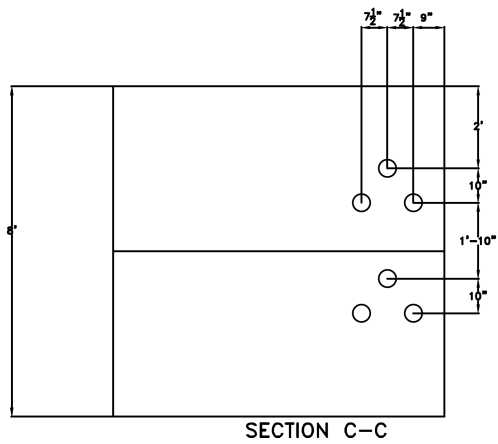
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 18-5" PVC FLARED BELL ENDS
 - PLUG 3 END BELLS IN SOUTH WALL
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



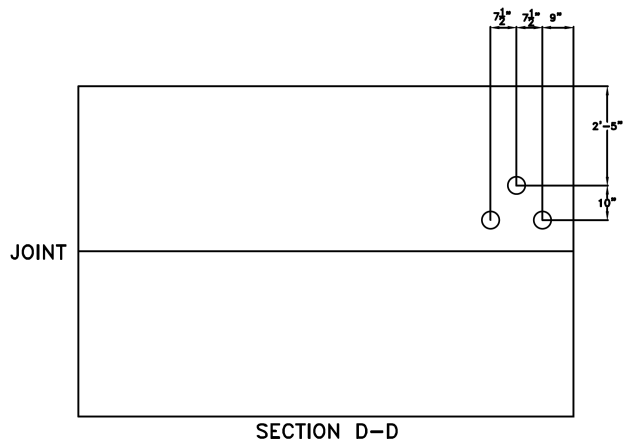
SECTION A-A



SECTION B-B

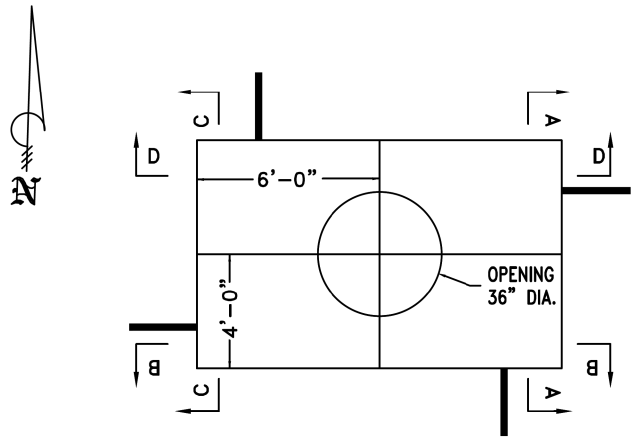


SECTION C-C

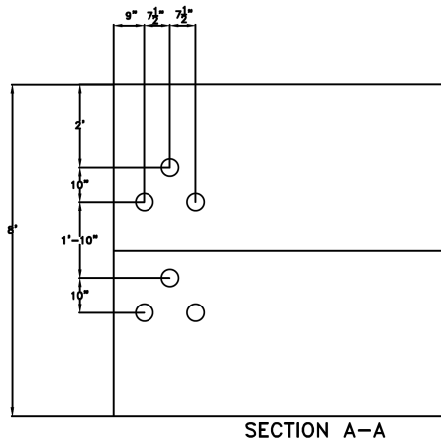


SECTION D-D

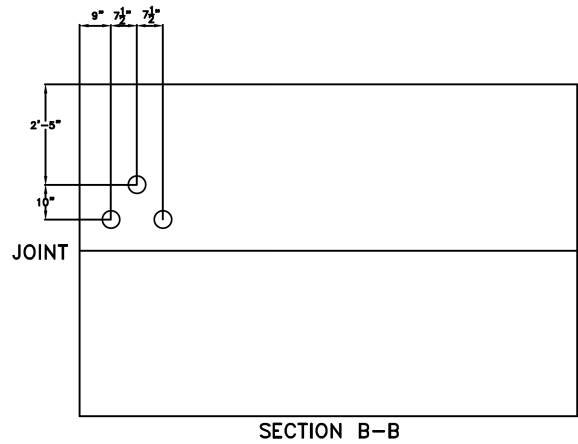
8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH17)
LOCATION: STA. 168+13.00, 65.0 RT, OC BLVD.					



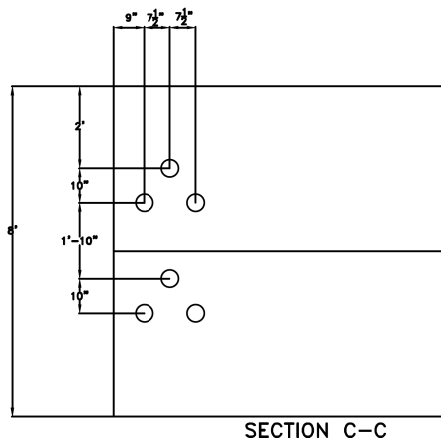
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 18-5" PVC FLARED BELL ENDS
 - PLUG 3 END BELLS IN SOUTH WALL
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



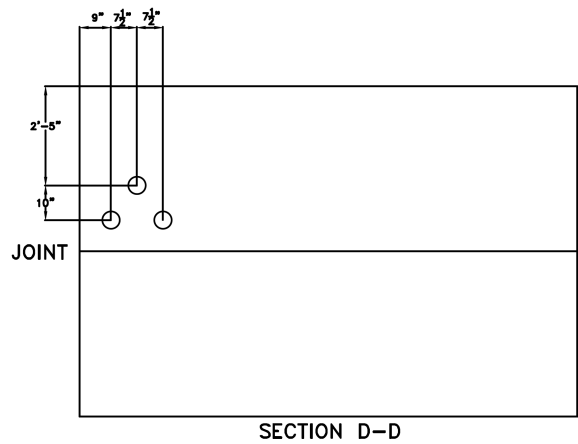
SECTION A-A



SECTION B-B



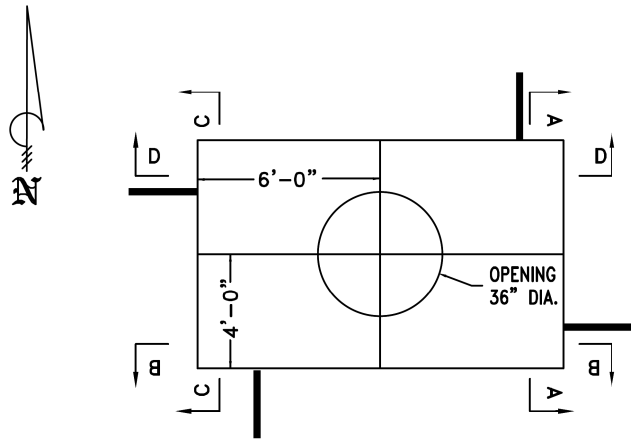
SECTION C-C



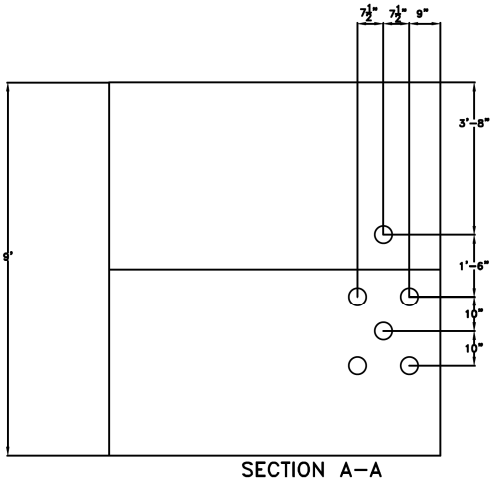
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

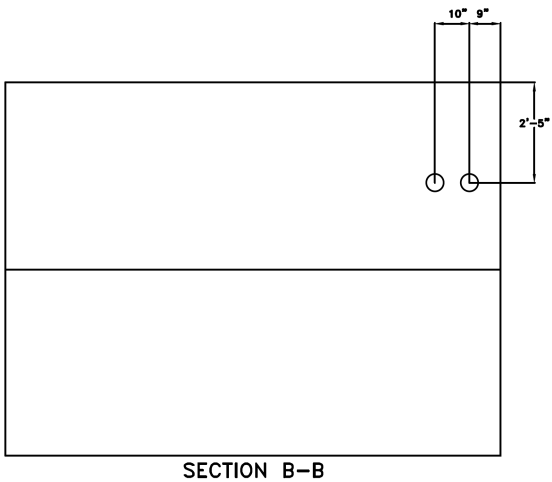
8'-0" WIDE	12'-0" LONG	9'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH18)
LOCATION: STA. 172+13.00, 65.0 RT, OC BLVD.					



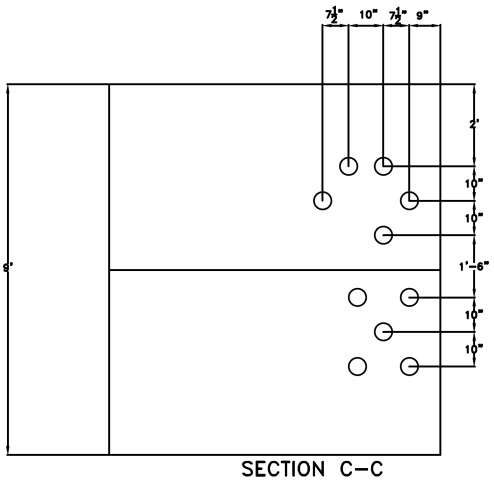
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 22-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



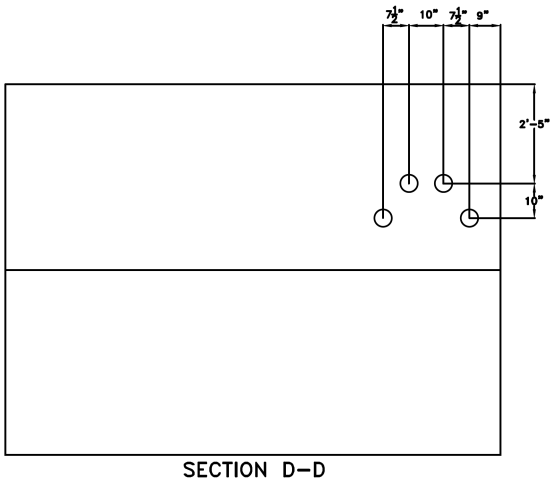
JOINT



SECTION B-B



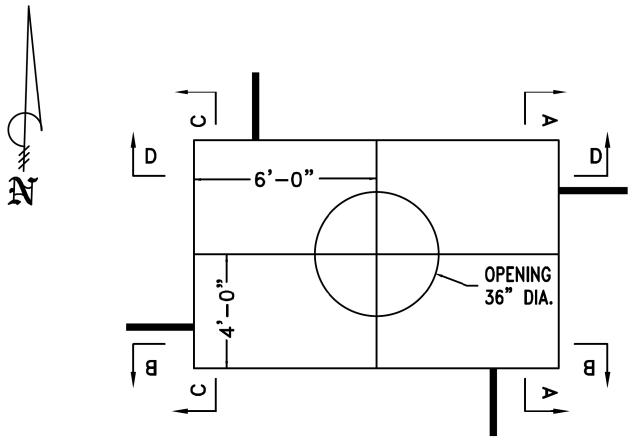
JOINT



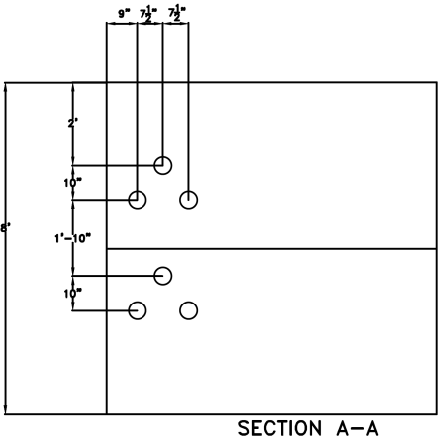
SECTION D-D

SECTION A-A

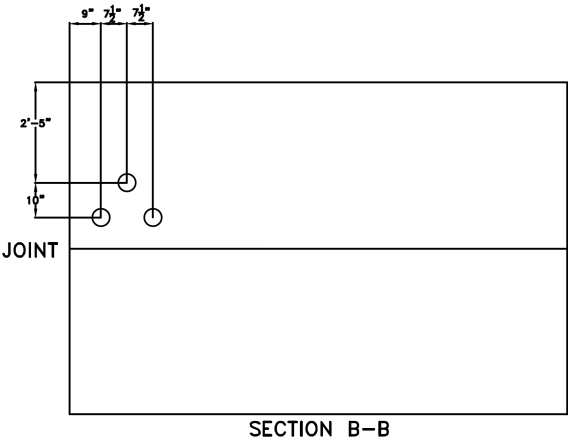
8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH19)
LOCATION: STA. 174+85.00, 65.0 RT, OC BLVD.					



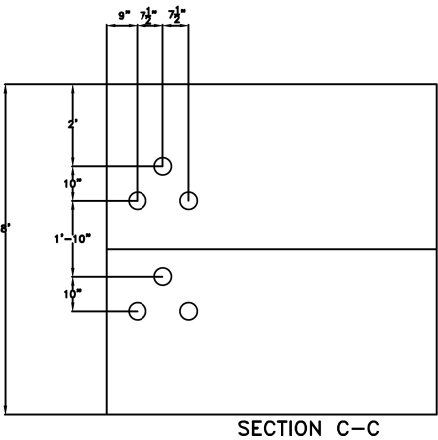
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 18-5" PVC FLARED BELL ENDS
 - PLUG 3 END BELLS IN SOUTH WALL
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



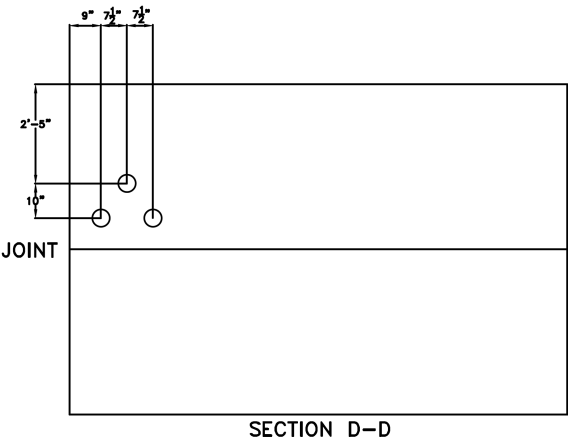
SECTION A-A



SECTION B-B



SECTION C-C

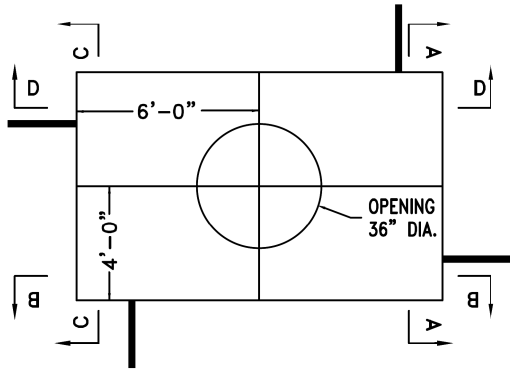


SECTION D-D

JOINT

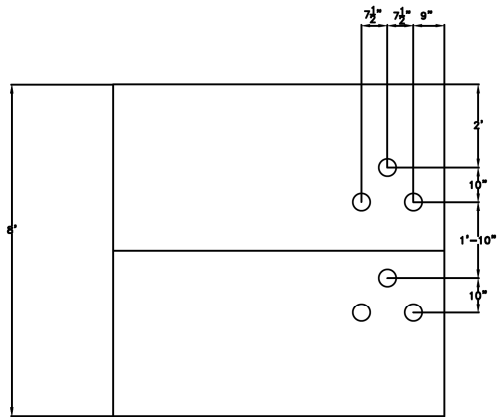
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH20)
LOCATION: STA. 177+90.00, 65.0 RT, OC BLVD.					

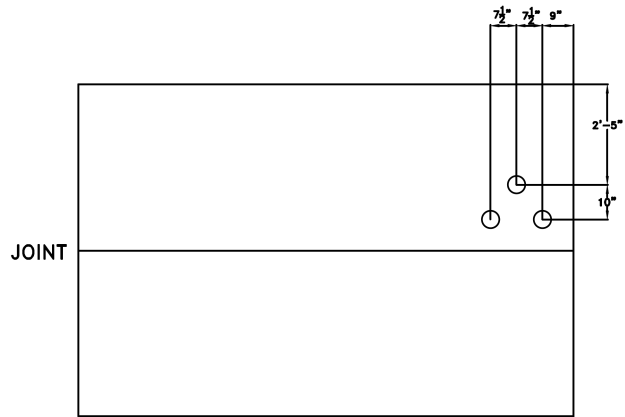


REQUIREMENTS:

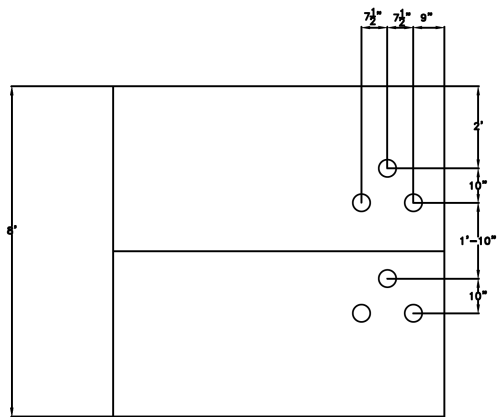
- 1-36"Ø ROOF OPENING
- 18-5" PVC FLARED BELL ENDS
- PLUG 3 END BELLS IN SOUTH WALL
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



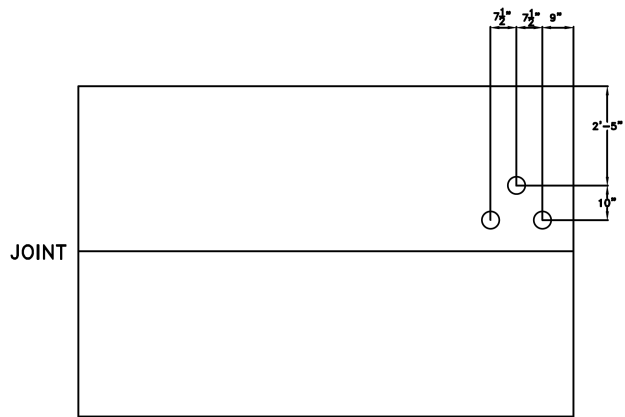
SECTION A-A



SECTION B-B

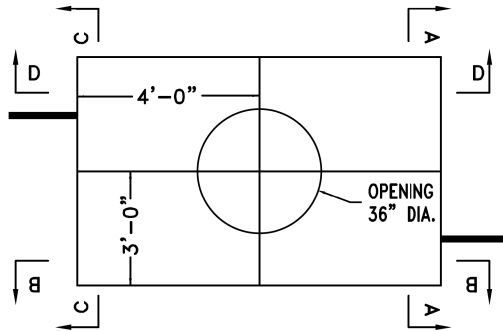


SECTION C-C



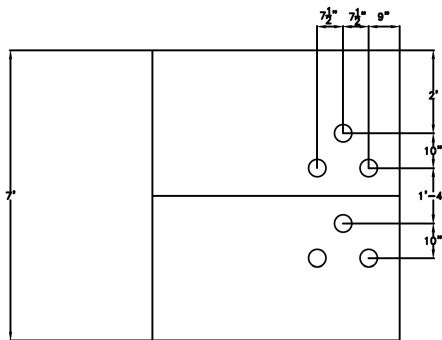
SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH 115-9 (EMH21)
LOCATION: STA. 15+70.36, 25.50 LT, E.79th St.					



REQUIREMENTS:

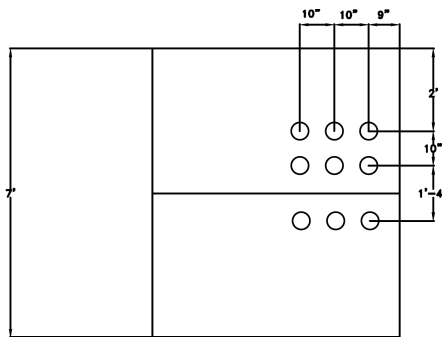
- 1-36"Ø ROOF OPENING
- 12-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES
- PRECAST OR BUILD-IN-PLACE MANHOLE
- FIELD VERIFY EXISTING MANHOLE CONFIGURATION PRIOR TO CONSTRUCTING NEW MANHOLE



SECTION A-A



SECTION B-B



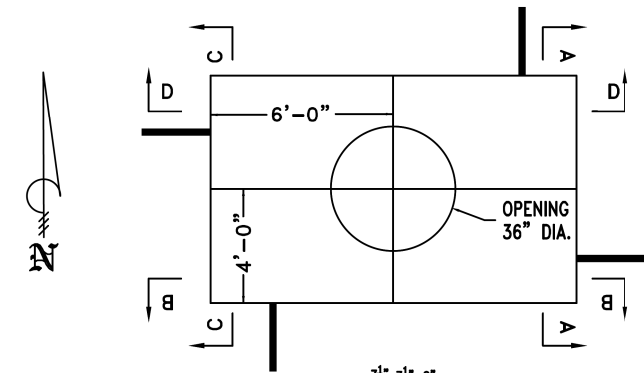
SECTION C-C



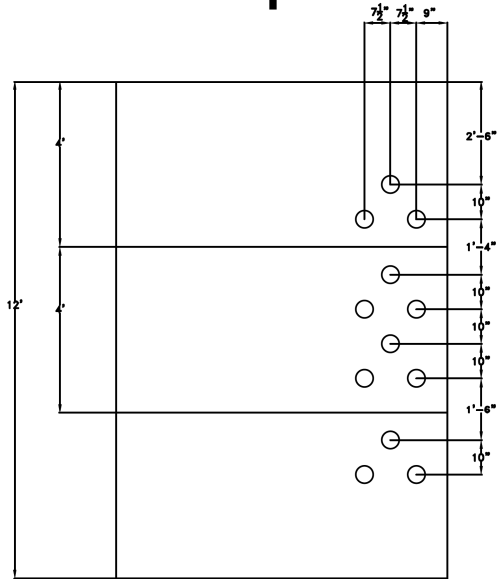
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

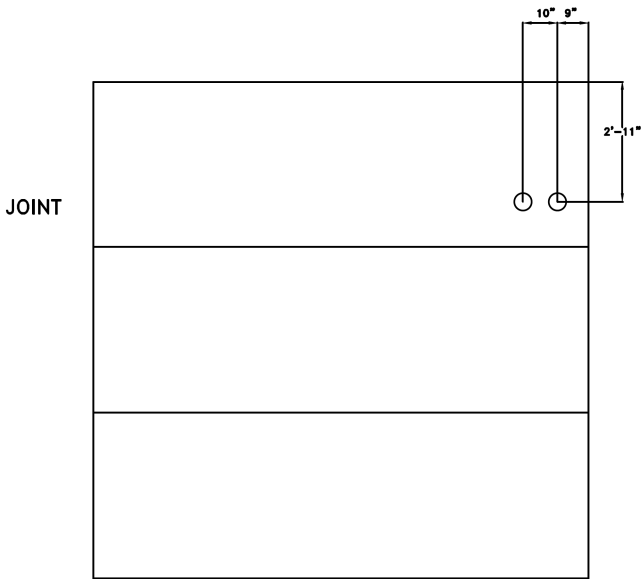
8'-0" WIDE	12'-0" LONG	12'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH22)
LOCATION: STA. 179+80.00, 65.0' RT, OC BLVD.					



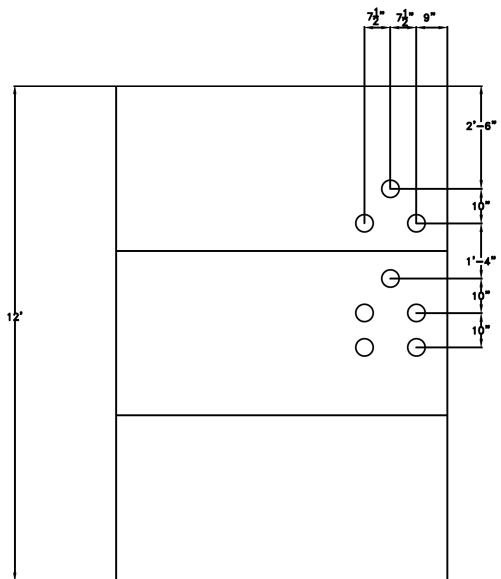
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 31-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



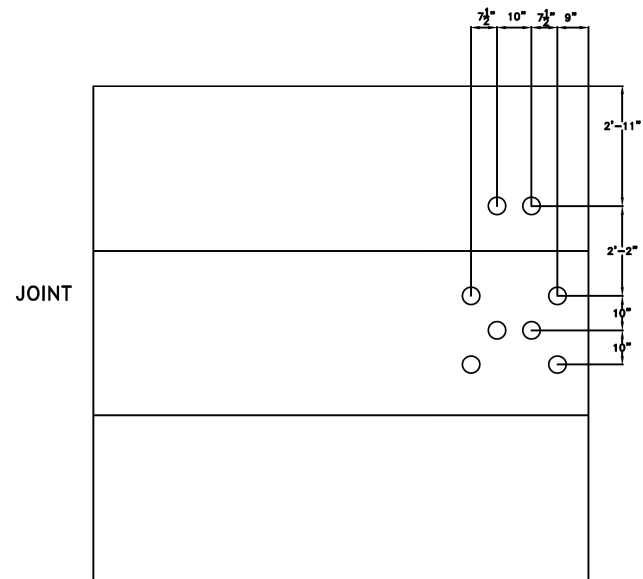
SECTION A-A



SECTION B-B

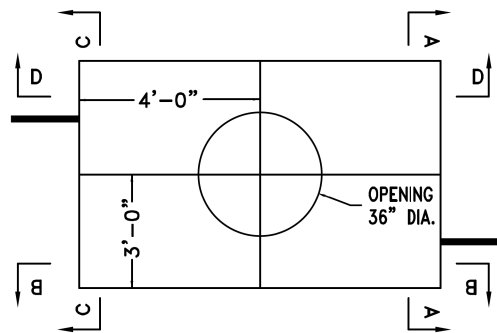


SECTION C-C



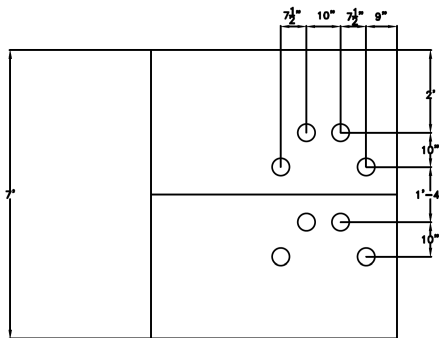
SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH 115-5 (EMH23)
LOCATION: STA. 21+31.00, 25.00 LT, E.79th St.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 16-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

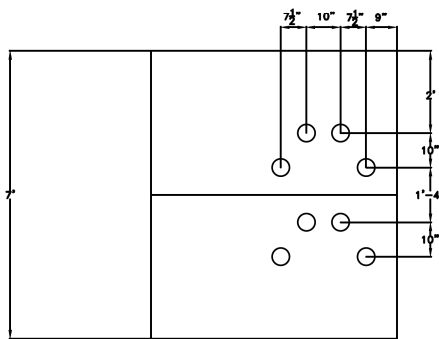
TO EX. CONDUITS



SECTION A-A



SECTION B-B



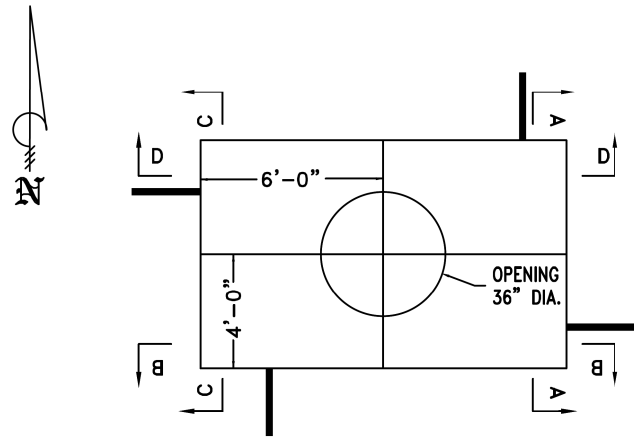
SECTION C-C



SECTION D-D

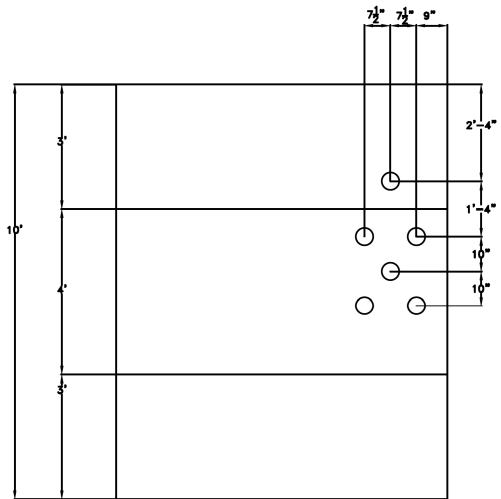
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

8'-0" WIDE	12'-0" LONG	10'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH24)
LOCATION: STA. 183+61.00, 65.0' RT, OC BLVD.					

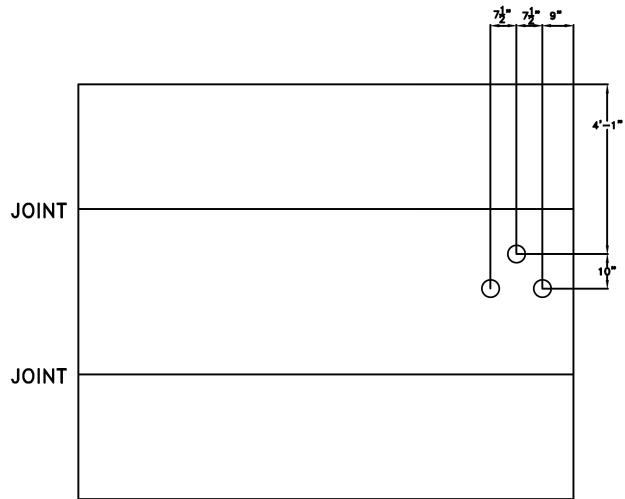


REQUIREMENTS:

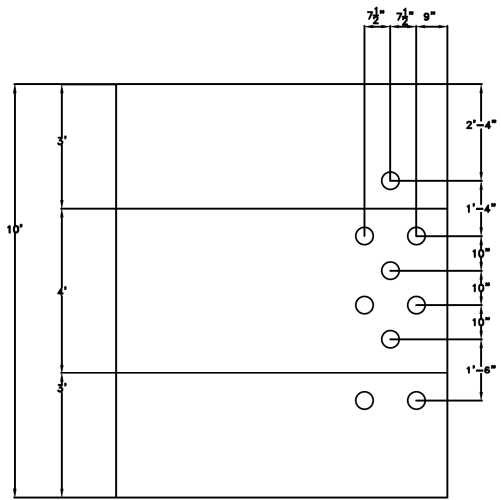
- 1-36"Ø ROOF OPENING
- 23-5" PVC FLARED BELL ENDS
- PLUG 3 END BELLS IN SOUTH WALL
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



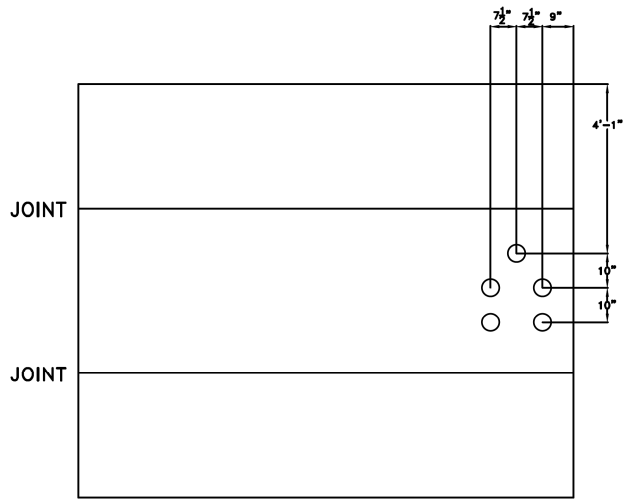
SECTION A-A



SECTION B-B

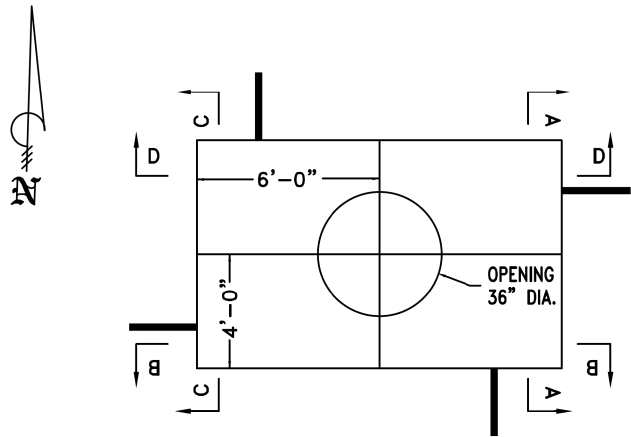


SECTION C-C



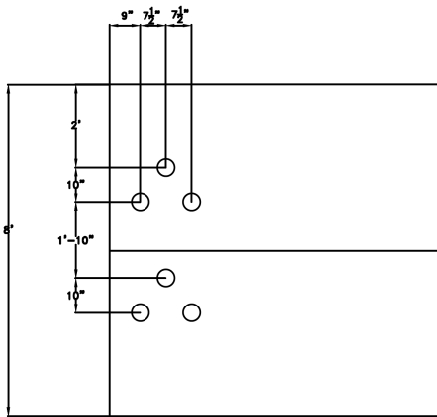
SECTION D-D

8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH25)
LOCATION: STA. 187+50.00, 65.0 RT, OC BLVD.					

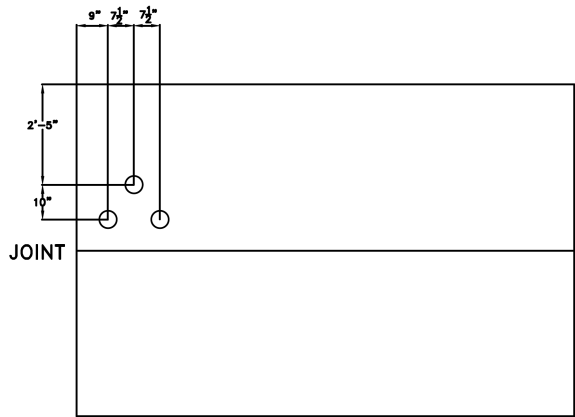


REQUIREMENTS:

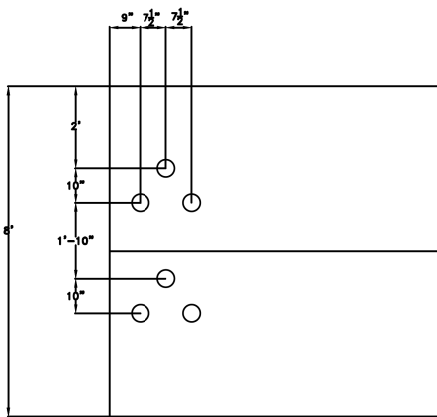
- 1-36"Ø ROOF OPENING
- 18-5" PVC FLARED BELL ENDS
- PLUG 3 END BELLS IN SOUTH WALL
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



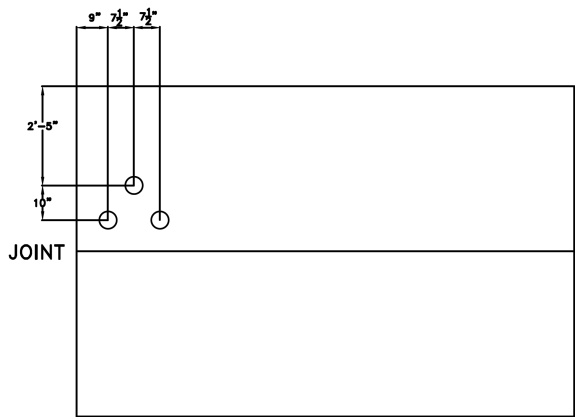
SECTION A-A



SECTION B-B



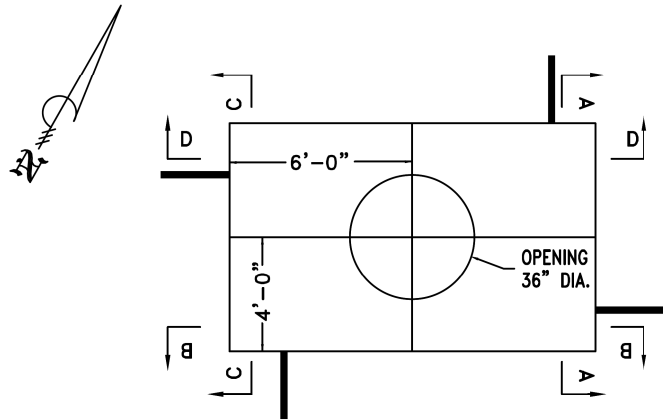
SECTION C-C



SECTION D-D

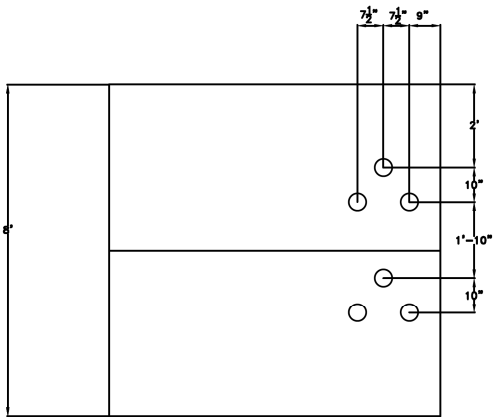
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH26)
LOCATION: STA. 191+50.00, 65.0 RT, OC BLVD.					

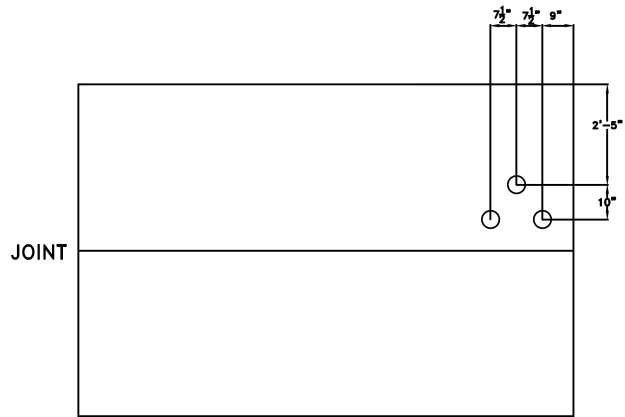


REQUIREMENTS:

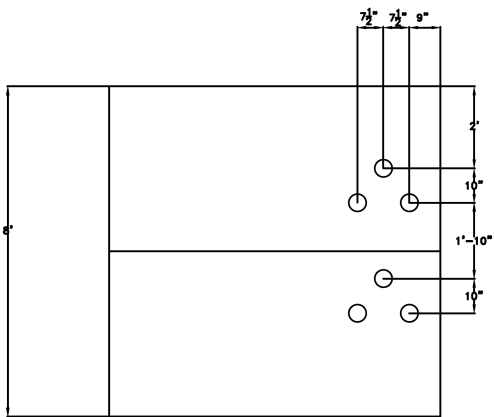
- 1-36"Ø ROOF OPENING
- 18-5" PVC FLARED BELL ENDS
- PLUG 3 END BELLS IN SOUTH WALL
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



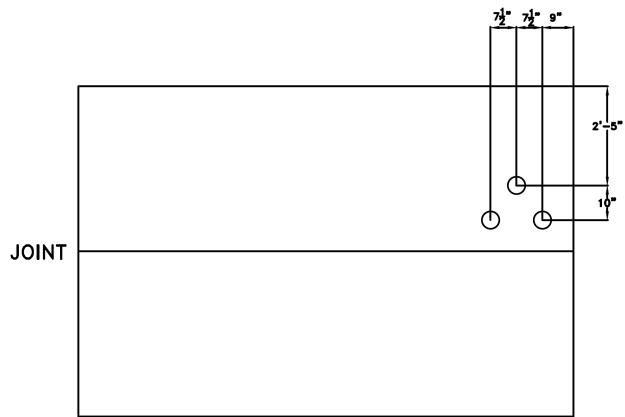
SECTION A-A



SECTION B-B

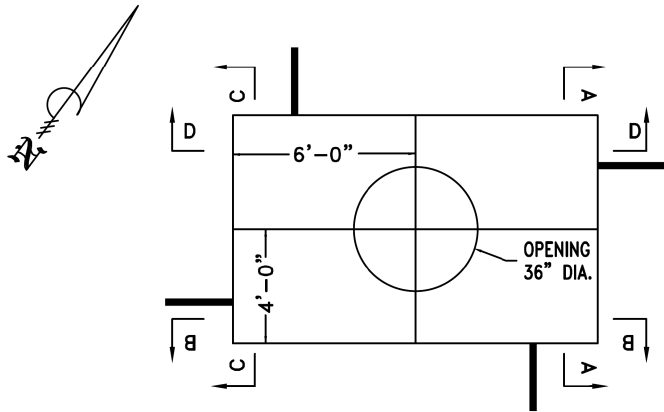


SECTION C-C



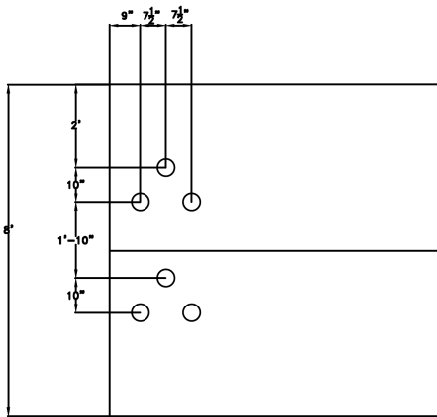
SECTION D-D

8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH27)
LOCATION: STA. 194+80.00, 65.0 RT, OC BLVD.					

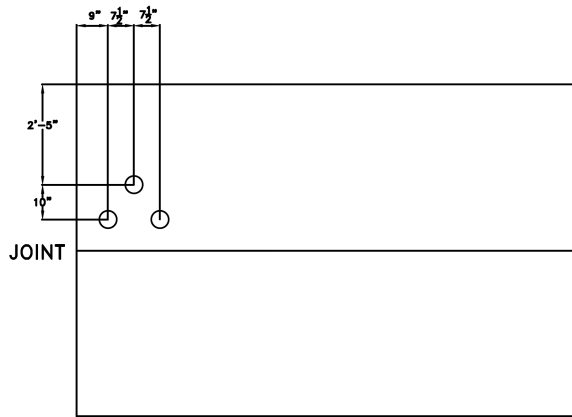


REQUIREMENTS:

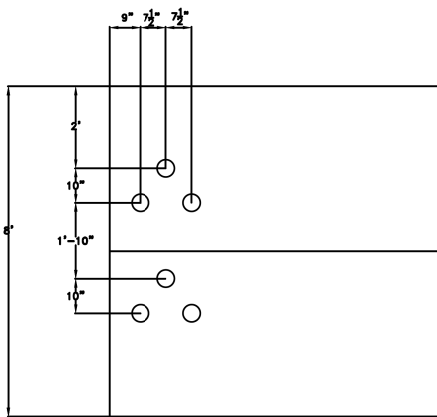
- 1-36"Ø ROOF OPENING
- 18-5" PVC FLARED BELL ENDS
- PLUG 3 END BELLS IN SOUTH WALL
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



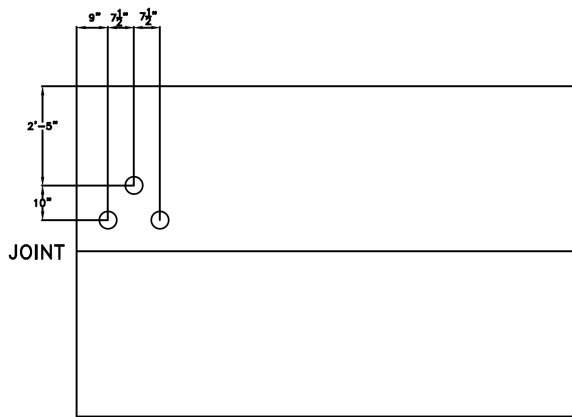
SECTION A-A



SECTION B-B



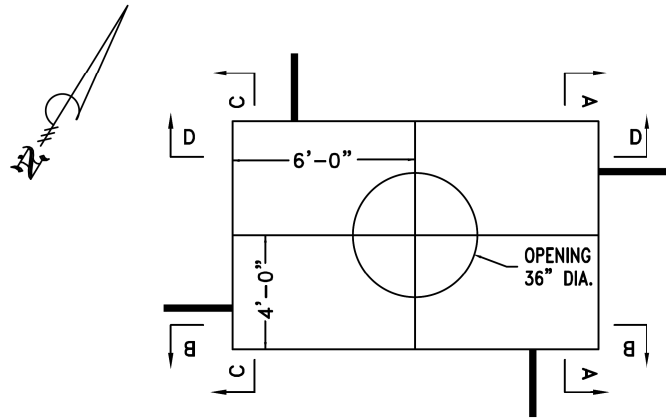
SECTION C-C



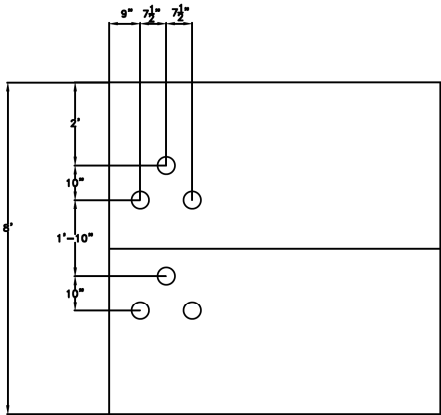
SECTION D-D

NO.	DATE	DESCRIPTION
0	2019-08-08	RFC
ISSUE RECORD		

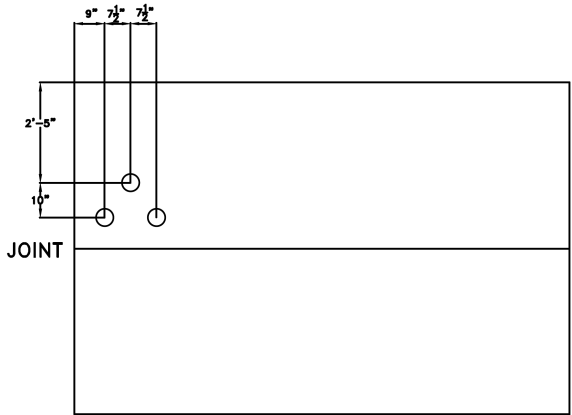
8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH28)
LOCATION: STA. 198+70.00, 65.0 RT, OC BLVD.					



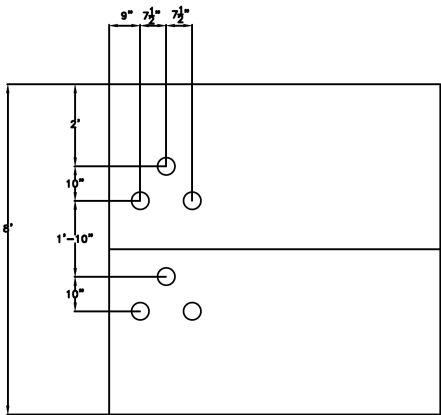
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 18-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



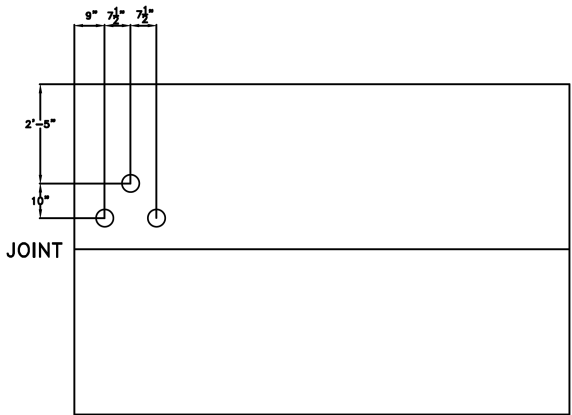
SECTION A-A



SECTION B-B

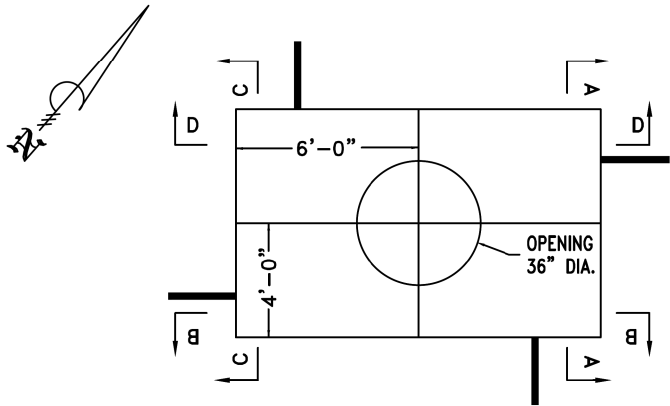


SECTION C-C

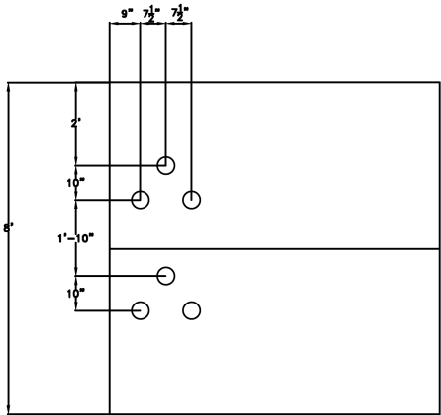


SECTION D-D

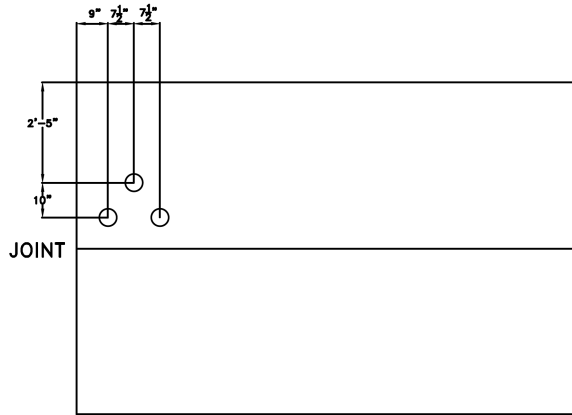
8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH29)
LOCATION: STA. 201+70.00, 65.0 RT, OC BLVD.					



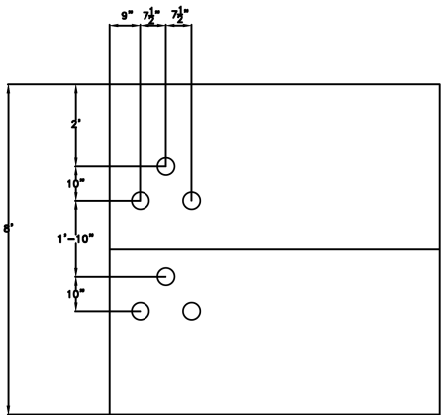
- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 18-5" PVC FLARED BELL ENDS
 - PLUG 3 END BELLS IN SOUTH WALL
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES



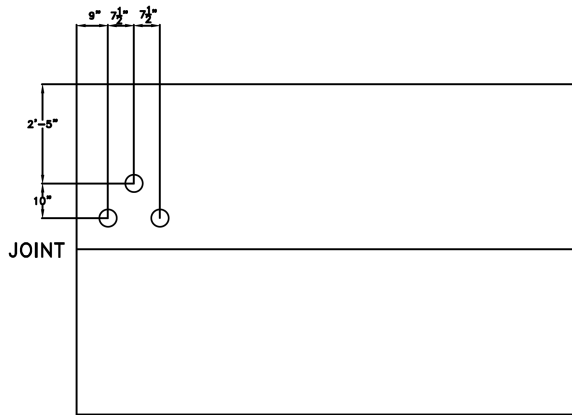
SECTION A-A



SECTION B-B



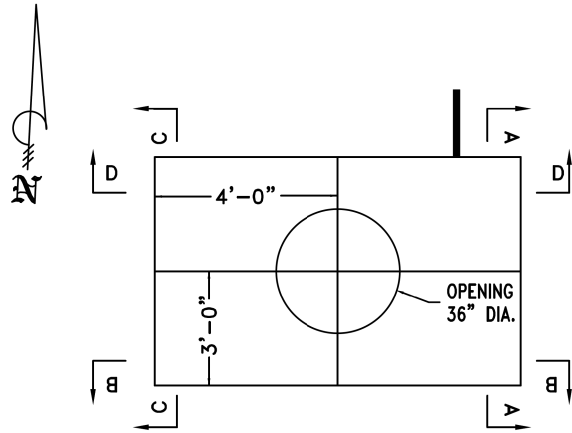
SECTION C-C



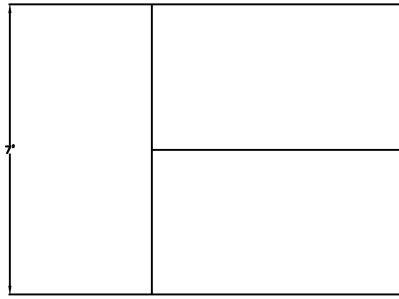
SECTION D-D

0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH32)
LOCATION: STA. 29+96.50, 22.6' RT, Woodland Ave.					



- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 6-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

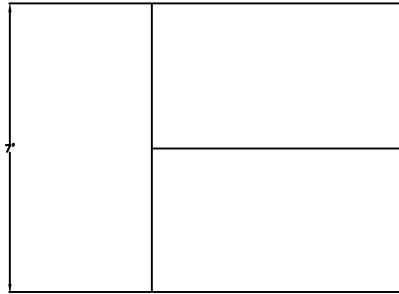


SECTION A-A

JOINT

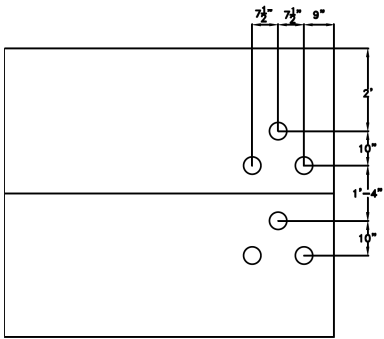


SECTION B-B



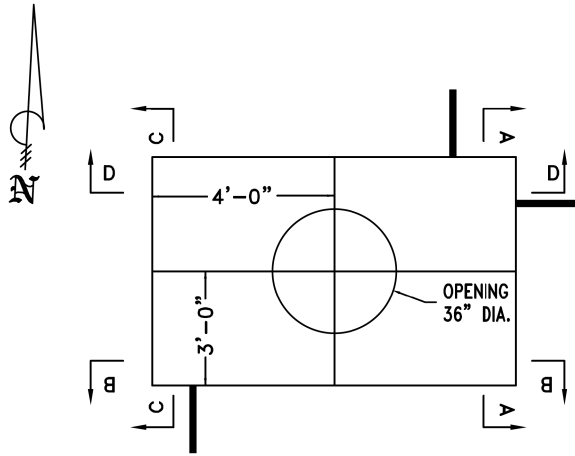
SECTION C-C

JOINT

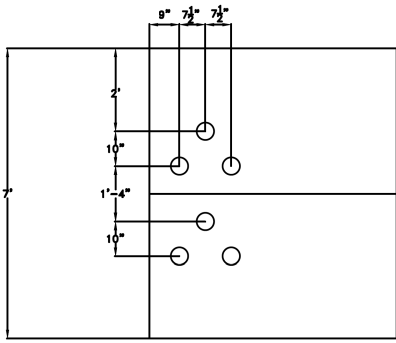


SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH33)
LOCATION: STA. 30+01.00, 22.5 LT, Woodland Ave.					

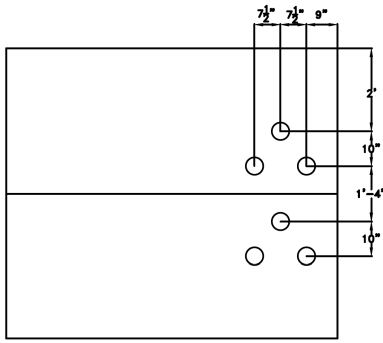


- REQUIREMENTS:
- 1-36"Ø ROOF OPENING
 - 14-5" PVC FLARED BELL ENDS
 - 6-PULLING IRONS
 - 1-12" PRECAST NECK RING
 - 1-3" PRECAST CAP RING
 - 1-12" Ø SUMP HOLE
 - 1-36"Ø COVER AND CASTING
 - EJIW # 1585 W/HOLES

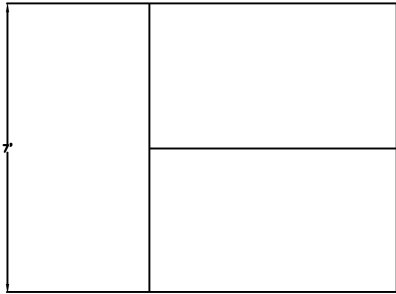


SECTION A-A

JOINT

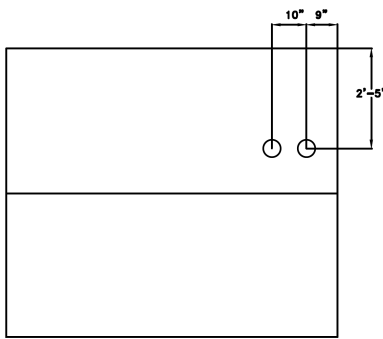


SECTION B-B



SECTION C-C

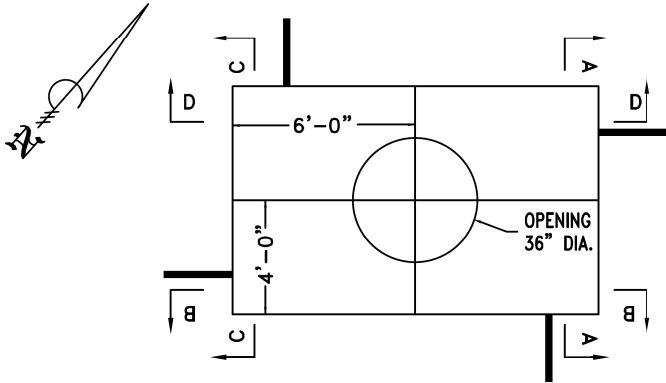
JOINT



SECTION D-D

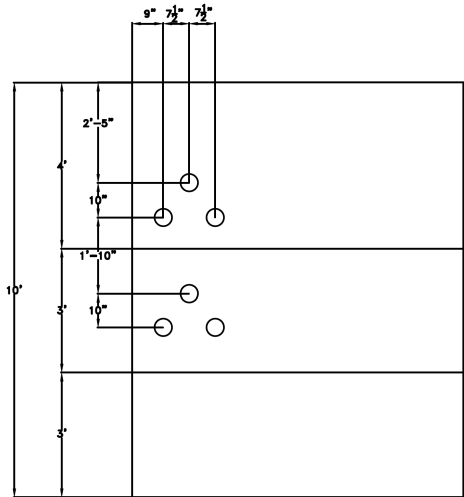
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

8'-0" WIDE	12'-0" LONG	10'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH34)
LOCATION: STA. 212+00.00, 30' RT, OC BLVD.					

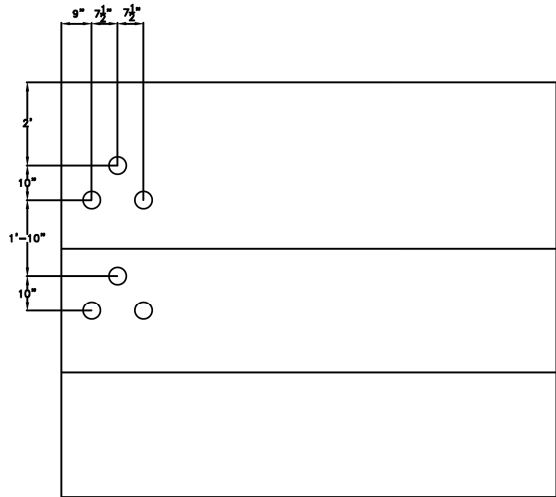


REQUIREMENTS:

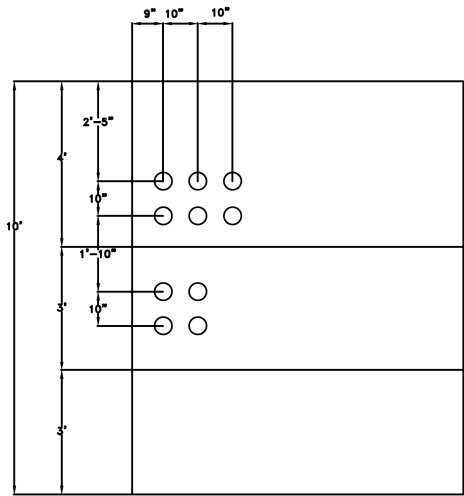
- 1-36"Ø ROOF OPENING
- 32-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



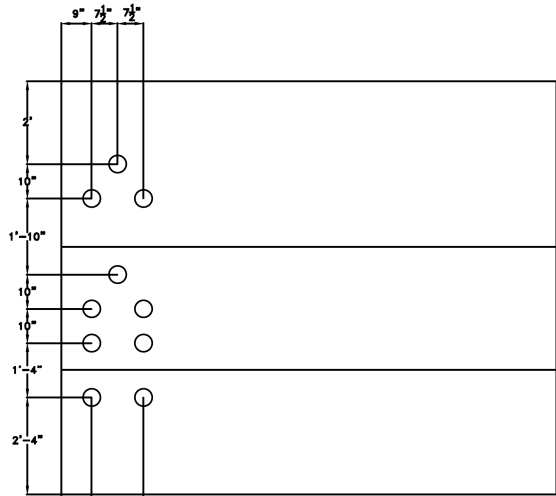
SECTION A-A



SECTION B-B

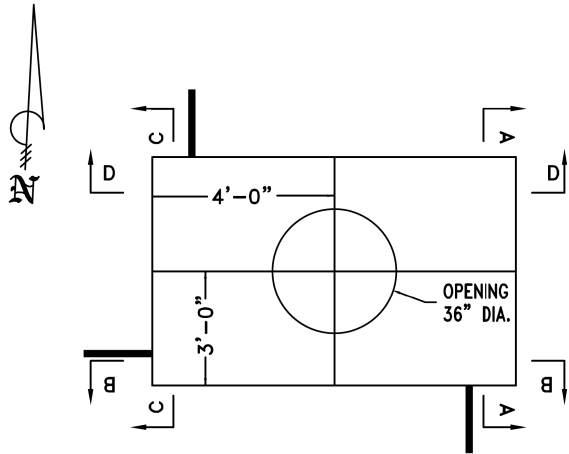


SECTION C-C



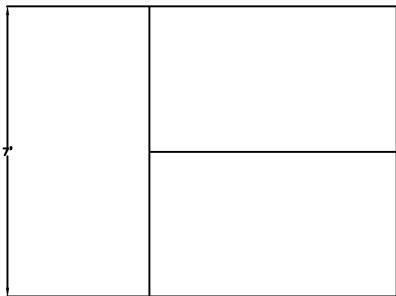
SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH35)
LOCATION: STA. 34+89.00, 22.0 LT, Woodland Ave.					

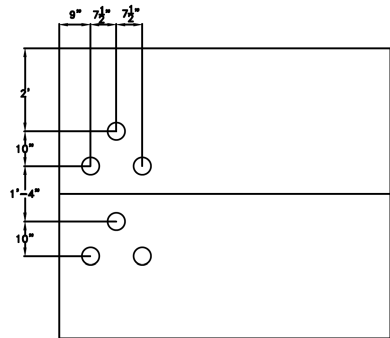


REQUIREMENTS:

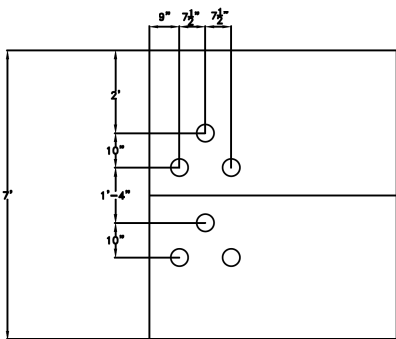
- 1-36"Ø ROOF OPENING
- 14-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



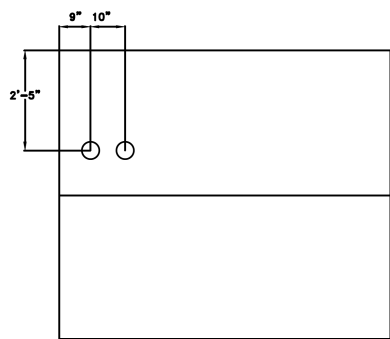
SECTION A-A



SECTION B-B



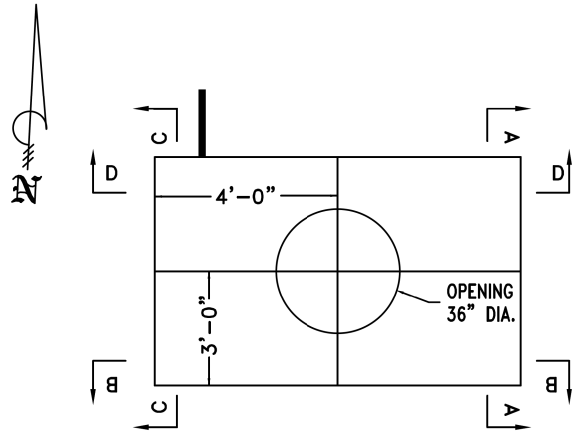
SECTION C-C



SECTION D-D

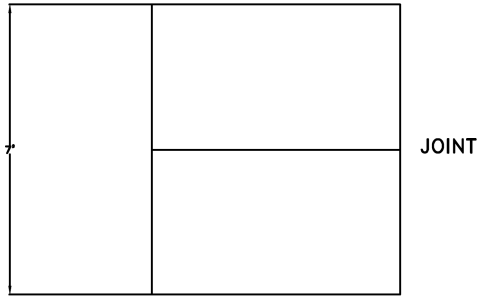
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH36)
LOCATION: STA. 34+93.50, 20.0 RT, Woodland Ave.					



REQUIREMENTS:

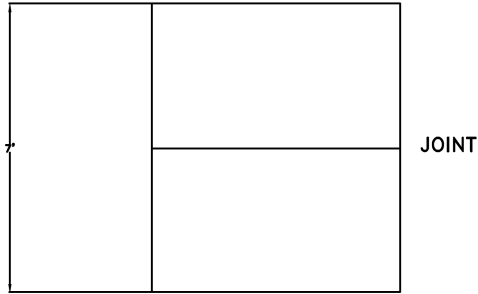
- 1-36"Ø ROOF OPENING
- 6-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



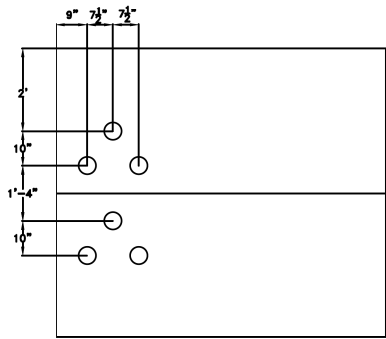
SECTION A-A



SECTION B-B

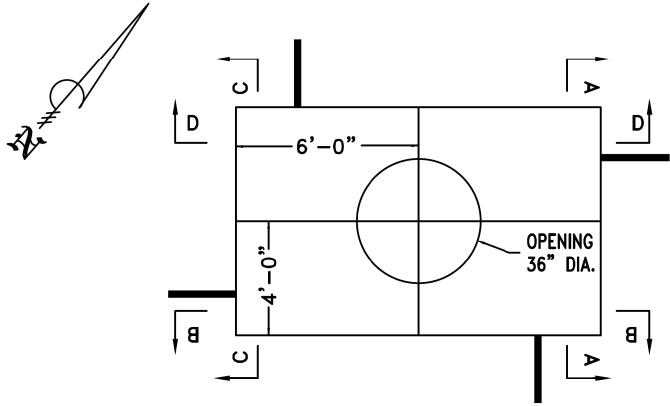


SECTION C-C



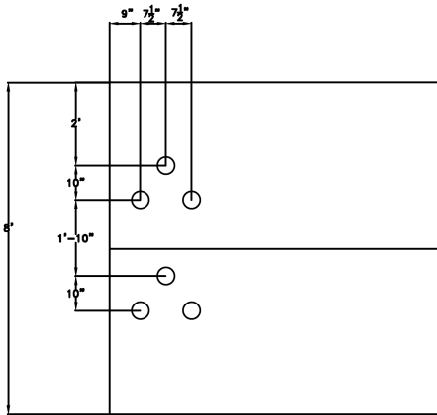
SECTION D-D

8'-0" WIDE	12'-0" LONG	8'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH37)
LOCATION: STA. 215+50.00, 53.0 RT, OC BLVD.					

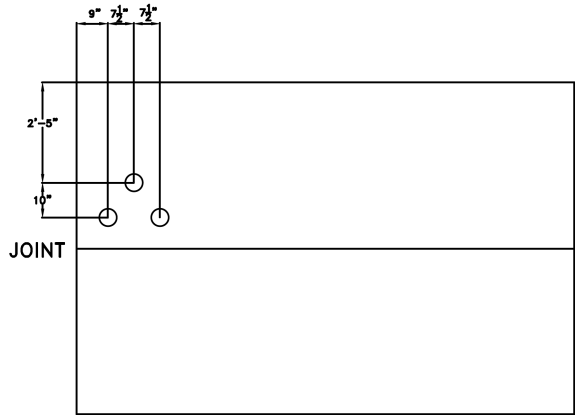


REQUIREMENTS:

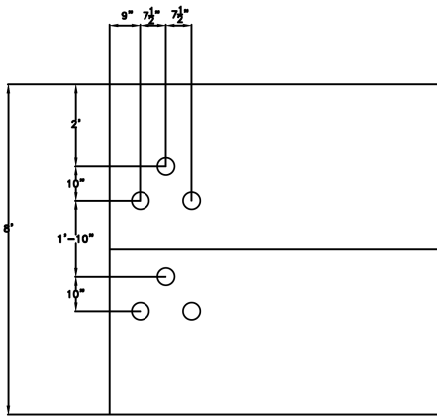
- 1-36"Ø ROOF OPENING
- 18-5" PVC FLARED BELL ENDS
- PLUG 3 BELL ENDS IN SOUTH WALL
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



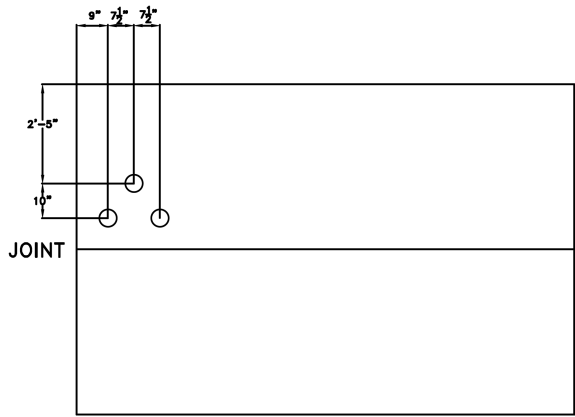
SECTION A-A



SECTION B-B



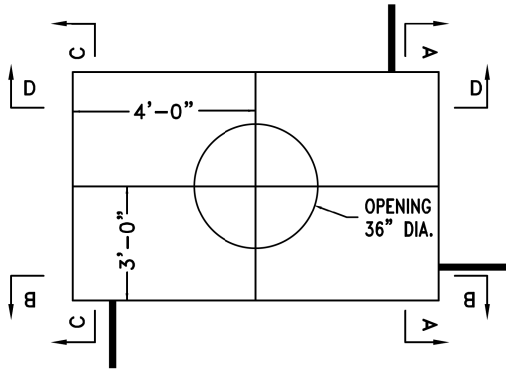
SECTION C-C



SECTION D-D

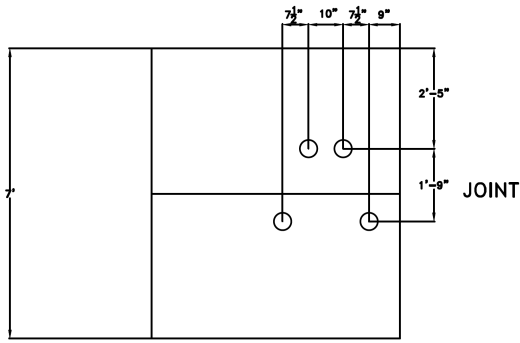
0	2019-08-08	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH38)
LOCATION: STA. 23+94.00, 22.00' RT, E.89th ST.					

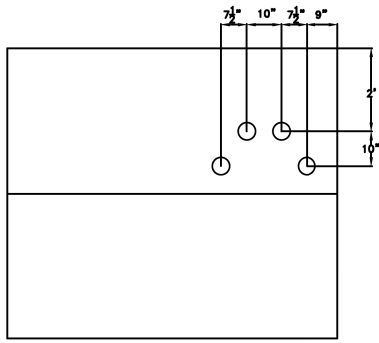


REQUIREMENTS:

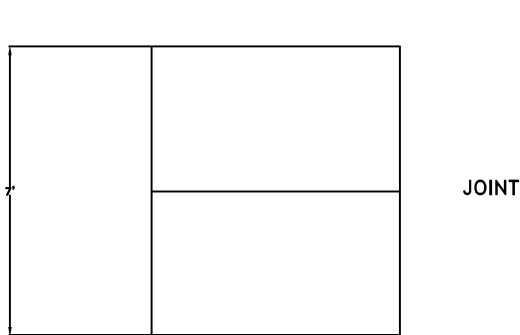
- 1-36"Ø ROOF OPENING
- 10-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



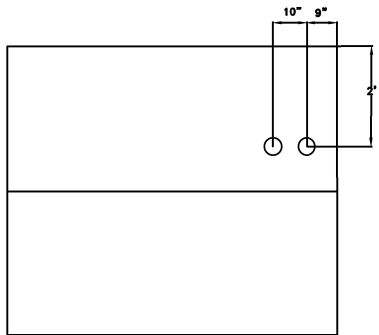
SECTION A-A



SECTION B-B

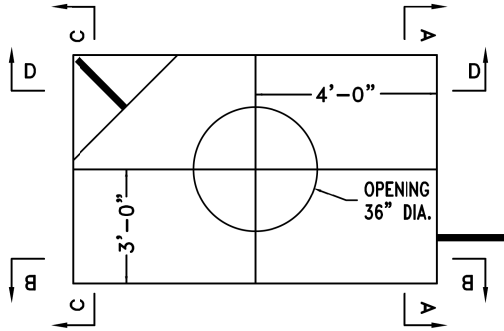
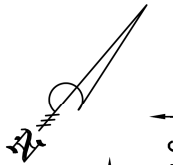


SECTION C-C



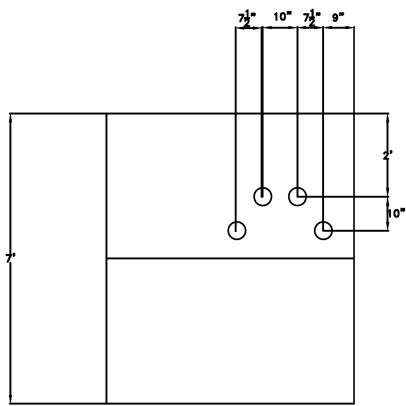
SECTION D-D

6'-0" WIDE	8'-0" LONG	7'-0" H.R.	NECK: 2'-6"	COVER: AS SHOWN	NEW MH xx-xx (EMH39)
LOCATION: STA. 28+60.00, 21.5 RT, E.89th ST.					

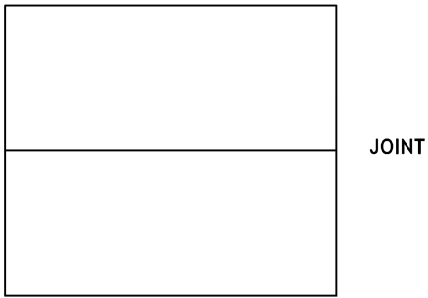


REQUIREMENTS:

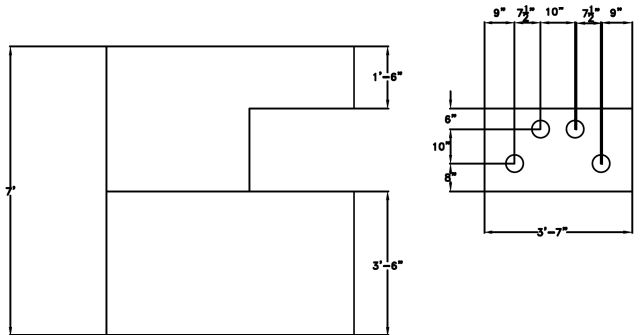
- 1-36"Ø ROOF OPENING
- 8-5" PVC FLARED BELL ENDS
- 6-PULLING IRONS
- 1-12" PRECAST NECK RING
- 1-3" PRECAST CAP RING
- 1-12" Ø SUMP HOLE
- 1-36"Ø COVER AND CASTING
- EJIW # 1585 W/HOLES



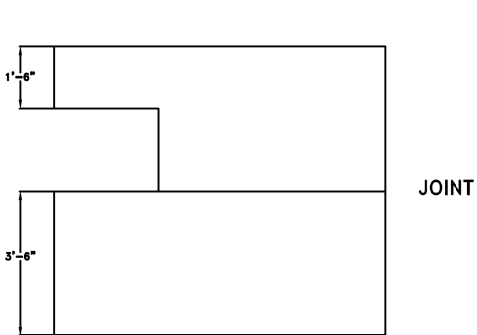
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NO.	DATE	DESCRIPTION
1	2019-09-10	DC018
0	2019-08-08	RFC
ISSUE RECORD		

Submittal: 048

Revision:

Date Submitted: 10/24/2019

Response Due: 11/7/2019



Project: ODOT 3000(17) – Opportunity Corridor 3
Subject: Precast Electrical Manhole Shop Drawings

To: Julie Meyer, P.E.
Ohio Department of Transportation – District 12
Email: Julie.Meyer@dot.ohio.gov

From: Marty Fritz
Kokosing Construction Company, Inc.
Email: mwf@kokosing.biz

We Are Sending:	Submitted For:
<input type="checkbox"/> As-Built Construction Drawings	<input checked="" type="checkbox"/> Approval
<input type="checkbox"/> Certifications / Test Results	<input type="checkbox"/> Acceptance
<input type="checkbox"/> Engineered / Working Drawings	<input type="checkbox"/> Record
<input type="checkbox"/> Product Data / Samples	
<input type="checkbox"/> Quality Control Procedures	
<input checked="" type="checkbox"/> Shop Drawings	<input checked="" type="checkbox"/> Attached (Electronic)
<input type="checkbox"/> Other:	<input type="checkbox"/> Attached (Hard Copy)

Submittal #	Spec	Revision	Description	Status
048		N/A	Precast Electrical Manhole Shop Drawings	For Approval

Comments:

Please see the attached shop drawing submittal for Electrical Manholes (BU11). Included with this submittal are the following:

- Shop Drawings-Precast electrical manhole structures, with pulling irons and terminators
- East Jordan Iron Works- 1581Z Frame/1585BVH Cover with CPP Name Plate

Please note the Cook Paving provided this submittal and will be ultimately responsible for proper installation.

Please feel free to contact me for any questions/concerns regarding this submittal.

Signed: 

**Cook Paving & Construction Co., Inc.**

11360 Brookpark Rd. Brooklyn, Ohio 44130

Office 216-267-7705 / Fax 216-267-7595

Submittal Transmittal

Date: 10/22/19
Project Name: Opportunity Corridor PH-3
Cook Project #: 18171
P.O. #

Transmitted To: Michael Luyster PE
Kokosing
1539 Lowell Street
Elyria, Ohio 44035
614-206-3475
MRL@KOKOSING.BIZ

Transmitted By: Greg Gipko
Cook Paving & Construction
11360 Brookpark Road
Brooklyn, Ohio 44130
Tel: 216-267-7705

Qty	Submittal No	Description	Due Date
1	#03	Electrical Manholes	11/4/2019

Transmitted For	Delivered Via	Spec Section
Approval	Email	CPP -specifications

Remarks

Attached please find the following

1. Precast Electrical manhole structures, with pulling irons and terminators - Buildable Unit # 11 CPP
 2. East Jordan Iron Works- 1581Z Frame / 1585BVH Cover with CPP Name Plate
- Supplier - Lindsay Precast , PO Box 578 , 6845 Erie Avenue N.W., Canal Fulton , Ohio 44614

Signature

10/22/19

Date



Submittal Package #173423

Cook Paving & Construction

**ODOT 173000
Opportunity Corridor, Ph 3
BU-11**

Cleveland, Ohio

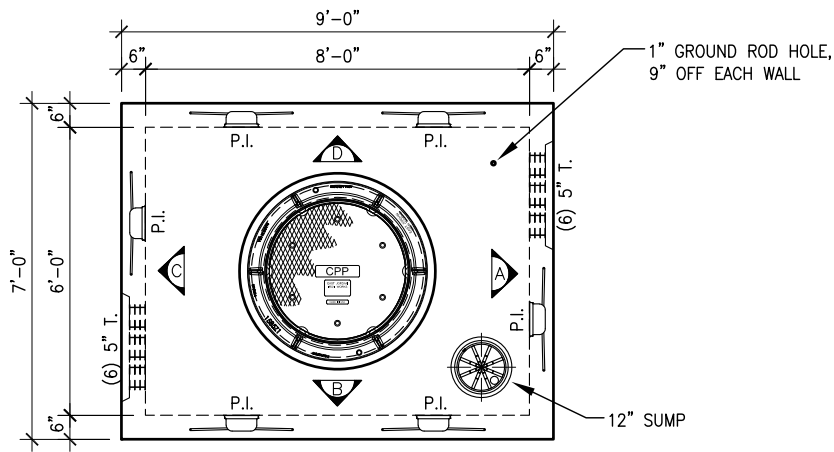
Oct 21, 2019

**SUBMITTAL FOR:
Electrical Manholes**

**EMH-05, 06, 07, 08, 09, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39 & 40**

**RALPH HASTINGS
LINDSAY PRECAST
PO BOX 578
6845 ERIE AVE. N.W.
CANAL FULTON, OHIO 44614
1-800-837-7788**

Ph: 440 543-5468
Fax: 440 543-1152
Mobile: 440 336-4162
Email: rhastings@lindsayprecast.com
Web : www.lindsayconcrete.com



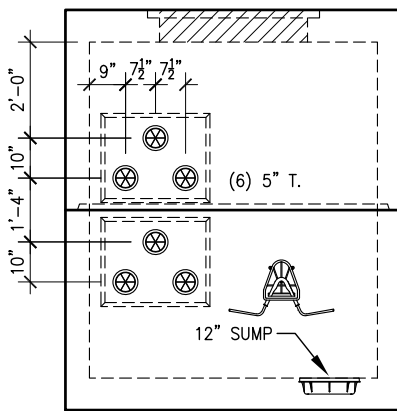
TOP VIEW

EMH 05,
EMH 07,
EMH 13,
EMH 14

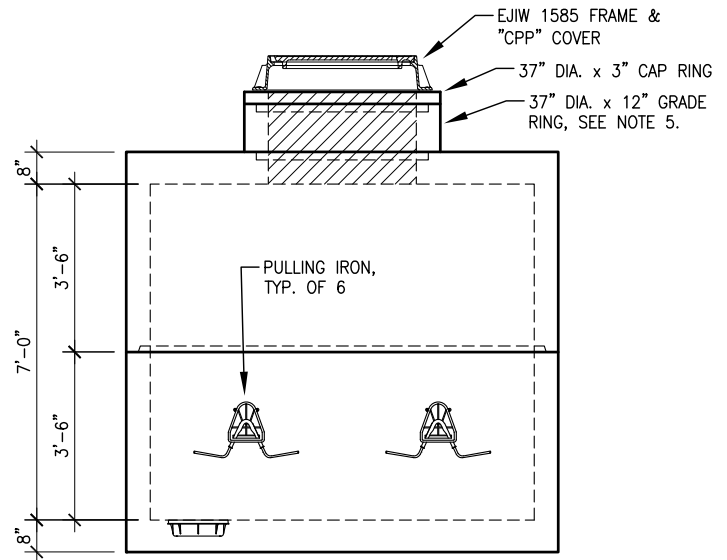
BU-11

6' x 8' x 7'
"CLAMSHELL" STYLE ELECTRICAL M.H.

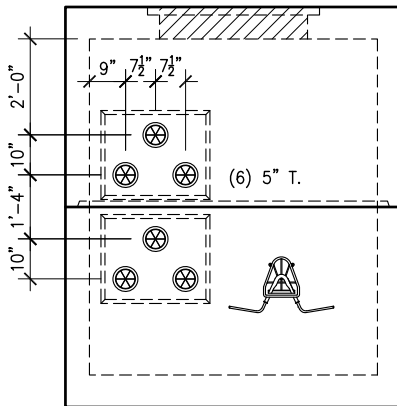
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



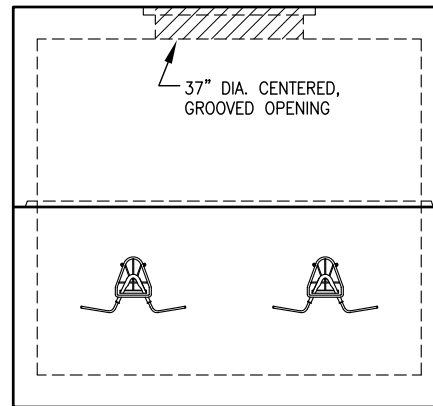
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	12" GRADE RING	9/28/19	DJF
2.			
3.			
4.			
5.			
6.			
7.			

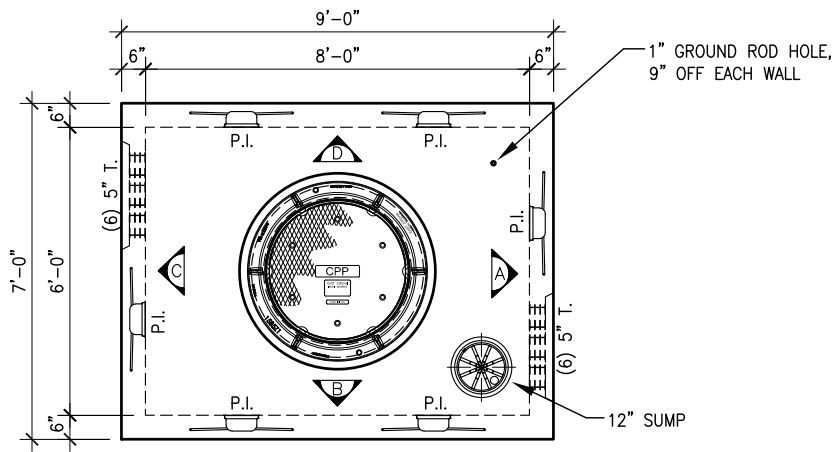


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CUSTOMER:
COOK PAVING & CONSTRUCTION CO., INC.
JOB: **ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's**

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4"=1'-0" DATE: 9/28/19 JOB NO: 173423 DWG NO: LP-001





TOP VIEW

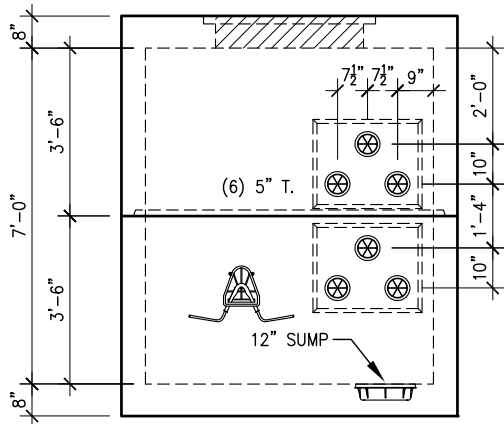
EMH 06,
EMH 40,
EMH 08,
EMH 09,
EMH 15

BU-11

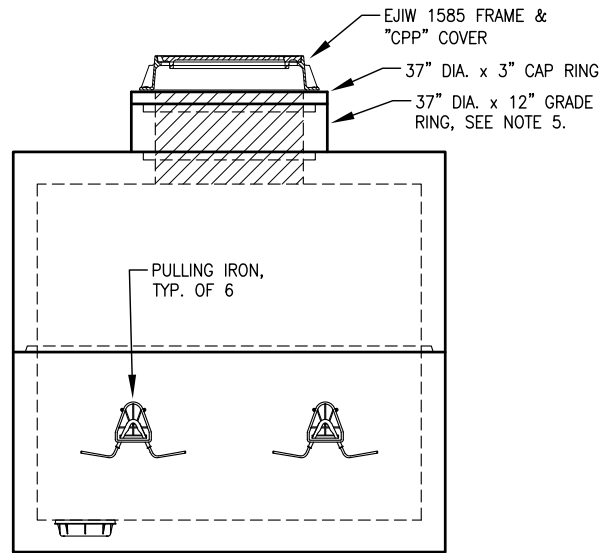
6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

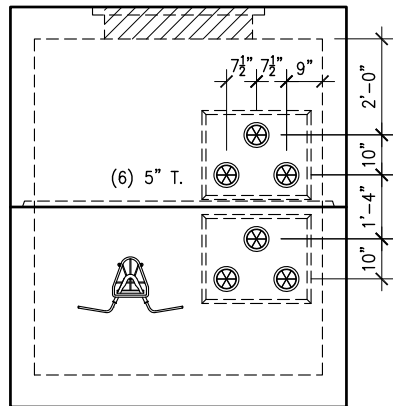
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



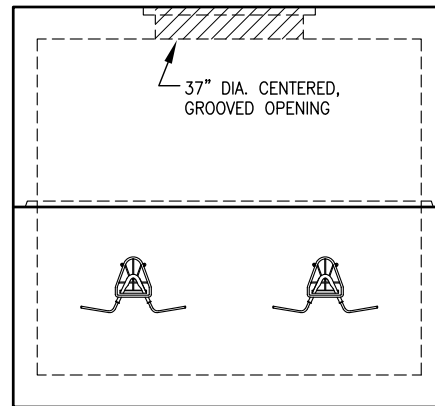
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	12" GRADE RING	9/28/19	DJF
2.			
3.			
4.			
5.			
6.			
7.			

LP Lindsay
PRECAST

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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF

CHECKED BY: RH

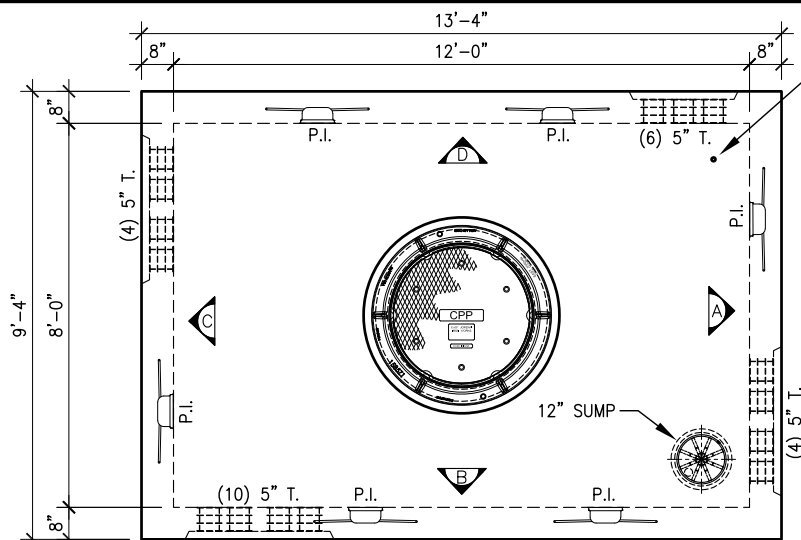
SCALE: 1/4" = 1'-0"

DATE: 9/28/19

JOB NO: 173423

DWG NO: LP-002





TOP VIEW

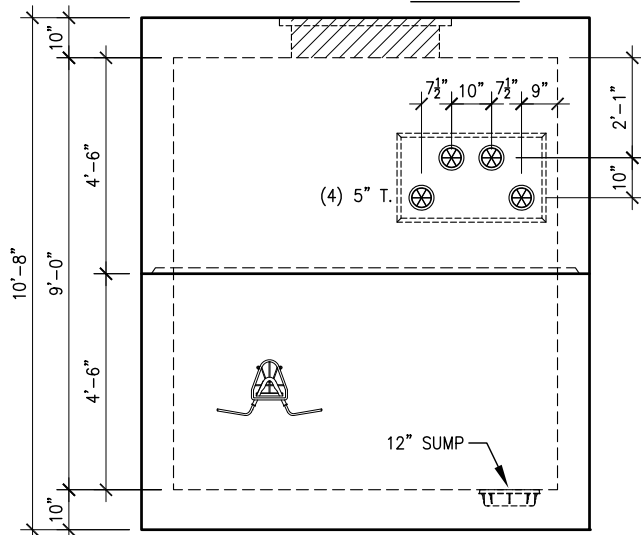
BU-11

EMH 11

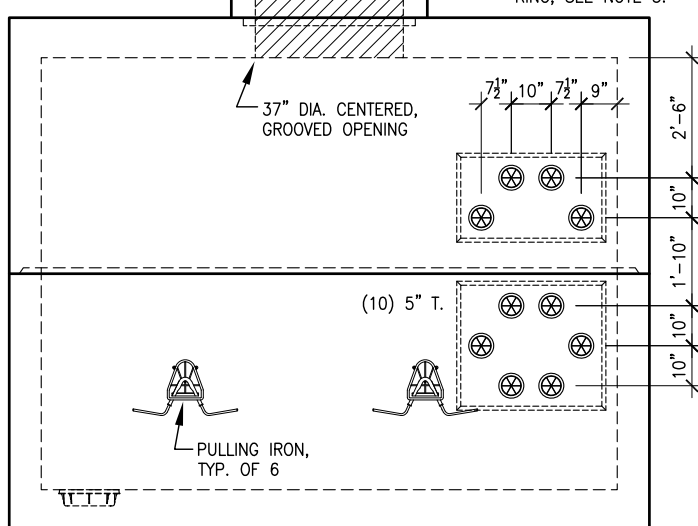
8' x 12' x 9'

"CLAMSHELL" STYLE ELECTRICAL M.H.

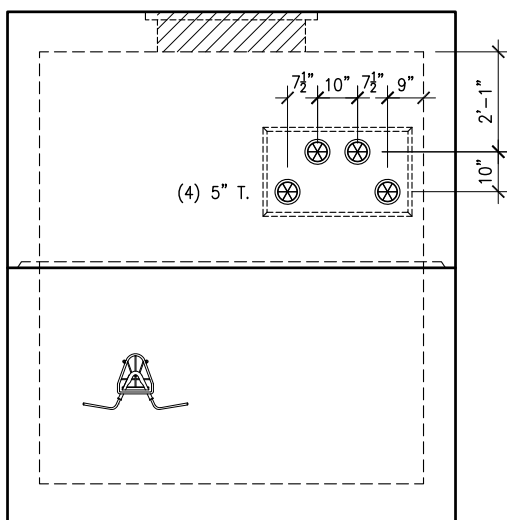
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



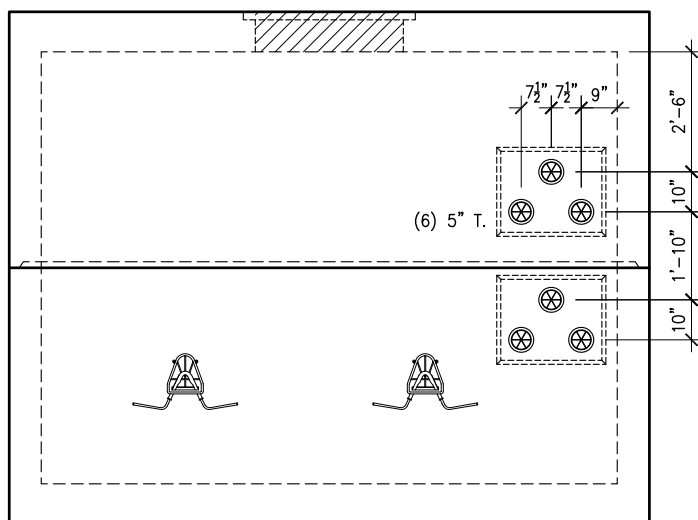
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 35,815 #, TOP: 34,500 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.			
2.			
3.			
4.			
5.			
6.			
7.			

LP Lindsay
PRECAST

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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4" = 1'-0"

DATE: 9/28/19

JOB NO: 173423

DWG NO: LP-003



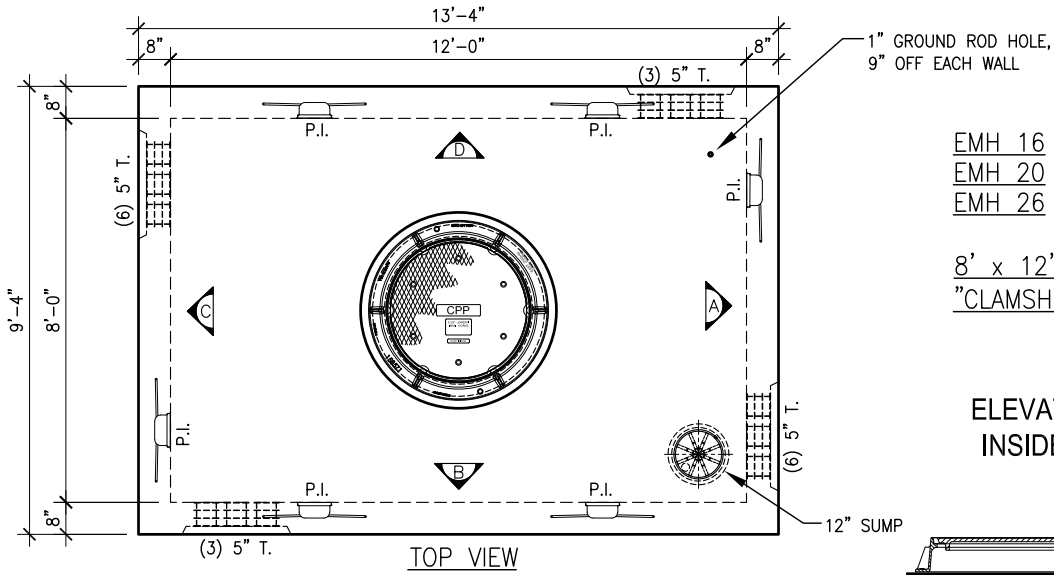
BU-11

EMH	16
EMH	20
EMH	26

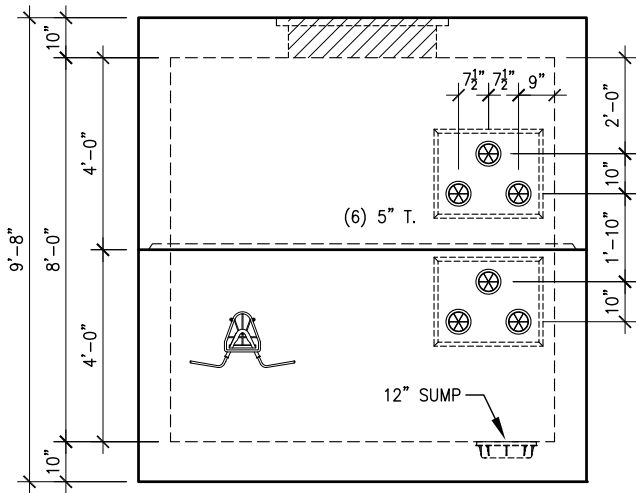
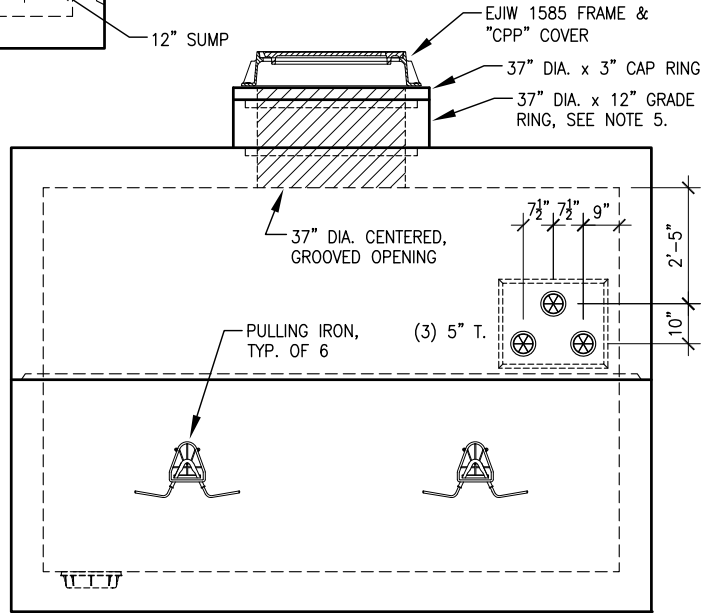
$$\underline{8' \times 12' \times 8'}$$

"CLAMSHELL" STYLE ELECTRICAL M.H.

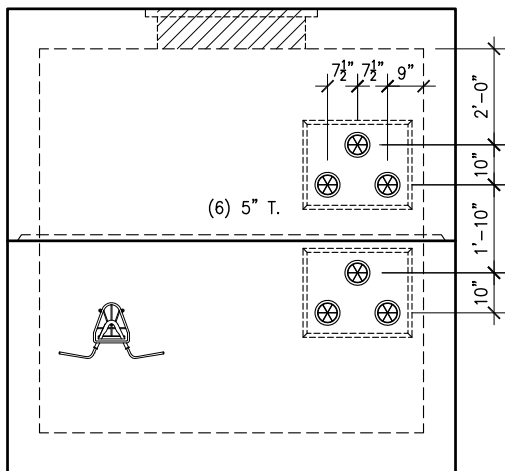
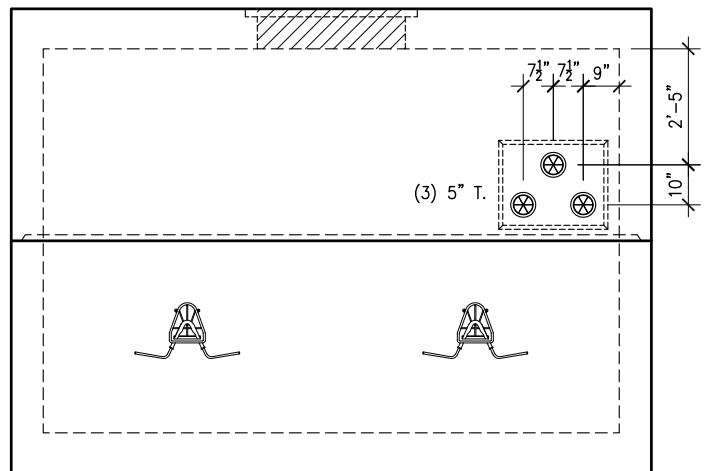
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



TOP VIEW

WALL ELEVATION A

WALL ELEVATION B

WALL ELEVATION C

WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 33,640 #, TOP: 32,325 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	(3) 5" T. ADDED TO WALL "B"	9/28/19	DJH
2.	12" GRADE RING	9/28/19	DJH
3.			
4.			
5.			
6.			
7.			



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CUSTOMER:

CUSTOMER: **COOK PAVING & CONSTRUCTION CO., INC.**

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

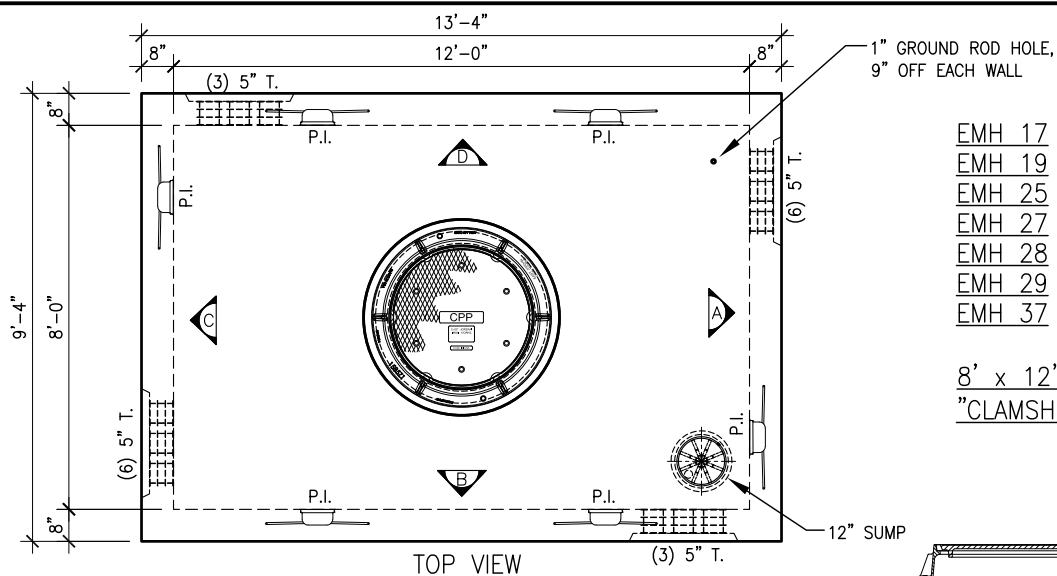
DRAWN BY: CHECKED BY: SCALE:

DATE:

JOB NO:

DWG NO:



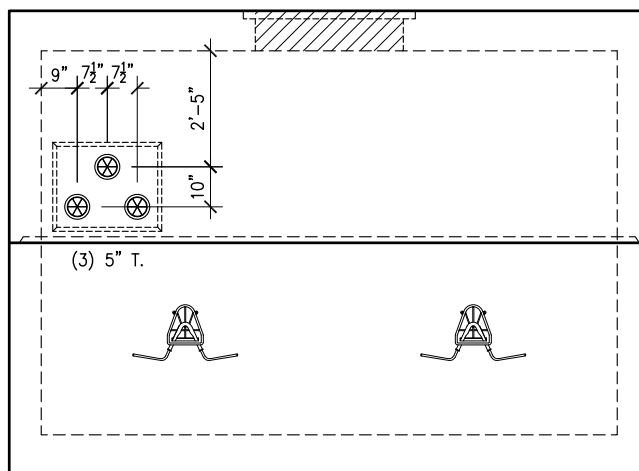
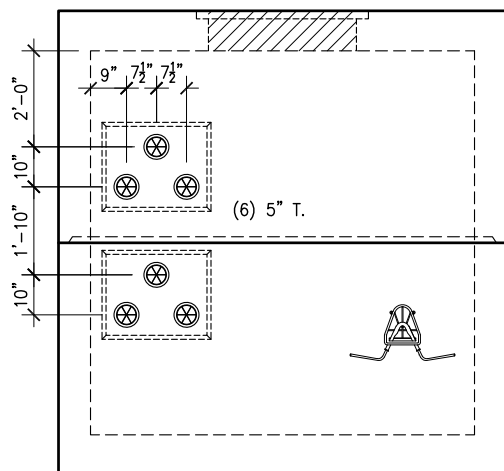
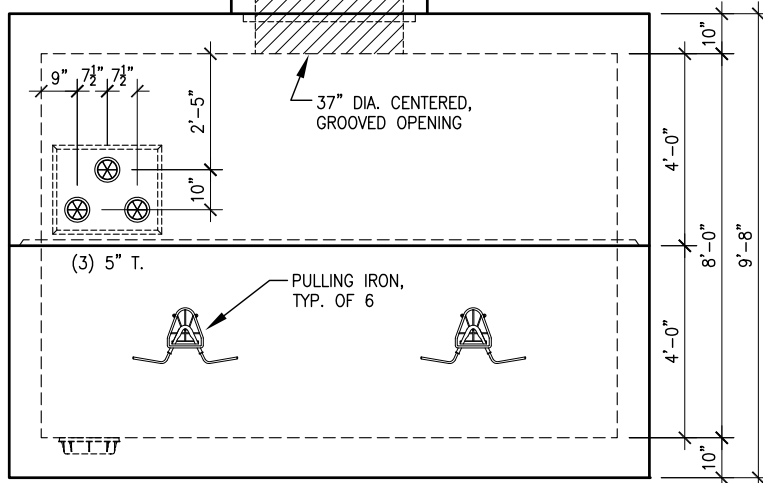
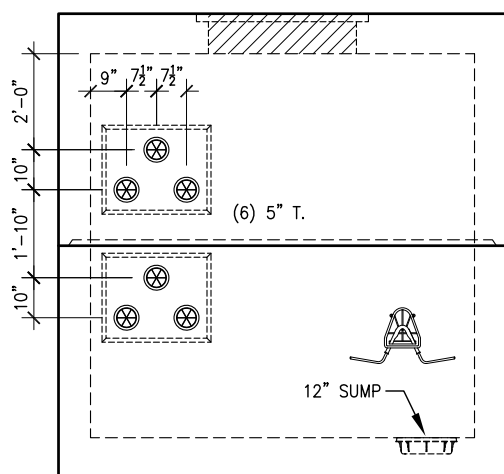


BU-11

EMH 17
EMH 19
EMH 25
EMH 27
EMH 28
EMH 29
EMH 37

ELEVATION VIEWS ARE
INSIDE LOOKING OUT

8' x 12' x 8'
"CLAMSHELL" STYLE ELECTRICAL M.H.



NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 33,640 #, TOP: 32,325 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	(3) 5" T. ADDED TO WALL 'B'	9/28/19	DJF
2.	12" GRADE RING	9/28/19	DJF
3.			
4.			
5.			
6.			
7.			



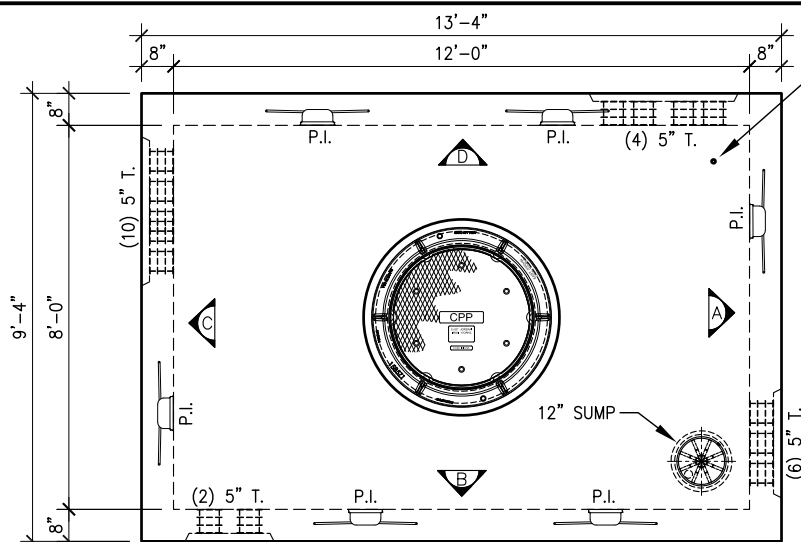
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CUSTOMER:
COOK PAVING & CONSTRUCTION CO., INC.

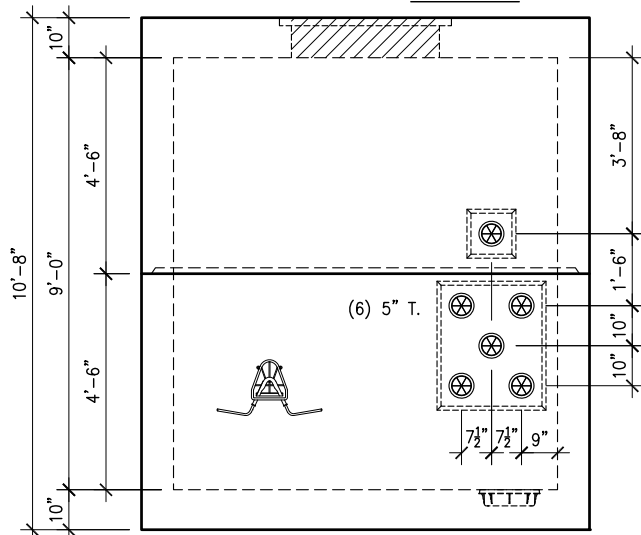
JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4"=1'-0" DATE: 9/28/19 JOB NO: 173423 DWG NO: LP-005

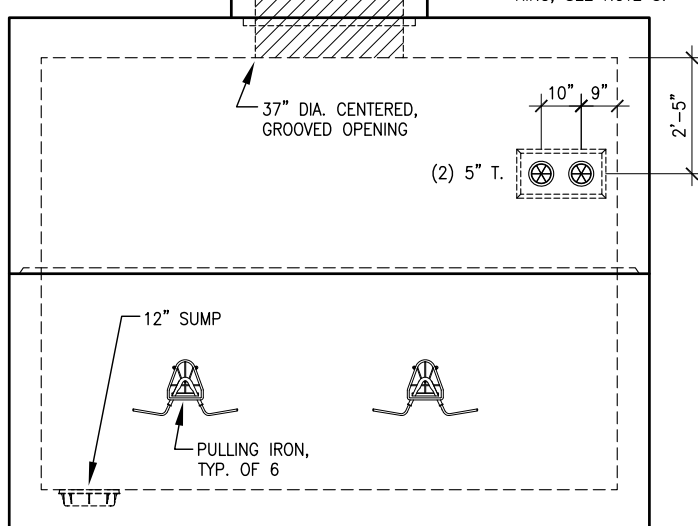




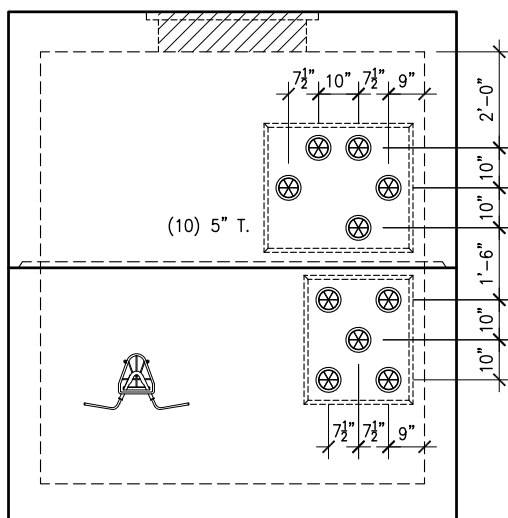
TOP VIEW



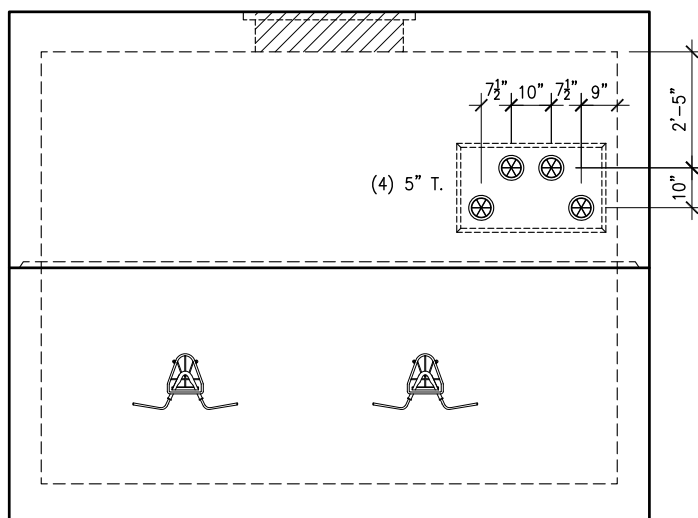
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

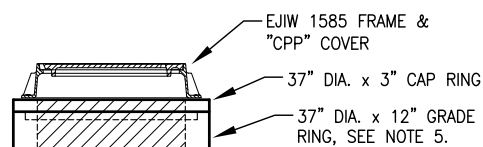
BU-11

EMH 18

8' x 12' x 9'

"CLAMSHELL" STYLE ELECTRICAL M.H.

ELEVATION VIEWS ARE
INSIDE LOOKING OUT



NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 35,815 #, TOP: 34,500 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

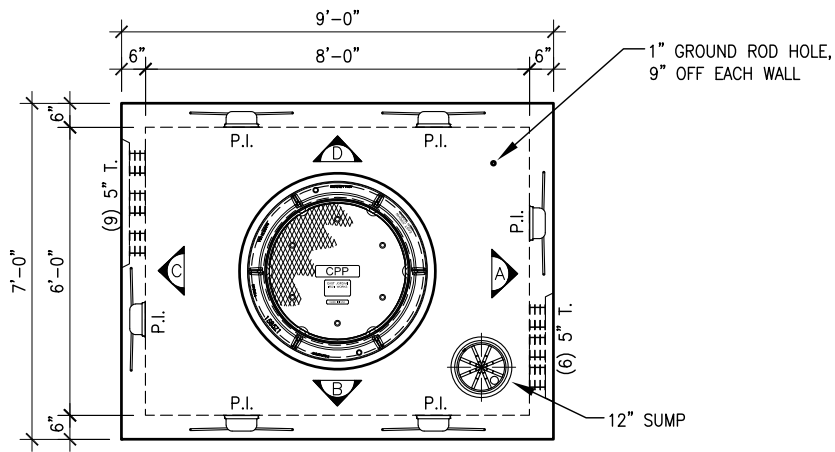
DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4" = 1'-0"

DATE: 10/14/19

JOB NO: 173423

DWG NO: LP-006





TOP VIEW

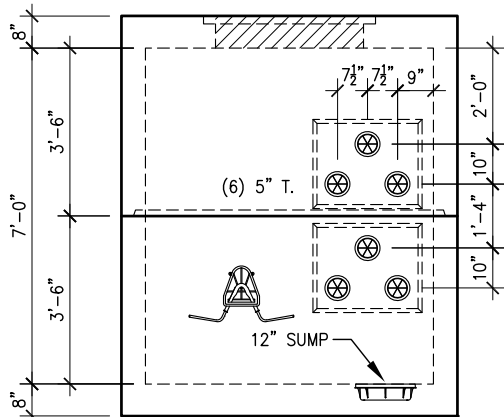
BU-11

EMH 21

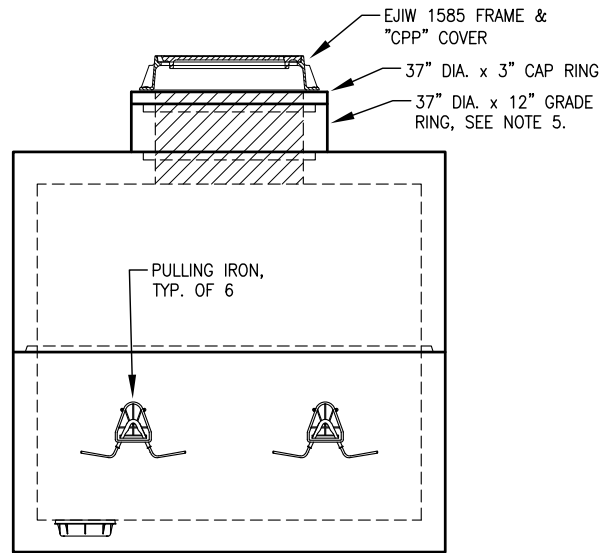
6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

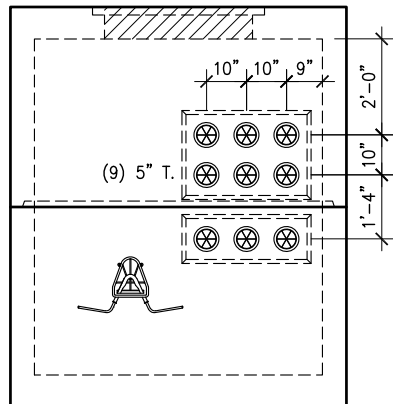
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



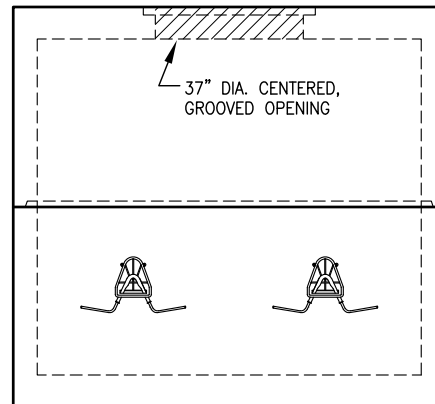
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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LP Lindsay
PRECAST

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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4"=1'-0"

DATE: 10/5/19

JOB NO: 173423

DWG NO: LP-007

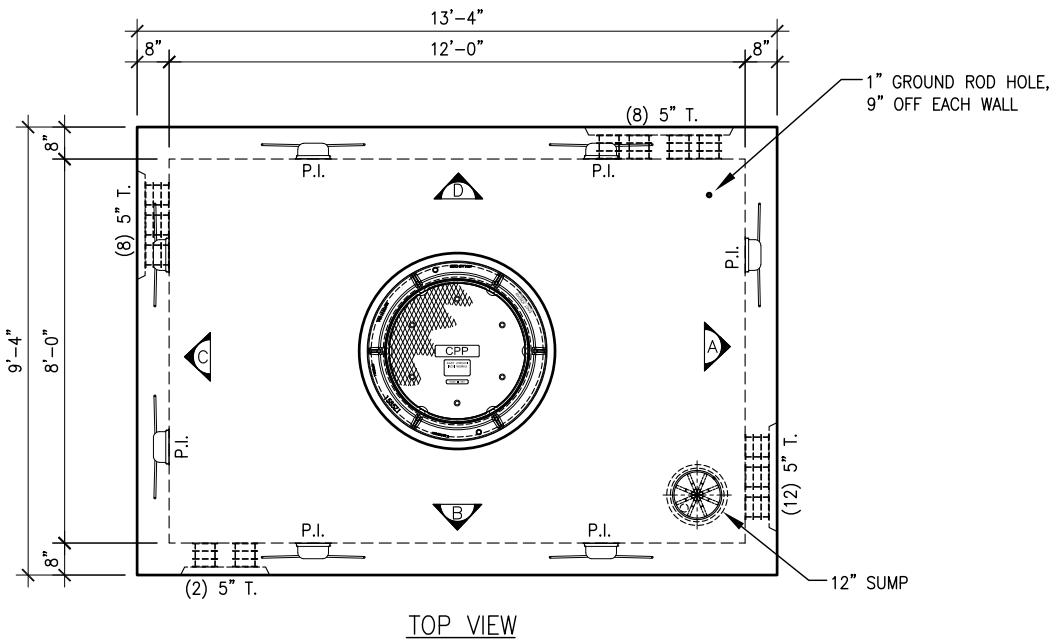


BU-11

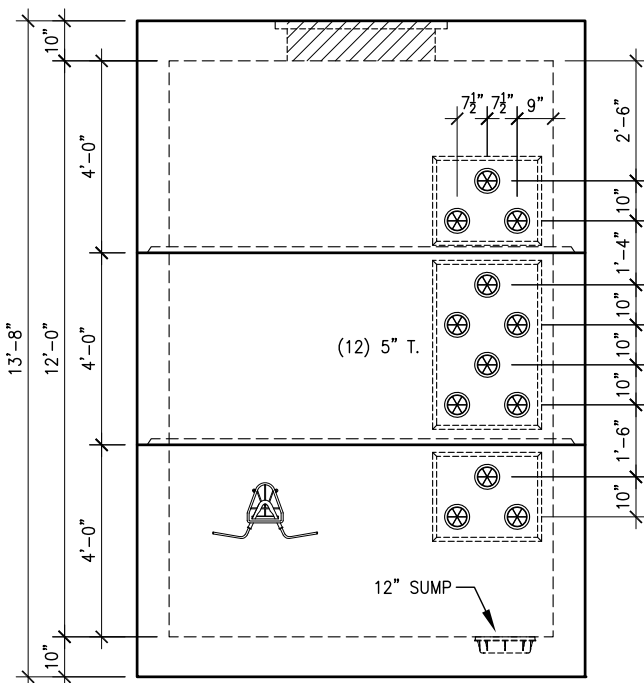
EMH 22

8' x 12' x 12'
"CLAMSHELL" STYLE ELECTRICAL M.H.
W/ RISER SECTION

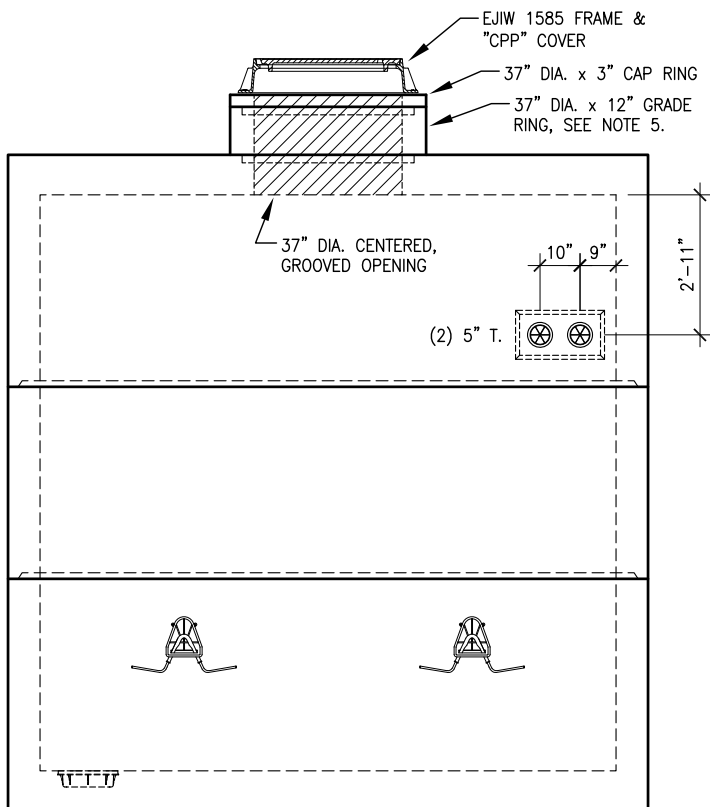
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



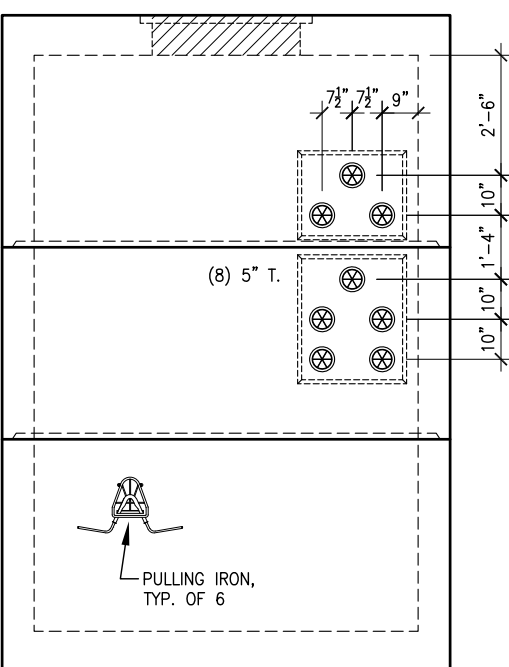
TOP VIEW



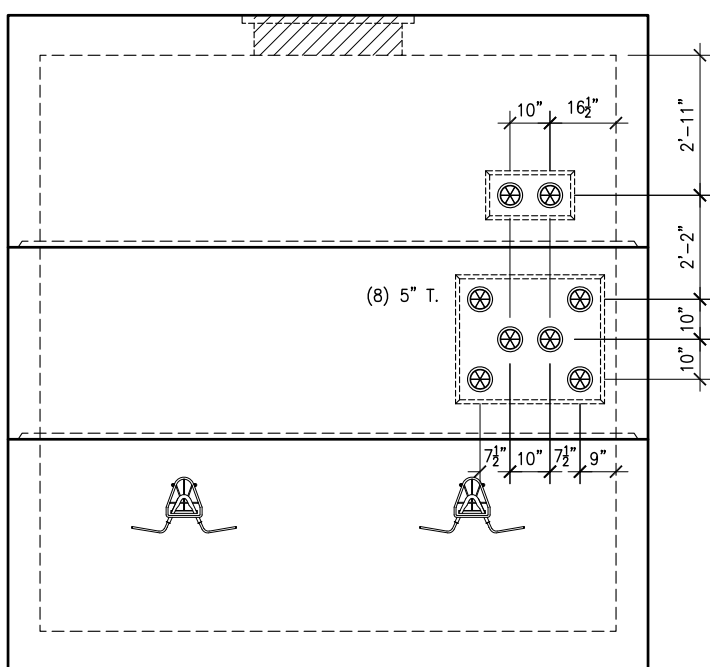
WALL ELEVATION /



WALL ELEVATION 1



WALL ELEVATION (continued)



WALL ELEVATION 1

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 33,635 #. RISER: 17,405 #. TOP: 32,320 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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Lindsay

P R E C A S T

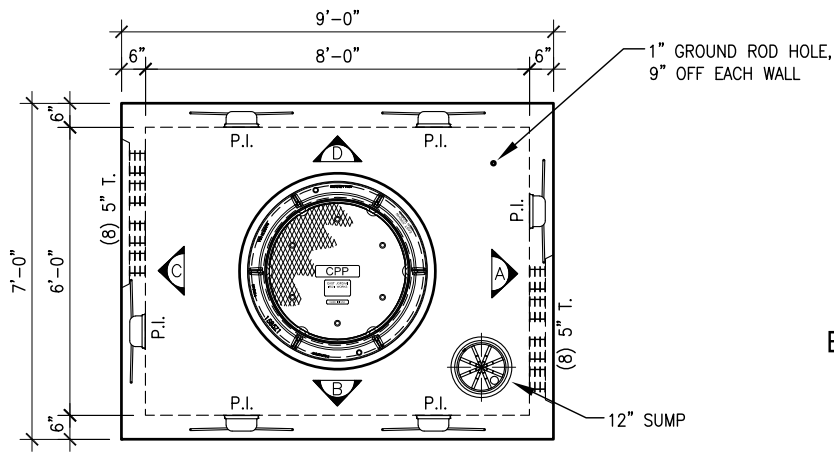
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CUSTOMER:

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JOB: **ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's**

DRAWN BY: **CH** CHECKED BY: **RL** SCALE: **1 1/4" = 1'-0"** DATE: **9/28/19** JOB NO: **173423** DWG NO: **JP-008**



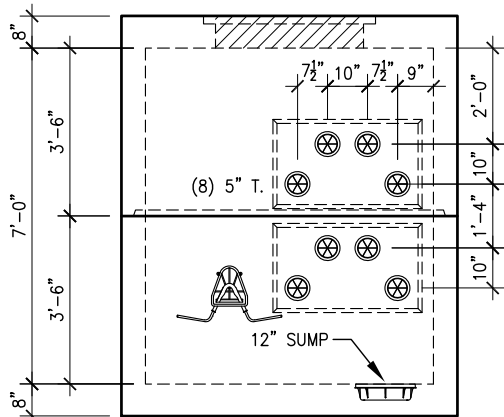
TOP VIEW

BU-11

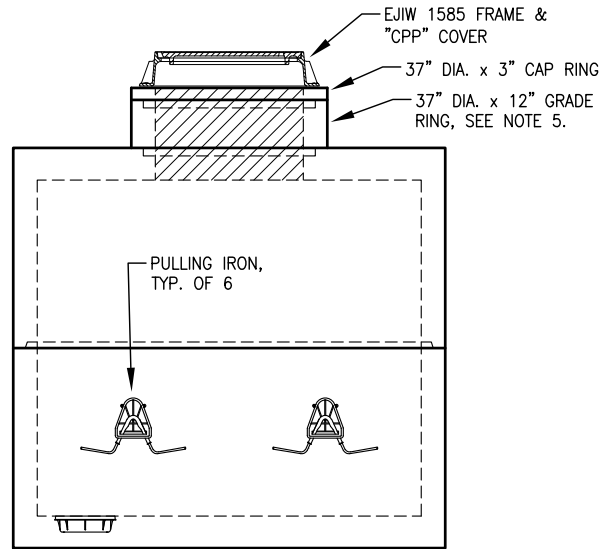
EMH 23

6' x 8' x 7'
"CLAMSHELL" STYLE ELECTRICAL M.H.

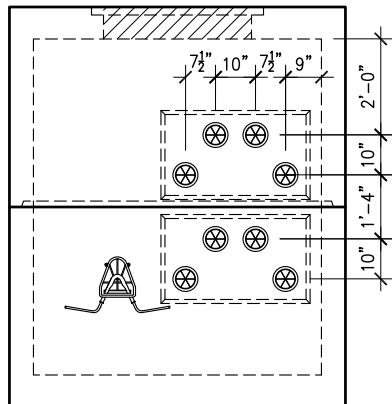
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



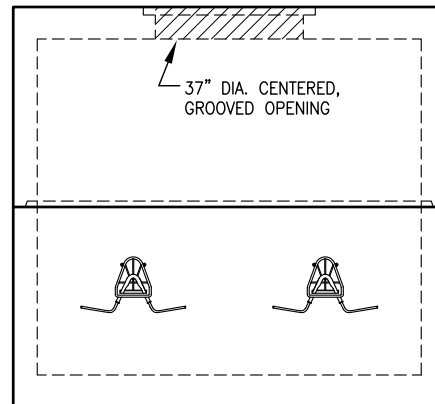
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

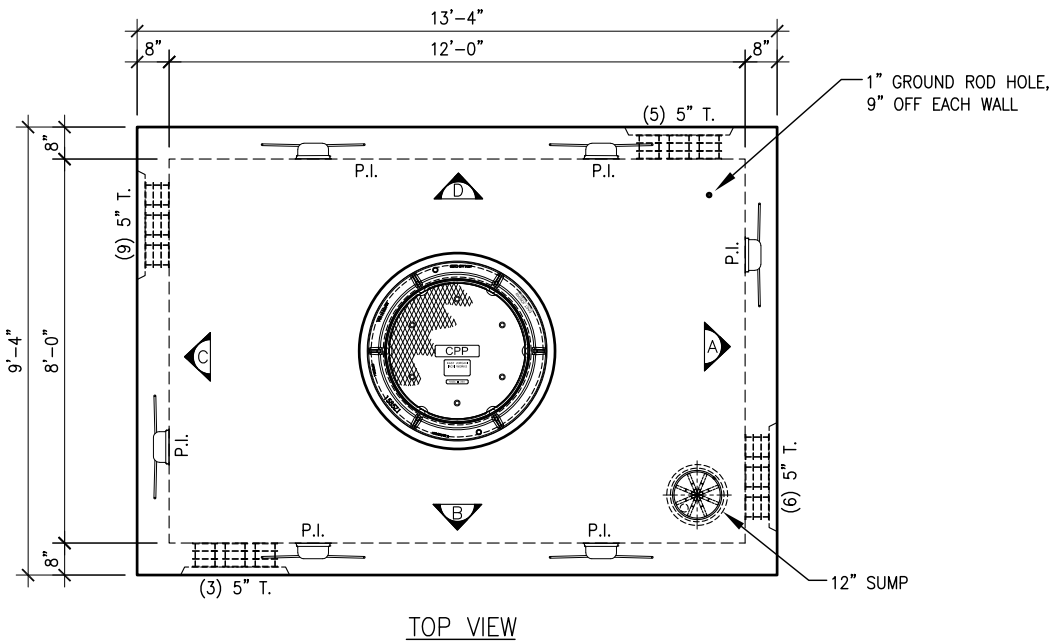
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DATE: 9/28/19

JOB NO: 173423

DWG NO: LP-009



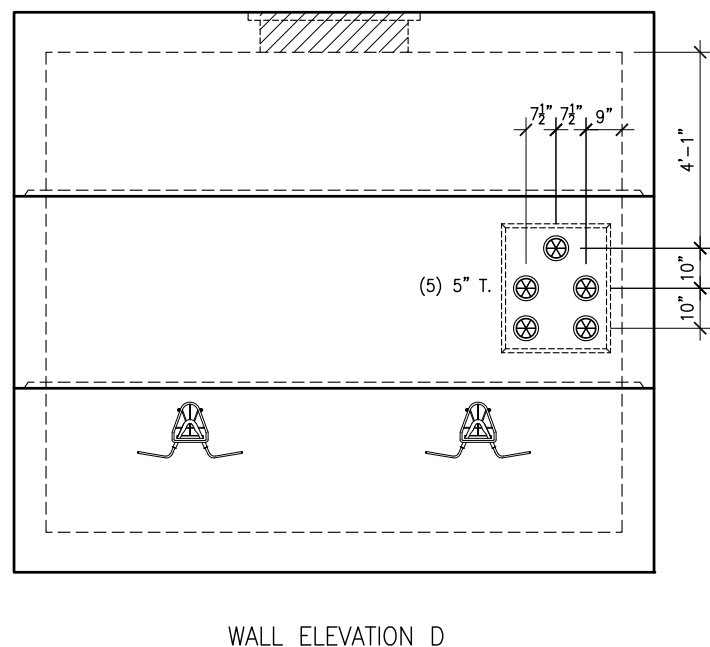
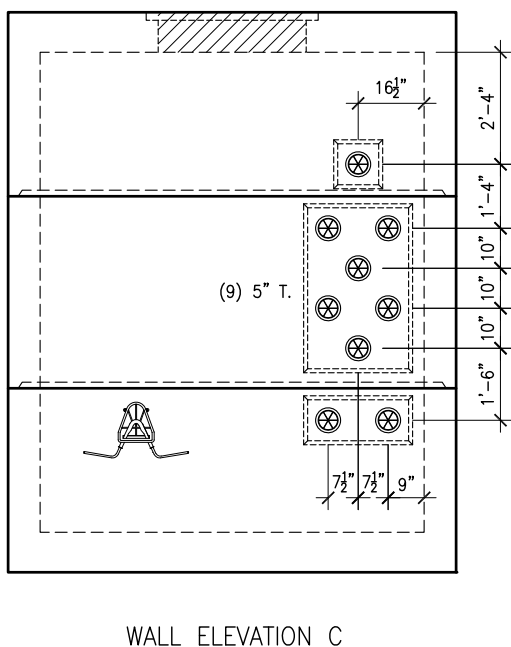
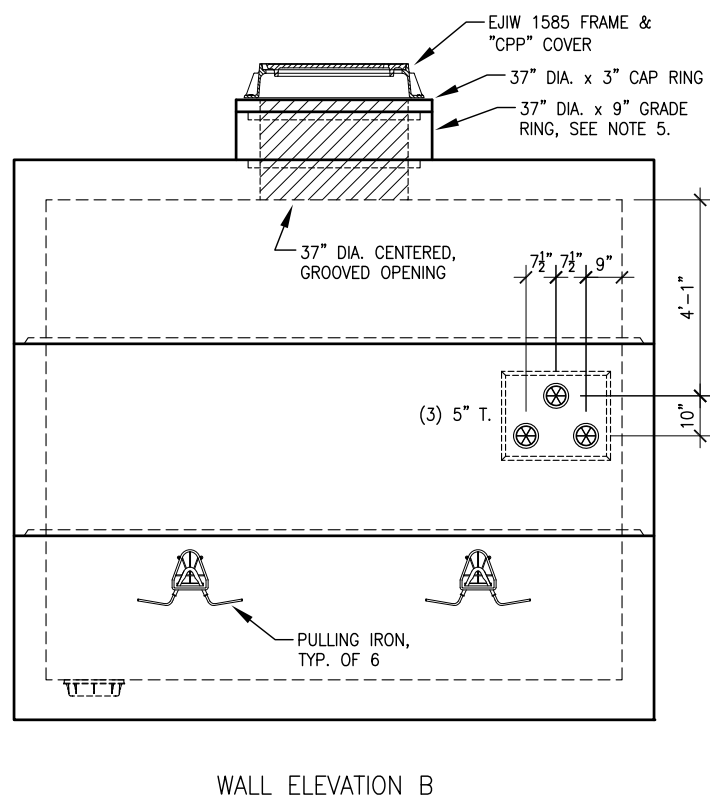
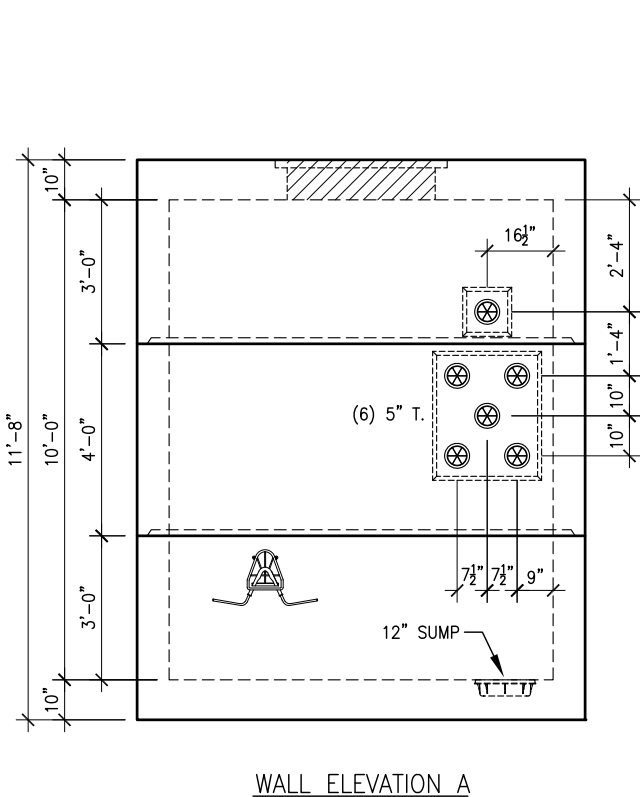


BU-11

EMH 24

8' x 12' x 10'
"CLAMSHELL" STYLE ELECTRICAL M.H.
W/ RISER SECTION

ELEVATION VIEWS ARE
INSIDE LOOKING OUT



- NOTES:
- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
 - 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
 - 3.) HS-25 LOADING
 - 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
 - 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
 - 6.) WEIGHTS: BASE: 29,285 #, RISER: 17,410 #, TOP: 27,970 #

REVISIONS							
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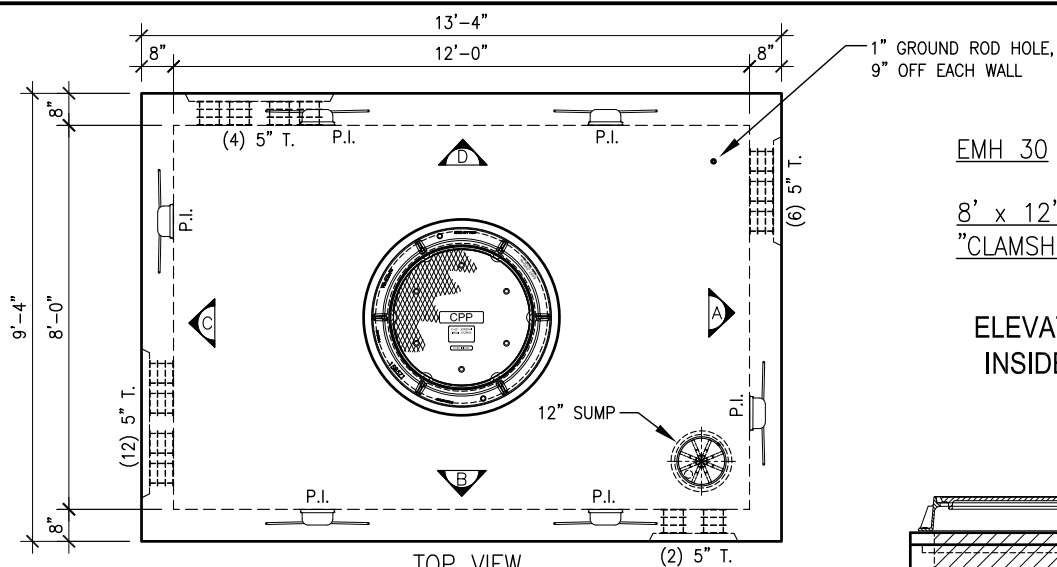
Lindsay
PRECAST

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CUSTOMER:
COOK PAVING & CONSTRUCTION CO., INC.

JOB:
ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4"=1'-0" DATE: 9/28/19 JOB NO: 173423 DWG NO: LP-010



TOP VIEW

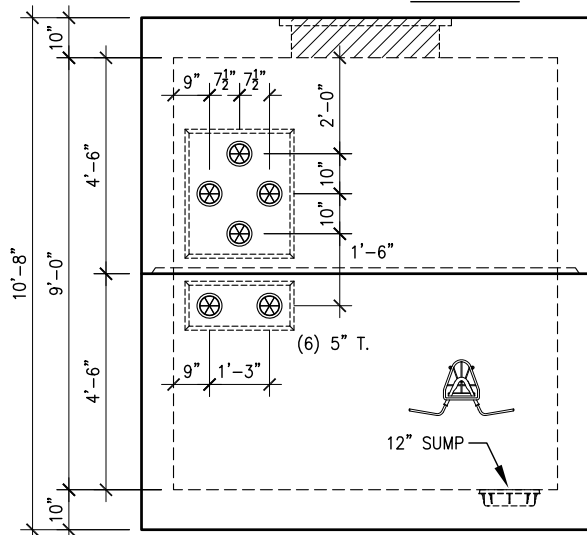
BU-11

EMH 30

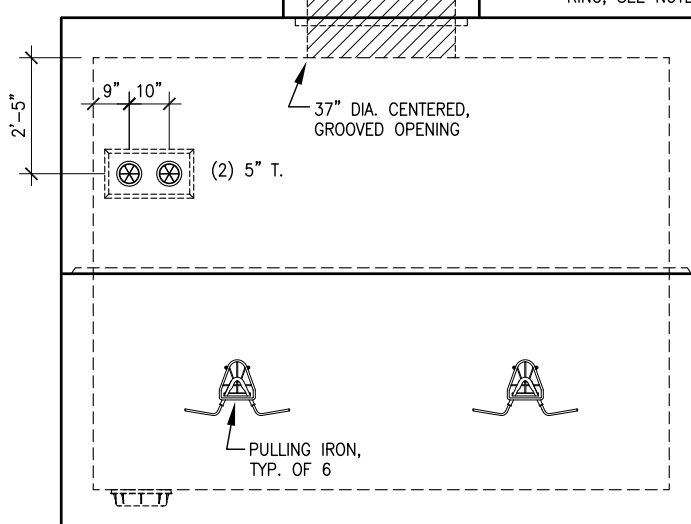
8' x 12' x 9'

"CLAMSHELL" STYLE ELECTRICAL M.H.

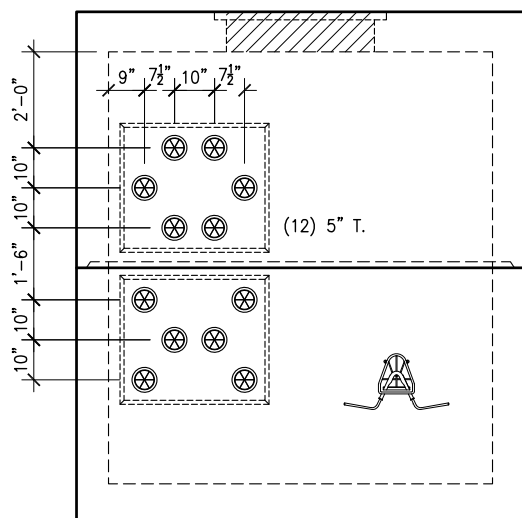
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



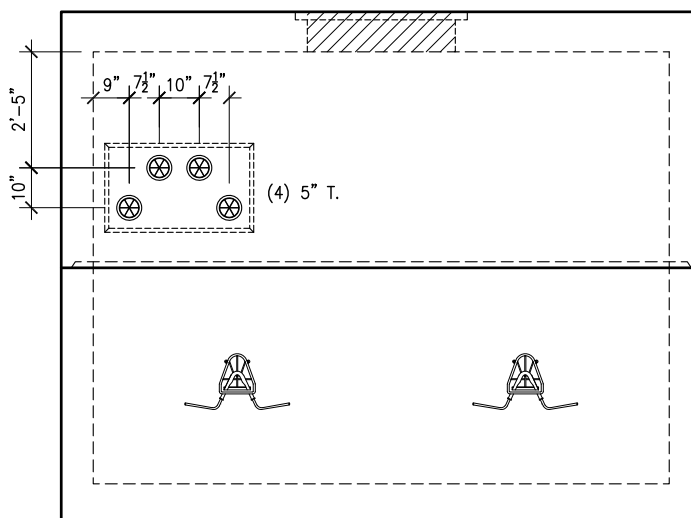
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 35,815 #, TOP: 34,500 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4" = 1'-0"

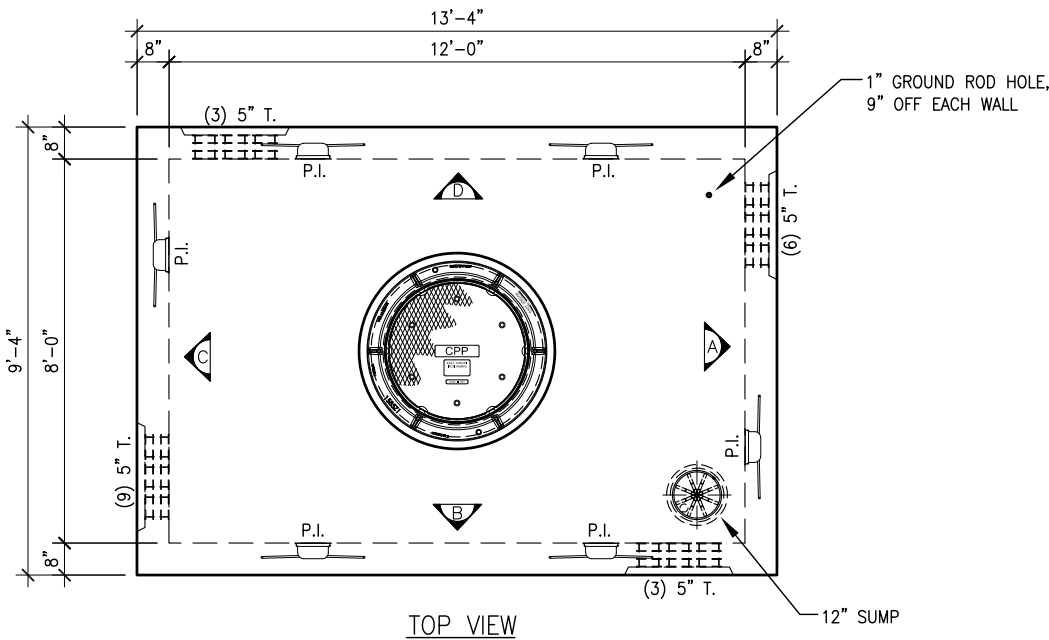
DATE: 10/14/19

JOB NO: 173423

DWG NO: LP-011



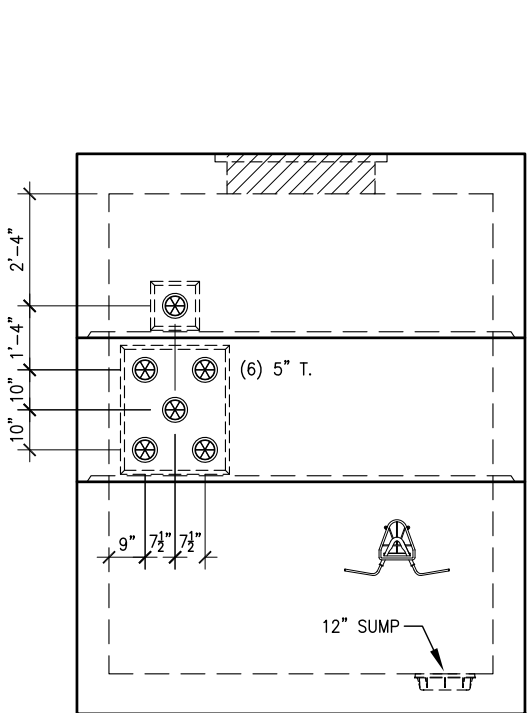
BU-11



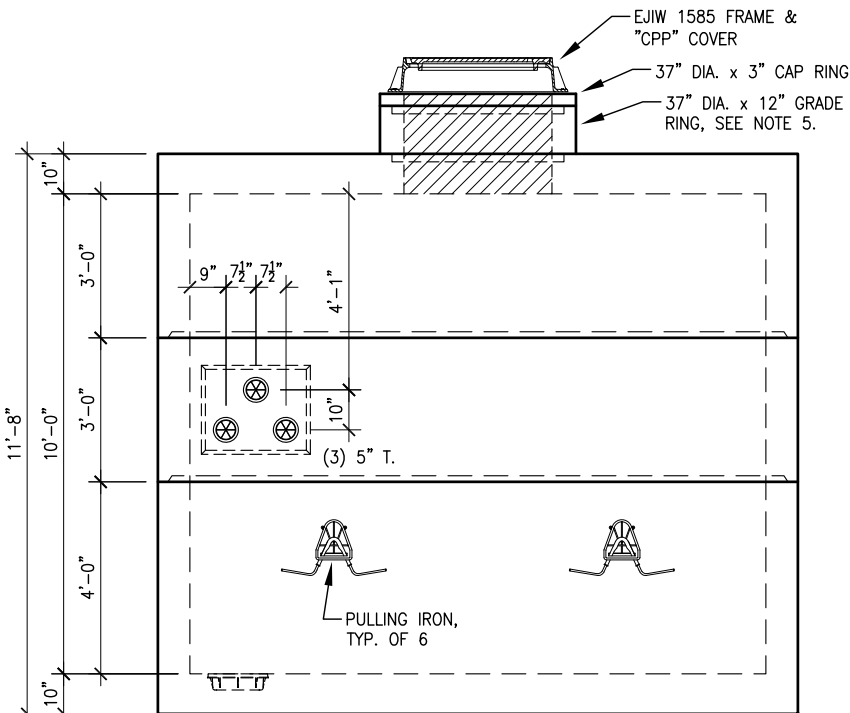
EMH 31

8' x 12' x 10'
"CLAMSHELL" STYLE ELECTRICAL M.H.
W/ RISER SECTION

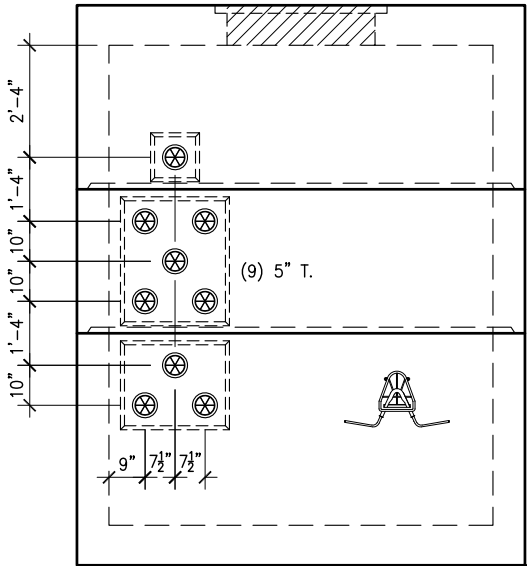
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



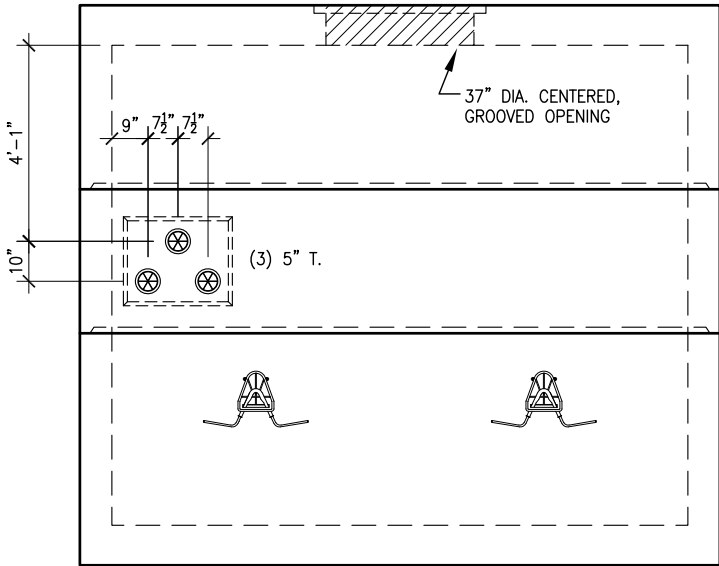
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

- NOTES:
- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
 - 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
 - 3.) HS-25 LOADING
 - 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
 - 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
 - 6.) WEIGHTS: BASE: 33,635 #, RISER: 13,060 #, TOP: 27,970 #

REVISIONS							
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JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF
CHECKED BY: RH
SCALE: 1/4"=1'-0"

DATE: 10/5/19

JOB NO: 173423

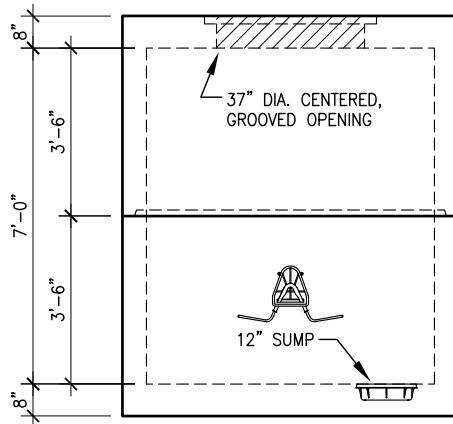
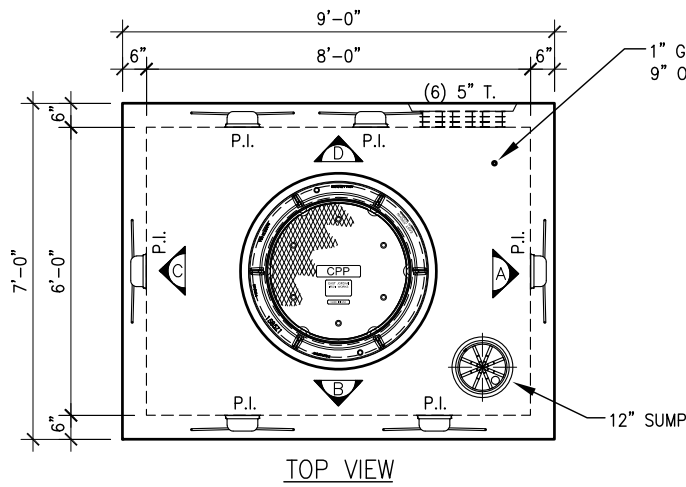
DWG NO: LP-012

BU-11

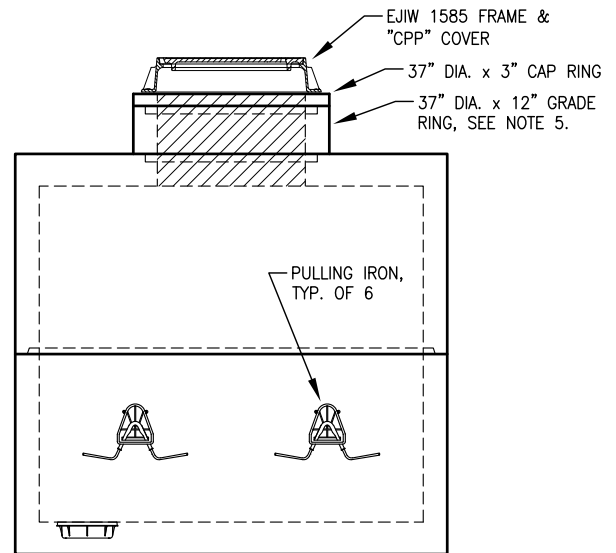
EMH 32

6' x 8' x 7'
"CLAMSHELL" STYLE ELECTRICAL M.H.

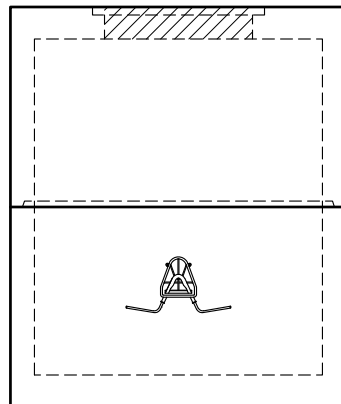
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



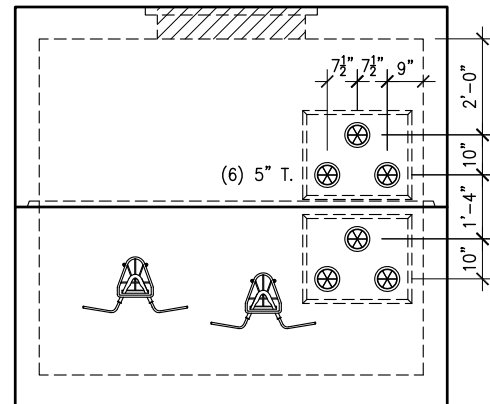
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	12" GRADE RING	12/5/19	DJF
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LP Lindsay
PRECAST

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CUSTOMER:
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JOB: **ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's**

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4" = 1'-0" DATE: 10/5/19 JOB NO: 173423 DWG NO: LP-013



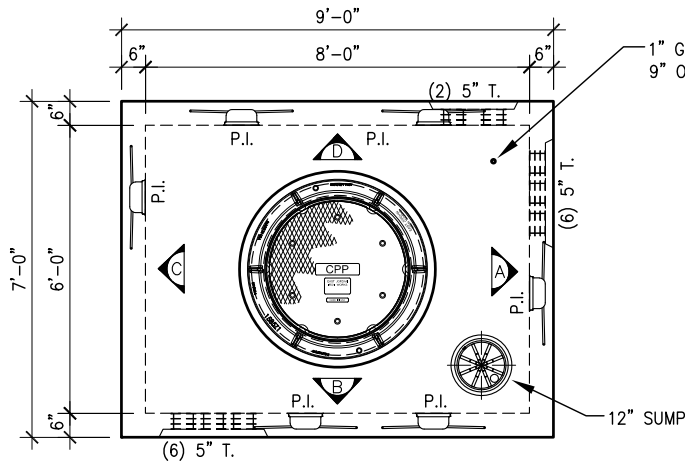
BU-11

EMH 33

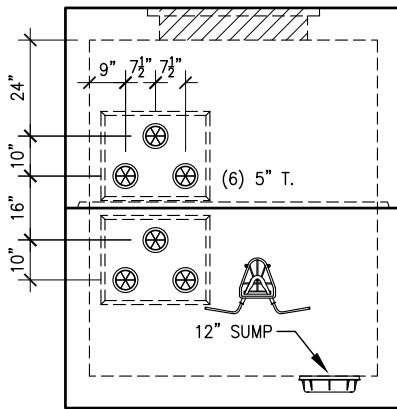
6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

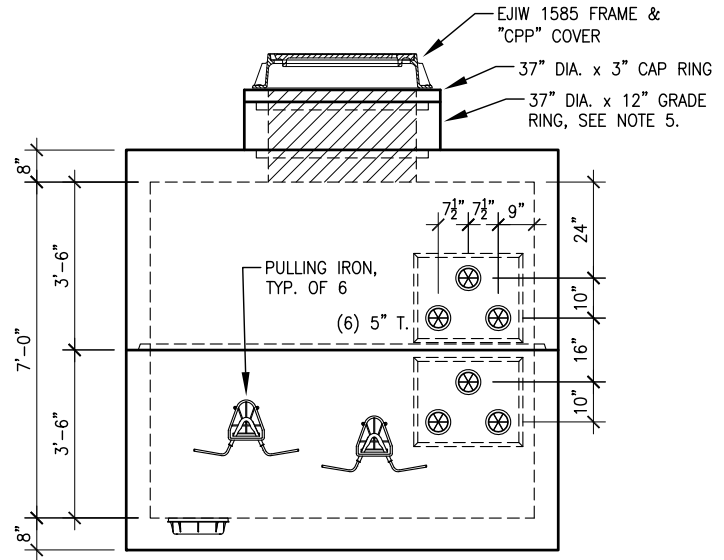
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



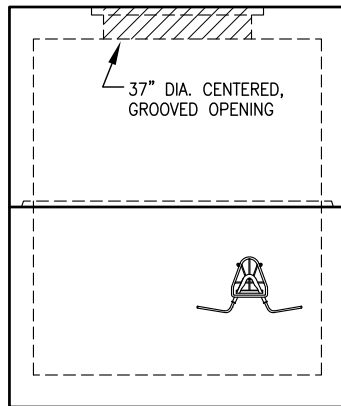
TOP VIEW



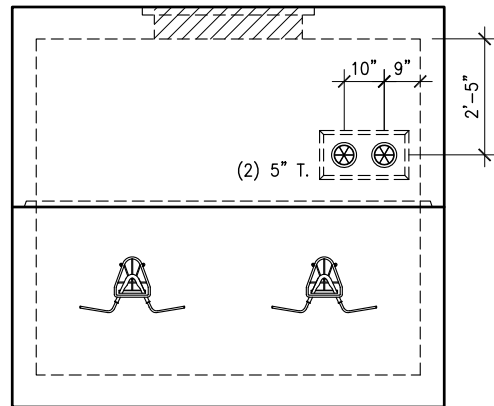
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	12" GRADE RING	10/5/19	DJF
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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4"=1'-0"

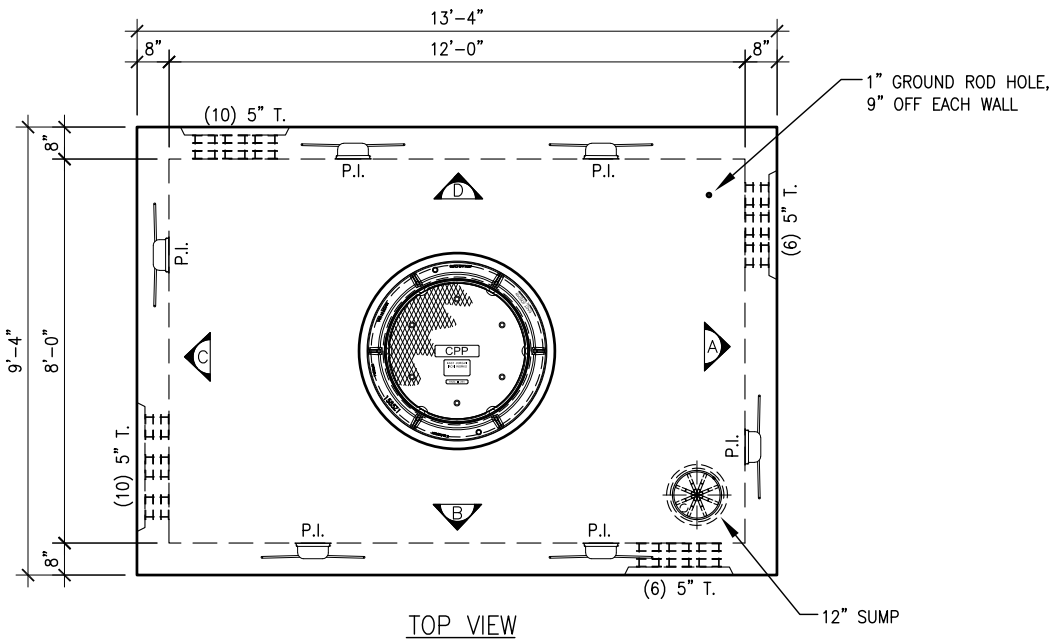
DATE: 10/5/19

JOB NO: 173423

DWG NO: LP-014



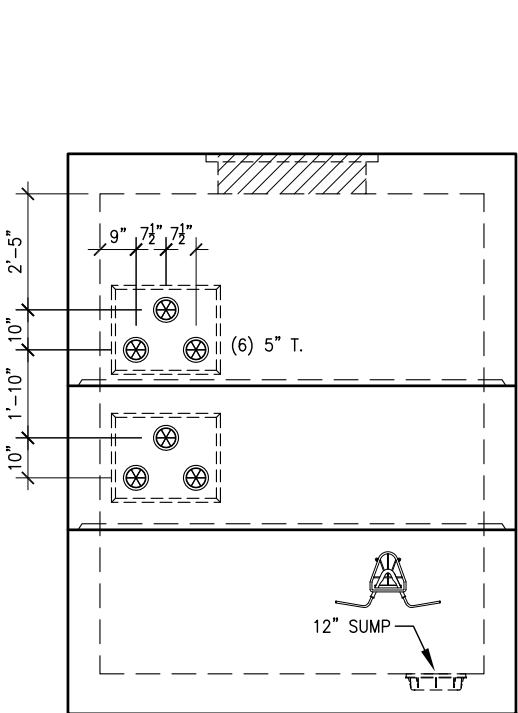
BU-11



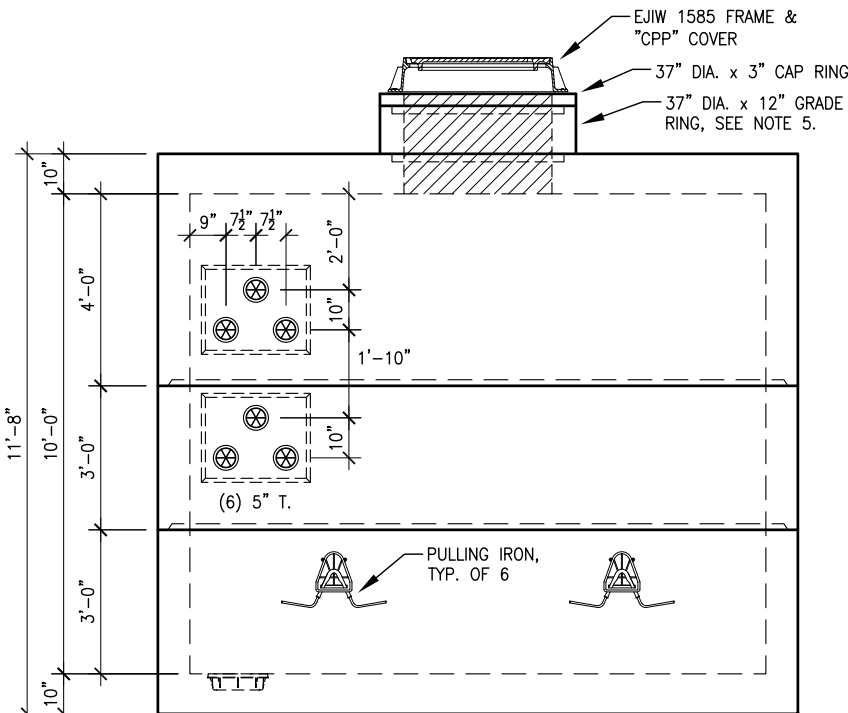
EMH 34

8' x 12' x 10'
"CLAMSHELL" STYLE ELECTRICAL M.H.
W/ RISER SECTION

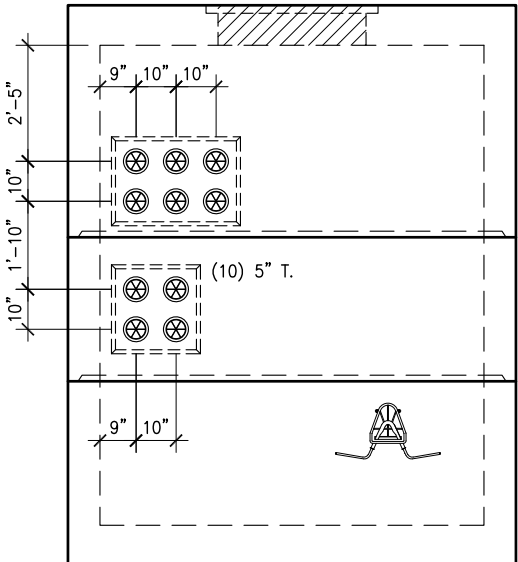
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



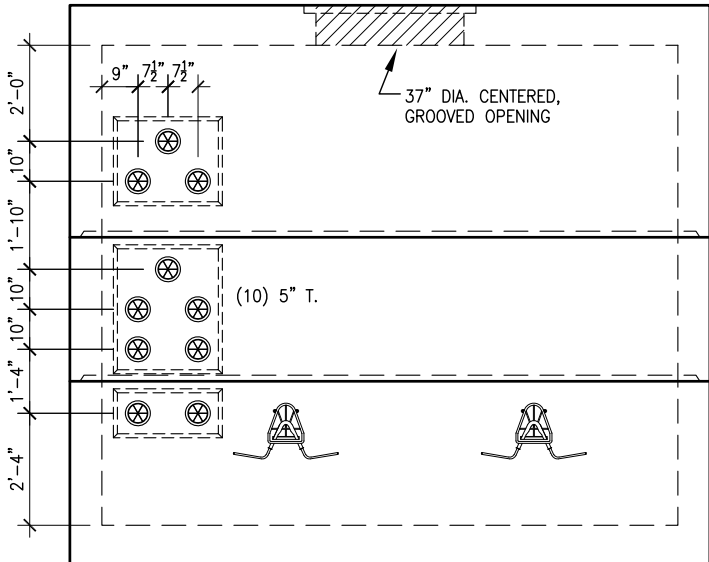
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

- NOTES:
- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
 - 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
 - 3.) HS-25 LOADING
 - 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
 - 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
 - 6.) WEIGHTS: BASE: 29,285 #, RISER: 13,060 #, TOP: 32,320 #

REVISIONS				Lindsay P R E C A S T			
NO.	DESCRIPTION	DATE	BY				
1.				<div>THIS DRAWING IS THE PROPRIETARY PROPERTY OF LINDSAY PRECAST. REPRODUCTION, DISCLOSURE OR USE OF ANY PART OF THIS DRAWING OR ANY INFORMATION THEREIN IS EXPRESSLY PROHIBITED WITHOUT PRIOR WRITTEN CONSENT OF LINDSAY PRECAST.</div> <div>CUSTOMER: COOK PAVING & CONSTRUCTION CO., INC.</div> <div>JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's</div> <div>DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4"=1'-0" DATE: 10/5/19 JOB NO: 173423 DWG NO: LP-015</div>			
2.							
3.							
4.							
5.							
6.							
7.							

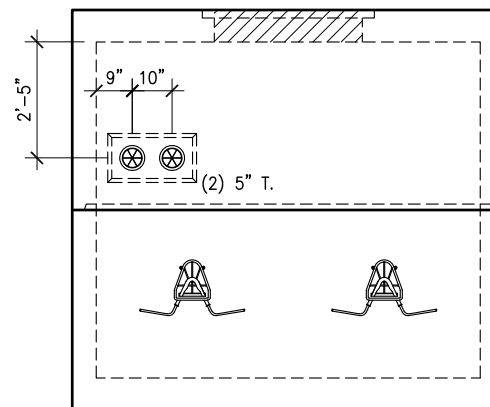
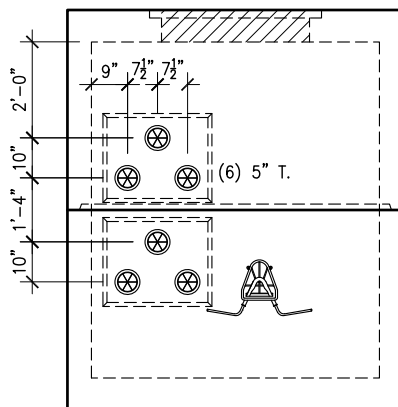
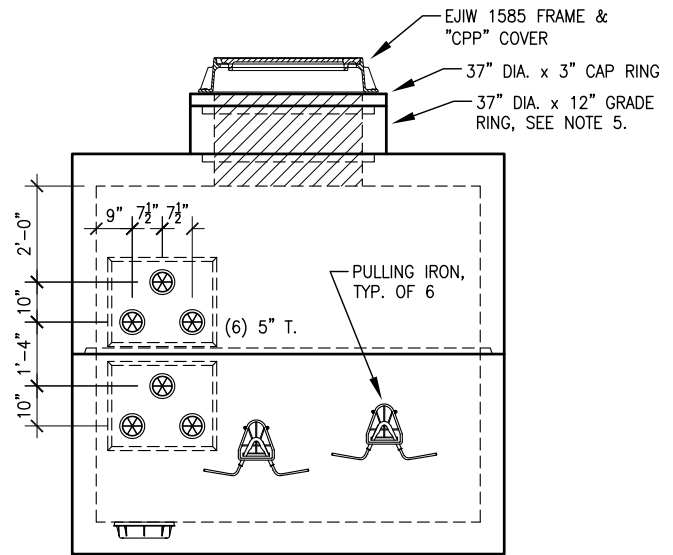
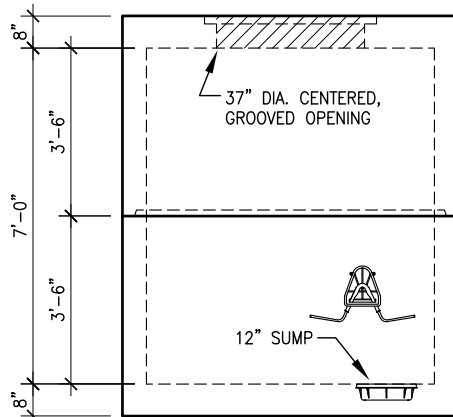
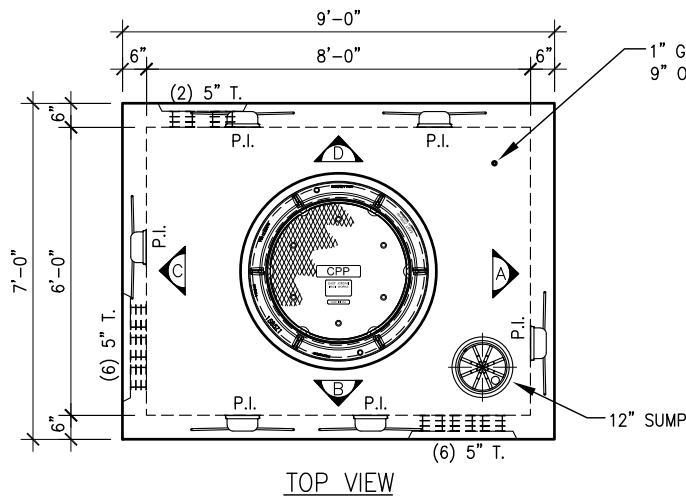
BU-11

EMH 35

6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

ELEVATION VIEWS ARE
INSIDE LOOKING OUT



NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	12" GRADE RING	10/5/19	DJF
2.			
3.			
4.			
5.			
6.			
7.			



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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4" = 1'-0"

DATE: 10/5/19

JOB NO: 173423

DWG NO: LP-016



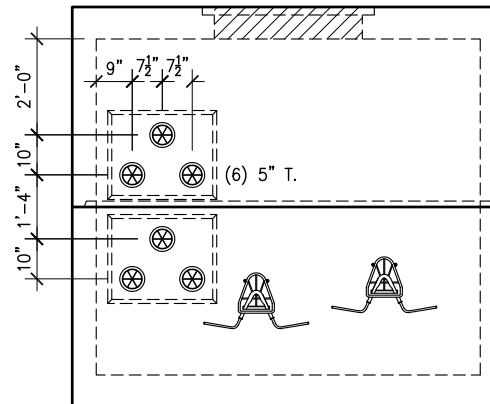
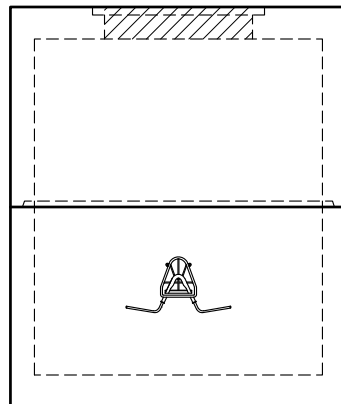
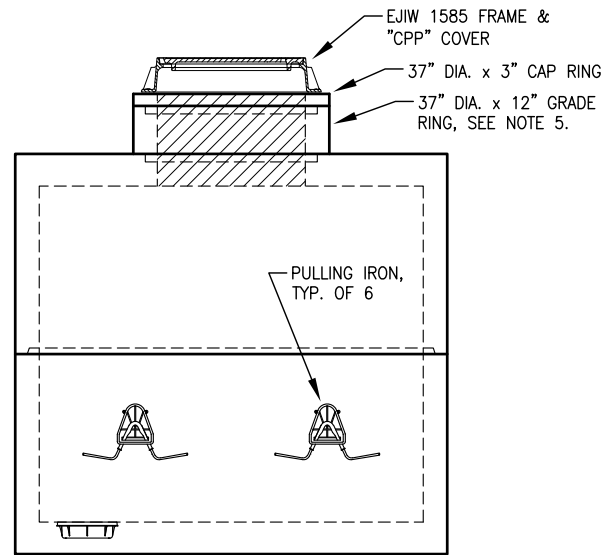
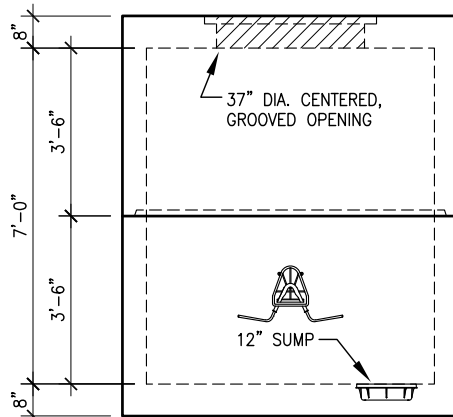
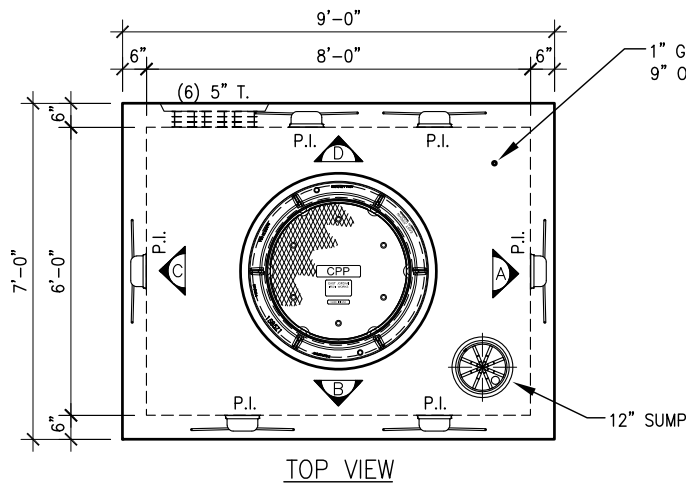
BU-11

EMH 36

6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

ELEVATION VIEWS ARE
INSIDE LOOKING OUT



NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
- 3.) HS-25 LOADING
- 4.) ALL WALL ELEVATION VIEWS ARE INSIDE LOOKING OUT.
- 5.) GRADE RINGS ARE AVAILABLE IN HEIGHTS OF 6", 9" & 12".
- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1.	12" GRADE RING	12/5/19	DJF
2.			
3.			
4.			
5.			
6.			
7.			

LP Lindsay
PRECAST

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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF CHECKED BY: RH SCALE: 1/4" = 1'-0"

DATE: 10/5/19

JOB NO: 173423

DWG NO: LP-017



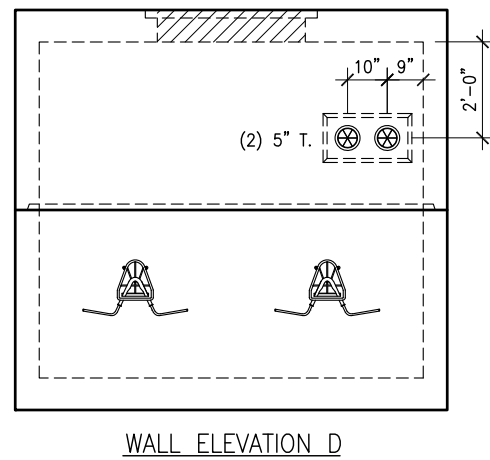
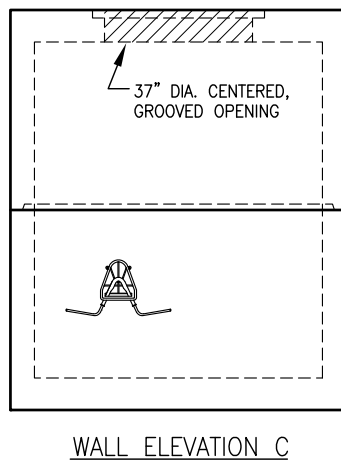
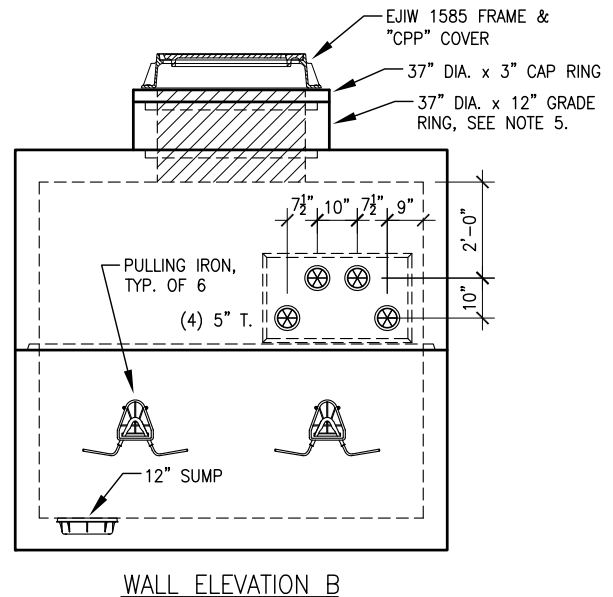
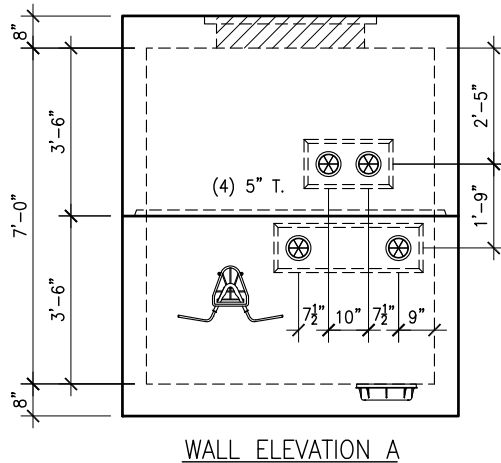
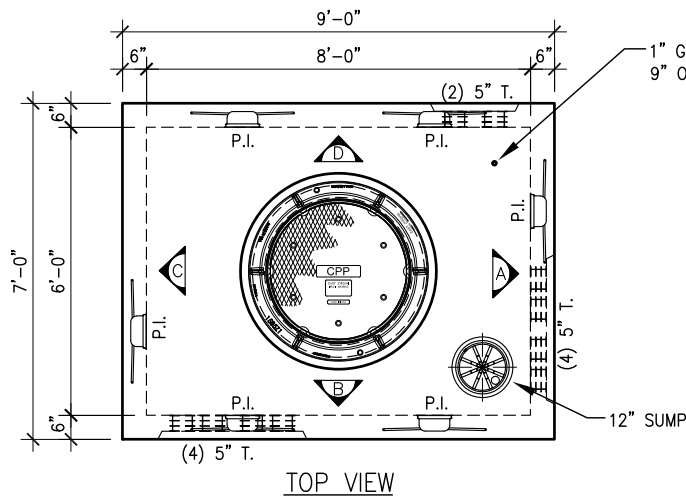
BU-11

EMH 38

6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

ELEVATION VIEWS ARE
INSIDE LOOKING OUT



NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
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- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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PRECAST

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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

DRAWN BY: DJF
CHECKED BY: RH

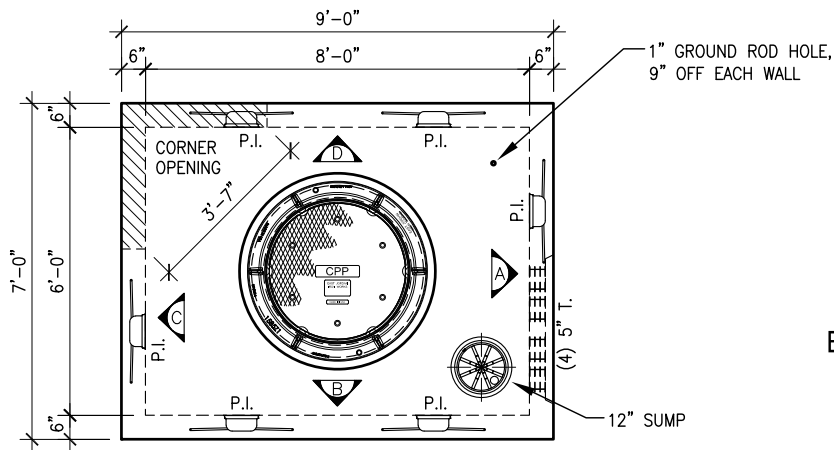
SCALE: 1/4" = 1'-0"

DATE: 10/5/19

JOB NO: 173423

DWG NO: LP-018





TOP VIEW

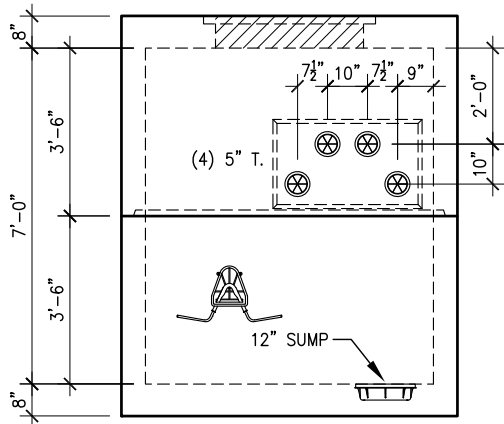
BU-11

EMH 39

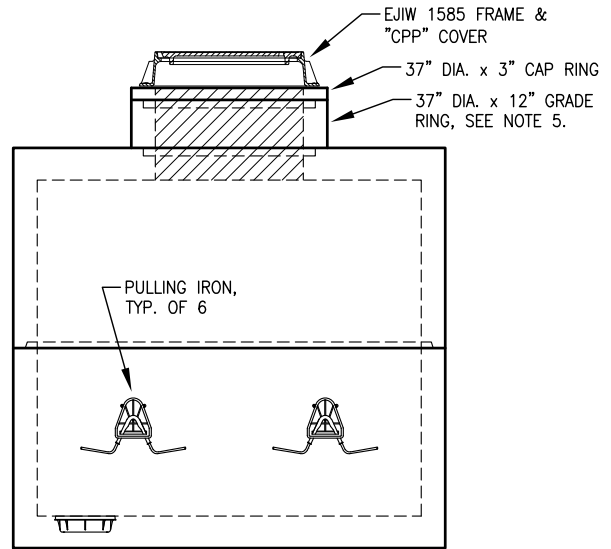
6' x 8' x 7'

"CLAMSHELL" STYLE ELECTRICAL M.H.

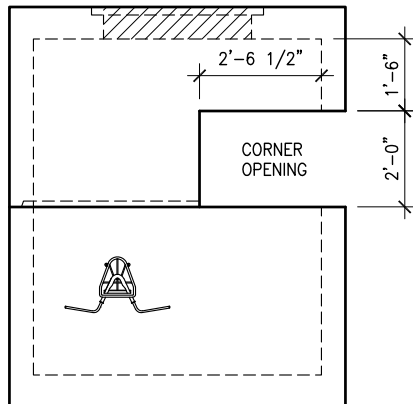
ELEVATION VIEWS ARE
INSIDE LOOKING OUT



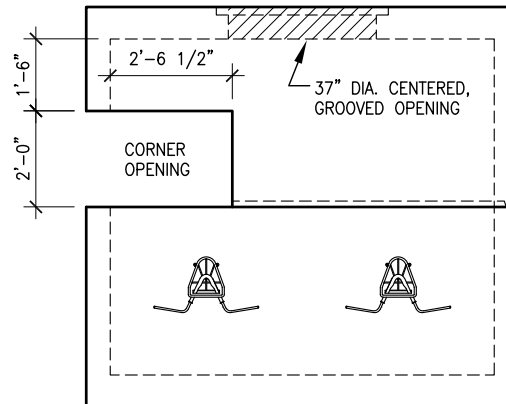
WALL ELEVATION A



WALL ELEVATION B



WALL ELEVATION C



WALL ELEVATION D

NOTES:

- 1.) CONCRETE MIN. 5,000 PSI @ 28 DAYS
- 2.) REINFORCING GRADE 60 ASTM A615-A617
60,000 PSI YIELD STRENGTH
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- 6.) WEIGHTS: BASE: 14,650 #, TOP: 13,695 #

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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7.			

LP Lindsay
PRECAST

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CUSTOMER:

COOK PAVING & CONSTRUCTION CO., INC.

JOB: ODOT 17-3000 ~ OPPORTUNITY CORRIDOR ~ BU-11 ~ CPP MH's

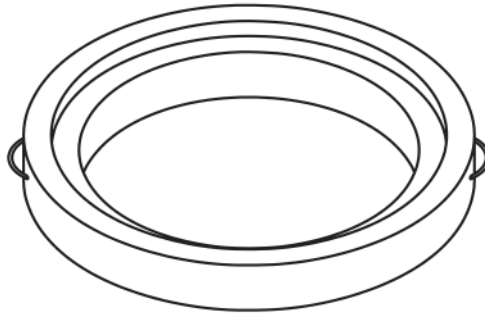
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DATE: 10/14/19

JOB NO: 173423

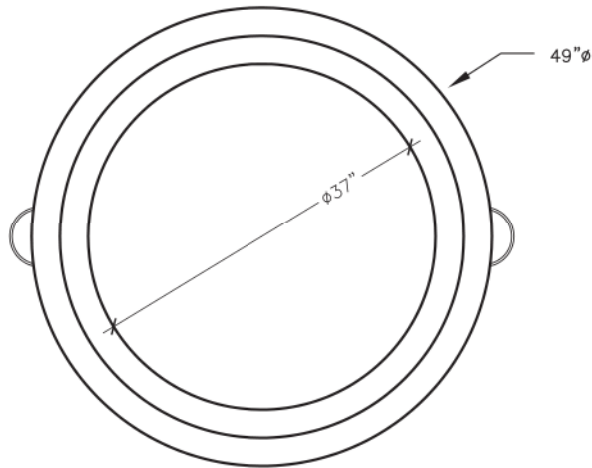
DWG NO: LP-019





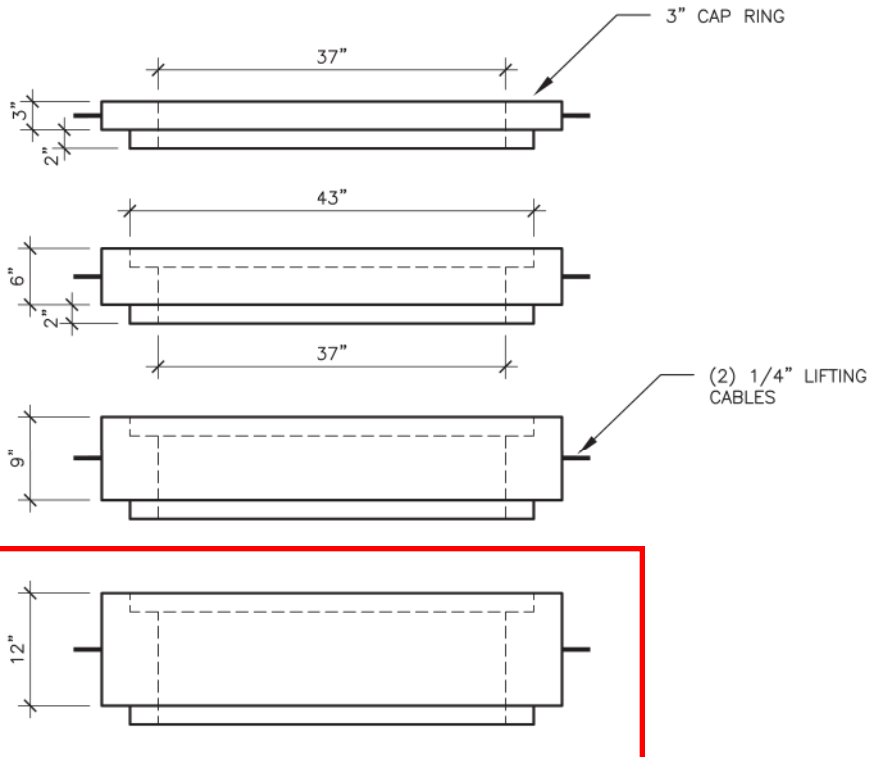
LINDSAY PRECAST GRADE RINGS

DIA.	HEIGHT	POUNDS
37"	6"	422
37"	9"	633
37"	12"	843



CAP RING

DIA.	HEIGHT	POUNDS
37"	3"	270



37" DIA MANHOLE GRADE RINGS

NOTES:

1. CONCRETE MIN. 5,000 PSI @ 28 DAYS
2. REINFORCING GRADE 60 ASTM A615-A617 60,000 PSI YIELD STRENGTH
3. HS-20 LOADING

REVISIONS			
NO.	DESCRIPTION	DATE	BY
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CUSTOMER:

JOB: 37" DIA MANHOLE GRADE RINGS

DRAWN BY: CHECKED BY: SCALE:

DATE:

JOB NO:

DWG NO:

LP-001



EJIW EAST JORDAN
IRON WORKS EST.1883

800-626-4653

www.ejiw.com

MADE IN USA

PRODUCT NUMBER

00158514

CATALOG NUMBER

1585Z1

MANHOLE FRAME

LOAD RATING

HEAVY DUTY

COATING

DIPPED

ESTIMATED WEIGHT

FRAME: 242 LBS 110kg

MATERIAL SPECIFICATION

FRAME — GRAY IRON
ASTM A48 CL35B

OPEN AREA

N/A

✓ DESIGNATES MACHINED
SURFACE

DRAWN
DEW

DATE
01/18/07

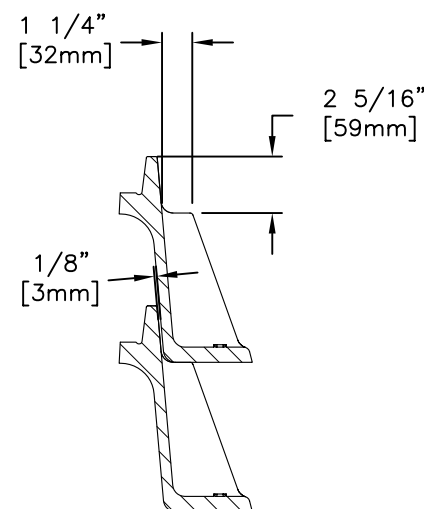
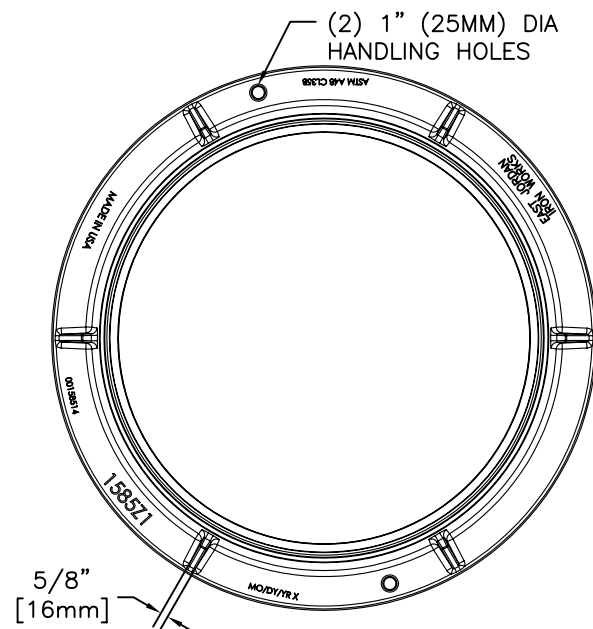
LAST REVISED

DATE

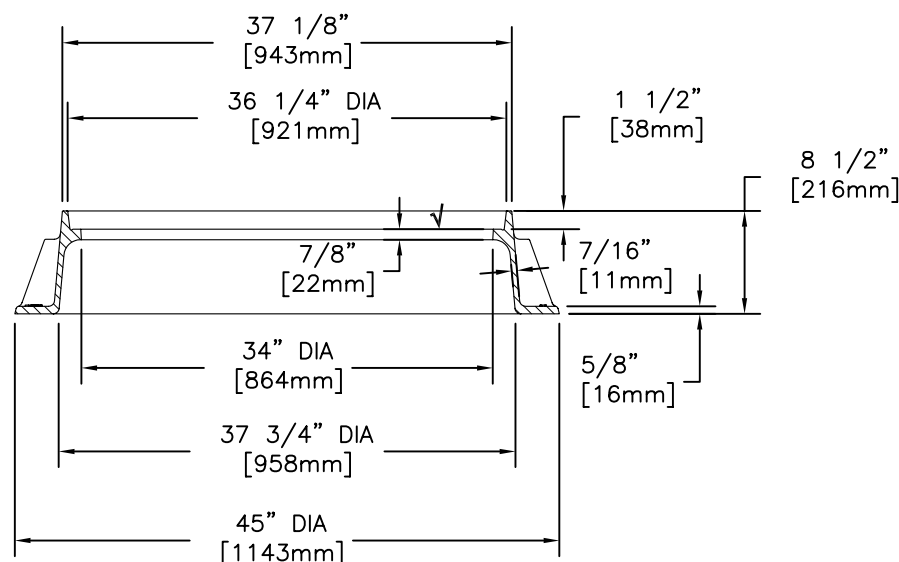
REFERENCE INFORMATION

00158513

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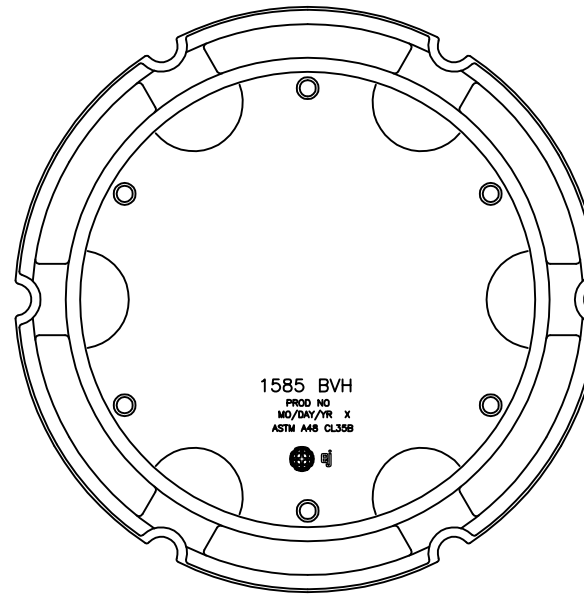
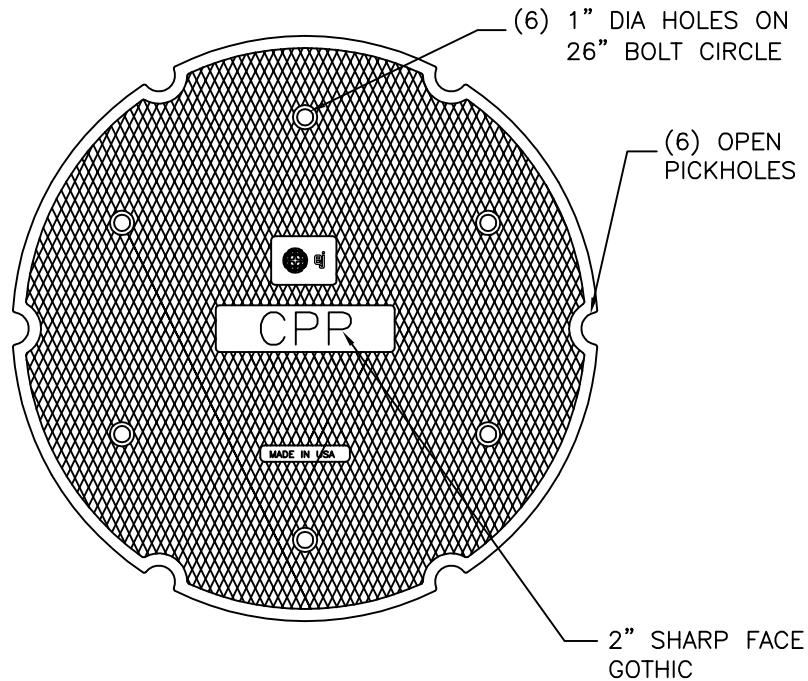


STACK DETAIL

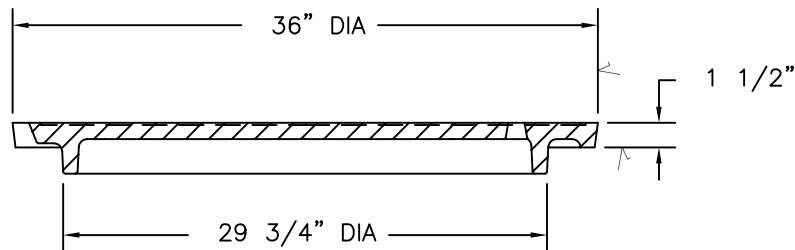


SECTION

1585BVH Cover



BOTTOM VIEW



SECTION VIEW

Product Number

00158526

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
Heavy Duty
- Open Area
n/a
- Coating
Dipped
- ✓ Designates Machined Surface

Certification

- ASTM A48
-
-
- Country of Origin: USA

Drawing Revision

08/12/2004 Designer: SBB
6/26/2015 Revised By: DAE

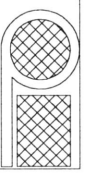
Disclaimer

Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

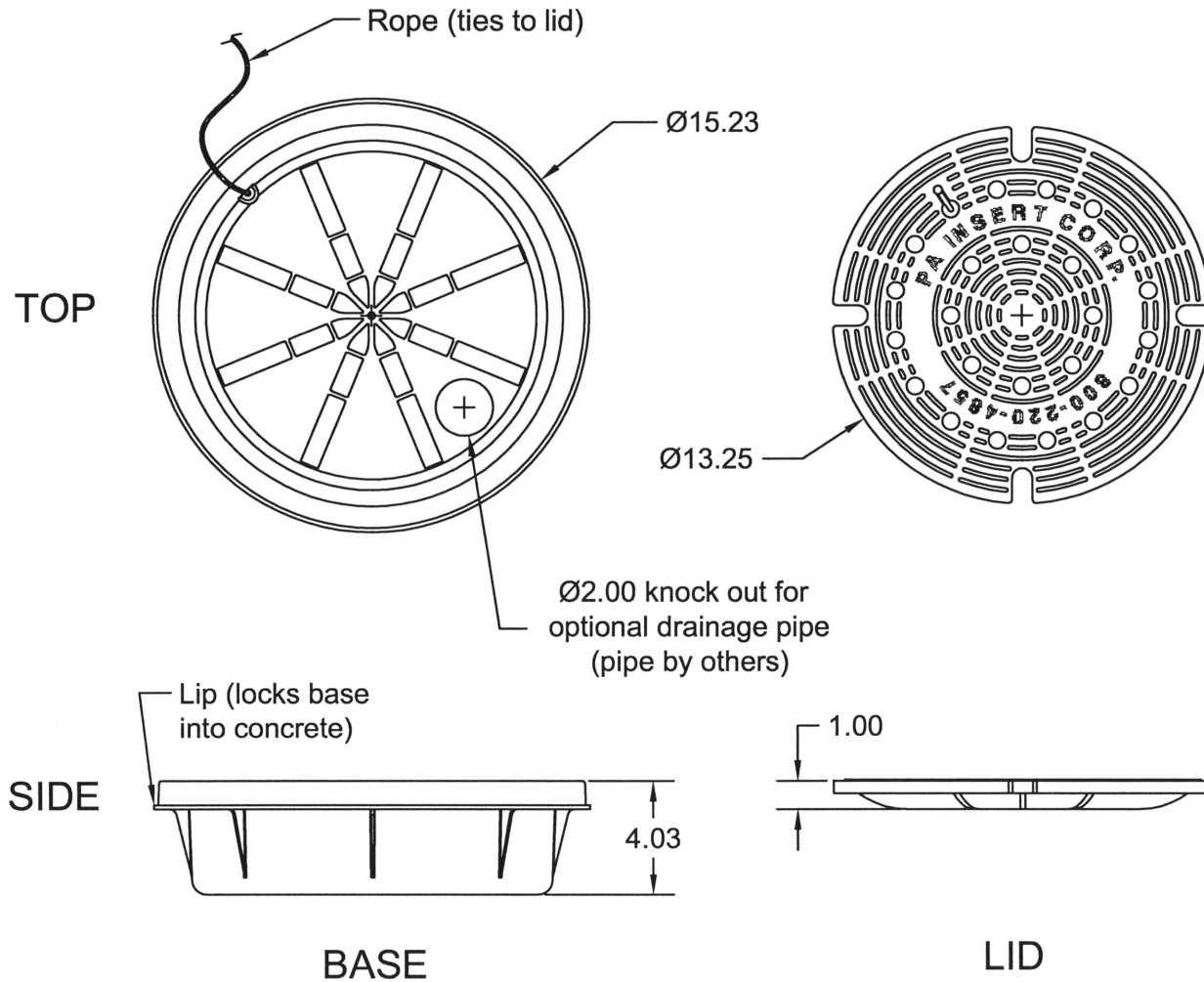
CONFIDENTIAL: This drawing is the property of EJ GROUP, Inc., and embodies confidential information, registered marks, patents, trade secret information, and/or know how that is the property of EJ GROUP, Inc. Copyright © 2012 EJ GROUP, Inc. All rights reserved.

Contact

800 626 4653
ejco.com

Fax to:	Customer		Approved/Notes	PA Insert Corp PO Box 199 Spring City PA 19475 tel: 610-948-9688 fax: 610-948-4975 email: sales@pennsylvaniainsert.com web: www.pennsylvaniainsert.com	
Fax#	Project				
From	Job#	Ship Date			
Date	PA Insert Quote/Order#	Page ____ of ____			

NEW PLASTIC SUMP

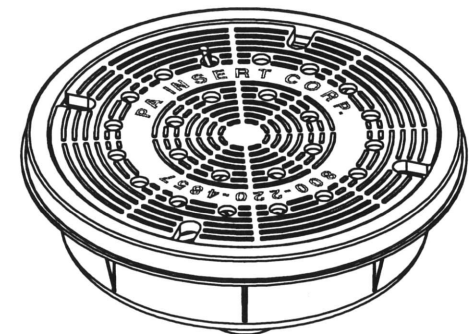


BASE:

- Material - Propylene
- Rope connects to lid
- Lip positively locks base into concrete
- 2" knock out hole in base for optional drain pipe (drain pipe by others)

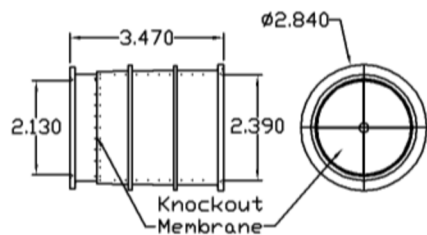
LID:

- Material - 30% Glass filled Propylene
- Top surface has raised areas to provide traction
- Ribbed construction provides increased strength and rigidity

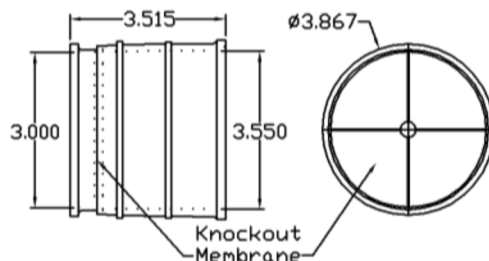


3D VIEW

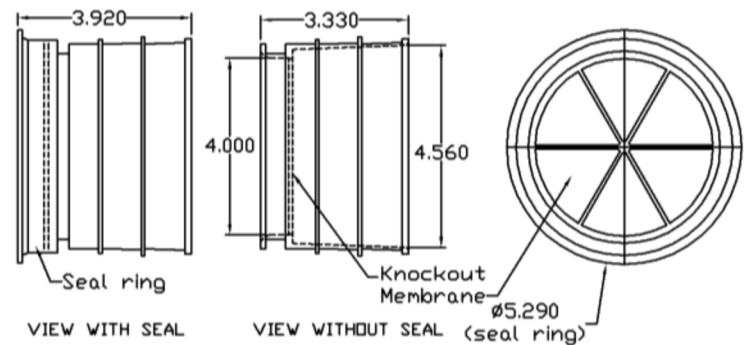
DATE:	CUSTOMER:	<h1 style="text-align: center;">ELECTRIC / TELEPHONE DUCT TERMINATORS</h1> <p style="text-align: center;">You can find this information online at: PENNSYLVANIAINSERT.COM OR EMAIL YOUR REQUEST TO: SALES@PENNSYLVANIAINSERT.COM</p>	<h2 style="text-align: center;">PENNSYLVANIA INSERT</h2> <p style="text-align: center;">490 FIRST AVENUE ROYERSFORD, PA 19468 P. 610.948.9688 F. 610.948.4975</p>	
REV 1:	JOB:			
REV 2:	OWNER:			



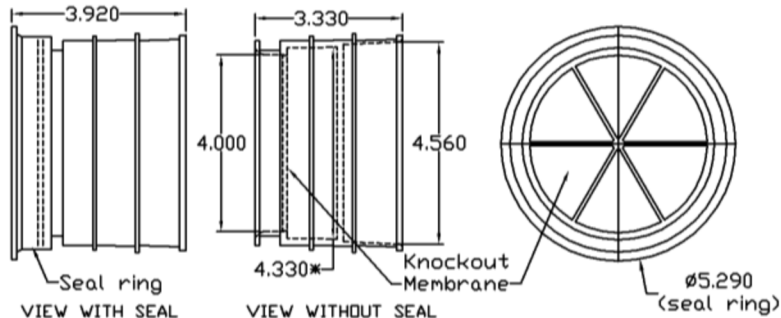
TE-2 2" TERMINATOR
(ACCEPTS SCH 40 ONLY)



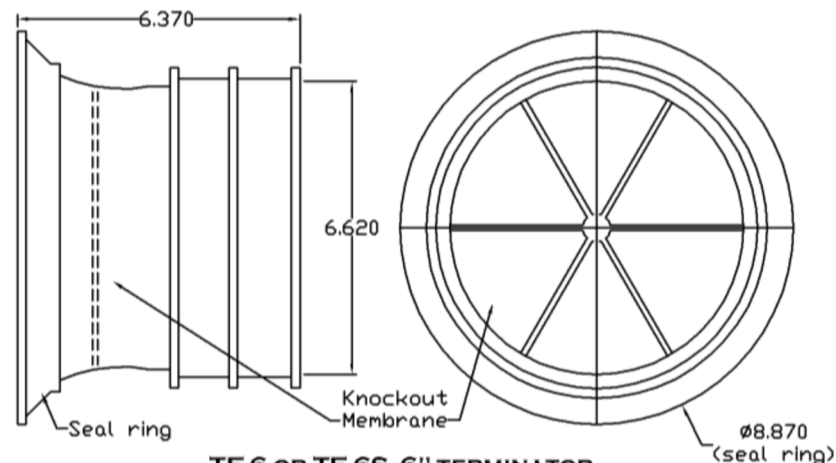
TE-3 3" TERMINATOR
(ACCEPTS SCH 40 ONLY)



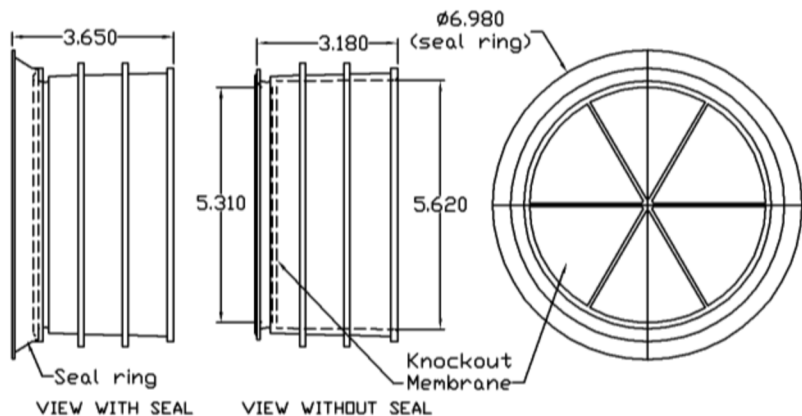
TE-4G OR TE-4GS 4" TERMINATOR
(ACCEPTS SCH 40 ONLY)



TE-4B OR TE-4BS 4" STEP-DOWN TERMINATOR
(ACCEPTS SCH 40 OR SCH 20)



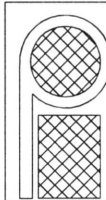
TE-6 OR TE-6S 6" TERMINATOR
(ACCEPTS SCH 40/80)



TE-5 OR TE-5S 5" STEP-DOWN TERMINATOR
(ACCEPTS SCH 40 OR SCH 80)

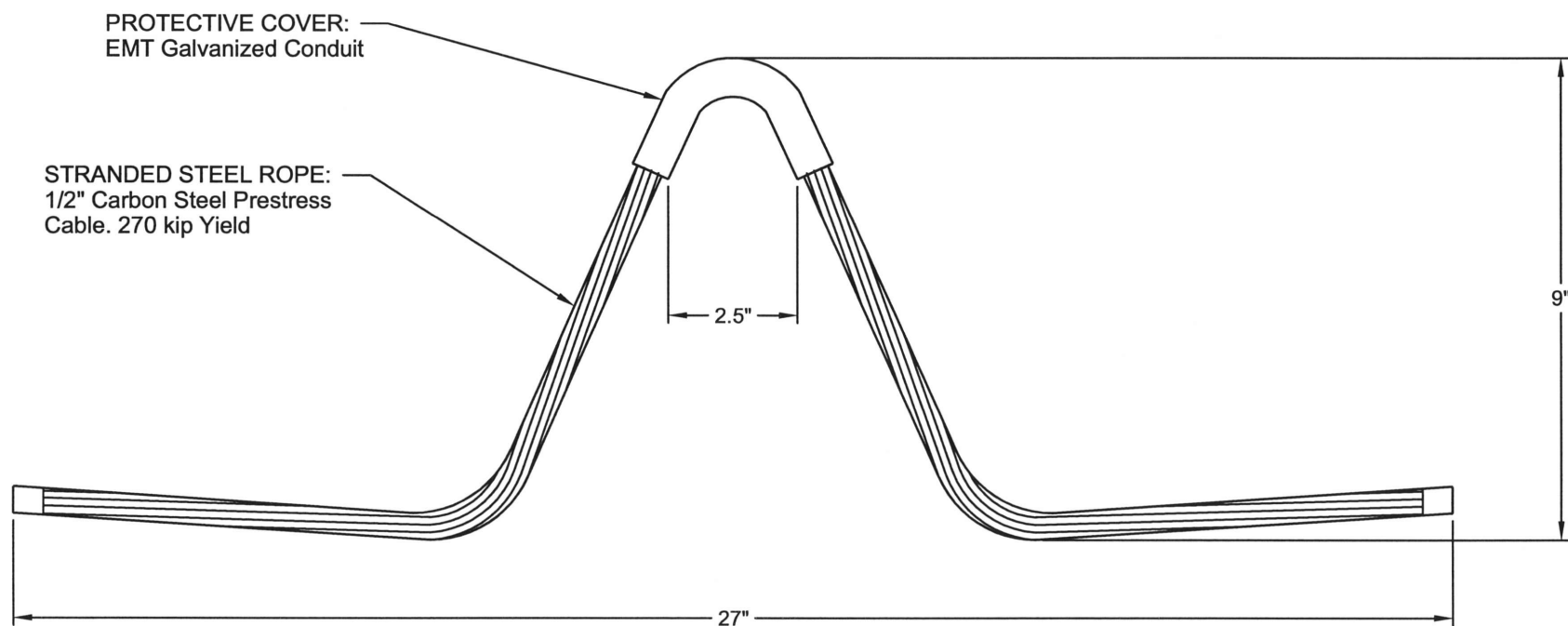
Model	TE-2	TE-3	TE-4B	TE-4BS	TE-4G	TE-4GS	TE-5	TE-5BS	TE-6	TE-6BS
Color	black	black	black	black	black	black	black	black	black	black
Duct Size	2"	3"	4"	4"	4"	4"	5"	5"	6"	6"
Pipe Wall	SCH40	SCH40	SCH20	SCH20	SCH40	SCH40	SCH40	SCH40	SCH40	SCH40
			SCH40	SCH40			SCH80	SCH80	SCH80	SCH80
Seal	n/a	n/a	no	yes	no	yes	no	yes	no	yes
Material	PVC	PVC	PVC	PVC	PVC	PVC	Polystyrene	Polystyrene	Polystyrene	Polystyrene

Specifications: Penetrations for cables shall be Electric/Telephone Duct Terminators as manufactured by Pennsylvania Insert Corp., Spring City, PA. Terminators shall be sized to accept 2" (3", 4", 5", 6") Sch 40 (20, 80) pipe and will provide a bonding surface for glueing cable or duct to the terminator, creating a watertight penetration. Terminators shall be manufactured from polystyrene or polyvinylchloride (PVC).

Fax to:	Customer		Approved/Notes	PA Insert Corp PO Box 199 Spring City PA 19475 tel: 610-948-9688 fax: 610-948-4975 email: sales@pennsylvaniainsert.com web: www.pennsylvaniainsert.com	
Fax#	Project				
From	Job#	Ship Date			
Date	PA Insert Quote/Order#	Page ____ of ____			

SINGLE STRAND, UPI CABLE: MODEL# PI-U1 (#1003)

SWL = 11,000 lbs



NO SCALE

12/08

Submittal: 054

Revision: N/A

Date Submitted: 1/30/2020

Response Due By: 2/14/2020



Project: 16051 - ODOT 173000 CUY IR 490/SR010 (OC3)

Description: Misc. CPP Materials

To: Julie Meyer, P.E.
Ohio Department of Transportation – District 12

Email: Julie.Meyer@dot.ohio.gov

From: Oliver Bluestone
Kokosing Construction Company, Inc.

Email: obluestone@kokosing.biz

Submittal Type:	Submitted For:
<input type="checkbox"/> Engineered Drawings	<input checked="" type="checkbox"/> Approval
<input type="checkbox"/> Shop Drawings	<input type="checkbox"/> Record
<input type="checkbox"/> Working Drawings	<input type="checkbox"/> Other
<input type="checkbox"/> CPM Schedule	
<input type="checkbox"/> Material Certifications / Test Results	Sent Via:
<input type="checkbox"/> Reports	<input checked="" type="checkbox"/> Attached (Electronic)
<input checked="" type="checkbox"/> Product Data/Samples	<input type="checkbox"/> Attached (Hard Copy)
<input type="checkbox"/> Other:	

Submittal #	Copies	Spec #	Rev. #	Description	
054	1		N/A	054 – Misc. CPP Materials	

Comments:

Please see the attached product data sheet submittal for miscellaneous CPP materials (BU11).

Please note that US Utility Contractor Co. provided this submittal and will be ultimately responsible for proper installation.

Please feel free to contact me with any questions/concerns regarding this submittal.

Signed: Oliver Bluestone

U.S. UTILITY CONTRACTOR CO., INC.

3592 Genoa Road

TRANSMITTAL #2 CPP

Perrysburg, OH 43551

419/ 837-9358 or 419/ 837-2017

419/ 837-2015 Fax

PROJECT: ODOT 17300 RTA OC-3**OWNER'S PROJECT NO.** RTA 17.18**COMPANY:** Kokosing**DATE:** 1/24/2020**ATTN:** Mike Luyster**IF CHECKED BELOW, PLEASE:**☒ (X) Acknowledge receipt of enclosures☐ () Return enclosures to us☒ (X) Drawings☐ () Shop Drawings☐ () Product Literature☐ () Specifications☒ (X) Catalog Cuts / Submittals☐ () Certified Test Report☐ () Change Order No. ☐ () Samples☐ () Other

DATE	DESCRIPTION	QTY	PAGES
1/24/20	3M Cold Shrink Term Kits	Field Verify	2
1/24/20	5" U- Cable Guard and Boot	Field Verify	2
1/24/20	200 Amp Fuseible Cutout	Field Verify	2
1/24/20	Lightning Arrestors	Field Verify	3
1/24/20	SCH 80 PVC Riser Conduit	Field Verify	1
1/24/20	Penta Wood Poles- Various Sizes	Field Verify	3
1/24/20	Wood Crossarms	Field Verify	1
1/24/20	Crossarm Braces	Field Verify	1
1/24/20	Crossarm Gain Plate	Field Verify	1

☒ (X) For approval☐ () For your information/file☒ (X) Review & comment **MEMO:** Material is on hold on until one signed approved copy has been returned.US Utility hereby certifies that this submittal has been reviewed and verified to be inaccordance with drawings and specifications as provided by Kokosing.George Ovalle

ODOT 173000 OC 3 CPP
Various Sizes and Quantities

3M™ Cold Shrink QT-III Silicone Rubber Skirted Termination Kit

With High-K Stress Relief

For Tape Shield, Wire Shield and UniShield® Cable

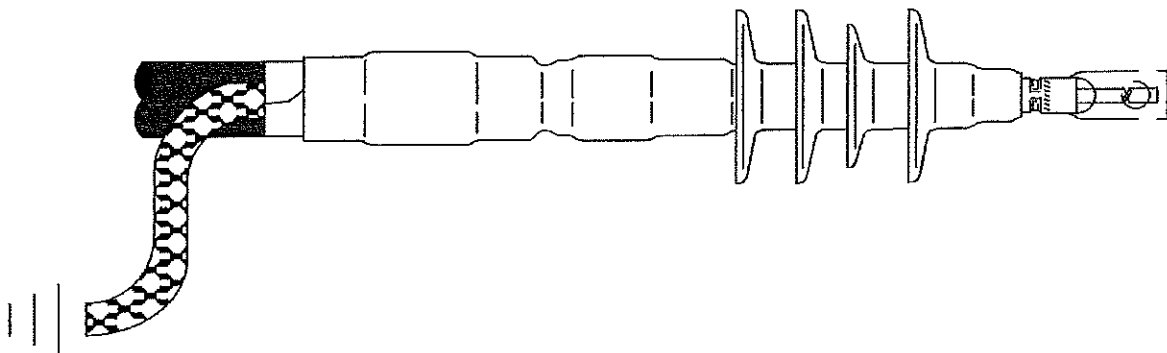
7692-S-4, 7692-S-4(L), 7693-S-4, 7694-S-4, 7695-S-4,
7695-S-4(L), 7696-S-4

Instructions

IEEE Std. No. 48
Class 1 Termination
25/28 kV Class
150 kV BIL

CAUTION

Working around energized systems may cause serious injury or death. Installation should be performed by personnel familiar with good safety practice in handling electrical equipment. De-energize and ground all electrical systems before installing product.



September 2015
78-8117-0566-0 Rev F

3M

3M™ Cold Shrink QT-III Silicone Rubber Skirted Termination Kit With High-K Stress Relief

1.0 Kit Contents

- 3 High-K, Tracking Resistant, Silicone Rubber Terminations
- 3 Pre-formed Ground Braids
- 3 Constant Force Springs
- 3 3M EMI Copper Foil Shielding Tape 1181 Strips, 1/2" x 10"
- 6 Strips Scotch® Mastic Strip 2230 (black with white release liners, bagged)
- 1 3M Cable Cleaning Preparation Kit CC-2
- 1 Instruction Sheet

Note: Do not use knives to open plastic bags.

Kit Selection Tables

NOTE: Final determination factors are cable insulation, connector and drop wire O.D. Range

For Use With Compression Lugs or Connectors						
Kit Number	Primary Insulation O.D. Range	Jacket O.D. Range	Conductor Size Range (AWG & kcmil)			
			5 kV	8 kV	15 kV	25/28 kV
7692-S-4	0.64" - 1.08" (16,3 - 27,4 mm)	0.97" - 1.48" (24,6 - 37,7 mm)	4/0 - 400 ---	3/0 - 300 ---	2 - 4/0 (35 - 120 mm²)	2 - 1/0 (35 - 50 mm²)
7693-S-4	0.72" - 1.29" (18,3 - 32,8 mm)	1.04" - 1.60" (26,4 - 40,6 mm)	300 - 500 ---	250 - 500 ---	2/0 - 300 (70 - 150 mm²)	2 - 4/0 (35 - 120 mm²)
7694-S-4	0.83" - 1.53" (21,1 - 38,9 mm)	1.12" - 1.87" (28,4 - 47,5 mm)	500 - 750 ---	350 - 700 ---	4/0 - 500 (120 - 240 mm²)	2/0 - 250 (70 - 150 mm²)
7695-S-4	1.05" - 1.80" (26,7 - 45,7 mm)	1.39" - 2.40" (35,2 - 61,0 mm)	700 - 1500 ---	600 - 1250 ---	500 - 1000 (240 - 500 mm²)	250 - 800 (150 - 400 mm²)
7696-S-4	1.53" - 2.32" (38,9 - 58,9 mm)	1.84" - 2.80" (46,7 - 71,1 mm)	1750 - 2000 ---	1500 - 2000 ---	1250 - 2000 (625 - 1000 mm²)	900 - 1500 (500 - 800 mm²)

Table 1

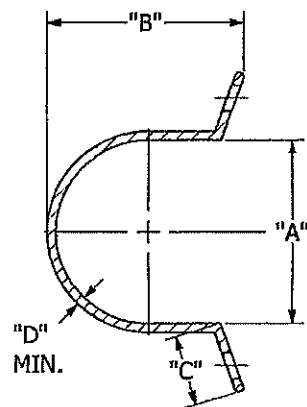
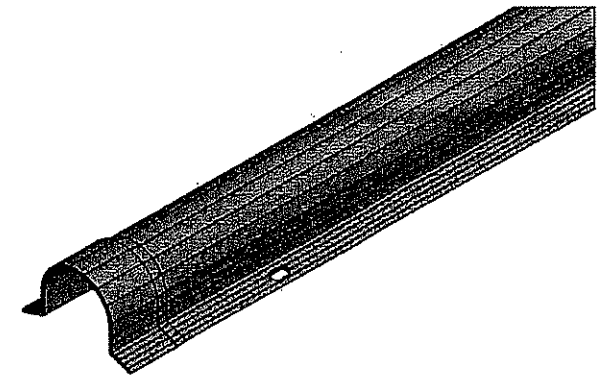
For Use With 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole					
Kit Number	Primary Insulation O.D. Range	Jacket O.D. Range	Conductor Size Range (AWG & kcmil)		3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Part Number
			15 kV	25/28 kV	
7692-S-4(L)	0.69" - 1.22" (17,5 - 31,0 mm)	0.97" - 1.48" (24,6 - 37,7 mm)	1/0 - 4/0 (60 - 120 mm²)	---	QL2-A-2-250
7693-S-4	0.72" - 1.29" (18,3 - 32,8 mm)	1.04" - 1.60" (26,4 - 40,6 mm)	2/0 - 250 (70 - 150 mm²)	2 - 4/0 (35 - 120 mm²)	QL2-A-2-250
7694-S-4	0.83" - 1.53" (21,1 - 38,9 mm)	1.12" - 1.87" (28,4 - 47,5 mm)	---	2/0 - 250 (70 - 150 mm²)	QL2-A-2-250
7694-S-4	0.83" - 1.53" (21,1 - 38,9 mm)	1.12" - 1.87" (28,4 - 47,5 mm)	4/0 - 350 (120 - 150 mm²)	2/0 - 250 (70 - 150 mm²)	QL2-A-1/0-350
7694-S-4	0.83" - 1.53" (21,1 - 38,9 mm)	1.12" - 1.87" (28,4 - 47,5 mm)	---	4/0 - 250 (120 - 150 mm²)	QL2-A-4/0-600
7695-S-4	1.05" - 1.80" (26,7 - 45,7 mm)	1.39" - 2.40" (35,3 - 61,0 mm)	500 (240 mm²)	250-500 (150-240 mm²)	QL2-A-4/0-600
7695-S-4	1.05" - 1.80" (26,7 - 45,7 mm)	1.39" - 2.40" (35,3 - 61,0 mm)	500 - 750 (240 - 325 mm²)	350 - 750 (240 - 325 mm²)	QL2-A-350-750
7695-S-4(L)	1.15" - 1.98" (29,2 - 50,3 mm)	1.39" - 2.40" (35,3 - 61,0 mm)	750 - 1000 (400 - 500 mm²)	500 - 750 (240 - 325 mm²)	QL2-A-500-1000
7696-S-4	1.53" - 2.32" (38,9 - 58,9 mm)	1.84" - 2.80" (46,8 - 71,1 mm)	1250 (625 mm²)	1000 - 1250 (600 - 625 mm²)	QL2-A-1000-1250

Table 2

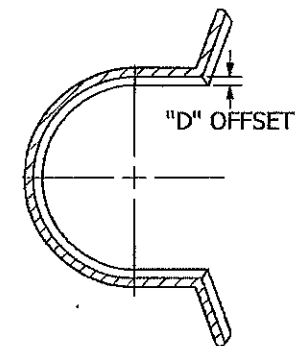
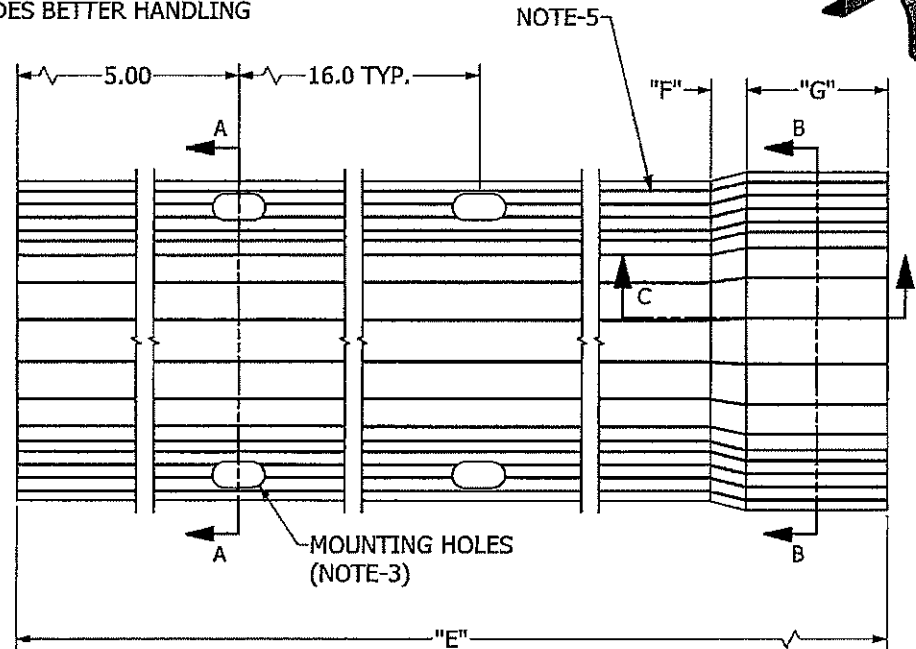
- NOTES -

1. MATERIAL: PE 335420E PER ASTM D 3350
2. CABLE GUARDS MEET REQUIREMENTS LISTED IN NEMA TC-19 STANDARD FOR:
 - IMPACT RESISTANCE
 - SUNLIGHT RESISTANCE
3. 5' LENGTH WILL HAVE 8 MOUNTING HOLES (4 PER SIDE)
 8' LENGTH WILL HAVE 12 MOUNTING HOLES (6 PER SIDE)
 10' LENGTH WILL HAVE 16 MOUNTING HOLES (8 PER SIDE)
4. BELLED END PROVIDE AN OVERLAP FOR ADJACENT SECTIONS
5. RIBBED OUTER SURFACE PROVIDES BETTER HANDLING

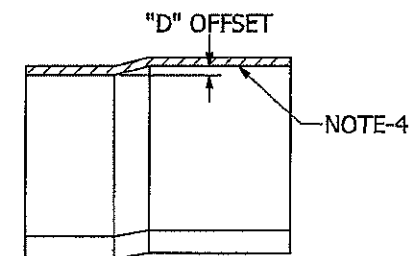
ODOT 173000 OC 3 CPP
Field Verify Qty.



SECTION A-A



SECTION B-B



SECTION C-C

CATALOG NO.	SIZE	"A"	"B"	"C"	"D"	"E"	"F"	"G"	MOUNTING HOLES
PSC2030588	1"	1.13	1.25	0.75	0.125	5'	N/A	N/A	.19 x .75
PSC2030606	1"	1.13	1.25	0.75	0.125	8'	N/A	N/A	.19 x .75
PSC2030546	1"	1.13	1.25	0.75	0.125	10'	N/A	N/A	.19 x .75
PSC2030547	2"	2.63	2.79	1.00	0.125	5'	0.50	2.00	.31 x .75
PSC2030548	2"	2.63	2.79	1.00	0.125	10'	0.50	2.00	.31 x .75
PSC2030549	3"	3.56	4.17	1.00	0.150	5'	1.00	3.00	.31 x .75
PSC2030550	3"	3.56	4.17	1.00	0.150	10'	1.00	3.00	.31 x .75
PSC2030551	4"	4.44	5.54	1.00	0.150	5'	1.50	4.00	.31 x .75
PSC2030552	4"	4.44	5.54	1.00	0.150	10'	1.50	4.00	.31 x .75
PSC2030553	5"	5.41	6.67	1.25	0.170	5'	1.50	4.00	.31 x .75
PSC2030554	5"	5.41	6.67	1.25	0.170	10'	1.50	4.00	.31 x .75
PSC2030555	6"	6.25	7.87	1.50	0.200	5'	2.00	5.00	.31 x .75
PSC2030556	6"	6.25	7.87	1.50	0.200	10'	2.00	5.00	.31 x .75
PSC2030568	8"	8.13	10.06	1.63	0.220	5'	3.00	7.00	.31 x .75

CHANCE

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HUBBELL POWER SYSTEMS, INC.

TITLE

GUARD, CABLE
BELLED END

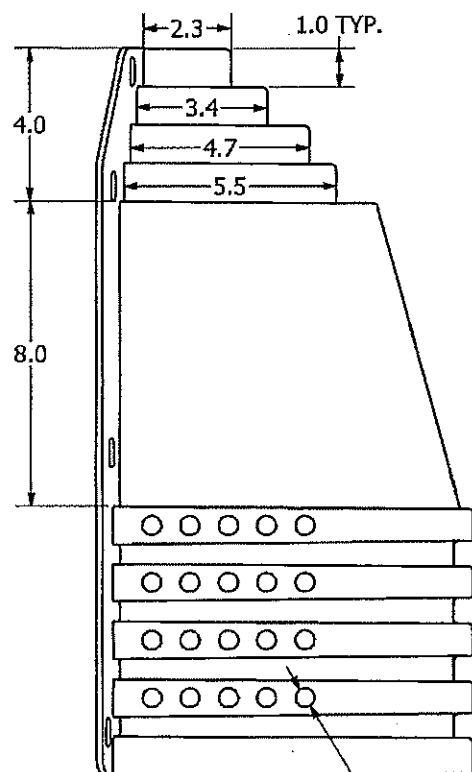
SIZE CAT / PART / ASSY NO.
C SEE TABLE
DO NOT SCALE THIS DRAWING

DWG NO.
SAC2030546
DATE 5/23/19

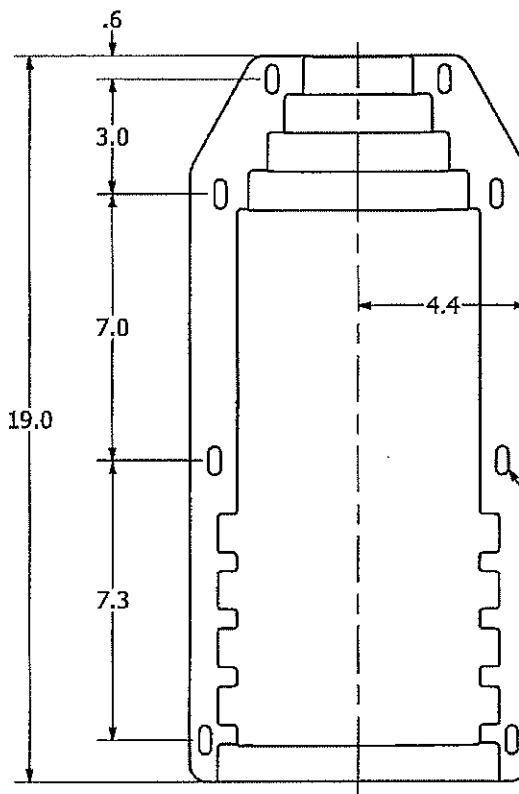
REV
D
SHEET 1 OF 1

- NOTES -

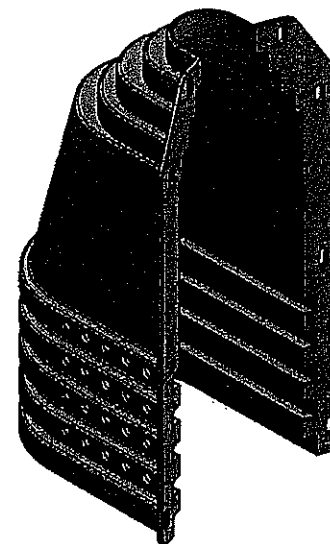
1. MATERIAL: PE 335420E PER ASTM D 3350
2. MATERIAL TESTED FOR SUNLIGHT RESISTANCE USING PROCEDURES OUTLINED IN NEMA TC-19



Ø.50 VENT HOLES
30X BOTH SIDES



8X MOUNTING HOLES
.313" X .750"



CATALOG NUMBER: PSC2030558

CHANCE®		HUBBELL POWER SYSTEMS, INC.	
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SIZE B	CAT / PART / ASSY NO. PSC2030558	DWG NO. SAC2030558	REV D
DO NOT SCALE THIS DRAWING	DRN BY WILSON	DATE 09/20/18	SHEET 1 OF 1

Type C-Polymer STANDARD Cutout



ODOT 173000 OC 3 CPP
Field Verify Qty.

Interchangeability

Chance was the first to design a cutout that could interchange fuseholders and mounting assemblies with those of another manufacture. Standard Type C fuseholders and mounting assemblies are mutually interchangeable with the S&C Electric Company's Type XS cutout (within the same voltage class).

The Type C-Polymer Standard cutout is mutually interchangeable with Chance Type C Porcelain Standard cutout.

Synthetic Arc-Quenching Fusetube

The 1/2-inch inside diameter of the Type C-Polymer cutout's 100 ampere fusetube increases internal pressure giving superior and reliable expulsion action. During frequently encountered intermediate fault ranges this diameter also permits higher TRV (transient recovery voltage) values to be tolerated. This small bore design eliminates any concern related to high impedance phase-to-phase faults on ungrounded wye and delta systems.

The inside liner is a synthetic arc-quenching formulation in part consisting of polyester fiber, epoxy and Aluminum Tri Hydrate. The liner is chemically bonded to the tube's glass-reinforced shell. This combination provides a moisture source to extinguish the arc during interrupt operations without absorption of atmospheric moisture leading to potential swelling and delamination, and provides a high bursting strength. It is protected from the weather and environment by a special ultra-violet resistant coating. For more information on the synthetic arc-quenching material, refer to Bulletin 10-0201.

The Hubbell fuse tube operates with fuselinks from all major suppliers.

100 amp or smaller fuselinks shall not be used in 200-amp fuseholders.

Brackets

Type C-Polymer cutouts come packed one per carton including a NEMA Heavy Duty "B" bracket with captive 1 1/2" bolt for crossarm mounting.

Type X brackets, also for crossarm mounting, provides 2 5/8" additional clearance between the crossarm and the cutout.

"D" brackets are used to mount cutouts and/or arresters directly to the pole. Three brackets may be used for three-phase application. Type D brackets provide a clean, quick mounting without crossarm or special pole bands.

All the above brackets are galvanized steel for long lasting service. Cutouts can be ordered without any brackets.

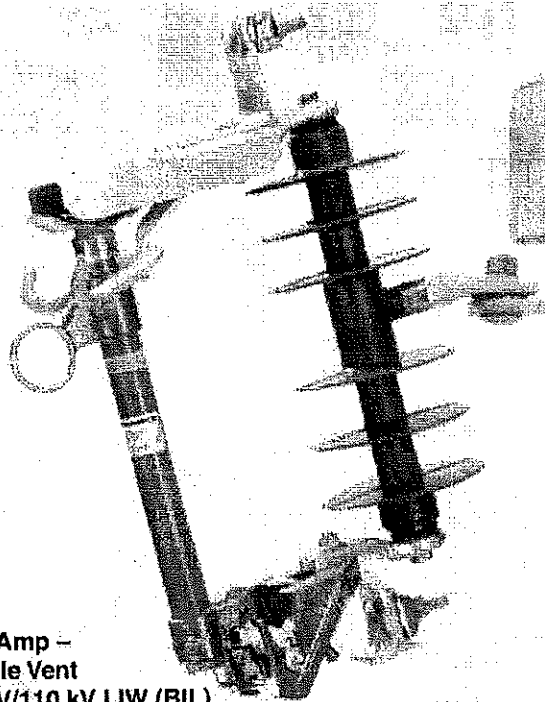
Higher Interrupt Capacities

By using a copper arc shortening rod inside the top of the fusetube, higher interrupt ratings are obtainable. An arc shortening rod is attached to the cap of some fusetubes and lowers the fuse link within the fusetube. This permits a much shorter arc, resulting in less arc energy, and higher interrupting capacities. For 200 A tubes, it allows for full voltage ratings.

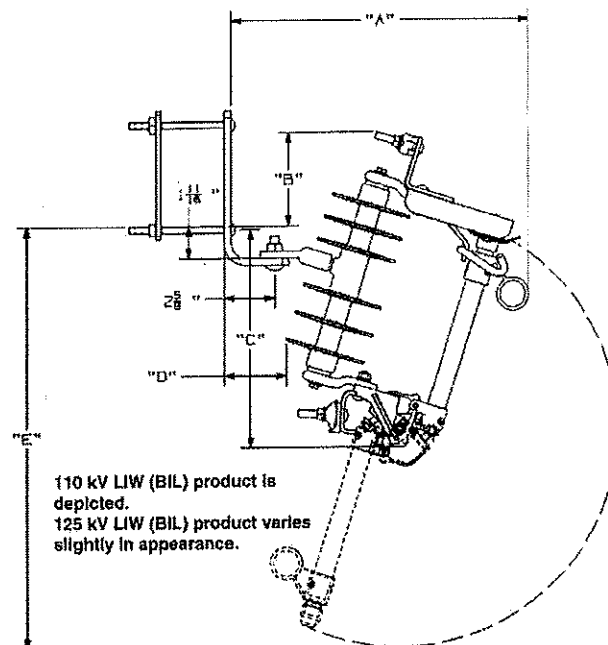
It is necessary to use fuse links with removable buttonheads when arc shortening rods are employed.

Terminals

Tin-plated bronze parallel groove type terminals are standard on Type C cutouts. They can accommodate aluminum or copper conductor sizes ranging from No. 6 (13.3 mm²) solid copper through 4/0 (160.6 mm²) ACSR or 250 (167.5 mm²) kemil stranded copper. The parallel groove design is perfect for handling two different sizes of conductor as is the case when arresters are being used. Eyebolts are also available. See ordering data, page 10AA-11.



100 Amp –
Single Vent
15 kV/110 kV LIW (BIL)



**STANDARD Type C-Polymer Cutout
with NEMA Type B Bracket**

kV LIW (BIL)	A	B	C	D	E
110	15 5/8" 395 mm	4 7/8" 125 mm	11 5/8" 295 mm	3 1/4" 82 mm	22 7/16" 561 mm
125	16 1/16" 408 mm	6 9/16" 167 mm	13 3/16" 332 mm	2 7/8" 72 mm	27" 686 mm



Type C-Polymer STANDARD Cutout

Specifications and Ordering Information

See page 10AA-11 for Accessories.

All Type C Cutouts meet or exceed ANSI/NEMA specifications.

15 kV - 110 kV LIW (BIL) RUS LISTED

*Base Catalog No.	*Option suffixes below	Maximum Design Voltage	Nominal System Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym Amps)	Leakage to Ground Metal to Metal	*Weight (lb./kg.)	Replacement Fusetube Cap	Arc Shortening Rod
CP710112	1 2 3	15 kV	Thru 14.4 kV	100	10,000	12.6" 319 mm	9.6/4.4	P7001635P	No
CP710114	1 2 3	15 kV	Thru 14.4 kV	100	16,000	12.6" 319 mm	9.8/4.5	E7001767P	Yes ¹
CP710143	1 2 3	15 kV	Thru 14.4 kV	200	12,000	12.6" 319 mm	10.4/4.7	E7002146P	Yes ¹
CP710133	1 2 3	15 kV	Thru 14.4 kV	300	12,000**	12.6" 319 mm	9.9/4.5	P7001535P	N/A

27 kV - 125 kV LIW (BIL)

CP710211	1 2 3	27 kV	Thru 24.9 kV	100	8,000	17.1" 434 mm	11.0/5.0	P7001535P	No
CP710213	1 2 3	27 kV	Thru 24.9 kV	100	12,000	17.1" 434 mm	11.0/5.0	E7001768P	Yes ²
CP710242	1 2 3	27 kV	Thru 24.9 kV	200	10,000	17.1" 434 mm	11.6/5.3	E7002479P	Yes ²
CP710233	1 2 3	27 kV	Thru 24.9 kV	300	12,000**	17.1" 434 mm	11.2/5.1	P7001535P	N/A

**Momentary rating -Solid blade. ¹Must use removable buttonhead fuse links. ²Adjust total weight when selecting Options below.

*Option Suffix 1 Terminal Variations

Suffix 1	Description	*Weight (lb./kg.)
P	Parallel-groove clamps	0.33/0.15
E	Small eyebolts	0.16 /0.07
L	Large eyebolts	0.31/0.14

Must specify one selection for Option 1.

*Option Suffix 2 Bracket Variations

Suffix 2	Description	*Weight (lb./kg.)
B	NEMA Heavy Duty "B" bracket for crossarm (1 1/2" bolt)	2.84/1.29
X	Extended type bracket for crossarm (Horizontal section is 2 3/8" longer than Type B bracket)	3.75/1.70
D	D-shape bracket (pole)	7.67/3.48
Z	No bracket (must be used with M in Option 3)	—
Blank	No bracket (cannot use with M in Option 3)	—

*Option Suffix 3 Mechanical Assist Fuseholder

Suffix 3	Description
Blank	No option (may not be used with Z in Option 2)
M	Mechanical Assist Fuseholder (may not be used with Blank in Option 2)
F	Fargo cutout cover (available for 15 kV only) (may not be used with Blank in Option 2)

Fuseholders and Mounting Assemblies

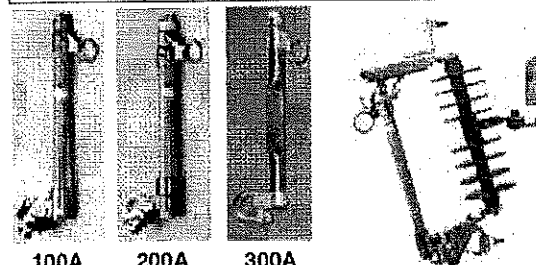
15 kV - 110 kV LIW (BIL)

Cutout Base Catalog Number	Fuseholder or Blade only Catalog No.	Weight	Mounting Assembly only *Base Catalog No.	*Weight
CP710112	T710112T	1.8 lb. 0.76 kg.	TP7101MM	8.0 lb. 3.6 kg.
CP710114	T710114T	2.0 lb. 0.79 kg.		
CP710143	T710143T	2.6 lb. 1.18 kg.		
CP710133	T710133T	2.1 lb. 0.95 kg.		

27 kV - 125 kV LIW (BIL)

CP710211	T710211T	1.9 lb. 0.86 kg.	TP7102MM	9.16 lb. 4.1 kg.
CP710213	T710213T	2.0 lb. 0.91 kg.		
CP710242	T710242T	2.5 lb. 1.13 kg.		
CP710233	T710233T	2.1 lb. 0.97 kg.		

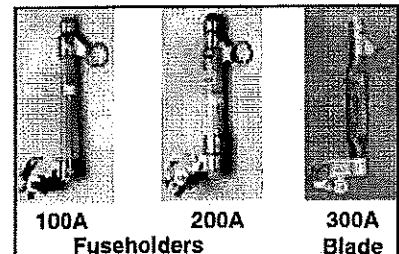
*Adjust total weight when selecting Option suffixes above.



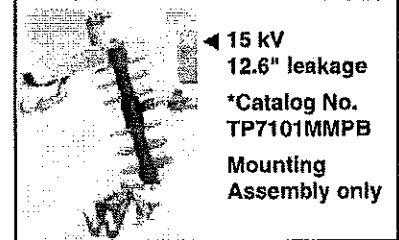
100A 200A
Fuseholders

300A
Blade

27 kV - 17.1" leakage
TP7102MMPB



100A 200A 300A
Fuseholders Blade



◀ 15 kV
12.6" leakage
*Catalog No.
TP7101MMPB
Mounting
Assembly only

Universal Cutout Tool

Ideal for Standard and Linkbreak 100 amp fuse holders (ABB, Chance S&C) to easily lift out, place, *open and close. Inverted, secure method also fits Chance Electronic Sectionalizers.
Cat. No. PSC4033484 (Wt. 4 oz.) See Tools Catalog Section 2100.

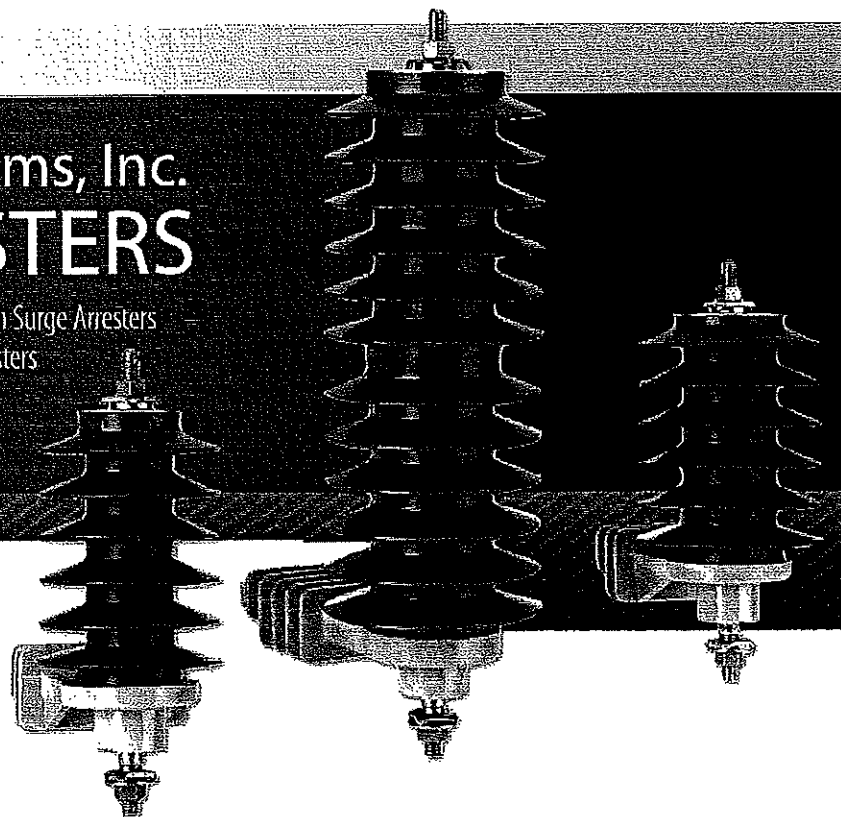
*When opening a cutout, follow all work rules and OSHA regulations. Not for use with Loadbreak cutouts.

ODOT 173000 OC 3 CPP
Field Verify Qty.

Hubbell Power Systems, Inc. SURGE ARRESTERS

IEC 5kA, 10kA Class 1 & 2, Distribution Medium & High Surge Arresters
IEEE Normal Duty, Heavy Duty & Riser Pole Surge Arresters

Experience, Reliability & Education



CHIO BRASS

Enduring Products & People You Can Depend On



IEEE Riser Pole Distribution Arrester- PVR-Optima

The PVR-Optima design satisfies the IEEE C62.11-2012 Riser Pole heavy-duty arrester requirement. Table 28 specifies the electrical characteristics while Table 29 specifies the dimensions, weights, clearances and insulation characteristics of the arrester only configuration.

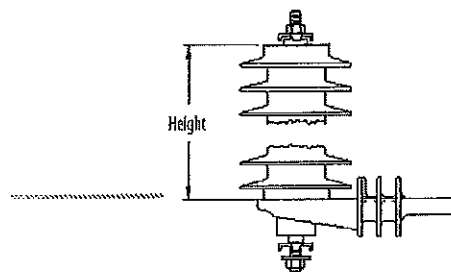
NOTE: A PVR Optima arrester complete catalog number requires at least ten digits. Common hardware codes can be found in Tables 34 and 35.

Table 28: PVR Optima Arresters Electrical Characteristics

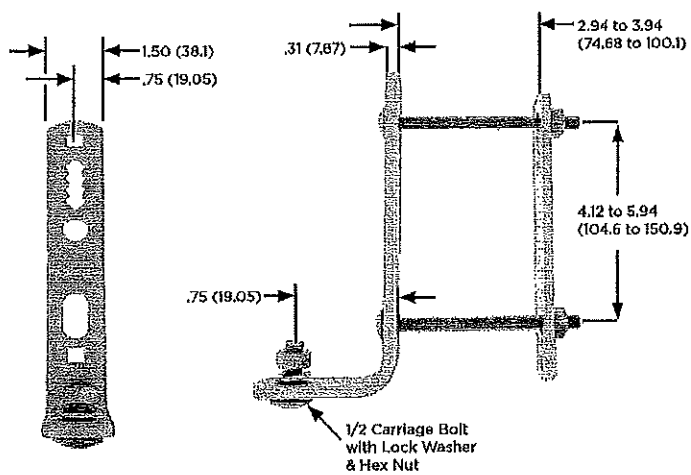
Rated Voltage U _r	Continuous Operating Voltage	Catalog Number	Residual Voltage kV								
			0.5 μs Steep front	8/20 Impulse Wave							Switching Surge
				10 kA	1.5 kA	3 kA	5 kA	10 kA	20 kA	40 kA	
kV	kV										
3	2.55	221603	10.5	7.8	8.1	8.4	9.1	10.1	11.6	6.7	
6	5.1	221605	21	15.6	16.3	17	18.3	20.2	23.4	13.5	
9	7.65	221608	27.6	20.9	21.8	22.7	24.5	27.1	31.4	18	
10	8.4	221609	30.3	23.1	24.1	25.1	27	29.8	34.6	19.9	
12	10.2	221610	36.2	27.8	29	30.2	32.5	35.9	41.6	23.9	
15	12.7	221613	45.5	34.6	36.1	37.6	40.5	44.8	51.8	29.8	
18	15.3	221615	54.5	41.8	43.6	45.4	48.9	54	62.6	36	
21	17	221617	61.7	47.5	49.5	51.6	55.6	61.4	71.2	40.9	
24	19.5	221620	72.2	55.5	57.8	60.2	64.9	71.7	83.1	47.8	
27	22	221622	81.4	61.6	64.2	66.8	72	79.6	92.2	53	
30	24.4	221624	91	69.3	72.2	75.2	81	89.5	103.7	59.6	
36	29	221629	107.2	82.2	85.6	89.2	96.1	106.2	123	70.7	

Table 29: PVR Optima Arresters Dimensions, Clearances and Insulation Withstands (WS)

Rated Voltage U_r	Continuous Operating Voltage U_c	Arrester Only Height	Minimum Leakage Distance	Minimum Strike Distance with Bracket	Recommended Clearances		Weight	Arrester BIL with Bracket	Arrester 48-62 Hz Wet WS with Bracket
					Phase-Phase	Phase-Ground			
kV	kV	in	in	in	in	in	lbs	kV peak	kV peak
3	2.55	3.1	8.0	3.6	5.0	3.0	3.3	50	20
6	5.1	5.5	15.4	6.8	5.3	3.3	4.2	105	40
9	7.65	5.5	15.4	6.8	5.8	3.8	4.2	105	40
10	8.4	5.5	15.4	6.8	6.0	4.0	4.2	105	40
12	10.2	5.5	15.4	6.8	7.3	5.3	4.4	105	40
15	12.7	8.5	26.0	10.4	8.3	6.3	5.5	150	60
18	15.3	8.5	26.0	10.4	9.2	7.2	6.2	150	60
21	17	8.5	26.0	10.4	9.7	7.7	6.2	150	60
24	19.5	10.8	30.8	12.0	11.6	9.6	7.5	165	70
27	22	17.2	52.0	18.7	12.5	10.5	9.7	270	105
30	24.4	17.2	52.0	18.7	13.5	11.5	9.7	270	105
36	29	17.2	52.0	18.7	16.0	14.0	10.8	270	105

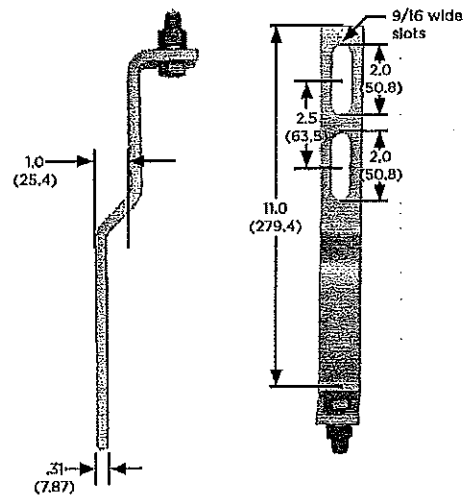


Standard Mounting Brackets



Dimensions: Inches (mm)

Part Number 273456-3001



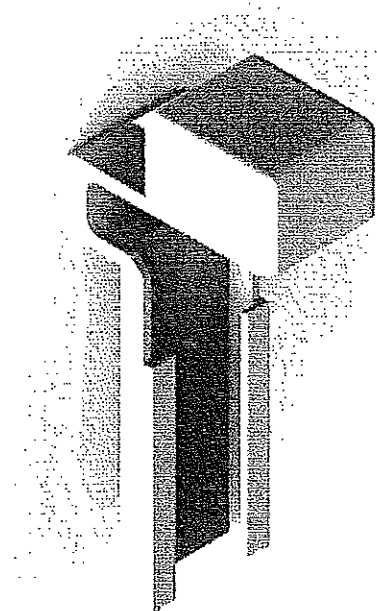
Dimensions: Inches (mm)

Part Number 273066-4004

Note: Non-standard mounting brackets are available.

Transformer Bracket Cover

The transformer bracket cover insulates the mounting bolt and part of the transformer mounting bracket. The transformer bracket cover is used with mounting bracket number 273066-4004.



Part Number PSPPD6COV



Rigid Non Metallic Schedule 80 Electrical Conduit



ODOT 173000 OC 3 CPP
Riser Conduit
Field Verify Qty.

Schedule 80 Electrical Conduit

Allied Tube & Conduit® created the long bell for ease and efficiency. In compliance with the industry standards, Allied Tube & Conduit® PVC Electrical Conduit is manufactured from PVC compounds complying with the UL651 standards. Our PVC Electrical Conduits are subject to in-process quality control to assure compliance with appropriate manufacturing and performance standards.

- UL 651
- NEMA TC-2
- Sunlight resistant per UL 651
- Listed for 90° C conductors or cable
- Rigid nonmetallic raceway for wires and cables in accordance with the NEC
- Product manufactured with one integral solvent-weld bell standard per length



10' Part No.	20' Part No.	Trade Size	Average O.D. (in)	Minimum Average I.D. (in)	Minimum Wall (in)	Weight Per Foot (lbs)	10 Ft Crate Quantity (ft)
9302	925785	½	0.840	0.502	0.147	0.205	6000
9303	9503	¾	1.060	0.698	0.154	0.278	4400
9304	9504	1	1.315	0.910	0.179	0.410	3800
9305	924298	1 ¼	1.660	1.227	0.191	0.565	3300
9306	9506	1½	1.900	1.446	0.200	0.726	2250
9308	9508	2	2.375	1.881	0.218	1.004	1400
9310	924299	2 ½	2.875	2.250	0.276	1.531	930
9312	9512	3	3.500	2.820	0.300	2.049	880
924024	925941	3 ½	4.000	3.280	0.318	2.499	630
9316	9516	4	4.500	3.737	0.377	3.122	570
9320	9520	5	5.563	4.713	0.375	4.330	380
9324	9524	6	6.625	5.646	0.432	5.954	260
906397	924567	8*	8.625	7.455	0.500	9.042	140

Meets or exceeds the requirements of NEMA TC 2 and UL 651 for Schedule 80 Conduit.

* UL 651 does not include 8"



Intertek

Item availability may vary by region.

NOTE: Special orders are non-cancelable, non-returnable and non-refundable

16100 S. Lathrop Ave., Harvey, IL 60426
Phone / 708.339.1610 • Toll-Free / 800.882.5543

www.alliedeg.com

ODOT 173000 Penta Wood
Poles for OH Line Work-Variou
sizes as marked. Field Verify
Quantity. TE 24 to be provided.




CERTIFICATE OF QUALITY FOR PRESSURE TREATED POLES

Brown Wood Preserving Company Inc. produces poles which meet or exceed the following specifications: A.N.S.I. 05.1 (latest) "Specifications and Dimensions for Wood Poles", and are treated in accordance with the requirements of the "American Wood Producers Association (standard C1), "All Timber - Products Preservative Treatment by Pressure Processes", and (C4), "Poles - Preservative Treatment by Pressure Processes."

Brown Wood Preserving Co., Inc. also meets or exceeds the following American Wood Preservers Association (AWPA) standards:

Wood poles shall comply with ANSI 05.1 (latest edition) and shall be pressure treated in accordance with oil-borne preservatives and petroleum conforming to AWPA P8 and P9 respectively and waterborne preservatives conforming to AWPA P5, Chromated Copper Arsenate, (CCA). Poles treated with pentachlorophenol will have a minimum retention of .45 PCF. Poles treated with CCA will have a minimum retention of .60 PCF. Wood poles shall have pole marking located approximately 10 feet from pole butts for poles 50 feet or less in length. Poles shall be machine trimmed by turning smooth full length.


David Stanley
President
Brown Wood Preserving Co., Inc.

ClassLength	ANSI CFT	CGAWeight	PantaWeight	E-TWeight
1/100	142.3	8296	7912	8510
1/30	20.4	1189	1134	1220
1/35	26.2	1527	1457	1567
1/40	32.6	1901	1813	1949
1/45	39.3	2291	2185	2350
1/50	46.6	2717	2591	2787
1/55	54.3	3166	3019	3247
1/60	62.6	3650	3481	3743
1/65	71.1	4145	3953	4252
1/70	80.1	4670	4454	4790
1/75	89.5	5218	4976	5352
1/80	99.8	5818	5549	5968
1/85	109.6	6390	6094	6554
1/90	120.1	7002	6678	7182
1/95	131	7637	7284	7834
2/100	123.5	7200	6887	7385
2/30	17.8	1038	990	1064
2/35	22.8	1329	1268	1363
2/40	28.2	1644	1568	1686
2/45	34.1	1988	1896	2039
2/50	40.4	2355	2246	2416
2/55	47.1	2746	2619	2817
2/60	54.2	3160	3014	3241
2/65	61.6	3591	3425	3684
2/70	69.5	4052	3864	4156
2/75	77.7	4530	4320	4646
2/80	86.1	5020	4787	5149
2/85	94.9	5533	5276	5675
2/90	104	6063	5782	6219
2/95	113.5	6617	6311	6787
3/25	11.5	670	639	688
3/30	15.4	898	858	921
3/35	19.7	1149	1095	1178
3/40	24.5	1428	1362	1465
3/45	29.5	1720	1640	1764
3/50	35	2041	1946	2093
3/55	40.8	2379	2268	2440
3/60	47	2740	2613	2811
3/65	53.4	3113	2969	3193
3/70	60.2	3510	3347	3600
3/75	67.3	3924	3742	4025
3/80	74.6	4349	4148	4461
3/85	82.3	4798	4576	4922
3/90	90.2	5259	5015	5394
4/25	10	583	556	598
4/30	13.3	775	739	795
4/35	17.1	997	951	1023
4/40	21.2	1236	1179	1268
4/45	25.6	1492	1423	1531
4/50	30.4	1772	1690	1818
4/55	35.4	2064	1968	2117
4/60	40.7	2373	2263	2434
4/65	46.4	2705	2580	2775
4/70	52.2	3043	2902	3122
5/25	8.6	501	478	514
5/30	11.6	676	645	694
5/35	14.8	863	823	885
5/40	18.4	1079	1023	1100
5/45	22.2	1294	1234	1328
6/25	7.5	437	417	449
6/30	10.1	589	562	604
6/35	12.8	746	712	765
6/40	15.9	927	884	951
7/20	4.6	268	256	275
7/25	6.4	373	356	383
7/30	8.6	501	478	514
7/35	11.1	647	617	664
9/20	3.2	187	178	191
9/25	4.7	274	261	281
9/30	6.4	373	356	383

ANSI 05.1-2002 Dimension Table For Southern Pine and Douglas-fir Poles

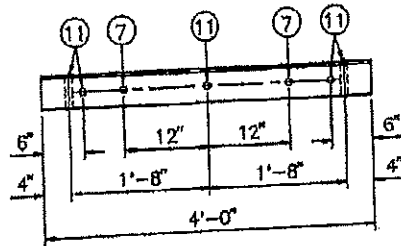
		Top of Pole Minimum Dimensions (inches)														
Class		H-6	H-5	H-4	H-3	H-2	H-1	2	3	4	5	6	7	8	9	
Minimum Circumference at Top		39	37	35	33	31	29	27	25	23	21	19	17	15	13	11
Length of Pole (feet)	Groundline* Distance from Butt (Ft)	Minimum Circumference at 6 feet from Butt (inches)														
20	4							31.0	29.0	27.0	25.0	23.0	21.0	19.5	17.5	14.0
25	5							33.5	31.5	29.5	27.5	25.5	23.0	21.5	19.5	15.0
30	5.5							36.5	34.0	32.0	29.5	27.5	25.0	23.5	20.5	
35	6					43.5	41.5	39.0	36.5	34.0	31.5	29.0	27.0	25.0		
40	6			51.0	48.5	46.0	43.5	41.0	38.5	36.0	33.5	31.0	28.5			
45	6.5	58.5	56.0	53.5	51.0	48.5	45.5	43.0	40.5	37.5	35.0	32.5	30.0			
50	7	61.0	58.5	55.5	53.0	50.5	47.5	45.0	42.0	39.0	36.5	34.0				
55	7.5	63.5	60.5	58.0	55.0	52.0	49.5	46.5	43.5	40.5	38.0					
60	8	65.5	62.5	59.5	57.0	54.0	51.0	48.0	45.0	42.0	39.0					
65	8.5	67.5	64.5	61.5	58.5	55.5	52.5	49.5	46.5	43.5	40.5					
70	9	69.0	66.5	63.5	60.5	57.0	54.0	51.0	48.0	45.0	41.5					
75	9.5	71.0	68.0	65.0	62.0	59.0	55.5	52.5	49.0	46.0						
80	10	72.5	69.5	66.5	63.5	60.0	57.0	54.0	50.5	47.0						
85	10.5	74.5	71.5	68.0	65.0	61.5	58.5	55.0	51.5	48.0						
90	11	76.0	73.0	69.5	66.5	63.0	59.5	56.0	53.0	49.0						
95	11	77.5	74.5	71.5	67.5	64.5	61.0	57.0	54.0							
100	11	79.0	76.0	72.5	69.0	65.5	62.0	58.5	55.0							
105	12	80.5	77.0	74.0	70.5	67.0	63.0	59.5	56.0							
110	12	82.0	78.5	75.0	71.5	68.0	64.5	60.5	57.0							
115	12	83.5	80.0	76.5	72.5	69.0	65.5	61.5	58.0							
120	12	85.0	81.0	77.5	74.0	70.0	66.5	62.5	59.0							
125	12	86.0	82.5	78.5	75.0	71.0	67.5	63.5	59.5							

* The figures in this column are intended for use only when a definition of groundline is necessary in order to apply requirements relating to scars, straightness, etc.

REA Distribution Crossarms

Drilling guide M19 and cross section dimensions per REA specification DT-5B.

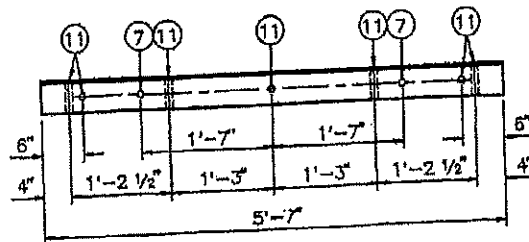
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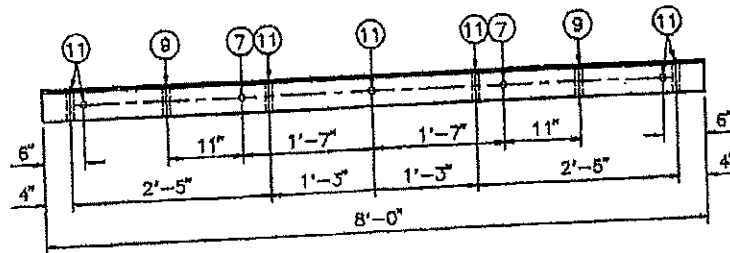
Hole Size Key

- 7 — 7/16" Diameter
- 9 — 9/16" Diameter
- 11 — 11/16" Diameter

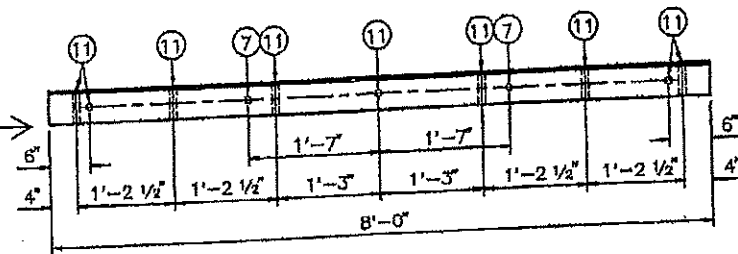
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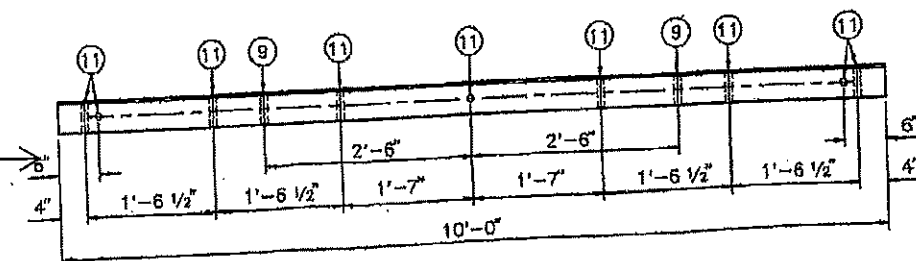
Type 03



Type 04



Type 05

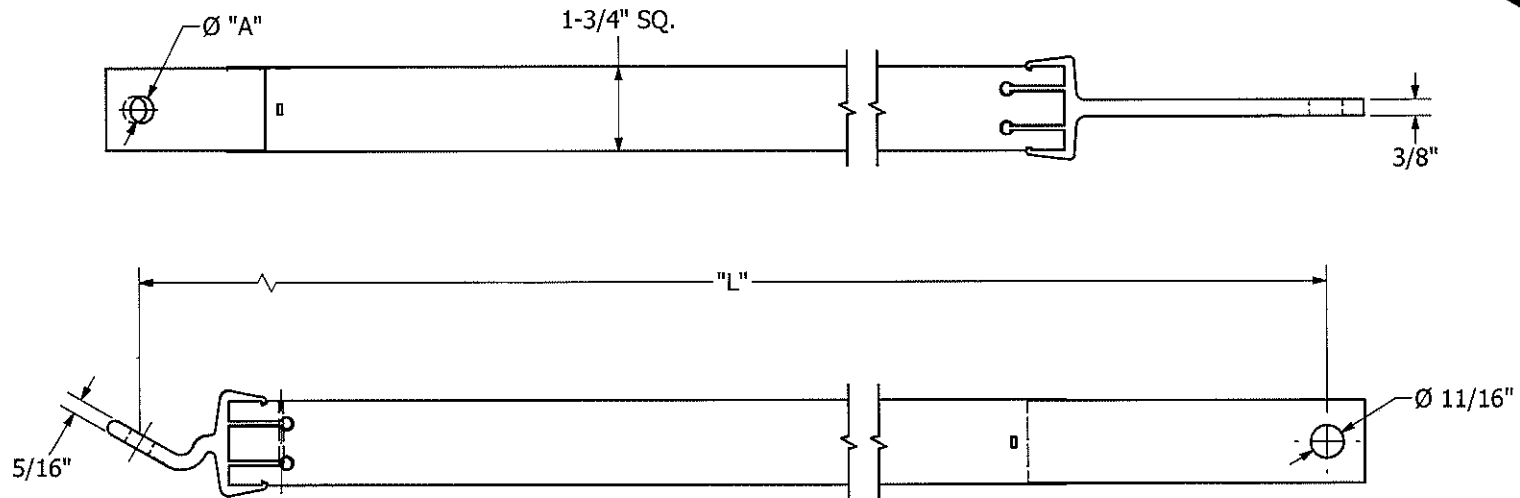
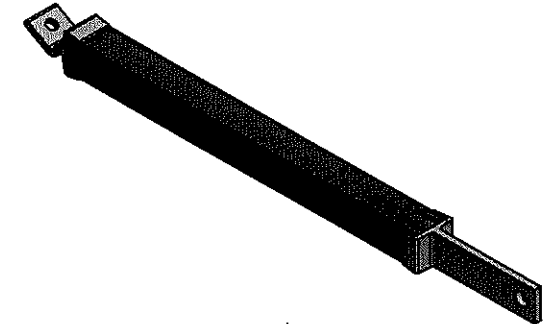


Please contact BROOKS for specific catalog numbers when ordering REA distribution crossarms.

=NOTES=

1. MATERIAL: APITONG WOOD WITH 6061-T6 ALUMINUM END FITTINGS.
2. APITONG WOOD IS PRESSURE TREATED WITH COPPER NEPHTHENATE PER AWPA P8 (LATEST REVISION).
3. ALUMINUM END FITTINGS ARE PRESSED ON AND CAPTURED WITH A NAIL THROUGH BOTH THE WOOD AND ALUMINUM.

ODOT 173000 Crossarm Braces
Field Verify Quantity



CATALOG NUMBER	SPAN	DROP	"L"	"A"
CRA4216A1316	42"	16"	26"	13/16"
PSCRA4814	48"	14"	28"	9/16"
PSCRA4818	48"	18"	30"	9/16"
PSCRA4818A1116	48"	18"	30"	11/16"
PSCRA4824	48"	24"	34"	9/16"
PSCRA6018	60"	18"	35"	9/16"
PSCRA6018A1116	60"	18"	35"	11/16"
PSCRA60265	60"	26-1/2"	40"	9/16"
PSCRA6030	60"	30"	42"	9/16"
PSCRA6620	66"	20"	38"	9/16"
PSCRA7222	72"	22"	42"	9/16"
PSCRA7236	72"	36"	51"	9/16"
PSCRA863358	86"	33"	54"	11/16"
PSCRA9648A1116	96"	48"	68"	11/16"

CHANCE

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HUBBELL POWER SYSTEMS, INC.

TITLE

REVERSIBLE APITONG
BRACE

SIZE

CAT / PART / ASSY NO.

DWG NO.

REV

B

SEE TABLE

SAPSCRA4814

C

DO NOT SCALE
THIS DRAWING

DRN BY TLB

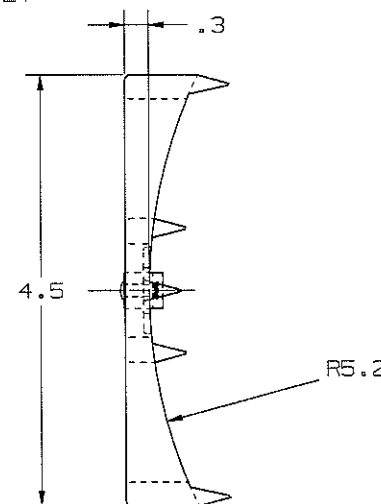
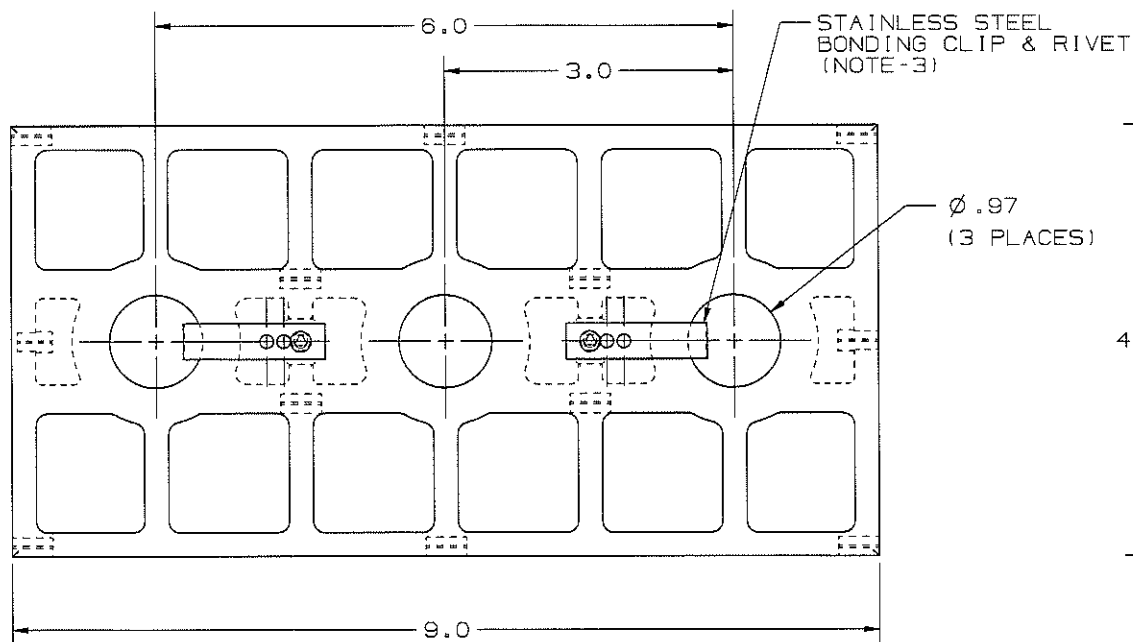
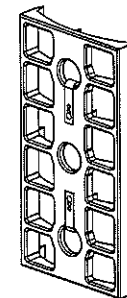
DATE 3/12/19

SHEET 1 OF 1

-NOTES-

1. MATERIAL: DUCTILE IRON (MINUS HARDWARE).
2. FINISH: HOT DIP GALVANIZE (MINUS HARDWARE).
3. SEE CHART FOR BONDING CLIP REQUIREMENTS.

ODOT 173000 Crossarm Gain Plate
Field Verify Quantity



CATALOG NO.	BONDING CLIP REQUIREMENTS
PG459	NO BONDING
PG459AB	CENTER HOLE BONDED
PG459AB2	OUTER HOLES BONDED

LATEST EC NO:		REV.	DATE	CHANGED BY	RESP ENGINEER
---		-	-----	---	---
DRN BY: WILSON DATE: 10/2/12				TITLE: POLE GAIN	
				DWG NO: SAPG459	

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CLEVIS

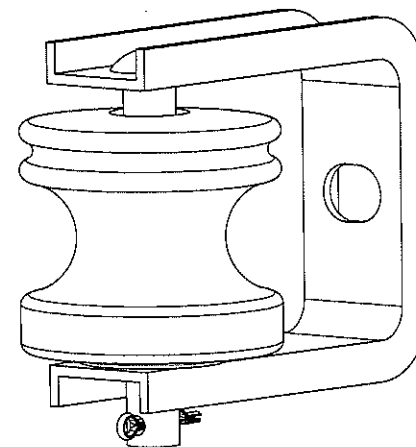
CLEVIS PIN

ODOT 173000 OC 3 CPP
Field Verify Qty.

3.25

COTTER KEY

4.25



CATALOG NUMBER
T2070085

==NOTES==

1. MATERIAL: STEEL. HOT DIP GALVANIZE PER ASTM A153.

LATEST EC NO:		REV.	DATE	CHANGED BY	RESP ENGINEER
---		-	-----	---	---
				DO NOT SCALE THIS DWG	THIRD ANGLE PROJECTION ISO DUAL DIMENSIONS IN=INCH, MM=MILLIMETER
DRN BY:	DATE	TITLE:			SIZE
TNT	07/29/14	INSULATED CLEVIS			B
					DWG NO: SA2070085

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U.S. UTILITY CONTRACTOR CO., INC.

3592 Genoa Road

TRANSMITTAL #2.1 CPP

Perrysburg, OH 43551

419/ 837-9358 or 419/ 837-2017

419/ 837-2015 Fax

PROJECT: ODOT 17300 RTA OC-3**OWNER'S PROJECT NO.** RTA 17.18**COMPANY:** Kokosing**DATE:** 1/24/2020**ATTN:** Mike Luyster**IF CHECKED BELOW, PLEASE:**☒ (X) Acknowledge receipt of enclosures☐ () Return enclosures to us☒ (X) Drawings☐ () Shop Drawings☐ () Product Literature☐ () Specifications☒ (X) Catalog Cuts / Submittals☐ () Certified Test Report☐ () Change Order No. ____☐ () Samples☐ () Other _____

DATE	DESCRIPTION	QTY	PAGES
1/24/20	Down Guy Anchor Assemblies	Field Verify	7
1/24/20	CPP Ground Rods	Field Verify	1
1/24/20	Solid Ground Wire for Pole Grounds and MH	Field Verify	1
1/24/20	3 Phase Terminator Bracket	Field Verify	1
1/24/20	Type M3 Solid Blade Switches	Field Verify	2
1/24/20	3 Phase Vertical Pin Standoff Bracket	Field Verify	1
1/24/20	Aluminum Deadend Clamps Side Opening	Field Verify	1
1/24/20	Aluminum Deadend Clamps Straight Line	Field Verify	1
1/24/20	Deadend Insulators	Field Verify	1

☒ (X) For approval☐ () For your information/file☒ (X) Review & comment _____**MEMO:** Material is on hold on until one signed approved copy has been returned.US Utility hereby certifies that this submittal has been reviewed and verified to be inaccordance with drawing:George Ovalle

RR (ROUND-ROD) SCREW ANCHORS

The Round-Rod "RR" multi-helix anchors are used in areas where weak soil conditions exist and moderate holding capacities are required. All helix lead sections are 7 ft. long. Extension shafts may be required for installation to proper depth.

RR screw anchors consist of three galvanized components: Lead section, extension shaft (which includes an integral coupling), and

the guy adapter. Each extension and guy adapter includes a high-strength bolt and nut.

Type RR (Round-Rod) anchors torque rating is 2,300 ft.-lb. Ultimate tension rating for RR mechanical strength is 70,000 lb. Failure to install within 5° of alignment with the guy load will significantly lower strength.

LEAD SECTIONS

Catalog No.	Length	Helix Combinations	Std. Pkg./Pallet	Holding Capacity - (lb.) vs. Soil Class		
				Class 7	Class 6	Class 5
012690AE	7 ft.	8" - 10"	1/20	19,000	23,000	27,000
012690AEJ	7 ft.	8" - 10" - 12"	1/20	26,000	32,000	39,000
V1090007	7 ft.	10" - 10" - 10"	1/15	25,000	31,000	N/A
V1090006	7 ft.	10"	1/20	17,000	21,000	24,000

EXTENSIONS

Catalog No.	Nominal length	Std. Pkg./Pallet
12696	3 1/4 ft.	1/50
12697	5 ft.	1/50
12698	7 ft.	1/30
12699	10 ft.	1/50

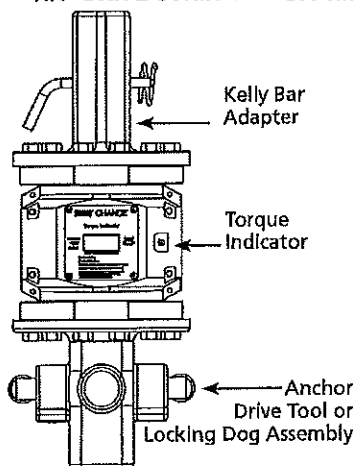
Extensions with helices are available. Contact your Hubbell representative or ServiCenter for information.

GUY ADAPTERS: 18" overall length, 17" L₃ length

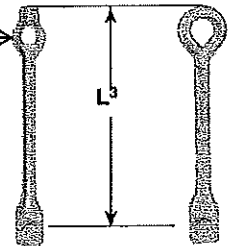
Catalog Number	WITHOUT Pulling Eye	WITH Pulling Eye	Strand Eye Rating*	Pulling Eye Rating	#Std. Package per Pallet
C1020023	Thimbleye®	N/A	70,000 lb	N/A	5/200
C1020024	N/A	Twineye®		12,000 lb	5/200
C1020025	N/A	Tripleye®			
C1100041	Ovaleye	N/A		N/A	5/200

*Guy adapters are shipped in corrugated cartons.

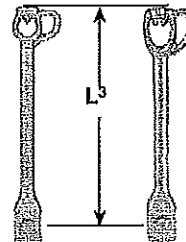
TYPICAL "RR" DRIVE STRING



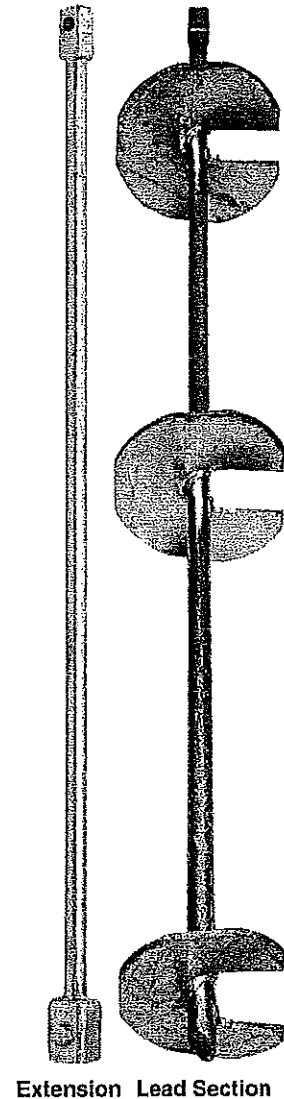
For installation tool options, see catalog Section 4A.



Thimbleye® & Ovaleye
Guy Adapters
WITHOUT Pulling Eye



Twineye® & Tripleye®
Guy Adapters
WITH Pulling Eye
NOTE: Guy wire should not be attached to Pulling Eye.



Extension Lead Section

LOAD CAPACITY¹ BASED ON INSTALLATION TORQUE² LOAD CAPACITY OF RR ANCHORS IN SOIL (POUNDS TENSION)

Helix Combinations	Installation Torque (ft.-lb.)		
	1,500	2,000	2,300
10"	16,000	22,000	28,000
8" - 10"	17,000	23,000	29,000
10" - 10" - 10"	19,000	25,000	31,000
8" - 10" - 12"	19,000	25,000	31,000

¹Load capacities listed above are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety. More specific data on soils and anchor performance in any site condition can be obtained by contacting Hubbell Power Systems.

²The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration.



GUY-GRIP® Dead-end: Galvanized Steel

For use on:

**Extra High Strength, High Strength,
Siemens Martin, Utilities Grade³**

ODOT 173000 OC 3 CPP
3/8" Preforms for Down Guy Assemblies
Field Verify Qty.



B-Coat							
Catalog Number	Strand			Units per carton	Wt./Lbs. per carton	Length (Inches)	Color Code
	Size (Inches)	Construction	Mean Diameter (Inches)				
GDE-1102	3/16	7W 7W	.186 .195	100	30	20	Red
GDE-1103	7/32	7W	.216	50	19	24	Green
GDE-1104	1/4	3W 7W	.259 .240	50	24	25	Yellow
GDE-1105	9/32	7W	.279	50	26	28	Blue
GDE-1106	5/16	3W 7W 7W	.312 .312 .327	50	39	31	Black
GDE-1107	3/8	3W 7W	.356 .360	50	51	35	Orange
GDE-1108	7/16	7W	.435	25	40	38	Green

C-Coat							
Catalog Number	Strand			Units per carton	Wt./Lbs. per carton	Length (Inches)	Color Code
	Size (Inches)	Construction	Mean Diameter (Inches)				
GDE-2102	3/16	7W 7W	.186 .195	100	30	20	Red
GDE-2103	7/32	7W	.216	50	19	24	Green
GDE-2104	1/4	3W 7W	.259 .240	50	24	25	Yellow
GDE-2105	9/32	7W	.279	50	26	28	Blue
GDE-2106	5/16	3W 7W 7W	.312 .312 .327	50	39	31	Black
GDE-2107	3/8	3W 7W	.356 .360	50	51	35	Orange
GDE-2108	7/16	7W	.435	25	40	38	Green

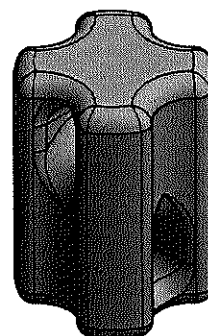
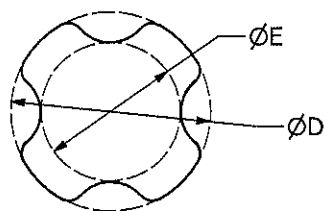
Left-hand lay standard

EXPLANATORY NOTES:

- (1) Big-Grip Dead-end is recommended as an alternative product for guying multiple pole structures or metal towers associated with transmission construction.
- (2) Refer to Hardware Considerations for acceptable fittings. Cabled Loop design furnished as standard, all sizes.
- (3) Rated holding strength is 100% of published rating for all grades of galvanized strand.
- (4) Consult PLP for sizes and stranding not shown.

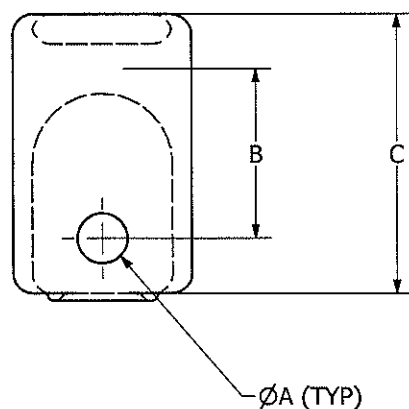
ODOT 173000 OC 3 CPP
Down Guy Anchor Assembly.
Field Verify Quantity

CATALOG NUMBER	ANSI CLASS	TENSILE STRENGTH, POUNDS	MAX. CABLE DIAMETER	A	B	C	D	E
C9091041	54-1	10,000	3/8	5/8	1 3/4	3 1/2	2 1/2	1 3/4
C9091042	54-2	12,000	1/2	7/8	2 1/4	4 1/4	2 7/8	2 1/8



==NOTES==

1. INSULATES GUY WIRES USED TO ANCHOR POLE.
2. MEETS ANSI C29.1
3. MATERIAL: PORCELAIN, LIGHT GRAY



CHANCE®

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HUBBELL POWER SYSTEMS, INC.

TITLE

GUY-STRAIN
INSULATORS

SIZE
B

CAT / PART / ASSY NO.
SEE CHART

DWG NO.

SA9091041

REV

-

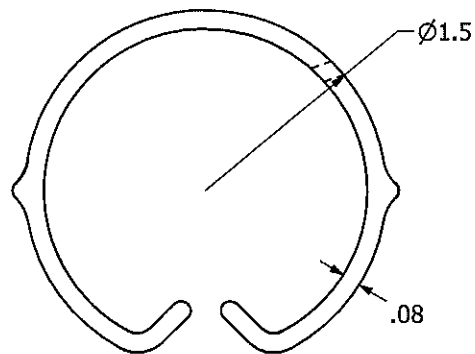
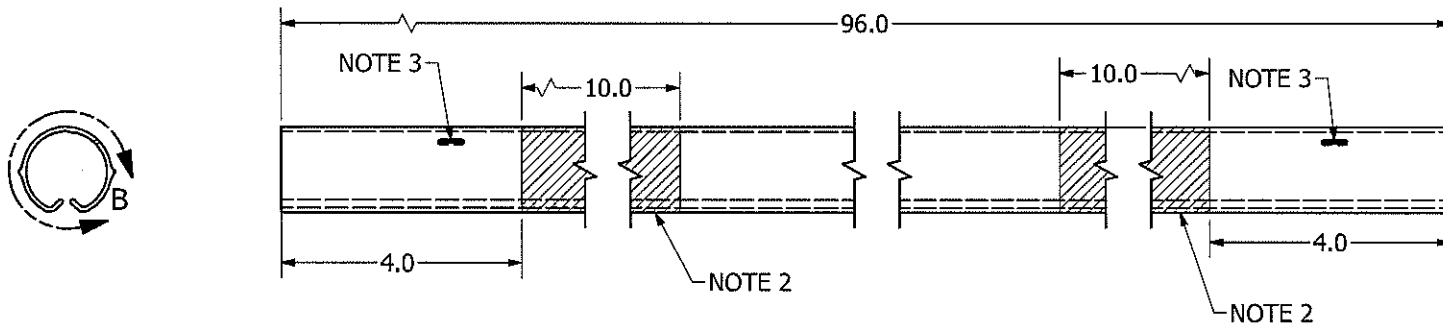
DO NOT SCALE
THIS DRAWING

DRN BY NJM

DATE 05/05/17

SHEET 1 OF 1

ODOT 173000 OC 3 CPP
Guy Marker- Field Veify Qyt.



DETAIL B
SCALE 2:1

CATALOG NUMBER

T0790206

C2030586

NOTE:

1. MATERIAL: HIGH INTENSITY YELLOW POLYETHYLENE
2. 3" X 10" ORANGE REFLECTIVE TAPE (3M REFLECTIVE SHEETING 3814 OR SIMILAR) USED ONLY ON C2030586.
3. COMES WITH TWO (2) CABLE TIES (MATERIAL: BLACK STABILIZED NYLON)

CHANCE

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HUBBELL POWER SYSTEMS, INC.

TITLE

1-1/2" FULL ROUND
PLASTIC MARKER

SIZE
B

CAT / PART / ASSY NO.
SEE TABLE

DWG NO.

SA079-0206

REV
B

DO NOT SCALE
THIS DRAWING

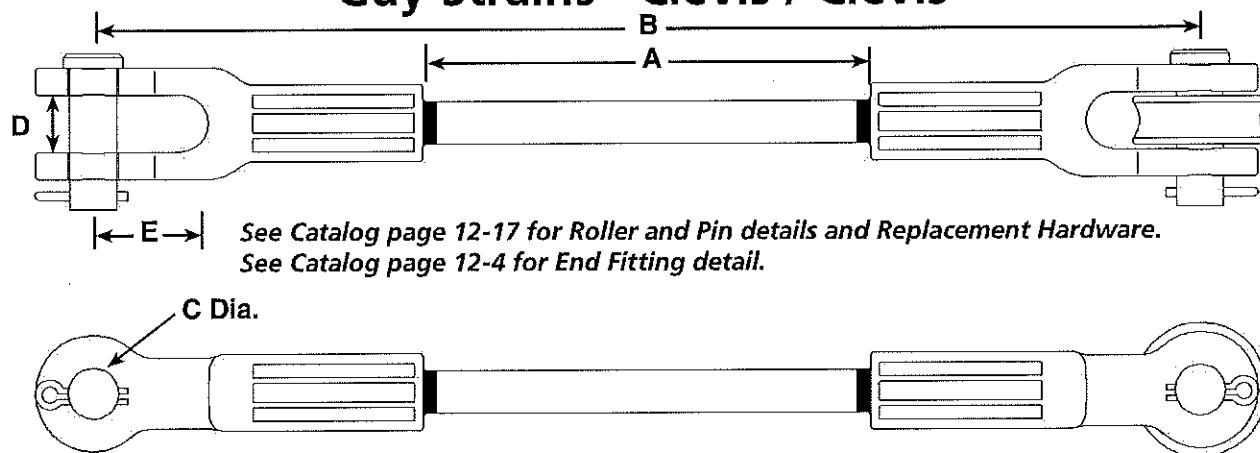
DRN BY KOST

DATE 12/14/17

SHEET 1 OF 1

30,000 lb. SERIES Guy Strains - Clevis / Clevis

ODOT 173000 OC 3 CPP
Field Verify Qty.



See Note For Roller Configurations

C Dimension is 3/4" for 30,000 lbs. series

D Dimension is 1" for 30,000 lbs. series

E Dimension is 2.04" for 30,000 lbs. series

3/4" dia. Fiberglass rod.

Castings are hot-dip galvanized ductile iron.

Catalog Number	Length A	Length B	Weight (Each)
30,000 lbs. (13,608 kg) Minimum Ultimate Strength*			
GS30012CC1	12" (30.5 cm)	24" (61.0 cm)	6.1 lbs. (2.8 kg)
GS30018CC1	18" (45.8 cm)	30" (76.2 cm)	6.3 lbs. (2.9 kg)
GS30024CC1	24" (61.0 cm)	36" (91.4 cm)	6.5 lbs. (2.9 kg)
GS30030CC1	30" (76.2 cm)	42" (106.7 cm)	6.7 lbs. (3.0 kg)
GS30036CC1	36" (91.4 cm)	48" (122.0 cm)	6.9 lbs. (3.1 kg)
GS30042CC1	42" (106.7 cm)	54" (137.2 cm)	7.1 lbs. (3.2 kg)
GS30048CC1	48" (121.9 cm)	60" (152.4 cm)	7.3 lbs. (3.3 kg)
GS30054CC1	54" (137.2 cm)	66" (167.6 cm)	7.5 lbs. (3.4 kg)
GS30060CC1	60" (152.4 cm)	72" (182.9 cm)	7.7 lbs. (3.5 kg)
GS30072CC1	72" (182.9 cm)	84" (213.4 cm)	8.0 lbs. (3.6 kg)
GS30078CC1	78" (198.1 cm)	90" (228.6 cm)	8.2 lbs. (3.7 kg)
GS30084CC1	84" (213.4 cm)	96" (243.8 cm)	8.4 lbs. (3.8 kg)
GS30090CC1	90" (228.6 cm)	102" (259.1 cm)	8.6 lbs. (3.9 kg)
GS30096CC1	96" (243.8 cm)	108" (274.3 cm)	8.8 lbs. (4.0 kg)
GS30108CC1	108" (274.3 cm)	120" (304.8 cm)	9.2 lbs. (4.2 kg)
GS30120CC1	120" (304.8 cm)	132" (335.3 cm)	9.6 lbs. (4.4 kg)
GS30144CC1	144" (365.8 cm)	156" (396.2 cm)	10.3 lbs. (4.7 kg)

GS—CC1 series has 1 Roller as detailed in drawing

For 2 Rollers, replace "CC1" in number with "CC2"

For no Rollers, replace "CC1" in number with "CC"

Add "SC" suffix to the end of the catalog number to denote Silicone Coated Rod

*Recommended maximum working load is 50% of minimum ultimate ratings listed.



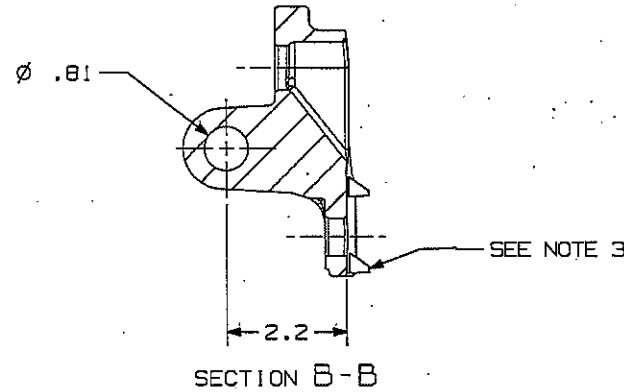
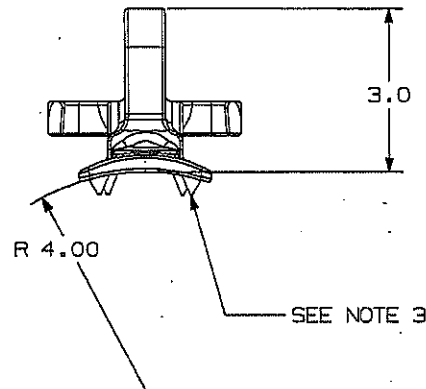
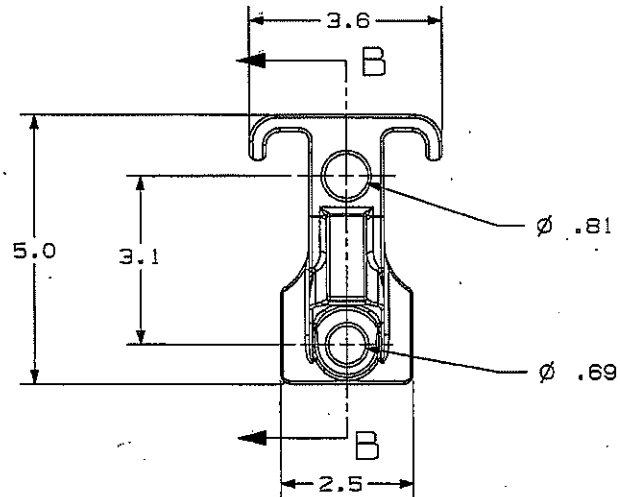
Phone: 573-682-5521 Email: hpsliterature@hubbell.com Web: hubbellpowersystems.com



ODOT 173000
 3/8" Messenger wire for Down
 Guy Anchor Assemblies

GALVANIZED STEEL STRAND				MINIMUM BREAKING STRENGTH IN POUNDS					MINIMUM WEIGHT OF COATING OZ./SQ. FT.		
Strand Diameter Inches	Coated Diameter Inches	Wires Per Strand	Strand Weight/ 1000 FT Pounds	Utilities Grade	Common Grade	Siemens- Martin Grade	High Strength Grade	Extra High Strength Grade	Class A	Class B	Class C
1/4	.120	3	117	3150	1860	3040	4730	6740	.85	1.70	2.55
1/4	.120	3	117	4500					.85	1.70	2.55
5/16	.145	3	171	6500	2490	4090	6350	9100	.90	1.80	2.70
3/8	.165	3	220	8500	3330	5560	8360	11800	.90	1.80	2.70
3/16	.062	7	73		1150	1900	2850	3990	.5	1.0	1.5
3/16	.065	7	80	2400					.5	1.0	1.5
7/32	.072	7	98		1540	2560	3850	5400	.5	1.0	1.5
1/4	.080	7	121		1900	3150	4750	6650	.6	1.2	1.8
9/32	.093	7	164	4600	2570	4250	6400	8950	.7	1.4	2.1
5/16	.104	7	205		3200	5350	8000	11200	.8	1.6	2.4
5/16	.109	7	225	6000					.8	1.6	2.4
3/8	.120	7	273	11500	4250	6950	10800	15400	.85	1.7	2.55
7/16	.145	7	399	18000	5700	9350	14500	20800	.9	1.8	2.7
1/2	.165	7	517	25000	7400	12100	18800	26900	.9	1.8	2.7
9/16	.188	7	671		9600	15700	24500	35000	1.0	2.0	3.0
5/8	.207	7	813		11600	19100	29600	42400	1.0	2.0	3.0
1/2	.100	19	504		7620	12700	19100	26700	.7	1.4	2.1
9/16	.113	19	637		9640	16100	24100	33700	.8	1.6	2.4
5/8	.125	19	796		11000	18100	28100	40200	.85	1.7	2.55
3/4	.150	19	1155		16000	26200	40800	58300	.9	1.8	2.7
7/8	.177	19	1581		21900	35900	55800	79700	.9	1.8	2.7
1	.200	19	2073		28700	47000	73200	104500	1.0	2.0	3.0

ODOT 173000 OC 3 CPP
Down Guy Pole Anchor Attachment
Field Verify Quantity



CATALOG NO.	DESCRIPTION
GEP5A34	WITH CLEATS
GEP5A34N	WITHOUT CLEATS

NOTES

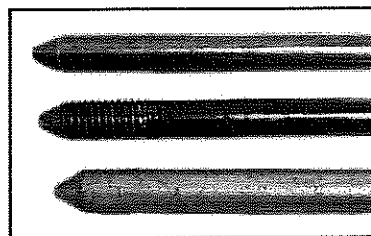
1. MATERIAL: DUCTILE IRON PER ASTM A536.
2. GALVANIZED PER ASTM A153
3. CATALOG NO. GEP5A34N HAS NO TEETH FOR MOUNTING ON CONCRETE, STEEL, AND VARIOUS OTHER POLE TYPES.

LATEST EC NO:		REV.	DATE	CHANGED BY	RESP ENGINEER
23319		A	09/17/07	LURKINS	KIRK
				DO NOT SCALE THIS DWS	THIRD ANGLE PROJECTION ISO DUAL DIMENSIONS IN=INCH, MM=MILLIMETER
DRN BY:	DATE	TITLE:			SHEET B
MCLV	11-14-05	MULTIPLE GUY ATTACHMENT			
HUBBELL POWER SYSTEMS		CHANCE		DWG NO:	SAGEP5A34

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ODOT 173000
CPP Ground Rods for
Poles and Manholes.
Qty.60



Ground Rods

Part Number	Rod Size (Nominal Diameter x Length)	Master Bundle	Weight lbs. per 100 Pcs	Cu (mils)	UL Listed
Single Type					
PWC126	½" x 6'	100	400	5	NO
PWC128-5	½" x 8'	100	500	5	NO
PWC128	½" x 8'	100	500	10	YES
PWC1210	½" x 10'	100	625	10	YES
PWC586	¾" x 6'	100	510	5	NO
PWC588	¾" x 8'	100	700	10	YES
PWC588-13	¾" x 8' RUS	100	700	13	YES
PWC5810	¾" x 10'	100	900	10	YES
PWC348	¾" x 8'	50	1000	10	YES
PWC3410	¾" x 10'	50	1300	10	YES
PWC110	1" x 10'	25	2300	10	YES
Sectional Type					
PWCS1210	½" x 10'	100	625	10	YES
PWCS588	¾" x 8'	100	680	10	YES
PWCS5810	¾" x 10'	100	900	10	YES
PWCS348	¾" x 8'	50	1000	10	YES
PWCS3410	¾" x 10'	50	1300	10	YES
PWCS110	1" x 10'	25	2300	10	YES
Hot Dipped Galvanized Ground Rods					
PWCG125	½" x 5'	10	300	-	NO
PWCG126	½" x 6'	10	400	-	NO
PWCG586	¾" x 6'	5	600	-	NO
PWCG588	¾" x 8'	5	734	-	NO
PWCG5810	¾" x 10'	5	1000	-	NO
PWCG3410	¾" x 10'	5	1500	-	NO

All values are nominal and subject to correction

Application: Ground Rods are intended to be driven into earth to provide grounding for substations, towers, homes, buildings and all other structures that contain electrical products or for applications to provide grounding against lightning. They are available in copper coated steel or galvanized steel constructions.

Copper Covered: High quality steel with a consistent covering of electrolytic copper.

Galvanized Steel: High quality steel with a consistent covering of zinc.

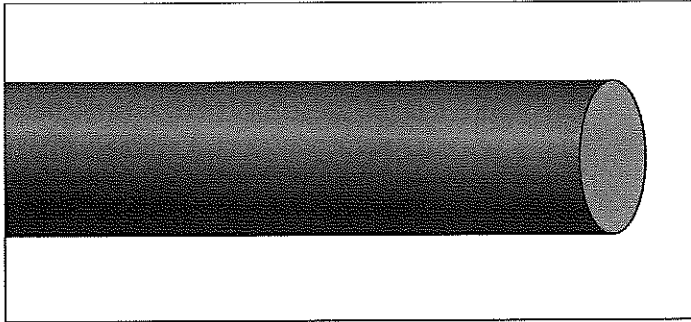
Standards: UL 467-1984 for ground rods ½ to 1" diameter, in 8 to 10' lengths
ASTM A153-82
13mil coatings are both UL/RUS Approved

1-800-945-5542

© Priority Wire & Cable, Little Rock, AR PWC-2013

ODOT 173000 CPP
 Pole grounds and Manhole Rack
 Bonding. Qty. Field Verify

BARE COPPER



SOLID CONDUCTOR

Bare or Tinned

Soft (Annealed), Medium Hard, Hard Drawn



Description:

Soft Drawn: Easily formed into place.

Hard Drawn: Higher tensile strength. Retains shape. More difficult to form.

Application:

Suitable for use in electrical grounding systems and on insulators for overhead transmission and distribution applications.

Standards:

ASTM Standards: B-1 (*hard drawn*), B-2 (*medium hard drawn*),
B-3 (*soft or annealed*), B-33 (*tinned*)

REA/RUS Approved

Federal Standard QQ-W-343

RoHS Compliant

Part Number	Size (AWG)	Nominal Diameter (in.)	Approx. Net Weight (lb./1000')	HARD DRAWN Min. Breaking Strength (lbs.)	HARD DRAWN DC Resistance (OHMS/1000') @20°C	MED HARD DRAWN Min. Breaking Strength (lbs.)	MED HARD DRAWN DC Resistance (OHMS/1000') @20°C	SOFT (BARE) DC Resistance (OHMS/1000') @20°C	SOFT (TINNED) DC Resistance (OHMS/1000') @20°C	Ampacity*
BSOS18	18	0.0403	4.92	85	6.6400	87	6.5100	6.3900	6.6400	-
BSOS16	16	0.0508	7.82	135	4.1800	106	4.1600	4.0200	4.1800	-
BSOS14	14	0.0641	12.43	214	2.5300	167	2.8100	2.5200	2.6200	-
BSOS12	12	0.0808	19.77	337	1.6500	262	1.6400	1.5900	1.6500	-
BSOS10	10	0.1019	31.43	529	1.0390	410	1.0330	0.9988	1.0430	-
BSOS8	8	0.1285	49.98	826	0.6532	644	0.6498	0.6281	0.6426	98
BSOS6	6	0.1620	79.46	1,280	0.4110	1,010	0.4088	0.3862	0.4109	124
BSOS4	4	0.2043	126.40	1,970	0.2584	1,584	0.2571	0.2485	0.2528	155
BSOS2	2	0.2576	200.90	3,002	0.1625	2,450	0.1617	0.1563	0.1580	209
BSOS1	1	0.2893	253.30	3,688	0.1289	3,024	0.1282	0.1239	-	-
BSOS1/0	1/0	0.3249	319.50	4,518	0.1011	3,731	0.1016	0.0982	-	252
BSOS2/0	2/0	0.3648	402.80	5,519	0.0802	4,600	0.0798	0.0779	-	329
BSOS3/0	3/0	0.4096	507.80	6,720	0.0636	5,666	0.0633	0.0618	-	382
BSOS4/0	4/0	0.4600	640.50	8,143	0.0504	6,980	0.0502	0.0490	-	444

*Per NEC Table 310.15 (B)(21). Based on conductor temperature of 80°C; ambient temperature of 40°C; 2 ft./sec. wind. **Ref ASTM B-787. NOTE: The data shown is approximate and subject to standard industry tolerance.

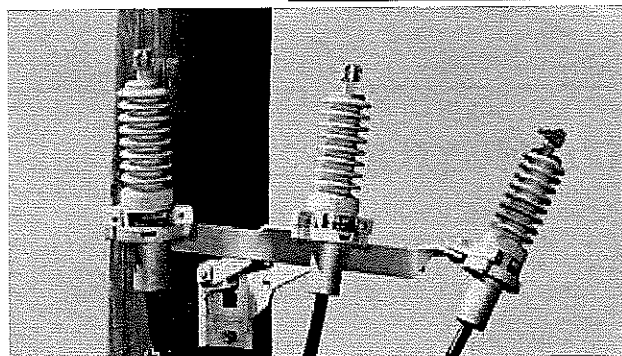
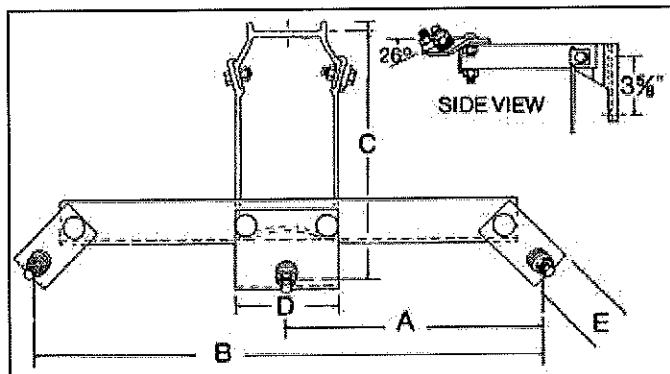
EQUIPMENT MOUNTS

Bolted Terminator & Arrestor Mounts

Mounts with 5/8" thru-bolt and 1/2" lag screw (not supplied). Equipment mounting hardware and grounding device included.

Three Phase Terminator Mounts

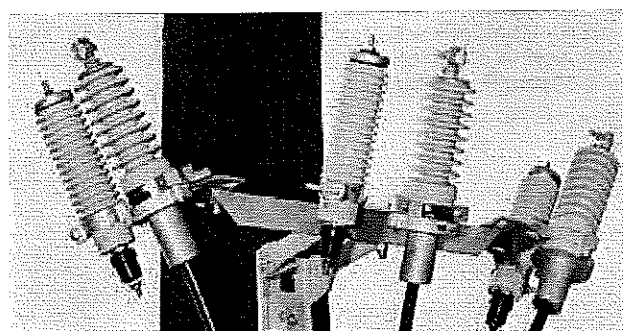
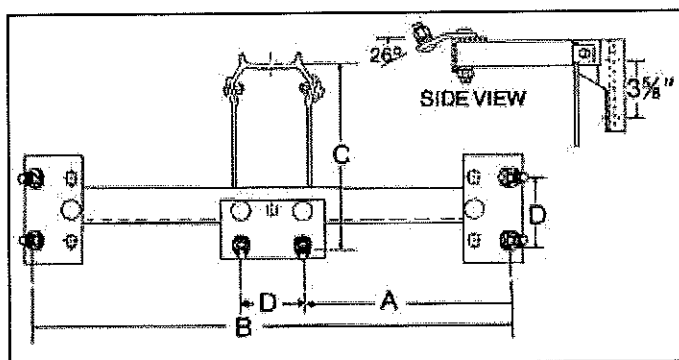
ODOT 173000 OC 3 CPP
Standoff Bracket
Field Verify Qty.



26° ANGLE STANDARD, ALSO AVAILABLE WITH 0° ANGLE (ADD SUFFIX STR FOR 0° ANGLE)

Catalog No.	Product No.	A	B	C	D	E
TB-EMB-13PA	51033	11 5/8"	23 1/4"	11"	4 13/16"	2"
TB-EMB-1-3PA-35	51063	16 3/4"	33 1/2"	11"	4 13/16"	2"

Three Phase Terminator-Arrestor Mounts



26° ANGLE STANDARD, ALSO AVAILABLE WITH 0° ANGLE (ADD SUFFIX STR FOR 0° ANGLE)

Catalog No.	Product No.	A	B	C	D
TB-EMB-1-6PA	51837	10 9/16"	24 3/4"	11"	3 9/16"
TB-EMB-1-6PA-35	51064	15 11/16"	35"	11"	3 9/16"

Type M3 Switch DISTRIBUTION CLASS

ODOT 173000 OC 3 CPP
OH Line Switches
Filed Verify Qty.

RUS Listed

Ordering Information

M3

D

6

6

B

BASE

D = Distribution base, serrated slots with four $\frac{3}{8}$ " x 8"/10" carriage bolts and backstrap

H = Distribution base, smooth slots with four $\frac{1}{2}$ " x 8"/10" carriage bolts and backstrap

RATED CURRENT

6 = 600 AMP

9 = 900 AMP

INSULATION

2 = 15kV 110BIL Porcelain

3 = 25kV 125BIL Porcelain (not available in 900 amp)

4 = 35kV 150BIL Porcelain

6 = 15kV 110BIL Polymer

7 = 25kV 125BIL Polymer (not available in 900 amp)

8 = 35kV 150BIL Polymer

OPTIONS

C = Captive Hardware*

Consists of 4 each: $\frac{1}{2}$ " 13 stainless steel bolts, $\frac{1}{2}$ " flatwasher / lockwasher, $\frac{1}{2}$ " 13 bronze nut

L = Open Position Latch
(P8070181P)

Stainless steel latch for holding the blade in the 160° open position

P = Parallel Groove Terminals*
(ACT1343 2 per switch)

Two complete connectors and hardware. Accepts #2 - 500 kcmil (Copper or Aluminum)

R = Bypass Studs
(P8070166P 2 per switch)

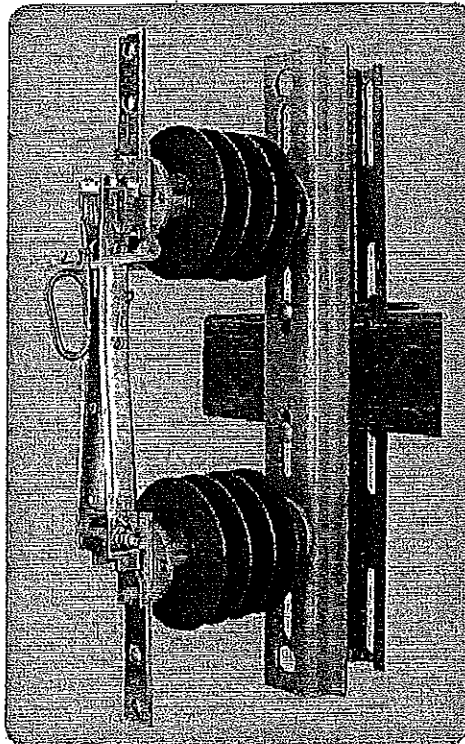
Two copper alloy bypass studs, which can be used for regulator or recloser bypassing

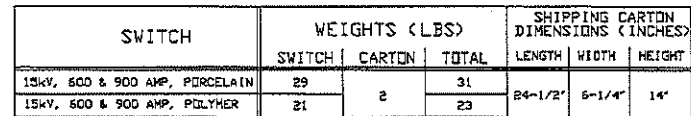
*NOTE: Captive Hardware and Parallel Groove Terminals CANNOT be ordered together.

BOLT LENGTH

A = 10" Length

B = 8" Length





**TYPE M3 DISTRIBUTION SWITCH
CATALOG NUMBERING SYSTEM**

M3 - □ □ □ □ □ □

BASE

- P- SERRATED SLITS
- N- SMOOTH SLITS

RATED CURRENT

- 6- 600 AMP
- 9- 900 AMP

INSULATION

- 2 - 15KV 110BIL PORCELAIN
- 6 - 15KV 110BIL POLYMER

OPTIONS

- C- CAPTIVE HARDWARE
- L- OPEN POSITION LATCH
- P- PARALLEL GROOVE TERMINAL
- R- BY-PASS STUDS

BOLT LENGTH

- A- 10" LENGTH
- B- 8" LENGTH

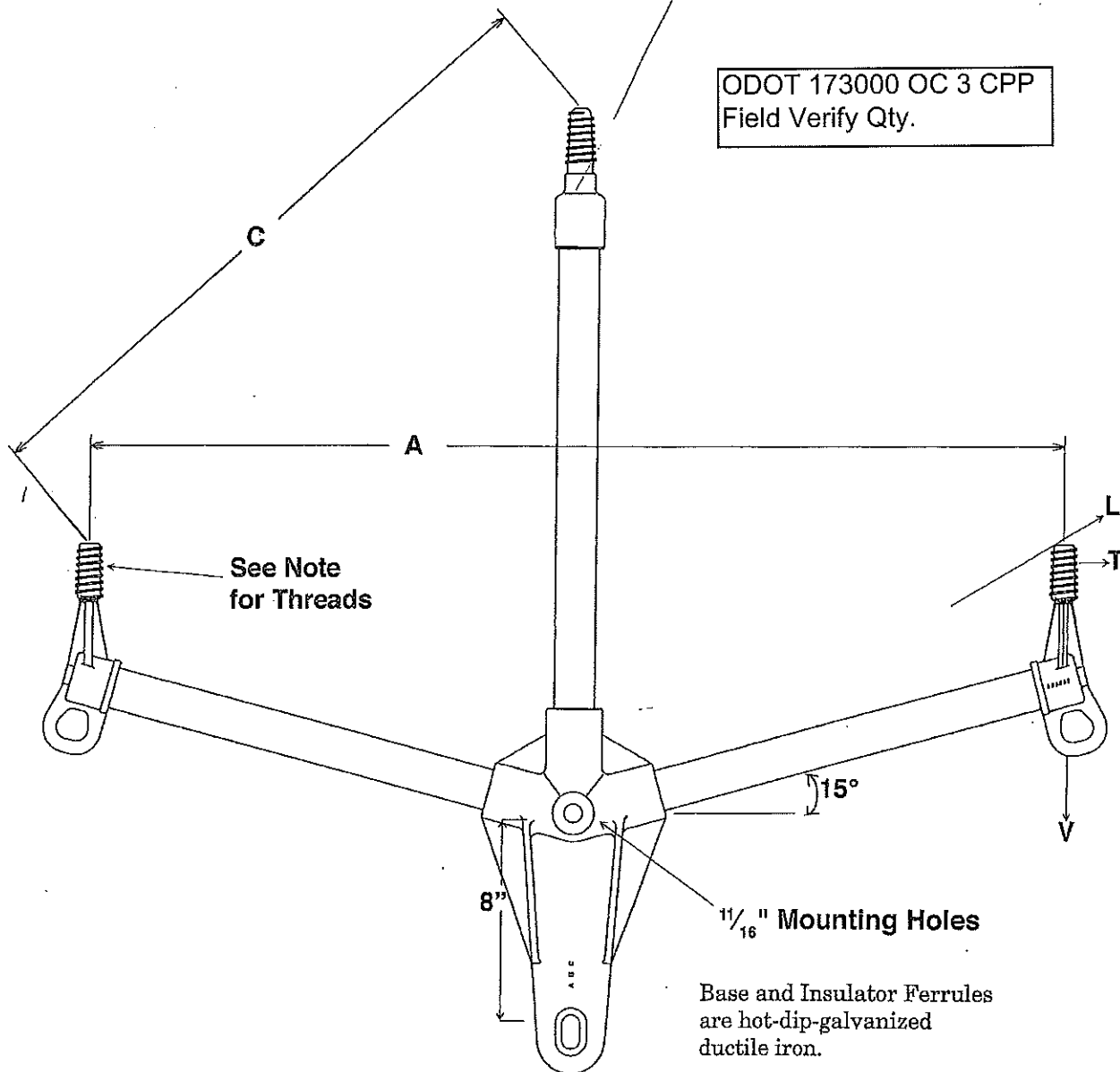
CONFIDENTIAL

DISTRIBUTION CLASS
-15kv, 110 kv BIL, 600 & 900 AMP

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<p>CHANCE TOLERANCE CHART</p> <p>EC 71911 DTD 11/09/17</p> <p>CONFIDENTIAL: THE DRAWING AND ITS CONTENTS ARE CONFIDENTIAL, AND THE INFORMATION HEREON IS THE PROPERTY OF CHANCE POWER SYSTEMS, INC. IT IS TO BE USED FOR THE PROJECT AND NOT TO BE REPRODUCED, COPIED, OR DISCLOSED TO ANY OTHER PARTY WITHOUT THE WRITTEN PERMISSION OF CHANCE POWER SYSTEMS, INC. ANY VIOLATION OF THIS NOTICE WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.</p>		<p>HUBBELL POWER SYSTEMS</p> <p>TYPE M3 SWITCH</p> <p>DATE / PART / ASSY NO. D SA-M3D SEE CHART</p> <p>REV B</p> <p>DATE 08-13-02</p>	
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Three-Phase Vertical Pin Standoff Bracket



Catalog Number	Length A	Length C	Minimum Ultimate*			Weight (Each)
			Vertical V	Longitudinal L	Transverse T	
Medium Duty 1.5" (38 mm) Dia. Rod						
3SBM3024VV1	30" (76.2 cm)	24" (61 cm)	1500 lbs. (675 kg)	900 lbs. (405 kg)	1500 lbs. (675 kg)	18.7 lbs. (8.4 kg)
3SBM4828VV1	48" (121.9 cm)	28" (71.1 cm)	1350 lbs. (608 kg)	800 lbs. (360 kg)	1500 lbs. (675 kg)	19.8 lbs. (8.9 kg)

*Recommended maximum working load is 50% of minimum ultimate ratings listed.

3SBM—VV1 series has 1" plastisol coated threads.

For 1" Lead threads, replace "VV1" in number with "VV3"

For 1.375" Lead threads, replace "VV1" in number with "VV4"

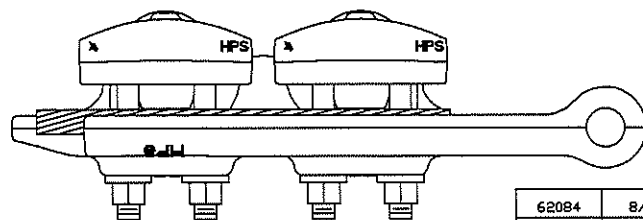
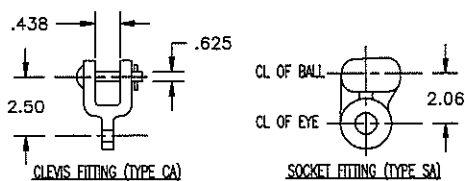
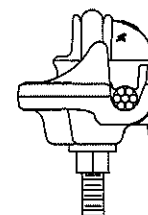
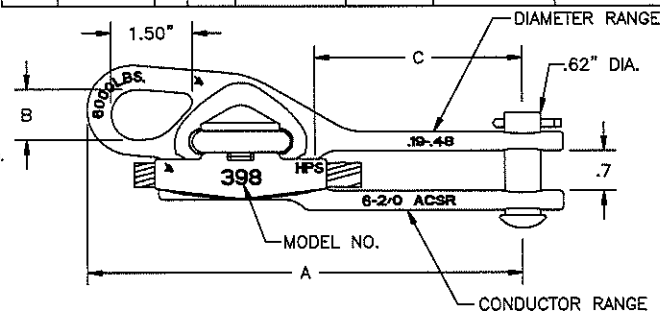
Consult factory for additional lengths.

NOTES:

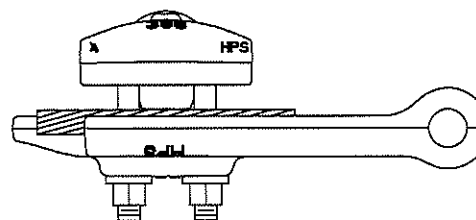
1. MATERIAL- BODY AND KEEPER: ALUMINUM ALLOY
U-BOLTS, WASHERS, NUTS AND CLEVIS PIN: GALV. STEEL
COTTER PIN AND SPRING CLIP: STAINLESS STEEL
SOCKET OR CLEVIS FITTING: GALV. DUCTILE IRON
2. CLAMPS WITH END FITTING MAY BE ORDERED BY CHANGING -N SUFFIX TO -S FOR SOCKET OR -C FOR CLEVIS IN CATALOG NUMBER. (EX. ASOD 684-1S FOR ASOD 684-1 WITH SOCKET. SOCKET IS FOR USE WITH CLASS 52-3 AND 52-5 INSUL. PER ANSI C-29.2.)
3. FOR LIFTING EYE ADD AN E BEFORE THE END FITTING SUFFIX.(570 SIZE ONLY) (EX. ASOD-570-1EN FOR ASOD-570 WITH LIFTING EYE AND NO END FITTING.)
4. FOR A HEX CLEVIS PIN ADD SUFFIX - HP TO CATALOG NUMBER. (EX. ASOD-570-1EN-HP FOR ASOD-570 WITH LIFTING EYE, NO END FITTING, AND HEX CLEVIS PIN)
5. FOR EYE NUTS IN PLACE OF HEX NUTS ADD AN "EN" AFTER PART NUMBER (EX. ASOD-684-1N-EN FOR ASOD 684 WITH EYENUTS, NO END FITTING.)
6. ANDERSON PRODUCT SPECIFICATION 56.013.
7. FOR LONG CLEVIS PIN, ADD SUFFIX - "LCP" TO CATALOG NUMBER (EX. ASOD-570-1EN-LCP FOR ASOD 570 WITH LIFTING EYE, NO FITTING AND LONG CLEVIS PIN)
8. FOR TIN PLATED BODY AND KEEPER, ADD SUFFIX "TP" OR "GP" TO CATALOG NUMBER (EX. ASOD-570-1N-HP-TP FOR ASOD 570 WITH TIN PLATED BODY AND KEEPER, HEX CLEVIS PIN AND NO END FITTING). (EX. ASOD-684-1N-GP FOR ASOD 684 WITH TIN PLATED BODY AND KEEPER).

ODOT 173000 OC 3 CPP
Field Verify Qty.

VIEW	CAT. NO.	U-BOLTS		CLAMPING RANGE						ULT. STR. (LBS)		DIMENSIONS IN INCHES		
				ACSR		ALUMINUM		INCHES						
		NO.	SIZE	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	BODY	SAG EYE	A	B	C
A	ASOD-398-1N	1	.375	#6 (6/1)	2/0 (6/1)	#4 (7 STR)	2/0 (19 STR)	.19	.48	6,000	6,000	8.00	1	3.62
A	ASOD-570-1N	1	.50	#6 (6/1)	4/0 (6/1)	#4 (7 STR)	4/0 (19 STR)	.19	.57	8,000	8,000	8.62	1	3.75
A	ASOD-684-1N	1	.50	#4 (6/1)	336.4 (18/1)	#3 (7 STR)	350 (37 STR)	.25	.69	8,000	8,000	9.00	1	4.50
A	ASOD-858-1N	1	.50	#4 (6/1)	556.5 (18/1)	#2 (7 STR)	556.5 (37 STR)	.25	.888	8,000	6,000	9.62	1	4.75
B	ASOD-858-2N	2	.50	3/0 (6/1)	556.5 (18/1)	4/0 (7 STR)	556.5 (37 STR)	.502	.888	12,000	9,000	14.5	1	6.0
B	ASOD-1160-2N	2	.50	336.4 (18/1)	900 (54/7)	350 (37 STR)	954 (61 STR)	0.69	1.16	12,000	9,000	16.75	1.5	7.75
B	ASOD-1259-2N	2	.50	336.4 (18/1)	1113 (45/7)	336.4 (19 STR)	1200 (91 STR)	0.666	1.263	15,000	11,250	16.56	1.5	6.90

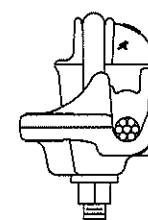


VIEW B



VIEW A

DIMENSIONS FOR REFERENCE ONLY



62084	8/28/15	JES	JES
EC #	DATE	CHG BY	RESP ENG
DESC OF DWG: ADDED ASOD12592N			
REASON (S) FOR CHANGE: —			
DISPOSITION OF MAT'L: —			

ANDERSON		HUBBELL POWER SYSTEMS	
CONFIDENTIAL: THIS DRAWING AND ITS CONTENTS ARE CONFIDENTIAL AND THE EXCLUSIVE PROPERTY OF HUBBELL POWER SYSTEMS. NO PUBLICATION, DISTRIBUTION OR COPIES MAY BE MADE WITHOUT THE WRITTEN CONSENT OF HUBBELL POWER SYSTEMS. HUBBELL POWER SYSTEMS UNPUBLISHED. ALL RIGHTS RESERVED UNDER THE COPYRIGHT LAWS.		TITLE AL. SIDE OPENING DEADEND CLAMP	
SIZE B	DWG NO. CC-17236	CAT / PART / ASSY NO. ASOD-XXX-X	REV 12
DO NOT SCALE THIS DRAWING	DRN BY WSB	DATE 08-19-03	SHEET 1 OF 1

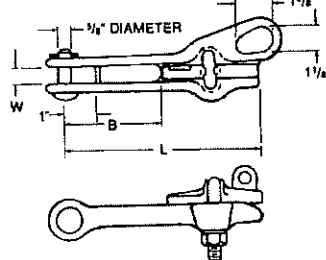
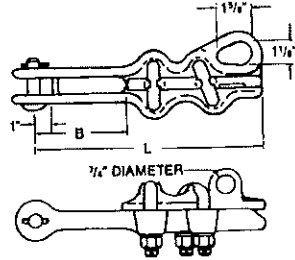
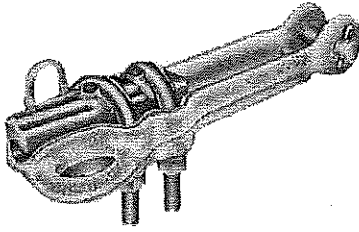


ALUMINUM
ADS

DEADENDS BOLTED

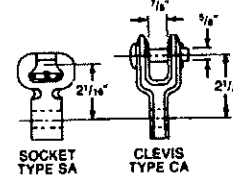
ODOT 17300 OC 3 CPP
Field Verify Qty.

STRAIGHT LINE STRAIN CLAMP ALUMINUM



For distribution and light transmission construction with all aluminum, ACSR or aluminum alloy conductor. These clamps have high holding power and large range taking ability. (Straight Contoured Groove)

Material: Body and Keeper — 356-T6 Aluminum Alloy
Hardware — Galvanized Steel
Sockets and Clevises—Ductile Iron, Galvanized
Cotter Pin — #302 Stainless Steel



Product Data & Conductor Size

CATALOG NUMBER	FITTING		CLAMPING RANGE			ULTIMATE BODY STRENGTH LBS. (KG)	U-BOLTS		DIMENSIONS INCHES (MM)			APPROX. WT. EACH LBS. (KG)
	TYPE	CAT. NO.	ACSR	ALUMINUM	INCHES (MM)		NO.	SIZE INCHES (MM)	L	B	W	
ADS47N	None	-	#6 (6/1)	#6-7 Str.	.18-.47	7,000	1	1/2	5-3/8	2-1/8	11/16	1.1 (.50)
ADS47S	Socket	SA04	To	To	(.47-11.94)	(3,175)		(12.70)	(136.52)	(53.98)	(17.46)	2.4 (1.09)
ADS47C	Clevis	CA04	2/0 (6/1)	3/0-19 Str.								2.7 (1.22)
*ADS47LN	None	-	#6 (6/1)	#6-7 Str.	.18-.47	7,000	1	1/2	6-3/4	3-1/2	11/16	1.3 (.59)
*ADS47LS	Socket	SA04	To	To	(.47-11.94)	(3,175)		(12.70)	(171.45)	(88.90)	(17.46)	2.6 (1.15)
*ADS47LC	Clevis	CA04	2/0 (6/1)	3/0-19 Str.								2.9 (1.32)
ADS48N**	None	-	#6 (6/1)	#6-7 Str.	.18-.502	7,000	2	3/8	7-5/8	3-7/8	11/16	1.6 (.73)
ADS48S	Socket	SA04	To	To	(.47-12.75)	(3,175)		(9.53)	190.50	(98.43)	(17.46)	2.9 (1.32)
ADS48C	Clevis	CA04	3/0 (6/1)	3/0-19 Str.								3.2 (1.46)
ADS60N**	None	-	#6 (6/1)	#4-7 Str.	.19-.60	8,000	2	1/2	8-1/4	4	3/4	2.0 (.91)
ADS60S	Socket	SA04	To	To	(.483-15.24)	(3,629)		(12.70)	(209.55)	(101.60)	(19.05)	3.2 (1.45)
ADS60C	Clevis	CA04	266.8 (18/1)	266.8-19 Str.								3.6 (1.63)
*ADS60LN	None	-	#6 (6/1)	#4-7 Str.	.19-.60	8,000	2	1/2	10-5/8	6	3/4	2.2 (1.00)
*ADS60LS	Socket	SA04	To	To	(.483-15.24)	(3,629)		(12.70)	(269.88)	(152.40)	(19.05)	3.4 (1.54)
*ADS60LC	Clevis	CA04	266.8 (18/1)	266.8-19 Str.								3.8 (1.72)
ADS88N	None	-	#2 (6/1)	#1-7 Str.	.31-.88	10,000	2	1/2	9	4-1/2	15/16	2.2 (1.00)
ADS88S	Socket	SA06	To	To	(7.87-22.35)	(4,536)		(12.70)	(228.60)	(114.30)	(23.81)	3.5 (1.59)
ADS88C	Clevis	CA06	556.5 (18/1)	556.5-37 Str.								3.9 (1.77)
*ADS88LN	None	-	#2 (6/1)	#1-7 Str.	.31-.88	10,000	2	1/2	12	7-1/2	15/16	2.4 (1.09)
*ADS88LS	Socket	SA06	To	To	(7.87-22.35)	(4,536)		(12.70)	(304.80)	(190.50)	(23.81)	3.7 (1.68)
*ADS88LC	Clevis	CA06	556.5 (18/1)	556.5-37 Str.								4.1 (1.86)
ADS116N	None	-	#2 (6/1)	#1-7 Str.	.31-1.16	15,000	2	1/2	10-1/2	5-1/2	1	2.9 (1.32)
ADS116S	Socket	SA07	To	To	(7.87-29.46)	(6,804)		(12.70)	(266.70)	(139.70)	(25.40)	4.2 (1.91)
ADS116C	Clevis	CA06	954 (36/1)	1000-61 Str.								4.6 (2.09)
ADS130N	None	-	266.8 (26/7)	336.4-19 Str.	.64-1.30	15,000	2	1/2	10-1/2	5-1/2	1	3.0 (1.36)
ADS130S	Socket	SA07	To	To	(16.26-33.02)	(6,804)		(12.70)	(266.70)	(139.70)	(25.40)	4.3 (1.95)
ADS130C	Clevis	CA06	1192.5 (45/7)	1272-61 Str.								4.7 (2.13)
ADS155N	None	-	336.4 (26/7)	397.5-19 Str.	.72-1.55	15,000	2	5/8	11-3/4	6	1	4.4 (2.0)
ADS155S	Socket	SA07	To	To	(18.3-39.9)	(6,804)		(15.9)	(298.5)	(152.4)	(25.40)	5.8 (2.6)
ADS155C	Clevis	CA06	1590.5 (54/19)	1800-127 Str.								6.1 (2.8)

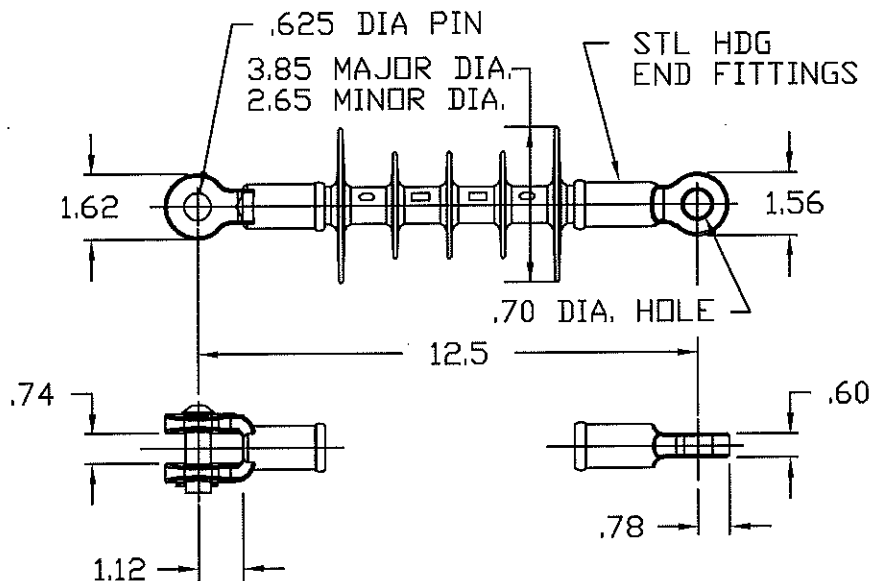
NOTES: (1) Recommended Torque on bolts: 3/8"—240 in. lbs., 1/2"—480 in. lbs., 5/8"—720 in. lbs.

(2) Lifting eye is standard on keeper for hot line work.

*Extra length clamps for greater insulator clearance.

** RUS Listed.


ODOT 173000 OC 3 CPP
Field Verify Qty.



DESIGN CHARACTERISTICS

LEAKAGE DISTANCE	16 IN.
60 Hz DRY FLASHOVER	100 KV
60 Hz DRY WITHSTAND	90 KV
60 Hz WET FLASHOVER	80 KV
60 Hz WET WITHSTAND	70 KV
IMPULSE CRITICAL FLASHOVER POSITIVE	150 KV
IMPULSE CRITICAL FLASHOVER NEGATIVE	170 KV
MAX. RIV AT 1000 kHz	10 μ V
RIV TEST VOLTAGE	15 KV
POWER ARC	150 kA CYCLES
NET WEIGHT	2.4 LBS
TENSION PROOF TEST	10000 LB
ULTIMATE TENSION STRENGTH	15000 LB
NO. OF WEATHERSHEDS	5

SILICONE RUBBER

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		<p>TITLE DS-15/PDI-15 DIST DEAD END INS</p>			
REV DATE	09/13/13	SIZE	DWG NO.	CAT / PART / ASSY NO.	REV
		S	--	801015-0215	1
		DO NOT SCALE THIS DRAWING	DRN BY WEB	DATE 10/6/11	SHEET 1 OF 1

U.S. UTILITY CONTRACTOR CO., INC.

3592 Genoa Road

TRANSMITTAL #2.2 CPP

Perrysburg, OH 43551

419/ 837-9358 or 419/ 837-2017

419/ 837-2015 Fax

PROJECT: ODOT 17300 RTA OC-3**OWNER'S PROJECT NO.** RTA 17.18**COMPANY:** Kokosing**DATE:** 1/24/2020**ATTN:** Mike Luyster**IF CHECKED BELOW, PLEASE:**☒ (X) Acknowledge receipt of enclosures☐ () Return enclosures to us☒ (X) Drawings☐ () Shop Drawings☐ () Product Literature☐ () Specifications☒ (X) Catalog Cuts / Submittals☐ () Certified Test Report☐ () Change Order No. ☐ () Samples☐ () Other

DATE	DESCRIPTION	QTY	PAGES
1/24/20	Elastimold Straight Splice Kits	Field Verify	1
1/24/20	Elastimold 3 way-4 way Splice Kits	Field Verify	2
1/24/20	200 Amp Loadbreak Elbow Connector	Field Verify	4
1/24/20	Elastimold Insulated Cap with Test Point	Field Verify	1
1/24/20	Porcelain Pin Insulator and Pin	Field Verify	2
1/24/20	ACSR OH Wire	Field Verify	1
1/24/20	Aluminum Triplex Wire	Field Verify	1
1/24/20	Insulated Clevis	Field Verify	1
1/24/20	15 KV Okonite Non Strand Filled Wire	Field Verify	3

☒ (X) For approval☐ () For your information/file☒ (X) Review & comment **MEMO:** Material is on hold on until one signed approved copy has been returned.US Utility hereby certifies that this submittal has been reviewed and verified to be inaccordance with drawing:George Ovalle



Representative

Project: CPP Carnegie Bridge**Location:** Cleveland Ohio**US Utility Contractors**3592 Genoa Road
Perrysburg, OhioODOT 173000 OC 3 CPP
CPP Splice Kits
Field Verify Qty.**Catalog Number:** 15PCJ1H2270
Product ID: 7TAA123100R0050
UPC Number: 78378664619
Status: A

15kV Power Cable Joint Style 1 with Single Piece Housing, Cable Insulation Diameter 0.850 inch to 1.050 inch. Copper Conductor. Conductor Size AWG Stranded 4/0 /Solid 250.

North American Specifications (UNSPSC)

UNSPSC	39121452 Cable joint
IGCC	4677 Cable joint
Brand Name	Elastimold
Type	Power Cable Joint
Special Features	Power Cable Joints utilize permanently crimped connectors. PCJ housings are fully insulated, shielded and sealed for direct-burial, vault, submersible and other severe service applications. Units have been designed and tested per IEEE Standard 404 to ensure system matched performance and ratings equal to the cable to which the splice will be installed. Power Cable Joints are available in two styles. Style 1 uses a single-piece housing that is sized to accommodate a specific range of cable - ideally suited to straight splicing of the same or similar cable. Style 2 designs incorporate a universal housing with separate cable adapters to allow transition splices of different types and sizes of cable.
Application	For Direct Burial, Vault, Submersible and Other Severe Service Applications.
Standard	IEEE Standard 404
Size	14-3/8 inch long
Connection	Compression
Conductor Range	4/0 STR AWG ; 250 kcmil
Number Of Conductors	2
Material	EPDM Rubber
Color	Black
Voltage Rating	15 kV
Insulation	Yes

Packaging

Outer Quantity	15
Weight Uom	1.72 lbs. Each

Documents / Support Tools

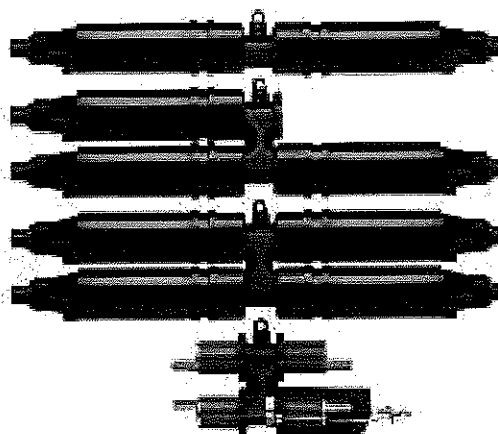
Technical Drawing / Data Sheet	Available on Website
Instruction Sheet	Available on Website
Instruction Sheet	Available on Website
Instruction Sheet	Available on Website

600 Series Deadbreak – Cable Joints

600 Series Separable Cable Joints are available in 2, 3 and 4-way versions and include a capacitive test point as standard. Units are interchangeable, featuring bolted connections. Designs are compact and ideally suited for small vaults and manholes.

DE-ENERGIZED joints can be quickly and easily connected and disconnected using standard hand tools and equipment in accordance with accepted operating practices. Bus bars can be changed to add or remove cables from the joint.

Optional accessories include insulating and grounding caps and plugs which allow visible external separation, by-pass, isolation, dead-ending, grounding and testing.



Ratings Overview

See page A3–A4 for complete information.

Current Ratings

(Prefixes: 650, K650, K655, K656 and 03700)

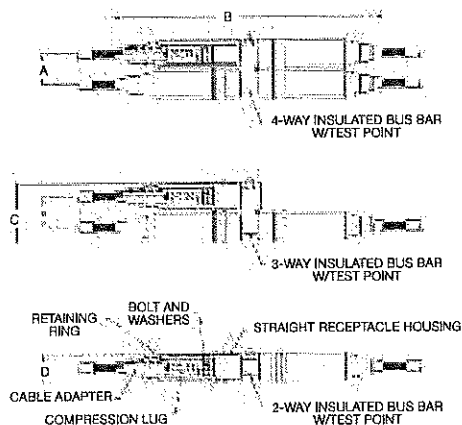
600 A Continuous
25 kA sym., 10 cycles

Voltage Ratings

15/25 kV Class (5 kV thru 28 kV)
16.2 kV Phase-to-Ground
28 kV Phase-to-Phase
140 kV BIL
45 kV AC Withstand
84 kV DC Withstand
21.5 kV Corona Extinction

Note: Elastimold has increased the IEEE Standard Production and Design Test levels for 25 kV Class products to include 27 kV and 28 kV systems.

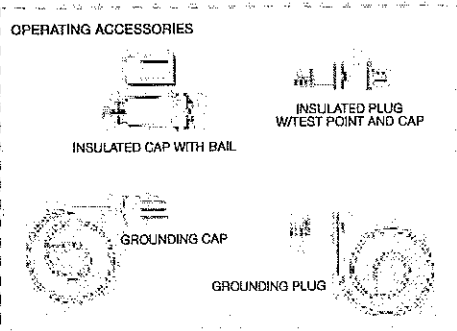
SEPARABLE CABLE JOINTS – 600 SERIES DEADBREAK



**SEPARABLE H-JOINT
(4-WAY)**

**SEPARABLE WYE-JOINT
(3-WAY)**

**SEPARABLE STRAIGHT-JOINT
(2-WAY)**



Note: The separable cable joints shown here use a special "V" interface that may not be interchangeable with other 600 Series interfaces.

Dimension	(in.)
A	4-1/4
B	37-1/8
C	8-1/8
D	3-7/8

600 Series Deadbreak – Cable Joints

Illustration (not to scale)	Description	Voltage Class	ELASTIMOLD Cat. No.	Notes
	Separable Straight Joint Pkg. (2-Way) w/ Test Point	15/25 kV	K656I-W0X Use Tables W7 and X6	N1, 8
	Basic Housing Pkg. Straight Joint w/ Test Point	15/25 kV	K656I-HP N2	N2
	Separable Wye Joint Pkg. (3-Way) w/ Test Point	15/25 kV	K656CY-W0X Use Tables W7 and X6	N1, 8
	Basic Housing Pkg. Wye Joint w/ Test point	15/25 kV	K656CY-HP	N2
	Separable "H" Joint Pkg. (4-Way) w/ Test Point	15/25 kV	K656CH-W0X Use Tables W7 and X6	N1, 8
	Basic Housing Pkg. "H" Joint w/ Test Point	15/25 kV	K656CH-HP	N2
	2-Way Insulated Bus Bar w/Test Point	15/25 kV	K656I-BUS	N3
	3-Way Insulated Bus Bar w/Test Point	15/25 kV	K656CY-BUS	N3
	4-Way Insulated Bus Bar w/Test Point	15/25 kV	K656CH-BUS	N3
	Straight Receptacle	15/25 kV	K655YSR-W0X Use Tables W7 and X6	N4, 8
	Direct Test Straight Receptacle Elbow	15/25 kV	K655YDSR-W0X Use Tables W7 and X6	N4, 8, 11
	Direct Test Straight Receptacle Elbow w/ Test Point	15/25 kV	K656YDSR-W0X Use Tables W7 and X6	N4, 8, 11
	Straight Receptacle Housing Only	15/25 kV	K655YBSR	N5, 10
	Insulated Ca w/ Bail	15/25 kV	K655YDR	
	Bail Only	15/25 kV	650BA	
	Cable Adapter	15/25 kV	655CA-W Use Table W7	
	Adapter Retaining Ring	15/25 kV	650ARR -X Use Table X6	
	Compression Lug	15/25 kV 15/25 kV	03700X N7 03702X N9 Use Table X6	N7 N9

Illustration (not to scale)	Description	Voltage Class	ELASTIMOLD Cat. No.	Notes
	600 Series Straight Receptacle Size Sensitive (Cable Adapter, Retaining Ring and Lug)	15/25 kV	655CK-W0X-ARR Use Tables W7 and X6	N8
	Insulating Plug w/ Test Point and Cap	15/25 kV	K650YBIP	
	Grounding Plug (4/0 AWG x 6' Ground Lead)	15/25 kV	650YGP	
	Grounding Cap (4/0 AWG x 6' Ground Lead)	15/25 kV	650GYDR	
	Stainless Steel Bolt and Washers	15/25 kV	650BAW	
	Assembly Disassembly Tool	ALL	600YADT-1 N6	N6
	Assembly Disassembly Tool	ALL	600RR T N6	N6

- N1. Complete Joint Packages consisting of: insulated bus bar; straight receptacle housings, retaining rings, cable size adapters, lugs, bolts and washers.
- N2. Housing Packages consisting of the following non-size sensitive components of the joint: insulated bus bar, straight receptacle housings, bolts and washers.
- N3. Insulated bus bar only.
- N4. Straight Receptacle consisting of: straight receptacle housing, retaining ring, cable adapter, lug, bolt and washers.
- N5. Straight receptacle housing consisting of: straight receptacle housing, bolt and washers.
- N6. Recommended for ease of assembly/disassembly of receptacles to Bus. 600 YADT is lever drive and 600RR T is screw drive.
- N7. Aluminum lug for use on aluminum or copper conductors. DO NOT substitute threaded 03600X lug.
- N8. Add suffix symbol from page A29 to include cable shield grounding kit and/or cable jacket sealing kit.
- N9. Copper lug for use with COPPER CONDUCTOR ONLY. DO NOT substitute threaded 03602X lug.
- N10. Available without the bolt and washers by adding "N" to the Cat. No.
- N11. Direct Test Connectors, along with a 200TC-X series meter adapter, a properly rated voltage meter and Hot-line Stick; provides a means for direct conductor voltage testing. See page A13 for meter adapters.

Refer to the W and X tables on pages A39 to A41 for sizing to cable insulation diameter and conductor size. For cable shield adapters and jacket seals, see page A30.

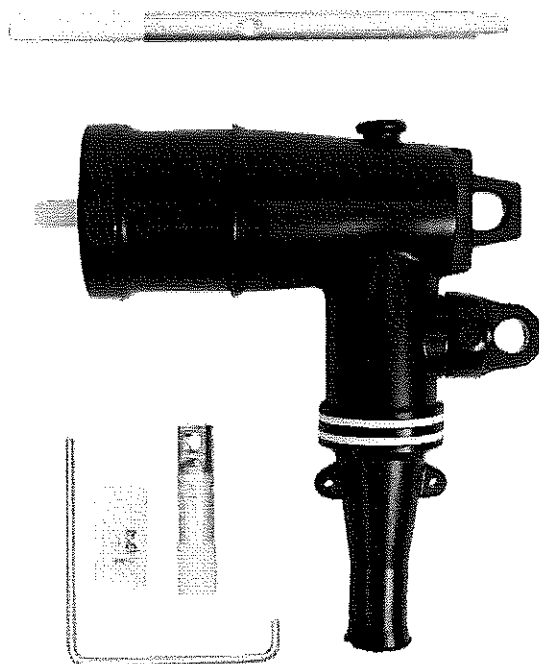


Product Specifications

ODOT 173000 OC 3 CPP
Field Verify Qty.

Issue Date: 07/25/2016
Page: 1 of 4
File: PSS-162LR-W5X

15kV	200A Loadbreak Elbow	w/ Test Point	162LR-W5X
------	----------------------	---------------	-----------



Features:

- 15kV, 200 Amp Loadbreak Elbow
- Fully shielded, fully submersible molded rubber housing
- 100% peroxide-cured construction includes insulation and conductive EPDM materials
- Provision for hot stick operation
- Provision for ground wire connection
- Wide cable range with minimum number of sizes
- Long bi-metal compression lug is standard
- Non-corrosive capacitive test point

162LR Loadbreak Elbow Connector

Applications:

The Elastimold® 162LR Elbow Connector is a fully rated 15kV, 200 Amp Class loadbreak connector. It includes provisions for energized operation using standard hotstick tools allowing loadmake/loadbreak operation and a visible disconnect. It has a standard interface for connecting to 15kV, 200 Amp bushing inserts, junctions, and operating accessories. The 162LR is designed for connecting to and operating 15kV Class, 200 Amp distribution apparatus. It provides a convenient method to connect/disconnect cable and equipment on power distribution systems. The 162LR allows the connection of cables with insulation diameters from .575" (14,6mm) to 1.220" (31,0mm) with only four elbow sizes. (#4 solid, 175 mil to 4/0 stranded, 260 mil)

Ratings:

Meets ANSI/IEEE Standard 386, Latest Revision

For 15kV Voltage Class:

8.3kV Max Phase-to-Ground – Operating Voltage
14.4kV Max Phase-to-Phase
95kV BIL – Impulse Withstand (1.2 x 50 microsecond wave)
34kV AC – One minute withstand
53kV DC – 15 minutes withstand
11kV AC – Corona Extinction @ 3pC sensitivity
200 Amp – Continuous and Loadbreak
10kA Sym – 10 Cycles Momentary & Fault Close

15kV	200A Loadbreak Elbow	w/ Test Point	162LR-W5X
------	----------------------	---------------	-----------

CATALOG NUMBER SELECTION

Step 1 (W)

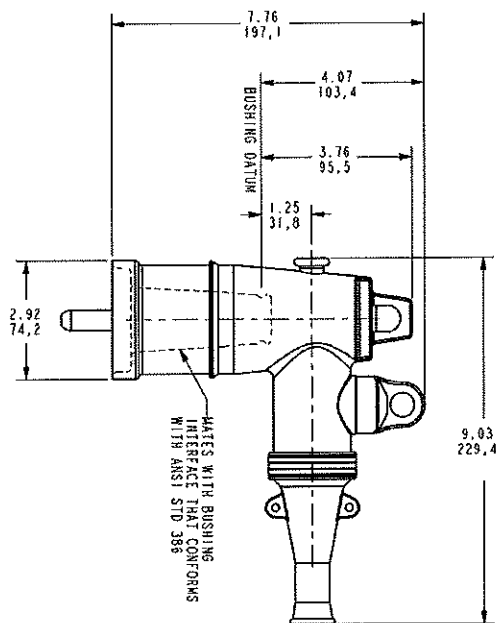
Determine the insulation diameter of the cable.
Select the insulation letter code that best straddles the insulation diameter from W table below. Insert code into catalog number.

Step 2

Insert conductor material code from the Material Code table.
Code 5 is standard.

Step 3 (X)

Choose the proper compression lug code according to the conductor size from the Conductor Code Table. Insert code into catalog number.



162LR -

Material Code	
2	Copper*
5	Bi-metal**

Cable Insulation Diameter in Inches		Cable Insulation Diameter in mm		Symbol for W
MIN.	MAX.	MIN.	MAX.	
0.575	0.740	14.61	18.80	A
0.635	0.905	16.13	22.99	B
0.805	1.060	20.45	26.92	C
0.890	1.220	22.61	30.99	D

Example:

The ordering number for an Elbow Connector for a 1/0 compressed/stranded, 220 mil wall cable with an insulation diameter of .805" to .895" and capacitive test point is 162LR-B5240.

Each kit contains the following:

1	Elbow connector housing	162BLR-W
1	Bi-metal compression lug	02500XXX
1	Probe	162LRF
1	Probe wrench	271-94
1	Tube, lubricant	82-08
1	Crimp chart	CC-0020
1	V.D Cap-Peroxide	156-7
1	Installation Instruction	IS-1378

XXX Code	Conductor Size AWG or kcmil			Connector only	
	Strand./ Compr.	Solid/ Comp.	mm ²	Bi-Metal	Copper
190	-	#4	16.76	02500190	02702190
200	#4	#3	21.14	02500200	02702200
210	#3	#2	26.67	02500210	02702210
220	#2	#1	33.62	02500220	02702220
230	#1	1/0	42.41	02500230	02702230
240	1/0	2/0	53.49	02500240	02702240
250	2/0	3/0	67.43	02500250	02702250
260	3/0	4/0	85.01	02500260	02702260
270	4/0	250	107.20	02500270	02702270

Notes:

* Copper compression lug suitable for all copper conductor only.

** Bi-metal compression lug with universal aluminum barrel suitable for copper or aluminum conductors.

15kV	200A Loadbreak Elbow	w/ Test Point	162LR-W5X
------	----------------------	---------------	-----------

IMPORTANT:

For safety purposes, a sealing & grounding kit with the loadbreak elbow is **HIGHLY RECOMMENDED**. Please choose from the sealing and grounding kit below:

**Jacket Concentric
Neutral Cable**

**Copper Tape
Shield Cable**

→ 200ECS

200ECSG3

For Jacketed Concentric Neutral Cables, the sealing kit part number will be: **200ECS** or add suffix "-S" to part number for cables with nominal O.D. within the range of .80"-1.50"

Example:

The ordering number for an Elbow Connector for a 1/0 compressed/stranded, jacketed concentric neutral, 220 mil wall cable with an insulation diameter of .805" to .895", overall cable diameter is 1.03" and capacitive test point is

162LR-B5240-S.

For installation instruction for the 200ECS, please see IS-459

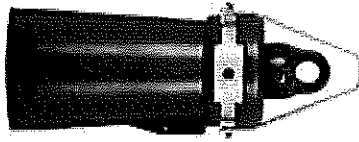
For Copper Tape Shield Cables, the sealing & grounding kit part number will be: **200ECS** or add suffix "-S" to part number for cables with nominal O.D. within the range of .80"-1.50"

Example:

The ordering number for an Elbow Connector for a 1/0 compressed/stranded, copper tape shield, 220 mil wall cable with an insulation diameter of .805" to .895", overall cable diameter is 1.05" and capacitive test point is

162LR-B5240-SG3.

For installation instruction for the 200ECSG3, please see IS-460



Actual

Catalog Number: K656DR
Product ID: 7TAA122230R0008
UPC Number: 78378663626
EAN Number: 05415022249347
Status: Active

600Amp, 15/25kV, 600 Series Deadbreak Insulated Cap with Test Point (with Stud)

North American Specifications (UNSPSC)

UNSPSC	26121630 Cable accessories
IGCC	1779 Cable accessories
Brand Name	Elastimold
Type	Insulated Cap
Special Features	15/28 kV, 600 Amp Deadbreak Rated. Molded EPDM Rubber. Provision for ground wire connection. Provision for hotstick operation.
Application	The insulated cap is designed to insulate, shield, and water seal 15/28kV, 600 Amp IEEE Std. 386 bushing interfaces. Units have a capacitance test point which can be used to check if the system is energized. A threaded stud attachment is standard.
Standard	ANSI/IEEE Standard 386
Size	3.13 inch (79.4 mm) Diameter of Cable Entrance, 8.31 inch (211.1 mm) Length
Material	EPDM Rubber

Packaging

Outer Quantity	1
Outer Dimensions (inches)	50
Weight Uom	1.9 lbs. Each

Documents / Support Tools

Technical Drawing / Data Sheet	Available on Website
Instruction Sheet	Available on Website
Catalog Canada	Available on Website

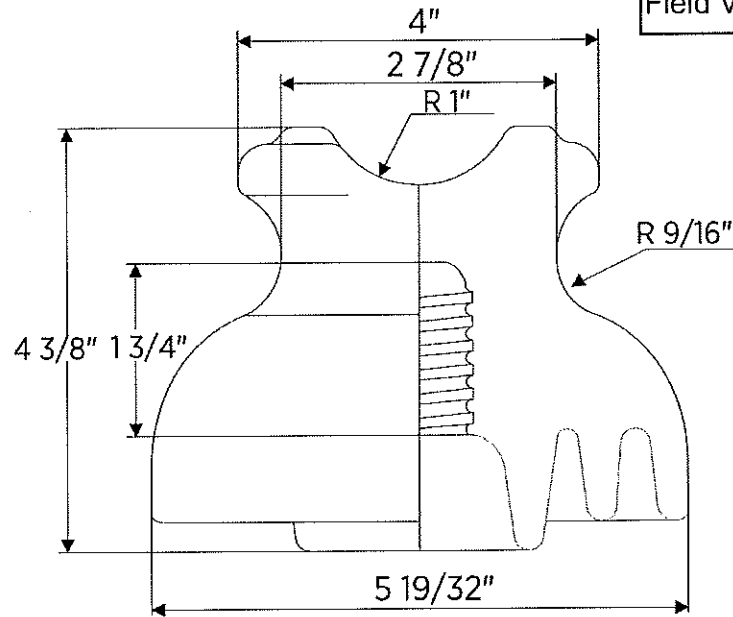
For further technical assistance, please contact us...

Thomas & Betts - USA
860 Ridge Lake Blvd.
Memphis, TN 38120
www.tnb.com

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MS 3B-50
860 Ridge Lake Blvd.
Memphis, TN 38120

Hours: 7AM - 6PM CDT
Monday-Friday
Phone: (888) 862-3289
Fax: (901) 252-1321
Email:techsupport@tnb.com

ODOT 173000 OC 3 CPP
Field Verify Qty.



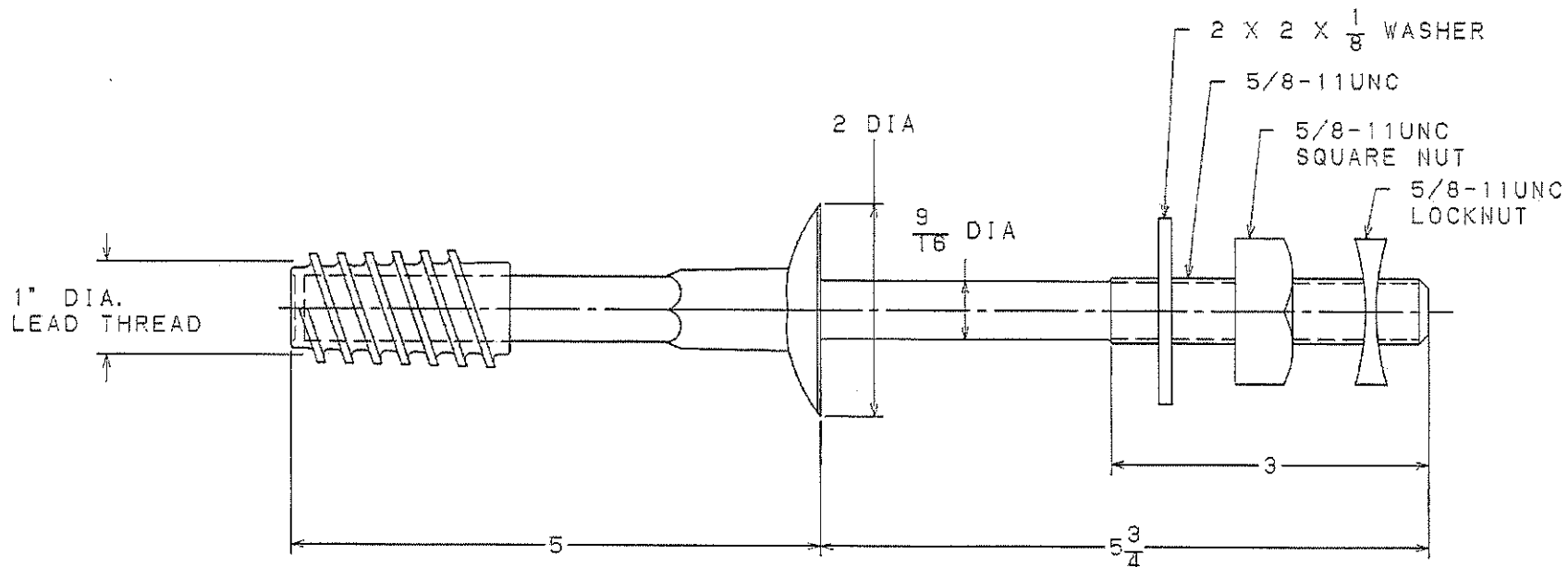
6183R-70

PORCELAIN PIN TYPE INSULATORS SUPPORTS TYPICAL APPLICATION VOLTAGE FROM 7.2 KV AND UP TO 34.5KV. MANUFACTURED AND DESIGNED COMPLYING WITH ANSI C29.5 STANDARD.

SKU	6183R-70
Rated Voltage (kV)	13.2kV
Mechanical Load (LB)	3000LB
Standard	ANSI ANSI 55-4
Leakage Distance (inches)	9.02inches
Arcing Distance (inches)	5inches
Product	DISTRIBUTION
Line	POLYMER INSULATORS
Type	SUSPENSION

Download this information in PDF (<https://gammainsulators.com/wp-content/uploads/2017/11/6183R-70.pdf>)

ODOT 173000 OC 3 CPP
Field Verify Qty.



==NOTE==

1. MATERIAL: STEEL, HOT DIP GALVANIZED PER ASTM A153 (LATEST REVISION) EXCEPT LEAD THREAD.

LATEST EC NO:		REV.	DATE	CHANGED BY	RESP ENGINEER
EC92073014		-	-----	---	ODOM
				DO NOT SCALE THIS DWG	THIRD ANGLE PROJECTION 180 DUAL DIMENSIONS IN=INCH, MM=MILLIMETER
DRN BY:	DATE	TITLE:		SIZE	
JOBE	08-11-82	LOW VOLTAGE FORGED STEEL PIN		B	
				DWG NO: SA881	

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ODOT 173000 OC 3 CPP
OH ACSR Wire - Multiple Sizes
Field Verify Qty.

ACSR – Aluminum Conductor Steel Reinforced

Code Word	Size (AWG or KCM)	STR (AL/STL)	Diameter (Inches)				Wt. per 1000 feet (lbs)			Content %		Rate Breaking Strength (lbs)	OHMS/1000ft		Rating (AMPS)
			Alum	Steel	Steel Core	Cable OD	Alum	Steel	Total	Alum	Steel		DC @ 20C	AC @ 75C	
Turkey	6	6/1	0.0661	0.0661	0.0661	0.198	24.5	11.6	36.1	67.9	32.1	1,190	0.641	0.806	105
Swan	4	6/1	0.0834	0.0834	0.0834	0.25	39	18.4	57.4	67.9	32.1	1,860	0.403	0.515	140
Swanate	4	7/1	0.0772	0.1029	0.1029	0.257	39	28	67	51.13	41.87	2,360	0.399	0.519	140
Sparrow	2	6/1	0.1052	0.1052	0.1052	0.316	62	29.3	91.3	67.9	32.1	2,850	0.254	0.332	164
Sparate	2	7/1	0.0974	0.1299	0.1299	0.325	62	44.7	106.7	58.13	41.87	3,640	0.251	0.338	184
Robin	1	6/1	0.1181	0.1181	0.1181	0.354	78.2	36.9	115.1	67.9	32.1	3,550	0.201	0.258	212
Raven	1/0	6/1	0.1327	0.1327	0.1327	0.398	98.7	46.6	145.3	67.9	32.1	4,380	0.149	0.217	242
Quail	2/0	6/1	0.1489	0.1489	0.1489	0.447	124.3	58.7	183	67.9	32.1	5,300	0.126	0.176	276
Pigeon	3/0	6/1	0.1672	0.1672	0.1672	0.502	156.7	74	230.7	67.9	32.1	6,620	0.1	0.144	315
Penguin	4/0	6/1	0.1878	0.1878	0.1878	0.563	197.7	93.4	291.1	67.9	32.1	8,350	0.0795	0.119	357
Waxwing	266.8	18/1	0.1217	0.1217	0.1217	0.609	250.3	39.2	289.5	86.45	13.55	6,880	0.0643	0.0787	449
Partridge	266.8	26/7	0.1013	0.0788	0.2364	0.642	251.7	115.6	367.2	68.53	31.47	11,130	0.0637	0.0779	475
Ostrich	300	26/7	0.1074	0.0835	0.2505	0.68	282.9	129.8	412.7	68.53	31.47	12,700	0.0567	0.0693	492
Merlin	336.4	18/1	0.1367	0.1367	0.1367	0.683	315.8	49.5	365.2	86.45	13.55	8,680	0.051	0.0625	519
Linnet	336.4	26/7	0.1137	0.1137	0.2642	0.72	317.1	145.4	462.5	68.53	31.47	14,100	0.0505	0.0618	529
Oriole	336.4	30/7	0.1059	0.1059	0.3177	0.741	318.2	208.9	527.1	60.35	39.65	17,800	0.0505	0.0613	535
Chickadee	397.5	18/1	0.1486	0.1486	0.1486	0.743	373.1	58.5	431.6	86.45	13.55	9,940	0.0432	0.0529	576
Brant	397.5	24/7	0.1287	0.0858	0.2574	0.772	375	137	512	73.23	26.77	14,500	0.043	0.0526	584
Ibis	397.5	25/7	0.1236	0.0961	0.2882	0.783	374.7	171.9	546.6	68.53	31.47	16,300	0.0428	0.0523	587
Lark	397.5	30/7	0.1151	0.1151	0.3453	0.806	375.8	246.8	622.6	60.35	39.65	20,300	0.0425	0.0519	594
Pelican	477	18/1	0.1628	0.1628	0.1628	0.814	447.8	70.2	518	86.45	13.55	11,800	0.036	0.0442	646
Flicker	477	24/7	0.141	0.094	0.282	0.846	450.1	164.4	614.5	73.23	26.77	17,200	0.0358	0.0439	655
Hawk	477	26/7	0.1354	0.1053	0.3159	0.858	449.6	205.4	655	68.53	31.47	19,500	0.0356	0.0436	659
Hen	477	30/7	0.1261	0.1261	0.3783	0.883	451.1	296.2	747.3	60.35	39.65	23,800	0.054	0.0433	666
Osprey	556.5	18/1	0.1758	0.1758	0.1758	0.879	522.2	81.8	604	86.45	13.55	13,700	0.0308	0.0379	711
Parakeet	556.5	24/7	0.1523	0.1015	0.3045	0.914	525.1	191.7	716.8	73.23	26.77	19,800	0.0307	0.0376	721
Dove	556.5	26/7	0.1463	0.1138	0.3414	0.927	525	241	766	68.53	31.47	22,500	0.0306	0.0375	726
Eagle	556.5	30/7	0.1632	0.1362	0.4086	0.953	526.3	245.6	871.9	60.35	39.65	27,800	0.0303	0.0372	734
Peacock	605	24/7	0.1588	0.1059	0.3177	0.953	570.4	208.7	779.6	73.23	26.77	21,600	0.0282	0.0346	760
Squab	605	26/7	0.1525	0.1186	0.3558	0.966	570.4	261.8	832.2	68.53	31.47	24,300	0.0281	0.0345	765
Wood Duck	605	30/7	0.142	0.142	0.426	0.994	582	375.6	947.6	60.35	39.65	28,900	0.0279	0.0342	774
Teal	605	30/19	0.142	0.0852	0.426	0.994	582	367.4	939.4	60.89	39.11	30,000	0.0278	0.0342	773
Kingbird	636	18/1	0.188	0.118	0.188	0.94	497.2	93.6	690.8	86.45	13.55	15,700	0.027	0.0342	773
Swift	636	36/1	0.1329	0.1329	0.1329	0.93	596.9	46.8	643.7	92.72	7.28	13,800	0.0271	0.0344	769
Rook	636	24/7	0.1628	0.1085	0.3255	0.977	600	219.1	819.1	73.23	26.77	22,600	0.0268	0.033	784
Grosbeak	636	26/7	0.1564	0.1216	0.3648	0.99	599.2	276.2	874.1	68.53	31.47	25,200	0.0267	0.0328	789
Scoter	636	30/7	0.1456	0.1456	0.4368	1.019	601.4	394.9	996.3	60.35	39.65	30,400	0.0256	0.0325	798
Egret	636	30/19	0.1456	0.0874	0.437	1.019	601.4	386.6	988	60.89	39.11	31,500	0.0266	0.0326	798

All values are nominal and subject to correction

* Current ratings based on 75°C conductor temperature, 25°C ambient, 2st wind, 96watts/sq. foot sun. 0.5 coefficients of emissivity and absorption

Application: Used as bare overhead transmission cable and as primary and secondary distribution cable. ACSR offers optimal strength for line design. Variable steel core stranding for desired strength without sacrificing ampacity.

Conductors: Aluminum alloy 1350-H119 wires, concentrically stranded around a steel core available with Class A, B or C galvanizing; aluminum coated (AZ); or aluminum-clad steel core (AL). Additional corrosion is available through the application of grease to the core or infusion of the complete cable with grease.

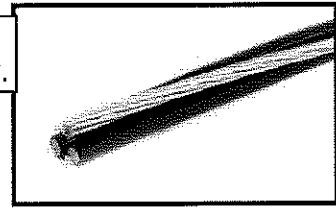
Standards: ACSR bare cable meets or exceeds the following ASTM specifications:
 B-230 Aluminum wire, 1350-H19 for Electrical Purposes
 B-231 Aluminum conductors, concentric lay stranded
 B-232 Aluminum conductors, concentric lay stranded, coated steel reinforced (ACSR)
 B-341 Aluminum coated steel core wire for aluminum conductors, steel reinforced (ACSR/AZ)
 B-498 Zinc coated steel core wire for aluminum conductors, steel reinforced (ACSR)
 B-500 Metallic coated stranded steel core for aluminum conductors, steel reinforced (ACSR)
 RUS ACCEPTED

1-800-945-5542

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ODOT 173000 OC 3 CPP
4/0 Triplex-Field Verify Qty.



Aluminum Triplex Overhead

Code Word	Phase Conductors			Bare Neutral Messenger			Weight (lbs) per 1000 ft.		Ampacity (Amps)	
	Size AWG	Strand	Insulation Thickness (mils)	Size AWG	*Strand	Breaking Strength (lbs)	XLP	Poly	XLP	Poly
FULL SIZE ACSR MESSENGER										
Paludina	6	Solid	45	6	6/1	1,190	114.0	113.0	85	70
Voluta	6	7/w	45	6	6/1	1,190	115.0	112.0	85	70
Whelk	4	Solid	45	4	6/1	1,860	163.0	161.0	110	90
Periwinkle	4	7/w	45	4	6/1	1,860	172.0	169.0	110	90
Conch	2	7/w	45	2	6/1	2,850	262.0	257.0	150	115
Neritina	1/0	7/w	60	1/0	6/1	4,380	420.0	414.0	200	155
Cenia	1/0	19/w	60	1/0	6/11	4,380	414.0	408.0	200	155
Runcina	2/0	7/w	60	2/0	6/1	5,310	519.0	512.0	230	180
Triton	2/0	19/w	60	2/0	6/1	5,310	511.0	505.0	230	180
Cherrystone	3/0	7/w	60	3/0	6/1	6,620	656.0	643.0	260	205
Mursia	3/0	19/w	60	3/0	6/1	6,620	633.0	626.0	260	205
Razor	4/0	7/w	60	4/0	6/1	8,350	814.0	799.0	300	235
Zuzara	4/0	19/w	60	4/0	6/1	8,350	785.0	777.0	300	235
Limpet	336	19/w	80	336	18/1	8,680	1161.0	1147.0	380	290
ACSR REDUCED SIZE MESSENGER										
Scallop	4	Solid	45	6	6/1	1,190	142.0	139.0	110	90
Strombus	4	7/w	45	6	6/1	1,190	151.0	148.0	110	90
Cockle	2	7/w	45	4	6/1	1,860	228.0	224.0	150	115
Janthina	1/0	7/w	60	2	6/1	2,850	367.0	360.0	200	155
Ranella	1/0	19/w	60	2	6/1	2,850	361.0	356.0	200	155
Cavolinia	2/0	7/w	60	1	6/1	3,550	452.0	444.0	230	180
Clio	2/0	19/w	60	1	6/11	3,550	444.0	437.0	230	180
Sanddollar	3/0	7/w	60	1/0	6/1	4,380	570.0	557.0	260	205
Aega	3/0	19/w	60	1/0	6/1	4,380	565.0	552.0	260	250
Cuttlefish	4/0	7/w	60	2/0	6/1	5,310	706.0	691.0	300	235
Cerapus	4/0	19/w	60	2/0	6/1	5,310	678.0	670.0	300	235
Cowry	336	19/w	80	4/0	6/1	8,350	1135.0	1093.0	380	290

All values are nominal and subject to correction

Application: Aluminum Triplex Overhead cable is designed for use to supply power from utility lines to the consumer weather head. For service at 600 volts or lower (phase to phase) at a conductor temperature of 75°C maximum.

Conductors: Aluminum Triplex Overhead cable has concentric strand or compressed 1350-H19 series aluminum conductor.

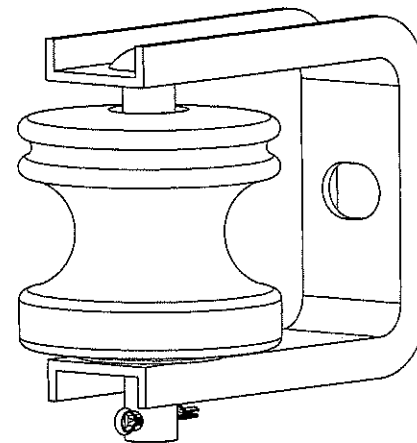
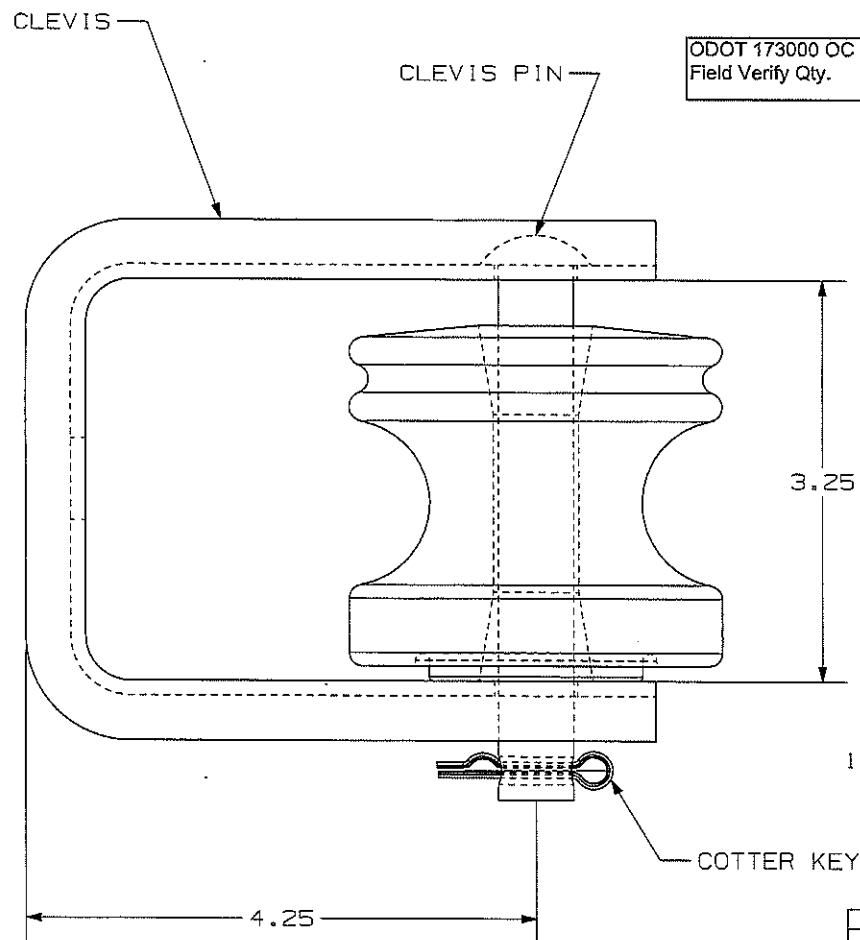
Messenger: Aluminum Triplex Overhead cable has a bare ACSR messenger. Optional constructions include a messenger of AAC or 6201 alloy.

Insulation: Aluminum Triplex Overhead cable has a black cross linked polyethylene (XLP) insulation. Polyethylene (PE) insulation available upon request.

Standards: ASTM B-230
ASTM B-231
ASTM B-232
ASTM B-399
ICEA S-76 - 474

1-800-945-5542

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CATALOG NUMBER
T2070085

==NOTES==

1. MATERIAL: STEEL. HOT DIP GALVANIZE PER ASTM A153.

LATEST EC NO:		REV.	DATE	CHANGED BY	RESP ENGINEER
---		-	-----	---	---
				DO NOT SCALE THIS DWG	THIRD ANGLE PROJECTION ISO DUAL DIMENSIONS IN=INCH, MM=MILLIMETER
DRN BY:	DATE	TITLE:		SIZE	
TNT	07/29/14	INSULATED CLEVIS		B	
				DWG NO: SA2070085	

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Product Data Sheet
Catalog Item (Mfg. Special)
140-23-9046

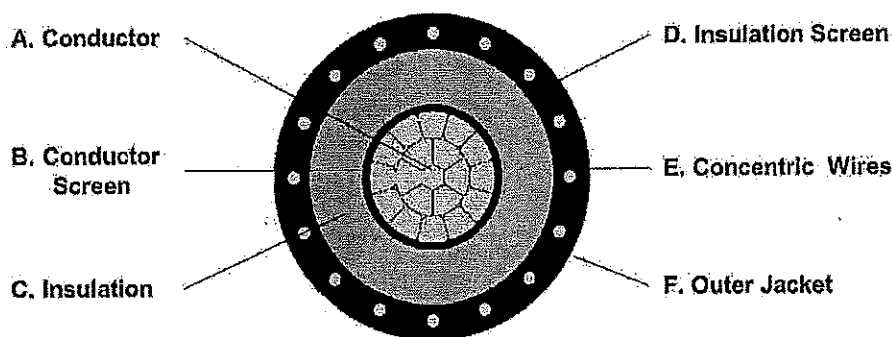
(*Replaces 140-23-9055)



1/C, 15kV Rated, 133% Insulation Level, URO-J

- A. CONDUCTOR: **4/0 AWG Compact Round Class B Strand Copper**
B. CONDUCTOR SCREEN: **Extruded Semiconducting (SC-EPR)**
C. INSULATION: **220 Extruded Ethylene Propylene Rubber OKOGUARD®**
D. INSULATION SCREEN: **Extruded Semiconducting (SC-EPR)**
E. CONCENTRIC WIRES: **18 x #14 AWG Bare Copper Concentric Wires (Third Neutral)**
F. JACKET: **050 Encapsulated OKOLENE® LLDPE (Linear Low Density Polyethylene) with 3-ERS**

ODOT 173000 OC 3 CPP
Non- Strand Filled
Field Verify Qty.



Dimensions	Thickness (in.)		Diameter (in.)			Cable Description	140-23-9046
	Nominal	Minimum Point		Nominal		1/C 4/0 CLASS B COPPER C-RD -SS- 220 OKOGUARD EPR -024 SC EPR - 18 X #14 COPPER CONC WIRES (THIRD NEUTRAL) - 050. OKOLENE PE W/3 RED STRIPES - SEQ. PRINT - 15KV TEMPERATURE RATINGS 105°C - Continuous, 140°C - Emergency 250°C - Short Circuit	
Conductor	N/A			0.478			
Cond. Screen	0.012	0.008		0.506			
Insulation	0.220	0.210		0.952			
Insul. Screen	0.027	0.024		1.019			
Conc. Neutral	0.0641			1.146			
Outer Jacket	0.050	0.045		1.256			
		Cable Weight (lbs./M'):		1367			



OKONITE CATALOG ITEM - MFG. SPECIAL

Industry Standards: **AEIC CS8-13 and ICEA S-94-649.**
CSA Listed to C68.5 as SR, LTGG (-40C).

APPROVED BY:	Okonite Product Code 140-23-9046			Date: 01/07/19
PREP. BY RWP 01/03/19 TDN	SCALE None	Catalog Page Section 2: Sheet 42	SERIAL NO. 81554	DRAWING NO. T - 43823
PRINT LEGEND: OKONITE (PLT) 4/0-AWG CPT CU OKOGUARD EPR 15KV 133% INSUL LEVEL 220 MILS 10SC UROJ PE INSUL JKT OR CSA LL39606 LTGG-SR (LIGHTING BOLT) (YEAR) (SEQUENTIAL NUMBER)				

<http://www.okonite.com/media/catalog/product/files/2-42.pdf>

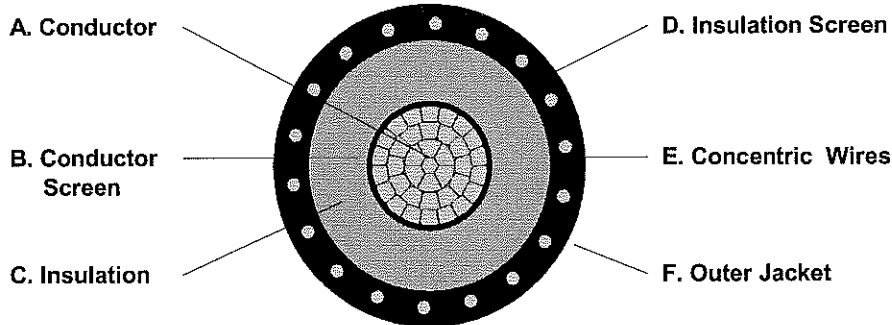
Cable Dimensions are Subject to Normal Manufacturing Tolerances.


Cable Image is representative and meant to display individual cable components and is not to scale.

1/C, 15kV Rated, 133% Insulation Level, URO-J

- A. CONDUCTOR: 500 kcmil Compact Round Class-B Strand Copper
- B. CONDUCTOR SCREEN: Extruded Semiconducting (SC-EPR)
- C. INSULATION: Extruded Ethylene Propylene Rubber OKOGUARD®
- D. INSULATION SCREEN: Extruded Semiconducting (SC-EPR)
- E. CONCENTRIC WIRES: 18 x #10 AWG Bare Copper Concentric Wires (One Third Neutral)
- F. OUTER JACKET: Encapsulated OKOLENE® LLDPE (Linear Low Density Polyethylene) with 3-ERS

ODOT 173000 OC 3 CPP
 Non-Strand Filled
 Field Verify Qty



Dimensions	Thickness (in.)		Diameter (in.)			Cable Description
	Nominal	Minimum Point		Nominal		1/C 500 CLASS B COPPER C-RD -SS- 220 OKOGUARD EPR - 024 SC EPR - 18 X #10 SOLID COPPER CONC WIRES - 050 OKOLENE PE W/3 RED STRIPES - SEQ. PRINT - 15KV TEMPERATURE RATINGS 105C - Continuous, 140C - Emergency 250C - Short Circuit
Conductor	N/A			0.736		
Cond. Screen	0.015	0.012		0.767		
Insulation	0.220	0.210		1.213		
Insul. Screen	0.027	0.024		1.281		
Conc. Neutral	0.1019			1.483		
Outer Jacket	0.050	0.045		1.593		
Cable Weight (lbs./M'): 2793						

OKONITE CATALOG ITEM - MFG. SPECIAL

Industry Standards: AEIC CS8-13 and ICEA S-94-649.

APPROVED BY:	Okonite Product Code 140-23-9087			Date: 5/26/2015
PREP. BY: CMJ 04/28/15	SCALE None	Catalog Page Section 2: Sheet 42	SERIAL NO. 79891	DRAWING NO. T - 23493

http://www.okonite.com/Product_Catalog/

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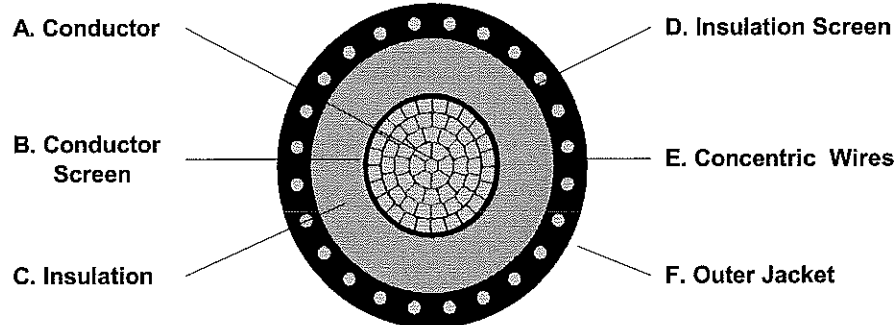
Nominal Dimensions are Subject to Normal Manufacturing Tolerances.


www.okonite.com

1/C, 15kV Rated, 133% Insulation Level, URO-J

- A. CONDUCTOR: 750 kcmil Compact Round Class B Strand Copper
- B. CONDUCTOR SCREEN: Extruded Semiconducting (SC-EPR)
- C. INSULATION: 220 Extruded Ethylene Propylene Rubber OKOGUARD®
- D. INSULATION SCREEN: Extruded Semiconducting (SC-EPR)
- E. CONCENTRIC WIRES: 24 x .1021 AWG Bare Copper Concentric Wires (Third Neutral)
- F. JACKET: 080 Encapsulated OKOLENE® LLDPE (Linear Low Density Polyethylene) with 3-ERS

ODOT 173000 OC 3 CPP
 Non-Strand Filled
 Field Verify Qty.



Dimensions		Thickness (in.)		Diameter (in.)		Cable Description	140-23-9096
	Nominal	Minimum Point		Nominal		1/C 750 CLASS B COPPER C-RD -SS- 220 OKOGUARD EPR - 024 SC EPR - 24 X .1021 SOLID COPPER CONC WIRES - 080 OKOLENE PE W/3 RED STRIPES - SEQ. PRINT - 15KV TEMPERATURE RATINGS 105C - Continuous, 140C - Emergency 250C - Short Circuit	
Conductor	N/A			0.908			
Cond. Screen	0.020	0.016		0.944			
Insulation	0.220	0.210		1.390			
Insul. Screen	0.027	0.024		1.458			
Conc. Neutral	0.1021			1.662			
Outer Jacket	0.080	0.070		1.836			
		Cable Weight (lbs./M'):		3931			

OKONITE CATALOG ITEM - MFG. SPECIAL

Industry Standards: AEIC CS8-13 and ICEA S-94-649.

APPROVED BY:	Okonite Product Code 140-23-9096			Date: 01/20/16
PREP. BY RWP 03/26/15	SCALE None	Catalog Page Section 2: Sheet 42	SERIAL NO. 77423	DRAWING NO. T - 22846

http://www.okonite.com/Product_Catalog/

Cable Image is representative and meant to display individual cable components and is not to scale.

Nominal Dimensions are Subject to Normal Manufacturing Tolerances.

www.okonite.com

TRANSMITTAL #2.3 CPP

419/ 837-2015 Fax

() Product Literature
() Certified Test Report
() Other

George Oualle

ODOT 173000 OC 3 CPP Manhole Racking Materials

HUBBELL
Power Systems, Inc.

For sales and support visit:
hubbellpowersystems.com/contact/

Home > Products > Pole Line Hardware > Manhole, Vault & Underground Hardware > Racking, Underground Cable > Nob-Loc Racking

Nob-Loc Racking

Cable Racks and Supports

Nob-Loc Racks DU1B Series

Manufactured from 3/8" x 1-3/4" steel.
 Can accommodate from one to 13 supports. Nob-Loc type supports are interchangeable on DU1B Series racks. Order supports separately (see below).

Cable Racks

Catalog Number	Number of Holes for Support Hooks	Overall Length	Mounting Hole Spacing	Support Hook Spacing	Approx. Ship Wt. per Each
DU1B1	1	14-3/4"	13"	N/A	2.80 lbs.
DU1B3	3	28-3/4"	27"	7"	5.20 lbs.
DU1B4	4	35-3/4"	34"		6.60 lbs.
DU1B28	5	28-3/4"	27"	3-1/2"	5.20 lbs.
DU1B29	9	42-3/4"	41"		7.60 lbs.
DU1B10	11	34-7/8"	33-1/8"	2"	6.00 lbs.
DU1B30	13	56-3/4"	55"	3-1/2"	10.00 lbs.

Click on Catalog Number to view sales drawing
 ANSI Standard, C135.35

Nob-Loc Supports DU1S Series

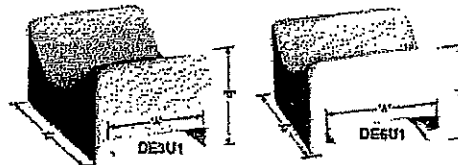
Use DE3U1 or DE6U1 insulators; order separately.

Cable Rack Support Hooks

Catalog Number	Length from Face of Rack	Maximum Number of Insulators	ANSI Load Rating	Approx. Ship Wt. per Each
DU1S1	3-7/8"	1	400 lbs.	1.36 lbs.
DU1S2	7-7/8"	2		2.20 lbs.
DU1S3	11-7/8"	3	300 lbs.	2.96 lbs.
DU1S4	14-7/8"	4	200 lbs.	3.60 lbs.

Click on Catalog Number to view sales drawing
 ANSI Standard, C135.35

Cable Support Insulators



High-grade electrical porcelain insulators with rounded corners and edges prevent cable-sheath damage.

Cable Rack Insulator Pads Porcelain, Dry Process

Catalog Number	Length	Width	Radius	Approx. Ship Wt. per Each
DE3U1	4"	2 13/16"	2 1/16"	1.12 lbs.
DE6U1	3"	2 13/16"	1 7/16"	0.74 lbs.

Click on Catalog Number to view sales drawing
 ANSI Standard, C135.35



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Underground Cable Racking

NOB-LOC TYPE

- Manufactured from $\frac{3}{8}$ " x $1\frac{3}{4}$ " steel.
- Can accommodate from 1 to 13 supports.
- Nob-Loc type supports are interchangeable on DU1B Series racks.
- Order support hooks separately.

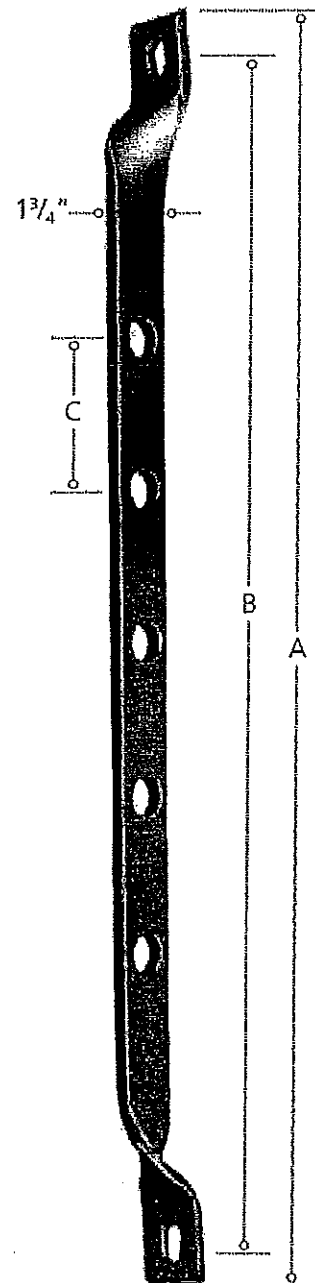
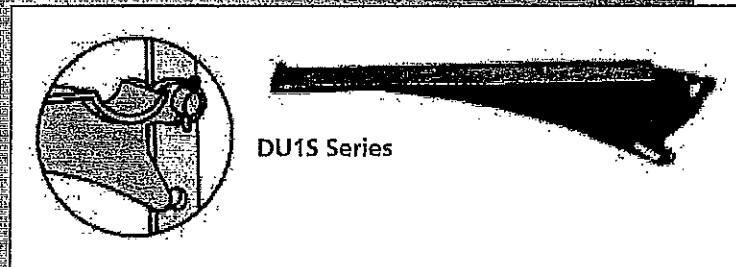
Racking					
Catalog Number	Number of Support Holes	Dimensions Inches			Approx Ship Wt lb Per Each
		A	B	C	
DU1B1 ⁽¹⁾	1	14 $\frac{3}{4}$	13	—	2.80
DU1B3	3	28 $\frac{3}{4}$	27	7	5.20
DU1B4	4	35 $\frac{3}{4}$	34	7	6.60
DU1B10 ⁽¹⁾	11	34 $\frac{3}{4}$	33 $\frac{3}{4}$	2	6.00
DU1B28 ⁽¹⁾	5	28 $\frac{3}{4}$	27	3 $\frac{1}{2}$	5.20
DU1B29 ⁽¹⁾	9	42 $\frac{3}{4}$	41	3 $\frac{1}{2}$	7.60
DU1B30 ⁽¹⁾	13	56 $\frac{3}{4}$	55	3 $\frac{1}{2}$	10.00

(1) ANSI/NEMA standard.

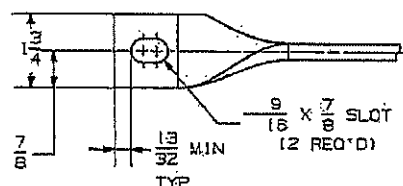
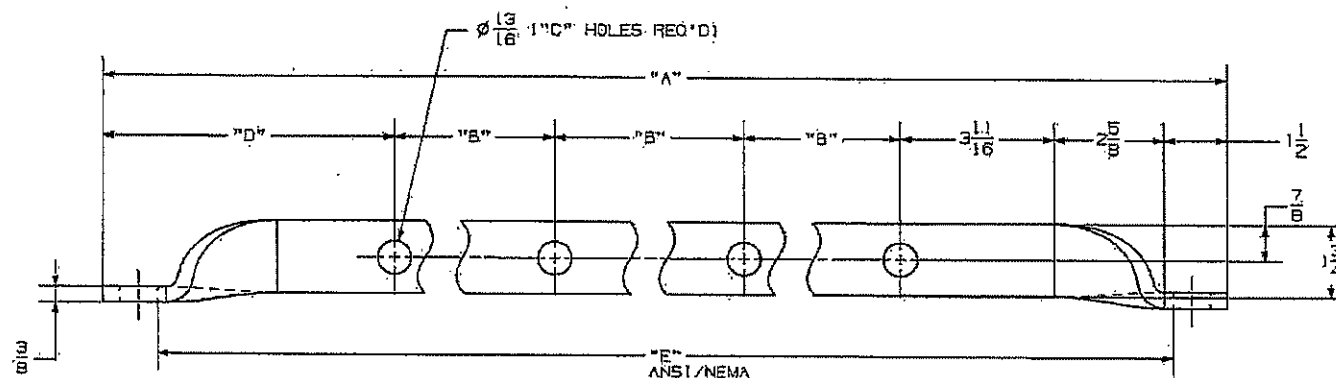
NOTE: Use DE3U1 or DE6U1 insulators; order separately.

Support Hooks			
Catalog Number	Length Inches	Accommodates Number of Insulators	Approx Ship Wt lb Per Each
DU1S1 ⁽¹⁾	3 $\frac{3}{4}$	1	1.36
DU1S2 ⁽¹⁾	7 $\frac{3}{4}$	2	2.20
DU1S3 ⁽¹⁾	11 $\frac{3}{4}$	3	2.96
DU1S4 ⁽¹⁾	14 $\frac{3}{4}$	4	3.60

(1) ANSI/NEMA standard.



DU1B Series



-NOTES-

1. MATERIAL: 3/8" X 1 3/4" X .LG.
ASTM A663, GR. 55 PER DZ33A
ALT. MAT'L: DZ31A, Z2A, M1008
2. FINISH: HOT DIP GALVANIZE PER
ASTM A153 (LATEST REV).

"A"	"B"	"C"	"D"	"E"	CATALOG NUMBER	PART NAME
14 3/4	N/A	1	6 7/16	13	DU1B1	UNDERGROUND RACK
21 3/4	7	2	6 7/16	20	DU1B2	UNDERGROUND RACK
28 3/4	7	3	6 7/16	27	DU1B3	UNDERGROUND RACK
35 3/4	7	4	6 7/16	34	DU1B4	UNDERGROUND RACK
42 3/4	7	5	6 7/16	41	DU1B6	UNDERGROUND RACK
34 3/4	2	11	6 7/16	33 1/8	DU1B10	UNDERGROUND RACK
29 3/4	8 5/8	3	4 1/4	28	DU1B16	UNDERGROUND RACK
38 3/4	8 5/8	4	4 1/4	37	DU1B17	UNDERGROUND RACK
28 3/4	3 1/2	5	6 7/16	27	DU1B28	UNDERGROUND RACK
42 3/4	3 1/2	9	6 7/16	41	DU1B29	UNDERGROUND RACK
56 3/4	3 1/2	13	6 7/16	55	DU1B30	UNDERGROUND RACK

LATEST EC NO		REV.	DATE	CHANGED BY	RESP. ENGINEER
47043		-	-----	-----	-----
DO NOT SCALE THIS DWG				THIRD ANGLE PROJECTION	
DRN BY: DATE				TITLE	
BERGER 09-20-12				UNDERGROUND RACK	
HUBBELL				CHANCE	
Dwg No:				SADU1B	

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