

0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

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GENERAL NOTES

RAILROAD OPERATIONS

1. THE CONTRACTOR'S WORK SHALL NOT INTERRUPT THE OPERATIONS OF THE TRANSIT AGENCY WITHOUT PRIOR APPROVAL OF THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY (GCRTA).

OVERHEAD CONTACT SYSTEMS

1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL MATERIALS AND CONSTRUCTION AS NOTED, INCLUDING DEMOLITION, FOUNDATION CONSTRUCTION, POLE AND ARM ERECTION, GUY INSTALLATION, FEEDER CABLE INSTALLATION, MESSENGER CABLE INSTALLATION AND CONTACT WIRE INSTALLATION. THE CONTRACTOR WILL REMOVE THE EXISTING MESSENGER AND CONTACT WIRES, WHICH SHALL OCCUR PRIOR TO TRACK REMOVAL IN THE AREA. THE AUTHORITY WILL TEST ALL NEW AND EXISTING MESSENGER AND CONTACT WIRES. CONTRACTOR IS TO PROVIDE AT LEAST TEN (10) WORKING DAY NOTICE PRIOR TO ANY NECESSARY AUTHORITY WORK AND ALLOW SUFFICIENT TIME, AS COORDINATED WITH THE AUTHORITY, FOR THAT WORK TO TAKE PLACE.
2. IN ADDITION TO POLES REMOVED FOR CONSTRUCTION, ADDITIONAL POLES THAT ARE CURRENTLY NOT IN USE HAVE BEEN NOTED FOR REMOVAL. THESE POLES MAY BE REMOVED AT ANY TIME DURING THE CONSTRUCTION WITH THE APPROVAL OF THE AUTHORITY.
3. OVERHEAD CONTACT SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE TO GCRTA STANDARDS.
4. REFER TO BU-17A FOR ADDITIONAL INFORMATION.

FOUNDATIONS

1. FOR NOTES ON STEEL POLE FOUNDATIONS SEE SHEET 32.
2. FOR NOTES ON CONCRETE DOWN GUY ANCHORS SEE SHEET 33.
3. FOR NOTES ON TIMBER POLE DOWN GUY ANCHORS SEE SHEET 34.

STEEL

1. FOR NOTES ON STEEL CATENARY POLES SEE SHEET 30.

TIMBER

1. FOR NOTES ON TIMBER CATENARY POLES SEE SHEET 31.

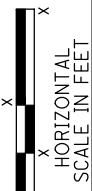
SUGGESTED CONSTRUCTION SEQUENCE

1. REMOVE EXISTING CATENARY AND FOUNDATIONS AS SHOWN.
2. REMOVE EXISTING TRACK (NOT IN THIS BU).
3. INSTALL NEW TRACK (NOT IN THIS BU).
4. INSTALL NEW FOUNDATIONS.
5. INSTALL NEW POLES AND ADJUST FEEDERS (SEE SHEETS 6 TO 15 FOR OCS LAYOUT PLANS).
6. INSTALL NEW CATENARY AND CUT OVER.

ABBREVIATIONS

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
°	DEGREE(S)
'	FOOT or FEET or MINUTE(S)
"	INCH or INCHES or SECOND(S)
%	PERCENT
#	POUND or NUMBER
Δ	CENTRAL ANGLE OF CIRCULAR CURVE
AP	ANGLE POINT
AVE	AVENUE
BC	BEGINNING OF CURVE
BLVD	BOULEVARD
BM	BENCHMARK
CB	CATCH BASIN
CC	CENTER OF CURVE
CIP	CAST IRON PIPE or CAST IN PLACE
C/L	CENTERLINE
CLR	CLEAR
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
CP	CONTROL POINT
COMM	COMMUNICATION LINE
CORR	CORRUGATED
CS	CURVE TO SPIRAL
CT	CONCRETE TIES
DC	DEGREE OF CURVE
DESC	DESCRIPTION
Ea	SUPERELEVATION, ACTUAL
E	EAST or EASTERLY or EASTING
EC	END OF CURVE
EF	EACH FACE
EL or ELEV	ELEVATION
EQ	EQUAL or EQUATION
EQNAHD	EQUATION AHEAD
EQNBK	EQUATION BACK
EW	EACH WAY
Eu	SUPERELEVATION, UNBALANCED
EX or EXIST	EXISTING
ESMT	EASEMENT
F	FREIGHT
FH	FIRE HYDRANT
FL	FLOWLINE
FS	FINISHED SURFACE
FT	FOOT or FEET
G	GRADE
GRD	GROUND
GV	GAS VALVE
HGL	HYDRAULIC GRADE LINE
HORIZ	HORIZONTAL
HP	HIGH POINT or HIGH PRESSURE
HWY	HIGHWAY
INV	INVERT



CALCULATED
LWH
CHECKED
JWA

GCRTA WYE TEST TRACK
GENERAL NOTES

CUY-IR490 / SR010-
2.09 / 19.28

1 / 36

3
38

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0	2019-11-04	RFC
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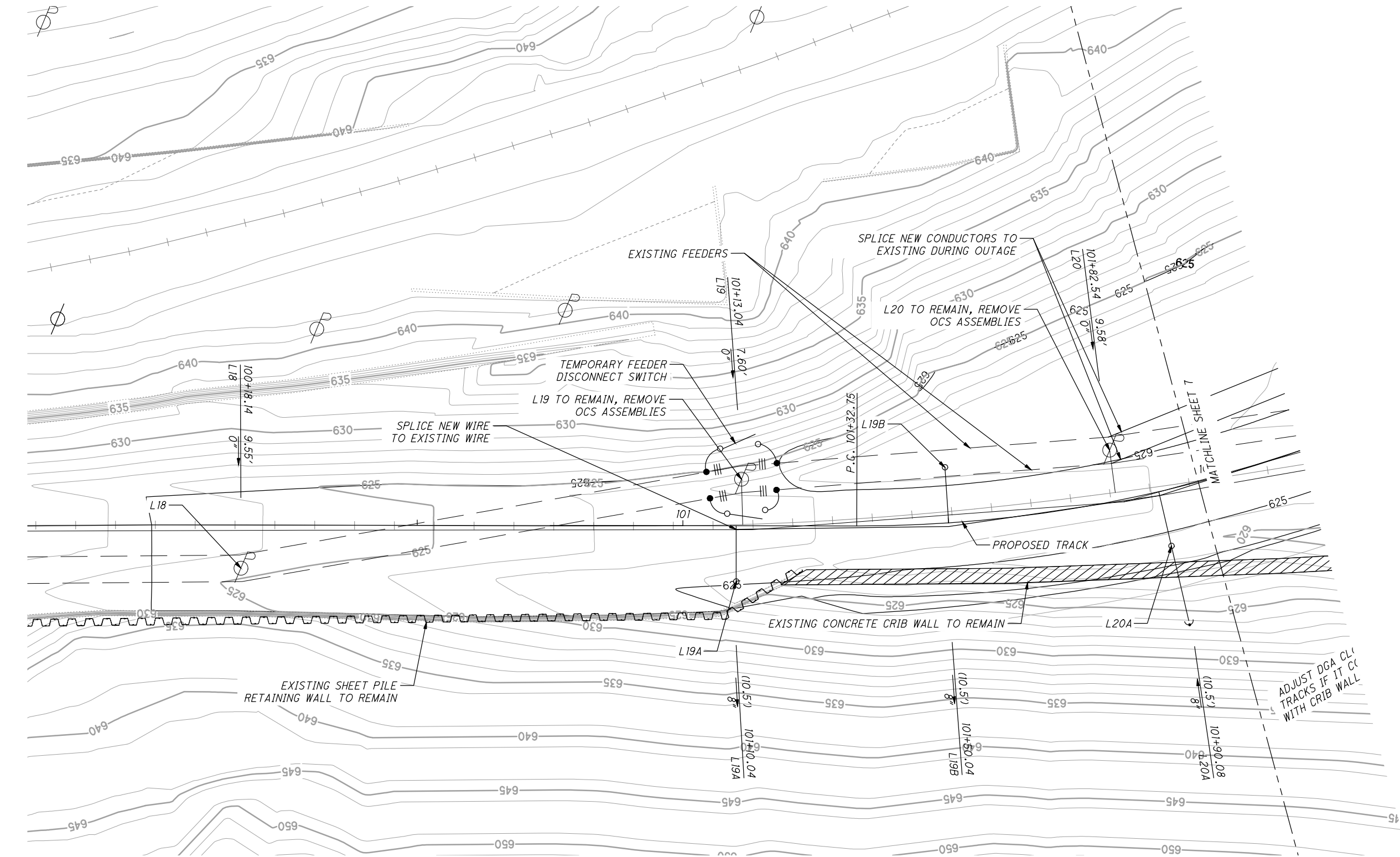
RECORD PLANS

RECORD PLANS

RECORD PLANS

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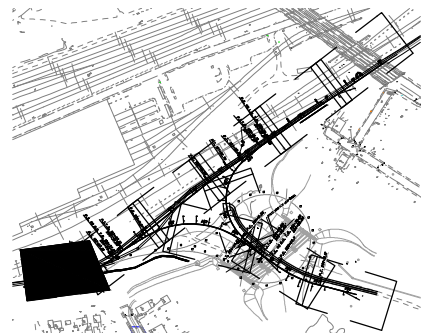
GCRTA WYE TEST TRACK
OCS LAYOUT PLAN

LEGEND

- NEW POLE
- ⊙ EXISTING POLE TO REMAIN
- ⊙ EXISTING POLE TO BE REMOVED
- ⌒ NEW DOWN GUY ANCHOR (DGA)

PROPOSED FEEDER WORK:

1. INSTALL NEW POLES L21A, YC1, YC2, L23B, AND YC3. NO OUTAGE REQUIRED.
2. INSTALL NEW FEEDERS. NO OUTAGE REQUIRED.
3. CUT OVER AT L20 AND 151.
4. REMOVE EXISTING FEEDERS.
5. INSTALL NEW POLES YC6 AND YC7 WITH OUTAGE. PROVIDE TEMPORARY SUPPORT FOR EXISTING FEEDERS.
6. INSTALL NEW FEEDERS.
7. CUT OVER AT 153A AND 155.
8. REMOVE EXISTING FEEDERS.
9. INSTALL NEW POLE YC8 WITH OUTAGE. PROVIDE TEMPORARY SUPPORT FOR EXISTING FEEDER.
10. INSTALL NEW FEEDERS AND CUT OVER 155 AND 156.



KEY PLAN

NO.	DATE	DESCRIPTION	ISSUE RECORD
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2.09 / 19.28

4 / 36

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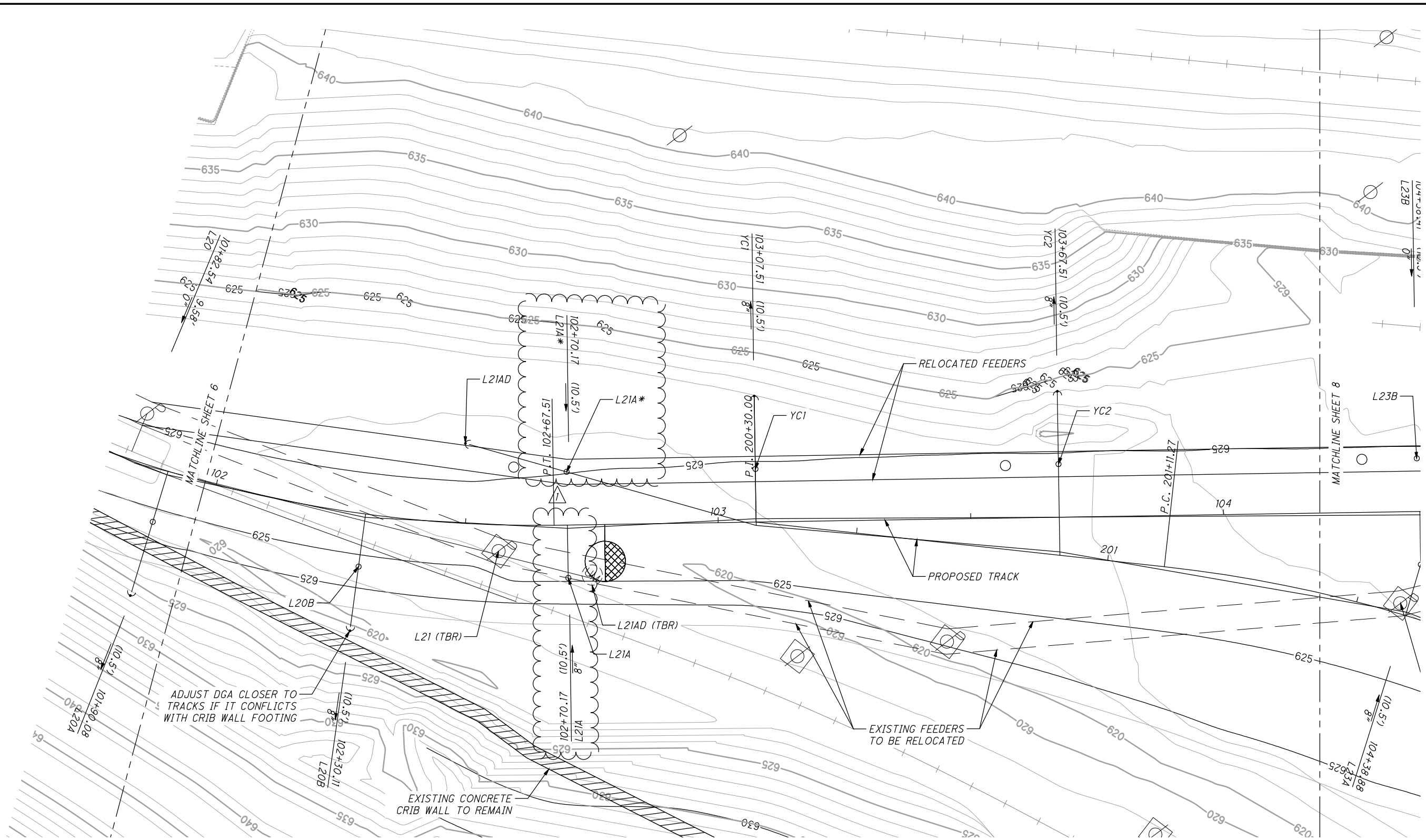
GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 1

RECORD PLANS

RECORD PLANS



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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN

LEGEND

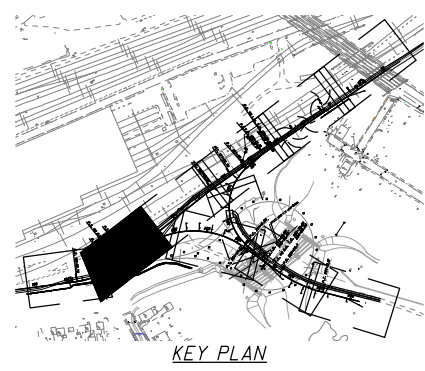
NEW POLE

EXISTING POLE TO REMAIN

EXISTING POLE TO BE REMOVED

NEW DOWN GUY ANCHOR (DGA)

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CALCULATED
LWH

CHECKED
JWA

0 5 10

2.5

HORIZONTAL
SCALE IN FEET

GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 2

RECORD PLANS

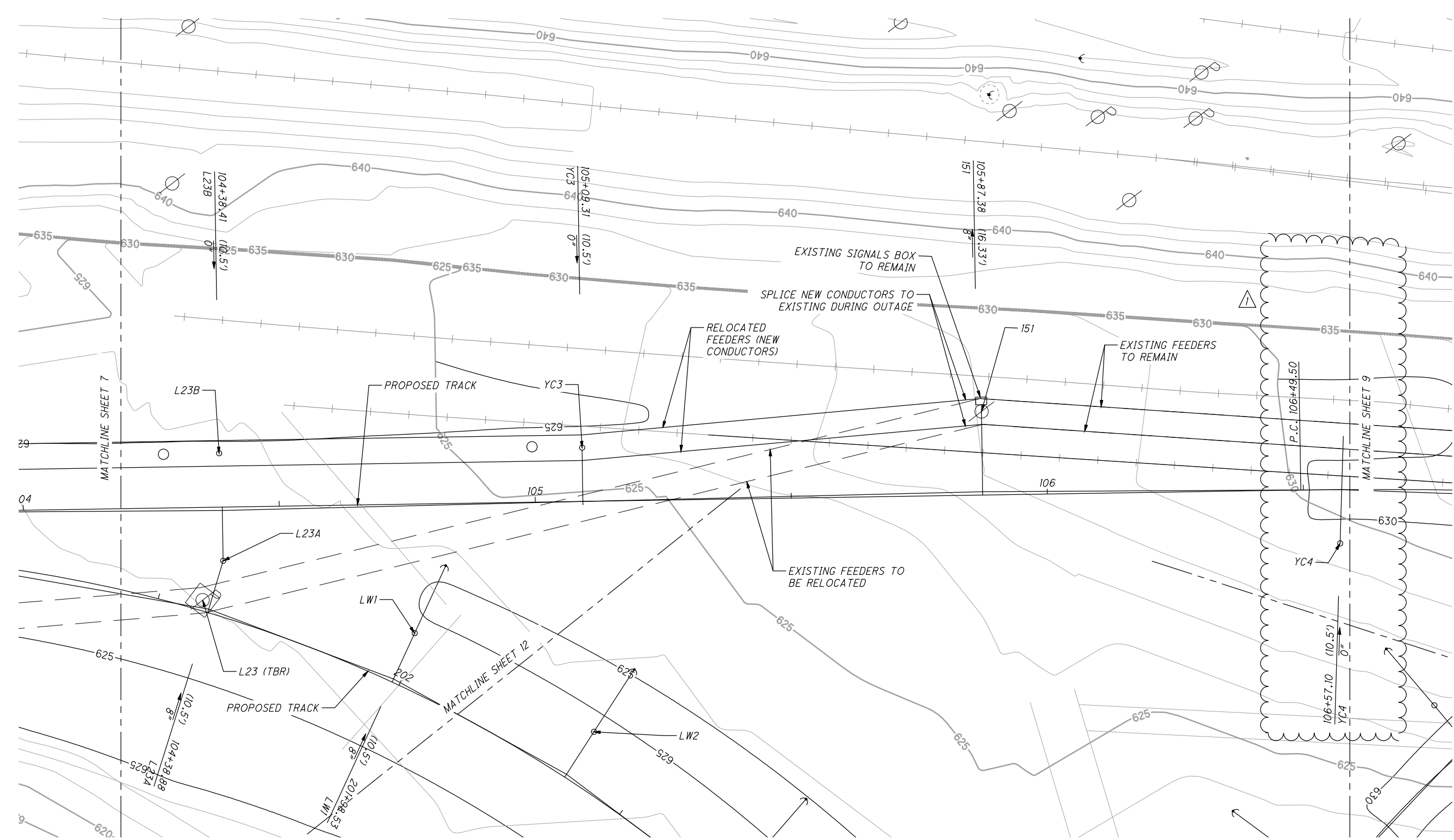
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RECORD PLANS

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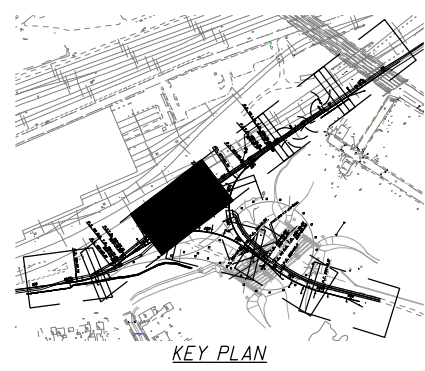
GCRTA WYE TEST TRACK
OCS LAYOUT PLAN

LEGEND

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10. INSTALL NEW FEEDERS AND CUT OVER 155 AND 156.



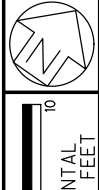
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ISSUE RECORD		

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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 3

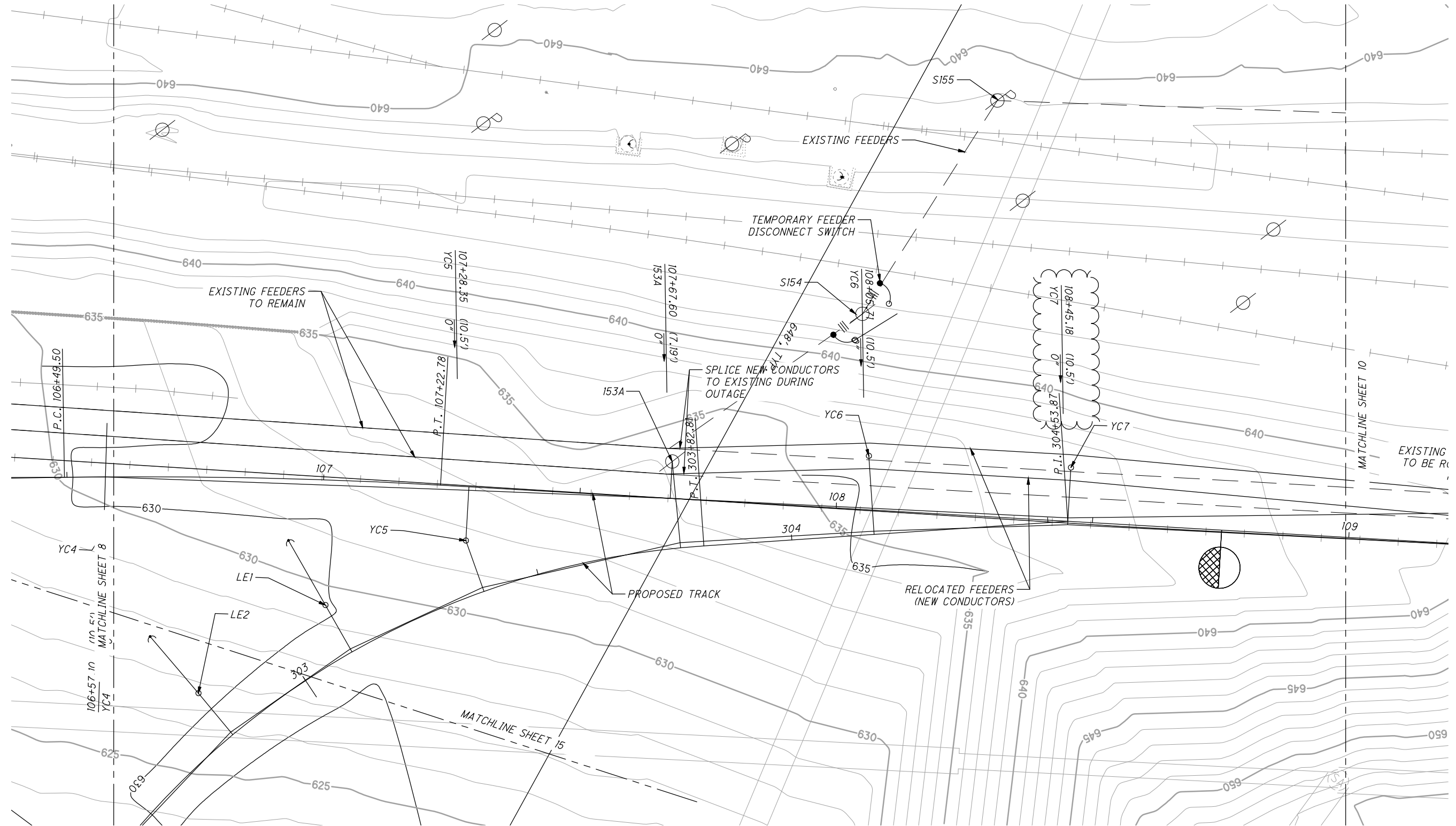
RECORD PLANS
RECORD PLANS



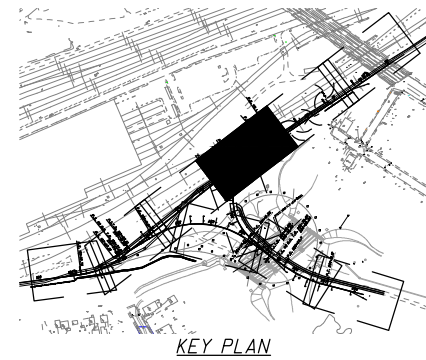
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- LEGEND**
- NEW POLE
 - ⊙ EXISTING POLE TO REMAIN
 - ⊙ EXISTING POLE TO BE REMOVED
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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN



KEY PLAN

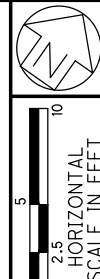
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ISSUE RECORD		

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2.09 / 19.28

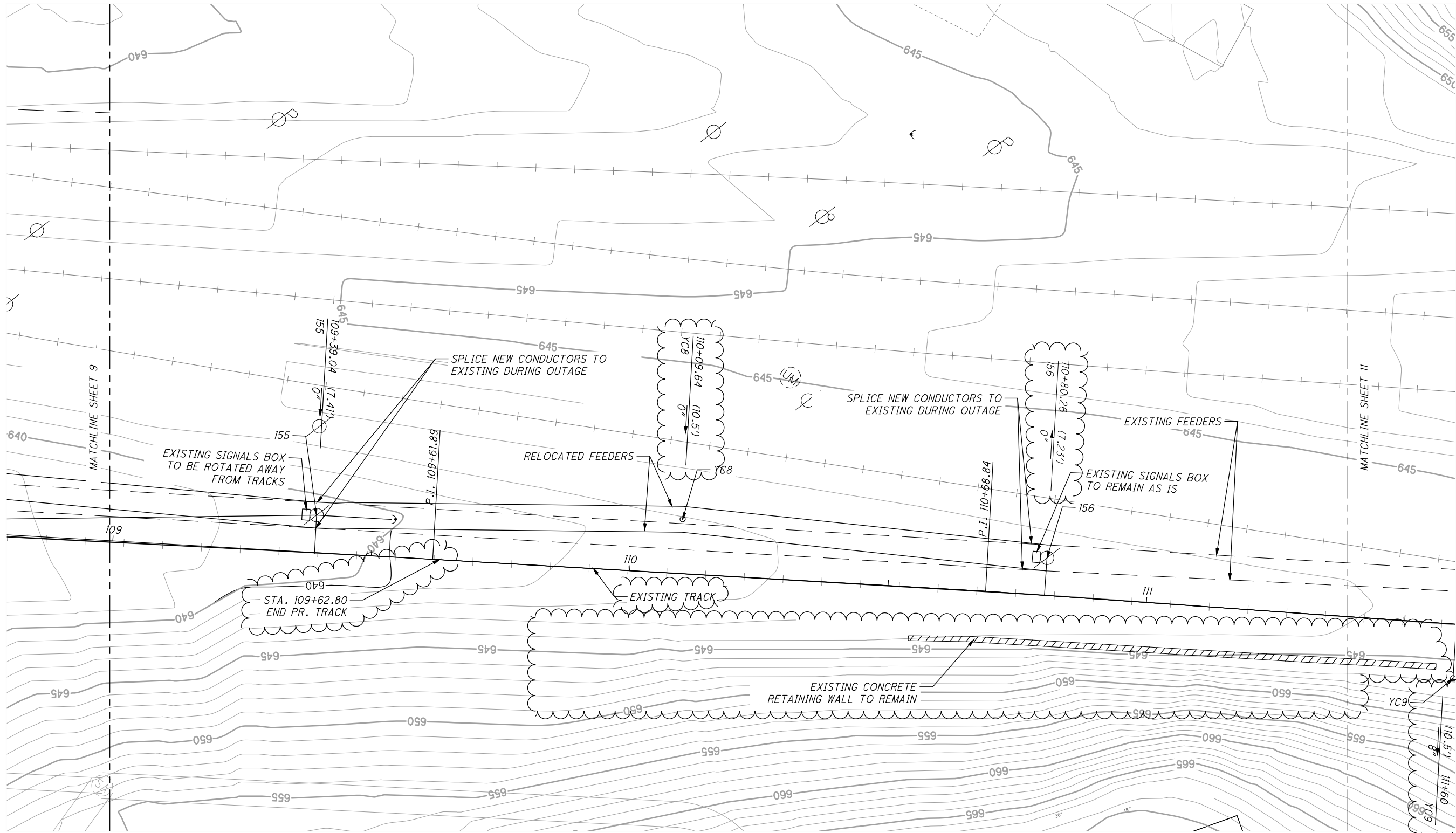
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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 4

RECORD PLANS
RECORD PLANS



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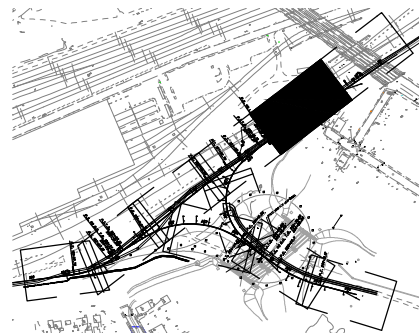


LEGEND

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- ⊙ EXISTING POLE TO BE REMOVED
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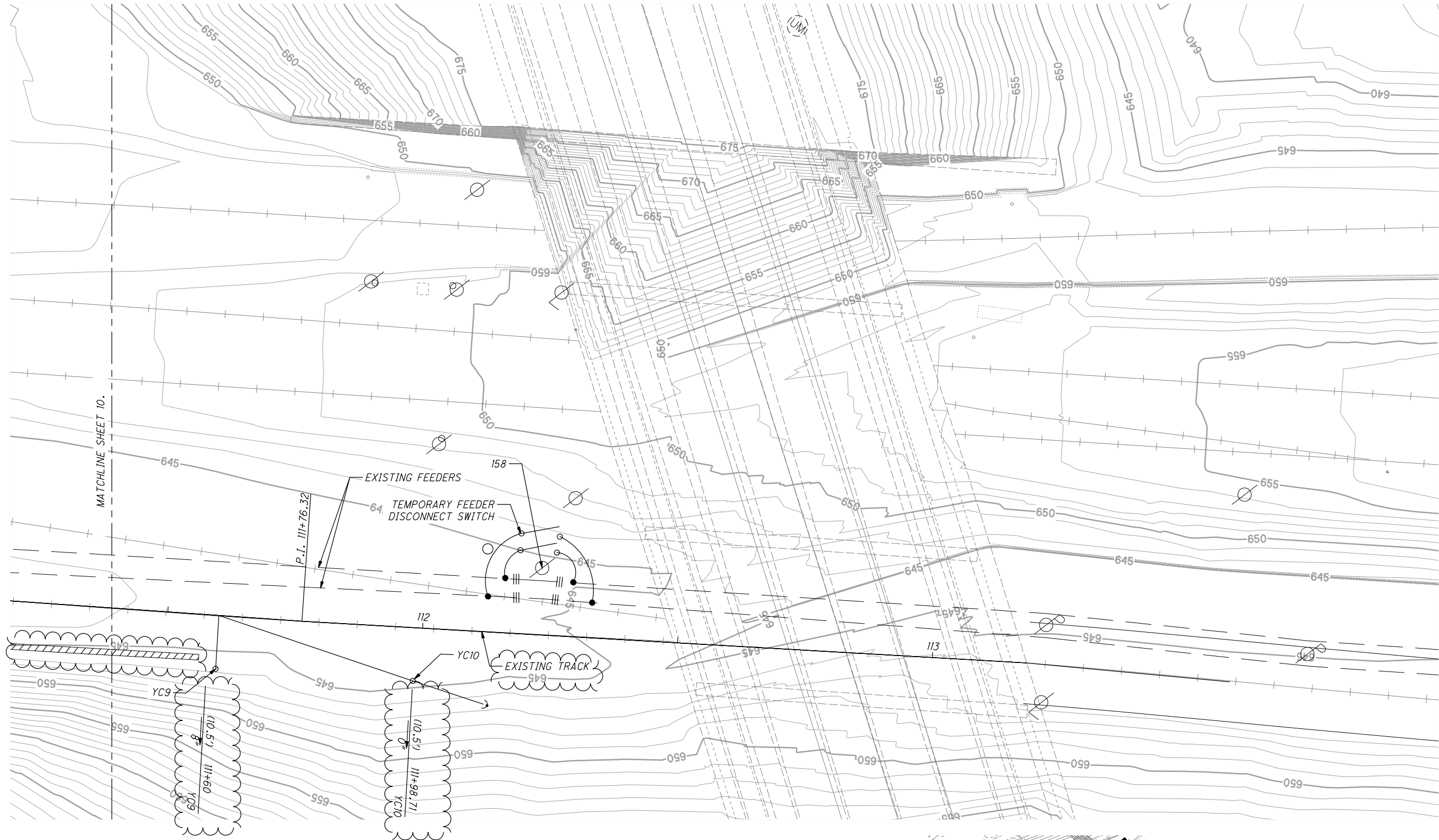
GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 5

RECORD PLANS

RECORD PLANS



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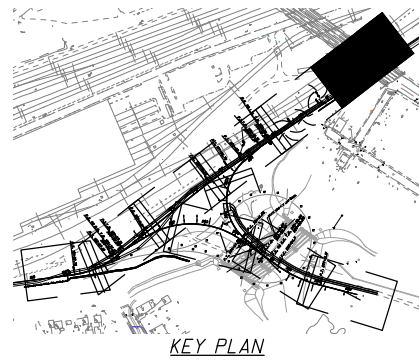


LEGEND

- NEW POLE
- ⊕ EXISTING POLE TO REMAIN
- ⊗ EXISTING POLE TO BE REMOVED
- ⌒ NEW DOWN GUY ANCHOR (DGA)

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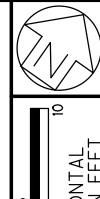
GCRTA WYE TEST TRACK
OCS LAYOUT PLAN

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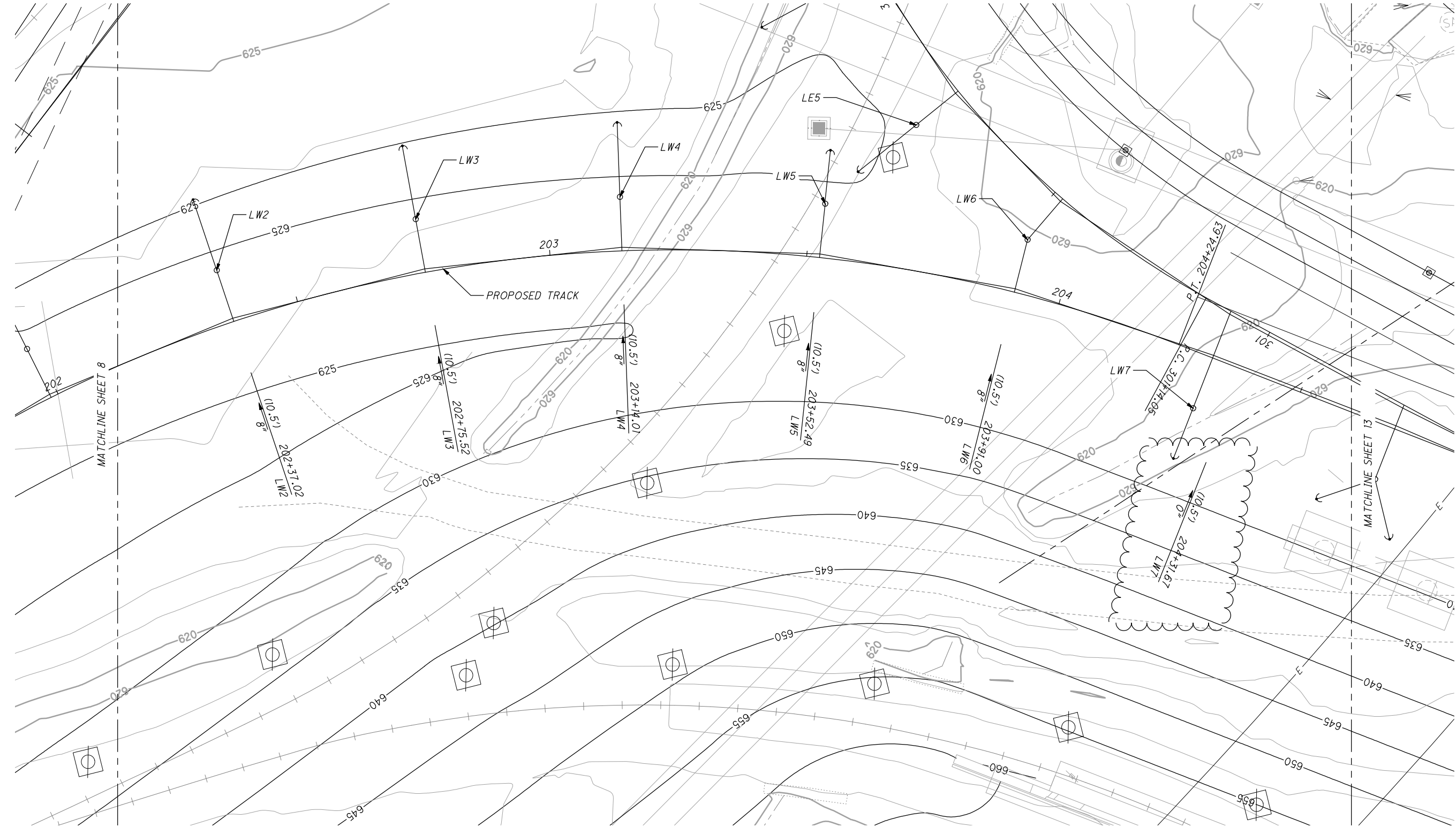
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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 6

RECORD PLANS
RECORD PLANS



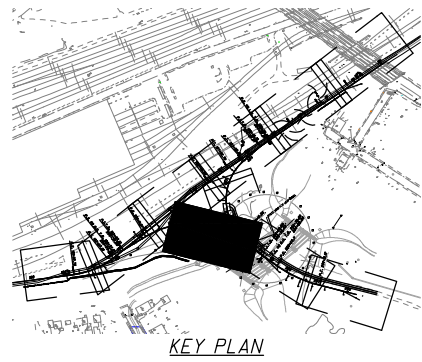
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LEGEND

- NEW POLE
- ⊕ EXISTING POLE TO REMAIN
- ⊖ EXISTING POLE TO BE REMOVED
- ↪ NEW DOWN GUY ANCHOR (DGA)

GCRTA WYE TEST TRACK
OCS LAYOUT PLAN



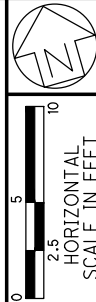
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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 7

CALCULATED
LWH
CHECKED
JWA



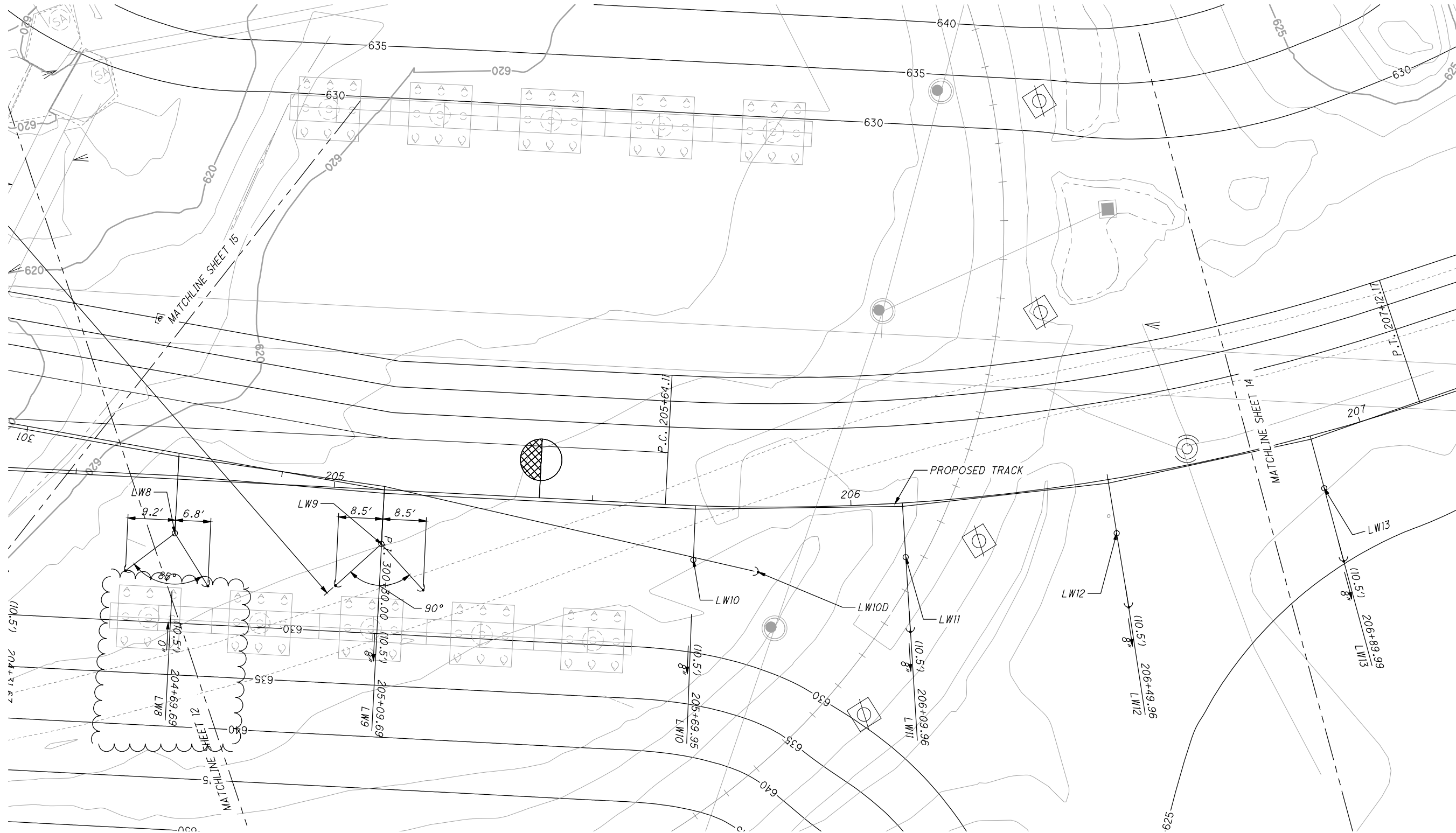
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RECORD PLANS

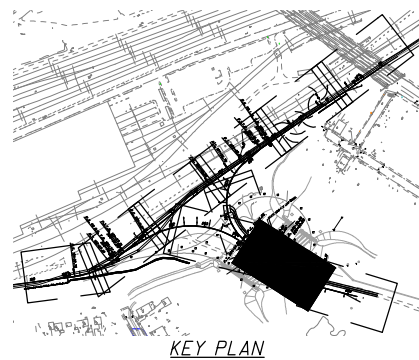
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- LEGEND
- NEW POLE
 - ⊙ EXISTING POLE TO REMAIN
 - ⊙ EXISTING POLE TO BE REMOVED
 - ↪ NEW DOWN GUY ANCHOR (DGA)



GCRTA WYE TEST TRACK
OCS LAYOUT PLAN

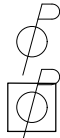
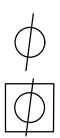
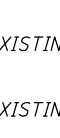



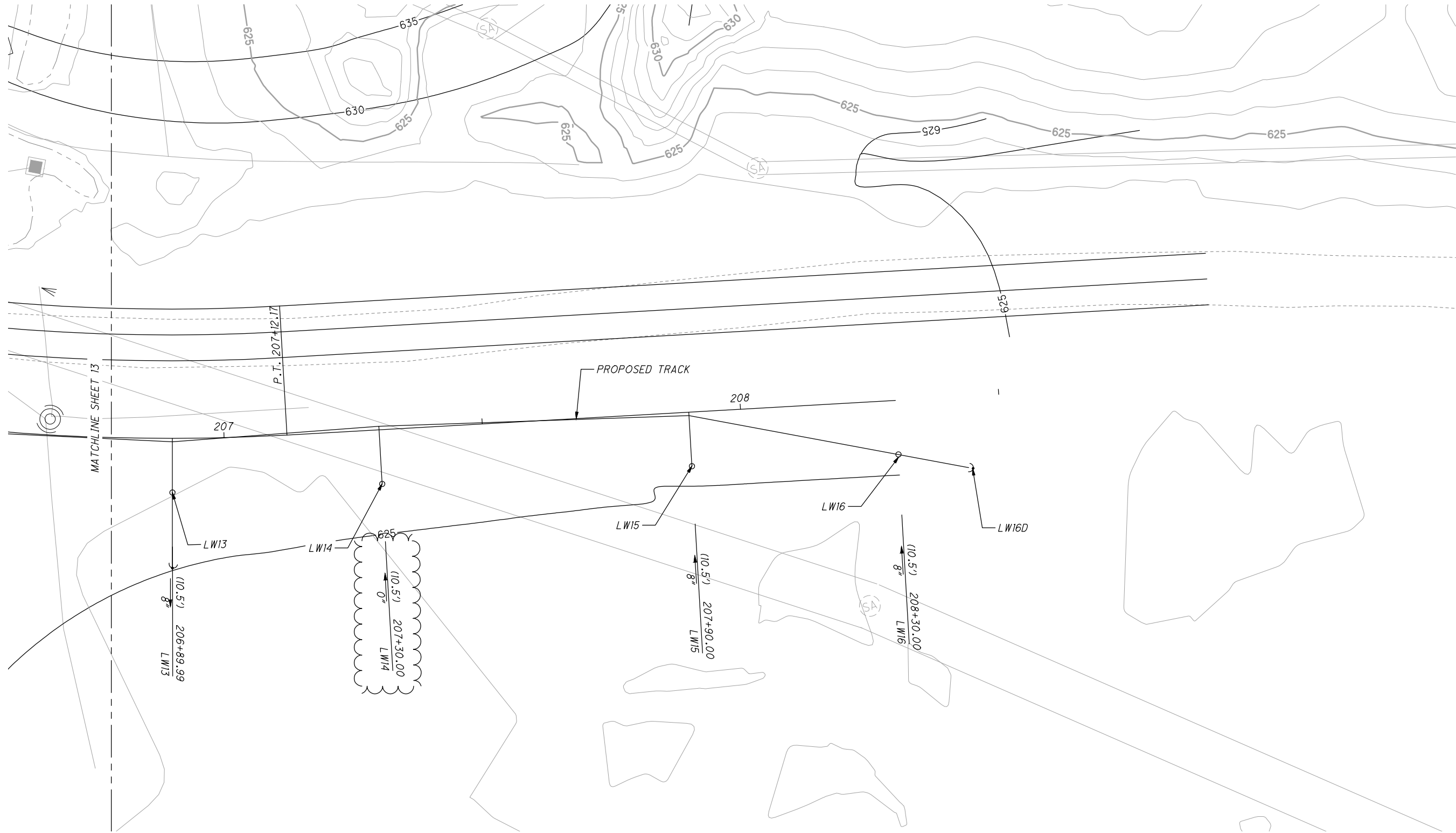
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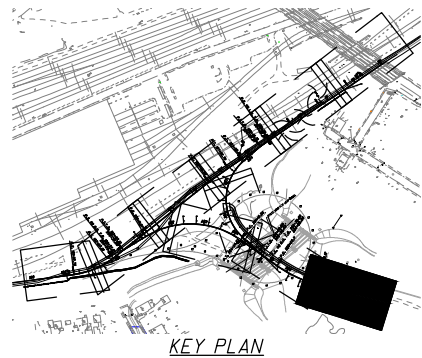


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- LEGEND
-  NEW POLE
 -  EXISTING POLE TO REMAIN
 -  EXISTING POLE TO BE REMOVED
 -  NEW DOWN GUY ANCHOR (DGA)



GCRTA WYE TEST TRACK
OCS LAYOUT PLAN



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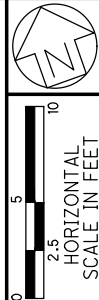
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2.09 / 19.28

12 / 36

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GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 9

CALCULATED
LWH
CHECKED
JWA







RECORD PLANS

RECORD PLANS

RECORD PLANS

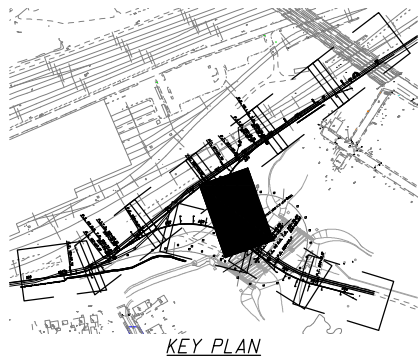
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- LEGEND
-  NEW POLE
 -  EXISTING POLE TO REMAIN
 -  EXISTING POLE TO BE REMOVED
 -  NEW DOWN GUY ANCHOR (DGA)



GCRTA WYE TEST TRACK
OCS LAYOUT PLAN

* POLE WITHIN LIMITS OF
LIGHTWEIGHT FILL.



ISSUE RECORD		
NO.	DATE	DESCRIPTION
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2.09 / 19.28

GCRTA WYE TEST TRACK
OCS LAYOUT PLAN - SHEET 10

RECORD PLANS

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38

13 / 36

RECORD PLANS

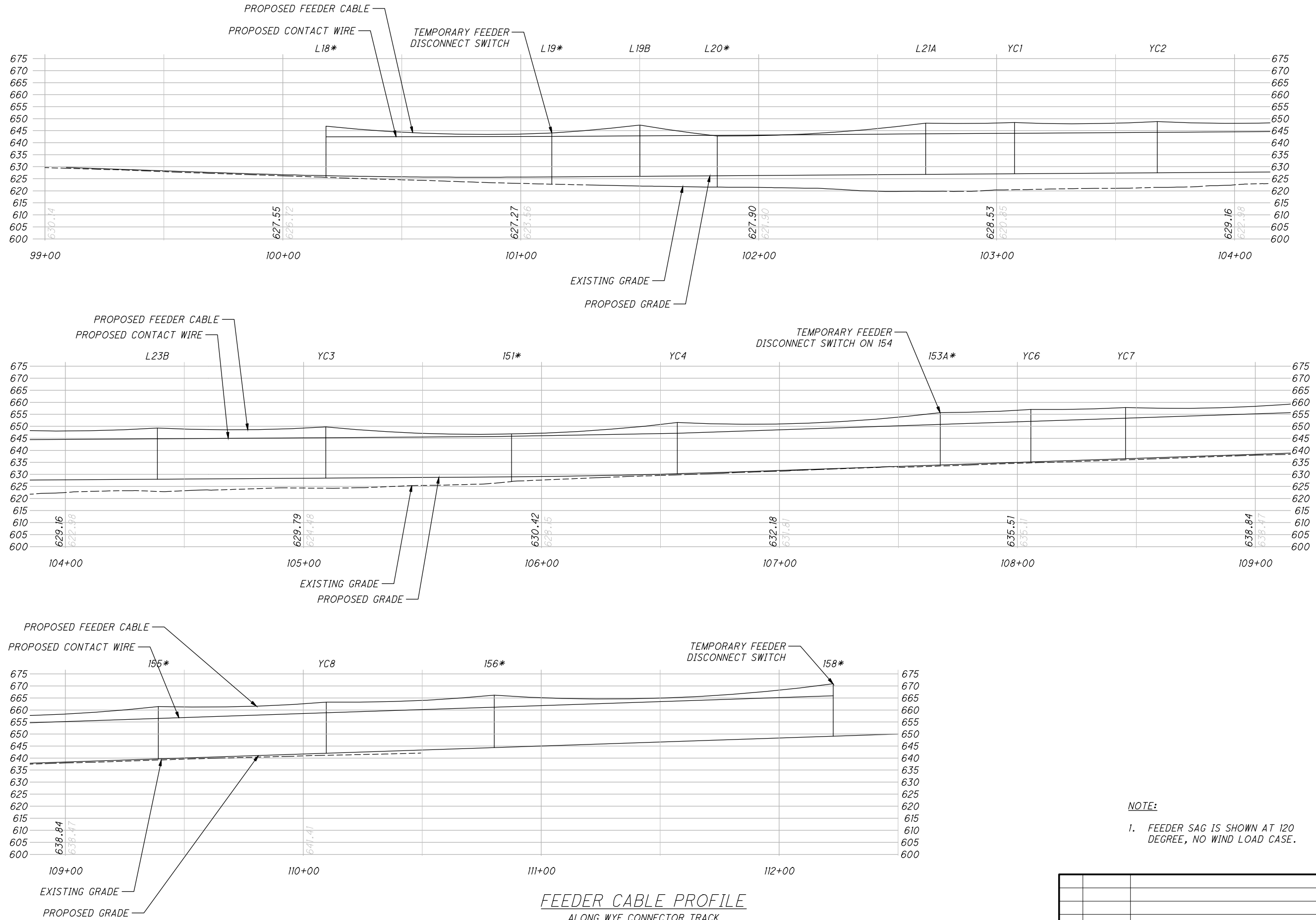
0 5 10
2.5' HORIZONTAL
SCALE IN FEET

CALCULATED
LWH
CHECKED
JWA

INL

RECORD PLANS

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CUY-IR490 / SR010-2.09 / 19.28

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GCRTA WYE TEST TRACK
FEEDER CABLE PROFILE

RECORD PLANS

CALCULATED
LWH

CHECKED
JWA

0 5 10 20
HORIZONTAL
SCALE IN FEET

RECORD PLANS

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STRUCTURE NO	REF. TRACK	TRACK CL STATION	CENTERLINE OF STRUCTURE TO CL OF REF TRACK (AT TOP OF RAIL)	FOUNDATION TYPE	COORDINATE AT STRUCTURE LOCATION		POLE		OVERHEAD CATENARY SYSTEM										REMARKS	
					NORTHING	EASTING	TYPE	HEIGHT, FT	CATENARY TYPE	SPAN LENGTH FT	MESSENGER, AUXILIARY & CONTACT WIRE HEIGHTS (FT-IN)	NUMBER & TYPE OF HANGER	PULL-IN & PULL-OUT ASSEMBLIES	SWITCH HEATER CONNECTION	WIRE TERMINATION HEIGHT(FT-IN)	CANTILEVER TYPE & BRACKET	FEEDER HEIGHT (FT-IN) & CROSSARM	FEEDER SUPPORT ASSEMBLY		MISCELLANEOUS ASSEMBLIES
L18*	YC	100+18.14	9.55	F-4	62143.84	101892.57	PS-1	27-0	1	-	N/A	N/A	Z-E30/3			Z - E14/1 Z - E15/1	21-6 FA-1	FS-2 FS-2		existing assemblies
L19A	YC	101+10.04	10.50	N/A	662161.45	2202114.85	W1	35-0	1	91.90	N/A	N/A	PHM			PHM				
L19*	YC	101+13.04	7.60	F-2	62143.84	101984.35	PS-1	27-0	1	-	17-0	N/A	Z-E30/2			Z - E14/1 Z - E15/1	21-6 FA-1	FS-2 FS-2		Feeders only. Remove all other assemblies. Disconnect switch.
L19B	YC	101+50.04	10.50	F-1-N	662187.95	2202150.98	PS-1-N	27-0	1	40.00	17-0	N/A	Z-E30/2			Z-E14/2	21-6 FA-1	FS-1 FS-2		
L20*	YC	101+82.54	9.58	F-2	62157.83	102051.63	PS-1	27-0	1	-	N/A	N/A	Z-E30/2			Z - E14/1 Z - E15/1	21-6 FA-1	FS-2 FS-2		Feeders only. Remove all other assemblies.
L20A	YC	101+90.08	10.50	N/A	662178.87	2202195.2	W1	35-0	1	40.0	17-0	N/A	PHH			PHH			DGA	
L20B	YC	102+30.11	10.50	N/A	662196.62	2202232.92	W1	35-0	1	40.0	17-0	N/A	PHH			PHH			DGA	Adjust DGA closer to tracks if it conflicts with crib wall footing.
L21AD	YC	102+49.13	15.7	N/A	-	-	DGA		1	-	N/A	N/A								
L21A*	YC	102+70.17	10.50	N/A	662236.54	2202254.207	W1	35-0	1		17-0	N/A	Z-E30/2			Z-E14/2			DGA	
L21A	YC	102+70.17	10.50	F-1-N	662220.08	2202267.24	PS-1-N	27-0	1	21.0	17-0	N/A	Z-E30/1		17-9	Z-E14/1	21-6 FA-1	FS-1 FS-2	DE-1, DGA	
YC1	YC	103+07.51	10.50	F-1-N	662259.32	2202283.8	PS-1-N	27-0	1	37.3	17-0	N/A	Z-E30/1 Z-E30/2			Z-E14/2	21-6 FA-1	FS-1 FS-2	DGA	
YC2	YC	103+67.51	10.50	F-1-N	662296.95	2202330.53	PS-1-N	27-0	1	60.0	17-0	N/A	T2 PHH			T2 PHH	22-0 FA-1	FS-1 FS-2	DGA	
L23A	YC	104+38.88	10.50	F-1-N	662324.77	2202399.52	PS-2-N	27-0	1	71.4	17-0	N/A	TWIN PHM			TWIN PHM				
L23B	YC	104+38.41	10.50	F-1-N	662340.95	2202386.13	PS-1-N	27-0	1								21-6 FA-1	FS-1 FS-2		Feeders only.
YC3	YC	105+09.31	10.50	F-1-N	662384.95	2202441.72	PS-1-N	27-0	1	70.4	17-0	N/A	Z-E30/1			Z-E14/1	21-6 FA-1	FS-1 FS-2		
151*	YC	105+87.39	16.33	N/A	662437.98	2202499.32	EXISTING	27-0	1	78.1	17-0	N/A	Z-E30/1			Z-E14/1 Z-E14/2*	20-0 FA-1*	FS-2* FS-2*		Existing signal cables & signals box to remain.
YC4	YC	106+57.10	10.50	F-1-N	662460.18	2202570.65	PS-1-N	27-0	1	69.7	17-0	N/A	Z-E30/2			Z-E14/2	21-6 FA-1	FS-1 FS-2		
YC5	YC	107+28.35	10.50	F-1-N	662501.49	2202627.74	PS-2-N	27-0	1	71.3	17-0	N/A	TWIN PHM			TWIN PHM				
153A*	YC	107+67.60	7.19	F-1	662538.18	2202650.27	PS-1	27-0	1	39.3	17-0	N/A	Z-E30/1			Z-E14/1*	21-6 FA-1	FS-2* FS-2*	PO-1	Pull-off for East Leg contact wire. Removed unued cantilever arm.
YC6	YC	108+05.71	10.50	F-1-N	662562.34	2202679.99	PS-1-N	27-0	1	38.1	17-0	N/A	T2 PHH			T2 PHH	22-0 FA-1	FS-1 FS-2	DGA	
YC7	YC	108+45.18	10.50	F-1-N	662584.48	2202712.62	PS-1-N	27-0	1	77.6	17-0	N/A	Z-E30/1 Z-E30/2A			Z-E14/2	21-6 FA-1	FS-1 FS-2		Removed unued cantilever arm.
155*	YC	109+39.04	7.41	F-1	662634.46	2202792.09	PS-1	27-0	1	93.9	17-0	N/A	Z-E30/1		17-9	(2) Z-E14/1*	22-0 FA-1*	FS-1* FS-2*	DE-1, DGA	Existing signals box to be rotated.
YC8	YC	110+09.64	10.50	F-1-N	662676.83	2202848.71	PS-1-N	27-0	1	70.6	17-0	N/A	Z-E30/1			Z-E14/1	21-6 FA-1	FS-1 FS-2		
156*	YC	110+80.26	7.23	F-1	662713.7	2202909.12	PS-1	27-0	1	70.6	17-0	N/A	Z-E30/1			(2) Z-E14/1*	21-6 FA-1*	FS-1* FS-2*		Existing signals box to remain as is.
YC9	YC	111+60.00	10.50	F-1-N	662751.63	2202979.65	PS-2-N	27-0	1	79.7	17-0	N/A	PHM							
YC10	YC	111+98.00	10.50	F-1-N	662764.55	2203017.63	PS-1-N	27-0	N/A	38.0	N/A	N/A			17-9				DE-1, DGA	
158*	YC	112+22.69	13.10	F-1	662797.51	2203024.27	PS-1	27-0	1	24.7	17-0	N/A					21-6 FA-1*	FS-1* FS-2*		Disconnect switch.

NOTES:

1. CATENARY TYPE:

3 = COMPOUND WIRE SYSTEM
2 = SIMPLE WIRE SYSTEM
1 = SINGLE WIRE SYSTEM
2. POLE TYPES:

PS-1 = EXISTING TAPERED STEEL POLE
PS-1-N = NEW TAPERED STEEL POLE
PS-2-N = NEW NON-TAPERED STEEL POLE
W1 = WOOD POLE
DGA = DOWN GUY ANCHOR
3. TRACK NOMENCLATURE:

YC = WYE CONNECTOR TRACK
LW = WEST LEG TRACK
LE = EAST LEG TRACK
4. * DENOTES EXISTING POLE OR COMPONENTS
5. BEFORE SPLICING, MEASURE TENSION FORCES ON THE EXISTING CATENARY AND RECORD THE AMBIENT TEMPERATURE. THE READING SHALL BE USED AS THE BASE FOR STRINGING AND TENSIONING.

2	2024-09-10	RECORD DRAWINGS
1	2020-09-09	DC047
0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

15 / 36

17
38

CUY-IR490 / SR010-
2.09 / 19.28

GCRTA WYE TEST TRACK
OCS STRUCTURE SUMMARY-WYE CONN.

CALCULATED
LWH
CHECKED
JWA

0 X
X
HORIZONTAL
SCALE IN FEET

RECORD PLANS

RECORD PLANS

RECORD PLANS

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STRUCTURE NO	REF. TRACK	TRACK CL STATION	CENTERLINE OF STRUCTURE TO CL OF REF TRACK (AT TOP OF RAIL)	FOUNDATION TYPE	COORDINATE AT STRUCTURE LOCATION		POLE		OVERHEAD CATENARY SYSTEM											REMARKS
					NORTHING	EASTING	TYPE	HEIGHT, FT	CATENARY TYPE	SPAN LENGTH FT	MESSENGER, AUXILIARY & CONTACT WIRE HEIGHTS (FT-IN)	NUMBER & TYPE OF HANGER	PULL-IN & PULL-OUT ASSEMBLIES	SWITCH HEATER CONNECTION	WIRE TERMINATION HEIGHT(FT-IN)	CANTILEVER TYPE & BRACKET	FEEDER HEIGHT (FT-IN) & CROSSARM	FEEDER SUPPORT ASSEMBLY	MISCELLANEOUS ASSEMBLIES	
YC1	LW	200+30.00	10.50	F-1-N	662 259.32	2202283.8	PS-1-N	27-0	1		17-0	N/A	Z-E30/1 Z-E30/2			Z-E14/2	21-6 FA-1	FS-1 FS-2	DGA	
YC2	LW	200+90.47	17.53	F-1-N	662296.95	2202330.53	PS-1-N	27-0	1	60.5	17-0	N/A	T2 PI-H			T2 PI-H	22-0 FA-1	FS-1 FS-2	DGA	
L23A	LW	201+60.04	10.50	F-1-N	662324.77	2202399.52	PS-2-N	27-0	1	69.6	17-0	N/A	TWIN PI-M			TWIN PI-M				
LW1	LW	201+98.53	10.50	N/A	662336.31	2202437.78	W1	35-0	1	38.5	17-0	N/A	PI-H			PI-H			DGA	
LW2	LW	202+37.02	10.50	N/A	662342.29	2202477.29	W1	35-0	1	38.5	17-0	N/A	PI-H			PI-H			DGA	
LW3	LW	202+75.52	10.50	N/A	662342.59	2202517.25	W1	35-0	1	38.5	17-0	N/A	PI-H			PI-H			DGA	
LW4	LW	203+14.01	10.50	N/A	662337.22	2202556.85	W1	35-0	1	38.5	17-0	N/A	PI-H			PI-H			DGA	
LW5	LW	203+52.49	10.50	N/A	662326.27	2202595.28	W1	35-0	1	38.5	17-0	N/A	PI-H			PI-H			DGA	
LW6	LW	203+91.00	10.50	F-1-N	662309.97	2202631.77	PS-2-N	27-0	1	38.5	17-0	N/A	TWIN PI-M			TWIN PI-M				
LW7	LW	204+31.67	10.50	N/A	662270.39	2202655.09	W1	35-0	1	40.7	17-0	N/A	T2 PI-H			T2 PI-H			DGA	
LW8	LW	204+69.69	10.50	N/A	662248.44	2202686.11	W1	35-0	1	38.0	17-0	N/A	T2 PI-H			T2 PI-H			(2) DGA	
LW9	LW	205+09.69	10.50	N/A	662225.33	2202718.76	W1	35-0	1	40.0	17-0	N/A	T2 - H			T2 PI-H			(2) DGA	
LW10	LW	205+69.95	10.50	N/A	662190.47	2202768.09	W1	35-0	1	60.3	17-0	N/A	PI-M		17-9	PI-M			DE-1, DGA	
LW10D	LW	205+81.38	12.42	N/A	-	-	DGA		N/A	N/A	N/A	N/A								
LW11	LW	206+09.96	10.50	N/A	662168.97	2202803.06	W1	35-0	1	40.0	17-0	N/A	PI-M			PI-M			DGA	
LW12	LW	206+49.96	10.50	N/A	662151.07	2202839.99	W1	35-0	1	40.0	17-0	N/A	PI-M			PI-M			DGA	
LW13	LW	206+89.99	10.50	N/A	662136.95	2202878.54	W1	35-0	1	40.0	17-0	N/A	PI-M			PI-M			DGA	
LW14	LW	207+30.00	10.50	N/A	662126.46	2202917.74	W1	35-0	1	40.0	17-0	N/A	PI-M			PI-M			DGA	
LW15	LW	207+90.00	10.50	F-1-N	662111.87	2202975.94	PS-1-N	27-0	1	60.0	17-0	N/A	Z-E30/2			Z-E14/2				
LW16	LW	208+30.00	10.50	N/A	662102.13	2203014.74	W1	35-0	1	40.0	17-0	N/A			17-9				DE-1, DGA	
LW16D	LW	208+43.63	13.18	N/A	-	-	DGA		N/A		N/A	N/A								

NOTES:

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W1 = WOOD POLE
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3. TRACK NOMENCLATURE:

YC = WYE CONNECTOR TRACK
LW = WEST LEG TRACK
LE = EAST LEG TRACK
4. * DENOTES EXISTING POLE OR COMPONENTS
5. BEFORE SPLICING, MEASURE TENSION FORCES ON THE EXISTING CATENARY AND RECORD THE AMBIENT TEMPERATURE. THE READING SHALL BE USED AS THE BASE FOR STRINGING AND TENSIONING.

2	2024-09-10	RECORD DRAWINGS
1	2020-09-09	DC047
0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

16 / 36

18
38

CUY-IR490 / SR010-
2.09 / 19.28

GCRTA WYE TEST TRACK
OCS STRUCTURE SUMMARY - WEST LEG

CALCULATED
LWH
CHECKED
JWA



RECORD PLANS

RECORD PLANS

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STRUCTURE NO	REF. TRACK	TRACK CL STATION	CENTERLINE OF STRUCTURE TO CL OF REF TRACK (AT TOP OF RAIL)	FOUNDATION TYPE	COORDINATE AT STRUCTURE LOCATION		POLE		OVERHEAD CATENARY SYSTEM										REMARKS	
					NORTHING	EASTING	TYPE	HEIGHT, FT	CATENARY TYPE	SPAN LENGTH FT	MESSENGER, AUXILIARY & CONTACT WIRE HEIGHTS (FT-IN)	NUMBER & TYPE OF HANGER	PULL-IN & PULL-OUT ASSEMBLIES	SWITCH HEATER CONNECTION	WIRE TERMINATION HEIGHT(FT-IN)	CANTILEVER TYPE & BRACKET	FEEDER HEIGHT (FT-IN) & CROSSARM	FEEDER SUPPORT ASSEMBLY		MISCELLANEOUS ASSEMBLIES
LW9	LE	300+30.00	10.80	N/A	662225.33	2202718.76	W1	35-0	1		17-0	N/A	T2-H			T2 P-H			(2) DGA	
LW8	LE	300+70.31	15.52	N/A	662248.44	2202686.11	W1	35-0	1	40.3	17-0	N/A	T2 P-H			T2 P-H			(2) DGA	
LW7	LE	301+08.61	20.29	N/A	662270.39	2202655.09	W1	35-0	1	38.3	17-0	N/A	T2 P-H			T2 P-H			DGA	
LW6	LE	301+48.04	10.50	F-1-N	662309.97	2202631.77	PS-2-N	27-0	1	39.4	17-0	N/A	TWIN P-M			TWIN P-M				
LE5	LE	301+77.30	10.50	N/A	662336.89	2202616.13	W1	35-0	1	29.3	17-0	N/A	P-H			P-H			DGA	
LE4	LE	302+06.56	10.50	N/A	662366.21	2202605.65	W1	35-0	1	29.3	17-0	N/A	P-H			P-H			DGA	
LE3	LE	302+44.45	10.50	N/A	662406.13	2202600.29	W1	35-0	1	37.9	17-0	N/A	P-H			P-H			DGA	
LE2	LE	302+82.34	10.50	N/A	662446.19	2202604.45	W1	35-0	1	37.9	17-0	N/A	P-H			P-H			DGA	
LE1	LE	303+10.63	10.50	N/A	662474.88	2202613.64	W1	35-0	1	28.3	17-0	N/A	P-H			P-H			DGA	
YC5	LE	303+38.91	10.50	F-1-N	662501.49	2202627.74	PS-2-N	27-0	1	28.3	17-0	N/A	TWIN P-M			TWIN P-M				
153A*	LE	303+78.27	16.88	N/A	662538.18	2202650.27	PS-1	27-0	1	39.4	17-0	N/A	Z-E30/1			(2) Z-E14/1*	22-0 FA-1*	FS-2* FS-2*	PO-1	Pull-off for East Leg contact wire. Install PO-1 at 19'-0". Remopve unused cantilever arm
YC6	LE	304+16.07	15.36	F-1-N	662562.34	2202679.99	PS-1-N	27-0	1	37.8	17-0	N/A	TWIN P-M			TWIN P-M				
YC7	LE	304+53.87	10.50	F-1-N	662584.48	2202712.62	PS-1-N	27-0	1	75.6	17-0	N/A	Z-E30/1 Z-E30/2			Z-E14/2	21-6 FA-1	FS-1 FS-2		

NOTES:

1. CATENARY TYPE:

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2 = SIMPLE WIRE SYSTEM
1 = SINGLE WIRE SYETEM
2. POLE TYPES:

PS-1 = EXISTING TAPERED STEEL POLE
PS-1-N = NEW TAPERED STEEL POLE
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W1 = WOOD POLE
DGA = DOWN GUY ANCHOR
3. TRACK NOMENCLATURE:

YC = WYE CONNECTOR TRACK
LW = WEST LEG TRACK
LE = EAST LEG TRACK
4. * DENOTES EXISTING POLE OR COMPONENTS
5. BEFORE SPLICING, MEASURE TENSION FORCES ON THE EXISTING CATENARY AND RECORD THE AMBIENT TEMPERATURE. THE READING SHALL BE USED AS THE BASE FOR STRINGING AND TENSIONING.

1	2020-09-09	DC047
0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

CUY-IR490 / SR010-2.09 / 19.28

GCRTA WYE TEST TRACK

OCS STRUCTURE SUMMARY - EAST LEG

17 / 36

19 / 38

CALCULATED LWH

CHECKED JWA

0 X

0 X

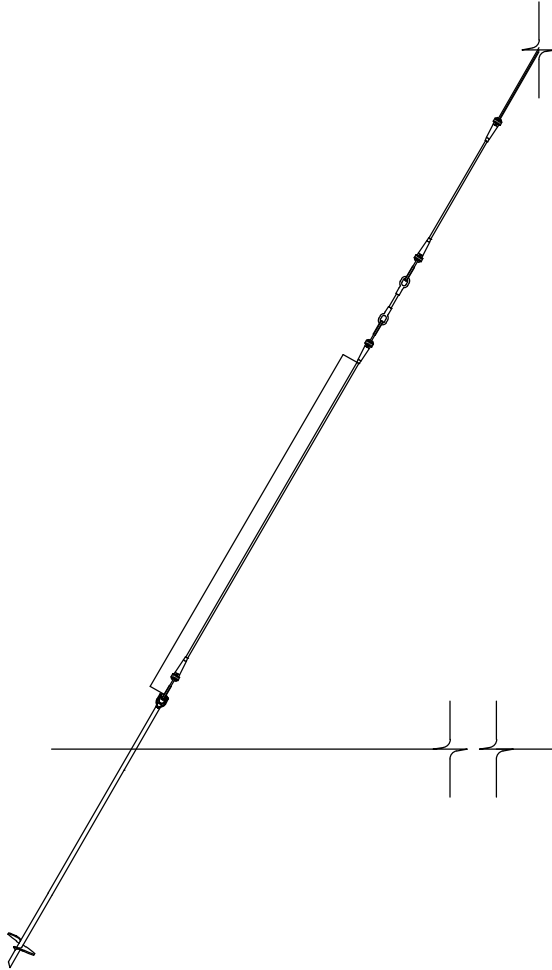
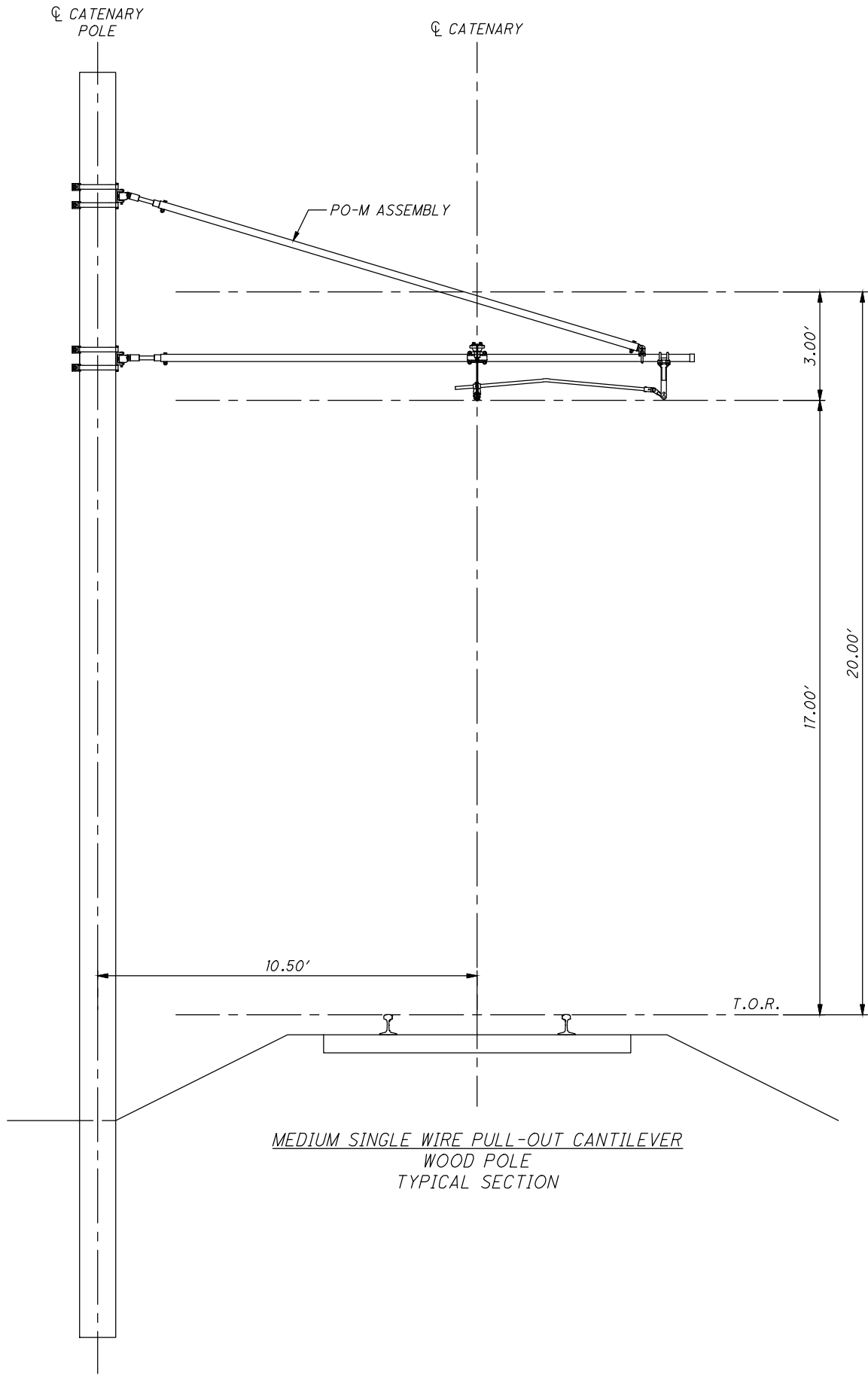
HORIZONTAL SCALE IN FEET

RECORD PLANS

RECORD PLANS

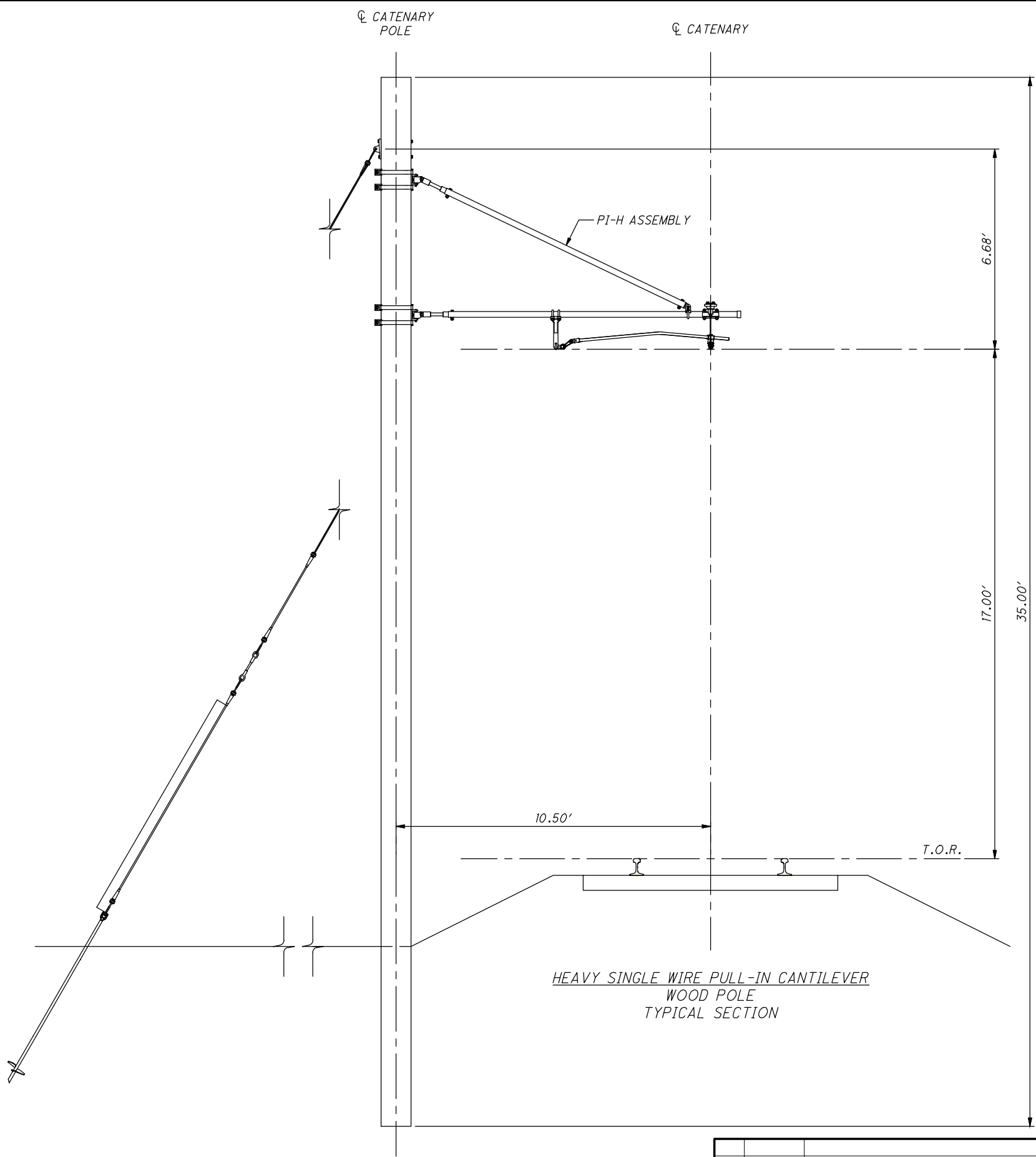
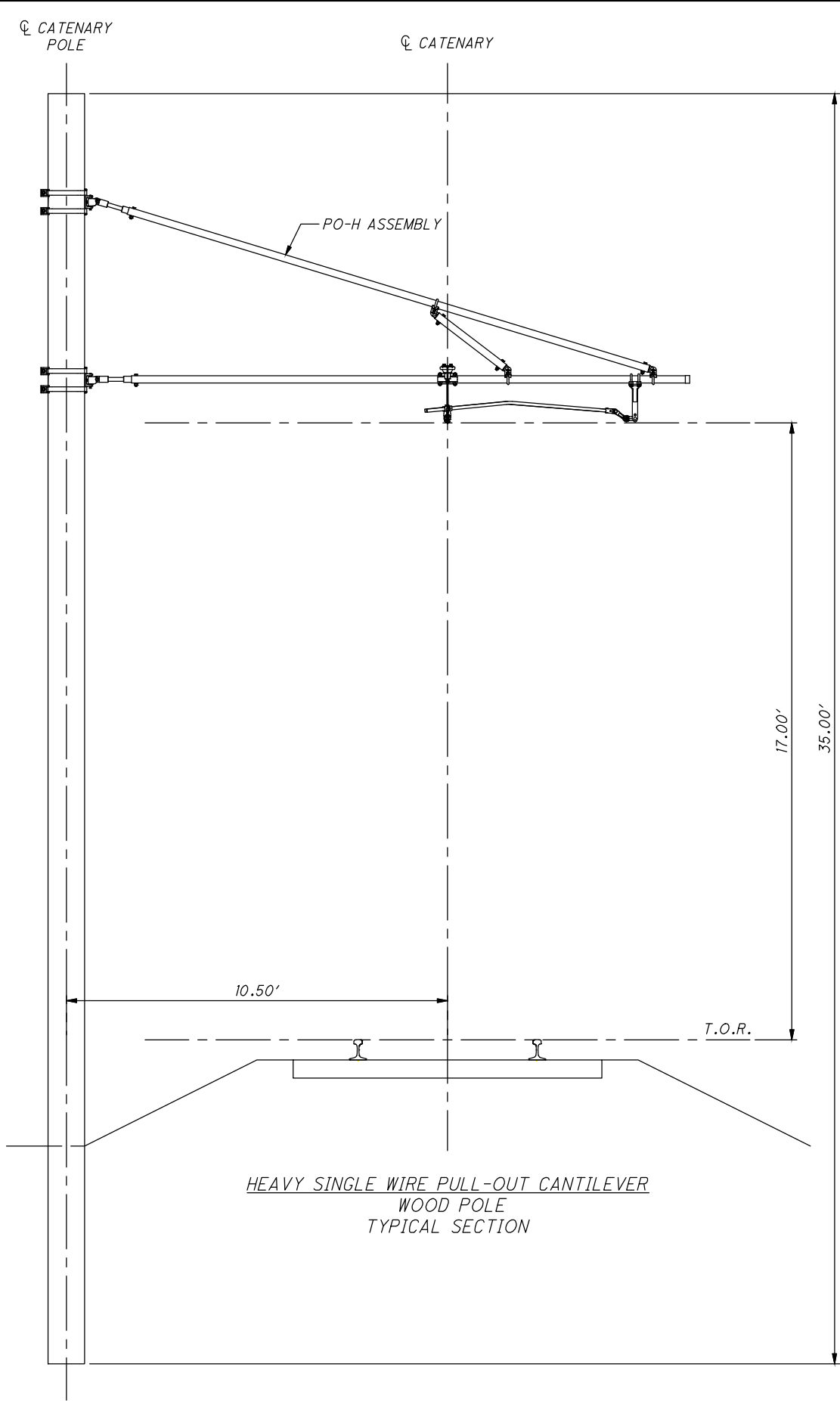
RECORD PLANS

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0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

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0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

CUY-IR490 / SR010-2.09 / 19.28

20 / 36

22 / 38

GCR TA WYE TEST TRACK

OCS TYP. SECTIONS - HEAVY CATENARY

CALCULATED LWH

CHECKED JWA

0 1/4 1/8 1/2

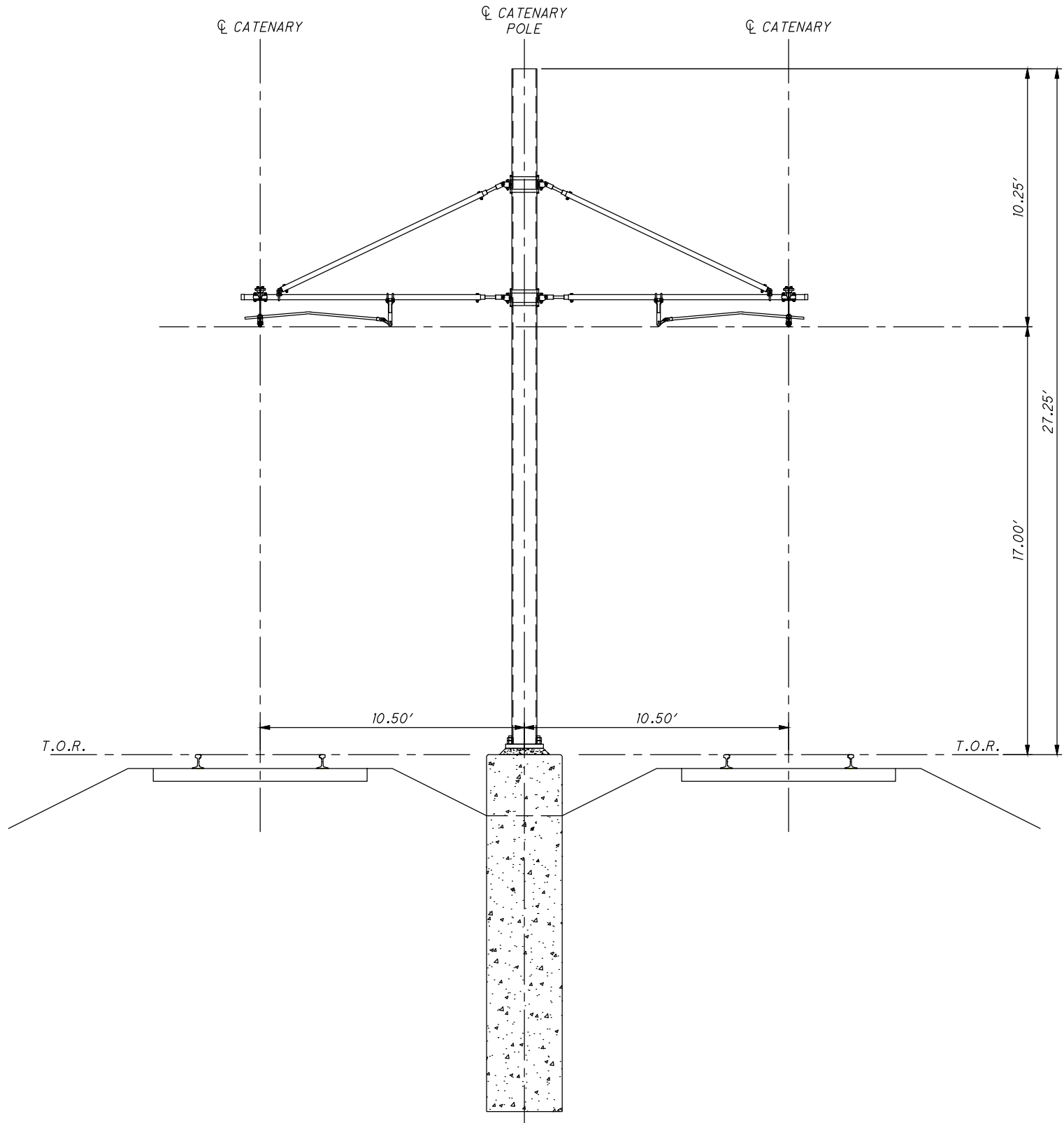
HORIZONTAL SCALE IN FEET

RECORD PLANS

RECORD PLANS

RECORD PLANS

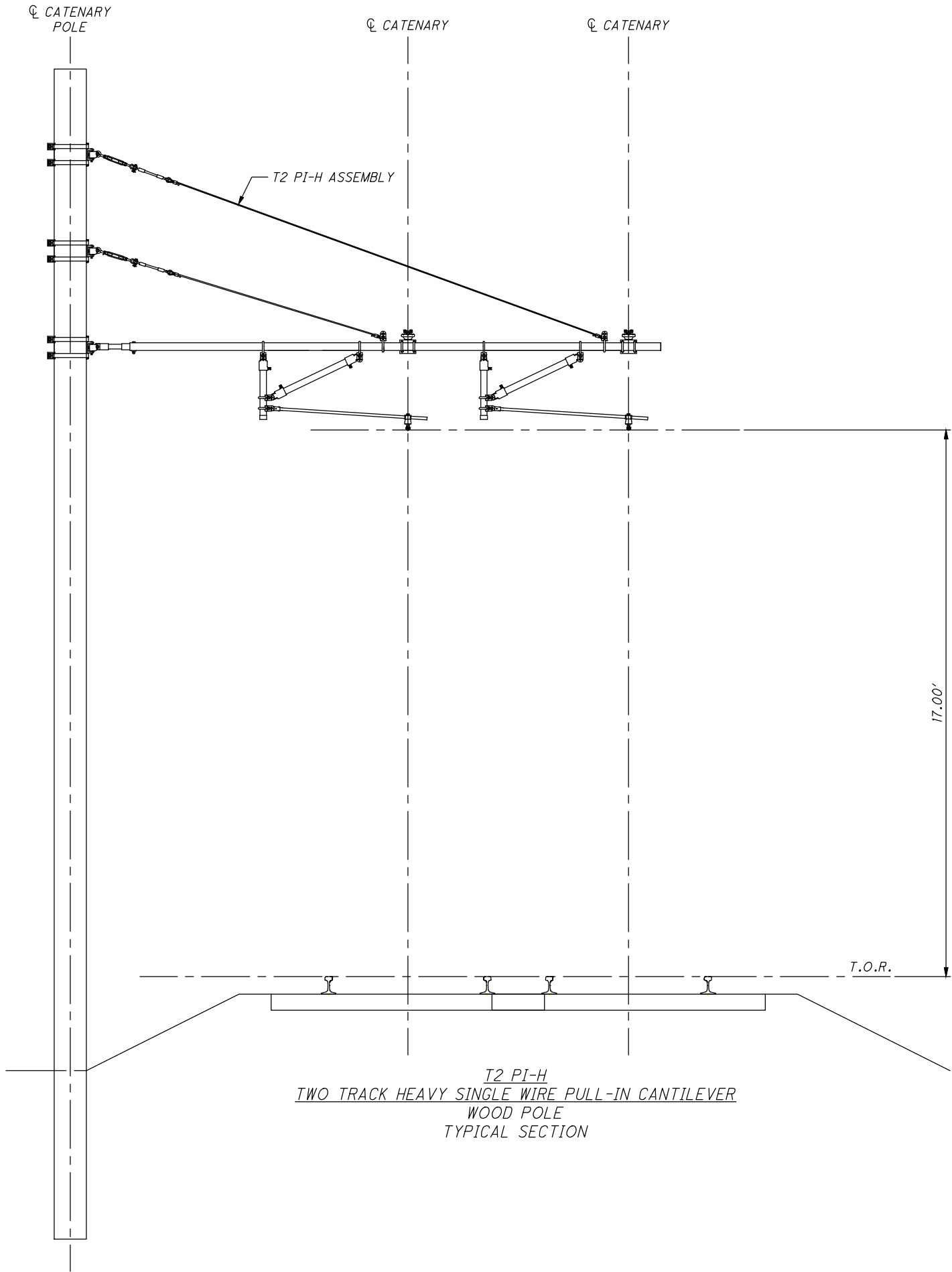
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TWIN PI-M
TWIN TRACK MEDIUM SINGLE WIRE PULL-IN CANTILEVER
STEEL POLE
TYPICAL SECTION

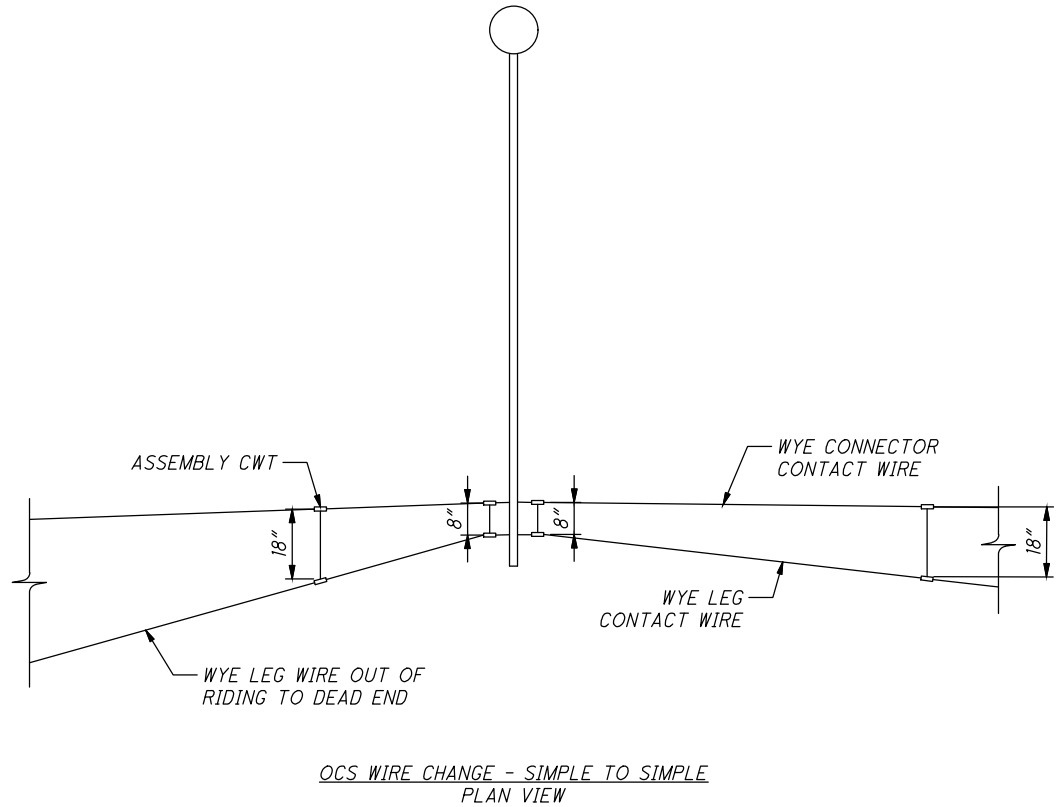
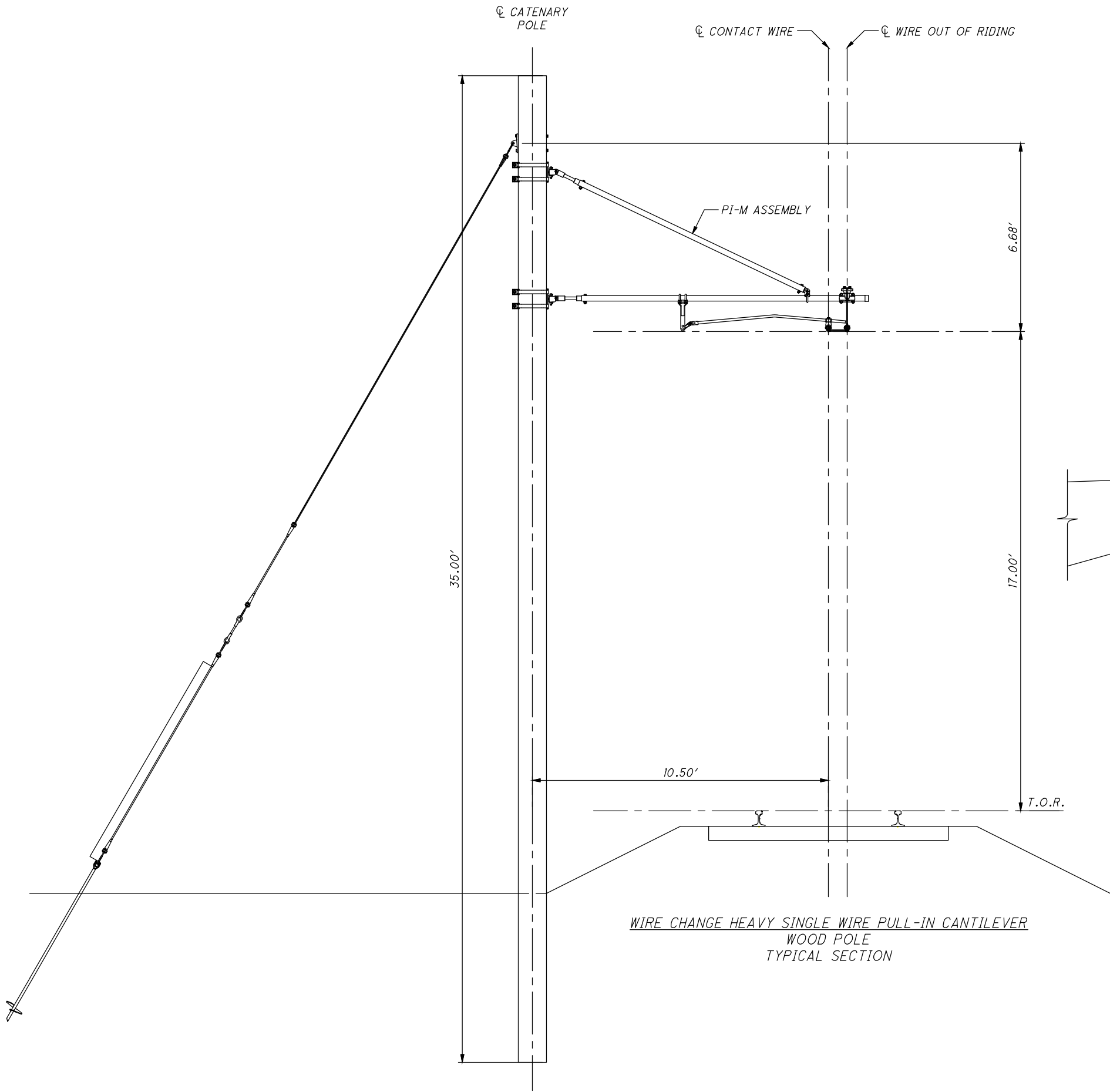
0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

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0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

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0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

23 / 36

25
38

CUY-IR490 / SR010-
2.09 / 19.28

GCRTA WYE TEST TRACK
OCS TYP. SECTIONS - TWO WIRE PULL-IN

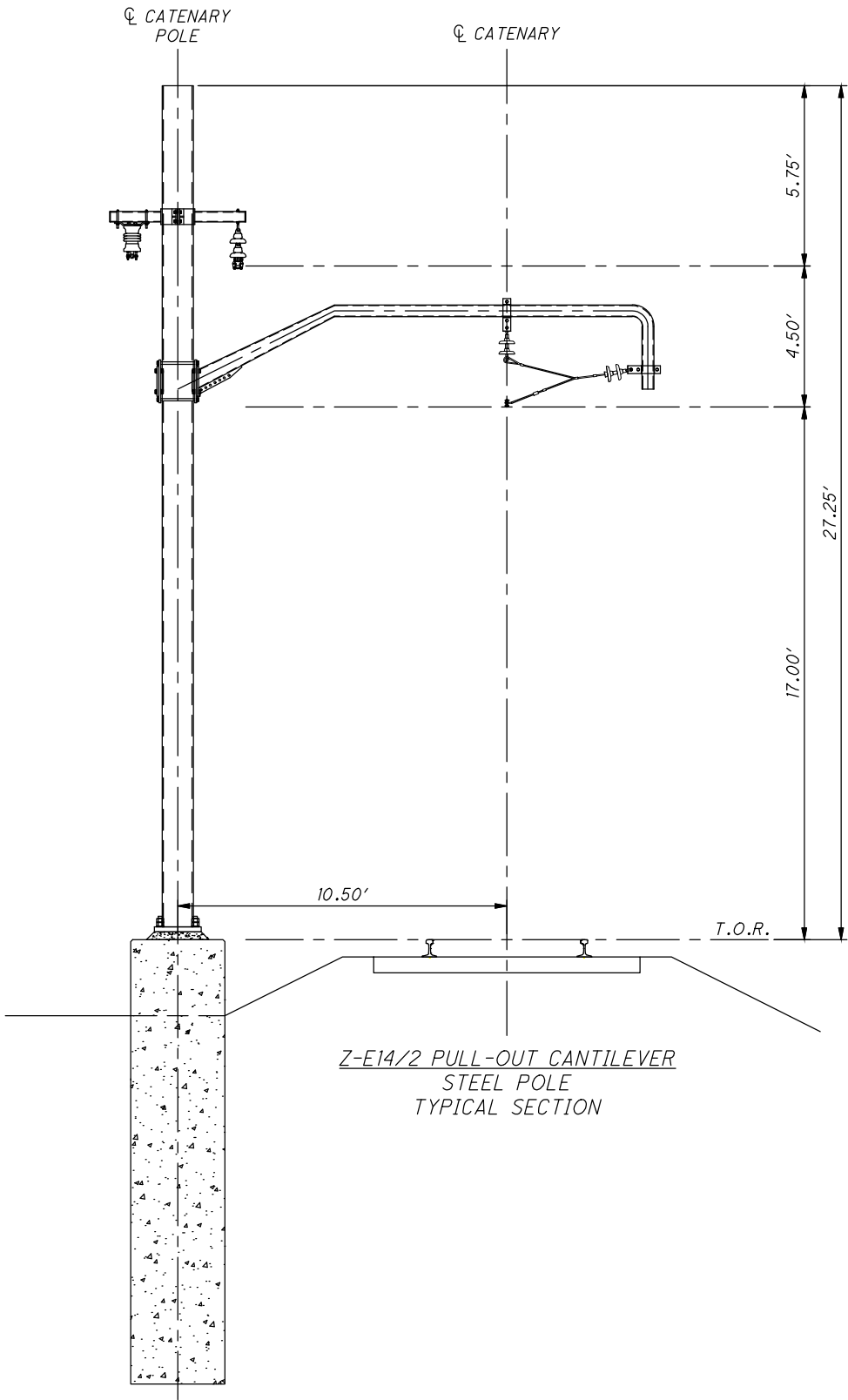
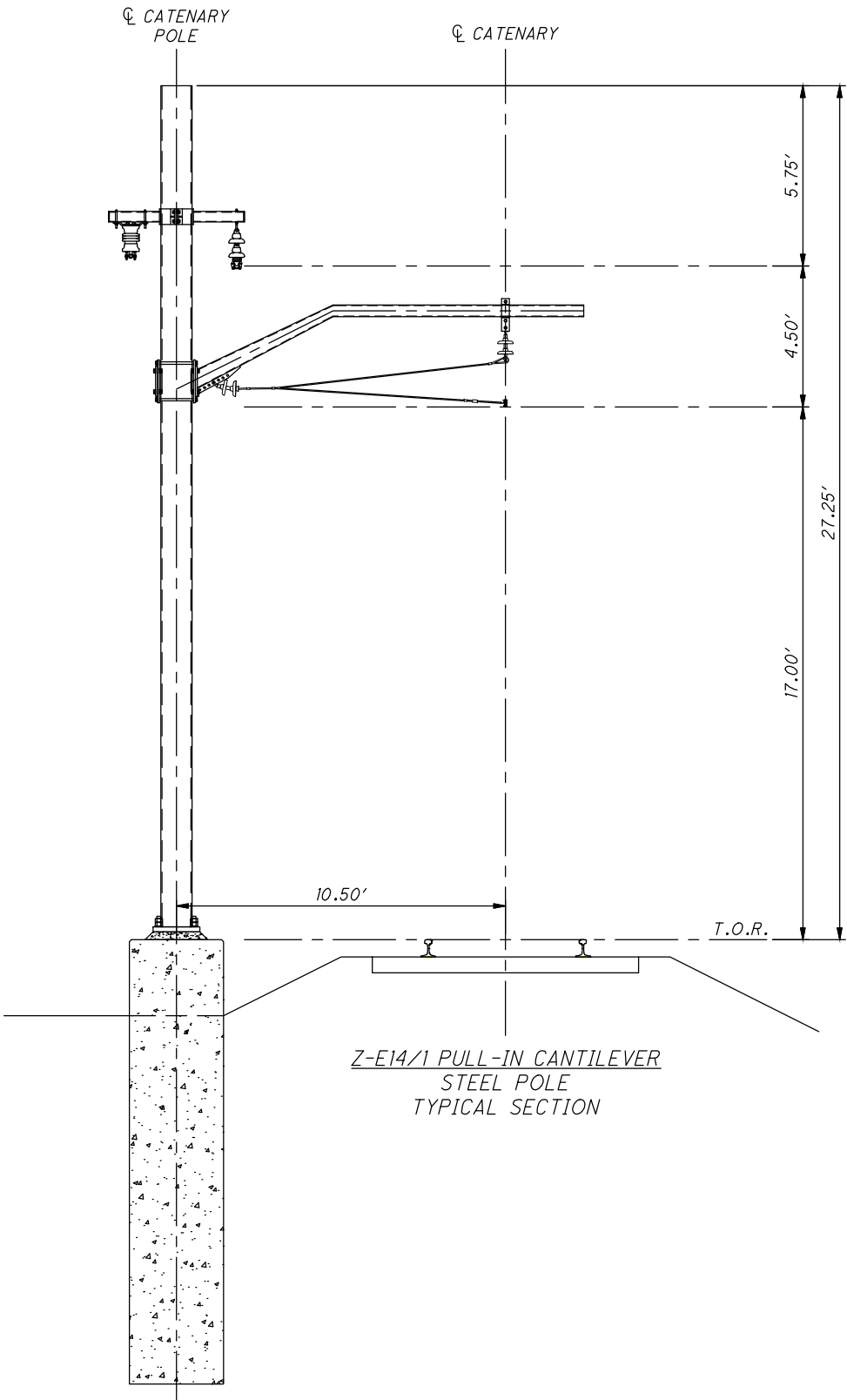
CALCULATED
LWH
CHECKED
JWA
0 1/4 1/8 1/2
HORIZONTAL
SCALE IN FEET

RECORD PLANS

RECORD PLANS

RECORD PLANS

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0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

CUY-IR490 / SR010-
2.09 / 19.28

GCR TA WYE TEST TRACK
OCS TYP. SECTIONS - Z-E14/1 & Z-E14/2

CALCULATED
LWH
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JWA

0 3/16 3/32 3/8
HORIZONTAL
SCALE IN FEET

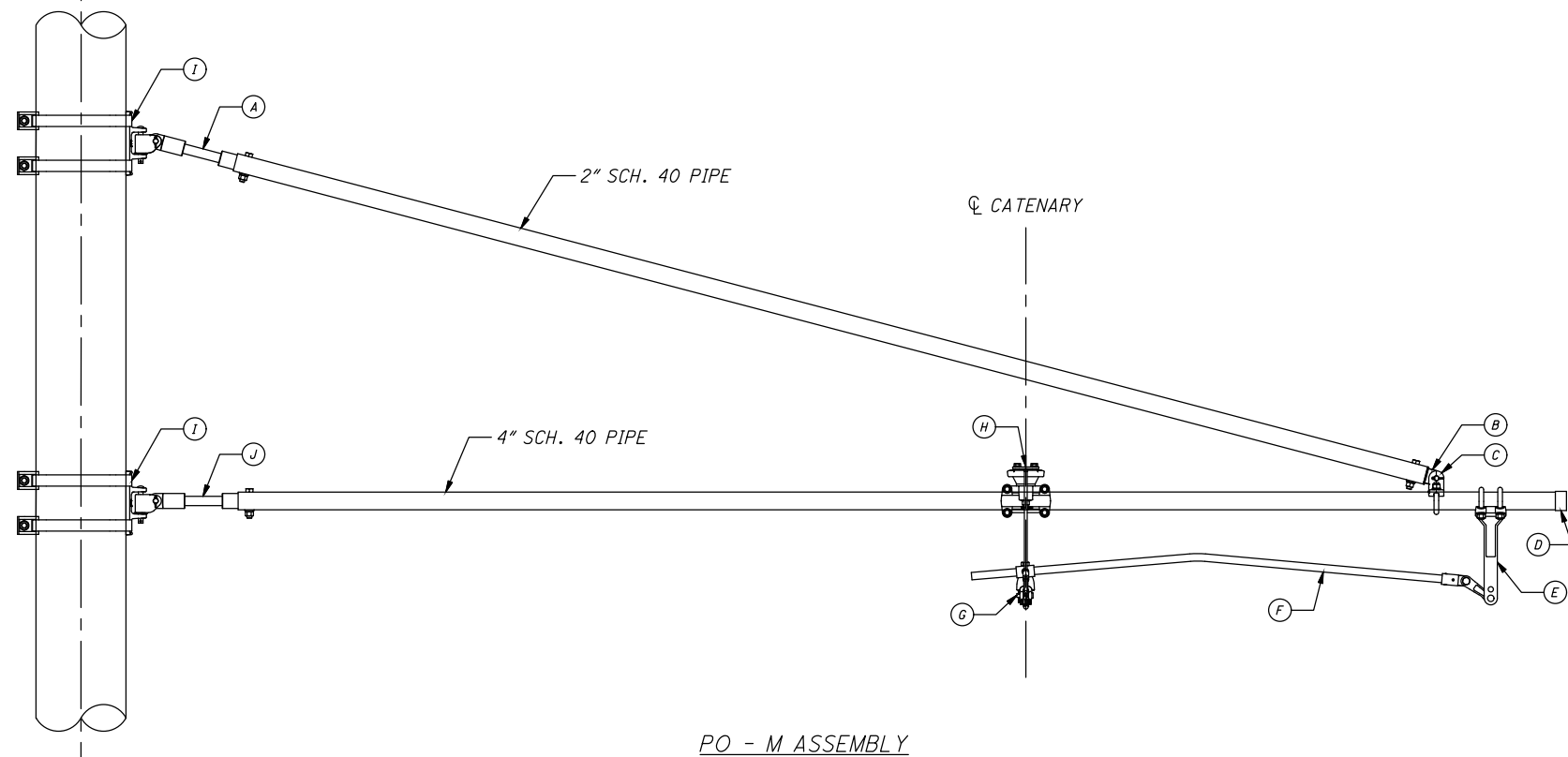
RECORD PLANS

RECORD PLANS

RECORD PLANS

24 / 36

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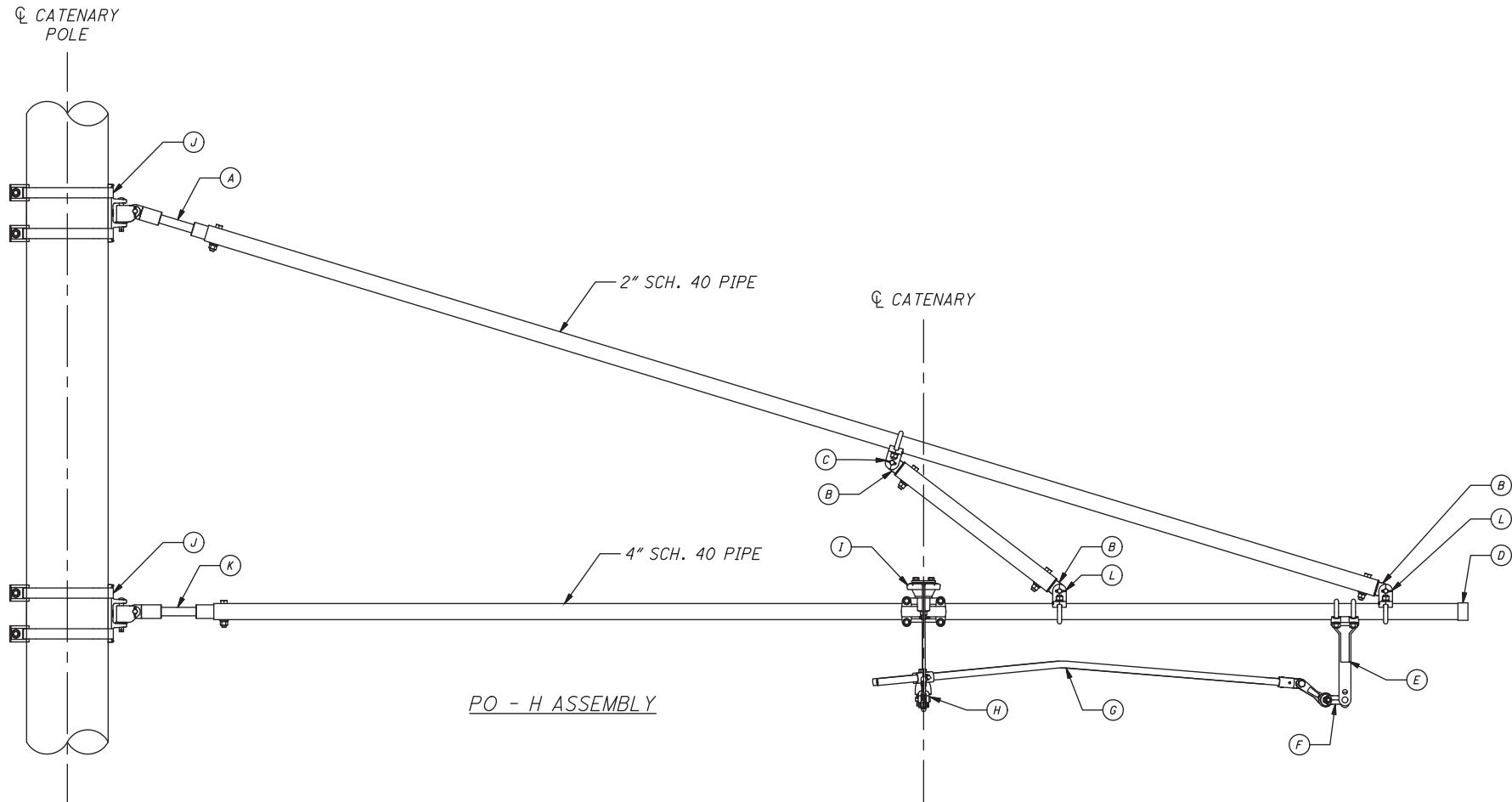
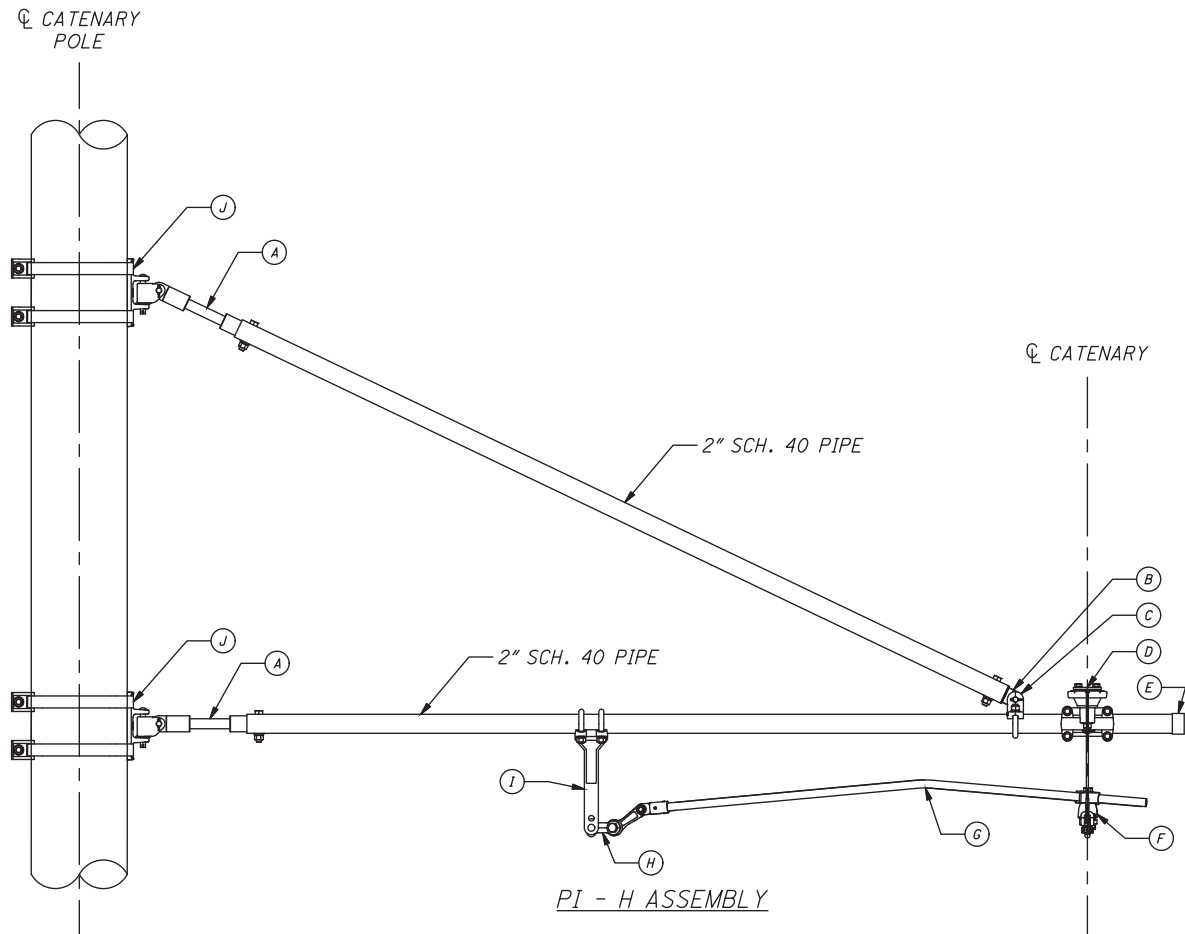


MEDIUM PULL-OUT ASSEMBLY			
ITEM	DESCRIPTION	PART NO.	QTY
A	TRANS*LITE INSULATOR 2"/40	056909-3002	1
B	PIPE EYE 2"/40	056463-3002	1
C	CLEVIS CLAMP 4"	BSC400-63	1
D	PIPE CAP 4"	0675188	1
E	DROP BRACKET 4" (13")	0674983	1
F	STEADY ARM 1" 10°	057823-8060	1
G	INSULATED SWIVEL CLAMP 4°	674999	1
H	BRIDLE ASSEMBLY	B-ASSY	1
I	POLE ATTACHMENT	WPA-1*	2
J	TRANS*LITE INSULATOR 4"/40	0675150	1

*IF STEEL POLE,
USE SPB-1



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HEAVY PULL-IN ASSEMBLY			
ITEM	DESCRIPTION	PART NO.	QTY.
A	TRANS*LITE STRUT INSULATOR 2"/40	056909-3002	2
B	PIPE EYE 2"/40	056030-3002	1
C	CLEVIS CLAMP 2"	055375-3001	1
D	BRIDLE ASSEMBLY	B-ASSY	1
E	PIPE CAP 2"	056030-4001	1
F	INSULATED SWIVEL CLAMP 4°	0674999	2
G	STEADY ARM 1" 10°	057823-8060	2
H	"Y" CLEVIS/EYE (5/8)" BOLT)	059687-3001	2
I	DROP BRACKET 2" (13")	674983	1
J	POLE ATTACHMENT	WPA-1*	2

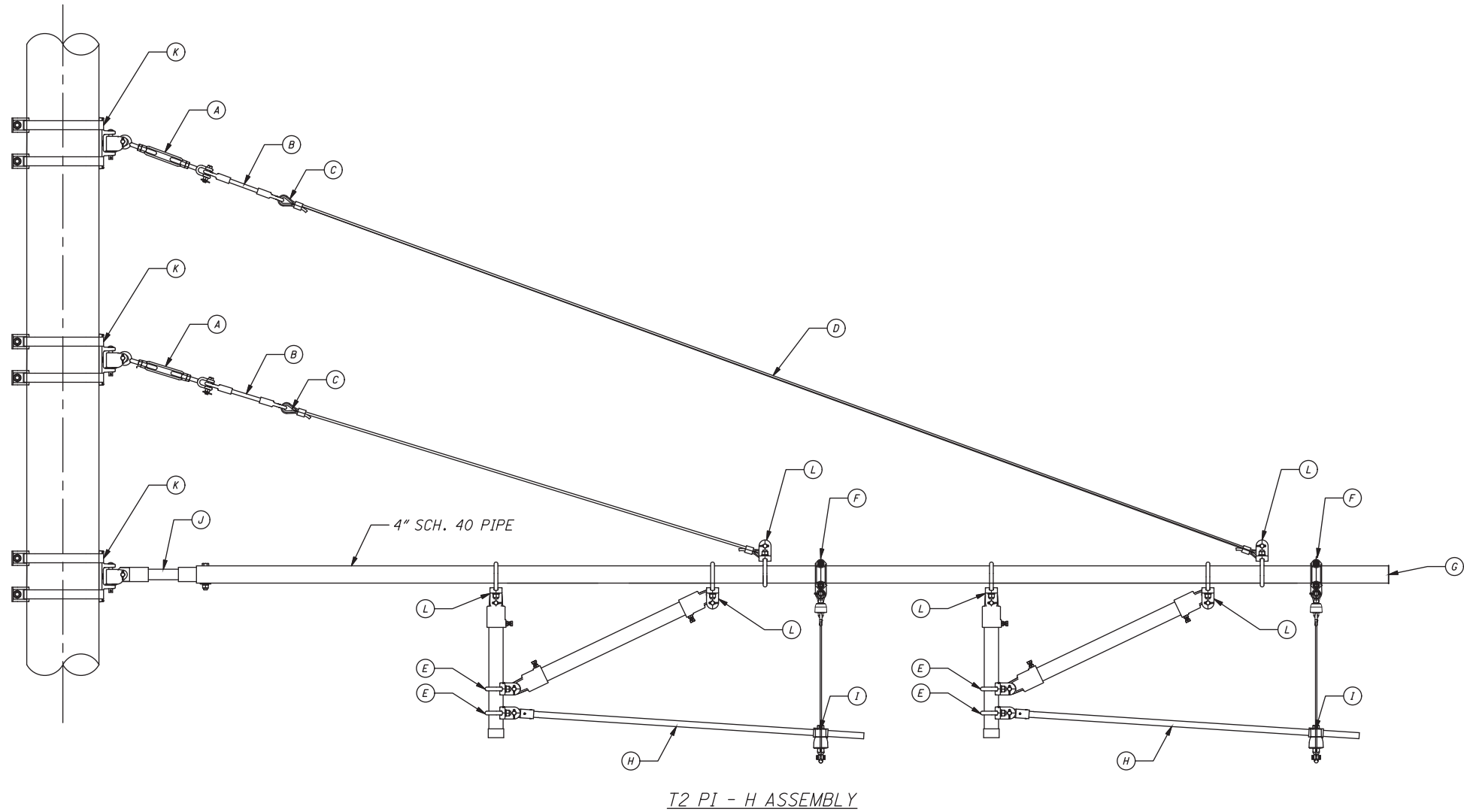
*IF STEEL POLE, USE SPB-1

HEAVY PULL-OUT ASSEMBLY			
ITEM	DESCRIPTION	PART NO.	QTY.
A	TRANS*LITE INSULATOR 2"/40	056909-3002	1
B	PIPE EYE 2"/40	056463-3002	3
C	CLEVIS CLAMP 2"	055375-3001	1
D	PIPE CAP 4"	0675188	1
E	DROP BRACKET 4" (13")	0674983	1
F	"Y" CLEVIS/EYE (5/8)" BOLT)	059687-3001	2
G	STEADY ARM 1" 10°	057823-8060	2
H	INSULATED SWIVEL CLAMP 4°	674999	2
I	BRIDLE ASSEMBLY	B-ASSY	1
J	POLE ATTACHMENT	WPA-1*	2
K	TRANS*LITE INSULATOR 4"/40	0675150	1
L	CLEVIS CLAMP 4"	BSC400-63	2

*IF STEEL POLE, USE SPB-1

ISSUE RECORD		
NO.	DATE	DESCRIPTION
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0	2019-11-04	RFC

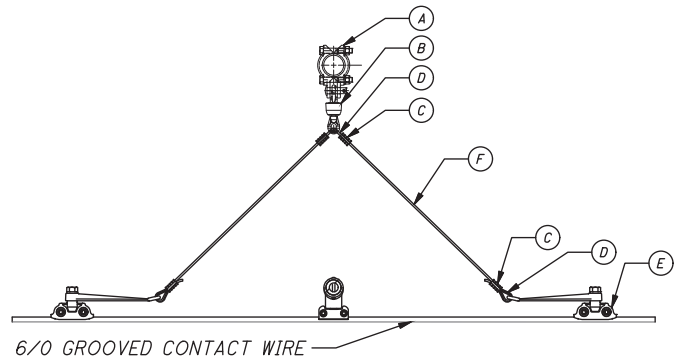
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T2 PI - H ASSEMBLY

TWO TRACK HEAVY PULL-IN ASSEMBLY			
ITEM	DESCRIPTION	PART NO.	QTY.
A	$\frac{5}{8}$ " TURNBUCKLE	-	2
B	EYE/EYE TRANS*LITE INSULATOR	055263-6132	2
C	THIMBLE $\frac{3}{8}$ " (OPEN)	056626-4003	2
D	$\frac{3}{8}$ " DIA. CABLE	-	2
E	CLEVIS CLAMP 2"	055375-3001	4
F	BRIDLE ASSEMBLY	B-ASSY	2
G	PIPE CAP 4"	0675188	1
H	STEADY ARM	060471-3001	2
I	INSULATED SWIVEL CLAMP 4°	674999	2
J	TRANS*LITE INSULATOR 4"/40	0675150	1
K	POLE ATTACHMENT	WPA-1*	3
L	CLEVIS CLAMP 4"	BSC400-63	6

*IF STEEL POLE, USE SPB-1



(B-ASSY) BRIDLE ASSEMBLY

BRIDLE ASSEMBLY (B-ASSY)			
ITEM	DESCRIPTION	PART NO.	QTY.
A	CLAMP, PIPE CLEVIS TYPE	BSC400-63	1
B	INSULATOR, STRAIN, 1/2" PIN	PFI-EE-90	1
C	SLEEVE, COMPRESSION, 3/16", PLAIN	CSNP-19PL	4
D	THIMBLE, 3/16", OPEN, HDG	G408-19	4
E	CLAMP, CONTACT WIRE, BRIDLE SUPPORT	ISSS-CLP-001	2
F	WIRE ROPE, 3/16" DIA, 7X19, TYPE SS 304, BS:3330 LBS	SSAC-19	*

* AS REQUIRED

ISSUE RECORD		
NO.	DATE	DESCRIPTION
1	2020-09-09	DC047
0	2019-11-04	RFC

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CUY-IR490 / SR010-2.09 / 19.28

GCR TA WYE TEST TRACK
OCS ASSEMBLIES - TWO TRACK PULL-IN

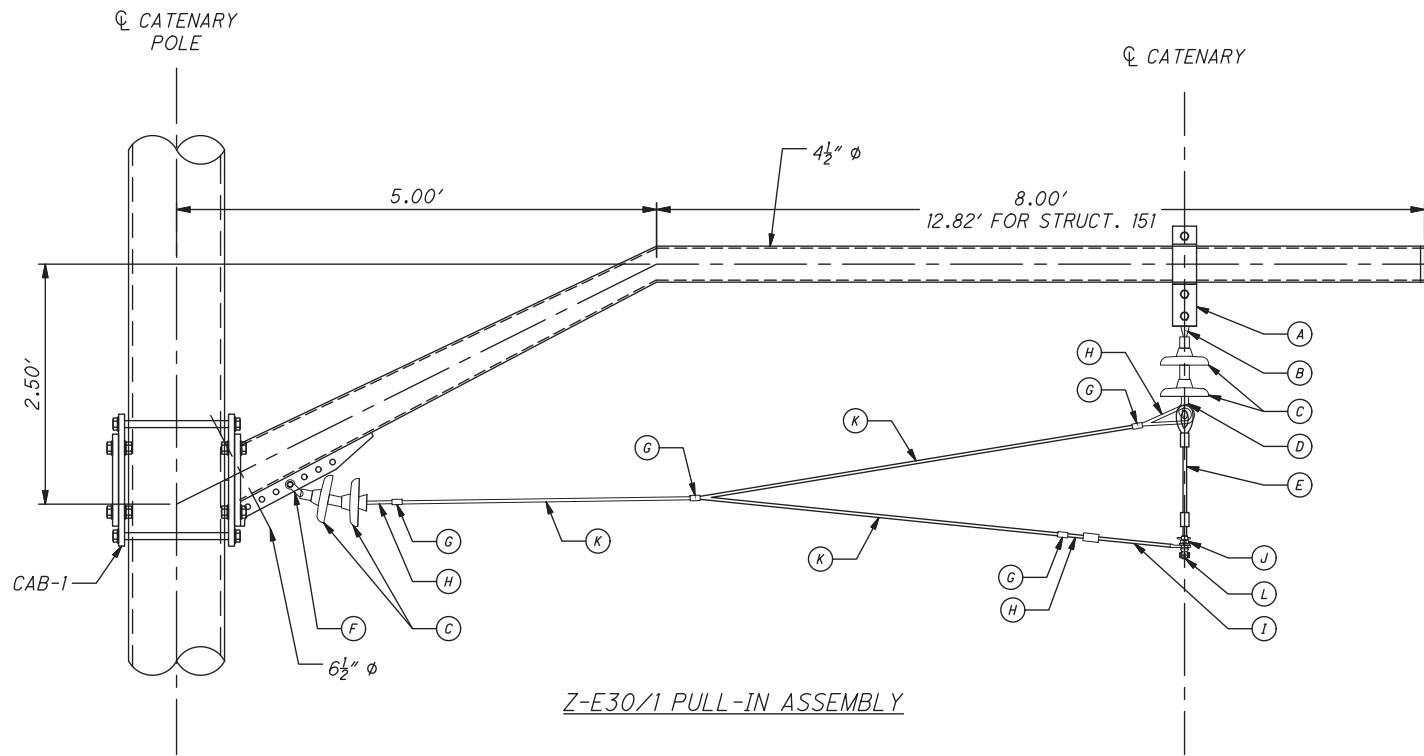
RECORD PLANS

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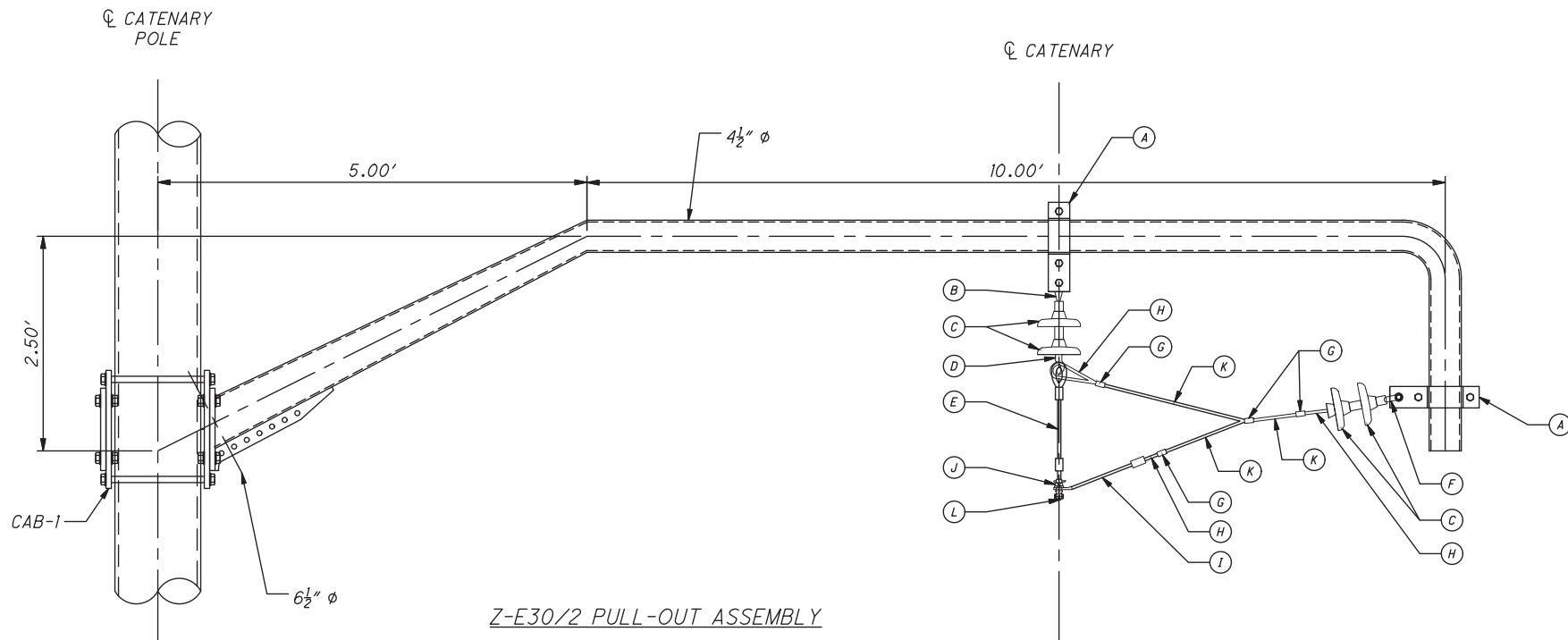
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SCALE IN FEET

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Z-E30/1 PULL-IN ASSEMBLY			
ITEM	DESCRIPTION	PART NO.	QTY.
A	CATENARY CLAMP ASSEMBLY	-	1
B	O.B. TWISTED LINK, FIGURE 8	79688	1
C	O.B. SUSPENSION INSULATOR, CLEVIS TYPE HIGH IMPACT (5000# WORKING LOAD)	47033	4
D	O.B. MESSENGER SUSPENSION CLAMP SIDE OPENING TYPE	55651-3001	1
E	HANGER ASSEMBLY	-	1
F	O.B. CLEVIS EYE	83827	1
G	O.B. TWO BOLT CLAMP (3/8" CU.)	14575	4
H	BURNDY 3/8" WIRE THIMBLE	M-30	3
I	O.B. PULLOVER ASSEMBLY W/O MESSENGER TENSION ARM	21761	1
J	O.B. SWIVEL CLAMP CW	5575-3001	1
K	3/8" STRAIN CABLE-SOLID, HD, CU	-	-
L	6/0 CONTACT WIRE, BRZ	-	-



Z-E30/2 PULL-OUT ASSEMBLY			
ITEM	DESCRIPTION	PART NO.	QTY.
A	CATENARY CLAMP ASSEMBLY	-	2
B	O.B. TWISTED LINK, FIGURE 8	79688	1
C	O.B. SUSPENSION INSULATOR, CLEVIS TYPE HIGH IMPACT (5000# WORKING LOAD)	47033	4
D	O.B. MESSENGER SUSPENSION CLAMP SIDE OPENING TYPE	55651-3001	1
E	HANGER ASSEMBLY	-	1
F	O.B. CLEVIS EYE	83827	1
G	O.B. TWO BOLT CLAMP (3/8" CU.)	14575	4
H	BURNDY 3/8" WIRE THIMBLE	M-30	3
I	O.B. PULLOVER ASSEMBLY W/O MESSENGER TENSION ARM	21761	1
J	O.B. SWIVEL CLAMP CW	5575-3001	1
K	3/8" STRAIN CABLE-SOLID, HD, CU	-	-
L	6/0 CONTACT WIRE, BRZ	-	-

NO.	DATE	DESCRIPTION
1	2020-09-09	DC047
0	2019-11-04	RFC
ISSUE RECORD		

FA-1
FEEDER CABLE ARM AND BRACKET
ASSEMBLY

NTS

FB-1
FEEDER CABLE ARM AND BRACKET
ASSEMBLY

NTS

BILL OF MATERIALS			
ITEM	DESCRIPTION	PART NO.	QTY.
1	CHANCE OVAL EYE BOLT - 1/2" Φ x 6" LG.	29937	1
2	VICTOR SUSPENSION INSULATOR	804	2
3	O.B. SUSPENSION CLAMP W/ CLEVIS, BRZ	83106	1
4	500 MCM FEEDER CABLE, H.D.C.	-	VAR.

① ELEVATION
NTS

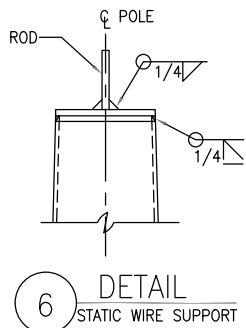
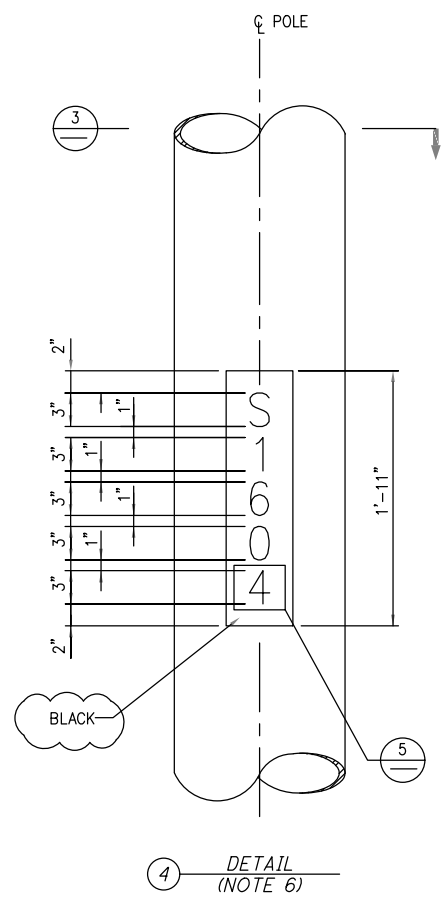
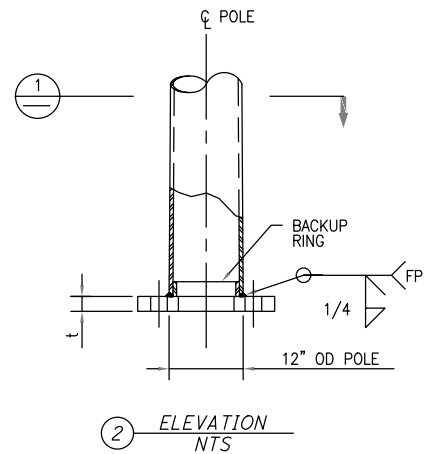
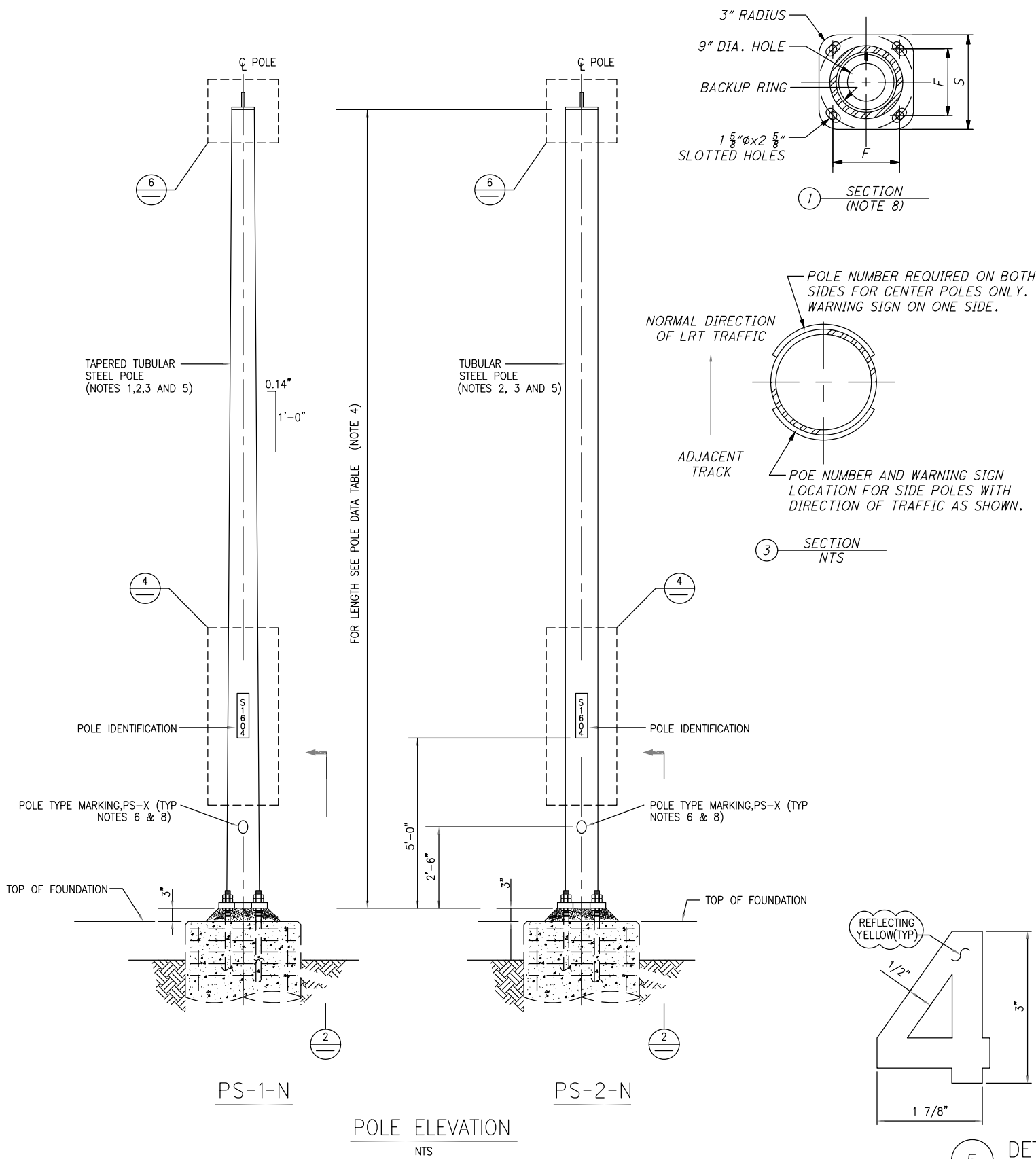
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BILL OF MATERIALS			
ITEM	DESCRIPTION	PART NO.	QTY.
1	PENN-UNION CABLE CLAMP	BSR2B-050 -3BM	1
2	NEWELL PSN STATION POST INSULATOR	41510	1
3	DELTA-STAR INSULATOR SUPPORT	633453	1
4	500 MCM FEEDER CABLE, H.D.C.	-	VAR.

2 SECTION
NTS

1	2020-09-09	DC047
0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

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STEEL POLE DATA TABLE							
ROUND POLE			BASE PLATE (IN)			ANCHOR BOLT DIA. (IN)	MAXIMUM ALLOWABLE WORKING MOMENTS (FT-LB) UNFACTORED (NOTE 7)
TYPE	POLE HEIGHT (FT-IN)	WALL THICKNESS (IN)	S	F	t		
PS-1-N	27'-0"	1/4	18	13 1/2	2	1 1/2	66,200
PS-2-N	27'-0"	1/4	18	13 1/2	2	1 1/2	66,200

- NOTES:
- POLE PS-1-N SHALL BE TAPERED TUBULAR STEEL. THE STANDARD TAPER SHALL BE FOURTEEN HUNDREDTHS (0.14) OF AN INCH PER LINEAR FOOT, MEASURED AS CHANGE IN DIAMETER.
 - TAPERED POLES PS-1-N SHALL BE ASTM A500 GRADE. NON-TAPERED POLES PS-2-N SHALL BE ASTM A513 TYPE 5 MD.
 - STEEL POLES, SHAFTS, BASE PLATES, AND POLE CAPS, SHALL BE FABRICATED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
 - TOLERANCE OF POLE LENGTH IS PLUS 2 INCHES AND MINUS ZERO INCH.
 - POLES SHALL BE SET PLUMB AFTER FULLY LOADED. SUGGESTED PRELOADED RAKE IS 2 INCHES FOR PULLOFF CANTILEVERS AND "0" INCH FOR PUSHOFF CANTILEVERS.
 - FOR POLE IDENTIFICATION AND POLE TYPE MARKING SEE TECHNICAL SPECIFICATIONS.
 - MAXIMUM ALLOWABLE WORKING MOMENTS ARE BASED ON THE MINIMUM YIELD STRESS OF 50,000 PSI FOR THE POLE AND THE BASE PLATE PER AISC.
 - BOTTOM OF BASE PLATE SHALL BE HARD DIE - STAMPED WITH POLE GAUGE USING 1/2" CHARACTERS IN ADDITION TO POLE TYPE MARKING REQUIRED UNDER NOTE 6.

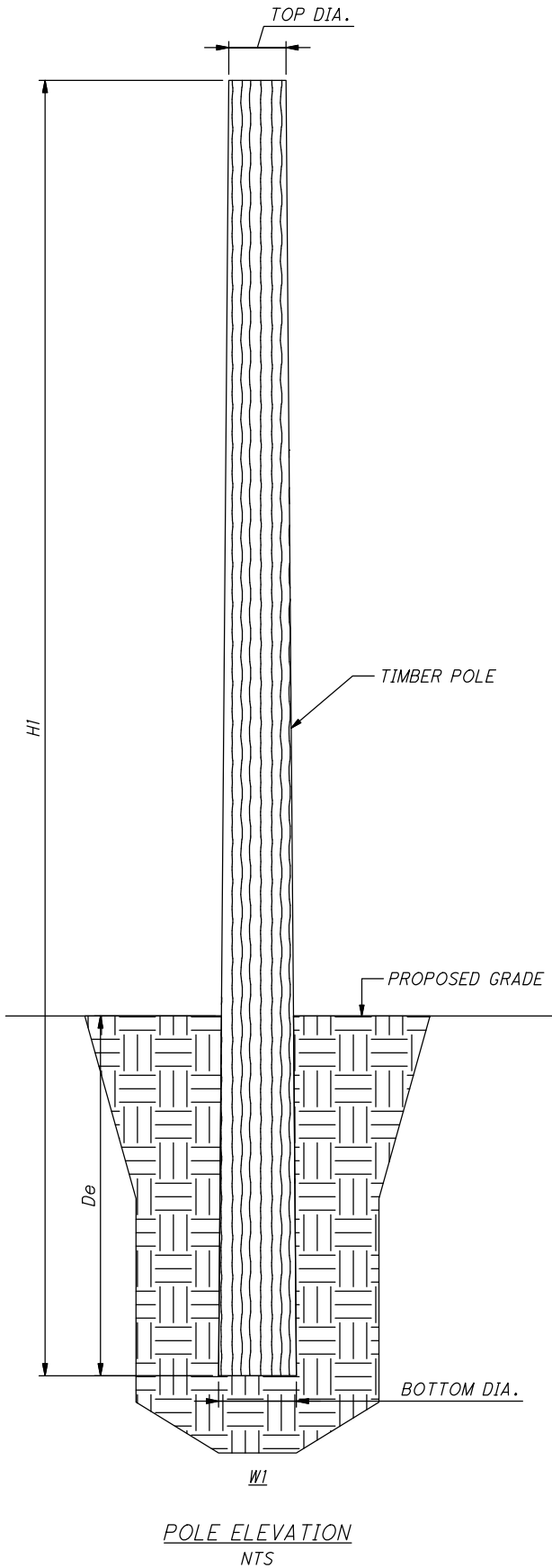
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ISSUE RECORD

GCRTA WYE TEST TRACK
OCS STEEL POLE DETAILS

CUY-IR490 / SR010-
2.09 / 19.28

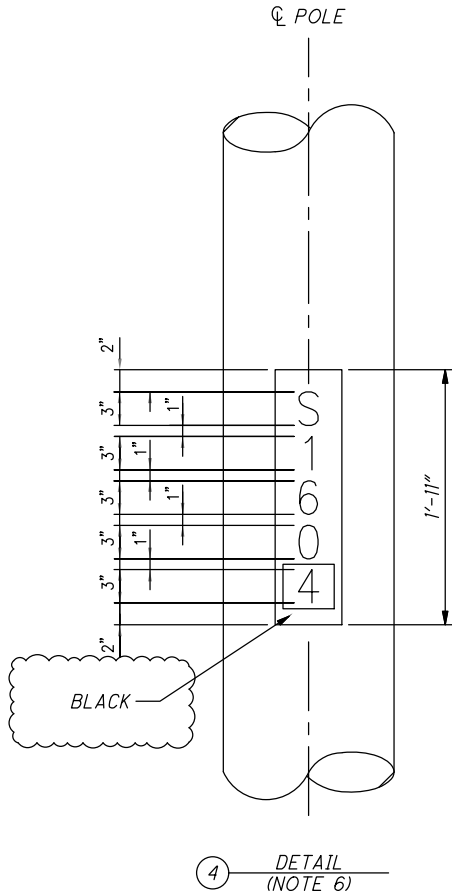
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WOOD POLE DATA TABLE						
TYPE	POLE CLASS	POLE HEIGHT (FT-IN) H1	TOP DIA. (IN)	BOTTOM DIA. (IN)	MIN. EMBEDMENT DEPTH (FT-IN) De	MAXIMUM ALLOWABLE WORKING MOMENTS (FT-LB) UNFACTORED
W1	2	35-0	0'-8"	1'-1"	8'-0"	37,583 FT-LB

NOTES:

- ALL TIMBER POLES SHALL BE SOUTHERN PINE.
- ALL TIMBER POLES SHALL BE TREATED WITH COPPER NAPHTHENATE (CuN).
- POLES ARE TO BE DIRECTLY EMBEDDED AT A MINIMUM TO THE REQUIRED MINIMUM EMBEDMENT DEPTH, De.



NO.	DATE	DESCRIPTION
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0	2019-11-04	RFC
ISSUE RECORD		

CUY-IR490 / SR010-2.09 / 19.28

GCRTA WYE TEST TRACK
OCS WOOD POLE DETAILS

RECORD PLANS

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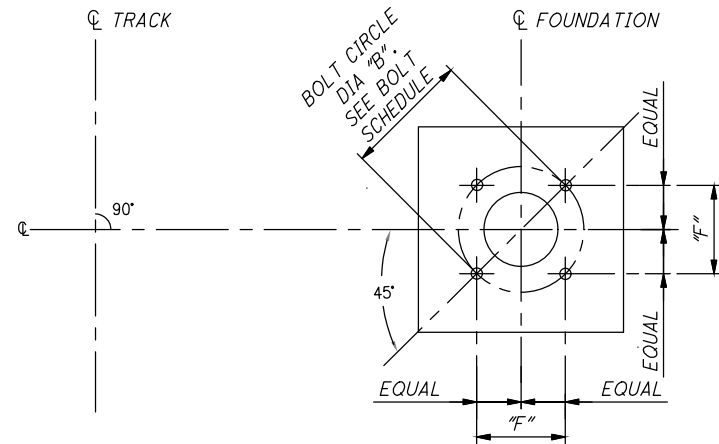
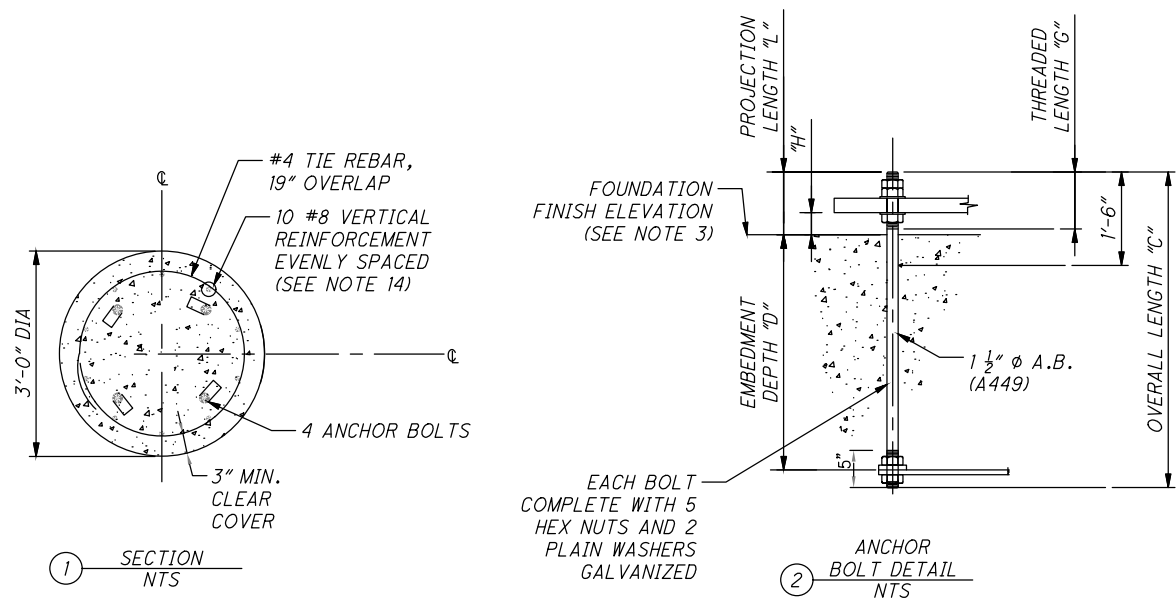
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HORIZONTAL
SCALE IN FEET

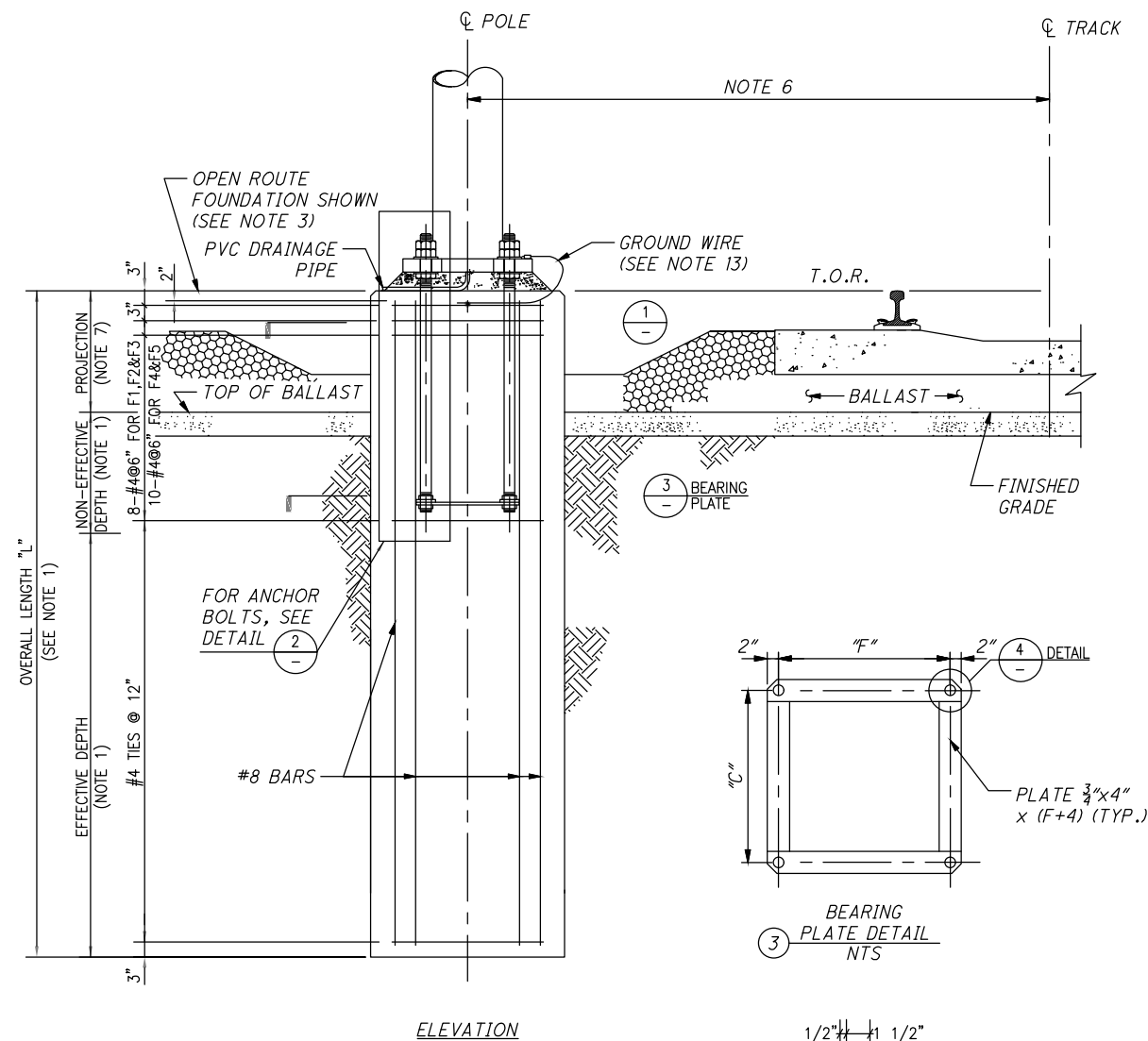
RECORD PLANS

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POLE FOUNDATION SCHEDULE				
TYPE	EFFECTIVE DEPTH (FT)	DIAMTER (FT-IN)	ANCHOR BOLT TYPE	REMARKS
F-I-N	14'-0"	3'-0"	A	

ANCHOR BOLT SCHEDULE (IN)								
TYPE	A	B	C	D	E	F	G	H
A	1 1/2	19 1/16	78	66	9	13 1/2	9	3



FOUNDATION NOTES:

- FOUNDATION OVERALL LENGTH "L" SHALL BE THE EFFECTIVE DEPTH INDICATED IN THE FOUNDATION SCHEDULE PLUS THE PROTECTION OF THE FOUNDATION ABOVE FINISHED GRADE AND THE FOLLOWING NON-EFFECTIVE DEPTH:

FINISHED GRADE LEVEL	NON-EFFECTIVE DEPTH
30° EMBANKMENT	1.0 FEET
45° EMBANKMENT	3.0 FEET
	5.0 FEET

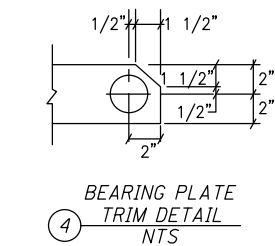
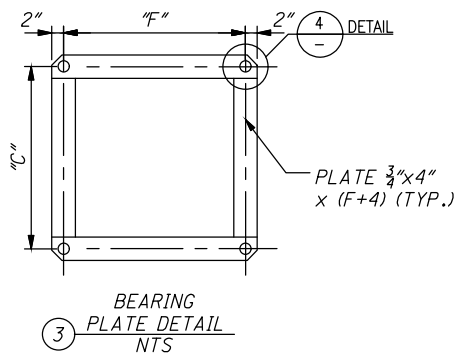
- TO DETERMINE THE TOTAL DEPTH OF THE AUGERED HOLE, THE NON-EFFECTIVE DEPTH SHALL BE ADDED TO THE EFFECTIVE DEPTH INDICATED IN THE POLE FOUNDATION SCHEDULE.
- FOUNDATION FINISHED LEVELS FOR STANDARD OPEN ROUTE SHALL BE AT HIGH RAIL LEVEL.
- CONTRACTOR SHALL COMPACT BACKFILL MATERIAL FOR DUCTBANK TO AT LEAST 90% DENSITY PRIOR TO POLE INSTALLATION.
- EXPOSED EDGE OF CONCRETE SHALL HAVE 3/4" CHAMFER.
- FOR DISTANCES BETWEEN CENTERLINE OF POLE AND CENTERLINE OF TRACK, SEE LAYOUT CHARTS.
- TOP OF SUBBALLAST TO TOP OF FOUNDATION SHALL BE 2'-3" UNLESS OTHERWISE INDICATED.
- CONTRACTOR SHALL TEST, RECORD AND SUBMIT RESISTANCE MEASUREMENTS FOR ACCEPTANCE PER SPECIFICATION REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND INSTALLATION METHODS OF THE PREFABRICATED TEMPLATES THAT THE CONTRACTOR INTENDS TO USE, TO HOLD THE ANCHOR BOLTS IN THEIR PROP POSITION DURING PLACEMENT OF CONCRETE.
- DISTANCE BETWEEN CENTERLINE OF TRACK AND CENTERLINE OF ANCHOR BOLT SET SHALL HAVE A TOLERANCE OF PLUS/MINUS ON INCH. ELEVATION BETWEEN TOP OF RAIL AND TOP OF FOUNDATION SHALL BE SET WITH A TOLERANCE OF PLUS/MINUS ONE-HALF INCH.
- REINFORCING STEEL BARS SHALL BE UNCOATED DEFORMED TYPE CONFORMING TO ASTM A615 GRADE 60 MATERIAL. CAST-IN-PLACE CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH F'c = 4,000 PSI AT 28 DAYS.

- REINFORCING STEEL AND ANCHOR BOLTS SHALL BE INSTALLED AS FOLLOWS:

- PLACE THE REINFORCEMENT AND INSTALL THE ANCHOR BOLTS AND GROUNDING WIRE IN THE PIER SHAFTS. VERIFY THAT THE ANCHOR BOLT ASSEMBLIES ARE CORRECTLY LOCATED AND ORIENTED FOR THE POLES TO BE PLACED AND WITHIN THE SPECIFIED TOLERANCES. ELECTRICAL BONDING WITHIN THE REINFORCING CAGES SHALL BE PROVIDED AS INDICATED.
 - REINFORCING CAGES SHALL BE SET AND SECURED SYMMETRICALLY ABOUT THE AXIS OF THE FOUNDATIONS AND SHALL BE SECURELY FASTENED TO MAINTAIN THE CONCRETE COVER AS INDICATED. CONCRETE SPACERS OR "DOBIES" SHALL BE ADDED TO THE CAGES AS REQUIRED AT NO ADDITIONAL COST TO THE AGENCY.
 - PROPERLY SECURED PREFABRICATED TEMPLATES SHALL BE USED TO HOLD THE ANCHOR BOLTS AND PVC DRAINAGE PIPE IN THEIR PROPER POSITIONS DURING PLACEMENT OF CONCRETE.
 - ANCHOR BOLTS SHALL BE PROPERLY FASTENED TO THE REBAR CASE IN PLUMB POSITION PRIOR TO PLACEMENT OF CONCRETE.
 - NOTIFY THE ENGINEER AFTER INSTALLATION OF THE REINFORCEMENT AND ANCHOR BOLTS IN EACH PIER SHAFT THAT THE INSTALLATION IS READY FOR INSPECTION. ADJUST THE REINFORCEMENT AND ANCHOR BOLTS AS REQUIRED BY THE ENGINEER.
 - IMMEDIATELY AFTER ACCEPTANCE OF REINFORCEMENT AND ANCHOR BOLTS IN EACH PIER SHAFT BY THE ENGINEER, BEGIN PLACEMENT OF THE CONCRETE. PLACEMENT OF THE CONCRETE IN EACH PIER SHAFT SHALL BE ONE CONTINUOUS OPERATION. CONCRETE SHALL BE PLACED IN ACCORDANCE WITH SPECIFICATION.
 - IF A CASING IS USED, VIBRATION OF THE TOP FIVE FEET OF EACH PIER SHALL NOT BE CARRIED OUT, UNTIL THE CASING IS COMPLETELY REMOVED.
 - THE ANCHOR BOLT TEMPLATE SHALL BE LEFT IN PLACE FOR AT LEAST TWO DAYS AFTER THE CONCRETE HAS BEEN PLACED.
- INSULATED 2/0 COPPER GROUND WIRE WITH 18" PROJECTION LENGTH ABOVE FOUNDATION FINISH LEVEL TO BE CONNECTED TO REINFORCING BAR AND BASE PLATE BY FIELD CADWELD.
 - THE TOP HORIZONTAL REINFORCING BARS SHALL BE FIELD WELDED TO ALL VERTICAL BARS AND ONE VERTICAL BAR SHALL BE WELDED TO EACH HORIZONTAL BAR TO PROVIDE ELECTRICAL CONTINUITY.

LAP LENGTH:
NO. 8 BAR= 41"

STEEL POLE FOUNDATION



CUY0IR490 / SR10

2.09 / 19.28

GCRTA WYE TEST TRACK
STEEL POLE FOUNDATION

RECORD PLANS

RECORD PLANS

1/2
1/4
HORIZONTAL
SCALE IN FEET

CALCULATED
LWH

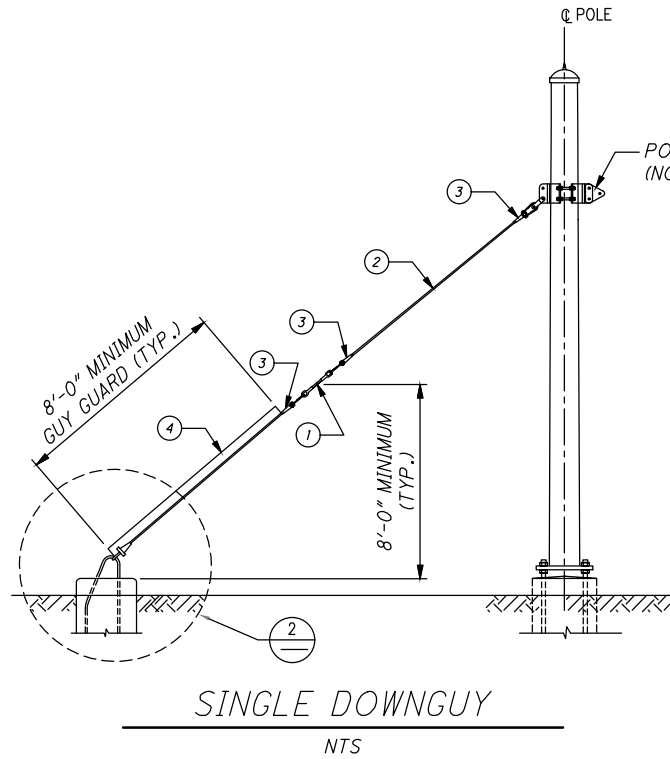
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NO.	DATE	DESCRIPTION
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0	2019-11-04	RFC
ISSUE RECORD		

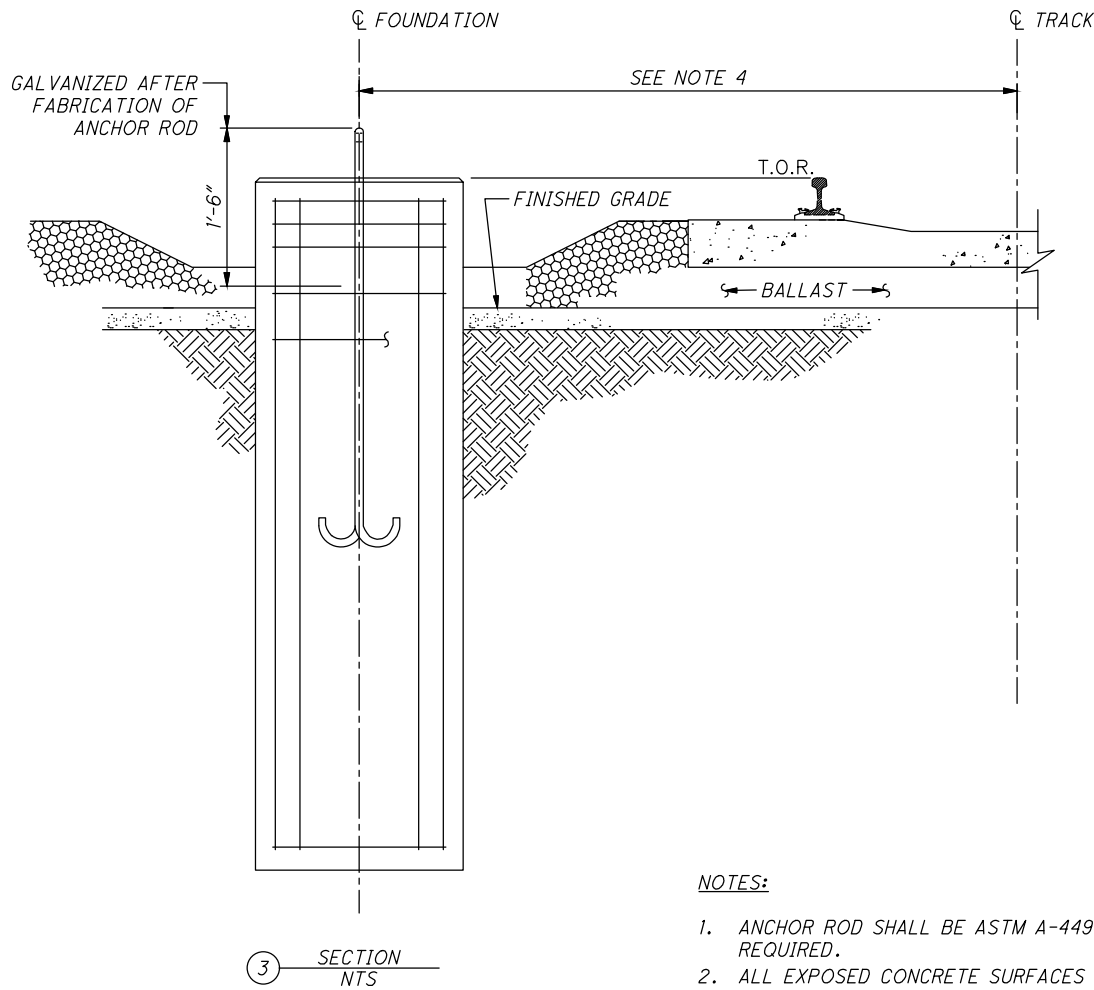
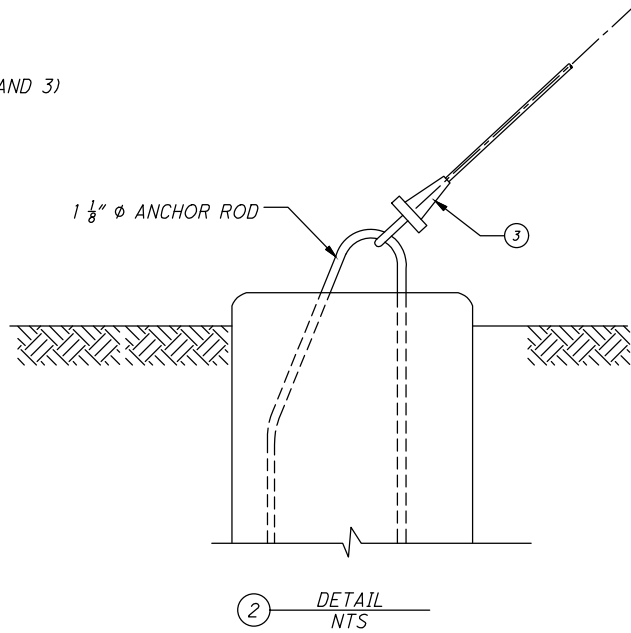
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BILL OF MATERIALS		
ITEM NO.	DESCRIPTION	QTY.
1	STRAIN INSULATOR CLEVIS/CLEVIS - 10" MIN. INSULATION WITH PINS AND COTTER PINS	1
2	1/2" Ø - 7 STRAND UTILITY GRADE GALV WIRE	VAR
3	HALF SLEEVE DEADEND	4
4	GUY GUARD	1

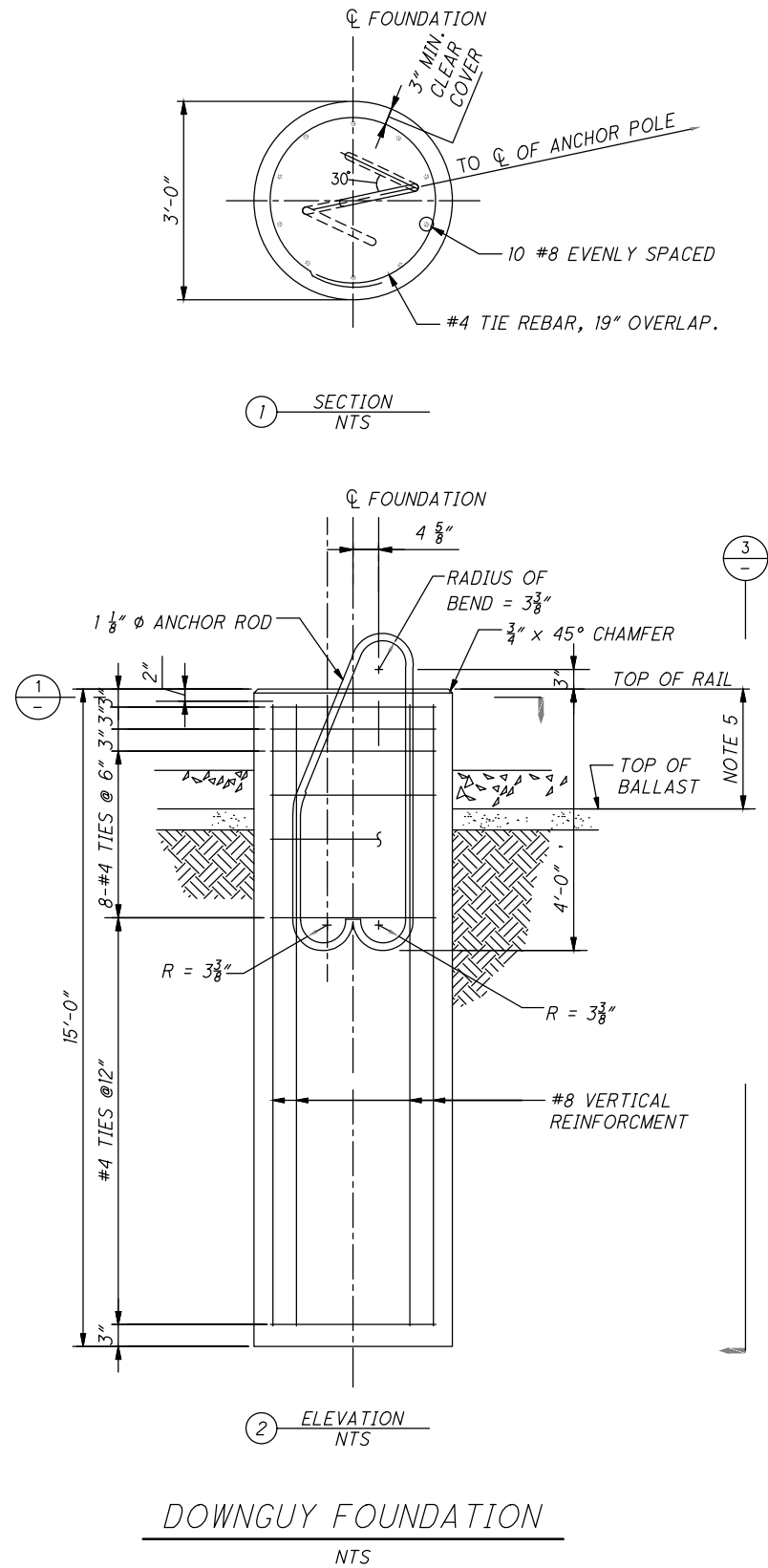
NOTES:

1. FOR TERMINATION HEIGHTS, SEE OCS LAYOUT PLANS
2. POLE BANDS WITH YOKE PLATES AND LINKS FOR DEADEND ASSEMBLIES ARE SHOWN IN THEIR RESPECTIVE ASSEMBLY DRAWINGS.
3. POLE BANDS AND TERMINATION MATERIALS SHALL BE RATED WITH A FACTOR OF SAFETY 2.5 MINIMUM.

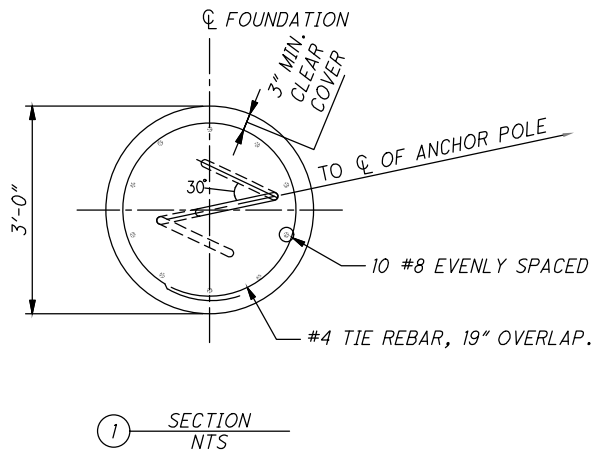


NOTES:

1. ANCHOR ROD SHALL BE ASTM A-449 GALVANIZED AS REQUIRED.
2. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A 3/4" CHAMFER AND SHALL BE CAST IN FORMS.
3. ANCHOR ROD SHALL BE SET IN LINE OF DOWNGUYS.
4. FOR DISTANCE BETWEEN CENTER LINE OF FOUNDATION AND CENTER LINE OF TRACK, SEE LAYOUT CHARTS.
5. TOP OF SUBBALLAST TO TOP OF FOUNDATION SHALL BE 2'-3" UNLESS OTHERWISE INDICATED.



DOWNGUY FOUNDATION
NTS



NO.	DATE	DESCRIPTION
0	2019-11-04	RFC
35		
38		

GCR TA WYE TEST TRACK
DOWNGUY DETAILS

CUY-IR490 / SR010-
2.09 / 19.28

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RECORD PLANS

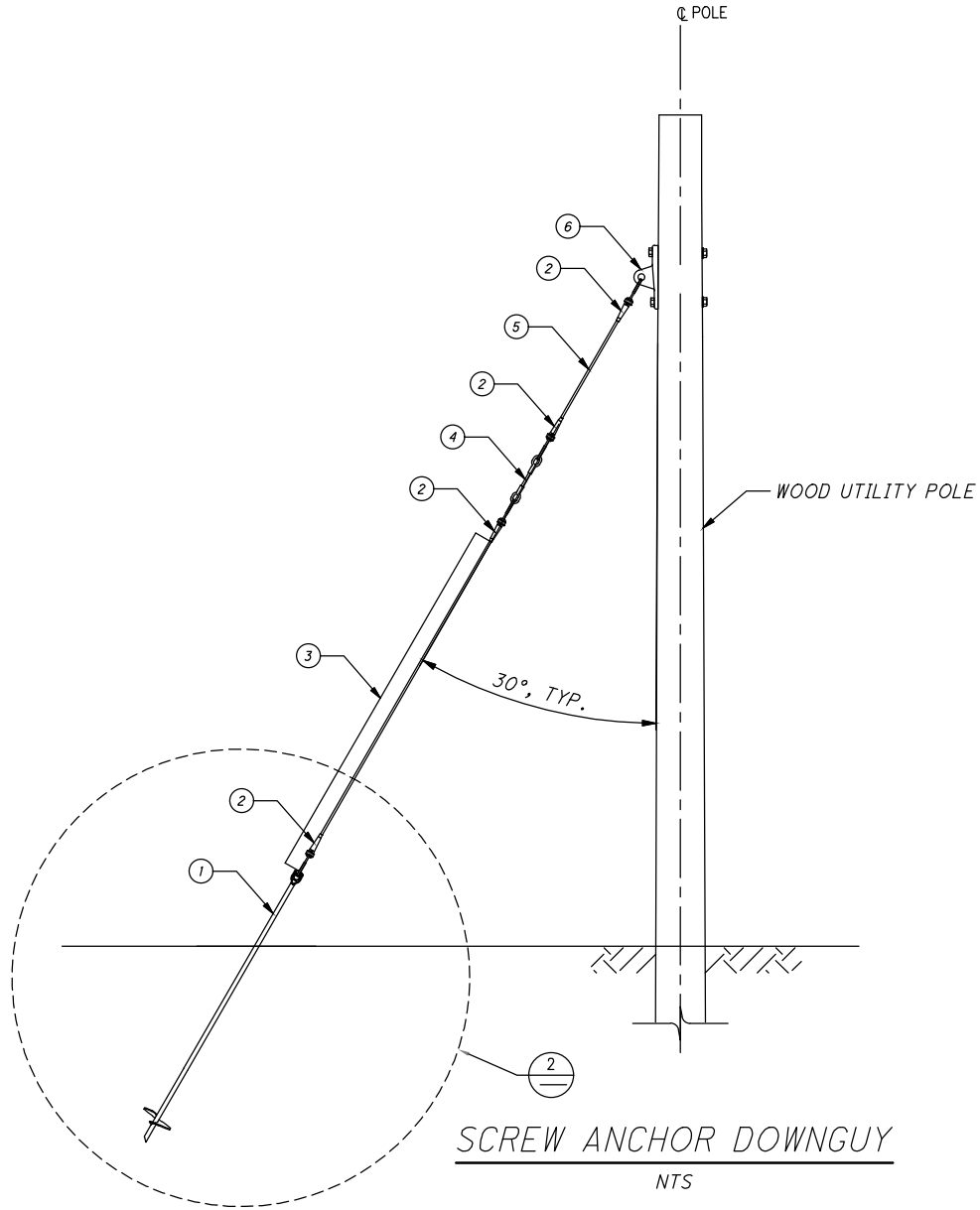
RECORD PLANS

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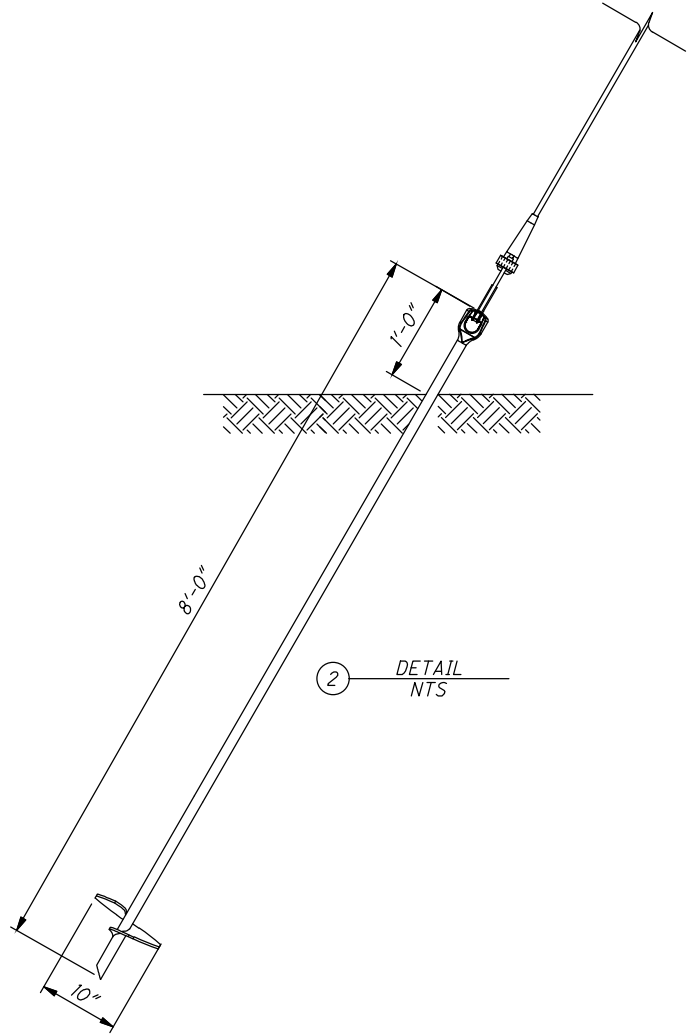
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HORIZONTAL
SCALE IN FEET

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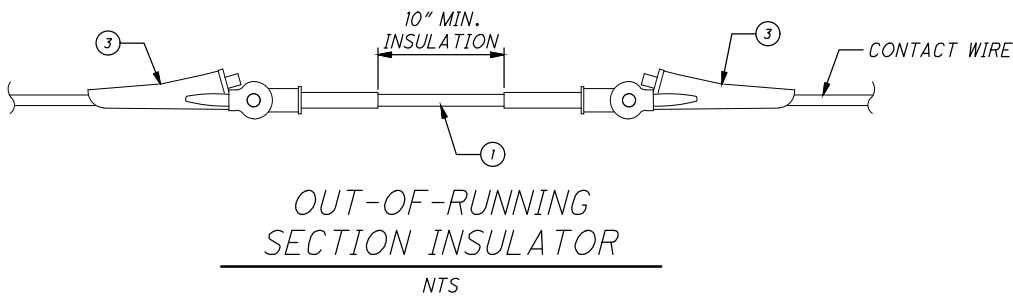
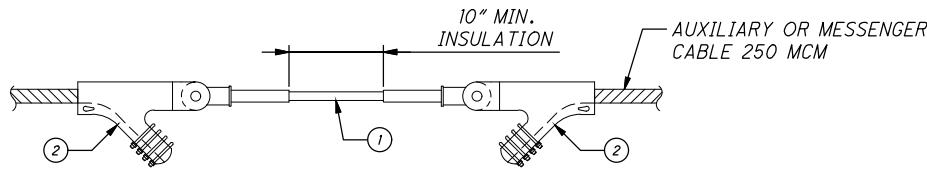
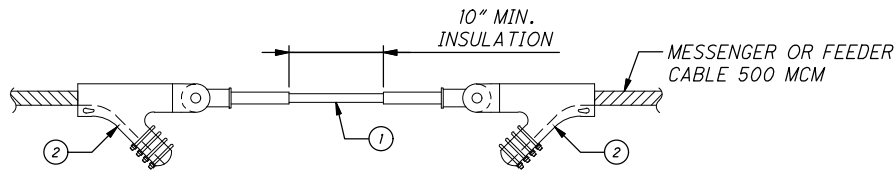
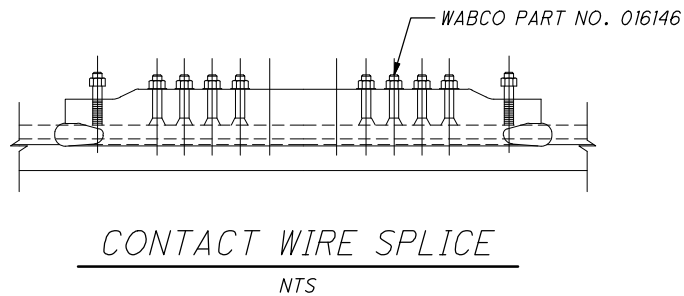
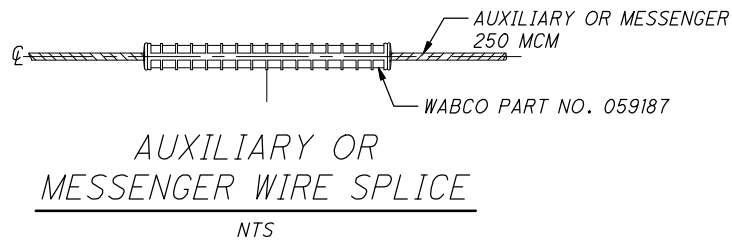
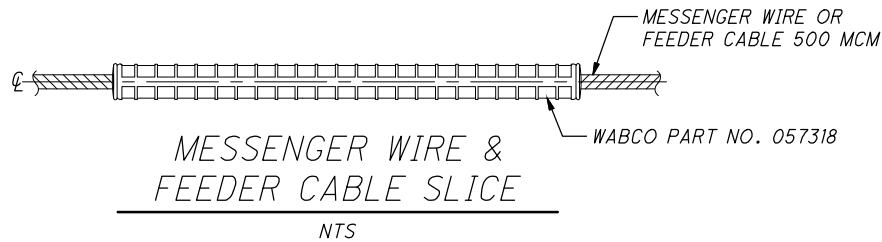
BILL OF MATERIALS		
ITEM NO.	DESCRIPTION	QTY.
1	NO-WRENCH SCREW ANCHOR	1
2	HALF SLEEVE DEADEND	4
3	GUY GUARD	1
4	STRAIN INSULATOR CLEVIS/CLEVIS - 10" MIN. INSULATION WITH PINS AND COTTER PINS	1
5	1/2" ϕ - 7 STRAND UTILITY GRADE GALVANIZED WIRE	1
6	POLE EYE PLATE W/ 5/8" ϕ BOLTS	1



0	2019-11-04	RFC
NO.	DATE	DESCRIPTION
ISSUE RECORD		

GCR TA WYE TEST TRACK		CALCULATED LWH	CHECKED JWA	<div><div></div><div>01/2</div><div>1</div></div> <div>HORIZONTAL SCALE IN FEET</div>		
WOOD POLE DOWNGUY DETAILS						
CUY-IR490 / SR010-2.09 / 19.28		RECORD PLANS				
34 / 36		RECORD PLANS				

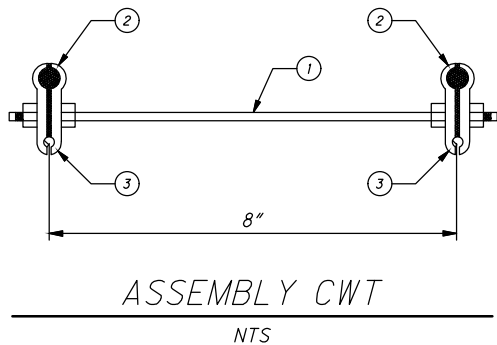
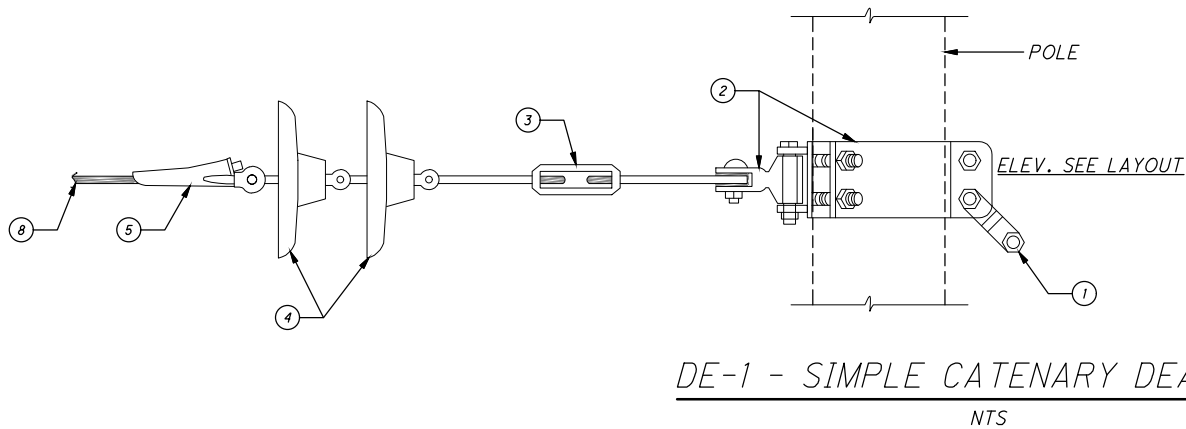
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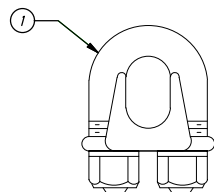
BILL OF MATERIALS		
ITEM NO.	DESCRIPTION	QTY.
1	STRAIN INSULATOR EYE-EYE	3
2	DEADEND CLAMP FOR MESSNGER WIRE (ANGLED TYPE) - CLEVIS END	3
3	DEADEND CLAMP FOR CONTANT WIRE - CLEVIS END	2

BILL OF MATERIALS			ASSEMBLY QTY.	
ITEM	DESCRIPTION	PART NO.	CLM	CLP
1	TYPE BC DEADEND CLIP, BURNDY CORP.	BC-35	1	-
2	TYPE BC DEADEND CLIP, BURNDY CORP.	BC-30	-	1

BILL OF MATERIALS			
ITEM	DESCRIPTION	PART NO.	QTY.
1	LINK CLEVIS-CLEVIS W/ PIN & COTTER PIN	79656	2
2	POLE BAND AND CLEVIS SWIVEL ASSEMBLY FOR HORIZONTAL WORKING LOAD 10,000#		2
3	O.B. TURNBUCKLE, 5/8" x 12" E/E	95683	2
4	O.B. SUSPENSION INSULATOR, CLEVIS TYPE (15,000# WORKING LOAD)	47415	4
5	O.B. CONTACT WIRE DEAD END CLAMP, BRZ	23734	1
6	O.B. STRAIN CLAMP W/ CLEVIS CONNECTOR BRZ	80640	1
7	MESSENGER - 250 MCM	-	-
8	6/0 - FIG. 9 DEEP SECTION CONTACT WIRE	-	-



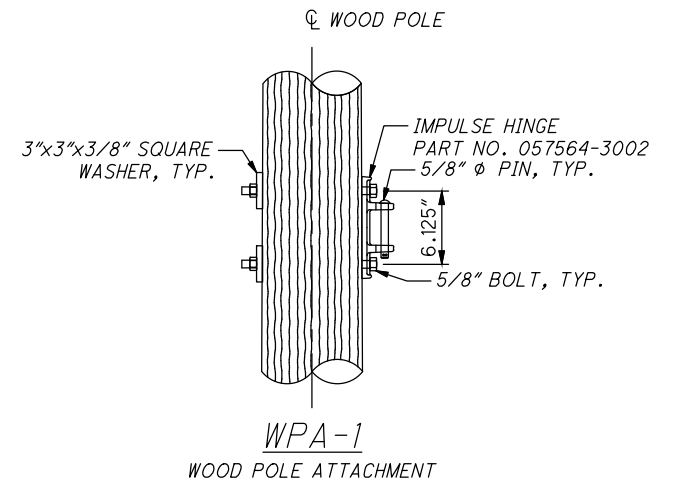
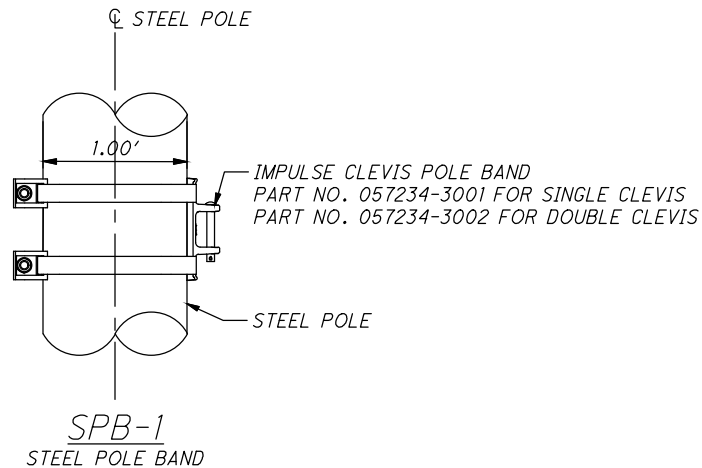
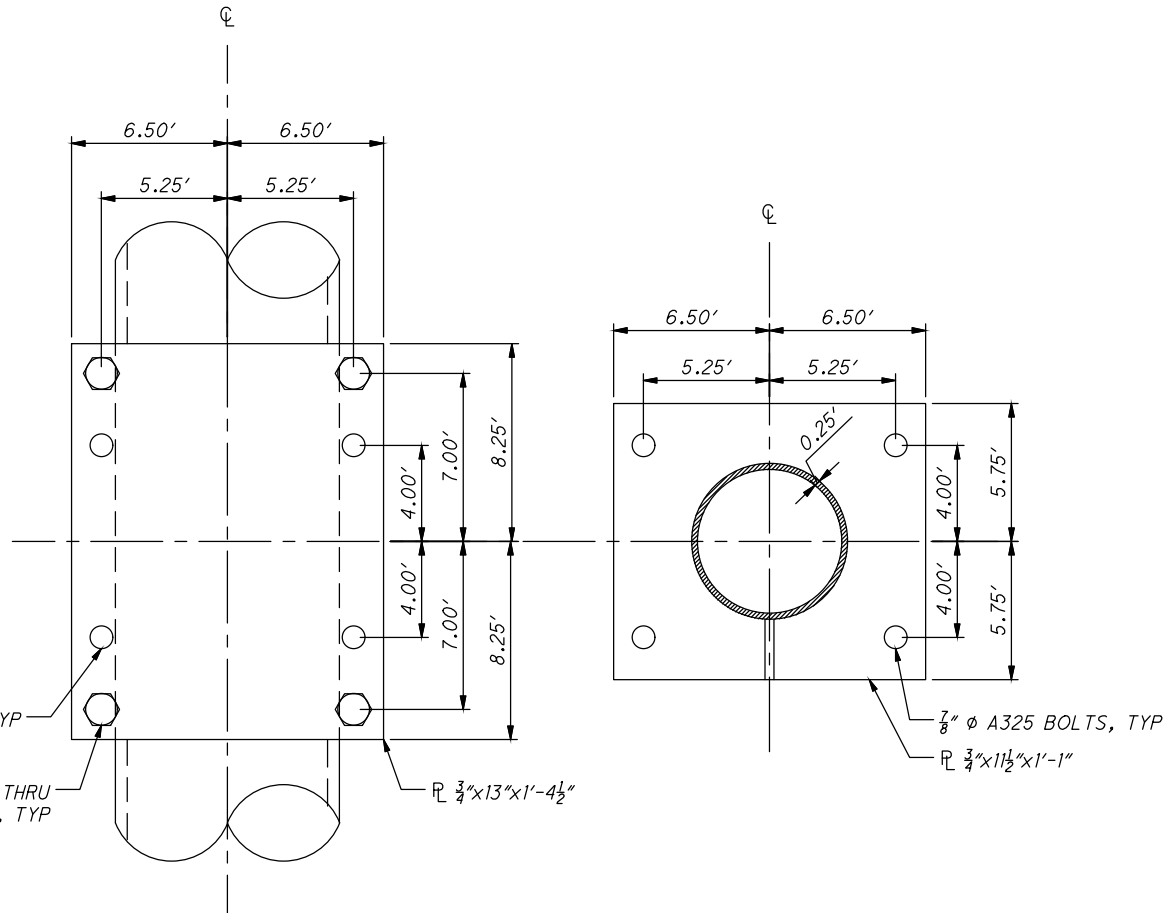
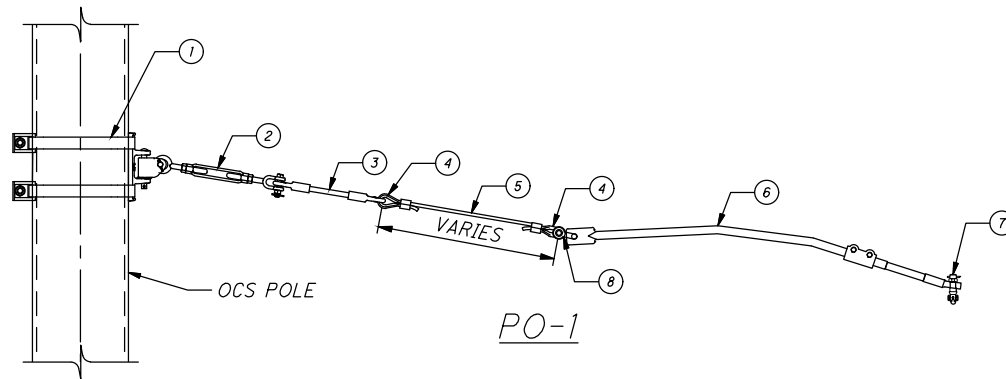
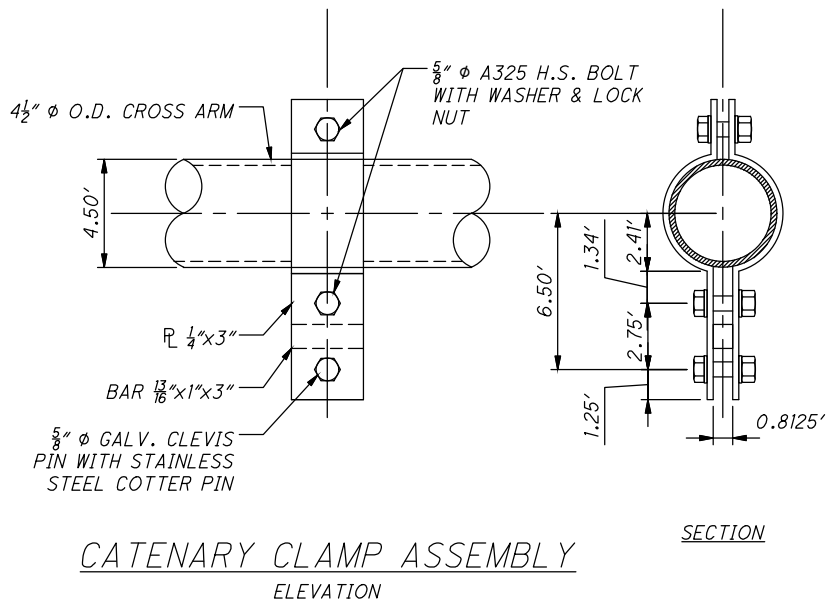
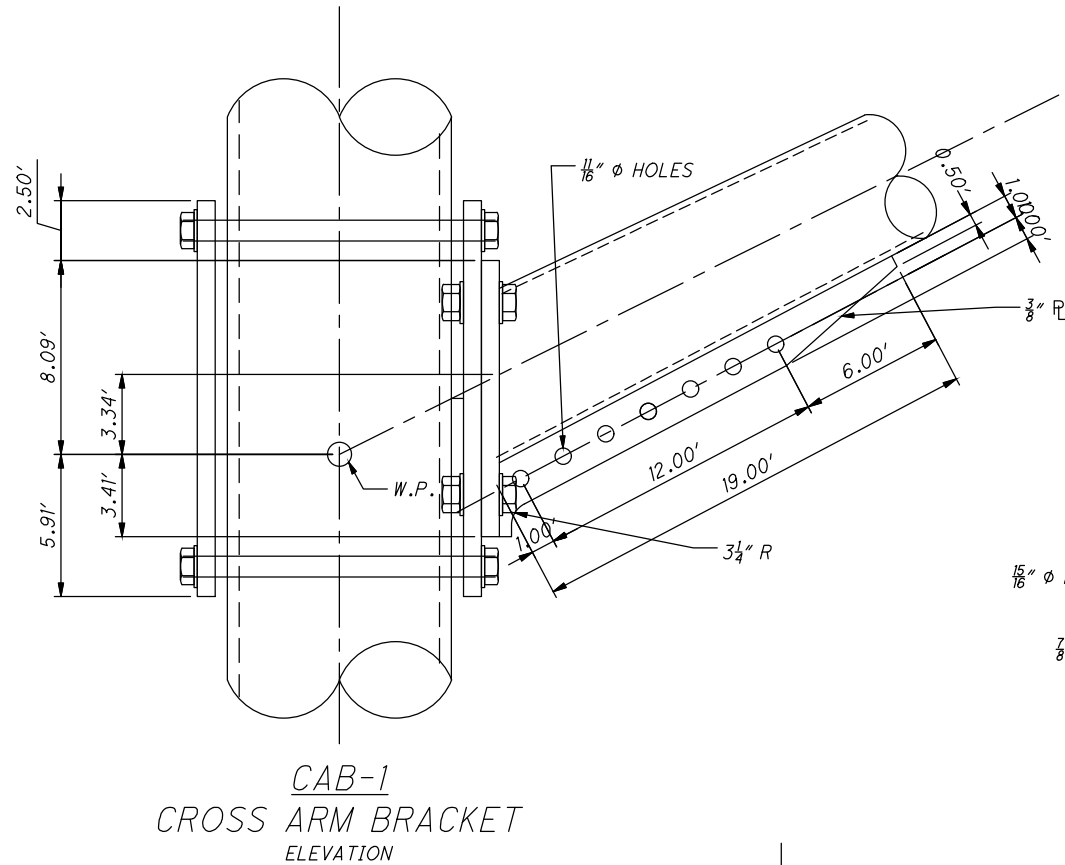
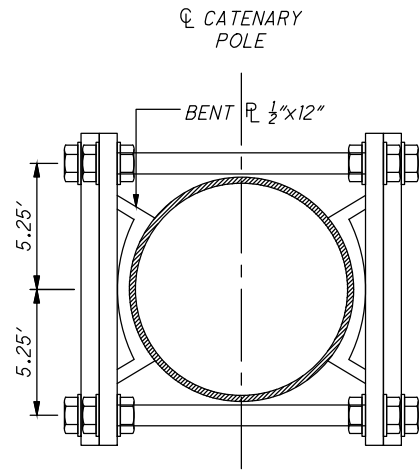
BILL OF MATERIALS			
ITEM	DESCRIPTION	PART NO.	QTY.
1	THREADED ROD-5/8" DIA. W/(4) LOCK NUTS, S.S.		1
2	DUMMY AUX.-1-1/2" LG.-250		2
3	DUPLEX CLIP JAW-O.B.	22675-FIG. 2	2



ASSEMBLY CLM & CLP
NTS

ISSUE RECORD		
NO.	DATE	DESCRIPTION
0	2019-11-04	RFC

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BILL OF MATERIALS			
ITEM	DESCRIPTION	PART NO.	QTY.
1	SPB-1	-	1
2	5/8" TURNBUCKLE	-	1
3	EYE/EYE TRANS*LITE INSULATOR	055263-6132	1
4	THIMBLE 3/8"	056626-4003	1
5	3/8" DIA. CABLE	-	1
6	INSULATED STEADY ARM	056303-3001	2
7	4" SWIVELW CLAMP	057219-3001	1

NO.	DATE	DESCRIPTION
0	2019-11-04	RFC
ISSUE RECORD		

Submittal: 53

Revision:

Date Submitted: 01/20/2020

Response Due: 02/03/2020



Project: ODOT 3000(17) – Opportunity Corridor 3

Subject: Disconnect Switches

To: Chris Coppock, P.E.
GCRTA-Track Engineer
Email: Christopher.Coppock@gcrta.org

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

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

Submittal #	Spec	Revision	Description	Status
54			Disconnect Switches	For Approval

Comments:

Please see the included submittal drawings for disconnect switches received from U.S. Utility for review/approval.

Also, the below questions need clarified:

- Does each disconnect switch that is installed require a 'section insulator' to be installed at the same location?
- If a 'section insulator' does need installed, U.S. Utility will need a drawing and BOM for the section insulator.

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

Signed: 

Submittal: 071

Revision: 0

Date Submitted: 4/1/2020

Response Due By: 4/15/2020



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

Description: GCRTA Material - Feeder Poles and Material for Mac Switch Installation

To: Chris Coppock, PE
GCRTA – Track Engineer

Email: Christopher.Coppock@gcrt.org

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 checked="" 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 type="checkbox"/> Product Data/Samples	<input type="checkbox"/> Attached (Hard Copy)
<input type="checkbox"/> Other:	

Submittal #	Copies	Spec #	Rev. #	Description	Status
071	1		0	071 – GCRTA Material - Feeder Poles and Material for Mac Switch Installation	For Approval

Comments:

Please see the attached shop drawings received from U.S. Utility Contractor Co. for review/approval.

Let me know if you have any questions or concerns regarding this submittal.

Signed: 

U.S. UTILITY CONTRACTOR CO., INC.

3592 Genoa Road

TRANSMITTAL #2

Perrysburg, OH 43551

419/ 837-9358 or 419/ 837-2017

419/ 837-2015 Fax

PROJECT: ODOT 173000 RTA OC-3

OWNER'S PROJECT NO.

COMPANY: Kokosing

DATE: 3/26/2020

ATTN: Mike Luyster

IF CHECKED BELOW, PLEASE:

(X) Acknowledge receipt of enclosures

() Return enclosures to us

(X) Drawings () Shop Drawings
() Specifications (X) Catalog Cuts / Submittals
() Change Order No. () Samples

() Product Literature
() Certified Test Report
() Other

DATE	DESCRIPTION	QTY	PAGES
3/26/20	Feeder Poles - 12-PS-1-N & 4-PS-2-N	16	1
3/26/20	Misc. Material for Mac Switch Install	5	10

(X) For approval () For your information/file
(X) Review & comment

MEMO: Material is on hold on until one signed approved copy has been returned.

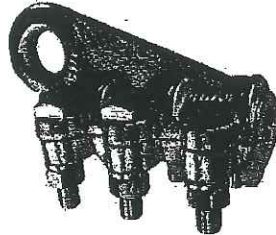
Please confirm quantities of poles and arms needed.

George Ovalle

George Ovalle

PHOENIX MINING & TRANSIT SYSTEMS
P.O. BOX 14179, CINCINNATI, OHIO 45250
(513) 651-0300 Fax (513) 651-0270 E-mail: BILLpme@fuse.net

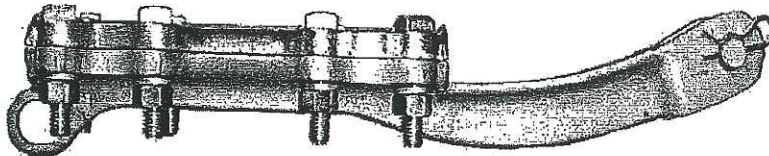
FEEDER CABLE STRAIN CLAMPS



Manufactured of bronze, and all fasteners are HDG steel.

Catalog No.	Description	Feeder Cable Size	Wt./Ea.
5859	Feeder Cable Clamp with Clevis	1/0 to 500 MCM	3.19#
5860	Feeder Cable Clamp with Eye	4/0 to 500 MCM	1.60#
5861	Guy Wire Clamp with Eye	3/8" Guy Wire	1.65#
5862	Guy Wire Clamp with Clevis	3/8" Guy Wire	1.7#
8762	Feeder Cable Clamp with Eye	500 to 1000 MCM	2.6#
8483	Feeder Cable Clamp with Clevis	500 to 1000 MCM	2.9#

FEEDER CABLE DEAD END



Body and keeper are high strength bronze alloy, and cadmium plated. Cable is secured by eight (8) 1/2" HDG, steel machine bolts, lock washers and hex nuts.

Catalog No.	Description	Feeder Cable Size	Wt./Ea.
→ 8628	Feeder Cable Dead End	500 to 700 MCM	9.9#
8629	Feeder Cable Dead End	750 to 1000 MCM	9.5#

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P.O. BOX 14179, CINCINNATI, OHIO 45250
(513) 651-0300 Fax (513) 651-0270 E-mail: BILLpme@fuse.net

500 MCM PARALLEL FEEDER CABLE DUPLEX CLAMPS



Manufactured of high strength bronze alloy. Clamping grip provided by three (3) 1/2-inch, bronze full thread bolts, lock washers and hex nuts.

Catalog No.	Description	Wt./Ea.
1504	500 MCM Parallel Feeder Clamp	2.6#

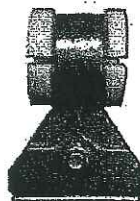
UNIVERSAL FEEDER CABLE DUPLEX CLAMP

Clamp design permits rotation of one side, thus allowing the accommodation of all size feeder cable between 2/0 to 1000 MCM. Double ended castings are made of high strength bronze alloy and secured by a steel, hot dip galvanized, carriage bolt, lock washer and hex nut.



Catalog No.	Impulse P/N	Description	Wt./Ea.
8123	18547-2000	Universal Feeder Duplex Clamp	1.2#

INSULATED FEED SPAN SUPPORT CLAMP



Clamp fits 1/4 to 3/8-inch guy wire and is made of high strength bronze alloy. Clamping grip is provided by a single, steel, HDG, hex bolt, hex nut, and lock washer.

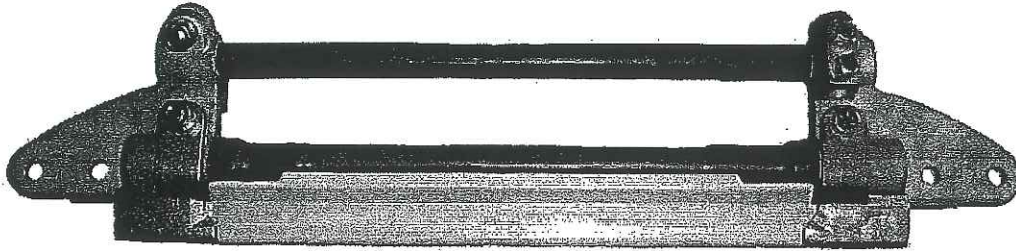
Split nylon spool has 7/8" diameter hole.

Catalog No.	Impulse P/N	Description	Wt./Ea.
9414	17706-2000	Insulated Feed Span Support Clamp	1.2#

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PHOENIX MINING & TRANSIT SYSTEMS
P.O. BOX 14179, CINCINNATI, OHIO 45250
(513) 651-0300 Fax (513) 651-0270 E-mail: BILLpme@fuse.net

NOBO STYLE SECTION INSULATOR



Catalog No. 9400

Phoenix NOBO Style Section Insulators are a standard component incorporated in curve segments, turnouts and virtually all overhead assemblies. Constructed of fiberglass tension and compression rods (both covered in shrink wrap rubber tubes); an insulating runner made of premium, high strength, electrical grade, thermo-set polyester; and high strength bronze end fittings - End fittings will accommodate all PHOENIX and Impulse standard clevis type frog tips.

Standard units are "Long" with a 14 1/2" runner, "Short" with a 10" runner and "Extended" with a 29 15/16" runner.

With an ultimate tensile strength of 12,000 pounds, safely allowing working loads in excess of 6,000 pounds, the PHOENIX NoBo Style Section Insulators are strong and rugged enough for all standard applications.

Catalog No.	Description	Voltage
→ 9400	Long Section Insulator-14 1/2" Runner	1,500 VDC
9500	Short Section Insulator-10" Runner	700 VDC
9300	Extended Section Insulator-29 15/16" Runner	1,500 VDC

All PHOENIX NoBo Style Section Insulators and component parts are interchangeable with their Impulse equivalents. See page 35 for complete parts list and cross reference.

www.phoenixmining.net



ODOT 173000 OC 3
RTA Feeder Disconnect
Switches

PHOENIX MINING & TRANSIT SYSTEMS
P.O. BOX 14179, CINCINNATI, OHIO 45250
(513) 651-0300 Fax (513) 651-0270 E-mail: BILLpme@fuse.net

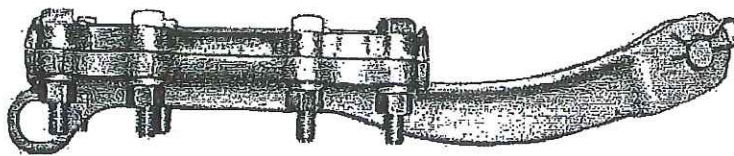
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ODOT 173000 OC 3
RTA Feeder Disconnect
Switches

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P.O. BOX 14179, CINCINNATI, OHIO 45250
(513) 651-0300 Fax (513) 651-0270 E-mail: BILLpme@fuse.net

500 MCM PARALLEL FEEDER CABLE DUPLEX CLAMPS



Manufactured of high strength bronze alloy. Clamping grip provided by three (3) 1/2-inch, bronze full thread bolts, lock washers and hex nuts.

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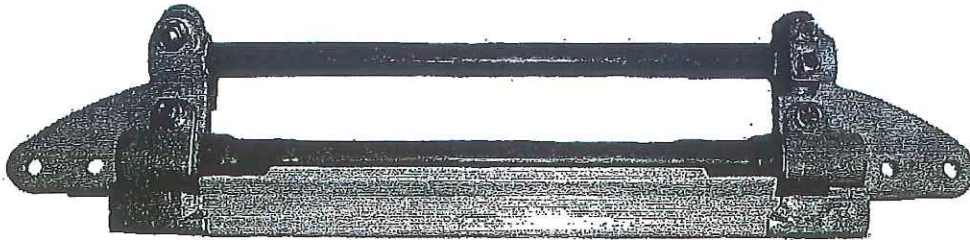
Split nylon spool has 7/8" diameter hole.

Catalog No.	Impulse P/N	Description	Wt./Ea.
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(513) 651-0300 Fax (513) 651-0270 E-mail: BILLpme@fuse.net

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Catalog No. 9400

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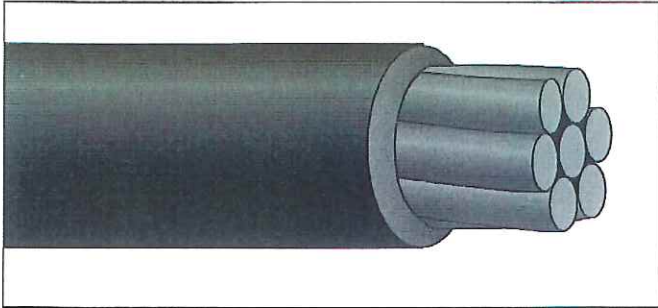
All PHOENIX NoBo Style Section Insulators and component parts are interchangeable with their Impulse equivalents. See page 35 for complete parts list and cross reference.

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ODOT 173000 OC 3
RTA Disconnect
Switch Jumper Wire



SINGLE CONDUCTOR



SERVICEPRO-X®

RHW-2 or RWU90

1,000/2,000 Volt Copper, CT Rated
No Pulling Lubricant Required



Description:

Single copper conductor, stranded and insulated with moisture and heat resistant, chemically crosslinked polyethylene. Featuring ServicePRO-X® Insulation—No Pulling Lubricant Required (#6 AWG and larger).

Application:

Suitable for wiring in raceways, conduit, etc. Applications include general purpose wiring for power distribution, services, feeders, branch circuit wiring in residential, industrial, and commercial buildings and in photovoltaic systems. Suitable for use in 105°C dry systems. Also suitable for use in low leakage circuits requiring a dielectric constant of 3.5 or less (*Hospital Grade*). Suitable for use in photovoltaic systems up to 2kV.

Standards:

ASTM Standards: B-3 (*soft or annealed*), B-8 (*concentric lay stranded*), B787 (*combination strand*)
UL 44 RHW-2 2kV and UL 4703 (*type PV #6 AWG and larger*)
ICEA S-95-658/NEMA WC-70
Federal Spec. A-A-59544
Flame Rated: CT Use (*1/0 AWG and larger*)
Temperature Rated at 90°C Wet/Dry, Cold Temperature Rated at -40°C
Sunlight Resistant, Gasoline and Oil Resistant II
Direct Burial
RoHS Compliant

Part Number	Size (AWG or Kcmil)	Strand (no.)	Insulation Thickness (mils)	Nominal Diameter Overall (in.)	Approx. Net Weight (lb./1000')	Ampacity* 90°C Wet/Dry
RWU14BK	14	7	60	0.19	25	35†
RWU12BK	12	7	60	0.21	35	40†
RWU10BK	10	7	60	0.24	48	55†
RWU8BK	8	7	60	0.30	77	80
RWU6BK	6	7	85	0.35	117	105
RWU4BK	4	7	85	0.40	172	140
RWU3BK	3	7	85	0.42	209	165
RWU2BK	2	7	85	0.45	257	190
RWU1BK	1	19	105	0.53	329	220
RWU1/0BK	1/0	19	105	0.57	404	260
RWU2/0BK	2/0	19	105	0.61	498	300
RWU3/0BK	3/0	19	105	0.66	615	360
RWU4/0BK	4/0	19	105	0.72	762	405
RWU250BK	250	37	120	0.81	898	455
RWU300BK	300	37	120	0.87	1,062	500
RWU350BK	350	37	120	0.92	1,226	570
RWU400BK	400	37	120	0.96	1,387	615
RWU500BK	500	37	120	1.04	1,712	700
RWU600BK	600	61	135	1.16	2,056	780
RWU750BK	750	61	135	1.26	2,540	885

*Based on ambient temperature of 30°C per NEC Table 310.15 (B)(17). †The overcurrent protection for items marked with an obelisk (†) shall not exceed 15 amps for #14 AWG, 20 amps for #12 AWG, and 30 amps for #10 AWG per NEC 310-17 footnote. NOTE: The data shown is approximate and subject to standard industry tolerances.

servicewire.com

Phoenix, AZ
877-623-9473

Culloden, WV
800-624-3572

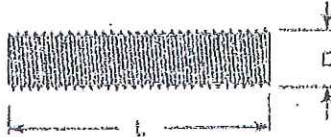
Houston, TX
800-231-9473

ODOT 173000 OC 3
RTA Disconnect Switches
Hardware to mount switch to
feeder pole.

Page 1 of 2	Fastenal Product Standard	REV-04
Date: July 25, 2013	FASTENAL	TROD.304

Threaded Rod, 304 Stainless Steel

The information below lists the required dimensional, chemical and physical characteristics of the products in this purchase order. If the order received does not meet these requirements, it may result in a supplier corrective action request, which could jeopardize your status as an approved vendor. Unless otherwise specified, all referenced consensus standards must be adhered to in their entirety.



Diameter	Nominal Size	D (Major Diameter)	
		Max.	Min.
0-80 *	.0600	.0595	.0563
2-56 *	.0860	.0854	.0813
4-40 *	.1120	.1112	.1061
5-40 *	.1250	.1242	.1191
6-32 *	.1380	.1372	.1312
8-32	.1640	.1631	.1571
10-24 *	.1900	.1890	.1818
10-32 *	.1900	.1891	.1831
12-24 *	.2160	.2150	.2078
1/4-20	.2500	.2489	.2367
1/4-28	.2500	.2490	.2392
5/16-18	.3125	.3113	.2982
5/16-24	.3125	.3114	.3006
3/8-16	.3750	.3737	.3595
3/8-24	.3750	.3739	.3631
7/16-14	.4375	.4361	.4206
7/16-20	.4375	.4362	.4240
1/2-13	.5000	.4985	.4822
1/2-20	.5000	.4987	.4865
9/16-12	.5625	.5609	.5437
9/16-18	.5625	.5611	.5480
5/8-11	.6250	.6233	.6051
5/8-18	.6250	.6236	.6105
3/4-10	.7500	.7482	.7288
3/4-16	.7500	.7485	.7343
7/8-9	.8750	.8731	.8523
7/8-14	.8750	.8734	.8579
1-8	1.000	.9980	.9755
1-14	1.000	.9984	.9881
1 1/8-7	1.125	1.1228	1.0982
1 1/8-8 *	1.125	1.1229	1.1079
1 1/8-12	1.125	1.1232	1.1118
1 1/4-7	1.250	1.2478	1.2232
1 1/4-8 *	1.250	1.2479	1.2329
1 1/4-12	1.250	1.2482	1.2368
1 3/8-6	1.375	1.3726	1.3453
1 1/2-6	1.500	1.4976	1.4703
1 1/2-8 *	1.500	1.4978	1.4828
1 3/4-5	1.750	1.7473	1.7165
2-4.5	2.000	1.9971	1.9641

* Class 2A threads shall be used for sizes where 1A is not applicable

Length	Tolerance
3'	+/- 1/4"
6' - 12'	+/- 1/2"

Length shall be measured form end to end

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Date: July 25, 2013	FASTENAL	TROD.304

Specification Requirements:

- **Standard:** ASME B18.31.3
- **Material:** UNS S30400 Stainless Steel
- **Mechanical Properties:** Alloy Group 1 Condition CW per ASTM F593 shall be accepted for all diameters in the table above, per their respective tensile stress areas
- **Thread requirements:** Roll threaded to ASME B1.1 UNC, UNF UNS & 8UN, Class 1A.
- **Finish:** ASTM A380.
- **Product Marking:** Marked with predetermined color on rod end.
Vendor to supply color code with the MTR and purchase order.
- **Material Test Reports:** Must be available and have documented lot traceability, including full chemical and mechanical figures, to the specification(s) above.

Thread Cutting Screws Cont.

Head - Truss Drive - Slotted				
Diameter	Thread Size	Length	18-8 Stainless Steel Part No.	410 Stainless Steel Part No.
#10	24	3/4"	0174486	0176040
#10	32	1/2"	0174487	-
#10	32	3/4"	0174488	-

FNL Stainless Steel Type 23 Thread Cutting Screws

Head - Pan Drive - Phillips				
Diameter	Thread Size	Length	18-8 Stainless Steel Part No.	410 Stainless Steel Part No.
#4	40	1/4"	11112814	0176117
#4	40	3/8"	11112816	0176118
#6	32	1/4"	11112818	0176120
#6	32	5/16"	11112820	-
#6	32	3/8"	11112822	0176121
#6	32	1/2"	11112823	0176122
#8	32	1/4"	11112826	0176123
#8	32	3/8"	11112830	0176124
#8	32	1/2"	11112831	0176125
#10	24	1/2"	11112834	0176127
#10	24	3/4"	-	0176128
#10	32	3/8"	11112835	0176129
#10	32	1/2"	11112837	0176130
1/4"	20	1/2"	-	0176132
1/4"	20	3/4"	-	0176133

Head - Indented Hex Washer Drive - Hex Unfinished				
Diameter	Thread Size	Length	410 Stainless Steel Part No.	
#6	32	1/4"	0148293	
#6	32	5/16"	0148294	
#6	32	3/8"	0148295	
#6	32	1/2"	0148296	
#8	32	1/4"	0148297	
#8	32	3/8"	0148298	
#8	32	1/2"	0148299	

Thread Rolling Screws

FNL 410 Stainless Steel Thread Rolling Screws

Head - Pan Drive - Phillips				
Diameter	Thread Size	Length	Stainless Steel Part No.	
#4	40	1/4"	0148270	
#4	40	5/16"	0148279	
#4	40	3/8"	0148280	
#4	40	1/2"	0148281	
#6	32	1/4"	0148282	
#6	32	5/16"	0148283	
#6	32	3/8"	0148284	
#6	32	1/2"	0148285	
#8	32	1/4"	0148286	
#8	32	3/8"	0148287	
#8	32	1/2"	0148288	

FNL 18-8 Stainless Steel 48-2 Thread Forming Screws

Head - Pan Drive - Phillips				
Diameter	Thread Size	Length	18-8 Stainless Steel Part No.	
#2	28	3/16"	11112784	
#2	28	1/4"	11112785	
#2	28	5/16"	11112786	
#2	28	3/8"	11112787	
#2	28	1/2"	11112788	
#3	24	1/4"	11112771	
#3	24	1/2"	11112774	
#4	20	1/4"	11112776	
#4	20	5/16"	11112777	
#4	20	3/8"	11112778	
#4	20	1/2"	11112780	
#4	20	3/4"	11112782	
#6	19	1/4"	11112786	
#6	19	5/16"	11112787	
#6	19	3/8"	11112788	
#6	19	1/2"	11112789	

Head - Pan Drive - Phillips				
Diameter	Thread Size	Length	18-8 Stainless Steel Part No.	
#6	19	5/8"	11112790	
#6	19	3/4"	11112791	
#8	16	3/4"	11112795	
#8	16	1/2"	11112796	
#8	16	5/8"	11112797	
#8	16	3/4"	11112798	
#10	14	3/8"	11112803	
#10	14	1/2"	11112804	
#10	14	3/4"	11112805	
#10	14	7/8"	11112806	
#10	14	1"	11112807	
#10	14	1-1/4"	11112808	

Drive Screws

Stainless Steel Round Head

U-Drive Screws

A thread forming drive screw with multiple start threads of high helix angle for driving or hammering into metals or plastics.



Head - Round			Stainless Steel Part No.	
Diameter	Length		Part No.	
#0	1/8"		0172705	
#00	1/8"		0172709	
#0	3/16"		0172706	
#0	1/4"		0172707	
#0	3/8"		0172708	
#2	1/8"		0172713	
#2	3/16"		0172714	
#2	1/4"		0172715	
#2	5/16"		0172716	
#2	3/8"		0172717	
#2	1/2"		0172718	
#4	3/16"		0172719	
#4	1/4"		0172720	
#4	5/16"		0172721	
#4	3/8"		0172722	
#6	3/16"		0172723	
#6	1/4"		0172724	
#6	5/16"		0172725	
#6	3/8"		0172726	
#6	1/2"		0172727	
#8	5/8"		0172728	
#8	1/4"		0172729	
#8	3/8"		0172730	
#8	1/2"		0172731	
#10	1/4"		0172732	
#10	3/8"		0172733	
#10	1/2"		0172734	
#12	1/2"		0172736	
#14	3/4"		0172737	

Machine Screw Nuts

Stainless Steel Machine Screw Nuts



Thread - Coarse			
Diameter	Thread Size	18-8 Stainless Steel Part No.	316 Stainless Steel Part No.
#0	60	70701	-
#1	64	0173199	-
#2	56	70702	0173944
#3	48	70703	-
#4	40	70704	0170884
#5	40	70706	0173912
#6	32	70705	0170885
#8	32	70708	0176682
#10	24	70707	77707
#12	24	70709	77709
1/4"	20	0170905	0170913
5/16"	18	-	0170907
3/8"	16	0170908	0170916

Thread - Fine				
Diameter	Thread Size	18-8 Stainless Steel Part No.	316 Stainless Steel Part No.	
#1	72	0170980	-	
#2	64	0173200	-	
#3	56	0170981	-	
#4	48	0170982	-	
#5	44	0170983	-	
#6	40	0170984	-	
#8	36	0170985	-	
#10	32	70708	77708	
#12	28	0173201	-	
1/4"	28	0173202	0170908	

Hex Nuts

Stainless Steel

Finished Hex Nuts



Thread - Coarse				
Diameter	Thread Size	18-8 Stainless Steel Part No.	316 Stainless Steel Part No.	80 Stainless Steel Part No.
#4	40	-	77704	-
#6	32	-	77706	-
#8	32	-	77708	-
#10	32	0173917	-	-
1/4"	20	70710	77710	-
5/16"	18	70711	77711	-
3/8"	16	70712	77712	-
7/16"	14	70713	77713	-
1/2"	13	70714	77714	-
9/16"	12	70715	77715	-
5/8"	11	70716	77716	-
3/4"	10	70717	77717	-
7/8"	9	70718	77718	0174896
1"	8	70719	77719	0174897
1"	12	0172756	-	-
1-1/8"	7	70720	77720	0174898
1-1/8"	8	-	77723	-
1-1/4"	7	70721	77721	0174899
1-1/4"	8	-	77724	-
1-3/8"	6	0172441	-	-
1-1/2"	6	70722	77722	-
1-1/2"	8	-	70725	-
1-3/4"	5	70726	77726	-
2"	4.5	70727	77727	-

Thread - Fine				
Diameter	Thread Size	18-8 Stainless Steel Part No.	316 Stainless Steel Part No.	
1/4"	28	70730	77730	
5/16"	24	70731	77731	
3/8"	24	70732	77732	
7/16"	20	70733	77733	
1/2"	20	70734	77734	
9/16"	18	70735	-	
5/8"	18	70736	77736	
3/4"	16	70737	77737	
7/8"	14	70738	77738	
1"	14	70739	77739	
1-1/8"	12	70740	77740	
1-1/4"	12	70741	77741	
1-1/2"	12	70742	77742	

Jam Nuts

Stainless Steel

Hex Jam Nuts



Thread - Coarse			
Diameter	Thread Size	18-8 Stainless Steel Part No.	316 Stainless Steel Part No.
1/4"	20	70810	77810
5/16"	18	70811	77811
3/8"	16	70812	77812
7/16"	14	70813	77813
1/2"	13	70814	77814
9/16"	12	70815	77815
5/8"	11	70816	77816
3/4"	10	70817	77817
7/8"	9	70818	77818
1"	8	70819	77819
1-1/8"	7	70820	77820
1-1/4"	7	70821	77821
1-1/2"	6	70822	77822
1-3/4"	5.0	0173154	-
2"	4.5	0173155	-

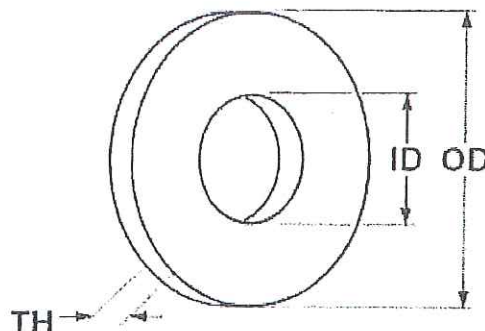
Can't find what you need? Fastenal Manufacturing can make custom parts to suit your needs!

FASTENERS

Page 1 of 1	Fastenal Product Standard	REV-01
Date: February 2, 2015	FASTENAL	FW.LGOD.SS

Flat Washer, Large OD, 18-8 Stainless Steel

The information below lists the required dimensional, chemical and physical characteristics of the products in this purchase order. If the order received does not meet these requirements, it may result in a supplier corrective action request, which could jeopardize your status as an approved vendor. Unless otherwise specified, all referenced consensus standards must be adhered to in their entirety.



Size	OD		ID		Thickness	
	Min.	Max.	Min.	Max.	Min.	Max.
4	0.307	0.320	0.120	0.133	0.022	0.042
6	0.370	0.395	0.146	0.168	0.022	0.042
8	0.432	0.457	0.164	0.184	0.022	0.042
10	0.495	0.515	0.214	0.227	0.033	0.047
12	0.557	0.567	0.253	0.263	0.033	0.047
1/4	0.683	0.693	0.280	0.290	0.033	0.047
5/16	0.870	0.880	0.339	0.349	0.033	0.047
3/8	0.995	1.005	0.401	0.411	0.043	0.057
3/8	0.995	1.005	0.401	0.411	0.071	0.080
7/16	1.245	1.255	0.495	0.505	0.055	0.070
1/2	1.370	1.380	0.555	0.567	0.055	0.070
9/16	1.245	1.255	0.600	0.630	0.068	0.088
5/8	1.745	1.755	0.683	0.692	0.090	0.113
3/4	1.870	1.880	0.810	0.820	0.090	0.113
7/8	2.245	2.255	0.932	0.942	0.090	0.113
1	2.495	2.505	1.057	1.067	0.108	0.123
1 1/8	2.700	2.880	1.178	1.198	0.108	0.123
1 1/4	2.950	3.080	1.307	1.317	0.108	0.123
1 1/2	3.450	3.680	1.550	1.570	0.129	0.149
1 3/8	3.450	3.580	1.500	1.600	0.129	0.149
2	4.400	4.580	2.050	2.185	0.149	0.169

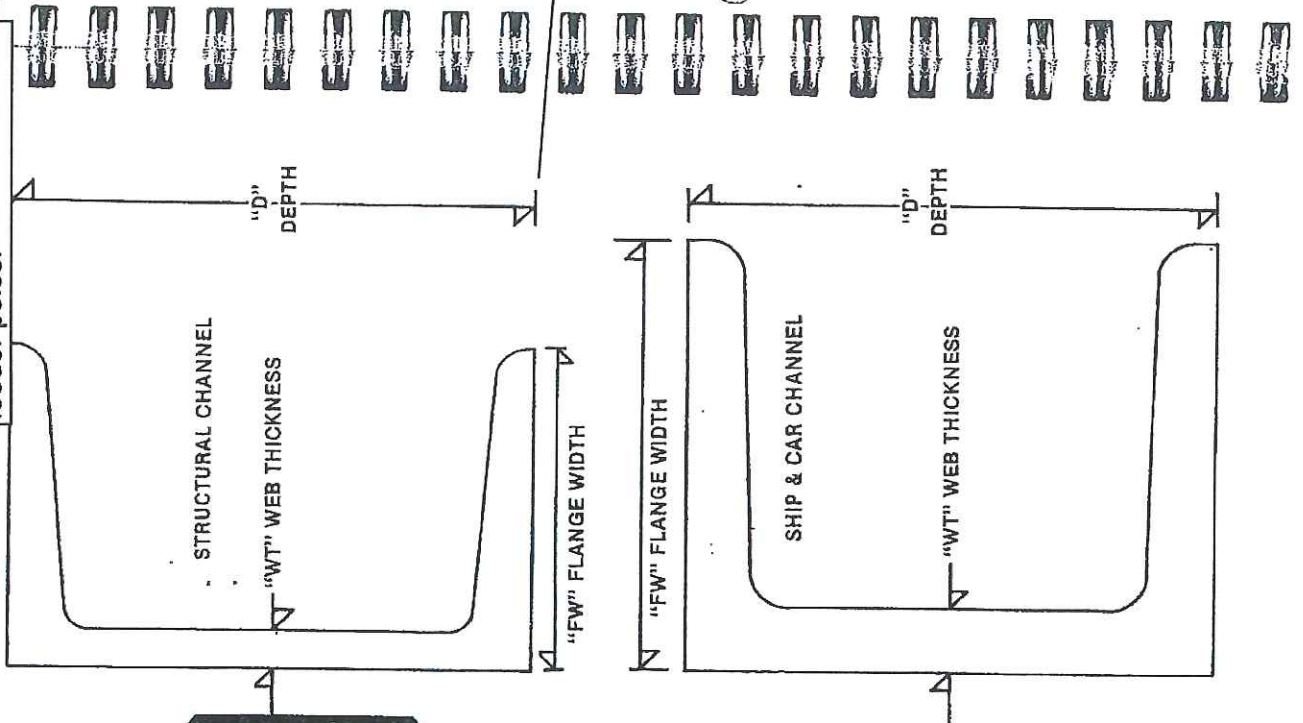
Specification Requirements:

- Dimensions: See dimensions above.
- Material: 18-8 Stainless steel.
- Finish: Per ASTM A380

ODOT 173000 OC 3

RTA Disconnect Switches

Channel to mount switches to
feeder poles.



Bar Channels

Size		Estimated Wt. In Lbs.	
In	Inches	Per Ft.	20 Ft. Bar
1	x 1/2 x 1/8	.84	16.80
1-1/4	x 1/2 x 1/8	1.01	20.20
1-1/2	x 1/2 x 1/8	1.12	22.40
2	x 1/2 x 1/8	1.43	28.60
2	x 5/8 x 1/4	2.28	45.60
2	x 1 x 1/8	1.59	31.80
2	x 1 x 3/16	2.32	46.40

Structural Channels

"D" Depth of Channel & Wt. Per Ft.	Wt. For 20'	"WT" Thickness Of Web in Inches	"FW" Width Of Flange in Inches
3" x 3.5 lbs.	70	.140	1.360
4.1 lbs.	82	.170	1.410
5.0 lbs.	100	.258	1.498
6.0 lbs.	120	.356	1.596
4" x 4.5 lbs.	90	.145	1.520
5.4 lbs.	108	.180	1.580
6.25 lbs.	125	.247	1.647
7.25 lbs.	145	.320	1.720
5" x 6.7 lbs.	134	.190	1.750
9.0 lbs.	180	.325	1.885
6" x 8.2 lbs.	164	.200	1.920
10.5 lbs.	210	.314	2.034
13.0 lbs.	260	.437	2.157
7" x 9.8 lbs.	196	.210	2.090
12.25 lbs.	245	.314	2.194
14.75 lbs.	295	.419	2.299
8" x 8.5 lbs.	170	.180	1.875
11.5 lbs.	230	.220	2.260
13.75 lbs.	275	.303	2.343
18.75 lbs.	375	.487	2.527
9" x 13.4 lbs.	268	.230	2.430
15.0 lbs.	300	.285	2.485
20.0 lbs.	400	.448	2.646
10" x 15.3 lbs.	306	.240	2.600
20.0 lbs.	400	.379	2.739
25.0 lbs.	500	.526	2.886
30.0 lbs.	600	.673	3.033

Submittal: 116

Revision: 0

Date Submitted: 12/15/2020

Response Due By: 1/4/2020



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

Description: GCRTA Material - Wye Track Feeder Poles

To: Chris Coppock, PE
GCRTA – Track Engineer

Email: Christopher.Coppock@gcrt.org

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 checked="" 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 type="checkbox"/> Product Data/Samples	<input type="checkbox"/> Attached (Hard Copy)
<input type="checkbox"/> Other:	

Submittal #	Copies	Spec #	Rev. #	Description	Status
116	1		0	116 – GCRTA Material - Wye Track Feeder Poles	For Approval

Comments:

Please see the attached shop drawing submittal from US Utility Contractor Co. for the Wye Track – Feeder Poles called for in BU17B. Let me know if you have any questions or concerns.

Signed: 

U.S. UTILITY CONTRACTOR CO., INC.

3592 Genoa Road

Perrysburg, OH 43551

419/ 837-9358 or 419/ 837-2017

419/ 837-2015 Fax

TRANSMITTAL #1**PROJECT:** ODOT 17300 RTA OC-3**OWNER'S PROJECT NO.** RTA 17.18**COMPANY:** Kokosing**DATE:** 12/4/2020**ATTN:** Mike Luyster**IF CHECKED BELOW, PLEASE:**☒ Acknowledge receipt of enclosures☐ Return enclosures to us

☒ Drawings ☐ Shop Drawings
☐ Specifications ☒ Catalog Cuts / Submittals
☐ Change Order No. __ ☐ Samples

☐ Product Literature
☐ Certified Test Report
☐ Other _____

DATE	DESCRIPTION	QTY	PAGES
12/4/20	RTA Feeder Poles PS-1-N	12	1
12/4/20	RTA Feeder Poles PS-2-N	4	1
12/4/20	RTA Feeder Pole Arms	32	1

☒ For approval ☐ For your information/file☒ 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

George Ovalle

