REFERENCE DRAWINGS

RECORD OF SURVEY_____A1-001
SITE PLAN_____A1-002
GRADING PLAN_____A1-003
GRADING SECTIONS AND DETAILS_____A1-004
GEOLOGIC LOGS OF EXPLORATION____

DO NOT USE FOR CONSTRUCTION

#	REVISION DESCRIPTION	DATE
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
VICINITY MAP

DRAWN BY T. Chinn
APPROVED BY
SCALE N.T.S.
DATE 6/23/14

A0-001

RECORD OF SURVEY

A PORTION OF THE NORTHEAST 1/4 OF SECTION 32,
T.4S., R.1E., SLB&M,
UTAH COUNTY, UTAH

•NORTHERN ENGINEERING, INC.•
OREM, UTAH
2014

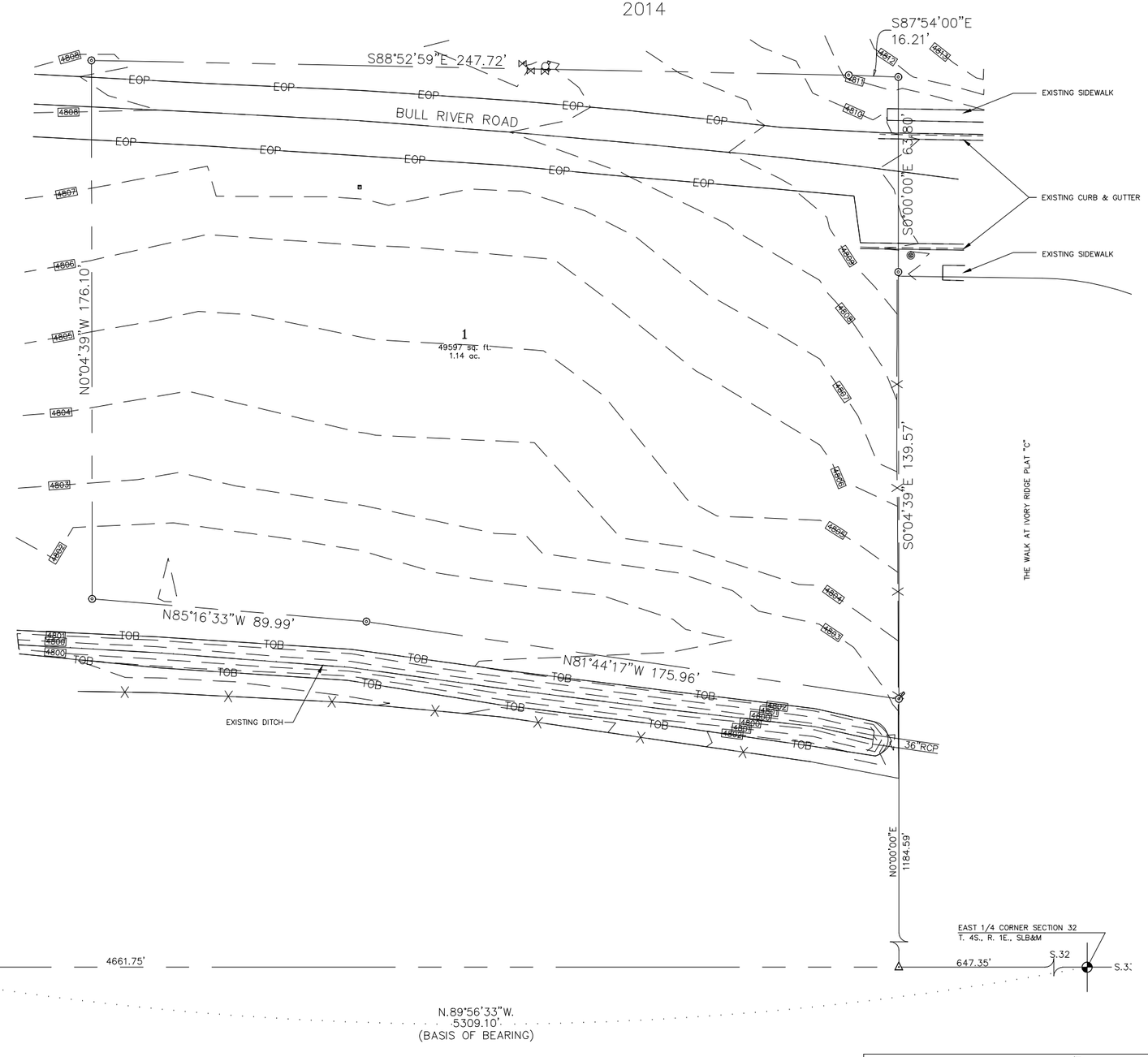
N
W
E
S

0 5 2 10 20 40 60

(24"x36")
SCALE 1" = 20'
(11"x17")
SCALE 1" = 40'

LEGEND

- FOUND BRASS CAP
- FOUND RIVET
- FOUND 5/8" IRON PIN
- SET 5/8" IRON PIN
- CALCULATED POINT, NOT SET
- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING TELEPHONE BOX
- EXISTING STORM DRAIN MANHOLE
- PROPERTY BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- EASEMENT
- EXISTING DEED LINE
- EDGE OF PAVEMENT
- EXISTING FENCE LINE
- EXISTING DITCH



SURVEYED DESCRIPTION:

A PARCEL OF LAND LOCATED IN THE NORTHEAST 1/4 OF SECTION 32, TOWNSHIP 4 SOUTH, RANGE 1 EAST, S.L.B.&M., UTAH COUNTY, UTAH, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A BRASS CAP MONUMENT MARKING THE EAST QUARTER CORNER OF SAID SECTION 32, THENCE N.89°56'33"W. A DISTANCE OF 647.35 FEET; THENCE N.00°00'00"E. A DISTANCE OF 1184.59 FEET TO THE REAL POINT OF BEGINNING.

THENCE N.81°44'17"W. A DISTANCE OF 175.96 FEET; THENCE N.85°16'33"W. A DISTANCE OF 89.99 FEET; THENCE N.00°04'39"W. A DISTANCE OF 176.10 FEET; THENCE S.88°52'59"E. A DISTANCE OF 247.72 FEET; THENCE S.87°54'00"E. A DISTANCE OF 16.21 FEET; THENCE S.00°00'00"E. A DISTANCE OF 63.80 FEET; THENCE S.00°04'39"E. A DISTANCE OF 139.57 FEET TO THE REAL POINT OF BEGINNING.
CONTAINS 49,597 sq. ft. OR 1.14 ACRES MORE OR LESS.

BASIS OF BEARING IS THE UTAH STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE.

NARRATIVE:

THE PURPOSE OF THIS SURVEY IS TO ESTABLISH THE BOUNDARY LINE BASED ON THE ORIGINAL DESCRIPTION, AND TO LOCATE THE EXISTING BULL RIVER ROAD IMPROVEMENTS THAT CROSS THE PARCEL.

THE BASIS OF BEARING N. 89°56'33" W BETWEEN THE EAST ¼ CORNER AND THE WEST ¼ CORNER OF SECTION 32, TOWNSHIP 4 SOUTH, RANGE 1 EAST OF THE SALT LAKE BASE AND MERIDIAN

CERTIFICATE OF LAND SURVEYOR

I, KIM WATNE LUNDEBERG, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LICENSED LAND SURVEYOR, LICENSED BY THE STATE OF UTAH, AND THAT THIS MAP HAS BEEN PREPARED FROM AN ACTUAL SURVEY MADE ON THE GROUND UNDER MY DIRECT SUPERVISION, AND THAT THIS MAP IS AN ACCURATE REPRESENTATION OF SAID SURVEY, AND IS IN CONFORMITY WITH THE CURRENT LAWS OF THE STATE OF UTAH PERTAINING TO PLATS AND SURVEYS.

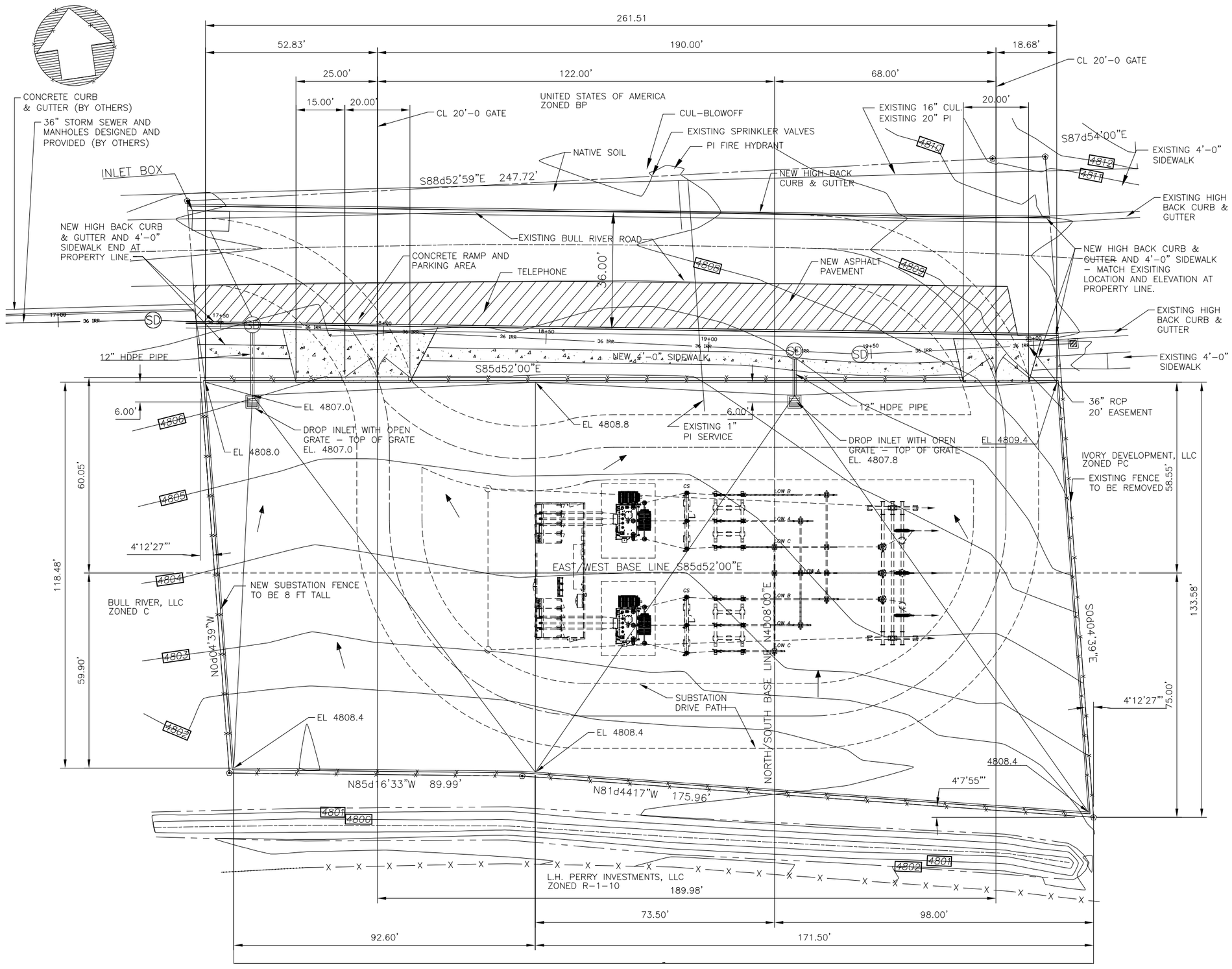
PROFESSIONAL LAND SURVEYOR
No. 354377
KIM WAYNE LUNDEBERG
STATE OF UTAH

KIM WAYNE LUNDEBERG — LICENSE NO. 354377

RECORD OF SURVEY
A1-001

Northern
ENGINEERING INC
ENGINEERING-LAND PLANNING
CONSTRUCTION MANAGEMENT
1040 E. 800 N.
OREM, UTAH 84097
(801) 802-8992

QUARTER	SECTION	TOWNSHIP	RANGE	
NORTHEAST	32	4 S.	1 E.	SLB&M



LEGEND

- PRXX-08 ___ GEOLOGIC LOGS OF EXPLORATION
- ------- ___ PROPERTY LINE
- _ _ _ _ _ PROPERTY CORNER
- _ _ _ _ _ APPROXIMATE LIMITS OF RIPRAP
- RETAINING WALL AND FENCE CONSTRUCTED BY OTHERS
- 20'-0" ACCESS GATE CONSTRUCTED BY OTHERS
- INDICATES NEW ASPHALT SURFACED AREAS
- INDICATES NEW CONCRETE DRIVES, PARKING AREAS AND SIDEWALKS

AREAS

TOTAL AREA OF PROPERTY	49,597 SQ. FT.
TOTAL AREA WITHIN FENCE	16,288 SQ. FT.
TOTAL LANDSCAPED AREA	1,910 SQ. FT.

NOTES

1. GRADING ELEVATIONS SHOWN ARE TO FINISHED GRADE.
2. CONTOURS SHOWN ARE EXISTING ELEVATIONS AS SITE EXISTS. FINISHED GRADE CONTOURS ARE SHOWN ON THE GRADING PLAN DRAWING.
3. SUBSTATION YARD TO HAVE MINIMUM 6" GRAVEL SURFACING.
8. 36" STORM SEWER AND MANHOLES SHOWN ON DRAWING ARE BEING PROVIDED BY OTHERS.
9. SLOPE GRADES UNIFORMLY BETWEEN ELEVATIONS.
4. BASIS OF SURVEY: UTAH STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE.
5. ALL DIMENSION SHOWN ARE TAKEN FROM BASE LINES LAYOUT BEARINGS AS SHOWN IN PLAN AS TIED TO SOUTHEAST PROPERTY BOUNDARY.
6. SUBSTATION DRIVE PATH SHOWN FOR VISUAL LOCATIONS ONLY. NO SPECIAL PROVISIONS FOR SURFACING OR BASE MATERIAL.

REFERENCE DRAWINGS

RECORD OF SURVEY_____A1-001
GRADING PLAN_____A1-003
GRADING SECTIONS AND DETAILS_____A1-004
GEOLOGIC LOGS OF EXPLORATION____

DO NOT USE FOR CONSTRUCTION

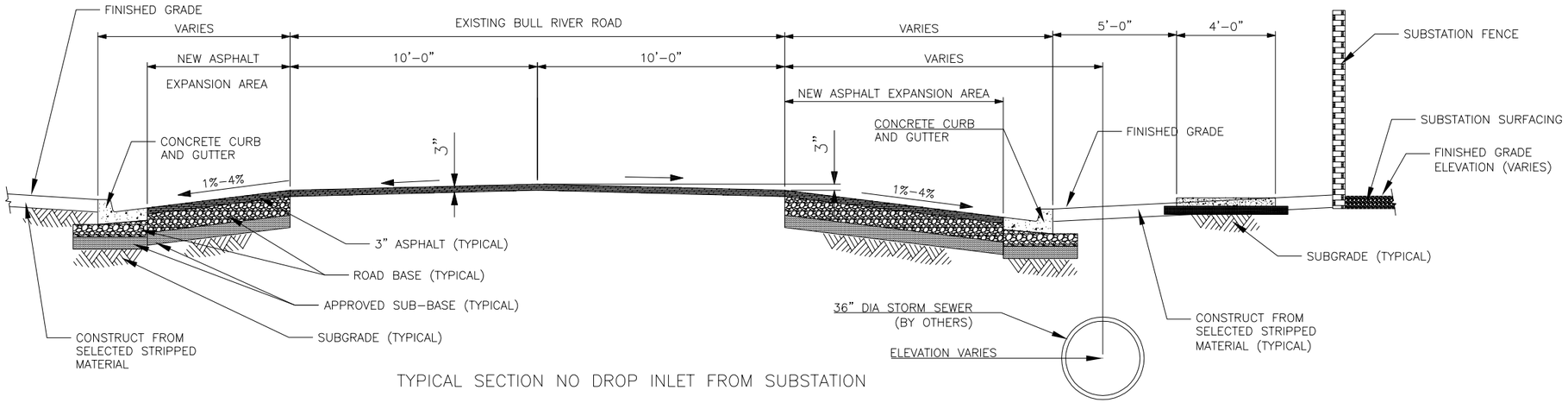
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD

SALIENT Power Engineering LLC

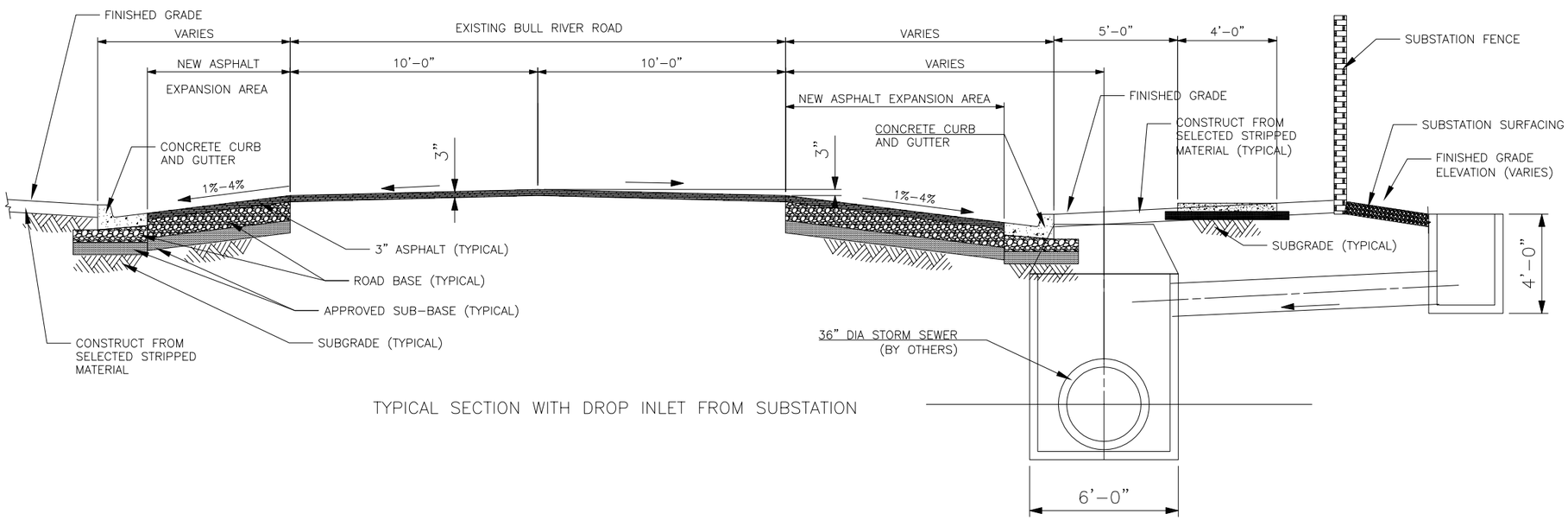
LEHI CITY
MURDOCK SUBSTATION
SITE PLAN

DRAWN BY T. Chinn
APPROVED BY
SCALE 1"=15'
DATE 6/23/14

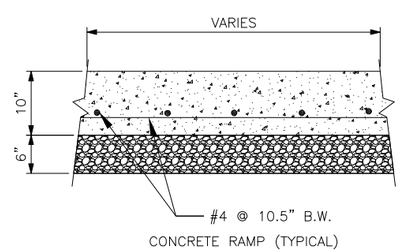
A1-002



TYPICAL SECTION NO DROP INLET FROM SUBSTATION



TYPICAL SECTION WITH DROP INLET FROM SUBSTATION



CONCRETE RAMP (TYPICAL)

NOTES

1. APPROVED SUB-BASE THICKNESS TO BE BASED ON A CBR #XX.X.
2. REFER TO LEHI CITY SIDEWALK AND CURB SPECIFICATIONS AVAILABLE FROM LEHI CITY.

REFERENCE DRAWINGS

VICINITY MAP_____A0-001
RECORD OF SURVEY_____A1-001
SITE PLAN_____A1-002
GRADING PLAN_____A1-003
GEOLOGIC LOGS OF EXPLORATION____

DO NOT USE FOR CONSTRUCTION

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

SALIENT Power Engineering LLC

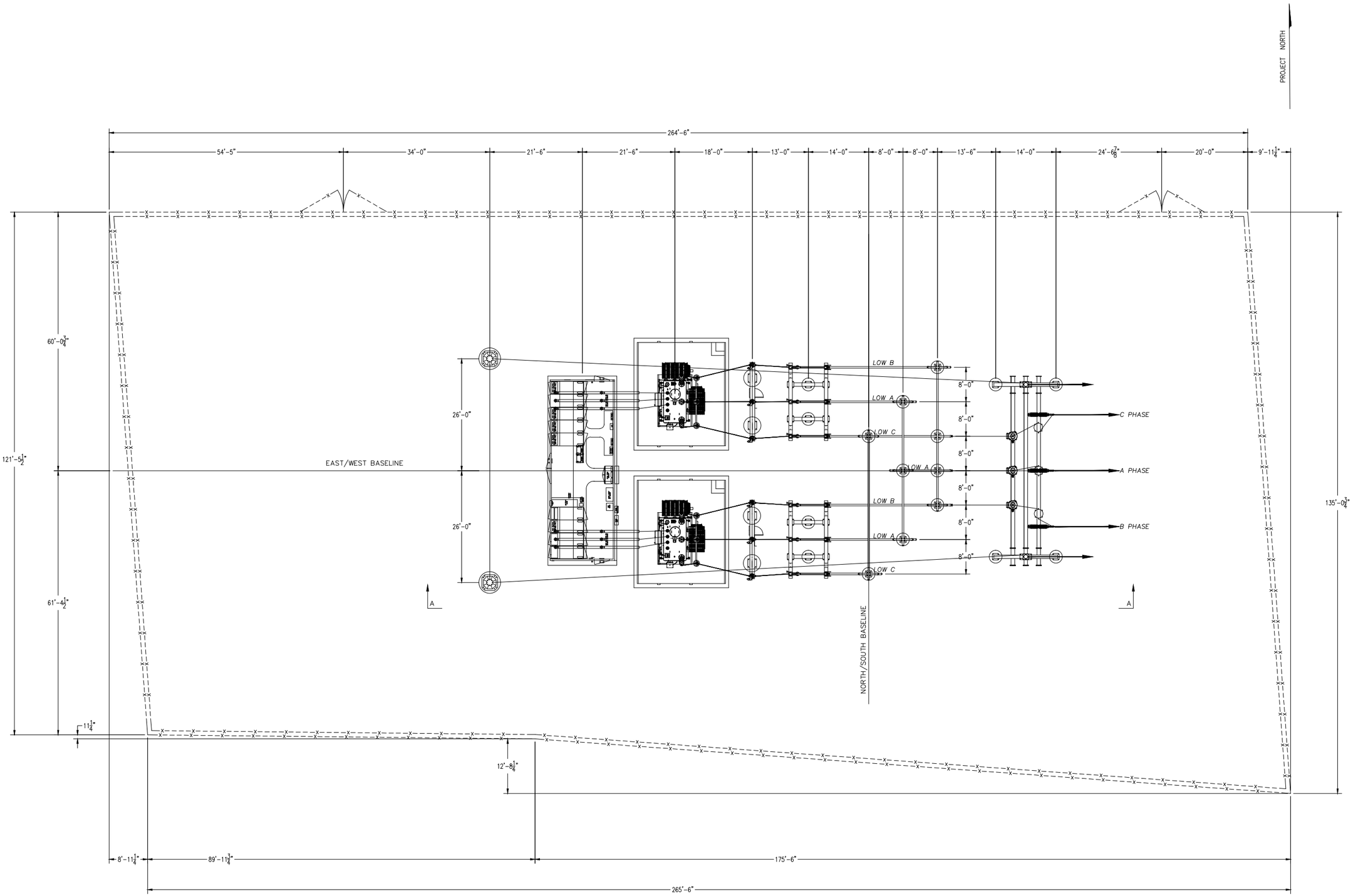
LEHI CITY

MURDOCK SUBSTATION

GRADING SECTIONS AND DETAILS

DRAWN BY T Chinn | APPROVED BY --- | SCALE N/A | DATE 04/19/14

A1-004



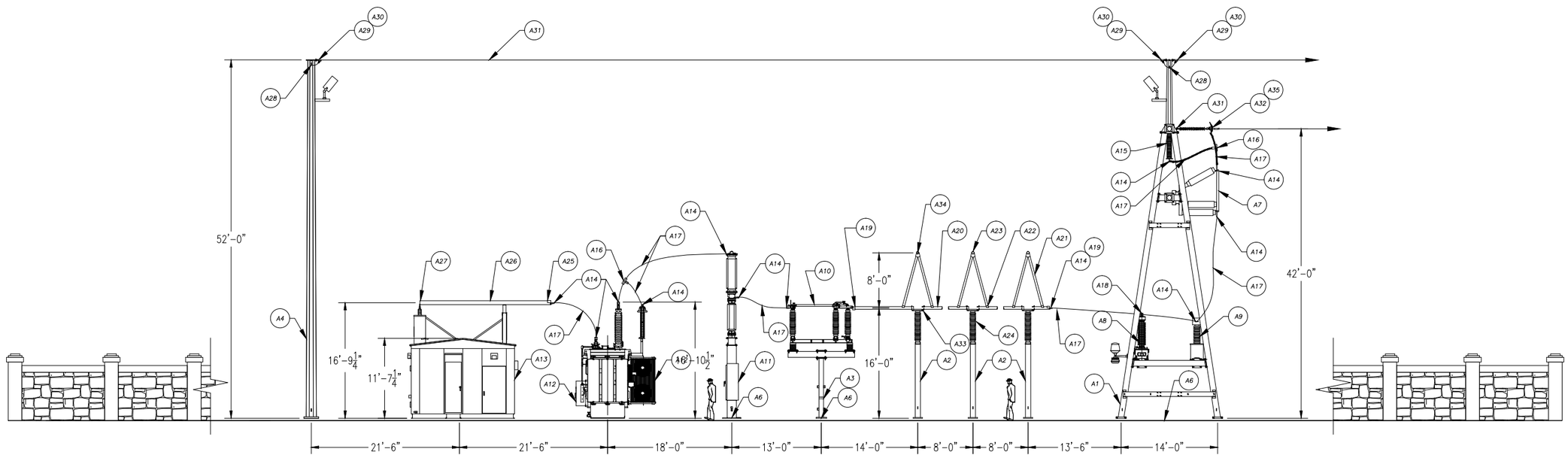
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
D	ISSUED FOR BID	06/25/2014	JLF	CWM	
C	CENTERED A FRAME	04/25/2014	CWM		
B	REMOVE A FRAME	03/05/2014	CWM	JLF	JE
A	ISSUED FOR REVIEW	01/23/2014	JLF	CWM	JE

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
GENERAL ARRANGEMENT

DRAWN BY J. FORSTING
APPROVED BY
SCALE 3/32" = 1'-0"
DATE 1/17/2013

A2-001



DO NOT USE FOR CONSTRUCTION

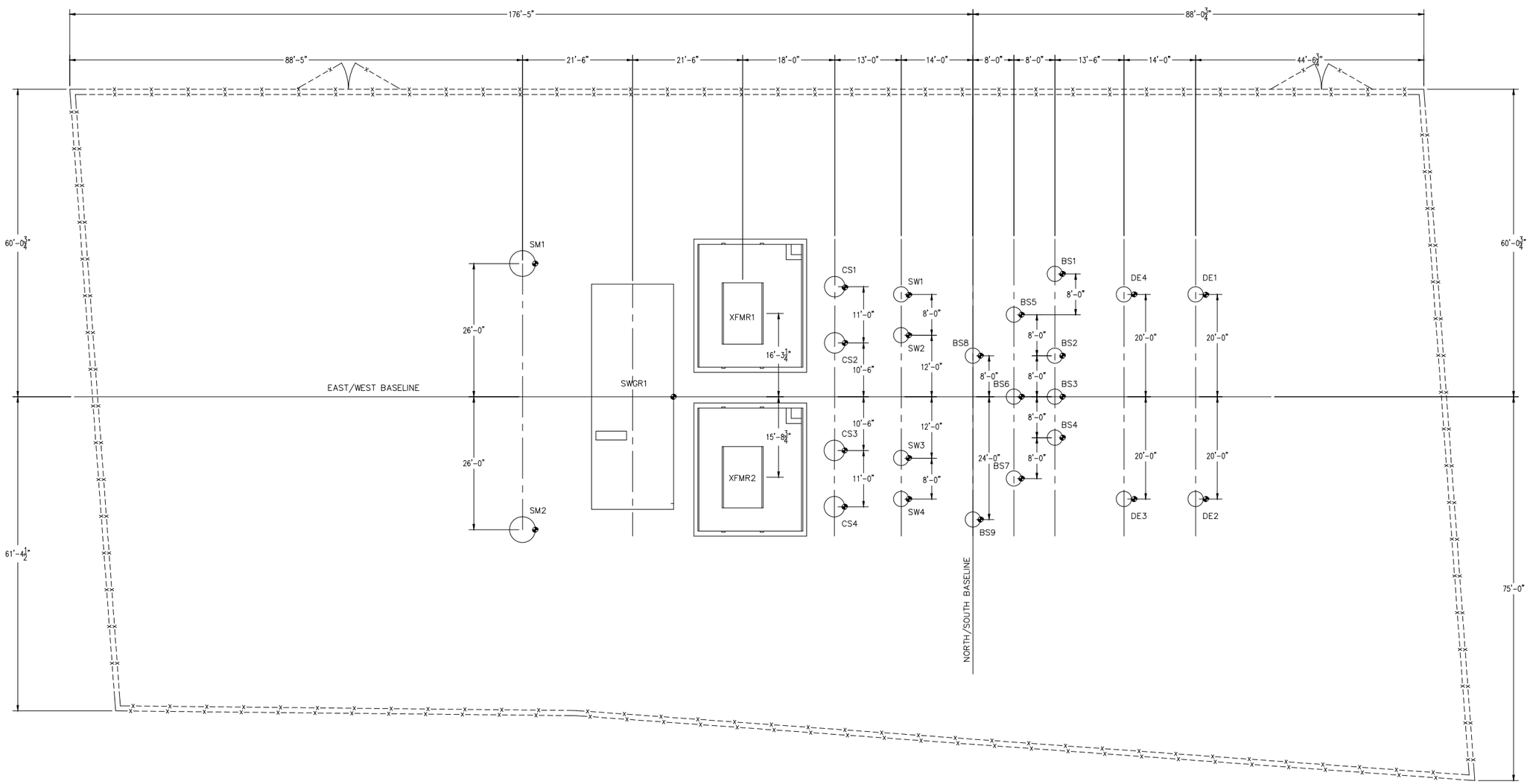
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
C	ISSUED FOR BID	06/25/2014	JLF	CWM	
B	REMOVED A FRAME	03/05/2014	CWM	JLF	JE
A	ISSUED FOR REVIEW	01/23/2014	JLF	CWM	JE

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
EQUIPMENT SECTIONS

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/8" = 1'-0"
DATE 1/17/2013

A4-001



NOTES:

1. ⊕ FOUNDATION REFERENCE MARK
2. FOUNDATION TOP OF CONCRETE TO BE 4809.0'

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/24/2014	JLF	CWM	JE

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
FOUNDATION PLAN

DRAWN BY J. FORSTING
APPROVED BY
SCALE 3/32" = 1'-0"
DATE 06/24/2014

A5-001

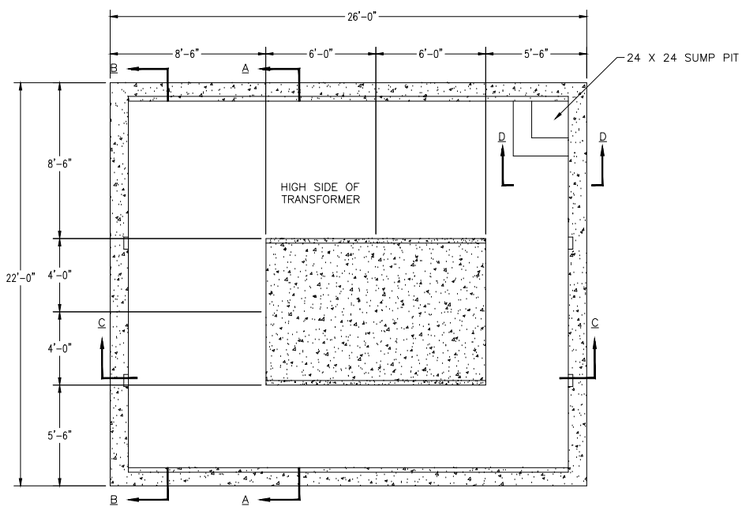
REINFORCING SCHEDULE

MARK NO.	NO. REQD	SIZE	LENGTH	TOTAL WT	TYPE	SKETCH	A	B	C	D	E	F	G
T-1	28	#8	7'-2"	536	STR	———							
T-2	20	#8	11'-2"	597	STR	———							
T-3	96	#8	5'-6"	1367	2	└──┘	1'-6"	2'-6"					1'-6"
T-4	24	#5	7'-0"	176	3	└──	3'-6"	3'-6"					
T-5	27	#5	25'-6"	718	STR	———							
T-6	96	#8	4'-0"	1026	3	└──	2'-2"	1'-10"					
T-7	2	#8	5'-0"	11	3	└──	1'-6"	3'-6"					
T-8	2	#5	8'-0"	17		FIELD BEND							
T-9	31	#5	21'-6"	696	STR	———							
T-20	22	#8	24'-2 1/2"	1423	TYPE 1	└──	2'-0"	22'-2 1/25"					
T-21	21	#8	21'-6"	1206	STR	———							

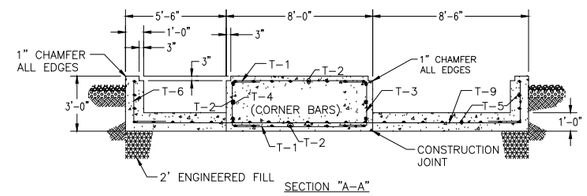
STR

TYPE 2

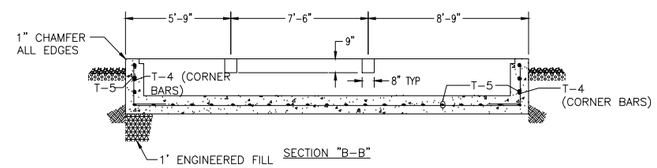
TYPE 3



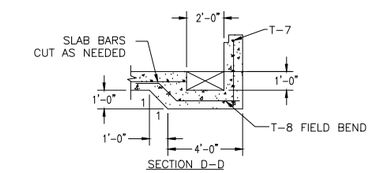
FOUNDATION PLAN VIEW



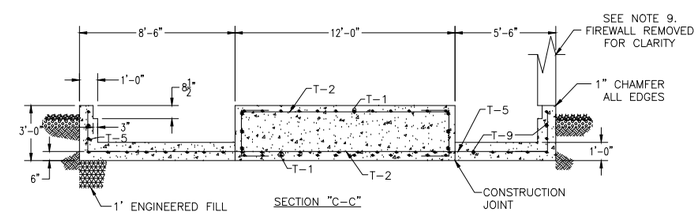
SECTION "A-A"



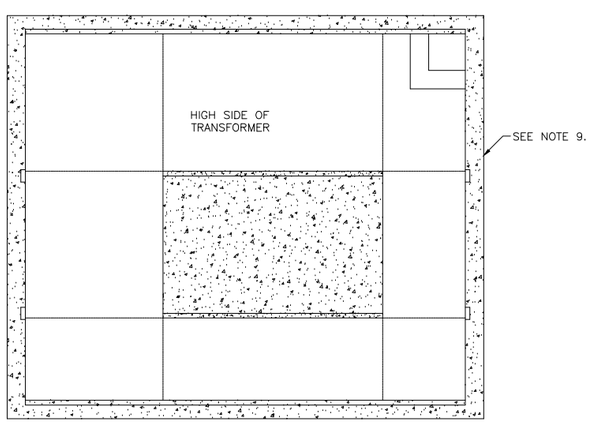
SECTION "B-B"



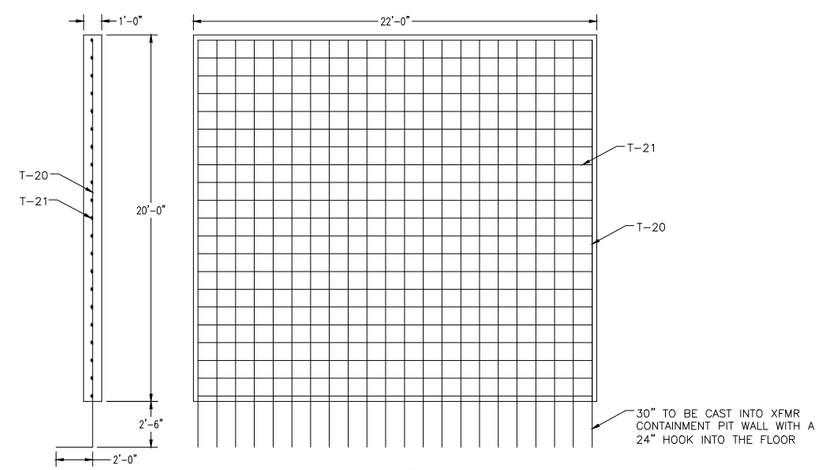
SECTION D-D



SECTION "C-C"



CONTROL JOINT PLAN VIEW



FIREWALL DETAILS

LEGEND

- CRUSHED ROCK
- COMPACT ROAD BASE
- EXISTING SOIL
- 1' THICK VOID FORM

NOTES:

1. REINFORCING STEEL TO BE A615 GR 60
2. REINFORCING STEEL TO BE EQUALLY SPACED UNLESS OTHERWISE NOTED.
3. CONCRETE COVER TO BE 3" UNLESS OTHERWISE NOTED.
4. CONCRETE TO HAVE MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. ALL EXPOSED EDGES TO HAVE A 1" CHAMFER AT 45 DEGREES.
6. ALL CONSTRUCTION JOINTS AND CONCRETE PENETRATIONS TO BE SEALED WITH GREENSTREAK SWELLSTOP II.
7. CONTRACTOR SHALL INSTALL WATER STOP AND SHALL DETERMINE HOW TO ROUTE CONCRETE CONTROL JOINT.
8. SEE FOUNDATION PLAN (A5-001) FOR TOP OF CONCRETE ELEVATION.
9. FIREWALL TO BE INSTALLED ON THE SOUTH SIDE OF T1 FOUNDATION ONLY.

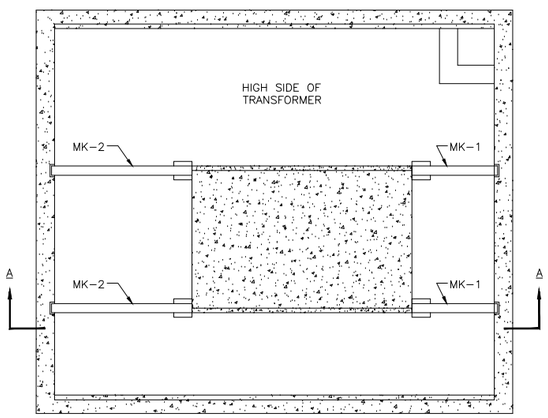
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

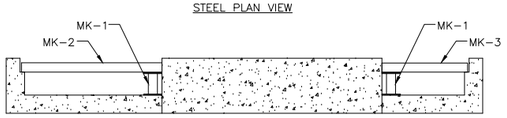
LEHI CITY
MURDOCK SUBSTATION
XMFR FOUNDATION DETAILS

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/4" = 1'-0"
DATE 6/23/2014

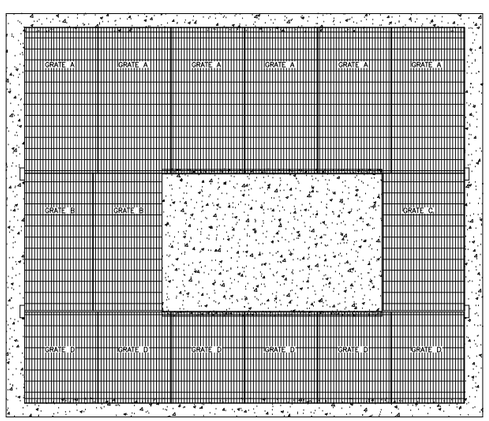
A5-002



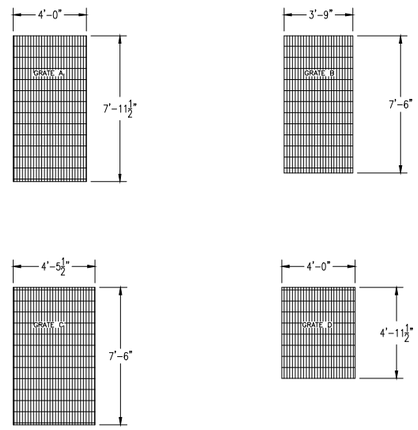
STEEL PLAN VIEW

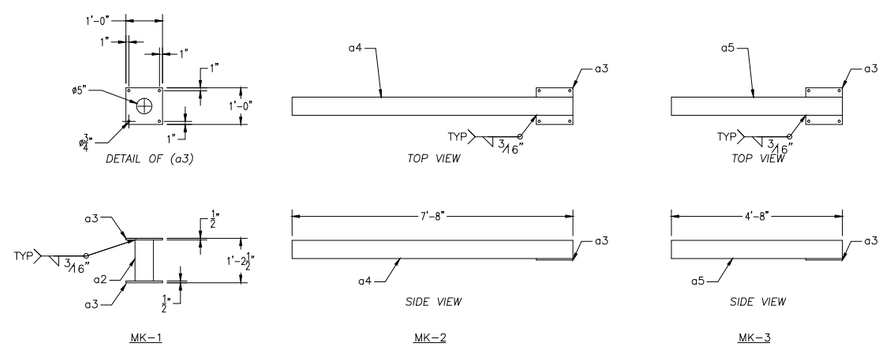


SECTION "A-A"



GRATE PLAN VIEW





NOTES:

1. GRATES A, B, C, AND D TO BE AMERICAN GRATING I30-50.

BILL OF MATERIAL

QTY	MARK	DESCRIPTION	LENGTH FT.	LENGTH INS.	UNIT WEIGHT	TOTAL WEIGHT
		GRATE ASSEMBLY				
6	A	SEE NOTE 1 3'-11 7/8"	7	11 1/2	10.85#/SQ. FT.	2083.2
2	B	SEE NOTE 1 3'-8 7/8"	7	5 7/8	10.85#/SQ. FT.	610.3
1	C	SEE NOTE 1 4'-5 1/2"	7	5 7/8	10.85#/SQ. FT.	366.2
6	D	SEE NOTE 1 3'-11 7/8"	4	11 1/2	10.85#/SQ. FT.	1302.0
		TOTAL GRATING WEIGHT				4361.7
		SUPPORT ASSEMBLY MK-1				
4	a2	HSS 6 X 6 X 3/16	1	1 1/2	5.64/FT	25.4
8	a3	PL 12" x 1/2"	1	0	20.4/FT	163.2
		TOTAL BLACK STEEL WEIGHT				188.6
		SUPPORT ASSEMBLY MK-2				
2	a4	HSS 6 X 6 X 3/16	7	8	5.64/FT	86.5
4	a3	PL 12" x 1/2"	1	0	20.4/FT	81.6
		TOTAL BLACK STEEL WEIGHT				168.1
		SUPPORT ASSEMBLY MK-3				
2	a5	HSS 6 X 6 X 3/16	4	8	5.64/FT	52.7
4	a3	PL 12" x 1/2"	1	0	20.4/FT	81.6
		TOTAL BLACK STEEL WEIGHT				134.3
		HARDWARE KIT HK-1				
16	EACH	5/8" x 1 1/2" HEAVY HEX BOLT WITH NUT AND WASHER				4.4
16	EACH	5/8" x 8" A304SS THREADED ROD WITH NUT AND WASHER				14.1
		TOTAL WEIGHT BLACK STEEL				509.6
		TOTAL WEIGHT OF GALVANIZING 3.5%				17.8
		TOTAL WEIGHT OF GRATING SYSTEM				4889.1

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	JE

SALIENT Power Engineering LLC

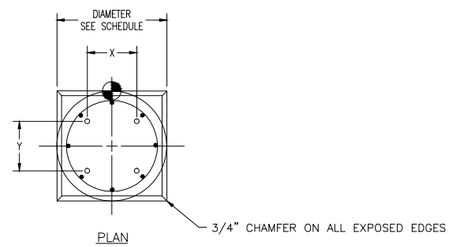
LEHI CITY
MURDOCK SUBSTATION
XMFR GRATING DETAILS

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/4" = 1'-0"
DATE 6/23/2014

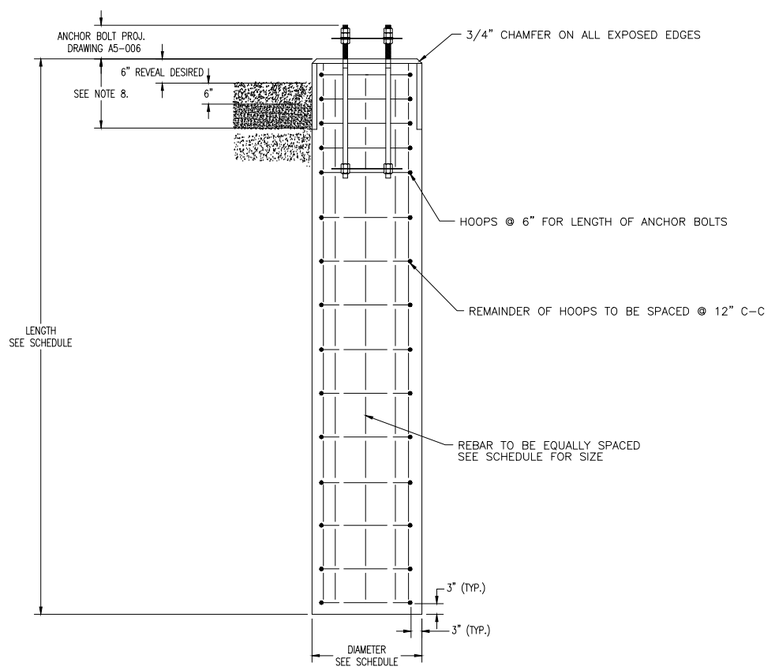
A5-003

FOUNDATION SCHEDULE

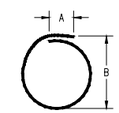
PIER SIZE				REBAR											ANCHOR BOLTS		
FDN. TYPE	DIAMETER	LENGTH	EST. CU. YDS. CONC. PER FTG.	# OF STRAIGHT REBAR	SIZE	LENGTH OF STRAIGHT REBAR	WT. OF STRAIGHT REBAR PER FTG.	# OF HOOPS	SIZE	A	B	LENGTH OF HOOPS	WT. OF HOOPS PER FOUNDATION	TOTAL REBAR WT. PER FOUNDATION	ANCHOR BOLT PAT. X	ANCHOR BOLT PAT. Y	ANCHOR BOLT TYPE
DE	36"	15'-0"	4.0	8	#8	14'-6"	309.7	19	#5	12"	30"	8'-10"	175.1	484.8	1'-2"	1'-2"	TYPE I
BS	36"	15'-0"	4.0	8	#8	14'-6"	309.7	19	#5	12"	30"	8'-10"	175.1	484.8	1'-0"	1'-0"	TYPE III
SW	36"	15'-0"	4.0	8	#8	14'-6"	309.7	19	#5	12"	30"	8'-10"	175.1	484.8	1'-2"	1'-2"	TYPE I
CS	48"	15'-0"	7.0	12	#8	14'-6"	464.6	19	#5	12"	42"	12'-0"	237.8	702.4	1'-8"	1'-8"	BY MANUF.
SM	60"	20'-0"	14.6	18	#8	19'-6"	937.2	28	#6	24"	54"	16'-2"	679.9	1,617.1	SEE DWG.	A5-007	TYPE II



PLAN



ELEVATION



HOOP DESIGN

B = DIAMETER – 3" CLEAR AS A MINIMUM.

NOTES:

1. REINFORCING STEEL TO BE A615 GR 60
2. REINFORCING STEEL TO BE EQUALLY SPACED UNLESS OTHERWISE NOTED.
3. CONCRETE COVER TO BE 3" UNLESS OTHERWISE NOTED.
4. CONCRETE TO HAVE MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER AT 45 DEGREES.
6. SEE FOUNDATION PLAN (A5-001) FOR TOP OF CONCRETE ELEVATION.
7. SEE ANCHOR BOLT DRAWING (A5-005) FOR ANCHOR BOLT DETAILS.
8. SQUARE FORMED TOPS ARE ACCEPTABLE. FORMED TOPS MUST EXTEND BELOW GRADE.

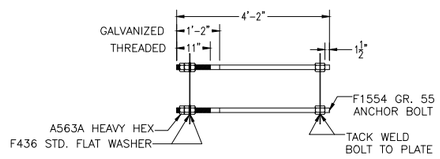
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

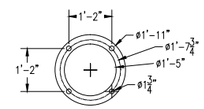
SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
PIER SCHEDULE

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/4" = 1'-0"
DATE 6/23/2014

A5-004

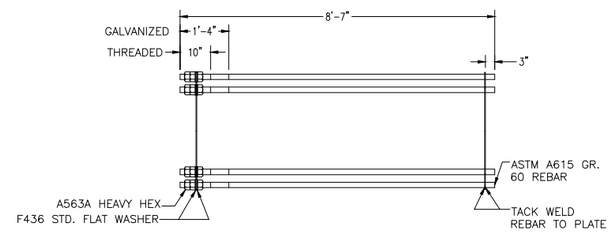




(p1) DETAILS

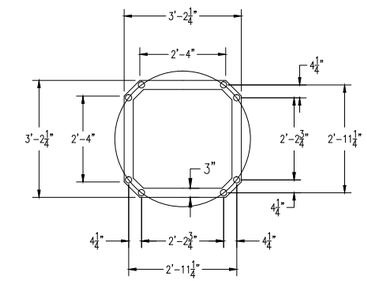
ANCHOR BOLT CAGE TYPE I
BILL OF MATERIALS

(4) 1 1/2" DIA. F1554 GR. 55 BOLT
(8) 1 1/2" DIA. F436 ST. FLAT WASHER
(20) 1 1/2" DIA. A563A HEAVY HEX NUTS
(2) 3/16" PLATE (p1)

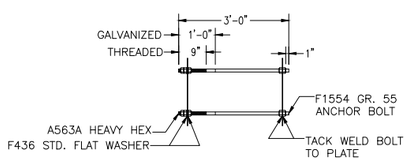


ANCHOR BOLT CAGE TYPE II
BILL OF MATERIALS

(8) #14J REBAR GR. 75
(16) 1 3/4" DIA. F436 ST. FLAT WASHER
(24) 1 3/4" DIA. A563A HEAVY HEX NUTS
(2) 1/4" PLATE (p2)

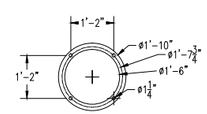


(p2) DETAILS



ANCHOR BOLT CAGE TYPE III
BILL OF MATERIALS

(4) 1" DIA. F1554 GR. 55 BOLT
(8) 1" DIA. F436 ST. FLAT WASHER
(20) 1" DIA. A563A HEAVY HEX NUTS
(2) 3/16" PLATE (p3)



(p3) DETAILS

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
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SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
ANCHOR BOLT DETAILS

DRAWN BY J. FORSTING
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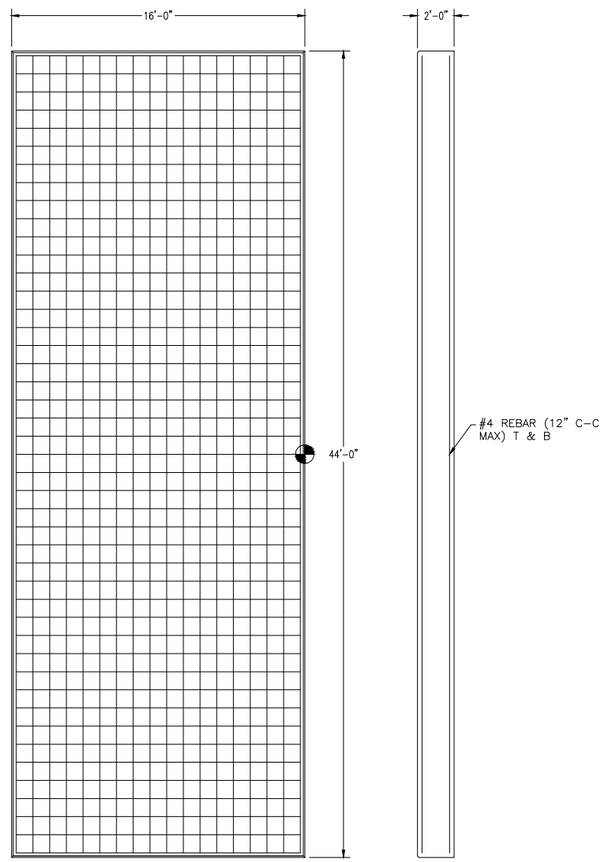
SCALE 1/2" = 1'-0"
DATE 6/23/2014

A5-005

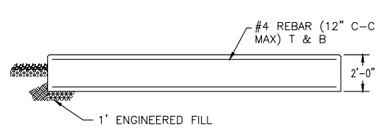
REINFORCING SCHEDULE

MARK NO.	NO. REQD	SIZE	LENGTH	TOTAL WT	TYPE	SKETCH	A	B	C	D	E	F	G	STR
SWGR-1	90	#4	15'-6"	932	STR	———								
SWGR-2	36	#4	43'-6"	1047	STR	———								



FOUNDATION PLAN VIEW

FOUNDATION SIDE VIEW



FOUNDATION END VIEW

LEGEND

- CRUSHED ROCK
- COMPACT ROAD BASE
- EXISTING SOIL
- 1' THICK VOID FORM

NOTES:

1. REINFORCING STEEL TO BE A615 GR 60
2. REINFORCING STEEL TO BE EQUALLY SPACED UNLESS OTHERWISE NOTED.
3. CONCRETE COVER TO BE 3" UNLESS OTHERWISE NOTED.
4. CONCRETE TO HAVE MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
5. ALL EXPOSED EDGES TO HAVE A 1" CHAMFER AT 45 DEGREES.
6. ALL CONSTRUCTION JOINTS AND CONCRETE PENETRATIONS TO BE SEALED WITH GREENSTREAK SWELLSTOP II.
7. CONTRACTOR SHALL INSTALL WATER STOP AND SHALL DETERMINE HOW TO ROUTE CONCRETE CONTROL JOINT.
8. SEE FOUNDATION PLAN (A5-001) FOR TOP OF CONCRETE ELEVATION.

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	JE

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
SWITCHGEAR FOUNDATION DETAILS

DRAWN BY J. FORSTING
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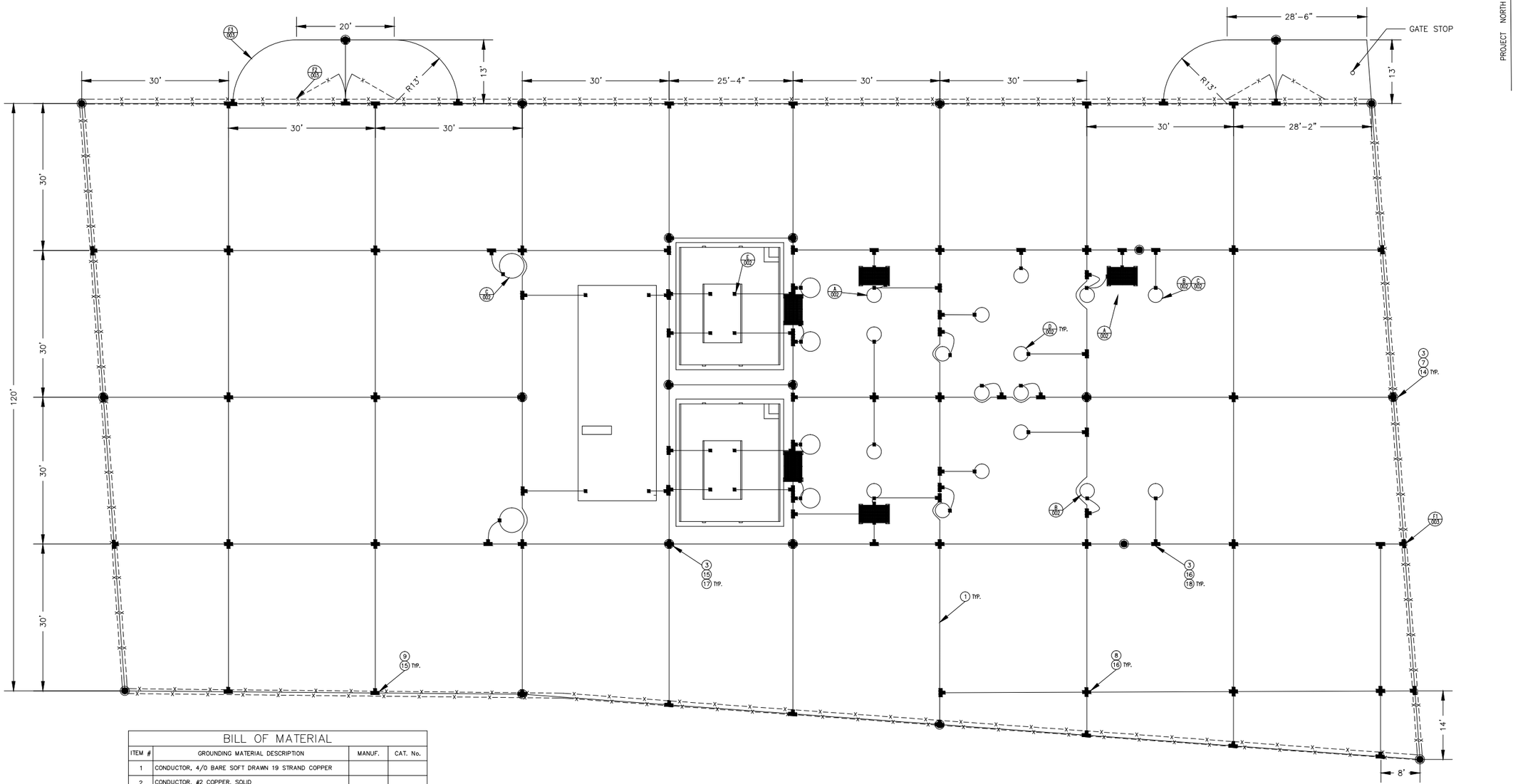
SCALE 1/4" = 1'-0"
DATE 6/23/2014

A5-006



BILL OF MATERIAL

ITEM #	GROUNDING MATERIAL DESCRIPTION	MANUF.	CAT. No.
1	CONDUCTOR, 4/0 BARE SOFT DRAWN 19 STRAND COPPER		
2	CONDUCTOR, #2 COPPER, SOLID		
3	GROUND ROD, COPPER CLAD 3/4" X 10-'0"		
4	CONNECTOR. SPLIT-BOLT, #2-#6 SOLID COPPER TO FENCE FABRIC	BURNDY	KS23
5	CABLE TO ROD/TUBE GROUND CONNECTOR	BURNDY	TYPE GD
6	FLEXIBLE BRAID	BURNDY	BD12N
7	4/0 CABLE TO 3/4" GROUND ROD CONNECTOR WELD METAL 115	CADWELD	GTC-182Q
8	HORIZONTAL X - 4/0 RUN, 4/0 TAP WELD METAL 250	CADWELD	XBM-2Q2Q
9	HORIZONTAL TEE - 4/0 RUN, 4/0 TAP WELD METAL 150	CADWELD	TAC-2Q2Q
10	FENCE POST GROUND CONNECTOR	BURNDY	NOTE 13 TYPE GAR
11	2 CABLE GROUND CONNECTOR	BURNDY	GC2929
12	1 CABLE GROUND CONNECTOR	BURNDY	GB29
13	COPPER CABLE TERMINAL	BURNDY	NAH34-29
14	STANDARD WELD MATERIAL	CADWELD	115
15	STANDARD WELD MATERIAL	CADWELD	150
16	STANDARD WELD MATERIAL	CADWELD	250
17	3 4/0 CABLE TO 3/4" GROUND ROD CONNECTOR WELD METAL 250	CADWELD	NCR-182Q
18	4 4/0 CABLE TO 3/4" GROUND ROD CONNECTOR WELD METAL 2-150	CADWELD	NDF-182Q

DESIGN NOTES

1. STATION GROUNDING IS BASED ON THE FOLLOWING DESIGN CRITERIA:
   MAXIMUM FAULT CURRENT: 10,701 AMPS
   FAULT CLEARING TIME: 0.50 SECONDS (30 CYCLES)
2. GRID BURIAL DEPTH (BELOW GRADE): 18" MINIMUM
3.

DESIGN FACTOR	ALLOWABLE	CALCULATED
STEP POTENTIAL	2234.1 VOLTS	215.7 VOLTS
TOUCH POTENTIAL	681.6 VOLTS	481.4 VOLTS
GRID RESISTANCE	0.63 OHMS	
GROUND POTENTIAL RISE		4,008.9 VOLTS

4. ALL UNDERGROUND CONNECTIONS ARE EXOTHERMIC WELDED.
5. SURFACE MATERIAL SHALL BE SIX (6) INCHES DEEP, 3000 OHM-METER CRUSHED ROCK.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR QUANTITY TAKE-OFF FOR ALL GROUNDING MATERIALS.
7. ALL CONCEALED GROUND RODS, SPLICES, AND TAPS SHALL BE CADWELD.
8. ALL MECHANICAL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDATION COMPOUND.
9. ALL GROUND WIRE TO BE BURIED 18" BELOW GRADE.
10. RETAINING AND BLOCK WALL REBAR SHALL BE GROUNDED AT EVERY CORNER AND EVERY 30 FEET ALONG PERIMETER
11. GROUND GRID SHALL NOT EXCEED WALL LINE.
12. COORDINATE CATALOG NUMBER OF GATE GROUNDING COMPONENTS WITH THE SIZE OF PIPE USED FOR GATE CONSTRUCTION.
13. ALL COPPER GROUND WIRE TO BE STRANDED 4/0 COPPER UNLESS OTHERWISE NOTED.

LEGEND

- DETAIL IDENTIFICATION NUMBER / DRAWING REFERENCE NUMBER
- BOM IDENTIFICATION NUMBER
- 4/0 AWG STRAND CU. (APPROX. 3100 FT) (INSTALL 18" BELOW GRADE MIN.)
- 4/0 AWG STRAND CU. INSTALLED ABOVE GRADE
- NEW CROSS CONNECTIONS (EXOTHERMIC)
- NEW TEE CONNECTIONS (EXOTHERMIC)
- CLAMP TYPE CONNECTOR
- 3/4"ø X 10'-0" LG SECTIONAL GROUND RODS

REFERENCE DRAWINGS

GROUNDING DETAILS.....A6-002

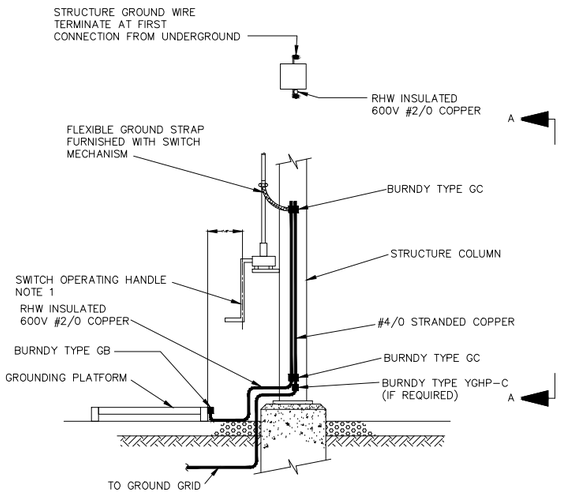
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	ACP	CWM	

SALIENT Power Engineering LLC

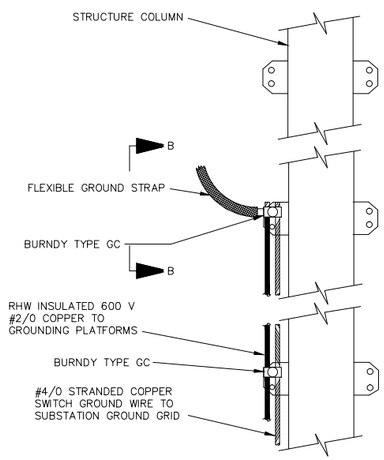
LEHI CITY
MURDOCK SUBSTATION
GROUNDING PLAN

DRAWN BY A. PONTASCH
APPROVED BY
SCALE 3/32" = 1'-0"
DATE 06/25/2014

A6-001



A 001 ONE SWITCH OPERATOR



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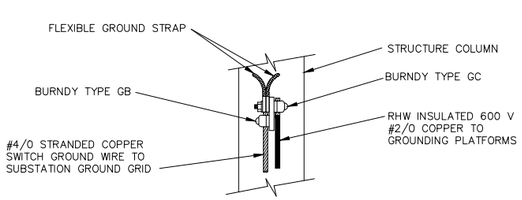
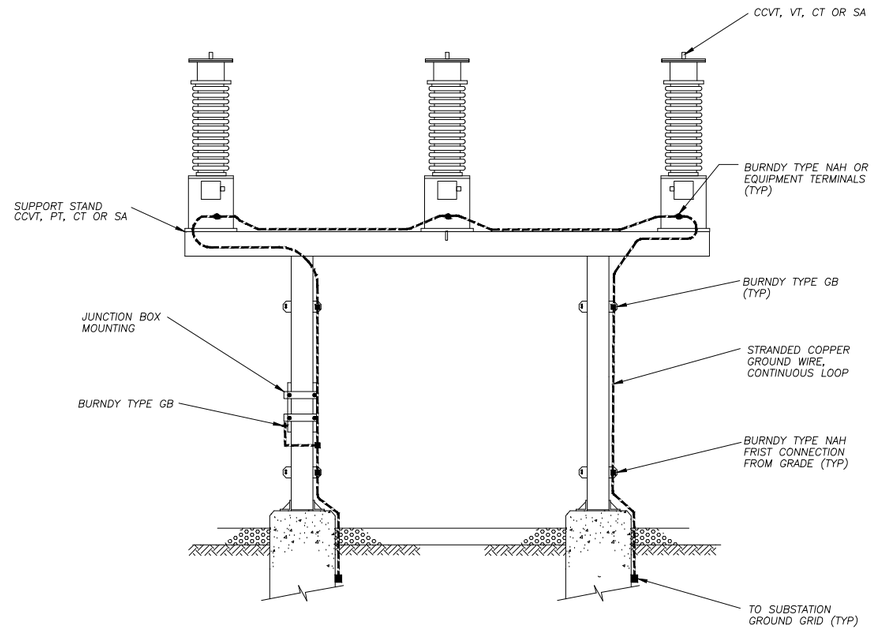
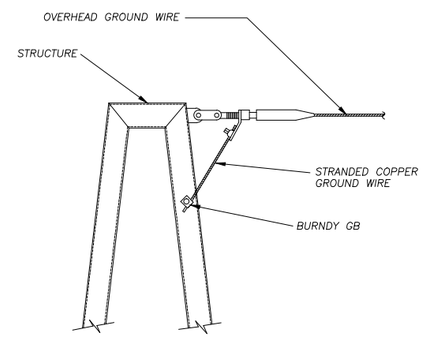


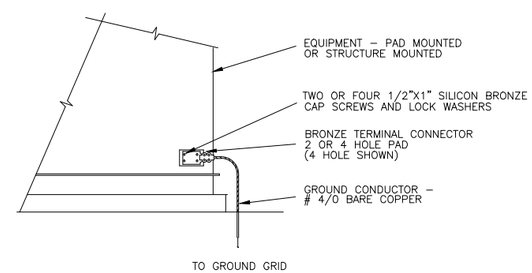
SECTION B–B



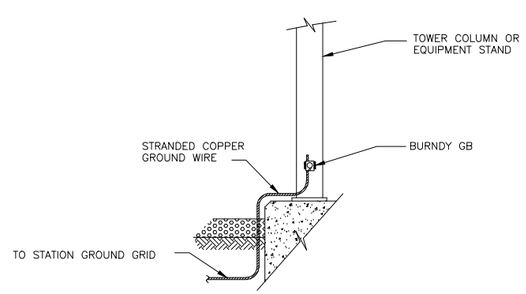
B 001 CCVT, PT, CT, OR SA GROUNDING



C 001 O.H.G.W. GROUNDING CONNECTION



E 001 EQUIPMENT GROUNDING CONNECTION



D 001 LEG GROUNDING CONNECTION

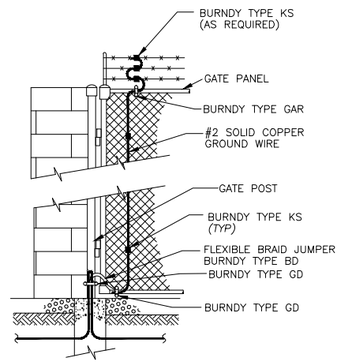
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	ACP	CWM	

SALIENT Power Engineering LLC

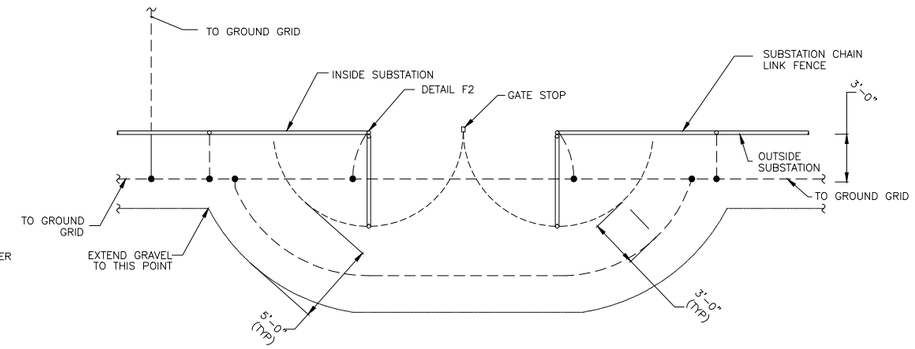
LEHI CITY
MURDOCK SUBSTATION
GROUNDING DETAILS

DRAWN BY A. PONTASCH
APPROVED BY
SCALE N.T.S.
DATE 06/25/2014

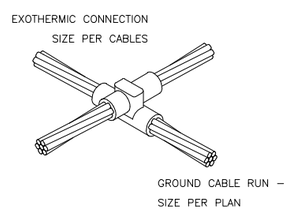
A6–002



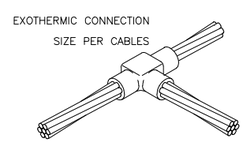
F2 / 001 GATE GROUNDING CONNECTIONS



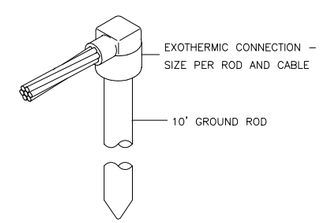
F3 / 001 PLAN – TYPICAL GROUNDING AROUND GATES



8 / 001 CROSS CONNECTION (TYP)



9 / 001 TEE CONNECTION



5 / 001 GROUND ROD CONNECTION

NOTES:

1. RETANING WALL AND BLOCK WALL REBAR TO BE BONDED AT ALL CORNERS AND EVERY 30' ALONG PERIMETER

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
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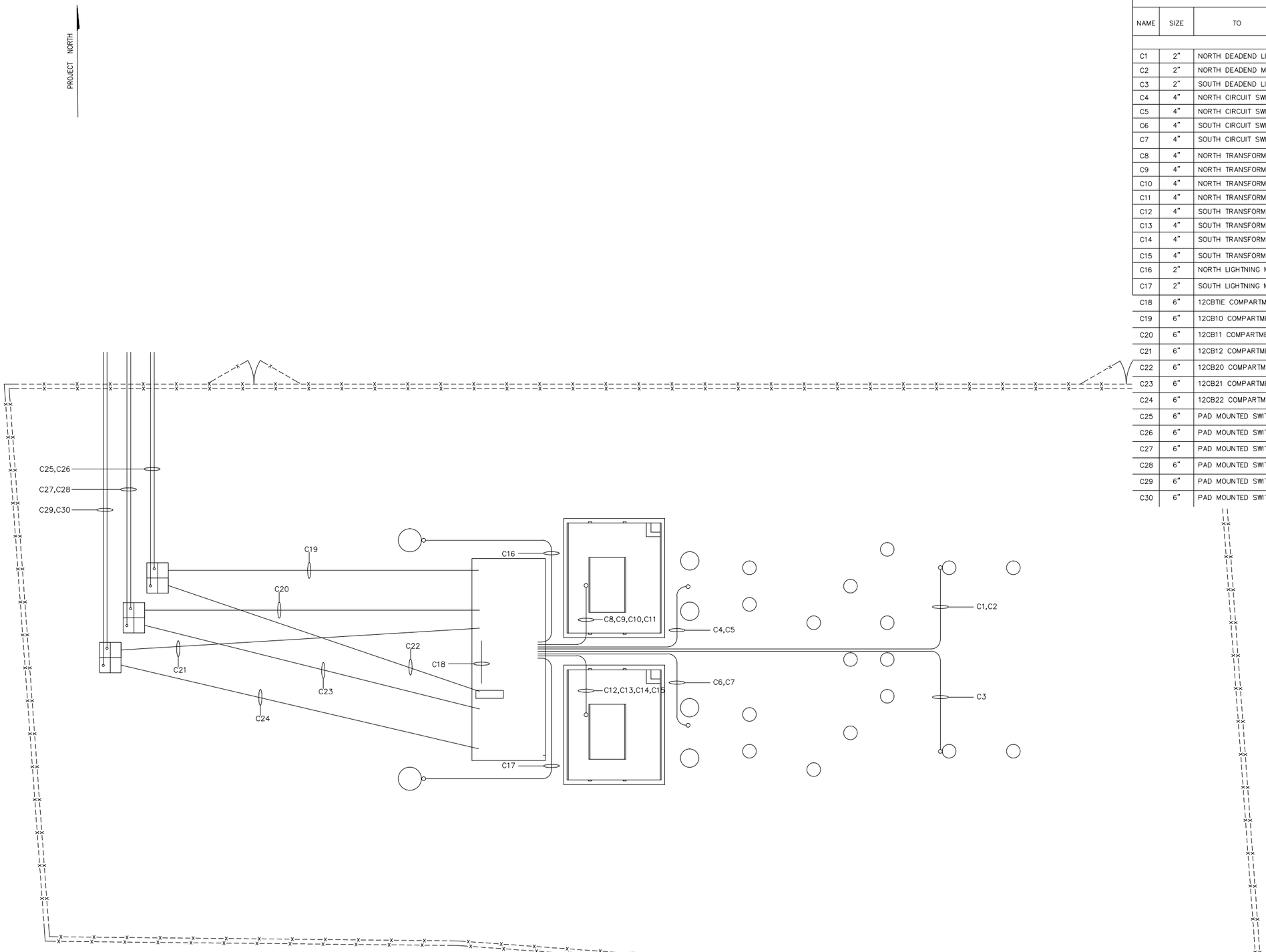
SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
GROUNDING DETAILS

DRAWN BY A. PONTASCH
APPROVED BY
SCALE N.T.S.
DATE 06/25/2014

A6–003



CONDUIT SCHEDULE

NAME	SIZE	TO	FROM	LENGTH
C1	2"	NORTH DEADEND LIGHT	FEILD TERM. CABINET	110'
C2	2"	NORTH DEADEND METERING	FEILD TERM. CABINET	110'
C3	2"	SOUTH DEADEND LIGHT	FEILD TERM. CABINET	110'
C4	4"	NORTH CIRCUIT SWITCHER	FEILD TERM. CABINET	45'
C5	4"	NORTH CIRCUIT SWITCHER	FEILD TERM. CABINET	45'
C6	4"	SOUTH CIRCUIT SWITCHER	FEILD TERM. CABINET	45'
C7	4"	SOUTH CIRCUIT SWITCHER	FEILD TERM. CABINET	45'
C8	4"	NORTH TRANSFORMER	FEILD TERM. CABINET	30'
C9	4"	NORTH TRANSFORMER	FEILD TERM. CABINET	30'
C10	4"	NORTH TRANSFORMER	FEILD TERM. CABINET	30'
C11	4"	NORTH TRANSFORMER	FEILD TERM. CABINET	30'
C12	4"	SOUTH TRANSFORMER	FEILD TERM. CABINET	30'
C13	4"	SOUTH TRANSFORMER	FEILD TERM. CABINET	30'
C14	4"	SOUTH TRANSFORMER	FEILD TERM. CABINET	30'
C15	4"	SOUTH TRANSFORMER	FEILD TERM. CABINET	30'
C16	2"	NORTH LIGHTNING MAST LIGHT	FEILD TERM. CABINET	60'
C17	2"	SOUTH LIGHTNING MAST LIGHT	FEILD TERM. CABINET	60'
C18	6"	12CBTIE COMPARTMENT B1	BUS TIE COMPARTMENT B2	60'
C19	6"	12CB10 COMPARTMENT	PAD MOUNTED SWITCH	60'
C20	6"	12CB11 COMPARTMENT	PAD MOUNTED SWITCH	60'
C21	6"	12CB12 COMPARTMENT	PAD MOUNTED SWITCH	60'
C22	6"	12CB20 COMPARTMENT	PAD MOUNTED SWITCH	70'
C23	6"	12CB21 COMPARTMENT	PAD MOUNTED SWITCH	75'
C24	6"	12CB22 COMPARTMENT	PAD MOUNTED SWITCH	80'
C25	6"	PAD MOUNTED SWITCH	OUTSIDE SUBSTATION WALL	50'
C26	6"	PAD MOUNTED SWITCH	OUTSIDE SUBSTATION WALL	50'
C27	6"	PAD MOUNTED SWITCH	OUTSIDE SUBSTATION WALL	60'
C28	6"	PAD MOUNTED SWITCH	OUTSIDE SUBSTATION WALL	60'
C29	6"	PAD MOUNTED SWITCH	OUTSIDE SUBSTATION WALL	70'
C30	6"	PAD MOUNTED SWITCH	OUTSIDE SUBSTATION WALL	70'

NOTES:

1. ALL BELOW GRADE STRAIGHT CONDUIT TO BE SCHEDULE 40 PVC
2. ALL BELOW GRADE ELLS AND ANGLES TO BE PVC LINED GALVANIZED RIGID CONDUIT.
3. ALL ABOVE GROUND CONDUIT TO BE GALVANIZED RIGID CONDUIT.
4. ALL 15KV FEEDER CONDUITS TO BE INSTALLED PER CITY SPECIFICATIONS.

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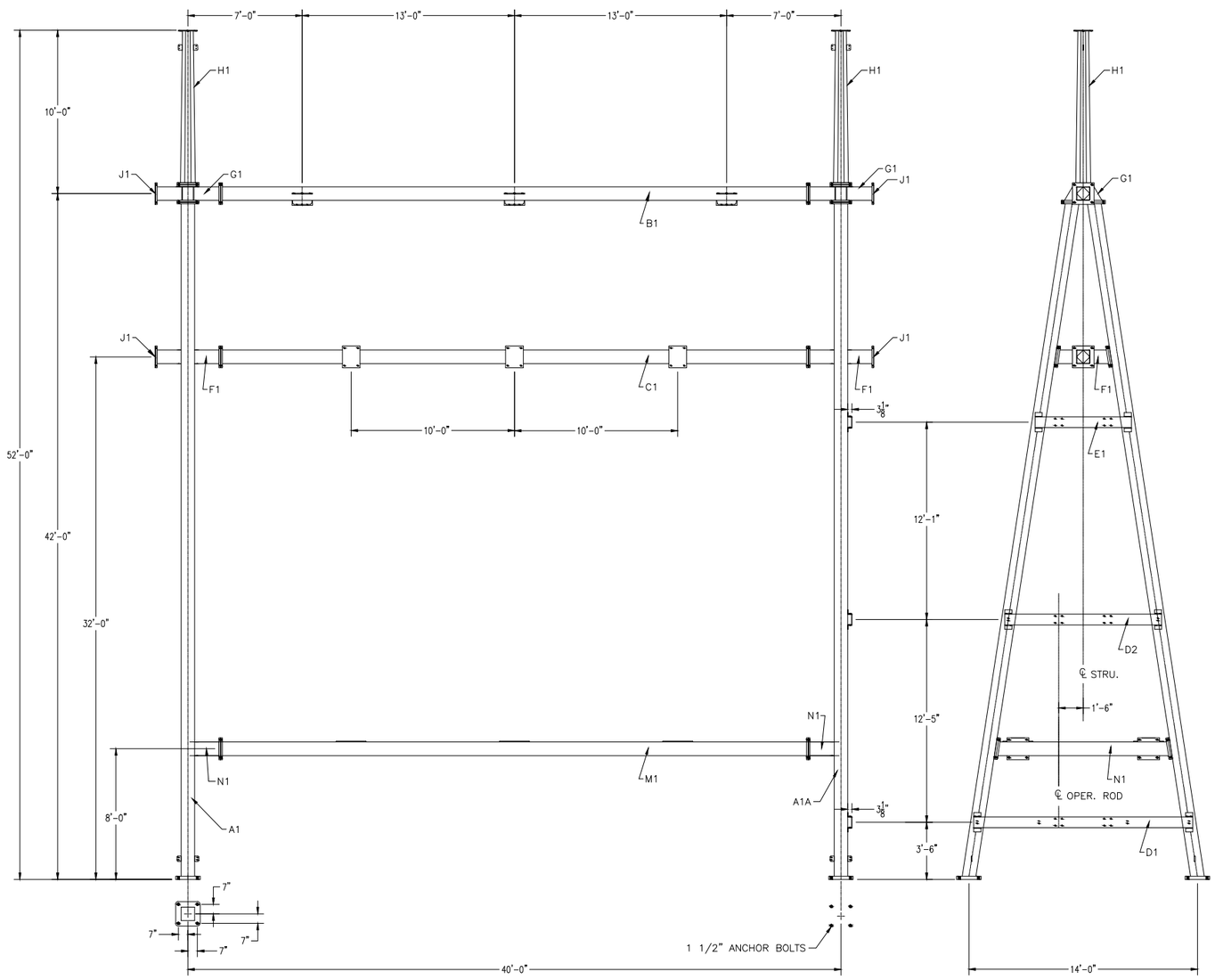
SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
CONDUIT PLAN

DRAWN BY J. FORSTING
APPROVED BY
SCALE 3/32" = 1'-0"
DATE 06/25/2014

A7-001



ELEVATION VIEW

SIDE VIEW

BILL OF MATERIAL

QTY	MARK	DESCRIPTION	WEIGHT
2	A13–A1	COLUMN LEG	3,494.8
1	A13–A1A	COLUMN LEG W/ BRACKETS	1,760.3
1	A13–RA1A	COLUMN LEG W/ BRACKETS	1,760.3
1	A13–B1	PULL OFF BEAM	1,657.2
1	A13–C1	SWITCH BEAM	1,702.2
1	A13–D1	CHANNEL SUPPORT	154.2
1	A13–D2	CHANNEL SUPPORT	110.5
1	A13–E1	CHANNEL SUPPORT	68.0
2	A13–F1	BRACE	1,120.5
2	A13–G1	CONNECTION	1,330.4
2	A13–H1	GROUND MAST	633.5
4	A13–J1	END COVER	54.5
2	A13–M1	EQUIPMENT BEAM	5,131.8
2	A13–N1	EQUIPMENT BEAM CONNECTION	3,463.2
1	A13–K1	HARDWARE KIT	194.0
		TOTAL BLACK STEEL WEIGHT	22,613.3
		TOTAL WEIGHT OF GALVANIZING (3.5%)	791.5
		TOTAL GALVANIZED WEIGHT	23,404.8

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

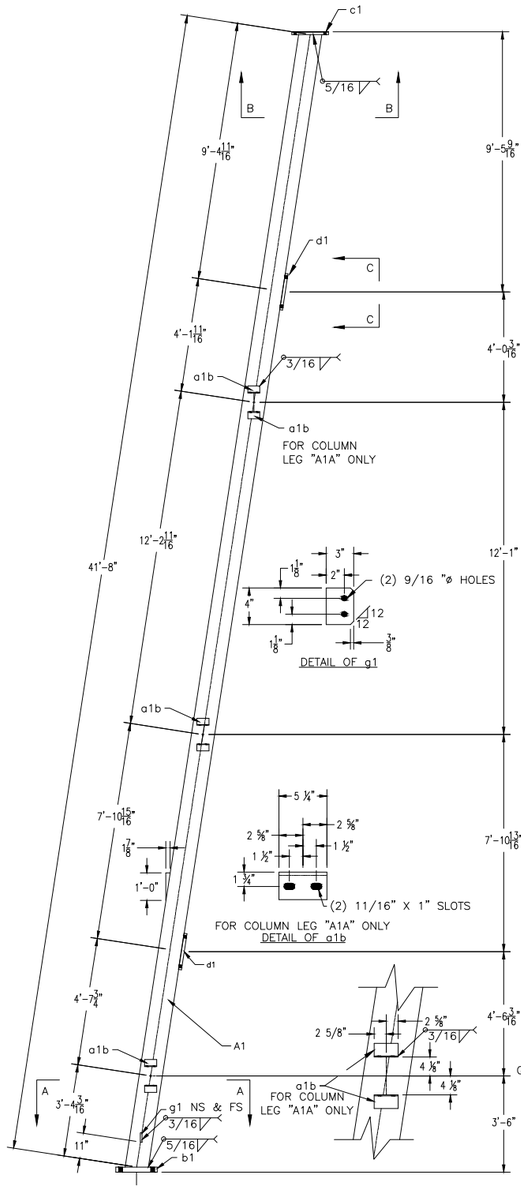
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

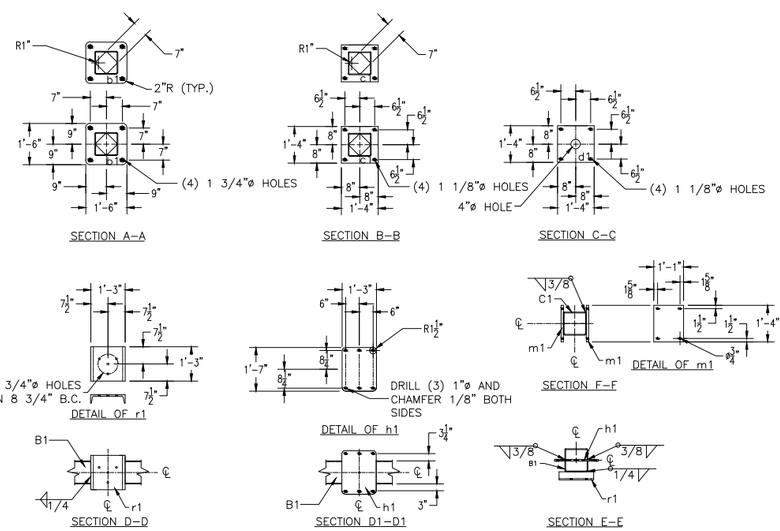
LEHI CITY
MURDOCK SUBSTATION
138KV DEAD-END ERECTION

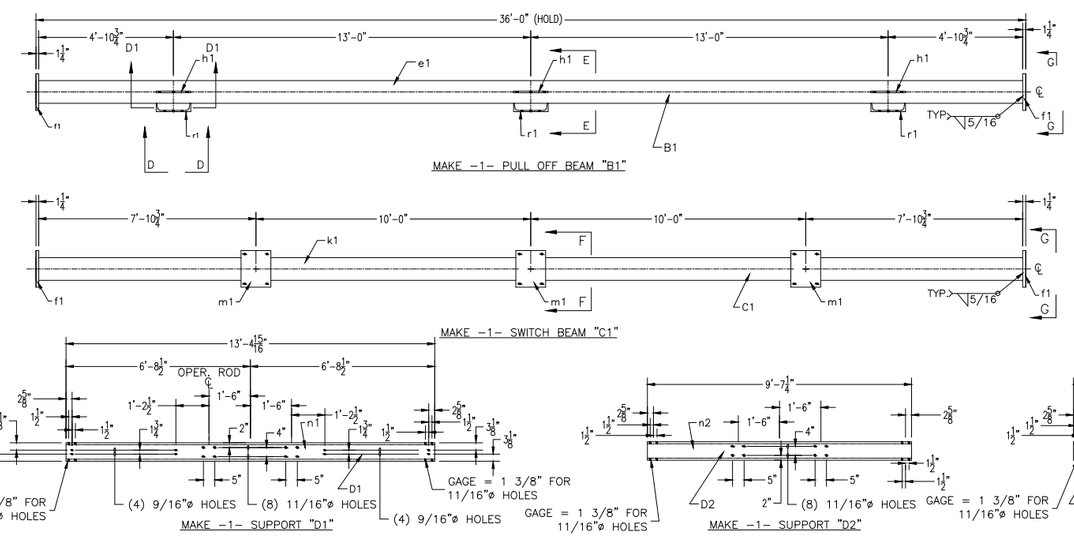
DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/4" = 1'-0"
DATE 6/22/2014

A9–001



MAKE (2) COLUMN LEG "A1" THUS
MAKE (1) COLUMN LEG "A1A" THUS
MAKE (1) COLUMN LEG "RA1A" REV.





NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

BILL OF MATERIAL

QTY	MARK	DESCRIPTION	LENGTH FT.	LENGTH INCHES	UNIT WEIGHT	TOTAL WEIGHT
2	A13–A1	COLUMN LEG				
2	A13–a1	HSS 10 X 10 X 1/4 (BEVEL CUT)	41	8	32.60#/FT	2705.8
2	A13–b1	PL 1 1/4 X 18	1	6	51.04#/SQ. FT	229.7
2	A13–c1	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	181.5
4	A13–d1	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	363.0
4	A13–g1	BAR 3 X 1/4	0	4	2.55#/FT	3.4
		BLACK STEEL WEIGHT				3483.4
1	A13–RA1A	COLUMN LEG W/BRACKETS				
1	A13–A1A	COLUMN LEG W/BRACKETS				
2	A13–a1	HSS 10 X 10 X 1/4 (BEVEL CUT)	41	8	32.60#/FT	2705.8
2	A13–b1	PL 1 1/4 X 18	1	6	51.04#/SQ. FT	229.7
2	A13–c1	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	181.5
4	A13–d1	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	363.0
4	A13–g1	BAR 3 X 1/4	0	4	2.55#/FT	3.4
12	A13–a1b	L 3 X 3 X1/4	0	5 1/4	4.9#/FT	27.5
		BLACK STEEL WEIGHT				3510.9
1	A13–B1	PULL OFF BEAM				
1	A13–e1	HSS 10 X 10 X 1/4	35	9 1/2	32.60#/FT	1166.8
2	A13–f1	PL 1 1/4 X 16	1	4	51.04 #/SQ. FT	181.5
3	A13–r1	C15 X 33.9	1	3	33.9#/FT	127.1
3	A13–h1	PL 3/4 X 15	1	7	30.63#/SQ. FT	181.8
		BLACK STEEL WEIGHT				1657.2
1	A13–C1	SWITCH BEAM				
1	A13–k1	HSS 10 X 10 X 1/4	35	9 1/2	32.60#/FT	1166.8
2	A13–f1	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	181.5
6	A13–m1	PL 1 X 13	1	4	40.84#/SQ. FT	353.9
		BLACK STEEL WEIGHT				1702.2
1	A13–D1	SUPPORT CHANNEL				
1	A13–n1	C 8 X 11.5#	13	4 15/16	11.5#/FT	154.2
		BLACK STEEL WEIGHT				154.2
1	A13–D2	SUPPORT CHANNEL				
1	A13–n2	C 8 X 11.5#	9	7 1/4	11.5#/FT	105.6
		BLACK STEEL WEIGHT				105.6
1	A13–E1	SUPPORT CHANNEL				
1	A13–p1	C 8 X 11.5#	5	10 7/8	11.5#/FT	68.0
		BLACK STEEL WEIGHT				68.0

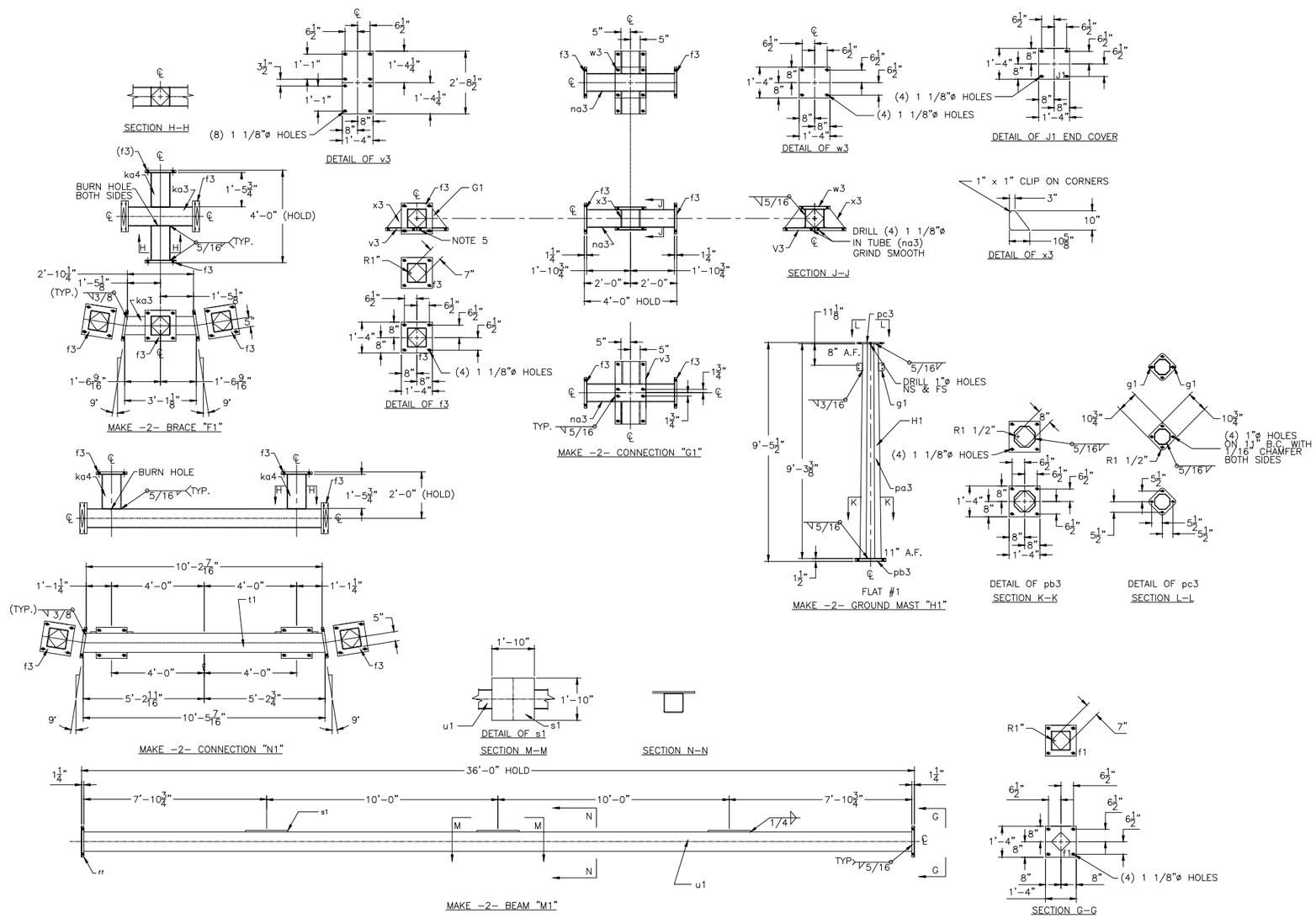
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
138KV DEAD–END DETAILS

DRAWN BY J. FORSTING
APPROVED BY
SCALE 3/8" = 1'-0"
DATE 6/22/2014

A9–002



BILL OF MATERIAL

QTY	MARK	DESCRIPTION	LENGTH FT.	LENGTH INCHES	UNIT WEIGHT	TOTAL WEIGHT
2	A13–F1	BRACE				
2	A13–ka3	HSS 10 X 10 X 1/4 (BEVEL CUT)	3	1 1/8	32.60#/FT	201.7
4	A13–ka4	HSS 10 X 10 X 1/4	1	5 3/4	32.60#/FT	192.9
8	A13–f3	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	725.9
		BLACK STEEL WEIGHT				1120.5
2	A13–G1	CONNECTION				
2	A13–na3	HSS 10 X 10 X 1/4	3	9 1/2	32.60#/FT	247.2
2	A13–v3	PL 1 1/4 X 16	2	8 1/2	51.04#/SQ. FT	368.6
2	A13–w3	PL 1 1/2 X 16	1	4	61.25#/SQ. FT	217.8
8	A13–x3	PL 9/16 X 10	0	10 5/8	22.97#/SQ. FT	135.6
4	A13–f3	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	361.2
		BLACK STEEL WEIGHT				1330.4
2	A13–H1	GROUND MAST				
2	A13–pa3	OCT. 11" AF X 8" AF X 3/16	9	3 5/8		373.0
2	A13–pb3	PL 1 1/2 X 16	1	4	61.25#/SQ. FT	217.8
2	A13–pc3	PL 5/8 X 10 3/4	0	10 3/4	25.52#/SQ. FT	41.0
2	A13–g1	BAR 3 X 1/4	0	4	2.55#/FT	1.7
		BLACK STEEL WEIGHT				633.5
2	A13–M1	EQUIPMENT BEAM				
2	A13–u1	HSS 10 X 10 X 1/2	35	9 1/2	62.33#/FT	4461.8
4	A13–f3	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	361.2
3	A13–s1	PL 3/4 X 22	1	10	30.63#/FT	308.8
		BLACK STEEL WEIGHT				5131.8
2	A13–N1	EQUIPMENT BEAM CONNECTION				
2	A13–t1	HSS 10 X 10 X 1/4	10	5 7/16	32.60#/FT	2544.4
4	A13–ka4	HSS 10 X 10 X 1/4	1	5 3/4	32.60#/FT	192.9
8	A13–f3	PL 1 1/4 X 16	1	4	51.04#/SQ. FT	725.9
		BLACK STEEL WEIGHT				3463.2
1	A13–J1	END COVER				
4	A13–j1	PL 3/16 X 16	1	4	7.6#/SQ. FT	54.5
		BLACK STEEL WEIGHT				54.5
1	A13–K1	HARDWARE KIT (ALL HARDWARE TO BE GALVANIZED)				
88	A13–hk1	1" DIA. X 4" LG A325 TYPE 1, HEAVEY HEX HEAD				
10	A13–hk1	1" DIA. X 4 1/2" LG A325 TYPE 1, HEAVEY HEX HEAD				
98	A13–hk1	1" DIA. A563HD NUT				
98	A13–hk1	1" DIA. LOCK WASHER				
196	A13–hk1	1" DIA. F436 STANDARD FLAT WASHER				

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

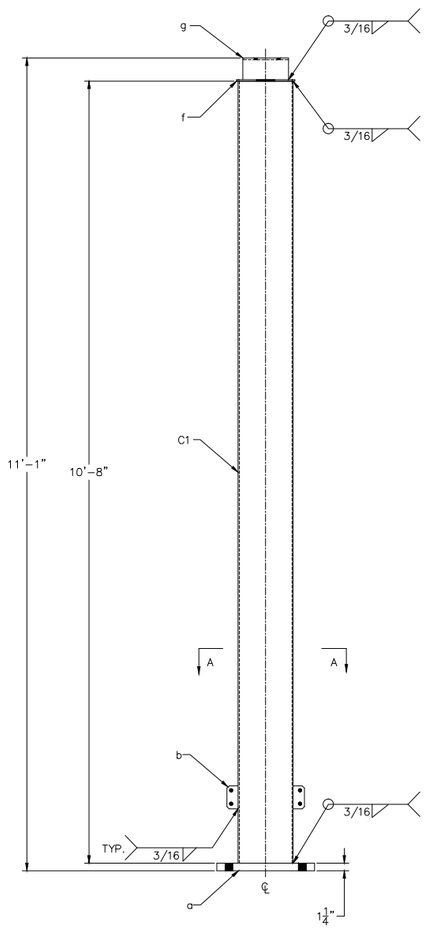
LEHI CITY
MURDOCK SUBSTATION
138KV DEAD-END DETAILS

DRAWN BY J. FORSTING
APPROVED BY
SCALE 3/8" = 1'-0"
DATE 6/22/2014

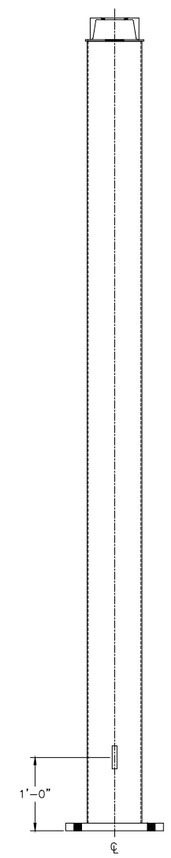
A9–003

BILL OF MATERIAL

QTY	MARK	DESCRIPTION	LENGTH FT.	LENGTH INS.	UNIT WEIGHT	TOTAL WEIGHT
(ONE) COLUMN ASSEMBLY MARK C2						
1	A56-C1	TS 8" X 8" X 3/16"	10	8	19.61 LBS/FT	210.0
1	A56-a	PL 1 1/4" X 18"	1	6		114.9
2	A56-b	PL 1/2" X 3"		4		3.4
1	A56-f	PL 1/4" x 9"	0	9		5.7
1	A56-g	MC8x21.4	0	8	21.4/FT	14.3
TOTAL BLACK STEEL WEIGHT						348.3
TOTAL GALVANIZED WEIGHT OF 1 STEEL STRUCTURE						360.5

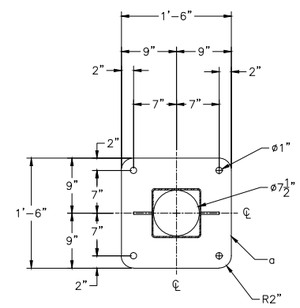


ELEVATION VIEW

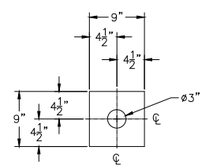


SIDE VIEW

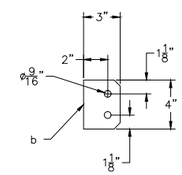
PLAN VIEW



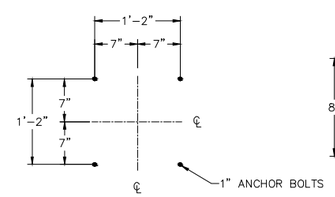
SECTION A-A



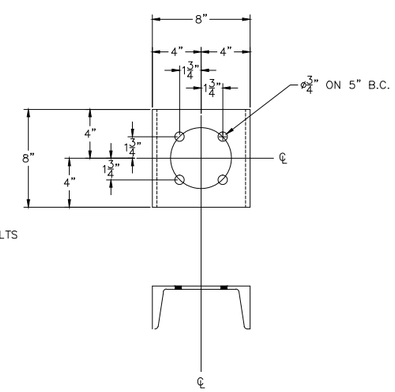
DETAIL f



DETAIL b



ANCHOR BOLT PLAN



DETAIL g

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

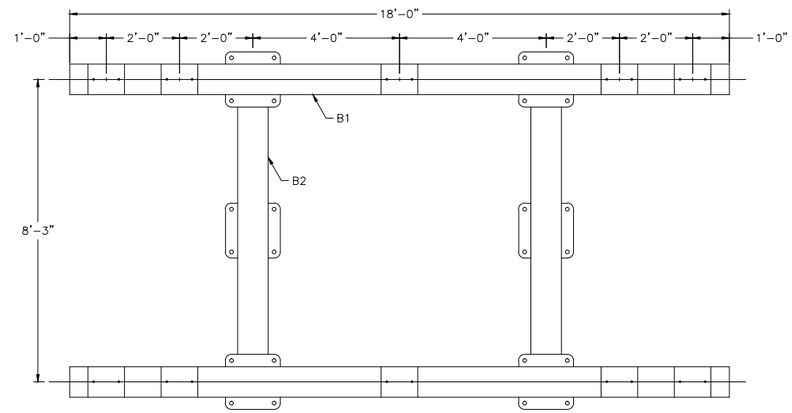
LEHI CITY
MURDOCK SUBSTATION
138KV LOW BUS SUPPORT

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1" = 1'-0"
DATE 6/23/2014

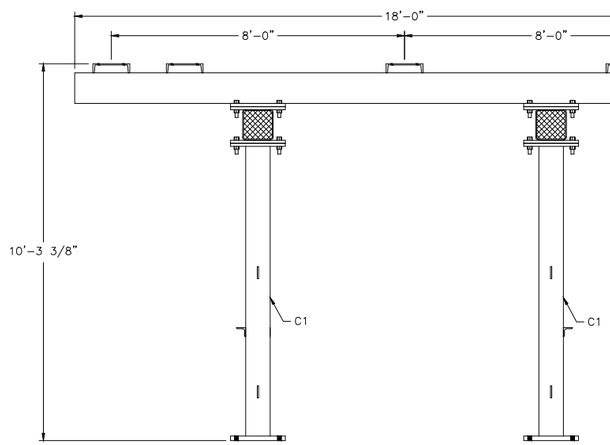
A9-004

BILL OF MATERIAL

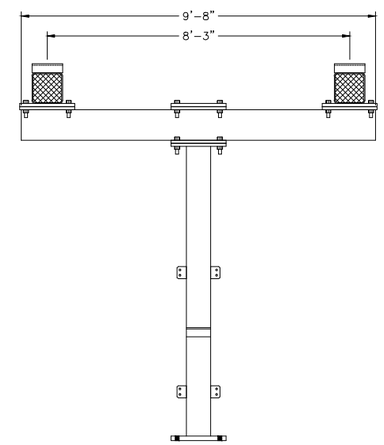
QTY	MARK	DESCRIPTION	LENGTH FT.	LENGTH INS.	REMARKS	WEIGHT
2	B1	HSS 10" X 10 X 5/16"	18	0	BEAM ASS'Y	2060.8
2	B2	HSS 10" X 10 X 5/16"	9	8	BEAM ASS'Y	1377.0
2	C1	HSS 10" X 10 X 5/16"	8	1 3/8	COLUMN ASS'Y	1158.2
	FIELD BOLTS					
24	1" X 4" HEAVY HEX. BOLT, HEAVY HEX NUT AND PLAIN ROUND WASHER					49.7
24	1" HEX. LOCKNUT MF TYPE					5.2
	TOTAL GALVANIZED WEIGHT OF (1) STEEL STRUCTURE					4650.9



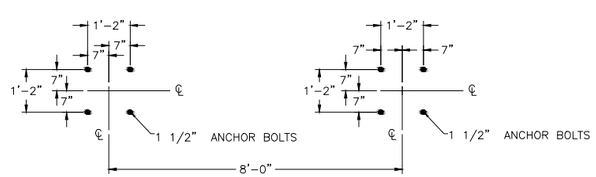
PLAN VIEW



ELEVATION VIEW



END VIEW



ANCHOR BOLT PLAN

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

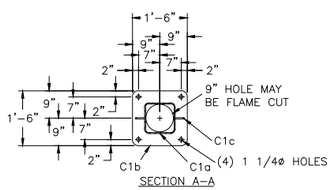
LEHI CITY
MURDOCK SUBSTATION
138KV SWITCH STAND

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/2" = 1'-0"
DATE 6/23/2014

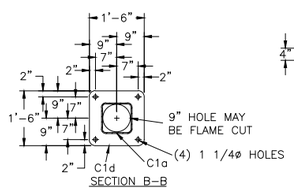
A9-005

BILL OF MATERIAL						
ITEM NO.	QTY.	DESCRIPTION	LENGTH FEET	LENGTH INCHES	UNIT WEIGHT	TOTAL WEIGHT
(ONE) BEAM ASSEMBLY – B1						
B1a	1	HSS 10" X 10" X 5/16"	18	0	40.30# / FT.	725.4
B1b	2	PL 1" X 18"	1	6		183.8
B1c	5	C12 X 20.7	0	10	20.7# / FT.	86.3
TOTAL BLACK STEEL WEIGHT						995.5
TOTAL GALVANIZED STEEL WEIGHT						1030.4
(ONE) BEAM ASSEMBLY – B2						
B2a	1	HSS 10" X 10" X 5/16"	9	8	40.30# / FT.	389.6
B1b	3	PL 1" X 18"	1	6		275.6
TOTAL BLACK STEEL WEIGHT						665.2
TOTAL GALVANIZED STEEL WEIGHT						688.5
(ONE) COLUMN ASSEMBLY – C1						
C1a	1	HSS 10" X 10" X 5/16"	7	10 7/8	40.30# / FT.	318.6
C1b	1	PL 1 1/2" X 18"	1	6		137.9
C1c	4	PL 3/8" X 3"	0	4		5.1
C1d	1	PL 1" X 18"	1	6		91.9
C1e	1	L 3 X 3 X 3/8"	0	10	7.2# / FT.	6.0
TOTAL BLACK STEEL WEIGHT						559.5
TOTAL GALVANIZED STEEL WEIGHT						579.1

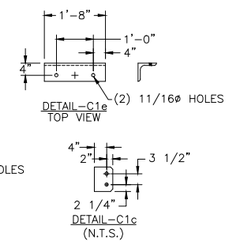
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

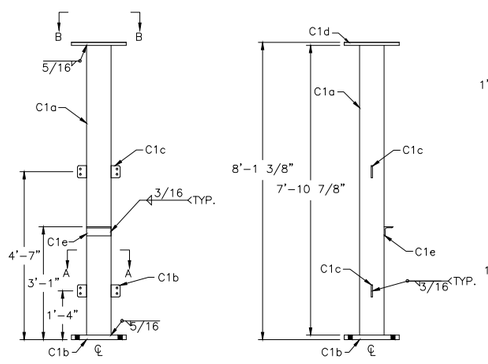


SECTION A–A

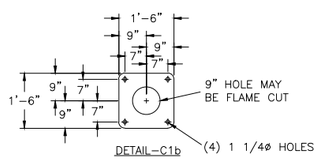


SECTION B–B

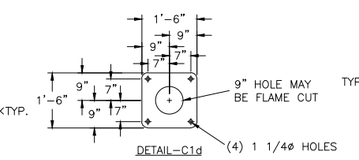




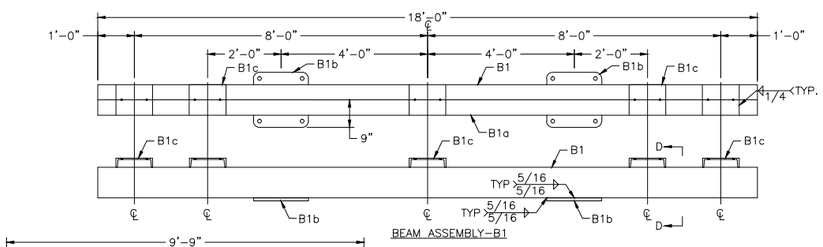
COLUMN ASSEMBLIES–C1 & C2



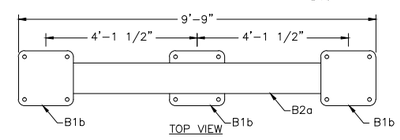
DETAIL–C1b



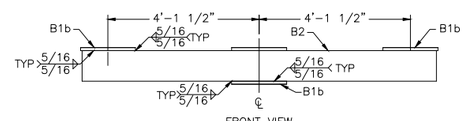
DETAIL–C1d



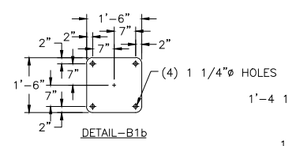
BEAM ASSEMBLY–B1



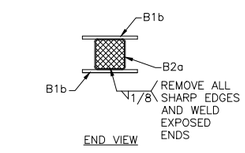
TOP VIEW



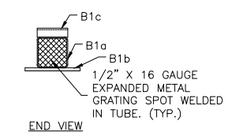
FRONT VIEW
SIDE SWITCH BEAM ASSEMBLY B2



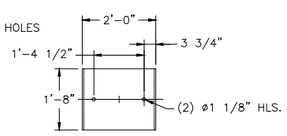
DETAIL–B1b



END VIEW



END VIEW



B1c, DETAIL B
(N.T.S)

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

SALIENT Power Engineering LLC

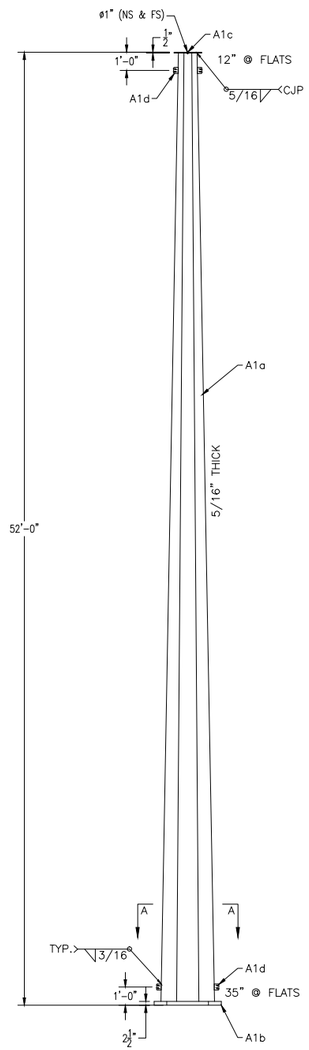
LEHI CITY
MURDOCK SUBSTATION
138KV SWITCH STAND

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/2" = 1'-0"
DATE 6/23/2014

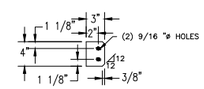
A9–006

BILL OF MATERIAL

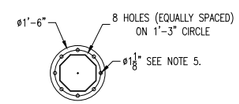
QTY	MARK	DESCRIPTION	LENGTH FT.	LENGTH INCHES	NOTES.	TOTAL WEIGHT
1	A1	SHAFT				
1	A1a	PL. 5/16"	51	9 1/8		4,312.4
1	A1b	PL 2 1/2" X 44"	3	8		798.7
1	A1c	PL 12 X 18	1	6		36.1
4	A1d	PL 3/8" X 4	0	3		5.1
TOTAL BLACK STEEL WEIGHT						5,152.3
TOTAL WEIGHT OF GALVANIZING (3.5%)						180.4
TOTAL GALVANIZED WEIGHT						5,332.7



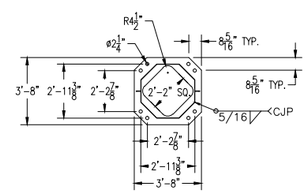
ELEVATION VIEW



DETAIL A1d



DETAIL A1c



DETAIL A1b

NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.
5. HOLES TO HAVE A 1/8" CHAMFER ON BOTH EDGES.

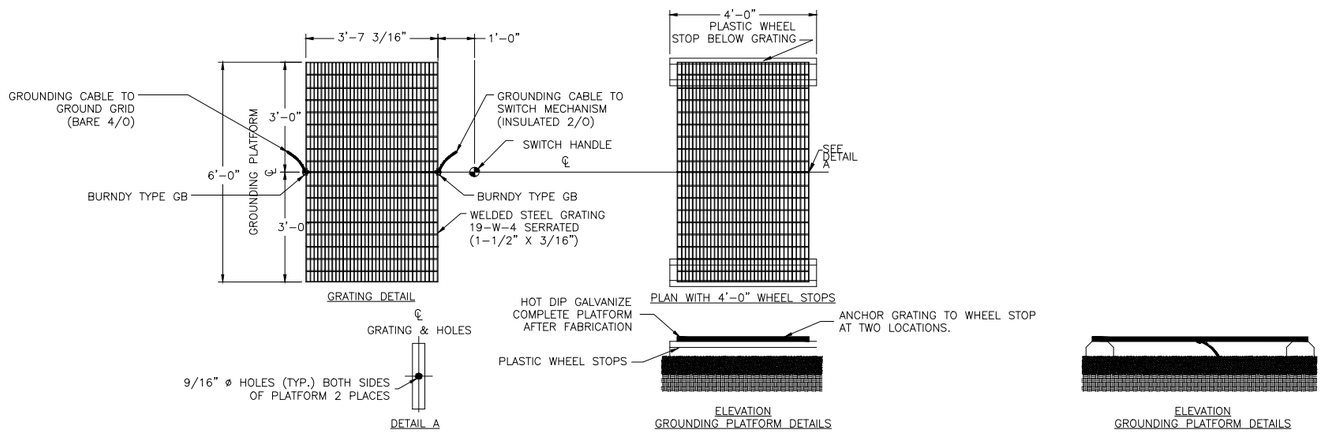
#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
52' STATIC MAST

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/4" = 1'-0"
DATE 6/25/2014

A9-007



NOTES:

1. ALL HOLES AS NOTED.
2. ALL MATERIAL HOT DIP GALVANIZED PER A.S.T.M. A123.
3. ALL MATERIAL AS NOTED.
4. ALL WELDING TO MEET OR EXCEED AWS D1.1. AND BE PERFORMED BY AWS CERTIFIED WELDERS.

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
SWITCH PLATFORM

DRAWN BY J. FORSTING
APPROVED BY
SCALE 1/2" = 1'-0"
DATE 6/23/2014

A9-008

ITEM NO.	QTY	UNIT	MATERIAL DESCRIPTION	MANUFACTURER	PART NUMBER	CONTRACTOR	CITY
A1	1	EA	138KV DEAD-END STRUCTURE				X
A2	9	EA	138KV SINGLE PHASE LOW BUS SUPPORT				X
A3	2	EA	138KV LOW SWITCH STAND				X
A4	2	EA	52' STATIC MAST				X
A5	1	LOT	138KV/12.47KV TRANFORMER GRATING				X
A6	5	EA	SWITCH GROUNDING PAD				X
A7	1	EA	138KV VERTICAL BREAK SLANT SWITCH				X
A8	3	EA	138KV CCVT				X
A9	3	EA	138KV CURRENT TRANSFORMER				X
A10	2	EA	138KV VERTICAL BREAK SWITCH				X
A11	2	EA	138KV CIRCUIT SWITCHER				X
A12	2	EA	138/12.47KV POWER TRANSFORMER		SPX		X
A13	1	EA	12.47KV SWITCH GEAR		MYERS		X
A14	60	EA	ALUMINUM COMPRESSION, CABLE TO FLAT, STRAIGHT	TRAVIS PATTERN	16-161C	X	
A15	3	EA	98KV MCOV SURGE ARRESTER			X	
A16	9	EA	ALUMINUM COMPRESSION, TEE, CABLE TO FLAT	TRAVIS PATTERN	16-161C-T	X	
A17		FT	795 26/7 ACSR "DRAKE" CONDUCTOR			X	
A18	3	EA	ALUMINUM COMPRESSION, TEE, CABLE TO FLAT	TRAVIS PATTERN	16-161C-T	X	
A19	9	EA	ALUMINUM WELDMENT, PIPE TO FLAT, 4" BUS	TRAVIS PATTERN	18-129	X	
A20	250	FT	ALUMINUM BUS, 4" IPS (4.5" O.D.), 6063-T6			X	
A21	130	FT	ALUMINUM BUS, 3" IPS (3.5" O.D.), 6063-T6			X	
A22	14	EA	ALUMINUM WELDMENT, PIPE TO ANGLE TEE, 4" TO 3", 15 DEGREES	TRAVIS PATTERN	18-283-15	X	
A23	7	EA	ALUMINUM WELDMENT, PIPE TO ANGLE VEE, 4" TO 3", 15 DEGREES	TRAVIS PATTERN	18-374-15	X	
A24	9	EA	138KV STATION CLASS INSULATOR	LAPP	TR-288	x	
A25	6	EA	ALUMINUM WELDMENT, PIPE TO FLAT, 6" BUS	TRAVIS PATTERN	18-138	X	
A26	6	EA	ALUMINUM BUS, 6" IPS (6.625" O.D.), 6063-T6			X	
A27	12	EA	ALUMINUM WELDMENT, PIPE TO FLAT, 6" BUS, 90 DEGREES	TRAVIS PATTERN	18-138-90	X	
A28	6	EA	BRONZE GROUND CLAMP, CABLE TO FLAT SURFACE, GPB	TRAVIS PATTERN	17-164	X	
A29	8	EA	BOLTED DEAD-END, 3/8" EHS	HUBBELL	SWDE-55-N	X	
A30	8	EA	DUCTILE IRON, HARDWARE FITTING, Y-CLEVIS EYE	HUBBELL	YCS-05-90-30	X	
A31	3	EA	138KV STRAIN INSULATOR	QUADRI*SIL	S030047S2010	X	
A32	3	EA	COMPRESSION DEAD-END, ALUMINUM, 795 26/7 ACSR "DRAKE"	HUBBELL	A021245	X	
A33	9	EA	HOOK ON BUS SUPPORT, 4" IPS	TRAVIS PATTERN	19-354	X	
A34	11	EA	ALUMINUM WELDMENT, INTERNAL END PLUG	TRAVIS PATTERN	18-1295	X	
A35	3	EA	HARDWARE FITTING, DUCTILE IRON, SOCKET Y-CLEVIS	HUBBELL	SYC-30	X	
A36							
A37	AS REQ.		GROUNDING HARDWARE AND CONDUCTOR			X	
A38	AS REQ.		CONDUIT AND FITTINGS			X	
A39	AS REQ.		CONTROL CABLE AND CONNECTORS			X	
A40							
A41							
A42							
A43							
A44							
A45							
A46							
A47							
A48							
A49							
A50							

#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
A	ISSUED FOR BID	06/25/2014	JLF	CWM	JE

SALIENT Power Engineering LLC

LEHI CITY

MURDOCK SUBSTATION

BILL OF MATERIALS

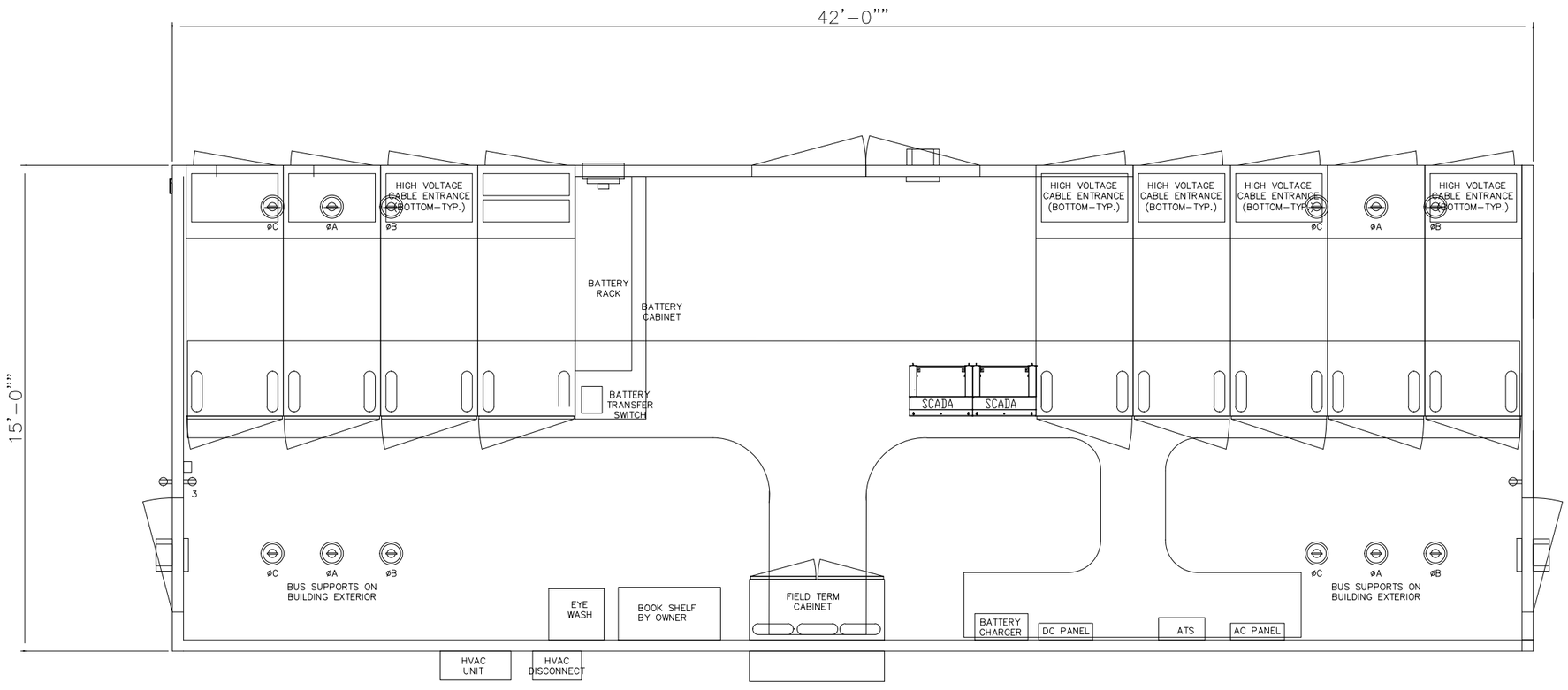
DRAWN BY J. FORSTING

APPROVED BY

SCALE N.T.S.

DATE 6/23/2014

A10–001



#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
C	ISSUED FOR SWITCHGEAR BID	05/12/2014	CWM		
B	UNSTACKED BREAKERS	04/25/2014	CWM		
A	ISSUED FOR REVIEW	04/25/2014	CWM		

SALIENT Power Engineering LLC

LEHI CITY

MURDOCK SUBSTATION

SWITCHGEAR LAYOUT

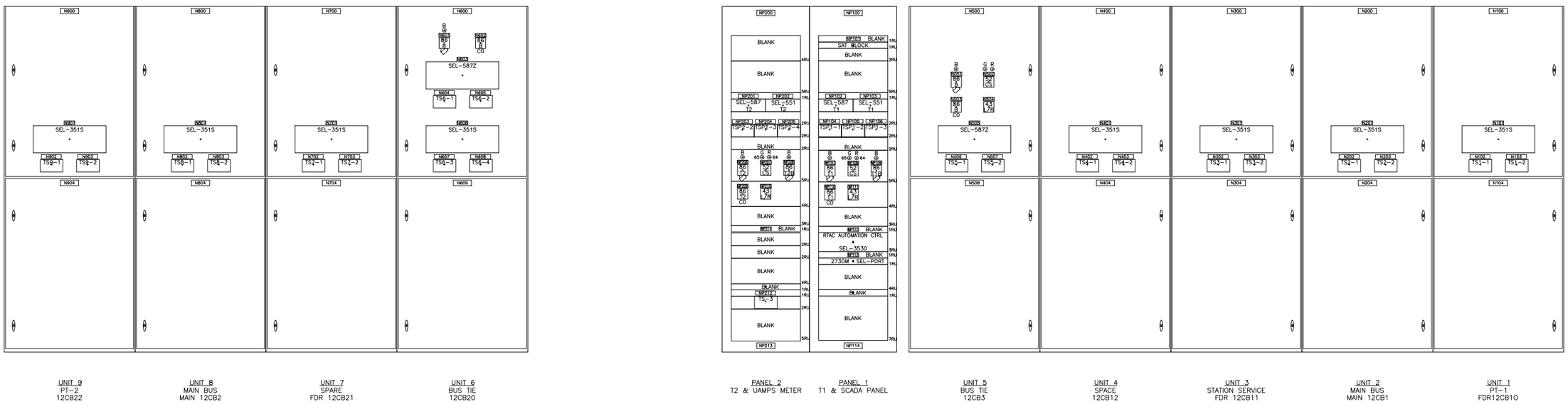
DRAWN BY J. FORSTING

APPROVED BY

SCALE 1/8" = 1'-0"

DATE 1/17/2013

C2-001



#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
C	ISSUED FOR SWITCHGEAR BID	05/12/2014	CWM		
B	UNSTACKED BREAKERS	04/28/2014	CWM		
A	ISSUED FOR REVIEW	04/25/2014	CWM		

SALIENT Power Engineering LLC

LEHI CITY

MURDOCK SUBSTATION

SWITCHGEAR ELEVATION

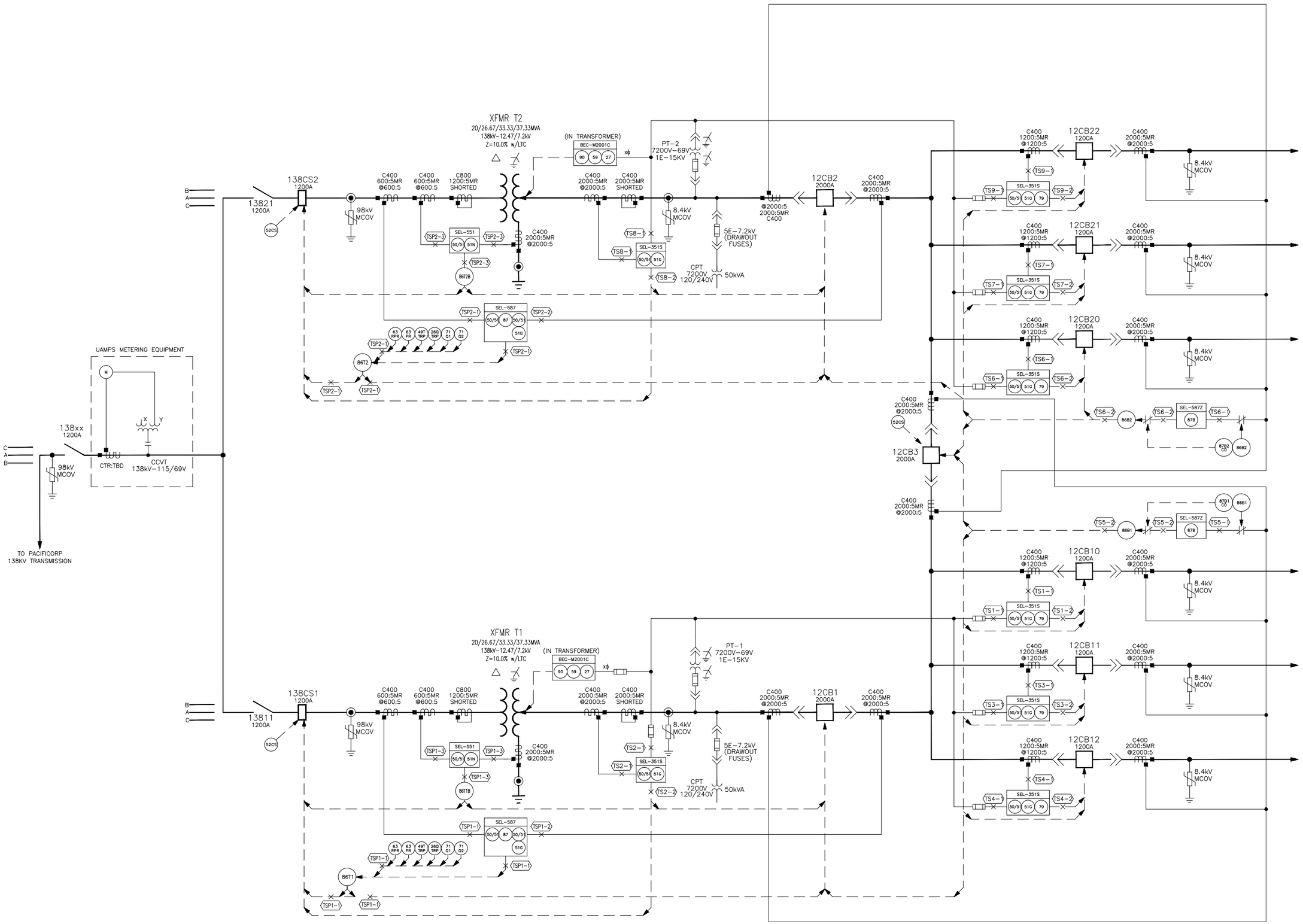
DRAWN BY
J. FORSTING

APPROVED BY

SCALE
NTS

DATE
1/17/2013

C2-002



#	REVISION DESCRIPTION	DATE	BY	CHKD	APPD
D	ISSUED FOR SWITCHGEAR BID	05/12/2014	CWM		
C	REMOVED SPARE FEEDERS	04/25/2104	CWM		
B	REMOVE A FRAME	03/05/2014	CWM	JLF	JE
A	ISSUED FOR REVIEW	01/23/2014	CWM	CWM	JE

SALIENT Power Engineering LLC

LEHI CITY
MURDOCK SUBSTATION
ONE-LINE DIAGRAM

DRAWN BY E. WEISGERBER
APPROVED BY C. MIELKE
SCALE N/A
DATE 11/27/2013

E1-001