STANDBY POWER GENERATION

TO SERVE

CITY OF WICHITA WASTEWATER TREATMENT PLANT 2

CITY OF WICHITA, KANSAS

FEBRUARY 2015

PLANS PREPARED BY

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

ENGINEERS

WICHITA, KANSAS

C.O.W. PROJECT NO. 468-84956

O.C.A. 624114

DRAWING INDEX:

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
1	ASI #1		5/26/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

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CITY OF WICHITA, KANSAS

COVER SHEET

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	RWW	Job No.	34-14229-001-0042
Drawn by	CJV	Date	4/29/15

Sht. G0.0 of 37

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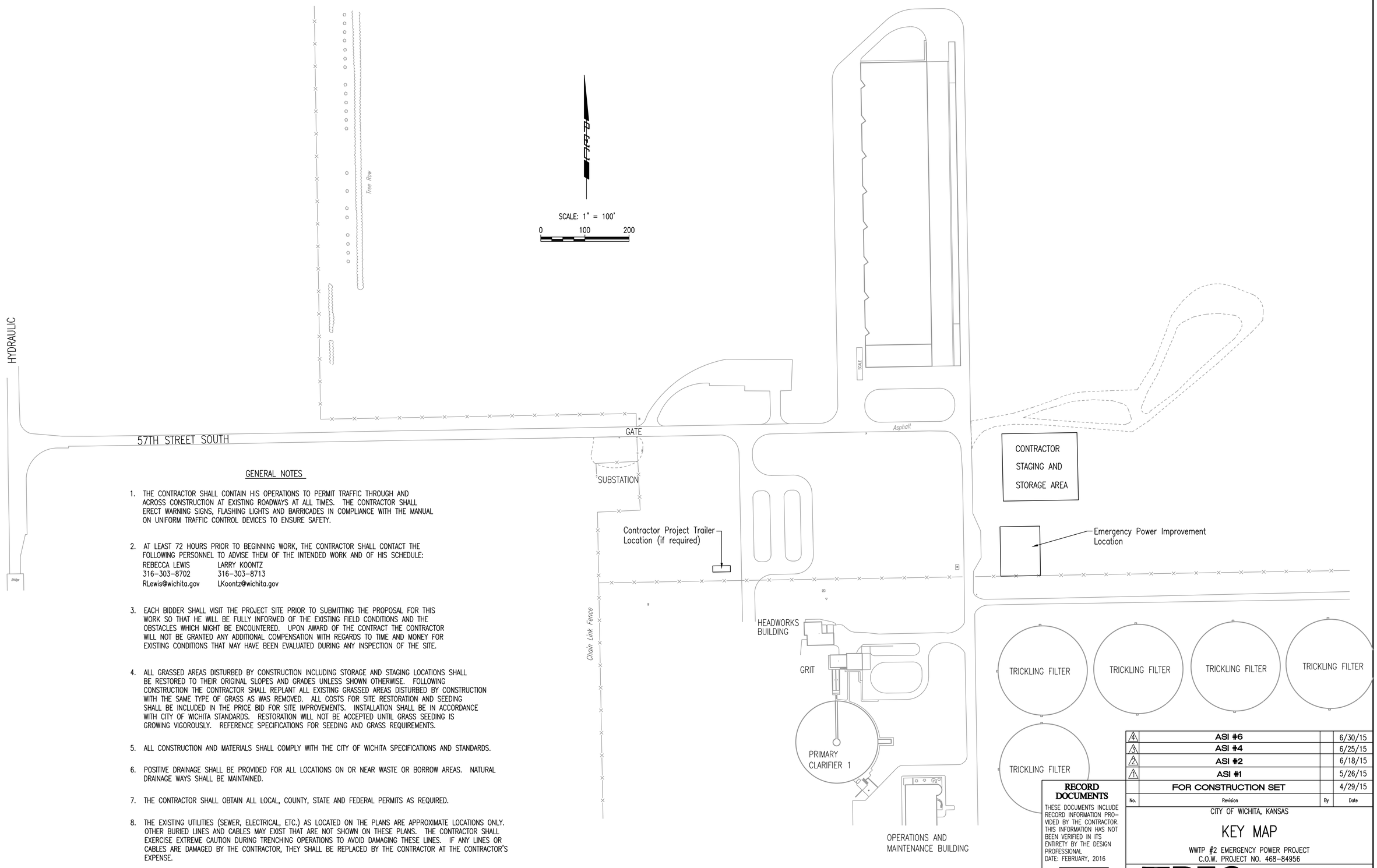
U:\Wichita-Fac\2014\14229\001\Elec\Drawings\As-Builts\14229-001-G0.0 PLANT 2 COVER SHEET



GENERAL NOTES

1. THE CONTRACTOR SHALL CONTAIN HIS OPERATIONS TO PERMIT TRAFFIC THROUGH AND ACROSS CONSTRUCTION AT EXISTING ROADWAYS AT ALL TIMES. THE CONTRACTOR SHALL ERECT WARNING SIGNS, FLASHING LIGHTS AND BARRICADES IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES TO ENSURE SAFETY.

2. AT LEAST 72 HOURS PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CONTACT THE FOLLOWING PERSONNEL TO ADVISE THEM OF THE INTENDED WORK AND OF HIS SCHEDULE:

REBECCA LEWIS	LARRY KOONTZ
316-303-8702	316-303-8713
RLewis@wichita.gov	LKoontz@wichita.gov

3. EACH BIDDER SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE PROPOSAL FOR THIS WORK SO THAT HE WILL BE FULLY INFORMED OF THE EXISTING FIELD CONDITIONS AND THE OBSTACLES WHICH MIGHT BE ENCOUNTERED. UPON AWARD OF THE CONTRACT THE CONTRACTOR WILL NOT BE GRANTED ANY ADDITIONAL COMPENSATION WITH REGARDS TO TIME AND MONEY FOR EXISTING CONDITIONS THAT MAY HAVE BEEN EVALUATED DURING ANY INSPECTION OF THE SITE.

4. ALL GRASSED AREAS DISTURBED BY CONSTRUCTION INCLUDING STORAGE AND STAGING LOCATIONS SHALL BE RESTORED TO THEIR ORIGINAL SLOPES AND GRADES UNLESS SHOWN OTHERWISE. FOLLOWING CONSTRUCTION THE CONTRACTOR SHALL REPLANT ALL EXISTING GRASSED AREAS DISTURBED BY CONSTRUCTION WITH THE SAME TYPE OF GRASS AS WAS REMOVED. ALL COSTS FOR SITE RESTORATION AND SEEDING SHALL BE INCLUDED IN THE PRICE BID FOR SITE IMPROVEMENTS. INSTALLATION SHALL BE IN ACCORDANCE WITH CITY OF WICHITA STANDARDS. RESTORATION WILL NOT BE ACCEPTED UNTIL GRASS SEEDING IS GROWING VIGOROUSLY. REFERENCE SPECIFICATIONS FOR SEEDING AND GRASS REQUIREMENTS.

5. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE CITY OF WICHITA SPECIFICATIONS AND STANDARDS.

6. POSITIVE DRAINAGE SHALL BE PROVIDED FOR ALL LOCATIONS ON OR NEAR WASTE OR BORROW AREAS. NATURAL DRAINAGE WAYS SHALL BE MAINTAINED.

7. THE CONTRACTOR SHALL OBTAIN ALL LOCAL, COUNTY, STATE AND FEDERAL PERMITS AS REQUIRED.

8. THE EXISTING UTILITIES (SEWER, ELECTRICAL, ETC.) AS LOCATED ON THE PLANS ARE APPROXIMATE LOCATIONS ONLY. OTHER BURIED LINES AND CABLES MAY EXIST THAT ARE NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING TRENCHING OPERATIONS TO AVOID DAMAGING THESE LINES. IF ANY LINES OR CABLES ARE DAMAGED BY THE CONTRACTOR, THEY SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

9. AT LEAST 72 HOURS PRIOR TO BEGINNING EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT THE KANSAS ONE-CALL SYSTEM, A UTILITY LOCATION SERVICE, AT (316) 687-2470 TO REQUEST THE LOCAL UTILITY COMPANIES TO LOCATE ANY EXISTING LINES WITHIN THE PROJECT AREA.

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CITY OF WICHITA, KANSAS

KEY MAP

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by MEB	Job No. 34-14229-001-0042	Sht. C1.0 of 37
Drawn by CAL	Date 4/29/15	

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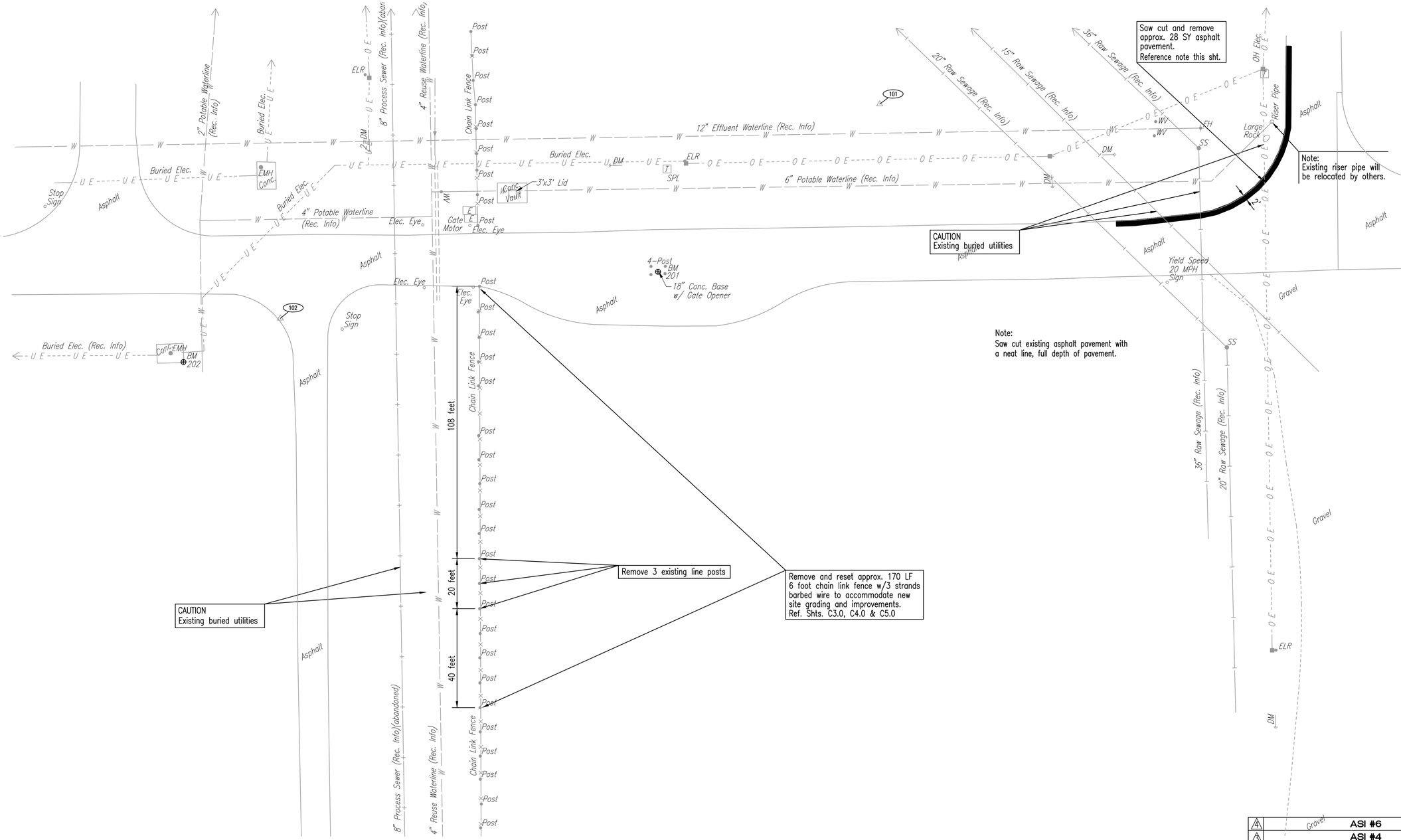

Scale: 1"= 20'

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CITY OF WICHITA, KANSAS

DEMOLITION SITE PLAN

WWTP #2 EMERGENCY POWER PROJECT
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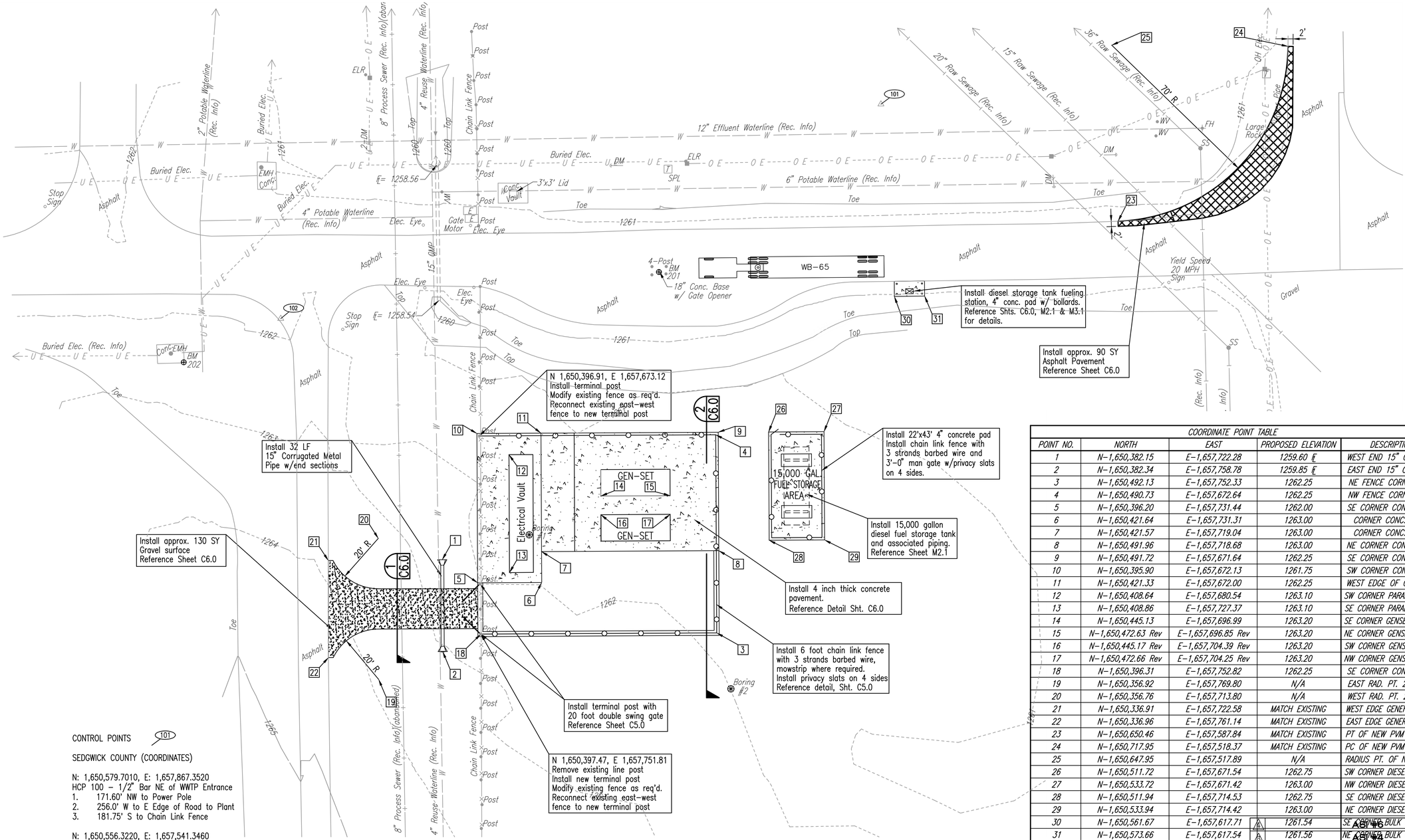

CONTROL POINTS (101)

SEDGWICK COUNTY (COORDINATES)

N: 1,650,579.7010, E: 1,657,867.3520
HCP 100 – 1/2" Bar NE of WWTP Entrance
1. 171.60' NW to Power Pole
2. 256.0' W to E Edge of Road to Plant
3. 181.75' S to Chain Link Fence

N: 1,650,556.3220, E: 1,657,541.3460
HCP 101 – 1/2" Bar N of WWWTP Entrance
1. 70.76' NE to Power Pole
2. 80.51' SE to Power Pole
3. 181.75' S to Chain Link Fence

N: 1,650,318.0310, E: 1,657,626.5010
HCP 102 – PK Nail in Asphalt Road S of WWTP Entrance
1. 51.42' W to NE Corner of Electric MH Vault
2. 39.87' SW to NW Corner Electric MH Vault
3. 80.19' NW to E Gate Post of Drive to Plant

BENCHMARKS BM 201

VERTICAL DATUM IS NAVD 88

BM 201 "d" CUT IN THE EXISTING CARD READER BASE.
ELEV. 1262.28

BM 202 "d" CUT INTO THE NE CORNER OF ELECTRIC MANHOLE BASE.
ELEV. 1263.27

Scale: 1"= 20'

LEGEND

- 4" CONCRETE PAVEMENT
- GRAVEL SURFACE
- ASPHALT PAVEMENT

COORDINATE POINT TABLE

POINT NO.	NORTH	EAST	PROPOSED ELEVATION	DESCRIPTION
1	N-1,650,382.15	E-1,657,722.28	1259.60 ℄	WEST END 15" CMP
2	N-1,650,382.34	E-1,657,758.78	1259.85 ℄	EAST END 15" CMP
3	N-1,650,492.13	E-1,657,752.33	1262.25	NE FENCE CORNER
4	N-1,650,490.73	E-1,657,672.64	1262.25	NW FENCE CORNER
5	N-1,650,396.20	E-1,657,731.44	1262.00	SE CORNER CONC. PVM'T
6	N-1,650,421.64	E-1,657,731.31	1263.00	CORNER CONC. PVM'T
7	N-1,650,421.57	E-1,657,719.04	1263.00	CORNER CONC. PVM'T
8	N-1,650,491.96	E-1,657,718.68	1263.00	NE CORNER CONC. PVM'T
9	N-1,650,491.72	E-1,657,671.64	1262.25	SE CORNER CONC. PVM'T
10	N-1,650,395.90	E-1,657,672.13	1261.75	SW CORNER CONC. PVM'T
11	N-1,650,421.33	E-1,657,672.00	1262.25	WEST EDGE OF CONC. PVM'T
12	N-1,650,408.64	E-1,657,680.54	1263.10	SW CORNER PARALLELING GEAR PAD (TOP ELEV.)
13	N-1,650,408.86	E-1,657,727.37	1263.10	SE CORNER PARALLELING GEAR PAD (TOP ELEV.)
14	N-1,650,445.13	E-1,657,696.99	1263.20	SE CORNER GENSET CONC. PAD (TOP PAD ELEV.)
15	N-1,650,472.63 Rev	E-1,657,696.85 Rev	1263.20	NE CORNER GENSET CONC. PAD (TOP PAD ELEV.)
16	N-1,650,445.17 Rev	E-1,657,704.39 Rev	1263.20	SW CORNER GENSET CONC. PAD (TOP PAD ELEV.)
17	N-1,650,472.66 Rev	E-1,657,704.25 Rev	1263.20	NW CORNER GENSET CONC. PAD (TOP PAD ELEV.)
18	N-1,650,396.31	E-1,657,752.82	1262.25	SE CORNER CONC. PVM'T
19	N-1,650,356.92	E-1,657,769.80	N/A	EAST RAD. PT. 20 FT. RETURN
20	N-1,650,356.76	E-1,657,713.80	N/A	WEST RAD. PT. 20 FT. RETURN
21	N-1,650,336.91	E-1,657,722.58	MATCH EXISTING	WEST EDGE GENERATOR ACCESS DRIVE
22	N-1,650,336.96	E-1,657,761.14	MATCH EXISTING	EAST EDGE GENERATOR ACCESS DRIVE
23	N-1,650,650.46	E-1,657,587.84	MATCH EXISTING	PT OF NEW PVM'T, MATCH EXISTING
24	N-1,650,717.95	E-1,657,518.37	MATCH EXISTING	PC OF NEW PVM'T, MATCH EXISTING
25	N-1,650,647.95	E-1,657,517.89	N/A	RADIUS PT. OF NEW PVM'T EDGE
26	N-1,650,511.72	E-1,657,671.54	1262.75	SW CORNER DIESEL TANK CONC. PAD (TOP ELEV.)
27	N-1,650,533.72	E-1,657,671.42	1263.00	NW CORNER DIESEL TANK CONC. PAD (TOP ELEV.)
28	N-1,650,511.94	E-1,657,714.53	1262.75	SE CORNER DIESEL TANK CONC. PAD (TOP ELEV.)
29	N-1,650,533.94	E-1,657,714.42	1263.00	NE CORNER DIESEL TANK CONC. PAD (TOP ELEV.)
30	N-1,650,561.67	E-1,657,617.71	1261.54	SE CORNER BULK FUELING CONC. PAD (TOP ELEV.)
31	N-1,650,573.66	E-1,657,617.54	1261.56	NE CORNER BULK FUELING CONC. PAD (TOP ELEV.)

Note: Coordinate locations for structures and pavement are at the corner, outside face, at grade.
Verify electrical equipment pads and structure dimensions with equipment provided and structural drawings.

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IMPROVEMENT SITE PLAN

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Drawn by CAL | Date 4/29/15
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Saved 02-18-2016 11:52:16 AM by CAL
Plot Scale 1:2 03-03-2016 10:45:57 AM by CRAIG LEWIS
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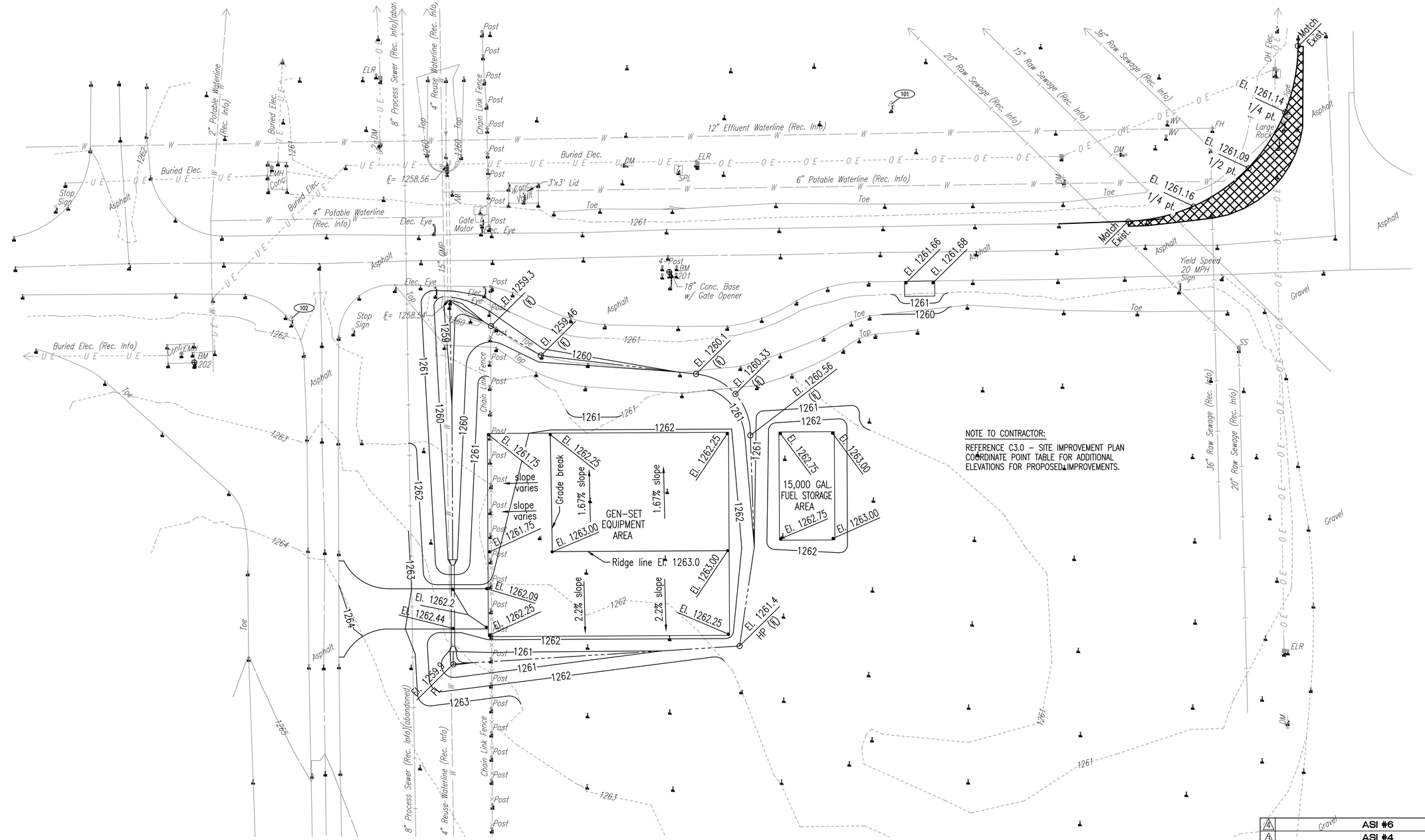

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SITE GRADING PLAN

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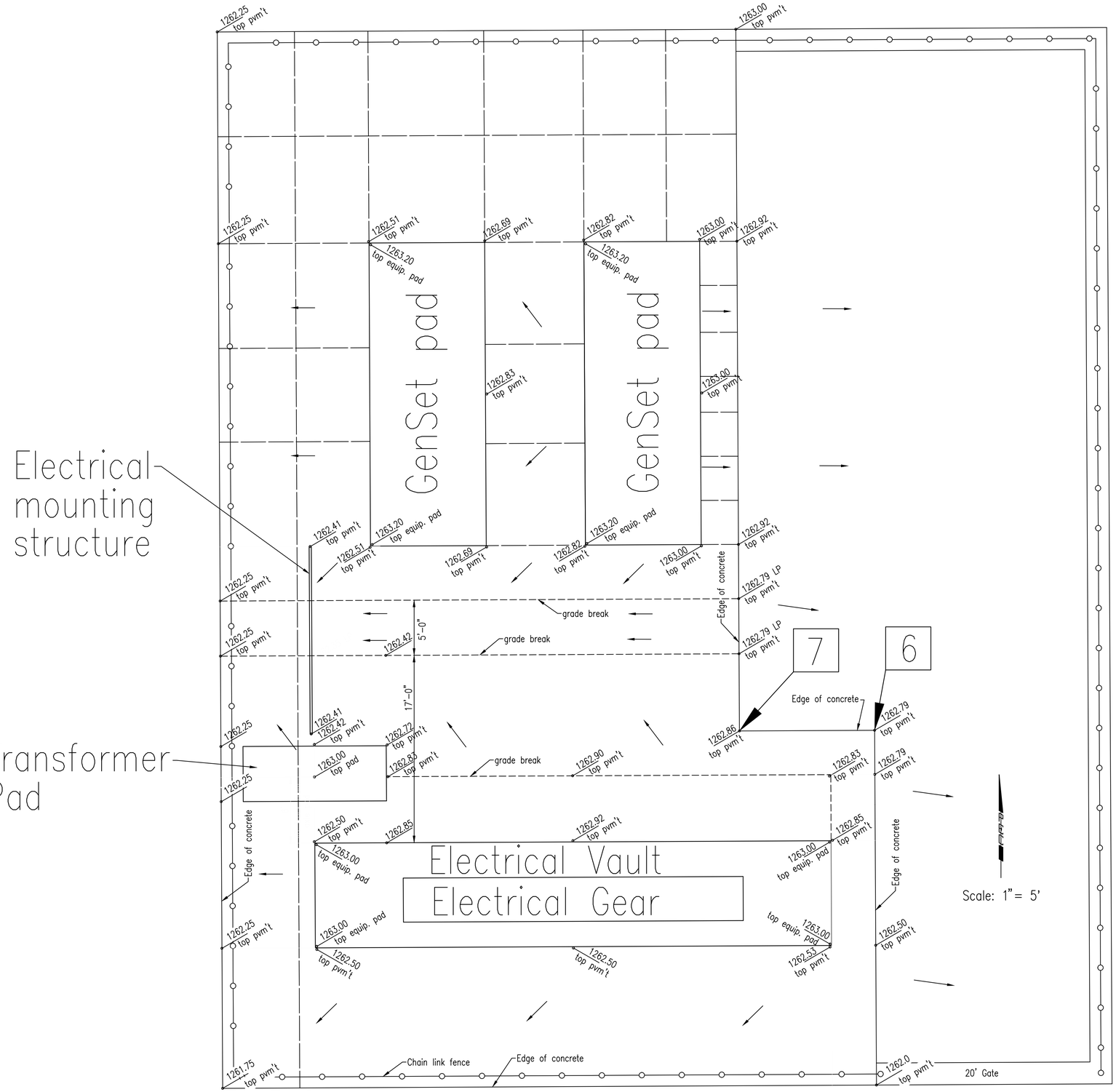

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CITY OF WICHITA, KANSAS

PAVEMENT PLAN REVISION

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Designed by	Job No. 34-14229-001-0042	Sht.	of 37
Drawn by	Date 4/29/15		

STANDARD SPECIFICATIONS FOR CHAIN LINK FENCE AND GATES

GENERAL:

THIS SPECIFICATION COVERS CHAIN LINK FENCE INSTALLATION AND MATERIALS INCLUDING CHAIN LINK FABRIC, FRAMEWORK, GATES AND FITTINGS.

FENCE SHALL BE A MINIMUM OF 7'–0" HIGH ABOVE FINISHED GRADE, USING 6'–0" HIGH CHAIN LINK FABRIC AND SURMOUNTED BY THREE (3) STRANDS OF BARBED WIRE.

MATERIALS:

A. FABRIC: CHAIN LINK FABRIC SHALL BE 9 GAUGE HOT DIP GALVANIZED WITH A MINIMUM OF 1.2 OUNCES OF ZINC PER SQUARE FOOT OF SURFACE AREA WHEN DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A–90. FABRIC SHALL BE WOVEN IN A 2" DIAMOND MESH AND SHALL BE 72" HIGH. THE TOP SELVAGE SHALL BE TWISTED AND BARBED AND THE BOTTOM SELVAGE MAY BE KNUCKLED OR TWISTED AND BARBED.

B. FRAMEWORK: ALL LINE POSTS, TERMINALS, BRACES, TOP RAILS, GATE POSTS, AND GATE FRAMES SHALL BE HOT DIP GALVANIZED. GALVANIZING, EXCEPT HIGH STRENGTH PIPE, SHALL BE 1.8 OUNCES OF ZINC PER SQUARE FOOT OF SURFACE AREA WHEN DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A–53 OR ASTM A–123. HIGH–STRENGTH PIPE SHALL BE COATED WITH A TYPE B COATING IN ACCORDANCE WITH ASTM F 1234.

1. LINE POSTS SHALL BE 1.875" X 1.700" C–SECTION (STD. – C) WEIGHING 2.28 LBS./FT., 2.375" HIGH STRENGTH PIPE WEIGHING 3.12 LBS./FT., 2.375" SCHEDULE 40 PIPE WEIGHING 3.65 LBS./FT., OR POSTS PROVIDING EQUIVALENT OR GREATER STRENGTH CHARACTERISTICS TO THOSE POSTS NOTED.

2. TERMINAL POSTS (END, CORNER, AND PULL) SHALL BE 2.875" HIGH STRENGTH PIPE WEIGHING 4.64 LBS./FT., 2.875" SCHEDULE 40 PIPE WEIGHING 5.79 LBS./FT., OR POSTS PROVIDING EQUIVALENT OR GREATER STRENGTH CHARACTERISTICS TO THOSE POSTS NOTED.

3. GATE POSTS SHALL BE OF THE SIZE AND TYPE RECOMMENDED BY THE GATE MANUFACTURER.

4. TOP RAIL AND BRACE RAILS SHALL BE 1.625" X 1.250" C–RAIL WEIGHING 1.35 LBS./FT., 1.660" HIGH STRENGTH STEEL WEIGHING 1.82 LBS./FT. 1.660" SCHEDULE 40 PIPE WEIGHING 2.27 LBS./FT., OR SECTION PROVIDING EQUIVALENT OR GREATER STRENGTH CHARACTERISTICS TO THOSE RAIL SECTIONS NOTED. TOP RAIL SECTIONS SHALL BE A MINIMUM OF 20'–0", EXCEPT AS NECESSARY TO MAKE CONNECTIONS TO TERMINAL POSTS, AND BE FITTED OR FURNISHED WITH COUPLINGS TO PROVIDE A SATISFACTORY CONNECTION OF ADJACENT SECTIONS.

5. BOTTOM TENSION WIRE SHALL BE NO. 7 GAUGE GALVANIZED STEEL WIRE WITH 1.2 OUNCES OF ZINC PER SQUARE FOOT OF SURFACE AREA.

6. FITTINGS SHALL BE PRESSED STEEL, MALLEABLE IRON, OR CAST IRON OF GOOD COMMERCIAL QUALITY IN CONFORMANCE WITH ASTM F–626. STEEL FITTINGS SHALL BE GALVANIZED WITH 1.2 OUNCES OF ZINC PER SQUARE FOOT IN ACCORDANCE WITH ASTM A–153.

7. GATE FRAMES SHALL BE A MINIMUM OF 1.900" HIGH STRENGTH PIPE, 1.900" SCHEDULE 40 PIPE, OR SECTION PROVIDING EQUIVALENT OR GREATER STRENGTH CHARACTERISTICS. FRAMES FOR LARGE SWING GATES SHALL BE CONSTRUCTED WITH MATERIALS OF THE SIZE AND TYPE RECOMMENDED BY THE GATE MANUFACTURER.

8. GATE AND OTHER MISCELLANEOUS HARDWARE SHALL BE STRUCTURALLY CAPABLE OF SUPPORTING GATES, FABRIC, RAILS, WIRE OR OTHER ITEMS FOR WHICH SAID HARDWARE IS PROVIDED.

9. BARBED WIRE SHALL BE DOUBLE STRAND TWISTED 12 1/2 GAUGE ZINC COATED WIRE WITH 4–POINT BARBS AND SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A–121, CLASS 3.

10. FENCING CONTRACTOR SHALL PROVIDE AND INSTALL PRIVACY SLATS IN CHAIN LINK FENCE FABRIC. SLAT COLOR SELECTION BY OWNER.

C. GATES:

1. FRAMES MAY BE ASSEMBLED BY WELDING OR WITH USE OF SUITABLE STEEL HARDWARE FITTINGS. ALL WELDED AREAS SHALL BE COVERED WITH A RUST PREVENTATIVE COATING. ALL HARDWARE USED, INCLUDING SUPPORTS, ROLLERS AND LATCHES, SHALL BE OF ADEQUATE DESIGN AND STRENGTH TO PROVIDE SATISFACTORY OPERATION OF THE GATE(S). INTERIOR BRACING SHALL BE PROVIDED AS RECOMMENDED BY THE MANUFACTURER.

2. GATE FABRIC SHALL BE OF THE SAME TYPE, SIZE OF MESH, GAGE SIZE OF WIRE AND SELVAGE AS THAT SPECIFIED FOR FENCE.

3. THE END MEMBERS OF THE GATE FRAMES SHALL EXTEND ONE (1) FOOT ABOVE THE TOP HORIZONTAL SECTION OF THE GATE FRAME. THREE STRANDS OF BARBED WIRE SHALL BE UNIFORMLY SPACED AND SHALL BE ATTACHED TO THE ONE (1) FOOT EXTENSIONS BY BANDS, CLIPS OR EYEBOLTS.

4. LATCHES, HINGES, STOPS AND KEEPERS SHALL BE GALVANIZED STEEL. THE GALVANIZED COATING SHALL BE 1.2 OUNCES OF ZINC PER SQUARE FOOT UNLESS OTHERWISE SPECIFIED.

5. SINGLE GATE LATCHES SHALL BE FORK TYPE, GRAVITY DROP BAR TYPE WITH POSITIVE LOCKING FEATURES OR PLUNGER BAR TYPE OF FULL GATE HEIGHT.

6. DOUBLE GATE LATCHES SHALL BE FORK TYPE LATCH WITH CENTER DROP ROD, OR PLUNGER BAR TYPE OF FULL GATE HEIGHT ARRANGED TO ENGAGE THE GATE STOP, OR A POSITIVE LOCKING GRAVITY DEVICE. LOCKING DEVICES SHALL BE CONSTRUCTED SO THAT THE CENTER DROP ROD OR PLUNGER BAR CANNOT BE RAISED WHEN LOCKED.

7. CENTER GATE STOP SHALL BE PROVIDED FOR ALL DOUBLE GATES AND SHALL BE SUITABLE FOR SETTING IN CONCRETE OR WITH ANCHORS FOR THE CENTER DROP ROD OR PLUNGER.

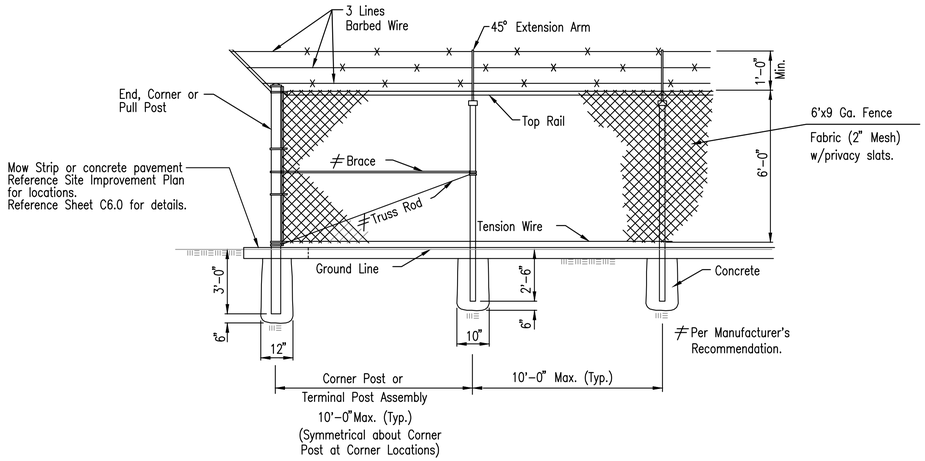
8. KEEPERS SHALL BE PROVIDED FOR EACH GATE LEAF OVER FIVE (5) FEET WIDE. GATE KEEPERS SHALL CONSIST OF A MECHANICAL DEVICE FOR SECURING THE FREE END OF THE GATE WHEN IN FULL OPEN POSITION.

9. GATE HINGES SHALL BE OF ADEQUATE STRENGTH FOR THE GATE, AND SHALL HAVE LARGE BEARING SURFACES FOR CLAMPING OR BOLTING IN POSITION. HINGE ACTION SHALL BE SUCH THAT GATES MAY BE EASILY OPENED AND CLOSED BY ONE PERSON. HINGES SHALL PROVIDE FOR FULL 180 SWING OF GATE LEAF.

10. SINGLE OR DOUBLE CANTILEVER OR ROLLER GATES SHALL BE FURNISHED WHEN SPECIFIED ON THE PLANS. ROLLER OR CANTILEVER GATES SHALL BE OF A TYPE SUITABLE FOR FITTING OF ELECTROMECHANICAL OPERATORS WHETHER SPECIFIED OR NOT. DIRECTION OF OPERATION AND MINIMUM CLEAR OPENING SHALL BE THAT SHOWN ON THE PLANS OR SPECIFIED BY THE OWNER.

11. PADLOCKS WILL BE FURNISHED BY THE OWNER.

12. ALL GATES FURNISHED SHALL BE INDUSTRIAL STANDARD. SHOP DRAWINGS AND/OR CATALOG CUTS OF PROPOSED GATE DESIGN SHALL BE SUBMITTED FOR THE OWNER'S APPROVAL PRIOR TO ASSEMBLY AND DELIVERY TO THE SITE.



CHAIN LINK FENCE WITH BARBED WIRE

INSTALLATION:

A. LINE POSTS SHALL BE OF SUFFICIENT LENGTH TO ALLOW FOR AN APPROXIMATE 30" SETTING INTO CONCRETE FOOTINGS. CONCRETE FOOTINGS FOR LINE POSTS SHALL BE A MINIMUM OF 10" DIAMETER WITH A MINIMUM OF 6" OF CONCRETE BELOW THE BOTTOM OF THE POSTS. PULL, END AND CORNER POSTS SHALL BE OF SUFFICIENT LENGTH TO ALLOW FOR AN APPROXIMATE 36" SETTING INTO CONCRETE FOOTINGS. CONCRETE FOOTINGS FOR THESE POSTS SHALL BE A MINIMUM OF 12" IN DIAMETER WITH A MINIMUM OF 6" OF CONCRETE BELOW THE BOTTOM OF THE POSTS. GATE POSTS AND THEIR FOOTINGS SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GATE MANUFACTURER. POSTS, OTHER THAN GATE POSTS, SHALL BE SET AT 10'–0" MAXIMUM CENTERS. PULL POSTS SHALL BE INSTALLED AT SHARP BREAKS IN VERTICAL GRADE, OR AT MAXIMUM 330' CENTERS ON STRIAGHT RUNS, OR AS OTHERWISE DIRECTED BY THE ENGINEER.

B. CHAIN LINK FABRIC SHALL BE ATTACHED TO TERMINAL POSTS WITH MINIMUM 1/4" X 3/4" TENSION BARS AND 12 GAUGE BY 1" WIDE CLAMPS USING MINIMUM 3/8" DIAMETER CARRIAGE BOLTS. FABRIC SHALL BE FASTENED TO TOP RAIL, LINE POSTS AND TENSION WIRE WITH 9–GAUGE MINIMUM FABRIC TIE WIRES SPACED AT 24" MAXIMUM CENTERS OR WEAVED DIRECTLY INTO INTEGRAL LOCK LOOPS AS MAY BE FORMED IN THE POST(S) PROVIDED.

C. EXTENSION ARMS TO ACCOMMODATE THE SURMOUNTED BARBED WIRE SHALL SLOPE AT A 45 DEGREE ANGLE TO THE OUTSIDE OF THE AREA BEING PROTECTED BY THE FENCE AND SHALL PROVIDE FOR AN APPROXIMATE 5" SPACING OF THE BARBED WIRE. SURMOUNTED BARBED WIRE SHALL BE SECURELY ATTACHED TO THE GATES AS RECOMMENDED BY THE GATE MANUFACTURER AND MAY BE MOUNTED IN A VERTICAL PLANE PARALLEL TO THAT OF THE GATE.

D. ALL WORK SHALL BE ACCOMPLISHED BY MECHANICS SKILLED IN THE TRADE. ALL WORK, NOT OTHERWISE SHOWN ON THE PLANS OR DIRECTLY DESCRIBED HEREIN, SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND THE CHAIN LINK FENCE MANUFACTURER'S INSTITUTE, UNLESS OTHERWISE APPROVED BY THE OWNER.

E. ALL DIMENSIONS AND GAUGES OF MATERIAL ARE SUBJECT TO ACCEPTED INDUSTRY TOLERANCE STANDARDS. THE JOB SITE SHALL BE CLEARED OF ALL EXCESS SPILLAGE OF CONCRETE, CUT WIRES, ETC., AND MATERIAL REMOVED FROM POST HOLES SHALL BE REMOVED FROM THE SITE OR UNIFORMLY SCATTERED AS MAY BE APPROVED BY THE OWNER.

F. UPON REQUEST OF THE OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE, SAMPLES OF EACH COMPONENT AND/OR MILL CERTIFICATES CONFIRMING COMPLIANCE WITH THESE SPECIFICATIONS SHALL BE FURNISHED. ANY AND ALL MATERIAL AND WORK FOUND NOT TO BE IN COMPLIANCE WITH THE HEREIN DESCRIBED SPECIFICATIONS SHALL BE REMOVED AND REPLACED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
1	ASI #1		5/26/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

THESE DOCUMENTS INCLUDE RECORD INFORMATION PROVIDED BY THE CONTRACTOR. THIS INFORMATION HAS NOT BEEN VERIFIED IN ITS ENTIRETY BY THE DESIGN PROFESSIONAL.
DATE: FEBRUARY, 2016

CITY OF WICHITA, KANSAS

FENCE DETAILS

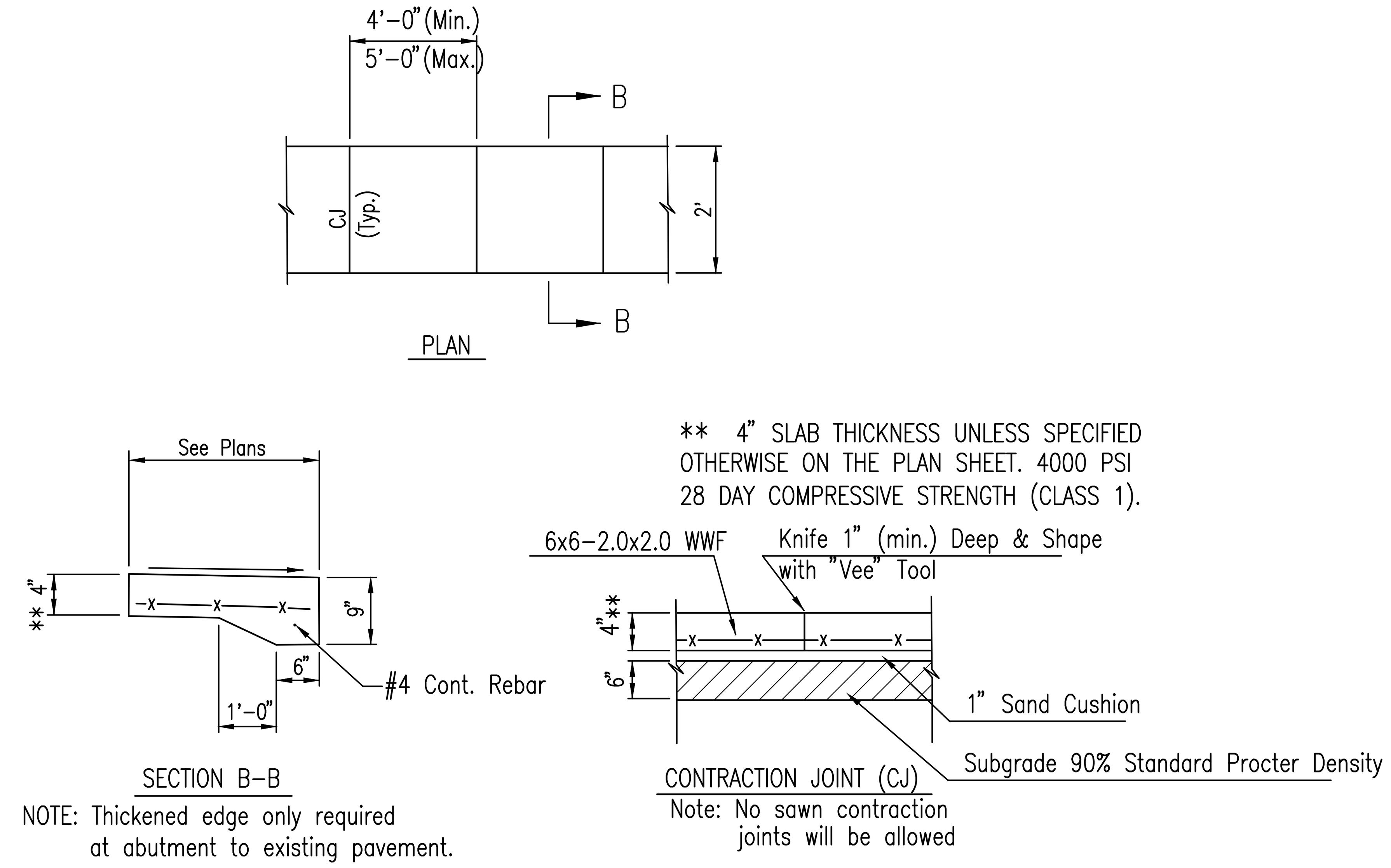
WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468–84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	MEB	Job No.	34–14229–001–0042
Drawn by	CAL	Date	4/29/15

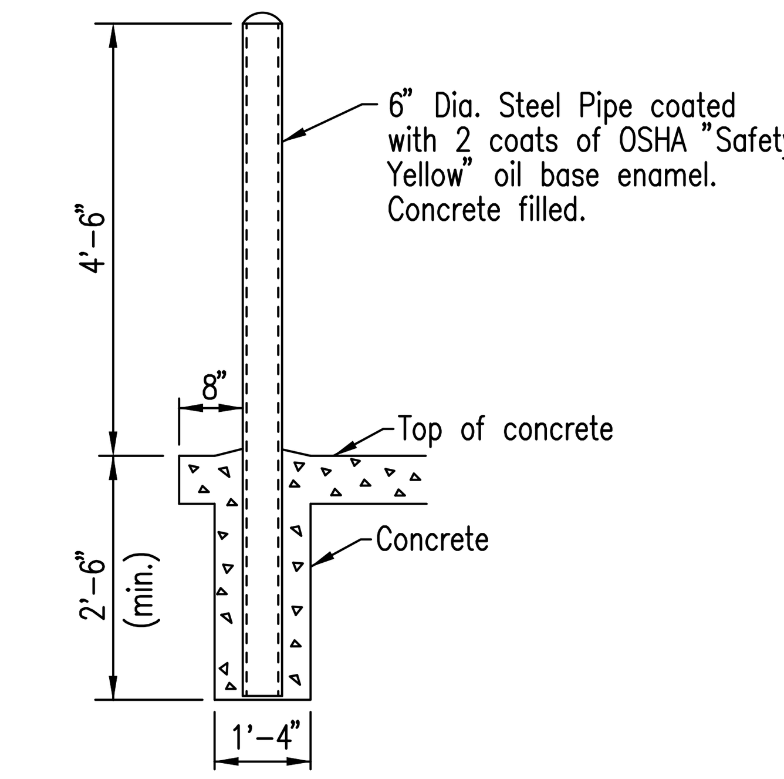
Sht. C5.0 of 37

Saved 02–18–2016 11:55:04 AM by CAL
Plot Scale 1:2 03–03–2016 10:51:43 AM by CRAIG LEWIS
J:\Wichita–Fac\2014\14229\001\W&WW\Drawings\As–Builts\14229–001–C5 Fence Details RECORD

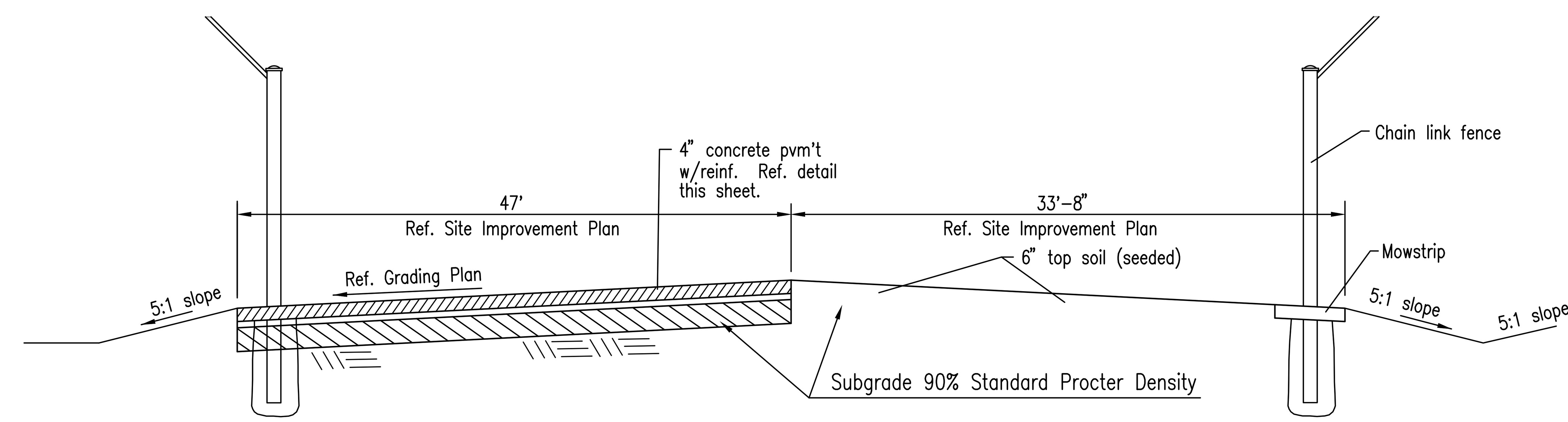


CONCRETE PAVEMENT/MOW STRIP DETAILS

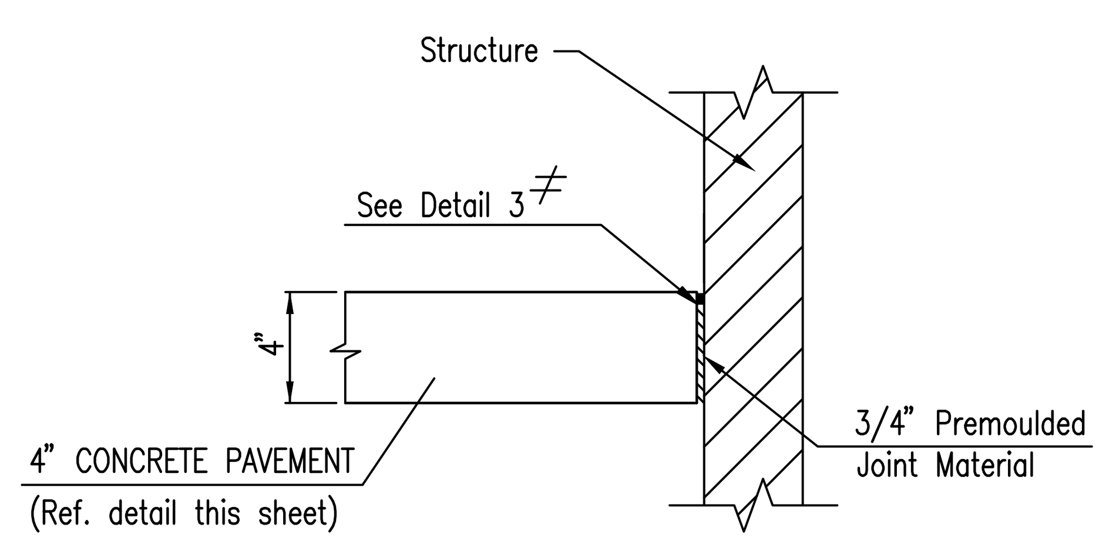
Note: Mow Strip shall be 2'-0" wide.



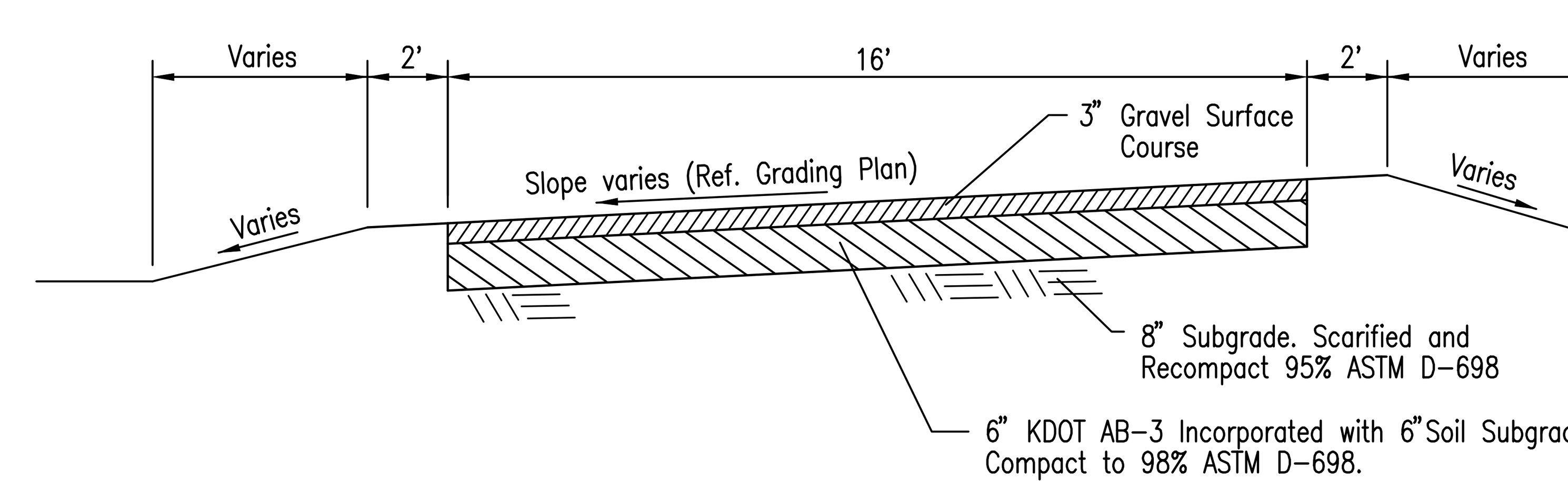
PIPE BOLLARD DETAIL



2 C6.0 EQUIPMENT PAD SECTION

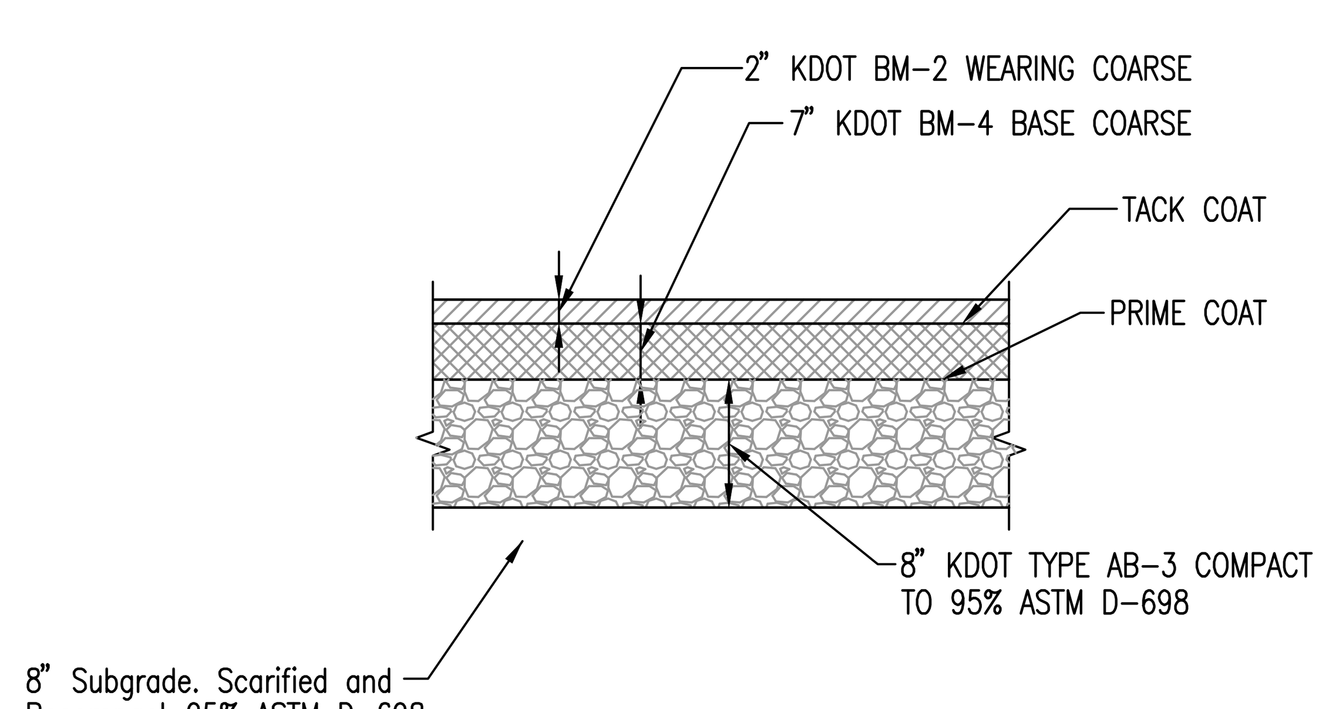


ISOLATION JOINT

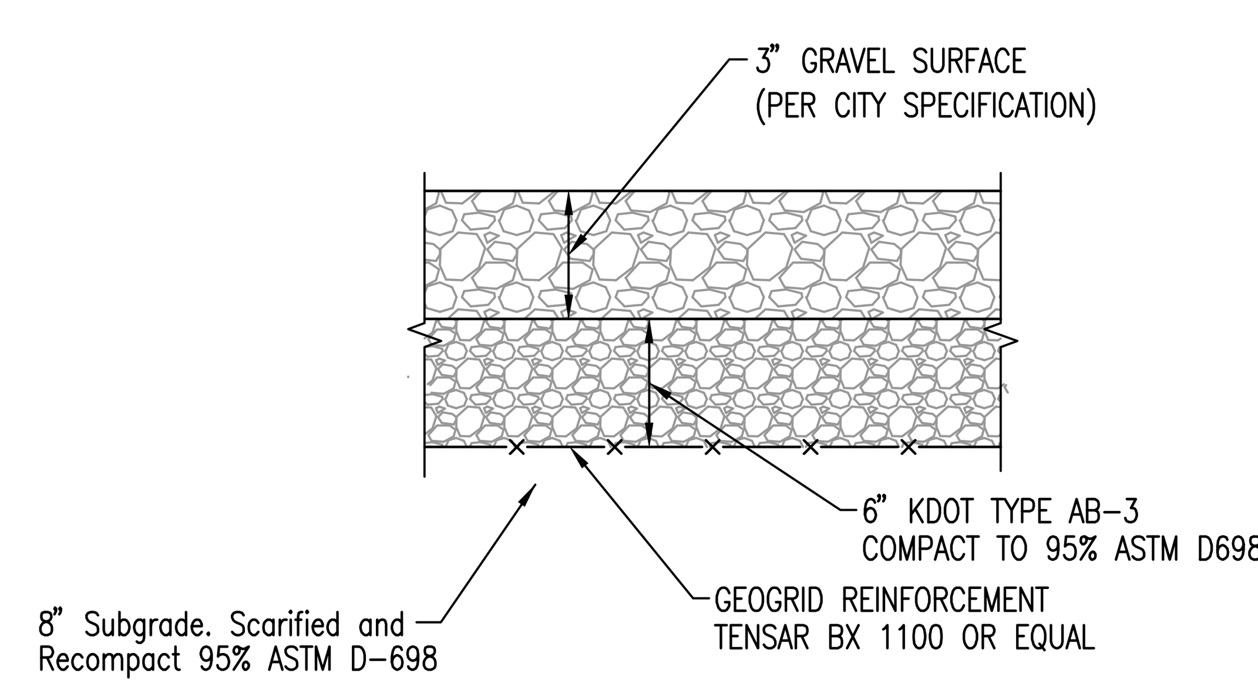


1 C6.0 ACCESS ROAD SECTION (GRAVEL DRIVE)

NOT TO SCALE



9" ASPHALT PAVEMENT



9" GRAVEL SURFACE

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CITY OF WICHITA, KANSAS

MISCELLANEOUS DETAILS

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
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316-262-2691 www.pec1.com

Designed by MEB | Job No. 34-14229-001-0042
Drawn by CAL | Date 4/29/15

MECHANICAL SYMBOL SCHEDULE

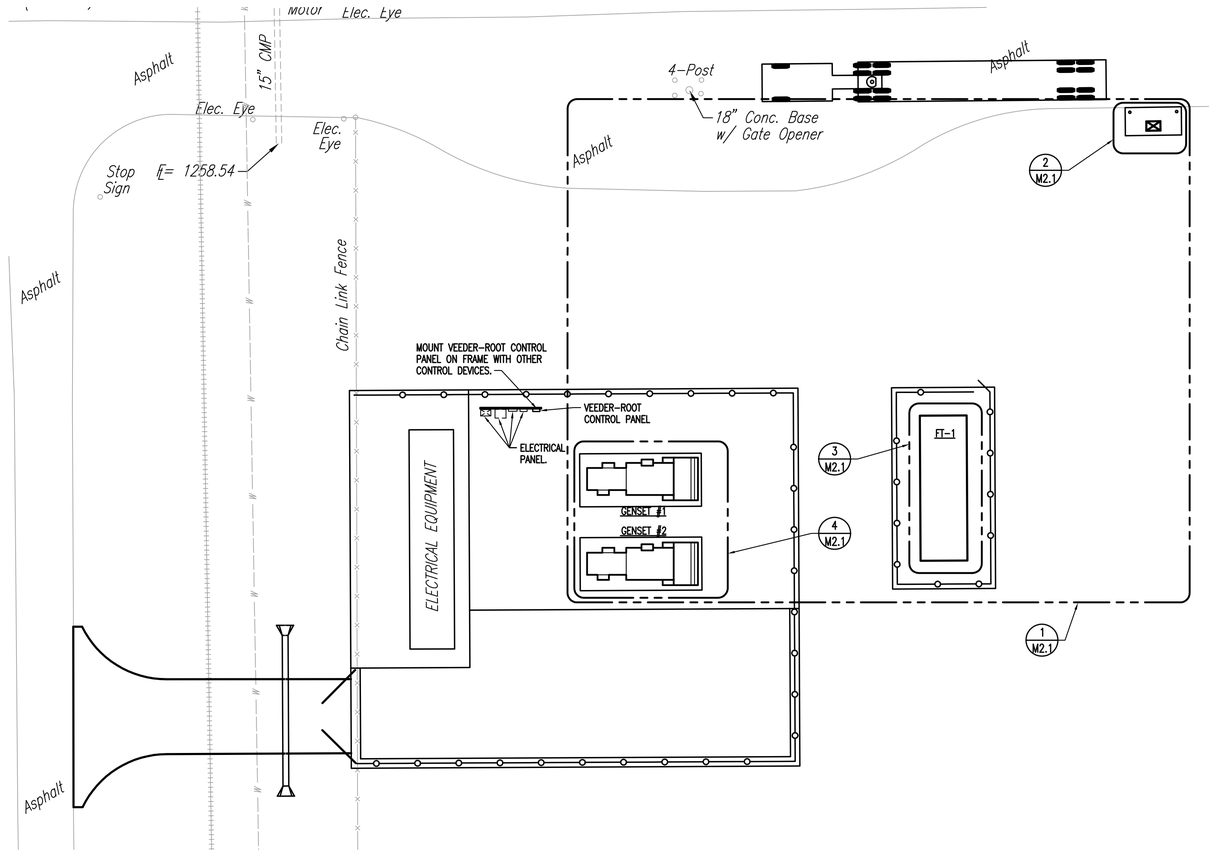
SYMBOL	DESCRIPTION
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
VTR	VENT THRU ROOF
	CAP
	PIPE RISE
	PIPE DROP
	UNION OR FLANGE CONNECTION
	DIRECTION OF FLOW
	ANCHOR
	CONCENTRIC REDUCER OR INCREASER
	ECCENTRIC REDUCER
	TOP CONNECTION, 45° OR 90°
	BOTTOM CONNECTION, 45° OR 90°
	SIDE CONNECTION
	CAPPED OUTLET
	GAS COCK
	VALVE IN DROP
	VALVE IN RISER
BOS	BOTTOM OF STEEL
	ELECTRIC WIRING (WITH 2 WIRES) - LOW VOLTAGE
120V	120V POWER WIRING
	CONTROL COMMUNICATION WIRING
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
111	ROOM CALLOUT
1	REVISION NUMBER
	CONNECT NEW TO EXISTING. VERIFY EXACT LOCATION.
(#)	REFER TO PLAN NOTES

DRAWING SYMBOLS

EQUIPMENT CALLOUT	SECTIONS	DETAILS
P-3 — EQUIPMENT TYPE (P=PUMP); UNIQUE I.D. (PUMP NO. 3); TYPICAL EQUIPMENT NUMBER	B / M3.6 — SECTION LETTER; SHEET NUMBER WHERE DRAWN	5 / M3.6 — DETAIL NUMBER; SHEET NUMBER WHERE DRAWN

GENERAL NOTES

1. VERIFY JOB SITE CONDITIONS AND DIMENSIONS BEFORE BEGINNING WORK. PLANS ARE SCHEMATIC IN NATURE. LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT LOCATION, CONFIGURATION AND ROUTING OF EXISTING SYSTEMS REQUIRED TO REMAIN IN OPERATION DURING THE PROJECT TO PREVENT DAMAGE DURING DEMOLITION AND PHASING.
3. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
4. COORDINATE SIZE AND LOCATION OF MECHANICAL EQUIPMENT PADS WITH G.C.
5. ALL WORK IS TO CONFORM WITH APPLICABLE CODES AND STANDARDS.
6. ALL EQUIPMENT SUPPORT STANDS SHALL BE PRIMED AND PAINTED WITH EPOXY ENAMEL.
7. UNDERGROUND-TYPE UTILITY MARKER: PROVIDE A CAST ALUMINUM UTILITY MARKER AT EVERY 100 FEET FOR ALL UNDERGROUND UTILITIES. 4"x7" TOP WITH 10" MINIMUM SPIKE; LABEL WITH THE APPROPRIATE UTILITY. MARKERS AS MANUFACTURED BY LAKE SHORE MARKERS, ERIE, PENNSYLVANIA.
8. THESE DRAWINGS ARE ACCOMPANIED BY SPECIFICATIONS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.



1 / M1.0 **SITE PLAN**

0' 8' 16' 24' 40'

SCALE: 1/16" = 1'-0"

MECHANICAL SHEET INDEX

No.	Revision	By	Date
4	ASI #6		6/30/15
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DATE: MARCH, 2016

CITY OF WICHITA, KANSAS

MECHANICAL COVER SHEET

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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316-262-2691 www.pec1.com

Designed by	QAM	Job No.	34-14229-001-0042
Drawn by	JML	Date	4/29/15

Sht. M1.0 of 37

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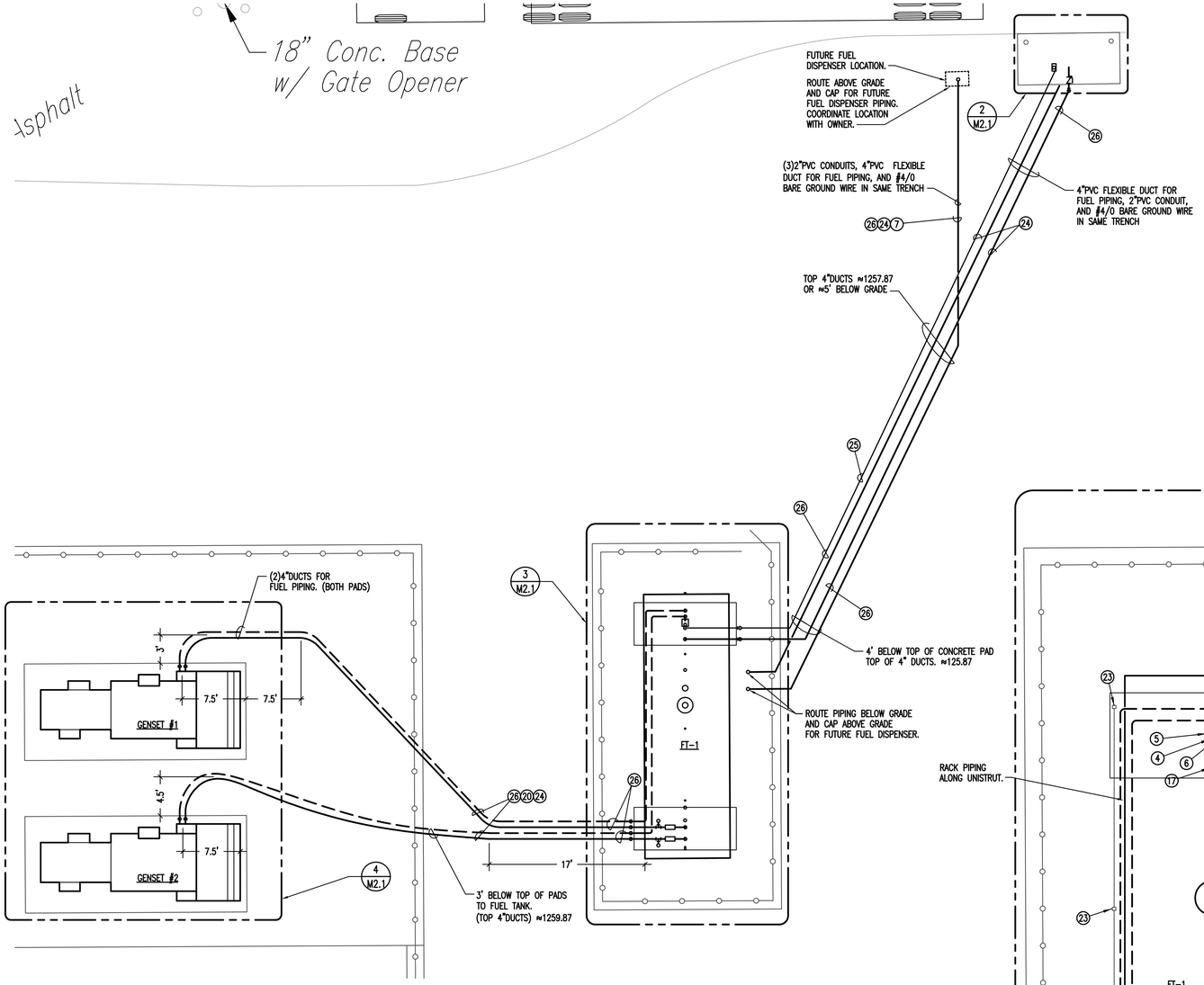
Plot Scale 1:2 04-04-2016 8:24:45 AM by JEREMY.LEE
U:\Wichita-Fac\2014\14229\001\Mech\Drawings\As-Builts\14229-001_M1.0 MECHANICAL COVER SHEET

PLAN NOTES:

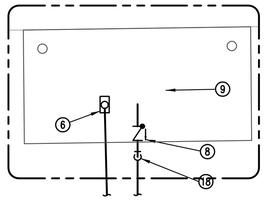
1. PRIMARY EMERGENCY 8" VENT EQUIVALENT TO OPW 202-0680. MANUAL RESET AFTER ACTUATION.
2. 8" INTERSTITIAL EMERGENCY VENT EQUIVALENT TO OPW 202-0680 THRU OUTER SHELL ONLY. MANUAL RESET OF CAP AFTER ACTUATION. MARK WITH SPECIAL WARNING LABEL "INTERSTITIAL EMERGENCY VENT ONLY".
3. PROVIDE BUSHING FOR 2" VENT PIPE IN 4" HOLE. 2" VENT PIPE UP WITH PRESSURE/VACUUM CAP. TERMINATE 12'-0" ABOVE GRADE.
4. PROVIDE 4" TANK BUNG GAUGE AND ALARM COMBO FITTING EQUIVALENT TO OPW TGTA-0400.
5. PROVIDE MECHANICAL TANK GAUGE WITH 304 SS FLOAT, DROP TUBE, LARGE EASY READ FACE IN ENGLISH UNITS TO READ FEET AND INCHES. EQUIVALENT TO OPW 200TG-ENG-AST.
6. PROVIDE SINGLE CHANNEL LIQUID LEVEL TANK ALARM AT FUEL TANK. EQUIVALENT TO OPW 144TA-0100.
7. 1-1/2" SUPPLY IN CONTAINMENT PIPING FOR FUTURE FUEL DISPENSER.
8. INSTALL A 2" OPW SWING CHECK VALVE AND AN OPW SERIES 1611AN KAMVALOK WITH DUST CAP AND A POPPETED 1711D KAMVALOK DRY BREAK COUPLER. MOUNT 36" ABOVE GRADE.
9. PROVIDE STAINLESS STEEL 34"Wx 24"Dx 24"H REMOTE FILL ABOVE GROUND STORAGE TANK SPILL CONTAINER WITH BOTTOM AT 24" TO 30" ABOVE GRADE. EQUIVALENT TO OPW 211-RMOT.
10. 24" TIGHT BOLT MANWAY WITH 8" PRIMARY VENT MOUNTED IN COVER.
11. 2" CAST IRON PLUG BY MANUFACTURER.
12. INSTALL LEAK DETECTION SENSOR PROVIDED AS PART OF THE VEEDER-ROOT TLS-300C FUEL MANAGEMENT SYSTEM IN THE LEAK DETECTION PORT.
13. INSTALL FUEL LEVEL SENSOR PROVIDED AS PART OF THE VEEDER-ROOT TLS-300C FUEL MANAGEMENT SYSTEM.
14. PROVIDE (2)2" TANK BUNG COMBO FITTING FOR 1-1/2" PIPING CONNECTIONS AND DROP TUBES FOR EACH CONNECTION DOWN TO 6" ABOVE FLOOR OF TANK.
15. ANTI-SYPHON VALVE. 1-1/2"
16. PLUGGED 90° ELL TURNED UP FOR PIPE VENTING AND PRIMING FILL.
17. INSTALL A 2" OPW MODEL 61SO OVERFILL PREVENTION VALVE IN TANK FILL CONNECTION.
18. TRANSITION TO FUEL OIL CONTAINMENT PIPING AT 12" ABOVE GRADE, WHERE PIPING CONTINUES BELOW GRADE. REFER TO SHEET M3.1 FOR ADDITIONAL INFORMATION.
19. FUEL HOSE WITH STAINLESS STEEL BRAID EXTERIOR MIN. 24" LENGTH RATED FOR SERVICE INTENDED.
20. 1-1/2" SUPPLY AND 1-1/2" RETURN COAXIAL PIPING BELOW GRADE IN FUEL OIL CONTAINMENT PIPING.
21. COORDINATE ADDITIONAL 4" CONNECTION PORT IN TOP OF TANK WITH TANK MANUFACTURER FOR FUTURE PUMPING CONNECTION. PLUG CONNECTION PORT FOR FUTURE USE.
22. 1-1/2" SUPPLY PIPING WITH 1-1/2" OPW 821-0100AC SOLENOID VALVE AND 1-1/2" OPW 346DI-0400AV EXTERNAL AST EMERGENCY SHUT-OFF VALVE. 1-1/2" RETURN PIPING WITH 1-1/2" 246DI-0200AV SWING CHECK VALVE. TRANSITION TO 1-1/2" FUEL OIL CONTAINMENT PIPING AT 12" ABOVE GRADE. REFER TO SHEET M3.1 FOR ADDITIONAL INFORMATION.
23. UNISTRUT PIPE SUPPORT. REFER TO DETAIL 4/M3.1.
24. BURY 12GA COPPER TRACER WIRE AND SAFETY TAPE OVER THE TOP OF BURIED FUEL PIPING.
25. CONDUIT- REF ELECTRICAL
26. INSTALL MARKER (REF E1.1/4) INDICATING BURIED FUEL PIPING.



1 M2.1 MECHANICAL ENGINE FUEL PLAN

0' 4' 8' 12' 20'

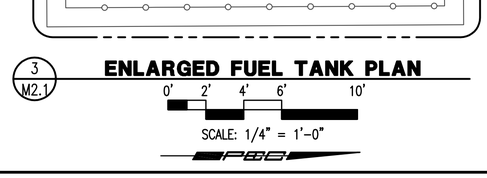
SCALE: 1/8" = 1'-0"



2 M2.1 ENLARGED FILL CONNECTION PLAN

0' 2' 4' 6' 10'

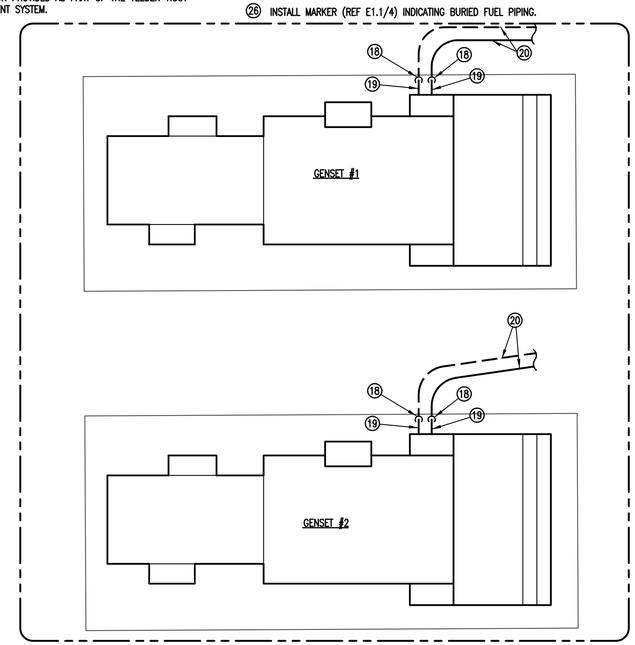
SCALE: 1/4" = 1'-0"



3 M2.1 ENLARGED FUEL TANK PLAN

0' 2' 4' 6' 10'

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



4 M2.1 ENLARGED GENERATOR PLAN

0' 2' 4' 6' 10'

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

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DATE: MARCH, 2016

CITY OF WICHITA, KANSAS

MECHANICAL ENGINE FUEL PLAN

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	QAM	Job No.	34-14229-001-0042
Drawn by	JML	Date	4/29/15

Sht. M2.1 of 37

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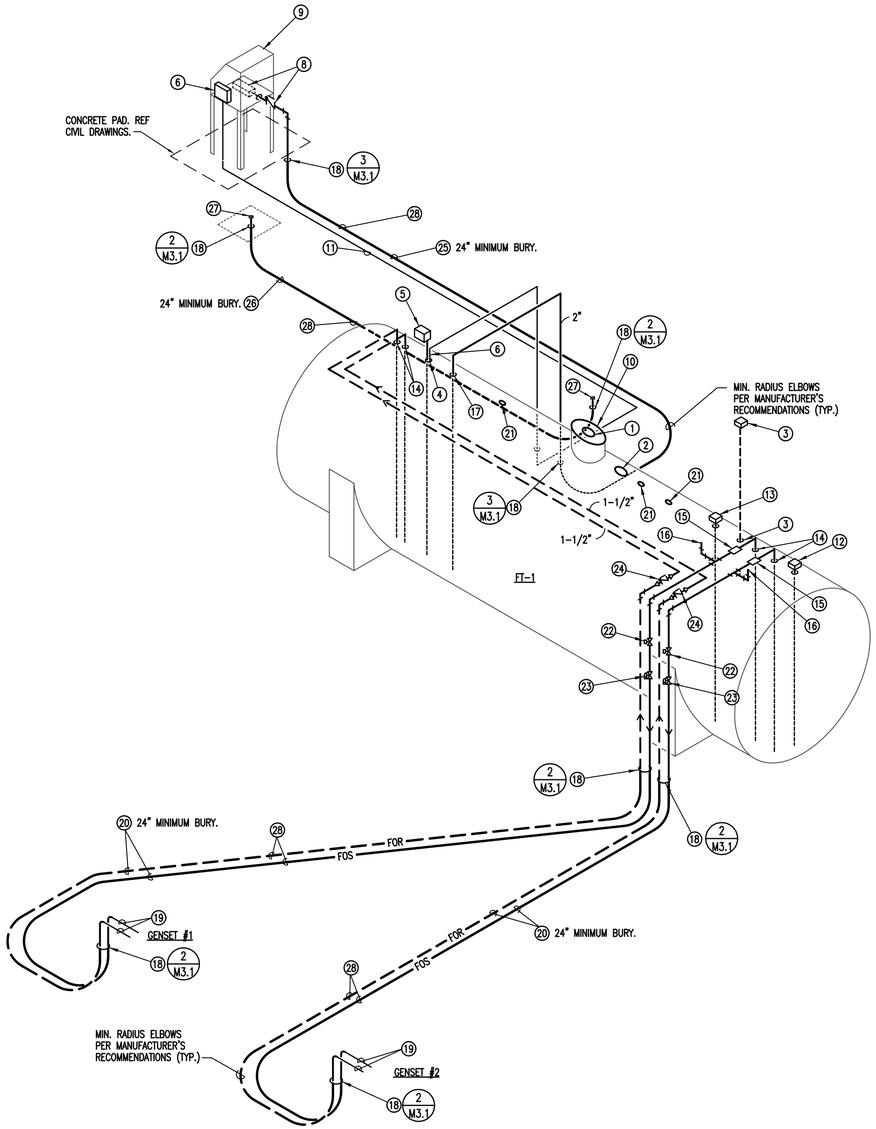
Plot Scale 1:2 04-04-2016 8:24:39 AM by JEREMY.LEE
D:\Wichita-Fecil\2014\14229\001\Mech\Drawings\As-Builts\14229-001_M2.1 MECHANICAL ENGINE FUEL PLAN



1 GENSET FUEL PIPING ISOMETRIC

SCALE: NONE

NOTE:
M.C. TO COORDINATE WITH FUEL TANK SUPPLIER TO PROVIDE A COMPLETE AND WORKING SYSTEM.

GENERAL NOTES:

1. CONTACT CITY PERSONNEL– CITY WILL PROVIDE INITIAL FILL OF FUEL TANK. CONTRACTOR SHALL PERFORM ALL TESTING AND UPON COMPLETION OF PROJECT SHALL PROVIDE FULL, FUEL TANK.

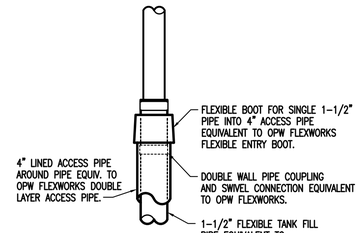
PLAN NOTES:

1. PRIMARY EMERGENCY 8" VENT EQUIVALENT TO OPW 202-0680. MANUAL RESET AFTER ACTUATION.
2. 8" INTERSTITIAL EMERGENCY VENT EQUIVALENT TO OPW 202-0680 THRU OUTER SHELL ONLY. MANUAL RESET OF CAP AFTER ACTUATION. MARK WITH SPECIAL WARNING LABEL "INTERSTITIAL EMERGENCY VENT ONLY".
3. PROVIDE BUSHING FOR 2" VENT PIPE IN 4" HOLE. 2" VENT PIPE UP WITH PRESSURE/VACUUM CAP. TERMINATE 12'-0" ABOVE GRADE.
4. PROVIDE 4" TANK BUNG GAUGE AND ALARM COMBO FITTING EQUIVALENT TO OPW TGTA-0400.
5. PROVIDE MECHANICAL TANK GAUGE WITH 304 SS FLOAT, DROP TUBE, LARGE EASY READ FACE IN ENGLISH UNITS TO READ FEET AND INCHES. EQUIVALENT TO OPW 200TG AST.
6. PROVIDE SINGLE CHANNEL LIQUID LEVEL TANK ALARM AT FUEL TANK. EQUIVALENT TO 144TA-0100.
7. NOT USED
8. INSTALL A 2" OPW SWING CHECK VALVE AND AN OPW SERIES 1611AN KAMVALOK WITH DUST CAP AND A POPPETED 1711D KAMVALOK DRY BREAK COUPLER. MOUNT 36" ABOVE GRADE.
9. PROVIDE STAINLESS STEEL 34"Wx 24"Dx 24"H REMOTE FILL ABOVE GROUND STORAGE TANK SPILL CONTAINER WITH BOTTOM AT 24" TO 30" ABOVE GRADE. EQUIVALENT TO OPW 211-RMOT.
10. 24" TIGHT BOLT MANWAY WITH 8" PRIMARY VENT MOUNTED IN COVER.
11. CONDUIT – REF ELECTRICAL.
12. INSTALL LEAK DETECTION SENSOR PROVIDED AS PART OF THE VEEDER-ROOT TLS-300C FUEL MANAGEMENT SYSTEM IN THE LEAK DETECTION PORT.
13. INSTALL FUEL LEVEL SENSOR PROVIDED AS PART OF THE VEEDER-ROOT TLS-300C FUEL MANAGEMENT SYSTEM.
14. PROVIDE 2" TANK BUNG COMBO FITTING FOR 1-1/2" PIPING CONNECTION AND DROP TUBES FOR EACH CONNECTION DOWN TO 6" ABOVE FLOOR OF TANK.
15. 1-1/2" ANTI-SYPHON VALVE.
16. PLUGGED 90° ELL TURNED UP FOR PIPE VENTING AND PRIMING FILL.
17. INSTALL A 2" OPW MODEL 61SO OVERFILL PREVENTION VALVE IN TANK FILL CONNECTION.
18. TRANSITION TO FUEL OIL CONTAINMENT PIPING AT 12" ABOVE GRADE, WHERE PIPING CONTINUES BELOW GRADE.
19. 1-1/2" FUEL HOSE WITH STAINLESS STEEL BRAID EXTERIOR MIN. 24" LENGTH RATED FOR SERVICE INTENDED.
20. 1-1/2" SUPPLY AND 1-1/2" RETURN COAXIAL PIPING BELOW GRADE IN FUEL OIL CONTAINMENT PIPING.
21. COORDINATE ADDITIONAL 4" CONNECTION PORT IN TOP OF TANK WITH TANK MANUFACTURER FOR FUTURE PUMPING CONNECTION.
22. 1-1/2" SUPPLY PIPING WITH 1-1/2" OPW 821-0100AC 110V N.C. SOLENOID VALVE
23. 1-1/2" SUPPLY PIPING TRANSITIONED TO 1-1/2" OPW 346DI-0400AV EXTERNAL AST EMERGENCY SHUT-OFF VALVE OR EQUAL, THEN TRANSITIONED BACK TO 1-1/2" SUPPLY.
24. 1-1/2" RETURN PIPING TRANSITIONED TO 1-1/2" OPW 246ADI-0200AV SWING CHECK VALVE OR EQUAL, THEN TRANSITIONED BACK TO 1-1/2" RETURN.
25. 2" FUEL FILL PIPING IN CONTAINMENT PIPING.
26. INSTALL 1-1/2" COAXIAL SUPPLY PIPING IN CONTAINMENT PIPING.
27. ROUTE 1-1/2" SUPPLY PIPING ABOVE GRADE AND CAP FOR FUTURE FUEL DISPENSING PIPING. COORDINATE LOCATION WITH OWNER.
28. BURY 12 GA COPPER WIRE AND SAFETY TAPE OVER THE TOP OF BURIED FUEL PIPING.

FUEL TANK SCHEDULE

MARK	LOCATION	CONSTRUCTION TYPE	WALL THICKNESS	MAX. CAP. (GAL.)	WEIGHT (lbs.)	REMARKS
FT-1	ABV. GRND	DOUBLE WALL	1/4"	15,000	35,821	①

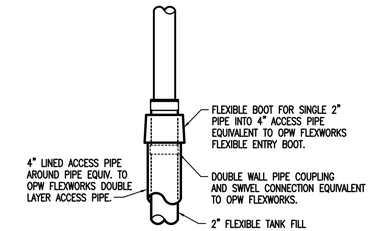
① BASED ON HIGHLAND TANK FIREGUARD CYLINDRICAL ABOVEGROUND DOUBLE WALL TANK WITH THERMAL PROTECTION, BALLISTICS RATED, UL-2085 LISTED. PROVIDE (7) 4" FEMALE FIREGUARD COUPLINGS, PROVIDE (2) 8" FITTINGS FOR EMERGENCY VENTING, PROVIDE (1) 2" FEMALE FIREGUARD COUPLING FOR INTERSTITIAL MONITOR PIPE, AND PROVIDE (1) 24" DIA. MANHOLE, PROVIDE (4) 2" FEMALE FIREGUARD COUPLING FOR FUEL SUPPLY AND RETURN PIPING.



SUPPLY AND RETURN

2/M3.1 CONTAINMENT PIPING SINGLE TRANSITION DETAIL

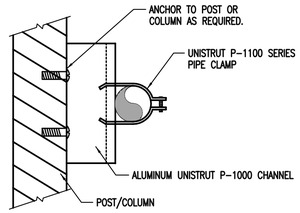
SCALE: NONE



TANK FILL

3/M3.1 CONTAINMENT PIPING SINGLE TRANSITION DETAIL

SCALE: NONE



4/M3.1 UNISTRUT PIPE CLAMP DETAIL FOR VERTICAL OR HORIZONTAL PIPING (TYPICAL FOR ALL)

SCALE: NONE

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
1	ASI #1		5/26/15
	FOR CONSTRUCTION SET	QAM	4/29/15

RECORD DOCUMENTS

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DATE: MARCH, 2016

CITY OF WICHITA, KANSAS

ENGINE FUEL DETAILS AND SCHEDULES

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	QAM	Job No.	34-14229-001-0042
Drawn by	JML	Date	4/29/15

Sht. M3.1 of 37

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Plot Scale 1:2 04-04-2016 8:24:33 AM by JEREMY.LEE
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LIGHTING FIXTURE SCHEDULE

(1) (2) (P.E.C.)

FIXT. LTR.	MANUFACTURER CATALOG NUMBER	MANUFACTURER CATALOG NUMBER	MANUFACTURER CATALOG NUMBER	MANUFACTURER CATALOG NUMBER	DESCRIPTION SEE NOTES	LAMP TYPE NO.	LAMP TYPE VOLTS	LENS\LOUVER\FINISH REMARKS	W	L	D
EG	WILLIAMS 96-4-L40-840-HIA-DRV	LITHONIA FEM4LED-4L-IMACD	OR APPROVED EQUAL		4' STRIP	40W LED 82CRI 4000K 1	120	WHITE 4,700 DELIVERED LUMENS WITH L85 = 50,000 HOURS		4.0	
	FULLY ENCLOSED AND GASKETED.										
SL	RAB LIGHTING FXLED12SSF	OR APPROVED EQUAL			FLOOD LIGHT (5)	133W LED 82CRI 4000K 1	UNV	DARK BRONZE 10,700 DELIVERED LUMENS WITH L70 = 100,000 HOURS	1.5	1.5	
	MOUNT AT 25' - 0" AFG.	ROUTE THRU FIXTURE 'SLPC'.									
SLPC	RAB LIGHTING FXLED12SSF/PCS	OR APPROVED EQUAL			FLOOD LIGHT (5)	133W LED 82CRI 4000K 1	UNV	DARK BRONZE 10,700 DELIVERED LUMENS WITH L70 = 100,000 HOURS	1.5	1.5	
	MOUNT AT 25' - 0" AFG.	PROVIDE WITH INTEGRAL PHOTOCELL.									

(1) MANUFACTURERS LISTED IN THIS SCHEDULE OR APPROVED BY WRITTEN ADDENDUM WILL BE THE ONLY APPROVED MANUFACTURERS TO BID THE LIGHTING FIXTURES FOR THIS PROJECT. CONTRACTORS AND SUPPLIERS USING PRICING FROM MANUFACTURERS NOT LISTED ON SCHEDULE OR BY ADDENDUM DO SO AT THEIR OWN RISK.

(2) LIGHT FIXTURE SELECTIONS ARE BASED ON THE MANUFACTURER IN THE LEFT MOST COLUMN AS LISTED IN THE SCHEDULE. FIXTURES APPROVED AS EQUALS IN THIS SCHEDULE OR BY ADDENDUM SHALL BE EQUAL TO THE UNIT SPECIFIED IN THE LEFT MOST COLUMN, IE: SPRING LOADED LATCHES, POST PAINTED FINISH, AND PHOTOMETRICS.

PANELBOARD: PG-LV

208/120 VOLTS, 3 PHASE, 4 WIRE
225 AMP MAIN BKR, SURFACE MTD.
NEMA 4 ENCLOSURE, W/GRD. BUS
22000 AIC LABELED

CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P.	AMP SIZE	PHASE	AMP SIZE	P.	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.
1	1400	PWR	GEN-1 BATTERY CHARGER	1	20	A	20	1	LTG - GENERATOR STATION	LGH	931	2
3	1400	PWR	GEN-1 ALTERNATOR HTR	1	20	B	20	1	LTG - PMSG VAULT	LGH	160	4
5	1400	PWR	GEN-2 BATTERY CHARGER	1	20	C	20	1	SPARE	SPR		6
7	1400	PWR	GEN-2 ALTERNATOR HTR	1	20	A	20	1	VEEDER ROOT CONTROLLER	PWR	500	8
9	6000	HEAT	GEN-1 BLOCK HEATER	2	35	B	20	1	GEN-CP	PWR	500	10
11	———	—	———	—	|	C	20	1	SPARE	SPR		12
13	1000	PWR	GEN-1 ENC PWR & LTS	1	20	A	20	1	CONVENIENCE RECEPTACLE	RCPT	200	14
15	6000	HEAT	GEN-1 BLOCK HEATER	2	35	B	20	1	SPARE	SPR		16
17	———	—	———	—	|	C	20	1	SPARE	SPR		18
19		SPR	SPARE	1	20	A	20	1	SPARE	SPR		20
21	6000	HEAT	GEN-2 BLOCK HEATER	2	35	B	20	1	PMSG DMC	PWR	1400	22
23	———	—	———	—	|	C	20	1	PMSG BATT. CHARGER	PWR	800	24
25	1000	PWR	GEN-2 ENC PWR & LTS	1	20	A	20	1	SPARE	SPR		26
27	6000	HEAT	GEN-2 BLOCK HEATER	2	35	B	20	1	SPARE	SPR		28
29	———	—	———	—	|	C	20	1	SPARE	SPR		30
31		SPR	SPARE	1	20	A	20	1	SPARE	SPR		32
33	3000	HEAT	ATS HEATER	2	20	B	20	1	SPARE	SPR		34
35	———	—	———	—	|	C	20	1	SPARE	SPR		36
37		SPR	SPARE	1	20	A	20	1	SPARE	SPR		38
39		SPR	SPARE	1	20	B	20	1	SPARE	SPR		40
41		SPR	SPARE	1	20	C	20	1	SPARE	SPR		42

PEN WEIGHT LEGEND

SYMBOL	DESCRIPTION
	ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK SOLID LINES ARE NEW TO BE INSTALLED.
	NEW DUPLEX GROUNDED RECEPTACLE
	NEW LIGHT FIXTURE
	ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT SOLID LINES ARE EXISTING TO REMAIN.
	EXISTING DUPLEX GROUNDED RECEPTACLE TO REMAIN
	EXISTING LIGHT FIXTURE TO REMAIN
	ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK DASHED LINES ARE TO BE REMOVED.

SPECIAL OUTLET SCHEDULE

SYMBOL	DESCRIPTION
GSD	GENERATOR EMERGENCY REMOTE SHUT DOWN SWITCH. REFER TO SPECIFICATIONS.
GLG	GROUND LUG LOCATION. PROVIDE A 1" CONDUIT WITH #4/0 CU PIG TAIL AT THIS LOCATION FOR CONNECTION TO GENERATOR FOR GROUNDING. ROUTE #4/0 DOWN TO GROUNDING GRID CONDUCTOR BELOW SLAB AND CAD WELD. PROVIDE CONNECTION FROM GENERATOR TO THIS LOCATION.

GENERAL NOTES

1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) & THE AMERICANS WITH DISABILITIES ACT (ADA).
2. REFER TO RELATED CIVIL AND STRUCTURAL DRAWINGS FOR RELATED INFORMATION.
3. REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
4. ALL MOUNTING HEIGHTS TO CENTERLINE OF ITEM UNLESS OTHERWISE NOTED. VERIFY ALL OUTLET LOCATIONS ON THE JOB PRIOR TO ROUGH-IN.
5. CONDUIT RUN W/CONDUCTORS AS INDICATED & GROUND WIRE SIZED PER N.E.C. 250.122. CONDUIT SIZE AS REQUIRED.
6. WHEN INCREASED CONDUCTOR SIZES ARE SHOWN ON THE PLANS, THE LARGER CONDUCTOR SIZE SHALL BE USED THROUGHOUT THE LENGTH OF THE CIRCUIT, INCLUDING NEUTRAL AND GROUND.
7. BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.

T2. RUN CABLES CONTINUOUS FROM JACK TO ASSOCIATED SYSTEM PATCH PANEL IN CONDUIT, CABLE TRAY, OR J-HOOKS PER THE PLANS AND SPECIFICATIONS. NUMBER BESIDE CABLE SYMBOL INDICATES QUANTITY OF CABLES REQUIRED PER HOME RUN.

ONE-LINE SYMBOLS LEGEND:

- CIRCUIT BREAKER
- N E A.T.S. — AUTOMATIC TRANSFER SWITCH
- VFD — VARIABLE FREQUENCY DRIVE
- HP — MOTOR
- KW — NON-MOTOR LOAD
- METER
- PANEL — PANEL
- TRANSFORMER
- FUSE
- A — SWITCH
- K — KIRK-KEY INTERLOCK
- DRAWOUT

SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING
A	LIGHT FIXTURE & FIXTURE LETTER	POLE
A	STRIP LIGHT FIXTURE & FIXTURE LETTER	CEILING
	GROUND FAULT DUPLEX RECEPTACLE	18"AFF
$ $2 $3 $4	SWITCHES (1-POLE,2-POLE,3-WAY,4-WAY)	46"AFF
WP	WEATHERPROOF	
AFG	ABOVE FINISHED GRADE	
UON	UNLESS OTHERWISE NOTED	
A A	SPECIAL OUTLET (SEE SCHEDULE OR AS NOTED)	FLOOR/WALL
J	JUNCTION BOX	
'A'	BRANCH CIRCUIT PANEL & PANEL DESIG.	72" TO TOP
	ELECTRICAL DISTRIBUTION EQUIPMENT	
1	FEEDER DESIGNATION	
#10	CONDUIT HOME RUN, 1 CIRCUIT. 2#10 & 1#10 GRD. GEN. NOTE 5 & 6	CEIL./WALL
	CONDUIT RUN 2#12 & 1#12 GRD.-1/2"C.	CEIL./WALL
	CONDUIT RUN 2#12 & 1#12 GRD.-3/4"C.	EARTH/FLOOR
	CONDUIT HOME RUN, 1 CIRCUIT. 2#12 & 1#12 GRD. 1/2"C.	CEIL./WALL
	CONDUIT RUN PARTIAL CIRCUIT. 2#12 & 1#12 GRD. 1/2"C.	CEIL./WALL
	CONDUIT HOME RUN, 2 CIRCUITS PHASE CONDUCTORS (#12 UON) NEUTRAL CONDUCTOR (#12 UON) SWITCH LEGS (#12 UON) GROUND CONDUCTOR (#12 UON)	CEIL./WALL
2	VOICE UTP CABLE HOME RUN	GEN NOTE T2
2	FIBER OPTIC CABLE HOME RUN (MULTI MODE)	GEN NOTE T2
	GROUND ROD	
	GROUND TEST WELL	

ABBREVIATIONS:

A	AMPS
A.I.C.	AMPS INTERRUPTING CAPACITY
A.T.S.	AUTOMATIC TRANSFER SWITCH
AF	AMP FRAME
AT	AMP TRIP
E	EMERGENCY POWER
GEN	GENERATOR
HP	HORSE POWER
KW	KILOWATT
N	NORMAL POWER
PH	PHASE
SPD	SURGE PROTECTION DEVICE
V	VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
XFMR	TRANSFORMER

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	FOR CONSTRUCTION SET		4/29/15

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DATE: FEBRUARY, 2016

CITY OF WICHITA, KANSAS

ELECTRICAL LEAD SHEET

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	RWW	Job No.	34-14229-001-0042
Drawn by	CJV	Date	4/29/15

Sht. E0.0 of 37

Saved 04-04-2016 1:20:20 PM by CJV
Plot Scale 1:2 04-04-2016 1:21:36 PM by CHRIS VAIL
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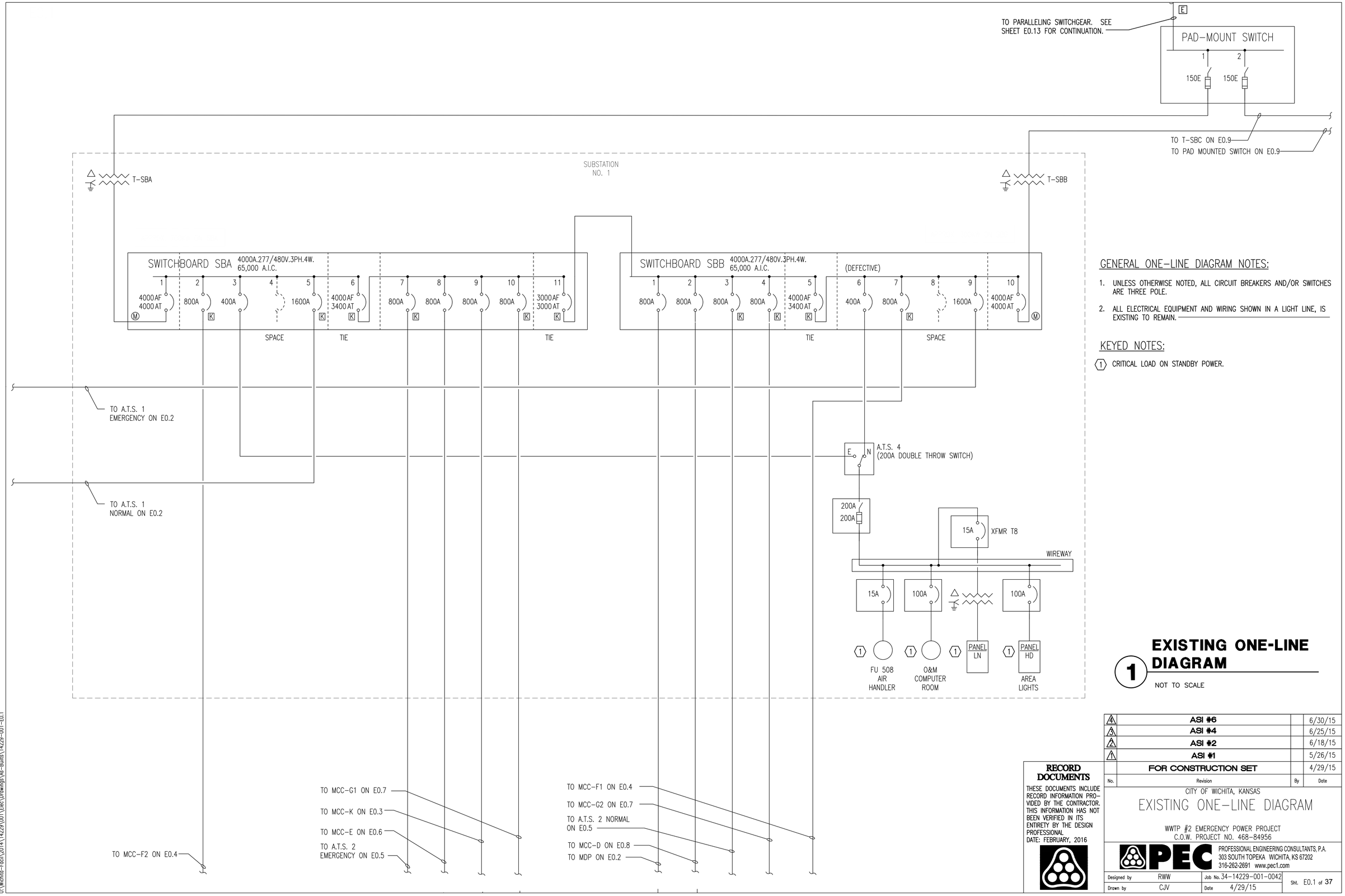

GENERAL ONE-LINE DIAGRAM NOTES:

1. UNLESS OTHERWISE NOTED, ALL CIRCUIT BREAKERS AND/OR SWITCHES ARE THREE POLE.
2. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A LIGHT LINE, IS EXISTING TO REMAIN.

KEYED NOTES:

(1) CRITICAL LOAD ON STANDBY POWER.

1 EXISTING ONE-LINE DIAGRAM

NOT TO SCALE

No.	Revision	By	Date
4	ASI #6		6/30/15
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CITY OF WICHITA, KANSAS

EXISTING ONE-LINE DIAGRAM

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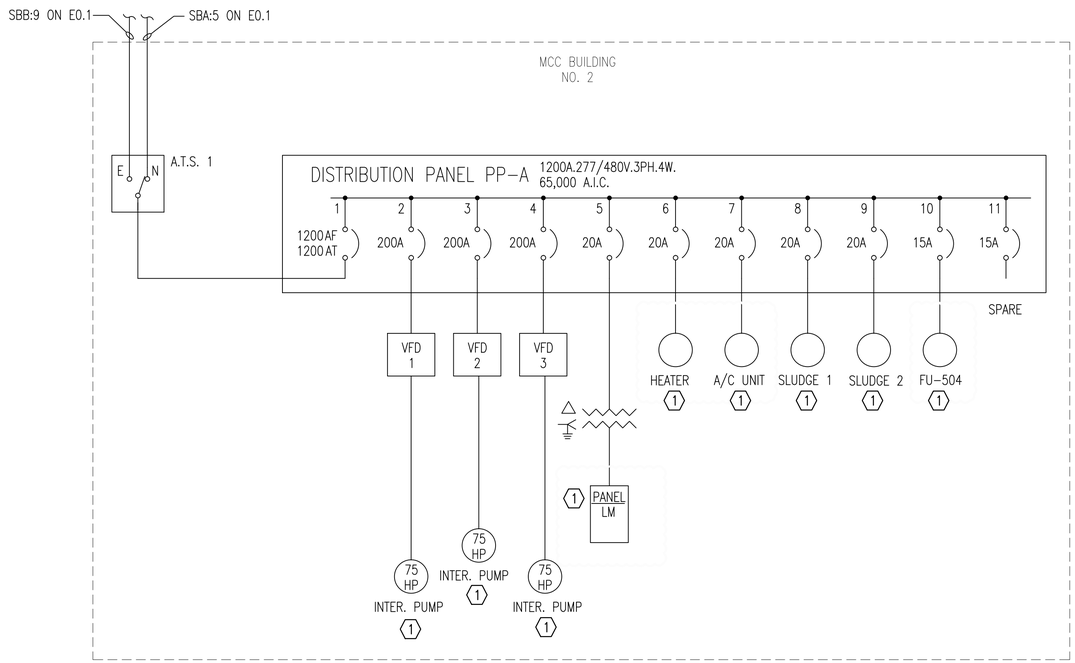
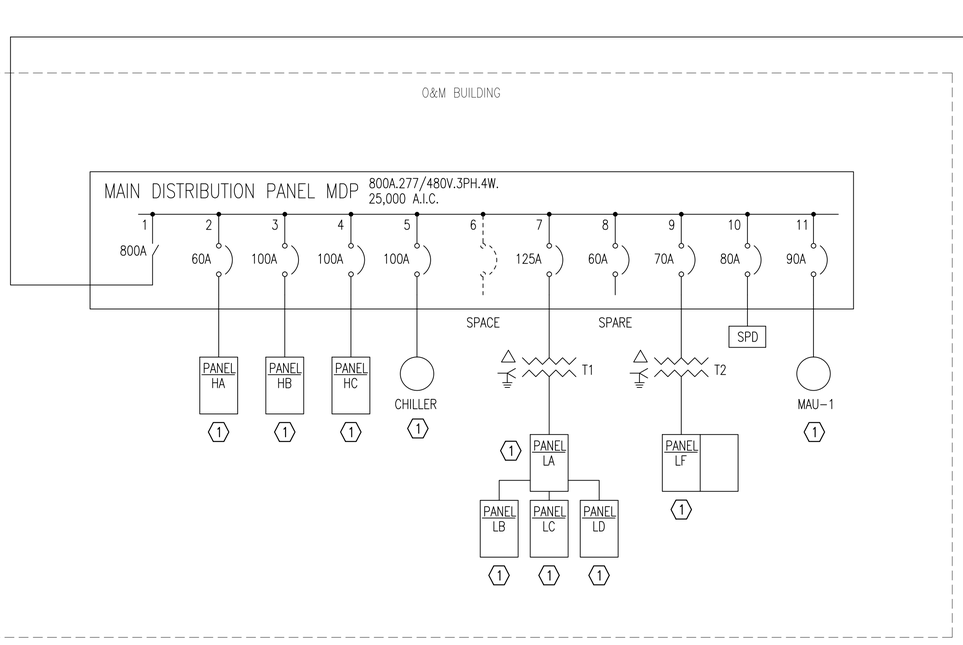
Sht. E0.1 of 37





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Sht. E0.2 of 37

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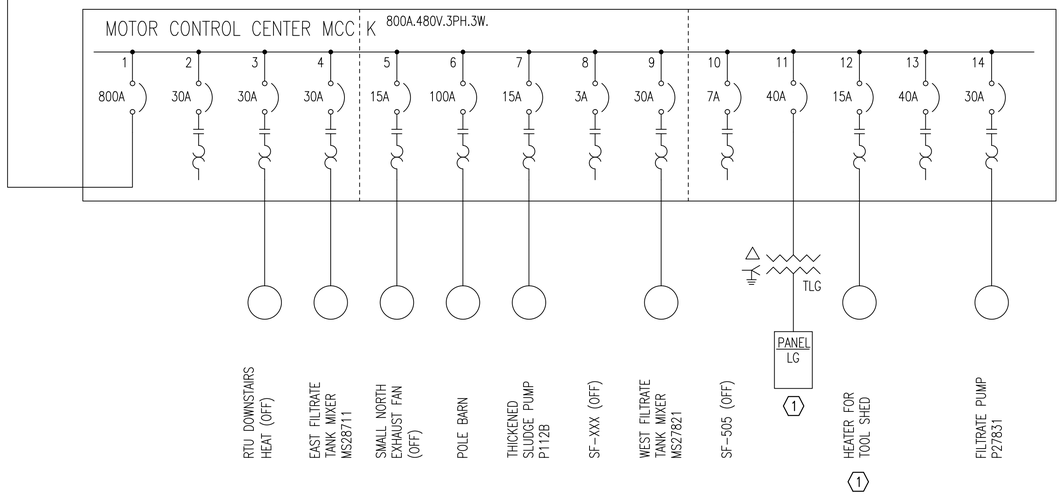
SBA:9 ON E0.1

STORAGE (GRAVITY BELT)



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Sht. E0.3 of 37

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HEADWORKS

SBA:2 ON E0.1

MOTOR CONTROL CENTER MCC F2 800A.480V.3PH.3W.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19	20	21	22	23	24	25	26	27	28	29	30
100A	40A	40A	100A	100A	15A	??A	45A	15A	20A	20A	15A	15A	90A	50A	15A	20A	125A	3A	30A	15A	3A	30A	7A	15A	250A	250A			3A	
50 HP	15 HP	15 HP	50 HP	50 HP	7.5 HP	7.5 HP		7.5 HP	10 HP	10 HP	5 HP	5 HP	VFD	15 HP	7.5 HP			1 HP	PANEL/ XFMR FRONT GATE		.75 HP	10 HP	1 HP		VFD	VFD			.75 HP	
ODOR CONTROL FAN F29101	ODOR CONTROL POWER CENTER OCLP-1	ODOR CONTROL POWER CENTER OCLP-1	SEPTAGE RECEIVING POWER PANEL SPP-1	GRIT HANDLING BUILDING POWER PANEL MVP-1	RAKE ROOM AIR HANDLING UNIT AHU 21120	GRIT HANDLING RM EXHAUST FAN F21866		SCREENING BLD MONORAIL HOIST MME 21861	ELEVATOR MME 21130	RAKE ROOM GRINDER	SCREENING PRESS MME 21103	SLUDGE SCREEN 2 SCN 21820	PRIMARY SLUDGE PUMP P21352	SCREENING SHREDDER GDR 21106 (LOCK-OFF)	SCREEN RAKE SCR 21105	CRANE MME 21123		SCREEN ROOM EXHAUST FAN F21862		SPARE	FOUL AIR BOOSTER FAN F21864	GRIT PUMP 2 P21807	PADDLE DRIVE #2 DU21806	SPARE	RAW SEWAGE PUMP 2 P21112	RAW SEWAGE PUMP 4 P21114	SPACE	SPACE	GRIT CLASSIFIER 2 MME 21808	FROM MCC-F1
(1)	(1)	(1)	(1)	(1)	(1)	(1)		(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(2)		(1)	(1)		(1)	(1)	(1)		(1)	(2)			(1)	

MOTOR CONTROL CENTER MCC F1 800A.480V.3PH.3W.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
800A [K]	7A	30A	15A	15A	3A	15A	150A	250A	250A	7A	45A	7A	7A	30A	90A	50A	??A	125A	3A	15A	20A	50A	3A
	2 HP	10 HP	5 HP	5 HP	1 HP	7.5 HP	75 HP	100 HP	100 HP	1.5 HP			2 HP	2 HP	10 HP	40 HP	30 HP		1? HP	7.5 HP	10 HP	20 HP	1 HP
FROM MCC-F2	PADDLE DRIVE 1 DU21802	GRIT PUMP 1 P21803	SLUDGE SCREEN 1 SCN 21810	SLUDGE SCREEN 3SCN 21830	GRIT CLASSIFIER MME 21804	SCREEN ROOM AIR HANDLING UNIT AHU 21865	COMPACT HYDRAULIC DRIVE UNIT HDU 21851	RAW SEWAGE PUMP 1 P21111	RAW SEWAGE PUMP 3 P21113	SCREEN ROOM AHU LOOP PUMP P21861			SCREEN RAKE SCN 21102	PUMP PIT VENTILATING FAN F21162	PRIMARY SCUM PUMP P21353	PRIMARY SLUDGE PUMP P21351	ELECTRICAL RM AIR HANDLING UNIT AHU 21160	EAST GATE OPERATOR	GRIT CONVEYOR CON 21860	SCUM GRINDER GRD 21354	YARD VALVES (OFF)	SCREEN LUGS SHREDDER GRD 21103	PARSHALL FLUME EXHAUST FAN F21360
	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(1)			(1)	(1)	(1)	(1)	(1)	(2)	(1)	(1)	(2)	(1)	(1)

SBB:7 ON E0.1

E N TRF-F1 PANEL

E N MTSF TRF-F PANEL

GENERAL ONE-LINE DIAGRAM NOTES:

1. UNLESS OTHERWISE NOTED, ALL CIRCUIT BREAKERS AND/OR SWITCHES ARE THREE POLE.
2. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A LIGHT LINE, IS EXISTING TO REMAIN.

KEYED NOTES:

(1) CRITICAL LOAD ON STANDBY POWER.

(2) REDUNDANT LOAD ON STANDBY POWER.

1 EXISTING ONE-LINE DIAGRAM

NOT TO SCALE

No.	Revision	By	Date
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Designed by	RWW	Job No.	34-14229-001-0042	Sht. E0.4 of 37
Drawn by	CJV	Date	4/29/15	

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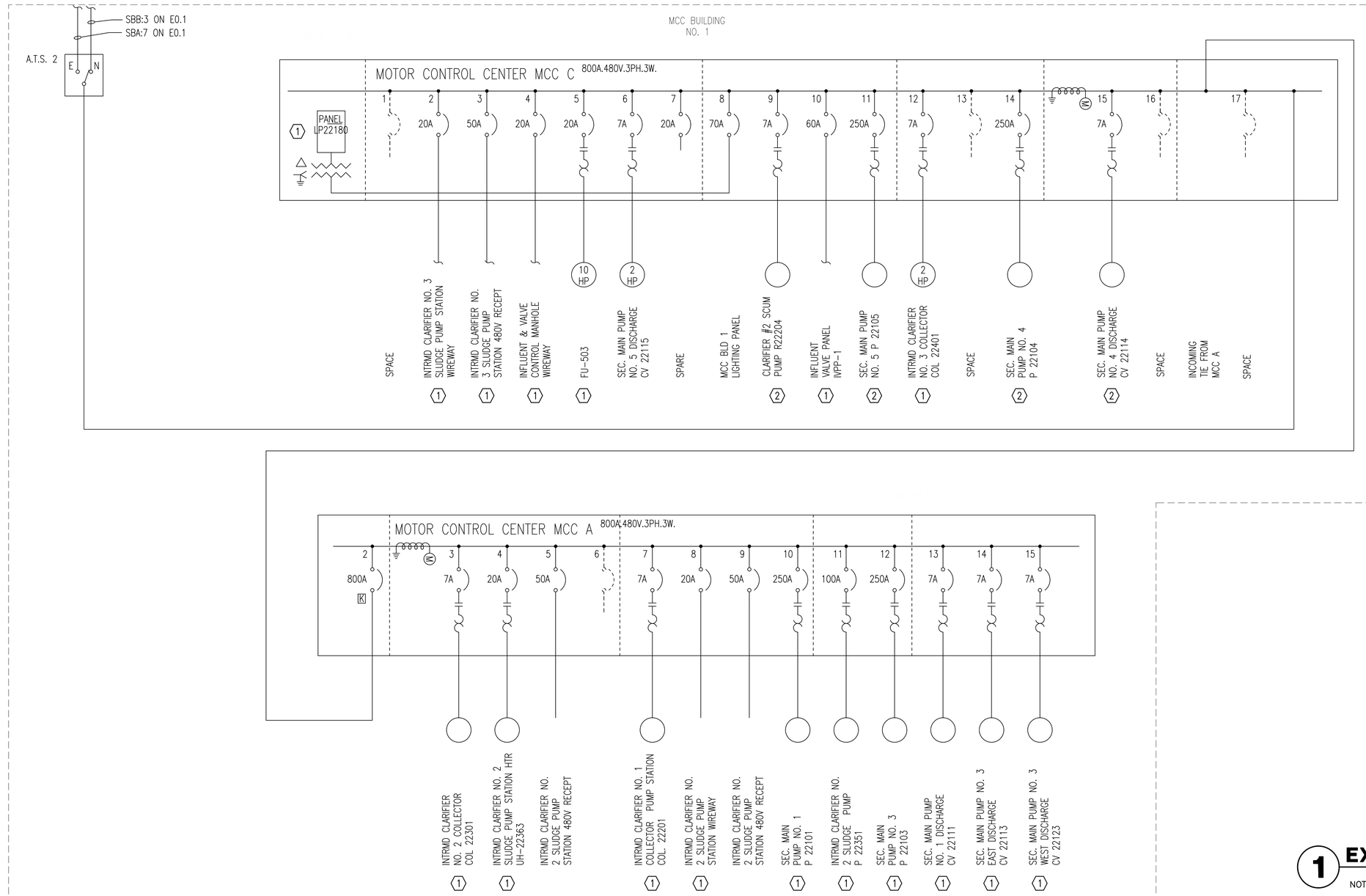

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DATE: FEBRUARY, 2016

CITY OF WICHITA, KANSAS

EXISTING ONE-LINE DIAGRAM

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	RWW	Job No.	34-14229-001-0042
Drawn by	CJV	Date	4/29/15

Sht. E0.5 of 37

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DIGESTERS

MOTOR CONTROL CENTER MCC E 800A.480V.3PH.3W.

SBA:9 ON E0.1

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
	30A	15A	50A	50A	50A	50A	50A	50A	15A	15A	15A	15A	30A	30A	30A	30A	50A	50A	50A	50A	3A	3A	3A	3A	30A	30A	30A	30A	7A	15A	60A	30A
			VFD	VFD	VFD	VFD																										
	HP	5 HP	20 HP	20 HP	20 HP	20 HP		20 HP	7.5 HP	7.5 HP	7.5 HP	7.5 HP	15 HP	15 HP	15 HP	15 HP	20 HP	20 HP	20 HP	20 HP	.5 HP	.5 HP	.5 HP	.5 HP	10 HP	10 HP	10 HP	10 HP	2 HP	1 HP	BREAKER HANDLE LOCKED-OFF	7.5 HP
	LOAD OUT PUMP	THICKENED SLUDGE BLEND TANK MIXER MXR 26001 TSH 26001	DIGESTER FEED PUMP NO. 1 P26011	DIGESTER FEED PUMP NO. 2 P26012	DIGESTER FEED PUMP NO. 3 P26013	DIGESTER FEED PUMP NO. 4 P26014		TUNNEL SUMP PUMPS P26003/P26004	DIGESTED SLUDGE PUMP 1 P26141	DIGESTED SLUDGE PUMP 2 P26241	DIGESTED SLUDGE PUMP 3 P26341	DIGESTED SLUDGE PUMP 4 P26441	DIGESTED SLUDGE HEAT CKT PUMP 1 P26134	DIGESTED SLUDGE HEAT CKT PUMP 2 P26234	DIGESTED SLUDGE HEAT CKT PUMP 3 P26334	DIGESTED SLUDGE HEAT CKT PUMP 4 P26434	SLUDGE CKT PUMP 1 P26121	SLUDGE CKT PUMP 2 P26221	SLUDGE CKT PUMP 3 P26321	SLUDGE CKT PUMP 4 P26421	DIGESTER 1 EXHAUST FAN P26964	DIGESTER 2 EXHAUST FAN P26963	DIGESTER 3 EXHAUST FAN P26969	DIGESTER 4 EXHAUST FAN P26968	DIGESTER 1 MIXING PUMP 1 P26111	DIGESTER 1 MIXING PUMP 2 P26112	DIGESTER 1 MIXING PUMP 3 P26113	DIGESTER 1 MIXING PUMP 4 P26114	TRANSFER FAN P26967	GALLERY 1 SUMP PUMP 1 P26912		BLR 26720 PNL 26720
		1	1	1	2	2		1	1	1	2	2	1	1	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1		1

35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
30A	15A	50A	7A	30A	30A	30A	30A	30A	30A	3A	30A	30A	30A	30A	30A	30A	30A	30A	30A	7A	7A	7A	7A	30A	30A	30A	30A	15A	15A	250A	3A
7.5 HP			2 HP	10 HP	10 HP	10 HP	10 HP	10 HP	10 HP	10 HP										3 HP	3 HP	3 HP	3 HP									
BLR 26710 PNL 26710	NOT LABELED	PORTABLE DIGESTER PUMP RECEPTS	FILTER BUILDING H.V. PUMP P26977	DIGESTER 1 MIXING PUMP 5 P26115	DIGESTER 2 MIXING PUMP 1 P26211	DIGESTER 2 MIXING PUMP 2 P26212	DIGESTER 2 MIXING PUMP 3 P26213	DIGESTER 2 MIXING PUMP 4 P26214	DIGESTER 2 MIXING PUMP 5 P26215	DIGESTER 3 MIXING PUMP 1 P26311	DIGESTER 3 MIXING PUMP 2 P26312	DIGESTER 3 MIXING PUMP 3 P26313	DIGESTER 3 MIXING PUMP 4 P26314	DIGESTER 3 MIXING PUMP 5 P26315	DIGESTER 4 MIXING PUMP 1 P26411	DIGESTER 4 MIXING PUMP 2 P26412	DIGESTER 4 MIXING PUMP 3 P26413	DIGESTER 4 MIXING PUMP 4 P26414	DIGESTER 4 MIXING PUMP 5 P26415	DIGESTER SLUDGE HEATER WATER CIRC PUMP 1 P26136	DIGESTER SLUDGE HEATER WATER CIRC PUMP 2 P26236	DIGESTER SLUDGE HEATER WATER CIRC PUMP 3 P26336	DIGESTER SLUDGE HEATER WATER CIRC PUMP 4 P26436	CONVERTER LOOP CIRC PUMP 1 P26712	CONVERTER LOOP CIRC PUMP 2 P26722	CONVERTER LOOP CIRC PUMP 1 P26712	CONVERTER LOOP CIRC PUMP 2 P26722	DIGESTER AIR HANDLING UNIT 26961	SLUDGE GAS BOOSTER BLOWER BWR 26715	TFRE PANEL LPE	HRR CIRC PUMP P26965
1			1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	1	1	1	1	1	.75 HP 1	1

67	68	69	70	71	72
3A	3A	15A	15A		3A
1 HP		7.5 HP	7.5 HP		
SPARE	GALLERY 2 SUMP PUMP P26913	HEAT RESERVOIR CIRC PUMP P26731	HEAT RESERVOIR CIRC PUMP P26732	SPACE	SPARE
	1	1	1		

GENERAL ONE-LINE DIAGRAM NOTES:

1. UNLESS OTHERWISE NOTED, ALL CIRCUIT BREAKERS AND/OR SWITCHES ARE THREE POLE.
2. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A LIGHT LINE, IS EXISTING TO REMAIN.

KEYED NOTES:

(1) CRITICAL LOAD ON STANDBY POWER.

(2) REDUNDANT LOAD ON STANDBY POWER.

1 EXISTING ONE-LINE DIAGRAM

NOT TO SCALE

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
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CITY OF WICHITA, KANSAS

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C.O.W. PROJECT NO. 468-84956

PEC PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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Designed by	RWW	Job No.	34-14229-001-0042	Sht. E0.6 of 37
Drawn by	CJV	Date	4/29/15	

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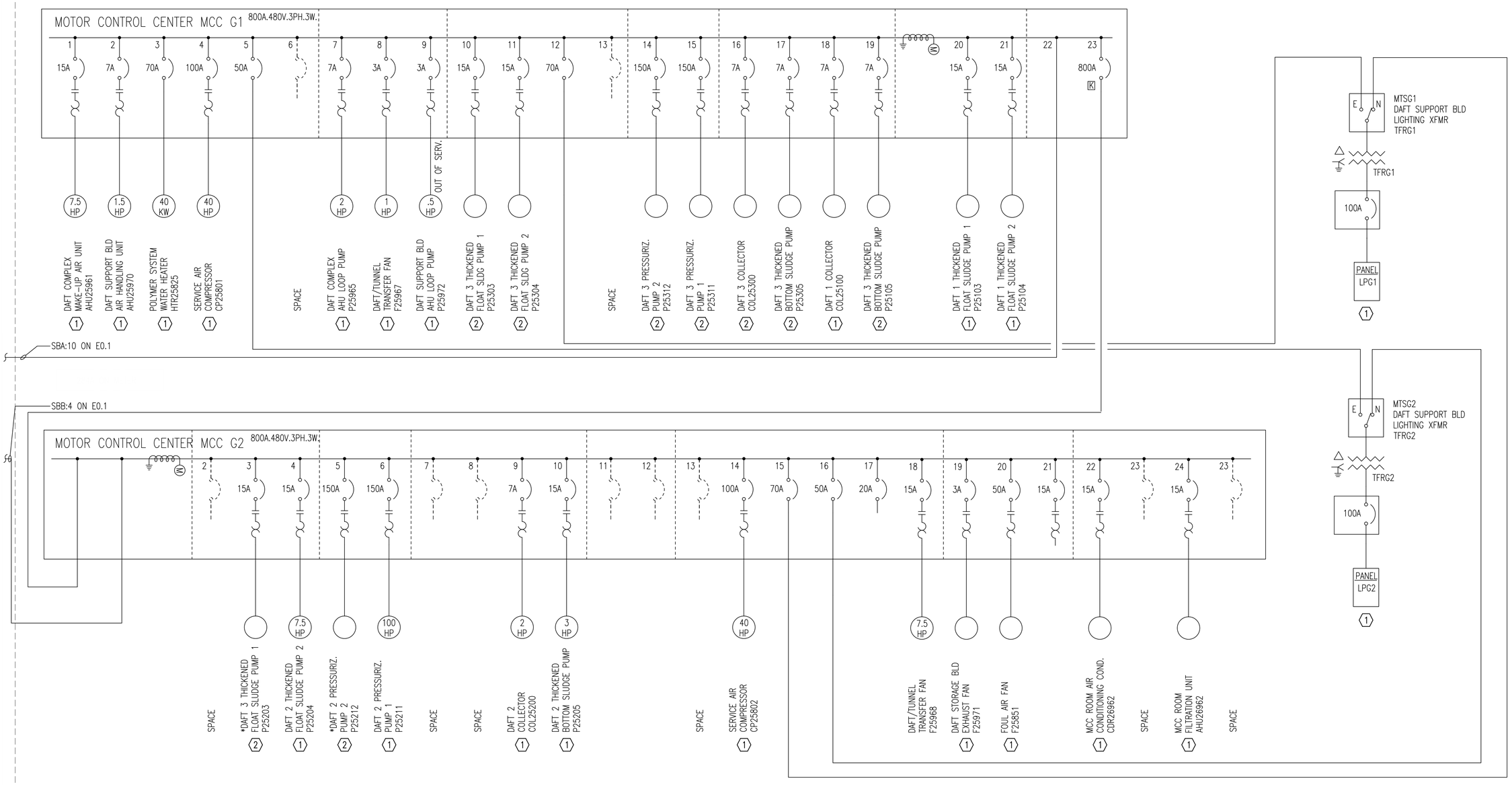
DAFT BUILDING



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CITY OF WICHITA, KANSAS

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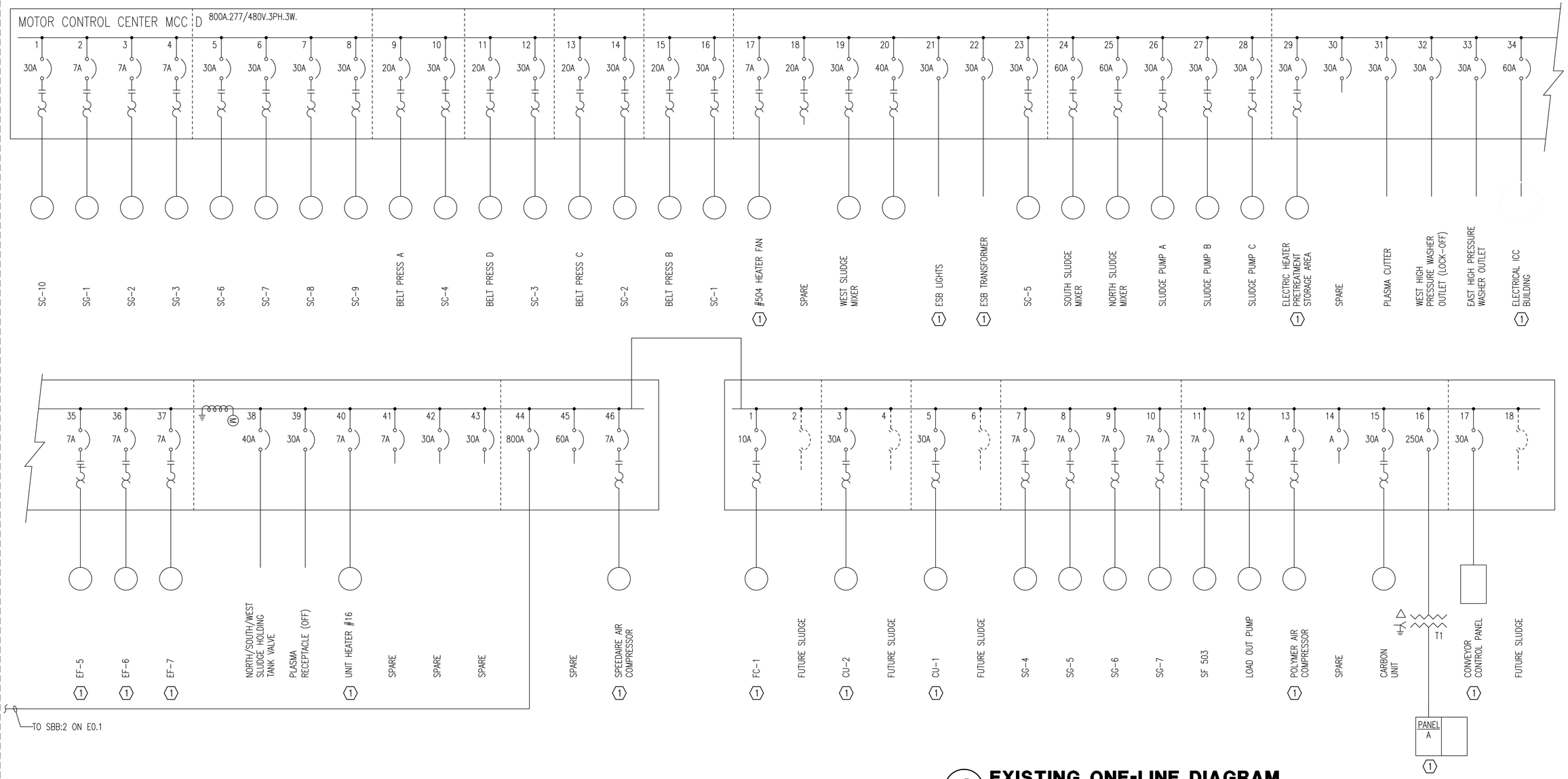
VACUUM FILTER



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Drawn by	CJV	Date 4/29/15	

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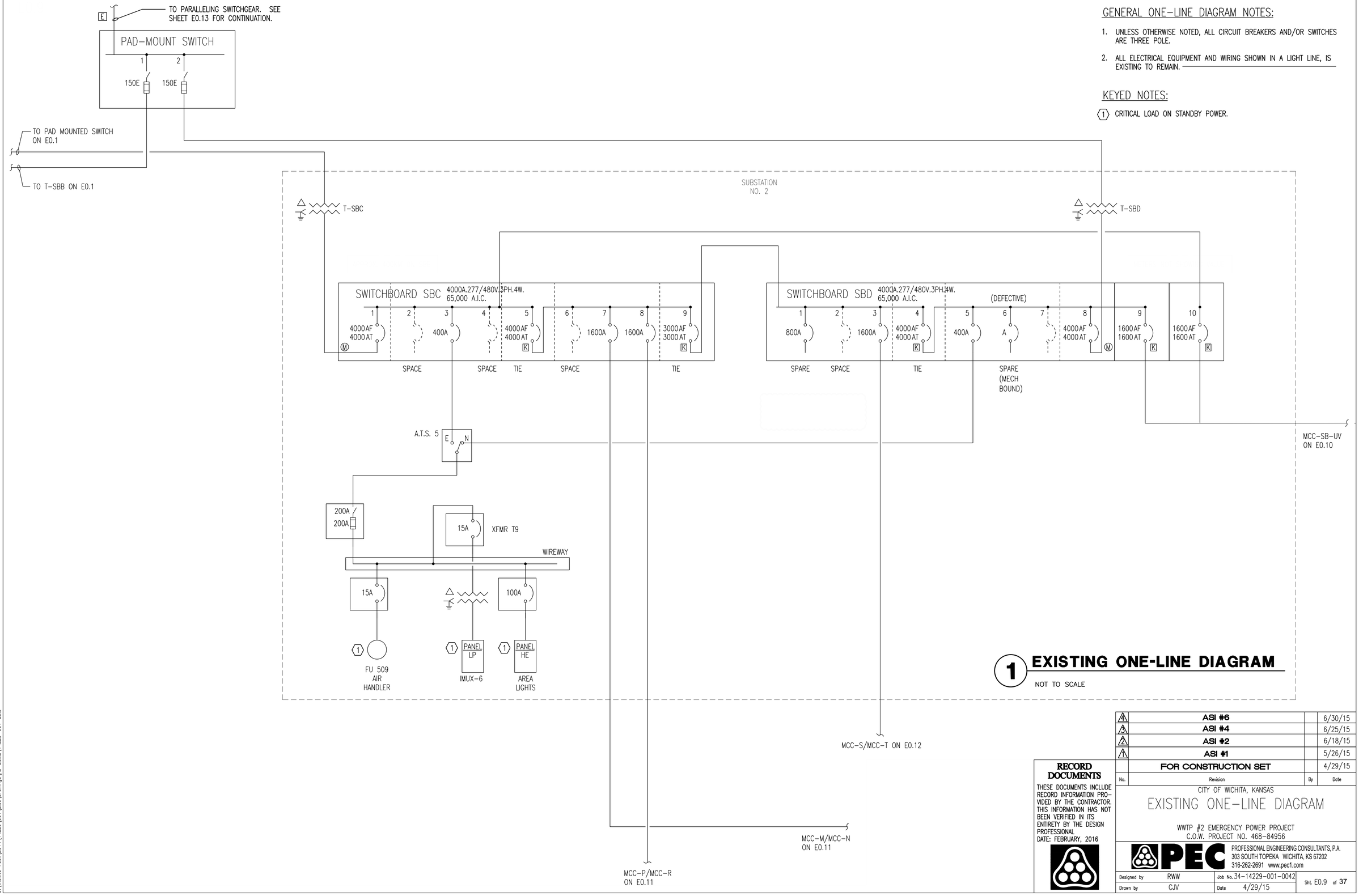

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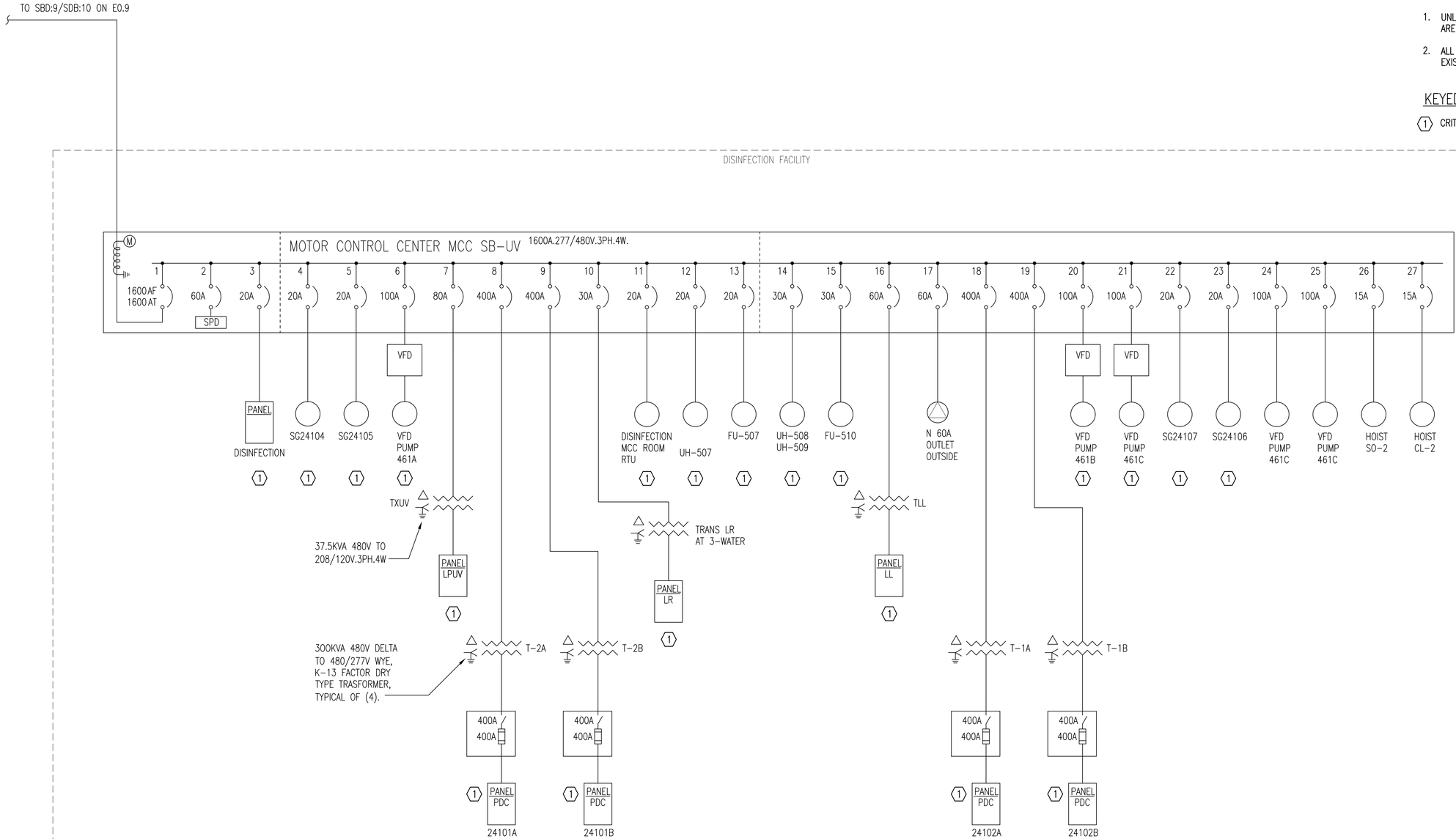

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Sht. E0.10 of 37

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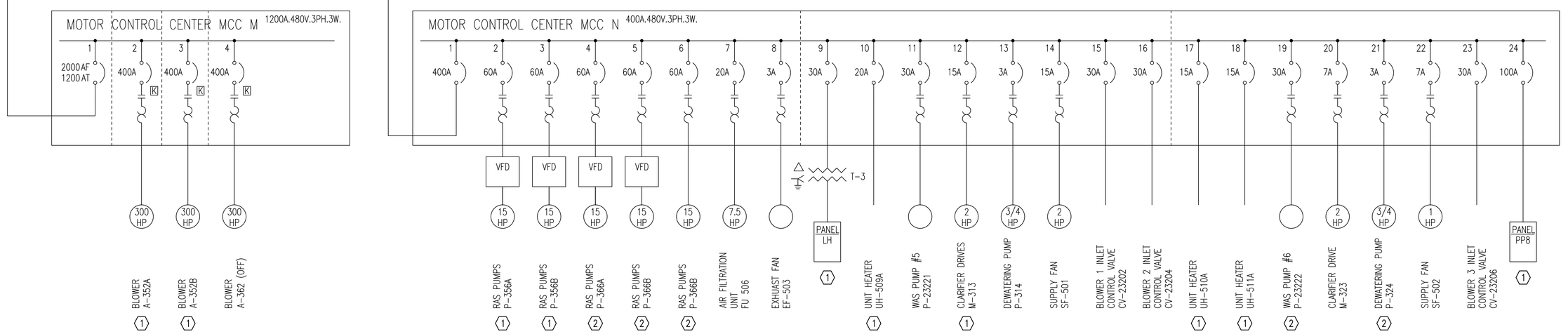
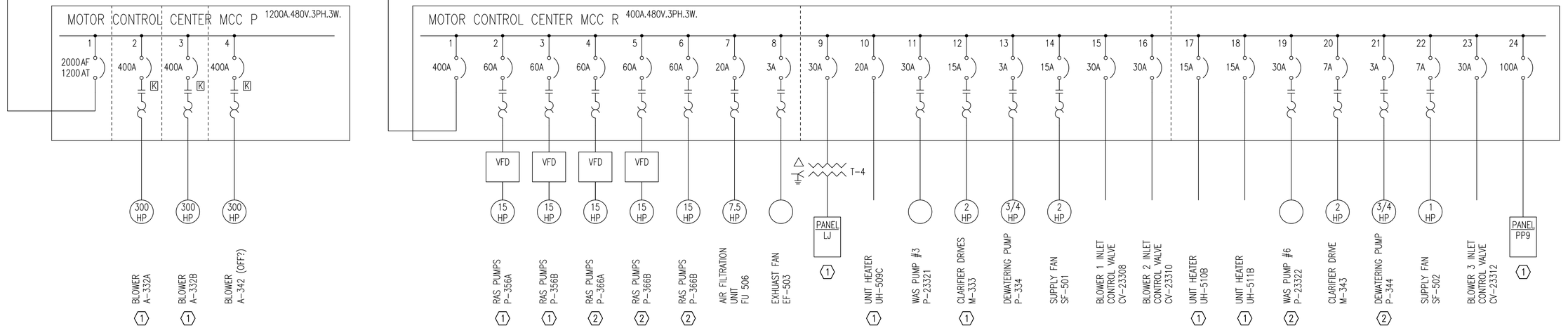
RAS/WAS BLD 1



TO SBC:8 ON E0.9

RAS/WAS BLD 2



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KEYED NOTES:

⟨1⟩ CRITICAL LOAD ON STANDBY POWER.

⟨2⟩ REDUNDANT LOAD ON STANDBY POWER.

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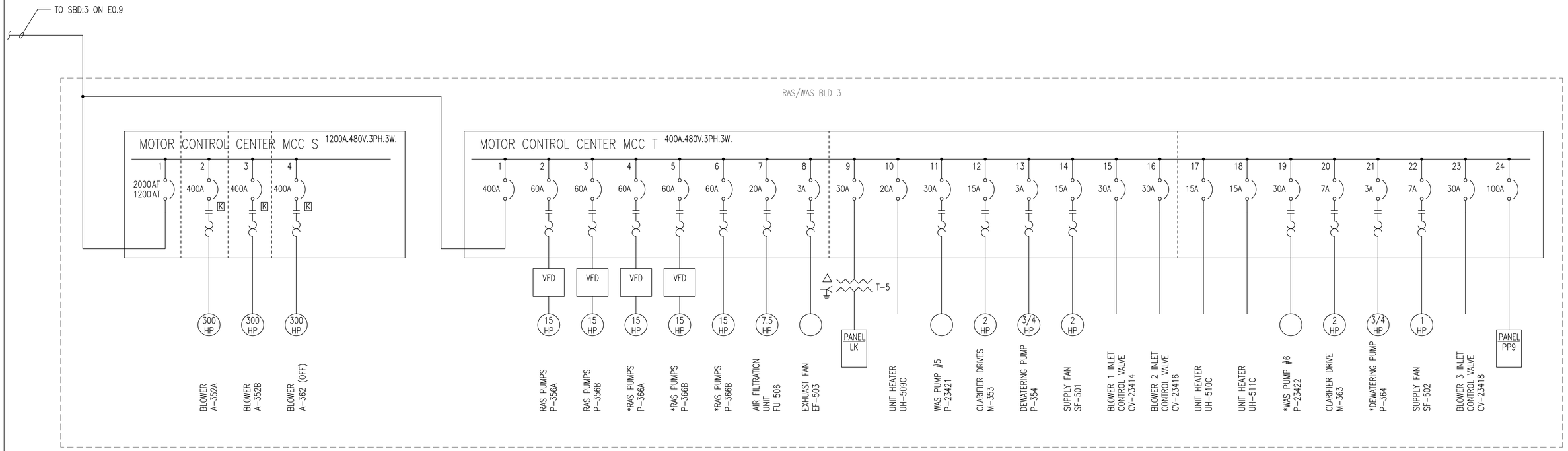

GENERAL ONE-LINE DIAGRAM NOTES:

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EXISTING ONE-LINE DIAGRAM

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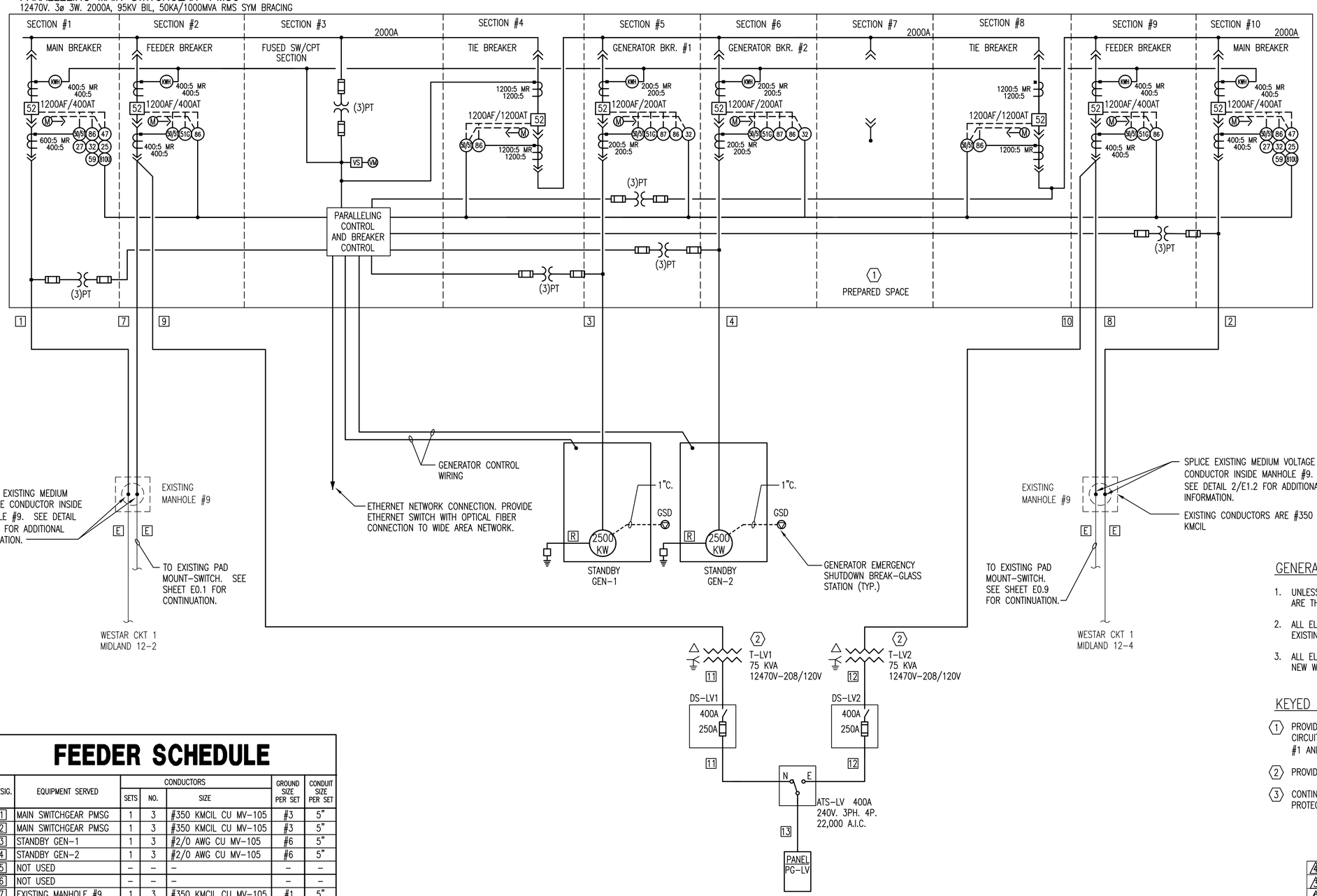
PARALLELING MAIN SWITCHGEAR 'PMSG'

12470V. 3ø 3W. 2000A, 95KV BIL, 50KA/1000MVA RMS SYM BRACING



ANSI SYMBOLS LEGEND

- 25 SYNCHRONIZATION CHECK
- 27 UNDERVOLTAGE
- 32 REVERSE POWER
- 47 UNBALANCE-VOLTAGE PROTECTION AND/OR PHASE SEQUENCE MONITORING
- 50 DEFINITE-TIME PHASE OVERCURRENT PROTECTION
- 51 INVERSE PHASE OVERCURRENT PROTECTION
- 59 OVERVOLTAGE
- 810U OVER/UNDER FREQUENCY
- 86 LOCKOUT
- 87 DIFFERENTIAL RELAY

GENERAL ONE-LINE DIAGRAM NOTES:

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2. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A LIGHT LINE, IS EXISTING TO REMAIN.
3. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A DARK LINE, IS NEW WORK UNDER THIS CONTRACT.

KEYED NOTES:

(1) PROVIDE QUOTE AS OPTIONAL ADDER TO PROVIDE 3RD GENERATOR CIRCUIT BREAKER AND RELAYS EQUIVALENT TO GENERATOR BREAKER #1 AND #2.

(2) PROVIDE WITH PRIMARY FUSES.

(3) CONTINUOUS RATED LOW RESISTANCE GROUNDING RESISTOR TO PROTECT THE GENERATOR DURING A SINGLE PHASE GROUND FAULT.

FEEDER SCHEDULE

	DESIG.	EQUIPMENT SERVED	CONDUCTORS SETS	CONDUCTORS NO.	CONDUCTORS SIZE	GROUND SIZE PER SET	CONDUIT SIZE PER SET
1 2	1	MAIN SWITCHGEAR PMSG	1	3	#350 KMCIL CU MV-105	#3	5"
1 2	2	MAIN SWITCHGEAR PMSG	1	3	#350 KMCIL CU MV-105	#3	5"
1 2	3	STANDBY GEN-1	1	3	#2/0 AWG CU MV-105	#6	5"
1 2	4	STANDBY GEN-2	1	3	#2/0 AWG CU MV-105	#6	5"
	5	NOT USED	–	–	–	–	–
	6	NOT USED	–	–	–	–	–
1 2	7	EXISTING MANHOLE #9	1	3	#350 KMCIL CU MV-105	#1	5"
1 2	8	EXISTING MANHOLE #9	1	3	#350 KMCIL CU MV-105	#1	5"
1 3	9	TRANSFORMER T-LV1	1	3	#2 AWG CU MV-105	#8	4"
1 3	10	TRANSFORMER T-LV2	1	3	#2 AWG CU MV-105	#8	4"
	11	ATS-LV	1	4	#250 KCMIL CU	#2	3"
	12	ATS-LV	1	4	#250 KCMIL CU	#2	3"
	13	PANEL PG-LV	1	4	#250 KCMIL CU	#2	3"
	E	EXISTING TO REMAIN					
1	R	GENERATOR RESISTOR	1	1	#2/0 KCMIL CU MV-105	–	4"

(1) 15KV/TS 133% INSULATION.
(2) PROVIDE (1) SPARE 5" WITH PULL ROPE.
(3) PROVIDE (1) SPARE 4" WITH PULL ROPE.

TRANSFORMER SCHEDULE

TRANSF. DESIG.	KVA RATING	PRIMARY VOLTAGE 480 3ø, 3W.	12470 3ø, 4W.	7200 1ø, 2W.	SECONDARY VOLTAGE 120/208 3ø, 4W.	277/480 3ø, 4W.		OIL FILLED PAD MOUNTED	DRY TYPE	PRIMARY FEEDER (SEE FEEDER SCHEDULE)	SECONDARY FEEDER (SEE FEEDER SCHEDULE)	GROUND WIRE TO NEAREST GROUNDING SOURCE PER NEC SECTION 250.30(A)(7)	REMARKS
T-LV1	75		●		●			●		9	11	#2	
T-LV2	75		●		●			●		10	12	#2	

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PROPOSED ONE-LINE DIAGRAM

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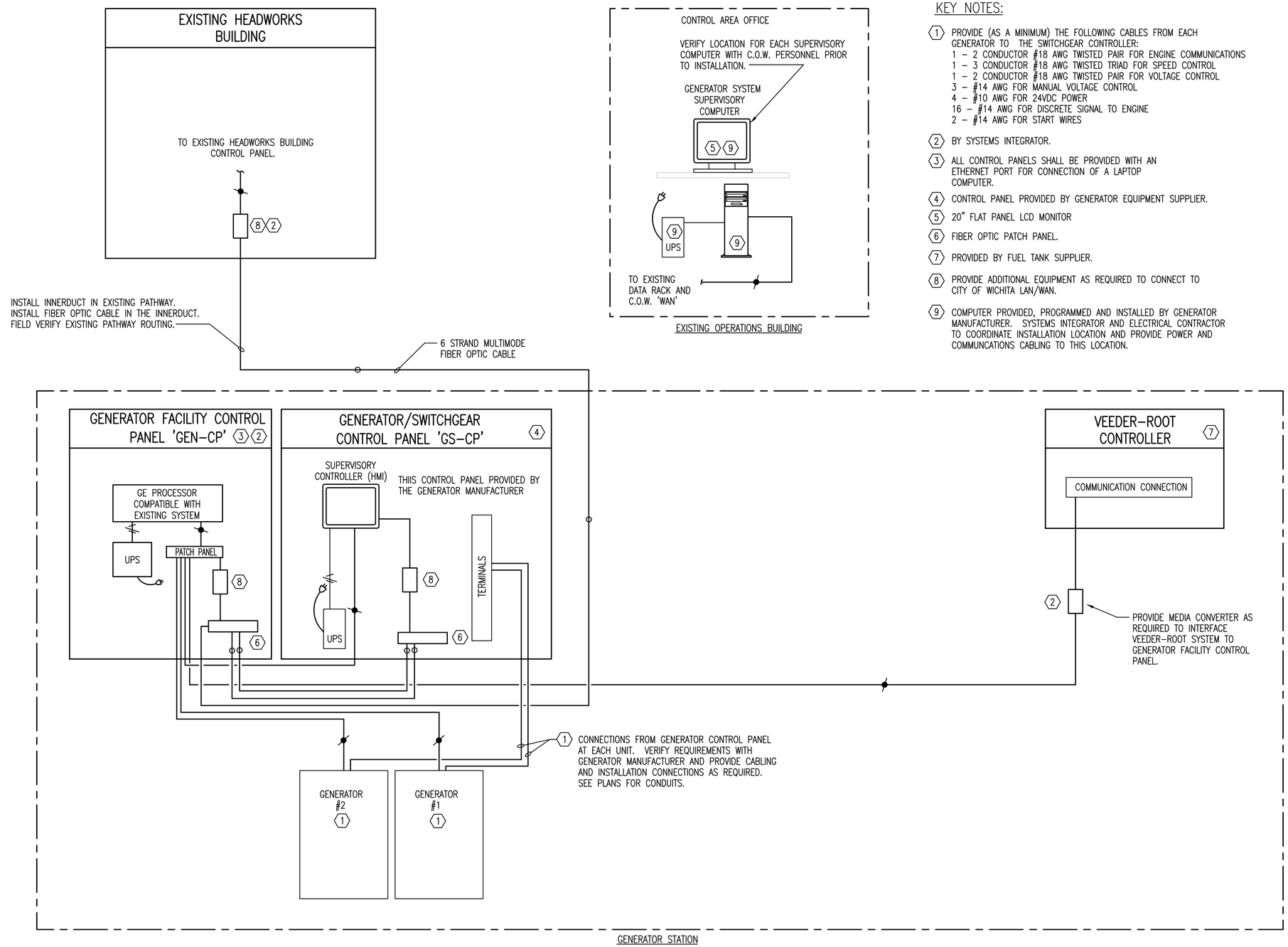

KEY NOTES:

1. PROVIDE (AS A MINIMUM) THE FOLLOWING CABLES FROM EACH GENERATOR TO THE SWITCHGEAR CONTROLLER:
   1 – 2 CONDUCTOR #18 AWG TWISTED PAIR FOR ENGINE COMMUNICATIONS
   1 – 3 CONDUCTOR #18 AWG TWISTED TRIAD FOR SPEED CONTROL
   1 – 2 CONDUCTOR #18 AWG TWISTED PAIR FOR VOLTAGE CONTROL
   3 – #14 AWG FOR MANUAL VOLTAGE CONTROL
   4 – #10 AWG FOR 24VDC POWER
   16 – #14 AWG FOR DISCRETE SIGNAL TO ENGINE
   2 – #14 AWG FOR START WIRES
2. BY SYSTEMS INTEGRATOR.
3. ALL CONTROL PANELS SHALL BE PROVIDED WITH AN ETHERNET PORT FOR CONNECTION OF A LAPTOP COMPUTER.
4. CONTROL PANEL PROVIDED BY GENERATOR EQUIPMENT SUPPLIER.
5. 20" FLAT PANEL LCD MONITOR
6. FIBER OPTIC PATCH PANEL.
7. PROVIDED BY FUEL TANK SUPPLIER.
8. PROVIDE ADDITIONAL EQUIPMENT AS REQUIRED TO CONNECT TO CITY OF WICHITA LAN/WAN.
9. COMPUTER PROVIDED, PROGRAMMED AND INSTALLED BY GENERATOR MANUFACTURER. SYSTEMS INTEGRATOR AND ELECTRICAL CONTRACTOR TO COORDINATE INSTALLATION LOCATION AND PROVIDE POWER AND COMMUNCATIONS CABLING TO THIS LOCATION.

FIBER OPTIC CABLE SPECIFICATIONS

A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
   1. ADC TELECOMMUNICATIONS, INC.
   2. BELDEN CDT INC.; ELECTRONICS DIVISION.
   3. BERK-TEK; A NEXANS COMPANY.
   4. COMMSCOPE, INC.
   5. MOHAWK; A DIVISION OF BELDEN CDT.
   6. SUPERIOR ESSEX INC.

B. DESCRIPTION:
   1. COMPLY WITH ICEA S-87-596 FOR MECHANICAL PROPERTIES.
   2. COMPLY WITH TIA/EIA-568-B.3 FOR PERFORMANCE SPECIFICATIONS.
   3. COMPLY WITH TIA/EIA-492AAAA-B (50/125 MICROMETER CABLE) OR TIA/EIA-492AAAA-A (62.5/125 MICROMETER CABLE) FOR DETAILED SPECIFICATIONS.
   4. LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION AS COMPLYING WITH UL 444, UL 1651, AND NFPA 70 FOR THE APPROPRIATE ENVIRONMENT IN WHICH IT IS INSTALLED.

C. MULTIMODE: 62.5/125-MICROMETER, MINIMUM 2-STRAND, LOOSE TUBE.
   1. OUTSIDE PLANT MULTIMODE CABLES SHALL NOT EXCEED THE RECOMMENDED DISTANCE OF 6560 FEET (2000 METERS).
   2. JACKET SHALL BE BLACK (OR AS DIRECTED BY OWNER) AND SHALL BE IMPRINTED WITH FIBER COUNT AND FIBER TYPE AT REGULAR INTERVALS NOT TO EXCEED 40 INCHES (1000 MM).

D. OPTICAL FIBER CABLE HARDWARE
   1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

A. ADC TELECOMMUNICATIONS, INC.
B. BELDEN CDT INC.; ELECTRONICS DIVISION.
C. BERK-TEK; A NEXANS COMPANY.
D. COMMSCOPE, INC.
E. HUBBELL PREMISE WIRING.
F. SIEMON CO. (THE).
   2. CABLE CONNECTING HARDWARE: SHALL HAVE THE FOLLOWING CHARACTERISTICS:

A. COMPLY WITH OPTICAL FIBER CONNECTOR INTERMATEABILITY STANDARDS (FOCIS) SPECIFICATIONS OF TIA/EIA-604-2, TIA/EIA-604-3-A, AND TIA/EIA-604-12. COMPLY WITH TIA/EIA-568-B.3.
B. QUICK-CONNECT, SIMPLEX AND DUPLEX, CONNECTORS.
C. HAVE A TERMINATION PROCESS, WHICH INCORPORATES USE OF A RELIABLE ANAEROBIC ADHESIVE, WHICH HAS A HIGH RESISTANCE TO ENVIRONMENTAL EXTREMES.
D. UTILIZE A PRECISION ZIRCONIA CERAMIC FERRULE.
E. HAVE A TYPICAL INSERTION LOSS NOT MORE THAN 0.5 DB VIA MANUAL POLISH METHOD OR 0.2 DB VIA AUTOMATIC FIBER POLISHER.
F. VERIFY ALL FIBER CONNECTOR TYPES WITH OWNER.

1 CONTROLS SCHEMATIC

NOT TO SCALE

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
1	ASI #1		5/26/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

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DATE: FEBRUARY, 2016

CITY OF WICHITA, KANSAS

CONTROLS SCHEMATIC

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	RWW	Job No.	34-14229-001-0042
Drawn by	CJV	Date	4/29/15

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CONTROL PANEL GEN-CP

LOCATION: GENERATOR STATION

CIRCUIT NO.	EQUIPMENT SERVED/ MARK	CONNECT				DESCRIPTION/FUNCTION	CONDUCTORS IN CABLE	DISCRETE	ANALOG	DIGITAL		REMARKS
		DEVICE	CTL. PNL	STARTER	VFD					INPUT	OUTPUT	
1	GEN 1	–	X	–	–	GENSET READY	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
2	GEN 1	–	X	–	–	GENSET RUNNING	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
3	GEN 1	–	X	–	–	GENSET FAIL	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
4	GEN 1	–	X	–	–	GENSET VOLTAGE	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
5	GEN 1	–	X	–	–	GENSET AMPS	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
6						SPACE	LAN	–	–	X	–	
7	GEN 2	–	X	–	–	GENSET READY	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
8	GEN 2	–	X	–	–	GENSET RUNNING	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
9	GEN 2	–	X	–	–	GENSET FAIL	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
10	GEN 2	–	X	–	–	GENSET VOLTAGE	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
11	GEN 2	–	X	–	–	GENSET AMPS	LAN	–	–	X	–	FROM GENERATOR CONTROL PANEL AT UNIT
12						SPACE	LAN	–	–	X	–	
13	GS CP	–	X	–	–	STEP 1 STEP LOAD AVAILABLE	LAN	–	–	X	–	FROM GENERATOR CONTROLLER
14	GS CP	–	X	–	–	STEP 2 STEP LOAD AVAILABLE	LAN	–	–	X	–	FROM GENERATOR CONTROLLER
15	GS CP	–	X	–	–	STEP 3 STEP LOAD AVAILABLE	LAN	–	–	X	–	FROM GENERATOR CONTROLLER
16	GS CP	–	X	–	–	STEP 4 STEP LOAD AVAILABLE	LAN	–	–	X	–	FROM GENERATOR CONTROLLER
17	GS CP	–	X	–	–	STEP 5 STEP LOAD AVAILABLE	LAN	–	–	X	–	FROM GENERATOR CONTROLLER
18						SPACE						
19	ALARM	–	X	–	–	LEAK DETECTION (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
20	ALARM	–	X	–	–	LOW LEVEL (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
21	ALARM	–	X	–	–	OVER–FILL (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
22	ALARM	–	X	–	–	SUDDEN LOSS (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
23	ALARM	–	X	–	–	HIGH WATER (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
24	ALARM	–	X	–	–	DELIVERY NEEDED (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
25	ALARM	–	X	–	–	TEST FAILURE (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
26	ALARM	–	X	–	–	TEST NO PERFORMED (VEEDER–ROOT CONTROLLER)	LAN	–	–	X	–	FUEL TANK CONTROL PANEL
27						SPACE						
28	ATS	–	X	–	–	ATS POSITION	1	X	–	X	–	
29												
30												

CONTROL PANEL NOTES:

1. CONDUIT FOR ANALOG CABLES SHALL TERMINATE IN EQUIPMENT ENCLOSURE AS CLOSE AS POSSIBLE TO THE TERMINALS. ANALOG CABLES SHALL NOT PASS NEAR TO CABLES OR EQUIPMENT OPERATING OVER 24V.
2. INTERNAL AND EXTERNAL I/O SHALL BE LANDED ON TERMINAL STRIPS.
3. I/O IDENTIFIED ON CONTROL DIAGRAM SHEETS ARE FOR INPUTS AND OUTPUTS EXTERNAL TO THE EQUIPMENT CONTROL PANEL. I/O NECESSARY FOR THE COMPLETE FUNCTIONALITY OF THE EQUIPMENT (INTERNAL I/O) SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT AND WIRING AS REQUIRED FOR COMPLETE FUNCTIONALITY OF EQUIPMENT AS SPECIFIED AND AS IDENTIFIED BY THE MANUFACTURER. COORDINATE FIELD WIRING REQUIREMENTS WITH EQUIPMENT MANUFACTURER.
4. ALL I/O SHOWN SHALL BE AVAILABLE AT THE MAIN HESS PUMP STATION CONTROL PANEL LOCATED IN THE HESS PUMP STATION.
5. THE SYSTEMS INTEGRATOR SHALL PROVIDE I/O CARDS FOR ALL FUTURE EQUIPMENT AND CONNECTIONS AS INDICATED WITHIN THE SCHEDULE IN ADDITION TO THE SPARE REQUIRED IN THE SPECIFICATIONS. NO WIRING WILL BE INSTALLED AS PART OF THIS PROJECT FOR THE FUTURE I/O. ALL FUTURE I/O SHALL BE LABELED AS SHOWN IN SCHEDULE AND SHALL BE WIRED INTERNAL TO THE CONTROL PANEL READY FOR FUTURE CONNECTION TO FIELD EQUIPMENT.

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CITY OF WICHITA, KANSAS

CONTROLS SCHEDULE

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468–84956

PEC
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Designed by RWW | Job No. 34–14229–001–0042
Drawn by CJV | Date 4/29/15
Sht. E0.15 of 37

Saved 04–04–2016 1:20:27 PM by CJV
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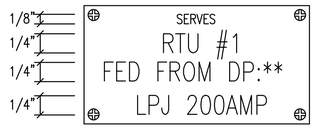
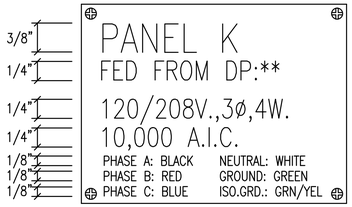
U:\Wichita–Fac\\2014\14229\001\Elec\Drawings\As–Builts\14229–001–E0.15 CONTROLS SCHEDULE

SWITCHBOARD/DISTRIBUTION PANEL/MOTOR CONTROL CENTER BREAKER/SWITCH

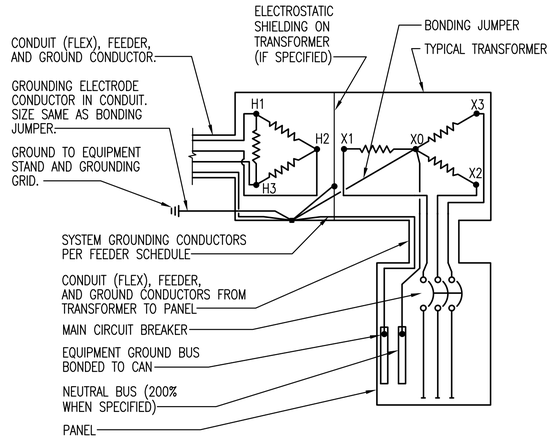


DISCONNECT SWITCH

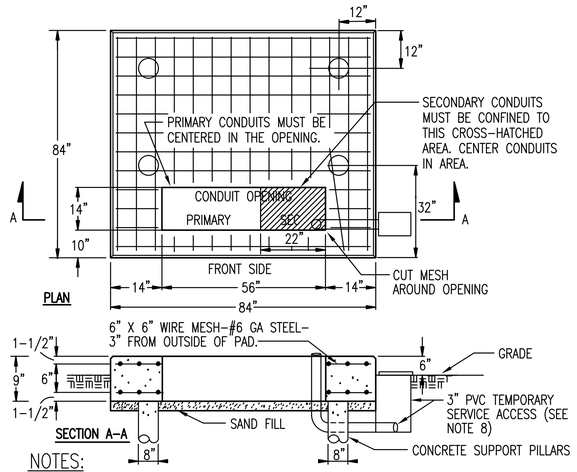


BRANCH CIRCUIT/DISTRIBUTION PANEL

1 TYPICAL NAME PLATES
NO SCALE



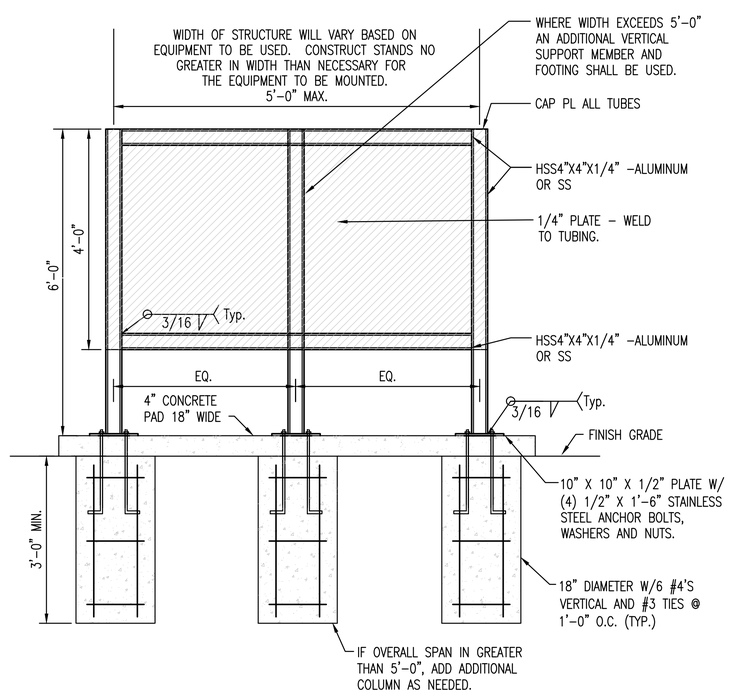
2 TYPICAL TRANSFORMER GROUNDING DETAIL
NO SCALE



NOTES:

1. VERIFY PAD LOCATION, DIMENSIONS & ALL REQUIREMENTS WITH LOCAL UTILITY CO.
2. THE TOP OF THE TRANSFORMER PAD SHALL RECEIVE A SMOOTH TROWEL FINISH. THE CORNERS AND EDGES SHALL BE ROUNDED OR BEVELLED.
3. THE CONCRETE SHALL BE A MINIMUM OF 3,000 LB. MIX.
4. CONTRACTOR SHALL EXTEND FORMS DOWN TO AT LEAST 3" BELOW AVERAGE GROUND LINE.
5. TOP OF CONDUITS SHALL BE FLUSH WITH TOP OF PAD.
6. THE CONDUIT OPENING SHALL BE FREE AND CLEAR OF CONCRETE.
7. PILLARS ARE FORMED BY AUGERING AN 8" DIAMETER HOLE TO A DEPTH OF UNDISTURBED EARTH. A SEPARATOR, SUCH AS TAR PAPER, SHOULD BE PLACED BETWEEN THE PILLAR AND THE PAD SO THE PAD CAN BE LEVELLED AT A LATER TIME IF NECESSARY.
8. VERIFY IF 3" PVC TEMPORARY SERVICE ACCESS IS REQUIRED. IF REQUIRED, CONDUIT TO EXTEND 1' TO 2' BEYOND EDGE OF PAD. DO NOT BACKFILL. USE 3/4" PLAYWOOD OR COMPARABLE COVER TO SECURE HOLE. CAP CONDUIT PRIOR TO BACKFILLING HOLE AT COMPLETION OF PROJECT.

6 TRANSFORMER PAD DETAIL
NO SCALE — 75-500KVA



CONTRACTOR OPTION TO FABRICATE ENTIRE STRUCTURE OF STAINLESS STEEL OR ALUMINUM. IF STAND IS CONSTRUCTED OF STAINLESS STEEL THE SAME TUBING, PLATE SIZES, AND WELDS SHALL BE USED.

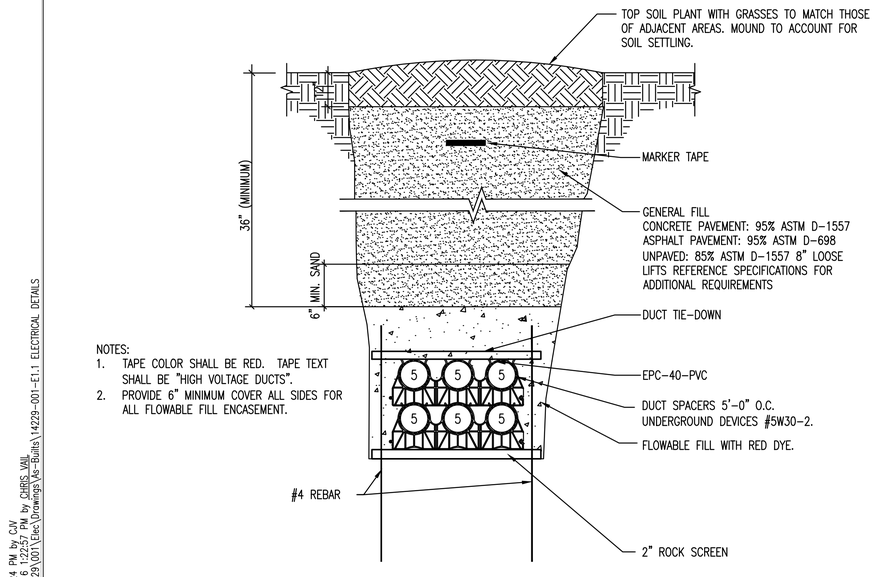
CONNECT ALL EQUIPMENT TO STRUCTURE USING STAINLESS STEEL BOLT AND/OR SCREWS.

IF ALUMINUM IS USED A 10" X 10" X 1/16" RUBBER PAD SHALL BE INSTALLED BETWEEN THE HOUSKEEPING PAD AND THE PLATES AT THE BOTTOM OF EACH STAND VERTICIAL MEMBER WHERE THEY ATTACH TO THE ANCHOR BOLTS

WHERE STANDS ARE TO BE INSTALLED ON THE INTERIOR OF THE PROCESS BUILDING, THE STANDS SHALL BE ANCHORED TO THE FLOOR WITH STAINLESS STEEL ANCHOR BOLTS EPOXIED IN PLACES IN LIEU OF PROVIDING FOUNDATIONS AS SHOWN.

WHERE STANDS ARE TO BE INSTALLED ON THE INTERIOR OF THE PROCESS BUILDING, THE STRUCTURE MAY BE CONSTRUCTED OF BACK-TO-BACK UNISTRUT FOR VERTICAL MEMBERS AND UNISTRUT FOR HORIZONTAL MEMBERS WITH A 1/4" PLATE INSTALLED FOR MOUNTING EQUPMENT ON. ALL MEMBERS SHALL BE EITHER ALUMINUM OR STAINLESS STEEL.

3 TYPICAL ELECTRICAL STRUCTURE DETAIL
NO SCALE

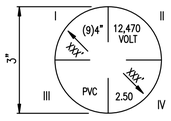


NOTES:
1. TAPE COLOR SHALL BE RED. TAPE TEXT SHALL BE "HIGH VOLTAGE DUCTS".
2. PROVIDE 6" MINIMUM COVER ALL SIDES FOR ALL FLOWABLE FILL ENCASEMENT.

4 DUCTBANK DETAIL - CONCRETE ENCASED
NO SCALE — 6-WAY

UNDERGROUND UTILITY MARKERS

DESCRIPTIONS:



PLAN

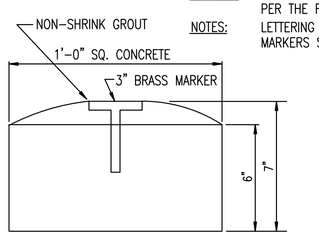
LEGEND/QUADRANT	CODE	ELECTRICAL
I	SIZE	QUANTITY AND SIZE
II	UTILITY	VOLTAGE OR COMM.
III	MATERIAL	RGS OR PVC
IV	DEPTH	DISTANCE, IN FEET, FROM TOP OF MARKER TO TOP OF UTILITY

UNDERGROUND UTILITY MARKERS

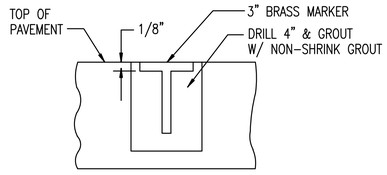
ARROW — DIRECTION(S) OF UTILITY WITH DISTANCES, XXX IN FEET, TO AND FROM ADJACENT MARKER(S) OR UTILITY STUB-UP(S).

MARKERS — SHALL BE LOCATED ON THE DRAWINGS, FURNISHED, AND INSTALLED PER THE FOLLOWING REQUIREMENTS:

NOTES: LETTERING SHALL BE STAMPED 1/4" BLOCK STYLE LETTERS. MARKERS SHALL BE A 3" FLAT BRASS SURVEY MARKER



SECTION - GRADE AREA



SECTION - PAVED AREA

NOTE:

PROVIDE MARKERS AT 100'-0" ON CENTER, AND AT ALL CHANGE IN DIRECTION, FOR ALL UNDERGROUND DUCTS AND CABLES.

5 UTILITY MARKER DETAIL
NO SCALE

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ELECTRICAL DETAILS

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C.O.W. PROJECT NO. 468-84956

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Drawn by	CJV	Date	4/29/15

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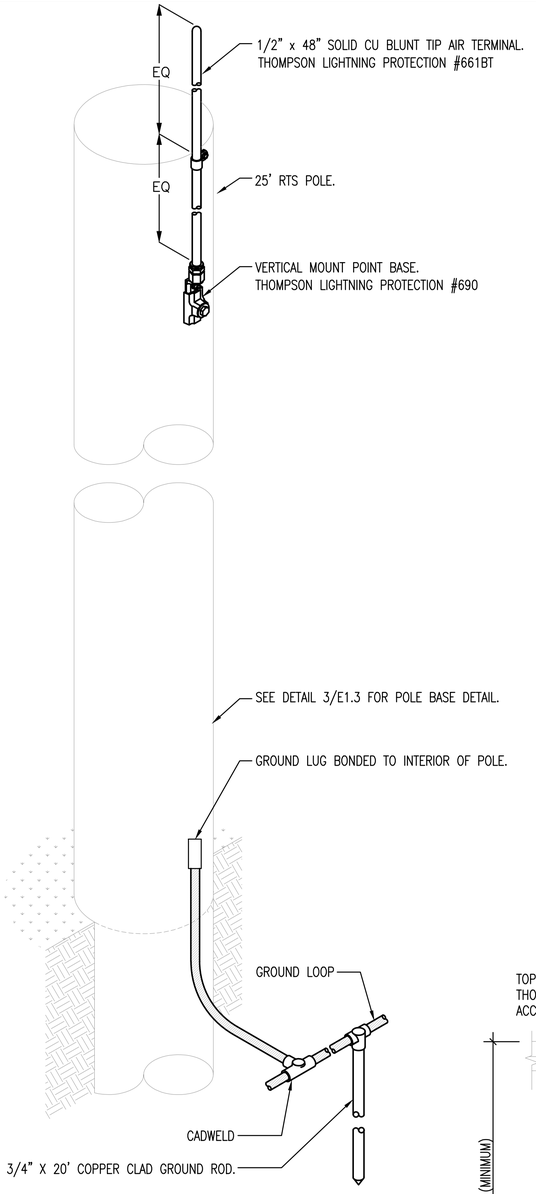
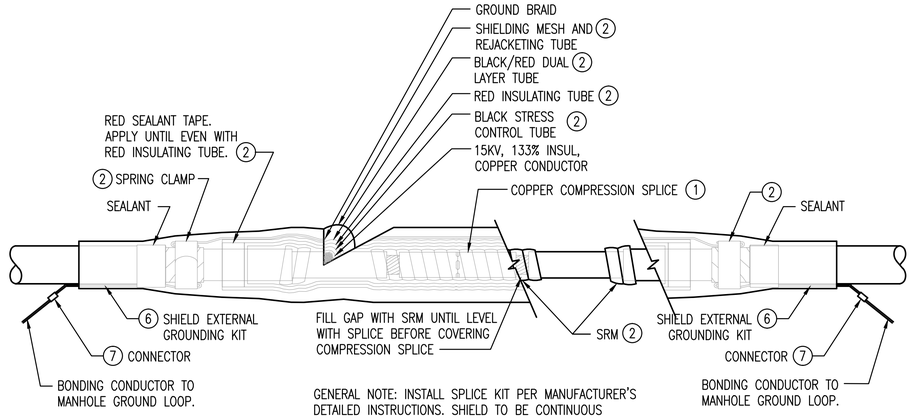


1 LIGHTNING PROTECTION POLE DETAIL
NOT TO SCALE

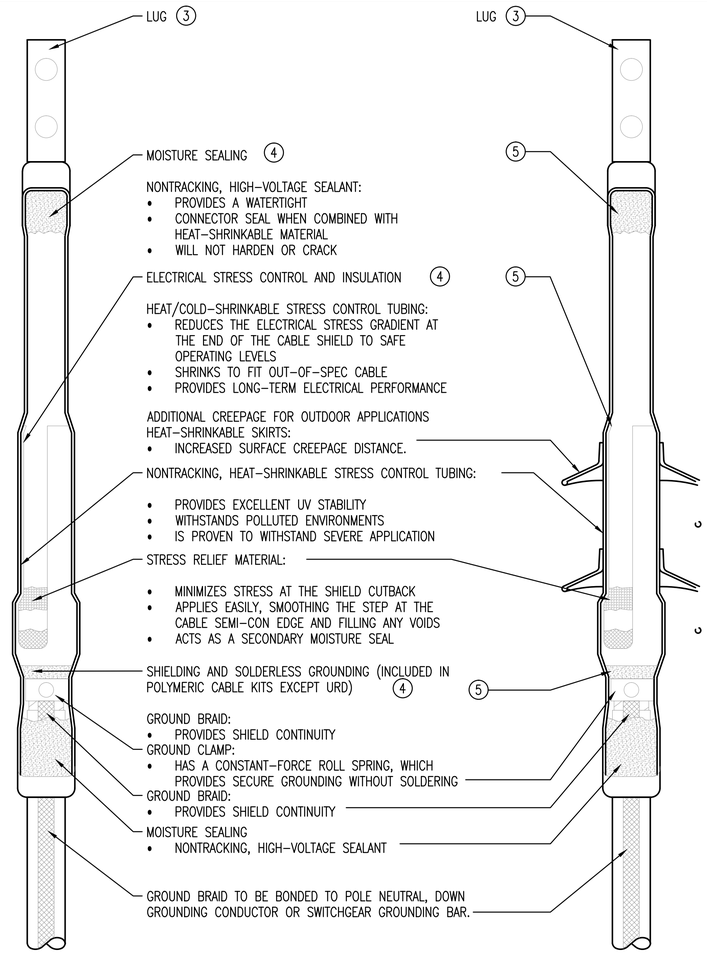
15KV SPLICE AND TERMINATION EQUIPMENT SCHEDULE

SYM	DESCRIPTION
1	COPPER COMPRESSION SPLICE CONNECTOR: COPPER ONLY, LONG BARREL TYPE, 15KV 90°C RATED WITH CENTER STOPS.
2	SPLICE FOR EXTRUDED DIELECTRIC (POLY/EPR) POWER CABLES: TYCO #HVS-1520S SERIES, HEAT-SHRINK TYPE, 15KV CLASS. PARTS; 1 BLACK STRESS CONTROL TUBE, 1 RED INSULATION TUBE, 1 BLACK/RED DUAL WALL TUBE, 1 BLACK REJACKETING TUBE, 1 COPPER BRAID, 2 ROLL SPRINGS, 1 INSTALLATION INSTRUCTION, 2 GROUND CONNECTORS, 4 STRIPS COPPER TAPE, 2 ANGLE-CUT STRIPS STRESS RELIEF MATERIAL LONG STRIPS STRESS RELIEF MATERIAL ROLL COPPER MESH STRIPS RED SEALANT.
3	COPPER LONG BARREL COMPRESSION TWO HOLE LUG: COPPER ONLY, LONG BARREL TYPE, 15KV 90°C.
4	INTERIOR POLYMERIC CABLE TERMINATOR: TYCO #HVT152-G SERIES, HEAT-SHRINK TYPE, 15KV CLASS.
5	OUTDOOR POLYMERIC CABLE TERMINATOR: TYCO #HVT152-SG SERIES, HEAT-SHRINK TYPE, 15KV CLASS.
6	EXTERNAL GROUNDING/SHIELD INTERRUPTING KIT: TYCO HVS-EG SERIES, GROUND BRAID AND SEALANT.
7	COMPRESSION CONNECTOR: COMPRESSION CONNECTOR FOR GROUND BRAID TO GROUNDING CONDUCTOR.



GENERAL NOTE: INSTALL SPLICE KIT PER MANUFACTURER'S DETAILED INSTRUCTIONS. SHIELD TO BE CONTINUOUS THROUGHOUT JOINT. DO NOT INTERRUPT SHIELD.

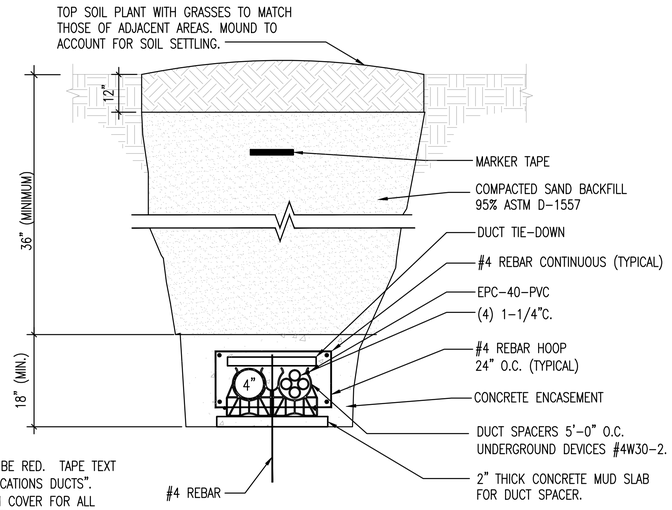
CABLE JOINT (SPLICE) DETAIL



SUBSTATION TERMINATION

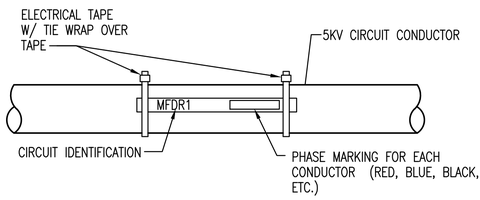
POLE SWITCH TERMINATION

2 15 KV SPLICE AND TERMINATION DETAIL
NOT TO SCALE



NOTES:
1. TAPE COLOR SHALL BE RED. TAPE TEXT SHALL BE "COMMUNICATIONS DUCTS".
2. PROVIDE 3" MINIMUM COVER FOR ALL CONCRETE ENCASEMENT.

3 2X1 4" COMMUNICATIONS DUCTBANK NON-PAVED LOCATIONS SECTION
NOT TO SCALE



TYPICAL FOR ALL EXISTING AND NEW CABLES IN THE WORK AREA

4 FEEDER CABLE IDENTIFICATION
NO SCALE

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ELECTRICAL DETAILS

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Drawn by	CJV	Date	4/29/15

Sht. E1.2 of 37

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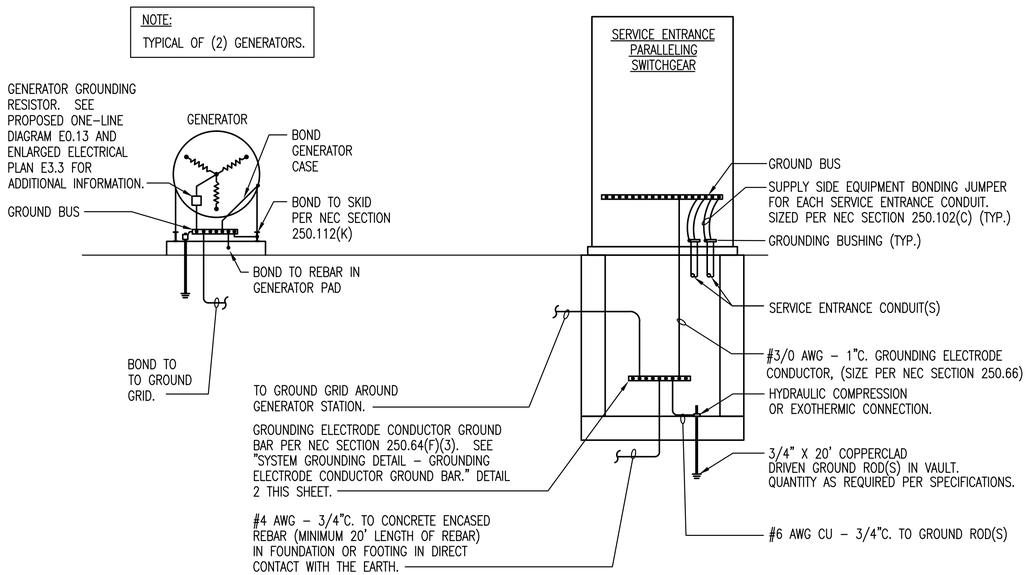
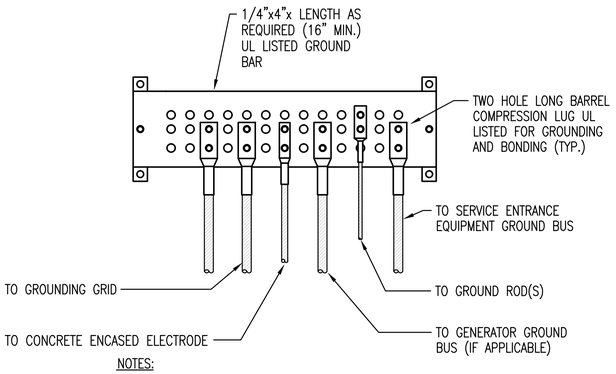
U:\Wichita-Fac\(2014\14229\001\Elec\Drawings\As-Builts\14229-001-E1.2 ELECTRICAL DETAILS



NOTES:

1. PROVIDE OTHER GROUNDING CONNECTIONS AS SPECIFIED IN NEC SECTION 250.50.
2. LABEL EACH GROUNDING ELECTRODE CONDUCTOR AND BONDING JUMPER.
3. WHERE CONDUCTORS ARE ROUTED IN FERROUS CONDUIT, BOND BOTH ENDS OF THE CONDUIT TO THE CONDUCTOR.

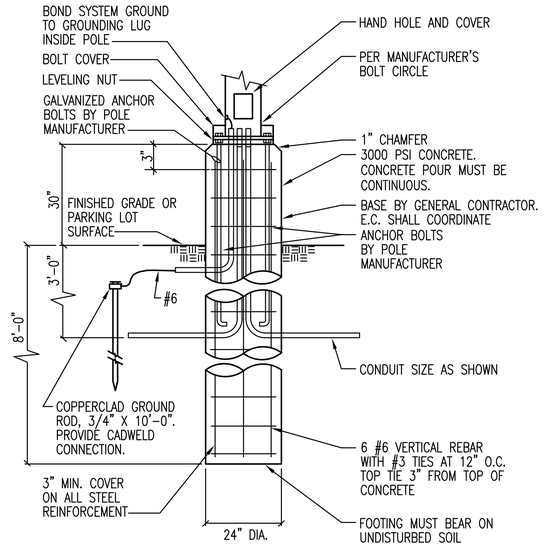
1 SYSTEM GROUNDING DETAIL
NO SCALE



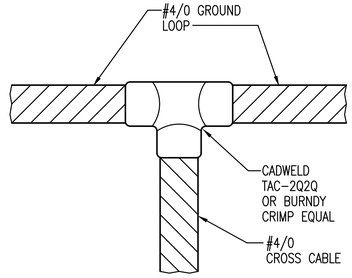
NOTES:

1. PROVIDE OTHER GROUNDING CONNECTIONS AS SPECIFIED IN NEC SECTION 250.50.
2. LABEL EACH GROUND CONDUCTOR TO INDICATE USE.
3. PROVIDE NON-FERROUS CONDUIT (SIZE AS NOTED) WHERE CONDUCTORS ARE SUBJECT TO PHYSICAL DAMAGE. IF FERROUS CONDUIT IS USED, BOND EACH END OF THE CONDUCTOR TO THE CONDUIT.

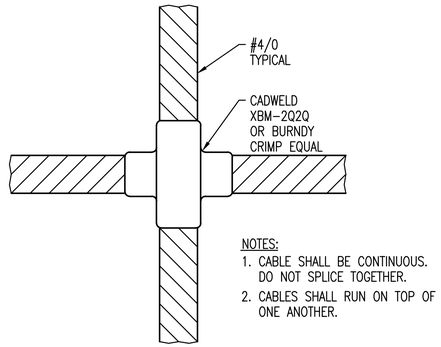
2 SYSTEM GROUNDING DETAIL - GROUNDING ELECTRODE CONDUCTOR GROUND BAR
NO SCALE



3 POLE BASE DETAIL
NO SCALE (30' MAX. POLE)



4 CABLE CONNECTION DETAIL
NO SCALE

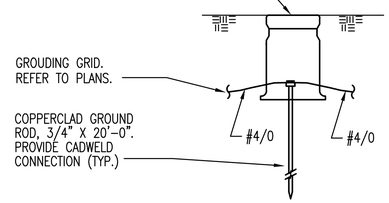


NOTES:

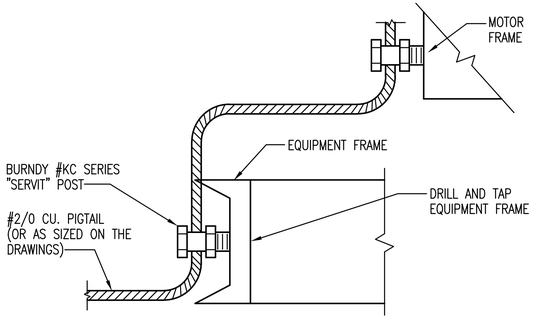
1. CABLE SHALL BE CONTINUOUS. DO NOT SPLICE TOGETHER.
2. CABLES SHALL RUN ON TOP OF ONE ANOTHER.

6 CABLE CONNECTION DETAIL
NO SCALE

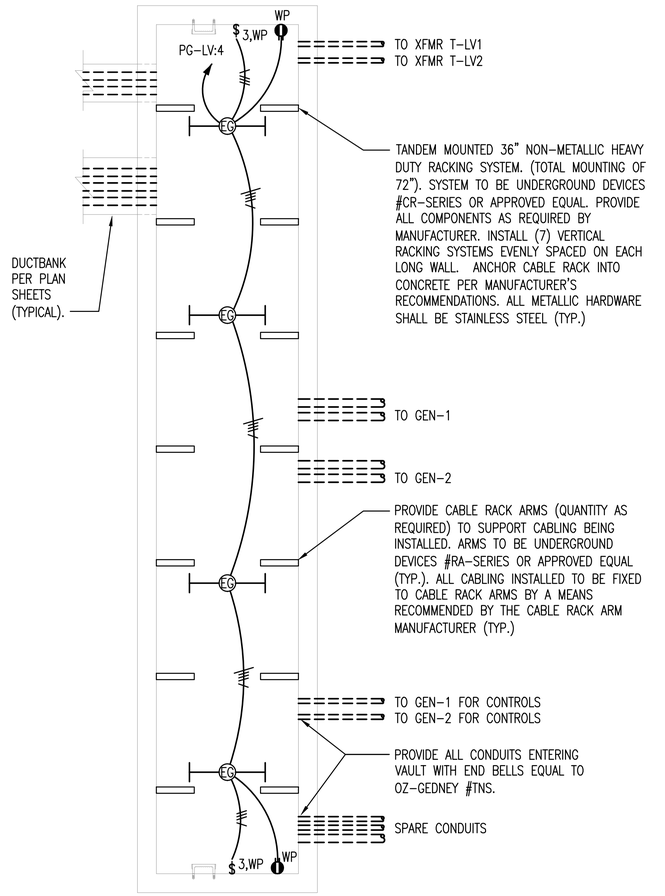
BROOKS PRODUCTS INC. 10-1/4"ø TRAFFIC BOX, CAT. #3-RT BODY AND CAST IRON COVER TO BE FLUSH WITH FINISH GRADE. COVER SHALL BE MARKED 'GROUND ROD'.



5 GROUNDING SYSTEM TEST WELL
NO SCALE



7 EQUIPMENT BONDING DETAIL
NO SCALE



A VAULT ELECTRICAL PLAN
0' 4' 8' 12'
1/8"=1'-0"

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
1	ASI #1		5/26/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

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DATE: FEBRUARY, 2016

CITY OF WICHITA, KANSAS

ELECTRICAL DETAILS

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	RWW	Job No.	34-14229-001-0042
Drawn by	CJV	Date	4/29/15

Sht. E1.3 of 37

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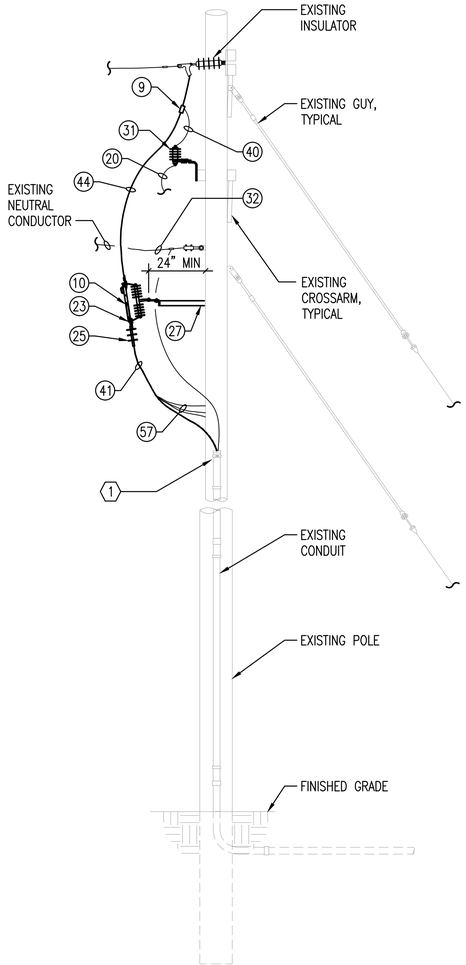
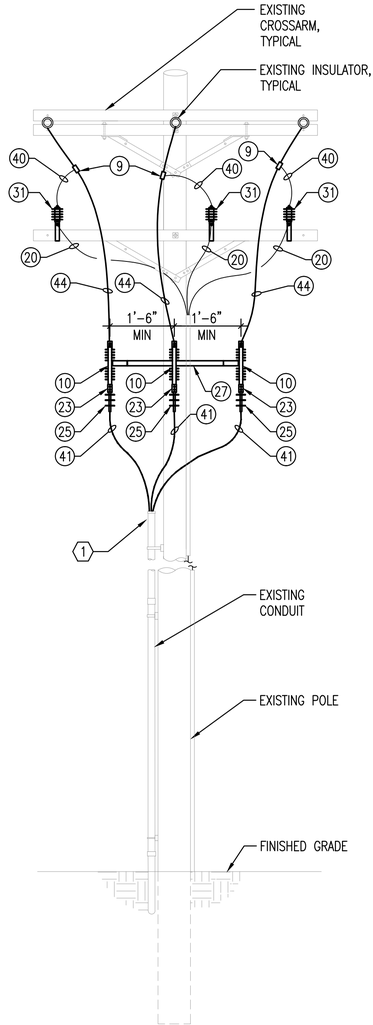
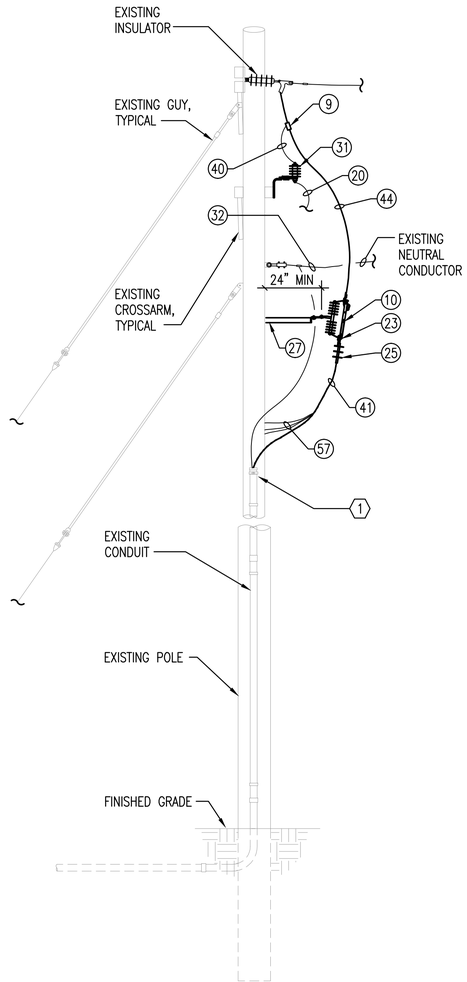


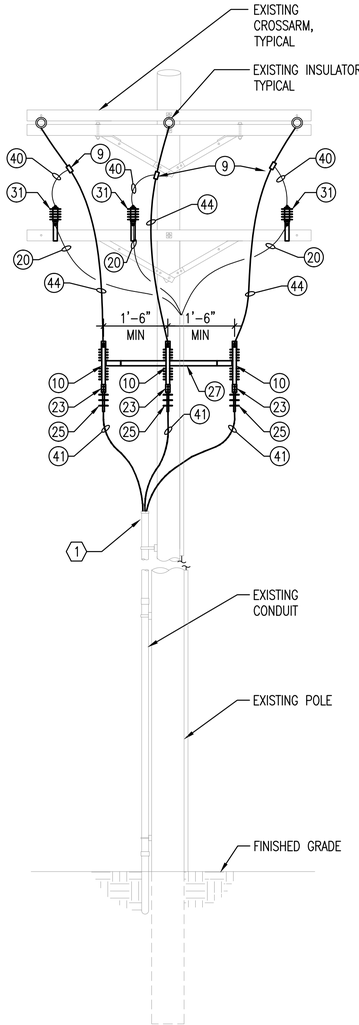
LONGITUDINAL ELEVATION



TRANSVERSE ELEVATION



LONGITUDINAL ELEVATION



TRANSVERSE ELEVATION

SCHEDULE OF POLE EQUIPMENT

NO.	DESCRIPTION
1	WOOD POLE, SEE POLE HEIGHT SCHEDULE
2	POLE BAND
4	INSULATOR, PIN TYPE, NEMA CLASS 54–1L, 15KV
5	PIN
6	INSULATOR, SUSPENSION TYPE, NEMA CLASS 52–1 OR 52–9, 15KV
7	EXTENSION LINK
8	QUADRANT STRAIN CLAMP, DEAD END (DISTRIBUTION)
9	TEE CONNECTOR, ALUMINUM; COMPRESSION
10	600A, 15.5KV SINGLE INSULATOR HOOK DISCONNECT SWITCH
11	CROSSARM ASSEMBLEY
12	5/8" LOCK NUT
20	EXISTING GROUND CONNECTION #4 CU. TO POLE GROUND
22	BOLT, DOUBLE ARMING, 5/8" X REQ. LENGTH
23	TWO HOLE, LONG BARREL COMPRESSION LUG
25	15KV CABLE TERMINATOR
26	STAPLES, INSTALL 2'–6" O.C.
27	SWITCH MOUNTING BRACKET
30	EYE NUT; 5/8"
31	SURGE ARRESTOR; MOV, 9.0 KV MCOV
32	EXISTING #4/0 CU NEUTRAL, BOND TO O.H. NEUTRAL
33	#4 SOLID CU WIRE, GROUND
34	GROUNDING JUMPER, #4 COPPER
35	MOULDING; 1/2"
38	STAND–OFF BRACKET, FOR CONDUIT SUPPORT
40	EXISTING CONDUCTOR – 4/0 DAISY AAC CONDUCTOR TO CORNER POLE (ALLOWABLE AMPACITY 403A BASED ON AMBIENT 25'C, CONDUCTOR 75'C, WIND 2 FT/SEC, SUN
41	EXISTING 3#500KCMIL CU, #4/0 GND 15KV EPR 133% POWER SHIELDED CABLE, TYPE MV–105
42	5" RGS CONDUIT
43	5" PVC COATED RGS ELBOW AND RISER TO BE ABOVE GRADE
44	CONDUCTOR – 447 ACSR PELICAN TO CORNER POLE (ALLOWABLE AMPACITY 646A BASED ON AMBIENT 25'C, CONDUCTOR 75'C, WIND 2 FT/SEC, SUN)
45	GUY WIRE
46	CONDUIT – SCHEDULE 40 PVC
47	PVC TO RGS CONDUIT COUPLING
48	PVC COATED RGS CONDUIT COUPLING
49	ROD, GROUND, 5/8" MIN. DIAMETER
50	CONCRETE ENCASES EPC–40–PVC, 5"
51	NEUTRAL CONDUCTOR – 4/0 ACSR PENGUIN
52	5/8" X AS REQ. LENGTH DIA. BOLT
53	CONDUIT/PIPE HANGER
54	EYENUT
56	13/16" SQ. WASHER
57	EXISTING #4 CU BONDING CONDUCTORS TO TAPE SHIELD
60	SEAL TOP OF CONDUIT
61	COPPER COMPRESSION CONNECTOR
62	ANCHORS, SHACKLE
63	CABLE SUPPORT
64	EYE SCREW, ELLIPTICAL OR DRIVE HOOK
65	CLAMP, GROUND ROD
66	INSULATRO, PIN TYPE, NEMA CLASS 54–1L, 15kV, WHITE
67	LETTERS, 2" C, 2" N, WITH 1" NAILS
68	5" PVC COATED RGS CONDUIT
69	CONCRETE ENCASEMENT
70	BUTT GROUND
71	HIGH STRENGTH DOUBLE CROSSARM

GENERAL NOTES:

1. COORDINATE ALL OVERHEAD WORK WITH UTILITY COMPANY.
2. COORDINATE ALL POWER OUTAGES WITH OWNER AND UTILITY COMPANY. REFERENCE SPECIFICATIONS.

KEYED NOTES:

1 CUT BACK CONDUIT AS REQUIRED TO ALLOW ROOM FOR MEDIUM VOLTAGE CUTOUTS AND STANDOFF. PROVIDE BUSHING ON END OF CONDUIT.

1 POLE NORTH ELEVATIONS

NO SCALE

SCOPE OF WORK:

1. REMOVE EXISTING SURGE ARRESTORS.
2. UNTERMINATE MEDIUM VOLTAGE FEEDERS SERVING THE PLANT.
3. PROVIDE FUSED CUTOUTS, MOUNTING BRACKETS, AND 9.0 KV SURGE ARRESTORS AS SHOWN.
4. RECONNECT EXISTING MEDIUM VOLTAGE FEEDERS SERVING THE PLANT TO PROPOSED CUTOUTS.
5. PROVIDE MEDIUM VOLTAGE CONDUCTORS FROM EXISTING INSULATORS TO PROPOSED CUTOUTS.
6. PROVIDE ALL HARDWARE AS REQUIRED FOR A COMPLETE INSTALLATION.

2 POLE SOUTH ELEVATIONS

NO SCALE

No.	Revision	By	Date
6	ASI #6		6/30/15
5	ASI #5		6/25/15
4	ASI #4		6/18/15
3	ASI #3		6/10/15
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1	ASI #1		4/29/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

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DATE: FEBRUARY, 2016

CITY OF WICHITA, KANSAS

ELECTRICAL DETAILS

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468–84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA WICHITA, KS 67202
316-262-2691 www.pec1.com

Designed by	RWW	Job No.	34–14229–001–0042
Drawn by	CJV	Date	4/29/15

Sht. E1.4 of 37

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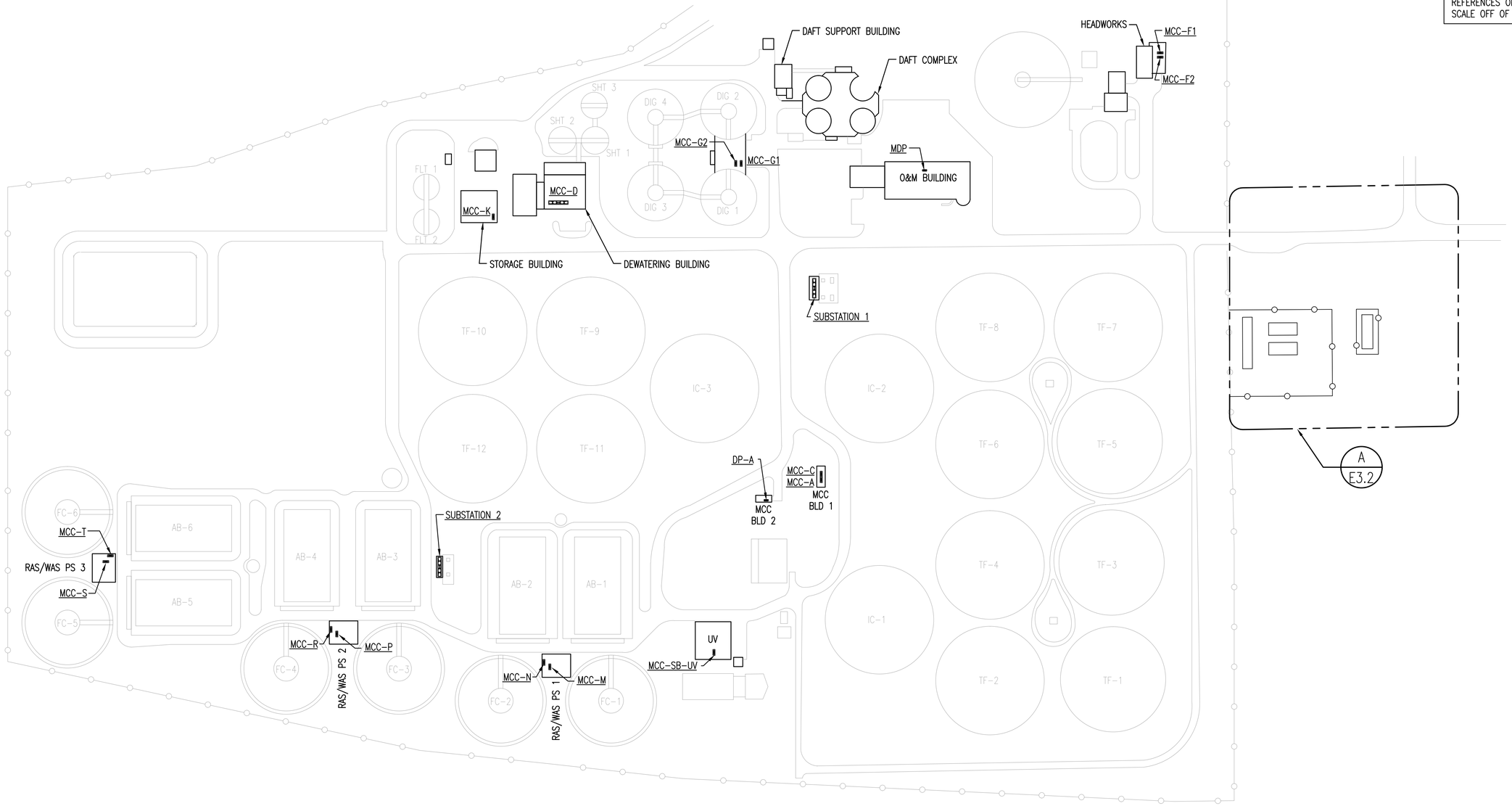
THIS PLAN IS FOR LOCATION REFERENCES ONLY. DO NOT SCALE OFF OF THESE DRAWINGS.



A ELECTRICAL SITE MAP

NO SCALE

No.	Revision	By	Date
4	ASI #6		6/30/15
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2	ASI #2		6/18/15
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CITY OF WICHITA, KANSAS

ELECTRICAL SITE MAP

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Drawn by	CJV	Date	4/29/15

Sht. E3.1 of 37

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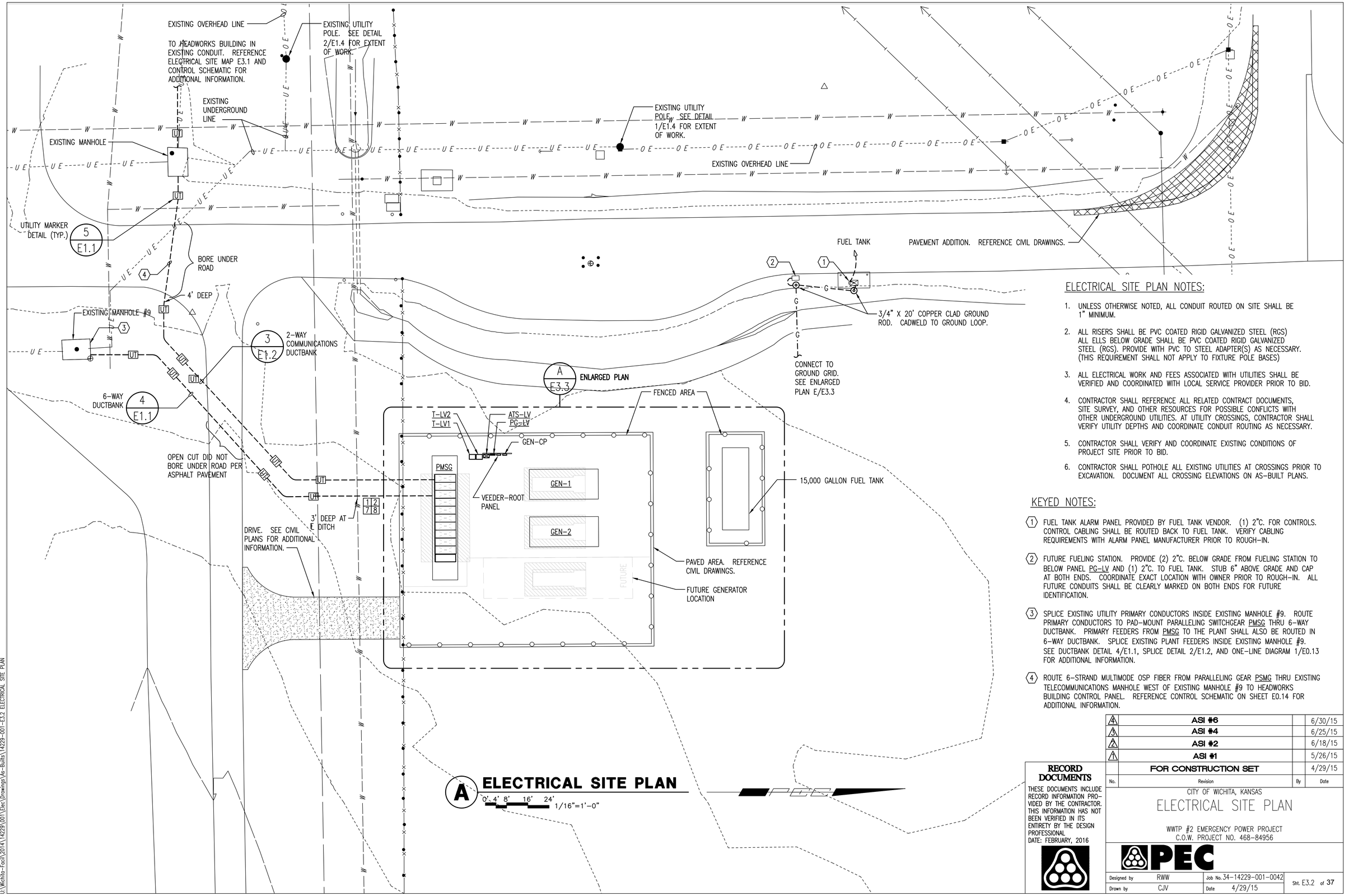

ELECTRICAL SITE PLAN NOTES:

1. UNLESS OTHERWISE NOTED, ALL CONDUIT ROUTED ON SITE SHALL BE 1" MINIMUM.
2. ALL RISERS SHALL BE PVC COATED RIGID GALVANIZED STEEL (RGS) ALL ELLS BELOW GRADE SHALL BE PVC COATED RIGID GALVANIZED STEEL (RGS). PROVIDE WITH PVC TO STEEL ADAPTER(S) AS NECESSARY. (THIS REQUIREMENT SHALL NOT APPLY TO FIXTURE POLE BASES)
3. ALL ELECTRICAL WORK AND FEES ASSOCIATED WITH UTILITIES SHALL BE VERIFIED AND COORDINATED WITH LOCAL SERVICE PROVIDER PRIOR TO BID.
4. CONTRACTOR SHALL REFERENCE ALL RELATED CONTRACT DOCUMENTS, SITE SURVEY, AND OTHER RESOURCES FOR POSSIBLE CONFLICTS WITH OTHER UNDERGROUND UTILITIES. AT UTILITY CROSSINGS, CONTRACTOR SHALL VERIFY UTILITY DEPTHS AND COORDINATE CONDUIT ROUTING AS NECESSARY.
5. CONTRACTOR SHALL VERIFY AND COORDINATE EXISTING CONDITIONS OF PROJECT SITE PRIOR TO BID.
6. CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES AT CROSSINGS PRIOR TO EXCAVATION. DOCUMENT ALL CROSSING ELEVATIONS ON AS-BUILT PLANS.

KEYED NOTES:

1. FUEL TANK ALARM PANEL PROVIDED BY FUEL TANK VENDOR. (1) 2"C. FOR CONTROLS. CONTROL CABLING SHALL BE ROUTED BACK TO FUEL TANK. VERIFY CABLING REQUIREMENTS WITH ALARM PANEL MANUFACTURER PRIOR TO ROUGH-IN.
2. FUTURE FUELING STATION. PROVIDE (2) 2"C. BELOW GRADE FROM FUELING STATION TO BELOW PANEL PC-LV AND (1) 2"C. TO FUEL TANK. STUB 6" ABOVE GRADE AND CAP AT BOTH ENDS. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN. ALL FUTURE CONDUITS SHALL BE CLEARLY MARKED ON BOTH ENDS FOR FUTURE IDENTIFICATION.
3. SPLICE EXISTING UTILITY PRIMARY CONDUCTORS INSIDE EXISTING MANHOLE #9. ROUTE PRIMARY CONDUCTORS TO PAD-MOUNT PARALLELING SWITCHGEAR PMSG THRU 6-WAY DUCTBANK. PRIMARY FEEDERS FROM PMSG TO THE PLANT SHALL ALSO BE ROUTED IN 6-WAY DUCTBANK. SPLICE EXISTING PLANT FEEDERS INSIDE EXISTING MANHOLE #9. SEE DUCTBANK DETAIL 4/E1.1, SPLICE DETAIL 2/E1.2, AND ONE-LINE DIAGRAM 1/E0.13 FOR ADDITIONAL INFORMATION.
4. ROUTE 6-STRAND MULTIMODE OSP FIBER FROM PARALLELING GEAR PSMG THRU EXISTING TELECOMMUNICATIONS MANHOLE WEST OF EXISTING MANHOLE #9 TO HEADWORKS BUILDING CONTROL PANEL. REFERENCE CONTROL SCHEMATIC ON SHEET E0.14 FOR ADDITIONAL INFORMATION.

No.	Revision	By	Date
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	FOR CONSTRUCTION SET		4/29/15

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CITY OF WICHITA, KANSAS

ELECTRICAL SITE PLAN

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC

Designed by	RWW	Job No. 34-14229-001-0042	Sht. E3.2 of 37
Drawn by	CJV	Date 4/29/15	

A ELECTRICAL SITE PLAN
0' 4' 8' 16' 24' 1/16"=1'-0"

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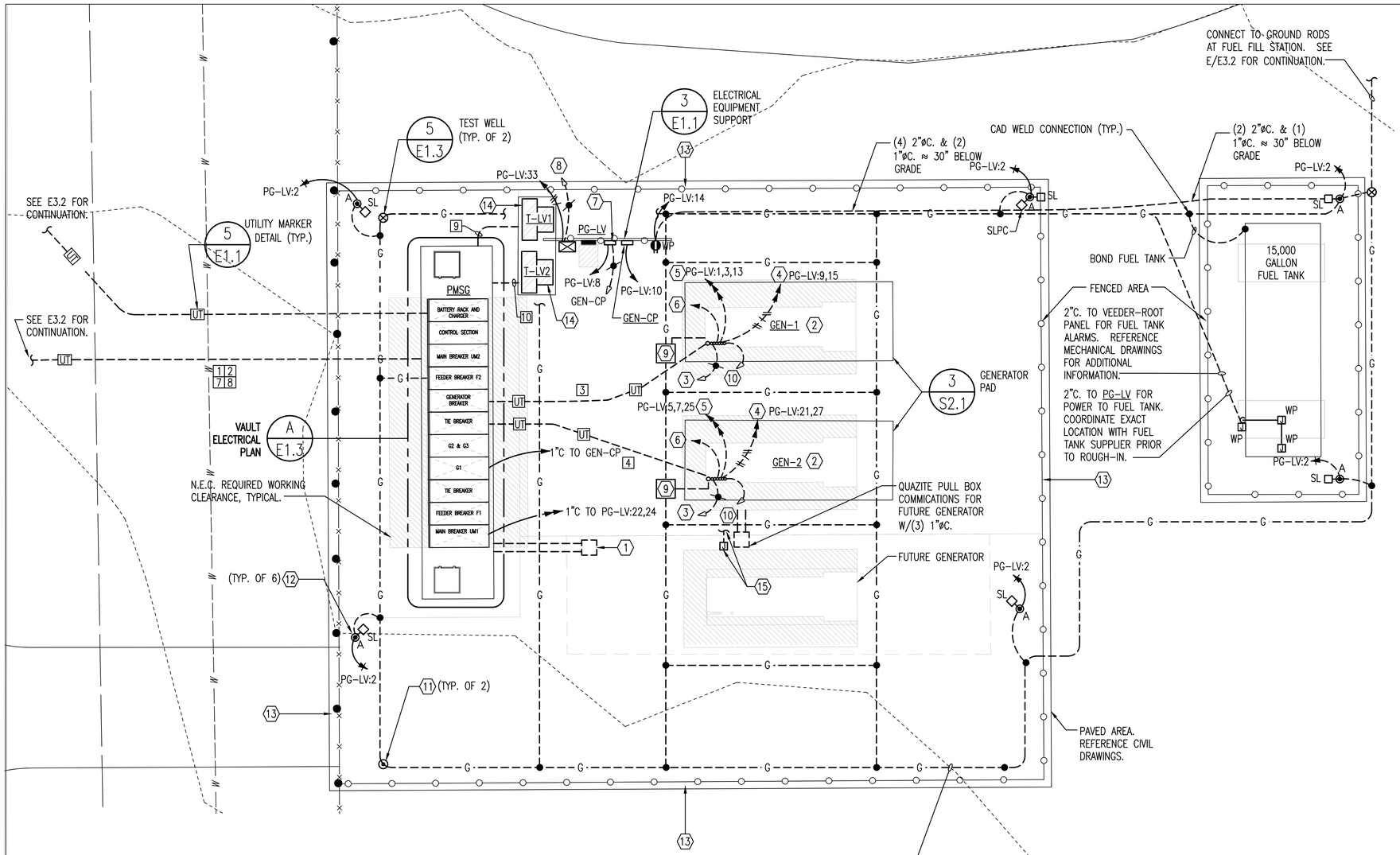
U:\Wichita-Fac\\2014\14229\001\Elec\Drawings\As-Builts\14229-001-E3.2 ELECTRICAL SITE PLAN



KEYED NOTES:

1. PROVIDE IN-GRADE WEATHERPROOF JUNCTION BOX IN UNPAVED AREA FOR CONNECTION TO FUTURE GENERATOR. PROVIDE (1) SPARE 4", (1) SPARE 2", AND (6) SPARE 1" CONDUITS WITH PULL ROPES FROM JUNCTION BOX TO PAD-MOUNTED SWITCHGEAR VAULT. CAP BOTH ENDS.
2. VERIFY EXACT LOCATION OF ALL CONDUITS BEING STUBBED UP FROM BELOW GENERATOR WITH GENERATOR MANUFACTURER PRIOR TO ROUGH-IN.
3. 2"C. FROM GENERATOR CONTROLLER TO PMSG CONTROLS FOR CONTROL AND MONITORING OF GENERATOR. VERIFY EXACT CONDUIT AND CABLING REQUIREMENTS WITH GENERATOR MANUFACTURER PRIOR TO ROUGH-IN.
4. 6#12,#12G IN 1"C. FOR BLOCK HEATER. VERIFY CONDUCTOR, CONDUIT, AND OVERCURRENT SIZE WITH EQUIPMENT PROVIDED.
5. 4#12,#12G IN 1"C. FOR BATTERY CHARGERS. VERIFY CONDUCTOR, CONDUIT, AND OVERCURRENT SIZE WITH EQUIPMENT PROVIDED.
6. 2-1" CONDUITS TO PMSG FOR AC AND DC CONTROL.
7. VEEDER-ROOT TANK AND PIPING MONITORING CONTROL PANEL IN NEMA 4 ENCLOSURE. PROVIDE ALL CONDUIT AND WIRING REQUIRED FROM CONTROL PANEL TO THE 15,000 GALLON ABOVE GROUND DIESEL FUEL STORAGE TANK FOR MONITORING AND CONTROLS. CONTROL PANEL SHALL PROVIDE CONTINUOUS LEAK SENSING FOR INTERSTITIAL SPACE, PIPING SUMP, LEAK, OVERFILL, LOW LEVEL, SUDDEN LOSS, HIGH WATER, DELIVERY NEEDED, TEST FAILURE, TANK TEST NOT PERFORMED, AND LEVEL SENSING. UNIT SHALL COMMUNICATE WITH GEN-CP VIA MODBUS TCP/IP COMMUNICATION INTERFACE. COORDINATE COMMUNICATIONS INTERFACE WITH SYSTEMS INTEGRATOR.
8. 1"C. WITH 2#14 FROM ATS TO GEN-CP FOR CONTROL AND MONITORING OF HOUSE PANEL ATS. VERIFY EXACT CONDUIT AND CABLING REQUIREMENTS WITH ATS MANUFACTURER PRIOR TO ROUGH-IN.
9. RESISTOR FOR GENERATOR MOUNTED INSIDE GENERATOR ENCLOSURE. COORDINATE MOUNTING WITH GENERAL CONTRACTOR AND GENERATOR MANUFACTURER. ROUTE #4 AWG GROUND CONDUCTOR IN 1" CONDUIT TO GROUNDING GRID BELOW GRADE. PROVIDE CADWELD CONNECTION TO GROUNDING GRID. SEE 1/E1.3 FOR SYSTEM GROUNDING DETAIL.
10. 1" C. FROM GENERATOR CONTROLLER TO GEN-CP FOR MONITORING OF GENERATOR.
11. 3/4" X 20' COPPER CLAD GROUND ROD. CADWELD TO GROUND LOOP.
12. 'A': 25' RTS POLE WITH SOLID COPPER AIR TERMINAL AND BARE COPPER GROUND TO GROUND LOOP. SEE DETAIL 1/E1.2 FOR ADDITIONAL INFORMATION. VERIFY ALL REQUIREMENTS AND QUANTITIES WITH LIGHTNING PROTECTION DESIGNER PRIOR TO BID. PROPOSED LAYOUT DESIGNED AROUND THOMPSON LIGHTNING PROTECTION.
13. CAUTION SIGN PER 263213.
14. 8" CONCRETE EQUIPMENT PAD ON 12" LVC. REINFORCE CONCRETE WITH #4 AT 12" O.C.. REFERENCE STRUCTURAL GENERAL NOTES FOR CONCRETE REQUIREMENTS.
15. PROVIDE IN-GRADE WEATHERPROOF JUNCTION BOX IN UNPAVED AREA FOR CONNECTION TO FUTURE GENERATOR. ROUTE (1) 2" PVC FOR COMM CABLE, (1) 1" PVC FOR AC CONTROL SIGNALS, AND (1) 1" PVC FOR DC CONTROL SIGNALS TO GEN-2 AND FROM GEN-1 TO GEN-2. STUB UP 4" ABOVE SLAB.

ELECTRICAL SITE PLAN NOTES:

1. UNLESS OTHERWISE NOTED, ALL CONDUIT ROUTED ON SITE SHALL BE 1" MINIMUM.
2. ALL RISERS SHALL BE PVC COATED RIGID GALVANIZED STEEL (RGS) ALL ELLS BELOW GRADE SHALL BE PVC COATED RIGID GALVANIZED STEEL (RGS). PROVIDE WITH PVC TO STEEL ADAPTER(S) AS NECESSARY. (THIS REQUIREMENT SHALL NOT APPLY TO FIXTURE POLE BASES)
3. ALL ELECTRICAL WORK AND FEES ASSOCIATED WITH UTILITIES SHALL BE VERIFIED AND COORDINATED WITH LOCAL SERVICE PROVIDER PRIOR TO BID.
4. CONTRACTOR SHALL REFERENCE ALL RELATED CONTRACT DOCUMENTS, SITE SURVEY, AND OTHER RESOURCES FOR POSSIBLE CONFLICTS WITH OTHER UNDERGROUND UTILITIES. AT UTILITY CROSSINGS, CONTRACTOR SHALL VERIFY UTILITY DEPTHS AND COORDINATE CONDUIT ROUTING AS NECESSARY.
5. CONTRACTOR SHALL VERIFY AND COORDINATE EXISTING CONDITIONS OF PROJECT SITE PRIOR TO BID.
6. ALL ELECTRICAL EQUIPMENT SHALL BE BONDED TO THE GROUNDING GRID.

A ENLARGED ELECTRICAL SITE PLAN

0' 4' 8' 12' 1/8"=1'-0"

No.	Revision	By	Date
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ENLARGED SITE PLAN

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

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Designed by	RWW	Job No.	34-14229-001-0042
Drawn by	CJV	Date	4/29/15

Sht. E3.3 of 37

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GENERAL STRUCTURAL NOTES

A. DESIGN CRITERIA

1. BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC), 2006 EDITION, INCLUDING LOCAL SUPPLEMENTS.

2. GRAVITY LOADS:

LOCATION	LIVE LOAD	DEAD LOAD*
VAULT COVER	200 PSF	5 PSF

*DEAD LOAD WHICH IS SUPERIMPOSED ONTO ACTUAL STRUCTURAL WEIGHTS.

3. SOIL LOADS

SOIL WEIGHT:	120 PCF
EXTERNAL SOIL PRESSURE	90 PCF (SATURATED)

B. SOIL PREPARATION AND FOUNDATIONS

1. THE FOUNDATION SYSTEM IS DESIGNED AS RECOMMENDED IN THE GEOTECHNICAL INVESTIGATION PREPARED BY ALLIED LABORATORIES JOB NO. 74-14229-001-0147. A COPY IS IN THE SPECIFICATIONS OR IS AVAILABLE FOR INSPECTION AT THE ENGINEER'S PLACE OF BUSINESS.

2. REMOVE TOP SOIL CONTAINING ORGANIC MATERIAL AND PREPARE THE BUILDING PAD IN ACCORDANCE WITH THE CIVIL ENGINEERING PLANS, SPECIFICATIONS, AND GEOTECHNICAL INVESTIGATION.

3. REMOVE SOIL AS REQUIRED TO ALLOW FOR A LOW VOLUME CHANGE ZONE 18" THICK UNDER SLABS. FILL TO SUBGRADE ELEVATION SHOWN ON THE DRAWINGS WITH NON-EXPANSIVE FILL OR STABILIZED SOIL PER SPECIFICATION.

4. SOIL SUPPORTED FOUNDATIONS:

   A. DESIGN BEARING PRESSURE (NET) IS 1500 PSF FOR FOUNDATIONS BEARING ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL MATERIAL.

   B. ALL FOUNDATIONS ARE DESIGNED WITH EARTH FORMED SIDES; THE TOP 7⅛" OF THE FOUNDATION SHALL BE FORMED TO THE DESIGN DIMENSION WHEN VISIBLE AFTER CONSTRUCTION IS COMPLETE. THE CONSTRUCTED FOUNDATION DIMENSION SHALL BE NO LESS THAN THE DESIGN DIMENSION, AND NO MORE THAN 6" GREATER THAN THE DESIGN DIMENSION.

5. DO NOT BACKFILL FOUNDATION WALLS UNTIL THE RESTRAINING COVER SLAB OR ADEQUATE BRACING ARE IN PLACE AND CONCRETE STRENGTH HAS REACHED 75% OF DESIGN STRENGTH. ALL BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION.

C. CONCRETE

1. ALL STRUCTURAL CONCRETE HAS BEEN DESIGNED IN ACCORDANCE WITH THE ACI 318 AND THE BUILDING CODE, AND IN CONFORMANCE WITH THE CURRENT "ACI MANUAL OF CONCRETE PRACTICE."

2. THE CONCRETE REQUIREMENTS ARE:

   A. CEMENT SHALL BE TYPE I OR II CONFORMING TO ASTM C150. FLY ASH CONFORMING TO ASTM C618 TYPE C OR F MAY BE USED TO REPLACE A MAXIMUM OF 20% OF THE CEMENT.

   B. FINE AND COARSE AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. COARSE AGGREGATES SHALL BE NO LESS THAN 50% OF THE TOTAL AGGREGATE BY WEIGHT, UNLESS APPROVED BY THE ENGINEER PRIOR TO MIX DESIGN SUBMITTAL.

   C. MIX REQUIREMENTS ARE:

LOCATION	MIN. F'C PSI	MIN. CEM. PCY	MAX. W/C RATIO	COARSE AGGREGATE GRADE	AIR ENT.	SLUMP§ INCHES
FOUNDATION	4000	470	0.45	#67	5%+/-1%	2-5

   § PRIOR TO THE ADDITION OF HIGH RANGE WATER REDUCERS, IF APPROVED BY ENGINEER, AFTER ADDITION THE SLUMP MAY NOT EXCEED 8".

   F'C SPECIFIED IS BASED ON THE 28 DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH ACI 318 ACCEPTANCE CRITERIA

3. ADMIXTURES, HARDENERS, & CURING COMPOUNDS

   A. ALL CONCRETE ADMIXTURES SHALL, WHEN MIXED INTO CONCRETE, BE NON-CHLORIDE AND NON-CHLORIDE FORMING.

   B. THE FOLLOWING ADMIXTURES MAY BE USED TO MEET THE CONCRETE MIX DESIGNS SPECIFIED:

PURPOSE	ASTM	TYPE
WATER REDUCER (NORMAL, MID, & HIGH RANGE)	C-494	A, F, & G
AIR ENTRAINING	C-260	
SET RETARDING	C-494	B & D
SET ACCELERATING	C-494	C & E
CORROSION INHIBITING	C-494	C

   C. CONCRETE CURING COMPOUND AND SEALERS SHALL MEET ASTM C-309 TYPE 1 OR 1D

   D. THE CONTRACTOR SHALL VERIFY THAT ALL ADMIXTURES, HARDENERS, CURING COMPOUNDS, AND FLOOR COVERING ADHESIVES ARE COMPATIBLE WITH EACH OTHER.

4. MISCELLANEOUS CONCRETE DETAILS:

   A. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS UNLESS NOTED OTHERWISE.

   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING AND SHORING. SHORING FOR ELEVATED SLABS SHALL BE SET SO THAT ANY LOAD DUE TO THE CONCRETE OPERATIONS DOES NOT CAUSE THE FORMS TO SETTLE (SLACK, TAKE-UP, ETC.).

   C. NO ALUMINUM SHALL BE EMBEDDED IN CONCRETE. CONDUITS AND PIPING EMBEDDED IN CONCRETE WALLS, SLABS, OR BEAMS SHALL BE SPACED A MINIMUM OF FOUR DIAMETERS AND THE OUTSIDE DIAMETER SHALL BE LESS THAN 30% OF THE MEMBER THICKNESS AND PLACED BETWEEN LAYERS OF REINFORCING.

   D. WATERSTOP AT CAST IN PLACE JOINTS SHALL BE PVC WATERSTOP MODEL NO. 702 BY GREENSTREAK OR APPROVED EQUAL.

   E. PROVIDE EXTERIOR WATERPROOFING AT ALL CONCRETE SURFACES BELOW GRADE. USE 2 COATS OF SEAL MASTIC BY W.R. MEADOWS OR APPROVED EQUAL. APPLY PER MANUFACTURER'S RECOMMENDATIONS.

D. CONCRETE REINFORCING (CAST-IN-PLACE)

1. MATERIALS:

	ASTM	GRADE
REINFORCING BARS:	A615	60

2. DETAILS:

   A. WELDING OF REINFORCING BARS IS PROHIBITED.

3. PLACEMENT

   A. ALL REINFORCING (BARS, ANCHOR RODS, EMBEDMENTS, WWF, ETC.) SHALL BE SUPPORTED ON CHAIRS/BOLSTERS TO THE DESIGN DIMENSIONS. SPACING SHALL BE SUFFICIENTLY CLOSE TO PREVENT DISPLACEMENT OR PERMANENT DEFORMATION DUE TO CONCRETE PLACEMENT, FOOT TRAFFIC, OR VIBRATION. "PUDDLING IN" OR "PULLING UP" REINFORCING IS NOT AN ACCEPTABLE METHOD FOR PLACING REINFORCING. CHAIRS/BOLSTERS SHALL HAVE PLASTIC COATED FEET OR BE MADE OF STAINLESS STEEL. CHAIRS/BOLSTERS IN CONTACT WITH EARTH SHALL HAVE BOTTOM PLATES AND BE COATED TO PREVENT CORROSION. ANCHOR RODS SHALL BE HELD IN PLACE WITH TEMPLATES SUFFICIENTLY STRONG TO PREVENT DISPLACEMENT OR TILTING.

   B. MAINTAIN ACI CLEAR COVER ON REINFORCING AS LISTED BELOW UNLESS NOTED OTHERWISE.

CAST AGAINST EARTH (BOTTOM OR SIDES):	3"
FORMED - EXPOSED TO SOIL, WEATHER OR LIQUIDS:	2"

   C. PROVIDE CORNER BARS OF THE SAME SIZE AND SPACING AS ADJACENT REINFORCING. REFERENCE DETAILS. CONTINUOUS WALL FOOTING REINFORCING NEED ONLY TO OVERLAP.

   D. OPENINGS IN WALLS OR STRUCTURAL SLABS SHALL BE REINFORCED PER DETAIL.

   E. ALL REINFORCING BARS ARE TO BE MADE CONTINUOUS OR LAPPED PER TABLE A.

E. POST INSTALLED ANCHORING SYSTEMS

1. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AND THE EVALUATION REPORT (ER/ESR) SPECIFIED INCLUDING HOLE PREPARATION, TEMPERATURE AND MOISTURE CONDITIONS.

2. ADHESIVE ANCHORS:

   A. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE CONTRACTOR MUST MAINTAIN TRAINING RECORDS OF ALL CONTRACTOR PERSONNEL INSTALLING ANCHORS AND SUBMIT TO THE ENGINEER OF RECORD PRIOR TO INSTALLING ANCHORS UPON REQUEST.

   B. ADHESIVE ANCHORS SHALL BE USED IN CONJUNCTION WITH THE APPROPRIATE ADHESIVE SYSTEM.

   C. APPROVED ADHESIVE ANCHORS FOR PREVIOUSLY CAST CONCRETE:

MANUFACTURER/PRODUCT	REPORT NUMBER
HILTI HIT-HY200 SSS* WITH HIT-Z ROD	ICC-ES ESR-3187
HILTI HIT-HY200 SSS* WITH HOLLOW BIT & HAS-E ROD	ICC-ES ESR-3187
*SAFE SET SYSTEM	

F. CONTRACT/CONSTRUCTION DOCUMENTS

1. THE CONTRACT DOCUMENTS SHALL INCLUDE ALL PLANS, SPECIFICATIONS, ADDENDAS, AND SUPPLEMENTAL INSTRUCTIONS.

2. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN A FULL SET OF THE MOST RECENT REVISIONS OF EACH DOCUMENT.

3. THE CONTRACTOR SHALL REVIEW THE DOCUMENTS PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY MATERIALS FOR CONFLICTS. IF CONFLICTS OCCUR THE CONTRACTOR SHALL USE THE MOST STRINGENT REQUIREMENT. ALTERNATELY, THE CONTRACTOR MAY REQUEST A CLARIFICATION THROUGH A REQUEST FOR INFORMATION (RFI).

4. THE DOCUMENTS MAY NOT BE REPRODUCED IN WHOLE OR IN PART FOR USE ON PROJECTS OTHER THAN IDENTIFIED IN THE TITLE BLOCK. SHOULD THE CONTRACTOR USE THE DOCUMENTS AS A PORTION OF A SHOP DRAWING SUBMITTAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONSEQUENCES RESULTING FROM ERRORS IN THE REPRODUCED DOCUMENTS.

5. DETAILS LABELED TYPICAL ARE INTENDED TO REPRESENT A CONDITION THAT OCCURS AT SEVERAL LOCATIONS IN THE PLANS WHETHER OR NOT THE DETAIL IS REFERENCED.

6. DO NOT SCALE THE PLANS AND DETAILS FOR THE PURPOSE OF ESTABLISHING DIMENSIONS.

G. CONSTRUCTION MEANS AND METHODS ISSUES

1. SLABS ON GRADE AND ELEVATED SLABS ARE NOT DESIGNED TO SUPPORT CRANES, FORKLIFTS, TRUCKS, MANLIFTS, OR OTHER CONSTRUCTION RELATED EQUIPMENT UNLESS NOTED AS SUCH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE IF CONSTRUCTION EQUIPMENT CAN BE SAFELY OPERATED ON THESE SLABS AND TO REPAIR ANY DAMAGE THE EQUIPMENT MAY CAUSE.

2. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY BRACING AND/OR SHORES TO SAFELY CONSTRUCT THE STRUCTURE AND PREVENT DAMAGE DURING CONSTRUCTION.

3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION THAT MAY AFFECT THE PROJECT AND REPORT DISCREPANCIES TO THE ENGINEER. EXISTING BUILDING ELEMENTS THAT ARE TO BE ABANDONED THAT INTERFERE WITH NEW CONSTRUCTION SHALL BE REMOVED.

4. WHEN A PIECE OF EQUIPMENT IS PROVIDED THAT IS DIFFERENT THAN THE EQUIPMENT THAT THE STRUCTURE WAS DESIGNED FOR EITHER BY SIZE, WEIGHT OR CONFIGURATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE REMEDY OF THE SITUATION.

H. STRUCTURAL TESTS, INSPECTIONS, AND QUALITY ASSURANCE

1. ALL STRUCTURAL TESTS AND INSPECTIONS SHALL BE PERFORMED PER CHAPTER 17 OF THE BUILDING CODE WITH LOCAL SUPPLEMENTS, UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED.

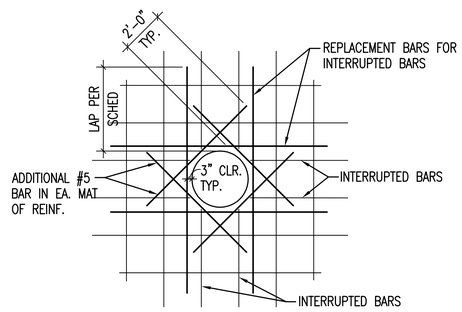
TABLE A - REINFORCEMENT LAPS, EMBEDMENTS, AND HOOK LENGTHS.

fy = 60000 PSI f'c = 4000 PSI

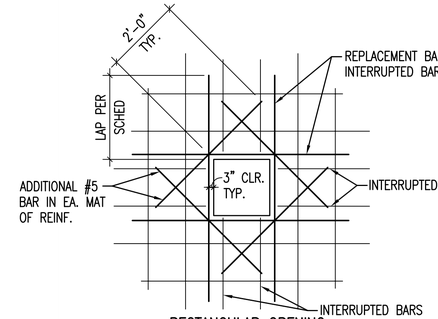
BAR SIZE (d)	CLEAR SPACING (S) (in)			EMBEDMENT & CLASS A LAP (in)						CLASS B LAP (in)						HOOK (in)
				TOP BAR			OTHER BARS			TOP BAR			OTHER BARS			
				24<S<3d	S ≥ 3d	S ≥ 5d	24<S<3d	S ≥ 3d	S ≥ 5d	24<S<3d	S ≥ 3d	S ≥ 5d	24<S<3d	S ≥ 3d	S ≥ 5d	
	2d	3d	5d													
3	¾	1⅛	1⅞	28	18	12	21	14	12	36	24	14	28	18	12	8
4	1	1½	2½	37	25	15	28	19	12	48	32	19	37	25	15	10
5	1¼	1⅞	3⅛	46	31	18	36	24	14	60	40	24	46	31	18	12
6	1½	2¼	3¾	55	37	22	43	28	17	72	48	29	55	37	22	15
7	1¾	2⅝	4⅜	81	54	32	62	42	25	105	70	42	81	54	32	18
8	2	3	5	92	62	37	71	47	28	120	80	48	92	62	37	20
9	2¼	3⅜	5⅝	104	70	42	80	54	32	136	90	54	104	70	42	22
10	2.54	3.81	6.35	117	78	47	90	60	36	153	102	61	117	78	47	25
11	2.82	4.23	7.05	130	87	52	100	67	40	170	113	68	130	87	52	27

NOTES:
1. LENGTHS SHOWN CONFORM WITH NON-SEISMIC PROVISIONS OF ACI 318 FOR UNCOATED BARS.
2. BAR CLEAR SPACING IS THE CENTER TO CENTER BAR SPACING MINUS ONE BAR DIAMETER.
3. CLASS A LAP LENGTHS APPLY WHEN BAR LAPS ARE STAGGERED TO LAP HALF THE BARS AT THE SAME LOCATION. USE CLASS B LAP FOR ALL OTHER CASES.
4. TOP BARS ARE HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12 INCHES OF CONCRETE IS CAST BELOW THE REINFORCEMENT.
5. MULTIPLY LAP AND EMBEDMENT LENGTHS GIVEN BY 2.0 FOR BARS WITH CLEAR SPACING OF TWO BAR DIAMETERS OR LESS, OR CONCRETE COVER OF ONE BAR DIAMETER OR LESS.
6. TABLE FOR NORMAL WEIGHT CONCRETE AND UNCOATED REINFORCING BARS ONLY.

1 / S0.1 **TABLE A**
NO SCALE



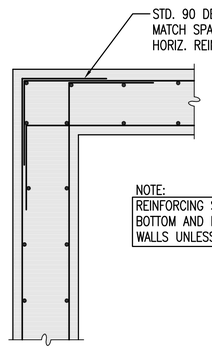
ROUND OPENING



RECTANGULAR OPENING

NOTES:
1. USE THIS DETAIL FOR ALL OPENINGS GREATER THAN 8" IN CONCRETE WALLS AND ELEVATED SLABS , PROVIDE #5 ON DIAGONAL AT EACH CORNER AS SHOWN. EXTEND BARS 2'-0" PAST OPENING. REPLACE ALL VERTICAL AND HORIZONTAL BARS INTERUPTED BY THE OPENING WITH AN EQUAL NUMBER AND SIZE BARS EVENLY DIVIDED ON EACH SIDE OF THE OPENING UNLESS NOTED OTHERWISE.
2. REFER TO ARCHITECTURAL, STRUCTURAL & MECHANICAL PLANS FOR ALL OPENING LOCATIONS.

2 / S0.1 **TYP.WALL/ELEVATED SLAB OPENING REINF.**
NO SCALE



NOTE:
REINFORCING SHOWN APPLIES TO TOP, BOTTOM AND INTERMEDIATE BARS IN WALLS UNLESS NOTED OTHERWISE.

3 / S0.1 **TYP. CORNER AND INTERSECT. REINF.**
NO SCALE

No.	Revision	By	Date
5	ASI #6		6/30/15
4	ASI #4		6/25/15
3	ASI #2		6/18/15
2	ASI #1		5/26/15
1	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS
THESE DOCUMENTS INCLUDE RECORD INFORMATION PROVIDED BY THE CONTRACTOR. THIS INFORMATION HAS NOT BEEN VERIFIED IN ITS ENTIRETY BY THE DESIGN PROFESSIONAL
DATE: MARCH, 2016

CITY OF WICHITA, KANSAS

STRUCTURAL GENERAL NOTES

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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Designed by	DKC	Job No. 34-14229-001-0042	Sht. S0.1 of 37
Drawn by	JTR	Date 4/29/15	

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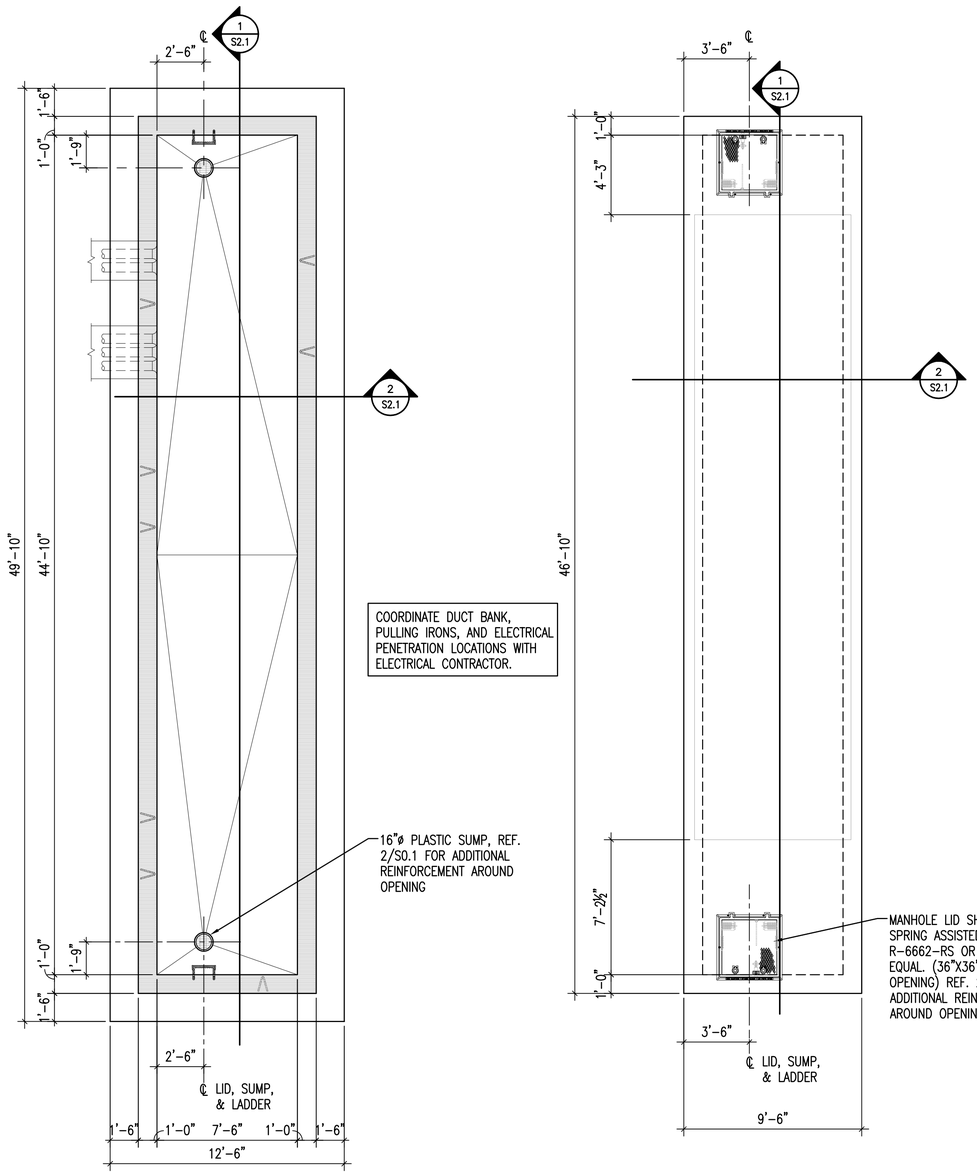
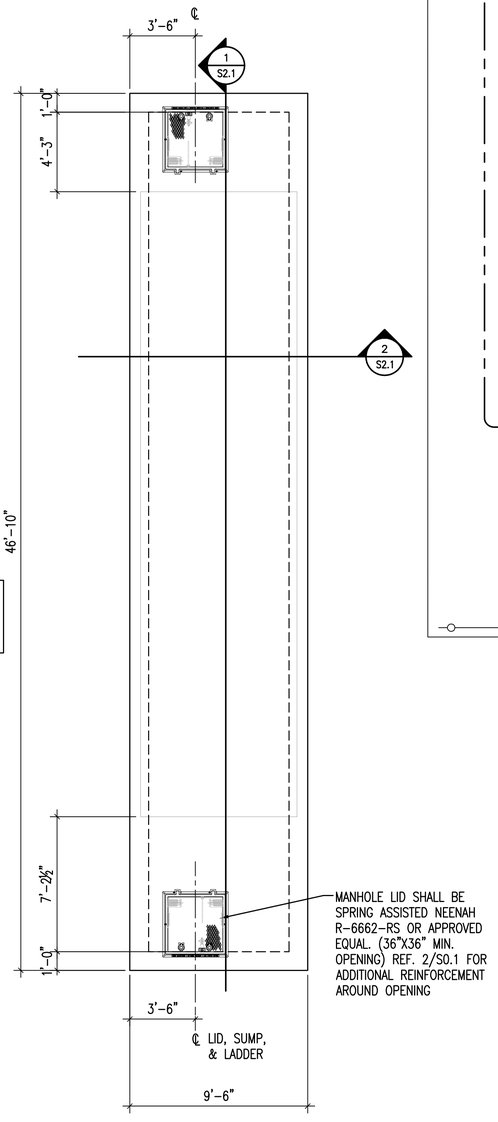


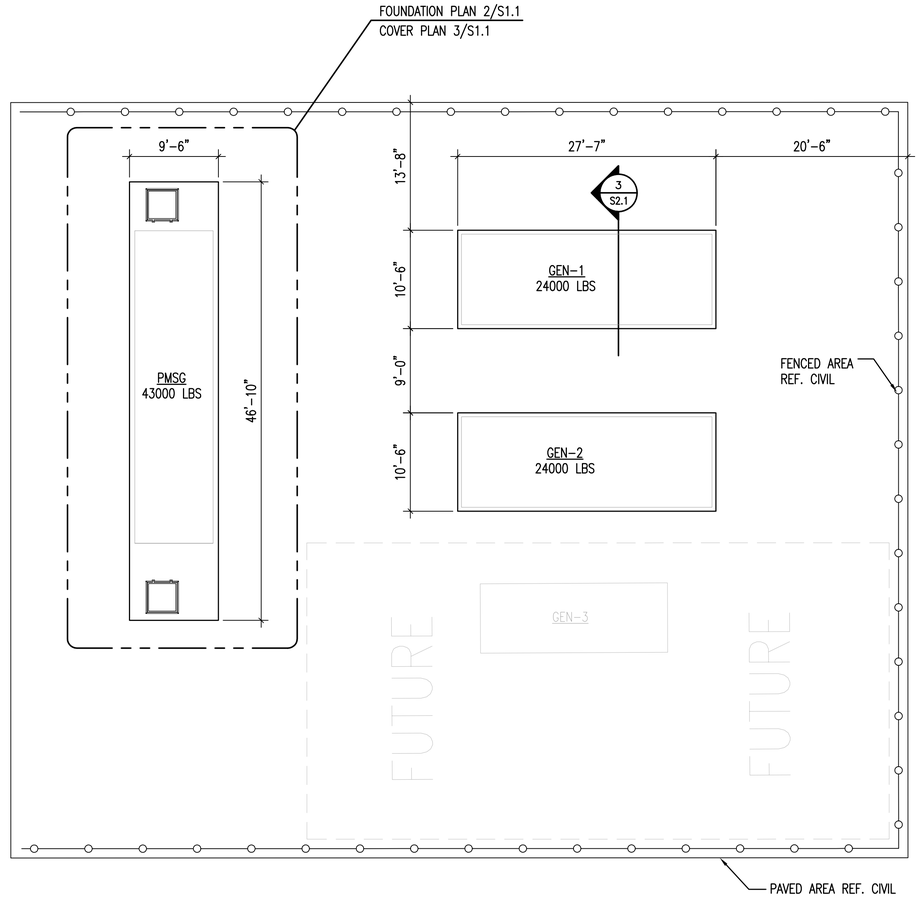
2 S1.1 VAULT FOUNDATION PLAN

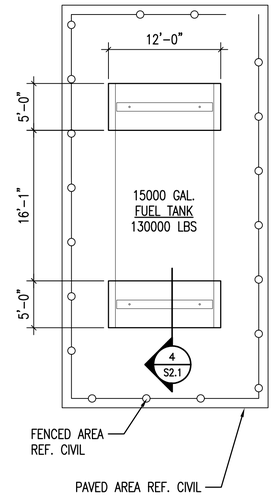
1/4"=1'0"



3 S2.1 VAULT COVER PLAN

1/4"=1'0"





1 S1.1 EQUIPMENT PLAN

1/8"=1'0"

No.	Revision	By	Date
4	ASI #6		6/30/15
3	ASI #4		6/25/15
2	ASI #2		6/18/15
1	ASI #1		5/26/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

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DATE: MARCH, 2016

CITY OF WICHITA, KANSAS

STRUCTURAL PLANS

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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316-262-2691 www.pec1.com

Designed by	DKC	Job No.	34-14229-001-0042
Drawn by	JTR	Date	4/29/15

Sht. S1.1 of 37

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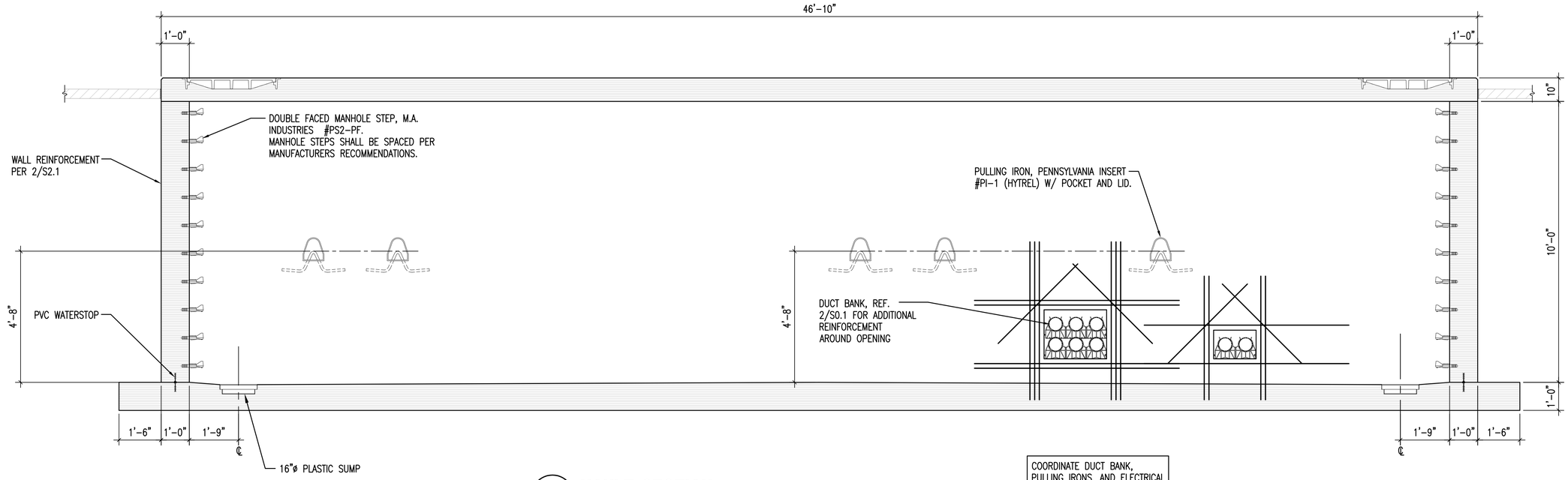
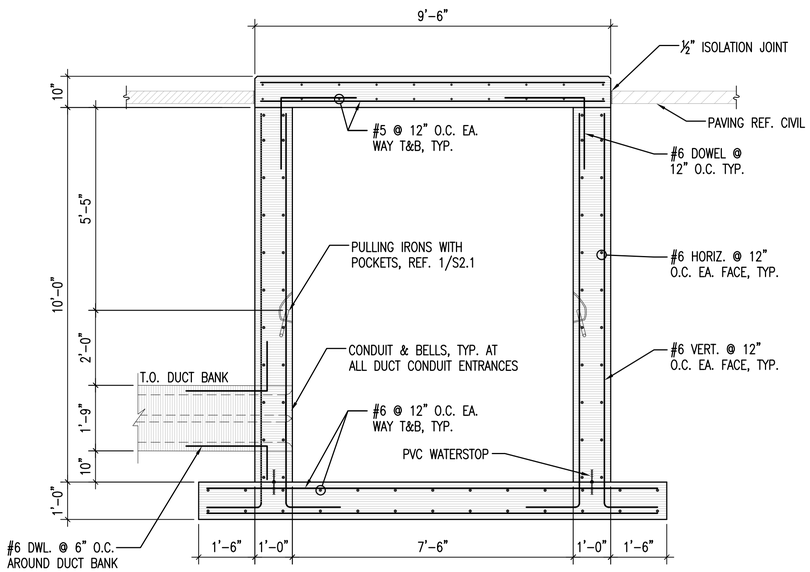
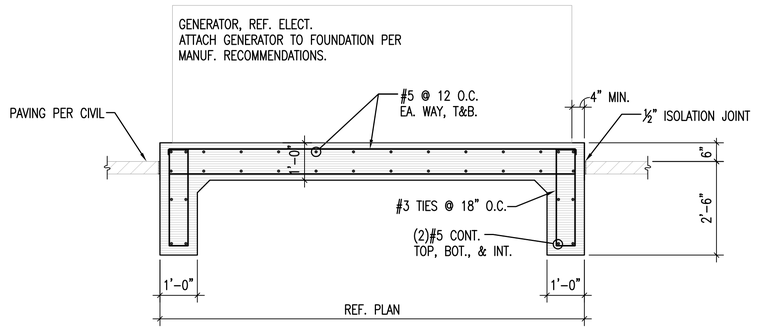


1 S2.1 **VAULT SECTION**
1/2"=1'0"

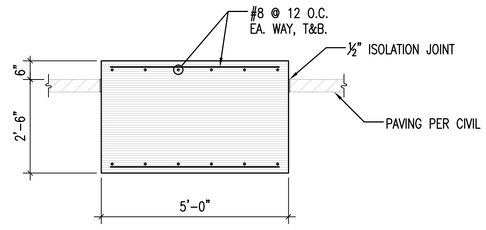
COORDINATE DUCT BANK, PULLING IRONS, AND ELECTRICAL PENETRATION LOCATIONS WITH ELECTRICAL CONTRACTOR.



2 S2.1 **VAULT SECTION**
1/2"=1'0"



3 S2.1 **GENERATOR PAD SECTION**
1/2"=1'-0"



4 S2.1 **FUEL TANK FOUNDATION SECTION**
1/2"=1'-0"

No.	Revision	By	Date
4	**ASI #6**		6/30/15
3	**ASI #4**		6/25/15
2	**ASI #2**		6/18/15
1	**ASI #1**		5/26/15
	FOR CONSTRUCTION SET		4/29/15

RECORD DOCUMENTS

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DATE: MARCH, 2016

CITY OF WICHITA, KANSAS

STRUCTURAL SECTIONS

WWTP #2 EMERGENCY POWER PROJECT
C.O.W. PROJECT NO. 468-84956

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Designed by	DKC	Job No.	34-14229-001-0042
Drawn by	JTR	Date	4/29/15

Sht. S2.1 of 37

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