MAINTENANCE FACILITY
ELECTRICAL UPGRADE
ALBIA, IOWA

IOWA DEPARTMENT OF TRANSPORTATION

UTILITY COORDINATION NOTES

COORDINATE ALL ELECTRIC UTILITY WORK WITH CHARITON VALLEY R.E.C.

CHARITON VALLEY R.E.C. CONTACTS:
BILL FLAHIVE OR LANCE HENDERSON
641-932-7126
BFLAHIVE@CVREC.COM OR LHENDERSON@CVREC.COM

LOCATE ALL LOCAL UTILITIES IN WORK AREA PRIOR TO STARTING WORK. CONTACT IOWA ONE CALL PRIOR TO DIGGING.

IOWA ONE CALL:
811 or 1-800-292-8989

ELECTRICAL NOTES - GENERAL

ALL WORK SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE 2014 NATIONAL ELECTRIC CODE (NEC).

DETERMINE EXISTING CONDITIONS THAT MAY AFFECT THIS WORK, BY ON-SITE INSPECTION PRIOR TO BIDDING.

LABEL CIRCUIT BREAKER NUMBER & PANEL DESIGNATION ON EACH JUNCTION BOX COVER INSTALLED OR ACCESSED AS PART OF THE WORK.

VERIFY POWER REQUIREMENTS AND EXACT LOCATION OF EQUIPMENT FURNISHED. COMPLY WITH ELECTRICAL ROUGH-IN REQUIREMENTS FOR THIS EQUIPMENT.

ALL CIRCUITS SHALL BE IN CONDUIT AND SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR, GREEN #12 STRANDED COPPER MINIMUM.

ALL CONDUCTORS SHALL BE STRANDED COPPER, #12 AWG MINIMUM. INCREASE CONDUCTOR SIZES A MINIMUM OF ONE SIZE OVER NEC TABLE 310-16 IN CIRCUITS WITH A LENGTH OVER 75 FEET.

IF EXISTING WIRING IS CALLED OUT TO BE REUSED, INSPECT CONDITION AND CURRENT RATING OF WIRE TO DETERMINE IF IT IS SAFE TO REUSE. REPORT ANY UNSATISFACTORY OR UNSAFE CONDITIONS TO THE ENGINEER.

ELECTRICAL DEMOLITION NOTES

DEMOLITION OF ALL ELECTRICAL DEVICES, CIRCUITS, AND OTHER MISCELLANEOUS MATERIALS IS TO BE BY THE ELECTRICAL CONTRACTOR.

DEMOLISH ALL EXISTING ABOVE GROUND CONDUIT OF CIRCUITS TO BE DEMOLISHED. CUT EXISTING CONDUIT TO 2' BELOW GRADE, PLUG WITH GROUT OR OTHER APPROVED METHOD AFTER CONDUCTORS HAVE BEEN REMOVED.

INCLUDE IN REMOVAL OF CIRCUITS: WIRING, BOXES, CONDUITS, STRAPS, AND OTHER MISCELLANEOUS MATERIALS BACK TO THE BRANCH PANEL OR TO A JUNCTION BOX THAT IS TO REMAIN. CIRCUITS THAT TERMINATE IN A JUNCTION BOX MAY BE LEFT FOR FUTURE USE AFTER MARKING AS NOTED BELOW.

CIRCUITS THAT ARE REMOVED, AND NOT REUSED, SHALL BE DISCONNECTED AT THE CIRCUIT BREAKER IN THE EXISTING PANEL. FOLD OVER ENDS OF WIRE, DOUBLE WRAP WITH UL LISTED BLACK VINYL TAPE, AND TAG TO IDENTIFY TO WHICH JUNCTION BOX THE CIRCUIT IS TERMINATED. LABEL UNUSED CIRCUIT BREAKERS AS "SPARE".

REMOVE DEMOLISHED MATERIALS PROMPTLY FROM THE SITE AND DISPOSE OF PROPERLY.

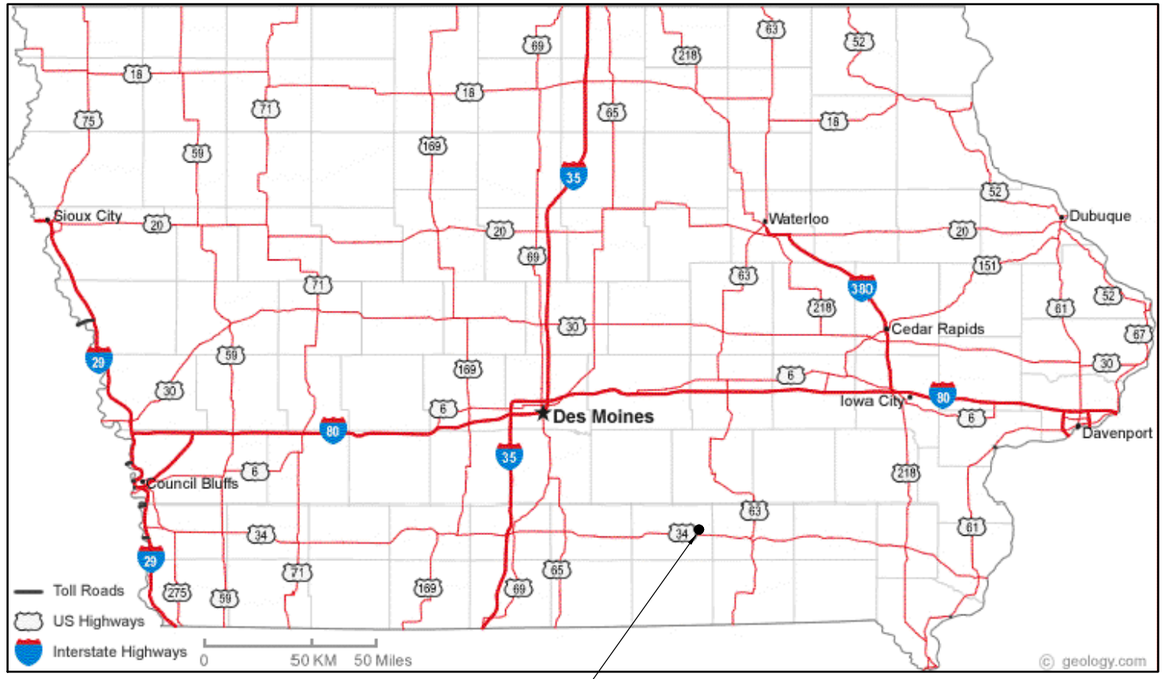
LEAVE OLD CIRCUITS INTACT UNTIL NEW CIRCUITS ARE INSTALLED AND FULLY FUNCTIONAL.

ELECTRICAL SYMBOLS

- EXPOSED CONDUIT
  - INDICATES PHASE CONDUCTOR(S)
  - INDICATES NEUTRAL CONDUCTOR
  - INDICATES EQUIPMENT GROUNDING CONDUCTOR
- (5) CIRCUIT KEYED NOTE REFERENCE
- (2) KEYED NOTE REFERENCE
- 1 / E2 DETAIL NUMBER REFERENCE / PAGE NUMBER REFERENCE

ABBREVIATIONS

APPROX. – APPROXIMATE
BLDG. – BUILDING
EJ – EXPANSION JOINT
GALV – GALVANIZED
J-BOX – JUNCTION BOX
NEC – NATIONAL ELECTRICAL CODE
OP – OVERHEAD PRIMARY ELECTRIC
R.G.S. – RIGID GALVANIZED STEEL
SCH – SCHEDULE
S.S. – STAINLESS STEEL
TYP – TYPICAL



PROJECT LOCATION

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MAINTENANCE FACILITY
ELECTRICAL UPGRADE
ALBIA, IOWA

SHEET TITLE
COVER SHEET

SCALE:
AS NOTED

DRAWN BY:
M.C.

APPROVED:
R.M.

REVISIONS:

DATE:
JUNE 14, 2016

PROJECT NO.:
ME 1517

SHEET NO.:
CS

EXISTING 3 PHASE SERVICE:
DEMOLISH EXISTING SERVICE CIRCUIT TO EXISTING MAIN–2 SWITCH IN MAINTENANCE FACILITY.

DEMOLISH EXISTING POLE MOUNTED 200A SWITCH AND FEEDER CIRCUIT TO EXISTING STORAGE BUILDING 1 PANELS.

DEMOLISH EXISTING POLE MOUNTED KW/HR METER AND ASSOCIATED CIRCUITS. COORDINATE DEMOLITION WITH CHARITON VALLEY R.E.C.

EXISTING 3 PHASE POLE MOUNTED TRANSFORMERS TO BE DEMOLISHED BY CHARITON VALLEY R.E.C. COORDINATE DEMOLITION WITH CHARITON VALLEY R.E.C.

NEW THREE PHASE SERVICE TO BE ESTABLISHED BY CHARITON VALLEY R.E.C. COORDINATE ASSOCIATED WORK WITH CHARITON VALLEY R.E.C.

REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION.

EXISTING 1 PHASE SERVICE:
EXISTING KW/HR METER AND ASSOCIATED 100A 2P BREAKER WITHIN METER ENCLOSURE USED TO SERVE EXISTING BRINE BUILDING PANEL. METER & FEEDER CIRCUIT HAS SINCE BEEN DISCONNECTED. DEMOLISH EXISTING KW/HR METER, INCLUDING EXISTING 100A 2P CIRCUIT BREAKER WITHIN METER ENCLOSURE. DEMOLISH EXISTING FEEDER CIRCUIT TO EXISTING BRINE BUILDING PANEL. REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION.

NEW BRINE BUILDING PANEL: REFER TO SHEET E5 FOR PANEL SCHEDULE AND RATINGS INFORMATION. DEMOLISH EXISTING BRINE BUILDING PANEL AND REPLACE WITH NEW PANEL IN SAME LOCATION. RECONNECT EXISTING CIRCUITS TO NEW PANEL. PROVIDE CIRCUIT BREAKERS AS REQUIRED FOR EXISTING CIRCUITS. INSTALL NEW PANEL ON THE OUTSIDE OF THE BRINE BUILDING USING (2) VERTICAL STAINLESS STEEL STRUTS. PROVIDE A #6 AWG THWN–2 SUPPLEMENTAL GROUNDING ELECTRODE FROM PANEL TO NEW GROUND ROD. INSTALL IN SCH80 RIGID PVC CONDUIT FROM PANEL TO GROUND ROD AND BARE CONDUCTOR FOR FINAL CONNECTION TO GROUND ROD. INSTALL GROUND ROD TO WITHIN 2" ABOVE GRADE. BOND CONDUCTOR TO NEW GROUND ROD USING BURNDY TYPE GRC HEAVY DUTY BRONZE CLAMP, UL467 LISTED. PROVIDE GROUND LUG IN PANEL TO TERMINATE GROUNDING ELECTRODE CONDUCTOR. DO NOT BOND NEUTRAL AND GROUND BARS TOGETHER IN PANEL. REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION.

NEW PAD MOUNTED TRANSFORMER AND UNDERGROUND PRIMARY CIRCUIT BY CHARITON VALLEY R.E.C.
SECONDARY: 208/120V 3ø.
COORDINATE WORK WITH CHARITON VALLEY R.E.C.

4 / E4 BOLLARD (TYP OF 8)

EXISTING BRINE BUILDING

EXISTING STORAGE BUILDING 2

REUSE EXISTING CONDUIT PENETRATION THROUGH EXTERIOR WALL FOR NEW FEEDER CIRCUIT TO EXISTING PANEL.

EXISTING STORAGE BUILDING 1 PANEL TO REMAIN FOR REUSE. DEMOLISH EXISTING FEEDER CIRCUIT FROM EXISTING 200A CIRCUIT BREAKER ON EXISTING 3ø UTILITY POLE. REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION. RE–FEED EXISTING PANEL FROM NEW MDP.

EXISTING STORAGE BUILDING 1

EXISTING MAINTENANCE FACILITY ADDITION: SEE SHEET E2 FOR ELECTRICAL PLAN

EXISTING MAINTENANCE FACILITY: SEE SHEET E2 FOR ELECTRICAL PLAN

EXISTING STORAGE BUILDING 3

GR–2 GR–1 LED1 POLE P1

1 / E3 SECONDARY SERVICE CIRCUIT–INSTALL IN SCH80 PVC CONDUIT WITH R.G.S. SWEEPS BELOW GROUND, BEFORE PAD IS POURED. REFER TO CIRCUIT SCHEDULE ON SHEET E3.

ATS: REFER TO SHEETS E2 & E3.

KW/HR METER, CT CABINET, ENCLOSED CIRCUIT BREAKER, GENERATOR EMERGENCY SHUTOFF SWITCH, & PANEL P1 ON STAND. PROVIDE CT CABINET AND METER SOCKET AS RECOMMENDED BY CHARITON VALLEY R.E.C. KW/HR METER BY CHARITON VALLEY R.E.C. COORDINATE WORK WITH CHARITON VALLEY R.E.C. 1 / E3, 1,6 / E4

3 EMERGENCY POWER CIRCUIT–INSTALL IN SCH80 PVC CONDUIT BELOW GROUND, BEFORE PAD IS POURED. REFER TO CIRCUIT SCHEDULE ON SHEET E3.

CONTROL CIRCUIT FROM GENSET TO ATS. INSTALL BELOW CONCRETE PAD.

EMERGENCY GENERATOR SET: REFER TO SCHEDULE ON SHEET E2.

FOUNDATION PAD FOR GENSET & ATS. COORDINATE BLOCKOUTS IN CONCRETE FOR CIRCUITS WITH EQUIPMENT SHOP DRAWINGS. 6 / E4

NEW GROUNDING FIELD 5 / E4

UNDERGROUND 1" MDPE LPG PIPE. BURY 36" DEEP. PROVIDE TRACER WIRE: YELLOW #12 THWN. STRAP TRACER WIRE TO BIP AT GENERATOR & TANK. PROVIDE 90° COATED STEEL BEND TO TRANSITION FROM UNDERGROUND PLASTIC TO ABOVE GROUND STEEL PIPE. (TYP AT GENERATOR & LPG TANK)

1" BIP LPG PIPE ALONG CONCRETE PAD. PAINT EXPOSED PIPING. REFER TO LPG PIPING NOTES ON SHEET E2. (TYP AT TANK AND GENERATOR PAD)

PROVIDE INITIAL 80% FULL FILL OF LPG.

1000 GALLON LPG TANK ON SUPPORTS: LOCATION IS APPROXIMATE. VERIFY EXACT LOCATION ON SITE, COORDINATE WITH IOWA DOT. PROVIDE CONCRETE PAD, APPROX 18'–0" X 7'–6". CONSTRUCT WITH (6) PILLARS SIMILAR TO DETAIL 6 ON SHEET E4. VERIFY OVERALL PAD SIZE WITH FURNISHED TANK.

11 FEEDER CIRCUIT TO NEW MDP. INSTALL BELOW GROUND TO BLDG, THEN UP WALL TO DISCONNECT THEN TO PULL BOX. INSTALL IN SCH80 PVC CONDUIT BELOW GROUND, & R.G.S. CONDUIT ABOVE GROUND TO PULL BOX. REFER TO CIRCUIT & CONDUIT SCHEDULES ON SHEET E3. 1 / E3

PULL BOX: NEMA 4X, 36"Wx36"Lx20"D INSTALL AT +10'–0" HIGH ON EXISTING CONCRETE WALL. SEE SHEET E2 FOR CONTINUATION INTO BUILDING. COORDINATE EXACT LOCATION & HEIGHT ON SITE. NEATLY CORE DRILL OPENINGS IN EXISTING MASONRY WALL. SLEEVE & SEAL WALL PENETRATION. 3 / E4

DS 1 INSTALL DISCONNECT ON STAINLESS STEEL STRUT STAND AGAINST BUILDING. INSTALL TOP AT 5'–0" ABOVE GRADE. 1 / E1

DEMOLISH EXISTING 400A DISCONNECT SWITCH ON POLE. REFER TO ELECTRICAL DEMOLITION NOTES.

DEMOLITION OF EXISTING WOOD POLE, POLE MOUNTED TRANSFORMER, AND KW/HR METER BY CHARITON VALLEY R.E.C.

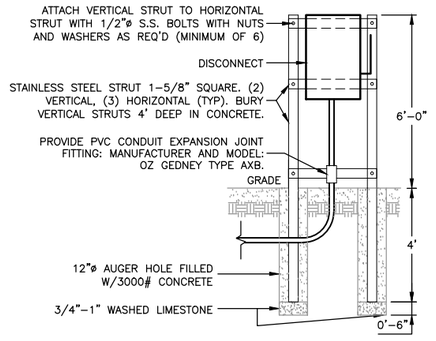
EXISTING SINGLE PHASE SERVICE CIRCUIT: IF INSTALLED IN CONDUIT, PULL OLD WIRING OUT OF CONDUIT AND REMOVE FROM SITE. REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION. IF DIRECT BURIED, ABANDON DIRECT BURIED CONDUCTORS IN PLACE, DEMOLISH ABOVE GROUND CONDUCTORS AND CONDUIT ABOVE GROUND AS STATED ABOVE.

GRAVEL
CONCRETE
GRASS
OP

ELECTRICAL SITE PLAN
SCALE: 1" = 20'–0" (APPROX)

NORTH

SUPPORT STAND NOTES
STRUTS: 1–5/8"W X 1–5/8"D NOMINAL STAINLESS STEEL. ALL FASTENERS AND HARDWARE SHALL BE STAINLESS STEEL. USE SPRING LOADED NUTS FOR ALL FASTENERS. PROVIDE S.S. FLAT WASHER UNDER ALL BOLT HEADS.



1 DISCONNECT STAND DETAIL
NOT TO SCALE

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MAINTENANCE FACILITY
ELECTRICAL UPGRADE
ALBIA, IOWA

SHEET TITLE: ELECTRICAL SITE PLAN

SCALE: AS NOTED

DRAWN BY: M.C.

APPROVED: R.M.

REVISIONS:

DATE: JUNE 14, 2016

PROJECT NO.: ME 1517

SHEET NO.: E1

LPG PIPING NOTES

SUMMARY OF WORK: PROVIDE A FULLY FUNCTIONAL LPG FUEL PIPING SYSTEM FOR THE GENSET.

COORDINATE WITH GENSET SUPPLIER AND ENSURE PROPANE VAPOR IS DELIVERED AT THE RIGHT PRESSURE AND QUANTITY AS REQUIRED BY THE GENSET.

CODES
AT A MINIMUM, CONFORM TO THE FOLLOWING:
UNIFORM PLUMBING CODE (LATEST ADOPTED EDITION)
NATIONAL FUEL GAS CODE–NFPA 54
INTERNATIONAL FUEL GAS CODE (LATEST ADOPTED EDITION)

PRODUCTS
STEEL GAS PIPING:
STEEL GAS PIPING, ABOVE GROUND AS NOTED ON THE DRAWING: SCHEDULE 40 BLACK STEEL PIPE, ASTM A53, WITH ANSI/ASME B16.3 MALLEABLE IRON FITTINGS AND SCREWED JOINTS.

GAS PIPING UNIONS: BLACK MALLEABLE IRON, GROUND JOINT WITH BRASS SEAT, ANSI B16.39.

MEDIUM DENSITY POLYETHELENE (MDPE) GAS PIPING:
PROVIDE MDPE PIPING FOR UNDERGROUND PIPING AS NOTED ON THE DRAWING. PROVIDE YELLOW TRACER WIRE THROUGHOUT LENGTH.

VALVES
BALL VALVES: 200 PSI WOG @ 150 F, ALL BRASS OR BRONZE, STRAIGHT WAY PLUG, SCREWED, SQUARE HEAD.

PROVIDE VALVES WITH CSA LABEL.

MISCELLANEOUS MATERIALS

INCLUDE MISCELLANEOUS MATERIALS, NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, AS SELECTED BY THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE ENGINEER.

INSTALLATION IN GENERAL:
COMPLY WITH ALL APPLICABLE REQUIREMENTS OF NFPA 54, AND THE INTERNATIONAL FUEL GAS CODE
PROTECT PIPING FROM DIRT BY CAPPING ENDS UNTIL READY TO USE.
SUPPORT PIPING INDEPENDENTLY SO THAT WEIGHT OF PIPE WILL NOT BE SUPPORTED BY THE EQUIPMENT.

EXECUTION

SECURELY ANCHOR ALL EQUIPMENT, HANGERS, AND SIMILAR ITEMS IN PLACE. SUPPORT EACH ITEM INDEPENDENTLY FROM OTHER PIPES. DO NOT USE WIRE OR METAL STRAPS FOR HANGING OR STRAPPING PIPES.
PROVIDE UNION AND SHUT_OFF VALVES SUITABLY LOCATED TO FACILITATE MAINTENANCE AND REMOVAL OF EQUIPMENT AND APPARATUS.
SECURELY MOUNT REGULATORS (REFER TO SECTION 16190).

TESTING NATURAL GAS PIPING SYSTEM:
COMPLY WITH NFPA 54.

SUBMIT A TEST REPORT TO THE ENGINEER.

GAS REGULATOR SCHEDULE

TAG	SERVES	MANUFACTURER	PRESSURE		PIPE SIZE		1000 BTU/HR	FLOW RATE (CFH)	NOTES
			INLET	OUTLET	INLET	OUTLET			
GR–1	GENSET (AT LPG TANK)	(SEE NOTE 4)	(SEE NOTE 2)	10 PSI	1"	1"	1250	500	3–5
GR–2	GENSET (AT GENSET)	(SEE NOTE 4)	10 PSI	11" W.C.	1"	1"	1250	500	1,2,4,5

NOTES:
1. GAS REGULATOR SPECIFICATIONS MAY CHANGE DEPENDING ON MANUFACTURER OF THE GENERATOR. VERIFY AND COORDINATE GAS REGULATOR RATINGS BASED ON THE GENERATOR SET MANUFACTURERS RECOMMENDATIONS.
2. CONNECT REGULATOR TO LPG INLET OF GENERATOR.
3. TANK VAPOR PRESSURE: TYPICALLY 25–100 PSI.
4. PROVIDE A CSA APPROVED BALL GAS SHUTOFF VALVE AT EACH REGULATOR.
5. MAXITROL, FISHER, OR APPROVED EQUAL.

GENERATOR SET SCHEDULE

TAG	POWER RATING				NAMEPLATE RATING (kW)	FUEL	NOTES
	VOLTS	PHASE	AMPS	FREQ.			
GENSET	208/120	3	347	60 Hz	125	NATURAL GAS/LPG	1–3

NOTES:
1. ACCEPTABLE MANUFACTURERS: CATERPILLAR, KOHLER, GENERAC.
2. REFER TO SECTION 16355 FOR ADDITIONAL REQUIREMENTS.
3. GENSET WILL BE INITIALLY FUELED BY LPG ONLY, NATURAL GAS CAPABILITY IS FOR FUTURE USE.

AUTOMATIC TRANSFER SWITCH SCHEDULE

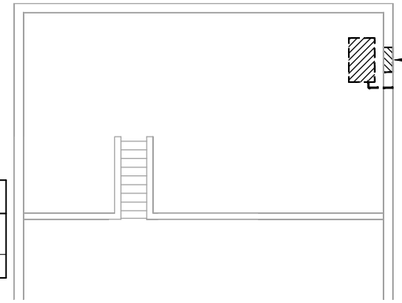
TAG	TYPE	MANUFACTURER	MODEL	RATINGS					ENCLOSURE RATING	NOTES
				VOLTS	POLES	AMPS	FREQ.	SCR		
ATS	AUTOMATIC	ASCO	7000 SERIES	240	4	600	60 Hz	65kA	NEMA 4X	1–4

NOTES:
1. INCLUDE OPEN TRANSITION MAINTENANCE BYPASS WITHIN ENCLOSURE.
2. REFER TO SECTION 16495 FOR ADDITIONAL REQUIREMENTS.
3. AMP MODEL EQUIVALENT TO THE ASCO 7000 SERIES IS ACCEPTABLE.
4. SWITCHED NEUTRAL.

TVSS SCHEDULE

TAG	MANUFACTURER	MODEL	RATINGS			SURGE CURRENT RATING (kA)	MODES PROTECTED	NOTES
			VOLTS	PHASE	WIRES			
TVSS–1	SQUARE D	TVS2IMA240	208	3	4+GRND.	240	L–N/L–L/L–G/N–G	1
TVSS–2	SQUARE D	SDSA2040	208	3	4+GRND.	40	L–N/L–L/L–G/N–G	2

NOTES:
1. FACTORY INSTALLED INTEGRAL TO PANEL. SHALL NOT TAKE UP ANY CIRCUIT BREAKER SPACES.
2. NIPPLE MOUNTED TO BOTTOM OF ENCLOSED CIRCUIT BREAKER.



REMOVE AND SALVAGE EXISTING GENERATOR SET, INCLUDING MUFFLER & GAS REGULATOR, FOR OWNER. DEMOLISH EXHAUST PIPING, POWER & CONTROL CIRCUITS TO THE EXISTING ATS, & GAS PIPING. DEMOLISH GAS PIPING BACK TO GAS MAIN & CAP BRANCH AT MAIN. DEMOLISH EXISTING EXHAUST DUCTWORK & MOTORIZED LOUVER AND SEAL WALL PENETRATION CREATED BY REMOVING EXHAUST DUCT. REFER TO ELECTRICAL DEMOLITION NOTES. DELIVER GENERATOR TO AN ON SITE STORAGE BUILDING SPECIFIED BY IOWA DEPT. OF TRANSPORTATION.

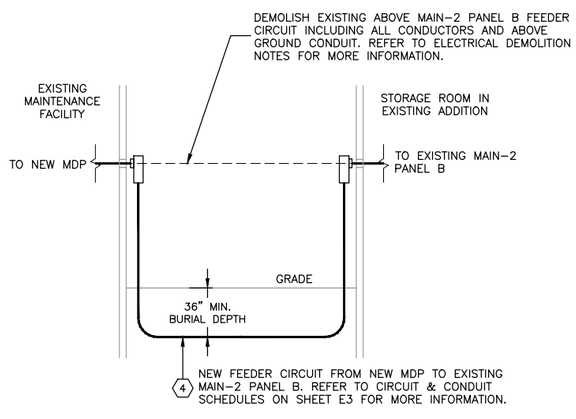
SECOND FLOOR ELECTRICAL PLAN

SCALE: 1/8" = 1' –0"

NORTH

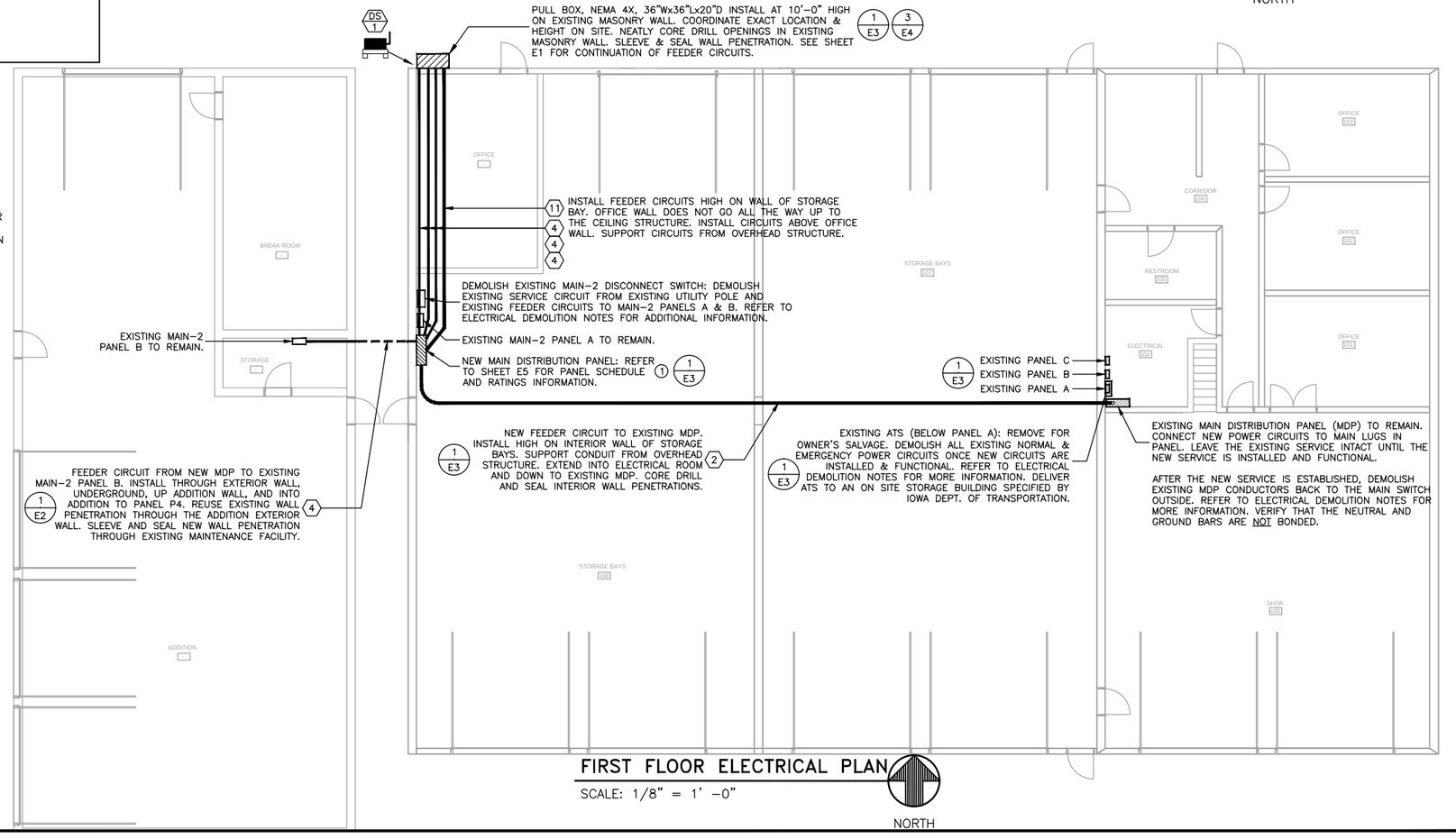
ELECTRICAL KEYED NOTES

(1) CUT AND SHORTEN EXISTING WIRE TROUGH TO MAKE ROOM FOR NEW MDP ADJACENT TO EXISTING MAIN–2 PANEL A. DEMOLISH EXISTING FEEDER CIRCUIT TO EXISTING MAIN–2 PANEL B. DEMOLISH ALL ABOVE GROUND CONDUIT AND LB FITTINGS. PATCH OPENING IN MASONRY WALL WITH NON–SHRINK GROUT. REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION.



1 EXISTING MAIN–2 PANEL B FEEDER CIRCUIT

NOT TO SCALE



FIRST FLOOR ELECTRICAL PLAN

SCALE: 1/8" = 1' –0"

NORTH

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MAINTENANCE FACILITY
ELECTRICAL UPGRADE

ALBIA, IOWA

SHEET TITLE
ELECTRICAL PLAN

SCALE: AS NOTED

DRAWN BY: M.C.

APPROVED: R.M.

REVISIONS:

DATE: JUNE 14, 2016

PROJECT NO.: ME 1517

SHEET NO.: E2

ELECTRIC DISTRIBUTION NOTES

1. FURNISH & INSTALL CIRCUIT BREAKERS AS SHOWN ON PANEL SCHEDULE (TYP).
2. APPLY ANTIOXIDANT PASTE TO ALL CONDUCTORS WHERE THEY CONNECT TO LUGS. TORQUE ALL CONNECTIONS TO VALUES RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
3. GENERATOR FRAME MOUNTED CIRCUIT BREAKER: INSTALL CB SO IT IS ACCESSIBLE FROM GROUND AT HEIGHT NO GREATER THAN 6'-0" ABOVE GROUND.
4. ROUTE GROUNDING CONDUCTORS AS SHORT & DIRECT AS POSSIBLE. MINIMIZE BENDS. MAKE REQ'D BENDS W/ LARGE RADIUS. STRAP CONDUIT TO WALL W/ PVC STRAPS. INSTALL GROUNDING CONDUCTOR IN CONDUIT EVERYWHERE ABOVE GRADE AND BELOW GRADE TO BURIAL DEPTH IN 1" SCH80 PVC.
5. PROVIDE PENETRATION OF EXTERIOR WALL WITH SCH. 40 GALV. STEEL SLEEVE. EXTEND CONDUIT THROUGH EXISTING WALL. FILL AREA BETWEEN SLEEVE AND CONDUIT WITH SPRAY FOAM. APPLY NEAT FILLET OF URETHANE BASED SEALANT AROUND PERIMETER ON BOTH SIDES OF WALL.
6. PROVIDE A 4" RIGID GALVANIZED CONDUIT EXPANSION JOINT FROM AN APPROVED MANUFACTURER.
7. PROVIDE PULL BOX–REFER TO SHEET E1 & E2.
8. CADWELD UFER GROUNDING CONDUCTOR TO REBAR IN CONCRETE PAD.
9. EXISTING KW/HR METER BY ALLIANT ENERGY TO REMAIN. SHOWN FOR REFERENCE.
10. EXISTING MDP: VERIFY THAT THE FOLLOWING GROUNDING CONNECTIONS EXIST AT THE EXISTING MDP. REPORT ANY THAT DO NOT EXIST OR ANY UNSAFE CONDITIONS TO THE ENGINEER:
    –MDP GROUNDING BAR BONDED TO COLD WATER PIPE AT WATER SERVICE ENTRANCE.
    –JUMPER ACROSS WATER METER AT WATER SERVICE ENTRANCE.
    –GROUNDING BAR BONDED TO BUILDING STEEL IF APPLICABLE.
    –VERIFY THAT THE NEUTRAL AND GROUND BARS ARE NOT BONDED. REMOVE BOND IF IT DOES EXIST.
    AFTER THE NEW SERVICE IS ESTABLISHED, DEMOLISH EXISTING CONDUCTORS BACK TO THE DISCONNECT SWITCH OUTSIDE. DEMOLISH ALL ABOVE GROUND PORTIONS OF THE CONDUIT. CUT EXISTING CONDUIT 2' BELOW GRADE AND ABANDON EXISTING CONDUIT BELOW GRADE. PLUG EXISTING CONDUIT WITH GROUT OR OTHER APPROVED METHOD AFTER EXISTING CONDUCTORS HAVE BEEN REMOVED. REFER TO ELECTRICAL DEMOLITION NOTES FOR MORE INFORMATION.
11. GENERATOR EMERGENCY SHUTOFF SWITCH. INSTALL ON STAND NEXT TO PANEL P1. REFER TO DETAIL 2 ON SHEET E3 AND SPECIFICATION SECTION 16355 FOR MORE INFORMATION.
12. BOND NEUTRAL AND GROUND BARS TOGETHER AT ONE POINT ONLY.
13. PROVIDE 120V 20A INDUSTRIAL GRADE DUPLEX GFCI RECEPTACLE IN A 4"x4"x2-1/8" STEEL BOX, MOUNTED WITHIN THE GENSET WEATHER ENCLOSURE FOR BATTERY CHARGER & BATTERY HEATER.
14. VERIFY ENGINE HEATER WATTAGE WITH GENERATOR MANUFACTURER. PROVIDE EITHER A HARDWIRED CONNECTION OR 20A GFCI RECEPTACLE AS REQUIRED BY GENERATOR MANUFACTURER.
15. PROVIDE (1) 120V 20A SWITCH IN A 4"X4"X2-1/8" STEEL BOX FOR LED2'S WITHIN GENERATOR. MOUNT SO SWITCH IS EASILY ACCESSIBLE ON SIDE WALL OF GENSET ENCLOSURE. CIRCUIT TO 20A CIRCUIT BREAKER IN PANEL P1.
16. PROVIDE 120V 20A WEATHERPROOF RECEPTACLE ON EQUIPMENT STAND. CIRCUIT TO NEW PANEL P1.
17. PROVIDE NEW ENCLOSED CIRCUIT BREAKER ON STAND NEXT TO GENERATOR EMERGENCY CIRCUIT BREAKER. SEE DETAIL 1 ON SHEET E4 FOR MOUNTING DETAIL.
18. PROVIDE ENGRAVED PLASTIC LABELS ON MAIN CIRCUIT BREAKER COVER. THE TOP ONE SHALL SAY "MAIN SERVICE DISCONNECT" AND THE BOTTOM SHALL SAY "ELECTRICAL SYSTEM IS EQUIPPED WITH AN EMERGENCY GENERATOR. PUSH ADJACENT GENERATOR STOP SWITCH TO DISCONNECT ALL POWER". REFER TO SPECIFICATION SECTION 16195 FOR ADDITIONAL INFORMATION.

CIRCUIT SCHEDULE

TAG	CIRCUIT SERVES	# OF SETS	CONDUCTOR INFORMATION	CONDUIT SIZE
1	SECONDARY SERVICE/ENCLOSED CIRCUIT BREAKER	(2)	(4) 350 kcmil THWN–2	4"
1A	ATS NORMAL POWER	(2)	(4) 350 kcmil THWN–2 + (1) #1 AWG THWN–2 E.G.C.	4"
2	EXISTING MDP	(1)	(3) 600 kcmil THWN–2 + (1) #3 AWG THWN–2 E.G.C.	4"
3	ATS EMERGENCY POWER	(1)	(4) 600 kcmil THWN–2 + (1) #3 AWG THWN–2 E.G.C.	4"
4	EXISTING & NEW PANELS	(1)	(4) #4/0 AWG THWN–2 + (1) #4 AWG THWN–2 E.G.C.	3"
5	GENERATOR RECEPTACLE (GENERAL MAINTENANCE)	(1)	(2) #10 AWG THWN–2 + (1) #12 AWG THWN–2 E.G.C.	1–1/2"
6	GENERATOR RECEPTACLE (ENGINE HEATER)	(1)	(2) #10 AWG THWN–2 + (1) #12 AWG THWN–2 E.G.C.	WITH ABOVE
7	GENERATOR RECEPTACLE (BATTERY CHARGER & HEATER)	(1)	(2) #10 AWG THWN–2 + (1) #12 AWG THWN–2 E.G.C.	WITH ABOVE
8	EXISTING PANEL A	(1)	(3) #3 AWG THWN–2 + (1) #8 AWG THWN–2 E.G.C.	2"
9	GROUNDING CONDUCTORS	(1)	(1) #2/0 AWG THWN–2 E.G.C.	4
10	GENSET EMERGENCY SHUTOFF SWITCH	(1)	(2) #12 AWG THWN–2 + (1) #12 AWG THWN–2 E.G.C.	3/4"
11	NEW MDP	(2)	(4) 350 kcmil THWN–2 + (1) #1 AWG THWN–2 E.G.C.	4"

LIGHT FIXTURE SCHEDULE

TAG	FIXTURE TYPE	MANUFACTURER	MODEL	VOLTS	LAMPS	NOTES
LED1	EXTERIOR LED PARKING LOT FIXTURE	GARDCO	ECOFORM ECF–1–5–135LA–6470–NW–UNV–BRP–PC	MULTI	135W LED	1–3
LED2	GENERATOR ENCLOSURE LED	LUMINAIRE LED	SWP610–15W–3500K–120–277–BLK	120V	15W LED	3
P1	PARKING LOT LIGHTING POLE (25'–0")	KWI	SSP25–5.0–7–BRZ–DM10–BC	–	–	3–4

NOTES:
1. INCLUDE BUILT–IN PHOTOCELL & PHOTOCELL SWITCH.
2. HOUSING COLOR: DARK BRONZE.
3. EQUIVALENT PRODUCTS FROM LITHONIA, DAYBRITE, & HUBBELL ARE APPROVED AS EQUALS.
4. INCLUDE BASE COVER, ANCHOR BOLTS, HANDHOLE, GROUNDING LUG, 12" MOUNTING ARMS, & ALL HARDWARE REQUIRED TO INSTALL THE SPECIFIED LED1 FIXTURE.

CONDUIT SCHEDULE

REFER TO SECTION 16110 FOR FITTINGS & ADDITIONAL REQUIREMENTS.

PROVIDE CONDUIT IN THE SIZES SHOWN ON THE CIRCUIT SCHEDULE & OF THE TYPES AS FOLLOWS (UNLESS NOTED OTHERWISE ON DRAWINGS):

BELOW GROUND: SCH80 RIGID PVC

ABOVE GROUND, OUTSIDE: SCH40 RIGID GALVANIZED STEEL

SWEEPS OR ELBOWS, OUTSIDE: SCH40 RIGID GALVANIZED STEEL

GROUNDING CONDUCTOR, ABOVE GROUND: SCH80 RIGID PVC

ABOVE GROUND, WITHIN THE BUILDING: EMT.

SPECIAL CONDITIONS

WORK INVOLVING SIGNIFICANT POWER DISRUPTIONS MUST BE PREFORMED WITHOUT MAJOR DISRUPTION TO THE OWNER'S NORMAL ACTIVITIES. REFER TO SPEC SECTION 16010–1.

EXISTING WIRING

IF EXISTING WIRING IS CALLED OUT TO BE REUSED, INSPECT CONDITION AND CURRENT RATING OF WIRE TO DETERMINE IF IT IS SAFE TO REUSE. REPORT ANY UNSATISFACTORY OR UNSAFE CONDITIONS TO THE ENGINEER.

ENCLOSED CIRCUIT BREAKER SCHEDULE

RATINGS				ENCLOSURE RATING	NOTES
VOLTS	POLES	AMPS	S.C.R.		
240	3	600	65kA	NEMA 4X	1–3

NOTES:
1. SERVICE DISCONNECT.
2. UL LISTED AS SUITABLE FOR SERVICE ENTRANCE.
3. FULLY RATED. 65,000 AIC.

DISCONNECT SWITCH SCHEDULE

TAG (DS 1)	VOLTS (V)	SIZE (A)	NO. OF POLES	NEMA TYPE	TYPE	NOTES
1	240	600	3	4X	NON FUSED, HEAVY DUTY	1

NOTES:
1. INSTALL ON STAINLESS STEEL STAND. SEE SHEET E1.

EQUIPMENT LABELING

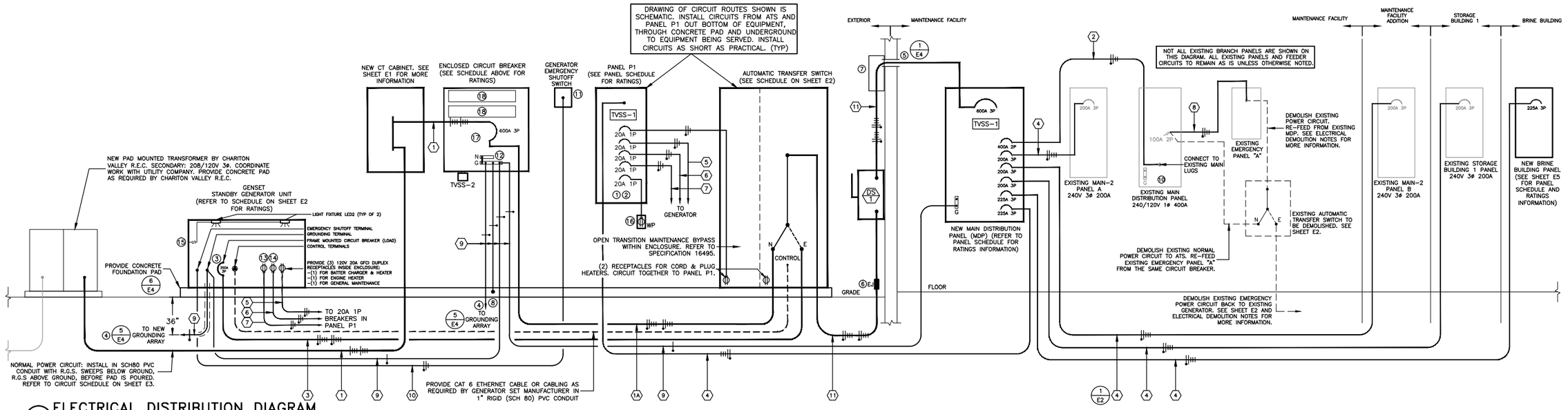
PROVIDE LABELING OF PANELS AND EQUIPMENT AS REQUIRED ON THE NEC AND SPECIFIED IN SPECIFICATION SECTION 16195. LABEL BOTH NEW AND EXISTING PANELS.

PROVIDE IDENTIFICATION OF WIRING AND JUNCTION BOXES AS SPECIFIED IN SECTION 16195.

TRACE EXISTING CIRCUITS FROM EXISTING PANELS ADEQUATE TO CREATE NEW PANEL SCHEDULES FOR EXISTING PANELS.

PROVIDE PANEL SCHEDULES FOR BOTH NEW AND ALL EXISTING PANELS AS SPECIFIED IN SECTION 16195.

2 GENERATOR EMERGENCY SHUTOFF SWITCH
NOT TO SCALE



1 ELECTRICAL DISTRIBUTION DIAGRAM
NOT TO SCALE

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3079 COLDWATER CREEK RD.
CRESCO, IA 52136
515-360-5995
RMERCER@MERCERENG.COM

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MAINTENANCE FACILITY
ELECTRICAL UPGRADE
ALBIA, IOWA

SHEET TITLE
ELECTRICAL DETAILS

SCALE: AS NOTED

DRAWN BY: M.C.

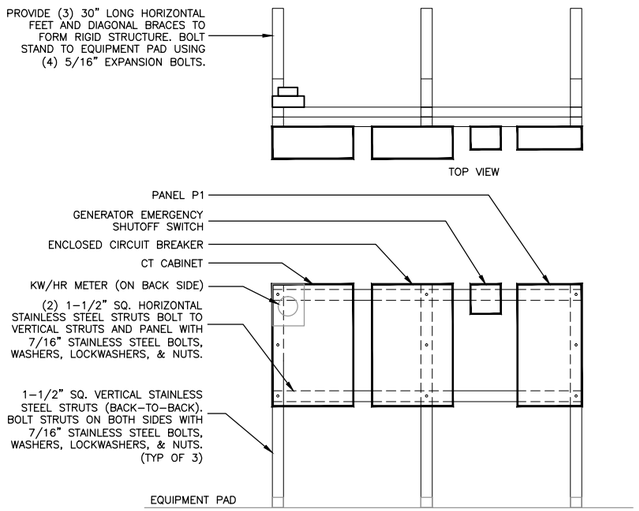
APPROVED: R.M.

REVISIONS:

DATE: JUNE 14, 2016

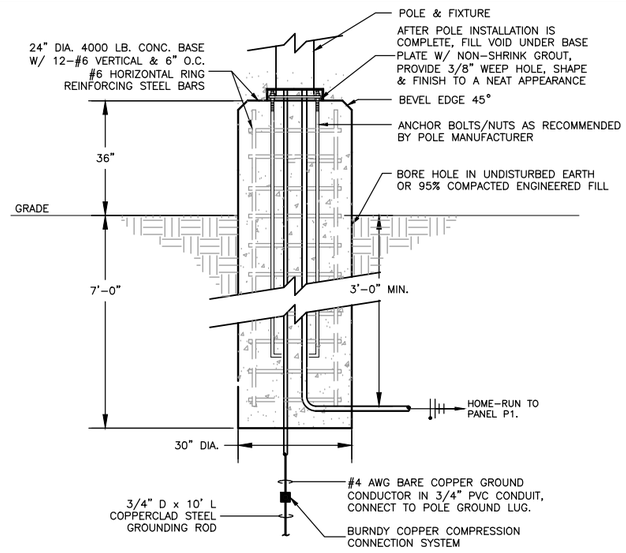
PROJECT NO.: ME 1517

SHEET NO.: E3



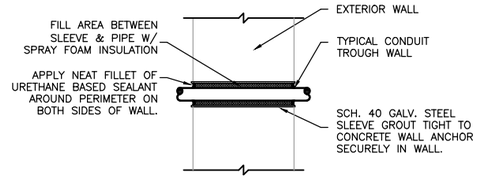
1 EQUIPMENT STAND DETAIL

NOT TO SCALE



2 POLE BASE DETAIL

NOT TO SCALE



3 SLEEVE & SEAL DETAIL – EXTERIOR

NOT TO SCALE

EQUIPMENT FOUNDATION SUMMARY

CUT EXISTING SOD & SAVE FOR RE-USE. KEEP MOIST. EXCAVATE APPROX. 3 FT. & SAVE SOIL FOR RE-GRADING.

BORE (6) 12"D HOLES 6 FT. BELOW GRADE. PUT 3/4" WASHED LIMESTONE 6" DEEP IN BOTTOM OF EACH HOLE.

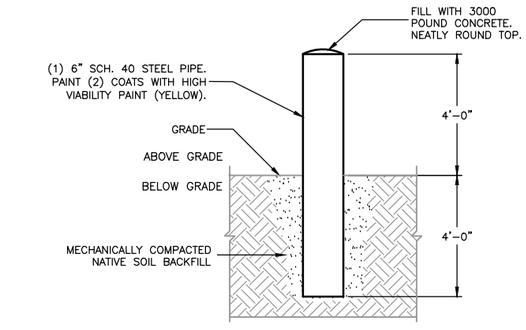
PROVIDE BLOCKOUTS FOR CONDUITS ENTERING EQUIPMENT.

INSTALL BELOW-PAD CONDUITS TO EQUIPMENT AS SHOWN ON THE DRAWINGS.

PROVIDE 8" BED OF 3/4" WASHED LIMESTONE IN BOTTOM OF PAD EXCAVATION.

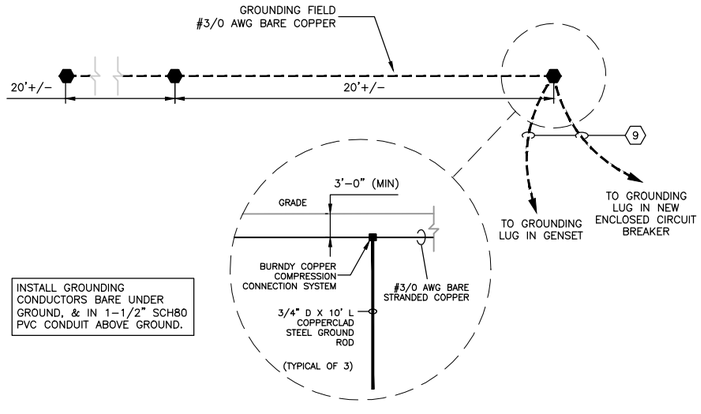
PROVIDE REINFORCED CONCRETE FOUNDATION AS SHOWN BELOW. OVERALL SIZE SHOWN IS APPROXIMATE. COORDINATE EXACT OVERALL SIZE WITH EQUIPMENT SHOP DRAWINGS.

AFTER EQUIPMENT HAS BEEN INSTALLED, FINISH GRADE WITH SLIGHT SLOPE UP TO 4" BELOW TOP OF SLAB. SET REMOVED SOD TO COVER EXPOSED DIRT & WATER.



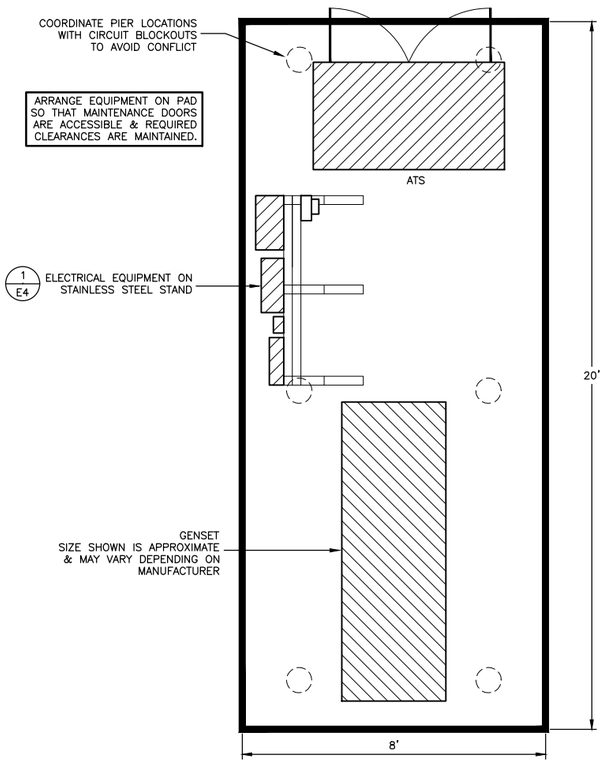
4 BALLARD DETAIL

NOT TO SCALE



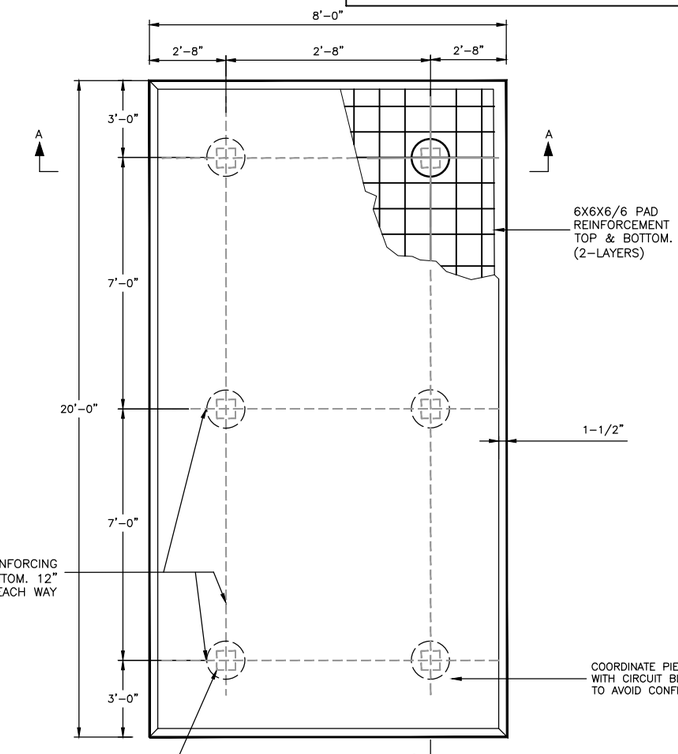
5 GROUNDING ELECTRODE SYSTEM DETAIL

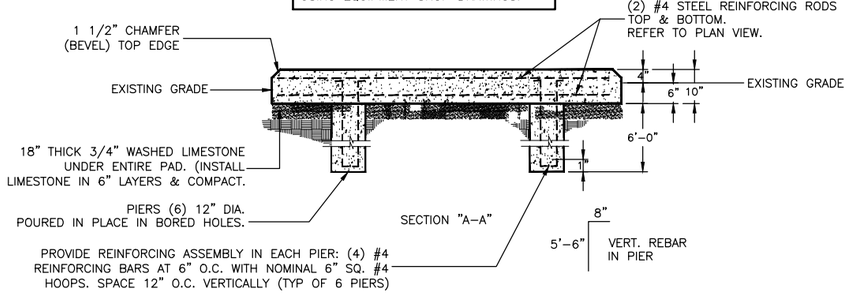
NOT TO SCALE



6 ATS & GENERATOR SET CONCRETE PAD DETAIL

NOT TO SCALE





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MAINTENANCE FACILITY
ELECTRICAL UPGRADE
ALBIA, IOWA

SHEET TITLE
ELECTRICAL DETAILS

SCALE: AS NOTED

DRAWN BY: M.C.

APPROVED: R.M.

REVISIONS:

DATE: JUNE 14, 2016

PROJECT NO.: ME 1517

SHEET NO.: E4

MAIN DISTRIBUTION PANEL (MDP)

LOCATION: MAINTENANCE FACILITY
ENCLOSURE TYPE: NEMA 12
INSTALLATION: SURFACE

VOLTS: 208/120V 3ø 4W+G
MAINS RATING: 600A
NEUTRAL: 100%

AIC RATING: 65,000
600A 3P MAIN BREAKER

CKT. NO.	CIRCUIT BREAKER		CIRCUIT DESCRIPTION	CKT. NO.	CIRCUIT BREAKER		CIRCUIT DESCRIPTION
			TVSS-1				
1	400A/2P		EXISTING MDP	2	200A/3P		EXISTING MAIN-2 PANEL A
3	200A/3P		EXISTING MAIN-2 PANEL B	4	200A/3P		STORAGE BUILDING 1 PANEL
5	225A/3P		NEW BRINE BUILDING PANEL	6	225A/3P		NEW PANEL P1
7	100A/3P		SPARE	8	100A/3P		SPARE
9	200A/3P		SPARE	10	200A/3P		SPACE
11	200A/3P		SPACE	12	200A/3P		SPACE

PANEL P1

LOCATION: EQUIPMENT PAD
ENCLOSURE TYPE: NEMA 4X
INSTALLATION: STAND

VOLTS: 208/120V 3ø 4W+G
MAINS RATING: 225A
NEUTRAL: 100%

AIC RATING: 10,000
MAIN LUGS ONLY

CKT. NO.	CIRCUIT BREAKER	LOAD kVA	CIRCUIT DESCRIPTION	CKT. NO.	CIRCUIT BREAKER	LOAD kVA	CIRCUIT DESCRIPTION
			TVSS-1				
1	20A/1P	–	GENSET RECEPTACLE	2	20A/1P	–	ATS ENCLOSURE HEATERS
3	20A/1P	–	GENSET RECEPTACLE	4	20A/1P	–	RECEPTACLE
5	20A/1P	–	GENSET RECEPTACLE	6	20A/1P	–	GENSET LED2 FIXTURES
7	20A/2P	–	LED1	8	20A/1P	–	SPARE
9				10	20A/1P	–	SPARE
11	20A/1P	–	SPARE	12	20A/1P	–	SPARE
13	20A/1P	–	SPARE	14	20A/1P	–	SPARE
15	20A/1P	–	SPACE	16	20A/1P	–	SPACE
17	20A/1P	–	SPACE	18	20A/1P	–	SPACE
19	20A/1P	–	SPACE	20	20A/1P	–	SPACE
21	20A/1P	–	SPACE	22	20A/1P	–	SPACE
23	20A/1P	–	SPACE	24	20A/1P	–	SPACE
25	20A/1P	–	SPACE	26	20A/1P	–	SPACE
27	20A/1P	–	SPACE	28	20A/1P	–	SPACE
29	20A/1P	–	SPACE	30	20A/1P	–	SPACE

NEW BRINE BUILDING PANEL (BP)

LOCATION: BRINE BUILDING
ENCLOSURE TYPE: NEMA 4X
INSTALLATION: SURFACE

VOLTS: 208/120V 3ø 4W+G
MAINS RATING: 225A
NEUTRAL: 100%

AIC RATING: 10,000
225A 3P MAIN BREAKER

CKT. NO.	CIRCUIT BREAKER	LOAD kVA	CIRCUIT DESCRIPTION	CKT. NO.	CIRCUIT BREAKER	LOAD kVA	CIRCUIT DESCRIPTION
1	20A/2P	–	EXISTING CIRCUIT	2	30A/2P	–	EXISTING CIRCUIT
3				4			
5	20A/1P	–	EXISTING CIRCUIT	6	20A/1P	–	EXISTING CIRCUIT
7	20A/1P	–	EXISTING CIRCUIT	8	15A/1P	–	EXISTING CIRCUIT
9	15A/1P	–	EXISTING CIRCUIT	10	40A/2P	–	EXISTING CIRCUIT
11	60A/1P	–	EXISTING CIRCUIT	12			
13	20A/1P	–	SPARE	14	40A/2P	–	EXISTING CIRCUIT
15	20A/1P	–	SPARE	16			
17	20A/1P	–	SPARE	18	20A/1P	–	SPARE
19	20A/1P	–	SPACE	20	20A/1P	–	SPACE
21	20A/1P	–	SPACE	22	20A/1P	–	SPACE
23	20A/1P	–	SPACE	24	20A/1P	–	SPACE
25	20A/1P	–	SPACE	26	20A/1P	–	SPACE
27	20A/1P	–	SPACE	28	20A/1P	–	SPACE
29	20A/1P	–	SPACE	30	20A/1P	–	SPACE

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AS NOTED

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APPROVED:
R.M.

REVISIONS:

DATE:
JUNE 14, 2016

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SHEET NO.:
E5