

# KNOTT LANDFILL FLARE EXPANSION PROJECT

DESCHUTES COUNTY  
BEND, OREGON



## PROJECT INFORMATION

### PROJECT LOCATION

61050 SE 27TH STREET  
BEND, OREGON 97702

### PROJECT DESCRIPTION

LANDFILL GAS (LFG) FLARE EXPANSION TO BE INSTALLED IN 2017 AT THE KNOTT LANDFILL. THE NEW BLOWER AND FLARE SYSTEM INCLUDES TWO (2) 2000 SCFM BLOWERS FOR 100% REDUNDANT BACKUP. THE FLARE WILL BE A 2000 SCFM CANDLESTICK STYLE LFG FLARE. A TELEMETRY SYSTEM WILL ALLOW THE FLARE SYSTEM TO COMMUNICATE WITH DESCHUTES COUNTY DEPARTMENT OF SOLID WASTE'S EXISTING NETWORK. THE NEW FLARE SYSTEM WILL BE INSTALLED ADJACENT TO AN EXISTING FLARE STATION, WHICH WILL REMAIN IN PLACE AS A SECONDARY BACKUP.

### LANDFILL OWNER

DESCHUTES COUNTY DEPARTMENT  
OF SOLID WASTE  
61050 SE 27TH STREET  
BEND, OREGON 97702  
(541) 317-3163

### GCCS ENGINEER

ENERGYNEERING SOLUTIONS, INC.  
15820 BARCLAY DRIVE,  
SISTERS, OR 97759  
(541) 549-8766

### DRAWING INDEX

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COVER SHEET

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.

**G0.01**

PROJECT NO.  
018.004

# GENERAL MECHANICAL NOTES

**GENERAL:**

1. ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM WITH THE MOST RECENTLY ADOPTED SPECIFICATION OF CODE AND WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK.
2. THE CONTRACTOR SHALL ASSUME THAT THERE WILL BE MINOR MODIFICATIONS MADE DURING CONSTRUCTION, CHANGE ORDERS FOR THESE MODIFICATIONS WILL NOT BE ACCEPTED.
3. WORK REQUIRING A SHUTDOWN OF EXISTING EQUIPMENT SHALL BE AT SUCH TIME AND IN SUCH MANNER AS DIRECTED BY THE OWNER. PROVIDE A MINIMUM ONE (1) WEEK PRIOR WRITTEN NOTICE.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING WORK.
5. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A RECORD SET OF INSTALLATION PRINTS. THE CONTRACTOR SHALL NEATLY AND CLEARLY RECORD ON THESE PRINTS ALL DEVIATIONS FROM THE CONTRACT DRAWINGS IN SIZES, LOCATIONS AND DETAILS. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL RETURN THE MARKED PRINTS WITH ALL INFORMATION OBTAINED DURING THE CONSTRUCTION PROCESS TO THE ENGINEER FOR SUBMISSION TO OWNER.
6. ENERGYNEERING SOLUTIONS, INC. INCORPORATES COMMERCIALY MANUFACTURED ITEM(S) OR COMPONENT(S) IN THE PREPARATION OF THIS PLAN, AND RELIES UPON MANUFACTURERS' STATED OR IDENTIFIED SPECIFICATIONS AND PROPERTIES IN THE PREPARATION OF THIS PLAN. ENERGYNEERING SOLUTIONS, INC. HAS NOT UNDERTAKEN ANY INDEPENDENT EXAMINATION, TESTING OR ANALYSIS TO VERIFY THE MANUFACTURERS' SPECIFICATIONS OR PROPERTIES FOR ANY ITEM OR COMPONENT. (ENERGYNEERING SOLUTIONS INC. MAKES NO REPRESENTATIONS OR WARRANTIES AS TO THE ACCURACY OF THE SPECIFICATIONS OR PROPERTIES ASSOCIATED WITH ANY ITEM OR COMPONENT UTILIZED IN THIS PLAN.)
7. ENERGYNEERING SOLUTIONS, INC. HAS RELIED UPON INFORMATION PROVIDED TO IT BY OTHERS IN PREPARATION OF THESE PLANS. THIS INFORMATION HAS BEEN USED IN THE DEVELOPMENT OF THESE PLANS. ENERGYNEERING SOLUTIONS INC. SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION; NOR FIELD CHANGES DURING INSTALLATION AND CONSTRUCTION.
8. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE DIMENSIONS AMONG DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEMOLITION AND CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCING, AND SAFETY REQUIRED FOR THIS PROJECT.
10. ALL PRODUCTS AND MATERIALS USED BY THE CONTRACTOR SHALL BE APPLIED, PLACED, ERECTED OR INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
11. THESE DOCUMENTS CONTAIN NOTES THAT MAY APPLY GENERALLY TO ALL MECHANICAL ELEMENTS, SPECIFICALLY TO ONE SHEET, OR SPECIFICALLY TO ONE OR MORE MECHANICAL ELEMENTS. THE NOTES ARE NOT MERE GUIDELINES, THEY ARE PART AND PARCEL OF THE DESIGN. ANY WORK THAT IS PERFORMED THAT IS NOT IN COMPLIANCE WITH THE NOTES IS NOT IN COMPLIANCE WITH THE DESIGN AND IS SUBJECT TO REJECTION. ANY ALTERATION, MODIFICATION, DELETION, OR ADDITION TO THE NOTES BY WRITING, ACT OR FAILURE TO ACT, SHALL BE CARRIED OUT ONLY WITH THE PRIOR EXPRESS WRITTEN CONSENT AND APPROVAL OF THE DESIGN ENGINEER.
12. UNLESS OTHERWISE SPECIFIED, DETAIL SHEETS ARE NOT TO SCALE.

2. ALL PIPING DIMENSIONS ARE ±1". MECHANICAL CONTRACTOR TO VERIFY IN FIELD.

3. ALL CARBON STEEL PIPING, SUPPORT STRUCTURES, AND COMPONENTS TO BE GALVANIZED FOR CORROSION PROTECTION.

**PIPE SUPPORTS:**

1. PIPE SUPPORTS TO BE INSTALLED TO MAINTAIN SLOPE, SUPPORT, AND ACCESSIBILITY. MECHANICAL CONTRACTOR TO INSTALL ADDITIONAL PIPE SUPPORTS AS NECESSARY.
2. MAXIMUM SUPPORT SPACING TO COMPLY WITH ALL APPLICABLE CODES (E.G. INTERNATIONAL MECHANICAL CODE, TABLE 305.4).

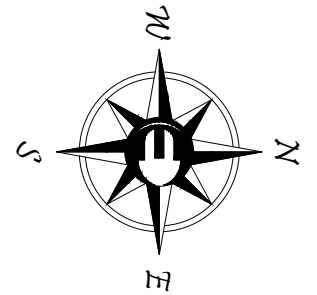
**MECHANICAL PIPING:**

1. ALL FLANGES TO BE ANSI 150# UNLESS OTHERWISE NOTED.

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							 <p>DESCHUTES COUNTY DEPARTMENT OF SOLID WASTE 61050 SE 27TH STREET, BEND, OR 97702 PHONE: 541-322-7172</p>	 <p>REGISTERED PROFESSIONAL ENGINEER 89268PE OREGON JULY 8, 2014 DOSOON SONG EXPIRES: 6/30/2016</p>	 <p>15820 BARCLAY DRIVE SISTERS, OR 97759 PHONE: (541) 549-8766 WWW.ENERGYNEERINGSOLUTIONS.COM</p>	<p>NOTES</p> <p>KNOTT LANDFILL FLARE EXPANSION PROJECT DESCHUTES COUNTY BEND, OREGON</p>	<p>DRAWING NO.</p> <h2 style="font-size: 2em;">G0.02</h2> <p>PROJECT NO. 018.004</p>
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0 40 80 160  
GRAPHIC SCALE IN FEET

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SITE MAP

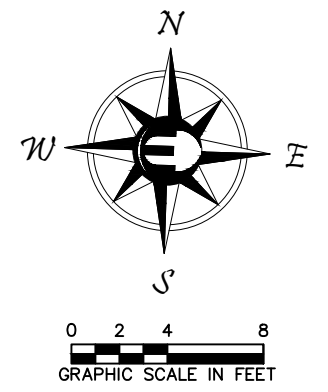
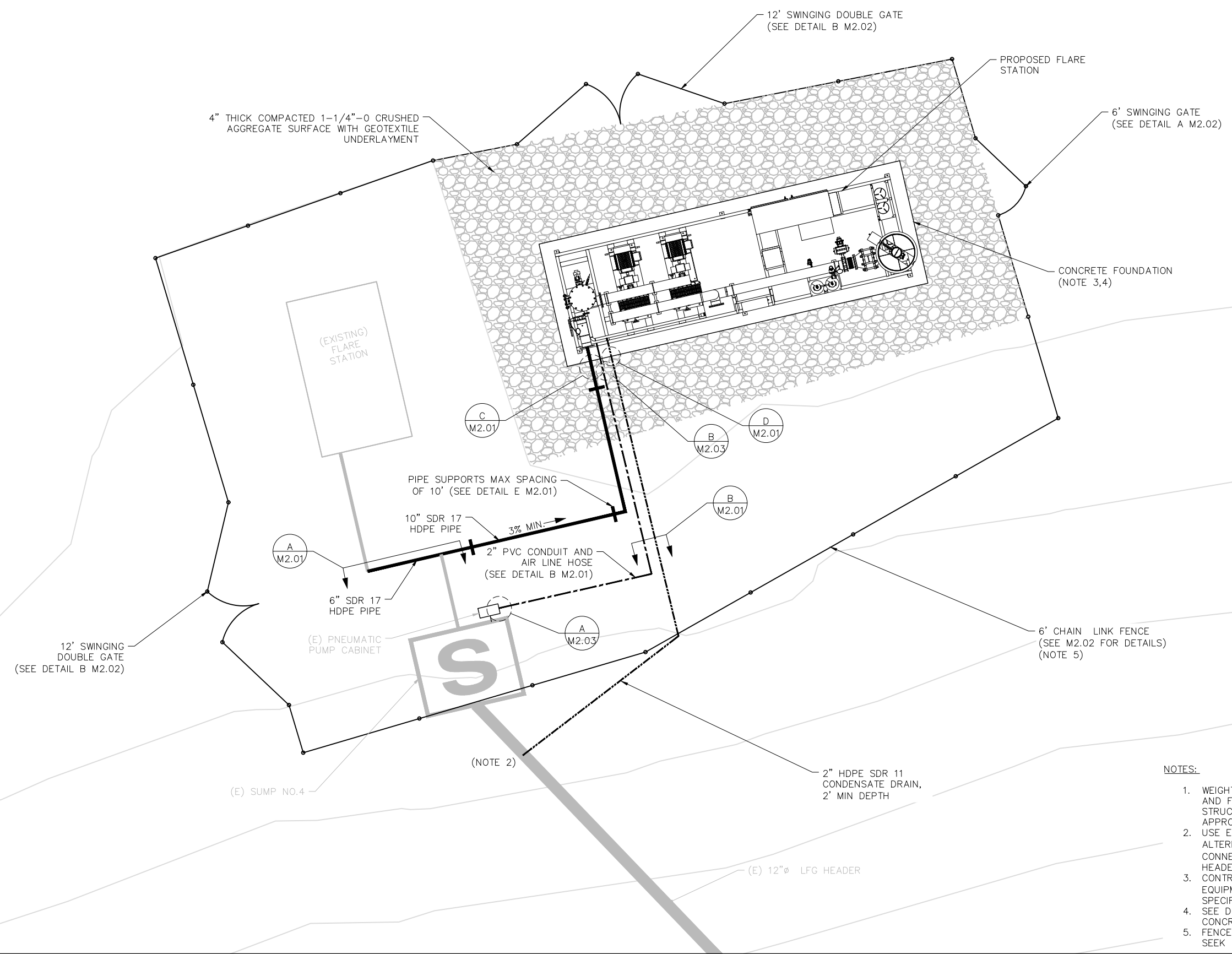
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EXPANSION PROJECT  
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G1.00

PROJECT NO.  
018.004

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- NOTES:**
1. WEIGHT AND DIMENSIONS WILL VARY BASED ON LFG BLOWER AND FLARE EQUIPMENT SELECTION. CONTRACTOR TO PERFORM STRUCTURAL DESIGN FOR FOUNDATION, WHICH WILL BE APPROVED BY THE ENGINEER.
  2. USE ELECTROFUSION COUPLING BRANCH SADDLE OR APPROVED ALTERNATIVE (IE. SIDEWINDER FUSION BRANCH SADDLE) TO CONNECT 2" HDPE CONDENSATE DRAIN TO EXISTING 12" HDPE HEADER.
  3. CONTRACTOR TO PROCURE A STAMPED STRUCTURAL DESIGN OF EQUIPMENT FOUNDATION BASED ON BLOWER/FLARE SKID SPECIFICATIONS.
  4. SEE DRAWING SHEET E2.02 FOR ELECTRICAL GROUNDING TO CONCRETE REINFORCEMENT..
  5. FENCE LOCATION DEPICTED IS APPROXIMATE. FIELD FIT AND SEEK APPROVAL OF THE OWNER DURING INSTALLATION.

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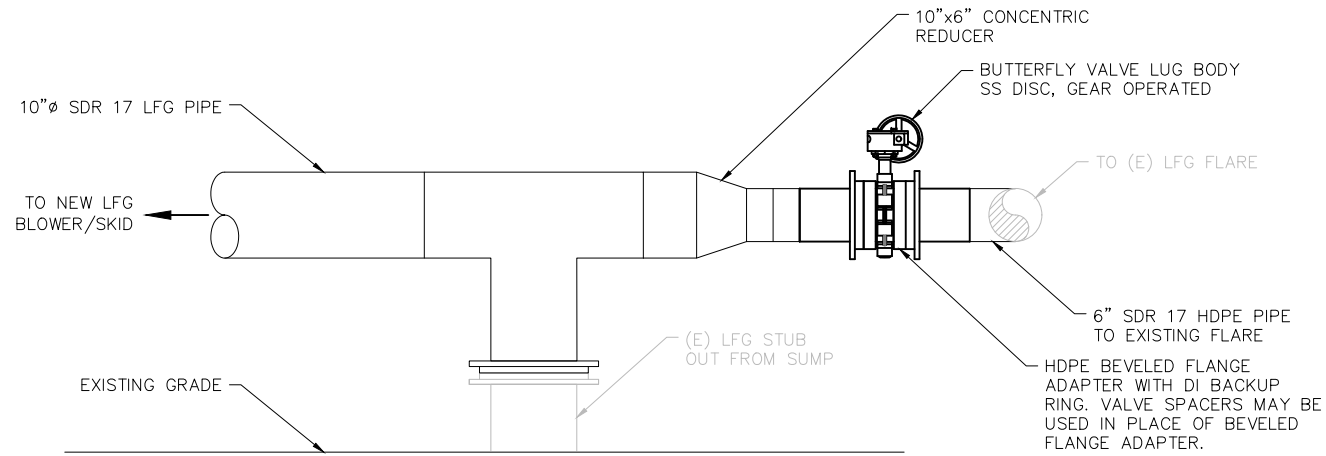
REGISTERED PROFESSIONAL  
ENGINEER  
89268PE  
William Song  
OREGON  
JULY 8, 2014  
DOSOON SONG  
EXPIRES: 6/30/2016

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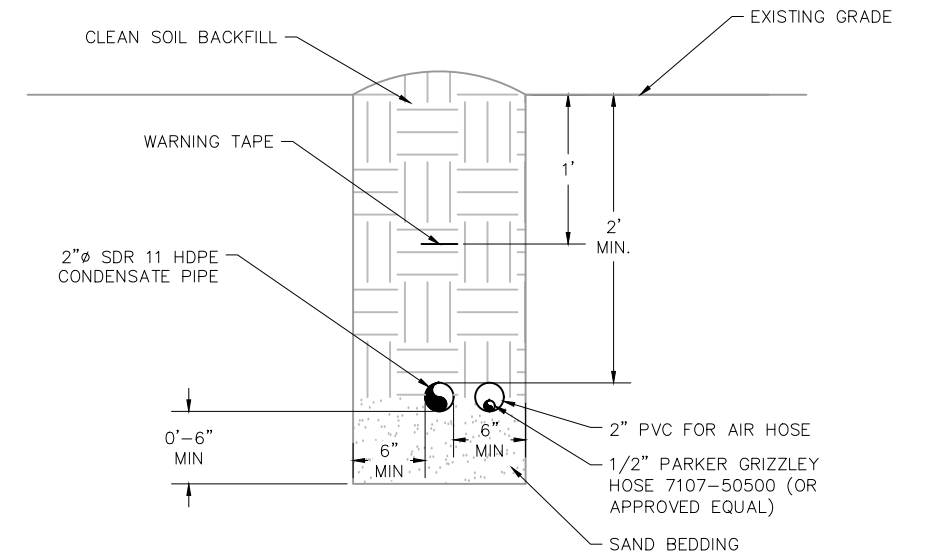
FLARE SITE

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

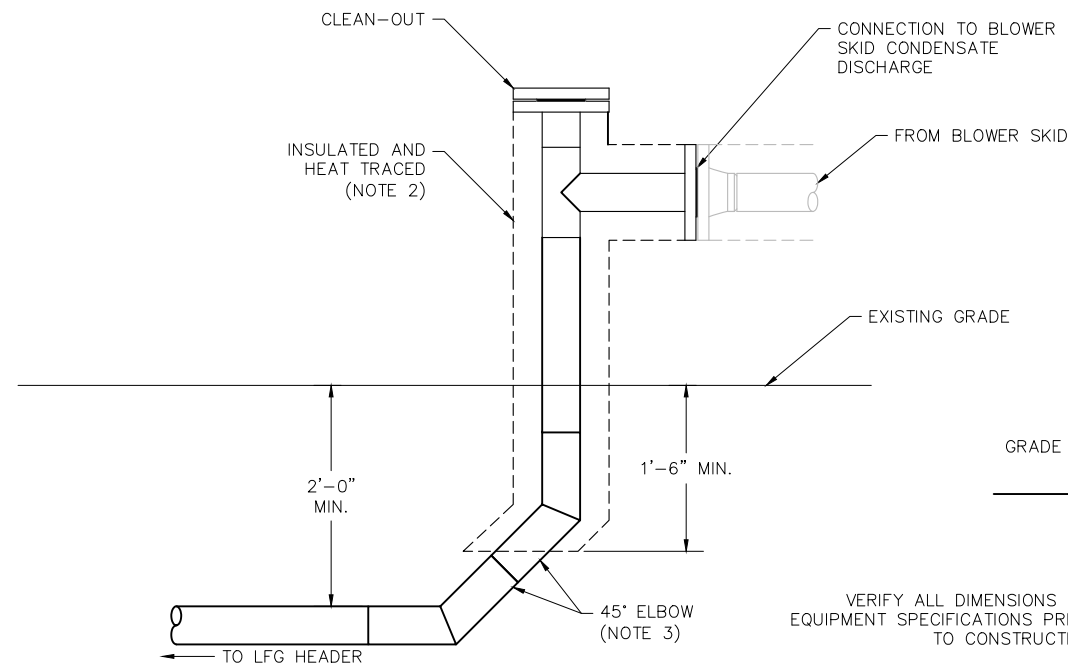
DRAWING NO.  
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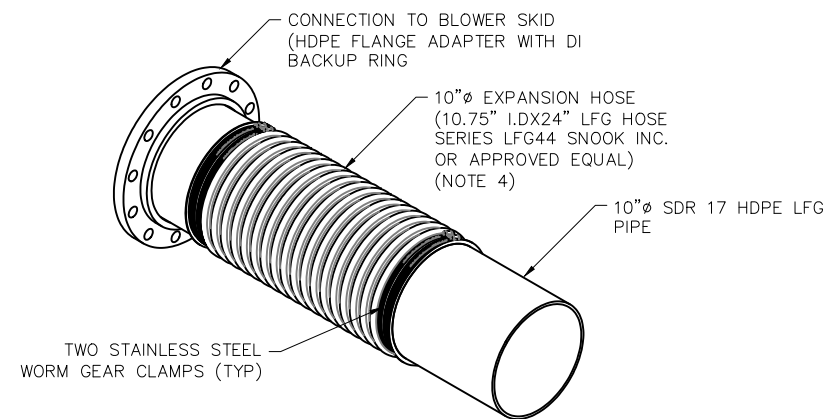
**A** FLARE SYSTEM PIPING MODIFICATION  
M2.01



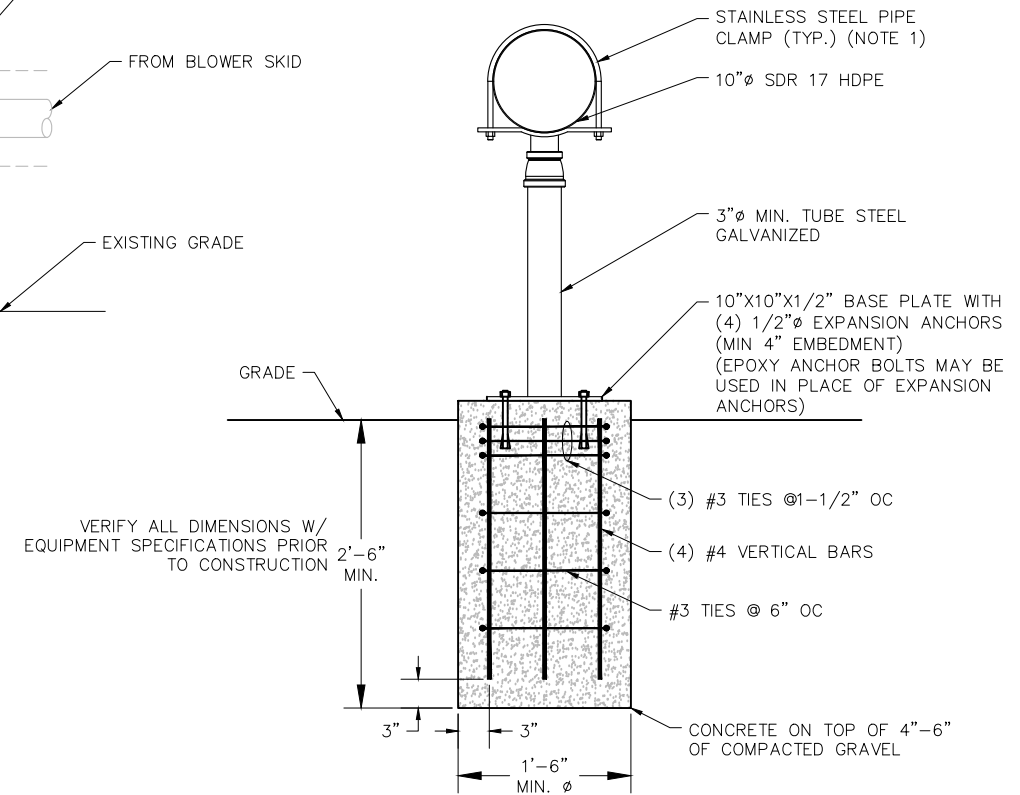
**B** CONDENSATE DRAIN TRENCH DETAIL  
M2.01



**D** CONDENSATE P-TRAP DETAIL  
M2.01



**C** PIPE EXPANSION JOINT DETAIL  
M2.01



**E** PIPE SUPPORT DETAIL  
M2.01

**NOTES:**

1. STAINLESS STEEL PIPE CLAMP IS TO REMAIN LOOSE TO ALLOW AXIAL PIPE MOVEMENT.
2. HEAT TRACING TO BE A SPIRAL WOUND CONTINUATION OF THE WIRE PROVIDED BY SKID MANUFACTURER. INSULATION TO BE 1" THICK FOAMGLASS WITH METAL WEATHER BARRIER INSTALLED IN A NEAT AND ATTRACTIVE MANNER WITH BAND SEALS AND UV RATED CAULK TO PREVENT MOISTURE INGRESS.
3. DEBEAD HDPE WELDS WHERE POSSIBLE.
4. CONTRACTOR TO PROVIDE SPARE EXPANSION HOSE.

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DETAILS I

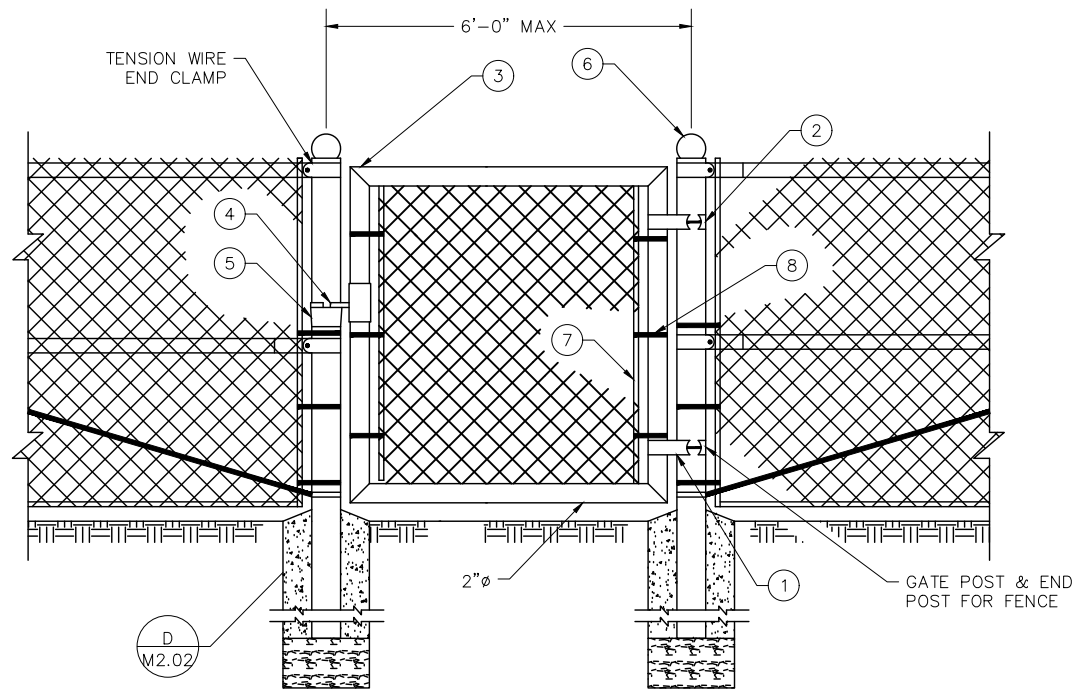
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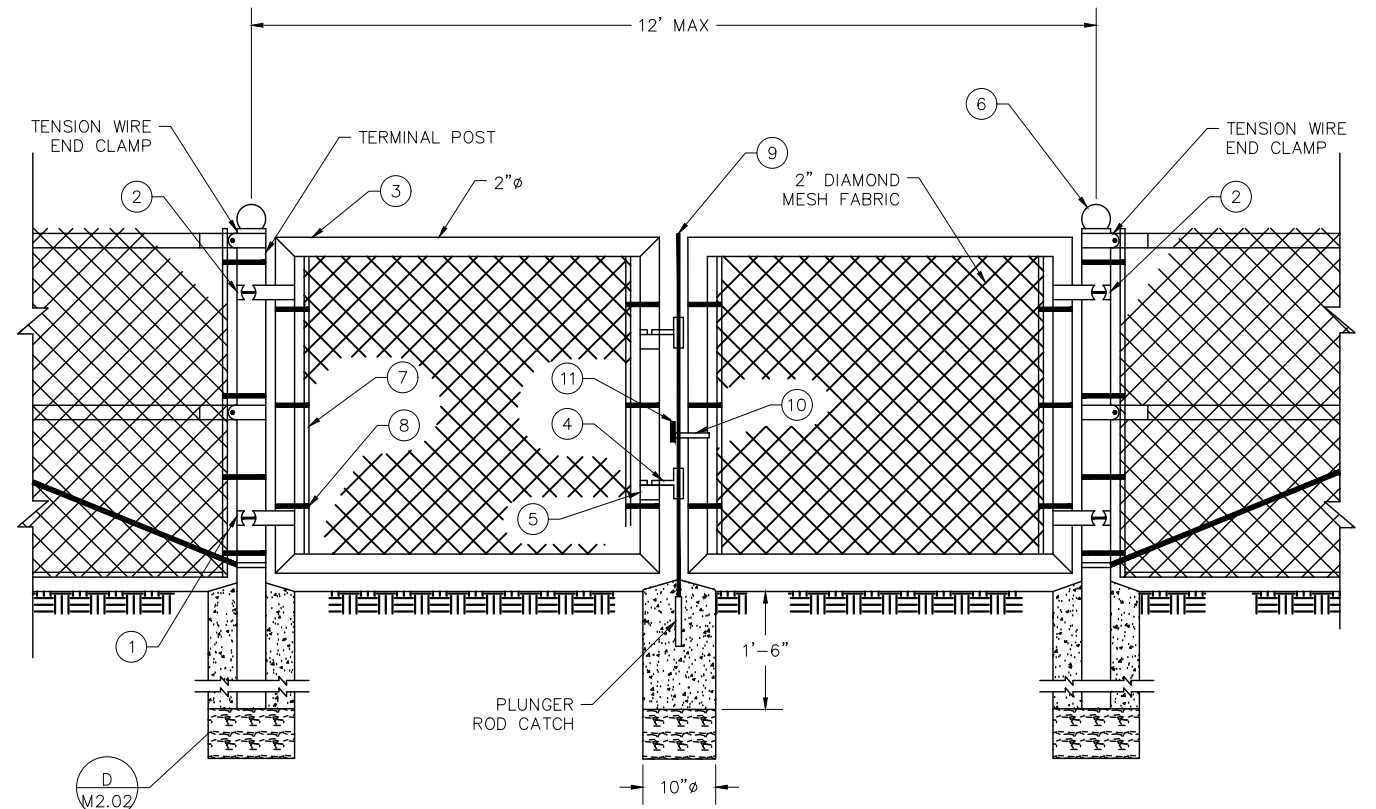
**M2.01**

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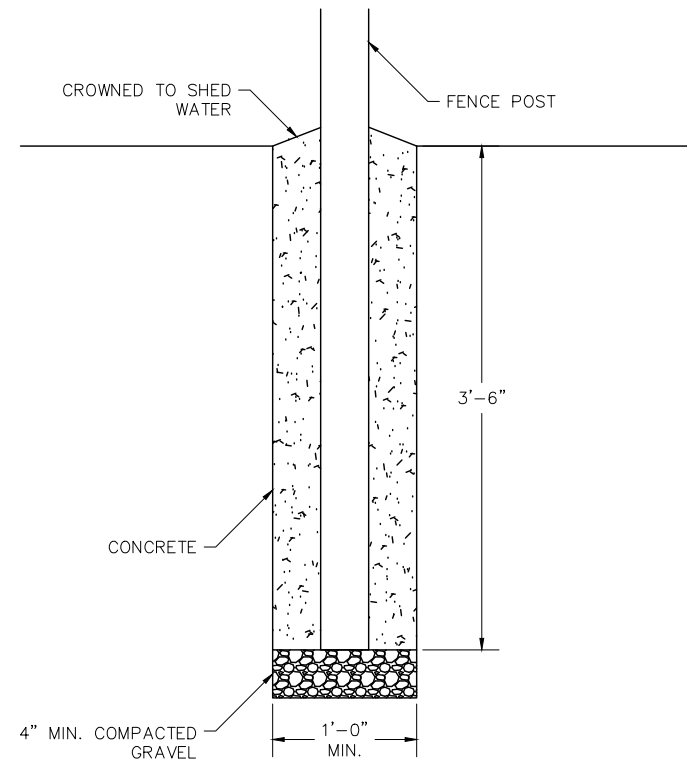
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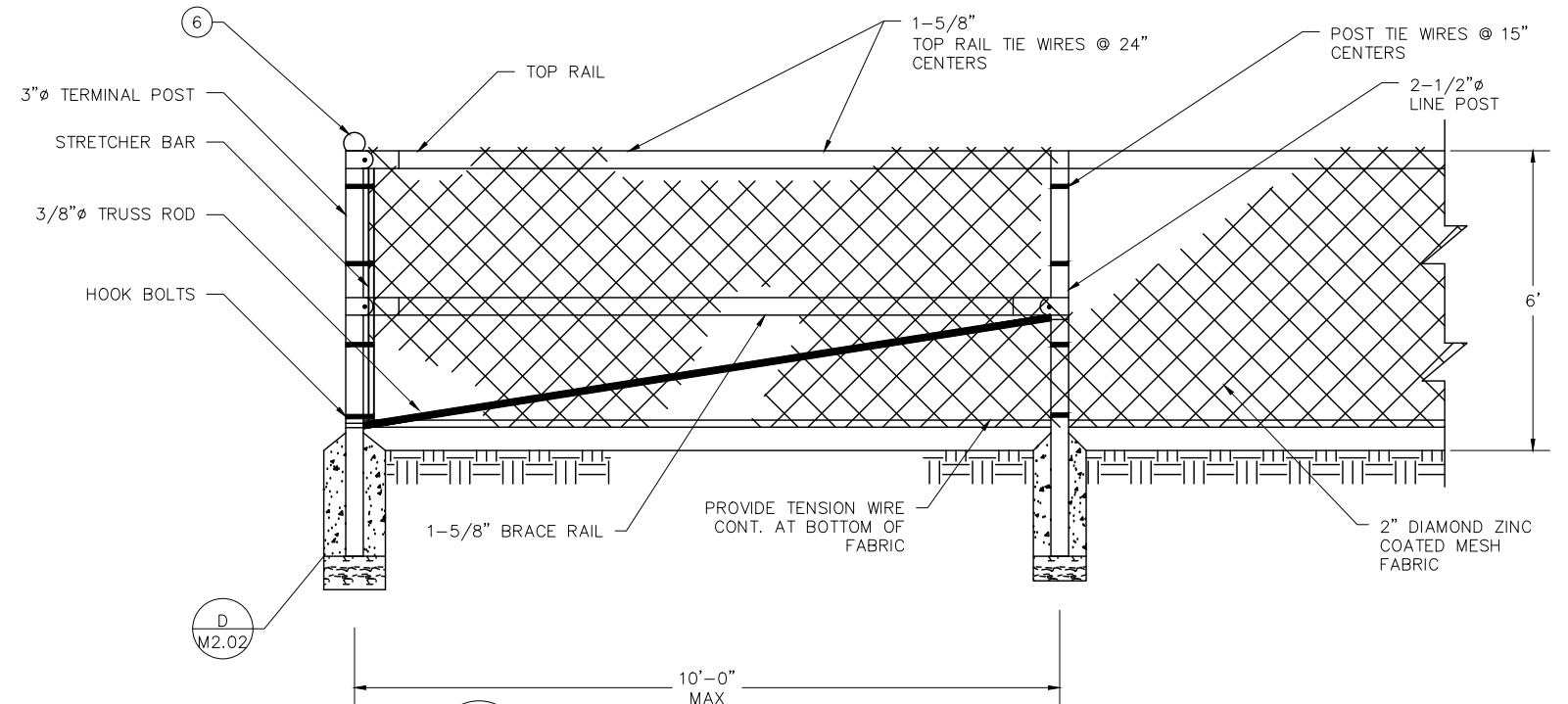
A MAN GATE FENCE DETAIL  
M2.02



B DOUBLE SWING GATE FENCE DETAIL  
M2.02



D FENCE POST FOOTER  
M2.02



A TYPICAL FENCE DETAIL  
M2.02

LEGEND	
PART NO.	DESCRIPTION
1	BOTTOM HINGE
2	TOP HINGE
3	WELDED JOINT WITH ZINC COATING (TYP)
4	PAD LOCKABLE LATCH FORK
5	FORK CATCH
6	ORNAMENTAL TOPS
7	STRETCHER BAR
8	FABRIC BANDS (15" MAX SPACING)
9	PLUNGER ROD
10	LOCK KEEPER GUIDE
11	LOCK KEEPER

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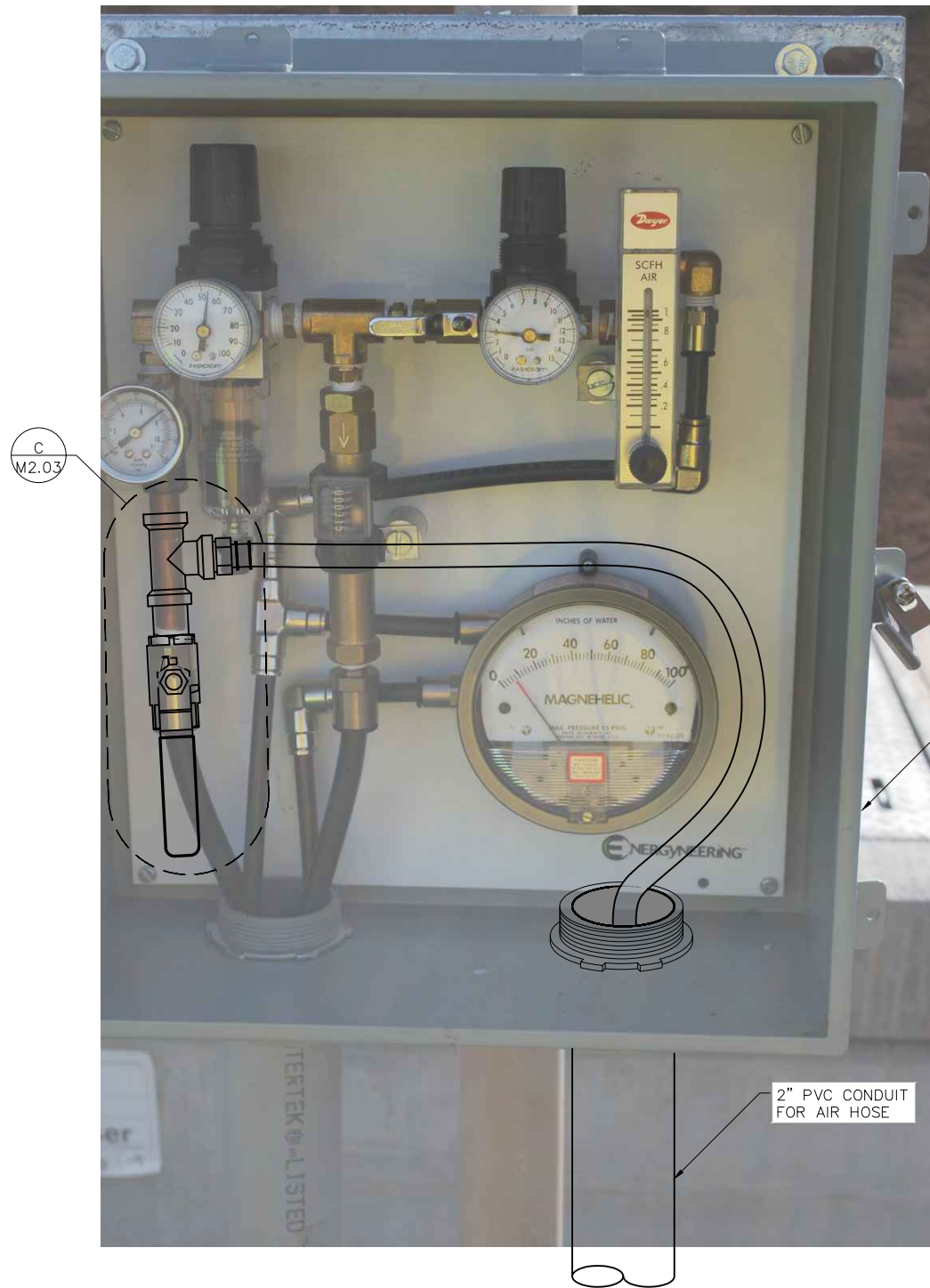
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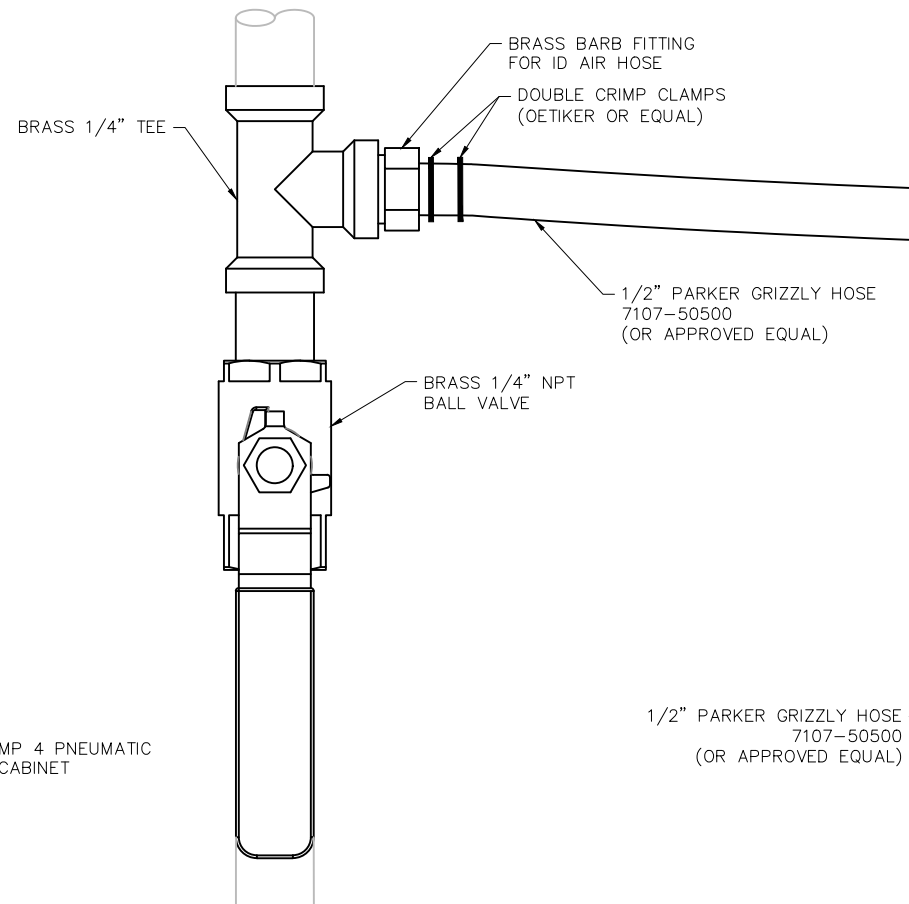
DETAILS II  
KNOTT LANDFILL FLARE  
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DRAWING NO.  
**M2.02**  
PROJECT NO.  
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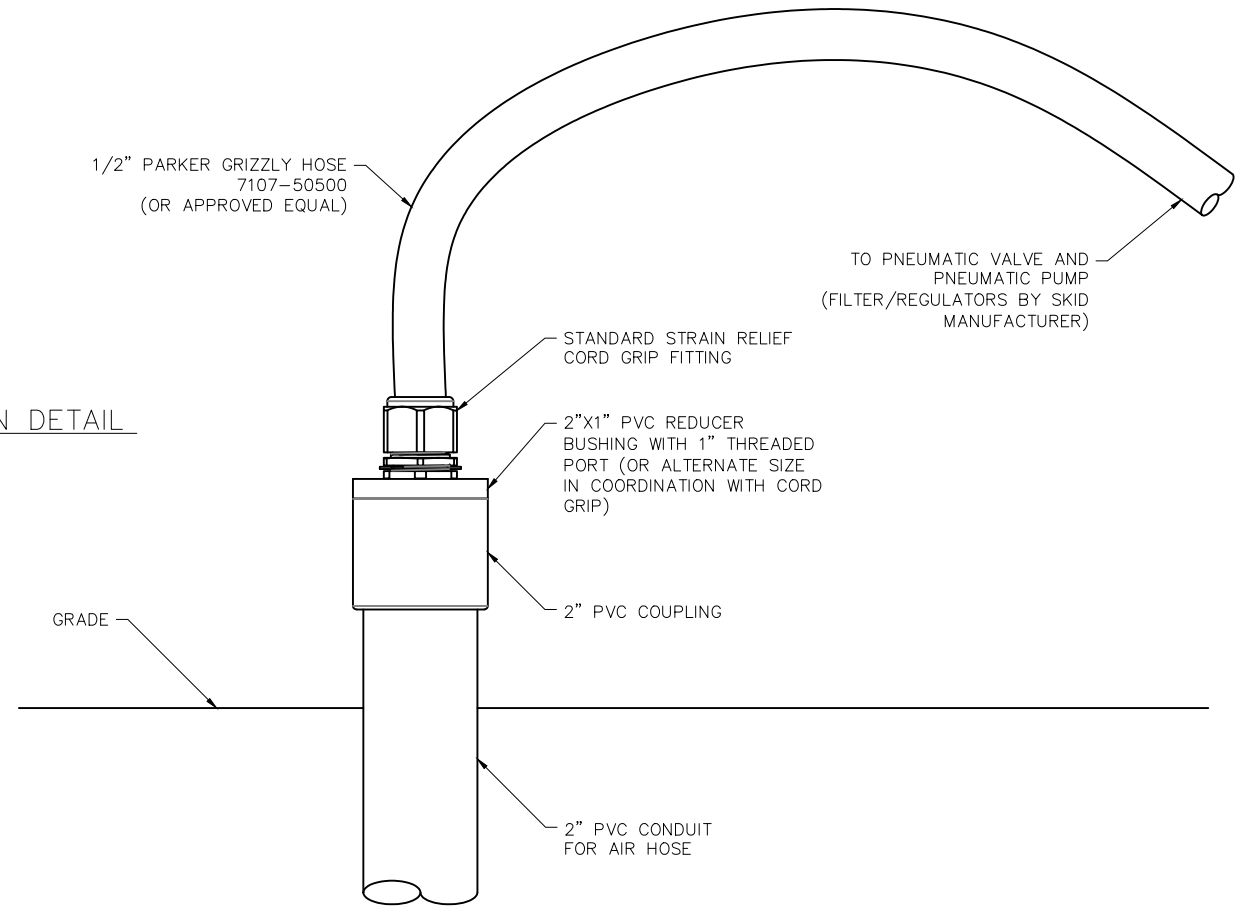
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**A** CONNECTION TO EXISTING COMPRESSED AIR DETAIL  
M2.03



**C** TEE CONNECTION DETAIL  
M2.03



**B** COMPRESSED AIR STUB-UP AT BLOWER SKID  
M2.03

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DETAILS III

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
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DRAWING NO.

**M2.03**

PROJECT NO.  
018.004

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### ELECTRICAL ABBREVIATIONS

(E)	EXISTING TO REMAIN
(ED)	EXISTING TO BE DEMOLISHED
(ER)	EXISTING TO BE RELOCATED
(N)	NEW
(RL)	EXISTING SHOWN RELOCATED
A	AMP, AMPERES
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY
AT	AMPERES TRIP
C	CONDUIT
CAB	CABINET
CB, C/B	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
DEG	DEGREE
DTT	DIRECT TRANSFER TRIP
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EPC	ENGINEER PROCURE CONSTRUCT
EPO	EMERGENCY POWER OFF
EPR	ETHYLENE-PROPYLENE RUBBER
EQ	EQUAL
FA	FIRE ALARM
FDR	FEEDER
FIXT	FIXTURE
FU	FUSE
FVNR	FULL VOLTAGE NON-REVERSING STARTER
G, GND	GROUND
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER (5MA)
GFP	GROUND FAULT PROTECTOR (30MA)
HH	HAND HOLE
HOA	HAND OFF AUTOMATIC
HP	HORSE POWER
HZ	HERTZ
JB	JUNCTION BOX
K	KILO, THOUSAND
KV	KILOVOLT
KVA	KILO VOLT-AMPERE
KW	KILOWATT
LA	LIGHTNING ARRESTER
LFG	LANDFILL GAS
LSIG	LONG, SHORT, INSTANTANEOUS AND GROUND FAULT TRIP FUNCTIONS
LTG	LIGHTING
LTNG	LIGHTNING
M	MEGA, MILLION
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MDSB	MAIN DISTRIBUTION SWITCHBOARD
MDSW	MAIN DISTRIBUTION SWITCHGEAR
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MST	MOTOR STARTER
MVA	MEGA VOLT-AMPERE
MW	MEGAWATT
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION CODE
NGR	NEUTRAL GROUNDING RESISTER
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOAD RELAY
P	POLE(S)
PH	PHASE(S)
PNL	PANEL, PANELBOARD
PP	POWER PANEL
PRI	PRIMARY
PT	POWER TRANSFORMER
PVC	POLYVINYL CHLORIDE
REC	RECESSED
RECPT	RECPT, RECEPTACLE
RGS	RIGID GALVANIZED STEEL

### ELECTRICAL ABBREVIATIONS

RM	ROOM
RP	RECEPTACLE PANEL
SA	SURGE ARRESTER
SC	SURGE CAPACITOR
S/N	SOLID NEUTRAL
SEC	SECONDARY
SPEC	SPECIFICATION
STP	SHIELDED TWISTED PAIR
STT	SHIELDED TWISTED TRIPLET
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
T/M	THERMAL/MAGNETIC
TDR	TIME DELAY RELAY
THWN	THERMOPLASTIC, HEAT & WATER RESISTANT, NYLON COATED
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SOURCE
V	VOLTS
VA	VOLTS-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
W	WATT(S), WIRE(S)
W/	WITH
W/O	WITHOUT
WP	WATER PROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

### OUTLETS & DEVICES

	DUPLEX RECEPTACLE OUTLET
	QUADRUPLX RECEPTACLE OUTLET
	DEDICATED DUPLEX RECEPTACLE OUTLET
	DEDICATED QUADRUPLX RECEPTACLE OUTLET
	QUADRUPLX RECEPTACLE OUTLET FLOOR MOUNTED
	DUPLEX RECEPTACLE OUTLET WITH GROUND FAULT INTERRUPTER
	SPECIAL PURPOSE RECEPTACLE OUTLET NEMA CONFIGURATION AS INDICATED ON DRAWING
	TELEPHONE OUTLET
	DATA OUTLET

### SWITCHES

	SINGLE POLE SWITCH: LOWER CASE LETTER INDICATES DEVICE CONTROLLED
	THREE WAY SWITCH
	FOUR WAY SWITCH
	MANUAL MOTOR STARTER W/THERMAL OVERLOAD
	KEY OPERATED SWITCH
	SWITCH WITH PILOT LIGHT
	SINGLE POLE SWITCH ON EMERGENCY CIRCUIT (RED BODY)
	PUSH BUTTON
	STOP/START PUSH BUTTON

### SINGLE LINE DIAGRAM

	TRANSFORMER
	CIRCUIT BREAKER 100 AF - INDICATES AMPERE FRAME 100 AT - INDICATES AMPERE TRIP
	CURRENT LIMITING CIRCUIT BREAKER
	THERMAL OVERLOAD
	DISCONNECT DEVICE FOR DRAWOUT EQUIPMENT
	NON-FUSED SWITCH
	FUSE
	FUSED SWITCH
	FUSED DISCONNECT
	LIGHTNING ARRESTER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	POTENTIAL TRANSFORMER WITH FUSE
	NORMALLY CLOSED MOMENTARY BUTTON
	NORMALLY OPEN MOMENTARY BUTTON
	GROUND CONNECTION
	BATTERY
	RELAY
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	METER
	GENERATOR/ MOTOR
	TRANSFER SWITCH
	AMMETER
	AMMETER SWITCH
	VOLTMETER
	VOLTMETER SWITCH
	KIRK KEY INTERLOCK
	WATTHOUR METER
	C/B WITH SHUNT TRIP
	DELTA CONNECTION
	GROUNDLED WYE CONNECTION
	OPEN WYE
	GROUNDLED OPEN WYE
	CONTACTOR
	POWER FACTOR CORRECTION CAPACITOR
	TRANSIENT VOLTAGE SURGE SUPPRESSION
	INDICATING LAMP
	ELECTRIC POLE
	POINT OF CONNECTION TO EXISTING EQUIPMENT.
	POINT OF DISCONNECTION TO EXISTING EQUIPMENT.
	SURGE ARRESTER
	SURGE CAPACITOR
	METAL OXIDE VARISTOR

### LIGHTING

	CEILING SUSPENDED EMERGENCY LUMINAIRE TYPE AS INDICATED
	CEILING SUSPENDED MOUNT LUMINAIRE TYPE AS INDICATED
	SURFACE MOUNT REMOTE EMERGENCY LIGHT. TYPE AS INDICATED.
	SURFACE MOUNT EMERGENCY LIGHT PACK. TYPE AS INDICATED.
	CEILING MOUNT LUMINAIRE. TYPE AS INDICATED
	SURFACE MOUNT LUMINAIRE. TYPE AS INDICATED
	SURFACE MOUNT EXIT LIGHT. TYPE AS INDICATED
	CEILING MOUNT EXIT LIGHT. TYPE AS INDICATED
	WALL MOUNTED LIGHT
	POLE MOUNTED LIGHT
	TIME CLOCK
	PHOTOCELL

### LINE TYPES

	INDICATES DEMOLISHED OR UNDERGROUND CONDUIT
	INDICATES EXISTING
	INDICATES NEW WORK

### FIRE ALARM & SAFETY

	MANUAL PULL STATION
	ALARM (STROBE)
	ALARM (HORN/BELL)
	ALARM (HORN/STROBE)
	SMOKE DETECTOR
	HEAT DETECTOR
	HYDROGEN SENSOR
	METHANE SENSOR
	METHANE TRANSMITTER
	FLAME SENSOR FIRE
	FIRE ALARM RELAY
	WARNING LIGHTS
	E-STOP PUSH BUTTON
	WALL MOUNTED FIRE EXTINGUISHER CABINET

NOTES:

- ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM WITH THE CURRENT NATIONAL ELECTRICAL CODE (N.E.C.) AND WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK.
- ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING DELIVERIES, RECEIVING, RIGGING, BOLTING TO PADS (TYPICAL FOR ALL STUB-UPS AND EQUIPMENT ON ALL CONCRETE PADS) AND APPURTENANCES REQUIRED FOR INSTALLATION PER MANUFACTURER'S REQUIREMENTS AND THE CONTRACT DOCUMENTS.
- ALL NEW ELECTRICAL MATERIAL AND EQUIPMENT SHALL BE LISTED BY THE UNDERWRITERS' LABORATORIES, INC. (UL) AND BEAR THE UL LABEL. WHERE EQUIPMENT AND CONDUITS PENETRATE FIRE AND SMOKE BARRIERS INCLUDING WALLS, PARTITIONS, FLOORS AND CEILINGS, INSTALL FIRE STOPPING AT PENETRATIONS AFTER CABLES ARE INSTALLED.
- THE DRAWINGS ARE DIAGRAMMATIC AND ALL SPECIALTIES AND APPURTENANCES ARE NOT SHOWN, HOWEVER ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO PROVIDE A COMPLETE INSTALLATION, IN A NEAT WORKMANLIKE MANNER.
- UNLESS OTHERWISE NOTED, ALL INDOOR ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH AND HOUSED IN A NEMA 1 ENCLOSURE. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN NEMA 4X STAINLESS ENCLOSURES UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACTOR SHALL ASSUME THAT THERE WILL BE MINOR MODIFICATIONS MADE DURING CONSTRUCTION, CHANGE ORDERS FOR THESE MODIFICATIONS WILL NOT BE ACCEPTED.
- WORK REQUIRING A SHUTDOWN OF EQUIPMENT SHALL BE AT SUCH TIME AND IN SUCH MANNER AS DIRECTED BY THE OWNER. PROVIDE A MINIMUM ONE (1) WEEK PRIOR WRITTEN NOTICE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING WITH THE WORK.
- EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED. EXISTING ELECTRICAL EQUIPMENT THAT INTERFERES WITH NEW ARRANGEMENT SHALL BE REMOVED, REINSTALLED, RELOCATED, REROUTED, EXTENDED OR ABANDONED AS REQUIRED, TO SUIT THE NEW ARRANGEMENT.
- THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND COORDINATING WITH THE DOCUMENTS OF ALL TRADES.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A RECORD SET OF INSTALLATION PRINTS. HE SHALL NEATLY AND CLEARLY RECORD ON THESE PRINTS ALL DEVIATIONS FROM THE CONTRACT DRAWINGS IN SIZES, LOCATIONS AND DETAILS. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL RETURN THE MARKED PRINTS WITH ALL INFORMATION OBTAINED DURING THE CONSTRUCTION PROCESS TO THE ENGINEER FOR SUBMISSION TO OWNER.
- CONTACT SITE UTILITY LOCATOR AT LEAST 48 HRS PRIOR TO EXCAVATING.
- FOR LOCATIONS OF ALL MECHANICAL EQUIPMENT REFER TO MECHANICAL PLANS.
- ENERGYNEERING SOLUTIONS, INC. INCORPORATES COMMERCIALY MANUFACTURED ITEM(S) OR COMPONENT(S) IN THE PREPARATION OF THIS PLAN, AND RELIES UPON THE MANUFACTURER'S STATED OR IDENTIFIED SPECIFICATIONS AND PROPERTIES IN THE PREPARATION OF THIS PLAN. ENERGYNEERING SOLUTIONS, INC. HAS NOT UNDERTAKEN ANY INDEPENDENT EXAMINATION, TESTING OR ANALYSIS TO VERIFY THE MANUFACTURER'S SPECIFICATIONS OR PROPERTIES FOR ANY ITEM OR COMPONENT. (ENERGYNEERING SOLUTIONS INC. MAKES NO REPRESENTATIONS OR WARRANTIES AS TO THE ACCURACY OF THE SPECIFICATIONS OR PROPERTIES ASSOCIATED WITH ANY ITEM OR COMPONENT UTILIZED IN THIS PLAN.)
- ENERGYNEERING SOLUTIONS, INC. HAS RELIED UPON INFORMATION PROVIDED TO IT BY OTHERS IN PREPARATION OF THESE PLANS. THIS INFORMATION HAS BEEN USED IN THE DEVELOPMENT OF THESE PLANS. ENERGYNEERING SOLUTIONS INC. SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION; NOR FIELD CHANGES DURING INSTALLATION AND CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LABELING ALL CONDUCTORS AND CONDUITS TO ALLOW FUTURE IDENTIFICATION.
- ABBREVIATIONS AND SYMBOLS ON THIS SHEET ARE GENERIC AND MAY NOT ALL BE USED IN THIS DRAWING SET.

### POWER DISTRIBUTION

	208/120 VOLT PANEL BOARD
	480/277 VOLT PANEL BOARD
	TRANSFORMER
	JUNCTION BOX
	NON-FUSED DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER
	FUSED DISCONNECT SWITCH
	SELECTOR SWITCH HOA = HAND-OFF-AUTO
	MAGNETIC MOTOR STARTER
	COMBINATION MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH
	MOTOR HORSEPOWER AS INDICATED
	EMERGENCY POWER OFF STATION
	HOMERUN TO PANEL ARROWS INDICATE NUMBER OF CIRCUITS
	CONCEALED WIRING IN WALL OR CEILING
	CONCEALED WIRING IN OR UNDER FLOOR SLAB OR ACCESS FLOOR
	CONDUIT SEAL
	EXPOSED WIRING

1	06/17/16	ISSUED FOR BID	PD	DC	JM
REV	DATE	DESCRIPTION	DRN BY	DSN BY	CHK BY



DESCHUTES COUNTY  
DEPARTMENT OF SOLID WASTE  
61050 SE 27TH STREET,  
BEND, OR 97702  
PHONE: 541-322-7172



REGISTERED PROFESSIONAL ENGINEER  
89268PE  
William Song  
OREGON  
JULY 8, 2014  
DOSOONSONG  
EXPIRES: 6/30/2016



REGISTERED PROFESSIONAL ENGINEER  
21488  
Paul Wilson  
EXPIRES 09/30/16  
ELECTRICAL  
STATE OF CALIFORNIA



ENERGYNEERING SOLUTIONS INC  
15820 BARCLAY DRIVE SISTERS, OR 97759  
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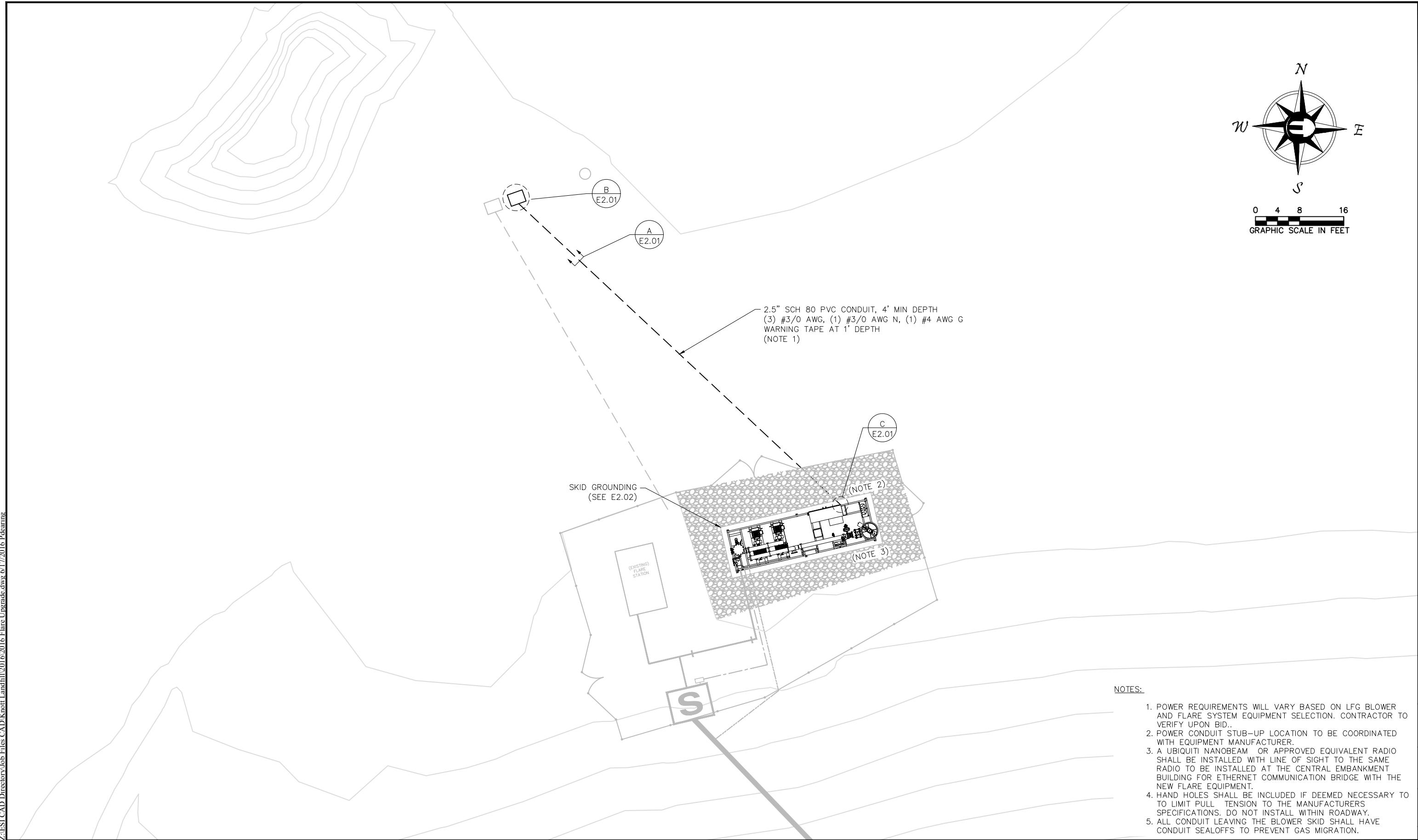
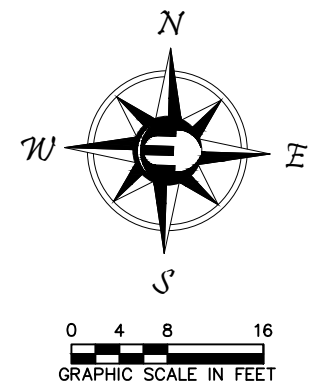
ELECTRICAL LEGEND/NOTES

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.  
**E0.01**  
PROJECT NO.  
018.004



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- NOTES:**
1. POWER REQUIREMENTS WILL VARY BASED ON LFG BLOWER AND FLARE SYSTEM EQUIPMENT SELECTION. CONTRACTOR TO VERIFY UPON BID.
  2. POWER CONDUIT STUB-UP LOCATION TO BE COORDINATED WITH EQUIPMENT MANUFACTURER.
  3. A UBIQUITI NANOBEAM OR APPROVED EQUIVALENT RADIO SHALL BE INSTALLED WITH LINE OF SIGHT TO THE SAME RADIO TO BE INSTALLED AT THE CENTRAL EMBANKMENT BUILDING FOR ETHERNET COMMUNICATION BRIDGE WITH THE NEW FLARE EQUIPMENT.
  4. HAND HOLES SHALL BE INCLUDED IF DEEMED NECESSARY TO LIMIT PULL TENSION TO THE MANUFACTURERS SPECIFICATIONS. DO NOT INSTALL WITHIN ROADWAY.
  5. ALL CONDUIT LEAVING THE BLOWER SKID SHALL HAVE CONDUIT SEALOFFS TO PREVENT GAS MIGRATION.

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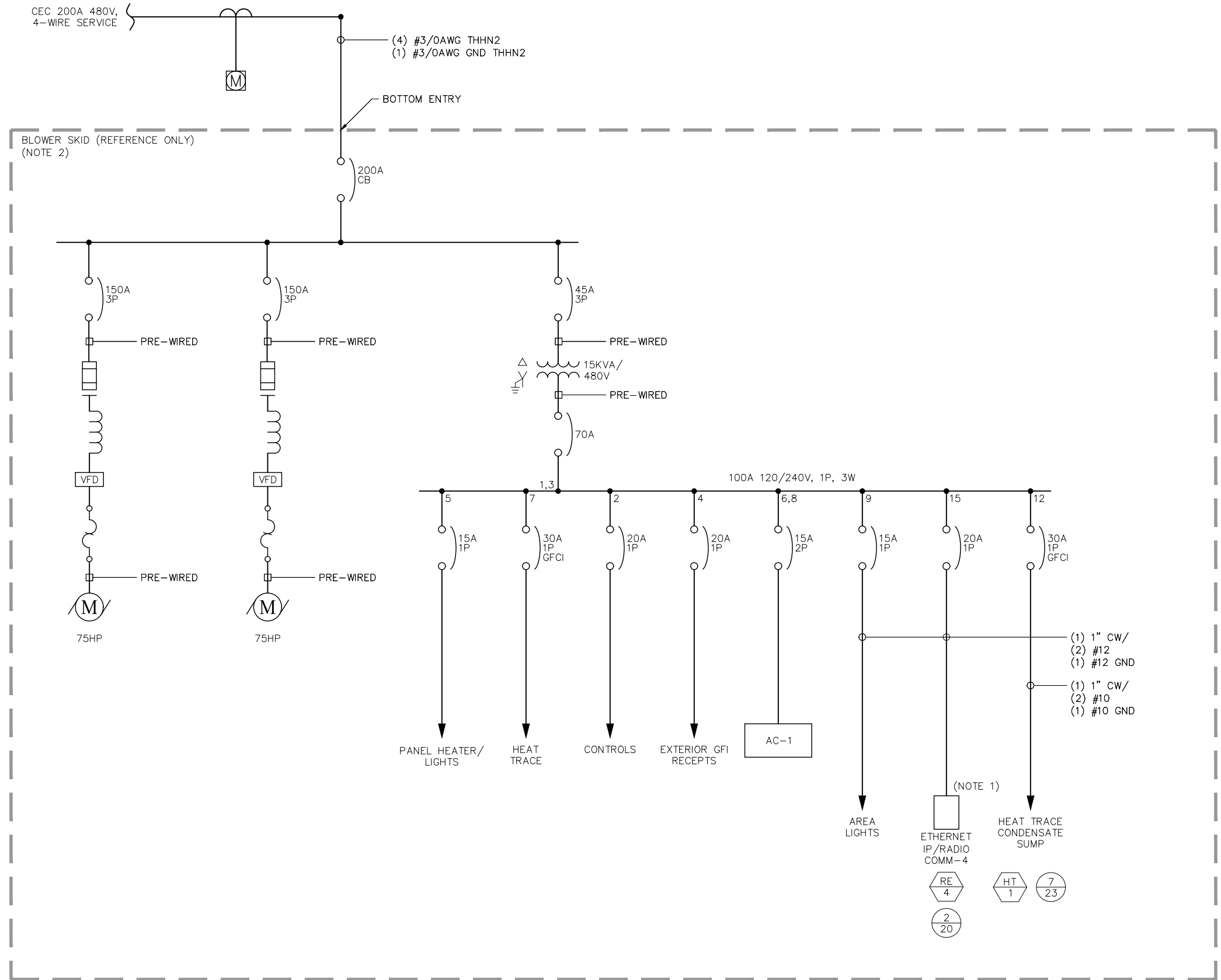
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ELECTRICAL FLARE SITE

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.  
**E1.01**  
PROJECT NO.  
018.004

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- NOTES:
1. RADIO WILL BE POWER OVER ETHERNET. A STANDARD DUPLEX RECEPTACLE TO BE PROVIDED INSIDE NEMA 3R ENCLOSURE BY BLOWER SKID MANUFACTURER.
  2. COMPONENTS WITHIN THE BLOWER SKID MANUFACTURER'S SCOPE OF WORK WILL VARY PER THE MANUFACTURER'S DESIGN. THIS CONTENT IS PROVIDED FOR REFERENCE ONLY.

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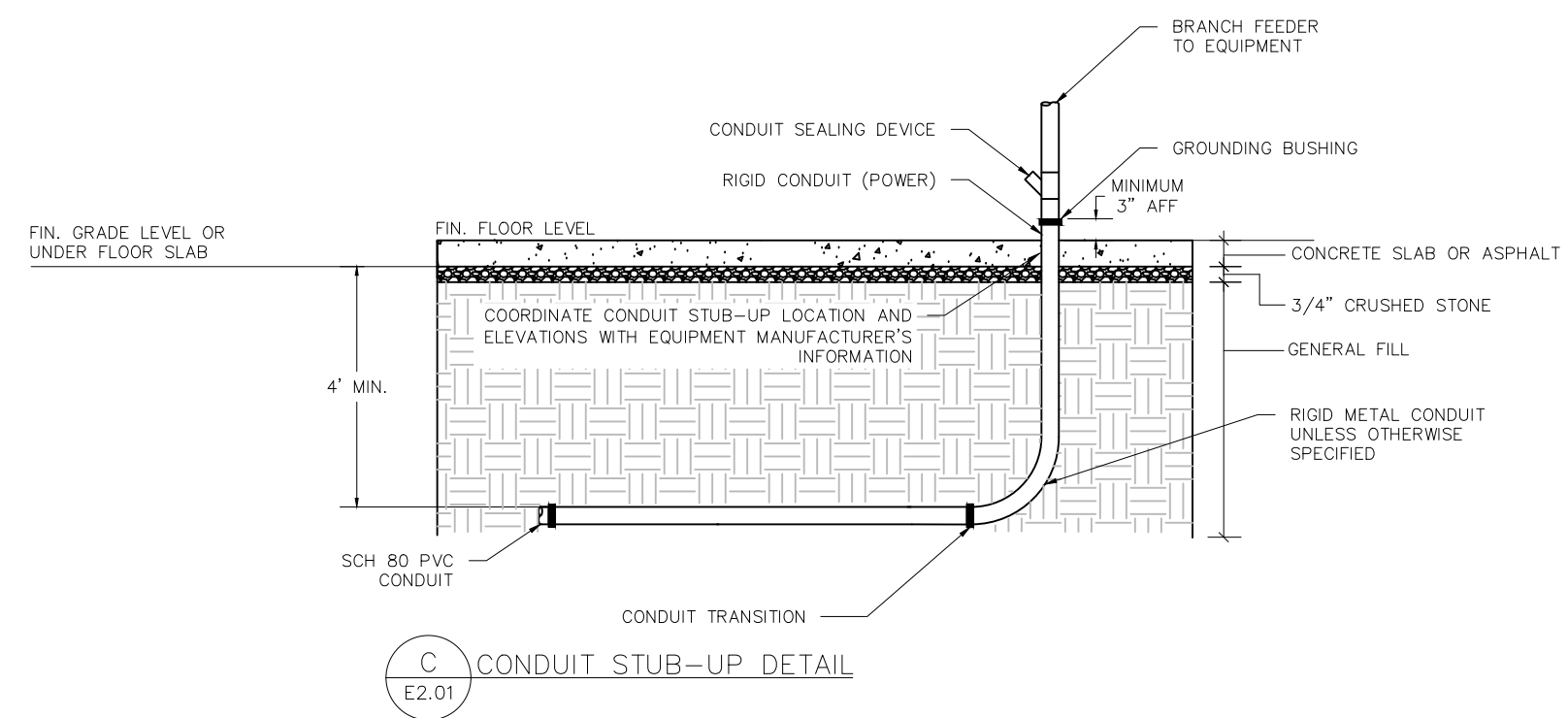
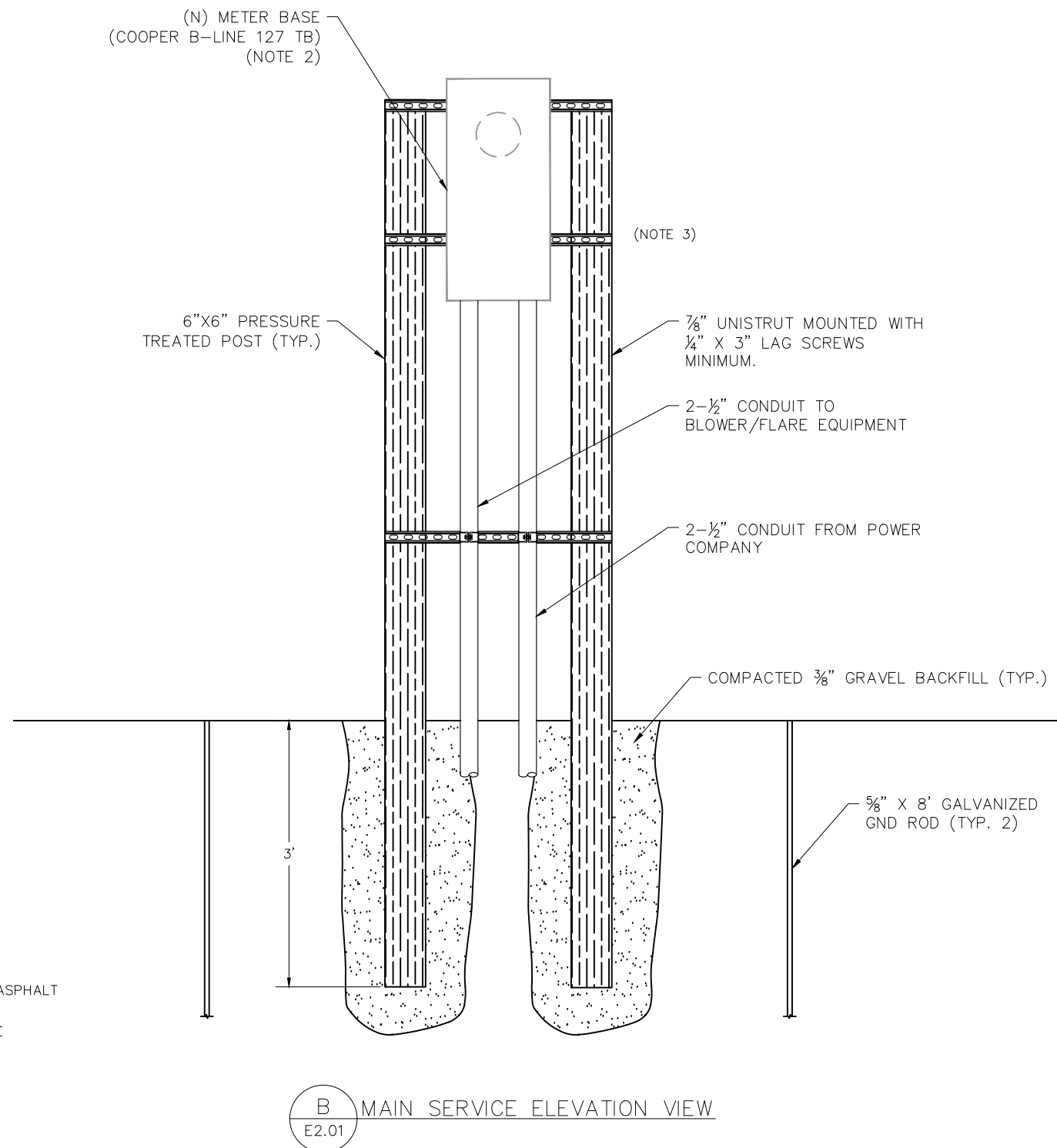
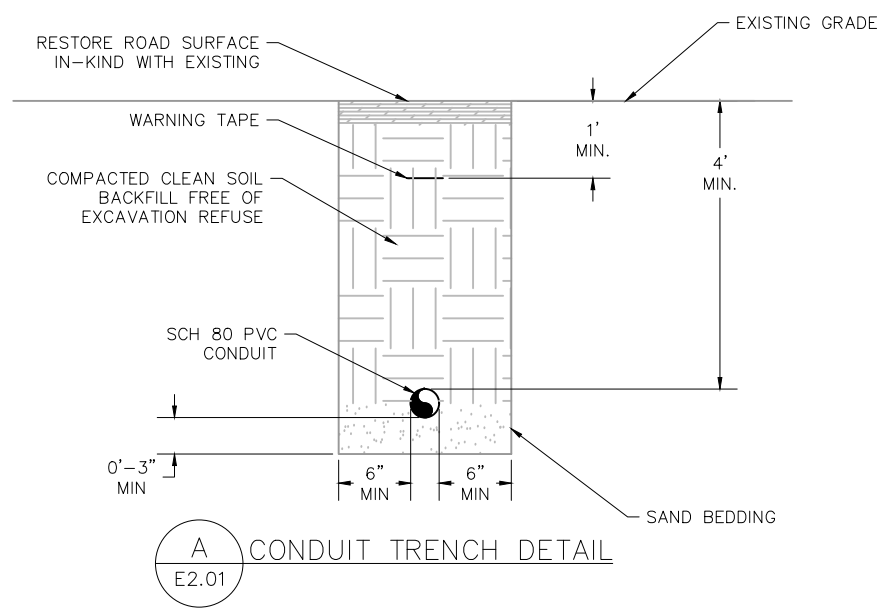
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ELECTRICAL SINGLE LINE

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.  
**E1.02**  
PROJECT NO.  
018.004

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- NOTES:
1. COORDINATE INSTALLATION AND EQUIPMENT SELECTION WITH THE ELECTRIC UTILITY.
  2. METER BASE SHALL BE COOPER B-LINE 127 TB OR APPROVED EQUAL.
  3. ROUTE CONDUITS FOR BOTTOM ENTRY. FINAL ROUTING TO BE DETERMINED BY E.C. IN FIELD.

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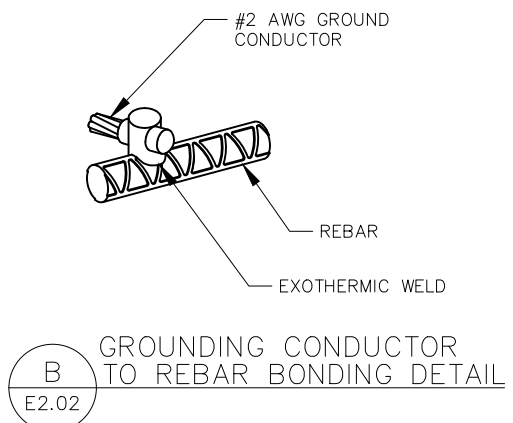
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ELECTRICAL DETAILS I

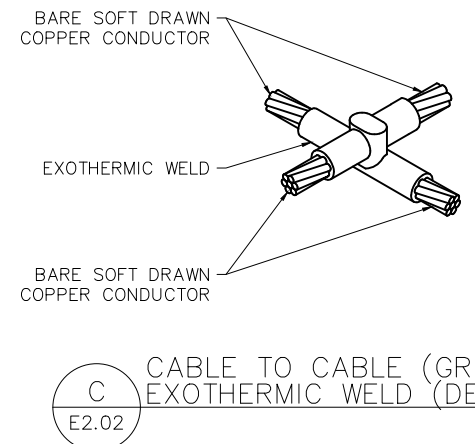
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EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.  
**E2.01**  
PROJECT NO.  
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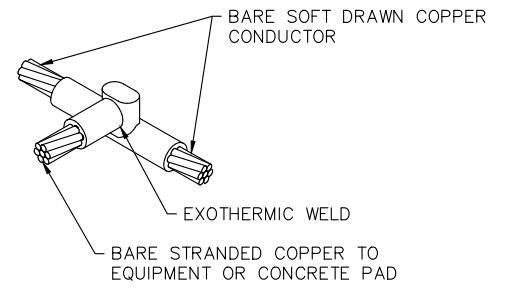
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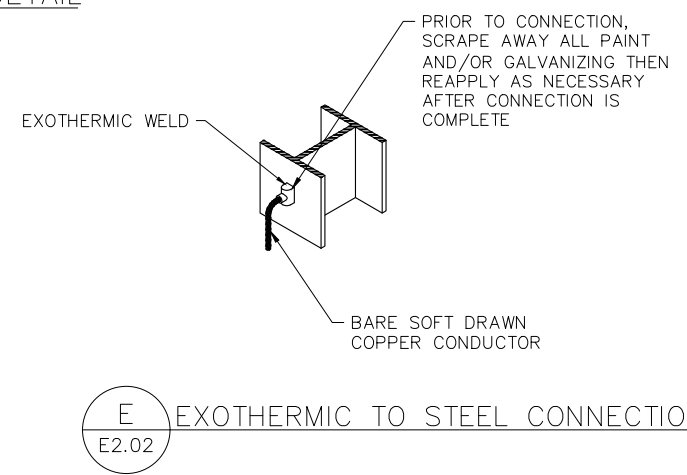
**B**  
E2.02  
GROUNDING CONDUCTOR TO REBAR BONDING DETAIL



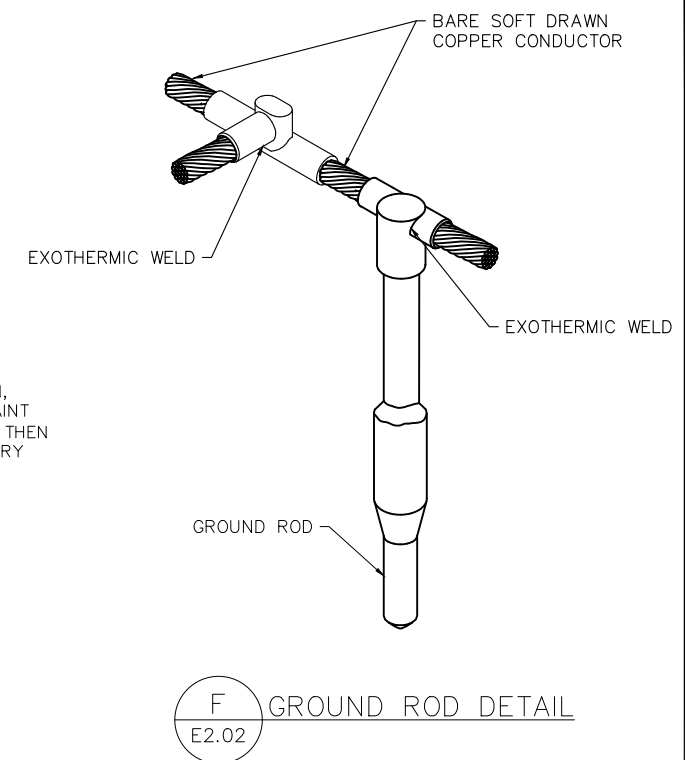
**C**  
E2.02  
CABLE TO CABLE (GRID) EXOTHERMIC WELD (DETAIL)



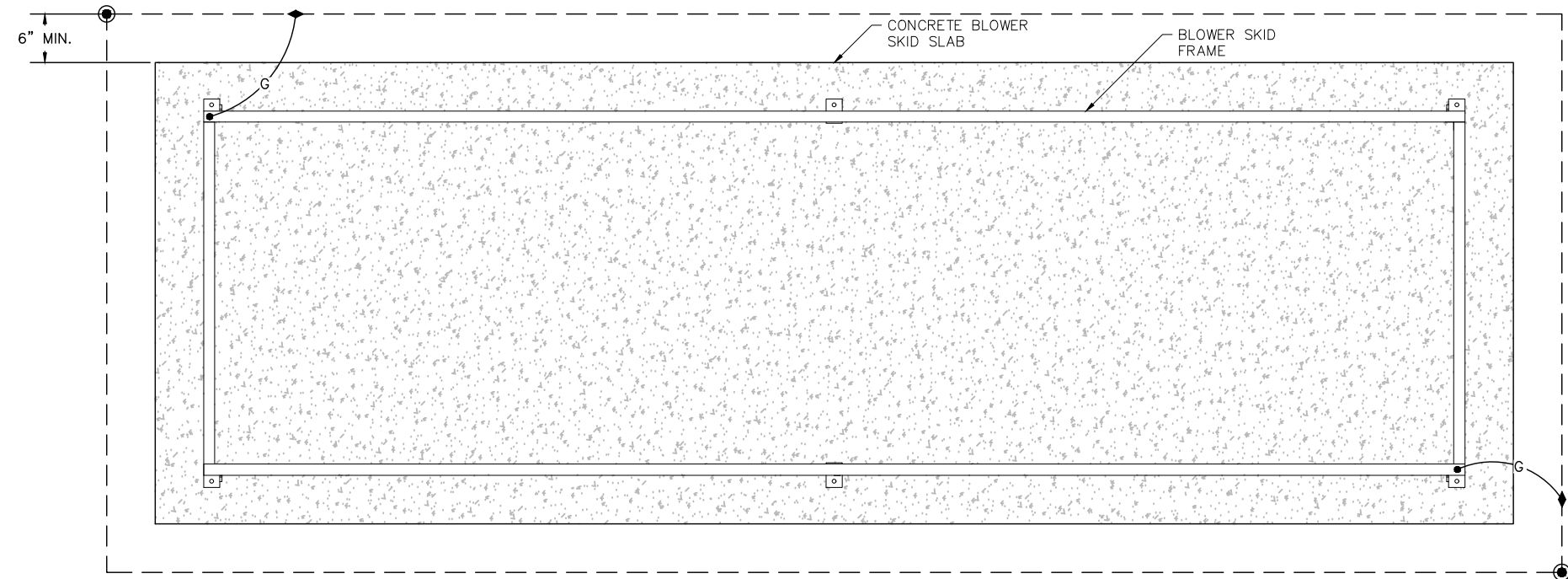
**D**  
E2.02  
EXOTHERMIC WELD CONNECTION DETAIL



**E**  
E2.02  
EXOTHERMIC TO STEEL CONNECTION



**F**  
E2.02  
GROUND ROD DETAIL



**A**  
E2.02  
SKID FRAME GROUNDING DETAIL

- LEGEND:**
- G — #2 BARE COPPER BONDING CONDUCTOR FOR THE CONNECTION OF EQUIPMENT
  - - - #2 AWG BARE COPPER CONDUCTOR
  - ◆ BONDING LOCATION
  - GROUND ROD COPPER COATED STEEL, 5/8" MIN. DIA DRIVEN TO A DEPTH OF NOT LESS THEN 8"

- NOTES:**
1. GROUND RING ELECTRODE IS #2 AWG BARE COPPER CONDUCTOR WITH 6" MINIMUM CLEAN SOIL COMPACTED SOIL SURROUNDING THE CONDUCTOR ON ALL SIDES. OTHER GROUND CONDUCTORS AND DEVICES ARE TO BE BONDED AS SHOWN IN THE DETAILS.
  2. REBAR TO BE BONDED TO GROUND RING ELECTRODE.

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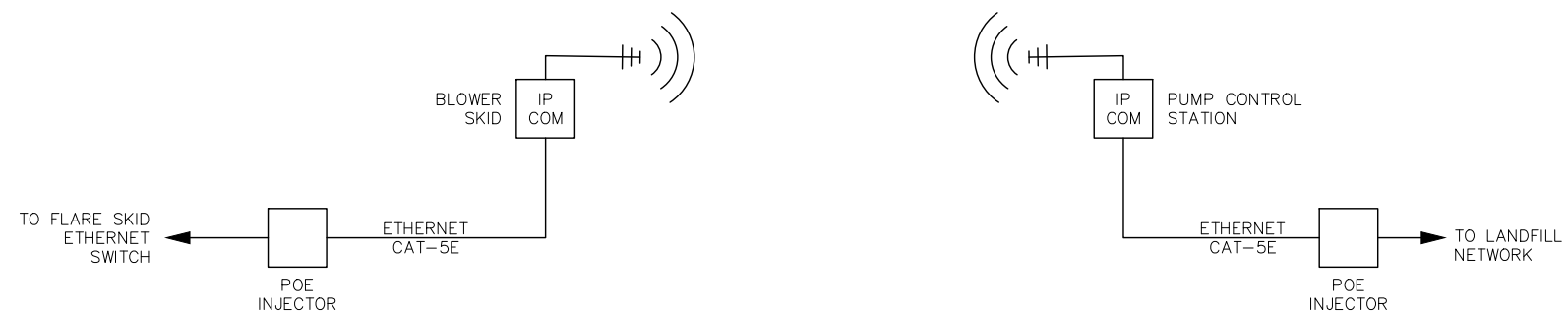
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ELECTRICAL DETAILS II  
KNOTT LANDFILL FLARE EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.  
**E2.02**  
PROJECT NO.  
018.004

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**A** RADIO COMMUNICATION DETAIL  
E2.03

NOTES:

1. INSTALL ANTENNAS ON 2"Ø X 15' GALVANIZED PIPE MOUNTED VERTICALLY TO ENSURE LINE OF SITE. PROVIDE A 3/4" X 10' GROUND ROD AND BOND ANTENNA TO GROUND ROD WITH #2AWG CABLE IN 1" CONDUIT.
2. RADIOS TO BE POWERED OVER ETHERNET (POE) STYLE. LOCATE POE INJECTOR SUCH THAT CABLE TO RADIO IS LESS THAN 100' IN LENGTH.

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ELECTRICAL DETAILS III

KNOTT LANDFILL FLARE  
EXPANSION PROJECT  
DESCHUTES COUNTY  
BEND, OREGON

DRAWING NO.

**E2.03**

PROJECT NO.  
018.004