

**APPENDIX D –  
AS-BUILT REPORTS  
INCINERATOR**



## M2C1 Construction and Engineering

*“Measure Twice. Cut Once”*

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P.O. Box 1750 Delta Junction, Alaska 99737 | tel: 907-895-5441 | fax: 907-895-5443

August 28, 2013

Ms. Sally S. McLeod, CEM, REM  
Environmental Superintendent  
Sumitomo Metal Mining Pogo LLC  
P.O. Box 145  
Delta Junction, AK 99737

**RE: As-Built Report for Design, Build, & Installation of the Incinerator Building and Incinerator, Pogo Mine.**

Dear Ms. McLeod,

This correspondence has been prepared to provide a record of construction for the design and construction of the incinerator building and installation of the incinerator and supporting utilities at the Pogo Mine located approximately 40 miles northeast of Delta Junction, Alaska and operated by Sumitomo Metal Mining Pogo LLC (Pogo).

This report summarizes the construction, quality assurance testing and inspection, and the completed configuration of the new incinerator and building including:

1. As-built drawings of the completed building and associated utilities (Attachment 1);
2. Photographs taken during construction of the building and installation of the incinerator and associated utilities (Attachment 2).

### **DESIGN – Incinerator Building and Incinerator**

The need for a new incinerator and a building to house it was determined by Pogo. The project design was contracted as follows:

- ACS Incorporated was contracted to provide design and fabrication of the Incinerator
- M2C1 Construction & Engineering was contracted to design the new building which would house the incinerator.
- M2C1 Construction & Engineering was contracted to design the site utilities including power and gas services to support the new building and operations of the incinerator.

3-Ea Concept Drawings showing different building types were provided at the 35% Design Phase to Pogo with budgetary estimates for the cost of construction. Also, energy efficiency information was provided to assist in showing building life cycle costs.

Of the 3 concepts a insulated concrete thin shell (monolithic dome) was selected for construction.



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The full design for the Incinerator Building consisted of the following components and persons/companies were responsible for the design:

Design Role	Designer of Record	Company
Architectural Designer	Stephen Hammond PE	M2C1 Construction & Engineering
Civil Designer	Stephen Hammond PE	M2C1 Construction & Engineering
Structural Designer	Chris Zweifel PE, SE	ZZ Consulting
Mechanical Designer	Helena Rueter	Rueter Engineering
Electrical Designer	Evan Roberts PE	Roberts-Koneko
Position	Client Contact	Company
Site Planner	Leif Christensen	Sumitomo Metal Mining Pogo LLC
Environmental Superintendent	Sally McLeod	Sumitomo Metal Mining Pogo LLC

The design was coordinated with and approved by the State of Alaska Fire Marshal, Fairbanks Office, prior to construction.

### CONSTRUCTION ACTIVITIES

Following the 'design' approval and issuance of a construction certificate by the State Fire Marshals' office and award of a construction contract to M2C1 Construction and Engineering the following sequence of construction was followed:

#### Early Procurements

- Ordering and Transportation of the air form from Italy Texas;
- Foam was ordered and shipped from Seattle;
- Shotcrete was evaluated between mix on site gunnite and shotcrete delivered by University Redi-Mix (URM). It was determined that URM could deliver the redi-mixed shotcrete for cheaper and with equal quality as a site mix gunnite.

#### Civil Works

- Survey layout of the constructed pad;
- Removal of existing pad, organics, and permafrost to the removal-grade. This work was performed by Pogo Surface Group under the supervision of Stephen Hammond PE;
- Import and placement of miners rock to sub-grade elevation across the pad;
- Import, placement, and compaction of Engineered Fill to the Bottom of Footing across the pad;
- Trenching, bedding, and backfill for installation of power, propane, and water;
- Rough grading to support construction activities;
- Final grading around the shell once construction activities were completed;



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### Monolithic Dome Construction

- Layout, formwork, rebar, pipe penetrations, and concrete placement to construct the footing to the diameter specified in the Design;
- Attachment and Inflation of the air form;
- Installation of the airlock and access stairs;
- Construction and installation of the polar motorized scaffolding used in construction;
- Installation/spraying of a 2" urethane foam layer to air form;
- Installation of rebar hanger foam embeds where required to hold rebar;
- Installation/spraying of a 2nd layer of 2" urethane foam to embed the rebar hangers;
- Installation of door and window bucks (frames) per the design;
- Installation of steel reinforcement;
- application of shotcrete in built up layers over a 5 day period to achieve the shell thicknesses required by the design;

### Concrete Works

- ARXX ICF forming, rebar tying, and concrete pump placement for the construction of a slotted retaining wall where required per the design and to accommodate the incinerator;
- Backfilling behind the retaining wall to bottom of the structural slabs;
- Forming, rebar placement, pumping of concrete and finishing of concrete slabs for the upper structural floor and the lower drive thru floor;
- Installation of Concrete Slabs at the drive thru doors;
- ARXX ICF forming, rebar tying, and concrete pump placement for the construction of a raised entry way into the incinerator room;
- Forming, rebar tying, concrete placement for stair support;
- Forming, rebar tying, concrete placement for Propane tank and dog house;
- Forming rebar tying, concrete placement for transformer pad;

### Metal Works

- A steel canopy and stairs were added over the raised entry way. The canopy was flashed to the dome air form to provide for a leak free interface;
- Steel grating was installed at the raised entryway to allow for anti-skid surface;
- A steel ladder was installed for access between the upper and lower slab;
- Steel handrail was installed to prevent falls from the upper slab;

### Doors and Windows

- 2-Ea Arctic rated garage doors were installed by Overhead Doors of Alaska;
- 1 Man Door was installed at the raised entrance to the Incinerator Building;



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- 4-Ea Skylights were installed at the dome quarters to allow for ambient lighting in the case of a power outage;
- All doors and Windows were weather stripped and flashed to shed moisture;

### Site Utilities (Electrical-MEI)

- Installation MCC-500 Conductor from the 1MVA Transformer at the Construction camp to the new 250 KVA transformer at the incinerator transformer pad;
- Installation of the building disconnect outside of the building and running of conductor from the building transformer to the building disconnect;
- Installation of the electrical service to the building and for the incinerator;
- Installation of the building lighting;
- Installation of electrical service to the propane dog house;
- Installation of heater and lights in the propane dog house;
- Installation of building mechanical controls and operational testing;

### Site Utilities (Propane-MSI)

- Installation of a 1000 gallon liquid propane tank to the concrete pad. Had to install the tank on I beams to allow for the outlet piping;
- Construction of the Doghouse;
- Installation of the propane pump, vaporizer, and controls for the incinerator propane service;
- Follow on work to install a different (15,000 Gallon) tank on a new foundation to provide for greater storage for the incinerator;

### Incinerator Installation

- Pogo Surface Group moved incinerator into the building using their 988 loader;
- Incinerator was moved into place for its lift onto the upper slab;
- 30 Ton hydraulic jacks, large timbers, and chain roller's were used to lift and roll the incinerator into its designed place;
- A small propane forklift was used to raise and place the insulated exhaust stacks onto the incinerator;
- The Pogo crane and operator was used to lift the exterior exhaust stack and spark arrestor into place;
- The exhaust stack was flashed to weather proof the penetration;

### Clouse Out

- Interior and exterior primer and paint;
- Exterior opening flashings;
- Project Punch.



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The construction of the incinerator building and installation of the incinerator was monitored by the Pogo Projects Team and the attached photo documentation is representative of the construction of this facility.

### AS-BUILT DRAWINGS

The As-built drawings are provided as follows:

- Post Construction Record Drawings,

The drawings are attached to this report in Attachment 1.

### SUMMARY OF QUALITY CONTROL PROCEDURES CARRIED OUT DURING CONSTRUCTION

Quality Control and Quality Assurance activities during construction included:

- Manufactures guidelines were followed for handling and attachment of the air form to the footing;
- Concrete strength cylinders were collected and tested on concrete for the ring foundation, interior retaining wall, and the structural upper slab;
- Shell urethane foam was monitored for proper thickness, mixture, and hanger embedment;
- Rebar placement, type, and pattern was monitored for conformance to design and was verified by the inspecting engineer prior to shotcrete operations;
- Shotcrete mixture, placement method, and thickness was monitored for conformance to design specifications by the project engineer;
- Onsite electrical megger and continuity tests were performed on all conductor installed;
- Hydrotesting of the water line was performed to 1.5 times the operating pressure;
- Operational air test was performed on the propane piping to 1.5 times the operating pressure;
- Mechanical systems were balanced prior to final operation;
- Incinerator was commissioned by a manufacture representative;
- Commissioning and Operational testing was performed at turnover;
- Maintenance of a running punchlist across the entire project duration;
- Building and Incinerator Punch-Out.



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### OBSERVATIONS AND TEST RESULTS

The following was observed during construction:

- Soil preparation by Pogo Surface Group was exceptional and provided a solid pad to build the incinerator building on;
- No deviations from design were observed during construction of the monolithic dome shell;
- Concrete strength cylinders tested did meet or exceed the design strength required;
- All hydrotest's were observed by the inspecting engineer and passed or were modified till passed the testing requirements. Hydro testing was performed to 100 psi;
- All air tests were observed by the inspecting engineer and passed or were modified till passed the testing requirements;
- Electrical installation performed per NEC;
- Heat trace was operational and energized prior to filling of the water line to heat the pipe so freezing would not occur;
- All exterior piping and building penetrations were sealed prior to winter freezing;
- All punch list items were resolved for this project.

Overall the project was constructed per the design and the incinerator installed per the manufacturer guidelines.

Please call me at (907) 895-5441 if you have any questions or require further assistance.

Prepared by,

**Stephen Hammond, P.E.** | President

[M2C1 Construction and Engineering](#)

PO Box 1750 \* Delta Junction \* AK \* 99737

Direct:907.895.5441 Fax:907.895.5443

Email: [shammond@m2c1llc.com](mailto:shammond@m2c1llc.com)

Attachments: Attachment 1: As-Built Drawings  
Attachment 2: Photographs



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### ATTACHMENT 1

#### As-Built Drawings

<u>GENERAL</u>	
SHEET NO.	TITLE
T1.0	COVER SHEET
T2.0	DRAWING INDEX
<u>CIVIL</u>	
SHEET NO.	TITLE
C1.0	CIVIL GENERAL NOTES, LEGEND AND ABBREVIATIONS
C2.0	EXISTING PAD
C3.0	NEW SITE PLAN
C4.0	PAD SECTIONS & DETAILS
<u>ARCHITECTURAL</u>	
SHEET NO.	TITLE
A1.0	DESIGN CRITERIA AND TYPICAL DETAILS
A1.1	FINISH, COLORS, AND MATERIAL SCHEDULES
A2.0	BUILDING LAYOUT PLAN
A3.0	ROOF PLAN
A4.0	BUILDING SECTIONS
A5.0	BUILDING ELEVATIONS
<u>STRUCTURAL</u>	
SHEET NO.	TITLE
S0.1	GENERAL STRUCTURAL NOTES
S0.2	TYPICAL DETAILS
S1.1	FOUNDATION PLAN
S1.2	ROOF PLAN
S2.1	SHELL SECTION
S3.1	FOUNDATION DETAILS
S3.2	SHELL DETAILS



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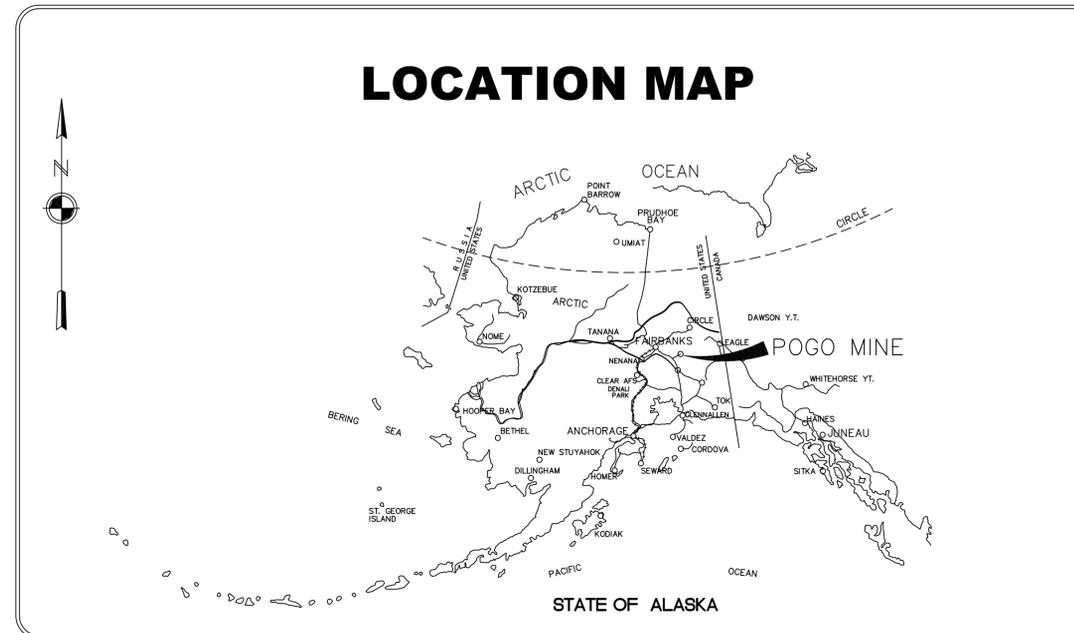
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<b><u>MECHANICAL</u></b>	
<b>SHEET NO.</b>	<b>TITLE</b>
M1.0	MECHANICAL LEGEND AND SPECIFICATIONS
M2.0	MECHANICAL PLANS
M3.0	MECHANICAL SECTIONS
<b><u>ELECTRICAL</u></b>	
<b>SHEET NO.</b>	<b>TITLE</b>
E1.1	SYMBOLS & SPECIFICATIONS
E1.2	SITE PLAN
E1.3	SITE DETAILS
E2.1	LIGHTING PLAN
E2.2	POWER PLAN

# POGO MINE INCINERATOR BUILDING

DELTA JUNCTION, ALASKA



## PROJECT TEAM

### CONTRACTOR:

M2C1 CONSTRUCTION & ENGINEERING  
P.O. BOX 1750  
DELTA JUNCTION, ALASKA 99737

### DESIGN TEAM:

#### CIVIL ENGINEERING

M2C1 CONSTRUCTION & ENGINEERING  
P.O. BOX 1750  
DELTA JUNCTION, AK 99737

#### STRUCTURAL ENGINEERING

ZZ CONSULTING  
1086 NORTH 900 EAST  
SHELLEY, ID 83274

#### MECHANICAL ENGINEERING

HB RUETER ENGINEERING  
P.O. BOX 83535  
FAIRBANKS, ALASKA 99708

#### ELECTRICAL ENGINEERING

ROBERTS-KANEKO  
2790 MONTEVERDE RD.  
FAIRBANKS, ALASKA 99709



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POGO MINE  
INCINERATOR BUILDING DESIGN  
DELTA JUNCTION, ALASKA

DATE: 07/15/11  
PROJECT NO: 0199-13  
DRAWN: SPH  
CHECKED:

TITLE:

COVER SHEET

SHEET:

T1.0

REVISIONS  
AS-BUILT

# PROJECT DRAWING INDEX

GENERAL	
SHEET No.	TITLE
T1.0	COVER SHEET
T2.0	DRAWING INDEX

CIVIL	
SHEET No.	TITLE
C1.0	CIVIL GENERAL NOTES, LEGEND AND ABBREVIATIONS
C2.0	EXISTING PAD
C3.0	NEW SITE PLAN
C4.0	PAD SECTIONS & DETAILS

ARCHITECTURAL	
SHEET No.	TITLE
A1.0	DESIGN CRITERIA AND TYPICAL DETAILS
A1.1	FINISH, COLORS, AND MATERIAL SCHEDULES
A2.0	BUILDING LAYOUT PLAN
A3.0	ROOF PLAN
A3.0	BUILDING SECTIONS
A4.0	BUILDING ELEVATIONS
A5.0	INTERIOR ELEVATIONS
A6.0	HANDRAIL LAYOUT AND DETAILS

MECHANICAL – PLUMBING	
SHEET No.	TITLE
M1.0	MECHANICAL LEGEND AND SPECIFICATIONS
M2.0	MECHANICAL PLANS
M3.0	MECHANICAL SECTIONS

ELECTRICAL – TELECOMMUNICATIONS	
SHEET No.	TITLE
E1.1	SYMBOLS & SPECIFICATIONS
E1.2	SITE PLAN
E1.3	SITE DETAILS
E2.1	LIGHTING PLAN
E2.2	POWER PLAN

STRUCTURAL	
SHEET No.	TITLE
S0.1	GENERAL STRUCTURAL NOTES
S0.2	TYPICAL DETAILS
S1.1	FOUNDATION PLAN
S1.2	ROOF PLAN
S2.1	SHELL SECTION
S3.1	FOUNDATION DETAILS
S3.2	SHELL DETAILS



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 Fax: 907-895-5445



**POGO MINE  
 INCENERATOR BUILDING DESIGN  
 DELTA JUNCTION, ALASKA**

DATE: 07/15/11  
 PROJECT NO: 0159-12  
 DRAWN: SPH  
 CHECKED:

TITLE:

DRAWING INDEX

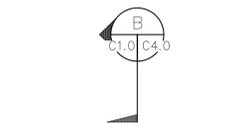
SHEET:

T2.0

REVISIONS

AS-BUILT

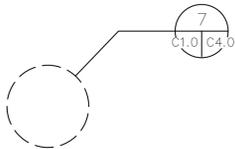
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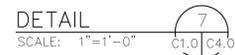
SECTION CUT  
 TOP - SECTION IDENTIFICATION LETTER  
 LEFT - DRAWING FROM WHICH SECTION IS TAKEN  
 RIGHT - DRAWING ON WHICH SECTION IS DRAWN



SECTION TITLE  
 TOP - SECTION IDENTIFICATION LETTER  
 LEFT - DRAWING(S) FROM WHICH SECTION IS TAKEN  
 RIGHT - DRAWING ON WHICH SECTION IS DRAWN

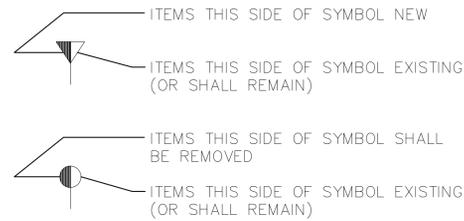


DETAIL INDICATION  
 TOP - DETAIL OR ASSEMBLY IDENTIFICATION NUMBER  
 LEFT - DRAWING FROM WHICH DETAIL IS TAKEN  
 RIGHT - DRAWING ON WHICH DETAIL IS DRAWN



DETAIL TITLE  
 TOP - DETAIL OR ASSEMBLY IDENTIFICATION NUMBER  
 LEFT - DRAWING(S) FROM WHICH DETAIL IS TAKEN  
 RIGHT - DRAWING ON WHICH DETAIL IS DRAWN

**INTERFACE SYMBOLS:**



**GENERAL NOTES:**

- TOPOGRAPHIC SURVEYS OF THE SITE WAS PERFORMED BY XXXX FROM APRIL XX THRU APRIL XX, 2011 UNDER CONTRACT TO M2C1 CONSTRUCTION & ENGINEERING. THESE SURVEYS REFLECT EXISTING GRADES SUBSEQUENT TO SITE PREPARATION CONTRACT WORK PERFORMED NY OTHERS.
- UNLESS SPECIFIED OR SHOWN OTHERWISE, EMBANKMENT SLOPES SHALL BE NO STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL.
- FROST SUSCEPTIBLE MATERIAL ENCOUNTERED DURING EARTHWORK OPERATIONS ON THE NEW SEPTIC SHOULD BE EXCAVATED AND REMOVED FROM THE SEPTIC SITE.
- EXISTING CONDITIONS ARE REPRESENTED BY A SCREENED LINE TYPE. NEW WORK TO BE PERFORMED IS SHOWN BY A BOLDER LINE TYPE. FOR AREAS OUTSIDE OF AREA SURVEYED IN APRIL 2010, CONTRACTOR SHALL FIELD VERIFY AS BUILT CONDITIONS PRIOR TO PERFORMING ANY WORK.

**LEGEND:**

	EXISTING	NEW
MONUMENT BENCH MARK		
SOIL BORING		
SURVEY CONTROL POINT		
EXISTING TREE LINE		
CONTOUR LINE		
SPOT ELEVATION		
ASPHALT		
RIGHT-OF-WAY, PROPERTY LINE		
TYPE A FENCE		
TYPE B FENCE		
TYPE C FENCE		
SEWER LINE		
WATER LINE		
FIRE LINE		
GRADING POINT COORDINATE		
FIRE HYDRANT		
CULVERT		
DEMOLITION		
FINISHED EDGE OF AGGREGATE SURFACE		
CENTERLINE STATIONING		
SIDEWALK, PEDESTRIAN WALKWAY		
SUBBASE		
CLASSIFIED FILL		
UNCLASSIFIED FILL		
SAND FILTER/BEDDING		
TOPSOIL		
AGGREGATE BASE		
AGGREGATE SURFACE		
ASPHALTIC CONCRETE		
CONCRETE		
RIPRAP		
POWER POLE		
SUPPLY WELL		
PIPE GUARD		
LAUNCH HAZARD ZONE		
CLEAN OUT		
FUEL LINE ANCHOR		

**ABBREVIATIONS:**

ADOT	ALASKA DEPARTMENT OF TRANSPORTATION	LF	LINEAR FEET
AL	ALUMINUM	LT	LEFT
B	BARRACKS BUILDING	LOC	LIMITS OF CONSTRUCTION
BMF	BOTTOM OF FOOTING	LF-1	LEACH FIELD 1
BOC	BACK OF CURB	MAX	MAXIMUM
CL	CENTERLINE	MIN	MINIMUM
CHS	CHILLED WATER SUPPLY	MH	MANHOLE
CHR	CHILLED WATER RETURN	MO	MIDDLE ORDINATE
CMP	CORRUGATED METAL PIPE	N	NORTHING
CMU	CONCRETE MASONRY UNIT	NA	NOT APPLICABLE
CO	CLEAN OUT	NFS	NON - FROST SUSCEPTIBLE
CE	CORPS OF ENGINEERS	NIC	NOT IN CONTRACT
CONC	CONCRETE	NTS	NOT TO SCALE
Δ	CURVE DELTA	OC	ON CENTER
DC	DEGREE OF CURVATURE	OCEW	ON CENTER EACH WAY
DIA	DIAMETER	OD	OUTSIDE DIAMETER
DIM	DIMENSION	OH/E	OVERHEAD ELECTRICAL
DND	DO NOT DISTURB	OWS	OIL WATER SEPERATOR DISCHARGE PIPE
E	EASTING	PC	POINT OF CURVATURE
ELEC	ELECTRICAL	PH	PUMP HOUSE BUILDING
EL	ELEVATION	PI	POINT OF INTERSECTION
EW	EACH WAY	PIV	POST INDICATOR VALVE
EXP	EXPANSION	POB	POINT OF BEGINNING
FDN	FOUNDATION	POE	POINT OF ENDING
FF	FINISH FLOOR	POL	PETROLEUM OIL & LUBRICANTS
FH	FIRE HYDRANT	PT	POINT OF TANGENCY
FDB	FIELD DISTRIBUTION BOX	PVC	POINT OF VERTICAL CURVATURE
FOM	FUEL OIL MAKEUP	PVI	POINT OF VERTICAL INTERSECTION
FOS	FUEL OIL SUPPLY	PVT	POINT OF VERTICAL TANGENCY
FP	FOOD PREP BUILDING	PW	POTABLE WATER
FPWS	FIRE PROTECTION WATER SUPPLY	QDR	QUANTITY DISTANCE RADIUS
FPWR	FIRE PROTECTION WATER RETURN	R	RADIUS
FT	FOOT	RC	REVERSE CLEANOUT
G	GENERAL USE BUILDING	RE	RIM ELEVATION
GALV	GALVANIZED	RCP	REINFORCED CONCRETE PIPE
HDPE	HIGH DENSITY POLYETNELENE	ROW	RIGHT OF WAY
HORZ	HORIZONTAL	RT	RIGHT
HTR	HEAT TRACE RETURN	SHLD	SHOULDER
HTS	HEAT TRACE SUPPLY	SP	SPACE
HWR	HEATED WATER RETURN	SQ	SQUARE
HWS	HEATED WATER SUPPLY	SS	SANITARY SEWER
ID	INSIDE DIAMETER	SSD	STOPPING SIGHT DISTANCE
INV	INVERT ELEVATION	STA	STATION
JT	JOINT	STND	STANDARD
K	RATE OF VERTICAL CURVATURE	SW-1	WATER SUPPLY WELL-1
L	LATRINE BUILDING	SW	SERVICE WASTE
LC	LENGTH OF CURVE	SWV	STORM WATER VALVE
		T	TANGENT
		TAP	TRANS-ALASKAN PIPELINE
		TOC	TOP OF CONCRETE
		TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
		USACE	U.S. ARMY CORPS OF ENGINEERS
		∅	DIAMETER
		@	AT



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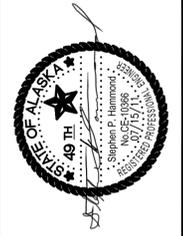
**POGO MINE  
 INCENERATOR BUILDING DESIGN  
 DELTA JUNCTION, ALASKA**

DATE: 07/18/11  
 PROJECT NO: 0159-13  
 DRAWN: SPH  
 CHECKED:

TITLE:  
 GENERAL NOTES,  
 LEGEND AND  
 ABBREVIATIONS

SHEET:  
 C1.0

REVISIONS



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**POGO MINE  
 INCENERATOR BUILDING DESIGN  
 DELTA JUNCTION, ALASKA**

DATE: 07/15/11  
 PROJECT NO: C159-12  
 DRAWN: SPH  
 CHECKED:

TITLE:  
**EXISTING PAD**

SHEET:  
**C2.0**

REVISIONS

AS-BUILT



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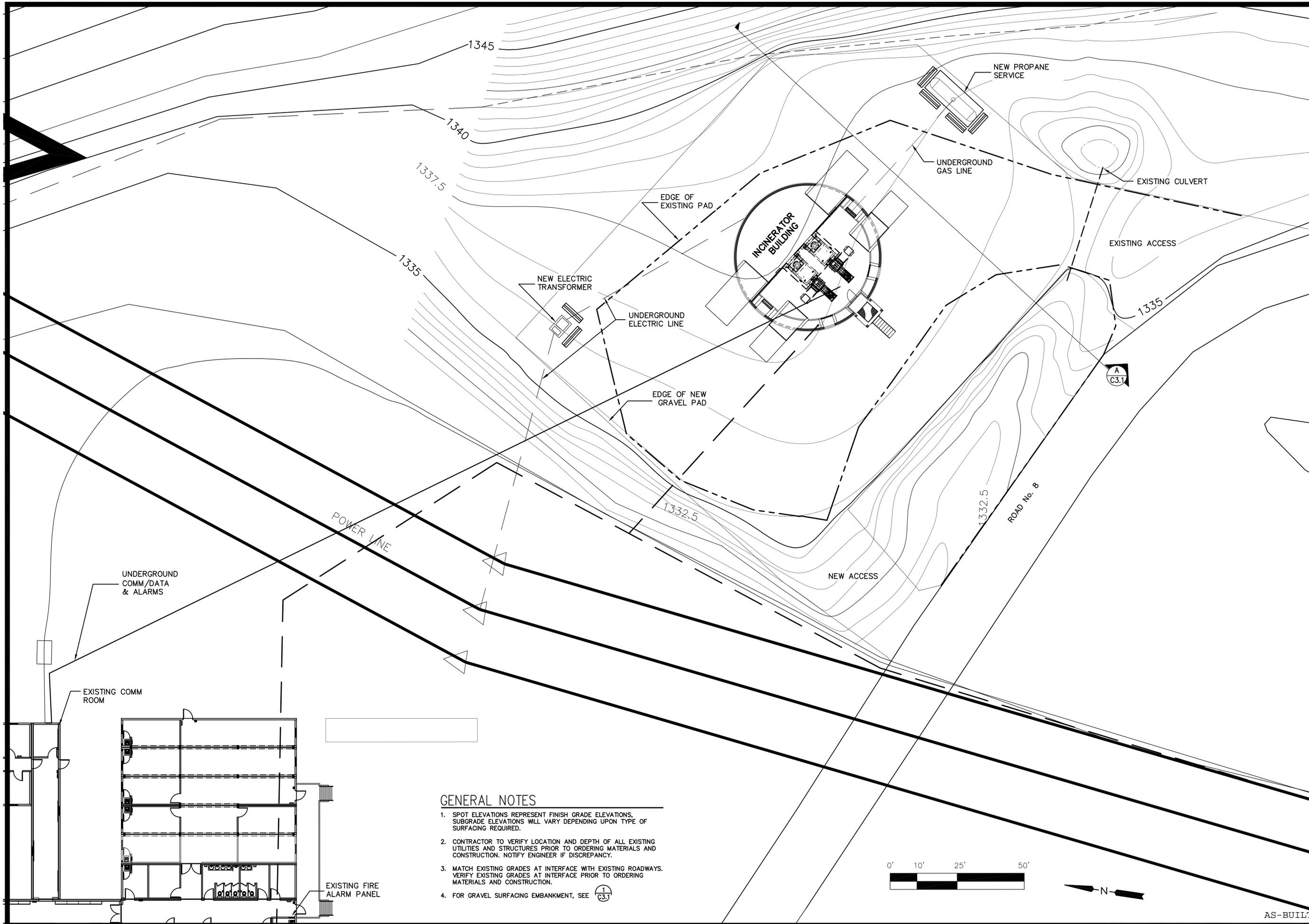
**POGO MINE  
INCENERATOR BUILDING DESIGN  
DELTA JUNCTION, ALASKA**

DATE: 07/15/11  
PROJECT NO.: C159-12  
DRAWN: SPH  
CHECKED:

TITLE:  
**NEW  
SITE PLAN**

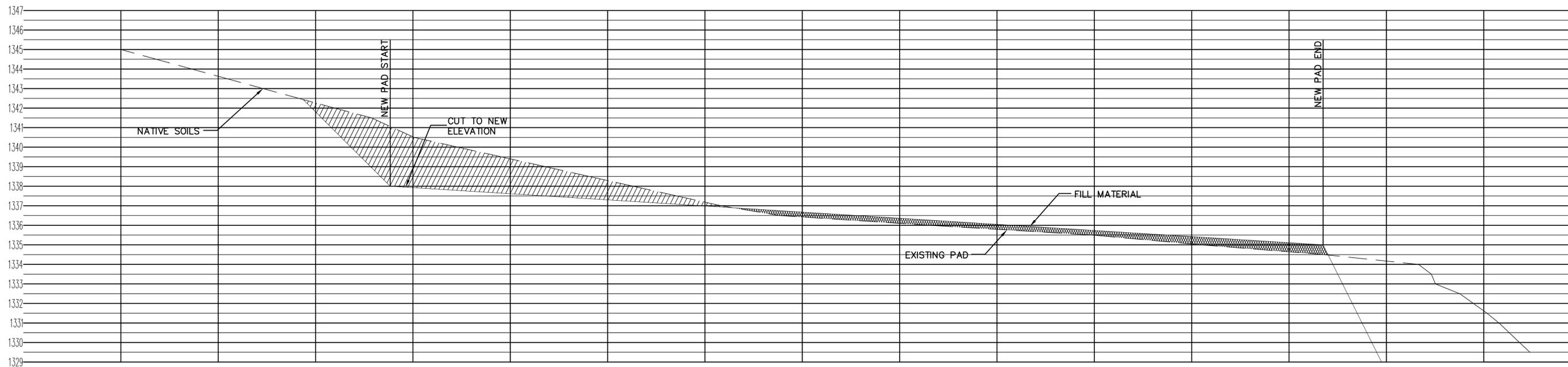
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REVISIONS

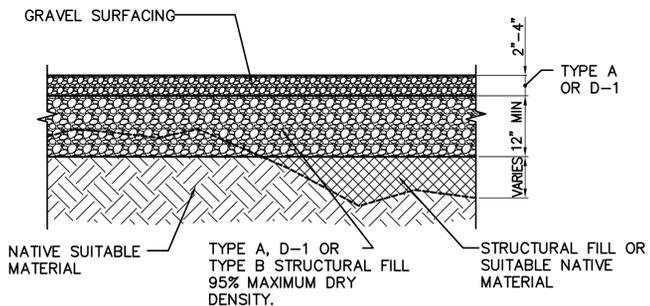


- GENERAL NOTES**
1. SPOT ELEVATIONS REPRESENT FINISH GRADE ELEVATIONS, SUBGRADE ELEVATIONS WILL VARY DEPENDING UPON TYPE OF SURFACING REQUIRED.
  2. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND STRUCTURES PRIOR TO ORDERING MATERIALS AND CONSTRUCTION. NOTIFY ENGINEER IF DISCREPANCY.
  3. MATCH EXISTING GRADES AT INTERFACE WITH EXISTING ROADWAYS. VERIFY EXISTING GRADES AT INTERFACE PRIOR TO ORDERING MATERIALS AND CONSTRUCTION.
  4. FOR GRAVEL SURFACING EMBANKMENT, SEE

AS-BUILT



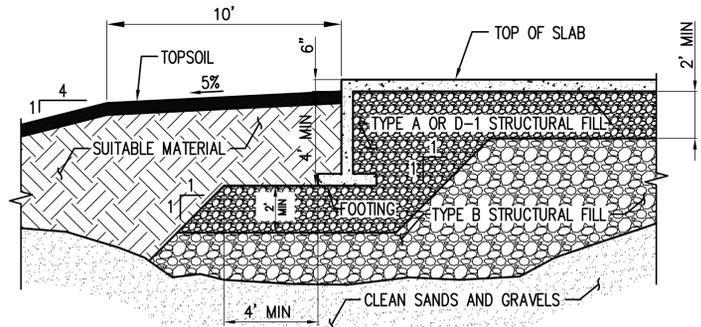
SECTION A  
SCALE: C3.0



NEW PAD

DETAIL 1  
SCALE: NTS  
C3.1

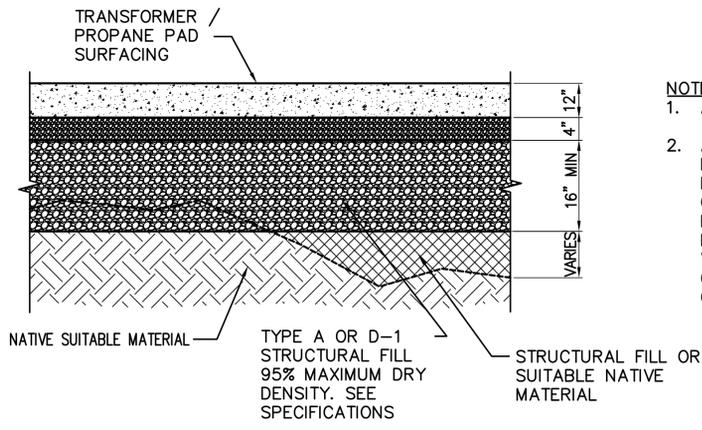
NOTES:  
1. ALL DEPTHS ARE COMPACTED THICKNESS  
2. AFTER UNSUITABLE MATERIALS HAVE BEEN EXCAVATED AND PRIOR TO PLACEMENT OF NON-FROST SUSCEPTIBLE STRUCTURAL FILLS OR SUITABLE NATIVE MATERIAL AS INDICATED, PROOF-ROLL INSITU SOIL WITH MINIMUM FOUR PASSES OF LARGE, HEAVY SELF-PROPELLED VIBRATORY COMPACTOR SUCH THAT 95% COMPACTION OF FIRST LIFT OF SUBBASE FILL CAN BE ACHIEVED.



BUILDING

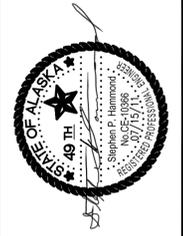
DETAIL 2  
SCALE: NTS  
C3.1

NOTES:  
1. ALL DEPTHS ARE COMPACTED THICKNESS  
2. REMOVE EXISTING SOILS TO CLEAN SANDS AND GRAVELS. PLACE TWO FEET MINIMUM TYPE A OR D-1 STRUCTURAL FILL UNDER BOTTOM OF SLAB AND FOOTING. PLACE TYPE B STRUCTURAL FILL FROM TWO FEET BELOW BOTTOM OF SLAB AND FOOTING TO CLEAN SAND AND GRAVEL LAYER. SEE SPECIFICATIONS.



DETAIL 3  
SCALE: NTS  
C3.1

NOTES:  
1. ALL DEPTHS ARE COMPACTED THICKNESS  
2. AFTER UNSUITABLE MATERIALS HAVE BEEN EXCAVATED AND PRIOR TO PLACEMENT OF NON-FROST SUSCEPTIBLE STRUCTURAL FILLS OR SUITABLE NATIVE MATERIAL AS INDICATED, PROOF-ROLL INSITU SOIL WITH MINIMUM FOUR PASSES OF LARGE, HEAVY SELF-PROPELLED VIBRATORY COMPACTOR SUCH THAT 95% COMPACTION OF FIRST LIFT OF SUBBASE FILL CAN BE ACHIEVED.



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POGO MINE  
INCENERATOR BUILDING DESIGN  
DELTA JUNCTION, ALASKA

DATE: 07/15/11  
PROJECT NO: C159-12  
DRAWN: SPH  
CHECKED:

TITLE:  
PAD SECTION & DETAILS

SHEET:  
C3.1

REVISIONS

POGO INCINERATOR BUILDING  
CODE NOTES

2006 IRC

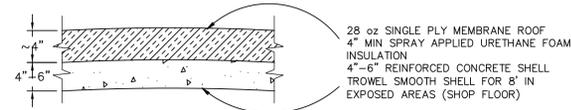
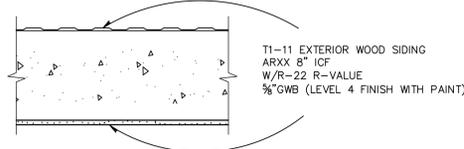
- OCCUPANCY GROUPS: GROUP F-1 (SEC. 312) - ALL AREAS
- INCIDENTAL USE AREAS: PER TABLE 508.2, THE FOLLOWING INCIDENTAL USE AREAS SHALL BE SEPARATED BY 1-HR FIRE BARRIERS, BUT REMAIN CLASSIFIED WITH THE MAIN OCCUPANCY, GROUP F-1:  
a. NONE
- CONSTRUCTION TYPE: NEW CONSTRUCTION: TYPE II-B (SEC 602.2 FIRE RATED NON-COMBUSTIBLE)
- SPRINKLER SYSTEM: SECTION 903.2.3 & 903.2.3.1, GROUP F-1 OCCUPANCY LESS THAN 2500 SF AND LESS THAN 3 STORIES DO NOT REQUIRE AN AUTOMATIC SPRINKLER SYSTEM
- ALLOWABLE HEIGHT AND BUILDING AREA: PER TABLE 503 - GROUP F-1 - TYPE II-B  
ALLOWABLE HEIGHT: 2 STORIES  
ALLOWABLE AREA: 15,500 SF  
ACTUAL HEIGHT: 1 STORY  
ACTUAL AREA: ~1900 SF
- OCCUPANT LOAD: GROUP F-1 (TABLE 1004.1.1-INDUSTRIAL) - 1 OCCUPANT / 100 SF  
 $\frac{1900}{100} = 16$  PPL
- LOCATION ON PROPERTY: ALL EXTERIOR WALLS ARE GREATER THAN 30 FEET FROM PROPERTY LINES OR OTHER STRUCTURES. PER TABLE 602, NO RATED EXTERIOR WALLS ARE REQUIRED BUT THEY ARE PROVIDED.  
MINIMUM FIRE SEPARATION DISTANCE FOR EXTERIOR WALL OPENINGS IS GREATER THAN 30 FEET. PER TABLE 704.8, NO PROTECTED OPENINGS IN EXTERIOR WALLS ARE REQUIRED.
- COMBUSTIBLE MATERIALS: PER SEC 603.1, COMBUSTIBLE MATERIALS MAY BE USED IN TYPE II CONSTRUCTION IN THE FOLLOWING:  
a. CLASS A, B, OR C ROOF COVERINGS.  
b. INTERIOR TRIM AND MILLWORKS.  
c. FOAM PLASTICS PER IBC CHAPTER 26.  
d. BLOCKING FOR HANDRAILS, MILLWORK, CABINETS, WINDOWS AND DOORS, ETC.  
e. NAILING OR FURRING STRIPS.  
f. AS INTERIOR FINISH WHEN MEETING CLASS C REQUIREMENTS OF SEC. 803.1
- INTERIOR FINISHES: PER TABLE 803.4, AND FOOTNOTE b) CLASS C FINISHES ARE PERMITTED THROUGHOUT.
- FIRE PROTECTION: REQUIRED PORTABLE FIRE EXTINGUISHERS (PER SEC. 906.1) ARE INDICATED ON DRAWINGS.
- ALARMS/DETECTION: PER SEC. 907.2.4 GROUP F OCCUPANCIES DO NOT REQUIRE FIRE ALARM OR SMOKE DETECTION DEVICES IF LESS THAN 2 STORIES AND OCCUPANT LOAD IS < 500.  
OWNER HAS REQUESTED FIRE/SMOKE DETECTION AND ALARMS FOR THIS BUILDING. THE BUILDING SYSTEM SHALL BE COMPATIBLE WITH THE POGO SYSTEM AND INTERGRATED INTO THE SYSTEM FOR REPORTING
- STAIR EGRESS: 1ST FLOOR STAIR EGRESS (TABLE 1005.1) [16\*3] = 4.8 INCHES PLANNED MINIMUM DOOR WIDTH = 3 FEET  
ONE EXIT ALLOWED PER TABLE 1019.2 WITH OCCUPANCY LOAD LESS THAN 49 AND LESS THAN 75 FEET OF TRAVEL DISTANCE
- SPECIAL INSPECTION: CHAPTER 17 REQUIREMENTS FOR SPECIAL INSPECTION, TESTING, AND QUALITY ASSURANCE ARE OUTLINED IN DRAWINGS AND TECHNICAL SPECIFICATIONS.

POGO INCINERATOR BUILDING  
GENERAL NOTES

- MONOLITHIC CONCRETE THIN SHELL STRUCTURE
1. BUILDING CONSTRUCTION
- 1.1. ICF CONSTRUCTION
- 1.1.1. 20 MIL EXTERIOR WATERPROOFING MEMBRANE FOR AIR/VAPOR BARRIER
- 1.1.2. 8" ARXX ICFs (2-3/8" FOAM ON EACH FACE)
- 1.1.3. REINFORCING PER DESIGN
- 1.1.4. CONCRETE STRENGTH PER DESIGN WITH MIN. 3000 PSI MIX
- 1.2. SHELL CONSTRUCTION
- 1.2.1. 60 MIL SINGLE PLY ROOFING MEMBRANE FOR AIR/VAPOR BARRIER AND INFLATABLE FORM USED DURING CONSTRUCTION. MULTIPLE COLORS AVAILABLE TO CHOOSE FROM
- 1.2.2. 4" OF SPRAY FOAM INSULATION
- 1.2.3. 4-6 INCHES OF REINFORCED SHOTCRETE (THERMAL MASS)
- 1.3. FIRE RESISTANT TYPE II-B CONSTRUCTION
- 1.4. NEAR ABSOLUTE PROTECTION RATING (FEMA). THUS THE BUILDING IS VERY WIND, EARTHQUAKE, FIRE, AND SEVERE WEATHER RESISTANT
- 1.5. ROOF/WALL R-VALUE RATED BETWEEN R60 - R80
- 1.6. DURABLE AND RESILIENT STRUCTURE
2. BUILDING MECHANICAL SYSTEM
- 2.1. BUILDING HEATING SYSTEM SHALL PRIMARILY BE HEATED BY EXCESS HEAT FROM THE INCINERATORS. WHEN INCINERATORS ARE NOT IN USE HEAT WILL BE PROVIDED BY ELECTRIC UNIT HEATERS
- 2.2. COMBUSTION AIR IS PROVIDED DURING INCINERATOR OPERATIONS
- 2.3. BUILDING IS MONITORED FOR CO AND POSSIBLE LEL DUE TO COMBUSTION AND GAS SOURCE
- 2.4. NO AIR CONDITIONING IS PLANNED
- 2.5. WATER SERVICE TO BUILDING IS TO SUPPLY INCINERATOR DEMAND. NO WATER SERVICE OTHERWISE PLANNED FOR THIS BUILDING
- 2.6. NO SANITARY PLUMBING REQUESTED FOR THIS BUILDING
3. BUILDING ELECTRICAL SYSTEM
- 3.1. SERVICE TAP AND TRANSFORMER AS REQUIRED
- 3.2. BUILDING / INCINERATOR GROUNDING AS REQUIRED
- 3.3. EXTERIOR BUILDING DISCONNECT SERVICED FROM UNDERGROUND MAIN FEEDER (FROM THE TAP OR TRANSFORMER)
- 3.4. DOUBLE INTERIOR ELECTRIC PANELS FOR BUILDING POWER, LIGHTS, HEAT, AND INCINERATOR(S)
- 3.5. 2 EA INCINERATOR DISCONNECT SWITCHES IF NOT BY MANUFACTURER

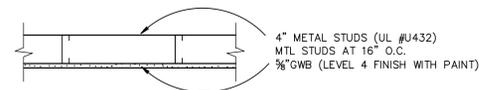
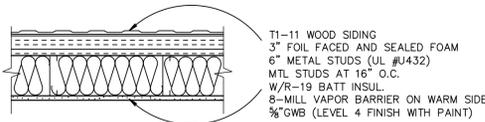
POGO INCINERATOR BUILDING  
PARTITION NOTES

- EXTERIOR CONCRETE SHELL
1. EXTERIOR WALL AND ROOF ARE AS SHOWN ON PARTITION DETAIL 1 OR 2 AND GENERAL NOTE 1.1 ICF CONSTRUCTION AND 1.2 SHELL CONSTRUCTION
- INTERIOR WALL PARTITION(S)
1. INTERIOR FRAMED WALL OPENINGS ARE AS SHOWN ON PARTITION DETAIL 2 AND AS DETAILED BELOW
- 1.1. FRAMED WALL OPENINGS AND DOOR FRAMING SUPPORTS SHALL BE LIGHT GAUGE METAL FRAMING 6" WIDTH MINIMUM OR AS REQUIRED BY DESIGN
- 1.2. 3" FOIL FACED FOAM WITH SEALED SEAMS SHALL FORM A AIR BARRIER AT FRAMED OPENINGS, FIBER INSULATION BETWEEN STUDS AND AN INTERIOR VAPOR BARRIER SHALL BE INSTALLED TO PROVIDE A MINIMUM R-30 ASSEMBLY
- 1.3. SHEETING FOR EXTERIOR WALL(S) SHALL BE 1/2" T1-11 WOOD WITH VERTICAL ORIENTED PATTERN PRIMERED AND PAINTED
- 1.4. FINISH FOR INTERIOR WALL(S) SHALL BE 3/8" GWB FIRE TAPED AT JOINTS



1 ICF FOUNDATION/LOADING DOCK  
SCALE : 1"=1'-0"

2 CONCRETE SHELL SECTION  
SCALE : 1"=1'-0"



3 6" EXTERIOR MTL STUD WALL  
SCALE : 1"=1'-0"

4 4" MTL STUD WALL  
SCALE : 1"=1'-0"



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POGO MINE  
INCINERATOR BUILDING DESIGN  
DELTA JUNCTION, ALASKA

DATE: 07/15/11  
PROJECT NO: 0159-13  
DRAWN: SPH  
CHECKED:

TITLE:  
DESIGN CRITERIA  
AND  
TYPICAL DETAILS

SHEET:  
A1.0

REVISIONS  
AS-BUILT

# COLOR AND MATERIAL SCHEDULES

PAINTING			
SYMBOL	MATERIAL	MANUFACTURER	COLOR - PATTERN - TYPE
PT-1	LOW VOC PAINT	SHERWIN WILLIAMS	EGGSHELL WHITE-SEMI-GLOSS

GENERAL NOTES:  
 1. SHELL WILL BE COATED WITH 2 COATS OF PRIMER AND 1-COAT OF PT-1 PRIOR TO INTERIOR FRAMING AND FINISHES  
 2. CWB WALLS WILL BE COATED WITH 2 COATS OF PRIMER AND 1-COAT OF PT-1 PRIOR TO INTERIOR FRAMING AND FINISHES

# ROOM FINISH SCHEDULE

ROOM No.	ROOM NAME	FLOOR		BASE	CEILING		WALL		NOTES
		MATERIAL	FINISH		MATERIAL	FINISH	MATERIAL	FINISH	
100	GARAGE	CONCRETE	STEEL TROWL	4" VINYL COVE	PAINT	ROUGH	CONCRETE	LEVEL 4	
101	INCINERATOR ROOM	CONCRETE	STEEL TROWL	4" VINYL COVE	PAINT	ROUGH	GWB	LEVEL 4	

GENERAL NOTE:  
 1. ALL GWB WILL BE LEVEL 4 FINISH

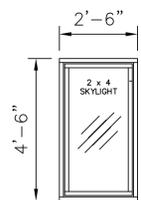
WINDOW SCHEDULE										
WINDOW No.	FRAME						GLAZING	RATING	WINDOW TREATMENT	NOTES
	FRAME TYPE	HEIGHT	WIDTH	MATERIAL	FINISH	HEAD HEIGHT				

SKYLIGHT SCHEDULE										
WINDOW No.	FRAME						OUTER GLAZING	INNER GLAZING	WINDOW TREATMENT	NOTES
	FRAME TYPE	HEIGHT	WIDTH	MATERIAL	FINISH	STYLE				
S(1,3,5,7)	S1	46-1/4"	22-1/4"	ALUMINUM	BRONZE ANODIZE	NON-OPERABLE (SINGLE-GLAZING)	BRONZE	CLEAR	N/A	

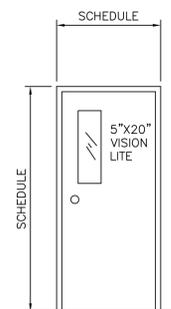
GENERAL NOTES:  
 1. FRAME DIMENSIONS REFER TO ROUGH OPENING SIZE.  
 2. REFER TO ROOF PLAN FOR SKYLIGHT TYPE AND LOCATION.

DOOR SCHEDULE														
DOOR No.	DOOR							RATING	HARDWARE GROUP	FRAME				NOTES
	WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	GLAZING	WIDTH			HEIGHT	DEPT	MATERIAL		
D01	3'-0"	7'-0"	D1	STEEL	FACTORY	5X20 SAFETY GLASS	R-10	BEST HARDWARE	3'-0"	7'-0"	0'-10"	16 GA		
D02	10'-2"	12'-1"	599	STEEL	FACTORY	AIG	R-17.5	SLIDE LOCK	10'-0"	12'-0"	-	.016" STL	THERMACOR 599	
D03	10'-2"	12'-1"	599	STEEL	FACTORY	AIG	R-17.5	SLIDE LOCK	10'-0"	12'-0"	-	.016" STL	THERMACOR 599	

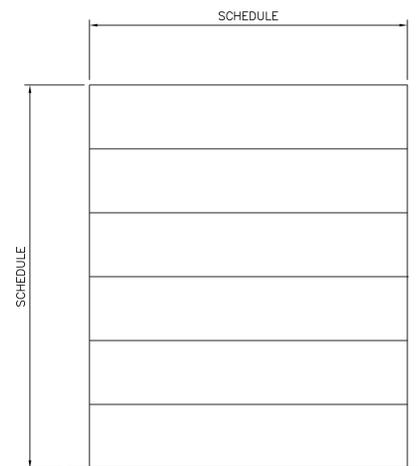
GENERAL NOTES:  
 1. FRAME DIMENSIONS REFER TO ROUGH OPENING SIZE.  
 2. REFER TO EXTERIOR ELEVATIONS FOR WINDOW/DOOR TYPE AND LOCATION.



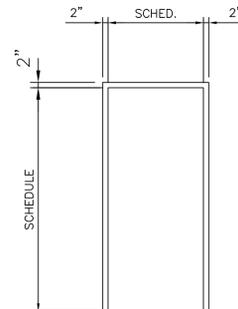
SKYLIGHT TYPE S1



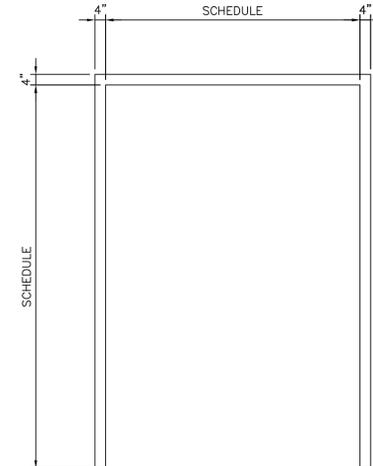
DOOR TYPES



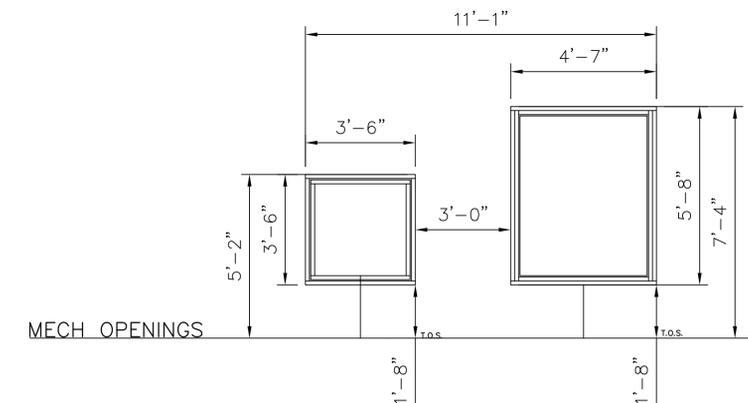
TYPE D3



DOOR FRAMES



TYPE F3



MECH\_OPENINGS



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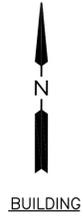
**POGO MINE**  
**INCINERATOR BUILDING DESIGN**  
**DELTA JUNCTION, ALASKA**

DATE: 07/15/11  
 PROJECT NO: 0159-13  
 DRAWN: SPH  
 CHECKED:

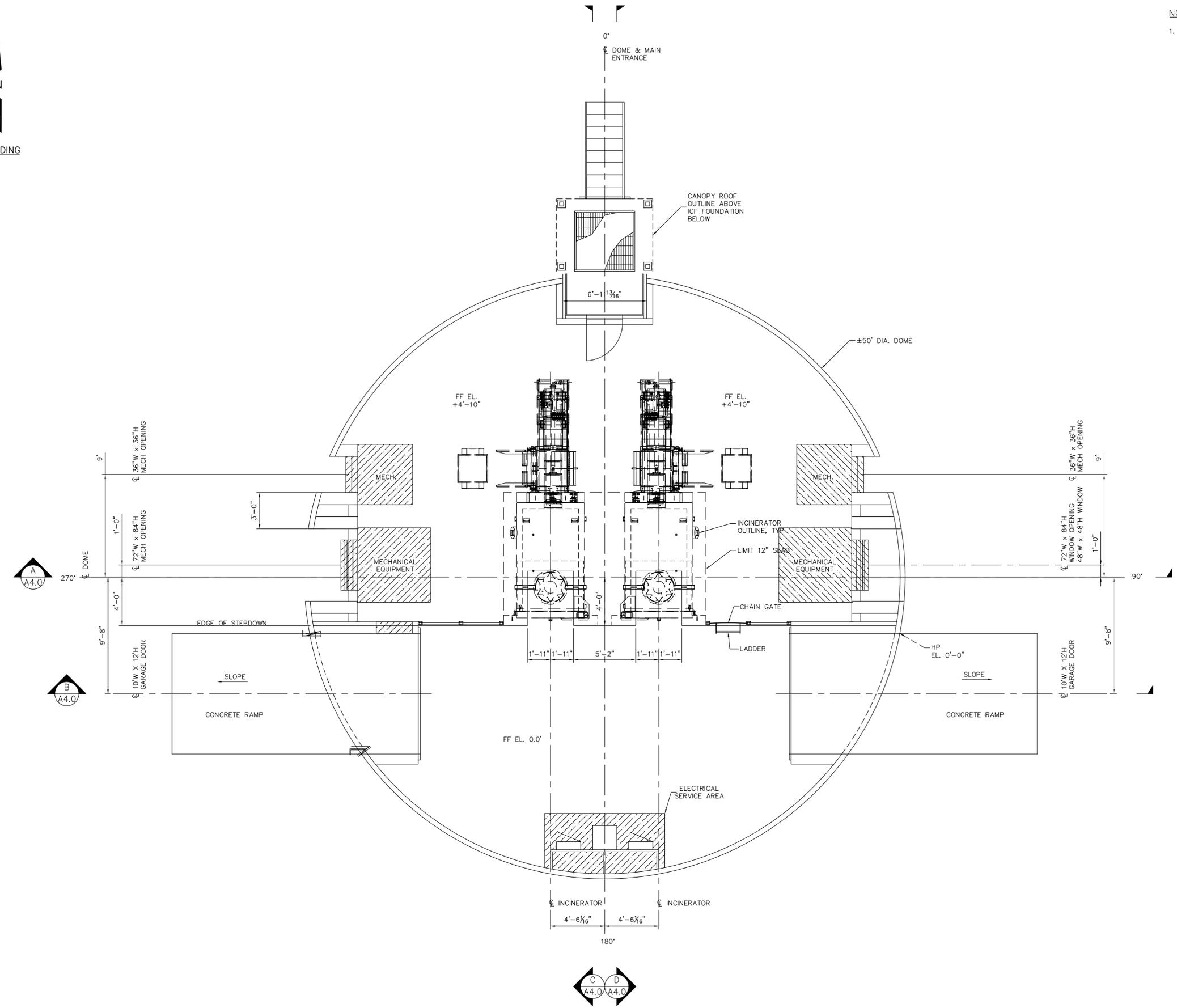
TITLE:  
 FINISH, COLORS  
 AND MATERIAL  
 SCHEDULES

SHEET:  
 A1.1

REVISIONS  
 AS-BUILT



NOTE:  
1. FOR GENERAL NOTES REFER TO SHEET A1.0.



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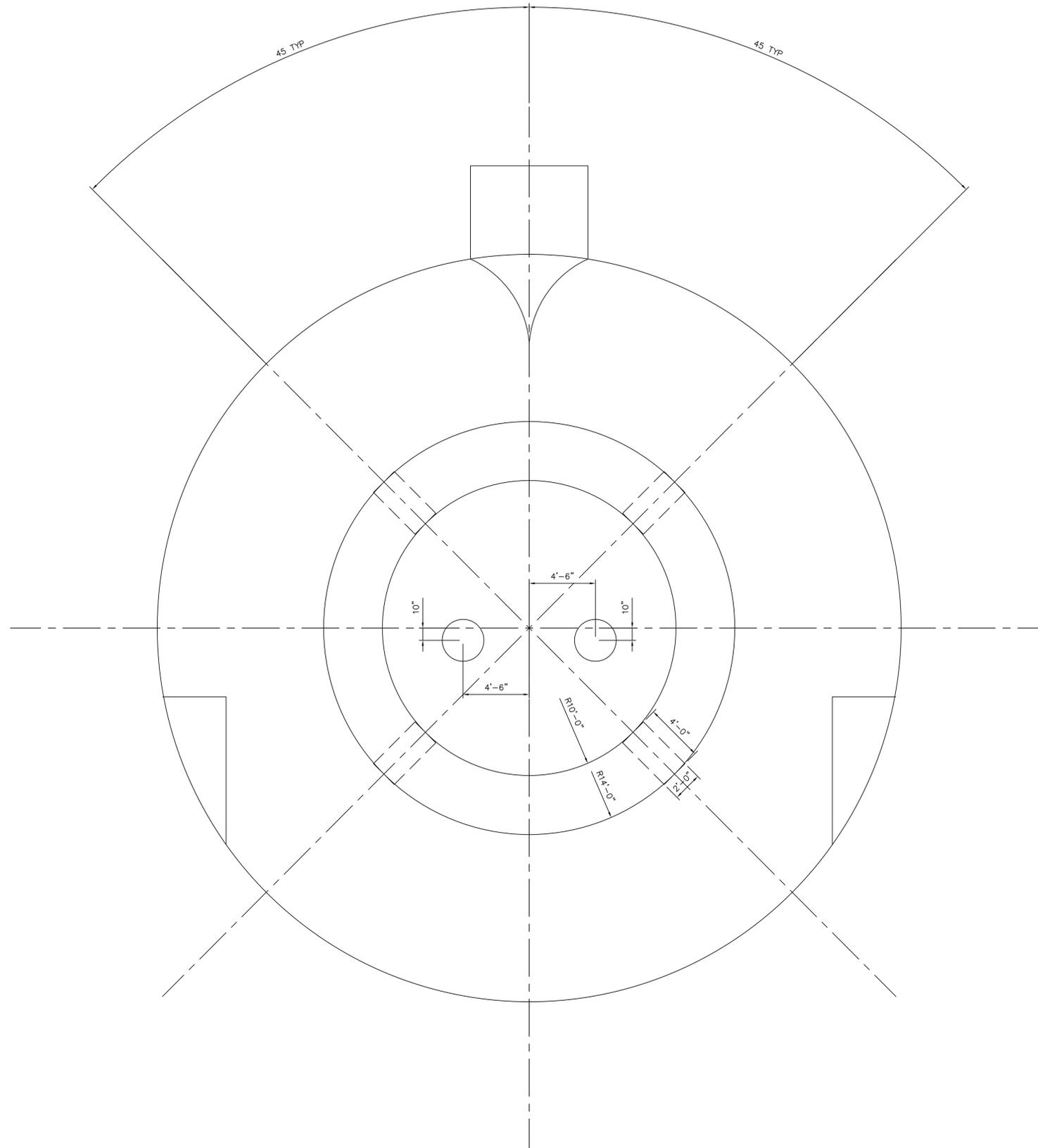
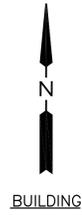
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INCINERATOR BUILDING DESIGN  
DELTA JUNCTION, ALASKA**

DATE: 07/15/11  
PROJECT NO: 0199-13  
DRAWN: SPH  
CHECKED:

TITLE:  
LAYOUT PLAN

SHEET:  
A2.0

REVISIONS  
AS-BUILT



NOTE:

1. FOR DOOR LAYOUT REFER TO SHEET A2.0
2. SKYLING PENETRATIONS ARE OPTIONAL
3. SKYLIGHT DATA REQUIREMENTS FOUND ON SHEET A1.1



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TITLE:  
**ROOF  
PLAN**

SHEET:  
**A3.0**

REVISIONS  
AS-BUILT



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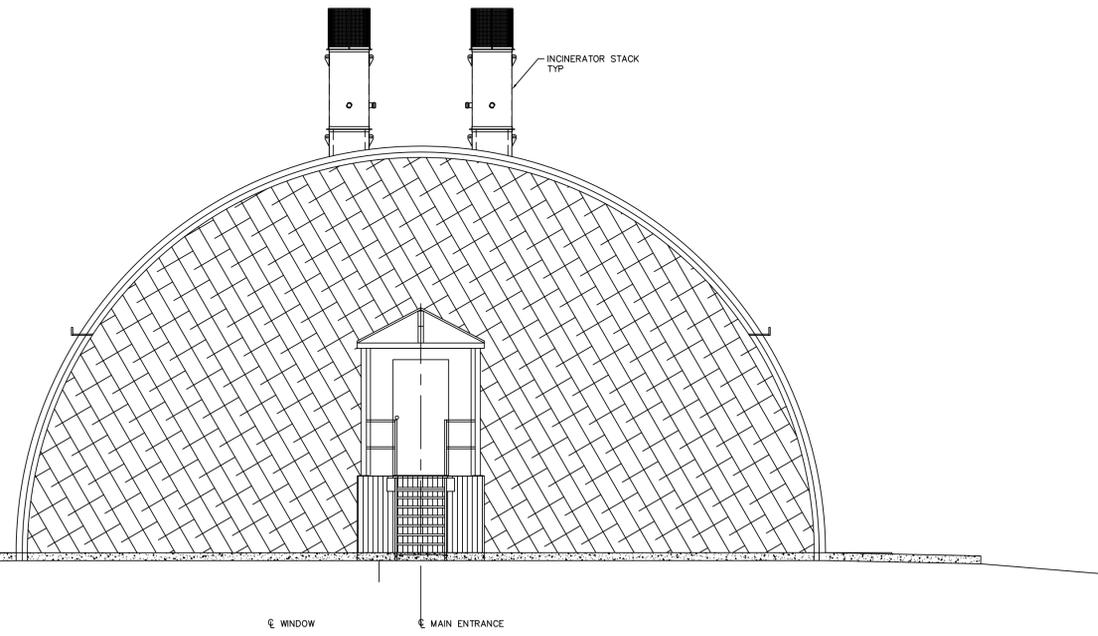
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DATE: 07/15/11  
PROJECT NO: 0159-15  
DRAWN: SPH  
CHECKED:

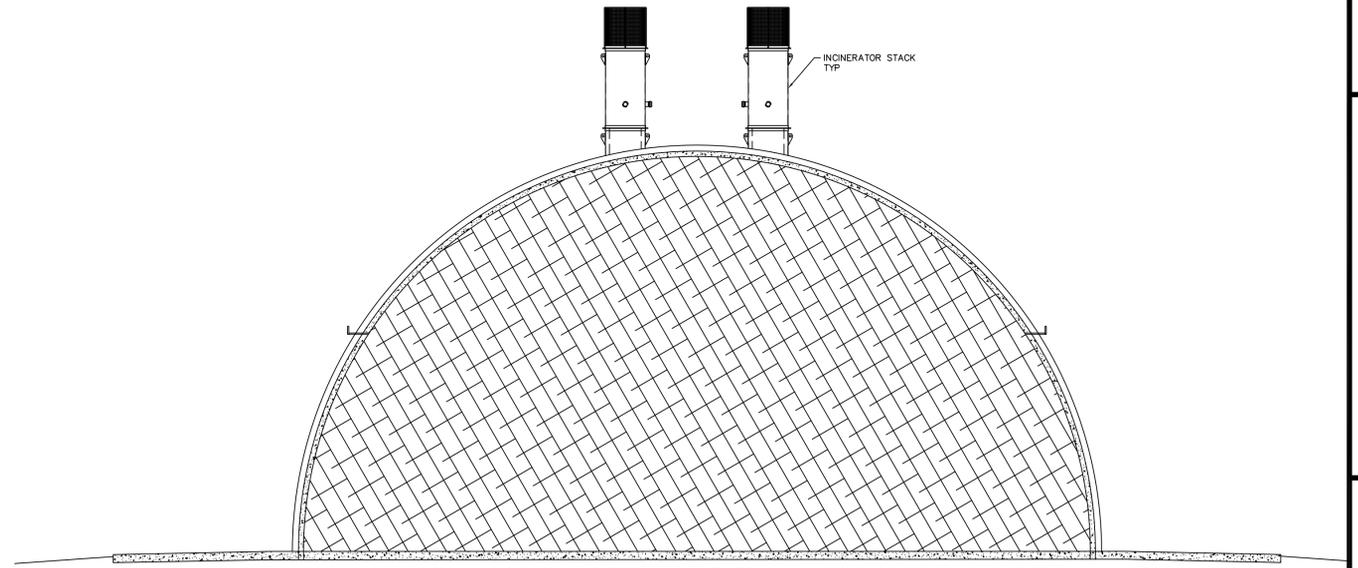
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**EXTERIOR PROFILES**

SHEET:  
**A4.0**

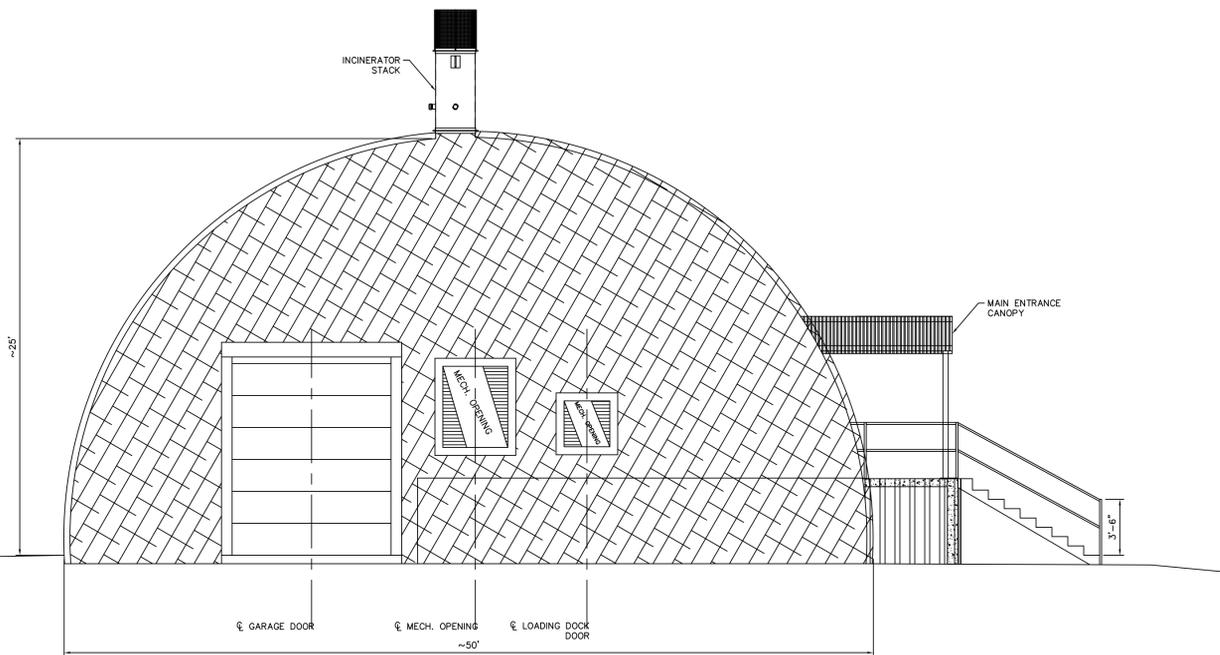
REVISIONS  
**AS-BUILT**



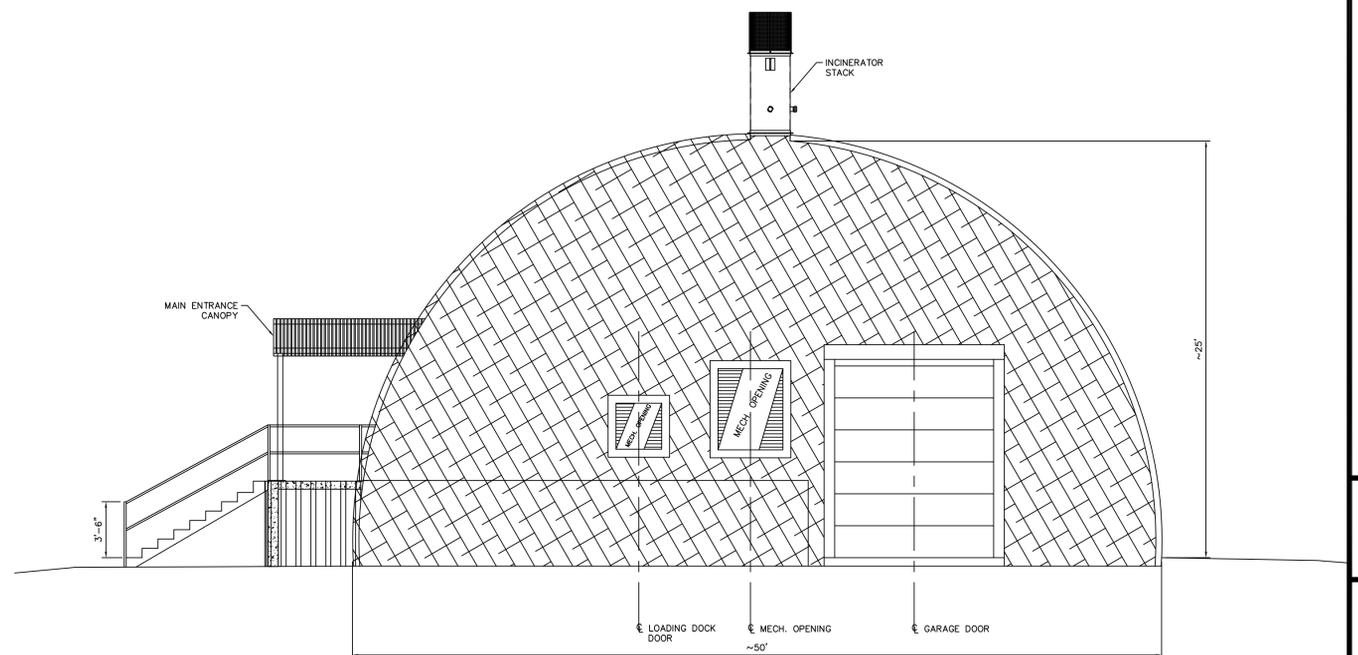
€ WINDOW  
€ MAIN ENTRANCE  
**NORTH ELEVATION**  
LOOKING SOUTH



**SOUTH ELEVATION**  
LOOKING NORTH



€ GARAGE DOOR  
€ MECH. OPENING ~50'  
€ LOADING DOCK DOOR  
**EAST ELEVATION**  
LOOKING WEST LOOKING EAST



€ LOADING DOCK DOOR  
€ MECH. OPENING ~50'  
€ GARAGE DOOR  
**WEST ELEVATION**  
LOOKING EAST



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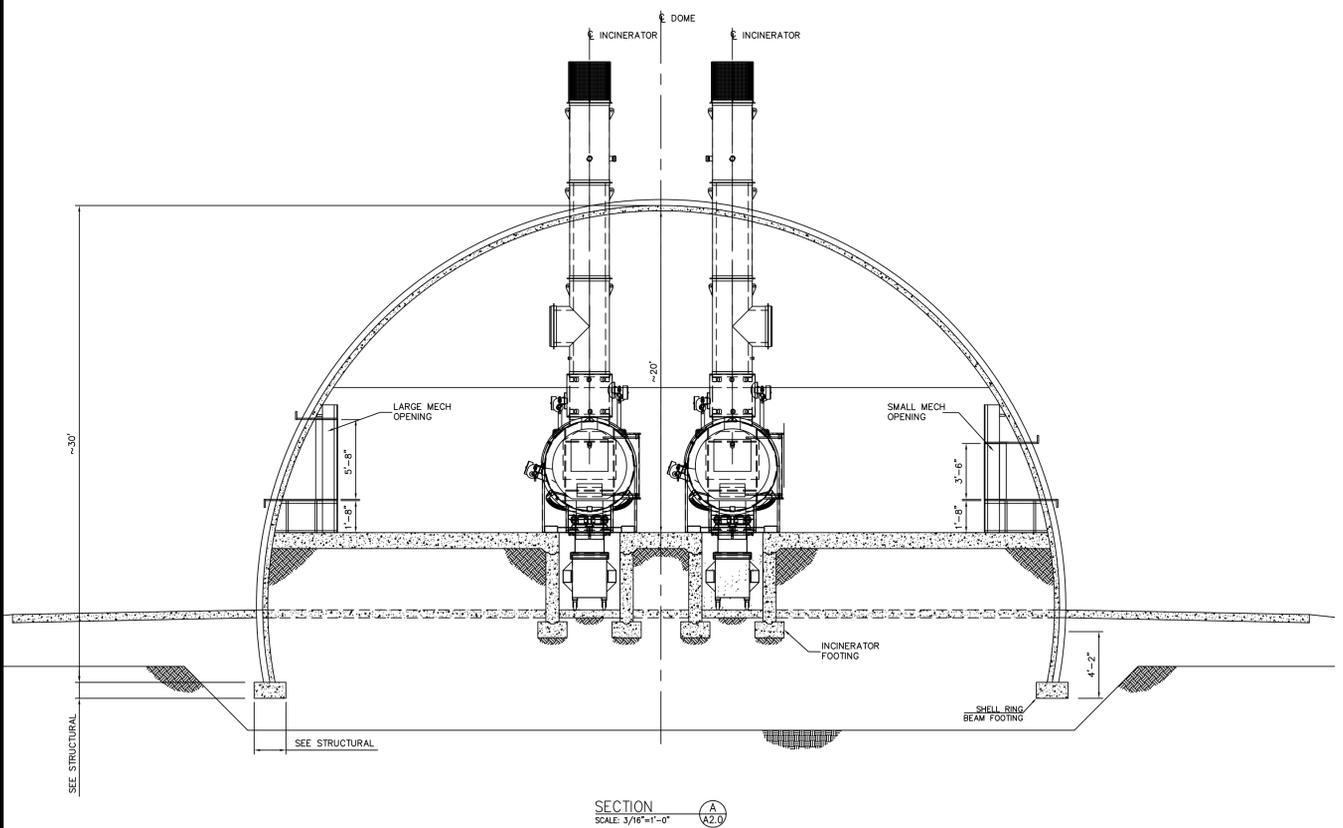
**POGO MINE  
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DELTA JUNCTION, ALASKA**

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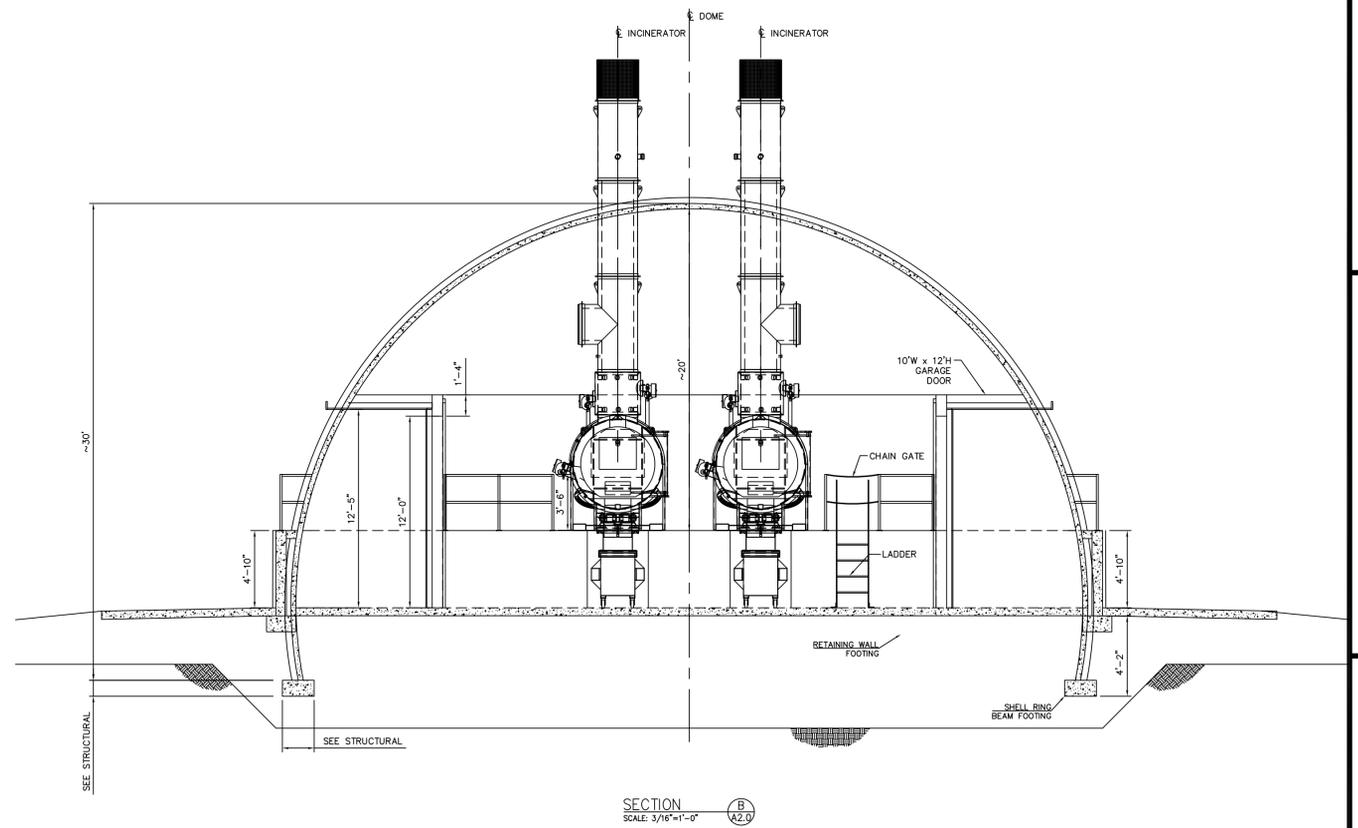
TITLE:  
**INTERIOR SECTIONS**

SHEET:  
**A5.0**

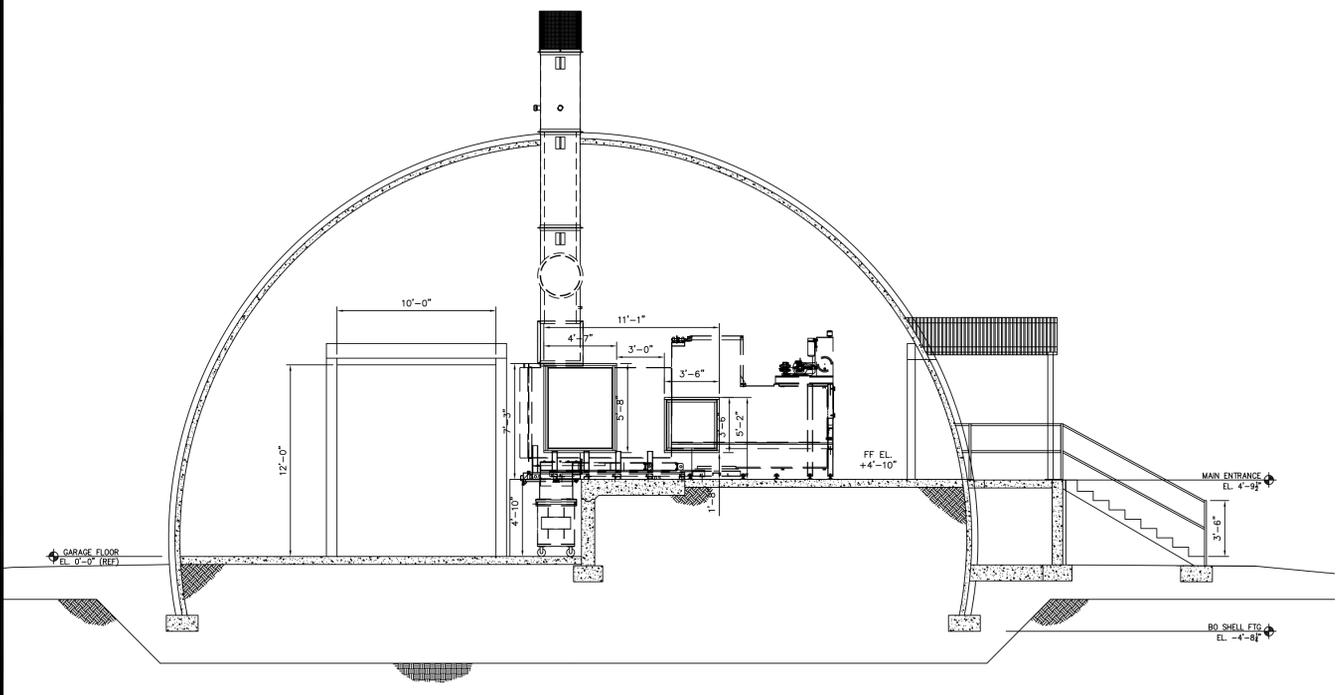
REVISIONS  
**AS-BUILT**



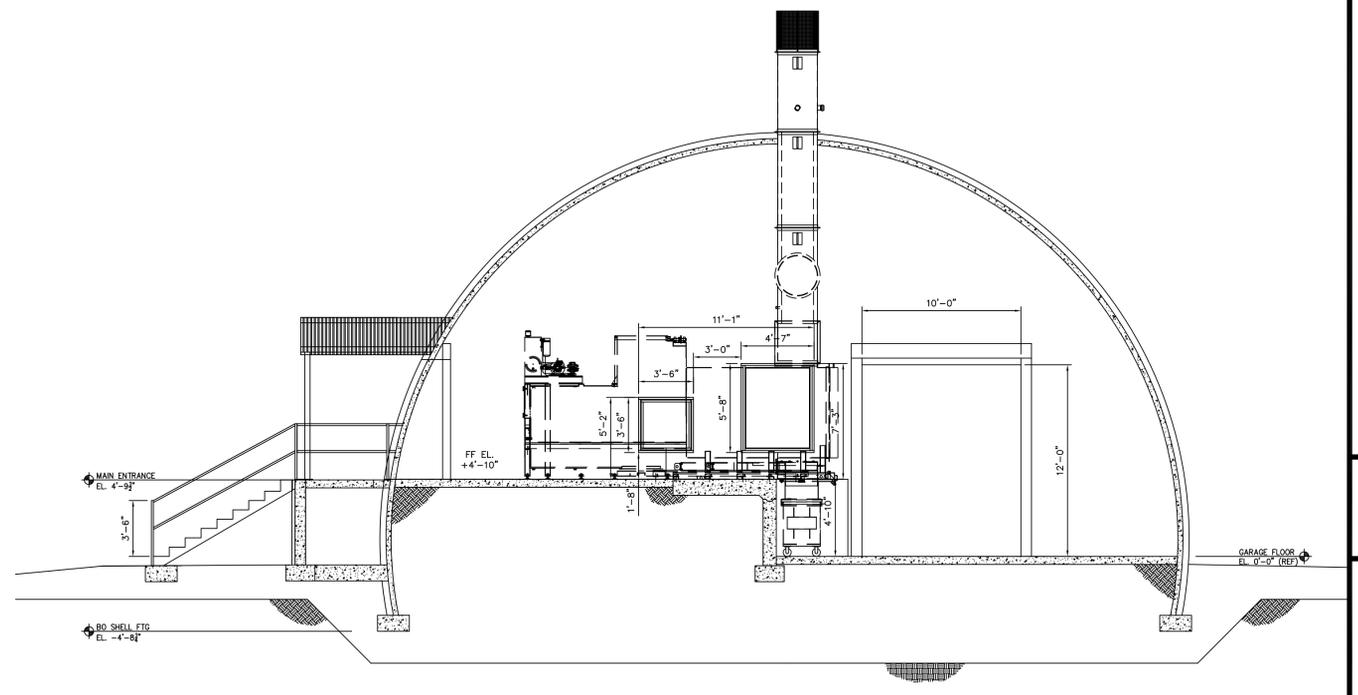
SECTION A  
SCALE: 3/16"=1'-0"  
A2.0



SECTION B  
SCALE: 3/16"=1'-0"  
A2.0



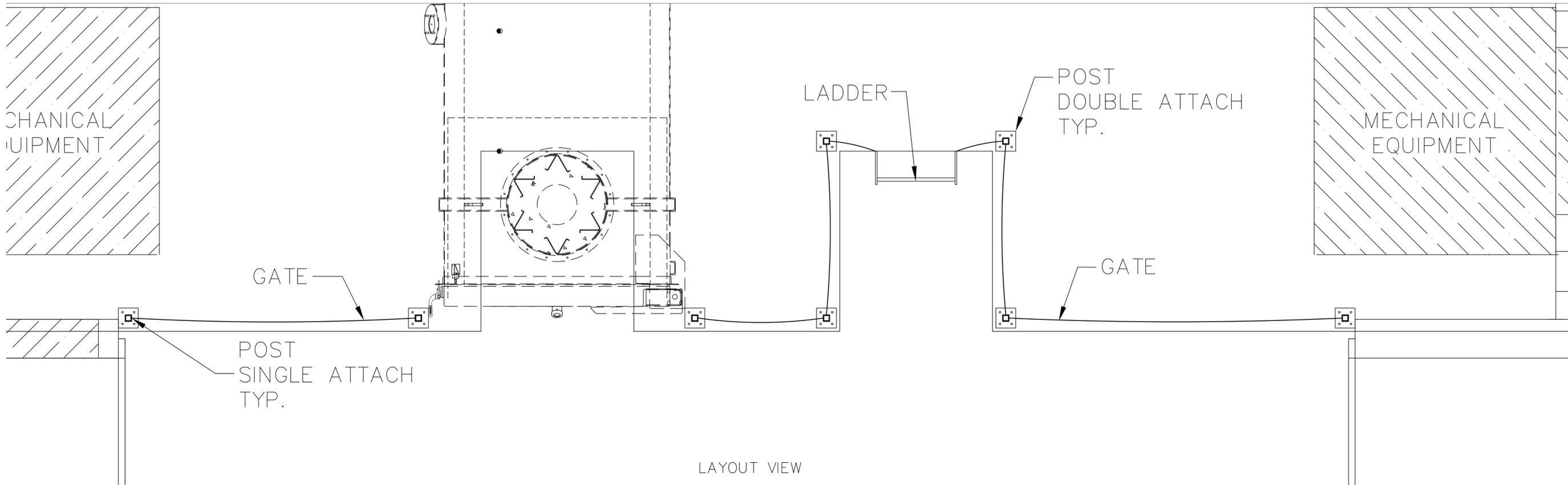
SECTION C  
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A2.0



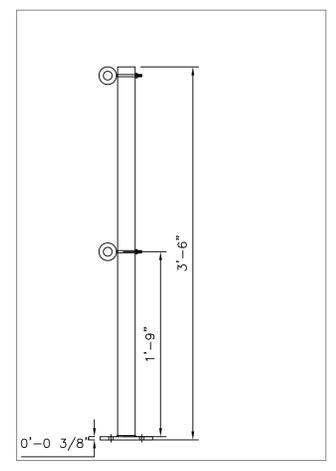
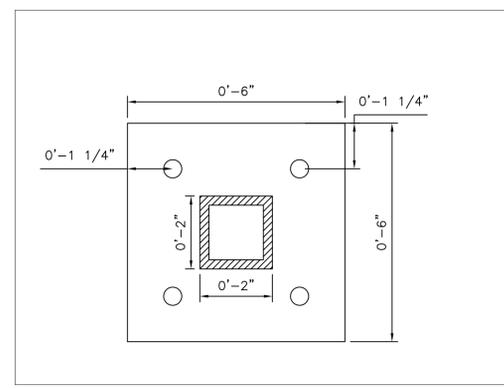
SECTION D  
SCALE: 3/16"=1'-0"  
A2.0

MECHANICAL EQUIPMENT

MECHANICAL EQUIPMENT



LAYOUT VIEW



- NOTES:
- 1) BASE PLATE IS  $\frac{3}{8}$ " MIN. STEEL
  - 2) POST IS 2"X2"X $\frac{1}{4}$ " STEEL
  - 3) USE  $\frac{5}{16}$ " MIN. EYE BOLTS OR WELDABLE PAD EYES
  - 4) ORIENT AS SHOWN ON LAYOUT
  - 5) WIRE ROPE IS  $\frac{3}{8}$ " MIN AND POLY COATED IF AVAILABLE
  - 6) USE TURNBUCKLES AND SPRING HOOKS AS NEEDED TO INSTALL
  - 7) USE MINIMUM 2-EA CABLE CLAMPS AND THIMBLES ON WIRE ROPE ENDS



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DELTA JUNCTION, ALASKA**

DATE: 07/15/11  
PROJECT NO: 0159-12  
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CHECKED:

TITLE:  
**HANDRAIL  
LAYOUT &  
DETAILS**

SHEET:  
**A6.0**

REVISIONS  
**AS-BUILT**

## GENERAL

- THE PRIMARY PURPOSE OF THESE STRUCTURAL DRAWINGS IS TO PROVIDE SAFETY THROUGH STRENGTH AND STABILITY, NOT NECESSARILY TO PREVENT ALL DAMAGE OR MAINTAIN NON-ESSENTIAL SERVICE FUNCTIONS.
- THESE DRAWINGS DO NOT NECESSARILY SHOW PRECISE CONDITIONS. IT IS ASSUMED THAT CONSTRUCTION WILL BE PERFORMED BY CONTRACTORS EXPERIENCED IN THE TYPES OF WORK INVOLVED IN THIS PROJECT AND THAT HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODES, STANDARDS, AND CORRECT INDUSTRY ACCEPTED PRACTICES. WHERE EXACT CONDITIONS ARE NOT SHOWN, CONSTRUCTION SHALL BE OF THE SAME TYPE AND CHARACTER AS SHOWN FOR SIMILAR CONDITIONS, SUBJECT TO REVIEW OF THE STRUCTURAL ENGINEER. WHERE CONFLICTS BETWEEN GENERAL REQUIREMENTS AND SPECIFIC REQUIREMENTS OCCUR ON THESE DRAWINGS, THE SPECIFIC REQUIREMENTS SHALL APPLY.
- THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE AND, UNLESS NOTED OTHERWISE, ARE NOT INTENDED TO SPECIFY CONSTRUCTION OR FABRICATION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, COORDINATION OF WORK, SHORING, TEMPORARY BRACING, FORM-WORK, ETC. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADEQUATELY BRACE THE STRUCTURE AGAINST WIND, SEISMIC, AND SOIL PRESSURE FORCES UNTIL THE STRUCTURE IS COMPLETE. WEIGHTS OF CONSTRUCTION MATERIALS ON FINISHED FLOORS AND ROOFS SHALL NOT EXCEED LIVE LOADS INDICATED ON THESE DRAWINGS.
- DESIGN OF MISCELLANEOUS OR PREFABRICATED ITEMS SUCH AS STAIRS, LADDERS, RAILINGS, PARTITION WALLS, AND TRUSSES ARE NOT INCLUDED AND SHALL BE PROVIDED BY OTHERS.
- THE STRUCTURAL ENGINEER SHALL REVIEW AND APPROVE CONTRACTOR SUBMITTALS SUCH AS SHOP DRAWINGS AND PRODUCT DATA FOR ITEMS SUCH AS PREFABRICATED COMPONENTS AND SPECIALTY ITEMS, BUT ONLY FOR GENERAL CONFORMANCE WITH STRUCTURAL INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. SUBMITTALS SHALL INCLUDE ITEMS REQUIRED IN THE GENERAL STRUCTURAL NOTES. ITEMS DESIGNED BY A SPECIALTY ENGINEER SHALL INCLUDE STAMPED DRAWINGS AND CALCULATIONS. REVIEW SHALL NOT NECESSARILY INCLUDE DIMENSIONS, QUANTITIES, WEIGHTS, CONSTRUCTION OR FABRICATION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, OR COORDINATION OF WORK WITH OTHER TRADES. REVIEW SHALL BE LIMITED TO DETERMINING THAT ITEMS ARE COMPATIBLE WITH THE PRIMARY STRUCTURAL SYSTEM AND NOT FOR ADEQUACY OF THE ITEM. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH CONTRACT DOCUMENTS.
- SITE VISITS BY THE STRUCTURAL ENGINEER SHALL IN NO WAY CONSTITUTE INSPECTION. ALL REQUIRED INSPECTIONS SHALL BE PROVIDED BY THE BUILDING DEPARTMENT OR A QUALIFIED INDEPENDENT INSPECTION AGENCY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS AND ELEVATIONS WITH THE ARCHITECTURAL DRAWINGS, VERIFICATION OF ALL EXISTING CONDITIONS SHOWN, AND VERIFICATION OF INFORMATION TO BE COORDINATED WITH OTHERS. THE CONTRACTOR SHALL REPORT ANY UNCLEAR INFORMATION AND DISCREPANCIES WITH ARCHITECTURAL DRAWINGS OR OTHER REQUIREMENTS.
- PRODUCTS AND MATERIALS SHALL BE PLACED, ERECTED, AND INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS, MINIMUM CODE REQUIREMENTS, AND CORRECT INDUSTRY ACCEPTED PRACTICES, UNLESS NOTED OTHERWISE IN THESE DRAWINGS.

## BASIS FOR DESIGN

- BUILDING CODE: 2003 INTERNATIONAL BUILDING CODE
- ROOF LOAD: 20 PSF LL (REDUCIBLE)  
18 PSF DL
- ROOF SNOW: Ff=100 PSF  
C<sub>s</sub>=0.7, I<sub>s</sub>=1.0, C<sub>t</sub>=1.0
- WIND: 120 MPH BASIC WIND SPEED (3 SECOND GUST), I<sub>w</sub>=1.0  
BLDG CATEGORY I, EXPOSURE C  
INTERNAL PRESSURE COEFF=+0.18
- SEISMIC: I<sub>s</sub>=1.0, USE GROUP 1  
S<sub>s</sub>=0.45g, S<sub>1</sub>=0.18g, S<sub>0.5</sub>=0.34g, S<sub>D1</sub>=0.20g  
SITE CLASS D, DESIGN CATEGORY I  
EQUIVALENT LATERAL FORCE PROCEDURE  
BASE SHEAR=0.2711 (ASD)  
R=5.5 (CONCRETE SHEAR WALLS)

## FOUNDATION

- ALLOWABLE DEAD PLUS LIVE LOAD SOIL BEARING PRESSURE = 2000 PSF.
- TRENCHES AND EXCAVATIONS ADJACENT TO FOUNDATIONS SHALL BE PROPERLY BACKFILLED AND COMPACTED.
- ALL DISTURBED SOIL, WATER, AND DEBRIS SHALL BE REMOVED FROM FOOTING EXCAVATIONS PRIOR TO CONCRETE PLACEMENT.

## CONCRETE

- MINIMUM 28-DAY CONCRETE STRENGTH, F<sub>c</sub>, SHALL BE 3000 PSI FOR CONCRETE IN CONTACT WITH SOIL. MINIMUM 28-DAY CONCRETE STRENGTH, F<sub>c</sub>, SHALL BE 4000 PSI FOR ALL SHELL SHOTCRETE.
- CONCRETE MIXES SHALL BE DESIGNED BY A CERTIFIED LABORATORY AND APPROVED BY THE ENGINEER. MIX DESIGNS FOR CONCRETE SLABS SHALL BE PROPORTIONED SO AS TO MINIMIZE SHRINKAGE.
- ALL CONCRETE SHALL BE NORMAL WEIGHT OF 145 POUNDS PER CUBIC FOOT USING HARDROCK AGGREGATES.
- MAX SLUMP SHALL BE 5 INCHES. WATER SHALL BE CLEAN AND POTABLE.
- PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE I OR II CEMENT SHALL BE USED. CEMENT SHALL BE TYPE V WITH POZZOLAN WHERE CONCRETE IS IN CONTACT WITH SOIL CONTAINING VERY SEVERE SULFATE EXPOSURE.
- CONCRETE MIXING, PLACEMENT AND QUALITY SHALL BE PER ACI 304. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED. SLABS ON GRADE NEED TO BE VIBRATED ONLY AROUND AND UNDER FLOOR DUCTS OR SIMILAR ELEMENTS. REMOVE ALL DEBRIS FROM FORMS BEFORE PLACING CONCRETE. CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL SO AS TO CAUSE SEGREGATION OF AGGREGATES. UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 5 FEET.
- ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOUELS, BOLTS, ANCHORS, SLEEVES, ETC. SHALL BE SECURELY POSITIONED IN THE FORMS.
- PROTECT CONCRETE FROM DAMAGE OR REDUCED STRENGTH DUE TO COLD OR HOT WEATHER IN ACCORDANCE WITH ACI 305 AND 306. CONTRACTOR SHALL TAKE SPECIAL CURING PRECAUTIONS TO MINIMIZE SHRINKAGE CRACKING OF CONCRETE SLABS.

## REINFORCING STEEL

- REINFORCING STEEL SHALL CONFORM TO REQUIREMENTS OF ASTM A615. REINFORCING SHALL BE GRADE 60 (FY = 60 KSI) DEFORMED BARS FOR ALL BARS #4 AND LARGER AND ALL BARS USED FOR CONCRETE WALLS, BEAMS, ELEVATED SLABS AND COLUMN PRIMARY REINFORCING. REINFORCING MAY BE GRADE 40 (FY = 40 KSI) DEFORMED BARS FOR ALL #3 TIES UNO, ON PLANS OR DETAILS. ALL REINFORCING TO BE WELDED SHALL BE ASTM A106, GRADE 60 LOW ALLOY WELDABLE STEEL.
- WELDED WIRE FABRIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM A185. LAPS IN WELDED WIRE FABRIC SHALL BE MADE SUCH THAT THE OVERLAP, MEASURED BETWEEN OUTERMOST CROSS WIRE OF EACH FABRIC SHEET, IS NOT LESS THAN THE SPACING OF CROSS WIRES PLUS 2 INCHES.
- ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" OR "CLR" ARE TO CENTER OF STEEL. MIN. COVER FOR NON-PRESTRESSED CONCRETE REINFORCING SHALL BE AS FOLLOWS, UNO, ON PLANS OR DETAILS:

EXPOSURE CONDITION:	MINIMUM COVER :	TOLERANCES (+ / -)
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3"	3/8"
EXPOSED TO EARTH OR WEATHER: NO. 5 AND SMALLER: NO. 6 AND LARGER:	1 1/2" 2"	3/8" 3/8"
NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND: ROOF SLAB STRUCTURAL SLABS AND WALLS BEAMS AND COLUMNS (PRIMARY REINFORCEMENT, TIES, STIRRUPS AND SPIRALS)	1" 3/4"	1/8" 1/8"
SLABS ON GRADE SHELL ELEMENTS	1 1/2" 3/4"	1/4" 1/4"

- LAP SPLICES OF REINFORCING STEEL IN THE SHELL SHALL BE ACCORDING TO LAP SCHEDULE BELOW. LAP SPLICES ARE BASED ON CLASS B SPLICES PER ACI 318. STAGGER LAP SPLICES A MIN. OF ONE LAP LENGTH. NOT MORE THAN 1/3 OF THE REINFORCEMENT SHALL BE SPLICED AT ANY LOCATION. WHERE THIS CANNOT BE AVOIDED, USE INCREASED LAP LENGTH PER THE SCHEDULE BELOW.

CONTACT SPLICE			NON-CONTACT SPLICE*		
BAR	STANDARD LAP	INCREASED LAP	BAR	STANDARD LAP	INCREASED LAP
#3	33"	36"	#3	18"	23"
#4	44"	48"	#4	18"	23"
#5	55"	60"	#5	22"	24"
#6	61"	72"	#6	21"	29"
#7	81"	105"	#7	42"	46"
#8	111"	120"	#8	55"	60"
#9	125"	135"	#9	70"	76"
#10	139"	150"	#10	81"	94"
#11	153"	165"	#11	105"	114"

\* NON-CONTACT SPLICE REQUIRES A MINIMUM CLEAR SPACING OF (2) BAR DIAMETERS BETWEEN BARS BEING SPLICED AND (1) BAR DIAMETER OF CLEAR COVER TO EDGE.

- IN THE DOME SHELL, HORIZONTAL BARS MAY BE FASTENED TO EITHER INSIDE OR OUTSIDE OF THE VERTICAL.
- REINFORCEMENT BAR OF A DIFFERENT DIAMETER MAY BE SUBSTITUTED FOR THE SIZE INDICATED ONLY IF THE SUBSTITUTED BAR RESULTS IN THE SAME OR A GREATER CROSS SECTIONAL AREA. THE SPACING OF REBAR SHALL ALLOW PROPER CONCRETE PLACEMENT.
- MECHANICAL SPLICE COUPLERS SHALL HAVE CURRENT ICBO APPROVAL AND SHALL BE CAPABLE OF DEVELOPING 125% OF THE STRENGTH OF THE BAR.
- ALL REINFORCING SHALL BE BENT COLD. BARS SHALL NOT BE UN-BENT AND RE-BENT. FIELD BENDING OF REBAR SHALL NOT BE ALLOWED UNLESS SPECIFICALLY NOTED.
- VERTICAL DOUELS MAY BE BENT OVER ONE TIME PRIOR TO INFLATING FORM. STRAIGHTEN AND INCORPORATE INTO WALL REINFORCING LATER.
- WIRE DEPTH GAGES SHALL BE INSTALLED IN A GRID PATTERN AS REQUIRED TO MAINTAIN AND CONTROL SHOTCRETE THICKNESS IN SHELL.
- REINFORCING BAR SPACING SHOWN ON PLANS ARE MAX. ON CENTERS. ALL BARS SHALL BE DETAILED AND PLACED PER CRSI SPEC'S AND HANDBOOK. DOUCEL ALL VERT. REINFORCING TO FOUNDATION. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE. MIN. CLEAR SPACING BETWEEN PARALLEL REINFORCEMENT SHALL BE THE LARGER OF 1-1/2 TIMES NOMINAL BAR DIA. OR 1-1/3 TIMES MAX. AGGREGATE SIZE OR 1-1/2".

## AIRFORM CRITERIA

- THE AIRFORM SHALL BE PVC IMPREGNATED IN A POLYESTER SCRIM AS MANUFACTURED BY SEMIN, OR APPROVED EQUAL WITH THE FOLLOWING STRENGTH CHARACTERISTICS:
  - TONGUE TEAR - 215 PSI MIN.
  - TRAPEZOIDAL TEAR - 85 PSI MIN.
  - GRAB TENSILE - 550 PSI MIN.
  - STRIP TENSILE - 500 PSI MIN.
  - FLAME RETARDANT, CFM TITLE 19 FR NFPA 701
  - FABRIC WEIGHT SHALL BE 28 OZ PER SQUARE YARD MIN.
- AFTER THE AIRFORM HAS BEEN INFLATED, BUT PRIOR TO DOME CONSTRUCTION, THE CONTRACTOR SHALL MEASURE THE INFLATED AIRFORM PROFILE FROM A UNIFORM HORIZONTAL DATUM. THE AIRFORM SHALL BE MEASURED IN TWO ORTHOGONAL DIRECTIONS, PASSING THROUGH THE CENTER OF THE DOME. MEASUREMENTS SHALL BE TAKEN 6 FEET O.C. THESE MEASUREMENTS SHALL BE OVERLAPPED WITH THE DESIRED DOME SHAPE AND SUBMITTED TO THE ARCHITECT AND ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

## SPECIAL INSPECTIONS

- IN ADDITION TO INSPECTIONS REQUIRED BY THE BUILDING OFFICIAL, THE OWNER SHALL EMPLOY SPECIAL INSPECTORS PER IBC CHAPTER 17 TO PROVIDE SPECIAL INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THIS SECTION.
- THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE NOTICE TO THE SPECIAL INSPECTOR AND PROVIDE ADEQUATE ACCESS TO WORK REQUIRING SPECIAL INSPECTION.
- SPECIAL INSPECTORS SHALL KEEP RECORDS OF SPECIAL INSPECTIONS AND SHALL FURNISH INSPECTION REPORTS TO THE OWNER, ENGINEER OF RECORD, CONTRACTOR, BUILDING OFFICIAL, AND OTHER DESIGNATED PERSONS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED THEY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND BUILDING OFFICIAL. SPECIAL INSPECTORS SHALL SUBMIT FINAL REPORTS DOCUMENTING SPECIAL INSPECTIONS AND CORRECTIONS OF ANY DISCREPANCIES.
- CONTINUOUS SPECIAL INSPECTION SHALL BE THE FULL-TIME OBSERVATION OF WORK BY THE SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. PERIODIC SPECIAL INSPECTION SHALL BE THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK BY THE SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK. SPECIAL INSPECTION SHALL BE FOR CONFORMANCE WITH APPROVED CONTRACT DOCUMENTS.
- THE TYPES OF WORK TO BE CONTINUOUSLY OR PERIODICALLY INSPECTED BY THE SPECIAL INSPECTOR PER IBC 1704 INCLUDE THE FOLLOWING:

CONCRETE	CONT.	PERIODIC
1. REINFORCING STEEL AND PLACEMENT		X
2. BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT	X	
3. VERIFY USE OF REQUIRED DESIGN MIX		X
4. SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT AND DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS PER ACI 318	X	
5. WELDING OF REINFORCING BARS	X	
6. CONCRETE PLACEMENT		X
7. MAINTENANCE OF SPECIFIED CURING TEMPERATURE		X

## SHEET INDEX

SHEET	TITLE
S01	GENERAL STRUCTURAL NOTES
S02	TYPICAL DETAILS
S11	FOUNDATION PLAN
S12	ROOF PLAN
S21	SHELL SECTION
S31	FOUNDATION DETAILS
S32	SHELL & CANOPY DETAILS

AS-BUILT



JULY 15, 2011

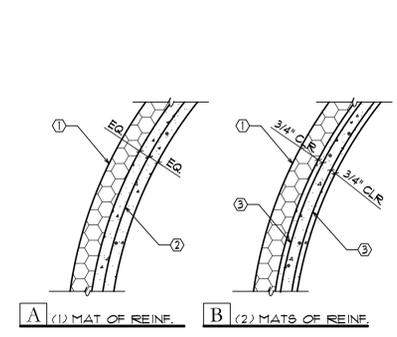
POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA

DATE: JULY 15, 2011  
PROJECT NO.: 511124  
DRAWN: KTH  
CHECKED: CSZ

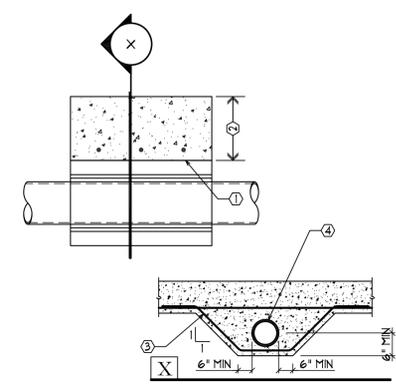
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GENERAL  
STRUCTURAL  
NOTES

SHEET:  
S0.1

REVISIONS



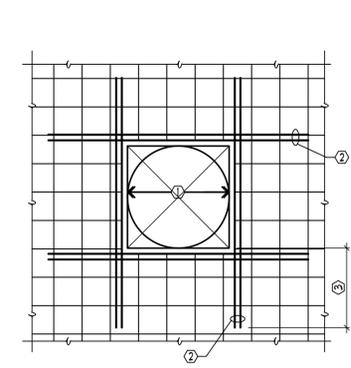
- ① URETHANE FOAM PER PLAN
- ② VERTICAL REINFORCING CENTERED IN SHELL THICKNESS. HORIZONTAL REINF. MAY BE INSIDE OR OUTSIDE VERTICAL.
- ③ VERTICAL REINFORCING EACH FACE. HORIZONTAL REINFORCING SHALL BE ON INSIDE



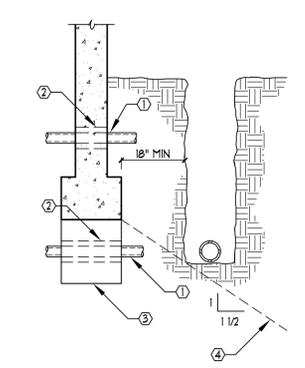
- ① CONT. WALL FOOTING
- ② NO PIPE PENETRATION THROUGH THIS PORTION OF FOOTING
- ③ #4 AT 12" o.c. TO LAP FOOTING REINF.
- ④ OVERSIZE PIPE SLEEVE AND/OR COMPRESSIBLE FOAM

04 TYPICAL SHELL REINFORCING PLACEMENT  
DA-109 NO SCALE

01 TYPICAL PIPE PENETRATION AT FOOTING  
F-101 NO SCALE



- ① OPENING WIDTH OR DIAMETER 4'-0" MAX.
- ② NUMBER OF ADDED BARS EQUAL TO THE NUMBER OF BARS INTERRUPTED BY OPENING. ROUND UP TO AN EQUAL NUMBER OF BARS EACH SIDE OF OPENING. MIN. (3) #4
- ③ EXTEND BARS PAST EDGE OF OPENING EQUAL TO LAP LENGTH OF BAR PER IT LAP SCHEDULE (24" MIN.)

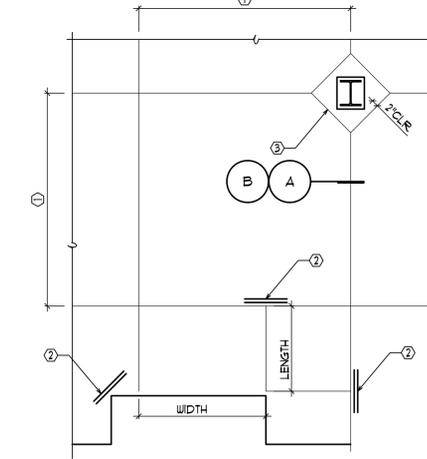


- ① UTILITY PIPE
- ② SLEEVE, SIZE TO PROVIDE 1/2" MIN. CLEARANCE AROUND UTILITY PIPE.
- ③ LEAN CONCRETE FILL, FORM SAME WIDTH AS FOOTING.
- ④ NO PIPE TRENCH EXCAVATION ALLOWED BELOW THIS LINE.

A. PIPES SHALL NOT PASS THRU NOR BE LOCATED BENEATH ISOLATED PAD FOOTINGS.

05 TYPICAL SMALL OPENING IN SHELL  
DO-106 NO SCALE

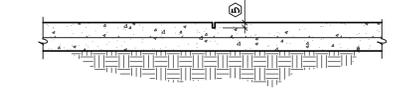
02 UTILITY PIPES AT FOOTING  
F-129 NO SCALE



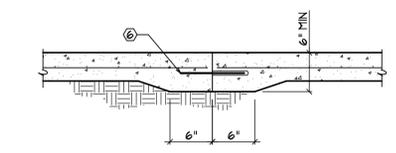
- ① JOINT SPACING PER SCHEDULE
- ② PROVIDE (2) #4x48" MID-HEIGHT SLAB BARS ADJACENT TO ALL DISCONTINUOUS JOINT LOCATIONS
- ③ CLOSURE FOUR AT COLUMN AS OCCURS
- ④ THE LENGTH TO WIDTH RATION OF CONTROL JOINT SECTIONS SHALL NOT EXCEED 15
- ⑤ DEPTH EQUAL TO 1/4 SLAB THICKNESS
- ⑥ 1/2" DIA. x 12" SMOOTH DOU EL AT 24" o.c. WRAP OR GREASE ONE END TO PREVENT BOND TO CONCRETE. CENTER IN SLAB THICKNESS AT FOUR JOINT

JOINT SPACING SCHEDULE	
SLAB THICKNESS	MAX SPACING
4"	10'
5"	12.5'
6"	15'

TYPICAL CONTROL JOINT LAYOUT



A SAWCUT JOINT



B DOWELED JOINT

- A. SAWCUTS SHALL BE MADE SOON ENOUGH TO PREVENT SHRINKAGE CRACKING, BUT NOT SO SOON AS TO CAUSE SPALLING
- B. ZIP STRIP OR TOOLED JOINT MAY BE USED IN LIEU OF SAW CUT
- C. DOWELED JOINTS NEED ONLY OCCUR AT EXPOSED EDGES OF DISCONTINUOUS SLAB PLACEMENT UNO.

03 TYPICAL CONTROL JOINT IN SLAB ON GRADE  
F-102 NO SCALE

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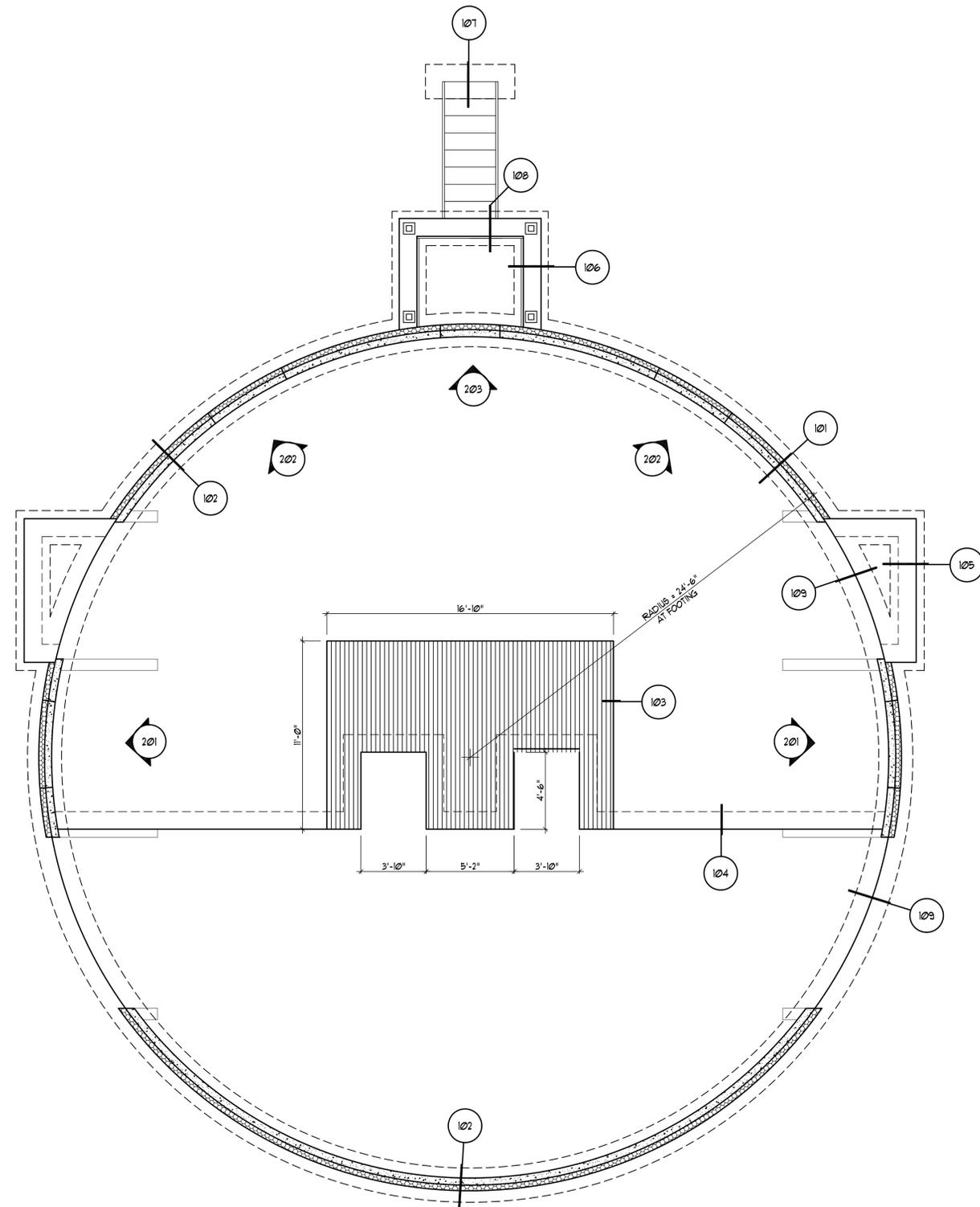
POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA

DATE: JULY 15, 2011  
PROJECT NO.: S11124  
DRAWN: KTH  
CHECKED: CSZ

TITLE:  
TYPICAL  
DETAILS

SHEET:  
S0.2

REVISIONS



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

FOUNDATION PLAN NOTES

- A. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. RESOLVE DISCREPANCIES WITH THE ARCHITECT.
- B. VERIFY LOCATION OF ALL INSERTS IN SLAB WITH ARCH'L, MECH, PLUMBING AND ELEC. PLANS PRIOR TO CONSTRUCTION.
- C. CONCRETE SLAB SHALL BE 6" THICK UNO. REINFORCE SLAB WITH #5 BARS AT 18" o.c. EACH WAY CENTERED IN SLAB THICKNESS. MOISTEN BUT DO NOT SATURATE SOIL IMMEDIATELY BENEATH SLAB PRIOR TO CONCRETE PLACEMENT.
- E. [Hatched Area] DENOTES 12" THICK SLAB. REINFORCE WITH #5 BARS AT 12" o.c. EACH WAY, TOP AND BOTTOM.

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JULY 15, 2011

POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA

DATE: JULY 15, 2011  
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DRAWN: KTH  
CHECKED: CSZ

TITLE:  
FOUNDATION PLAN

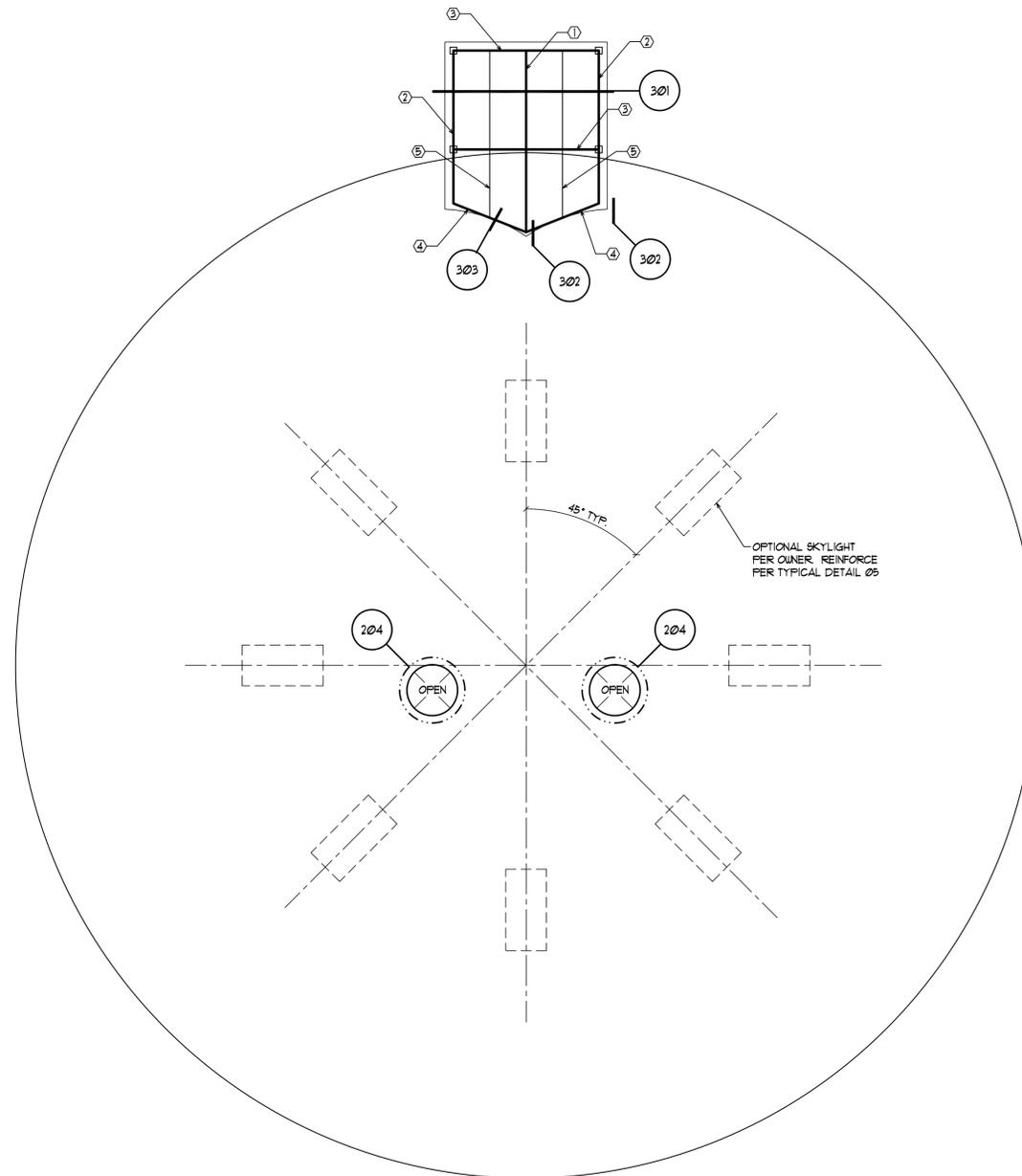
SHEET:  
SI.1

REVISIONS

AS-BUILT

**ROOF FRAMING PLAN KEYNOTES**

- ① H884x6x $\frac{1}{2}$  RIDGE BEAM.
- ② H884x6x $\frac{1}{2}$  SIDE BEAM.
- ③ H884x4 FRAMING PER DETAIL 301.
- ④ H884x4 DIAGONAL BEAM PER DETAIL 303.
- ⑤ H882x2 PER DETAIL 301.



**ROOF PLAN**  
SCALE: 1/4" = 1'-0"

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**POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA**

DATE: JULY 15, 2011  
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TITLE:  
**ROOF PLAN**

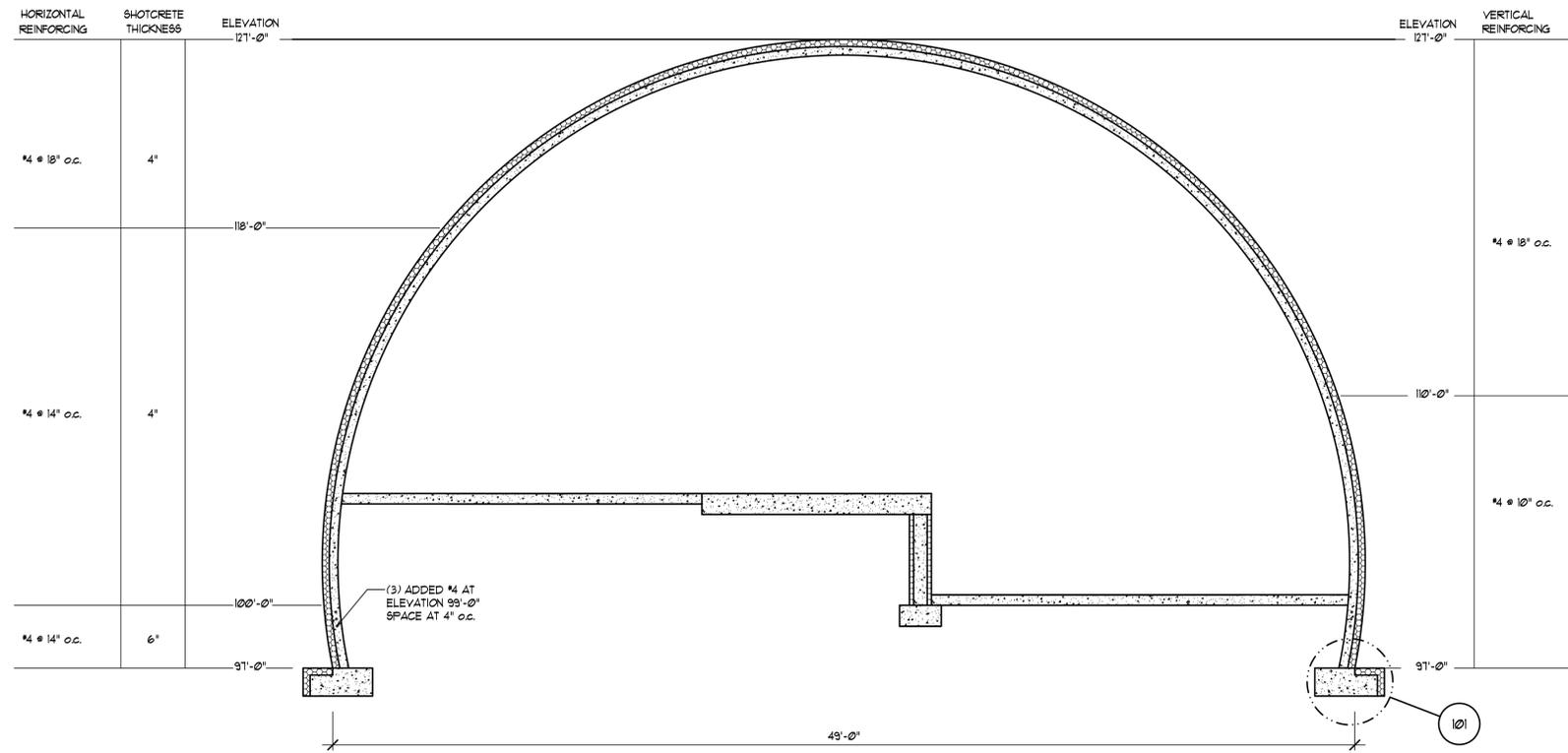
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REVISIONS

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**DOME REINFORCING NOTES**

- A. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
- B. HORIZONTAL BARS MAY BE FASTENED TO EITHER INSIDE OR OUTSIDE OF THE VERTICAL BARS, BUT MUST BE CONSISTENT THROUGHOUT THE DOME SHELL CENTER VERTICAL REINFORCING IN SHELL THICKNESS.
- C. VERTICAL DOUELS MAY BE BENT OVER ONE TIME PRIOR TO INFLATING THE FORM, STRAIGHTEN AND INCORPORATE INTO WALL REINFORCING LATER.
- D. 3/4" DIA. PLASTIC PIPE MAY BE PLACED WITHIN THE SHELL WALL FOR CONDUIT. IT SHALL NOT INTERFERE WITH THE DOME REINFORCING.



**SHELL SECTION**

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

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**POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA**

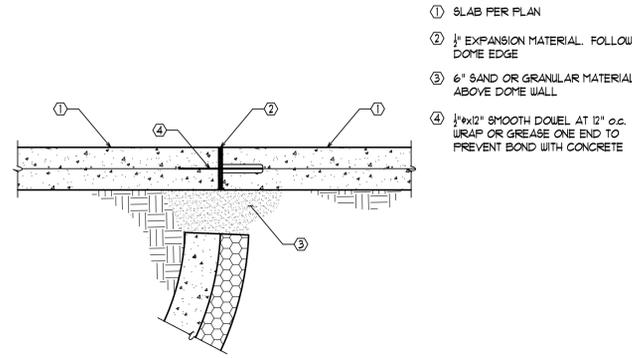
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PROJECT NO.: S11124  
DRAWN: KTH  
CHECKED: CSZ

TITLE:  
**SHELL SECTION**

SHEET:  
**S2.1**

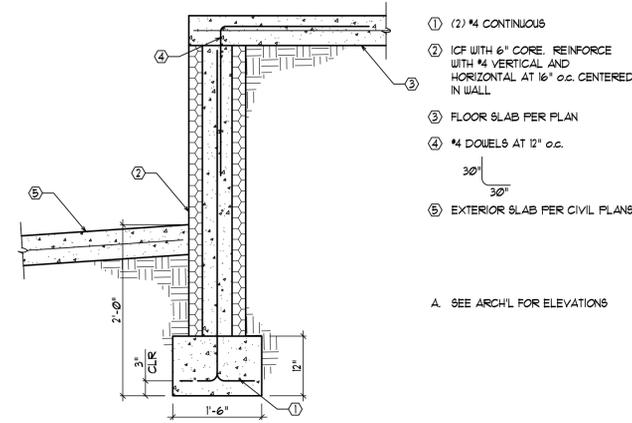
REVISIONS

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109 INTERIOR SLAB AT LOADING DOCK  
109-51124 NO SCALE

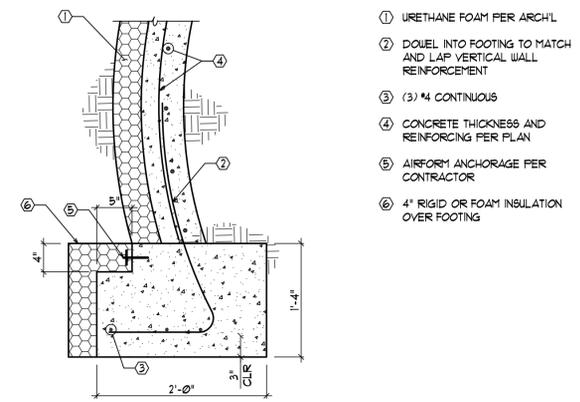
- ① SLAB PER PLAN
- ② 1/2" EXPANSION MATERIAL. FOLLOW DOME EDGE
- ③ 6" SAND OR GRANULAR MATERIAL ABOVE DOME WALL
- ④ 1/2"x12" SMOOTH DOEL AT 12" o.c. WRAP OR GREASE ONE END TO PREVENT BOND WITH CONCRETE



105 TRUCK DOCK  
105-51124 NO SCALE

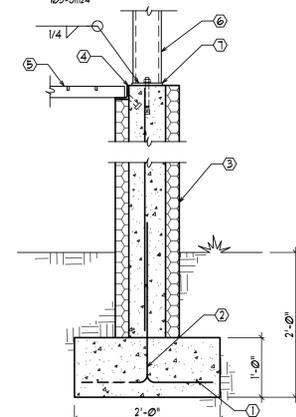
- ① (2) #4 CONTINUOUS
- ② ICF WITH 6" CORE. REINFORCE WITH #4 VERTICAL AND HORIZONTAL AT 16" o.c. CENTERED IN WALL
- ③ FLOOR SLAB PER PLAN
- ④ #4 DOELS AT 12" o.c.
- ⑤ EXTERIOR SLAB PER CIVIL PLANS

A. SEE ARCH'L FOR ELEVATIONS



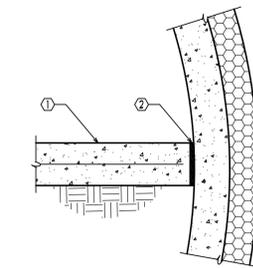
101 DOME AT FOUNDATION  
101-51124 NO SCALE

- ① URETHANE FOAM PER ARCH'L
- ② DOEL INTO FOOTING TO MATCH AND LAP VERTICAL WALL REINFORCEMENT
- ③ #4 CONTINUOUS
- ④ CONCRETE THICKNESS AND REINFORCING PER PLAN
- ⑤ AIRFORM ANCHORAGE PER CONTRACTOR
- ⑥ 4" RIGID OR FOAM INSULATION OVER FOOTING



106 FOUNDATION AT ENTRY  
106-51124 NO SCALE

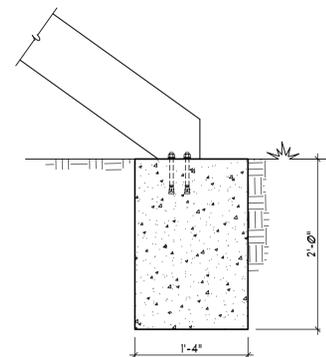
- ① (2) #4 CONTINUOUS
- ② #4 DOELS AT 16" o.c.
- ③ ICF WITH 8" CORE. REINFORCE WITH (1) #4 VERTICAL AT 16" o.c. CENTERED IN WALL AND (2) #4 HORIZONTAL AT 16" o.c.
- ④ 1 1/2"x1/2"x1/2" WITH 1/2"x4" HEADED STUDS AT 12" o.c.
- ⑤ 1/2"x3/8" BAR GRATE. SEE ARCH'L FOR FINISH
- ⑥ HSS COLUMN PER DETAIL 301
- ⑦ BASE PLATE 5"x10"x1/2" w/ (2) 1/2" DIA WEDGE ANCHORS



102 FLOOR SLAB AT DOME SHELL  
102-51124 NO SCALE

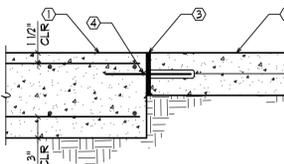
- ① SLAB ON GRADE AND REINFORCING PER PLAN
- ② 1/2" JOINT MATERIAL

A. SHELL REINFORCING NOT SHOWN FOR CLARITY.



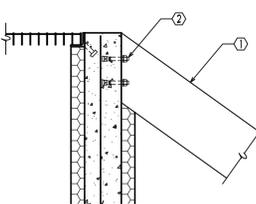
107 STEEL STAIR STRINGER AT FOUNDATION  
107-51124 NO SCALE

- ① STEEL STAIR STRINGER BY OTHERS
- ② CONNECT TO FOUNDATION WITH (2) 1/2" WEDGE ANCHORS



103 JOINT AT INCINERATOR SLAB  
103-51124 NO SCALE

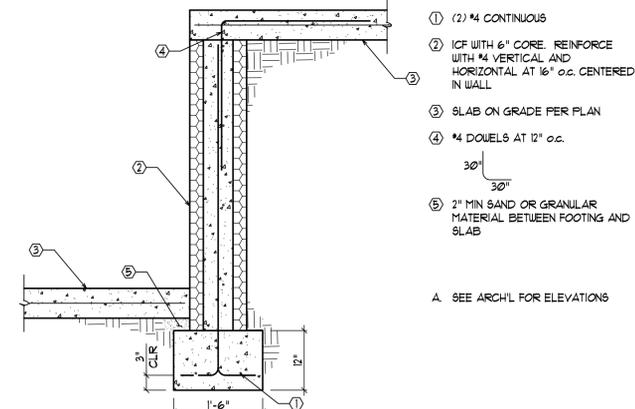
- ① INCINERATOR SLAB PER PLAN
- ② TYPICAL SLAB PER PLAN
- ③ 1/2" JOINT MATERIAL
- ④ 1/2"x12" SMOOTH DOELS AT 18" o.c. CENTER DOEL AT JOINT LOCATION. GREASE OR WRAP ONE END TO PREVENT BOND WITH CONCRETE.



108 STEEL STAIR STRINGER AT ICF  
108-51124 NO SCALE

- ① STEEL STAIR STRINGER BY OTHERS
- ② CONNECT TO FOUNDATION WITH (2) 1/2" WEDGE ANCHORS

A. SEE DETAIL 106 FOR INFORMATION SHOWN BUT NOT NOTED.



104 STEP IN SLAB  
104-51124 NO SCALE

- ① (2) #4 CONTINUOUS
- ② ICF WITH 6" CORE. REINFORCE WITH #4 VERTICAL AND HORIZONTAL AT 16" o.c. CENTERED IN WALL
- ③ SLAB ON GRADE PER PLAN
- ④ #4 DOELS AT 12" o.c.
- ⑤ 2" MIN SAND OR GRANULAR MATERIAL BETWEEN FOOTING AND SLAB

A. SEE ARCH'L FOR ELEVATIONS



M2C1 Construction and Engineering  
P.O. Box 1750  
Delta Junction, Alaska 99737  
Tel: 907-895-5441  
Fax: 907-895-5443



STATE OF ALASKA  
REGISTERED PROFESSIONAL ENGINEER  
CHRISTOPHER S. ZWEIFEL  
CE 11756  
JULY 15, 2011

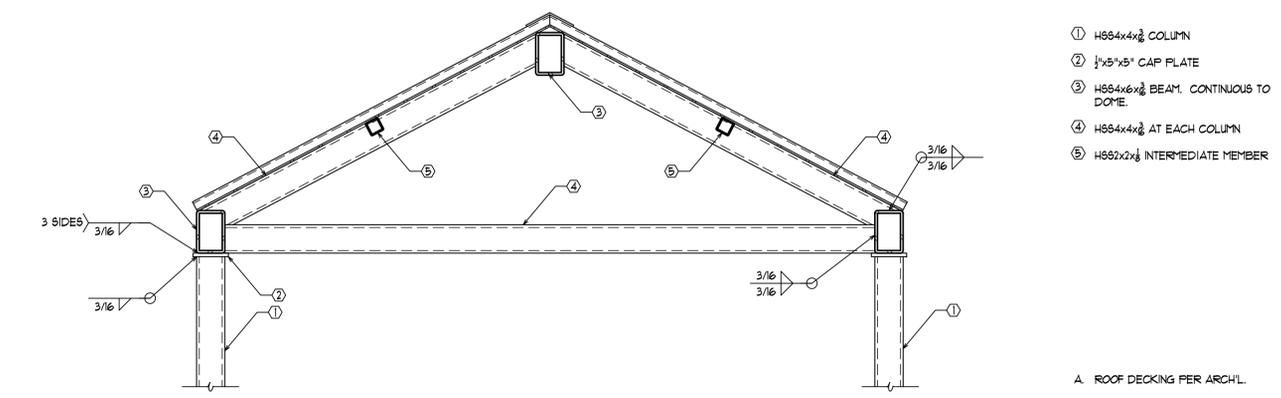
POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA

DATE: JULY 15, 2011  
PROJECT NO: 51124  
DRAWN: KTH  
CHECKED: CSZ

TITLE:  
FOUNDATION DETAILS

SHEET:  
S3.1

REVISIONS

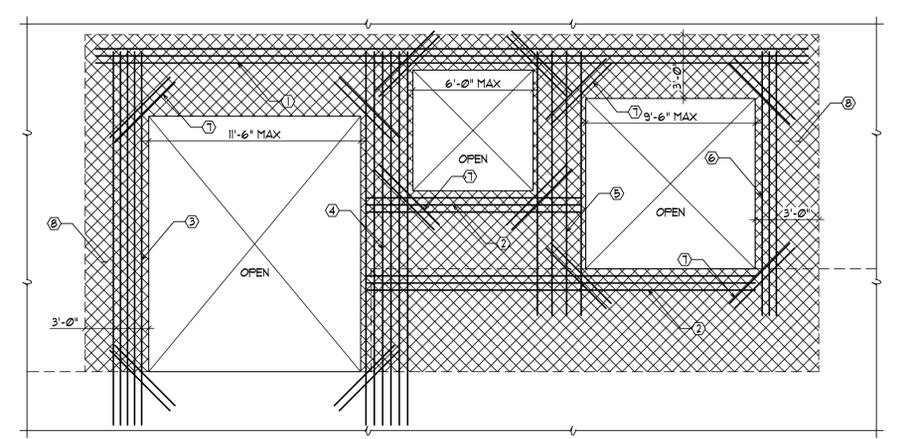


301 CANOPY FRAMING  
301-51124

- ① H884x4x8 COLUMN
- ② 1/2x5x5 CAP PLATE
- ③ H884x6x8 BEAM, CONTINUOUS TO DOME
- ④ H884x4x8 AT EACH COLUMN
- ⑤ H882x2x8 INTERMEDIATE MEMBER

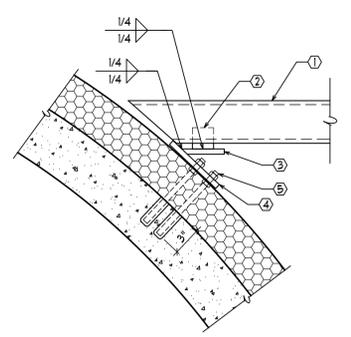
A. ROOF DECKING PER ARCH'L.

201 GARAGE DOOR OPENINGS  
201-51124



- ① (3) #4 ABOVE ALL OPENINGS AS SHOWN, SPACE AT 4" o.c. EXTEND 30" PAST GARAGE DOOR OPENINGS.
- ② (3) #4 BELOW OPENINGS AS SHOWN, SPACE AT 4" o.c.
- ③ (5) #4 VERTICAL SPACED AT 4" o.c. EXTEND 30" PAST TOP AND BOTTOM OF OPENING.
- ④ (6) #4 VERTICAL EQUALLY SPACED, EXTEND 30" PAST TOP AND BOTTOM OF OPENING.
- ⑤ (4) #4 VERTICAL EQUALLY SPACED, EXTEND 30" PAST TOP AND BOTTOM OF OPENING.
- ⑥ (3) #4 VERTICAL SPACED AT 4" o.c. EXTEND 30" PAST TOP AND BOTTOM OF OPENING.
- ⑦ (2) #4x8" DIAGONAL BARS.
- ⑧ THICKEN HATCHED AREA TO 5" MIN.

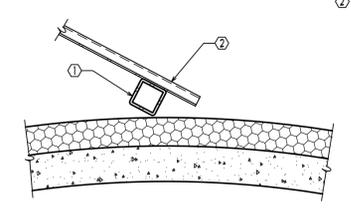
A. SEE ARCH'L DRAWINGS FOR EXACT OPENING CONFIGURATION AND SIZE.



- ① H88 BEAM w/ 3/8" WIDE x 3" LONG SLOT TO ACCOMMODATE KNIFE PLATE
- ② 2x2x1/2 KNIFE PLATE
- ③ 1/2x4x4 PLATE
- ④ 1/2x6x6 PLATE
- ⑤ (4) 1/4" ALL THREAD RODS EPOXY GROUTED INTO DOME SHELL w/ NUT ABOVE AND BELOW PLATE

A. ADDITIONAL FRAMING AS OCCURS NOT SHOWN FOR CLARITY

302 STEEL BEAM AT DOME  
302-51124

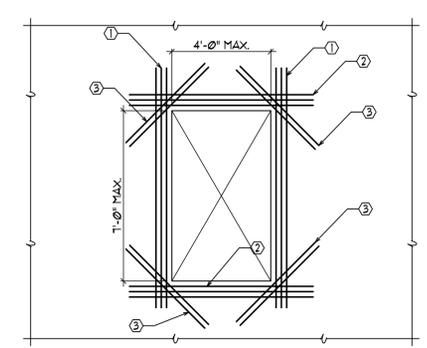


- ① H884x4x8 DIAGONAL AS CLOSE TO DOME AS POSSIBLE
- ② STEEL ROOFING PER ARCH'L

A. SEE ARCH'L FOR FLASHING REQUIREMENTS.

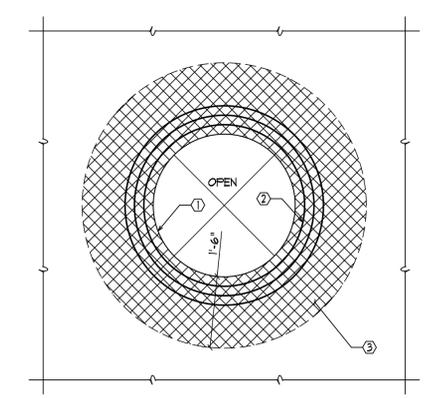
303 CANOPY ROOF AT DOME  
303-51124

202 WINDOW OPENING IN DOME  
DO-1381



- ① (3) #4 VERTICAL BARS EXTENDED 30" LAP PAST OPENING. (SPACE BARS AT 4" O.C.)
- ② (3) #4 ADDED BARS ABOVE AND BELOW OPENING, EXTEND PAST EDGE OF OPENING 30"
- ③ (2) #4x8" DIAGONAL BARS

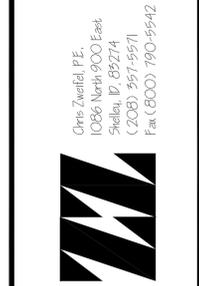
203 MAN DOOR OPENING  
DO-1051



- ① 3'-0" MAX SKYLIGHT OPENING
- ② (3) #4 CONTINUOUS RING BARS SPACED AT 4" o.c.
- ③ THICKEN HATCHED AREA TO 6"

A. FLASH AROUND PER ARCH'L.

204 INCINERATOR STACK OPENING  
DO-1381



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JULY 15, 2011

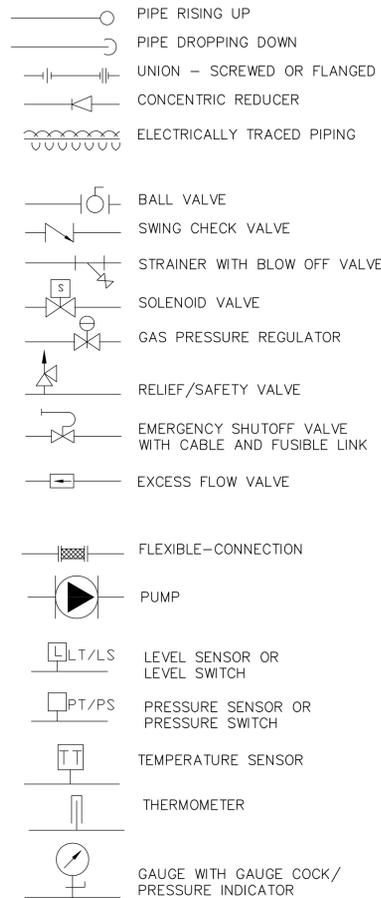
POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA

DATE: JULY 15, 2011  
PROJECT NO: S1124  
DRAWN: KTH  
CHECKED: CSZ

TITLE: SHELL & CANOPY DETAILS

SHEET: S3.2

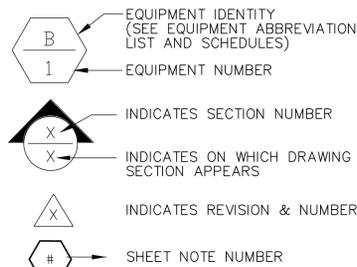
## PIPING ELEMENTS/VALVING



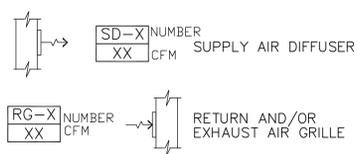
### PIPE LINETYPES



## HVAC REFERENCE SYMBOLS



## DUCTWORK SYMBOLS



NOTE:  
SYMBOLS SHOWN IN LEGEND DO NOT  
NECESSARILY APPEAR ON DRAWINGS.

## SPECIFICATIONS

### I. GENERAL

A. CONTRACTOR shall furnish and install all materials, equipment and supervision necessary for a complete installation of the mechanical system as shown on the Drawings and herein specified.

B. CONTRACTOR shall comply with local and state governing regulations and be responsible to obtain all licenses and permits.

C. The mechanical work shall be in conformance with the State of Alaska Building and Mechanical Codes and all local codes and regulations. Upon completion of the building, provide Owner with certificates of Department of Labor, State of Alaska, local office.

D. CONTRACTOR shall provide a minimum one year warranty on all materials and workmanship.

E. After complete installation of equipment, CONTRACTOR shall properly lubricate equipment per manufacturer's instructions. CONTRACTOR shall also change the filters and supply the OWNER with one extra change of filters for the equipment. Lubrication and filter change shall be done before any test runs are permitted and before equipment is put into final operation.

F. After cleaning the construction area the CONTRACTOR shall thoroughly clean all equipment to completely remove the construction dust and dirt from same.

G. After cleaning of equipment the CONTRACTOR shall repair any scratches or mars or same by obtaining paint from equipment manufacturer matching that on the equipment.

H. During the first year of operation, the CONTRACTOR shall make two complete inspections of the mechanical system making any adjustments required, report visit and action then to OWNER.

I. CONTRACTOR shall receive and store equipment upon delivery to ensure good working condition. If equipment is damaged due to shipment, CONTRACTOR shall immediately take the appropriate action to correct the situation and protect the OWNER from damaged equipment.

### II. SUBMITTALS

A. The CONTRACTOR shall submit (3) copies of certificates and SHOP DRAWINGS to the ENGINEER within 30 days after the notice to proceed. These shall be neatly arranged by system in 3-ring binders. The CONTRACTOR shall provide SHOP DRAWINGS and product data on the air handling units, heating coils, grilles and diffusers, boilers, pumps, air separator, glycol makeup system, zone and control valves, ball valves, check valves, strainers, and any item which is intended as an "accepted equal" substitute for a product as scheduled or specified herein.

### III. COORDINATION WITH ELECTRICAL WIRING

A. Electrical wiring, including distribution panels, cabinets, supports, feeders, circuit wiring, motor-disconnects, and related items and electrical connections to equipment, fixtures, and devices shall be provided by the ELECTRICAL CONTRACTOR unless specifically called for by the MECHANICAL CONTRACTOR.

B. ELECTRICAL CONTRACTOR shall furnish and install all line voltage wiring and conduit to and from the equipment that is furnished by the MECHANICAL CONTRACTOR.

C. All electrical wiring provided as part of the Mechanical Equipment shall meet the requirements of the N.E.C.

D. Electrical work shall be provided as a subcontract between the GENERAL CONTRACTOR and the ELECTRICAL SUBCONTRACTOR.

### IV. MECHANICAL WORK CLOSE-OUT

A. Do not proceed with the transfer of the mechanical system to the OWNER for operation until guarantees, warranties, performance certifications, maintenance agreements and similar commitments to be signed by the CONTRACTOR and others have been executed and transmitted to the OWNER.

B. The CONTRACTOR shall operate the entire installation for at least one week or for a period of time the ENGINEER deems necessary, to ensure correct operation.

C. During this period, the OWNER or his Representative shall be instructed in the operation and maintenance of all mechanical systems.

D. The CONTRACTOR shall provide operating instructions, repair parts

list, equipment manuals and automatic control diagrams. These shall be neatly arranged by system in a 3-ring binder and submitted to the OWNER.

### V. EQUIPMENT

A. All mechanical equipment shall be as scheduled on Drawings or an accepted equal meeting the scheduled specifications. All mechanical equipment shall carry a minimum one year warranty.

### VI. INSULATION

#### A. General

1. All mastics, sealants and adhesives shall be UL listed. Insulation shall have composite Flame Hazard Classification not exceeding Flame Spread 25, Smoke Developed 50, and Fuel Contributed 50, when tested in accordance with procedures of UL Standard 723, and shall meet requirements of ASTM-84 and NFPA 255.

2. Insulation shall not be applied until all surfaces are clean, dry, free of dirt, dust, grease, frost, moisture and other imperfections.

#### B. Duct Insulation

1. All outside air ductwork and first 10 feet of exhaust ductwork from the discharge point to outside shall be insulated with commercial grade faced duct wrap insulation similar to Owens-Corning Type 150, 1-1/2" nominal thickness or an accepted equal.

2. Insulation shall be applied to cover all exterior surfaces of ductwork and sealed tightly to prevent leakage.

3. Insulation shall be glass fiber type, factory laminated to reinforced foil Kraft (FRK) vapor barrier facing with a 2" stapling and taping flange. Insulation shall have a thermal conductivity of not more than 0.25 at 75 Deg.F mean temperature. Vapor barrier shall have a water vapor permeability of not more than 0.02 perms.

4. All joints shall be sealed with a noncombustible vapor barrier pressure sensitive adhesive tape to form a complete vapor tight system.

#### C. Pipe Insulation:

1. Insulate domestic cold water (DCW), indoors, above grade, with 1" insulation. Provide sealants and coverings as necessary in order to obtain a neat, finished appearance and intact vapor barrier on DCW piping. Test piping systems before applying insulation. Use one of the following:

a) Sectional fiberglass pipe insulation with vapor barrier jacket, and self-sealing lap joint. Cover fittings with one piece PVC jacket covers.

b) Flexible elastomeric insulation, Aeroflex Aerocell or accepted equal with operating temperature up to 257 degF and a maximum thermal conductivity of 0.265 at 104 degF.

2. Insulate outdoor, aboveground and belowground propane piping with 2" cellular glass and Pittwrap or equal underground direct buried jacket; stainless steel or aluminum jacket aboveground.

3. For insulation of outdoor, domestic water piping, see appropriate section below.

### VII. PIPING

#### A. Water Piping, Valves and Accessories

1. Domestic water piping indoors, above grade shall be copper type L hard copper with soldered fittings and adjustable clevis type hangers spaced not more than 8 ft. on center. Copper and steel pipes shall be joined with dielectric unions. Pitch pipe in direction of flow and all high points shall be vented and low points drained

2. Domestic water piping outdoors, on the ground surface:

a) Carrier pipe shall be high density polyethylene (HDPE), conforming to ASTM D-3350 and NSF standard 61 for use with potable water. Pipe and fittings shall be manufactured from extra high molecular weight polyethylene compound PE 3408 and fabricated to standard dimensional ratio (SDR) wall thickness in standard IPS sizes. Pipe for this project shall be 2- and 3-inch nominal diameter, SDR 11 class 160.

b) Insulation shall be rigid, min 90% closed cell polyurethane with min 2 pounds per cubic foot density and k factor 0.15-0.17 at 75 deg F per ASTM C 518. The polyurethane foam shall be injected into the annular space with high pressure foam equipment. Centering spacers shall be factory-installed to ensure uniform insulation around the pipe. Insulation thickness shall be min 3.65-inches. Temperature rating shall be -60 deg F to 220 deg F.

c) Outer protective jacket shall be HDPE per ASTM D 1248, type III, category 5, class C, grade PE 3408, 0.156-inches thick. Jacket shall be seamless and pressure tested for watertight integrity during foaming.

d) Moisture barrier shall be factory-applied to each pipe end. End

seals shall be mastic completely sealing the exposed end of the insulation.

e) Fittings shall be heat fusion butt-welded to adjacent pipe sections. Fittings shall be HDPE butt-fused bare fittings insulated with a two-piece polyurethane foam half shell set and a poly-urea jacket, or pre-insulated HDPE fittings with an appropriate HDPE stub.

f) Field joints shall be field-insulated per the manufacturer's recommendation, using a two-part foam injection method or a pre-formed half shell with a full-length aluminum band.

g) New piping sections shall be flushed and disinfected in accordance with AWWA standard C 651. Submit details concerning disposal of disinfecting water to the ADEC. If required upon review, obtain a permit for disposal of disinfecting water.

3. Ball valves 1/2" and larger shall be Nibco S-580-70 with solder or threaded ends as required; or accepted equal.

4. Ball valves 1/4" to 3/8" shall be Kitz 68 with solder or threaded ends as required; or accepted equal.

5. Low point drains shall be Nibco S-585-70-HC or accepted equal.

6. High point vents shall be 1/4" ball valve with 1/4 inch connection by 1/4 inch copper tube to high point of coil or line by means of a tapped cap on top of 6 inches vertical nipple. Ball valve shall be installed approximately 5 feet-6 inches above finish floor.

7. Strainers shall be Nibco S- or T- 221A with solder or threaded ends as required; or accepted equal. Provide drain valve and cap.

8. Water Hammer Arrestor shall be bellows or piston type with pressurized cushioning chamber.

9. All valves including service and hose bibbs shall be identified and tagged.

#### B. LPG (liquid and gas) Piping and Specialties

1. Liquid piping shall be limited to packaged, skid-mounted equipment.

2. A package containing tank, pump, vaporizer and protective enclosure is described in the drawings and in product data and shop drawings from the manufacturer.

3. Above grade gas piping between the vaporizer package and the building wall: Schedule 40 steel. Provide insulation, aluminum jacketing and heat trace.

4. Below grade piping between the vaporizer and the building wall: PE pipe, ASTM D 2513, SDR 11 with butt-welded fittings. Provide insulation and heat trace, and sleeved risers to abovegrade piping.

5. Piping inside the building: Schedule 40 steel, painted with alkyd metal primer and two coats interior latex, high-gloss, grey.

### VIII. DUCTWORK

A. Comply with SMACNA Low Pressure Duct Construction Standards latest edition for both fabrication and installation to achieve an air tight and noiseless system.

B. Sheet metal ductwork shall be galvanized sheet steel complying with ASTM A-527, Lockforming Quality with ASTM A-525 G90 zinc coating, mill phosphatized.

C. The gauges of the ductwork shall be as specified in SMACNA Standards for 2" W.G. positive and 1" W.G. negative static pressure. Unless otherwise specified use: 26 gauge up to 12"; 24 gauge up to 30"; 22 gauge up to 54" (dimension indicates longest side of duct).

D. Ductwork reinforcement shall be as specified in SMACNA Standards for 2" W.G. positive and 1" W.G. negative static pressure.

E. Duct Sealing shall be as specified in SMACNA Standard for Seal Class D.

F. Duct Tape shall be 3 wide, self-adhesive, UL Labeled as manufactured by United States Metal, Arno, 3M Company, Mystic Tape Co., or equal.

G. Duct Sealer shall be UL Labeled duct sealer as manufactured by 3M Company, United Sheet Metal, Benjamin Foser, or equal.

H. Duct Fittings shall be fabricated in accordance with SMACNA Standards and as follows:

1. Elbows - long radius (r = 1.5d) or square with single width turning vanes, as required by standards or as indicated on the Drawings.

2. Transitions and Offsets - SMACNA Standard Fig. 2-7.

I. Flex duct in branch ducts shall be equal to Thermaflex MKC insulated

flexible duct. Length shall not exceed 5'-0".

J. Provide flexible connections at HRV-1 inlets and discharges: Metal-edged connectors by Ductmate Industries Inc., Duro Dyne Inc., or accepted equal; 2-3/4" galvanized sheetmetal edges with 3-1/2"-wide fabric.

K. Outdoor air and relief air dampers shall be insulated, low leakage style by TAMCO or Ruskin.

L. Return air dampers shall be a standard uninsulated control damper style by Ruskin or accepted equal.

M. Filters shall be Camfil Farr 30/30, 2" deep, dimensions as shown on the drawings.

#### N. Installation:

1. Installation shall be in accordance with SMACNA Standard to achieve air tight and noiseless systems, capable of performing each indicated service. Install each run with minimum of joints; align ductwork accurately at connections, within 1/8" misalignment tolerance. Locate duct runs as indicated on Drawings and not obstructing usable space or blocking access for servicing the building or equipment.

2. Duct Supports shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 4, "Hangers and Supports."

3. Duct runs shall coordinate with walls, suspended ceilings, light fixtures, roof trusses and similar finished work.

4. Duct openings shall be covered during construction to prevent entrance of dust and debris.

### IX. CONTROLS

A. All line voltage wiring through starters and safety switches to equipment will be provided by the ELECTRICAL CONTRACTOR. All remaining, low voltage electrical work including any wiring and/or accessories required for the complete system shall be furnished by the MECHANICAL CONTRACTOR.

B. Thermostats shall be mounted 5'-0" above finished floor and where shown on Drawings. Include locking covers.

C. Controls shall perform according to their Sequence of Operation.

1. CF-1: Packaged control turns CF-1 on (interlocked with incinerator operation) and modulateS fan speed via VFD to satisfy space differential static pressure set point.

2. VF-1 and mixing box control: Provide a stand-alone controller with sensors and damper actuators as required.

a) VF-1 starts if the space temperature is above set point, 80 deg f (adjustable)

b) Control modulates the return (RA) and outdoor air (OA) damper actuators to maintain the desired duct discharge temperature and space temperature set point (50 degF, adjustable). RA is normally fully open, and OA is normally fully closed.

c) Relief damper (RE/A) modulates with same % open signal as OA damper.

d) VF-1 is allowed to run until a space temperature of 75 degF (adjustable) is achieved.

3. UH-1, -2: line voltage t-stat cycles unit heaters on-off.

4. DH-1: A packaged stepping control with DH-1 turns individual circuits on in sequence to satisfy a discharge air temperature set point (40 degF, adjustable). An air flow switch enables DH-1 to operate.

5. All control components shall be furnished and installed by the MECHANICAL CONTRACTOR.

#### X. TESTING AND BALANCING

A. Test and balance all air volumes delivered through each air supply and return device. Testing shall be done with approved, properly calibrated testing devices. Balance and adjust the air distribution systems to provide air flows as shown on Drawings. Performance of this work shall be in accordance with recommendations, procedures and standards as described in the Manual for Balancing and Adjustment of Air Distribution Systems, latest edition, as published by SMACNA. Reports shall be made on the recommended SMACNA forms.

B. Test water and LPG flows at the equipment connections. Provide a report verifying flows are as scheduled on the equipment schedules on the Drawings.

C. A copy of the testing and balancing report shall be submitted to the OWNER for final approval.

RECORD INFORMATION WAS FURNISHED BY  
THE CONSTRUCTION CONTRACTOR AND  
TRANSFERRED TO THE DRAWINGS BY HB  
RUETER ENGINEERING, INC.

RECORD DRAWING

DATE:

BY:

MECHANICAL DESIGN AND CONSULTING SERVICES  
HB  
RUETER ENGINEERING  
P.O. BOX 1750  
DELTA JUNCTION, ALASKA 99737  
TEL: 907-374-1888 FAX: 907-374-2989  
hruter@rueter.net

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Construction and Engineering  
P.O. Box 1750  
Delta Junction, Alaska 99737  
Tel: 907-895-5441  
Fax: 907-895-5443



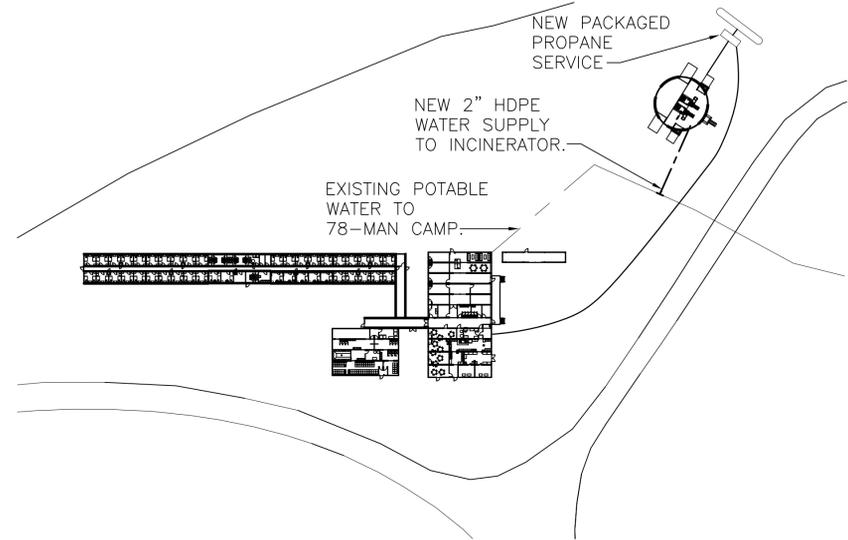
POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA

DATE: 07/03/12  
PROJECT NO: 1105  
DRAWN: HER  
CHECKED:

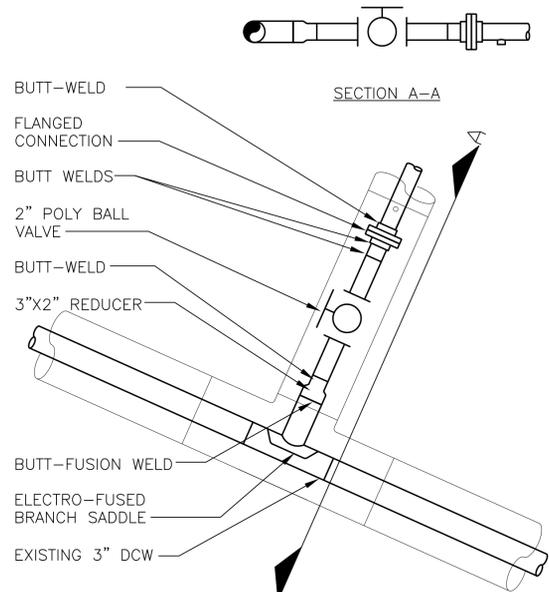
TITLE:  
MECHANICAL  
LEGEND AND  
SPECIFICATIONS

SHEET:  
M1.0

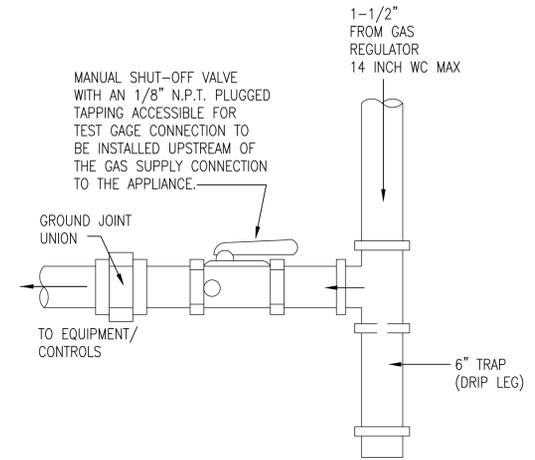
REVISED  
IFC SET



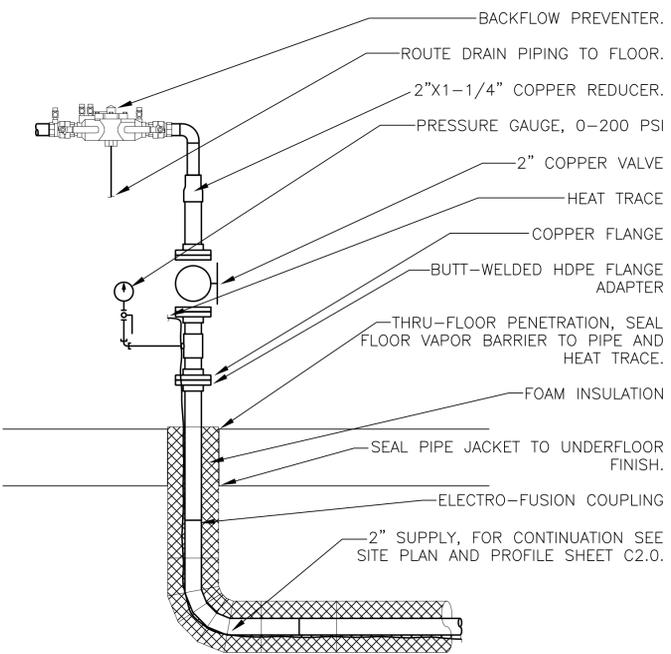
**1**  
MECHANICAL SITE PLAN  
SCALE: 1"=80'-0"



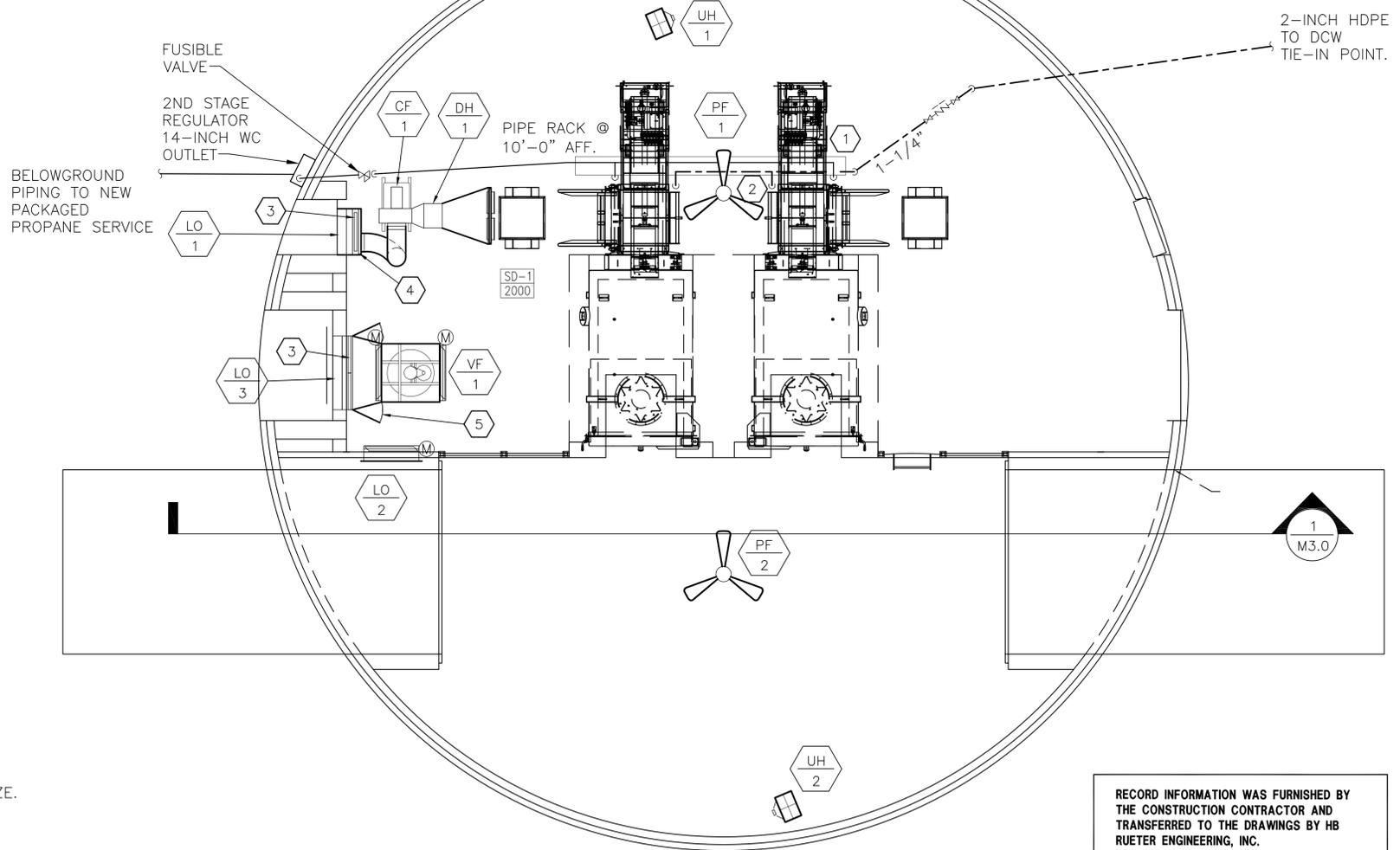
**4**  
WATER PIPE CONNECTION  
SCALE: 1"=1'-0"



**5**  
DETAIL: PROPANE CONNECTION TO INCINERATOR  
SCALE: NONE



**3**  
WATER SERVICE ENTRANCE  
SCALE: 1"=1'-0"



**2**  
INCINERATOR BUILDING MECHANICAL PLAN  
SCALE: 1/4"=1'-0"

**SHEET NOTES**

- 1 PIPE DOWN TO 1-1/2-INCH UNION AT EQUIPMENT.
- 2 WATER CONNECTION TO EQUIPMENT - MATCH EQUIPMENT CONNECTION SIZE.
- 3 FILTER SECTION (SUMMER ONLY) TO MATCH LOUVER DIMENSIONS.
- 4 TRANSITION FROM LOUVER TO FAN INLET. PROVIDE FILTER PULL AREA.
- 5 TRANSITION FROM LOUVER TO FAN FRAME DIMENSIONS. PROVIDE 2 EA. ACCESS DOORS FOR FILTER REMOVAL.

RECORD INFORMATION WAS FURNISHED BY THE CONSTRUCTION CONTRACTOR AND TRANSFERRED TO THE DRAWINGS BY HB RUETER ENGINEERING, INC.

**RECORD DRAWING**

DATE: BY:

MECHANICAL DESIGN AND CONSULTING SERVICES  
**HB RUETER ENGINEERING**  
P.O. Box 1750 Delta Junction, Alaska 99737  
Tel: 907-895-5441 Fax: 907-895-5443  
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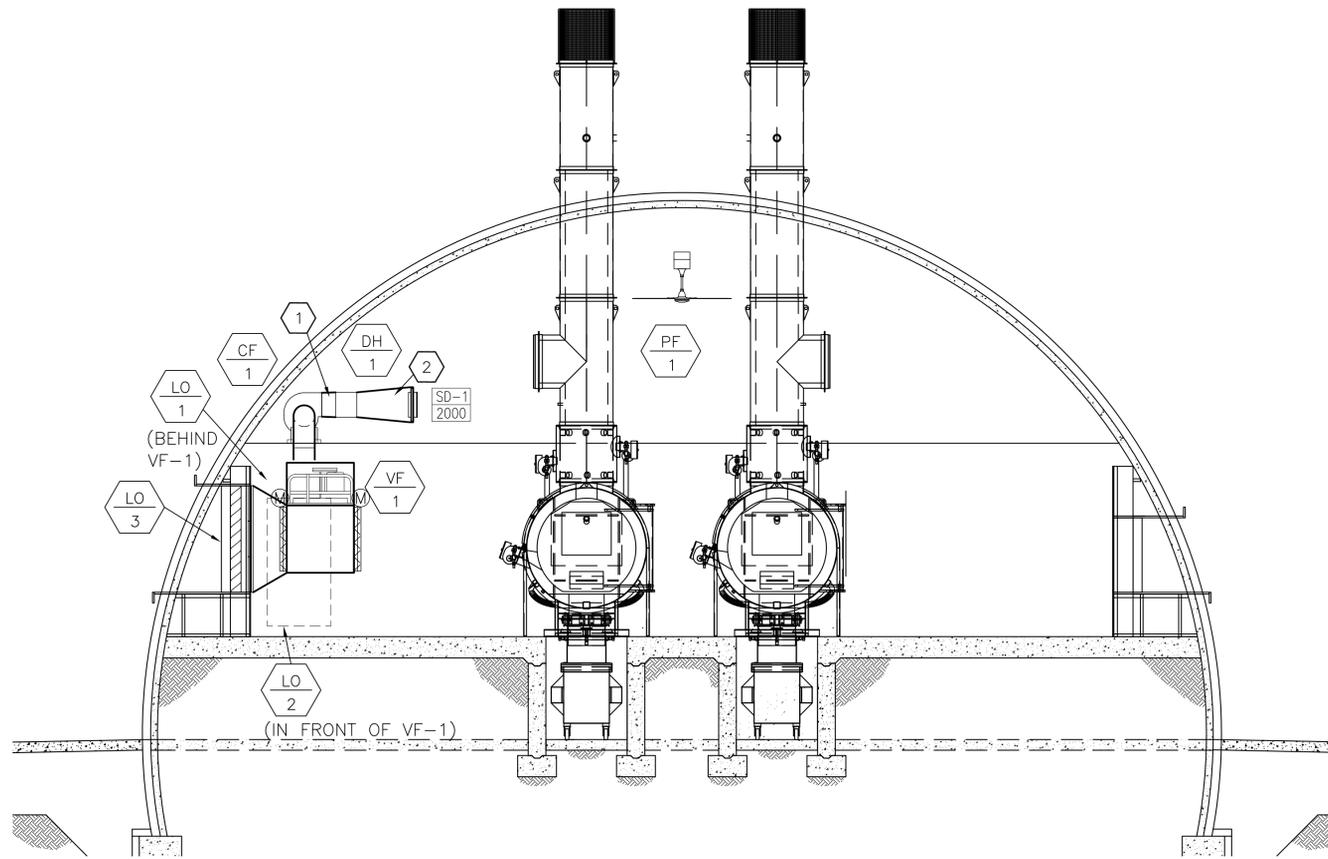
**POGO MINE  
INCINERATOR BUILDING  
DELTA JUNCTION, ALASKA**

DATE: 07/03/12  
PROJECT NO: 1103  
DRAWN: HER  
CHECKED:

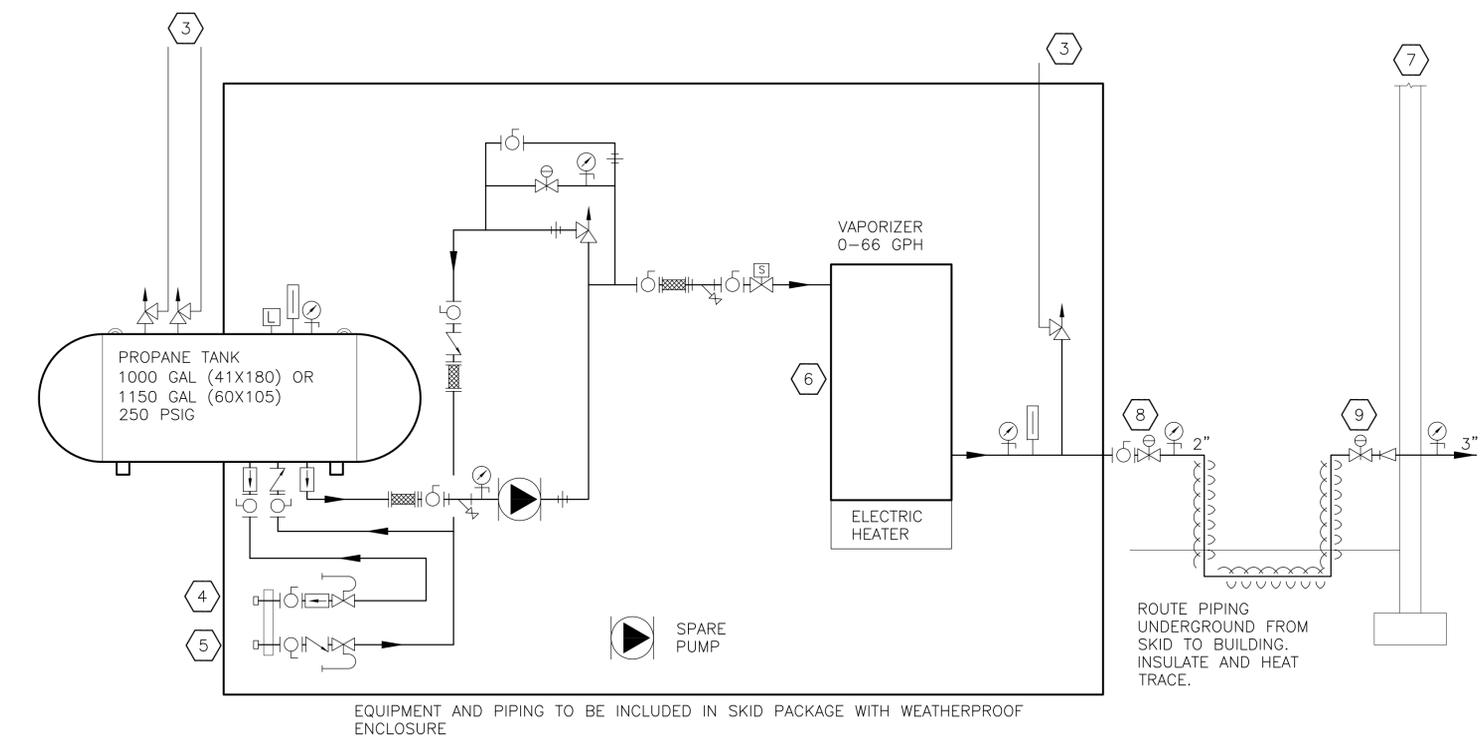
TITLE:  
MECHANICAL  
PLANS

SHEET:  
**M2.0**  
dwa 18 of 25

REVISIONS  
IFC SET



**1 INCINERATOR BUILDING MECHANICAL SECTION**  
SCALE: 1/4"=1'-0"



EQUIPMENT AND PIPING TO BE INCLUDED IN SKID PACKAGE WITH WEATHERPROOF ENCLOSURE

**2 DETAIL: PROPANE PIPING SCHEMATIC DIAGRAM**  
SCALE: NONE

**FAN SCHEDULE**

EQP TAG	SERVICE	TYPE	CFM	RPM	SP (IN WC)	DAMPER	ELECTRICAL			BASIS OF DESIGN		NOTES
							HP	VOLTS	PHASE	MFR	MODEL	
VF-1	COOLING	PROP	9200	905	0.5	MOTORIZED	2	480	3	GREENHECK	SBS-3L-30-20	1
CF-1	COMBUSTION	BI	2000	2115	0.7	MOTORIZED	1	480	3	TJERNLUND	VSUB12	2
PF-1, -2	CIRCULATION	CEILING	34000	350	-	NONE	0.71A	120	1	ENVIROFAN	190A	3

**NOTES**  
 1. PROVIDE FILTER, MIXING BOX WITH OA AND RA DAMPERS AND CONTROLS, HOUSING, OUTLET SCREEN AND EXTERIOR INTAKE HOOD.  
 2. PROVIDE ACCESSORIES AND CONTROLS CPC-3, VFD AND TD-2 FOR A COMPLETE SYSTEM TO MODULATE BASED ON SPACE STATIC PRESSURE.  
 3. PROVIDE SOLID STATE SPEED CONTROL, PART 100F.

**AIR OUTLET SCHEDULE**

DESIGNATION	USE	UNIT SIZE (IN)	NECK SIZE (IN)	THROW (FT)	PATTERN	SP (IN WG)	NC	FINISH	BASIS OF DESIGN	
									MFR	MODEL
SD-1	SUPPLY	14 - 2 EA.	18X35	47-58-83	CONE	0.15	30	WHITE	TITUS	TURBOFUSER

**ELECTRIC HEATER SCHEDULE**

EQP TAG	CFM	MBH	KW	VOLTAGE	BASIS OF DESIGN		NOTES
					MFR	MODEL	
UH-1, -2	1240	34	10	480/3	CHROMALOX	LUH-10-43-32	
DH-1	2000	184	54	480/3	CHROMALOX	DHRF-GPP-14HX016WX12D-480V083P-54.0KW-1MP-MOWAM-AST24FD	1

**NOTES**  
 1. PROVIDE MANUFACTURER'S STANDARD AIR FLOW SWITCH AND 8 STAGES OF HEAT.

**LOUVER AND WALL VENT SCHEDULE**

EQP TAG	SERVICE	SIZE (IN)	CFM	FREE AREA (SQ FT)	FACE VEL. (FPM)	SP (IN WG)	DEPTH (IN)	BASIS OF DESIGN		NOTES
								MFR	MODEL	
LO-1	INTAKE	36Hx30W	2,000	3.95	506	0.070	6	RUSKIN	ELF6375DX	1
LO-2	RELIEF	72Hx36W	9,200	10.45	880	0.10	6	RUSKIN	ELF6375DX	1
LO-3	INTAKE	60Hx48W	9,200	11.62	792	0.10	6	RUSKIN	ELF6375DX	1

**NOTES**  
 1. PROVIDE 1" BIRD SCREEN, PRIME COAT AND BAKED ENAMEL FINISH. SUBMIT COLOR SAMPLES FOR OWNER SELECTION.

**SHEET NOTES**

- ① TRANSITION FROM FAN OUTLET TO 14H X 16W TO MATCH DH-1.
- ② TRANSITION FROM 14H X 16W TO MATCH SD-1.

**GENERAL NOTES:**

1. SYSTEM SHALL PROVIDE 66 GPH PEAK, 6 GPH AVERAGE PROPANE USE WITH 100% TURNDOWN.
2. THE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 58 AND ALL LOCAL, STATE AND FEDERAL REGULATIONS.
3. SEISMIC BRACING AND ANCHORING OF EQUIPMENT AND PIPEWORK SHALL BE BASED ON SEISMIC ZONE 2B OF THE INTERNATIONAL BUILDING CODE.
4. THIS DRAWING SHOWS GENERAL ARRANGEMENT OF EQUIPMENT AND MAY DIFFER FROM THE AS-BUILT INSTALLATION. FOR PUMP AND VAPORIZER ENCLOSURE AND ASSOCIATED PROPANE PIPING, SEE VENDORS DRAWINGS.

**SHEET NOTES:**

- ③ ROUTE TO 7 FEET ABOVE TANK AND PROVIDE RAIN CAP.
- ④ 2-INCH TRUCK TRANSPORT BULKHEAD VAPOR CONNECTION WITH CAP.
- ⑤ 3-INCH TRUCK TRANSPORT BULKHEAD LIQUID FILLER CONNECTION WITH CAP.
- ⑥ APPURTENANCES NOT SHOWN INCLUDE: HIGH TEMP SAFETY SWITCH.
- ⑦ BUILDING WALL.
- ⑧ FIRST STAGE REGULATOR SET TO 10 PSIG.
- ⑨ SECOND STAGE REGULATOR SET TO 14 INCHES WG.

RECORD INFORMATION WAS FURNISHED BY THE CONSTRUCTION CONTRACTOR AND TRANSFERRED TO THE DRAWINGS BY HB RUETER ENGINEERING, INC.

**RECORD DRAWING**

DATE: BY:

## SPECIFICATIONS

1. GENERAL
  - 1.1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH LOCAL AND STATE BUILDING CODES AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION AND CONFORM TO NFPA NO. 70, NATIONAL ELECTRICAL CODE, 2011 EDITION.
  - 1.2. CONTRACTOR SHALL OBTAIN AND PAY FOR APPLICABLE PERMITS.
  - 1.3. INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS. NOTIFY ENGINEER IMMEDIATELY WHERE THERE ARE CONFLICTS WITH THE DRAWINGS.
  - 1.4. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND FEATURE SALIENT POINTS FOR PROJECT CONSTRUCTION.
  - 1.5. EQUIPMENT LOCATIONS SHOWN ARE GENERAL IN NATURE UNLESS SPECIFICALLY DIMENSIONED. SCALE THE PLACEMENT OF EQUIPMENT FROM THE DRAWINGS. MAKE MINOR RELOCATIONS AS NECESSARY FOR FITTING WITH BUILDING LINES AND COORDINATION WITH OTHER TRADES.
  - 1.6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING DIMENSIONS AND EXISTING CONDITIONS. REPORT DISCREPANCIES TO THE OWNER BEFORE PROCEEDING WITH WORK. WORK AT AN AREA OF DISCREPANCY MADE BEFORE APPROVAL BY THE OWNER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTIONS BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION.
2. CONDUCTORS AND CABLES
  - 2.1. CONDUCTORS SHALL BE COPPER ONLY.
  - 2.2. NO. 10 AND SMALLER: SOLID; NO. 8 AND LARGER: STRANDED.
  - 2.3. MINIMUM SIZE: NO. 12 AWG.
  - 2.4. INSULATION, BRANCH CIRCUITS:
    - 2.4.1. HEATED INTERIOR SPACES, EXPOSED (INCLUDING ABOVE DROPPED OR SUSPENDED CEILINGS): INDIVIDUAL CONDUCTORS, TYPE THHN / THHW.
    - 2.4.2. OUTDOORS OR UNINSULATED SPACES - INDIVIDUAL CONDUCTORS, TYPE XHHW.
  - 2.5. INSULATION, FEEDERS: INDIVIDUAL CONDUCTORS, TYPE XHHW.
3. CONDUIT
  - 3.1. REQUIRED FOR INDIVIDUAL CONDUCTORS, AND SHALL BE 1/2-INCH DIAMETER MINIMUM SIZE.
  - 3.2. ABOVE GRADE, BRANCH CIRCUIT: EMT.
  - 3.3. ABOVE GRADE, FEEDERS: IMC OR RSC.
  - 3.4. BELOW GRADE: SCHEDULE 40 PVC.
  - 3.5. MOTOR CONNECTIONS: A SLACK SECTION OF FLEXIBLE METAL CONDUIT 18 INCHES TO 36 INCHES LONG.
  - 3.6. USE DUCT SEAL AROUND CONDUCTORS WHERE CONDUITS ENTER AND LEAVE THE BUILDING.
  - 3.7. PENETRATIONS OF CONDUITS THROUGH FIRE-RATED WALLS OR CEILINGS MUST BE SEALED AROUND CONDUIT SO AS TO RESTORE ORIGINAL FIRE-RATING OF WALLS OR CEILINGS. APPROVED FIRE-RATED FITTINGS SHALL BE USED. SEE ARCH DWG FOR EXACT LOCATIONS AND RATINGS OF FIRE-RATED WALLS AND CEILINGS.
4. BOXES
  - 4.1. BOXES SHALL BE PROVIDED IN THE WIRING OR RACEWAYS SYSTEMS WHEREVER REQUIRED FOR PULLING OF WIRES, MAKING CONNECTIONS, AND MOUNTING OF DEVICES OR FIXTURES.
  - 4.2. BOXES FOR METALLIC RACEWAYS SHALL BE 4-INCH SQUARE NOMINAL SIZE U.O.N., MINIMUM 1-1/2 INCHES DEEP FOR SURFACE, 2-1/8 INCHES DEEP FOR CONCEALED.
  - 4.3. BOXES FOR FIXTURE SUPPORT SHALL BE AS RECOMMENDED BY THE FIXTURE MANUFACTURER.
  - 4.4. BOXES FOR TELE/DATA SHALL BE 4-11/16-INCH SQUARE BY 2-1/8-INCH DEEP, STEEL.
  - 4.5. JUNCTION AND OUTLET BOXES INSTALLED OUTDOORS SHALL BE OF THE CAST THREADED HUB TYPE, NON-ALUMINUM.
  - 4.6. COVERS FOR OUTDOOR OUTLET BOXES SHALL FULLY COVER OUTLET WHEN IN USE, RED DOT "CODE KEEPER", OR EQUAL.
5. GROUNDING
  - 5.1. GROUND RODS SHALL BE COPPER, 10 FEET LONG, AND 3/4" DIAMETER MINIMUM, WITH MINIMUM 10 FOOT SPACING.
  - 5.2. PROVIDE A GREEN INSULATED GROUNDING CONDUCTOR, NO. 12 AWG MINIMUM SIZE, IN EACH ELECTRICAL CABLE AND CONDUIT.
6. WIRING DEVICES
  - 6.1. DUPLEX RECEPTACLES SHALL BE SINGLE PHASE, 20 AMPERE, 120 VOLTS, 2 POLE, GROUNDED 3 WIRE, NEMA 5 20R. THE HEADBOLT HEATER DUPLEX TYPE SHALL HAVE BREAK OFF FEATURE FOR TWO-CIRCUIT OPERATION.
  - 6.2. GROUND FAULT INTERRUPT DUPLEX OUTLETS SHALL BE SIMILAR TO DUPLEX RECEPTACLES, AND IN ADDITION SHALL INTERRUPT THE CURRENT SUPPLY FOR ANY VALUE OF GROUND LEAKAGE CURRENT ABOVE FIVE MILLIAMPERES.
  - 6.3. LIGHT SWITCHES SHALL BE SINGLE POLE, 20 AMPERE, 120 VOLTS, TOGGLE HANDLE TYPE.
  - 6.4. DEVICE PLATES SHALL BE STEEL.
  - 6.5. MANUFACTURER SHALL BE HEAVY-DUTY COMMERCIAL GRADE, LEVITON, PASS & SEYMOUR, COOPER, OR EQUAL.
  - 6.6. DEVICE BODY COLOR: IVORY.
7. DISCONNECT SWITCHES AND STARTERS
  - 7.1. DISCONNECT SWITCHES (SAFETY SWITCHES) SHALL BE UL LISTED, HEAVY DUTY TYPE WITH RATINGS AND FEATURES AS REQUIRED BY THE LOAD SERVED, WITH ISOLATED NEUTRAL BUS FOR CIRCUITS WITH A NEUTRAL. PROVIDE ATTACHED GROUND LUGS TO THE ENCLOSURE FOR TERMINATING EQUIPMENT GROUNDING CONDUCTORS. SWITCHES SHALL HAVE VISIBLE BLADES, BE PADLOCKABLE IN THE OFF (DOWN) POSITION, USE POSITIVE QUICK MADE, QUICK BREAK OPERATING MECHANISMS.
- 7.2. MAGNETIC STARTERS SHALL BE FULL-VOLTAGE, NON-REVERSING, NEMA CLASS, SIZE AS SCHEDULED.
  - 7.2.1. OVERLOAD RELAYS SHALL BE SOLID-STATE, CURRENT SENSING, FIELD SELECTABLE AS MANUAL OR AUTOMATIC RESET TYPE.
  - 7.2.2. PROVIDE WITH HAND-OFF-AUTOMATIC SWITCH, RED AND GREEN PILOT LIGHTS, AND OVERLOAD RESET BUTTON IN FRONT COVER.
- 7.3. COMBINATION MAGNETIC STARTER DISCONNECTS (COMBINATION MAGS) SHALL HAVE SWITCHES HORSEPOWER RATED FOR THE MOTOR SERVED.
- 7.4. MOTOR START SWITCHES SHALL BE TOGGLE HANDLE TYPE, WITH RED PILOT LIGHT, RESETTABLE OVERLOAD PROTECTION, AND WITH GUARD/LOCKOFF HASP, SQUARE D CLASS 2510 OR EQUAL.
- 7.5. ENCLOSURES SHALL BE NEMA 1 FOR DRY INDOOR LOCATIONS AND NEMA 3R FOR OUTDOOR OR WET LOCATIONS.
8. METERING EQUIPMENT
  - 8.1. ELECTRIC SERVICE TO THE BUILDING SHALL BE 200A, 480Y/277V, 3 PHASE, 4 WIRE, SELF-CONTAINED METERING (WITHOUT CT'S). METERING EQUIPMENT SHALL BE WEATHER TIGHT, NEMA 3R RATED.
  - 8.2. METER SOCKET SHALL BE
    - 8.2.2. S-BASE, 7-TERMINAL FOR SELF-CONTAINED METERING, WITH COMBINATION CIRCUIT BREAKER SERVICE DISCONNECT SWITCH.
    - 8.2.3. CIRCUIT BREAKER SHALL BE SIZE AS NOTED ON THE DRAWINGS, 35K AIC RATED.
  - 8.3. METERING EQUIPMENT SHALL COMPLY WITH SERVING UTILITY REQUIREMENTS.
9. PANELBOARDS
  - 9.1. PANELBOARDS SHALL HAVE MAIN BREAKER OR MAIN LUGS, BUS SIZE, VOLTAGE, PHASE, TOP OR BOTTOM FEED, AND FLUSH OR SURFACE MOUNTING AS SCHEDULED ON THE DRAWINGS.
10. LIGHTING
  - 10.1. FIXTURES SHALL BE AS SCHEDULED ON THE DRAWINGS.
  - 10.2. VERIFY CEILING TYPES THROUGHOUT.
  - 10.3. ALIGN, MOUNT AND LEVEL THE LIGHTING FIXTURES UNIFORMLY.
  - 10.4. PROVIDE ALL MOUNTING ACCESSORIES, END PLATES, TRIM FLANGES, OUTLET BOXES, ETC. FOR COMPLETE INSTALLATION.
11. OUTSIDE LIGHTING CONTROLS
  - 11.1. PHOTOCELL SHALL BE PLUG-IN LOCKING TYPE, THERMAL, EQUIPPED WITH STANDARD 3-PRONG NEMA LOCKING-TYPE PLUG CONNECTION, 120V, 15A, INTERMATIC NO K4521 OR EQUAL, WITH MATCHING BASE.
12. HEAT TRACE
  - 12.1. HEAT TRACE SHALL BE SW/FT, 277V, SUITABLE FOR HAZARDOUS LOCATIONS, RAYCHEM NO. BTV-5, OR EQUAL. PROVIDE WITH CLASS 1, DIV 2 HAZARDOUS RATED MANUFACTURER CONNECTORS AND END TERMINATIONS.
  - 12.2. HEAT TRACE DISCONNECT SWITCHES SHALL BE TOGGLE HANDLE TYPE, WITH RED PILOT "ON" LIGHT, AND WITH GUARD/LOCKOFF HASP, SQUARE D CLASS 2510 OR EQUAL.
16. IDENTIFICATION
  - 16.1. LABELS SHALL BE BLACK PHENOLIC PLASTIC WITH WHITE ENGRAVED LETTERING, MINIMUM LETTER HEIGHT 1/4" HIGH.
    - 16.1.1. LABEL PANELBOARDS.
    - 16.1.2. LABEL THE FUNCTION OF MOTOR CONTROLLER AND OUTDOOR LIGHTING SWITCHES.
  - 16.2. PROVIDE CLEAR PRINTED PLASTIC ADHESIVE TAPE WITH 1/8" HIGH BLACK LETTERS AT THE BASE OF OUTLET FACEPLATES TO IDENTIFY THE SERVING BRANCH CIRCUIT.
  - 16.3. LABEL WITH PRINTED PLASTIC ADHESIVE TAPE THE PANEL AND CIRCUIT NUMBERS OF CONDUCTORS INSIDE JUNCTION BOXES.
  - 16.4. LABEL PANELBOARDS AND METER MAIN WITH AIC RATING AND DATE SHOWN ON THE DRAWINGS PER NEC 110.24
17. PROJECT CLOSEOUT
  - 17.1. DEMONSTRATE OPERATION OF ELECTRICAL SYSTEMS TO THE SATISFACTION OF THE OWNER AND ENGINEER.

## MOUNTING HEIGHT SCHEDULE

RECEPTACLES	1'-6"
RECEPTACLES (OUTSIDE)	2'-0"
TOGGLE SWITCHES	4'-0"
DISCONNECT SWITCHES	5'-6"
PANELBOARDS	6'-6" TO TOP

### NOTES:

1. MOUNTING HEIGHTS ARE FROM ABOVE FINISHED FLOOR (INTERIOR) OR ABOVE FINISHED GRADE (EXTERIOR), UON.
2. MOUNTING HEIGHTS ARE TO CENTER OF DEVICE, UON.

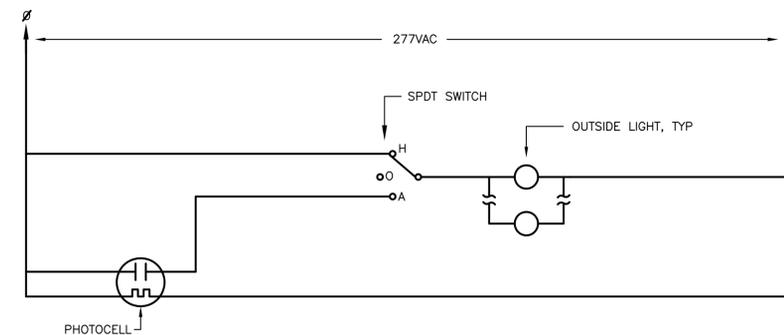
## ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
AUTO	AUTOMATIC
CLG	CEILING
CWA	CONSTANT-WATTAGE AUTO TRANSFORMER
DISC SW	DISCONNECT SWITCH
EXIST	EXISTING
F/A	FIRE ALARM
GFI	GROUND FAULT INTERRUPT
HOA	HAND-OFF-AUTOMATIC
HPS	HIGH PRESSURE SODIUM
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
N/A	NOT APPLICABLE
OC	ON CENTER
PNL	PANEL
TBB	TELEPHONE BACKBOARD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
XFMR	TRANSFORMER

NOTE: NOT ALL ABBREVIATIONS MAY APPEAR ON THE DRAWINGS.

## SYMBOLS

	FLUORESCENT LIGHT FIXTURE
	BATTERY UNIT EMERGENCY FIXTURE
	LED EXIT SIGN
	LIGHT SWITCH, SINGLE POLE
	DUPLEX RECEPTACLE
	5mA GFI RECEPTACLE
	PANELBOARD, SURFACE MOUNTED
	J-BOX
	MOTOR
	DISCONNECT SWITCH (SAFETY SWITCH), FUSED AS NOTED
	COMBINATION MOTOR STARTER DISCONNECT SWITCH
	MOTOR STARTER SWITCH WITH THERMAL OVERLOAD
	HEAT TRACE SWITCH W/O THERMAL OVERLOAD
	GROUND
	F/A HEAT DETECTOR
	F/A MANUAL PULL STATION
	F/A HORN/STROBE
	FIRE ALARM CONTROL PANEL
	BRANCH CIRCUIT WIRING, 2 NO. 12 AND 1 NO. 12 GND IN 1/2 INCH EMT, UNLESS OTHERWISE NOTED
	BRANCH CIRCUIT WIRING, HOT = SHORT TICS, NEUTRAL = LONG TICS, GND = LONG TICS WITH CIRCLE
	HOME RUN TO INDICATED PANEL AND CIRCUIT
	SITE WIRING - UNDERGROUND ELECTRICAL
	SITE WIRING - UNDERGROUND COMMUNICATIONS
	CLASS 1, DIV 2 EXPLOSION-PROOF SEAL
	CALCULATED AIC RATING, NNN = VALUE
	TAGGED NOTE, N=NUMBER

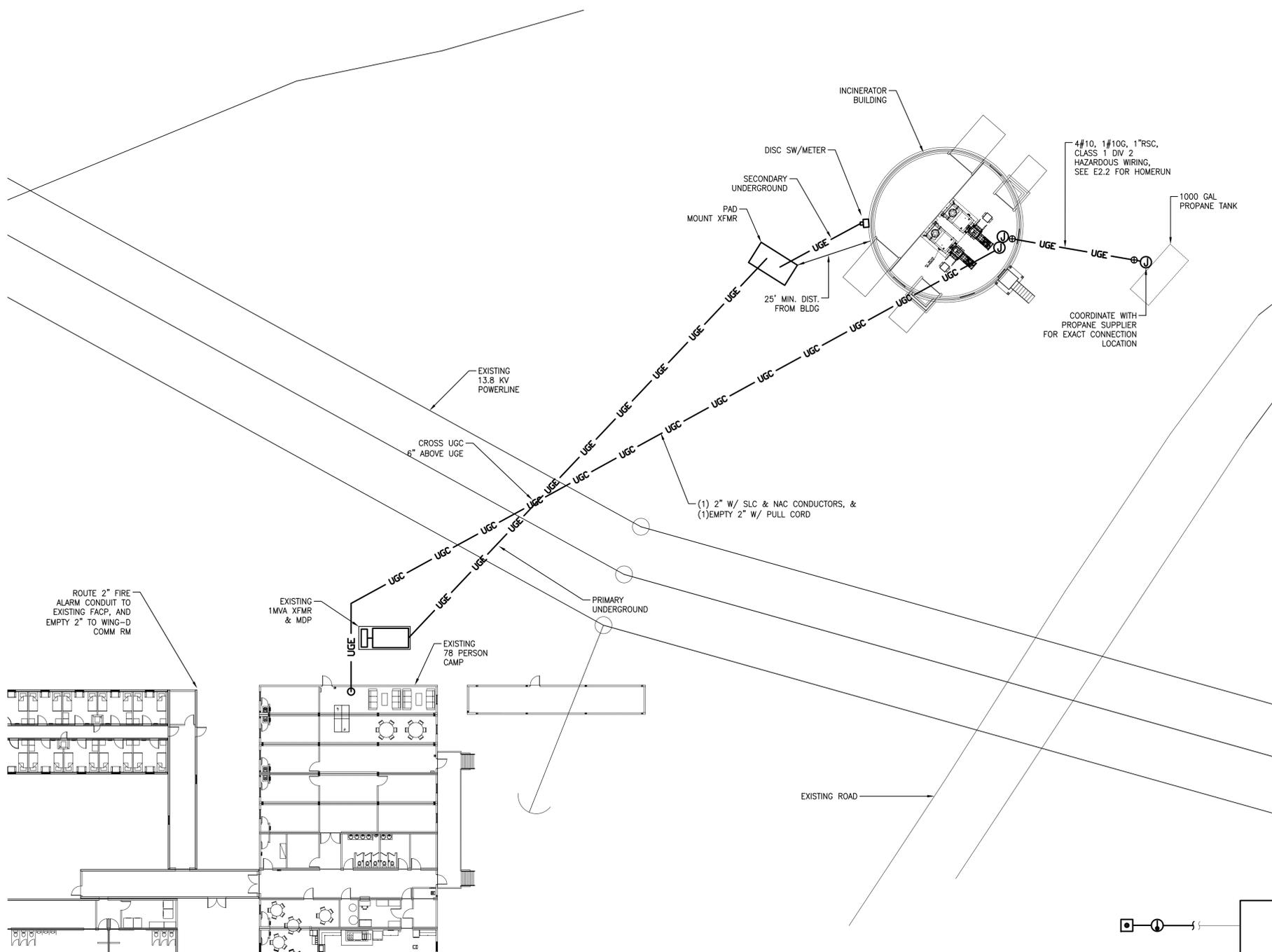


1 OUTSIDE LIGHTING CONTROLS  
E1.1 NO SCALE

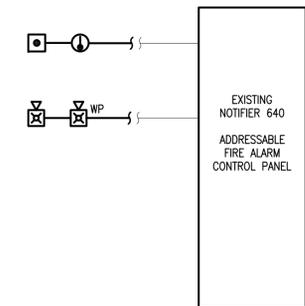
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AS-BUILT RECORD DRAWING  
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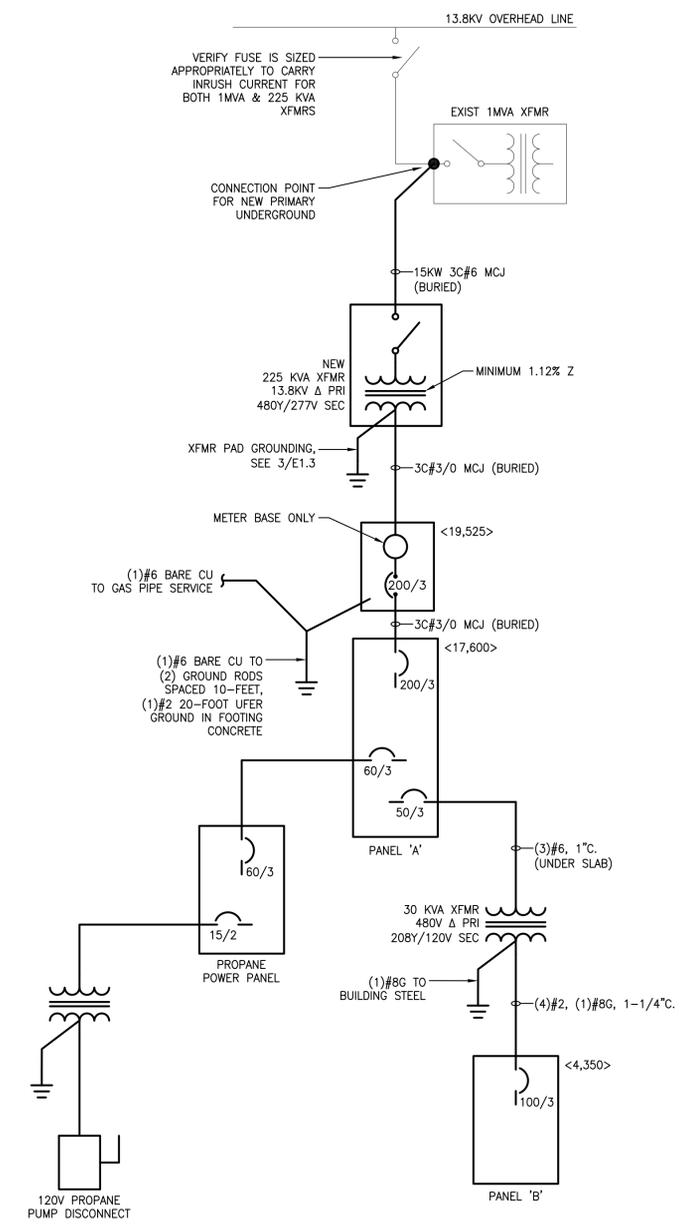
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**1 SITE PLAN**  
E1.2 1" = 20'



**3 FIRE ALARM RISER DIAGRAM**  
E1.2 NO SCALE

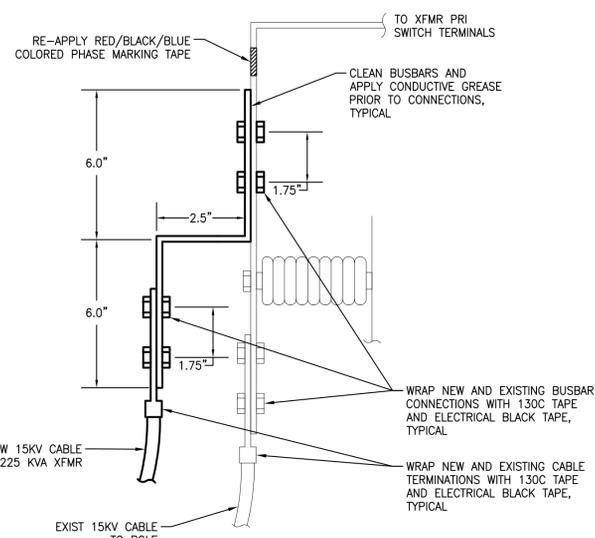


**2 POWER ONE LINE DIAGRAM**  
E1.2 NO SCALE

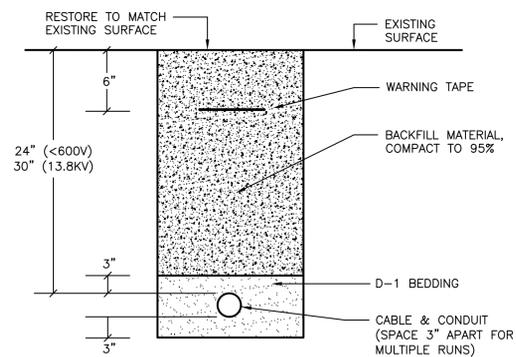
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AS-BUILT RECORD DRAWING  
M2C1 CONSTRUCTION & ENGINEERING

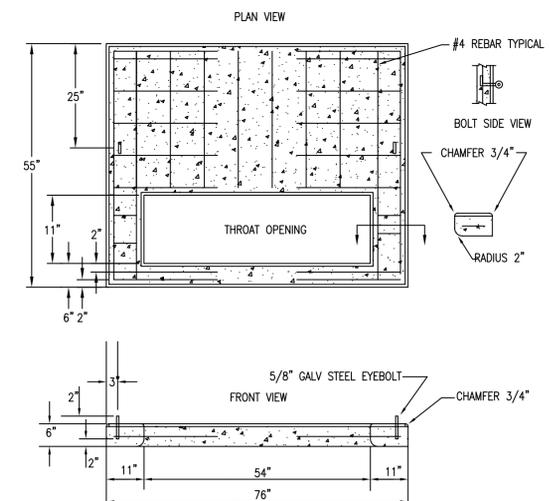
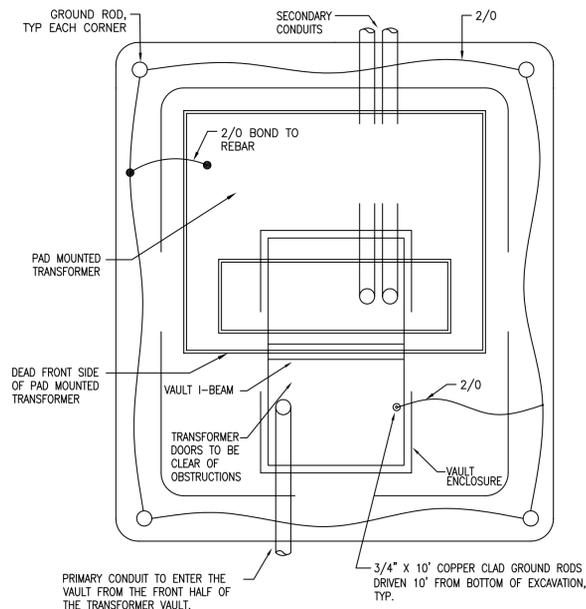
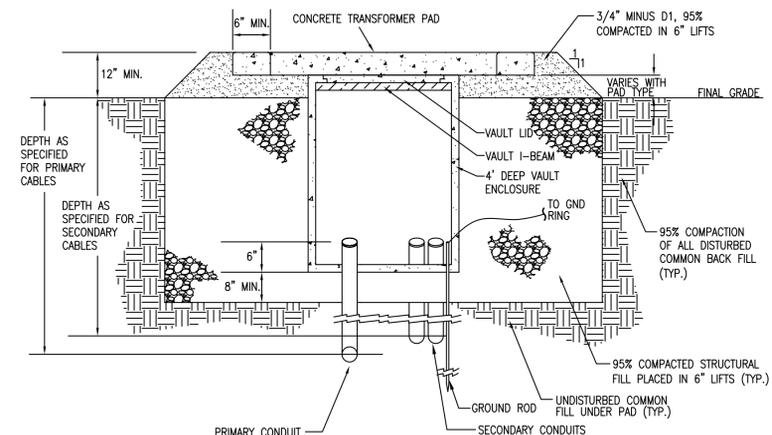
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**1 1MVA XFMR CONNECTION DETAIL - SIDE VIEW**  
E1.3 NO SCALE



**2 TRENCH DETAIL**  
E1.3 NO SCALE



**3 MAIN TRANSFORMER VAULT & CONCRETE PAD DETAIL**  
E1.3 NO SCALE

RECORD INFORMATION WAS FURNISHED BY THE CONSTRUCTION CONTRACTOR AND TRANSFERRED TO THE DRAWINGS BY ROBERTS-KANEKO ELECTRICAL CONSULTANTS, INC.

AS-BUILT RECORD DRAWING  
M2C1 CONSTRUCTION & ENGINEERING

DATE: BY:



DATE: 5/3/12  
PROJECT NO: C159-12  
DRAWN: EDR  
CHECKED:

TITLE:  
SITE DETAILS

SHEET:  
**E1.3**

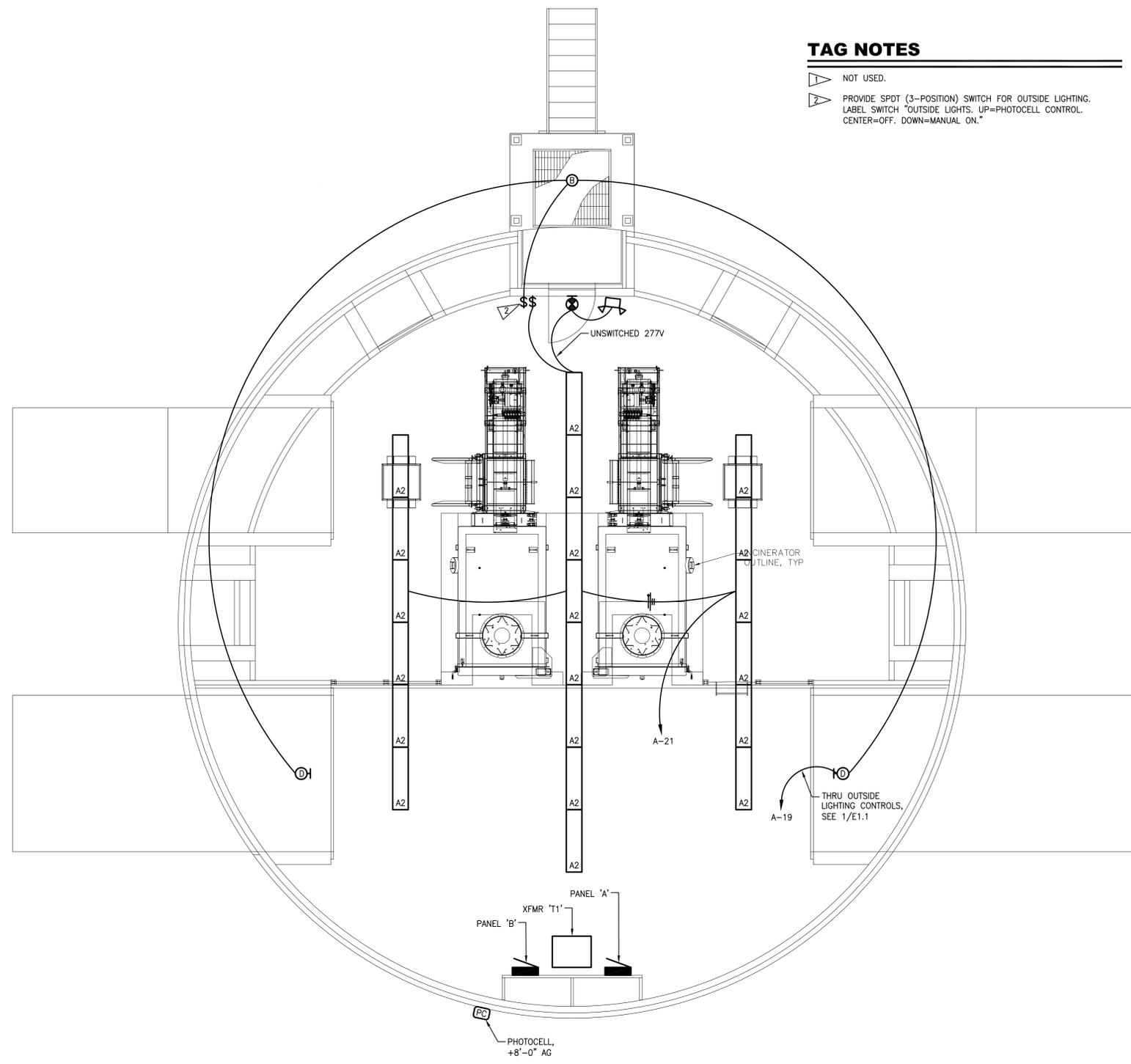
REVISIONS  
AS BUILT SET



TYPE	DESCRIPTION	BASIS OF DESIGN	BALLAST	LAMP (QTY) TYPE	MOUNTING
A2	HEAVY-DUTY TURRET INDUSTRIAL, WHITE ENAMEL REFLECTOR FINISH.	LITHONIA AFST 232 277 GEB	277V ELECTRONIC	(2) 32T8/35K	CHAIN +12'-0" AFF UON
B	LED CANOPY FIXTURE, 59-WATTS, POLYCARBONATE HOUSING AND LENS, GASKETED, SUITABLE FOR WET LOCATIONS, NOMINAL 54"L X 8"W X 4"D.	LITHONIA VAP 59LED SYM	MVOLT	4100K LED BY MFR	CANOPY
C	BUILDING MOUNTED LED WALLPACK, 70-WATT, ALUMINUM HOUSING, MOLDED TYPE III LENS.	LITHONIA ALXW LED 1 15A400/51K SR3 MVOLT DDBXD	MVOLT	(15) 5100K LED'S BY MFR	NEAR DOOR HEADER
D	BUILDING MOUNTED LED WALLPACK, 112-WATT, ALUMINUM HOUSING, MOLDED TYPE III LENS.	LITHONIA ALXW LED 1 30A350/51K SR3 MVOLT DDBXD	MVOLT	(30) 5100K LED'S BY MFR	NEAR DOOR HEADER
EM2	INDUSTRIAL EMERGENCY LIGHT, 0.14-INCH THICK THERMOPLASTIC HOUSING, 90 MINUTES ILLUMINATION.	LITHONIA IND618	277V	(2) 9W BY MFR	SURFACE +7'-6"
EX	EXTREME LED EXIT SIGN, 0.25 TO 0.50-INCH THICK CAST ALUMINUM HOUSING, NICKEL-CADMIUM BATTERY, BLACK FACEPLATE ON BLACK HOUSING.	LITHONIA LV S 1 R 120/277 ELN	120/277V	LED BY MFR	SURFACE +6" ABOVE DOOR

**TAG NOTES**

- ▽ NOT USED.
- ▽ PROVIDE SPDT (3-POSITION) SWITCH FOR OUTSIDE LIGHTING. LABEL SWITCH "OUTSIDE LIGHTS. UP=PHOTOCELL CONTROL. CENTER=OFF. DOWN=MANUAL ON."



PANEL 'A'												
CKT	LOAD	BRANCH			CONNECTED KVA			BRANCH			LOAD	CKT
		BKR	WIRE	VA	A	B	C	VA	WIRE	BKR		
1	CF-1, 1 HP	15/3	12	582	#REF!	#REF!	#REF!	942	12	15/3	VF-1, 2 HP	2
3			12	582	#REF!	#REF!	#REF!	942	12			4
5			12	582				942	12			6
7			10	3330	4.3			3330	10			8
9	UH-2, 10 KW	20/3	10	3330	4.3			3330	10	20/3	UH-1, 10 KW	10
11			10	3340			4.3	3340	10			12
13					3.4			3400	10			14
15	SPARE	20/3					3.4	3400	10	20/3	INCINERATOR #1	16
17								3400	10			18
19	OUTSIDE LIGHTS	20/1	10	400	1.7			1260	6			20
21	INSIDE LIGHTS	20/1	10	1500			1.7	170	6	50/3	PANEL 'B' XFMR	22
23	PROPANE LINE HEAT TRACE	20/1	12	300			0.8	500	6			24
25	SPARE	30/1			5.0			5000	6			26
27					5.0			5000	6	60/3	PROPANE SHED	28
29							5.0	5000	6			30
31					0.0							32
33					0.0							34
35					0.0							36
37					0.0							38
39					0.0							40
41					0.0							42
CONNECTED LOAD					#REF!	KVA	#REF!	#REF!	#REF!	PANEL SPECIFICATIONS		
NEC DEMAND					56.5	KVA	#REF!	#REF!	#REF!	MAINS RATING AMPS - 225		
					68	AMPS				MAIN CIRCUIT BREAKER AMPERES - MLO		
										CAPACITY ONE-POLE CIRCUITS - 42		
										SYSTEM VOLTAGE - 480Y/277		
										PHASE, NO. OF WIRES - 3 PH, 4 W		
										A.I.C. RATING - 18,000		
										MOUNTING - SURFACE		

PANEL 'B'												
CKT	LOAD	BRANCH			CONNECTED KVA			BRANCH			LOAD	CKT
		BKR	WIRE	VA	A	B	C	VA	WIRE	BKR		
1	OUTLETS	20/1	12	1260	1.3					20/1	SPARE	2
3	CEILING FANS (2 EACH)	20/1	12	170		0.2				20/1	SPARE	4
5	HEAT TRACE (NOTE 1)	* 20/1	12	500			0.5			20/1	SPARE	6
7	SPARE	20/1			0.0					20/1	SPARE	8
9	SPARE	20/1			0.0					20/1	SPARE	10
11	SPARE	20/1			0.0					20/1	SPARE	12
13					0.0							14
15					0.0							16
17					0.0							18
19					0.0							20
21					0.0							22
23					0.0							24
25					0.0							26
27					0.0							28
29					0.0							30
CONNECTED LOAD					1.9	KVA	1.3	0.2	0.5	PANEL SPECIFICATIONS		
NEC DEMAND					1.9	KVA	11	1	4	MAINS RATING AMPS - 100		
					5	AMPS				MAIN CIRCUIT BREAKER AMPERES - MLO		
					5	AMPS				CAPACITY ONE-POLE CIRCUITS - 30		
										SYSTEM VOLTAGE - 208Y/120		
										PHASE, NO. OF WIRES - 3 PH, 4 W		
										A.I.C. RATING - 10,000		
										MOUNTING - SURFACE		

PROPANE PANEL												
CKT	LOAD	BRANCH			CONNECTED KVA			BRANCH			LOAD	CKT
		BKR	WIRE	VA	A	B	C	VA	WIRE	BKR		
1	VAPORIZER	40/3	8		0.9			942	12	20/1	LIGHTS, HEATER	2
3			8			0.9		942	12	15/2	PROPANE PUMP XFMR	4
5			8				0.9	942	12			6
7					3.3			3330	10	20/1	SPARE	8
9	SPARE	20/3				3.3		3330	10	20/1	SPARE	10
11					0.0							12
13					0.0							14
15	MAIN BREAKER	60/3	6			0.0						16
17			6									18
CONNECTED LOAD					9.5	KVA	4.3	4.3	0.9	PANEL SPECIFICATIONS		
NEC DEMAND					11	AMPS	15	15	3	MAINS RATING AMPS - 100		
					1.9	KVA				MAIN CIRCUIT BREAKER AMPERES - 60/3 MCB		
					2	AMPS				CAPACITY ONE-POLE CIRCUITS - 18		
										SYSTEM VOLTAGE - 480Y/277		
										PHASE, NO. OF WIRES - 3 PH, 4 W		
										A.I.C. RATING - 18,000		
										MOUNTING - SURFACE		

1 LIGHTING PLAN  
E2.1 SCALE: 1/4" = 1'-0"



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AS-BUILT RECORD DRAWING  
M2C1 CONSTRUCTION & ENGINEERING  
DATE: BY:





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### ATTACHMENT 2

#### **Photographs**

- 1) Foundation Prep Civil
- 2) Foundation Poured
- 3) Airform Attached and Inflating
- 4) Airform Inflated with Airlock
- 5) Polar Work Scaffolding
- 6) Foaming the Dome
- 7) Embedded Rebar Hangers
- 8) Door and Mech Opening Frames
- 9) Foundation Seal & Pipe Penetration
- 10) Back Wall Reinforcing
- 11) Mechanical Openings Reinforcing
- 12) Garage Door Reinforcing
- 13) Shotcrete Placement on Back Wall
- 14) Shotcrete at Mech Openings
- 15) Shotcrete Finished at Mech Openings
- 16) Shotcrete Finished Shell
- 17) Shotcrete Finished Top
- 18) Finished Front Door Opening
- 19) Retaining Wall Footings
- 20) Concrete Truck Access
- 21) Retaining Wall Forming
- 22) Completed Formwork
- 23) Structural Slab Forms
- 24) Structural Slab Poured
- 25) Drive Slab Forming & Rebar
- 26) Driving Slab Rebar
- 27) Drive Slab Poured



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- 28) Upper Slab Poured
- 29) Slab Finishing
- 30) Wall Smoothing
- 31) Interior Framing at Mech Opening
- 32) GWB at Opening
- 33) Exterior Siding at Mech Opening
- 34) Retaining Wall Metal Backing
- 35) Metal Trimout on Retaining Wall
- 36) Handrails & Ladder
- 37) Incinerator on Trailer
- 38) Incinerator in the Building
- 39) Incinerator up on Blocks
- 40) Incinerator Rolling into Place
- 41) Incinerator in Place Ready for Stack
- 42) Setting the Stack
- 43) Stack thru Shell
- 44) Propane Line & Tank
- 45) Water Service Main Connection
- 46) Water Line Insulation
- 47) Exterior Slabs
- 48) Entrance Canopy & Finish



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Photo 1, Foundation Prep Civil



Photo 2, Foundation Poured



Photo 3, Airform Attached & Inflating



Photo 4, Airform Inflated with Airlock



Photo 5, Polar Work Scaffolding



Photo 6, Foaming the Dome



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Photo 7, Embedded Rebar Hangers



Photo 8, Door and Mech Opening Frames



Photo 9, Foundation Seal & Pipe Penetration



Photo 10, Back Wall Reinforcing

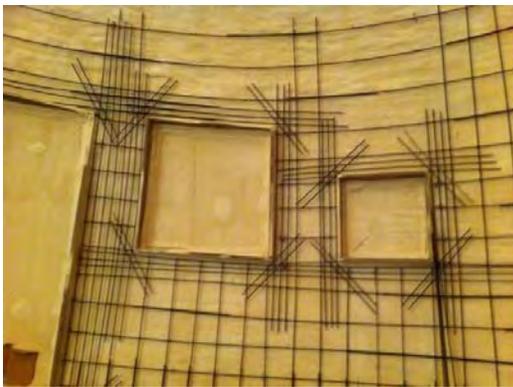


Photo 11, Mechanical Opening Reinforcing



Photo 12, Garage Door Reinforcing



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Photo 13, Shotcrete Placement on Back Wall



Photo 14, Shotcrete at Mech Openings



Photo 15, Shotcrete Finished at Mech Openings



Photo 16, Shotcrete Finished Shell



Photo 17, Shotcrete Finished Top



Photo 18, Finished Front Door Opening



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Photo 19, Retaining Wall Footings



Photo 20, Concrete Truck Access



Photo 21, Retaining Wall Forming



Photo 22, Completed Formwork



Photo 23, Structural Slab Forms



Photo 24, Structural Slab Poured



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Photo 25, Drive Slab Forming & Rebar



Photo 26, Driving Slab Rebar



Photo 27, Drive Slab Poured



Photo 28, Upper Slab Poured



Photo 29, Slab Finishing



Photo 30, Wall Smoothing



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Photo 31, Interior Framing at Mech Opening



Photo 32, GWB at Opening



Photo 33, Exterior Siding at Mech Opening



Photo 34, Retaining Wall Metal Backing



Photo 35, Metal Trimout on Retaining Wall



Photo 36, Handrails & Ladder



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Photo 37, Incinerator on Trailer



Photo 38, Incinerator in the Building



Photo 39, Incinerator up on Blocks



Photo 40, Incinerator Rolling into Place



Photo 41, Incinerator in Place Ready for Stack



Photo 42, Setting the Stack



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Photo 43, Stack thru Shell



Photo 44, Propane Line & Tank



Photo 45, Water Service Main Connection



Photo 46, Water Line Insulation



Photo 47, Exterior Slabs



Photo 48, Entrance Canopy & Finish