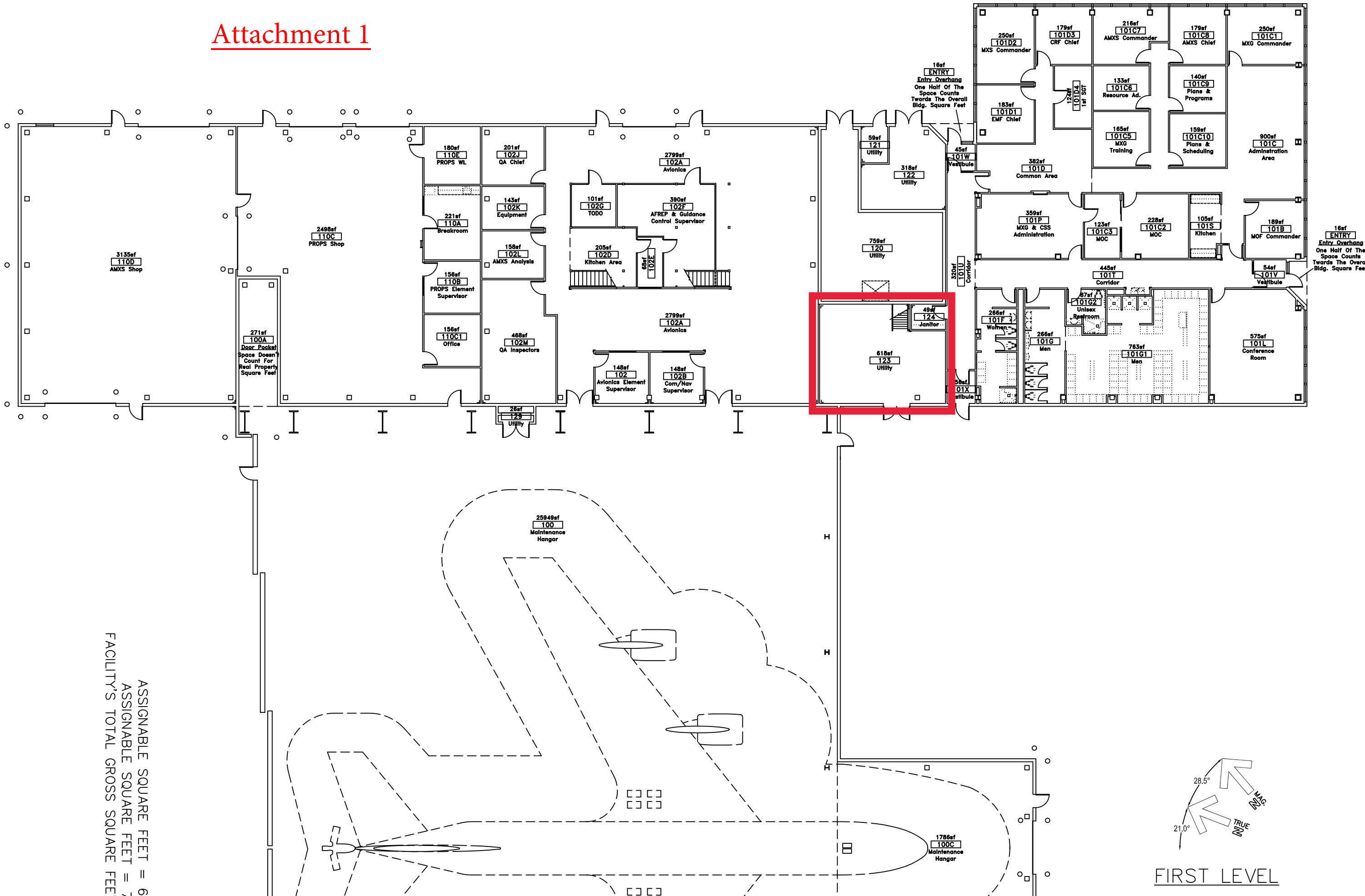
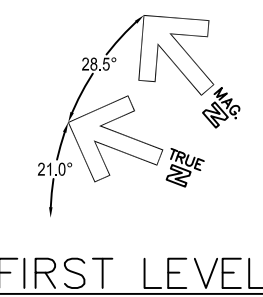


Attachment 1



ASSIGNABLE SQUARE FEET = 6
 ASSIGNABLE SQUARE FEET = 7
 FACILITY'S TOTAL GROSS SQUARE FEET



FIRST LEVEL

REVISIONS		Scale: NTS	Date: 12-9-2014	Drawn: WSL	Check: Capt. A.	Sheet: 1 of 3
<h1 style="margin: 0;">FP01</h1>						
FIRST LEVEL - EAST HALF COMPOSITE MAINTENANCE FACILITY - B1176 Department of the Air Force, Eielson Air Force Base 168 AIR REFUELING WING, ALASKA AIR NATIONAL GUARD						

Attachment 2



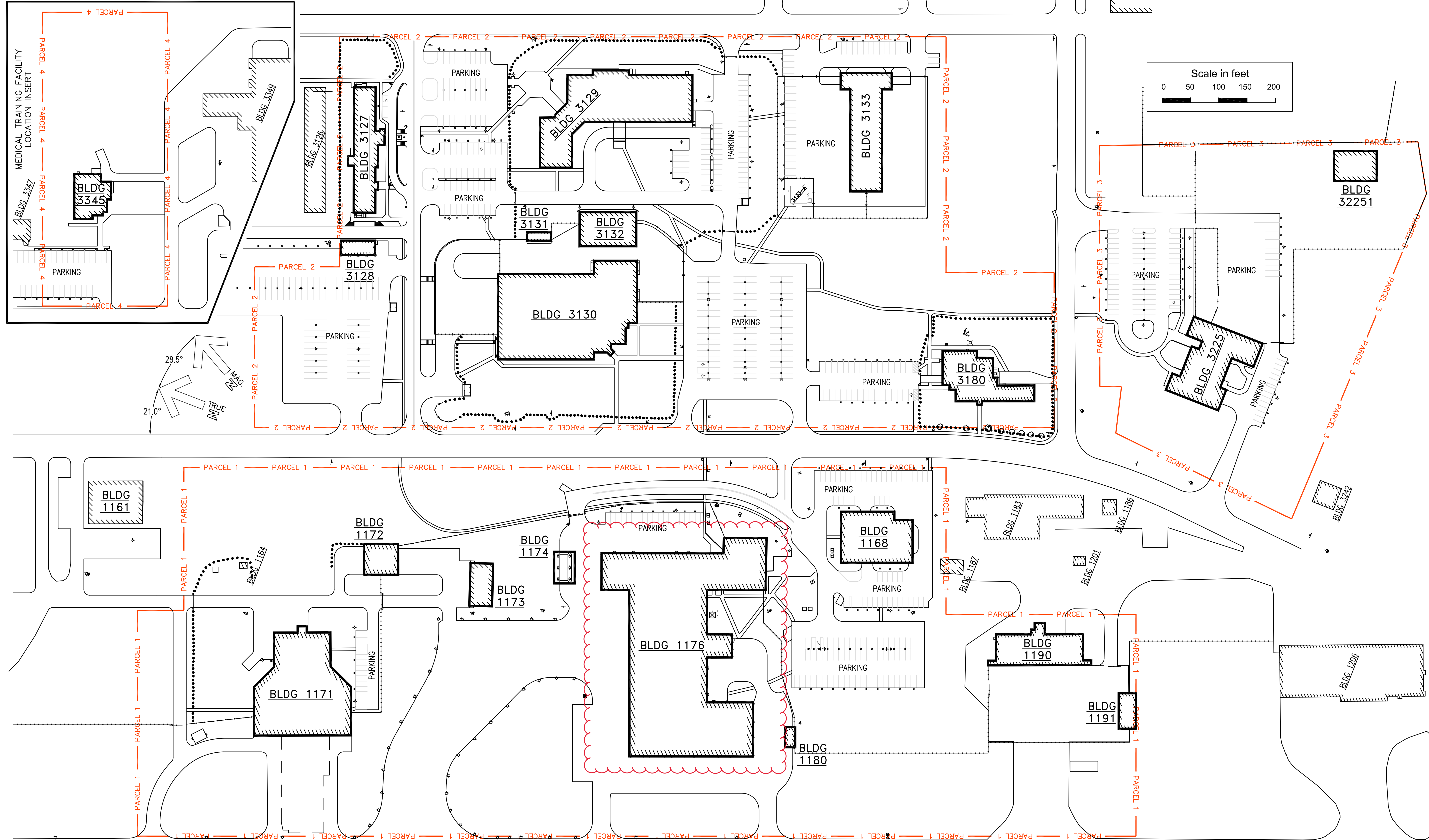
Existing

Facility # Functional Area

- 1161 Survival Equipment (Active Duty)
- 1168 Aircraft Maintenance Shop (ACMS)
- 1171 Fuel Systems Maintenance Hangar (FSMH)
- 1172 Aircraft Grounds Equipment Storage Facility (AGE)
- 1173 Tug & Deicer Warm Storage (TDWS)
- 1174 Refueling Pump Station
- 1176 Composite Maintenance Hangar (CMF)
- 1180 GOX's Covered Storage
- 1190 Nose Dock 5
- 1191 Covered Storage
- 3127 Wing Headquarters (HQ)

Facility # Functional Area

- 3128 Alert Parking Garage
- 3129 Composite Operations Facility
- 3130 Base Supply & Equipment Warehouse (BSEW)
- 3131 Supply Hazardous Storage
- 3132 Supply Cold Storage
- 3133 Vehicle Maintenance Facility (VMF)
- 3134 Security Forces Complex (Joint Use Facility)
- 3180 Communications Facility (COMM)
- 3225 Base Civil Engineering Maintenance Facility (BCMF)
- 32251 CE Coverd Storage Facility
- 3345 Medical Training Facility (MDTH)



REVISIONS		ALASKA AIR NATIONAL GUARD	168th WING PROPERTY ON EIELSON AIR FORCE BASE	Department of the Air Force, Eielson Air Force Base 168th WING, ALASKA AIR NATIONAL GUARD
		Scale: NTS	Date: 1/10/2017	Drawn: WSL
				Check: Moj. Surofy
				Sheet: 1 of 1

ANG

Attachment 3

SCHEDULE OF MATERIAL SUBMITTALS										PROJECT NUMBER :	PROJECT TITLE:	SOLICITATION/CONTRACT NO.:						
										FTQW 25-2004	Repair Fire Pump Controllers and HEF Disposal, B1176							
TO BE COMPLETED BY PROJECT ENGINEER										TO BE COMPLETED BY CONTRACT ADMINISTRATOR								
LINE NUMBER	ITEM OR DESCRIPTION OF ITEM, CONTRACT REFERENCE, TYPE OF SUBMITTAL	NO. OF COPIES REQUIRED							REQUIRED SUBMISSION DATE	DATE RECEIVED IN CONTRACTING	DATE TO CIVIL ENGINEERING	RETURN SUSPENSE DATE	SUBMITTAL NUMBERS	DATE CONTRACTOR NOTIFIED		CONTRACTOR RESUBMITTAL	FINAL APPROVAL	REMARKS
		CERTIFICATION OF COMPLIANCE	SHOP DRAWINGS	SAMPLES	COLOR SELECTION	MANUFACTURER'S RECOMMENDATIONS	MANUFACTURER'S WARRANTY	CATALOG DATA						OPERATING & MAINTENANCE MANUAL	OTHER			
1	B1176 FPC-1 Data	1			1	1	1	1										
2	B1176 FPC-2 Data	1			1	1	1	1										
3	F/A Releasing Panel Data	1			1	1	1	1										
4	Surge Protection Devices Data	1			1	1	1	1										
5	Pipe Material	1			1	1	1											
6	Schedule of Work																	1
7	Safety Plan (including SDSs)																	1
8	Environmental Training Certificates																	1
9	Permits, Licenses, Certificates	1			1													1
10	Waste Management Plan																	1
11	EPA Recycling/Disposal Weight Tickets																	1
12	Hazardous Material and/or Aerosol Can accumulation logs																	1
13	Proofs of Purchase and/or Receipts for items with warranties				1													1
14	Test, Training, Demonstration Data/Plan				1													1
15	Test Report																	1

Alaska Air National Guard
168th Civil Engineer Squadron
Eielson AFB, Alaska 99702

ATTACHMENT 4: ENVIRONMENTAL REQUIREMENTS
Repair Services
FTQW 25-2004 Repair Fire Pump Controllers and HEF Disposal, Building 1176

27 March 2024

1.0 ENVIRONMENTAL REQUIREMENTS

1.1 Tanks and Spills.

Potential for a temporary increased risk to spills program. Rinsing the lines will be deemed a release until sampling can prove the water is clean. Please see the information below for requirements put forth by ADEC for Eielson AFB:

For High Expansion Foam (HEF) fire suppression system testing, the Spills PM must be notified of the testing schedule prior to the tests being performed. Alaska Department of Environmental Conservation (ADEC) must be notified and may ask to be present for the tests. ADEC treats these tests as hazardous substance spills in regard to cleanup and reporting requirements. To comply with these requirements, the Spills PM must be notified of the estimated volumes released and bays or areas involved at the end of each day of testing. This report should occur via the Spill Phone as soon as possible after testing. After appropriate testing of the substance released, an ADEC Treatment, Transport and Disposal form must be submitted to the Spills PM for submission to ADEC.

All POL and hazardous material leaks/spills must be reported to 911. Eielson Fire Dispatch will call the spill line (377-7745). Eielson Environmental will conduct all communication with the Alaska Department of Environmental Conservation and/or US Environmental Protection Agency and others, if required. Discovery of historical contamination must also be reported by calling the spill line.

Follow generic SAP requirements.

1.2 Training.

All contractors performing work on Eielson AFB are required to complete onsite hazardous waste training provided by 354 CES/CEIEC. Contractor training must be completed two weeks prior to field work start date and prior to receiving the Environmental Element signature on the Work Clearance Request (AF Form 103). Please contact 377-4017 to schedule a training for handling hazardous wastes, including aerosol cans management. All costs associated with waste disposal are the responsibility of the contractor. Empty aerosol cans are the only waste accepted at the base Hazardous Waste Facility for disposal. All Hazardous and Universal waste must

be managed in accordance with the requirements for large quantity generators (40 CFR 262.17 and 40 CFR 273, respectively) under the Resource Conservation Recovery Act. Hazardous waste and non-regulated waste manifests must be signed by a designated AF POC prior to shipment off-base. Please coordinate signature through the base Hazardous Waste Facility (377-1668) 10-days prior to planned transport.

- List each type of waste which the Contractor anticipates will be generated and the proposed disposal sites.
- Identify any subcontractors responsible for the transportation and disposal of solid waste. Submit copies of licenses or permits for solid waste disposal sites that are not commercial operating facilities.
- Contractor must submit a list of hazardous materials used for this project prior to commencing work on site. Include SDSs for each material. Submit final report of quantity used at project completion.
- If suspected LBP or PCB impacted surfaces are to be disturbed, testing must occur prior to demolition and renovation. Contact the toxics program manager at 377-4017 with any questions.
- Refer to Safety Data Sheets (SDSs) for proper Personal Protective Equipment (PPE).
- Ensure BMPs are implemented to ensure water, rinsate, and other contaminants do not enter the sanitary sewer through any drains within the building.
- If rinsate and water located in the piping system is not containerized for offsite disposal, and the sanitary sewer is the preferred removal method for the water located within the piping system ONLY, a SAP will be needed to ensure HEF and other contaminants are not present before using the sanitary sewer.

1.3 Air Quality

Impact to Air Quality depends upon whether hydrofluorocarbons (HFCs) are a component of the fire suppression system.

HFCs, like their predecessors Ozone-Depleting Substances, are commonly used in fire suppression. The current list of regulated substances and their exchange values can be found in Appendix A to 40 CFR 84.

As of 1 January 2026:

- It is prohibited to knowingly vent regulated substances in the installation, servicing, repair or disposal of fire suppression equipment.
- Servicing and/or repair of fire suppression equipment must be done with recycled regulated substances.

For additional information regarding the use of HFC based agents in fire suppression systems, refer to 40 CFR 84.110.

1.4 Required Documentation.

- Employee Training Records: contractor Hazardous Waste Training, Environmental Management System (EMS)
- Certificate Of Disposal
- EPA Transport, Treatment, & Disposal Approval Form
- Hazardous Waste Accumulation Log submitted quarterly or at completion if project is shorter than 3 months in duration.

1.41 Closeout Submittals.

- Waste Determination Documentation
- Disposal Documentation for Hazardous and Regulated Waste monthly (weight tickets, invoices, receipts, manifests)
- Hazardous Waste/Debris Management
- Certificate of Disposal and/or Recycling
- EPA Approved Disposal Facility Weight and/or Acceptance Ticket
- EPA Approved Disposal Facility Certificate of Incineration or Disposal
- Hazardous Waste Accumulation Log (Final)
- Final Hazardous Material Inventory Log

27 March 2024

END OF STATEMENT

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Federal, state, and local codes and ordinances take precedence over these specifications and drawings where conflicts occur, unless the drawings or specifications call for more stringent requirements. All work shall be governed by the more stringent provisions of these contract document requirements or the latest published edition or statute-adopted edition. Notify the Contracting Officer or their designated representative and 168 CES in writing of conflicts.

Alaska Department of Conservation (ADEC)

18 AAC 75 Oil and Other Hazardous Substances
Pollution Control

18 AAC 78 Underground Storage Tanks

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)

AHRI Guideline K (2009) Guideline for Containers for
Recovered Non-Flammable Fluorocarbon
Refrigerants

U.S. AIR FORCE (USAF)

AFMAN 32-7002 Environmental Compliance and Pollution
Prevention

U.S. DEFENSE LOGISTICS AGENCY (DLA)

DLA 4145.25 (Jun 2000; Reaffirmed Oct 2010) Storage
and Handling of Liquefied and Gaseous
Compressed Gases and Their Full and Empty
Cylinders
<http://www.aviation.dla.mil/UserWeb/aviationengineering/>

U.S. DEPARTMENT OF DEFENSE (DOD)

DOD 4000.25-1-M (2006) MILSTRIP - Military Standard
Requisitioning and Issue Procedures

MIL-STD-129 (2014; Rev R; Change 1 2018; Change 2
2019) Military Marking for Shipment and
Storage

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846

(Third Edition; Update IV) Test Methods
for Evaluating Solid Waste:
Physical/Chemical Methods

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.1053	Respirable Crystalline Silica
29 CFR 1926.1153	Respirable Crystalline Silica
40 CFR 112	Oil Pollution Prevention
40 CFR 122.26	Storm Water Discharges (Applicable to State NPDES Programs, see section 123.25)
40 CFR 152	Pesticide Registration and Classification Procedures
40 CFR 152 - 186	Pesticide Programs
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261.7	Residues of Hazardous Waste in Empty Containers
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.31	Standards Applicable to Generators of Hazardous Waste-Labeling
40 CFR 262.34	Standards Applicable to Generators of Hazardous Waste-Accumulation Time
40 CFR 262.262	Copies of contingency plan
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste

40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 273	Standards for Universal Waste Management
40 CFR 273.2	Standards for Universal Waste Management - Batteries
40 CFR 273.3	Standards for Universal Waste Management - Pesticides
40 CFR 273.4	Standards for Universal Waste Management - Mercury Containing Equipment
40 CFR 273.5	Standards for Universal Waste Management - Lamps
40 CFR 273.6	Standards for Universal Waste Management - Aerosol cans
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 300.125	National Oil and Hazardous Substances Pollution Contingency Plan - Notification and Communications
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 403	General Pretreatment Regulations for Existing and New Sources of Pollution
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR 60	Standards of Performance for New Stationary Sources
40 CFR 61	National Emission Standards for Hazardous Air Pollutants

40 CFR 63	National Emission Standards for Hazardous Air Pollutants for Source Categories
40 CFR 64	Compliance Assurance Monitoring
40 CFR 82	Protection of Stratospheric Ozone
40 CFR 745	Lead-Based Paint Poisoning Prevention in Certain Residential Structures
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR 107	Hazardous Materials Program Procedures
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 172.101	Hazardous Material Regulation-Purpose and Use of Hazardous Material Table
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 173.301	Shipment of Compressed Gases in Cylinders and Spherical Pressure Vessels
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Class I and II Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act. A list of Class I ODS can be found on the EPA website at the following weblink.
<https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>.

Class II ODS is defined in Section 602(s) of The Clean Air Act. A list of Class II ODS can be found on the EPA website at the following weblink.
<https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>.

1.2.2 Contractor Generated Hazardous Waste

Contractor generated hazardous waste is materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work but are not fully consumed during construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene), waste thinners, excess paints, excess solvents, waste solvents, excess pesticides, and contaminated pesticide equipment rinse water.

1.2.3 Electronics Waste

Electronics waste is discarded electronic devices intended for salvage, recycling, or disposal.

1.2.4 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally or historically.

1.2.5 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.6 Hazardous Debris

As defined in paragraph SOLID WASTE, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) in accordance with 40 CFR 261. Hazardous debris also includes debris that exhibits a characteristic of hazardous waste in accordance with 40 CFR 261.

1.2.7 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that: Is regulated as a hazardous material in accordance with 49 CFR 173; or requires a Safety Data Sheet (SDS) in accordance with 29 CFR 1910.120; or during end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D. Designation of a material by this definition, when separately regulated or controlled by other sections or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this section for "control" purposes. Such material includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs).

1.2.8 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibit a hazardous characteristic (ignitability, corrosivity,

reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or contains a listed hazardous waste as identified in 40 CFR 261, Subpart D.

1.2.9 Lamps

Lamp is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.

1.2.10 Land Application

Land Application means spreading or spraying discharge water at a rate that allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" must occur. Comply with federal, state, and local laws and regulations.

1.2.11 National Pollutant Discharge Elimination System (NPDES)

The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The State of Alaska has been granted primacy for implementing NPDES, which is referred to as the Alaska Pollutant Discharge Elimination System (APDES).

1.2.12 Oily Waste

Oily waste are those materials that are, or were, mixed with Petroleum, Oils, and Lubricants (POLs) and have become separated from that POLs. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, POLs and may be appropriately tested and discarded in a manner which is in compliance with other state and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay (**which is prohibited for cleanup use on Eielson AFB**), and organic sorbent material. These materials may be land filled provided that: It is not prohibited in other state regulations or local ordinances; the amount generated is "de minimus" (a small amount); it is the result of minor leaks or spills resulting from normal process operations; and free-flowing oil has been removed to the practicable extent possible. Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, perform a hazardous waste determination prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.2.13 Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) as used in this specification shall mean the same as PCBs, PCB Article, PCB Article Container, PCB Container, PCB Equipment, PCB Item, PCB Transformer, PCB-Contaminated Electrical Equipment, as defined in 40 CFR 761, Section 3, Definitions

1.2.14 Regulated Waste

Regulated waste are solid wastes that have specific additional federal, state, or local controls for handling, storage, or disposal.

1.2.15 Sediment

Sediment is soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.16 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at construction sites may include:

1.2.16.1 Co-mingle

The practice of placing unrelated materials together in a single container, usually for benefits of convenience and speed.

1.2.16.2 Construction Waste

Waste generated by construction activities, such as scrap materials, damaged or spoiled materials, temporary and expendable construction materials, and other waste generated by the workforce during construction activities.

1.2.16.3 Debris

Debris is non-hazardous solid material generated during the construction, demolition, or renovation of a structure that exceeds 60 mm 2.5-inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (for example, cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may/may not be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.2.16.4 Disposal

Depositing waste in a solid waste disposal facility, usually a managed landfill, regulated in the US under the Resource Conservation and Recovery Act (RCRA).

1.2.16.5 Diversion

The practice of diverting waste from disposal in a landfill, by means of eliminating or minimizing waste, or reuse of materials.

1.2.16.6 Final Construction Waste Diversion Report

A written assertion by a material recovery facility operator identifying constituent materials diverted from disposal, usually including summary tabulations of materials, weight in short-ton.

1.2.16.7 Green Waste

Green waste is the vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.

1.2.16.8 Material not regulated as solid waste

Material not regulated as solid waste is nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

1.2.16.9 Non-Hazardous Waste

Non-hazardous waste is waste that is excluded from, or does not meet, hazardous waste criteria in accordance with 40 CFR 263.

1.2.16.10 Recyclables

Recyclables are materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable such as wiring, insulated/non-insulated copperwire cable, wire rope, and structural components. It also includes commercial-grade refrigeration equipment with Freon removed, household appliances where the basic material content is metal, clean polyethylene terephthalate bottles, cooking oil, used fuel oil, textiles, high-grade paper products and corrugated cardboard, stackable pallets in good condition, clean crating material, and clean rubber/vehicle tires. Metal meeting the definition of lead contaminated or lead based paint contaminated may or may not be included as recyclable if sold to a scrap metal company. Paint cans that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

1.2.16.11 Reuse

The use of a product or materials again for the same purpose, in its original form or with little enhancement or change.

1.2.16.12 Salvage

Usable, salable items derived from buildings undergoing demolition or deconstruction, parts from vehicles, machinery, other equipment, or other components.

1.2.16.13 Surplus Soil

Surplus soil is existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars, and paving. Contaminated soil meeting the definition

of hazardous material or hazardous waste is not included and must be managed in accordance with paragraph HAZARDOUS MATERIAL MANAGEMENT.

1.2.16.14 Scrap Metal

This includes scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe, and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.

1.2.16.15 Wood

Wood is dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included. Treated wood includes, but is not limited to, lumber, utility poles, crossties, and other wood products with chemical treatment.

1.2.17 Surface Discharge

Surface discharge means discharge of water into drainage ditches, storm sewers, creeks or "waters of the United States". Surface discharges are discrete, identifiable sources and require a permit from the governing agency. Comply with federal, state, and local laws and regulations.

1.2.18 Wastewater

Wastewater is the used water and solids from a community that flow to a treatment plant.

1.2.18.1 Stormwater

Stormwater is any precipitation in an urban or suburban area that does not evaporate or soak into the ground, but instead collects and flows into storm drains, rivers, and streams.

1.2.19 Waters of the United States

Waters of the United States means federally jurisdictional waters, including wetlands, that are subject to regulation under Section 404 of the Clean Water Act or navigable waters, as defined under the Rivers and Harbors Act.

1.2.20 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

1.2.21 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (for example, thermostats), aerosol cans for recycling, and lamps (for example, fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste

(MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval, or information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook. Submit the following:

SD-01 Preconstruction Submittals

- Environmental Protection Plan; G
- Employee Training Records; G
- Environmental Manager Qualifications; G
- Wastewater Management Plan; G
- Initial Hazardous Material Inventory Log; G
- Initial Hazardous Waste Accumulation Log; G

SD-06 Test Reports

- Laboratory Analysis; G
- Inspection Reports; G
- Solid Waste Management Report; G
- Laboratory Test Reports; G

SD-07 Certificates

- Employee Training Records; G
- Certificate Of Disposal; G
- ADEC Transport, Treatment, & Disposal Approval Form; G
- Hazardous Waste Accumulation Log submitted quarterly; G

SD-11 Closeout Submittals

- Waste Determination Documentation; G
- Disposal Documentation for Hazardous and Regulated Waste monthly (weight tickets, invoices, receipts, manifests); G
- Assembled Employee Training Records; G
- Solid Waste Management Report; G

Hazardous Waste/Debris Management; G

Regulatory Notifications; G

Sales Documentation; G

Certificate of Disposal and/or Recycling; G

ADEC Approved Disposal Facility Weight and/or Acceptance Ticket; G

ADEC Approved Disposal Facility Certificate of Incineration or Disposal; G

Hazardous Waste Accumulation Log (Final); G

Final Hazardous Material Inventory Log; G

1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this Contract. Comply with federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution. Comply with any applicable Eielson AFB instructions, plans, and permits. If requirements differ between any of the regulatory agencies, the most stringent requirement applies.

Tests and procedures assessing whether construction operations comply with Applicable Environmental Laws may be required. Analytical work must be performed by qualified laboratories; and where required by law, the laboratories must be certified.

1.4.1 Conformance with the Environmental Management System

Perform work under this contract consistent with the policy and objectives identified in the installation's Environmental Management System (EMS). Perform work in a manner that conforms to objectives and targets of the environmental programs and operational controls identified by the EMS. Support Government personnel when environmental compliance and EMS audits are conducted by escorting auditors at the Project site, answering questions, and providing proof of records being maintained. Provide monitoring and measurement information as necessary to address environmental performance relative to environmental, energy, and transportation management goals. In the event an EMS nonconformance or environmental noncompliance associated with the contracted services, tasks, or actions occurs, take corrective and preventative actions. In addition, employees must be aware of their roles and responsibilities under the installation EMS and of how these EMS roles and responsibilities affect work performed under the contract.

Coordinate with the installation's EMS Program Manager to identify training needs associated with environmental aspects and the EMS and arrange training or take other action to meet these needs. All contractors working on the installation are required to take the EMS General Awareness Training (course EMS100AFIT00004) offered on TEACH (approx. 7 min duration). Training can be accessed on-line at the following website: <https://usaf.learningbuilder.com>. Training Certificates will be required as a submittal and must be provided prior to receiving the Environmental Element signature on the AF Form 103, Work Clearance Request. Provide training documentation to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE. The Installation Environmental Office will retain associated environmental compliance

records. Make EMS Awareness training completion certificates available to Government auditors during EMS audits and include the certificates in the Employee Training Records. See paragraph EMPLOYEE TRAINING RECORDS.

1.5 SPECIAL ENVIRONMENTAL REQUIREMENTS

Comply with the special environmental requirements listed here and attached at the end of this section.

1.5.1 Work At Sites With Land Use Controls In Place

All work must comply with 354 FWI 32-7006, Land Use Controls (LUCs), the installation Land Use Control Implementation Plan (LUCIP), and the IC/LUC Settlement Agreement (April 16, 2013). LUC info will be provided upon request through the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE to the AFCEC Installation Restoration Program Office (AFCEC/CZOP) located in the Installation Environmental Office.

Provide updated information on the status of the project within five business days upon the AFCEC Environmental Restoration Program's request for monthly regulatory meetings. Work with USAF, ADEC, and/or EPA to prepare project documents during major milestone design meetings (e.g. 35%, 60%, 90%, etc.). No soil disturbing activities may commence without an approved SAP. Soil disturbance excludes the following (unless impacting a landfill site):

- (a) Mechanically hammering in items (e.g. sign posts, pilings, etc.)
- (b) Vibrating knife installation of communication cable
- (c) Removal of items without excavation (e.g. pipes)
- (d) Activities already approved in writing by EPA and/or ADEC

1.5.2 Sites With Known or Suspected Contamination

An approved Work Plan is required prior to excavation at sites with known or suspected contamination, including areas within 200-ft buffer zone.

1.5.3 Base Wide General Sampling and Analysis Plan

The Base Wide Sampling and Analysis Plan may be used for projects located outside of the PFAS plume boundaries at Eielson AFB or for small, minimally ground disturbing activities (such as concrete pads, parking lots, and

re-leveling surfaces) that will not excavate deeper than two feet in areas within the plume boundaries. Contact the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE and the Installation Restoration Program Office (AFCEC/CZOP) to determine if the project is within the PFAS plume. If a site falls under the SAP, comply with all terms of the SAP for field screening, sampling, stockpiling, and reporting. A copy of the Base Wide SAP is available from the Installation Restoration Program Office (AFCEC/CZOP) located in the Installation Environmental Office.

1.6 QUALITY ASSURANCE

1.6.1 Preconstruction Survey and Protection of Features

Prior to start of any onsite construction activities, perform a Preconstruction Survey of the project site with the Contracting Officer or their designated representative and 168 CES, and take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record. Include in the report a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. The Contractor and the Contracting Officer or their designated representative and 168 CES, will sign this survey report upon mutual agreement regarding its accuracy and completeness. Protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference that their preservation may cause to the work under the Contract.

1.6.2 Regulatory Notifications

Provide regulatory notification requirements in accordance with federal, state and local regulations. In cases where the Government will also provide public notification (such as stormwater permitting), coordinate with the Contracting Officer or their designated representative and 168 CES. Submit copies of regulatory notifications to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE at least 30 days prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all-inclusive): demolition, renovation, NPDES defined site work, construction, removal, installation, or use of a permitted air emissions source, Land Disposal Restriction Notice for lead-acid batteries, and remediation of controlled substances (asbestos, hazardous waste, lead paint).

1.6.3 Environmental Brief

An initial environmental assessment is accomplished for each project through the Air Force 813 tool. Abide by all requirements provided by program managers in the AF 813 in addition to this instruction. Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the installation; types and quantities of wastes/wastewater that may be generated during the Contract; and emission and use information for any new air emission units. Discuss the results of the Preconstruction Survey at this time. The information can be provided to the Installation Environmental Office through the submittal review, comment, and revision process. Contact your Contracting Officer or their designated representative to

request an in-person brief.

Prior to initiating any work on site, meet with the Contracting Officer or their designated representative, 168 CES and Installation Environmental Office to discuss the proposed Environmental Protection Plan (EPP). This can be accomplished by the Environmental Office's review and comments on the EPP. Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural and cultural resources, required reports, required permits, permit requirements (such as mitigation measures), and other measures to be taken.

1.6.4 Environmental Manager

Appoint in writing an Environmental Manager for the project site. The Environmental Manager is directly responsible for coordinating contractor compliance with federal, state, local, and installation requirements. The Environmental Manager must ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal); implement the EPP; ensure environmental training records required by all programs are obtained and up to date, ensure environmental permits are obtained, maintained, and closed out; ensure compliance with Stormwater Program requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers). This can be a collateral position; however, the person in this position must be trained to adequately accomplish the following duties: ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite and Central Accumulation Areas; ensure only authorized personnel add wastes to containers; ensure Contractor personnel are trained in state, federal, local, USAF, and Eielson AFB requirements in accordance with their position requirements; coordinate removal of waste containers; and maintain the Environmental Records binder and required documentation, including environmental permits compliance and close-out. Submit Environmental Manager Qualifications to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE.

1.6.5 Employee Training Records

Prepare and maintain Employee Training Records throughout the term of the contract meeting applicable 40 CFR requirements. Provide Employee Training Records in the Environmental Records Binder. Ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with federal, state and local regulatory requirements for RCRA Large Quantity Generator. Provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description will include training requirements as defined in 40 CFR 262 for a Large Quantity Generator facility. Submit these Assembled Employee Training Records to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE at the conclusion of the project, unless otherwise directed.

Train personnel to meet federal, state, USAF, and Eielson AFB requirements. Conduct environmental protection/pollution control meetings for personnel prior to commencing construction activities. Contact additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and

continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, waters of the United States, and endangered species and their habitat that are known to be in the area. Provide copy of the Erosion and Sediment Control Lead Certification as required by the State of Alaska.

1.7 ENVIRONMENTAL PROTECTION PLAN (EPP)

The purpose of the EPP is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Incorporate construction related objectives and targets from the installation's EMS into the EPP. Include in the EPP measures for protecting natural and cultural resources, required reports, and other measures to be taken. Meet with the Contracting Officer or their designated representative and 168 CES, to discuss the EPP and develop a mutual understanding relative to the details for environmental protection including measures for protecting natural resources, required reports, and other measures to be taken. Submit the EPP within 30 days after notice to proceed and at least two weeks prior to commencing construction activities or delivery of materials to the site.

Submit an EPP for review and approval by the Contracting Officer or their designated representative, 168 CES, and 354 CES/CEIE. Revise the EPP throughout the project to include any reporting requirements, changes in site conditions, or contract modifications that change the project scope of work in a way that could have an environmental impact. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations. During Construction, identify, implement, and submit for approval any additional requirements to be included in the EPP. Maintain the current version onsite.

The EPP includes, but is not limited to, the following elements:

1.7.1 General Overview and Purpose

1.7.1.1 Descriptions

A brief description of each specific plan required by environmental permit or elsewhere in this Contract such as stormwater pollution prevention plan, spill control plan, solid waste management plan, wastewater management plan, air pollution control plan, contaminant prevention plan, a historical, archaeological, cultural resources, biological resources and wetlands plan, traffic control plan Hazardous, Toxic and Radioactive Waste (HTRW) Plan, Non-Hazardous Solid Waste Disposal Plan, and borrowing material plan. This brief description does not replace the required plan but acts as a summary of methods and recognition of the plan's target area compiled into one place, the EPP.

1.7.1.2 Duties

The duties and level of authority assigned to the person(s) on the job site who oversee environmental compliance, such as who is responsible for adherence to the EPP, who is responsible for spill cleanup and training personnel on spill response procedures, who is responsible for manifesting hazardous waste to be removed from the site (if applicable), and who is responsible for training the Contractor's environmental protection personnel.

1.7.1.3 Procedures

A copy of any standard or project-specific operating procedures that will

be used to effectively manage and protect the environment on the project site.

1.7.1.4 Communications

Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

1.7.1.5 Contact Information

Emergency contact information contact information (office phone number, cell phone number, and e-mail address).

1.7.2 General Site Information

1.7.2.1 Documentation

A letter signed by Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE of the firm appointing the Environmental Manager and stating that person is responsible for managing and implementing the Environmental Program as described in this contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work.

1.7.3 Stormwater Management and Control

a. Wastewater Management Plan (Other than Stormwater)

- (1) If dewatering uncontaminated water, submit Dewatering Plan to the Contracting Officer or their designated representative, 168 CE and Eielson Environmental 354 CES/CEIE Water Quality Program Manager for approval prior to submission to ADEC.
- (2) Identify methods for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of groundwater, disinfection water, hydrostatic test water, and water used in flushing of lines.
- (3) If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants.
- (4) If disposal is to a sanitary sewer, the plan shall include documentation that the Water Systems Superintendent has approved the flow rate, volume, and type of discharge.
- (5) If there will be dewatering, surface discharge, or discharge from a container that meet the state requirements for a permit, obtain the required permitting. If no permit is required for these actions, clarify that within the plan. Permit applications must be submitted and approved by the 354 CES/CEIE prior to submittal to the state. Include a copy of each permit in the plan.
- (6) If land application will be the method of disposal for the wastewater, the plan shall include a sketch showing the location for land application along with a description of the pretreatment

methods to be implemented and erosion mitigation.

1.7.4 Non-Hazardous Solid Waste Disposal Plan

Include the following in the EPP as part of a Non-Hazardous Solid Waste Disposal Plan:

- a. List each type of waste which the Contractor anticipates will be generated and the proposed disposal sites.
- b. Identify any subcontractors responsible for the transportation and disposal of solid waste. Submit copies of licenses or permits for solid waste disposal sites that are not commercial operating facilities.

1.7.5 Construction Waste Management Plan

Submit Construction Waste Management Plan within 30 calendar days after notice to proceed. Revise and resubmit Construction Waste Management Plan until it receives final approval from the Contracting Officer or their designated representative, 168 CES, and 354 CEIE, in order for construction to begin.

An approved construction waste management plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations or meeting project cumulative waste diversion requirement. Ensure all subcontractors receive a copy of the approved Construction Waste Management Plan. The plan demonstrates how to meet the project waste diversion requirement. Also, include the following in the plan:

- a. Identify the names of individuals responsible for waste management and waste management tracking, along with roles and responsibilities on the project.
- b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.
- c. Description of the regular meetings to be held to address waste management.
- d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas on site and equipment to be used for processing, sorting, and temporary storage of materials.
- e. Name of landfill and/or incinerator to be used.
- f. Identification of local and regional re-use programs, including non-profit organizations such as schools, local housing agencies, and organization that accept used materials such as material exchange networks and resale stores. Include the name, location, phone number for each re-use facility identified, and provide a copy of the permit or license for each facility.
- g. List of specific materials, by type and quantity that will be salvaged

for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Identify the recycling facilities by name, address, and phone number.

h. Identification of materials that cannot be recycled or reused with an explanation or justification, to be approved by the Contracting Officer or their designated representative, 168 CES, and 354 CEIE.

i. Description of the means by which any materials identified in item (g) above will be protected from contamination.

j. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).

k. Copy of training plan for subcontractors and other services to prevent contamination by co-mingling materials identified for diversion and waste materials.

l. Identification of at least 5 construction or demolition material streams for diversion.

m. Facilities or subcontractors offering construction waste transport on-site or off-site must ensure that proper shipping orders, bill of lading, manifests, or other shipping documents containing waste diversion information meet requirements of 40 CFR 273 Universal Waste Management, 49 CFR 173 Shippers - General Requirements for Shipments and Packagings, and 49 CFR 178 Specifications for Packaging. Individuals signing manifests or other shipping documents should meet the minimum training requirements.

n. List each supplier who deliver construction materials, in bulk, or package products in returnable containers or returnable packaging, or have take-back programs. List each program and the applicable material to actively monitor and track to assist in meeting waste diversion requirements on the project.

o. Identify any local jurisdiction requirements for waste management. Include those requirements, points of contact, etc.

Distribute copies of the approved waste management plan to each subcontractor, Quality Control Manager Environmental Manager, and the Contracting Officer or their designated representative, 168 CES, and 354 CEIE.

1.7.6 Protection of the Environment from Waste Derived from Contractor Operations

Control and disposal of solid and sanitary waste. Control and disposal of hazardous waste.

Hazardous Waste Plan (keep a copy of approved plan on site at all times):

This item consists of the management procedures for hazardous waste to be generated. The elements of those procedures will coincide with the Installation Hazardous Waste Management Plan. The Contracting Officer or their designated representative and/or 168 CES, will provide a copy of the Installation Hazardous Waste Management Plan. As a minimum, include the following:

- a. List of the types and amounts of hazardous wastes expected to be generated, submit this in an Initial Hazardous Waste Accumulation Log.
- b. Procedures to ensure a written waste determination is made for appropriate wastes that are to be generated
- c. Sampling/analysis plan, including laboratory method(s) that will be used for waste determinations and copies of relevant laboratory certifications
- d. Methods and proposed locations for hazardous waste accumulation/storage (that is, in tanks or containers)
- e. Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted and required permits are obtained)
- f. Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268)
- g. Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar
- h. Used oil management procedures in accordance with 40 CFR 279; Hazardous waste minimization procedures
- i. Plans for the disposal of hazardous waste by permitted facilities; and Procedures to be employed to ensure required employee training records are maintained.
- j. Maintain a Contingency Plan/Quick Reference Guide in accordance with 40 CFR 262.262
- k. Hazardous waste training records and documentation of a hazardous waste training plan
- l. Identify removal or installation of electrical equipment containing oil, including any analysis required to identify PCB contamination
- m. Contaminant prevention procedures that identify potentially hazardous substances to be used on the job site, intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials

1.7.7 Polychlorinated Biphenyl Removal and Disposal Plan

PCBs are commonly found in transformer oil, ballasts, some paints, and caulking. If PCBs are being removed and/or disposed of in this project, the PCB Removal and Disposal Work Plan may be incorporated into the EPP.

1.7.8 Prevention of Releases to the Environment

The EPP shall include procedures to prevent releases to the environment, spill response procedures, cleanup supplies onsite, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The plan shall include as a minimum:

- a. Contaminant prevention procedures that identify potentially hazardous substances to be used on the job site, intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials.
- b. The name and contact information of the individual who shall report any spills or hazardous substance releases. This individual shall immediately call 911 and ask for Eielson Air Force Base Fire Dispatch. The spill phone is manned 24 hours a day. The plan shall contain a list of the required reporting channels and telephone numbers
- c. The name and qualifications of the individual who shall be responsible for implementing and supervising the containment and cleanup.
- d. Location of temporary fueling facilities and associated spill control measures. Secondary containment provisions shall be required for any container or group of containers co-located holding 55 gallons or more of petroleum products or hazardous materials.

1.7.9 Regulatory Notification and Permits

List what notifications and permit applications must be made. Some permits require up to 180 days to obtain. Demonstrate that those permits have been obtained or applied for by including copies of applicable environmental permits. The EPP will not be approved until the permits have been obtained.

1.7.10 Clean Air Act Compliance

1.7.10.1 Pollution Generating Equipment

Identify air pollution generating equipment or processes that may require federal, state, or local permits under the Clean Air Act. Determine requirements based on any current installation permits and the impacts of the project. Provide a list of all fixed mobile equipment, machinery and operations that could generate air emissions during the project to the 168 BCE and Environmental Manager. The Contractor shall track the time onsite for all mobile sources and provide it to the Air Program Manager upon request.

1.7.10.2 Stationary Internal Combustion Engines

Identify portable and stationary internal combustion engines that will be supplied, used or serviced. Comply with 40 CFR 60 Subpart IIII, 40 CFR 60 Subpart JJJJ, 40 CFR 63 Subpart ZZZZ, and local regulations as applicable. At minimum, include the make, model, serial number, manufacture date, size (engine brake horsepower), and EPA emission certification status of each engine in the Product Data. Maintain applicable records and log hours of operation and fuel use. Logs must include reasons for operation and delineate between emergency and non-emergency operation.

1.7.10.3 Refrigerants

Identify management practices to ensure that heating, ventilation, and air conditioning (HVAC) work involving refrigerants complies with 40 CFR 82 requirements. Technicians must be certified, maintain copies of certification on site, use certified equipment and log work that requires the addition or removal of refrigerant. Any refrigerant reclaimed is the property of the Government, coordinate with the Installation Environmental Office to determine the appropriate turn in location.

1.7.10.4 Air Pollution-engineering Processes

Identify planned air pollution-generating processes and management control measures (including, but not limited to, spray painting, abrasive blasting, demolition, material handling, fugitive dust, and fugitive emissions). Log hours of operations and track quantities of materials used.

1.7.10.5 Compliant Materials

Provide the Government a list of and SDSs for all hazardous materials proposed for use on site. Materials must be compliant with all Clean Air Act regulations for emissions including solvent and volatile organic compound contents, and applicable National Emission Standards for Hazardous Air Pollutants requirements. The Government may alter or limit use of specific materials as needed to meet installation permit requirements for emissions.

1.8 LICENSES AND PERMITS

Obtain licenses and permits required for the construction of the project and in accordance with FAR 52.236-7 Permits and Responsibilities. Notify the Government of all general use permitted equipment the Contractor plans to use on site. This paragraph supplements the Contractor's responsibility under FAR 52.236-7 Permits and Responsibilities.

1.9 ENVIRONMENTAL RECORDS BINDER

Maintain on-site a separate three-ring Environmental Records Binder and submit at the completion of the project. Make separate parts within the binder that correspond to each submittal listed under paragraph CLOSEOUT SUBMITTALS in this section.

1.10 SOLID WASTE MANAGEMENT PERMIT

Provide written notification of the quantity of anticipated solid waste or debris that is anticipated or estimated to be generated by construction. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance from the receiving location or as applicable; submit one copy of the receiving location state and local Solid Waste Management Permit or license showing such agency's approval of the disposal plan before transporting wastes off Government property.

1.10.1 Solid Waste Management Report

Monthly, submit a solid waste disposal report to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE. For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving

the solid waste.

1.10.2 Solid Waste Documentation

Maintain records to document the types and quantities of waste generated and diverted through re-use, recycling and/or sale to third parties; through disposal to a landfill or incinerator facility. Provide explanations for any materials not recycled, reused or sold. Collect and retain manifests, weight tickets, sales receipts, and invoices specifically identifying diverted project waste materials or disposed materials.

Maintain a running record of materials generated and diverted from landfill disposal, including accumulated diversion rates for the project. Make records available to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE during construction or incidental demolition activities. Provide a copy of the diversion records to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE upon completion of the construction, incidental demolitions or minor deconstruction activities.

1.11 CONSTRUCTION WASTE (INCLUDES DEMOLITION DEBRIS/WASTE)

Divert a minimum of 60 percent by weight of the project construction waste and demolition debris/waste from the landfill. Follow applicable industry standards in the management of waste. Apply sound environmental principles in the management of waste. Practice efficient waste management when sizing, cutting, and installing products and materials and use all reasonable means to divert construction waste and demolition debris/waste from landfills and incinerators and to facilitate the recycling or reuse of excess construction materials.

1.11.1 Construction Waste Management

Implement a construction waste management program for the project. Take a pro-active, responsible role in the management of construction waste, recycling process, disposal of demolition debris/waste, and require all subcontractors, vendors, and suppliers to participate in the construction waste management program. Establish a process for clear tracking, and documentation of construction waste and demolition debris/waste.

All construction waste disposal will abide by the stricter of the federal, state, local, or Installation policies, and at the very least comply with the following:

- a. All general construction wastes, other than those specifically allowed, or required to be disposed of on-base shall be legally disposed at an off-base sanitary landfill. Maintain weight ticket receipts for submission to Eielson Solids Waste Manager. Handling and disposal of hazardous materials and hazardous wastes is described later in this Section.
- b. Review the types of waste, quantities, and disposal methods. If hazardous waste is generated due to the project scope (i.e., disposal of LBP chips), the contractor shall dispose of this material in accordance with the Control and Management of Hazardous Waste paragraph in this Section. Waste shall be properly disposed of off base unless disposal on base is specifically allowed by the contract.
- c. Asbestos Waste shall be disposed of in accordance with 40 CFR 763, Section 3.10. Copies of the waste manifest signed by the receiving

landfill shall be provided to the Contracting Office or their designated representative, 168 CES, 354 Solid Waste Program Manager, Air Program Manager, and Insulation Shop.

1.12 SUSTAINABLE PROCUREMENT PROGRAM

The contractor is encouraged to recycle materials that would otherwise be discarded as waste. Items that can be recycled in this community are asphalt, metals (including, but not limited to aluminum, copper, tin, and steel), antifreeze, batteries, paper/cardboard, #1 and #2 plastics, and used oil. This list is not all inclusive. The purpose of the SPP is to enhance and sustain mission readiness through cost effective acquisition that achieves compliance and sound management of the AF's financial, natural, and energy resources. Through the P2 methodology outlined below, all AF organizations making purchases or product specifications for purchases will use the SPP as a routine part of day-to-day purchasing activities to reduce resource consumption and solid and HW generation. These standards apply to all new construction, demolition, rehabilitation, alteration, modification, repair, and maintenance of existing facilities.

1.13 FACILITY HAZARDOUS WASTE GENERATOR STATUS

Eielson AFB is designated as a Large Quantity Generator. Meet the regulatory requirements of this generator designation for any work conducted within the boundaries of this Installation. Comply with provisions of federal, state, and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of construction derived wastes.

1.14 HAZARDOUS WASTES

All hazardous wastes as defined in 40 CFR 261 shall be collected and disposed of in accordance with 40 CFR 260 through 40 CFR 268, AFMAN 32-7002, and the Installation's Hazardous Waste Management Plan. This includes disposal of any radioactive material, which disposal is coordinated through the Installation's Radioactive Safety Office, Contracting Officer or their designated representative, 168 CES, and 354 CEIE.

Properly store, mark, label, secure, and transport hazardous wastes. All hazardous wastes shall be collected in contractor furnished Department of Transportation (DOT) / United Nations (UN) approved containers. Do not store hazardous waste on base for more than 90 days, secondary containment is required for storage of 55 gallons or more liquid. Contractor employees shall be properly trained (with training documentation) in these disposal procedures.

Maintain a Hazardous Waste Accumulation Log (See example located at the end of this Section) at the work site submitted quarterly to the Hazardous Waste Program Manager along with a final copy once project activities have ended. Ensure containers are labeled with the start date when the hazardous waste was first put in the containers and are updated when adding waste to the container. Container shall remain closed when not in use. The start date begins when the initial deposit of hazardous waste is placed in the container. Maintain all records regarding hazardous waste on site for reference by regulatory agency inspections.

Records must show documented hazardous waste training, waste manifests, and waste accumulation/container logs.

1.14.1 Hazardous Waste Training

Hazardous Waste Training is required for all contractors who will be performing work on Eielson AFB and handling wastes. At a minimum, the prime Contractor's site superintendent and an alternate are required to receive the Installation's Hazardous Waste Training. Employees specifically assigned to manage the handling of hazardous wastes shall receive training as well. Training shall be completed prior to beginning any waste generating activities. Training is offered on a regular basis in the 354th CES Headquarters Building (Bldg 2258). Coordinate with the Hazardous Waste Program Manager to attend training prior to the start of field work. Classroom training generally lasts 90 minutes. The 354 Environmental Office will not sign AF Form 103, Work Clearance Request, if personnel have not attended the Hazardous Waste Training.

Employees transporting hazardous materials, including hazardous waste, or preparing hazardous materials for transportation, including samples, must be trained, tested, and certified in accordance with 49 CFR 172, Subpart H, including security awareness and any applicable security plans. Hazardous material employees must also be trained in accordance with IATA DGR when shipping hazardous materials by air. Employees must be trained, tested, and certified in accordance with 49 CFR 172, Subpart H to determine that shipments do not constitute DOT regulated hazardous materials.

1.14.2 Hazardous Waste Disposal

Comply with Federal, state, and local laws and regulations which are applicable. These requirements are amended frequently and compliance with amendments is required as they become effective. Provide Laboratory Test Reports (soil tests, waste TCLP, lead tests, ACM sample tests, etc.) and/or SDSs with waste for disposal. Only aerosol cans may be disposed of on base. Aerosol cans may be dropped off at the Hazardous Waste Facility (Bldg 4388) on Wednesdays between 0800 and 1100. All other wastes must be disposed of off base.

Prior to transporting hazardous waste off base, all hazardous and non-hazardous waste manifests must be signed by a designated Eielson POC in accordance with Eielson's current Waste Manifest Delegation of Authority Letter. Contact the Hazardous Waste Facility at 377-1668 for signature 14 days prior to shipment of manifested wastes. Copies of all manifests must be provided to 168 BCE, 354 CES/CEOIC, and Hazardous Waste Facility Manager. Notify the Contracting Officer or their designated representative, 168 CES, and 354 CEIE immediately if compliance exceeds the scope of work or conflicts with specific requirements of the contract. Questions regarding disposal of hazardous waste should be directed to the Installations Hazardous Waste Program Manager (CES/CEIE).

1.14.3 Hazardous Waste Transportation

Designate, by position and title, one person to act as the Transportation and Disposal Coordinator (TDC) for this contract. The TDC must serve as the single point of contact for all environmental regulatory matters and have overall responsibility for total environmental compliance at the site including, but not limited to, accurate identification and classification of hazardous waste and hazardous materials; determination of proper shipping names; identification of marking, labeling, packaging and placarding requirements; completion of waste profiles, hazardous waste manifests, asbestos waste shipment records, PCB manifests, bill of lading, exception and discrepancy reports; and all other environmental documentation. The TDC must have, at a minimum, one year of specialized experience in the management and transportation of hazardous waste and have been Department of Transportation certified under 49 CFR 172, Subpart H.

The hazardous materials transporter must possess a current certificate of registration issued by the Research and Special Programs Administration (RSPA), U.S. Department of Transportation, when required by 49 CFR 107, Subpart G. Submit copies of the certificates or written statements certifying exemption from these requirements.

1.15 STORMWATER POLLUTION PREVENTION

Comply with the Clean Water Act (Section 402), APDES Construction General Permit (CGP). Polluting, dumping, or discharging of any harmful, nuisance, or regulated materials (such as concrete truck washout, vehicle maintenance fluids, residue from saw cutting operations, Solid Waste and Hazardous Substances) into building drains, site drains, streams, waterways, holding ponds, or to the ground surface shall not be permitted. Hold responsibility for any and all damages resulting from such actions. Conduct activities in a fashion which avoids creating any legal nuisance, including but not limited to suppression of noise and dust, control of erosion, and implementation of other measures as necessary to minimize off site impacts of work activities.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitats. Prior to the commencement of activities, consult with the Installation Environmental Office, regarding rare species or sensitive habitats that need to be protected. The protection of rare, threatened, and endangered animal and plant species identified, including their habitats, is the Contractor's responsibility.

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work that is consistent with the requirements of the 354 Environmental Office or as otherwise specified. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Vegetation

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer or their designated representative, 168 CES, and 354 CEIE's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer or their designated representative, 168 CES, and 354 CEIE. Where such use of attached ropes, cables, or guys is authorized, the Contractor is responsible for any resultant damage.

Protect existing trees that are to remain to ensure they are not injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. Coordinate with the Contracting Officer or their designated representative, 168 CES, and 354 CEIE to determine appropriate action for trees and other landscape features scarred or damaged by equipment operations.

3.1.2 Class I and II ODS Prohibition

Class I and II ODS are Government property and must be returned to the Government for appropriate management. Coordinate with the Installation Environmental Office to determine the appropriate location for turn in of all reclaimed refrigerant. Contact the Air Quality Program Manager prior to purchase and installation of any proposed, chemical-based fire-suppression or air conditioning systems to ensure it complies with 40 CFR 82 - Protection of Stratospheric Ozone regulations and is a Significant New Alternative Program (SNAP) approved chemical. The procedures in AFMAN 32-7002 on refrigerant management must be adhered to when procuring new refrigerant containing equipment. Uncontaminated Class I or Class II ODS must be recovered and turned into DLA through the Local Eielson AFB HAZMART from existing refrigerant containing equipment prior to disposal. The Air Force prohibits refrigerant containing equipment with unrecovered, useful Class I and II ODS from leaving Eielson AFB for recovery.

3.1.2.1 Disposal of Ozone Depleting Substances

Class I and Class II ODS are defined in Section, 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting AHRI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling. Recovered ODS shall be removed from Government property and disposed of in accordance with 40 CFR 82 once it has been determined by HVAC and Hazmart that the recovered refrigerant is not needed for EAFB or DLA stockpiles respectively. Products, equipment and appliances containing ODS in a sealed, self-contained system (e.g. residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82. Submit Receipts or bills of lading, as specified. Submit a shipping receipt or bill of lading for all containers of ozone depleting substance (ODS) shipped to the Defense Depot, Richmond, Virginia.

3.1.2.2 Special Instructions

No more than one type of ODS is permitted in each container. A warning/hazardous label shall be applied to the containers in accordance with Department of Transportation regulations. All cylinders including but not limited to fire extinguishers, spheres, or canisters containing an ODS shall have a tag with the following information:

- a. Activity name and unit identification code
- b. Activity POC and phone number
- c. Type of ODS and pounds of ODS contained
- d. Date of shipment
- e. National stock number (for information, call (804) 279-4525).

3.1.2.3 Transportation Guidance

Ship all ODS containers in accordance with MIL-STD-129, DLA 4145.25 (also reference Air Force Regulation 67-12), 49 CFR 173.301, and DOD 4000.25-1-M.

3.1.3 Accidental Venting of Refrigerant

Accidental venting of a refrigerant is a release and must be reported immediately to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE who is required to report it to the Air Quality Program Manager.

3.1.4 EPA Certification Requirements

Heating and air conditioning technicians must be certified through an EPA-approved program. Maintain copies of certifications at the employees' places of business; technicians must carry certification wallet cards, as provided by environmental law.

3.2 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the EPP. Obtain a copy of the installation's Pollution Prevention/Hazardous Waste Minimization Plan for reference material when preparing this part of the EPP. If no written plan exists, obtain information by contacting the Contracting Officer or their designated representative, 168 CES, and 354 CEIE. Describe the anticipated types of the hazardous materials to be used in the construction when requesting information.

3.2.1 Salvage, Reuse and Recycle

Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

Include the name, physical address, and telephone number of the hauler, if transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

3.2.2 Nonhazardous Solid Waste Diversion Report

Maintain an inventory of nonhazardous solid waste diversion and disposal of construction and demolition debris. Submit a report to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE on the first working day after each fiscal year quarter, starting the first quarter that nonhazardous solid waste has been generated. Include the following in the report:

Construction and Demolition (C&D) Debris Disposed	[_____] [cubic yards][tons],[cubic meters] as appropriate
C&D Debris Recycled	[_____] [cubic yards][tons],[cubic meters] as appropriate
Total C&D Debris Generated	[_____] [cubic yards][tons],[cubic meters] as appropriate

Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount)	[] [cubic yards][tons],[cubic meters] as appropriate
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3.3 WASTE MANAGEMENT AND DISPOSAL

3.3.1 Waste Determination Documentation

Complete a Waste Determination form (provided at the pre-construction conference) for Contractor-derived wastes to be generated. All potentially hazardous solid waste streams that are not subject to a specific exclusion or exemption from the hazardous waste regulations (e.g. scrap metal, domestic sewage) or subject to special rules, (lead-acid batteries and precious metals) must be characterized in accordance with the requirements of 40 CFR 261 or corresponding applicable state or local regulations. Base waste determination on user knowledge of the processes and materials used, and analytical data when necessary. Consult with the Installation environmental staff for guidance on specific requirements. Attach support documentation to the Waste Determination form. As a minimum, provide a Waste Determination form for the following waste (this listing is not inclusive): oil- and latex -based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and containers of the original materials.

3.3.1.1 Sampling and Analysis of Waste

3.3.1.1.1 Waste Sampling

Sample waste in accordance with EPA SW-846. Clearly mark each sampled drum or container with the Contractor's identification number, and cross reference to the chemical analysis performed.

3.3.1.1.2 Laboratory Analysis

Follow the analytical procedure and methods in accordance with the 40 CFR 261. Provide analytical results and reports performed to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354.

3.3.1.1.3 Analysis Type

Identify hazardous waste by analyzing for the following characteristics: ignitability, corrosivity, reactivity, toxicity, based on TCLP results.

3.3.2 Solid Waste Management

3.3.2.1 Solid Waste Management Report

Provide copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation and Certificate of Disposal. In lieu of sales documentation, a statement indicating the disposal location for the solid waste that is signed by an employee authorized to legally obligate or bind the firm may be submitted. The sales documentation [Contractor certification] must include the receiver's tax identification number and business, EPA or state registration number, along with the receiver's delivery and business addresses and telephone numbers.

For each solid waste retained for the Contractor's own use, submit the information previously described in this paragraph on the solid waste disposal report. Prices paid or received do not have to be reported to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE unless required by other provisions or specifications of this Contract or public law.

3.3.2.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste. Transport solid waste off Government property and dispose of it in compliance with 40 CFR 260, state, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill is the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Comply with site procedures. Segregate and separate treated wood components disposed at a lined landfill approved to accept this waste in accordance with local and state regulations. Solid waste disposal offsite must comply with most stringent local, state, and federal requirements, including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

Manage hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, in accordance with 49 CFR 173.

3.3.3 Control and Management of Hazardous Waste

Do not dispose of hazardous waste on Government property. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal on Government property without written approval of the Contracting Officer or their designated representative, 168 CES, and 354 CEIE.

3.3.3.1 Hazardous Waste/Debris Management

Identify construction activities that will generate hazardous waste or debris. Provide a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations, including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268.

Manage hazardous waste in accordance with the approved Hazardous Waste Management Section of the EPP. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities is identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, hazardous waste manifests must be signed by personnel from the Installation Environmental Office. Do not bring hazardous waste onto Government property. Provide the Contracting Officer or their designated representative with a copy of waste determination documentation for review and approval by 168 CES, and 354 CEIE for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D.

3.3.3.2 Waste Storage/Satellite Accumulation/90 Day Storage Areas

Accumulate hazardous waste at a 90-day accumulation point and in compliance with 40 CFR 262.17 and applicable state or local regulations. Submit an accumulation point request in writing to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE and provide the following information (Attach Site Plan to the Request):

Contract Number	[_____]
Contractor	[_____]
Haz/Waste or Regulated Waste POC	[_____]
Phone Number	[_____]
Type of Waste	[_____]
Source of Waste	[_____]
Emergency POC	[_____]
Phone Number	[_____]
Location of the Site	[_____]

Attach a Waste Determination form for the expected waste streams. Allow 10 working days for processing this request. Additional compliance requirements (e.g. training and contingency planning) that may be required are the responsibility of the Contractor. Barricade the designated area where waste is being stored and post a sign identifying as follows:

"DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

3.3.3.3 Hazardous Waste Disposal

3.3.3.3.1 Responsibilities for Contractor's Disposal

Dispose of all hazardous wastes off base except for aerosol cans which may be managed following the guidance document in the Appendix. Provide hazardous waste manifests to the Installation's Environmental Office for review, approval, and signature **14 days prior** to shipping waste off Government property.

3.3.3.3.1.1 Services

Provide service necessary for the final treatment or disposal of the hazardous material or waste in accordance with 40 CFR 260, local, and state, laws and regulations, and the terms and conditions of the Contract within 60 days after the materials have been generated. These services include necessary personnel, labor, transportation, packaging, detailed analysis (if required for disposal or transportation, include manifesting or complete waste profile sheets, equipment, and compile documentation).

3.3.3.3.1.2 Samples

Obtain a representative sample of the material generated for each job done

to provide waste stream determination.

3.3.3.3.1.3 Analysis

Analyze each sample taken and provide analytical results to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE. See paragraph WASTE DETERMINATION DOCUMENTATION.

3.3.3.3.1.4 Labeling

Determine the Department of Transportation's (DOT's) proper shipping names for waste (each container requiring disposal) and demonstrate to Contracting Officer or their designated representative, 168 CES, and 354 CEIE how this determination is developed and supported by the sampling and analysis requirements contained herein. Label all containers of hazardous waste with the words "Hazardous Waste" or other words to describe the contents of the container in accordance with 40 CFR 262.31 and applicable state or local regulations.

3.3.3.4 Universal Waste Management

Manage the following categories of universal waste in accordance with federal, state, and local requirements and installation instructions:

- a. Batteries as described in 40 CFR 273.2
- b. Lamps as described in 40 CFR 273.5
- c. Mercury-containing equipment as described in 40 CFR 273.4
- d. Aerosol Cans as described in 40 CFR 273.6

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed.

3.3.3.5 Electronics End-of-Life Management

Recycle or dispose of electronics waste, including, but not limited to, used electronic devices such as computers, monitors, hard-copy devices, televisions, mobile devices, in accordance with 40 CFR 260-262, state, and local requirements, and installation instructions.

3.3.3.6 Disposal Documentation for Hazardous and Regulated Waste

Contact Contracting Officer or 168 CES/354 CEIE for the facility RCRA identification number that is to be used on each manifest.

Submit a copy of the applicable EPA and or state permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities. Hazardous or toxic waste manifests must be reviewed, signed, and approved by 354 CEIE and the Eielson Hazardous Waste Facility before the Contractor may ship waste. To obtain specific disposal instructions, coordinate with the Installation Environmental Office.

3.3.4 Releases/Spills of Oil and Hazardous Substances

A spill sign must be present at each work site and must be posted next to the hazardous waste accumulation area along with other areas of concern. Contact 168 CES for the Installation's spill sign.

3.3.4.1 Response and Notifications

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with 40 CFR 300. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, hazardous materials, petroleum products, glycols, antifreeze, grease, latex paint, hydraulic fluids, aqueous film forming foam or gases; immediately (within 15 minutes) notify the Installation Fire Department, the Installation Environmental Office's Spills Program Manager, and the **Contracting Officer or their designated representative**. Provide dispatch with all requested information and at the very least the materials spilled, estimated volume, where the spill occurred, and any instances of human injury.

Notifications as required by the federal (40 CFR 300.125 and 40 CFR 355), state, local regulations and instructions will be provided by the Spill's Program Manager. Spill response must be in accordance with 40 CFR 300 and applicable state and local regulations. Contain and clean up these spills without cost to the Government.

3.3.4.2 Clean Up

Clean up hazardous and non-hazardous waste spills. Reimburse the Government for costs incurred including sample analysis materials, clothing, equipment, and labor if the Government will initiate its own spill cleanup procedures, for Contractor- responsible spills, when Spill cleanup procedures have not begun within one hour of spill discovery/occurrence; or, in the Government's judgment, spill cleanup is inadequate and the spill remains a threat to human health or the environment. Maintain sufficient spill response supplies on vehicles and/or at the site to contain any spills. All petroleum spills shall be cleaned up using absorbent materials.

ADEC approval shall be secured prior to transport of any contaminated material generated by cleanup of a spill or previously known historic contaminated site off-base. Contractors shall submit an ADEC Transport, Treatment, & Disposal Form for contaminated media to the Installations Environmental Office's Tanks and Spills Program Manager for submission to ADEC. A copy of the ATT shall be submitted to the **Contracting Officer or their designated representative, 168 CES, and 354 CEIE** prior to transport off base. A waste manifest will need to be signed by the Installation's Hazardous Waste Facility prior to transporting waste off the Installation.

3.3.5 Release of High Expansion Foam (HEF)

Provide temporary measures to prevent HEF from entering storm drains, sanitary sewers, drainage ditches, streams and water courses. Do not allow HEF concentrate or solution to come in contact with earth. Contain all discharged HEF in tanks. Collect all discharged HEF and rinse and flushing water and dispose of it in an EPA - approved waste- water treatment

facility which provides secondary (biological) treatment. At least 15 days prior to the date flow testing is to take place, submit written plan for HEF containment and disposal methods(s) to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE. The written plan for HEF containment and the testing schedule should be provided to the Spills& Tanks program manager so notice can be given to the Alaska Department of Environmental Conservation (ADEC). A representative from ADEC may ask to be present, therefore a detailed schedule of the formal tests must be provided in advance.

3.3.5.1 Fire Suppression Tests

Fire suppression system tests must be treated as spills to comply with ADEC guidance. After a test, the Spills& Tanks program manager must be called with test details such as volume of waste generated, volume of waste contained, time of tests, and confirmation that no mishaps occurred. The Spills& Tanks Program Manager will report the release to ADEC.

Waste generated during tests requires an ADEC Transport, Treatment, & Disposal Approval Form to be completed prior to the waste be removed from base. The form must be submitted to the Spills & Tanks program manager who will submit the form to ADEC for approval.

3.3.6 Mercury Materials

Immediately report to the Environmental Office, the Contracting Officer or their designated representative and 168 CES, instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Contracting Officer or their designated representative, 168 CES, and 354 CEIE.

Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.3.7 Wastewater

3.3.7.1 Disposal of wastewater must be as specified below.

3.3.7.1.1 Treatment

Do not allow wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, and forms to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction-related waste water off-Government property in accordance with 40 CFR 403, state, regional, and local laws and regulations or by collecting and placing it in a retention pond where suspended material can be settled out or the water can evaporate to separate pollutants from the water. The site for the retention pond must be coordinated and approved with the Contracting Officer or their designated representative, 168 CES, and 354 CEIE. The residue left in the pond prior to completion of the project must be removed, tested, and disposed of off-Government property in accordance with federal, state, and local laws and regulations. Backfill the area to the original grade, top-soiled, and seeded or sodded. Test the water in the retention pond and have the results reviewed and approved by the Contracting Officer or their designated representative, 168 CES, and 354 CEIE prior to being discharged or disposed of off-Government property.

3.3.7.1.2 Surface Discharge

For discharge of ground water, obtain a state or federal permit specific

for pumping and discharging ground water prior to surface discharging. Surface discharge in accordance with federal, state, and local laws and regulations. Surface discharge in accordance with the requirements of the NPDES or state STORMWATER DISCHARGES FROM CONSTRUCTION SITES permit.

3.3.7.1.3 Land Application

Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing to be land-applied in accordance with federal, state, and local laws and regulations for land application or discharged into the sanitary sewer with prior approval and notification to the Wastewater Treatment Plant's Operator.

3.4 HAZARDOUS MATERIAL MANAGEMENT

Include hazardous material control procedures in the Safety Plan. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Do not bring hazardous material onto Government property that does not directly relate to requirements for the performance of this contract. Submit an SDS and estimated quantities to be used for each hazardous material to the Contracting Officer or their designated representative, 168 CES, and 354 CEIE for review and approval prior to bringing the material on the installation in the Initial Hazardous Material Inventory Log and provide any future additional hazardous materials to the Contracting Officer for 168 CES or their designated representative, and 354 CEIE for review and approval. Typical materials requiring SDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products.

Use hazardous materials in a manner that minimizes the amount of hazardous waste generated. Containers of hazardous materials must have National Fire Protection Association labels or their equivalent. Submit a Final Hazardous Material Inventory Log identifying the hazardous materials and estimated quantities removed from the site. Certify that hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste, in accordance with 40 CFR 261.

3.5 PREVIOUSLY USED EQUIPMENT

Clean previously used construction equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

3.6 CONTROL AND MANAGEMENT OF ASBESTOS-CONTAINING MATERIAL (ACM)

Manage and dispose of asbestos-containing waste in accordance with 40 CFR 61. Manifest asbestos-containing waste and provide the manifest to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE. Notifications to the state (Department of Labor), the EPA (10 working days), and Installation Air Program Manager are required before starting any asbestos work.

3.7 CONTROL AND MANAGEMENT OF LEAD-BASED PAINT (LBP)

No paint with a lead content of 0.06 percent or greater shall be used in any capacity on this project unless specifically approved in advance by the Hazardous Materials Program Manager (354 LRS/LGRMH); Bioenvironmental (354 MDG/SGOAB); and Environmental (354 CES/CEIE). Manage and dispose of

lead-contaminated waste in accordance with 40 CFR 745, including removal, required trainings, certifications, and submittals. Manifest any lead-contaminated waste and provide the manifest to the Contracting Officer or their designated representative for review and approval by 168 CES, and 354 CEIE.

Any sampling results for lead based paint must be provided to the Installation's Toxics Program Manager. Please specify facility number and include a drawing or map of the sampling locations and the results. Sample results exceeding regulatory limits should be clearly denoted (e.g., a change in color or bold font).

3.8 CONTROL AND MANAGEMENT OF POLYCHLORINATED BIPHENYLS (PCBS)

Select PCB removal procedures that minimize contamination of work areas with PCB or other PCB-contaminated debris/waste including but not limited to paints, caulks, and transformers. PCB removal processes should be described in the work plan. Manage and dispose of PCB-contaminated waste in accordance with 40 CFR 761 and Section 02 84 33 REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBS). Store liquid PCBs in Department of Transportation (DOT) Specification 17E containers. Store nonliquid PCB mixtures, articles, or equipment in DOT Specification 5, 5B, or 17C containers with removable heads. Manage all PCB waste and contaminated material to be disposed of as a hazardous waste.

3.9 CONTROL AND MANAGEMENT OF LIGHTING BALLAST AND LAMPS CONTAINING PCBS

Manage and dispose of contaminated waste in accordance with 40 CFR 761. Submit to the Government before application for payment within 30 days of the date that the Certificate of Disposal and/or Recycling of the PCB and mercury-containing lamp waste identified on the manifest was completed.

3.10 PETROLEUM, OIL, LUBRICANT (POL) STORAGE AND FUELING

POL products include flammable or combustible liquids, such as gasoline, diesel, lubricating oil, used engine oil, hydraulic oil, mineral oil, and cooking oil. Store POL products and fuel equipment and motor vehicles in a manner that affords the maximum protection against spills into the environment. Manage and store POL products in accordance with EPA 40 CFR 112, and other federal, state, regional, and local laws and regulations. Use secondary containments, dikes, curbs, and other barriers, to prevent POL products from spilling and entering the ground, storm or sewer drains, stormwater ditches or canals, or navigable waters of the United States. Describe in the EPP (see paragraph ENVIRONMENTAL PROTECTION PLAN) how POL tanks and containers must be stored, managed, and inspected and what protections must be provided. Storage of oil, including fuel, on the project site is not allowed without approval. Fuel must be brought to the project site each day that work is performed. If approved, storage of fuel on the project site must be in accordance with EPA, state, and local laws and regulations and paragraph OIL STORAGE INCLUDING FUEL TANKS.

3.10.1 Used Oil Management

Manage used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while onsite exhibits a characteristic of hazardous waste. Used oil containing 1,000 parts per million of halogens is considered a hazardous waste and disposed of at the Contractor's expense. Used oil mixed with a hazardous waste is also considered a hazardous waste. Dispose in accordance with paragraph HAZARDOUS WASTE DISPOSAL. For further used oil management guidance, refer to the

Installations Hazardous Waste Management Plan.

3.10.2 Oil Storage Including Fuel Tanks

Provide secondary containment and overfill protection for oil storage tanks. A berm used to provide secondary containment must be of sufficient size and strength to contain the contents of the tanks plus 12 centimeters 5 inches freeboard for precipitation. Construct the berm to be impervious to oil for 72 hours that no discharge will permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Use drip pans during oil transfer operations; adequate absorbent material must be onsite to clean up any spills and prevent releases to the environment. Cover tanks and drip pans during inclement weather. Provide procedures and equipment to prevent overfilling of tanks. If tanks and containers with an aggregate aboveground capacity greater than 5000 liter 1320 gallons will be used onsite (only containers with a capacity of 208 liter 55 gallons or greater are counted), provide and implement a SPCC plan meeting the requirements of

40 CFR 112.

Monitor and remove any rainwater that accumulates in open containment dikes or berms. Inspect the accumulated rainwater prior to draining from a containment dike to the environment, to determine there is no oil sheen present.

3.11 POST CONSTRUCTION CLEANUP

Unless otherwise instructed in writing by the Contracting Officer or their designated representative after review and approval by 168 CES, and 354 CEIE, remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade parking area and similar temporarily used areas to conform with surrounding contours.

-- End of Section --

Eielson Air Force Base (EAFB)
Installation Facilities Standards (IFS)

G17 EAFB IFS Fire Alarm Systems Standards

Comply with Air Force Corporate Standards for Overview:
<http://afcfs.wbdg.org/index.html>

Summary of Sections in this Supplementary Document:

- G17.0. General Requirements
- G17.1. General Standards
- G17.2. Fire Alarm System
- G17.3. Mass Notification System
- G17.4. Sprinkler/Suppression Systems
- G17.5. Closeout Requirements
- G17.6. Warranty Coverage
- G17.7. Alarm Shop Support

G17.0. General Requirements

1. Note: This Supplementary Document is provided as a supplement to the Eielson AFB IFS. If there are any discrepancies between this Supplementary Document and the requirements of the IFS, the IFS will govern.
2. This Supplementary Document modifies the previous version dated 12 September 2017 with this section G17.0.
3. Refer to the following sections.

End of Section

G17 EAFB IFS Fire Alarm Systems Standards

354th Civil Engineering Squadron

OPR: CES/CEOFA

ISSUED: 12 September 2017

Purpose

This standard shall be used in conjunction with the latest version of Unified Facilities Criteria (UFC) 3-600-01, *FIRE PROTECTION ENGINEERING FOR FACILITIES* and UFC 4-021-01, *DESIGN AND O&M: MASS NOTIFICATION SYSTEMS* as the minimum standard(s) for the planning and development of projects and, design, construction and commissioning documentation used for procurement of facilities that fall under the responsibility of the 354th Fighter Wing, Eielson AFB, AK. Examples include, but are not limited to, the development of scopes of work, DD1391 documentation, drawings, specifications and request for proposals. These standards will serve as the primary fire protection criteria reference document for services provided by architectural and engineering (A&E) firms and consultants in the development of both design-bid-build and design-build contracts. This document shall be used in conjunction with detailed design documents in the procurement of Facility construction. No part of this document should be considered inclusive to all government requirements.

Contact the 354th CES Alarm Shop at 907-377-6666 for any questions, comments or concerns.

1. General Standards

1.1. Fire Protection Engineering Services

- 1.1.1. Under the terms of UFC 3-600-01 all Major Projects require the design, review and oversight services of a Qualified Fire Protection Engineer (QFPE). Refer to UFC 3-600-01 for the definition of Major Project and QFPE. Qualifications for QFPE are also listed in the UFC.
- 1.1.2. At the initial design conference, or at another time convenient to all parties prior to final design submission, the QFPE shall meet with the 354th CES Alarm Shop and 354th CES Fire Department personnel to review all the fire protection aspects of the design.
- 1.1.3. The QFPE shall provide sound pressure and light level calculations at the final design submittal or the contractor shall submit this information as a Government Approved submittal after design. As a minimum, provide the following for each room and space: ambient sound pressure level (SPL) including contributions from equipment, maximum and minimum intelligibility, maximum and minimum strobe light level and maximum and minimum alarm SPL.

1.2. Contractor Qualifications

- 1.2.1. All Fire Alarm (including foam system) and s Notification System (MNS) panels and terminal cabinets shall be terminated by either a NICET Level III technician or an individual licensed by the State of Alaska for fire alarm and MNS installation (Class IC). A licensed electrician or NICET Level I Fire Alarm Technician shall install conduit and pull wire for the fire alarm system. A NICET Level II Fire Alarm Technician shall terminate Fire alarm devices. Installers shall have a minimum of 5 years of experience with systems of similar complexity. Proof of qualifications shall be submitted.

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- 1.2.2. Fire sprinkler (including foam system) equipment and piping installation shall be installed by a NICET II or an individual licensed by the state of Alaska (Class IB). Installer shall have a minimum of 5 years of experience on systems of similar complexity. Proof of qualifications shall be submitted to the Contracting Officer Representative who will provide a copy to the Alarm Shop.

1.3. Access Requirements

- 1.3.1. Full access for testing and maintenance of all fire protection systems equipment and devices shall be provided. Equipment requiring testing or maintenance shall be provided with sufficient clearance to allow the work to be done without having to remove any piping, structure, doors or other surrounding items. Access to all fire protection system equipment and components shall be unhindered and a minimum of 1 m wide by 2 m high (3.3 ft wide by 6.6 ft high). Access shall not require crawling over or under structures, pipes or other items.

1.4. Panels

- 1.4.1. A Monaco, Siemens or Simplex addressable fire alarm and MNS panel shall be provided.
- 1.4.2. The panels for fire alarm, MNS and booster panels shall each have a dedicated circuit. The Monaco transceiver shall have a dedicated circuit. The Whelen IPS 400 shall have a dedicated circuit. The circuits shall be clearly marked inside each panel. The circuit shall be red and lockable. The fire and MNS panel circuits shall be identified as "FIRE ALARM AND MNS" inside the circuit panel. The Fire Alarm Transceiver shall be identified as "FIRE TRANSCEIVER" inside the circuit panel. The Whelen IPS 400 transceiver shall be identified as "MNS TRANSCEIVER" inside the circuit panel.
- 1.4.3. All standby or backup batteries shall be installed in the fire alarm and MNS panel if space permits. If space is not available, batteries shall be installed in a manufacturer listed battery panel with enough room so batteries can be properly placed in the cabinet on their base, not sides or end. Batteries shall be wired in parallel for proper supervision.
- 1.4.4. All equipment and devices connected to the Fire Alarm and Mass Notification Panel must be listed to be used with the panel and installed in accordance with NFPA 72, UFC 3-600-01 and the manufacturer's instructions.
- 1.4.5. The panel selected shall have at minimum two (2) Signaling Loop Circuits (SLC). A failure of one SLC shall not cause a facility to lose over 50% of its detection capability.
- 1.4.6. All access panels and cabinets for fire alarm, MNS, booster batteries, sprinkler systems and other access as determined by the Installation AHJ shall be keyed alike. The key type shall be labeled on the outside of each door. All spare keys

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shall be turned into the Alarm Shop. The Alarm Shop will ensure proper distribution of keys between the Shop and the Fire Prevention Office.

1.4.7. The fire alarm contractor shall provide the main fire alarm control panel near the main entrance of the building. If the panel cannot be located near the main entrance, a remote annunciator shall be provided and shall be coordinated with the Installation AHJ. The remote annunciator must have a silence and reset button and provide the same textural annunciation as the fire alarm panel. The remote annunciator must be locked against unauthorized access.

1.4.8. The fire alarm control panel shall provide smoke detection, flow switches and supervised addressable relays for elevator functions as required by UFC 3-600-01. Control systems for elevators must be wired and programmed by certified elevator and fire alarm personnel.

1.5. Antennas

1.5.1. When there is a pitched roof, the antenna must be mounted on the gable end of the building that is closest to Emergency Communication Center (located in Building 3134) to prevent damage from ice buildup. The grounding wire cannot be attached to any fixed ladders. The antenna shall be mounted a minimum of 2' above the roof line and must be mounted securely (nut and bolt) to withstand the wind load. Mounting the bracket using screws through the building's metal skin is not acceptable. The contractor is responsible for cutting the antenna to its proper length, in order to match the frequency and transmit correctly, and is responsible for installing the antenna cable connectors correctly. The antenna cable must have a lightning arrester installed inline, in a weatherproof box. The assembly must be properly grounded per manufacturer specifications. As part of the 100 percent functional performance tests, witnessed by the Alarm Shop personnel, the transmitter must pass manufacturer's specification for forward and reflective power and all signals transmitted or received must be accurate.

1.6. Wiring and Circuits

1.6.1. All circuits for the fire alarm and MNS shall be in red conduit. All conduit shall be a minimum of 3/4". All junction box covers shall be painted red.

1.6.2. The fire alarm and MNS wiring shall be Class B.

1.6.3. All conductor connections shall be made under screw terminals. Provide insulated barrier type terminal strips at junction points. Use of wire nuts, crimped connectors, or twisting of conductors is prohibited.

1.7. Strobes

1.7.1. Strobes shall be provided to alert persons with hearing disabilities, and shall be installed per NFPA 72, and located as required to meet Architectural Barriers Act Accessibility Guidelines (ABAAG) requirements. Wall-mounted appliances shall

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be mounted such that the entire lens is not less than 80" above the highest floor level or 6" below the ceiling, whichever is lower. Ceiling strobes are permitted, and shall be located and installed per NFPA 72, and may be part of a combined audible/visual device. A single clear strobe with a red plate with white lettering stating "ALERT" shall be provided for the fire alarm and MNS.

1.8. Protection From Freezing

1.8.1. For any wet-pipe systems that have sprinklers under overhead doors, sprinklers shall be provided with heat trace. Other areas with wet pipe sprinkler systems will be required to be heat traced as determined by the Installation AHJ.

1.8.2. Any heat trace associated with the sprinkler system shall be on a dedicated circuit breaker, shall be red and lockable and shall be monitored by the fire alarm and MNS. Power source to the heat trace shall be monitored by the fire alarm panel so that in the event that power is lost a signal will be sent to the Eielson Fire Department.

1.8.3. Fire alarm and MNS devices shall not be located in arctic entries.

1.8.4. Mechanical rooms in which sprinkler risers are located are required to have a low temperature sensor in them to prevent damage due to freezing. Upon activation of the low temperature alarm, a supervisory signal shall be sent to the Eielson Fire Department.

1.8.5. All open bay areas or areas where freezing is probable as determined by the Installation AHJ, a dry pipe system electronically actuated on low air shall be provided. A low air pressure switch is mandatory for a dry system, and must be address or zoned independently.

1.8.6. Any area determined to be susceptible to arctic conditions as determined by the Installation AHJ shall be provided with insulation and heat trace.

2. Fire Alarm System

2.1. Addressable fire alarm panels shall be required for facilities over 1000 square feet, deemed to be mission critical or as determined by the Installation AHJ.

2.2. Transceivers

2.2.1. The contractor shall provide a Monaco transceiver for each building in the project.

2.2.2. Fire alarm systems shall communicate wirelessly with the Eielson Monaco D-21 supervising station at a frequency of 139.675 MHz.

2.2.3. Provide a Monaco BT-XF transceiver capable of communicating with the Eielson Monaco D-21 supervising station.

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- 2.2.4. The contractor is responsible for programming and integration with the existing wireless D-21 front end server.
- 2.2.5. The fire alarm transceiver shall transmit all addressable devices or a minimum of the following zones:
 - a. Water flow alarm (1 per water flow switch)
 - b. Hangar foam system pressure switch (1 per pressure switch)
 - c. Hangar pre-action pressure switch (1 per pressure switch)
 - d. Hangar flame detector (1 per hangar bay)
 - e. Hangar manual foam pull station (1 per hangar bay)
 - f. Hangar automatic heat detector (1 per hangar bay)
 - g. Carbon Monoxide detector
 - h. Foam system tamper switch supervisory
 - i. Pump loss of power supervisory
 - j. Pump Phase reversal supervisory
 - k. Pump running supervisory
 - l. Foam key switch disable supervisory
 - m. Flame detector disable key switch supervisory
 - n. Pre-action key switch supervisory
 - o. Disable switch or feature supervisory
 - p. Pressure maintenance pump loss of power supervisory
 - q. Elevator flow switch
 - r. Elevator tamper switch
 - s. Elevator loss of shunt trip power supervisory
 - t. Manual Pull Station (1 per floor)
 - u. Automatic detector initiating building alarm (1 per floor per device type)
 - v. Dwelling unit heat detector alarm signal (1 per floor)
 - w. Dwelling unit smoke detector supervisory signal (1 per floor)
 - x. Tamper Switch trouble signal
 - y. Low Temperature supervisory signal for mechanical rooms

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- z. Heat trace power loss (supervisory)
 - aa. Air compressor power loss (supervisory)
 - bb. Duct Detector alarm signal (1 per floor)
 - cc. Mass Notification override of the fire alarm notification system supervisory signal
 - dd. General supervisory signal
 - ee. Common Trouble signal
 - ff. Two spare zones, including necessary relays and hardware in the fire alarm panel and transmitter panel.
- 2.2.6. NOTE: Depending on the complexity of the system or type of systems installed, more zones will be required. The contractor shall coordinate with the Installation AHJ for zones that may not be listed here.
- 2.3. All fire alarm systems components including sprinkler system control valve shall be electronically supervised and continuously monitored.
- 2.4. Provide a heating, ventilation and air conditioning (HVAC) shutdown button at the fire alarm and MNS control panel to shut down all the HVAC units. Shutdown button shall comply with UFC 4-021-01. Coordinate location of shutdown button with the Installation AHJ.
- 2.5. Where addressable modules are used on conventional devices, the addressable monitor module shall monitor, at most, one conventional initiating device.
- 2.6. The contractor shall include a disable switch or function for the following items (located at the main fire alarm control panel), if these items are included in the fire alarm system:
- 2.6.1. Air handler fan shutdown and smoke damper closure, horns or speaker strobes, automatic door hold open release, elevator recall, elevator shunt trip, fire pump, etc.
 - 2.6.2. If a disable switch or feature is activated, an LED will illuminate at the panel indicating a trouble condition. A trouble signal shall be transmitted to the Eielson Fire Department and a description of the feature disabled shall be displayed at the fire alarm panel.
- 2.7. Field Devices
- 2.7.1. Fixed temperature heat detectors shall be used due to the repeated nuisance alarms. Heat detectors shall be installed per code or as required by manufacturer's recommended location or spacing.

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- 2.7.2. Detectors located in dormitory sleeping areas shall have low frequency sounder bases in all dwelling units. Activation of any detector in a dwelling unit shall activate all sounder bases in the dwelling unit and transmit a supervisory signal to the Eielson Fire Department. Activation of any two (2) dwelling unit detectors will initiate a building alarm and detectors will latch in alarm. The first dwelling unit smoke detector activation shall be non-latching and self-restoring.
- 2.7.3. Fire/smoke doors in primary egress path shall be held open by magnetic devices controlled by the fire alarm panel. This requirement does not apply to hangars per UFC 4-211-01. Smoke detectors shall be provided at all doors held open by magnetic hold open device, regardless of door type.
- 2.7.4. All duct detectors that are installed must be readily accessible and clearly labeled. Locations that result in the need for maintenance personnel to climb over ductwork and/or need a ladder over 6' in height for access is unacceptable. Any duct detector that is not readily accessible or is more than 6' above the finished floor shall have a remote LED/test/reset device. All duct detectors shall be of the auto reset type.
- 2.7.5. All duct detectors shall have duct access doors to maintain and access the duct detector tube. Door shall be a minimum of 18" x 18" unless smaller size is necessary which requires approval of the Installation AHJ.
- 2.7.6. Provide pull stations where required by applicable codes and criteria. At a minimum, a pull station shall be located within 5' of each exit or where required per the Installation AHJ.
- 2.8. A device label shall be provided on the exterior for each device that matches the device number at the panel. Notification Appliance Circuit (NAC devices) shall also be labeled with loop number and device number that matches the drawings.
- 2.9. A weatherproof speaker/strobe, listed for use in Eielson's low temperatures, shall be installed on each side of the exterior of the building.

3. Mass Notification System

- 3.1. All buildings having a fire alarm system shall also have an MNS installed unless otherwise directed by the Installation AHJ.
- 3.2. Building Mass Notification System (BMNS)
 - 3.2.1. Provide a BMNS in accordance with all requirements UFC 4-021-01, except as noted herein.
 - 3.2.2. The contractor is to note that Whelen IPS 400 does not currently meet UL standard 864 and therefore cannot be used to power speakers to broadcast a fire alarm evacuation signal. Therefore, BMNS must be either stand-alone and have separate speakers from the fire alarm system or IPS 400 must be electrically

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isolated from a combination fire alarm/mass notification system, in accordance with UFC 4-021-01.

3.3. Connect to the Wide Area Mass Notification System (MNS)

3.3.1. The individual BMNS system shall be interfaced with the Eielson-wide mass notification central control system. The existing Eielson-wide central control system was provided by Whelen. In order for the individual BMNS to be fully and completely integrated into the Eielson-wide central control system, it must be added and programmed into the Whelen central receiving station by a Whelen authorized representative. The installation of a new combination fire alarm/MNS or stand-alone MNS will not be deemed complete until the Whelen central receiving station has had the new or renovated building added as a new site. MNS testing will include testing of the interface and control of the BMNS by the Eielson central MNS. The contractor must coordinate installation, testing and connection of the MNS system with the Eielson Alarm Shop and Base Communications.

3.4. Mass notification sequence of operation

3.4.1. For a combined fire alarm and MNS, the ACU is the main fire alarm control panel. For separate systems, the ACU is the BMNS panel. The ACU shall take precedence over the Whelen IPS 400 signal and over any LOC function. The LOC shall take precedence over the IPS signal. Once the ACU is activated, the LOC shall not be able to override the ACU. The MNS shall take priority over the fire alarm and the PA system (if installed). The fire alarm system shall override the PA. Any mass notification or fire alarm even shall override the microphone used as a PA.

3.5. Audible Appliances

3.5.1. Design criteria for locating audible appliances. The sound pressure level in a room or area shall not vary by more than 6 dB across the room or area (starting at a point 10 feet from the speaker or horn).

3.5.2. Voice notification appliances shall have adjustable or multi-tap settings with available settings both above and below the design settings (except that 15 watt devices, where permitted, can be at the highest setting). Devices shall be spaced such that the device does not need to be tapped higher than 0.5 watt to meet audibility and intelligibility requirements.

3.5.3. Amplifier circuits shall be loaded to no more than 70 percent of rated continuous capacity when producing sound levels as required by NFPA 72 against normal ambient background noise levels for this occupancy for simultaneous operation of all speakers for all areas in the voice zone. Annotate data for each circuit on the drawing.

3.6. Local Operator Consoles (LOC)

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- 3.6.1. All LOC are required to have an adjustable microphone gain. All LOC's shall have handheld microphone.
- 3.6.2. The contractor shall provide instructions located inside the LOC cabinet and at the ACU describing the procedures for initiating either live voice messages or pre-recorded messages. These instructions shall be permanently attached to the cabinet.
- 3.6.3. LOC microphones shall be located and adjusted so that the microphones can be used to provide a message meeting the intelligibility requirements of UFC 4-021-01. LOC's may be located in the stairs; however travel distance defined in UFC 4-021-01 must still be met. If LOC's are provided in the stairs, the contractor shall provide an amber strobe at each floor landing in the stairs.
- 3.6.4. The LOC shall be capable of a minimum of 8 pre-recorded messages. The following pre-recorded messages shall be programmed into and clearly labeled on the LOC's:
 - a. Attention all personnel: There has been a bomb threat. Evacuate immediately and proceed to your designated evacuation point. This is not a drill.
 - b. Attention all personnel: Lockdown, lockdown, lockdown. There is an active shooter on the premises. This is not a drill.
 - c. Attention all personnel: Please evacuate the building immediately. Listen for announcement of alternate exit path if required. This is not a drill.
 - d. Attention all personnel: Attention, attention. The Force Protection Condition for Eielson AFB has been elevated. All personnel are to immediately implement prescribed actions. Tune your television to the Commander's access channel or access the base intranet for further information.
 - e. Attention all personnel: Please proceed to your designated shelter-in-place room immediately and wait for further instruction. This is not a drill.
 - f. Attention all personnel: This is a severe weather warning. Make sure to keep track of weather conditions and be prepared to take shelter.
 - g. Attention all personnel: The building emergency or test has now ended. Please resume your normal duties. Thank you for your cooperation.
 - h. Attention all personnel: This is a test of the Mass Notification system. This is only a test.
- 3.6.5. LOC's should be labeled "Mass Notification System LOC".

4. Sprinkler/Suppression Systems

4.1. Piping and Connections

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- 4.1.1. Plastic pipe is prohibited.
 - 4.1.2. Flexible hose connections for sprinklers are prohibited.
 - 4.1.3. All piping used on the fire suppression system shall be black steel Schedule 40.
 - 4.1.4. Fittings for non-grooved steel pipe shall be malleable iron conforming to ASME B16.3. Fittings into which sprinklers, drop nipples or riser nipples (sprigs) are screwed shall be threaded type. Plain-end fittings with mechanical couplings, mechanical tee's, fittings that use steel gripping devices to bite into the pipe and segmented welded fittings shall not be used. Gasket for grooved couplings shall be the flush type that fills the entire cavity between the fitting and the pipe. Reductions in pipe sizes shall be made with one-piece tapered reducing fittings.
- 4.2. Valves and Backflow Prevention
- 4.2.1. Inspector's test valve is to be located at the farthest point of the suppression system.
 - 4.2.2. The contractor shall provide a floor control valve assembly or separate riser for each floor in the building. Assembly shall comply with Figure 4-1 of UFC 3-600-01.
 - 4.2.3. All control valves except the backflow preventer may be butterfly valves or outside screw & yoke (OS&Y) gate type and shall be provided with tamper switches connected to the Fire Alarm Control Panel (FACP). Backflow preventer shall be OS&Y type. Butterfly valves for a normally closed valve shall be supervised in the normally closed position.
 - 4.2.4. Control valves shall be installed in a location accessible by maintenance personnel and inaccessible to building occupants.
 - 4.2.5. A double-check backflow prevention assembly that complies with ASSE 1013 or ASSE 1015 shall be provided at the sprinkler riser connection to the potable water system. Provide piping, valves, test header, and other devices necessary to provide a permanent method for forward flow testing of the backflow prevention assembly at system demand. Forward flow test shall not require removal of check valve disk. If a reduced pressure backflow preventer is provided, the disinfection requirements located elsewhere are not required. Vent from the reduced pressure backflow preventer shall be provided with drain piping to an adequately sized floor drain. Prior to final sprinkler testing, the backflow preventer shall be tested by a certified backflow assembly tester. Backflow preventer testing documentation will need to be supplied to 354th CES Utilities Shop Supervisor, Sheldon Sites or his replacement. Backflow preventer test header shall be exterior to the building with a supervised shut-off valve inside the building.
- 4.3. All arctic entries to be protected by dry sprinklers where required.

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- 4.4. If a wet pipe system is utilized, ensure a time-delay programming for the flow switch installed to counter any water pressure instability.
- 4.5. Hydraulic calculations shall take into account the domestic water demand in addition to the fire sprinkler and hose stream demand. All calculations shall include a 10 percent safety factor on the system pressure. Water velocity in the piping system shall not exceed 20 feet per second. Software that uses k-factors for typical branch lines is not acceptable.
- 4.6. Provide manual air vents and/or auxiliary drains to allow bleeding of air from all the sprinkler piping.
- 4.7. Sprinkler pipe shall not be located in the communications room or elevator machine room. Sprinklers protecting the communications room or elevator machine rooms shall be sidewall type and provided with a guard.
- 4.8. Sprinklers located in the hangars bays shall be pre-action type in accordance with UFC 4-211-01, *Aircraft Maintenance Hangars* and 4-211-02, *Aircraft Corrosion Control and Paint Facilities*.
- 4.9. Sprinklers shall be provided to protect all floor areas under the first floor stair including landings and risers.
- 4.10. Hydrant flow shall be re-tested prior to design work on the sprinkler system to obtain the flow quantities. Fire Protection Engineer Designer of Record is required to witness flow tests.
- 4.11. Dormitories only: Flushed concealed sprinkler heads shall be provided in the dwelling units and the corridors located outside the dwelling units.
- 4.12. If an elevator pit sprinkler is provided, a flow switch shall be provided in the same location as the pit sprinkler control valve.
- 4.13. Water motor alarms shall not be used. See Section 4.14 for electrically operated bell.
- 4.14. Waterflow exterior alarm signal shall be an electrically operated 24VDC waterflow bell on exterior of the building and shall be non-silenceable.

5. Closeout Requirements

- 5.1. Asbuilt Drawings
 - 5.1.1. The contractor shall supply electronic copies (a .pdf file) of the final as-built drawings, O&M manuals and a copy of the fire alarm/sprinkler system program to the Alarm Shop.
 - 5.1.2. Wall maps at 1/8" to 1 foot scale shall be provided for each system and mounted next to their respective system. The Fire alarm map shall show the location of each device and the device ID. The sprinkler maps shall show the location of

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each low point drain and each main drain point. The Contractor shall supply a .pdf file of the final as-builts to the Alarm Shop.

5.1.3. All blueprints and as-builts related to the fire alarm and suppression systems need to be forwarded to the Alarm Shop 48 hours prior to the 100% acceptance test. As-built drawings must show the location and address or zone of each device in the system. Intelligent devices must be labeled with their address.

5.1.4. Two suitably framed drawings are required in the suppression room: one drawing showing all interconnections of suppression components, and one drawing listing the sequence of operation for testing, and resetting after a system trip.

5.2. O&M Manuals

5.2.1. The contractor shall provide a fire alarm sequence of operation matrix.

5.2.2. Copies of manuals for all systems and equipment shall be turned over to the 354th CES Alarm Shop for system maintenance, reprogramming, and testing.

5.2.3. A locked cabinet keyed to the fire alarm panel shall be provided near the fire alarm panel. The contractor shall place hard copies of the O&M manuals for the fire alarm/sprinkler system and as-built drawings within the cabinet.

5.2.4. The contractor shall provide copies of the fire programming software, including operating software keys, and interface equipment for both the fire alarm panel and all fire system devices requiring programming, even if these items are proprietary. Any revisions to the fire alarm software, and any revisions of the software in the systems with which the fire alarm software interfaces, shall be verified for compatibility in accordance with the requirements of NFPA 72 Paragraph 23.2.2.1.1.

5.3. Training

5.3.1. Fire Alarm Training

- a. Training course shall be provided for Alarm Shop personnel. The course shall be conducted in the building where the system is installed or as designated by the Contracting Officer. The training shall consist of two, 2-hour training sessions held on consecutive days with one training session per day, unless otherwise setup with the Alarm Shop. The training shall start after the system is functionally completed but prior to final acceptance tests. The instruction shall cover items contained in the operation and maintenance instructions. The contractor shall provide all required training material, visual aids, software/hardware to supply the number of personnel to be trained in each training session.

5.3.2. Sprinkler System Training

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- a. Training course shall be provided for Alarm Shop personnel. The course shall be conducted in the building where the system is installed. The training shall consist of a single, 2-hour training session. The training shall start after the system is functionally complete.

5.3.3. MNS Training

- a. Training course shall be provided for Alarm Shop personnel. The course shall be conducted in the building where the system is installed. The training shall consist of a single, 2-hour training session. The training shall start after the system is functionally complete.

5.4. Testing

5.4.1. Sprinkler System Testing

- a. The system, including the underground water mains, and the aboveground piping and system components, shall be tested in accordance with NFPA 13 and NFPA 24 to assure that equipment and components function as intended. Upon completion of specified tests, the contractor shall complete and submit the Contractor's Material and Test Certificates. The contractor shall coordinate with the Contracting Officer's Representative to invite Alarm Shop personnel and Fire Department personnel to witness final testing. Final testing schedule shall be flexible to accommodate Fire Alarm Shop schedule.

5.4.2. Fire Alarm & MNS Testing

- a. The fire alarm and MNSs shall be fully tested with a functional and operational performance tests including each installed initiating and notification device, meggering of conductors for grounded, shorted or open circuits. An acceptance test shall be performed in accordance with NFPA 72. Each device shall be tested. After testing is completed, the contractor shall furnish to the Contracting Officers Representative completed originals of the NFPA 72 Record of Completion and the NFPA 72 Testing and Inspection form. The contractor shall coordinate with the Contracting Officer's Representative to invite Alarm Shop personnel and Fire Department personnel to witness final testing. Final testing schedule shall be flexible to accommodate Fire Alarm Shop schedule.

5.4.3. Shop MNS Final Test

- a. Audibility and intelligibility testing of the MNS shall be accomplished in accordance with UFC 4-021-01. UFC 4-021-01 requires an average of three (3) readings of each room to determine the CIS score. The 3 readings will be taken as follows: the most remote point from the speakers in the room; a middle point between speakers to be field determined based on wall or ceiling mounted speakers; and a point close to the speaker. Readings will be

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recorded on an 11x17 plan of the building with CIS scores identified on the drawings.

6. Warranty Coverage

- 6.1. Include in the warranty statement that any code violations not discovered during acceptance testing, but found during the warranty period, will be corrected by the contractor. The 1 year warranty shall begin when the entire facility is signed off, not when the fire alarm portion of the project is complete. Contact the Alarm Shop for further clarification if needed.
- 6.2. One month prior to all fire protection system warranty expiration, the equipment distributor shall perform (at no extra cost) all maintenance as recommended on an annual basis by the manufacturer and required by associated NFPA's. Any defective or damaged equipment shall be replaced, any user requested software changes shall be made and the system recertified. Spare parts provided under this contract shall not be consumed during this period.

7. Alarm Shop Support

- 7.1. In the event that a contractor requires 354th CES Alarm Shop support for the performance of duties as outlined in a contract or is doing work on a fire system, the contractor must coordinate with the Alarm Shop Supervisor/NCOIC, 24 to 72 hours in advance for scheduling purposes.

Attachment 6

**TALCO FIRE SYSTEMS
MILWAUKIE, OR.
503-653-8055/FAX503-653-8797**

10/15/06

SUBMITTAL DATA FOR
AIR NATIONAL GUARD MAINTENANCE
HANGER
ENGINE DRIVEN
HORIZONTAL SPLIT CASE FIRE PUMP

RATED: 2500 GPM @ 95 PSI

FIRE PUMP SUBMITTAL DATA SHEET

DATE: 10/15/06
JOB: ALASKA NATIONAL GUARD MAINTENANCE
HANGER
PUMP DESIGN CONDITIONS: 2500 GPM @ 95# BOOST
PUMP MODEL: AURORA MODEL 8-481-17B UL LISTED
HORIZONTAL SPLIT CASE FIRE PUMP W/125#
FLANGES
ENGINE: CUMMINS MODEL CFP-83-F20, 227 HP @ 1770 RPM
DIESEL, UL LISTED, 12 VOLT DC
CONTROLLER: CUTLER HAMMER MODEL FD100 RATED FOR
DIESEL FIRE PUMPS W/DUAL CHARGERS
JOCKEY PUMP: G&L MODEL 1SV-5 STAGE PUMP WITH A 1-1/2 HP,
480, 3 PHASE MOTOR
JOCKEY CONTROLLER: CUTLER HAMMER PUMP JOCKEY CONTROLLER
FOR 1-1/2 HP, 480 V, SINGLE PHASE
RELIEF VALVE: 6" OCV ANGLE MAIN RELIEF VALVE. WITH 6" X
10" ENCLOSED WASTE CONE

TALCO FIRE SYSTEMS

POWER REQUIREMENTS FOR DIESEL FIRE PUMP ACCESSORIES

PROJECT: Alaska Air National Guard Maintenance Hanger

DATE: 10/13/06

ITEM:

1. **JOCKEY PUMP:** 1-1/2 Hp, 480 V, Single Phase: 2.6 Amps Full Load, 20 Amps Locked Rotor.
2. **ENGINE PREHEATER:** *1500 Watt, 120 V. Single Phase.
3. **MAIN CONTROLLER AC POWER FOR BATTERY CHARGER:**
*30 AMPS, 120 V, Single Phase.
* A separate supply signifies that each device should have its own circuit breaker.

DIESEL FIRE PUMP DATA

2500 G.P.M. 913 SERIES

DIESEL ENGINE DRIVE

Section **913** Page **461**

Date **December 2000**

Supersedes Section 913 Page 461

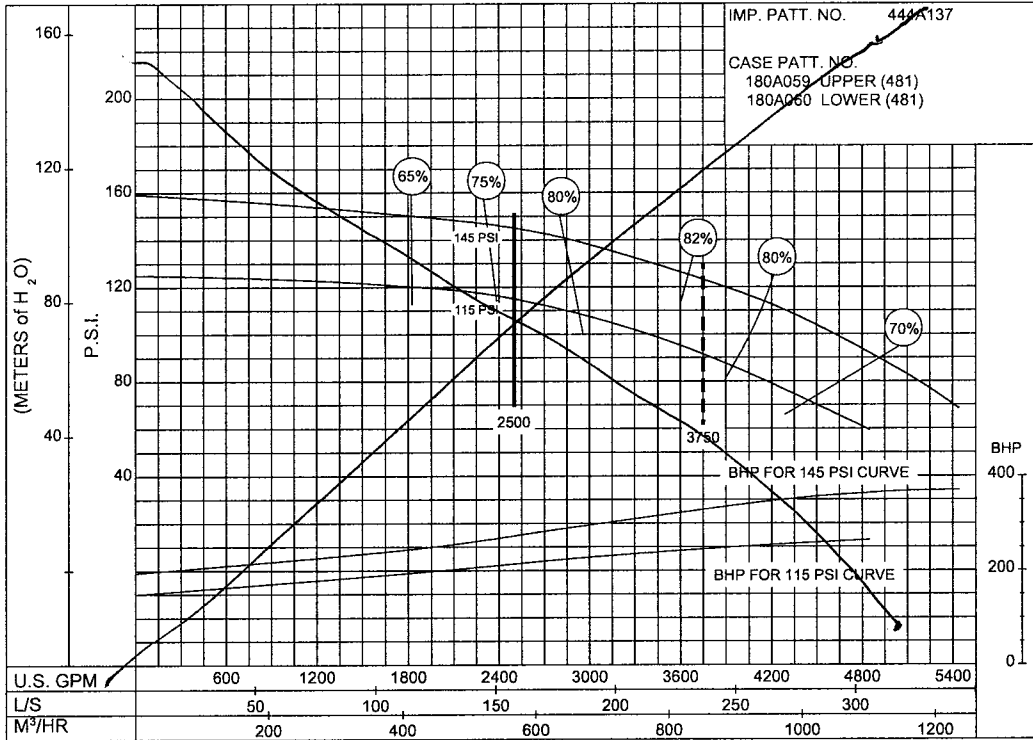
Dated April/November 2000

SIZE : 8-481-17B

MODEL: 480

IMPELLER : Enclosed

R. P. M. : 2100



PC-123147A

115 to 144 P.S.I.

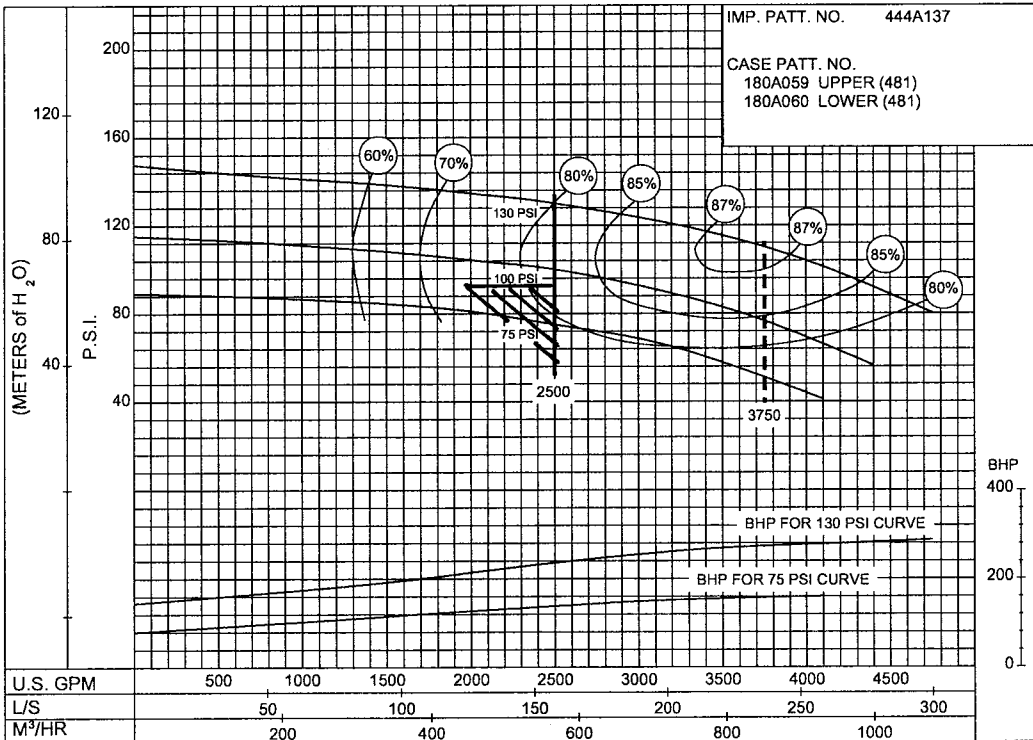
Design: 2500 @ 95%

SIZE : 8-481-17B

MODEL: 480

IMPELLER : Enclosed

R. P. M. : 1750

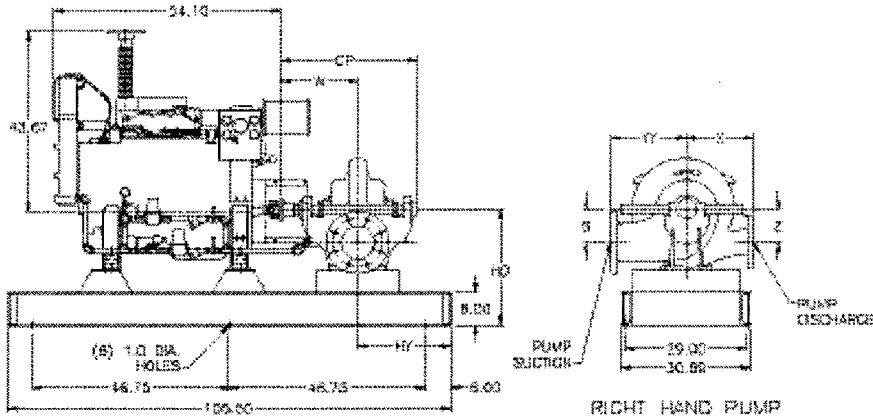


PC-123166A

75 to 130 P.S.I.

AURORA MODEL 481 PUMPS

SINGLE STAGE FIRE PUMPS
CUMMINS CFP59 & CFP6E
DIESEL DRIVE



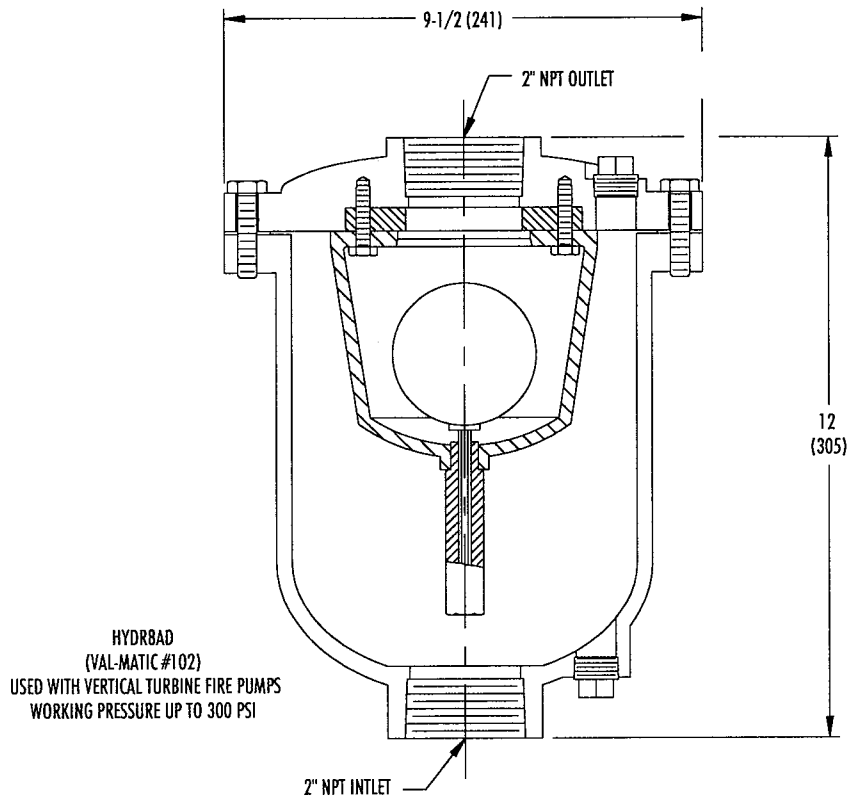
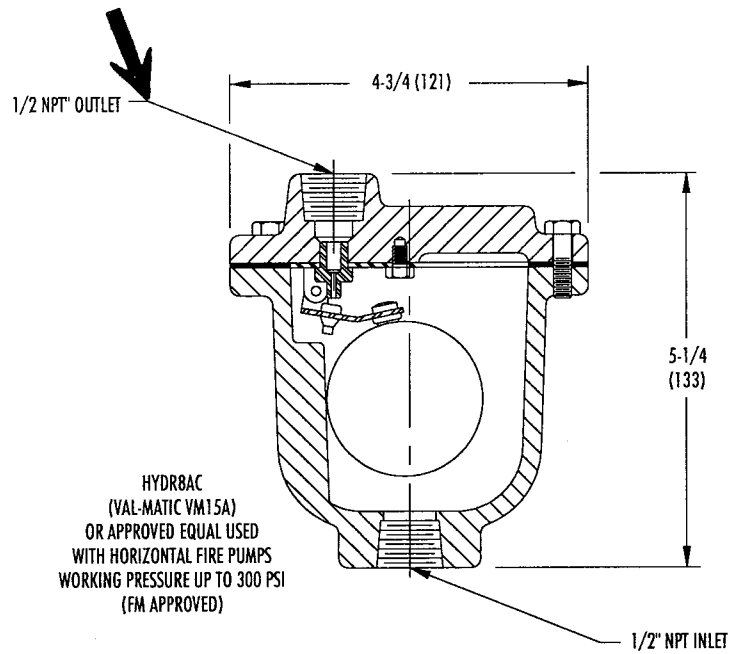
PUMP SIZE		STANDARD* 125# SUCTION AND DISCHARGE FLANGES		OPTIONAL* 125# SUCTION FLANGE, 250# DISCHARGE FLANGE		OPTIONAL 250# SUCTION AND DISCHARGE FLANGES							
DISCH	MODEL	CASE BORE	SUCTION	POWER SERIES	S	W	X	Z	CP	YY	ZZ	HY	HD
5	481	15	6	4	6.25 (159)	16 (406)	13.25 (337)	6.25 (159)	28.5 (724)	15 (381)	1.25	24.31 (617)	28 (711)
5	481	17	5	4	6.25 (159)	16 (406)	14 (356)	6.25 (159)	28.5 (724)	15 (381)	1.25	24.31 (617)	28 (711)
6	481	11HH*	6	4A	8.63 (219)	18.13 (461)	10 (254)	8.63 (219)	32.88 (835)	15 (381)	1.25	22.18 (563)	28 (711)
6	481	14HH*	8	5A	7.5 (191)	20.44 (519)	15 (381)	7.5 (191)	36.75 (933)	17 (432)	1.25	19.88 (505)	28 (711)
6	481	15	8	5	6.75 (171)	18 (457)	14.25 (362)	6.75 (171)	32 (813)	16.75 (425)	1.25	22.31 (567)	28 (711)
6	481	18B/C	8	5	8 (203)	18 (457)	16 (406)	8 (203)	32 (813)	18 (457)	1.25	22.31 (567)	28 (711)
6	481	20	8	5	8 (203)	18 (457)	15.75 (400)	8 (203)	32 (813)	18 (457)	1.25	22.31 (567)	28 (711)
8	481	17B	10	5	8 (203)	18 (457)	17 (432)	8 (203)	32 (813)	17.75 (451)	1.25	22.31 (567)	28 (711)
8	481	21	10	6B	9.5 (241)	21.88 (556)	18 (457)	9.5 (241)	38 (965)	21 (533)	1.25	18.43 (468)	28 (711)
10	481	18	12	6B	13.5 (343)	21.88 (556)	18 (457)	13.5 (343)	38 (965)	22 (559)	1.25	18.43 (468)	33 (711)

NOTES

- All dimensions are in inches (mm) and may vary $\pm 3/8"$ (9).
- Not for construction purposes unless certified.
- Suction and discharge flanges are ANSI Standard flat face.
- Refer to individual engine dimension print for reference point used to determine engine overall length.
- Left hand (CCW) rotation not available.
- The drive shaft is not designed to operate at 0° angle. The engine crankshaft is to be parallel offset 0.50 \pm 0.25 inch. The engine crankshaft may be parallel offset from the pump shaft 0.50 inch right or left.

*Pump size 6-481-11HH & 6-481-14HH are furnished as standard with 125# suction flange and 250# discharge flange.

AURORA FIRE PUMPS AUTOMATIC AIR RELEASE VALVE



NOTES:

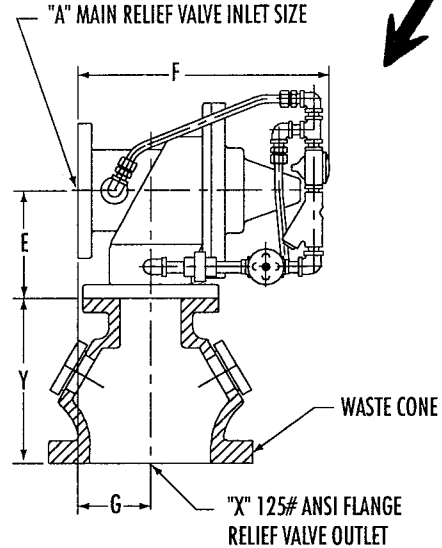
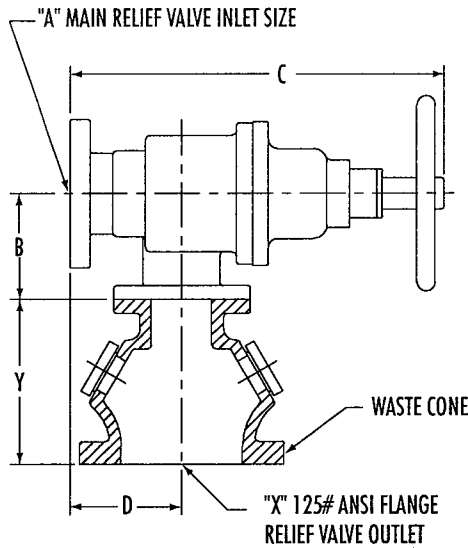
1. All dimensions are in inches (mm) and may vary $\pm 1/4$ (6).

AURORA FIRE PUMPS

OPTION 79 - MAIN RELIEF VALVE

OPTION 80 - WASTE CONE

Section **916** Page **205**
 Date **June 2002**
 Supersedes Section 916 Page 205
 Dated July 2001



- Spring-Operated Main Relief Valve
 - 125# INLET FLANGE
 - 250# INLET FLANGE

- Pilot-Operated Main Relief Valve
 - 125# INLET FLANGE
 - 250# INLET FLANGE

Enclosed Waste Cone

Enclosed Waste Cone

PUMP RATING G.P.M.	A	INLET FLANGE RATING	SPRING-OPERATED MAIN RELIEF VALVE			PILOT OPERATED MAIN RELIEF VALVE			WASTE CONE	
			B	C	D	E	F	G	X	Y
250 500	3	125#	5-7/8 (149)	21-1/4 (540)	6-1/8 (155)	6 (152)	14-7/8 (378)	4 (102)	5	11 (279)
		250#				6 (152)	15-1/4 (387)	4-3/8 (111)		
750 1000	4	125#	6-7/16 (163)	22-5/8 (575)	6-5/8 (168)	7-5/8 (194)	16-15/16 (430)	5-1/16 (129)	8	11-1/2 (292)
		250#				7-15/16 (202)	17-1/4 (438)	5-3/8 (137)		
1250 1500 2000 2500	6	125#	8-1/2 (216)	36 (914)	9-3/8 (238)	10 (254)	19-7/8 (505)	6 (152)	10	11-1/2 (292)
		250#				10 (254)	20-3/8 (518)	6-1/2 (195)		
3000 3500	8	125#	Not Available			12-3/4 (324)	22-7/8 (581)	8 (203)	12	12 (305)
		250#								
4000 4500 5000	8	125#	Not Available			12-3/4 (324)	22-7/8 (581)	8 (203)	14	16 (406)
		250#								

NOTES:

1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Valves are available with inlet flange ratings of 125# or 250#. All waste cones have 125# flange ratings.
3. Dimensions for conventional relief valves are not affected by flange rating.
4. Relief valve discharge is intended to be piped to waste. Refer to factory if discharge is to be piped to a line where back pressure is present.
5. Maximum operating pressure for valves rated for 125# is 175 PSI.
6. Maximum operating pressure for valves rated for 250# is 300 PSI.

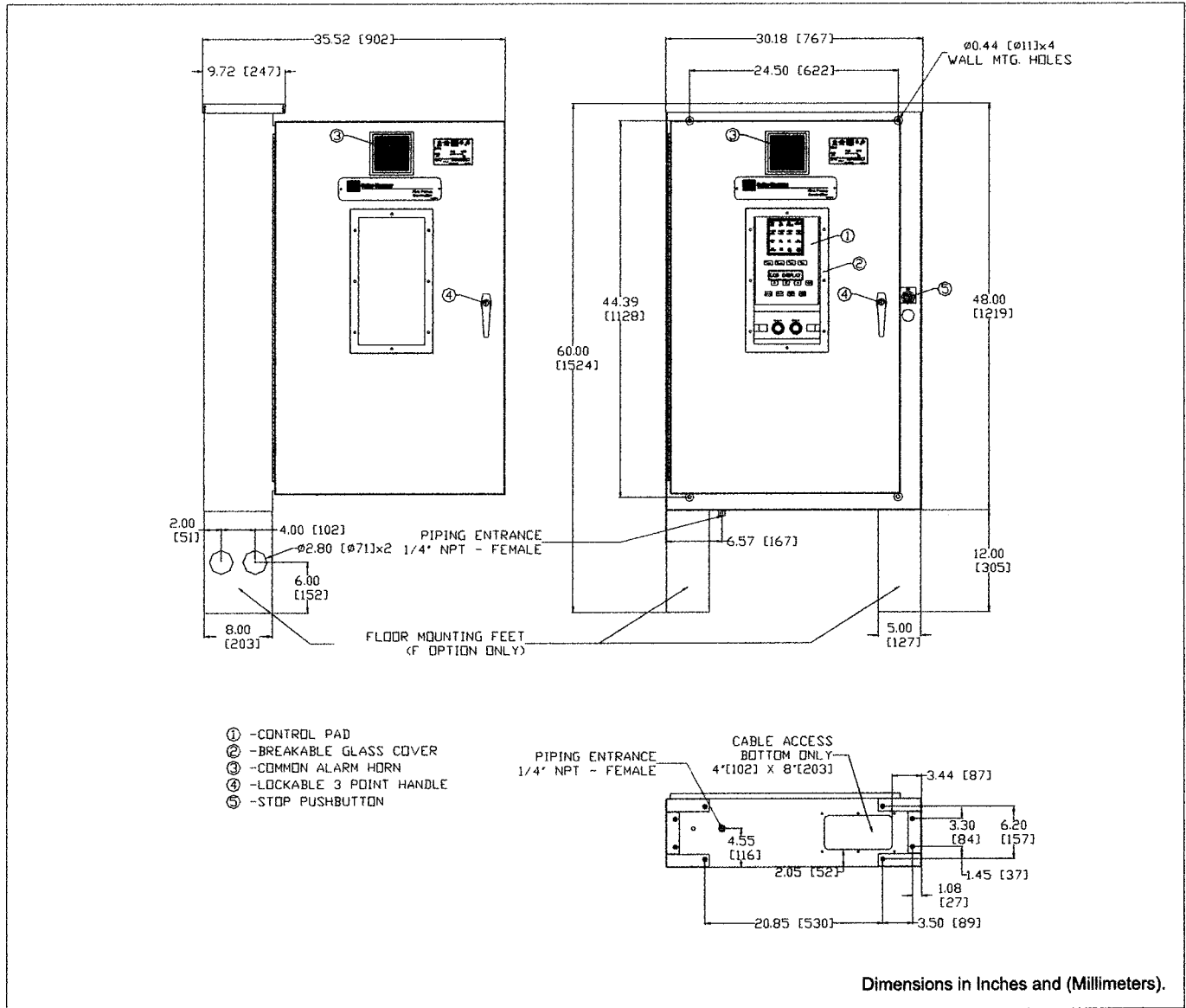
DIESEL FIRE PUMP CONTROLLER DATA

December 2005

FD100 Diesel Engine Controllers

Dimensions

Standard Enclosure - Type NEMA 2, 12

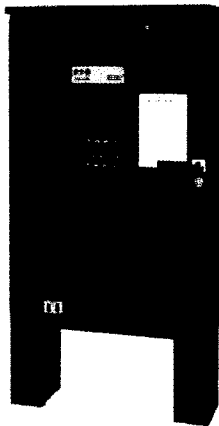


Approx. Weight Lbs. (Kg)
250 (113)

NOTE:
 1. All Enclosures finished in Fire Pump red.
 2. Cable Entrance bottom only.
 3. Standard Enclosure type NEMA 2,12
 4. Enclosure made from #14 Gauge (0.75) HR Steel.



FD100 Diesel Engine Controllers



Product Description

The FD100 Diesel Engine Controller is designed to control and monitor 12 or 24 volt, diesel fire pump engines. All models are listed by UL and ULC, and approved by Factory Mutual and CSA, as well as meeting or exceeding the requirements of NFPA 20 and NFPA 70.

Product Features

Microprocessor Control

EATON Cutler-Hammer FD100 Diesel Engine Fire Pump Controllers are microprocessor based. All events surrounding the operation of the controller are stored within the memory, thus giving the ability to diagnose and troubleshoot problems based on an actual history of events. Events are time and date stamped.

A main display unit provides a read-out of parameters such as current pressure, volts and amps and will display error messages as well as provide alarm indication. A status report is available which can be printed locally. The status reports provide a record of the state of the controller as it was left after commissioning.

Pressure Transducer: 0 - 600 psi

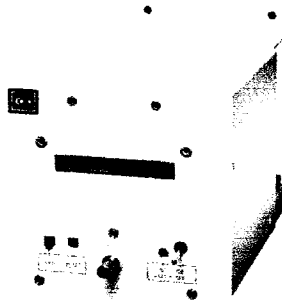
Each FD100 controller is equipped with a stainless steel, 0-600 psi pressure switch capable of withstanding a momentary surge pressure of 1000 psi.

Run Period Timer

The run period timer is built into the FD100 microprocessor and can be accessed via the membrane / keypad. It is programmable from 0-60 minutes and should be reset to thirty (30) minutes when the controller is placed in service.

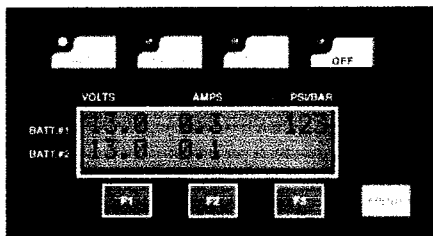
Printer / Recorder

The industrial grade thermal printer is housed in a rugged steel enclosure within the controller. The on/off switch, feed and reset buttons are front accessible. A bi-color status LED is also visible on the front of the printer. Green indicates - "Printer Operational" while yellow indicates - "Out of Paper".



Last 1024 Messages

The internal microprocessor stores the most recent 1024 messages in it's memory. The messages can be printed, viewed on the LCD screen or downloaded to a computer. Each message is time and date stamped. The LCD display acts as a paperless chart recorder.



Common Alarm Relay

The FD100 controller has a common alarm relay which energizes whenever there are any alarm conditions present. This relay is energized under normal conditions and has LED status indication.

Additional Output Relays

Two additional output relays labeled Future #1 and Future #2, can be user programmed to operate for ten (10) different functions. Programming is done in the FD100 menu using the membrane / keypad.

Alarm Relay Ratings

All alarm relays are rated at 10 Amps, 220VAC 1/3HP resistive load only.

Engine Crank Cycle

Upon detecting a drop in system pressure, the microprocessor sends a start signal to the engine, initiating its' crank cycle.

The crank cycle consists of six periods of 15 second duration, separated by five rest periods of 15 second duration alternating on each set of batteries. If the engine does not start within this cycle, an audible and visible "Fail to Start" alarm is activated. Should voltage of either battery fall below 67% of normal during the crank cycle, a "Battery Failure" alarm will be activated and the FD100 will alter the cranking sequence by continuing the process with the remaining "good" battery.

The crank cycle terminates when the engine starts. The FD100 continues to monitor the batteries and engine for conditions such as: water temperature, oil pressure and speed (RPM).

NEMA 2 Enclosures

All FD100 controllers come standard with NEMA 2 enclosures unless otherwise ordered. Available options include: NEMA 3R, 4, 4X, 12.

AC Power Failure

The FD100 microprocessor retains a record in it's memory whenever AC power is applied / restored to the controller. The LCD display indicates the message "AC Power OK".

Weekly Test Timer

Each diesel controller is equipped with a Weekly Test Timer, 24 hour clock, to automatically exercise the engine once a week for the time specified as per NFPA Pamphlet No. 20.

Relay Board

The FD100 Relay Board is clearly labeled with pull-apart terminal blocks for ease of wiring and connections. All relays are labeled with full description as well as corresponding three letter designation as indicated on the wiring diagram.



A visual LED indicates the energized state of the relay.

All plug-in relays are identical 3PDT, allowing complete interchangeability.

All terminal numbers are indicated on both the stationary and moveable portion of the terminal blocks.

Pump Room Trouble and Engine Trouble common alarm relays are standard.

FD100 Diesel Engine Controllers

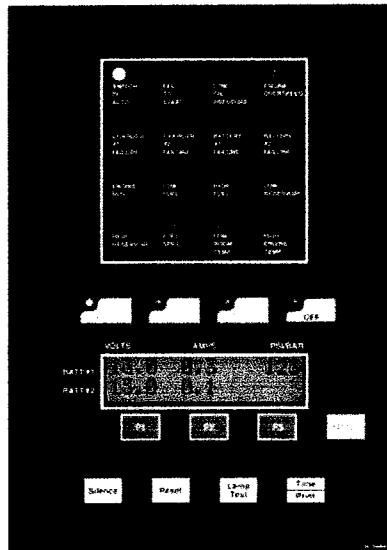
Product Features

Alarm & Status Indication

The display panel is equipped with sixteen indication LED's which indicate various functions and operations of the controller. They are colour keyed to the urgency of the indication. Green indicates normal running conditions, Yellow indicates supervisory alarms and Red indicates critical alarms.

LCD Display / Function Panel

The 2 line liquid crystal display allows viewing of all programming parameters in addition to battery and pressure information without opening the front door of the controller. Messages can also be downloaded to a laptop computer via the communications port located on the top of the main microprocessor board.



Alarm LED's

- Auto Mode
- Fail to Start
- Low Oil Pressure
- Engine Overspeed
- Engine Run
- Battery Failure
- Charger Failure
- Low Fuel Level
- High Fuel Level
- Fuel Spill
- High Engine Temperature
- Low Pump Room Temperature
- High Reservoir Level
- Low Reservoir Level

Technical Data and Specifications

Line Terminals (Incoming Cables)

Recommended Wire Size	Terminal Number	Distance
Stranded # 14 (1.63 mm)	1-5, 9, 10, 16-38, L, N	N. A.
Stranded # 14 (1.63 mm)	39 - 134	N. A.
Stranded # 10 (2.59 mm)	Ground	N. A.
Stranded # 10 (2.59 mm)	6, 7, 8, 11	0 feet to 25 feet (7.62m)
Stranded # 8 (3.26 mm)	6, 7, 8, 11	25 feet to 50 feet (7.62 - 15.24m)

Standards & Certification

The FD100 Diesel Engine Fire Pump Controllers meet or exceed the requirements of Underwriters Laboratories, Underwriters Laboratories Canada, Factory Mutual, the Canadian Standards Association, New York City building code, and are built to NFPA 20 standards.



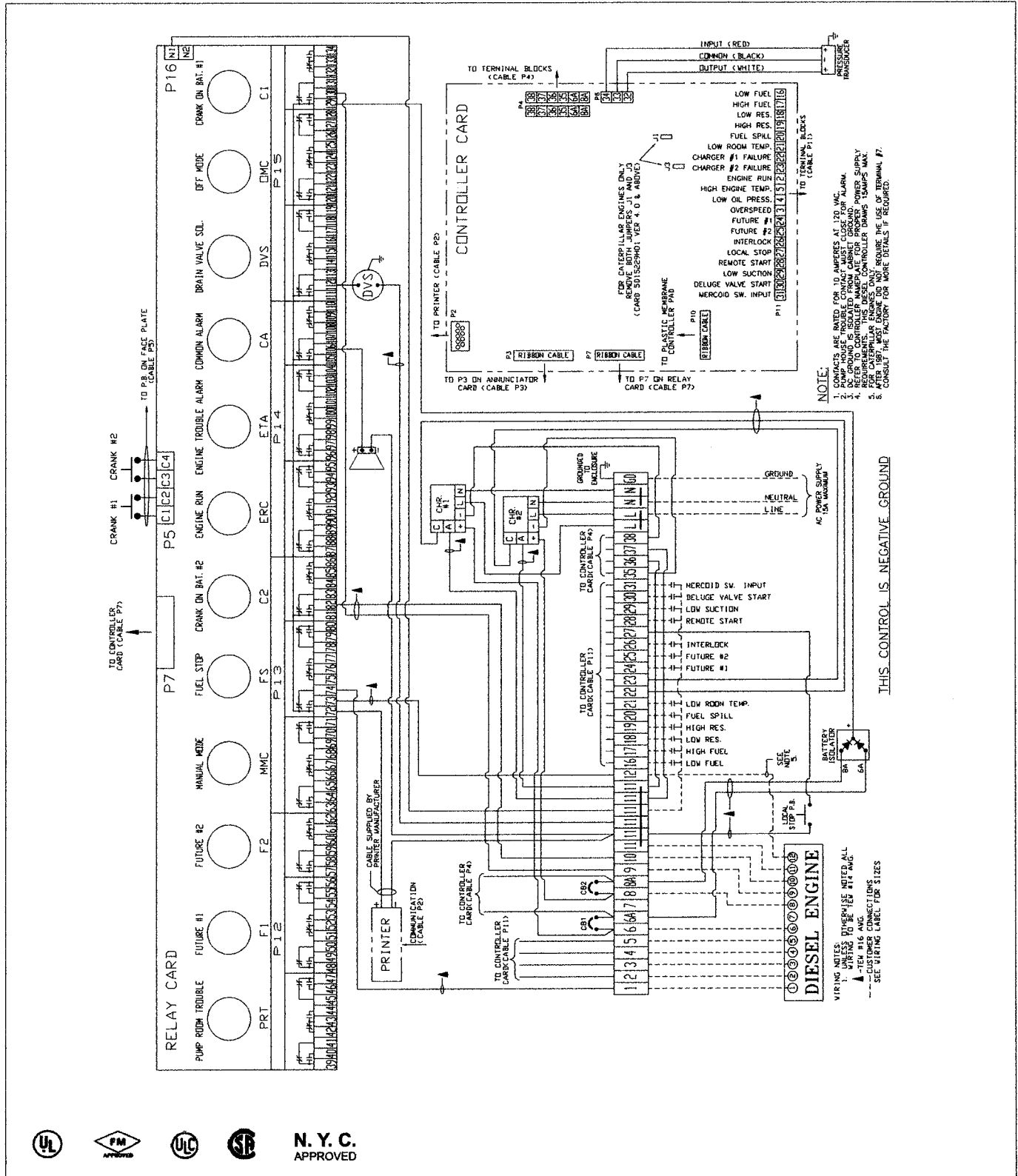
N. Y. C.
APPROVED



For CE Approved Dimensional drawing - see Page 1-5.

FD100 Diesel Engine Controllers

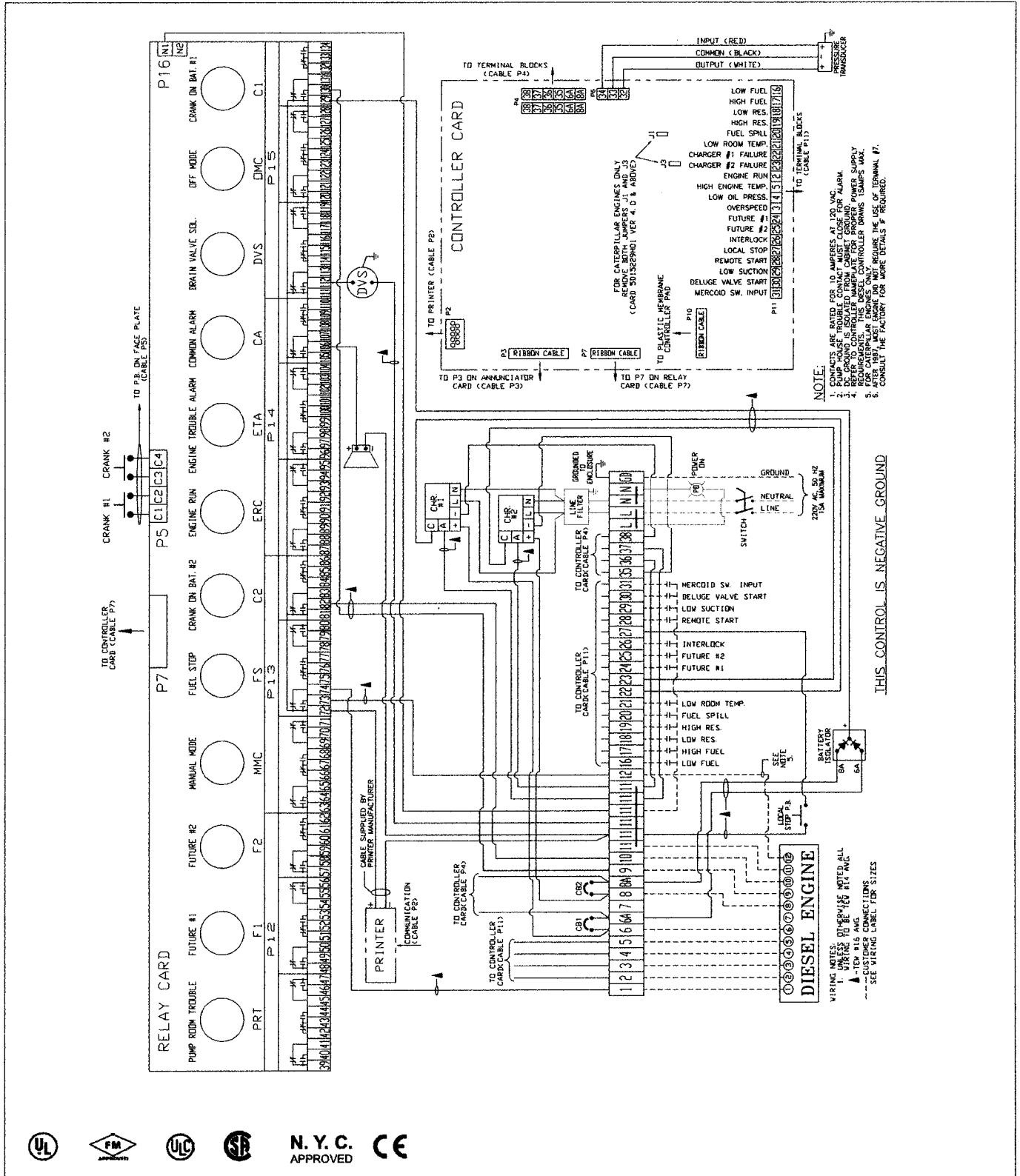
Electrical Wiring Schematic FD100 Diesel Engine Controllers



December 2005

FD100 Diesel Engine Controllers

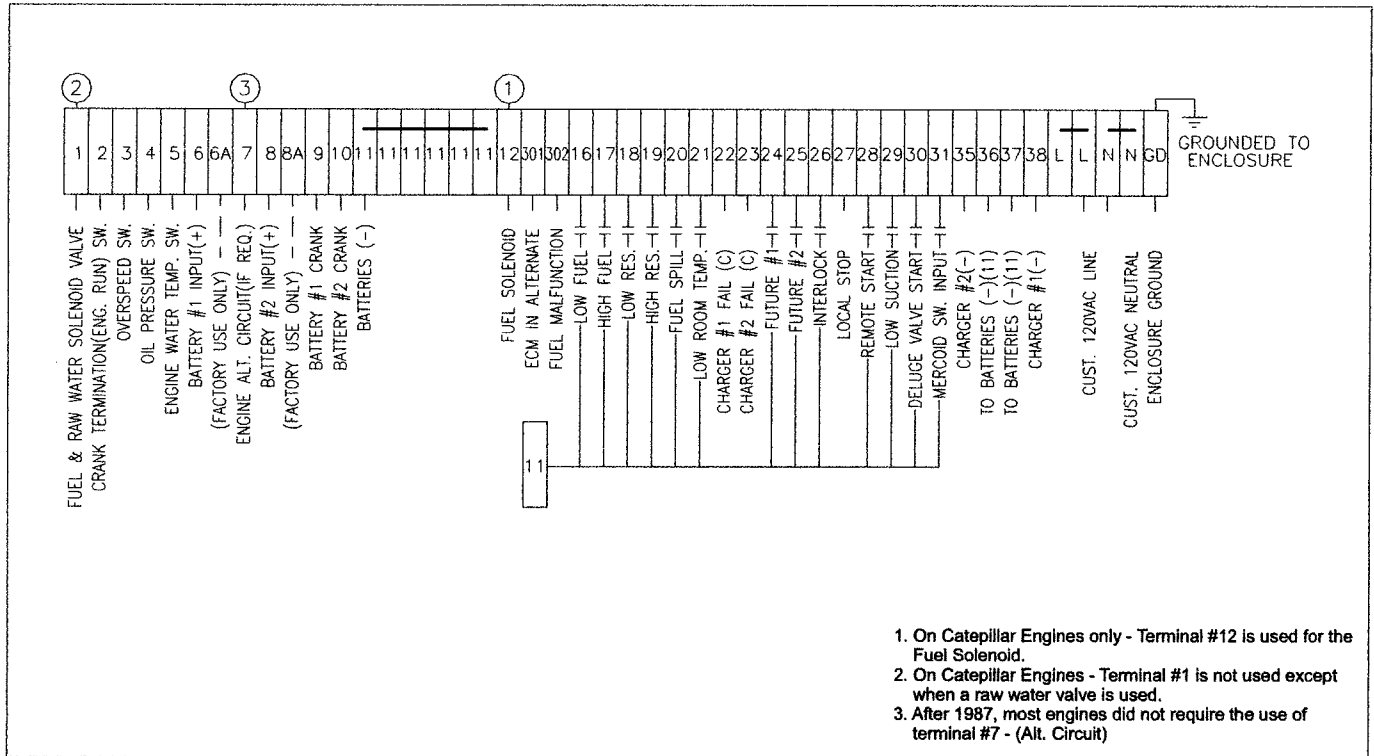
**Electric Motor Connections
FD110 CE Approved Diesel Engine Controllers**



FD100 Diesel Engine Controllers

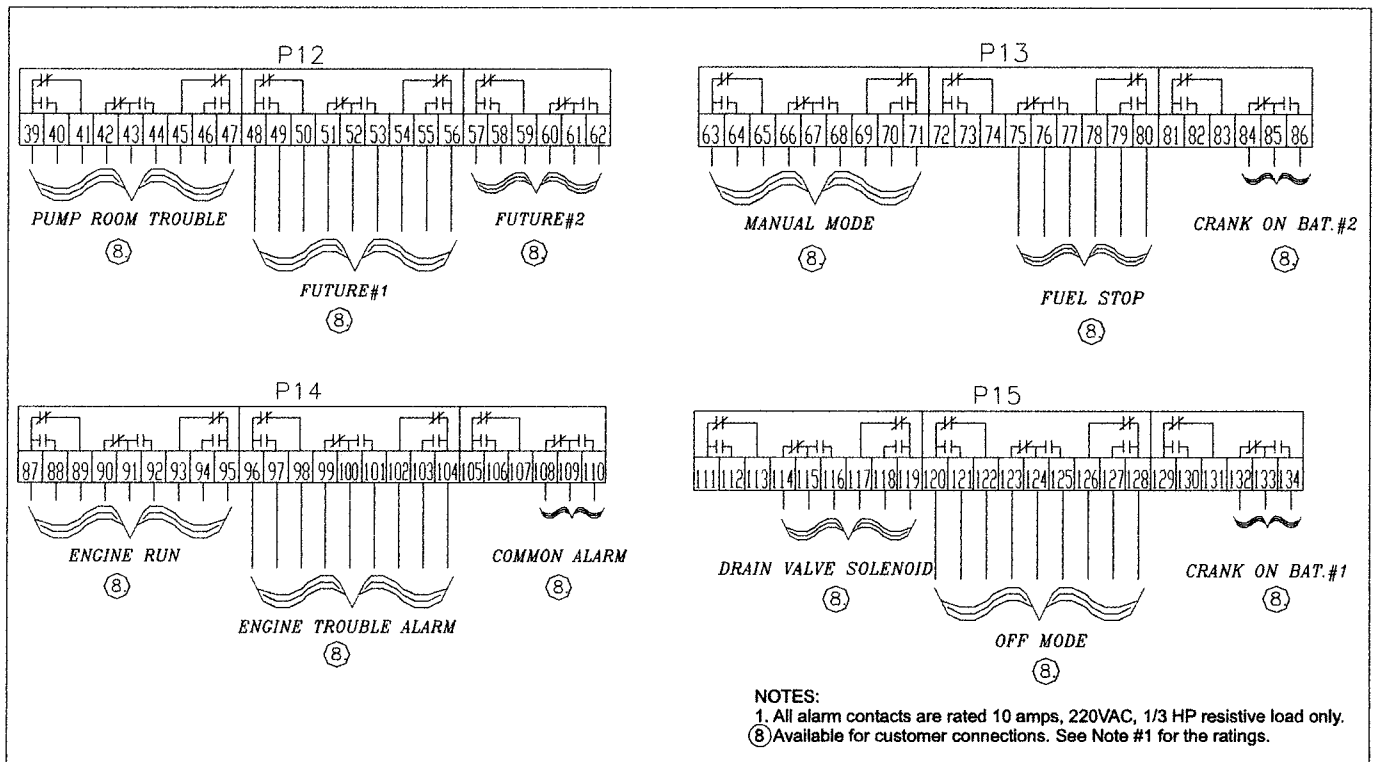
Field Connections

Main Terminal Block

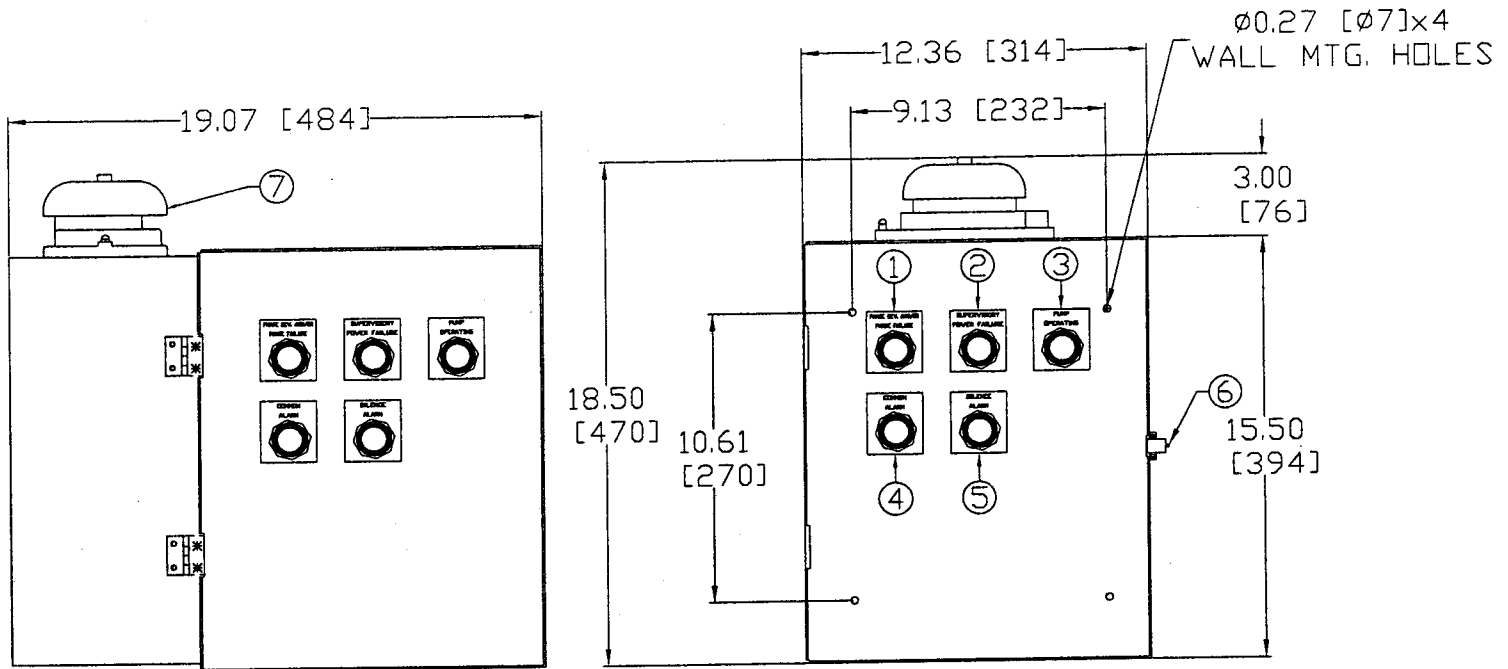


1. On Caterpillar Engines only - Terminal #12 is used for the Fuel Solenoid.
2. On Caterpillar Engines - Terminal #1 is not used except when a raw water valve is used.
3. After 1987, most engines did not require the use of terminal #7 - (Alt. Circuit)

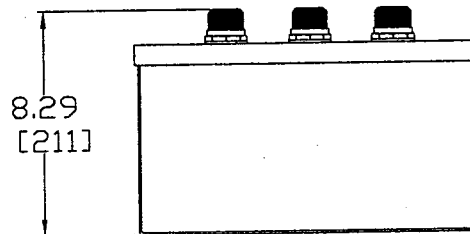
Relay Card Terminal Blocks



- NOTES:**
1. All alarm contacts are rated 10 amps, 220VAC, 1/3 HP resistive load only.
 - ⑧ Available for customer connections. See Note #1 for the ratings.

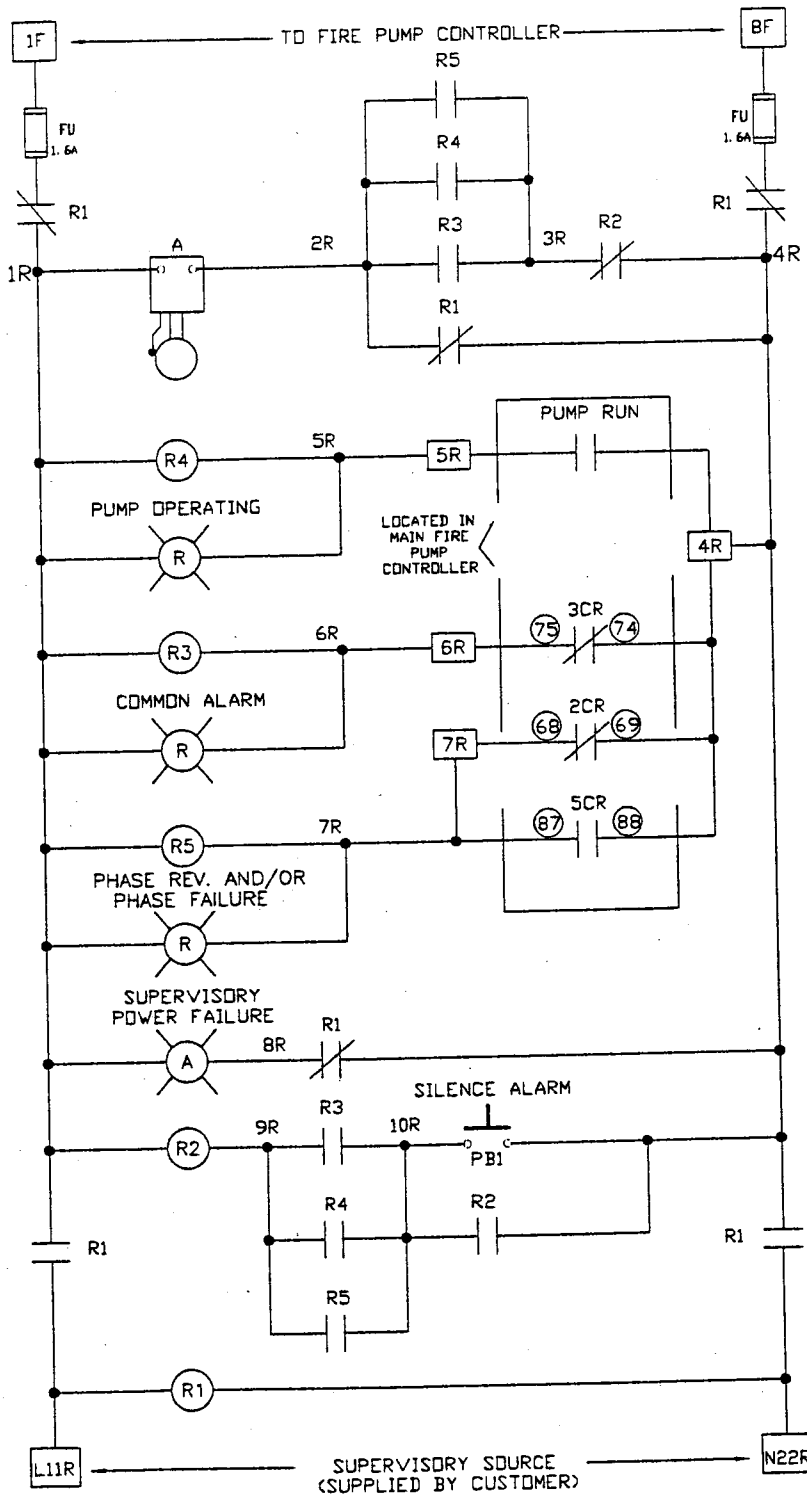


- ① -PHASE REVERSAL AND/OR PHASE FAILURE LIGHT
- ② -SUPERVISORY POWER FAILURE LIGHT
- ③ -PUMP OPERATING LIGHT
- ④ -COMMON ALARM LIGHT
- ⑤ -SILENCE ALARM PUSHBUTTON
- ⑥ -DOOR LATCH
- ⑦ -ALARM BELL



Approx. Weight Lbs. [Kg]
40 [18]

NOTE:
 1. ALL ENCLOSURES FINISHED IN FIRE PUMP RED
 2. CABLE ENTRANCE EITHER TOP OR BOTTOM
 3. STANDARD ENCLOSURE TYPE NEMA 1



LEGEND:

- A-ALARM BELL
- R1-SUPERVISORY POWER FAILURE RELAY
- R2-SILENCE ALARM RELAY
- R3-COMMON ALARM RELAY
- R4-PUMP RUNNING RELAY
- R5-PHASE REVERSAL AND/OR PHASE FAILURE ALARM RELAY
- PB1-SILENCE ALARM PUSHBUTTON
- FU-CONTROL FUSES

NOTES:

1. ALL RELAY CONTACTS ARE SHOWN IN NO POWER CONDITION.
2. FOR CONNECTIONS TO FIRE PUMP CONTROLLER REFER TO DRAWINGS DDFDX01.

RECOMMENDED WIRE SIZE (AWG)	NUMBER OF FEET (METERS) FROM THE CONTROLLER TO THE REMOTE PANEL
#16	3000' [914.4]
#14	4500' [1371.6]
#12	7000' [2133.6]

NOTE:

- # - TERMINAL BLOCK
- (87) - TERMINAL ON RELAY CARD

DIESEL ENGINE & COMPONENT DATA



Fire Power

Engine Specification Sheet

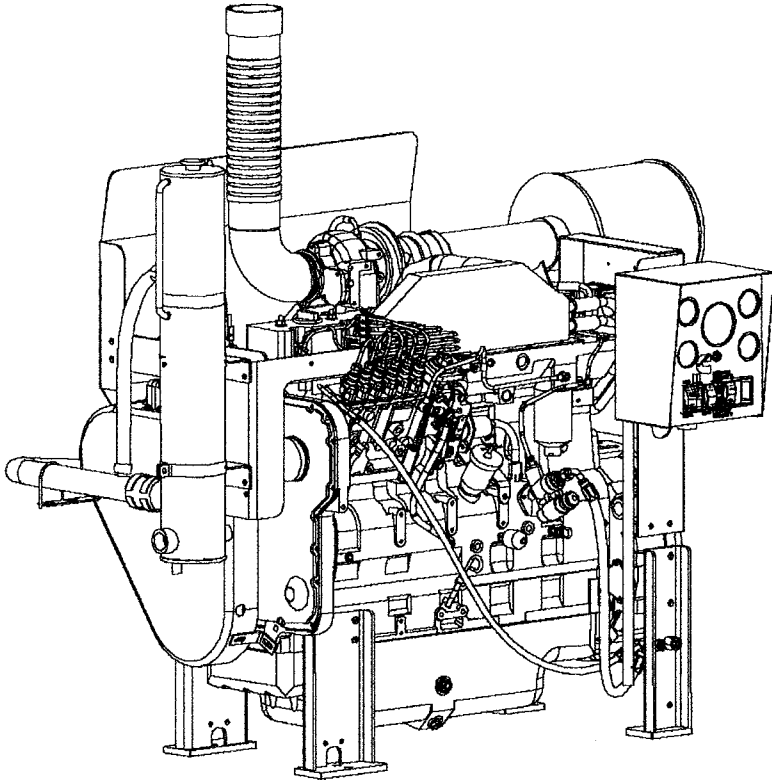
Cummins Fire Power
DePere, WI 54115
<http://www.cumminsfirepower.com>

Basic Engine Model

CFP83-F30, F20, F10

Curve Number: **FR - 90242, 90243**

Revision Date: **August 2006**



Equipment	Standard	Optional
Air Cleaner	Direct Mounted, Disposable, Indoor Service	Disposable, Treated for High Humidity, Indoor Service
Alternator	12V-DC, 95 AMPS; With Belt Guard	24V-DC, 45 AMPS; With Belt Guard
Cooling Loop	N/A	Maximum Pressure of 400 PSI
Exhaust Protection	Metal Guards on Manifolds and Turbo	N/A
Exhaust Flex Connection	SS Flex, NPT	SS Flex, 150# Flange
Flywheel Power Take-Off	Flywheel with Mounting for Coupler	•Drive Shaft System •Stub Shaft
Fuel Connections	Fire Resistant Flexible Supply and Return Lines	N/A
Fuel Injection	Direct Injection	N/A
Fuel Filter	Primary Filter with Priming Pump	N/A
Engine Heater	120V-AC, 2250 Watts	240V-AC, 2250 Watts
Governor, Speed	Constant Speed	N/A
Heat Exchanger	Tube & Shell Type, 60 PSI with NPTF Connections	N/A
Instrument Panel	English and Metric, Tachometer, Hourmeter, Water Temperature, Oil Pressure & Two (2) Voltmeters	N/A
Junction Box	Integral with Instrument Panel; For DC Wiring Interconnection to Engine Controller	N/A
Lube Oil Cooler	Engine Water Cooled, Plate Type	N/A
Lube Oil Filter	Full Flow with By-Pass Valve	N/A
Lube Oil Pump	Gear Driven	N/A
Manual Start	On Instrument Panel	N/A
Overspeed Controls	Electronic with Reset & Test on Instrument Panel	N/A
Raw Water Solenoid Operation	Automatic from Engine Controller & from Emergency Local Control	N/A
Run-Stop Control	On Instrument Panel with Control Position Warning Light	N/A
Run Solenoid	12V-DC	24V-DC
Starters	12V-DC	24V-DC
Throttle Control	Adjustable Speed Control	N/A
Water Pump	Poly-Vee Belt Drive with Guard	N/A

Operating Speed (RPM)

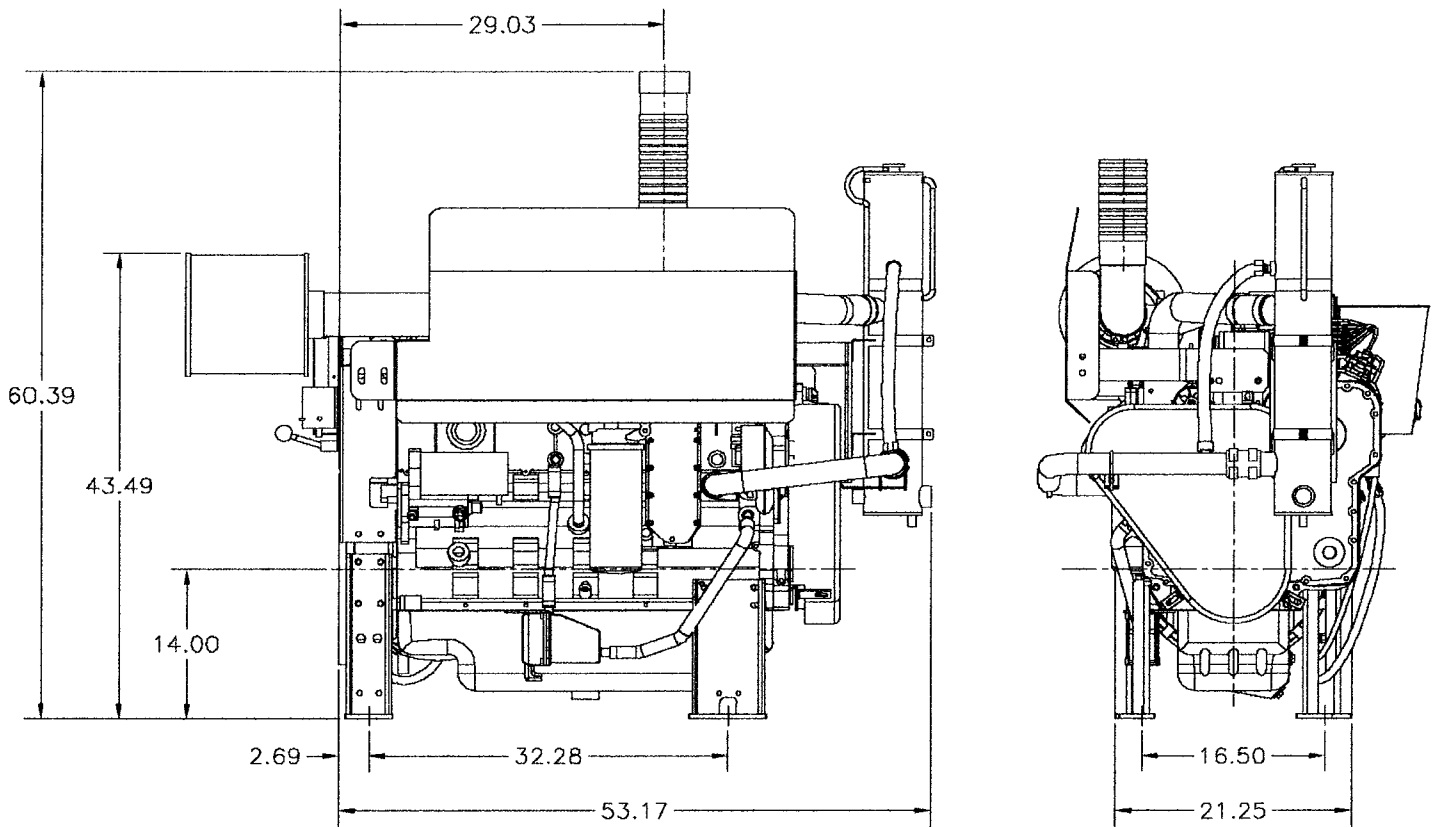
Model	1470	1760
CFP83-F30	216 (161)	252 (188)
CFP83-F20	197 (147)	227 (169)
CFP83-F10	176 (131)	202 (151)

Ratings are: HP (kW)

Specifications

Aspiration.....	Turbocharged and Aftercooled
Rotation.....	Clockwise
Weight - lb (kg).....	2057 (926)
Displacement - in ³ (litre).....	505 (8.3)
Engine Type.....	4 Cycle; In-Line, 6 Cylinder
Engine Series.....	Cummins C8.3 Series
Exhaust Emissions.....	EPA Tier 1





Engine Ratings Baselines

- Engines are rated at standard SAE conditions of 29.61 in. (7521 mm) Hg barometer and 77 °F (25°C) inlet air temperature (approximates 300ft. (91.4 m) above sea level) by the testing laboratory (see SAE Standard J1349).
- A deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000 ft. (305 m) altitude above 300 ft. (91.4 m).
- A deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F above 77°F (24°C) ambient temperature.

Certified Power

This Cummins Fire Power fire pump driver is built to comply with NFPA-20, and is UL listed and FM approved. Although FM-UL Certified BHP ratings are shown at specific speeds, this Cummins engine can be applied at any intermediate speed. To determine the intermediate certified power, make a linear interpolation from the Cummins FM-UL certified power curve. Contact Cummins Fire Power or your pump OEM representative to obtain details.

For additional information, click the hyperlinks below.

[CFP83-F10](#)

[CFP83-F20](#)

[CFP83-F30](#)



Fuel Supply / Drain System

1470

1760

CFP83-F30 Nominal Fuel Consumption - Gal./hr. (L/hr)	10.5 (39.7)	12.6 (47.7)
CFP83-F20 Nominal Fuel Consumption - Gal./hr. (L/hr)	9.6 (36.2)	11.4 (43.0)
CFP83-F10 Nominal Fuel Consumption - Gal./hr. (L/hr)	8.6 (32.4)	10.1 (38.2)
Fuel Type	Number 2 Diesel Only	
Minimum Supply Line Size - in. (mm)	0.375	(9.53)
Minimum Drain Line Size - in. (mm)	0.25	(6.35)
Maximum Fuel Line Length Between Supply Tank & Fuel Pump - ft. (m)	40	(12)
Maximum Fuel Height above C/L Crankshaft - in. (mm)	80	(2032)
Recommended Fuel Filter - Primary	Fleetguard (Cummins).....	FS1251 (3286503)
- Secondary	None	
Maximum Restriction @ Lift Pump-Inlet - With Clean Filter - in. Hg (mm Hg)	4.0	(102)
Maximum Restriction @ Lift Pump-Inlet - With Dirty Filter - in. Hg (mm Hg)	8.0	(203)
Maximum Return Line Restriction - Without Check Valves - in. Hg (mm Hg)	10	(254)
Minimum Fuel Tank Vent Capability - ft ³ /hr (m ³ /hr)	12	(0.36)
Maximum Fuel Temperature @ Lift Pump Inlet - °F (°C)	160	(71)

Starting and Electrical System

12V

24V

Min. Recommended Batt. Capacity - Cold Soak at 0°F (-18°C) or Above		
Engine Only - Cold Cranking Amperes - (CCA)	1250	625
Engine Only - Reserve Capacity - Minutes	400	800
Battery Cable Size (Maximum Cable Length Not to Exceed 5 ft. [1.5 m] AWG)	00	00
Maximum Resistance of Starting Circuit - Ohms	0.002	0.004
Typical Cranking Speed - RPM	120	120
Alternator (Standard), Internally Regulated - Ampere	95	45
Wiring for Automatic Starting (Negative Ground)	Standard	
Reference Wiring Diagram	8512	

Performance Data

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and alternator; not included are compressor, fan, optional equipment, and driven components. Data is based on operation at SAE standard J1394 conditions of 300 ft. (91 m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25 °C) intake air temperature, using No.2 diesel or a fuel corresponding to ASTM-D2.

Altitude Above Which Output Should be Limited - ft. (m)	1000	(300)
Correction Factor per 1000 ft. (300 m) above Altitude Limit	3%	
Temperature Above Which Output Should be Limited - °F (°C)	77	(25)
Correction Factor per 10 °F (11 °C) Above Temperature Limit	1%	(2%)

Exhaust Emissions (EPA Tier T1) [Reference Emissions Data Doc. 9811]

g/kW-hr

g/BHP-hr

Hydrocarbons (HC/OMHCE).....	0.40	0.30
Oxides of Nitrogen (NOx).....	8.40	6.26
Non-Methane Hydrocarbons + NOx (NMHC+NOx).....	8.80	6.56
Carbon Monoxide (CO).....	0.50	0.37
Particulate.....	0.18	0.13

FM Approved and UL Listed Ratings for CFP83-F30, F20, F10



Engine Speed - RPM	<u>1470</u>	<u>1760</u>
CFP83-F30 Output - BHP (kW)	216 (161)	252 (188)
Ventilation Air Required for Combustion - CFM (litre/sec)	407 (192)	540 (255)
Exhaust Gas Flow - CFM (litre/sec)	1100 (519)	1400 (661)
Exhaust Gas Temperature - °F (°C)	1010 (543)	860 (460)
Engine Heat Rejection to Coolant- BTU/min. (kW)	4695 (83)	6055 (106)
Engine Heat Rejection to Ambient - BTU/min. (kW)	1370 (24)	1645 (29)
CFP83-F20 Output - BHP (kW)	197 (147)	227 (169)
Ventilation Air Required for Combustion - CFM (litre/sec)	404 (191)	539 (254)
Exhaust Gas Flow - CFM (litre/sec)	961 (454)	1234 (582)
Exhaust Gas Temperature - °F (°C)	848 (453)	826 (441)
Engine Heat Rejection to Coolant- BTU/min. (kW)	4582 (81)	5201 (91)
Engine Heat Rejection to Ambient - BTU/min. (kW)	1315 (23)	1579 (28)
CFP83-F10 Output - BHP (kW)	176 (131)	202 (151)
Ventilation Air Required for Combustion - CFM (litre/sec)	377 (178)	510 (241)
Exhaust Gas Flow - CFM (litre/sec)	877 (414)	1111 (524)
Exhaust Gas Temperature - °F (°C)	818 (437)	755 (402)
Engine Heat Rejection to Coolant- BTU/min. (kW)	4261 (75)	5872 (103)
Engine Heat Rejection to Ambient - BTU/min. (kW)	1263 (22)	1516 (27)

All Data is Subject to Change Without Notice.

Manager Engineering: *Scott Danforth*
Cummins Fire Power, DePere, WI 54115 U.S.A.



Fire Power

EPA Tier 1 Emission Data
Fire Pump NSPS Compliant

CFP83-F20 Fire Pump Driver

Type: 4 Cycle; In-Line; 6 Cylinder

Aspiration: Turbocharged, Charge Air Cooled

15 PPM Diesel Fuel													
RPM	BHP	Fuel Consumption		D2 Cycle Exhaust Emissions						Exhaust			
		Gal/Hr	L/hr	Grams per BHP - HR			Grams per kW - HR			Temperature		Gas Flow	
				NMHC+NOx	CO	PM	NMHC+NOx	CO	PM	°F	°C	CFM	L/sec
1470	197	9.5	36.0	6.022	0.373	0.118	8.075	0.500	0.158	848	453	961	454
1760	227	11.2	42.4							826	441	1234	582

The emissions values above are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB 15 ppm fuel.

300-500 PPM Diesel Fuel													
RPM	BHP	Fuel Consumption		D2 Cycle Exhaust Emissions						Exhaust			
		Gal/Hr	L/hr	Grams per BHP - HR			Grams per kW - HR			Temperature		Gas Flow	
				NMHC+NOx	CO	PM	NMHC+NOx	CO	PM	°F	°C	CFM	L/sec
1470	197	9.5	36.0	6.562	0.373	0.134	8.800	0.500	0.180	848	453	961	454
1760	227	11.2	42.4							826	441	1234	582

C8.3TA Base Model Manufactured by Cummins Inc.
- Using fuel rating 90242 and 90243

Reference EPA Standard Engine Family: D413034GX02

No special options needed to meet current regulation emissions for all 50 states

Test Methods:

EPA/CARB Nonroad emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A, for Constant Speed Engines (ref. ISO8178-4, D2).

Diesel Fuel Specifications:

Cetane Number: 40-48
Reference: ASTM D975 No. 2-D

Reference Conditions:

Air Inlet Temperature: 25°C (77°F)
Fuel Inlet Temperature: 40°C (104°F)
Barometric Pressure: 100 kPa (29.53 in Hg)
Humidity: 10.7 g/kg (75 grains H₂O/lb) of dry air; required for NOx correction
Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.



Fire Power

Engine Performance Curve

Cummins Fire Power
DePere, WI 54115
<http://www.cumminsfirepower.com>

Basic Engine Model
CFP83-F20

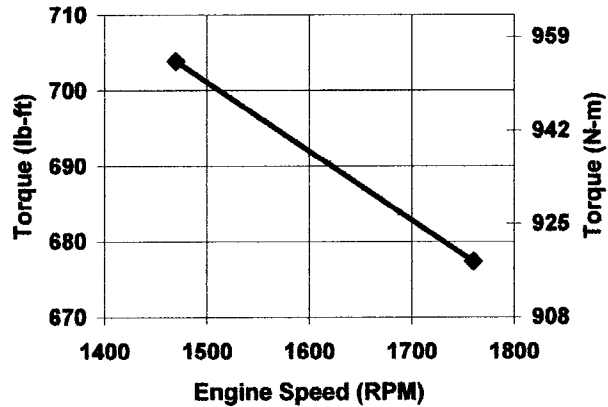
Curve Number: **FR - 90242, 90243**
Revision Date: **June 2006**

Engine Family: **G Drive**
Displacement - in.3 (litre): **505 (8.3)**
Dry Weight - lbs (kg): **1985 (893)**
Compression Ratio: **16.8:1**
No. of Cylinders: **6**
Fuel System: **Bosch - P3000 DI**

CPL Code: **2218**
Emission Certification: **2002 EPA/CARB Tier 1**
Aspiration: **Turbocharged, Aftercooled**
Engine Configuration: **D413034GX02**
Minimum rating: **197 HP @ 1470 RPM**
Maximum rating: **227 HP @ 1760 RPM**

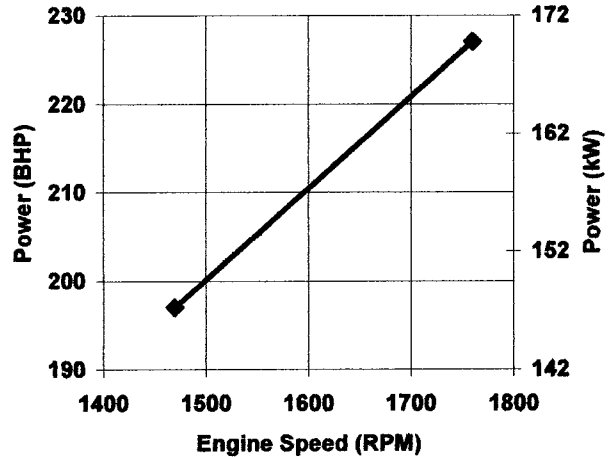
Torque Output

RPM	lb-ft	N-m
1470	704	954
1760	677	918



Horsepower Output

RPM	BHP	kW
1470	197	147
1760	227	169



1. Curves shown above represent mature gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions of 29.61 in Hg (100 kPa) barometric pressure [300 ft. (90 m) altitude], 77 °F (25 °C) inlet air temperature, and 0.30 in. Hg (1 kPa) water vapor pressure with No. 2 diesel fuel.

2. The engine may be operated without changing the fuel setting up to 1000 ft. (300 m) altitude and up to 77°F (25 °C) ambient temperature. For sustained operation at high altitudes, the fuel rate of the engine should be adjusted to limit performance by 3% per 1,000 ft. (305 m) above 1000 ft. (300 m) altitude. For sustained operation at high ambient temperatures, the fuel rate of the engine should be adjusted to limit performance by 1% per 10 °F above 77 °F (2% per 11 °C above 25 °C).

3. Engine is certified at any speed between 1470 and 1760 RPM.

Scott Danforth
Engineering Manager

Certified Within 5%

**Fire Power****Engine Datasheet**

Cummins Fire Power

DePere, WI 54115

<http://www.cumminsfirepower.com>

Basic Engine Model

CFP83-F30, F20, F10Curve Number: **FR - 90242, 90243**CPL Code: **2218**Configuration Number: **D413034GX02**Installation Drawing: **8708**Engine Family: **G Drive**Revision Date: **June 2006****General Engine Data**

Type.....	4 Cycle; In-Line; 6 Cylinder
Aspiration.....	Turbocharged, Aftercooled
Bore & Stroke - in. (mm).....	4.49 x 5.32 (114 x 135)
Displacement - in. ³ (litre).....	505 (8.3)
Compression Ratio.....	16.8:1
Valves per Cylinder - Intake.....	1
- Exhaust.....	1
Dry Weight - lb (kg).....	1985 (893)
Wet Weight - lb (kg).....	2057 (926)
Maximum Allowable Bending Moment @ Rear Face of Block - lb.-ft. (N-m).....	1000 (1356)

Air Induction System

Max. Temperature Rise Between Ambient Air and Engine Air Inlet - °F (°C).....	30 (16.7)
Maximum Inlet Restriction with Dirty Filter - in. H ₂ O (mm H ₂ O).....	25 (635)
Recommended Air Cleaner Element - (Standard)..... Donaldson (CFP).....	B105006 (8535)
- (Optional)..... K&N (CFP).....	RU5045 (9606)

Lubrication System

Oil Pressure Range at Rated - PSI (kPa)	40-60 (276-414)
Oil Capacity of Pan (High - Low) - U.S. quarts (litre)	20-16 (18.9-15.1)
Total System Capacity - U.S. Gal. (litre)	6.3 (23.8)
Recommended Lube Oil Filter	Fleetguard (Cummins)..... LF9009 (3401544)

Cooling System

Raw Water Working Pressure Range at Heat Exchanger - PSI (kPa)	60 (413) MAX
Recommended Min. Water Supply Pipe Size to Heat Exchanger - in. (mm).....	1.00 (25.40)
Recommended Min. Water Disch. Pipe Size From Heat Exchanger - in. (mm).....	1.25 (31.75)
Coolant Water Capacity (Engine Side) - U.S. gal. (litre)	5.9 (22.3)
Standard Thermostat - Type.....	Modulating
- Range - deg F (deg C)	180-203 (82-95)
Minimum Raw Water Flow	
with Water Temperatures to 90 °F (32 °C) - U.S. GPM (litre/s)	30 (1.89)
Recommended Cooling Water Filter.....	Fleetguard (Cummins)..... WF2072 (4058964)

A jacket water heater is mandatory on this engine. The recommended heater wattage is 2250 down to 40°F (4 °C).

Exhaust System

Max. Back Pressure Imposed by Complete Exhaust System in in. H ₂ O (kPa)	40.8 (10.2)
Exhaust Pipe Size Normally Acceptable - in. (mm)	4 (102)

Noise Emissions

Top.....	97.7 dBa
Right Side.....	97.7 dBa
Left Side.....	97.7 dBa
Front.....	97.7 dBa
Exhaust.....	N/A dBa



Fire Power

Engine Materials and Construction

Cummins Fire Power
DePere, WI 54115
<http://www.cumminsfirepower.com>

Basic Engine Model

CFP83-F30, F20, F10

Curve Number: **FR - 90242, 90243**

CPL Code: **2218**

Configuration Number: **D413034GX02**

Installation Drawing: **8708**

Engine Family: **G Drive**

Revision Date: **June 2006**

Engine

Camshaft

Type..... Precision Ground
Material..... Forged Steel
Location..... In Block
Drive..... Gear

Connecting Rods

Type..... I-Beam, Fracture-split
Material..... Nickel Chrome Molybdenum

Crankshaft

Type..... Precision Ground
Material..... Forged Steel

Crankshaft Main Bearings

Type..... Precision Half Shells
Material..... Steel, Copper with Soft Metal Overlay

Crankshaft Rod Bearings

Type..... Precision Half Shells
Material..... Steel, Copper with Soft Metal Overlay

Cylinder Block

Type..... Wet Lined
Material..... Cast Iron Alloy

Cylinder Head

Type..... 1 Common, 12 Valve
Material..... Cast Iron Alloy

Cylinder Liners

Type..... Centrifugal Casting, Mid Stop
Material..... Cast Iron Alloy

Pistons

Type..... 1 Piece Cast
Material..... Aluminum Alloy

Piston Pins

Type..... Full Floating
Material..... Forged Steel

Piston Rings

First..... Chrome Coated Ductile Cast Iron
Second..... Keystone, Hardened Grey Cast Iron
Third..... Chrome Coated Composite

Valves

Type..... Poppet
Arrangement..... Overhead Valve
Number per Cylinder... 1 Intake, 1 Exhaust
Mechanism Type..... Mechanical Rocker Arm
Lifter Type..... Solid Push Tube

Air Handling

Air Cleaner

Type..... Single Element, Disposable
Material..... Cellulose

Turbocharger

Type..... Cummins Turbo Tech HX40
Design..... Wastegated

Cooling System

Charge Air Cooler Heat Exchanger

Type..... None
Material.....
Covers..... Not Applicable
Headers..... Not Applicable
Plumbing.....
Tubes..... Not Applicable

Coolant Heat Exchanger

Type..... Tube and Shell
Material.....
Electrode..... Zinc
Headers..... Copper
Shell..... Copper
Tubes..... Copper

Coolant Pump

Type..... Centrifugal
Drive..... Belt, Multi VCC

Thermostat

Type..... Modulating
Quantity..... 1

Fuel System

Fuel Injection Pump

Type..... Inline
Drive..... Mechanical, Gear Driven

Fuel Lift Pump

Type..... Piston
Drive..... Mechanical, Gear Driven

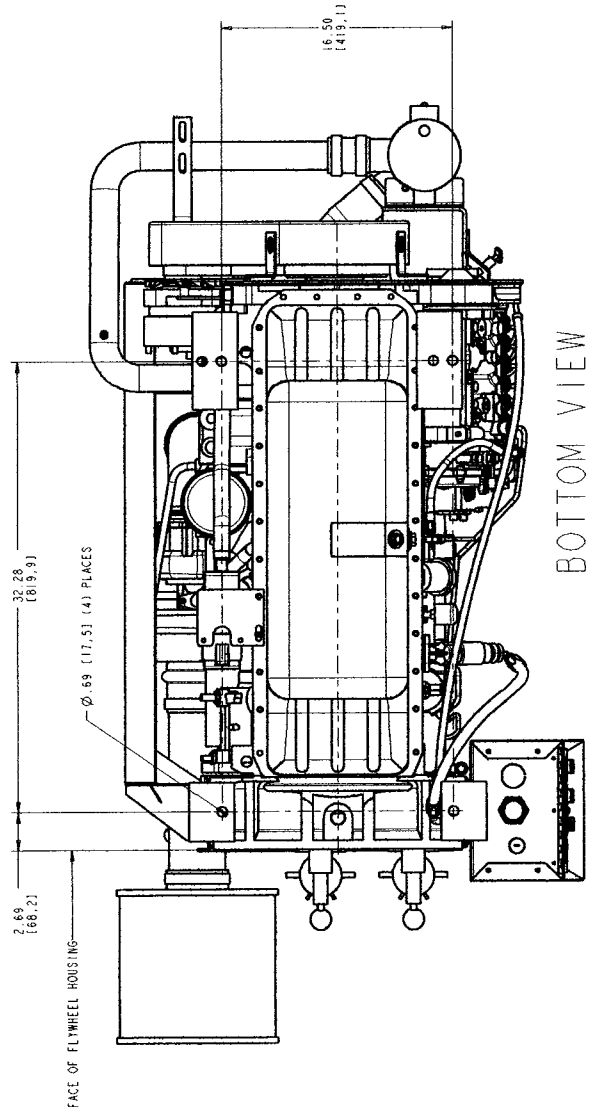
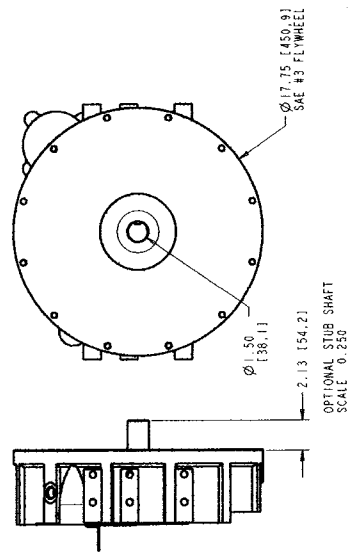
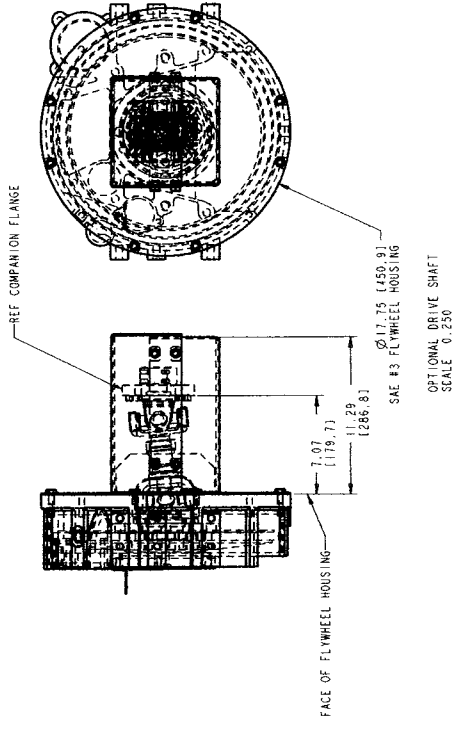
Lubrication System

Oil Pump

Type..... Gerotor
Drive..... Gear

Lubrication Cooler

Type..... Plate
Material..... Braised Stainless Steel



BOTTOM VIEW

GN GENERAL MOTORS CORPORATION
 DIVISION OF GENERAL MOTORS CORPORATION
 WARREN, MICHIGAN 48090
 1987-88 GM ENGINE MODEL C74R171710202

DATE:	11/11/87	SCALE:	AS SHOWN
BY:	W. J. ZELTZER	SCALE:	AS SHOWN
CHECKED:	W. J. ZELTZER	SCALE:	AS SHOWN
APPROVED:	W. J. ZELTZER	SCALE:	AS SHOWN

REV.	DESCRIPTION OF REVISION	DATE	BY

ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	ASSEMBLY, ENGINE, ACT423-02	4378
2	1	ASSEMBLY, MOUNTING, TIREPUMP, COB.3	4077
3	1	ASSEMBLY, AIR CLEANER, TIREPUMP, COB.3	4011
4	1	ASSEMBLY, FUEL LINE, COB.3, TIREPUMP	4012
5	1	ASSEMBLY, WATER EXCHANGER, COB.3, TIREPUMP	4013
6	1	ASSEMBLY, COOLANT MOUNTING, COB.3	4014
7	1	ASSEMBLY, OPERATORS STATION, 18 WAKE, TIREPUMP	4015
8	1	ASSEMBLY, SENSOR PACKAGE, COB.3, TIREPUMP	4016
9	1	ASSEMBLY, FUEL LINE, COB.3, TIREPUMP	4017
10	1	ASSEMBLY, FUEL LINE, COB.3, TIREPUMP	4018
11	1	ASSEMBLY, SECOND STROKE, TIREPUMP	4019
12	1	EXC. DRAWING, 4 SUPP. TIREPUMP	4020

BILL OF MATERIAL

MANUAL START INSTRUCTIONS DECAL #9526-08
 HIGH CURRENT DECAL #9526-04
 MANUAL START
 17.53 [445.4]
 17.61 [447.3]
 29.03 [737.5]
 4" EXHAUST
 10.03 [254.7]
 67.25 [1708.1]
 OVERALL LENGTH
 32.28 [819.9]
 CENTER OF 0.690 WTG. HOLE (4)
 53.43 [1357.1]
 COOLANT DRAIN

GROUND DECAL #9526-07
 SETTINGS DECALS #9526-02 & #9526-03
 ENGINE DATA TAG #9534

SCALE 0.100

COOLANT FILL
 FILL INSTRUCTION DECAL #9526-09
 1-1/4" NPT RAW WATER INLET
 1-1/4" NPT RAW WATER OUTLET
 1" NPT RAW WATER INLET

1/4" NPT FUEL RETURN
 3/8" NPT FUEL SUPPLY

60.39 [1533.8]
 47.67 [1208.3]

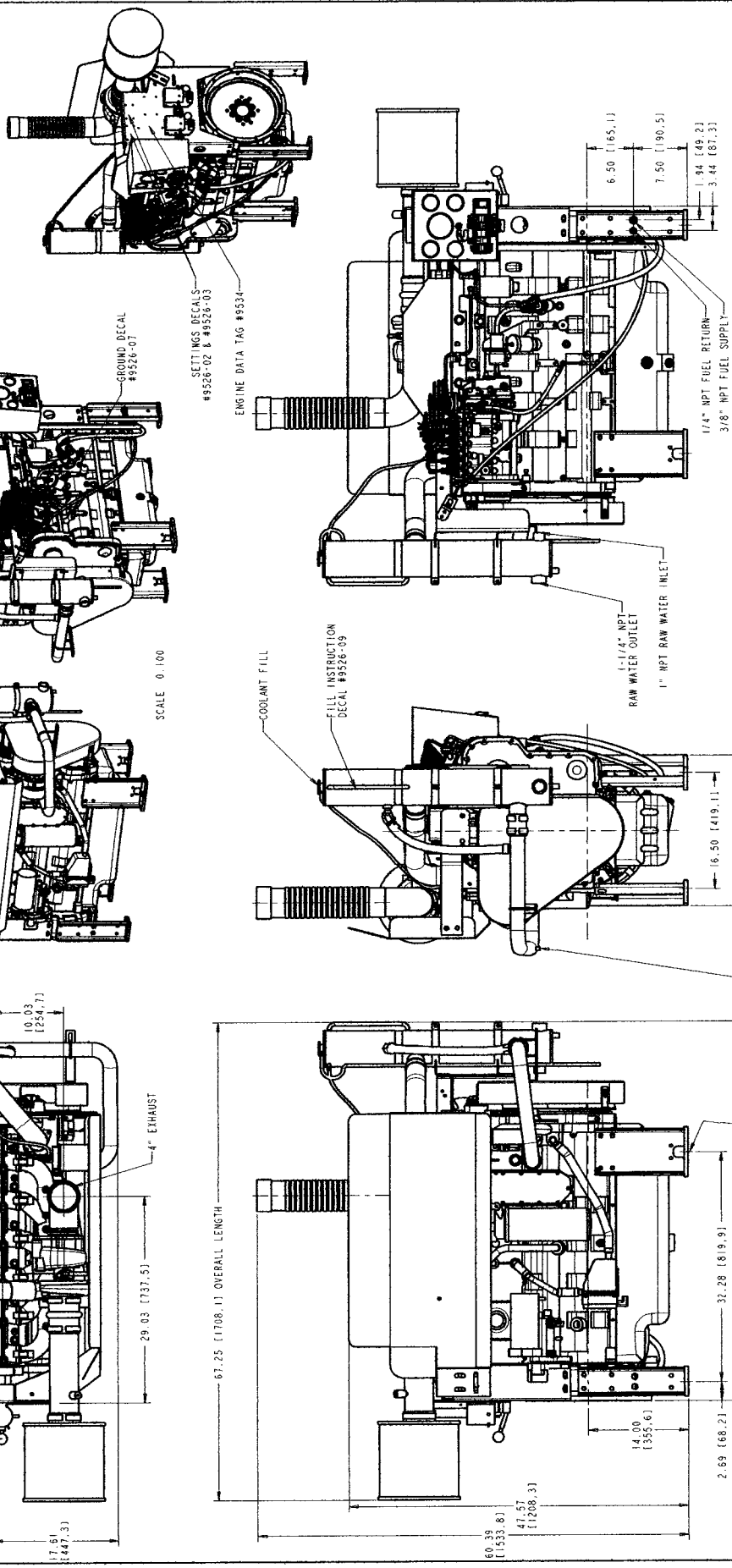
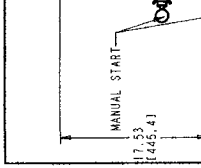
2.69 [68.2]
 14.00 [355.6]

6.50 [165.1]
 7.50 [190.5]

1.94 [49.2]
 3.44 [87.3]

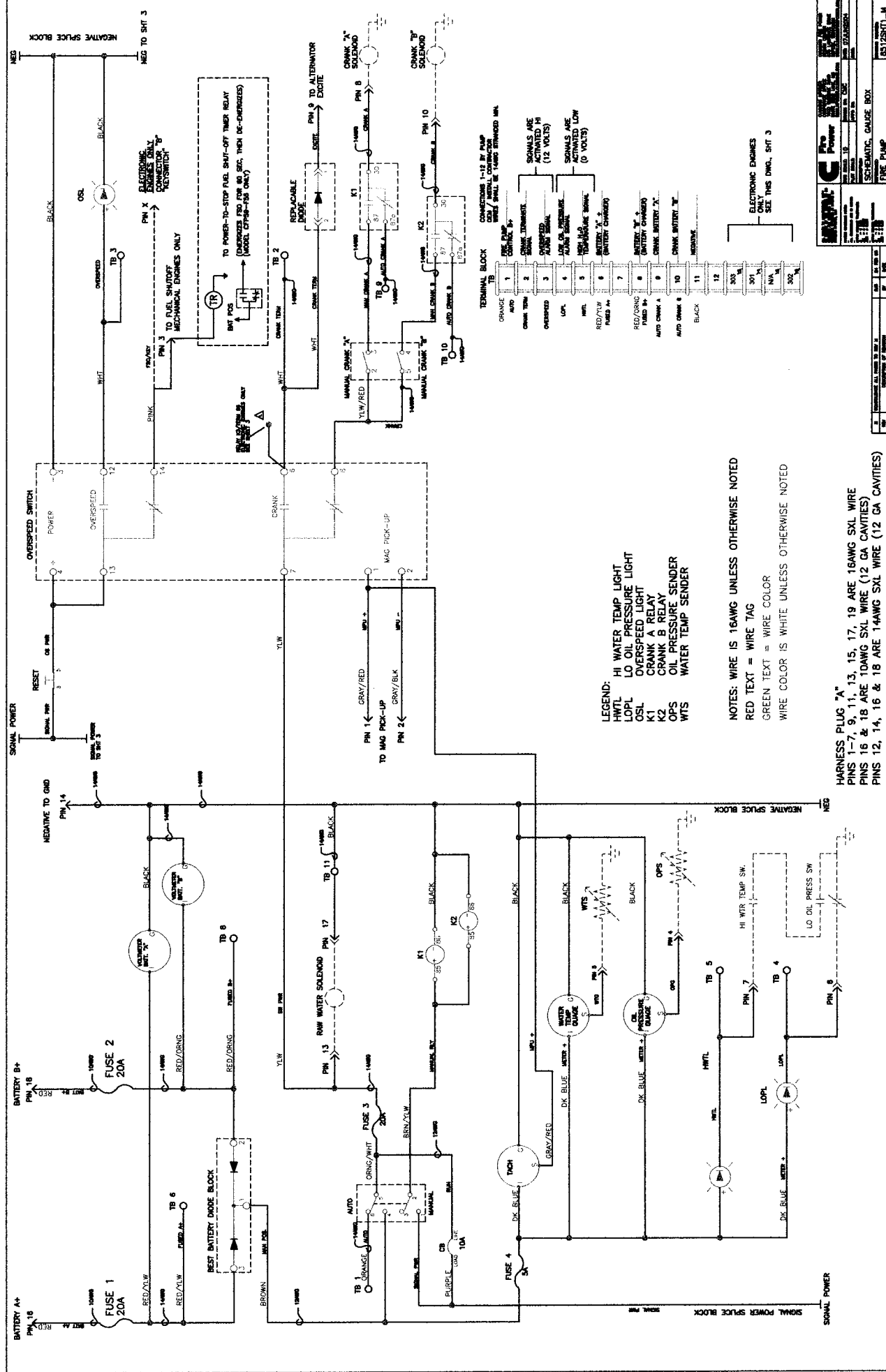
COOLANT DRAIN

SEE SHIT 2 FOR MOUNTING PATTERN AND SHAFT OPTIONS



REV	DATE	DESCRIPTION	BY	CHKD
1	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
2	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
3	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
4	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
5	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
6	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
7	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
8	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
9	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
10	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
11	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS
12	10/10/88	ISSUE FOR PRODUCTION	J. W. HARRIS	J. W. HARRIS

TITLE 1: ASSEMBLY, POWER MODULE, CTRB-F1000024
 DATE: 10/10/88
 DRAWN BY: J. W. HARRIS
 CHECKED BY: J. W. HARRIS
 PART NO.: 4378
 REV. NO.: 12
 SCALE: 0.100
 SHEET NO.: 2 OF 2
 TOTAL SHEETS: 2



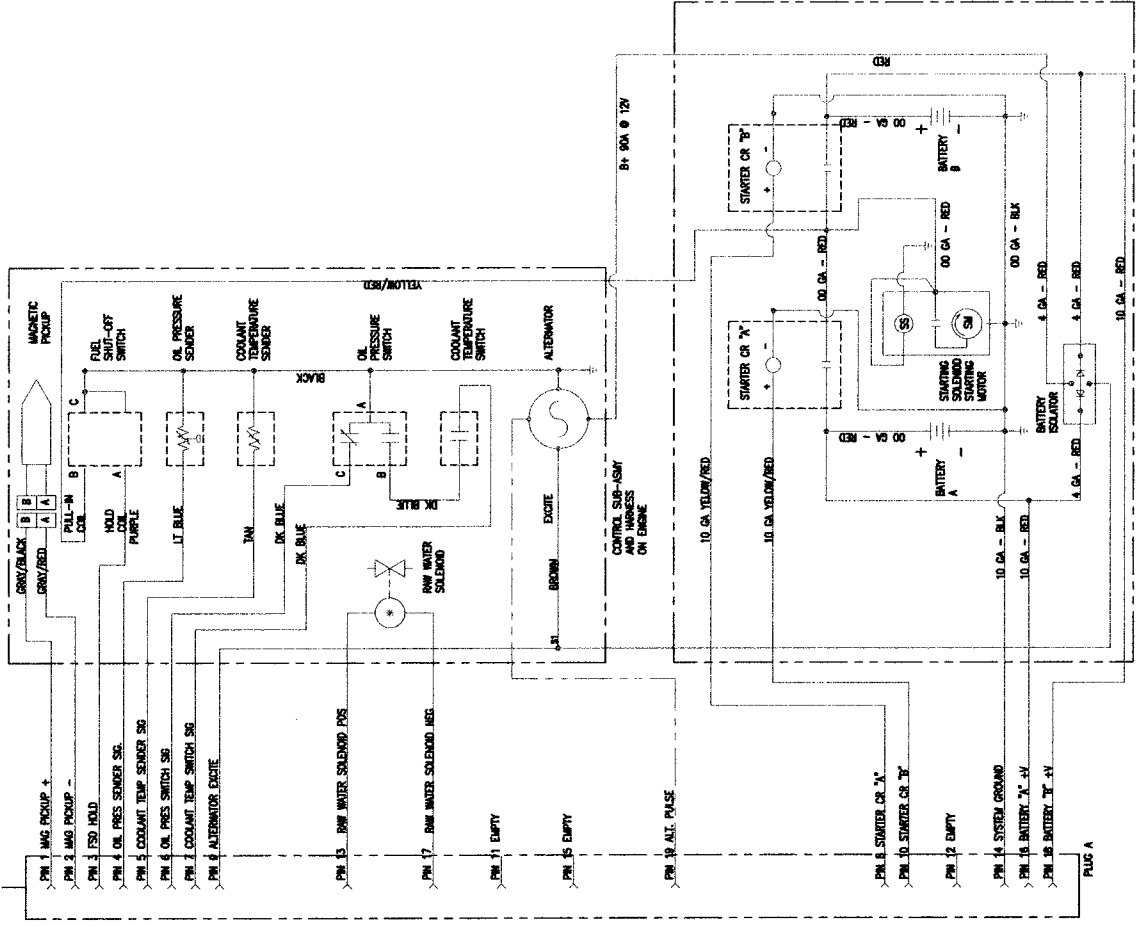
Pin Power

Pin	Power	Ground
1	12V	0V
2	12V	0V
3	12V	0V
4	0V	12V
5	0V	12V
6	12V	0V
7	12V	0V
8	12V	0V
9	12V	0V
10	12V	0V
11	12V	0V
12	12V	0V

SEPARATE GAGE BOX

FINE PUMP

85175HT-1.M



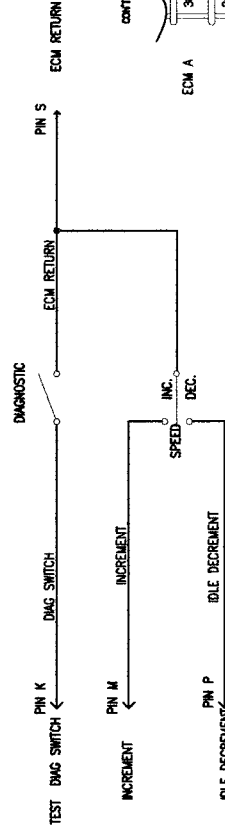
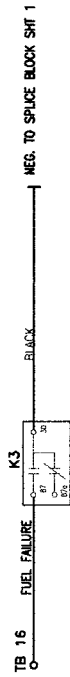
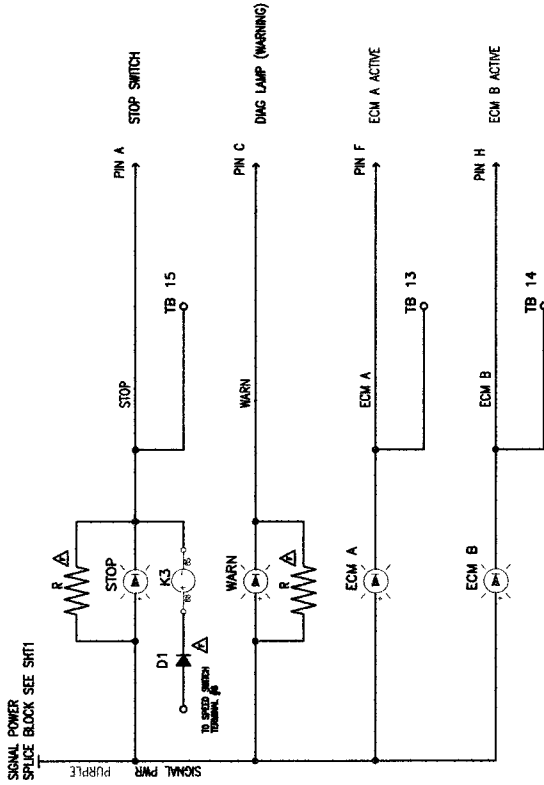
HARNESS PLUG "A"
 PINS 1-7, 9, 11, 13, 15, 17, 19 ARE 16AWG SOL. WIRE
 PINS 16 & 18 ARE TOWING SOL. WIRE (12 GA CAVITIES)
 PINS 12, 14, 16 & 18 ARE 14AWG SOL. WIRE (12 GA CAVITIES)

GENCO Fire Power
 10000 W. 100th St., Minneapolis, MN 55426
 TEL: 612-835-1111 FAX: 612-835-1112
 © 1995 GENCO

SCHEMATIC, ENGINE WIRING
 FIRE PUMP
 85125077_M

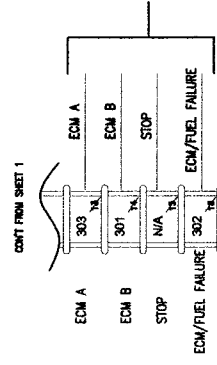
REV	DESCRIPTION	DATE
1	ISSUED AS SHOWN ON DRAWING	08/11/95

ELECTRONIC ENGINES ONLY



HARNES PLUG TB*
PINS 1-7, 9, 11, 13, 15, 17, 19 ARE 16AWG SIL WIRE

SIGNALS ARE ACTIVATED LO



- LEGEND:**
 K3 ECM/FUEL FAIL RELAY
 R RESISTOR
NOTES: WIRE IS 16AWG UNLESS OTHERWISE NOTED
 RED TEXT = WIRE TAG
 GREEN TEXT = WIRE COLOR
 WIRE COLOR IS WHITE UNLESS OTHERWISE NOTED
 Δ RESISTOR VALUE = 1.5K OHMS 1/2 WATT
 Δ D1 VALUE = 6 AMPS/100V MIN

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
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7		
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20		

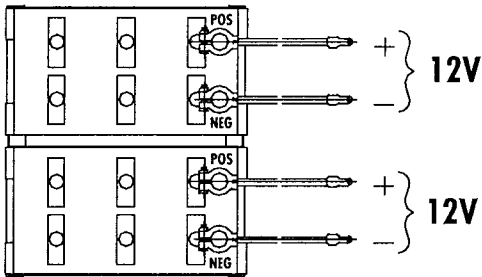
APPROVED

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
DATE: [Date]

SCHEMATIC CONTROL PANEL, ECM LIGHTS
PREPAMP OSB, OSC, GSM
ES128T3_M

DIESEL BATTERY CABLE DIAGRAMS

12 VOLT SYSTEM

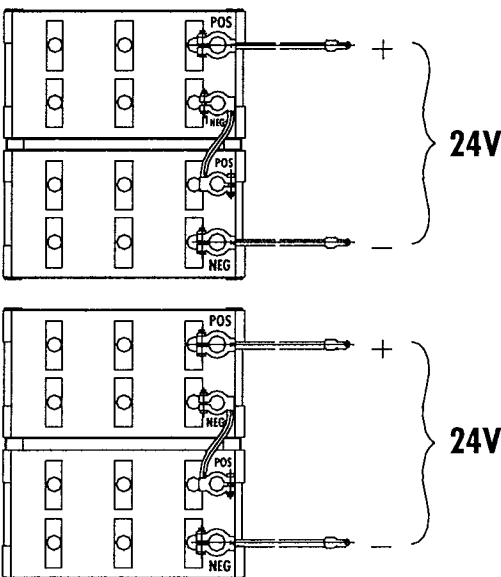


REQUIRED COMPONENTS	ENGINE APPLICABILITY
(1) BATTERY RACK (2) BATTERIES (2) POSITIVE CABLES (2) NEGATIVE CABLES	CUMMINS: 6BTA 5.9-F1 6BTA 5.9-F2 6BTA 5.9-F4 6CTA 8.3-F1 6CTA 8.3-F2 6CTA 8.3-F3 CLARKE-DETROIT: VMFP-04HN VMFP-04HT VMFP-06HT VMFP-T6HT VMFP-L6HR VMFP-T6HR JU4H-UF10 JU4H-UF20 JU4H-UF30 JU4H-UF40 JU4H-UF50 JU6H-UF30 JU6H-UF50 JU6H-UF60 JW6H-UF30 JW6H-UF40 JW6H-UF50 JW6H-UF60 EDWARDS: ALL MODELS

NOTES:

1. Clarke "VMFP," "JU4H" & "JU6H" Engines require cable sets of different lengths. On these engine models, a 2/0 guage positive and negative cable set 60" (1524 mm) long, and a 3/0 guage positive and negative cable set 80" (2032 mm) long are furnished.
2. Refer to Section 916, Page 251 for details of batteries, racks and cables.

24 VOLT SYSTEM



REQUIRED COMPONENTS	ENGINE APPLICABILITY
(2) BATTERY RACKS (4) BATTERIES (2) POSITIVE CABLES (2) NEGATIVE CABLES (2) INTERCONNECTING CABLES	CLARKE-DETROIT: DDFP-08FH DDFP-08FA CATERPILLAR: ALL MODELS

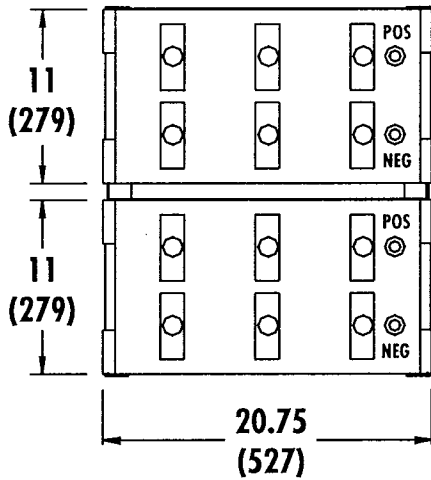
AURORA MODEL 481 & 485 PUMPS

DIESEL BATTERIES, RACKS, & CABLES

Section **916** Page **251**

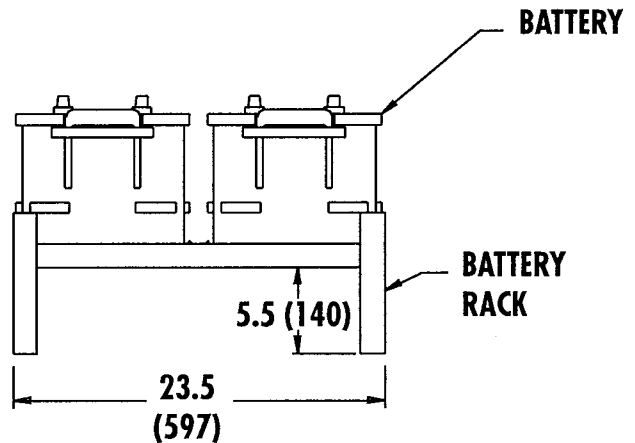
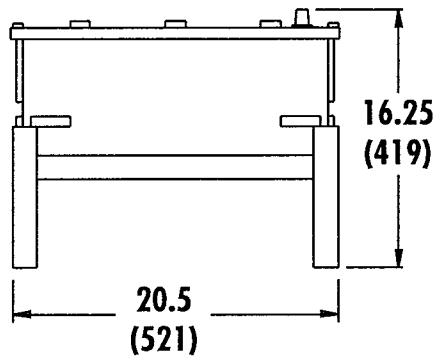
Date **June 2002**

Supersedes Section 916 Page 251
Dated July 2001



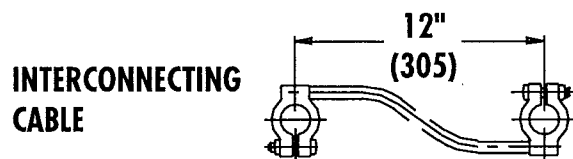
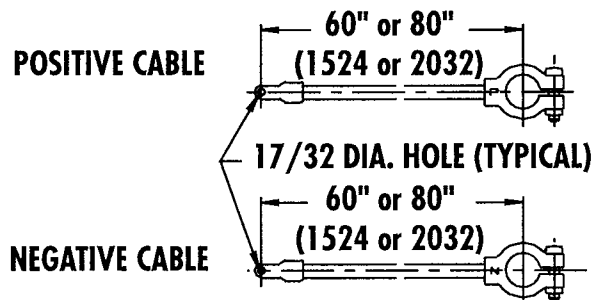
NOTES:

1. Dimensions are in inches (mm) and may vary $\pm 1/4$ " (6).
2. Batteries are 12 volt, lead-acid type D-8D, approximately 95 lbs. each, dry.
3. Batteries are shipped dry. Electrolyte (approx. 19 quarts per battery) must be procured locally.
4. Refer to Section 916 page 252 for exact number of batteries & cables to be furnished based on the diesel engine manufacturer and model used.
5. Battery racks are fabricated steel, approximately 20 lbs. each.
6. Each rack holds 2 batteries. Racks are not to be stacked.



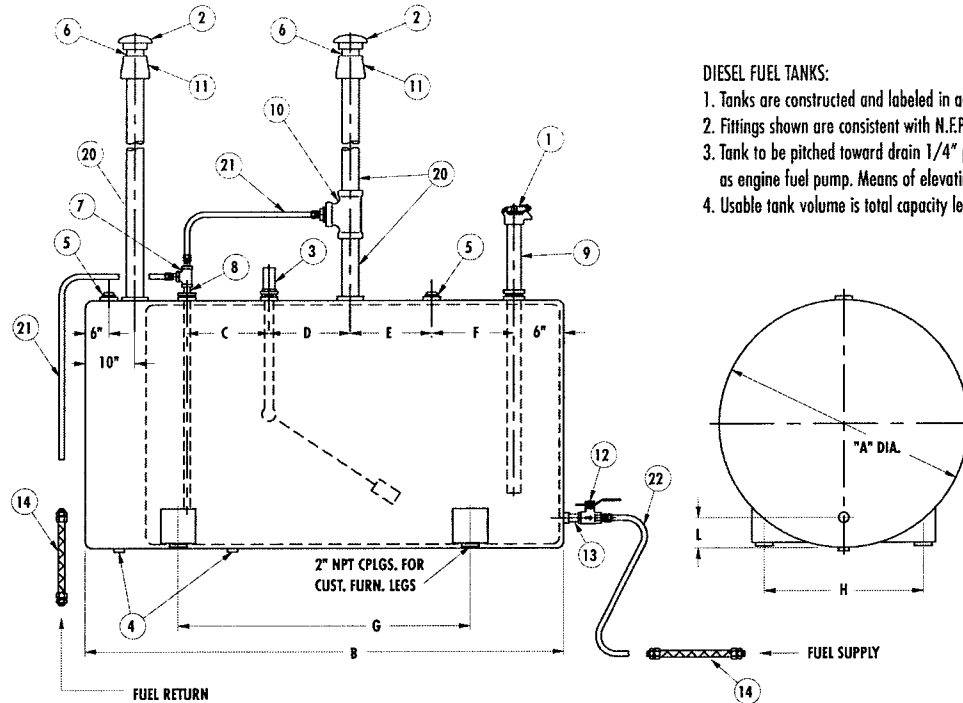
NOTES:

1. All cables are SAE J55BA type SGT with tensile attachment of 700-800 lbs.
2. Positive & negative cables 60" (1524) long are 2/0 gauge; positive & negative cables 80" (2032) long are 3/0 gauge.
3. Terminal clamps have steel reinforced inserts.
4. Not all cable types are required for every engine. Refer to Section 916 page 252 for cable applicability.



AURORA FIRE PUMPS

DOUBLE WALL FUEL TANKS & "NFA-20" FITTINGS



DIESEL FUEL TANKS:

1. Tanks are constructed and labeled in accordance with UL-142.
2. Fittings shown are consistent with N.E.P.A. 20.
3. Tank to be pitched toward drain 1/4" per foot with outlet on the same elevation as engine fuel pump. Means of elevating tank (by others) may be required.
4. Usable tank volume is total capacity less 5% for sump and 5% for expansion.

NOMINAL TANK SIZE IN GALLONS	USABLE VOLUME IN GALLONS	A	B	C	D	E	F	G	H	L	Z
119	105	24.5 (622)	73 (1853)	6 (152)	6 (152)	6 (152)	19 (482)	44 (1117)	14 (355)	3 (76)	2
187	165	31 (787)	73 (1853)	6 (152)	6 (152)	6 (152)	19 (482)	44 (1117)	16 (406)	3 (76)	3
300	270	39 (990)	73 (1853)	6 (152)	6 (152)	6 (152)	19 (482)	44 (1117)	22-7/8 (581)	3-3/4 (95)	3
359	320	41 (1041)	73 (1853)	6 (152)	6 (152)	6 (152)	31 (787)	44 (1117)	22-7/8 (581)	4 (102)	3
572	515	51 (1294)	73 (1853)	6 (152)	6 (152)	6 (152)	31 (787)	44 (1117)	30 (761)	5 (127)	4
849	766	65 (1651)	61 (1548)	6 (152)	6 (152)	6 (152)	19 (482)	44 (1117)	30 (761)	4-3/4 (121)	4
1100	993	65 (1651)	84 (2134)	6 (152)	6 (152)	6 (152)	37 (940)	44 (1117)	30 (761)	4-3/4 (121)	6

COMPONENTS FURNISHED BY AURORA PUMP

ITEM NO.	QTY. REQ'D	DESCRIPTION
1	1	2" NPT Lockable Fuel Cap
2	2	1-1/4" Screened Tank Vent
3	1	Fuel Gauge 1-1/2" NPT
4	2	1" NPT Drain Plug
5	2	2" NPT Pipe Plug
6	2	1-1/4" Close Nipple
7	1	1/2" Tee
8	1	1/2" Close Nipple
9	1	2" Fuel Fill Pipe
10	1	"Z" x "Z" x 1/2" Tee
11	2	"Z" x 1-1/4" Banded Reducer
12	1	3/4" NPT Lockable Fuel Valve
13	1	3/4" Close Nipple
14	2	Fuel Hoses for Supply & Return (Furnished by Engine Mfr.)

COMPONENTS FURNISHED BY OTHERS

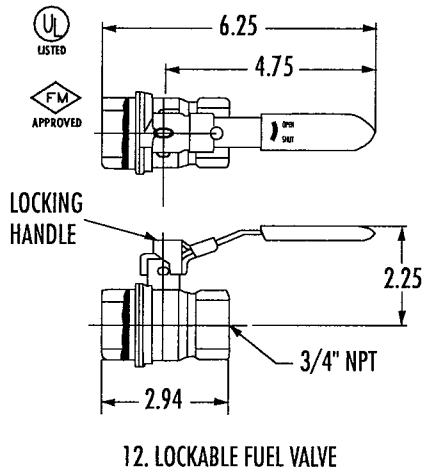
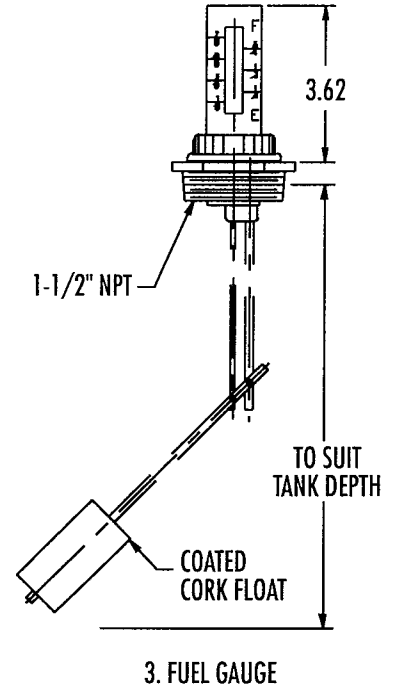
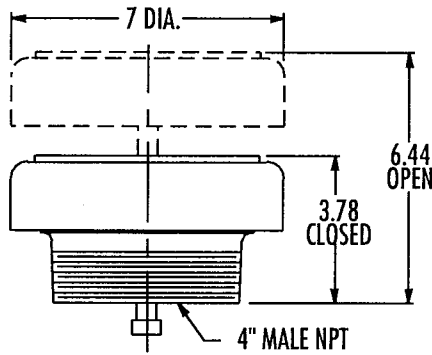
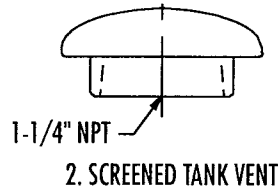
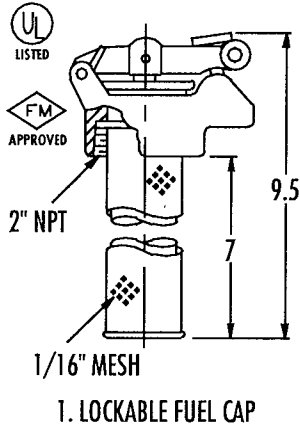
ITEM NO.	QTY. REQ'D	DESCRIPTION
20	2	"Z" Diameter Piping for Vent
21	1	1/2" Tubing and Fittings or 1/2" Black Pipe
22	1	3/4" Tubing and Fittings or 3/4" Black Pipe

NOTES

1. All dimensions are in inches and may vary ± 1/4".
2. Components shown are shipped loose for field assembly.
3. Illustration is for component identification only. Actual installation must meet local codes and all applicable standards.
4. Item 10 may consist of a combination of fittings.
5. Refer to Section 916 page 259 for details of Aurora-furnished components.

AURORA FIRE PUMPS

FITTINGS FOR DIESEL FUEL TANKS



14. FLAME RESISTANT FLEXIBLE FUEL HOSE
(2) FURNISHED BY ENGINE MANUFACTURER
FOR SUPPLY AND RETURN LINES

NOTES

1. All dimensions are in inches and may vary $\pm 1/4"$.
2. Components shown are shipped loose for field assembly.
3. Illustration is for component identification only. Actual installation must meet local codes and all applicable standards.
4. Refer to Section 916 pages 255 through 258 for the location and applicability of each component shown above

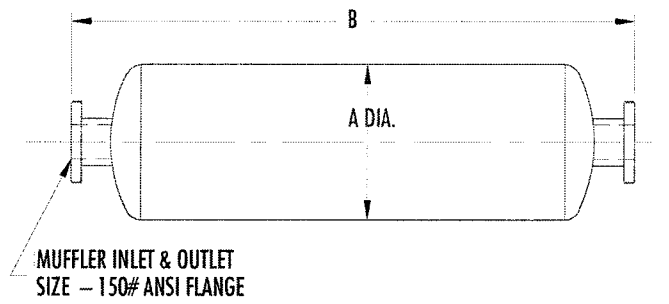
AURORA FIRE PUMPS

DIESEL ENGINE MUFFLERS

Section **916** Page **261**

Date **May 2004**

Supersedes Section 916 Page 261
Dated June 2002

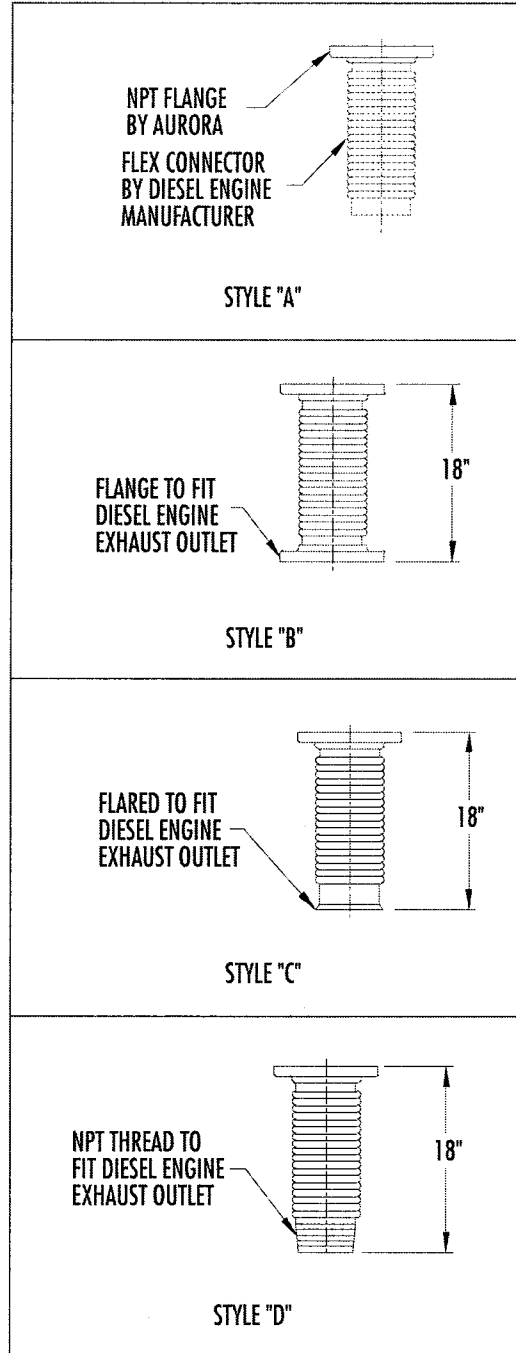


ENGINE MODEL	MUFFLER INLET & OUTLET	COMMERCIAL GRADE			RESIDENTIAL GRADE			CRITICAL GRADE		
		"A"	"B"	WGT	"A"	"B"	WGT	"A"	"B"	WGT
CUMMINS										
6BTA 5.9	4"	10	36	48	10	46	50	14	54	115
6CTA 8.3	5"	10	42	55	10	54	6	16	61	140
CLARKE FIRE PROTECTION										
VMFP-04HN	2.5"	8	30	39	8	42	39	10	42	40
VMFP-04HT	3"	8	36	39	8	42	42	12	42	68
VMFP-06HT, -T6HT, VMFP-L6HR & -T6HR	4"	10	36	48	10	46	50	14	54	115
JU4H-UF10 & -UF12 JU4H-UF20 & -UF22	3"	8	36	39	8	42	42	12	42	68
JU4H-UF30 & -UF32 JU4H-UF40 & -UF42 JU4H-UF50 & -UF52	4"	10	36	48	10	46	50	14	54	115
JU6H-UF30 & -UF32 JU6H-UF50 & -UF52 JU6H-UF60 & -UF62	5"	10	42	55	10	54	60	16	61	140
JW6H-UF30 (JDFP-06WA) JW6H-UF40 (JDFP-06VWR)	5"	10	42	55	10	54	60	16	61	140
JW6H-UF50 JW6H-UF60	6"	12	42	65	12	54	60	20	74	175
DDFP-08FA	8"	18	50	150	18	62	145	24	75	215
DDFP-08FH	DUAL 8"	18	50	300	18	62	290	24	75	430
CATERPILLAR										
3406B-DIT, -DITA	6"	12	42	65	12	54	60	20	74	175
3408-DITA, PH-0	6"	12	42	65	12	54	60	20	74	175
3408-DITA, PH-1	8"	18	50	150	18	62	145	24	75	215
3412-DIT	8"	18	50	150	18	62	145	24	75	215
3412-DITA, PH-0	8"	18	50	150	18	62	145	24	75	215
3412-DITA, PH-1	DUAL 8"	18	50	300	18	62	290	24	75	430
EDWARDS										
EMI 4041D	2.5"	8	30	39	8	42	39	10	42	40
EMI 4050T	2"	7	36	35	7	36	35	10	30	35
EMI 4JB1R & 4JB1H	2.5"	8	30	39	8	42	39	10	42	40
EMI 4080D & 4080H	4"	10	36	48	10	46	50	14	54	115

AURORA FIRE PUMPS

EXHAUST FLEX CONNECTORS

ENGINE MODEL	MUFFLER CONNECTION SIZE	FLEX CONNECTOR STYLE
CUMMINS		
6BTA 5.9	4"	"B"
6CTA 8.3	5"	"B"
CLARKE FIRE PROTECTION		
VMFP-04HN	2.5"	"A"
VMFP-04HT	3"	"A"
VMFP-06HT, -T6HT, VMFP-L6HR & -T6HR	4"	"A"
JU4H-UF10 & -UF12	3"	"A"
JU4H-UF20 & -UF22		
JU4H-UF30 & -UF32		
JU4H-UF40 & -UF42	4"	SEE NOTE 1
JU4H-UF50 & -UF52		
JU6H-UF30		
JU6H-UF50	5"	SEE NOTE 1
JU6H-UF60		
JW6H-UF30 (JDFP-06WA)	5"	SEE NOTE 1
JW6H-UF40 (JDFP-06WR)		
JW6H-UF50	6"	SEE NOTE 1
JW6H-UF60		
DDFP-08FA	8"	"C"
DDFP-08FH	DUAL 8"	"C"
CATERPILLAR		
3406B-DIT, -DITA	6"	"B"
3408-DITA, PH-0	6"	"B"
3408-DITA, PH-1	8"	"B"
3412-DIT	8"	"B"
3412-DITA, PH-0	8"	"B"
3412-DITA, PH-1	DUAL 8"	"B"
EDWARDS ENGINE		
EMI 4041D	2.5"	"A"
EMI 4050D	2"	"A"
EMI 4JB1R & 4JB1H		
EMI 4080D & 4080H	2.5"	"A"
EMI 4099T & 4099TH	4"	"A"



NOTE 1: FLANGED FLEX CONNECTOR PROVIDED BY DIESEL ENGINE MANUFACTURER. NO ADDITIONAL FLEX CONNECTOR OR ADAPTOR FITTING IS REQUIRED OR PROVIDED BY AURORA.

AURORA MODEL 481 & 485

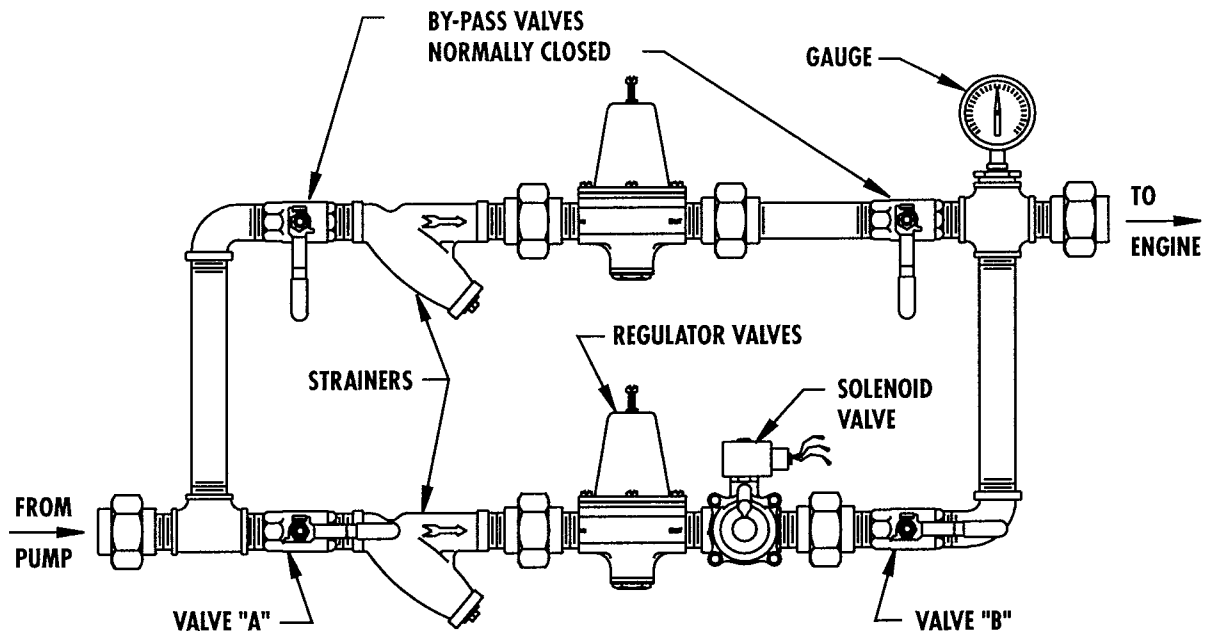
DIESEL ENGINE DRIVEN FIRE PUMP

COOLING WATER PIPING DATA

Section **916** Page **301**

Date **July 2001**

Supersedes Section 916 Page 301
Dated January 1997



This instructional data explains the installation and operation of the cooling system for UL listed, FM approved Fire Pump engines equipped with heat exchangers.

Engines equipped with heat exchangers use an engine mounted water pump to circulate jacket water around the tubes of the heat exchanger to maintain proper jacket water temperatures. Cooling water, supplied by the Fire Pump, is piped through the tubes and discharged to waste.

REQUIREMENTS

The loop portion of the cooling water supply piping, shown above, incorporates all components required by NFPA and is sized to provide the required volume of water at the proper pressure for the heat exchangers of the engine models listed in Table A.

Model 481 & 485 pumps are shipped from the plant with the loop piped between the pump and engine. The pipe and loop sizes are determined by the engine model.

COMPONENTS

1. A flushing type strainer is used to protect the regulator valve, solenoid valve and the tubes of the heat exchanger from foreign material.
2. The regulator valve is used to control the volume and pressure of the cooling water.
3. The solenoid valve opens automatically when the engine is started and closes automatically on engine shut-

down to prevent the waste of cooling water. (One red wire must be connected to terminal #1 of the engine junction box, the other red wire to terminal #11 of the engine junction box, and the green wire grounded to the engine block. Refer to applicable wiring diagrams.)

4. The valves in the BYPASS line of the loop are normally CLOSED. They should ONLY be opened to provide cooling water to the engine if the regulator valve or solenoid valve require repair.

5. Valves "A" and "B" are normally OPEN. They should ONLY be closed if repair is required to the regulator valve or solenoid valve.

6. The gauge indicates back pressure on the cooling water discharge. The recommended back pressure to assure adequate flow is 15-20 PSI and should not exceed the allowable pressure shown in Table A.

7. Since cooling loop components are subject to bumps and movement during shipping, all components must be checked for pipe strain and leakage prior to initial startup.

INSTALLATION -COOLING WATER OUTLET

The cooling water outlet piping from the engine heat exchanger must be at least the size listed in Table A. The piping must be short, have no valves and discharge into an open waste cone. If deviations from the requirement of discharge to an open waste cone are permitted by the authority having jurisdiction, the proposed plumbing must be reviewed to assure that the back pressure created will not reduce the cooling water flow to below that required for the engine.

AURORA MODEL 481 & 495

DIESEL ENGINE DRIVEN FIRE PUMP

COOLING WATER PIPING DATA

If the outlet piping from two or more engines is connected to a common manifold, the manifold piping should be sized such that the velocity resulting from the combined flow is the same as that in the outlet piping between the manifold and heat exchanger.

Adequate pipe supports must be provided for the loop and outlet piping to minimize vibration and prevent excessive strain at the heat exchanger, pump and engine connections.

Engine coolant should be added in accordance with the engine manufacturer's recommendations.

OPERATION

The regulator valve is adjusted during operational tests at the plant and set between 15 and 20 PSI back pressure. If additional

adjusting is necessary, see the following procedure:

With the pump operating at the rated duty, the adjustment is made after the engine block temperature has risen to the level required to open the engine thermostat. The thermostat opens at approximately 170°F. The temperature will stabilize and then decrease slightly. At this point, the regulator is adjusted between 15 and 20 PSI by turning the regulator screw clockwise to increase the pressure and counterclockwise to reduce the pressure. The regulator screw is then locked into place with the locknut provided.

MAINTENANCE

1. Strainers must be inspected frequently and kept clean.
2. If cooling water temperature changes, the regulator valve may require adjustment.

JOCKEY PUMP DATA



FIRE PUMP SYSTEMS
Dimensions and Engineering Data
Performance - Curves
Vertical Multi Stage Jockey Pumps
1SV 60 Hz

A-C Fire Pump Systems



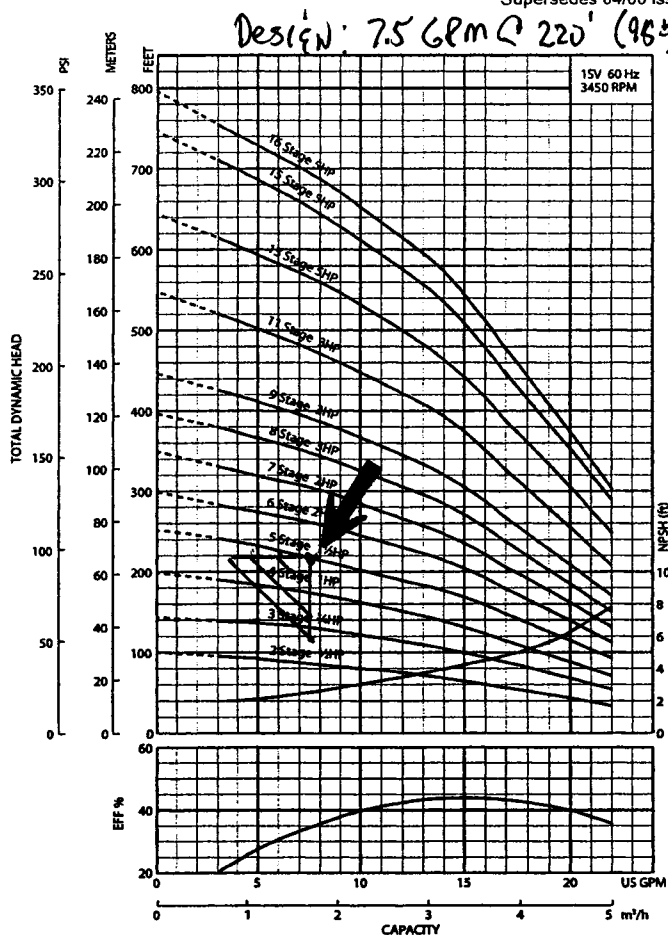
Construction: 304 stainless steel
 Capacities: 3 - 22 gallons per minute (1.1 - 5 m³/hr)
 Heads: 40 - 760 feet TDH (12 - 232 meters)
 Staging: 2 - 16
 Minimum flow: 3 GPM
 Maximum working pressure: 360 PSI (25 bar) for the ANSI flange version
 Temperatures: Standard liquid temperature from -13°F (-25°C) to 250°F (120°C)

Component Materials

Pump body	304 stainless steel
Casing O-rings	Viton
Tie-rods and nuts	Zinc-coated steel
Pump shaft	304 stainless steel
Pump casing	304 stainless steel
Top seal housing	304 stainless steel
Inner bowls	304 stainless steel
Diffusers	304 stainless steel
Impellers	316L stainless steel
Impeller O-rings	Viton
Shaft spacers	316L stainless steel
Shaft bushing	Ceramic
Shaft sleeve	Tungsten carbide
Seal spring and retainer clip	316L stainless steel

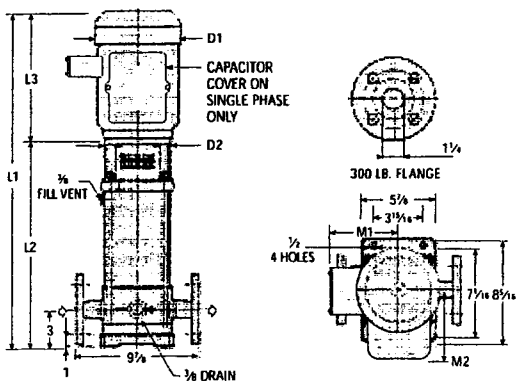
Mechanical seal

Code No.	Rotary	Stationary	Elastomer
0	High Temp. Carbon	Silicon	Viton
Priming and drain plugs	316L stainless steel		
NEMA motor adapter	Cast iron		
Coupling guards	304 stainless steel		
Motor shaft coupling	Cast aluminum		
Pump base	Aluminum casting		



Standard motors supplied are NEMA standard TC frame motors open drip proof, or totally enclosed fan cooled enclosures. 60 Hz, 3500 RPM, single phase ½ to 3 HP (115/208-230 V) 5 HP (208-230 V) and three phase (208-230/460 V). 1SV horsepowers from ½ to 5. For other motor options, contact the factory. Above motors are 1.25 S.F. for ½, ¾ and 1 HP. 1.15 S.F. for 1½-5 HP.

1SVB Series



Stage	Motor Frame	HP	Dimensions (max.)						Wt. (lbs.)		
			L1	L2	L3	M1	M2	D1	D2	ODP	TEFC
2	56C	½	21 ¼	12 ¼	9 ¼	4 ¼	5 ¼	5 ¼	6 ¼	45	45
			22	12 ¼	9 ¼	4 ¼	5 ¼	5 ¼	6 ¼	50	50
3	56C	¾	23 ¼	13 ¼	9 ¼	4 ¼	5 ¼	5 ¼	6 ¼	50	50
			23 ¼	13 ¼	9 ¼	4 ¼	5 ¼	5 ¼	6 ¼	55	55
4	56C	1	25 ¼	14 ¼	10 ¼	4 ¼	5 ¼	5 ¼	6 ¼	65	65
			25 ¼	14 ¼	11 ¼	5 ¼	5 ¼	6 ¼	6 ¼	65	65
5	56C	1 ½	26 ¼	15 ¼	11 ¼	5 ¼	5 ¼	6 ¼	6 ¼	65	70
			26 ¼	15 ¼	11 ¼	5 ¼	5 ¼	6 ¼	6 ¼	70	70
6	56C	2	27 ¼	16 ¼	11 ¼	5 ¼	5 ¼	6 ¼	6 ¼	70	80
			28 ¼	16 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	70	80
7	56C	2	28 ¼	17 ¼	11 ¼	5 ¼	5 ¼	6 ¼	6 ¼	70	80
			29 ¼	17 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	80	80
8	56C	3	30 ¼	18 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	80	105
			30 ¼	18 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	80	105
9	56C	3	31 ¼	19 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	80	105
			31 ¼	19 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	85	110
11	56C	3	33 ¼	21 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	85	110
			33 ¼	21 ¼	12 ¼	5 ¼	5 ¼	6 ¼	6 ¼	110	120
13	1B4TC	5	37 ¼	23 ¼	14 ¼	5 ¼	7 ¼	7 ¼	9 ¼	110	125
			38 ¼	23 ¼	15 ¼	5 ¼	7 ¼	7 ¼	9 ¼	110	125
15	1B4TC	5	39 ¼	25 ¼	14 ¼	5 ¼	7 ¼	7 ¼	9 ¼	110	125
			40 ¼	25 ¼	15 ¼	5 ¼	7 ¼	7 ¼	9 ¼	115	125
16	1B4TC	5	40 ¼	26 ¼	14 ¼	5 ¼	7 ¼	7 ¼	9 ¼	115	125
			41 ¼	26 ¼	15 ¼	5 ¼	7 ¼	7 ¼	9 ¼	115	125

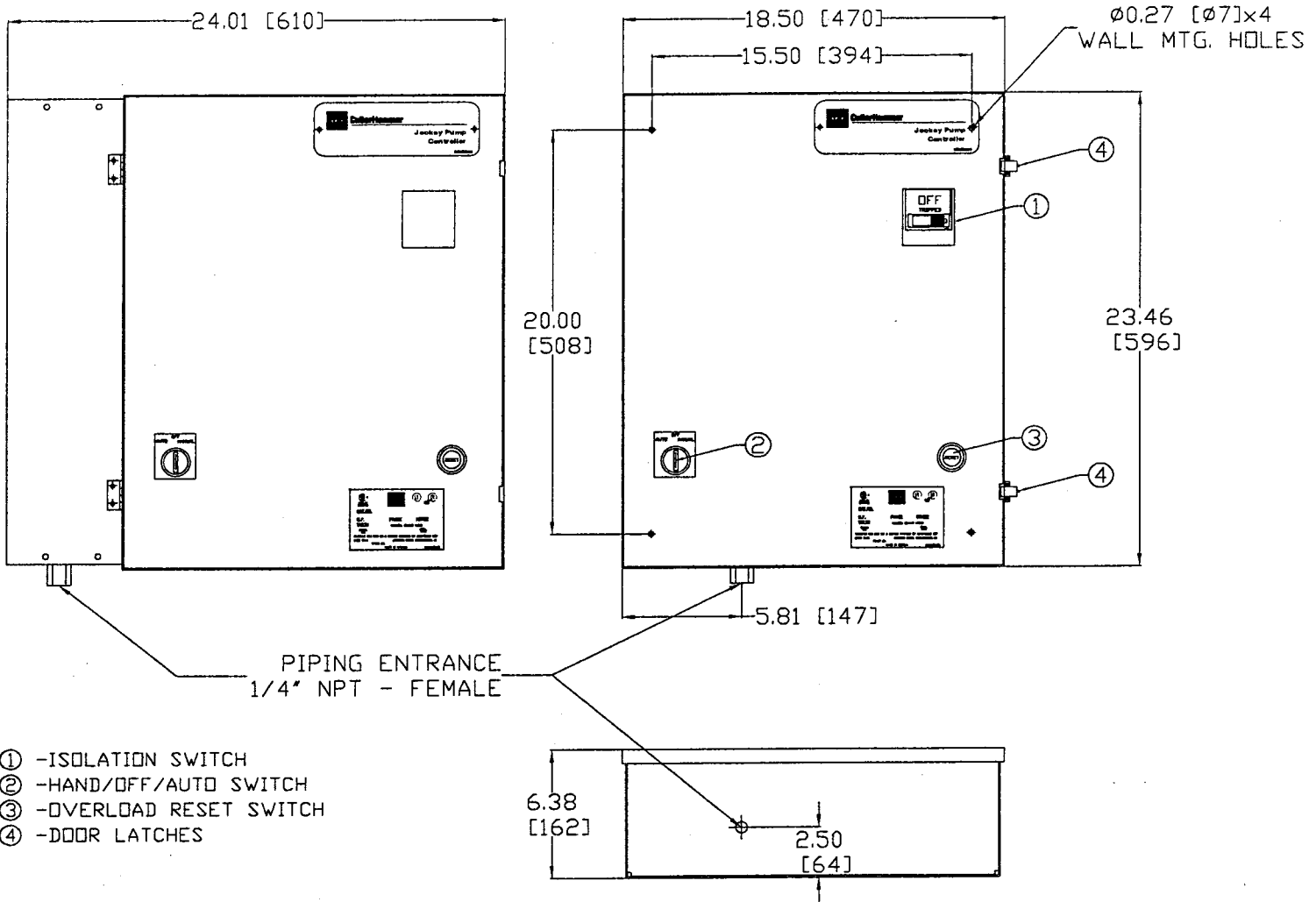
NOT FOR CONSTRUCTION, INSTALLATION OR APPLICATION PURPOSES UNLESS CERTIFIED.

CERTIFIED FOR: *AIR GUARD.*

CUSTOMER ORDER NO: _____ IDENTIFICATION NO: _____

PUMP DATA	SIZE	MODEL	CURVE NO.	GPM	HEAD (FT)	ROTATION	SUCTION	DISCHARGE
		1 ¼"	1SV-5	✓	7.5	95'	STD	250"
MOTOR DATA	HP	RPM	VOLTS	PHASE	HERTZ	FRAME SIZE	ENCLOSURE	
	1 ½	3450	230	Single	60	56C	ODP	

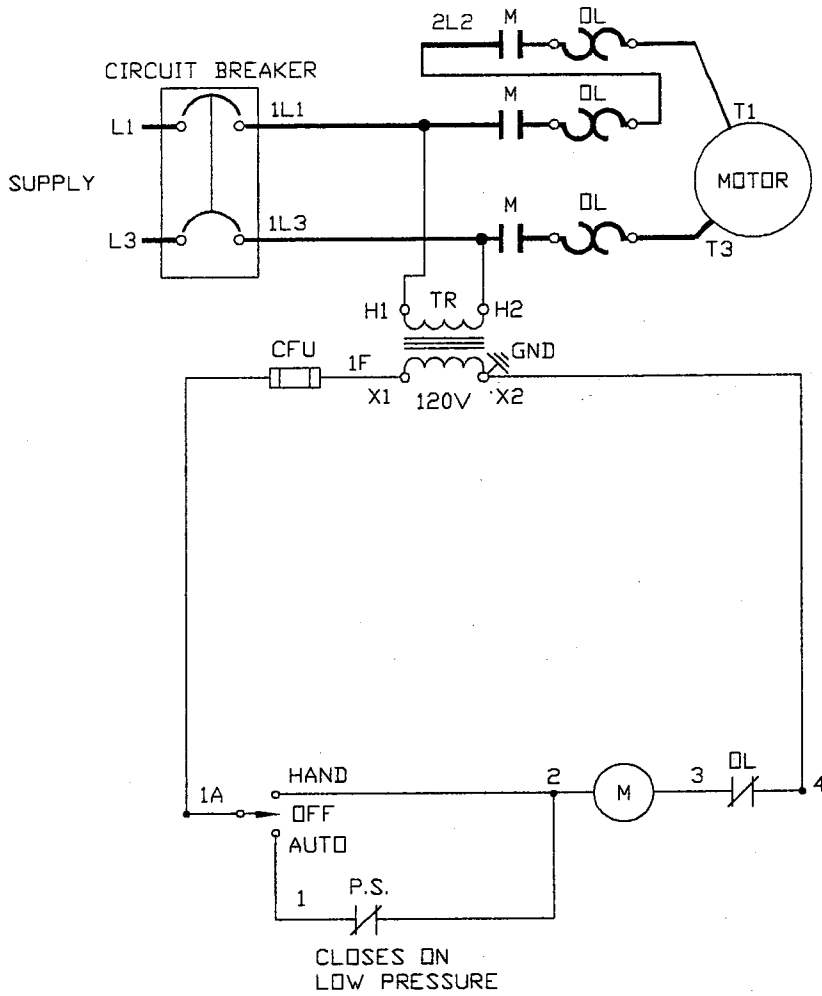
SHOP ORDER: _____ CERTIFIED BY: *V.C.F.* DATE: *10/5/06*



- ① - ISOLATION SWITCH
- ② - HAND/OFF/AUTO SWITCH
- ③ - OVERLOAD RESET SWITCH
- ④ - DOOR LATCHES

Motor Hp	Line Voltage	Withstand Rating			Approx. Weight Lbs. [Kg]
		Standard	Intermediate	High	
0.33-15	200-208V	100,000	150,000	200,000	55 [25]
0.33-20	220-240V				
0.33-50	380V 50Hz				
0.33-50	440-480V	25,000	100,000		
0.33-50	550-600V	100,000	150,000		
0.33-5	120V 1 ϕ				
0.33-10	240V 1 ϕ				

NOTE:
 1. ALL ENCLOSURES FINISHED IN FIRE PUMP RED
 2. CABLE ENTRANCE EITHER TOP OR BOTTOM
 3. STANDARD ENCLOSURE TYPE NEMA 2
 4. THIS SIZE ENCLOSURE REQUIRED FOR MOUNTING OF MERCOID PRESSURE SWITCH



LEGEND:

- M-RUN CONTACTOR
- OL-OVERLOAD RELAY
- TR-CONTROL TRANSFORMER
- CFU-CONTROL FUSE
- PS-PRESSURE SWITCH

NOTES:

1. ALL RELAY CONTACTS ARE SHOWN IN NO POWER CONDITION.

TEST HEADER DATA

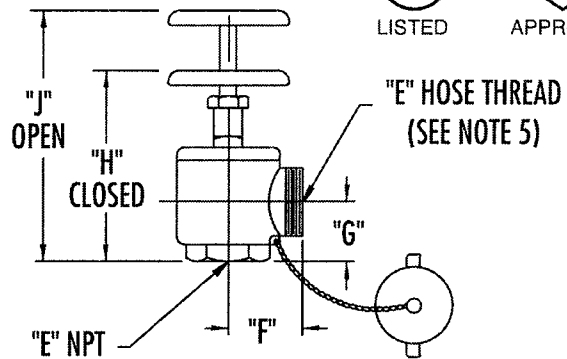
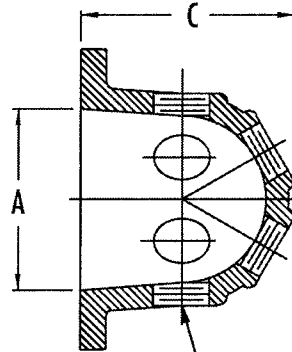
AURORA FIRE PUMPS

OPTION 75 - TEST MANIFOLD
 OPTION 76 - HOSE VALVES
 OPTION 77 - BALL DRIP VALVE

Section **916** Page **203**

Date **May 2004**

Supersedes Section 916 Page 203
 Dated June 2002



QTY "B" SIZE "D" PIPE TAPS FOR HOSE VALVES

OPTION 75 - TEST MANIFOLD	
STD. 125# ASA FLANGES	OPT. 250# ASA FLANGES

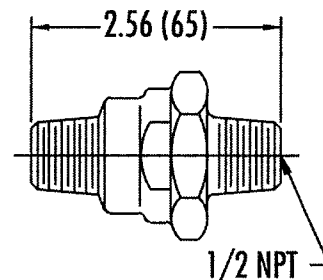
VALVE SIZE "E"	"F"	"G"	"H"	"J"
1-1/2	2.25 (57)	2.00 (51)	6.50 (165)	7.50 (191)
2-1/2	3.5 (89)	2.75 (70)	9.50 (241)	11.00 (297)

OPTION 76 - HOSE VALVE(S)	
WITH CAPS AND CHAINS	WITHOUT CAPS AND CHAINS

PUMP RATING G.P.M.	50	100 150 200	250 300	400 450 500	750	1000	1250 1500 2000	2500	3000	3500	4000 4500	5000
"A" MANIFOLD SUPPLY SIZE	1.5"	2.5"	3"	4"	6"	6"	8"	10"	10"	12"	12"	12"
"B"	1	1	1	2	3	4	6	8	12	12	16	20
"C"	1.00 (25)	1.13 (29)	1.31 (33)	8.50 (216)	10.62 (270)	10.62 (270)	11.75 (298)	12.50 (318)	25.63 (651)	31.63 (803)	31.63 (803)	43.75 (1111)
"D"	1-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2

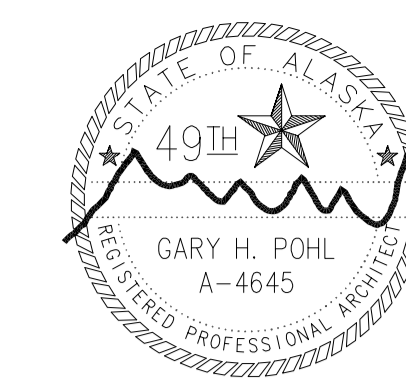
NOTES:

- Dimensions are in inches (mm) and may vary $\pm 1/4$ (6).
- Components shown are shipped loose for field installation and assembly.
- Manifold supply size "A" and the number of hose valves ("B") meets or exceeds the minimums specified by N.F.P.A. 20 for the pump ratings indicated.
- Manifolds for 3000 through 5000 GPM ratings consist of multiple sections and may require support (by others).
- 1-1/2" Hose valves furnished with 1-1/2" National Standard Fire Hose Thread: 1.9900 (50.55) O.D. (max.), 6 threads per inch. 2-1/2" Hose valves are furnished with 2-1/2" National Standard Fire Hose Thread: 3.0686 (77.94) O.D. (max.), 7-1/2 threads per inch. Refer to factory for other thread conventions or adaptors.



OPTION 77 - BALL DRIP VALVE

Designed to drain a branch line leading to an outside test manifold where danger of freezing exists. Opens at zero flow.



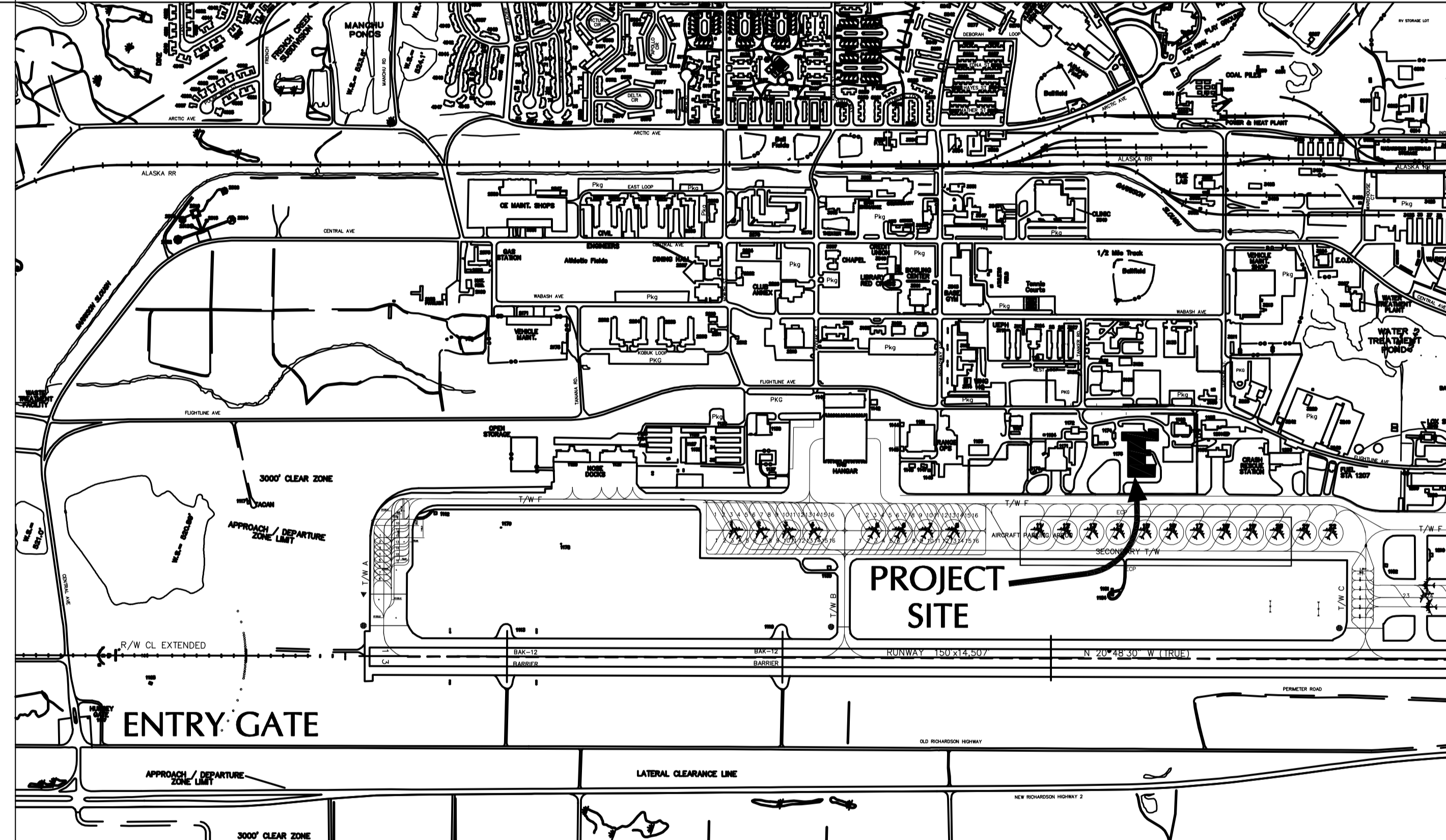
REPAIR AIRCRAFT MAINTENANCE HANGAR BUILDING 1176

FTQW 04-2254 ALASKA AIR NATIONAL GUARD AT EIELSON AIR FORCE BASE, ALASKA

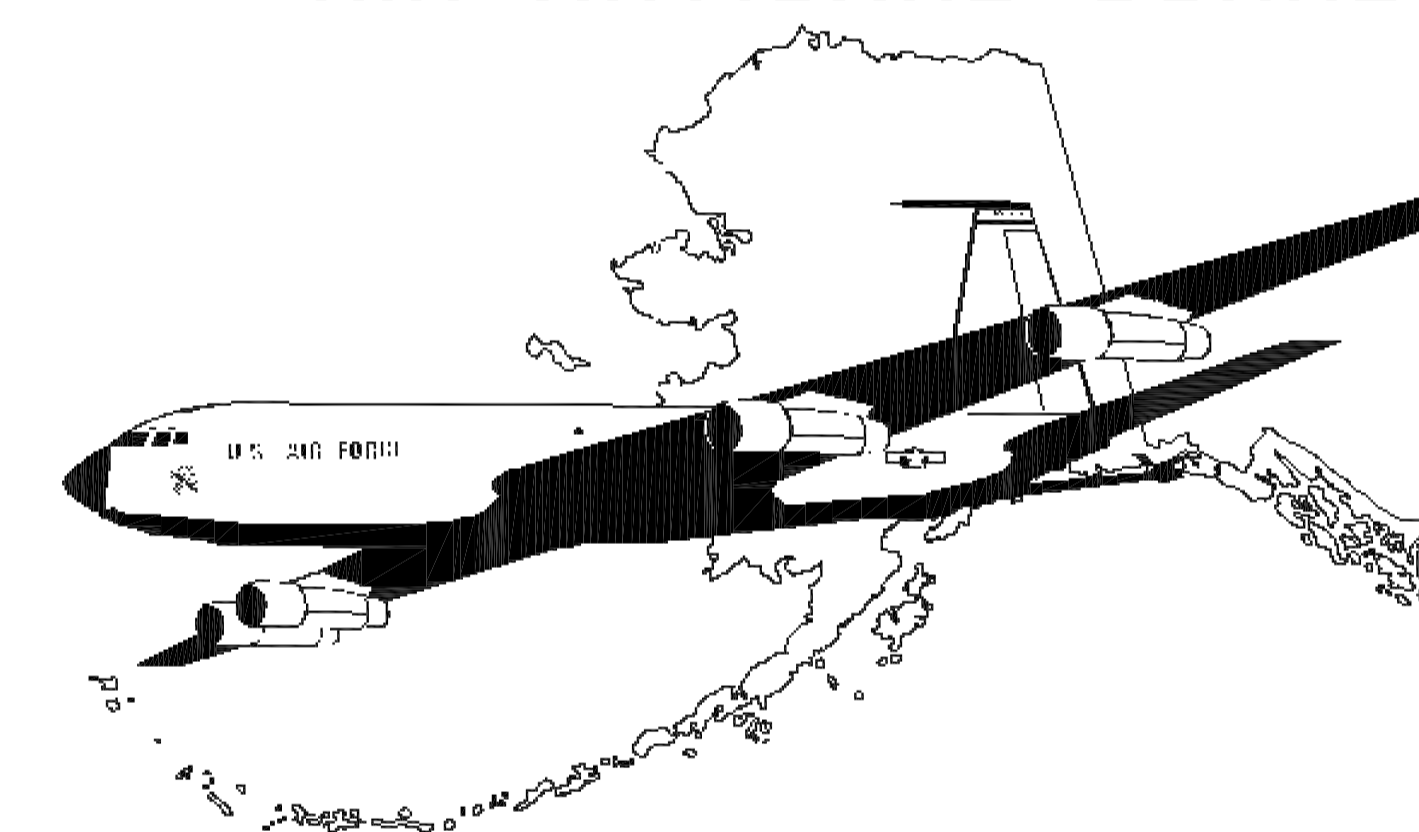
⊕ REGIONAL MAP



⊕ VICINITY MAP



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Project:

**REPAIR AIRCRAFT
MAINTENANCE HANGER
BDLG 1176**
EIELSON AFB, ALASKA
FTQW-04-2254
ALASKA AIR NATIONAL GUARD
EIELSON AFB, ALASKA

SHEET INDEX

PROJECT DRAWINGS

- | | | | |
|------|--|------|---|
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| A1.1 | FLOOR PLAN DEMOLITION | M1.0 | DEMO - SOUTHEAST FLOOR PLANS |
| A1.2 | HANGAR FLOOR DEMOLITION PLAN | M1.1 | DEMO - HANGAR BAY FLOOR PLAN |
| A2.1 | RENOVATION FLOOR PLAN AND SCHEDULES | M1.2 | DEMO - MECH ROOM FLOOR PLAN AND SPRINKLER SCHEMATIC |
| A2.2 | HANGAR FLOOR REFINISHING PLAN | M2.0 | NEW WORK - SOUTHEAST FLOOR PLANS |
| A3.1 | DOOR, WINDOW AND MISCELLANEOUS DETAIL | M2.1 | NEW WORK - HANGAR BAY FLOOR PLAN AND DETAILS |
| A6.1 | REFLECTED CEILING RENOVATION PLAN WALL TYPES AND DETAILS | M2.2 | NEW WORK - MECH ROOM FLOOR PLAN SPRINKLER SCHEMATIC AND DETAILS |
| A8.1 | ROOF PLAN & INFORMATION | E0 | ELECTRICAL LEGENDS AND SCHEDULES |
| A8.2 | ROOF DETAILS | E1 | ELECTRICAL DEMOLITION |
| A8.3 | ROOF DETAILS | E2 | FIRE ALARM DEMO PLAN |
| S1 | FALL ARREST FRAMING PLAN | E3 | ELECTRICAL LIGHTING PLAN |
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| S5 | DETAILS | E7 | FIRE ALARM PLAN |
| | | E8 | FIRE ALARM RISER DIAGRAM |
| | | E9 | PANEL SCHEDULES |

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Date	Revision	By

Sheet Contents
TITLE SHEET

Project Mgr.	GVN	Sheet No.
Drawn	CAL	T1
Drawn		
Checked	GVN	
Date	10/14/05	USKH W.O. 693316

DRAWING NAME: 01.CEC10_Engineer Project Control Files\10 - G. BLDG 1176 (COMPOSITE MAINTENANCE HANGAR)\04-2254 (Repair, Maintenance Hangar, B117663316-A1_1.dwg, PLOTTED: Nov 21, 2005 - 10:07am



PHOTO 1

PHOTO 2

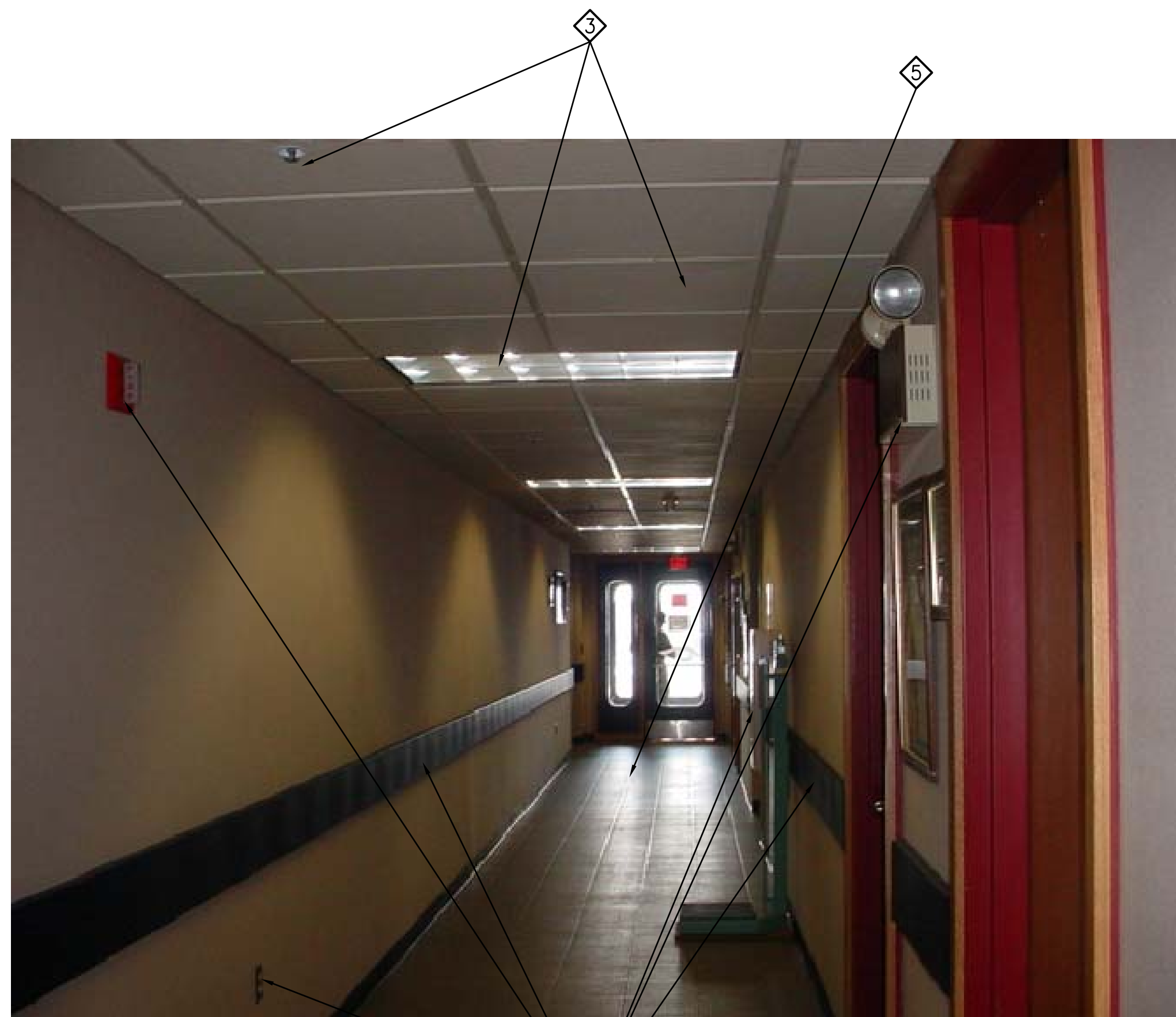
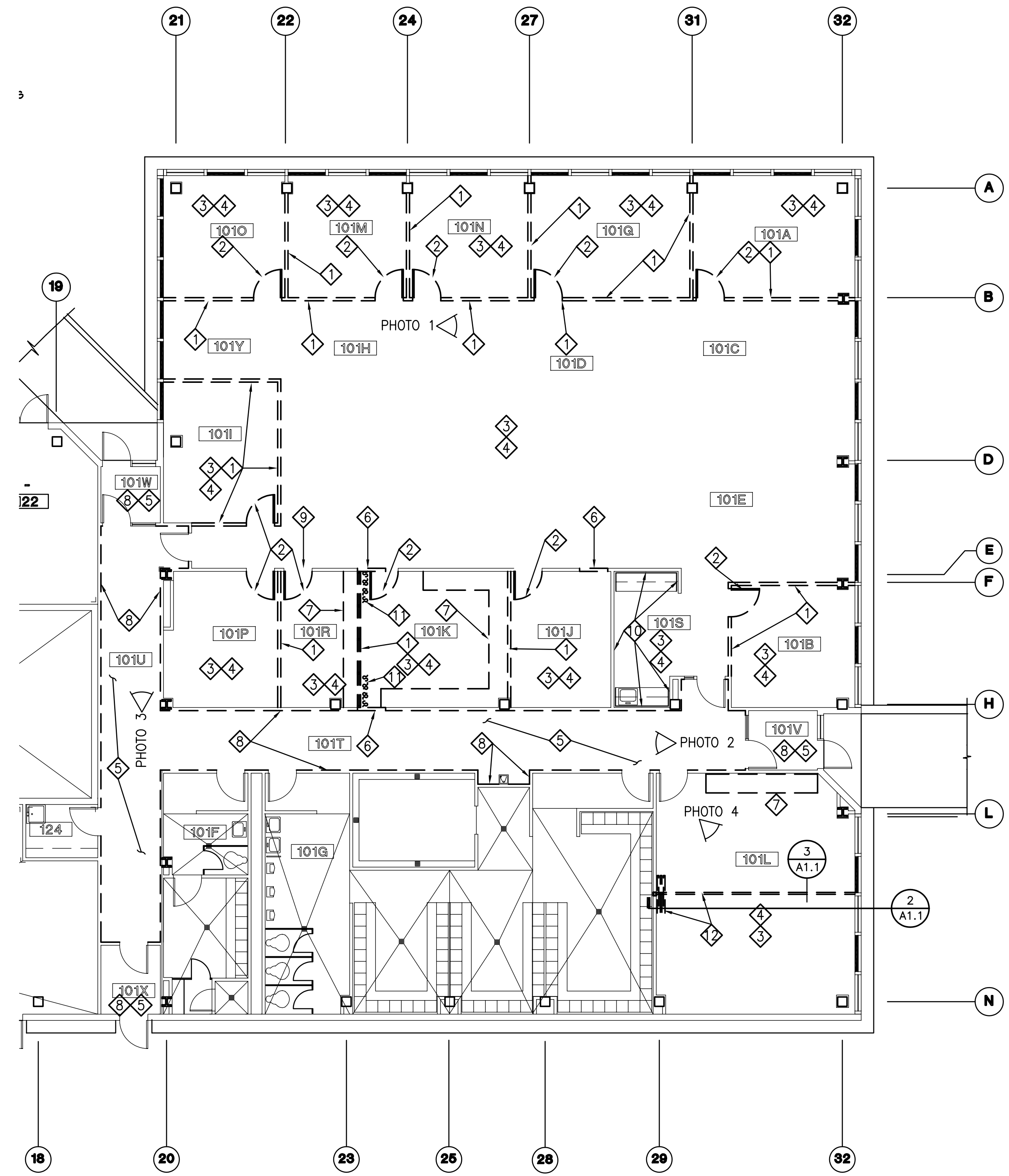
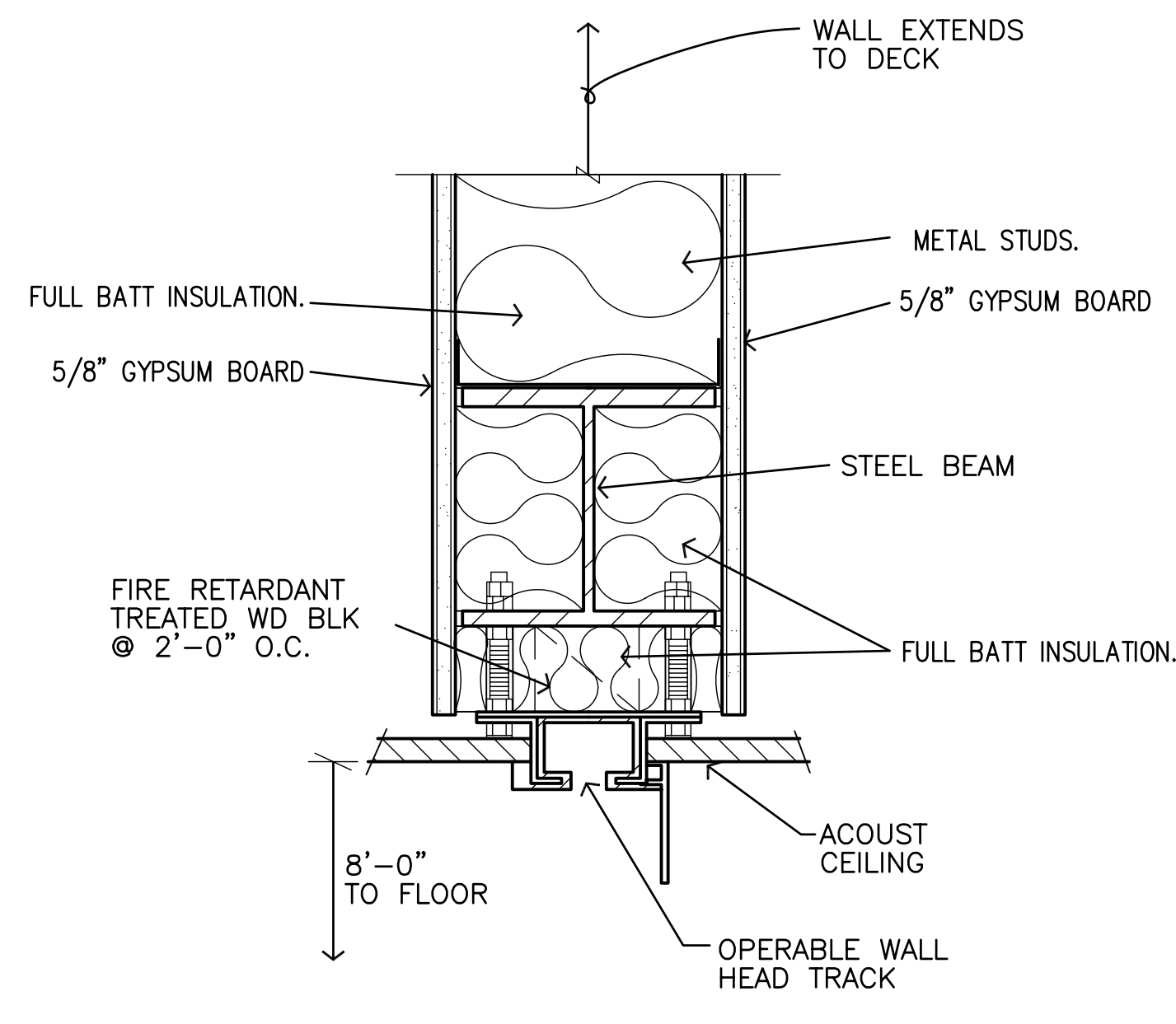
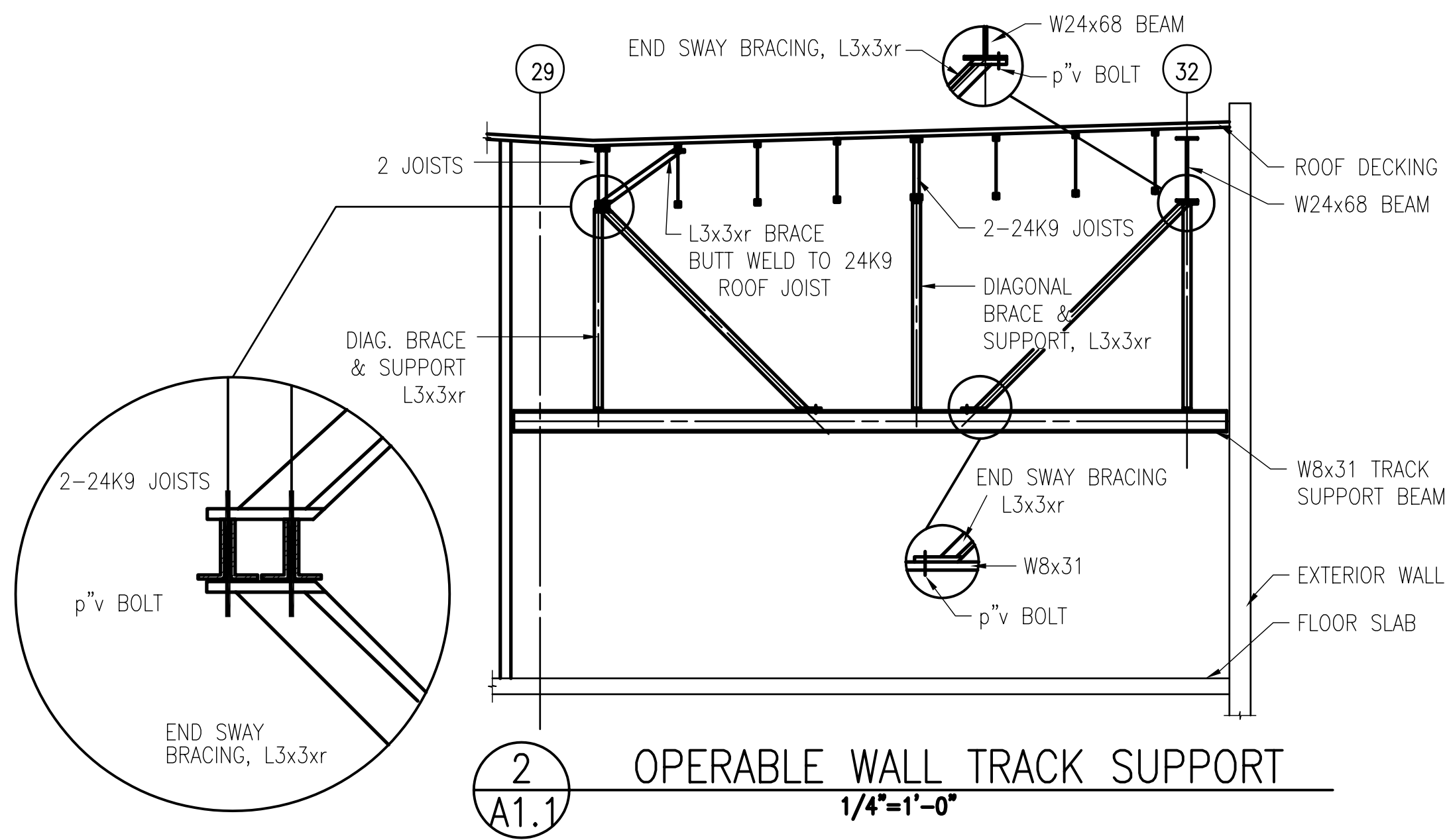


PHOTO 3



PHOTO 4

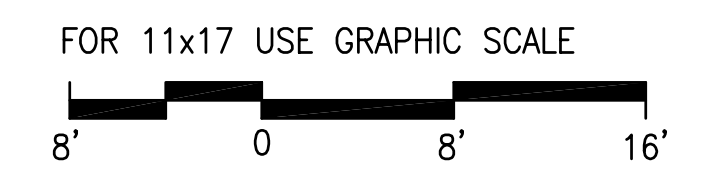


KEYNOTES:

- 1 REMOVE NON LOAD BEARING PARTITIONS. CLEAN AND PREPARE SURFACES DESIGNATED TO REMAIN TO RECEIVE NEW FINISHES AS SHOWN ON A2.1.
- 2 REMOVE DOOR AND FRAME. SALVAGE DOORS TO OWNER. PREPARE OPENINGS FOR INFILL WHERE INDICATED ON A2.1
- 3 REMOVE SUSPENDED CEILING, DIFFUSERS, GRILLES AND LIGHTS, COORDINATE WITH MECHANICAL AND ELECTRICAL.
- 4 REMOVE CARPET AND ADHESIVE. CLEAN AND LEVEL FLOOR IN PREPARATION FOR NEW FLOORING
- 5 REMOVE TILE FLOORING AND ADHESIVE. CLEAN AND LEVEL FLOOR IN PREPARATION FOR NEW FLOORING.
- 6 REMOVE 40" X 86" SECTION OF WALL, PREPARE OPENING FOR NEW DOOR
- 7 REMOVE EXISTING CABINETRY, SALVAGE TO OWNER. PREPARE SURFACES DESIGNATED TO REMAIN FOR NEW FINISHES AS SHOWN ON A2.1
- 8 REMOVE EXISTING SURFACE MOUNTED ITEMS NOT DESIGNATED BY OTHER DISCIPLINES FOR DEMOLITION, SALVAGE FOR REINSTALLATION. DO NOT REMOVE FIRE HOSE CABINETS. PREPARE EXISTING HOLLOW METAL FRAMES TO RECEIVE NEW Z-TRIM.
- 9 PREPARE OPENING FOR NEW 36" X 42" ROLL-UP COUNTER DOOR.
- 10 REMOVE EXISTING SURFACE MOUNTED ITEMS NOT DESIGNATED BY OTHER DISCIPLINES FOR DEMOLITION, SALVAGE FOR REINSTALLATION. REMOVE VINYL WALL COVERING, PREPARE SURFACE FOR NEW PAINT.
- 11 REMOVE EXISTING VERTICAL BLINDS, SALVAGE TO OWNER.
- 12 REMOVE EXISTING OPERABLE WALL, OVERHEAD TRACK, SUPPORTING WIDE FLANGE BEAM, WALL AND DIAGONAL SUPPORTS ABOVE CEILING. SEE ADJACENT EXISTING DETAILS

LEGEND

- WALLS TO BE REMOVED
- WALLS TO REMAIN
- DOORS TO BE REMOVED
- DOORS TO REMAIN



KEYPLAN

Notes:

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Project:

REPAIR AIRCRAFT MAINTENANCE HANGER BLDG 1176
EIELSON AFB, ALASKA
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Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

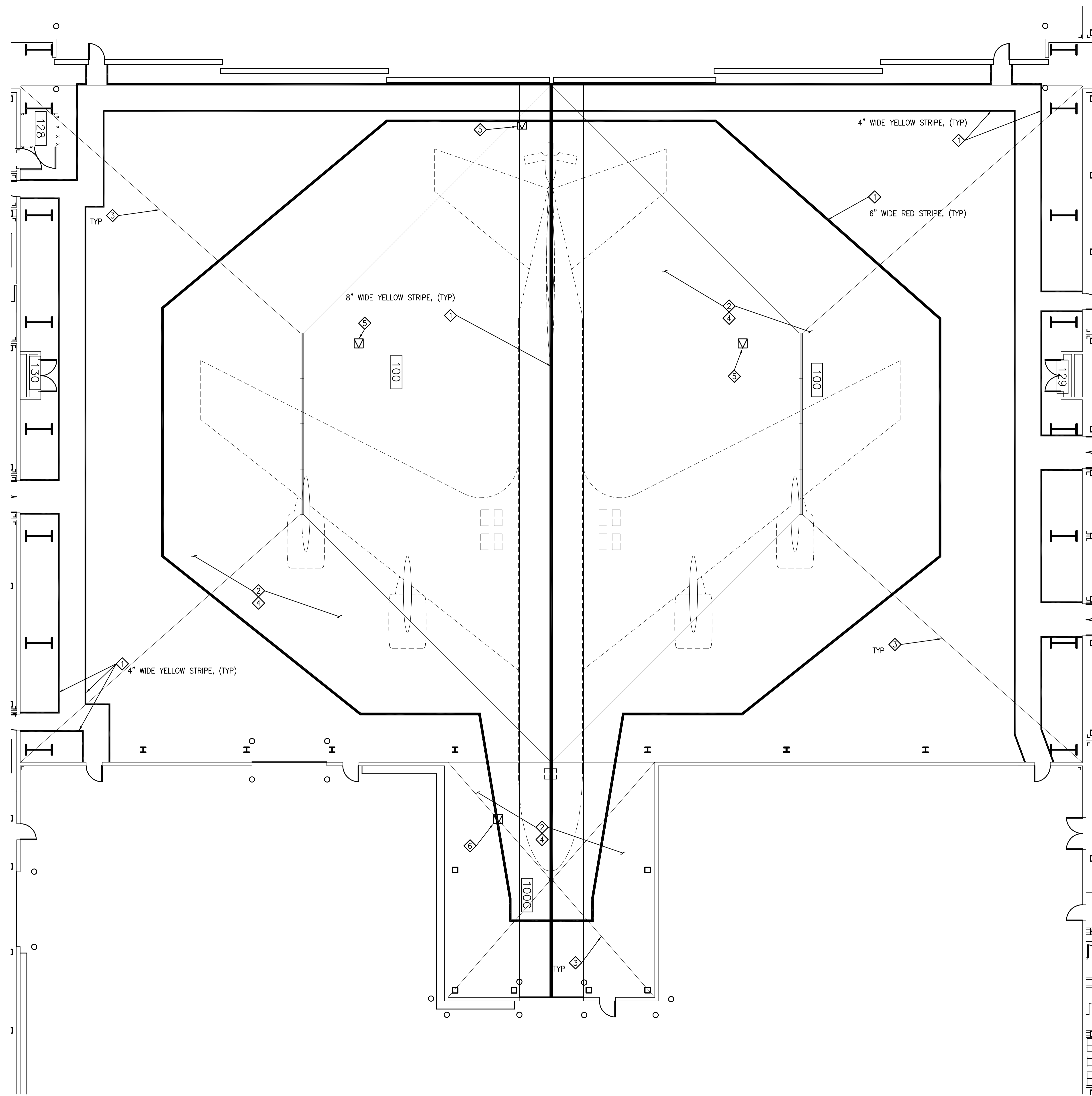
Sheet Contents

FLOOR PLAN DEMOLITION

Project Mgr.	GVN	Sheet No.
Drawn	JTP	A1.1
Checked	GVN	
Date	10/14/05	

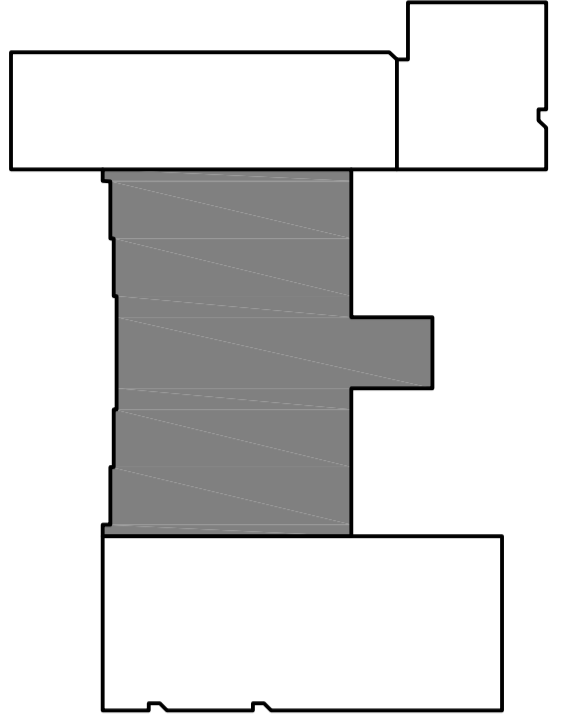
USKH w.o. 693316

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KEY NOTES:

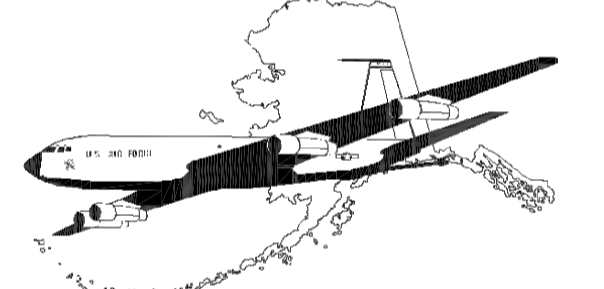
- ① RECORD LOCATIONS, COLORS AND SIZES OF EXISTING PAINT STRIPING PRIOR TO REMOVAL OF EXISTING FLOOR FINISH.
- ② REMOVE EXISTING FLOOR FINISH IN HANGAR (ROOMS 100 AND 100C). CAUTION, SEE SPECIFICATION SECTION 02090 FOR REMOVAL OF LEAD BASED PAINT (YELLOW STRIPES).
- ③ REMOVE JOINT SEALANTS AND ASSOCIATED BACKER MATERIALS.
- ④ REPAIR EXISTING DIVOTS, SPALLS AND OTHER IMPERFECTIONS IN CONCRETE FLOOR SURFACE AFTER REMOVAL OF EXISTING FLOOR FINISH AND BEFORE INSTALLATION OF NEW FLOOR FINISH.
- ⑤ ABANDON EXISTING UTILITY PITS IN PLACE. REMOVE LIDS AND SALVAGE TO OWNER. PREPARE LID SEAT FOR BLOCKING. SEE MECH FOR TREATMENT OF WASTE LINES.
- ⑥ EXISTING UTILITY PIT TO REMAIN.



KEYPLAN

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Project:

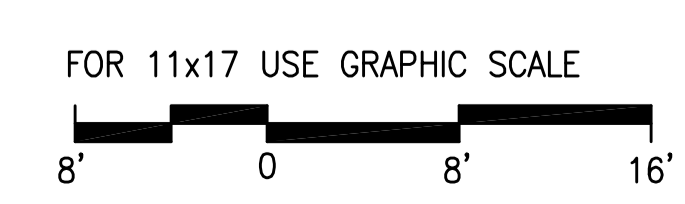
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
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EIELSON AFB, ALASKA

Date	Revision	By

Sheet Contents
HANGAR FLOOR DEMOLITION PLAN

Project Mgr.	GVN	Sheet No.
Drawn	JTP CAL	A1.2
Checked	GVN	
Date	10/14/05	
USKH w.o. 693316		

 **1**
A1.2 HANGAR FLOOR FINISH PLAN
SCALE: 1/8" = 1'-0"

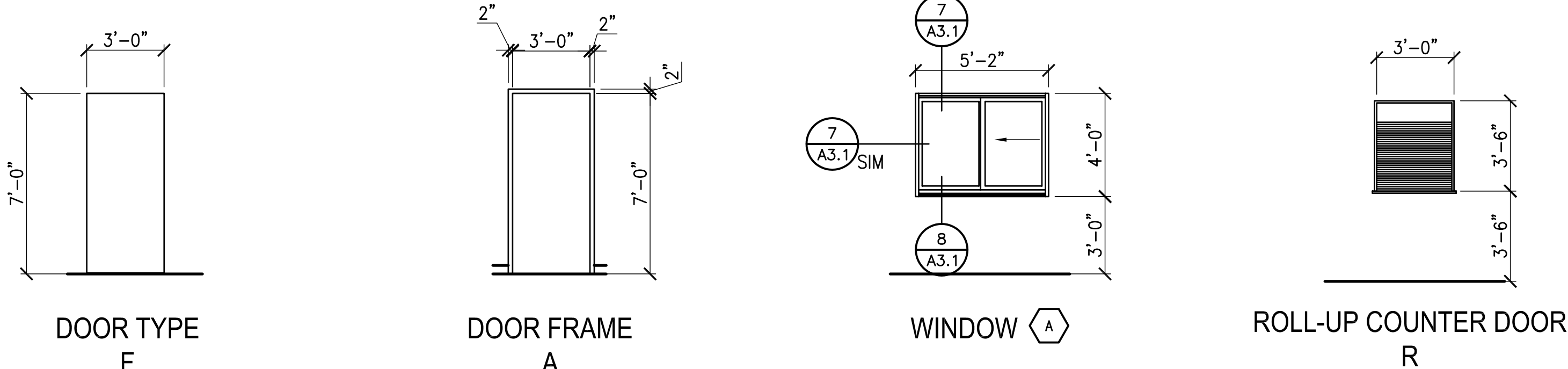


DOOR SCHEDULE

DOOR NUMBER	DOOR SIZE			DETAILS				FRAME				REMARKS	DOOR NUMBER			
	WIDTH	HEIGHT	THICKNESS	TYPE	CONSTRUCTION	FINISH	RATING	JAMB	HEAD	THRESHOLD	TYPE			CONSTRUCTION	FINISH	HARDWARE
101D	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	EXIST	-	REFINISH DOOR	101D
101D1	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101D1
101D2	3'-0"	7'-0"	1-3/4"	F	SRWD	SV	-	5/A3.1	5/A3.1	6/A3.1	A	SRHM	PT	-	SOUND RATED STC 46	101D2
101D3	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101D3
101D4	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101D4
101P-1	3'-0"	7'-0"	1-3/4"	F	SRWD	SV	20 MIN	5/A3.1	5/A3.1	6/A3.1	A	SRHM	PT	-	SOUND RATED STC 46	101P-1
101P-2	3'-0"	7'-0"	1-3/4"	F	SRWD	SV	20 MIN	5/A3.1	5/A3.1	6/A3.1	A	SRHM	PT	-	SOUND RATED STC 46	101P-2
101P-3	3'-0"	3'-6"	-	R	RUCD	S ST	20 MIN	-	-	-	-	-	S ST	-	-	101P-3
101S	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	EXIST	-	REFINISH DOOR	101S
101B	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101B
101C1	3'-0"	7'-0"	1-3/4"	F	SRWD	SV	-	5/A3.1	5/A3.1	6/A3.1	A	SRHM	PT	-	SOUND RATED STC 46	101C1
101C2	3'-0"	7'-0"	1-3/4"	F	SRWD	SV	-	5/A3.1	5/A3.1	6/A3.1	A	SRHM	PT	-	SOUND RATED STC 46	101C2
101C3	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C3
101C5	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C5
101C6	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C6
101C7	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C7
101C8	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C8
101C9	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C9
101C10	3'-0"	7'-0"	1-3/4"	F	WD	SV	-	1/A3.1	1/A3.1	-	A	HM	PT	-	-	101C10
101F	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	EXIST	-	RF1S	101F
101G	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	EXIST	-	RF1S	101G
101G1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	EXIST	-	RF1S	101G1
101L	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101L
101V-1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101V-1
101V-2	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101V-2
101W-1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101W-1
101W-2	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101W-2
101X-1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101X-1
101X-2	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	PT	-	REFINISH DOOR	101X-2
124	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	3/A3.1	3/A3.1	-	EXIST	EXIST	EXIST	-	RF1S	124

DOOR SCHEDULE ABBREVIATIONS

- HM HOLLOW METAL
- SV STAINED AND VARNISHED
- SRWD SOUND RATED WOOD DOOR
- SRHM SOUND RATED HOLLOW METAL
- PT PAINTED METAL FRAME
- WD SOLID CORE WOOD DOOR
- RF1S REFINISH DOOR & FRAME HALL SIDE
- RUCD ROLL-UP COUNTER DOOR
- S ST STAINLESS STEEL



ROOM FINISH SCHEDULE

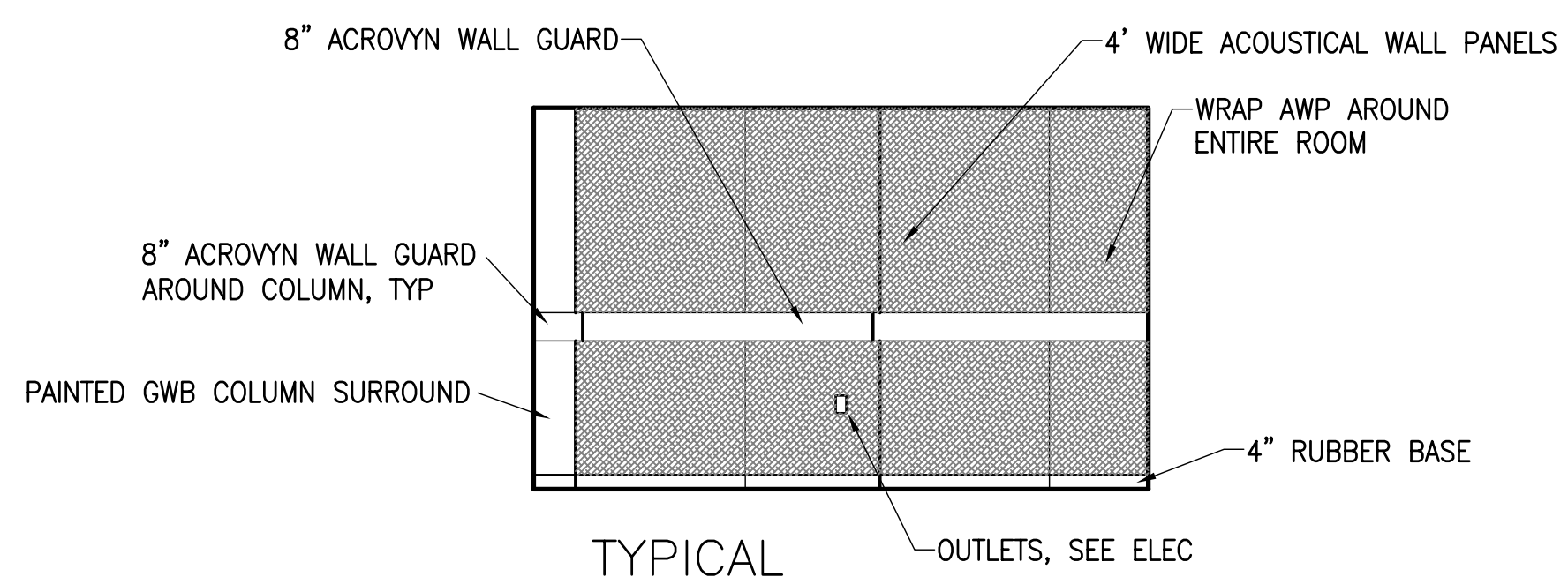
ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS				CEILING			REMARKS	ROOM NO.				
		MATERIAL	FINISH	MATERIAL	FINISH	NORTH	EAST	SOUTH	WEST	MATERIAL	FINISH	HEIGHT						
101B	MXM	EXC	CPT1	RB	RB	EGWB	PT	EGWB	PT	EGWB	PT	EGWB	PT	ACST	2L	9'-0"	101B	
101S	KITCHEN	EXC	VCT	RB	RB	EGWB	PT	EGWB	PT	EGWB	PT	EGWB	PT	ACST	2L	9'-0"	101S	
101C	MXG/CCA	EXC	CPT1	RB	RB	EGWB	PT	EGWB	PT	EGWB/GWB	PT	GWB	PT	ACST	2L	9'-0"	101C	
101C1	MXG/CC	EXC	CPT1	RB	RB	EGWB	PT	EGWB	PT	EGWB	PT	GWB	PT	ACST	2L	9'-0"	101C1	
101C2	MOC	EXC	CPT2	RB	RB	EGWB/GWB	PT	EGWB	PT	EGWB	PT	GWB	PT	ACST	2L	9'-0"	101C2	
101C3	SECURE COM	EXC	CPT2	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C3	
101C5	TRAINING	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C5	
101C6	BUDGET	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C6	
101C7	MXS/CC	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C7	
101C8	MXM	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C8	
101C9	ANALYSIS	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C9	
101C10	P&S	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101C10	
101D	ADMIN	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	EGWB/GWB	PT	ACST	2L	8'-0"/9'-0"	SEE PLAN	101D
101D1	MOF/MOF CC	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	EGWB	PT	ACST	2L	9'-0"	101D1	
101D2	AMXS/CC	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	EGWB	PT	ACST	2L	9'-0"	101D2	
101D3	AMXS CHIEF	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	EGWB	PT	ACST	2L	9'-0"	101D3	
101D4	JOINT 1st SGT	EXC	CPT1	RB	RB	EGWB	PT	GWB	PT	GWB	PT	GWB	PT	ACST	2L	9'-0"	101D4	
101P	JOINT CCA	EXC	CPT1	RB	RB	EGWB/GWB	PT	EGWB	PT	EGWB	PT	EGWB	PT	ACST	2L	9'-0"	101P	
101L	CONFERENCE	EXC	CPT1	RB	RB	EGWB/GWB	AWP/CR	EGWB	AWP/CR	EGWB	AWP/CR	EGWB	AWP/CR	ACST	2L	9'-0"	SEE NOTE 1	101L
101T	HALLWAY	EXC	VCT	RB	RB	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	ACST	2L	8'-0"	101T	
101U	HALLWAY	EXC	VCT	RB	RB	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	ACST	2L	8'-0"	101U	
101V	VESTIBULE	EXC	VCT	RB	RB	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	ACST	2L	8'-0"	SEE NOTE 2	101V
101W	VESTIBULE	EXC	VCT	RB	RB	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	ACST	2L	8'-0"	SEE NOTE 2	101W
101X	VESTIBULE	EXC	VCT	RB	RB	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	EXIST	NGWB/PT	ACST	2L	8'-0"	SEE NOTE 2	101X
100	HANGAR	EXC	ARC	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	100	

FINISH ABBREVIATIONS

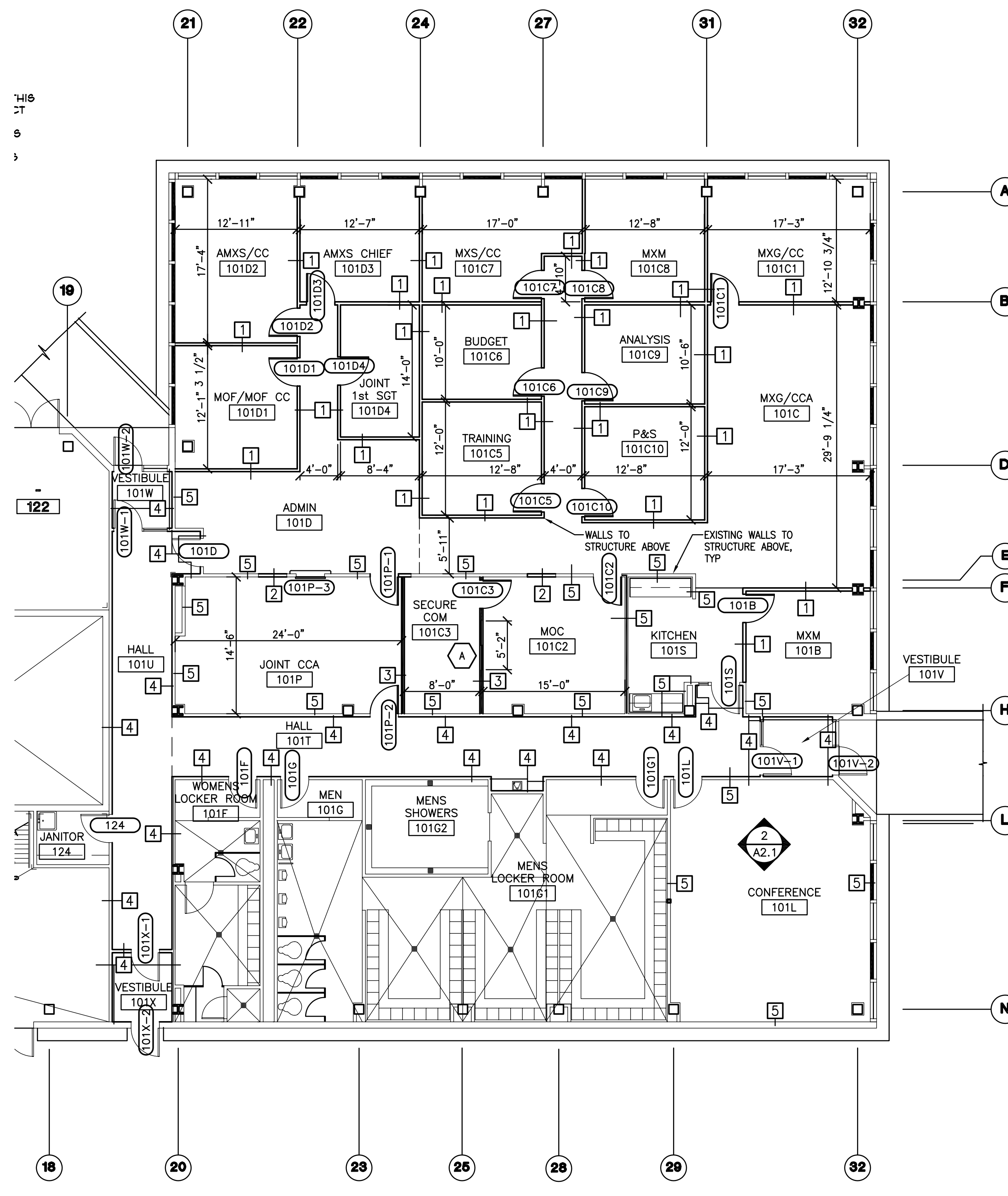
- 2L ARMSTRONG SECOND LOOK ITEM 2767
- ACST ACOUSTICAL CEILING TILE
- AWP ACOUSTICAL WALL PANELS
- CPT1 CARPET STYLE 1 - GENERAL PURPOSE
- CPT2 STATIC RESISTANT
- CR 8" CHAIR RAIL
- EGWB EXISTING GWB SUBSTRATE
- EXC EXISTING CONCRETE FLOOR
- EXIST EXISTING FINISH TO REMAIN
- GWB NEW GWB
- ARC ABRASION RESISTANT COATING
- NGWB 1/4" GYPSUM WALL BOARD OVER EXISTING FINISH
- PT PAINT
- RB RUBBER BASE
- VCT VINYL COMPOSITION TILE

NOTES:

- 1 CHAIR RAIL MOUNTED AT 36" AFF TO BOTTOM OF RAIL. ACOUSTICAL WALL PANEL MOUNTED ABOVE AND BELOW CHAIR RAIL.
- 2 EXISTING RECESSED ENTRY MATTING TO REMAIN.



2 A2.1 CONFERENCE ROOM INTERIOR ELEVATION SCALE: 1/4" = 1'-0"



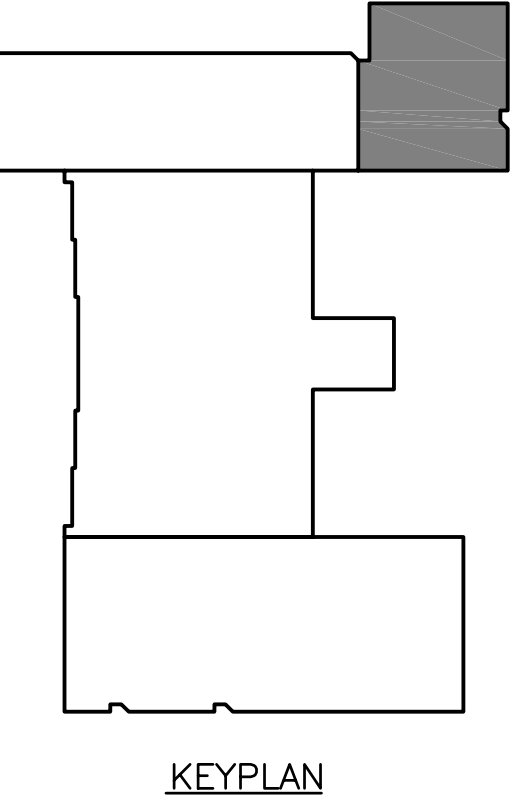
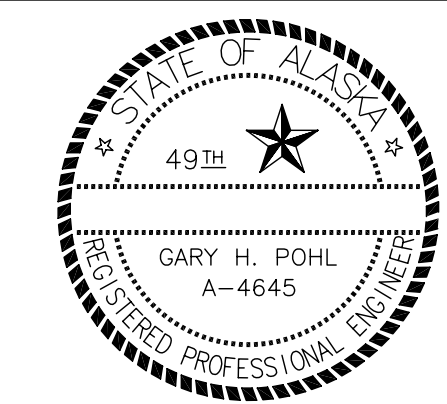
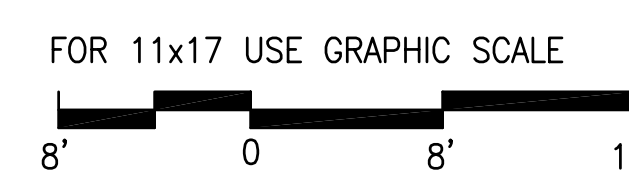
1 A2.1 FLOOR PLAN - RENOVATION SCALE: 1/8" = 1'-0"

LEGEND

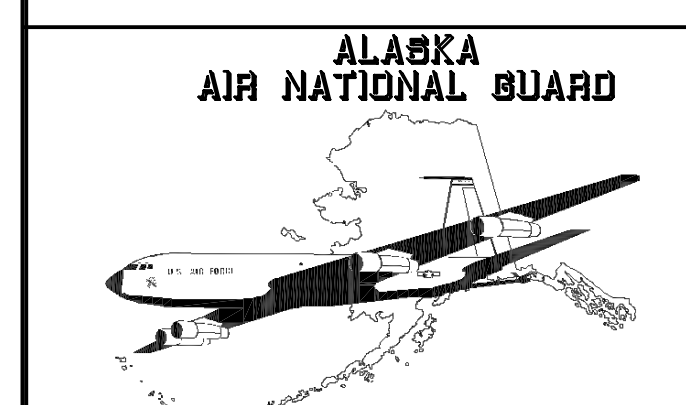
- [Symbol] NEW WALL MATCHES WALL TYPE
- [Symbol] EXISTING MODIFIED WALL MATCHES WALL TYPE
- [Symbol] EXISTING MODIFIED WALL, ONE SIDE MATCHES ONE WALL TYPE, OTHER SIDE MATCHES OTHER WALL TYPE

NOTE: SEE SPEC SECTION 10425 FOR SIGN REQUIREMENTS

2 A2.1 TYPICAL SIGNAGE MOUNTING SCALE: 1/2" = 1'-0"



Notes:



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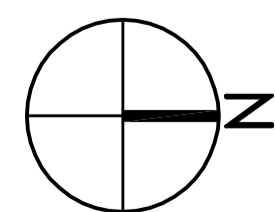
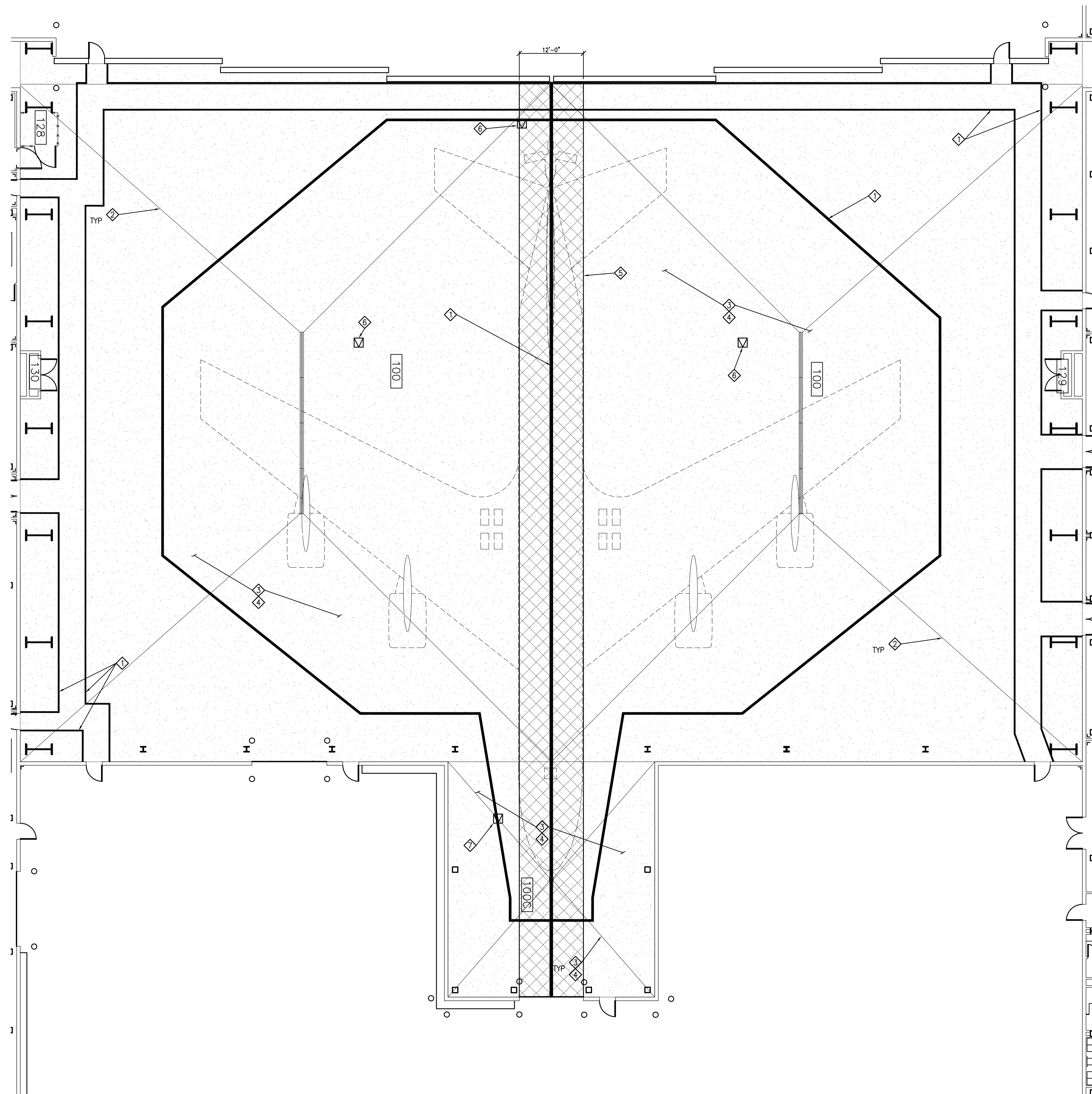
Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
EIELSON AFB, ALASKA
FTQW-04-2254
ALASKA AIR NATIONAL GUARD
EIELSON AFB, ALASKA

Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Project Mgr.	GVN	Sheet No.
Drawn	JTP	A2.1
Drawn		
Checked	GVN	
Date	10/14/05	USKH w.o. 693316

DRAWING NAME: G:\C\10 - Engineer Project Control Files\10 - G BLDG 1176 (COMPOSITE MAINT HANGAR) 04-2254 (Repair Maintenance Hangar, B1176) Doc#693316-A2-1.dwg PLOTTED: Mar 15, 2006 - 8:11am

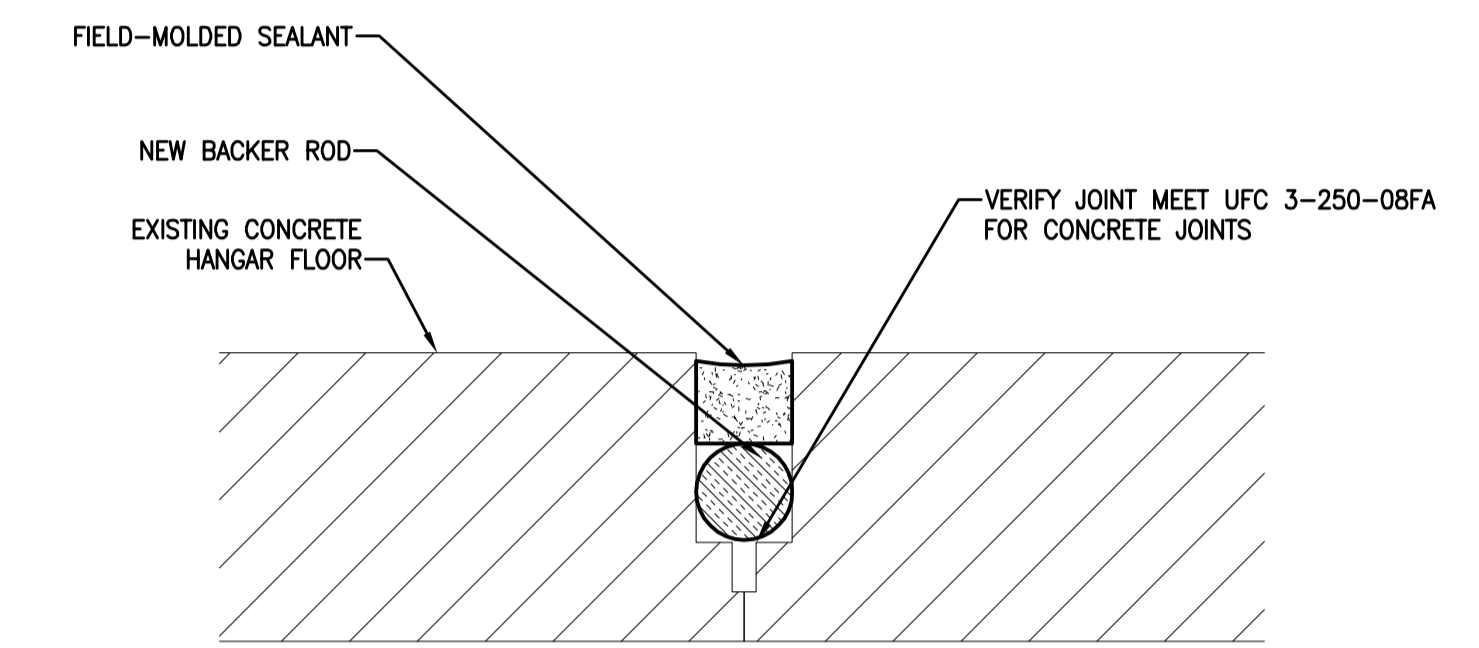
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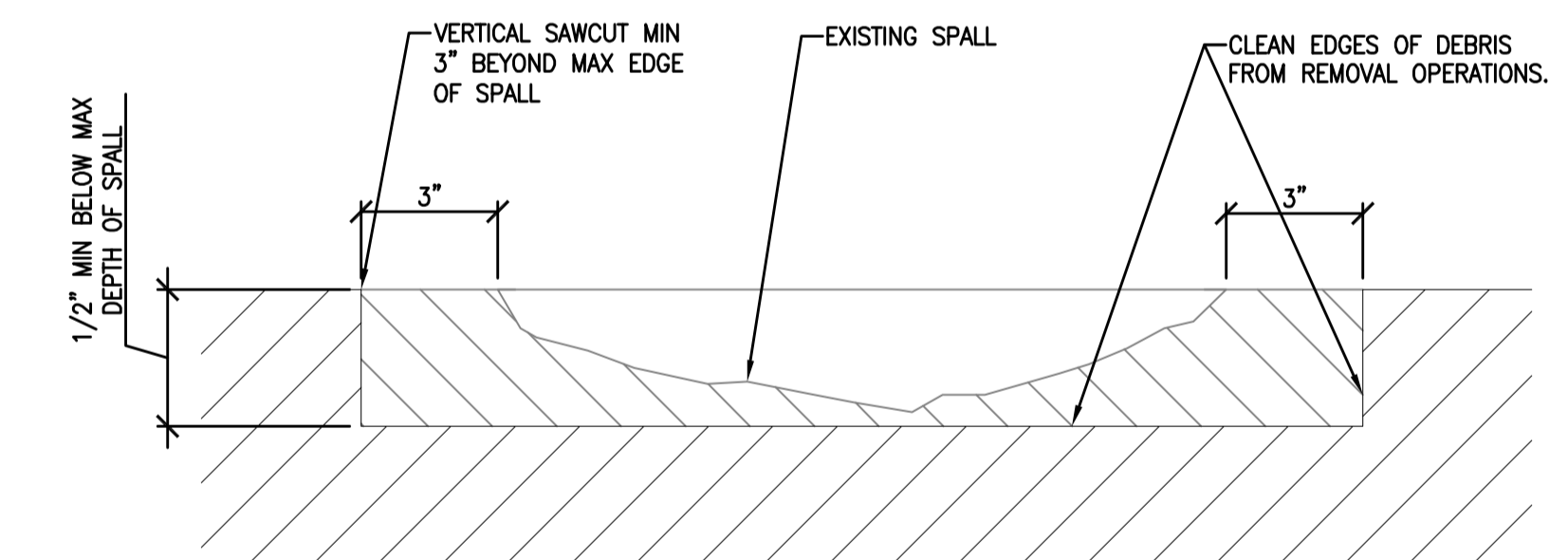
1 HANGAR FLOOR FINISH PLAN
A2.2 SCALE: 1/8" = 1'-0"

KEY NOTES:

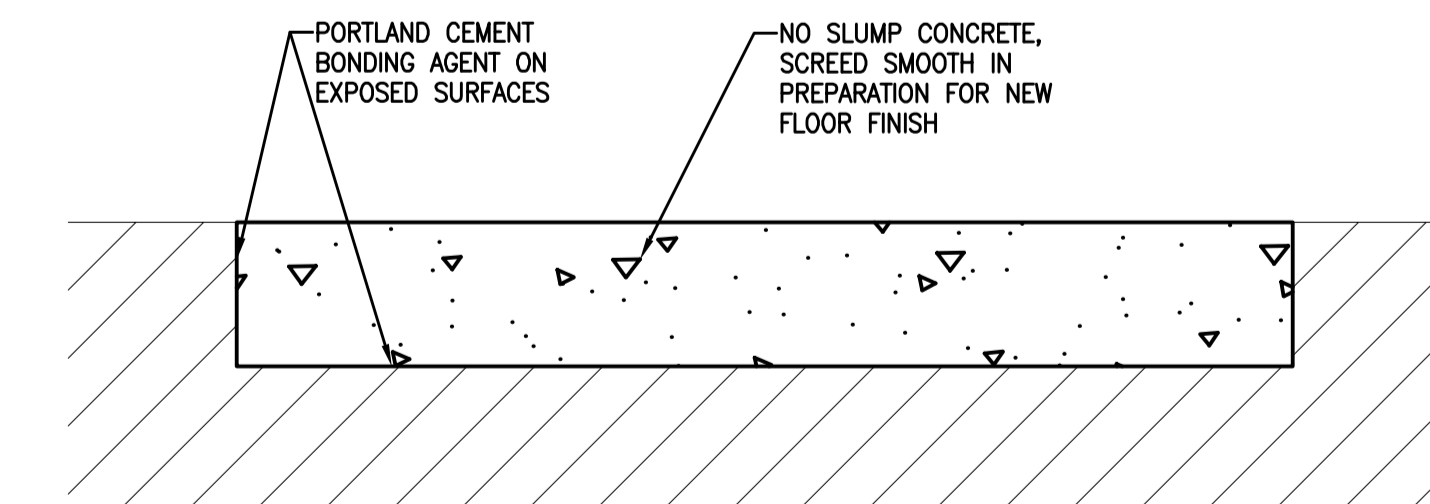
- 1 REPAINT STRIPING IN ORIGINAL WIDTH, LOCATION, CONFIGURATION AND COLORS AFTER NEW FLOOR HAS BEEN INSTALLED.
- 2 PROVIDE NEW JOINT SEALANTS WITH BACKING MATERIAL.
- 3 PROVIDE NEW FLOOR FINISH.
- 4 REPAIR EXISTING DIVOTS, SPALLS AND OTHER IMPERFECTIONS IN CONCRETE FLOOR SURFACE AFTER REMOVAL OF EXISTING FLOOR FINISH AND BEFORE INSTALLATION OF NEW FLOOR FINISH.
- 5 PROVIDE ADDITIONAL COATS OF FINISH PER SPECIFICATION THIS AREA.
- 6 FILL UTILITY PIT PER DETAIL 9/A3.1
- 7 EXISTING UTILITY PIT TO REMAIN.



2 HANGAR FLOOR JOINT DETAIL
A2.2 SCALE: 3" = 1'-0"

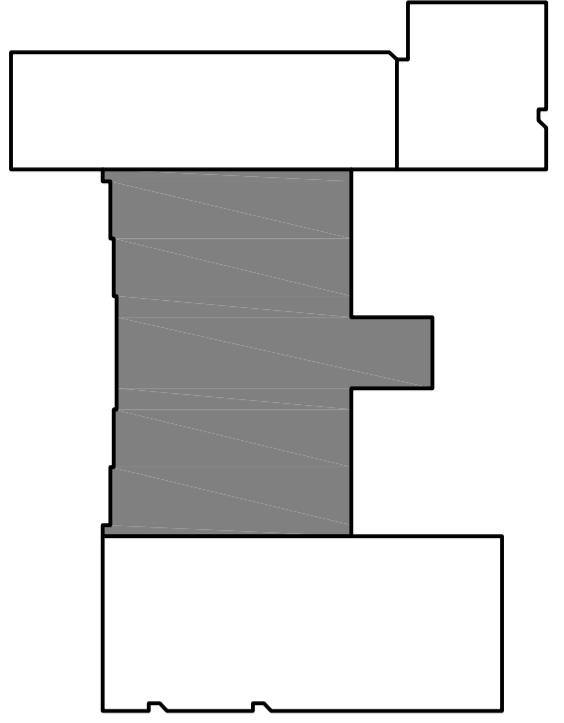
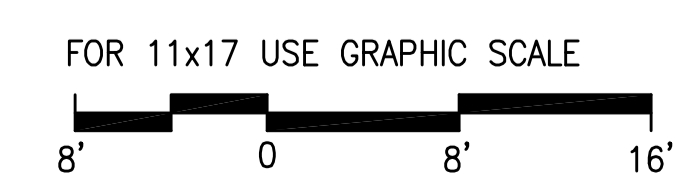


EXISTING CONDITIONS
REPAIR PREPARATION



NEW CONDITIONS
CONCRETE REPAIR

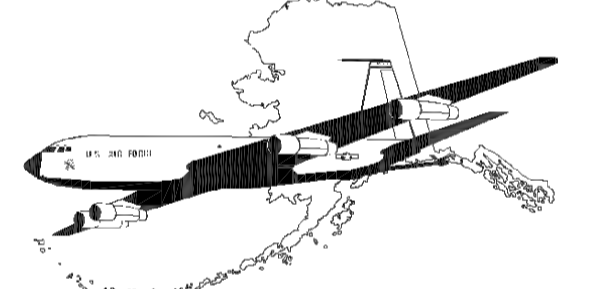
3 HANGAR FLOOR SPALL REPAIR DETAIL
A2.2 SCALE: 3" = 1'-0"



KEYPLAN

Notes:

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Project:

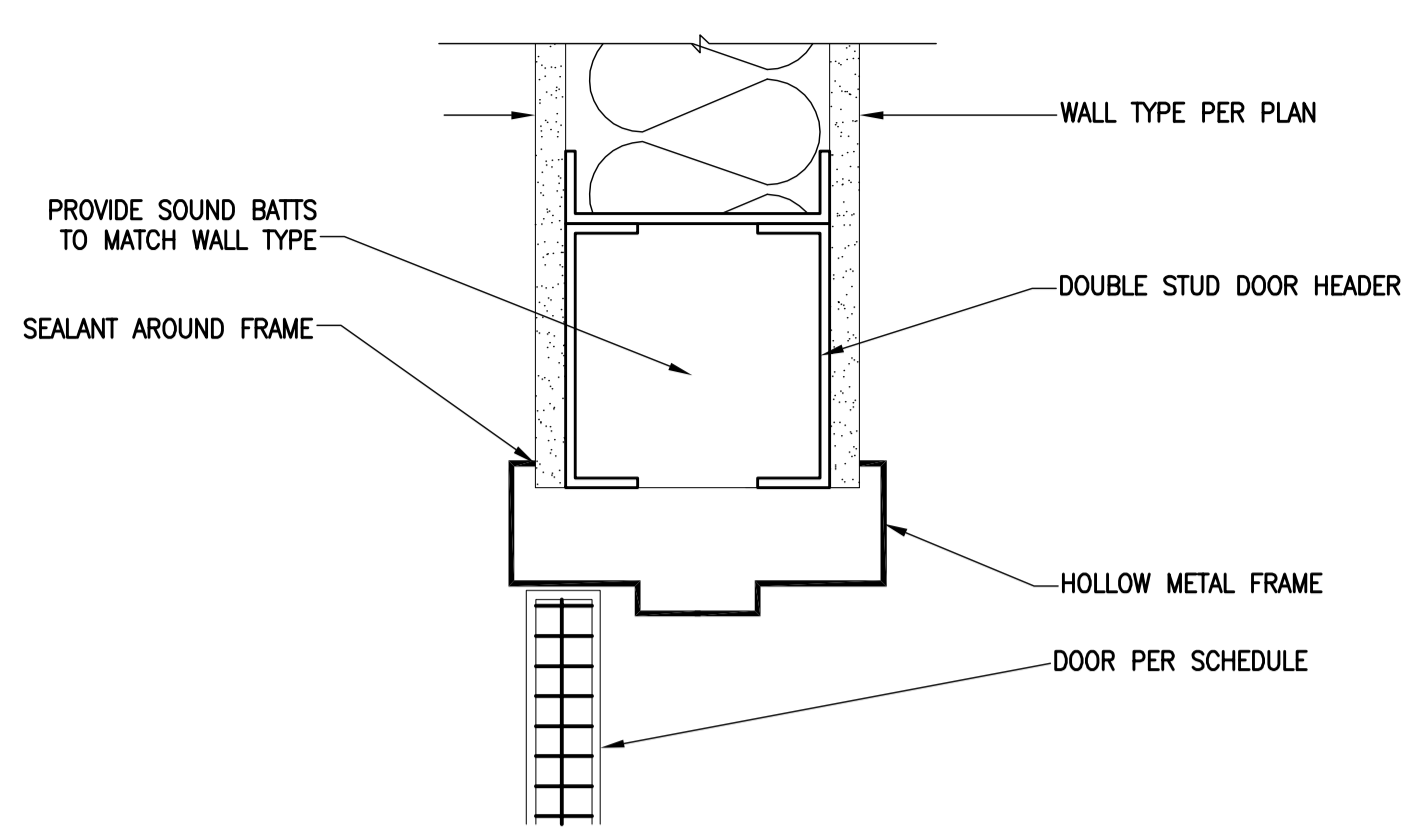
**REPAIR AIRCRAFT
MAINTENANCE HANGER
BDLG 1176**
EIELSON AFB, ALASKA
FTQW-04-2254
ALASKA AIR NATIONAL GUARD
EIELSON AFB, ALASKA

Date	Revision	By

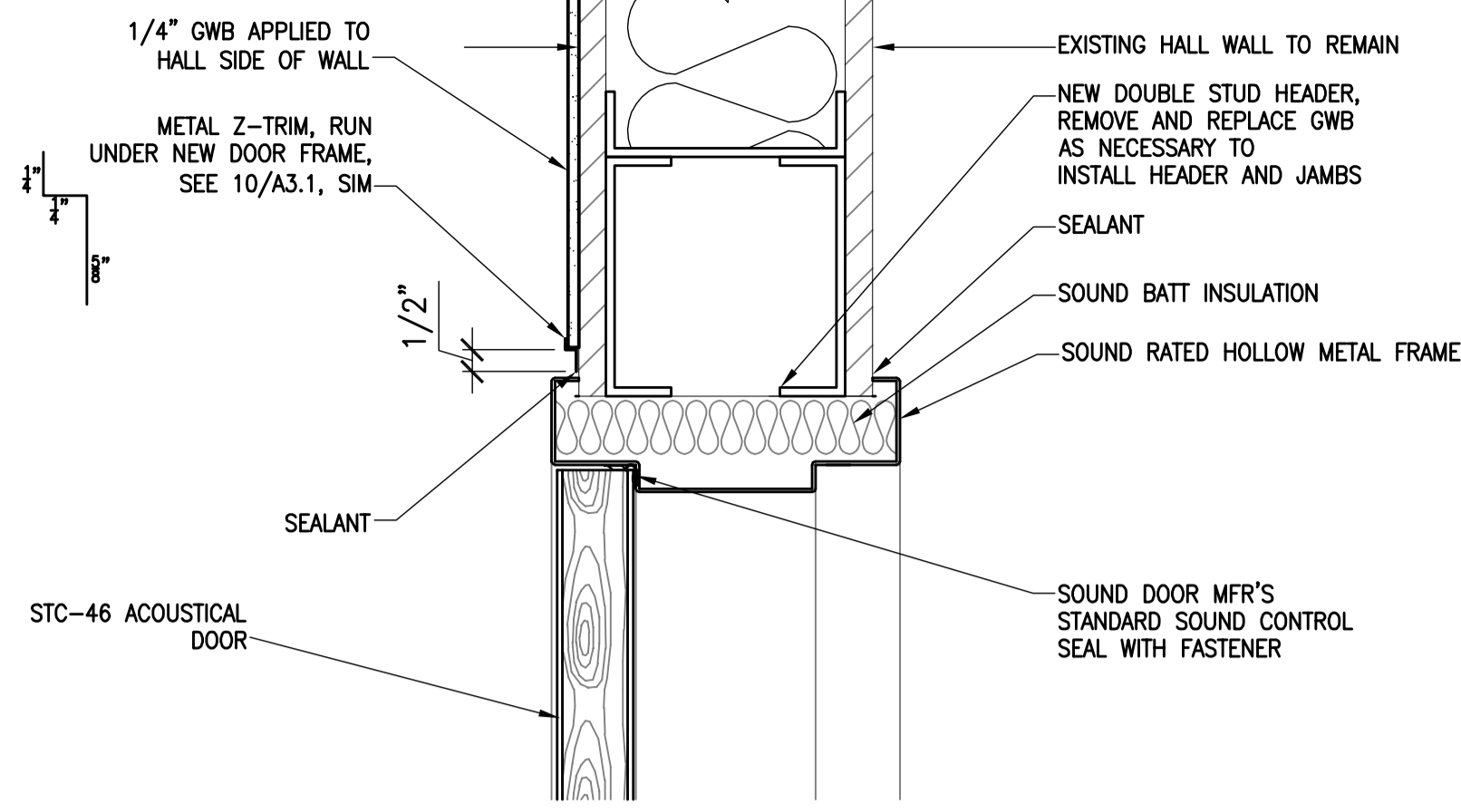
Sheet Contents
HANGAR FLOOR
REFINISHING PLAN

Project Mgr.	GVN	Sheet No.
Drawn	JTP CAL	A2.2
Checked	GVN	
Date	10/14/05	

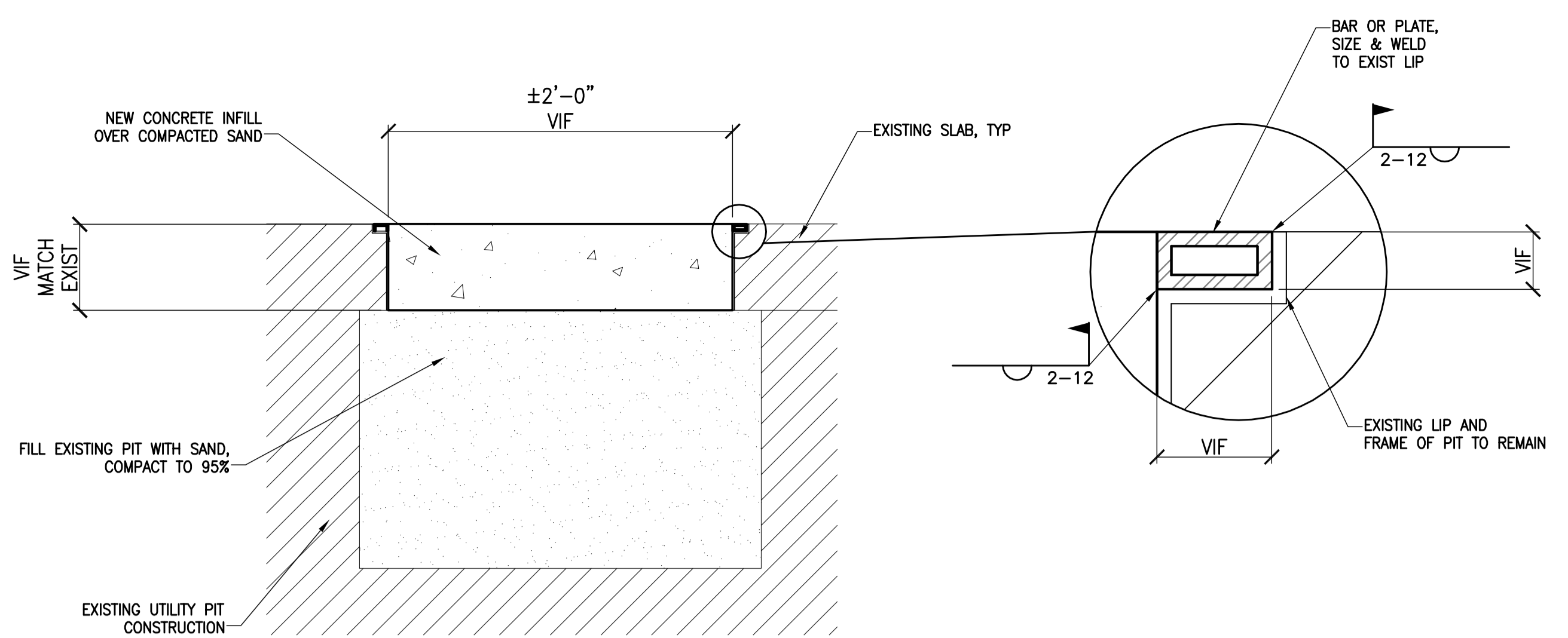
USKH W.O. 693316



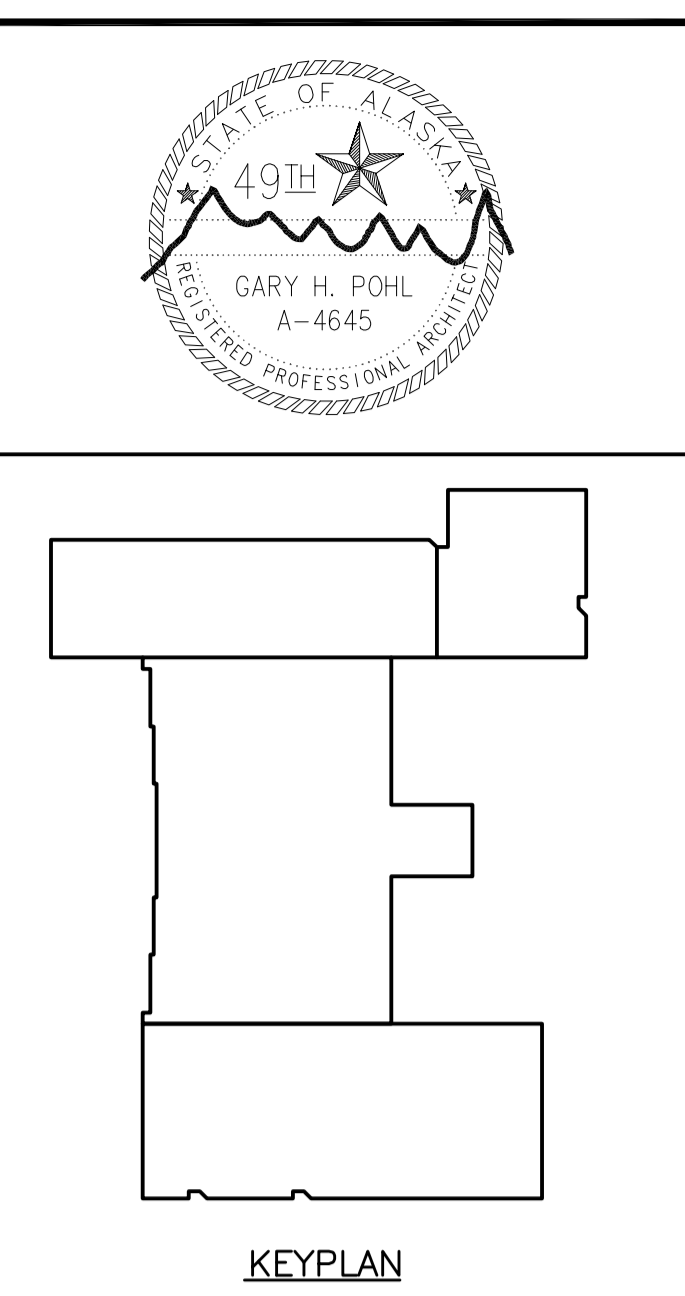
1 NEW DOOR HEAD/JAMB SIM IN NEW WALL
 A3.1 SCALE: 3" = 1'-0"



5 ACOUSTICAL DOOR HEAD/JAMB SIM
 A3.1 SCALE: 3" = 1'-0"

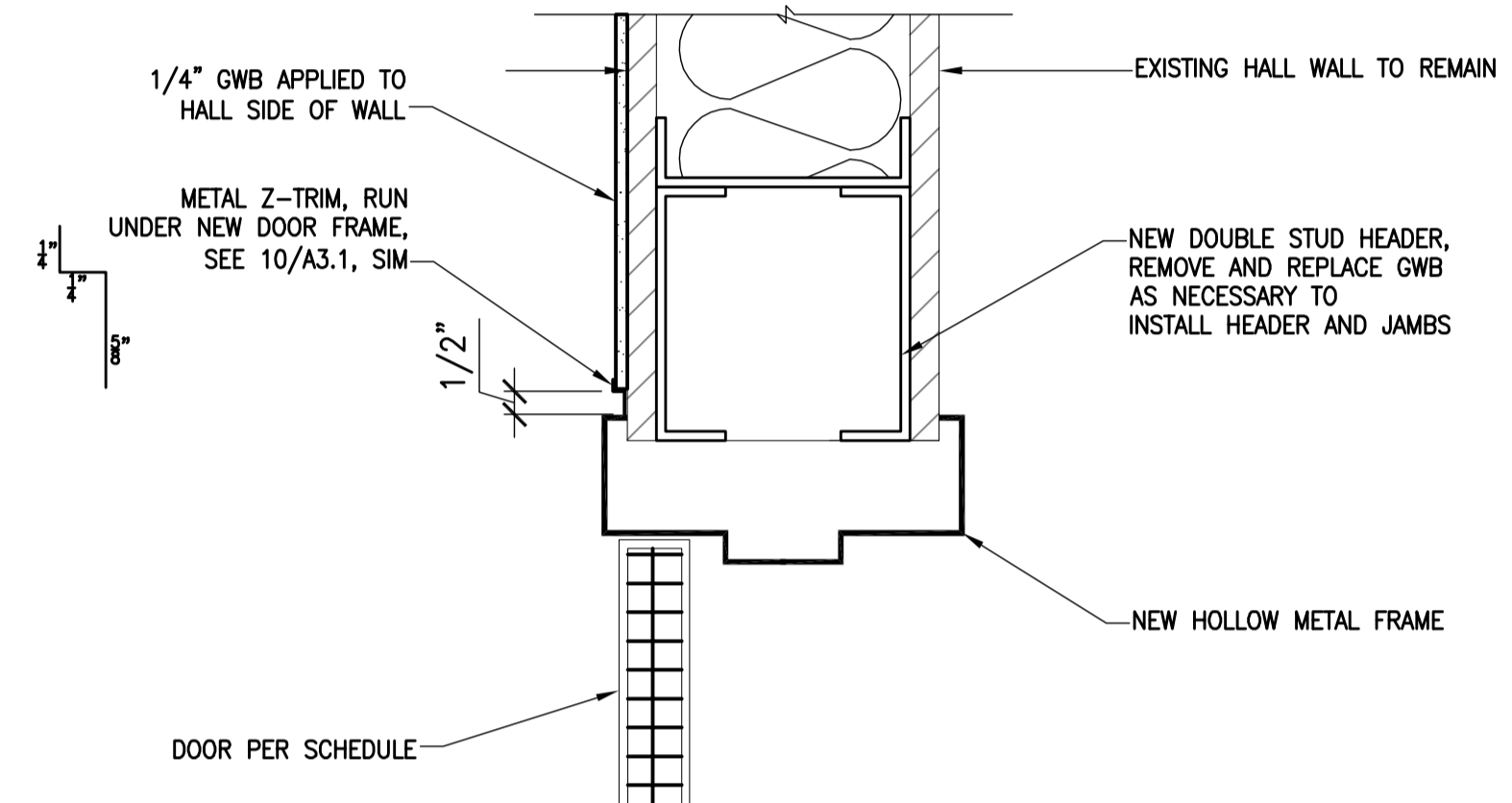


9 UTILITY PIT INFILL DETAIL
 A3.1 SCALE: 1-1/2" = 1'-0"

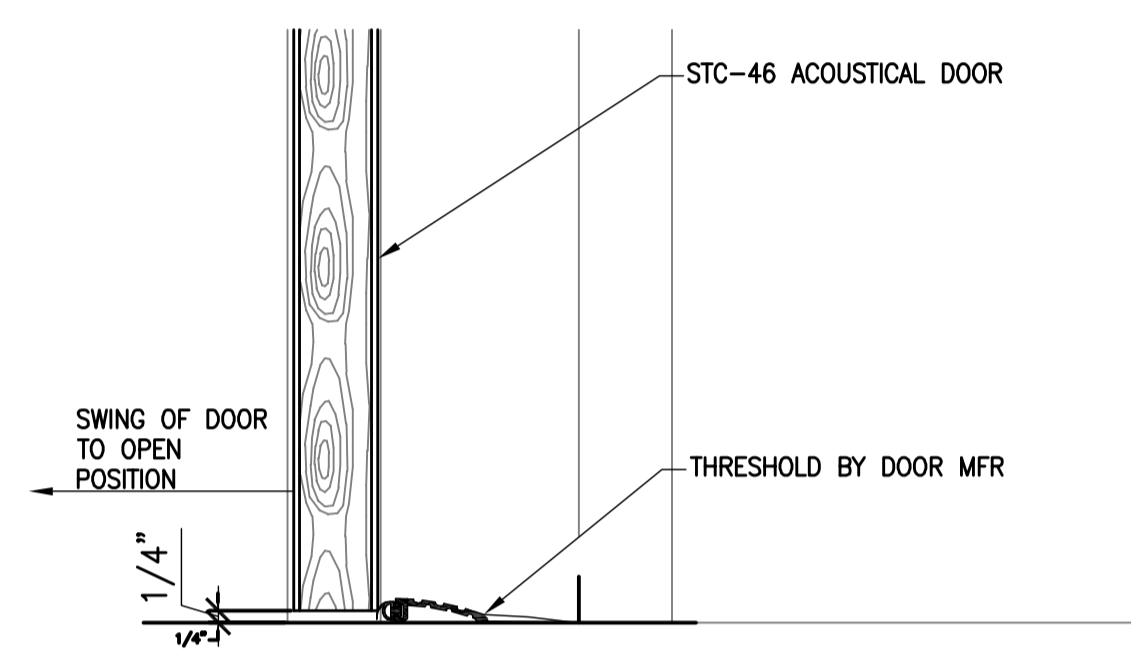


KEYPLAN

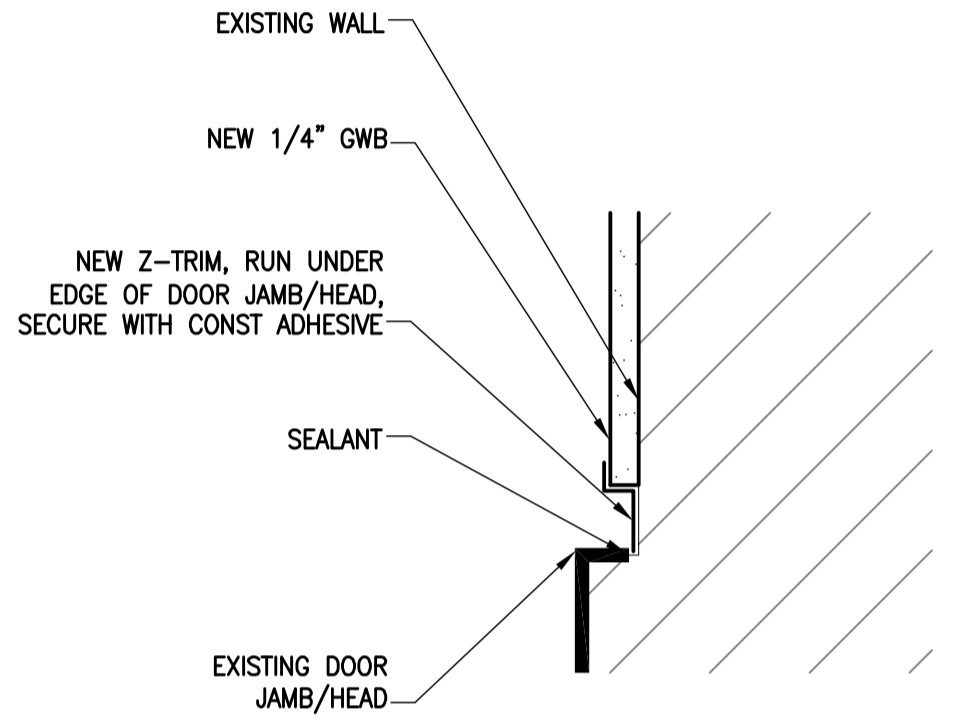
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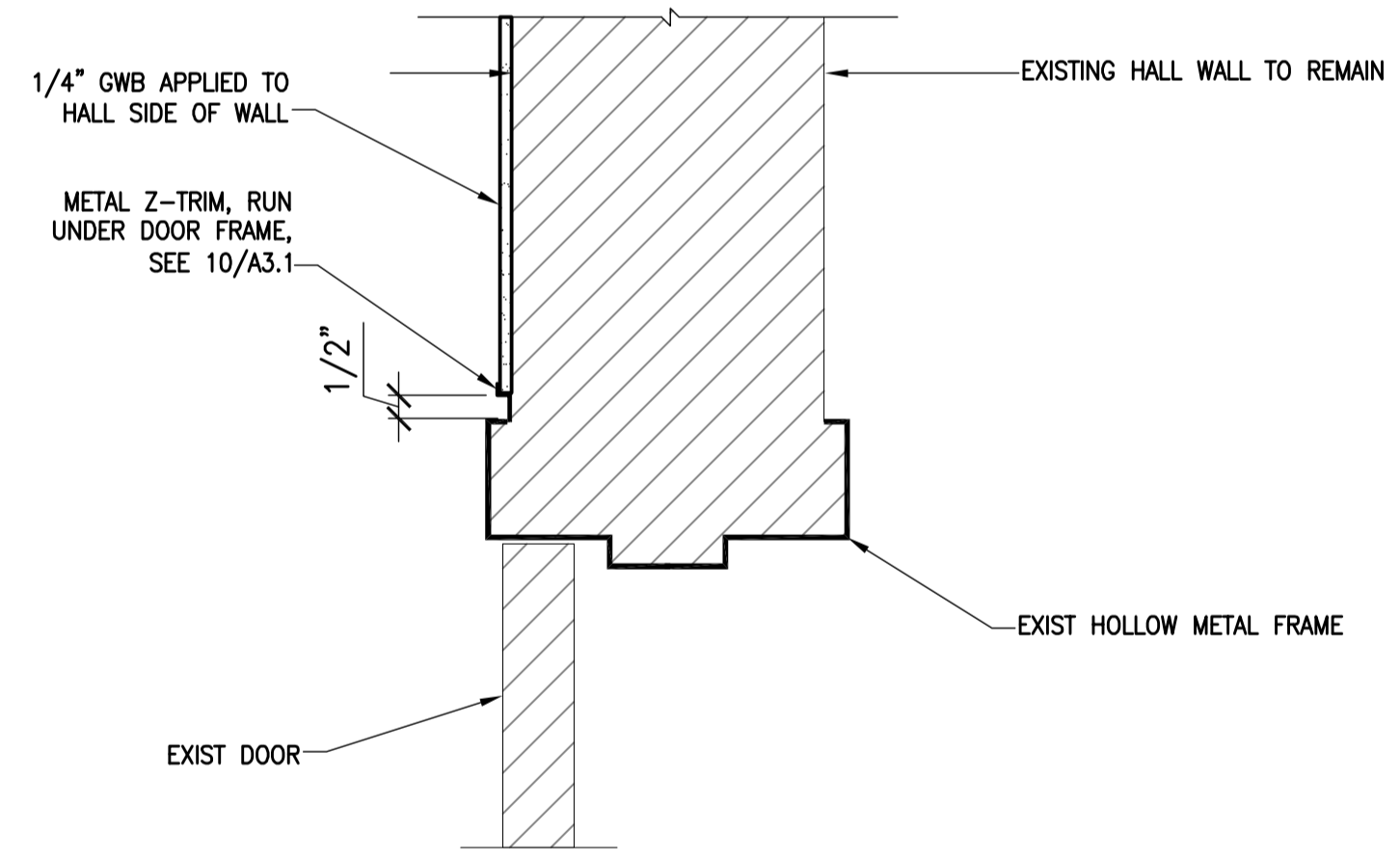
2 NEW DOOR HEAD/JAMB SIM, IN EXIST WALL
 A3.1 SCALE: 3" = 1'-0"



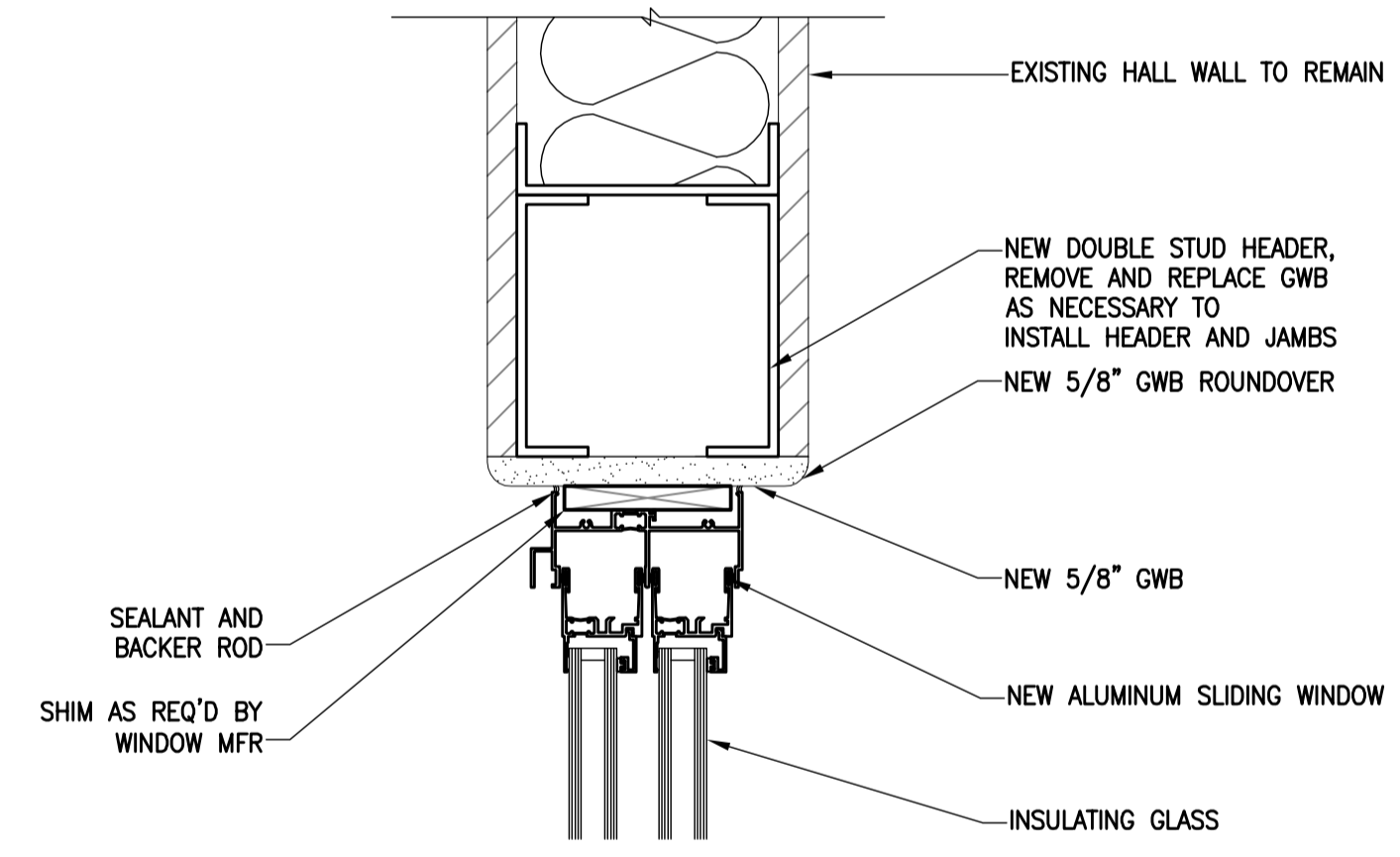
6 ACOUSTICAL DOOR SILL
 A3.1 SCALE: 3" = 1'-0"



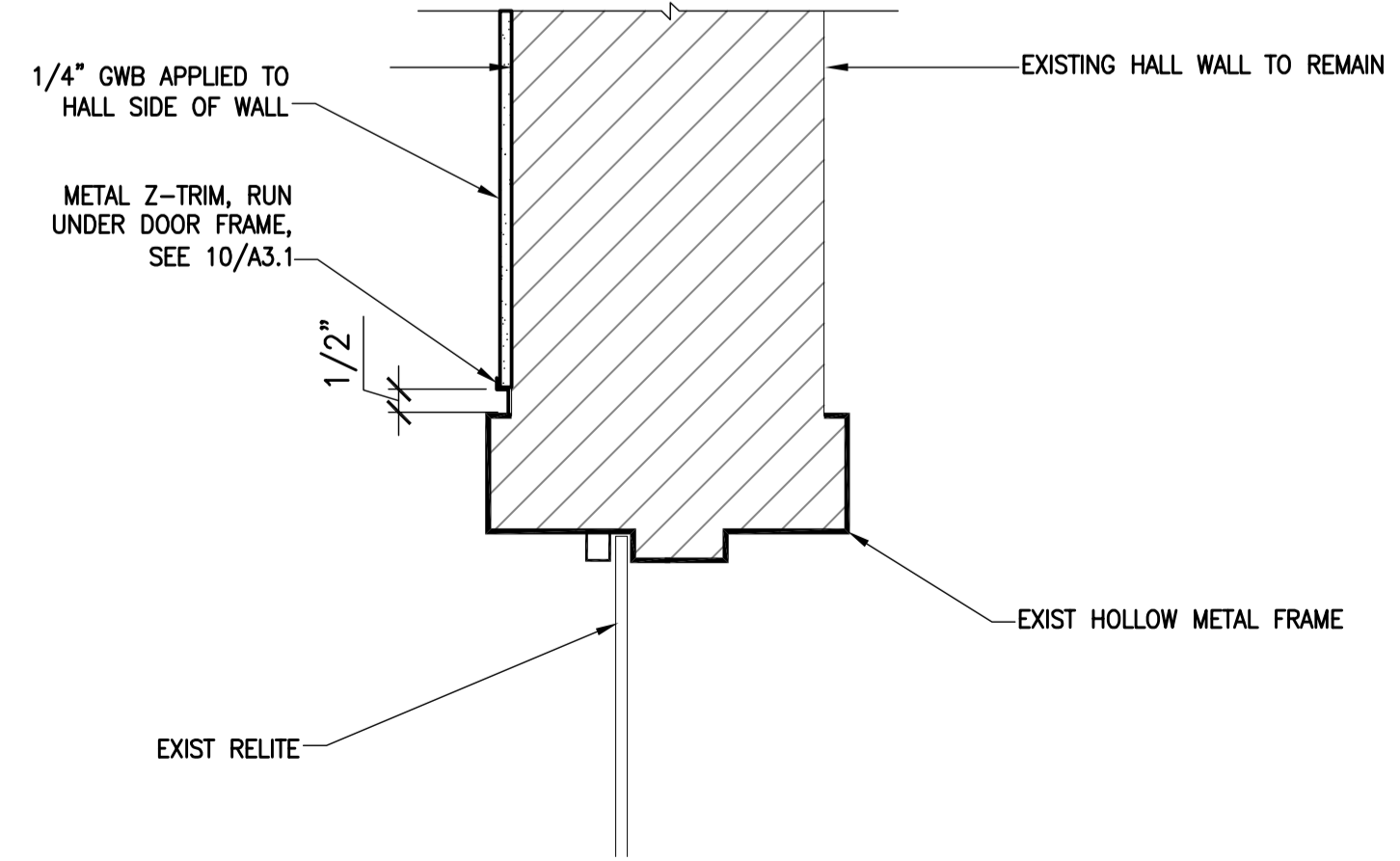
10 Z-TRIM DETAIL
 A3.1 SCALE: FULL



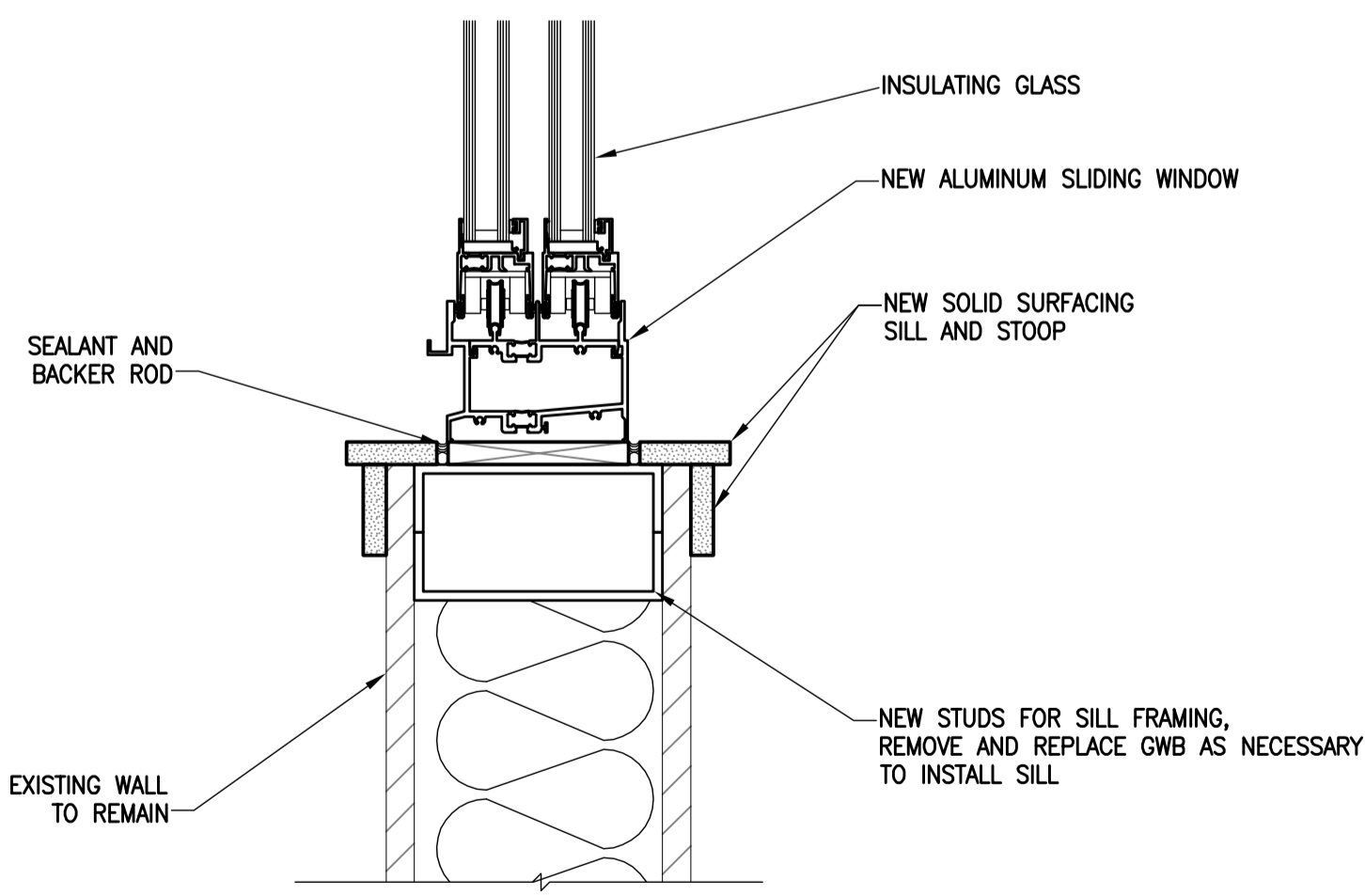
3 WALL TREATMENT AT EXIST DOOR HEAD/JAMB SIM
 A3.1 SCALE: 3" = 1'-0"



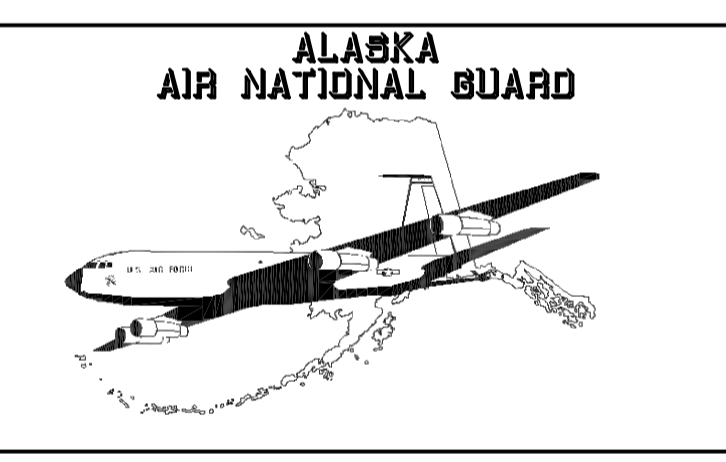
7 SLIDING WINDOW HEAD/JAMB SIM
 A3.1 SCALE: 3" = 1'-0"



4 WALL TREATMENT AT EXIST RELITE
 A3.1 SCALE: 3" = 1'-0"



8 SLIDING WINDOW SILL
 A3.1 SCALE: 3" = 1'-0"



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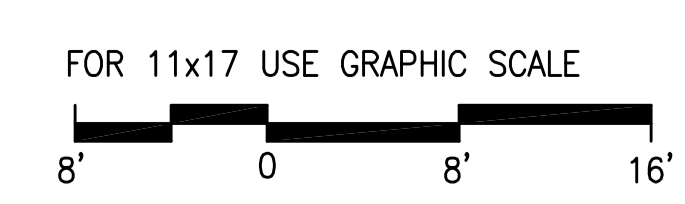
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Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
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Date	Revision	By






Sheet Contents
 DOOR, WINDOW & MISCELLANEOUS DETAILS

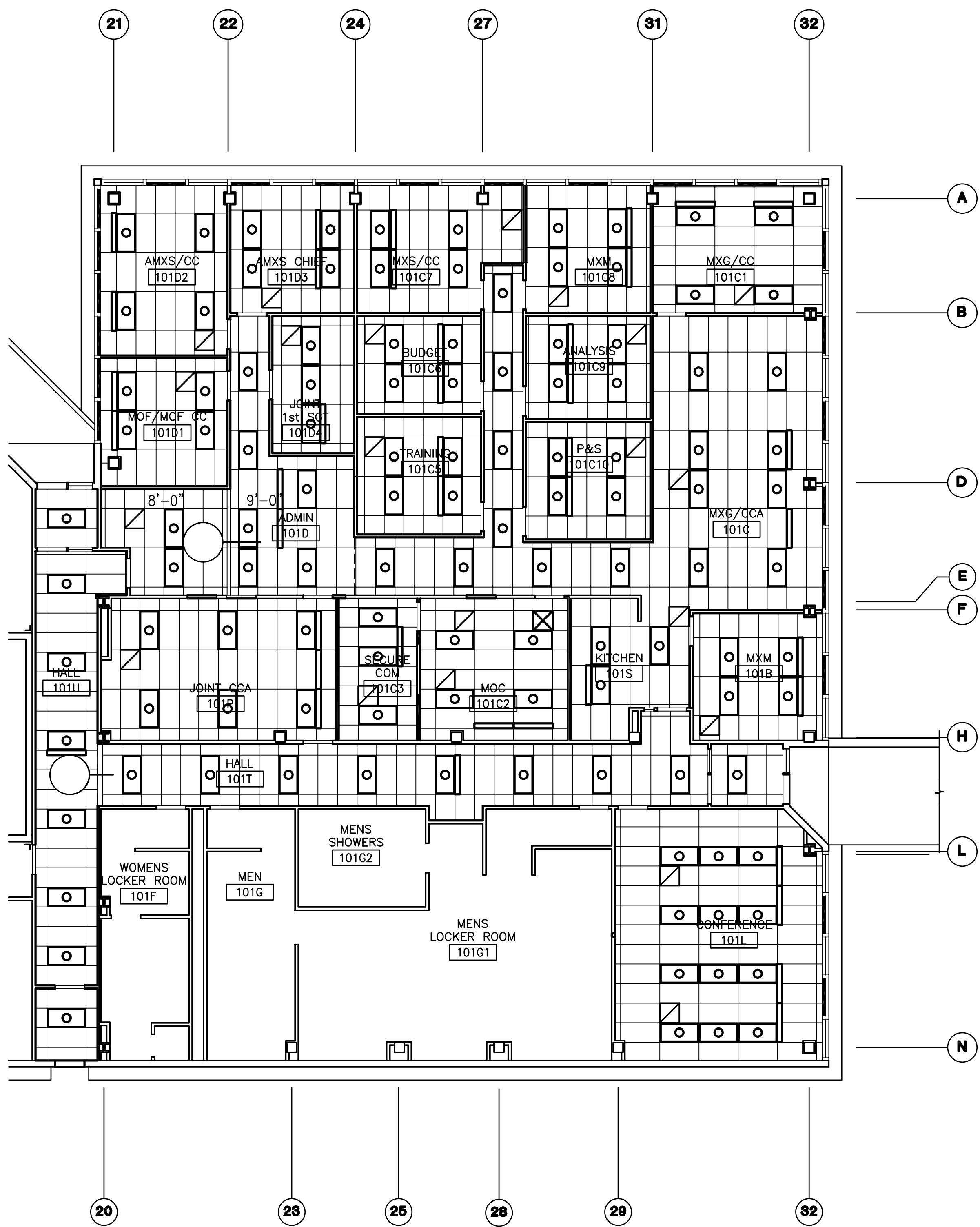
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Drawn	JTP CAL	A3.1
Drawn		
Checked	GVN	
Date	10/14/05 USKH w.o. 693316	



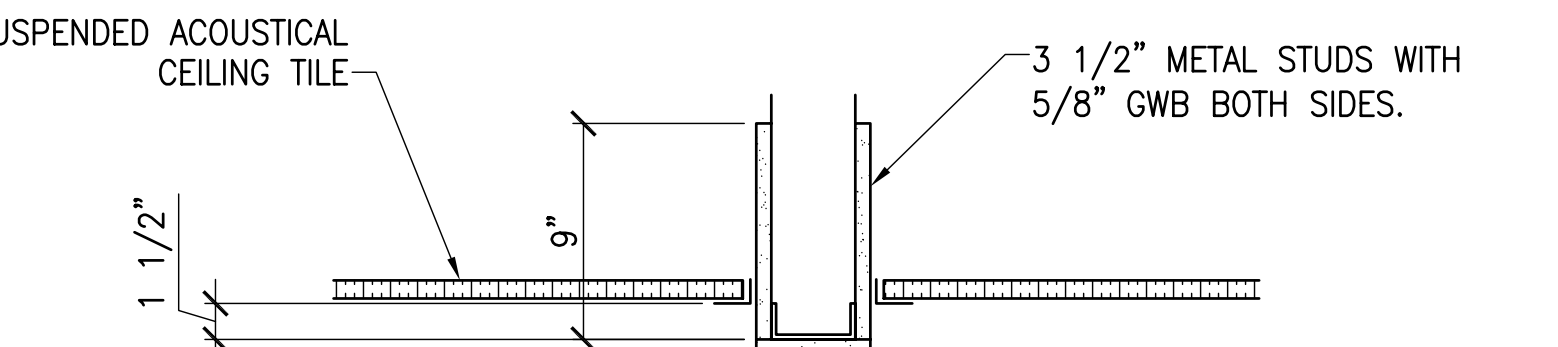
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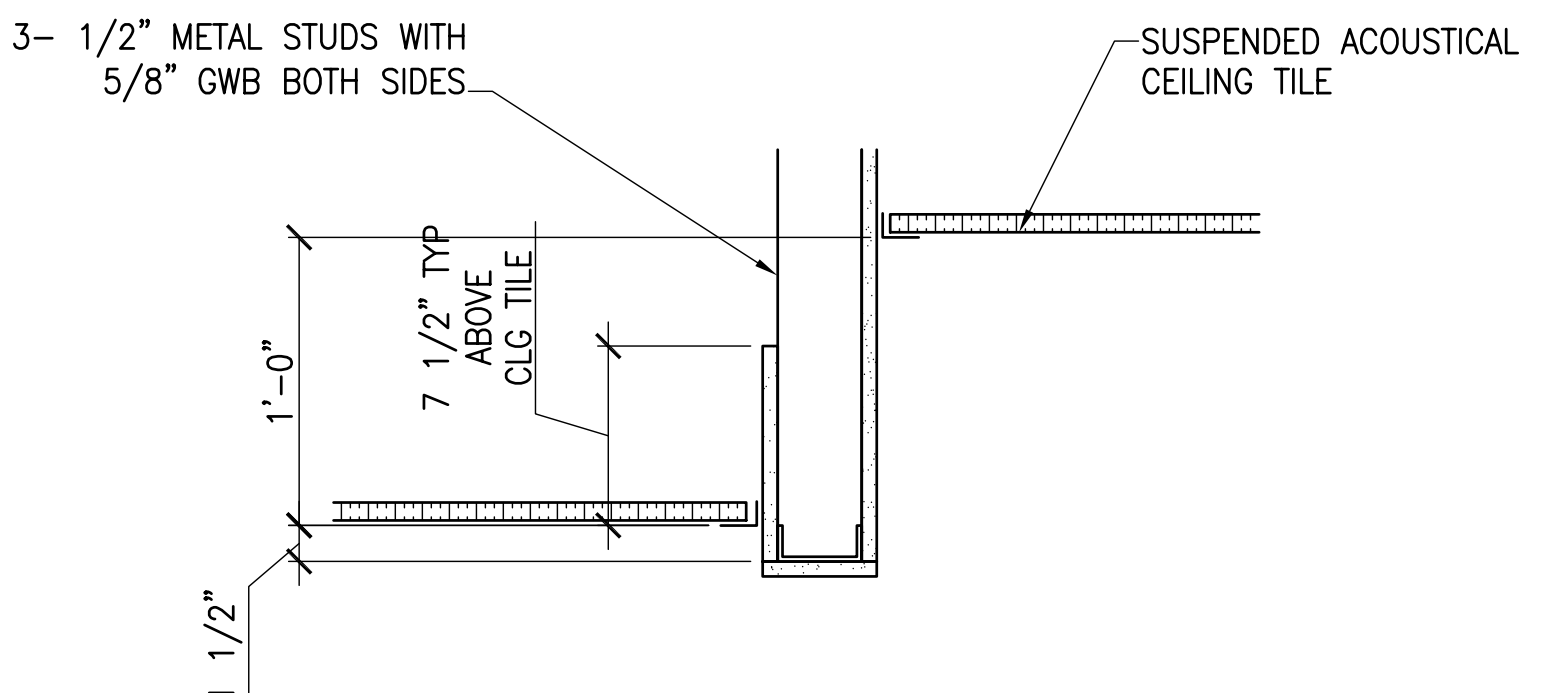
-  2X4 LAY-IN LIGHT FIXTURE
-  2X4 LAY-IN CEILING TILE. SEE FINISH SCHEDULE FOR TYPE
-  LINEAR DIFFUSER IN 2X4 GRID, SEE MECH.
-  RETURN AIR GRILLE IN 2X4 GRID, SEE MECH.
-  SUPPLY AIR DIFFUSER IN 2X4 GRID, SEE MECH.



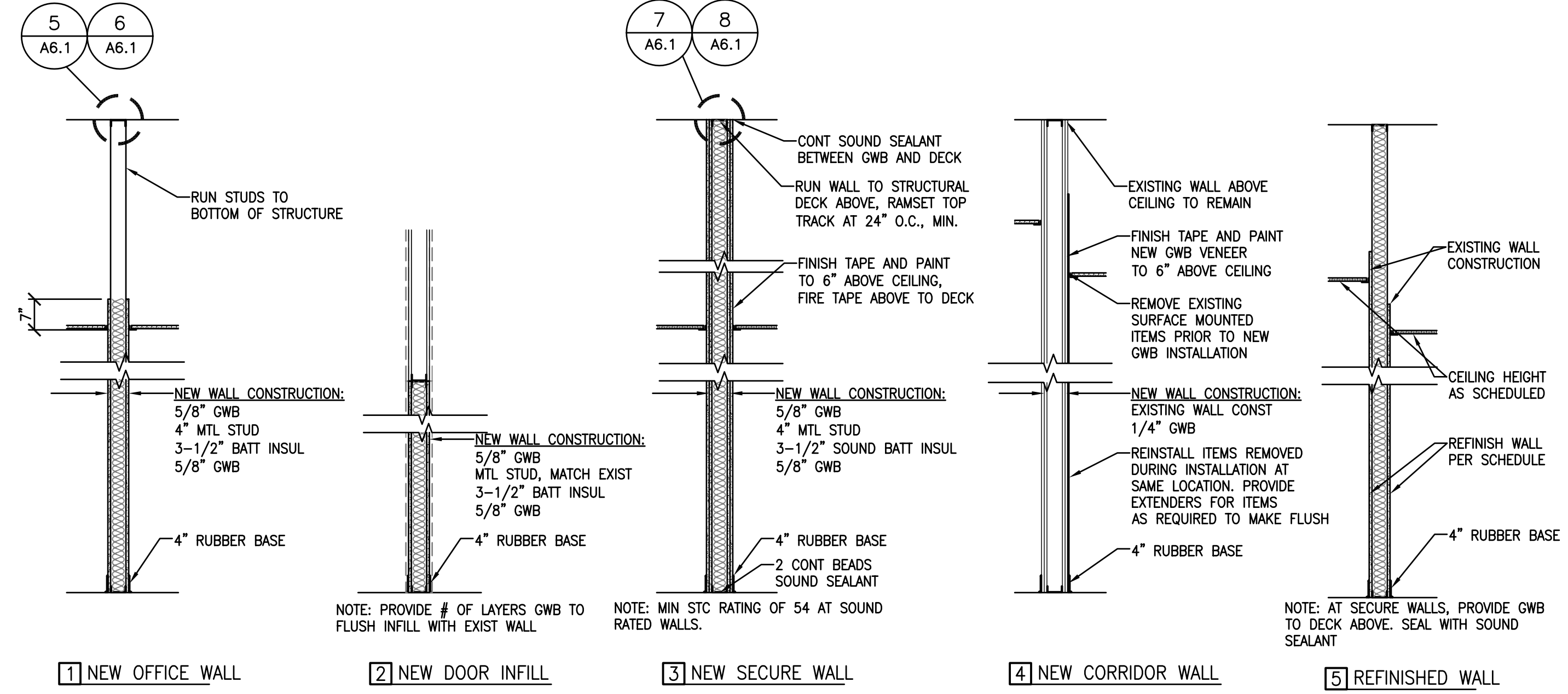
1 REFLECTED CEILING PLAN — RENOVATION
 SCALE: 1/8" = 1'-0"



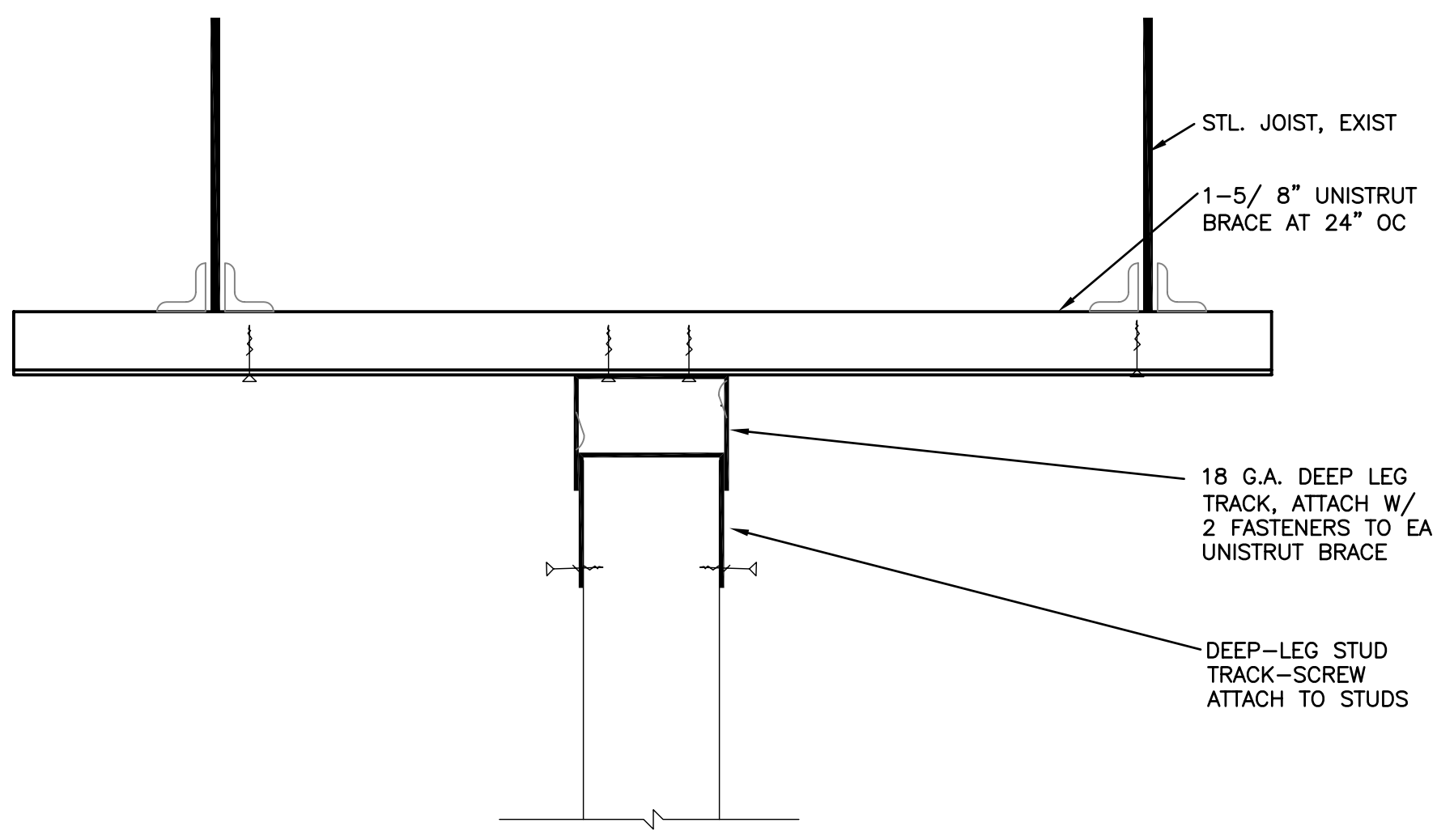
2 BULKHEAD DETAIL
 SCALE: 1-1/2" = 1'-0"



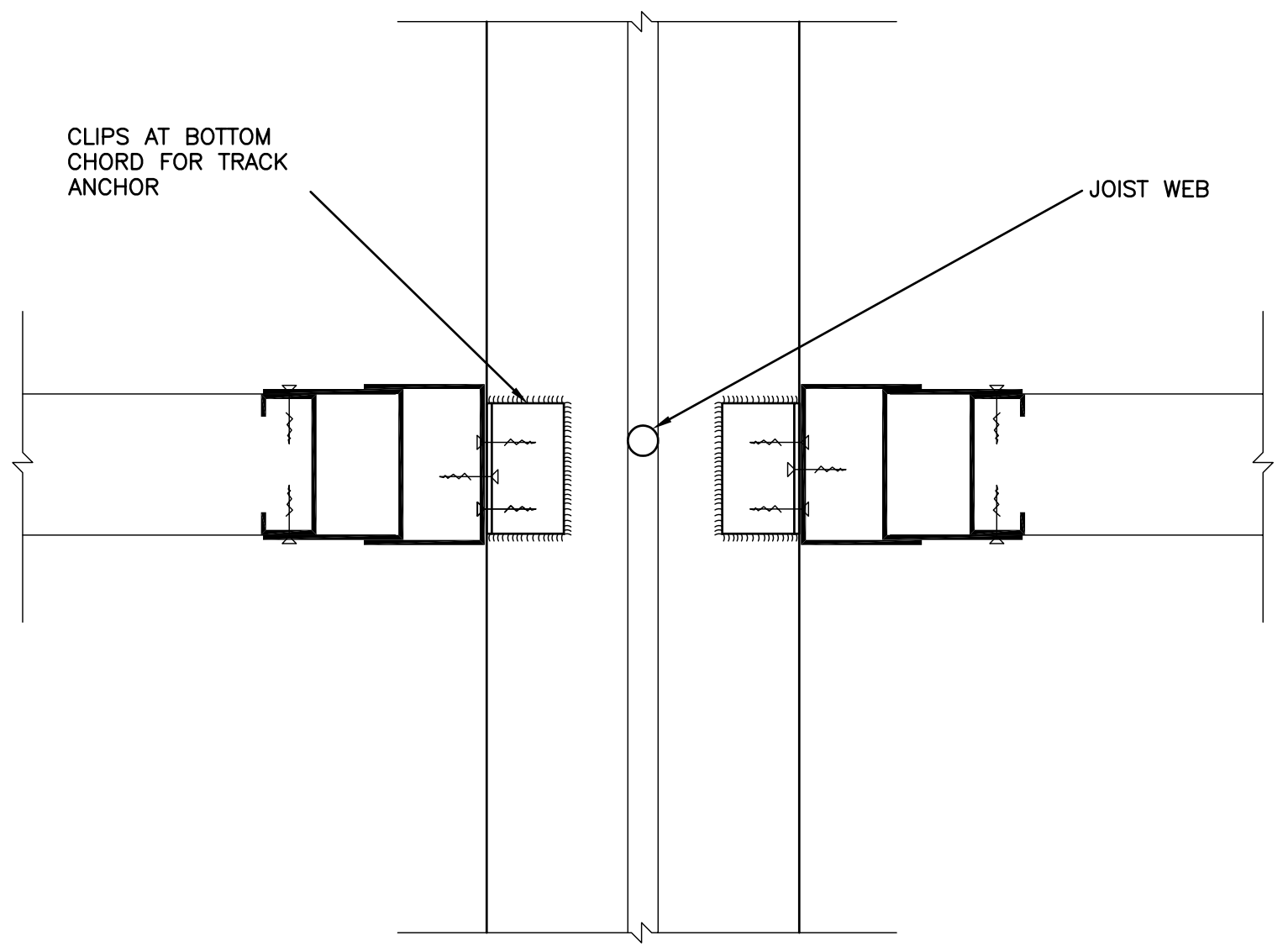
3 BULKHEAD DETAIL
 SCALE: 1-1/2" = 1'-0"



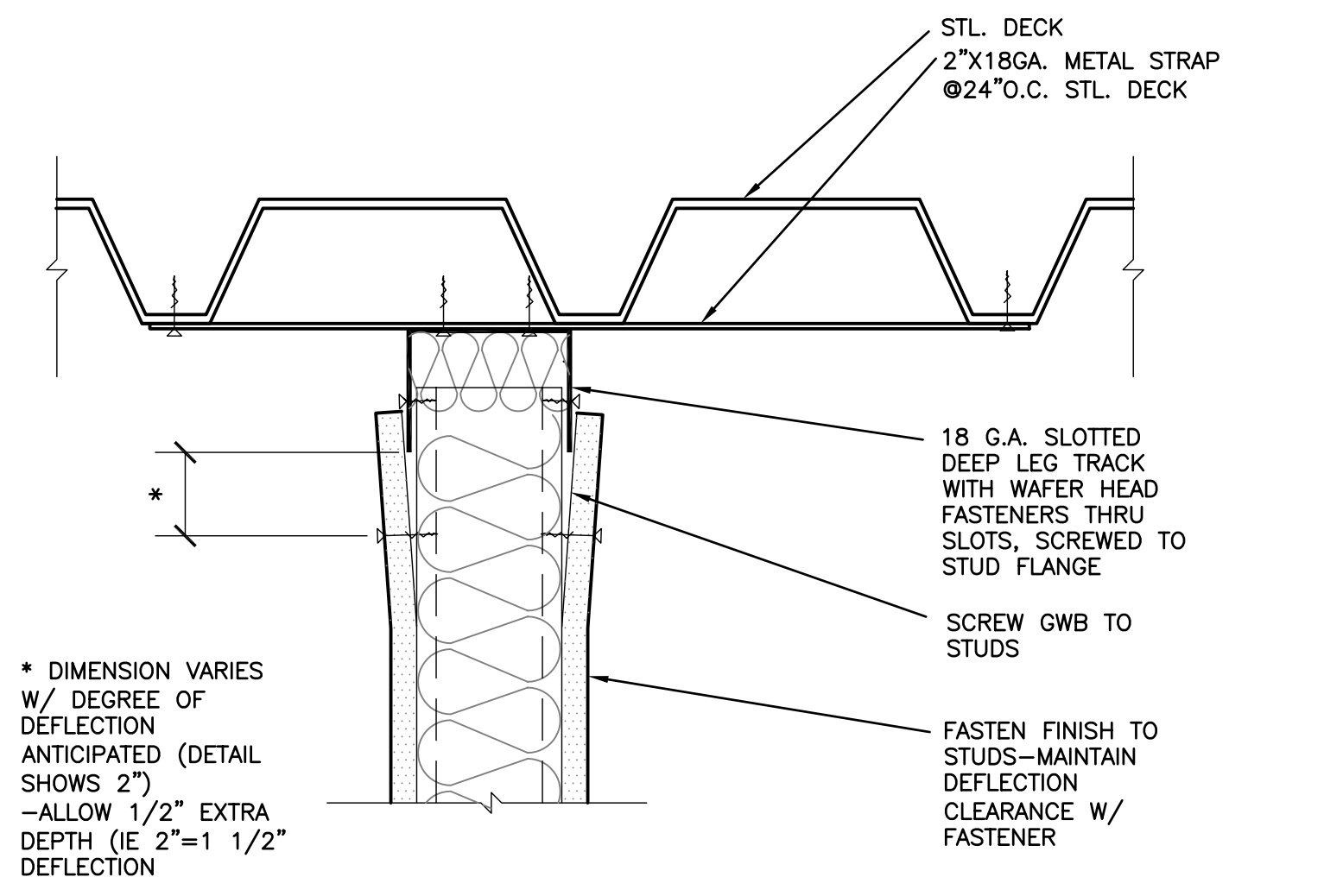
4 WALL TYPES
 SCALE: 1-1/2" = 1'-0"



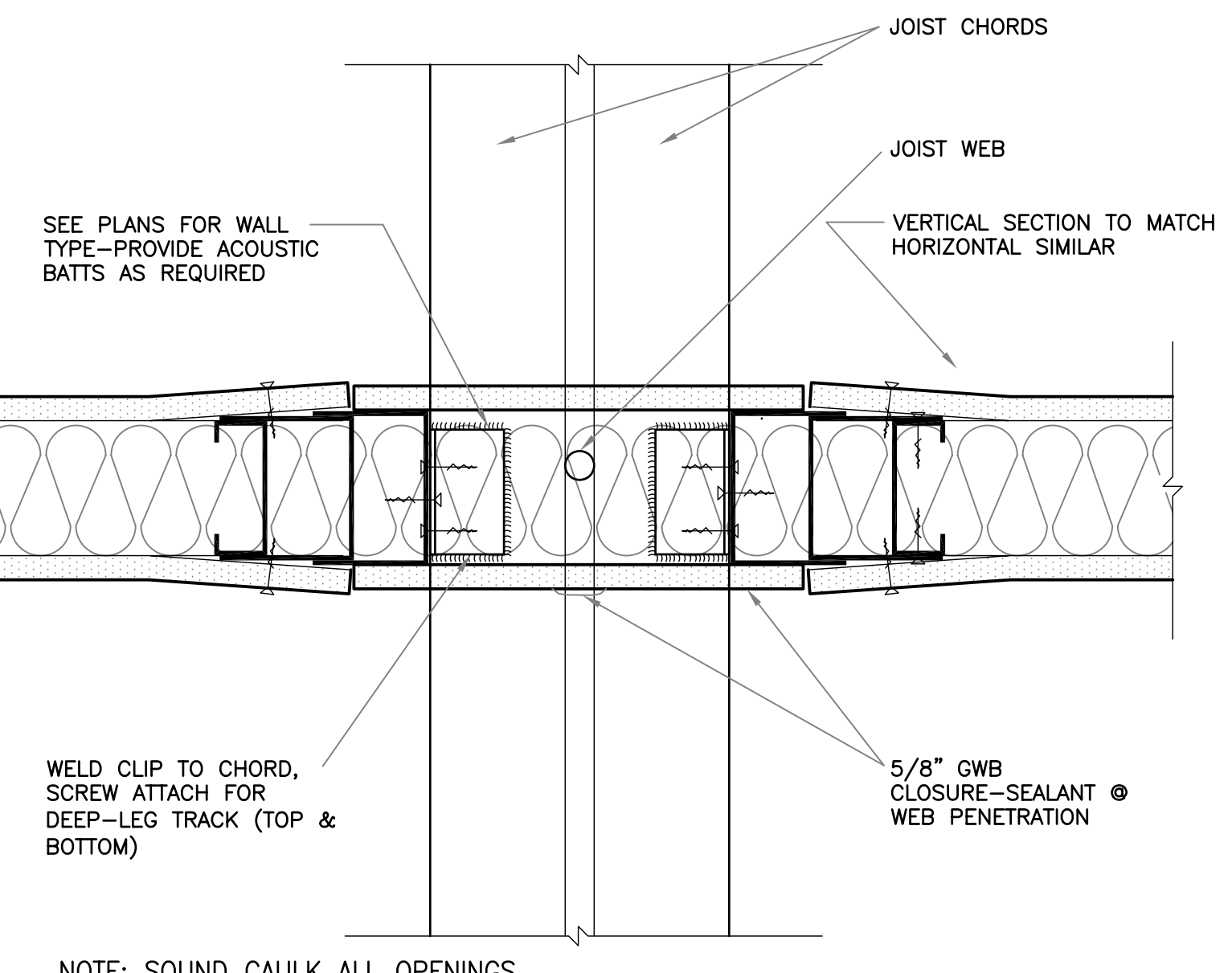
5 WALL HEAD DETAIL PARALLEL TO JOISTS
 SCALE: 3" = 1'-0"



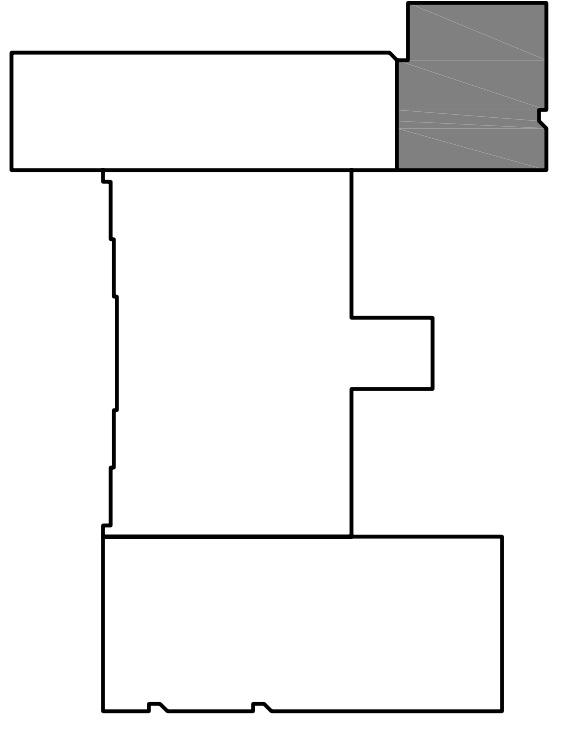
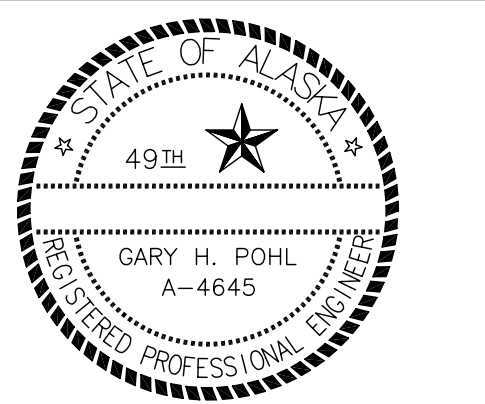
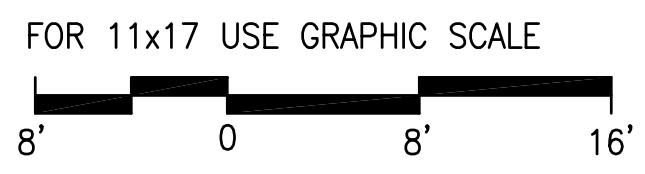
6 WALL HEAD DETAIL PERPENDICULAR TO JOISTS
 SCALE: 3" = 1'-0"



7 WALL HEAD AT DECK
 SCALE: 3" = 1'-0"

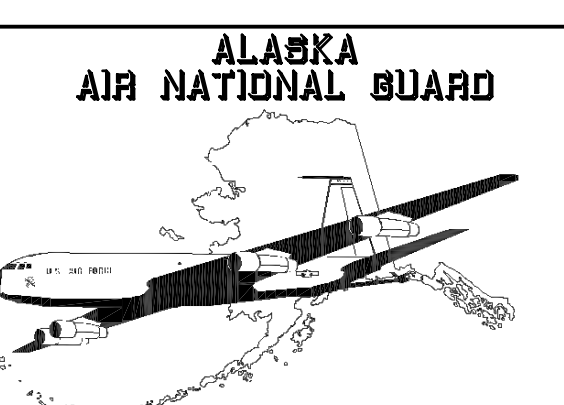


8 WALL PLAN DETAIL PERPENDICULAR TO JOISTS
 SCALE: 3" = 1'-0"



KEYPLAN

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Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
 EIELSON AFB, ALASKA
 FTQW-04-2254
 ALASKA AIR NATIONAL GUARD
 EIELSON AFB, ALASKA

Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Sheet Contents
 REFLECTED CEILING RENOVATION PLAN
 WALL TYPES AND DETAILS

Project Mgr.	GVN	Sheet No.
Drawn	JTP CAL	A6.1
Drawn		
Checked	GVN	
Date	10/14/05	USKH w.o. 693316

DRAWING NAME: 0:\CCT\10_Engineer Project Control Files\10 - G BLDG 1176 (COMPOSITE MAINTENANCE HANGAR)\04-2254 (Repair Maintenance Hangar)_B1176683316-A6.1.dwg PLOTTED: Nov 21, 2005 - 10:25am

ROOFING SYMBOLS

- CONTINUOUS LUMBER
 - DISCONTINUOUS LUMBER
 - RIGID INSULATION
 - BATT INSULATION
 - PLYWOOD
 - GYPSUM WALL BOARD
 - WOOD FIBERBOARD
 - MECHANICAL CURB - SUPPLY AIR
 - MECHANICAL CURB - RETURN AIR
 - ROOF HATCH
 - PIPE THROUGH ROOF (PTR, ETR)
 - ROOF CORE SAMPLE LOCATION (CORE CUTS PERFORMED BY USKH DURING ROOF INVESTIGATION)
 - EXISTING ROOF DRAINS
 - ROOF LADDER
- ROOF IDENTIFICATION NUMBER
 APPROXIMATE ROOF HEIGHT ABOVE GRADE

ROOFING ABBREVIATIONS

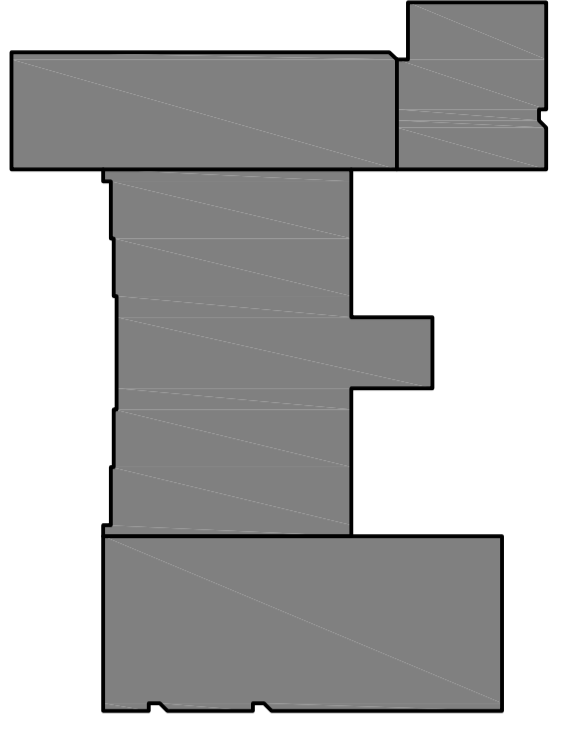
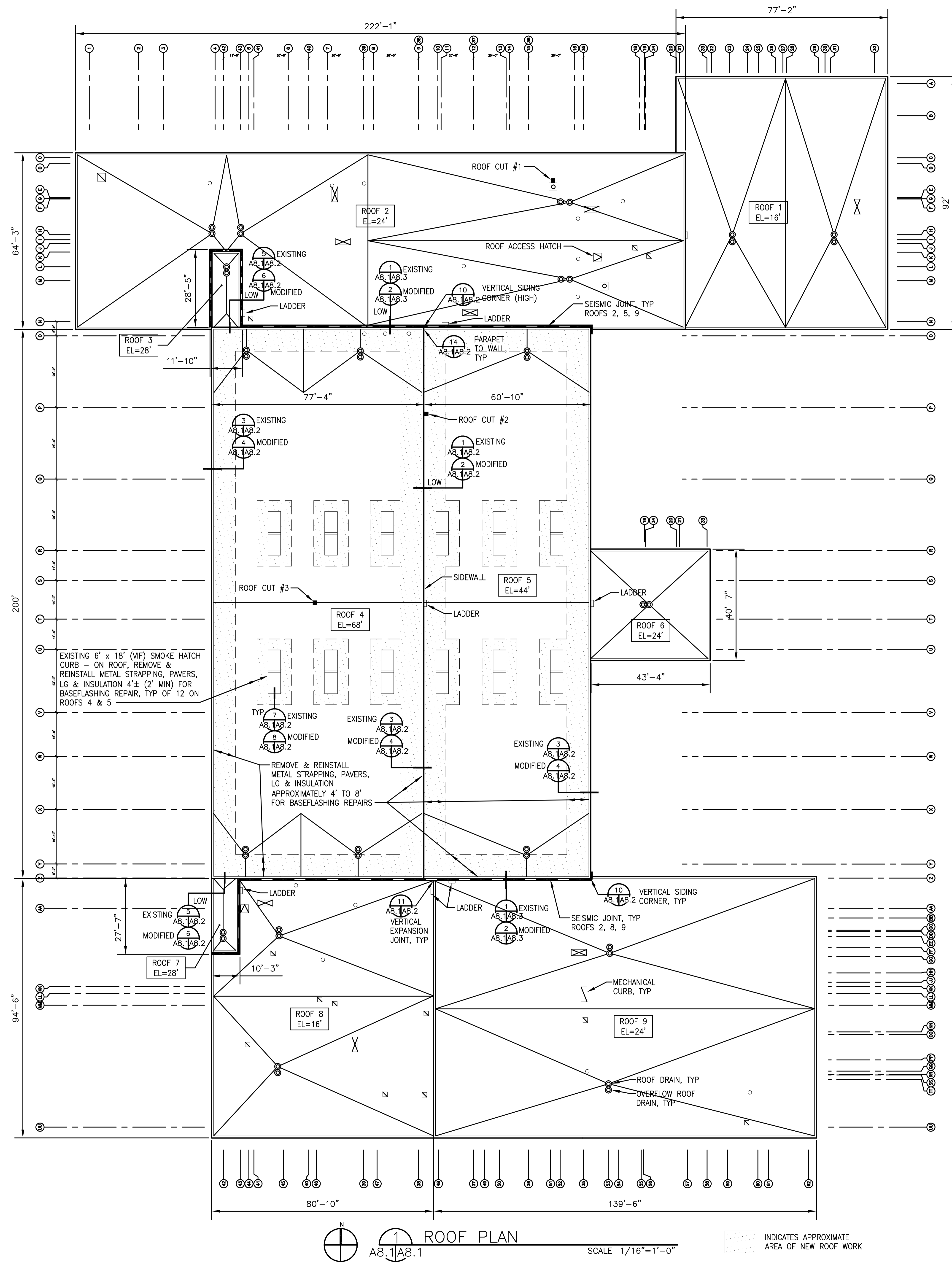
- APPROX APPROXIMATELY
- BLDG BUILDING
- BUR BUILT-UP ROOFING
- EL ELEVATION
- EPDM ETHYLENE PROPYLENE DIENE MONOMER
- ETR ELECTRICAL THROUGH ROOF
- GA GAGE
- GALV GALVANIZED
- GWB GYPSUM WALL BOARD
- LF LINEAL FEET
- LG LIGHT GUARD
- MAX MAXIMUM
- MC BUR MINERAL CAP BUILT UP ROOF
- MFR MANUFACTURER
- MIN MINIMUM
- NIC NOT IN CONTRACT
- NTS NOT TO SCALE
- OC ON CENTERS
- ORD OVERFLOW ROOF DRAIN
- POLY POLYETHYLENE (PLASTIC SHEETING)
- PT PRESSURE TREATED
- PTR PIPE THROUGH ROOF
- RD ROOF DRAIN
- SAM SELF ADHERING MEMBRANE
- SF SQUARE FOOT
- SIM SIMILAR
- SM SHEET METAL
- TERM TERMINATION
- TYP TYPICAL
- UON UNLESS OTHERWISE NOTED
- VIF VERIFY IN FIELD
- VR VAPOR RETARDER
- VTR VENT THROUGH ROOF
- W/ WITH
- XPS EXTRUDED POLYSTYRENE BOARD

ROOFING NOTES

1. ALL DETAILS ARE TO BE CONSIDERED TYPICAL. SIMILAR DETAILS OCCUR AT SIMILAR LOCATIONS.
2. IF WET INSULATION IS FOUND, INFORM THE OWNER'S REPRESENTATIVE AND CORRECT AS DIRECTED.
3. AT EXISTING ROOF DRAINS, TIGHTEN ALL DRAIN RINGS.
4. TYPE IV ASPHALT IS TO BE USED ON ALL HOT ASPHALT WORK.
5. NEW SHEET METAL FLASHINGS ARE TO BE CUSTOM COLOR TO MATCH EXISTING.

ROOFING WORK SUMMARY

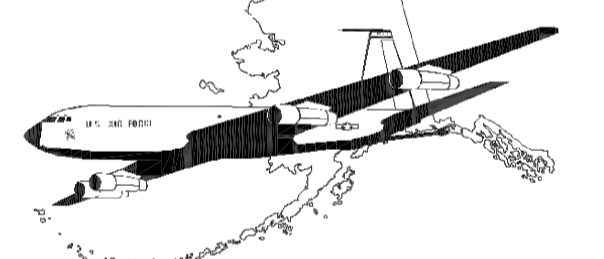
1. REPLACE SEISMIC JOINT COVERS, MAINLY ON GRIDS Z & N.
2. REPLACE ROOFING BASE FLASHINGS ON ROOFS 4 AND 5.
3. VARIOUS ROOFING AND SIDING TRIM CORRECTIONS.
4. EXISTING LIGHTNING CONDUCTOR SYSTEM NOT SHOWN. NOTE THAT THE EXISTING LIGHTNING CONDUCTOR SYSTEM WILL BE REMOVED AS NECESSARY TO PERFORM THE ROOFING WORK, AND THEN BE REINSTALLED IN OPERATING ORDER. COORD WITH ELECTRICAL, SEE E6



KEYPLAN

Notes:

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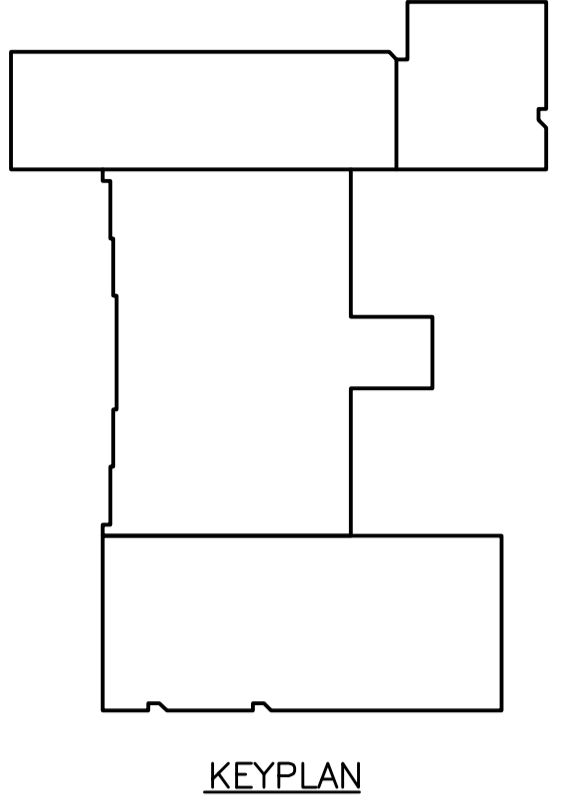
Project:

REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
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 EIELSON AFB, ALASKA

Date	Revision	By

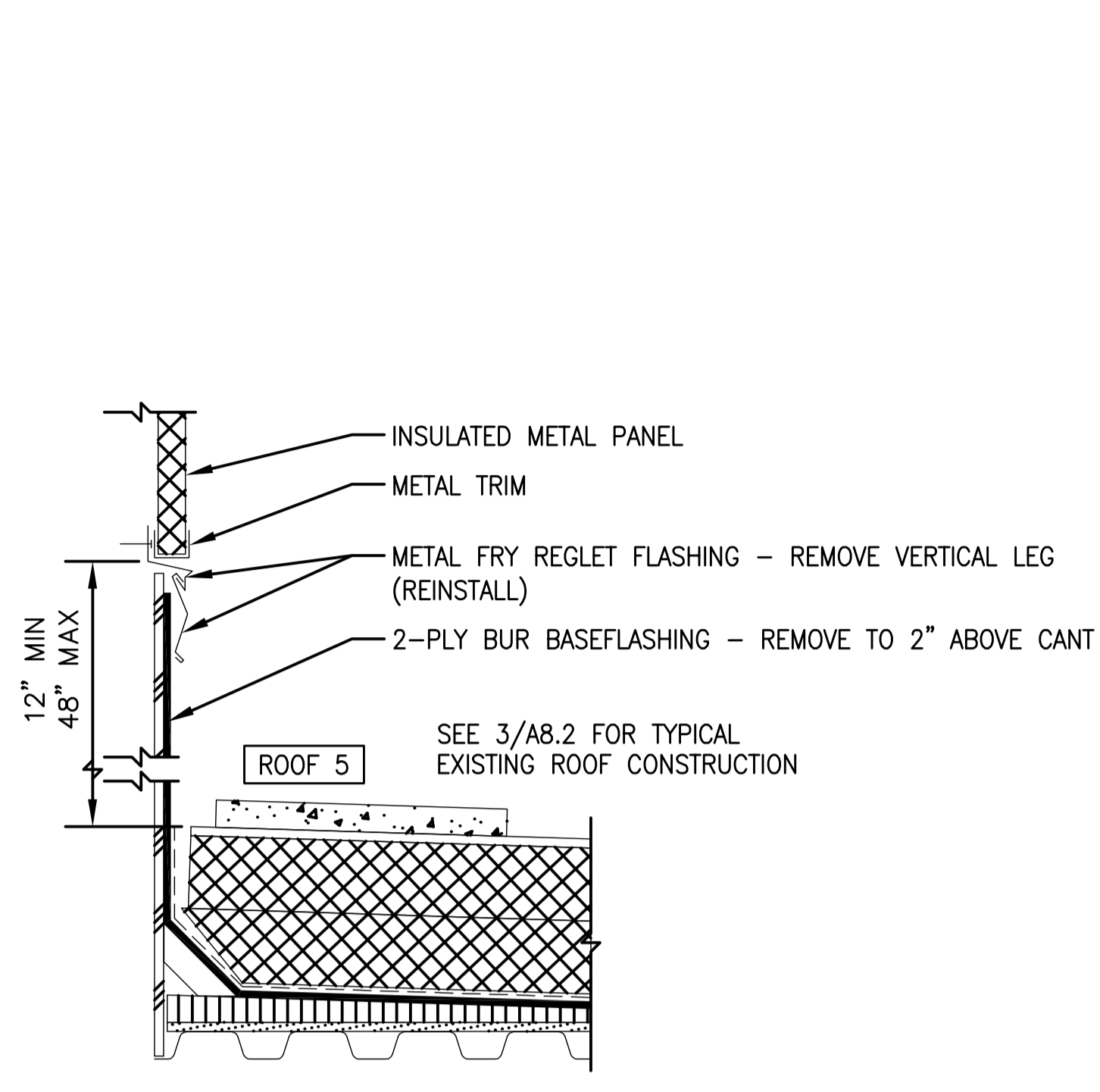
Sheet Contents

ROOF PLAN & INFORMATION		
Project Mgr.	GVN	Sheet No.
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Drawn		
Checked	GVN JMS	
Date	10/14/05	USKH W.O. 693316

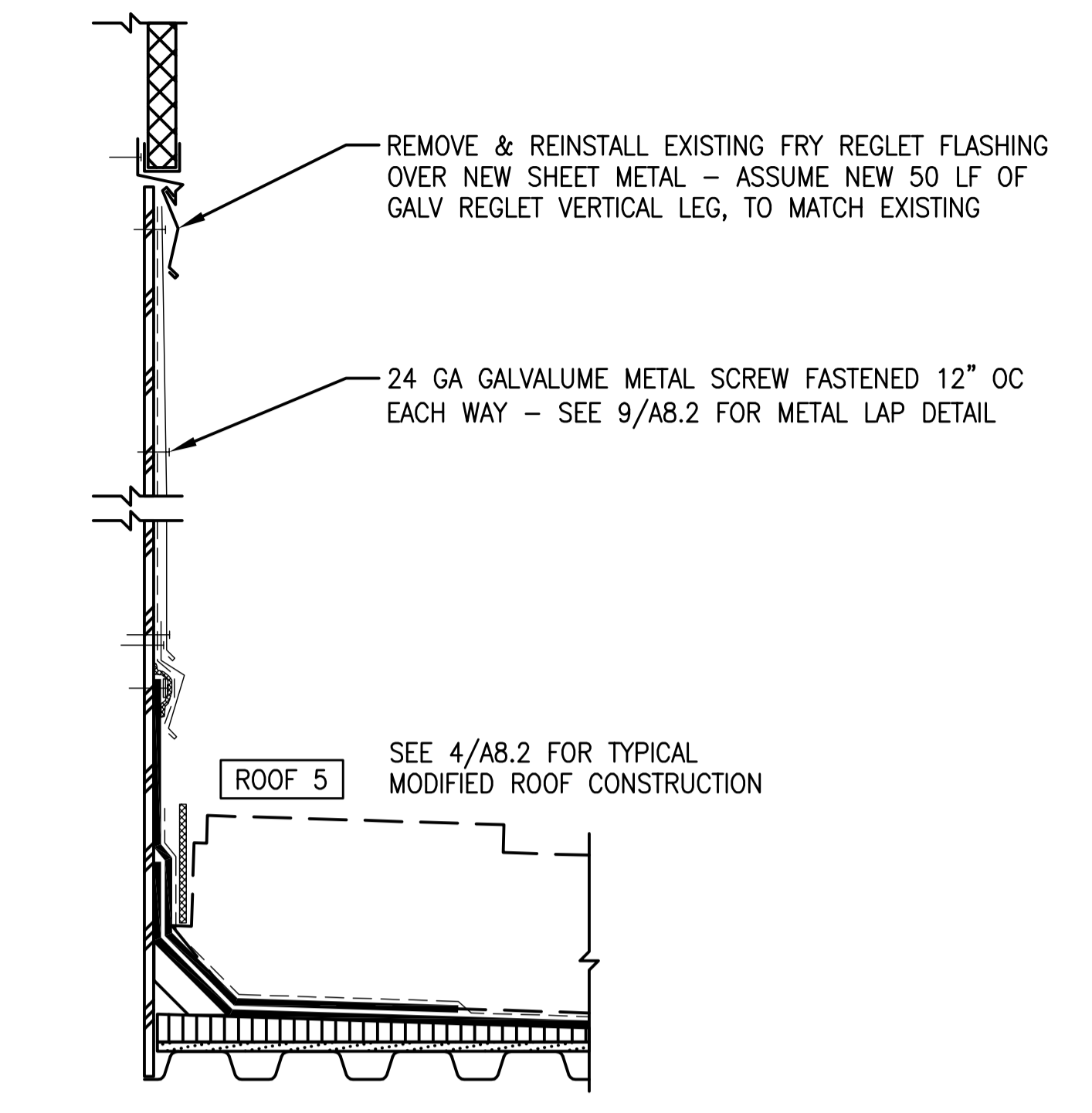


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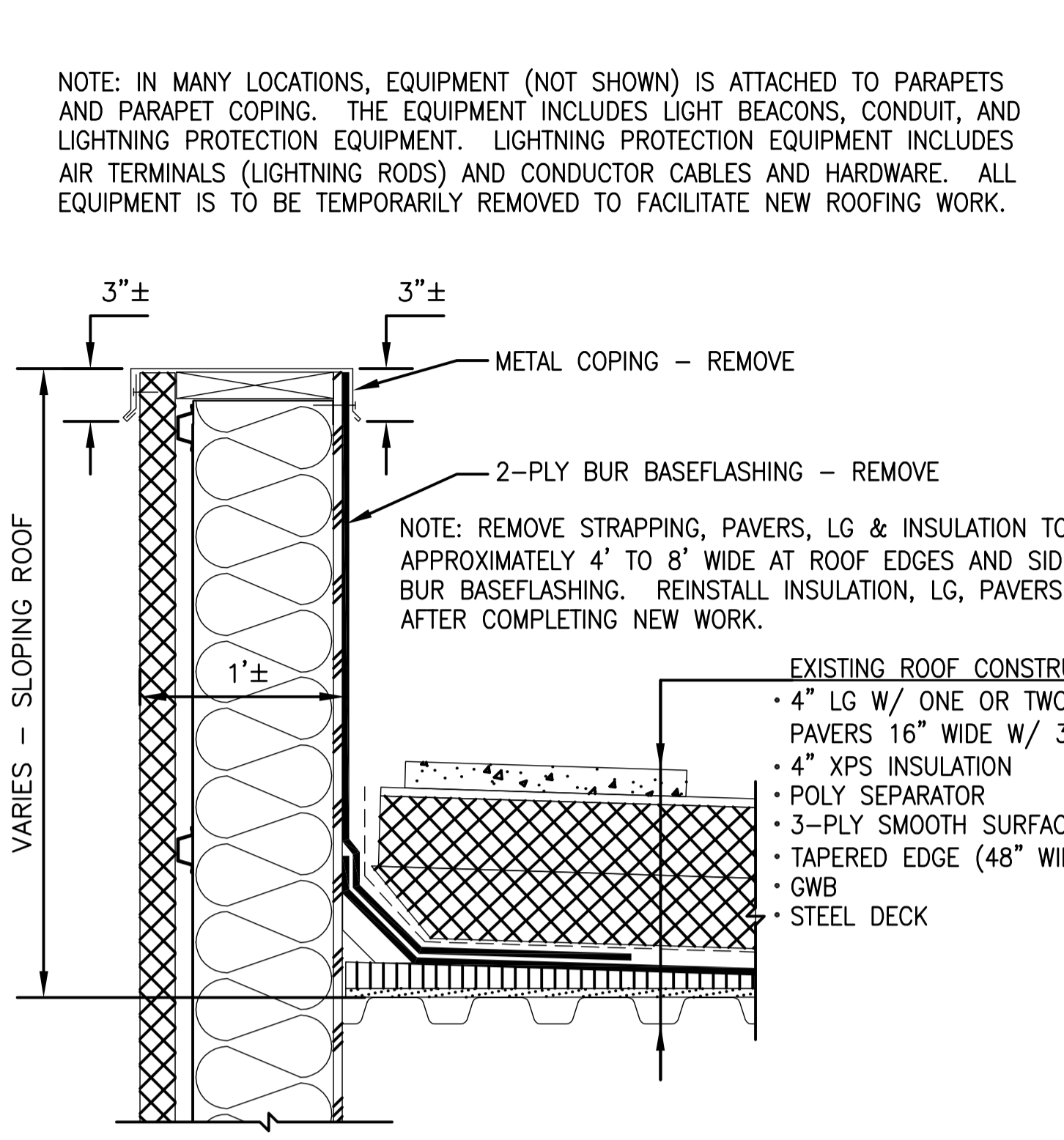
NOTE: REINSTALL EXISTING LIGHT BEACONS AND CONDUIT, AND LIGHTNING PROTECTION EQUIPMENT (NOT SHOWN) PER APPLICABLE REGULATIONS. ROUTE CONDUIT & CABLES ON SIDE OF PARAPET TO LIMIT PENETRATIONS THROUGH TOP OF NEW PARAPET COPING. SEE 12/A8.2 FOR RE-MOUNTING CONDUIT & CABLES TO PARAPET. SEE 13/A8.2 FOR RE-MOUNTING BEACON LIGHTS TO PARAPET.



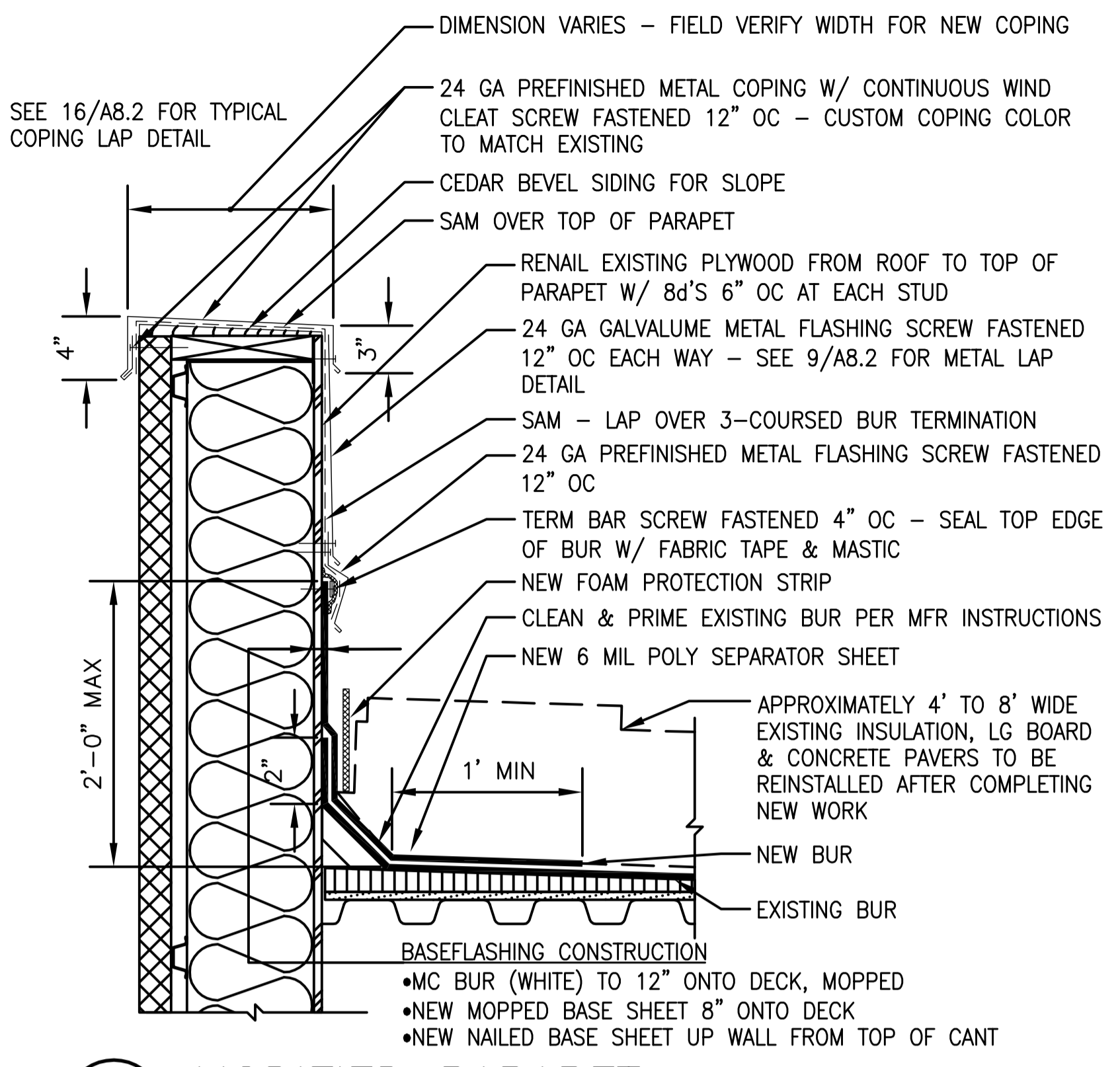
1 EXISTING SIDEWALL
A8.1/A8.2 SCALE 1 1/2"=1'-0"



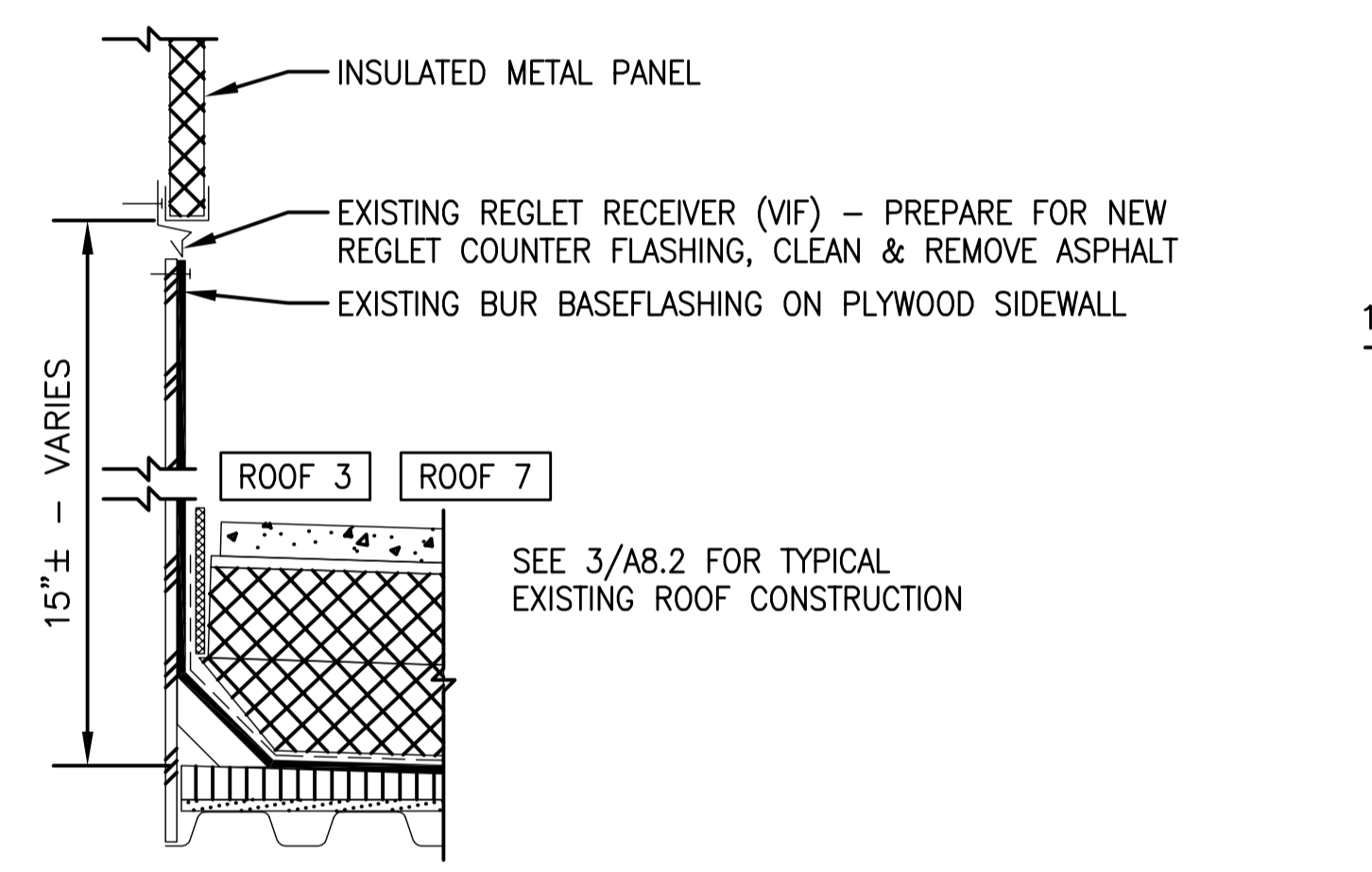
2 MODIFIED SIDEWALL
A8.1/A8.2 SCALE 1 1/2"=1'-0"



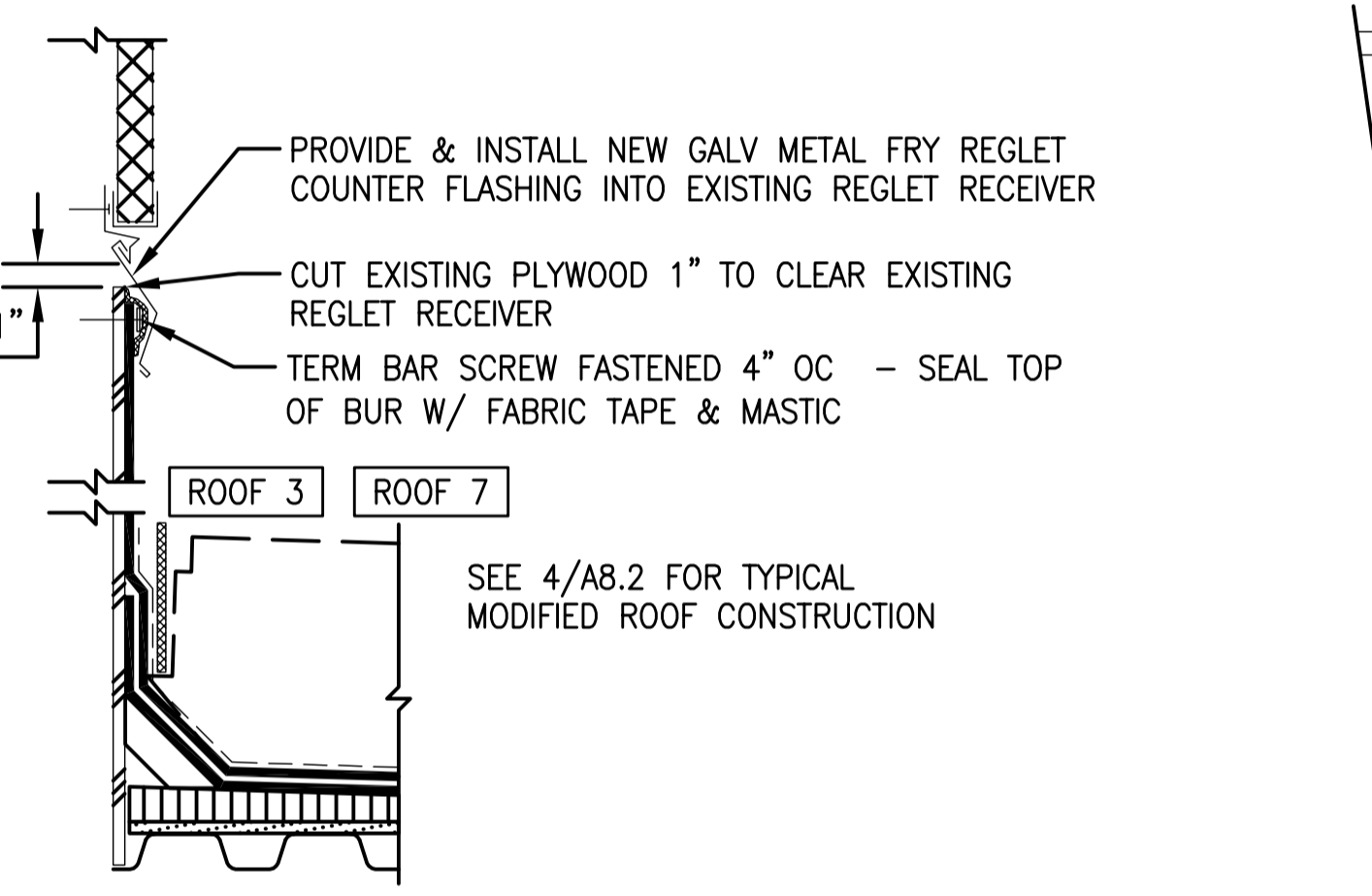
3 EXISTING PARAPET
A8.1/A8.2 SCALE 1 1/2"=1'-0"



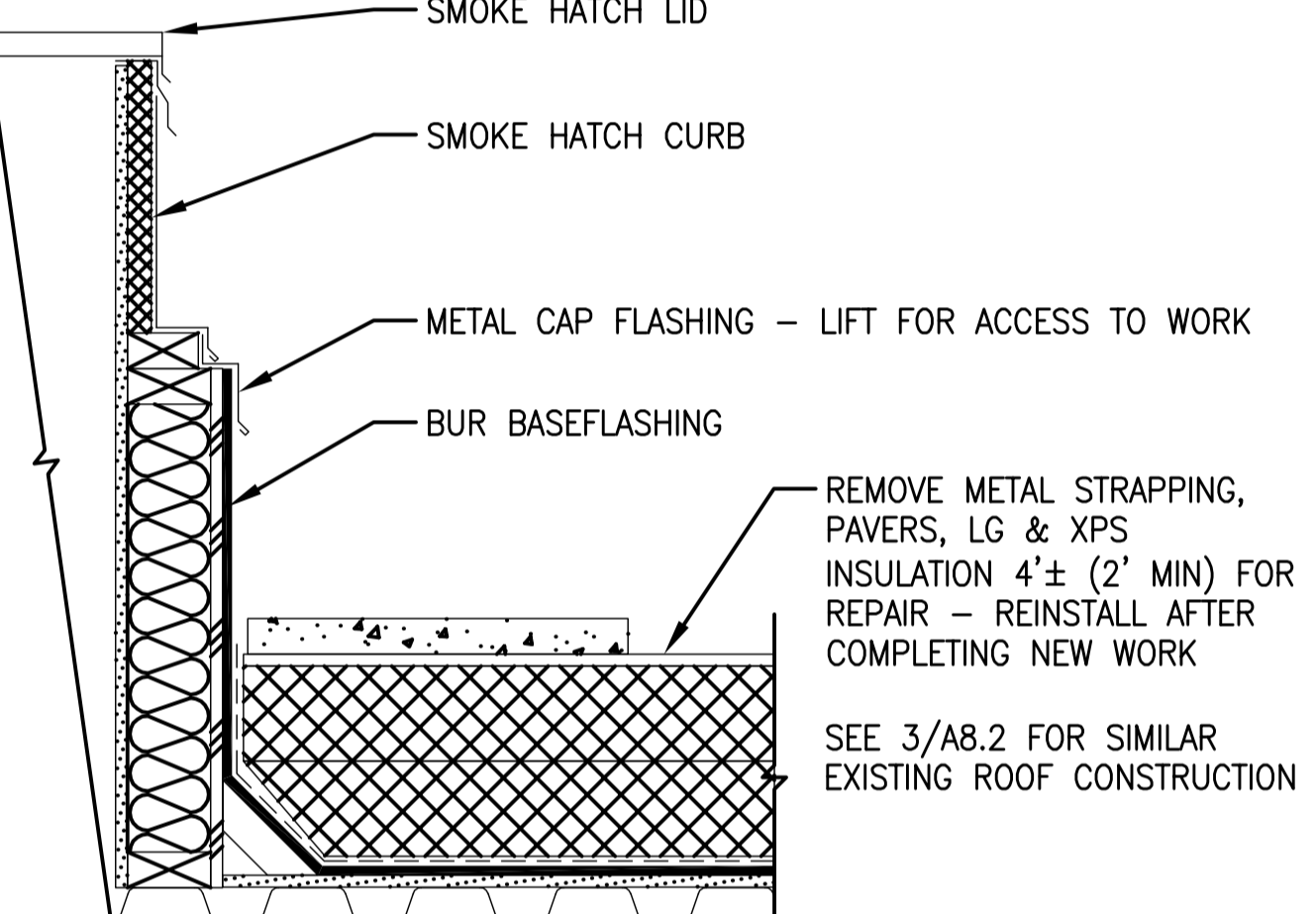
4 MODIFIED PARAPET
A8.1/A8.2 SCALE 1 1/2"=1'-0"



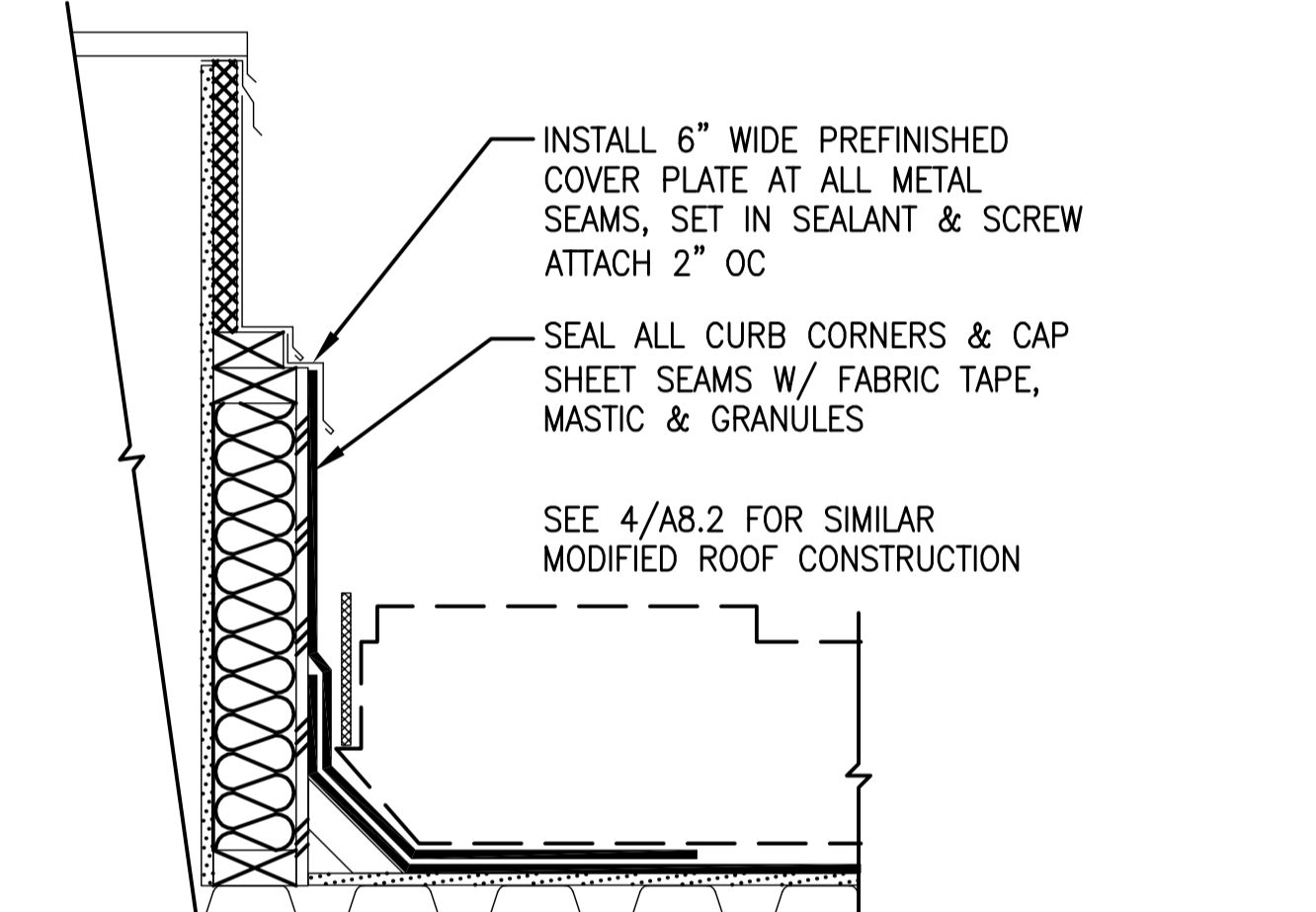
5 EXISTING SIDEWALL
A8.1/A8.2 SCALE 1 1/2"=1'-0"



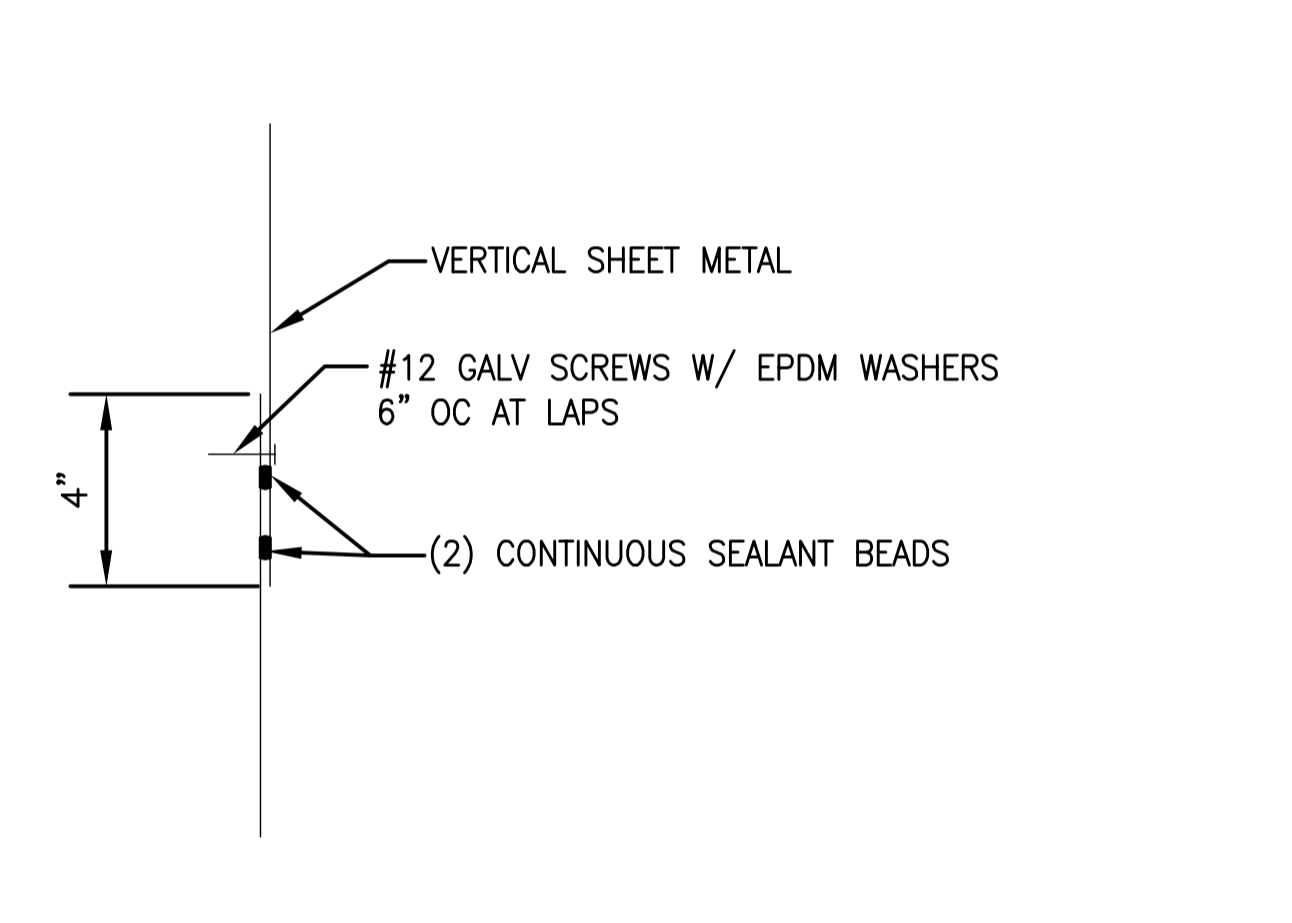
6 MODIFIED SIDEWALL
A8.1/A8.2 SCALE 1 1/2"=1'-0"



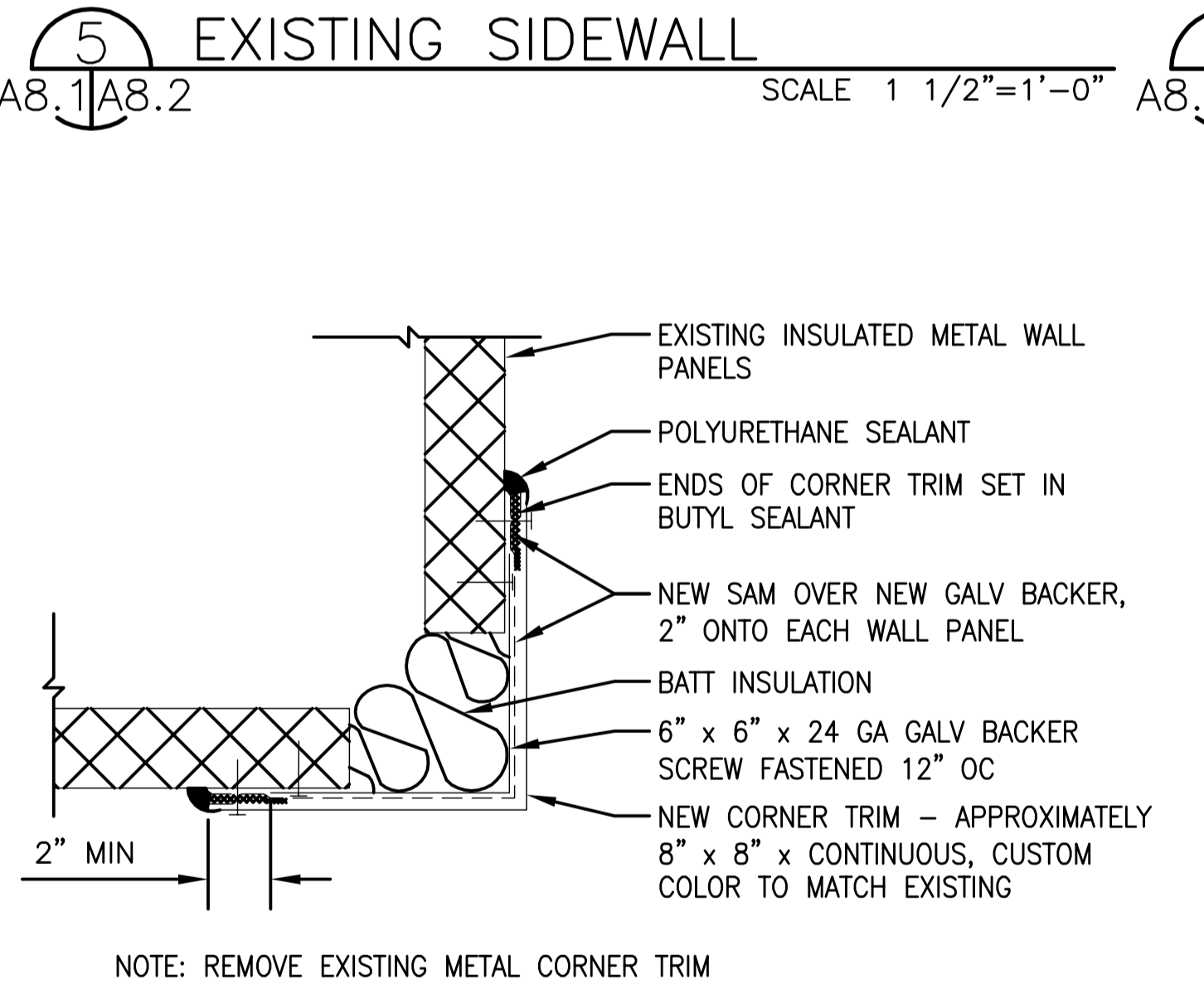
7 EXISTING EQUIPMENT CURB
A8.1/A8.2 SCALE 1 1/2"=1'-0"



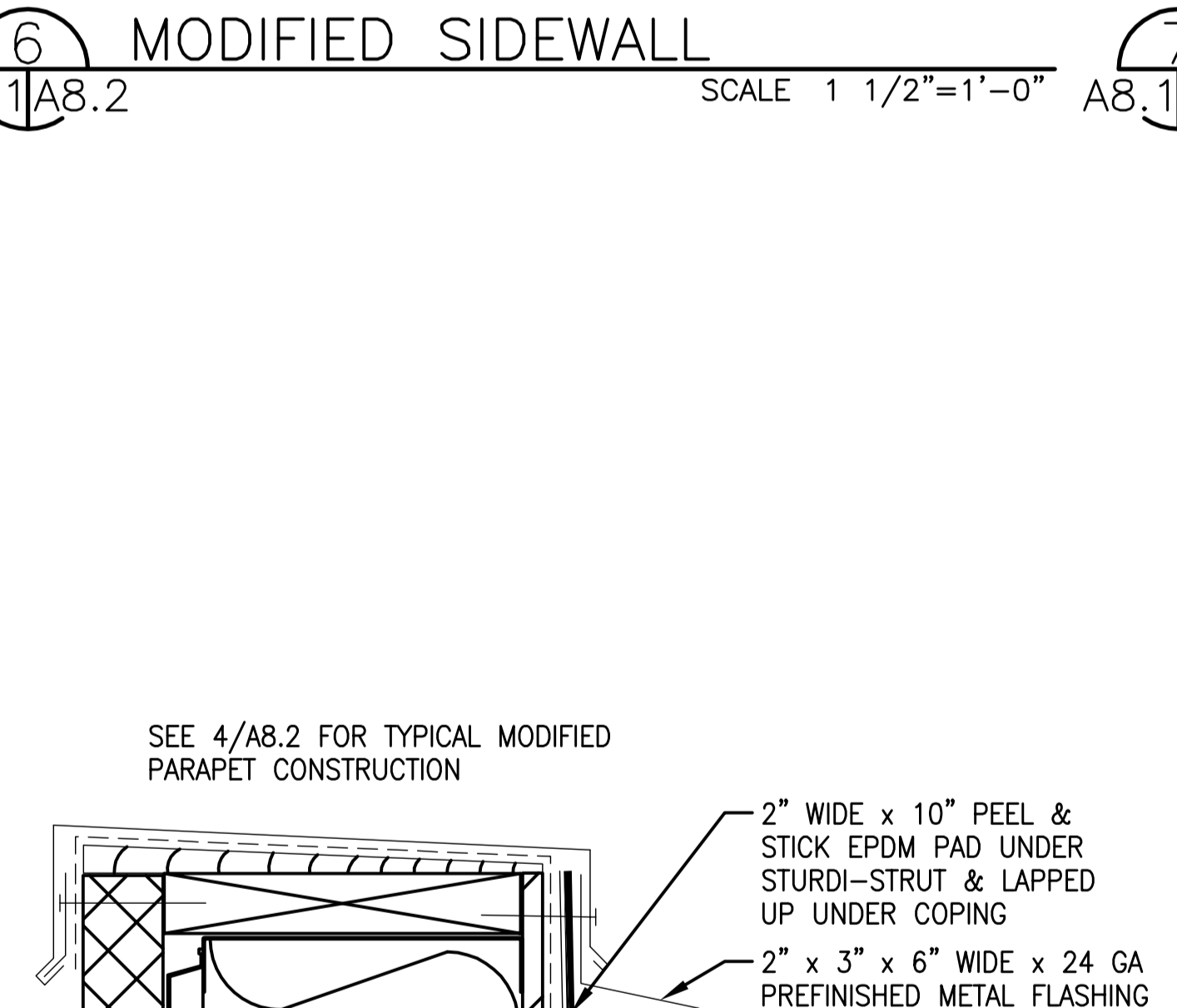
8 MODIFIED EQUIPMENT CURB
A8.1/A8.2 SCALE 1 1/2"=1'-0"



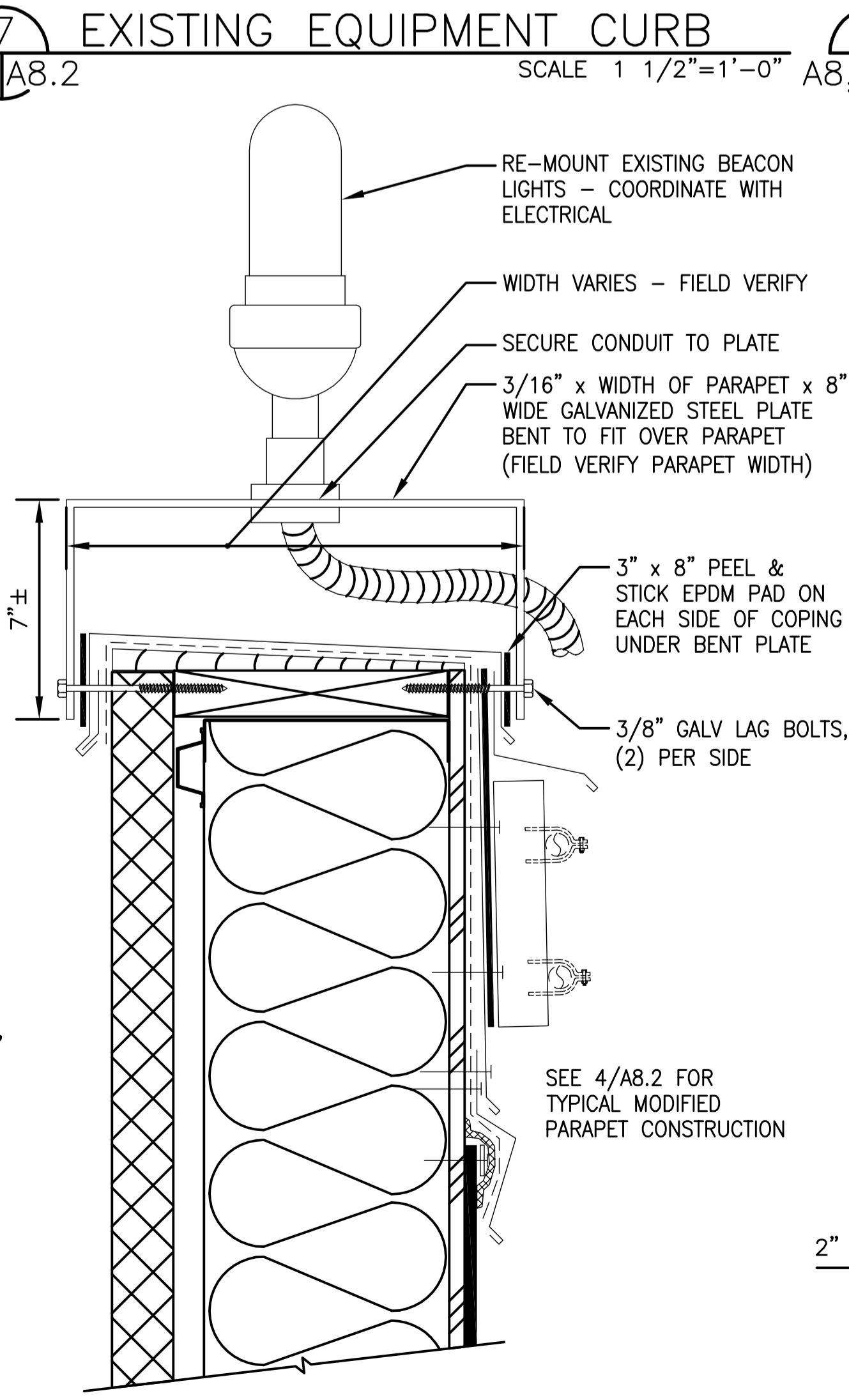
9 SHEET METAL LAP DETAIL
SCALE 3"=1'-0"



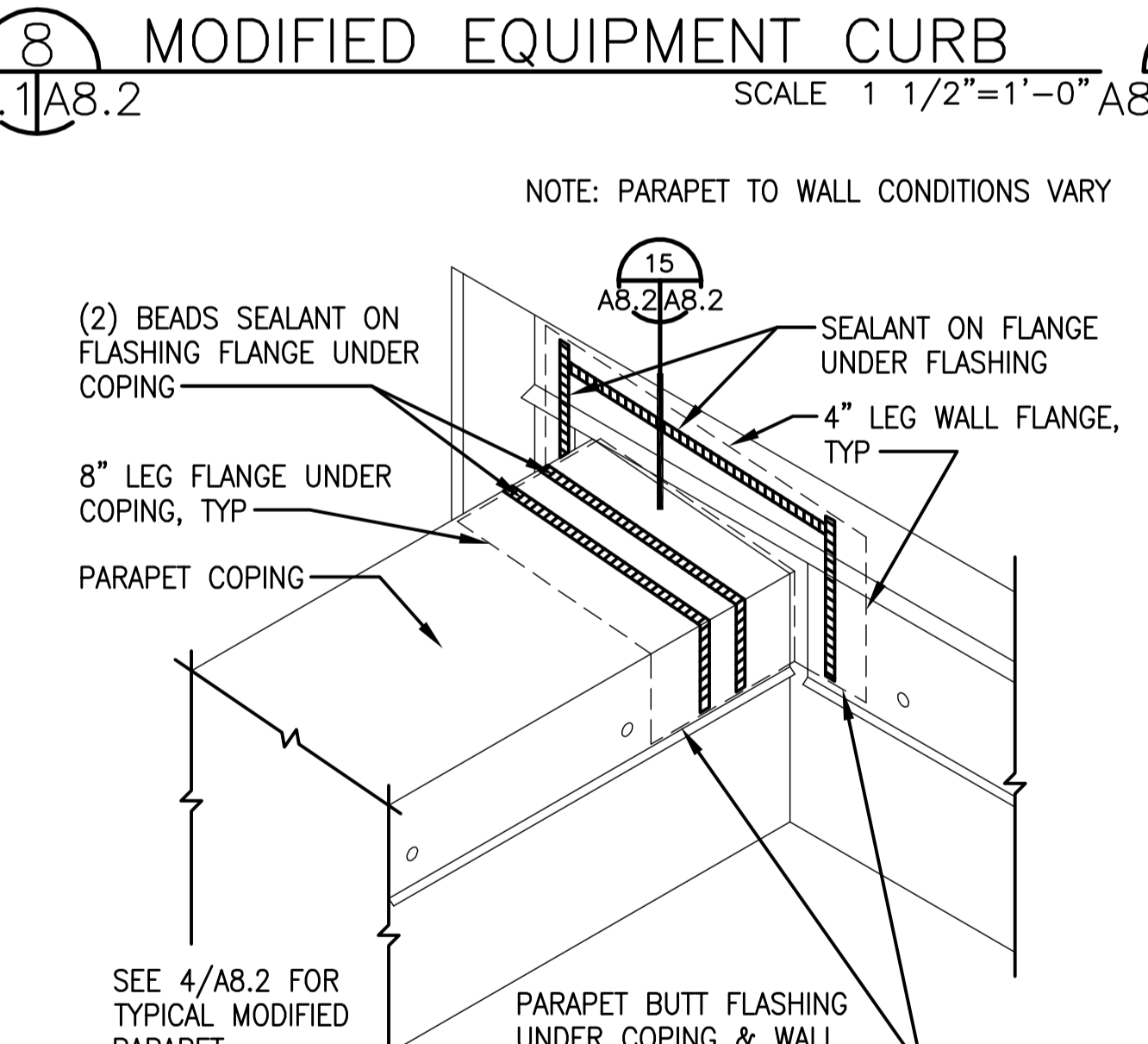
10 VERTICAL OUTSIDE CORNER TRIM
A8.1/A8.2 SCALE 3"=1'-0"



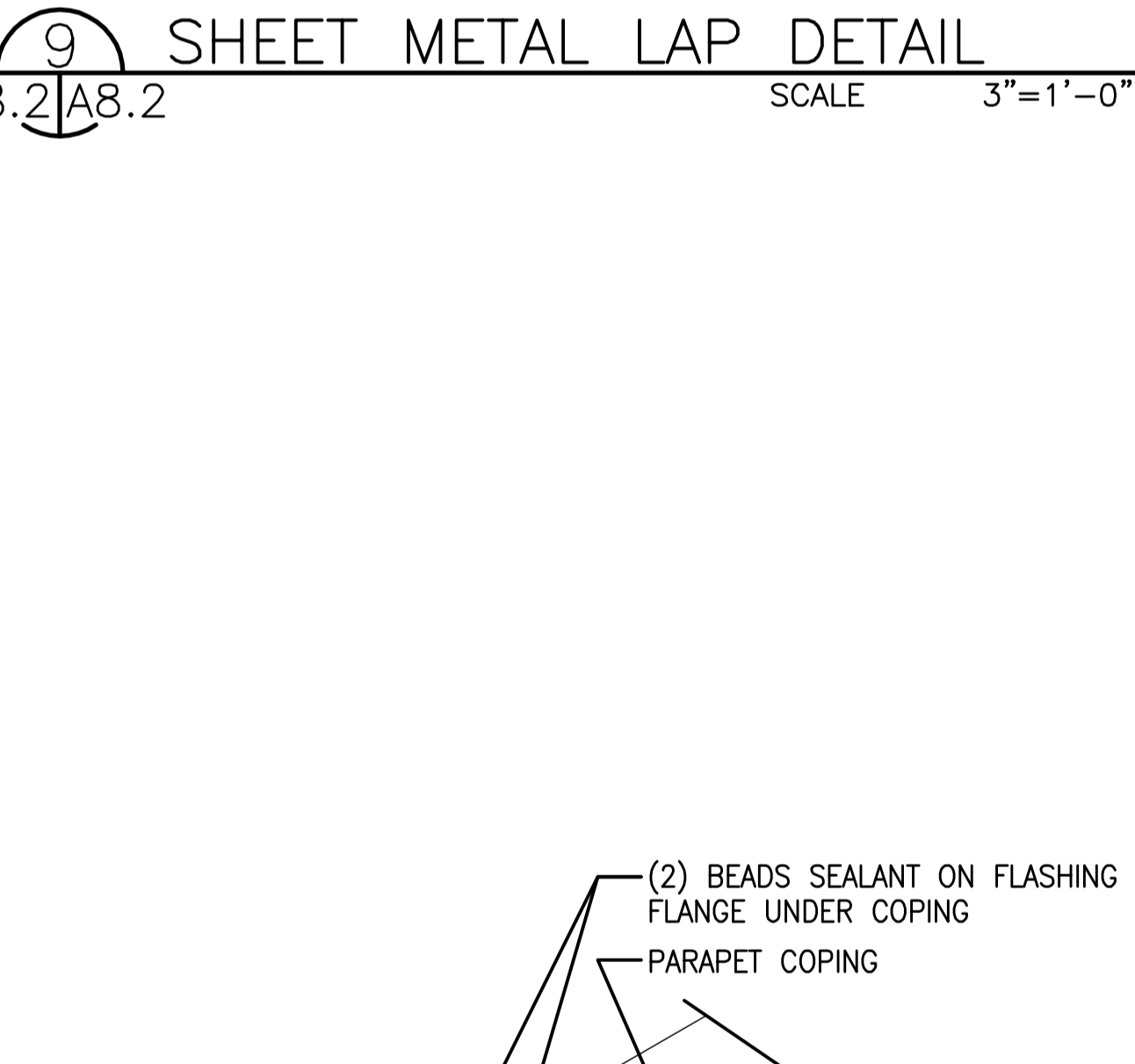
11 VERTICAL INSIDE CORNER TRIM
A8.1/A8.2 SCALE 3"=1'-0"



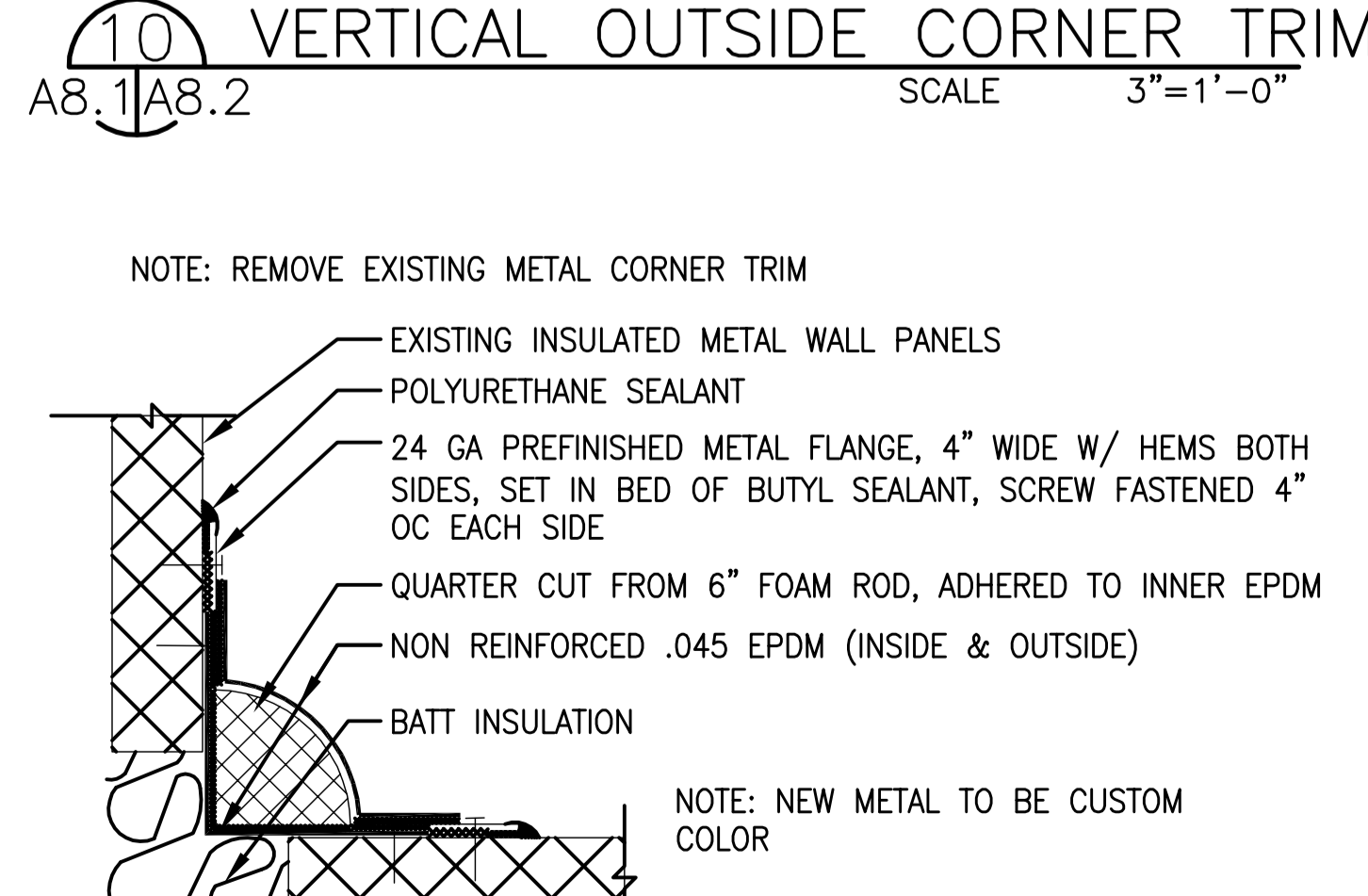
12 CONDUIT SUPPORT DETAIL
A8.2/A8.2 SCALE 3"=1'-0"



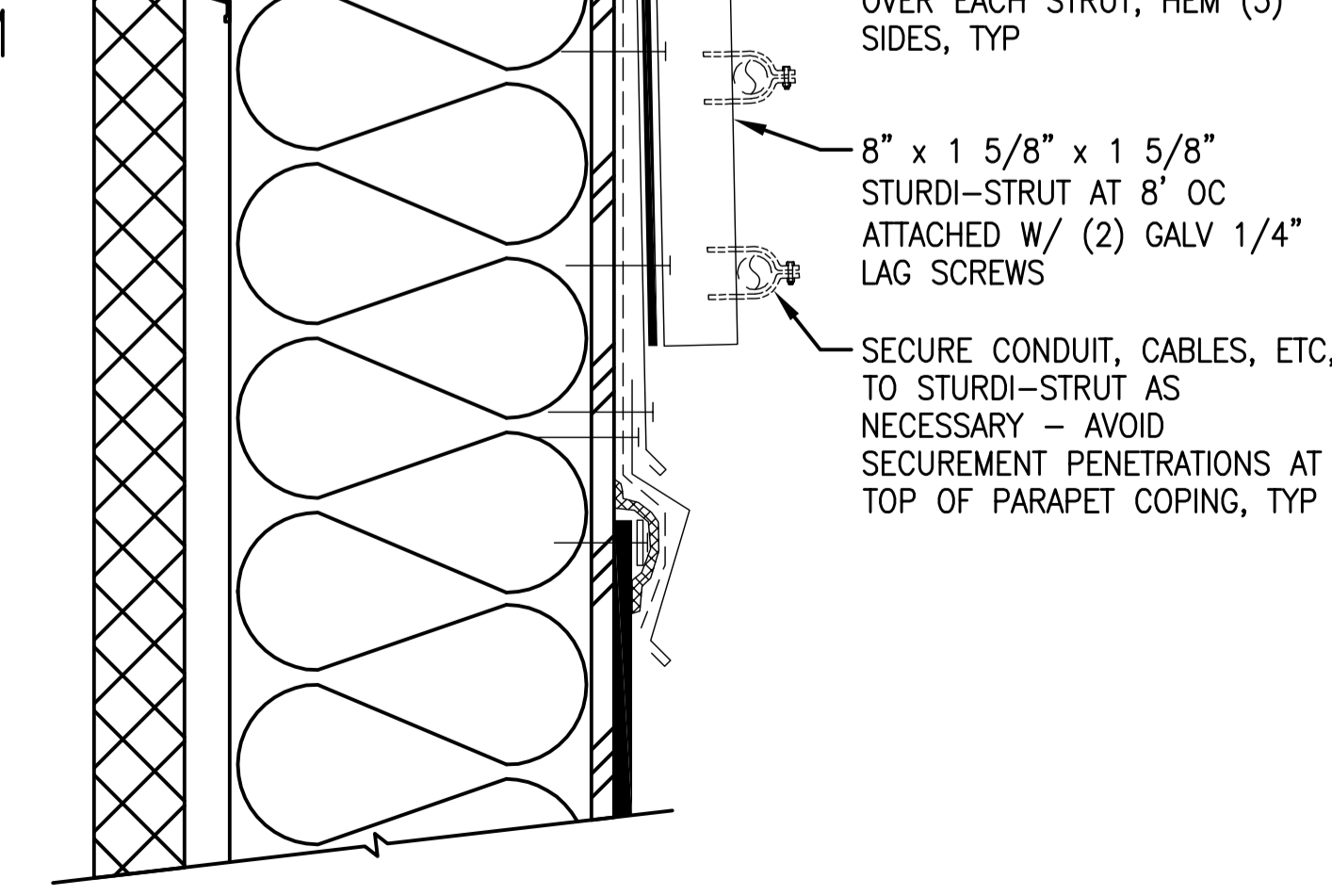
13 BEACON/EQUIPMENT MOUNTING
A8.2/A8.2 SCALE 3"=1'-0"



14 PARAPET TO WALL DETAIL
A8.1/A8.2 SCALE 1 1/2"=1'-0"



15 PARAPET TO WALL SECTION
A8.1/A8.2 SCALE 3"=1'-0"



16 PARAPET COPING LAP JOINT
A8.2/A8.2 SCALE 1 1/2"=1'-0"

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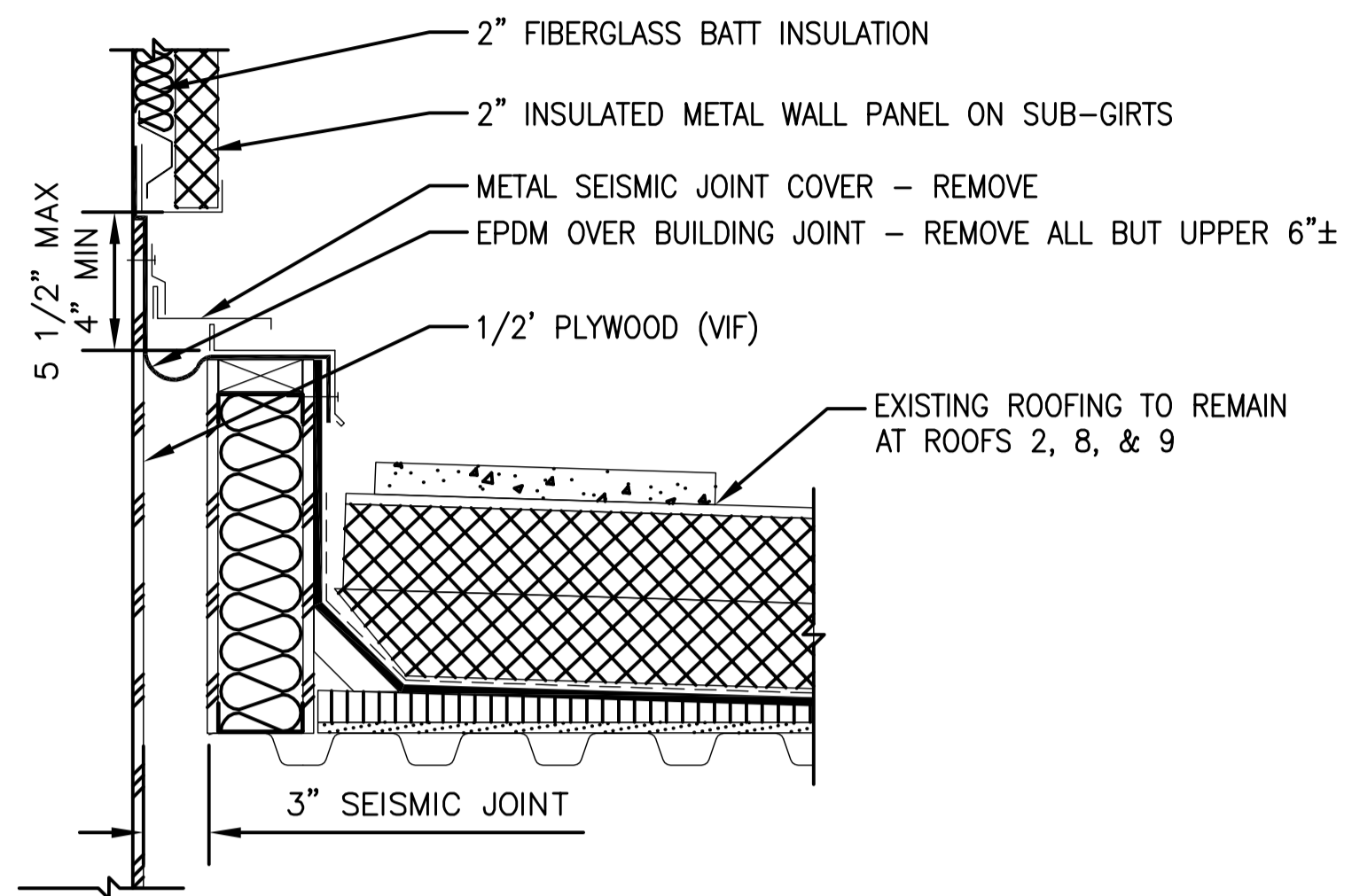
USKH
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Land Surveying - Planning
2515 'A' Street Anchorage, Alaska 99503 (907) 276-4245
544 Fourth Avenue Fairbanks, Alaska 99701 (907) 452-2128
3031 Clinton Drive Suite 200 Juneau, Alaska 99801 (907)790-2901
290 North Willow St. Wasilla, Alaska 99654 (907)376-7815

Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
EIELSON AFB, ALASKA
FTQW-04-2254
ALASKA AIR NATIONAL GUARD
EIELSON AFB, ALASKA

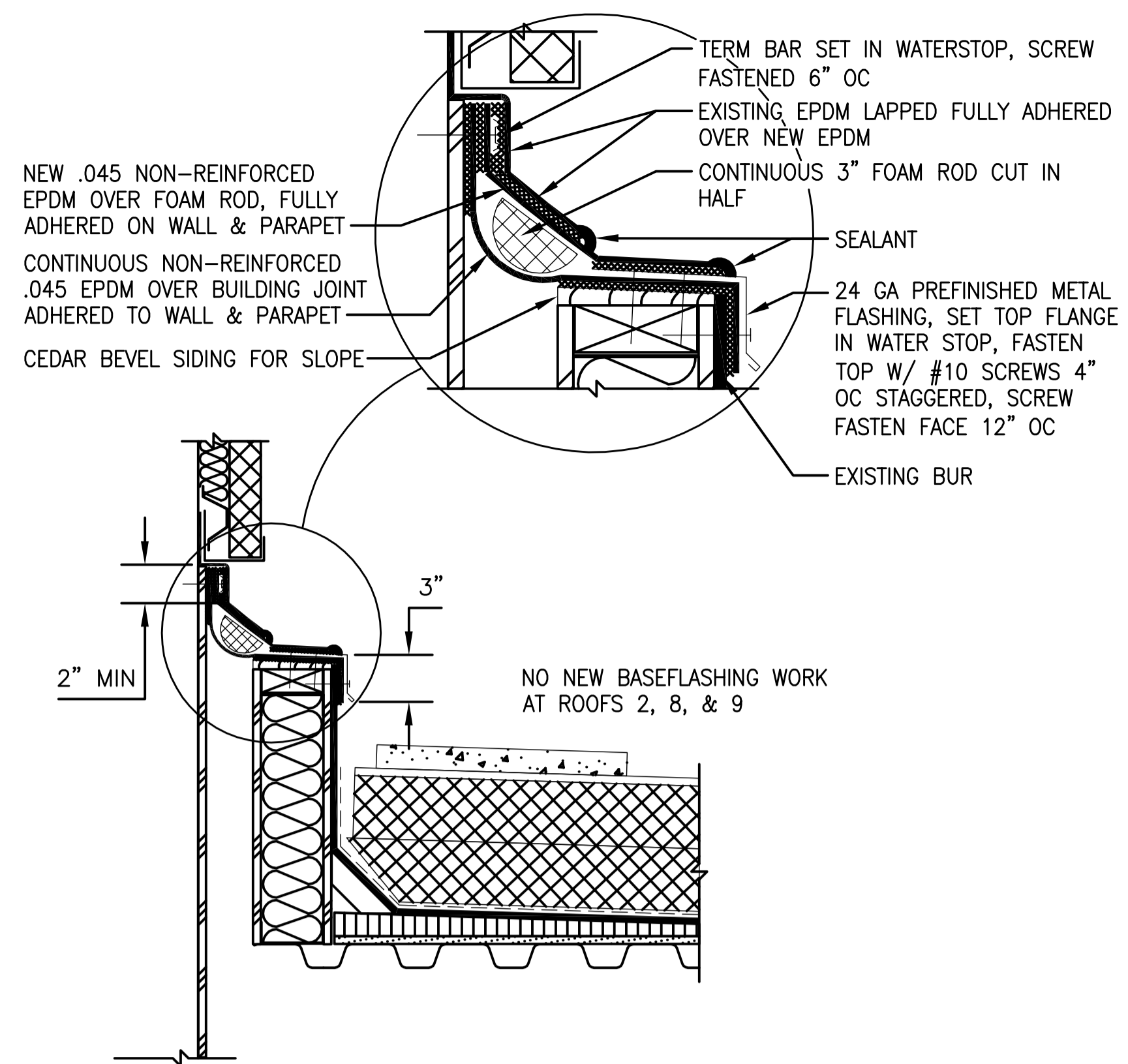
Date	Revision	By

Sheet Contents
ROOF DETAILS

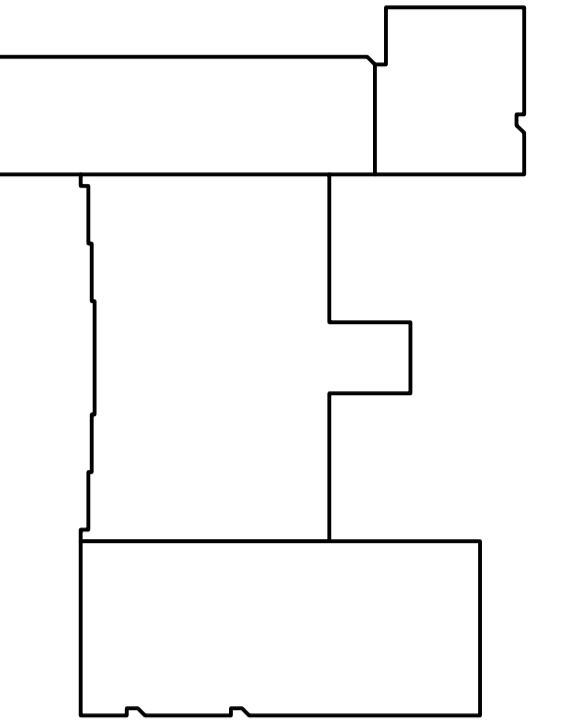
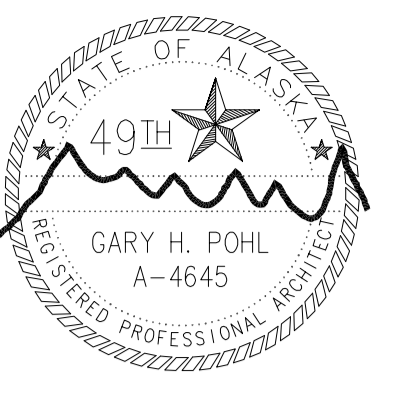
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Drawn		
Checked	GVN JMS	
Date	10/14/05	



1 EXISTING BUILDING JOINT
A8.1/A8.3 SCALE 1 1/2"=1'-0"



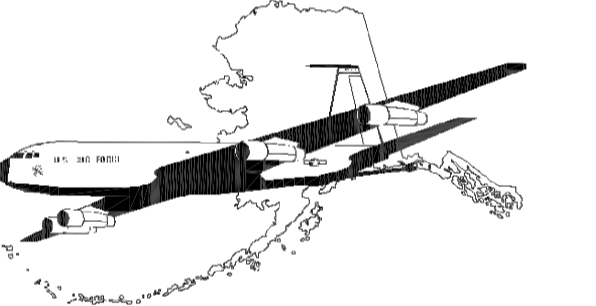
2 MODIFIED BUILDING JOINT
A8.1/A8.3 SCALE 1 1/2"=1'-0"



KEYPLAN

Notes:

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Project:

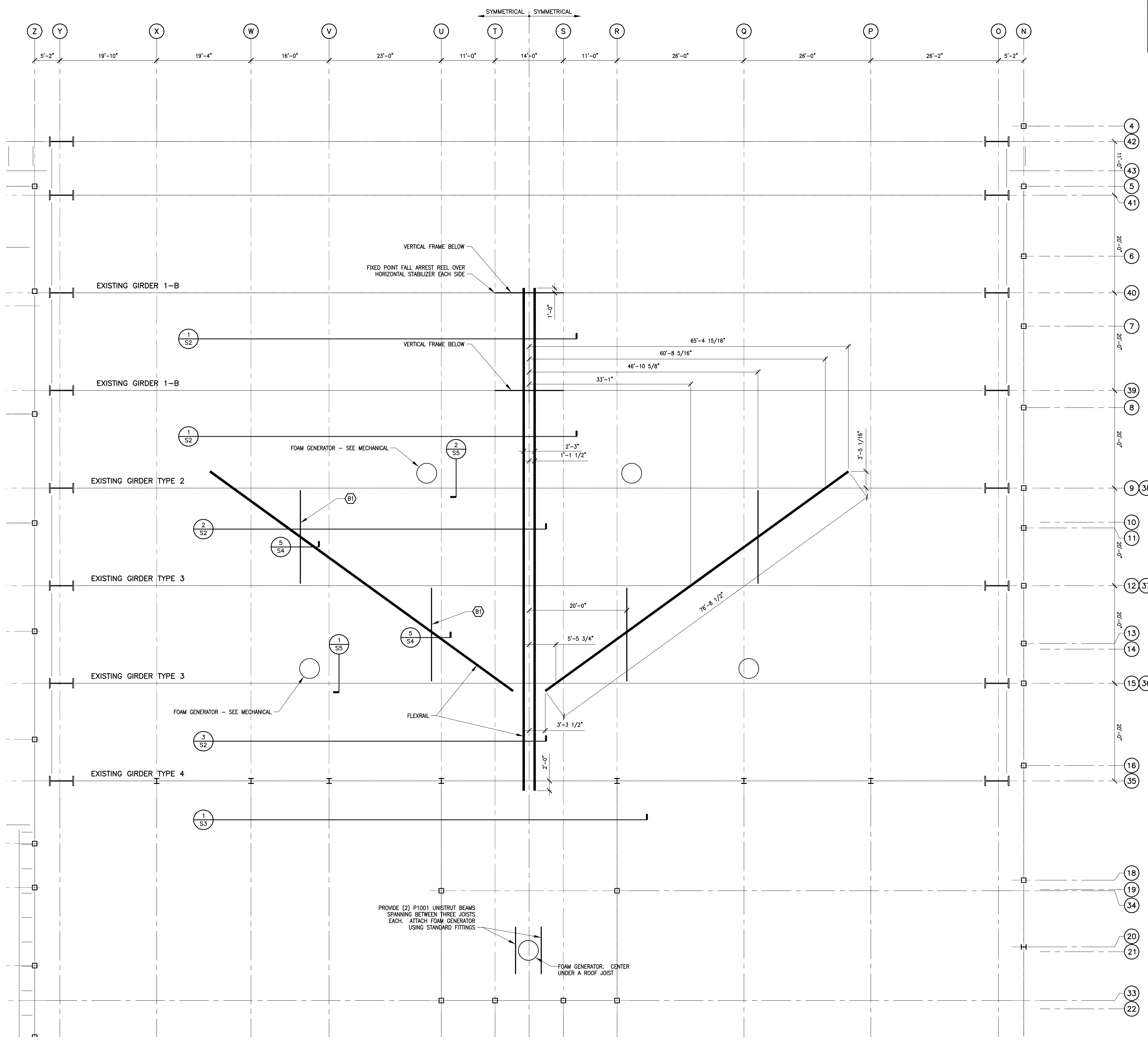
**REPAIR AIRCRAFT
MAINTENANCE HANGER
BDLG 1176**
EIELSON AFB, ALASKA
FTQW-04-2254
ALASKA AIR NATIONAL GUARD
EIELSON AFB, ALASKA

Date	Revision	By

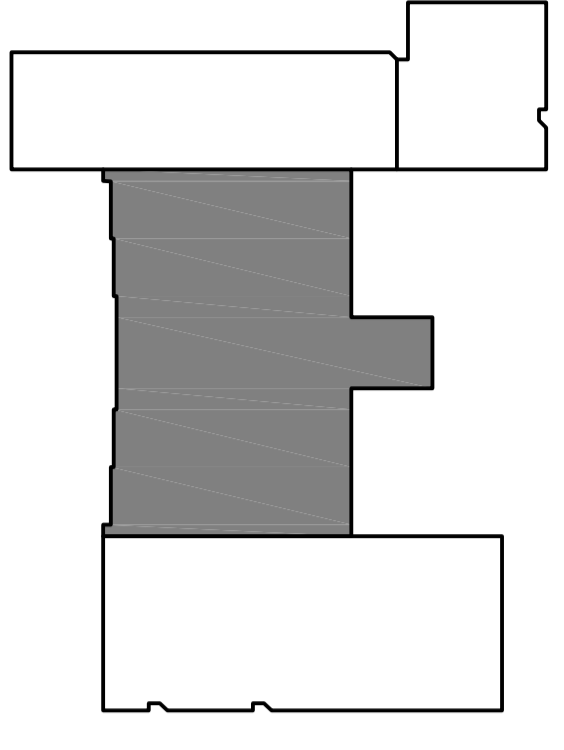
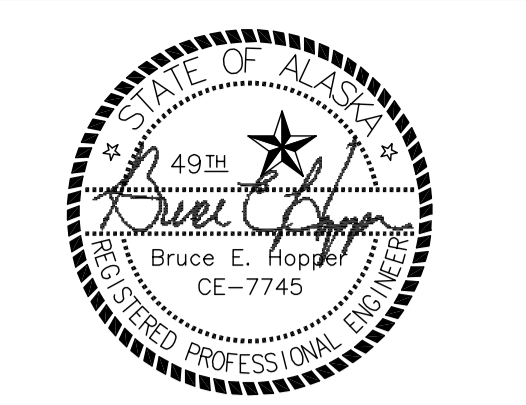
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Date	10/14/05	USKH W.O. 693316

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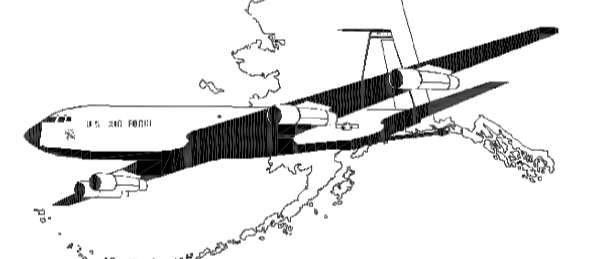
BEAM (B) SCHEDULE				
MARK	BEAM SIZE	CAMBER AT MIDSPAN	END CONNECTION	REMARKS
B1	HSS 7X7X5/16	-	SEE DETAILS	RAIL SUPPORT BEAM



KEYPLAN

Notes:
THE FALL ARREST SYSTEM COMPONENTS ARE SYMMETRICAL ABOUT THE CENTERLINE OF THE HANGAR. THE DIMENSIONS ARE SHOWN ON THE RIGHT HALF OF THE DRAWING; THE DETAIL CUTS ON THE LEFT HALF.

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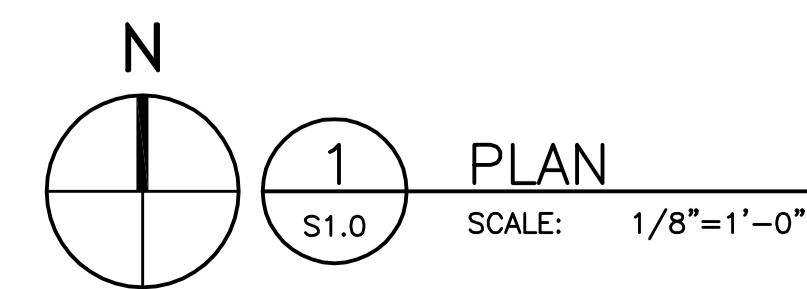
2515 'A' Street Anchorage, Alaska 99503 (907) 276-4245
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Project:
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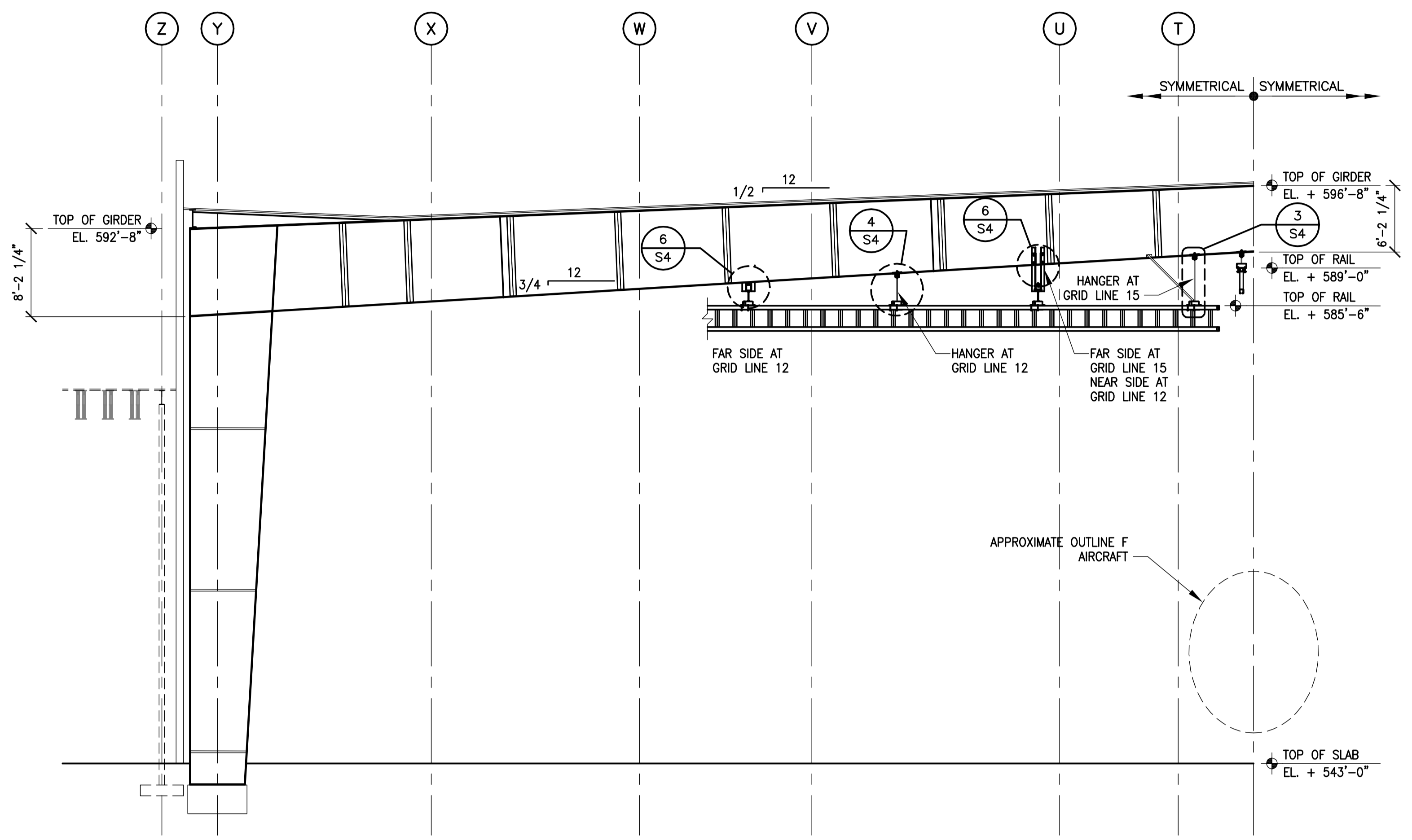
Date	Revision	By

Sheet Contents
FALL ARREST SYSTEM FRAMING PLAN

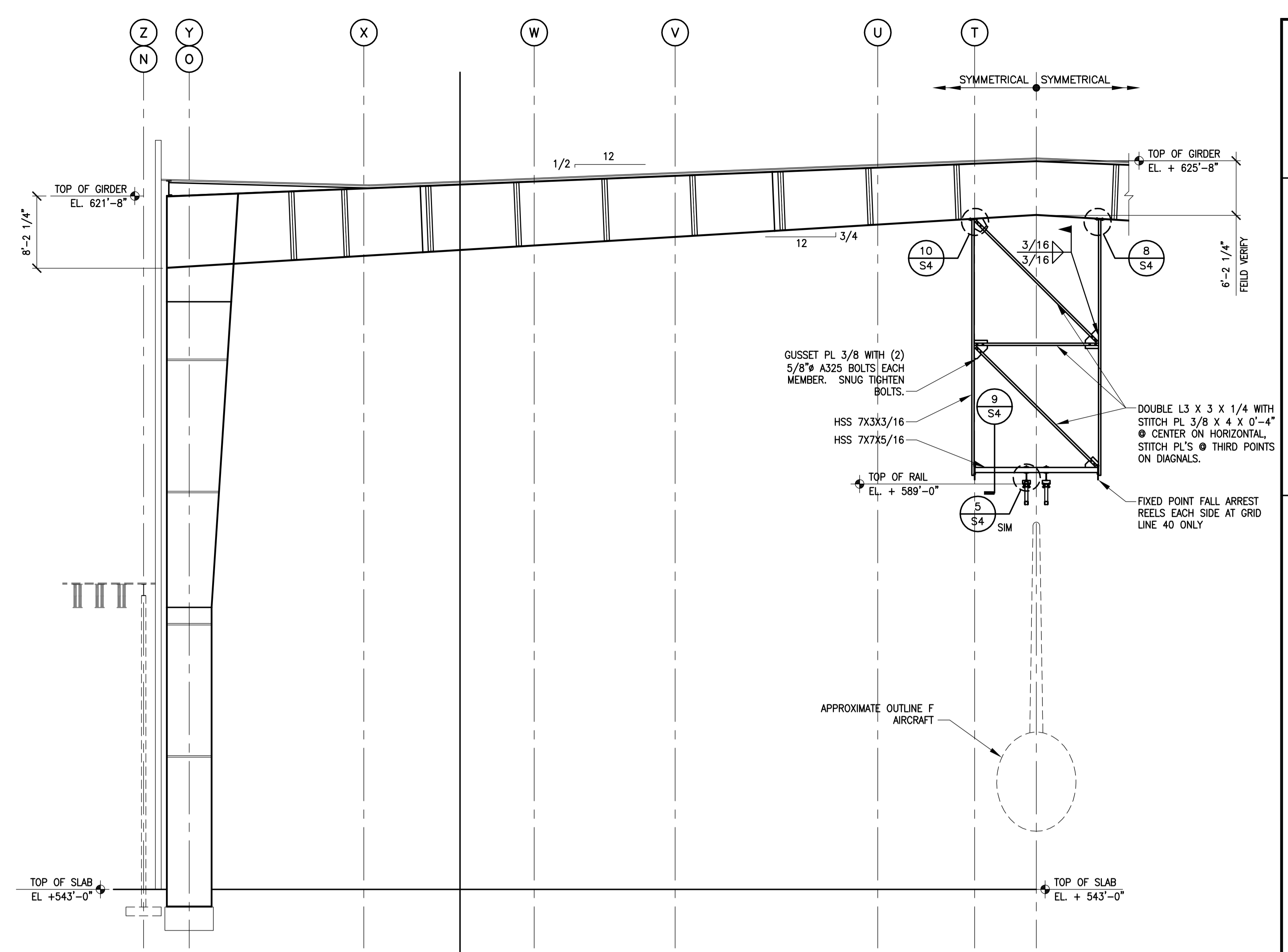
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Checked	BEH	
Date	10/14/05	USKH w.o. 693316



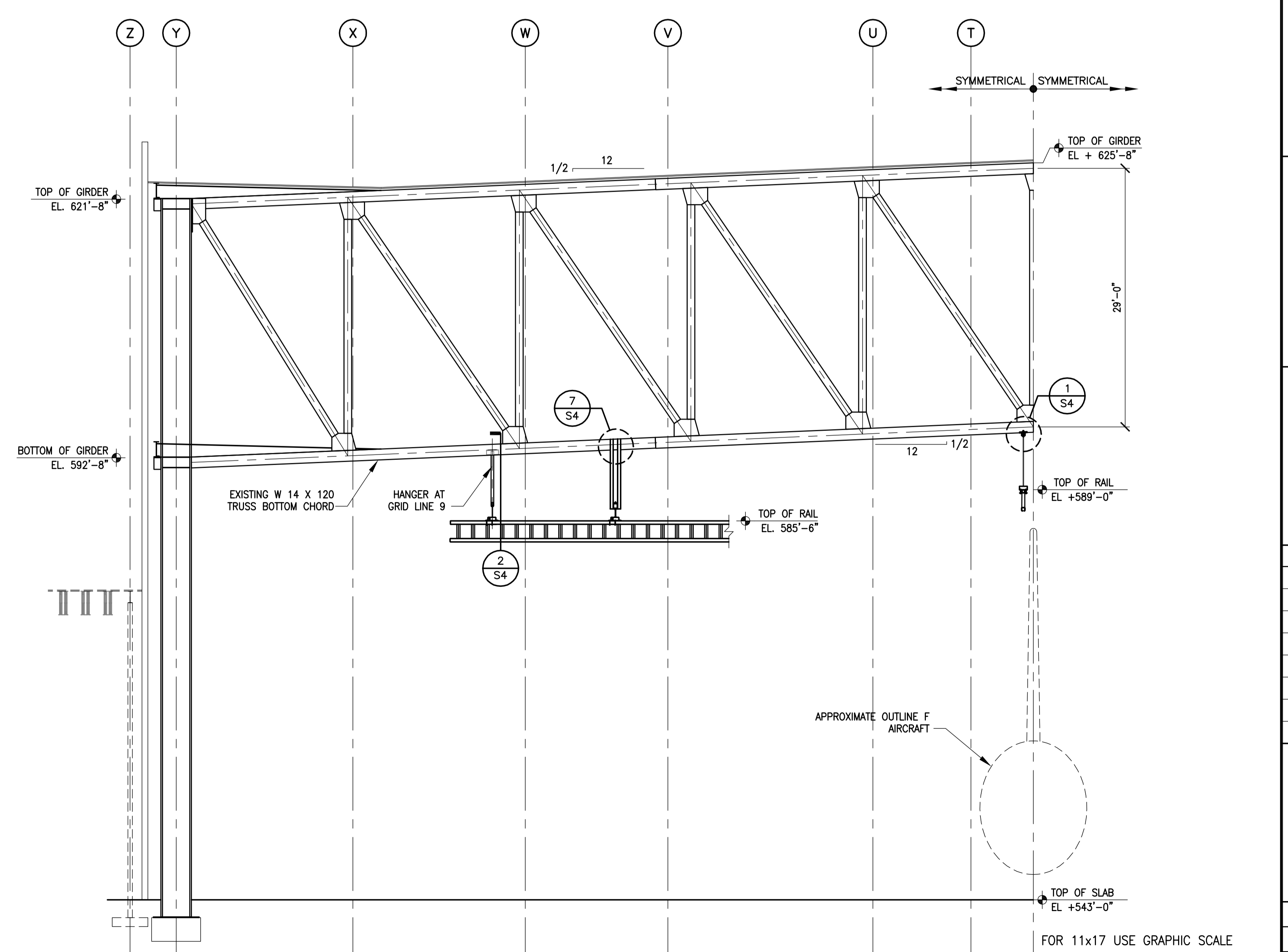
FOR 11x17 USE GRAPHIC SCALE
FOR 11x17 USE GRAPHIC SCALE



3 GIRDER 3 ELEVATION
S2 SCALE: 1/8" = 1'-0"



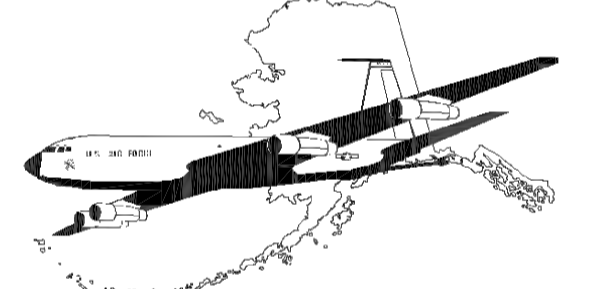
1 GIRDER 1-B ELEVATION
S2 SCALE: 1/8" = 1'-0"



2 GIRDER 2 ELEVATION
S2 SCALE: 1/8" = 1'-0"

Notes:

ALASKA AIR NATIONAL GUARD



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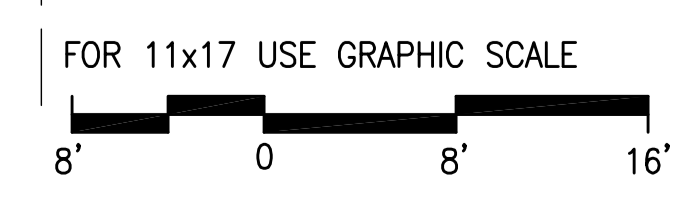
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3031 Clinton Drive Juneau, Alaska 99801 (907) 790-2901
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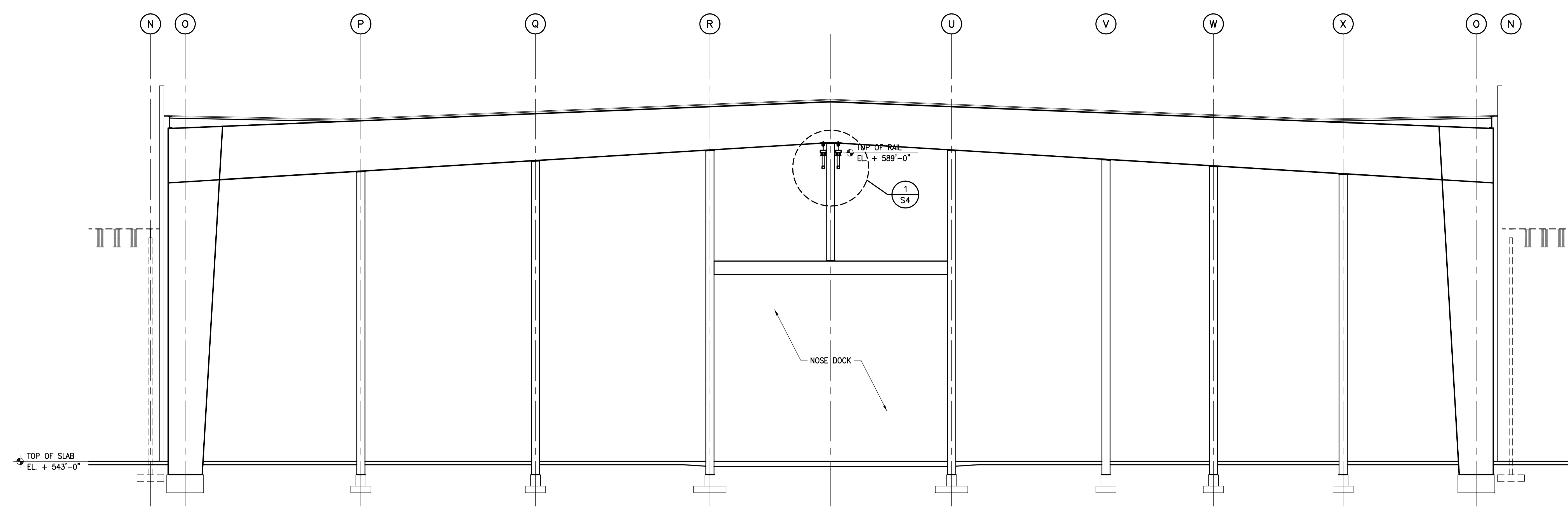
Project:
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Date	Revision	By

Sheet Contents
PARTIAL FRAME ELEVATIONS

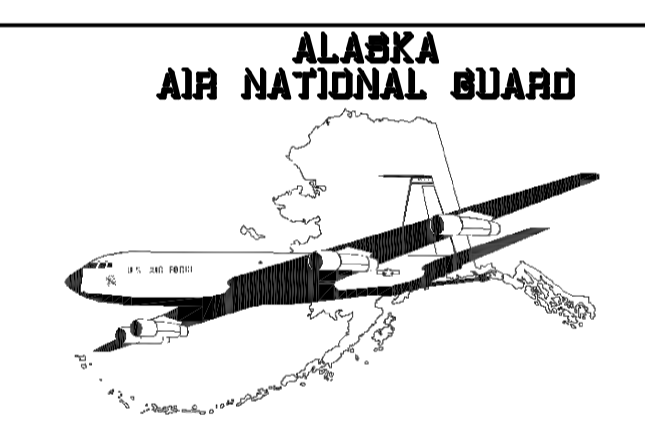
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Drawn	DJR	S2
Checked	BEH	
Date	10/14/05	USKH W.O. 693316





1 EXISTING GIRDER TYPE 4 ELEVATION
S3 SCALE: 1"=8'-0"

Notes:



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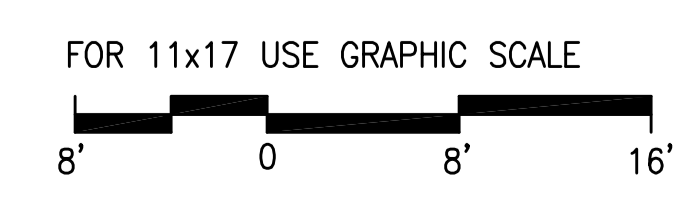
Project:
**REPAIR AIRCRAFT
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BDLG 1176**
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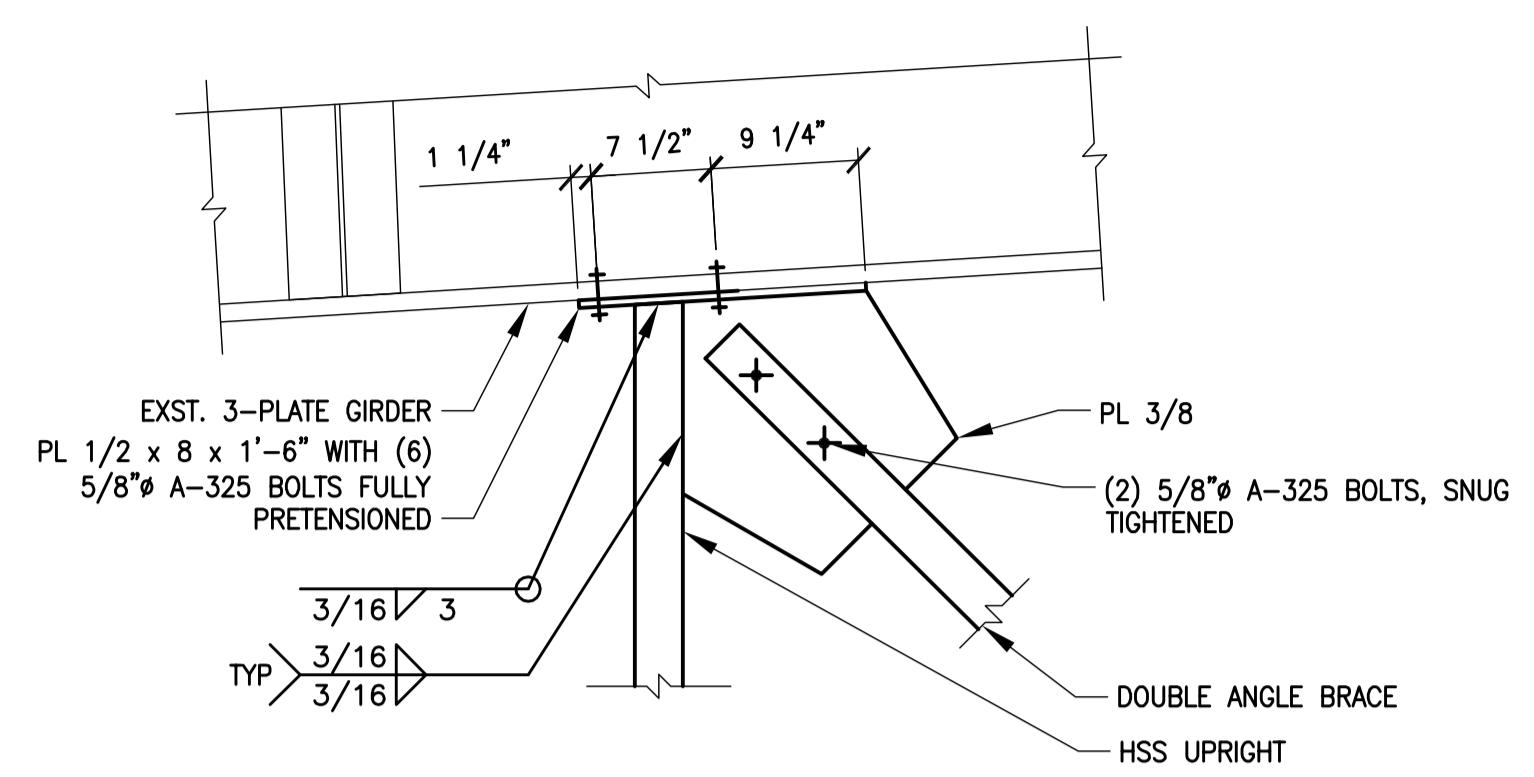
Date	Revision	By

Sheet Contents
GIRDER ELEVATIONS

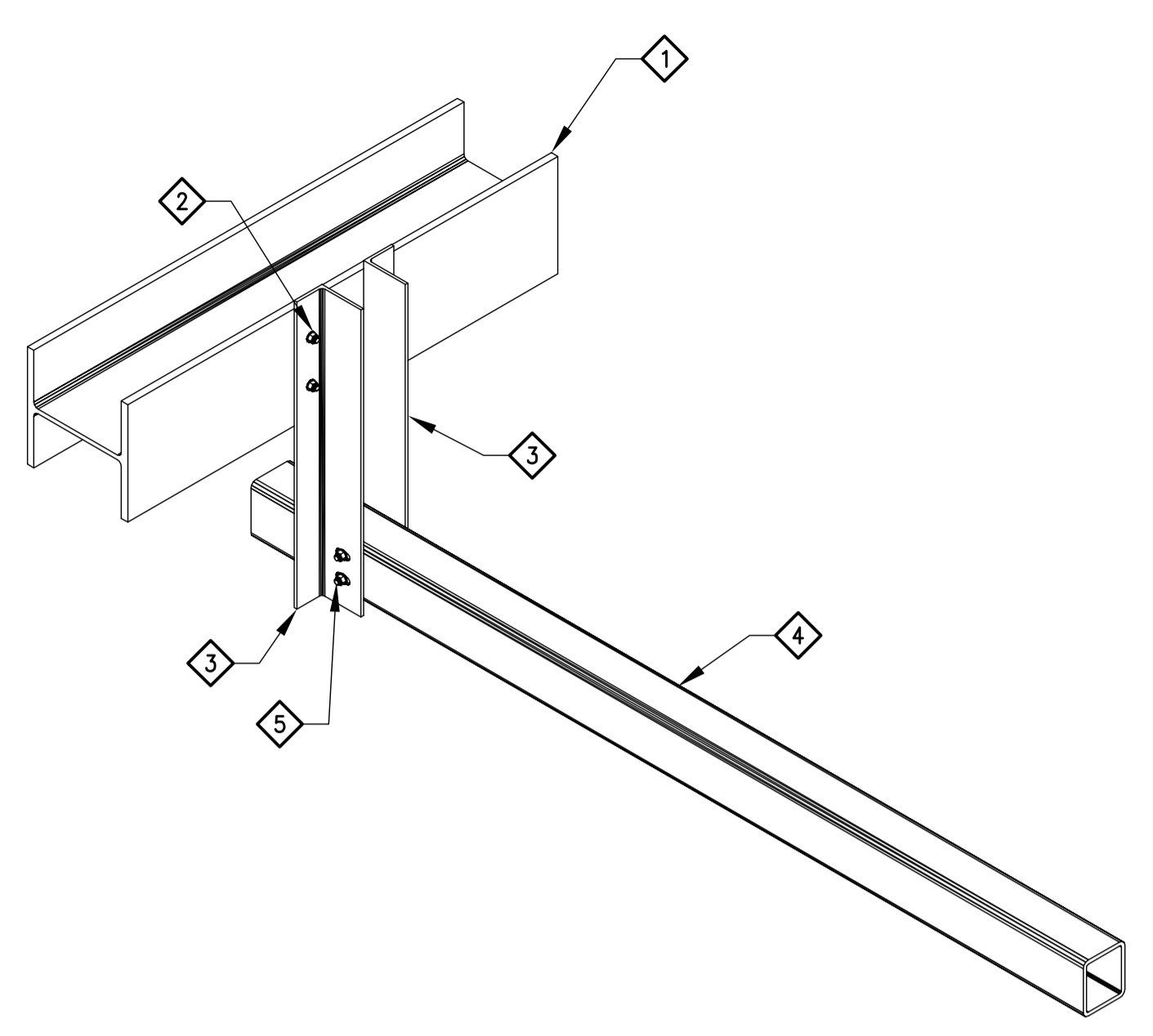
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Drawn	DJR	
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Date	10/14/05	

USKH W.O. 693316

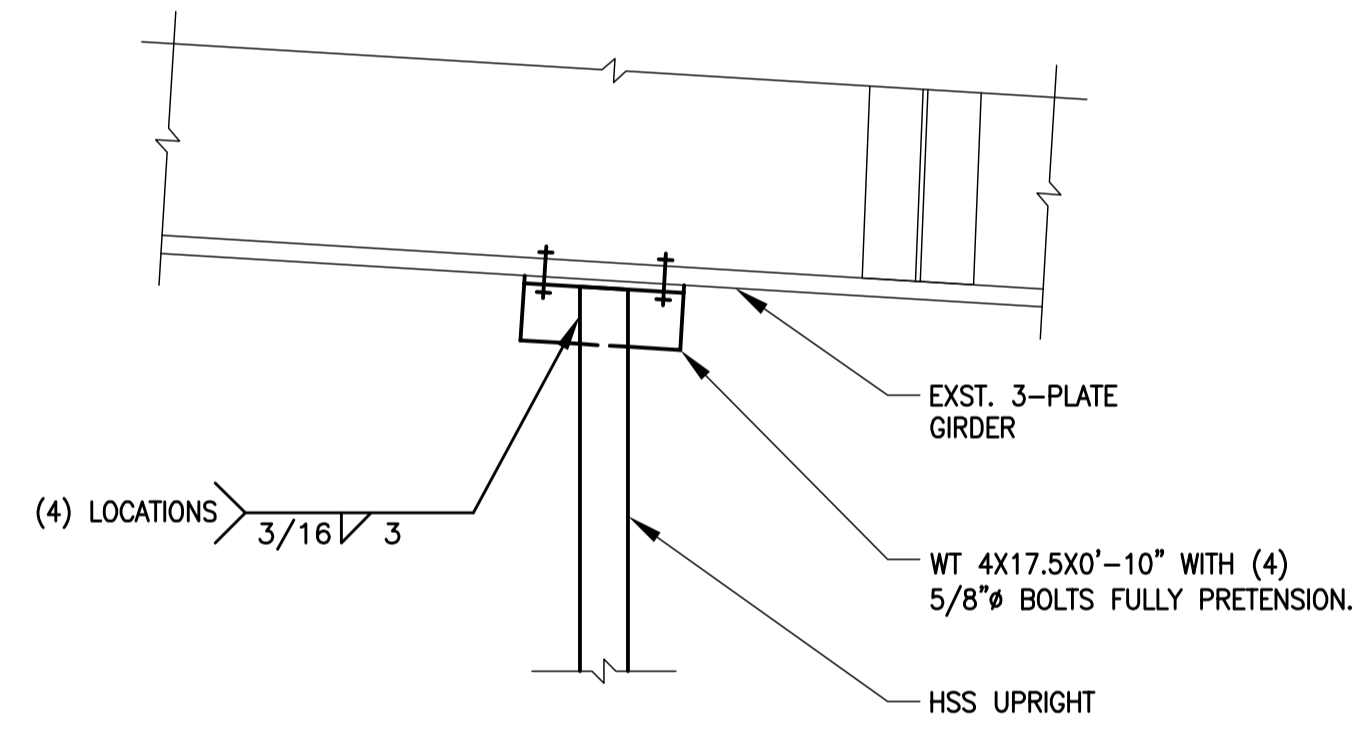




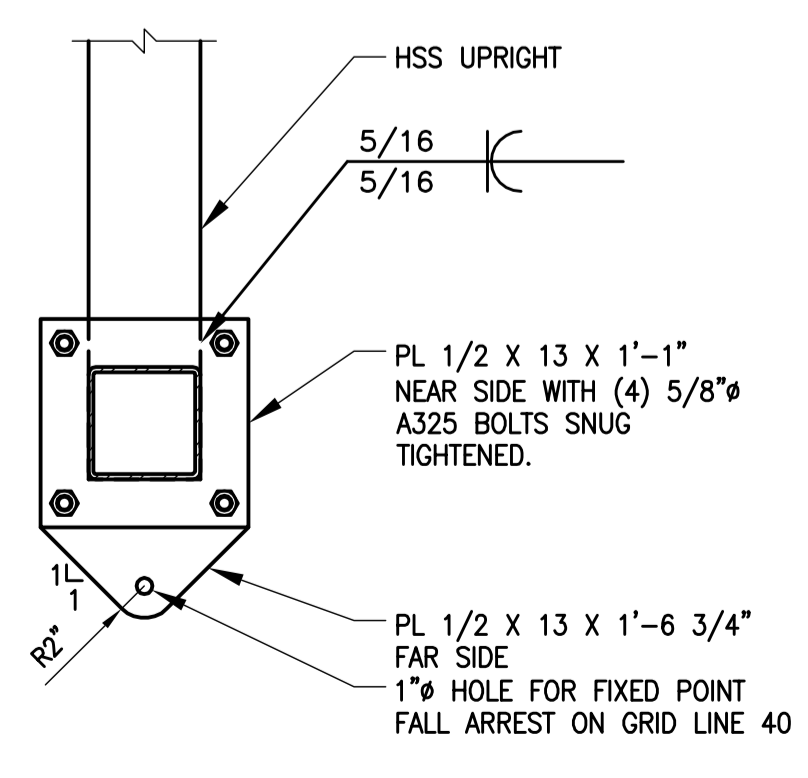
10 HSS WITH BRACE AT EXISTING BEAM
S4 SCALE: 1" = 1'-0"



7 NEW BEAM AT EXISTING TRUSS
S4 SCALE: 1" = 1'-0"

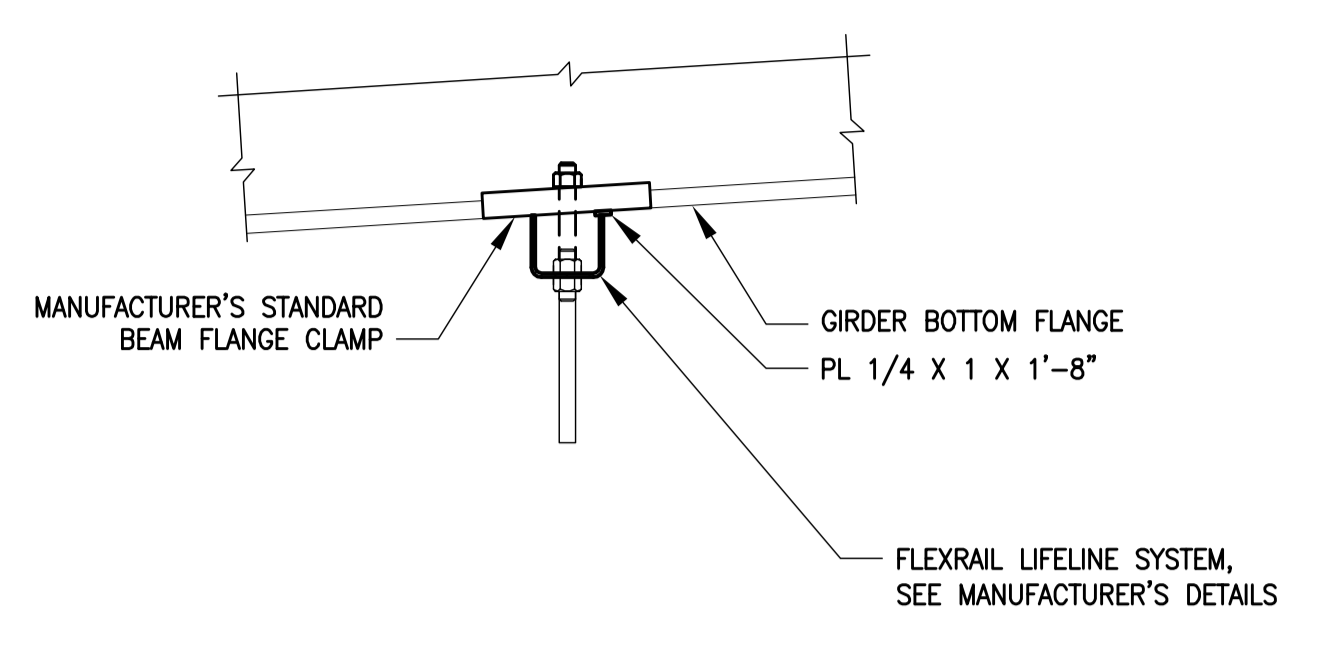


8 HSS AT EXISTING BEAM
S4 SCALE: 1" = 1'-0"

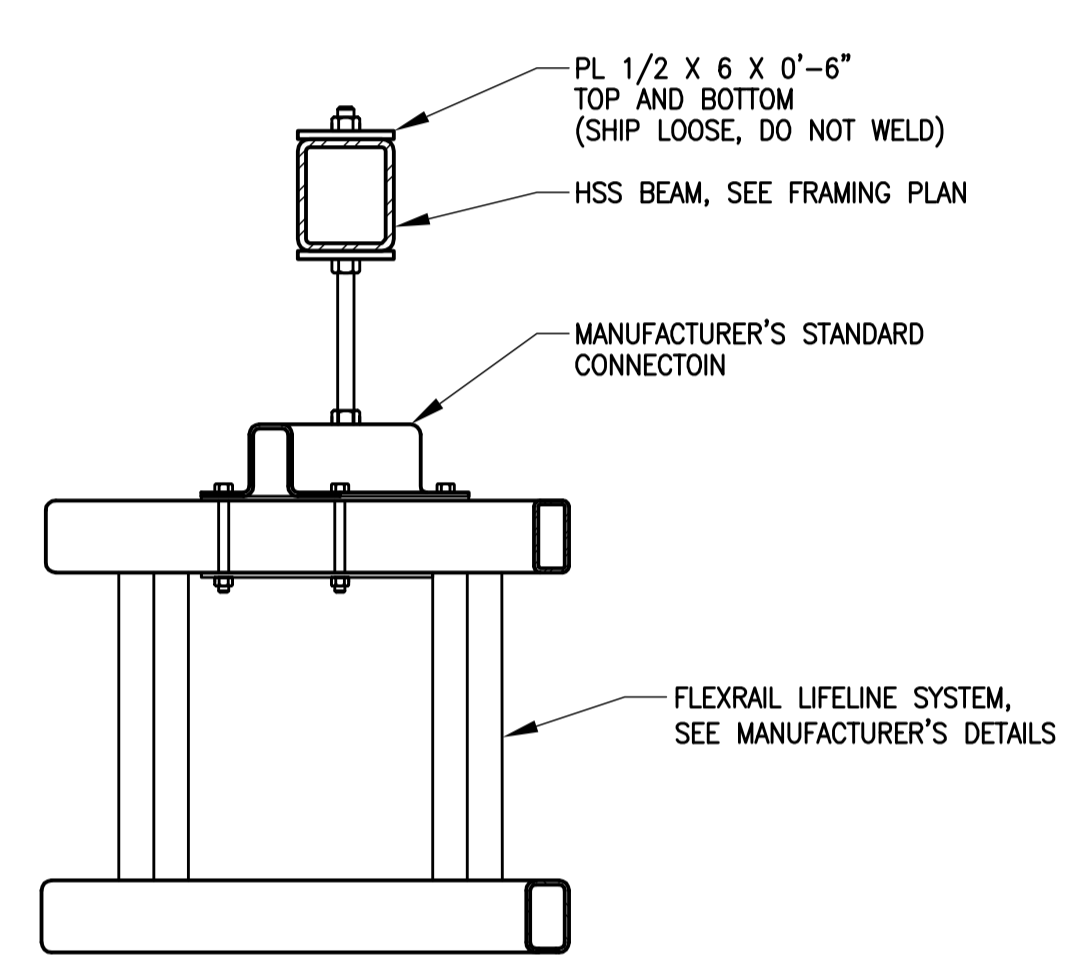


9 END PLATE CONNECTION
S4 SCALE: 1" = 1'-0"

4 FIXED POINT CONNECTION AT TYPE 1B GIRDER
S4 SCALE: 1" = 1'-0"



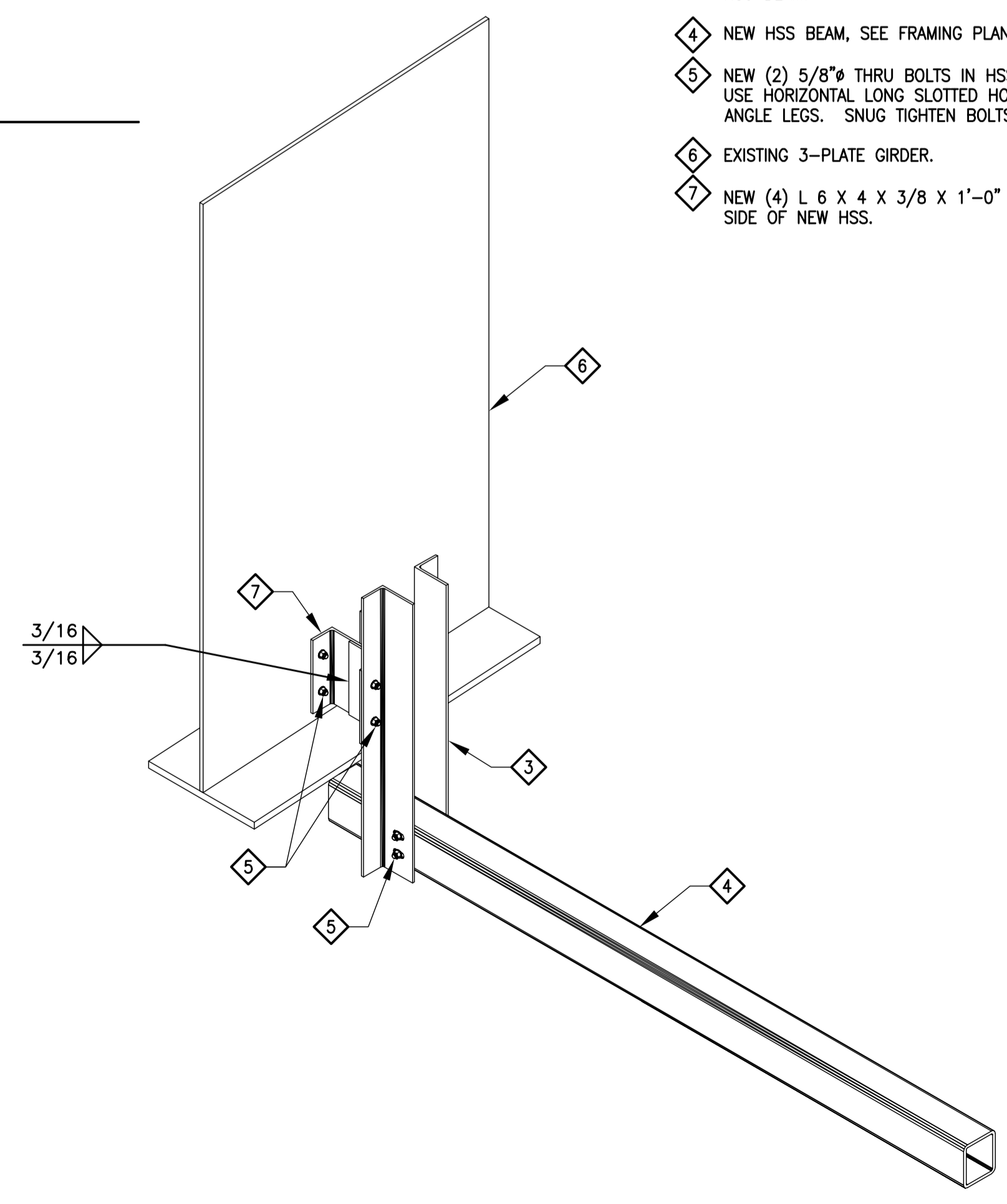
5 FLEXRAIL CONNECTION AT NEW BEAM
S4 SCALE: 1" = 1'-0"



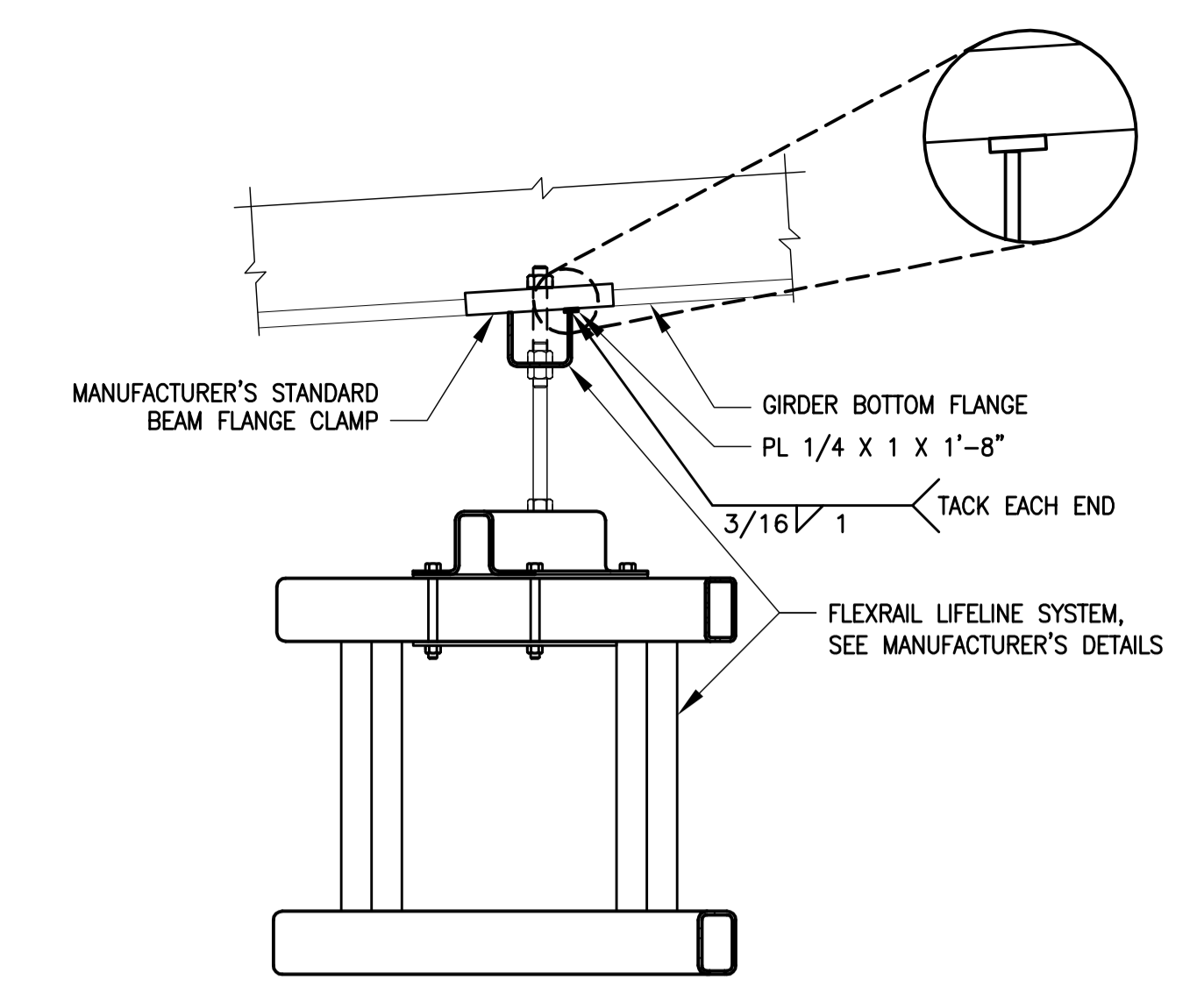
NOTES FOR DETAILS 6 & 7 THIS SHEET:

- 1 EXISTING TRUSS BOTTOM CHORD.
- 2 NEW (4) 5/8" A325 BOLTS - FULLY PRETENSION. USE HORIZONTAL LONG SLOTTED HOLES IN ANGLE LEGS.
- 3 NEW L 6 X 4 X 3/8 EACH SIDE OF NEW HSS BEAM.
- 4 NEW HSS BEAM, SEE FRAMING PLAN.
- 5 NEW (2) 5/8" THRU BOLTS IN HSS BEAM. USE HORIZONTAL LONG SLOTTED HOLES IN ANGLE LEGS. SNUG TIGHTEN BOLTS.
- 6 EXISTING 3-PLATE GIRDER.
- 7 NEW (4) L 6 X 4 X 3/8 X 1'-0" (2) EACH SIDE OF NEW HSS.

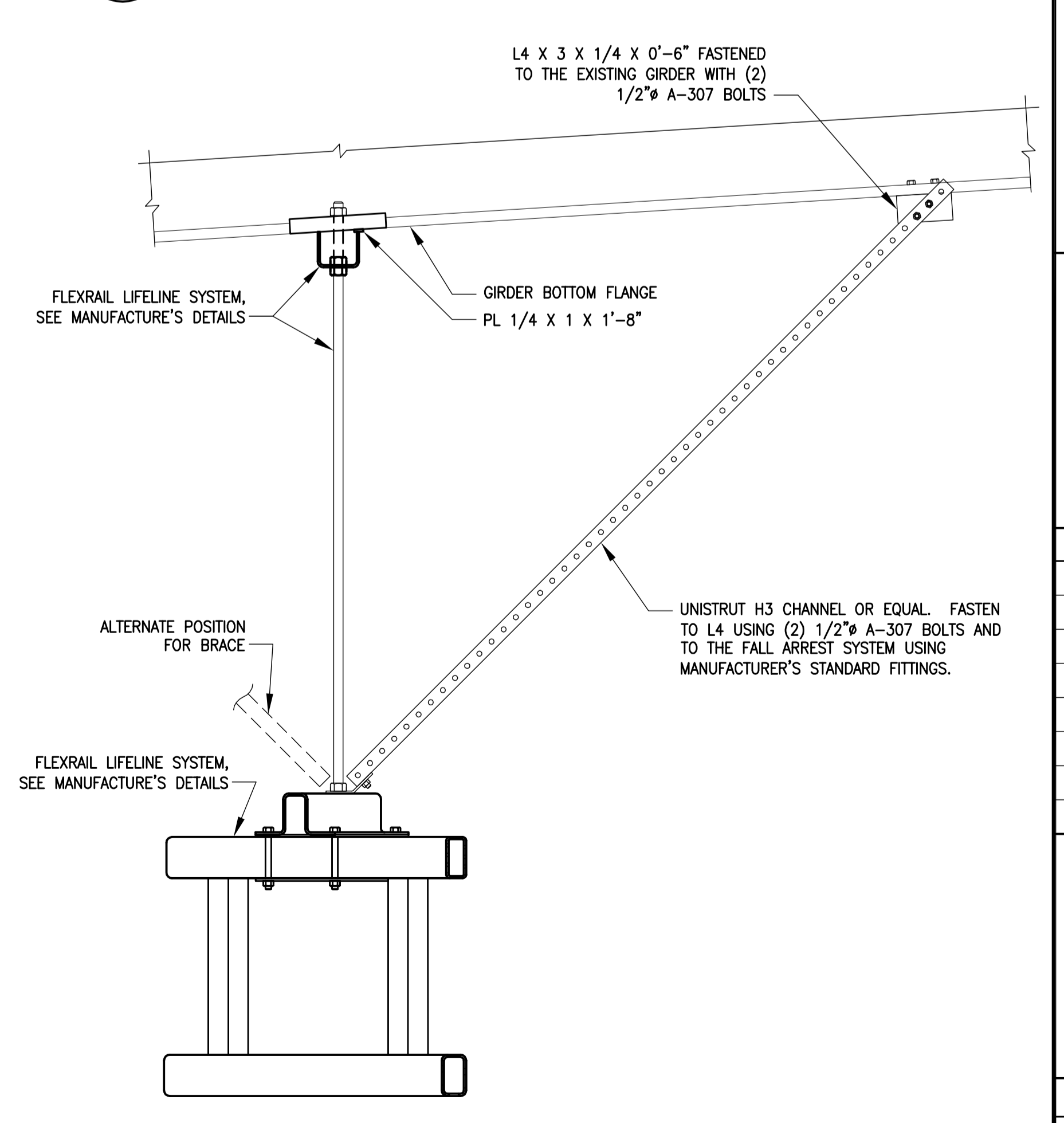
6 NEW BEAM AT EXISTING GIRDER
S4 SCALE: 1" = 1'-0"



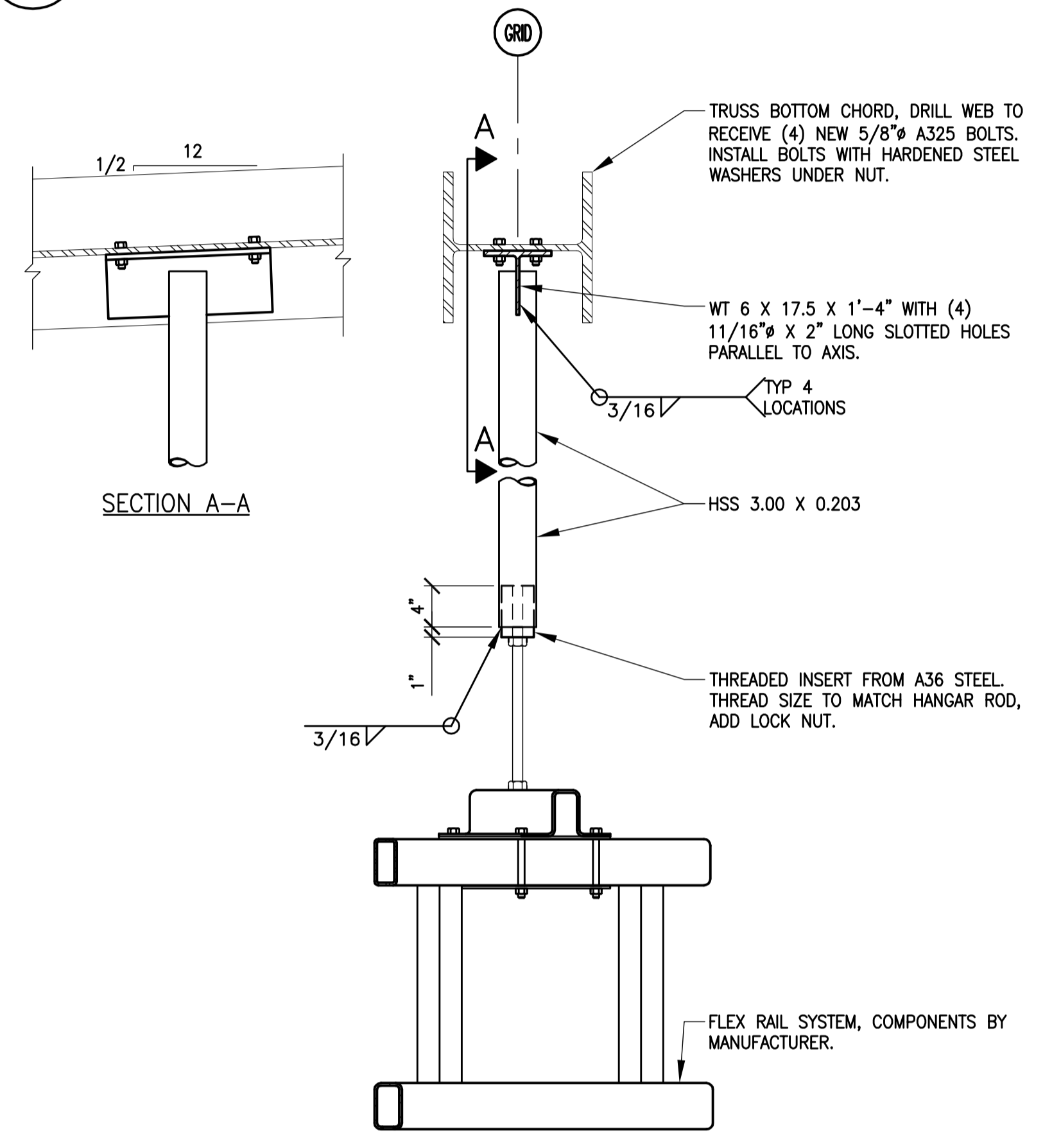
1 FLEXRAIL CONNECTION AT TYPE 3 GIRDER
S4 SCALE: 1" = 1'-0"



2 FLEX RAIL CONNECTION AT TYPE 2 GIRDER
S4 SCALE: 1" = 1'-0"



3 FLEXRAIL CONNECTION AT TYPE 3 GIRDER-RIDGE
S4 SCALE: 1" = 1'-0"



FOR 11x17 USE GRAPHIC SCALE
0 6 12 18

Notes:



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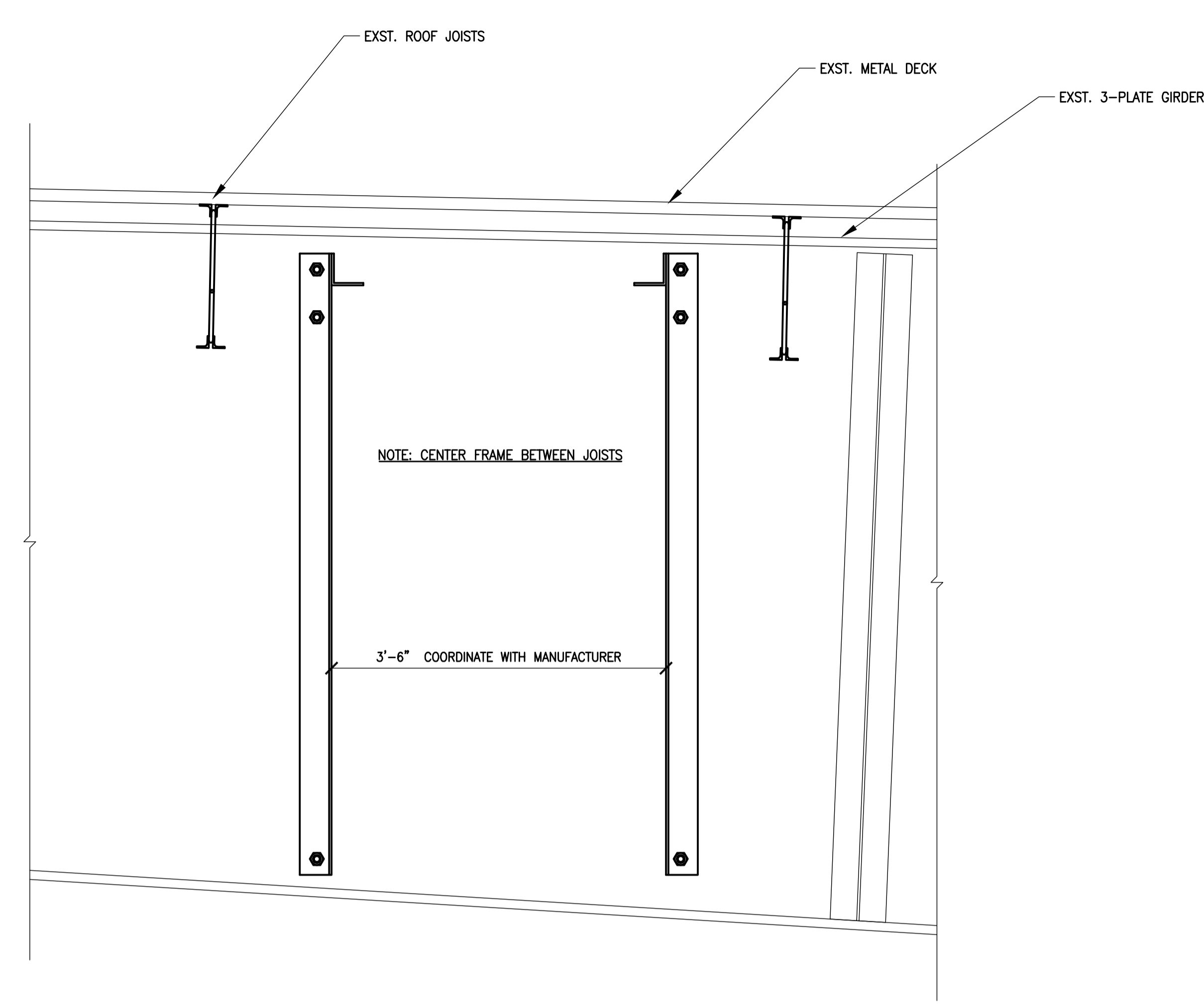
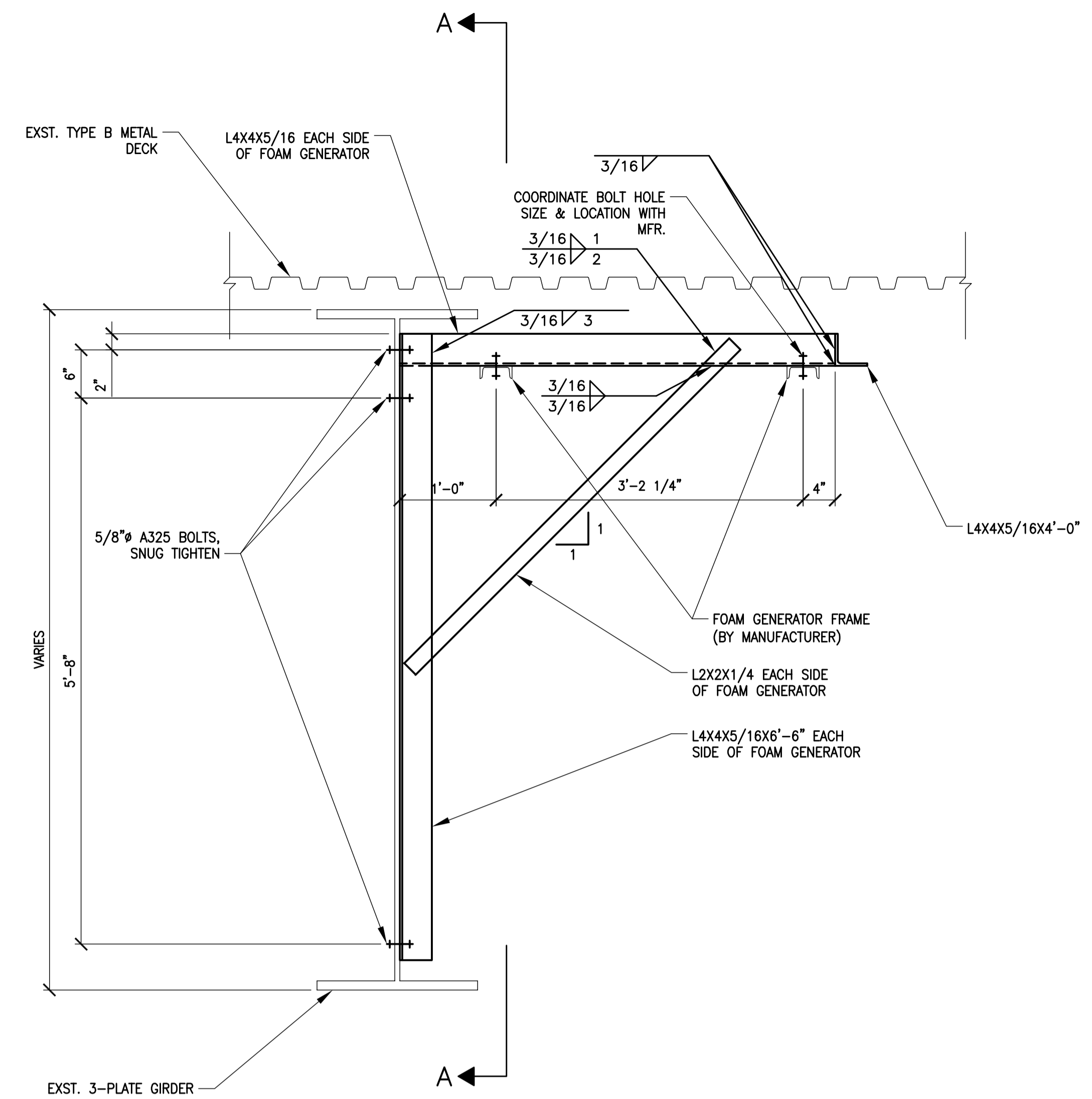
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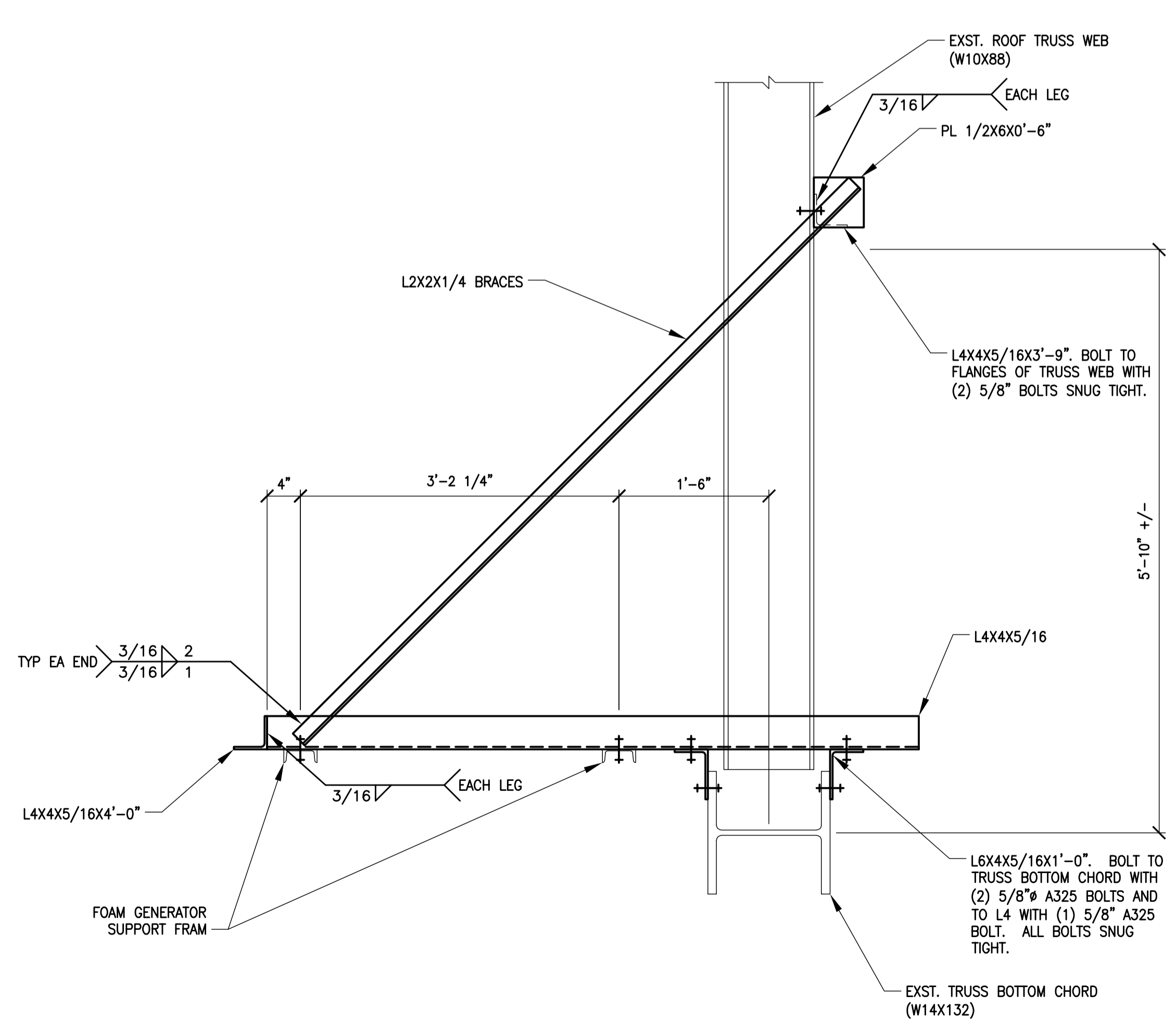
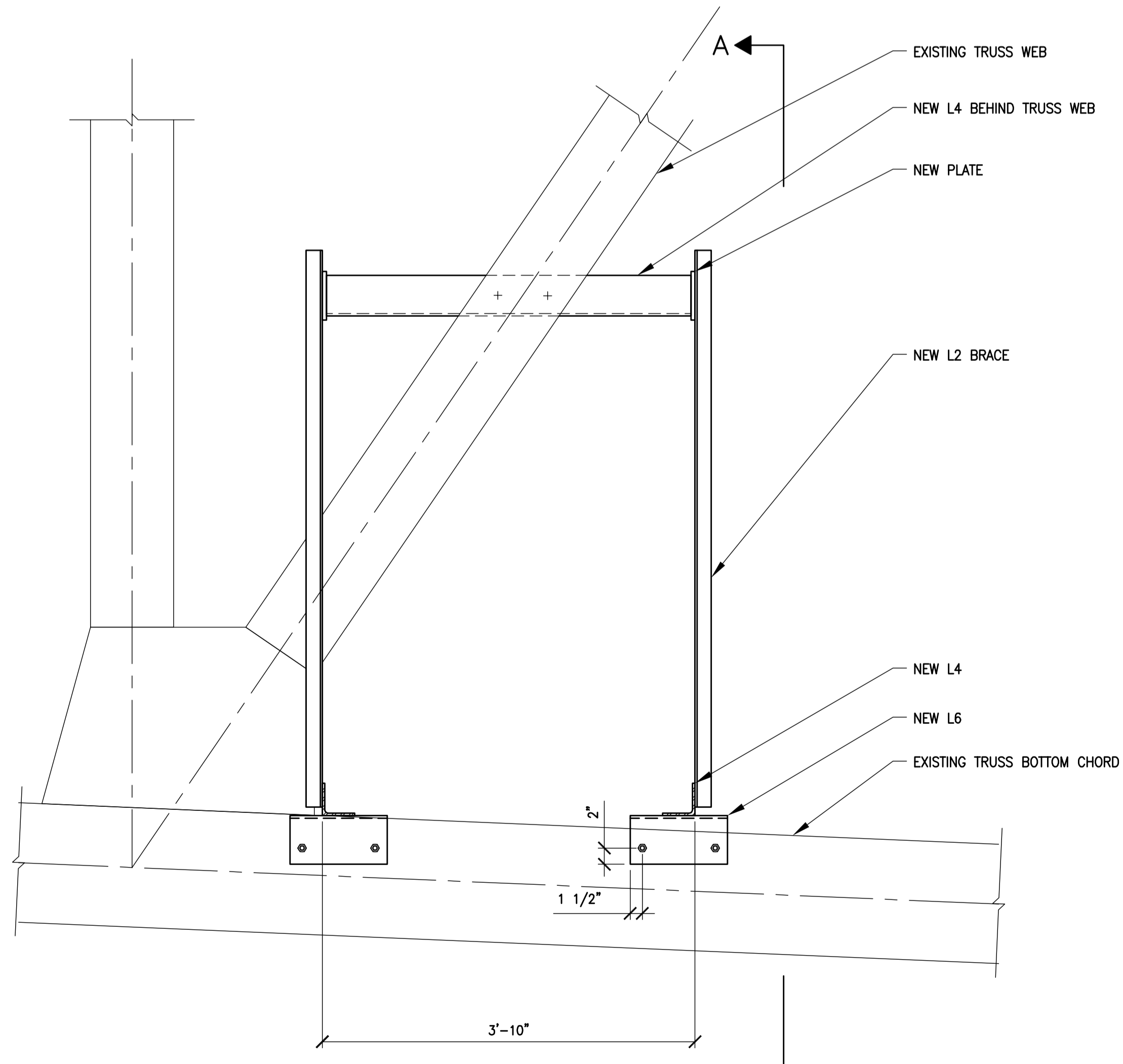
Date	Revision	By

Sheet Contents
DETAILS

Project Mgr.	GVN	Sheet No.
Drawn	GIS	S4
Drawn	DJR	
Checked	BEH	
Date	10/14/05	USKH W.O. 693316



1 FOAM GENERATOR MOUNTING FRAME ON GIRDER
SCALE: 1"=1'-0"

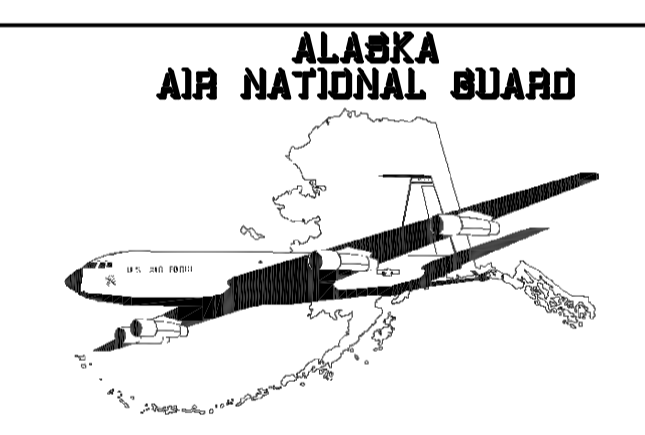


2 FOAM GENERATOR MOUNTING FRAME ON TRUSS
SCALE: 1"=1'-0"

SECTION A - A

FOR 11x17 USE GRAPHIC SCALE
0 6 12 18

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Sheet Contents
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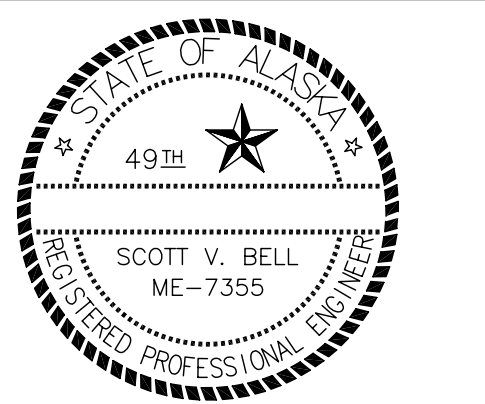
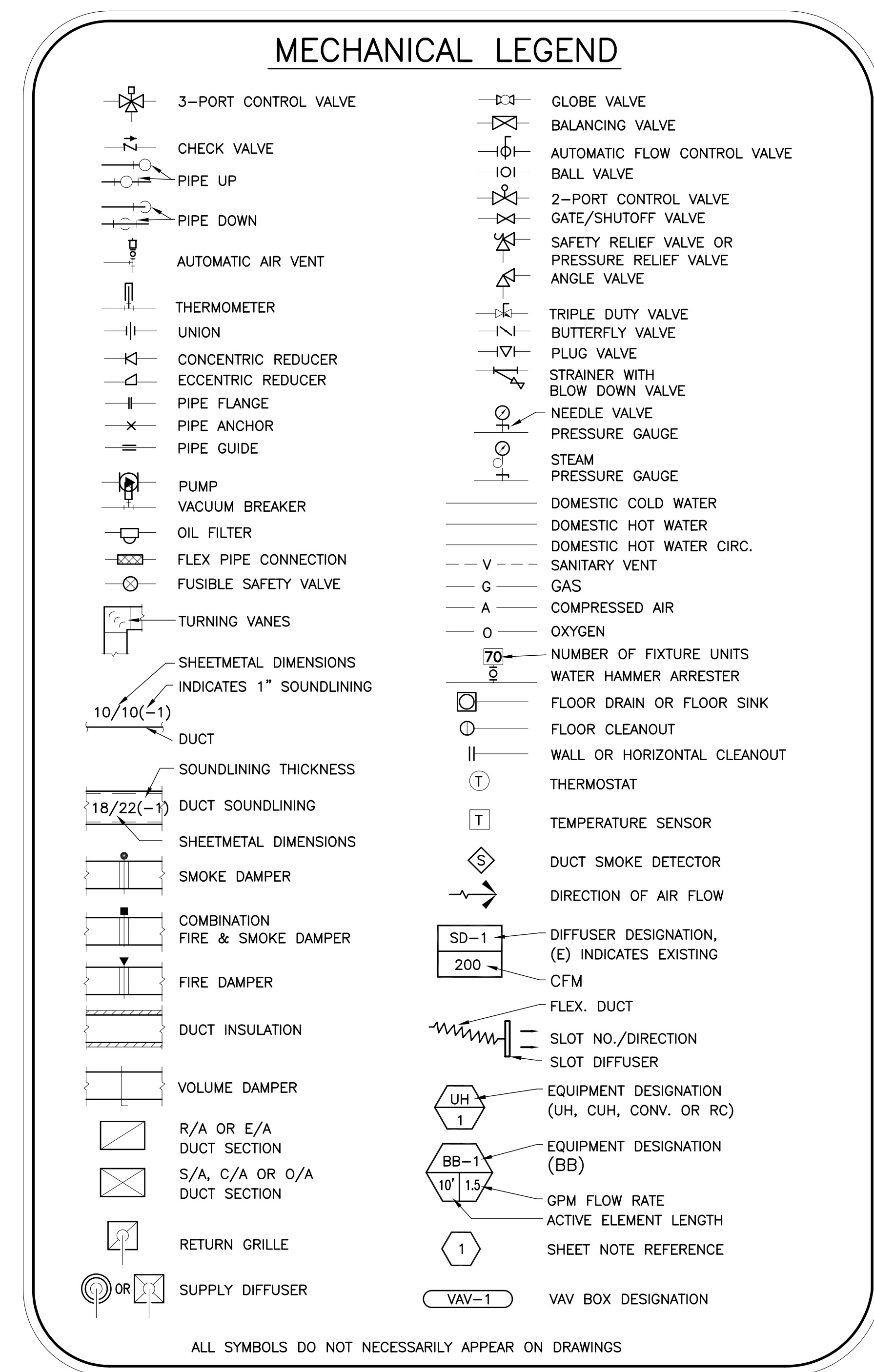
MISCELLANEOUS EQUIPMENT SCHEDULE										
DESIGNATION	EQUIPMENT	LOCATION	CAPACITY	ELECTRICAL			BASIS OF DESIGN			NOTES
				HP	VOLTS	PHASE	MFR.	MODEL		
FWP-1	FIRE WATER PUMP	MECH 123	2500 GPM @ 140 PSI	-	-	-	ITT-AC	8100 SERIES	13	
FWP-2	FIRE WATER PUMP	MECH 123	2500 GPM @ 140 PSI	-	-	-	ITT-AC	8100 SERIES	13	
JP-1	JOCKEY PUMP	MECH 123	10 GPM @ 140 PSI	3	208	3	GRUNDFOS	CR2-100U		
CST-1	CONCENTRATE STORAGE TANK	MECH 123	400 GAL	-	-	-	CHEMGUARD	VERTICAL, 36" x 190" TALL		
ST-1	SURGE TANK	MECH 123	SEE NOTES	-	-	-	SEE NOTES	SEE NOTES	1,5	
ST-2	SURGE TANK	MECH 123	SEE NOTES	-	-	-	SEE NOTES	SEE NOTES	2,5	
ST-3	SURGE TANK	MECH 123	SEE NOTES	-	-	-	SEE NOTES	SEE NOTES	3,5	
ST-4	SURGE TANK	MECH 123	SEE NOTES	-	-	-	SEE NOTES	SEE NOTES	4,5	
FG-1	FOAM GENERATOR	HANGAR 100	23,250 CFM @ 250 GPM/70 PSI	-	-	-	CHEMGUARD	25000WP		
FG-2	FOAM GENERATOR	HANGAR 100	23,250 CFM @ 250 GPM/70 PSI	-	-	-	CHEMGUARD	25000WP		
FG-3	FOAM GENERATOR	HANGAR 100	23,250 CFM @ 250 GPM/70 PSI	-	-	-	CHEMGUARD	25000WP		
FG-4	FOAM GENERATOR	HANGAR 100	23,250 CFM @ 250 GPM/70 PSI	-	-	-	CHEMGUARD	25000WP		
FG-5	FOAM GENERATOR	HANGAR 100	23,250 CFM @ 250 GPM/70 PSI	-	-	-	CHEMGUARD	25000WP		
HR-1	HOSE REEL	HANGAR 100	3/4" NPT IN & OUT	-	-	-	COXREELS	1125-5-200	6	
HR-2	HOSE REEL	HANGAR 100	3/4" NPT IN & OUT	-	-	-	COXREELS	1125-5-200	6	
HR-3	HOSE REEL	HANGAR 100	3/4" NPT IN & OUT	-	-	-	COXREELS	1125-5-200	6	
HR-4	HOSE REEL	HANGAR 100	3/4" NPT IN & OUT	-	-	-	COXREELS	1125-5-200	6	
HR-5	HOSE REEL	HANGAR 100	3/4" NPT IN & OUT	-	-	-	COXREELS	1125-5-200	6	
FP-1	FOAM PROPORTIONING VALVE	MECH 123	1250 GPM	-	-	-	CHEMGUARD	CPSV6		
FC	FOAM CONCENTRATE	MECH 123	400 GAL	-	-	-	CHEMGUARD	C2/VEE	7	
BB-1	BASEBOARD	MKS & MXM	920 BTU/LF	-	-	-	VULCAN	LINOVECTOR MODEL 312	8	
AC-1	AIR CONDITIONING UNIT	101T HALL & MECH 120	1.5 TON, 525 CFM	1/8	120	1	TRANE	TWE 018	10	
SD-1	SUPPLY DIFFUSER	VARIOUS	VARIES, 4" LONG, 1" X 4 SLOTS	-	-	-	TITUS	MP-39	11	
SD-2	SUPPLY DIFFUSER	MOC	24/24 LAY-IN PANEL, 14" NECK	-	-	-	TITUS	TMS	11	
RG-1	RETURN GRILLE	VARIOUS	24/24 LAY-IN PANEL, OPENING VARIES	-	-	-	TITUS	50F - NT	11	
VFD-1	VARIABLE FREQUENCY DRIVE	ANCILLARY SPACE 200	-	7.5	480	3	ALLEN BRADLEY	-	12	
T-1	FUEL TANK (DOUBLE-WALL)	MECH 123	300 GAL	-	-	-	-	-	14	

- NOTES:
- FOR FWP-1.
 - FOR FWP-2.
 - FOR ZONE 5 RISER.
 - FOR ZONE 6 RISER.
 - CONTRACTOR SHALL PROVIDE SURGE ANALYSIS AND APPROPRIATELY SIZED SURGE ARRESTORS IN ACCORDANCE WITH UFC 3-600-1, AIR FORCE ETL 02-15, AND NFPA REQUIREMENTS.
 - PROVIDE HOSE REELS WITH AIR-DRIVEN REWIND.
 - FOAM CONCENTRATE SHALL MATCH FOAM GENERATOR MANUFACTURER.
 - 3/4" - 3-1/4" - 48, SINGLE TEIR. UNIT SHALL MATCH EXISTING BASEBOARD UNITS IN ROOM 101C7 MKS/CC.
 - (NOT USED) -
 - TWE FAN/COIL UNIT SHALL BE COUPLED WITH TRANE MCW WALL-MOUNTED CONDENSER UNIT LOCATED IN MECHANICAL ROOM 120. COMPRESSOR IS 8.8 AMPS, 208 VOLTS, 1 PHASE. THERMOSTAT LOCATED ON WALL IN ROOM 101C2.
 - SEE AIR OUTLET AND DISTRIBUTION SCHEDULE FOR DETAILS ON DIFFUSERS AND RETURN GRILLES.
 - NEW VFD SHALL REPLACE EXISTING VFD ON EXISTING SUPPLY FAN #9 (SF-9).
 - PACKAGED 8X10X20FRB UL/FM APPROVED DIESEL FIRE PUMPS, SEE TECHNICAL SPECIFICATIONS FOR DETAILS.
 - DOUBLE WALL FUEL OIL TANK SHALL INCLUDE SPILL OVERFILL PROTECTION AND MEET 40 CFR PART 112 REGULATIONS FOR SECONDARY CONTAINMENT OF OIL CONTAINERS.

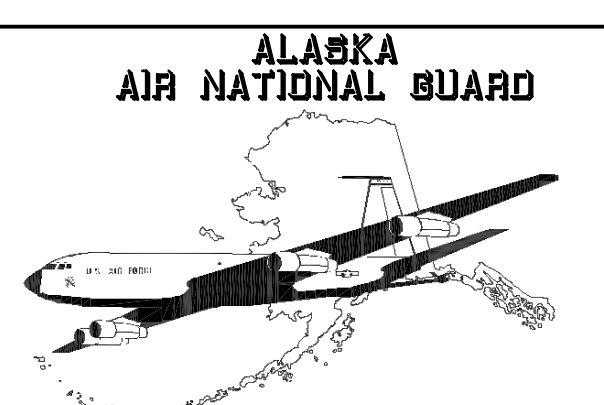
VARIABLE AIR VOLUME TERMINAL SCHEDULE															
DESIGNATION	SIZE	COOLING		INLET		HEATING						BASIS OF DESIGN		NOTES	
		CFM	SP	SIZE	VOLTS	TYPE	CFM	MBH	APD	GPM	WPD	ROWS	MFR.		MODEL
VAV-1	12	600	0.25	12	24	HYDRONIC	235	4.5	0.1	0.5	0.2	1	TRANE	VCWF12	1,2
VAV-2	24/16	1,690	0.25	24/16	24	-	-	-	-	-	-	-	TRANE	VCCF24	1,2
VAV-3	12	580	0.25	12	24	HYDRONIC	235	4.5	0.1	0.5	0.2	1	TRANE	VCWF12	1,2
VAV-4	12	830	0.25	14	24	HYDRONIC	235	4.5	0.1	0.5	0.2	1	TRANE	VCWF12	1,2
VAV-5	12	530	0.25	12	24	HYDRONIC	235	4.5	0.1	0.5	0.2	1	TRANE	VCWF12	1,2
VAV-6	24/16	1,570	0.25	24/16	24	-	-	-	-	-	-	-	TRANE	VCCF24	1,2
VAV-7	10	330	0.25	10	24	-	-	-	-	-	-	-	TRANE	VCCF10	1,2

NOTES:

- SHUT OFF STYLE.
- CONTROLS SHALL BE COMPATIBLE WITH EXISTING INVENSYSS DDC SYSTEM.



Notes:



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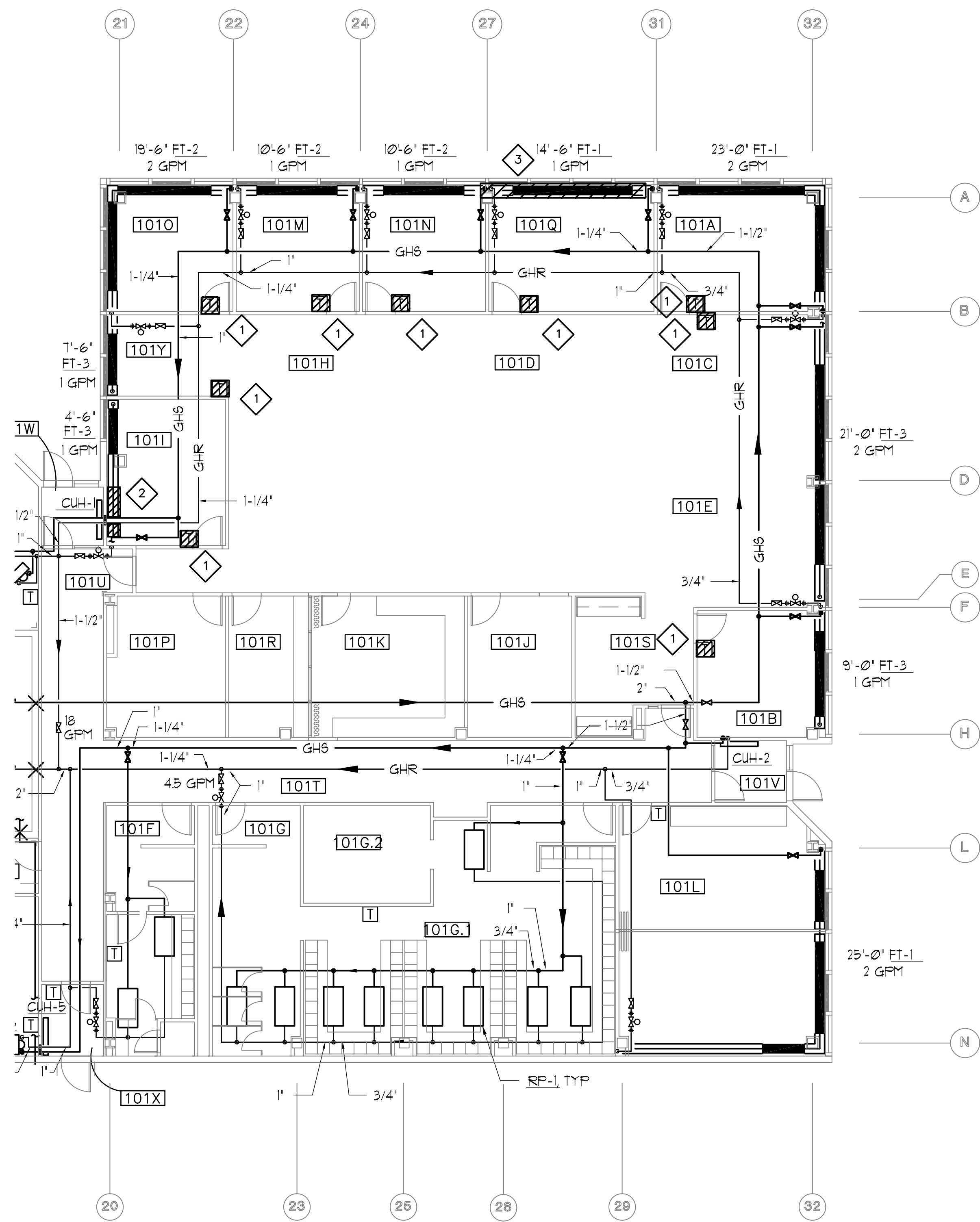
Project:
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Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

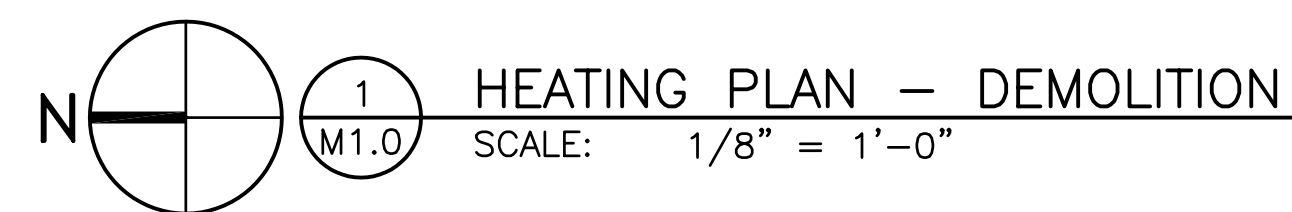
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 MECHANICAL LEGEND & SCHEDULES

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Checked	GVN	
Date	10/14/05	

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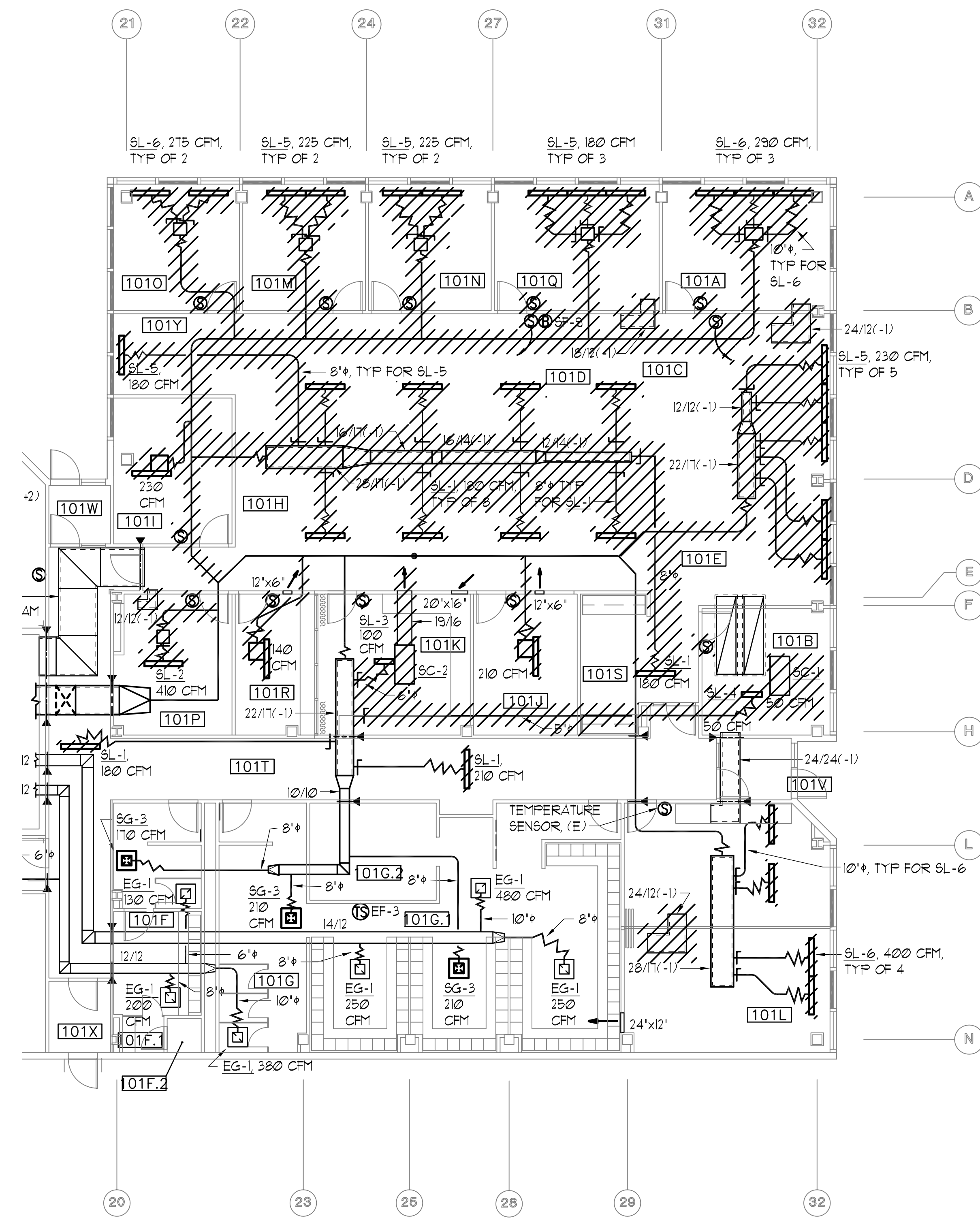


NOTE: EXISTING PIPE SIZES AND EQUIPMENT CALL-OUTS ARE FOR INFORMATION PURPOSES ONLY.

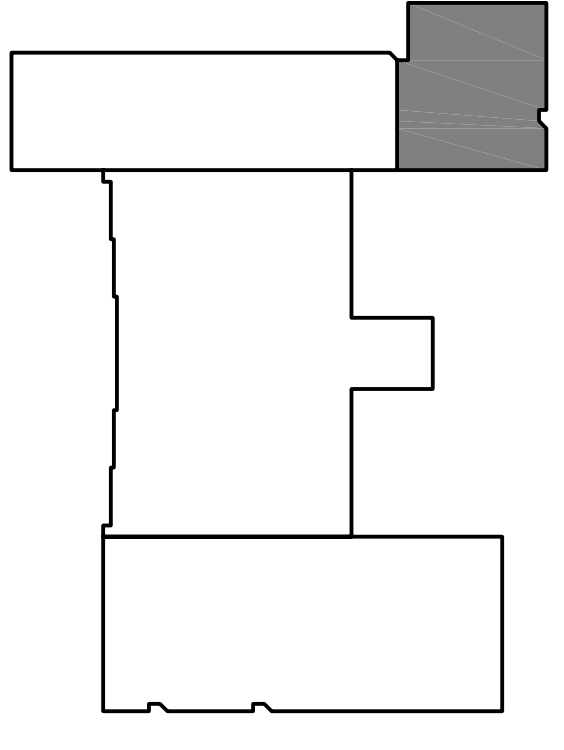
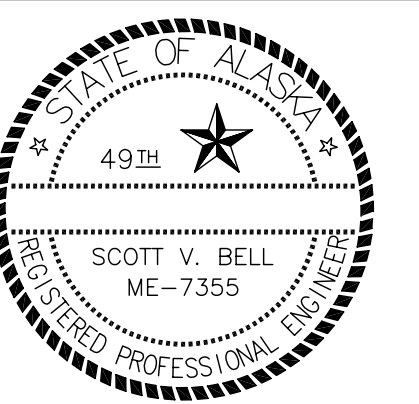
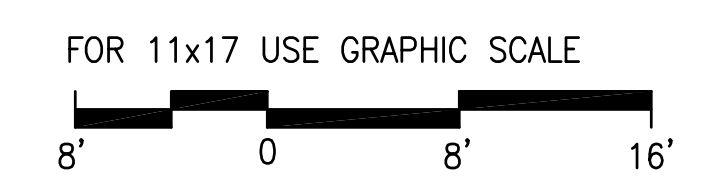
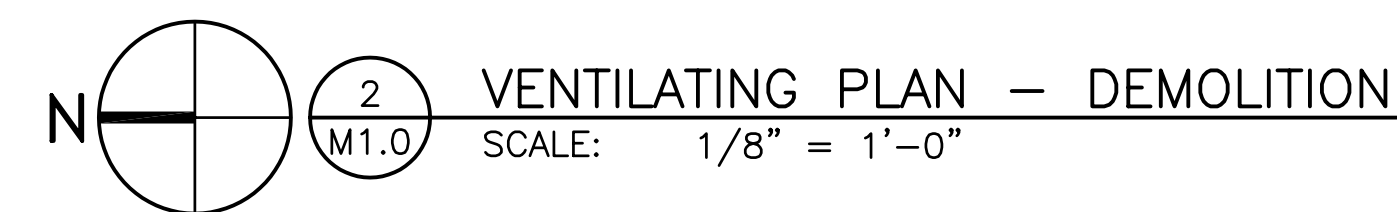


DEMOLITION NOTES

1. REMOVE EXISTING SENSORS AND ALL ASSOCIATED CONDUIT AND CONDUCTORS.
2. CUT EXISTING BASEBOARD ENCLOSURE AND GHS/R TO BASEBOARD TO ACCOMMODATE NEW WALL LOCATION.
3. REMOVE EXISTING BASEBOARD AND GHS/R PIPING SERVING BASEBOARD TO ABOVE CEILING.
4. EQUIPMENT TO BE REMOVED SHOWN HATCHED.

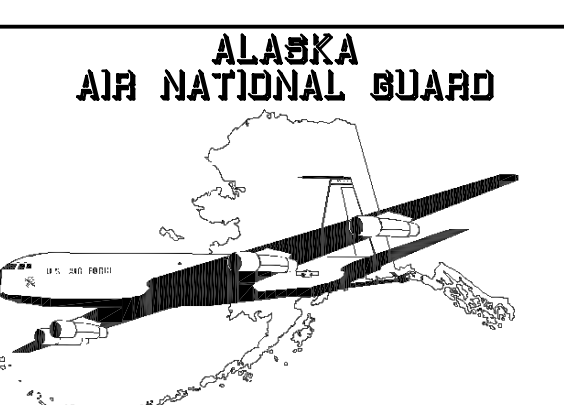


NOTE: EXISTING DUCT SIZES AND EQUIPMENT CALL-OUTS ARE FOR INFORMATION PURPOSES ONLY.



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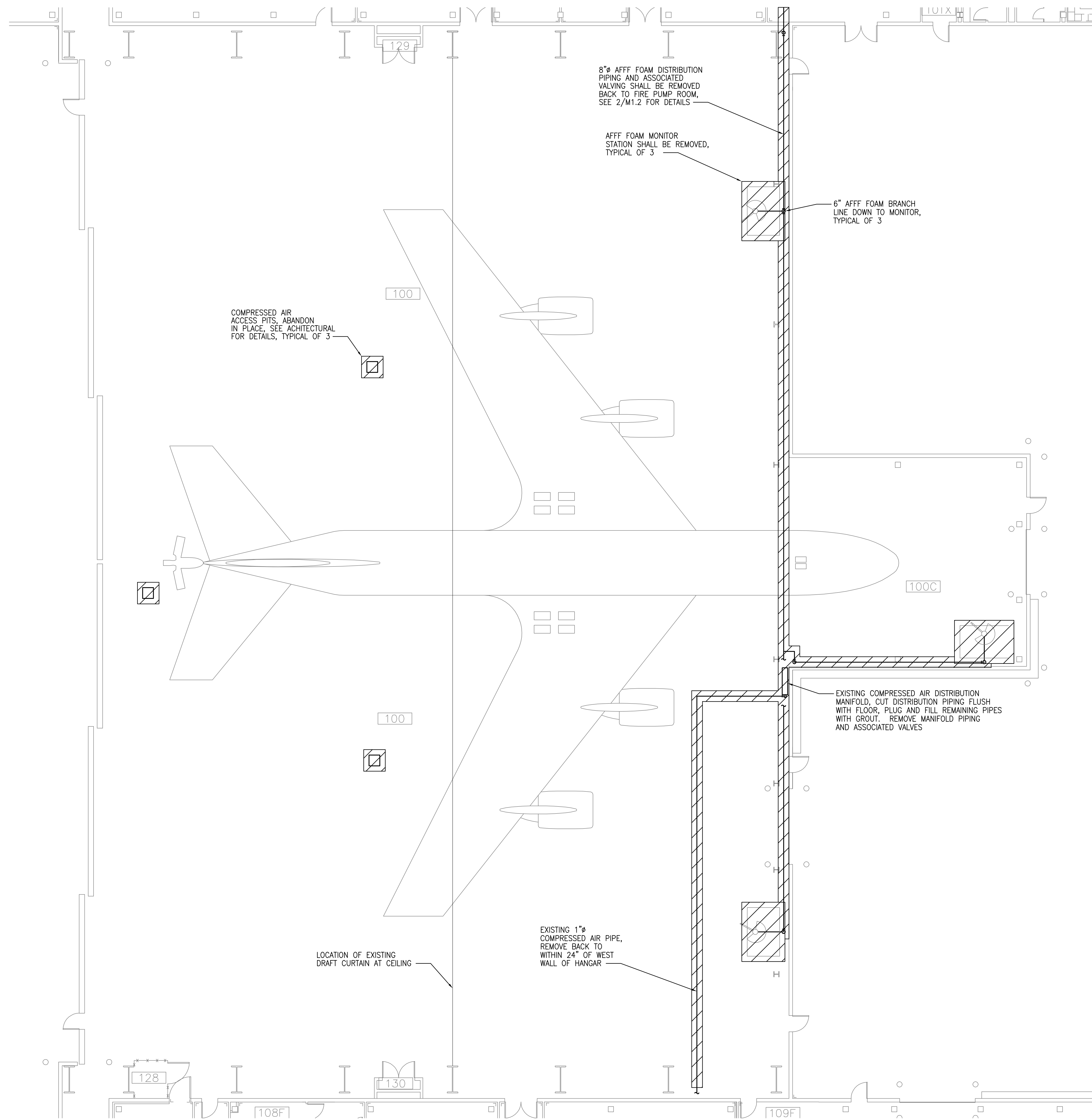
Project:
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Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Sheet Contents
DEMO - SOUTHEAST FLOOR PLANS

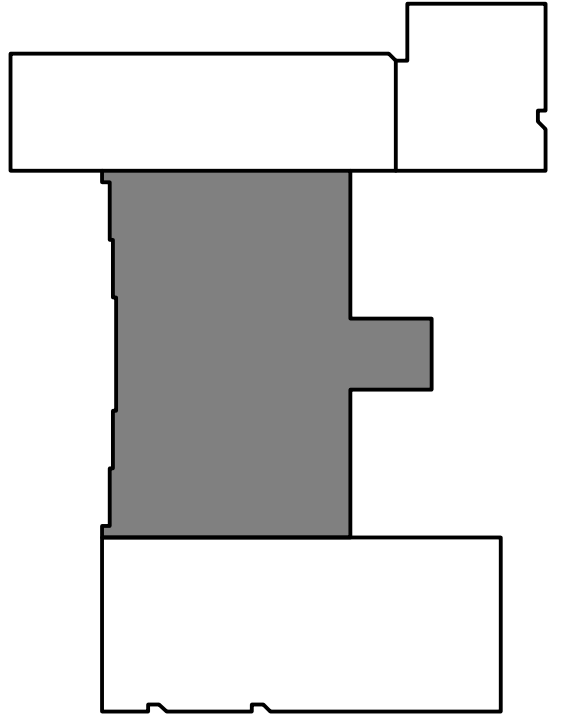
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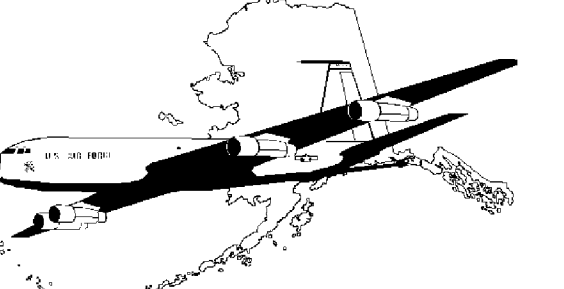
- 1. EQUIPMENT TO BE REMOVED SHOWN HATCHED.



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Project:

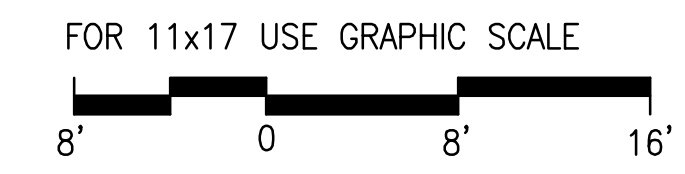
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Date	Revision	By

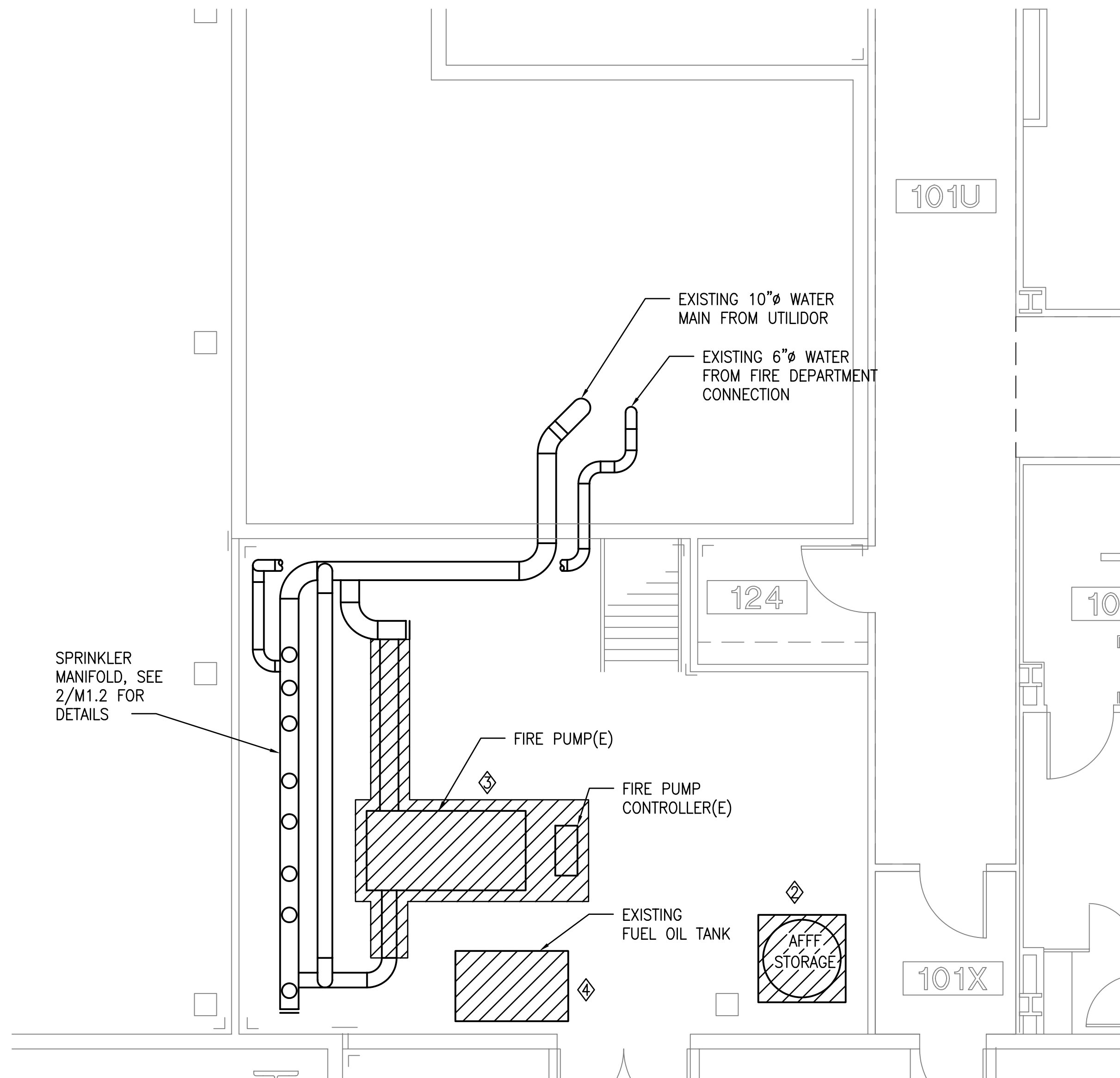
Sheet Contents
DEMO - HANGAR BAY FLOOR PLAN

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Checked	GVN	
Date	10/14/05	USKH w.o. 693316

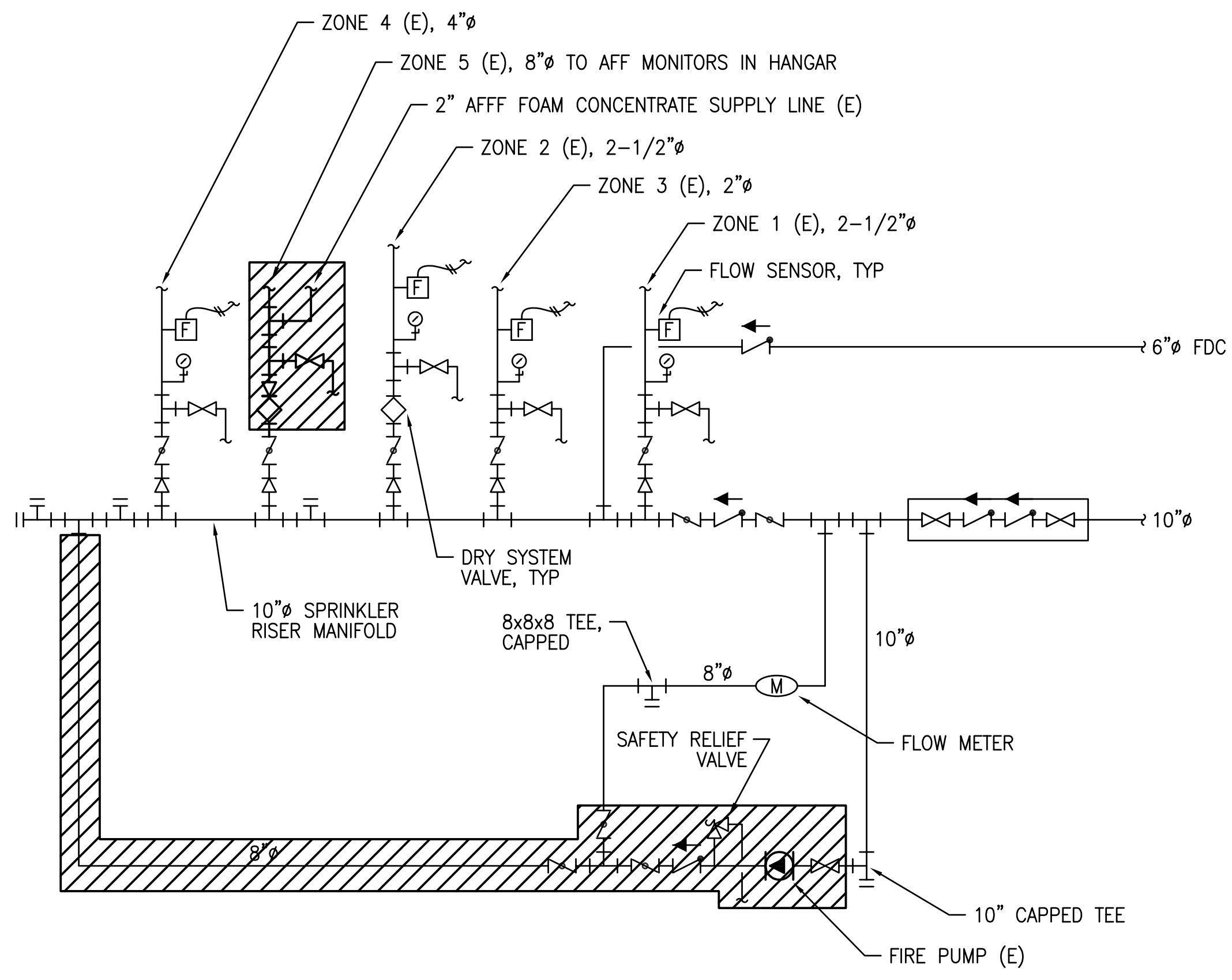
HANGAR BAY - DEMOLITION
SCALE: 1/8" = 1'-0"



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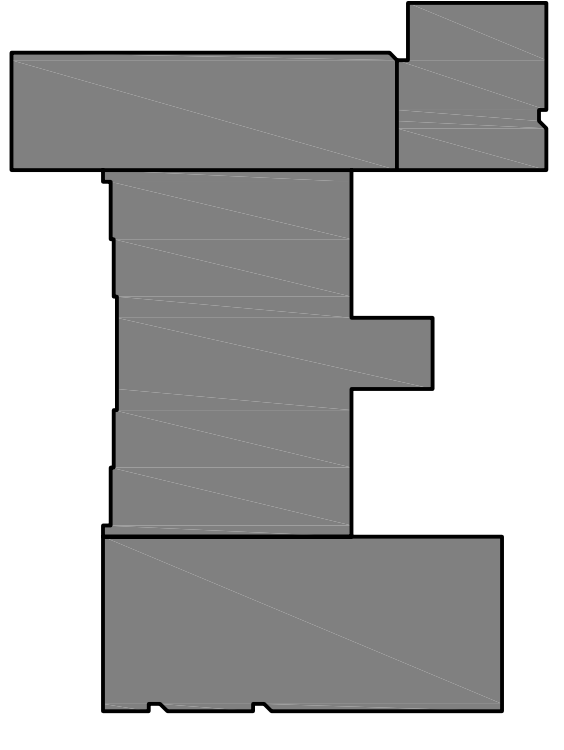
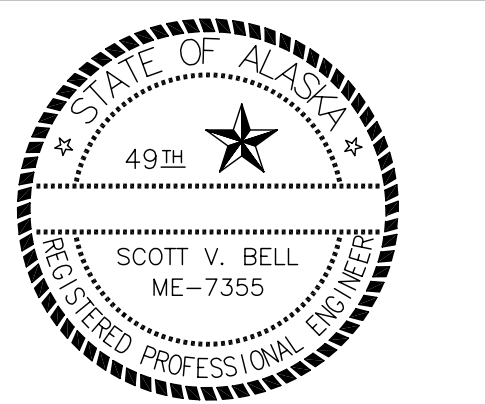


1 MECH ROOM 123 FLOOR PLAN - DEMOLITION
 SCALE: 1/4" = 1'-0"



2 FIRE SPRINKLER RISER SCHEMATIC - DEMOLITION
 SCALE: NTS

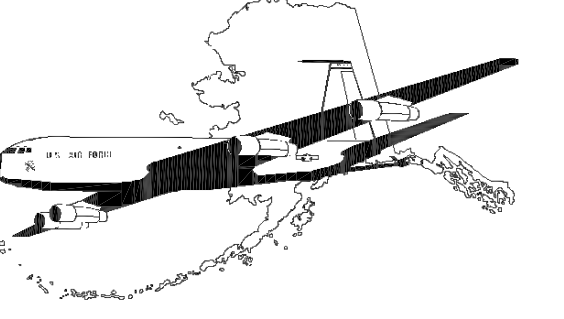
- NOTE:**
- 1. EQUIPMENT TO BE REMOVED SHOWN HATCHED.
 - ◇ REMOVE EXISTING AFF STORAGE TANK, CONTROLS, AND ASSOCIATED PIPING AND VALVING. NOMINAL 75 LINEAR FEET OF 2" PIPE. CONTRACTOR SHALL FIELD VERIFY BEFORE WORK BEGINS.
 - ◇ REMOVE EXISTING FIRE PUMP AND ASSOCIATED CONTROLS.
 - ◇ REMOVE EXISTING FUEL OIL TANK AND ANY UNUSED CONTROLS.



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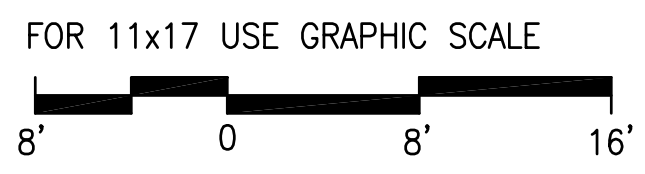
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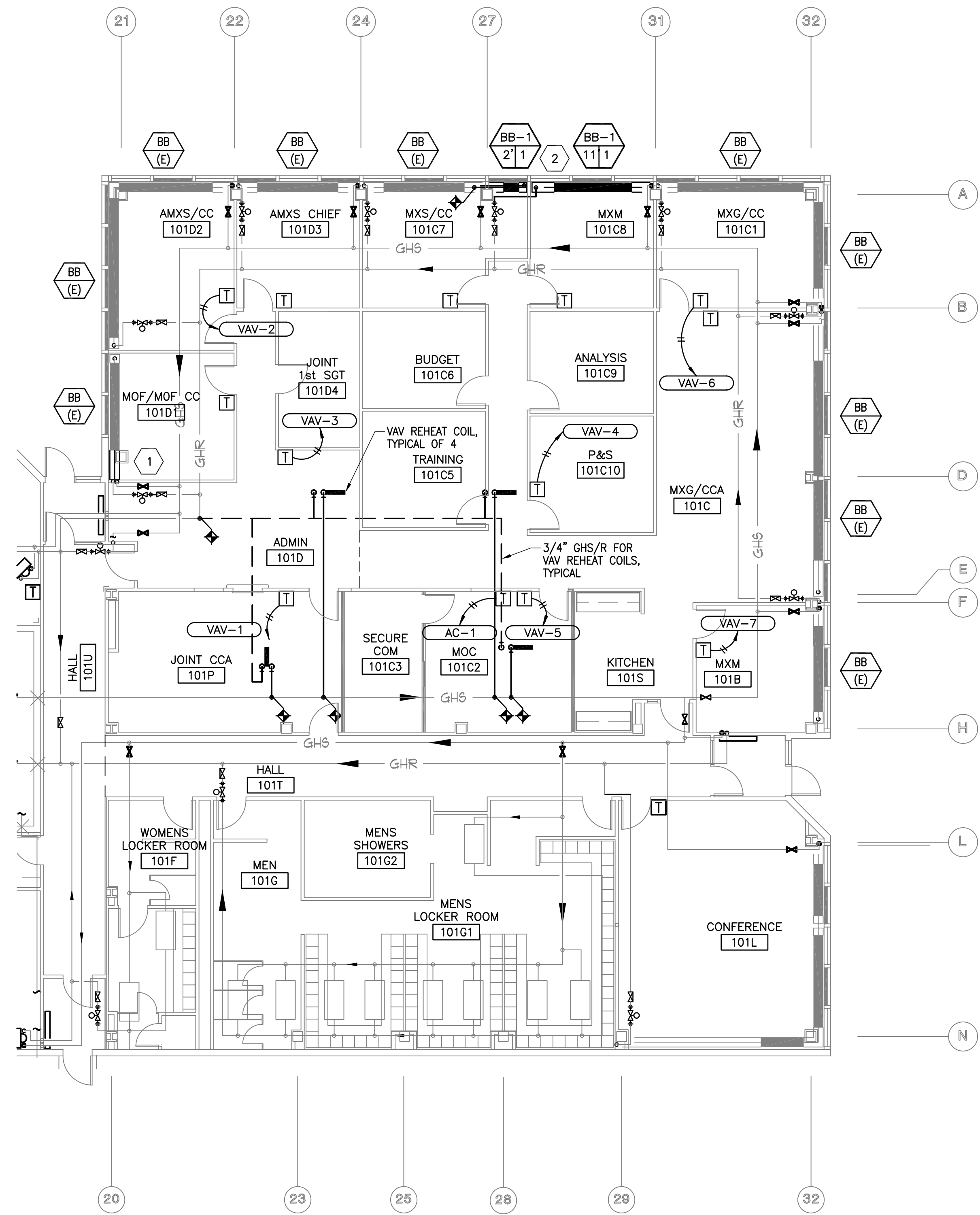
Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Sheet Contents
 DEMO - MECH ROOM FLOOR PLAN AND SPRINKLER SCHEMATIC

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Checked	GVN	
Date	10/14/05	



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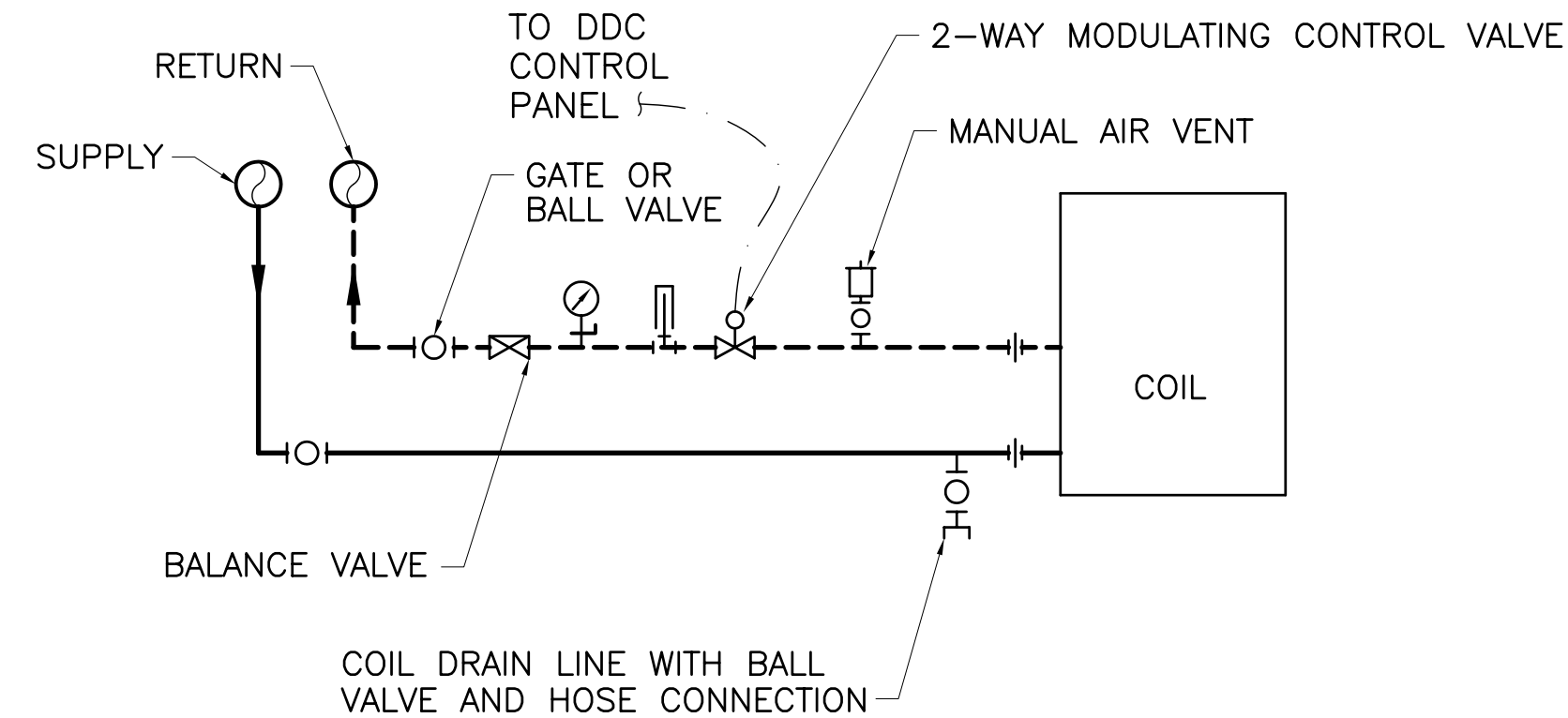


NOTES:
 1. EXISTING PIPING AND EQUIPMENT SHOWN FOR REFERENCE ONLY.
 2. CONNECT NEW TEMP SENSORS TO BASEBOARD IN EACH ROOM, AND ZONE VAV BOXES AS INDICATED.

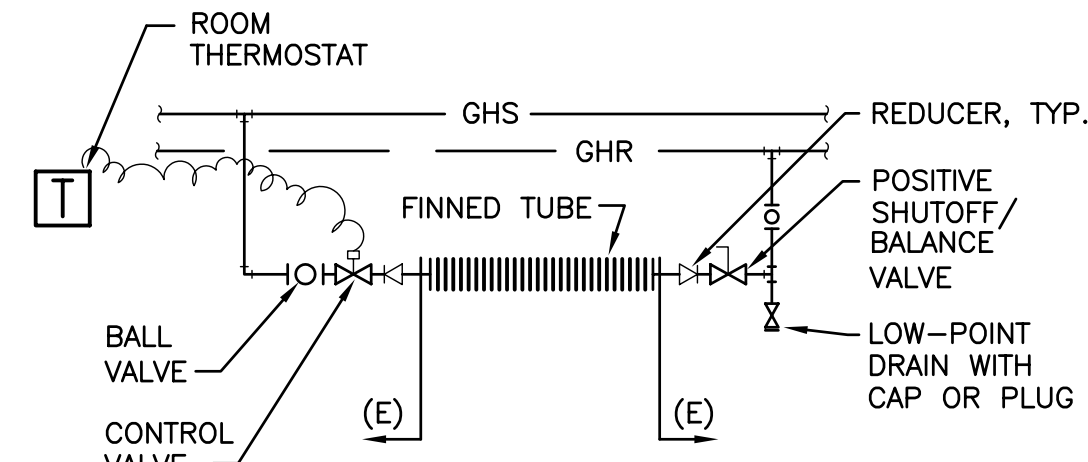
1 HEATING PLAN - NEW WORK
 SCALE: 1/8" = 1'-0"

SHEET NOTES

- 1 PATCH BASEBOARD ENCLOSURE TO MATCH EXISTING. CONNECT GHS TO EXISTING BRANCH.
- 2 NEW BASEBOARD UNITS, 2 EACH. MATCH EXISTING UNITS IN RENOVATED AREA.
- 3 NEW DUCT STATIC PRESSURE SENSOR, CONNECT TO EXISTING DDC CONTROL SYSTEM.

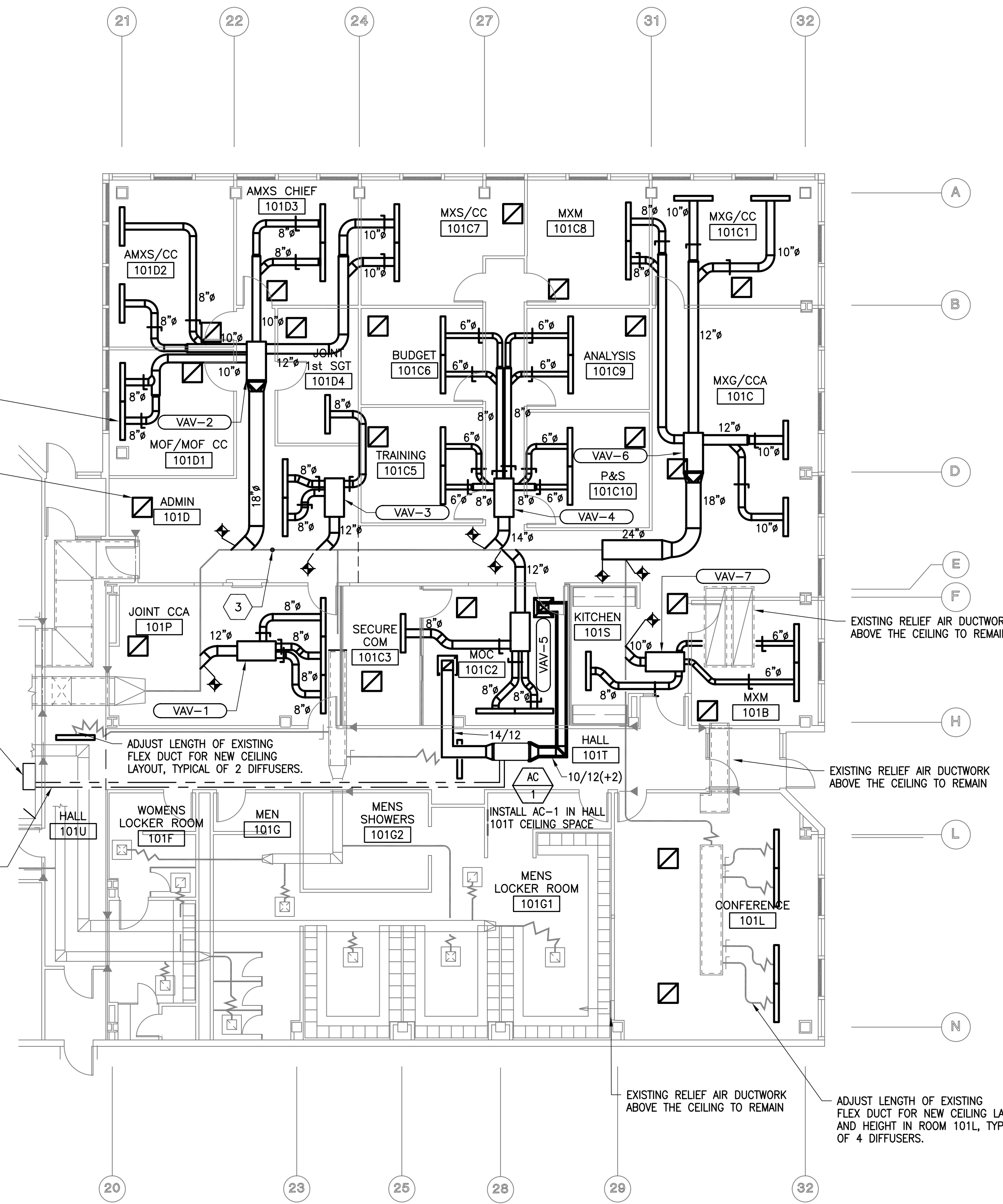


3 DETAIL - REHEAT COIL PIPING
 SCALE: 1/8" = 1'-0"



4 DETAIL - TOP FED BASEBOARD
 SCALE: NTS

SUPPLY DIFFUSER, TYPICAL
 RETURN GRILLE, TYPICAL
 CONDENSING UNIT FOR AC-1 LOCATED ON WALL IN MECH ROOM 120. PIPE CONDENSATION DRAIN ALONG FLOOR TO NEAREST FD.
 1/4" LIQUID LINE AND 1/2" SUCTION LINE TO/FROM AC-1, ROUTE IN CEILING SPACE HALL 101T, FIRE-SEAL WALL PENETRATIONS

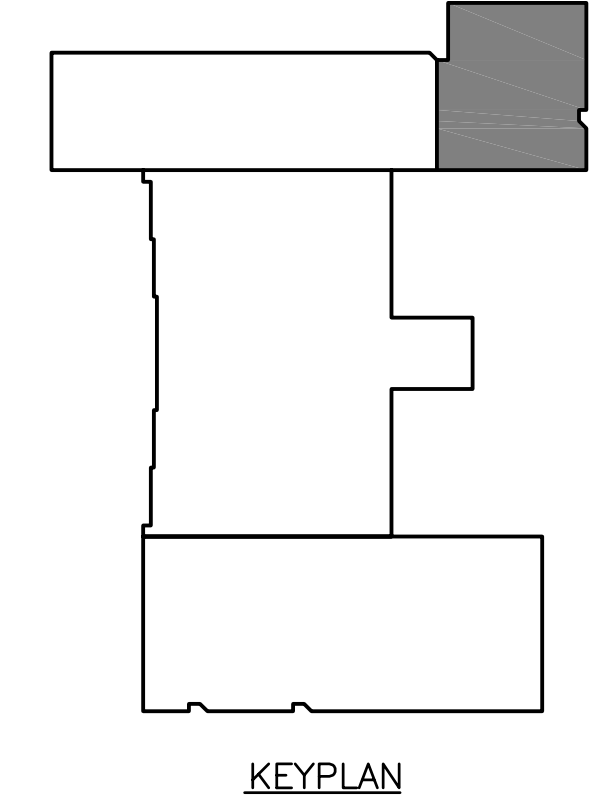
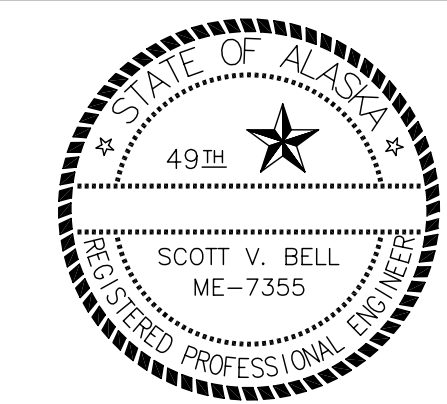


NOTE: EXISTING DUCTWORK AND EQUIPMENT SHOWN FOR REFERENCE ONLY.

2 VENTILATING PLAN - NEW WORK
 SCALE: 1/8" = 1'-0"

ROOM	SUPPLY AIR DIFFUSERS			RETURN AIR GRILLES			NOTES		
	DESIGNATION	INLET SIZE	# of DIFFUSERS	CFM's	DESIGNATION	NECK SIZE (IN)		# of GRILLES	CFM's
101B MXM	SD-1	6"	2	100	RG-1	8/8	1	100	1
101C MXG/CCA	SD-1	10"	2	400	RG-1	12/12	1	400	1
101C1 MOC/CC	SD-1	10"	2	235	RG-1	12/12	1	235	1
101C2 MOC	SD-1 / SD-2	8" / 14"	2 / 1	140 / 525	RG-1	8/8	1 / 1	140 / 525	1
101C3 SECURE COM	SD-1	6"	1	150	RG-1	8/8	1	150	1
101C5 TRAINING	SD-1	6"	2	100	RG-1	8/8	1	100	1
101C6 BUDGET	SD-1	6"	2	100	RG-1	8/8	1	100	1
101C7 MXS/CC	SD-1	10"	2	250	RG-1	12/12	1	250	1
101C8 MXM	SD-1	8"	2	150	RG-1	8/8	1	150	1
101C9 ANALYSIS	SD-1	6"	2	100	RG-1	8/8	1	100	1
101C10 P&S	SD-1	6"	2	115	RG-1	8/8	1	115	1
101D ADMIN	SD-1	8"	2	200	RG-1	12/12	1	200	1
101D1 MOF/MOF CC	SD-1	8"	2	150	RG-1	8/8	1	150	1
101D2 AMXS/CC	SD-1	8"	2	220	RG-1	12/12	1	220	1
101D3 AMXS CHIEF	SD-1	8"	2	225	RG-1	12/12	1	225	1
101D4 JOINT 1st SGT	SD-1	8"	1	180	RG-1	12/12	1	180	1
101L CONFERENCE	SD-1	10"	4	400	RG-1	12/12	2	400	1
101P JOINT CCA	SD-1	8"	3	140	RG-1	8/8	1	140	1
101S KITCHEN	SD-1	8"	1	180	RG-1	12/12	1	180	1
101T HALL	SD-1	8"	1	210	-	-	-	-	1
101U HALL	SD-1	8"	1	180	-	-	-	-	1

NOTES:
 1. ALL LISTED CFM ARE PER DESIGNATED ROOM AREA.



Notes:

EXISTING RELIEF AIR DUCTWORK ABOVE THE CEILING TO REMAIN

EXISTING RELIEF AIR DUCTWORK ABOVE THE CEILING TO REMAIN



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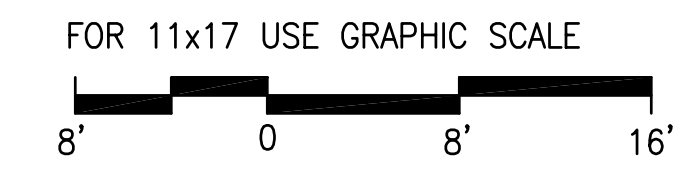
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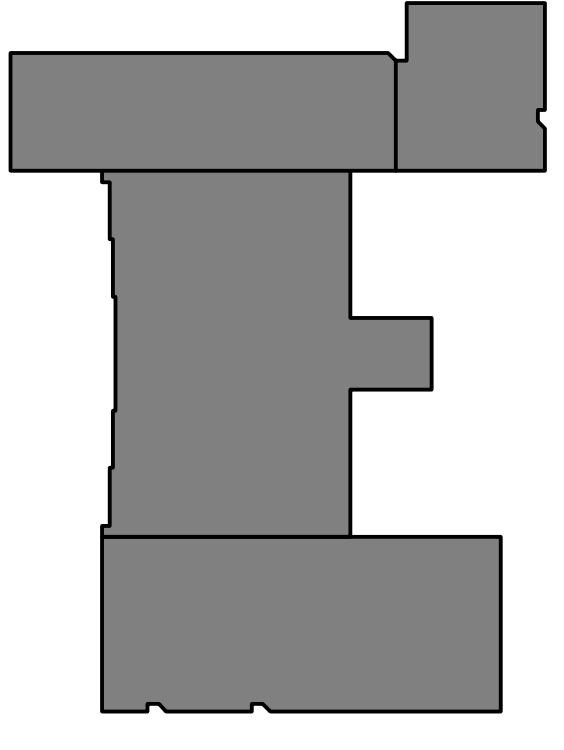
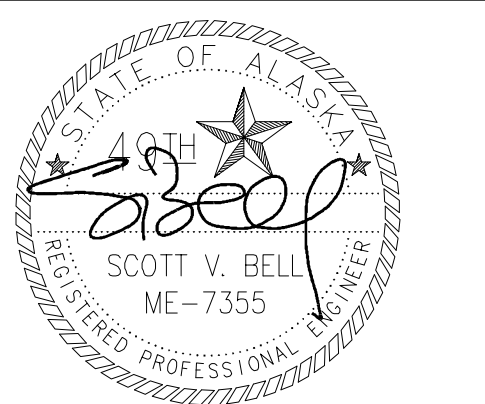
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Date	Revision	By
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Sheet Contents
NEW WORK - SOUTHEAST FLOOR PLANS

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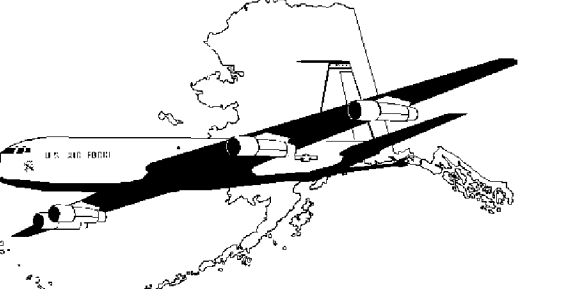




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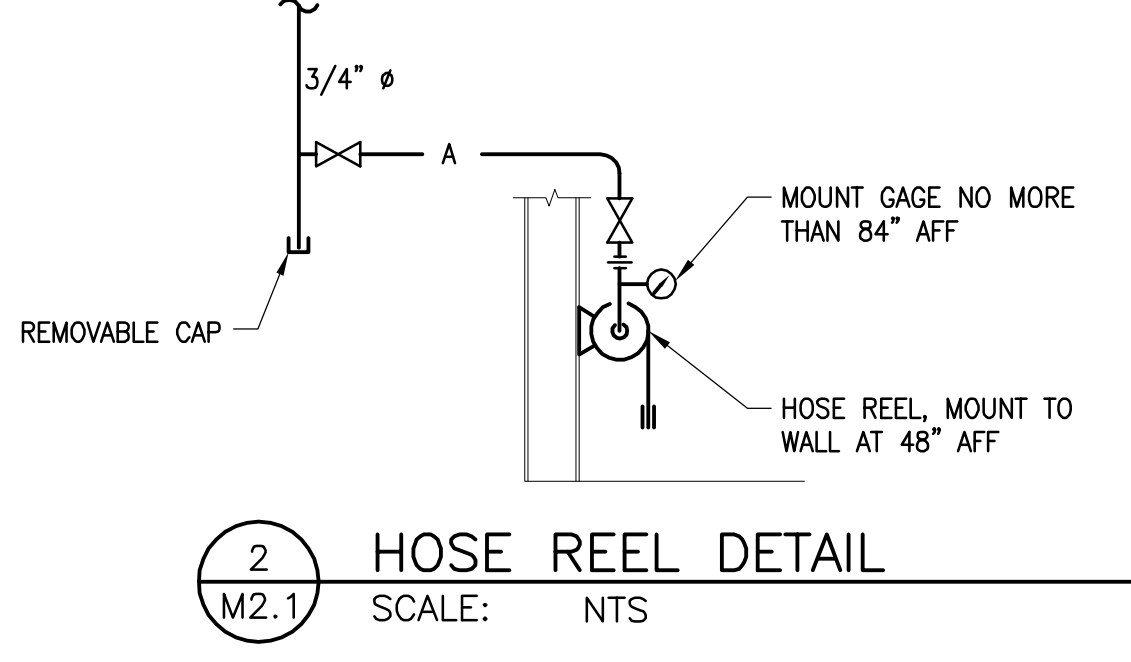
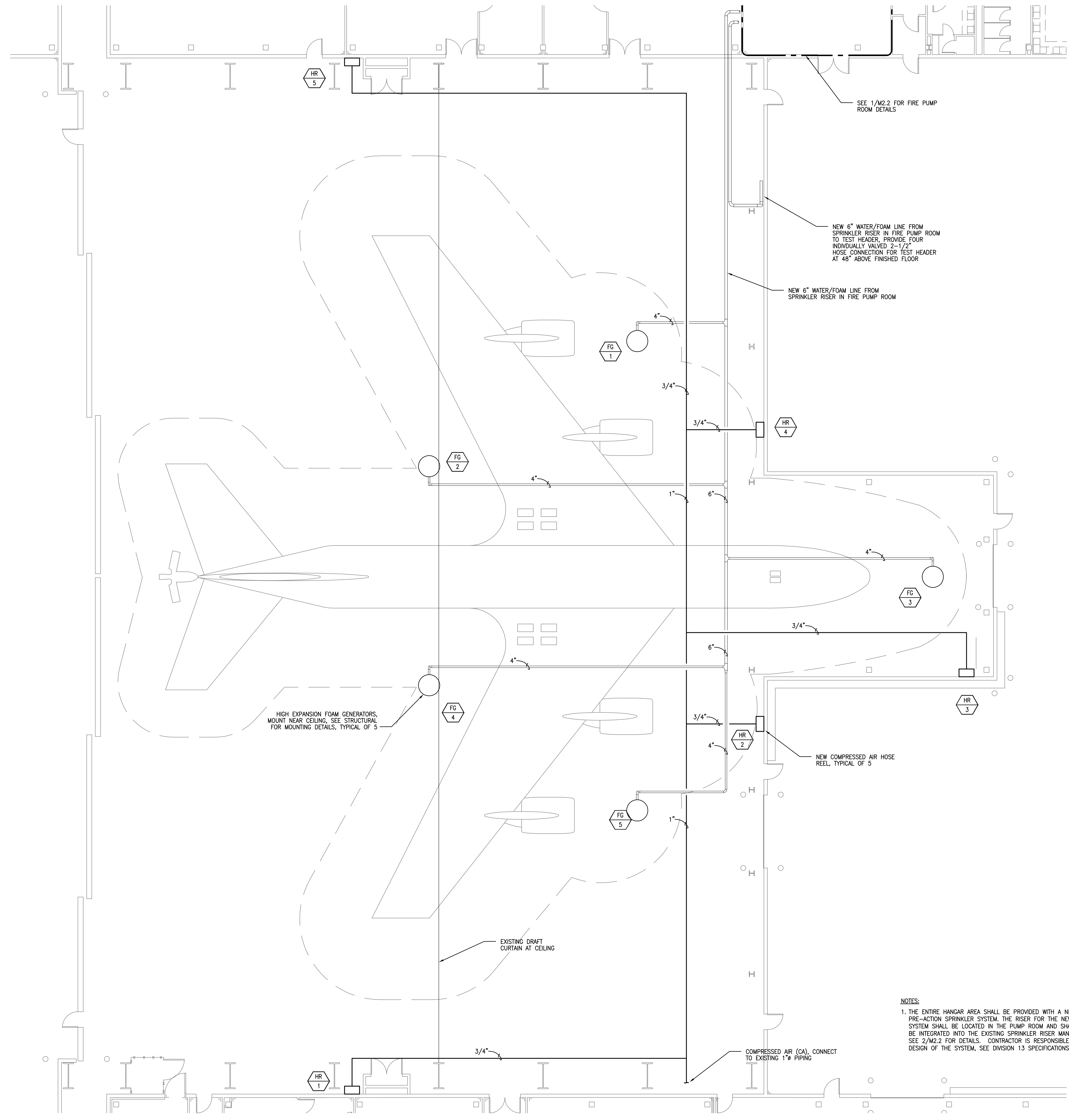
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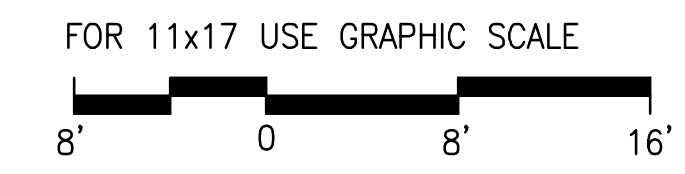
Date	Revision	By

Sheet Contents
NEW WORK -- HANGAR BAY FLOOR PLAN AND DETAILS

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Date	10/14/05	USKH w.o. 693316



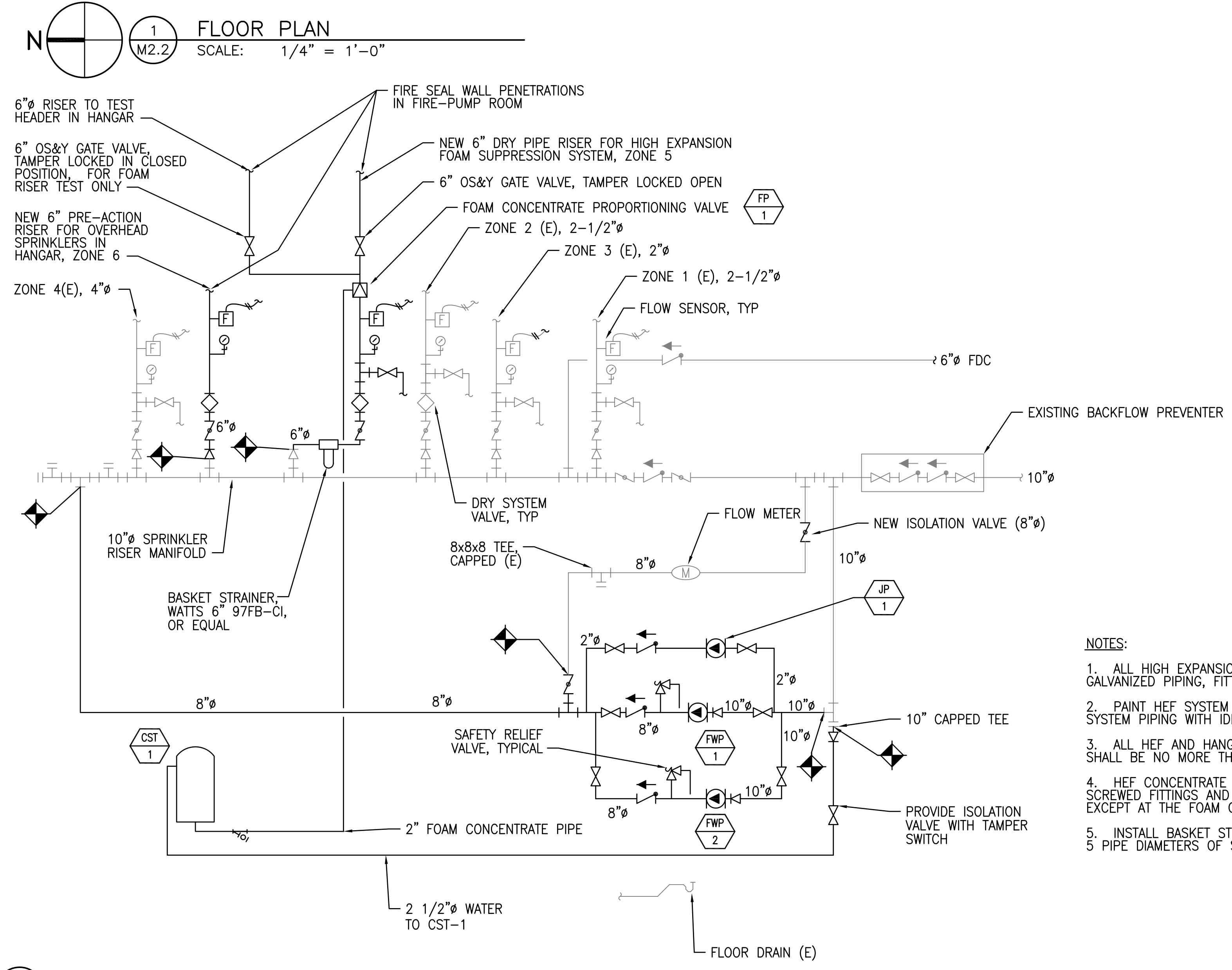
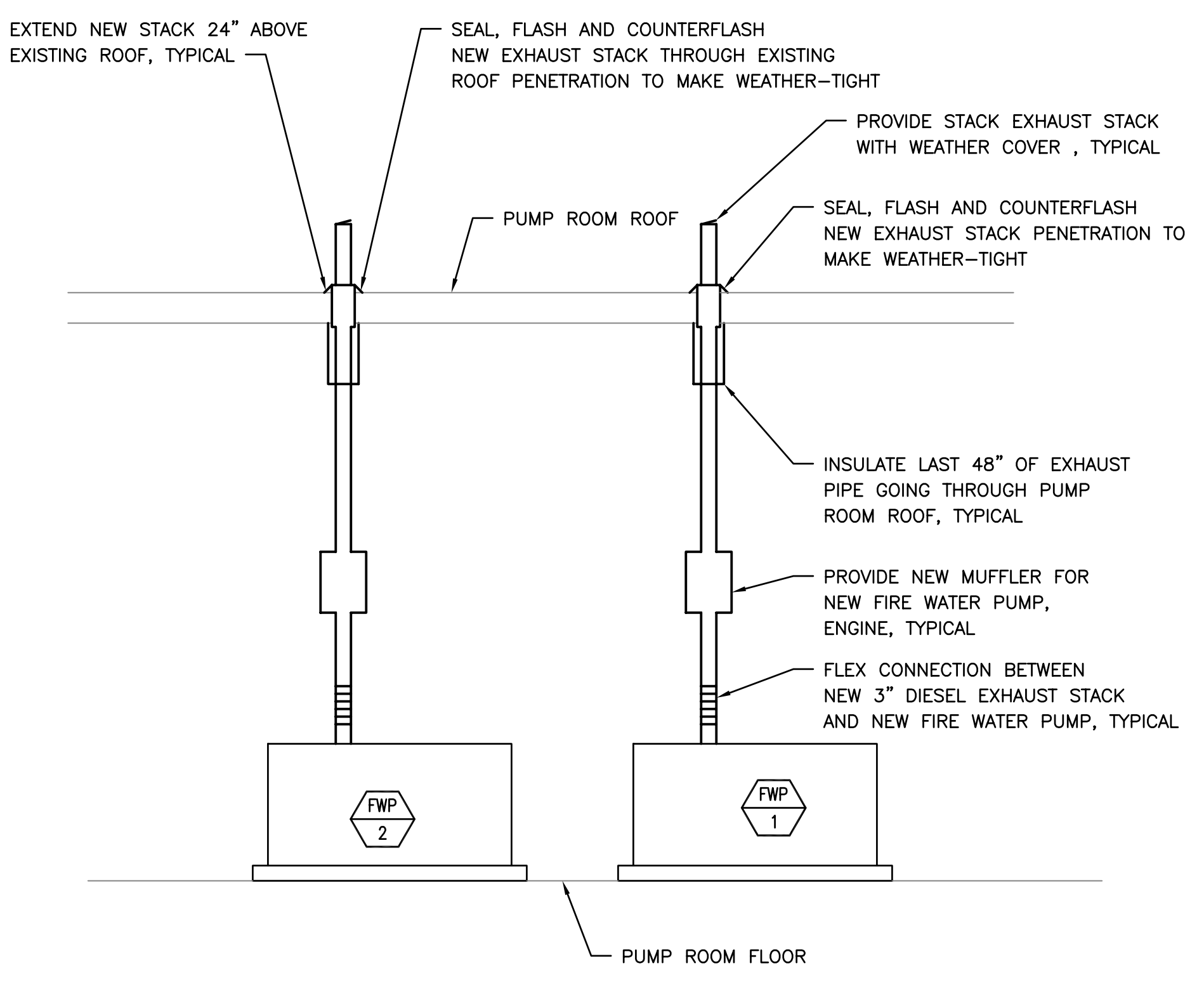
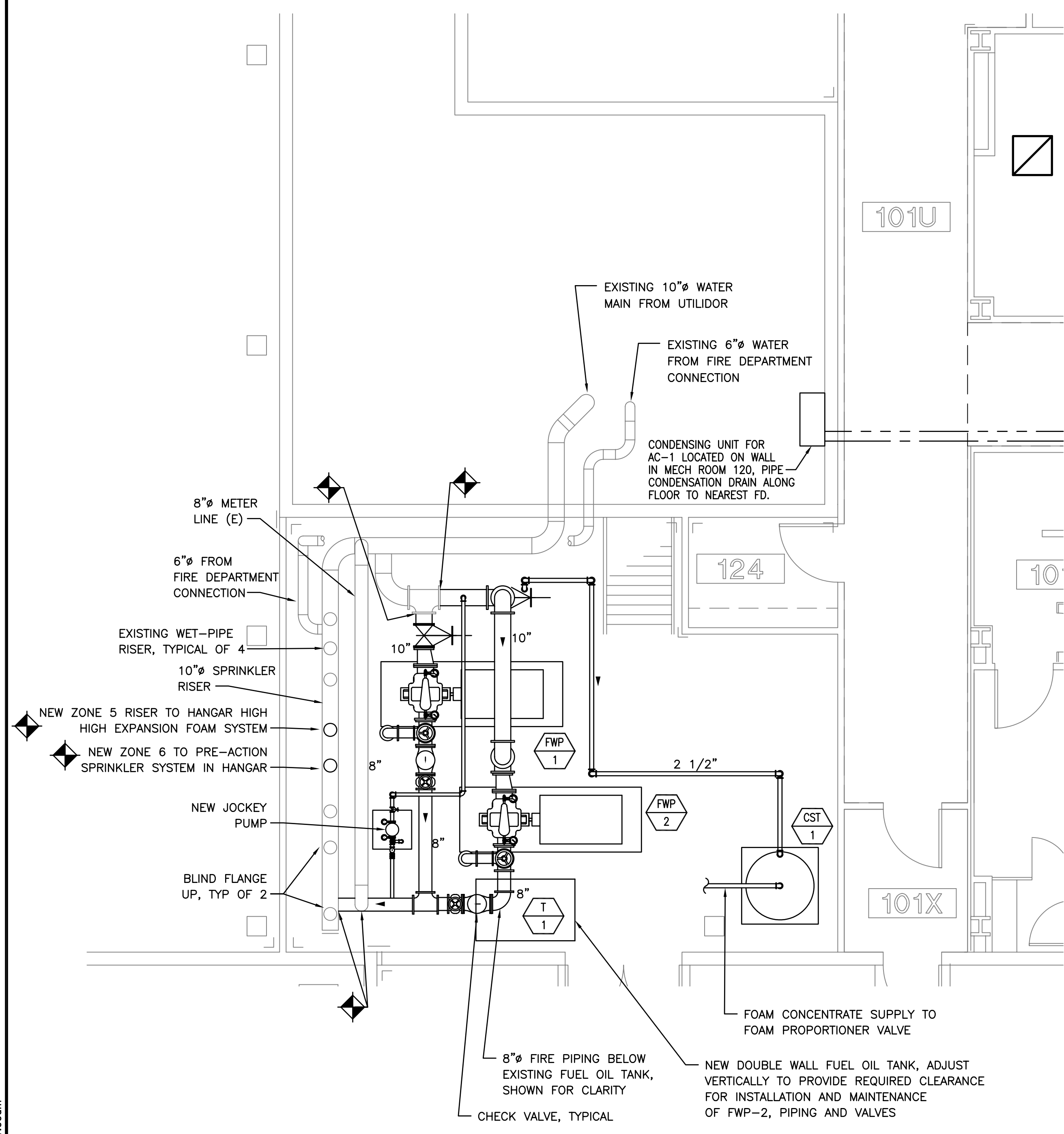
1 HANGAR BAY -- NEW WORK
SCALE: 1/8" = 1'-0"



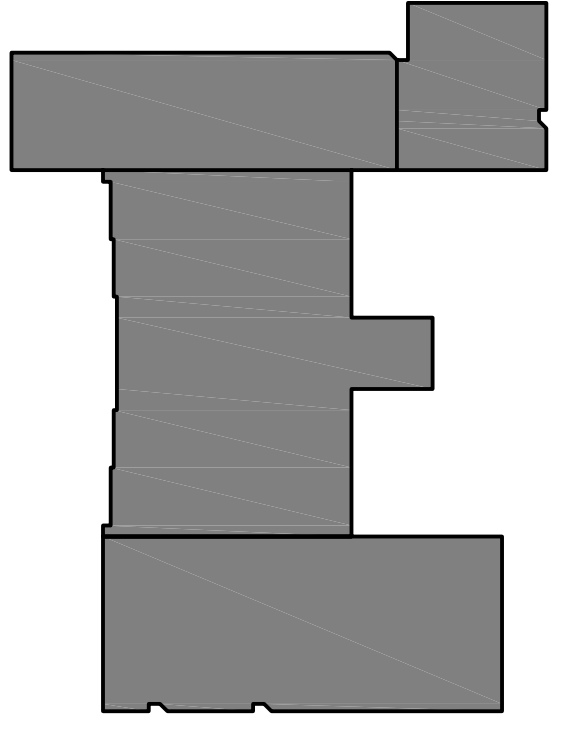
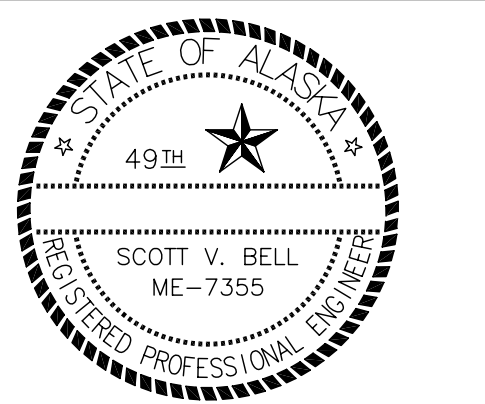
NOTES:
1. THE ENTIRE HANGAR AREA SHALL BE PROVIDED WITH A NEW PRE-ACTION SPRINKLER SYSTEM. THE RISER FOR THE NEW SYSTEM SHALL BE LOCATED IN THE PUMP ROOM AND SHALL BE INTEGRATED INTO THE EXISTING SPRINKLER RISER MANIFOLD. SEE 2/M2.2 FOR DETAILS. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF THE SYSTEM, SEE DIVISION 13 SPECIFICATIONS.

DRAWING NAME: E:\693316\Drawings\Mech\693316m21.dwg PLOTTED: Dec 05, 2005 4:21pm

DRAWING NAME: 0:\CCT\10 - G BLDG 1176 (COMPOSITE MAINTENANCE HANGAR)\04-2254 (Repair - Maintenance Hangar, B117663316m22.dwg PLOTTED: Nov 21, 2005 - 11:00am

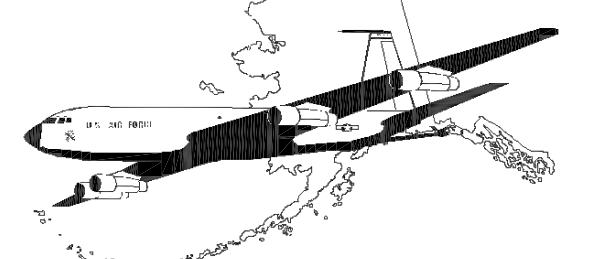


- NOTES:**
- ALL HIGH EXPANSION FOAM (HEF) SYSTEM PIPING SHALL BE MINIMUM SCHEDULE 40 STEEL GALVANIZED PIPING, FITTINGS OR DEVICES SHALL NOT BE USED IN ANY HEF RELATED SYSTEM.
 - PAINT HEF SYSTEM PIPING IN FACILITY COORDINATE COLOR, COORDINATE WITH OWNER. MARK ALL HEF SYSTEM PIPING WITH IDENTIFICATION AND FLOW MARKINGS AT INTERVALS NOT TO EXCEED 26 FEET.
 - ALL HEF AND HANGAR SPRINKLER PIPING SHALL BE CAPABLE OF BEING DRAINED. MAIN DRAINS SHALL BE NO MORE THAN 7'-0" AFF.
 - HEF CONCENTRATE PIPING SHALL BE SCHEDULE 40 STAINLESS STEEL WELDED OR FLANGED FITTINGS ONLY. SCREWED FITTINGS AND GROOVED/ROLLED EDGE COUPLINGS ARE PROHIBITED ON ANY CONCENTRATE PIPING EXCEPT AT THE FOAM CONCENTRATE STORAGE TANK AND THE PROPORTIONING VALVE CONNECTIONS.
 - INSTALL BASKET STRAINER HORIZONTALLY. PROVIDE 10 PIPE DIAMETERS OF STRAIGHT PIPE UPSTREAM, AND 5 PIPE DIAMETERS OF STRAIGHT PIPE DOWNSTREAM OF BASKET STRAINER.



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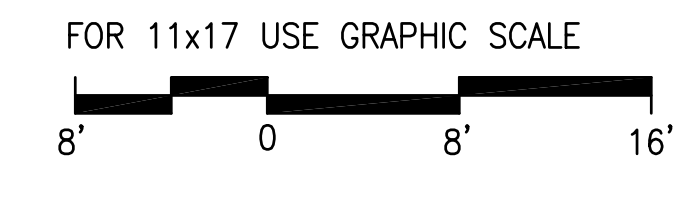
Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
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FTQW-04-2254
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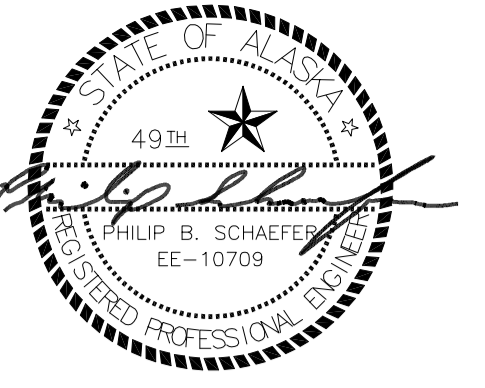
Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Sheet Contents
NEW WORK - MECH ROOM PLAN SPRINKLER SCHEMATIC AND DETAILS

Project Mgr.	GVN	Sheet No.
Drawn	MIW	M2.2
Drawn		
Checked	GVN	
Date	10/14/05	

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LIGHT FIXTURE SCHEDULE												
ID	DESCRIPTION	FIXTURE		LAMPS		BALLAST		MTC	MTC HEIGHT	CL.G TYPE	MANUFACTURERS CATALOG NO.	NOTES
		VOLTAGE	WATTS	NO.	TYPE	NO.	TYPE					
A2	LENSED TROFFER	120	70	2	F32T8	1	PRS	RECESSED	----	GRID	LITHONIA 2SP8-G-232	
A3	LENSED TROFFER	120	105	3	F32T8	1	PRS	RECESSED	----	GRID	LITHONIA 2SP8-G-332	
A4	LENSED TROFFER	120	140	4	F32T8	1	PRS	RECESSED	----	GRID	LITHONIA 2SP8-G-432	
B2	PARABOLIC	120	70	2	F32T8	1	PRS	RECESSED	----	GRID	LITHONIA 2PM3N-G-D-232	
B3	PARABOLIC	120	105	3	F32T8	1	PRS	RECESSED	----	GRID	LITHONIA 2PM3N-G-D-332	
B4	PARABOLIC	120	140	4	F32T8	1	PRS	RECESSED	----	GRID	LITHONIA 2PM3N-G-D-432	

ABBREVIATIONS:
 CWB = GYPSUM WALL BOARD
 GRID = LAY-IN GRID
 STR = EXPOSED STRUCTURE

MOUNTING HEIGHT SCHEDULE	
EQUIPMENT	HEIGHT
RECEPTACLE OUTLETS	2'-0"
COMMUNICATION OUTLETS	2'-0"
COMMUNICATION OUTLETS FOR WALL PHONES	4'-0"
TELEVISION OUTLETS (RECP & COMM)	7'-0"
MULTI-OUTLET ASSEMBLY (MOA)	2'-0"
OUTLETS AND MOA ABOVE COUNTERS (NOTE 4)	6" ABOVE COUNTER, OR BACKSPASH IF EXISTENT
TOGGLE SWITCHES	4'-0"
PUSH BUTTON AND SELECTOR CONTROLS	4'-0"
FIRE ALARM MANUAL PULL STATIONS	4'-0"
FIRE ALARM HORNS / STROBES / BELLS	6'-8" TO BOTTOM
DISCONNECT SWITCHES, SIDE OPERATED	5'-6" TO TOP
COMBINATION DISC. SW. / MOTOR STARTERS	5'-6" TO TOP
PANELBOARDS	6'-2" TO TOP
WALL MOUNTED EXIT SIGNS	6" ABOVE DOOR TO BOTTOM

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.
 3. EXISTING MOUNTING HEIGHTS SHALL PREVAIL ON EXISTING CONSTRUCTION.
 4. OPTIONAL MOUNTING FOR OUTLETS ABOVE COUNTERS IN TIGHT SPACES: 2-1/2 INCHES ABOVE COUNTER (BACKSPASH) MOUNTED HORIZONTALLY.

ELECTRICAL LEGEND

LIGHTING

- A/4 LIGHTING FIXTURE DESIGNATION / NO. OF LAMPS
- FLUORESCENT LIGHT FIXTURE, SURFACE MOUNT
- FLUORESCENT LIGHT FIXTURE, RECESS MOUNT
- FLUORESCENT EMERGENCY LIGHT FIXTURE, SURFACE MOUNT
- FLUORESCENT EMERGENCY LIGHT FIXTURE, RECESS MOUNT
- FLUORESCENT UNDER CABINET FIXTURE
- FLUORESCENT LIGHT FIXTURE, WALL MOUNT
- STRIP FLUORESCENT LIGHT FIXTURE
- SURFACE CEILING MOUNTED LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- RECESSED CEILING MOUNTED LIGHT FIXTURE
- WALL SCONCE
- EXTERIOR SURFACE MOUNT WALL-PAK
- PENDANT LIGHT FIXTURE
- EMERGENCY LIGHT FIXTURE
- EXIT SIGN, CEILING MOUNT, ARROW INDICATES DIRECTION
- EXIT SIGN, WALL MOUNT, ARROW INDICATES DIRECTION
- PHOTOCELL
- OCCUPANCY SENSOR, LETTER DENOTES TYPE
- SINGLE POLE SWITCH
- 3-WAY SWITCH
- 4-WAY SWITCH
- DIMMER SWITCH
- KEY OPERATED SWITCH
- MOTOR STARTING SWITCH W/ THERMAL OVERLOADS
- SWITCH WITH PILOT LIGHT

COMMUNICATIONS

- WALL/FLOOR MOUNTED DATA OUTLET, SUBSCRIPT DENOTES NUMBER OF OUTLETS PER JUNCTION BOX (DEFAULT, ONE)
- WALL/FLOOR MOUNTED TELECOMMUNICATION OUTLET, SUBSCRIPT DENOTES NUMBER OF OUTLETS PER JUNCTION BOX (DEFAULT, ONE)
- WALL/FLOOR MOUNTED COMBINATION DATA AND TELECOMMUNICATION OUTLET
- INTERCOM WALL STATION

FIRE ALARM

- FIRE ALARM PULL STATION
- FOAM SYSTEM MANUAL RELEASE STATION
- IONIZATION SMOKE DETECTOR, "P" DENOTES PHOTOELECTRIC
- DUCT SMOKE DETECTOR
- HEAT DETECTOR, SUBSCRIPT DENOTES VARIATIONS: R = RATE-OF-RISE, R/C = RATE COMPENSATED
- SPRINKLER SYSTEM TAMPER SWITCH
- SPRINKLER SYSTEM FLOW SWITCH
- SPRINKLER SYSTEM PRESSURE SWITCH
- FIRE ALARM HORN/STROBE
- FIRE ALARM HORN
- FIRE ALARM STROBE
- FOAM ALARM BLUE STROBE OR BEACON
- FIRE ALARM BELL
- DOOR HOLD

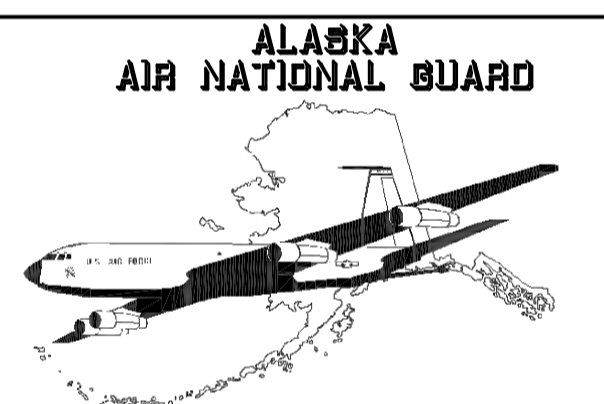
POWER CONTROL

- GFI = GROUND FAULT INTERRUPT
- DUPLEX RECEPTACLE, WALL/FLOOR MOUNTED
- DOUBLE DUPLEX RECEPTACLE, WALL/FLOOR MOUNTED
- SINGLE 240 VOLT RECEPTACLE, NEMA TYPE 7
- SPECIAL PURPOSE RECEPTACLE, WALL/FLOOR MOUNTED
- SWITCHED DUPLEX RECEPTACLE, TOP OUTLET SWITCHED
- DUPLEX RECEPTACLE ON UPS CIRCUIT
- PLUGMOLD RECEPTACLE
- MULTI-OUTLET SURFACE RACEWAY ASSEMBLY
- CONTROL OR TERMINAL CABINET, TYPE AS NOTED
- PANELBOARD, SURFACE/FLUSH MOUNTED
- JUNCTION BOX
- JUNCTION BOX, GRADE OR FLOOR MOUNTED
- EQUIPMENT CONNECTION
- MOTOR
- METER (V = VOLT, A = AMP, W = WATT, WH = WATT-HOUR)
- MOTOR STARTER
- COMBINATION MOTOR STARTER/DISCONNECT
- NON-FUSED DISCONNECT
- FUSED DISCONNECT
- DISCONNECT SWITCH WITH BREAKER
- GROUND POINT
- GROUND
- PUSHBUTTON CONTROL
- CONDUIT STUBBED & CAPPED OR BUSHED AS NOTED
- RACEWAY UP
- RACEWAY DOWN
- FLEXIBLE CONDUIT
- UNDERGROUND OR UNDER FLOOR CIRCUIT
- BRANCH CIRCUIT HOMERUN WITH GROUND, NEUTRAL AND NUMBER OF HOT WIRES
- B-2 INDICATES PANEL AND CIRCUIT NUMBER
- CIRCUIT BREAKER
- NORMALLY CLOSED/NORMALLY OPEN CONTACTS
- ELECTRICALLY HELD CONTACT, LOCATED BY PANEL

NOTATION

- REFERENCE TO SHEET NOTE
- REFERENCE TO EQUIPMENT SCHEDULE
- REFERENCE TO REVISION
- ZONE DESIGNATOR

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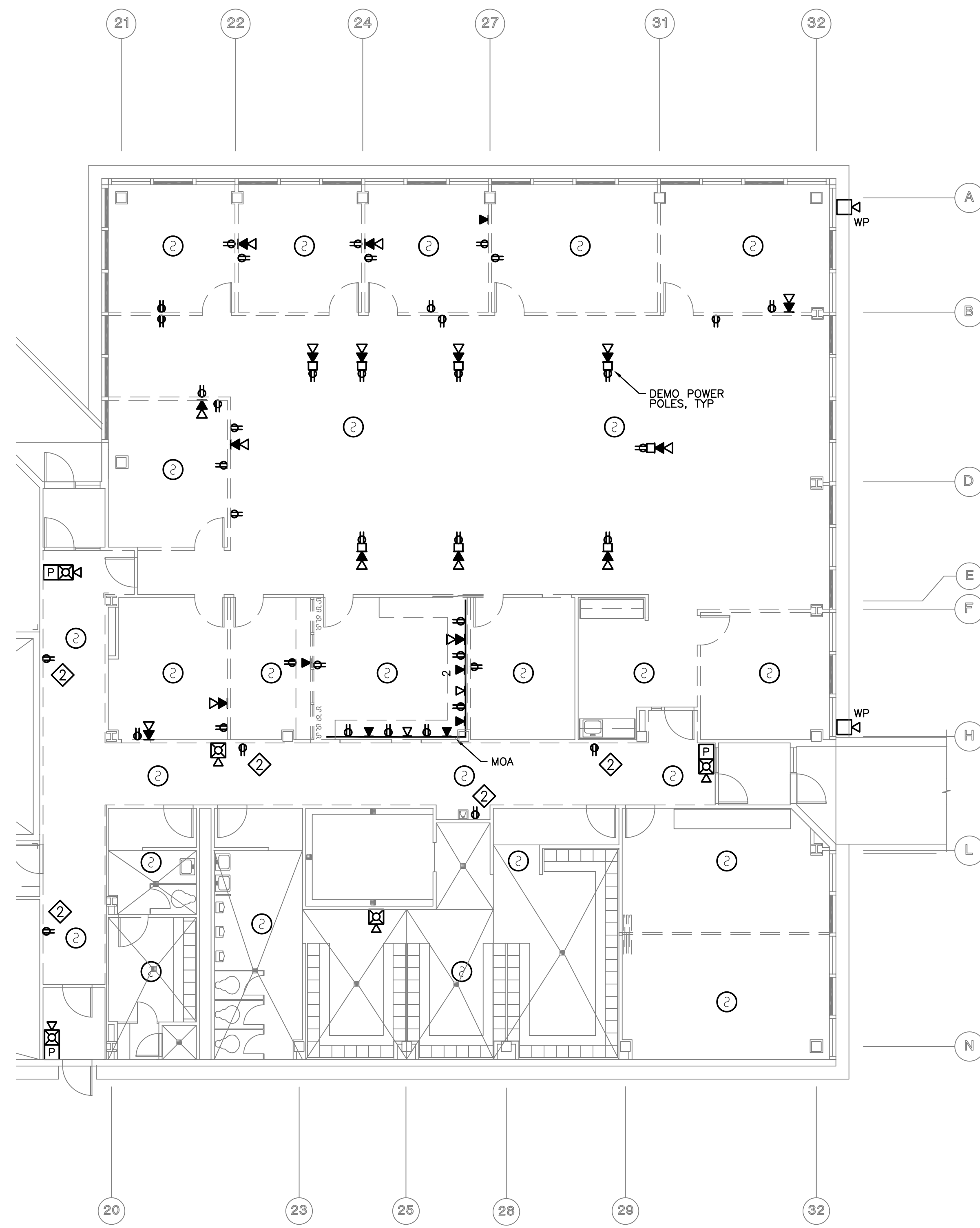
Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
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Date	Revision	By

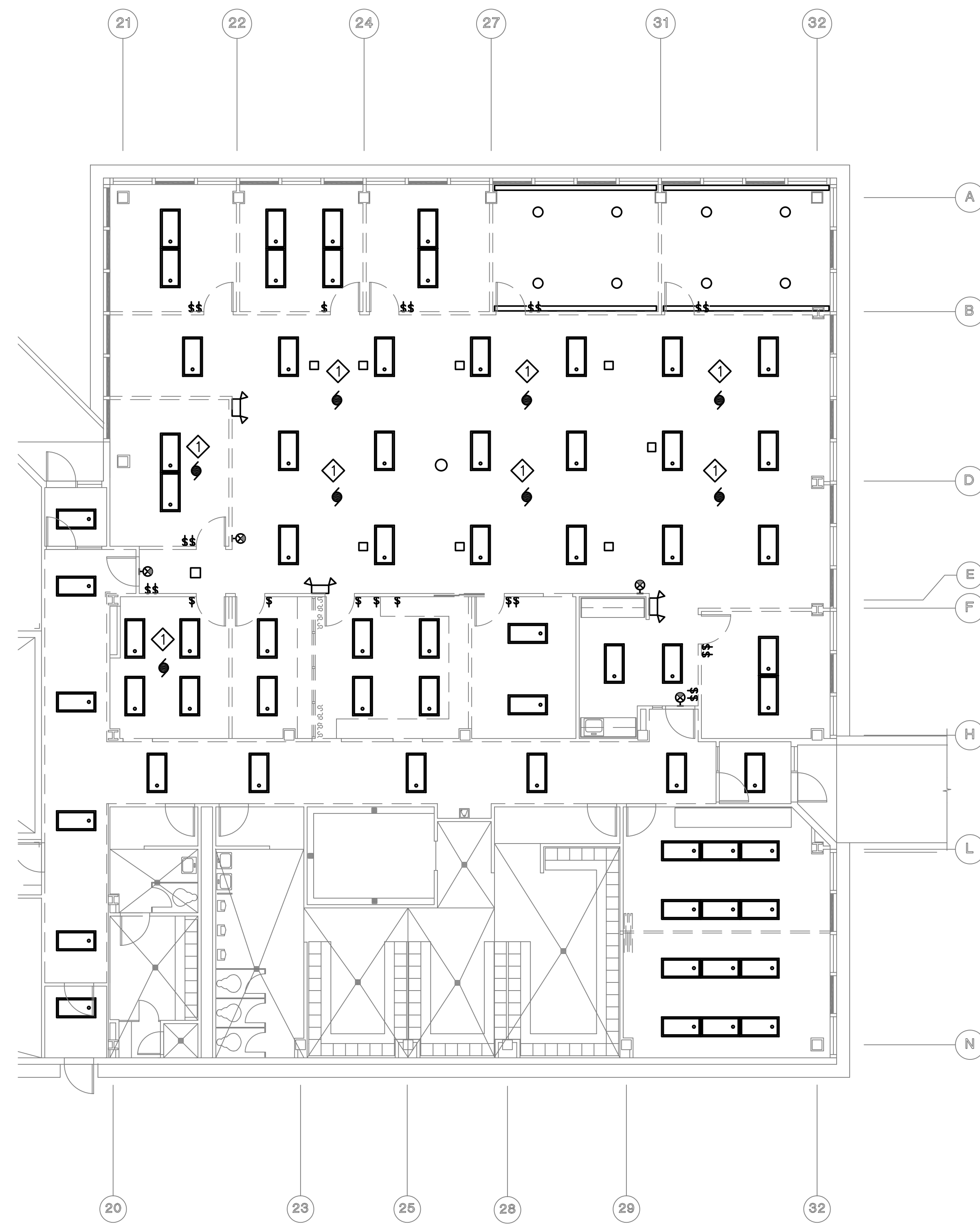
Sheet Contents
 ELECTRICAL LEGENDS AND SCHEDULE

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Checked	GMH	
Date	10/14/05	USKH W.O. 693316

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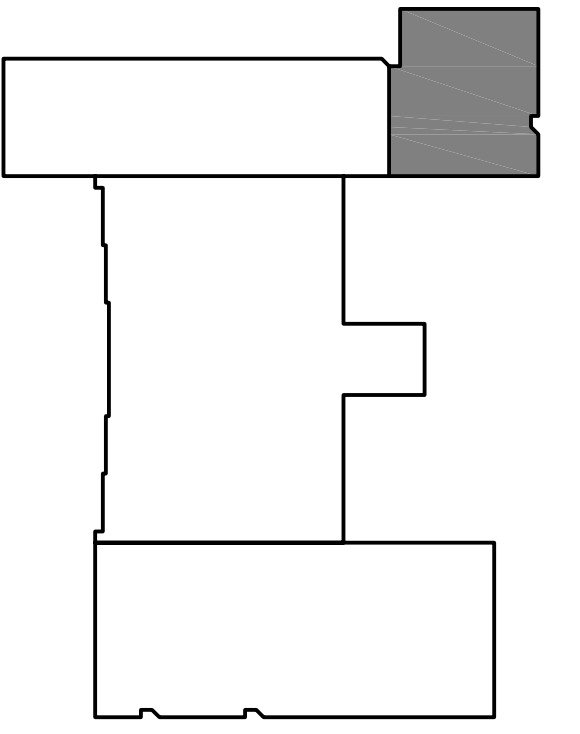
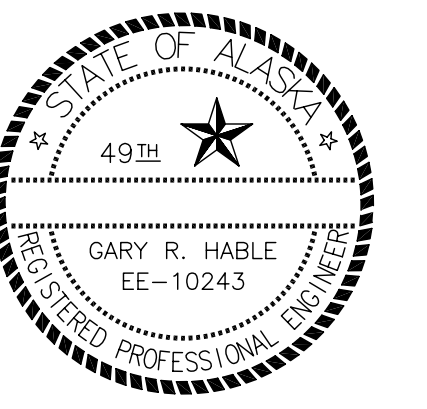
1
E1 POWER & SYSTEMS - DEMO
SCALE: 1/8" = 1'-0"



2
E1 LIGHTING - DEMO
SCALE: 1/8" = 1'-0"

KEYNOTES:

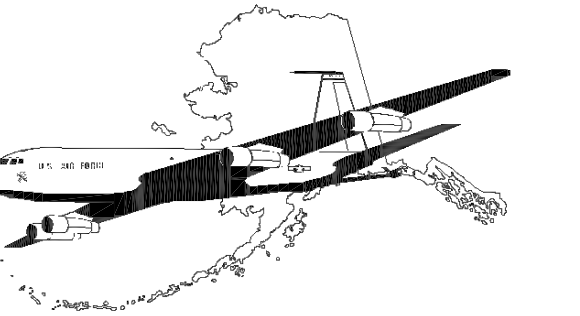
- ◊ REMOVE CEILING FAN AND TURN OVER TO OWNER. REMOVE SWITCHES AND CONDUCTORS AND CONDUIT BACK TO CIRCUIT BREAKER.
- ◊ REMOVE DEVICE, EXTEND BOX FLUSH WITH NEW SHEETROCK. REPLACE WITH NEW DEVICE AND COVER PLATE.



KEYPLAN

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Project:

REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176

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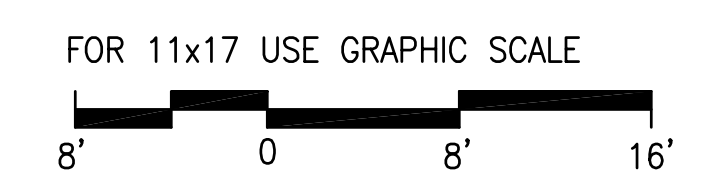
EIELSON AFB, ALASKA

Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

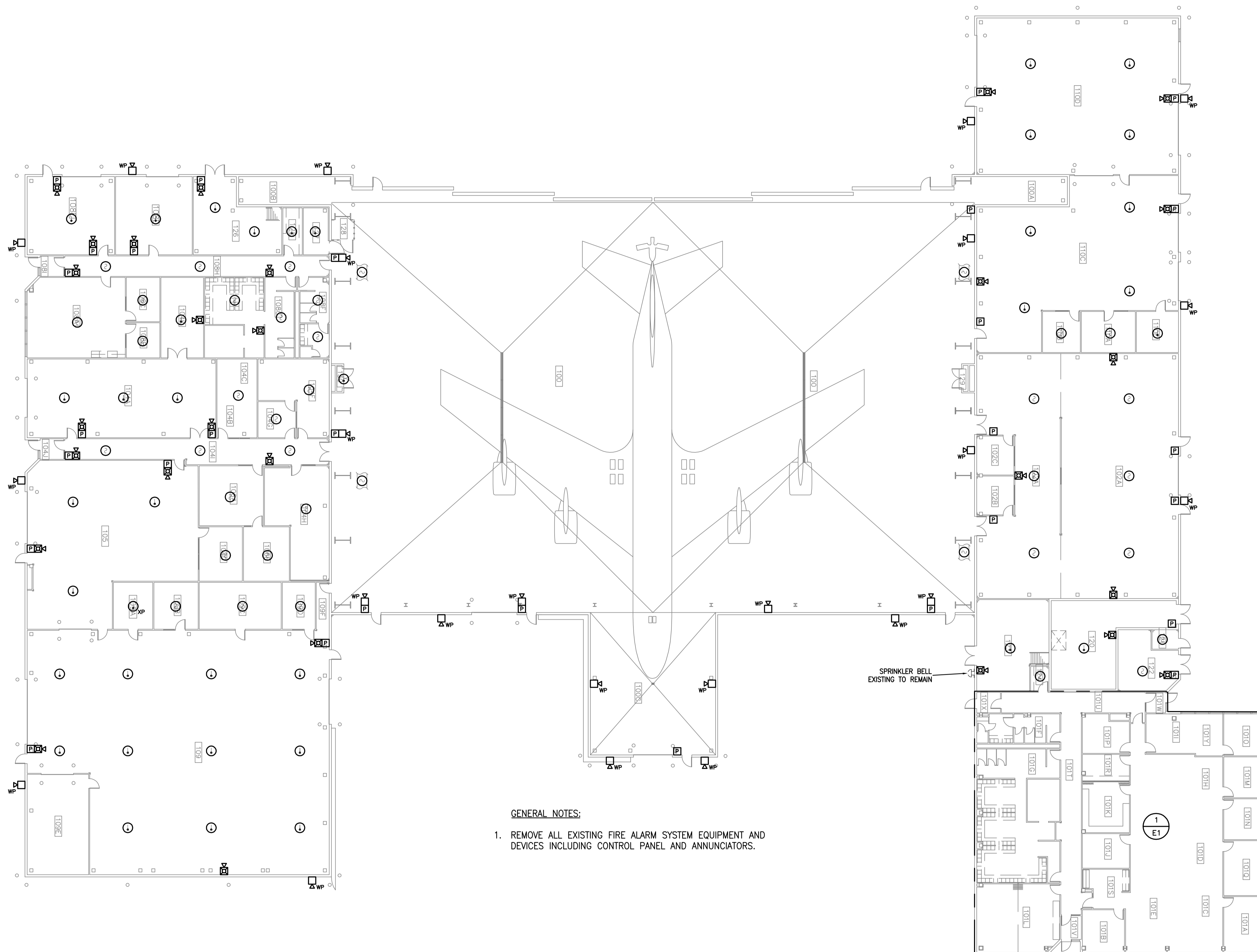
Sheet Contents

ELECTRICAL DEMOLITION

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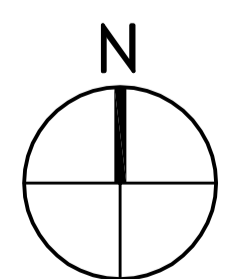


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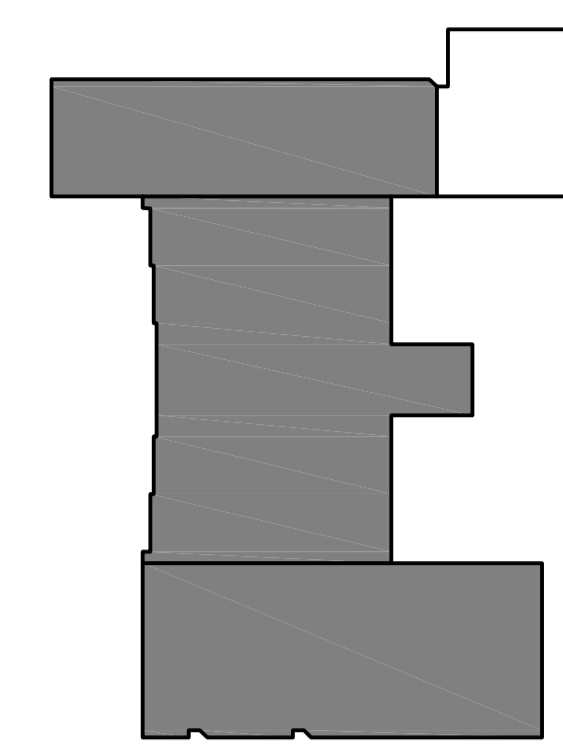
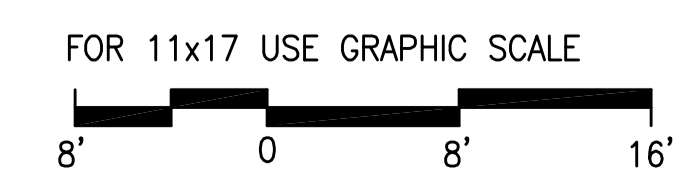


GENERAL NOTES:

1. REMOVE ALL EXISTING FIRE ALARM SYSTEM EQUIPMENT AND DEVICES INCLUDING CONTROL PANEL AND ANNUNCIATORS.



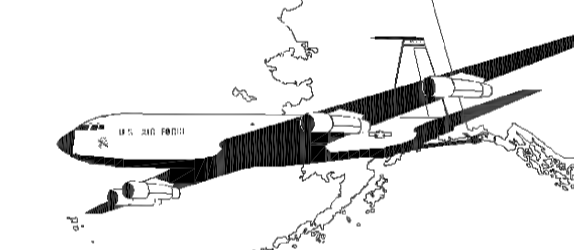
FIRE ALARM PLAN - DEMO
SCALE: 1/16" = 1'-0"



KEYPLAN

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Project:

**REPAIR AIRCRAFT
MAINTENANCE HANGER
BDLG 1176**
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Date	Revision	By

Sheet Contents

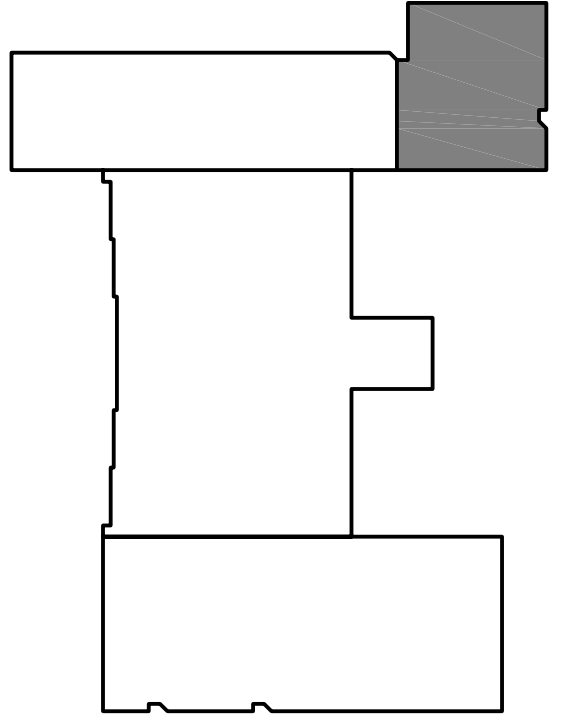
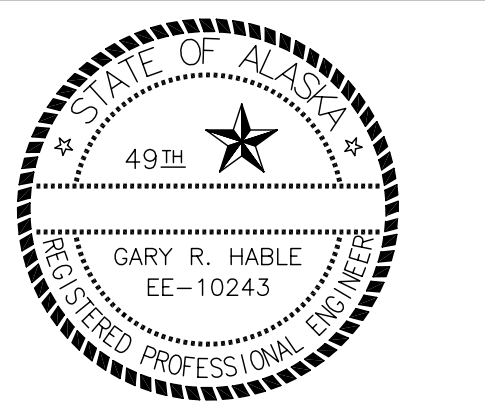
FIRE ALARM DEMO PLAN

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Checked	GMH	
Date	10/14/05	
USKH w.o. 693316		

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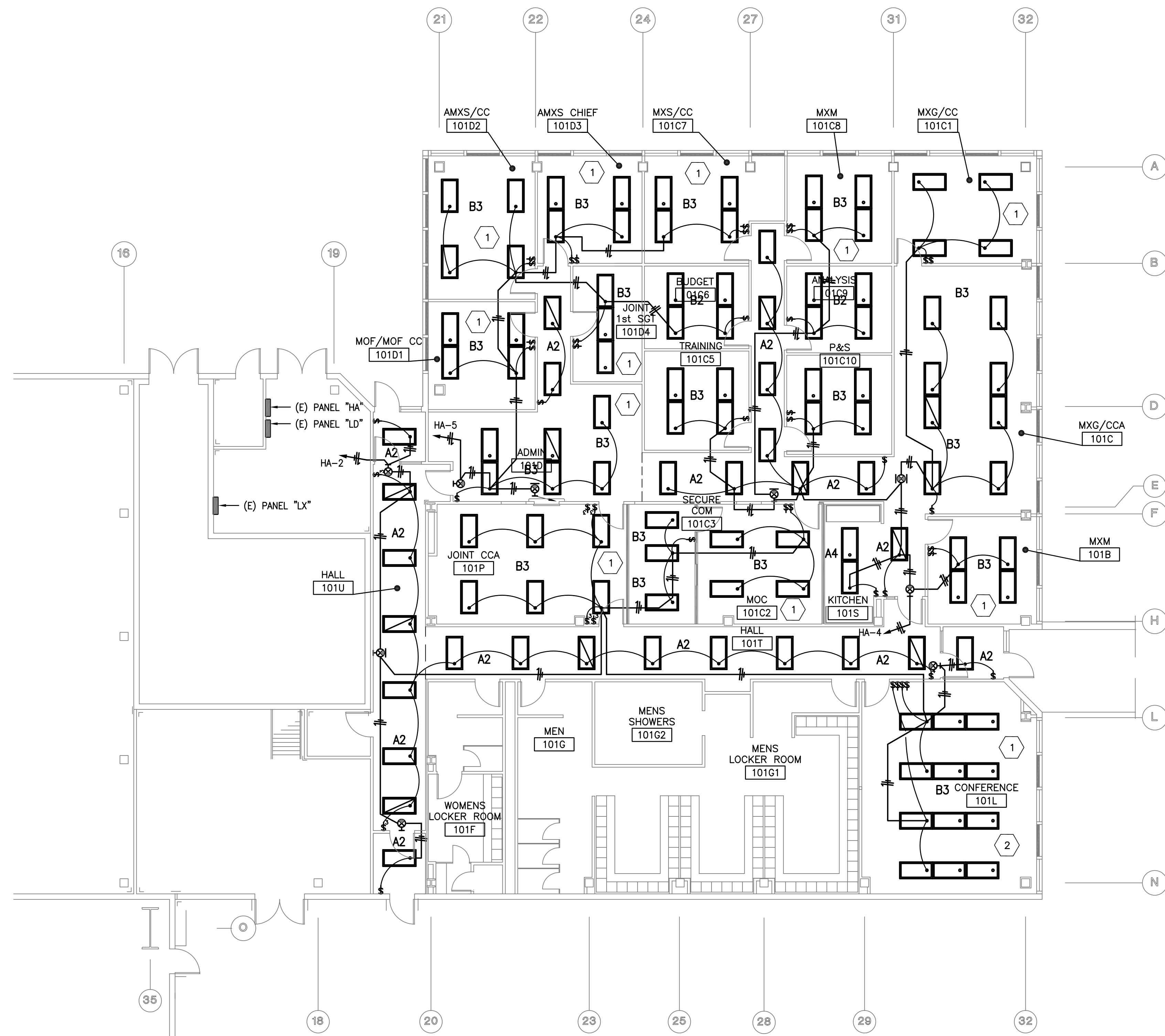
SHEET NOTES: ⬡

1. PROVIDE FIXTURES WITH TWO BALLASTS TO MULTI LEVEL SWITCHING.
2. MOUNT SWITCHES IN INDICATED ROOM FLUSH WITH ACOUSTICAL PANELS.



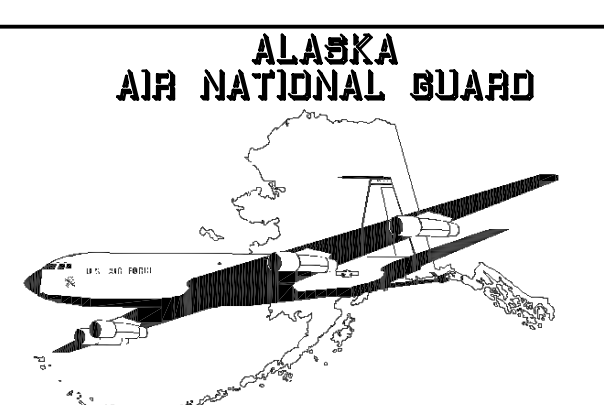
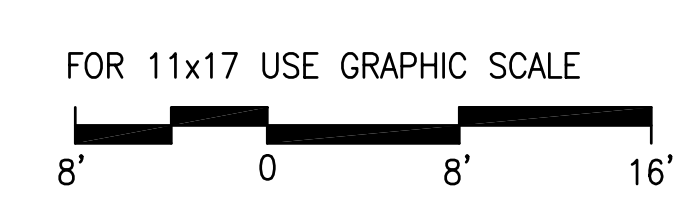
KEYPLAN

Notes:



1 LIGHTING PLAN - RENOVATION

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



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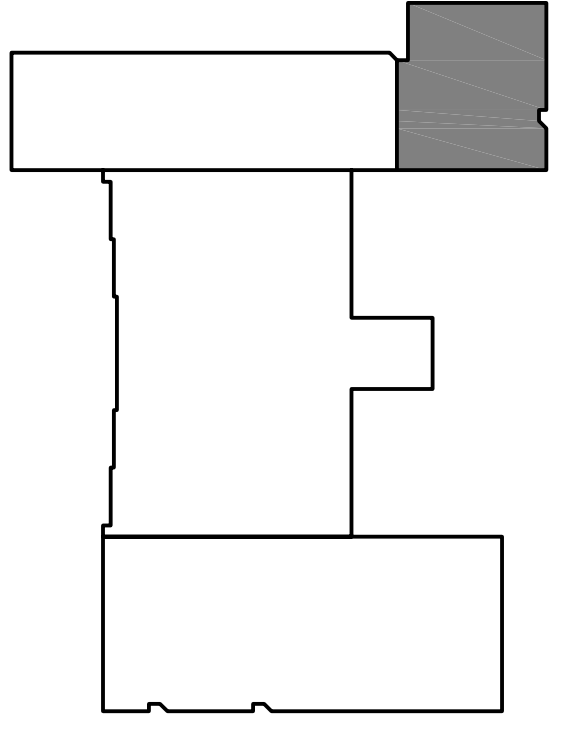
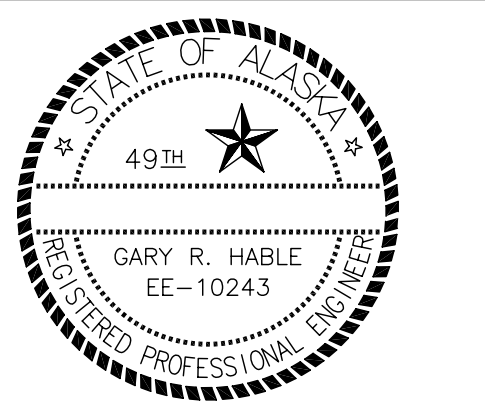
Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Sheet Contents
ELECTRICAL LIGHTING PLAN

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Drawn		
Checked	GMH	
Date	10/14/05	

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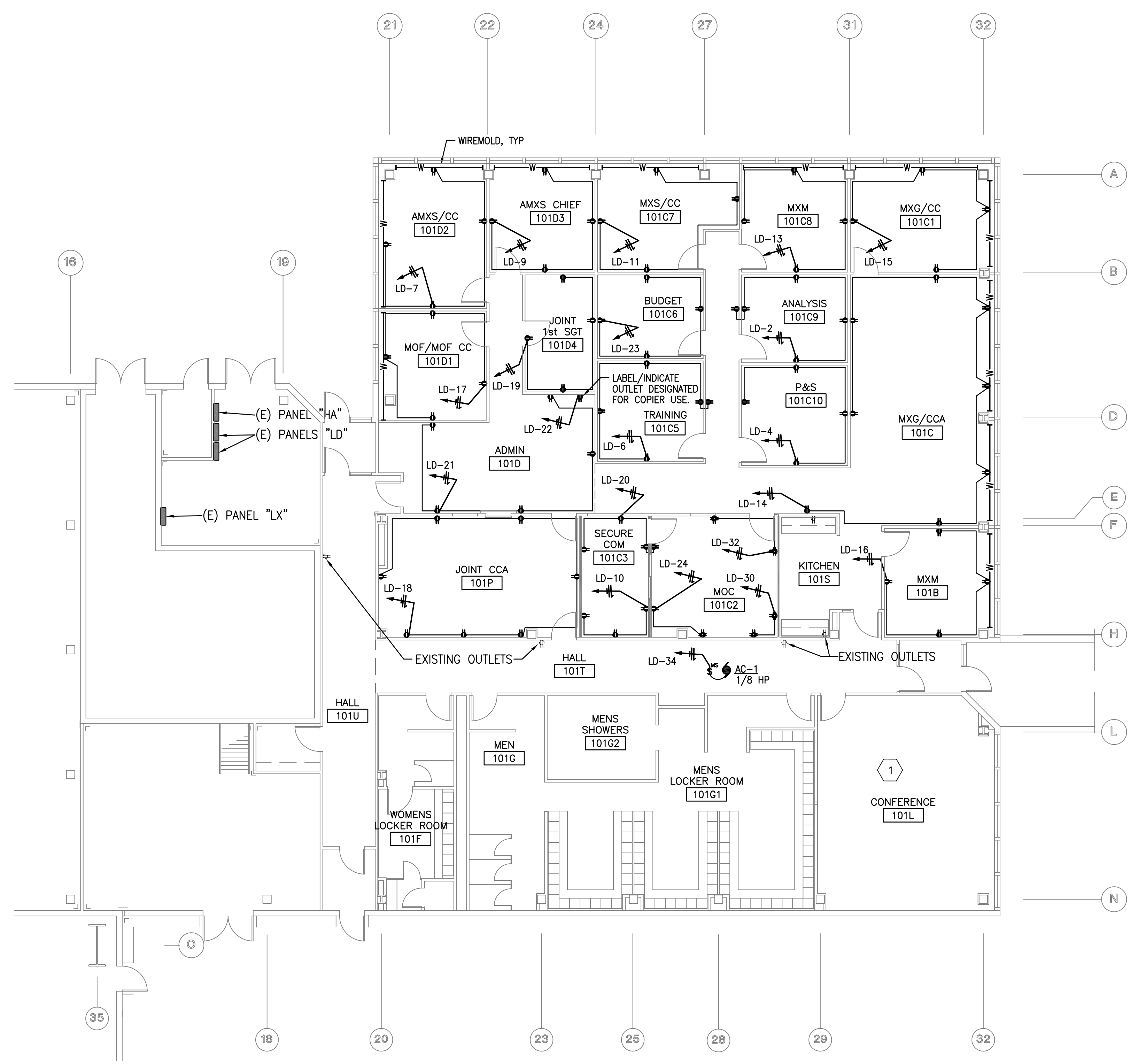
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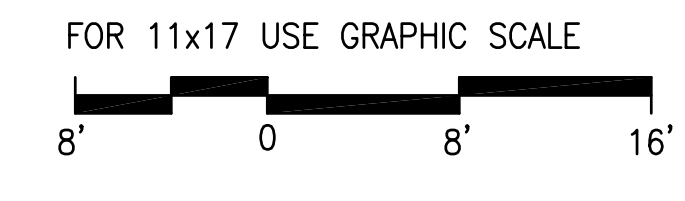
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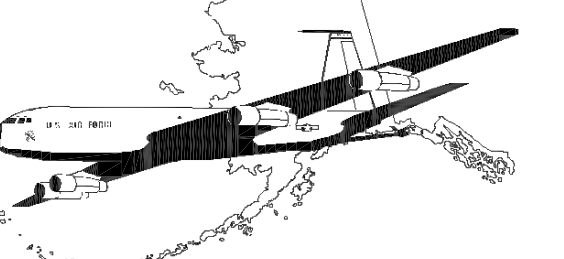
- SHEET NOTES: 1. MOUNT DEVICES IN INDICATED ROOM FLUSH WITH ACOUSTICAL PANELS.



1 FLOOR PLAN -- RENOVATION
 SCALE: 1/8" = 1'-0"



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11-05	FLOORPLAN CHANGE	WSL

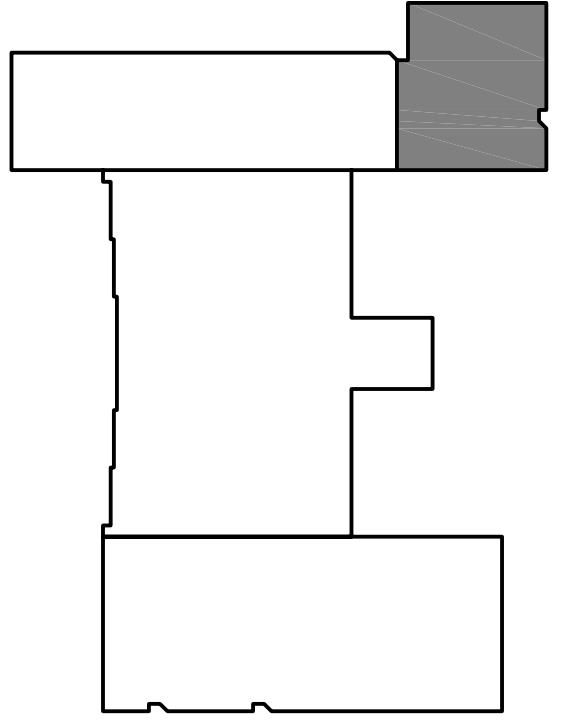
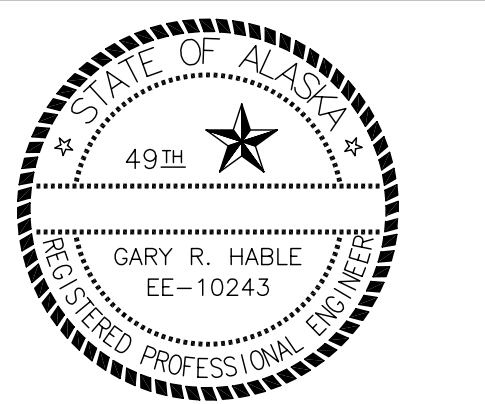
Sheet Contents
ELECTRICAL POWER PLAN

Project Mgr.	GVN	Sheet No.
Drawn	PBS	E4
Drawn		
Checked	GMH	
Date	10/14/05	USKH w.o. 693316

DRAWING NAME: G:\CC\10_Engineer Project Control Files\10 - G BLDG 1176 (COMPOSITE MAINTENANCE HANGAR)\04-2254 (Repair - Maintenance Hangar, E1176683316-ES.dwg PLOTTED: Nov 21, 2005 - 11:18am

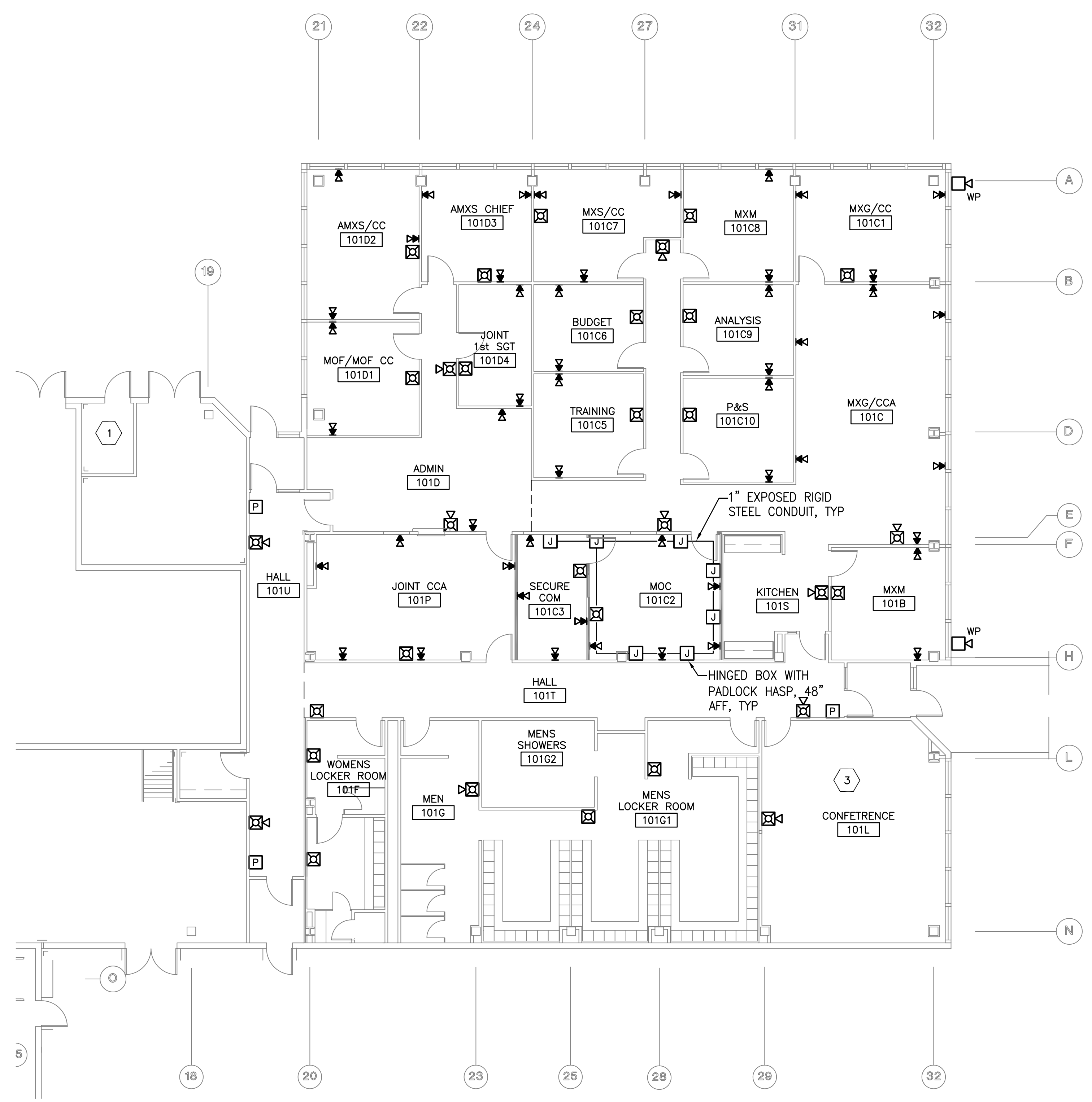
SHEET NOTES:

1. EXISTING COMM ROOM, TERMINATE ALL NEW CABLES TO EXISTING RACKS AND BACKBOARDS HERE.
2. SURFACE MOUNT DEVICES ON EXTERIOR WALLS USING METALIC SURFACE RACEWAY. FLUSH MOUNT DEVICES ON INTERIOR WALLS.
3. MOUNT DEVICES IN INDICATED ROOM FLUSH WITH ACOUSTICAL TILES.



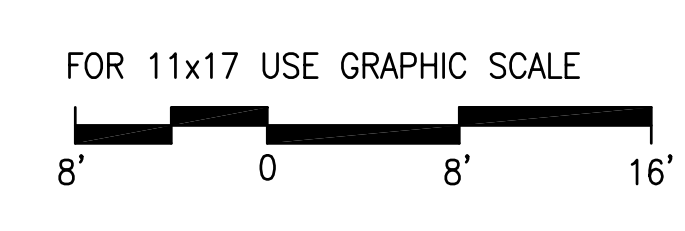
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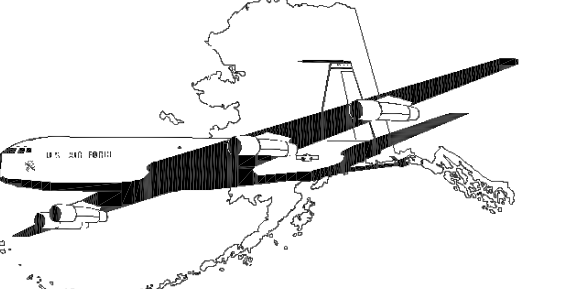


FLOOR PLAN -- RENOVATION

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



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Project:

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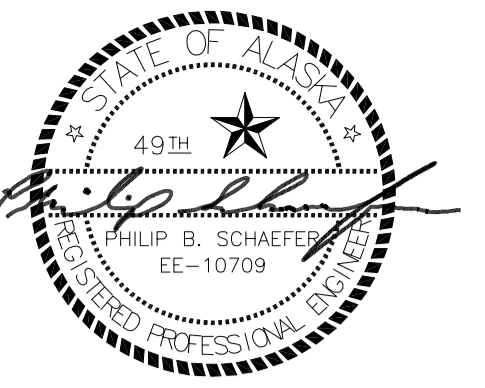
Date	Revision	By
11-05	FLOORPLAN CHANGE	WSL

Sheet Contents

ELECTRICAL SYSTEMS PLAN

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Drawn		
Checked	GMH	
Date	10/14/05	

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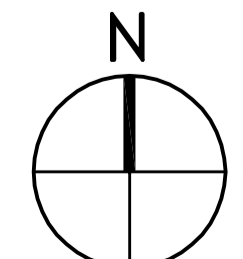
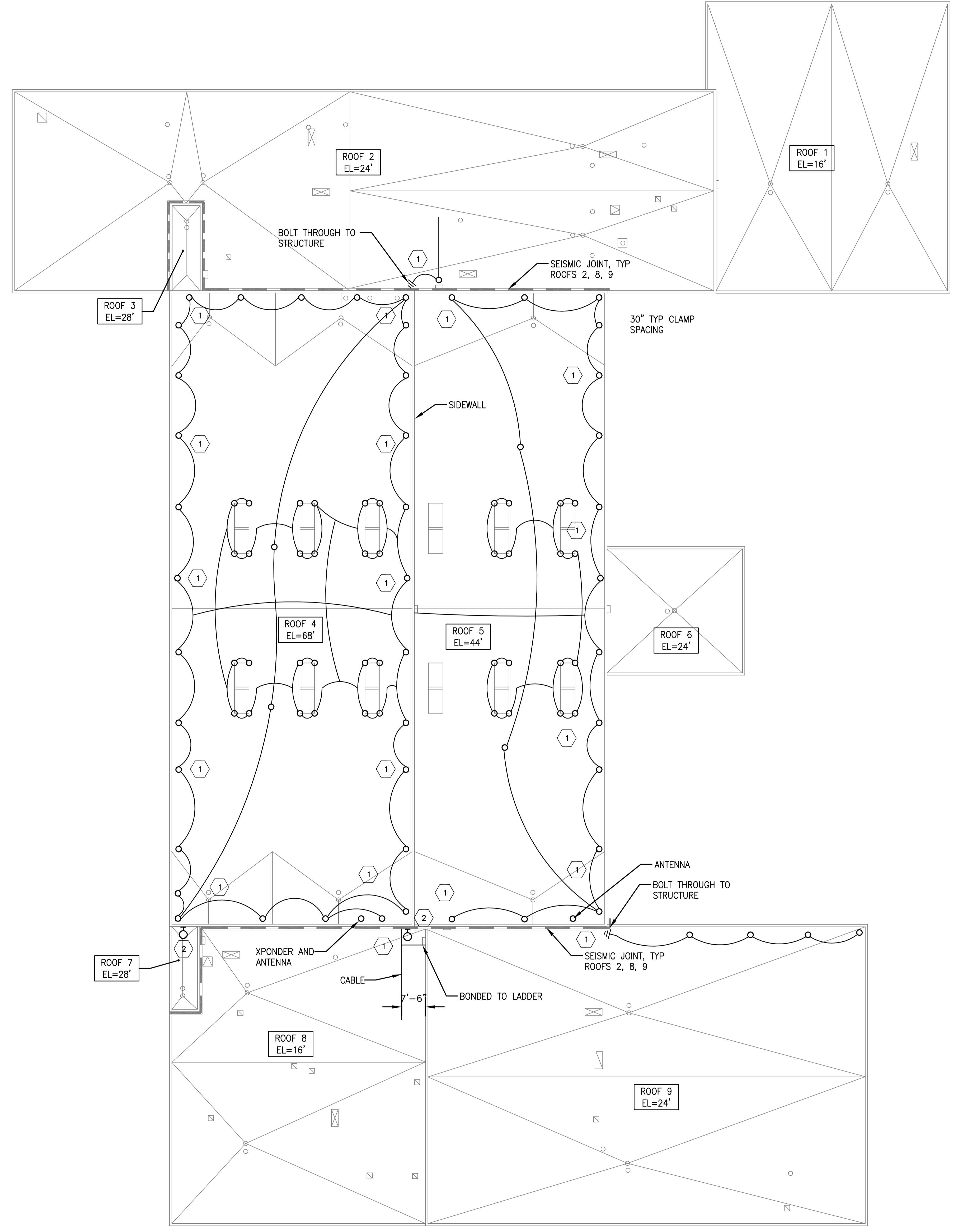
Notes:

SHEET NOTES:

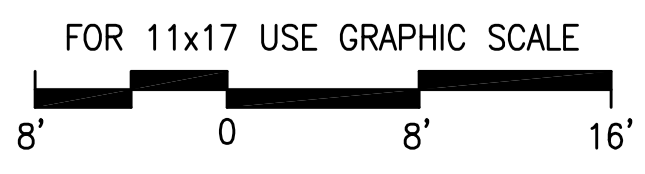
1. REMOVE LIGHTNING PROTECTION SYSTEM AND REPLACE AFTER ROOFING IS COMPLETE, SEE ROOFING PLANS. TEST SYSTEM PRIOR TO REMOVAL AND FOLLOWING REINSTALLATION, INCLUDE TEST RESULTS IN O&M MANUAL. TEST PER AF132-1065, GROUND SYSTEMS, APPENDIX 6, PARAGRAPH A6.4 AS FOLLOWS:

"Perform this test by firmly attaching one lead of an ohmmeter to a corner ground rod. Next, connect the other lead consecutively to each of the air terminals located at the corners of the building, and the air terminal (or metallic body) with the highest elevation. Repeat the test from the ground rod located at the opposite corner of the building. If the continuity of the system is good, the resistance value at any given test point should be about the same. Investigate any reading over 3 ohms. NOTE: Tests can also be performed from ground rod to nearest corner air terminal and from that corner terminal to the other corner terminals"

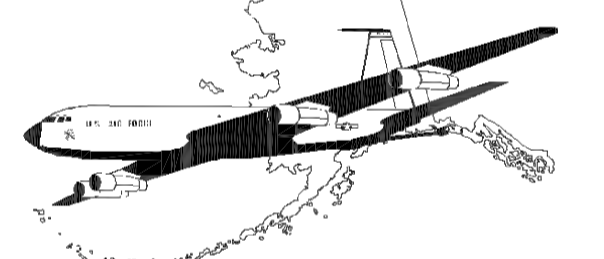
2. REMOVE AND REINSTALL BEACONS, SEE ROOFING PLANS.



ELECTRICAL ROOF PLAN - RENOVATION
SCALE: 1/16" = 1'-0"



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Project:
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Sheet Contents
ELECTRICAL ROOF PLAN

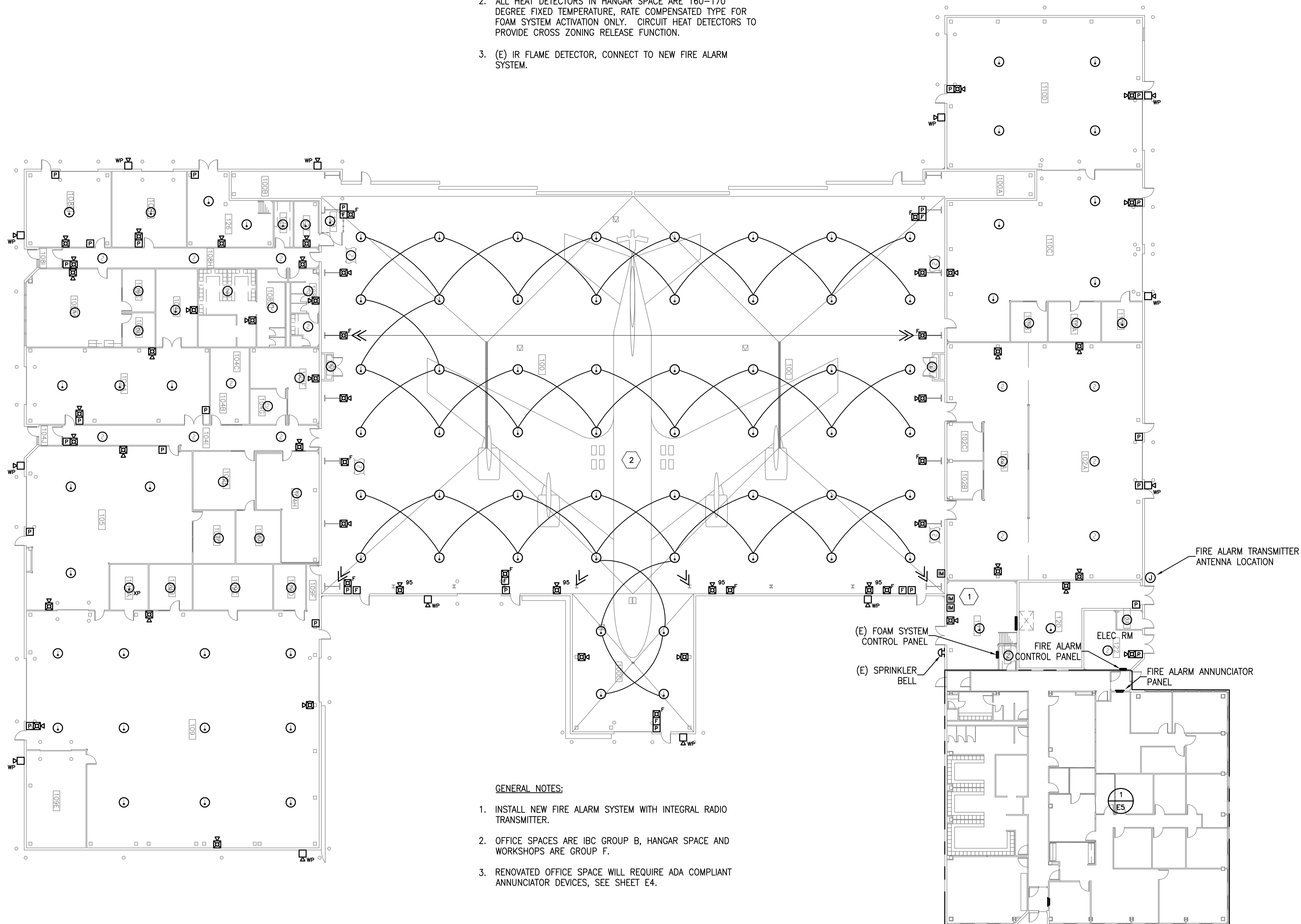
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Drawn	MWV	E6
Drawn		
Checked	PBS GMH	
Date	5/18/04	USKH w.o. 693316

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DRAWING NAME: I:\693316\Drawings\693316-E7.dwg - PLOTTED: Dec 05, 2005 - 4:00pm

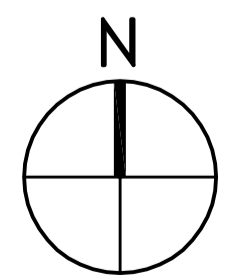
SHEET NOTES:

1. INTERFACE MODULES, QUANTITY AS REQUIRED TO CONNECT ALL EXISTING AND NEW SPRINKLER FLOW AND TAMPER SWITCHES WITH AN INDIVIDUAL ADDRESS.
2. ALL HEAT DETECTORS IN HANGAR SPACE ARE 160-170 DEGREE FIXED TEMPERATURE, RATE COMPENSATED TYPE FOR FOAM SYSTEM ACTIVATION ONLY. CIRCUIT HEAT DETECTORS TO PROVIDE CROSS ZONING RELEASE FUNCTION.
3. (E) IR FLAME DETECTOR, CONNECT TO NEW FIRE ALARM SYSTEM.

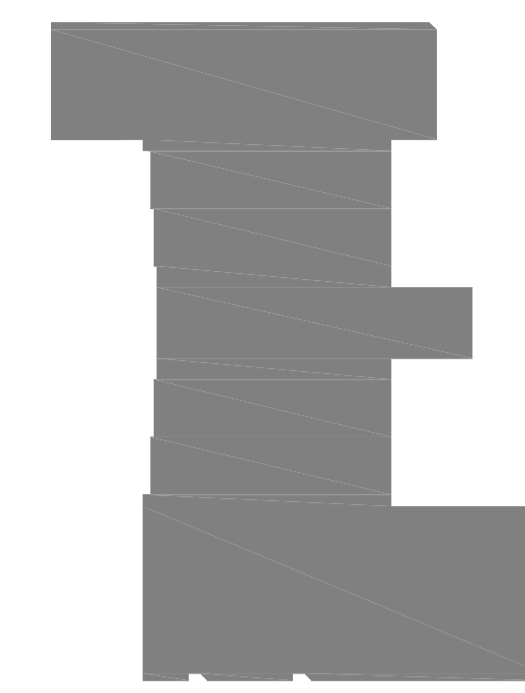
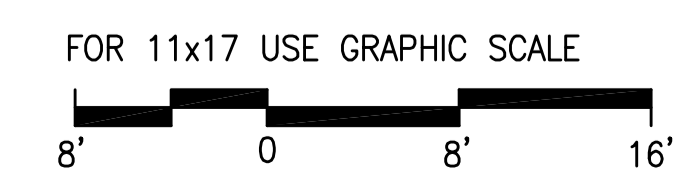


GENERAL NOTES:

1. INSTALL NEW FIRE ALARM SYSTEM WITH INTEGRAL RADIO TRANSMITTER.
2. OFFICE SPACES ARE IBC GROUP B, HANGAR SPACE AND WORKSHOPS ARE GROUP F.
3. RENOVATED OFFICE SPACE WILL REQUIRE ADA COMPLIANT ANNUNCIATOR DEVICES, SEE SHEET E4.



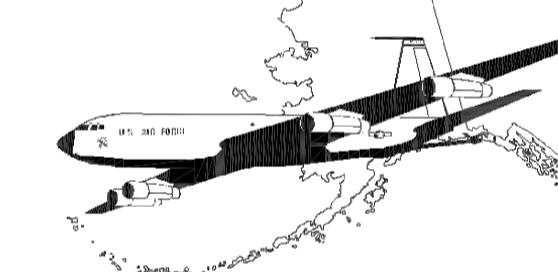
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E7 FIRE ALARM PLAN - RENOVATION
SCALE: 1/16" = 1'-0"



KEYPLAN

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Project:

**REPAIR AIRCRAFT
MAINTENANCE HANGER
BDLG 1176**

EIELSON AFB, ALASKA

FTQW-04-2254

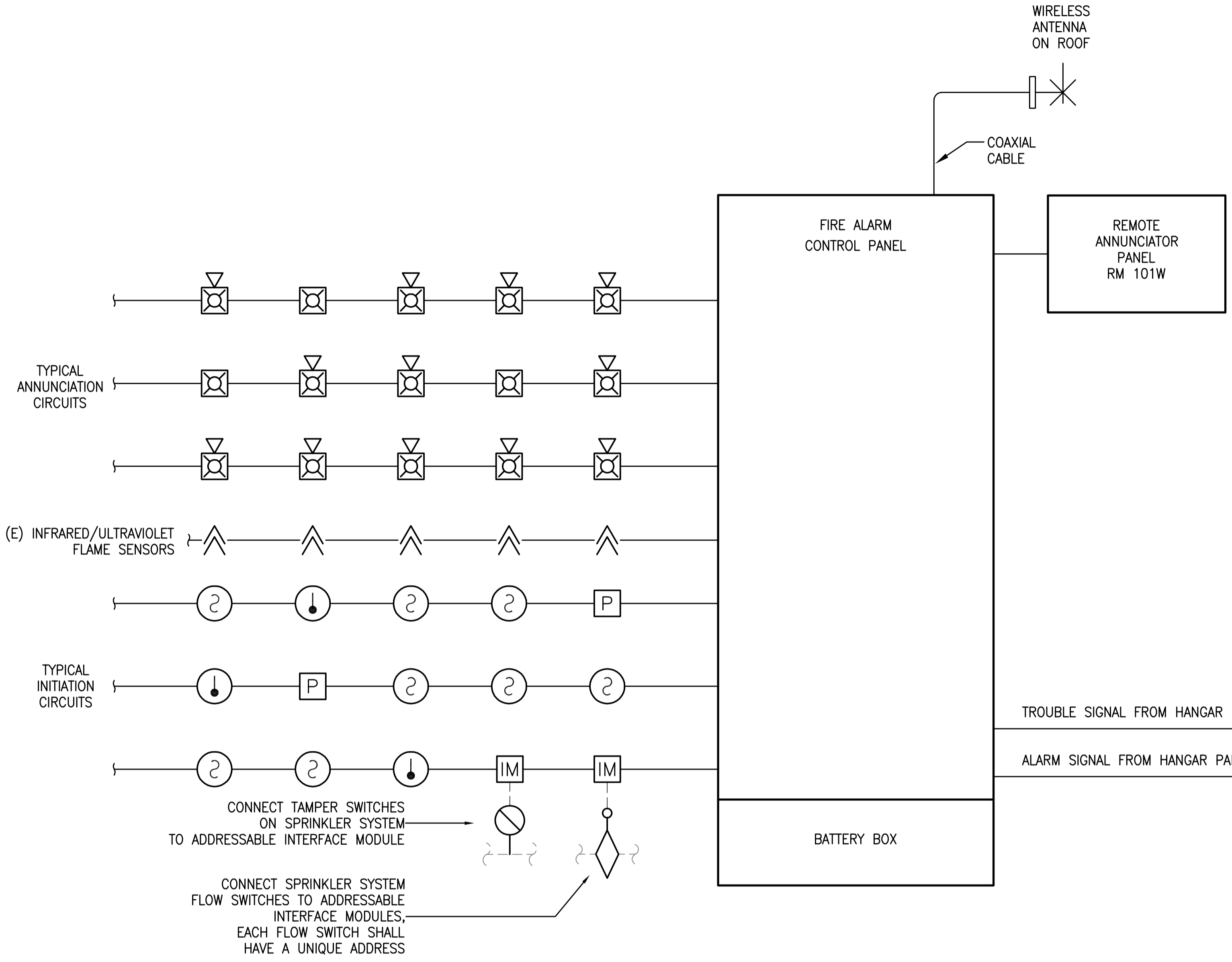
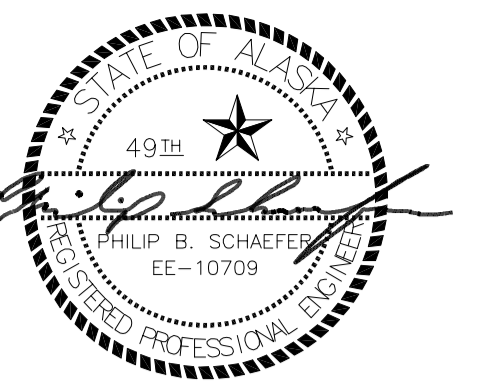
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Sheet Contents

FIRE ALARM PLAN

Project Mgr.	GVN	Sheet No.
Drawn	PBS	E7
Drawn		
Checked	GMH	
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USKH W.O. 693316		



SYSTEM INPUTS

FIRE ALARMS

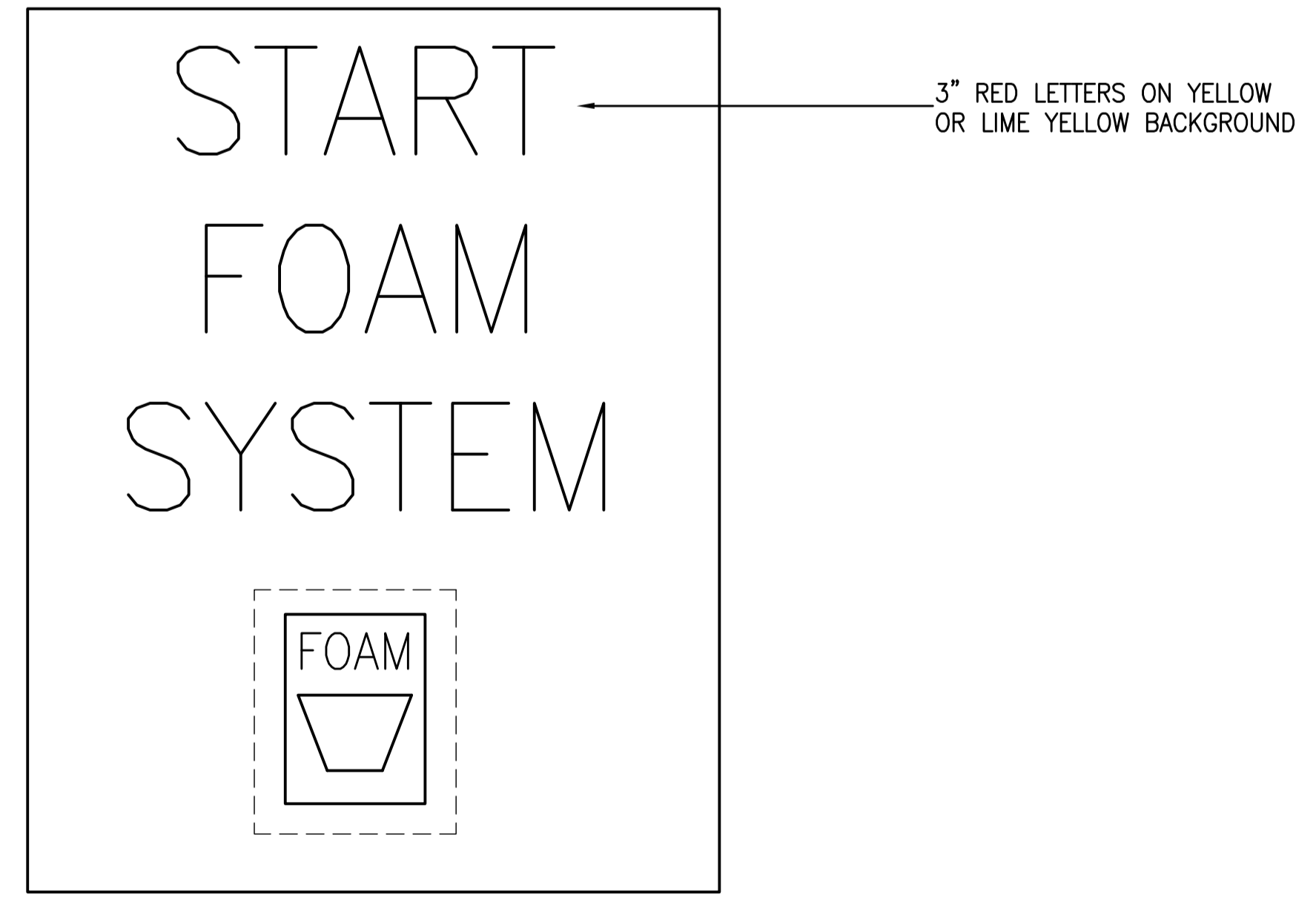
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MANUAL F/A STATIONS	X			X						X					X	X		
SMOKE DETECTORS	X			X						X					X	X		
HEAT DETECTORS	X			X						X					X	X		
DUCT SMOKE DETECTORS	X			X						X					X	X		
SINGLE HANGAR HEAT DETECTOR	X			X						X					X	X	X	
MULTIPLE HANGAR HEAT DETECTORS	X			X	X	X				X				X	X	X	X	
SPRINKLER FLOW SWITCHES	X			X						X	X				X	X		
FOAM SYSTEM FLOW SWITCH	X			X						X	X		X	X	X	X	X	X
MANUAL FOAM STATION	X			X	X	X				X			X	X		X	X	
LOW-LEVEL IR DETECTORS	X			X						X		X				X		

SUPERVISORY SIGNALS

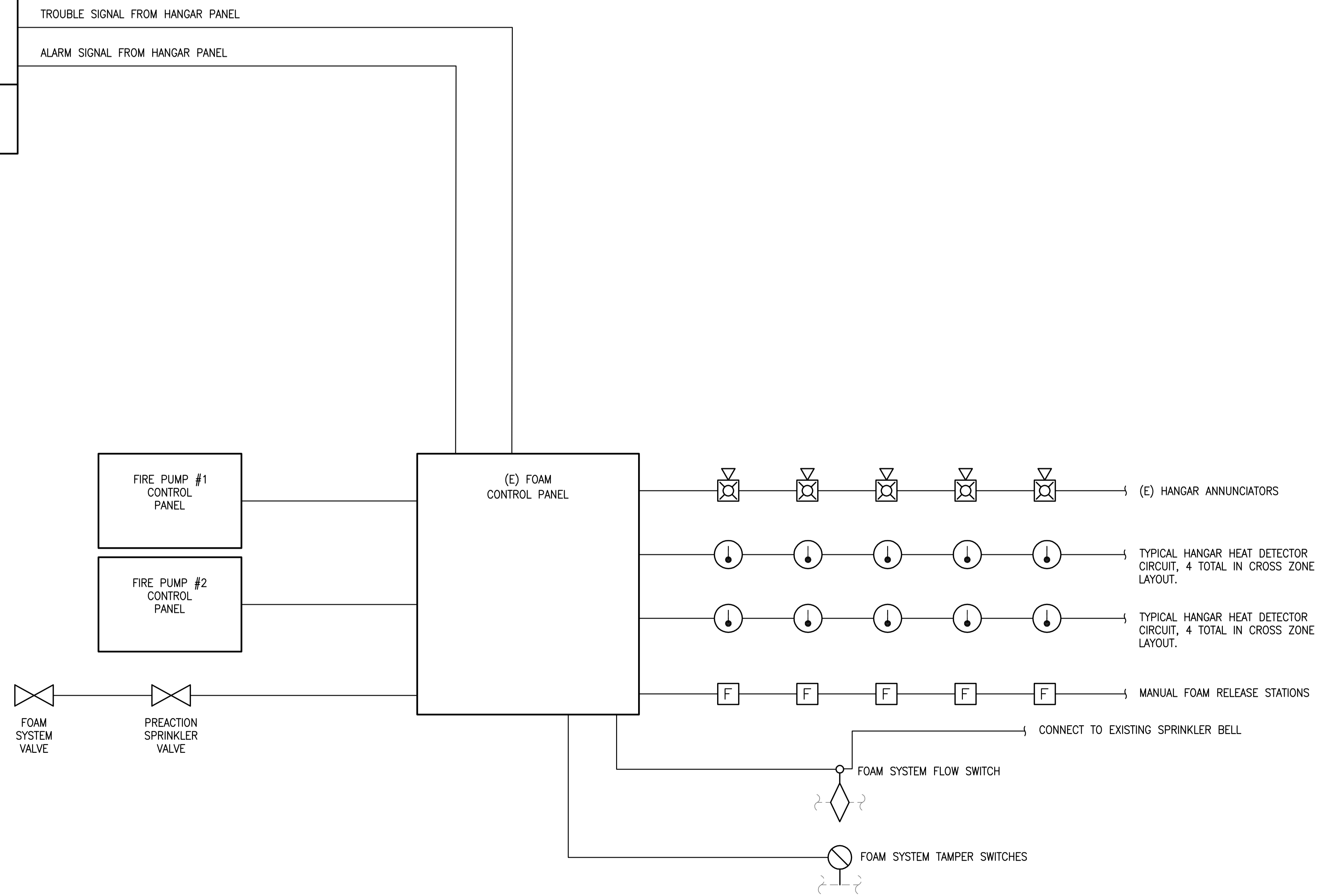
SPRINKLER TAMPER SWITCHES		X	X						X									
FOAM SYSTEM TAMPER SWITCHES		X	X						X									
CONTROL COMPONENT COMMON TROUBLE CONDITION			X	X					X									

TROUBLE CONDITIONS

LOW BATTERY VOLTAGE			X						X									
CIRCUIT FAULT			X						X									
SUPERVISED COMPONENT FAULT			X						X									
AC POWER FAILURE			X						X									



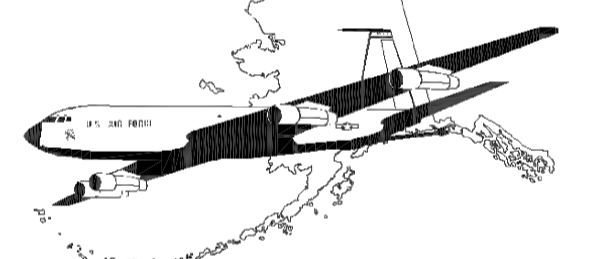
1
E8 MANUAL FOAM STATION SIGN
SCALE: NTS



2
E8 FIRE ALARM RISER DIAGRAM
SCALE: NTS

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Sheet Contents
FIRE ALARM RISER DIAGRAM

Project Mgr.	GVN	Sheet No.
Drawn	PBS	E8
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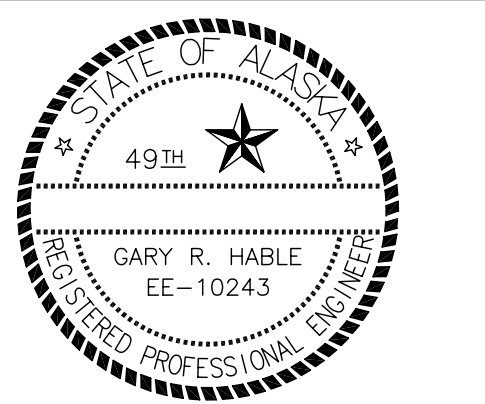
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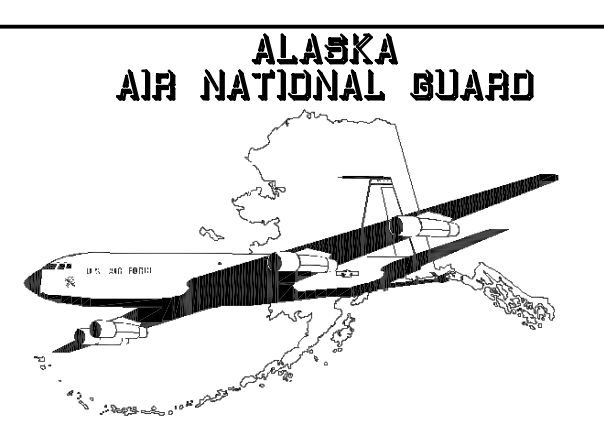
EXISTING PANEL 'LD-1'												
CKT	LOAD	BRANCH			CONNECTED KVA			BRANCH		LOAD	CKT	
		BKR	VA	A	B	C	VA	BKR				
1	P-9 R-200	20/1		0.9			900	20/1		REC ANALYSIS, HALL	2	
3	EF-2, R-200	20/1			0.7		720	20/1		REC P&S	4	
5	EF-3 R-200	20/1				0.9	900	20/1		REC TRAINING	6	
7	REC AMXS/CC	20/1	720	0.7				20/1		DF, REC, LT R-101F, F.1, G	8	
9	REC AMXS CHIEF	20/1	720		1.4		720	20/1		REC SECURE COM	10	
11	REC MXS/CC	20/1	720			0.7		20/1		REC R-101 T, U, 124	12	
13	REC MXM	20/1	720	1.8			1080	20/1		REC MXG/CCA	14	
15	REC MXG/CC	20/1	1080		1.8		720	20/1		REC MXM	16	
17	REC MOF/MOF CC	20/1	720			1.8	1080	20/1		REC JOINT CCA	18	
19	REC JOINT 1st SGT	20/1	720	1.4			720	20/1		REC SECURE COM.	20	
21	REC ADMIN	20/1	900		2.1		1200	20/1		REC ADMIN	22	
23	REC BUDGET	20/1	720			1.4	720	20/1		REC MOC	24	
25	EXT REC.	20/1		0.0				20/1		REC R-101 L	26	
27	P-15, R-120, WH-1, 3	20/1			0.0			20/1		REC TRACK LTG, R-101L	28	
29	REC, 27 R-120, 200 UTILIDOR	20/1				0.7	720	20/1		REC MOC	30	
31	SP-1, UTILIDOR	20/1		0.7			720	20/1		REC MOC	32	
33	VF-4, R-122	20/1			0.5		528	20/1		AC-1	34	
35	ENGINE HEATER R-123	20/1				0.0		20/1			36	
37	SPARE	20/1		0.0				20/1		POWER SHUTDOWN R-102 A, 122	38	
39	OUTSIDE LTG CONTROL R-122	20/1			0.0			20/1		POWER POLE R-101 S.	40	
41	LTG R-102A	20/1				0.0		20/1		POWER POLE R-101 S.	42	
CONNECTED LOAD		17.7 KVA		5.6	6.6	5.6	PANEL SPECIFICATIONS					
NEC DEMAND		14.7 KVA		47	55	47	MOUNTING - RECESSED					
PANEL NOTES		1. LOADS SHOWN ARE NEW LOADS ADDED IN THIS PROJECT.			MOUNTING - RECESSED							

EXISTING PANEL 'LD-2'												
CKT	LOAD	BRANCH			CONNECTED KVA			BRANCH		LOAD	CKT	
		BKR	VA	A	B	C	VA	BKR				
43	LTG R-102A	20/1		0.0				20/1		CEILING FANS	44	
45	LT R-102A (CEILING FANS???)	20/1			0.0			20/1		REFRIDG KITCHEN	46	
47		20/1				0.0		20/1		SYSTEM FURNITURE	48	
49	COPIER	20/1		0.0				30/2		AVIONICS CONDENSER	50	
51	SYS FURNITURE ADMIN	20/1			0.0						52	
53	SHREDDER	20/1				0.0		40/2		AVIONICS COMPRESSOR	54	
55				0.0							56	
57					0.0						58	
59						0.0					60	
61				0.0							62	
63					0.0						64	
65						0.0					66	
67				0.0							68	
69					0.0						70	
71						0.0					72	
73				0.0							74	
75					0.0						76	
77						0.0					78	
79				0.0							80	
81					0.0						82	
83						0.0					84	
CONNECTED LOAD		0.0 KVA		0.0	0.0	0.0	PANEL SPECIFICATIONS					
NEC DEMAND		0.0 KVA		0	0	0	MOUNTING - RECESSED					
PANEL NOTES		0 AMPS			MOUNTING - RECESSED							

EXISTING PANEL 'HA'												
CKT	LOAD	BRANCH			CONNECTED KVA			BRANCH		LOAD	CKT	
		BKR	VA	A	B	C	VA	BKR				
1	LTG R-110D	20/1		3.8			3840	20/1		LTG HALLS, CONF., COPY, COM, MOC	2	
3	LTG R-110A, B, E, 202	20/1			4.2		4180	20/1		LTG EAST OFFICES	4	
5	LTG R-110C	20/1				2.6	2625	20/1		LTG WEST OFFICES	6	
7	EXT LTG - EAST	20/1		0.0				20/1			8	
9	LTG R-102B, C 201	20/1			0.0			20/1			10	
11	SPARE	20/1				0.0		20/1			12	
13	SPARE	20/1		0.0				20/1		SPARE	14	
15	SPARE	20/1			0.0			20/1		CONSOLE LTS R-102K	16	
17	SPARE	20/1				0.0		20/1		SPARE	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		10.6 KVA		3.8	4.2	2.6	PANEL SPECIFICATIONS					
NEC DEMAND		13.3 KVA		14	15	9	MOUNTING - RECESSED					
PANEL NOTES		1. LOADS SHOWN ARE NEW LOADS ADDED IN THIS PROJECT.			MOUNTING - RECESSED							



Notes:



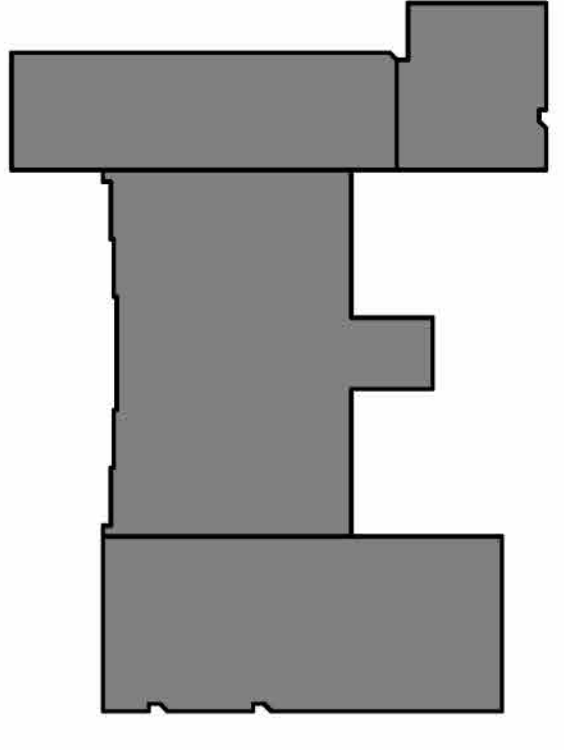
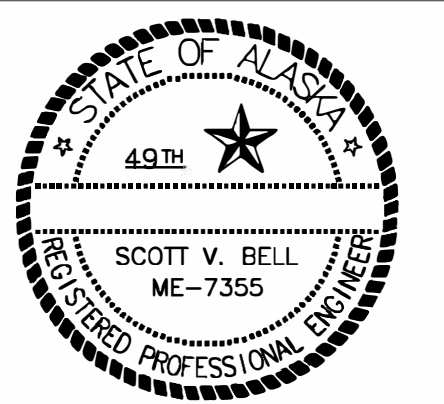
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Sheet Contents
PANEL SCHEDULES

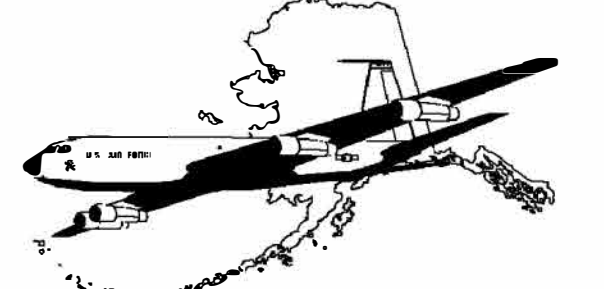
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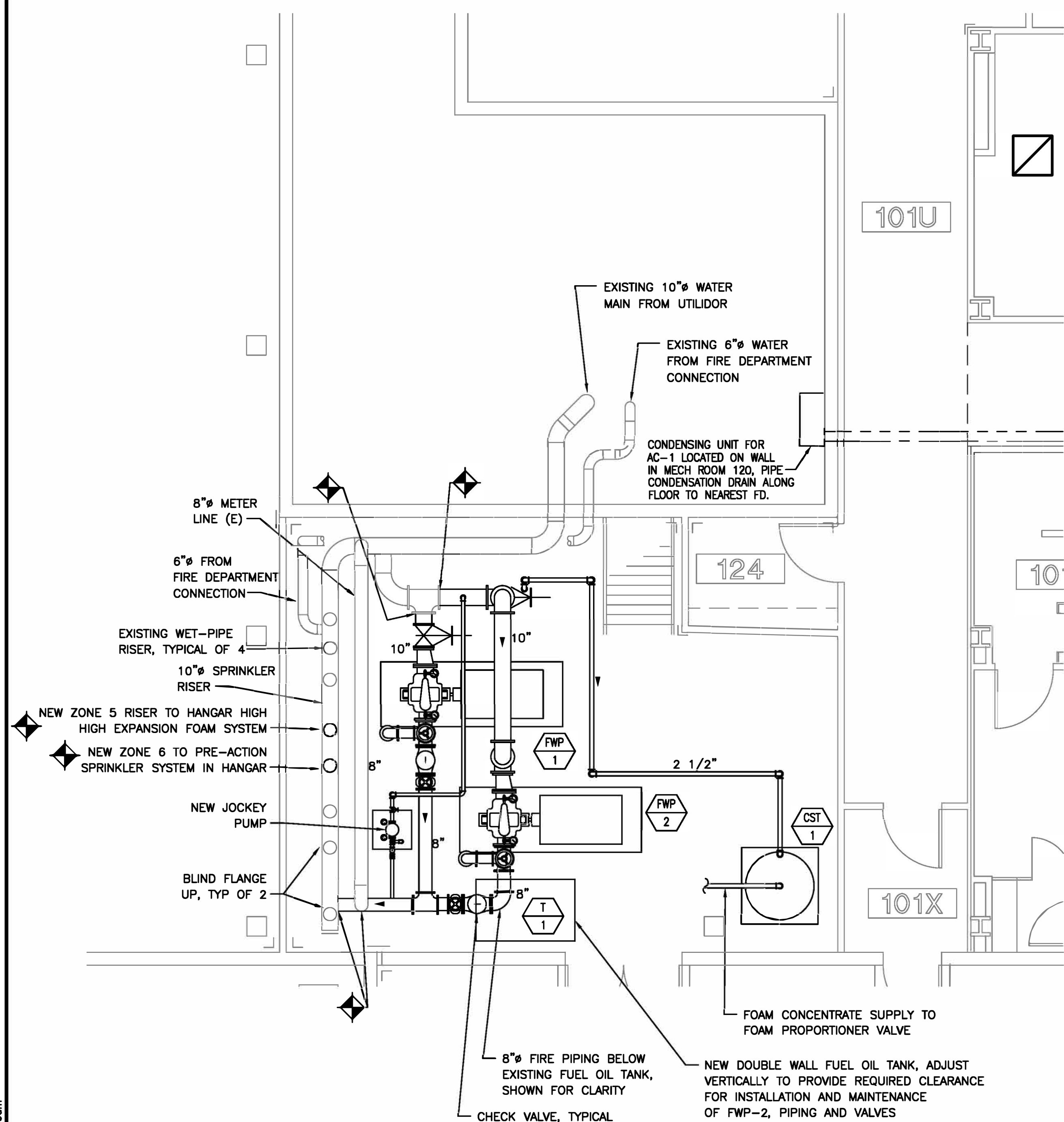
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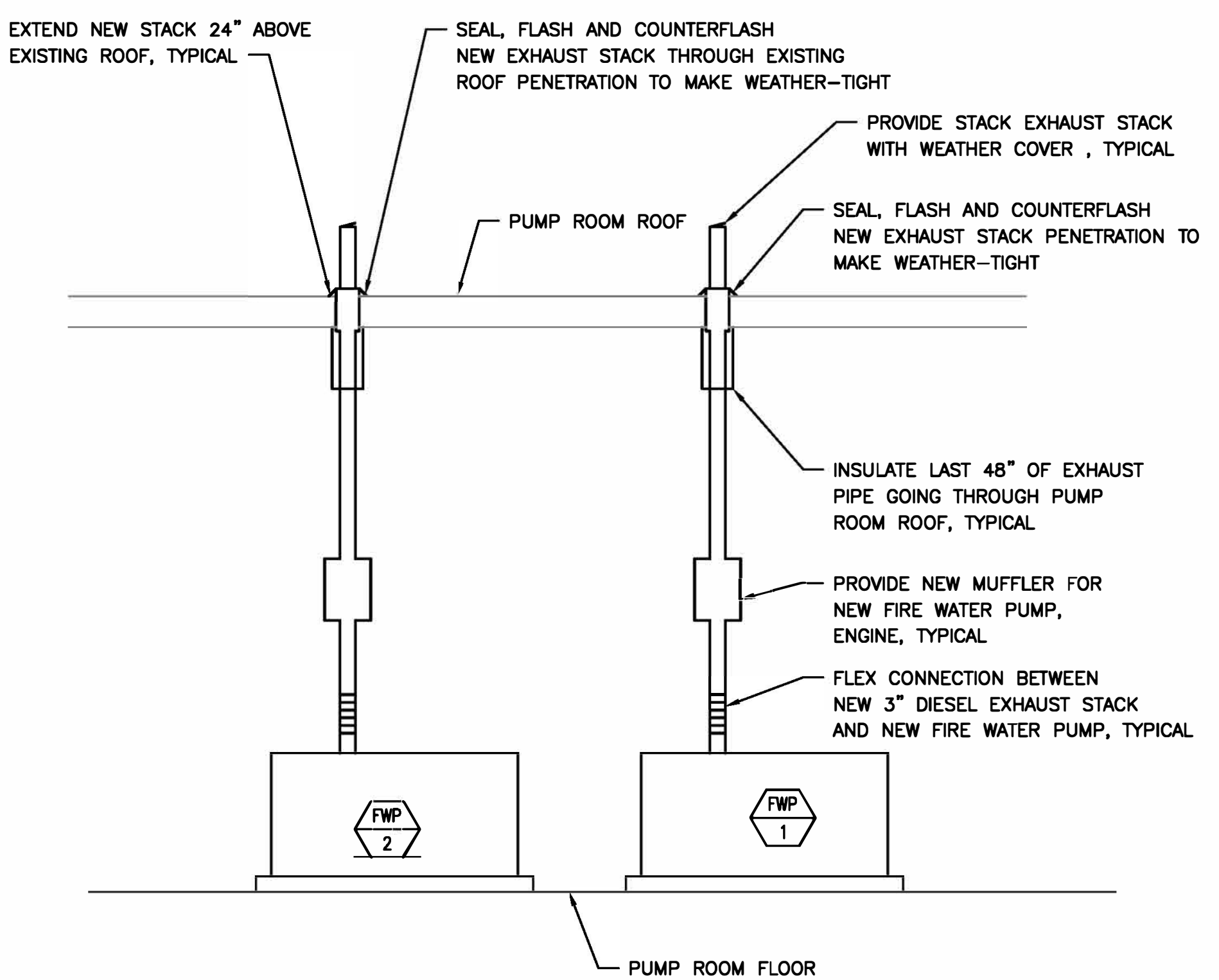
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Sheet Contents
NEW WORK - MECH ROOM PLAN
SPRINKLER SCHEMATIC AND DETAILS

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Checked	GVN	
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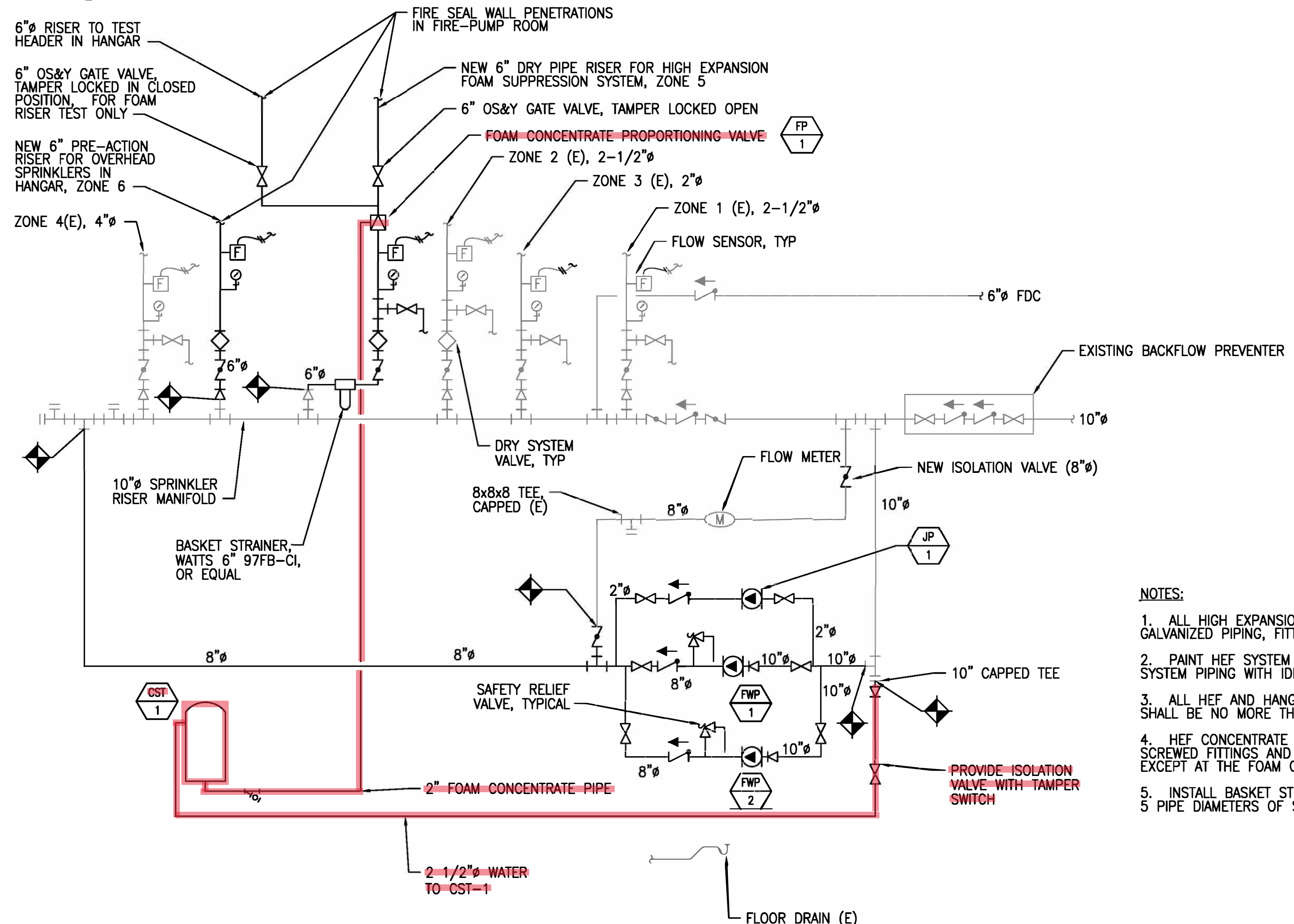


1 FLOOR PLAN
SCALE: 1/4" = 1'-0"



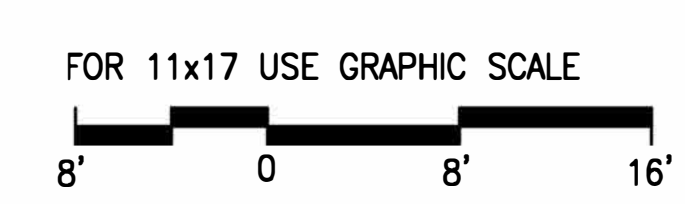
3 FIRE PUMP EXHAUST SCHEMATIC
SCALE: NONE

HIGHLIGHTED HIGH EXPANSION FOAM COMPONENTS TO BE REMOVED

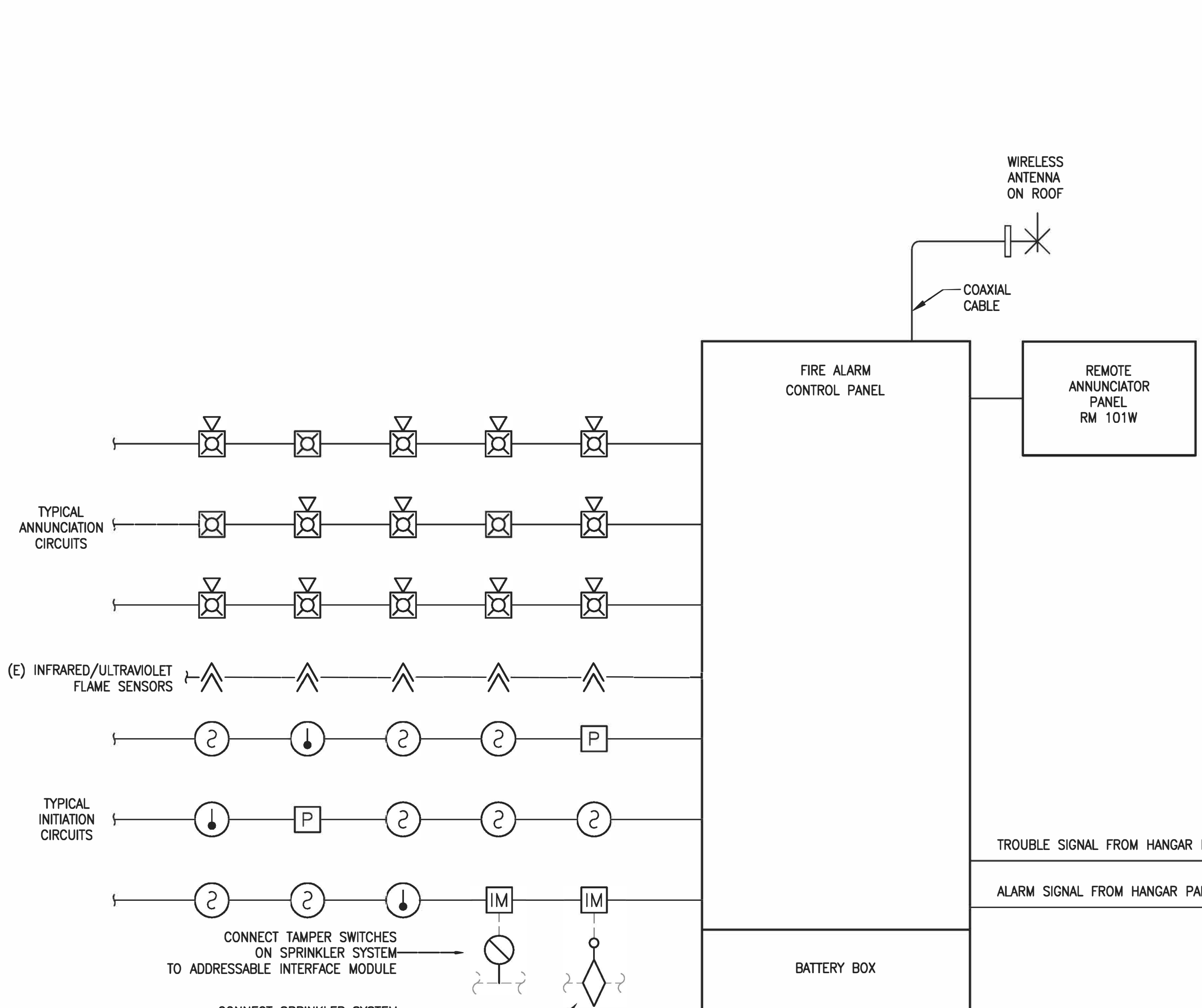


2 FIRE SPRINKLER RISER
SCALE: NTS

- NOTES:
- ALL HIGH EXPANSION FOAM (HEF) SYSTEM PIPING SHALL BE MINIMUM SCHEDULE 40 STEEL GALVANIZED PIPING, FITTINGS OR DEVICES SHALL NOT BE USED IN ANY HEF RELATED SYSTEM.
 - PAINT HEF SYSTEM PIPING IN FACILITY COORDINATE COLOR, COORDINATE WITH OWNER. MARK ALL HEF SYSTEM PIPING WITH IDENTIFICATION AND FLOW MARKINGS AT INTERVALS NOT TO EXCEED 26 FEET.
 - ALL HEF AND HANGAR SPRINKLER PIPING SHALL BE CAPABLE OF BEING DRAINED. MAIN DRAINS SHALL BE NO MORE THAN 7'-0" AFT.
 - HEF CONCENTRATE PIPING SHALL BE SCHEDULE 40 STAINLESS STEEL WELDED OR FLANGED FITTINGS ONLY. SCREWED FITTINGS AND GROOVED/ROLLED EDGE COUPLINGS ARE PROHIBITED ON ANY CONCENTRATE PIPING EXCEPT AT THE FOAM CONCENTRATE STORAGE TANK AND THE PROPORTIONING VALVE CONNECTIONS.
 - INSTALL BASKET STRAINER HORIZONTALLY. PROVIDE 10 PIPE DIAMETERS OF STRAIGHT PIPE UPSTREAM, AND 5 PIPE DIAMETERS OF STRAIGHT PIPE DOWNSTREAM OF BASKET STRAINER.



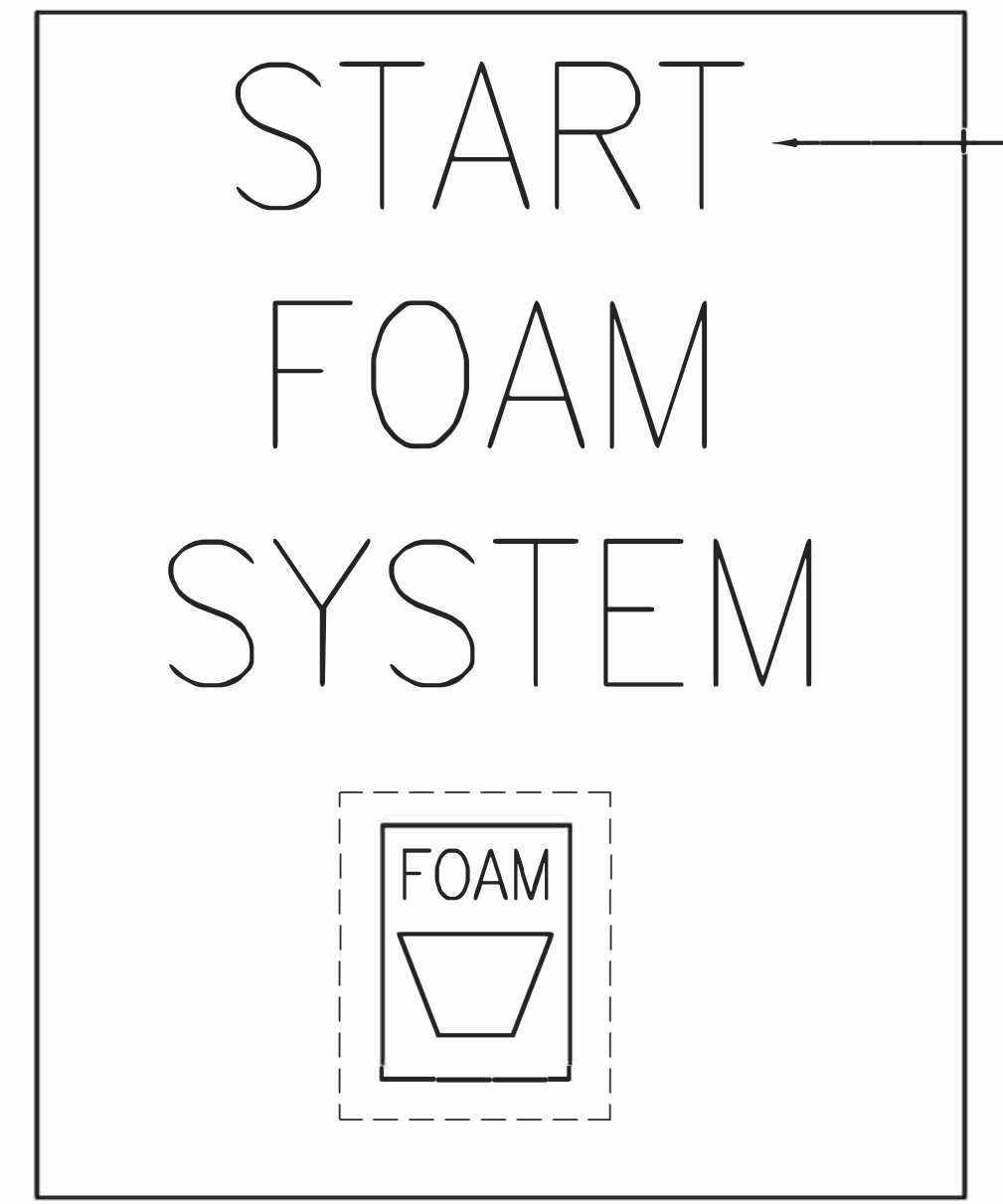
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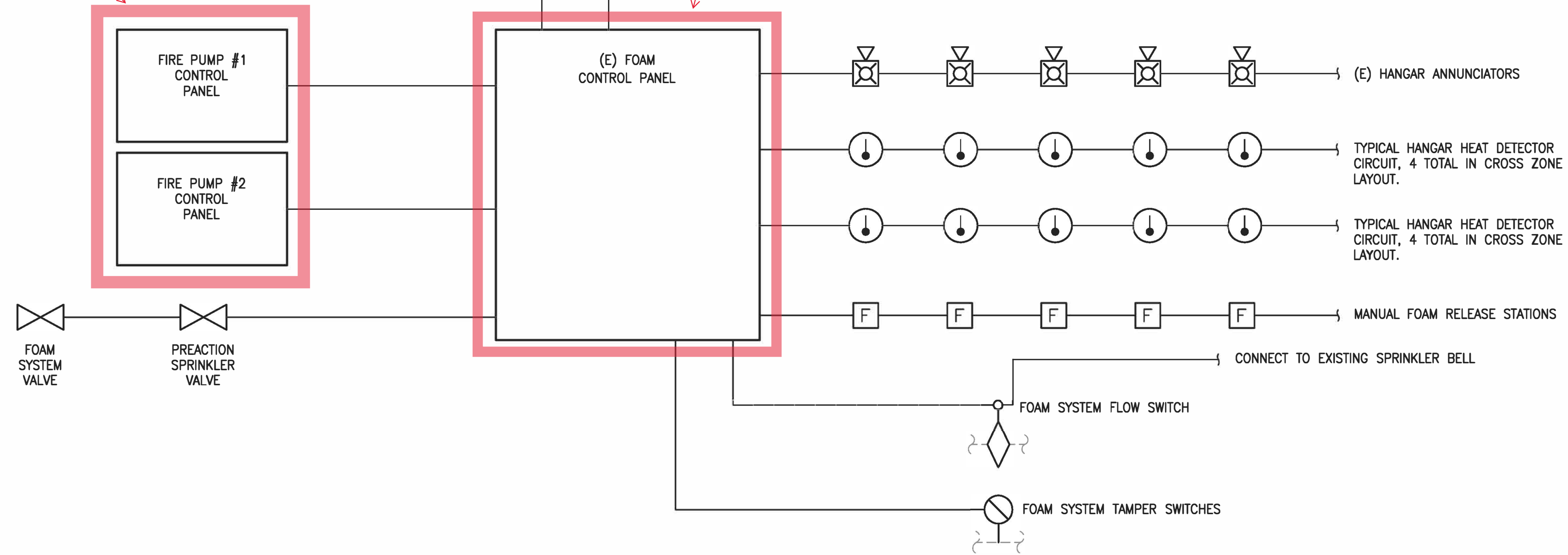
	ANNUNCIATION AT LOCAL PANELS				SUPPRESSION SYSTEM FUNCTIONS		TRANSMIT SIGNALS TO FIRE DEPARTMENT				AUXILIARY FUNCTIONS		EVACUATION SIGNALS					
	AUDIO-VISUAL FIRE INDICATION	AUDIO-VISUAL TROUBLE INDICATION	AUDIO-VISUAL COMMON TROUBLE INDICATION	AUDIO-VISUAL ALARM INDICATION BY DEVICE	OPEN PRE-ACTION	SPRINKLER VALVES	ACTIVATE FOAM SYSTEM	COMMON TROUBLE SIGNAL	COMMON SUPERVISORY SIGNAL	COMMON FIRE ALARM SIGNAL	SPRINKLER WATER FLOW PER ZONE	LOW-LEVEL IR DETECTORS	FOAM DISCHARGE	FAN SHUTDOWN	RELEASE MAGNETIC DOOR HOLDERS	FIRE EVACUATION AUDIO-VISUAL SIGNAL	FOAM SYSTEM SIGNAL	BLUE STROBES/ BEACONS
FIRE ALARMS																		
MANUAL F/A STATIONS	X			X					X						X	X		
SMOKE DETECTORS	X			X					X					X	X	X		
HEAT DETECTORS	X			X					X					X	X	X		
DUCT SMOKE DETECTORS	X			X					X					X	X	X		
SINGLE HANGAR HEAT DETECTOR	X			X					X					X	X	X	X	
MULTIPLE HANGAR HEAT DETECTORS	X			X	X	X			X				X	X		X	X	
SPRINKLER FLOW SWITCHES	X			X					X	X				X	X	X		
FOAM SYSTEM FLOW SWITCH	X			X					X	X			X	X	X	X	X	
MANUAL FOAM STATION	X			X	X	X			X				X	X		X	X	
LOW-LEVEL IR DETECTORS	X			X					X		X					X		
SUPERVISORY SIGNALS																		
SPRINKLER TAMPER SWITCHES		X	X						X									
FOAM SYSTEM TAMPER SWITCHES		X	X						X									
CONTROL COMPONENT COMMON TROUBLE CONDITION		X	X						X									
TROUBLE CONDITIONS																		
LOW BATTERY VOLTAGE		X							X									
CIRCUIT FAULT		X							X									
SUPERVISED COMPONENT FAULT		X							X									
AC POWER FAILURE		X							X									

REPLACE BOTH CONTROL PANELS

REPLACE RELEASING PANEL



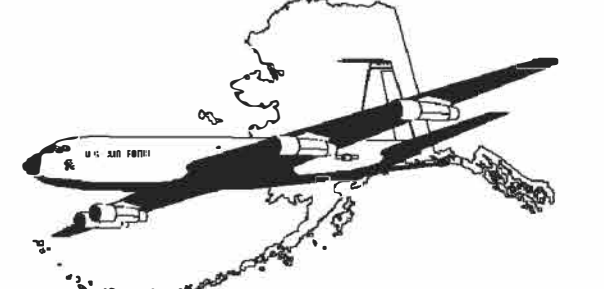
1
E8
MANUAL FOAM STATION SIGN
SCALE: NTS



2
E8
FIRE ALARM RISER DIAGRAM
SCALE: NTS

Notes:

ALASKA AIR NATIONAL GUARD



USKH

Architecture - Engineering
Land Surveying - Planning
2515 'A' Street Anchorage, Alaska 99503 (907) 276-4245
544 Fourth Avenue Fairbanks, Alaska 99701 (907) 452-2128
3031 Clinton Drive Juneau, Alaska 99801 (907) 790-2901
290 North Willow St. Wasilla, Alaska 99654 (907) 376-7815

Project:
REPAIR AIRCRAFT MAINTENANCE HANGER BDLG 1176
EIELSON AFB, ALASKA
FTQW-04-2254
ALASKA AIR NATIONAL GUARD
EIELSON AFB, ALASKA

Date	Revision	By

Sheet Contents
FIRE ALARM RISER DIAGRAM

Project Mgr.	GVN	Sheet No.
Drawn	PBS	E8
Drawn		
Checked	GMH	
Date	10/14/05	

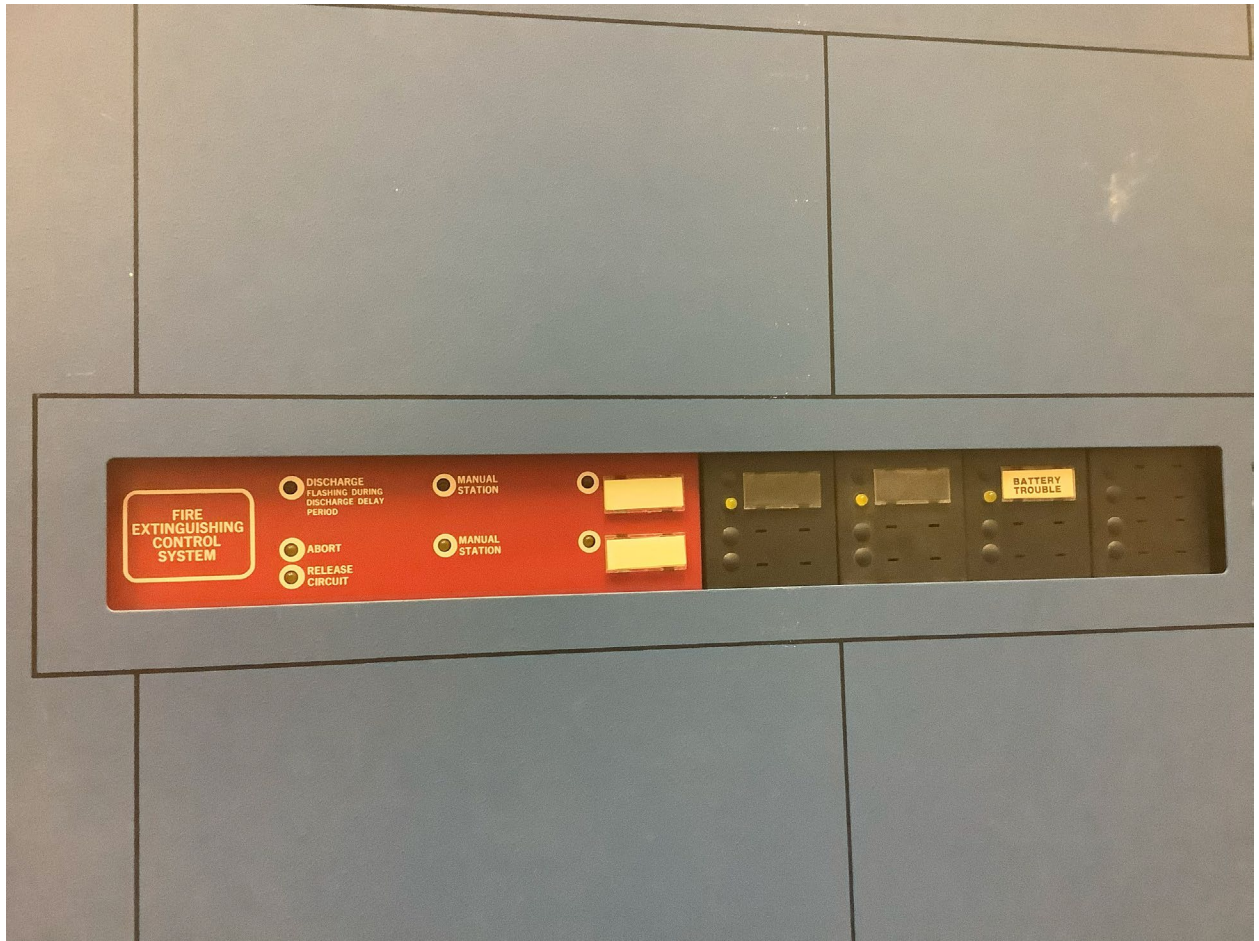
USKH W.O. 693316





Releasing Panel





FIRE
EXTINGUISHING
CONTROL
SYSTEM

DISCHARGE
FLASHING DURING
DISCHARGE DELAY
PERIOD

MANUAL
STATION

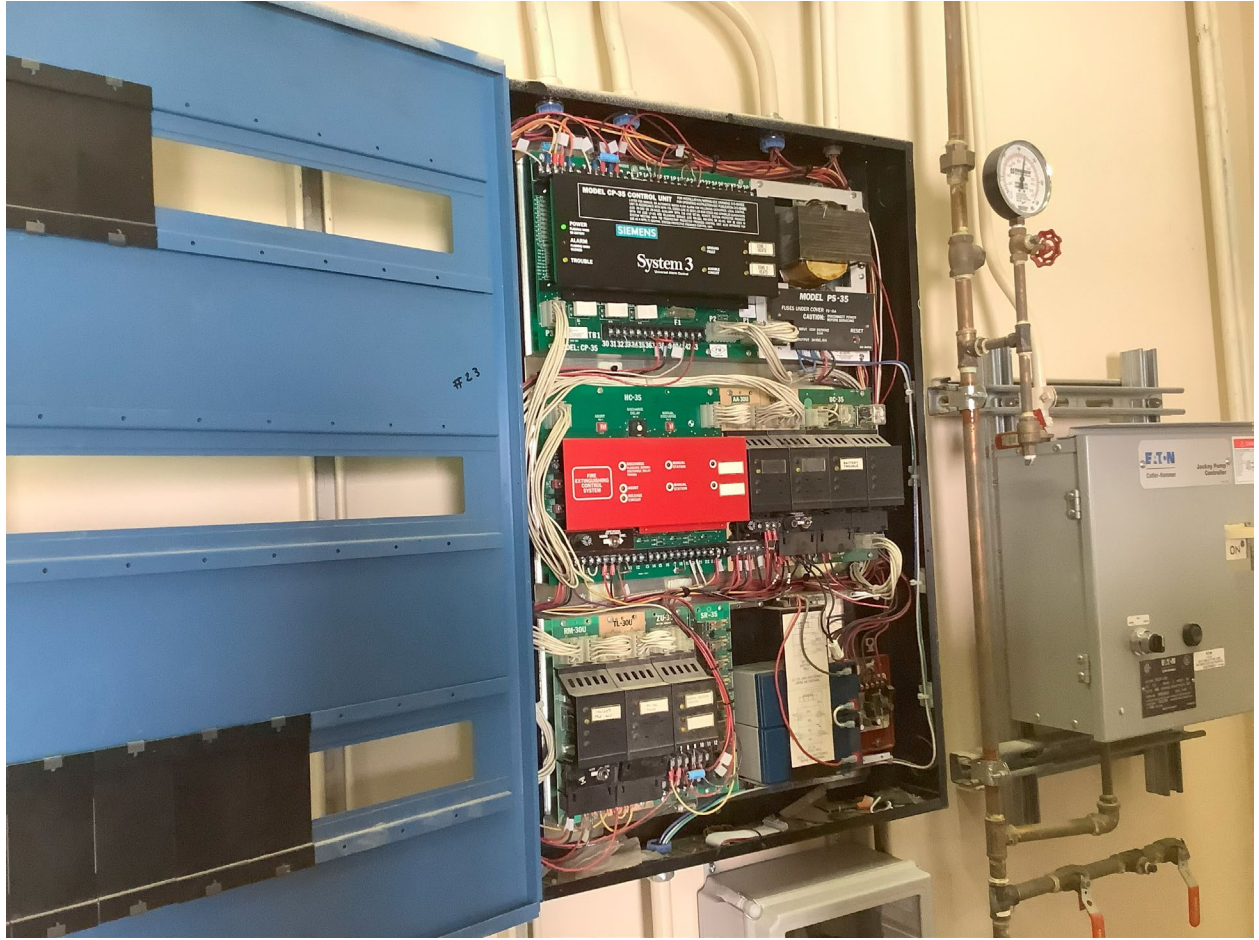
ABORT

MANUAL
STATION

RELEASE
CIRCUIT

BATTERY
TROUBLE



















**Remove all
foam piping
and
components
coming from
HEF Tank**

**Foam Riser to
remain and NOT
removed. Properly
terminate using a
cap, blind flange,
or other approved
method.**





Remove all Water line piping to the HEF Tank

Horizontal Feed Main to Remain and NOT removed. Properly terminate using a cap, blind flange, or other approved method.





Work in the Hangar Bay needs to be scheduled minimum 1 week in advance. Scheduled with COR.