Design Narrative

Renovate Pratt & Whitney Area, B3001

Project Number: WWYK260007
Work Order: 1142581

Tinker Air Force Base, Oklahoma

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1. Overview

Due to a previous flood in the space this project will encompass a complete interior renovation of the existing 2nd floor space. The elevated platform level is located within B3001, adjacent to post WX 107 110.

2. Applicable Codes and Standards

2.1 General

- IBC International Building Code (as amended by UFC 1-200-01)
- IEBC International Existing Building Code (as amended by UFC 1-200-01)
- NFPA 101 Life Safety Code
- TAFB Facility Standard
- UFC 1-200-01 DoD Building Code
- UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings

2.2 Architectural

- ABA Architectural Barriers Act Standards
- UFAS Uniform Federal Accessibility Standards
- UFC 3-101-01 Architecture
- UFC 3-120-10 Interior Design
- UFC 3-190-06 Protective Coatings and Paints

2.3 Structural

- ACI 318-19 Building Code Requirements for Structural Concrete and Commentary
- AISC 360-22Steel Construction Manual, 16th Ed.
- ASCE 7-22 Minimum Design Loads for Building and other Structures
- AISI S100-16 w/ S2 (20) North American Specification for the Design of Cold-formed Steel Structural Members
- UFC 3-301-01 Structural Engineering

2.4 Mechanical / Plumbing

- ANSI/ASHRAE/ ACCA Standard 183 Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings
- ASHRAE 55 Thermal Environmental Conditions for Human Occupancy
- ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality
- ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
- IECC International Energy Conservation Code
- IMC International Mechanical Code (as amended by UFC 3-410-01)
- IPC International Plumbing Code (as amended by UFC 3-420-01)
- TAFB Mechanical Standard

- UFC 1-200-02 High Performance and Sustainable Building Requirements
- UFC 3-401-01 Mechanical Engineering
- UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems
- UFC 3-410-02 Direct Digital Control for HVAC and Other Building Control Systems
- UFC 3-420-01 Plumbing Systems

2.5 Fire Protection

- NFPA 1 Fire Code
- NFPA 10 Standard for Portable Fire Extinguishers
- NFPA 13 Standard for the Installation of Sprinkler Systems
- NFPA 51B Standard for Fire Prevention during Welding, Cutting, and Other Hot Work
- NFPA 70 National Electric Code
- NFPA 72 National Fire Alarm and Signaling Code
- NFPA 80 Standard for Fire Doors and Other Opening Protectives
- NFPA 90A Standard for the Installation of Air-Conditioning and Ventilation Systems
- NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems
- NFPA 101 Life Safety Code
- NFPA 220 Standard on Types of Building Construction
- NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations
- TAFB Fire Protection Standard
- DAFI 32-2001 Fire and Emergency Services (F&ES) Program
- UFC 3-600-01 Fire Protection Engineering for Facilities
- UFC 3-601-02 Fire Protection Systems Inspection, Testing, and Maintenance
- UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings
- UFC 4-021-01 Design and O&M: Mass Notification Systems
- USACE ECB 2018-17 Engineering Construction Bulletin - Requirements for Visual Notification for Mass Notification Systems - US Army Corps of Engineers (USACE)

3. Architectural Design Narrative

The Architectural requirement for the water damage renovation involves removing/replacing existing drywall, acoustical batt insulation, select framing, acoustical ceiling tile system, and finish flooring within two stairwells and the office area of an elevated platform space. Refer as-built drawings, DACA56-85-R-0006, B3001 WX 107 110. Stair 6-1-1/ 6-2-2 and Stair 6-1-2/ 6-2-3, as per 4/A-1.30 TYPICAL STAIR SECTION, indicate 2 hour partitions with gypsum wallboard on structural metal framed walls and gypsum board ceiling on wood joists. The north stairwell has received extensive water damage and the south stairwell has received less water damage. The office area, as per 5/A-3.4 ELEVATED PLATFORM WALL, indicate gypsum wallboard on metal framed walls secured to roof trusses. Sound attenuation batts within the walls and on the suspended acoustical ceiling tile. Borrowed lites have sound insulated glass within hollow metal frame. The platform finish floor is 14’-7” above the first floor level. The floor is 3 inch concrete on 1-1/2” metal deck.

3.1 General Design Parameters and Assumptions

3.1.1 Accessibility

This space currently does not meet the ABA accessibility requirements. Access to the elevated platform space is by stairs, only.

3.1.2 Energy Conservation

Acoustical Batt insulation and sealant will be replaced

3.1.3 Life Safety

Removal and replacement of fire rated drywall within the existing stairs leading to and from the elevated platform space

3.1.4 Security

Secure door hardware is existing. Remove core during construction.

3.1.5 Acoustical Design

Acoustical Batt insulation and sealant will be removed and replaced

3.2 Architectural Demolition

<u>Elevated Platform Office Area:</u>

- Floor: Remove remaining carpet within Com closet. Remove remaining glue on Existing Concrete Floor. Note – Finishes removed after water damage event: Carpet Tile.
- Base: Remove Rubber Base.
- Wall: Remove drywall throughout water damaged area walls – protect metal framing during demolition. Remove acoustical batt. Note: Work to include removal of rusted metal framing.
- Ceiling: Note – Finishes removed after water damage event: Acoustical Ceiling Tile. Remove carpet glue. Remove metal framing showing signs of rust.

<u>Stairwells:</u>

- Floor: Remove rubber flooring and rubber treads.

- Base: Remove Rubber Base.
- Wall: Remove drywall and metal framing throughout stairwells – protect adjacent metal framing during demolition. Remove acoustical batt within framing. Note: Work to include removal of rusted metal framing.
- Ceiling: Remove gypsum wallboard ceiling. Remove wood framing above stair ceiling. Existing ceiling on first floor is approximately 8'-6" above finish floor. The existing ceiling height on the elevated platform level is approximately 7'-0" above finish floor.

3.3 Architectural Construction

3.3.1 Elevated Platform Office Area – New Work:

- Floor: Carpet Tile on Existing Concrete Floor. Product selection, as per Base Carpet Policy Standard. Color: TBD per Base Standard
- Base: Rubber Base. Manufacturer: Roppe; Color: Black Brown 193, as per Base Standard.
- Wall: Gypsum wallboard throughout office area. Provide Wall Type M3 and M3G to provide acoustical walls meeting STC 51. Paint, Eggshell. Manufacturer: Sherwin Williams; Color: TBD per Base Standard. Note: Work to include replacement of rusted metal framing. Provide acoustical batt or board insulation.
- Ceiling: Acoustical Ceiling Tile. CAC-50.. Secure metal framing to joists, above and provide stone wool or mineral wool acoustical batt. ACT General Requirements: Good acoustics, Humiguard plus performance, non-sag, anti-mold, anti-mildew, anti-bacterial, 30 year warranty (when used with Armstrong suspension systems.) Design based on Manufacturer: Armstrong; CALLA PrivAssure, Square Tegular 15/16", 8880, 24x24x1.75, 0.8 NRC, 50 CAC; Mineral fiber; Light Reflectance: 0.86.
- Paint: Hollow metal frames, Hollow metal doors. Paint, Alkyd Enamel Satin. Manufacturer: Sherwin Williams; Color: TBD per Base Standard.
- Provide new coffee bar casework adjacent to Custodial Closet. Provide a bar sink. Existing as-built drawings indicate adjacent plumbing within wall in custodial room. Countertop design based on: Corian Platinum solid surface. Color: TBD per Base Standard. Cabinet, plastic laminate on marine grade plywood cabinet grade. Color: TBD per Base Standard.

3.3.2 Stairwells – New Work:

- Floor: Rubber Floor Tile on Existing Concrete Floor. Manufacturer: Roppe; Color: Black Brown 193, as per Base Standard.
- Base: Rubber Base. Manufacturer: Roppe; Color: Black Brown 193, as per Base Standard.
- Tread: Rubber Tread. Manufacturer: Roppe; Color: Black Brown 193, as per Base Standard.

- Wall: Gypsum wallboard, acoustic batt, and structural metal framing throughout stairs. Provide Wall Type M2 to provide acoustical walls meeting STC 51 and fire rating required. Note: Work to include replacement of rusted metal framing. Paint, Eggshell. Manufacturer: Sherwin Williams; Color: TBD per Base Standard.
- Ceiling: Gypsum Board. CAC-50. Provide 5/8" Gypsum board, Type X on metal joists, above with 2-hour fire rating. Replace exposed wood framing above stairwells with structural metal framing and acoustical insulation within. Paint, Eggshell. Manufacturer: Sherwin Williams; Color: TBD per Base Standard.
- Paint: Hollow metal frames, Hollow metal doors. Paint, Alkyd Enamel Satin. Manufacturer: Sherwin Williams; Color: TBD per Base Standard.

3.3.3 Wall Types:

Wall Type M2R – STC 51 - 2-hour fire rated walls within Stairwells. Requires 2-layers 5/8" Gypsum Wallboard, Type "X". Provide Interior Wall 51 STC - Fire Resistance, 2 Hour GA-WP 1548; Test Reference, WP 1548; 51 STC; Cladding - Side 1: 2 layers 5/8" gypsum wallboard, Type "X", meeting requirements of ASTM C1369 Standard Specification for Gypsum Wallboard; Side 2: 2 layers 5/8" gypsum wallboard, Type "X", meeting requirements of ASTM C1369 Standard Specification for Gypsum Wallboard; Framing – 4-inch structural stud meeting ASTM C645 Standard Specification for Structural Steel Framing. Minimum size 250s125-18 at 24 inches O.C.; Minimum Wall Thickness: 5"; Insulation: 3" mineral wool insulation meeting ASTM C665 Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; Reference: GA 600 Fire Resistance Manual. Design based on Rockwool, AFB EVO, 24", Acoustical fire batt insulation; Assembly number: ISS-23, as per Rockwool Acoustic Wall Assemblies Catalog.

Wall Type M3 – STC 51 - Office Area Walls: Provide 3" inch Stone Wool or Mineral Wool insulation within existing metal framing. Secure 5/8" CGC Sheetrock Brand Firecode X Panels, joints finished, to existing framing; CGS Shaft Wall System to include: 2-1/2" CGC C-H Studs 25 gauge @ 16 O.C.; 1-1/2" Stone Wool or Mineral Wool Insulation (design based on Thermafiber SAFB); 1" CGC Sheetrock Brand Glass-Mat Liner Panels; Test Number: ULC W452 System A/ UL Design U415, System A or U469. Provide Interior Wall 51 STC; Minimum Wall Thickness: 3-1/8"; Insulation: 3" mineral wool insulation meeting acoustical performance STC 51; Test Number: USG-040901, Based on 4 inch C-H studs. Note: Design Based on CGC Shaft Wall Systems SA-926.

Wall Type M3G – **STC 51** – West Office Area Wall: Provide 3" inch Stone Wool or Mineral Wool insulation within existing metal framing. Secure 5/8" CGC Sheetrock Brand Firecode X Panels, joints finished, to existing framing; secure continuous insulation board to existing framing with fasteners at 2-inch gap. CGS Shaft Wall System to include: 2-1/2" CGC C-H Studs 25 gauge @ 16 o.c.; 1-1/2" Stone Wool or Mineral Wool Insulation (design based on Thermafiber SAFB); 1" CGC Sheetrock Brand Glass-Mat Liner Panels; Test Number: ULC W452 System A/ UL Design U415, System A or U469. Provide Interior Wall 51 STC; Minimum Wall Thickness: 3-1/8"; Insulation: 3" mineral wool insulation meeting acoustical performance STC 51; Test Number: USG-040901, Based on 4 inch C-H studs. Note: Design Based on CGC Shaft Wall Systems SA-926. As-built drawings indicate 2-inch gap between Warehouse facing wall and office facing wall.

4. Structural Design Narrative

The structural requirements for the renovation of the second floor of an office in B3001 involves replacing the wood stud walls and ceilings at the egress stairs, replacing any corroded or damaged light gauge stud walls, and supporting the new office ceiling and MEP items.

4.1 General Design Parameters and Assumptions

4.1.1 Concrete and Reinforcing Steel

- Structural Cast-In-Place Concrete, Unless Otherwise Indicated: 4000 psi
- Concrete for Paving, Sidewalks, slab-on-grade and Other Flatwork: 4000 psi
- Cement: Type II or I/II for cast-in-place concrete.
- Reinforcing Steel (Deformed Bars): ASTM A615, Grade 60.
- Reinforcing Steel to Be Welded (Deformed Bars): ASTM A706, Grade 60.
- Anchor Bolts: ASTM F1554, Gr 36, Galvanized.

4.1.2 Reinforced Concrete Design

Design of Slab-On-Ground: Slabs-on-ground shall be designed in accordance with ACI 360R-10 and ACI 318-19.

4.1.3 Structural Steel

- W and WT Shapes: ASTM A992 or ASTM A572, Grade 50, with special requirements per AISC Technical Bulletin #3.
- Other Rolled Sections and Plates: ASTM A36 or ASTM A572, Grade 50.
- Square or Rectangular Tubes (HSS): ASTM A500, Grade B.
- High Strength Bolts: ASTM A325, with compressible washer type direct tension indicators or twist of type tension control bolts.
- Anchor Bolts: ASTM F593, Type 304.

4.1.4 Steel Design

Structural steel design will be performed in accordance with the requirements of the American Institute of *Manual Steel Construction (16th Edition)*, AISC 360-22.

4.1.5 Structural Loads

4.1.5.1 Dead Loads

Dead loads will be considered resulting from fixed construction, materials, and equipment. Dead loads will be determined and applied in accordance with ASCE 7-22, and other pertinent standards and vendor-supplied information.

4.1.5.2 Live Loads

Live loads are those loads produced by the use and occupancy of the building or structure, and do not include loads such as wind/seismic loads, rain loads, flood loads, or dead loads. Minimum uniformly distributed live loads will be as required by ASCE 7-22 and UFC 3-301-01.

4.1.5.3 Wind Loads

General: Wind loads for structural design of main wind force resisting systems and components and cladding shall be determined and applied in accordance with ASCE 7-22, Directional procedure.

Wind Speed: The minimum 3-second gust design wind speed shall be determined from Figure 26.5 of ASCE 7-22. A basic wind speed of 115 mph will be appropriate for the project location.

Exposure Category: Building exposure classification C, as defined by ASCE 7-22, shall be used for this building.

Risk Category: Building risk category III, as defined by ASCE 7-22, shall be used for this building.

4.1.5.4 Load Combinations

Load combinations using strength design and service-level combinations shall be as defined in ASCE 7-22.

4.1.5.5 Seismic and Snow Loads

Seismic loads shall be determined in accordance with IBC 2024. The structure will be designed as Seismic Design Category of “B” based on the seismic parameters defined in IBC 2022.

Snow loads shall be determined in accordance with IBC 2022. The ground snow load shall be 20 pounds per square foot.

4.2 Structural Demolition

Structural demolition is required for the light gauge stud walls and wood ceiling at the egress stairs. Demolition of the corroded or damaged stud walls will be required.

4.3 Structural Construction

Replace the wall and ceiling structure for the fire-rated egress stair with light gauge steel construction. Replace the corroded or damaged stud walls in like kind. New ceiling support structure will be required. The structure should limit the structural depth to maintain the highest ceiling as feasible. New ceiling structure can be supported from the main building’s roof.

5. Mechanical Design Narrative

The goal of this project is to repair the water damage to the area and rebuild the space into an office area.

5.1 General Design Parameters and Assumptions

5.1.1 Elevation, Latitude/Longitude, Climate Zone

Elevation, latitude, and longitude were taken from the 14th Weather Squadron (14 WS) website. Climate and weather data below was taken from 2021 ASHRAE Fundamentals Chapter 14.

- Elevation: 1,290 ft.
- Latitude: 35.41 N
- Longitude: 97.39 W
- Climate Zone: 3
- Summer: 100°F DB/74°F WB
- Winter: 12°F

5.1.2 General Indoor Temperature/Relative Humidity Parameters

HVAC Design by Building Area				
Area Designation	Design Temperature (°F)		Relative Humidity (%)	
	Minimum Winter	Maximum Summer	Minimum Winter	Maximum Summer
Conference/Office	68	78	N/A	50
Storage/Janitor Closet	68	78	N/A	N/A
Electrical Room	40	78	N/A	N/A

5.2 Building HVAC Loads

Load calculations should be performed using software which complies with ANSI/ASHRAE Standard 140. Occupancy loads, equipment and miscellaneous room loads will be coordinated with Tinker AFB and the Using Agency as the design progresses. Internal equipment gain will not be used as part of the heating load calculations (loads are not modeled to allow lowering of the base heating load). For the cooling load, people load is assumed at peak occupancy levels for each space and internal equipment gain is included.

5.3 Indoor Air Quality

Ventilation rates for all areas will be provided per ASHRAE 62.1-2016, via the existing RTU.

5.4 Validation of Existing HVAC Systems

Validation of existing HVAC systems was accomplished by reviewing existing plans and field observation of the HVAC systems serving the areas within the building where renovation work is taking place.

The existing HVAC system (3001-RTU-P9A) is an AAON RTU which was installed by Honeywell under an ESPC contract. It utilizes a DX refrigerant system for cooling and natural gas for heating.

5.5 Life Cycle Cost Analysis (LCCA)

An LCCA was not performed for this project, as none of the mechanical systems are being replaced as a part of this project.

5.6 Demolition

Demolition includes but is not limited to the following:

5.6.1 Second Floor

(a) Demolish all existing diffusers in the space

(b) Demolish all existing flexible duct connections back to the existing sheet metal ductwork

(c) Demolish the existing water heater and its water connection back to the line above the ceiling

(d) Demolish the existing sink and the water connection back to the line above the ceiling

(e) Demolish the existing sanitary trap connection for the sink, evaluate possibility of reuse for new break room.

5.7 Mechanical Construction

5.7.1 Second Floor

(a) Design a new mechanical supply and return diffuser and grille layout using the existing sheet metal ductwork

(b) Design a new sanitary and potable water supply system to serve the new breakroom and coffee bar.

(c) Design a new water heating system for the breakroom water supply

5.7.2 Building Pressure

The building pressure for the first and second floor areas served by the new AHUs will be designed to maintain a positive pressure in relation to the exterior and non-conditioned spaces. Toilet rooms, janitor closets, and similar spaces will be maintained negative with respect to adjacent spaces and will continue to be exhausted directly to the outside.

5.7.3 Air Distribution

All new diffusers will be selected for minimum pressure drop, efficient throw, and minimal sound characteristics. All new grilles will be selected for minimum pressure drop and minimal sound characteristics.

5.7.4 Ductwork

All ductwork upstream of VAV boxes will be rated for +4” WG. All ductwork downstream of VAV boxes will be rated for +2” WG. All outside air ductwork will be rated for -2” WG. All return/relief air ductwork will be rated for -2” WG. All exhaust air ductwork upstream of exhaust fans will be -1” WG. All exhaust air ductwork downstream of in-line exhaust fans will be +1” WG. All supply ductwork will be provided with external wrap insulation. Exhaust and return ductwork within 20 ft. of an AHU or ERU will be lined for sound. All ductwork shall be SMACNA Seal Class A.

Fire, smoke, and combination fire/smoke dampers will be provided in new ductwork where needed as dictated by code.

5.7.5 Piping

5.7.5.1 Hydronic Systems

Chilled and heating water piping will consist of black steel or copper. Steel piping will be schedule 40 black steel. Copper piping over 2 inches will be type K hard drawn. Copper pipe 2 inches and smaller will be type L hard drawn.

Heating hot water piping design shall incorporate provisions for pipe expansion.

Piping systems will be sized for a maximum velocity of 4 fps for piping 2-inches and smaller. For piping over 2-inch, piping shall be sized for a maximum pressure drop of 4 ft. /100 ft. For piping 10-inches and over, piping shall be sized for a maximum velocity of 8 fps.

All heating water piping will be provided with fiberglass pipe insulation with all-service jacket and self-sealing lap. Chilled water piping insulation will be provided with cellular glass insulation with all-service jacket, self-sealing lap and vapor barrier jacket to prevent condensation.

Connections to equipment will be provided with shutoff valves on the supply/return lines, balancing valve for each coil, control valve, strainer, manual air vents on the supply/return lines, pressure/temperature test plugs on the supply/return lines, and unions on either side of the control valve.

5.7.5.2 Domestic Systems

Domestic cold and hot piping will be type L hard drawn seamless copper tube with leadfree soldered joints and fittings.

All domestic cold and hot piping will be provided with fiberglass pipe insulation with all service jacket and self-sealing lap. Cold water piping insulation will be provided with vapor barrier jacket to prevent condensation. Piping exposed to exterior conditions or located within 8 FT of the finished floor will be provided with aluminum jackets.

Above and below ground sanitary/vent piping shall be standard weight cast iron soil pipe with corrosion protective coating inside and outside. Piping shall meet ASTM A74, NSF certified, and CISPI trademarked. All above ground sanitary/vent piping shall be no-hub. All below ground sanitary/vent piping shall be hub and spigot.

5.7.6 Controls

The direct digital controls will be tied into the base side Honeywell DDC system to allow monitoring and troubleshooting remotely as well as at the facility. New graphics will be provided for all new AHUs and VAV boxes.

5.7.7 System Commissioning, Testing and Balancing

Provide commissioning of work designed/constructed under this project. Also provide to a firm certified by the Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB) to perform the testing, adjusting and balancing procedures of air side and water

side systems per the requirements of the AABC or NEBB Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems.

6. Electrical Design Narrative

The electrical requirements for the project include (but are not limited to):

- Demolition all the electrical equipment back to the source panel 3001-PNL-P10223 in the production area.
- Removal/replacement of existing exit signs and normal/emergency lighting in ceilings.

6.1 General Design Parameters and Assumptions

The existing secondary voltage for this area is a 45-KVA transformer located on the wall next to the service panel in the production area, 3-phase, 4-wire. The area is currently served by an existing 45 kVA utility wall-mounted transformer that will remain in place, as the demand load for this area is not expected to increase. Contractor shall determine anticipated load increases and provide to government during the design process. The existing electrical service size for this area is currently 125 amperes.

Contractor shall perform Voltage Drop calculations for all existing/reused branch circuits that have excessive lengths; circuits showing excessive voltage drop will be replaced. New branch circuits for this project will not exceed the maximum allowable length and will not produce excessive voltage drop.

6.2 Electrical Demolition

The Demolition of all the electrical equipment back to the panel 3001-PNL-P10223 located in the production area.

6.3 Electrical Construction

Contractor will be required to verify and trace all existing panel sources, and existing loads information for panelboards located in the production area. Circuit index directories will be required to be updated as per Specifications. All existing conditions and circuits will be updated and provided on as-built drawings as required for records.

Install lighting in induvial offices do so per the UFC 3-530-01 section 3-4.2 or 3-4.3. For open office areas per UFC 3-530-01 3-4.4.

At each desk and/or workstations place two Receptacles on two circuits for every 6 computers and 8 unity circuits. Next to each receptacle group install comm. Receptacle with a pull string and conduct going back to the computer switch.

The user needs to put in CIPS request with base comm to reroute all the base comm lines that run through Pratt & Whitney Area. After base comm has completed their rerouting their lines place a request with Pratt and Whitney communication team so they can install their comm network.

7. Fire Protection / Life Safety Design Narrative

7.1 General Design Parameters and Assumptions

7.1.1 Jurisdictional Authority

The Contracting Officer and the base Fire Chief are the Authorities Having Jurisdiction (AHJs).

7.1.2 Fire Protection Approach

The fire protection and life safety systems design approach will follow UFC 1-200-01, UFC 3-600-01, Chapter 34, the International Building Code (IBC), the International Existing Building Code (IEBC) and NFPA 101 (Life Safety Code).

The scope of work is defined as a Level 1 Alteration per IEBC. Level 1 Alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose. Per UFC 3-600-01, this work is classified as a Renovation, defined as the replacement in kind, strengthening, or upgrading of building elements, materials, equipment, or fixtures, that does not result in a reconfiguration of the building spaces within.

In accordance with UFC 3-600-01 §34-1.2.1, the work in this existing facility shall conform to the Building Rehabilitation chapter of NFPA 101 for design and construction projects. Under NFPA 101 terms, this project would be classified as a Renovation. The work shall additionally adhere to UFC 3-600-01 §34-1.4.1, which states "All work must conform to the existing occupancy provisions of NFPA 101." The work must not make the building or occupancy less conforming with UFC 3-600-01 and NFPA 101 than before the Renovation project was undertaken.

7.2 Building Use and Occupancy

7.2.1 Existing Occupancy Classification

IBC Building Occupancy Classification of Scope of Work Area: Business (B).
NFPA 101 Occupancy Classification of Scope of Work Area: Business.

7.2.2 New Occupancy Classification

The occupancy will remain unchanged.

7.3 Passive Fire Protection Features

7.3.1 Fire and Smoke Protection Features

7.3.1.1 Penetration Requirements

All existing penetration protectives and sealants through fire and/or smoke rated partitions, barriers and walls shall be maintained. Any new penetrations into or through fire-and/or smoke rated partitions, barriers and walls shall be in accordance with IBC §714, and the Tinker Air Force Base Fire Protection Standard.

7.3.1.2 Interior Finish

Interior finishes will not be affected by construction and will remain unchanged.

Interior Finish Classification Limitations (NFPA 101, Table A.10.2.2, 10.2.3.3, 10.2.7.4)

Wall and Ceiling Finish Rating (Exit Access): Class A or Class B

Interior Floor Finish Rating (Exit Access): Class I or Class II

7.3.1.3 Fire and Smoke Dampers

The protection of duct penetrations through fire and smoke resistive rated construction shall be in accordance with NFPA 90A, UFC 3-600-01, and Tinker Air Force Base Fire Protection Standard.

7.4 Fire Protection Systems

7.4.1 Automatic Sprinkler Protection

Automatic sprinkler protection is provided throughout Building 3001. Sprinkler protection is provided by wet pipe sprinkler system located at column Y-108.

Within the scope of work area, demolish the existing cross main, branch lines, piping and sprinklers back to the cross main entry point to the scope of work area on the second floor above the ceiling. Install a temporary cap as necessary to accommodate the renovation.

Remove the temporary cap and install new cross main, branch lines, sprinklers, escutcheons, and drop piping as required for new office space. New sprinklers and system installation shall be in accordance with NFPA 13 as modified by UFC 3-600-01. All new sprinkler pipe will be Schedule 40, minimum, and painted red. New work shall be isolated and hydrostatically tested in accordance with NFPA 13. Hydraulic calculations, system layout, and product data submittal will be required.

7.4.2 Fire Extinguishers

Portable fire extinguishers were noted throughout the building and were generally found to be well distributed.

The contractor should provide portable fire extinguishers suitable for the combustibles present during construction. Where existing building extinguishers are blocked, removed or generally made inaccessible to the building occupants, supplemental extinguishers should be provided such that a 4A-60BC portable fire extinguisher is located within 75 travel distance of all areas of the building. The contractor shall regularly inspect (at least weekly) portable extinguishers located within the work area to ensure that they are charged and free from damage and accessible.

7.4.3 Fire Alarm / Mass Notification

The scope of work area does not have an operational fire alarm or mass notification system as required by UFC 3-600-01. The scope of work area currently has a single red beacon and a single red horn located in the central open office area on the second floor. These devices appear to be activated by the FCI 7200 fire alarm control panel (#3001-FA-P10225) located at Column V-111, on the first floor, near the entrance to the space. Also located at Column V-111 are two 120-volt device ADA power boosters, addressable modules, and a Monaco transceiver (#3001-FA-P10835). 120-volt power and a disconnect is also currently located at column V-111. The contractor shall uninstall the existing horn and beacon notification devices without negatively impacting the FCI 7200 in which they are connected. Reroute or demolish the existing circuits to these devices in order to maintain the existing performance of the existing FCI 7200. A pre-test of the FCI 7200 will be performed to identify the current status prior to commencing work. The contractor will not be held accountable for any existing deficiencies identified during the pre-test.

For this project, a new FCI E-3 fire alarm control panel shall be provided and installed at column V-111. The new FCI E-3 will only serve the scope of work area defined in this project. Future projects will also be served by this FCI E-3 control panel. The new panel will provide the capacity to migrate existing outdated systems. The FCI E-3 will interface with the existing Monaco transceiver (#3001-FA-P10835) to report by point to the Monaco D-21 Central Station. The new FCI E-3 will not be interfaced with the existing FCI 7200, or the ADA power boosters. The new

FCI E-3 will need to be provided with mass notification. The new FCI E-3 will not be installed on the fiber optic alarm network serving building 3001.

The new FCI E-3 will need to have voice audio and strobe visual alarm/alert notification throughout the scope of work area. As well as text signs located at the entrance to each of the two exit stairs. Each exit stair will also require a double action manual pull station to be installed within five feet of the exit door to the stairs.

Upon completion of work, the new FCI E-3 shall be tested in accordance with NFPA 72. All fire alarm / mass notification circuits are to be installed in ¾ inch factory painted red EMT. Complete submittals including product data, system layout with circuiting, and calculations shall be provided.

7.5 Means of Egress

7.5.1 Arrangement of Means of Egress

This space is a two-story structure located within building 3001. The space is served by two egress stairs which both are required to be a minimum one-hour fire rated. The interior 2-story structure, other than stair enclosures, is not required to be fire rated based on the usage of the 2nd floor business / office space.
The egress stairs will need to have the walls repaired back to 1-hour fire rated construction.
The renovation will not alter egress travel distances. The renovation work will not make the building less conforming with UFC 3-600-01 and NFPA 101 than before the renovation.

7.5.2 Illumination of Means of Egress

Emergency lighting will be provided in accordance with NFPA 101 and Tinker Standards within the work area. Emergency lighting for remaining building areas is comprised of light fixtures with emergency ballasts and wall mounted emergency lighting and will remain as is.

7.5.3 Marking of Means of Egress

Marking means of egress (exiting signs) will be provided in accordance with NFPA 101 within the scope of work area. Illuminated exit signs using 120-volt primary power with battery back-up are required.

7.5.4 Egress Travel Distance

The renovation will not alter egress and travel distances. The renovation work will not make the building less conforming with UFC 3-600-01 and NFPA 101 than before the renovation.

Common Path, Dead-End, and Travel Distance Limits (NFPA 101, Table A.7.6)

Common Path Limit (Business Use) = 100 feet

Dead-End Limit (Business Use) = 50 feet

Travel Distance Limit (Business Use) = 300 feet

7.5.5 Egress Capacity

The renovation will not alter the building's egress components. The renovation work will not make the building less conforming with UFC 3-600-01 and NFPA 101 than before the renovation.

7.6 Safeguards During Construction

All work associated with this project shall be performed in accordance with NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations.

7.6.1 Hot Work

All Hot Work associated with demolition and construction shall be performed in accordance with NFPA 51. Safeguard for Hot Work operations include but are not limited to the relocation of combustible storage, the use of fire resistive barriers to protect combustibles that cannot be relocated, the establishment of Fire Watch and the termination of hot work operations when fire protection systems are out of service. Additionally, Hot Work should not be performed when alternative methods can be employed to dismantle existing or assemble new systems.

7.6.2 Fire Protection Impairment Supervision

Fire protection impairments will be supervised and performed in accordance with UFC 3-601-02.

8. Communications Design Narrative

- N/A

Appendix A

Acronyms and Abbreviations

A	Ampere(s)
AABC	Associated Air Balance Council
ACCA	Air Conditioning Contractors Association
ACI	American Concrete Institute
ACS	Access Control System
ACT	Acoustic Ceiling Tile
AFB	Air Force Base
AFF	Above Finished Floor
AFI	Air Force Instruction
AHJ	Authorities Having Jurisdiction
AHU	Air Handling Unit
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
BTHU	British thermal unit
BUR	Built-Up Roof
CAC	Common Access Card
CBT	Computer Based Training
CCTV	Closed Circuit Television
CIPS	Cyberspace Infrastructure Planning System
CMU	Concrete Masonry Unit
COMM	Communications
DB	Dry Bulb
DoD	Department of Defense
DX	Direct Expansion
E	East
EBI	Enterprise Building Integrator
EMI	Electromagnetic Interference
EMT	Electrical Metallic Tubing
FCI	Fire Control Instruments
FCU	Fan Coil Unit

FF-L	Federal Specification
FPS	Feet Per Second
FT	Feet
GSA	General Services Administration
HR	Hour(s)
HSS	Hollow Structural Section
HVAC	Heating, Ventilation and Air Conditioning
IAW	In Accordance With
IBC	International Building Code
IC	Intelligence Community
ICD	Intelligence Community Directive
ICS	Intelligence Community Standard
IDS	Intrusion Detection System
IEBC	International Existing Building Code
IECC	International Energy Conservation Code
IMC	International Mechanical Code
IN	Inches
IPC	International Plumbing Code
IT	Information Technology
kVA	Kilovolt-Ampere
LAN	Local Area Network
LED	Light Emitting Diode
MOD	Motorized Damper
N	North
NEBB	National Environmental Balancing Bureau
NFPA	National Fire Protection Association
NIPR	Non-Secure Internet Protocol Router
PSF	Pounds per Square Foot
RF	Radio Frequency
RFI	Radio-Frequency Interference
SIPR	Secure Internet Protocol Router
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
S	South

STC	Sound Transmission Class
TAFB	Tinker Air Force Base
UFC	Unified Facilities Criteria
UPS	Uninterruptible Power Supply
V	Volts
VAV	Variable Air Volume
W	West
WB	Wet Bulb
WG	Water Gauge
§	Subsection
°F	Fahrenheit

Appendix B

Civil Calculations and Cutsheets

Appendix C

Architectural Calculations and Cutsheets

Appendix D

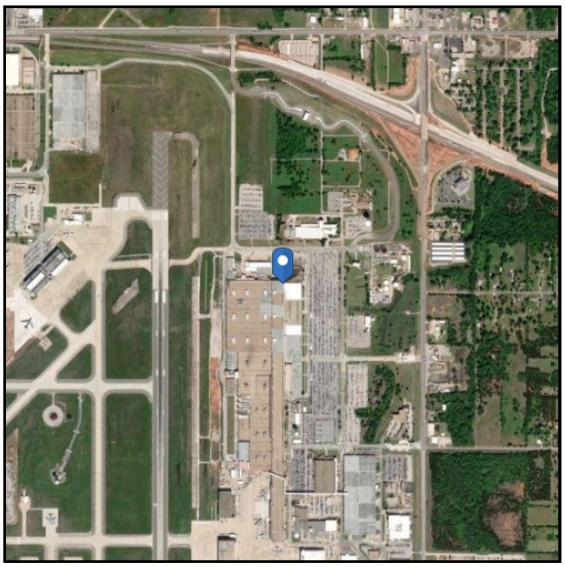
Structural Calculations and Cutsheets

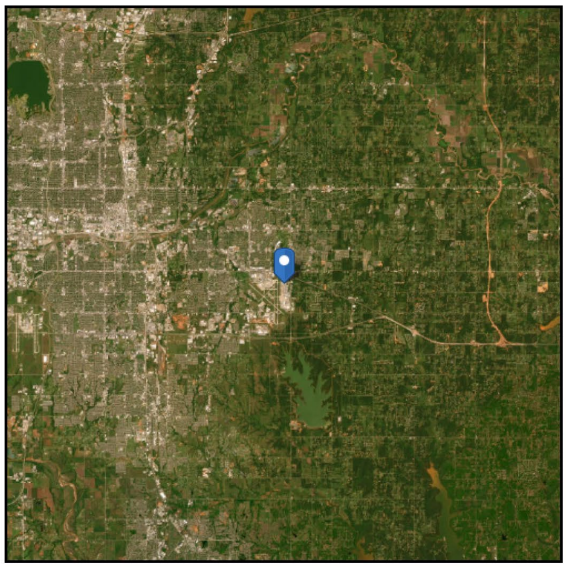
ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: III
Soil Class: D - Stiff Soil

Latitude: 35.426457
Longitude: -97.376885
Elevation: 1275.9835358675612 ft (NAVD 88)





Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	82 Vmph
50-year MRI	88 Vmph
100-year MRI	93 Vmph
300-year MRI	102 Vmph
700-year MRI	109 Vmph
1,700-year MRI	115 Vmph
3,000-year MRI	120 Vmph
10,000-year MRI	130 Vmph
100,000-year MRI	149 Vmph
1,000,000-year MRI	168 Vmph

Data Source: ASCE/SEI 7-22, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Feb 17 2026

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-22 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2.

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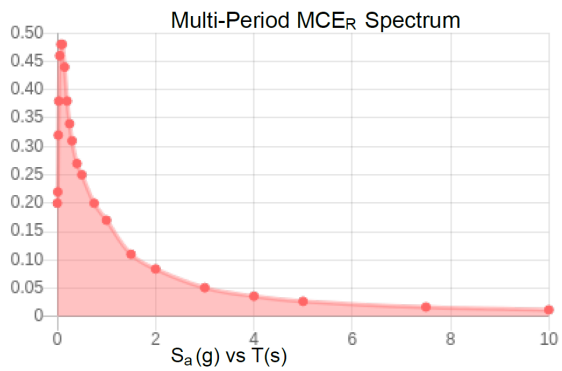
Seismic

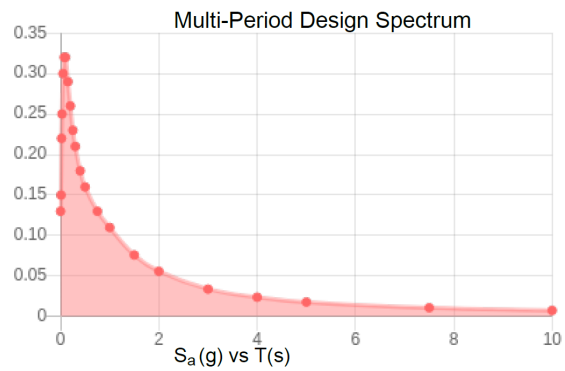
Site Soil Class: D - Stiff Soil

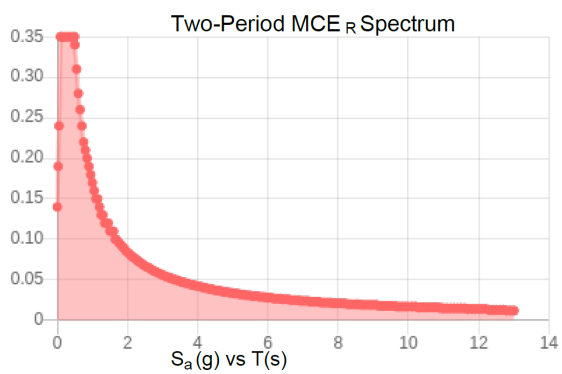
Results:

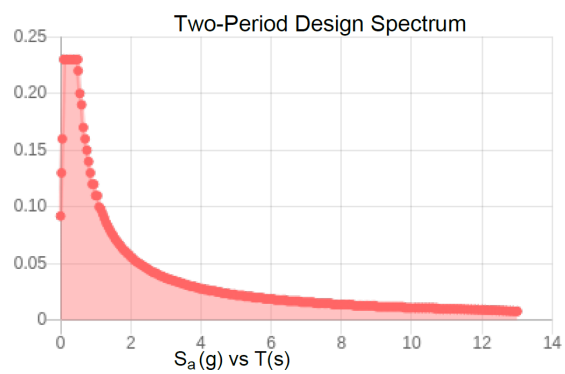
PGA_M :	0.19	T_L :	12
S_{MS} :	0.35	S_S :	0.31
S_{M1} :	0.17	S_1 :	0.08
S_{DS} :	0.23	V_{S30} :	260
S_{D1} :	0.11		

Seismic Design Category: B









MCER Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Data Accessed: **Tue Feb 17 2026**

Date Source:
USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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Ice

Results:

Ice Thickness:	1.74 in.
Concurrent Temperature:	5 F
3-s Gust Speed	40 mph
Data Source:	Standard ASCE/SEI 7-22, Figs. 10-2 through 10-8
Date Accessed:	Tue Feb 17 2026

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain for 250, 500, 1,000, and 1,400-year mean recurrence intervals along with concurrent 3-s gust speeds and concurrent air temperatures. The shading indicates special icing regions, with elevations above 2,100 ft (640 m) in the east, 6,000 ft (1829 m) in the west, and 1,600 ft (488 m) in Alaska, with sparse weather station data for determining design ice loads. In these regions, as well as in regions with complex terrain causing unusual icing conditions and regions where snow or in-cloud icing results in larger loads, the mapped values should be adjusted based on a combination of local historical records and experience, reanalysis data, and numerical weather prediction systems.

Snow

Results:

Ground Snow Load, p_g :	20 lb/ft^2
20-year MRI Value:	7.19 lb/ft^2
Winter Wind Parameter:	0.55
Mapped Elevation:	1255.7 ft
Data Source:	ASCE/SEI 7-22, Figures 7.6-1 and 7.6-2 A-D
Date Accessed:	Tue Feb 17 2026
	Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.
	Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported ‘elevation’ and ‘mapped elevation’ differ significantly from each other.
Ground Snow Loads for IRC only, $p_{g(asd)}$:	14.0 lb/ft^2

Rain

Results:

15-minute Precipitation Intensity:	8.63 in./h
60-minute Precipitation Intensity:	4.38 in./h

Data Source:	NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14(https://www.nws.noaa.gov/oh/hdsc/)
Date Accessed:	Tue Feb 17 2026

Flood

Results:

Flood Zone Categorization:	X (unshaded)
Base Flood Elevation:	Refer to map for local elevations and interpolate according to the Authority Having Jurisdiction.
Data Source:	FEMA National Flood Hazard Layer - Effective Flood Hazard Layer for US, where modernized (https://msc.fema.gov/portal/search)
Date Accessed:	Tue Feb 17 2026
FIRM Panel:	If available, download FIRM panel here
Insurance Study Note:	Download FEMA Flood Insurance Study for this area here

Tornado

Results:

	RC = III (MRI = 1,700 years)	MRI = 10,000 years	MRI = 100,000 years	MRI = 1,000,000 years	MRI = 10,000,000 years
Effective Plan Area (ft^2)	Tornado Speed (mph)	Tornado Speed (mph)	Tornado Speed (mph)	Tornado Speed (mph)	Tornado Speed (mph)
A_e = 1	V_T = 78	V_T = 123	V_T = 174	V_T = 220	V_T = 256
A_e = 2,000	V_T = 80	V_T = 125	V_T = 175	V_T = 222	V_T = 259
A_e = 10,000	V_T = 84	V_T = 128	V_T = 177	V_T = 223	V_T = 261
A_e = 40,000	V_T = 89	V_T = 132	V_T = 183	V_T = 226	V_T = 265
A_e = 100,000	V_T = 93	V_T = 136	V_T = 185	V_T = 230	V_T = 267
A_e = 250,000	V_T = 99	V_T = 142	V_T = 191	V_T = 234	V_T = 270
A_e = 1,000,000	V_T = 111	V_T = 153	V_T = 200	V_T = 241	V_T = 277
A_e = 4,000,000	V_T = 124	V_T = 164	V_T = 211	V_T = 251	V_T = 286

To select the appropriate tornado hazard map, the effective plan area, Ae, of the building, other structure, or facility, shall be determined in accordance with Section 32.5.4 and shall be rounded up to the next available mapped Ae. Alternatively, linear interpolation of tornado speed between maps using the logarithm of the effective plan area size is permitted, per Section 32.5.1.

Data Source:	ASCE/SEI Standard 7-22, Figs. 32.5-1, 32.5-2, and C 2-1 through -4
Date Accessed:	Tue Feb 17 2026

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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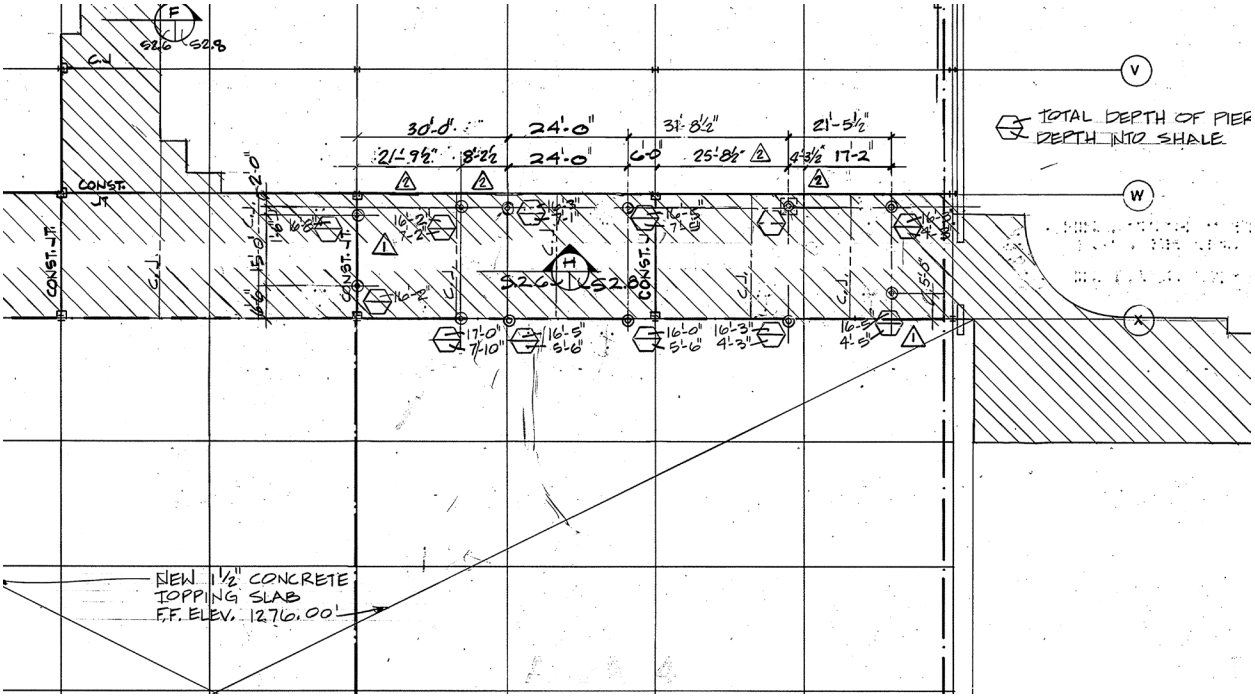
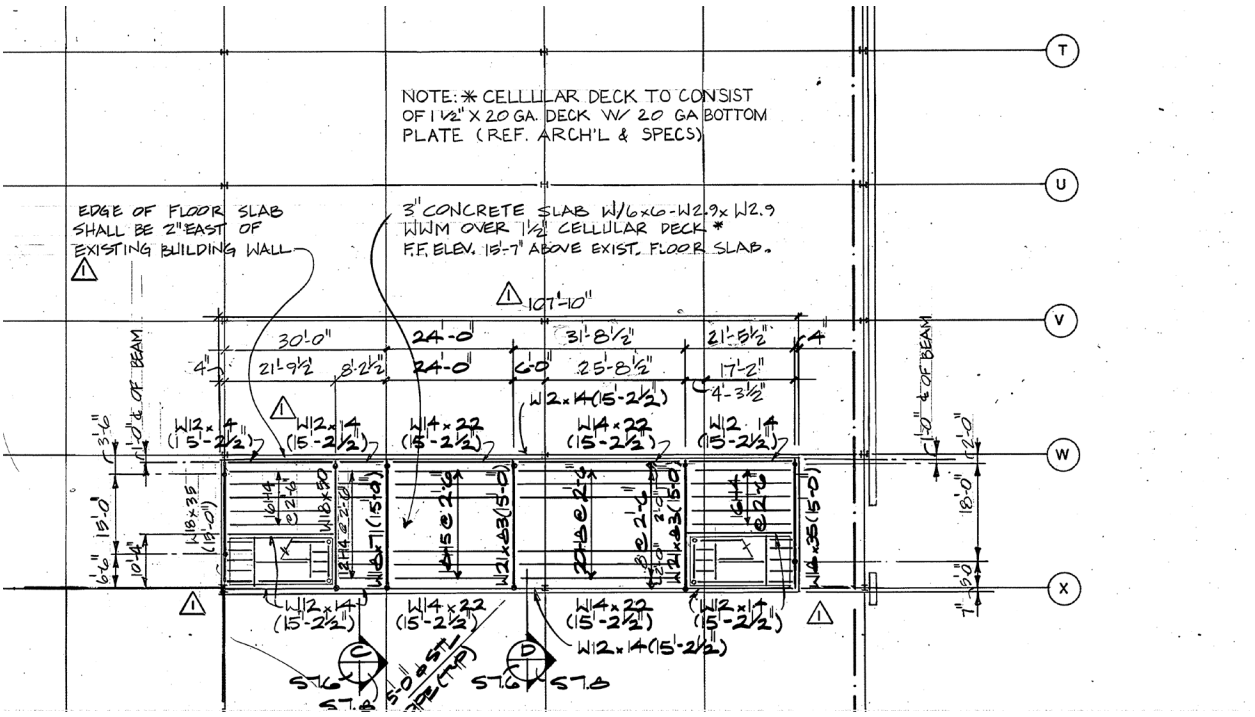
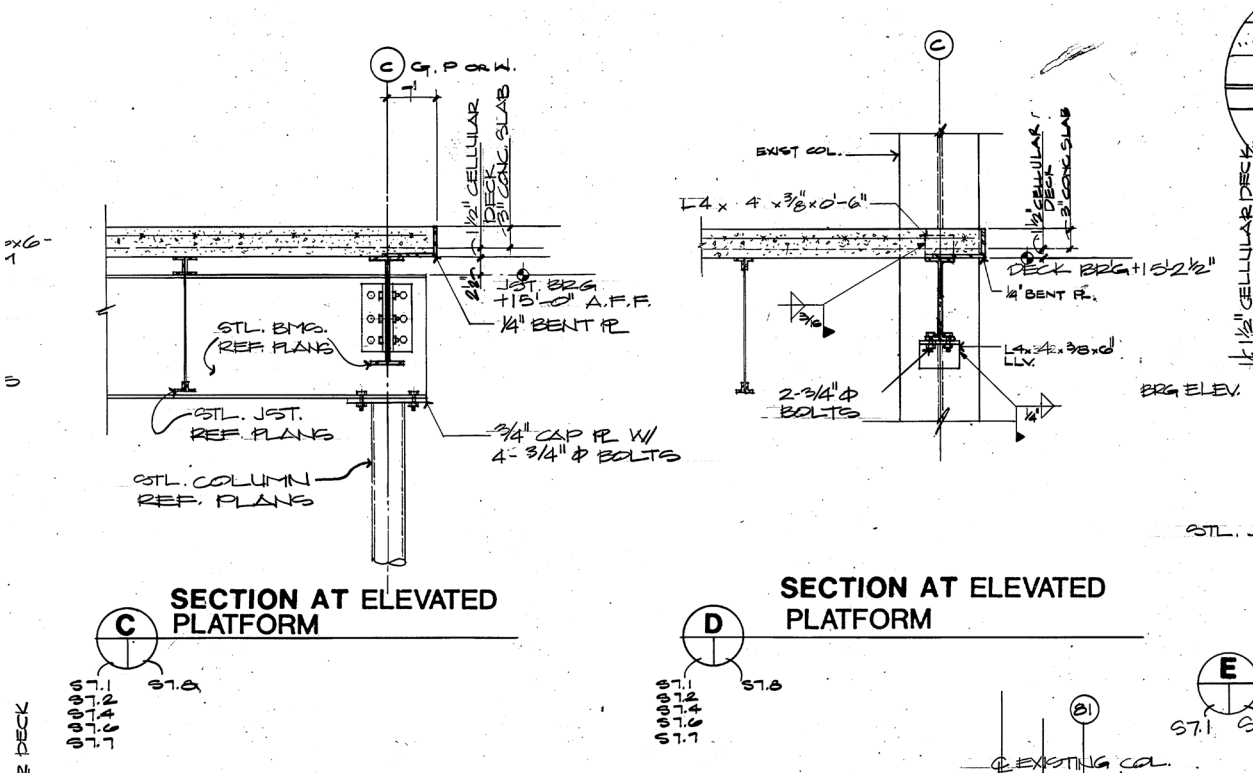
Office Foundation Plan:

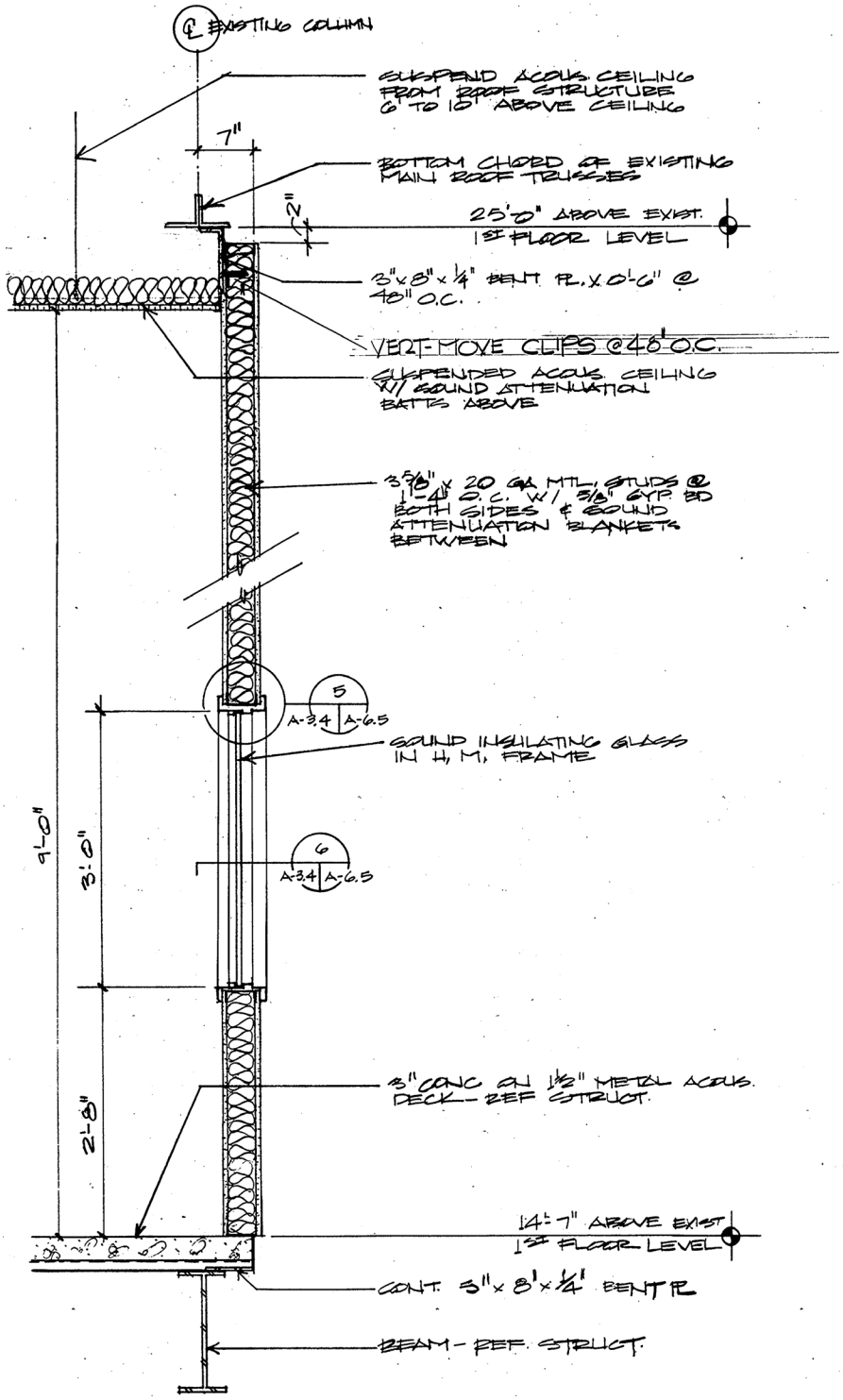


Office Second Floor Framing Plan:



Office Details:





IRSE
VERT. JOINTS

D

C

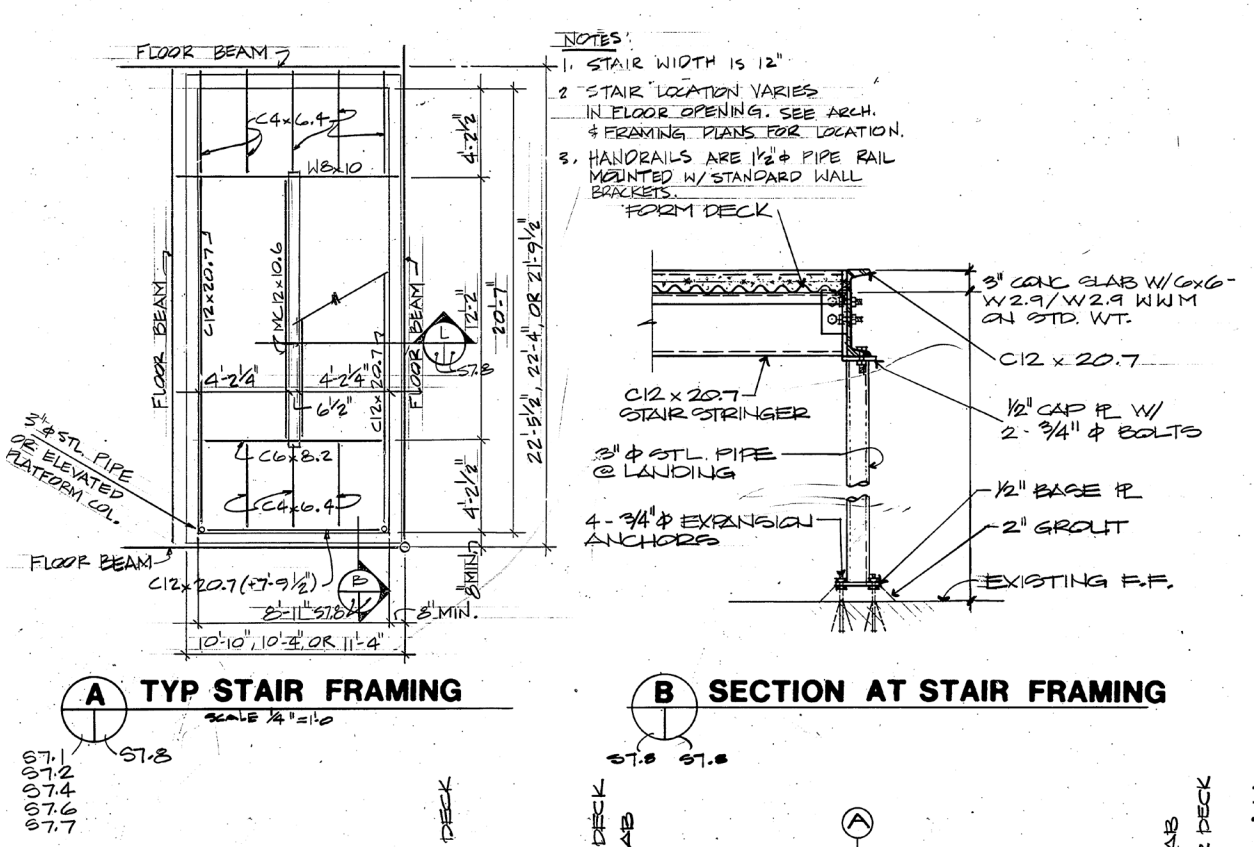
B

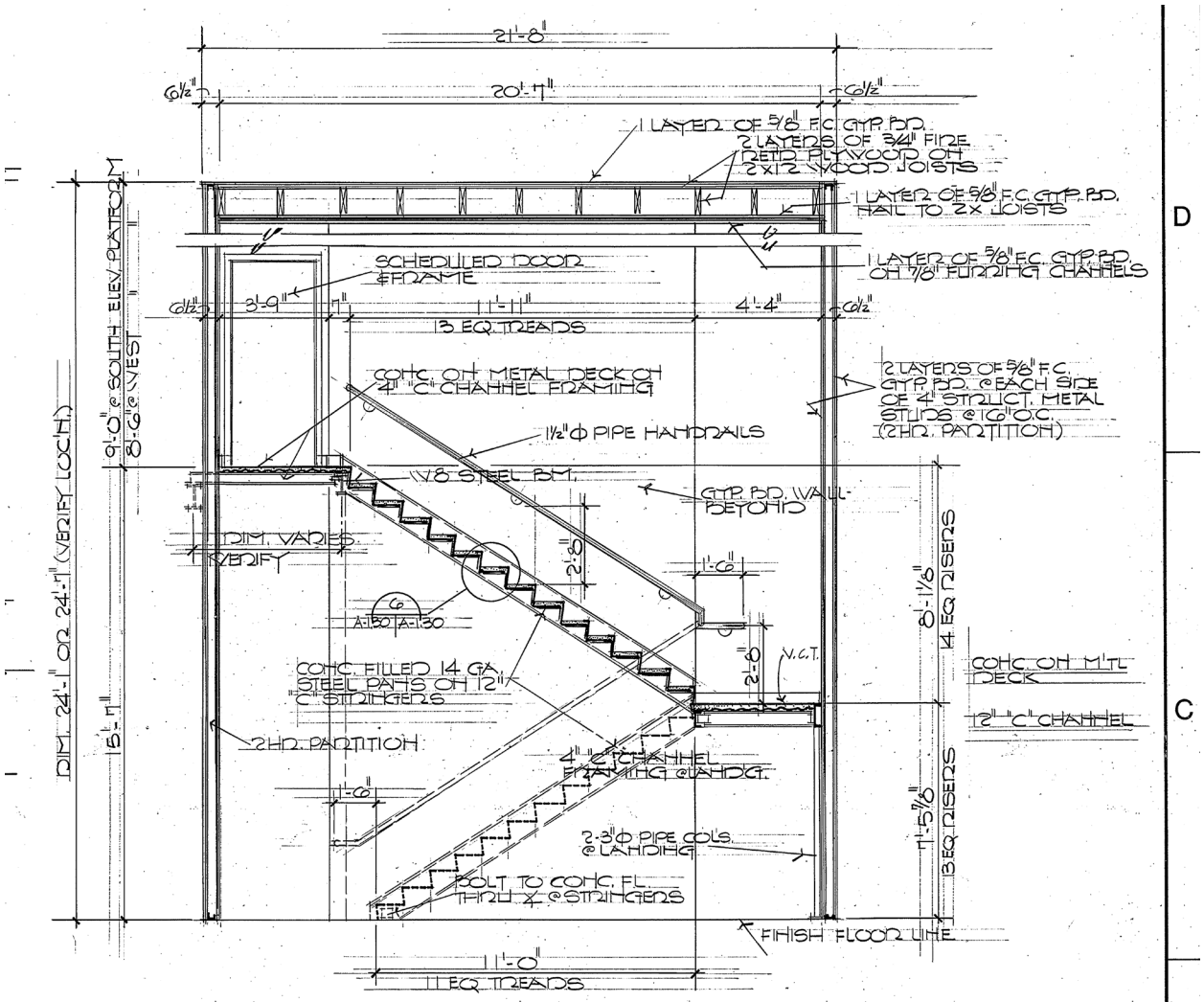
1 5 A-3.4 **ELEVATED PLATFORM WALL**
SCALE: 1" - 1'-0"

A-1.11
A-1.12
A-1.14
A-1.17

AS BUILT DRAWINGS

Stair Details:

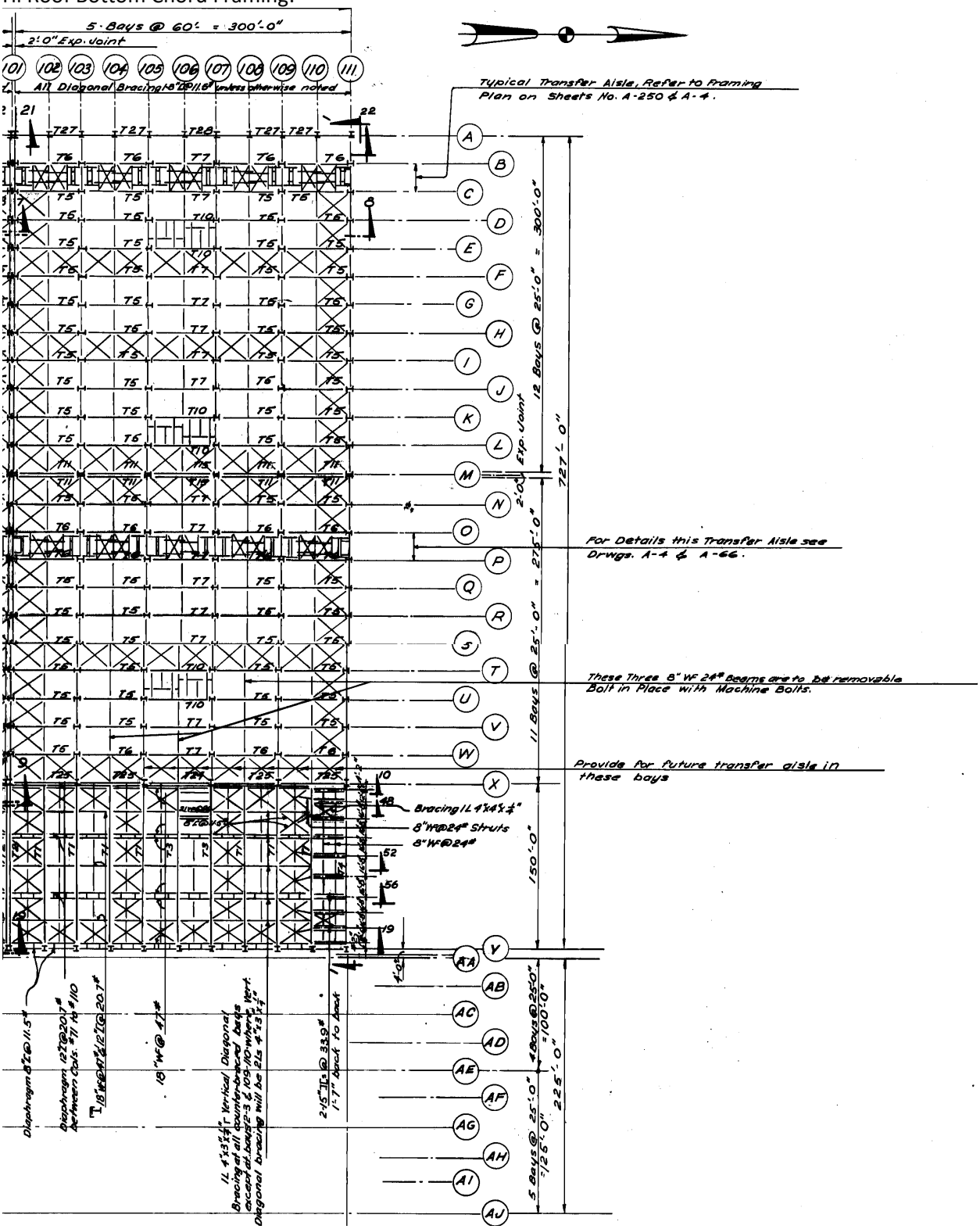




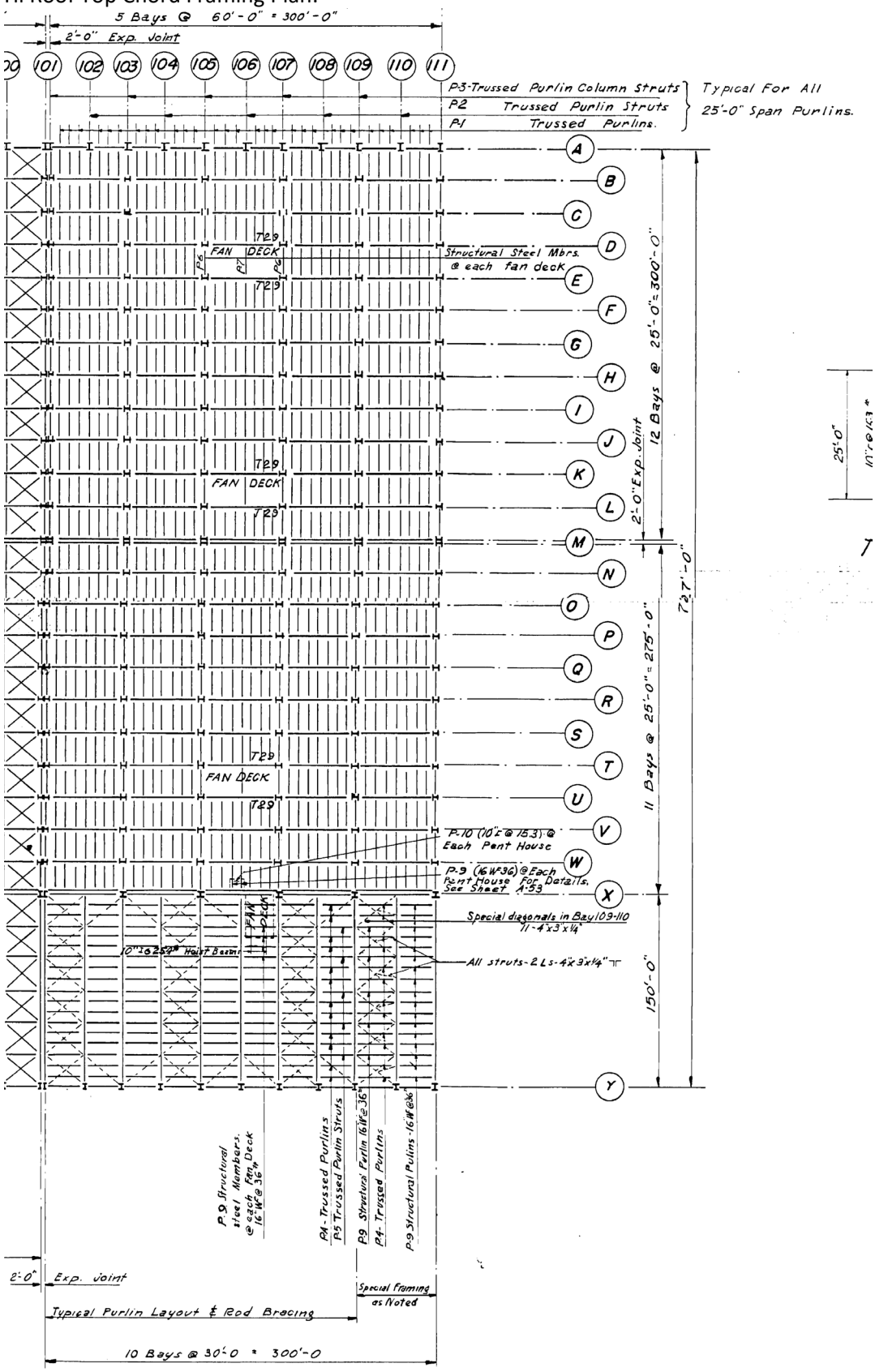
1 2 4 A-1.30 A-1.30 TYPICAL STAIR SECTION

SCALE 3/8" = 1' - 0"

Hi Roof Bottom Chord Framing:



Hi Roof Top Chord Framing Plan:



Appendix E

Mechanical / Plumbing Calculations
and Cutsheets

Appendix F

Electrical Calculations and Cutsheets

Appendix G

Fire Protection Calculations and Cutsheets