CONDITION ASSESSMENT REPORT

November
2023

SKAGWAY K-12 SCHOOL FACILITY CONDITION SURVEY

Prepared for:

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Executive Summary

The existing Skagway School, which serves grades Kindergarten through 12, was originally built in 1983 and includes a gymnasium, locker rooms, kitchen/cafeteria, library, shop, home economics, music room, multi-purpose room, and classrooms and offices to support the students and faculty. The building is approximately 50,000 ft^2 and has had several additions and renovations over the years but is largely original construction from 1983.

A condition assessment/survey has been conducted to review the status of the existing school and manage the risk associated with aging infrastructure by determining opportunities to improve the planning of maintenance, rehabilitation, and replacement of facility assets. This document provides the Municipality of Skagway Borough (Skagway) with a planning tool that identifies recommended capital improvement projects (upgrades) for the school required to maintain reliable and efficient operation. This condition assessment provides an overall preliminary, qualitative assessment of the current condition of the architectural, civil, mechanical, electrical, and structural systems of the existing school building, identifies deficiencies, and includes an order-of-magnitude cost estimate of potential repairs and/or retrofits that may be required to extend the useful life of the building.

A specific Americans with Disabilities Act (ADA) assessment was performed under a separate project by Southeast Alaska Independent Living, Inc. (SAIL). SAIL's summary report is included in Appendix A to this report. The recommendations from SAIL's report were reviewed by the overall condition assessment team and costs associated with SAIL's recommendations have been incorporated into this project's cost estimates.

A detailed analysis of the presence of hazardous materials in the facility was not performed as part of this site survey. Given the age of the facility and experience with similar construction in Southeast Alaska from that timeframe, it is possible that building elements containing hazardous materials, including lead and asbestos, may be present. This report recommends the completion of a hazardous materials site assessment by an environmental engineer as part of the pre-design phase and prior to beginning the construction of proposed improvements. Where applicable, the cost estimates in this report include allowances/additional costs for potential future hazardous material analysis and removal.

Table ES-1 below presents a suggested implementation program for recommended capital improvement projects (CIP) over the next five-year planning period. The recommended CIP projects have been selected based on the project groupings identified in Section 4.3 of the report. These projects generally represent the items identified in the survey as needing replacement/improvement in the next five years. Based on the priority ranking established in the evaluation, these were projects identified as 'Health, Life, and Safety' concerns or items/systems with recommended replacement in less than five years. The 5-year CIP program includes all recommended ADA improvements.

Table ES-1: 5-Year CIP Program

ID	Description	Total Project Planning Cost
Misc-1	Multiple disciplines - generally no design required	$ 60,000
Civil - 1	Civil Site work (incl Elec Site Lighting & Mech Fuel tanks)	$ 1,850,000
Civil - 2	Playground ADA	$ 690,000
Arch -1	Hallways/landings; Bathrooms; Door Replacement	$ 3,990,000

Arch -2	Gutters and Downspouts	$	260,000
Arch - 5	Chase Assembly	$	300,000
Elec - 1	Interior lighting; Power Devices and Connections	$	750,000
Elec - 2	"CP" Panel in Janitor's room 21; Boiler Room 26	$	71,000
Mech -1	Various Plumbing, Heating, etc.	$	770,000
Mech -2	Ventilation System	$	6,180,000
	Total =	$	14,921,000

Table ES-2 presents the recommended capital expenditures beyond five years. This includes several large architectural renovation projects for interior finishes, roofing, and exterior enclosures (building cladding, windows, etc.). The total recommended capital improvements over the next twenty years in 2023 dollars is approximately $22.0 million.

Table ES-2: 5-20 Year CIP Program

ID	Description	Total Project Planning Cost	
Arch -3	Interior Renovations; Walls, Floors, Casework, etc.	$	1,360,000
Arch - 4	Roofing	$	3,400,000
Arch - 6	Exterior Enclosure: Building Cladding; Windows	$	2,230,000
Mech - 3	Dust Collection System	$	160,000
	Total =	$	7,150,000

1. Introduction & Background

The Municipality of Skagway Borough (Skagway), has retained CRW Engineering Group, Inc. (CRW) to provide engineering and architectural services to support the condition assessment of the Skagway K-12 School (school). The condition survey has been developed in accordance with Department of Education & Early Development (DEED) requirements (State of Alaska – DEED Guide for School Facility Condition Surveys, 2020 Edition) to facilitate Skagway's ability to use the condition survey for CIP grant applications.

The Skagway School is centrally located between 15th and 17th Avenue on Main Street in Skagway, AK. See Figures 1 and 2 below for the school location and area map. The school serves grades Kindergarten through 12. It currently has a student population of approximately 142 students as well as 13 teachers and administrative staff. The school was originally built in 1983 and includes a gymnasium, locker rooms, kitchen/cafeteria, library, shop, home economics, music room, multi-purpose room, and classrooms and offices to support the students and faculty. The building is approximately 50,000 ft^2 and has had several additions and renovations over the years but is largely original construction from 1983. The most recent improvement project at the school was the addition of a 1,640 sf commercial kitchen and home economics classroom addition constructed on the north side of the existing school building in 2022.

The purpose of this survey is to review the status of the existing school and manage the risk associated with aging infrastructure by determining opportunities to improve the planning of maintenance, rehabilitation, and replacement of facility assets. This document will provide Skagway with a planning tool that identifies recommended capital improvement projects (upgrades) for the school required to maintain reliable and efficient operation. This condition assessment provides an overall preliminary, qualitative assessment of the current condition of the architectural, civil, mechanical, electrical, and structural systems of the existing school building, identifies deficiencies, and includes an order-of-magnitude cost estimate of potential repairs and/or retrofits that may be required to extend the useful life of the building.

Figure 1: School property location in Skagway, AK.

A site survey/condition assessment of the existing facility was conducted on June 14th and 15th, 2023. The survey team included representatives from CRW as well as architectural subconsultant Northwind Architects, LLC and representatives from Skagway Public Works and the School. The team visually assessed the condition of the existing structures and electrical and mechanical systems. Observations included selective, limited removal of existing building finishes as required to observe architectural/structural elements. Trip reports from the condition assessment are included in Appendix A.

Also during the site survey, the team collected and processed a 3D colorized point cloud of the interior and exterior façade of the school. Data was collected using a Matterport™ Pro2 scanner. The results of the scan provide detailed 3D 'pictures' of the school and allow users to essentially perform a 'walk-

through' of the facility. The scan is stored on Matterport's data server and can be accessed at the following address: https://my.matterport.com/show/?m=M6doY9xBENc.

Figure 2: School as seen from above.

The team did not conduct a specific Americans with Disabilities Act (ADA) assessment during the condition assessment. An ADA assessment was performed under a separate project by Southeast Alaska Independent Living, Inc. (SAIL). SAIL's summary report is included in Appendix A to this report. The recommendations from SAIL's report were reviewed by the overall condition assessment team and costs associated with SAIL's recommendations have been incorporated into this project's cost estimates in Appendix A.

2. Existing Conditions

The existing building (and additions) range in age and construction type as shown in Figure 3. These details are included in the record drawings provided in the appendices, and more detailed descriptions are included in the Architectural/Structural Assessments in Appendix A. The improvements recommended in this report are aimed at extending the useful life of the existing facility and bringing the facility to a code-compliant state as improvements are implemented.

A detailed analysis of the presence of hazardous materials in the facility was not performed as part of this site survey. Given the age of the facility and experience with similar construction in Southeast Alaska from that timeframe, it is possible that building elements containing hazardous materials, including lead and asbestos, may be present. This report recommends the completion of a hazardous materials site assessment by an environmental engineer as part of the pre-design phase and prior to beginning the construction of proposed improvements. As noted in the detailed condition assessment included in Appendix A, hazardous materials may be found in several typical items to be renovated (roof, ceiling tiles, gypsum board, tile and mastic in locker rooms, flooring in MPR and gym, etc.) Any repair or renovation that may disturb building elements containing hazardous materials must include required sampling and abatement activities and hazardous waste disposal. Where applicable, the cost estimates in this report include allowances/additional costs for potential future hazardous material analysis and removal.

The following are descriptions of the existing conditions found on site, highlighting code and life safety deficiencies, failed items, and items reaching the end of their useful life in the next 5-20 years. More information on the architectural, structural, civil, mechanical, and electrical conditions can be found in detailed assessments/trip reports included in Appendix A.

Figure 3: Existing Building Key

2.1 Summary of Condition Assessment

The following sections provide a summary of the condition assessment results by discipline. More detailed information, including site photographs/figures, identified code deficiencies, anticipated remaining useful life of components, recommendations, etc., is included in Appendix A. The information included in Appendix A is based on the template provided in the State of Alaska – DEED Guide for School Facility Condition Surveys, 2020 Edition. Each discipline evaluated the building systems/components in terms of a priority ranking and the estimated remaining useful life. Details on the priority ranking and designation of remaining useful life are included in Section 3 of this report and Appendix A.

2.1.1 Architectural Condition

The following section summarizes the architectural analysis and condition assessment for these major building components:

- Exterior Enclosure;
- Roof Systems; and
- Building Interiors

2.1.1.1 Exterior Enclosure

The school utilizes the following exterior enclosure systems:

- Exterior walls, primary – semi-vented wood clad rain screen system, original.
- Exterior walls, secondary (at new kitchen addition) – wood clad non-rainscreen system, new.
- Exterior walls, tertiary (at south mech chase) – unvented brick veneer over gypsum sheathing, original.
- Exterior finish carpentry – semi-vented and non-vented wood.
- Soffits – vented wood.
- Roof, primary - granulated finish, metal tile shingle system (at pitched roofs), replacement.
- Roof, secondary - PVC roof membrane system (at recent kitchen addition), new.

A. Exterior Walls – Original Semi-Vented Wood Clad Rainscreen Wall Assembly:

The exterior wall system is well designed for its time, but due to its limited capacity to vent/positively drain (horizontal furring limits venting/draining to vert grooves in the back of cladding), and its use of untreated furring, some deterioration, primarily of the furring, is occurring at the base of wall/water table condition. The cedar cladding has been painted multiple times since its original construction. Recent painting contractors report that the cedar is weathered enough to prohibit the efficient application of new layers of paint. This condition is mostly prominent in UV/weather-exposed areas.

B. Exterior Walls – New Wood Clad Wall Assembly

The exterior wall system is not designed as a rainscreen system other than that benefit offered by the assumed use of a crenulated weather barrier which allows for some drainage behind the plane of the cladding. The new exterior wall assemblies have been selected to match the existing assemblies as closely as possible, with the intent to replace when the entire building exterior walls are replaced.

C. Exterior Walls –Brick Veneer Wall Assembly

The wall system is poorly designed and should be replaced.

D. Exterior Finish Carpentry Assemblies

Original exterior finish carpentry assemblies are exclusively associated with the building's original, semi-vented wood-clad rainscreen wall assemblies. They are comprised primarily of painted, solid-sawn cedar installed over wall furring allowing for ventilation and drainage behind the plane of the wood element. In limited cases, wood exterior finish carpentry is installed directly to substrates eliminating the capacity to vent and drain.

E. Exterior Soffit/Fascia Assemblies

The exterior soffit assemblies are exclusively associated with the original wood-clad rainscreen wall assemblies. Soffits are corbeled providing a generous interior cavity that communicates with the building's attic. They are the low-edge vent source for ventilating the attic. With the exception of failed soffit vent screening, these assemblies are in good condition.

Exterior Glazing:

With one minor exception, exterior glazing is limited to original windows, all of the same make/model. The exception is limited to new glazing in the kitchen addition.

A. Windows:

The original windows are Pella, painted aluminum clad wood windows. They are double hung with false divided lites. The windows are of high quality for their time but are aged and failing/failed. Older methods of incorporating false mullions/muntins tended to cause Insulated Glass Unit (IGU) seal failure. This is evident in a number of lites, particularly on the weather side of the building. Likewise, cladding coating systems of that generation do not perform well with UV exposure. The coating is failing/failed on all water facing windows and signs of failure are noticeable on other windows. Of note – window head flashing appears to be limited to the top of the corbeled window finish carpentry head assemblies which also lacks a drip edge – there does not appear to be head flashing at the window heads themselves. This may allow for water to be pulled into the window head joint by differential pressure and/or capillary action. Also of note, window rough openings (ROs) are not flashed properly with respect to modern flashing methods leaving framing exposed to moisture infiltration. Finally, windows do not appear to be thermally broken meaning they will conduct more heat to the building exterior than modern, thermally broken window assemblies would.

Exterior Doors:

Existing exterior doors are hollow metal with hollow metal frames and side lites. A small number of the existing exterior doors have been replaced, including new hollow metal door leafs with relites at Main Entry Door E0, and with aluminum framed entrance doors with side lites at Doors E200 and E300. There are two special function exterior doors: one overhead panel door at Shop 24 and one overhead coiling door at North Storage 13A.

Personnel Doors:

The existing hollow metal doors - assumed to be galvanized sheet steel - are stamped with a decorative six-panel pattern and are (presumably) insulated using polyisocyanurate foam or possibly another variety of plastic foam. Stamped pattern doors have reduced cross-sectional area in regions which can elevate heat loss. Foam insulation over time can wick moisture and deteriorate with heat exposure. The U value of the door panels is likely to notably increase from their original U-value. The sheet steel is corroded at the heads and near the bottom of the door panels where moisture exposure/corrosion risk tends to be greatest. The hollow metal frames are similarly worn and do not appear to be thermally broken. Existing door hardware is functioning except in limited cases but is worn. All door hardware is functioning with the exception of Main Entry Door 100A and Gym 12, Door E12C.

The aluminum framed entrance replacement doors, side lites and door hardware are in good condition. These are noted as doors E200 and E300. The new hollow metal doors at the kitchen addition are in good condition. These doors are noted as Doors E30, E31 and E32. The special function door for the North Storage area (E13C) appears to be in fair to good condition. The Shop Overhead

door (E24B) is not functioning properly, is missing a window panel, and is lacking several key safety features.

Exterior Accessories:

Exterior Accessories are limited to the deck adjacent to the main building entry.

A. Louvers, Screens & Shading Devices:

A variety of louvers are located on the building exterior. Louvers are located both on the exterior walls and in the canopy ceilings. The largest louvers are located within the canopy ceilings. These louvers provide outside air, combustion air, exhaust air, and relief air for the school's various ventilation systems. Overall, the louvers are in fair condition with paint chipping being the only noted deficiency. There were no signs of corrosion, and the integrity of the louver blades and bird screen were sound.

B. Other Exterior Accessories:

Painted 2x wood space deck assumed to be installed on furring over concrete. It appears that surrounding concrete flatwork was possibly added after the construction of the deck, which has ramped surfaces leading to what we assume was original grade. At these conditions the ADA threshold height offset limit is exceeded and a significant trip hazard exists. The decking itself is in fair to poor condition.

2.1.1.2 Roof Systems

The original roof is a pitched hip roof. The kitchen addition uses a flat roof with parapets.

Pitched Roofing:

The pitched roof has a 3:12 slope and has two cupolas with hip roofs with a slope of approximately 1:12. The original roofing was asphalt shingle over asphalt-impregnated building felt, assumed to be 30#. That roofing was noted to have been replaced in 2004. The replacement roofing is a DECRA stone-coated roofing system – a low-ribbed, shingled metal panel system, with a granulated surface coating. Construction phase documentation created during installation notes the use of roofing felt as the primary underlayment with a self-adhering, bituminous, polyethylene-faced membrane flashing – likely Grace Ice and Water Shield installed at valleys and ridges. The DECRA system is noted to have been screwed directly through roof felt into the plywood roof sheathing.

The DECRA system is effectively an open-joint and semi-exposed fastener system which, in a low-slope application is more vulnerable to moisture infiltration caused primarily by wind-blown rain as well as any ponding occurring during snow-melt. Modern applications of systems like this in low-slope conditions typically require the use of an adhered, self-healing underlayment that better prevents moisture infiltration at lap joints and fastener penetrations. Some leaking has been noted at the building interior, though it appears to be the result of another minor system failure. It is unclear how the primary roof underlayment is performing but despite sub-standard underlayment, appears to be performing reasonably well. Otherwise, the system's granular surface shows signs of wear in locations. It supports moss and lichen in low-slope areas which are more prone to collecting debris. There is a slightly open condition that occurs at panel side joints which could allow moisture intrusion. At rake wall intersections, the corbeled fascia/soffit assembly makes it impossible to effectively install proper step flashing creating another region of moisture infiltration vulnerability. There are mechanical penetrations that may be improperly flashed. All of the above conditions increase the possibility of bulk moisture infiltration. The roof system as noted above is a cold roof system with

vented attic and insulation in the ceiling joist or rafter cavities. Attic cavity conditions were found to be dry with good air flow. This system is also used over the north storage addition.

The replacement roofing is performing less well in the approx.1:12 applications at each of the two cupolas. It is likely that this system is not warranted for low slope conditions. Moss and lichen growth are significant, causing possible infiltration. It should also be noted that the cupolas serve as the high-side venting for the roof system. The manner in which they are framed and flashed create two likely infiltration points in the cupolas' interior: positive but unsealed flashing laps in very low-slope areas is very vulnerable to infiltration from wind-blown rain as it drains down to the bottom edge of the cupolas' louvers. The vertical framing members penetrate this flashing system and appear to rely exclusively on sealant to prevent moisture intrusion at these vulnerable joints. At least one leak was identified in Gym 12 in the region of the cupola.

Gutters and Downspouts:

Built-in gutters are original and are used predominantly in the region of building main entry to preserve architectural character of corbeled fascia/soffit assemblies but are also located in short lengths on the side opposite the main entry of the two classroom wings. They are aluminum and appear to have had a coating applied. It is unknown, but likely, that leaking is occurring at joints in the gutter pan material. It appears leaking is occurring at the gutter to downspout joints and possible along the downspouts themselves. Downspouts are internal to finish carpentry enclosures. Leakage has caused visible damage to these assemblies.

Fascia-mount gutters are painted metal – type not determined. They appear not to have been a part of the original construction, presumably added to mitigate otherwise uncontrolled roof water. They do not appear to have been installed with adequate slope and/or have settled causing back-slope conditions resulting in overflow rather than positive drainage.

Flat Roof:

According to project specifications, the kitchen roof is an adhered PVC roof system comprised of a glass mat faced gypsum substrate board, 6mil sheet polyethylene vapor barrier, XPS base and tapered insulation, glass mat faced cover board, and 80 mil gray PVC membrane. The system is new and is in good condition. The roof membrane is noted as having a 20-year warranty.

Roof Accessories:

Roof accessories include the original smoke/fire vent, original south chase cap flashing with integral mechanical outlets, and new kitchen addition roof access ladder and integral rail, and roof walkway.

Three automatic smoke/fire vents are shown in the original construction documents above what is now referred to as Stage 7. They appear to be in good condition, however, inspection/test reports should be provided to verify this.

The south chase cap flashing assembly is in fair condition, however, it is inadequately anchored. Existing screws were driven directly into the cementitious sub-cap and do not have any pull-out strength.

The kitchen addition access ladder with integral rail and the rooftop walkway system are new and in good condition.

2.1.1.3 Interiors

The interiors at the Skagway School are original to the 1983 construction date, with some limited interior renovation work. Two small additions to the North created more storage for the school and gymnasium (North Storage) and a commercial kitchen/ Home Ec upgrade (Kitchen 30, Home Ec 33), instigating a partial renovation of Classrooms 9A and 9B and the Student Store 10. The original construction used durable interior finishes, including commercial grade vinyl tile, ACT ceilings throughout, and painted gypsum wall board partition faces. The commercial carpet throughout the facility has recently been replaced.

Partitions/Soffits:

Interior partitions at the Skagway School are original to the 1983 design, with some interior layout changes after the Kitchen/Home Ec addition was constructed on the North end of the building and the original Home Ec kitchen was renovated into classroom space.

A. Fixed Partitions:

Interior partitions are wood-framed and typically with a painted gypsum board finish. Hallways have wood raised panel wainscoting and bathrooms/locker rooms have ceramic tile to a 6'-8" height. The floorplan remains true to the 1983 design, with the exception of the North Storage and Kitchen addition. The partitions appear in good condition with some exceptions noted in Wall Finishes

Original gypsum board and associated gypsum compound may contain asbestos.

B. Soffits & Ceilings:

- The primary ceiling system is suspended 24"x48" white acoustic ceiling tile (ACT)
- The secondary ceiling system is gypsum board, assumed to be supported by ceiling joists, used for bathrooms, locker rooms, mechanical rooms, storage rooms and kitchens. Soffits are finished with gypsum in the limited applications found within the school. Original gypsum board and associated gypsum compound may contain asbestos.
- The tertiary ceiling system is gypsum board, assumed to be supported by ceiling/roof joists, with a 12"x12" ACT finish applied in the Gymnasium. Original gypsum board and associated gypsum compound as well as ACT and associated adhesive may contain asbestos.

Component condition assessment are as follows:

- Classrooms: 24"x48" ACT in 2'x4' metal grid, fair condition. 24"x48" tiles are scored to resemble 6"x 6" tiles. Less than 5% of tiles showed visible wear. Seismic bracing hanger wires found in select classrooms reviewed by NWA.
- Classroom Hallways: The hallways have a 24"x48" ACT field with painted gypsum board soffits at entries where ceiling height changes before vestibules. These ceiling tiles are in fair condition.
- Locker rooms and Bathrooms: Painted gypsum board ceilings and soffits are in generally fair/good condition. Boys and girls locker room ceiling lids are currently in the process of being painted.
- Gymnasium: 12"x12" ACT glued to rigid substrate. Ceiling finish was originally designed as unpainted gypsum. No tiles knocked visibly loose.

Special Partitions:

Several operable partitions were designed and installed according to the original 1983 floorplans and interior elevations. Operable partitions were used between classrooms and between common rooms, to create multi-functional and adaptable interior spaces.

A. Operable Partitions:
   - Classrooms in the Elementary wing (Classrooms 301-304, 314-316): Operable partitions comprised of accordion style panels approximately 3 ft wide and 7 ft high and suspended from a top track. There is no evidence the teachers use the operable partitions as intended, may be difficult to maneuver.
   - Multi-Purpose Room: Operable partitions comprised of accordion style panels approximately 3 ft wide and 15 ft high on west wall, suspended from a top track. A similar top track series of partitions is on the opposite east wall, between the Multi-purpose room and Stage. Partitions appear functional.
   - Stage: Velvet performance curtains hang in front of the operable partition between the Stage and Multi-Purpose Room. Curtain has small rips in places, showing wear.
   - Classrooms in Special Education wing (Classrooms 28 & 29): Curtain-style operable partition runs along a top track, secured at the southern end of the opening. A second operable partition was designed between classrooms 28 & 29, an interior renovation with gypsum infill and interior window. Partition is functional, showing wear.

B. Railings and Screens:

Wire partitions were specified as N.I.C. however were installed in the gymnasium clerestory according to the 1983 design documents. The enclosures were designed to create usable storage space and to deter sports equipment from leaving the gymnasium. A similar chain link metal screen was installed at the Shop ground floor and in the mezzanine for additional secured storage. Wire chain link metal screen partitions are in good condition with the gates/openings in operable condition as well.

<u>Interior Openings:</u>

Typical original interior doors are painted 6-panel wood interior doors with wood-veneer faces. The interior doors have hollow metal frames with a molded trim profile. Many of the interior doors do not meet the ADA-required 32” door width. The school has many types and sizes of interior operable coiling doors. There are few instances of interior windows.

A. Personnel Doors:

Typical classroom and office doors are painted 6-panel hollow core doors with painted hollow metal frames with a moulded profile. Fire rating not found on any interior doors, aside from boiler room, shop and electrical room. Flush hollow core doors with maple finish are found in the new Kitchen and Home Ec addition.

Typical interior doors: Overall finish condition is decent, with wear and tear. Typical classroom and office doors have a mortise latch set with classroom function, door closer, door stops, gaskets and kickplates. Other doors utilize exit devices, hold-opens in hallways which release on fire alarm and otherwise similar hardware of same make as classroom and office doors. Modern requirement to

provide means to secure doors of interior in lock down situation is achieved with portable emergency securing device. As noted, many of the interior doors do not meet the ADA-required 32" door width. More detail on specific interior personnel doors can be found in Appendix A.

B. Special Doors:

Several interior coiling doors/windows have been designed into common and food-related spaces. The overhead coiling counter doors and large overhead coiling doors appear in functioning order in terms of raising and lowering. See Appendix A for additional detail on location and condition of specific interior special doors.

C. Windows and Sidelites:

Interior glazing is uncommon in the Skagway School. The double doors have relites on either side between the entry vestibules 100C & 100B and hallway 100B, and entry vestibule 100A and hallway 100A. Classroom 29 has an interior fixed window into Classroom 28, which was installed when the original movable partition was removed, and a wood stud infill wall was built.

Interior Finishes:

The interior finishes of the Skagway School generally appear original to the 1983 construction. The interior carpet has been recently replaced throughout the entire facility. The weight room flooring was originally called out as the same vinyl tile as the multi-purpose room, and more recently had a resilient rubber athletic flooring installed. The remaining interior floor finishes appear to be original to the 1983 construction. These flooring finishes include vinyl tile at common rooms and in classrooms, wood gymnasium flooring, and ceramic tile. The wall finishes include painted gypsum board, ceramic tile and limited fabric wall covering applications. The interior surfaces of the Skagway School have many different teaching materials and components (posters, tack boards, etc.) that protect the condition of the gypsum. The ceiling finishes include painted gypsum board and Acoustic Ceiling Tiles (ACT).

In general, the floor, wall, and ceiling finishes are in good condition considering how old the building is, with minor wear and tear from continuous use. More significant damage is primarily limited to mechanical rooms. See Appendix A for additional detail on specific interior finishes throughout the building. It should be noted several finishes may contain hazardous materials. Vinyl tile flooring and/or mastic may contain asbestos. The wall finishes are primarily gypsum board, painted. Original gypsum board and associated gypsum compound may contain asbestos. For ceiling finishes, the original gypsum board and associated gypsum compound as well as ACT and associated adhesive may contain asbestos.

Specialties:

The Skagway School is equipped with specialties typically found in educational facilities. Examples include signage, writing surfaces, casework, fire extinguishers, and window coverings.

2.1.2 Structural Condition

In general, the Structural assessment did not find significant issues with the existing building. For the substructure, the school structure is supported by cast-in-place concrete foundations. Foundations

are generally obstructed and unobservable. At locations with damaged or removed stem wall coverings, it was determined that the exterior insulation is damaged and in poor condition.

The first floor of the school is constructed with 4" thick concrete slabs-on-grade. Several additional 4" thick concrete slabs occur at building entrances and exterior perimeter and host exterior mechanical equipment. The analysis found several locations of exterior slabs in need of repair, as summarized below.

For the superstructure, the building has three primary levels: the main floor supported by concrete slab-on-grade, the mezzanine supported by wood 2x10 joists, I-joists, and glulam beams, and the roof supported by pre-engineered wood trusses and tube steel trusses. The superstructure is supported by interior and exterior bearing walls, shear walls, columns, and foundations. No significant issues were found on the building superstructure.

2.1.2.1 Substructure

Standard Foundations and Basements:

A. Continuous and Column Footings:

The school structure is supported by cast-in-place concrete foundations. Steel and wood columns are supported by isolated concrete footings or various geometries and thicknesses. Exterior structural walls are supported by 8" concrete stem walls on 10"x18" strip footings. Interior structural walls are supported by thickened concrete slabs. Foundation concrete strength is specified as 3,000 psi per record drawings.

Foundations are typically obstructed by the concrete slab-on-grade and exterior fill and were not visible during the inspection. Reported information regarding foundation conditions is based on record drawings. There are no signs that the foundations are damaged or overloaded.

B. Foundation Walls and Treatment:

Foundation walls are shown as 8" cast-in-place concrete walls around the exterior perimeter of the structure. Cast-in-place walls are supported by 10"x18" concrete strip footings. The existing stem walls for the structure were typically obstructed by the interior concrete slab-on-grade and exterior fill. At a few locations, exterior foundation insulation is damaged from gardening equipment (weed whackers).

Slab On Grade:

A. Structural and Non-structural Slabs:

Record drawings indicate slab-on-grade concrete compressive strength of 3,000 psi and typical reinforcement with welded wire fabric (6"x6"-10x10 ga). All slabs-on-grade are shown as 4" thick. Control joints are sawcut and occur at 15-25ft on-center.

The interior slab-on-grade is generally obstructed by floor finishes and not visible. Where visible, the slab is in fair condition with minor spalling at entrances.

Exterior slabs-on-grade range from fair condition. Exterior slabs typically have minor spalling and random shrinkage cracking.

At the rear of the school, near the shop and mechanical room doors, several slabs appear to have settled and are no longer flush with the exterior wall base trim. Settlement is particularly noticeable

at the east exterior slab (adjacent to door 125 per record drawings) with a crack creating an approximately 1" vertical gap between sections of slab.

2.1.2.2 Superstructure

Floor Structure:

A. Lower and Main Floors:

The main floor of the original structure is supported by 4" cast-in-place concrete slabs on grade which appears to be in fair condition, where visible.

B. Upper Floors:

A mezzanine primarily hosting mechanical equipment is located 13'-0" above the finished floor. Additionally, a storage room above the gym is located 12'-0" above the finished floor. The mezzanine floor is framed with 14" wood I-joists, wood 2x10 joists, and various sized glulam beams. Per record drawings, the floor sheathing is 5/8" plywood. The floor structure is supported by a combination of bearing walls and columns.

Several cast-in-place housekeeping pads for mechanical equipment are supported on the mezzanine level. Housekeeping pads appeared to be in good condition with minimal cracking.

A note provided on the record drawings (Sheet S7) indicates a 5/8" underlayment is located on top of the 5/8" plywood sheathing. The mezzanines are laterally supported by the structure's interior and exterior shear walls, spanning via diaphragm actions utilizing the floor sheathing.

The wood framing was not visible due to sheathing at most locations. Where visible, the framing appeared free of decay or mold and in generally good condition.

Roof Structure:

A total of three types of primary roof structural systems compose the roof of the existing system:

- Pitched wood I-joists supported by tube steel trusses, steel beams, wood glulam beams, and bearing walls above the gym (roof framing plan "A" and "E" per record drawings), and above the central wing (roof framing plans "B" and "C" per record drawings).
- Pitched pre-engineered wood trusses and wood I-joist rafters at the east and south wings (roof framing plans "D" and "G" per record drawings".
- Flat roofing system above the kitchen with unknown framing.

A. Pitched Roofs:

Four primary pitched roof structural systems are connected for the existing structure roof. All the roof systems are hipped roofs. The roof structure is constructed with 18" wood I-joists, wood 2x12 rafters, wood glulam beams, pre-engineered wood trusses, and tube steel trusses. The roof structure is supported by interior and exterior bearing walls, shear walls, columns and foundations.

Most of the roof structure is not visible due to coverings and finishes. Tube steel trusses are visible from several areas of the mezzanine and the gym and appear in good condition with no visible paint peeling or rust.

Attic access allowed for observation of the pre-engineered wood trusses in the east and south wings of the structure. Observed wood trusses and roof sheathing were free of rot or decay and appeared in good condition.

B. Flat Roofs:

A flat roof occurs above the new kitchen addition. Access to observe the roof structure of the kitchen was unavailable. Existing conditions for the roof structural framing are unknown.

Stairs:

Interior and exterior (site) stairs were observed. Interior stairs access the mezzanine level from the woodworking shop. Exterior stairs are located at several locations around the perimeter of the building. Exterior stairs are cast-in-place concrete with cast-in-place traction strips near the nose of the treads. Exterior concrete stairs have several longitudinal shrinkage cracks that are beginning to show evidence of reinforcing corrosion.

Interior stairs are structural steel with steel grating tread and landing. Interior stairs appear to be adequate, however, there is excessive deflection at the landing grating due to a lack of support framing.

2.1.3 Mechanical Condition

Overall, the school's mechanical and plumbing systems range from fair to poor condition and have been well-maintained since the school's original construction in 1983. However, since most of the mechanical and plumbing systems were installed during the original construction without any major renovation, they are nearing or beyond the end of their serviceable lives.

2.1.3.1 Plumbing System

The school is comprised of two boys/girls' bathrooms, a boys locker room, a girls locker room, a science lab, and a commercial kitchen. A variety of other plumbing fixtures including sinks, drinking fountains, and washers are located throughout the building. The water closets and lavatories are vitreous china with the sinks, shower heads, and water fountains being stainless steel. The building's domestic water service comes into the building in Janitor's Room 21 where it also feeds the fire suppression system. The water service is connected to the city water distribution system. See Civil for more information on the water utility. Domestic hot water is provided by a 250-gallon oil-fired water heater located in the mechanical room. Hot water recirculation is provided by a tempered water line and associated recirculation pump located in the boiler room. Domestic water piping is copper with sweat joints. Drain, waste, and vent piping is hubless cast iron pipe with hubless coupling joints.

A. Plumbing Fixtures:

A detailed analysis of the plumbing fixtures located throughout the school's bathrooms, locker rooms, science lab, commercial kitchen/home economics room, classrooms, etc. is included in Appendix A. The assessment identified a number of relatively minor plumbing fixture issues ranging from poor condition/significant wear to non-functional components. The mechanical analysis noted a number of ADA compliance issues that were also identified in the separate ADA assessment developed by SAIL.

B. Plumbing Piping:

A detailed analysis of the plumbing piping located throughout the facility is included in Appendix A. In general, the domestic hot, tempered, and cold-water piping is in fair condition with no active leaks and minimal previous leaks. The assessment found a number of gate isolation valves are in poor

condition as they do not seat fully, or are stuck completely open, and do not provide isolation, which prevents repairs and/or replacement of system components.

The assessment also identified several instances of corrosion of the water piping/valves as well as low water pressure at the fixtures located furthest away from the water service and the water heater.

C. Plumbing Equipment:

Domestic hot water for the school is provided by a 250-gallon power combustion oil-fired water heater. The water heater is in fair condition. The combination pressure and temperature relief valve installed on the oil-fired water heater is undersized.

There is no thermal expansion tank installed on the water heater cold water line even though there is a check valve between the city water service and the building's domestic water system. The system includes a hot water recirculation pump to provide hot water with reduced wait times. The hot water recirculation pump is in poor condition and non-functional. Per maintenance staff, the recirculation pump was unable to be replaced since the gate valves on either side of the pump did not seat fully and effectively isolate the system.

2.1.3.2 HVAC System

A. Heating Equipment:

Two non-condensing cast iron oil-fired boilers installed in 2014 provide heating for the school. The boilers are forced draft appliances with a net IBR rating of 1,210 MBH. The boilers are mounted on housekeeping pads and located in containment basins. The boilers are in good condition and have been regularly inspected and maintained. There was no visible leakage. The most recent inspection was conducted in April 2023 as indicated by the inspection tags on the side of the boiler. There are no emergency boiler shutdown pushbuttons located inside or outside of the boiler room at either of the doors.

There are three base-mounted hydronic circulation pumps located on inertia bases with vibration isolators. Two of the circulation pumps have 3 HP motors and one of the circulation pumps has a 2 HP motor. Each circulation pump includes gate valves and flexible connectors on either side of the pump, a check valve and balance valve on the pump discharge, and a differential pressure gauge across the pumps. The circulation pumps are in fair condition with no visible leaks.

A 200-gallon plain steel expansion tank is in the mezzanine above the wood shop directly above the boiler room. The expansion tank has a sight glass, drain valve, pressure indicator, and a Bell & Gossett Airtrol tank fitting. The expansion tank was in fair condition with no visible leaks or corrosion. The sight glass, pressure gauge, drain valve, and Airtrol tank fitting were in fair condition.

A 50-gallon glycol mixing tank provides 30% propylene glycol to the school's heating system. The glycol mixing tank is in fair condition with no visible leaks. The associated transfer pump is in fair condition. There is severe oxidation on the hydronic system drain line. There is a new glycol make-up tank located in the boiler room that has not been connected to the hydronic system.

A centrifugal-style flanged air separator with integral strainer provides air and dirt separation for the hydronic system. The air separator and associated appurtenances are in fair condition.

Heating terminal units for the building include fintube, unit heaters, and cabinet unit heaters. Perimeter fintube heating is provided in all exterior classrooms and other normally occupied spaces. Unit heaters are provided in non-occupied spaces such as storage rooms and electrical rooms. Cabinet unit heaters are provided in building entry ways. The fintube is in fair condition but the enclosures

range from fair to poor condition. There are many instances of damaged enclosures, damaged grilles, and separation from the exterior wall with the wooden enclosures. The unit heaters ranged from fair condition to poor condition with most of the issues being at the piping connections with corrosion and condensation. The cabinet unit heaters were in fair condition. The air handler heating coils were in fair condition.

B. Heating Distribution Systems:

The heating distribution system is a primary two-pipe reverse return piping system. Make-up glycol for the hydronic system is provided from the glycol mixing tank by the transfer pump to the air separator relief pipe. The plain steel expansion tank located in the mezzanine above the wood shop maintains the system pressure. Hydronic piping is primarily copper piping with sweat joints. Steel piping with flanged connections is used on the larger piping primarily found in the boiler room.

Per maintenance personnel, the hydronic system leaks when the boilers are shutdown. As a result, the system is left in operation for the summer. The primary source of the leaks was noted to be older couplings with gasket deterioration causing premature failure and leaks upon change in system temperature.

In general, the heating distribution piping is in poor to fair condition with a number of relatively minor leaks, oxidation/corrosion, and inoperable valves. See Appendix A for a detailed list of heating distribution system issues identified in the condition assessment.

C. Ventilation Equipment:

Two mezzanine spaces house the major ventilation equipment for the school. One mezzanine is located above the wood shop and has two utilidors that are directly above the school's main corridors. The other mezzanine is located above the locker rooms adjacent to the gym. The wood shop mezzanine contains five air handling units that provide outside air to the multi-purpose room, stage, wood shop, classrooms, and office spaces. The gym mezzanine contains two air handling units that provide outside air to the gym, locker rooms, weight room, and gym storage. The two utilidors associated with the wood shop mezzanine contain variable air volume (VAV) terminal units.

Appendix A contains a very detailed accounting of the components and condition of the system. In general, the air handlers, ventilators, exhaust fans, etc. that comprise the ventilation system are at or beyond their serviceable life and in need of replacement in the near future.

Cooling Equipment:

Cooling systems are provided for the walk-in refrigerator and walk-in freezer located in the commercial kitchen and the freezer located in the wood shop.

All systems were observed functioning without issue during the survey. All three systems were in good condition.

D. Cooling Distribution System:

The cooling distribution systems within the building are limited to the refrigerant piping between the evaporating units and condensing units for the kitchen walk-in freezer, walk-in cooler, and the wood shop freezer. All piping is brazed copper, is insulated, and in good condition.

2.1.3.3 Integrated Automation System

Building controls are a combination of the original pneumatic controls and the electronic or DDC controls that have partially replaced the pneumatic controls in the building. Most of the pneumatic

controls are either removed or abandoned in place. The DDC controls are basic in their control sequences with manual adjustments, on/off control, and monitoring being the only forms of control. Facility staff have had issues with the DDC control system since its installation in 2008. In 2021, a new DDC system was installed for the AHUs and it has been functioning properly since its installation.

A. Control System:

The building's control systems have been partially upgraded from the original pneumatic control system to electronic controls. Most of the electronic controls are integrated into a Siemens DDC system. The heating control system includes DDC-monitored electronic zone valves and wall-mounted thermostats.

Overall, the pneumatic controls are in poor condition with a large portion of the system being abandoned in place. The 2008 DDC controls are in fair condition but have a number of deficiencies. Per facility staff, there are ongoing issues with the control of the system and the graphics front end is difficult to use. Facility staff indicate no issues with the DDC installed in 2021.

2.1.3.4 Fire Protection System

A. Riser and Equipment:

The sprinkler riser is in Janitor's Room 21. The 6" fire sprinkler main tees off the 6" water service. The fire sprinkler riser is comprised of galvanized steel piping. The fire sprinkler riser was replaced in 2008 and is in fair condition. Annual testing has been performed by Taylor Fire Protection Services.

B. Sprinklers and Piping:

The dry sprinkler piping is comprised of galvanized steel piping with Victaulic rigid couplings. The wet sprinkler piping is comprised of black steel piping. In general, the sprinkler system is in fair condition, with several relatively minor piping and sprinkler pattern issues noted in Appendix A.

2.1.4 Electrical Condition

The electrical system is mostly original, with the exception being the recently installed educational kitchen, facility kitchen, generator, and service equipment. The electrical infrastructure is in decent condition and while select items need to be addressed, there are no deep systemic issues that cannot be easily resolved. The electrical condition assessment focuses on code deficiencies, safety concerns, functional needs, and the health of the occupants.

2.1.4.1 Service and Distribution Systems

The service and switchgear were replaced as part of the Kitchen Addition effort. The remaining existing equipment appears generally to be in good condition.

A. Main Distribution Panels and Switchgear:

All of the building panels are fed via the main switchboard. The switchboard is 120/208Y, 3 pole, 4 wire, 1000A, rated for 22 KAIC (Thousand Amps Interruption Capacity). At the time of the condition assessment, the Switchgear was from the original construction but was in good condition. Staff reported that new breakers could still be obtained and almost all of the breakers are labeled. Since the condition assessment, new switchgear has been installed as part of the kitchen renovation project.

B. Panels and Motor Control Centers:

The 1200A, 120V/208Y electrical service was recently upgraded as part of the School Generator project to add an ATS (Automatic Transfer Switch) and a Standby Generator, which feeds into a

switchboard located in the electrical room. There are eighteen field panels located throughout the building. The ATS and main service disconnect had not arrived on site at the time of the survey, and the generator has not been commissioned. The electrical panels are of a range of ages, from original (1983) to new (2022).

2.1.4.2 Lighting Systems

The light system is split into two components, internal lighting and external lighting. Generally, the external light fixtures need to be replaced, and the older internal light fixtures need to be replaced.

A. Site Light Fixtures:

Site lighting mostly consists of wall-mounted lights, most of which are bulbs. Not all lights are functional. The kitchen extension has newer LED lights. There are pole-mounted lights for the parking lot, but no site lighting for the playground.

B. Interior Light Fixtures:

Internal Lighting, Hallways – The hallway lighting has recently been replaced with 2'x2' LED fixtures by school staff. The hallway lighting dispersion and levels are excellent, with footcandles ranging from 20 to 38, with the recommended minimum of 20 footcandles. The white light is pleasant on the eyes while providing even coverage and no harsh lighting locations.

Internal Lighting, Classrooms and Offices – The classroom and office lighting is very inconsistent. Some offices have differently colored light bulbs and overbright yellow light (100 footcandles), while others are severely underlit (down to 7 footcandles), while the target value is 30-40 footcandles. All the classrooms and offices use 2'x4' fluorescent direct lighting.

Internal Lighting, Gymnasium – The gymnasium does have LED lighting with wire guards, but some of the fixtures could not be turned on. It is unclear if the fixtures have failed or if they are not getting power (wiring or contactor issue). The basketball court had an average of 30 foot candles which is ideal, but the audience area was underlit. It is expected if the two unlit fixtures were on there would be no issues.

Internal Lighting, Bathrooms – The bathroom lighting is very dark. Minimum lighting is 10 footcandles, and all bathrooms have locations with less than 5 footcandles.

Egress (Emergency) Lighting – While some of the exit signs have integral lights, no location has sufficient egress lighting in the event of a power outage. This is a Health, Life, & Safety (HLS) issue.

C. Lighting Controls:

The internal lights are controlled by switches, outside by photocell. The light controls are all in good condition.

D. Conduit and Wiring:

The existing wiring is cable in conduit, with feeders being in underground conduit and branch circuit both underground and above ceiling raceway. Cables and raceway generally appear to be in good condition.

2.1.4.3 Power Systems

In general, the electrical equipment is in good condition and can continue to be used until it is broken, fails, or requires additional functionality. See Appendix A for a detailed list of power system issues identified in the condition assessment.

Special Systems:

There are multiple special systems in the school. The Fire Alarm System, Data and Communication system, Clock system, Intercom system, and Security system were all briefly reviewed while on site and discussed with site personnel. None of these systems have major issues.

2.1.5 Site Civil and Infrastructure Condition

2.1.5.1 Site Improvements

The existing site consists of grass, asphalt and concrete surfaces surrounding the school. A wood deck is adjacent to the main entrance, and a playground is located at the northeast end of the site. Overall, the site is in good condition, with improvements to the paved surfaces and playground recommended.

A. Vehicular Surfaces:

Existing asphalt driving surfaces and parking areas are in fair condition. One 24' entrance from Fifteenth Street and two 24' entrances from Main Street provide access to the main School entrance and paved parking areas. One-way traffic flow is indicated by signage at each driveway entrance, with vehicles entering from Main Street and exiting to Fifteenth Street. Motorized parking areas consist of a 12-space diagonal parking area, a 4-space guest parking area, a 2-space disabled parking area, and a 9-space parking area, for a total of 27. Additional parking spaces are available across Fifteenth Street and are used by staff.

The existing vehicular surfaces show signs of wear, with visible cracking and pitting of the surface. A low point in the driveway is present where material has spalled from the surface. The low point creates ponding and ice in the winter. Striping in parking and driving areas is no longer visible.

B. Pedestrian Surfaces:

Existing concrete sidewalks and pedestrian pathways wrap around the school site. Bike parking includes three 36-space bike racks along the main pedestrian walkway at the south end of the site, and one bike rack near the baseball field at the north end of the site.

Sidewalks range from fair to poor condition, with pitting of surfaces, cracking, differential settlement of panels, and curb deterioration. The bike racks at the front of the building are in good condition. The bike rack near the baseball field is in poor condition.

C. Elevated Decks, Stairs, and Ramps:

Exterior concrete steps are present at some exterior doors. Sidewalk ramps are present at the front and southeast building entrances. Concrete steps are in fair condition, with moss buildup and minor material spalling present. Corrosion is present on all the metal exterior handrails.

D. Landscaping:

Existing site landscaping consists mainly of grass surfaces. A coniferous treed area is present to the northeast of the site. A handful of deciduous trees have been planted in the southeast lawn in honor of staff. A baseball field is located at the northeast end of the site, along with a community garden. Landscaping is in good condition.

E. Fences and Gates:

A chain-link fence encloses the playground area and the baseball field. The baseball field fence includes two single gates and one double gate. The playground area includes two rolling gates. Both fences are in fair to good condition. One metal post pole on the baseball field fence has been replaced with a wooden 4x4 post. The single- and double-gate on the baseball field fence do not close due to gaps between the latch and post. One rolling gate on the playground fence is inoperable.

F. Playgrounds:

A Playcraft Systems Round 5 Playground was installed in 2013. The playground is manufactured for ages 2-5 and consists of slides and climbing surfaces. Wood chips provide a ground cover for the playground and picnic tables are in the fenced area. Adjacent to the playground is a 60'x100' field with soccer nets and one portable basketball net. A tennis court is located north of the playground. A baseball field is located on the northeast end of the site and includes two soccer nets. The playgrounds and fields are all in good condition. Some uneven grading was noticeable on the baseball field. The tennis court surface is in good condition, but the net is worn, and the area appears to be used as an equipment storage area.

2.1.5.2 Civil/Mechanical Utilities

The Civil/Mechanical Utilities consist of the exterior and interior building water service, the sanitary sewer service, storm drain inlets surrounding the site, on-site fuel systems, and heating and cooling piping and utilidors.

A. Water System:

The school has one 6" water service line from the municipal water distribution system. The service extends from a distribution line on Fifteenth Street into the Janitor Room. A water valve box (located on the main water line) is located on the opposite side of the site, in the concrete steps outside of the gym. The exterior water service is in good condition and has an estimated remaining useful life of 10+ years.

The six-inch steel building water service comes up through the floor from below grade in Janitor's Room 21. For water service grounding, see electrical. The single water service serves both the domestic water system and the wet and dry fire suppression systems. The three-inch domestic water service tees off the six-inch water service directly after it enters the building. The water service manifold is comprised of two hand-operated gate valves, strainer with blowdown, wafer check valve, and a normally closed bypass with a globe valve. The domestic water service reduces to 2-1/2 inches prior to serving the system. The interior water service in Janitor's Room 21 has significant rust and corrosion on water service piping, fittings, and valves, particularly the uninsulated strainer, wafer check valve, and three-inch flanged elbow. A portion of the insulation has been either removed or damaged from the domestic water service manifold, particularly around the bypass line where a repair was made in the past. Additionally, per facility staff, the main water shut-off valve for the building is not seating.

A wellhouse is located on-site and serves the municipal water system.

B. Sanitary Sewer System:

Wastewater flows by gravity to a manhole on the east side of the School and ties into a piped collection system along Main Street. The existing wastewater manhole and pipes appear to be in good condition and have an estimated remaining useful life of 10+ years.

C. Storm Sewer System:

Storm drainage for the building is provided by a combination of roof drains and gutters that discharge to grade. Most of the school has a sloped roof and is served by gutters. Two sets of primary/secondary roof/overflow drains serve the flat-roof section above 2021 kitchen addition. A portion of the sloped roof section drains to the flat roof portion. Primary and secondary roof drains are routed to separate downspout wall nozzles adjacent to the Home Economic exterior door and discharge to a trench drain that discharges to the drainage ditch. Heat trace has been added to the nozzles.

The roof drains, rain leader piping, and downspout wall nozzle are in good condition. Reference architectural and civil for site storm drainage and gutter condition. Although a sizeable portion of the sloped roofing discharges to the flat roof section added in the 2021 kitchen addition, the two roof drains and associated rain leader piping are sized appropriately in accordance with the 2018 UPC. There is no mechanical equipment located in the roof drainage paths.

D. Site Drainage:

Site grading generally conveys stormwater to storm drains along Fifteenth Street and Alaska Street. Storm drain curb inlets are present along Fifteenth Street. One storm drain catch basin manhole is located along Alaska Street near the Aquasource wellhead. Site drainage is in fair condition, with multiple observed and reported low spots that do not drain during rain events. The treed area northeast of the School has a low spot near the new generator pad. The baseball field has a low spot in the middle of the field, and the field next to the playground slopes to a low point near the south end of the field. Multiple low spots are present in the parking areas and the driveway has a low point caused by pavement deterioration.

4-inch PVC drainage pipes are present in the columns attached to the deck adjacent to the main entry, and it is assumed they discharge under the deck. The 4-inch PVC drainage pipes were reported to be leaking during the winter of 2021/22, and ice buildup was present around the column exteriors.

E. Fuel Systems:

Fuel oil #2 is stored in a 4,000-gallon, above-ground, double-wall, saddle-mounted, Fireguard fuel storage tank. The fuel storage tank is located within metal fencing outside the boiler room on the northwest side of the building. The fuel storage tank is not grounded. The fuel oil storage tank and associated appurtenances are in poor condition and are corroding and rusting. See Appendix A for additional detail on the issues associated with the 4,000-gallon storage tank system.

The science lab has a propane gas system that is served by an exterior, pad-mounted, vertical, free-standing propane tank located in a wooden fenced enclosure. The tank is located on the east side of the building near the electrical transformer more than five feet from the building. The propane tank that serves the science lab is in fair condition and is moderately rusting. The associated propane gas piping is in poor condition.

The new commercial kitchen has an independent propane gas system that was installed in 2021 and is located on the exterior of the building on the eastern corner of the new kitchen addition.

A new pad-mounted standby generator was installed in 2021 as part of the kitchen addition project. The standby generator has an integral 660-gallon subbase diesel fuel storage tank with integral secondary containment.

3. Evaluation and Project Prioritization Approach

This section details the approach used for the existing facility condition assessment at the Skagway School and the methodology for the overall Project Prioritization analysis. Per the project scope, the condition assessment recommends priorities for corrective action for individual school assets and systems based on an analysis of the remaining useful life for each reviewed component/system.

The condition of the school assets was evaluated to assess the functionality and reliability of major equipment/systems and identify potential repairs and/or retrofits that may be required to improve the overall conditions for occupants and extend the useful life of the building.

3.1 Condition Assessment Criteria

Record drawings of the existing facilities were collected and reviewed prior to the field condition assessment. After review of the data, a field condition assessment was conducted to identify the current condition of the architectural, structural, mechanical, electrical, and civil systems of the existing school building and site. The condition assessments were performed by specific discipline representatives from CRW (structural, mechanical, electrical, and civil), with architectural support from Northwind Architects, LLC, on June 14, 2023, and June 15, 2023. Skagway Public Works and School staff that were on-site were interviewed and assisted during the field assessment to collect additional information regarding the functionality of existing assets and operational history.

For the systems inspected in the field, the condition was assessed based on field observations and interviews with the staff on asset functionality. For each asset, the team estimated the remaining useful life of the equipment/system in terms of years of remaining service life. For instance, an asset that had failed or was inoperable (pump, valve, etc.), received an estimated remaining useful life of 0 years, and needs immediate replacement. Other more subjective items, such as floor/wall/ceiling finishes were assigned remaining useful life 'scores' based on observable conditions and the teams' experience with similar assets. In addition to the estimates of the remaining useful life of the systems, the team identified code deficiencies and code required upgrades based on the International Building Code (IBC), International Existing Building Code (IEBC), International Energy Conservation Code (IECC), National Fire Protection Association (NFPA), International Fire Code (IFC), National Electrical Code (NEC), etc. The team also cataloged detailed attributes of the assets/systems during the condition assessment (corrosion, noise, leaks, etc.) to use as a reference and comparison in future assessments.

3.2 Project Prioritization

In addition to identifying an estimated remaining useful life for each component/system, each discipline assigned a priority to the identified improvements. Reviewers designated one of the following priorities for each item:

- HLS - Immediate replacement recommended due to Health Life and Safety Concern.
- <5 yrs - Replacement recommended in less than 5 years.
- 5 to 15 yrs - Replacement recommended in 5 to 15 years
- >15 yrs - Replacement recommended in more than 15 years

The priority is selected in part based on the estimated useful life as well as additional criteria related to the consequence of failure of each component/system. Items identified as being Health Life and Safety concerns are given the highest priority. These items include significant code

deficiencies and components that have a direct impact on the health and safety of building occupants. It is recommended that these items be addressed in the very near future. It should be noted that all of the recommended improvements from the Americans with Disabilities Act (ADA) assessment performed by Southeast Alaska Independent Living, Inc. (SAIL) have been given an HLS priority.

Beyond the items designated as HLS concerns, the priority approach puts an emphasis on fixing what is inoperable or in very poor condition. It is assumed that if an asset is inoperable, but inconsequential enough to not need immediate repair/replacement then it has been removed from the evaluation.

Table 1 in the following section includes the estimated remaining useful life as well as the priority designation of all the components/systems inspected as part of this condition survey. Additional details on each item can be found in Appendix A.

4. Summary

This section presents a summary of all facility/building recommendations developed in Sections 2 and 3 of this Condition Assessment Report.

4.1 Summary of Recommendations

Table 1 beginning on page 24 includes a summary of each recommendation made for the school infrastructure. The table includes item numbers, associated discipline, project identification names, code references, estimated useful life information, project priority, cost information, and locations of where these projects occur at the school. Cross-reference to sections of the Condition Survey (Appendix A) where these recommendations are described is also provided.

4.2 Project Costs

Cost estimates are provided within this report only in the sections where renovations are recommended. Where no recommendations are made, no estimates are required. Table 1 contains a summary of all the cost estimates, and Appendix A contains more detailed information on the development of the estimates. Where applicable, the estimates were developed using the Department of Education & Early Development (DEED) 2023 Program Demand Cost Model for Alaskan Schools. For items not included in the DEED cost model, the costs have been estimated based on information from cost-estimating guides, budgetary estimates provided by equipment manufacturers, and experience gained while designing similar facilities. The project costs presented in this report include estimated construction dollars, contingencies, permitting, administration, engineering fees, etc.

While the estimated construction costs prepared at the planning level are intended to represent average bidding conditions for projects that are similar in nature, variations in the bidding environment at the time of project implementation will likely affect actual construction costs. The alternatives presented herein will also likely be refined during the preliminary and final design phases, affecting overall project costs.

Preliminary cost estimates prepared during the planning effort include the costs to construct the improvements as well as several additional factors, including an allowance for the contractor's overhead and profit and mobilization/demobilization costs. Other factors used, based on a percentage of construction costs (and generally following DEED cost model guidelines), are:

Mobilization, General Operating Costs, Office Overhead	30.00%
Contactor's Mark-Up, Risk and Profit	12.00%
Bonds and Insurances	3.00%
Geographic Factor specified by DEED for Skagway	9.37%
Contingencies - General	25.00%
Contingencies - Unique market risk (COVID, etc.)	3.50%
Contingencies - Inflation for project done in 2026	12.00%
Project Overhead: Construction Management	4.00%
Project Overhead: Design Services Costs	10.00%
Project Overhead: Equipment & Technology Costs	4.00%
Project Overhead: District Administrative Overhead	5.00%
Project Overhead: Art	0.50%
Project Overhead: Project Contingency	6.00%

4.3 Project Groupings

The recommended upgrade projects for the school have been grouped into the categories summarized below. Generally, the projects have been grouped by discipline and further divided by priority, with the highest priority projects being in group XXX-1 (i.e. Arch-1, Civil-1, Mech-1, etc.). All ADA recommendations have been included in the priority XXX-1 groups. Various projects from all disciplines have been included in a 'Miscellaneous' project group. The 'Misc' group is comprised of relatively low-cost, low-complexity items that have been prioritized as needing to be completed in the next five years. Some of these items could be accomplished by Skagway/School staff, while others could be completed by general contractors without the need for detailed design plans and specifications. Project groupings are included in the information provided in Table 1 and are as follows:

Arch-1:

- Bathroom upgrades (including ADA recommendations)
- Modify landings to meet 60" x 60" requirement
- Replacing existing exterior personnel and overhead doors.
- Remove bench from center of locker room and install bench which meets minimum ADA requirements
- Remove pneumatic gate from Hallway 100B.
- Replace room identification signage with signage that conforms with the American Disabilities Act.
- Replace side lites with labeled safety glazing. Glazing should be tempered.

- Replace all interior doors and hardware.

Arch-2:

- Repair gutters and downspouts –
    - Line built-in gutters with a continuous waterproof membrane.
    - Replace downspouts with continuous/jointless pipe downspouts.
    - Remove and replace exterior finish carpentry enclosures.
    - Install fascia-mount gutters for full-pitched roof perimeter except where built-in gutters are located.
- Repair the 4" PVC drainage pipes in the deck columns.

Arch-3:

- Interior Wall Finishes –
    - Painted gypsum boards should be patched, repaired, and painted as needed.
    - Wood wainscot surface and finish carpentry should be repaired and repainted.
    - Remove and replace tile, grout, and thin-set.
    - Remove and replace felt wall coverings in gymnasium.
- Interior Floor Finishes –
    - Replace vinyl tile in classrooms and multipurpose room.
    - Replace vinyl floor on the stage and repair wood on south edge where trim is delaminating.
    - Remove and replace ceramic tile, grout, and thin-set.
- Interior Specialties –
    - Blackboards should be updated with whiteboards to maintain consistency in writing surfaces.
    - Replace all lower and upper casework with premium grade, ADA-compliant casework.
    - Replace all pull-down roller blinds and full-length cloth drapes.

Arch-4:

- Replace Asphalt Shingle Roofing –
    - Re-roof with heavy-duty architectural asphalt shingles for all of the roof. Approx. 44,000 sq ft.
    - Cupolas should be deconstructed, re-detailed, and built-back.
    - Add soffit screens 316 SS wire mesh.

Arch-5:

- Remove and replace chase assembly.

Arch-6:

- Exterior Enclosure –
    - Remove and replace original cladding with new wood-clad wall assembly.
    - Replace all exterior finish carpentry for a complete, new system.
    - Replace all exterior windows with fiberglass-clad wood-framed windows or similar.

Mech-1:

- Demolish the blue air compressor and associated control panel and air dryer.
- Install p-trap safety covers on lavatory p-traps.
- Provide a booster pump packaged system.
- Provide Boiler Emergency Shutdown Pushbuttons
- Provide escutcheons for sprinkler heads where noted as missing.
- Provide expansion tank on cold water piping going to water heater.
- Provide insulation on exposed steel piping on discharge of CP-3.
- Provide pipe covers over dry sprinkler piping that are tripping hazards.
- Replace the Unit Heater in the Boiler Room

- Replace angle stop valves where corrosion is visible.
- Replace the combination temperature and pressure relief valve on the water heater.
- Replace components that leak during system shutdown.
- Replace corroded piping.
- Replace the domestic hot water recirculation pump.
- Replace Expansion Tank
- Replace gate isolation valves with ball isolation valves.
- Replace Glycol Tank
- Replace leaking automatic air vents, oxidized flexible piping, and oxidized drain valves.
- Replace non-functional gate valves.
- Replace rusted water service components with new coated valves that are designed for condensation.
- Replace main water shut-off valves (that don't seat) with new coated ball valves.
- Replace sink basins in the science lab.
- Replace specific instances where failures have occurred.
- Replace tailpiece, p-trap, and discharge piping for sinks in Classrooms 301 and 315.
- Relocate projectors.

Mech-2:

- Demolish abandoned control equipment.
- Demolish Electronic Air Cleaner, EC-1.
- Pre-TAB Entire Building
- Provide ducting between the air handlers and associated return air duct.
- Repair damaged flex duct connections.
- Replace AHU-1, AHU-2, AHU-6, and AHU-7.
- Replace range hoods in Kitchen 10B and Breakroom 22.
- Replace VAV boxes associated with AHU-1 and AHU-2.
- Update DDC graphics.
- Upgrade pneumatic controls to DDC.
- Ventilation Equipment: Replace Exhaust Fan, EF-1

Mech-3:

- Evaluate and modify dust collection system.

Elec-1:

- Interior Lighting –
    - The underlit and over-lit spaces need to have their lighting changed for code compliance.
    - All spaces require additional egress lighting.
- Power Devices and Connections
    - Code improvements in Shop (Room 24).

Elec-2:

- Panels and Motor Control Centers –
    - Relocate electrical panel “CP” currently located in the Janitor Room 21.
- Relocate disconnects, equipment, and/or piping to meet clearance requirements in Boiler Room 26.

Civil-1:

- Construct propane tank storage pad outside of the minimum separation distance from the generator.
- Provide soil covering to prevent further damage to existing foundation insulation.

- Regrade the baseball field.
- Repaint, replace fascia, and repair the broken benches for both baseball dugouts.
- Replace bike rack.
- Replace faded site signage. Install ADA-complaint, signage for curb cuts (3). Install signs per ADA Standards.
- Replace the above-ground fuel storage tank. Relocate science lab & Kitchen propane tanks.
- Resurface and restripe the asphalt driveway including ADA improvements.
- Resurface exterior metal handrails including repairs required for ADA compliance.
- Replace the deteriorated sidewalks, and curbs, and make all repairs for ADA compliance.
- Site lighting improvements for the parking lot and playground.
- Install additional steel angle supports at the interior steel stair's landing.
- Demolish and replace the existing deck adjacent to the main building entry.
- Demolish and replace settled slabs.

Civil-2:

- Install 2 additional ground-level play components in addition to bringing the swingset up to ADA standards.
- Install accessible swing seat accessory and harness.
- Replace surface under swings with rubber tiles or poured in place rubber.
  Replace gravel paths around playground areas with accessible ground surfaces that are stable.

Misc-1:

- Replace fire extinguishers 10-12 years of age or older.
- Provide all classrooms with portable fire extinguishers with a minimum rating of 2:A:20:B:C.
- Remove all fire hoses (0 yrs life)
- Adjust the door closer arm so the pull weight does not exceed 5 lbs of force on Personnel Doors.
- CCTV existing waste and vent piping.
- Classroom (Room 204): Replace receptacles located within 6' of sink edges with GFCI receptacles.
- Clean all ductwork.
- Removal/relocation of some fixed gym equipment to provide for a 36'' wide pathway to/from the door.
- Replace fridge/freezer with one that has freezer drawer on bottom.
- Ensure all receptacles have faceplates, ideally steel to minimize potential for breakage.
- Ensure all non-locking 15- and 20-ampere, 125- and 250-volt receptacles in classrooms, hallways, nurse's room, and other areas where students are likely to be are listed tamper-resistant.
- Label unlabeled breakers in existing, older panels.
- Modify indirect drain piping in Janitor's room mop basin to provide code-required air gap.
- Nurse's Room and Preschool Room: An electrician or maintenance personnel to identify compliance with NEC 517.13 (A) and (B) to inspect the space and resolve any non-compliant installations.
  Install a single (or more) GFCI receptacle(s) to protect all receptacles in the room.
- Provide one sink that has 11''-25'' of knee depth below the sink.
- Relocate storage box to ensure appropriate knee and foot clearance distance under sink.
- Remove or relocate items along corridor to ensure a 36" width minimum along the route of travel.
- Remove or relocate items in front of doorways to ensure a 36" wide minimum clear path is maintained along the route of travel.
- Provide a 60" round or T-shaped turning area in gymnasium laundry room.
- Replace garbage can with one that does not protrude into the path of travel in front of the sink.
- Confirm fire rating and check operability of the stage curtain. Replace as needed.
- Replace toilet with one which has a flushing mechanism on the "open" side.
- Cracks in the exterior concrete should be injected with epoxy to protect the reinforcing from corrosion.
- Bathrooms: boys bathroom near 5th grade classroom: Remove grab bars attached to toilet.
  Cover exposed pipes at accessible sink to protect knees against contact. In girls' locker room replace the

toilet with one that has flush on 'open' side. Move toilet tissue dispensers in 5 bathrooms so the toilet paper outlet is a maximum height of 48'' above the finish floor and maintaining at least 2" between the top gripping surface of the grab bar and the toilet paper dispenser outlet.

- All partitions should be verified as operable.
- Remove inoperable partitions and replace with wood framed/gypsum-faced infill, or other.

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
1	Civil	11.02	Site Work: Paving Replacement	4	Site and Infrastructure: Site Improvements: Vehicular Surfaces	<5 yrs	502: Accessible Parking Spaces 502.6: Sign Identification	2-3 years	Resurfacing and restriping the asphalt driveway is recommended. Line parking lot to clearly delineate the dedicated, marked, accessible spaces.	$71,965	$227,618	Civil - 1
2	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	5	Site and Infrastructure: Site Improvements: Pedestrian Surfaces	<5 yrs			Replace bike rack	$1,000	$3,163	Civil - 1
4	Civil	11.03	Site Work: Fencing Replacement	9	Site and Infrastructure: Site Improvements: Fencing and Gates	<5 yrs	No	One rolling gate inoperable. Others 5-10 year remaining.	Replacing the wooden post with a new metal pole on the baseball field fence is recommended, as well as replacing the out-of-plumb fence posts near each gate with latch gaps. Replacing the inoperable rolling gate on the playground fence is also recommended.	$4,660	$14,738	Civil - 1
5	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	10	Site and Infrastructure: Site Improvements: Site Furnishings & Equipment	5 to 15 yrs	No	5-10 years	Construct a permanent propane tank storage pad outside of the minimum separation distance from the generator.	$3,556	$11,246	Civil - 1
7	Civil	11.13	Site Grading/Drainage	12	Site and Infrastructure: Site Improvements: Playgrounds	<5 yrs	No	5-10 years	Regrade the baseball field.	$16,500	$52,188	Civil - 1
8	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	13	Site and Infrastructure: Site Improvements: Freestanding Shelters	5 to 15 yrs	No	5-10 years	Repaint, replace fascia, and repair the broken benches for both baseball dugouts.	$5,000	$15,815	Civil - 1
9	Mechanical	11.181	Other Repairs/Replacement/Demolition (Estimate)	16	Site and Infrastructure: Civil/Mechanical Utilities: Water System	<5 yrs	No	Some parts no	Replace rusted water service components with new coated valves that are designed for condensation. Replace main water shut-off valves (that don't seat) with new coated ball valves.	$50,000	$158,145	Mech -1
10	Civil	11.56	Roofing: Replace Roof Drain/Rain Leader	18	Site and Infrastructure: Site Drainage	<5 yrs	No	0	4-inch PVC drainage pipes are present in the columns attached to the deck adjacent to the main entry, and it is assumed they discharge under the deck. The 4-inch PVC drainage pipes were reported to be leaking during the winter of 2021/22, and ice buildup was present around the column exteriors. Repairing the drainage in the deck columns is also recommended.	$32,832	$103,844	Arch -2
12	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	21	Civil/Mechanical Utilities Overview: Fuel Systems	HLS	Yes, NFPA 30A and 2021 International Fire Code (IFC) Section 5704.2.7.3.3.	0	Replace the above ground fuel storage tank and correct the foundation and grounding issues, Relocate science lab propane storage tank to a code-compliant location and extend the piping accordingly, Reconnect to existing piping.	$35,000	$110,702	Civil - 1
13	Structural	11.11	Foundation and Substructure: Repairs (Estimate)	23	Substructure: Standard Foundations & Basements: Foundation Walls & Treatment	>15 yrs	No		Provide soil covering to prevent further damage to existing foundation insulation by weed whackers.	$1,500	$4,744	Civil - 1
14	Structural	11.11	Foundation and Substructure: Repairs (Estimate)	25 and ADA p25	Substructure: Slab on Grade: Structural & Non-Structural Slabs	HLS	303: Changes in level 302.3: Openings in floor or ground surface	0	Demolish and replace settled slabs.	$30,000	$94,887	Civil - 1
15	Structural	1.20	Superstructure: Repairs (Estimate)	30	Superstructure: Stair Structure	5 to 15 yrs	No	10yrs	Crack in the exterior concrete stairs should be injected with epoxy to protect the reinforcing from corrosion.	$400	$1,265	Misc
17	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	34	Exterior Enclosure: Exterior Walls: Original Semi-Vented Wood Clad Rainscreen Wall Assembly & New Wood Clad Wall Assembly	5 to 15 yrs	IECC 2021 – wall assembly does not utilize continuous insulation (ci), min R5.	10yrs	Install new siding system. **Total siding approx. 13,500SF.**	$343,791	$1,087,377	Arch - 6

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19	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	36	Exterior Enclosure: Exterior Walls: Brick Veneer Wall Assembly	<5 yrs	Original design code – the chase is required to be one hour rated. This rating would apply to those portions of the enclosure that separate it from the building interior which should include joint and penetration firestopping. Firestopping is noted as missing at flue penetration through this wall.	5yrs	Remove and dispose of chase cap flashing. Demolish chase, three-sides, preserve in-place building exterior wall chase abuts. Confirm exterior wall in this location is insulated, and is 1hr assembly. Upgrade as needed including replacement of moisture damaged GWB at wall interior and exterior and installation of penetration and joint firestopping as necessary. Frame, new chase with 2x hem/fir and sheathing. Framed assembly should be designed by struct engineer for conformance with modern code with respect to lateral loading. Install weather barrier Vaproshield Wrapshield SA. Install vertical PT 1x2 furring 16" OC to maximize venting and drainage – furring to be fastened to studs. Install shiplap or bevel cedar cladding, horizontally, painted. Detail continuous, 316 SS screened vent opening at top edge of cladding and continuous, 316 SS screened vent/drain opening at bottom edge of cladding. Fabricate and install new chase cap flashing.	$95,000	$300,476	Arch - 5
20	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	37	Exterior Enclosure: Exterior Finish Carpentry Assemblies	5 to 15 yrs	No	5 yrs	Approximately one half of the exterior finish carpentry components are in good condition and do not require attention other than periodic painting. The other half are in poor condition and should be replaced with allowance for better venting and drainage. If original wood clad rainscreen system is replaced however, all exterior finish carpentry should be replaced with it for a complete, new system.	$200,000	$632,580	Arch - 6
21	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	38	Exterior Enclosure: Exterior Soffit/Fascia Assemblies	<5 yrs	Yes, vents must be screened	Soffit vent screening [1], 0yr	Add soffit screens 316 SS wire mesh.	$5,760	$18,218	Arch - 4
22	Architecture	11.40	Exterior Closure: (Replace Windows)	40	Exterior Enclosure: Exterior Glazing: Windows	5 to 15 yrs	2021 IECC – Thermal performance of existing windows likely does not meet the U value requirements of modern energy code, noted as U.3 for 2021 IECC climate zone 6.	•Window frames [4], 20yr •Window frame cladding/coating [2], 5yr •Window IGUs [2], 5yr •Window head flashing [2], 5yr •Window rough opening flashing [3], 10yr (unclear extent to which this is a problem)	Recommend replacing all windows with fiberglass clad wood framed windows, or with fiberglass windows with high-performance IGUs utilizing appropriate low-emissivity coatings to help control both heat loss and heat gain.	$160,574	$507,881	Arch - 6

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23	Architecture	11.38	Exterior Closure: (Replace Doors and Frames)	41	Exterior Enclosure: Exterior Doors: Personnel Doors and Overhead Door	<5 yrs	Yes. •2021 IBC: See specific deficiencies note above under Existing Conditions •2021 IECC: Existing hollow metal doors do not conform with current energy code	0 yrs	Recommend replacing all existing and replacement hollow metal doors with new, thermally broken aluminum framed entrance doors, side lites and door hardware matching replacement Doors E200 and E300. There are 8 doors to be replaced. Doors don't conform to current energy code and some doors don't meet 2021 IBC code as detailed in report.	$145,479	$460,137	Arch -1
24	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	46	Roof Systems: Pitched Roofing:	<5 yrs	2021 IECC – inadequate insulation to meet recommended R value. Current R-value calculated at R40. Recommended R value is R60 for 2021 IECC Zone 6A – Cold/Humid.	Cupola flashin	Cupolas should be deconstructed, re-detailed and built-back to address flashing and penetration deficiencies noted. This work would necessarily include new roofing in these two instances.	$35,000	$110,702	Arch - 4
25	Architecture	11.54	Roofing: Replace Asphalt Shingle Roofing	46	Roof Systems: Pitched Roofing	5 to 15 yrs	2021 IECC – inadequate insulation to meet recommended R value. Current R-value calculated at R40. Recommended R value is R60 for 2021 IECC Zone 6A – Cold/Humid.	5yrs	Recommend re-roof with heavy-duty architectural asphalt shingles for all of roof. Work should involve deconstruction and build-back of corbeled fascia/soffit assemblies to facilitate installation of proper step flashing at rake wall to roof intersections. Area 44,000SF	$1,033,856	$3,269,985	Arch - 4
26	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	49	Roof Systems: Pitched Roof: Gutters and downspouts:	<5 yrs	No	•Built-in gutters and downspouts [1], 0yr •Fasia-mount gutters and downspouts [1], 0yr	Line built-in gutters with a continuous waterproof membrane. Downspouts should be replaced with continuous/jointless pipe downspouts. Recommend EPDM for membrane and grade 316 stainless steel tube for sleeves and downspouts. Roofing material adjacent to gutters will need to be removed to facilitate lapping membrane in and under existing roof underlayment. Exterior finish carpentry enclosures will need to be removed and replaced to facilitate this. Fascia-mount gutters should be removed and replaced. Additionally, fascia-mount gutters should be installed for full pitched roof perimeter except where built-in gutters are located.	$50,000	$158,145	Arch -2
27	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	56	Interiors: Special Partitions: Operable Partitions	5 to 15 yrs	Unknown	5 yrs	Remove inoperable partitions and replace with wood framed/gypsum faced infill, or other.	$13,608	$43,041	Misc
27	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	56	Interiors: Special Partitions: Operable Partitions	5 to 15 yrs	Unknown	5 yrs	All partitions should be verified as operable, and partition materials should be verified by review of original construction submittals (unavailable to design team) for fire propagation and smoke developed characteristics with respect to Chapter 8 of the International Building Code.	$400	$1,265	Misc
28	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	56	Interiors: Special Partitions	<5 yrs	No	<5 yrs	Replace stage curtain	$5,000	$15,815	Misc
29	Architecture	NA	NA	57	Interiors: Specialties: Special Partitions: Railings and Screens	>15 yrs	No	20 yrs	Chain link enclosure incidentally acts as guard. Verify that it meets OSHA requirements for guards serving regularly unoccupied service spaces.	$0	$0	Arch -3

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30	Architecture	11.63	Replace Door Leaf and Frames	59	Interiors: Interior Openings: Personnel Doors	HLS	•2021 IBC – Door I300: The force for pushing/pulling interior swinging egress doors shall not exceed 5 pounds. (1010.1.3) •NFPA 101: Classrooms and other spaces where students congregate do not have a means of securing the space from the inside except by use of portable emergency securing device. The portable devices themselves can impede egress and can also be misplaced/lost. (15.2.2.2.4)	5yrs	Replace all interior doors and hardware. Hardware, however, should be specified to integrally allow for emergency securement of doors serving any spaces where students congregate. Ensure ADA interior door width requirements are met (reference Project/Item #112)	$284,462	$899,725	Arch -1
31	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	60	Interiors: Interior Openings: Special Doors	HLS	•2021 IBC – Appears gate in closed position could create a dead-end corridor creating a life/safety hazard.	0 years	Remove pneumatic gate from Hallway 100B. Replace ACT with full tiles in location where gate was visible from below.	$5,000	$15,815	Arch -1
32	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	62	Interiors: Interior Openins: Windows & Sid	5 to 15 yrs	No	10 yrs	While side lites are in good condition, there is no visible labeling identifying it as safety glazing. Recommend side lites be replaced with labeled safety glazing. Glazing within 24" of door or 18" of floor finish surface should be tempered.	$10,668	$33,742	Arch -1
33	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	64	Interiors: Interior Finishes: Floor Finishes	<5 yrs	None	0 years	•Vinyl tile: Vinyl tile in classrooms and multipurpose room should be replaced within 5 years with modern, extra thick wear layer, waxless vinyl flooring. •Vinyl Flooring: Replace vinyl floor on the stage and repair wood on south edge of the Stage where trim is delaminating. •Ceramic Tile: Remove tile, grout and thinset or mastic. Repair/prep substrate as necessary, apply new tile with appropriate modified thinset and with control/expansion joints designed to alleviate existing cracking conditions.	$59,774	$189,059	Arch -3

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34	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	66	Interiors: Interior Finishes: Wall Finishes	<5 yrs	None	5yrs	•Painted gypsum boards should be patched and repaired as needed, paint to match surrounding area •Wood wainscot surface and finish carpentry should be repaired in areas of damage, prepped and repainted. Provide corner protection in vulnerable areas. •Remove tile, grout and thinset or mastic. If mastic, may contain asbestos- see environmental engineer's report. Repair/prep substrate as necessary, apply new tile with appropriate modified thinset and with control/expansion joints designed to alleviate existing cracking conditions. -Remove felt wall coverings in gymnasium, remove adhesive, prep underlayment or replace in kind as required for an applicable surface for a new wall covering to be installed. Replacement materials shall meet IBC Chapter 8 requirements.	25,000	$79,073	Arch -3
35	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	67	Interiors: Interior Finishes: Ceiling Finishes Finishes:	5 to 15 yrs	2021 IBC – Anticipate majority of ACT ceilings will require seismic bracing upgrades to bring them in conformance with current code.	5yrs	Recommend additional visual inspection of bracing, and add required bracing as per ASTM E580 as needed to the suspended grid.	$50,000	$158,145	Design
36	Architecture	11.86	Specialties/Furnishings and Equipment: Replace Tack/Chalk/Marker Boards	70	Interiors: Specialties: Interior Specialties	<5 yrs	No	5-10 years	Blackboards should be updated with white boards in the next five years to maintain consistency in writing surfaces for teachers.	$7,650	$24,196	Arch -3
39	Architecture	11.88	Specialties/Furnishings and Equipment: Replace Wall Hung Units	71	Interiors: Specialties: Casework/Millwork	5 to 15 yrs	Quality of Life	5yrs	Replace all upper casework with architectural plastic laminate faced premium grade, ADA compliant casework.	$71,419	$225,890	Arch -3
40	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	72	Interiors:Specialties: Fire Extinguishers	HLS	•2021 IBC oClassrooms generally do not appear to have fire extinguishers. Per section 906.1 Exception 2 of the 2021 IBC, all classrooms shall be provided with a fire extinguisher with a minimum rating of 2:A:20:B:C. oKitchen addition appears to have class A extinguisher (based on color of cylinder), however class B, subclass K noted to be installed.	•Fire Extinguishers [3], 10 yr •Fire Hoses [1], 0 yr	•Check labeling to confirm required class of extinguisher in kitchen. •Confirm all fire extinguisher testing is current. (Extinguishers checked have service tags dated 4/23 and 5/23.) Replace fire extinguishers 10-12 years of age or older. •Provide all classrooms with portable fire extinguishers with a minimum rating of 2:A:20:B:C. •Remove all fire hoses (0 yrs life)	$0	$0	Misc

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41	Architecture	11.89	Replace Window Coverings	73	Interiors: Specialties: Window Coverings	<5 yrs	Unknown	•Pull-down roller blinds [2], 5 yr •Cloth drapes [2], 5 yr	Replace all pull-down roller blinds and full length cloth drapes with duel light filtering/blackout roller shades complying with Chapter 8 of the IBC in the next 0-5 years.	$23,373	$73,927	Arch -3
42	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Waste & Vent Piping	<5 yrs	No	0	CCTV existing waste and vent piping.	$5,000	$15,815	Misc
43	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Waste & Vent Piping	<5 yrs	An indirect drainpipe discharges into the mop basin in the Janitor's room below the flood rim of the fixtures. This violates section 801.2 of the 2018 UPC. The source of the drainpipe is unknown.	0	Modify indirect drain piping in Janitor's room mop basin to provide code-required air gap.	$500	$1,581	Misc
44	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Plumbing Equipment	<5 yrs	No	0	Replace domestic hot water recirculation pump.	$15,000	$47,444	Mech -1
45	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Waste & Vent Piping	<5 yrs	Quality of Life	0	Replace tailpiece, p-trap, and discharge piping for sinks in Classroom 301 and 315.	$2,100	$6,642	Mech -1
47	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: HVAC: Heating Equipment	<5 yrs	Per ASME CSD-1, boiler emergency shutdown pushbuttons are required on all doors exiting the boiler room. The pushbutton for the interior door is required to be located just outside the boiler room. The pushbutton for the exterior door is required to be located inside the boiler room on the wall next to the handle side of the door.	0	Provide Boiler Emergency Shutdown Pushbuttons	$7,500	$23,722	Mech -1
48	Mechanical	11.117	Mechanical: Replace Cabinet Unit Heaters	85	Mechanical: HVAC: Heating Equipment	<5 yrs	No	0	Repalce Unit Heater in Boiler Room	$4,121	$13,034	Mech -1
49	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: HVAC: Heating Equipment	<5 yrs	No	0	Replace Expansion Tank	$15,000	$47,444	Mech -1
50	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: HVAC: Heating Equipment	<5 yrs	No	0	Replace Glycol Tank	$4,000	$12,652	Mech -1
52	Mechanical	11.111	Mechanical: Replace Plumbing Fixtures Only	85	Mechanical: Plumbing Fixtures	<5 yrs	No	0	Replace specific instances where failures have occurred.	$30,634	$96,891	Mech -1
53	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	87	Mechanical: Plumbing: Plumbing Piping:	<5 yrs	No	0	Provide a booster pump packaged system.	$50,000	$158,145	Mech -1
54	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	87	Mechanical: Plumbing: Plumbing Piping:	<5 yrs	No	0	Replace angle stop valves where corrosion is visible.	$4,000	$12,652	Mech -1
55	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	87	Mechanical: Plumbing: Plumbing Piping:	<5 yrs	No	0	Replace gate isolation valves with ball isolation valves.	$10,000	$31,629	Mech -1
56	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Provide insulation on exposed steel piping on discharge of CP-3.	$1,000	$3,163	Mech -1
57	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace components that leak during system shutdown.	$2,000	$6,326	Mech -1
58	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace corroded piping.	$2,400	$7,591	Mech -1

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59	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace leaking automatic air vents, oxidized flexible piping, and oxidized drain valves.	$6,000	$18,977	Mech -1
60	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace non-functional gate valves.	$5,600	$17,712	Mech -1
61	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	89	Mechanical: Plumbing Equipment	<5 yrs	Per Section 608.3 of the 2018 UPC, water systems provided with check valves shall be provided with an approved, listed, and adequately sized expansion tank.	0	Provide expansion tank on cold water piping going to water heater.	$1,000	$3,163	Mech -1
62	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	89	Mechanical: Plumbing Equipment	<5 yrs	The combination temperature and pressure relief valve discharge capacity is less than that of the water heater it serves. This violates the 2018 UPC Section 504.6.	0	Replace combination temperature and pressure relief valve on water heater.	$1,000	$3,163	Mech -1
63	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Demolish Electronic Air Cleaner, EC-1.	$7,500	$23,722	Mech -2
64	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Pre-TAB Entire Building	$10,000	$31,629	Mech -2
65	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Repair damaged flex duct connections.	$5,000	$15,815	Mech -2
66	Mechanical	11.120	Mechanical: Replace Air Handling Unit	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Replace AHU-1, AHU-2, AHU-6, and AHU-7.	$459,792	$1,454,277	Mech -2
67	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	Section 505.6 of the 2021 IMC requires a domestic cooking exhaust system to be installed where domestic ranges are used for domestic purposes. The non-functional range hoods above the ranges in Kitchen 10B and Break Room 22 violate this section of the code.	0	Replace range hoods in Kitchen 10B and Breakroom 22.	$5,000	$15,815	Mech -2
68	Mechanical	11.119	Mechanical: Replace Ventilation Systems	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	Due to the poor condition of the air handling units and VAV boxes, it is highly likely that code-required minimum air flows are not being provided to some spaces.	0	Replace VAV boxes associated with AHU-1 and AHU-2.	$826,400	$2,613,823	Mech -2
69	Mechanical	11.121	Mechanical: New Exhaust Fan	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Ventilation Equipment: Replace Exhaust Fan, EF-1	$14,612	$46,216	Mech -2
70	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	99	Mechanical: HVAC: Ventilation Distribution Systems	<5 yrs	Section 602.2.1 of the 2021 IMC	0	Clean all ductwork.	$9,600	$30,364	Misc
71	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	99	Mechanical: HVAC: Ventilation Distribution Systems	<5 yrs	Section 602.2.1 of the 2021 IMC	0	Provide ducting between the air handlers and associated return air duct.	$500,000	$1,581,451	Mech -2
72	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	103	Mechanical: Integrated Automation Overview: Control Systems	<5 yrs	No	0	Demolish abandoned control equipment.	$5,000	$15,815	Mech -2
73	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	103	Mechanical: Integrated Automation Overview: Control Systems	<5 yrs	No	0	Update DDC graphics.	$10,000	$31,629	Mech -2

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
74	Mechanical	11.123	Mechanical: New DDC Controls	103	Mechanical: Integrated Automation Overview: Control Systems	<5 yrs	No	0	Upgrade pneumatic controls to DDC.	$111,700	$353,296	Mech -2
75	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	106	Mechanical: Sprinklers and Piping	HLS	No	0	Provide escutcheons for sprinkler heads where noted as missing.	$250	$791	Mech -1
76	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	106	Mechanical: Sprinklers and Piping	<5 yrs	No	0	Provide pipe covers over dry sprinkler piping that are tripping hazards.	$1,000	$3,163	Mech -1
77	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	106	Mechanical: Sprinklers and Piping	<5 yrs	NFPA 13	0	Relocate projectors.	$2,400	$7,591	Mech -1
78	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	110	Mechanical: Special Mechanical Systems: Compressed Air & Vacuum Systems	<5 yrs	No	0	Demolish blue air compressor and associated control panel and air dryer.	$5,000	$15,815	Mech -1
79	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	110	Mechanical: Special Mechanical Systems: Dust Collection Systems	HLS	Currently, the dust-producing equipment in the wood shop is not properly exhausted in accordance with Section 511 of the 2021 IMC. Additionally, due to the lack of information available on the existing dust collector, we were unable to verify if the dust collector or associated ductwork meets the requirements of Section 511 of the 2021 IMC or Chapter 22 of the 2021 IFC.	0	Evaluate and modify dust collection system.	$50,000	$158,145	Mech - 3
80	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	113	Electrical: Service & Distribution: Main Distribution Panels & Switchgear	<5 yrs	Some of the breakers are unlabeled.	0	Label unlabeled breakers	$0	$0	Misc
81	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	116	Multiple. Electrical: Lighting Overview: Site Light Fixtures & Lighting	<5 yrs	There is no site lighting for the playground. The parking lot is insufficiently lit	0	Site Lighting: Add a pole light across the road for the parking spots, Add site lighting for the playground, Replace failed fixtures with new LED fixtures. Installation of two light poles, with lights and cables.	$10,000	$31,629	Civil - 1
82	Electrical	11.143	Electrical: New Power Panel	117	Electrical: Service & Distribution: Panels & Motor Control Centers	HLS	The electrical panel "CP" is located in the Janitor Room 21 is located so that the water and fire riser pipe is right in front of it. NEC (National Electrical Code 2020, NFPA 70) requires three foot front working clearance in front of it.	0	Relocate the panel by either rotating 180 degrees so the panel opens into the hallway, or move to a new location and utilize the existing panel enclosure as a terminal box.	$12,309	$38,932	Elec - 2
83	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Boiler (Room 26): Relocate disconnects, equipment, and/or piping to accommodate clearance requirements.	$10,000	$31,629	Elec - 2
84	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Classroom (Room 204): Replace receptacles located within 6' of sink edges with GFCI receptacles	$300	$949	Misc

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
85	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Ensure all receptacles have faceplates, ideally steel to minimize potential for breakage. Ensure all non-locking 15- and 20-ampere, 125- and 250-volt receptacles in classrooms, hallways, nurse's room, and other areas where students are likely to be to be listed tamper-resistant.	$2,000	$6,326	Misc
86	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Nurse's Room and Preschool Room: An electrician to identify compliance with NEC 517.13 (A) and (B) should inspect the space and resolve any non-compliant installations. Install a single (or more) GFCI receptacle(s) to protect all receptacles in the room.	$300	$949	Misc
87	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Old Kitchen (Room 10B): If this room is to continue to be used for food preparation, then all receptacles need to be changed to GFCI. If food is not being prepared in this space but the sink is kept, ensure all receptacles within 6' from the top edge of the bowl of the sink are GFCI.	$750	$2,372	Misc
88	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Shop (Room 24): •Receptacles should have dust covers to prevent build-up of wood dust. •An additional emergency shutdown button should be in a central location, on, or near the exit door, in a location where no equipment or material will block it. •Additional receptacles should be located in the fenced-off area with ground-fault protection.	$10,000	$31,629	Elec - 1
89	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	127	Misc	HLS	The fuel oil piping and propone piping were not grounded. If not completed, ground connections as shown on the 2021 drawings need to be completed.	0	Ground the fuel oil piping and propone piping.Complete the ground connections as shown on the 2021 drawings.	$400	$1,265	Misc
90	Electrical	11.145	Electrical: Replace Lighting - Fixtures Only	119 & 120	Multiple. Including Lighting: Lighting: Interior Light Fixtures	HLS	The underlit and over lit spaces need to have their lighting changed for health and code compliance. All spaces require additional egress lighting.	0	INTERIOR: The new LED fixtures being used in the hallway should be used in the classrooms and offices as well for ease of installation, ordering, and minimizing different spares on site. The new 2'x2' light fixtures should be evenly spaced in the dropped ceiling across the room for even distribution. Two new 2'x2' light fixtures should be provided for every single 2'x'4 being replaced, but the two 2'x2' should not be side-by-side but evenly located in the room. Ideally the classrooms will have two lighting circuits to allow for different lighting levels.	$227,378	$719,174	Elec - 1
91	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	44 and ADA report (Attachment B) Page 30	Exterior Enclosure: Exterior Accessories: Other Exterior Accessories	<5 yrs	2021 IBC – transitions to adjacent concrete are not ADA compliant and present a significant trip hazard. ADA 405.2 Slope and Cross Slope and ADA 405.2: Ramp Slope	5 years	Exterior Enclosure: Exterior Accessories: Other Exterior Accessories: Demo existing deck adjacent to the main building entry and replace with new concrete flatwork or a furred composite wood decking system. Need 1,100SF.	$36,667	$115,973	Civil - 1

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
119	Architecture	NA	NA	multiple	Interiors	HLS	High	0	As a part of any future renovation work, recommend environmental engineer sample and test for presence of Asbestos Containing Materials.	$60,000	$189,774	Design
122	Structural	1.20	Superstructure: Repairs (Estimate)	30	Superstructure: Stair Structure	5 to 15 yrs	No	0	To fix the excessive deflection at the interior steel stair's landing, install additional steel angle supports to better support the steel grating providing a stiffer walking surface.	$5,000	$15,815	Civil - 1

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
93	Architecture - ADA	11.111	Replace Plumbing Fixtures Only	ADA report (Attachment B) Page 11	Commercial kitchen	HLS	ADA Section 606.2.7: Lavatories and Sinks	0	Provide one sink which has 11''-25'' of knee depth below the sink (Appendix 5) - This been fixed as of the final report	$0	$15,815	Misc
94	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 12	Commercial kitchen	HLS	ADA Section 606.2.7: Lavatories and Sinks	0	Relocate storage box to ensure appropriate knee and foot clearance distance under sink - This has been fixed as of the final report	$0	$0	Misc
95	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 14	Mail room near main entrance	HLS	ADA Section 603.2.1/304: Turning Space	0	Ensure floor space is cleared to provide for a 60'' diameter circle or T-shaped space for turning	$0	$0	Misc
97	Architecture - ADA		11.181 Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 17	Multiple	HLS	ADA Section 604.5: Grab bars; ADA Section 213.3.4: Sinks; ADA Section 605.2: Urinals height and depth	0	Bathrooms: boys bathroom near 5th grade classroom: Remove grab bars attached to toilet. Cover exposed pipes at accessible sink to protect knees against contact. In girls' locker room replace toilet with one that has flush on 'open' side. Move toilet tissue dispensers in 5 bathrooms so the the toilet paper outlet is a maximum height of 48'' above the finish floor and maintaining at least 2" between the top gripping surface of the grab bar and the toilet paper dispenser outlet (ADA report page 6,7,16,18,24). In girls restroom near the stage/music room and main school entrance, and in commercial kitchen, lower towel dispenser so that operable portion is a maximum of 48'' from the ground. Ensure height of accessible urinal has a rim with a maximum height of 17'' above the finished floor and remove the platform (Appendix 6).	$9,000	$189,774	Misc
99	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 15, 18, 22	Room 316, girls locker room, commercial kitchen, Room 216, gymnasium laundry room.	HLS	ADA Section 403.5.1: Clear width, ADA Section 305.3: Clear Floor or Ground Space	0	Remove or relocate items in front of the doorway to ensure a 36" wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32" for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum. Provide a 60" round or T-shaped turning area in gymnasium laundry room.	$0	$0	Misc
100	Mechanical			ADA report (Attachment B) Page 19	Teacher's lounge	HLS	ADA Section 308.3: Reach Ranges	0	Consider replacement of fridge/freezer with one that has freezer drawer on bottom	$500	$316	Misc
101	Architecture - ADA		11.90 Specialties/Furnishings and Equipment: Other Repairs (Estimate)	ADA report (Attachment B) Page 21 and 23	Girls and Boys's locker rooms	HLS	ADA Section 222/803: Locker Rooms 903: Benches	0	Remove bench from center of locker room and install bench which meets minimum ADA requirements (20'' deep, 42'' long, 17'' above finished floor), flush to wall.	$0	$0	Arch -1
102	Architecture - ADA			ADA report (Attachment B) Page 24	Gym	HLS	ADA Section 304: Turning Space 403.5.1: Clear width circulation paths	0	Consider removal/relocation of some fixed gym equipment to ensure enough floor space is cleared to provide for a 36'' wide pathway to/from the door. Also, consider keeping a 60'' diameter circle of floor space free near free-weight area to allow for activity space	$0	$0	Misc
103	Architecture - ADA	11.111	Replace Plumbing Fixtures Only	ADA report (Attachment B) Page 24	Girls locker room	HLS	ADA Section 604.8.2: Flush controls	0	Replace toilet with one which has flushing mechanism on the "open" side	$2,553	$8,074	Misc
104	Civil - ADA	11.181	Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 26	Playground	HLS	ADA Section 240.2.1: Ground Level Play	0	Install 2 additional ground-level play components in addition to bringing the swingset up to ADA standards. Install accessible swing seat accessory and harness.	$15,000	$47,444	Civil - 2
106	Civil - ADA	NA	No cost	ADA report (Attachment B) Page 27	Playground	HLS	ADA Section 403.5: Clear width	0	Remove or relocate item along corridor to ensure a 36" width minimum is maintained along the route of travel	$0	$0	Misc
107	Civil - ADA	11.181	Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 27 and Page 26	Playground	HLS	American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99; American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99 ADA Section 240.2.1: Ground Level Play Components. 302.1: Accessible ground surfaces	0	Replace surface under swings with rubber tiles or poured in place rubber. Replace gravel paths around playground areas with accessible ground surfaces that is stable, firm, and slip resistant.	$203,000	$642,069	Civil - 2

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
109	Architecture - ADA			ADA report (Attachment B) Page 3	Handrail leading up to the stage/music room.	HLS	ADA Section 505.3; 505.10: Handrails	0	Replace/repair handrail	$7,000	$22,140	Misc
110	Architecture - ADA			ADA report (Attachment B) Page 3 and 4	Top of the ramp leading to the bathrooms and stage/music room, and at the landing near the door to the stage/music room	HLS	ADA Section 405.7: Landings	0	Modify landing to meet 60" x 60" requirement (Appendix 1)	$50,000	$158,145	Arch -1
111	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 3, 8, 10, 20, 22, 23	Door to the stage/music room, Entrance to girls locker room, Entrance to gymnasium laundry room, Entrance door to boys locker room, Entrance door to the gymnasium, Door to the student use kitchen areas behind the main cafeteria, Main door to the library	HLS	ADA Section 404.2.9: Door and Gate Hardware	10 years (just needs manual adjustment)	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force. See Instructions (Appendix 2 of ADA Report). Doors will all be replaced under a separate project recommended by the architect on page 59 of the Condition Report, section 'Interiors: Interior Openings: Personnel Doors'. The cost for this is Line Item 11.63 in the estimate.	$0	$0	Misc
112	Architecture - ADA			ADA report (Attachment B) Page 4		HLS	ADA Section 404.2.3: Clear Width	0	Increase door width to meet 32'' minimum. Door width (28'') does not meet minimum ADA standards. No cost shown for this item,as it will be addressed in larger project to replace all interior doors (reference Project/Item #30)	$0	$0	Arch -1
113	Architecture - ADA			ADA report (Attachment B) Page 6	Entrance of girls restroom near the stage/music room and main school entrance	HLS	ADA Section 404.2.4.1.a: Maneuvering Clearances at Manual Swinging Doors and Gates	0	Increase space between wall and pull side of door to 18'' while maintaining appropriate door width	$1,200	$3,795	Arch -1
115	Architecture - ADA			ADA report (Attachment B) Page 7	Boys restroom near the stage/music room and main school entrance	HLS	ADA Section 403.5.1: Clear width	0	A minimum width of 36" is required for path of travel. A narrowing of the path to 32" is permitted for a maximum length of 24". Consider installing sinks which do not project as far into path of	$5,000	$15,815	Arch -1
116	Architecture - ADA			ADA report (Attachment B) Page 8	Water fountain near the library	HLS	ADA Section 602.1-602.6: Drinking Fountains	0	Consider lowering water fountain, pending age of main users	$2,000	$6,326	Arch -1
117	Architecture - ADA			ADA report (Attachment B) Page 9	Student use kitchen areas behind the cafeteria	HLS	ADA Section 902.3: Built-in Elements; Dining, Counters, and Work Surfaces. ADA Section 804.2: Kitchens and Kitchenettes ADA Section 902.4: Dining Surfaces and Work Surfaces for Children's Use. ADA Section 606.2: Lavatories and Sinks. Clear Floor Space	0	Provide a counter space with height between 28''-34'' above the finished ground The tops of tables and counters shall be between 26"-30" if the kitchen is being used by children. Considered low priority/not applicable - children do not use kitchens	$0	$0	Arch -3
120	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 10, 11, 13	Commercial Kitchen	HLS	ADA Section 403.5.1	0	Remove or relocate items in front of the doorway to ensure a 36" wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32" for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	$0	$0	Misc
121	Architecture - ADA	11.181	Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 21	Boys locker room	HLS	ADA Section 403.5.1	0	Replace garbage can with one that does not protrude into the path of travel in front of the sink	$100	$316	Misc
3	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	7	Site and Infrastructure: Elevated Decks, Stairs & Ramps	HLS	ADA code violation	10 years	Site and Infrastructure, Elevated Decks, Stairs & Ramps, Resurfacing exterior metal handrails and making all repairs required for ADA compliance	$10,000	$31,629	Civil - 1
6	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	10	Site and Infrastructure: Site Improvements: Site Furnishings & Equipment	HLS	ADA Section 303.4: Curb ramps 406.8: Detectable warnings	0	Replace faded site signage and school crossing striping. Install ADA-complaint, signage for curb cuts (3). Install signs, including van accessible, per ADA Standards.	$15,000	$47,444	Civil - 1

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
37	Architecture	11.9	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	70 and ADA report page 19	Interiors: Specialties: Interior Specialties	HLS	ADA Section 703.4: Signs 216.8 Toilet Rooms and Bathing Rooms	0 years	Room identification signage should be replaced with signage that conforms with the American Disabilities Act.	$6,500	$20,559	Arch -1
38	Architecture	11.87	Specialties/Furnishings and Equipment: Replace Base Cabinet Units	71	Interiors: Specialties: Casework/Millwork	HLS	ADA code violation	•Classroom,	Replace all lower casework with architectural plastic laminate faced premium grade, ADA compliant casework.	$244,284	$772,646	Arch -3
46	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: Plumbing Fixtures	HLS	ADA		Install p-trap safety covers on lavatory p-traps.	$2,250	$7,117	Mech -1
51	Mechanical	11.111	Mechanical: Replace Plumbing Fixtures Only	85	Mechanical: Plumbing Fixtures	HLS	ADA	0	Replace sink basins in science lab.	$20,275	$64,128	Mech -1
92	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	5 and ADA Report Pages 28, 29, 30.	Site and Infrastructure: Site Improvements: Pedestrian Surfaces	HLS	ADA 35.151 Construction and alterations: streets, roads, sidewalks, highways; ADA section 302.3 Openings in Ground Surface. ADA Section 206.2.1: Site Arrival Points to Accessible Routes 502: Accessible Parking Spaces 502.6: Sign Identification. 406: Curb Ramps	0	Site and Infrastrucutre: Pedestrian Surfaces: Replace the deteriorated sidewalks, curbs, bike rack near the baseball field, and make all repairs for ADA compliance. Ensure path of travel does not go behind parked vehicles or across the active parking lot. Install a ramped curb cut for access to the accessible path.	$340,000	$1,075,387	Civil - 1

4.4 Recommended 5-Year Capital Expenditure Plan

Table 2 below presents a suggested implementation program for recommended capital improvement projects over the next five-year planning period. The recommended CIP projects have been selected based on the project groupings identified in Section 4.3. These projects generally represent the items identified in the survey as needing replacement/improvement in the next five years. Based on the priority ranking established in the evaluation, these were projects identified as 'Health, Life, and Safety (HLS)' concerns or items/systems with recommended replacement in less than five years. All of the recommended ADA projects have been identified as HLS concerns and included in the 5-year CIP program.

Table 2: 5-Year CIP Program

ID	Description	Total Project Planning Cost
Misc-1	Multiple disciplines - generally no design required	$ 60,000
Civil - 1	Civil Site work (incl Elec Site Lighting & Mech Fuel tanks)	$ 1,850,000
Civil - 2	Playground ADA	$ 690,000
Arch -1	Hallways/landings; Bathrooms; Door Replacement	$ 3,990,000
Arch -2	Gutters and Downspouts	$ 260,000
Arch - 5	Chase Assembly	$ 300,000
Elec - 1	Interior lighting; Power Devices and Connections	$ 750,000
Elec - 2	"CP" Panel in Janitor's room 21; Boiler Room 26	$ 71,000
Mech -1	Various Plumbing, Heating, etc.	$ 770,000
Mech -2	Ventilation System	$ 6,180,000
	Total =	$ 14,921,000

Table 3 presents the recommended capital expenditures beyond five years. This includes several large architectural renovation projects for interior finishes, roofing, and exterior enclosures (building cladding, windows, etc.). The total recommended capital improvements over the next twenty years in 2023 dollars is approximately $22.0 million.

Table 3: 5-20 Year CIP Program

ID	Description	Total Project Planning Cost
Arch -3	Interior Renovations; Walls, Floors, Casework, etc.	$ 1,360,000
Arch - 4	Roofing	$ 3,400,000
Arch - 6	Exterior Enclosure: Building Cladding; Windows	$ 2,230,000
Mech - 3	Dust Collection System	$ 160,000
	Total =	$ 7,150,000

The total project planning cost for the 'Misc-1' project grouping does not include project markups. In general, the items included in this group will not require detailed designs or factors generally associated with larger construction projects (allowances for the contractor's overhead and profit,

mobilization/demobilization costs, etc.). These are projects that may be accomplished by staff or smaller local contractors without detailed plans and specifications. All other projects include the markups identified in Section 4.2, which include allowances for design and construction administration.

Appendix A

Skagway K-12 School Facility Condition Survey

(DEED Format)

Skagway K-12 School Facility Condition Survey

Table of Contents

Facility Overview

School District:	Skagway School District
Facility:	Skagway K-12 School
Inspection Date(s):	June 14-15, 2023

Dates of Construction and Additions

[redacted]	Date	GSF
Original Construction:	1983	39,950
Addition:	2000	1,480
Addition:	2021	1,640
Addition:		
[redacted]	Total:	43,070

*Confirm dates and GSF with DEED Facility Database

Renovations and System Replacement

Date	Description (including renovations as part of above additions)
2004	Partial Roof Replacement
2010	Fire Sprinkler System Replacement
2021	Kitchen Addition

Survey Team

Name	Firm
Ryan Moyers	CRW Engineering Group
Christi Meyn	CRW Engineering Group
Austin Dabbs	CRW Engineering Group
Gavin Block	CRW Engineering Group
Ian Hofmann	CRW Engineering Group
Nick Choromanski	CRW Engineering Group
Dave Hurley	Northwind Architects, LLC
Shannon Crossley	Northwind Architects, LLC

Notes

A site survey was conducted on June 14th and 15th, 2023. Our survey team was accompanied by Tyson Ames, the Skagway Director of Public Works.

Cost estimates are provided within this report only in the sections where renovations are recommended. Where no recommendations are made, no estimates are required. Attachment A contains the summary of all the cost estimates, the Skagway School Remodel Cost Estimate. This estimate was developed using the Department of Education & Early Development (DEED) 2023 Program Demand Cost Model for Alaskan Schools.

An American with Disabilities Act (ADA) assessment of Skagway School was performed under a separate project by Southeast Alaska Independent Living, Inc. (SAIL). SAIL's summary report is included as Attachment B to this report. The costs associated with SAIL's recommendations have been incorporated into this project's cost estimates in Attachment A.

Attachment C of this report contains Skagway School as-builts that were used in the evaluation and development of costs.

Site and Infrastructure

Synopsis

Skagway School is located at the north end of Skagway on an approximately 280,000 square foot lot. The original building was constructed in 1983 over two phases.

Site Improvements Overview

Synopsis

The existing site consists of grass, asphalt and concrete surfaces surrounding the school. A wood deck is adjacent to the main entrance, and a playground is located at the northeast end of the site. Overall the site is in good condition, with improvements to the paved surfaces and playground recommended.

Vehicular Surfaces

Description of Existing Systems

Existing asphalt driving surfaces and parking areas are in fair condition. One 24' entrance from Fifteenth Street and two 24' entrances from Main Street provide access to the main School entrance and paved parking areas. One-way traffic flow is indicated by signage at each driveway entrance, with vehicles entering from Main Street and exiting to Fifteenth Street. Motorized parking areas consist of a 12-space diagonal parking area, a 4-space guest parking area, a 2-space disabled parking area, and a 9-space parking area, for a total of 27. Additional parking spaces are available across Fifteenth Street and are used by staff.

Existing Conditions

The existing vehicular surfaces show signs of wear, with visible cracking and pitting of the surface. A low point in the driveway is present where material has spalled from the surface. Striping in parking and driving areas is no longer visible.

An AutoTurn analysis was conducted as part of this assessment, using available aerial imagery and record drawing of the site. The analysis determined that an AASHTO passenger vehicle is the largest vehicle to fit on the site with the existing site layout. Features of an AASHTO passenger vehicle are listed in Table 1, and include sedans, pick-up trucks, SUVs, minivans, and full-size vans.

Limited student transportation is provided by the School using a 14-passenger van, which is adequate for the existing site.

Table 1: AASHTO Passenger Vehicle Features

Vehicle Length	19 ft
Vehicle Wheelbase	11 ft
Vehicle Turning Radius	23.8 ft

Overall, the vehicular surfaces have an estimated remaining useful life of two to three years.

Code Deficiencies

Skagway Municipal Code does not include off-street parking requirements for schools, but office buildings require one parking space per 250 square feet of floor area and businesses require one parking space per 500 square feet of floor area. Using either of these building classifications would

require 80 – 160 parking spaces at the school. Anchorage's Municipal Code sets school parking requirements based on the size of the multipurpose room and main auditorium, which could help ensure adequate parking without too many spaces.
An ADA Building and Site Access Consultation was performed separately from this assessment. The report developed from the consultation identified that the existing accessible parking spaces are not clearly marked.

Recommendations
Resurfacing and restriping the asphalt driveway and parking spaces are recommended.

Estimates
See Attachment A for Cost Model.


Photo 1 – Worn asphalt pavement at entrance


Photo 2 – Close up of worn asphalt surface


Photo 3 – Asphalt deterioration on driveway

Pedestrian Surfaces

Description of Existing Systems

Existing concrete sidewalks and pedestrian pathways wrap around the school site.
Bike parking includes three 36-space bike racks along the main pedestrian walkway at the south end of the site, and one bike rack near the baseball field at the north end of the site.

Existing Conditions

Sidewalks are in fair condition, with pitting of surfaces, cracking, differential settlement of panels, and curb deterioration. The bike racks at the front of the building are in good condition. The bike rack near the baseball field is in poor condition.
Overall, the pedestrian surfaces have an estimated remaining useful life of three to five years. The bike rack near the baseball field has a remaining useful life of less than one year.

Code Deficiencies

The ADA Report identified several gaps and damage to pedestrian surfaces that exceed ½-inch wide and ¼-inch tall, and several areas lacking ADA-compliant curb cuts.

Recommendations

Replace the deteriorated sidewalks, curbs, bike rack near the baseball field, and make all pedestrian surface repairs for ADA compliance.

Estimates

See Attachment A for Cost Model.

Photo 4 – Pitted sidewalk

Photo 5 – Chipped sidewalk

Photo 6 – Chipped sidewalk

Photo 7 – Chipped sidewalk

Photo 8 – Raised sidewalk panel

Photo 9 – Bike rack near baseball field

Elevated Decks, Stairs & Ramps

Description of Existing Systems

Exterior concrete steps are present at some exterior doors. Sidewalk ramps are present at the front and southeast building entrances. A wooden covered deck is located adjacent to the main entrance, and is discussed in the Architectural Section.

Existing Conditions

Concrete steps are in fair condition, with moss buildup and minor material spalling present. Corrosion is present on all of metal exterior handrails.

Overall, the exterior steps and ramps have an estimated remaining useful life of approximately 10 years.

Code Deficiencies

ADA deficiencies associated with sidewalk ramps are discussed in Pedestrian Surfaces.

Recommendations

Resurfacing exterior metal handrails are recommended.

Estimates

See Attachment A for Cost Model.

Photo 10 –Ramp from exterior door

Photo 11 – Exterior door stairs and handrails

Photo 12 – Close up of handrail corrosion

Landscaping

Description of Existing Systems

Existing site landscaping consists mainly of grass surfaces. A coniferous treed area is present to the northeast of the site. A handful of deciduous trees have been planted in the southeast lawn in honor of staff. A baseball field is located at the northeast end of the site, along with a community garden.

Existing Conditions

Landscaping is in good condition. Drainage discussed in separate section below. Overall, the site landscaping has an estimated remaining useful life of 10+ years.

Code Deficiencies

There are no known landscaping code deficiencies.

Recommendations

There are no recommended improvements.

Photo 13 – Aerial view of School landscaping

Photo 14 – Baseball field

Photo 15 – Community garden

Photo 16 – Trees in southeast lawn

Fencing and Gates

Description of Existing Systems

Chain-link fence encloses the playground area and the baseball field. The baseball field fence includes two single gates and one double gate. The playground area includes two rolling gates.

Existing Conditions

Both fences are in fair to good condition. One metal post pole on the baseball field fence has been replaced with a wooden 4x4 post. The single- and double-gate on the baseball field fence do not close due to gaps between the latch and post. One rolling gate on the playground fence is inoperable. Overall, the site fencing and gates have an estimated remaining useful life of 5-10 years.

Code Deficiencies

There are no known fencing code deficiencies.

Recommendations

Replacing the wooden post with a new metal pole on the baseball field fence is recommended, as well as replacing the out-of-plumb fence posts near each gate with latch gaps. Replacing the inoperable rolling gate on the playground fence is also recommended.

Estimates

See Attachment A for Cost Model.

Photo 17 – Out-of-plumb gate

Photo 18 – Typical gate latch gap

Photo 19 – Wood fence post

Photo 20 – Inoperable playground rolling gate

Site Furnishing & Equipment

Description of Existing Systems

Site furnishings include a gravel generator pad, propane tank storage, metal lamp posts, and site signage.

The generator pad is currently under construction and consists of a reinforced concrete slab on a gravel pad. Surface course for the pad has yet to be installed. A smaller concrete pad, originally for propane tank storage, is located adjacent to the generator pad. However, the propane tank pad is within the minimum separation distance of the generator, and the tanks are currently stored on a temporary metal platform outside of the separation distance.

Site signage consists of "No Parking" signs, "School Zone" signs, directional traffic signs in the parking area, and others.

Existing Conditions

Site signage is in fair condition, with many "No Parking" signs faded and covered by brush along the baseball field fence. School crosswalk markings are faded. It should be noted that the Municipality is moving away from low-visibility traditional, transverse crosswalks to higher-visibility crosswalk patterns (ladder, etc.). Municipal regulations have been enacted that specifically call for allowing old crosswalks to fade out. Crosswalks requiring re-painting will need to be coordinated with the Municipality during the design of site improvements. School crossing signs are in compliance with the Alaska Traffic Manual. All other site improvements are in good condition.
Overall, the site furnishing and equipment has an estimated remaining useful life of 5-10 years.

Code Deficiencies

There are no known deficiencies with site furnishings.

Recommendations

Replace faded site signage and school crossing striping. Construct a permanent propane tank storage pad outside of the minimum separation distance from the generator.

Estimates

See Attachment A for Cost Model.

Photo 21 – Generator pad

Photo 22 – Propane tank storage

Photo 23 – Typical lamp post

Photo 24 – Faded "No Parking" sign

Photo 25 – Worn crosswalk striping

Photo 26 – Faded sign

Playgrounds

Description of Existing Systems

A Playcraft Systems Round 5 Playground was installed in 2013. The playground is manufactured for ages 2-5 and consists of slides and climbing surfaces. Wood chips provide a ground cover for the playground and picnic tables are in the fenced area. Adjacent to the playground is a 60'x100' field with soccer nets and one portable basketball net. A tennis court is located north of the playground. A baseball field is located on the northeast end of the site and includes two soccer nets.

Existing Conditions

The playgrounds and fields are all in good condition. Some uneven grading was noticeable on the baseball field. The tennis court surface is in good condition, but the net is worn, and the area appears to be used as an equipment storage area.

Overall, the playground, tennis court, and sports fields have an estimated remaining useful life of 5-10 years.

Code Deficiencies

The ADA Report identified the following deficiencies with the playground:

- Inaccessible access routes to play structures
- Inaccessible surfaces within playground
- Insufficient number of ground-level play features

Recommendations

Re-grading the baseball field is recommended, as well as upgrading the playground to meet ADA requirements.

Estimates

See Attachment A for Cost Model.

Photo 27 - Playground

Photo 28 – Playground field

Freestanding Shelters

Synopsis

Freestanding shelters on the site consist of a shipping container and baseball dugouts.

Description of Existing Systems

One existing shipping container used for miscellaneous building materials is located outside the Shop and Boiler Room. Existing baseball dugouts are located at the baseball field and are currently used for sports equipment storage.

Existing Conditions

The shipping container is in good condition. Both dugouts are in poor condition. Paint is peeling from the wood surface, portions of the roof fascia are missing, and interior benches are broken.
Overall, the freestanding shelters on site have an estimated remaining useful life of 5-10 years.

Code Deficiencies

There are no known code deficiencies.

Recommendations

Repainting, replacing fascia, and repairing the broken benches are recommended for both dugouts.

Estimates

See Attachment A for Cost Model.

Photo 29 – Shipping container

Photo 30 – Baseball dugout

Photo 31 – Baseball dugout

Civil/Mechanical Utilities Overview

Synopsis

The Civil/Mechanical Utilities consist of the exterior and interior building water service, the sanitary sewer service, storm drain inlets surrounding the site, on-site fuel systems, and heating and cooling piping and utilidors.

Water System

Description of Existing Systems

The school has one 6" water service line from the municipal water distribution system. The service extends from a distribution line on Fifteenth Street into the Janitor Room. A water valve box (located on the main water line) is located on the opposite side of the site, in the concrete steps outside of the gym.

The six-inch steel building water service comes up through the floor from below grade in Janitor's Room 21. For water service grounding, see electrical. The single water service serves both the domestic water system and the wet and dry fire suppression systems. The three-inch domestic water service tees off the six-inch water service directly after it enters the building. The water service manifold is comprised of two hand-operated gate valves, strainer with blowdown, wafer check valve, and a normally closed bypass with a globe valve. The domestic water service reduces to 2-1/2 inches prior to serving the system.

A wellhouse is located on site and serves the municipal water system. A second wellhead is located on the west side of the school adjacent to a storm drain field inlet. The Municipality reports that this is a monitoring well. Site plans from 1983 and 2021 show a fire hydrant in approximately the same location as the wellhead, which is no longer present. Two fire hydrants are located further east along Alaska Street.

Photo 32 – Monitoring well

Photo 33 – Mainline valve/ valve box in concrete step

Photo 34 – Fire hydrant

Existing Conditions

The exterior water service is in good condition and has an estimated remaining useful life of 10+ years.

The interior water service in Janitor's Room 21 has significant rust and corrosion on water service piping, fittings, and valves, particularly the uninsulated strainer, wafer check valve, and three-inch flanged elbow. A portion of the insulation has been either removed or damaged from the domestic water service manifold, particularly around the bypass line where a repair was made in the past. Additionally, per facility staff, the main water shut-off valve for the building is not seating.

Code Deficiencies

There are no known code deficiencies.

Recommendations

Replace rusted water service components with new coated valves that are designed for condensation. Replace water main shut-off valves with new coated ball valves.

Estimates

See Attachment A for Cost Model.

Water Service Entrance

Rusting Strainer & Check Valve

Sanitary Sewer

Description of Existing Systems

Wastewater flows by gravity to a manhole on the northeast side of the School and ties into a piped collection system along Main Street.

Existing Conditions

The existing wastewater manhole and pipes appear to be in good condition and have an estimated remaining useful life of 10+ years.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Photo 35 – Sanitary sewer manhole

Storm Water

Description of Existing Systems

Storm drainage for the building is provided by a combination of roof drains and gutters that discharge to grade. Most of the school has a sloped roof and is served by gutters. Two sets of primary/secondary roof/overflow drains serve the flat-roof section above 2021 kitchen addition. A portion of the sloped roof section drains to the flat roof portion. Primary and secondary roof drains are routed to separate downspout wall nozzles adjacent to the Home Economic exterior door and discharge to a trench drain that discharges to the drainage ditch. Heat trace has been added to the nozzles.

Existing Conditions

The roof drains, rain leader piping, and downspout wall nozzle are in good condition. Reference architectural and civil for site storm drainage and gutter condition. Although a sizeable portion of the sloped roofing discharges to the flat roof section added in the 2021 kitchen addition, the two roof drains and associated rain leader piping are sized appropriately in accordance with the 2018 UPC. There is not mechanical equipment located in the roof drainage paths.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Gutters & Sloped Roofing

Roof Drains

Site Drainage

Description of Existing Systems

Site grading generally conveys stormwater to storm drains along Fifteenth Street and Alaska Street. Storm drain curb inlets are present along Fifteenth Street. One storm drain catch basin manhole is located along Alaska Street near the Aquasource wellhead.
4-inch PVC drainage pipes are present in the columns attached to the deck adjacent to the main entry, and it is assumed they discharge under the deck.

Existing Conditions

Site drainage is in fair condition, with multiple observed and reported low spots that do not drain during rain events. The treed area northeast of the School has a low spot near the new generator pad. The baseball field has a low spot in the middle of the field, and the field next to the playground slopes to a low point near the south end of the field. Multiple low spots are present in the parking areas and the driveway has a low point caused by pavement deterioration.
The 4-inch PVC drainage pipes were reported to be leaking during the winter of 2021/22, and ice buildup was present around the column exteriors.

Code Deficiencies

There are no known code deficiencies.

Recommendations

Re-grading the parking areas and fields is recommended to improve drainage. Repairing the drainage in the deck columns is also recommended.

Estimates

Refer to Site Improvements Overview for parking area re-grading cost.
See Attachment A for Cost Model.

Photo 36 Low spot near playground

Photo 37 – Storm drain curb inlet along Fifteenth Street

Photo 38 Low spot near generator pad

Fuel Systems

Description of Existing Systems

Fuel oil #2 is stored in a 4,000-gallon, above ground, double-wall, saddle-mounted, Fireguard fuel storage tank. The fuel storage tank is located within metal fencing outside the boiler room on the northwest side of the building. The fuel storage tank was not grounded, reference electrical for more information. The tank's saddle was installed on grade with multiple anchor bolts missing. Reference structural for more information on fuel tank supports. The fuel storage tank has four fuel oil supply lines, one fuel oil return line, a tank gauge, fill port with camlock fitting and spill box containment, vents, and spare tappings. Fuel oil is gravity fed from the fuel storage tank to the adjacent boiler room through a two-pipe, supply and return, fuel piping system. For interior fuel oil piping and associated appurtenances, reference the Special Mechanical Systems section.

The science lab has a propane gas system that is served by an exterior, pad-mounted, vertical, free-standing propane tank located in a wooden fenced enclosure. The tank is located on the east side of the building near the electrical transformer more than five feet from the building. Based on tank dimensions, the tank had a capacity of approximately 40 gallons. Painted threaded steel piping routes underground from the propane tank to the science lab. The propane gas piping has an isolation valve and flexible hose at the tank.

The new commercial kitchen has an independent propane gas system that was installed in 2021 located exterior to the building on the eastern corner of the new kitchen addition. Propane gas is supplied from two free-standing propane tanks mounted on a single steel platform that rests on grade. The propane gas tanks are Worthington Industries LPG system tanks with a capacity of 420 lbs or 100 gallons. The tanks are ASME rated with remote tank monitoring on the top of the unit. A permanent propane tank concrete pad is located adjacent to the tanks but is not currently in use. Propane gas transfers from the tanks to the kitchen through painted, threaded black steel piping. A low-pressure gas regulator is located on the building exterior. The piping also includes isolation valves and a flexible hose connector.

A new pad-mounted standby generator was installed in 2021 as part of the kitchen addition project. The standby generator has an integral 660-gallon subbase diesel fuel storage tank with integral secondary containment.

Existing Conditions

The fuel oil storage tank and associated appurtenances are in poor condition and are corroding and rusting. The fuel piping angle iron supports that are connected to the boiler flue chimney are in poor condition and are severely rusting. The spill box containment has particularly widespread and severe corrosion and rusting. Within the spill box containment, the camlock fitting was removed from the fill port connection and stored in the spill containment box along with an oily rag. The normal vent cap was propped open with a steel rod. The fuel oil piping was in fair condition, however there was no vent extended above grade 12 feet or more. There is a wooden platform that spans between either side of the metal fencing across the fuel storage tank adjacent to the tank gauge that appears to be used to access the tank gauge. The tagging and other identification components, including the hazard symbol, have faded beyond recognition. The fuel storage tank was located within five feet of the building edge. For existing grounding conditions, see electrical. For existing support and pad conditions, see structural.

The propane tank that serves the science lab is in fair condition and is moderately rusting. The associated propane gas piping is in poor condition.

The propane gas system associated with the kitchen is in good condition.

The generator subbase fuel storage tank is in good condition.

Code Deficiencies

The fuel oil storage tank is located within five feet of the building edge which is in violation of NFPA 30A. There is no vent located 12 feet or more above the finished ground level as required by the 2021 International Fire Code (IFC) Section 5704.2.7.3.3. The normal vent cap was propped open allowing hazardous gases to escape the fuel storage tank. The hazardous tagging for the fuel storage tank has faded and is illegible.

The propane tank that serves the science lab is located too close to the adjacent transformer. For more information, see electrical.

The concrete pad intended for the installation of a permanent propane tank is less than five feet from the building edge.

Recommendations

- Replace the above ground fuel storage tank and correct the foundation and grounding issues.
- Relocate science lab propane storage tank to a code-compliant location and extend the piping accordingly.

Estimates

See Attachment A for Cost Model.

Exterior Fuel Oil Piping

Fuel Storage Tank

Kitchen Propane System

Generator Subbase Fuel Tank

Science Lab Propane Piping

Science Lab Propane Tank

Substructure

Standard Foundations & Basements Overview

The school structure is supported by cast-in-place concrete foundations. Foundations are generally obstructed and unobservable. At locations with damaged or removed stem wall coverings, exterior insulation is damaged and in poor condition.

Continuous & Column Footings

Description of Existing Systems

The school structure is supported by cast-in-place concrete foundations. Steel and wood columns are supported by isolated concrete footings or various geometries and thicknesses. Exterior structural walls are supported by 8" concrete stem walls on 10"x18" strip footings. Interior structural walls are supported by thickened concrete slabs. Foundation concrete strength is specified as 3,000 psi per record drawings.

Existing Conditions

Foundations are typically obstructed by the concrete slab-on-grade and exterior fill and were not visible during the inspection. Reported information regarding foundation conditions is based on record drawings. There are no signs that the foundations are damaged or overloaded.

Code Deficiencies

None observed.

Recommendations

None.

Foundation Walls & Treatment

Description of Existing Systems

Foundation walls are shown as 8" cast-in-place concrete walls around the exterior perimeter of the structure. Cast in place walls are supported by 10"x18" concrete strip footings.

Existing Conditions

The existing stem walls for the structure were typically obstructed by the interior concrete slab-on-grade and exterior fill. At a few locations, exterior foundation insulation is damaged from gardening equipment (weed whackers).

Code Deficiencies

None.

Recommendations

Provide soil covering to prevent further damage to existing foundation insulation.

Estimates

See Attachment A for Cost Model.

Photo 39 — Damaged foundation insulation and flashing.

Photo 40 — Damaged foundation insulation and flashing.

Slab on Grade Overview

The first floor of the school is constructed with 4” thick concrete slabs-on-grade. Several additional 4” thick concrete slabs occur at building entrances and exterior perimeter and host exterior mechanical equipment.

Structural & Non-structural Slabs

Description of Existing Systems

Record drawings indicate slab-on-grade concrete compressive strength of 3,000 psi and typical reinforcement with welded wire fabric (6”x6”-10x10ga). All slabs-on-grade are shown as 4” thick. Control joints are sawcut and occur at 15-25ft on-center.

Existing Conditions

The interior slab-on-grade is generally obstructed by floor finishes and not visible. Where visible, the slab is in fair condition with minor spalling at entrances.

Exterior slabs-on-grade range from fair condition. Exterior slabs typically have minor spalling and random shrinkage cracking.

At the rear of the school, near the shop and mechanical room doors, several slabs appear to have settled and are no longer flush with the exterior wall base trim. Settlement is particularly noticeable at the east exterior slab (adjacent to door 125 per record drawings) with a crack creating an approximately 1” vertical gap between sections of slab.

Code Deficiencies

None

Recommendations

If it is desired to repair the settled slabs, it is likely that the slabs will need to be demolished and replaced. Foam injection is another alternative but may prove to be more expensive if local contractors with the necessary equipment are not available.

Estimates

See Attachment A for Cost Model.

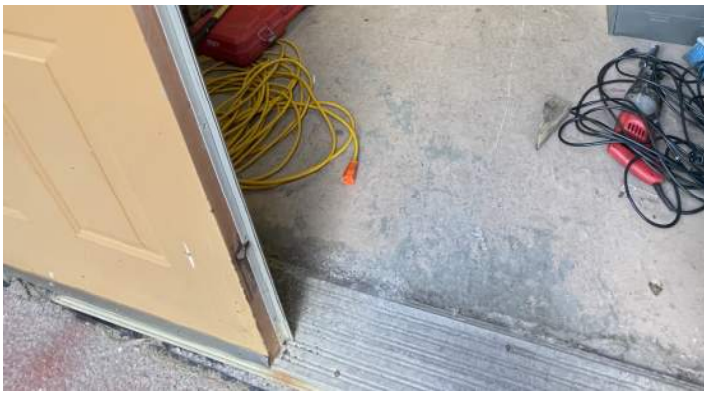


Photo 41 — Spalling at interior slab-on-grade (Boiler Room).

Photo 42 — Significant cracking at exterior slab near door 125.

Photo 43 — Typical settlement and spalling of exterior slabs.

Superstructure

The structure has three primary levels: the main floor supported by concrete slab-on-grade, the mezzanine supported by wood 2x10 joists, I-joists, and glulam beams, and the roof supported by pre-engineered wood trusses and tube steel trusses. The super structure is supported by interior and exterior bearing walls, shear walls, columns and foundations.

Floor Structure Overview

The main floor hosts all public rooms and primary corridors, while the mezzanine is used for mechanical equipment and storage.

Lower & Main Floors

Description of Existing Systems
The main floor of the original structure is supported by 4" cast-in-place concrete slabs-on-grade. Refer to Slab on Grade Overview for additional information.

The kitchen structure was constructed following the original structure, and record drawings were not available at the time of this report. The floor assembly used in the kitchen is anticipated to be cast-in-place concrete slab-on-grade.

Existing Conditions
See Slab on Grade Overview.

Code Deficiencies
See Slab on Grade Overview.

Recommendations
See Slab on Grade Overview.

Upper Floors

Description of Existing Systems
A mezzanine primarily hosting mechanical equipment is located 13'-0" above the finished floor. Additionally, a storage room above the gym is located 12'-0" above the finished floor. The mezzanine floor is framed with 14" wood I-joists, wood 2x10 joists, and various sized glulam beams. Per record drawings, the floor sheathing is 5/8" plywood. The floor structure is supported by a combination of bearing walls and columns.

Existing Conditions
Several cast-in-place housekeeping pads for mechanical equipment are supported on the mezzanine level. Housekeeping pads appeared to be in good condition with minimal cracking.

A note provided on the record drawings (sheet S7) indicates a 5/8" underlayment is located on top of the 5/8" plywood sheathing. The mezzanines are laterally supported by the structure's interior and exterior shear walls, spanning via diaphragm actions utilizing the floor sheathing.

The wood framing was not visible due to sheathing at most locations. Where visible, the framing appeared free of decay or mold and in generally good condition.

Code Deficiencies
None observed.

Recommendations
None.

Photo 44 — Typical mezzanine level housekeeping pad and mechanical equipment.

Ramps

Description of Existing Systems
There is a ramp at the main level near the main entrance to access the restrooms and a music room. The ramp is constructed of a concrete slab on grade.

Existing Conditions
See Slab on Grade Overview.

Code Deficiencies
See Slab on Grade Overview.

Recommendations
See Slab on Grade Overview.

Roof Structure Overview

A total of three types of primary roof structural systems composes the roof of the existing system:

- Pitched wood I-joists supported by tube steel trusses, steel beams, wood glulam beams, and bearing walls above the gym (roof framing plan "A" and "E" per record drawings), and above the central wing (roof framing plans "B" and "C" per record drawings).
- Pitched pre-engineered wood trusses and wood I-joist rafters at the east and south wings (roof framing plans "D" and "G" per record drawings".
- Flat roofing system above the kitchen.

Pitched Roofs

Description of Existing Systems

Four primary pitched roof structural systems are connected for the existing structure roof. All the roof systems are hipped roofs. The roof structure is constructed with 18" wood I-joists, wood 2x12 rafters, wood glulam beams, pre-engineered wood trusses, and tube steel trusses. The roof structure is supported by interior and exterior bearing walls, shear walls, columns and foundations.

All roof sheathing is shown as ½" plywood per the record drawings. Edge nailing for the diaphragm varies from 8d nails at 2 ½" – 6" on-center with all field nailing at 12" on-center. From the record drawings, it is unclear where different nailing patterns are applied for roof sheathing due to nailing patterns being labeled as roof diaphragm A – C, while roof plans are labeled A-G and do not distinguish locations of different diaphragms. Sheathing blocking occurs at select portions of roof plans "A" – "C".

Existing Conditions

Most of the roof structure is not visible due to coverings and finishes. Tube steel trusses are visible from several areas of the mezzanine and the gym and appear in good condition with no visible paint peeling or rust.

Attic access allowed for observation of the pre-engineered wood trusses in the east and south wings of the structure. Observed wood trusses and roof sheathing were free of rot or decay and appeared in good condition.

Code Deficiencies

None.

Recommendations

None.

Photo 45 — Tube steel trusses supporting gym roof.

Photo 46 — Pre-engineered wood trusses

Flat Roofs

Description of Existing Systems

A flat roof occurs above the kitchen. This is a new roof installed in 2022 as part of the Kitchen Addition.

Existing Conditions

Access to observe the roof structure of the kitchen was unavailable. Existing conditions for the roof structural framing are unknown, but it was new construction at the time of the condition assessment.

Code Deficiencies

None observed.

Recommendations

None

Photo 47 — Flat roof above kitchen.

Stairs Overview

Interior and exterior (site) stairs were observed. Interior stairs access the mezzanine level from the wood working shop. Exterior stairs are located at several locations around the perimeter of the building.

Stair Structure

Description of Existing Systems

Exterior stairs are cast-in-place concrete with cast-in-place traction strips near the nose of the treads. Interior stairs are structural steel with steel grating tread and landing.

Existing Conditions

Exterior concrete stairs have several longitudinal shrinkage cracks that are beginning to show evidence of reinforcing corrosions.

Interior stairs appear to be adequate, however there is excessive deflection at the landing grating due to a lack of support framing.

Code Deficiencies

None

Recommendations

Crack in the exterior concrete stairs should be injected with epoxy to protect the reinforcing from corrosion.

If it is desired to fix the excessive deflection at the interior steel stair's landing, additional steel angle supports could be installed to better support the steel grating providing a stiffer walking surface.

Estimates

See Attachment A for Cost Model.

Stair Railings

Description of Existing Systems
Steel tube railing are present at both interior and exterior stairs.

Existing Conditions
1-1/2" diameter steel tube railings.

Exterior railing are beginning to rust, especially at the base of the railing posts where they are embedded in the concrete.

Code Deficiencies
None

Recommendations
Exterior steel railing should be sandblasted and painted to prevent additional corrosion.

Estimates
See Attachment A for Cost Model.

Ladders and Steps

Description of Existing Systems
A steel ladder is located at the kitchen addition on the exterior of the building to access the roof of the addition.

Existing Conditions
The ladder is mounted to the exterior wall with bolts. The ladder has a fall protection cage around the upper portion with a platform that extends over the roof parapet to safely step onto the roof. The ladder is hot dipped galvanized.

Code Deficiencies
None

Recommendations
None

Exterior Enclosure

Synopsis
The school utilizes following exterior enclosure systems:

- Ext walls, primary – semi-vented wood clad rain screen system, original.
- Ext walls, secondary (at new kitchen addition) – wood clad non-rainscreen system, new.
- Ext walls, tertiary (at south mech chase) – unvented brick veneer over gypsum sheathing, original.
- Exterior finish carpentry – semi-vented and non-vented wood.
- Soffits – vented wood.
- Roof, primary - granulated finish, metal tile shingle system (at pitched roofs), replacement.
- Roof, secondary - PVC roof membrane system (at recent kitchen addition), new.

Regarding Code Deficiencies: with respect to the IECC, Alaska has not adopted this code, however we commonly design to it or to exceed it as a long-term energy cost savings measure. Any remedy to noted IECC deficiencies would be voluntary. R and U value requirements cited are identified in Ch. 4 of the 2021 IECC, Table C402.1.3.

Exterior Walls, Exterior Finish Carpentry & Soffits Overview

Synopsis

- Original, semi-vented and vented wood systems are generally in fair condition with instances of poor and failing condition in areas prone to greater UV/weather exposure – largely south-facing areas and base of wall/water table areas.
- New wood systems are in good condition.
- Original, unvented brick veneer systems are in poor to failing condition.

Exterior Walls – Original Semi-Vented Wood Clad Rainscreen Wall Assembly

Description of Existing Systems
Original, semi-vented wood clad rainscreen wall system components from interior to exterior are:

- Painted gypsum board.
- Plastic sheet vapor barrier (assumed)
- 2x8 hem/fir stud framing (2x8 appears to be typical, with some exceptions based on (e) as-built docs)
- 8.25” fiberglass batt stud cavity insulation
- ½” CDX plywood sheathing
- 15# asphalt impregnated building felt
- Untreated 2x2 wood furring, horizontal
- Cedar, T&G, beveled siding, vertical, painted

Existing Conditions
The exterior wall system is well designed for its time, but due to its limited capacity to vent/positively drain (horizontal furring limits venting/draining to vert grooves in back of cladding), and its use of untreated furring, some deterioration, primarily of the furring, is occurring at the base of wall/water table condition. There is an observable weather barrier. A rainscreen exists, with reduced air gap, but some

barrier is provided and is properly lapped. The cedar cladding has been painted multiple times since original construction. Recent painting contractors report that the cedar is weathered enough to prohibit the efficient application of new layers of paint. This condition is mostly prominent in U/V/weather exposed areas. Component condition rankings and expected remaining useful life are as follows:

- Plastic sheet vapor barrier (assumed) [4], 20yr+
- 2x8 hem/fir stud framing [4], 20yr+
- fiberglass batt stud cavity insulation (assumed) [4], 20yr+
- ½" CDX plywood sheathing [4], 20yr+
- 15# asphalt impregnated building felt [3], 10yr
- Untreated 2x2 wood furring, horizontal [3], 10yr
- Cedar, T&G, beveled siding, vertical, painted [2], 5yr

Code Deficiencies

- Original design code - none
- 2021 IBC – none
- IECC 2021 – wall assembly does not utilize continuous insulation (ci), min R5.

Recommendations

The presence of a vapor barrier and insulation are reasonably assumed, though it would be prudent to confirm. Otherwise, remove cladding components to face of plywood sheathing. Install vapor permeable weather barrier – basis of design Vaproshield Wrapshield SA. Install 1" R4.2 rigid board mineral fiber insulation continuously (it appears bottom face of existing soffit is deep enough to accommodate this 1" increase in depth). Install vertical PT 2x2 furring 16" OC to maximize venting and drainage – furring to be fastened to studs through ci. Install shiplap or bevel cedar cladding, horizontally, painted. Detail continuous, 316 SS screened vent opening at top edge of cladding and continuous, 316 SS screened vent/drain opening at bottom edge of cladding.

Estimates

See Attachment A for Cost Model.

Photo AE01– East wing south wall – greatest exposure

Photo AE02– Orig wood cladding assembly, typ

Exterior Walls – New Wood Clad Wall Assembly

Description of Existing Systems

New, wood clad wall system components from vapor barrier outward are:

- Plastic sheet vapor barrier
- 2x8 hem/fir stud framing

- 8.25” fiberglass batt stud cavity insulation
- ½” CDX plywood sheathing
- Crenulated face vapor permeable weather barrier (crenulated, vapor permeable assumed)
- Cedar, T&G siding, vertical, painted

Existing Conditions

The exterior wall system is not designed as a rainscreen system other than that benefit offered by the assumed use of a crenulated weather barrier which allows for some drainage behind the plane of the cladding. This is not an optimal assembly in that the wall will be more vulnerable to moisture infiltration, however, being relatively sheltered on the north side of the existing building should help protect this assembly.

Component condition rankings and expected remaining useful life are as follows:

- Plastic sheet vapor barrier [5], 30yr+
- 2x8 hem/fir stud framing [5], 30yr+
- 8.25” fiberglass batt stud cavity insulation [5], 30yr+
- ½” CDX plywood sheathing [5], 30yr+
- Crenulated face vapor permeable weather barrier (crenulated assumed) [4], 20yr
- Cedar, T&G siding, vertical, painted [4], 20yr

Code Deficiencies

- IBC 2021 – confirm weather barrier used is crenulated or otherwise provides drainage behind plane of cladding. If not, condition is deficient per IBC Ch 14.
- IECC 2021 – wall assembly does not appear to utilize continuous insulation (ci), min R5.

Recommendations

Install vertical PT 2x2 furring 16” OC to maximize venting and drainage – furring to be fastened to studs through ci. Install shiplap or bevel cedar cladding, horizontally, painted. Detail continuous, 316 SS screened vent opening at top edge of cladding and continuous, 316 SS screened vent/drain opening at bottom edge of cladding.

Photo AE03– New wood cladding at kitchen add

Photo AE04– New wood cladding at north chase

Estimates

See Attachment A for Cost Model.

Exterior Walls –Brick Veneer Wall Assembly

Description of Existing Systems

Original, non-vented brick veneer wall system components from interior GWB outward are:

- Gypsum wall board, moisture resistant – thickness not known
- Plastic sheet vapor barrier (assumed)
- 2x4 hem/fir studs
- ½" plywood
- 15# building felt (assumed)
- Cement plaster on metal lath (assumed – per original const docs)
- Brick veneer, direct applied

Existing Conditions

The wall system is poorly designed and should be replaced. The interior of the chase is in poor condition, with extensive mold observedComponent condition rankings and expected remaining useful life are as follows:

- Gypsum wall board, moisture resistant [2] 5yr
- Plastic sheet vapor barrier [2] 5yr
- 2x4 hem/fir studs [2] 5yr
- ½" plywood [2] 5yr
- 15# building felt [2] 5yr
- Cement plaster on metal lath (assumed – per original const docs) [2] 5yr
- Brick veneer, direct applied [2] 5yr

Code Deficiencies

- Original design code – the chase is required to be one hour rated. This rating would apply to those portions of the enclosure that separate it from the building interior which should include joint and penetration firestopping. Firestopping is noted as missing at flue penetration through this wall.

Recommendations

Remove and dispose of chase cap flashing. Demolish chase, three-sides, preserve in-place building exterior wall chase abuts. Confirm exterior wall in this location is insulated, and is 1hr assembly. Upgrade as needed including replacement of moisture damaged GWB at wall interior and exterior and installation of penetration and joint firestopping as necessary. Frame, new chase with 2x hem/fir and sheathing. Framed assembly should be designed by struct engineer for conformance with modern code with respect to lateral loading. Install weather barrier Vaporshield Wrapshield SA. Install vertical PT 1x2 furring 16" OC to maximize venting and drainage – furring to be fastened to studs. Install shiplap or bevel cedar cladding, horizontally, painted. Detail continuous, 316 SS screened vent opening at top edge of cladding and continuous, 316 SS screened vent/drain opening at bottom edge of cladding. Fabricate and install new chase cap flashing.

Estimates

See Attachment A for Cost Model.

Photo AE05 – Orig brick veneer at south chase

Photo AE05a – Moldy interior of chase

Exterior Finish Carpentry Assemblies

Description of Existing Systems

Original exterior finish carpentry assemblies are exclusively associated with the building's original, semi-vented wood clad rainscreen wall assemblies. They are comprised primarily of painted, solid-sawn cedar installed over wall furring allowing for ventilation and drainage behind the plane of the wood element. In limited cases wood exterior finish carpentry is installed directly to substrates eliminating capacity to vent and drain. The primary components of the exterior finish carpentry system are:

- Window and door jamb trim including corbeled head trim – vented/drained
- Window sill trim and skirting – non-vented/drained
- Exterior wall corner trim – vented/drained
- Water table – non-vented/drained
- Canopy column enclosure – vented/drained, but suffer excessive exposure to bulk moisture from limited, interior downspouts

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Window and door jamb trim including corbeled head trim [4], 20yr
- Window sill trim and skirting – non-vented/drained [2], 5yr
- Exterior wall corner trim – vented/drained [4], 20yr
- Water table – non-vented/drained [2], 5yr
- Canopy column enclosure [2], 5yr

Code Deficiencies

- Original design code – none
- 2021 IBC – none
- 2021 IECC – none

Recommendations

Approximately one half of the exterior finish carpentry components are in good condition and do not require attention other than periodic painting. The other half are in poor condition and should be replaced with allowance for better venting and drainage. If original wood clad rainscreen system is replaced however, all exterior finish carpentry should be replaced with it for a complete, new system.

Estimates

See Attachment A for Cost Model.

Photo AE06– Orig ext fin cap – window trim, water table

Photo AE07– Orig ext fin cap - water table

Photo AE08– Orig ext fin cap – column enc

Photo AE09– Orig ext fin cap at canopy – column enc water

Exterior Soffit/Fascia Assemblies

Description of Existing Systems

The exterior soffit assemblies are exclusively associated with the original wood clad rainscreen wall assemblies. Soffits are corbeled providing a generous interior cavity that communicates with the building's attic. They are the low edge vent source for ventilating the attic. The primary components of the exterior soffit assemblies are:

- Sub framing providing design profile
- Exposed, solid sawn cedar, painted
- Soffit vent screening

Existing Conditions

With the exception of failed soffit vent screening, these assemblies are in good condition. Component condition rankings and expected remaining useful life are as follows:

- Sub framing providing design profile [4], 20yr
- Exposed, solid sawn cedar, painted [4], 20yr
- Soffit vent screening [1], 0yr

Code Deficiencies

- Regardless of code year, code requires that vent openings be screened to protect interior cavities from degradation caused by intrusion of insects, rodents and birds.

Recommendations

Replace existing vent screening with 316 SS wire mesh.

Estimates

See Attachment A for Cost Model.

Photo AE10– Orig wood soffit/fascia, typ

Photo AE11 – Orig vented soffit, typ

Exterior Glazing Overview

Synopsis

With one minor exception, exterior glazing is limited to original windows, all of same make/model. Exception is limited to new glazing in kitchen addition.

Windows

Description of Existing Systems

Original windows are Pella, painted aluminum clad wood windows. They are double hung with false divided lites. The windows are of high quality for their time but are aged and failing/failed. Older methods of incorporating false mullions/muntins tended to cause Insulated Glass Unit (IGU) seal failure. This is evident in a number of lites, particularly on the weather side of the building. Likewise, cladding coating systems of that generation do not perform well with UV exposure. The coating is failing/failed on all water facing windows and signs of failure are noticeable on other windows. Of note – window head flashing appears to be limited to the top of the corbeled window finish carpentry head assemblies which also lacks a drip edge – there does not appear to be head flashing at the window heads themselves. This may allow for water to be pulled into the window head joint by differential pressure and/or capillary action. Also of note, window rough openings (ROs) are not flashed properly with respect to modern flashing methods leaving framing exposed to moisture infiltration. Finally, windows do not appear to be thermally broken meaning they will conduct more heat to the building exterior than modern, thermally broken window assemblies would.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Window frames [4], 20yr
- Window frame cladding/coating [2], 5yr
- Window IGUs [2], 5yr
- Window head flashing [2], 5yr
- Window rough opening flashing [3], 10yr (unclear extent to which this is a problem)

Code Deficiencies

- Original design code – none
- 2021 IBC – none
- 2021 IECC – Thermal performance of existing windows likely does not meet the U value requirements of modern energy code, noted as U.3 for 2021 IECC climate zone 6.

Recommendations

Recommend replacing all windows with fiberglass clad wood framed windows, or with fiberglass windows with high-performance IGUs utilizing appropriate low-emissivity coatings to help control both heat loss and heat gain. Window ROs should be properly flashed using a positively lapped membrane flashing incorporating a drainable sill pan with end dams flashed into the rough opening membrane system at the RO jambs. Window installation should include a positively lapped head flashing directing water from above out and away from the window. Window frames should be completely sealed into RO with both a primary exterior seal and secondary interior seal, leaving a pressure neutralizing drain gap on all four sides of the frames. Seals should be directly between window frame and membrane flashing at RO, which is an extension of the exterior wall's weather barrier system.

Estimates

See Attachment A for Cost Model.

Photo AE12– Orig window, typ

Photo AE13– Orig window, failed IGU seals, typ

Photo AE14– Window head, typ

Photo AE15– Window sill, typ

Photo AE16– Window finish, typ

Exterior Doors Overview

Synopsis

Existing exterior doors are hollow metal with hollow metal frames and side lites. A small number of the existing exterior doors have been replaced, including new hollow metal door leafs with relites at Main Entry Door E0, and with aluminum framed entrance doors with side lites at Doors E200 and E300. There are two special function exterior doors: one overhead panel door at Shop 24 and one overhead coiling door at North Storage 13A.

Personnel Doors

Description of Existing Systems

The existing hollow metal doors - assumed to be galvanized sheet steel - are stamped with a decorative six-panel pattern and are (presumably) insulated using polyisocyanurate foam or possibly another variety of plastic foam. Stamped pattern doors have reduced cross sectional area in regions which can elevate heat loss. Foam insulation over time can wick moisture and as well deteriorate with heat exposure. The U value of the door panels is likely notably increases from their original U-value. The sheet steel is corroded at the heads and near the bottom of the door panels where moisture exposure/corrosion risk tends to be greatest. The hollow metal frames are similarly worn and do not appear to be thermally broken. Existing door hardware is functioning except in limited cases but is worn. All door hardware is functioning with two exceptions which will be noted under Existing Conditions.

The aluminum framed entrance replacement doors, side lites and door hardware are in good condition. These are noted as doors E200 and E300. The new hollow metal doors at the kitchen addition are in good condition. These doors are noted as Doors E30, E31 and E32. The special function door for the North Storage area (E13C) appears to be in fair to good condition. The Shop Overhead door (E24B) is not functioning properly, is missing a window panel, and is lacking several key safety features.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

General:

- Existing hollow metal doors, frames and hardware w/o specific deficiencies [2], 5yr
- Existing hollow metal doors, frames and hardware with specific deficiencies [1], 0yr
- Replacement aluminum framed entrance doors, frames and hardware [4], 20yr
- New hollow metal doors, frames, and hardware [5], 30yr

Specific:

- Main Entry Door 100A: Confirm presence of emergency keybox.
- Stage 7, Door E07: RH leaf does not open independently in response to depressing exit device due to addition of post-installed astragal.
- Corridor 32, Door E30 door and pull-station are blocked.
- North Storage 13A, Door E13A is marked as an exit, but is blocked and uses improper, egress-side locking hardware and cannot serve as an exit.
- North Storage 13A, Door E13B is marked as an exit, but exit sign is oriented such that it is not visible except within a short distance of the door.
- Gym 12, Door E12C: latch doesn't engage when door auto-closing.
- Gym 12, Door E12B: north leaf does not release when exit device depressed.

- Shop 24, Door E24A is blocked and does not have a lit exit sign.
- Shop 24, Door E24B: Overhead Door is not functioning properly and is missing key safety features.

Code Deficiencies

- 2021 IBC: See specific deficiencies note above under Existing Conditions
- 2021 IECC: Existing hollow metal doors do not conform with current energy code

Recommendations

Recommend replacing all existing and replacement hollow metal doors with new, thermally broken aluminum framed entrance doors, side lites and door hardware matching replacement Doors E200 and E300. Door rough openings and associated flashings should be installed similarly as recommended for windows above. Also replace the existing overhead door in the shop area as it not fully functional and is missing several key safety features.

Estimates

See Attachment A for Cost Model.

Photo AE17– Door E01, orig HM door, typ of orig doors

Photo AE18– Door E01, door head

Photo AE19– Door E01, jamb at threshold

Photo AE20– Door E300, replacement alum door, typ of replacement doors

Photo AE21– Door E30A, new HM door, typ of new doors

Photo AE22– Door E13C, added coiling OH door

Photo AE23– Door E24B, orig sectional OH door

Exterior Accessories Overview

Exterior Accessories are limited to the deck adjacent to the main building entry.

Louvers, Screens & Shading Devices

Description of Existing Systems

A variety of louvers are located on the building exterior. Louvers are located both on the exterior walls and in the canopy ceilings. The largest louvers are located within the canopy ceilings. These louvers provide outside air, combustion air, exhaust air, and relief air for the school's various ventilation systems.

Existing Conditions

Overall, the louvers are in fair condition with paint chipping being the only noted deficiency. There were no signs of corrosion, and the integrity of the louver blades and bird screen were sound.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Exterior Louvers in Canopy

Exterior Louver in Entry

Other Exterior Accessories

Description of Existing Systems

Painted 2x wood space deck assumed to be installed on furring over concrete. It appears that surrounding concrete flatwork was possibly added after construction of deck, which has ramped surfaces leading to what we assume was original grade. At these conditions the ADA threshold height offset limit is exceeded and a significant trip hazard exists. The decking itself is in fair to poor condition.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Wood decking [2], 5yr

Code Deficiencies

- 2021 IBC – transitions to adjacent concrete are not ADA compliant and present a significant trip hazard.

Recommendations

Deck transitions require replacement to be code compliant and deck surface is in poor condition both as a result of wear and improper use (appears to be paint over-spray from art project or other). While transitions could be replaced and deck painted, extending the useful life of the deck to maybe 10 years, a better investment would be to replace in its entirety. Recommend new concrete flatwork or as an alternative, a furred composite wood decking system.

Estimates

See Attachment A for Cost Model.

Photo AE24– Orig wood deck at entry

Photo AE25– Orig wood deck at entry

Photo AE25a - Deck to be replaced.

Roof Systems

Synopsis
The original roof is a pitched hip roof. The kitchen addition uses a flat roof with parapets.

Pitched Roof Overview

Synopsis
The original pitched roof is predominately a 3:12 sloped hip roof with metal panel shingle roofing. It is a cold roof system with inaccessible vaulted and insulated vent cavities over the original Phase 1 school core spaces and accessible, insulated attic cavities over the original Phase 2 classroom wings. It utilizes limited built-in and very limited fascia-mount gutters.

Pitched Roofing

Description of Existing Systems
The pitched roof has a 3:12 slope and has two cupolas with hip roofs with a slope of approximately 1:12. The original roofing was asphalt shingle over asphalt impregnated building felt, assumed to be 30#. That roofing was noted to have been replaced in 2004. The replacement roofing a DECRA stone-coated roofing system – a low-ribbed, shingled metal panel system, with a granulated surface coating. Construction phase documentation created during installation notes use of roofing felt as the primary underlayment with a self-adhering, bituminous, polyethylene faced membrane flashing – likey Grace Ice and Water Shield installed at valleys and ridges. The DECRA system is noted to have been screwed directly through roof felt into plywood roof sheathing.

The DECRA system is effectively an open-joint and semi-exposed fastener system which, in a low-slope application is more vulnerable to moisture infiltration caused primarily by wind-blown rain as well as any ponding occurring during snow-melt. Modern applications of systems like this in low-slope conditions typically require use of an adhered, self-healing underlayment that better prevents moisture infiltration at lap joints and fastener penetrations. Some leaking has been noted at the building interior, though it appears to be the result of another minor system failure. It is unclear how the primary roof underlayment is performing but despite sub-standard underlayment, appears to be performing reasonably well. Otherwise, the system's granular surface shows signs of wear in locations. It supports moss and lichen in low-slope areas which are more prone to collecting debris. There is a slightly open condition that occurs at panel side-joints which could allow moisture intrusion. At rake wall intersections, the corbeled fascia/soffit assembly makes it impossible to effectively install proper step flashing creating another region of moisture infiltration vulnerability. There are mechanical penetrations which may be or obviously are improperly flashed. All of the above conditions increase the possibility of bulk moisture infiltration. The roof system as noted above is a cold roof system with vented attic and insulation in the ceiling joist or rafter cavities. Attic cavity conditions were found to be dry with good air flow. This system is also used over the north storage addition.

The replacement roofing is performing less well in the approx.1:12 applications at each of the two cupolas. It is likely that this system is not warranted for low slope conditions. Moss and lichen growth are significant, causing possible infiltration. It should also be noted that the cupolas serve as the high-side venting for the roof system. The manner in which they are framed and flashed create two likely

infiltration points in the cupolas' interior: positive but unsealed flashing laps in very low-slope areas is very vulnerable to infiltration from wind-blown rain as it drains down to the bottom edge of the cupolas' louvers. The vertical framing members penetrate this flashing system and appear to rely exclusively on sealant to prevent moisture intrusion at these vulnerable joints. At least one leak was identified in Gym 12 in the region of the cupola. Of note – the original construction drawings detailing construction of the louvers depict them with the wrong orientation – draining into the building. They were, however, installed in the correct orientation.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Replacement 3:12 roof [3], 10yr
- Replacement 1:12 roof [2], 5yr
- Cupola flashing/penetrations [1], 0yr

Code Deficiencies

- Original design code – none
- 2021 IBC – none
- 2021 IECC – inadequate insulation to meet recommended R value. Current R-value calculated at R40. Recommended R value is R60 for 2021 IECC Zone 6A – Cold/Humid.

Recommendations

Existing 3:12 slope roof appears to be in good condition, notwithstanding knowing the condition of its underlayment and sheathing. To avoid the development of potential infiltration caused damage (rot, mold) we recommend preemptively verifying underlayment is performing adequately through limited destructive investigation - temporarily opening roof system to reveal sheathing. Work is recommended to occur on windward side of building in valley and/or at step flashing condition. Otherwise, correct deficient penetration flashing and provide annual cleaning to remove organics. Additionally, in accessible attic cavities, recommend replacing approx. R40 aged fiberglass batt insulation with R60 blown-in fiberglass insulation.

Existing 1:12 slope roof is in poor condition at surface, but true measure of condition is that of underlayment, similar to the above. Recommend verifying underlayment is performing adequately through limited, destructive investigation. Otherwise, provide annual cleaning to remove organics.

For both 3:12 and 1:12 sloped roofs, if underlayment performance is inadequate, recommend re-roof with heavy-duty architectural asphalt shingles. Work should involve deconstruction and build-back of corbeled fascia/soffit assemblies to facilitate installation of proper step flashing at rake wall to roof intersections.

Cupolas should be deconstructed, re-detailed and built-back to address flashing and penetration deficiencies noted. This work would necessarily include new roofing in these two instances.

Estimates

See Attachment A for Cost Model.

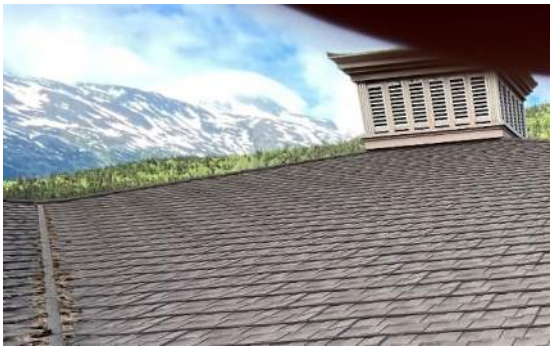


Photo AE26– Reroof 3:12 slope, typ

Photo AE27– Reroof 3:12 slope, open edge joints

Photo AE28 - Reroof 3:12 slope, surface wear

Photo A29 - Reroof 3:12 slope, ridge and valley support growth

Photo A30 - Reroof 3:12 slope, exp fasteners

Photo A31 - Reroof 3:12slope, step flashing at corbeled fascia

Photo A32 - Reroof 3:12 slope, improper penetration

Photo A33 - Reroof 3:12 slope, improper penetration

Photo A34 - Reroof 1:12 slope at north cupolas

Photo A35 - Reroof 1:12 slope supports growth

Photo AE36 – Cupola, open flashing joint and vert penetration w/ sealant

Gutters & Downspouts

Description of Existing Systems

Built-in gutters are original and are used predominantly in region of building main entry to preserve architectural character of corbeled fascia/soffit assemblies but are also located in short lengths on the side opposite the main entry of the two classroom wings. They are aluminum and appear to have had a coating applied. It is unknown, but likely, that leaking is occurring at joints in the gutter pan material. It appears leaking is occurring at the gutter to downspout joints and possible along the downspouts themselves. Downspouts are internal to finish carpentry enclosures. Leakage has caused visible damage to these assemblies.

Fascia-mount gutters are painted metal – type not determined. They appear not to have been a part of the original construction, presumably added to mitigate otherwise uncontrolled roof water. They do not appear to have been installed with adequate slope and/or have settled causing back-slope conditions resulting in overflow rather than positive drainage.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Built-in gutters and downspouts [1], 0yr
- Fasia-mount gutters and downspouts [1], 0yr

Code Deficiencies

- Original design code – none
- 2021 IBC – none

Recommendations

Built-in gutters should be retained but lined with a continuous waterproof membrane. In advance of applying membrane, an outlet with full round flange of the same membrane material as the liner should be installed to sleeve into a replacement downspout. Downspouts should be replaced with continuous/jointless pipe downspouts. Recommend EPDM for membrane and grade 316 stainless steel tube for sleeves and downspouts. Roofing material adjacent to gutters will need to be removed to facilitate lapping membrane in and under existing roof underlayment. Exterior finish carpentry enclosures will need to be removed and replaced to facilitate this. New enclosures should be reconstructed with a removable panel to allow for periodic inspection and maintenance of the downspouts.

Fascia-mount gutters should be removed and replaced. Additionally, fascia-mount gutters should be installed for full pitched roof perimeter except where built-in gutters are located. They should be installed flat at a minimum with a slight positive slope towards downspout outlets. New gutters should be installed with continuous eave flashing providing drip edge into gutters for their full length. Gutters should be installed using heavy duty straps to prevent ice/snow loads from damaging/deforming gutters and potentially altering their slope. Recommend 20g, G90 HDG, painted sheet steel for fascia-mount gutters and associated downspouts. Gutters and downspout cross-sectional areas should be sized using roof stormwater calculations based on local rainfall data. If ice damming has been experienced historically, gutters and downspouts should be provided with thermostatically activated heat trace, supplied by dedicated circuits designed by an electrical engineer.

Estimates

See Attachment A for Cost Model.

Photo AE37 – Built in gutter

Photo AE38 – Built in gutter, otherwise no gutters except in limited applications

Photo AE39 – Example limited gutter

Photo AE40 – Built in gutters use internal downspouts

Flat Roof Overview

Synopsis

The kitchen addition uses a polyvinyl chloride (PVC) roofing system.

Flat Roofing

Description of Existing Systems

According to project specifications, the kitchen roof is an adhered PVC roof system comprised of a glass mat faced gypsum substrate board, 6mil sheet polyethylene vapor barrier, XPS base and tapered insulation, glass mat faced cover board, and 80 mil gray PVC membrane. The system is new and is in good condition. The roof membrane is noted as having a 20-year warranty.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- PVC roofing assembly [4], 20yr

Code Deficiencies

- Original design code – none
- 2021 IBC – none
- 2021 IECC – It is unclear if XPS insulation was installed or if EPS was substituted which is common. It is also unclear what the average finished thickness of the insulation is. If XPS at R5/inch was installed, average thickness would need to be 12” to achieve required value of R60 for 2021 IECC climate zone 6A Cold/Humid.

Recommendations

None.

Photo AE41 – Flat roof at kitchen addition

Roof Accessories Overview

Synopsis

Roof accessories include original smoke/fire vent, original (replaced?) south chase cap flashing with integral mechanical outlets and new kitchen addition roof access ladder and integral rail, and roof walkway.

Roof Accessories

Description of Existing Systems

Three automatic smoke/fire vents are shown in the original construction documents above what is now referred to as Stage 7. They appear to be in good condition, however inspection/test reports should be provided to verify this.

The south chase cap flashing assembly is in fair condition, however it is inadequately anchored. Existing screws were driven directly into cementitious sub-cap and do not have any pull-out strength.

The kitchen addition access ladder with integral rail and the rooftop walkway system are new and in good condition.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Smoke/Fire vent – Unknown
- Roof access ladder and rail [5], 30yr
- Rooftop walkway system [4], 20yr

Code Deficiencies

- Original design code – None
- 2021 IBC – None

Recommendations

Test functionality of automatic fire/smoke vents.

Estimates

No cost.

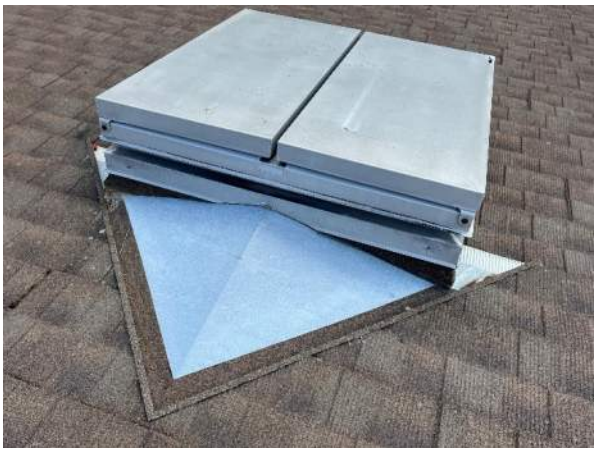


Photo AE42 - Smoke vent over room Stage 7

Photo AE43 – Cap flashing at south chase

Photo AE44 – Cap flashing at south chase fastening

Photo AE45– Roof access ladder at kitchen addition

Interiors

Synopsis
The interiors at the Skagway School are original to the 1983 construction date, with some limited interior renovation work. Two small additions to the North created more storage for the school and gymnasium (North Storage) and a commercial kitchen/ Home Ec upgrade (Kitchen 30, Home Ec 33), instigating a partial renovation of Classrooms 9A and 9B. The original construction used durable interior finishes, including commercial grade vinyl tile, ACT ceilings throughout, and painted gypsum wall board partition faces. The commercial carpet throughout the facility has recently been replaced.

Partitions/Soffits Overview

Synopsis
Interior partitions at the Skagway School are original to the 1983 design, with some interior layout changes after the Kitchen/Home Ec addition was constructed on the North end of the building and the original Home Ec kitchen was renovated into classroom space.

Fixed Partitions

Description of Existing Systems
Interior partitions are wood-framed and typically with a painted gypsum board finish. Hallways have wood raised panel wainscoting and bathrooms/locker rooms have ceramic tile to a 6'-8" height. The floorplan remains true to the 1983 design, with exception to the North Storage and Kitchen addition.

Original gypsum board and associated gypsum compound may contain asbestos.

Existing Conditions
Component condition rankings and expected remaining useful life are as follows:

- The partitions appear in good condition with some exceptions noted in Wall Finishes [4], 20 yr+

Code Deficiencies

- Original design code – None
- 2021 IBC – None

Recommendations
As a part of any future renovation work, recommend environmental engineer sample and test the materials.

Soffits & Ceilings

Description of Existing Systems

- The primary ceiling system is suspended 24"x48" white acoustic ceiling tile (ACT)
- The secondary ceiling system is gypsum board, assumed to be supported by ceiling joists, used for bathrooms, locker rooms, mechanical rooms, storage rooms and kitchens. Soffits are finished with gypsum in the limited applications found within the school. Original gypsum board and associated gypsum compound may contain asbestos.

- The tertiary ceiling system is gypsum board, assumed to be supported by ceiling/roof joists, with a 12”x12” ACT finish applied in the Gymnasium. Original gypsum board and associated gypsum compound as well as ACT and associated adhesive may contain asbestos.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Classrooms: 24”x48” ACT in 2’x4’ metal grid, fair condition. 24”x48” tiles are scored to resemble 6”x 6” tiles. Less than 5% of tiles showed visible wear. Seismic bracing hanger wires found in select classrooms reviewed by NWA. [3] 10 yr
- Classroom Hallways: The hallways have a 24”x48” ACT field with painted gypsum board soffits at entries where ceiling height changes before vestibules. These ceiling tiles are in fair condition. [3], 10 yr
- Locker rooms and Bathrooms: Painted gypsum board ceilings and soffits are in generally fair/good condition. Boys and girls locker room ceiling lids are currently in the process of being painted. [3], 10 yr
- Gymnasium: 12”x12” ACT glued to rigid substrate. Ceiling finish was originally designed as unpainted gypsum. No tiles knocked visibly loose. [3], 10 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – None

Recommendations

Anticipate majority of ACT ceilings will require seismic bracing upgrades. See recommendations under Ceiling Finishes.

As a part of any future renovation work, recommend environmental engineer sample and test materials.

Special Partitions Overview

Synopsis

Several operable partitions were designed and installed according to the original 1983 floorplans and interior elevations. Operable partitions were used between classrooms and between common rooms, to create multi-functional and adaptable interior spaces.

Operable Partitions

Description of Existing Systems

- Classrooms in the Elementary wing (Classrooms 301-304, 314-316): Operable partitions comprised of accordion style panels approximately 3 ft wide and 7 ft high and suspended from a top track.
- Multi-Purpose Room: Operable partitions comprised of accordion style panels approximately 3 ft wide and 15 ft high on west wall, suspended from a top track. A similar top track series of partitions is on the opposite east wall, between the Multi-purpose room and Stage.
- Stage: Velvet performance curtains hang in front of the operable partition between the Stage and Multi-Purpose Room.

- Classrooms in Special Education wing (Classrooms 28 & 29): Curtain-style operable partition runs along a top track, secured at the southern end of the opening. A second operable partition was designed between classrooms 28 & 29, an interior renovation with gypsum infill and interior window.

Existing Conditions

Operable partitions were not tested in the field, and condition assessment is limited to a visual inspection. Component condition rankings and expected remaining useful life are as follows:

- Classrooms in Elementary Wing: There is no evidence the teachers use the operable partitions as intended, may be difficult to maneuver [2], 5 yr
- Multi-Purpose: Partitions appear functional [3], 10 yr
- Stage: Curtain has small rips in places, showing wear [2], 5 yr
- Classrooms in Special Education Wing: Partition is functional, showing wear [2], 5 yr

Code Deficiencies

- Original design code – Unknown
- 2021 IBC – Unknown

Recommendations

All partitions should be verified as operable, and partition materials should be verified by review of original construction submittals (unavailable to design team) for fire propagation and smoke developed characteristics with respect to Chapter 8 of the International Building Code. The fire rating was not able to be confirmed as part of the condition assessment and should be verified. Non-operable partitions should be evaluated on an individual basis by the administration to determine if the partition should be removed and a wood framed/gypsum faced infill be installed or the hardware/partition be replaced in kind. The stage curtain has the most significant signs of wear. The administration should make a judgement when the wear and tear is significant enough to replace, recommend within 5 years.

Estimates

See Attachment A for Cost Model.

AI01 & AI02 – Operable partitions in Elementary Classroom wing

AI03 – Operable partition in Multi-Purpose Room

AI04 – Operable partitions in Elementary Classroom wing

AI05 – Operable Partition in Special Education Classroom wing

Railings & Screens

Description of Existing Systems

Wire partitions were specified as N.I.C. however were installed in the gymnasium clerestory according to the 1983 design documents. The enclosures were designed to create usable storage space and to deter sports equipment from leaving the gymnasium. A similar chain link metal screen was installed at the Shop ground floor and in the mezzanine for additional secured storage.

Existing Conditions
Component condition rankings and expected remaining useful life are as follows:

- Wire chain link metal screen partitions are in good condition with the gates/openings in operable condition as well. [4], 20 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – None.

Recommendations
Chain link enclosure incidentally acts as guard. Verify that it meets OSHA requirements for guards serving regularly unoccupied service spaces.


AI06 – Metal Screen in Shop

AI07 – Metal Screens in Gymnasium

Interior Openings Overview

Synopsis
Typical original interior doors are painted 6-panel wood interior doors with wood-veneer faces. The interior doors have hollow metal frames with a molded trim profile. The school has many types and sizes of interior operable coiling doors. There are few instances of interior windows.

Personnel Doors

Description of Existing Systems

Typical classroom and office doors are painted 6-panel hollow core doors with painted hollow metal frames with a moulded profile. Fire rating not found on any interior doors, aside from boiler room, shop and electrical room. Flush hollow core doors with maple finish are found in the new Kitchen and Home Ec addition. Many of the interior doors do not meet the ADA-required 32" door width.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

General:

Typical interior doors: Overall finish condition is decent, with wear and tear. Typical classroom and office doors have a mortise latch set with classroom function, door closer, door stops, gaskets and kickplates. Other doors utilize exit devices, hold-opens in hallways which release on fire alarm and otherwise similar hardware of same make as classroom and office doors. Modern requirement to provide means to secure doors of interior in lock down situation is achieved with portable emergency securing device. [2], 5 yr

- Boiler Room, Shop and Electrical Room doors: Warnock Hersey 1 ½ hour fire rated assembly door, visually matches typical classroom doors. Note rating not required with automatic sprinkler system per modern code. [2], 5 yr
- Janitor: Flush face wood door. [2], 5 yr
- Kitchen 30 and Home Ec 33: Flush door with narrow lite and maple wood-veneer faces [5], 30 yr
- Laundry in Kitchen 30: Flush door with maple wood-veneer faces [5], 30 yr

Specific:

- Shop 24, Door I24: Does not have exit sign.
- Corridor 300, Door I300: East leaf opening force exceeds max allowed.

Code Deficiencies

- Original design code – None
- 2021 IBC – Door I300: The force for pushing/pulling interior swinging egress doors shall not exceed 5 pounds. (1010.1.3)
- NFPA 101: Classrooms and other spaces where students congregate do not have a means of securing the space from the inside except by use of portable emergency securing device. The portable devices themselves can impede egress and can also be misplaced/lost. (15.2.2.2.4)

Recommendations

Replace all interior doors and hardware. Ensure ADA requirements are met with the new doors and hardware. Note that per modern code, with the use of automatic sprinkler systems, requirements for door fire ratings have largely been eliminated allowing for the use of less costly doors, frames and hardware. Hardware, however, should be specified to integrally allow for emergency securement of doors serving any spaces where students congregate.

Estimates

See Attachment A for Cost Model.


AI08 & AI09 – Typ Interior Doors

Special Doors

Description of Existing Systems

Several interior coiling doors/windows have been designed into common and food-related spaces:

- Overhead coiling door in Shop 24 mezzanine: Metal interlocking slats, closure to finish floor
- Overhead coiling door at Kitchen 30: Stainless steel interlocking slats, closure to finish floor
- Overhead coiling counter door at Kitchen 30: Stainless steel interlocking slats, closure to stainless steel countertop
- Overhead coiling door at Office 1: Painted metal interlocking slats, closure to wood countertop
- Overhead coiling counter door at Home Ec 33: Stainless steel interlocking slats, closure to stainless steel sill
- Overhead coiling counter door at Student Store 10: Painted metal interlocking slats, closure to PLAM countertop
- Pneumatic Gate at Hall 100B: Slat profile unclear at time of inspection, closure to finish floor

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

General:

- The overhead coiling counter doors and large overhead coiling doors appear in functioning order in terms of raising and lowering. [3], 10 yr
- The overhead coiling doors in Kitchen 30 and Home Ec 33 have been recently installed. [5], 30 yr

Specific:

- Pneumatic Gate Hallway 100B: Condition unclear, however it appears gate in closed position could create a dead-end corridor creating a life/safety hazard.

Code Deficiencies

- Original design code – None
- 2021 IBC – Appears gate in closed position could create a dead-end corridor creating a life/safety hazard.

Recommendations

Remove pneumatic gate from Hallway 100B. Replace ACT with full tiles in location where gate was visible from below.

Estimates

See Attachment A for Cost Model.

AI10 & AI11 – Overhead Coiling Door at Shop Mezzanine and Kitchen 30

AI12 & AI13 – Overhead Coiling Counter Doors at Office 1 and Kitchen 30


AI14 & AI15 – Overhead Coiling Counter Doors at Home Ec 33 and Student Store 10.

AI16 – Pneumatic Gate at Hallway 100B

Windows & Sidelites

Description of Existing Systems

Interior glazing is uncommon in the Skagway School. The double doors have relites on either side between the entry vestibules 100C & 100B and hallway 100B, and entry vestibule 100A and hallway 100A. Classroom 29 has an interior fixed window into Classroom 28, which was installed when the original movable partition was removed, and a wood stud infill wall was built.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Entry Relites: Fixed glazing in wood frames, unclear if safety glass was used. [3], 10 yr
- Interior Window: Fixed glazing in wood frame. [4], 20 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – Glazing within 24” of door or 18” of floor finish surface should be tempered.

Recommendations

While side lites are in good condition, there is no visible labeling identifying it as safety glazing. Recommend side lites be replaced with labeled safety glazing.

Estimates

See Attachment A for Cost Model.

AI17 – Sidelites at Entry

AI18 – Interior Window at Classroom 29

Interior Finishes Overview

Synopsis

The interior finishes of the Skagway School generally appear original to the 1983 construction. The interior carpet has been recently replaced throughout the entire facility. The weight room flooring was originally called out as the same vinyl tile as the multi-purpose room, and more recently had a resilient rubber athletic flooring installed. The remaining interior floor finishes appear to be original to the 1983 construction. These flooring finishes include vinyl tile at common rooms and in classrooms, wood gymnasium flooring, and ceramic tile. The wall finishes include painted gypsum board, ceramic tile and limited fabric wall covering applications. The interior surfaces of the Skagway School have many different teaching materials and components (posters, tack boards, etc.) that protect the condition of the gypsum. The ceiling finishes include painted gypsum board and Acoustic Ceiling Tiles (ACT).

Floor Finishes

Description of Existing Systems

- Classrooms, hallways: 24”x24” carpet tile
- Classrooms: Vinyl tile at casework in classrooms dated to original construction, visible signs of wear over 40-year span. Tile and/or mastic may contain asbestos- see environmental engineer’s report.
- Multi-Purpose room: 18”x18” vinyl tile. Tile not original (installed approx 2010), but old floor appears to still be there.
- Gymnasium: Maple wood flooring, 2.5” width, two wood stains, painted school mascot and courts indicated with 2” lines with white and black paint.
- Locker rooms/ Bathrooms: Ceramic tile with thinset or mastic. If mastic, may contain asbestos- see environmental engineer’s report.

- Kitchen additions: Resilient sheet vinyl with welded seams and cove base
- Weight room: Rubber athletic flooring
- Shop, Janitor, North Storage, Electrical Room and Boiler Room: Painted concrete

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Classrooms, hallways: Carpet tile [4], 20 yr
- Classrooms: Vinyl Tile [2-3], 10 yr
- Multi-Purpose room: 18”x18” vinyl tile [2], 5 yr
- Stage: Sheet vinyl flooring [2], 5 yr
- Gymnasium: Maple wood flooring [3], 10 yr
- Locker rooms/ Bathrooms: Ceramic tile [1], 0 yr
- Kitchen additions: Resilient sheet vinyl [5], 20 yr
- Weight room: Rubber athletic flooring [3], 10 yr
- Shop, Janitor, North Storage, Electrical Room and Boiler Room: Painted concrete [2], 5 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – None

Recommendations

- Vinyl tile: Vinyl tile in classrooms and multipurpose room should be replaced within 5 years with modern, extra thick wear layer, waxless vinyl flooring.
- Vinyl Flooring: Replace vinyl floor on the stage and repair wood on south edge of the Stage where trim is delaminating.
- Ceramic Tile: Remove tile, grout and thinset or mastic. Repair/prep substrate as necessary, apply new tile with appropriate modified thinset and with control/expansion joints designed to alleviate existing cracking conditions.

Estimates

See Attachment A for Cost Model.

AI19 – 24”x24” Commercial Grade Modular Carpet

AI20 – 18”x18” Commercial Grade Vinyl Tile

AI21 – Maple Gymnasium Wood Flooring

AI22 – 2”x2” Ceramic Tile

AI23 – Rubber Athletic Flooring

AI24 – Painted Concrete Floor

AI24a – Multi-Purpose Room – Vinyl Tile installed over Original Floor

Wall Finishes

Description of Existing Systems

- The wall finishes are primarily gypsum board, painted. Original gypsum board and associated gypsum compound may contain asbestos.
- Hallways have a raised wood wainscot and wood finish carpentry, painted
- The locker rooms and bathrooms have ceramic 2”x2” tile installed on the walls to a 6’8” wainscot height, gypsum board above
- The Gymnasium has a felt fabric wall covering, installed by the exterior exits and entrance doors from the Hall 100B

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Classrooms, common spaces, admin: Painted gypsum board. The gypsum is in good condition considering how old the building is, with minor wear and tear from continuous use. [3], 10 yr
- Mechanical rooms: Gypsum board. The gypsum is in poor condition in the mechanical rooms, patch and repair as needed [2], 5 yr
- Hallways: Wood wainscotting and wood finish carpentry is in fair condition and performing how it was intended, to protect the hallway walls from normal wear and tear. Incidences of severe wear/damage at corners. [2], 5 yr
- Bathrooms and Locker Rooms: 2"x2" tile in fair condition throughout facility, with some chipping at outside corners (Bathrooms 5 & 6) and cracking at inside corners of rooms [2], 5 yr
- Gymnasium: Felt wall fabric installed over underlayment. Ripped and frayed in some areas. [2], 5 yr

Code Deficiencies

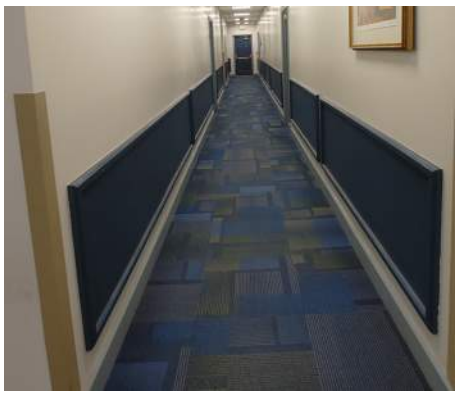
- Original design code – None
- 2021 IBC – None

Recommendations

- As a part of any future renovation work, recommend environmental engineer sample and test materials.
- Painted gypsum boards should be patched and repaired as needed, paint to match surrounding area
- Wood wainscot surface and finish carpentry should be repaired in areas of damage, prepped and repainted. Provide corner protection in vulnerable areas.
- Remove tile, grout and thinset or mastic. If mastic, may contain asbestos- see environmental engineer's report. Repair/prep substrate as necessary, apply new tile with appropriate modified thinset and with control/expansion joints designed to alleviate existing cracking conditions.
- Remove felt wall coverings, remove adhesive, prep underlayment or replace in kind as required for an applicable surface for a new wall covering to be installed. Replacement materials shall meet IBC Chapter 8 requirements.

Estimates

See Attachment A for Cost Model.



AI25 & AI26– Wood Wainscot in Hallways


AI27 & AI28 – Ceramic Tile Wall

Ceiling Finishes

Description of Existing Systems

- The school utilizes primarily 24”x48” Acoustic Ceiling Tile (ACT) with a heavily textured surface and tegular edges in a metal ceiling grid. Partial seismic bracing present in randomly selected classrooms, but lacking perimeter clips and grid end/wall clearance. Painted gypsum board is used in rooms with a high moisture content, such as locker rooms, bathrooms and kitchens. A 12”x12” glued ACT system is utilized in the gymnasium, due to the pitched interior slope of the ceiling. Original gypsum board and associated gypsum compound as well as ACT and associated adhesive may contain asbestos.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- 24”x48” ACT: Most in relatively good condition, approx.. 5% could be replaced due to wear, [3], 10 yr
- Gypsum board, painted: Most in relatively good condition with damage primarily limited to mechanical rooms [2-3], 5 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – Anticipate majority of ACT ceilings will require seismic bracing upgrades to bring them in conformance with current code.

Recommendations

- As a part of any future renovation work, recommend environmental engineer sample and test materials.
- Recommend additional visual inspection of bracing and add required bracing as per ASTM E580 as needed to the suspended grid.

Estimates

See Attachment A for Cost Model.

AI29 – 24”x48” ACT in metal grid

AI30 – Painted gypsum board

AI31 – 12”x12”

Specialties Overview

Synopsis

The Skagway School is equipped with specialties typically found in educational facilities, as listed under the Description of Existing Systems. Examples include signage, writing surfaces, casework, fire extinguishers and window coverings.

Interior Specialties

Description of Existing Systems

- Room identification signage in hallways is blue acrylic with white lettering or gold acrylic with black lettering. All signage does not conform with the American Disabilities Act. See ADA consultant report.
- Tackboards are mounted to walls throughout the school, such as in classroom wings and hallways. They often have an aluminum frame in the classrooms and hallways. Some hallway tackboards are framed with architectural woodwork to match the wood wainscotting.
- Blackboards, found in most classrooms, have aluminum frames with aluminum pen trays. They are typically split-level blackboards on tracks so boards can be moved up and down.
- White boards are mounted with an aluminum frame and aluminum pen tray, typically found in classroom wings, hallways, locker rooms
- Metal lockers are installed in Hallways 200 and 300, and are painted blue steel single tier standard metal lockers with number plates and ventilation louvers at the top and bottom of the locker door.
- Locker room benches, located in Boys Locker 14 and Girls Locker 18, are solid wood benches with steel podium bases with a black powder coat finish.
- Toilet partitions in all student bathrooms and locker rooms are stainless steel and fixed to the wall, floor and ceiling.
- Shower partitions in the Boys Locker 14 and Girls Locker 18 are stainless steel and fixed to the floor and walls.
- Gym lockers in Boys Locker 14 and Girls Locker 18 are blue and yellow painted steel and have 2 tier and 6 tier rows with ventilated doors.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Signage [1], 0 yr
- Tackboards [3], 10 yr
- Blackboards [2], 5 yr
- White boards [3], 10 yr
- Metal lockers [3], 10 yr
- Locker Room benches [3], 10 yr
- Toilet partitions [3], 10 yr
- Shower partitions [3], 10 yr
- Gym lockers [3], 10 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – Room identification signage does not conform with the American Disabilities Act. See ADA consultant report.

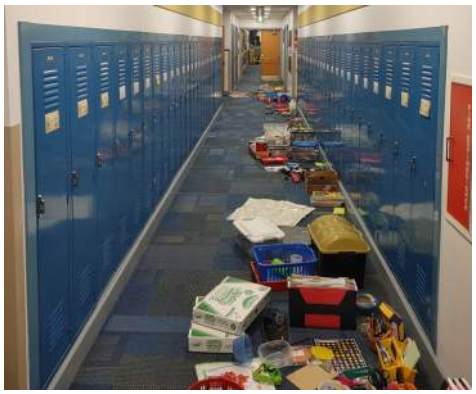
Recommendations

Room identification signage should be replaced with signage that conforms with the American Disabilities Act. Blackboards should be updated with white boards in the next five years to maintain consistency in writing surfaces for teachers.

Estimates

See Attachment A for Cost Model.


AI32, AI33 & AI34 – Signage, Tackboards and Blackboards

AI35 & AI36 – Locker room bench and Elementary Wing lockers


AI37 & AI38 – Shower partitions and Gym lockers

Casework/Millwork

Description of Existing Systems

Typical architectural millwork in the Skagway School is original to the 1983 date of construction, with plastic laminate (PLAM) faced cabinet boxes, solid color door/drawer faces, and are PVC edge banded. Countertops are typically self-edge plastic laminate. Library cabinetry includes lower and upper casework that appears to be wood veneer faced plywood in the administrative office and book

shelving that appears to be of solid wood construction. Display cases appear to be wood veneer faced plywood, open to gypsum wallboard at back and faced with sliding glass fronts.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Classroom, Work Room & Break Room [3], 10 yr
- Library casework [2], 5 yr
- Library bookcases [4], 20 yr
- Display Cases [4], 20 yr

Code Deficiencies

- Original design code – None
- 2021 IBC – Under sink clearance for ADA accessibility not met with casework in Break Room. (Classroom sinks fall under an exception for allowable parallel approach and therefore conform). See ADA consultant report.

Recommendations

Replace all upper and lower casework with architectural plastic laminate faced premium grade, ADA compliant casework.

Estimates

See Attachment A for Cost Model.

AI39 & AI40 – Break Room casework and Library casework

AI41 – Classroom Casework

Fire Extinguishers

Description of Existing Systems

The portable extinguishing system includes Class ABC extinguishers which are located throughout the building in locations conforming with the requirements of Chapter 9 of the IBC. The extinguishers all have current testing certification present. Extinguisher located in the kitchen addition appears, based on cylinder color, to be Class A. Fire hoses are located in hallways but are noted as obsolete by Alaska State Fire Marshal.

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Fire Extinguishers [3], 10 yr
- Fire Hoses [1], 0 yr

Code Deficiencies

- Original design code – None
- 2021 IBC
    - Classrooms generally do not appear to have fire extinguishers. Per section 906.1 Exception 2 of the 2021 IBC, all classrooms shall be provided with a fire extinguisher with a minimum rating of 2:A:20:B:C.

Recommendations

- Check labeling to confirm required class of extinguisher in kitchen.
- Confirm all fire extinguisher testing is current. (Extinguishers checked have service tags dated 4/23 and 5/23.) Replace fire extinguishers 10-12 years of age or older.
- Provide all classrooms with portable fire extinguishers with a minimum rating of 2:A:20:B:C.
- Remove all fire hoses.

Estimates

See Attachment A for Cost Model.

AI42 & AI43 – F.E in Kitchen, Elec

Window Coverings

Description of Existing Systems

Typical blinds throughout the Skagway School are pull down roller blinds. In limited applications, full length cloth drapes are utilized (Classrooms 219 & 220).

Existing Conditions

Component condition rankings and expected remaining useful life are as follows:

- Pull-down roller blinds [2], 5 yr
- Cloth drapes [2], 5 yr

Code Deficiencies

- Original design code – Unknown
- 2021 IBC – Unknown

Recommendations

Materials should be verified by review of original construction submittals (unavailable to design team) for fire performance characteristics with respect to Chapter 8 of the IBC. That said, the pull-down roller blinds are nearing the end of useful life, and cloth drapes are not ideal for a classroom setting. Recommend replace all with duel light filtering/blackout roller shades complying with Chapter 8 of the IBC in the next 0-5 years.

Estimates

See Attachment A for Cost Model.


AI43 & AI44 – Classroom pull-down blinds and drapes

Mechanical

Synopsis
Overall, the school's mechanical and plumbing systems range from fair to poor condition and have been well-maintained since the school's original construction in 1983. However, since most of the mechanical and plumbing systems were installed during the original construction without any major renovation, they are nearing or beyond the end of their serviceable lives. The waste and vent piping are hubless cast iron while the water and hydronic piping is Type L copper with sweat connections. The piping has had minor leaks over the years with most of the deficiencies being with the valves or the equipment.

Plumbing Overview

Synopsis
The school is comprised of two boys/girls' bathrooms, a boys locker room, a girls locker room, a science lab, and a commercial kitchen. A variety of other plumbing fixtures including sinks, drinking fountains, and washers are located throughout the building. The water closets and lavatories are vitreous china with the sinks, shower heads, and water fountains being stainless steel. The building's domestic water service comes into the building in Janitor's Room 21 where it also feeds the fire suppression system. The water service is connected to the city water distribution system. See Civil for more information on the water utility. Domestic hot water is provided by a 250-gallon oil-fired water heater located in the mechanical room. Hot water recirculation is provided by a tempered water line and associated recirculation pump located in the boiler room. Domestic water piping is copper with sweat joints. Drain, waste, and vent piping is hubless cast iron pipe with hubless coupling joints.

Plumbing Fixtures

Description of Existing Systems
The school's bathrooms are comprised of wall-hung vitreous china water closets with flush valves, wall-hung vitreous china urinals with level handle flush valves, vitreous china wall-hung lavatories with a variety of faucet styles, and round top emergency floor drains. The flush valves are a mix of original manual diaphragm style and hands-free sensor styles. Some of the lavatory faucets have integral thermostatic mixing valves while others have external thermostatic mixing valves mounted below the lavatory.

The science lab contains nine top-mount, single compartment, epoxy-coated, laboratory sinks with gooseneck single-hole deck-mount laboratory faucets with nozzle outlet attachments. Two of the faucets have emergency eyewash attachments mounted to them. The eyewash attachments had dust covers and were threaded onto the end of the faucets. The science lab fume hood also has a water feature with two control knobs.

The boys' and girl's locker rooms adjacent to the gymnasium each contain eight showers. The showers were originally designed to be gang showers and have since been separated with partitions to make individual showers. Each shower has a stainless-steel shower head and trim with a separate valve on the shower head. There is a single drain for every two showers with both showers sloping to the same drain. The locker rooms also include water closets, urinals, and emergency floor drains of similar style to that of the bathrooms.

Most classrooms have a single deck-mounted two-compartment stainless steel sink with a two-handle faucet and drinking fountain attachment. There are multiple wall-mounted single-station refrigerated water fountains with integral bottle filling stations located throughout the school.

A coin-operated front-load washer is in the laundry room adjacent to the gym. The washer is provided with a washer box. Additionally, a top-load stackable washer is in the janitor's closet within the new kitchen addition. Emergency floor drains are located in both spaces with washers.

The commercial kitchen part of the new addition includes a variety of plumbing fixtures. Specifically, the kitchen includes two wall-mounted stainless steel hand sinks with side splashes, one steam jacketed electric kettle, two dual compartment stainless steel prep sinks, one three-compartment stainless steel pot sink with grease interceptor, a soiled dish table sink with grease interceptor, and a high temperature hood-type combination dishwasher/pot washer with an automatic detergent dispensing system.

There are two double-basin, stainless steel kitchen sinks with deck-mounted stainless-steel faucets located in the Home Economics room. There is a mop sink located in the main janitor's room and a mop sink with mop hanger located in the kitchen janitor's closet.

Existing Conditions

The water closets were in fair condition with some instances of separation from the wall. Specifically, the water closet in the ADA stall of Boy's Restroom 5 had significant separation. There were no observed leaks on flush valves though there has been substantial replacement throughout the years indicated by the variety of manufacturers and styles. The lavatories were in fair condition with multiple documented leaks at the faucets. Specifically, the second leftmost lavatory in Girls Restroom 6 and the lavatory in Classroom 27 was leaking during operation. Additionally, the leftmost lavatory faucet in Girls Restroom 6 did not have cold water, only hot water. There were a variety of styles and manufacturers for lavatory faucets indicative of replacement throughout the years. There were no ADA lavatory p-trap safety covers installed. Also, there was a wooden platform installed in the ADA stall of Girls Restroom 305.

The science lab sinks were in adequate condition with significant wear on the basins. The fume hood water connections were in fair condition. The laboratory sink faucets were in fair condition with no leaks during operation. The emergency eyewash attachments were in fair condition.

Within the boys' and girls' locker rooms, the shower heads and associated trim ranged from fair to poor condition. Specifically, there were three shower heads that were missing the shower head valve and were leaking from the resulting opening.

The stainless-steel sinks installed primarily in classrooms throughout the building were in fair condition. The drinking fountain attachment was non-functional in all locations and had been isolated. Due to COVID concerns, this was a common pre-caution taken during that time. In Room 23, the faucet stem and right basket strainer were in marginal condition with corrosion around both components. Additionally, the sink aerator in room 23 was non-functional. The sink spray down attachment in Classroom 29 was non-functional. The sink faucet in Storage 10A was in marginal condition with corrosion around the faucet. The right faucet handle for the sink in Storage 207 leaks

during operation. Finally, the three-compartment sink in Kitchen 10B (old kitchen) has a non-functional spray nozzle.

The water fountain with bottle fill located in the multi-purpose room (MPR) is only partially functional. The bottle fill portion is functional, but the drinking fountain portion is non-functional.

Code Deficiencies

The wooden platform installed in Girls Restroom 305 made the stall non-ADA compliant. There were no ADA required p-trap safety covers installed on the lavatory p-traps in the restrooms.

Recommendations

- Repair and/or replace specific instances where failures have occurred.
- Replace sink basins in science lab.
- Remove wooden platform from ADA stall in Girl's Restroom 305 or replace with ADA compliant ramp.
- Install p-trap safety covers on lavatory p-traps.

Estimates

See Attachment A for Cost Model.

Boy's Restroom Toilet Wall Separation

Showerhead Missing Valve Handle

Typical Classroom Sink

Wood Platform (Girls Restroom 305)

Science Lab Sink & Faucet

Typical Restroom Lavatory

Storage 10A Sink Corrosion

Plumbing Piping

Description of Existing Systems

The domestic hot, tempered, and cold-water piping is copper with sweat joints. There is no central thermostatic mixing valve as they are located at the fixtures or integral to the faucets. Gate valves are the primary form of isolation with ball valves on newer equipment and angle stop valves at the sink connections. Isolation valves are located at each bathroom junction. Domestic water mains are routed above the corridor ceilings. Stainless steel braided flexible hoses are used at the sinks and lavatories. Water hammer arrestors are installed throughout the building. The cold-water piping originates from the water service located in Janitor's Room 21. The hot water and tempered water piping originates from the water heater located in the Boiler Room. Additionally, there was a double check backflow preventer located below the sink in Classroom 29. We were unable to discern the purpose of the backflow preventer.

Existing Conditions

The water piping is in fair condition with no active leaks and minimal previous leaks. The gate isolation valves are in poor condition as they do not seat fully and do not provide isolation, which prevents repairs and/or replacement of system components. Some gate valves are stuck completely open. Specifically, maintenance staff noted that the valves on either side of the hot water recirculation pump were stuck open which prevented replacement of the pump.

There is low water pressure at the fixtures located furthest away from the water service and the water heater. Specifically, the hot water pressure in the boys' locker room and the overall water pressure at both wall-hung sinks in the commercial kitchen were low. The low pressure did not prevent functionality of any faucets or flush valves. The fixtures exhibiting lower water pressure were the furthest fixtures from the water service and water heater.

There was corrosion on the angle stop isolation valves at the science lab sinks and at the sink in Classroom 314. There was evidence of a previous leak and associated corrosion at the hot water piping wall penetration in Classroom 301.

Code Deficiencies

There are no known code deficiencies.

Recommendations

- Replace gate isolation valves with ball isolation valves.
- Consider providing a booster pump packaged system.
- Replace angle stop valves where corrosion is visible.

Estimates

See Attachment A for Cost Model.

Angle Stop Valve Corrosion

Previous Leak at Wall Penetration

Plumbing Equipment

Description of Existing Systems

Domestic hot water for the school is provided by a 250-gallon PVI Maxim 27N 250A-MXO power combustion oil-fired water heater. The water heater has a gross input of 2.0 gallons per hour of #2 fuel oil which equates to 270,000 Btu/hr. The water heater is equipped with a Firepower B40-1 oil burner. The water heater is skid-mounted on a housekeeping pad located in a containment basin. At the time of inspection, the system was at 120°F and 50 psig. Adjacent to the active water heater was an abandoned-in-place 500-gallon, 540,000 Btu/hr oil-fired PVI water heater. The water heater's piping connections were isolated, the oil burner was removed, and the controls were removed.

There was no expansion tank installed on the potable water system. The system includes a hot water recirculation pump to provide hot water with reduced wait times. The recirculation pump is located on the wall behind the water heater in the boiler room.

Existing Conditions

The water heater is in fair condition. The combination pressure and temperature relief valve installed on the oil-fired water heater is undersized. The installed relief valve is rated for 180,000 Btu/hr and the water heater input is 270,000 Btu/hr.

There is no thermal expansion tank installed on the water heater cold water line even though there is a check valve between the city water service and the building's domestic water system.

The hot water recirculation pump was in poor condition and non-functional. Per maintenance staff, the recirculation pump was unable to be replaced since the gate valves on either side of the pump did not seat fully and effectively isolate the system. During the survey, we recorded the time it took for hot water to reach plumbing fixtures. Times and temperatures for lavatories located in the Boy's Restroom 5 are tabulated below:

Hot Water Temperature (°F)	Time (min)
100	4.5
105	7.5
107.5	8.5

The Boy's Restroom 5 is located the furthest away from the water heater besides the new commercial kitchen. The temperatures reached during the assessment were appropriate and below code-required maximums. However, 10 seconds is the standard maximum wait time for hot water. This wait time was primarily due to the recirculation pump being non-functional. Additionally, this test was conducted while the building was unoccupied.

Code Deficiencies

The combination temperature and pressure relief valve discharge capacity is less than that of the water heater it serves. This violates the 2018 UPC Section 504.6.
Per Section 608.3 of the 2018 UPC, water systems provided with check valves shall be provided with an approved, listed, and adequately sized expansion tank.

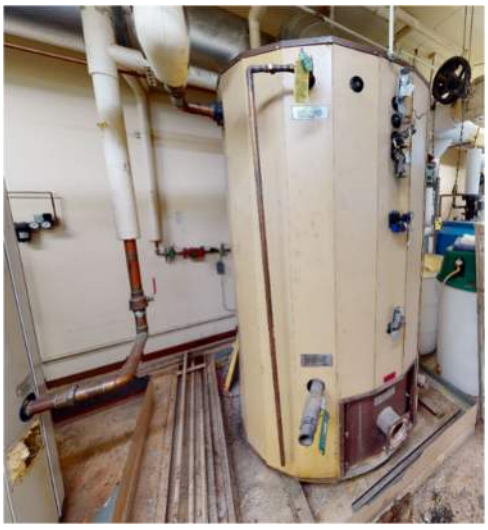
Recommendations

- Replace combination temperature and pressure relief valve with appropriately sized relief valve. Install thermal expansion tank on cold water piping going to water heater. Replace domestic hot water recirculation pump.
- Provide an expansion tank for water heater in accordance with the water heater's recommended piping configuration.
- Replace hot water recirculation pump.

Estimates

See Attachment A for Cost Model.

Water Heater & PRV



Hot Water Recirculation Pump

Waste & Vent Piping

Description of Existing Systems

The waste and vent systems are comprised of hubless cast iron piping joined with hubless couplings. ABS and PVC piping has been sporadically used throughout the building to make repairs over the

years. The waste piping is routed below grade and is a gravity drainage system that discharges to the city piped collection system on the west side of the school. The vent piping routes up through the roof at multiple locations. The waste piping located in the science lab was PVC designed for acid waste applications.

Existing Conditions

The waste and vent systems are in fair condition with a few areas in marginal condition. Specifically, the sink waste piping in Classroom 301 was corroding, the urinals in the Boy's Locker Room had poor drainage, and the sink waste piping in Classroom 315 was back pitched and corroding. Most of the waste and vent piping is not exposed and unable to be inspected.

Code Deficiencies

An indirect drainpipe discharges into the mop basin in the Janitor's room below the flood rim of the fixtures. This violates section 801.2 of the 2018 UPC. The source of the drainpipe is unknown.

Recommendations

- Replace the tailpiece, p-trap, and discharge piping for the sinks in Classroom 301 and 315.
- Modify indirect drain piping into Janitor's room mop basin to provide code-required air gap.
- Utilize closed circuit television video (CCTV) to determine condition on waste and vent piping. CCTV can be utilized to identify pipe breakage, slope issues, and blockages.

Estimates

See Attachment A for Cost Model.

Classroom 301 Sink P-Trap

Classroom 315 Sink P-Trap

Janitor Mop Sink Drain Line w/o Air Gap

HVAC Overview

Heating Equipment

Description of Existing Systems

Two Buderus GE515-10 non-condensing cast iron oil-fired boilers installed in 2014 provide heating for the school. The boilers are forced draft appliances with a net IBR rating of 1,210 MBH. Each boiler has a Becket CF2300A oil burner. The boilers are mounted on housekeeping pads and located in containment basins. The boiler trim includes a Safgard 550 electronic low water cutoff with manual reset, Honeywell L4006E1000 high limit manual reset aquastat controller, operating temperature controller, wall-mounted disconnect, tridicator gauge, and a one-inch 50 psig pressure relief valve with a 2,295 MBH relief capacity. The relief valves for both boilers discharge to a common pipe which routes to the adjacent floor drain with an air gap.

There are three base-mounted Bell & Gossett 106T hydronic circulation pumps located on inertia bases with vibration isolators. Two of the circulation pumps have 3 HP motors and one of the circulation pumps has a 2 HP motor. Each circulation pump includes gate valves and flexible connectors on either side of the pump, a check valve and balance valve on the pump discharge, and a differential pressure gauge across the pumps. Circulation pumps, CP-2 and CP-3, are piped in parallel and serve the perimeter hydronic loop and the AHU-4/AHU-5 heating coils. Circulation pump, CP-1, serves the remaining air handler heating coils.

A Bell & Gossett 200-gallon plain steel expansion tank is in the mezzanine above the wood shop directly above the boiler room. Welded steel cradles and wood sleepers support the expansion tank. The expansion tank has a sight glass, drain valve, pressure indicator, and a Bell & Gossett Airtrol tank fitting. The expansion tank is connected to the air separator relief. The expansion tank, supports, and associated piping and valves were all painted.

A 50-gallon glycol mixing tank provides 30% propylene glycol to the school's heating system. The hydronic system drain and domestic cold water make-up pipes discharge above the portion of the tank with the lid removed with the required air gap. The tank has a funnel fitting that is not in use. A Wayne 1/2 HP cast iron transfer utility pump transfers the glycol from the storage tank to the hydronic system. The transfer pump is not permanently mounted, has a line cord disconnect, and connects to the tank and system piping with two flexible green garden hoses.

A 5-inch Bell & Gossett R-5F centrifugal-style flanged air separator with integral strainer provides air and dirt separation for the hydronic system. The air separator is located on the main hydronic return main in the boiler room. The air separator has a capped drain valve on the bottom of the unit for blowdown of the integral strainer.

Heating terminal units for the building include fintube, unit heaters, and cabinet unit heaters. Perimeter fintube heating is provided in all exterior classrooms and other normally occupied spaces. Unit heaters are provided in non-occupied spaces such as storage rooms and electrical rooms. Cabinet unit heaters are provided in building entry ways. The fintube consists of copper tubing with aluminum fins located primarily in wood enclosures with steel grilles. There are sloped-top aluminum fintube enclosures located on the stage. Hydronic unit heaters are horizontal style unit heaters with a serpentine coil and are supported from the ceiling with threaded rods. Cabinet unit heaters are ceiling-

recessed style with front inlet and outlet grilles. Air heating coils were integral to the air handlers located in the two mezzanines.

Existing Conditions

The boilers are in good condition and have been regularly inspected and maintained. There was no visible leakage. The most recent inspection was conducted in April 2023 as indicated by the inspection tags on the side of the boiler. During the condition survey, the boiler outlet temperature and pressure, as measured at the tridicator gauge, were 170°F and 17 psig, respectively. The manual reset high limit aquastat controller was set to 220°F. There are no emergency boiler shutdown pushbuttons located inside or outside of the boiler room at either of the doors.

Circulation pumps, CP-1 and CP-2, were operating during the condition survey. As measured by the differential pressure gauge, CP-1 and CP-2 were creating pressure differentials of 23 psig and 27.5 psig, respectively. Circulation pump, CP-1, was replaced in 2021 with an in-kind model. There was a new Bell & Gossett base-mounted circulation pump located in the boiler room adjacent to the existing circulation pumps. Per maintenance personnel, this pump is scheduled to replace CP-2 soon. The circulation pumps were in fair condition with no visible leaks. There was insulation removed at multiple locations on the branch piping serving CP-1 and CP-3. There was oxidation on the copper piping associated with the differential pressure gauges.

The expansion tank was in fair condition with no visible leaks or corrosion. The water level in the expansion tank, as indicated by the sight glass, was 25% full. The pressure, as indicated by the pressure gauge, was 25 psig. The sight glass, pressure gauge, drain valve, and Airtrol tank fitting were in fair condition.

The glycol mixing tank is in fair condition with no visible leaks. The associated transfer pump is in fair condition. There is severe oxidation on the hydronic system drain line. There is a new Axiom SF100 glycol make-up tank located in the boiler room that has not been connected to the hydronic system. The Axiom glycol make-up tank is in good condition.

The air separator and associated appurtenances are in fair condition.

The fintube was in fair condition but the enclosures ranged from fair to poor condition. There were many instances of damaged enclosures, damaged grilles, and separation from the exterior wall with the wooden enclosures. The sloped enclosures on the stage were in good condition however, there were bookshelves directly in front of the enclosures on the stage which reduces the heating output of the unit. The unit heaters ranged from fair condition to poor condition with most of the issues being at the piping connections with corrosion and condensation. Reference the heating distribution system section for more information on issues with the unit heater piping connections. The unit heater in the boiler room has been disconnected from the hydronic piping and abandoned in place. The cabinet unit heaters were in fair condition. The air handler heating coils were in fair condition.

Code Deficiencies

Per ASME CSD-1, boiler emergency shutdown pushbuttons are required on all doors exiting the boiler room. The pushbutton for the interior door is required to be located just outside the boiler room. The pushbutton for the exterior door is required to be located inside the boiler room on the wall next to the handle side of the door.

Recommendations

Provide two boiler emergency shutdown pushbuttons. Locate pushbuttons in accordance with ASME CSD-1. Wire pushbuttons such that activating either pushbutton will shutdown both boilers. Provide labels for each pushbutton reading the following: “Boiler Emergency Shutdown”.

Due to the use of automatic air vents throughout the system and the age of the expansion tank, we recommend replacing the plain steel expansion tank located in the mezzanine above the wood shop with a bladder-style expansion tank located in the mechanical room. This will allow the use of automatic air vents in the system and simplify maintenance.

Replace the existing glycol mixing tank and the associated transfer pump with the Axiom SF100 glycol make-up tank that is on-site. Replace abandoned hydronic horizontal unit heater in boiler room and provide new electronic thermostat. Relocate bookshelves on the stage to provide clearance to fintube enclosures. Repair damaged fintube enclosures and replace damaged grilles.

Estimates

See Attachment A for Cost Model.

Boilers

Circulation Pumps

Expansion Tank

Glycol Mixing Tank

Damaged Fintube Enclosure (Library)

Boiler Room Unit Heater

Heating Distribution Systems

Description of Existing Systems

The heating distribution system is a primary two-pipe reverse return piping system. Make-up glycol for the hydronic system is provided from the glycol mixing tank by the transfer pump to the air separator relief pipe. The plain steel expansion tank located in the mezzanine above the wood shop maintains the system pressure. Hydronic piping is primarily copper piping with sweat joints. Steel piping with flanged connections is used on the larger piping primarily found in the boiler room. Additionally, Victaulic and Gruvlok rigid couplings are utilized near the main circulation pumps.

System and equipment isolation is provided by gate valves with hand-operated wheels. Chain operated wheels are only provided on either side of the air separator on the 6" hydronic return header located in the boiler room. Balance valves, copper braided flexible hoses, and capped drain valves are provided at terminal units and heating coils. Wafer check valves are provided on pump discharge and on the glycol make-up line. Automatic air vents are provided at terminal units and system high points.

A pneumatic three-way control valve located in the boiler room is installed between the supply and return headers to maintain the system temperature. Electronically actuated three-way control valves are located at each air handler between the supply and return piping to control the discharge air temperature. Two-way electronic zone valves are installed at terminal units.

The hydronic mains are routed above the corridors in the ceiling space. The piping is routed to provide hard pipe loops for thermal expansion. All hydronic piping is insulated with jacketed fiberglass pipe insulation and supported with clevis hangers for larger piping and pipe clamps for smaller piping routed along the wall. Pipe insulation shields are provided between the clevis hangers and pipe insulation.

Existing Conditions

Per maintenance personnel, the hydronic system leaks when the boilers are shutdown. As a result, the system is left in operation for the summer. The primary source of the leaks was noted to be the Victaulic and GruvLok couplings. Older models of the Victaulic and GruvLok couplings have issues with gasket deterioration causing premature failure and leaks upon change in system temperature.

The gate valves utilized for system and equipment isolation are in poor condition and do not completely isolate the system which makes repairs extremely difficult and intrusive.

The balance valves, check valves, and control valves are in fair condition. The three-way control valve actuators associated with the air handlers were recently replaced with DDC-controlled Belimo actuators and are in good condition. Automatic air vents ranged from fair to poor condition with the poor condition vents being isolated.

The copper braided flexible piping located at terminal units and heating coils ranged from fair condition to poor condition. Specifically, oxidation on the flexible piping was a consistent deficiency noted throughout the building. Specific instances of oxidation include the unit heaters in the shop mezzanine utilidor, corridor 13, gym fan room, and the supply piping to AHU-4.

Oxidation on copper has also occurred in other areas of the system such as drain valves and piping. The AHU-3 heating coil drain and the hydronic piping for the AHU-5 heating coil were two documented instances of oxidation.

There was a large active glycol leak at the AHU-2 heating coil which originates from the hydronic supply piping going into the unit. The piping around the capped drain valves was oxidized. A plastic container was located below the leak location to capture the glycol.

The hydronic piping for a unit heater located in the wood shop mezzanine utilidor was severely oxidized at a connection between steel and copper piping. There was no dielectric fitting separating the two dissimilar metals.

The steel piping on the discharge of circulation pump, CP-3, was missing insulation.

Evidence of multiple previous leaks was noted due to the staining on the ceiling tiles. One instance was between the library and the wood shop below where the hydronic mains routed. The leak had damaged the insulation and resulted in the rusting of the adjacent wet sprinkler piping. Another instance was outside the electrical room below where the hydronic mains were routed. The final instance was in Special Education Office 29 below where the hydronic branch piping service the room's fintube was routed. All leaks were inactive during the survey.

Other than the noted leaks and damages, the hydronic piping and associated appurtenances are in fair condition. The associated insulation and supports are in fair condition.

Code Deficiencies

There are no known code deficiencies.

Recommendations

- Replace system components that leak during shutdown. This is primarily the Victaulic and GruvLok rigid couplings installed in the boiler room and on the hydronic mains above the corridors. The older style couplings are known to leak over time as their gaskets harden, lose their elasticity, and deteriorate. As a result, they lose the ability to expand and contract to accommodate the system's thermal contraction during shutdown. Victaulic has since changed the material make-up of their gasket seals in recent years to improve and correct this issue. Previously, Victaulic was providing assistance to places with failing gaskets. We recommend

contacting the local Victaulic sales representatives to discuss potential options for replacement.

- Replace non-functional gate valves with ball valves or butterfly valves depending on the valve size.
- Replace leaking automatic air vents, oxidized flexible piping, oxidized drain valves.
- Replace steel piping located associated with unit heater in wood shop mezzanine utilidor with copper piping. Replace all compromised copper piping.
- Provide insulation on exposed steel piping on discharge of CP-3.

Estimates

See Attachment A for Cost Model.

Unit Heater Flex Oxidation

AHU-5 Heating Coil Oxidation

AHU-2 Heating Coil Leak

Hydronic Mains Old Leak

Dissimilar Metal Corrosion

Ventilation Equipment

Description of Existing Systems

Two mezzanine spaces house the major ventilation equipment for the school. One mezzanine is located above the wood shop and has two utilidors that are directly above the school's main corridors. The other mezzanine is located above the locker rooms adjacent to the gym. The wood shop mezzanine contains five air handling units that provide outside air to the multi-purpose room, stage, wood shop, classrooms, and office spaces. The gym mezzanine contains two air handling units that provide outside air to the gym, locker rooms, weight room, and gym storage. The two utilidors associated with the wood shop mezzanine contain variable air volume (VAV) terminal units.

Air handler, AHU-1, serves the east classrooms and offices and is in the wood shop mezzanine. AHU-1 is a Bohn VSC26ALF 12,000 CFM constant volume vertical draw through air handling unit with a 10 HP belt-driven forward curved fan. AHU-1 has an integral filter bank, mixing box, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and outside air ductwork with flex connectors.

Air handler, AHU-2, serves the south classrooms and offices and is in the wood shop mezzanine. AHU-2 is a Bohn HD26ALF 12,000 CFM constant volume horizontal draw through air handling unit with a 10 HP belt-driven forward curved fan. AHU-2 has an integral filter bank, mixing box, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and outside air ductwork with flex connectors.

Air handler, AHU-3, serves the wood shop and is in the wood shop mezzanine. AHU-3 is a Bohn HD08ALF 4,200 CFM constant volume horizontal draw through air handling unit with a 2 HP belt-driven forward curved fan. AHU-3 has an integral filter bank, mixing box, pre-heat coil, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and return air ductwork with flex connectors.

Air handler, AHU-4, serves the multi-purpose room and is in the wood shop mezzanine. AHU-4 is a Bohn VCS08ALF 4,300 CFM constant volume vertical draw through air handling unit with a 1-1/2 HP belt-driven forward curved fan. AHU-4 has an integral filter bank, mixing box, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and outside air ductwork with flex connectors.

Air handler, AHU-5, serves the gymnasium and is in the gym mezzanine. AHU-5 is a Bohn VCS26ALF 12,800 CFM constant volume vertical draw through air handling unit with a 7-1/2 HP belt-driven forward curved fan. AHU-5 has an integral filter bank, mixing box, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and outside air ductwork with flex connectors. A Vaporstream VLC-24-2 electric steam humidifier adds moisture to the supply air for AHU-5. The humidifier has a capacity of 68.4 pints per hour and is located directly next to AHU-5. The humidifier is supported with angle iron from AHU-5's housekeeping pad.

Air handler, AHU-6, serves the locker rooms, weightlifting room, and gym storage and is in the gym mezzanine. AHU-6 is a Bohn HD06ALF 3,000 CFM constant volume horizontal draw through air handling unit with a 1-1/2 HP belt-driven forward curved fan. AHU-6 has an integral filter bank, mixing box, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and outside air ductwork with flex connectors.

Air handler, AHU-7, serves the stage and is in the wood shop mezzanine. AHU-7 is a Bohn HD08ALF 3,900 CFM constant volume vertical draw through air handling unit with a 1-1/2 HP belt-driven forward curved fan. AHU-7 has an integral filter bank, mixing box, and re-heat coil. Return air and outside air dampers are actuated by DDC-controlled interlocked Belimo damper actuators. The unit is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to the supply and outside air ductwork with flex connectors.

Energy recovery ventilator, ERV-1, serves the commercial kitchen and adjacent corridor. ERV-1 is a Greenheck ERV-10-20L-V6 450 CFM enthalpy wheel style energy recovery unit with a direct drive EC motor. ERV-1 has an integral weather hood and filter bank. The unit is mounted on a roof curb.

Exhaust fan, EF-1, serves the gym ancillary spaces including the locker rooms, weightlifting room, and gym storage. EF-1 is a Trane UI6PI3-FC 3,300 CFM centrifugal belt-driven exhaust fan located in the gym mezzanine. EF-1 is supported by spring-mount vibration isolators on a concrete housekeeping pad. The unit is connected to intake and discharge ductwork with flex connectors.

Exhaust fan, EF-2 serves boys restroom 5 and girls restroom 6. EF-2 is a 500 CFM centrifugal inline exhaust fan. EF-2 is supported from roof structure with vibration isolators and secured to ductwork with flexible connectors.

Exhaust fan, EF-3, serves the commercial kitchen and is located on the flat roof section above the kitchen. EF-3 is a Greenheck USF-15 1,250 CFM centrifugal blower. The exhaust fan is utilized for

kitchen grease exhaust and is connected to the Class I hood located in the kitchen below. The unit has a grease trap and is supported by spring-mount vibration isolators on a roof curb. The unit is located on the flat roof section above the commercial kitchen.

Exhaust fan, EF-4, serves the janitor's room. EF-4 is a 170 CFM centrifugal exhaust fan. EF-4 is supported from roof structure with vibration isolators and secured to ductwork with flexible connectors.

Exhaust fan, EF-5, serves the electrical room. EF-5 is a 160 CFM centrifugal exhaust fan. EF-5 is supported from roof structure with vibration isolators and secured to ductwork with flexible connectors.

Exhaust fan, EF-6, serves multiple private restrooms and the dark room. EF-6 is a 145 CFM centrifugal inline exhaust fan. EF-6 is supported from roof structure with vibration isolators and secured to ductwork with flexible connectors.

Electronic air cleaner, EC-1, serves Breakroom 22. EC-1 is a 1,000 CFM ceiling-recessed air cleaner.

Four ceiling-mounted paddle fans located in the gym provide destratification for the space. The fans are in safety covers.

A CAR-MON CMB-20-F centrifugal exhaust fan is in the wood shop mezzanine. The exhaust fan was intended to be used for a welding hood which is not currently installed. The exhaust fan contains a 1 HP belt-driven fan and is supported by spring-mount vibration isolators.

Ventilation fan, VF-1, provides economizer cooling for the boiler room. VF-1 is a 5,100 CFM duct-mounted propeller fan with a 1/2 HP direct drive motor. The unit has an integral fan guard. The unit is in the boiler room.

There are variable air volume (VAV) boxes located in the wood shop fan room and associated utilidors. The VAV boxes are designed to modulate the airflow to the individual ventilation zones to provide enhanced occupant comfort. The VAV boxes are Trane Varitrane VCC units that are inline duct-mounted and supported from the floor. Currently, there is no control for the VAV boxes. Controls have been disabled and are non-functioning.

Four range hoods are located throughout the building above electric ranges. Two are located above the electric induction ranges in Home Economics 33. One is located above the electric range in Kitchen 10B. The final one is located above the electric range in Breakroom 22. The range hoods in Home Economics 33 are Broan F40000 30-inch under cabinet stainless steel range hoods. The hood has an integral 230 CFM fan, grease filter, and light. The range hood in Kitchen 10B and Breakroom 22 is a Kenmore under-cabinet style with an integral fan, grease filter, and light.

Existing Conditions

Air handlers, AHU-4 and AHU-5, were in fair condition. The units have been regularly maintained with no notable deficiencies.

Air handler, AHU-1, was in poor condition. Per facility staff, the associated fan motor was fried and the unit was non-functional.

Air handler, AHU-2, was in poor condition. The unit had a constant squeaking sound during operation. Also, the flex duct on the supply air connection was leaking from a damaged portion. Finally, there was a severe glycol leak at the heating coil connections. Reference the heating distribution systems section for more information.

Air handler, AHU-3, was in fair condition. The unit air leaks on the return air flex connection to the mixing box and at the outside air flex connection. Additionally, per facility staff, the associated interlocked mixing box control damper is stuck in the open position.

Air handler, AHU-6, was in poor condition. There were wood planks resting on top of the unit that spanned the length of the unit. Additionally, per facility staff, the motor was fried and the unit was non-functional.

Air handler, AHU-7, was in poor condition. Per facility staff, the unit was never wired up and has not functioned.

Energy recovery ventilator, ERV-1, was in good condition.

Exhaust fan, EF-1, was in poor condition. The unit was vibrating loudly and rattling during operation. The rattling noise was transmitting to the adjacent storage spaces behind the fan room.

Exhaust fans, EF-2, EF-4, and EF-6 were in fair condition. The exhaust grille located in the dark room was especially dirty.

Exhaust fan, EF-3, was in good condition.

Exhaust fan, EF-5, was in fair condition. The associated exhaust grille had separated from the ceiling and was hanging from the associated ductwork by a wire.

Electronic air cleaner, EC-1, was in poor condition. The unit was extremely noisy during operation.

The four ceiling-mounted paddle fans in the gym were in fair condition.

The CAR-MON centrifugal exhaust fan in the wood shop is extremely difficult to access and appears to have been abandoned in place. The unit's associated ductwork terminated in the space with no apparent purpose.

Ventilation fan, VF-1, was in fair condition.

The VAV boxes are in poor condition. The units no longer monitor or modulate the zone level air flow. As a result, the associated spaces may not be currently provided with code-required outside air.

The range hood above the electric range located in Kitchen 10B is in poor condition. The unit is extremely loud when the fan is operating. The unit's fan rattles during operation. The integral light is non-functional.

The range hood above the electric range in Break Room 22 was in poor condition. The unit's fan and light are both non-operational.

The two range hoods in Home Economics 33 were in good condition. The units are not operational yet as the associated project is still in progress.

Room 20 is currently being utilized as a nurse's room for patient care. Per facility staff, the room is intended to remain as a nurse's room. The room was not designed for patient care. The associated mechanical systems have not been updated to provide adequate ventilation to the space. A portable Medify Air MA-40 air purifier was in the space.

Per facility staff, the duct systems have not been rebalanced or cleaned since the original construction.

Code Deficiencies

Since the original installation of the school's ventilation systems, spaces have changed usage types and the ventilation system has not been updated or rebalanced accordingly. Specifically, the change of Room #20 from a pre-school classroom to a nurse's room is particularly impactful. ASHRAE Standard 170 Table 8-2 requires that general examination rooms be provided with a minimum of two outdoor air changes per hour with a minimum filter efficiency of MERV-8.

Section 505.6 of the 2021 IMC requires a domestic cooking exhaust system to be installed where domestic ranges are used for domestic purposes. The non-functional range hoods above the ranges in Kitchen 10B and Break Room 22 violate this section of the code.

Due to the poor condition of the air handling units and VAV boxes, it is highly likely that code-required minimum air flows are not being provided to some spaces.

Recommendations

Prior to other ventilation work, we recommend measuring the air flow throughout the building as part of a pre-TAB to verify any areas that have airflow issues. Specifically, this would allow us to identify areas where the code-required minimum air flows are not met. This would allow us to address the ventilation to Nurse's Room 20.

Repair the various damaged flex duct connections at the air handler duct connections. This will prevent the associated air leakage and increase air flow to spaces.

Replace exhaust fan, EF-1, with a new centrifugal exhaust fan in the same location with similar duct configuration to minimize cost. Provide the new unit with vibration isolators and flex duct connections to prevent vibration and noise transmission to adjacent spaces. Integrate the exhaust fan into the existing DDC system.

Replace air handlers, AHU-1, AHU-2, AHU-6, and AHU-7 with new air handling units in the same location with a similar duct configuration. Provide ducted return air from the associated spaces. Provide the unit with vibration isolators and flex duct connectors. Integrate the unit into the existing DDC system (2020 updated version) for air flow and temperature monitoring and control of associated dampers. These units are beyond their serviceable lives. Re-balance the associated duct systems.

During the replacement of air handling units AHU-1 and AHU-2, replace the associated VAV boxes. Locate the VAV boxes in the same location as the originals to reduce cost and continue to provide good maintenance accessibility. Integrate the VAV boxes into the existing DDC system including the electronic space thermostats. This will provide zone level cooling and outdoor air control and monitoring.

Demolish electronic air cleaner, EC-1, without replacement. This unit is not required for the space it is installed in and is non-functional.

Replace the range hoods in Kitchen 10B and Breakroom 22 with in-kind units and connect to existing ductwork.

All other air handling units and exhaust fans not associated with the 2021 kitchen addition are beyond their serviceable lives. However, some of these units are in fair condition. Replacement of all ventilation equipment installed during the original construction would be ideal. However, due to cost restrictions, the aforementioned recommendations are the highest priority items.

Estimates

See Attachment A for Cost Model.

AHU-1

AHU-2

AHU-3


AHU-4

AHU-5

AHU-6

AHU-7

EF-1

ERV-1

EF-3

EC-1

CAR-MON Exhaust Fan

EF-5 Exhaust Grille

VAV Box

Kitchen 10B Range Hood

Break Room 22 Range Hood

Ventilation Distribution Systems

Description of Existing Systems

Outside air is provided from louvers located in the canopy ceilings that is ducted to the two mezzanines. The low-pressure outside air ductwork serves each air handling unit with backflow preventers on each branch in the gym mezzanine. All outside air ductwork is insulated from the louver to the associated air handling units.

Supply air from the air handling units is transferred through round medium pressure ductwork upstream of the VAV boxes. Rectangular low-pressure ductwork is utilized between the VAV boxes and the diffuser branch connections. Diffuser branch connections include volume dampers, round low-pressure ductwork, and round flexible ductwork. Space air distribution is done with a fully mixed system with a ceiling supply of warm air and ceiling return. Supply air is distributed with ceiling-mounted linear slot diffusers in rooms with low ceiling heights such as classrooms and offices. Square plaque ceiling diffusers are provided in areas with high ceilings such as the MPR and the stage. The gym utilizes expose round ductwork with duct-mounted diffusers and grilles located high on the perimeter walls to distribute supply air. Fire dampers are provided in the low-pressure ductwork sections where the ductwork passes through the corridor walls.

Return air is transferred from the conditioned spaces to the mezzanine return air plenums through rectangular ceiling-mounted eggcrate style grilles. The return air grilles are primarily located in the corridors adjacent to the conditioned spaces. Low-pressure rectangular sound-lined ductwork transfers return air from the return grilles to the associated mezzanines. Transfer air openings are provided sporadically between adjacent spaces. Fire dampers are provided at all mezzanine return air penetrations and all transfer grilles. Return air is discharged into the mezzanine which serves as a return air plenum that the air handling units pull from. Sound attenuators are provided in the gym fan room for the two return air ducts that transfer air from the gym to the mezzanine.

Low-pressure rectangular ductwork is provided for exhaust systems. A sound attenuator is in the exhaust ductwork between the conditioned spaces and exhaust fan, EF-1. Exhaust air is transferred from the conditioned spaces through perforated return air grilles. Exhaust air is discharged to the exterior through louvers.

Gravity relief is provided in the mezzanines, boiler room, and the wood shop. Gravity relief is provided with backdraft and/or control dampers.

Existing Conditions

Overall, the ductwork and associated insulation and supports are in fair condition.

The gravity relief air outlet located in the boiler room was covered with a piece of rigid foam board.

The roll-up door that separates the wood shop from the adjacent mezzanine was propped partially open with a stack of chairs. Additionally, the man door that separates the mezzanine from the wood shop was also propped open. Per maintenance staff, this was done to cool the mezzanine area.

New DDC-controlled Belimo damper actuators have been installed on the air handler mixing boxes for the return air and outside air connections.

The gym ventilation system was abnormally noisy.

The ventilation system serving the gym ancillary areas was loud and had objectionable drafts. The area with the loudest air was Shower Room 15.

The outside air ductwork associated with air handler, AHU-6, was partially crushed.

Most classrooms and office spaces did not have return air grilles. The associated return air grilles were in the adjacent corridors. There was no substantial door undercut or other transfer air openings between the corridors and adjacent conditioned spaces.

The return air grille in Classroom 9B was dirty and located close to the supply air diffuser in the space.

The flex duct connection to the linear slot supply diffuser in Storage 10A was extremely tight and restricting air flow to the space.

Code Deficiencies

Both fan rooms are utilized as return air plenums for the air handling units located in the fan rooms. There is a plethora of equipment and items in the mezzanines that are not designed or rated to be installed in plenum spaces and not compliant with Section 602.2.1 of the 2021 IMC. Additionally, the roll-up door and man door that are open between the mezzanine and wood shop are causing return air from the wood shop to be circulated throughout the school. Reference the electrical report for more information on plenum rating deficiencies.

Recommendations

Seal separation between mezzanine plenum and wood shop with air tight barriers. Recommend replacing roll-up door with removable wall panel to allow for future equipment removal while preventing air transfer between the wood shop and the mezzanine.

Provide ducting between the air handlers and associated return air ductwork that stubs up into the mezzanine. This will change the mezzanine into a non-plenum space and not require the upgrade or replacement of the other existing equipment in the space.

Per facility staff, there is no record of ductwork cleaning during the school's history. Cleaning ductwork improves air flow, air quality, and filter life. We recommend having all the school's ductwork cleaned.

Estimates

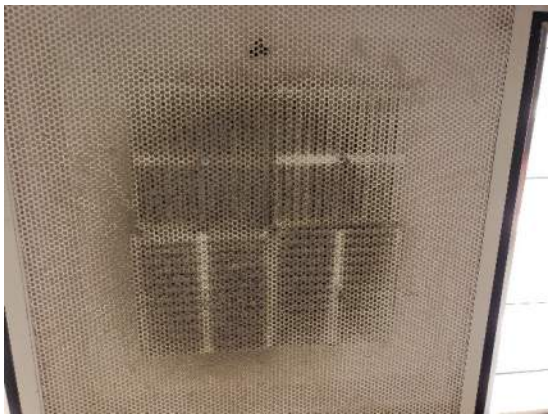
See Attachment A for Cost Model.

Boiler Room Relief Air Opening

Wood Shop Roll-Up Door

Mixing Box Control Dampers

AHU-6 Ductwork



Classroom 9B Return Air Grille

Storage 10B Flex Duct Connection

Cooling Equipment

Description of Existing Systems

Cooling systems are provided for the walk-in refrigerator and walk-in freezer located in the commercial kitchen and the freezer located in the wood shop.

The cooling system for the kitchen's walk-in refrigerator includes a ceiling hung evaporator unit located in the refrigerator and a curb-mounted condensing unit located on the flat roof above. The

evaporator is a single-fan unit manufactured by Refrigerated Solutions Group. The condenser is a Master-Bilt MHMD005AB half-ton hermetic-style condensing unit that utilizes R-448A refrigerant.

The cooling system for the kitchen's walk-in freezer includes a ceiling hung evaporator unit located in the freezer and a curb-mounted condensing unit located on the flat roof above. The evaporator is a Refrigerated Solutions Group KL/DP30X78 dual fan unit. The condenser is a Master-Bilt MSLD025MB 3/4-ton scroll-style condensing unit that utilizes R-448A refrigerant.

The wood shop freezer was locked during the survey and the associated condensing unit was inaccessible. The condensing unit was mounted on top of the freezer within the wood shop.

Existing Conditions

All systems were observed functioning without issue during survey. All three systems were in good condition. During the survey, the kitchen walk-in refrigerator cooling system was in operation and maintaining the space at 35°F. The kitchen walk-in freezer cooling system was in operation and maintaining the space at -5°F. The wood shop freezer cooling system was in operation and maintaining the space at -15°F.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Kitchen Refrigerator Evaporator

Kitchen Refrigerator Condenser

Kitchen Freezer Evaporator

Kitchen Freezer Condenser

Wood Shop Freezer & Condenser

Cooling Distribution Systems

Description of Existing Systems

The cooling distribution systems within the building are limited to the refrigerant piping between the evaporating units and condensing units for the kitchen walk-in freezer, walk-in cooler, and the wood shop freezer. All piping was brazed copper.

Existing Conditions

The existing refrigerant piping was insulated and in good condition.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Integrated Automation Overview

Synopsis

Building controls are a combination of the original pneumatic controls and the electronic or DDC controls that have partially replaced the pneumatic controls in the building. Most of the pneumatic controls are either removed or abandoned in place. The DDC controls are basic in their control sequences with manual adjustments, on/off control, and monitoring being the only forms of control. Facility staff have had issues with the DDC control system since its installation in 2008.

Control Systems

Description of Existing Systems

The building's control systems have been partially upgraded from the original pneumatic control system to electronic controls. Most of the electronic controls are integrated into a Siemens DDC system. The heating control system includes DDC-monitored electronic zone valves and wall-mounted thermostats. The air handler three-way heating control valves have recently been updated to have DDC-controlled Belimo actuators. The three-way control valve located between the main supply

and return headers in the boiler room was pneumatically controlled. Some of the ceiling recessed cabinet unit heaters still utilized pneumatic controls. The locker rooms were one instance of this.

The air handlers and the associated mixing box dampers are controlled by a DDC system. As the air handlers are constant volume, there are no variable frequency drives (VFDs) for the DDC system to monitor or control. There is currently no pneumatic or DDC control for the VAV boxes and they are set in fixed positions.

The existing DDC system has a partial graphics front end.

Existing Conditions

Per facility staff, there are ongoing issues with the control of the unit heaters and fintube. There have been numerous complaints since their DDC upgrades in 2008. Specifically, the interaction between the control valve and thermostat has issues and the heat either comes on or turns off completely. In 2021, a new DDC system was installed for the AHUs and it has been functioning properly since its installation

The VAV boxes pneumatic controls and associated appurtenances are abandoned in place and not in use including the control panels, air compressor, and controls. The controls were modified to electric last summer. The VAV boxes are manually set in fixed positions and do not modulate based on space occupancy or temperature.

The air handling unit control panels do not display the correct pressure or activations. The control panels are abandoned in place.

The duct smoke detector for air handler, AHU-7, was installed in open air and supported with insulation.

The DDC temperature sensor located in the MPR had a blank screen and did not appear to be functional.

The DDC temperature sensor in Room 27 was damaged on its side.

Overall, the pneumatic controls are in poor condition with a large portion of the system being abandoned in place. The 2008 DDC controls are in fair condition but have a number of deficiencies. Per facility staff, there are ongoing issues with the control of the system and the graphics front end is difficult to use. Facility staff indicate no issues with the DDC installed in 2021.

Code Deficiencies

There are no known code deficiencies.

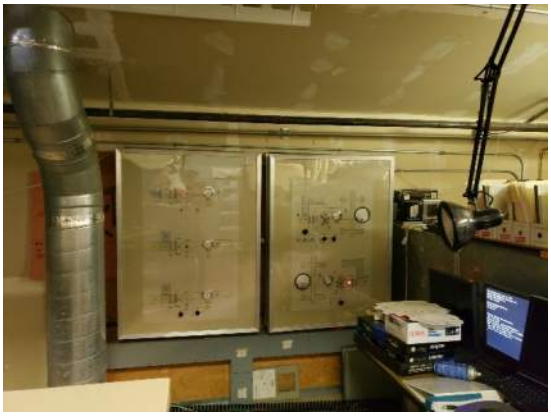
Recommendations

- Upgrade remaining pneumatic controls to DDC controls.
- Update DDC graphics to be more user friendly.
- Demolish all abandoned equipment.
- Repair or replace DDC temperature sensor in the MPR.

Estimates

See Attachment A for Cost Model.

AHU-7 Return Air Smoke Detector


AHU Pneumatic Control Panels

Fire Protection Overview

Riser & Equipment

Description of Existing Systems

The sprinkler riser is in Janitor's Room 21. The 6" fire sprinkler main tees off the 6" water service. The fire sprinkler riser is comprised of galvanized steel piping. The riser has a 4" Ames Colt 200 double check valve backflow preventer assembly with outside stem and yoke (os&y) gate valves with tamper switches on either side of the backflow preventer. The fire sprinkler riser serves the fire department connection, wet sprinkler system, and dry sprinkler system. The wet sprinkler system tap includes an os&y gate valve with tamper switch, test and drain assembly, 4" swing check valve, 4" System Sensor WFD40 water flow detector, and pressure indicators. The dry sprinkler system tap includes an os&y gate valve with tamper switch, a FireLock NXTS/768 4" dry alarm valve, and an air compressor. Both the dry and wet sprinkler systems connect to the main system drain.

Existing Conditions

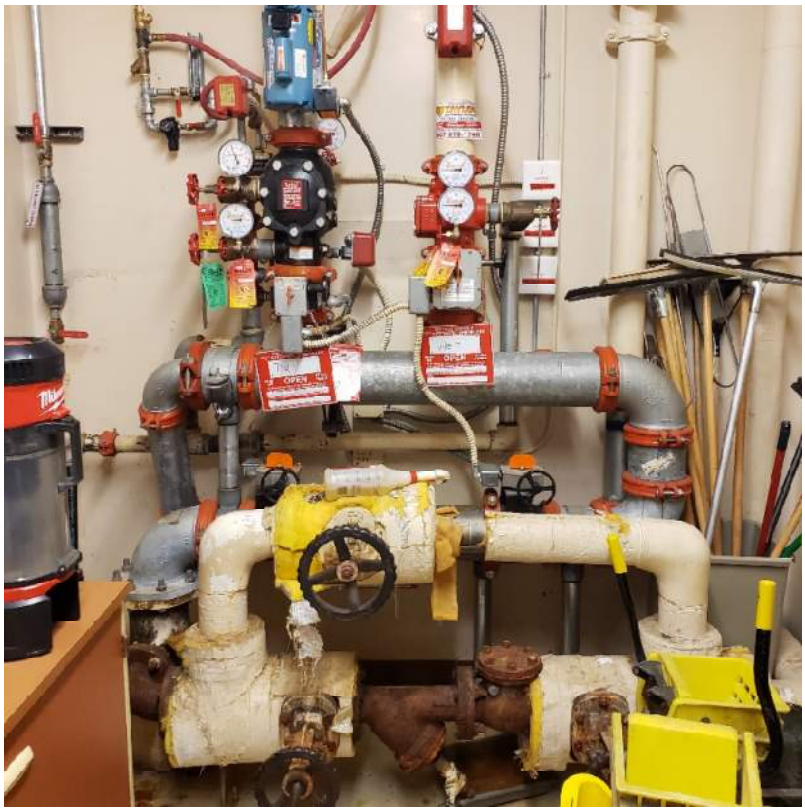
The fire sprinkler riser was replaced in 2008 and is in fair condition. Annual testing has been performed by Taylor Fire Protection Services. The fire sprinkler riser operating pressure during the survey was 50 psig. The wet sprinkler system operating pressure was 50 psig. The dry sprinkler system operating pressure was 40 psig downstream of the dry alarm valve.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.



Fire Sprinkler Riser

Sprinklers & Piping

Description of Existing Systems

The dry sprinkler piping is comprised of galvanized steel piping with Victaulic rigid couplings. The wet sprinkler piping is comprised of black steel piping. The exposed wet sprinkler piping is painted. The wet sprinkler piping uses Victaulic rigid couplings on larger piping and threaded steel fittings on smaller piping. Pendent-style fire sprinkler heads with threaded connections and exposed escutcheons are used in most of the building. Upright sprinkler heads with guards are utilized in the gymnasium.

Existing Conditions

The dry sprinkler piping in the two mechanical utilidors is routed along the floor and is a tripping hazard. Within the same utilidors, a Victaulic coupling was leaking on the dry sprinkler piping.

Sprinkler heads were missing escutcheons in the Library and Classroom 220.

Sprinkler heads were located above the projectors in Classrooms 205, 221, and 314. The sprinkler flow pattern is obstructed as a result.

Nurse's room 20 has the main sprinkler system drain line routed exposed on the wall.

Utilidor Dry Sprinkler Pipe

Sprinkler Head Missing Escutcheon

Sprinkler Head Above Projector

Exposed Sprinkler Drain Line

Code Deficiencies

There are no known code deficiencies.

Recommendations

- Provide pipe covers over the dry sprinkler piping located in the utilidor that are tripping hazards. This will prevent damage to the sprinkler piping and facility staff injuries.
- Provide escutcheons for sprinkler heads where noted above as missing.
- Relocate projectors to eliminate conflicts with sprinkler heads and associated flow patterns.

Estimates

See Attachment A for Cost Model.

Special Mechanical Systems Overview

Fuel Supply (Gas & Oil)

Description of Existing Systems

Fuel oil is gravity fed from the fuel storage tank to the adjacent boiler room through a two-pipe, supply and return, fuel piping system. For more information on the fuel storage tank and exterior piping, reference the Site and Infrastructure section. The piping is schedule 40 threaded, painted steel piping. There is no intermediate day tank within the boiler room. The fuel storage tank serves two 11.6 GPH Buderus GE515/10 oil-fired boilers and one 2.0 GPH PVI Maxim 250-gallon oil-fired water heater. The water heater is equipped with a Firepower B40-1 oil burner. The boilers are each equipped with a Becket CF2300A oil burner. The water heater has isolation valves, strainers, a check valve, a fusible link fire safety valve, a fuel oil filter, and flexible hoses on their fuel oil piping serving the unit. The boilers have isolation valves, a fusible link fire safety valve, a fuel oil filter, a check valve, and flexible hoses on their fuel oil piping serving the units.

The commercial kitchen propane gas system is served by two exterior skid-mounted storage tanks. For more information on the propane storage tank and exterior piping, reference the Site and Infrastructure section. The interior propane gas piping is black steel piping with threaded malleable iron fittings. Flexible connectors are installed at equipment connections. An emergency propane shut-off valve and associated signage are in a recessed wall box between the kitchen and Home Economics room. The propane gas piping serves the stackable gas ranges, range, and deep fryer.

The science lab propane gas system is served by an exterior pad-mounted propane storage tank. For more information on the propane storage tank and exterior piping, reference the Site and Infrastructure section. The interior propane gas piping is concealed. There is a main propane shut-off ball valve with the handle exposed on the side of one of the cabinets. There are propane gas deck-mounted stainless steel propane gas turrets with integral ball valves installed at each lab station. Additionally, the fume hood has two integral propane gas valves with adjustable handles and turrets.

Existing Conditions

The interior fuel oil piping, valves, and associated appurtenances were in fair condition.

The interior propane gas piping, valves, and associated appurtenances for the commercial kitchen were in good condition.

The interior propane gas piping, valves, and associated appurtenances for the science lab were in fair condition. One of the adjustable knobs for the fume hood propane gas system was missing. The system was off during the survey. However, facility staff noted this system was utilized during the school year.

Boiler Fuel Oil Piping

Water Heater Fuel Oil Piping

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Dust Collection Systems

Description of Existing Systems

The dust collection system serves the wood shop and the associated dust-producing equipment. The dust collection system is comprised of a dust collector located in a closet with round painted ductwork that currently feeds a floor sweep and a 2" flex hose. The system has five capped connections. Additionally, the system's make-up air comes from a filter bank and rectangular ductwork located above the fenced area of the room. The dust collector included a blower motor and a 1/3 HP dust collector motor. The dust collector had a removable basin below the unit for dust collection disposal.

Existing Conditions

Per facility staff, the dust collection system is scheduled to be modified this summer to accommodate the relocation of the art room and connection of existing shop equipment. The dust collection system was tested to be operational and confirmed by the facility staff. Overall, the dust collection system is in fair condition. The filter bank located in the fencing adjacent to the dust collector was not securely fastened.

Dust Collector

Dust Collection System

Code Deficiencies
Currently, the dust-producing equipment in the wood shop is not properly exhausted in accordance with Section 511 of the 2021 IMC. Additionally, due to the lack of information available on the existing dust collector, we were unable to verify if the dust collector or associated ductwork meets the requirements of Section 511 of the 2021 IMC or Chapter 22 of the 2021 IFC.

Recommendations
Evaluate and modify the dust collection system such that it complies with applicable sections of the 2021 IMC and 2021 IFC.

Estimates
See Attachment A for Cost Model.

Compressed Air & Vacuum Systems

Description of Existing Systems
A Spencer S-242 Industrvac 5 HP, 150 CFM, stationary, self-contained central vacuum is in the mezzanine above the wood shop. The central vacuum system serves the various steel vacuum hose connections located throughout the building. PVC piping is utilized to connect the central vacuum to the vacuum hose connections.

A gray Ingersoll-Rand T30 7HD 7.5 HP two-stage reciprocating air compressor is in the boiler room. The air compressor is floor-mounted on spring vibration isolators. The air compressor serves the fire sprinkler system and the wood shop. The associated piping is painted steel piping with threaded steel fittings.

A blue Quincy QTS5 5 HP single stage splash-lubricated air compressor is in the boiler room. The air compressor is floor-mounted on vibration isolator pads. The air compressor serves the pneumatic controls system. The unit has an associated air dyer and control panel mounted on the wall behind the unit. The air dryer is a Hankison International 8010-115 10 CFM air dryer.

Existing Conditions
Per facility staff, the central vacuum system is still operational and utilized with no known issues. The central vacuum system is in fair condition.

The fire sprinkler and wood shop air compressor were operating at 100 psig during the survey. The unit has been regularly inspected and maintained and is in fair condition.

The pneumatic control air compressor and associated air dryer and control panel have been abandoned in place. Overall, the unit, control panel, and air dryer appear in fair condition.

Code Deficiencies
There are no known code deficiencies.

Recommendations
Demolish the blue air compressor and associated control panel and air dryer.

Estimates
See Attachment A for Cost Model.

Central Vacuum System


Fire Sprinkler & Shop Compressor


Pneumatic Control Air Compressor

Air Dryer

Other Special Mechanical Systems

Description of Existing Systems
A residential-grade General Electric stackable, front-load, ventless electric dryer is in the commercial kitchen. The exhaust duct is routed to a filter.

Two residential-grade front load electric dryers are in the laundry room adjacent to the gymnasium. Both units are ducted to the building exterior.

Existing Conditions
The dryer located in the kitchen was in good condition.

The dryers located in the laundry room were in fair condition.

Code Deficiencies
There are no known code deficiencies.

Recommendations
None.

Kitchen Dryer

Laundry Room Dryers

Electrical

Synopsis
The electrical system is mostly original, with the exception being the recently installed educational kitchen, facility kitchen, generator, and service equipment. As a whole the electrical infrastructure is in decent condition and while select items need to be addressed, there is no deep systemic issues that cannot be easily resolved. The report will focus on code deficiencies, safety concerns, functional needs, and the health of the occupants.

Service & Distribution Overview

The service was replaced as part of the Kitchen Addition effort. The remaining existing equipment appears generally to be in good condition.

Main Distribution Panels & Switchgear

Description of Existing Systems
All of the building panels are fed via the main switchboard. The switchboard is 120/208Y, 3 pole, 4 wire, 1000A, rated for 22 KAIC (Thousand Amps Interruption Capacity).

Existing Conditions
At the time of the condition assessment, the Switchgear was from the original construction but was in good condition. Staff reported that new breakers could still be obtained and almost all of the breakers are labeled. Since the condition assessment, new switchgear has been installed as part of the kitchen renovation project.

Code Deficiencies
Some of the breakers are unlabeled.

Recommendations
Label unlabeled breakers

Estimates
No cost – part of ongoing construction effort.


Original Switchgear (left); New Switchgear (right)

Panels & Motor Control Centers

Description of Existing Systems

The 1200A, 120V/208Y electrical service was recently upgraded as part of the School Generator project to add an ATS (Automatic Transfer Switch) and a Standby Generator, which feeds into a switchboard located in the electrical room. There are eighteen field panels located throughout the building.

Existing Conditions

The ATS and main service disconnect had not arrived on site yet, and the generator has not been commissioned. The electrical panels are of a range of age, from original (1983) to new (2022).

Code Deficiencies

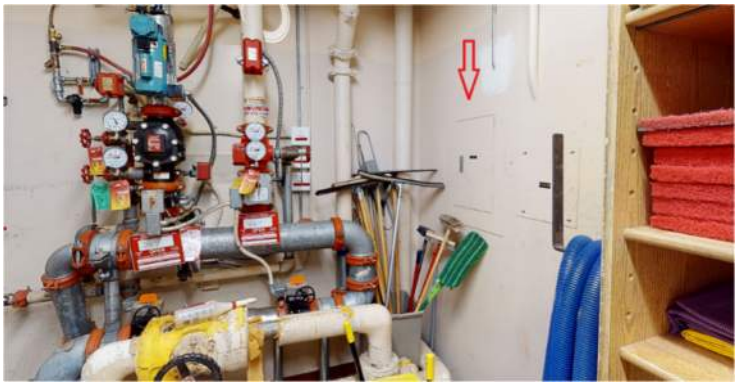
The electrical panel "CP" is located in the Janitor Room 21 is located so that the water and fire riser pipe is right in front of it. NEC (National Electrical Code 2020, NFPA 70) requires three foot front working clearance in front of it.

Recommendations

Relocate the panel by either rotating 180 degrees so the panel opens into the hallway, or move to a new location and utilize the existing panel enclosure as a terminal box.

Estimates

See Attachment A for Cost Model.



Panel Located near Water Riser

Transformers

Description of Existing Systems

Service transformer identified as "0897" located near the kitchen addition. This transformer has been replaced since the condition assessment, as part of the Kitchen Addition project.

Code Deficiencies

Transformer and transformer vault are located near a fuel tank located outside. The fuel tank is piped into the science classroom for Bunsen burners. The fuel tank is ~42" from the transformer, and ~36" from the transformer vault. The vault and transformer and potentially located within the hazardous location boundaries caused by the tank.

Recommendations

While a detailed analysis should be performed to determine the exact hazardous location boundaries, if the tank and tank enclosure are moved at least 10 feet away from any electrical equipment, conduits, vaults, or similar then no other modifications would be required.
See section on Civil/Mechanical Utilities: Fuel Systems for details of the relocation of propane tank.

Estimates

See Attachment A for Cost Model.

Distance between the Transformer Propane Tank

Lighting Overview

The light system is split into two components, internal lighting and external lighting. Generally the external light fixtures needs to be replaced, and the older internal light fixtures need to be replaced.

Site Light Fixtures

Description of Existing Systems - Site

Site lighting mostly consists of wall-mounted lights, most of which are bulbs. Not all lights are functional. The kitchen extension has newer LED lights. There are pole-mounted lights for the parking lot, but no site lighting for the playground.

Code Deficiencies

There is no site lighting for the playground. The parking lot is insufficiently lit, but due to night conditions in the summer when the site visit occurred, actual light conditions could not be measured.

Recommendations

- Add a pole light across the road for the parking spots.
- Add site lighting for the playground.
- Replace failed fixtures with new LED fixtures.

Estimates

See Attachment A for Cost Model.

Site Lighting – LED lights on Kitchen Addition (left); wall-mounted lights on original building (right)

Interior Light Fixtures

Description of Existing Systems - Internal

Internal Lighting, Hallways – The hallway lighting has been recently replaced with 2'x2' LED fixtures (Backlit LED Panel Light, Make: Keystone Model: KT-BPLED40PS-22-8CSA-VDIM / G2). The hallway lighting dispersion and levels are excellent, with footcandles ranging from 20 to 38, with the recommended minimum of 20 footcandles. The white light is pleasant on the eyes while providing even coverage and no harsh lighting locations.

Internal Lighting, Classrooms and Offices – The classroom and office lighting is very inconsistent. Some offices have differently colored light bulbs and overbright yellow light (100 footcandles), while others are severely underlit (down to 7 footcandles), while the target value is 30-40 footcandles. All the classrooms and offices use 2'x4' fluorescent direct lighting.

Internal Lighting, Gymnasium – The gymnasium does have LED lighting with wire guards, but some of the fixtures could not be turned on. It is unclear if the fixtures have failed or if they are not getting power (wiring or contactor issue). The basketball court had an average of 30 foot candles which is ideal, but the audience area was underlit. It is expected if the two unlit fixtures were on there would be no issues.

Internal Lighting, Bathrooms – The classroom and office lighting is very dark. Minimum lighting is 10 footcandles, and all bathrooms have locations with less than 5 footcandles.

Egress (Emergency) Lighting – While some of the exit signs have integral lights, no location has sufficient egress lighting in the event of a power outage.

Code Deficiencies

The underlit and over lit spaces need to have their lighting changed for health and code compliance. All spaces require additional egress lighting.

Recommendations

The new LED fixtures being used in the hallway should be used in the classrooms and offices as well for ease of installation, ordering, and minimizing different spares on site. The new 2'x2' light fixtures should be evenly spaced in the dropped ceiling across the room for even distribution. Two new 2'x2' light fixtures should be provided for every single 2'x'4 being replaced, but the two 2'x2' should not be side-by-side but evenly located in the room. Ideally the classrooms will have two lighting circuits to allow for different lighting levels.

The new LED fixtures can also be used as egress lighting to avoid having to test stand-alone units. To minimize routine testing costs, emergency inverters can be located in utility rooms or hallways for ease of access (ladder and ceiling tile removal not required) and can provide power to multiple locations.

The bathrooms are all hard lid ceilings. As such, a surface mount kit (such as KT-BPLED-SM-22-KIT) could be used to install bulk-bought LED fixtures in the bathrooms.

Estimates

See Attachment A for Cost Model.

Left to Right: Hallway with new LED lighting, Storage Room with Ex. 2'x4' fluorescent lights, Classroom with Ex. 2'x4' fluorescent lights

Lighting Controls

Description of Existing Systems
The internal lights are controlled by switches, outside by photocell.

Existing Conditions
The light controls are all in good condition.

Code Deficiencies
No code deficiencies.

Recommendations
None

Conduit & Wiring

Description of Existing Systems
The existing wiring is cable in conduit, with feeders being in underground conduit and branch circuit both underground and above ceiling raceway.

Existing Conditions
Cables and raceway generally appear to be in good condition.

Code Deficiencies
None.

Recommendations
None.

Power Overview

In general, the electrical equipment is in good condition and can continue to be used until they are broken, failed, or require additional functionality.

Devices & Connections – All locations except new Kitchen (Room 30)

Description of Existing Systems and Conditions
Receptacles and receptacle faceplates are of ranging quality and condition, some new and other existing and broken.

Code Deficiencies
All receptacles must have faceplates to protect the wiring and receptacle terminals and people and vice versa. Per NEC 406.12 Tamper-Resistant Receptacles, all of the 15- and 20-ampere, 125- and 250-volt nonlocking-type receptacles in classrooms, hallways, nurse's room, and areas where students are likely to be require listed tamper-resistant receptacles.

Recommendations
Ensure all receptacles have faceplates, ideally steel to minimize potential for breakage.
Ensure all non-locking 15- and 20-ampere, 125- and 250-volt receptacles in classrooms, hallways, nurse's room, and other areas where students are likely to be to be listed tamper-resistant.

Estimates
See Attachment A for Cost Model.

Devices & Connections – Nurse's Room and Preschool room

Description of Existing Systems and Conditions
A classroom was converted into a nurse's room and preschool room. Receptacles are plentiful but located low, within reach of preschoolers' fingers. As the room is used for examination and first aid treatment, this room is treated by the NEC as "Patient Care Space, Basic Care (Category 3) Space", defined as "Space in which failure of equipment or a system is not likely to cause injury to the patients, staff, or visitors but can cause patient discomfort" and "Category 3 spaces, formerly known as basic care rooms, are typically where basic medical or dental care, treatment, or examinations are performed. Examples include, but are not limited to, examination or treatment rooms in clinics, medical and dental offices, nursing homes, and limited care facilities".

Additional consideration will be taken into account due to the presence of preschool aged kids. Note that this only applies to the room itself, not adjacent rooms or hallways.

Code Deficiencies
Lack of compliance with NEC 517.13 (A)

- *All branch circuits serving patient care spaces shall be provided with an effective ground-fault current path by installation in a metal raceway system or a cable having a metallic armor or sheath assembly. The metal raceway system, metallic cable armor, or sheath assembly shall itself qualify as an equipment grounding conductor in accordance with 250.118.*
- Note that is it possible some or the entire room is already compliant with this code section as a receptacle covers were not removed and raceway not opened.

Lack of compliance with NEC 517.13 (B)

- *The following shall be directly connected to an insulated copper equipment grounding conductor that is clearly identified along its entire length by green insulation and installed with the branch circuit conductors in the wiring methods as provided in 517.13(A): (1) The grounding terminals of all receptacles other than isolated ground receptacles; (2) Metal outlet boxes, metal device boxes, or metal enclosures; (3) All non–current-carrying conductive surfaces of fixed electrical equipment likely to become energized that are subject to personal contact, operating at over 100 volts; (4) Metal faceplates, by means of a metal mounting screw(s) securing the faceplate to a metal yoke or strap of a receptacle or to a metal outlet box.*
- Note that is it possible some or the entire room is already compliant with this code section as a receptacle covers were not removed and raceway not opened.

While not required by code, it is advisable that the receptacles have GFCI protection.

Recommendations

- An electrician to identify compliance with NEC 517.13 (A) and (B) should inspect the space and resolve any non- compliant installations.
- Install a single (or more) GFCI receptacle(s) to protect all receptacles in the room.

Estimates
See Attachment A for Cost Model.

Nurse and Preschool room with low receptacles

Devices & Connections – Old Kitchen (Room 10B)

Description of Existing Systems and Conditions

This room has some receptacles located at above countertop and below the countertop, in addition to the typically located receptacles. If this room is to continued to be used for food preparation then all receptacles need to be changed to GFCI. If food is not being prepared in this space but the sink is kept, ensure all receptacles within 6' from the top edge of the bowl of the sink are GFCI.

Code Deficiencies

If this room is to continued to be used for food preparation then all receptacles need to be changed to GFCI.

If food is not being prepared in this space but the sink is kept, ensure all receptacles within 6' from the top edge of the bowl of the sink are GFCI.

Recommendations

If this room is to continue to be used for food preparation, then all receptacles need to be changed to GFCI. If food is not being prepared in this space but the sink is kept, ensure all receptacles within 6' from the top edge of the bowl of the sink are GFCI.

Estimates

See Attachment A for Cost Model.

Left to Right: Sink with receptacles nearby, Sink with receptacles across the room

Devices & Connections – New Kitchen (Room 30)

Description of Existing Systems and Conditions

The new kitchen is currently completely installed but not yet commissioned. It appears to have power (the lights and coolers are functional and receptacles have power).

Code Deficiencies

While some of the receptacle had GFCI protection, many receptacles that require it to not have it. Contract drawing E201 Note 1 from the 2021 kitchen addition correctly notes that NEC 210.8 (B) (2) requires the following receptacles to have GFCI protection, either at the receptacle or the breaker

- *All 125-volt through 250-volt receptacles supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, and all receptacles supplied by three-phase branch circuits rated 150 volts or less to ground, 100 amperes or less, installed in the locations specified in 210.8(B)(1) through (B)(12) shall have ground-fault circuit-interrupter protection for personnel*

Recommendations

Replace breakers for the circuits that need GFCI protection with GFCI breakers.

Estimates

No additional cost as original drawings require these circuits to have GFCI protection. Code (life safety) issue

NOTES:

1. PROVIDE GFCI RECEPTACLES AS REQUIRED BY NEC 210.8 (B) (2). WHERE RECEPTACLES ARE NOT READILY ACCESSIBLE, PROVIDE GFCI CIRCUIT BREAKERS.

Note from Drawings (above), Kitchen electrical panel

Devices & Connections – Shop (Room 24)

Description of Existing Systems and Conditions

The wood shop room electrical system consists of two local panels, standard 120V wall mounted receptacles, and cord drops powered from ceiling mounted receptacles. There are two emergency

power off buttons that disable power to the receptacles. There is an existing dust collector of questionable functionality. The dust collector is required to run while cutting wood to prevent wood dust build up and requirement to classify the space as a Class 2 space as identified in the NEC, Article 502.

Code Deficiencies
The locations of the existing shutdown buttons difficult to reach in emergency conditions.

Recommendations
- Receptacles should have dust covers to prevent build-up of wood dust.
- An additional emergency shutdown button should be in a central location, on, or near the exit door, in a location where no equipment or material will block it.
- Additional receptacles should be located in the fenced-off area with ground-fault protection.

Estimates
See Attachment A for Cost Model.

Left to Right: Emergency Shutdown Button behind equipment, Gated off area

Devices & Connections – Classroom (Room 204)

Description of Existing Systems and Conditions
The science classroom have sinks and countertop receptacles.

Code Deficiencies
All receptacles located within 6’ of sink edges are required to have GFCI protection.

Recommendations
Replace receptacles located within 6’ of sink edges with GFCI receptacles.

Estimates
See Attachment A for Cost Model.

Receptacle near sink above countertop

Devices & Connections – Boiler (Room 26)

Description of Existing Systems and Conditions
The boiler room is fully packed with equipment, piping, raceway, and electrical enclosures.

Code Deficiencies
Many disconnects for equipment in the boiler room have clearance issues. At least three feet working clearance in front of all disconnects and control panels are required.

Recommendations
Relocate disconnects, equipment, and/or piping to accommodate clearance requirements.

Estimates
See Attachment A for Cost Model.

Left to Right: Disconnects blocked by tanks, Disconnects blocked by pumps

Conduit & Wiring

Description of Existing Systems
The conduit and wiring are mostly original installation, site appropriately, and are listed for their use and location.

Existing Conditions
Wiring and raceway that was available for inspection appeared to be in good condition.

Code Deficiencies
None.

Recommendations
None.

Special Systems Overview

There are multiple special systems in the school. The Fire Alarm System, Data and Communication system, Clock system, Intercom system, and Security system were all briefly reviewed while on site and discussed with site personnel. None of these systems have major issues.

Fire Alarm

Description of Existing Systems
There is an existing fire alarm system that appears to be well maintained. Maintenance personal and local records indicate appropriate maintenance is being performed. The locations of annunciation and detection devices appear to be sufficient.

Existing Conditions
There is a known issue with the fire alarm panel and the replacement component is on order.

Code Deficiencies
None.

Recommendations
None.

Data & Communications

Description of Existing Systems
The building is served by a 100 MB/s (Mega Bit per second), up and down, internet connection. There is a core switch and three Level 2 switches that feed recessed wall CAT6 ports and WAP (Wireless Access Points) throughout the building.

Existing Conditions
The phone system is old and there are issues with logging in to the phone system to address issues, as the login information is lost and there is not a way to bypass the login.

Code Deficiencies
Not a code deficiency but a functional deficiency. During times of heavy loading (other schools visiting, conferences, competitions), the data rate is throttled by the ISP. It is unclear if this is limitation is due to local infrastructure bottlenecks (service drop, backbone to the school) or due to Skagway-wide infrastructure bottlenecks (getting the data out of Skagway).

Recommendations
Coordinate with the school ISP to determine cause of the bottleneck.

Security Systems

Description of Existing Systems
The security system is an MGI systems installation, there are no reported issues and is functioning well and will not be further evaluated.

Existing Conditions
Good condition, no identified or known issues.

Code Deficiencies
None

Recommendations
None

Clock Systems

Description of Existing Systems
The clock system has been newly replaced and is functioning well and will not be further evaluated.

Existing Conditions
Good condition, no identified or known issues.

Code Deficiencies
None

Recommendations
None

Intercom Systems

Description of Existing Systems
The intercom system has been newly replaced and is functioning well and will not be further evaluated.

Existing Conditions
Good condition, no identified or known issues.

Code Deficiencies
None

Recommendations
None

Other Electrical Systems Overview

The only additional electrical system under review is the grounding system. A code compliant and complete ground system reduces the possibility of inadvertent sparking and initiating a fire.

Grounding Systems

Description of Existing Systems

Based on the 2021 drawings, a new ground bar will be installed and connection via code sized ground cables to a concrete encased electrode, water pipe, ground rods, and building steel. There is a ground bus in the main switchgear located in the bottom left. Due to the location the ground bus and the inability to remove power from the adjacent terminals the actual ground connections could not be confirmed.

Code Deficiencies

The fuel oil piping and propane piping were not grounded.
If not completed, ground connections as shown on the 2021 drawings need to be completed.

Recommendations

- Ground the fuel oil piping and propane piping.
- Complete the ground connections as shown on the 2021 drawings.

Estimates

See Attachment A for Cost Model.

Equipment and Furnishings

Equipment Overview

Food Service & Kitchen Equipment

Description of Existing Systems

The commercial kitchen contains a variety of food preparation and storage equipment. For information on plumbing fixtures, plumbing equipment, and propane gas located in the kitchen, reference the appropriate sections of this report.

The kitchen contains two stackable Garland MCO-GS-10S 60,000 Btu/hr propane gas full size convection ovens, a Pitco single vat floor-mounted propane gas-fired deep fryer, a Garland nine burner gas range with storage, and a Cleveland Range KEL25T 25-gallon electric tilting steam-jacketed kettle.

A Streivor Air Systems WCLC 1365722.5 wall-mounted Class I kitchen exhaust air hood without fire dampers is located above the ovens, deep fryer, range, and kettle. The hood has an associated controller for the fan and hood lights located on the wall opposite the hood.

Existing Conditions

The equipment and exhaust hood are in good condition. The exhaust hood control panel and associated exhaust fan and lights were verified to operate during the survey.

Code Deficiencies

There are no known code deficiencies.

Recommendations

None.

Kitchen Equipment

Exhaust Hood

Science Equipment

Description of Existing Systems

A Labconco Protector laboratory fume hood is installed in the science lab. The fume hood is a cabinet mounted unit with integral lights, exhaust fan, water connections, and propane gas connections. The

unit has a manual switch for both the lights and exhaust fan. The propane gas and water connections are discussed in previous sections.

Existing Conditions
The fume hood exhaust fans and lights were operational. One of the gas knob adjustable handles had been removed. The sash sealed upon closure and the fan was manually enabled with a switch on the front face of the unit. Overall, the unit was in fair condition.

Code Deficiencies
There are no known code deficiencies.

Recommendations
Provide new propane gas nozzle for fume hood.

Estimates
See Attachment A for Cost Model.


Science Lab Fume Hood

Attachments

Survey, reports, and other documentation such as ADA Surveys, AHERA Surveys, Fire Marshal Inspection Reports, and similar documentation shall be referenced under this section of the condition survey and attached if available.

Attachment A Skagway School Remodel Cost Estimate.

This estimate was developed using the Department of Education & Early Development (DEED) 2023 Program Demand Cost Model for Alaskan Schools.

Attachment B ADA Assessment of Skagway School.

This assessment was performed under a separate project by Southeast Alaska Independent Living, Inc. (SAIL).

Attachment C Skagway School As-Builts

Attachment A

Cost Model

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
1	Civil	11.02	Site Work: Paving Replacement	4	Site and Infrastructure: Site Improvements: Vehicular Surfaces	<5 yrs	502: Accessible Parking Spaces 502.6: Sign Identification	2-3 years	Resurfacing and restriping the asphalt driveway is recommended. Line parking lot to clearly delineate the dedicated, marked, accessible spaces.	$71,965	$227,618	Civil - 1
2	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	5	Site and Infrastructure: Site Improvements: Pedestrian Surfaces	<5 yrs			Replace bike rack	$1,000	$3,163	Civil - 1
4	Civil	11.03	Site Work: Fencing Replacement	9	Site and Infrastructure: Site Improvements: Fencing and Gates	<5 yrs	No	One rolling gate inoperable. Others 5-10 year remaining.	Replacing the wooden post with a new metal pole on the baseball field fence is recommended, as well as replacing the out-of-plumb fence posts near each gate with latch gaps. Replacing the inoperable rolling gate on the playground fence is also recommended.	$4,660	$14,738	Civil - 1
5	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	10	Site and Infrastructure: Site Improvements: Site Furnishings & Equipment	5 to 15 yrs	No	5-10 years	Construct a permanent propane tank storage pad outside of the minimum separation distance from the generator.	$3,556	$11,246	Civil - 1
7	Civil	11.13	Site Grading/Drainage	12	Site and Infrastructure: Site Improvements: Playgrounds	<5 yrs	No	5-10 years	Regrade the baseball field.	$16,500	$52,188	Civil - 1
8	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	13	Site and Infrastructure: Site Improvements: Freestanding Shelters	5 to 15 yrs	No	5-10 years	Repaint, replace fascia, and repair the broken benches for both baseball dugouts.	$5,000	$15,815	Civil - 1
9	Mechanical	11.181	Other Repairs/Replacement/Demolition (Estimate)	16	Site and Infrastructure: Civil/Mechanical Utilities: Water System	<5 yrs	No	Some parts no	Replace rusted water service components with new coated valves that are designed for condensation. Replace main water shut-off valves (that don't seat) with new coated ball valves.	$50,000	$158,145	Mech -1
10	Civil	11.56	Roofing: Replace Roof Drain/Rain Leader	18	Site and Infrastructure: Site Drainage	<5 yrs	No	0	4-inch PVC drainage pipes are present in the columns attached to the deck adjacent to the main entry, and it is assumed they discharge under the deck. The 4-inch PVC drainage pipes were reported to be leaking during the winter of 2021/22, and ice buildup was present around the column exteriors. Repairing the drainage in the deck columns is also recommended.	$32,832	$103,844	Arch -2
12	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	21	Civil/Mechanical Utilities Overview: Fuel Systems	HLS	Yes, NFPA 30A and 2021 International Fire Code (IFC) Section 5704.2.7.3.3.	0	Replace the above ground fuel storage tank and correct the foundation and grounding issues, Relocate science lab propane storage tank to a code-compliant location and extend the piping accordingly, Reconnect to existing piping.	$35,000	$110,702	Civil - 1
13	Structural	11.11	Foundation and Substructure: Repairs (Estimate)	23	Substructure: Standard Foundations & Basements: Foundation Walls & Treatment	>15 yrs	No		Provide soil covering to prevent further damage to existing foundation insulation by weed whackers.	$1,500	$4,744	Civil - 1
14	Structural	11.11	Foundation and Substructure: Repairs (Estimate)	25 and ADA p25	Substructure: Slab on Grade: Structural & Non-Structural Slabs	HLS	303: Changes in level 302.3: Openings in floor or ground surface	0	Demolish and replace settled slabs.	$30,000	$94,887	Civil - 1
15	Structural	1.20	Superstructure: Repairs (Estimate)	30	Superstructure: Stair Structure	5 to 15 yrs	No	10yrs	Crack in the exterior concrete stairs should be injected with epoxy to protect the reinforcing from corrosion.	$400	$1,265	Misc
17	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	34	Exterior Enclosure: Exterior Walls: Original Semi-Vented Wood Clad Rainscreen Wall Assembly & New Wood Clad Wall Assembly	5 to 15 yrs	IECC 2021 – wall assembly does not utilize continuous insulation (ci), min R5.	10yrs	Install new siding system. **Total siding approx. 13,500SF.**	$343,791	$1,087,377	Arch - 6

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
19	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	36	Exterior Enclosure: Exterior Walls: Brick Veneer Wall Assembly	<5 yrs	Original design code – the chase is required to be one hour rated. This rating would apply to those portions of the enclosure that separate it from the building interior which should include joint and penetration firestopping. Firestopping is noted as missing at flue penetration through this wall.	5yrs	Remove and dispose of chase cap flashing. Demolish chase, three-sides, preserve in-place building exterior wall chase abuts. Confirm exterior wall in this location is insulated, and is 1hr assembly. Upgrade as needed including replacement of moisture damaged GWB at wall interior and exterior and installation of penetration and joint firestopping as necessary. Frame, new chase with 2x hem/fir and sheathing. Framed assembly should be designed by struct engineer for conformance with modern code with respect to lateral loading. Install weather barrier Vaproshield Wrapshield SA. Install vertical PT 1x2 furring 16" OC to maximize venting and drainage – furring to be fastened to studs. Install shiplap or bevel cedar cladding, horizontally, painted. Detail continuous, 316 SS screened vent opening at top edge of cladding and continuous, 316 SS screened vent/drain opening at bottom edge of cladding. Fabricate and install new chase cap flashing.	$95,000	$300,476	Arch - 5
20	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	37	Exterior Enclosure: Exterior Finish Carpentry Assemblies	5 to 15 yrs	No	5 yrs	Approximately one half of the exterior finish carpentry components are in good condition and do not require attention other than periodic painting. The other half are in poor condition and should be replaced with allowance for better venting and drainage. If original wood clad rainscreen system is replaced however, all exterior finish carpentry should be replaced with it for a complete, new system.	$200,000	$632,580	Arch - 6
21	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	38	Exterior Enclosure: Exterior Soffit/Fascia Assemblies	<5 yrs	Yes, vents must be screened	Soffit vent screening [1], 0yr	Add soffit screens 316 SS wire mesh.	$5,760	$18,218	Arch - 4
22	Architecture	11.40	Exterior Closure: (Replace Windows)	40	Exterior Enclosure: Exterior Glazing: Windows	5 to 15 yrs	2021 IECC – Thermal performance of existing windows likely does not meet the U value requirements of modern energy code, noted as U.3 for 2021 IECC climate zone 6.	•Window frames [4], 20yr •Window frame cladding/coating [2], 5yr •Window IGUs [2], 5yr •Window head flashing [2], 5yr •Window rough opening flashing [3], 10yr (unclear extent to which this is a problem)	Recommend replacing all windows with fiberglass clad wood framed windows, or with fiberglass windows with high-performance IGUs utilizing appropriate low-emissivity coatings to help control both heat loss and heat gain.	$160,574	$507,881	Arch - 6

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
23	Architecture	11.38	Exterior Closure: (Replace Doors and Frames)	41	Exterior Enclosure: Exterior Doors: Personnel Doors and Overhead Door	<5 yrs	Yes. •2021 IBC: See specific deficiencies note above under Existing Conditions •2021 IECC: Existing hollow metal doors do not conform with current energy code	0 yrs	Recommend replacing all existing and replacement hollow metal doors with new, thermally broken aluminum framed entrance doors, side lites and door hardware matching replacement Doors E200 and E300. There are 8 doors to be replaced. Doors don't conform to current energy code and some doors don't meet 2021 IBC code as detailed in report.	$145,479	$460,137	Arch -1
24	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	46	Roof Systems: Pitched Roofing:	<5 yrs	2021 IECC – inadequate insulation to meet recommended R value. Current R-value calculated at R40. Recommended R value is R60 for 2021 IECC Zone 6A – Cold/Humid.	Cupola flashin	Cupolas should be deconstructed, re-detailed and built-back to address flashing and penetration deficiencies noted. This work would necessarily include new roofing in these two instances.	$35,000	$110,702	Arch - 4
25	Architecture	11.54	Roofing: Replace Asphalt Shingle Roofing	46	Roof Systems: Pitched Roofing	5 to 15 yrs	2021 IECC – inadequate insulation to meet recommended R value. Current R-value calculated at R40. Recommended R value is R60 for 2021 IECC Zone 6A – Cold/Humid.	5yrs	Recommend re-roof with heavy-duty architectural asphalt shingles for all of roof. Work should involve deconstruction and build-back of corbeled fascia/soffit assemblies to facilitate installation of proper step flashing at rake wall to roof intersections. Area 44,000SF	$1,033,856	$3,269,985	Arch - 4
26	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	49	Roof Systems: Pitched Roof: Gutters and downspouts:	<5 yrs	No	•Built-in gutters and downspouts [1], 0yr •Fasia-mount gutters and downspouts [1], 0yr	Line built-in gutters with a continuous waterproof membrane. Downspouts should be replaced with continuous/jointless pipe downspouts. Recommend EPDM for membrane and grade 316 stainless steel tube for sleeves and downspouts. Roofing material adjacent to gutters will need to be removed to facilitate lapping membrane in and under existing roof underlayment. Exterior finish carpentry enclosures will need to be removed and replaced to facilitate this. Fascia-mount gutters should be removed and replaced. Additionally, fascia-mount gutters should be installed for full pitched roof perimeter except where built-in gutters are located.	$50,000	$158,145	Arch -2
27	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	56	Interiors: Special Partitions: Operable Partitions	5 to 15 yrs	Unknown	5 yrs	Remove inoperable partitions and replace with wood framed/gypsum faced infill, or other.	$13,608	$43,041	Misc
27	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	56	Interiors: Special Partitions: Operable Partitions	5 to 15 yrs	Unknown	5 yrs	All partitions should be verified as operable, and partition materials should be verified by review of original construction submittals (unavailable to design team) for fire propagation and smoke developed characteristics with respect to Chapter 8 of the International Building Code.	$400	$1,265	Misc
28	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	56	Interiors: Special Partitions	<5 yrs	No	<5 yrs	Replace stage curtain	$5,000	$15,815	Misc
29	Architecture	NA	NA	57	Interiors: Specialties: Special Partitions: Railings and Screens	>15 yrs	No	20 yrs	Chain link enclosure incidentally acts as guard. Verify that it meets OSHA requirements for guards serving regularly unoccupied service spaces.	$0	$0	Arch -3

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
30	Architecture	11.63	Replace Door Leaf and Frames	59	Interiors: Interior Openings: Personnel Doors	HLS	•2021 IBC – Door I300: The force for pushing/pulling interior swinging egress doors shall not exceed 5 pounds. (1010.1.3) •NFPA 101: Classrooms and other spaces where students congregate do not have a means of securing the space from the inside except by use of portable emergency securing device. The portable devices themselves can impede egress and can also be misplaced/lost. (15.2.2.2.4)	5yrs	Replace all interior doors and hardware. Hardware, however, should be specified to integrally allow for emergency securement of doors serving any spaces where students congregate. Ensure ADA interior door width requirements are met (reference Project/Item #112)	$284,462	$899,725	Arch -1
31	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	60	Interiors: Interior Openings: Special Doors	HLS	•2021 IBC – Appears gate in closed position could create a dead-end corridor creating a life/safety hazard.	0 years	Remove pneumatic gate from Hallway 100B. Replace ACT with full tiles in location where gate was visible from below.	$5,000	$15,815	Arch -1
32	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	62	Interiors: Interior Openins: Windows & Sid	5 to 15 yrs	No	10 yrs	While side lites are in good condition, there is no visible labeling identifying it as safety glazing. Recommend side lites be replaced with labeled safety glazing. Glazing within 24" of door or 18" of floor finish surface should be tempered.	$10,668	$33,742	Arch -1
33	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	64	Interiors: Interior Finishes: Floor Finishes	<5 yrs	None	0 years	•Vinyl tile: Vinyl tile in classrooms and multipurpose room should be replaced within 5 years with modern, extra thick wear layer, waxless vinyl flooring. •Vinyl Flooring: Replace vinyl floor on the stage and repair wood on south edge of the Stage where trim is delaminating. •Ceramic Tile: Remove tile, grout and thinset or mastic. Repair/prep substrate as necessary, apply new tile with appropriate modified thinset and with control/expansion joints designed to alleviate existing cracking conditions.	$59,774	$189,059	Arch -3

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
34	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	66	Interiors: Interior Finishes: Wall Finishes	<5 yrs	None	5yrs	•Painted gypsum boards should be patched and repaired as needed, paint to match surrounding area •Wood wainscot surface and finish carpentry should be repaired in areas of damage, prepped and repainted. Provide corner protection in vulnerable areas. •Remove tile, grout and thinset or mastic. If mastic, may contain asbestos- see environmental engineer's report. Repair/prep substrate as necessary, apply new tile with appropriate modified thinset and with control/expansion joints designed to alleviate existing cracking conditions. -Remove felt wall coverings in gymnasium, remove adhesive, prep underlayment or replace in kind as required for an applicable surface for a new wall covering to be installed. Replacement materials shall meet IBC Chapter 8 requirements.	25,000	$79,073	Arch -3
35	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	67	Interiors: Interior Finishes: Ceiling Finishes Finishes:	5 to 15 yrs	2021 IBC – Anticipate majority of ACT ceilings will require seismic bracing upgrades to bring them in conformance with current code.	5yrs	Recommend additional visual inspection of bracing, and add required bracing as per ASTM E580 as needed to the suspended grid.	$50,000	$158,145	Design
36	Architecture	11.86	Specialties/Furnishings and Equipment: Replace Tack/Chalk/Marker Boards	70	Interiors: Specialties: Interior Specialties	<5 yrs	No	5-10 years	Blackboards should be updated with white boards in the next five years to maintain consistency in writing surfaces for teachers.	$7,650	$24,196	Arch -3
39	Architecture	11.88	Specialties/Furnishings and Equipment: Replace Wall Hung Units	71	Interiors: Specialties: Casework/Millwork	5 to 15 yrs	Quality of Life	5yrs	Replace all upper casework with architectural plastic laminate faced premium grade, ADA compliant casework.	$71,419	$225,890	Arch -3
40	Architecture	11.90	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	72	Interiors:Specialties: Fire Extinguishers	HLS	•2021 IBC oClassrooms generally do not appear to have fire extinguishers. Per section 906.1 Exception 2 of the 2021 IBC, all classrooms shall be provided with a fire extinguisher with a minimum rating of 2:A:20:B:C. oKitchen addition appears to have class A extinguisher (based on color of cylinder), however class B, subclass K noted to be installed.	•Fire Extinguishers [3], 10 yr •Fire Hoses [1], 0 yr	•Check labeling to confirm required class of extinguisher in kitchen. •Confirm all fire extinguisher testing is current. (Extinguishers checked have service tags dated 4/23 and 5/23.) Replace fire extinguishers 10-12 years of age or older. •Provide all classrooms with portable fire extinguishers with a minimum rating of 2:A:20:B:C. •Remove all fire hoses (0 yrs life)	$0	$0	Misc

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
41	Architecture	11.89	Replace Window Coverings	73	Interiors: Specialties: Window Coverings	<5 yrs	Unknown	•Pull-down roller blinds [2], 5 yr •Cloth drapes [2], 5 yr	Replace all pull-down roller blinds and full length cloth drapes with duel light filtering/blackout roller shades complying with Chapter 8 of the IBC in the next 0-5 years.	$23,373	$73,927	Arch -3
42	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Waste & Vent Piping	<5 yrs	No	0	CCTV existing waste and vent piping.	$5,000	$15,815	Misc
43	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Waste & Vent Piping	<5 yrs	An indirect drainpipe discharges into the mop basin in the Janitor's room below the flood rim of the fixtures. This violates section 801.2 of the 2018 UPC. The source of the drainpipe is unknown.	0	Modify indirect drain piping in Janitor's room mop basin to provide code-required air gap.	$500	$1,581	Misc
44	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Plumbing Equipment	<5 yrs	No	0	Replace domestic hot water recirculation pump.	$15,000	$47,444	Mech -1
45	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	82	Mechanical: Waste & Vent Piping	<5 yrs	Quality of Life	0	Replace tailpiece, p-trap, and discharge piping for sinks in Classroom 301 and 315.	$2,100	$6,642	Mech -1
47	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: HVAC: Heating Equipment	<5 yrs	Per ASME CSD-1, boiler emergency shutdown pushbuttons are required on all doors exiting the boiler room. The pushbutton for the interior door is required to be located just outside the boiler room. The pushbutton for the exterior door is required to be located inside the boiler room on the wall next to the handle side of the door.	0	Provide Boiler Emergency Shutdown Pushbuttons	$7,500	$23,722	Mech -1
48	Mechanical	11.117	Mechanical: Replace Cabinet Unit Heaters	85	Mechanical: HVAC: Heating Equipment	<5 yrs	No	0	Repalce Unit Heater in Boiler Room	$4,121	$13,034	Mech -1
49	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: HVAC: Heating Equipment	<5 yrs	No	0	Replace Expansion Tank	$15,000	$47,444	Mech -1
50	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: HVAC: Heating Equipment	<5 yrs	No	0	Replace Glycol Tank	$4,000	$12,652	Mech -1
52	Mechanical	11.111	Mechanical: Replace Plumbing Fixtures Only	85	Mechanical: Plumbing Fixtures	<5 yrs	No	0	Replace specific instances where failures have occurred.	$30,634	$96,891	Mech -1
53	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	87	Mechanical: Plumbing: Plumbing Piping:	<5 yrs	No	0	Provide a booster pump packaged system.	$50,000	$158,145	Mech -1
54	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	87	Mechanical: Plumbing: Plumbing Piping:	<5 yrs	No	0	Replace angle stop valves where corrosion is visible.	$4,000	$12,652	Mech -1
55	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	87	Mechanical: Plumbing: Plumbing Piping:	<5 yrs	No	0	Replace gate isolation valves with ball isolation valves.	$10,000	$31,629	Mech -1
56	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Provide insulation on exposed steel piping on discharge of CP-3.	$1,000	$3,163	Mech -1
57	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace components that leak during system shutdown.	$2,000	$6,326	Mech -1
58	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace corroded piping.	$2,400	$7,591	Mech -1

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59	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace leaking automatic air vents, oxidized flexible piping, and oxidized drain valves.	$6,000	$18,977	Mech -1
60	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	88	Mechanical: HVAC: Heating Distribution System	<5 yrs	No	0	Replace non-functional gate valves.	$5,600	$17,712	Mech -1
61	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	89	Mechanical: Plumbing Equipment	<5 yrs	Per Section 608.3 of the 2018 UPC, water systems provided with check valves shall be provided with an approved, listed, and adequately sized expansion tank.	0	Provide expansion tank on cold water piping going to water heater.	$1,000	$3,163	Mech -1
62	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	89	Mechanical: Plumbing Equipment	<5 yrs	The combination temperature and pressure relief valve discharge capacity is less than that of the water heater it serves. This violates the 2018 UPC Section 504.6.	0	Replace combination temperature and pressure relief valve on water heater.	$1,000	$3,163	Mech -1
63	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Demolish Electronic Air Cleaner, EC-1.	$7,500	$23,722	Mech -2
64	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Pre-TAB Entire Building	$10,000	$31,629	Mech -2
65	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Repair damaged flex duct connections.	$5,000	$15,815	Mech -2
66	Mechanical	11.120	Mechanical: Replace Air Handling Unit	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Replace AHU-1, AHU-2, AHU-6, and AHU-7.	$459,792	$1,454,277	Mech -2
67	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	Section 505.6 of the 2021 IMC requires a domestic cooking exhaust system to be installed where domestic ranges are used for domestic purposes. The non-functional range hoods above the ranges in Kitchen 10B and Break Room 22 violate this section of the code.	0	Replace range hoods in Kitchen 10B and Breakroom 22.	$5,000	$15,815	Mech -2
68	Mechanical	11.119	Mechanical: Replace Ventilation Systems	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	Due to the poor condition of the air handling units and VAV boxes, it is highly likely that code-required minimum air flows are not being provided to some spaces.	0	Replace VAV boxes associated with AHU-1 and AHU-2.	$826,400	$2,613,823	Mech -2
69	Mechanical	11.121	Mechanical: New Exhaust Fan	93	Mechanical: HVAC: Ventilation Equipment	<5 yrs	ASHRAE Standard 170 Table 8-2	0	Ventilation Equipment: Replace Exhaust Fan, EF-1	$14,612	$46,216	Mech -2
70	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	99	Mechanical: HVAC: Ventilation Distribution Systems	<5 yrs	Section 602.2.1 of the 2021 IMC	0	Clean all ductwork.	$9,600	$30,364	Misc
71	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	99	Mechanical: HVAC: Ventilation Distribution Systems	<5 yrs	Section 602.2.1 of the 2021 IMC	0	Provide ducting between the air handlers and associated return air duct.	$500,000	$1,581,451	Mech -2
72	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	103	Mechanical: Integrated Automation Overview: Control Systems	<5 yrs	No	0	Demolish abandoned control equipment.	$5,000	$15,815	Mech -2
73	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	103	Mechanical: Integrated Automation Overview: Control Systems	<5 yrs	No	0	Update DDC graphics.	$10,000	$31,629	Mech -2

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74	Mechanical	11.123	Mechanical: New DDC Controls	103	Mechanical: Integrated Automation Overview: Control Systems	<5 yrs	No	0	Upgrade pneumatic controls to DDC.	$111,700	$353,296	Mech -2
75	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	106	Mechanical: Sprinklers and Piping	HLS	No	0	Provide escutcheons for sprinkler heads where noted as missing.	$250	$791	Mech -1
76	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	106	Mechanical: Sprinklers and Piping	<5 yrs	No	0	Provide pipe covers over dry sprinkler piping that are tripping hazards.	$1,000	$3,163	Mech -1
77	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	106	Mechanical: Sprinklers and Piping	<5 yrs	NFPA 13	0	Relocate projectors.	$2,400	$7,591	Mech -1
78	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	110	Mechanical: Special Mechanical Systems: Compressed Air & Vacuum Systems	<5 yrs	No	0	Demolish blue air compressor and associated control panel and air dryer.	$5,000	$15,815	Mech -1
79	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	110	Mechanical: Special Mechanical Systems: Dust Collection Systems	HLS	Currently, the dust-producing equipment in the wood shop is not properly exhausted in accordance with Section 511 of the 2021 IMC. Additionally, due to the lack of information available on the existing dust collector, we were unable to verify if the dust collector or associated ductwork meets the requirements of Section 511 of the 2021 IMC or Chapter 22 of the 2021 IFC.	0	Evaluate and modify dust collection system.	$50,000	$158,145	Mech - 3
80	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	113	Electrical: Service & Distribution: Main Distribution Panels & Switchgear	<5 yrs	Some of the breakers are unlabeled.	0	Label unlabeled breakers	$0	$0	Misc
81	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	116	Multiple. Electrical: Lighting Overview: Site Light Fixtures & Lighting	<5 yrs	There is no site lighting for the playground. The parking lot is insufficiently lit	0	Site Lighting: Add a pole light across the road for the parking spots, Add site lighting for the playground, Replace failed fixtures with new LED fixtures. Installation of two light poles, with lights and cables.	$10,000	$31,629	Civil - 1
82	Electrical	11.143	Electrical: New Power Panel	117	Electrical: Service & Distribution: Panels & Motor Control Centers	HLS	The electrical panel "CP" is located in the Janitor Room 21 is located so that the water and fire riser pipe is right in front of it. NEC (National Electrical Code 2020, NFPA 70) requires three foot front working clearance in front of it.	0	Relocate the panel by either rotating 180 degrees so the panel opens into the hallway, or move to a new location and utilize the existing panel enclosure as a terminal box.	$12,309	$38,932	Elec - 2
83	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Boiler (Room 26): Relocate disconnects, equipment, and/or piping to accommodate clearance requirements.	$10,000	$31,629	Elec - 2
84	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Classroom (Room 204): Replace receptacles located within 6' of sink edges with GFCI receptacles	$300	$949	Misc

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85	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Ensure all receptacles have faceplates, ideally steel to minimize potential for breakage. Ensure all non-locking 15- and 20-ampere, 125- and 250-volt receptacles in classrooms, hallways, nurse's room, and other areas where students are likely to be to be listed tamper-resistant.	$2,000	$6,326	Misc
86	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Nurse's Room and Preschool Room: An electrician to identify compliance with NEC 517.13 (A) and (B) should inspect the space and resolve any non-compliant installations. Install a single (or more) GFCI receptacle(s) to protect all receptacles in the room.	$300	$949	Misc
87	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Old Kitchen (Room 10B): If this room is to continue to be used for food preparation, then all receptacles need to be changed to GFCI. If food is not being prepared in this space but the sink is kept, ensure all receptacles within 6' from the top edge of the bowl of the sink are GFCI.	$750	$2,372	Misc
88	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	124	Electrical: Power: Devices & Connections	HLS	NEC 406.12	0	Shop (Room 24): •Receptacles should have dust covers to prevent build-up of wood dust. •An additional emergency shutdown button should be in a central location, on, or near the exit door, in a location where no equipment or material will block it. •Additional receptacles should be located in the fenced-off area with ground-fault protection.	$10,000	$31,629	Elec - 1
89	Electrical	11.181	Other Repairs/Replacement/Demolition (Estimate)	127	Misc	HLS	The fuel oil piping and propone piping were not grounded. If not completed, ground connections as shown on the 2021 drawings need to be completed.	0	Ground the fuel oil piping and propone piping.Complete the ground connections as shown on the 2021 drawings.	$400	$1,265	Misc
90	Electrical	11.145	Electrical: Replace Lighting - Fixtures Only	119 & 120	Multiple. Including Lighting: Lighting: Interior Light Fixtures	HLS	The underlit and over lit spaces need to have their lighting changed for health and code compliance. All spaces require additional egress lighting.	0	INTERIOR: The new LED fixtures being used in the hallway should be used in the classrooms and offices as well for ease of installation, ordering, and minimizing different spares on site. The new 2'x2' light fixtures should be evenly spaced in the dropped ceiling across the room for even distribution. Two new 2'x2' light fixtures should be provided for every single 2'x'4 being replaced, but the two 2'x2' should not be side-by-side but evenly located in the room. Ideally the classrooms will have two lighting circuits to allow for different lighting levels.	$227,378	$719,174	Elec - 1
91	Architecture	11.42	Exterior Closure: Other Repairs (Estimate)	44 and ADA report (Attachment B) Page 30	Exterior Enclosure: Exterior Accessories: Other Exterior Accessories	<5 yrs	2021 IBC – transitions to adjacent concrete are not ADA compliant and present a significant trip hazard. ADA 405.2 Slope and Cross Slope and ADA 405.2: Ramp Slope	5 years	Exterior Enclosure: Exterior Accessories: Other Exterior Accessories: Demo existing deck adjacent to the main building entry and replace with new concrete flatwork or a furred composite wood decking system. Need 1,100SF.	$36,667	$115,973	Civil - 1

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119	Architecture	NA	NA	multiple	Interiors	HLS	High	0	As a part of any future renovation work, recommend environmental engineer sample and test for presence of Asbestos Containing Materials.	$60,000	$189,774	Design
122	Structural	1.20	Superstructure: Repairs (Estimate)	30	Superstructure: Stair Structure	5 to 15 yrs	No	0	To fix the excessive deflection at the interior steel stair's landing, install additional steel angle supports to better support the steel grating providing a stiffer walking surface.	$5,000	$15,815	Civil - 1

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93	Architecture - ADA	11.111	Replace Plumbing Fixtures Only	ADA report (Attachment B) Page 11	Commercial kitchen	HLS	ADA Section 606.2.7: Lavatories and Sinks	0	Provide one sink which has 11''-25'' of knee depth below the sink (Appendix 5) - This been fixed as of the final report	$0	$15,815	Misc
94	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 12	Commercial kitchen	HLS	ADA Section 606.2.7: Lavatories and Sinks	0	Relocate storage box to ensure appropriate knee and foot clearance distance under sink - This has been fixed as of the final report	$0	$0	Misc
95	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 14	Mail room near main entrance	HLS	ADA Section 603.2.1/304: Turning Space	0	Ensure floor space is cleared to provide for a 60'' diameter circle or T-shaped space for turning	$0	$0	Misc
97	Architecture - ADA		11.181 Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 17	Multiple	HLS	ADA Section 604.5: Grab bars; ADA Section 213.3.4: Sinks; ADA Section 605.2: Urinals height and depth	0	Bathrooms: boys bathroom near 5th grade classroom: Remove grab bars attached to toilet. Cover exposed pipes at accessible sink to protect knees against contact. In girls' locker room replace toilet with one that has flush on 'open' side. Move toilet tissue dispensers in 5 bathrooms so the the toilet paper outlet is a maximum height of 48'' above the finish floor and maintaining at least 2" between the top gripping surface of the grab bar and the toilet paper dispenser outlet (ADA report page 6,7,16,18,24). In girls restroom near the stage/music room and main school entrance, and in commercial kitchen, lower towel dispenser so that operable portion is a maximum of 48'' from the ground. Ensure height of accessible urinal has a rim with a maximum height of 17'' above the finished floor and remove the platform (Appendix 6).	$9,000	$189,774	Misc
99	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 15, 18, 22	Room 316, girls locker room, commercial kitchen, Room 216, gymnasium laundry room.	HLS	ADA Section 403.5.1: Clear width, ADA Section 305.3: Clear Floor or Ground Space	0	Remove or relocate items in front of the doorway to ensure a 36" wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32" for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum. Provide a 60" round or T-shaped turning area in gymnasium laundry room.	$0	$0	Misc
100	Mechanical			ADA report (Attachment B) Page 19	Teacher's lounge	HLS	ADA Section 308.3: Reach Ranges	0	Consider replacement of fridge/freezer with one that has freezer drawer on bottom	$500	$316	Misc
101	Architecture - ADA		11.90 Specialties/Furnishings and Equipment: Other Repairs (Estimate)	ADA report (Attachment B) Page 21 and 23	Girls and Boys's locker rooms	HLS	ADA Section 222/803: Locker Rooms 903: Benches	0	Remove bench from center of locker room and install bench which meets minimum ADA requirements (20'' deep, 42'' long, 17'' above finished floor), flush to wall.	$0	$0	Arch -1
102	Architecture - ADA			ADA report (Attachment B) Page 24	Gym	HLS	ADA Section 304: Turning Space 403.5.1: Clear width circulation paths	0	Consider removal/relocation of some fixed gym equipment to ensure enough floor space is cleared to provide for a 36'' wide pathway to/from the door. Also, consider keeping a 60'' diameter circle of floor space free near free-weight area to allow for activity space	$0	$0	Misc
103	Architecture - ADA	11.111	Replace Plumbing Fixtures Only	ADA report (Attachment B) Page 24	Girls locker room	HLS	ADA Section 604.8.2: Flush controls	0	Replace toilet with one which has flushing mechanism on the "open" side	$2,553	$8,074	Misc
104	Civil - ADA	11.181	Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 26	Playground	HLS	ADA Section 240.2.1: Ground Level Play	0	Install 2 additional ground-level play components in addition to bringing the swingset up to ADA standards. Install accessible swing seat accessory and harness.	$15,000	$47,444	Civil - 2
106	Civil - ADA	NA	No cost	ADA report (Attachment B) Page 27	Playground	HLS	ADA Section 403.5: Clear width	0	Remove or relocate item along corridor to ensure a 36" width minimum is maintained along the route of travel	$0	$0	Misc
107	Civil - ADA	11.181	Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 27 and Page 26	Playground	HLS	American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99; American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99 ADA Section 240.2.1: Ground Level Play Components. 302.1: Accessible ground surfaces	0	Replace surface under swings with rubber tiles or poured in place rubber. Replace gravel paths around playground areas with accessible ground surfaces that is stable, firm, and slip resistant.	$203,000	$642,069	Civil - 2

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109	Architecture - ADA			ADA report (Attachment B) Page 3	Handrail leading up to the stage/music room.	HLS	ADA Section 505.3; 505.10: Handrails	0	Replace/repair handrail	$7,000	$22,140	Misc
110	Architecture - ADA			ADA report (Attachment B) Page 3 and 4	Top of the ramp leading to the bathrooms and stage/music room, and at the landing near the door to the stage/music room	HLS	ADA Section 405.7: Landings	0	Modify landing to meet 60" x 60" requirement (Appendix 1)	$50,000	$158,145	Arch -1
111	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 3, 8, 10, 20, 22, 23	Door to the stage/music room, Entrance to girls locker room, Entrance to gymnasium laundry room, Entrance door to boys locker room, Entrance door to the gymnasium, Door to the student use kitchen areas behind the main cafeteria, Main door to the library	HLS	ADA Section 404.2.9: Door and Gate Hardware	10 years (just needs manual adjustment)	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force. See Instructions (Appendix 2 of ADA Report). Doors will all be replaced under a separate project recommended by the architect on page 59 of the Condition Report, section 'Interiors: Interior Openings: Personnel Doors'. The cost for this is Line Item 11.63 in the estimate.	$0	$0	Misc
112	Architecture - ADA			ADA report (Attachment B) Page 4		HLS	ADA Section 404.2.3: Clear Width	0	Increase door width to meet 32'' minimum. Door width (28'') does not meet minimum ADA standards. No cost shown for this item,as it will be addressed in larger project to replace all interior doors (reference Project/Item #30)	$0	$0	Arch -1
113	Architecture - ADA			ADA report (Attachment B) Page 6	Entrance of girls restroom near the stage/music room and main school entrance	HLS	ADA Section 404.2.4.1.a: Maneuvering Clearances at Manual Swinging Doors and Gates	0	Increase space between wall and pull side of door to 18'' while maintaining appropriate door width	$1,200	$3,795	Arch -1
115	Architecture - ADA			ADA report (Attachment B) Page 7	Boys restroom near the stage/music room and main school entrance	HLS	ADA Section 403.5.1: Clear width	0	A minimum width of 36" is required for path of travel. A narrowing of the path to 32" is permitted for a maximum length of 24". Consider installing sinks which do not project as far into path of	$5,000	$15,815	Arch -1
116	Architecture - ADA			ADA report (Attachment B) Page 8	Water fountain near the library	HLS	ADA Section 602.1-602.6: Drinking Fountains	0	Consider lowering water fountain, pending age of main users	$2,000	$6,326	Arch -1
117	Architecture - ADA			ADA report (Attachment B) Page 9	Student use kitchen areas behind the cafeteria	HLS	ADA Section 902.3: Built-in Elements; Dining, Counters, and Work Surfaces. ADA Section 804.2: Kitchens and Kitchenettes ADA Section 902.4: Dining Surfaces and Work Surfaces for Children's Use. ADA Section 606.2: Lavatories and Sinks. Clear Floor Space	0	Provide a counter space with height between 28''-34'' above the finished ground The tops of tables and counters shall be between 26"-30" if the kitchen is being used by children. Considered low priority/not applicable - children do not use kitchens	$0	$0	Arch -3
120	Architecture - ADA	N/A	N/A	ADA report (Attachment B) Page 10, 11, 13	Commercial Kitchen	HLS	ADA Section 403.5.1	0	Remove or relocate items in front of the doorway to ensure a 36" wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32" for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	$0	$0	Misc
121	Architecture - ADA	11.181	Other Repairs/Replacement/Demolition (Estimate)	ADA report (Attachment B) Page 21	Boys locker room	HLS	ADA Section 403.5.1	0	Replace garbage can with one that does not protrude into the path of travel in front of the sink	$100	$316	Misc
3	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	7	Site and Infrastructure: Elevated Decks, Stairs & Ramps	HLS	ADA code violation	10 years	Site and Infrastructure, Elevated Decks, Stairs & Ramps, Resurfacing exterior metal handrails and making all repairs required for ADA compliance	$10,000	$31,629	Civil - 1
6	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	10	Site and Infrastructure: Site Improvements: Site Furnishings & Equipment	HLS	ADA Section 303.4: Curb ramps 406.8: Detectable warnings	0	Replace faded site signage and school crossing striping. Install ADA-complaint, signage for curb cuts (3). Install signs, including van accessible, per ADA Standards.	$15,000	$47,444	Civil - 1

Item #	Discipline	Estimate Item	Estimate Line Item Name	Page of Report	Section of Report	Priority	Code Violation Details	Expected Life	Description	Cost (without markups)	Cost with markup	Phase
37	Architecture	11.9	Specialties/Furnishings and Equipment: Other Repairs (Estimate)	70 and ADA report page 19	Interiors: Specialties: Interior Specialties	HLS	ADA Section 703.4: Signs 216.8 Toilet Rooms and Bathing Rooms	0 years	Room identification signage should be replaced with signage that conforms with the American Disabilities Act.	$6,500	$20,559	Arch -1
38	Architecture	11.87	Specialties/Furnishings and Equipment: Replace Base Cabinet Units	71	Interiors: Specialties: Casework/Millwork	HLS	ADA code violation	•Classroom,	Replace all lower casework with architectural plastic laminate faced premium grade, ADA compliant casework.	$244,284	$772,646	Arch -3
46	Mechanical	11.131	Mechanical: Other Repairs/Replacement (Estimate)	85	Mechanical: Plumbing Fixtures	HLS	ADA		Install p-trap safety covers on lavatory p-traps.	$2,250	$7,117	Mech -1
51	Mechanical	11.111	Mechanical: Replace Plumbing Fixtures Only	85	Mechanical: Plumbing Fixtures	HLS	ADA	0	Replace sink basins in science lab.	$20,275	$64,128	Mech -1
92	Civil	11.181	Other Repairs/Replacement/Demolition (Estimate)	5 and ADA Report Pages 28, 29, 30.	Site and Infrastructure: Site Improvements: Pedestrian Surfaces	HLS	ADA 35.151 Construction and alterations: streets, roads, sidewalks, highways; ADA section 302.3 Openings in Ground Surface. ADA Section 206.2.1: Site Arrival Points to Accessible Routes 502: Accessible Parking Spaces 502.6: Sign Identification. 406: Curb Ramps	0	Site and Infrastrucutre: Pedestrian Surfaces: Replace the deteriorated sidewalks, curbs, bike rack near the baseball field, and make all repairs for ADA compliance. Ensure path of travel does not go behind parked vehicles or across the active parking lot. Install a ramped curb cut for access to the accessible path.	$340,000	$1,075,387	Civil - 1

Attachment B

ADA Assessment

ADA Building and Site Access Consultation

Facility Name: School
Location: 1563 Main Street, Skagway AK 99840
Contact: Tyson Ames
Date of Assessment: 05/04/2023
Assessor: Bridget Thomson, Accessibility Specialist, Southeast Alaska Independent Living, Inc. (SAIL)
Contact Information: bthomson@sailinc.org or 888-487-0992.

Executive Summary

Thank you for your accessibility inquiry. The following document outlines specific accessibility issues (areas of ADA non-compliance) in and around the K-12 School in Skagway, Alaska. This assessment is based on the 2010 ADA Standards for Accessible Design, 2014 Accessibility Checklist for Existing Facilities, and Universal Design concepts. *The information, materials, and/or technical assistance that are provided is intended as general, and are neither a determination of your legal rights or responsibilities under the ADA or any other law nor binding on any agency with enforcement responsibilities under the ADA*.

The School accessibility concerns broadly fall into 4 main categories:

1) In-building hallways, doorways, and surrounding routes for pedestrian travel
   Unobstructed corridors with sufficient space for travel and turning, flush/level surfaces without abrupt threshold transitions, and light/easily operable doors allow for smooth and safe travel around and in the building.
2) Height of surfaces
   Counters, tables, switches, latches, and mirrors all have specific minimum and maximum height requirements to allow for multi-functional use by those in both seated and standing positions.
3) Lack of accessible bathrooms and locker rooms
   There are numerous details underlying ADA-compliant bathrooms and locker rooms ranging from toilet seat height and stall width to specifications surrounding sink lever style and location of flushing lever.
4) Inaccessible playground
   Smooth, level play surface with ample ground-level elements allow for inclusive participation

When planning for future School modifications to fix these areas of accessibility concern, we broadly recommend:

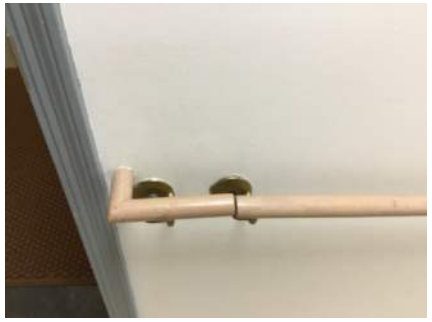
1) Removing obstacles and, when necessary, re-considering floor plans of hallways and pedestrian routes to ensure proper width and ease of access. Adjusting door closers to ensure 5lb max opening force.
2) Ensuring the height of all useable surfaces and operable tools meet the ADA standards outlined in the body of the report
3) Minor remodels/adjustments to existing bathrooms to meet the ADA criteria outlined both in the report, cited document below[1], and the additional guides provided in the Appendix
4) Replacement of playground play surface and addition of new ground-level elements[2]

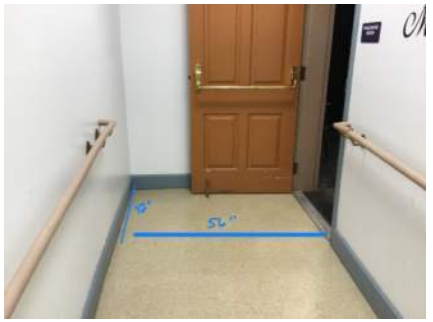
Note that you may find it cost prohibitive to complete all recommended modifications at one time. This summary can serve as a guide to help establish a phased plan for future upgrades.

[1] https://www.access-board.gov/files/ada/guides/toilet-rooms.pdf
[2] https://www.access-board.gov/files/ada/guides/play-areas.pdf

ADA Site Consultation Report

The following areas do not currently meet standards:

Reference	Accessibility Issue	Comments or Suggestions	Location Identifier	Image
ADA Section 405.7: Landings	Landing at point of ramp direction change (56” x 56”) does not meet minimum ADA standards	Modify landing to meet 60” x 60” requirement (Appendix 1)	Top of the ramp leading to the bathrooms and stage/music room	
ADA Section 404.2.9: Door and Gate Hardware	Door to the stage/music room requires 10 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force. Instructions (Appendix 2)	Door to the stage/music room	
ADA Section 505.3; 505.10: Handrails	Handrail is not continuous	Replace/repair handrail	Handrail leading up to the stage/music room.	

ADA Section 404.2.3: Clear Width	Door width (28’’) does not meet minimum ADA standards	Increase door width to meet 32’’ minimum		
ADA Section 405.7: Landings	Landing at bottom of ramp is too small (56” x 42”)	Modify landing to meet 60” x 60” requirement	Landing near the door to the stage/music room	

ADA Section 703.4: Signs 216.8 Toilet Rooms and Bathing Rooms	Door signage needs to be on latch side of door, not hinge side of door Signs must be provided indicating the location of the nearest accessible toilet room.	Move signage to opposite side of door, maintaining current height (Appendix 3) Add signage indicating the nearest accessible restroom.	Girls restroom near school/music room and main school entrance	
ADA Section 703.4: Signs 216.8 Toilet Rooms and Bathing Rooms	Door signage needs to be on latch side of door, not hinge side of door Signs must be provided indicating the location of the nearest accessible toilet room.	Move signage to opposite side of door, maintaining current height Add signage indicating the nearest accessible restroom.	Boys restroom near school/music room and main school entrance	

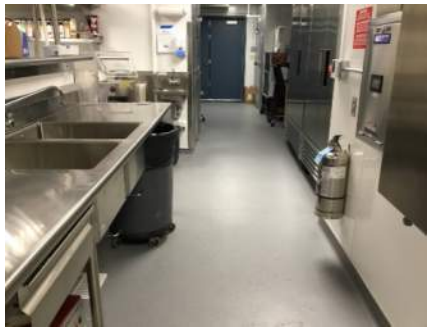
ADA Section 404.2.4.1.a: Maneuvering Clearances at Manual Swinging Doors and Gates	Insufficient horizontal distance between wall and pull side of door (16”)	Increase space between wall and pull side of door to 18” while maintaining appropriate door width	Entrance of girls restroom near the stage/music room and main school entrance	
ADA Section 308.2; 308.3: Reach Ranges	Height of operable portion of towel dispenser (50”) exceeds maximum ADA standards	Lower towel dispenser so useable portion is a maximum of 48” from the ground	Girls restroom near the stage/music room and main school entrance	
ADA Section 604.9.6: Dispensers	Toilet tissue dispenser located in inaccessible location (on wall opposite toilet)	Move toilet tissue dispenser to side wall adjacent to the toilet, ensuring all ADA standards for height are maintained (Appendix 4)	Main stall of the girls restroom near the stage/music room and main school entrance *(Appendix 10) See clip 604.9 for varying toilet heights by age	

			group.	
ADA Section 604.9.6: Dispensers	Toilet tissue dispenser located in inaccessible location (on wall opposite toilet)	Move toilet tissue dispenser to side wall adjacent to the toilet, ensuring all ADA standards for height are maintained	Main stall of the girls restroom near the stage/music room and main school entrance	
ADA Section 403.5.1: Clear width	Width of path of travel (27'') does not meet ADA minimum standards	A minimum width of 36” is required for path of travel. A narrowing of the path to 32” is permitted for a maximum length of 24”. Consider installing sinks which do not project as far into path of travel to ensure a 32” width minimum is maintained	Boys restroom near the stage/music room and main school entrance	

ADA Section 602.1-602.6: Drinking Fountains	This is an ADA compliant water dispenser if the primary users are adults. Drinking fountains primarily used by children ages 12 and younger should have a maximum spout height of 30’’	Consider lowering water fountain, pending age of main users	Water fountain near the library	
ADA Section 404.2: Door and Gate Hardware	Door requires 8 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force.	Main door to the library	

ADA Section 902.3: Built-in Elements; Dining, Counters, and Work Surfaces ADA Section 902.4: Dining Surfaces and Work Surfaces for Children's Use ADA Section 606.2: Lavatories and Sinks. Clear Floor Space ADA Section 804.2: Kitchens and Kitchenettes	Height of all counters exceeds maximum allowance under ADA Clearance between base cabinets is 58" Sink does not provide knee clearance	Provide a counter space with height between 28''- 34'' above the finished ground The tops of tables and counters shall be between 26"-30" if the kitchen is being used by children. In U-Shaped kitchens, clearance between all base cabinets should be 60 in. minimum Provide 24" of knee clearance from the floor.	Student use kitchen areas behind the cafeteria	

ADA Section 404.2: Door and Gate Hardware	Door requires 8 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force.	Door to the student use kitchen areas behind the main cafeteria	
ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Commercial kitchen	

ADA Section 606.2.7: Lavatories and Sinks	No sinks provide roll under options	Provide one sink which has 11’’-25’’ of knee depth below the sink (Appendix 5)	Commercial kitchen	
ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Commercial kitchen	

ADA Section 606.2.7: Lavatories and Sinks	Storage obstructing accessible, roll under sink	Relocate storage box to ensure appropriate knee and foot clearance distance under sink	Commercial kitchen	
ADA Section 308.3: Reach Ranges	Height of operable portion of towel dispenser (67”) exceeds maximum ADA standards	Lower towel dispenser so that operable portion is a maximum of 48” from the ground	Commercial kitchen	

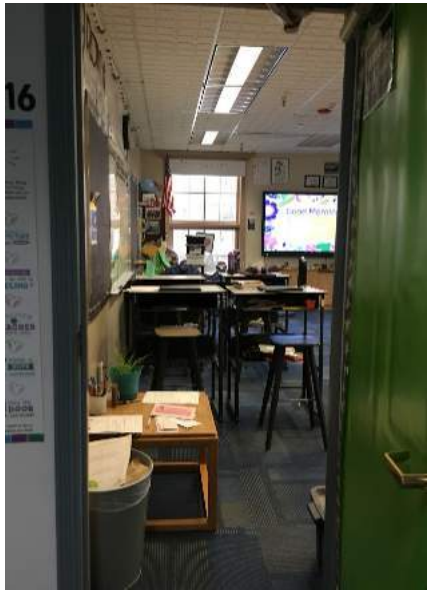
ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Commercial kitchen	
ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Commercial kitchen	

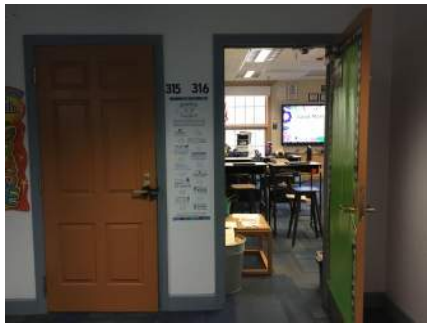
ADA Section 308.3: Reach Ranges	Height of operable portion of towel dispenser (67”) exceeds maximum ADA standards	Lower towel dispenser so that operable portion is a maximum of 48” from the ground	Commercial kitchen	
ADA Section 603.2.1/304: Turning Space	Not enough clear floor space to allow for ADA-compliant turning radius	Ensure floor space is cleared to provide for a 60” diameter circle or T-shaped space for turning	Mail room near main entrance	

ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Room 216	
ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Room 216	

ADA Section 213.3.4: Sinks	Exposed plumbing pipes under sink	Place covering over exposed pipes at the accessible sink to protect against knee contact	Boys bathroom near 5th grade classrooms	
ADA Section 604.7: Dispensers	Toilet tissue dispenser located above grab bar. When toilet paper dispensers are installed above the grab bar, the outlet of the toilet paper dispenser must be 48” maximum above the finish floor and the top of the gripping surface of the grab bar must be 33-36” maximum above the finish floor.	Move toilet tissue dispenser so the the toilet paper outlet is a maximum height of 48’’ above the finish floor. Maintaining at least 2” between the top gripping surface of the grab bar and the toilet paper dispenser outlet.	Boys bathroom near 5th grade classrooms	

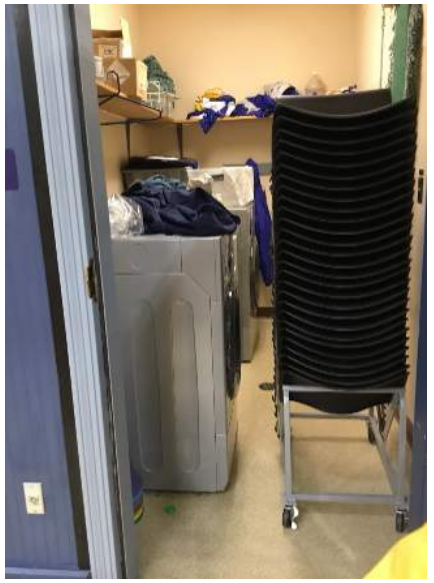
ADA Section 604.5: Grab bars	Grab bars attached to toilet are redundant when appropriate grab bars are placed around toilet.	Remove grab bars attached to toilet as they may provide a barrier to a lateral transfer	Boys bathroom near 5th grade classrooms	
ADA Section 605.2: Urinals height and depth	Presence of step-up platform decreases the accessibility of the urinal	Ensure height of accessible urinal has a rim with a maximum height of 17'' above the finished floor and remove the platform (Appendix 6)	Boys bathroom near 5th grade classrooms	

ADA Section 604.7: Dispensers	Toilet tissue dispenser located above grab bar. When toilet paper dispensers are installed above the grab bar, the outlet of the toilet paper dispenser must be 48” maximum above the finish floor and the top of the gripping surface of the grab bar must be 33 -36” maximum above the finish floor.	Move toilet tissue dispenser so the toilet paper outlet is a maximum height of 48’’ above the finish floor	Boys bathroom near 5th grade classrooms	
ADA Section 403.5.1: Clear width	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate items in front of the doorway to ensure a 36” wide minimum clear path is maintained along the route of travel. Exception: Note that the clear width can reduce to 32” for a maximum length of 24 inches provided that reduced width segments are separated by segments that are 48 inches long and 36 inches wide minimum.	Room 316	

ADA Section 703.4: Signs	Doors signs do not have raised characters or braille lettering	Door signage needs to have raised characters and braille lettering. When replacing the signs, ensure the new ones are placed between 48”-60” above the ground. The 48” minimum should be measured from the lowest tactile character and the 60” maximum should be measured from the highest tactile character.	Classroom Signs (General) - Using room 315 and 316 as an example	
ADA Section 308.3: Reach Ranges	Height of operable portion of freezer exceeds maximum ADA standards	Consider replacement of fridge/freezer with one that has freezer drawer on bottom	Teacher’s lounge	

ADA Section 404.2: Door and Gate Hardware	Door requires 10 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force.	Entrance door to the gymnasium	
ADA Section 404.2: Door and Gate Hardware	Door requires 8 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force.	Entrance door to boys locker room	

ADA Section 222/803: Locker Rooms 903: Benches	Bench obstructs clear floor space and does not allow for sufficient turning radius	Remove bench from center of locker room and install bench which meets minimum ADA requirements (20’’ deep, 42’’ long, 17’’ above finished floor), flush to wall (Appendix 7)	Boys locker room	
ADA Section 305.3: Clear Floor or Ground Space	Obstacles present are obstructing the 30” x 48” clear floor space at sink and limiting access width to less than minimum ADA allowance	Remove or relocate items to ensure a 30” width minimum is maintained along the route of travel. Consider replacing the garbage can with one which does not protrude into the path of travel in front of sink	Boys locker room	

ADA Section 403.5: Clear width 304.3: Turning Space	Obstacles present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance. Additionally, the lacks lack clear turning space.	Remove or relocate items in front of the doorway to ensure a 36” wide minimum clear access path is maintained along the route of travel. Provide a 60” round or T-shaped turning area.	Gymnasium laundry room	
ADA Section 404.2: Door and Gate Hardware	Door requires 8 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force.	Entrance to gymnasium laundry room	

ADA Section 404.2: Door and Gate Hardware	Door requires 8 lbs of force to pull open.	Adjust the door closer arm so the pull weight does not exceed 5 lbs of force.	Entrance to girls locker room	
ADA Section 222/803: Locker Rooms 903: Benches	Bench obstructs clear floor space and does not allow for sufficient turning radius	Remove bench from center of locker room and install bench which meets minimum ADA requirements (20'' deep, 42'' long, 17'' above finished floor), flush to wall	Girls locker room	

ADA Section 403.5: Clear width	Obstacles present are obstructing the 30” x 48” clear floor space at sink and limiting access width to less than minimum ADA allowance	Remove or relocate items to ensure a 30” width minimum is maintained along the route of travel. Consider replacing the garbage can with one which does not protrude into the path of travel in front of sink	Girls locker room	
ADA Section 604.7: Dispensers ADA Section 604.8.2: Flush controls	Toilet tissue dispenser located above grab bar Flushing mechanism is located on the “closed”, or wall-side, of the toilet	Move toilet tissue dispenser so the the toilet paper outlet is a maximum height of 48’’ above the finish floor Replace toilet with one which has flushing mechanism on the “open” side	Girls locker room	
ADA Section 304: Turning Space 403.5.1: Clear width circulation paths	Not enough clear floor space to allow for either ADA-compliant corridors or turning radius	Consider removal/relocation of some fixed gym equipment to ensure enough floor space is cleared to provide for a 36’’ wide pathway to/from the door. Also, consider keeping a 60’’ diameter circle of floor space free near free-weight area to allow for activity space		

303: Changes in level 302.3: Openings in floor or ground surface	Gaps and/or damage in sidewalk access route exceed ½ inch wide and ¼ inch tall in places	Repair concrete path so that it is level	Back entrance (near playground)	
ADA Section 404.2.5: Thresholds 303.2: Vertical changes in level 303.3: Beveled changes in level	Doorway threshold (1'') exceeds maximum allowance under ADA	Re-grade threshold to ensure maximum transition height of ¾'' with beveled edge for smooth transition (Appendix 9) Note that changes in level greater than ½" blunt shall be ramped and comply with 405 or 406	Back entrance (near playground)	
303: Changes in level 302.3: Openings in floor or ground surface	Gaps and/or damage in sidewalk access route exceed ½ inch wide and ¼ inch tall in places	Repair concrete path so that it is level	Back entrance (near playground)	

American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99 ADA Section 240.2.1: Ground Level Play Components 302.1: Accessible ground surfaces	Gravel and wood chips are not accessible rolling surfaces Accessilbe ground surfaces must be stable, firm, and slip resistant.	Accessible travel surfaces must connect all play components at ground level. Accessible ground surfaces are 60 inches wide, have a maximum 1:16 slope, and the force required to propel a wheelchair on them must be less than that which is required to propel a wheelchair up a ramp with a slope of 1:14. If replacing all ground surfaces is not possible, consider installing panels meeting the above standards on routes connecting ground-level play components (see footnote 2 above for additional details)	Playground	
ADA Section 240.2.1: Ground Level Play	Insufficient number of ground-level play features	The number and variety of ground-level play components required is determined by the number of elevated components provided in the play area. Given you number of elevated play components, consider installing 2 additional ground-level play components in addition to bringing the swingset up to ADA standards.	Playground	

American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99	Inaccessible surface en route to, an under, swingset	Replace with surface such as rubber tiles or poured in place rubber. Consider accessible swing seat accessory and harness	Playground	
American Society for testing and Materials (ASTM) F 1487, ASTM F 1951-99	Inaccessible access route to play structure.	Replace with surface such as rubber tiles or poured in place rubber. Ensure, specifically, that the transfer step onto the play structure is along an accessible route	Playground	
ADA Section 403.5: Clear width	Obstacle present obstructing clear walkway path and limiting accessible pathway width to less than minimum ADA allowance	Remove or relocate item along corridor to ensure a 36” width minimum is maintained along the route of travel	Playground	

ADA Section 303.4: Curb ramps 406.8: Detectable warnings	Curb ramp not marked	Install ADA-complaint, marked curb cut. While an exhaustive list of such requirements is beyond the scope of this report, a helpful introductory guide can be found below[3]	School entrance	
302.3 Openings in Ground Surface	Gaps and/or damage in sidewalk access route exceed ½ inch wide and ¼ inch tall in places	Repair concrete path so it is level	School entrance - Ramp entry point	
302.3 Openings in Ground Surface	Gaps and/or damage in sidewalk access route exceed ½ inch wide and ¼ inch tall in places	Repair concrete path so it is level	School entrance - Ramp entry point	

[3] https://www.dot.state.pa.us/public/Bureaus/design/ADA/PocketGuide.pdf

35.151 Construction and alterations: streets, roads, sidewalks, highways	Transitions from the walkway to the street must be flush (level) and free of abrupt level changes	Curb removal or installation of an additional curb ramp at site of abrupt transition Note that changes in level greater than ½" blunt shall be ramped and comply with 405 or 406	School entrance - Sidewalk from accessible parking	
ADA Section 206.2.1: Site Arrival Points to Accessible Routes 502: Accessible Parking Spaces 502.6: Sign Identification 406: Curb Ramps	Accessible parking spaces not clearly marked Van accessible space is not delineated (?) No curb cut provided for access to an accessible path (?)	Line parking lot to clearly delineate the dedicated, marked, accessible spaces[4] Install signs, including van accessible, per ADA Standards Ensure path of travel does not go behind parked vehicles or across the active parking lot. Install a ramped curb cut for access to the accessible path.	Accessible parking at school's entrance	
35.151 Construction and alterations: streets, roads, sidewalks, highways 206.2.1: Site Arrival Points to Accessible Routes	Transitions from the walkway to the street must be flush (level) and free of abrupt level changes	Curb removal or installation of an additional curb ramp at site of abrupt transition	School entrance	

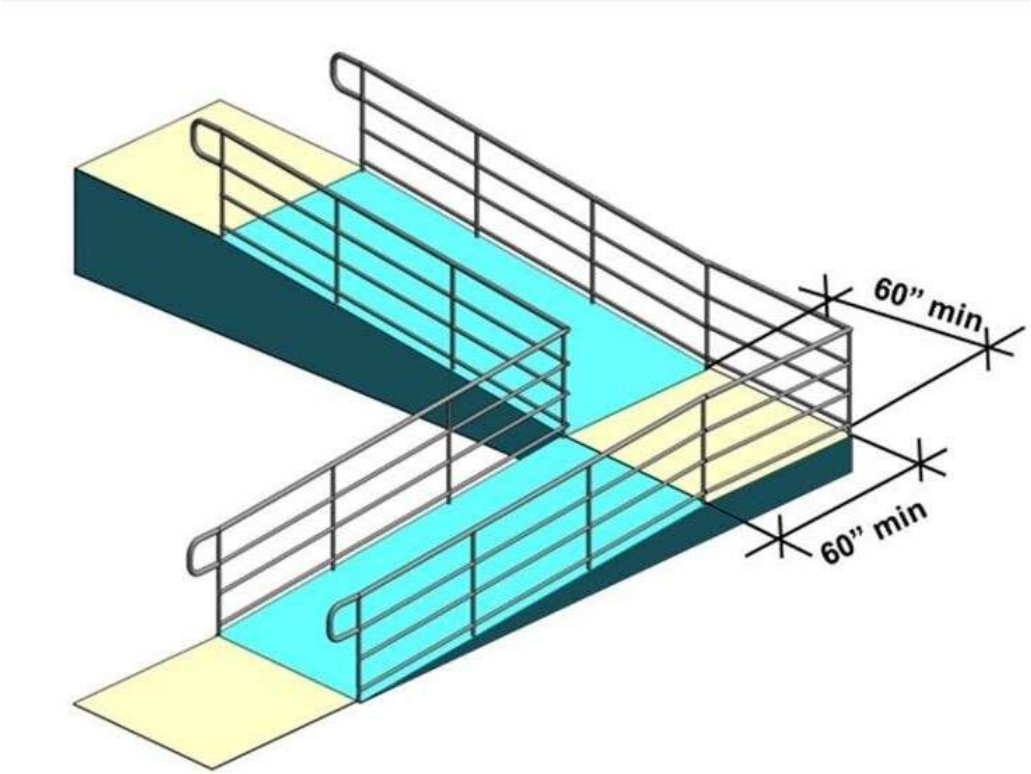
[4] https://www.access-board.gov/ada/guides/chapter-5-parking/

406: Curb Ramps				
ADA Section 206: Accessible Routes 303.4: Curb ramps 406.8: Detectable warnings	Curb ramp not marked	Install ADA-complaint, marked curb cut. Introductory guide to installation requirements found in above footnote Confirm slope does not exceed maximum allowable slope of 1:12 Patch and smooth concrete for smooth transitions	School entrance	
ADA Section 206: Accessible Routes 303.4: Curb ramps 406.8: Detectable warnings	Curb ramp not marked	Install ADA-complaint, marked curb cut. Introductory guide to installation requirements found in above footnote	School entrance	
405.2 Slope and Cross Slope 405.2: Ramp Slope	Transitions between walkways must be flush (level) and free of abrupt level changes	Changes in level greater than ½” blunt shall be ramped and comply with 405 or 406 Bevel the edge of concrete or install a 1:8-1:10 ramped threshold transition from the edge of the concrete to patio deck, ensuring a smooth transition	School entrance - Patio area near main entrance	

302.3 Openings in Ground Surface	Gaps and/or damage in sidewalk access route exceed ½ inch wide and ¼ inch tall in places	Repair concrete path so it is smooth and level	Sidewalk near school parking	
302.3 Openings in Ground Surface	Gaps and/or damage in sidewalk access route exceed ½ inch wide and ¼ inch tall in places	Repair concrete path so it is smooth and level	Sidewalk near school parking	

ADA Section 303.4: Ramps 406: Curb ramps 406.8: Detectable warnings	Curb ramp not marked	Install ADA-complaint, marked curb cut. Introductory guide to installation requirements found in above footnote	Sidewalk near school parking	

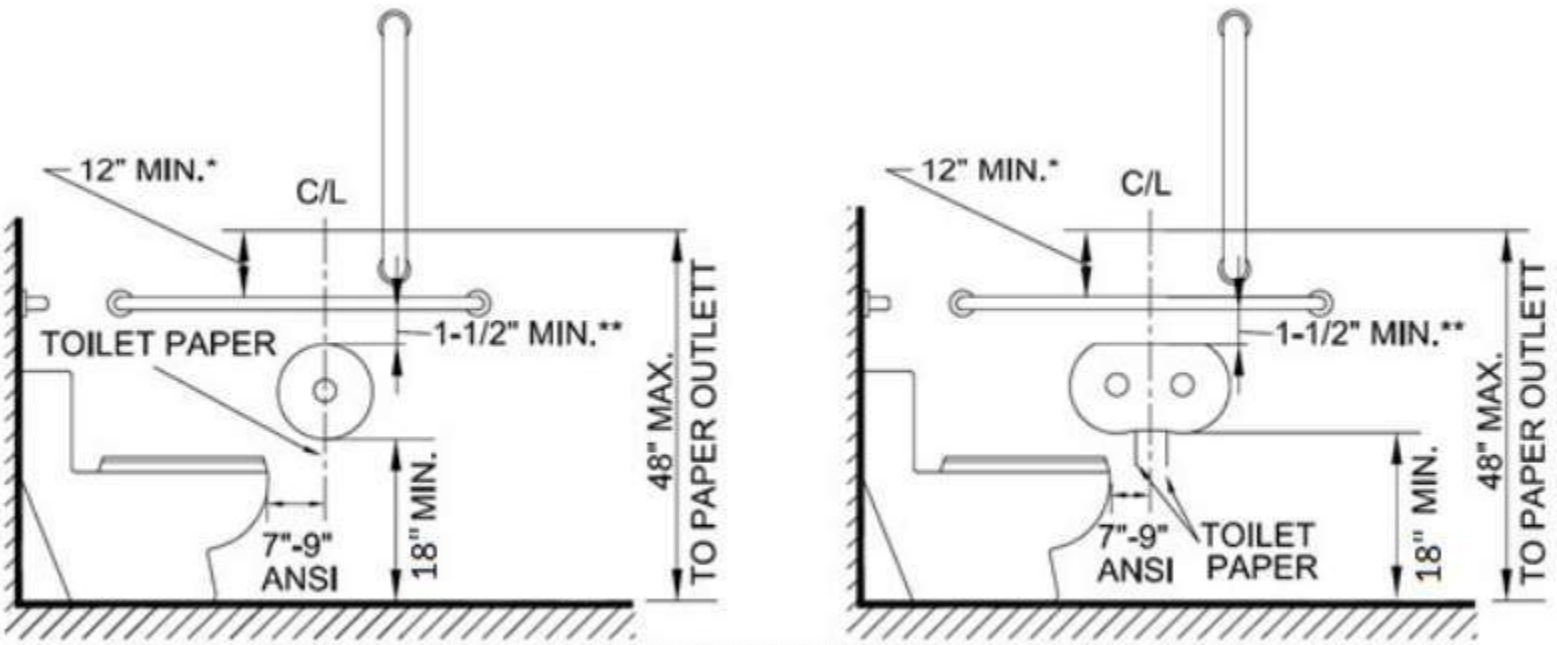
Appendix

1	
2	How To Adjust a Commercial Door Closer

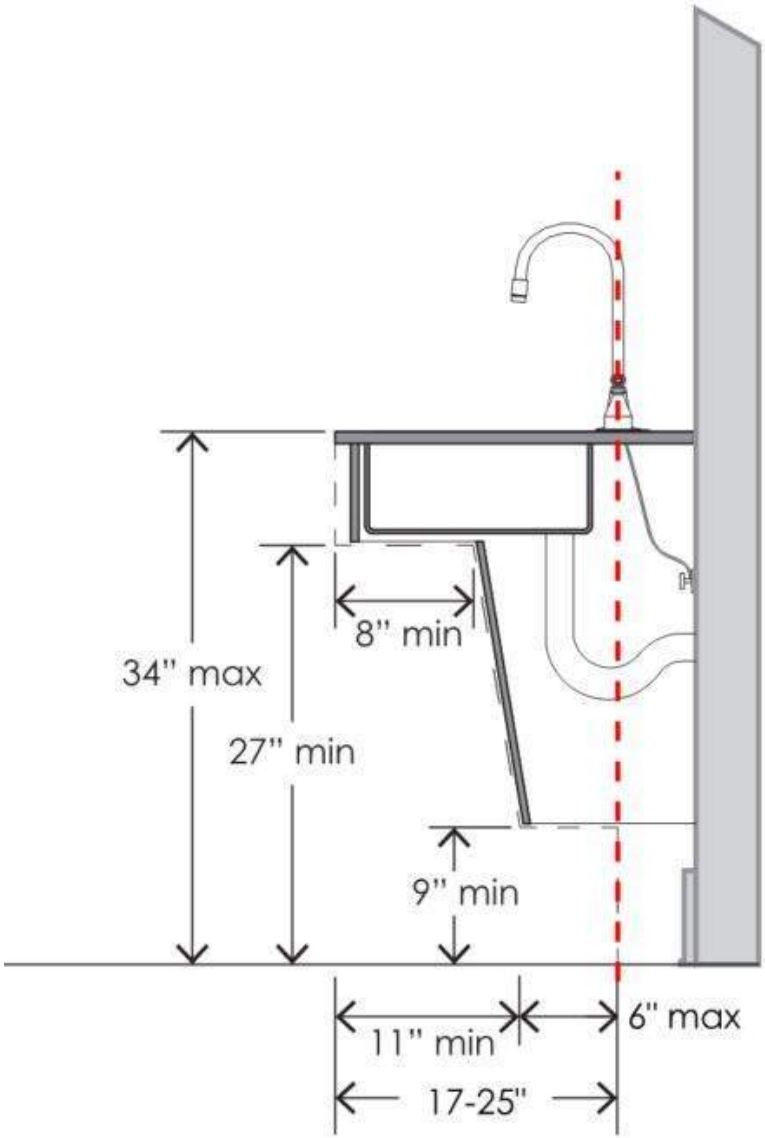
3	 CONFERENCE ROOM SIGN HEIGHT 48" Min CONFERENCE ROOM SIGN HEIGHT 60" Max

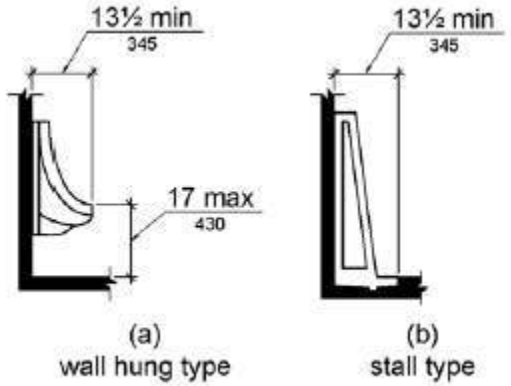
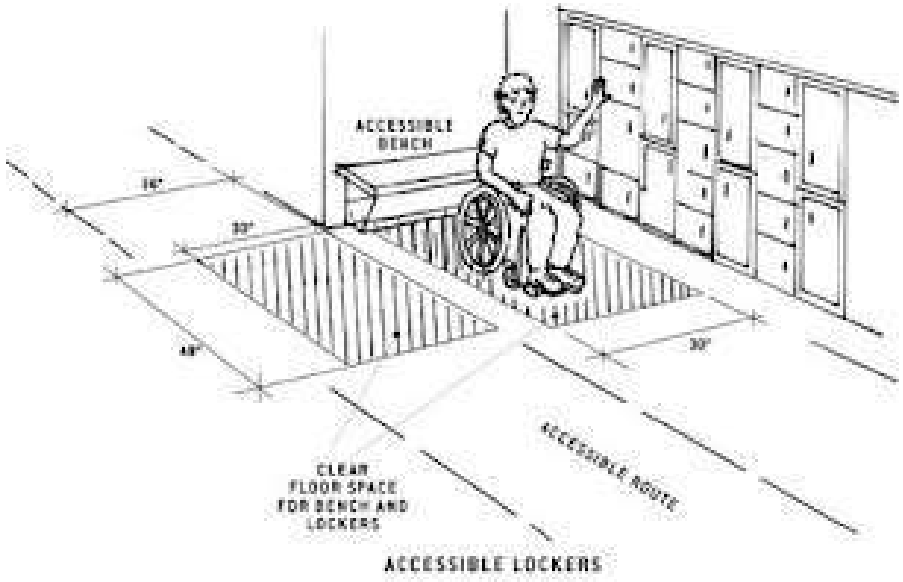
4

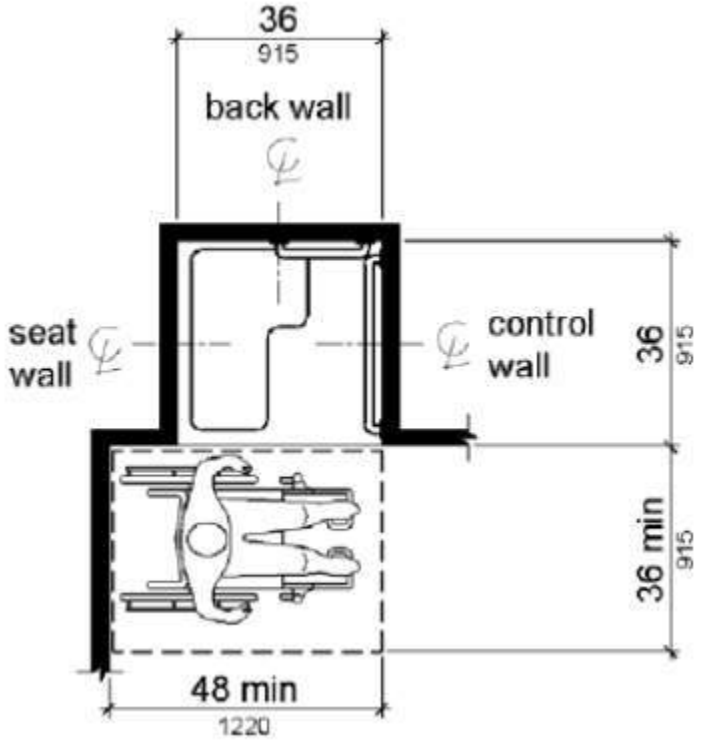
7. Toilet Paper



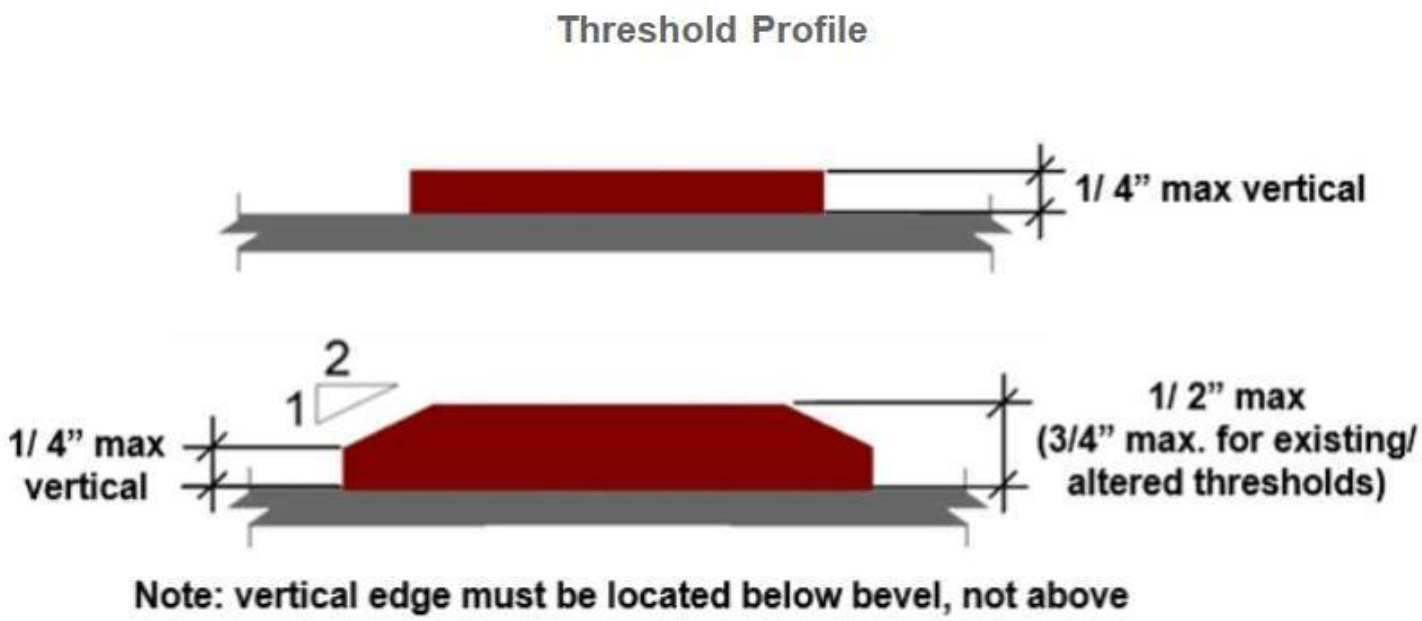
NOTE: HEIGHT DIMENSIONS GEARED TO POINT WHERE HAND TOUCHES TISSUE.
SOME LARGE ROLLS MAY BE TOO LARGE FOR BELOW GRAB BAR.
** MIN. CLEARANCE REQUIRED BETWEEN DISPENSER AND GRAB BAR.
DIMENSIONS COMPLY WITH ADA & ANSI.

5	

6	 13½ min 345 17 max 430 (a) wall hung type 13½ min 345 (b) stall type
7	 ACCESSIBLE BENCH CLEAR FLOOR SPACE FOR BENCH AND LOCKERS ACCESSIBLE ROUTE ACCESSIBLE LOCKERS

8	 36 915 back wall seat wall control wall 36 915 36 min 915 48 min 1220

9



10.

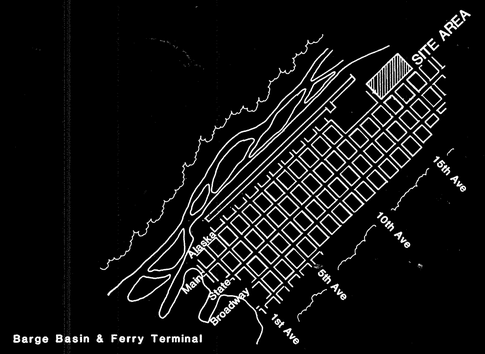
Advisory 604.9 Water Closets and Toilet Compartments for Children's Use. The requirements in 604.9 are to be followed where the exception for children's water closets in 604.1 is used. The following table provides additional guidance in applying the specifications for water closets for children according to the age group served and reflects the differences in the size, stature, and reach ranges of children ages 3 through 12. The specifications chosen should correspond to the age of the primary user group. The specifications of one age group should be applied consistently in the installation of a water closet and related elements.

Advisory Specifications for Water Closets Serving Children Ages 3 through 12

	Ages 3 and 4	Ages 5 through 8	Ages 9 through 12
Water Closet Centerline	12 inches (305 mm)	12 to 15 inches (305 to 380 mm)	15 to 18 inches (380 to 455 mm)
Toilet Seat Height	11 to 12 inches (280 to 305 mm)	12 to 15 inches (305 to 380 mm)	15 to 17 inches (380 to 430 mm)
Grab Bar Height	18 to 20 inches (455 to 510 mm)	20 to 25 inches (510 to 635 mm)	25 to 27 inches (635 to 685 mm)
Dispenser Height	14 inches (355 mm)	14 to 17 inches (355 to 430 mm)	17 to 19 inches (430 to 485 mm)

Attachment C

Record Drawings



SKAGWAY AREA MAP

A NEW SCHOOL FOR
SKAGWAY, ALASKA

ARCHITECT

HAEG•BETTIS•ASSOCIATES INC.

825 W. EIGHTH AVE. ANCH. AK. 99501 (907) 279-3436

STRUCTURAL & CIVIL ENGINEER

ARTHUR H. WHITMER ASSOCIATES

1569 S. BRAGAW ANCH. AK. 99504 (907) 338-1569

MECHANICAL & ELECTRICAL ENGINEER

FRYER/PRESSLEY ENGINEERING

1709 S. BRAGAW ANCH. AK. 99504 (907) 276-5144

PROJECT NO. 8303

SET NO. [redacted]

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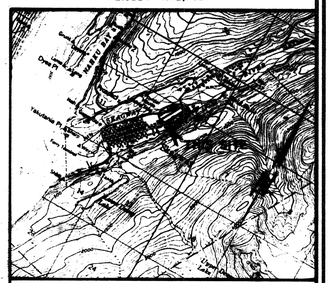
DI1 DI1 F
DI2 DI2 F

R&M

R&M CONSULTANTS, INC.

SKAGWAY RIVER FLATS



VICINITY MAP

SOURCE: U.S.G.S. QUADRANGLE SKAGWAY (B-1), ALASKA
SCALE: 1" = 1 MILE

DATE: 1949 REV: 1969

SYMBOLS

- SECONDARY MON. RECOVERED THIS SURVEY
- BOUNDARY PROPERTY LINE
- FIRE HYDRANT
- POWER POLE
- MANHOLE WITH SEWER LINE
- TREES
- WATER LINE
- 45 CONTOUR INTERVAL
- 447 SPOT ELEVATION (DECIMAL POINT REFLECTS POINT OF ELEVATION.

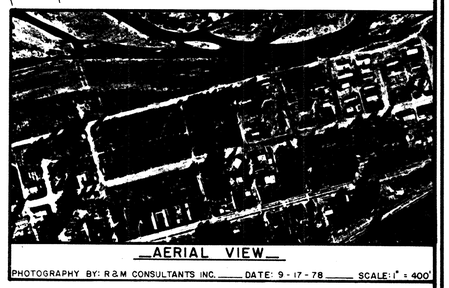
SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA, AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THE MONUMENTS SHOWN THEREON ACTUALLY EXIST AS DESCRIBED, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT.

GENERAL NOTES

1. TOPOGRAPHIC SURVEY PLAT SHOWN HEREON WAS AUTHORIZED BY LETTER DATED DECEMBER 3, 1981, FROM HAEG-BETTIS & ASSOCIATES, ANCHORAGE, ALASKA.
2. TITLE DATA MADE AVAILABLE FOR LANDS BEING SURVEYED WAS BY TITLE INSURANCE AGENCY, JUNEAU, ALASKA, DATED NOVEMBER 17, 1981, AS TRANSMITTED BY THE CITY OF SKAGWAY'S SCHOOL DISTRICT.
3. HORIZONTAL CONTROL FOR THE LAND SURVEYED WAS THE LINE-OF-SIGHT OF MONUMENTATION AS SHOWN ALONG THE NORTHEAST PROPERTY BOUNDARIES OF BLOCKS 94, 103, AND 104.
4. THE VERTICAL DATUM UTILIZED WAS THAT OF THE CITY OF SKAGWAY, ALASKA, AS FURNISHED BY THE CITY MANAGER. TEMPORARY BENCH MARKS WERE ESTABLISHED AT THE SITE.
5. SPOT ELEVATIONS WERE OBTAINED THROUGH THE UTILIZATION OF HEWLETT-PACKARD 3820A TACHOMETER/RANGING METHODS AND/OR STADIA SURVEY METHODS.
6. UTILITIES WERE LOCATED PER RECOVERED MANHOLES AND ELEVATIONS AS SHOWN, OR THROUGH DESIGN/AS-BUILT DRAWINGS FURNISHED THIS FIRM BY THE CITY OF SKAGWAY, AND RECOVERED "T" VALVES/FIRE HYDRANTS. PLEASE BE ADVISED THAT THE DESIGN PLANS REFLECT AN 8" SANITARY SEWER WITH CLEAN OUT WITHIN THE ALLEY WAY OF BLOCK 104. NO EVIDENCE OF SUCH A LINE COULD BE FOUND IN THE FIELD. THE PLANS DID NOT INDICATE A SEWER LINE UP EIGHTEENTH STREET; HOWEVER, AN 8" LINE WAS DISCOVERED (THE LENGTH IS UNKNOWN). IT IS OUR BELIEF THAT THIS 8" LINE WAS CONSTRUCTED FOR THE TOTAL LENGTH OF EIGHTEENTH STREET RATHER THAN THE ALLEY WAY LINE PREVIOUSLY DESCRIBED. FROZEN GROUND PREVENTED A "DIG" FOR SAID LINES.

ON ALASKA AVENUE, NO PLANS FURNISHED US INDICATED A WATER LINE BEING CONSTRUCTED; HOWEVER, A FIRE HYDRANT WAS FOUND ON ALASKA STREET, AS SHOWN HEREON. THE CONTINUATION OF THE WATER LINE ON FIFTEENTH STREET AND SEVENTEENTH STREET AND ALONG ALASKA STREET, IS OUR BEST INTERPRETATION OF AVAILABLE RECORDS.



AERIAL VIEW

PHOTOGRAPHY BY: R&M CONSULTANTS INC. DATE: 9-17-78 SCALE: 1" = 400'

A TOPOGRAPHIC SURVEY PLAT OF BLOCKS 93, 94, 103 & 104 TOWNSITE OF SKAGWAY, ALASKA

SCALE 1" = 40' (12.19 METERS)

CONTOUR INTERVAL = 1'

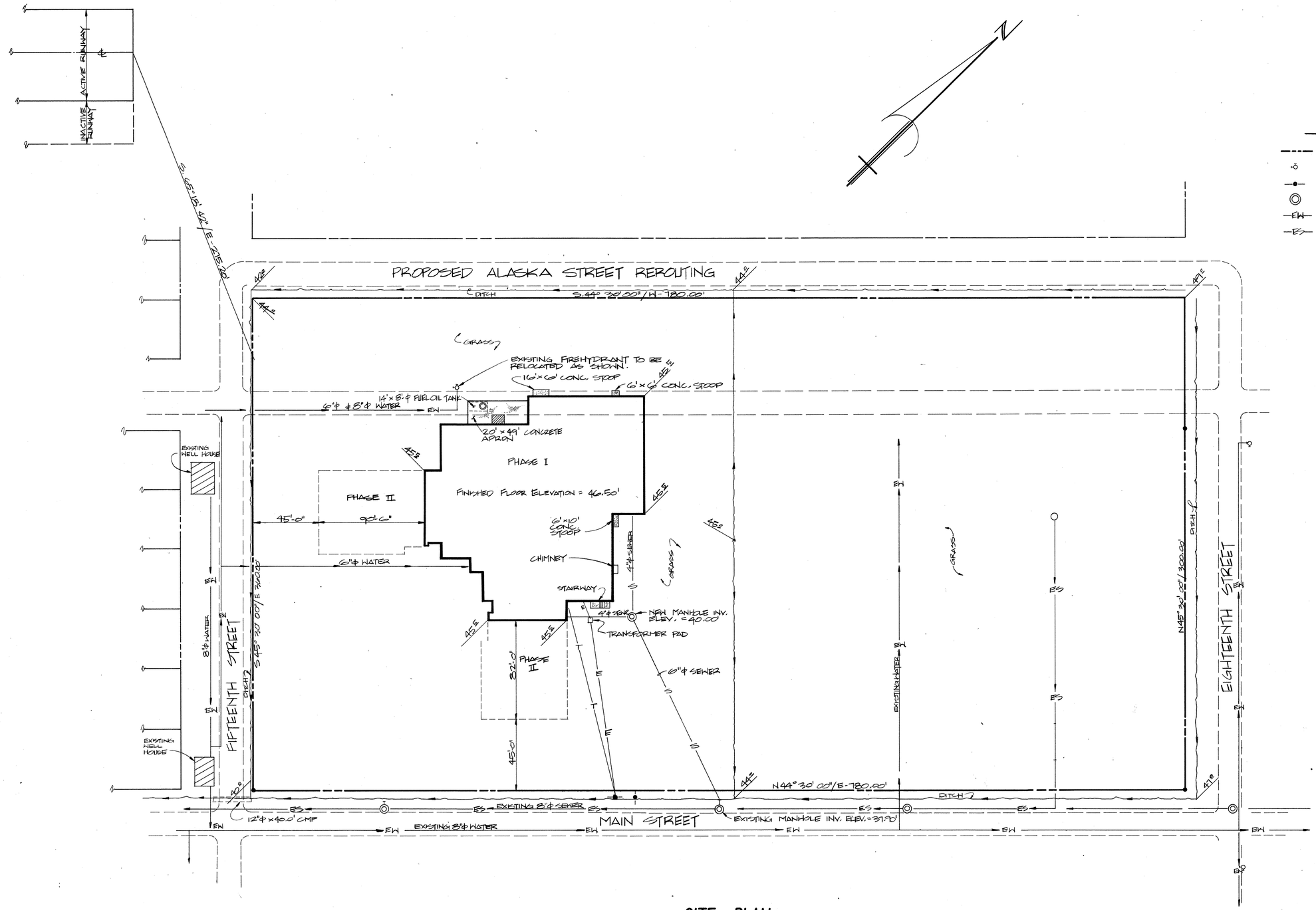
A TOPOGRAPHIC SURVEY PLAT OF BLOCKS 93,94,103 & 104 AND ADJACENT LAND TOWNSITE OF SKAGWAY, ALASKA

CLIENT: HAEG & BETTIS ASSOCIATES
825 W. EIGTH AVE., SUITE 200
ANCHORAGE, ALASKA 99501

SURVEYOR: R&M CONSULTANTS INC.
P.O. BOX 1786
JUNEAU, ALASKA 99801

APRIL 8, 1983 SHEET II OF II C-1

DATE: 1-82 SCALE: 1" = 40' PROJ.: 137275



SITE PLAN

SCALE: 1" = 40'

LEGEND

- BOUNDARY PROPERTY LINE
- FIRE HYDRANT
- POWER POLE
- MANHOLE W/ SEWER LINE
- EW — EXISTING WATER LINE
- ES — EXISTING SEWER LINE

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
CB	CB	F

HAEG · BETTIS · ASSOCIATES INC.

PLANNING · ARCHITECTURE · INTERIOR design · GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA 49TH
Arthur H. Whitmer
CE 3067
REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:

SKAGWAY ALASKA

SITE PLAN

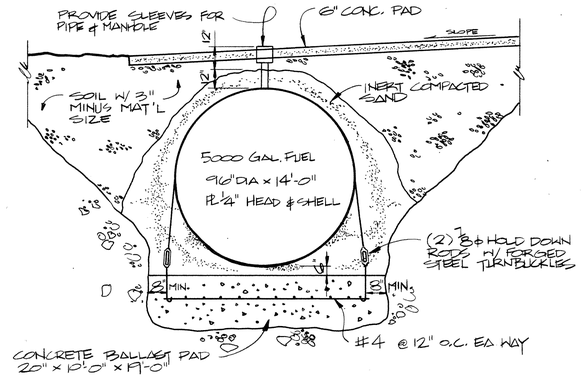
REVISIONS

drawn by

date
APRIL 8, 1983

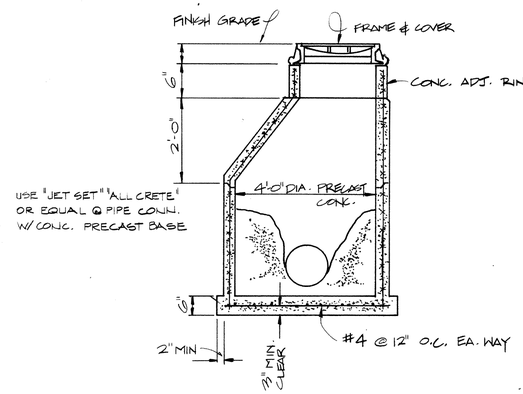
project no.
8303

sheet no.
C2 3



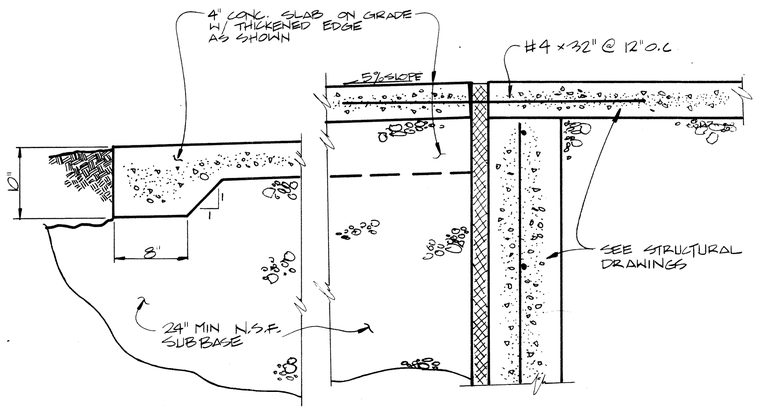
NOTE: SEE MECHANICAL DWGS. FOR PLUMBING DETAILS.

(B) FUEL TANK BURIAL DETAIL

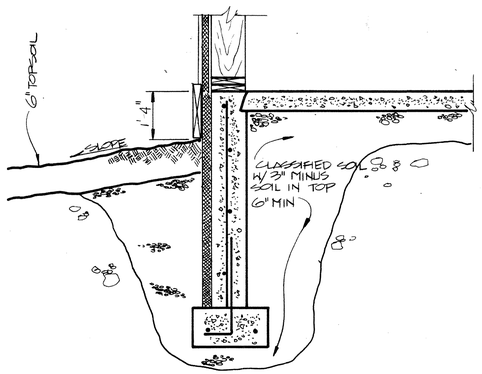


NOTE: ALL MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M C-478-69

(C) MANHOLE DETAIL



(D) TYP. SECTION AT CONC. STOOP



(E) TYP. SECTION AT BUILDING

OVERLAY REQD		
TB	TB	F
CC	CC	

OVERLAYS

SCREEN

STATE OF ALASKA 49TH
Arthur H. Whitmer
CE 3057
REGISTERED PROFESSIONAL ENGINEER

HAEG · BETTIS · ASSOCIATES INC.

PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR:

SKAGWAY ALASKA

SITE DETAILS

REVISIONS

drawn by

date
APRIL 8, 1983

project no.
8303

sheet no.
C3 of 3

SHEAR WALL & DIAGPHRAGM SCHEDULE

SYMBOL	PLYWOOD	EDGE NAILS	FIELD NAILS	REQUIRED BLOCKING	Anchor Bolts Req'd
1	1/2" STR-I	8d @ 2" O.C.	8d @ 12" O.C.	2x Blocking req'd @ all panel joints	*5/8"ϕx 10"@ 24" oc.
2	1/2" CD-X	8d @ 2" O.C.	8d @ 12" O.C.		6/8"ϕx 10"@48" oc.
3	1/2" CD-X	8d @ 4" O.C.	8d @ 12" O.C.		
4	1/2" CD-X	8d @ 6" O.C.	8d @ 12" O.C.		
ROOF DIA. A	1/2" CD-X	8d @ 2-1/2" O.C.	8d @ 12" O.C.	See drwgs. for location of blkg.	
ROOF DIA. B	1/2" CD-X	8d @ 4" O.C.	8d @ 12" O.C.		
ROOF DIA. C	1/2" CD-X	8d @ 6" O.C.	8d @ 12" O.C.	NONE	

* hold downs req'd, see foundation plan

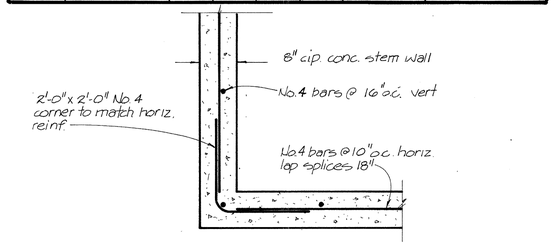
COLUMNS — BASE PLATES

mark	size	a	b	t	g	bolts	detail
A	TS 8x8 x 5/16	15"	15"	1.0"	1½"	4(3/4ϕ)x12"	
B	TS 10x10x5/8"	19"	19"	1½"	2"	4(1¼ϕ)x 18"	
C	TS 5x5x 1/4"	12"	12"	5/8"	1½"	4(5/8"ϕ)x 10"	
D	TS 6x5x 3/16"	12"	12"	5/8"	1½"	4(5/8"ϕ)x 10"	
E	TS 3x3 x 3/16"	8"	8"	3/8"	1½"	4(5/8"ϕ)x 10"	
F	TS 6x6 x 3/8"	15"	15"	1"	1½"	(4) ¾" x 12"	
	W6x20 bents	12"	12"	1"	1½"	(4) ¾"ϕx 12"	

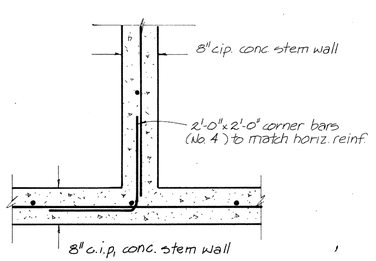
HEADER SCHEDULE *

Mark	H1	H2	H3	H4	type1
type	1	2	2	1	13⅜"x7½" microlam — 2x6 — 2x6
trimmers	(1) stud	(3) stud	(2) stud	(1) stud	type2
conn. Req'd	(2) king studs	(4) king studs	(2) king studs	(1) king stud	13¾"x7½" microlam — 2x6 — 2x6

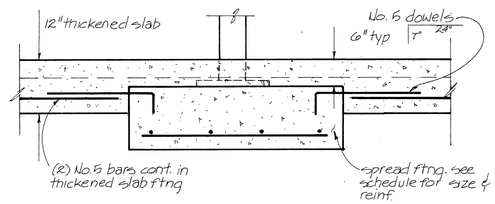
* All non-brg. wall headers with spans over 6'-0" shall be "H1 headers.



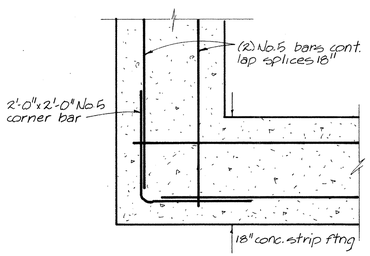
(A) TYP. FND. WALL CORNER
NTS



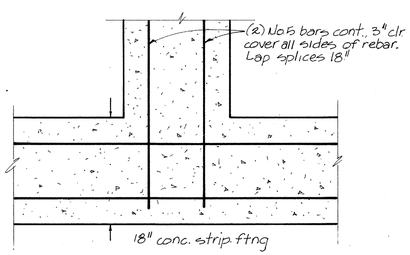
(B) TYP. FND. WALL INTERSECT
NTS



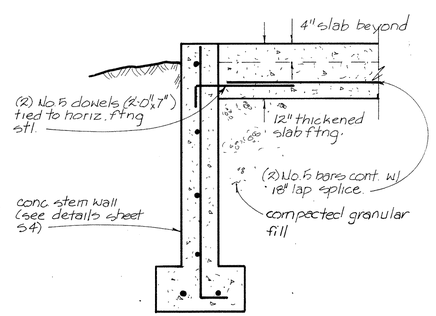
(C) SPREAD FTG.-THICKENED SLAB INTERSECTION
NTS.



(D) TYP. FOOTING CORNER
NTS



(E) TYP. FTG. INTERSECT.
NTS



(F) STEM WALL-THICKENED SLAB INTERSECT.
NTS

OVR	NY REQD
	OVERLAYS
	SCREEN
TB	TB F
SB	SB F
SA	SA F

GENERAL
Notes shown on this sheet apply unless shown otherwise. All materials and construction shall conform to the requirements of the Uniform Building Code (1979 Edition) Where explicit details are not shown or described, the minimum requirements of the above code shall apply. Contact the Structural Engineer if interpretation of structural documents is necessary.

DESIGN LOADS
In addition to dead loads, the following live loads were used for design:

Roof:	50 p.s.f. Snow (2 month duration)
Floors:	
Fan Rooms	40 p.s.f.
Stairs:	100 p.s.f.
Wind:	25 p.s.f. horizontal and 20 p.s.f. uplift
Earthquake:	Zone 2 (U.B.C.) (Box System)
Mezzanine:	
Shop Storage	125 p.s.f.

FOUNDATIONS
Place all footings on undisturbed soil or on 12" of compacted backfill placed on natural undisturbed soil. All fill placed below footings and concrete bearing walls shall be non-frost susceptible granular material free of organic matter and debris placed in lifts not exceeding 9" in loose thickness and compacted to 95% of maximum density in accordance with ASTM Specification D-1557-57T. Density tests shall be made by an approved testing laboratory and the test results approved before any construction on the fill. All organic material, frozen soil, loose fill, debris, and remnants of previous improvements (foundations, septic tanks, etc.) shall be removed from the work site prior to placing any structural fill, mats, slabs or footings.

SLAB ON GRADE
Prepare the site by removing any loose or excess material and "proof" rolling the existing soil prior to the placement of any new fill or slabs. Any pockets of loose soil or debris shall be excavated and backfilled. Fill and compact to 95% as described above.

REINFORCING STEEL
Unless noted otherwise, all reinforcing steel shall be deformed bars conforming with ASTM A-615 and shall be grade 60. Reinforcing steel bending and placement drawings shall be prepared by an experienced professional detailer in accordance with the "A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (A.C.I.-315-74)". These drawings shall be approved by the Structural Engineer prior to fabrication. Reinforcing steel shall be firmly tied in place with #16 double annealed iron wire. Bars in footings and slabs shall be supported on concrete blocks or approved metal A minimum lap for all bars shall be 1'-6". All welded wire fabric shall be furnished in flat sheets and shall conform to ASTM A185. Concrete cover of reinforcing shall be 3" for concrete poured against the earth and 2" for formed concrete exposed to weather.

CONCRETE
Mixing, selection of materials and placing of all concrete shall conform to the requirements of the Uniform Building Code, 1979 Edition. An air entraining agent, conforming to ASTM Specification C260, shall be used in all concrete mixes for concrete work that is exposed to earth or weather. The amount of entraining air shall be 5% by volume with a tolerance of 1%. The Contractor shall submit a mix design for approval. All concrete shall be tested by an approved testing lab at 7 and 28 days and the results submitted for approval. Minimum concrete requirements at 28 days shall be as follows:

CLASS AND USE	28 DAY F'c	SLUMP	SACKS/C.Y.
Footings and mats	3000 p.s.i.	4-5"	5 *
Slabs on grade	3000 p.s.i.	2-3"	5 *
Non-shrink grout	3000 p.s.i.	dry pack	---
Masonry grout	2000 p.s.i.	6-8"	5 *, **
Sidewalks and ext. stairs	2500 p.s.i.	3-4"	5 *

* Type A water-reducing agent may be used to improve workability.
** Calcium chloride not permitted.

SAWN LUMBER AND TIMBER
Structural timber and lumber to be stress grade Hem-Fir or Douglas Fir as follows:

USE	SPECIES	GRADE	Fb
4x__ and larger	Doug. Fir	No. 1	1500 p.s.i.
Exterior studs	Hem-Fir	No. 2	1150 p.s.i.
Interior studs	Hem-Fir	Standard	450 p.s.i.
MICRO=LAM studs	See spec. section 6100, B.9.		2500 p.s.i.
Joists & rafters	Hem-Fir	No. 2	1150 p.s.i.
All other lumber	Hem-Fir	Standard of better	

Bolts heads and nuts bearing against wood to be provided with M.I. washers. Solid blocking of not less than 1-1/2" thickness shall be provided at ends and at all supports of joist and rafters, unless shown otherwise. Beam and joist hangers to have capacity equal to shear strength of beam or joist unless noted otherwise. All metal framing anchors and hangers shown on drawings shall be "Strong Tie Connectors" as manufactured by the Simpson Company or approved equal. Unless otherwise noted, conform to table 25F (Nailing Schedule) of the U.B.C. for minimum nailing requirements.

PLYWOOD
Plywood sheathing shall have properties as shown in the table below and conform with the requirements of U.S. Product Standard PS 1-74. Minimum plywood nailing shall be 6" o.c. at all supported edges. Stagger end joints. Allow 1/8" spacing between panels ends and 1/16" spacing between panel edges. Double these spacings for wet environments. All plywood used in shear wall construction shall be blocked at the free edges. See drawings for nailing and diaphragm blocking requirements. Plywood grades shall be as follows:

TYPE	USE	THICKNESS	GRADE	INDEX	GLUE
I	Shear Walls	1/2"	C-D INT-APA	24/0	Exterior
II	Sub Floor & Roof	5/8" T&G	C-D INT-APA	32/16	Exterior
III	Underlayment	5/8"	UNDERLAYMENT APA	32/16	Exterior
IV	Gym Floor	1/2"	MARINE A-B EXT-APA	24/0	Exterior
V	Gym Sub Floor	1/2"	C-C EXT-APA	24/0	Exterior

GLUE LAMINATED STRUCTURAL MEMBERS
All structural glue laminated timber shall be as detailed on the plans and specifications and shall conform to the Voluntary Product Standard PS 56-79, "Structural Glue Laminated Timber". Shop drawings shall be approved before commencing with fabrication. Lumber for laminating shall be of such stress grade as to provide glue laminated timbers with allowable working stress values for loads of normal duration as follows:

DESIGN STRESS	DESIGN VALUE
Bending	2400 p.s.i.
Compression Perpendicular to grain (Fcp)	385 p.s.i.
Compression Parallel to grain (Fc)	1,500 p.s.i.
Horizontal Shear (Fv)	165 p.s.i.
Modulus of Elasticity	1,800,000 p.s.i.
Appearance grade =	Industrial

Adhesives shall meet requirements for wet use. Surfaces of members shall be sealed with a sealer coat. Members shall be individually wrapped and shall be marked with a qualified inspection and testing agency mark, and in addition, be accompanied by a certificate to indicate conformance to the Voluntary Product Standard PS 56-79.

FABRICATED WOOD TRUSSES
Design calculations and shop drawings showing grades of truss elements shall be submitted to the Structural Engineer for review and approval prior to fabrication. Truss design loads are shown on the drawings. Where unbalanced loading causes greater stresses, they shall control the design. Where proprietary connectors are used, a current I.C.B.O. Bulletin shall accompany the shop drawing submittal. Roof connections shall be designed to withstand 20 p.s.f. uniform uplift wind load. Every piece of material shall be graded and labeled. Instructions shall be shown concerning the positioning and permissible tolerance for field installation. Bridging type and lateral bracing for compression members shall be shown on the shop drawings. Maximum bridging spacing shall conform with the standard framing requirements for spacing of blocking in joist systems.

STRUCTURAL STEEL
Structural steel shall conform to ASTM Specification A36. Design, fabrication and erection shall be in accordance with the latest edition of the "A.I.S.C. Specification for the Design, Fabrication and Erection of Buildings". Bolts noted as "M.B. and Anchor shall conform to ASTM A307. Metal or welded studs shall be "Nelson" studs or equivalent. Bolts noted as expansion anchors shall be capable of developing safe load at least as great as the values given in U.B.C. Table 26G for concrete. All welds shall conform to the A.W.S. Codes for arc and gas welding in building construction. All welds shall be 3/16" minimum and continuous unless noted otherwise. Electrodes shall be A.W.S. E70. Shop drawings shall be approved by the Structural Engineer prior to the fabrication of structural steel items.

TJI JOISTS
Joists and rafters marked as TJI shall be solid plywood web joists with micro=lam or stress-grade lumber flanges assembled with waterproof type glues: such as the TJI joist manufactured by Trus Joist Corporation. The TJI's are to be erected and installed in accordance with the plans, and any Trus Joist drawings. If splices are necessary details shall be provided by the manufacturer. All TJI's are 35 series. See spec. Section 6100, B.9.

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA — 4937 — Arthur H. Whitmer — CE 3067 — REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR: SKAGWAY ALASKA

GENERAL NOTES AND TYPICAL DETAILS

REVISIONS

drawn by

date
APRIL 8, 1983

project no.
8303

sheet no.
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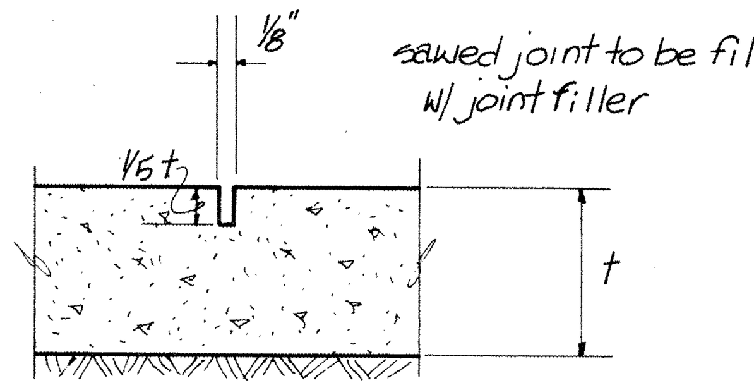
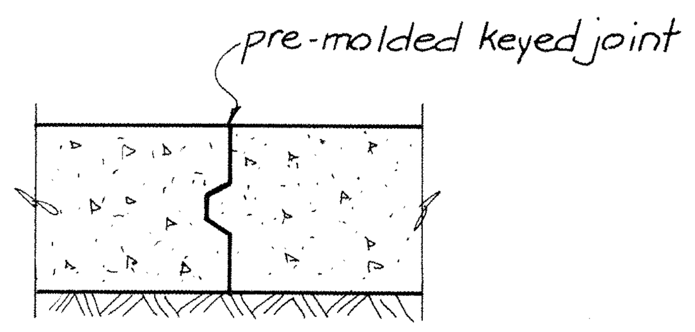


Ⓐ TYP SLAB CONTROL JOINT

NTS



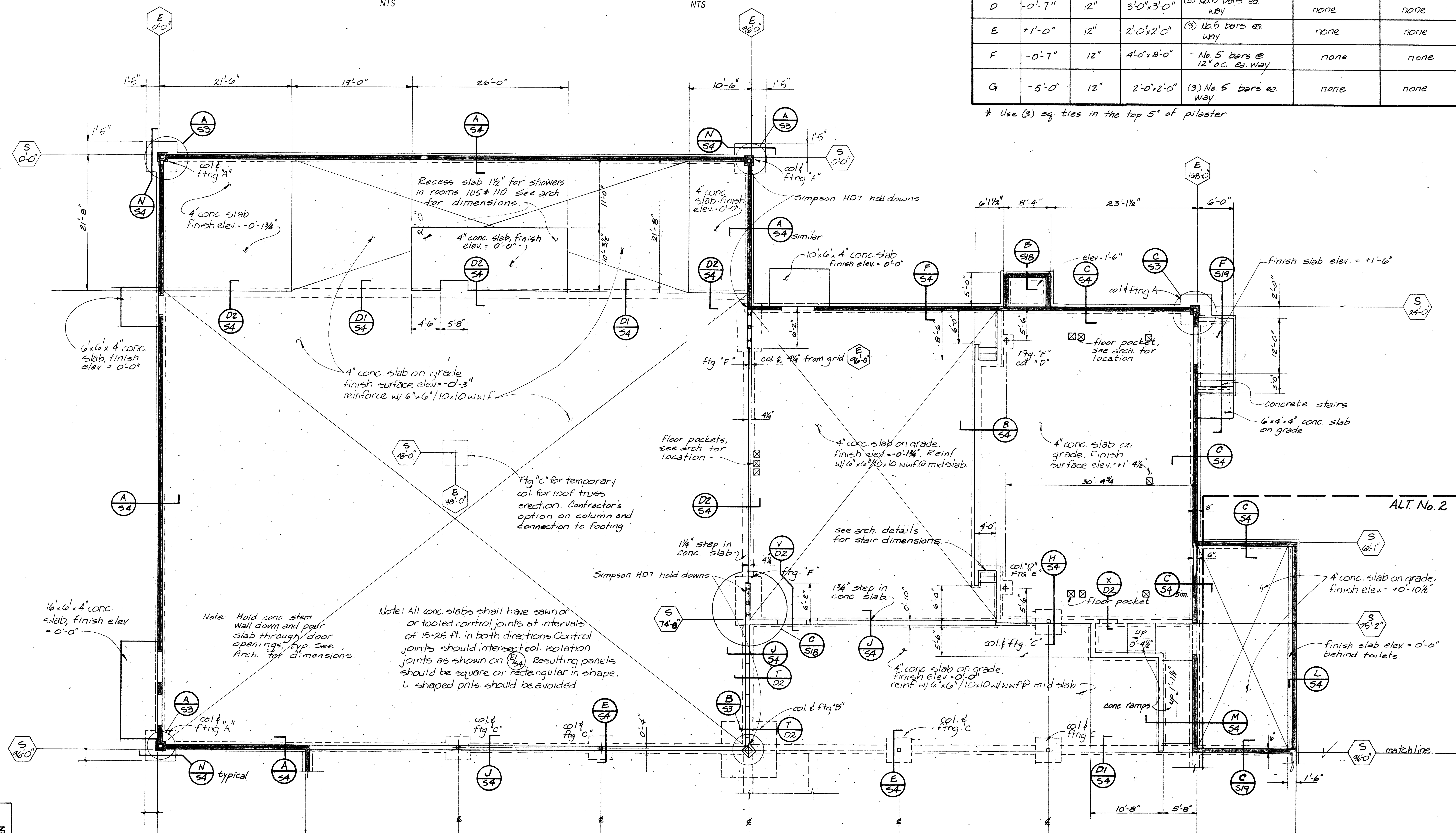
Ⓑ TYP. SLAB CONSTRUCTION JT.

NTS

FOOTING SCHEDULE

Mark	Elev. to top of ftg	Depth	Size	Ftg Reinforcement	Pilaster Size	Pilaster Rein. *
A	-4'-0"	14"	5'-6"x5'-6"	(6) No. 5 bars @ 12" o.c. ea. way.	17" x 17"	(6) No. 7 bars vert. No. 3 sq. ties @ 12"
B	-4'-0"	24"	9'-6"x9'-6"	(9) No. 7 bars @ 14" o.c. ea. way	20" x 20"	(8) No. 7 bars vert. No. 3 sq. ties @ 12"
C	-0'-7"	12"	4'-0"x4'-0"	(4) No. 5 bars. ea. way	none	none
D	-0'-7"	12"	3'-0"x3'-0"	(3) No. 5 bars ea. way	none	none
E	+1'-0"	12"	2'-0"x2'-0"	(3) No. 5 bars ea. way	none	none
F	-0'-7"	12"	4'-0"x8'-0"	- No. 5 bars @ 12" o.c. ea. way	none	none
G	-5'-0"	12"	2'-0"x2'-0"	(3) No. 5 bars ea. way.	none	none

* Use (3) sq. ties in the top 5" of pilaster



⊕ FOUNDATION PLAN "A"

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

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA 49TH Arthur H. Whitmer CE 3067 REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR :

SKAGWAY ALASKA

FOUNDATION PLAN A

REVISIONS

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APRIL 8, 1983

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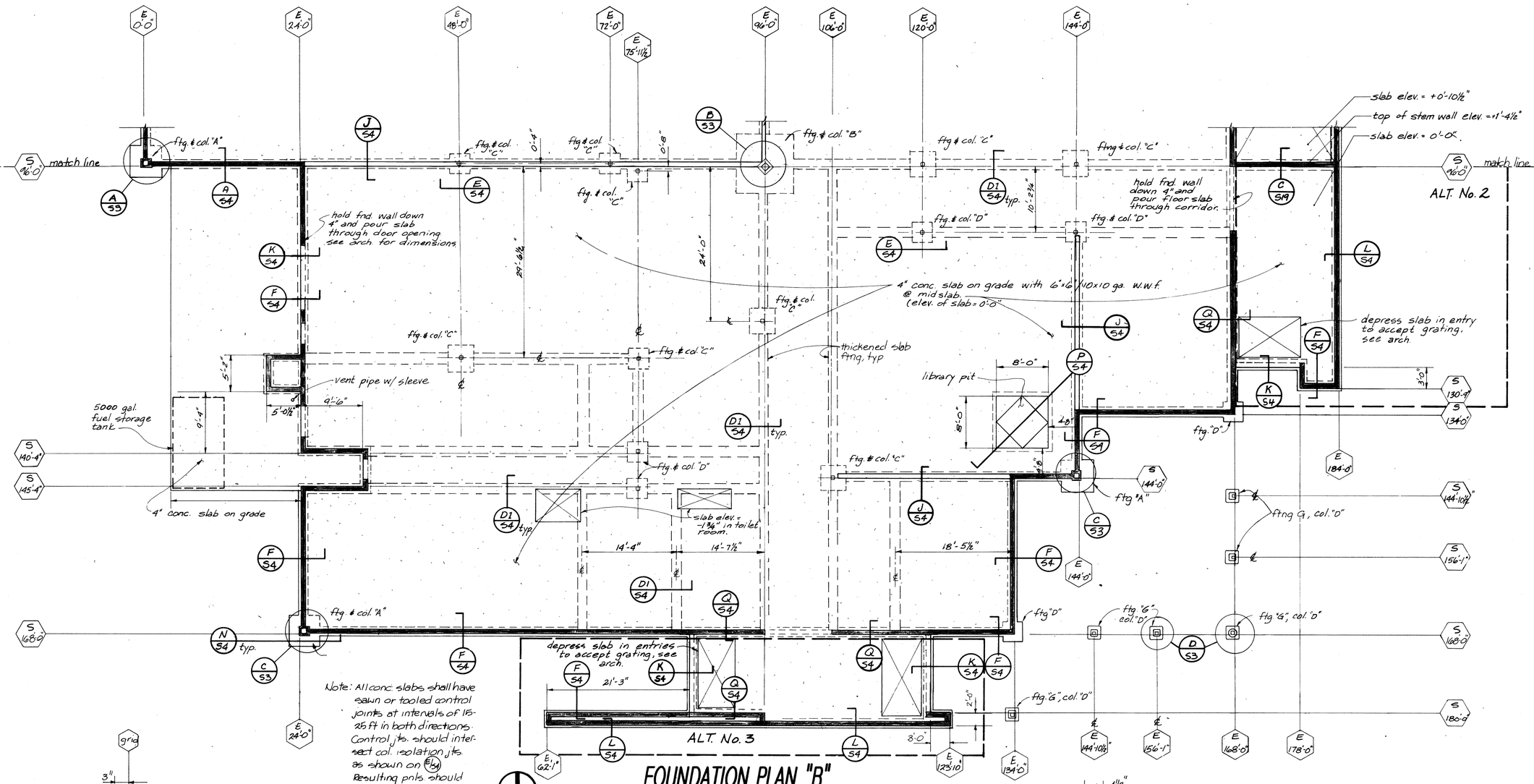
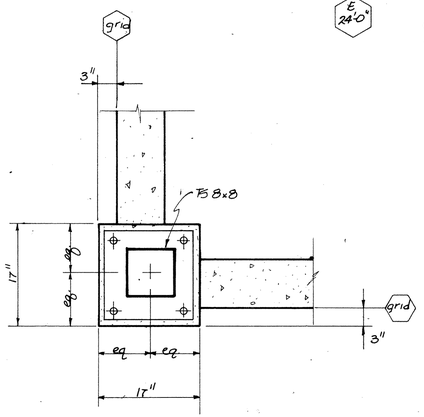
OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
Sg	Sg	F
Sg	Sg	F



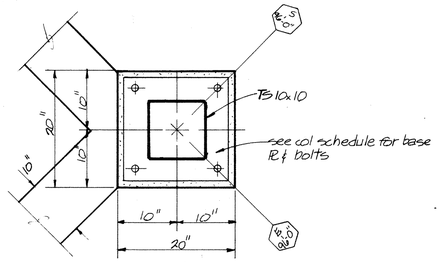
FOUNDATION PLAN "B"

Scale 1/8"=1'-0"



(A) BASE PLATE "A"

NTS



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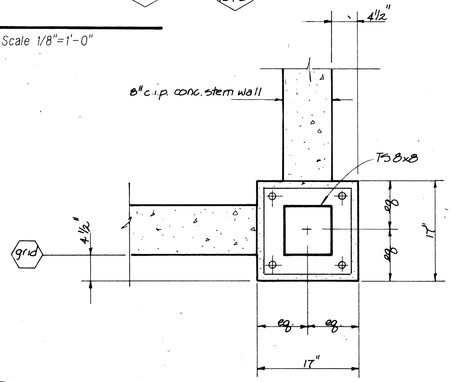

(C) BASE PLATE "A"

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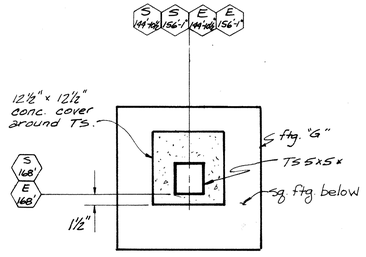

(D) PLAN COLUMN "G"

NTS

OVERLAY REQD		
TB	OVERLAYS TB.	SCREEN F
See Sht 2		F
Sht 1		F

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA 4931H Arthur H. Whitmer CE 3067 REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:

SKAGWAY ALASKA

FOUNDATION PLAN B

REVISIONS

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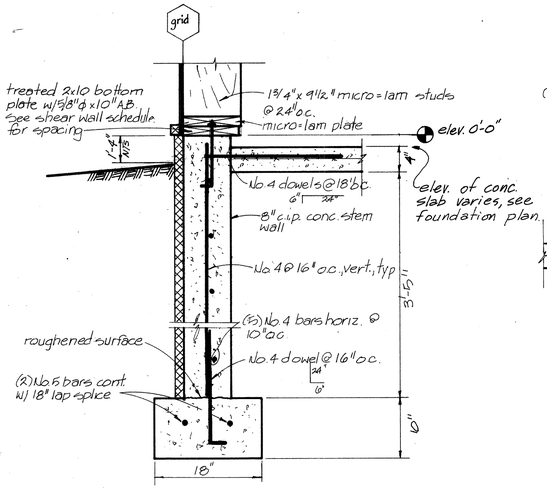
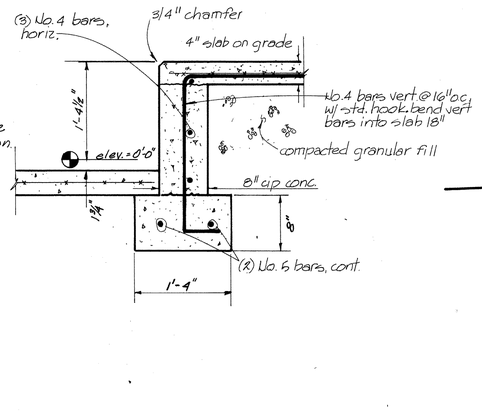


(A) FND. WALL SECTION

1"=1'-0"



(B) PLATFORM SECTION

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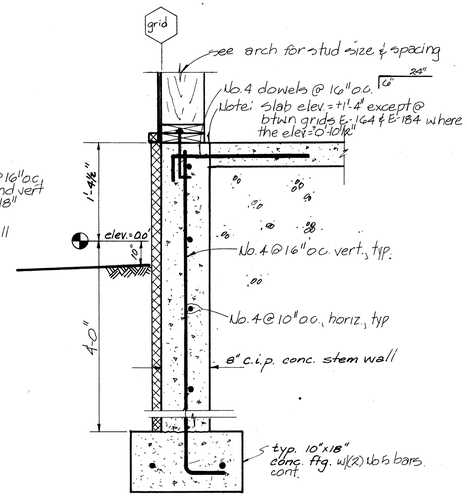

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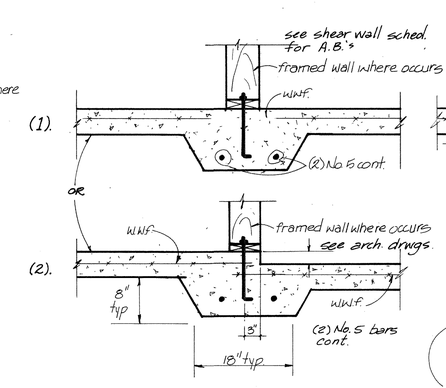

(D) TYP THICKENED SLAB FTGS.

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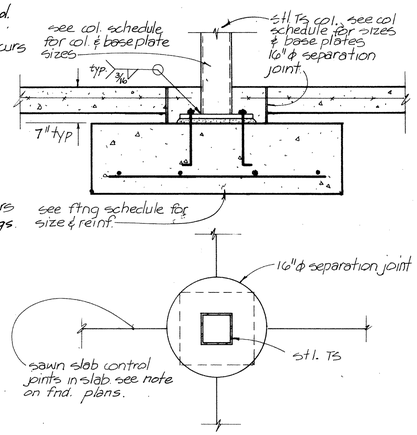
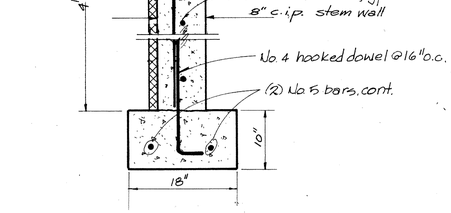


(E) TYP. SPREAD FTG. SECT.

NTS



(F) FND. WALL SECTION

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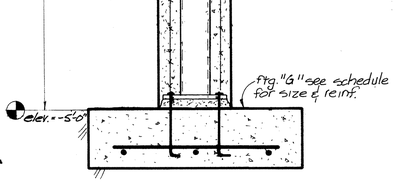

(G) FOOTING SECTION

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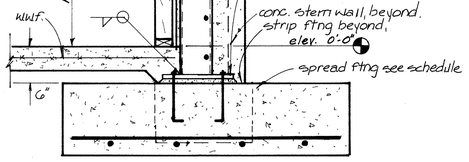
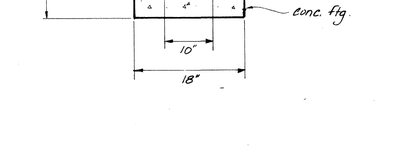


(H) FTG. "C" SECT. @ GRID S7 5'-4"



(J) FDN. SECTION

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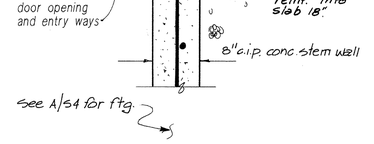
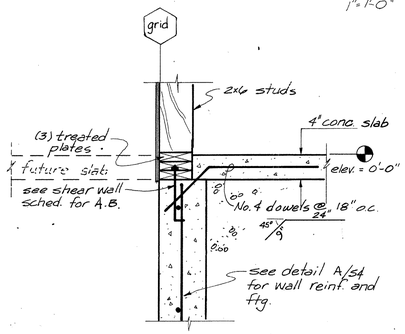


(K) SLAB @ ENTRY

NTS



(L) FND. WALL SECTION

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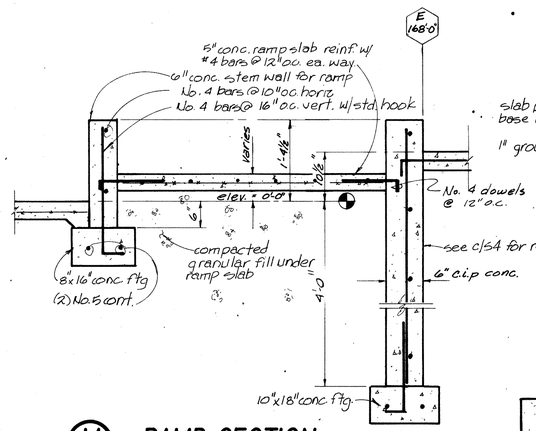

(M) RAMP SECTION

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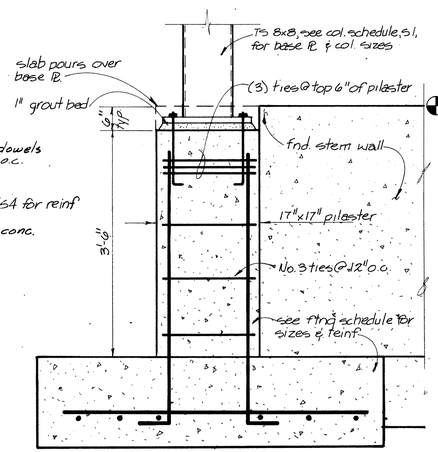
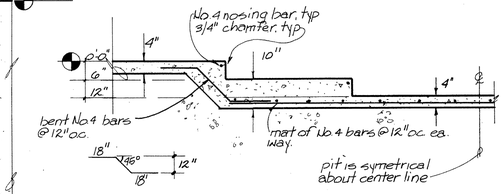


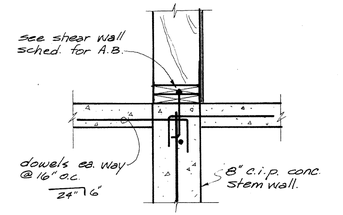
(N) FDN. "A" SECTION

1"=1'-0"



(P) READING PIT SECTION

NTS



(Q) FND. SECTION

scale: 1"=1'-0"

OVLY REQD	OVERLAYS	SCREEN
T⊕	T⊕	F
S⊕	S⊕	F
S⊕	S⊕	F

HAEG·DETTIS·ASSOCIATES INC.

PLANNING, ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA
49TH
Arthur H. Whitmer
CE 3067
REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:

SKAGWAY ALASKA

FOUNDATION DETAILS

REVISIONS

drawn by

date
APRIL 8, 1983

project no.
8303

sheet no.
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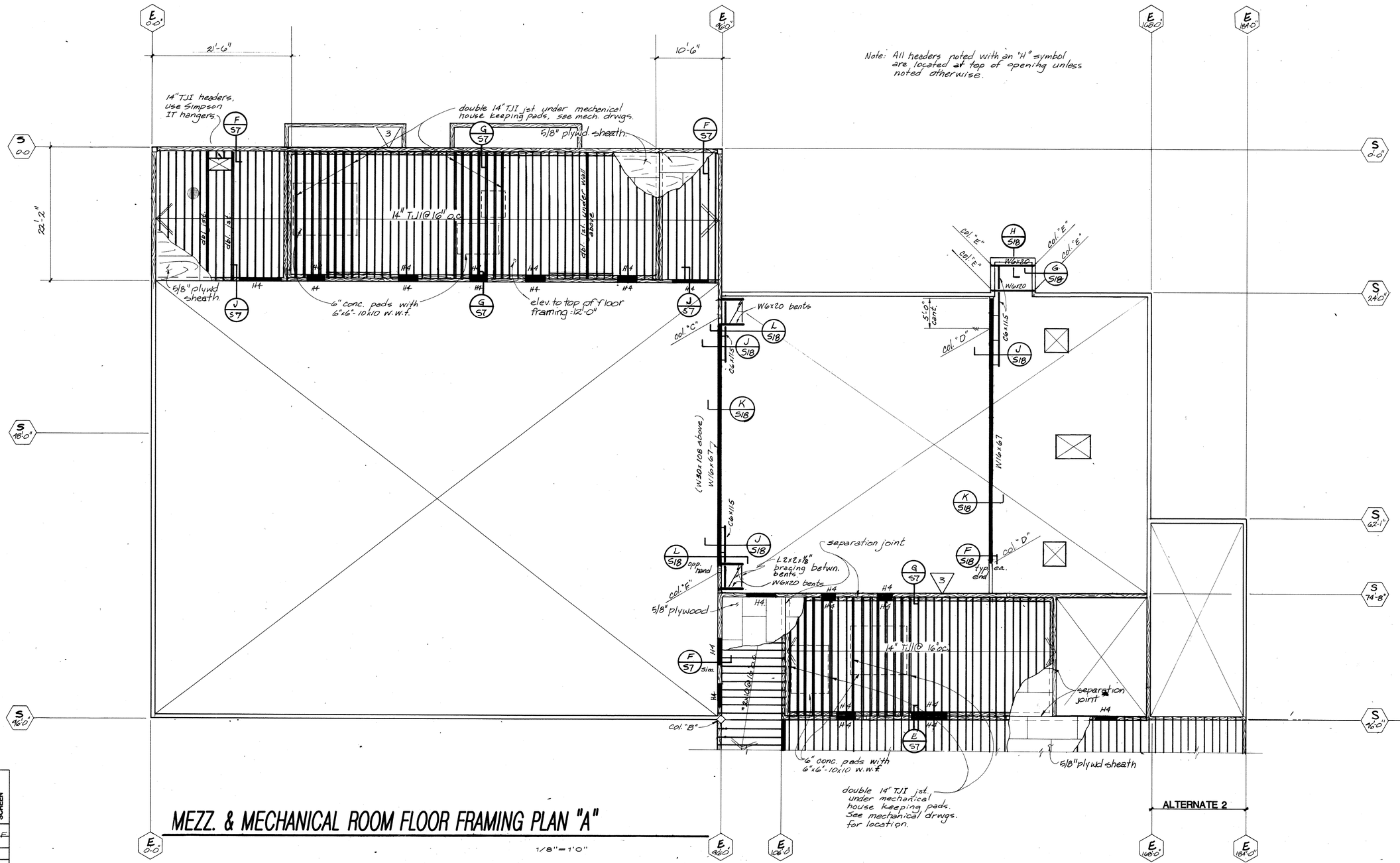
of



MEZZ. & MECHANICAL ROOM FLOOR FRAMING PLAN "A"

1/8"=1'0"

OVR	XY REQD
To	To

OVERLAYS	SCREEN
	F
Sh	F
Sg	F

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3476

STATE OF ALASKA
49TH
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A NEW SCHOOL FOR:

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MEZZANINE FRAMING PLAN A

REVISIONS

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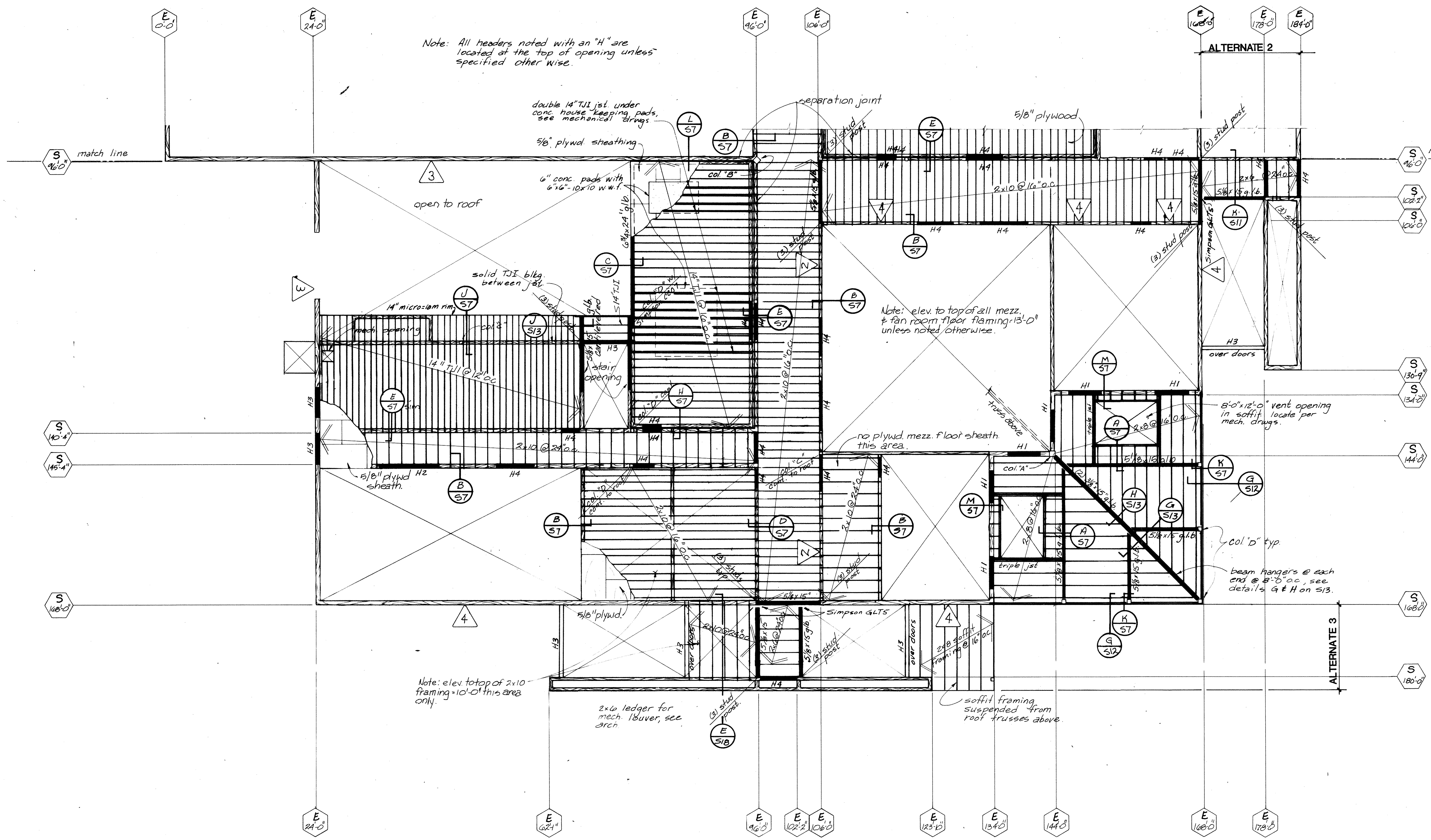

MEZZ. AND MECHANICAL ROOM FLOOR FRAMING PLAN "B"

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

OVE	Y REQD	
	OVERLAYS	
		SCREEN

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planning architecture interior design graphics
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

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A NEW SCHOOL FOR:
SKAGWAY ALASKA

MEZZANINE FRAMING PLAN B

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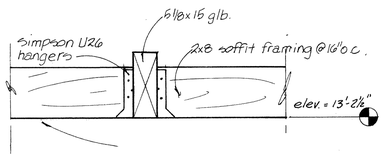
8303

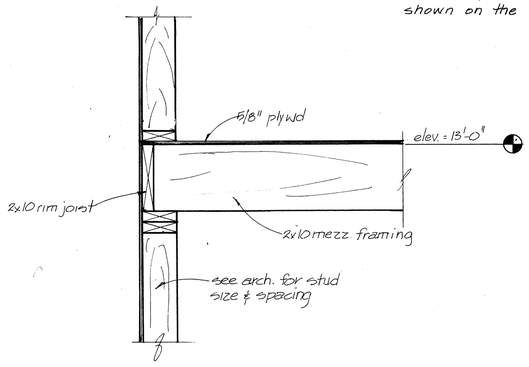
sheet no.
S6 19 of 40

Note: All mezzanine floors have layer of 5/8" underlayment grade plywood over the 5/8" CD-X, which is not shown on the structural details.



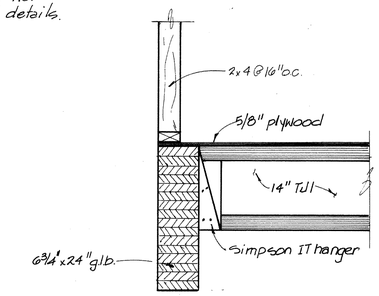
(A) SOFFIT SECTION

Scale: 1"=1'-0"



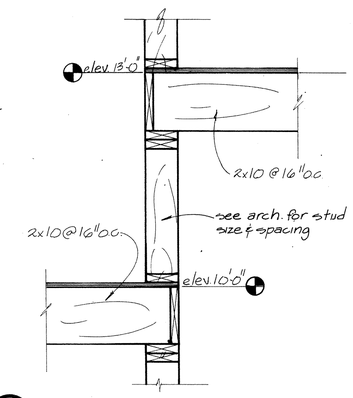
(B) MEZZ. FLOOR SECTION

NTS



(C) MEZZ. FLOOR SECTION

Scale: 1"=1'-0"



(D) MEZZ. AND CEILING FRAMING SECTION

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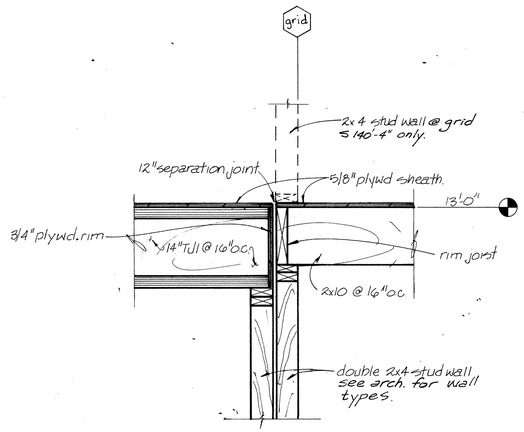

(E) MEZZ. FLOOR SECTION

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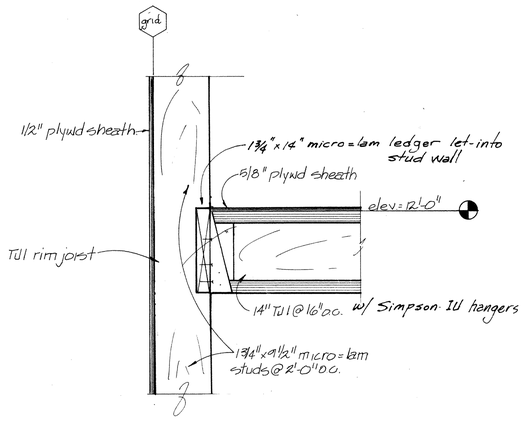
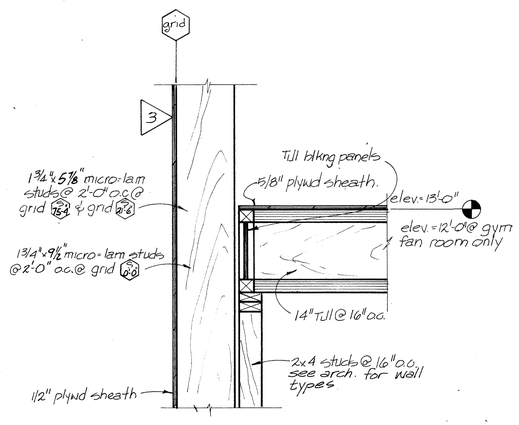


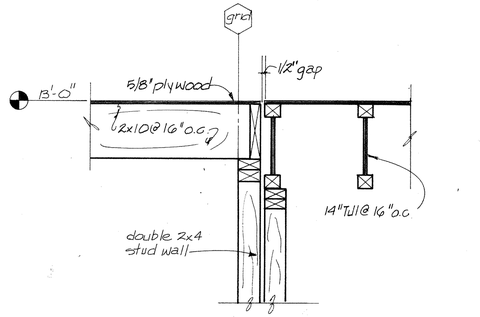
(F) MEZZ. FLOOR SECTION

Scale: 1"=1'-0"



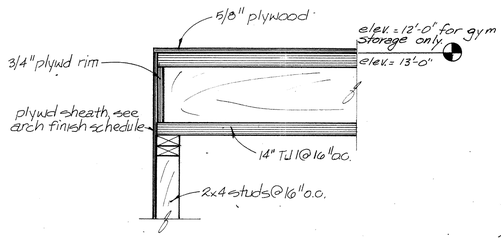
(G) MEZZ. FLOOR SECTION

Scale: 1"=1'-0"



(H) MEZZ. FLOOR SECTION

Scale: 1"=1'-0"



(J) MEZZ. FLOOR SECTION

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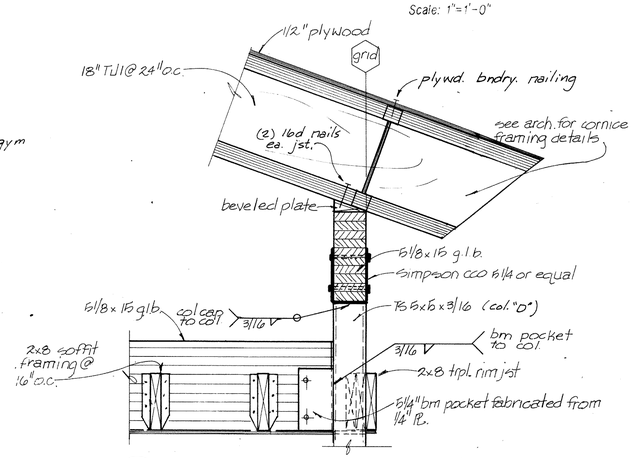
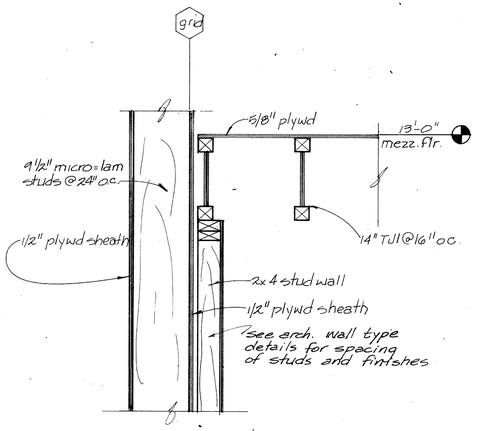


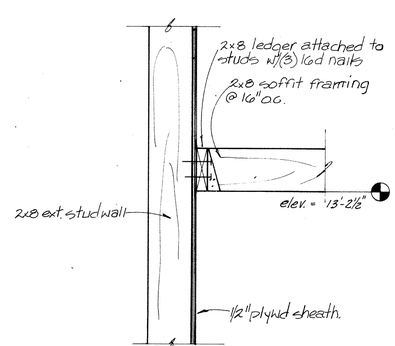
(K) SOFFIT SECTION

Scale: 1"=1'-0"



(L) MEZZ. FLOOR SECTION

Scale: 1"=1'-0"



(M) SOFFIT SECTION

Scale: 1"=1'-0"

OVE	Y REQD
To	TO
39	39
24	24

OVERLAYS	SCREEN
	F
	T1
	F

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PLANNING, ARCHITECTURE, INTERIOR DESIGN, GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA
Arthur H. Whitmer
CE-3067
REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:
SKAGWAY ALASKA

MEZZANINE DETAILS

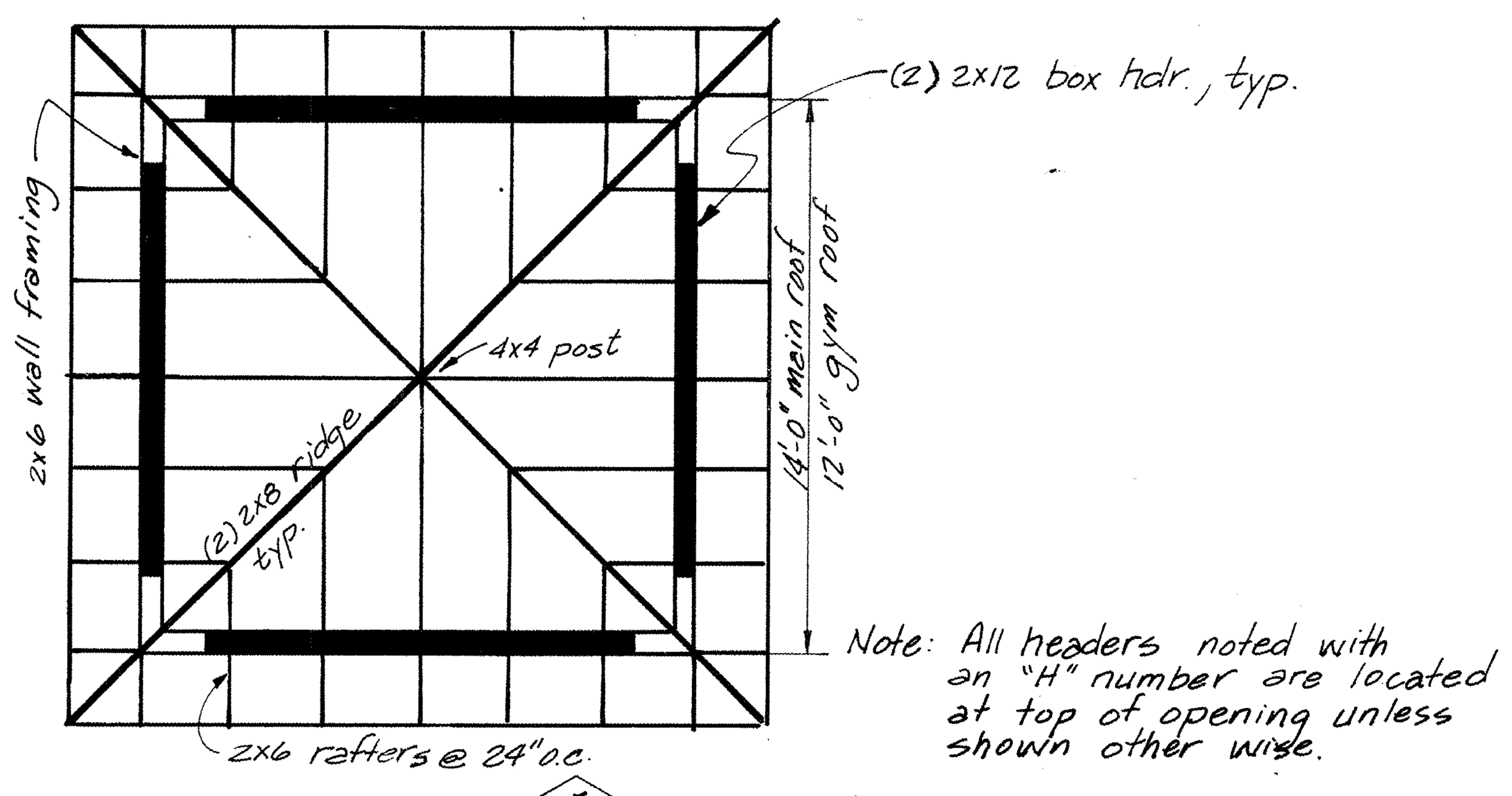
REVISIONS

drawn by

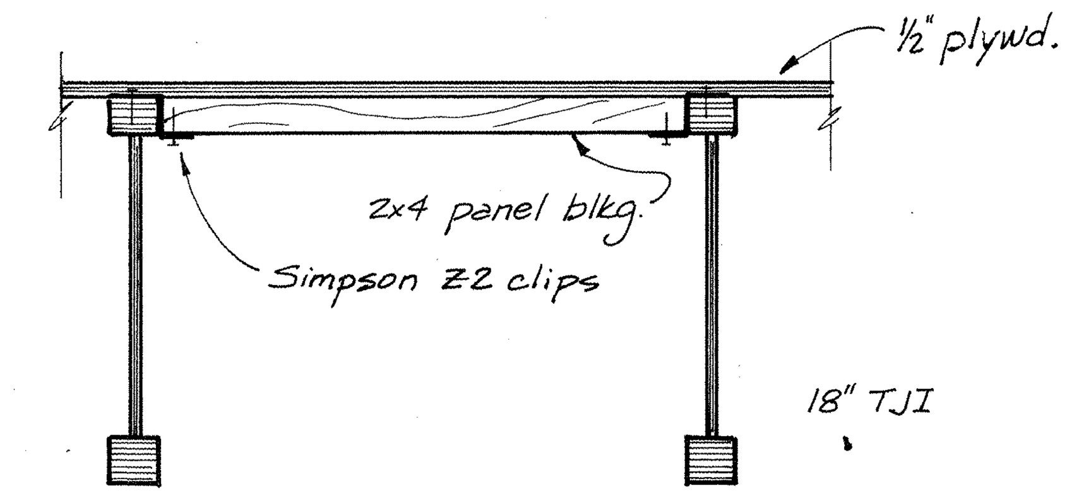
date
APRIL 8, 1983

project no.
8303

sheet no.
S7 19
of

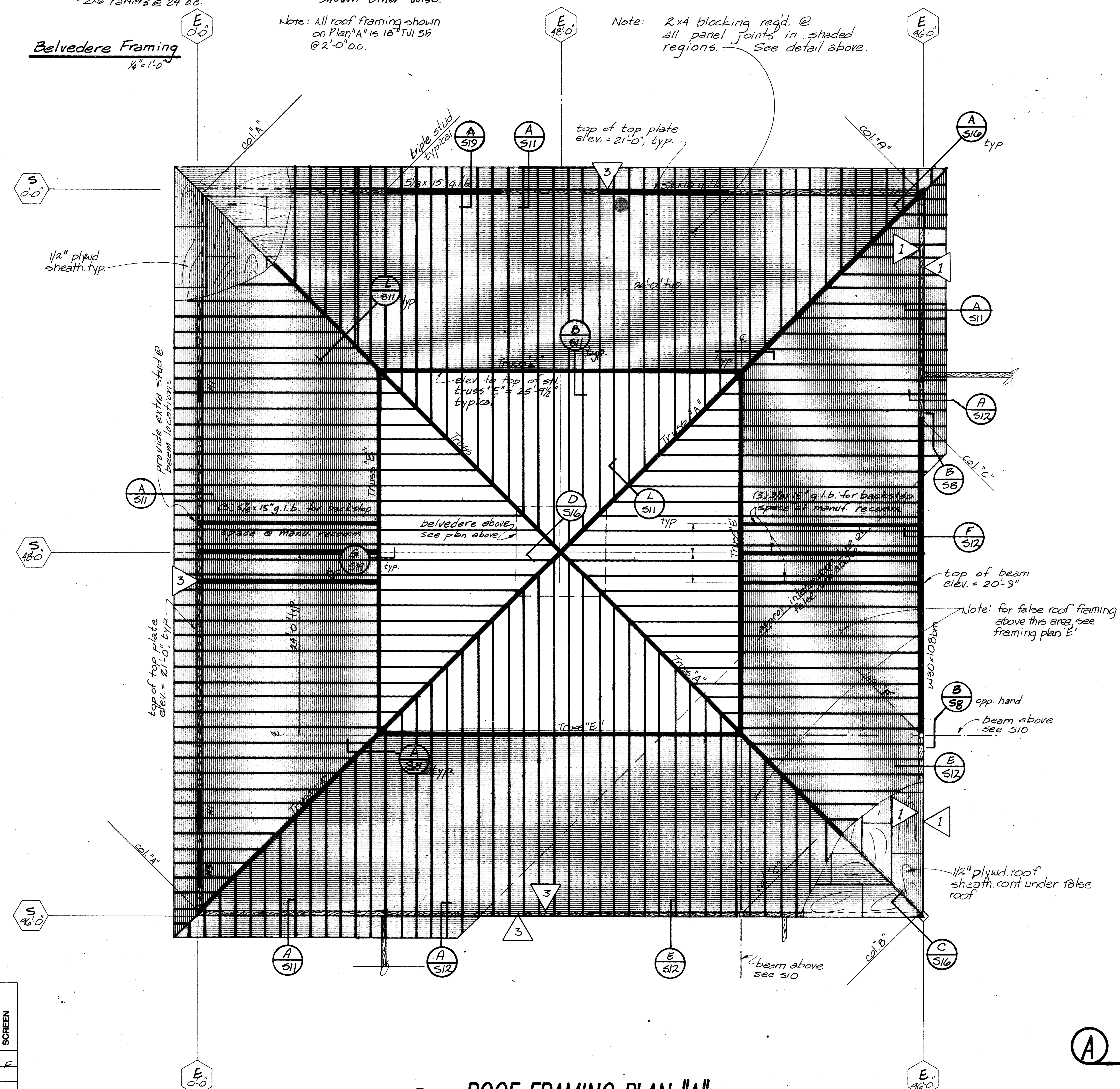


Belvedere Framing
1/4"=1'-0"

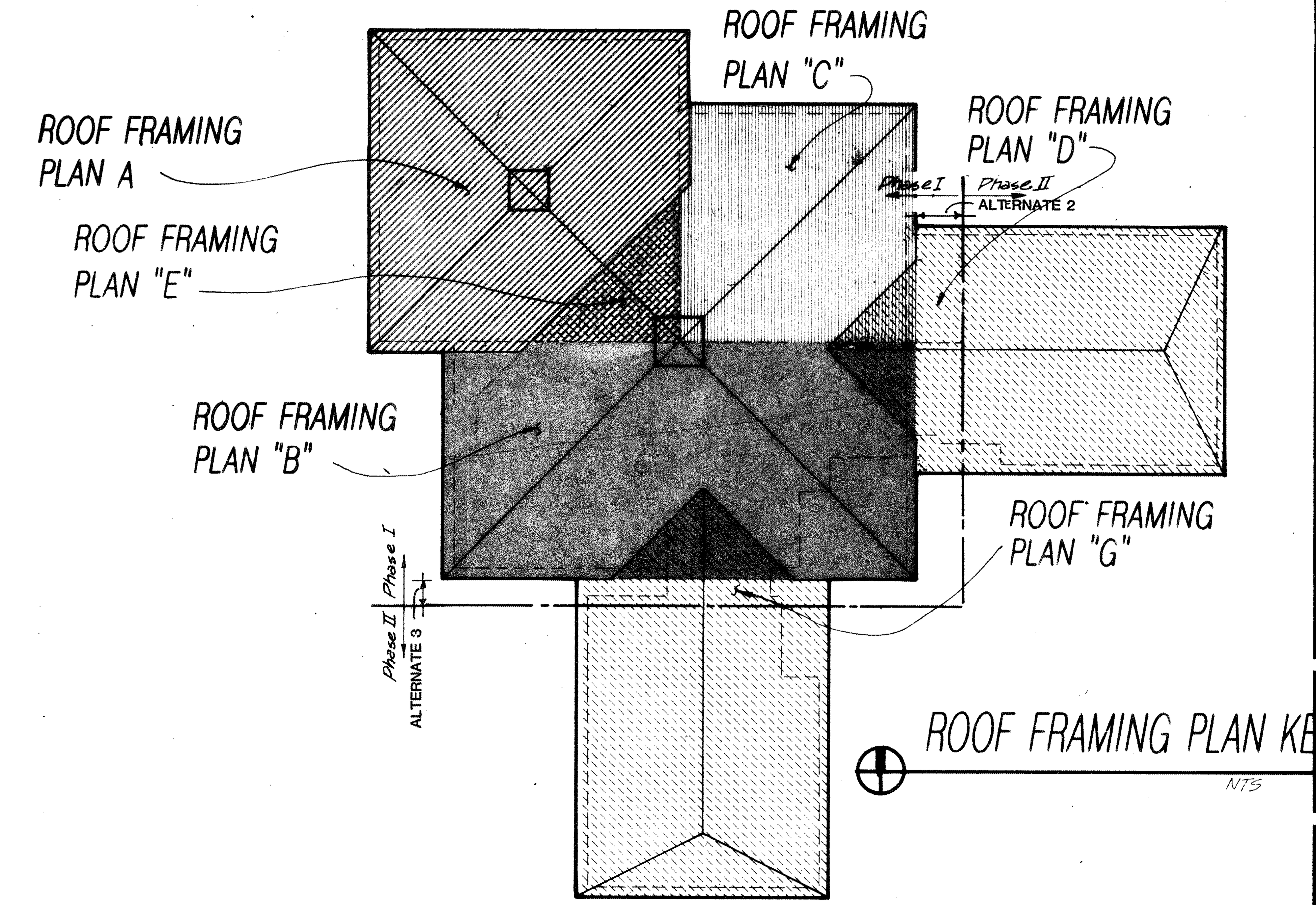


Note: All roof framing shown on Plan "A" is 18" TJI 35 @2'-0"o.c.

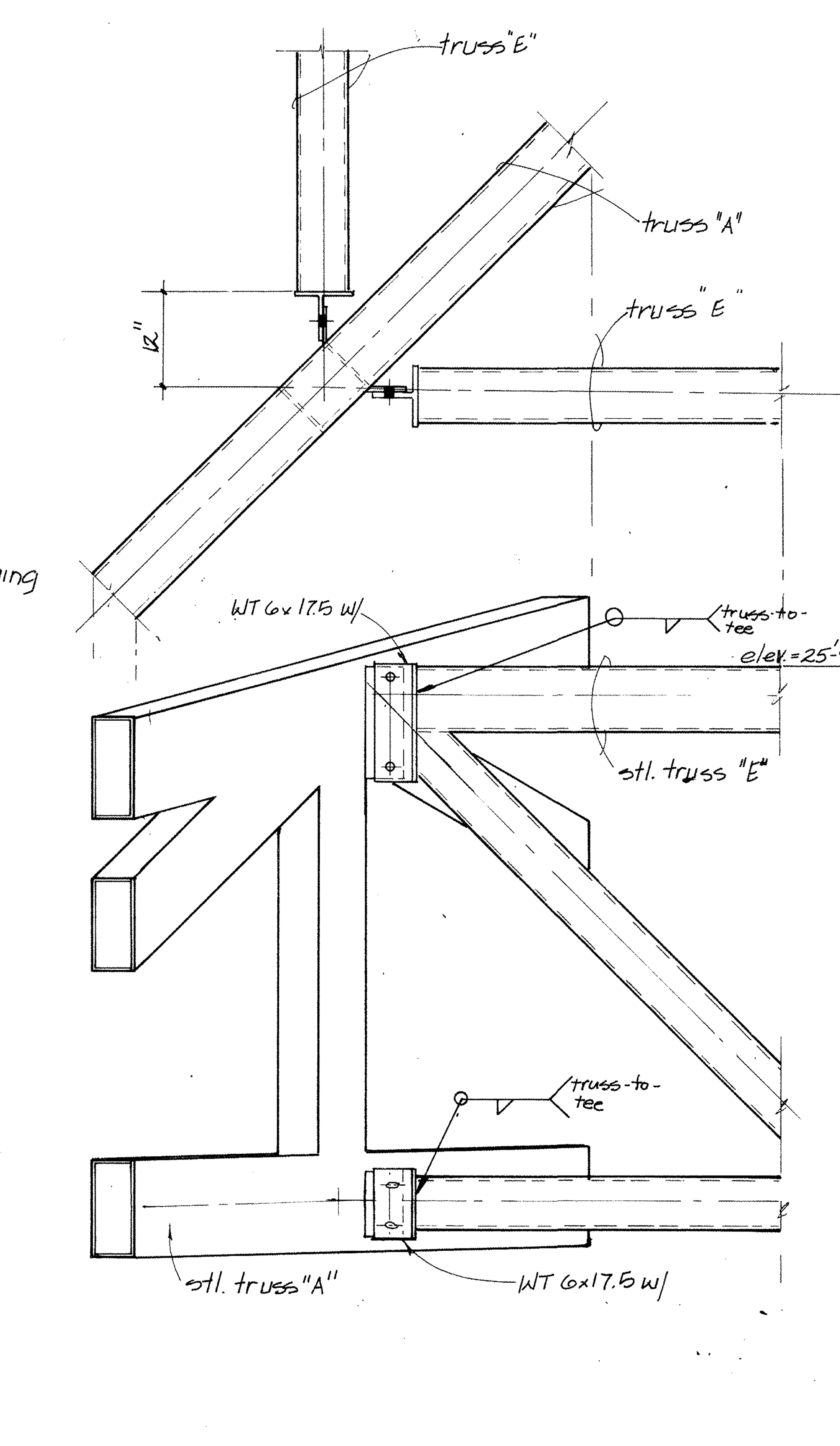
Note: 2x4 blocking req'd. @ all panel joints in shaded regions. See detail above.



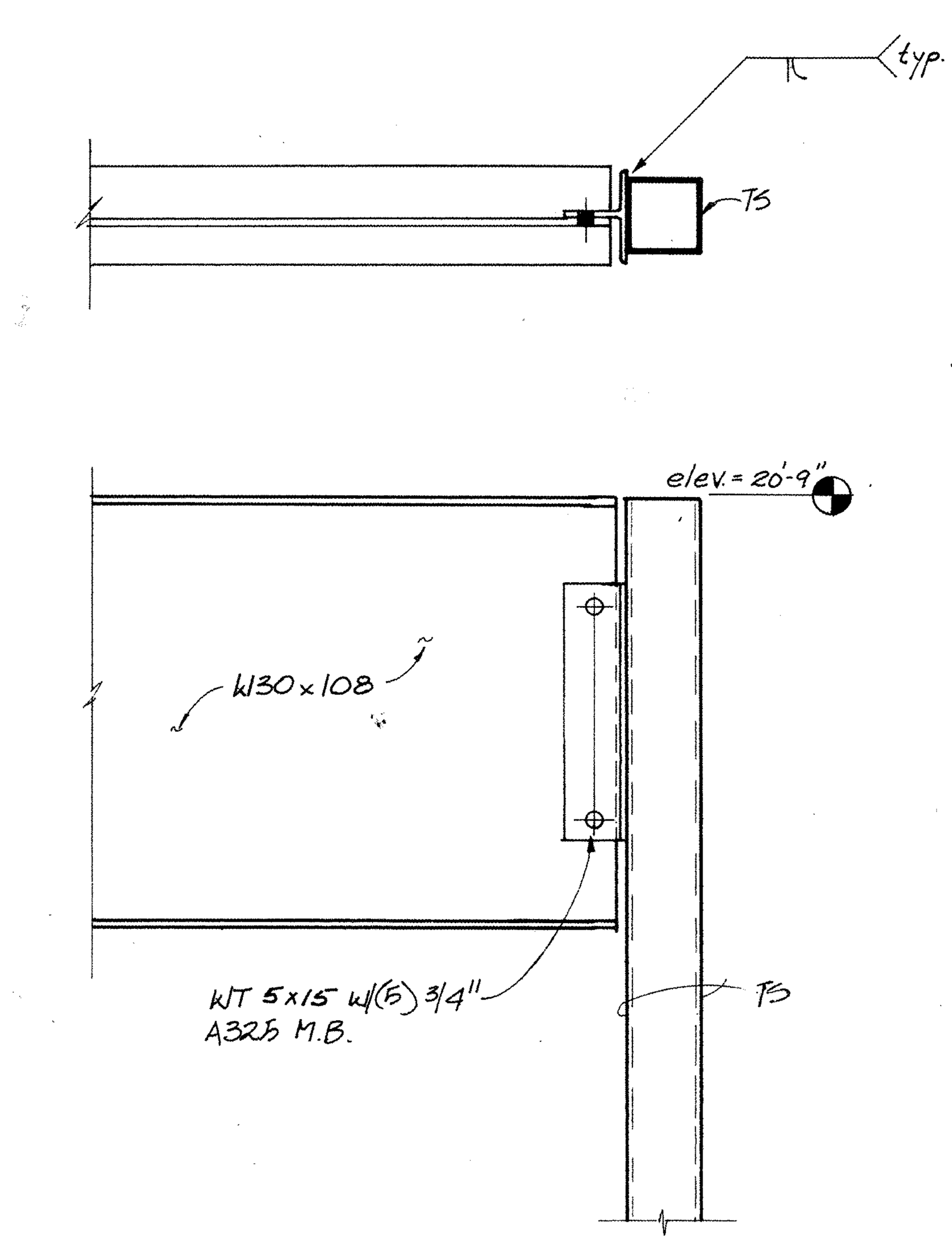
ROOF FRAMING PLAN "A"
SCALE: 1/8"=1'-0"



ROOF FRAMING PLAN KEY
NTS



(A) TRUSS CONN. DETAIL
Scale: 3/4"=1'-0"



(B) BEAM CONN. DETAIL
Scale: 1"=1'-0"

OV.	AY REQD	OVERLAYS	SCREEN
To		"B"	F
Sa	Sa		F
Sa	Sa	Sh	F

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A NEW SCHOOL FOR:
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ROOF FRAMING PLAN A

REVISIONS

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APRIL 8, 1983

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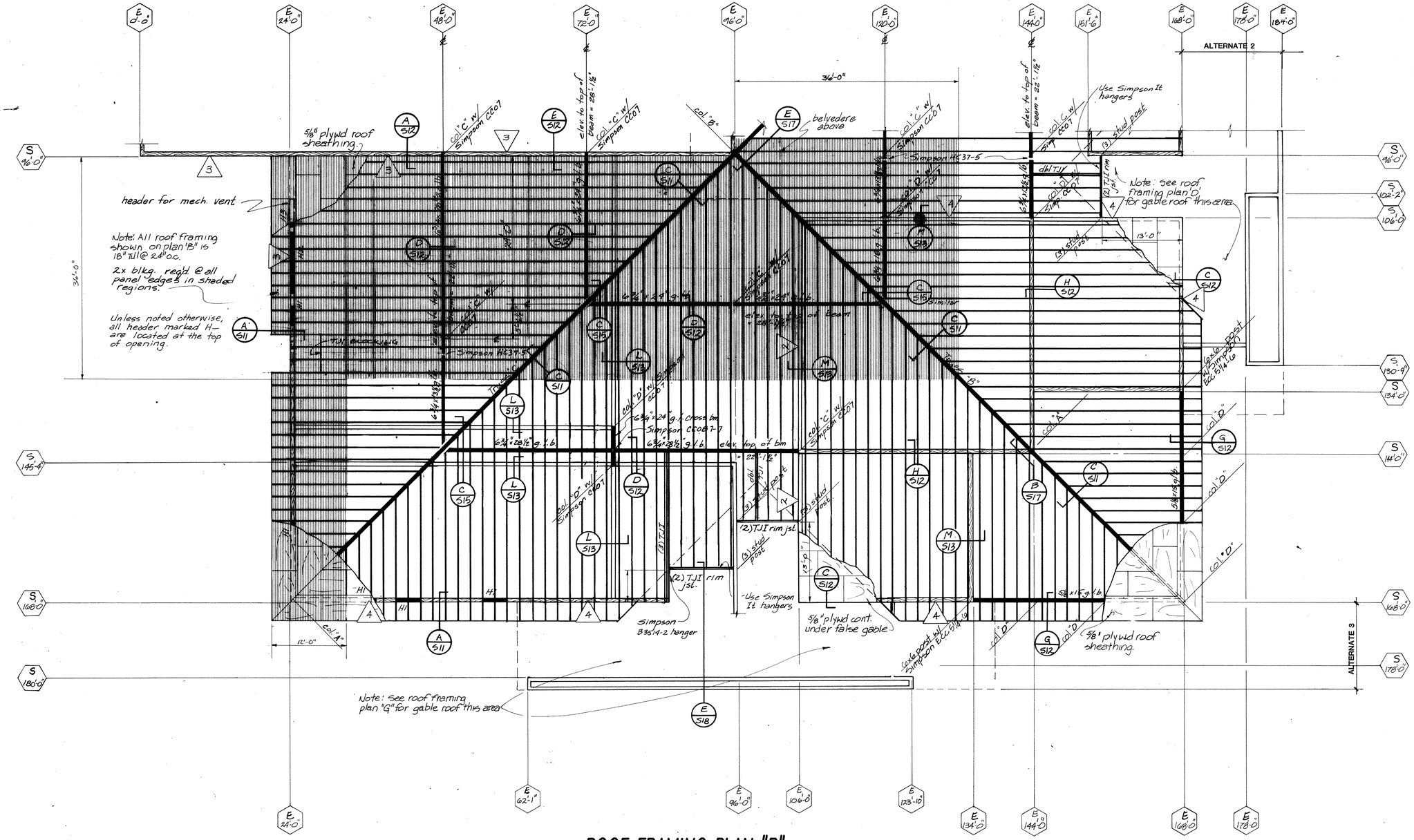

ROOF FRAMING PLAN "B"

SCALE: 1/8"=1'0"

OVERLAY REQD	OVERLAYS	SCREEN

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A NEW SCHOOL FOR:
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ROOF FRAMING PLAN "B"

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8303

sheet no.
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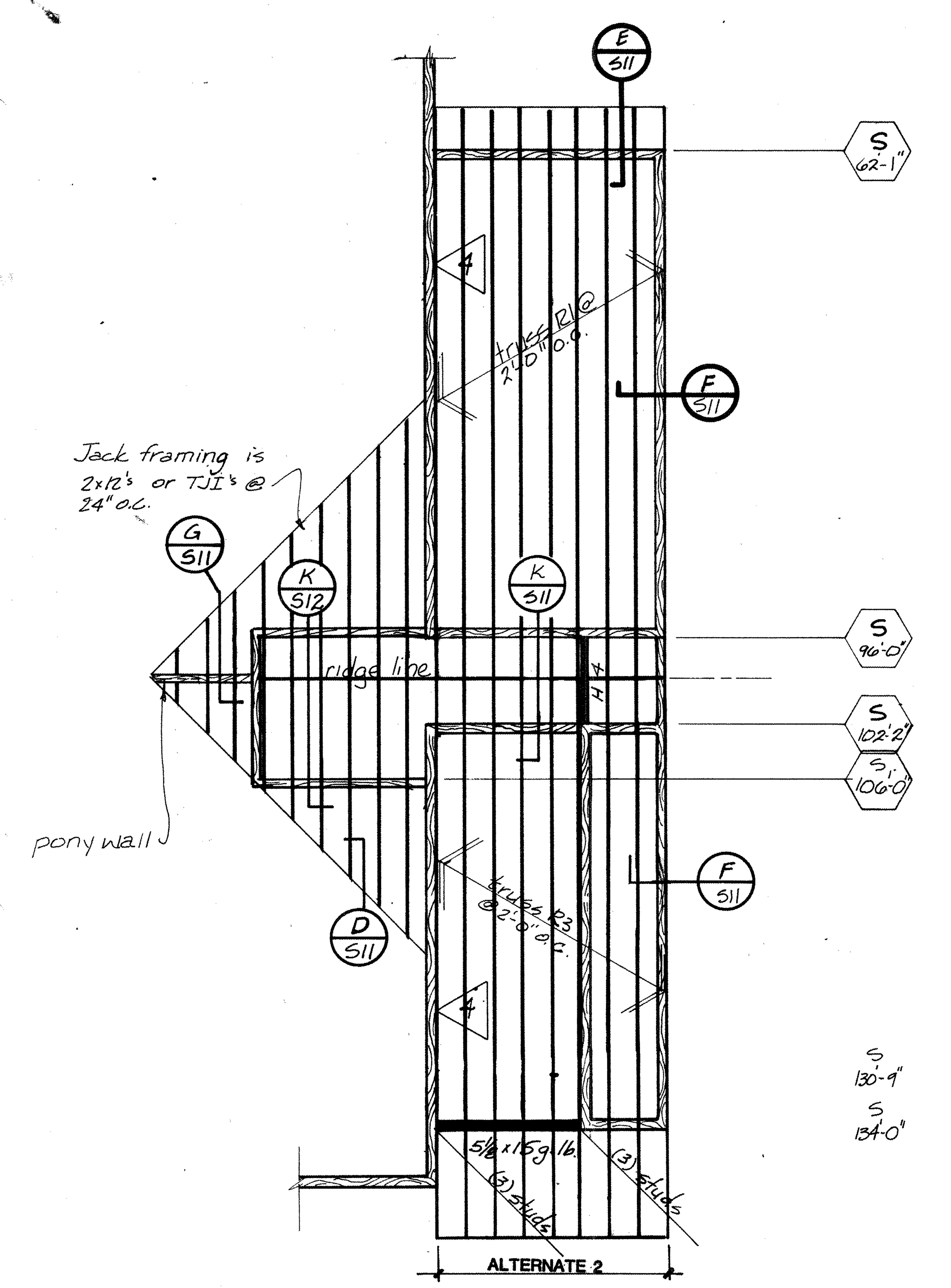
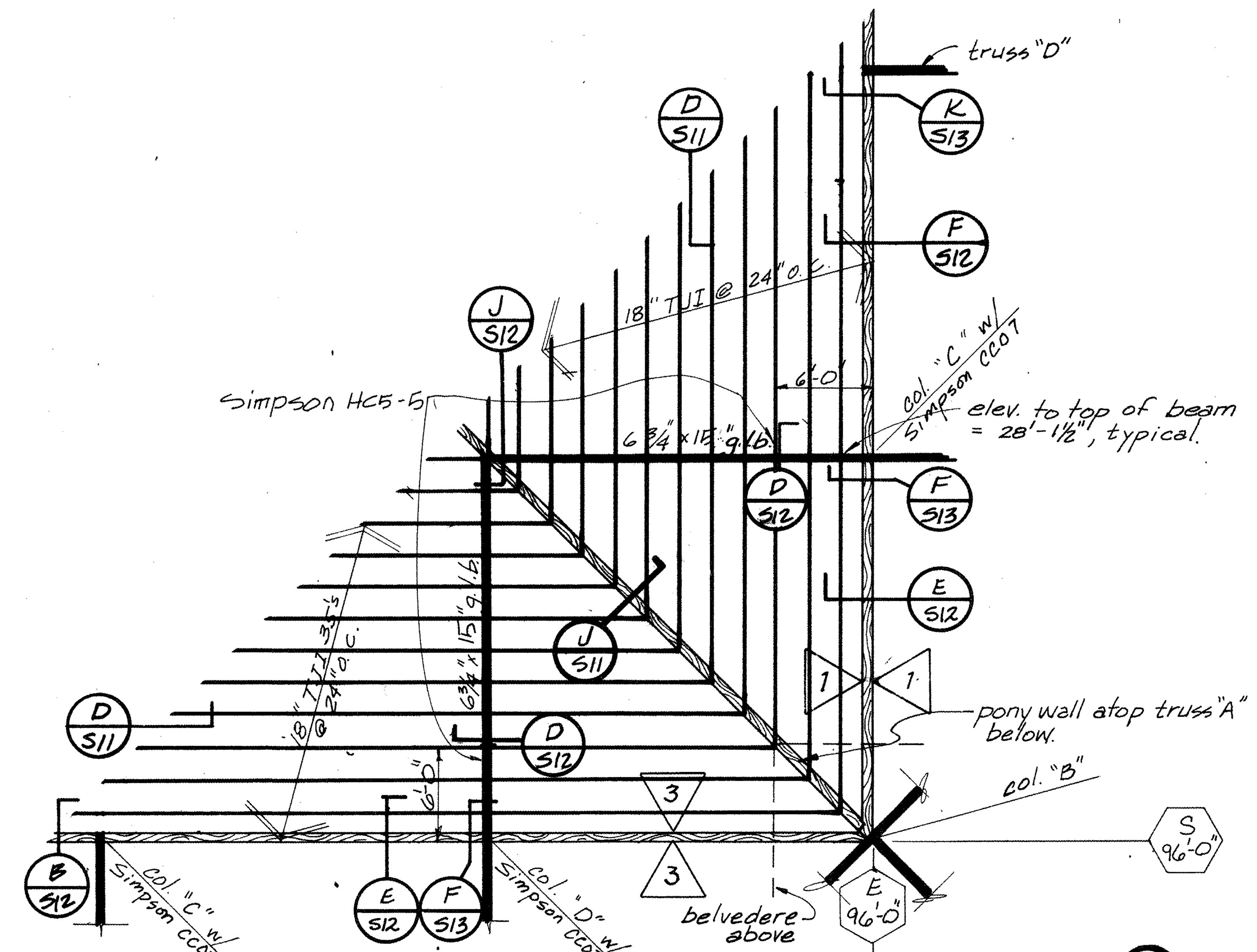
of



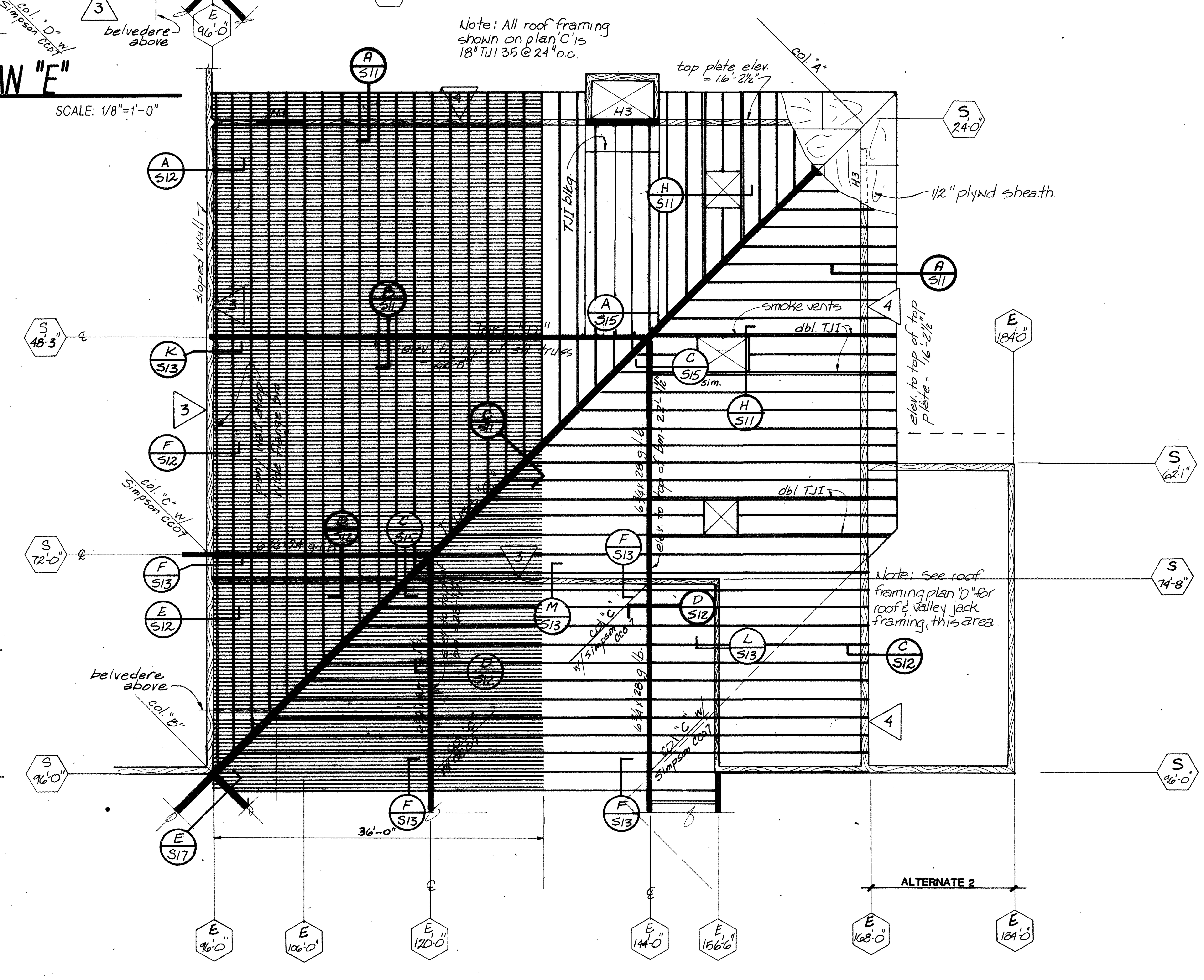
ROOF FRAMING PLAN "D"

SCALE: 1/8"=1'0"



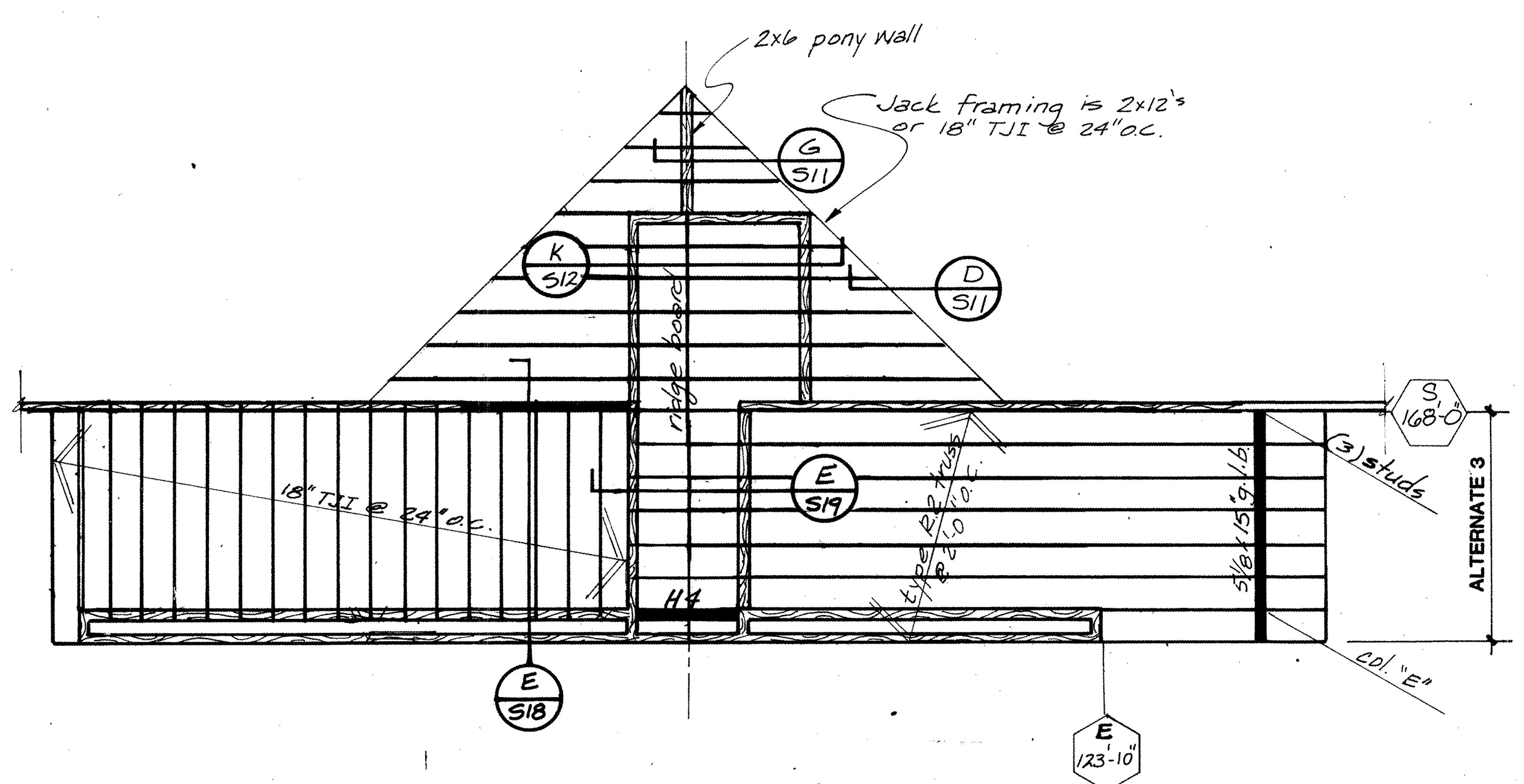
ROOF FRAMING PLAN "E"

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



ROOF FRAMING PLAN "C"

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



ROOF FRAMING PLAN "G"

SCALE: 1/8"=1'0"

OVERLAYS	SCREEN
TB	F

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ROOF FRAMING PLANS

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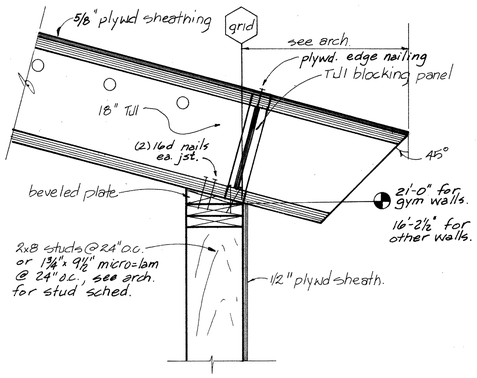
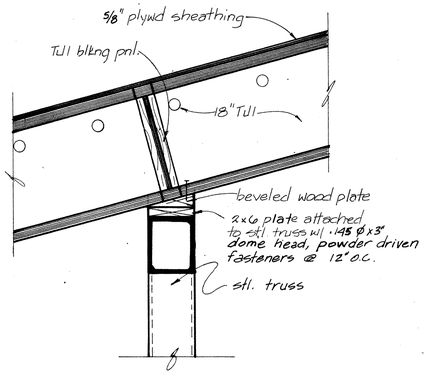
S10 of 19



(A) ROOF SECTION

SCALE: 1"=1'-0"



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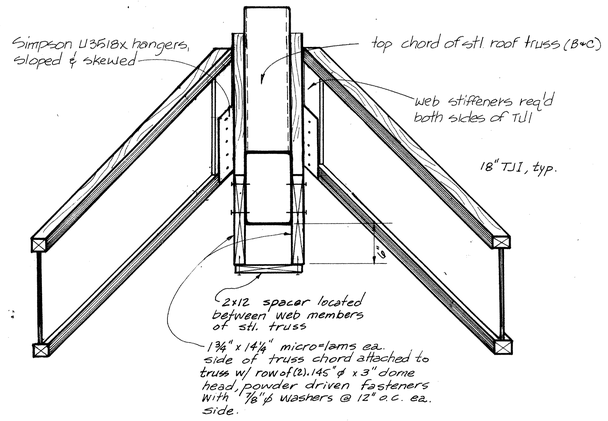

(C) ROOF RIDGE SECTION

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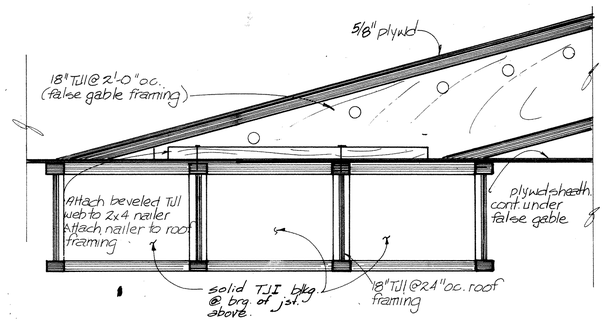

(D) ROOF SECTION

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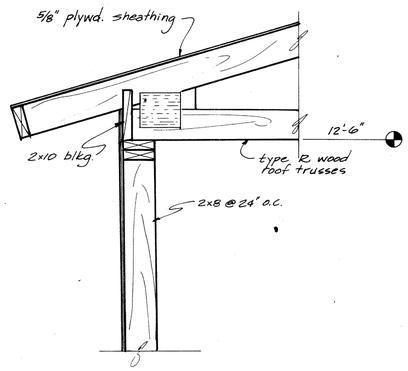

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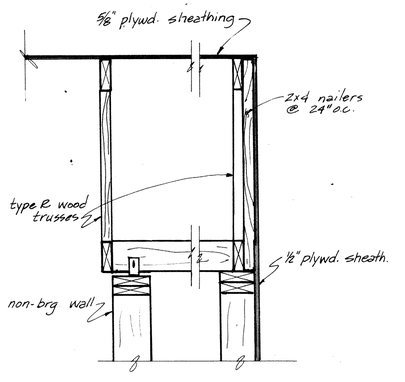

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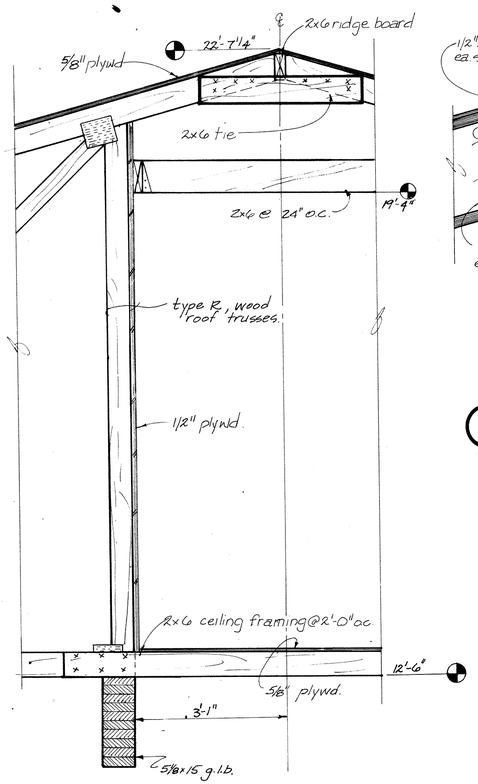

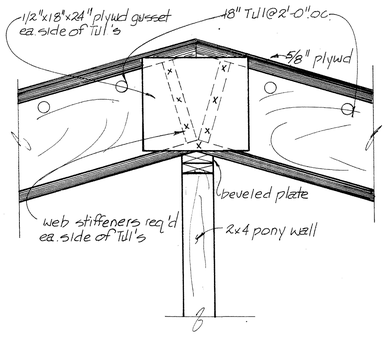

(G) ROOF RIDGE SECTION

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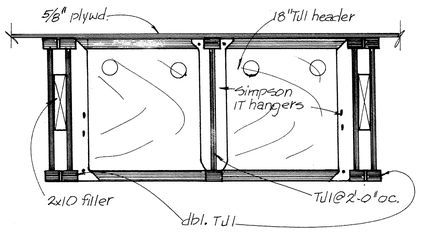
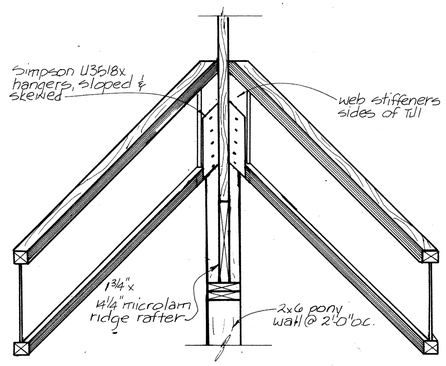


(H) RAFTER HEADER

SCALE: 1"=1'-0"

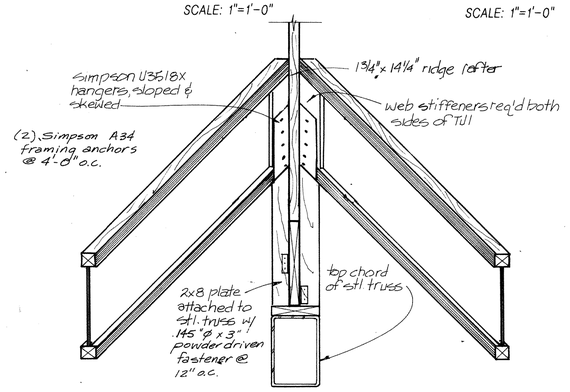


(J) ROOF RIDGE SECTION

SCALE: 1"=1'-0"

(K) ROOF SECTION

SCALE: 1"=1'-0"



(L) ROOF RIDGE SECTION

SCALE: 1"=1'-0"

OVE.	Y REQD
T6	T5
S4	S3
S5	S3

OVERLAYS	SCREEN
	F
S3	F
S3	F

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

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STATE OF ALASKA 49TH
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A NEW SCHOOL FOR: SKAGWAY ALASKA

ROOF DETAILS

REVISIONS

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sheet no.
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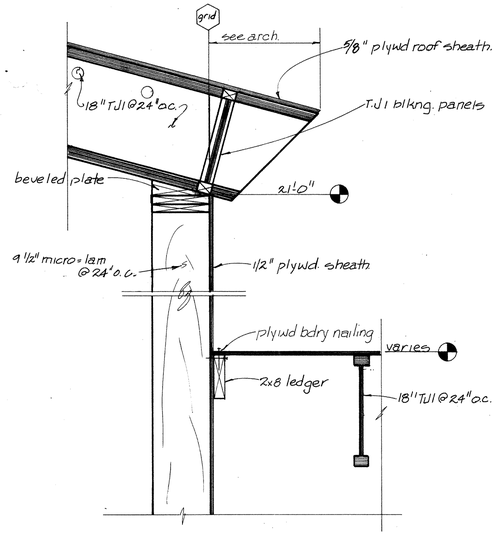

(A) ROOF SECTION

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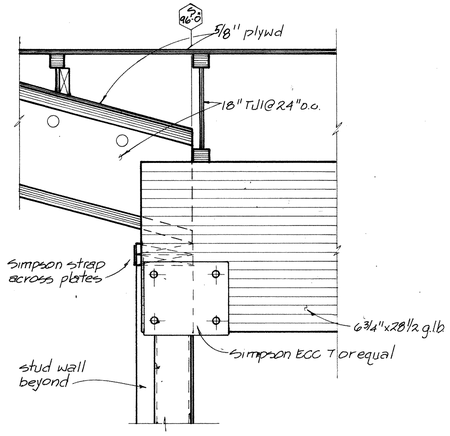

(B) BEAM SEAT DETAIL

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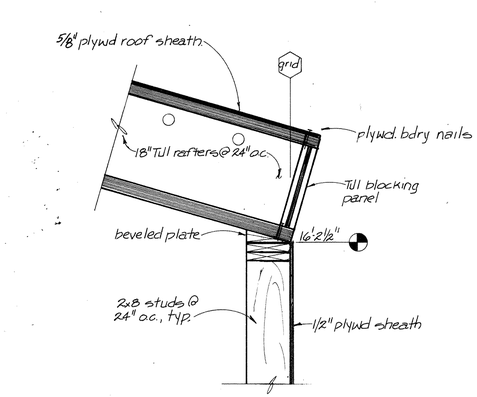

(C) ROOF SECTION

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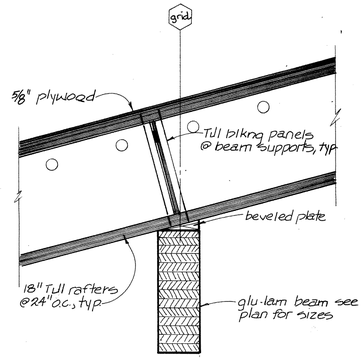

(D) ROOF SECTION

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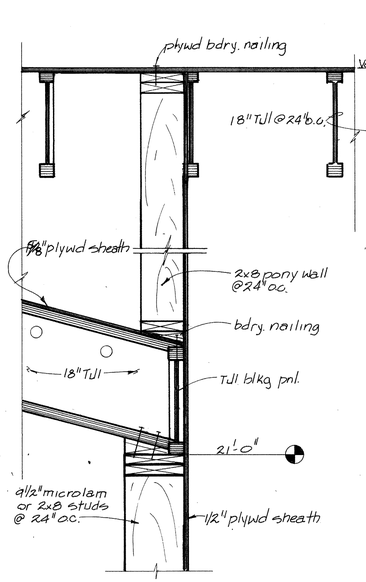

(E) ROOF SECTION

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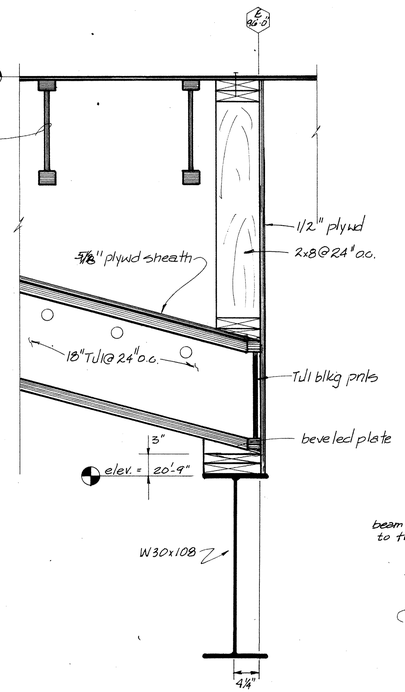

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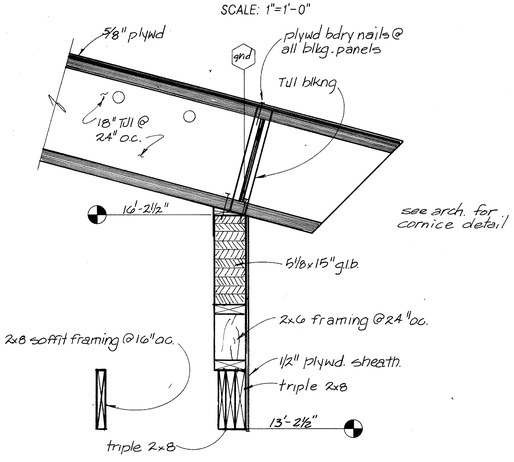
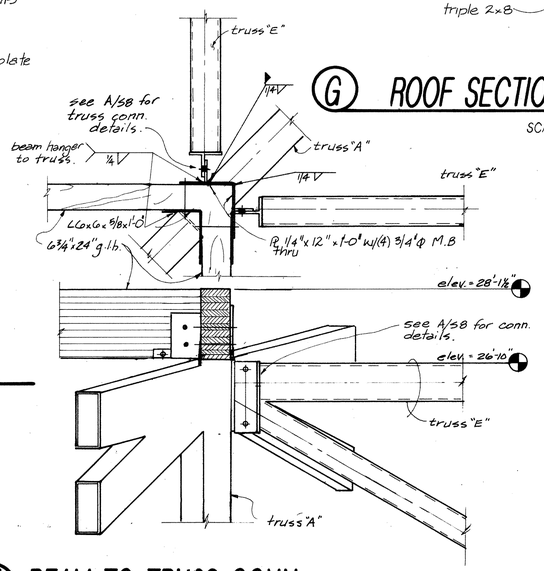


(G) ROOF SECTION

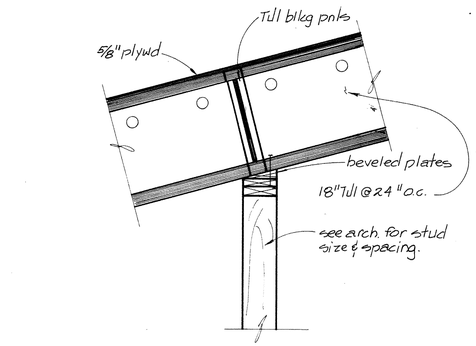
SCALE: 1"=1'-0"



Beam Hanger

(J) BEAM TO TRUSS CONN.

3/4"=1'-0"



(H) ROOF SECTION

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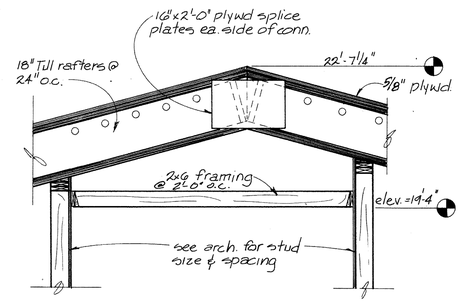

(K) ROOF SECTION

scale: 1/2"=1'-0"

OVE	Y RECD
To	To
Sw	Sw
Sw	Sw

OVERLAYS	SCREEN
To	F
Sw	F
Sw	F

HAEG·BETTIS·ASSOCIATES INC.

PLANNING, ARCHITECTURE INTERIOR design GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
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STATE OF ALASKA 49TH
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ROOF DETAILS

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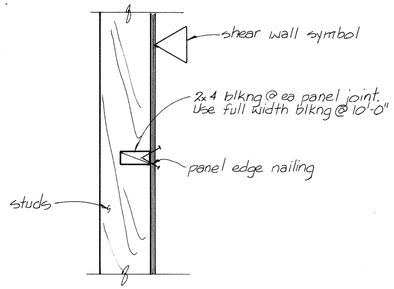
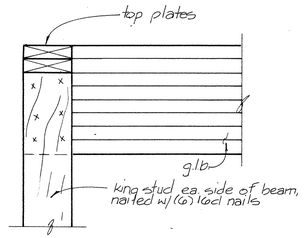
of



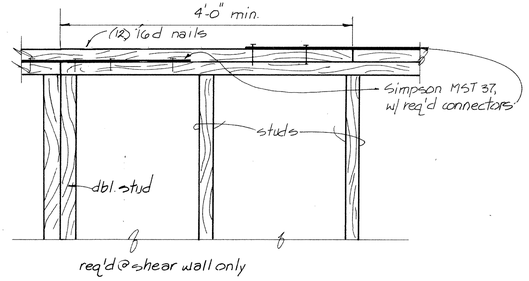
(A) TYP. SHEAR WALL BLKG.

NTS



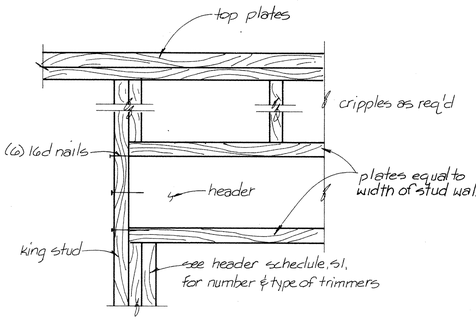
(B) TYP. BEAM POCKET

NTS



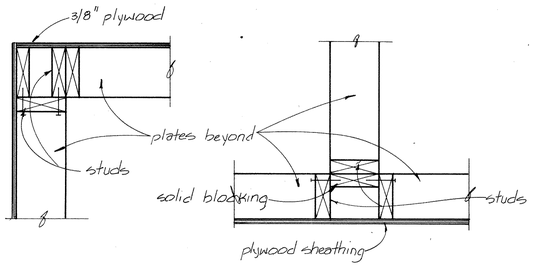
(C) TYP. TOP PLATE SPLICE

NTS

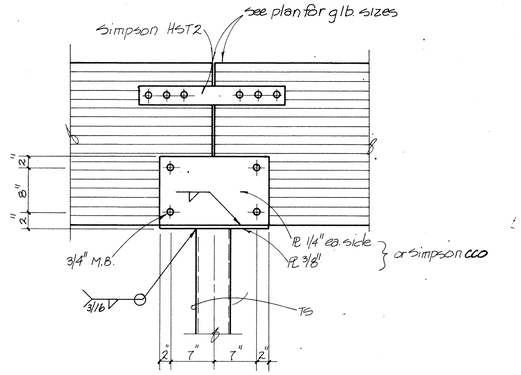


(D) TYP. HEADER DETAIL

NTS

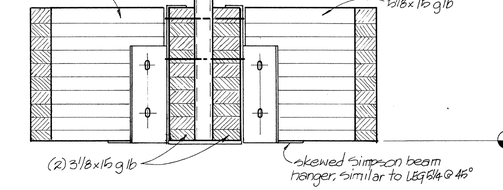


(E) TYP. FRAMING CORNERS



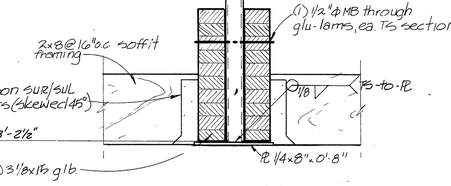
(F) TYP. BEAM SADDLE

NTS



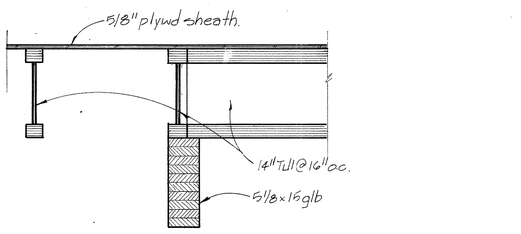
(G) SOFFIT FRAMING SECTION

NTS



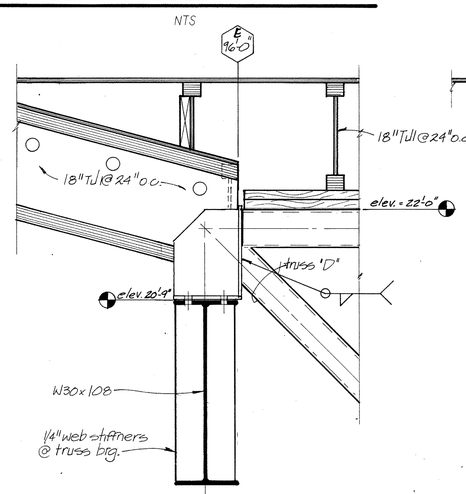
(H) SOFFIT FRAMING SECTION

NTS



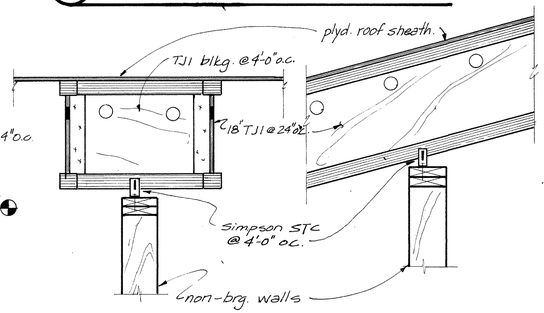
(J) MEZZ. SECTION

NTS

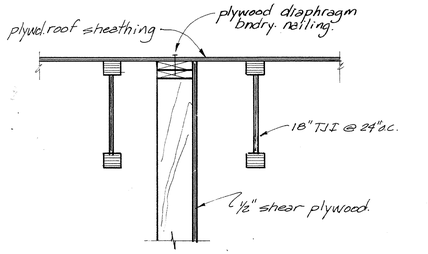


(K) TRUSS "D" BRG. DETAIL

SCALE: 1"=1'-0"



(L) TYP. NON-BRG. WALL DETAILS



(M) TYP. SHEAR WALL CONN.

OVE	NY REQD
TJI	OVERLAYS
T&G	SCREEN
S.W.	S.W. F.
S.W.	S.W. F.

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STATE OF ALASKA
49TH
Arthur H. Whitmer
CE 3067
REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:

SKAGWAY ALASKA

MISC. DETAILS

REVISIONS

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APRIL 8, 1983

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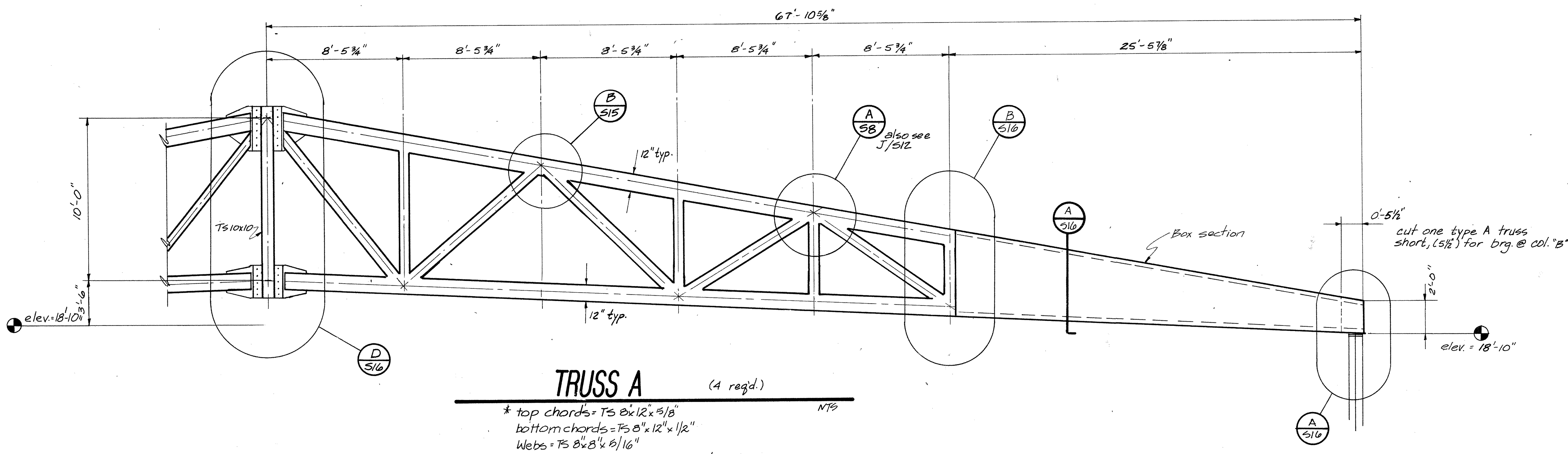
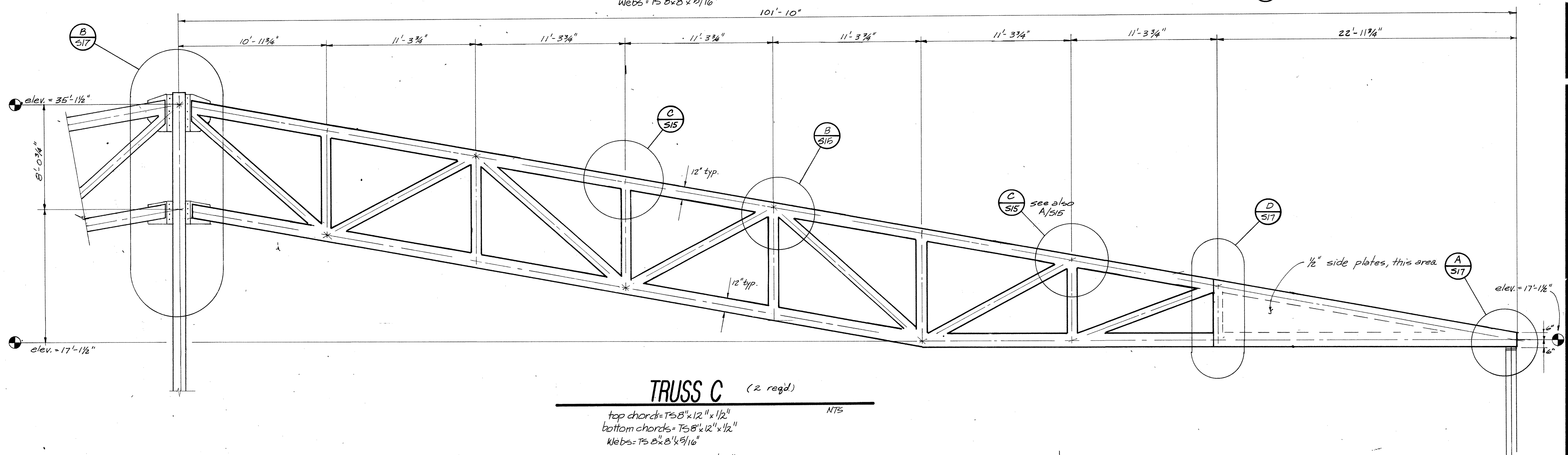


TRUSS A (4 req'd.)

NTS

* top chords = TS 8"x12"x5/8"
bottom chords = TS 8"x12"x1/2"
Webs = TS 8"x8"x5/16"

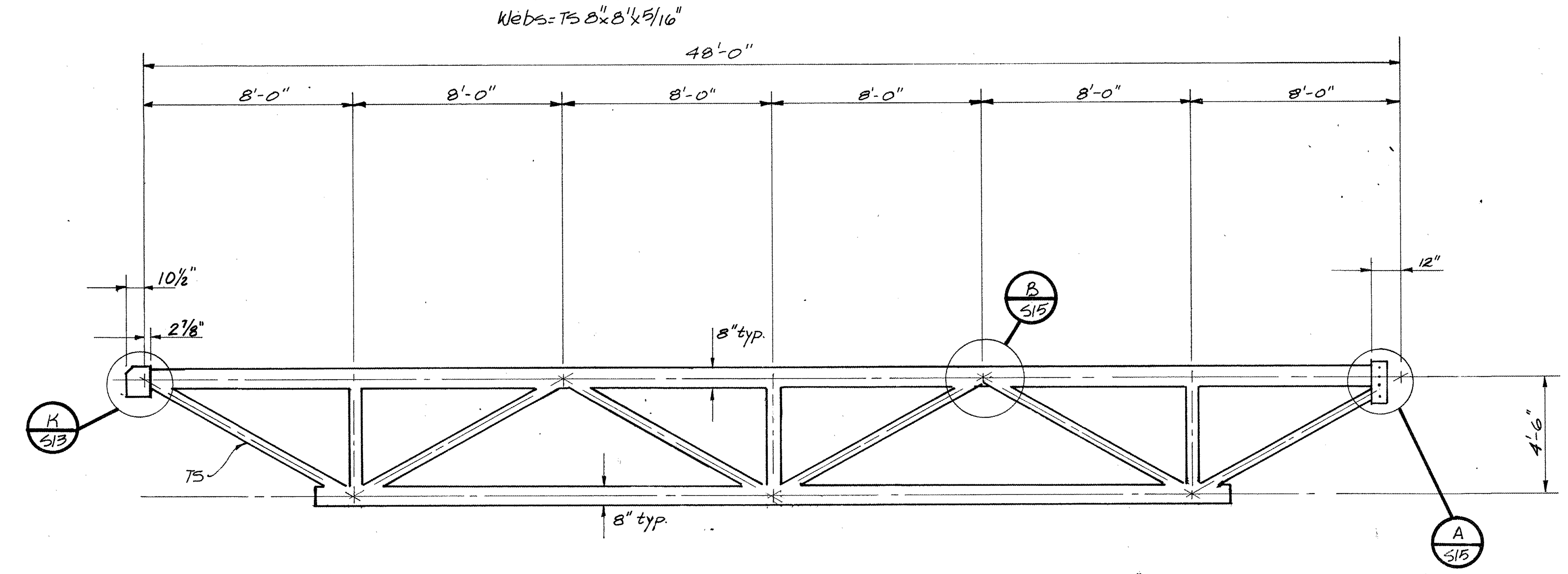


TRUSS C (2 req'd.)

NTS

top chord = TS 8"x12"x1/2"
bottom chords = TS 8"x12"x1/2"
Webs = TS 8"x8"x5/16"

* Note: Top chords of truss "A" may be a box section fabricated from 5/8" PL with a yield stress of 46 ksi or greater, and with an outside radius equal to the wall thickness.



top chords = TS 8x6x1/4
bottom chords = TS 8x6x1/4
Webs = TS 6x6x3/16

TRUSS D (1 req'd.)

NTS

ABOVE	Y REQD
OVERLAYS	SCREEN
TB	TB	F

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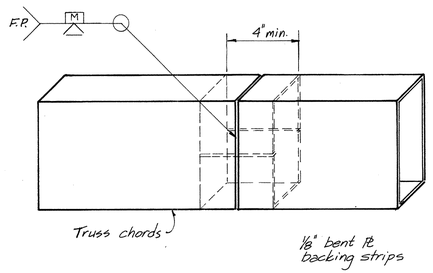
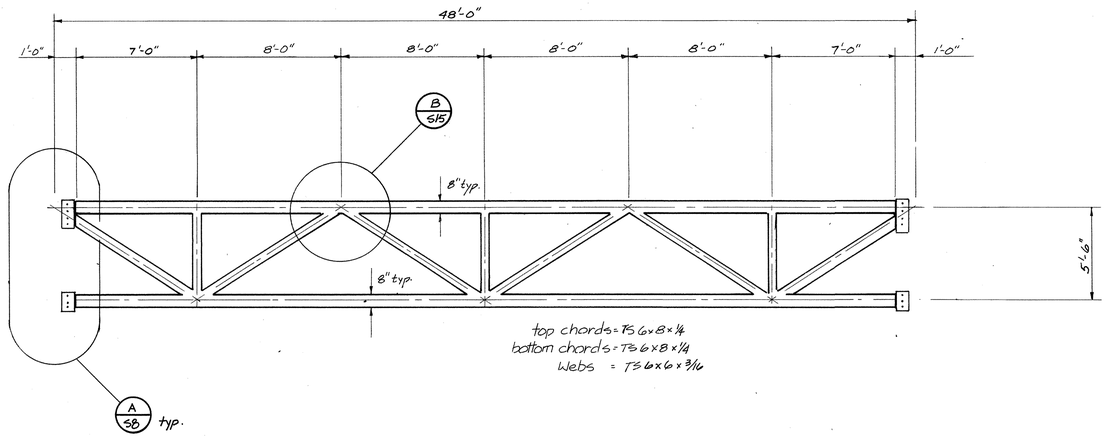
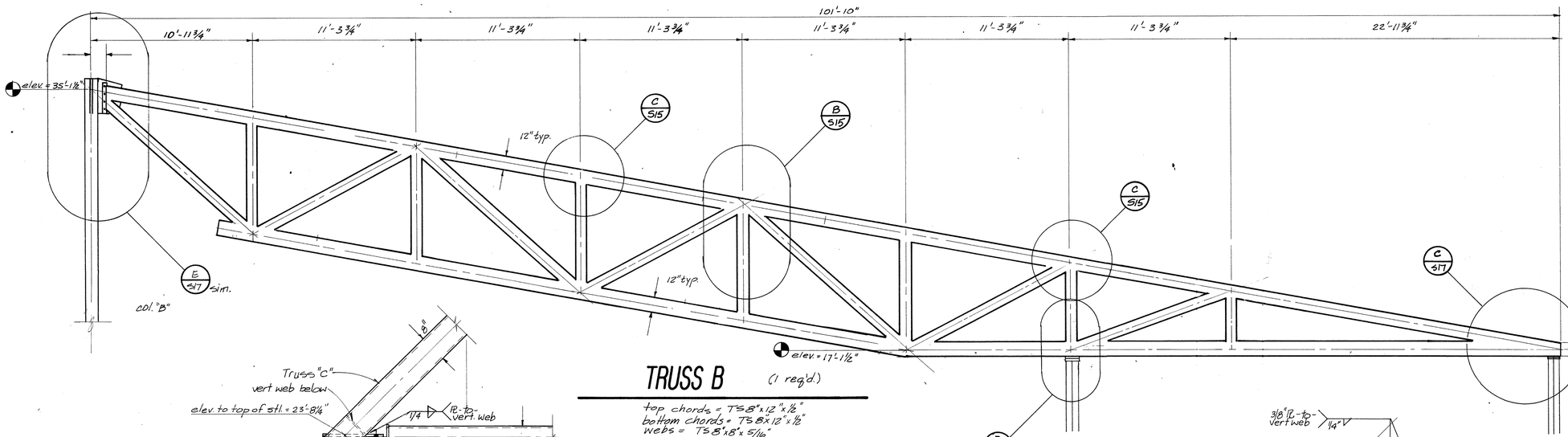


(D) FULL PENE. CHORD SPLICE

Note: Full penetration welded field splices are permissible on all steel trusses.

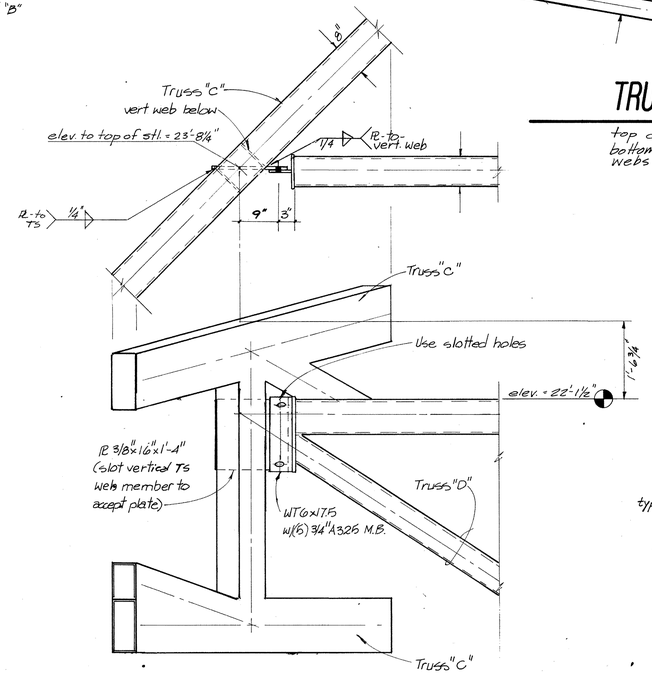


TRUSS E (4 req'd.)



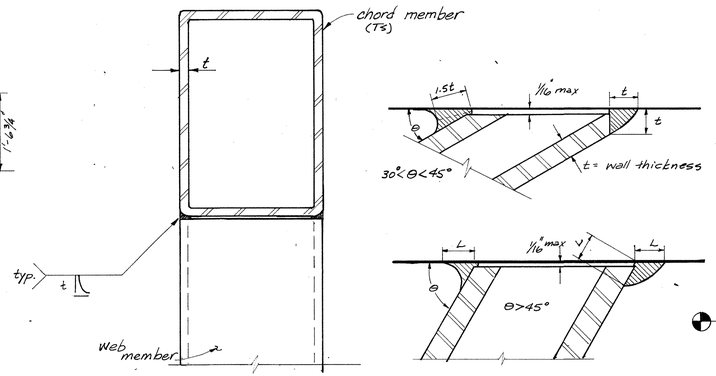
TRUSS B (1 req'd.)

top chords = TS 8"x12"x1/2"
bottom chords = TS 8"x12"x1/2"
webs = TS 8"x8"x5/16"



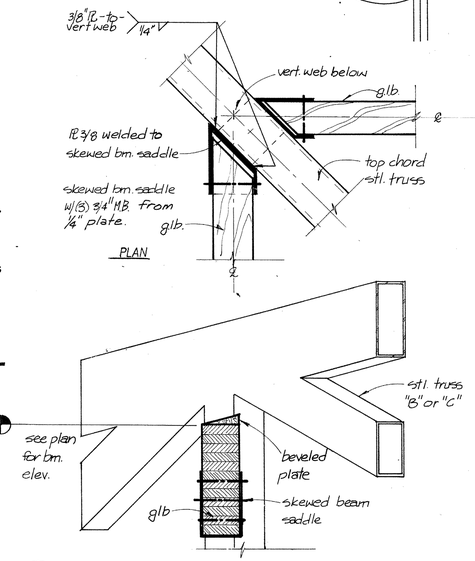
(A) TRUSS "D" TO TRUSS "C" CONN.

NTS



(B) TYP. WEB WELDED CONN.

NTS



(C) BEAM-TO-TRUSS CONN.

NTS

OVE	Y REQD
TS	TS
S68	S68

OVERLAYS	SCREEN
TS	TS
S68	TS

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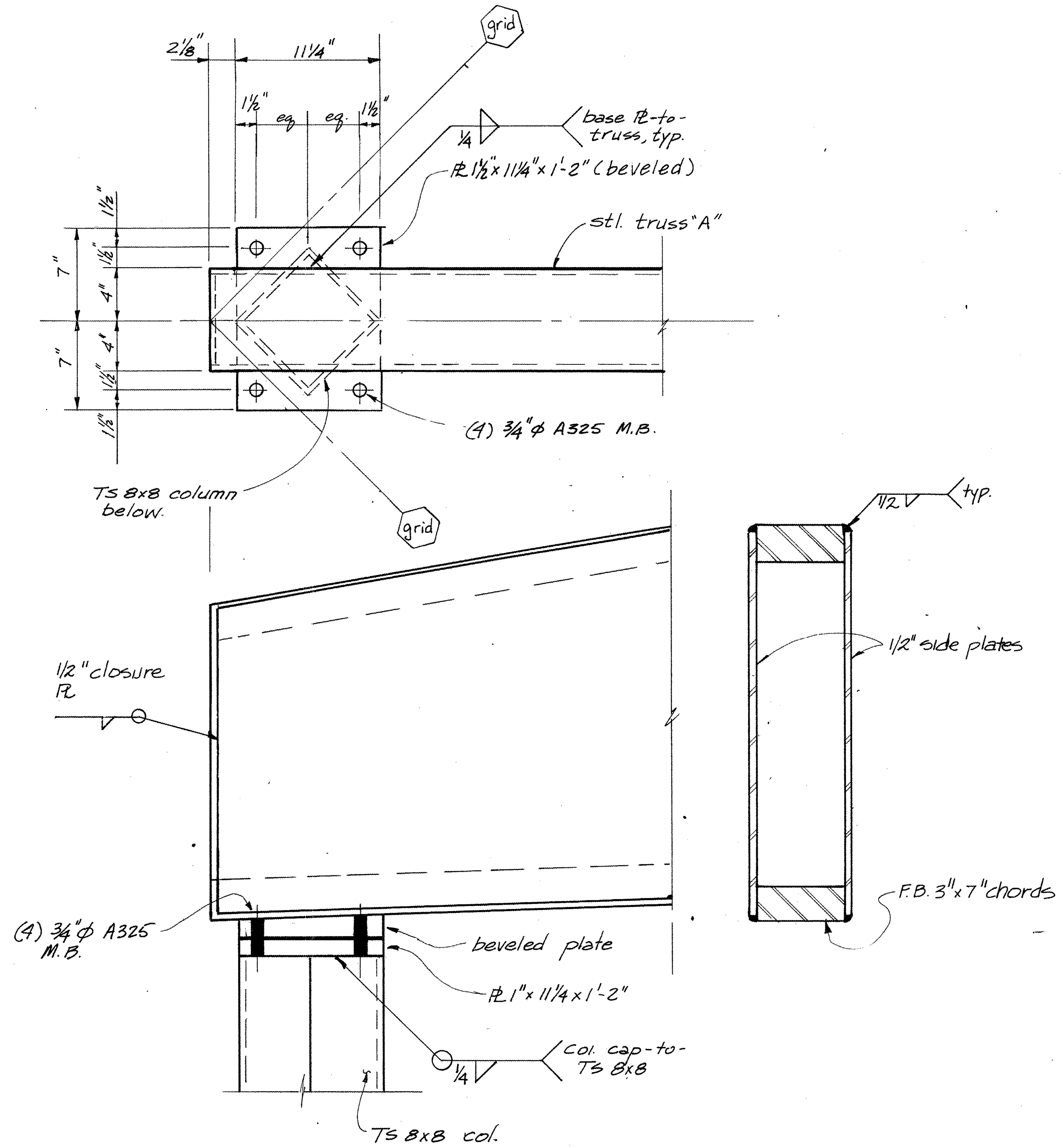
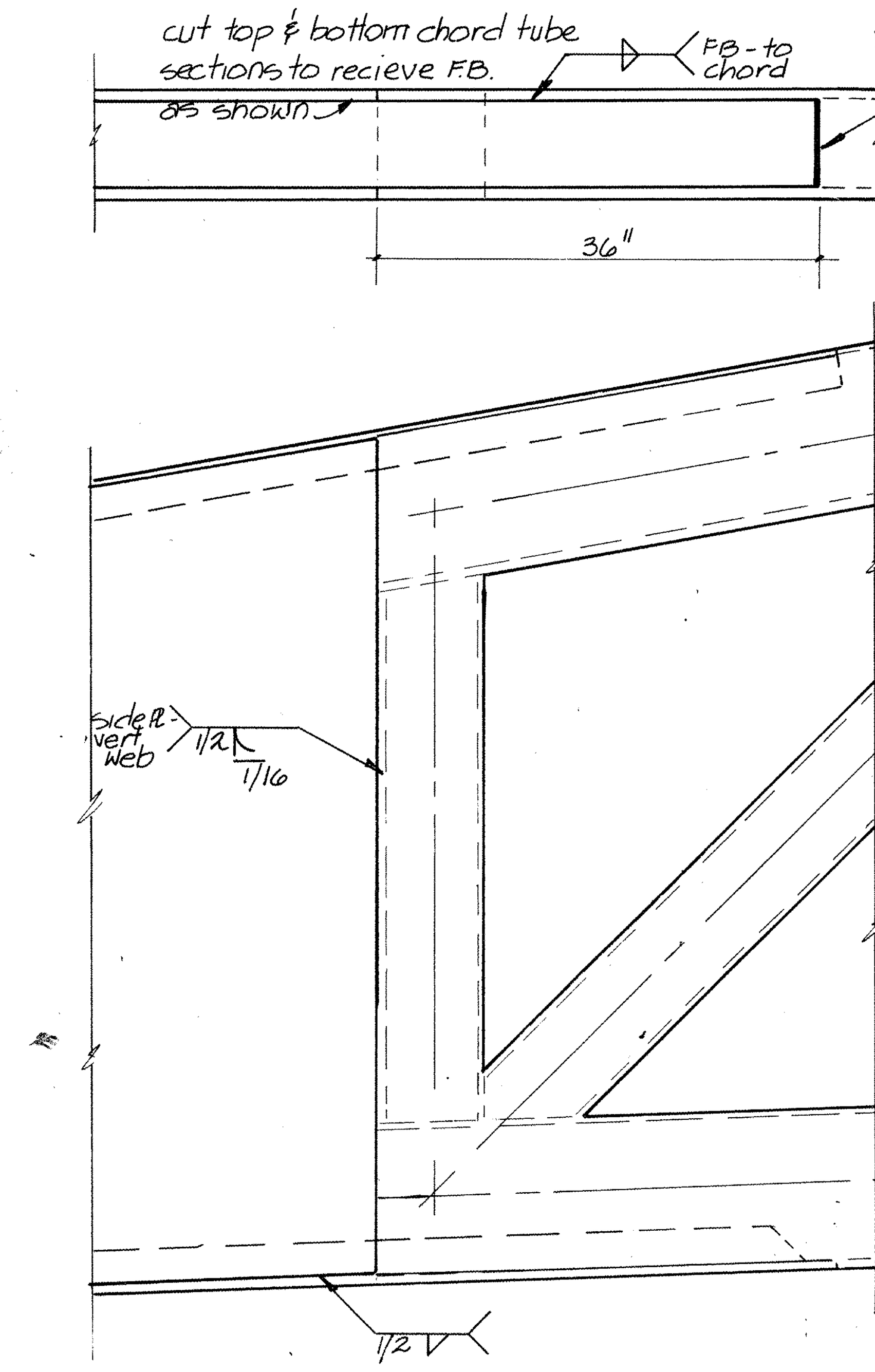


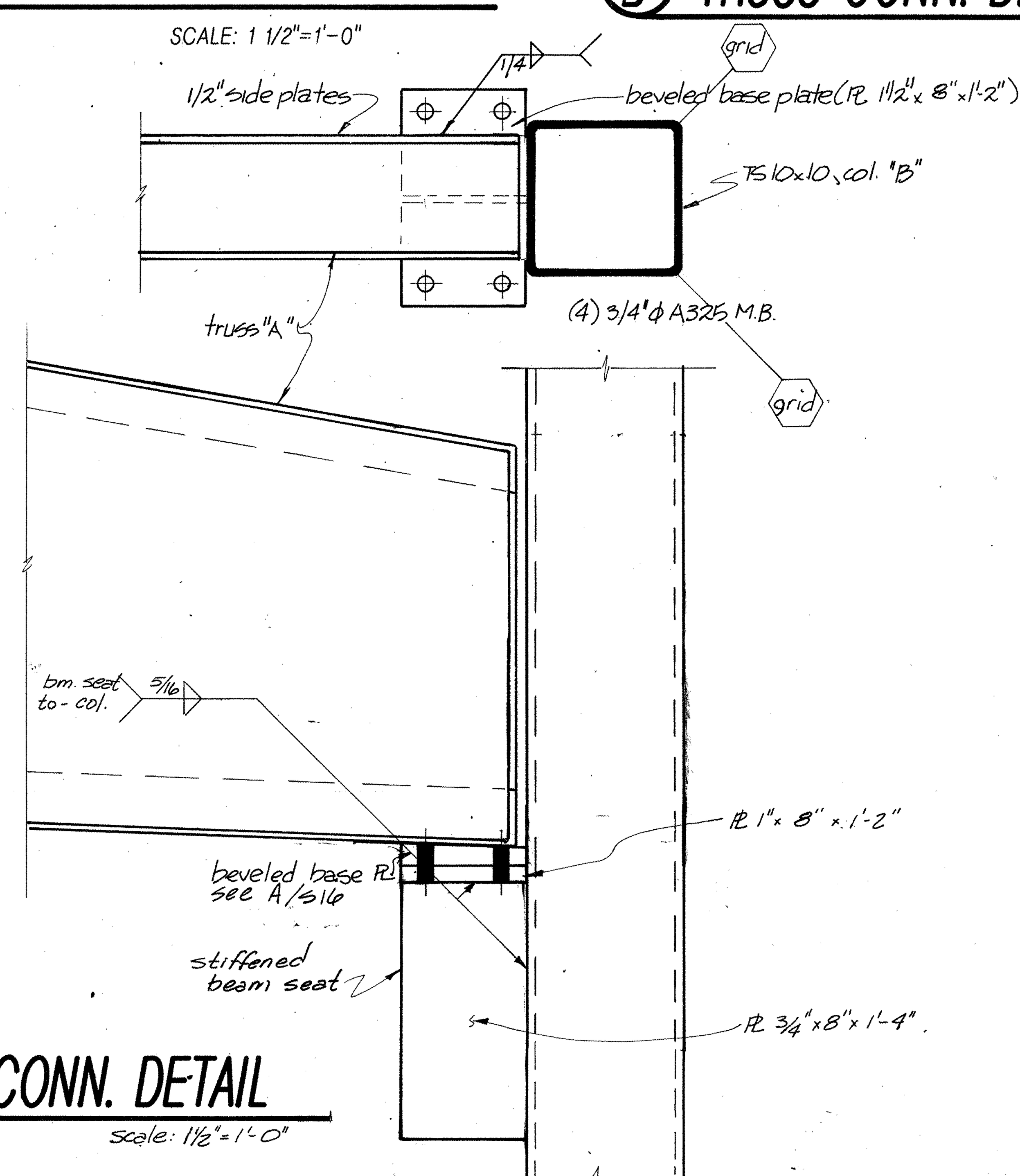
Ⓐ TRUSS "A" BRG. DETAIL



Ⓑ TRUSS CONN. DETAIL

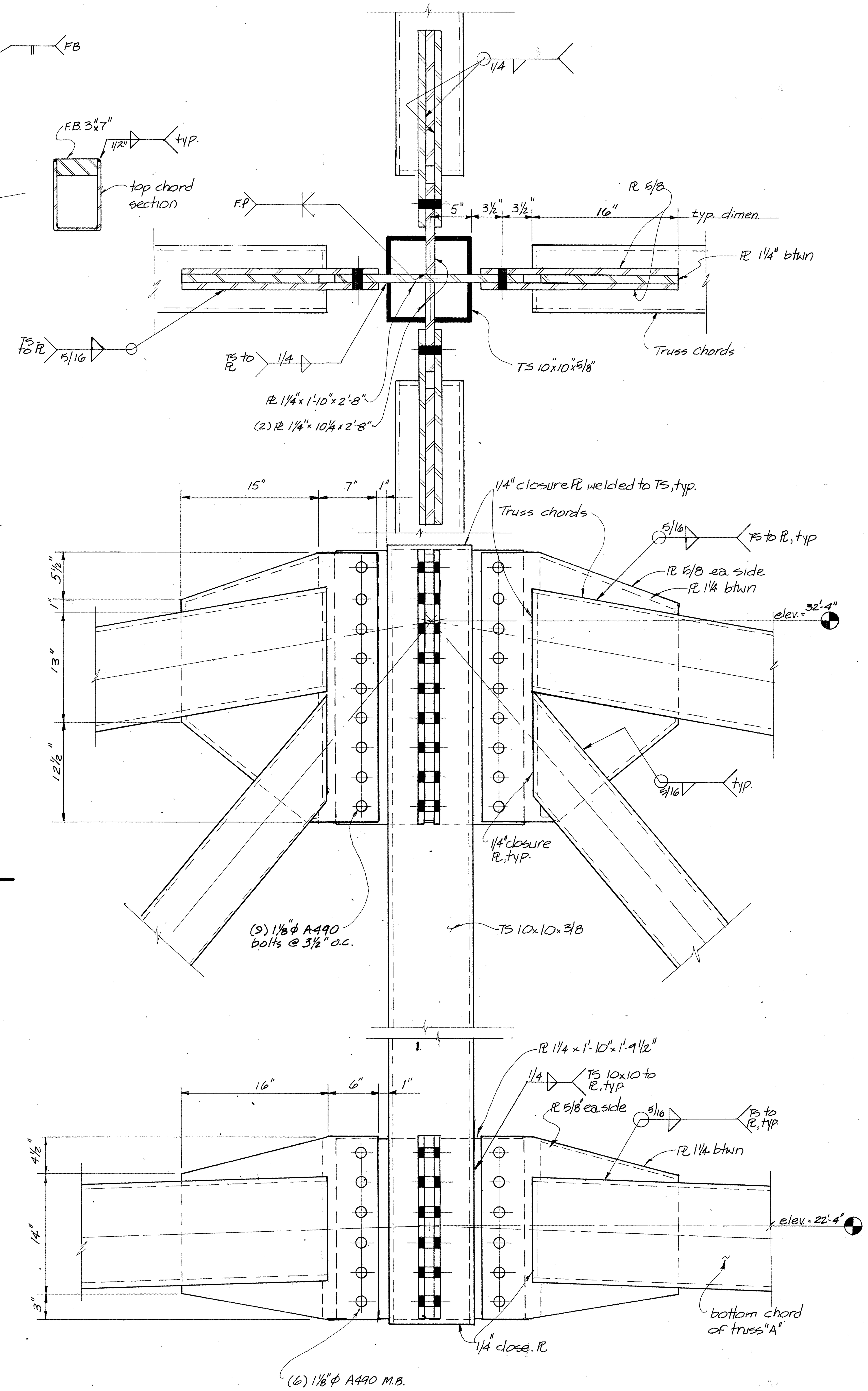
SCALE: =1'-0"

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



Ⓒ TRUSS CONN. DETAIL

scale: 1 1/2" = 1'-0"



Ⓓ TRUSS "A" CONN. DETAIL

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

OVE AY REQD	OVERLAYS	SCREEN
T8	T8	F
S16	S16	F

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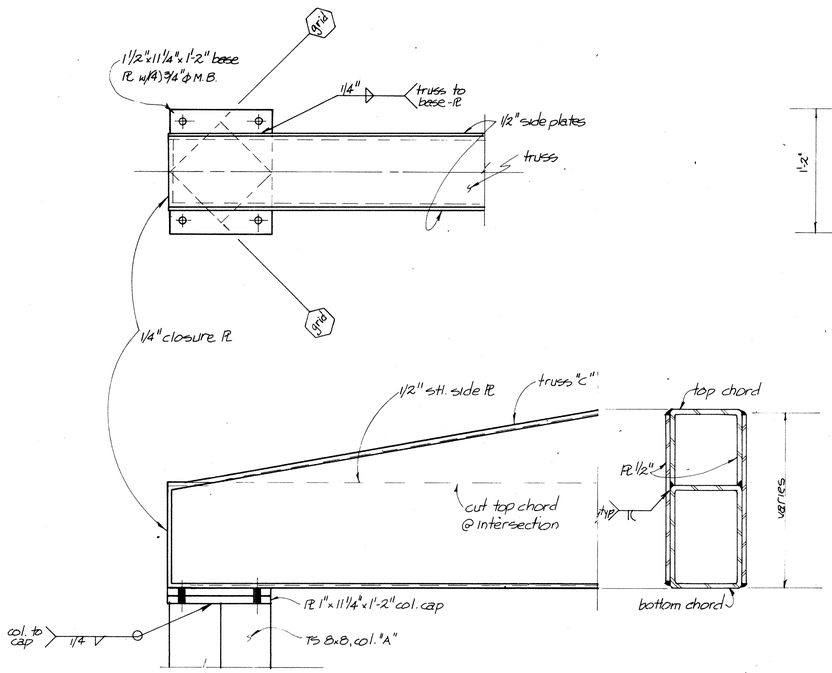
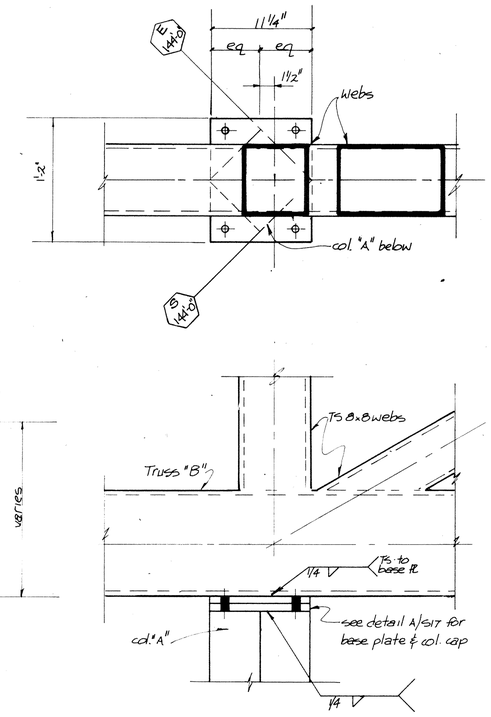


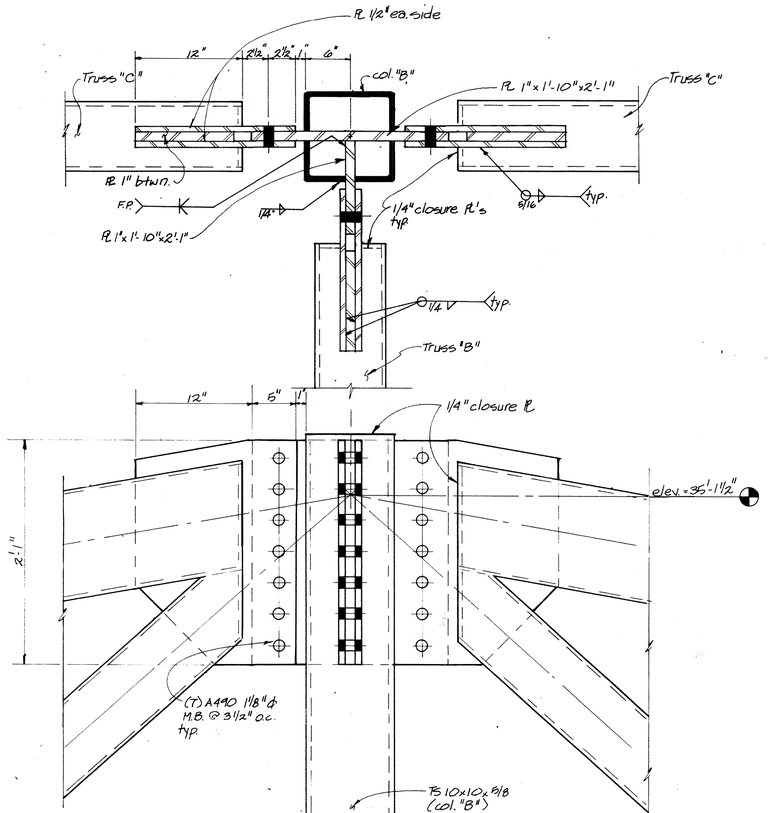
(A) TRUSS BEARING DETAIL

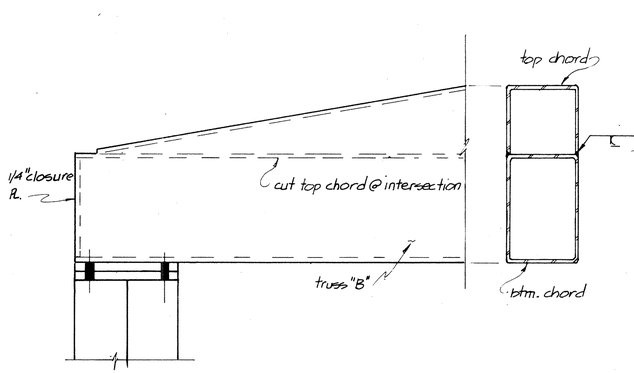
SCALE: 1-1/2"=1'-0"



(B) TRUSS BEARING DETAIL

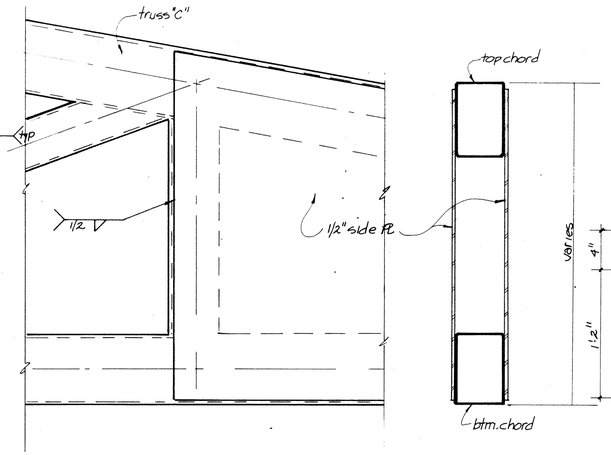
SCALE: 1-1/2"=1'-0"





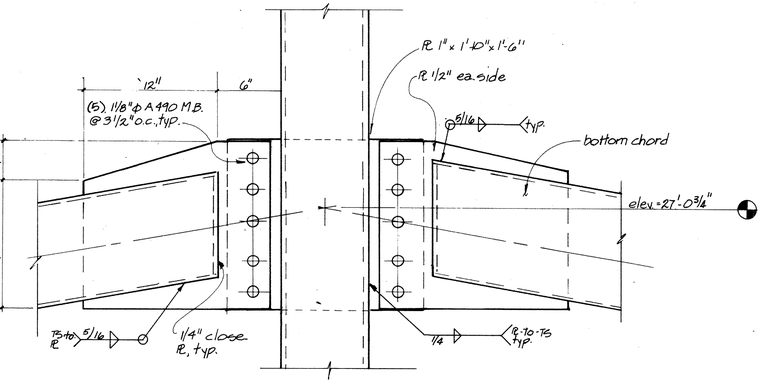
(C) TRUSS BEARING DETAIL

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



(D) TRUSS CONNECTION

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



(E) TRUSS CONNECTION

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

OVERLAY REQD		
T.B.	OVERLAYS	SCREEN
SGD	SGD	F.

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TRUSS CONNECTIONS

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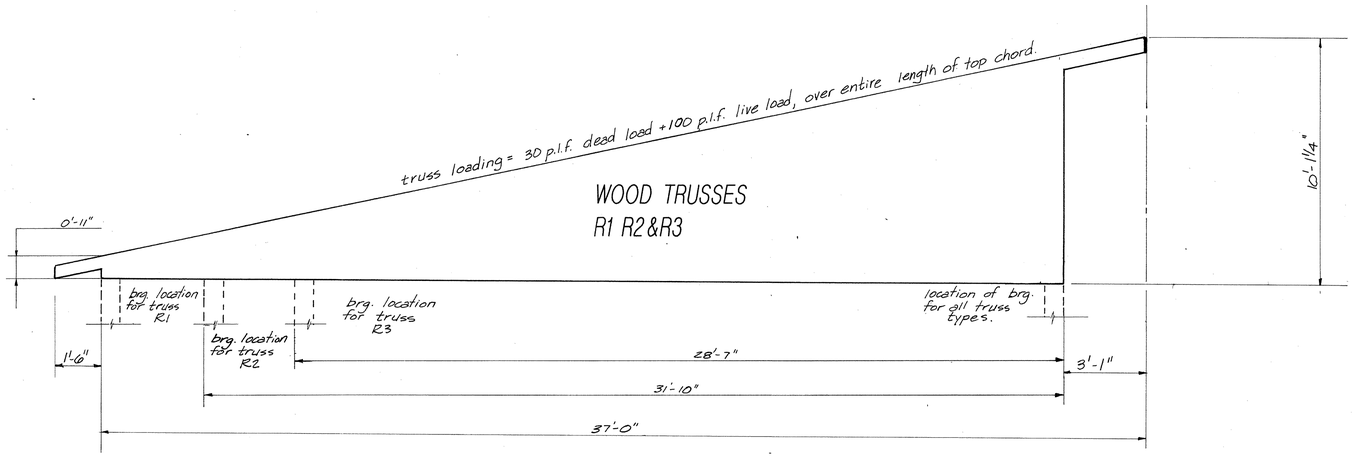
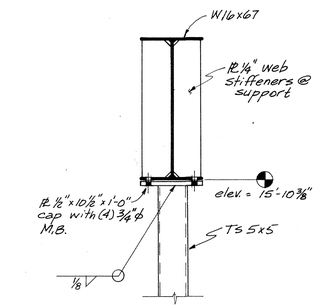
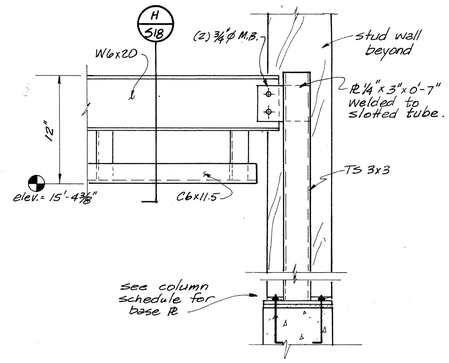


WOOD TRUSS PROFILE



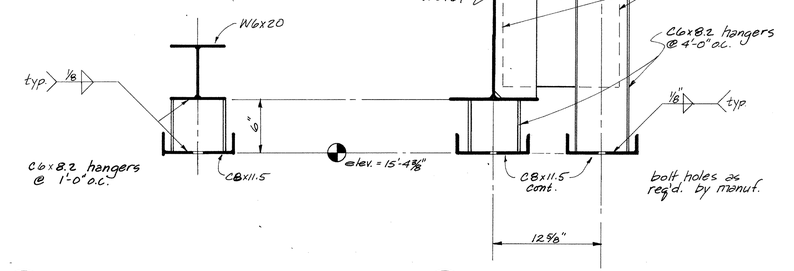
Ⓕ STL. BM. BRG. DETAIL

scale: 1½"=1'-0"



Ⓖ STL. BM. BRG. DETAIL

scale: 1½"=1'-0"

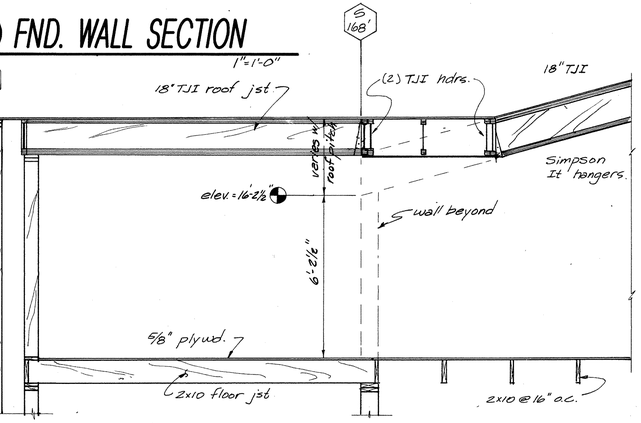


Ⓗ BEAM & TRACK SECTION

scale: 1½"=1'-0"

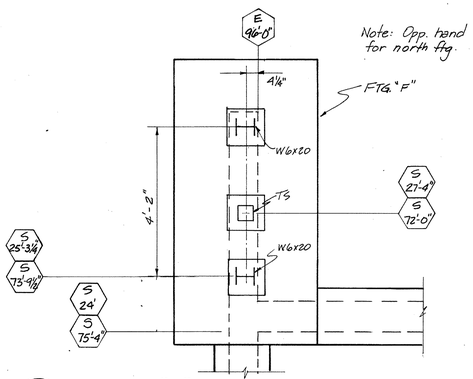
Ⓙ BEAM & TRACK SECTION

scale: 1½"=1'-0"



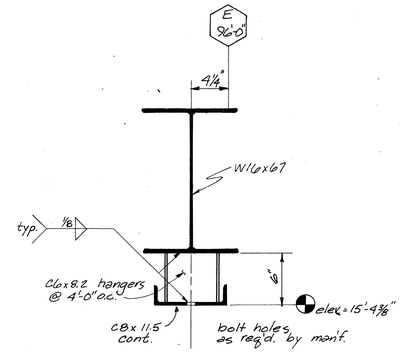
Ⓔ SECTION AT VENT OPENING

scale: ⅜"=1'-0"



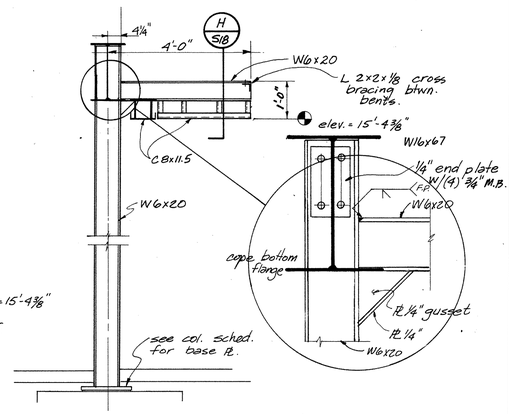
Ⓒ FTG. "F" PLAN

scale: ½"=1'-0"



Ⓚ BEAM & TRACK SECTION

scale: 1½"=1'-0"



Ⓛ STL. BENT DETAIL

scale: ½"=1'-0"

OVER AY REQD	OVERLAYS	SCREEN
TR	TB	F
SGE	SGE	F

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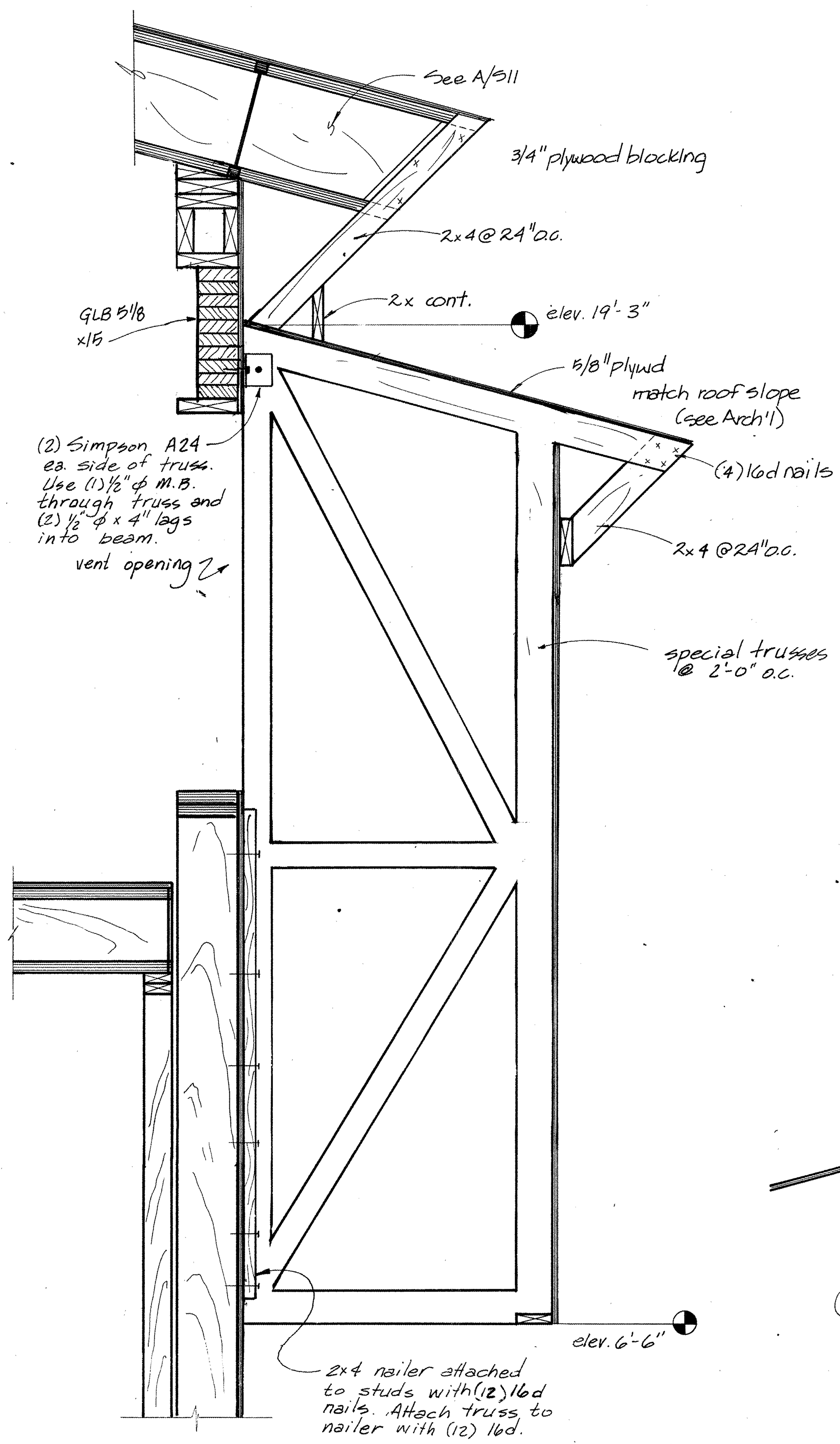
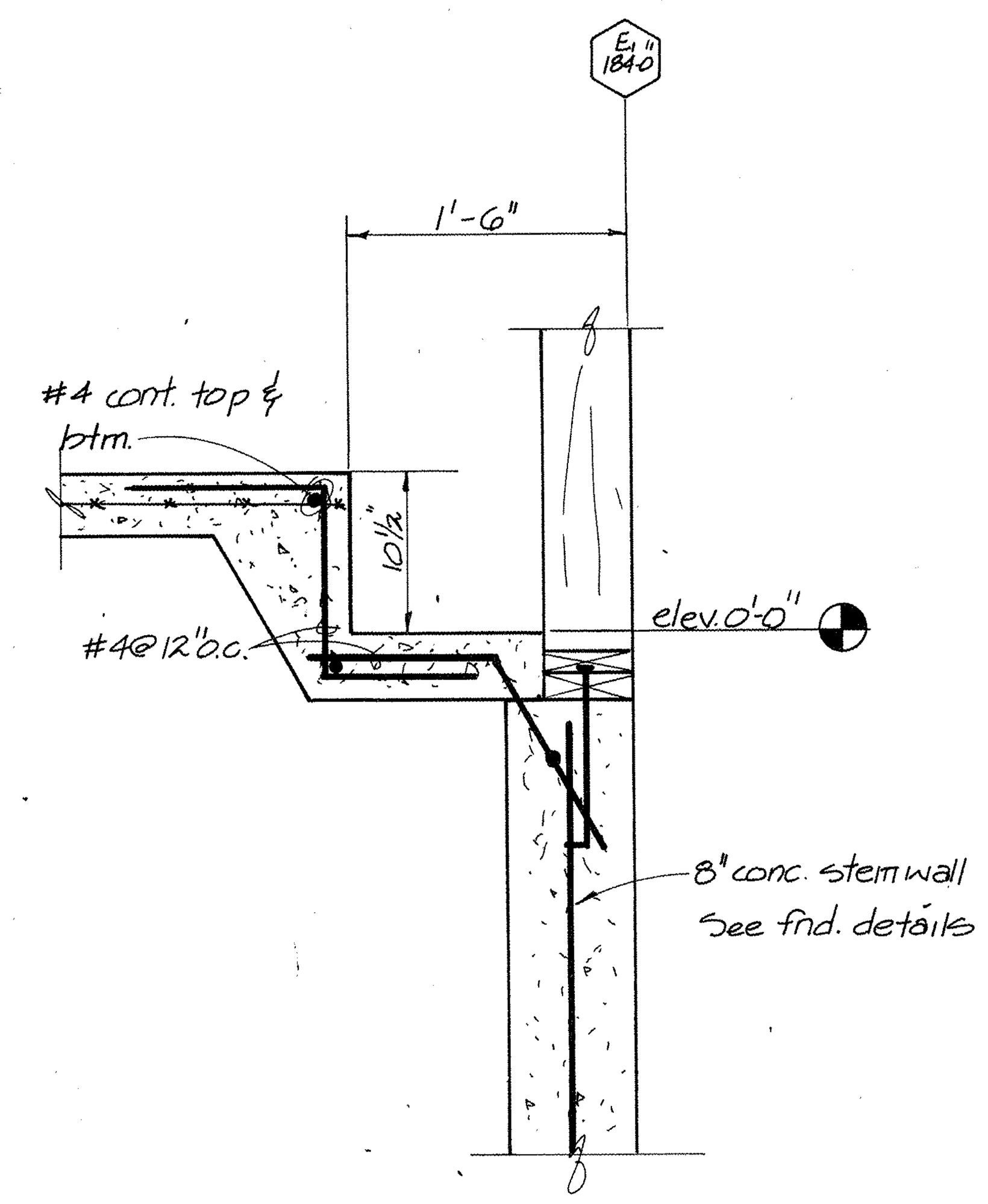


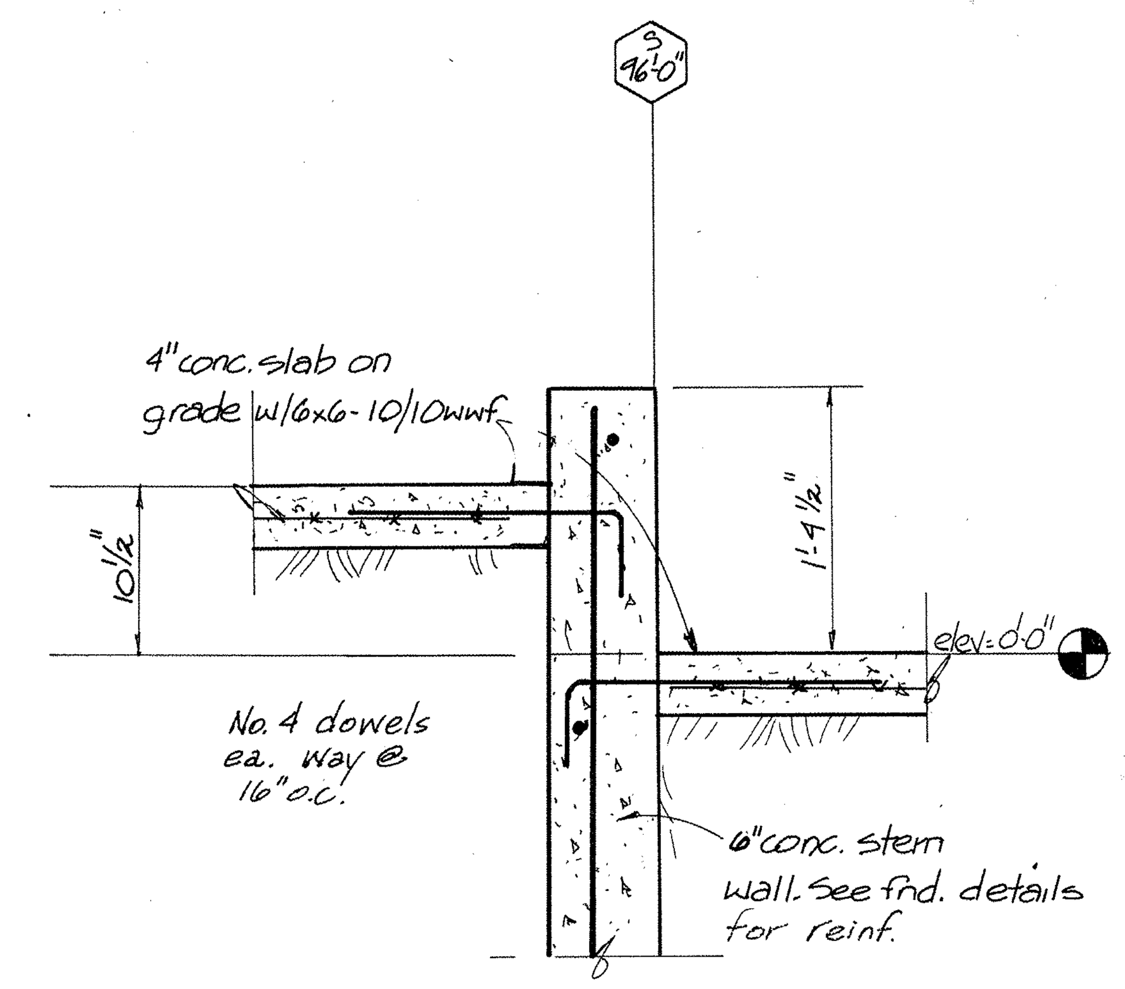
Ⓐ VENT OPENING AND HOOD SECTION

scale: 1"=1'-0"



Ⓑ FND. SECTION

scale: 1"=1'-0"



Ⓒ FND. SECTION

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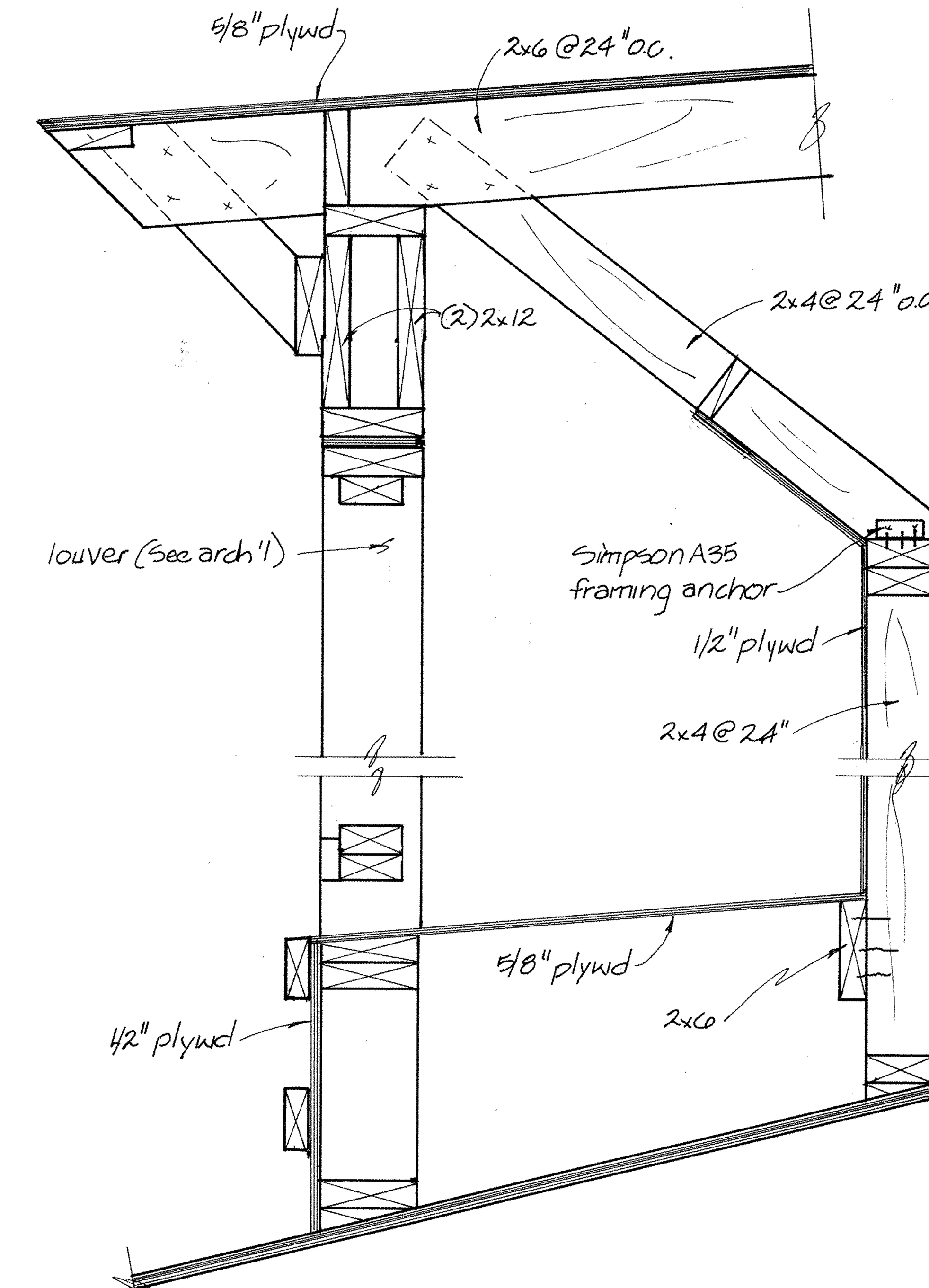
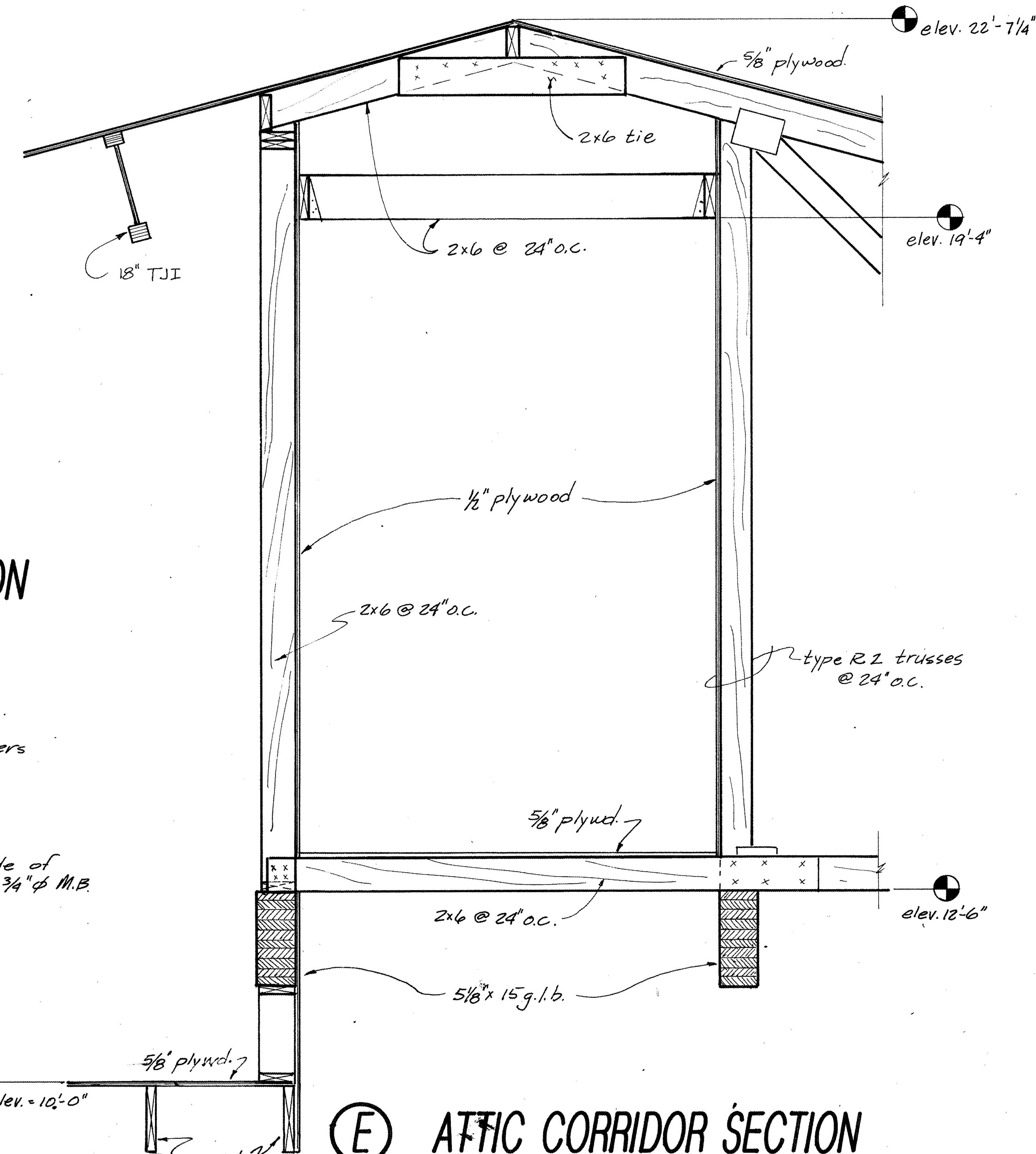


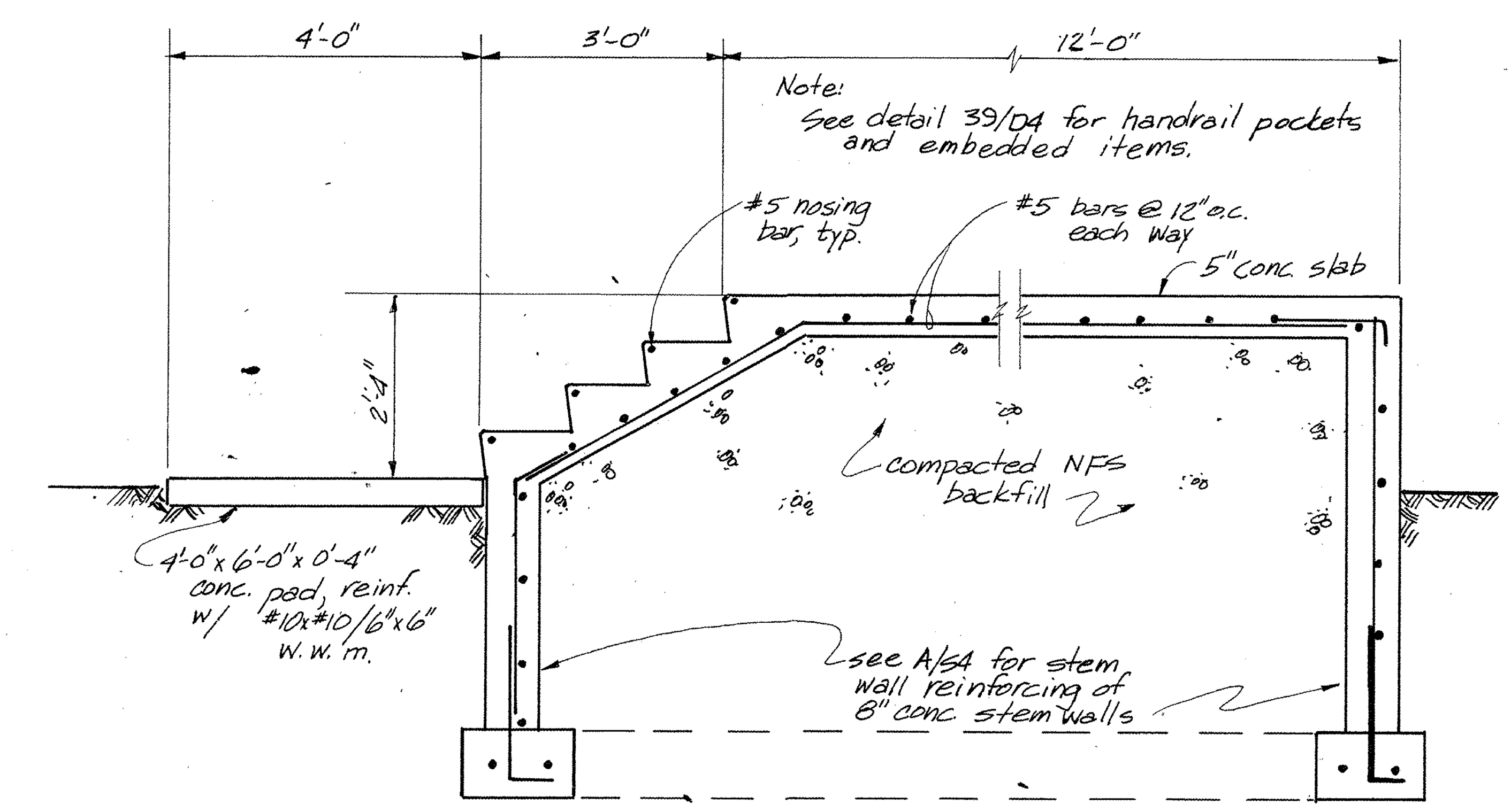
Ⓓ BELVEDERE SECTION

scale: 1"=1'-0"



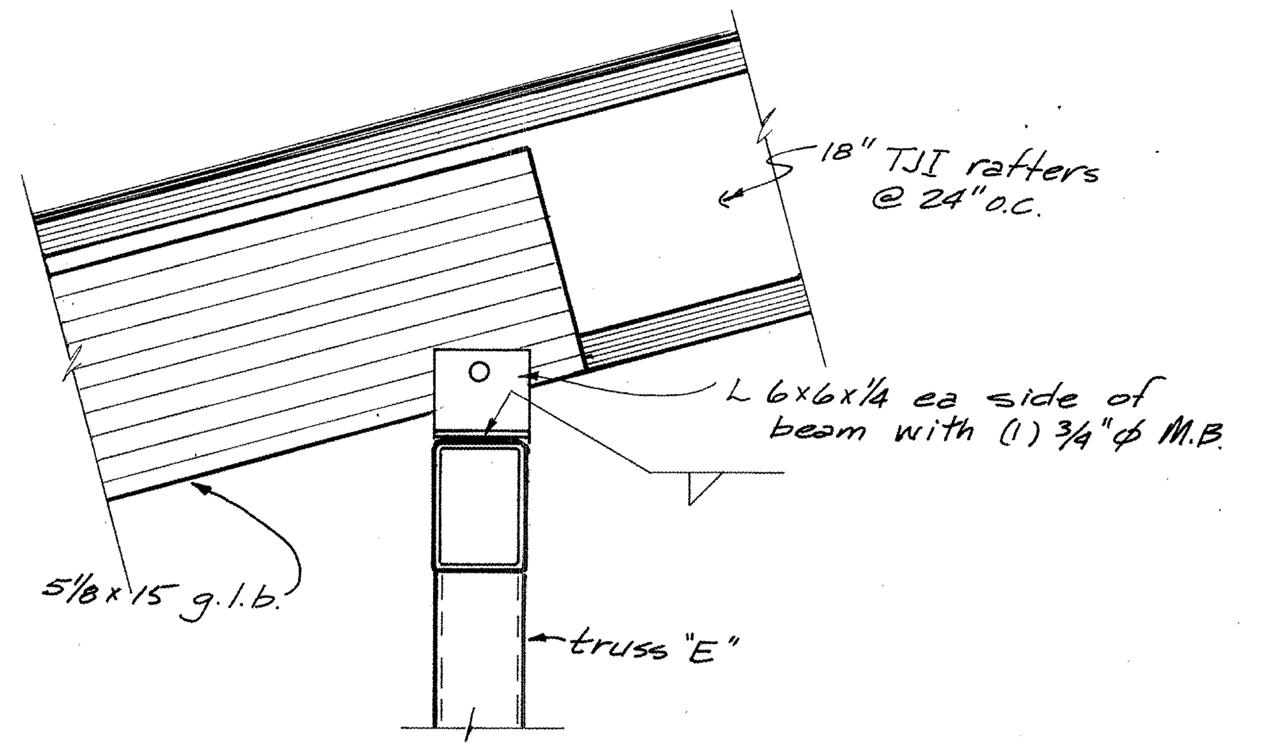
Ⓔ ATTIC CORRIDOR SECTION

NTS



Ⓕ EXT. STAIR SECTION

1/2"=1'-0"



Ⓖ BEAM CONN. AT TRUSS

OVF" AY REQD	OVERLAYS	SCREEN
TB	TB	F
SGF	SGF	F

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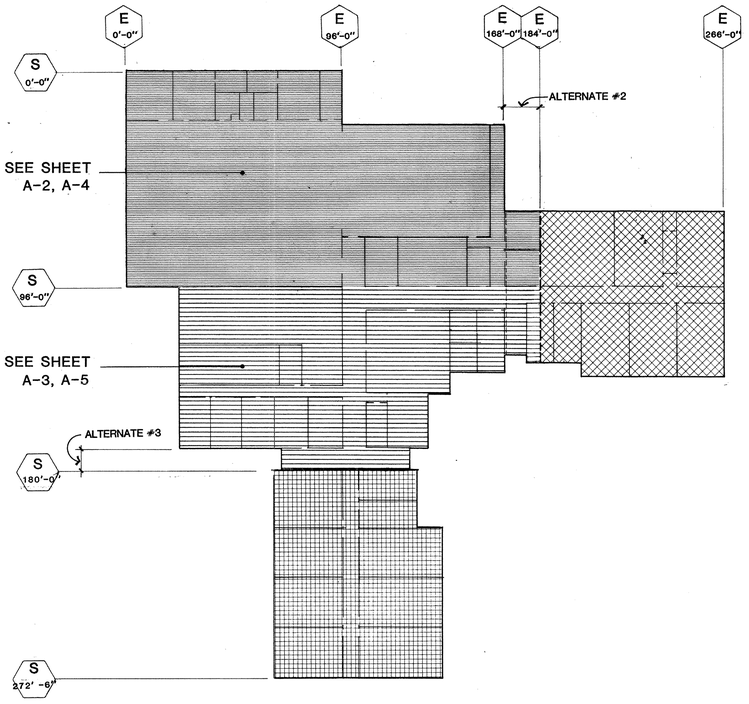
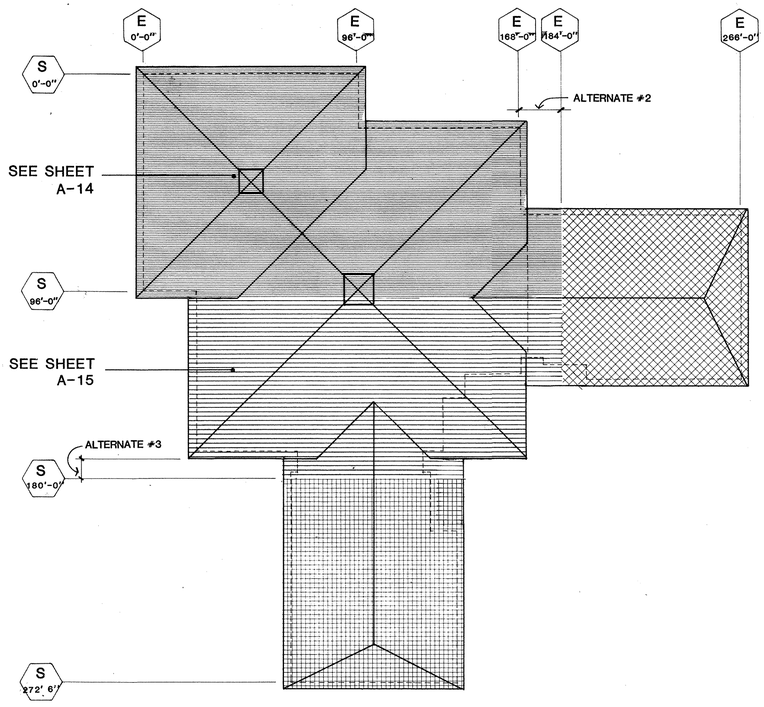
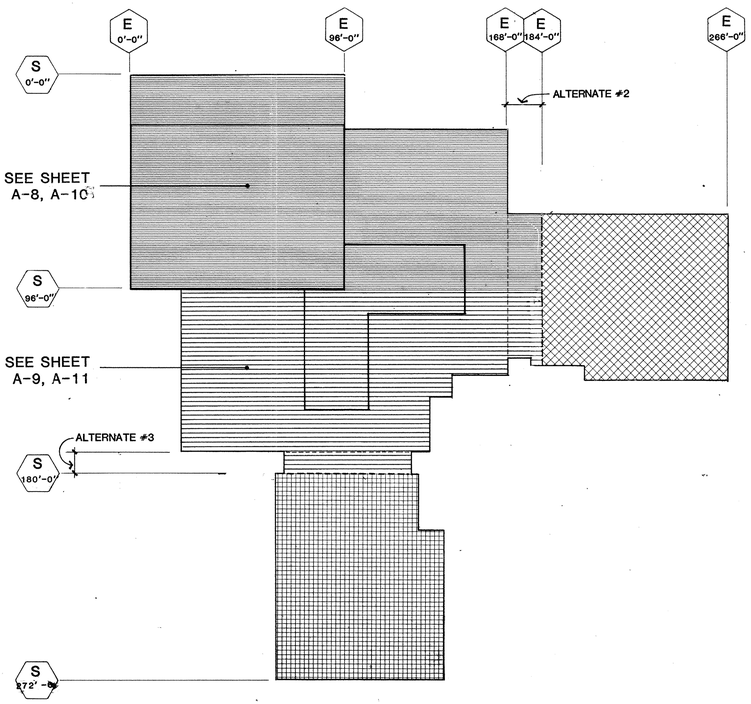


1 FLOOR & PHASING PLAN



2 ROOF & PHASING PLAN



3 ATTIC & PHASING PLAN

PHASING KEY

PHASE 1
PARTIAL BASE BID PACKAGE SECTION A

PHASE 1
PARTIAL BASE BID PACKAGE SECTION B

PHASE 2
SOUTHWEST CLASSROOM WING

PHASE 2
SOUTHEAST CLASSROOM WING

TO OVERLAY REQD	OVERLAYS	SCREEN
PH	PH	P

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T. Steven Settis
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

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SKAGWAY ALASKA

PHASING PLANS

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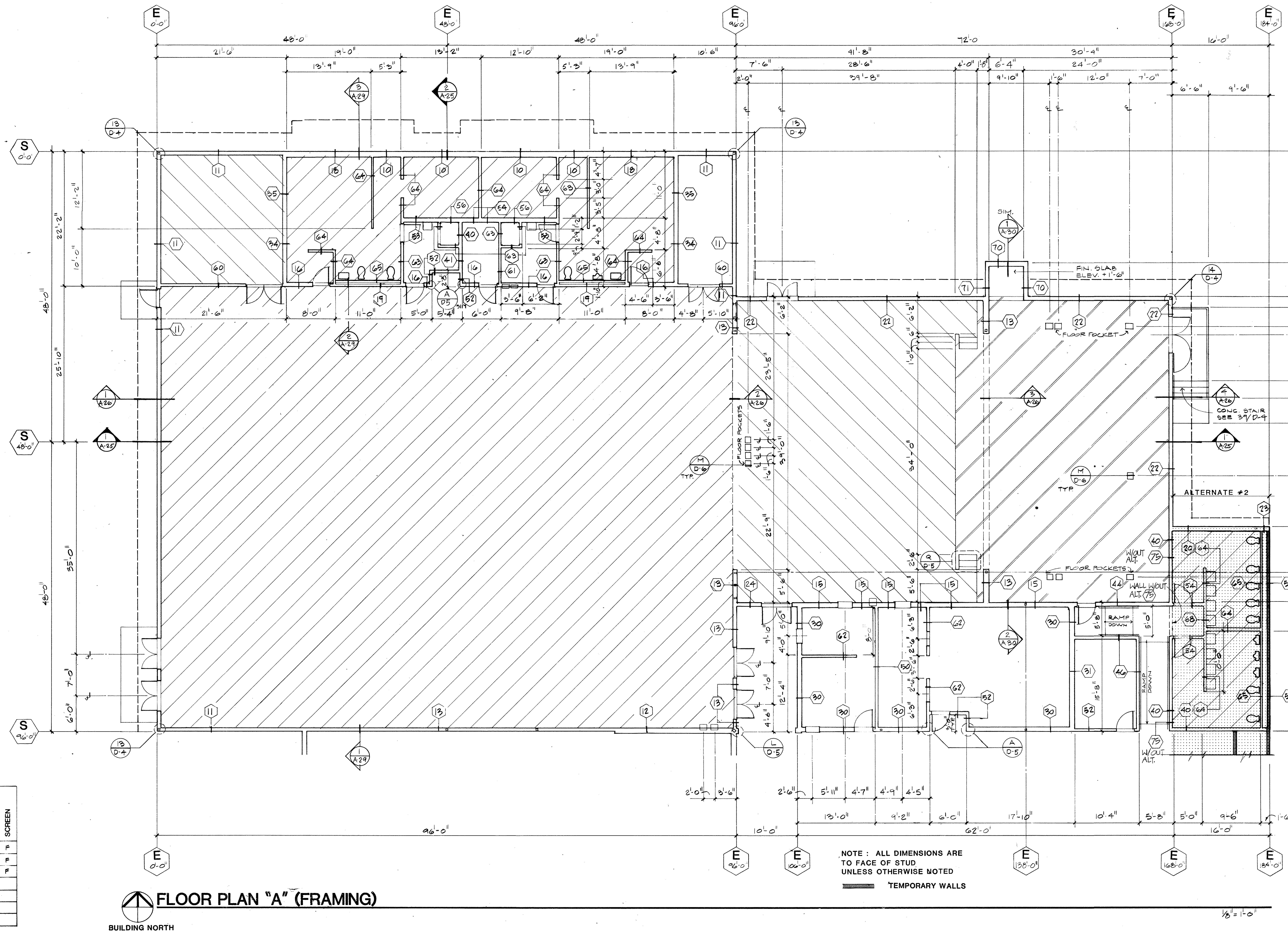

NOTE : ALL DIMENSIONS ARE TO FACE OF STUD UNLESS OTHERWISE NOTED

TEMPORARY WALLS

CONCRETE SLAB RECESSED 3" BELOW FINISHED FLOOR ELEVATION

CONCRETE SLAB RECESSED 1 3/4" BELOW FINISHED FLOOR ELEVATION

CONCRETE SLAB RECESSED 1 1/2" BELOW FINISHED PLATFORM ELEVATION

OVE	Y REQD	OVERLAYS	SCREEN
TB	-	-	F
FP1		FP1	F
FP1A		FP1A	F

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825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA — REGISTERED PROFESSIONAL ARCHITECT — T. Steve Bettis No. A 1687

A NEW SCHOOL FOR : SKAGWAY ALASKA

Floor Plan "A" (Framing)

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APRIL 8, 1983

project no.
8303

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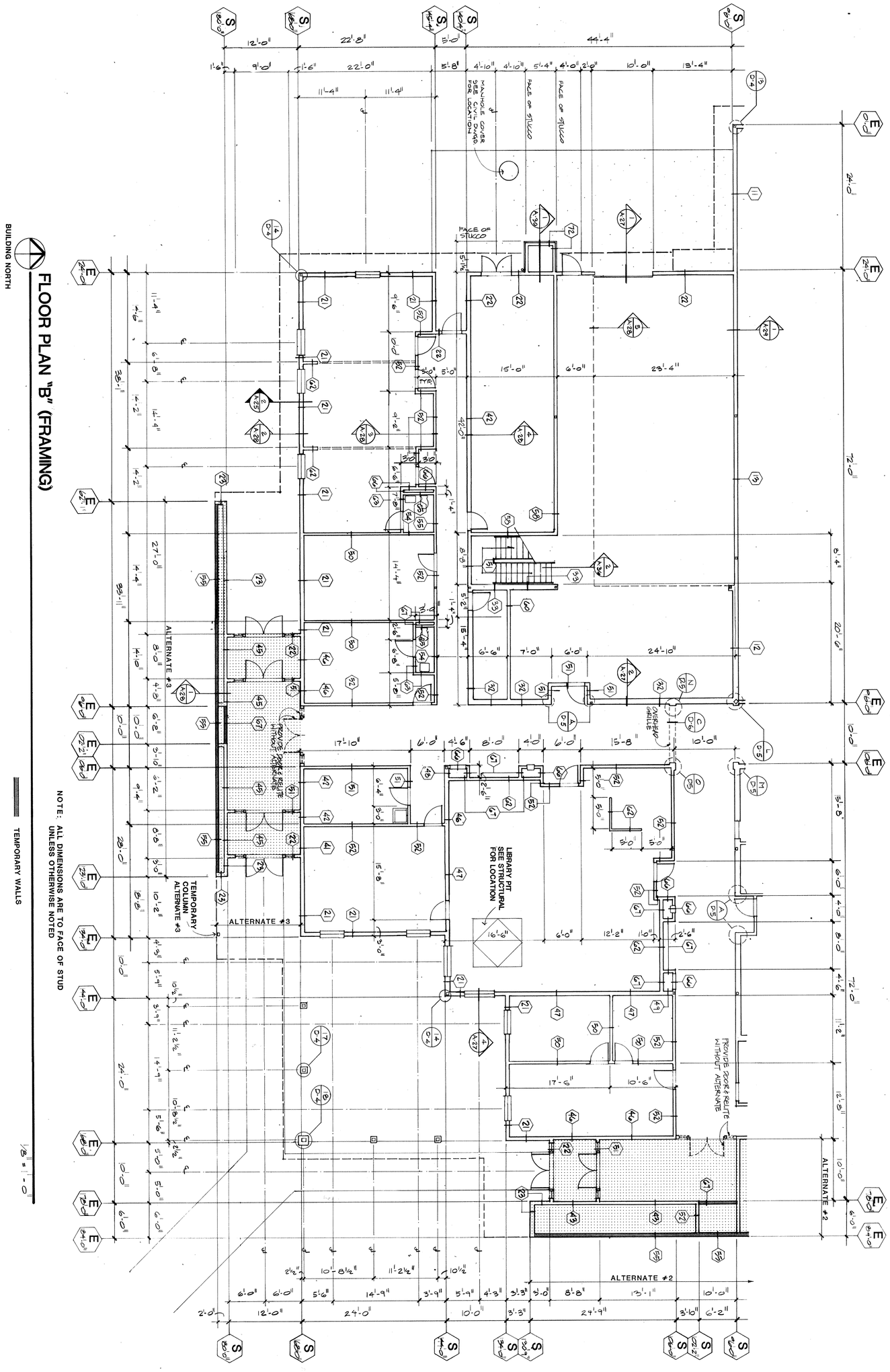
					TB	OVEI	Y REQD
					MP2	FP2	
					FP2A	FP2A	
					P	P	OVERLAYS
					P	P	SCREEN



825 WEST EIGHTH AVENUE SUITE 200
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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

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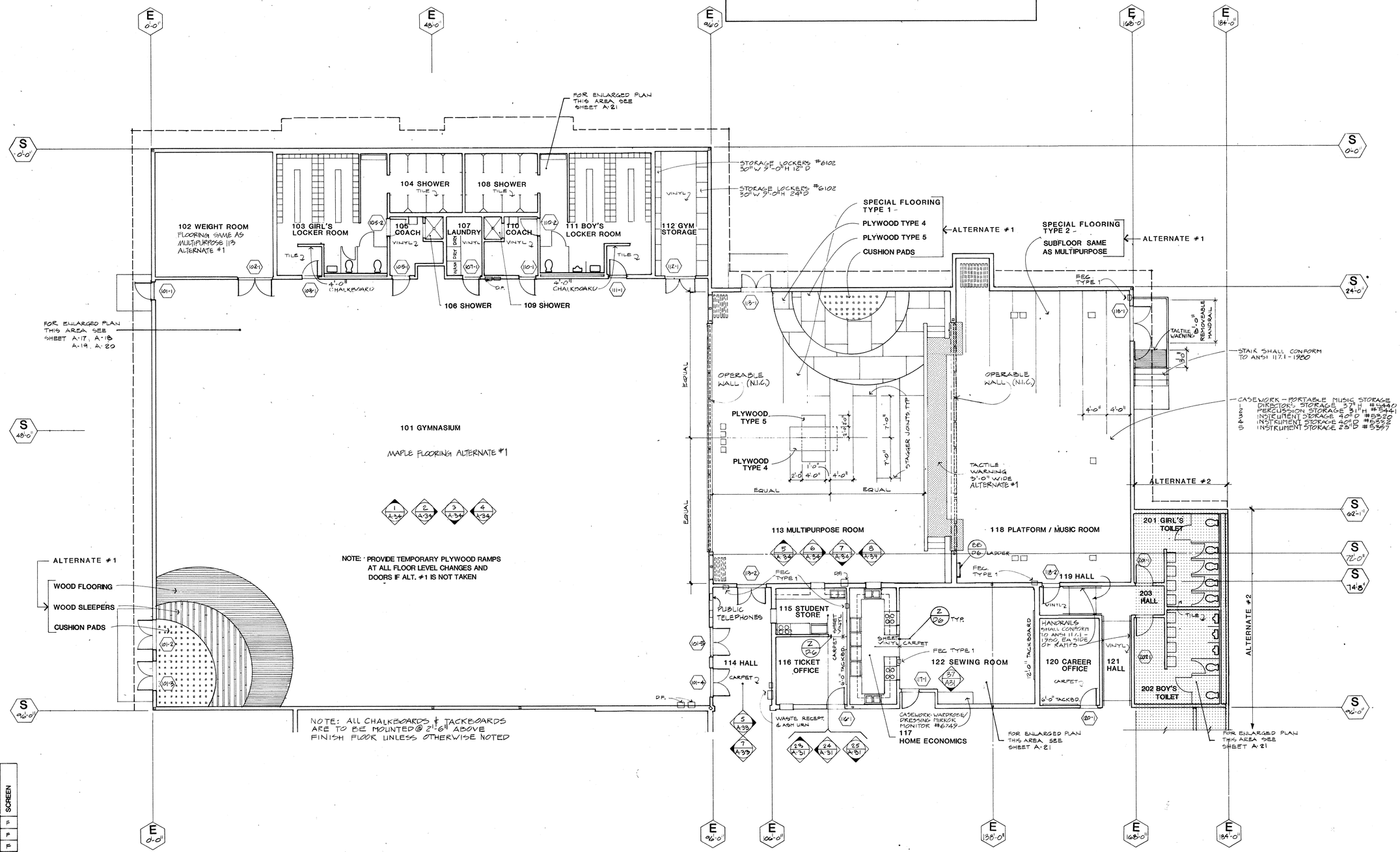
Floor Plan "B" (Framing)

A NEW SCHOOL FOR :

SKAGWAY ALASKA

THE FOLLOWING LIST OF ITEMS ARE NOT IN CONTRACT

- CHALKBOARDS
- TACKBOARDS
- CARPET
- SHEET VINYL
- CASEWORK
- EQUIPMENT (WASHERS,DRYERS,STOVES,ETC.)
- PUBLIC TELEPHONES
- SHOWER PARTITIONS
- GYM LOCKERS
- BENCHES
- OPERABLE WALLS
- STORAGE LOCKERS



OVER	Y REQD
TB	Y
FP1	FP1
FP1B	FP1B

OVERLAYS	SCREEN
N	F
FP1	P
FP1B	F

FLOOR PLAN "A" (FINISHES)

BUILDING NORTH

1/8" = 1'-0"

STATE OF ALASKA — REGISTERED PROFESSIONAL ENGINEER — T. Steve Bettis No. A 4687

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PLANNING, ARCHITECTURE, INTERIOR DESIGN, GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
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A NEW SCHOOL FOR :

SKAGWAY ALASKA

FLOOR PLAN "A" (FINISHES)

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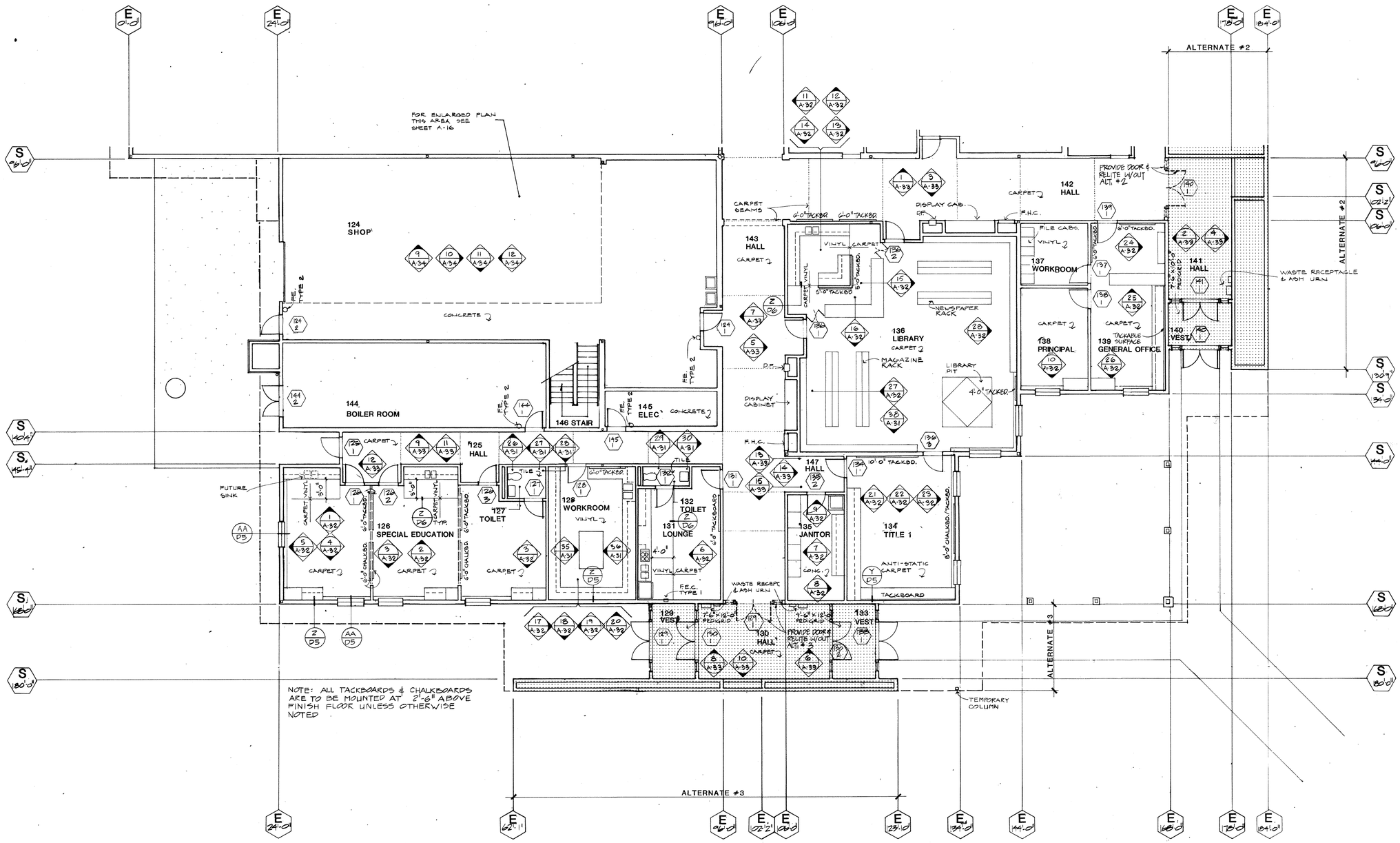

FLOOR PLAN "B" (FINISHES)

BUILDING NORTH

1/8" = 1'-0"

THE FOLLOWING LIST OF ITEMS ARE NOT IN CONTRACT

- CHALKBOARDS
- TACKBOARDS
- CARPET
- SHEET VINYL
- CASEWORK
- EQUIPMENT (WASHERS,DRYERS,STOVES,ETC.)
- DISPLAY CABINETS
- FILE CABINETS

OVF	VY RECD
TB	1'
FP2	FP2
FP2B	FP2B

OVERLAYS	SCREEN
FP2	
FP2B	

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA
T. Steve Bettis
No. A 4667
REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:
SKAGWAY ALASKA

FLOOR PLAN "B" (FINISHES)

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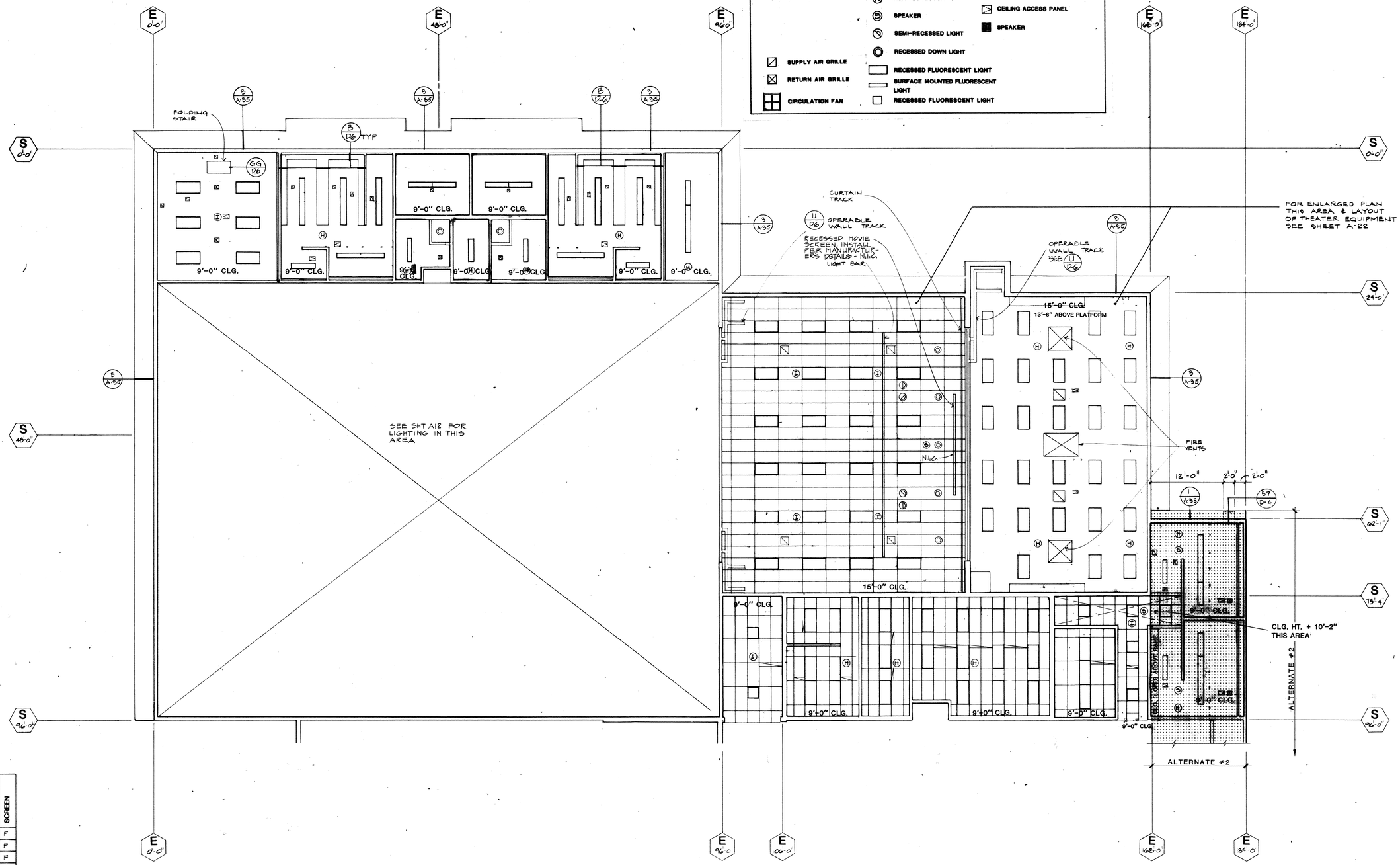
LEGEND

- CEILING TILE TYPE 1
- SUPPLY AIR GRILLE
- RETURN AIR GRILLE
- CIRCULATION FAN
- COMBUSTION DETECTOR
- HEAT DETECTOR
- SPEAKER
- SEMI-RECESSED LIGHT
- RECESSED DOWN LIGHT
- RECESSED FLUORESCENT LIGHT
- SURFACE MOUNTED FLUORESCENT LIGHT
- RECESSED FLUORESCENT LIGHT
- SURFACE MOUNTED HALIDE LIGHT
- EMERGENCY LIGHTING
- CEILING ACCESS PANEL
- SPEAKER



OVF	OVERLAYS	SCREEN
TB		
FP3	FP3	
FP1D	FP1D	
FP1E	FP1E	

REFLECTED CEILING PLAN "A"

1/8" = 1'-0"

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PLANNING, ARCHITECTURE, INTERIOR DESIGN, GRAPHICS
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ANCHORAGE, ALASKA 99501 (907) 279-3436

STATE OF ALASKA — T. Steve Dettis No. A 4687 — REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

REFLECTED CEILING PLAN "A"

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LEGEND

- CEILING TILE TYPE 1
- COMBUSTION DETECTOR
- HEAT DETECTOR
- SPEAKER
- SEMI-RECESSED LIGHT
- RECESSED DOWN LIGHT
- SUPPLY AIR GRILLE
- RETURN AIR GRILLE
- CIRCULATION FAN
- RECESSED FLUORESCENT LIGHT
- SURFACE MOUNTED FLUORESCENT LIGHT
- RECESSED FLUORESCENT LIGHT
- SURFACE MOUNTED HALIDE LIGHT
- EMERGENCY LIGHTING
- CEILING ACCESS PANEL
- SPEAKER

REFLECTED CEILING PLAN "B"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
FP4	FP4	F
FP2.5	FP2.5	F
FP2.5	FP2.5	F

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A NEW SCHOOL FOR:

SKAGWAY ALASKA

Reflected Ceiling Plan "B"

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APRIL 8, 1983

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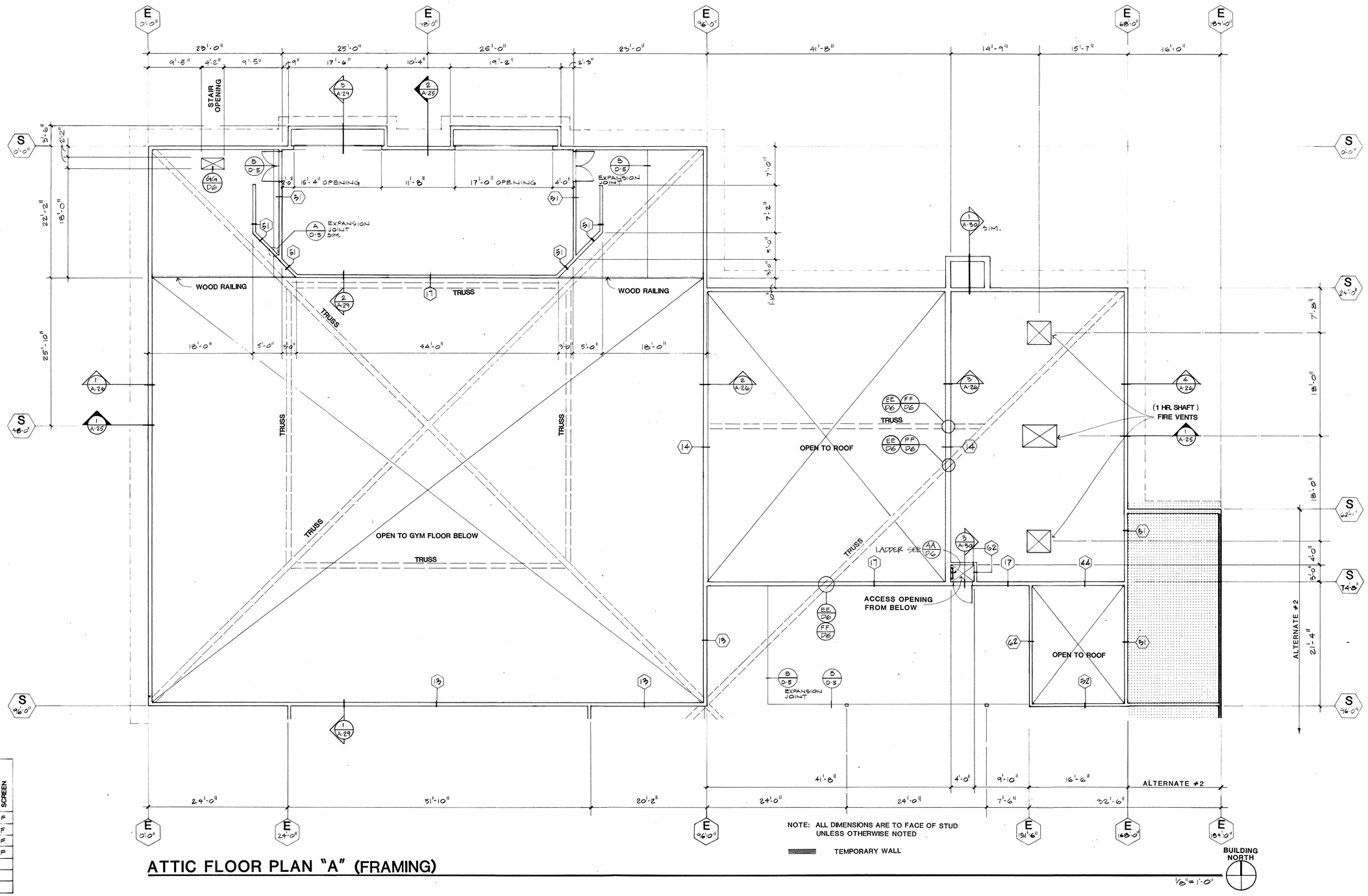

NOTE: ALL DIMENSIONS ARE TO FACE OF STUD UNLESS OTHERWISE NOTED

TEMPORARY WALL

BUILDING NORTH

1/8" = 1'-0"

ATTIC FLOOR PLAN "A" (FRAMING)

OVERLAYS	SCREEN
TB	B
AP1	F
AP1B	F
AP1A	F

HAEG bettis·associates INC.

PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
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STATE OF ALASKA
T. Steve Smith
No. A 4057
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

ATTIC PLAN "A" (FRAMING)

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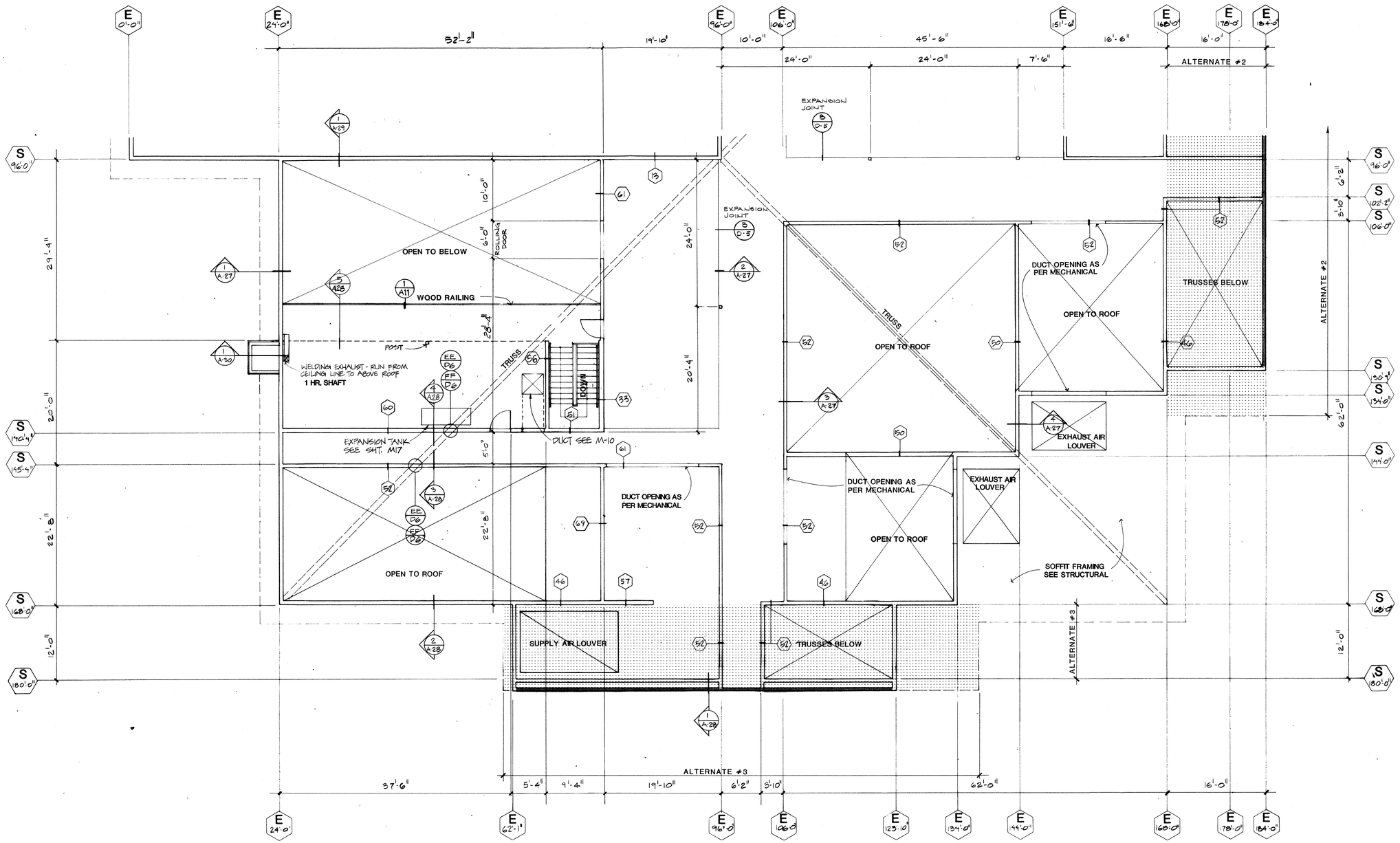

ATTIC FLOOR PLAN "B" (FRAMING)

BUILDING NORTH

1/8" = 1'-0"

NOTE: ALL DIMENSIONS ARE TO FACE OF STUD UNLESS OTHERWISE NOTED

TEMPORARY WALL

OVERLAY RECD	OVERLAYS	SCREEN
TB	TB	T
AP2	AP2	F
AP2B	AP2B	F
AP2A	AP2A	F

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
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STATE OF ALASKA
1979
T. Boyd Bettis
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

ATTIC PLAN "B" (FRAMING)

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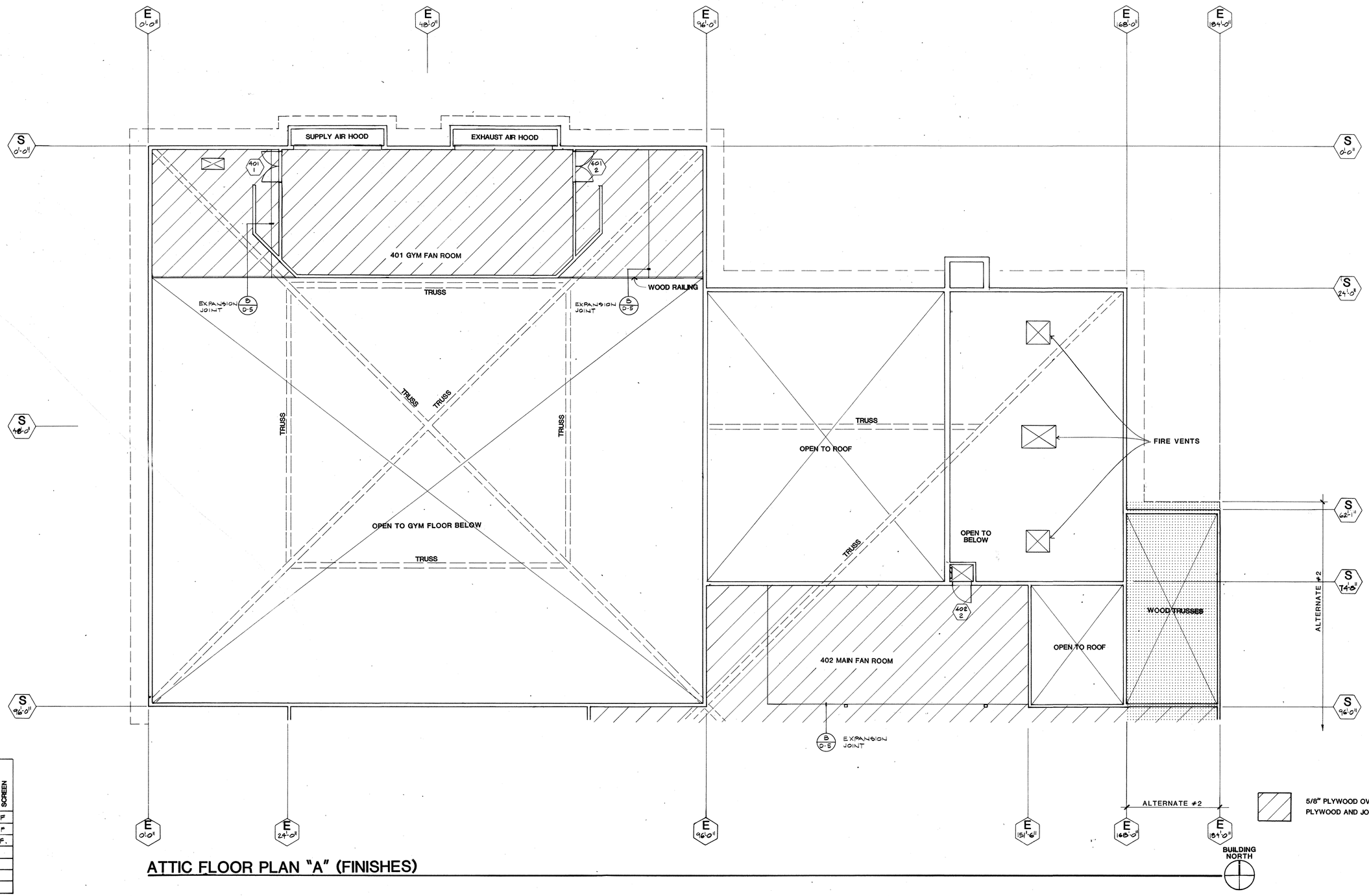

5/8" PLYWOOD OVER STRUCTURAL PLYWOOD AND JOISTS

BUILDING NORTH

ATTIC FLOOR PLAN "A" (FINISHES)

OVE	Y RECD
TB	TB
AP1	AP1
AP1B	AP1B

OVERLAYS	SCREEN
TB	TB
AP1	P
AP1B	P.

STATE OF ALASKA
1978
T. Steve Smith
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

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SKAGWAY ALASKA

FLOOR PLAN "A" (FINISHES)

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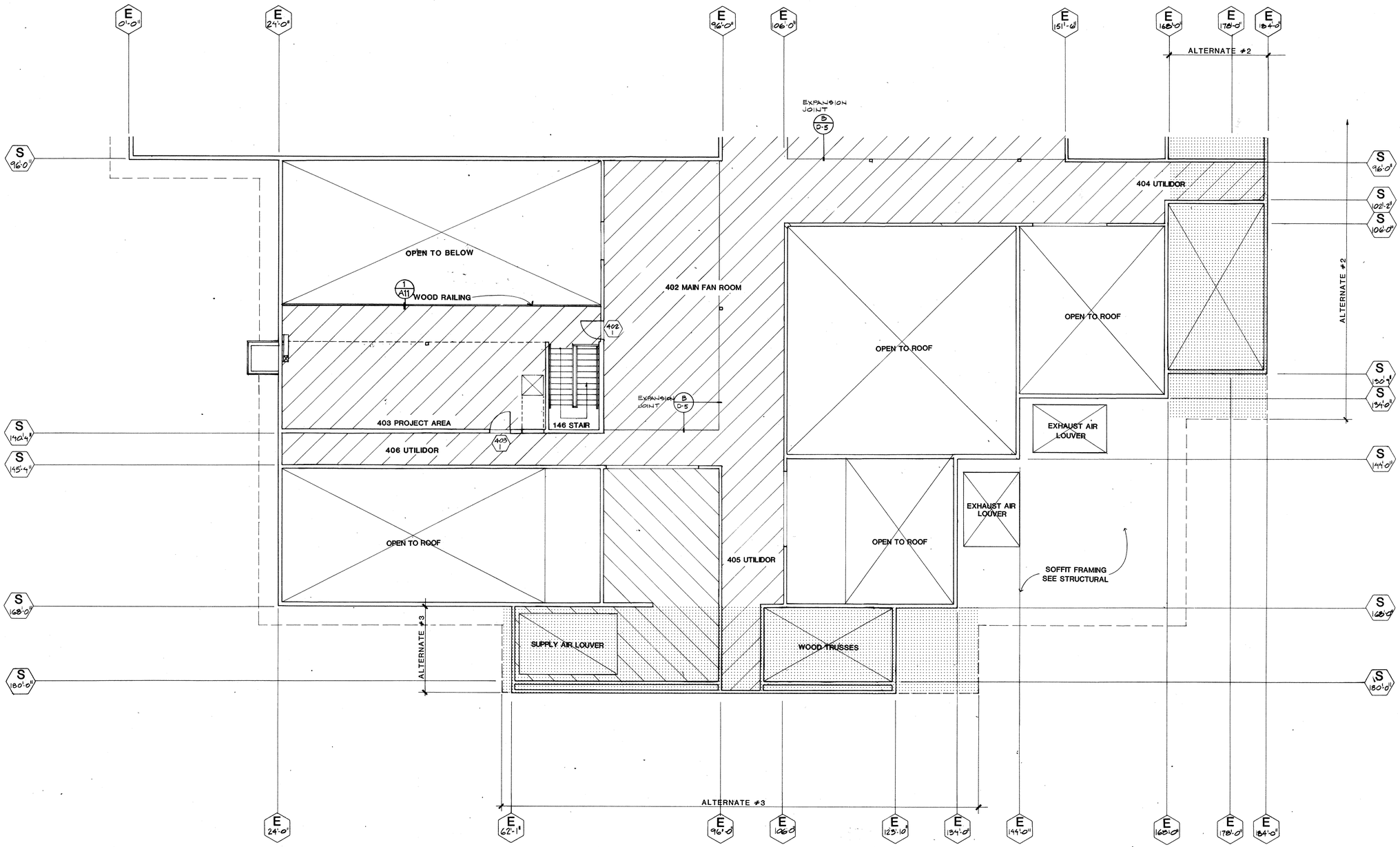

ATTIC FLOOR PLAN "B" (FINISHES)

BUILDING NORTH

5/8" PLYWOOD OVER STRUCTURAL PLYWOOD AND JOISTS

GYPSUM WALLBOARD TYPE 1 OVER STRUCTURAL PLYWOOD AND JOISTS

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
AP2	AP2	F
AP2B	AP2B	F

STATE OF ALASKA
T. Shane Bettis
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

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ATTIC PLAN "B" (FINISHES)

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LEGEND

- CEILING TILE TYPE 1
- SUPPLY AIR GRILLE
- RETURN AIR GRILLE
- CIRCULATION FAN
- COMBUSTION DETECTOR
- HEAT DETECTOR
- SPEAKER
- SEMI-RECESSED LIGHT
- RECESSED DOWN LIGHT
- RECESSED FLUORESCENT LIGHT
- SURFACE MOUNTED FLUORESCENT LIGHT
- RECESSED FLUORESCENT LIGHT
- SURFACE MOUNTED HALIDE LIGHT
- EMERGENCY LIGHTING
- CEILING ACCESS PANEL
- SPEAKER

CLG. HT. VARIES GWB

TRUSS

CLG. HT. VARIES GWB (UNPAINTED)

TYP 3 LOC

BASKETBALL BACKSTOP ALTERNATE #1

SPEAKER AS PER ELEC. N.I.C.

FAN ENCLOSURE, TYP. 4 LOC.

BASKETBALL BACKSTOP ALTERNATE #1

SEE FLOOR PLAN

BASKETBALL BACKSTOP SUPPORT BEAM ABOVE GWB PER STRUCT. - TO BE INCLUDED IN BASIC BID

CLG. HT. VARIES GWB (UNPAINTED)

CLG. HT. VARIES GWB

FIRE VENTS

GWB

CLG. BEAM

CLG. BEAM

CLG. 6'-6" GWB

ALTERNATE #2

ALTERNATE #2

OVR	KY REQD	OVERLAYS	SCREEN
TB			F
AP3	AP3		F
AP1G	AP1G		F
AP1F	AP1F		F

ATTIC REFLECTED CEILING PLAN "A"

1/8" = 1'-0"

NORTH

STATE OF ALASKA — REGISTERED PROFESSIONAL ARCHITECT — T. Steve Bettis No. A 3687

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ATTIC REFLECTED CEILING PLAN "A"

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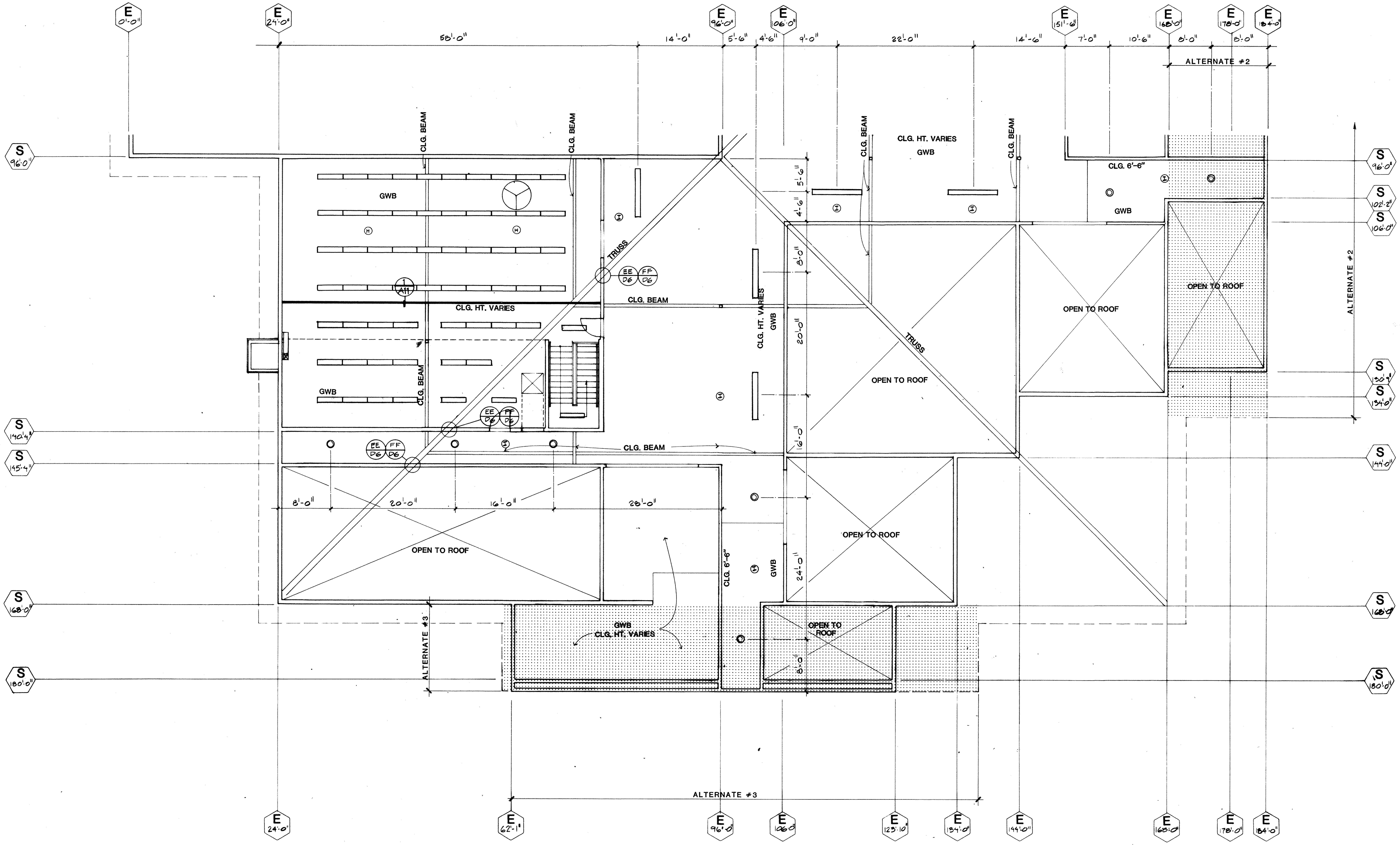

ATTIC REFLECTED CEILING PLAN "B"

1/8" = 1'-0"

NORTH

OVERLAY REQD	OVERLAYS	SCREEN
TB		F
AP2	AP2	F
AP2G	AP2G	F
AP2F	AP2F	F

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Attic Reflected Ceiling Plan "B"

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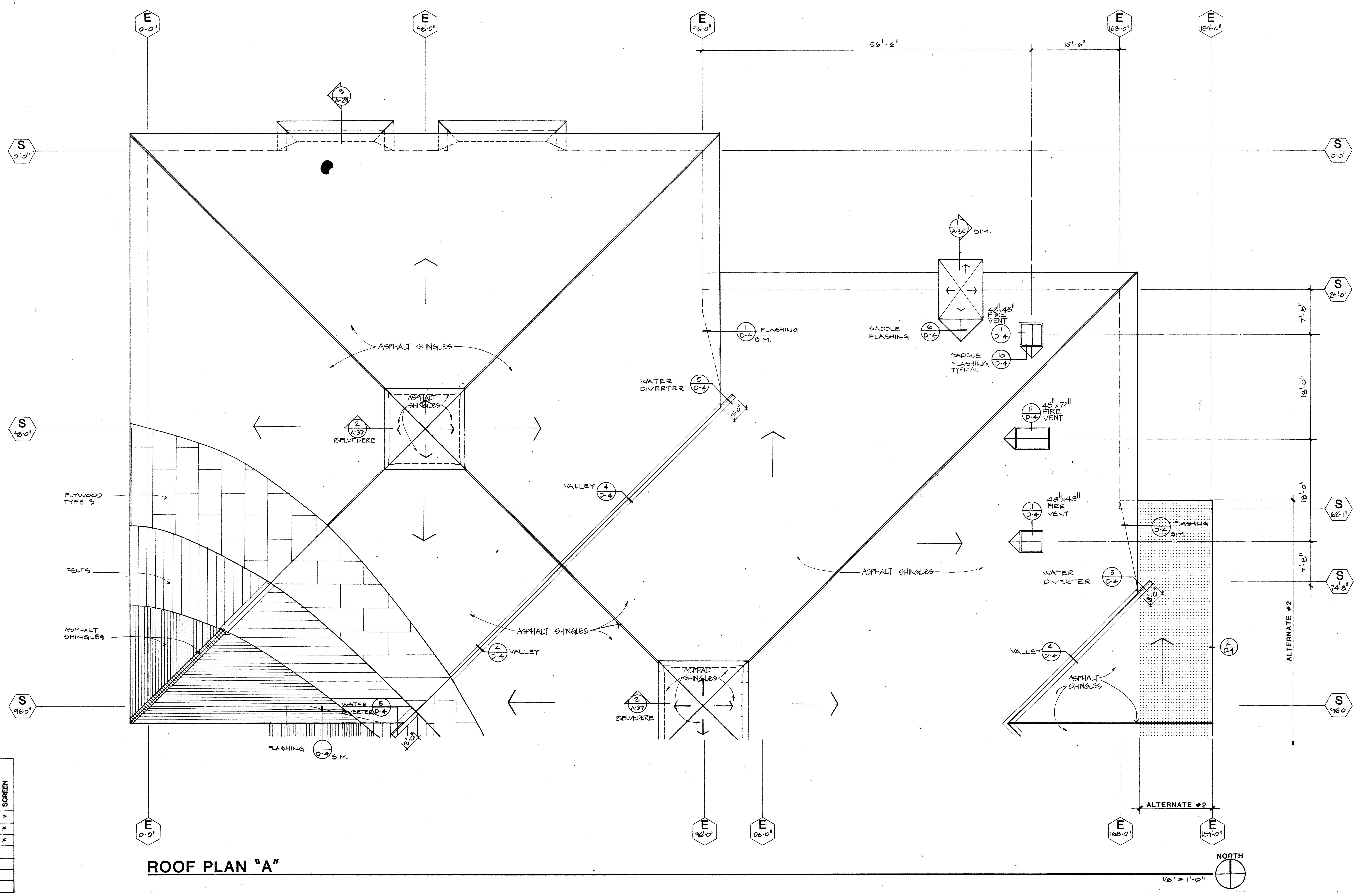

ROOF PLAN "A"

OVE. Y REQ'D	OVERLAYS	SCREEN
TB	TB	F
RP1	RP1	F
RP1B	RP1B	F

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ROOF PLAN "A"

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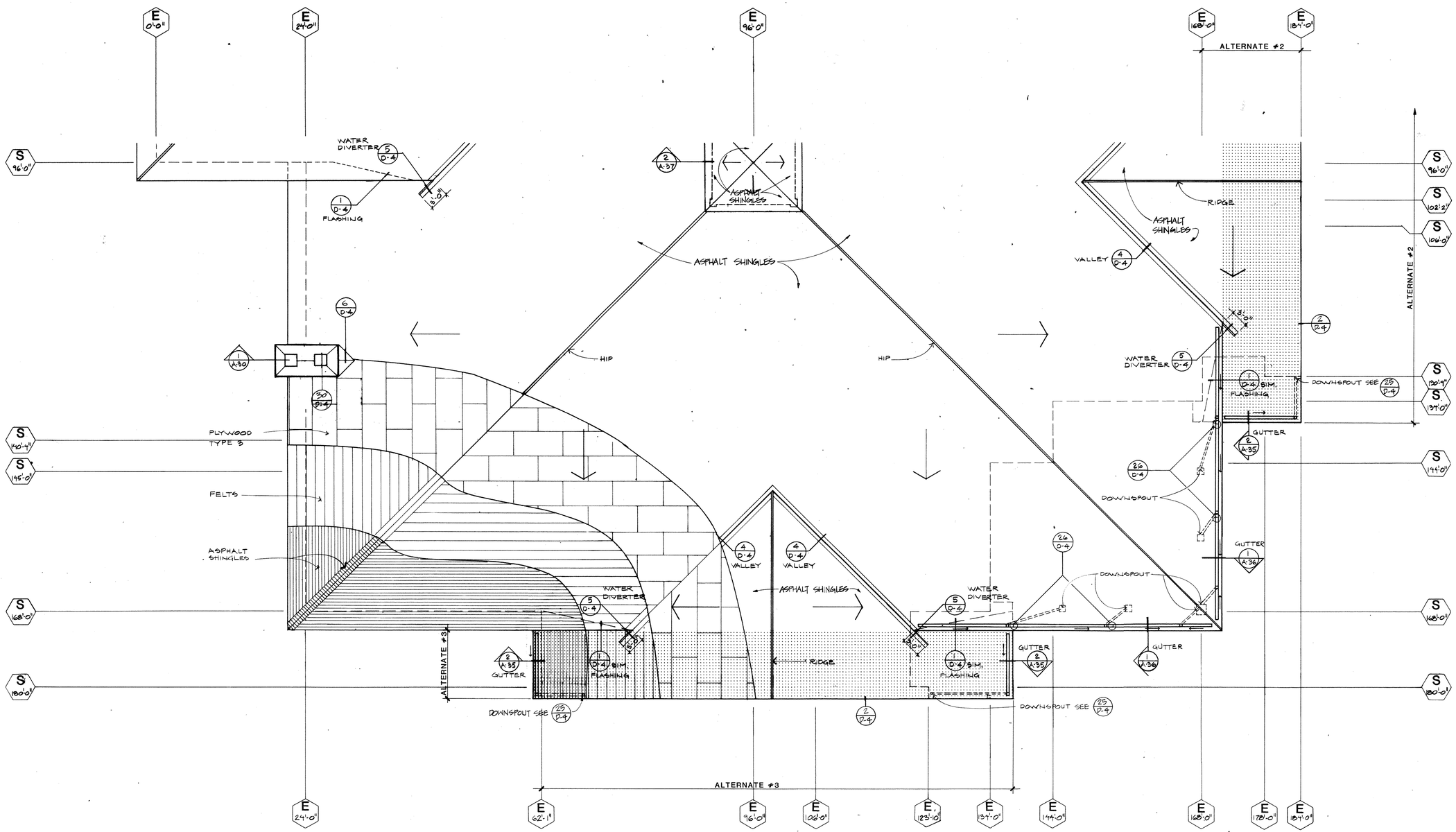

ROOF PLAN "B"

NORTH

1/8"=1'-0"

OVERLAY RECORD	OVERLAYS	SCREEN
TB	TB	TB
RP2	RP2	F
RP2B	RP2B	F

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STATE OF ALASKA
1984
T. Steve Bettis
No. A 4487
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

ROOF PLAN "B"

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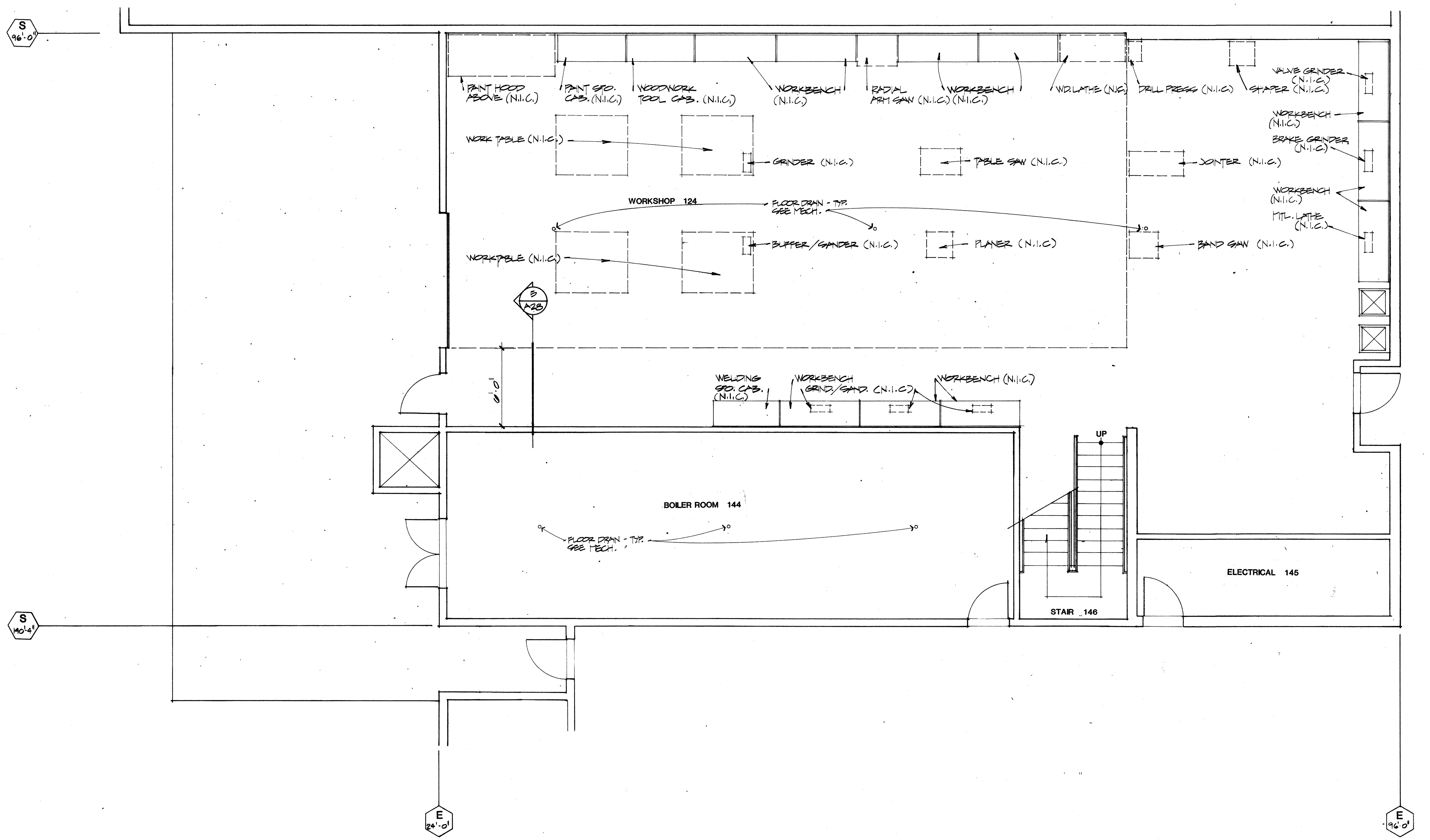

BOILER ROOM / SHOP / ELECTRICAL ROOM

1/4" = 1'-0"

NORTH

OVER- LY REQD	OVERLAYS	SCREEN
TB	TB	P
SP	SP	P
SP1	SP1	F

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Anchorage Alaska 99501 (907) 279-3436

State of Alaska — T. Steve Bettis No. A 4687 — Registered Professional Architect

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SHOP FLOOR PLAN

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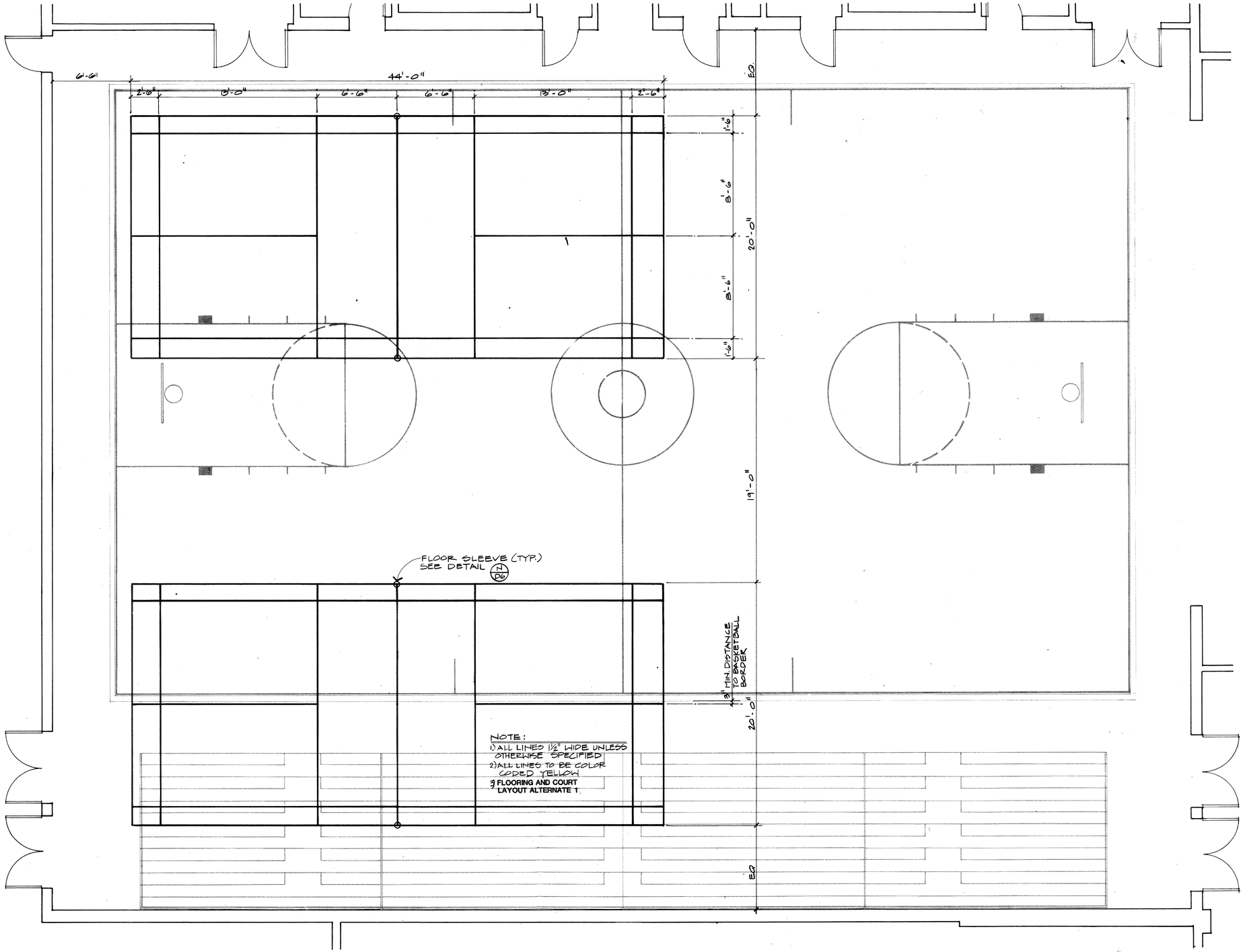

GYM FLOOR PLAN – BADMINTON

NORTH

1/4" = 1'-0"

OVERLAYS		SCREEN
T&B	1"	F
GP	GP	F
BL2	BL2	.5
BW	BW	F

DVEP AY REQD

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STATE OF ALASKA
T. Sterling Haeg
No. A 4667
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

GYM FLOOR PLAN – BADMINTON

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GYM FLOOR PLAN – TENNIS

NORTH

1/4"=1'-0"

OVER'Y RECD		
TD	OVERLAYS	SCREEN
GP	GP	F
BL2	BL2	S
TS	TS	F

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STATE OF ALASKA
T. Stamo Dettis
No. A 3687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

GYM FLOOR PLAN – TENNIS

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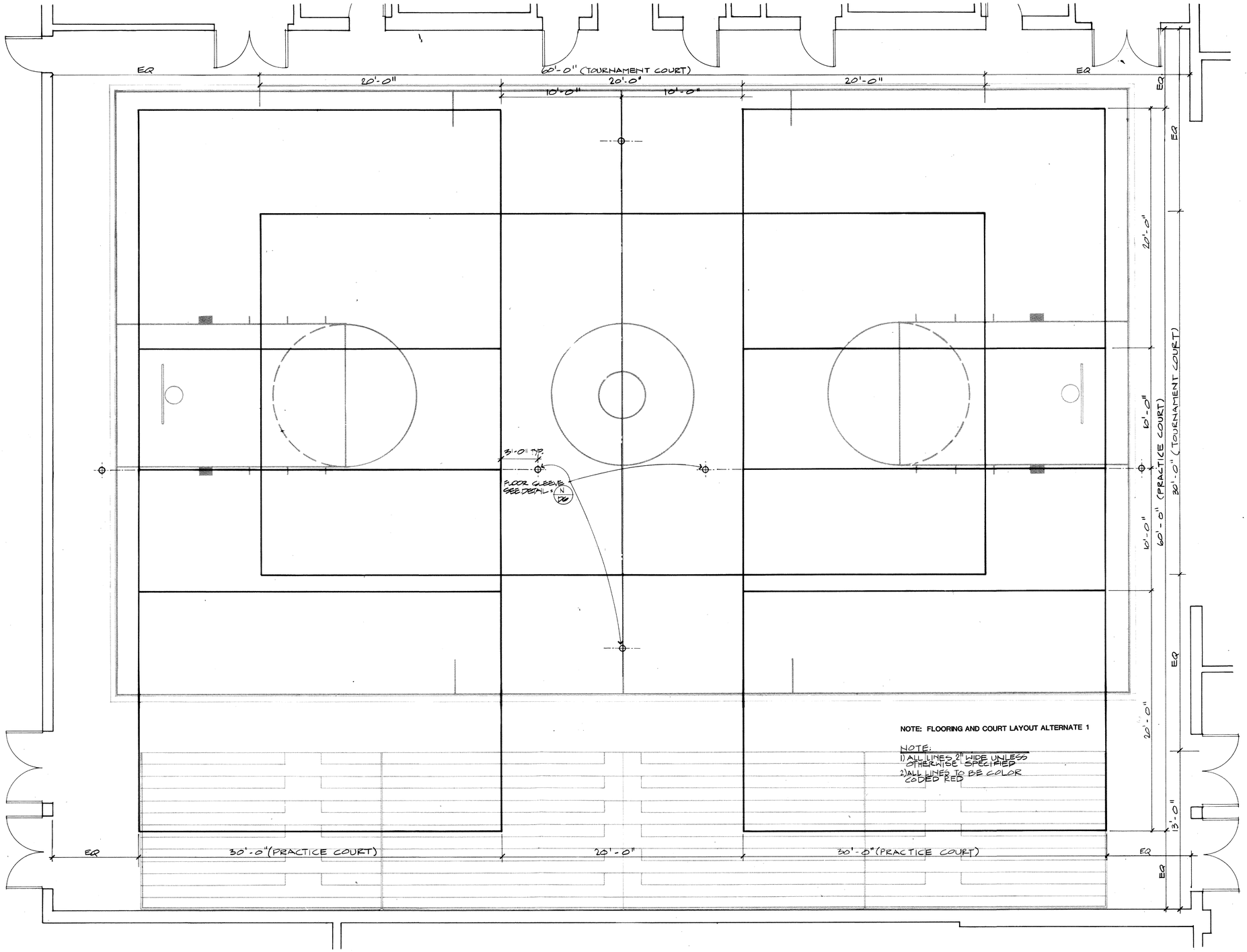

GYM FLOOR PLAN – VOLLEYBALL

NORTH

1/4" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	-	F
GP	GP	F
BL2	BL2	S
VB	VB	F

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825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

STATE OF ALASKA
T. Shane Smith
No. A 3687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

GYM FLOOR PLAN – VOLLEYBALL

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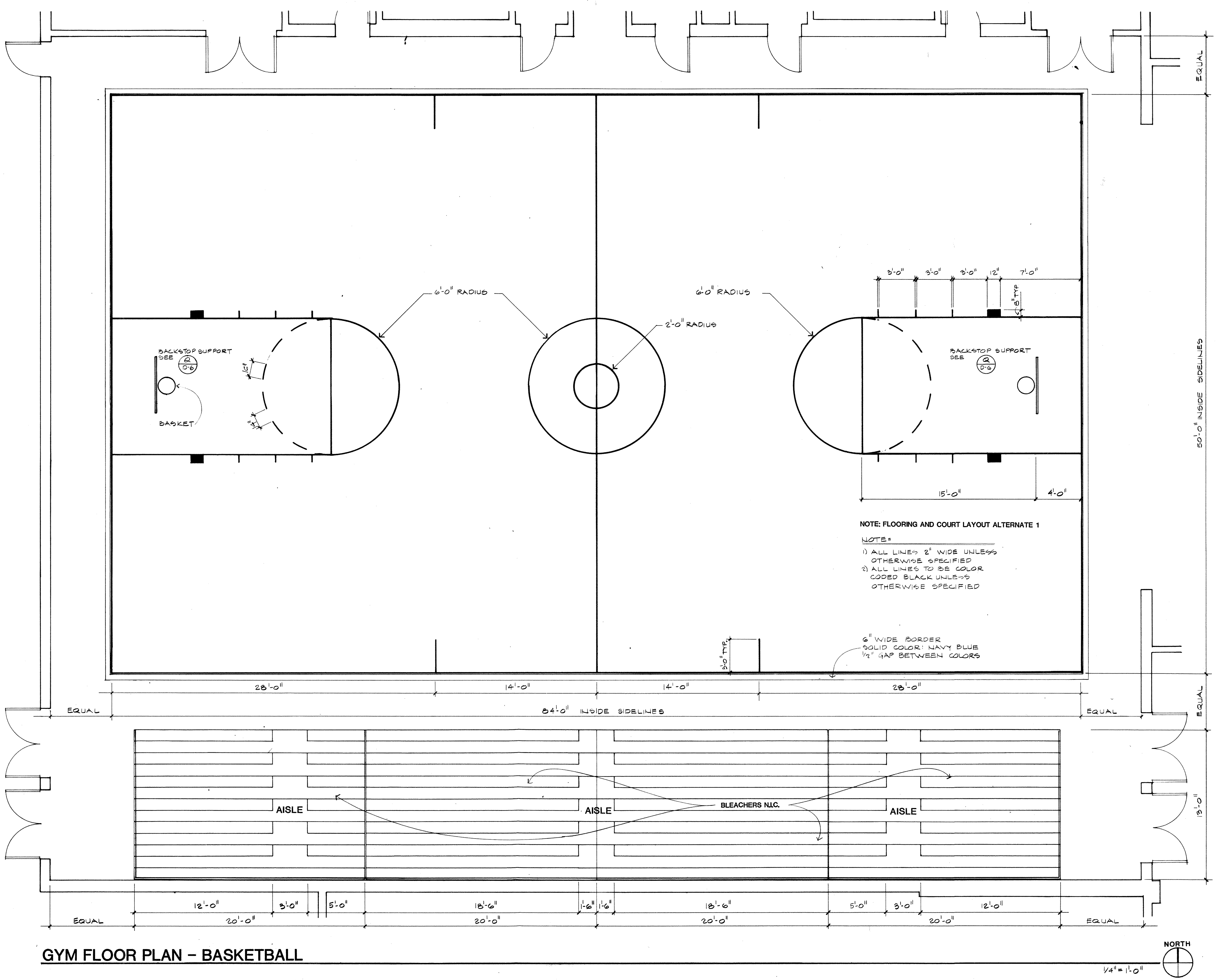

GYM FLOOR PLAN – BASKETBALL

1/4" = 1'-0"

OVER	OVERLAYS	SCREEN
TB	=	F
GP	GP	F
BL	BL	F
BLI	BLI	F

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GYM FLOOR PLAN – BASKETBALL

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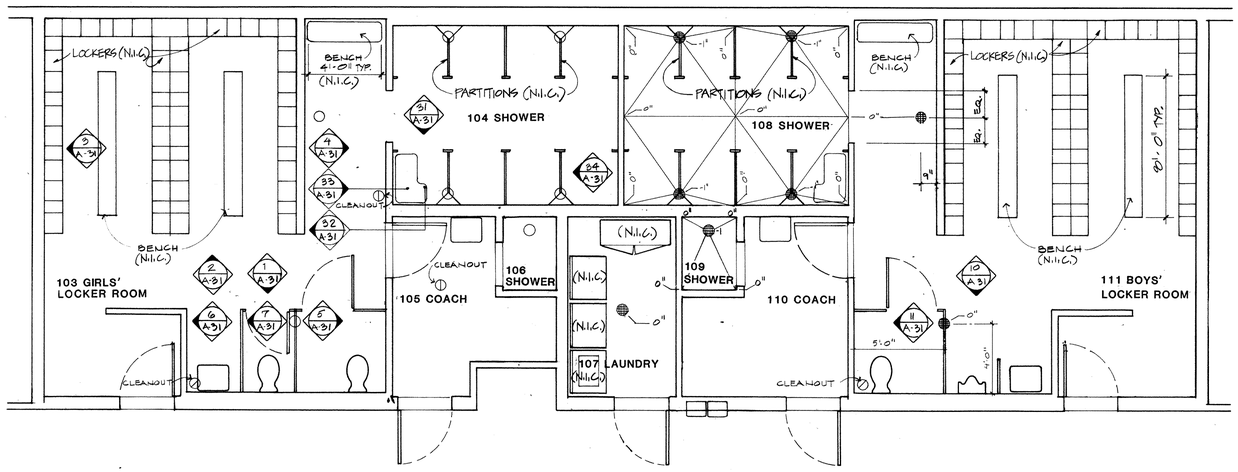
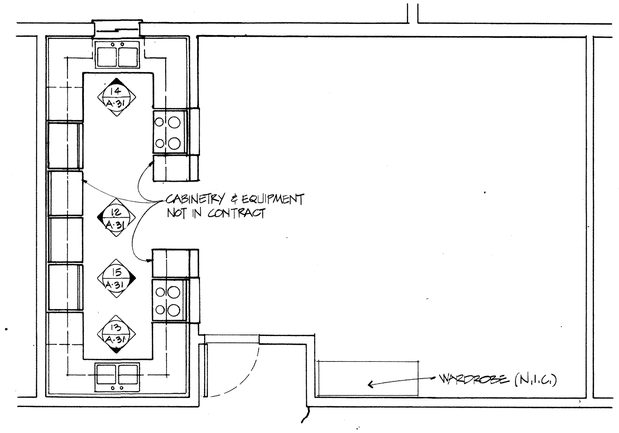


1 LOCKER ROOMS & SHOWERS

NOTE: DRAINAGE IN GIRLS' LOCKER ROOM, SHOWER, & COACH'S TLT. IS REVERSE OF BOYS'

1/4"=1'-0"



2 HOME ECONOMICS

1/4"=1'-0"

3 BOYS' & GIRLS' TOILET ROOMS

NOTE: DRAINAGE IN GIRLS' TOILET ROOMS IS THE REVERSE OF BOYS' TLT. ROOM

1/4"=1'-0"

DETAILS

FOR TYPICAL TILE BASE DETAIL SEE (C/12.5)

FOR TYPICAL FLOOR DRAIN DETAIL SEE (D/12.5)

FOR TYPICAL TILE @ OUTSIDE CORNER DETAIL SEE (H/12.5)

FOR TYPICAL TILE @ INSIDE CORNER DETAIL SEE (I/12.5)

ITEMS NOT IN CONTRACT

ALL CABINETRY, EQUIPMENT (STOVES, WASHERS, DRYERS, ETC.) BENCHES, LOCKERS, AND SHOWER PARTITIONS

OVERLAY REQD	OVERLAYS	SCREEN
HB	HE	
HB1	HE1	

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STATE OF ALASKA — T. Steve Settle No. A 4687 — REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

HOME EC, TOILET & LOCKER ROOM

REVISIONS

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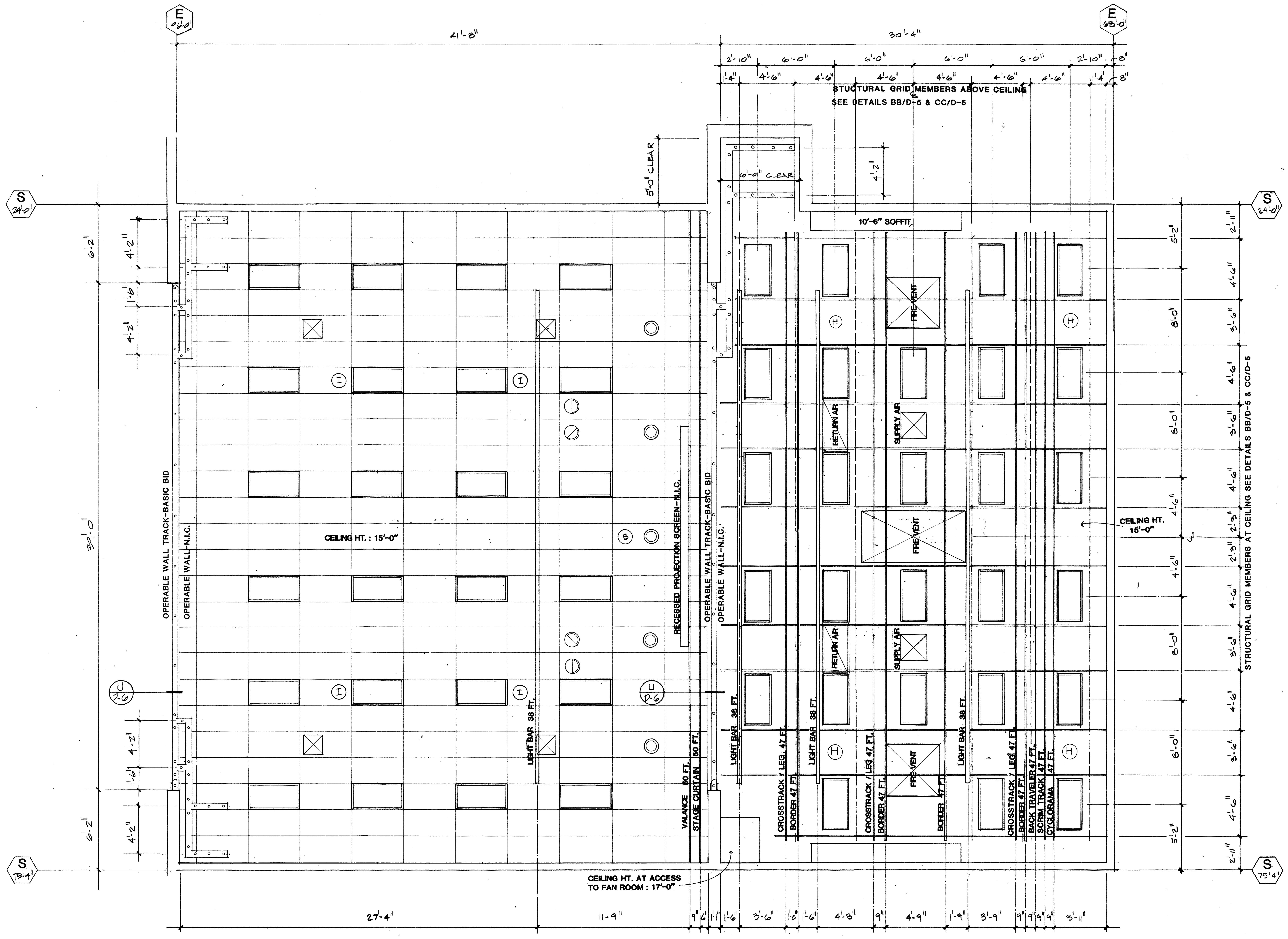


REFLECTED CEILING PLAN MULTIPURPOSE & PLATFORM/MUSIC ROOM

1/4" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	[illegible]	F
RC1	RC1	F
RC2	RC2	F

HAEG·BETTIS·ASSOCIATES INC.
PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA — T. Steve Bettis No. A 4667 — REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:
SKAGWAY ALASKA

MULTIPURPOSE &PLATFORM REFLECTED CEILING PLAN

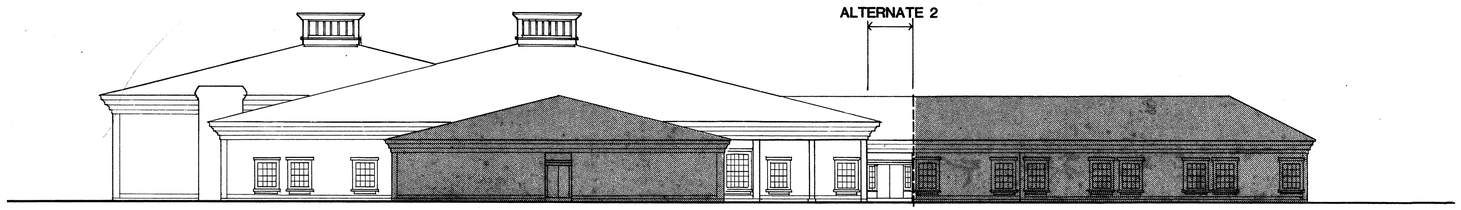
REVISIONS

drawn by

date
APRIL 8, 1983

project no.
8303

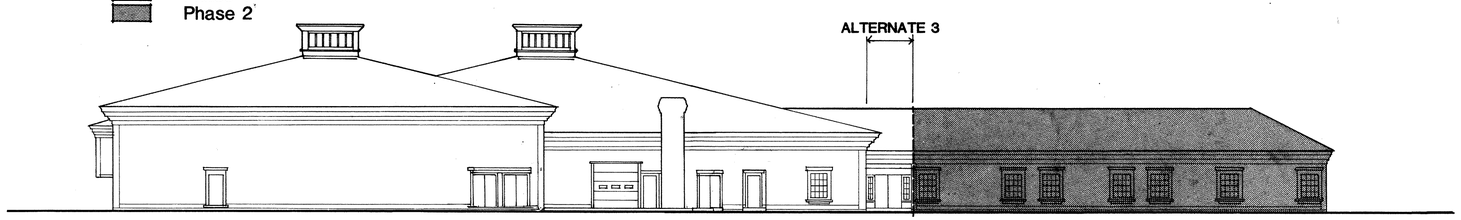
sheet no.
A22 of



SOUTH ELEVATION

1/16"=1'-0"

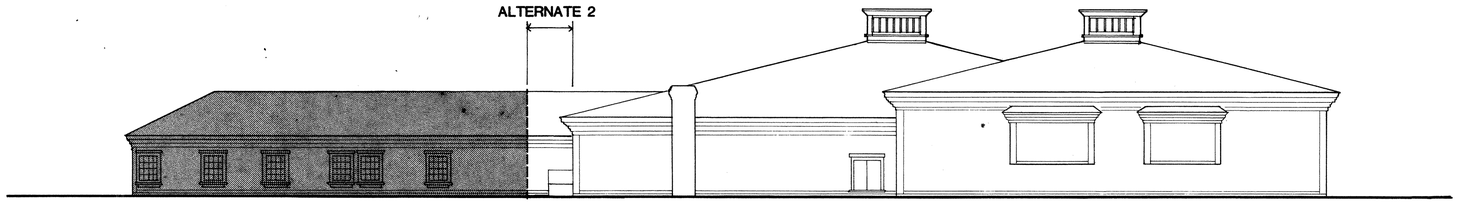
Phase 1
Phase 2



WEST ELEVATION

1/16"=1'-0"

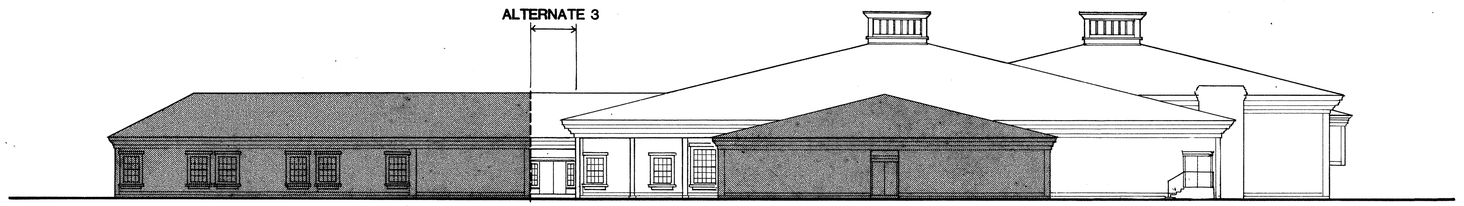
Phase 1
Phase 2



NORTH ELEVATION

1/16"=1'-0"

Phase 1
Phase 2



EAST ELEVATION

1/16"=1'-0"

Phase 1
Phase 2

OVERLAY REQD	OVERLAYS	SCREEN
TB	☐	F
EL	EL	F
PH2	PH2	F

HAEG·BETTIS·ASSOCIATES INC.
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436
PLANNING, ARCHITECTURE, INTERIOR DESIGN, GRAPHICS

STATE OF ALASKA
NOV 7
T. Steve Bettis
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

EXTERIOR ELEVATIONS, PHASING

REVISIONS

drawn by

date
APRIL 8, 1983

project no.
8303

sheet no.
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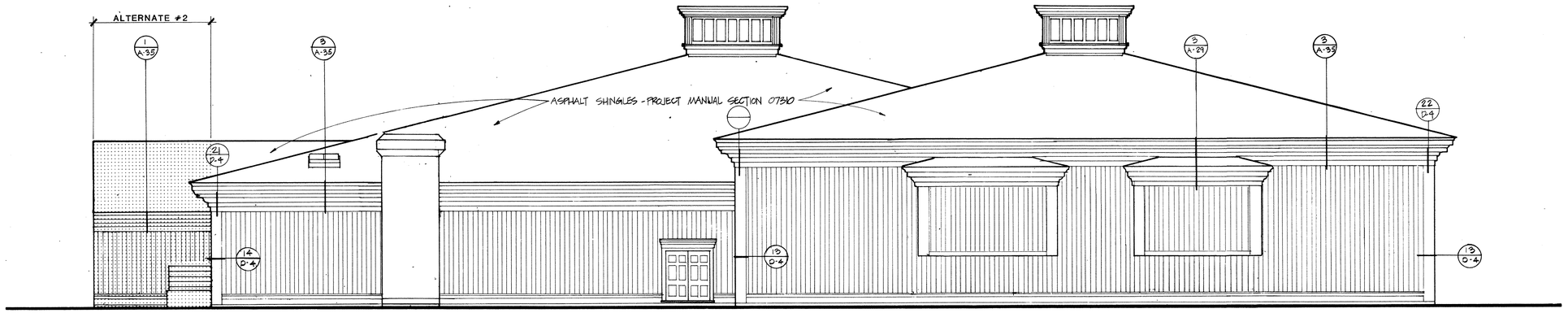
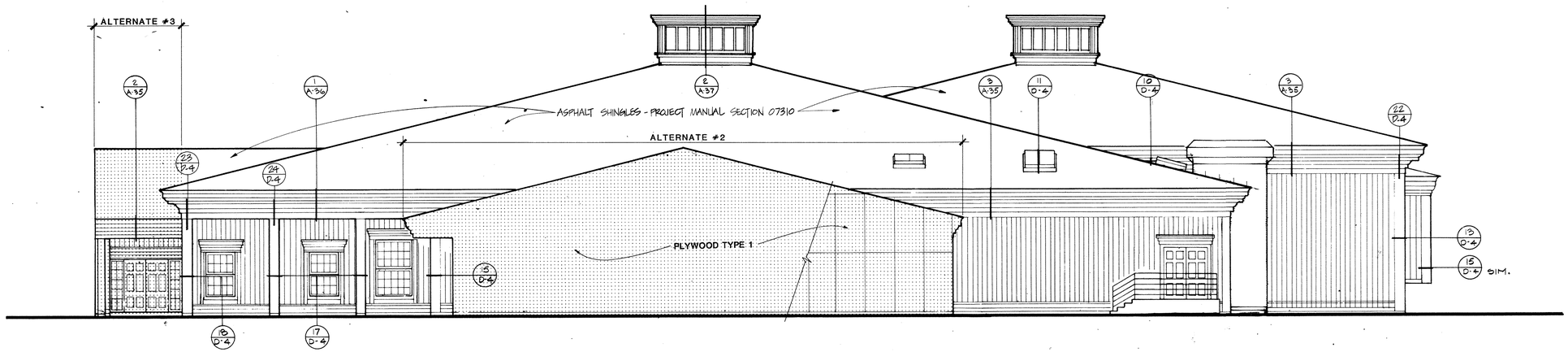


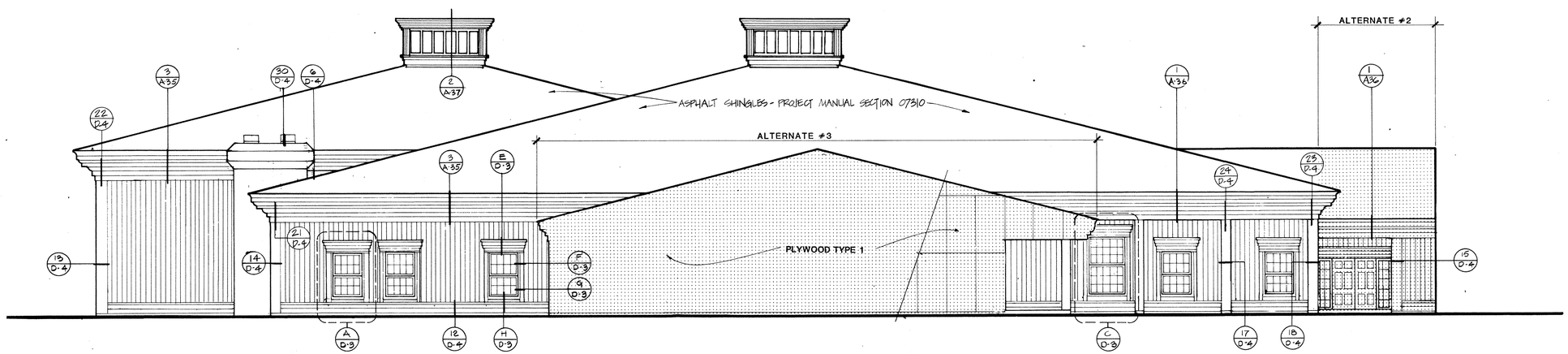
NORTH ELEVATION

1/8" = 1'-0"



EAST ELEVATION

1/8" = 1'-0"



SOUTH ELEVATION

1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	1"	F
EL2	EL2	F
EL1	EL1	F

STATE OF ALASKA
1979
T. Donna Bettis
No. A 4087
REGISTERED PROFESSIONAL ARCHITECT

HAEG·bettis·ASSOCIATES INC.
PLANNING ARCHITECTURE INTERIOR design GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR:

SKAGWAY ALASKA

EXTERIOR ELEVATIONS

REVISIONS

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APRIL 8, 1983

project no.
8303

sheet no.
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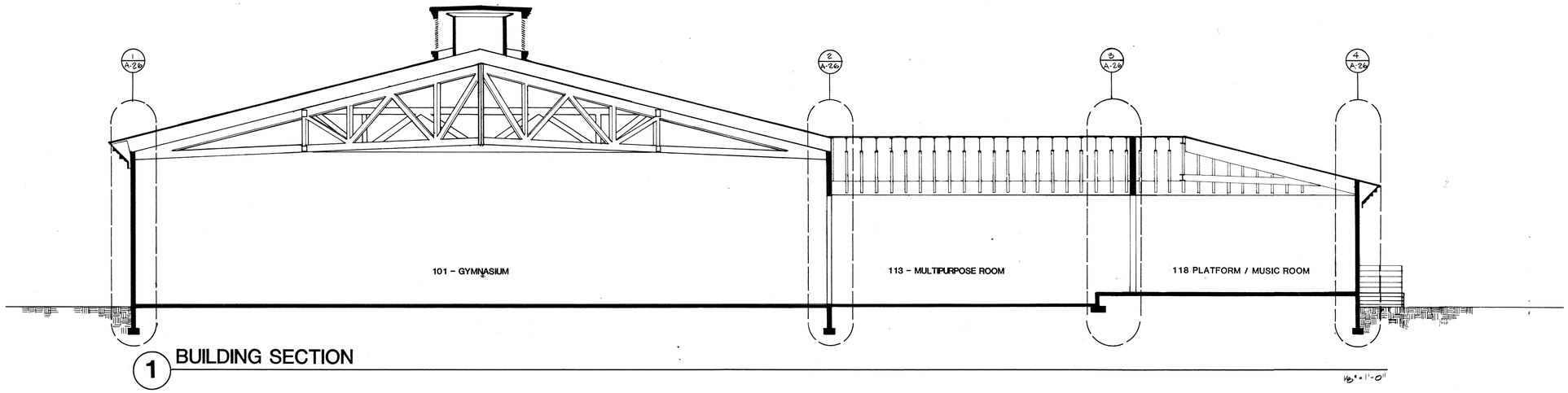
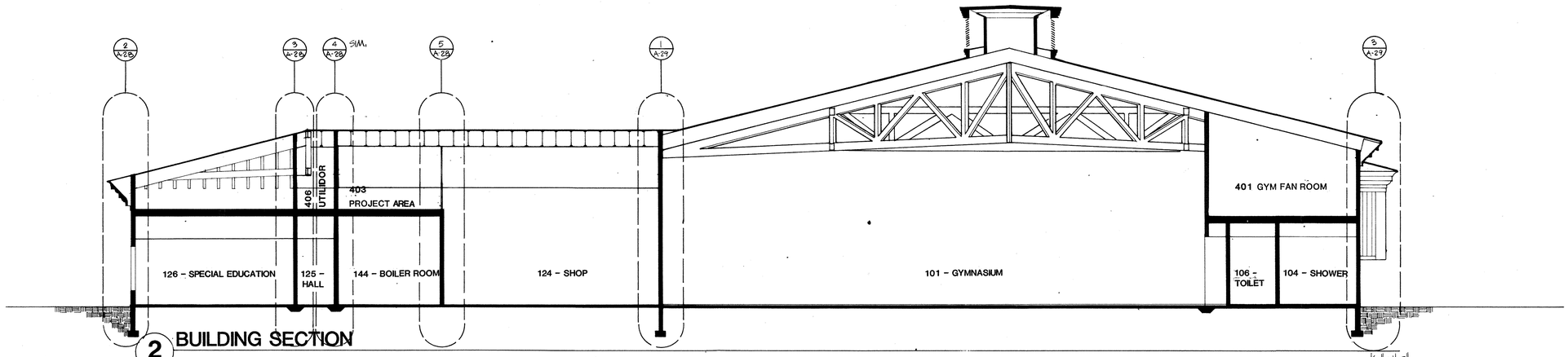


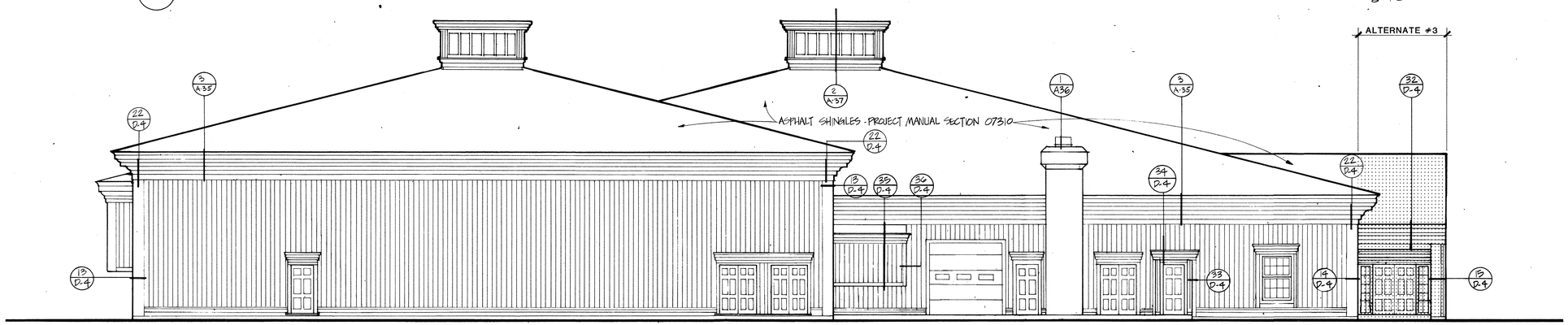
1 BUILDING SECTION

1/8"=1'-0"



2 BUILDING SECTION

1/8"=1'-0"



WEST ELEVATION

1/8"=1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TD	1'	F
EL 4	EL 4	F
EL 3	EL 3	F

STATE OF ALASKA
T. Steve Settle
No. A 3687
REGISTERED PROFESSIONAL ARCHITECT

HAEG·BETTIS·ASSOCIATES INC.

PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR:

SKAGWAY ALASKA

EXTERIOR ELEVATIONS & BUILDING SECTIONS

REVISIONS

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APRIL 8, 1983

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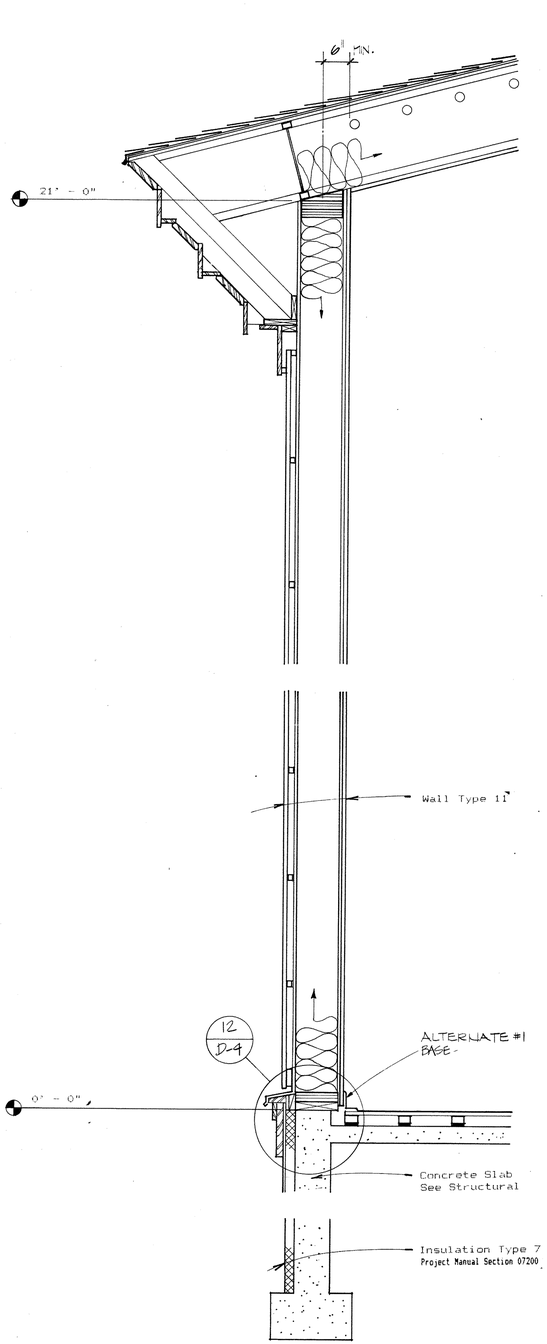
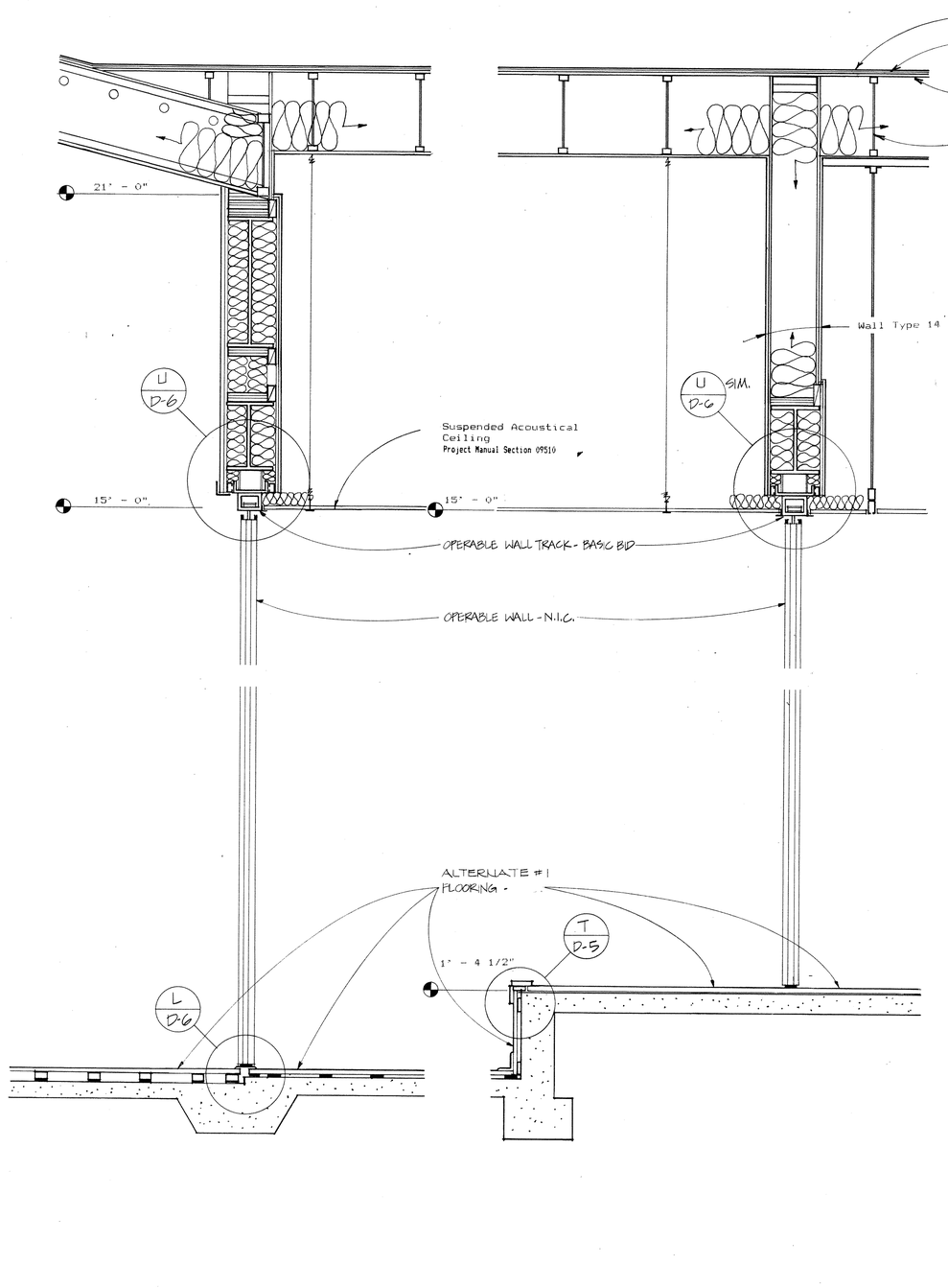


1 WALL SECTION

SCALE : 3/4" = 1'

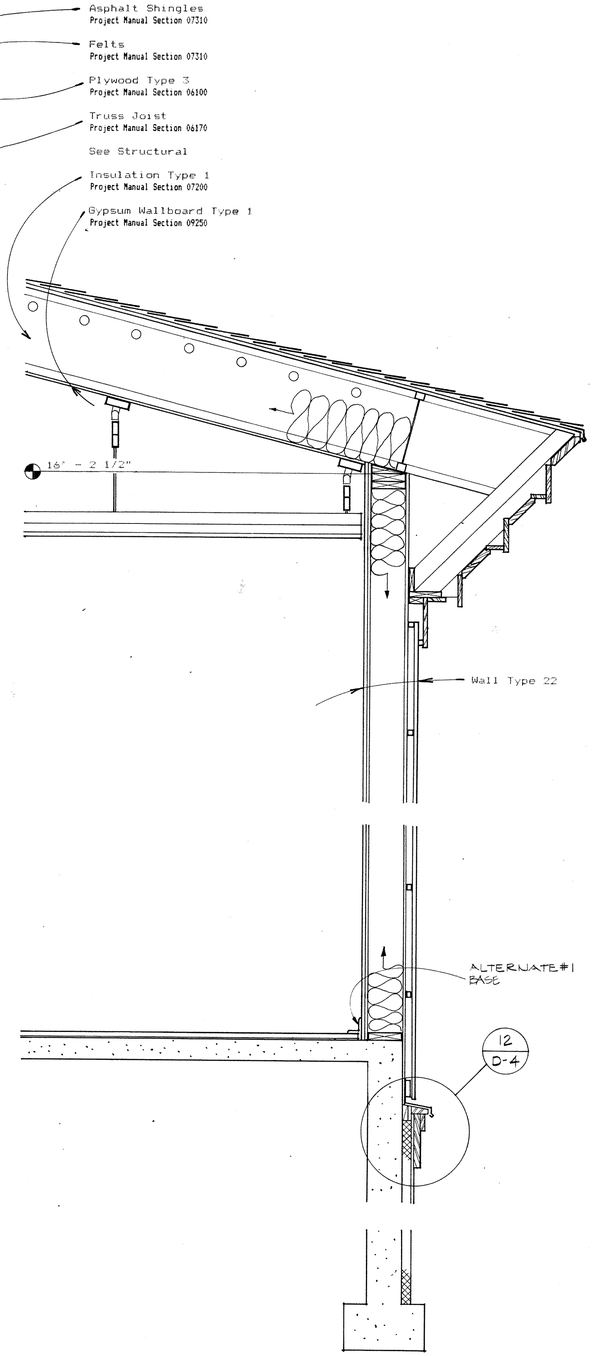


2 WALL SECTION

SCALE : 3/4" = 1'

3 WALL SECTION

SCALE : 3/4" = 1'



4 WALL SECTION

SCALE : 3/4" = 1'

TB	OVRLAY REQD
WSI	OVERLAYS
WSI	SCREEN

HAEG BETTIS ASSOCIATES INC.

825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

PLANNING ARCHITECTURE INTERIOR design GRAPHICS

STATE OF ALASKA
REGISTERED PROFESSIONAL ARCHITECT
T. Sherw. Bettis
No. A 6687

A NEW SCHOOL FOR :

SKAGWAY ALASKA

WALL SECTIONS

REVISIONS

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APRIL 8, 1983

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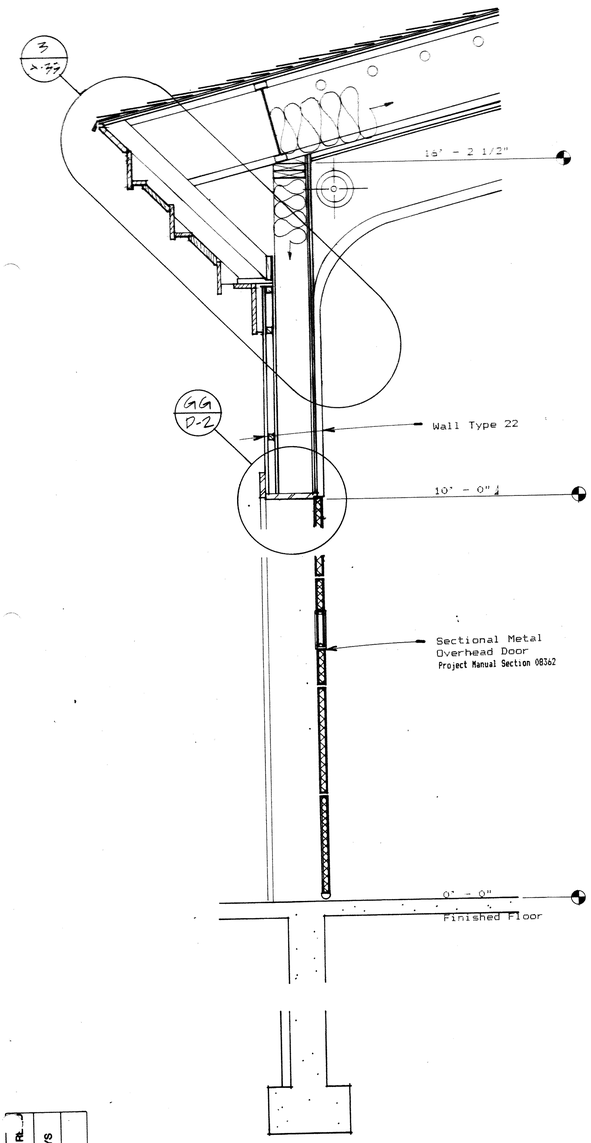
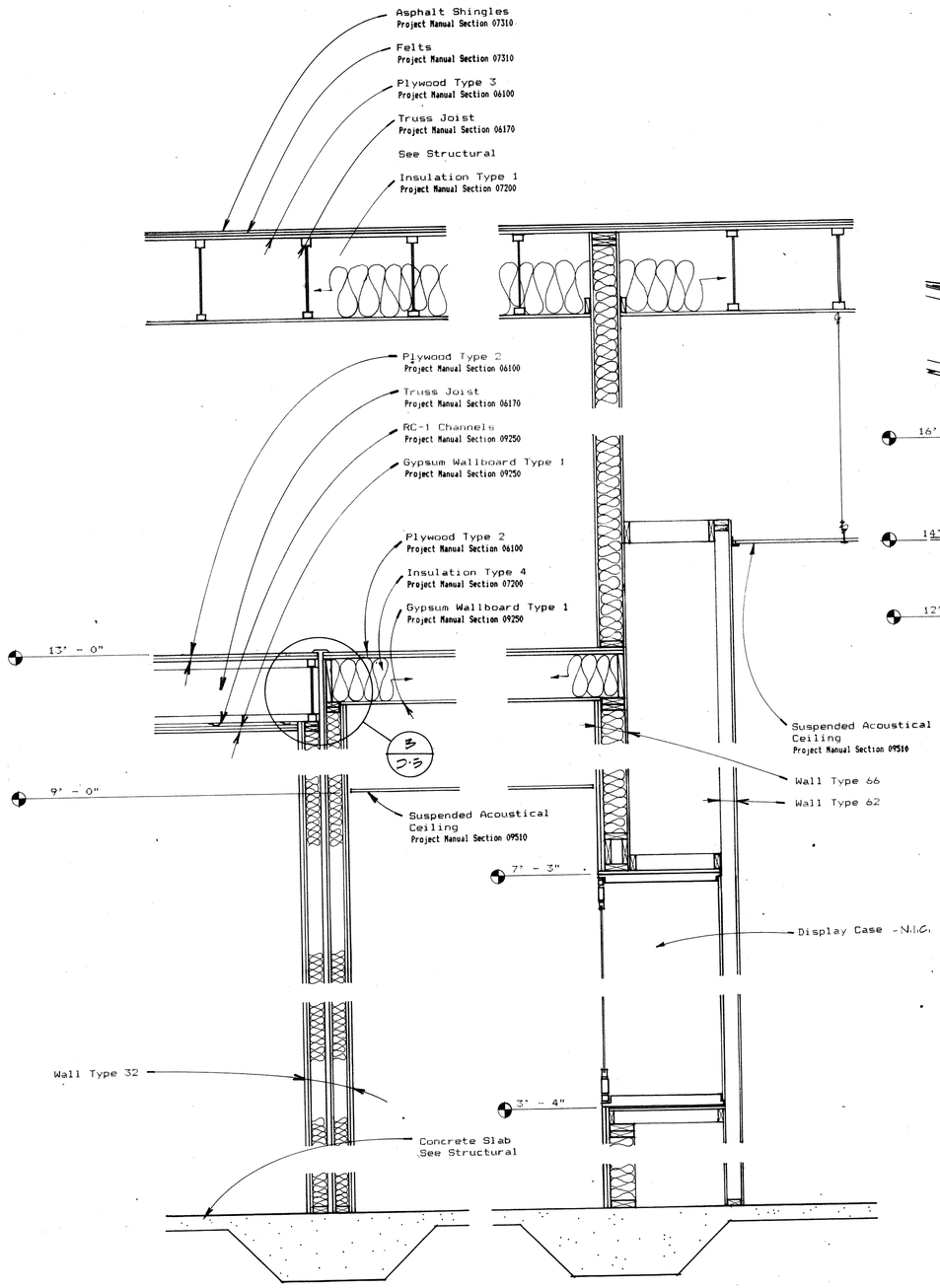


1 WALL SECTION

SCALE: 3/4" = 1'

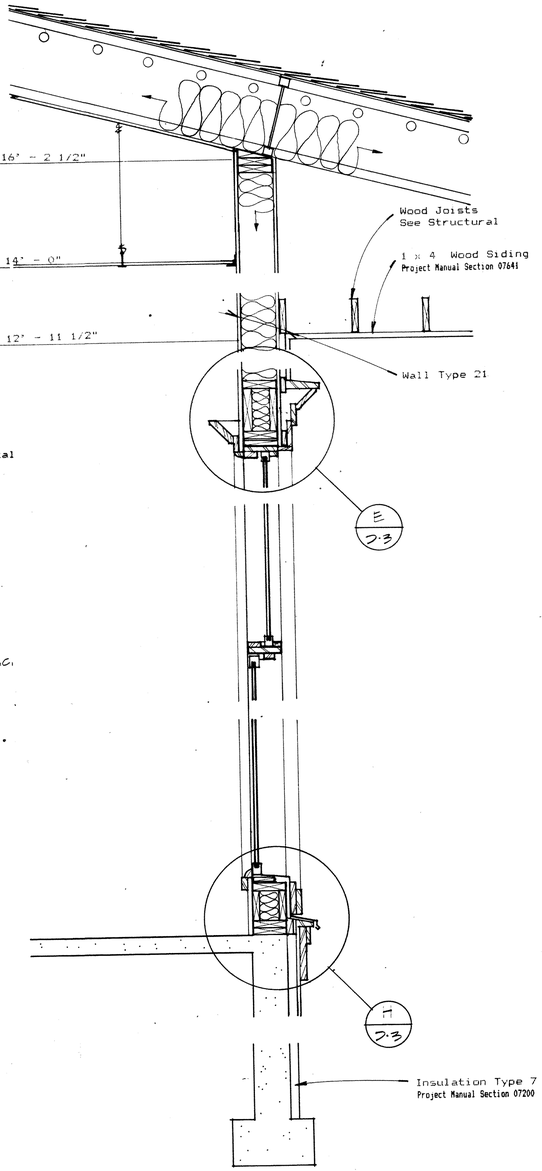


2 WALL SECTION

SCALE: 3/4" = 1'

3 WALL SECTION

SCALE: 3/4" = 1'



4 WALL SECTION

SCALE: 3/4" = 1'

OVERLAY RE...	OVERLAYS	SCREEN
TB	1=	F
WS2	WS2	F
WS3	WS3	F

HAEG·BETTIS·ASSOCIATES INC.
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436
PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

STATE OF ALASKA
REGISTERED PROFESSIONAL ARCHITECT
T. Shane Bettis
No. A 4687

A NEW SCHOOL FOR:

SKAGWAY ALASKA

WALL SECTIONS

REVISIONS

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APRIL 8, 1983

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8303

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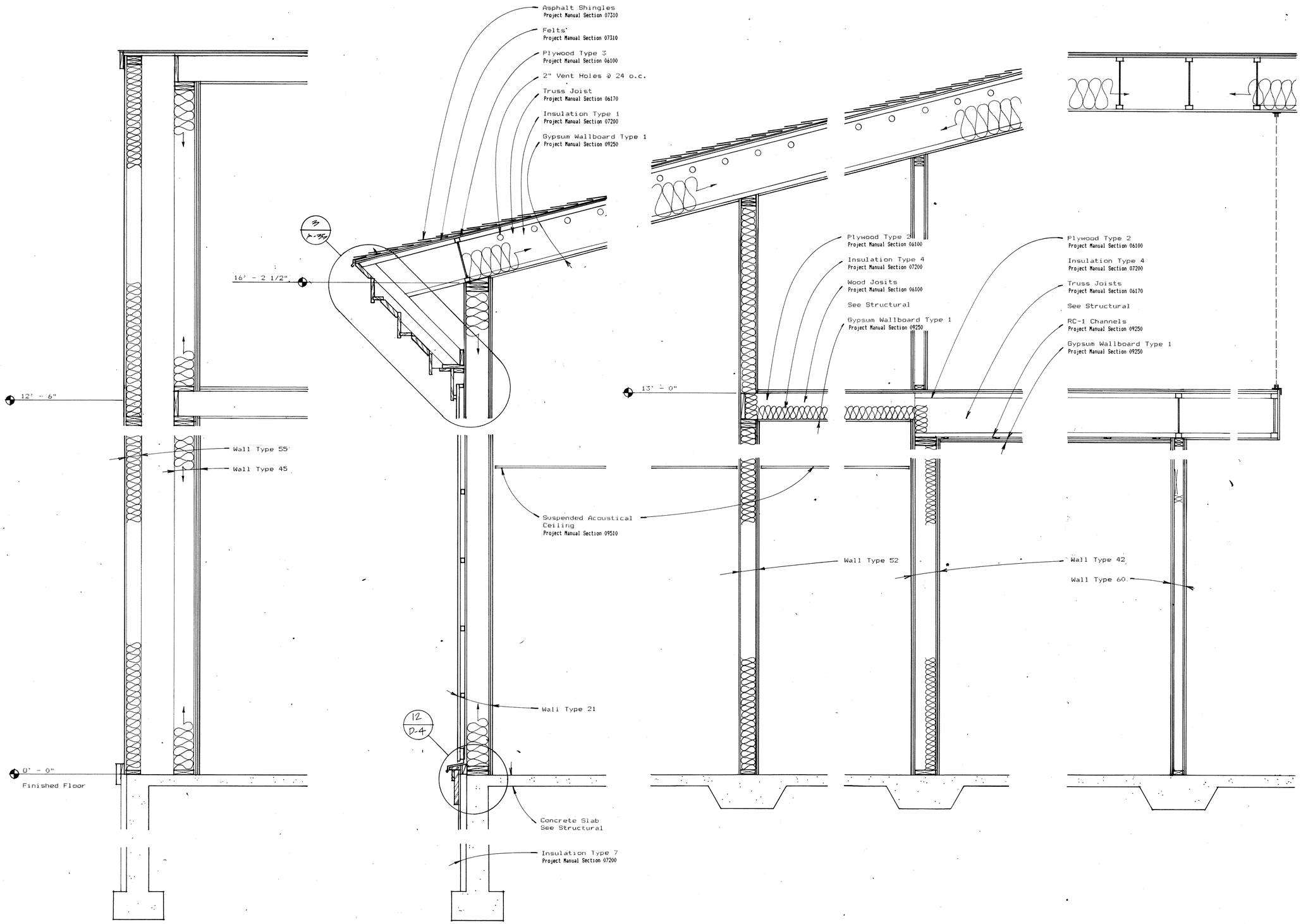

1 WALL SECTION
SCALE : 3/4" = 1'

2 WALL SECTION
SCALE : 3/4" = 1'

3 WALL SECTION
SCALE : 3/4" = 1'

4 WALL SECTION
SCALE : 3/4" = 1'

5 WALL SECTION
SCALE : 3/4" = 1'

OVERLAY REQD		
TB	1"	F
WG4	WG4	F
WG5	WG5	F

OVERLAYS	SCREEN

STATE OF ALASKA
1983
T. Steve Bettis
No. A 4667
REGISTERED PROFESSIONAL ARCHITECT

HAEG·BETTIS·ASSOCIATES INC.
PLANNING ARCHITECTURE INTERIOR design GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR:
SKAGWAY ALASKA

WALL SECTIONS

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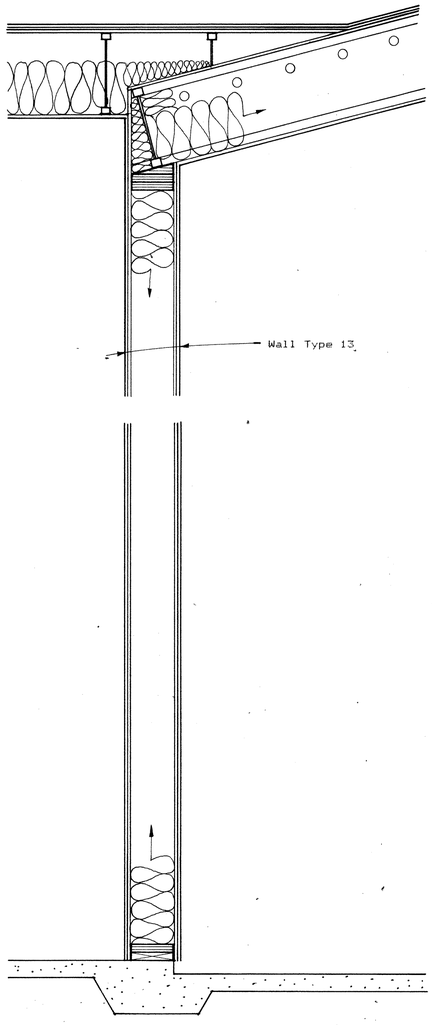
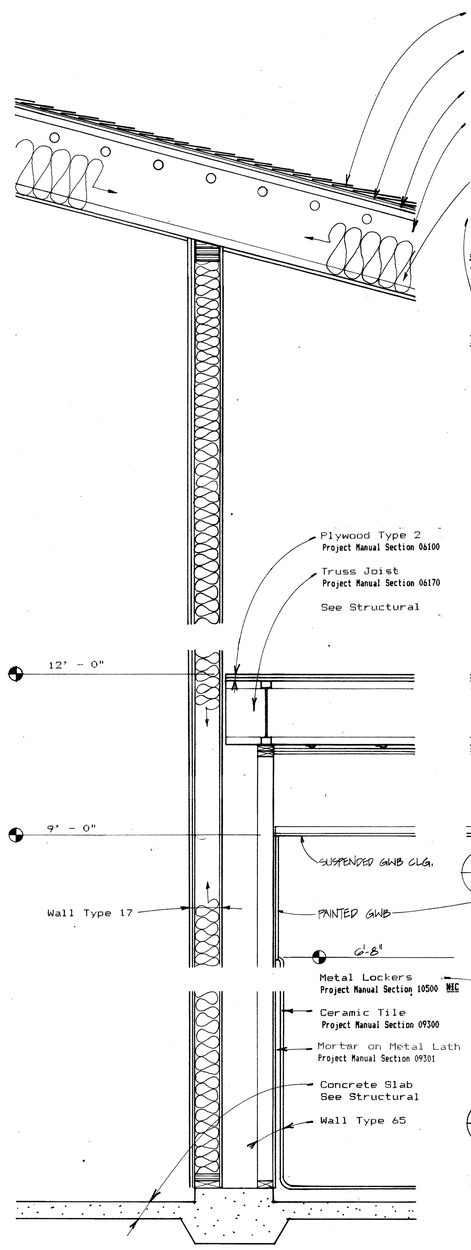
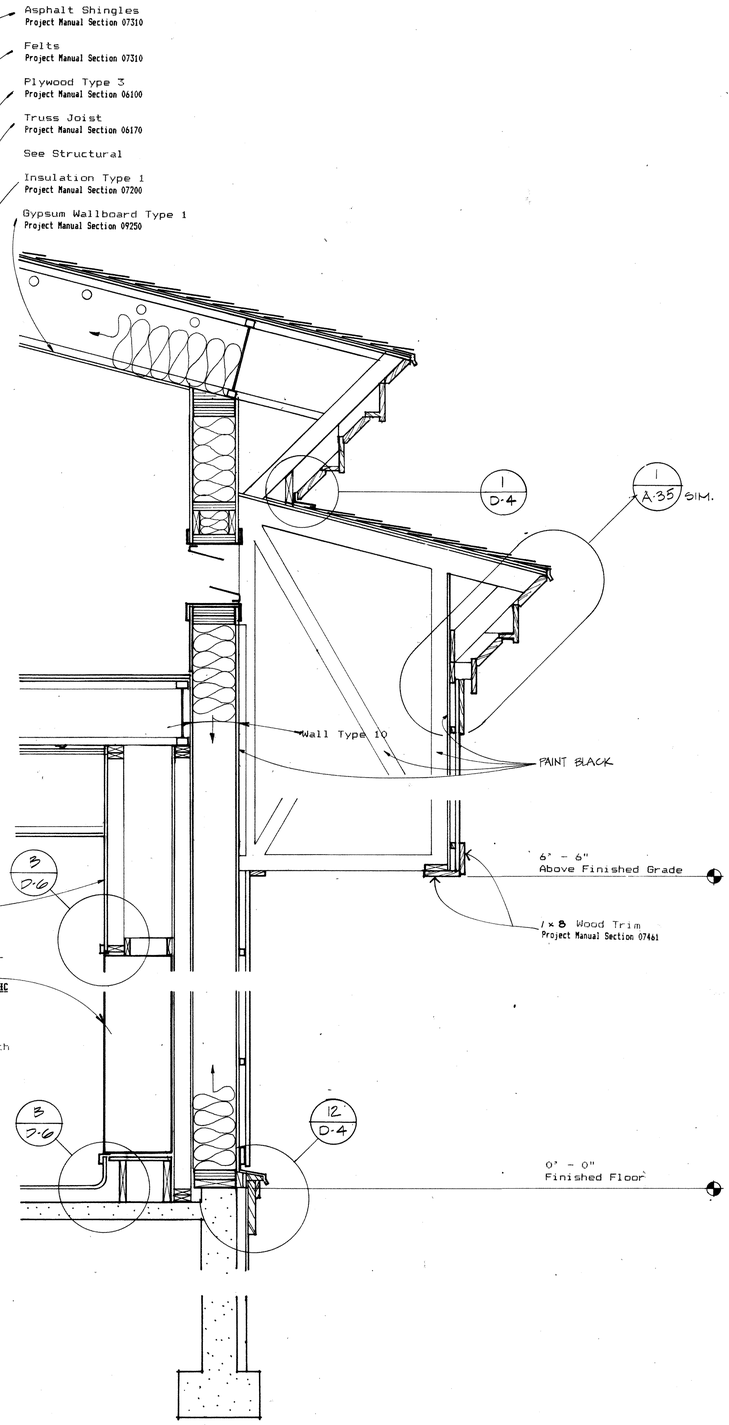


1 WALL SECTION



2 WALL SECTION



3 WALL SECTION

OVERLAY REQD	OVERLAYS	SCREEN
TB	11	F
W56	W56	F
W57	W57	

HAEG·BETTIS·ASSOCIATES INC.
PLANNING, ARCHITECTURE INTERIOR DESIGN, GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

STATE OF ALASKA
1984
T. Steve Bettis
No. A 6687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

WALL SECTIONS

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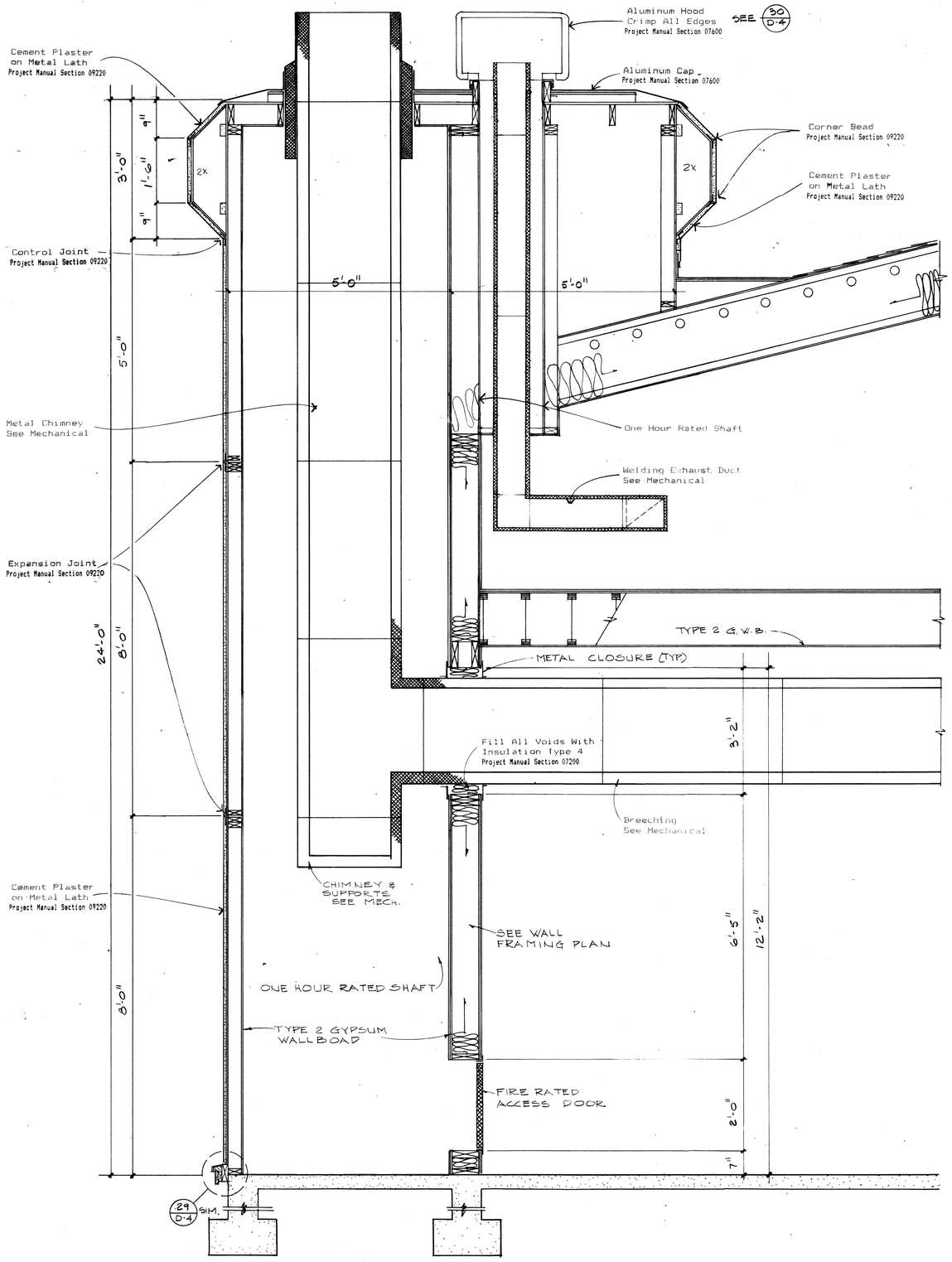
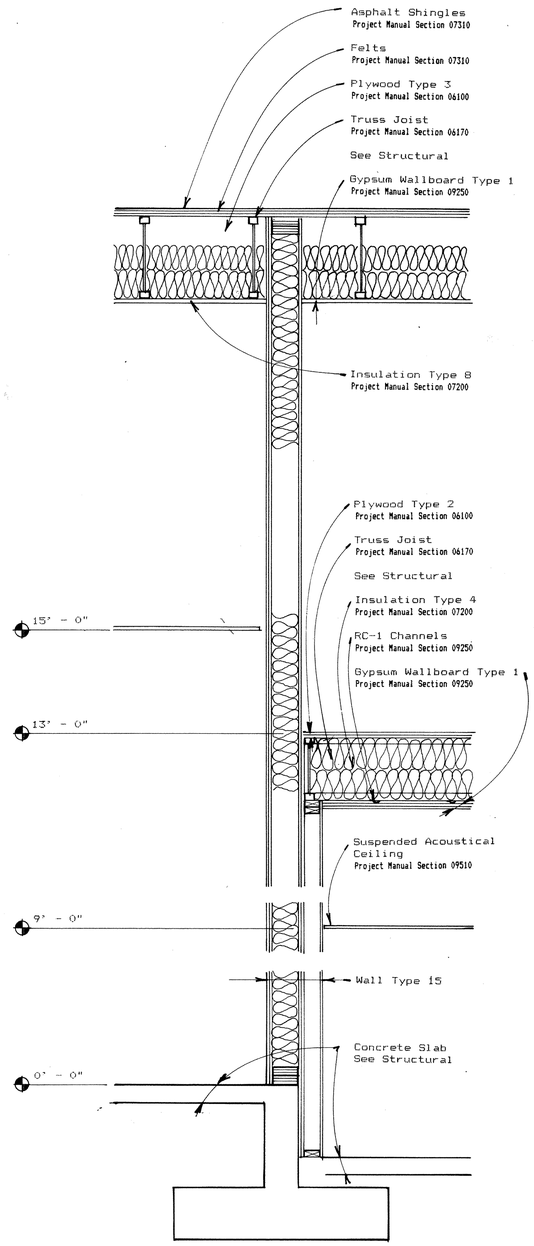


1 WALL SECTION

3/4" = 1'-0"



2 WALL SECTION

3/4" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB		
W59	W59	
W910	W910	

HAEG DETTIS ASSOCIATES INC.
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436
PLANNING ARCHITECTURE INTERIOR design GRAPHICS

STATE OF ALASKA
T. Steven Smith
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

SKAGWAY ALASKA

WALL SECTIONS

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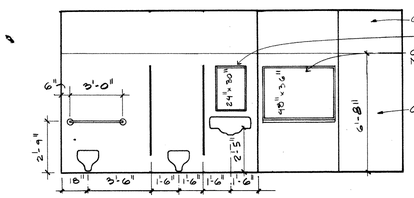
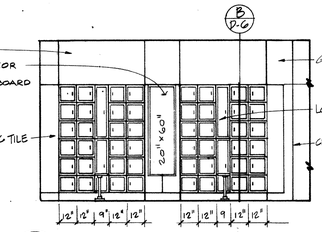


1 103 GIRLS LOCKER

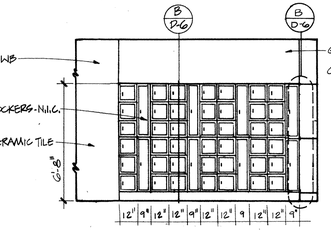
1/4" = 1'-0"



2 103 GIRLS LOCKER

1/4" = 1'-0"

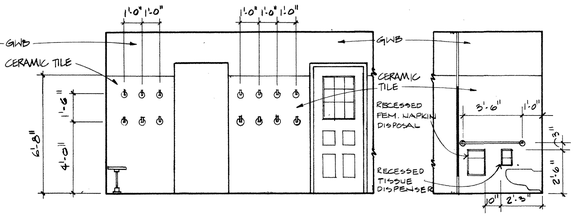
111 BOYS LOCKER - SAME, OPPOSITE HAND



3 103 GIRLS LOCKER

1/4" = 1'-0"

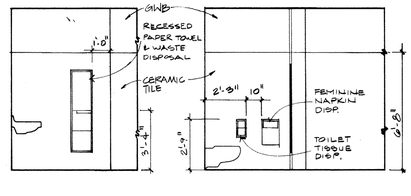
111 BOYS LOCKER - SAME,OPPOSITE HAND



4 103 GIRLS LOCKER

1/4" = 1'-0"

111 BOYS LOCKER - SAME, OPPOSITE HAND



5 103LCKR

1/4" = 1'-0"

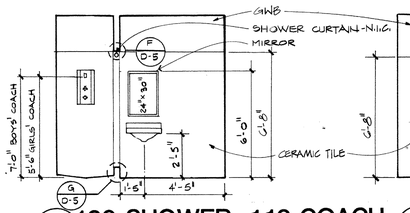
6 103 LOCKER

1/4" = 1'-0"

111 BOYS LOCKER - SAME, OPPOSITE HAND

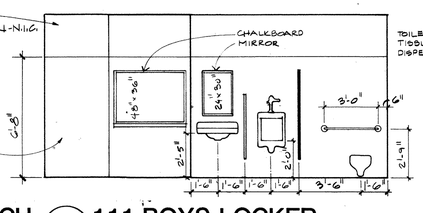
7 103 LOCKER

1/4" = 1'-0"



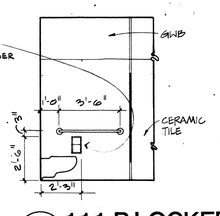
8 109 SHOWER - 110 COACH

105 COACH & 106 SHOWER - SAME, OPPOSITE HAND



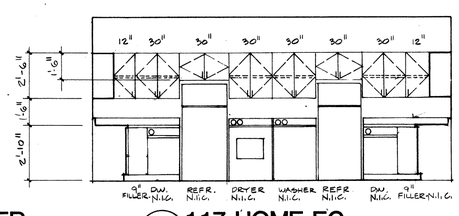
10 111 BOYS LOCKER

1/4" = 1'-0"



11 111 B.LOCKER

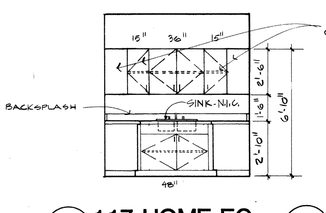
1/4" = 1'-0"



12 117 HOME EC.

CABINETS & EQUIP. ARE N.I.C.

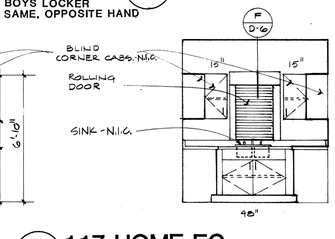
1/4" = 1'-0"



13 117 HOME EC.

CABINETS & EQUIP. ARE N.I.C.

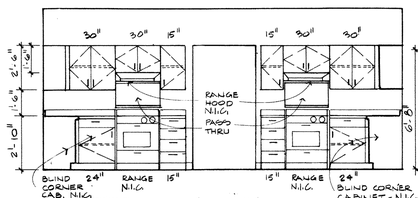
1/4" = 1'-0"



14 117 HOME EC.

CABINETS & EQUIP. ARE N.I.C.

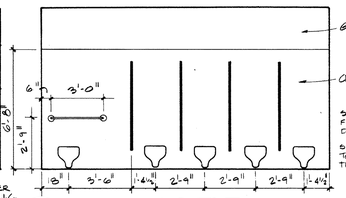
1/4" = 1'-0"



15 HOME ECONOMIC

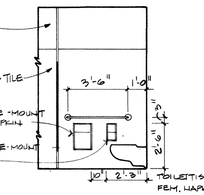
CABINETS & EQUIP. ARE N.I.C.

1/4" = 1'-0"



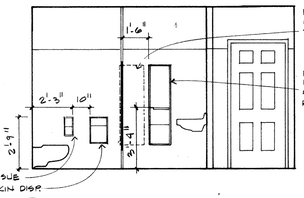
16 201 GIRLS TLT

1/4" = 1'-0"



17 201 GIRLS

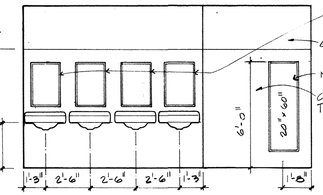
1/4" = 1'-0"



18 201 GIRLS TLT

1/4" = 1'-0"

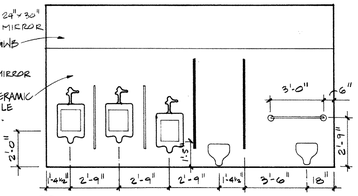
202 BOYS TOILET - SIMILAR, OPPOSITE HAND



19 201 GIRLS TLT

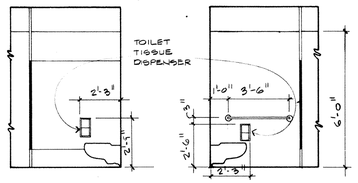
1/4" = 1'-0"

202 BOYS TOILET - SAME,OPPOSITE HAND



20 202 BOYS TLT

1/4" = 1'-0"

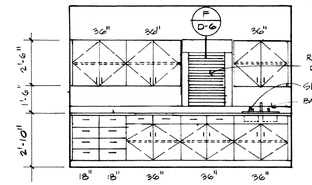


21 202 BOYS

1/4" = 1'-0"

22 202 BOYS

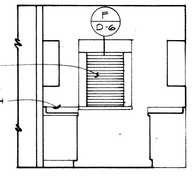
1/4" = 1'-0"



23 115 STUDENT STORE

CABINETS & EQUIP. ARE N.I.C.

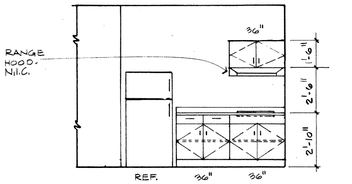
1/4" = 1'-0"



24 115 STORE

CABINETS & EQUIP. ARE N.I.C.

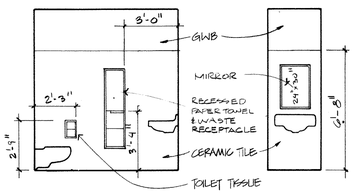
1/4" = 1'-0"



25 115 STUDENT STORE

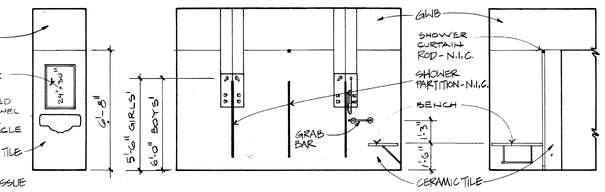
CABINETS & EQUIP. ARE N.I.C.

1/4" = 1'-0"



29 131 TLT.

1/4" = 1'-0"



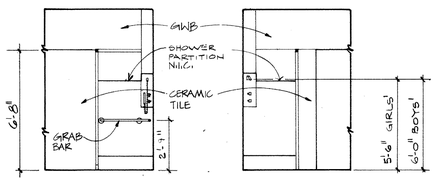
30 131 TLT.

1/4" = 1'-0"

31 104 SHOWER

1/4" = 1'-0"

108 BOYS SHOWER SAME, OPPOSITE HAND



32 104 SHOWER

1/4" = 1'-0"

108 BOYS SHOWER - SAME, OPPOSITE HAND

33 104 SHOWER

1/4" = 1'-0"

108 BOYS SHOWER - SAME, OPPOSITE HAND

34 104 SHOWER

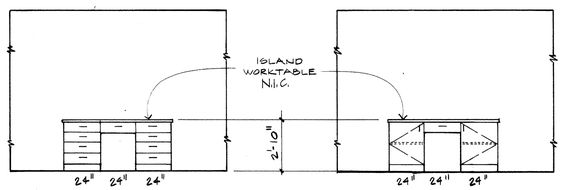
1/4" = 1'-0"

108 BOYS SHOWER - SAME, OPPOSITE HAND

ITEMS NOT IN CONTRACT

ALL CABINETRY , EQUIPMENT (STOVES, REFRIG., WASHERS, DRYERS, ETC.), BENCHES, LOCKERS, AND SHOWER PARTITIONS

OVERLAY REQD	OVERLAYS	SCREEN
TB	1'	F
IE1	IE1	F
IE2	IE2	F

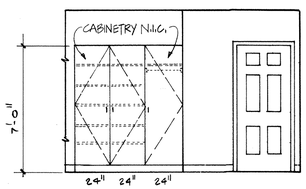


35 128 WORKROOM

CABINETS & EQUIP. ARE N.I.C.

36 128 WORKROOM

CABINETS & EQUIP. ARE N.I.C.



37 122 SEWING ROOM

CABINETS & EQUIP. ARE N.I.C.

38 136 LIBRARY

CABINETS & EQUIP. ARE N.I.C.

1/4" = 1'-0"

HAEG · DETTIS · ASSOCIATES INC.
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436
PLANNING ARCHITECTURE INTERIOR design GRAPHICS

STATE OF ALASKA
T. Steve Dettis
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:

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project no.
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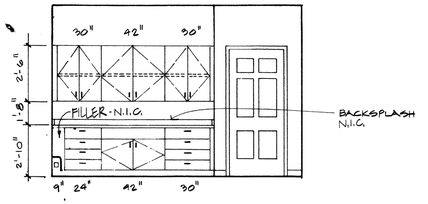
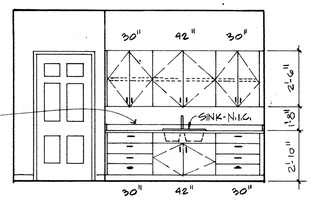
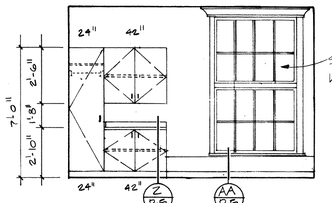
A31 of



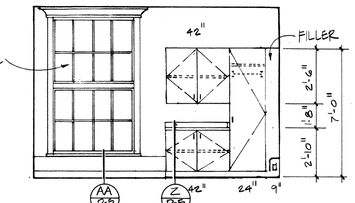
1 126 - SPEC.ED.
CABINETS ARE N.I.C. 1/4" = 1'-0"



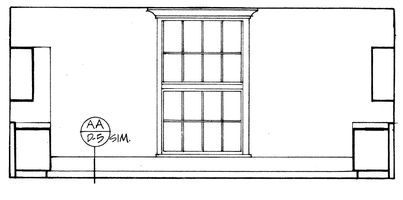
2 126 - SPEC. ED.
CABINETS ARE N.I.C. 1/4" = 1'-0"



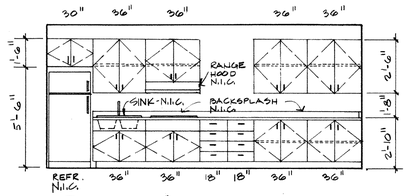
3 126 - SPEC. ED.
CABINETS ARE N.I.C. 1/4" = 1'-0"



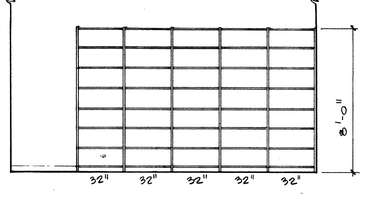
4 126 - SPEC. ED.
CABINETS ARE N.I.C. 1/4" = 1'-0"



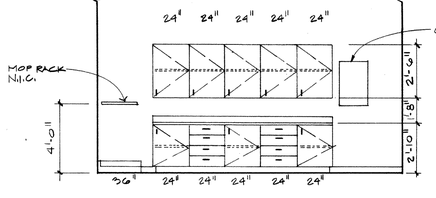
5 126 - SPEC. ED.
CABINETS ARE N.I.C. 1/4" = 1'-0"



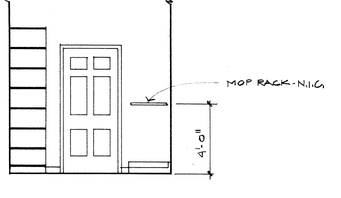
6 131 - LOUNGE
CABINETS ARE N.I.C. 1/4" = 1'-0"



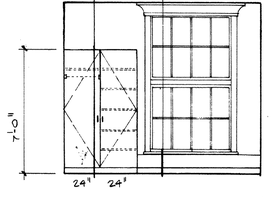
7 135 - JANITOR
CABINETS ARE N.I.C. 1/4" = 1'-0"



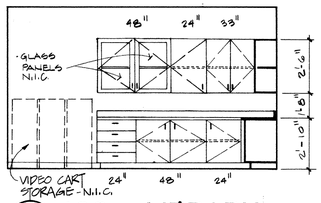
8 135 - JANITOR
CABINETS ARE N.I.C. 1/4" = 1'-0"



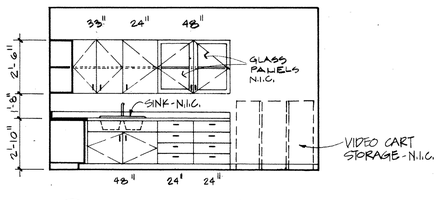
9 135 - JAN.
CABINETS ARE N.I.C.



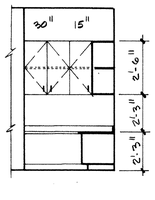
10 134 - PRINCIPAL
CABINETS ARE N.I.C. 1/4" = 1'-0"



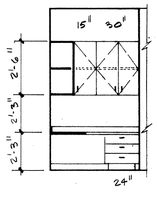
11 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"



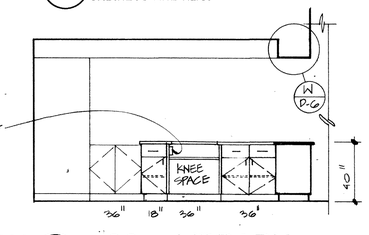
12 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"



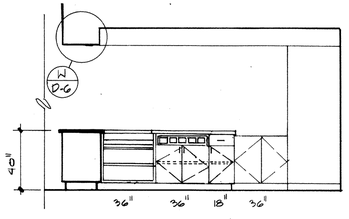
13 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"



14 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"



15 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"



16 136 - LIBRARY
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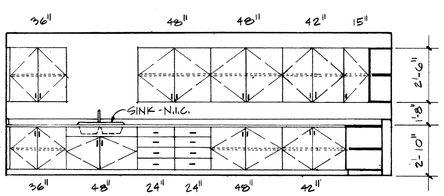
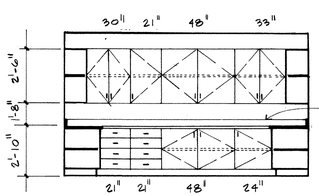
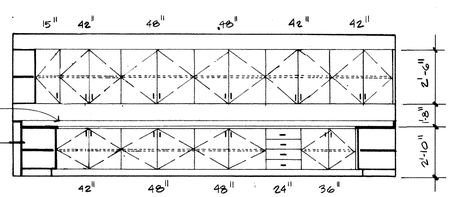


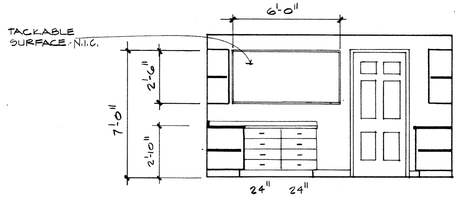
17 128 - WORKROOM
CABINETS ARE N.I.C. 1/4" = 1'-0"



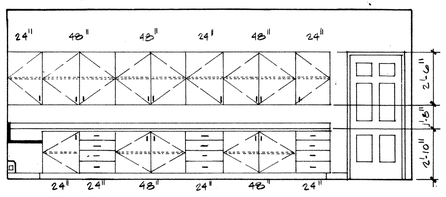
18 128 - WORKROOM
CABINETS ARE N.I.C. 1/4" = 1'-0"



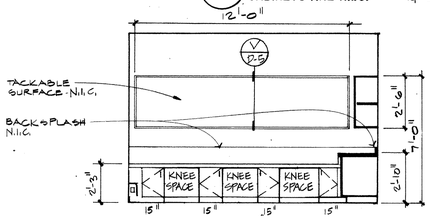
19 128 - WORKROOM
CABINETS ARE N.I.C. 1/4" = 1'-0"



20 128 - WORKROOM
CABINETS ARE N.I.C. 1/4" = 1'-0"



21 134 - TITLE 1
CABINETS ARE N.I.C. 1/4" = 1'-0"



22 134 - TITLE 1
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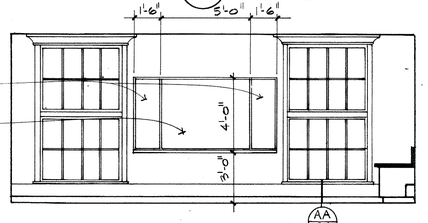

23 134 - TITLE 1
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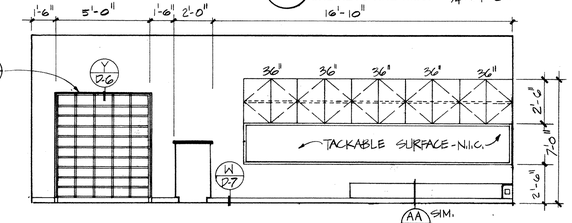
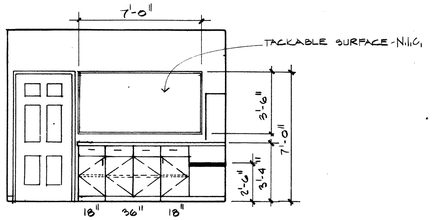
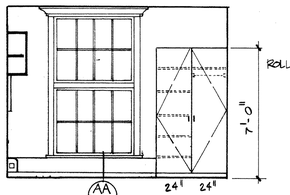


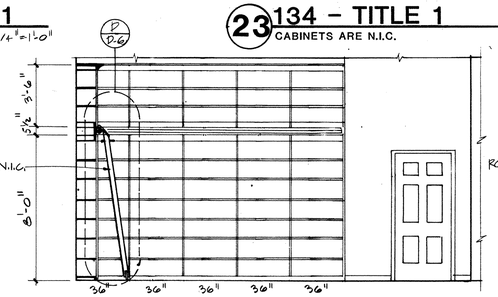
24 139 - GENERAL OFFICE
CABINETS ARE N.I.C. 1/4" = 1'-0"



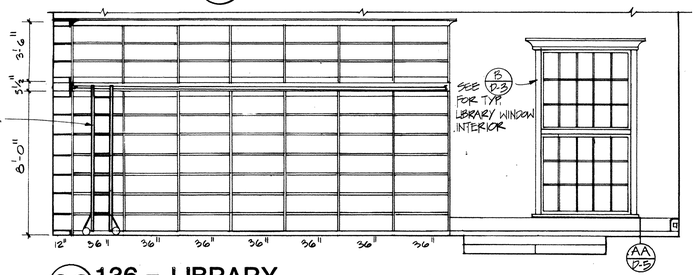
25 139 - GENERAL OFFICE
CABINETS ARE N.I.C. 1/4" = 1'-0"



26 139 - GENERAL OFFICE
CABINETS ARE N.I.C. 1/4" = 1'-0"



27 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"



28 136 - LIBRARY
CABINETS ARE N.I.C. 1/4" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
IE3	IE3	F
IE4	IE4	F

HAEG · BETTIS · ASSOCIATES INC.
PLANNING ARCHITECTURE INTERIOR design GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR:

SKAGWAY ALASKA

INTERIOR ELEVATIONS

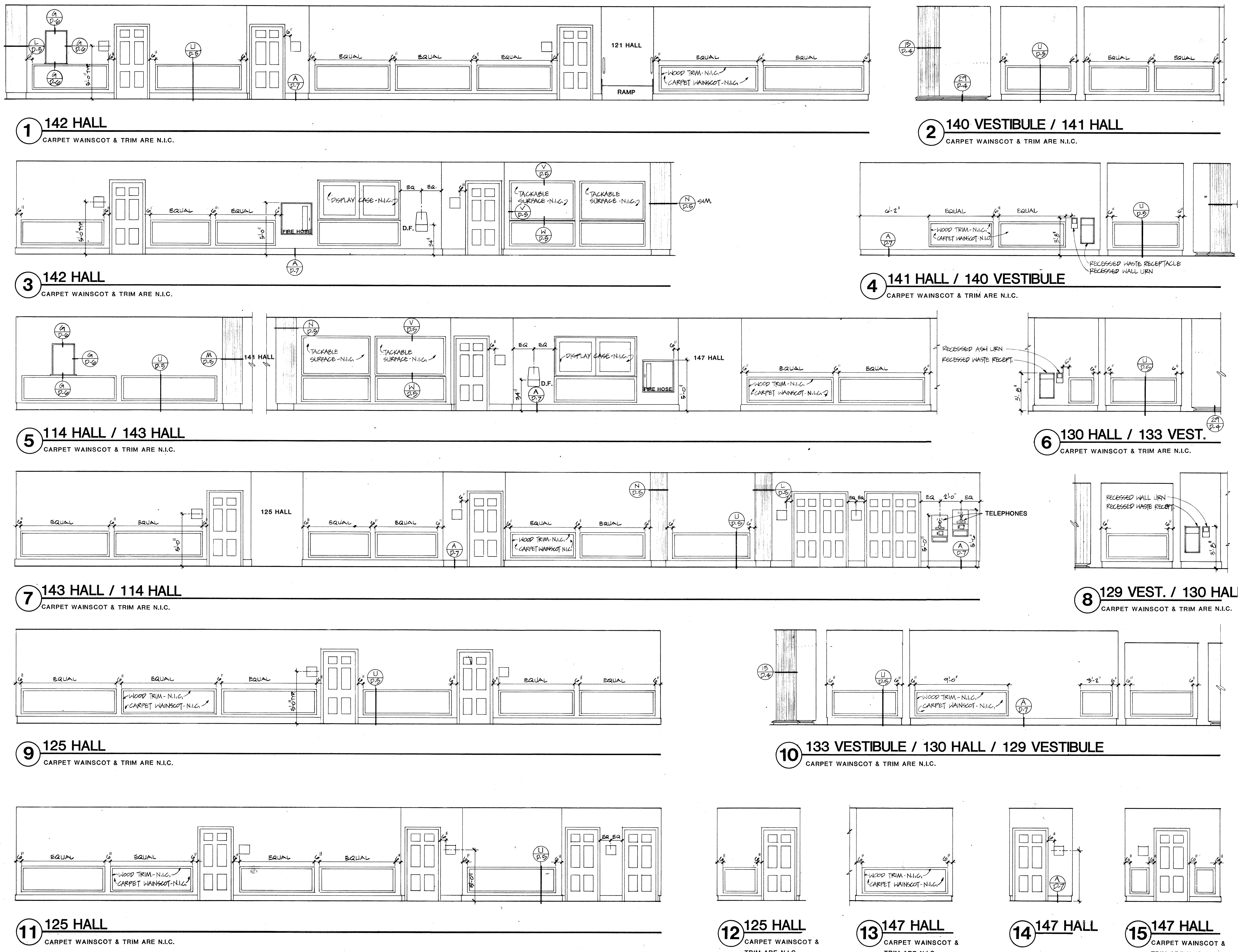
REVISIONS

drawn by

date
APRIL 8, 1983

project no.
8303

sheet no.
A32 of



OVE	Y RECO	OVERLAYS	SCREEN
TB		5	F
IE5		IE5	F
IE6		IE6	F

STATE OF ALASKA
T. Steve Bettis
No. A 4667
REGISTERED PROFESSIONAL ARCHITECT

HAEG·BETTIS·ASSOCIATES INC.

PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200
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A NEW SCHOOL FOR:
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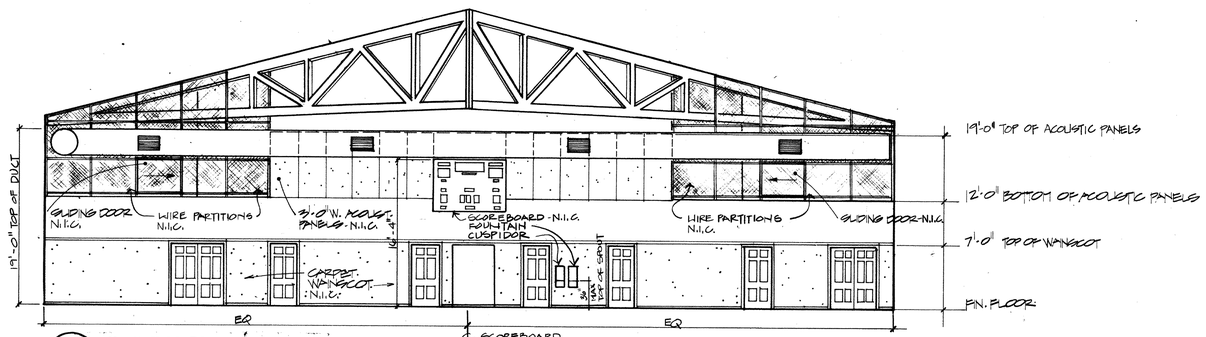
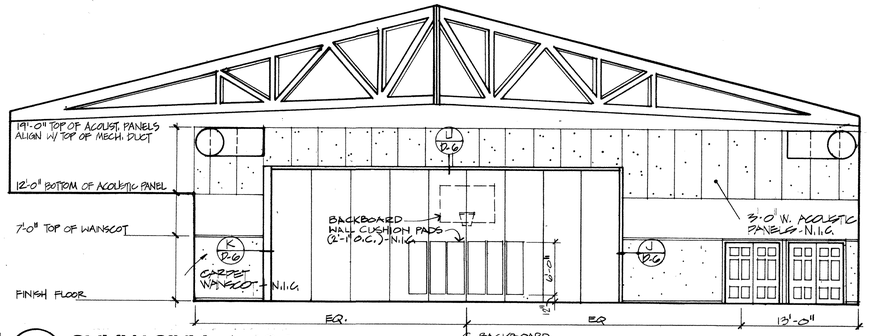
A33 of



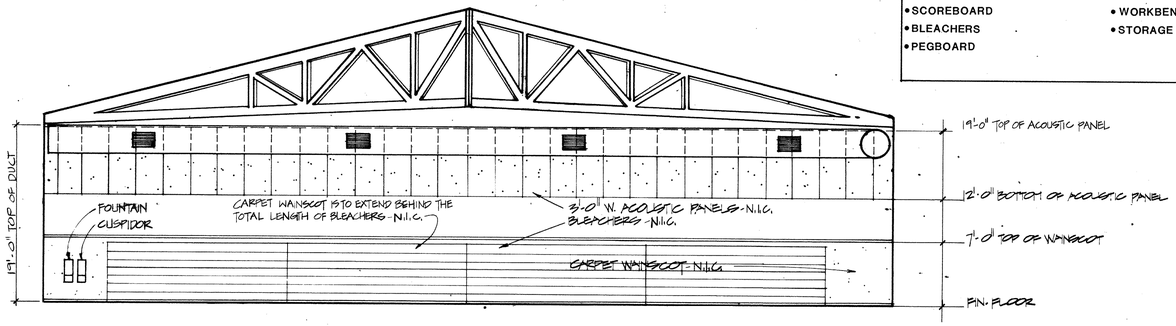
1 GYMNASIUM - 101

THE FOLLOWING LIST OF ITEMS ARE NOT IN CONTRACT

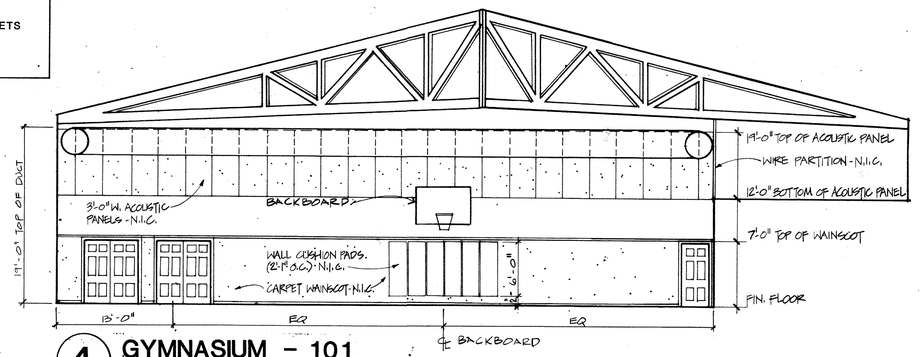
- ACOUSTICAL WALL PANELS
- CARPET WAINSCOT
- WIRE PARTITIONS
- SCOREBOARD
- BLEACHERS
- PEGBOARD
- MOVEABLE PARTITIONS
- WALL CUSHION PADS
- SPRAY PAINT BOOTH
- WORKBENCHES
- STORAGE CABINETS



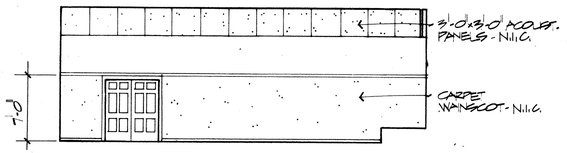
2 GYMNASIUM - 101



3 GYMNASIUM - 101

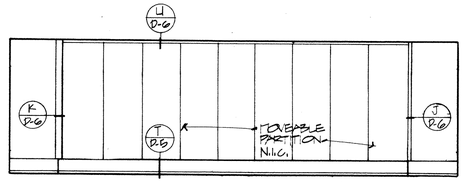


4 GYMNASIUM - 101



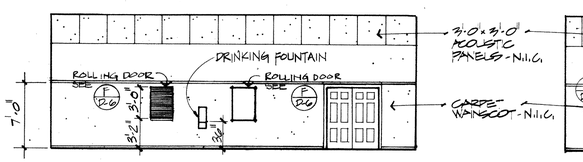
5 MULTIPURPOSE ROOM - 113

3/8" = 1'-0"

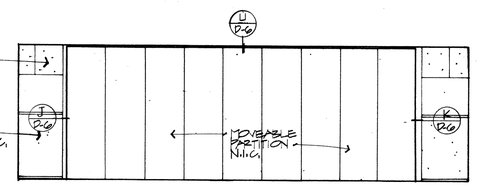


6 MULTIPURPOSE ROOM - 113

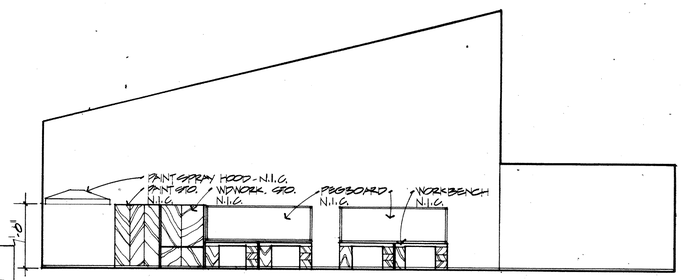
1/8" = 1'-0"



7 MULTIPURPOSE ROOM - 113

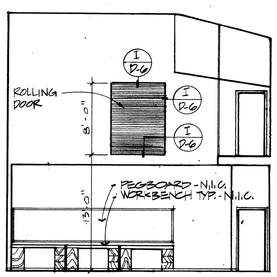


8 MULTIPURPOSE ROOM - 113



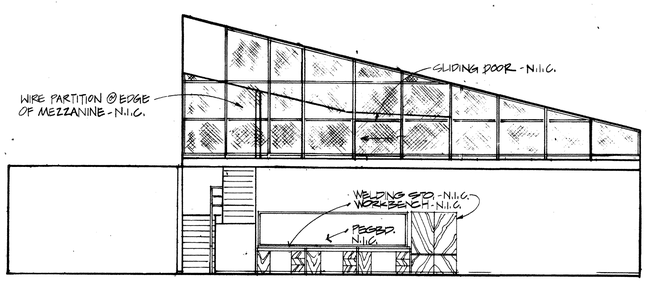
9 SHOP - 124

1/8" = 1'-0"



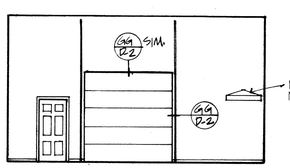
10 SHOP - 124

1/8" = 1'-0"



11 SHOP - 124

1/8" = 1'-0"



12 SHOP - 124

1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	'E'	F
IE7	IE7	F
IE8	IE8	F

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STATE OF ALASKA — REGISTERED PROFESSIONAL ARCHITECTS — T. Storm Dettis No. A 4667

A NEW SCHOOL FOR: SKAGWAY ALASKA

INTERIOR ELEVATIONS

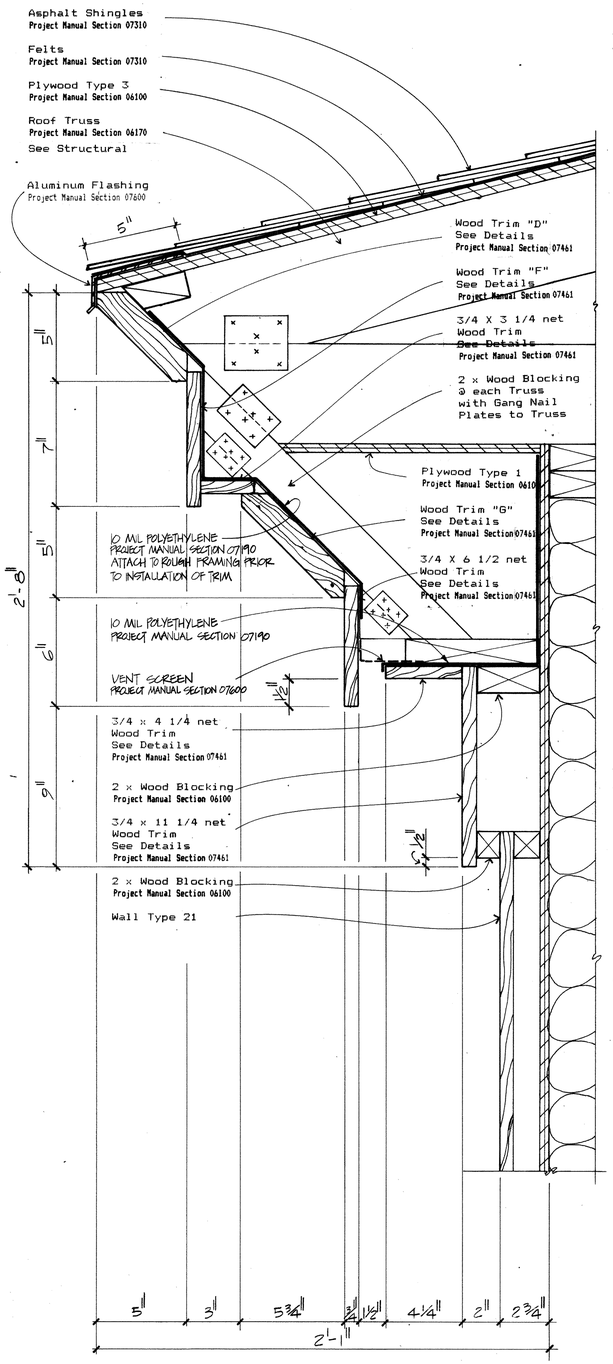
REVISIONS

drawn by

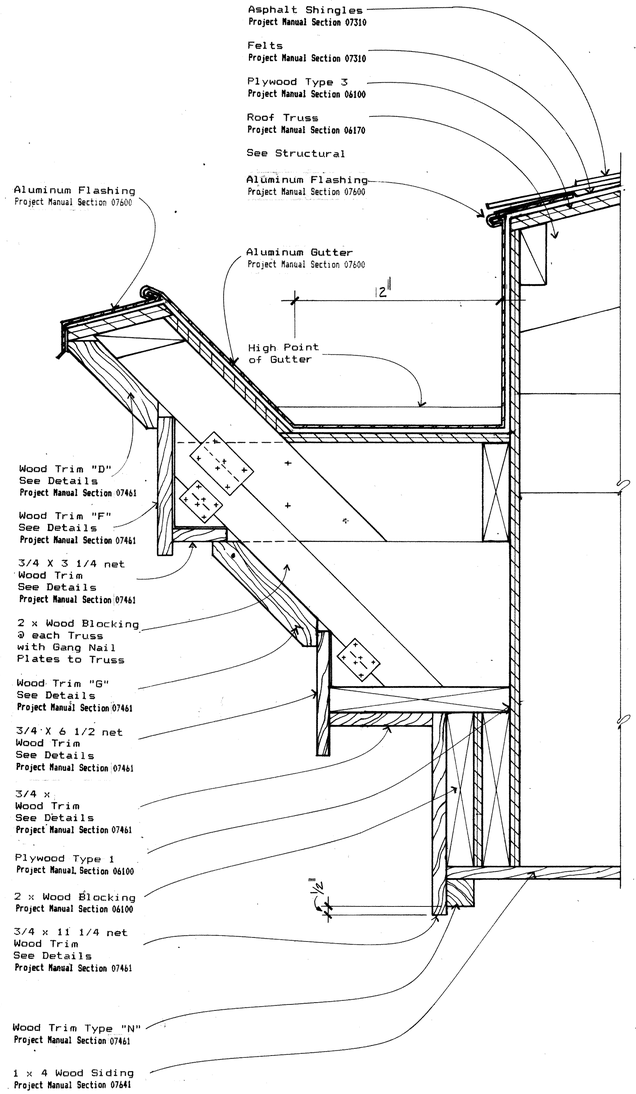
date APRIL 8, 1983

project no. 8303

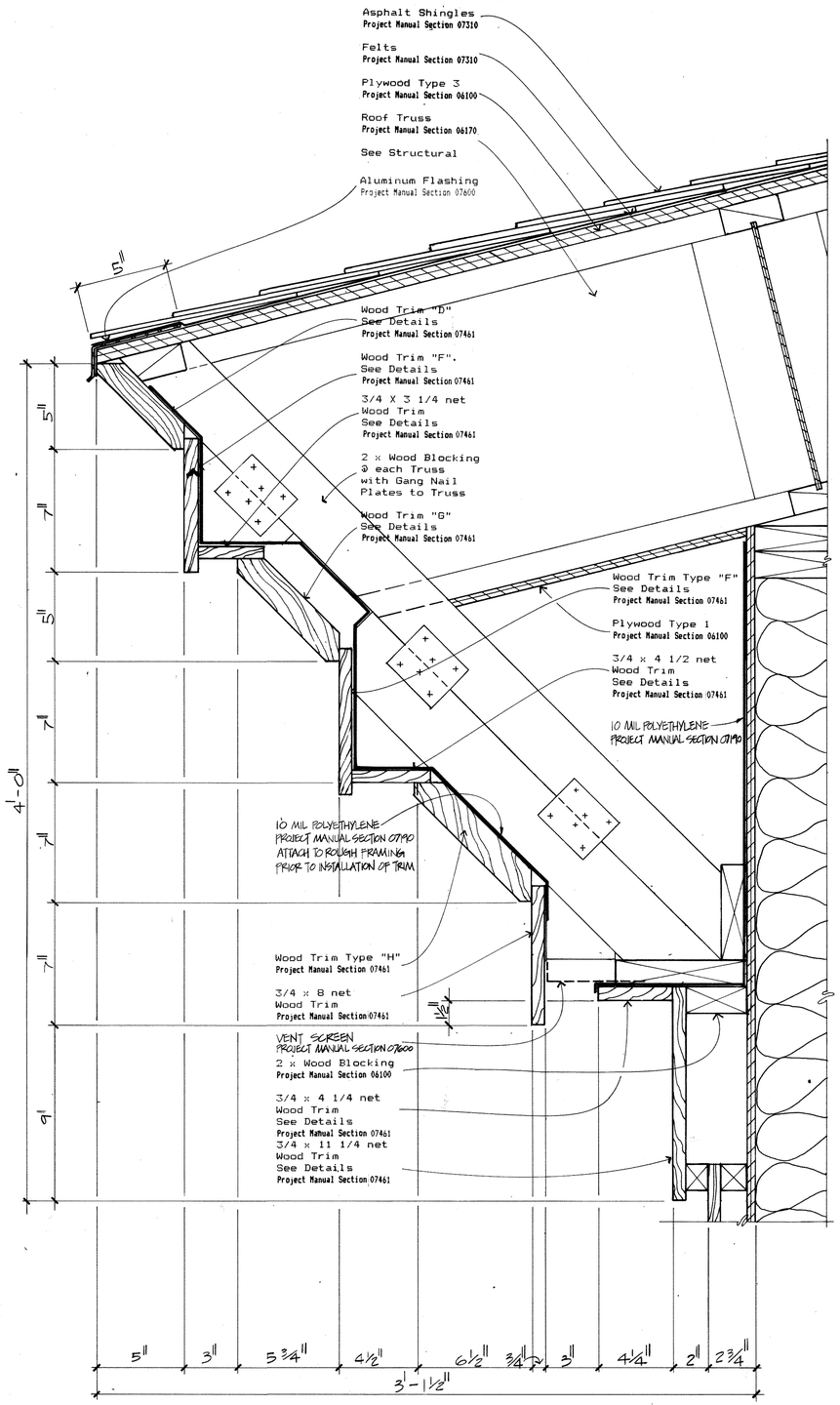
sheet no. A34 of



1 SMALL CORNICE
3" = 1'-0"



2 SMALL CORNICE AT SOFFIT
3" = 1'-0"



3 LARGE CORNICE
3" = 1'-0"

	OVERLAY REQD	OVERLAYS	SCREEN
CD			F
CD1	CD1		F
CD2	CD2		F

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STATE OF ALASKA
10TH
T. Steve Bettis
No. A 6687
REGISTERED PROFESSIONAL ARCHITECT

A NEW SCHOOL FOR:
SKAGWAY ALASKA

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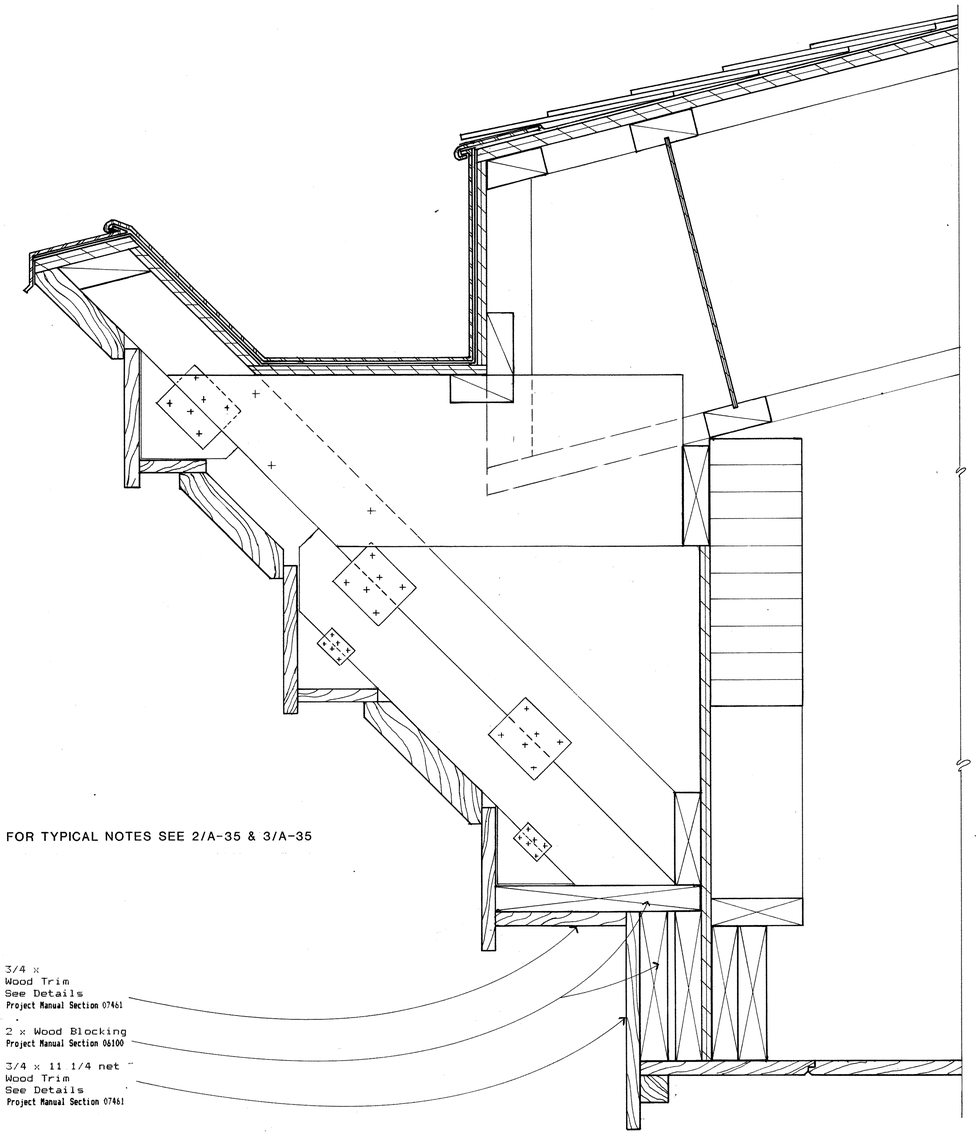
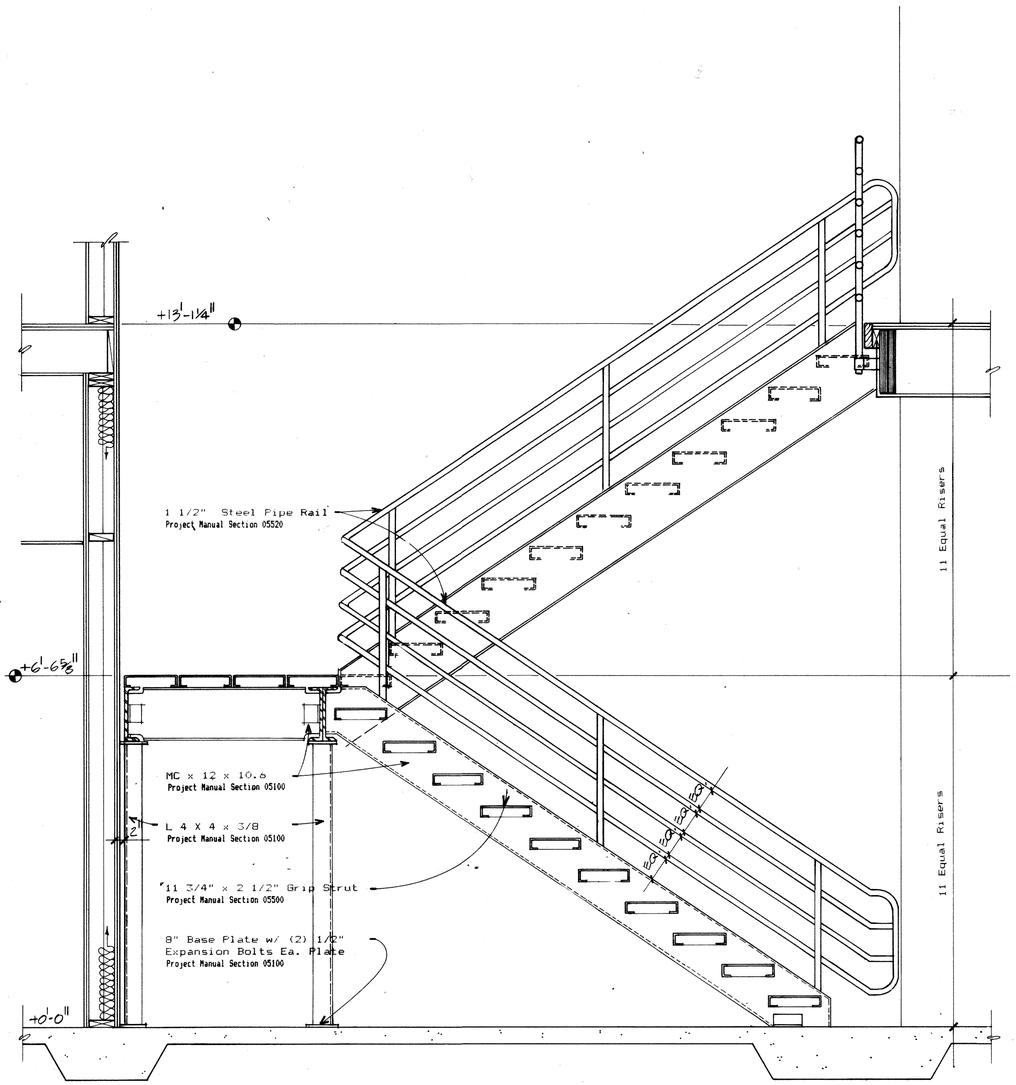
A35 of



FOR TYPICAL NOTES SEE 2/A-35 & 3/A-35

1 LARGE CORNICE AT SOFFIT
3"=1'-0"



2 STAIR AT SHOP
3/4"=1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
CD1	1	F
CD3	CD3	F
CD4	CD4	F

STATE OF ALASKA
T. Steve Settle
No. A 4687
REGISTERED PROFESSIONAL ARCHITECT

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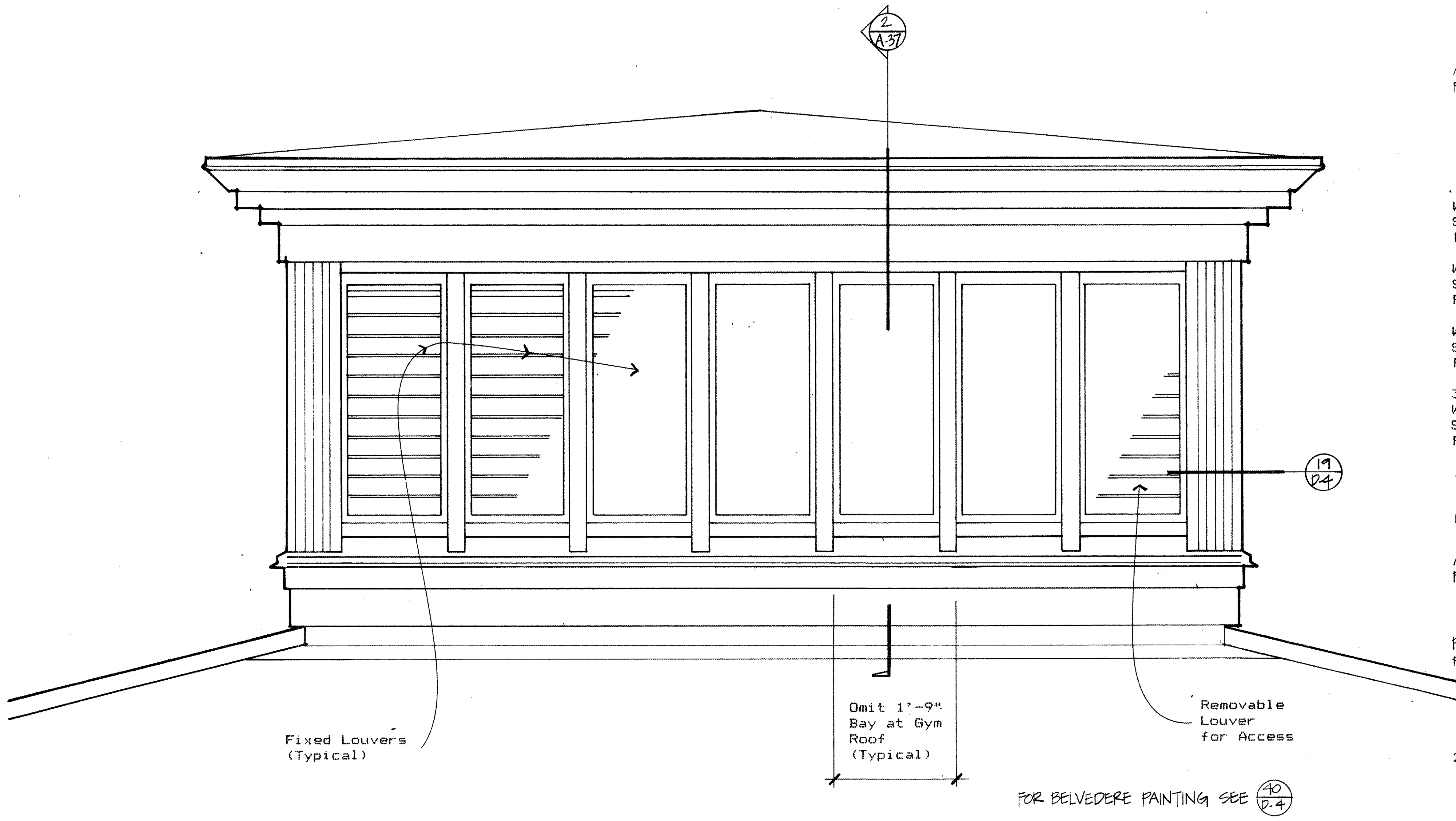
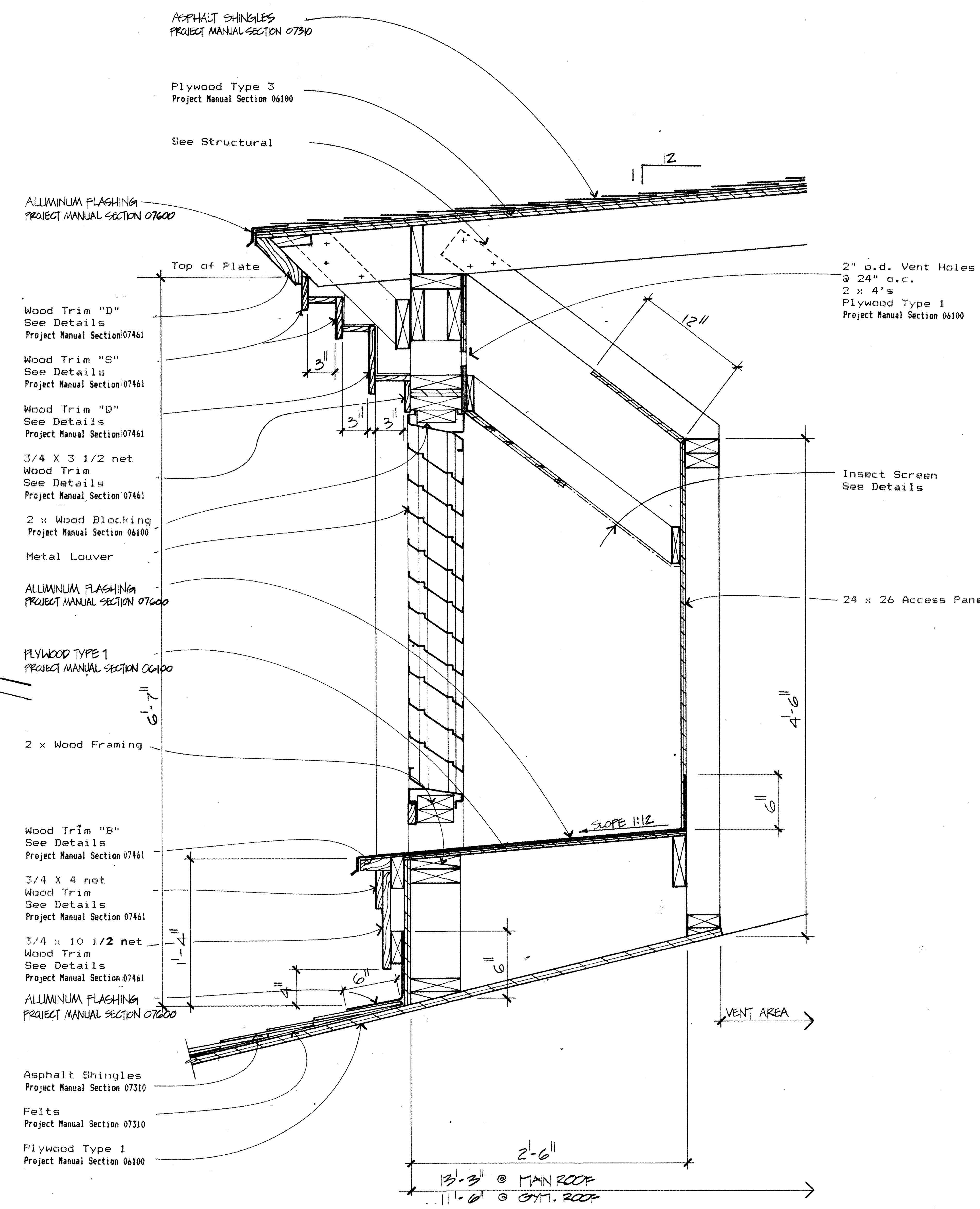


1 BELVEDERE AT MAIN ROOF
3/4" = 1'-0"



2 SECTION
1 1/2" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	-	F
B1	B1	F
B2	B2	F

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EQUIPMENT LIST

DESIGN.	DESCRIPTION
AHU-1	**VERTICAL** DRAW THROUGH AIR HANDLING UNIT: **12000** CFM @ 2.96" TSP, 10 H.P., 208 V./ 3 PH./60 Hz TEMPERING COIL: 228 MBH @ **12000** CFM, 56 EAT, 190 DEGREE EGT, 40 DEGREE GTD, 16 GPM, MAX. .15" APD, MAX. 2.5' GPD. PROVIDE: INLET VANES, MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL AND COMBINATION FILTER/MIXING BOX WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS. MANUFACTURER: TRANE, CLIMATE CHANGER # 25B W/25" FC FAN.
AHU-2	HORIZONTAL DRAW THROUGH AIR HANDLING UNIT: **12000** CFM @ 2.76" TSP, 10 H.P., 208 V./ 3 PH./60 Hz TEMPERING COIL: 228 MBH @**12000** CFM, 56 EAT, 190 DEGREE EGT, 40 DEGREE GTD, 16 GPM, MAX. .15" APD, MAX. 2.5' GPD. PROVIDE: INLET VANES, MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL AND COMBINATION FILTER/MIXING BOX WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS. MANUFACTURER: TRANE, CLIMATE CHANGER #25B W/25" FC FAN.
AHU-3	HORIZONTAL DRAW THROUGH AIR HANDLING UNIT: **4200** CFM @ **1.7" TSP, 2 H.P.**, 208 V./ 3 PH./60 Hz PREHEAT COIL: 328 MBH @ **4200** CFM, -5 DEGREES EAT, 190 DEGREE EGT, 20 DEGREE GTD, 38 GPM, MAX. .15" APD, MAX. 2.5' GPD. TEMPERING COIL: 93 MBH @ **4200** CFM, 55 EAT, 190 DEGREE EGT, 20 DEGREE GTD, 11 GPM, MAX. .15" APD, MAX. 2.5' GPD. PROVIDE: MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL AND COMBINATION FILTER/MIXING BOX WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS. MANUFACTURER: TRANE, CLIMATE CHANGER # 8A W/15" FC FAN.
AHU-4	**VERTICAL** DRAW THROUGH AIR HANDLING UNIT: 4300 CFM @ **1.5" TSP**, 1-1/2 H.P., 208 V./ 3 PH./60 Hz HEATING COIL: 115 MBH @ 4300 CFM, 56 EAT, 190 DEGREE EGT, 20 DEGREE GTD, 21 GPM, MAX. .1" APD, MAX. 2' GPD. PROVIDE: MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL AND COMBINATION FILTER/MIXING BOX WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS MANUFACTURER: TRANE, CLIMATE CHANGER # 8A W/15" FC FAN.
AHU-5	VERTICAL DRAW THROUGH AIR HANDLING UNIT: 12800 CFM @ **1.6" TSP**, 7-1/2 H.P., 208 V./ 3 PH./60 Hz HEATING COIL: 494 MBH @ 12800 CFM, 56 EAT, 190 DEGREE EGT, 20 DEGREE GTD, 57 GPM, MAX. .25" APD, MAX. 3' GPD. PROVIDE: MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL AND COMBINATION FILTER/MIXING BOX WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS. **2-SPEED MOTOR** MANUFACTURER: TRANE, CLIMATE CHANGER # 25A W/25" FC FAN, ARRANGEMENT 8.
AHU-6	HORIZONTAL DRAW THROUGH AIR HANDLING UNIT: 3000 CFM @ **2.0" TSP**, 1-1/2 H.P., 208 V./ 3 PH./60 Hz TEMPERING COIL: 254 MBH @ **3000** CFM, -5 EAT, 190 DEGREE EGT, 20 DEGREE GTD, 29 GPM, MAX. .15" APD, MAX. .9' GPD. PROVIDE: MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL, V-FILTER SECTION WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS. MANUFACTURER: TRANE, CLIMATE CHANGER # 6A W/12" FC FAN.
AHU-7	HORIZONTAL DRAW THROUGH AIR HANDLING UNIT: 3900 CFM @ **1.6" TSP**, 1-1/2 H.P., 208 V./ 3 PH./60 Hz. 2-SPEED MOTOR. TEMPERING COIL: 73 MBH @ 3600 CFM, 56 EAT, 190 DEGREE EGT, **30** DEGREE GTD, **5.8** GPM, MAX. .15" APD, MAX. 3' GPD. PROVIDE: MOTOR BELT GUARD, DUCT FLEX CONNECTIONS, VIBRATION ISOLATION, THERMAL/ACOUSTICAL INSULATION, TEMPERING COIL AND COMBINATION FILTER/MIXING BOX WITH FILTERS, CONTROL DAMPERS AND NECESSARY ACCESS PANELS. MANUFACTURER: TRANE, CLIMATE CHANGER # 8A W/15" FC FAN.
EF-1	CENTRIFUGAL BELT-DRIVEN EXHAUST FAN, 3300 CFM @ **1.4"** TSP, **2** H.P., 208 V./3 PH./60 Hz. PROVIDE: FLEX CONNECTIONS, TOP HORIZONTAL DISCHARGE, BASE MOUNT WITH VIBRATION ISOLATION, **MOTOR BELT GUARD** MANUFACTURER: TRANE, MODEL 16 FC.
EF-2	IN-LINE CENTRIFUGAL CABINET EXHAUST FAN, **500** CFM, @ .4" TSP, 280 WATT, 120 V./1 PH./60 Hz. PROVIDE: DUCT FLEX CONNECTIONS, THERMAL/ACOUSTICAL LINING, VIBRATION ISOLATION, BACKDRAFT DAMPER. MANUFACTURER: PENN, ZEPHYR #Z12TD.
EF-4	CENTRIFUGAL EXHAUST FAN: **170** CFM @ **.22"** TSP, 50 WATTS, 120 V./1 PH./60 Hz. PROVIDE: DUCT FLEX CONNECTIONS, THERMAL/ACOUSTICAL LINING, VIBRATION ISOLATION, BACKDRAFT DAMPER, **INTEGRAL INLET GRILLE** MANUFACTURER: PENN, ZEPHYR # **Z8**.
EF-5	CENTRIFUGAL EXHAUST FAN: **160** CFM @ **.23"** TSP, 105 WATTS, 120 V./1 PH./60 Hz. PROVIDE: DUCT FLEX CONNECTIONS, THERMAL/ACOUSTICAL LINING, VIBRATION ISOLATION, BACKDRAFT DAMPER, **INTEGRAL INLET GRILLE** MANUFACTURER: PENN, ZEPHYR #Z8.
EF-6	IN-LINE CENTRIFUGAL CABINET EXHAUST FAN: **145** CFM @**.250"**TSP, 105 WATTS, 120 V./1 PH./60 Hz. PROVIDE: DUCT FLEX CONNECTIONS, THERMAL/ACOUSTICAL LINING, VIBRATION ISOLATION, BACKDRAFT DAMPER. MANUFACTURER: PENN, ZEPHYR #Z8TD
CF-1	LOW RPM PROPELLOR CEILING CIRCULATION FAN: 56" DIA., 16800 CFM, 285 WATT, 120 V./1 PH./60 Hz. PROVIDE: OPTIONAL SOLID STATE VARIABLE SPEED CONTROLLER CAPABLE OF CONTROLLING 4 FANS. MANUFACTURER: SMC ENVIRONMENTAL SYSTEMS #SMC-60F.
VF-1	DIRECT-DRIVE PROPELLOR FAN: 5100 CFM @ .25" TSP, 1/2 H.P., 120 V./1 PH./60 Hz. PROVIDE: FAN GUARD, VIBRATION ISOLATION. MANUFACTURER: GREENHECK, MODEL #SDP-30-6-15.
B-1	FORCED DRAFT OIL-FIRED CAST IRON GLYCOL HEATING BOILER: 1600 MBH GROSS OUTPUT, COMPLETE WITH P/T RELIEF VALVE, P/T GAUGE, HI-LIMIT, LOW-WATER CUTOFF, SECOND LOW-WATER CUTOFF, INSTRUMENT PANEL WITH STACK PRESSURE, RUNNING TIME, SUPPLY AND RETURN TEMP, **FIREBOX PRESSURE, STACK TEMPERATURE** OIL BURNER: PEABODY GORDON-PIATT #RL8.2-0-10-GP201 WITH PREWIRED BURNER MOUNTED CONTROL CABINET, LOW FIRE START, PRE AND POST PURGE, HI-LOW OPERATING CAPABILITY, FLAME FAILURE, ELECTRONIC IGNITION, CONDITION LIGHTS (POWER ON/FUEL ON), HI-LIMIT FAILURE LIGHT, LOW-WATER FAILURE, FLAME FAILURE W/ALARMS. MANUFACTURER: WEIL-McCLAIN #886.
UH-1	HORIZONTAL PROPELLOR UNIT HEATER: 543 CFM, 1/20 H.P., 120 V./1 PH./60 Hz. COIL CAPACITY: AS INDICATED ON DRAWINGS @ 190 DEGREES F. EGT. PROVIDE: VIBRATION ISOLATION, FAN GUARD,. MANUFACTURER: TRANE #38-S.
UH-2	HORIZONTAL PROPELLOR UNIT HEATER: 815 CFM, 1/20 H.P., 120 V./1 PH./60 Hz. COIL CAPACITY: AS INDICATED ON DRAWINGS @ 190 DEGREES F. EGT. PROVIDE: VIBRATION ISOLATION, FAN GUARD. MANUFACTURER: TRANE #60-S.
UH-3	HORIZONTAL PROPELLOR UNIT HEATER: 1214 CFM, 1/8 H.P., 120 V./1 PH./60 Hz COIL CAPACITY: AS INDICATED ON DRAWINGS @ 190 DEGREES F. EGT. PROVIDE: VIBRATION ISOLATION, FAN GUARD, ADJUSTABLE DISCHARGE LOUVER VANES. MANUFACTURER: TRANE #90-S.
UH-4	HORIZONTAL PROPELLOR UNIT HEATER: 2381 CFM, 1/6 H.P., 120 V./1 PH./60 Hz. COIL CAPACITY: AS INDICATED ON DRAWINGS @ 190 DEGREES F. EGT. PROVIDE: VIBRATION ISOLATION, FAN GUARD, ADJUSTABLE DISCHARGE LOUVER VANES. MANUFACTURER: TRANE #168-S.
CUH-1	HORIZONTAL CEILING RECESSED CABINET UNIT HEATER: INTEGRAL DISCHARGE AND INLET GRILLE, 200 CFM, 1/30 H.P., 120 V./1 PH./60 Hz. COIL CAPACITY: AS INDICATED ON DRAWINGS @ 190 DEGREES F. EGT. PROVIDE: VIBRATION ISOLATION, FILTERS, THERMAL/ACOUSTICAL LINING. MANUFACTURER: TRANE #E-46-AO-03.

CONT. ON SHEET M-2

OVERLAY REQD	OVERLAYS	SCREEN
TB	E	F
MA	MA	F

LEGEND

SYMBOL	ABBR.	DESCRIPTION
RECTANGULAR / ROUND	S/A , O/A	SUPPLY AIR , OUTSIDE AIR DUCT.
RECTANGULAR / ROUND	R/A , E/A	RETURN AIR , EXHAUST AIR DUCT.
20"		VAV HIGH VELOCITY DUCT. NUMBER DESIGNATES TRUNK DUCT OR RUN-OUT NUMBER. SEE TRUNK DUCT SCHEDULE, RUN-OUT SCHEDULE AND VAV FITTING DETAILS.
		DUCT WITH SOUND LINING. LISTED DIMENSION IS INSIDE CLEAR.
		DUCT WITH RIGID INSULATION.
	VD	VOLUME DAMPER.
	FD-(A)	**DESIGNATION INDICATES TYPE, SEE SCHEDULE** FIRE DAMPER.
		RADIUSED ELBOW.
		RADIUSED BRANCH.
		RADIUSED TEE.
		LINEAR SUPPLY AIR DIFFUSER, VERTICALLY MOUNTED
		SQUARE ELBOW WITH TURNING VANES.
		SQUARE BRANCH WITH AIR EXTRACTOR.
		TEE WITH TURNING VANES.
		FLEX DUCT CONNECTION
	FLEX. DUCT.	FLEXIBLE DUCTWORK.
DESIGNATION / SIZE / CFM B - 5 X 5 - 100		CEILING SUPPLY AIR DIFFUSER, ARROWS INDICATE THROW DIRECTION.
DESIGNATION / SIZE DIA. / CFM B - 5 - 150		CIRCULAR DIFFUSER.
DESIGNATION / SIZE / CFM A - 4 X 10 - 200		SUPPLY AIR REGISTER, WALL OR DUCT MOUNTED.
B - 4 - 2 - **3** - 300 - F - 9		SUPPLY AIR SLOT, ARROWS INDICATE NO. SLOTS AND THROW DIRECTION NOMINAL PLENUM HEIGTH FIRE DAMPER, **N= NONE** NOMINAL CFM NUMBER SLOTS THROW DIRECTION LENGTH DESIGNATION
DESIGNATION / SIZE / CFM RA - 24 X 48 - 200		CEILING RETURN OR EXHAUST AIR REGISTER.
DESIGNATION / SIZE / CFM RA - 24 X 28 - 225		RETURN OR EXHAUST AIR REGISTER, WALL OR DUCT MOUNTED.
DESIGNATION		VAV BOX. NOTE: WHEN NO DESIGNATION MARKED, REFER TO RUN-OUT NUMBER.
DESIGNATION / SIZE - 10 X 10		**TRANSFER GRILLE**
(V)		NOTE: MOUNT INLET 18" OFF FINISH FLOOR. **LOCKABLE CENTRAL VACUUM INLET**

SYMBOL	ABBR.	DESCRIPTION
	W	WASTE
	V , VR , VTR ,	VENT , VENT RISER , VENT THRU ROOF,
	CW	DOMESTIC COLD WATER.
	HW	DOMESTIC HOT WATER.
	HWC	DOMESTIC HOT WATER CIRCULATING.
	CO , FCO , WCO , GCO	CLEANOUT , FLOOR CLEANOUT , WALL CLEANOUT , GRADE CLEANOUT.
		PIPE UP.
		PIPE DOWN.
		GATE OR ISOLATION VALVE.
		BALANCE VALVE.
		CHECK VALVE.
		GLOBE VALVE.
		2 - WAY CONTROL VALVE.
		3 - WAY CONTROL VALVE.
		PRESSURE REDUCING VALVE.
		PRESSURE / TEMPERATURE RELIEF VALVE.
		FUSIBLE VALVE.
		STRAINER WITH GATE VALVE AND HOSE ADAPTOR ON BLOWDOWN.
		UNION.
		AUTOMATIC AIR VENT WITH ISOLATION VALVE.
		PRESSURE GAUGE WITH ISOLATION COCK.
		THERMOMETER.
		DRAIN: GATE VALVE WITH HOSE ADAPTOR.
		DRIP LEG , DIRT LEG.
CV	CV	CENTRAL VACUUM
GHS	GHS	GLYCOL HEATING SUPPLY.
GHR	GHR	GLYCOL HEATING RETURN.
F	F	FIRE SPRINKLER SUPPLY.
FOS	FOS	FUEL-OIL SUPPLY.
FOR	FOR	FUEL-OIL RETURN.
F		FILTER
	FLEX. CONN.	FLEXIBLE PIPE CONNECTION.
	WHA	WATER HAMMER ARRESTOR.
		PIPE ANCHOR.
		PIPE GUIDE.
		METER.
SUBSCRIPT INDICATES TYPE, SEE SCHEDULE.		THERMOSTAT - WALL MOUNT UP 5' UNLESS OTHERWISE NOTED.
(S)		CONTROL SWITCH - WALL MOUNT UP 5' UNLESS OTHERWISE NOTED.
M-1		EQUIPMENT DESIGNATION, SEE EQUIPMENT LIST.
P-1		PLUMBING FIXTURE DESIGNATION, SEE FIXTURE CONNECTION SCHEDULE.
202		ROOM NUMBER DESIGNATION.
2 / 2	REFERENCE NOTE / GENERAL NOTE	SHEET NOTE REFERENCE.
BB-1 / 20 / 0.3	DESIGNATION / GPM / MBH OR LINEAL FEET (LF)	HYDRONIC TERMINAL UNIT DESIGNATION.

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A NEW SCHOOL FOR :

SKAGWAY ALASKA

EQUIPMENT LIST & LEGEND

REVISIONS

drawn by
BJS

date
APRIL 8, 1983

project no.
8303
FPE # 13-1076

sheet no.
M-1
of

EQUIPMENT LIST CONT.

DESIGN.	DESCRIPTION
CUH-2	HORIZONTAL CEILING RECESSED CABINET UNIT HEATER: INTEGRAL INLET GRILLE AND DUCTED DISCHARGE GRILL, 320 CFM, 1/30 H.P., 120 V./1 PH./60 Hz. COIL CAPACITY: AS INDICATED ON DRAWINGS @ 190 DEGREES F. EGT. PROVIDE: VIBRATION ISOLATION, FILTERS, THERMAL/ACOUSTICAL LINING. MANUFACTURER: TRANE #E-36-A0-03.
BB-1	HYDRONIC FIN TUBE RADIATION: 1 ROW, 1" COPPER TUBE, 4-1/4" x 4-1/4" - .020" THICK ALUMINUM FINS @ 48/FT., 1105 BTU/LF OUTPUT @ 180 DEGREE F. AVE. GLYCOL TEMP. PROVIDE: ALL NECESSARY HANGERS, **FIN TUBE ONLY.** MANUFACTURER: VULCAN, DURA-VANE STYLE DV.
BB-2	HYDRONIC FIN TUBE RADIATION: 2 ROW, 1-1/4" COPPER TUBE, 4-1/4" x 4-1/4" - .020" THICK ALUMINUM FINS @ 50/FT.,1450 BTU/LF OUTPUT @ 180 DEGREE F. AVE. GLYCOL TEMP. PROVIDE: ALL NECESSARY HANGERS, **TRIM PIECES AND ACCESS PANELS.** MANUFACTURER: STERLING, VERSA-LINE STYLE "SS" DOUBLE SLOPE TOP.
ST-1	RECTANGULAR IN-LINE SOUND ATTENUATOR: 3300 CFM, .10" MAX. APD, 23 dB ATTN. IN THE 3RD OCTAVE BAND, 32.5 dB ATTN. IN THE 5TH OCTAVE BAND. MANUFACTURER: INDUSTRIAL ACOUSTICS CO., MODEL **7S**
ST-2	RECTANGULAR IN-LINE SOUND ATTENUATOR: **5760** CFM, **.05"** MAX. APD, 17 dB ATTN. IN THE 3RD OCTAVE BAND. MANUFACTURER: INDUSTRIAL ACOUSTICS CO., MODEL **3S**
CP-1	BASE MOUNTED HYDRONIC CIRCULATING PUMP: **115.8** GPM @ 30 FT. TDH, 2 H.P., 1750 RPM, 208 V./3 PH./60 Hz. PROVIDE: **INERTIA BASE WITH VIBRATION ISOLATORS.** MANUFACTURER: BELL & GOSSETT, MODEL #106T, 2-1/2 A.
CP-2 CP-3	BASE MOUNTED HYDRONIC CIRCULATING PUMP: 160 GPM @ 40 FT. TDH, 3 H.P., 1750 RPM, 208 V./3 PH./60 Hz. PROVIDE: **INERTIA BASE WITH VIBRATION ISOLATORS.** MANUFACTURER: BELL & GOSSETT, MODEL 106T, 2-1/2 A.

DESIGN.	DESCRIPTION
HWH-1	OIL-FIRED STORAGE TYPE DOMESTIC HOT WATER HEATER: 500 GAL. STORAGE, 518 GPH RECOVERY @ 100 DEGREE TEMP. RISE, 540 MBH INPUT, 1/4 H.P., 120 V./1 PH/60 Hz. PROVIDE: P/T RELIEF, P/T GAUGE, NICKEL-SHIELD LINING, OPTIONAL FLAME SAFEGUARD, 2-STAGE PUMP @ 3.8 GPH, ASME TANK, THERMOMETER, PRESSURE GAUGE, LOW WATER CUTOFF. MANUFACTURER: PVI #3.8 N 500A-0.
HRC-1	HEAT RECOVERY COIL, AIR TO AIR HEAT PIPE THERMAL RECOVERY UNIT, MAX. APD: .62" @ 3300 E/A CFM, .60" @ 3000 S/A CFM. PROVIDE: FROST PROTECTION, CAPACITY CONTROL. MANUFACTURER: GAMEWELL, THERMOSIPHON, 6-ROW COIL, 14 FPI, 24 X 84, 120 V./1 PH./60 Hz.
HWCP-1	DOMESTIC HOT WATER CIRCULATION PUMP: STAINLESS STEEL AND BRONZE CONSTRUCTION, 2 GPM @ 6' TDH, 1/35 H.P., 120 V./1 PH./60 Hz. MANUFACTURER: GRUNDFOSS #UP25-185U
EC-1	ELECTRONIC AIR CLEANER: 3-SPEED, 550 CFM, 700 CFM, 1000 CFM, 120 V./1 PH./60 Hz. FLUSH MOUNTED IN **SOFFIT.** PROVIDE: OPTIONAL CHARCOAL FILTER. MANUFACTURER: HONEYWELL, MODEL NO. F57.

AHU-1 TRUNK DUCT SCHEDULE

TRUNK NO.	UP STREAM TRUNK	DUCT DIA.	CONSTRICTIONS	FITTING	DUCT TREATMENT
101	-100	30	NONE	REDUCER	SOUNDLINING
102	101	26	NONE	REDUCER	NONE
103	102	26	NONE	COUPLING	NONE
104	103	24	NONE	REDUCER	NONE
105	104	24	NONE	COUPLING	NONE
106	105	22	NONE	REDUCER	NONE
107	106	22	NONE	COUPLING	NONE
114	101	12	NONE	45 90 T	NONE
115	114	8	NONE	REDUCER	NONE
116	115	8	NONE	COUPLING	NONE

AHU-2 TRUNK DUCT SCHEDULE

TRUNK NO.	UP STREAM TRUNK	DUCT DIA.	CONSTRICTIONS	FITTING	DUCT TREATMENT
201	-200	28	NONE	REDUCER	SOUNDLINING
202	201	18	NONE	45 T	NONE
203	202	12	NONE	REDUCER	NONE
204	203	8	NONE	REDUCER	NONE
205	201	26	NONE	REDUCER	NONE
206	205	24	NONE	REDUCER	NONE
207	206	24	NONE	COUPLING	NONE

AHU-1 RUNOUT SCHEDULE

DUCT CONNECTION NUMBER	VAV TERMINAL CONTROL BOX TYPE	NOMINAL BOX CFM	DIAMETER	FITTING	ORIFICE DIMENSION
102	SHUTOFF, COOLING	1200	10	90 T	
103	SHUTOFF, COOLING	2000	12	90 T	8.5"
104	SHUTOFF, COOLING	400	6	90 T	4.0"
105	SHUTOFF, COOLING	800	8	90 T	
106	CONSTANT VOLUME	800	8	90 T	
114	SHUTOFF, COOLING	2000	12	90 T	
115	SHUTOFF, COOLING	200	5	90 T	
116	SHUTOFF, COOLING	1200	10	REDUCER	7.0"

AHU-2 RUNOUT SCHEDULE

DUCT CONNECTION NUMBER	VAV TERMINAL CONTROL BOX TYPE	NOMINAL BOX CFM	DIAMETER	FITTING	ORIFICE DIMENSION
202	SHUTOFF, COOLING	1200	10	90 T	
203	SHUTOFF, COOLING	2000	12	90 T	
204	SHUTOFF, COOLING	800	8	REDUCER	
205	SHUTOFF, COOLING	800	8	90 T	
206	SHUTOFF, COOLING	400	6	90 T	

FIRE DAMPER SCHEDULE

DESIGN	TYPE	MOUNTING	FRAME TYPE-CASE NO.	INSTALLATION-CASE NO.
(A)	ROUND OUT OF AIR STREAM	CONCEALED DUCT	◇1 - 7	◇2 - 2
(B)	RECTANGULAR OUT OF AIR STREAM	CONCEALED DUCT	◇1 - 2	◇2 - 2
(C)	RECTANGULAR IN AIR STREAM	CONCEALED DUCT	◇1 - 1	◇5 - 6
(D)	RECTANGULAR IN AIR STREAM	CONCEALED DUCT	◇1 - 1	◇1
(E)	REGISTER MOUNTED		◇3	
(F)	RECTANGULAR OUT OF AIR STREAM	CONCEALED DUCT	◇1 - 2	◇5 - 3

NOTES:

◇1 REFERENCE SMACNA FIRE DAMPER GUIDE, LATEST EDITION, FIG. 4.
◇2 REFERENCE SMACNA FIRE DAMPER GUIDE, LATEST EDITION, FIG. 5.
◇3 REFERENCE SMACNA FIRE DAMPER GUIDE, LATEST EDITION, FIG. 12.
◇4 ALL OPENINGS FOR FIRE DAMPERS SHALL BE PROTECTED IN ACCORDANCE WITH FIGURE 15 OF THE SMACNA FIRE DAMPER GUIDE, LATEST EDITION.
◇5 REFERENCE SMACNA FIRE DAMPER GUIDE, LATEST EDITION, FIG. 6.

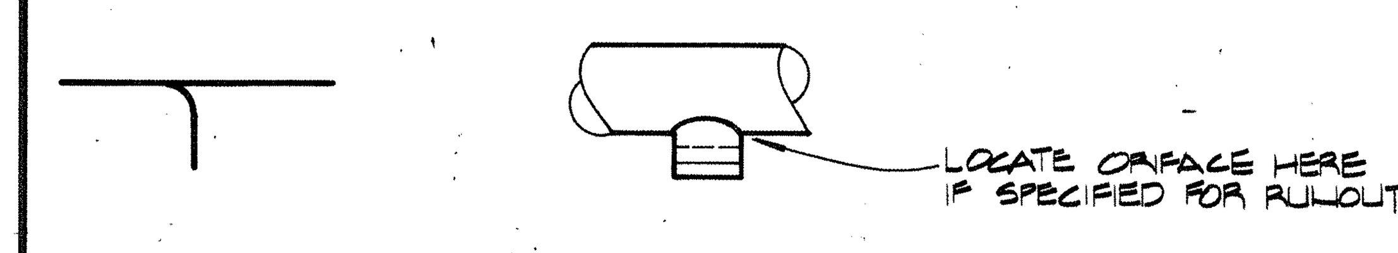
ZONE THERMOSTAT SCHEDULE

1. THERMOSTAT SHALL CYCLE HYDRONIC TERMINAL UNIT FAN TO MAINTAIN SETPOINT. **SUBJECT TO NIGHT SETBACK.**
2. THERMOSTAT SHALL MODULATE HYDRONIC TERMINAL UNIT CONTROL VALVE TO MAINTAIN SETPOINT. **SUBJECT TO NIGHT SETBACK.**
3. THERMOSTAT SHALL MODULATE VAV TERMINAL CONTROL BOX TO MAINTAIN SETPOINT, AND SHALL PROVIDE SIGNAL INPUT TO AHU DISCHARGE AIR TEMPERATURE CONTROLLER.
4. THERMOSTAT SHALL MODULATE HYDRONIC TERMINAL UNIT CONTROL VALVE AND VAV TERMNAL CONTROL BOX IN SEQUENCE TO MAINTAIN SETPOINT, AND SHALL PROVIDE SIGNAL INPUT TO AHU DISCHARGE AIR TEMPERATURE CONTROLLER. **SUBJECT TO NIGHT SETBACK.**

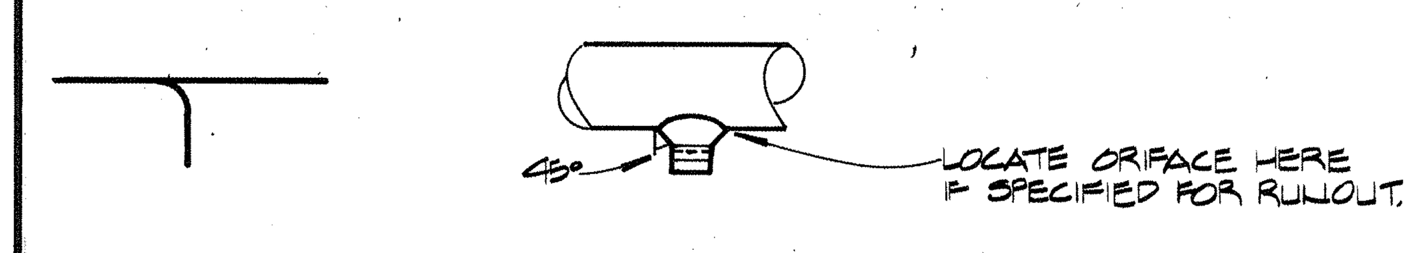
OVF. AY REQD	OVERLAYS	SCREEN
TB	=	=
Hb	He	=

VAV DUCT DETAILS

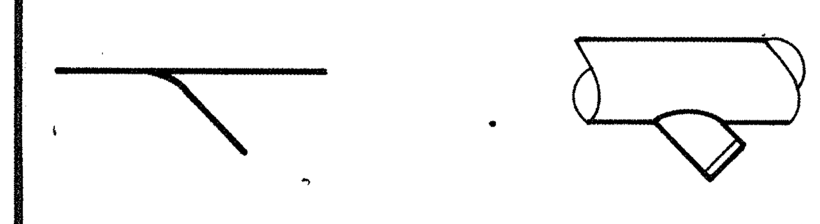
SYMBOL FITTING REMARKS



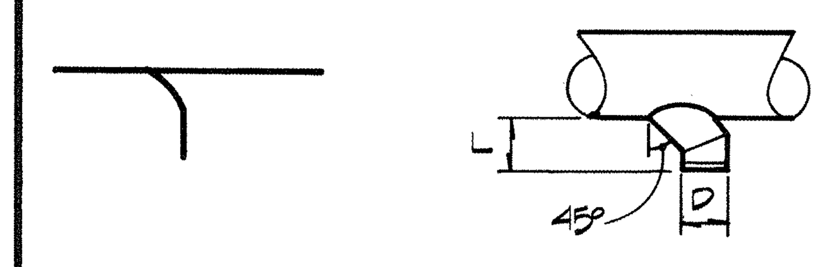
90° TEE



CONICAL 90° TEE

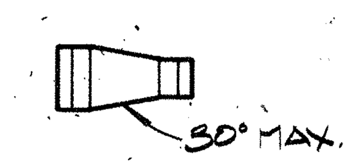


45° TEE

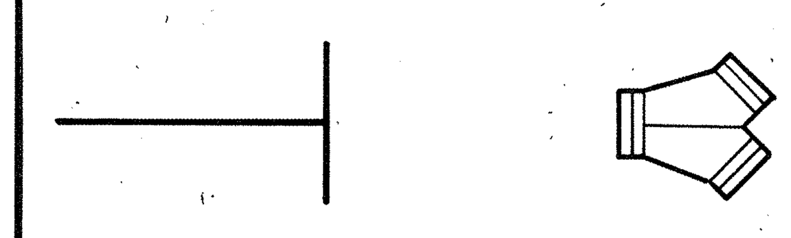


D	L
12"	12"
14"	13"
16"	14"
18"	15"
20"	16"

45° - 90° TEE

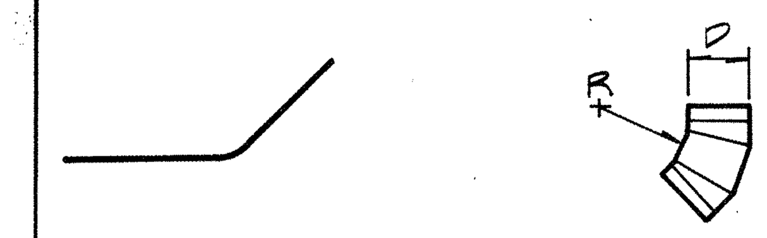


REDUCER OR Φ TO OVAL OR Φ TO RECT. TRANSITION



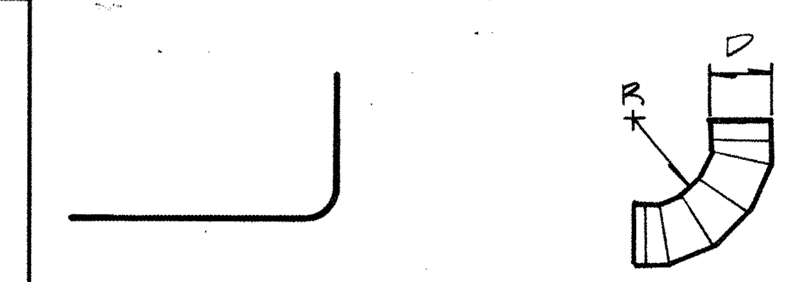
Y-FITTING

SYMBOL FITTING REMARKS



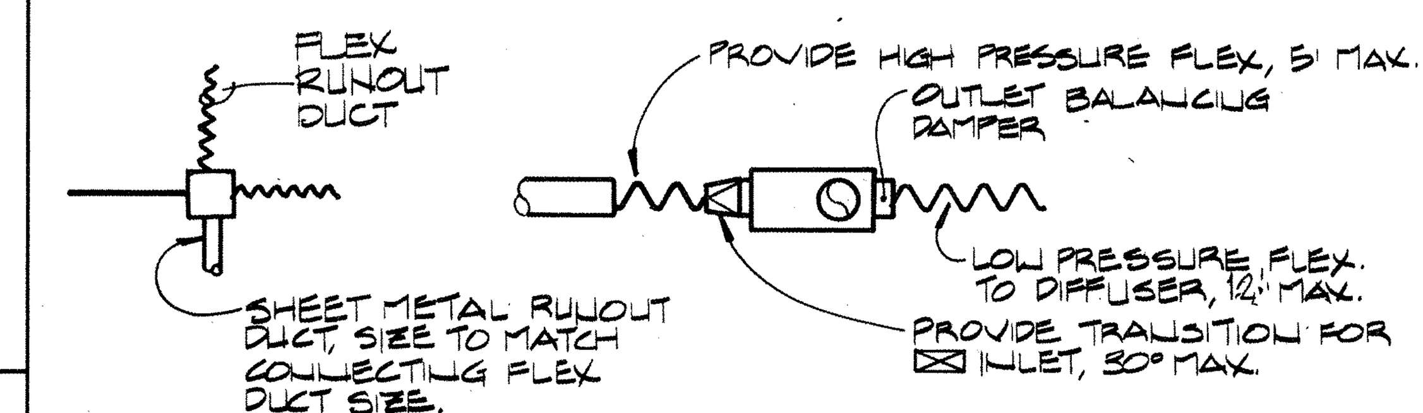
D	R
≤ 14"	D
> 14"	16"

45° ELL

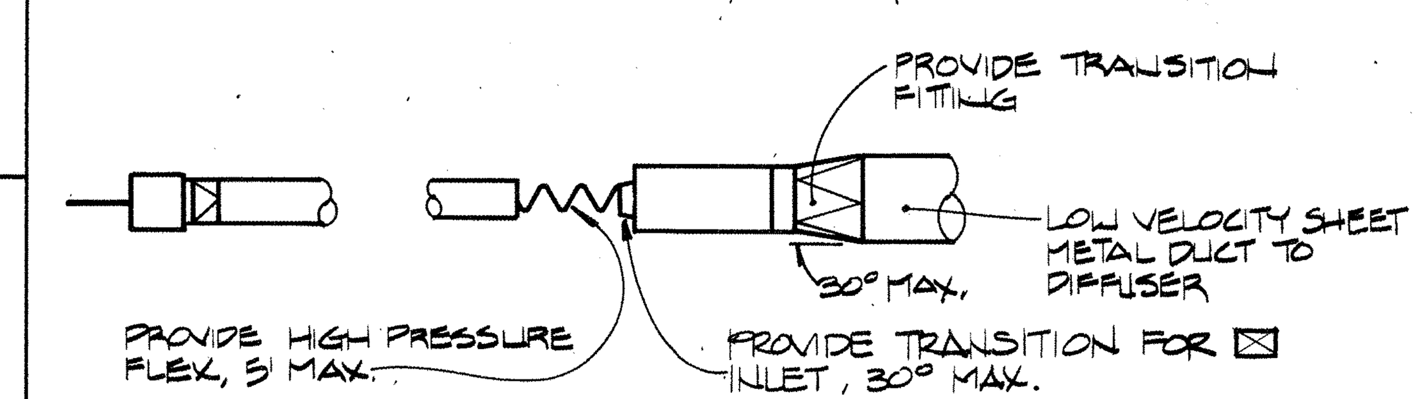


D	R
≤ 14"	D
> 14"	16"

90° ELL



STANDARD TERMINAL CONTROL BOX



DUCTED TERMINAL CONTROL BOX

DIFFUSER / REGISTER / GRILLE / LOUVER SCHEDULE

DESIGNATION	DESCRIPTION
A	SQUARE CEILING DIFFUSER, SURFACE CEILING MOUNTED. PROVIDE: VOLUME DAMPER, PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT # DF
B	LINEAR SLOT DIFFUSER, EXTRUDED ALUMINUM CONSTRUCTION, 1/2" SLOTS, MOUNT FLUSH IN GYPBOARD, CONTINUOUS. PROVIDE: VOLUME DAMPER, PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT # SLAD-50, FLANGE TYPE.
D	LINEAR SLOT DIFFUSER, T-BAR WITH 2 X 2 CENTER NOTCH, 1/2" SLOTS, INSULATED PLENUM. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT MODEL SLSD-50, COMPATIBLE WITH DONN FINELINE CEILING.
E	RECTANGULAR SINGLE DEFLECTION REGISTER, FLUSH MOUNT, **WITH VOLUME DAMPER,** EXTRUDED ALUMINUM CONSTRUCTION. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT # X1V
F	RECTANGULAR DOUBLE DEFLECTION REGISTER, MOUNT ON EXPOSED DUCTWORK, EXTRUDED ALUMINUM CONSTRUCTION. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING **OPPOSED BLADE DAMPER.** **MANUFACTURER: ANEMOSTAT, MODEL RC2H.**
G	SQUARE, PERFORATED DIFFUSER, 2-WAY DEFLECTION, MOUNT IN GYPBOARD CEILING. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT, MODEL PD-1

DESIGNATION	DESCRIPTION
H	LINEAR SLOT DIFFUSER, T-BAR, 1/2" SLOTS, INSULATED PLENUM. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT MODEL SLSD-50, COMPATIBLE WITH DONN FINELINE CEILING.
J	LINEAR SLOT DIFFUSER, T-BAR WITH 2 X 2 CENTER NOTCH, 3/4" SLOTS, INSULATED PLENUM. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT MODEL SLSD-50, COMPATABLE WITH DONN FINELINE CEILING.
K	HALF-ROUND CEILING DIFFUSER, FOR INSTALLATION ON EXPOSED DUCTWORK AT SIDEWALL, STEEL CONSTRUCTION. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING, ADJUSTABLE AIR PATTERN, EQUALIZING GRID, OPPOSED BLADE DAMPER. MANUFACTURER: TITUS, MODEL TH
RA	RECTANGULAR RETURN GRILLE WITH 3/4" FIN SPACING, WALL **& CLG.** MOUNTED, EXTRUDED ALUMINUM CONSTRUCTION. PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING, **VOLUME DAMPER.** **MANUFACTURER: ANEMOSTAT, MODEL X3HD.**
RB	RECTANGULAR PERFORATED RETURN AIR PANEL DIFFUSER, STEEL CONSTRUCTION, **CEILING MOUNTED.** PROVIDE: PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: ANEMOSTAT, MODEL PDLER
OUTSIDE, EXHAUST, RELIEF AND COMBUSTION AIR.	ALL WEATHER LOUVER, 6" DEPTH, 35 DEGREE BLADE ANGLE, EXTRUDED ALUMINUM CONSTRUCTION. PROVIDE: 1/2" MESH SCREEN, PRIME COAT FINISH FOR FIELD PAINTING. MANUFACTURER: AIRSTREAM, MODEL M.

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A NEW SCHOOL FOR :
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EQUIPMENT LIST CONT., DETAILS & SCHEDULES

REVISIONS

drawn by BJS

date APRIL 8, 1983

project no. 8303

FPE # 13-1076

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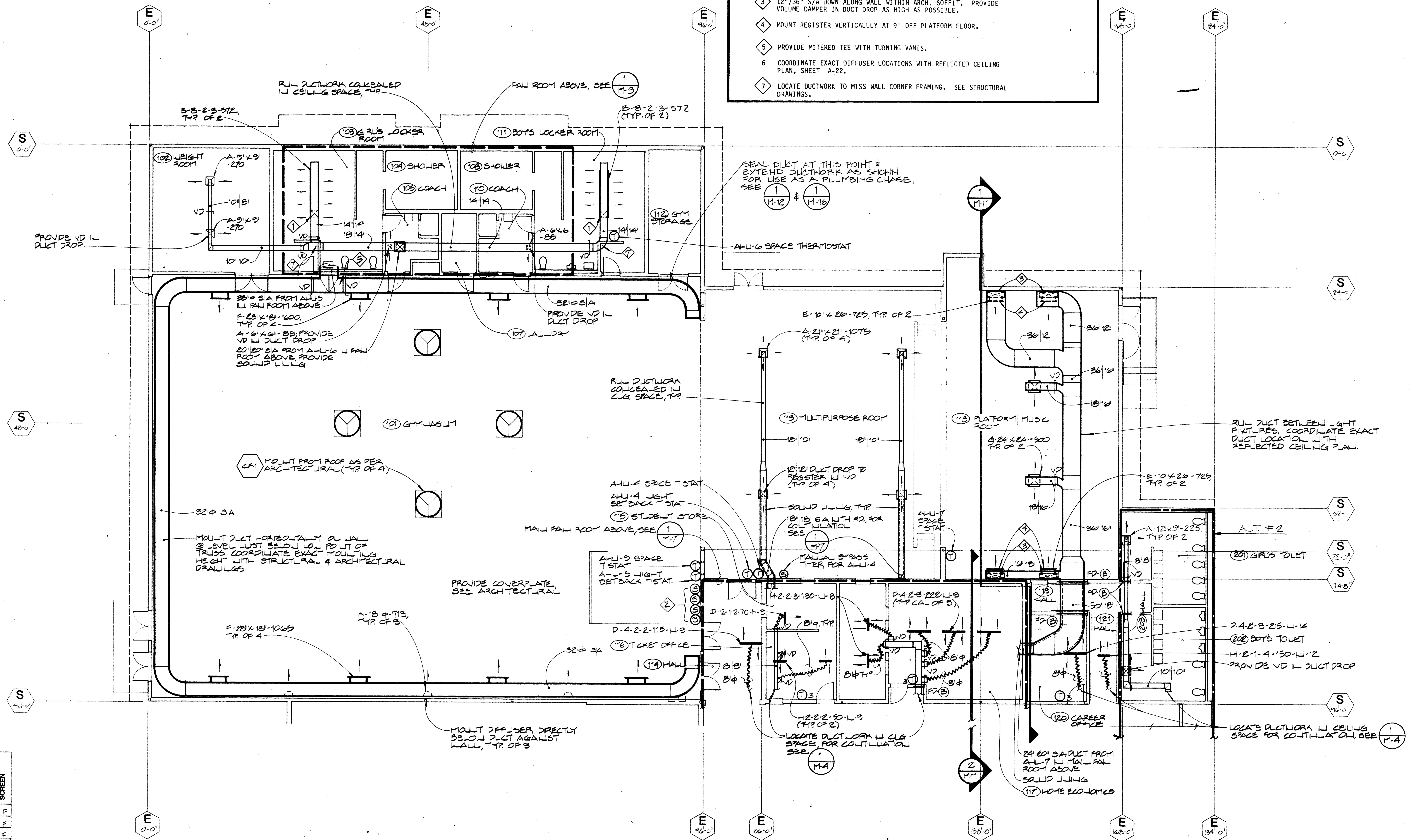
SHEET NOTES

1. 14"/14" S/A DUCT UP INTO LOCKER SOFFIT SPACE. FLUSH MOUNT SUPPLY SLOT DIFFUSERS VERTICALLY ON SOFFIT SIDEWALL.
2. CONTROL SWITCH FOR CF-1.
   2-SPEED CONTROL SWITCH FOR AHU-5.
   BY-PASS TIMER FOR AHU-5.
   BY-PASS TIMER FOR AHU-6.
3. 12"/36" S/A DOWN ALONG WALL WITHIN ARCH. SOFFIT. PROVIDE VOLUME DAMPER IN DUCT DROP AS HIGH AS POSSIBLE.
4. MOUNT REGISTER VERTICALLY AT 9' OFF PLATFORM FLOOR.
5. PROVIDE MITERED TEE WITH TURNING VANES.
6. COORDINATE EXACT DIFFUSER LOCATIONS WITH REFLECTED CEILING PLAN, SHEET A-22.
7. LOCATE DUCTWORK TO MISS WALL CORNER FRAMING. SEE STRUCTURAL DRAWINGS.



102 WEIGHT ROOM
103 GIRL'S LOCKER ROOM
111 BOYS LOCKER ROOM
104 SHOWER
108 SHOWER
105 COACH
110 COACH
112 GYM STORAGE
107 LAUNDRY
101 GYMNASIUM
113 MULTIPURPOSE ROOM
118 PLATFORM MUSIC ROOM
115 STUDENT STORE
116 TICKET OFFICE
114 HALL
119 HALL
121 HALL
120 CAREER OFFICE
117 HOME ECONOMICS
201 GIRL'S TOILET
202 BOYS TOILET
ALT. # 2
RUN DUCTWORK CONCEALED IN CEILING SPACE, TYP.
FAN ROOM ABOVE, SEE 1/M-9
AHU-6 SPACE THERMOSTAT
SEAL DUCT AT THIS POINT & EXTEND DUCTWORK AS SHOWN FOR USE AS A PLUMBING CHASE, SEE 1/M-12 & 1/M-16
PROVIDE VD IN DUCT DROP
32"φ S/A
MOUNT DUCT HORIZONTALLY ON WALL @ LEVEL JUST BELOW LOW POINT OF TRUSS. COORDINATE EXACT MOUNTING HEIGHT WITH STRUCTURAL & ARCHITECTURAL DRAWINGS.
MOUNT FROM ROOF AS PER ARCHITECTURAL (TYP. OF 4)
PROVIDE COVERPLATE SEE ARCHITECTURAL
MOUNT DIFFUSER DIRECTLY BELOW DUCT AGAINST WALL, TYP. OF 3
AHU-4 SPACE T STAT
AHU-4 NIGHT SETBACK T STAT
AHU-5 SPACE T STAT
AHU-5 NIGHT SETBACK T STAT
MAIN FAN ROOM ABOVE, SEE 1/M-7
MANUAL BYPASS TIMER FOR AHU-4
SOUND LINING, TYP.
RUN DUCT BETWEEN LIGHT FIXTURES. COORDINATE EXACT DUCT LOCATION WITH REFLECTED CEILING PLAN.
LOCATE DUCTWORK IN CEILING SPACE FOR CONTINUATION, SEE 1/M-4
24"/20" S/A DUCT FROM AHU-7 IN MAIN FAN ROOM ABOVE
SOUND LINING

FLOOR PLAN "A" - AIR DISTRIBUTION - SUPPLY

1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
MC	MC	F
MD	MD	F
V	V	S

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FLOOR PLAN 'A' - SUPPLY
AIR DISTRIBUTION

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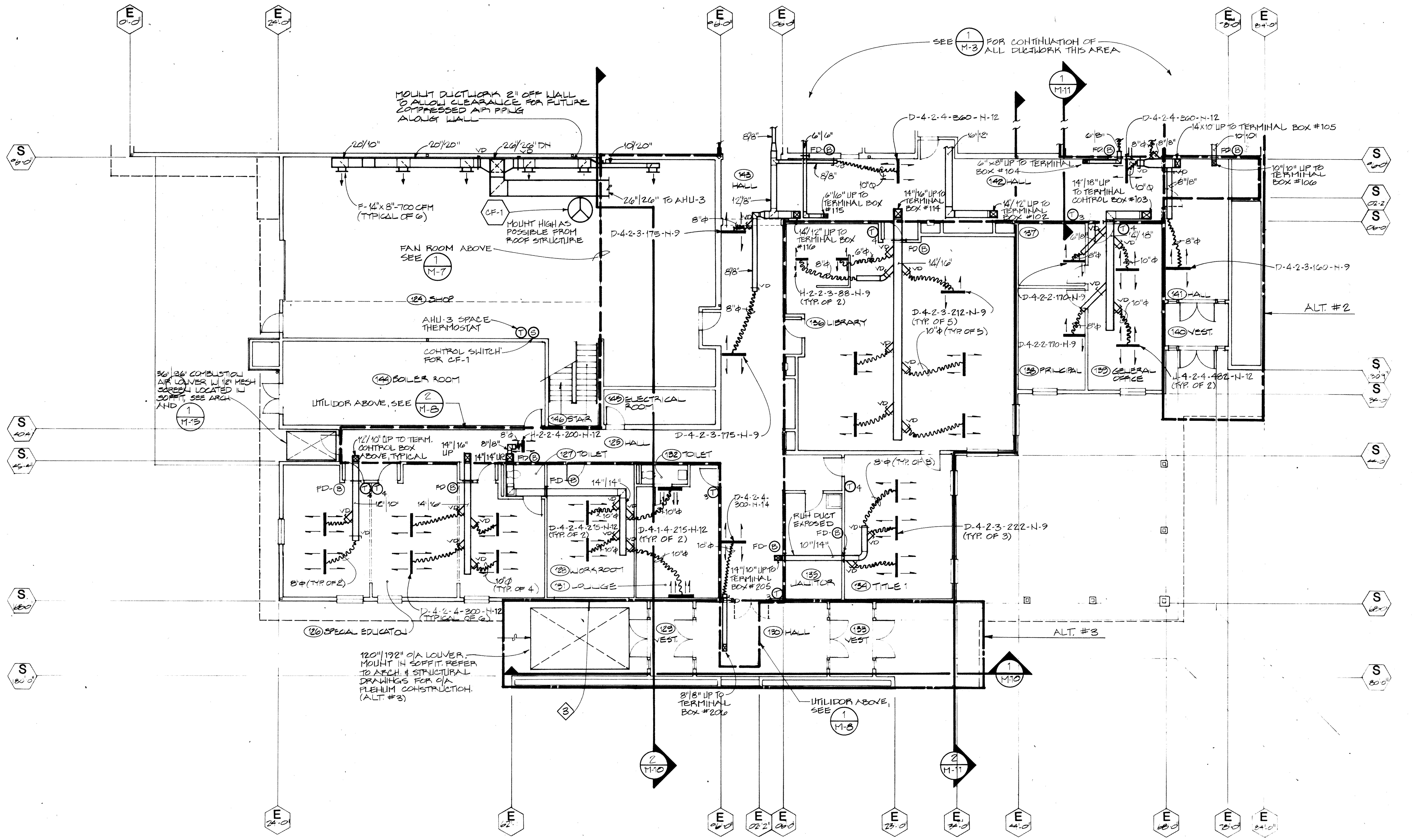

SHEET NOTES

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF DIFFUSERS, REGISTERS AND GRILLES.
2. COORDINATE DUCTWORK LOCATION WITH STRUCTURAL DOOR FRAMING.
3. FOR BASE BID ONLY, PROVIDE 144"x48" O/A LOUVER MOUNTED VERTICALLY IN WALL, WITH SHEET METAL HOOD. PROVIDE 144"x24" HOOD OPENING.

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
ME	ME	F
MP	MP	F
W	W	S

1/M-4 **FLOOR PLAN "B" - AIR DISTRIBUTION - SUPPLY**

1/8"=1'-0"

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FLOOR PLAN 'B' - SUPPLY AIR DISTRIBUTION

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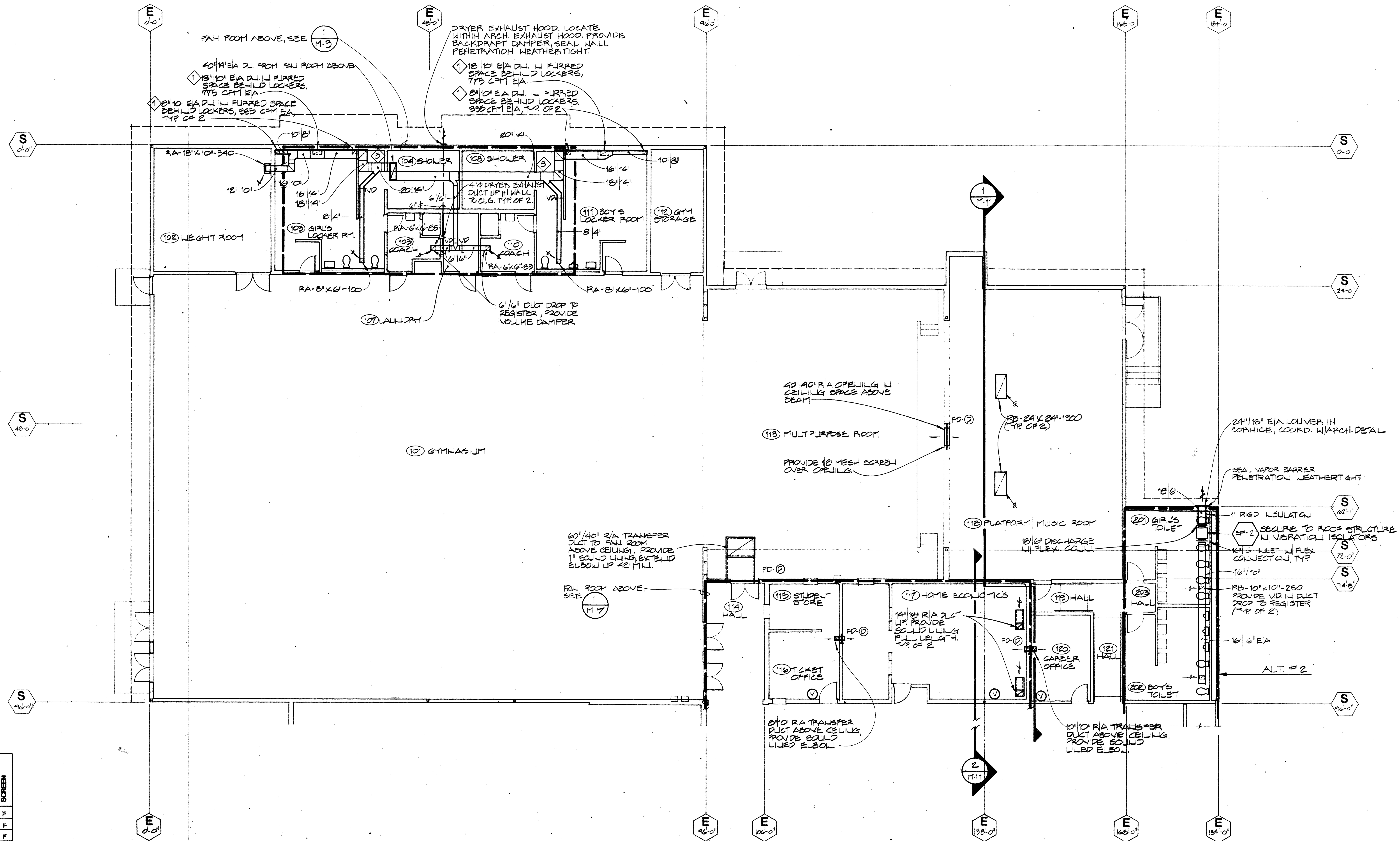
SHEET NOTES

1. PROVIDE VOLUME EXTRACTOR FOR DUCT DROP INTO FURRED SPACE.
2. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF DIFFUSERS, REGISTERS AND GRILLES.
3. COORDINATE DUCTWORK LOCATIONS WITH STRUCTURAL DOOR FRAMING.



FLOOR PLAN "A"- AIR DISTRIBUTION - RETURN & EXHAUST

1/M-5

1/8"= 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
MG	MG	F
MH	MH	F
V	V	S

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FLOOR PLAN 'A'- AIR DIST.- RETURN & EXHAUST

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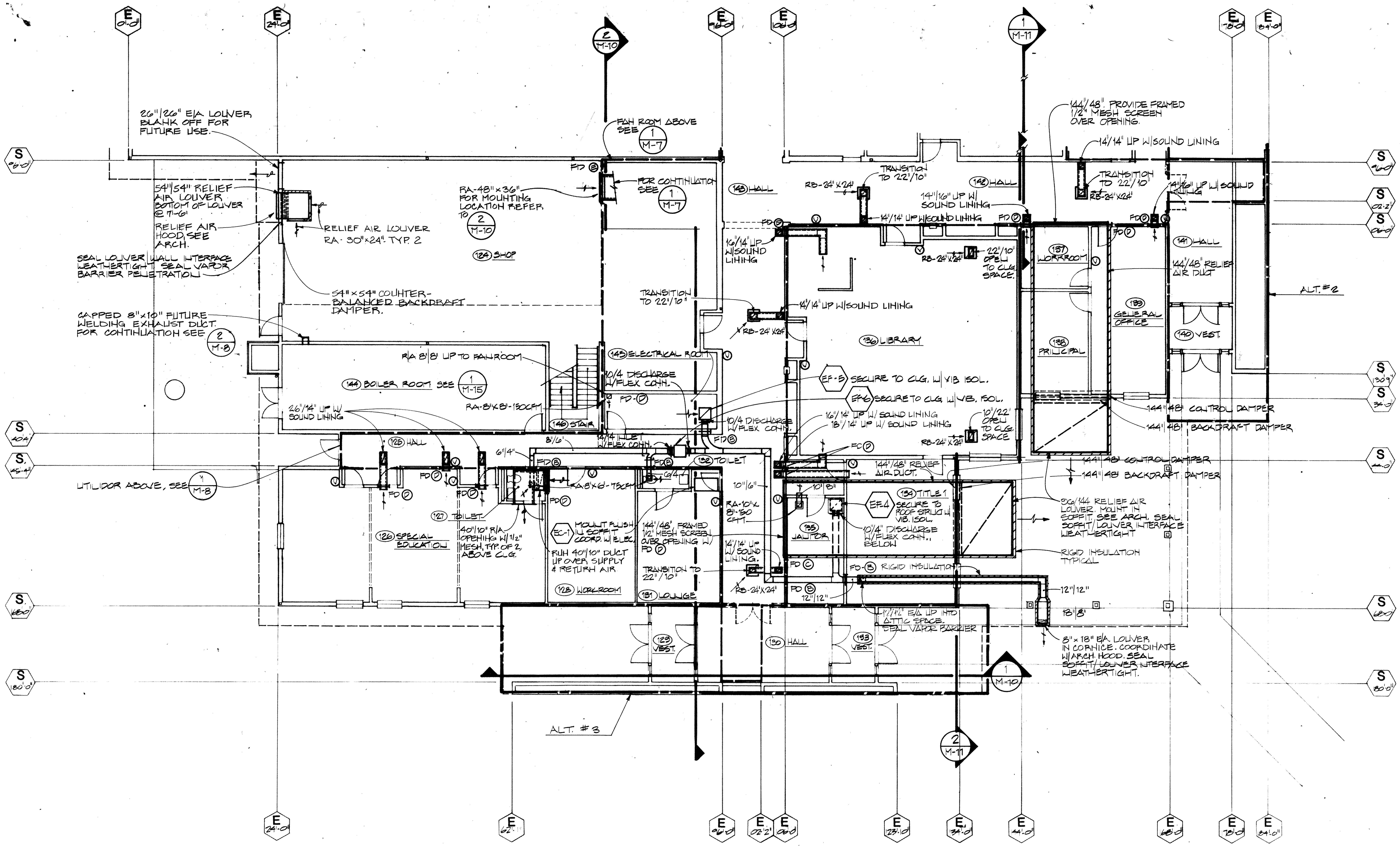

1 M-6 FLOOR PLAN "B" - AIR DISTRIBUTION RETURN AND EXHAUST

1/8"-1'0"

SHEET NOTES

1 REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF DIFFUSERS, REGISTERS AND GRILLES.

OVF AY REQD	OVERLAYS	SCREEN
TB	"	F
MI	MI	F
MJ	MJ	F
W	W	S

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FLOOR PLAN 'B' - AIR DIST.-
RETURN & EXHAUST

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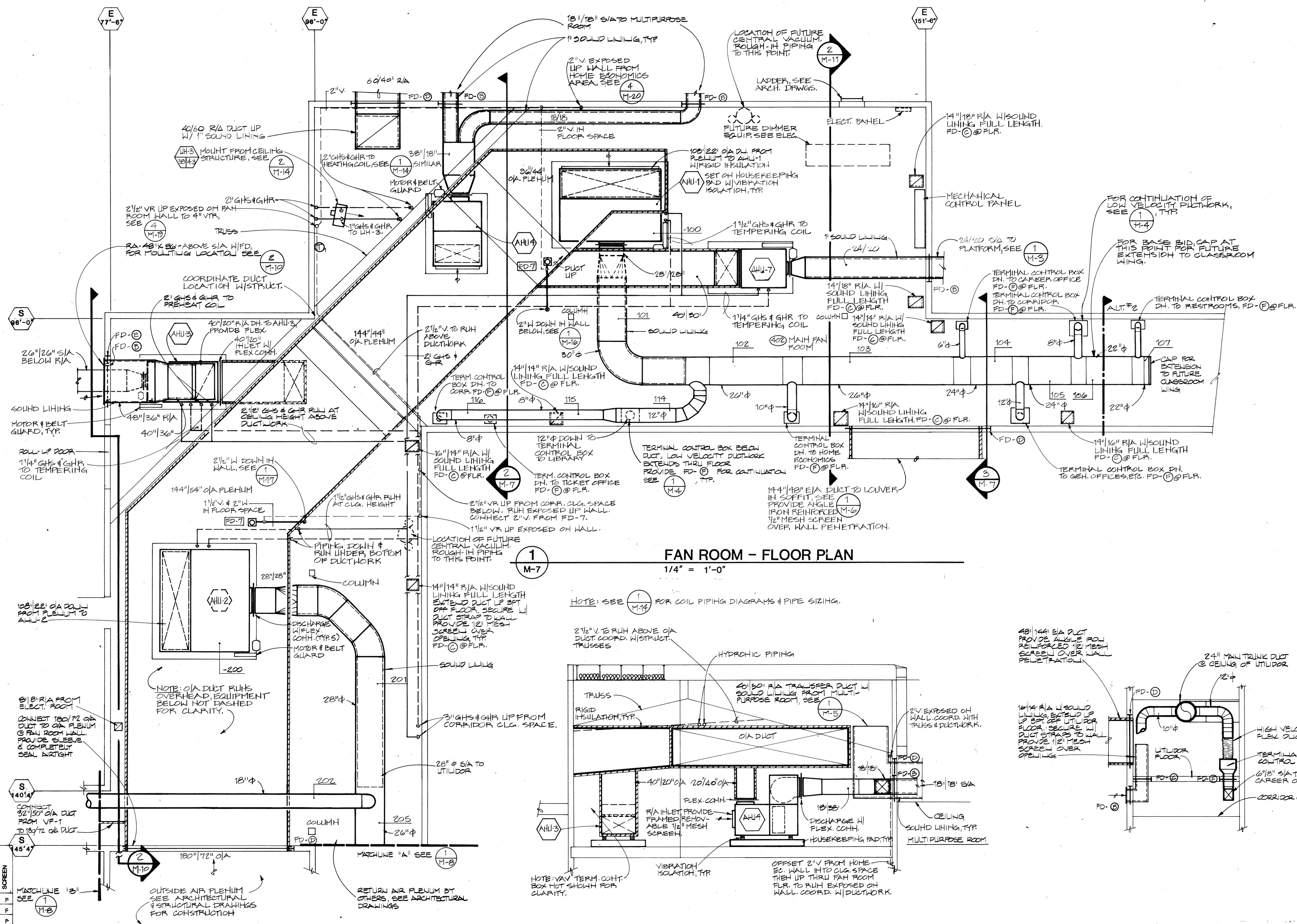

1/M-7 FAN ROOM – FLOOR PLAN
1/4" = 1'-0"

2/M-7 SECTION – FAN ROOM
1/4" = 1'-0"

3/M-7 SECTION – UTILIDOR
1/4" = 1'-0"

OVERLAY REQD	OV'LAYS	SCREEN
TB	"B"	F
MK	MK	F
ML	ML	F
MM	MM	F

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A NEW SCHOOL FOR: SKAGWAY ALASKA

FAN ROOM FLOOR PLAN & SECTIONS

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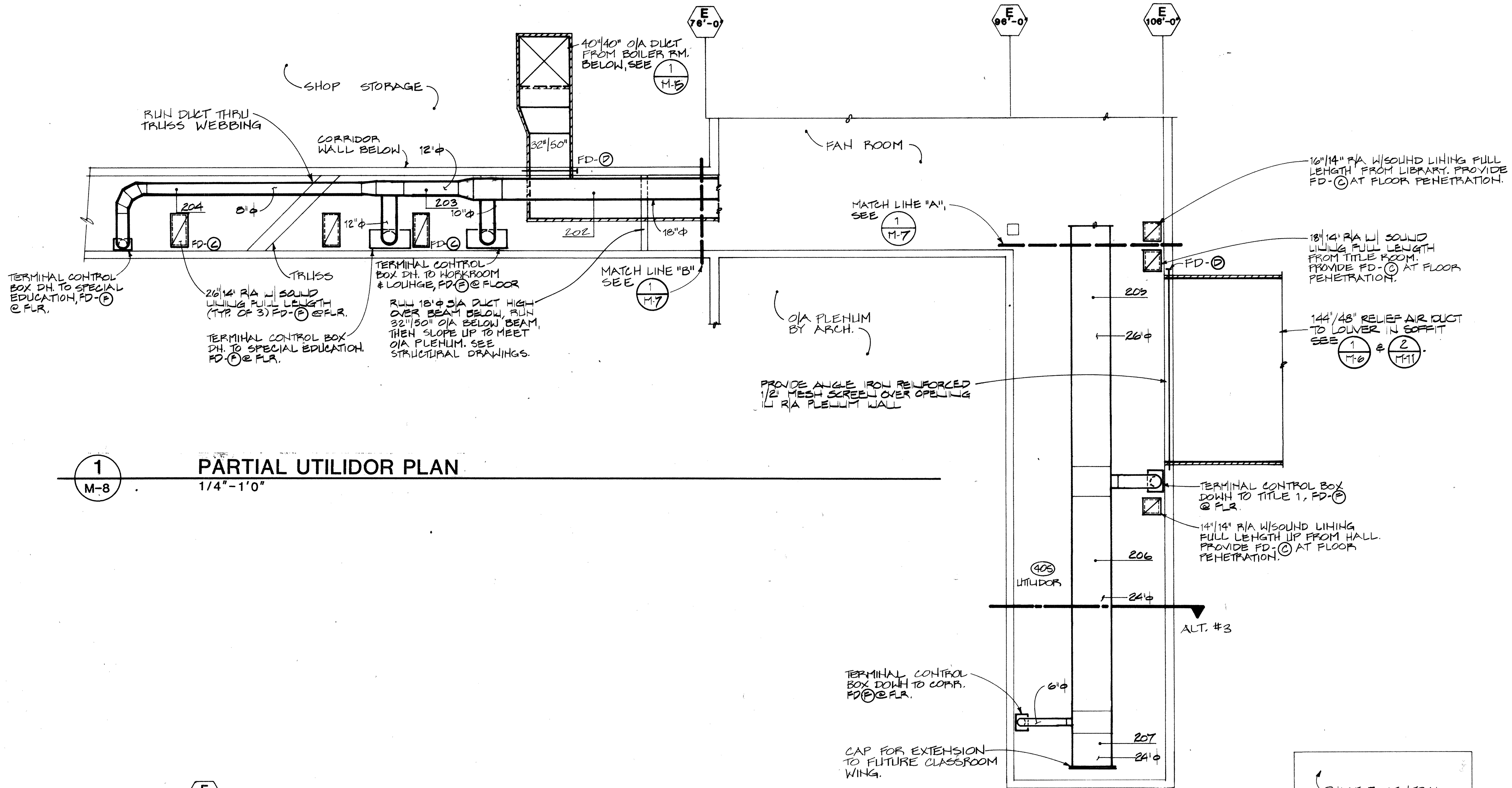
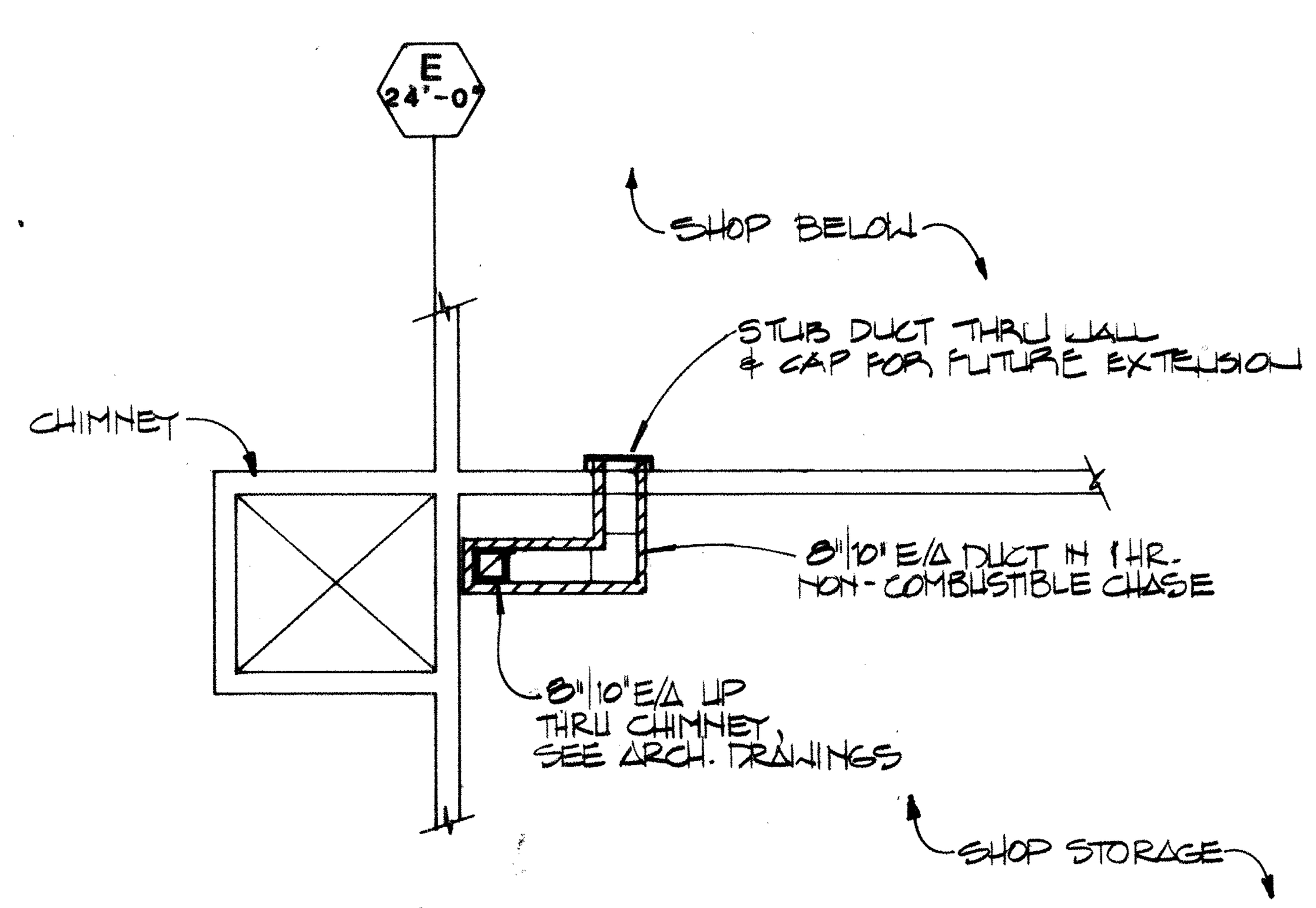
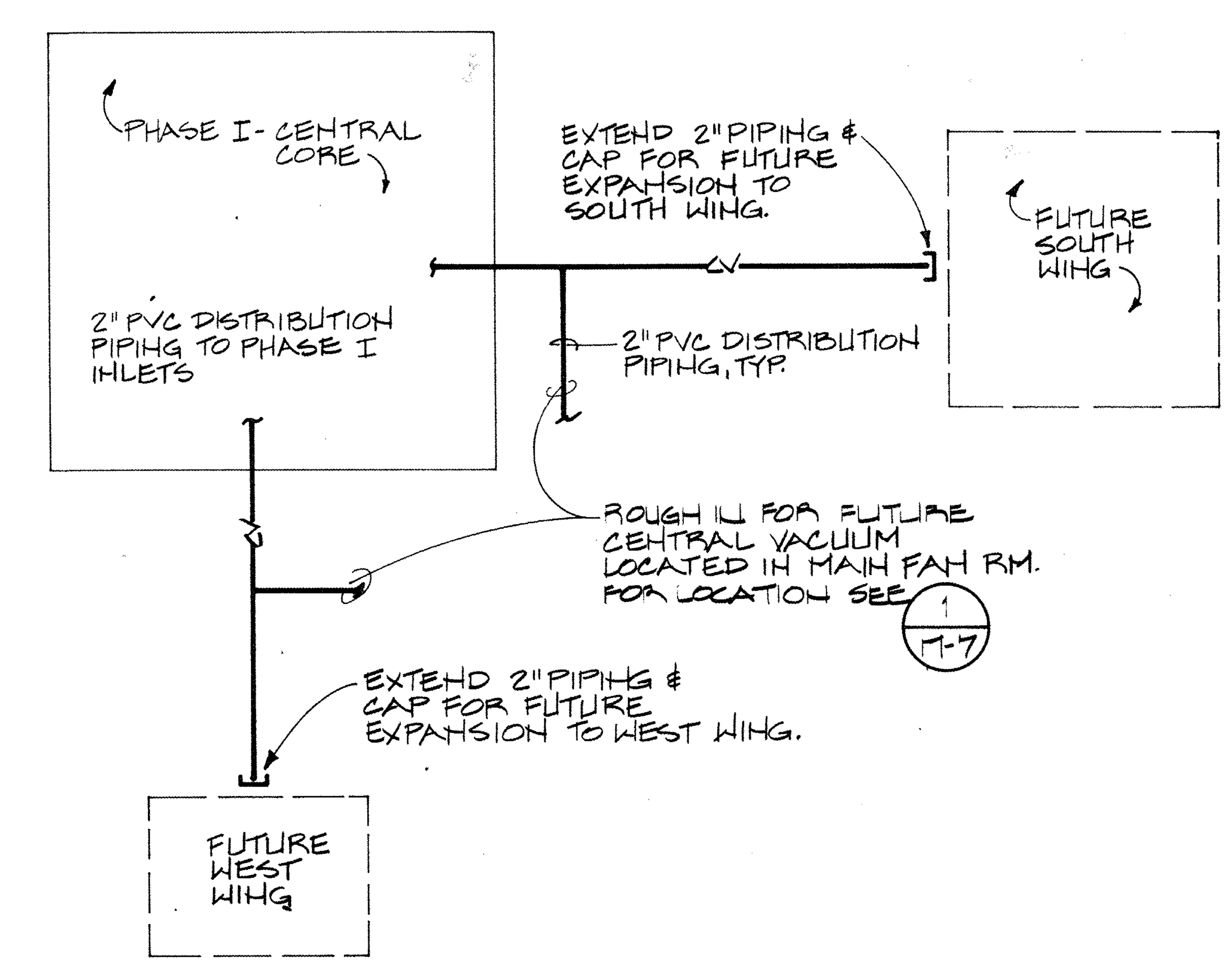


1 M-8 **PARTIAL UTILIDOR PLAN**
1/4"-1'0"



2 M-8 **PARTIAL ATTIC PLAN**



3 M-8 **CENTRAL VACUUM PIPING DIAGRAM**
N.T.S.

OVERLAYS REQ'D	OVERLAYS	SCREEN
TB	TB	F
MH	MH	F
MO	MO	F
MP	MP	F

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PARTIAL UTILIDOR PLAN
& PARTIAL ATTIC PLAN

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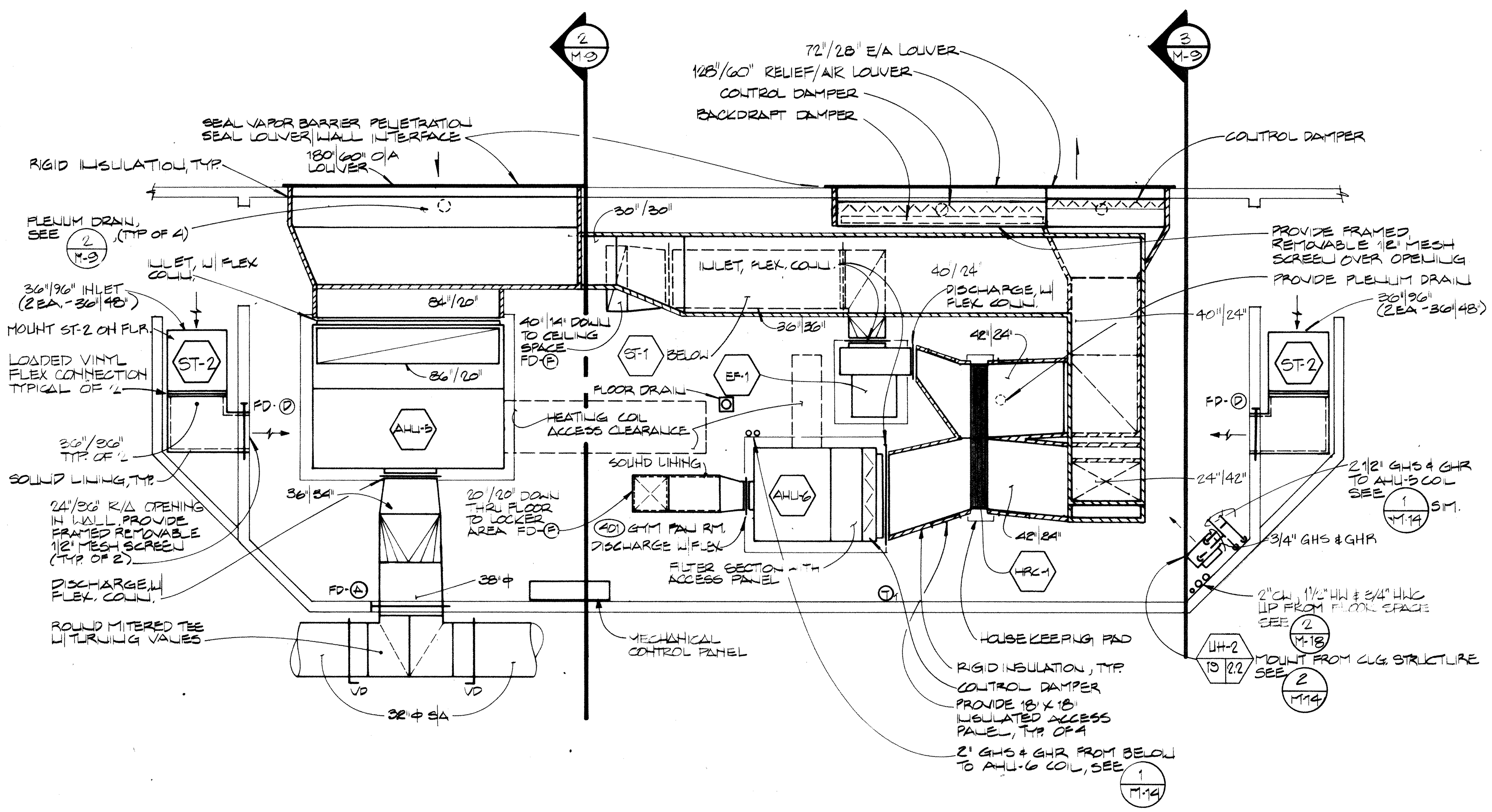
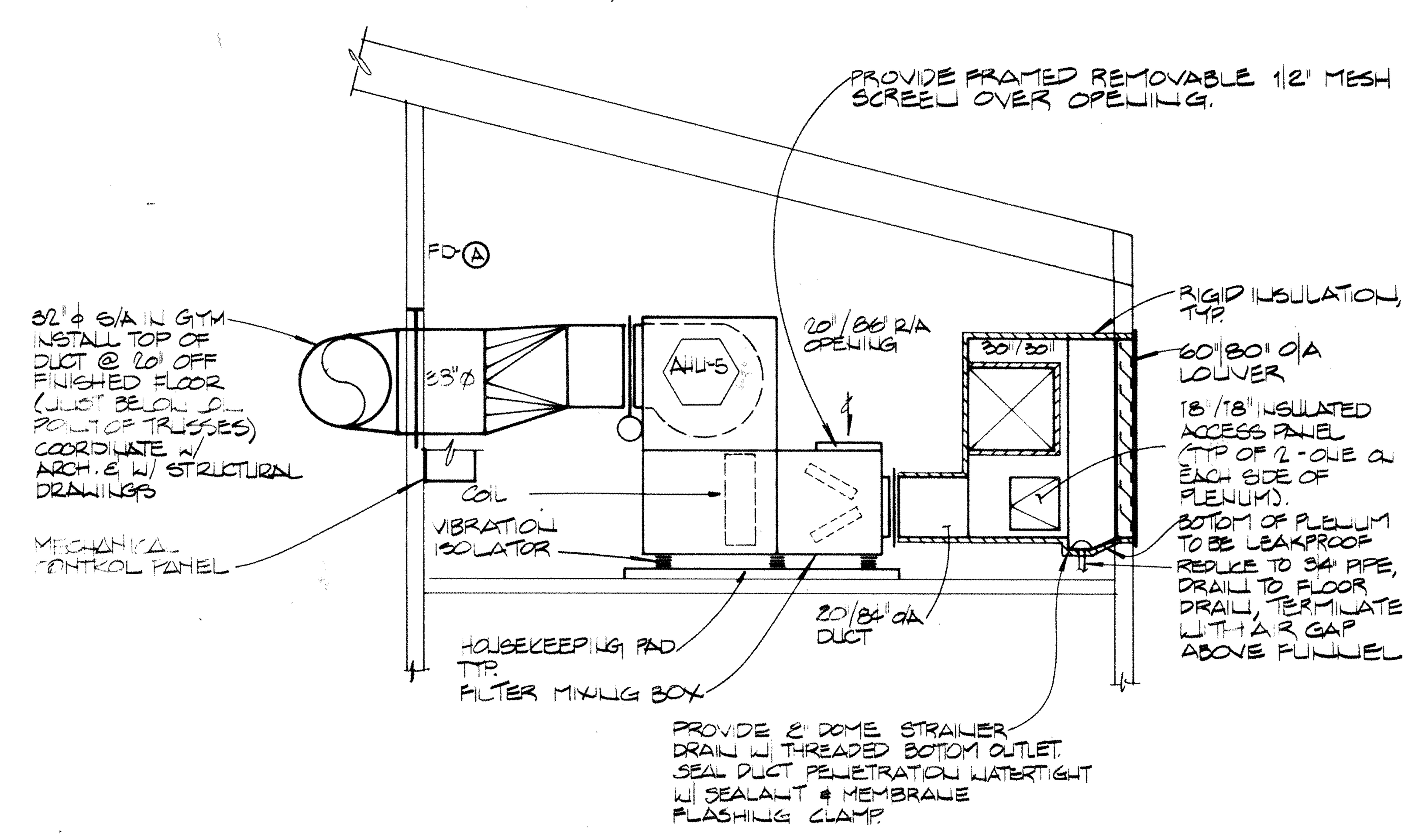
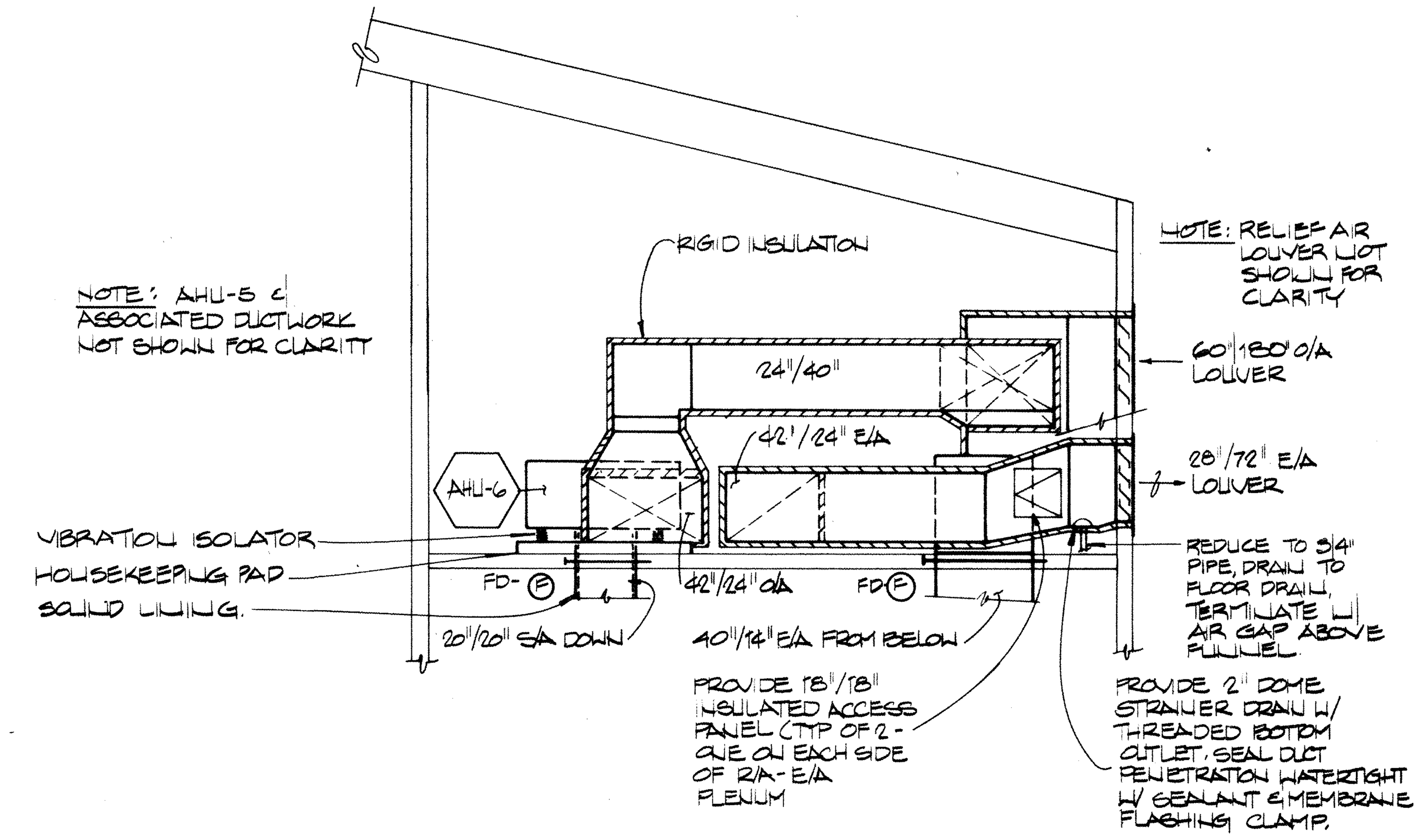


1 M-9 LOCKER AREA FAN ROOM – FLOOR PLAN
1/4" = 1'-0"



2 M-9 LOCKER AREA FAN ROOM – SECTION
1/4" = 1'-0"



3 M-9 LOCKER AREA FAN ROOM – SECTION
1/4" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	S	F
MQ	MQ	F
MR	MR	F
MS	MS	F

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LOCKER AREA FAN ROOM – FLOOR PLAN & SECTIONS

REVISIONS

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8303

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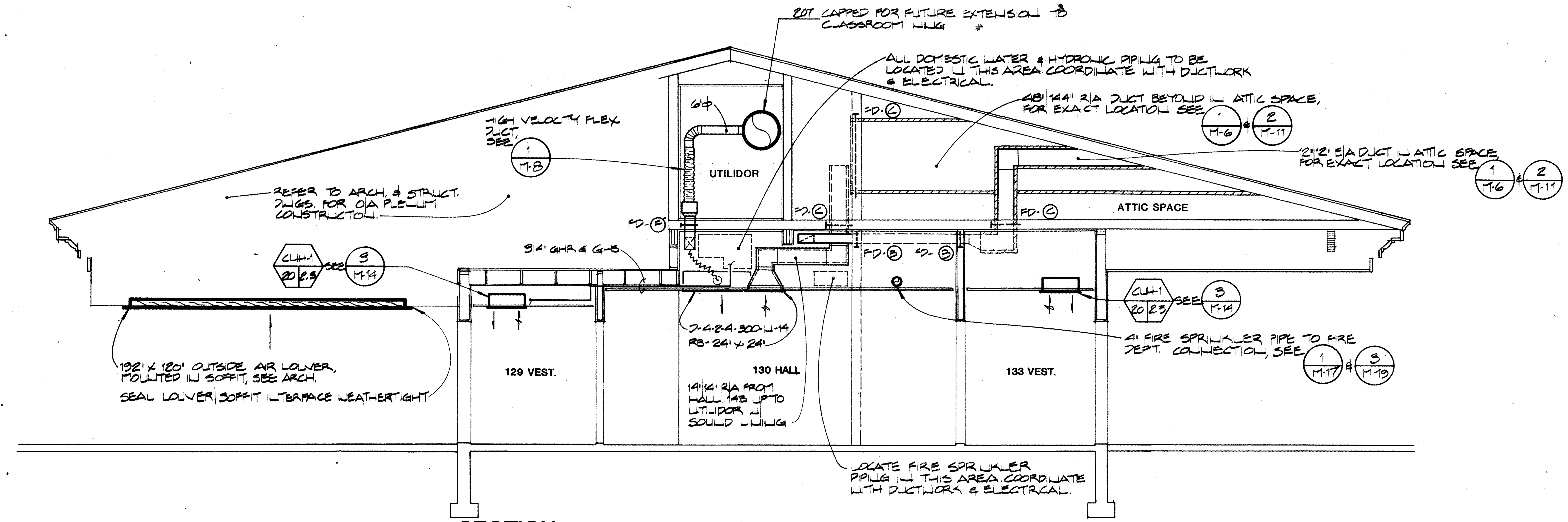
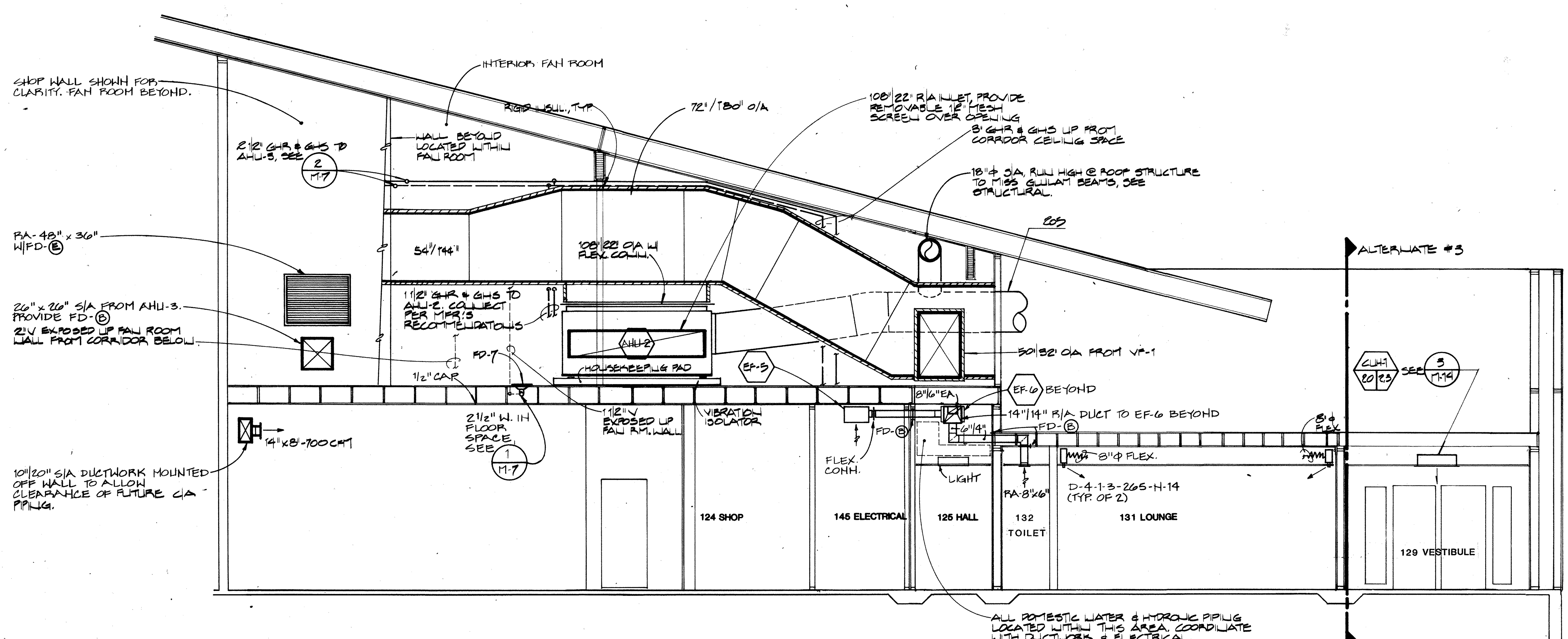
SHEET NOTES

1 SECTION (1 / M-10) INDICATES ITEMS IN THE BASE BID & ALT. #3. REFER TO FLOOR PLANS FOR CLARIFICATION.



1 SECTION
M-10 1/4"=1'-0"



2 SECTION
M-10 1/4"=1'-0"

OVERLAY REQ'D	OVERLAYS	SCREEN
TB	TB	F
MT	MT	F
MU	MU	F
MV	MV	F

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A NEW SCHOOL FOR :
SKAGWAY ALASKA

SECTIONS

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HJS

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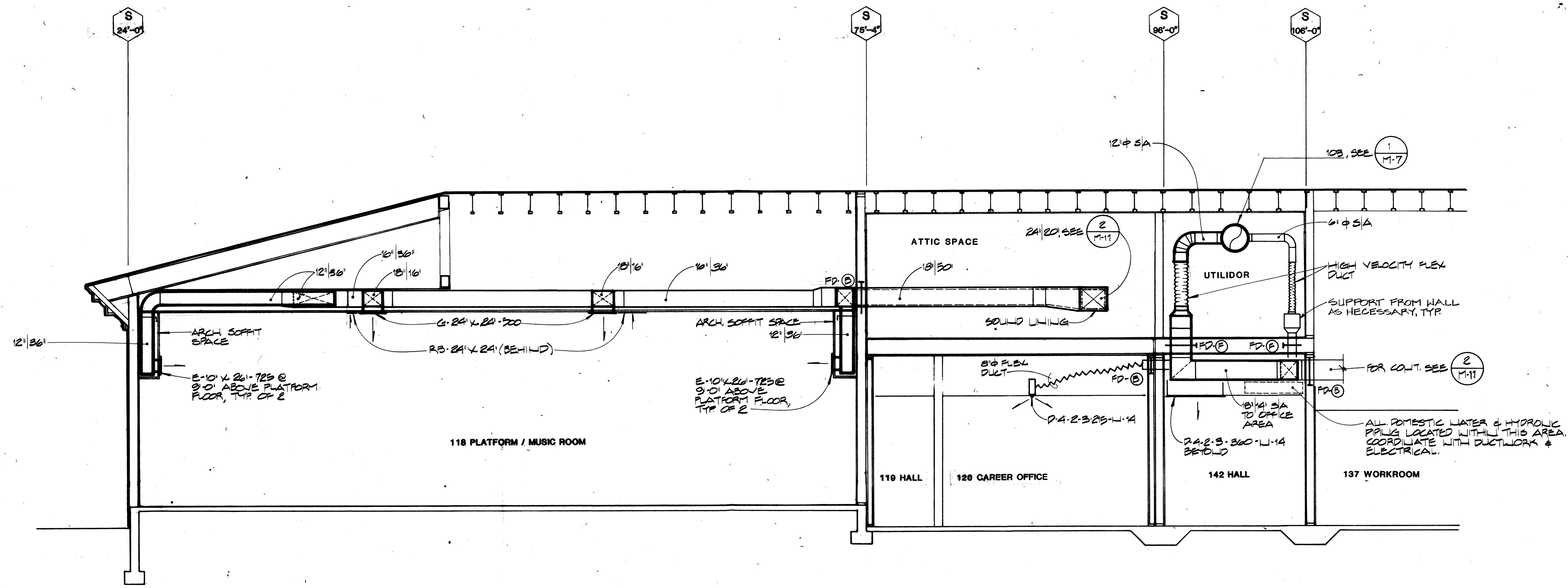
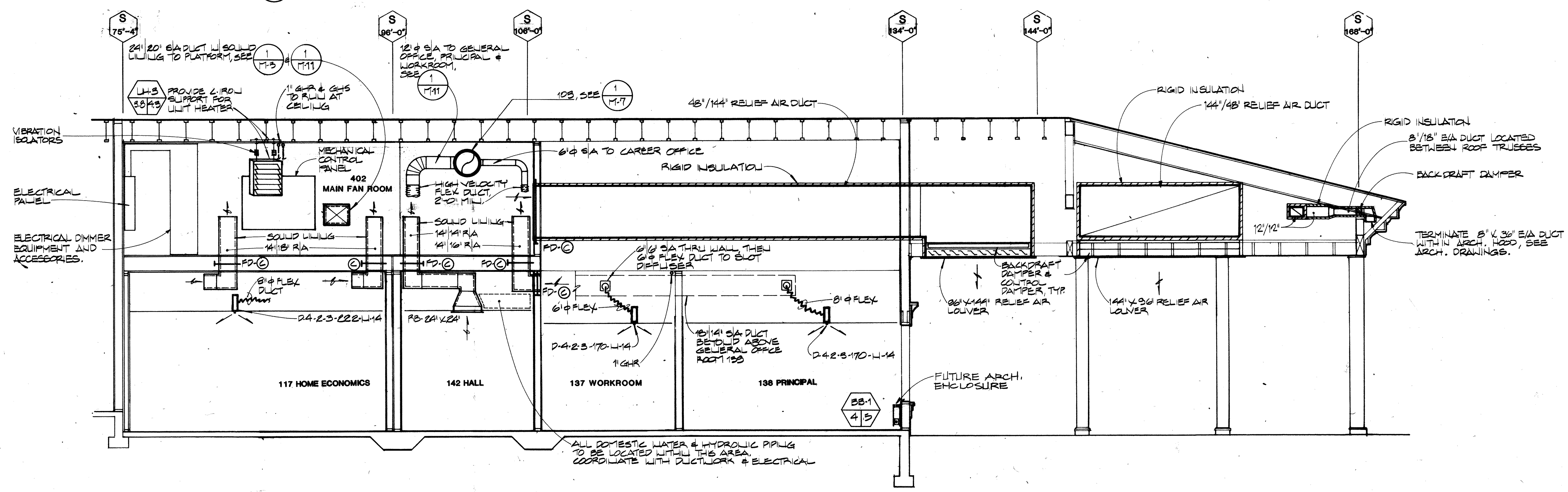


1/M-11 SECTION
1/4" = 1'-0"



2/M-11 SECTION
1/4" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
MW	MW	F
MX	MX	F
MY	MY	F

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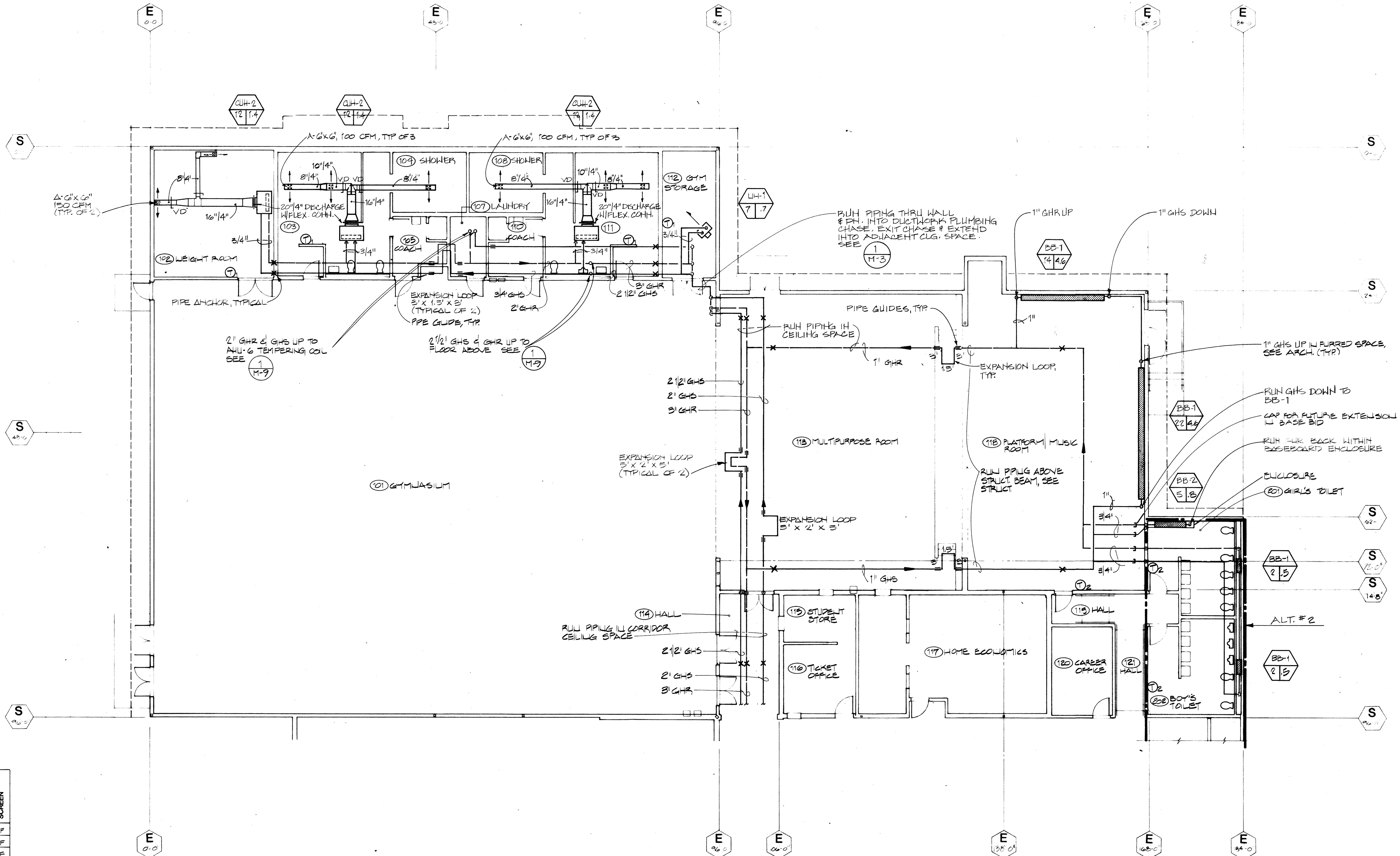
SHEET NOTES

1. SEE (3 / M-14) FOR TYPICAL CUH PIPING.
2. SEE (2 / M-14) FOR TYPICAL UH PIPING.
3. SEE (4 / M-14) FOR TYPICAL BB-1 PIPING.
4. SEE (5 / M-14) FOR TYPICAL BB-2 PIPING.



1 (M-12) FLOOR PLAN "A" - HYDRONICS

1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
NA	NA	F
NB	NB	F
V	V	S

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FLOOR PLAN 'A' - HYDRONICS

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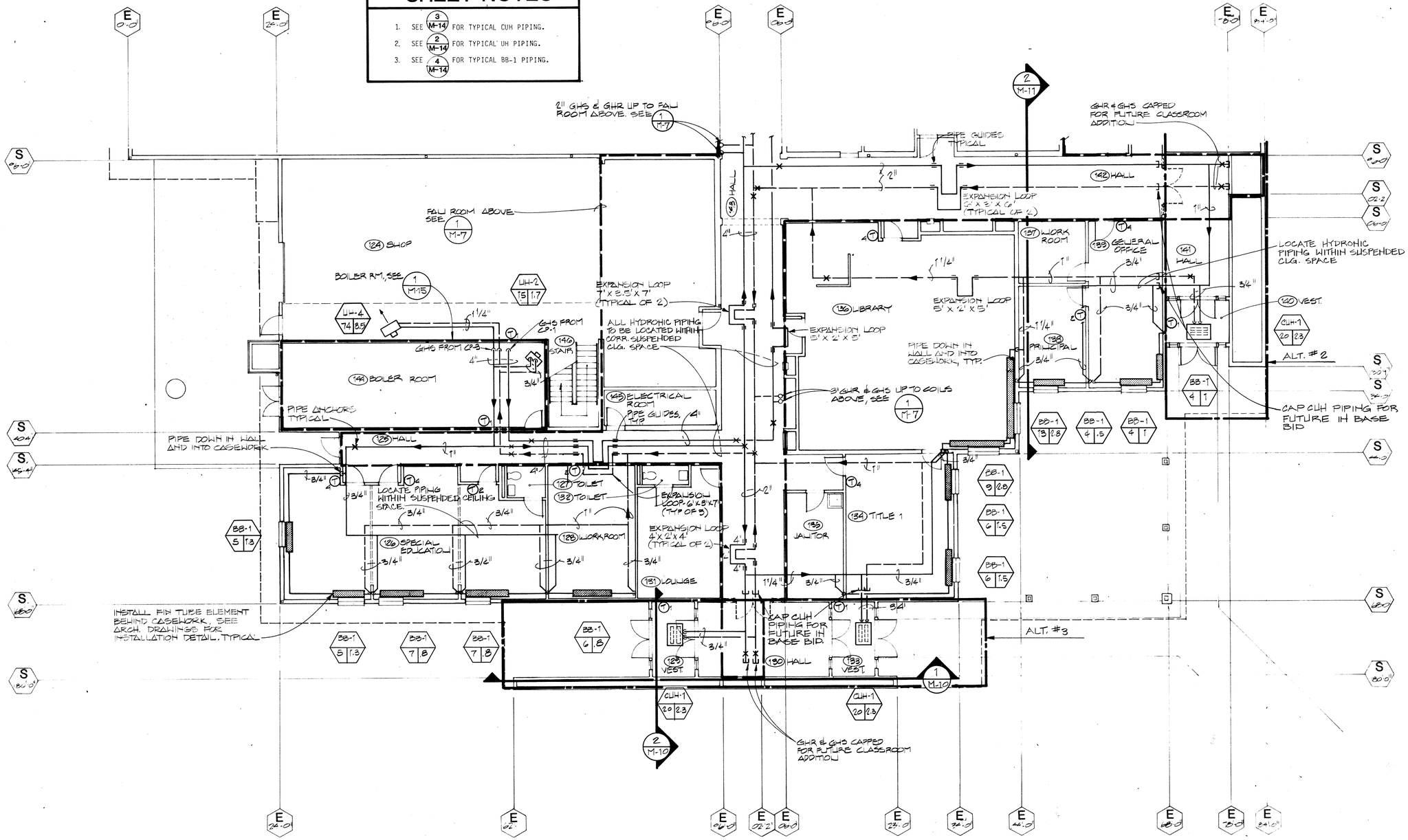
SHEET NOTES

1. SEE (3/M-14) FOR TYPICAL CUH PIPING.
2. SEE (2/M-14) FOR TYPICAL UH PIPING.
3. SEE (4/M-14) FOR TYPICAL BB-1 PIPING.



OVERLAY REQD	OVERLAYS	SCREEN
TD	E	P
ND	ND	P
ND	ND	P
W	W	S

1 / M-13

FLOOR PLAN "B" – HYDRONICS

1/8" = 1'-0"

N

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FLOOR PLAN 'B' – HYDRONICS

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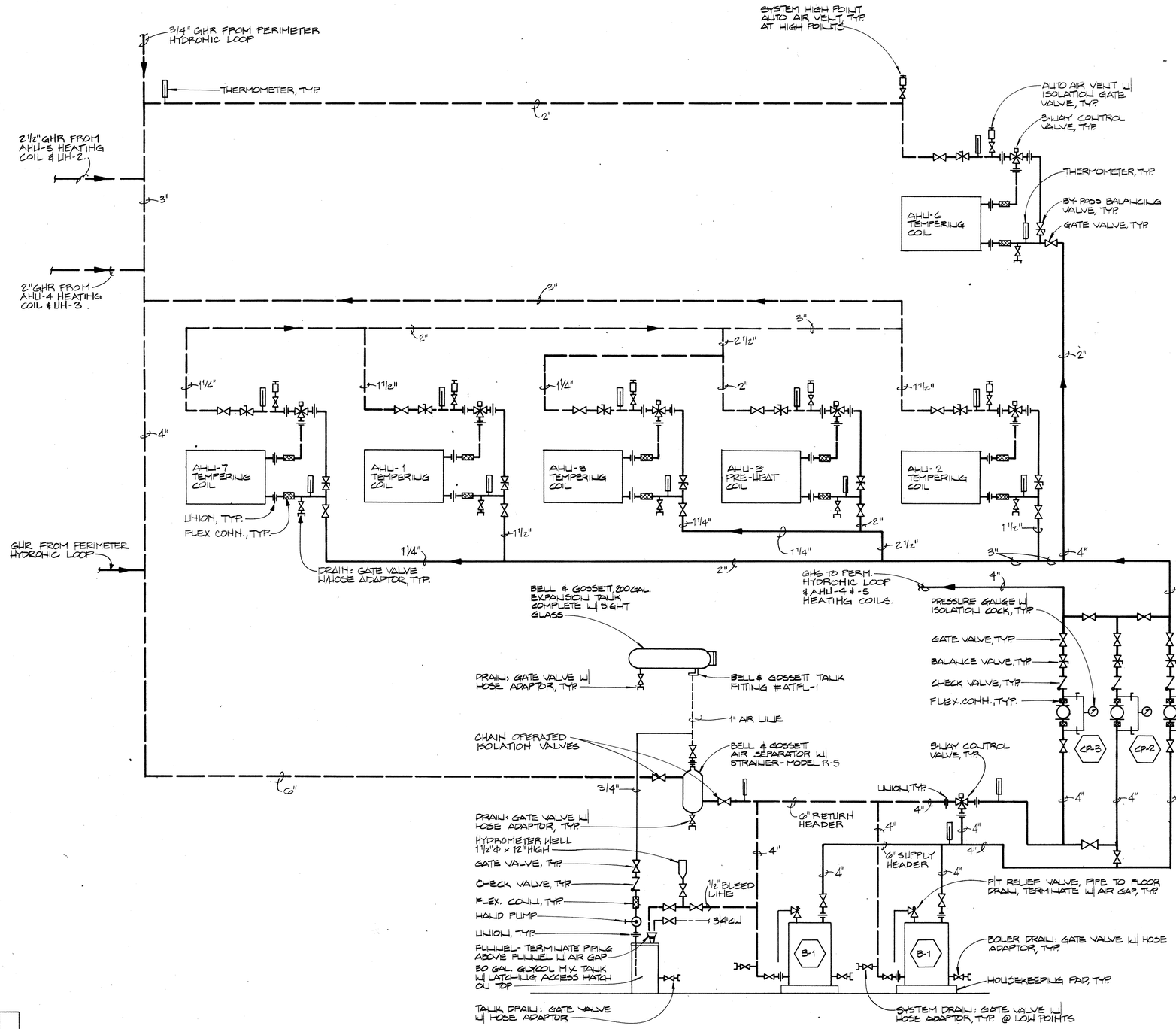
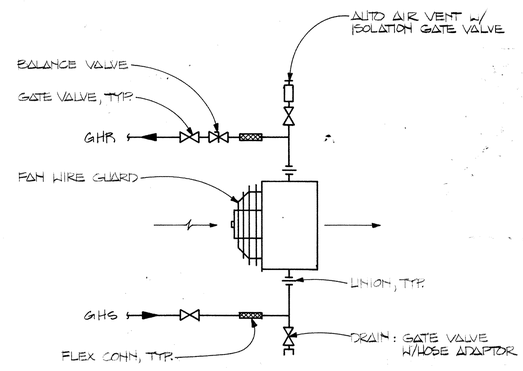
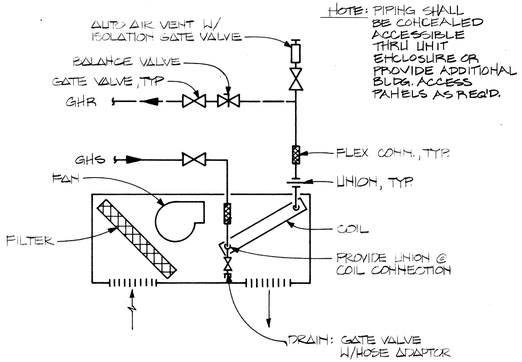


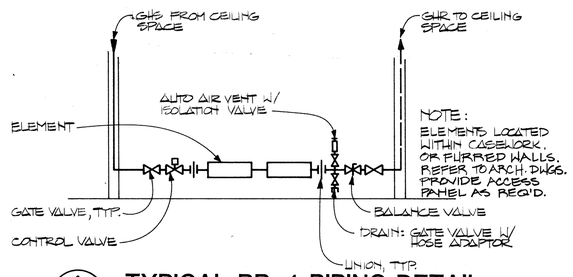
1 M-14 **HYDRONIC PIPING DIAGRAM**
N.T.S.



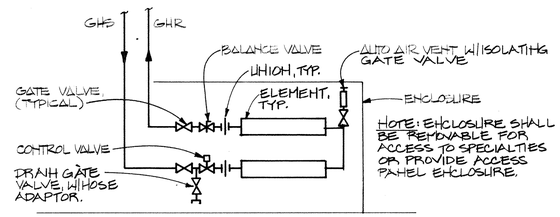
2 M-14 **TYPICAL UH PIPING DETAIL**
NTS



3 M-14 **TYPICAL CUH PIPING DETAIL**
NTS



4 M-14 **TYPICAL BB-1 PIPING DETAIL**
NTS



5 M-14 **TYPICAL BB-2 PIPING DETAIL**
NTS

OVERLAY REQD	OVERLAYS	SCREEN
TB	TD	P
NE	NE	P
NF	NF	P

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A NEW SCHOOL FOR:
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HYDRONIC PIPING DIAGRAM & DETAILS

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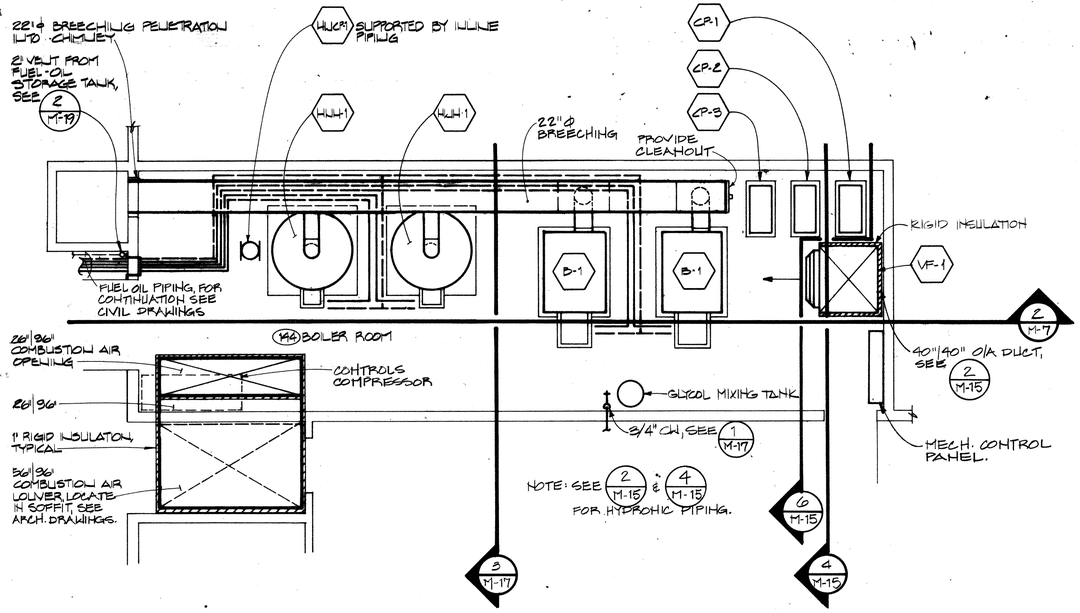
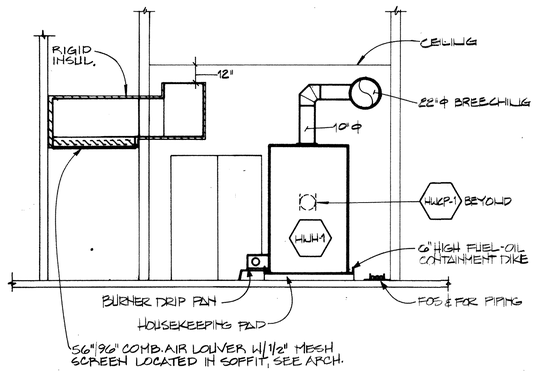


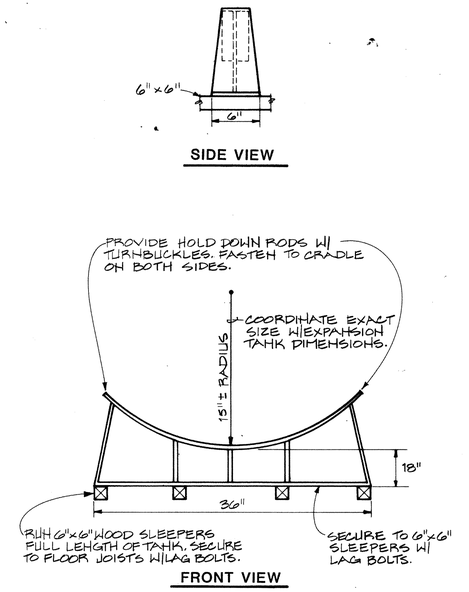
1/M-15 **BOILER ROOM FLOOR PLAN**

1/4"= 1'-0"



3/M-15 **SECTION – BOILER ROOM**

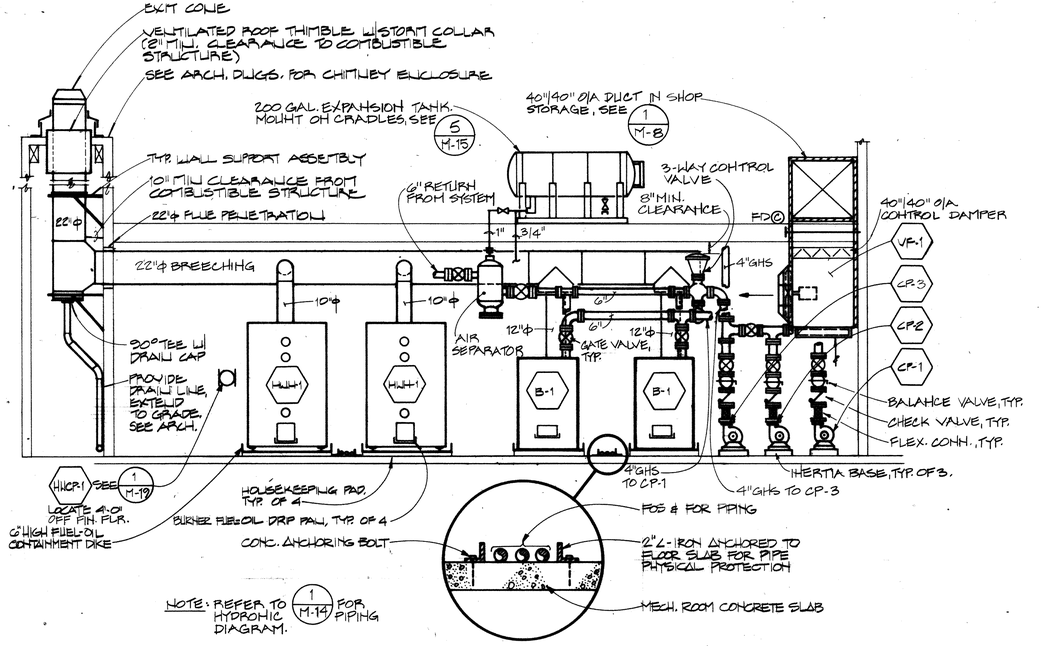
1/4"= 1'-0"



NOTE: CRADLES SHALL BE CONSTRUCTED OF STEEL W|WELDED CONNECTIONS. CAPABLE OF WITHSTANDING 200 LBS|SQ. FT.

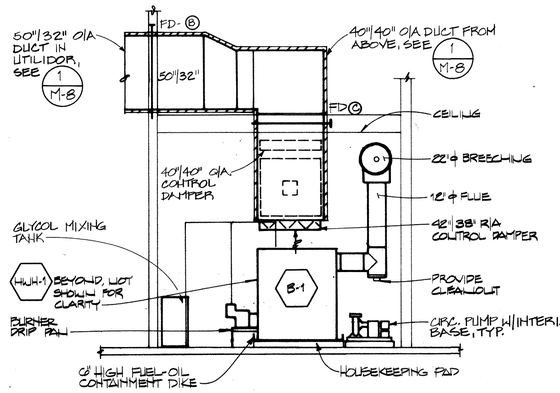
5/M-15 **CRADLE DETAIL**

N.T.S.



2/M-15 **SECTION – BOILER ROOM**

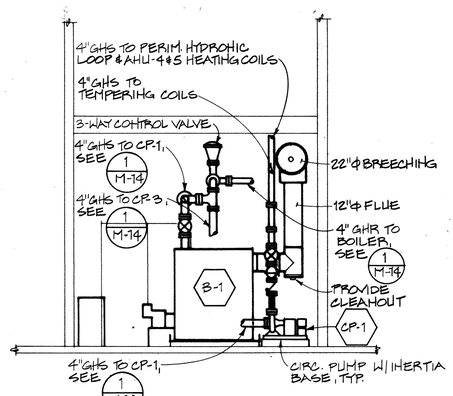
1/4"= 1'-0"



NOTE: HYDRONIC HOT SHOWN FOR CLARITY.

4/M-15 **SECTION – BOILER ROOM**

1/4"= 1'-0"



NOTE: RETURN PIPING TO BOILER LOCATED BEHIND SUPPLY PIPING, HOT SHOWN FOR CLARITY. SEE 1/M-14

6/M-15 **SECTION – BOILER ROOM**

1/4"= 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TD	TD	F
NG	NG	F
ME	ME	F
M	ME	F

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A NEW SCHOOL FOR:

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BOILER ROOM FLOOR PLAN & SECTIONS

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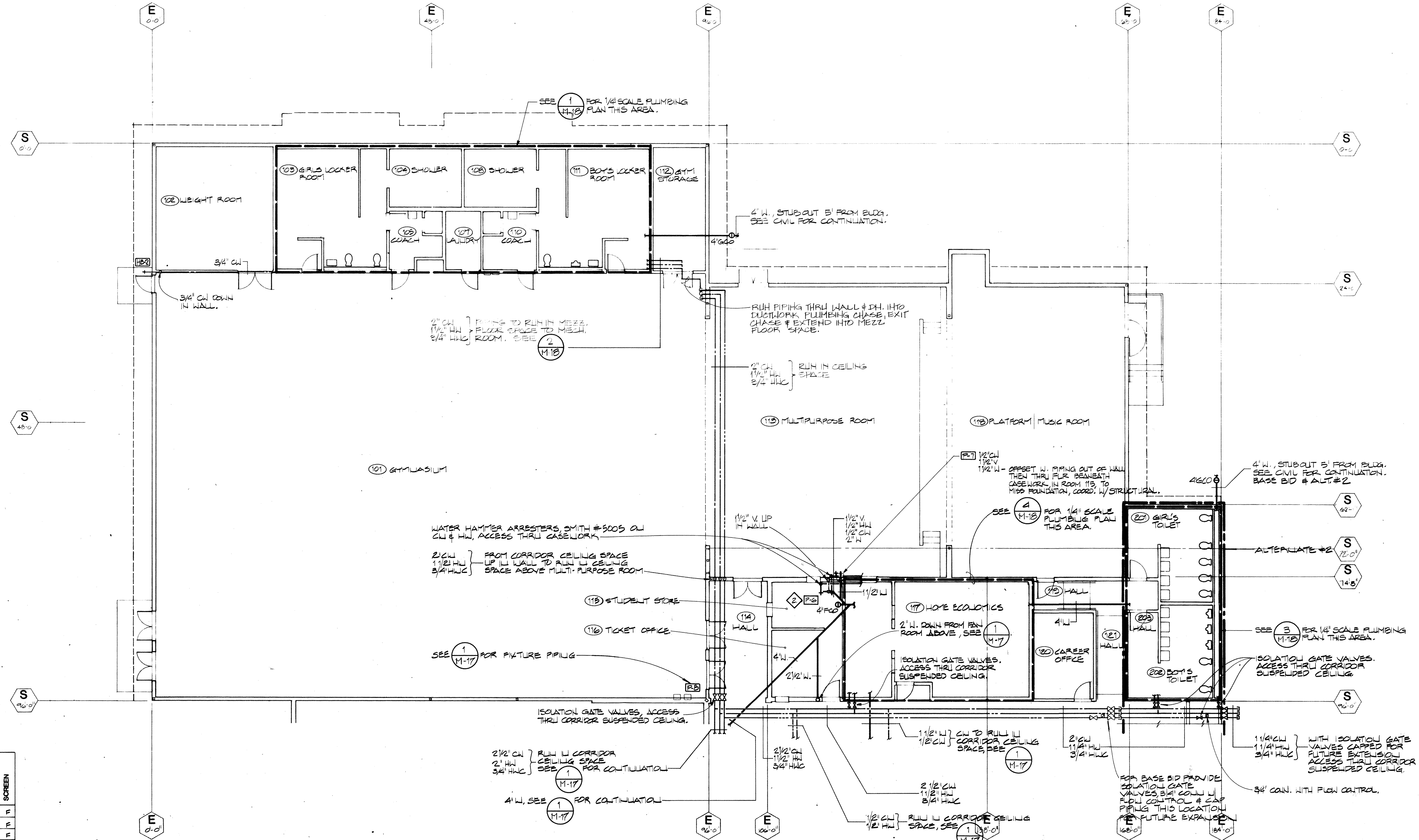
SHEET NOTES

1. SEE SHEET M-19 FOR PLUMBING FIXTURE CONNECTION SCHEDULE.
2. FIXTURES INSTALLED IN FUTURE CASEWORK SHALL BE ROUGHED-IN.



OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
NJ	NJ	F
NK	NK	F
V	V	S

1 / M-16 **FLOOR PLAN "A" – PLUMBING**

1/8" = 1'-0"

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FLOOR PLAN 'A' – PLUMBING

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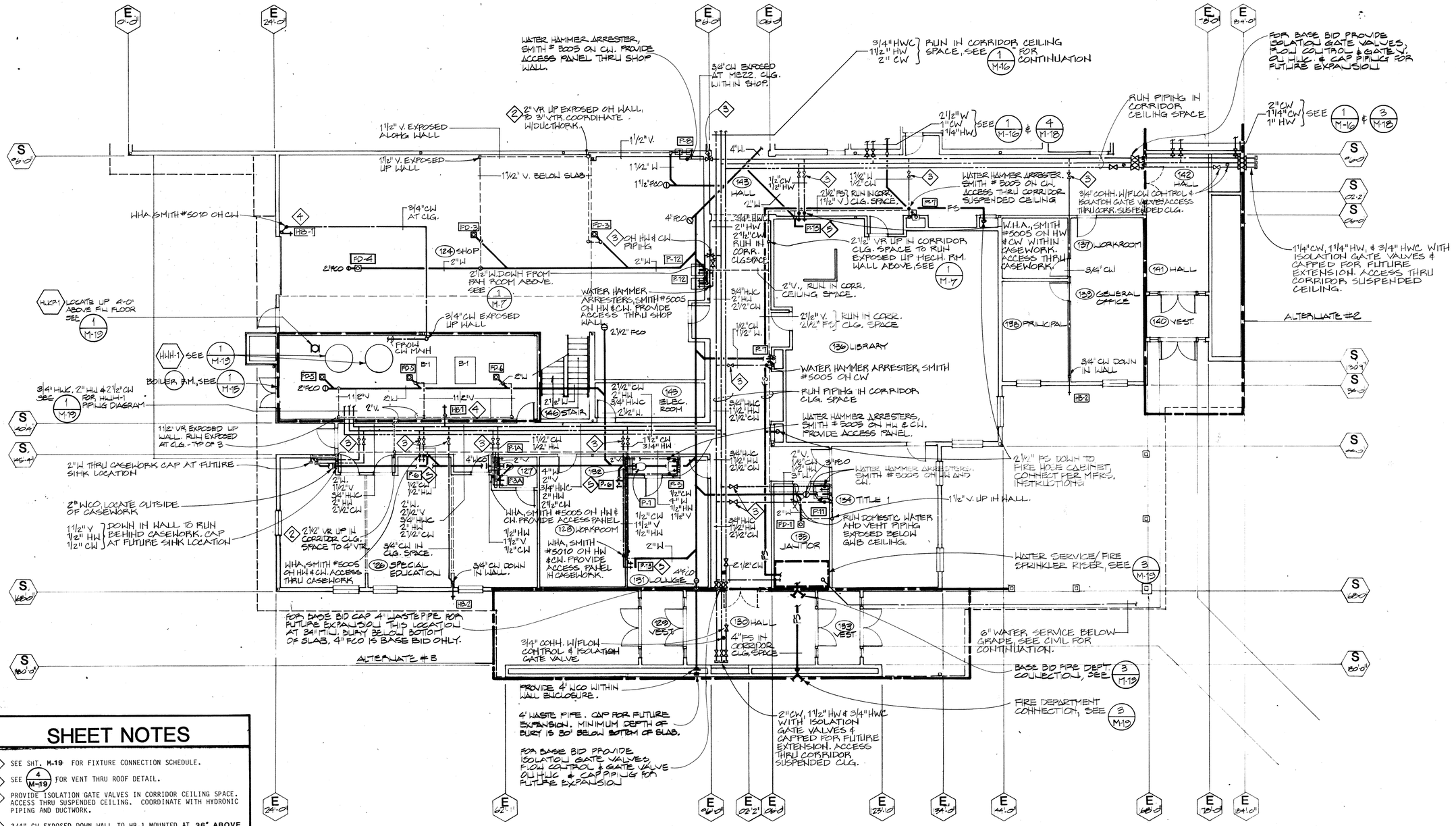

FLOOR PLAN "B" - PLUMBING

1 / M-17

1/8" = 1'-0"

SHEET NOTES

1. SEE SHT. **M-19** FOR FIXTURE CONNECTION SCHEDULE.
2. SEE 4 / M-19 FOR VENT THRU ROOF DETAIL.
3. PROVIDE ISOLATION GATE VALVES IN CORRIDOR CEILING SPACE. ACCESS THRU SUSPENDED CEILING. COORDINATE WITH HYDRONIC PIPING AND DUCTWORK.
4. 3/4" CW EXPOSED DOWN WALL TO HB-1 MOUNTED AT **36" ABOVE** FINISH FLOOR.
5. **ROUGH-IN FOR FIXTURES TO BE MOUNTED IN FUTURE CASEWORK.**

OVERLAY REQD	OVERLAYS	SCREEN
TB	[illegible]	F
UL	NL	F
NM	NM	F
W	W	S

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STEVEN MARK THENO
ME-5134

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FLOOR PLAN 'B' - PLUMBING

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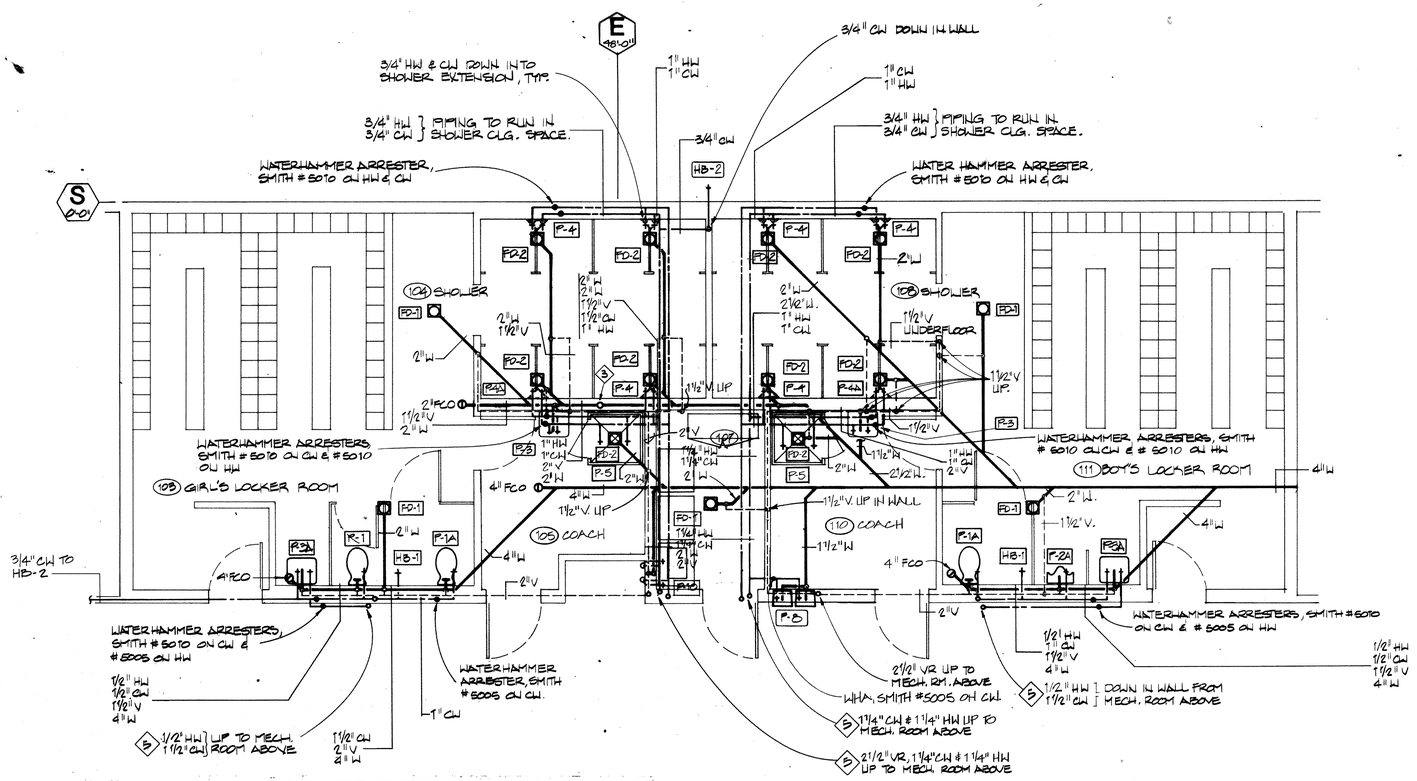

LOCKER ROOMS - PLUMBING

1/4" = 1'-0"

1 / M-18

MECHANICAL ROOM - PLUMBING

1/8" = 1'-0"

2 / M-18

SHEET NOTES

1. SEE 4/M-19 FOR TYPICAL VENT THRU ROOF DETAIL.
2. PIPING EXPOSED DOWN WALL TO LOCKER AREA **CLG. SPACE.** PROVIDE ISOLATION GATE VALVES IN VERTICAL PIPE DROPS IN MECH. ROOM.
3. 2" WASTE DOWN IN WALL FROM FD IN MECH. ROOM ABOVE.
4. SEE SHEET **M-19** FOR FIXTURE CONNECTION SCHEDULE.
5. SEE 2/M-18 MECH. ROOM-PLUMBING FOR CONTINUATION OF PIPING.
6. **ROUGH-IN FOR FUTURE FIXTURES.**

RESTROOMS - PLUMBING (ALT. #2)

1/4" = 1'-0"

3 / M-18

HOME EC. - PLUMBING

1/4" = 1'-0"

4 / M-18

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
NN	NN	F
NO	NO	F
NP	NP	F

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PARTIAL FLOOR PLANS - PLUMBING

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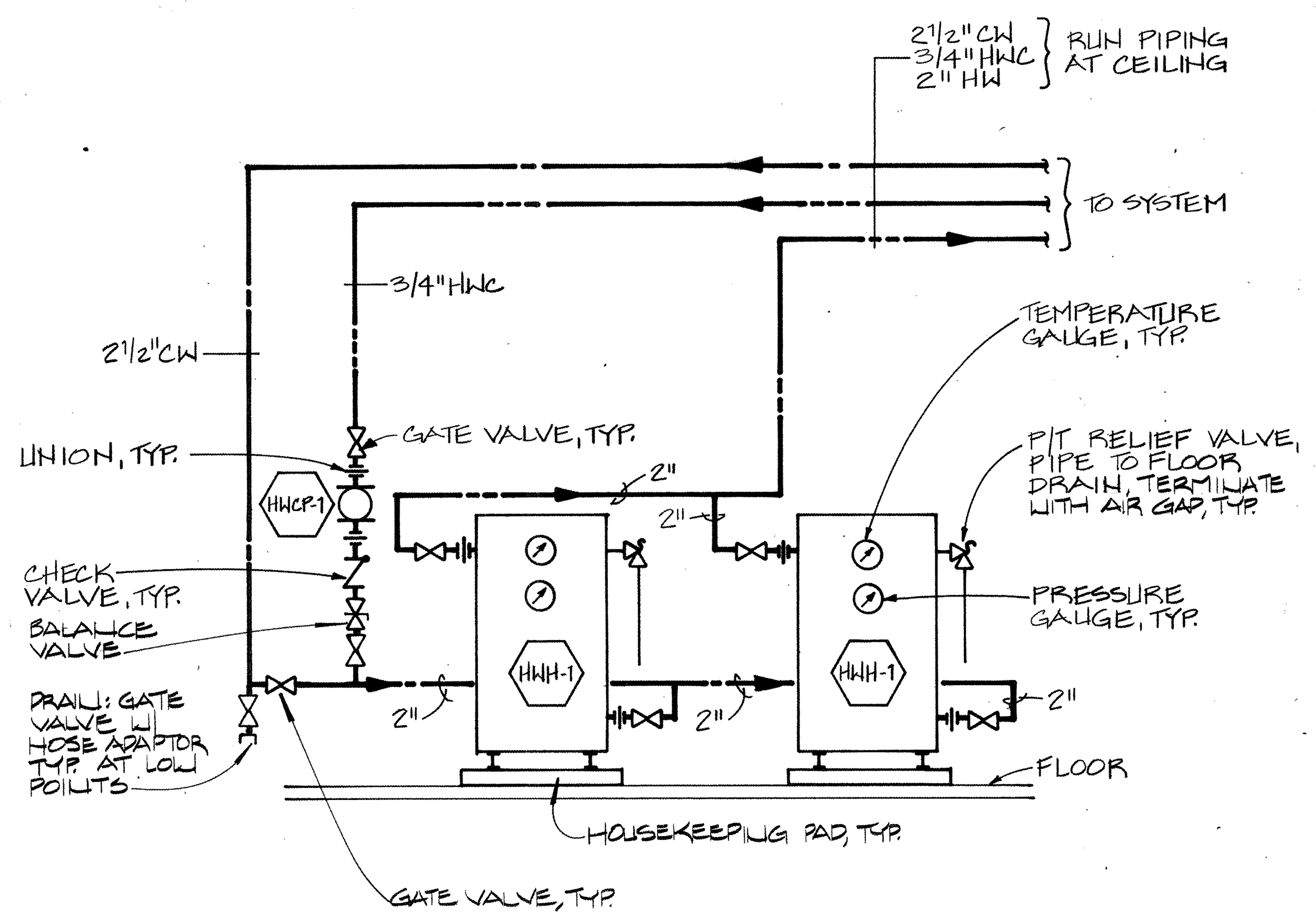
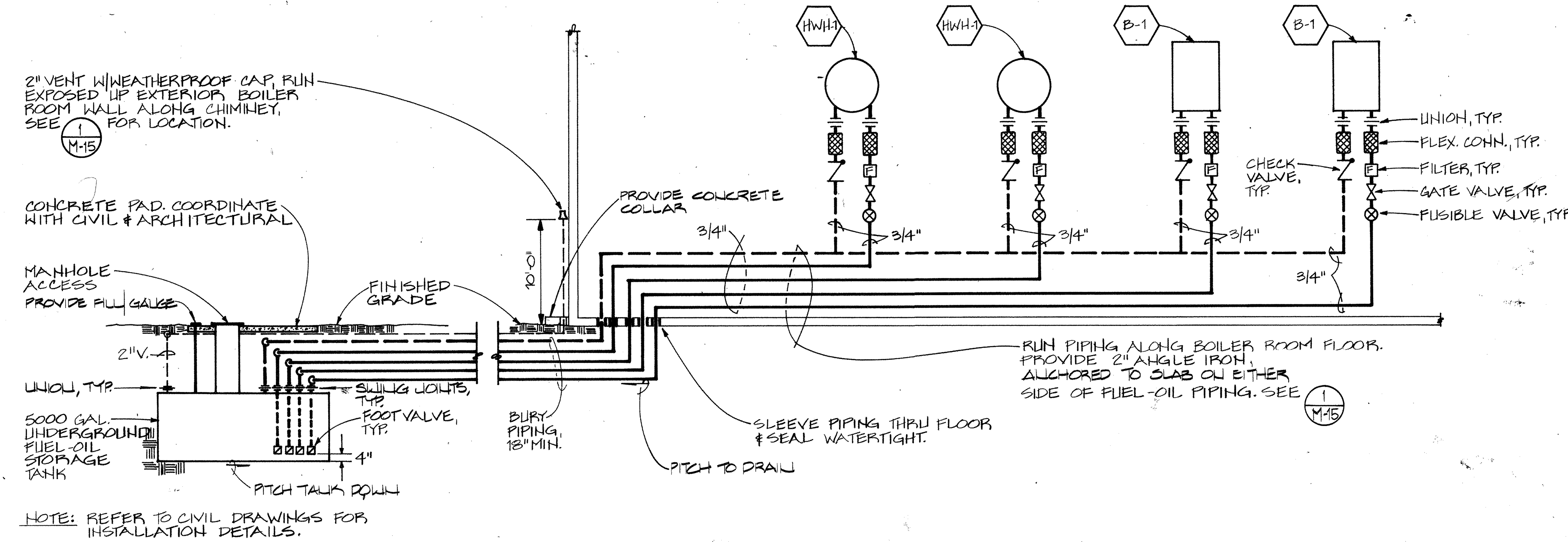
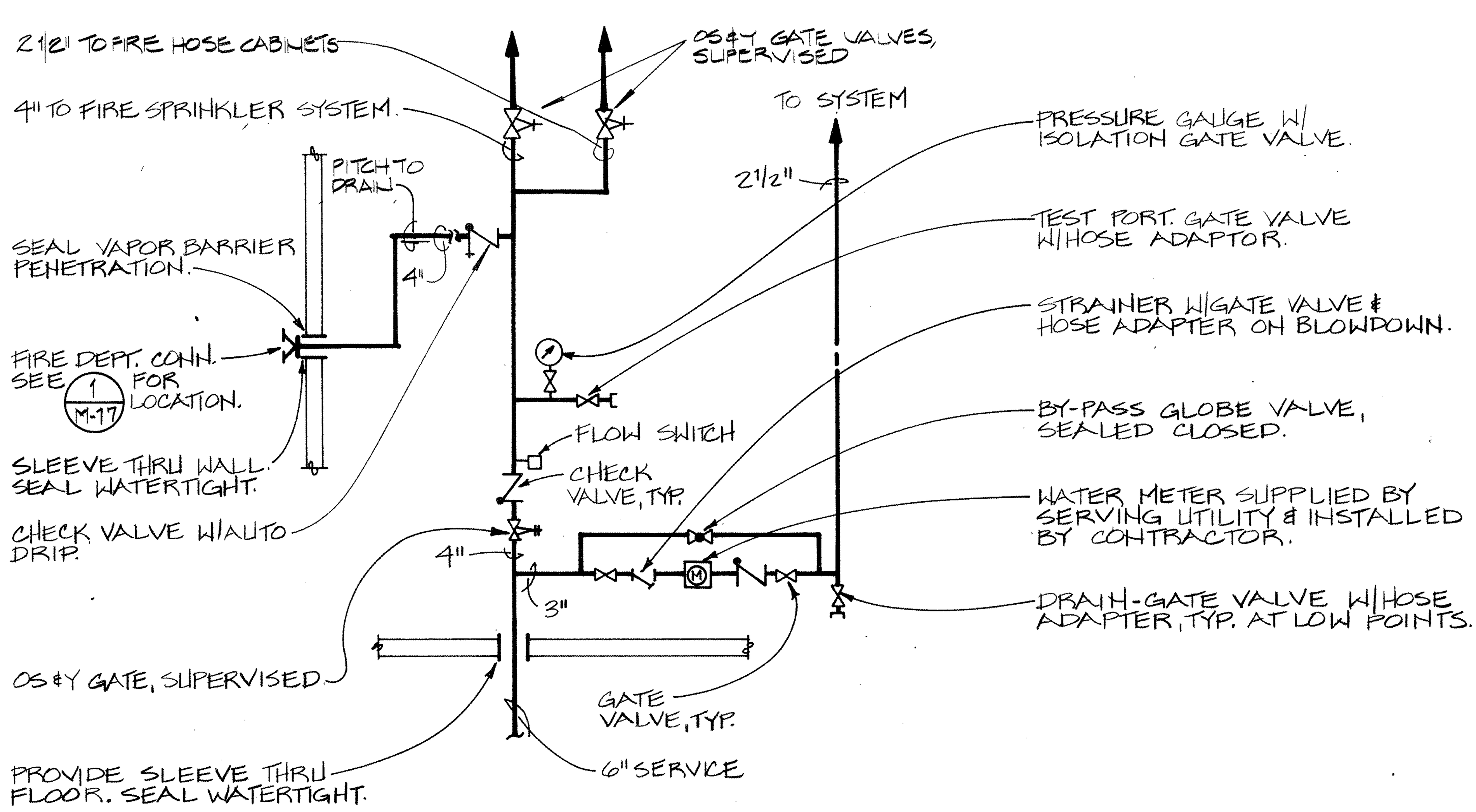


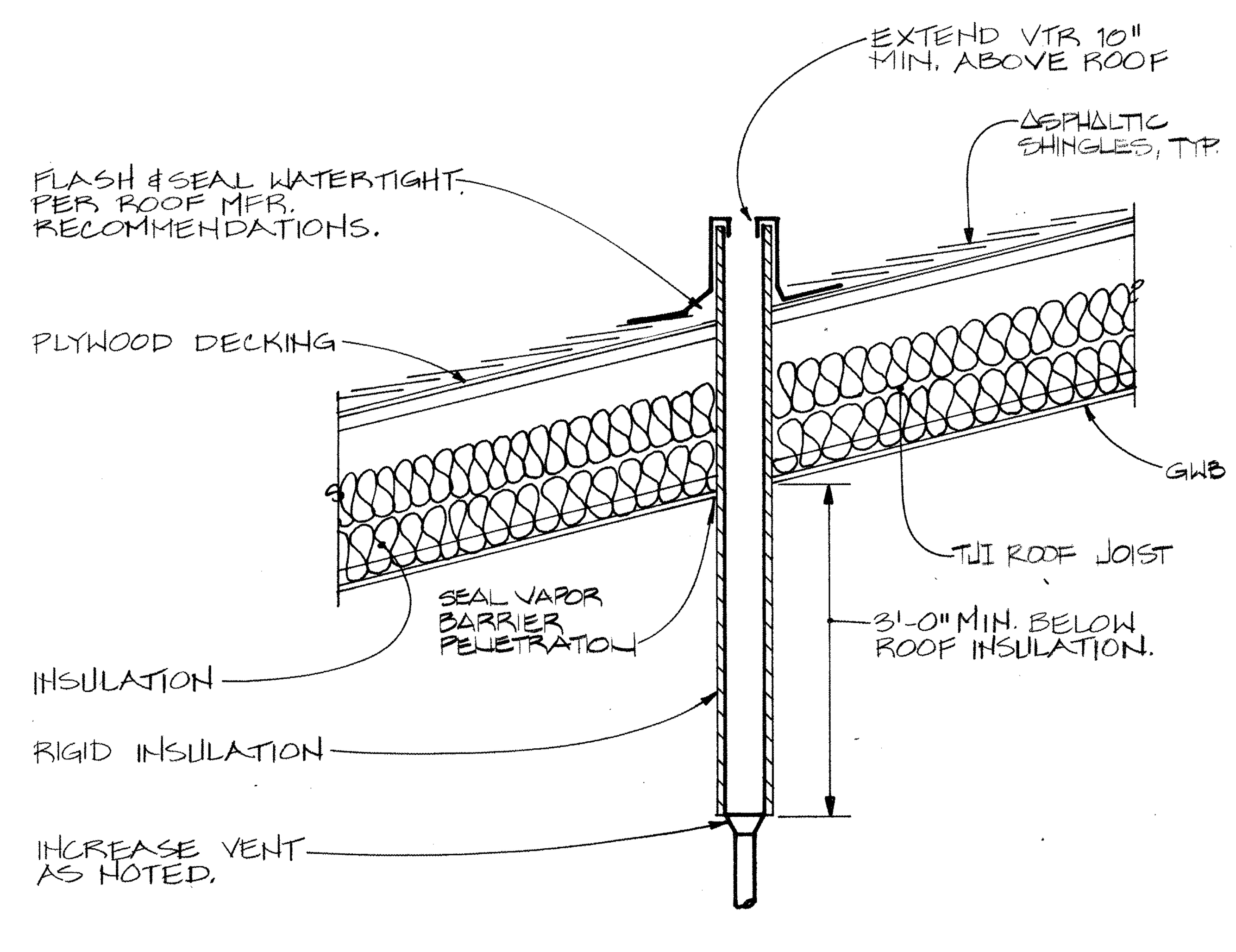
1 M-19 **HWH-1 PIPING DIAGRAM**
N.T.S.



2 M-19 **FUEL OIL PIPING DIAGRAM**
N.T.S.



3 M-19 **WATER SERVICE/FIRE SPRINKLER ENTRY DIAGRAM**
N.T.S.



4 M-19 **VENT THRU ROOF DETAIL**
N.T.S.

FIXTURE CONNECTION SCHEDULE

DESIGN.	DESCRIPTION	TRAP	WASTE	VENT	CW	HW	REMARKS
P-1	WATER CLOSET	----	4"	2"	1"	----	WALL, 14" TO TOP OF SEAT
P-1A	HANDICAPPED WATER CLOSET	----	4"	2"	1"	----	WALL, 17" TO TOP OF SEAT
P-2	URINAL	----	2"	1-1/2"	3/4"	----	WALL, 24" TO RIM
P-2A	HANDICAPPED URINAL	----	2"	1-1/2"	3/4"	----	WALL, 17" TO RIM
P-3	LAV.	1-1/2"	1-1/2"	1-1/2"	1/2"	1/2"	WALL MOUNT 29" TO BOTTOM OF APRON
P-3A	HANDICAPPED LAV.	1-1/2"	1-1/2"	1-1/2"	1/2"	1/2"	WALL MOUNT 29" TO BOTTOM OF APRON
P-4	SHOWERS	----	----	----	3/4"	3/4"	WALL, GIRLS 5'-6" BOYS 6'-0" TO SHOWER HEAD.
P-4A	HANDICAPPED SHOWER	----	----	----	3/4"	3/4"	WALL, 40" TO VALVE
P-5	SHOWERS	----	----	----	1/2"	1/2"	WALL, WOMENS 5'-6" - MENS 7'-0" TO SHOWER HEAD.
P-6	FUTURE TWO-COMPARTMENT SINK	2"	2"	1-1/2"	1/2"	1/2"	ROUGH-IN PIPING ONLY FOR FUTURE
P-7	DRINKING FOUNTAIN	1-1/2"	1-1/2"	1-1/2'	1/2"	----	SEMI-RECESSED, 36" TO SPOUT
P-8	DRINKING FOUNTAIN/ CUSPIDOR	1-1/2"	1-1/2"	1-1/2"	1/2"	----	SEMI-RECESSED
P-9	FUTURE DISHWASHER	----	1-1/2"	----	----	1/2"	ROUGH-IN PIPING ONLY FOR FUTURE
P-10	FUTURE CLOTHESWASHER	2"	2"	1-1/2"	3/4"	3/4"	30" STANDPIPE, HW, CW, HOSE BIBBS WITHIN UTILITY BOX
P-11	JANITORS SINK	3"	3"	2"	1/2"	1/2"	FLOOR
P-12	SHOP SINK	2"	2"	1-1/2"	1/2"	1/2"	MFR. STANDARD
P-13	FUTURE 2 COMP. SINK	2"	2"	1-1/2"	1/2"	1/2"	ROUGH-IN PIPING ONLY FOR FUTURE
HB-1	HOSE BIBB	----	----	----	3/4"	----	----------------
HB-2	HOSE BIBB NON-FREEZE	----	----	----	3/4"	----	----------------
FD-1	FLOOR DRAIN	2"	2"	1-1/2"	----	----	----------------
FD-2	FLOOR DRAIN	2"	2"	1-1/2"	----	----	----------------
FD-3	FLOOR DRAIN	2"	2"	1-1/2"	----	----	SEDIMENT BUCKET
FD-4	FLOOR DRAIN	2"	2"	1-1/2"	----	----	----------------
FD-5	FLOOR DRAIN	2"	2"	1-1/2"	----	----	FUNNEL
FD-6	FLOOR DRAIN	2"	2"	1-1/2"	----	----	----------------
FD-7	FLOOR DRAIN	2"	2"	1-1/2"	----	----	MOUNT WOOD FLOOR

OVE' Y REQD	OVERLAYS	SCREEN
TB	TB	F
NQ	NQ	F
NR	NR	F

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A NEW SCHOOL FOR: SKAGWAY ALASKA

PIPING DIAGRAMS, DETAILS & FIXTURE CONNECTION SCHEDULE

REVISIONS

drawn by
HJS , BJS

date
APRIL 8, 1983

project no.
8303

FPE # 13-1076

LIGHTING FIXTURE SCHEDULE

KEY	LAMPS NO.	LAMPS TYPE	DESCRIPTION (SEE NOTE 1)	MOUNTING HEIGHT	MFR'S. NO.
A/150	3	F40WW/RS/WM	2'X4' FLUORESCENT TROFFER, CELLULAR PARABOLIC REFLECTOR WITH SEMI-SPECULAR ALZAK FINISH. RETURN AIR THRU THE LAMP COMPARTMENT THRU TOP OF FIXTURE. SEE NOTES 3 & 4.	RECESSED, CEILING	COLUMBIA # P3-243G-4336-8-120 V.-HEAT EXTRACT
B/100	2	F40WW/U/6	2'X2' FLUORESCENT TROFFER SIMILAR TO TYPE A/150. **(NO RETURN AIR)**	RECESSED, CEILING	COLUMBIA # 4543G-43-222U-120V.
C/150	3	F40WW/RS/WM	SIMILAR TO "A/150" EXCEPT SURFACE CEILING MOUNTING AND NO RETURN AIR. SEE NOTE 3.	SURFACE, CEILING.	COLUMBIA # SP3-243-4336-120V.
D/460/ 250Q	1	MV400/C/U 250Q/D.C.	2'X2' SURFACE MOUNTED ENCLOSED 400 WATT METAL-HALIDE FIXTURE WITH "FEP" TEFLON LENS, WIRE GUARD, HINGED AND LATCHED STEEL DOOR, AND ULTRA-LOW-NOISE BALLAST. SEE NOTE 6. SEPARATELY WIRED 250 W QUARTZ LAMP.	SURFACE, CEILING	WIDELITE SPECTRA V 2X2 #SS2M-400-DT-120 -UQ-LQ1
E			NONE		
F/100	2	F40WW/RS/WM	4' LONG, ACRYLIC WRAP-AROUND FLUORESCENT, U.L. LISTED FOR WET LOCATION.	SURFACE, CEILING	LITHONIA # DV-240A-120 V.
G/200 **(NOT USED)**	1	LU150/55/D	H.I.D. WALL BRACKET, 120V. TRADITIONAL PERICLINE, BLACK POLYESTER FINISH, **ASYMMETRIC DIST. LEXAN WINDOWS**	WALL, UP 12'- 0" U.O.N.	MOLDCAST # 3325CF-WM-120V-LE-ASYMMETRIC
H/100	2	F40WW/RS/WM	4'LONG ACRYLIC WRAP-AROUND FLUORESCENT.	SURFACE, CEILING	GLOBE #WQV 3602-4R-120 V.
H/200	4	F40WW/RS/WM	SIMILAR TO "H/100" EXCEPT 8' LONG TANDEM UNIT.	SURFACE, CEILING.	GLOBE # WQV-3602-8R.
I/120	2	60A	INCANDESCENT WALL BRACKET SEE NOTE 7.	WALL, UP 6" ABV. MIRROR	ART-METAL #W-1001
J/100	2	F40WW/RS/WM	OPEN, SHIELDED, 4' LONG, FLUORESCENT, BAKED WHITE ENAMEL FINISH.	SURFACE, CEILING, ON SPACERS	LITHONIA # LA240-120VW
J/200	4	F40WW/RS/WM	SIMILAR TO TYPE J/100 EXCEPT 8' LONG TANDEM UNIT.	SURFACE, CEILING, ON SPACERS	LITHONIA # 8TLA240-120V
K/100	2	F40WW	SIMILAR TO TYPE A/150 EXCEPT 1'X4', LAMPS (PROVIDE STANDARD F40WW) **LAMPS & 0° F BALLAST**	RECESSED, CEILING	COLUMBIA # 4542G-43-142 - 120V
L/75	1	75 W. A19	DROP OPAL SHOWER-LIGHT, ALUMINUM REFLECTOR. SEE NOTE 7.	RECESSED, CEILING	HALO #H17-720
M/120	1	LU100/D	SQUARE, RECESSED H.I.D. WITH HIGH STRESS LENS AND PROTECTIVE GUARD.	RECESSED, SOFFIT	MOLDCAST # V64HPS-HS-G-PRV-12W
N/120	1	120 ER40 FLOOD	BAFFLED, INCANDESCENT DOWN LIGHT. SEE NOTE 7.	RECESSED, CEILING	MARCO # JD401164-P
O/250	1	Q250 PAR 38 FL	RECESSED QUARTZ DOWN LIGHT, GOLD ALZAK CONE. SEE NOTE 7.	RECESSED, CEILING	MARCO # JD401163-P
P/250	1	Q250 PAR 38 SP	SEMI-RECESSED ADJUSTABLE EYEBALL. SEE NOTE 7.	RECESSED, CEILING	PRESCOLITE #99HF
Q/120	1	120 ER40 FLOOD	SAME AS TYPE N/120, SEE NOTE 7.	RECESSED, CEILING	MARCO # JD401164-P
R/300 (*)	1 1	MV/250/C/U **150Q/D.C.**	SIMILIAR TO TYPE D/460 EXCEPT 250 WATT, TEMPERED GLASS LENS, VERTICAL LAMP, AND RECESSED MOUNTING. *= **UNIT W/ AUTO AUX. QUARTZ**	RECESSED, CEILING	WIDELITE # SR2M-250-C-120-UQ **W/ AUTO AUX. QUARTZ** WHERE INDICATED W/ *
S/100	2	F40WW/RS/WM	DUST TIGHT FLUORESCENT WEATHER-TIGHT POLY-CARBONATE DIFFUSER. MAXIMUM SECURITY SCREWS.	SURFACE, CEILING.	MARCO # NF447012/ 35-120V
T/150	1	LU100	H.I.D. WALL BRACKET, WEATHER-TIGHT, ALUMINUM CONSTRUCTION, PROJECTING POLY-CARBONATE LENS, BLACK FINISH. 85 DEGREE F. CUTOFF, 120 V.	WALL, UP 10'-0" UON	MOLDCAST PARACYL # 89021-12-BL-QT.
U/100	2	F40WW/RS/WM	PORCELAIN ENAMEL DUST-TIGHT FLUORESCENT. STANDARD UNIT, CLEAR TEMPERED PLATE GLASS LENS.	PENDANT, CHANNEL MOUNT TO 14'-0" UON	BENJAMIN # FD-2224-4-120 V.
V/200 **(NOT USED)**	1	LU150	H.I.D. TRADITIONAL PERICLINE, BLACK POLYESTER FINISH. SYMMETRICAL DISTRIBUTION 14'- 0" HIGH POST.	POST MTD. UP 14'- 0" (±) SEE BASE DTL., E-19.	MOLDCAST # A3214HA/ 73122-12-BL-00 WITH MODIFIED POLE, SEE (3/E-19)
EX/50	(FURNISHED WITH UNIT)		EXIT LIGHT WITH GREEN LETTERS ON WHITE BACK-GROUND. PROVIDE WITH INTEGRAL BATTERY BACK-UP POWER PACK. SEE NOTE 5. NO. OF FACES AND ARROWS AS REQUIRED.	CEILING OR WALL UP 7'- 6".	LITHONIA # XS-EL SERIES.
X	NONE		EMERGENCY BATTERY POWER SUPPLY FOR EGRESS LIGHTING, LOW-MAINTENANCE LEAD-CALCIUM 12 V. BATTERY TO POWER XA/24 & XB/24.	WALL, UP 8'-0" U.O.N.	EXIDE # B-200 W/ MBB
X/24	2	12W HALOGEN	SAME AS TYPE X, EXCEPT WITH 2, 12 WATT HALOGEN HEADS. SEE NOTE 5.	WALL, UP 8'-0" U.O.N.	EXIDE # B-200-2H W/MBB
XA/24	2	12W HALOGEN	TWIN HEAD REMOTE UNIT. SEE NOTE 5.	WALL, UP 8'-0" U.O.N.	EXIDE # MP-3 WITH 2-H1212 UNITS
XB/24	2	12W HALOGEN	SAME AS XA/24 EXCEPT CEILING MOUNT	CEILING	EXIDE # MP-3 WITH 2-H1212 UNITS

NOTES

1. VERIFY CEILING TYPES THROUGHOUT. PROVIDE ALL MOUNTING ACCESSORIES, TRIM, FLANGES, OUTLET BOXES, ETC. FOR COMPLETE AND FINISHED INSTALLATION.
2. PROVIDE ENERGY CONSERVING BALLASTS IN COMBINATION WITH ENERGY CONSERVING-FLUORESCENT LAMPS (SIMILAR TO THE "G.E." MAXI-MISER II BALLASTS, AND WATT-MISER LAMPS) THROUGHOUT, UNLESS OTHERWISE NOTED.
3. PROVIDE 3 LAMP FIXTURES WITH OUTBOARD LAMPS ON 1-TWO LAMP BALLAST & CENTER LAMP ON SEPARATE BALLAST FOR MULTI-LEVEL SWITCHING.
4. PROVIDE RECESSED FIXTURE WITH AIR EXTRACT OPTION THRU LAMP COMPARTMENT.
5. PROVIDE WIRE GUARD ON FIXTURE TYPES XA/24 AND EX/50 MOUNTED IN GYMNASIUM.
6. PROVIDE 250-WATT QUARTZ LAMP SYSTEM FOR AUXILIARY USE, ALL D/460 FIXTURES.
7. **PROVIDE FIXTURES WITH LABELS SUITABLE FOR APPLICATION**

LEGEND

SYMBOL OR ABBR.	DESCRIPTION
(1)	NOTE KEY-INDICATES NOTES APPLICABLE ON EACH SHEET.
A/100	LIGHTING FIXTURE TYPE - SEE LIGHTING FIXTURE SCHEDULE.
(102)	ROOM NUMBER.
$_{D}$	DIMMER SWITCH UP 4'-0" U.O.N.: "HUNT" #A-2000 OR APPROVED SUBSTITUTE.
$_{S}$ $_{2}$ $_{3}$ $_{4}$	SWITCHES UP 4'-0": SPST; DPST; THREE-WAY; FOUR-WAY.
$_{M}$	MASTER SWITCH FOR AREAS WITH LIGHTING SERVED BY MULTIPLE CIRCUITS.
K	AS SUBSCRIPT NEAR SWITCH INDICATES KEY TYPE.
P	AS SUBSCRIPT NEAR SWITCH OR OTHER DEVICE INDICATES WITH PILOT LIGHT.
a	LOWER CASE SUBSCRIPT INDICATES PHASE OR SWITCH CONNECTION WHERE MULTIPLE PHASE OR SWITCHING CONNECTIONS ARE MADE.
H.I.D.	HIGH-INTENSITY DISCHARGE.
*	SURFACE OR PENDANT MOUNTED INCANDESCENT OR H.I.D. FIXTURE - SEE LIGHTING FIXTURE SCHEDULE (* = H.I.D. WITH AUTO. AUXILIARY QUARTZ LAMP).
	WALL MOUNTED INCANDESCENT OR H.I.D. FIXTURE - SEE LIGHTING FIXTURE SCHEDULE.
XA/24	WALL MOUNTED REMOTE HEADS CONNECTED TO EMERGENCY LIGHTING POWER SUPPLY.
XB/24	CEILING MOUNTED REMOTE HEADS CONNECTED TO EMERGENCY LIGHTING POWER SUPPLY.
	RECESSED INCANDESCENT OR H.I.D. FIXTURE - SEE LIGHTING FIXTURE SCHEDULE
	RECESSED OR SURFACE CEILING MOUNTED FLUORESCENT FIXTURE - SEE LIGHTING FIXTURE SCHEDULE.
	ARCHITECTURAL LIGHTING UNIT - SEE LIGHTING FIXTURE SCHEDULE.
P	PHOTOCELL ON 3"-0" CONDUIT STEM ABOVE ROOF.
LC-1	LIGHTING CONTACTOR - NUMBER INDICATES SPECIFIC CONTACTOR TYPE AND CONFIGURATION.
E/24	BATTERY-OPERATED EMERGENCY LIGHTING UNIT - SEE LIGHTING FIXTURE SCHEDULE.
	EMERGENCY EXIT LIGHTING UNIT WITH ARROWS WHERE SHOWN: CEILING UNIT; WALL MOUNTED - SEE LIGHTING FIXTURE SCHEDULE.
	EMERGENCY LIGHTING POWER SUPPLY, WALL MOUNTED OF CAPACITY REQ'D TO POWER ALL CONNECTED LAMPS.
	INDICATES LIGHTING FIXTURE OR LAMPS WITHIN FIXTURE AS NOTED CONNECTED TO EMERGENCY POWER SYSTEM.
K	PORCELAIN KEYLESS ("P & S " #110) WITH 100 WATT A-19 LAMP: CEILING; WALL MOUNTED UP 8'-0" U.O.N.
J	JUNCTION BOX WITH 6'-0" LONG 1/2" DIAMETER FLEXIBLE METALLIC CONDUIT "WHIP" CONCEALED IN ACCESSIBLE CEILING SPACE U.O.N.
J	FLUSH MOUNTED JUNCTION BOX IN CEILING OR WALL AS NOTED.
	DUPLEX RECEPTACLE UP 18" U.O.N.
	250 VOLT - 1 PHASE, SINGLE DEVICE (AMP. RATING AS NOTED) UP 18" U.O.N.
	FLUSH MOUNTED FLOOR OUTLET WITH DUPLEX RECEPTACLE U.O.N.
T	PANELBOARD: SURFACE MOUNTED; FLUSH MOUNTED.
	MULTI-SECTION DISTRIBUTION SWITCHBOARD.
	PAD MOUNTED TRANSFORMER.
	MOTOR - H.P., VOLTAGE, PHASE AS NOTED.
	HEAVY DUTY DISCONNECT, H.P. RATED WHEN USED IN MOTOR CIRCUITS, OTHERWISE AMPERE RATING MUST MATCH CIRCUIT RATING.
	MOTOR CONTROLLER, H.P. RATED FULL VOLTAGE NON-REVERSIBLE U.O.N.
	PUSHBUTTON STATION WITH RED MUSHROOM HEAD UP 5'-0" U.O.N.
$_{T}$	MANUAL MOTOR SWITCH WITH THERMAL OVERLOAD(S).
W	MULTI-OUTLET SURFACE RACEWAY OF LENGTH AS SHOWN WITH DUPLEX RECEPTACLES 30" C.-C. SPACING TWO-CIRCUIT GROUNDING TYPE UP 45" WITH ALL ACCESSORIES, **U.O.N.**
H	FIRE ALARM COMBINATION HORN/VISUAL INDICATOR STATIONS FLUSH MOUNTED: UP 8'-0" U.O.N.
H WP	WEATHERPROOF FIRE ALARM HORN (NO VISUAL INDICATOR) UP 14'-0" U.O.N.
F	MANUAL PULL STATION UP 4'-0" U.O.N.
F-ACP	FIRE ALARM CONTROL PANEL, FLUSH MOUNTED.
F-AA	REMOTE FIRE ALARM ANNUNCIATOR, FLUSH MOUNTED.
M F	**JUNCTION BOX FOR FUTURE MICROPHONE OUTLET : F=FLUSH FLOOR; FLUSH WALL UP 18" U.O.N.**

SYMBOL OR ABBR.	DESCRIPTION
H F190	HEAT DETECTOR CEILING MOUNTED - FIXED TEMP. AND RATE-OF RISE U.O.N.; F = FIXED-TEMP. ONLY WITH NORMINAL DEGREE RATING AS INDICATED.
I	PRODUCTS OF COMBUSTION DETECTOR CEILING MOUNTED U.O.N.
S$_{C}$ S$_{W}$ S$_{HP}$	**JUNCTION BOX FOR FUTURE** SPEAKER: FLUSH CEILING; WALL MOUNTED; FLUSH MOUNTED WEATHERPROOF TYPE UP 8'-0" U.O.N.: LETTER INDICATES TYPE;
S	**JUNCTION BOX FOR FUTURE** SPEAKER CLUSTER: CEILING MOUNTED U.O.N.
S	**BACK BOX FOR FUTURE** COMBINATION CLOCK/SPEAKER UNIT WITH 12" CLOCK (U.O.N.) FLUSH MOUNTED, UP 8'-0" TO CENTERLINE U.O.N.
C	**BACK BOX FOR FUTURE** FLUSH MOUNTED SECONDARY CLOCK UP 8'-0" U.O.N., 12" CLOCK U.O.N.
B	**FUTURE** EMERGENCY PUSHBUTTON FOR SOUND SYSTEM PRIORITY CALL MOUNTED ON INSTRUMENT U.O.N.
A	**JUNCTION BOX FOR FUTURE** INTERCOM OR CALL-IN STATION: A = ADMINISTRATIVE (UP 18" U.O.N.): D = DESK TOP CLASSROOM STATION (UP 18" U.O.N.); W = WALL CLASSROOM STATION (UP 5'-0" U.O.N.): C = CALL-IN STATION (UP 5'-0" U.O.N.): S = SPEAKER INTEGRAL WITH STATION INSTRUMENT.
VR	**JUNCTION BOX FOR FUTURE** ADMINISTRATIVE STATION WITH LED INCOMING CALL REGISTER, INSTRUMENT MOUNTED.
	TELEPHONE OUTLET UP 18" U.O.N.
	TELEVISION OUTLET UP 18" U.O.N.
	PERFORMANCE LIGHTING WIREWAY/BATTEN ASSEMBLY.
	FLUSH MOUNTED TORMENTOR WALL POCKET WITH BATTEN.
W.G.	PROVIDE WIRE GUARD.
W.P.	WEATHERPROOF.
U.O.N.	UNLESS OTHERWISE NOTED.
XP	EXPLOSION PROOF.
EBU	EMERGENCY BATTERY UNIT.
TVTB	CABLE TELEVISION TERMINAL BOARD.
GSSTC	**FUTURE GYM SOUND SYSTEM TERMINAL CABINET**
SSSTC	**FUTURE STAGE SOUND SYSTEM TERMINAL CABINET**
SSTCM	**FUTURE CENTRAL INTERCOM/ PROGRAM SYSTEM TERMINAL CABINET**
P	PRIMARY SERVICE INSTALLATION BELOW GRADE.
S	SECONDARY SERVICE INSTALLATION BELOW GRADE.
T	TELEPHONE SERVICE INSTALLATION BELOW GRADE.
TV	CATV SERVICE INSTALLATION BELOW GRADE.
TTB	TO TELEPHONE TERMINAL BOARD (1" DIA. CONDUIT MINIMUM WITH PULL WIRE).
	CONDUIT RUN UP.
	CONDUIT RUN DOWN.
TVTB	TO CATV TERMINAL BOARD (1" DIA. CONDUIT MINIMUM U.O.N. WITH PULL WIRE).
DTC	TO ENERGY MANAGEMENT CONTROL SYSTEM DATA TERMINAL CABINET, 1" C. (U.O.N.) **WITH PULL WIRE.**
	FLEXIBLE CONDUIT.
	CONDUIT EXPOSED (NOTE A BELOW).
	CONDUIT IN OR BELOW SLAB OR GRADE (SEE NOTE A BELOW).
	CONDUIT CONCEALED IN WALLS OR CEILING SPACE (SEE NOTE A BELOW).
A- 2,4	INDICATES HOME-RUN (NUMBER OF ARROWS = NUMBER OF CIRCUITS) (SEE NOTE'B BELOW)

NOTES:

GENERAL ALL BRANCH CIRCUITS 2 #12, 1/2" C. TO 20 A., 1 P. CIRCUIT BREAKER U.O.N., e.g. A-30 (4#8, 3/4" C. to 40/3) INDICATES CIRCUIT NUMBER 30 IN PANEL "A" FEEDS TO EQUIPMENT FROM A 40 A., 3 P. CIRCUIT BREAKER WITH 4#8 AWG WIRES RUN IN 3/4" DIAMETER CONDUIT.

A. NUMBER OF WIRES (IF OTHER THAN TWO) INDICATED BY NUMBER OF SLASHES (= TWO "HOT" WIRES AND ONE NEUTRAL WIRE).

B. HOME-RUN DESIGNATION: "A"=PANELBOARD NOTATION; "-2,4"= CIRCUIT NUMBERS.

OVERLAY REQD	OVERLAYS	SCREEN
TB	U	E
EA	EA	F
EB	EB	F

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A NEW SCHOOL FOR:
SKAGWAY ALASKA

LIGHTING FIXTURE SCHEDULE AND LEGEND

REVISIONS

drawn by
BJS

date
APRIL 8, 1983

project no.
HDB # 13-1076

sheet no.
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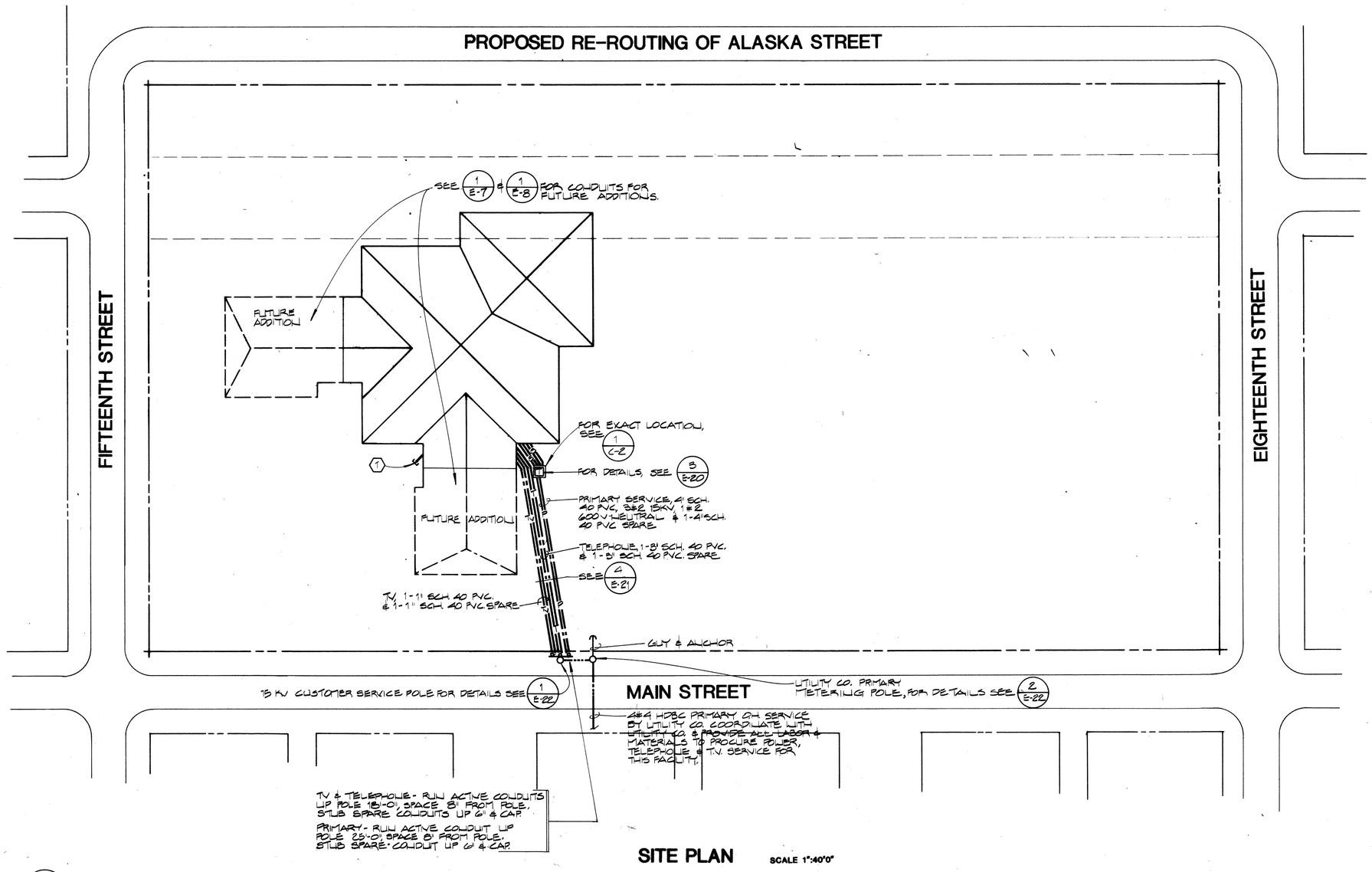
SHEET NOTES

(1) **CAP 1" DIAMETER CONDUIT BELOW GRADE WITHIN 5'-0" OF BUILDING FOUNDATION.** RUN CONDUIT BELOW GRADE TO PANEL "B". LOCATE CAPPED CONDUIT END ACCURATELY ON AS-BUILT DRAWINGS.



SITE PLAN SCALE 1":40'0"

1 / E-2 **SITE PLAN**
1" = 40'-0"

OVER* AY RECD	OVERLAYS	SCREEN
TB	TB	F
EC	EC	F
ED	ED	F
EE	EE	F
EF	EF	F

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SITE PLAN

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SHEET NOTES

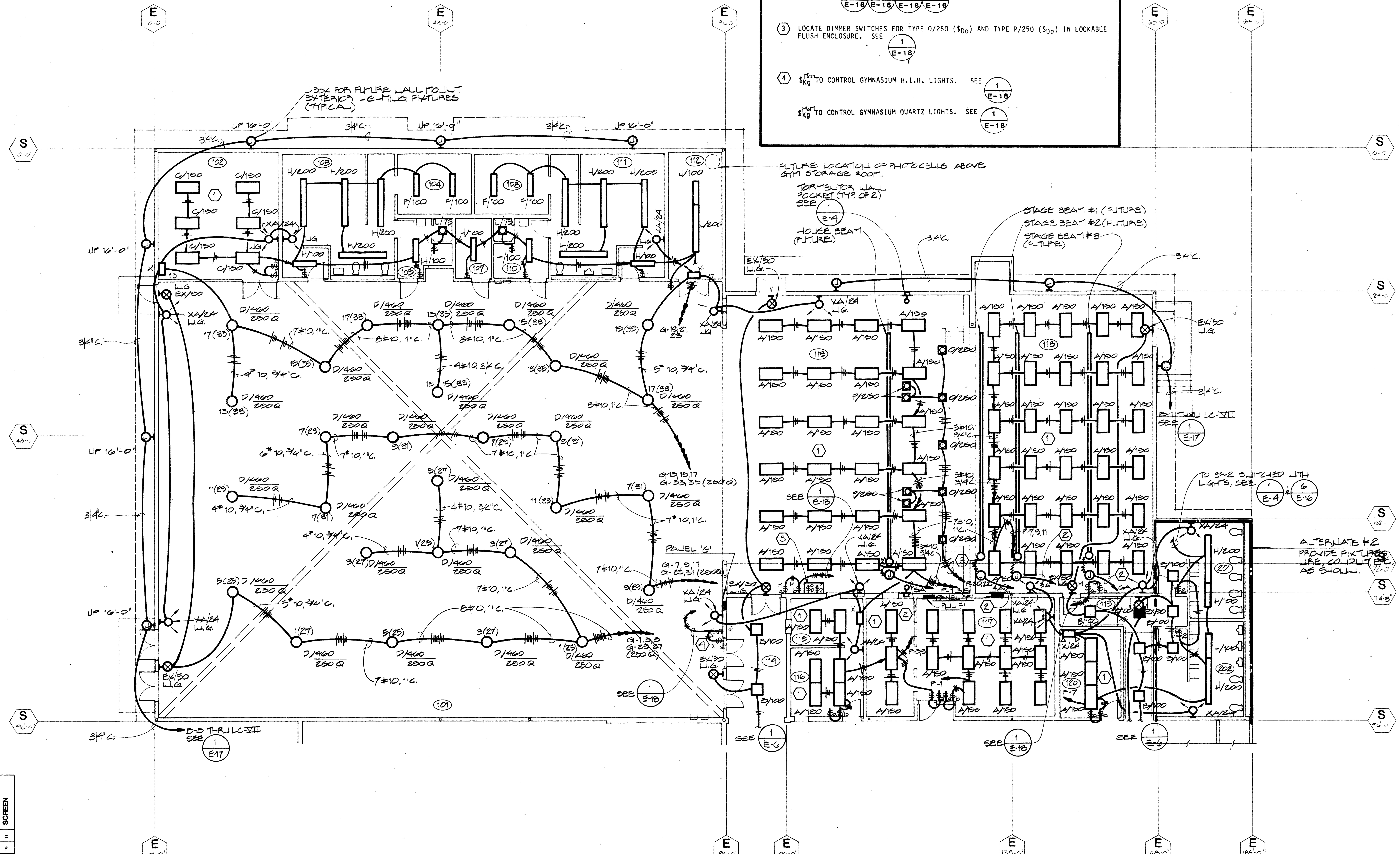
(1) SWITCH OUTBOARD LAMPS WITH $\$_a$ CENTER LAMP WITH $\$_b$ FOR MULTI-LEVEL LIGHTING CONTROL. IN MULTI-PURPOSE & PLATFORM/MUSIC ROOMS PROVIDE IDENTICAL SWITCHING THRU $\$_{Ma}$ & $\$_{Mb}$ CONTROLLING CONTACTORS. SEE 1/E-18

(2) CONDUITS 3A, 4A, 5A, 6A RUN FROM GRID IRON **J-BOXES TO FUTURE DIMMER RACK IN** ATTIC. SEE 2/E-16, 3/E-16, 4/E-16, 5/E-16 FOR DETAILS.

(3) LOCATE DIMMER SWITCHES FOR TYPE O/250 ($\$_{Do}$) AND TYPE P/250 ($\$_{Dp}$) IN LOCKABLE FLUSH ENCLOSURE. SEE 1/E-18

(4) $\$_{Kg}^{Mom}$ TO CONTROL GYMNASIUM H.I.D. LIGHTS. SEE 1/E-18

$\$_{Kg}^{Mom}$ TO CONTROL GYMNASIUM QUARTZ LIGHTS. SEE 1/E-18



1 FLOOR PLAN "A" – LIGHTING
E-3

1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
EF	EF	F
EG	EG	F
V	V	S

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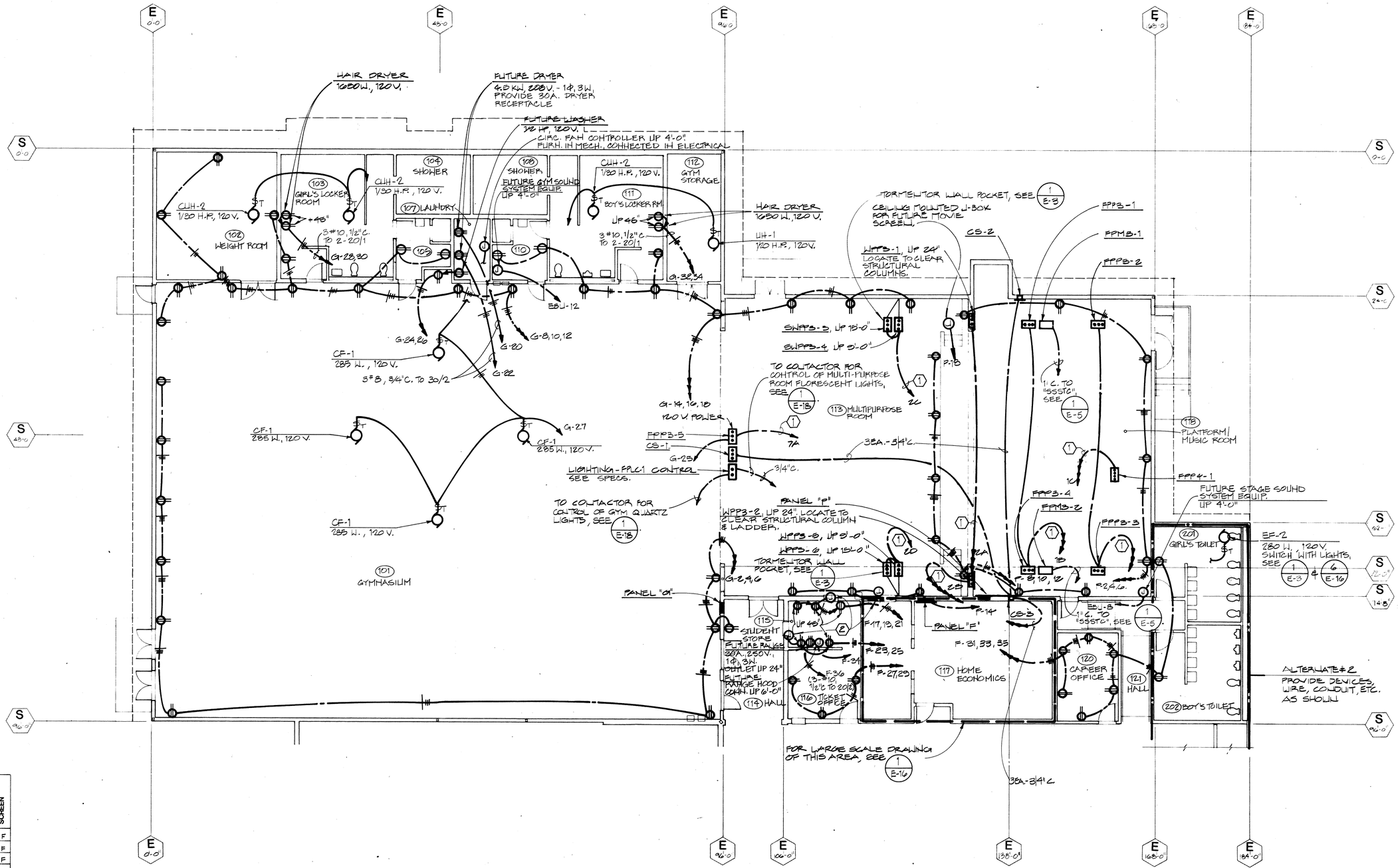
SHEET NOTES

1. SEE 4/E-16
2. CONNECT TO ROLLING FIRE DOOR POWER SUPPLY. SEE ARCHITECTURAL.

NOTE:
CONNECT ADJACENT DUPLEX RECEPTACLES TO ALTERNATING BRANCH CIRCUITS SUCH THAT OUTLETS ARE EVENLY DISTRIBUTED AMONG THE INDICATED BRANCH CIRCUITS.



1/E-4 FLOOR PLAN "A" – POWER
1/8"=1'-0"

OVERLAY RECD	OVERLAYS	SCREEN
TB	TB	F
EH	EH	F
EI	EI	F
V	V	S

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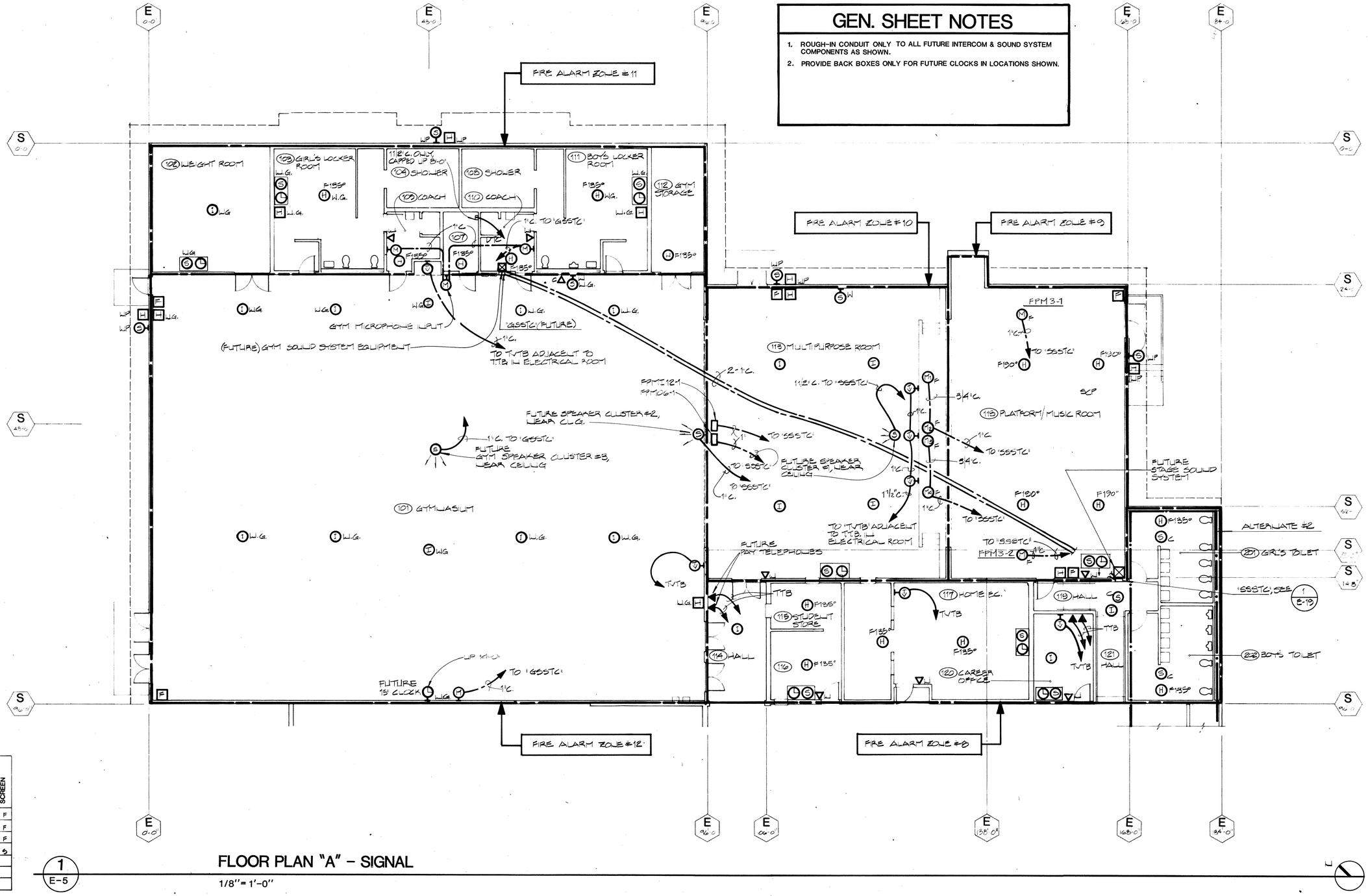
GEN. SHEET NOTES

1. ROUGH-IN CONDUIT ONLY TO ALL FUTURE INTERCOM & SOUND SYSTEM COMPONENTS AS SHOWN.
2. PROVIDE BACK BOXES ONLY FOR FUTURE CLOCKS IN LOCATIONS SHOWN.



OVERLAY REQD	OVERLAYS	SCREEN
TD	TD	F
EJ	EJ	F
EK	EK	F
V	V	S

1 / E-5

FLOOR PLAN "A" – SIGNAL

1/8" = 1'-0"

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FLOOR PLAN 'A' – SIGNAL

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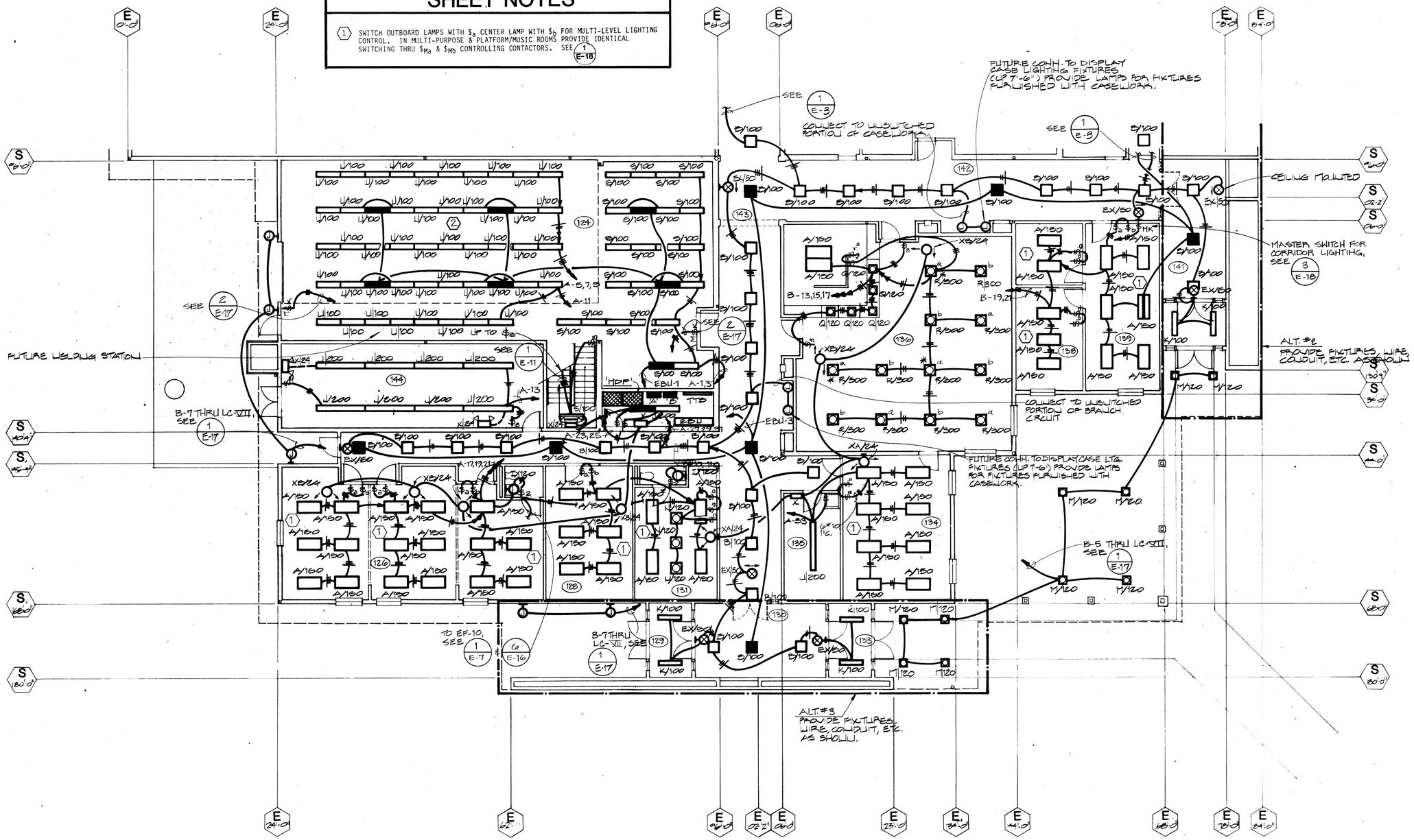
SHEET NOTES

1. SWITCH OUTBOARD LAMPS WITH S_a CENTER LAMP WITH S_b FOR MULTI-LEVEL LIGHTING CONTROL. IN MULTI-PURPOSE & PLATFORM/MUSIC ROOMS PROVIDE IDENTICAL SWITCHING THRU S_{Ma} & S_{Mb} CONTROLLING CONTACTORS. SEE 1/E-18



OVERLAY REQD		
TB	TD	F
EM	EM	F
EN	EN	F
W	W	6

FLOOR PLAN "B" – LIGHTING

1/8" = 1'-0"

1/E-6

N

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A NEW SCHOOL FOR:

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FLOOR PLAN 'B' – LIGHTING

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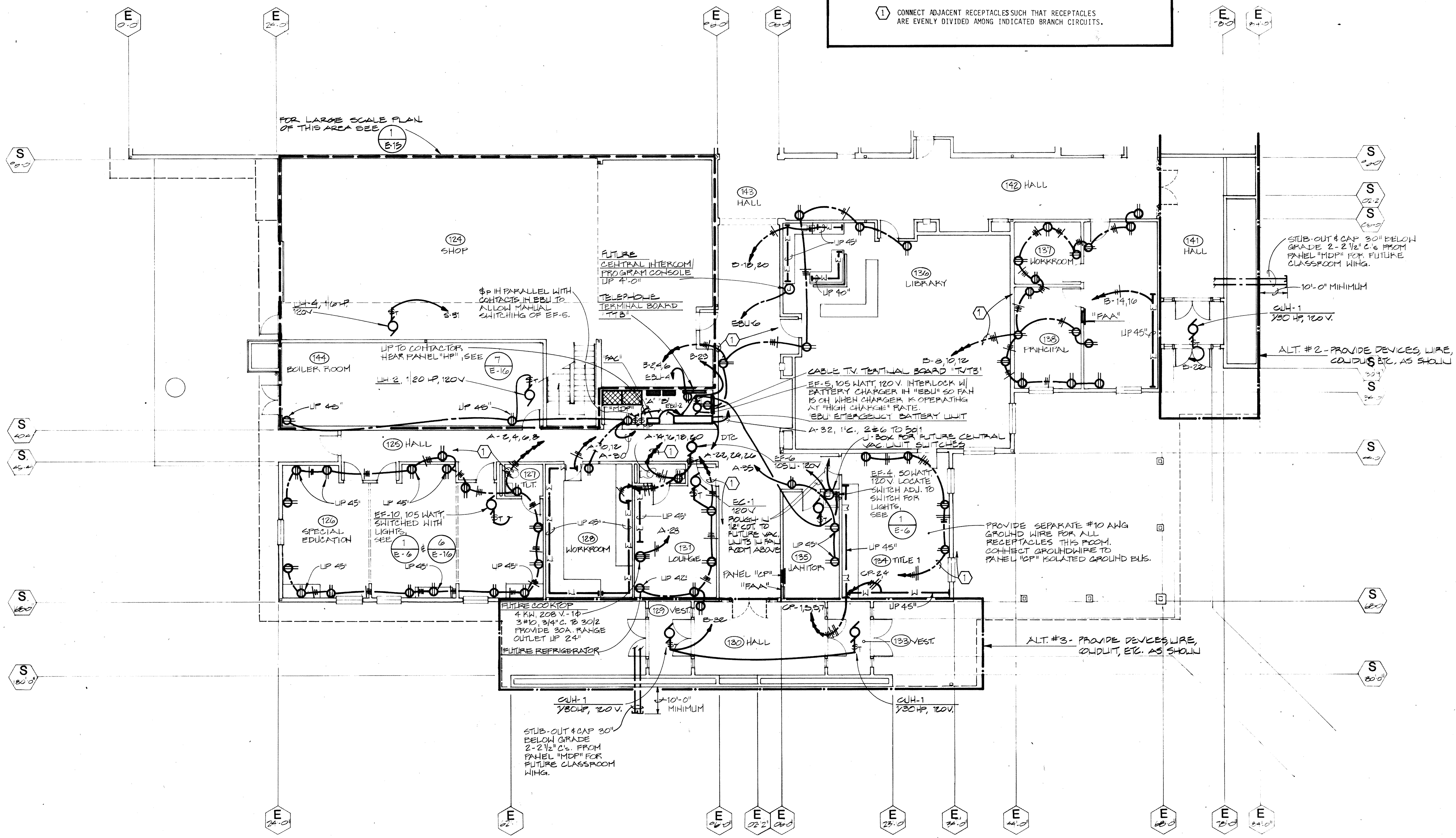
SHEET NOTES

(1) CONNECT ADJACENT RECEPTACLES SUCH THAT RECEPTACLES ARE EVENLY DIVIDED AMONG INDICATED BRANCH CIRCUITS.



OVERLAY REQD	OVERLAYS	SCREEN
TB	S	F
EO	EO	F
EP	EP	F
W	W	S

1 E-7 FLOOR PLAN "B" - POWER

1/8" = 1'-0"

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FLOOR PLAN 'B' — POWER

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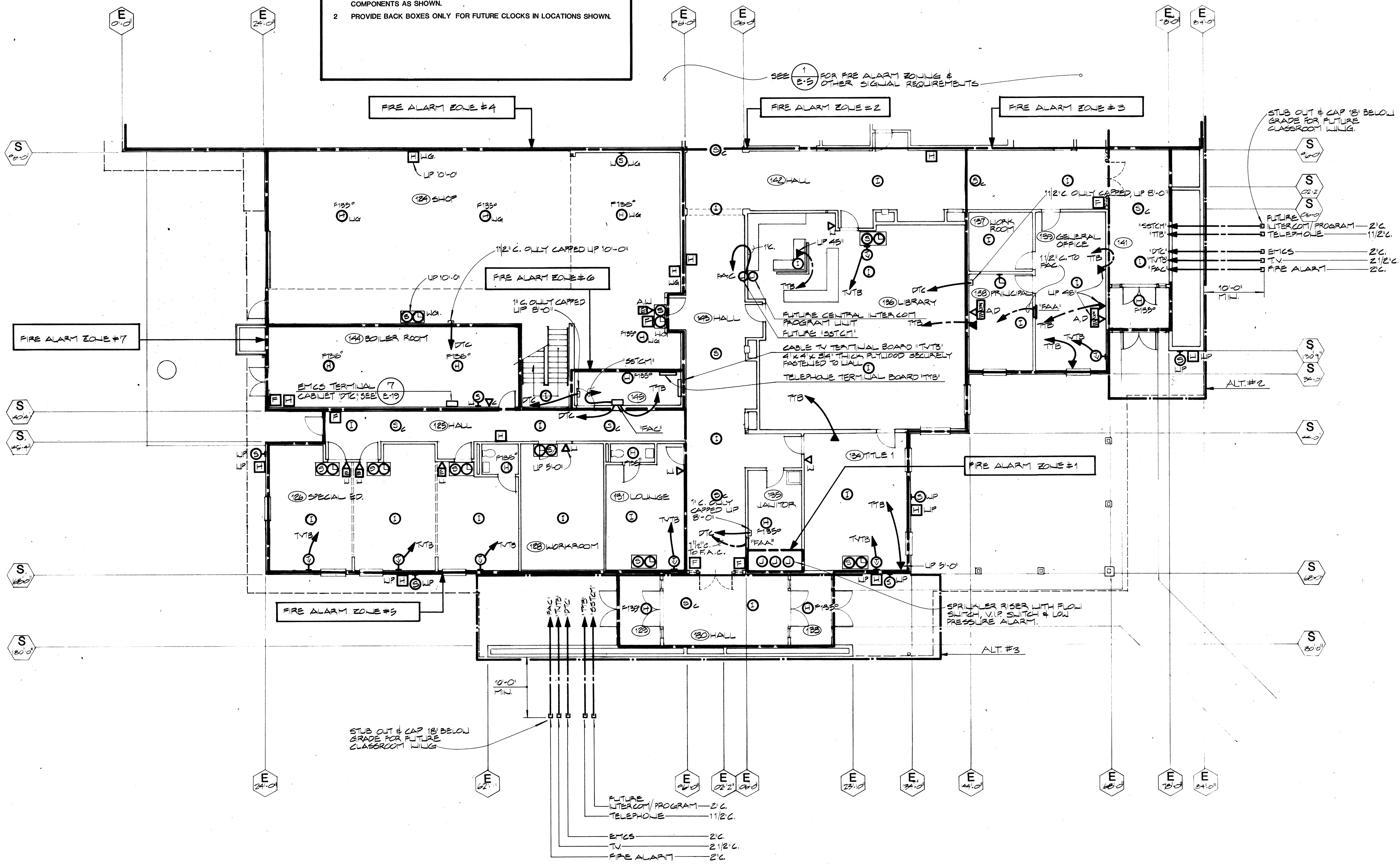
SHEET NOTES

1. ROUGH-IN CONDUIT ONLY TO ALL FUTURE INTERCOM & SOUND SYSTEM COMPONENTS AS SHOWN.
2. PROVIDE BACK BOXES ONLY FOR FUTURE CLOCKS IN LOCATIONS SHOWN.



1/E-8

FLOOR PLAN "B" - SIGNAL

1/8" = 1'-0"

OVF	Y REQD	OVERLAYS	SCREEN
TB		5	F
EQ		EQ	F
ER		ER	F
W		W	S

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FLOOR PLAN 'B' - SIGNAL

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FPE #13-1076

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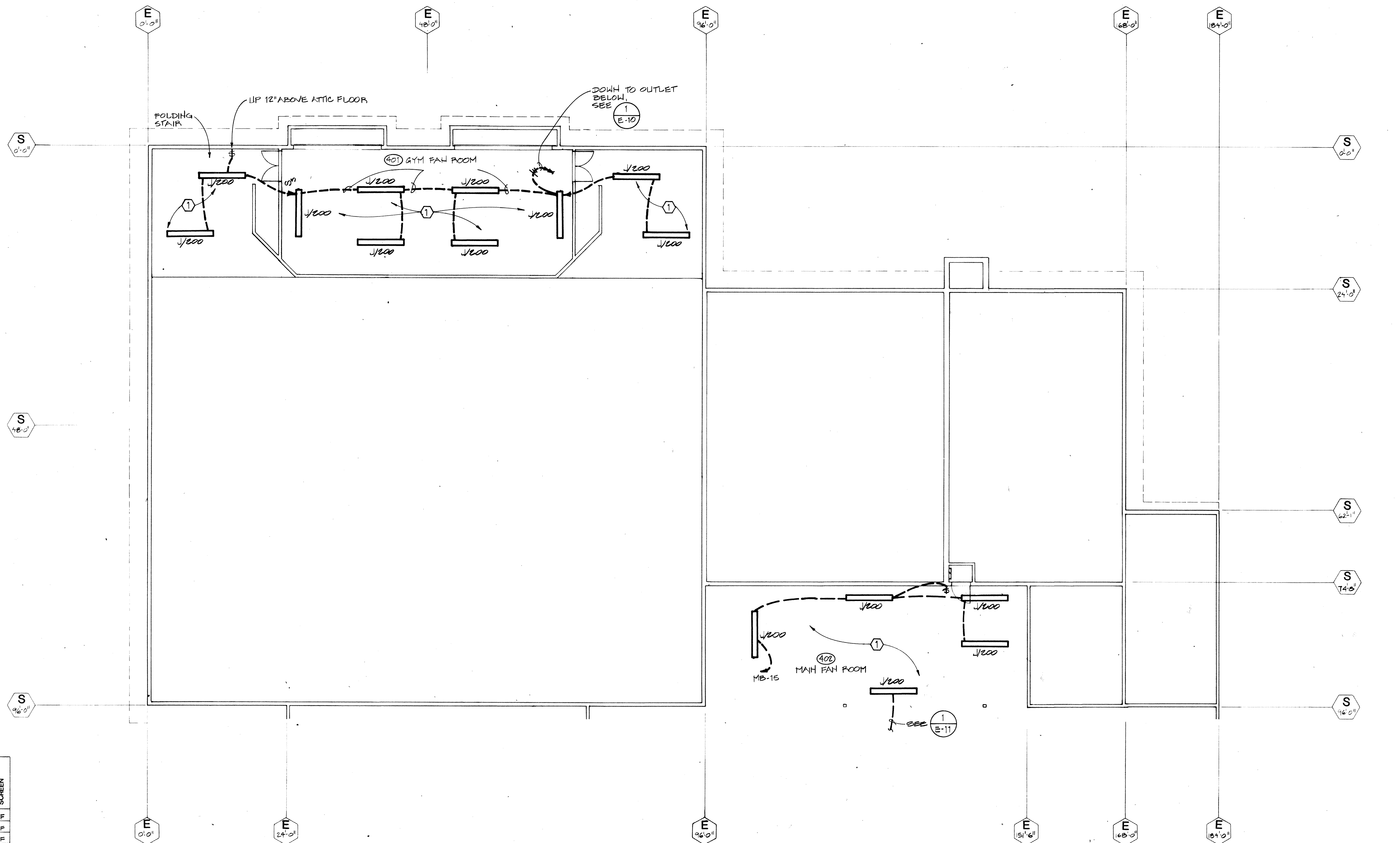
SHEET NOTES

1. LOCATE FIXTURES TO AVOID INTERFERENCE WITH MECHANICAL EQUIPMENT.



1 E-9 ATTIC PLAN "A" – LIGHTING

1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	[illegible]	F
ES	ES	F
ET	ET	F
X	X	S

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS
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A NEW SCHOOL FOR:
SKAGWAY ALASKA

ATTIC PLAN 'A' – LIGHTING

REVISIONS

drawn by POOH / HJS / DLR

date APRIL 8, 1983

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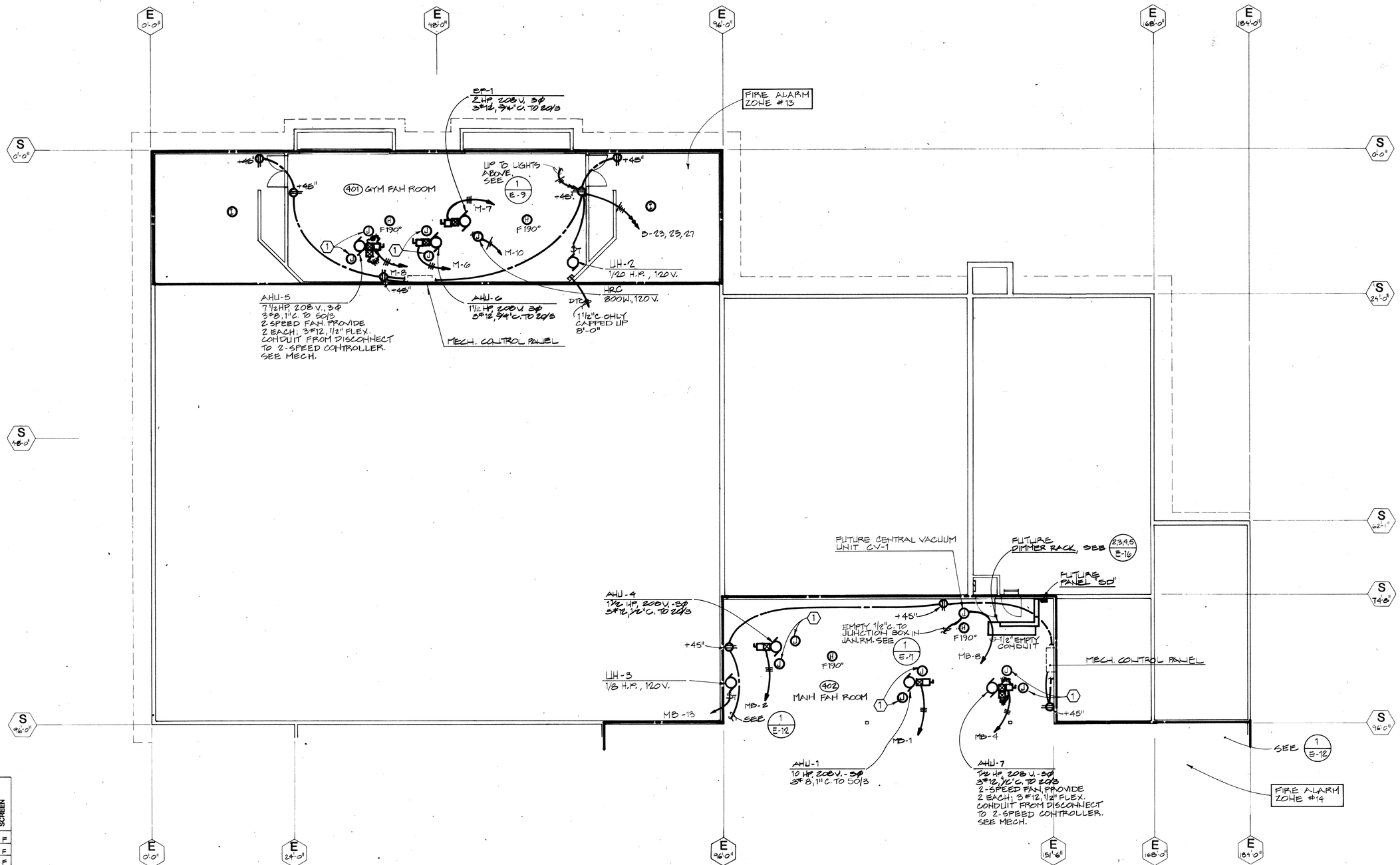
SHEET NOTES

(1) PROVIDE CONNECTIONS TO AIR-HANDLING UNIT DUCT DETECTORS AND FAN UNIT SHUT-DOWN CIRCUITRY. SEE 3/E-17



OVERLAY REQD	OVERLAYS	SCREEN
TB	☺	F
EU	EU	F
EV	EV	F
X	X	S

1 / E-10 ATTIC PLAN "A" – POWER & SIGNAL

1/8"= 1'-0"

N

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A NEW SCHOOL FOR:

SKAGWAY ALASKA

ATTIC PLAN 'A' – POWER AND SIGNAL

REVISIONS

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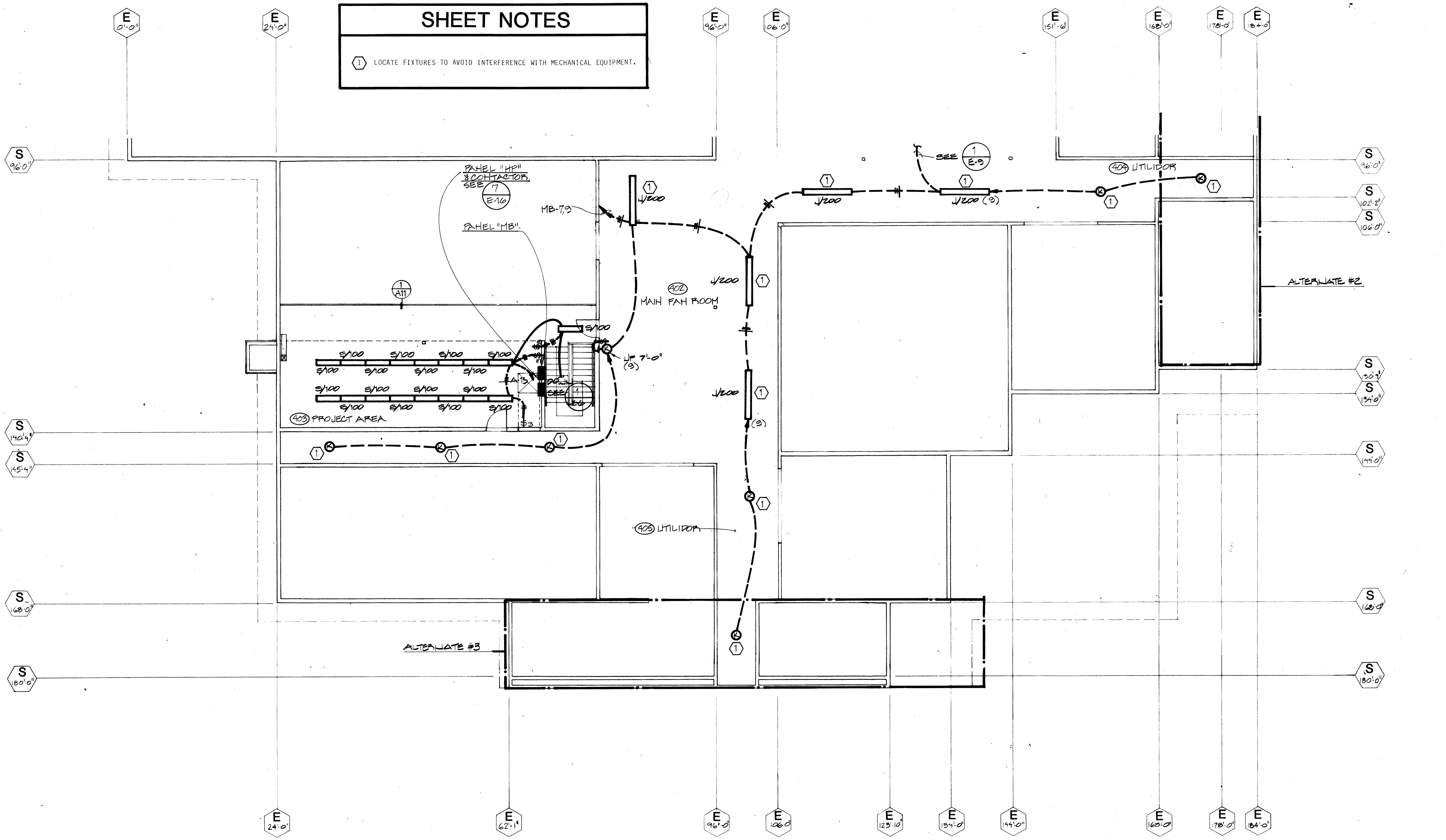
SHEET NOTES

(1) LOCATE FIXTURES TO AVOID INTERFERENCE WITH MECHANICAL EQUIPMENT.



1 E-11 ATTIC PLAN "B" - LIGHTING
1/8" = 1'-0"

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ATTIC PLAN 'B' - LIGHTING

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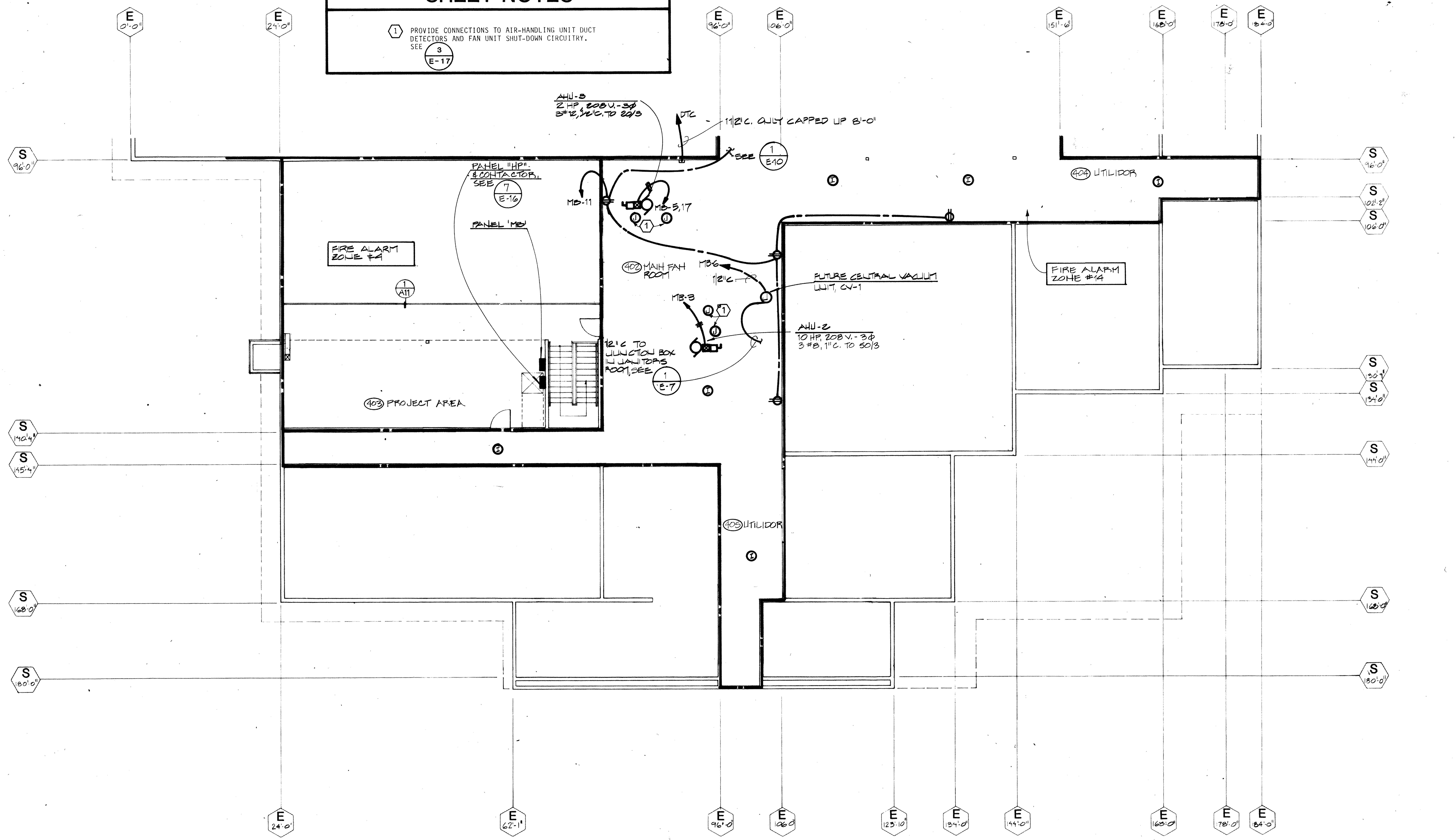
SHEET NOTES

1. PROVIDE CONNECTIONS TO AIR-HANDLING UNIT DUCT DETECTORS AND FAN UNIT SHUT-DOWN CIRCUITRY. SEE 3/E-17



ATTIC PLAN "B" - POWER & SIGNAL

1/8" = 1'-0"

OV	AY RECD	OVERLAYS	SCREEN
TB	TB	F	
EY	EY	F	
EZ	EZ	F	
Y	Y	S	

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ATTIC PLAN 'B' - POWER AND SIGNAL

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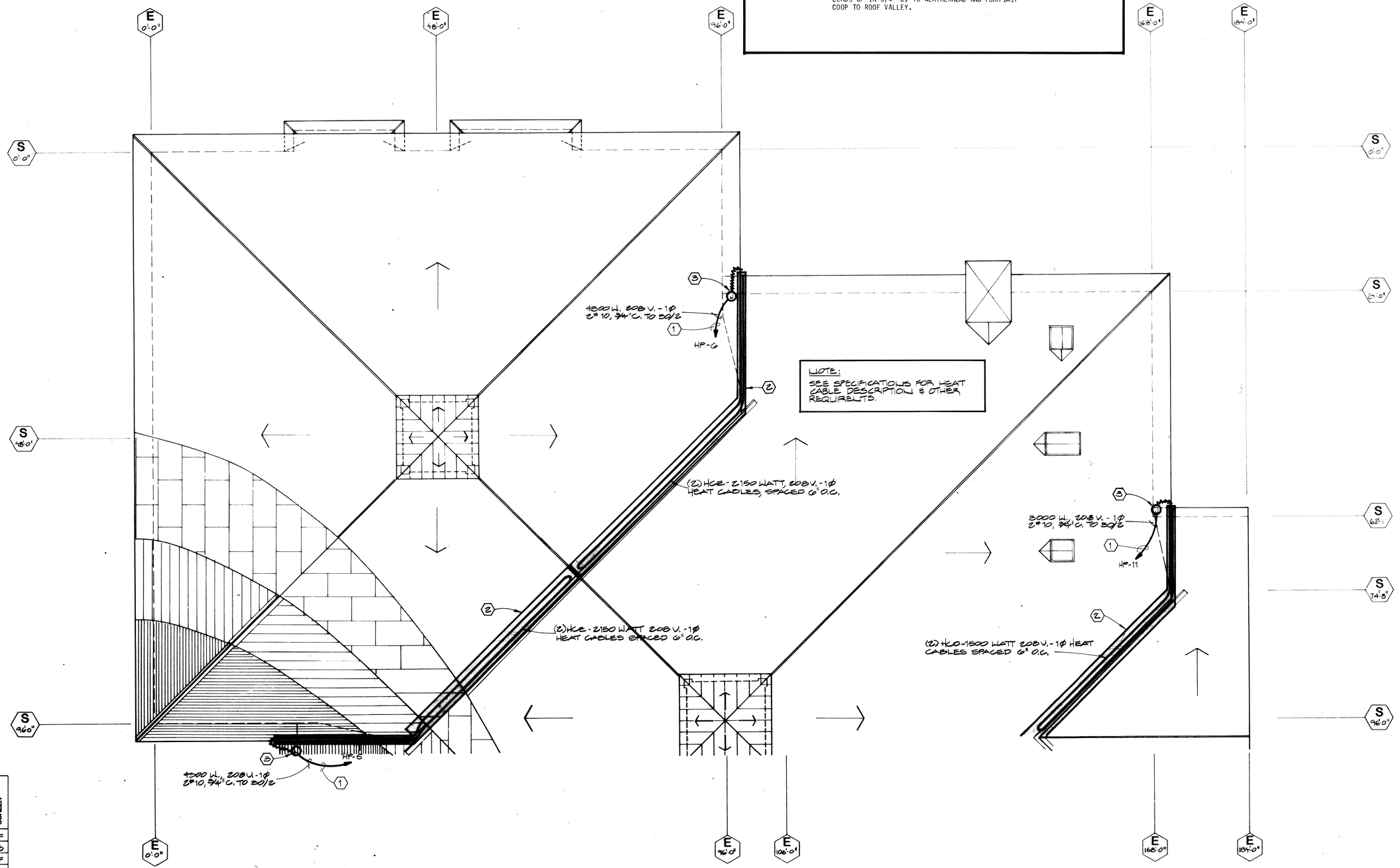
SHEET NOTES

1. SEE 7/E-16
2. RUN M.I. CABLES IN ROOF VALLEYS. LOOP FEED AS SHOWN ON 6" SPACERS.
3. MOUNT J.BOX WITH GASKETED COVER FLUSH IN SOFFIT BELOW ACCESSIBLE FROM BELOW. RUN HEAT CABLE COLD LEADS UP IN 3/4" C. TO WEATHERHEAD AND FORM DRIP COOP TO ROOF VALLEY.



NOTE:
SEE SPECIFICATIONS FOR HEAT CABLE DESCRIPTION & OTHER REQUIRELTS.

OVERLAY RECD	OVERLAYS	SCREEN
TB	TB	F
RP1	RP1	S
LA	LA	F
LB	LB	F

1 / E-13 ROOF PLAN "A" - HEAT
1/8" = 1'-0"

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A NEW SCHOOL FOR:
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ROOF PLAN 'A' - HEAT

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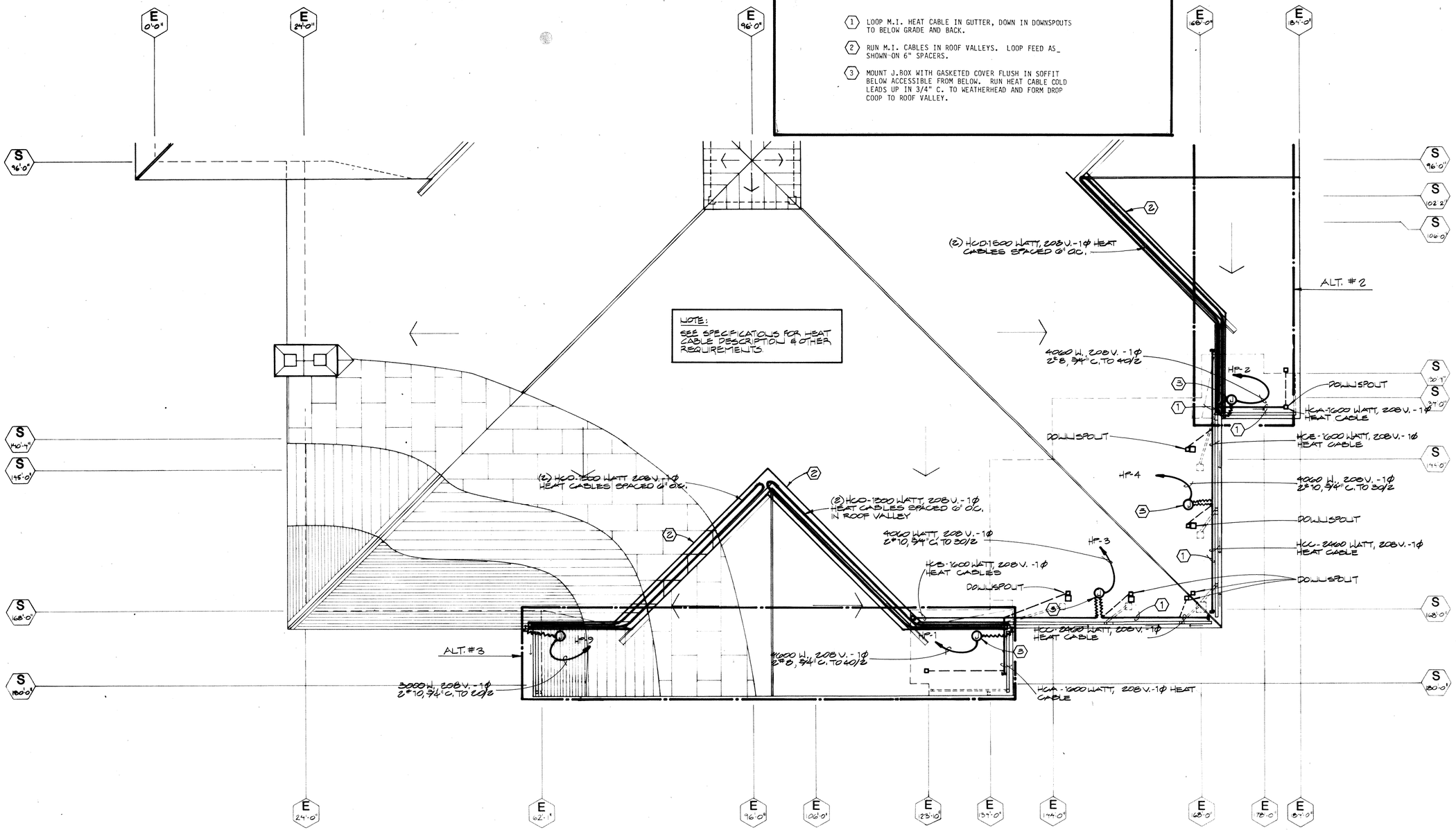
SHEET NOTES

1. LOOP M.I. HEAT CABLE IN GUTTER, DOWN IN DOWNSPOUTS TO BELOW GRADE AND BACK.
2. RUN M.I. CABLES IN ROOF VALLEYS. LOOP FEED AS SHOWN ON 6" SPACERS.
3. MOUNT J.BOX WITH GASKETED COVER FLUSH IN SOFFIT BELOW ACCESSIBLE FROM BELOW. RUN HEAT CABLE COLD LEADS UP IN 3/4" C. TO WEATHERHEAD AND FORM DROP COOP TO ROOF VALLEY.

NOTE:
SEE SPECIFICATIONS FOR HEAT CABLE DESCRIPTION & OTHER REQUIREMENTS.



1 ROOF PLAN "B" - HEAT
E-14
1/8" = 1'-0"

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	TB
RPB	RPB	RPB
LG	LG	LG
LG	LG	LG

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ROOF PLAN 'B' - HEAT

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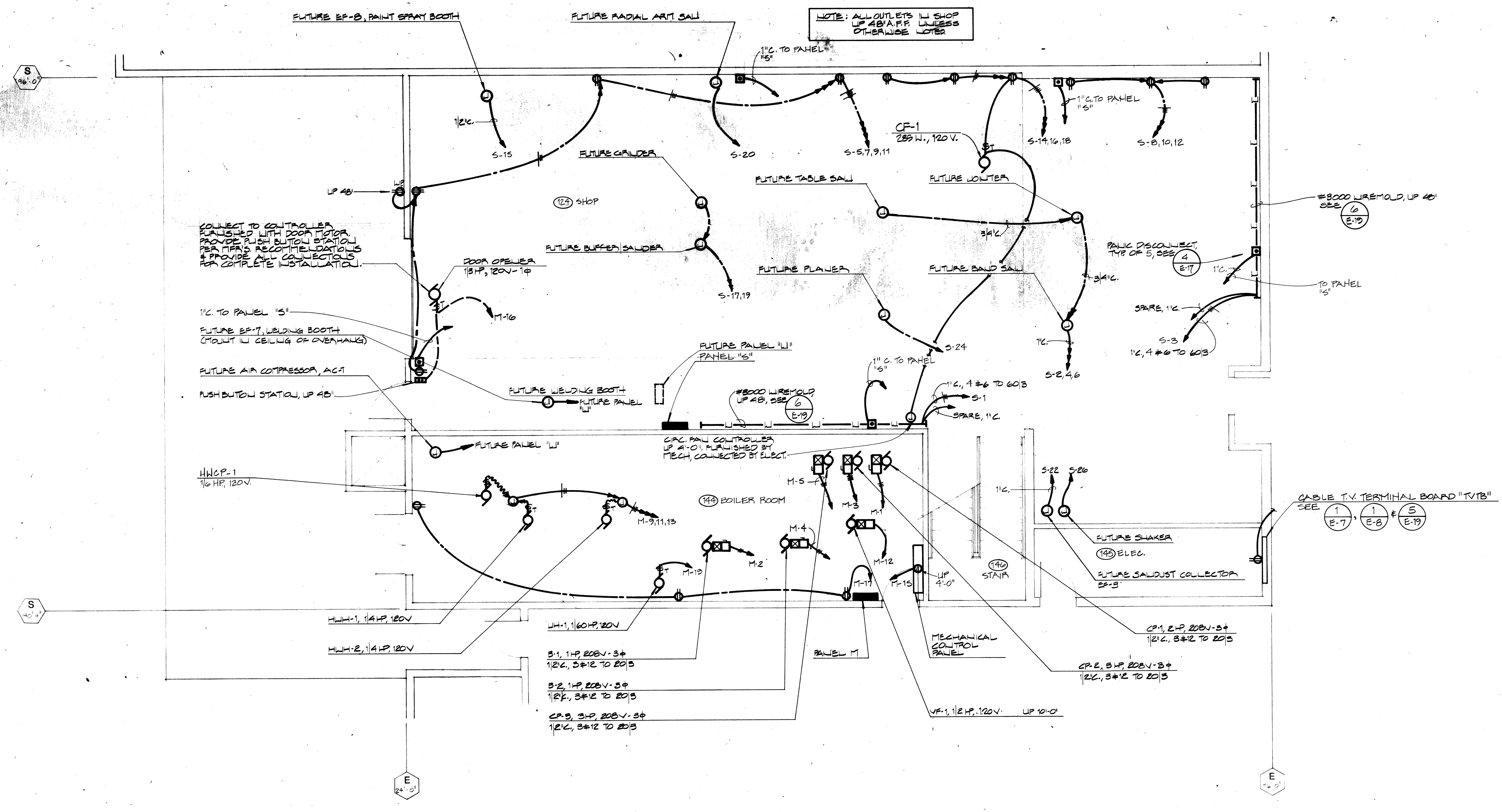
NOTE: ALL OUTLETS IN SHOP UP 48" A.F.F. UNLESS OTHERWISE NOTED.



1 E-15 **BOILER ROOM/ SHOP/ ELECTRICAL ROOM**

1/4" = 1'-0"

OVERLAY REQ'D	OVERLAYS	SCREEN
TB	TB	F
LE	LE	F
LF	LF	F
≡	N	S

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

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A NEW SCHOOL FOR: SKAGWAY ALASKA

BOILER ROOM/SHOP/ELECT. ROOM - POWER

REVISIONS

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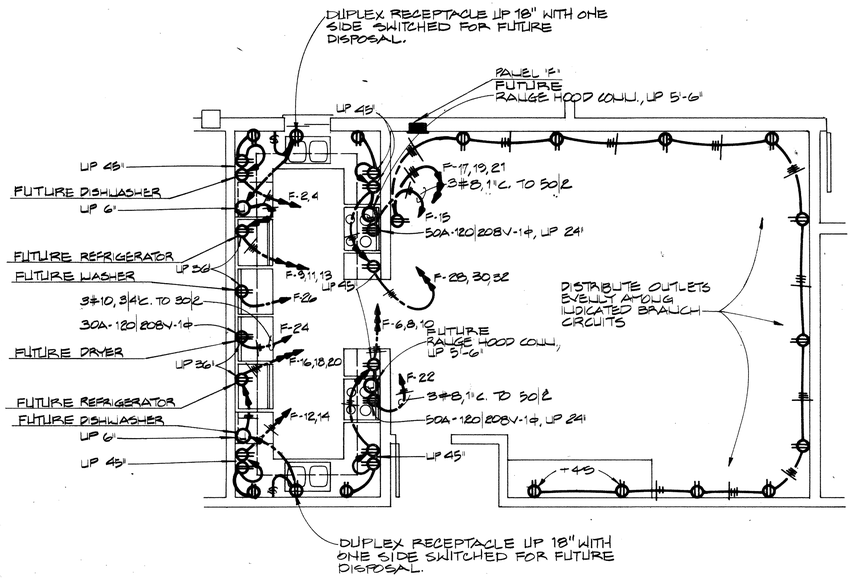
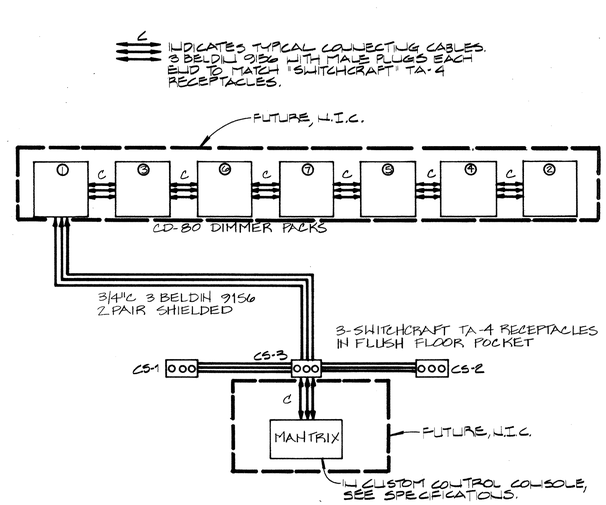


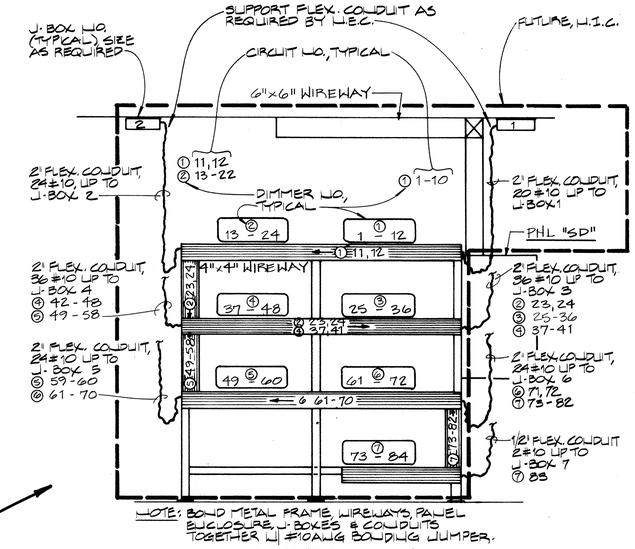
1 / E-16 **HOME ECONOMICS – POWER**

1/4" = 1'-0"



2 / E-16 **CONTROL ONE LINE DIAGRAM – PLATFORM LIGHTING SYSTEM**

N.T.S.



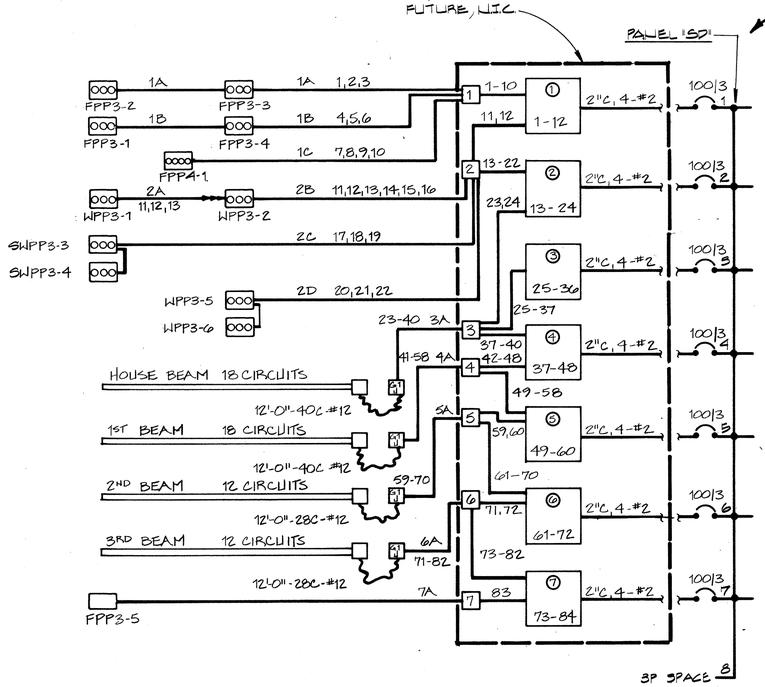
3 / E-16 **BACK VIEW – PLATFORM DIMMER LOAD CONNECTIONS**

N.T.S.

CONDUIT SCHEDULE PLATFORM DIMMING SYSTEM
1A 3/4" C. 6-#10 UP TO DB-1,2,3 VIA J-BOX #1
1B 3/4" C. 6-#10 UP TO DB-4,5,6 VIA J-BOX #1
1C 3/4" C. 8-#10 UP TO DB-7,8,9,10 VIA J-BOX #1
2A 3/4" C. 6-#10 UP 2B
2B 1" C. 12-#10 UP TO DB-11,12,13,14,15,16 VIA J-BOX #2
2C 3/4" C. 6-#10 UP TO DB-17,18,19 VIA J-BOX #2
2D 3/4" C. 6-#10 UP TO DB-20,21,22 VIA J-BOX #2
3A 2" C. 40-#10 UP TO DB-23 THRU 40 PLUS 4 SPARES VIA J-BOX #3
4A 2" C. 40-#10 UP TO DB-41 THRU 58 PLUS 4 SPARES VIA J-BOX #4
5A 2" C. 28-#10 UP TO DB-59 THRU 70 PLUS 4 SPARES VIA J-BOX #5
6A 2" C. 28-#10 UP TO DB-71 THRU 82 PLUS 4 SPARES VIA J-BOX #6
7A 3/4" C. 2-#10 UP TO DB-83 VIA J-BOX #7

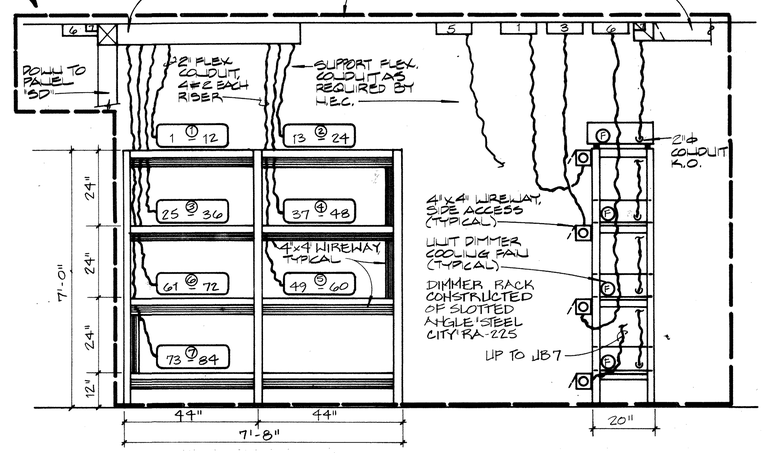
NOTE: CONDUCTOR SIZES & QUANTITIES ARE SHOWN FOR INFORMATIVE PURPOSES ONLY. PROVIDE COMPLETE CONDUIT ROUGH-IN INSTALLATION WITH FULL WIRES FOR PLATFORM LIGHTING SYSTEM.

NOTE: CONDUCTOR SIZES & QUANTITIES ARE SHOWN FOR INFORMATIVE PURPOSES ONLY. PROVIDE COMPLETE CONDUIT ROUGH-IN INSTALLATION WITH FULL WIRES FOR PLATFORM LIGHTING SYSTEM



4 / E-16 **POWER ONE LINE DIAGRAM – PLATFORM LIGHTING SYSTEM**

N.T.S.



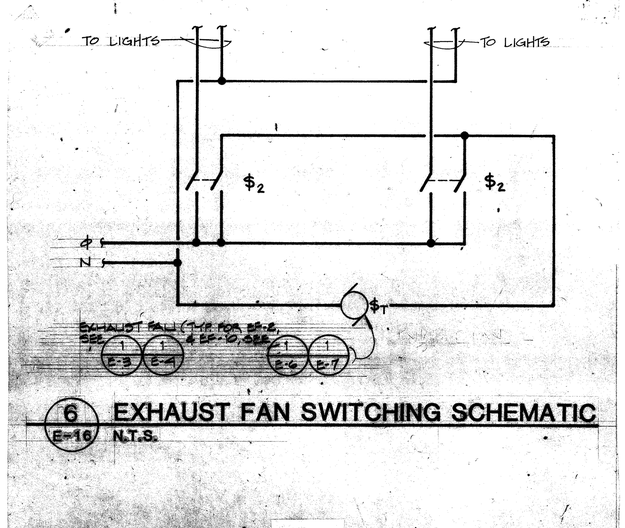
FRONT ELEVATION

SIDE ELEVATION

NOTE: BOND METAL FRAME, WIREWAYS, PANEL ENCLOSURE, J-BOXES & CONDUITS TOGETHER WITH #10 AWG BONDING JUMPER.

5 / E-16 **DETAILS PLATFORM DIMMING SYSTEM**

1/2" = 1'-0"



6 / E-16 **EXHAUST FAN SWITCHING SCHEMATIC**

N.T.S.

OVER 4V REQD	OVERLAYS	SCREEN
LB	LB	F
LG	LG	F
LH	LH	F
LI	LI	F

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PLANNING ARCHITECTURE INTERIOR design GRAPHICS

825 WEST EIGHTH AVENUE SUITE 200 ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR: **SKAGWAY ALASKA**

HOME ECON. FLOOR PLAN, DIMMER DETAILS, PLATFORM LIGHTING DETAILS

REVISIONS

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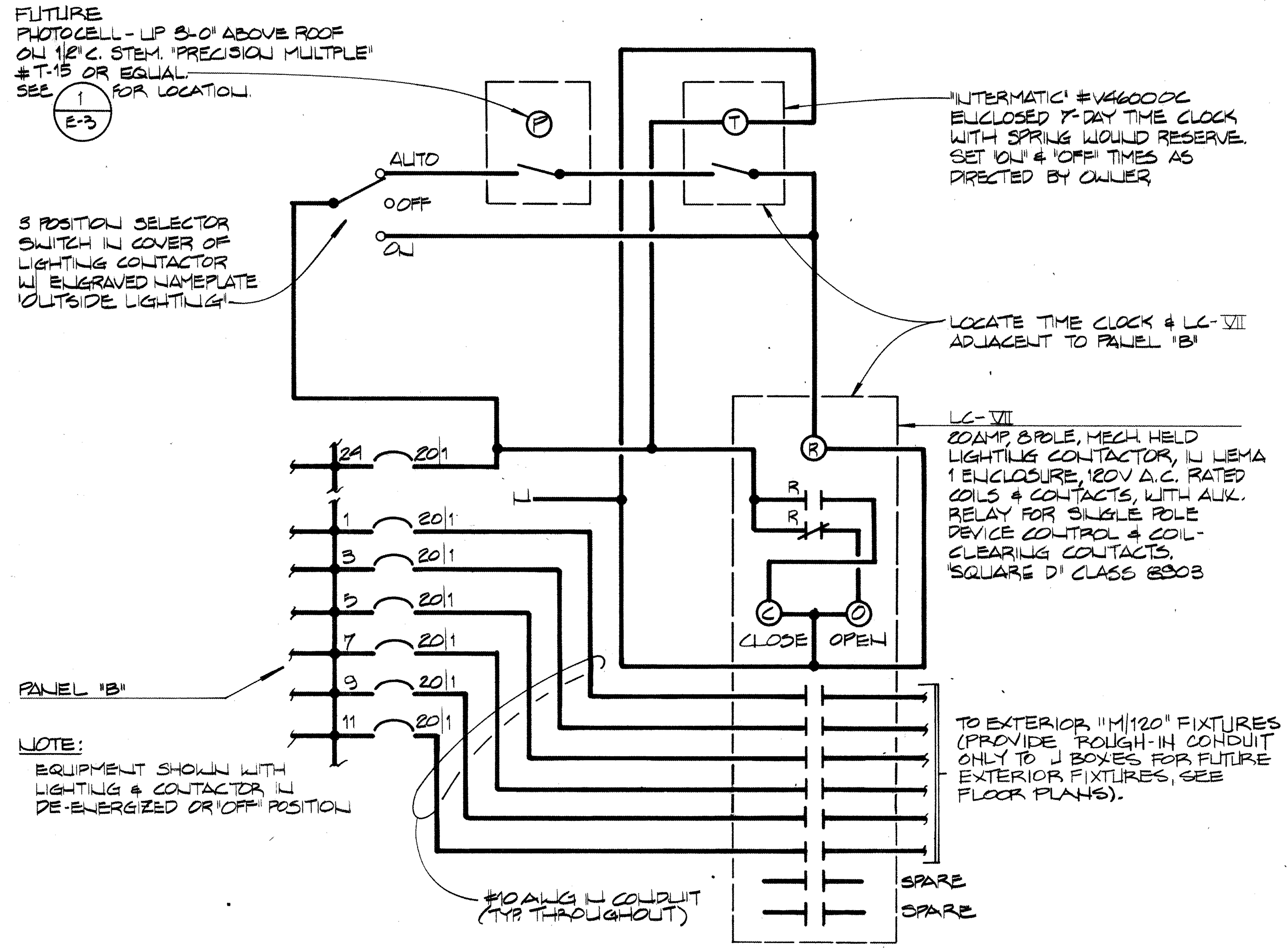
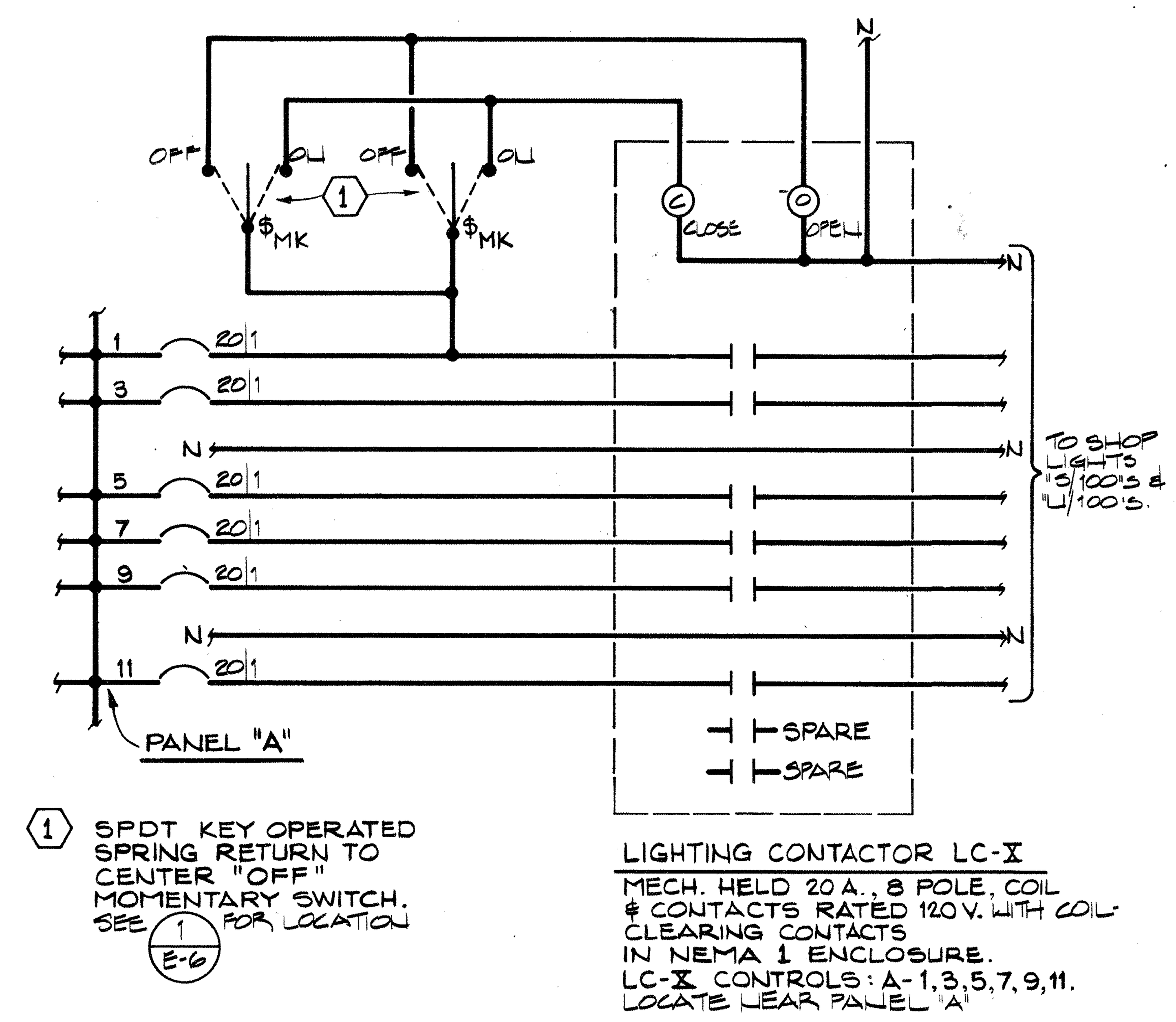


EXTERIOR LIGHTING CONTROL DIAGRAM

1/E-17

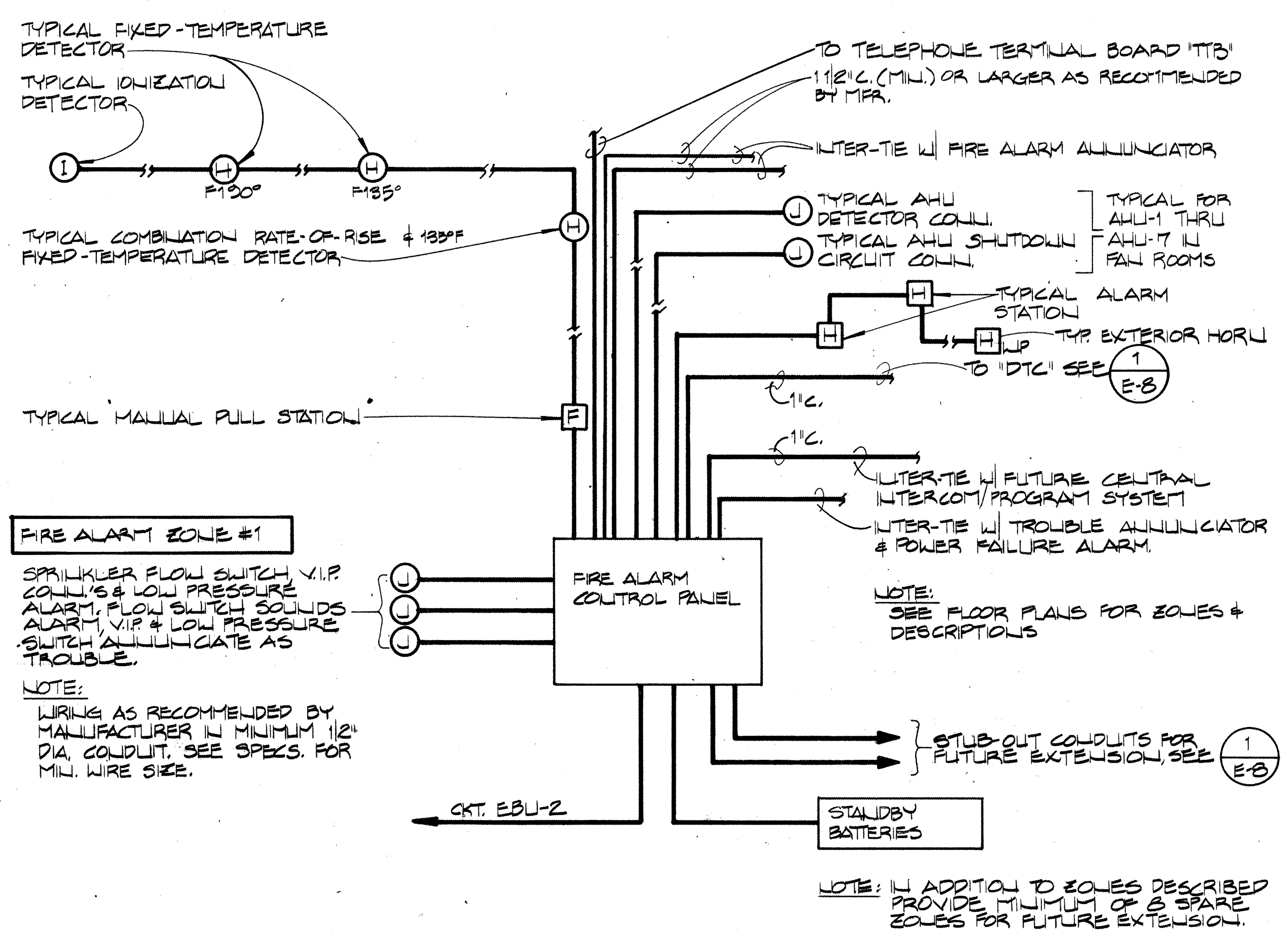
N.T.S.



LC-X SHOP LIGHTING CONTROL DIAGRAM

2/E-17

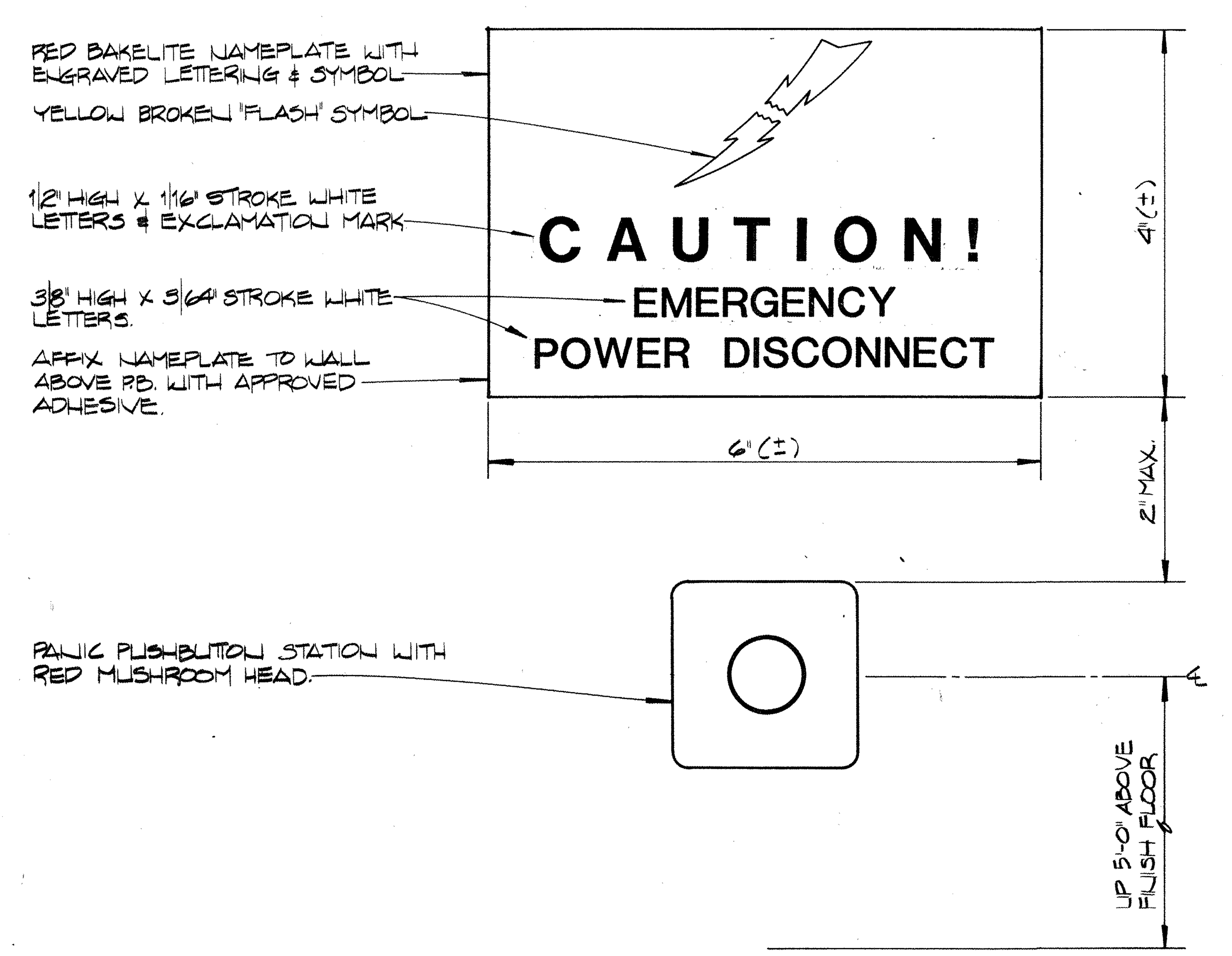
N.T.S.



FIRE ALARM RISER DIAGRAM

3/E-17

N.T.S.



DETAIL - TYPICAL PANIC DISCONNECT

4/E-17

N.T.S.

OVER- LY REQD	OVERLAYS	SCREEN
TB	TB	F
LJ	LJ	F
LK	LK	P

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PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS

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A NEW SCHOOL FOR: SKAGWAY ALASKA

DIAGRAMS & DETAILS

REVISIONS

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DATE APRIL 8, 1983

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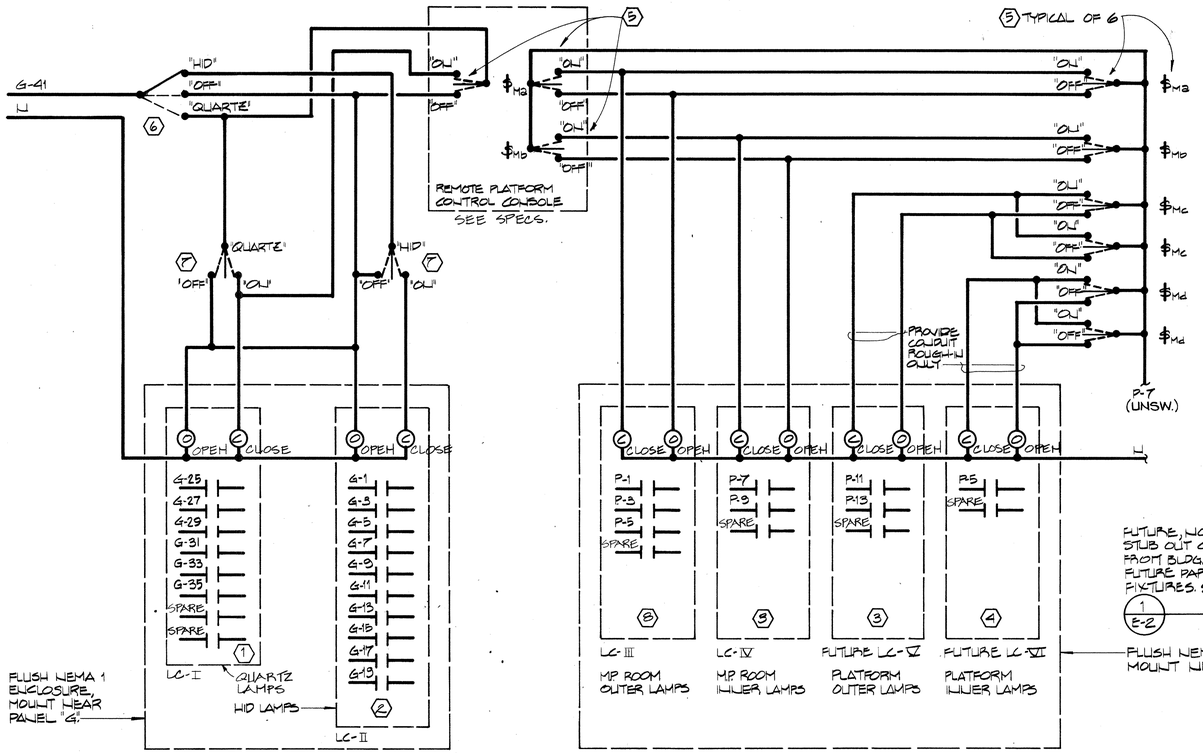
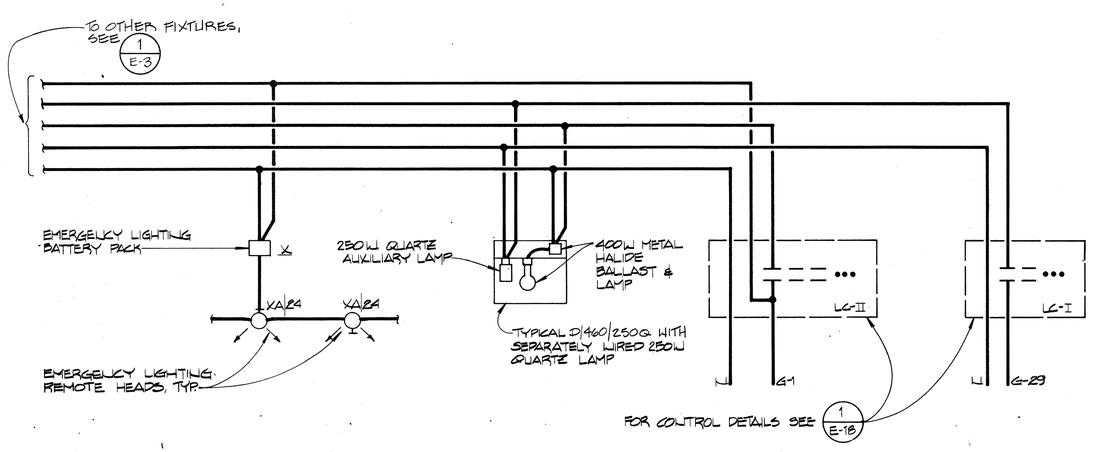


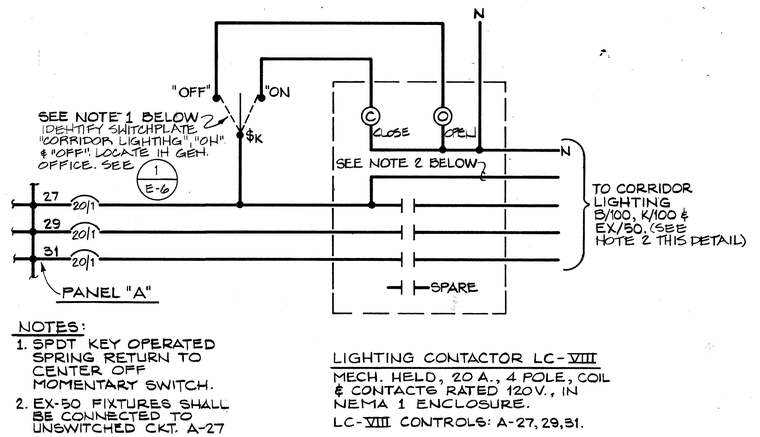
1 E-18 GYMNASIUM, MULTIPURPOSE ROOM & PLATFORM LIGHTING CONTROL DIAGRAM

N.T.S.



2 E-18 GYMNASIUM WIRING DIAGRAM

N.T.S.

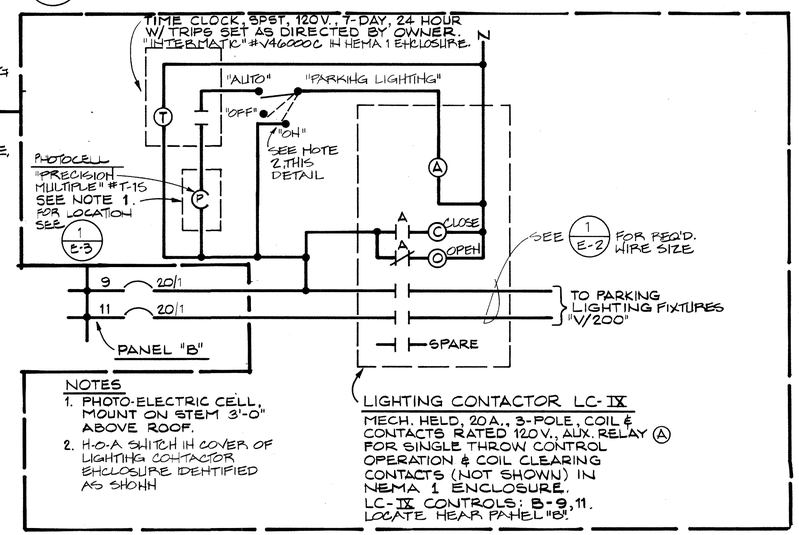


NOTES:
1. SPDT KEY OPERATED SPRING RETURN TO CENTER OFF MOMENTARY SWITCH.
2. EX-50 FIXTURES SHALL BE CONNECTED TO UNSWITCHED CKT. A-27

LIGHTING CONTACTOR LC-VIII
MECH. HELD, 20 A., 4 POLE, COIL & CONTACTS RATED 120V., IN NEMA 1 ENCLOSURE.
LC-VIII CONTROLS: A-27, 29, 31.

3 E-18 LC-VIII CORRIDOR LIGHTING CONTROL DIAGRAM

N.T.S.



NOTES
1. PHOTO-ELECTRIC CELL, MOUNT ON STEM 3'-0" ABOVE ROOF.
2. H-O-A SWITCH IN COVER OF LIGHTING CONTACTOR ENCLOSURE IDENTIFIED AS SHOWN

LIGHTING CONTACTOR LC-IX
MECH. HELD, 20A., 3-POLE, COIL & CONTACTS RATED 120V., AUX. RELAY (A) FOR SINGLE THROW CONTROL OPERATION & COIL CLEARING CONTACTS (NOT SHOWN) IN NEMA 1 ENCLOSURE.
LC-IX CONTROLS: B-9, 11. LOCATE NEAR PANEL "B".

4 E-18 LC-IX PARKING LOT LIGHTING CONTROL DIAGRAM

N.T.S.

SHEET NOTES

1. 20-AMP, 8-POLE MECHANICALLY HELD LIGHTING CONTACTOR WITH 120-VOLT COILS AND COIL CLEARING CONTACTS. SQUARE D CLASS 8903. MOUNT ON RUBBER ISOLATORS IN FLUSH NEMA 1 ENCLOSURE.
2. SIMILAR TO (1) EXCEPT 10 POLES.
3. SIMILAR TO (1) EXCEPT 3 POLES.
4. SIMILAR TO (1) EXCEPT 2 POLES.
5. SM_A, SM_B, SM_C, SM_D - 20 AMP, SINGLE POLE, DOUBLE THROW MOMENTARY TOGGLE SWITCH WITH SPRING RETURN TO CENTER OFF POSITION.
6. 3-POSITION SELECTOR SWITCH, 120-VOLT A.C., 10 AMP RATING, FLUSH MOUNTED WITH DEVICE PLATE ENGRAVED AS NOTED. SQUARE D CLASS 9001.
7. KEY OPERATED 20-AMP, SINGLE POLE, DOUBLE THROW MOMENTARY SWITCH WITH SPRING RETURN TO CENTER OFF POSITION. PROVIDE DEVICE PLATE ENGRAVED AS NOTED.
8. SIMILAR TO (1) EXCEPT 4 POLES.

OVF	AV REQD
TD	TD
LL	LL
LM	LM

OVERLAYS	SCREEN
TD	TD
LL	LL
LM	LM

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PLANNING, ARCHITECTURE, INTERIOR DESIGN, GRAPHICS

STATE OF ALASKA — REGISTERED ARCHITECT

A NEW SCHOOL FOR:
SKAGWAY ALASKA

LIGHTING CONTROL DIAGRAMS

REVISIONS

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DLR / DD / HJS

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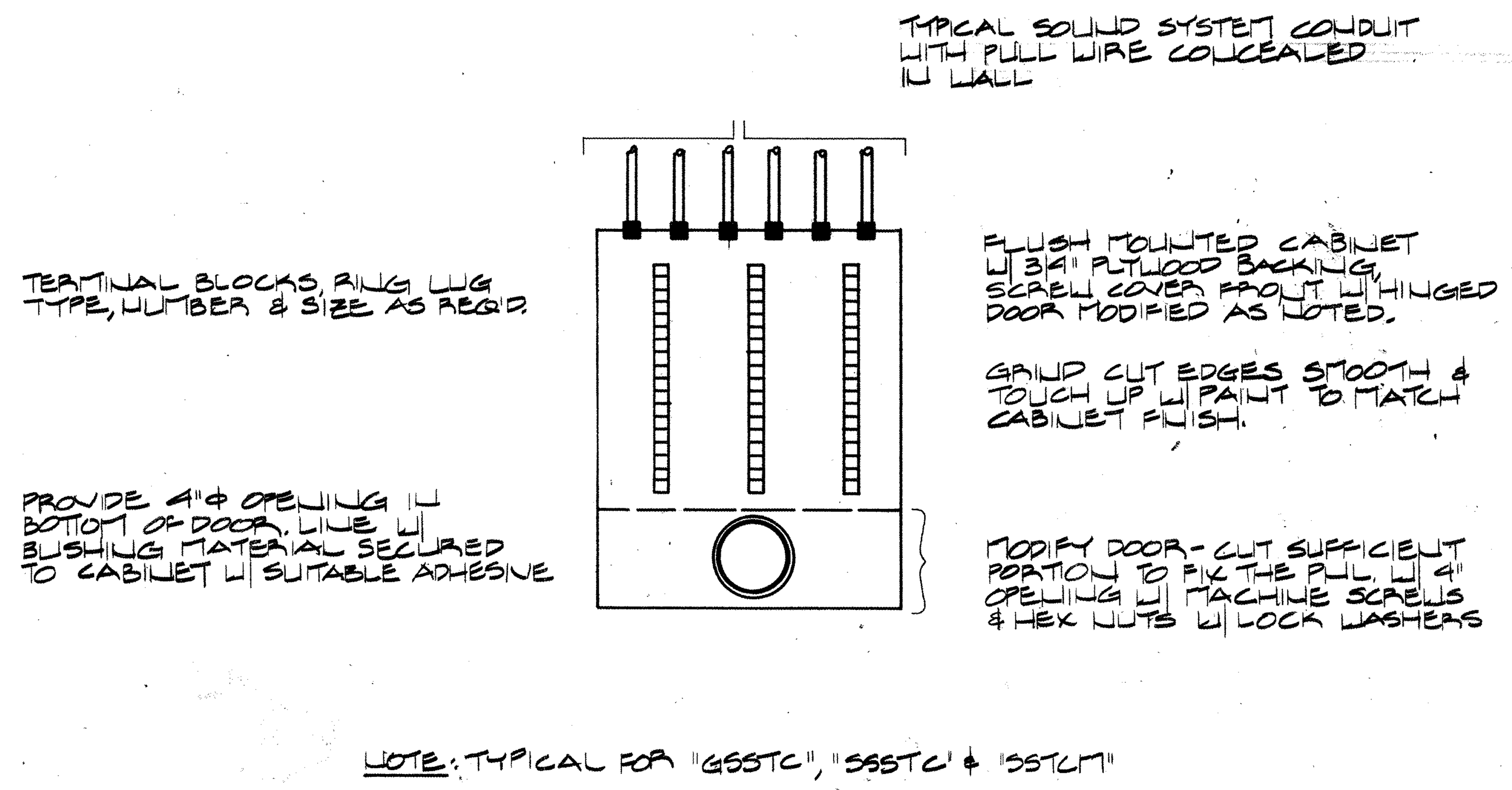
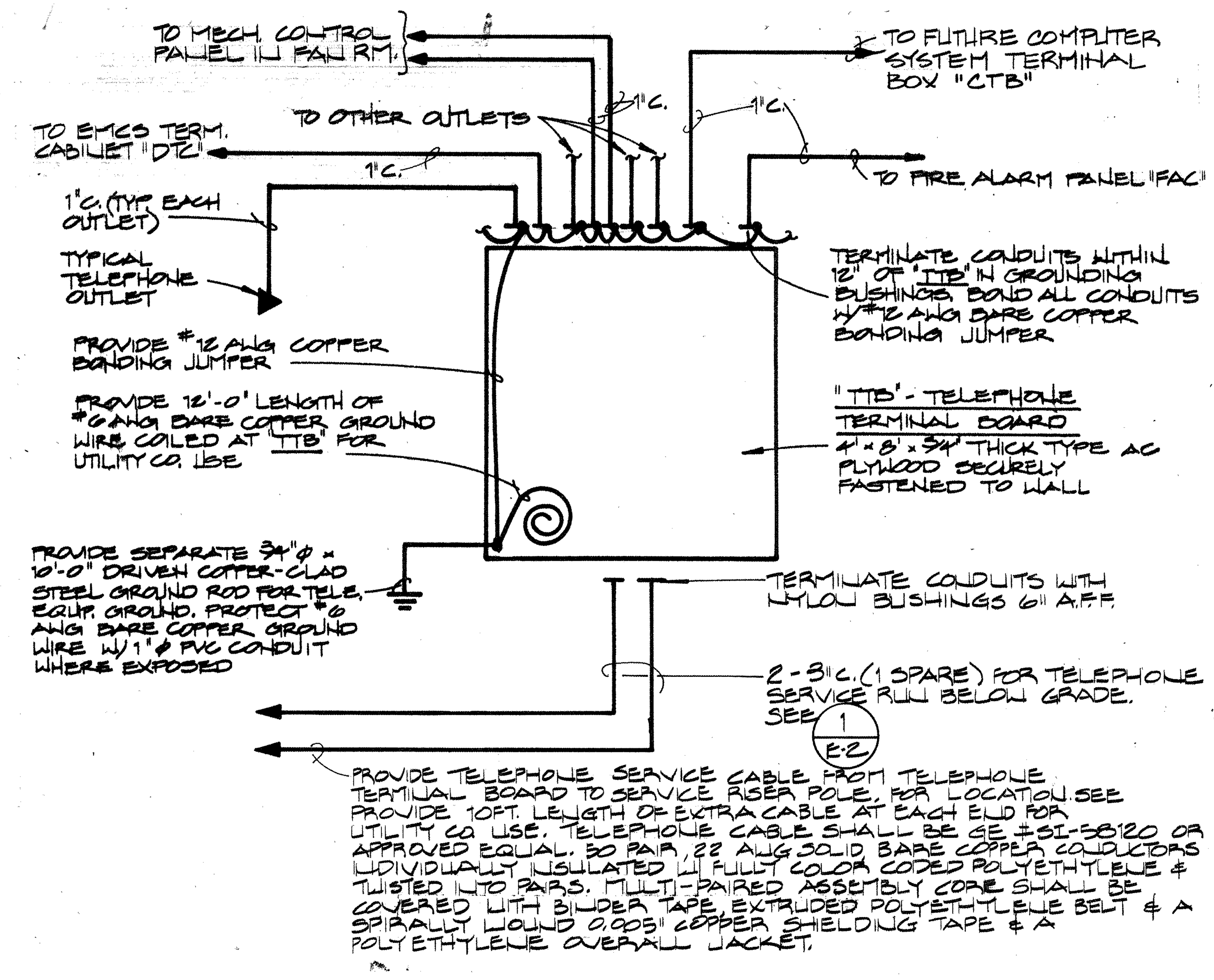
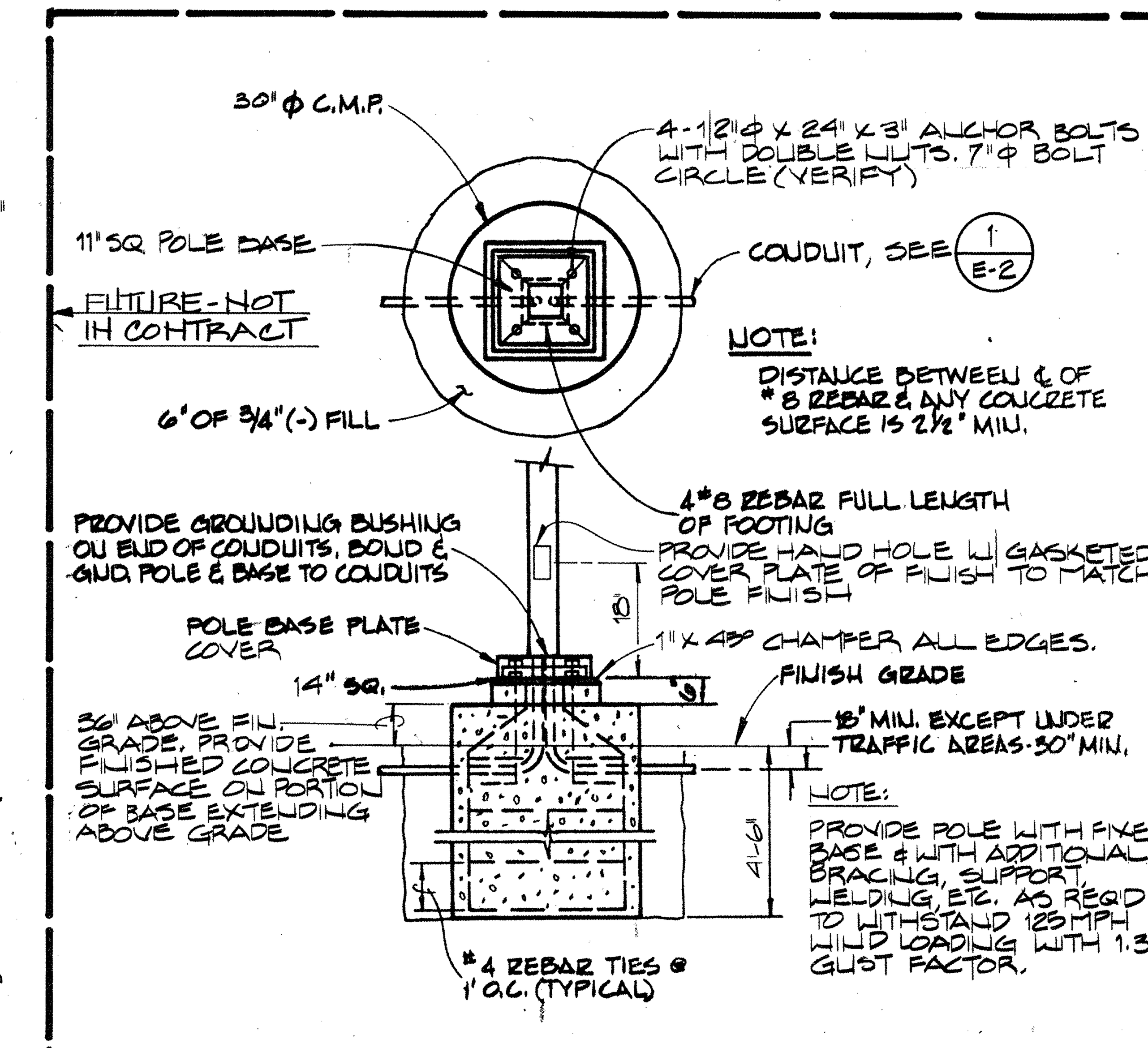


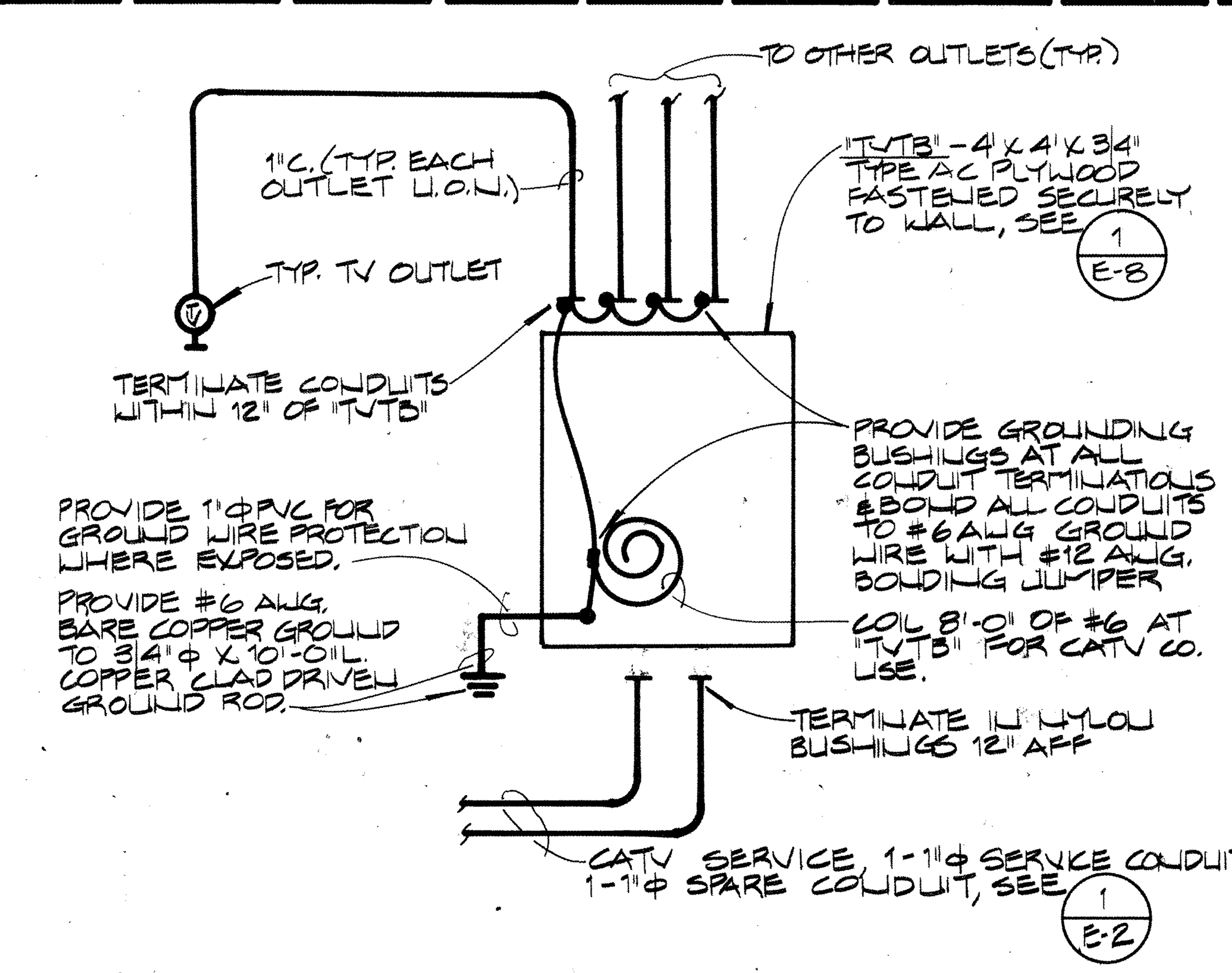
1 E-19 **TYPICAL TERMINAL CABINET**
NTS



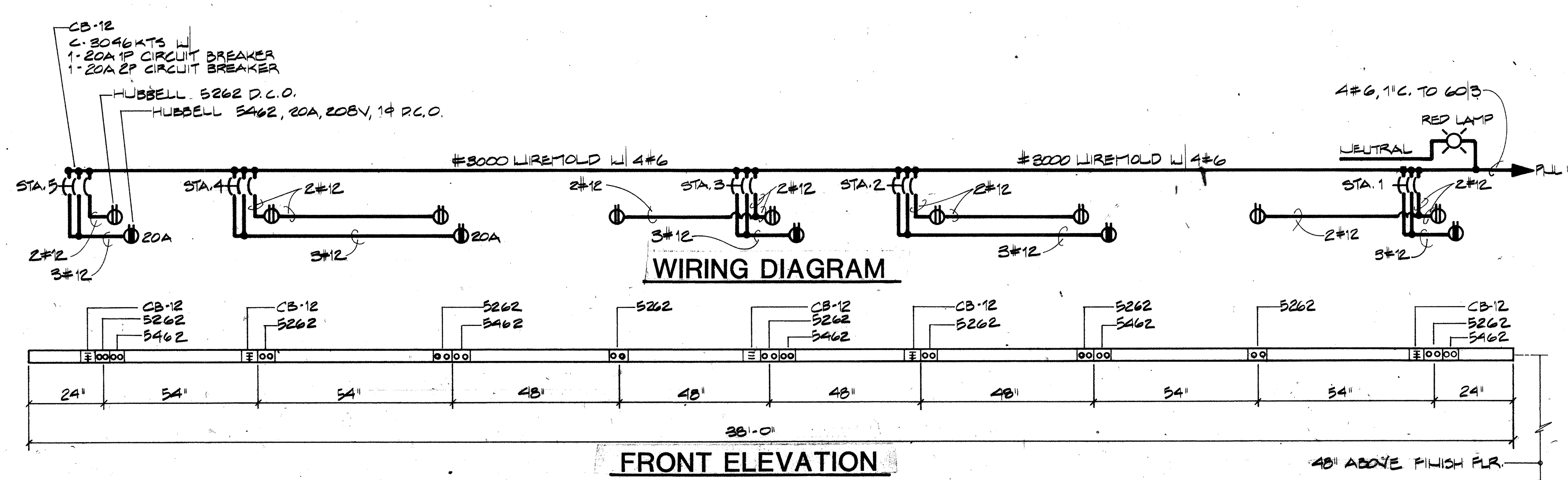
2 E-19 **TELEPHONE RISER**
NTS



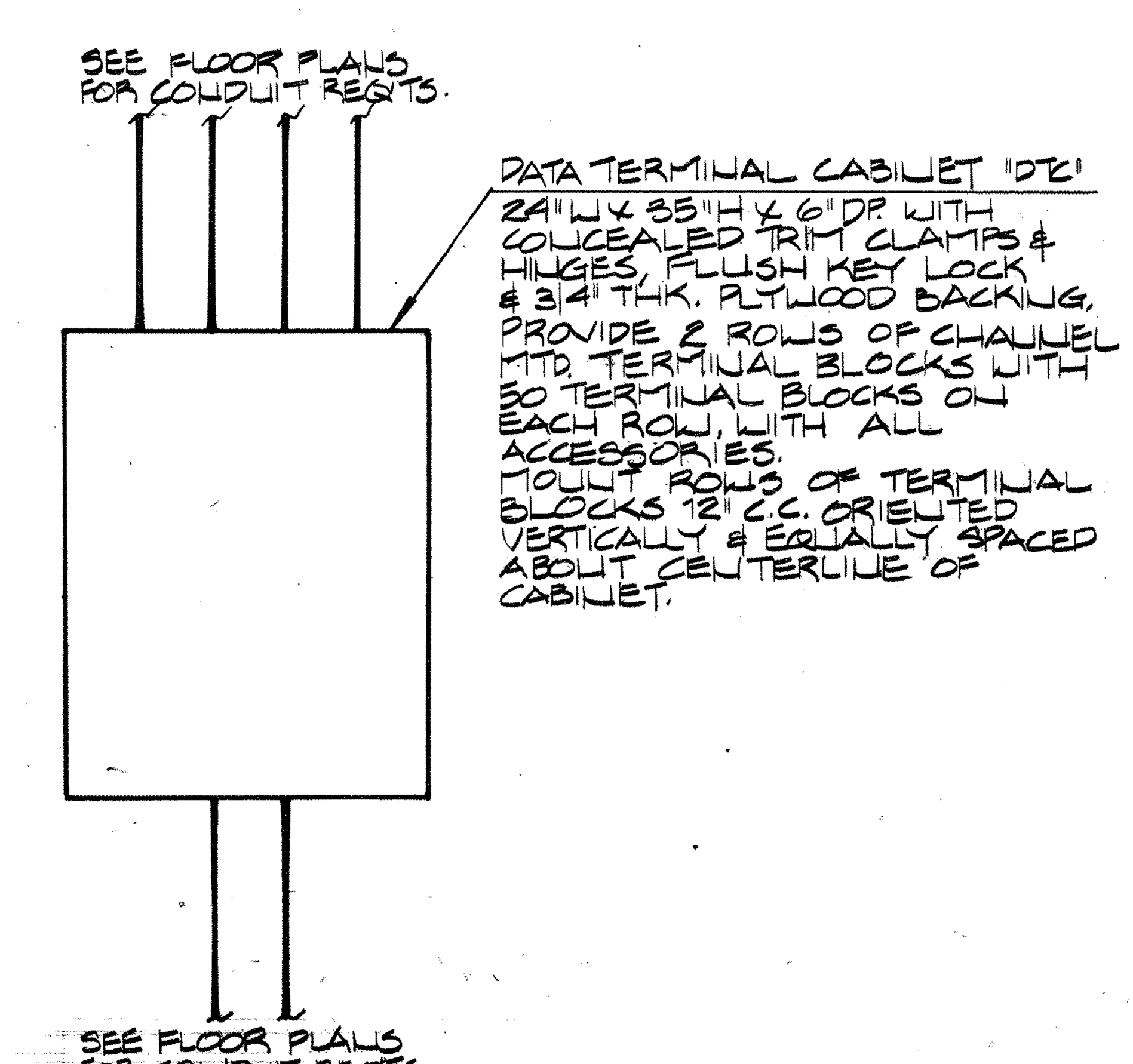
3 E-19 **DETAIL - POLE BASE**
NTS



5 E-19 **CATV RISER DIAGRAM**
NTS



6 E-19 **DETAIL - #3000 WIREMOLD OVER WORKBENCH** (TYPICAL FOR TWO LOCATIONS IN SHOP)
NTS



7 E-19 **EMCS RISER DIAGRAM**
NTS

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
LN	LN	F
LO	LO	F

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A NEW SCHOOL FOR : SKAGWAY ALASKA

WIRING DIAGRAMS & DETAILS

REVISIONS

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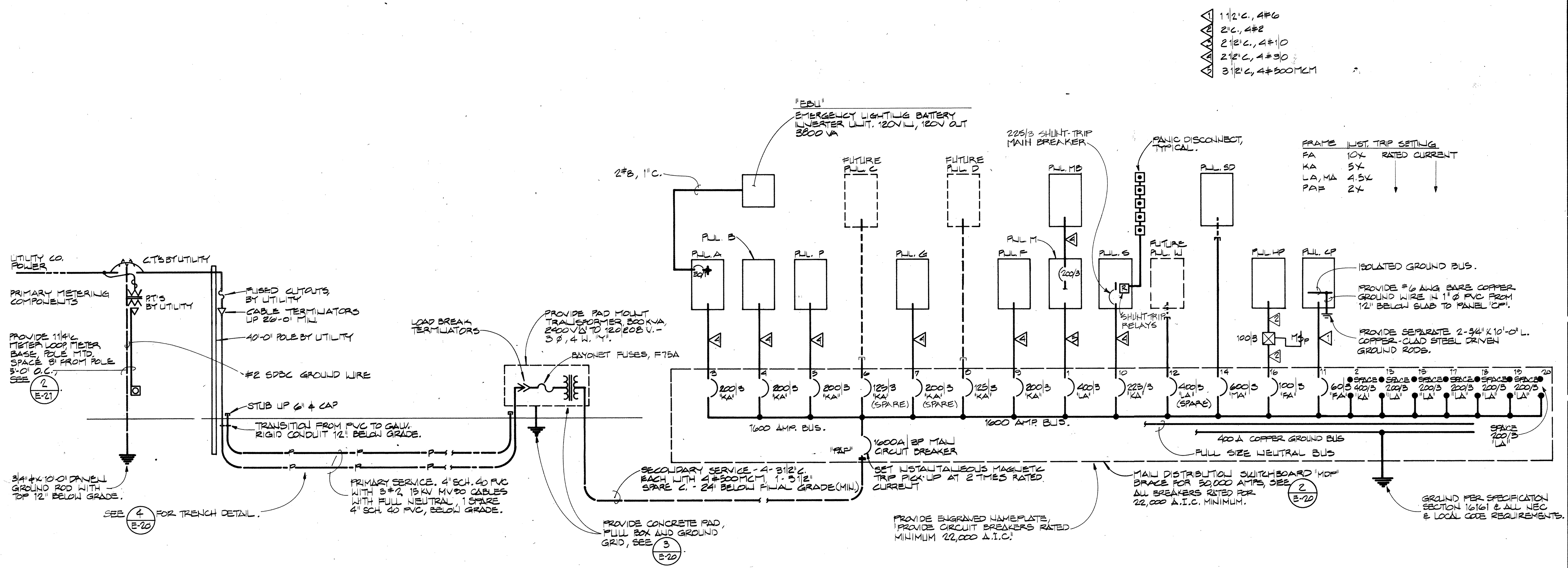
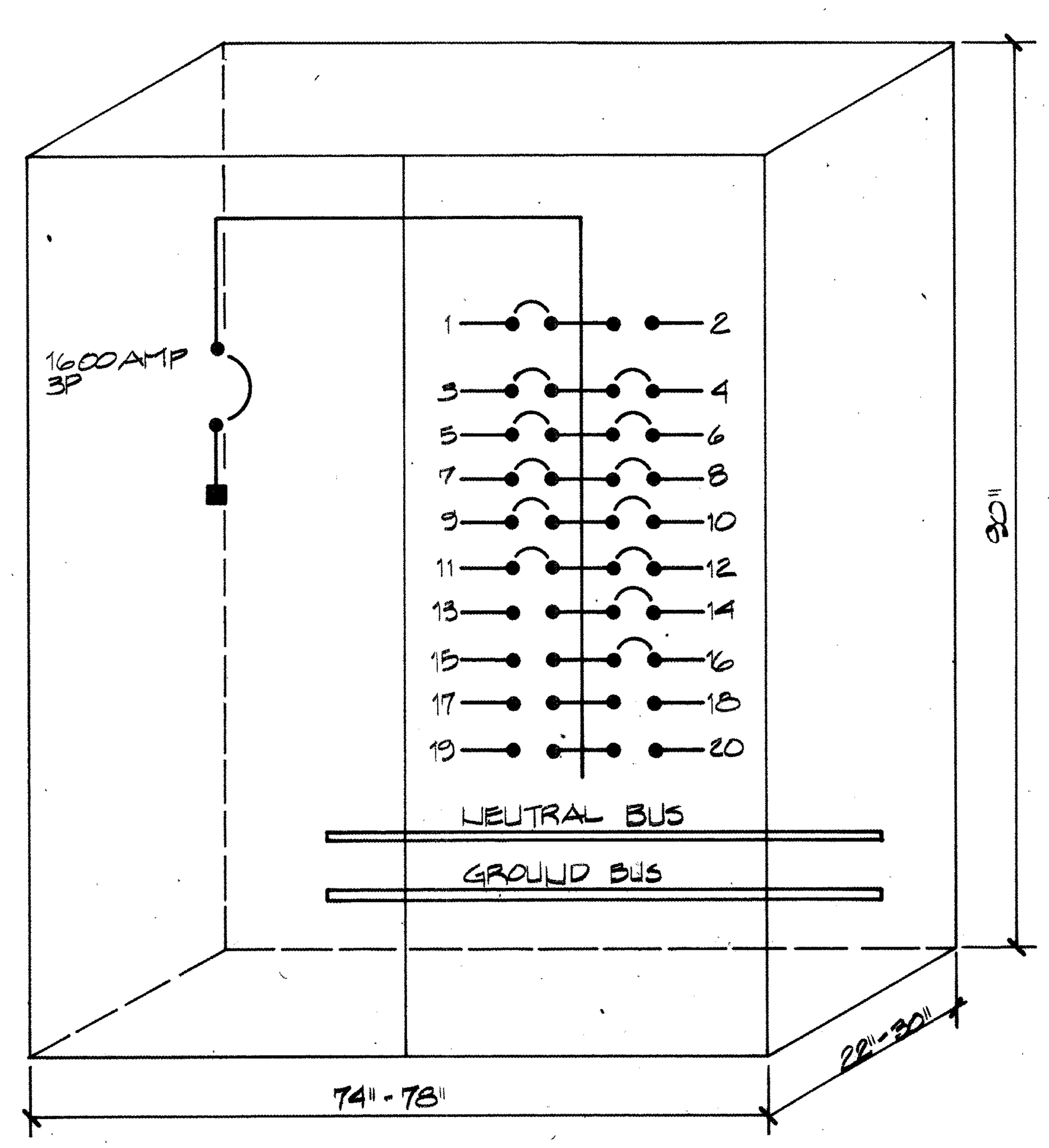
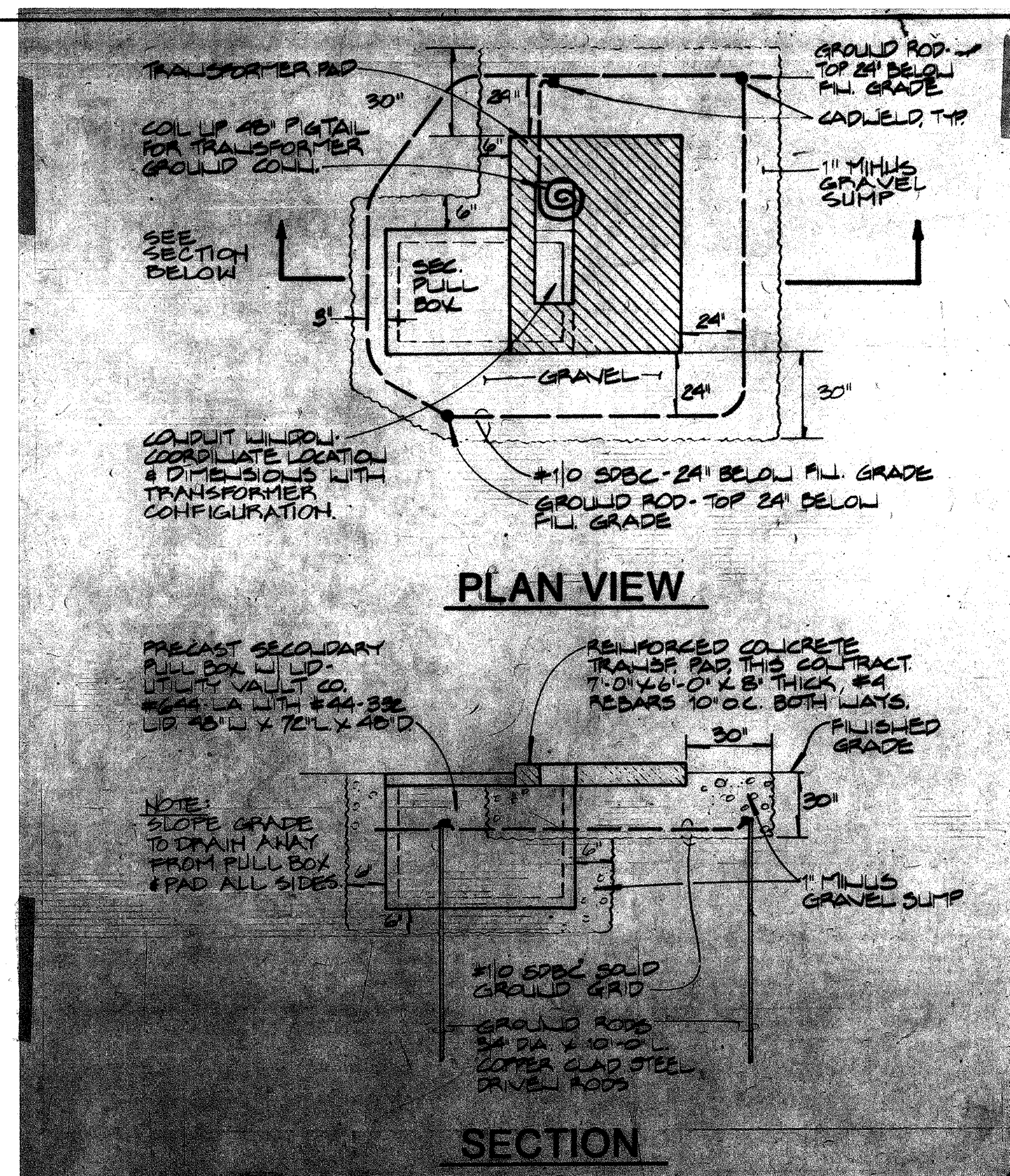


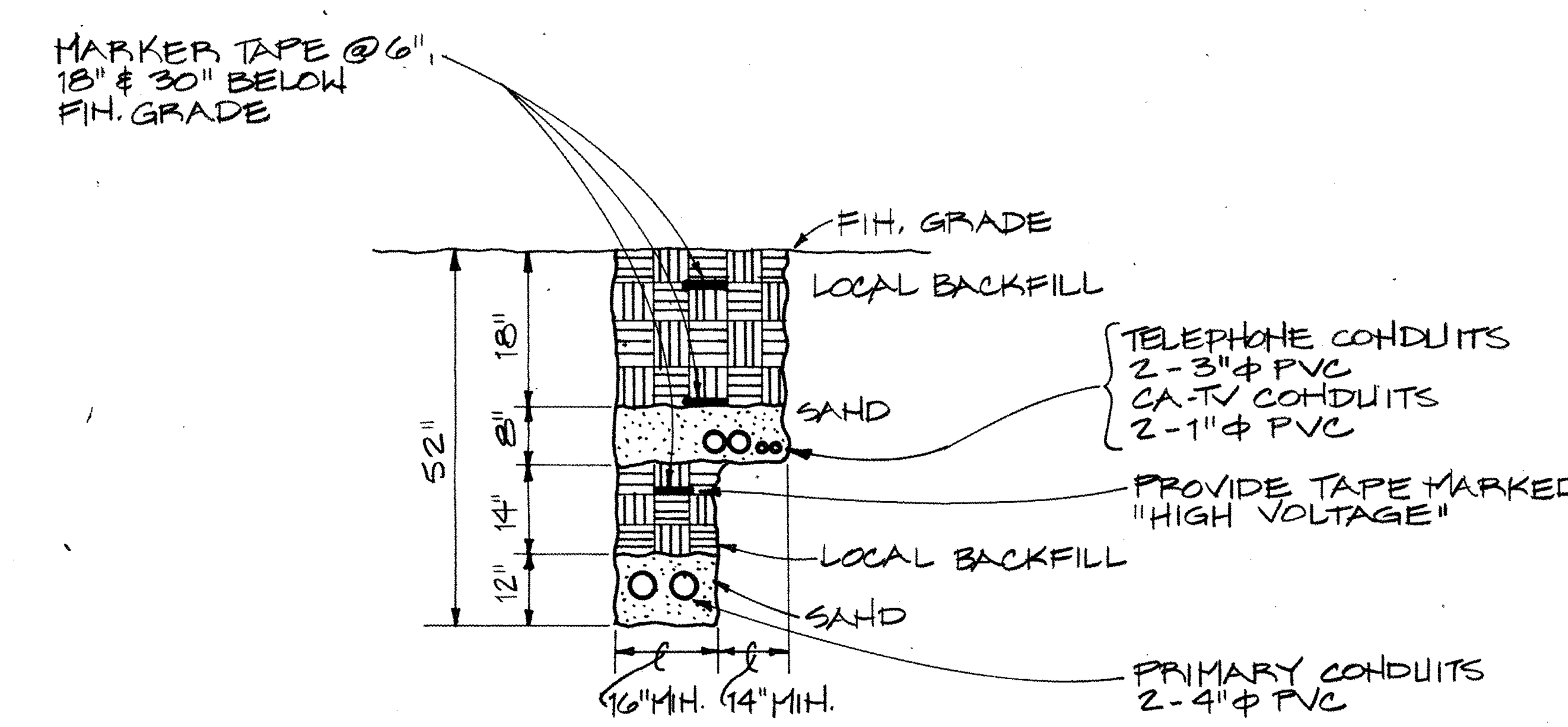
1 E-20 **ONE LINE POWER DIAGRAM**
N.T.S.



2 E-20 **ELEVATION - MAIN DISTRIBUTION SWITCHBOARD**
3/4"=1'-0"



3 E-20 **TRANSFORMER DETAILS**
N.T.S.



4 E-20 **TRENCH DETAIL**
N.T.S.

OVERLAY REQD	OVERLAYS	SCREEN
TB	TB	F
LP	LP	F
LQ	LQ	F

HAEG·BETTIS·ASSOCIATES INC.
PLANNING ARCHITECTURE INTERIOR DESIGN GRAPHICS
825 WEST EIGHTH AVENUE SUITE 200 ANCHORAGE ALASKA 99501 (907) 279-3436

A NEW SCHOOL FOR : **SKAGWAY ALASKA**

ONE LINE POWER DIAGRAM, DETAILS

REVISIONS

drawn by DLR / BJA / HJS

date APRIL 8, 1983

project no. 8303 FPE #13-1076

sheet no. **E-20** of 23

PANEL A SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	LIGHTING	2	1	20	RECEPTACLES
3				4			
5				6			
7				8			
9				10			MULTI-OUTLET RACEWAY
11				12			
13				14			
15				16			
17				18			
19				20			
21				22			RECEPTACLES
23				24			
25				26			
27				28	2	30	**FUTURE COOK TOP**
29				30	1	20	RECEPTACLES
31				32		50	EMERGENCY POWER SYSTEM
33				34		20	SPARE
35			RECEPTACLES	36			
37			SPARE	38			
39				40			
41							

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=

PANEL B SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	EXTERIOR LIGHTING	2	1	20	RECEPTACLES
3				4			
5				6			
7				8			
9				10			
11				12			
13			LIGHTING	14			MULTI-OUTLET RACEWAY
15				16			
17				18			
19				20			
21				22			C.U.H.
23				24			CONTROL
25				26			SPARE
27			RECEPTACLES	28			
29			EXHAUST FANS	30			
31			HEAT RECOVERY COIL	32			
33			SPARE	34			
35				36			
37				38			
39				40			
41				42			

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=

PANEL C SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	(FUTURE CLASSROOM WING)	2	1	20	(FUTURE CLASSROOM WING)
3				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			
17				18			
19				20			
21				22			
23				24			
25				26			
27				28			
29				30			
31				32			
33				34			
35				36			
37				38			
39				40			
41				42			

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=FUTURE PANEL - CONDUIT STUB OUT ONLY - PANEL N.I.C.

PANEL D SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	(FUTURE CLASSROOM WING)	2	1	20	(FUTURE CLASSROOM WING)
3				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			
17				18			
19				20			
21				22			
23				24			
25				26			
27				28			
29				30			
31				32			
33				34			
35				36			
37				38			
39				40			
41				42			

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=FUTURE PANEL - CONDUIT STUB OUT ONLY - PANEL N.I.C.

PANEL F SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	LIGHTING	2	1	20	RECEPTACLES
3				4			
5				6			
7				8			
9			**FUTURE REFRIGERATOR**	10			
11			**FUTURE DISHWASHER**	12			
13			**FUTURE DISPOSAL**	14			
15	2	50	**FUTURE RANGE**	16			**FUTURE REFRIGERATOR**
17	1	20	RECEPTACLES	18			**FUTURE DISHWASHER**
19				20			
21				22	2	50	**FUTURE RANGE**
23				24		30	**FUTURE DRYER**
25				26	1	20	**FUTURE WASHER**
27				28			RECEPTACLES
29				30			
31				32			
33				34			**FUTURE RANGE HOOD**
35				36	2	30	**FUTURE RANGE (COOK TOP)**
37			SPARE				
39							

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=FLUSH

SPECIAL REQUIREMENTS=

PANEL G SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	LIGHTING	2	1	20	RECEPTACLES
3				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			
17				18			
19				20	2	30	**FUTURE DRYER**
21				22			**FUTURE DRYER**
23				24	1	20	RECEPTACLES
25				26			**FUTURE WASHER**
27			CF-1	28			
29			SPARE	30			
31				32			
33				34			
35				36			**SPARE**
37				38			
39							
41							

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=FLUSH

SPECIAL REQUIREMENTS=

PANEL CP SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	MULTI-OUTLET RACEWAY	2	1	20	RECEPTACLES
3				4			
5				6			
7				8			SPARE
9			SPARE	10			
11				12			
13	-	---	SPACE W/ HARDWARE	14	-	---	SPACE W/ HARDWARE
15				16			
17				18			
19				20			
21				22			
23				24			

MAINS= 100 AMP M.L.O. | TYPE= 120/208 V.-3 PH; 4 W. | MOUNTING=FLUSH

SPECIAL REQUIREMENTS=PROVIDE W/ ISOLATED GROUND BUS

PANEL SD SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	3	100	DIMMER #1	2	3	100	DIMMER #2
3			DIMMER #3	4			DIMMER #4
5			DIMMER #5	6			DIMMER #6
7			DIMMER #7	8	3	100	SPARE
9	-	---	3 POLE SPACE W/ HARDWARE	10	-	---	3 POLE SPACE W/ HARDWARE

MAINS= 600 AMP M.L.O. | TYPE= 120/208 V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS= **FUTURE PANEL – CONDUIT STUB-OUT ONLY – PANEL NOT IN CONTRACT.**

PANEL EBU SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	LIGHTING	2	1	20	FIRE ALARM PANEL
3				4			*TELEPHONE TERMINAL BOARD
5			SPARE	6			*INTERCOM/P.A. SYSTEM
7				8			*MULTI-PURPOSE SOUND SYSTEM
9				10			**SPARE**
11				12			*GYM SOUND SYSTEM

MAINS= 100 AMP M.L.O. | TYPE= 120/240V.-1 PH; 3 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=120 VOLT IN / 120 VOLT OUT *** FUTURE**

PANEL HP SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	2	40	HEAT CABLES	2	2	40	HEAT CABLES
3		30		4		30	
5				6			
7			SPARE	8	-	---	SPACE W/ HARDWARE
9			HEAT CABLES	10			
11				12			
13	-	---	SPACE W/ HARDWARE	14			
15				16			
17				18			
				20			
				22			
				24			

MAINS= 125 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=

PANEL M SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	3	20	CP-1	2	3	20	BOILER #1
3			CP-2	4			BOILER #2
5			CP-3	6			AHU-6
7			EF-1	8		50	AHU-5
9	1		HWH-1	10	1	20	HRC
11			HWH-2	12			VF-1
13	1		HWCP-1	14	3		**PANEL MB SUB-FEED**
15			MECH. CONTROL PANEL	16	1		**DOOR OPENER**
17			RECEPTACLES				**SPARE**
19			**UH-1**				
21			**SPARE**	26			

MAINS= 400 AMP M.L.O. | TYPE= 120/208 V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=

PANEL MB SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	3	50	AHU-1	2	3	20	AHU-4
3			AHU-2	4			AHU-7
5		20	AHU-3	6	2		**FUTURE CV-1**
7	1		LIGHTING	8			**FUTURE CV-1**
9				10	1		SPARE
11			RECEPTACLES	12			
13			UH-3	14			
15			LIGHTING	16			
17			SPARE	18			
19				20			
21		---	SPACE W/ HARDWARE	22		---	SPACE W/ HARDWARE
23				24			
25				26			
27				28			
29				30			

MAINS= 225 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS=

PANEL P SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	1	20	LIGHTING	2	1	20	RECEPTACLES
3				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			SPARE
17				18			**FUTURE MOVIE SCREEN**
19				20			LIGHTING
21				22			
23				24			SPARE
25			RECEPTACLES	26			
27			SPARE	28			
29				30			

MAINS= 100 AMP M.L.O. | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=FLUSH

SPECIAL REQUIREMENTS=

PANEL S SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1	3	60	METALS WORK BENCH	2	2	20	**FUTURE TABLE SAW**
3			METALS WORK BENCH	4	1		**FUTURE JOINTER**
5	1	20	RECEPTACLES	6			**FUTURE BAND SAW**
7				8			RECEPTACLES
9				10			
11				12			
13				14			
15	3		**FUTURE EF-8**	16			
17	1		**FUTURE GRINDER**	18			
19			**FUTURE BUFFER/SANDER**	20	2		**FUTURE RADIAL ARM SAW**
21				22	3	50	**FUTURE SAW DUST COLLECTOR**
23				24		40	**FUTURE PLANER**
25				26			**FUTURE SHAKER**
27				28	1	20	SPARE
29				30			
				32			
				34			

MAINS= 225/3 MAIN BREAKER | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS= **SHUNT TRIP MAIN BREAKER**

PANEL W SCHEDULE

CKT. NO.	# P	TRIP	LOAD SERVED	CKT. NO.	# P	TRIP	LOAD SERVED
1			**(FUTURE WELDING ROOM)**	2			**(FUTURE WELDING ROOM)**
3				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			
17				18			
19				20			
21				22			
23				24			
25				26			
27				28			
29				30			

MAINS= **400/3** MAIN BREAKER | TYPE= 120/208V.-3 PH; 4 W. | MOUNTING=SURFACE

SPECIAL REQUIREMENTS= **FUTURE PANEL – CONDUIT STUB OUT ONLY – PANEL N.I.C.**

OVERLAY REQD	OVERLAYS	SCREEN
TB	LR	
LR	LR	

HAEG·DETTIS·ASSOCIATES INC.
PLANNING·ARCHITECTURE·INTERIOR DESIGN·GRAPHICS
825 WEST EIGHTH AVENUE·SUITE 200
ANCHORAGE·ALASKA 99501 (907) 279·3436

STATE OF ALASKA · James R. Pressley · No. 3855 · REGISTERED PROFESSIONAL

A NEW SCHOOL FOR:

SKAGWAY ALASKA

PANEL SCHEDULES

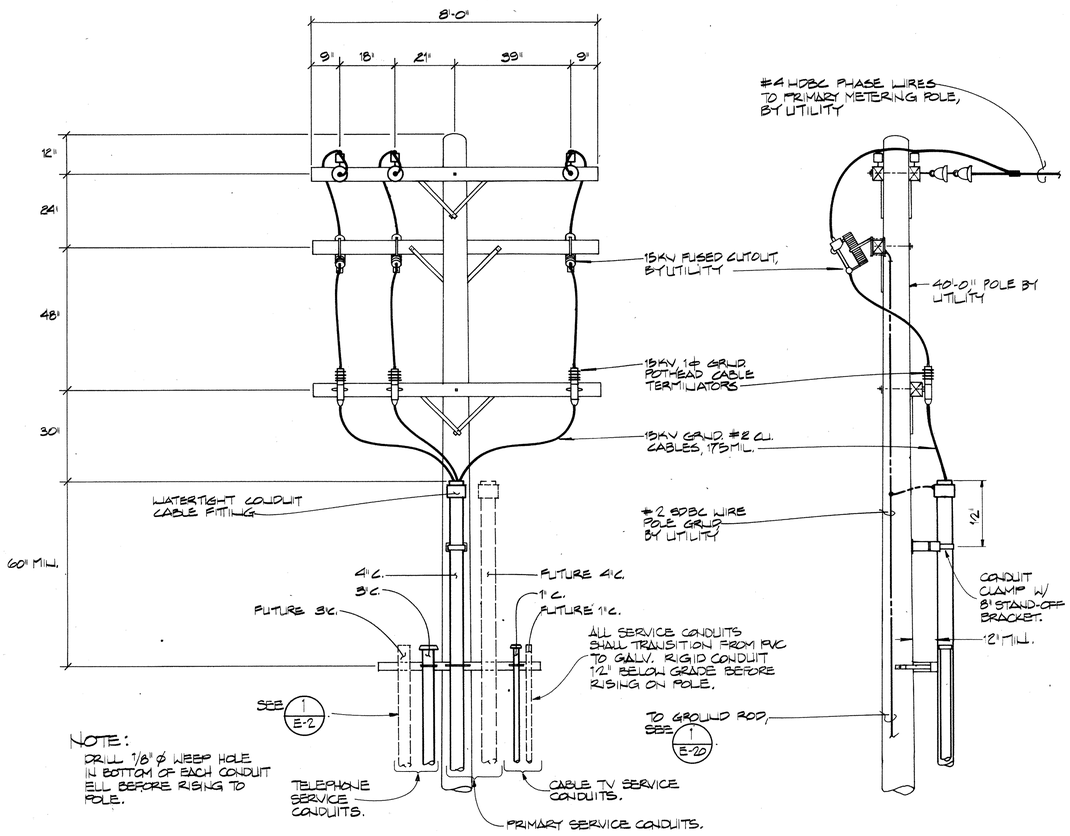
REVISIONS

drawn by
DLR

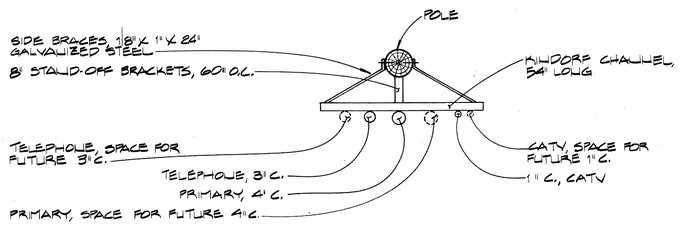
date
APRIL 8, 1983

project no.
8303
FPE #13-1076

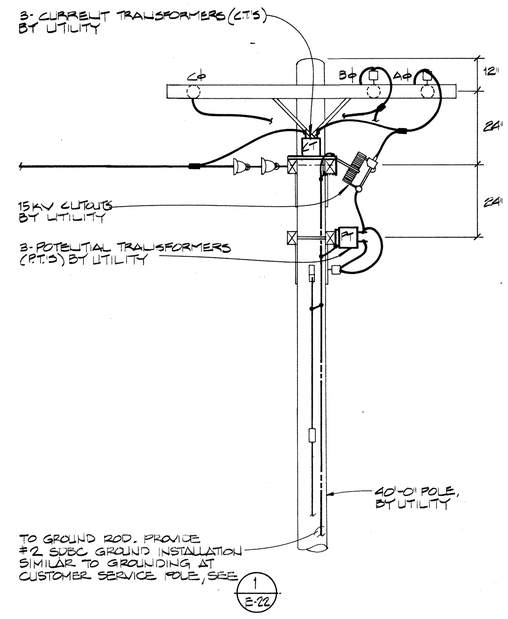
sheet no.
E-21
of 23



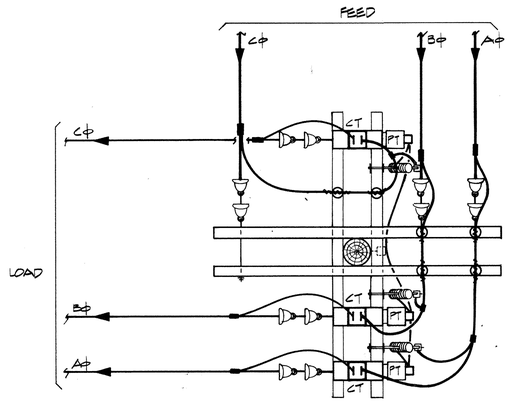
PARTIAL FRONT ELEVATION



SECTION THRU CONDUIT SUPPORTS

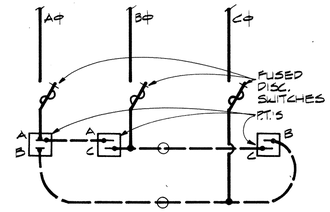


PARTIAL FRONT ELEVATION



PLAN VIEW - POLE TOP

METER CONNECTION DIAGRAM



P.T. CONNECTION DIAGRAM

OVE	' RECD
TB	TB
LG	LG
LT	LT

OVERLAYS	SCREEN
TB	P
LG	P
LT	P

1 E-22 DETAILS - CUSTOMER SERVICE POLE
N.T.S.

2 E-22 DETAILS - PRIMARY METERING POLE
N.T.S.

HAEG · DETTIS · ASSOCIATES INC.
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3496
PLANNING ARCHITECTURE INTERIOR design GRAPHICS

STATE OF ALASKA 49TH REGISTERED ARCHITECT

A NEW SCHOOL FOR:
SKAGWAY ALASKA

POLE LINE DETAILS

REVISIONS

drawn by
DLR / BJS

date
APRIL 8, 1983

project no.
8303
FPE # 13-1076

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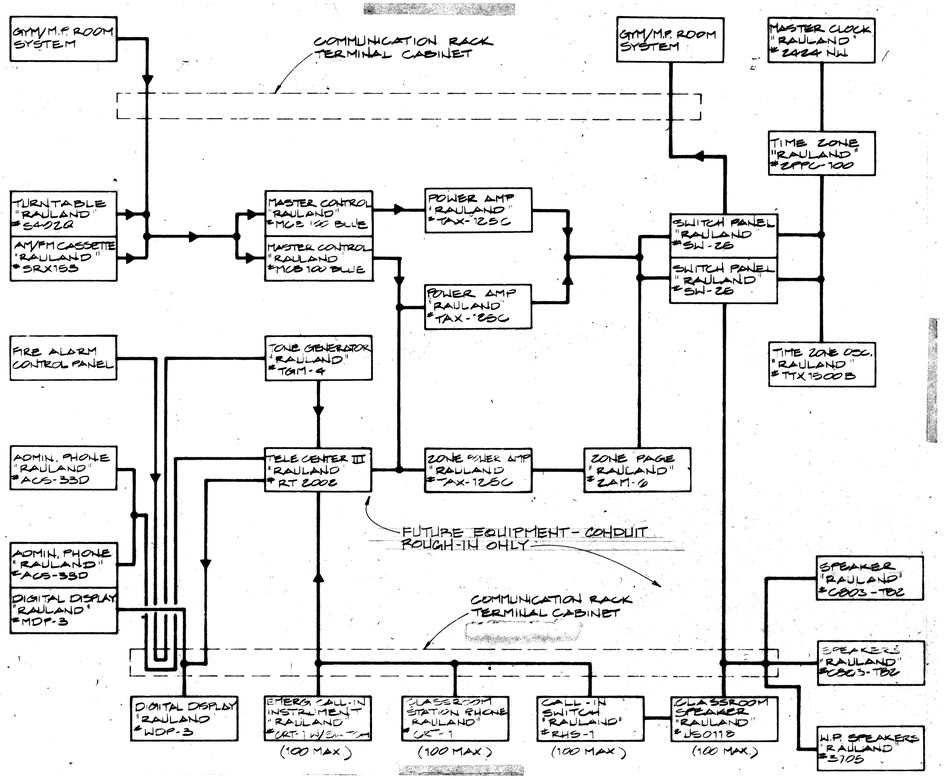
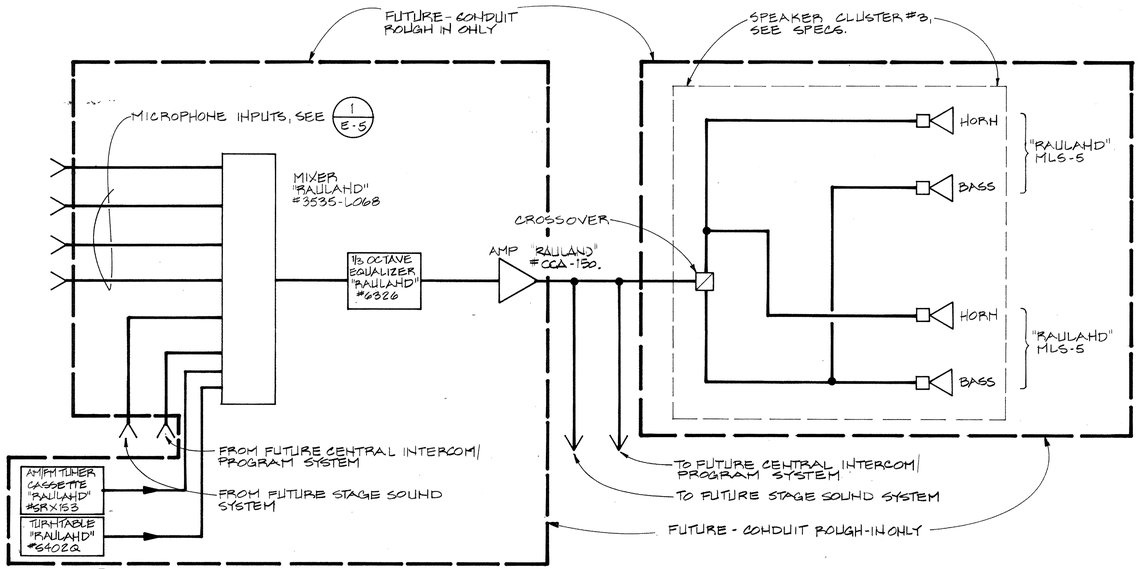


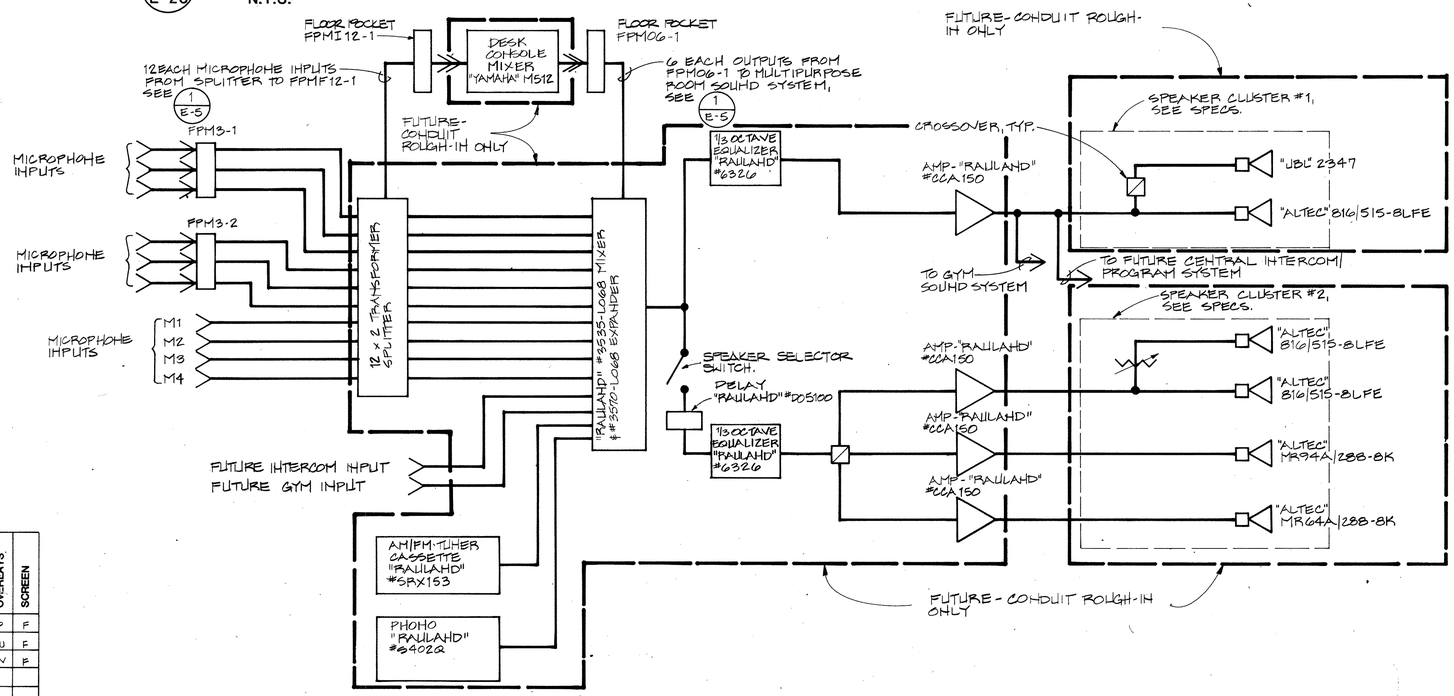
1 E-23 **CENTRAL INTERCOM/PROGRAM SYSTEM**

N.T.S.



3 E-23 **GYM SOUND SYSTEM**

N.T.S.



2 E-23 **MULTIPURPOSE ROOM SOUND SYSTEM**

N.T.S.

NOTE:

PROVIDE COMPLETE CONDUIT ROUGH IN INSTALLATION FOR GYM & MULTI-PURPOSE SOUND SYSTEMS IN BASIC BID.

SCREEN	OVERLAYS	"AY REQD
F	TB	TB
F	LU	LU
F	LV	LV

HAEG·BETTIS·ASSOCIATES INC.
825 WEST EIGHTH AVENUE SUITE 200
ANCHORAGE ALASKA 99501 (907) 279-3436
PLANNING, ARCHITECTURE INTERIOR DESIGN GRAPHICS

STATE OF ALASKA 4937 REGISTERED PROFESSIONAL ENGINEER

A NEW SCHOOL FOR:

SKAGWAY ALASKA

SOUND SYSTEM RISER DIAGRAMS

REVISIONS

drawn by: HJS

date: APRIL 8, 1983

project no.: 8303
FPE #13-1076

sheet no.: E-23
of 23

MUNICIPALITY OF SKAGWAY
BASE BID
SKAGWAY SCHOOL KITCHEN ADDITION
Skagway, Alaska

Jensen Yorba Wall Inc.
522 West 10th Street
Juneau, Alaska 99801
907.586.1070
AECC137
jensenyorbawall.com

MUNICIPALITY OF SKAGWAY BOROUGH

KITCHEN ADDITION

Skagway, Alaska

NOVEMBER 22, 2021

ARCHITECT
JENSEN YORBA WALL, INC.
522 WEST 10TH STREET
JUNEAU, ALASKA 99901
(907) 586-1070
FAX (844) 350-5352

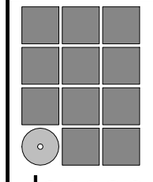
STRUCTURAL ENGINEER
PND ENGINEERING, INC.
CONSULTING ENGINEERS
9360 GLACIER HIGHWAY, SUITE 100
JUNEAU, ALASKA 99801
(907) 586-2093
FAX (907) 586-2099

MECHANICAL ENGINEER
PDC ENGINEERS
9109 MENDENHALL MALL RD, SUITE 4
JUNEAU, ALASKA 99801
(907) 780-6060
FAX (907) 780-4611

ELECTRICAL ENGINEER
BEGENYI ENGINEERING, LLC
217 2ND STREET, SUITED 208
JUNEAU, ALASKA 99801
(907) 586-5900
FAX (907) 586-5901

FOOD SERVICE
ARCTIC FOOD SERVICE DESIGN
1901 WEST TUDOR ROAD
ANCHORAGE, ALASKA 99517
(907) 243-3556

SHEET INDEX



Jensen Yorba Wall Inc.

522 West 10th Steet
Juneau, Alaska 99801
907.586.1070
AECC137
jensenyorbawall.com

FILE: 20002

A001

11/22/2021 3:01:01 PM G:_Projects\20002\CAD\CD\Arch\Skagway School CD R20 - Kitchen Only.rvt

CODE SUMMARY

INTERNATIONAL BUILDING CODE 2012

CONSTRUCTION TYPE
EXISTING BUILDING VB, SPRINKLERED
ADDITION VB, SPRINKLERED

OCCUPANCY TYPE E

AREA CALCULATIONS
ALLOWABLE AREAS
FIRST FLOOR
ALLOWABLE AREA INCREASED 51.13% DUE TO FRONTAGE. (506.2)

The north side has a public way. Distance to public way = 442.0 ,width = 30.0
Length of perimeter facing the public way = 265.0 This side is not accessible from a street or approved fire lane.
The east side has a public way. Distance to public way = 39.0 ,width = 30.0
Length of perimeter facing the public way = 290.0 This side can be accessed from a street or approved fire lane.
The south side has a public way. Distance to public way = 45.0 ,width = 30.0
Length of perimeter facing the public way = 265.0 This side can be accessed from a street or approved fire lane.
The west side has a public way. Distance to public way = 55.0 ,width = 30.0
Length of perimeter facing the public way = 290.0 This side can be accessed from a street or approved fire lane.
Perimeter of the entire building = 1,110.0 feet.
Perimeter which fronts a public way or accessible open space = 845.0 feet.
Weighted average of the width of public way or accessible open space = 30.0 feet.
Allowable area increased 51.13% due to frontage. (506.2)

(x3 PER IBC 506.3) 42,857 sf

ACTUAL AREAS
EXISTING BUILDING 40,000 sf
BUILDING ADDITION 1,640 sf
TOTAL: 41,640 sf

HEIGHT CALCULATIONS
ALLOWABLE HEIGHT
(INCREASE PER 504.1 AND TABLE 503) 60 ft / 2 STORIES

ACTUAL HEIGHTS 50 ft / 1 STORY + MECH ATTIC

OCCUPANCY LOAD CALCULATIONS FOR ADDITION
KITCHEN AREA 985sf / 200sf = 5 OCCUPANTS
HOME EC CLASSROOM 418sf / 40sf = 11 OCCUPANTS

FINISH SCHEDULE

Room No.	Room Name	Floor Finish	Base		Wainscot		Walls				Ceiling Finish	Comments
			Finish	Ht	Finish	Ht	North	East	South	West		
30	KITCHEN	SV	SVC	6"	-	-	PVC	PVC	PVC	PVC	PT	
31	JAN	SV	SVC	6"	-	-	PVC	PVC	PVC	PVC	PT	
32	CORR	SV	RUB	4"	-	-	PT	PT	PT	PT	PT	
33	HOME EC	SV	SVC	6"	-	-	PT	PT	PT	PT	PT	

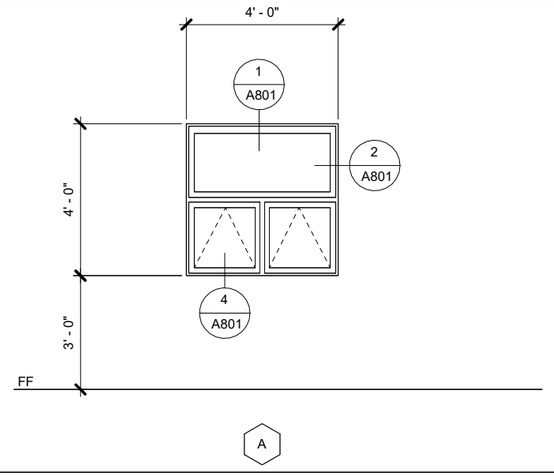
ABBREVIATIONS

ACP	ACOUSTICAL CEILING TILE
CPT	CARPET TILE
PVC	SEMI RIGID WALL PANELS
SVC	SHEET VINYL COVE
FRP	FIBERGLASS REINFORCED PANELS
RUB	RUBBER BASE
SV	SHEET VINYL

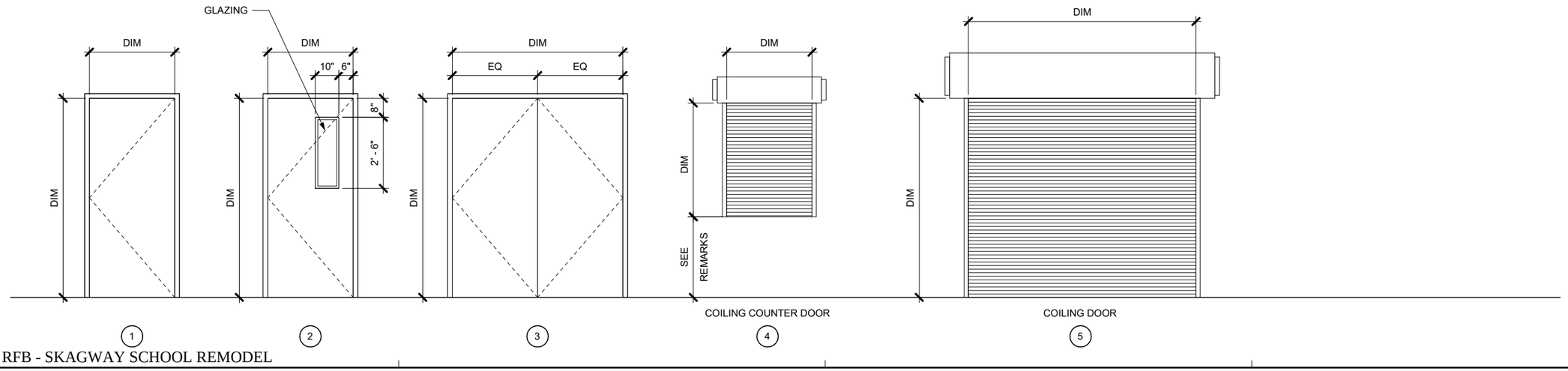
OPENING SCHEDULE

Opening				Door		Frame		Signage		Details				
Mark	Type	Width	Height	Door Material	Finish	Frame Material	Frame Finish	Type	Text	DoorJamb Detail	Door Head Detail	Door Sill Detail	HW	Remarks
30A	2	3' - 0"	7' - 0"	WD	STAIN	HM	PT	1	KITCHEN	4/A901	4/A901 SIM	-	2	
30B	5	9' - 6"	7' - 0"	MFR	MFR	MFR	MFR	-	-	3/A902	5/A902 SIM	-	-	
30C	4	3' - 0"	3' - 0"	MFR	MFR	MFR	MFR	-	-	3/A902	5/A902	5/A902	-	SILL 36" AFF
30D	3	6' - 0"	7' - 0"	HM	PT	HM	PT	-	-	5/A801	3/A801	6/A801	3	
31A	1	3' - 0"	7' - 0"	HM	PT	HM	PT	1	JANITOR	4/A901	4/A901 SIM	-	1	12"x12" LOUVER
32A	3	6' - 0"	7' - 0"	HM	PT	HM	PT	-	-	5/A801	3/A801	6/A801	3	
33A	2	3' - 0"	7' - 0"	WD	STAIN	HM	PT	1	CLASSROOM	4/A901	4/A901 SIM	-	4	
33B	4	3' - 0"	4' - 0"	MFR	MFR	MFR	MFR	-	-	3/A902	5/A902 SIM	5/A902	-	
33C	1	3' - 6"	7' - 0"	HM	PT	HM	PT	-	-	5/A801	3/A801	6/A801	5	

WINDOW TYPES



OPENING TYPES



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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
CODE SUMMARY, FINISH & DOOR SCHEDULE

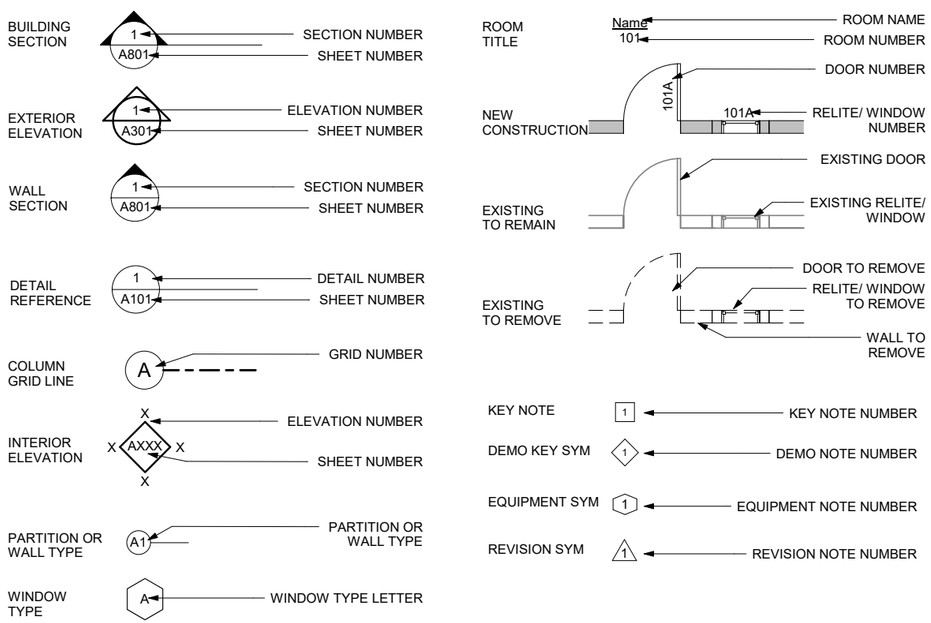
DATE: NOVEMBER 22, 2021
FILE: 20002

A002

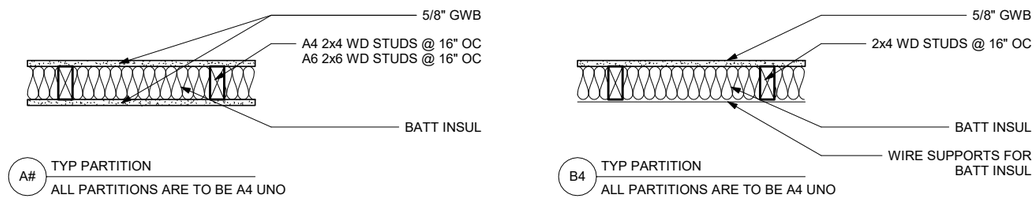
ABBREVIATIONS

	ANGLE
AC	ASPHALT CONCRETE
ACM	ASBESTOS CONTAINING MATERIAL
ACP	ACOUSTICAL CEILING PANEL
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AIB	AIR INFILTRATION BARRIER
AL	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASB	ASBESTOS
BD	BOARD
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENT
CG	CORNER GUARD
CI	CAST IRON
CLG	CEILING
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CTR	CENTER
CTSK	COUNTERSUNK
DBL	DOUBLE
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DISP	DISPENSER
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DWG	DRAWING
DWR	DRAWER
EA	EACH
EF	EXHAUST FAN
EFIS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
EPDM	ETHYLENE PROPYLENE DIANE MONOMER
EPS	EXPANDED POLYSTYRENE
EQ	EQUAL
EQP	EQUIPMENT
EX	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FDN	FOUNDATION
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FHC	FIRE HOSE CABINET
FIN	FINISH
FLASH	FLASHING
FLR	FLOOR
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOS	FACE OF STUD
FRP	(GLASS) FIBER REINFORCED PLASTIC
FRPF	FIREPROOF
FR	FIRE RETARDANT
FSR	FLEXIBLE SHEET ROOFING
FT	FOOT OR FEET
FTG	FOOTING
FURR	FURRING
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GL	GLASS
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HB	HOSE BIBB
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HW	HOT WATER
ID	INSIDE DIAMETER
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JT	JOINT
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LB	POUND
LT	LIGHT
MIR	MIRROR
MAX	MAXIMUM
MDO	MEDIUM DENSITY OVERLAID
MECH	MECHANICAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
MTL	METAL
MUL	MULLION
NIC	NOT IN CONTRACT
NO OR #	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OFD	OVERFLOW DRAIN
OFF	OFFICE
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PC	PRE-CAST
PF	PRE-FINISHED
PR	PAIR
PWD	PLYWOOD
R	RISER
RAD	RADIUS
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCED
REQ	REQUIRED
RESIL	RESILIENT
RH	ROBE HOOK
RL	RAIN LEADER
RM	ROOM
RO	ROUGH OPENING
RUB	RUBBER
RWD	REDWOOD
SASU	SELF ADHERING SHEET UNDERLAYMENT
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SF	SQUARE FOOT
SHR	SHOWER
SHTH	SHEATHING
SIM	SIMILAR
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTACLE
SPEC	SPECIFICATIONS
SQ	SQUARE
STA	STATION
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SS	STAINLESS STEEL
SUSP	SUSPENDED
SY	SQUARE YARD
TB	TOWEL BAR
TC	TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPORARY
T&G	TONGUE & GROOVE
TOC	TOP OF CONCRETE
TOD	TOP OF DECK
TPD	TOILET PAPER DISPENSER
TRD	TREAD
TRTD	PRESSURE TREATED
TOW	TOP OF WALL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNF	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
VERT	VERTICAL
VEST	VESTIBULE
VR	VAPOR RETARDER
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WD	WOOD
WO	WALK OFF MAT
WP	WATERPROOF/WALL PANEL
WR	WASTE RECEPTACLE
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

SYMBOLS



PARTITION TYPES



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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

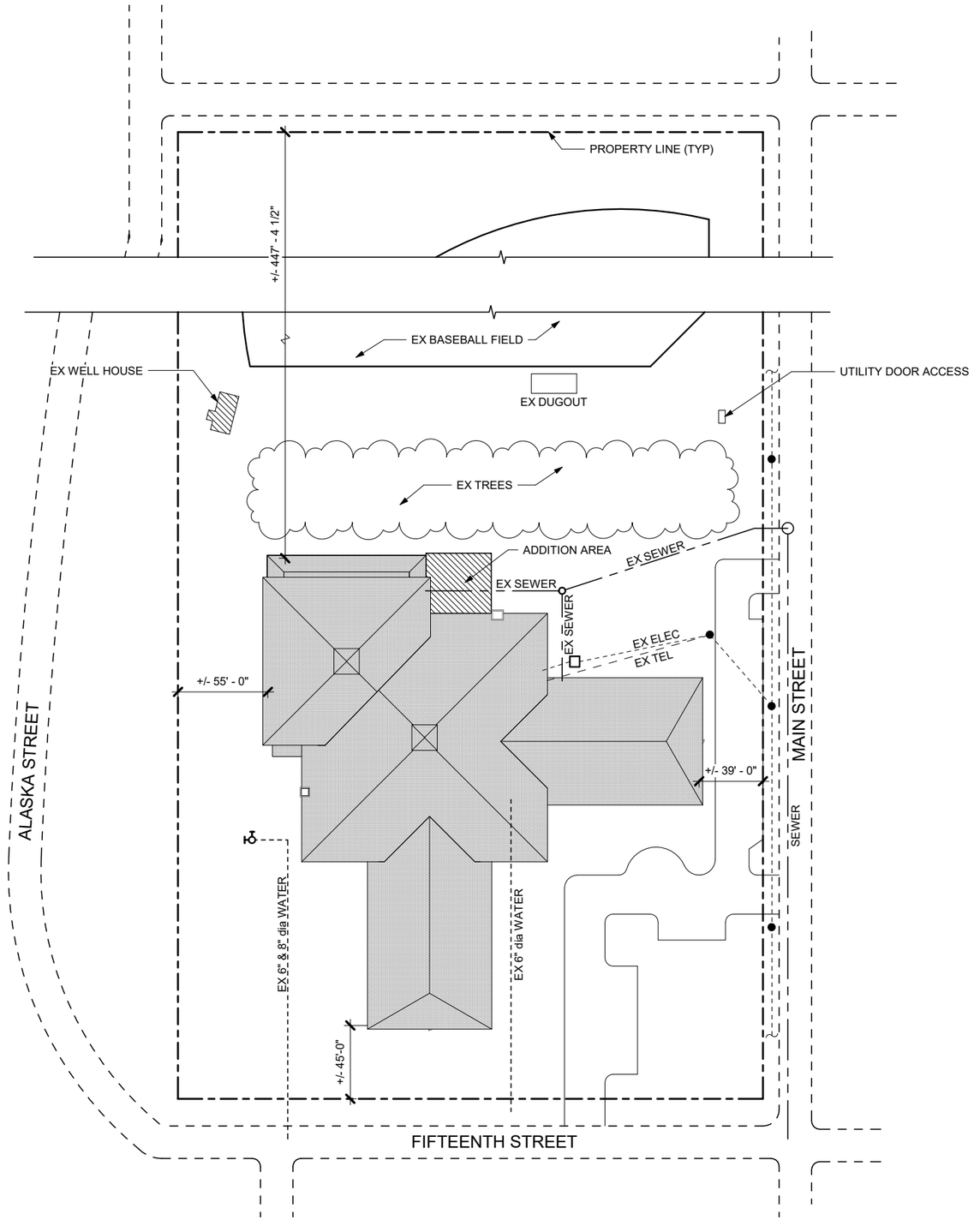
REVISIONS

SHEET TITLE

SYMBOLS AND ABBREVIATIONS

DATE: NOVEMBER 22, 2021
FILE: 20002

A003



1 SITE PLAN

SCALE: 0 10'20' 40' 80'

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
SITE PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

A101

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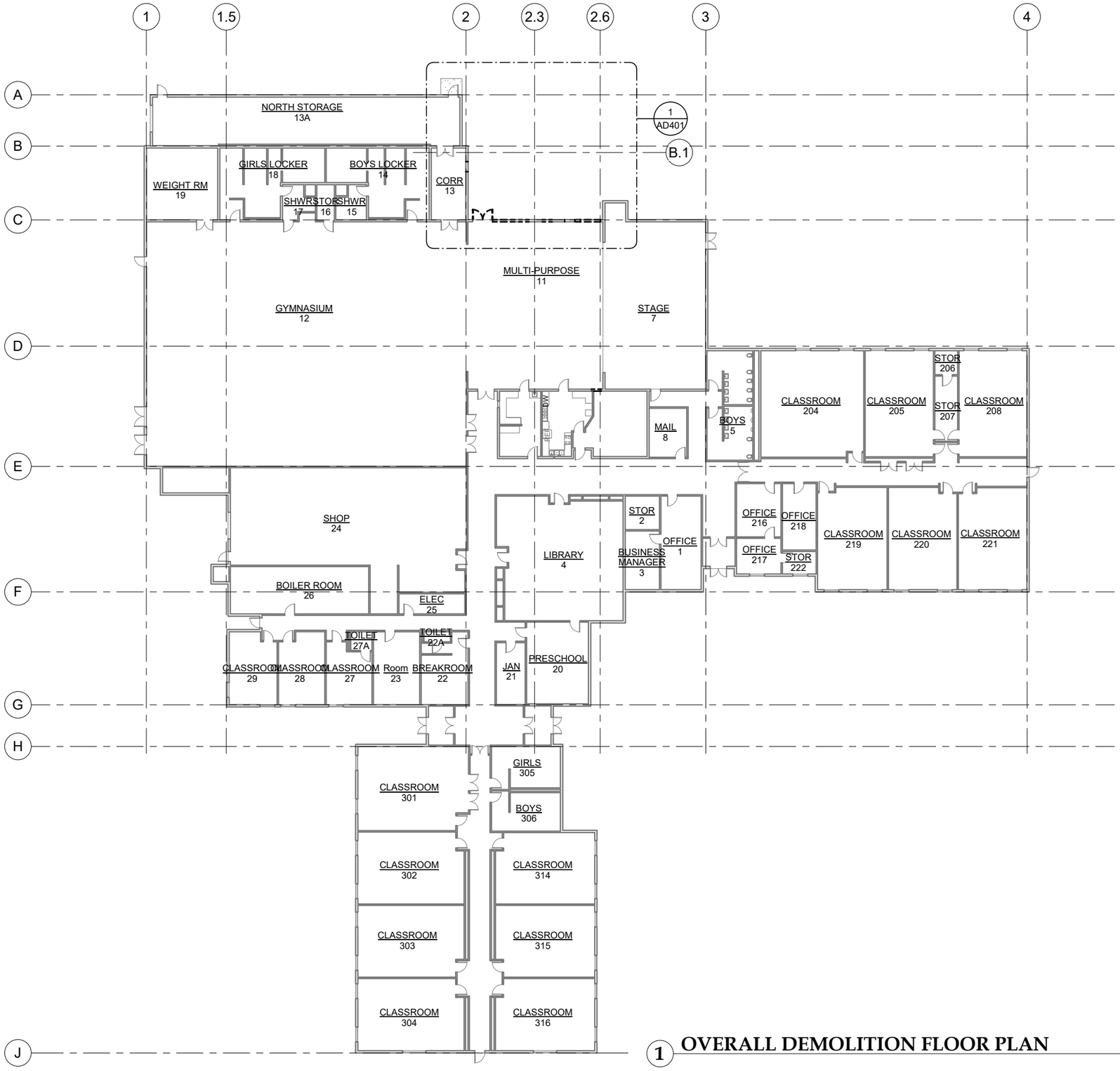

1 **OVERALL DEMOLITION FLOOR PLAN**

SCALE: 0 8' 16' 32'

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE

OVERALL DEMOLITION FLOOR PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

AD201

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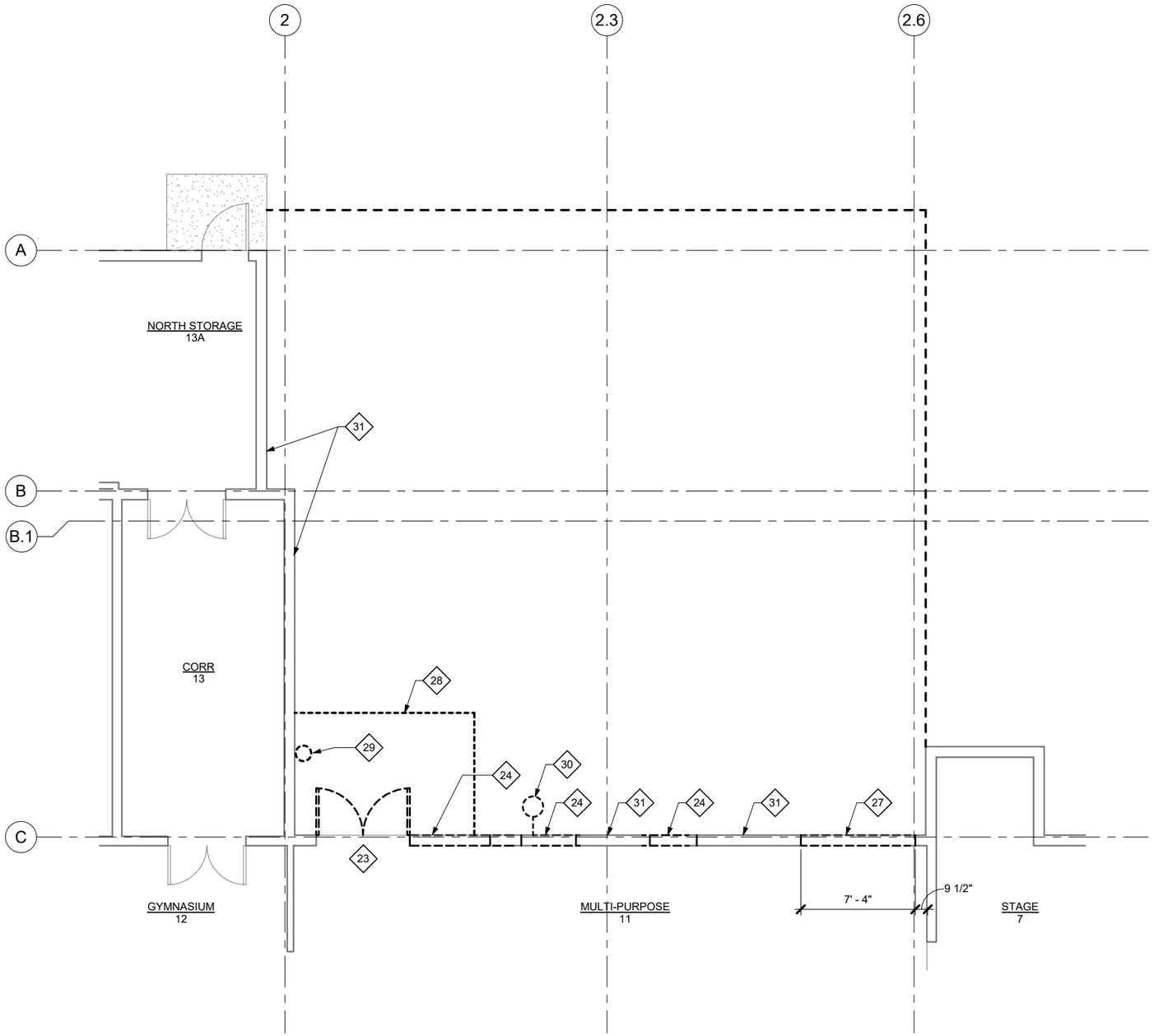

1 ENLARGED DEMOLITION FLOOR PLAN

SCALE: 0 2' 4' 8'

DEMOLITION GENERAL NOTES:

1. KEYNOTES ARE PROJECT SPECIFIC AND MAY NOT APPLY TO THIS SHEET
2. PROTECT EXISTING FINISHES TO REMAIN
3. REMOVE WALL MOUNTED ACCESSORIES TYP.

DEMOLITION KEYNOTES:

1. REMOVE WATER CLOSET, TYP.
2. REMOVE LAVATORY, TYP.
3. REMOVE TOILET/URINAL PARTITIONS, TYP.
4. REMOVE PARTITION
5. REMOVE DOORS: FRAMES AND PARTITIONS. HEADERS TO REMAIN. SV FLOOR FINISH TO REMAIN
6. REMOVE URINAL, TYP.
7. SAWCUT CONCRETE AS REQUIRED FOR MECHANICAL WORK
8. REMOVE FLOOR AND WALL TILE FINISH. PREPARE SURFACES FOR FINISH AS SCHEDULED.
9. REMOVE RECESSED PTD & WR
10. REMOVE DIAPER CHANGING STATION
11. SALVAGE HAND DRYER FOR REINSTALLATION
12. SALVAGE CONVECTOR AS REQUIRED FOR WORK. COORDINATE W/ MECHANICAL
13. REMOVE CASEWORK
14. REMOVE SV FLOOR FINISH AND BASE, PREPARE SURFACE FOR FINISH AS SCHEDULED
15. NOT USED.
16. NOT USED
17. NOT USED
18. REMOVE TEMPORARY PARTITION AND DOOR.
19. NOT USED
20. REMOVE FIXTURES AND EQUIPMENT, COORDINATE WITH MECHANICAL & ELECTRICAL
21. REMOVE ROLLING COUNTER DOOR AND FRAME
22. REMOVE CARPET AND BASE
23. REMOVE DOOR & FRAME
24. FRAME OPENING FOR DOOR AS SCHEDULED
25. FRAME OPENING FOR DOOR AND ALCOVE, SEE A402
26. RELOCATE CENTRAL VACUUM OUTLET, SEE A402
27. FRAME 7'-0"H OPENING
28. REMOVE CONCRETE PAD AND FOOTING
29. RELOCATE ROOF DRAIN
30. REMOVE LIGHT FIXTURE, COORDINATE WITH ELECTRICAL
31. REMOVE WOOD SIDING & TRIM, EXISTING ROOF CORNICE TO REMAIN

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

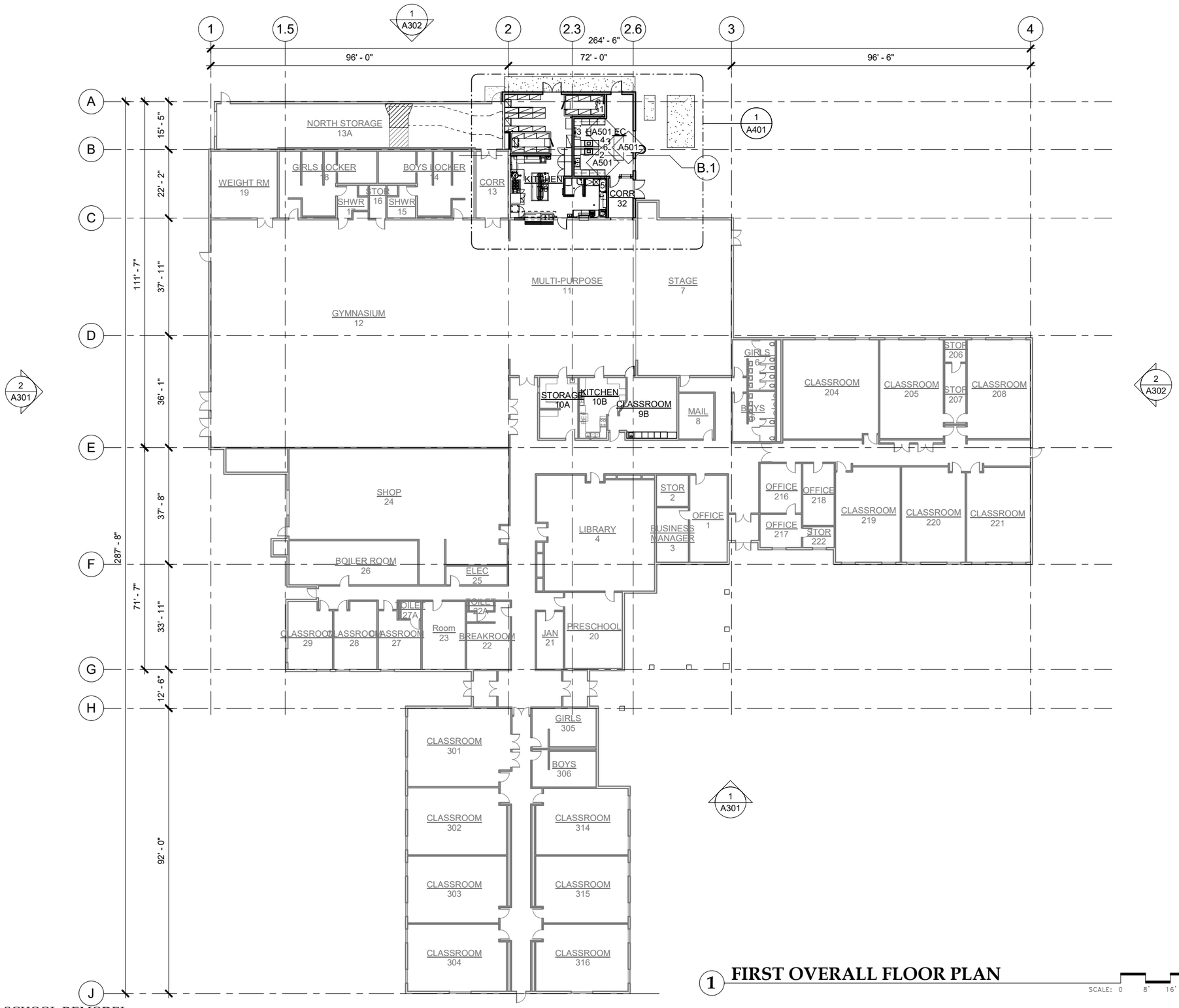
Skagway, Alaska

REVISIONS

SHEET TITLE
ENLARGED DEMOLITION FLOOR PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

AD401



1 **FIRST OVERALL FLOOR PLAN**

SCALE: 0 8' 16' 32'

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

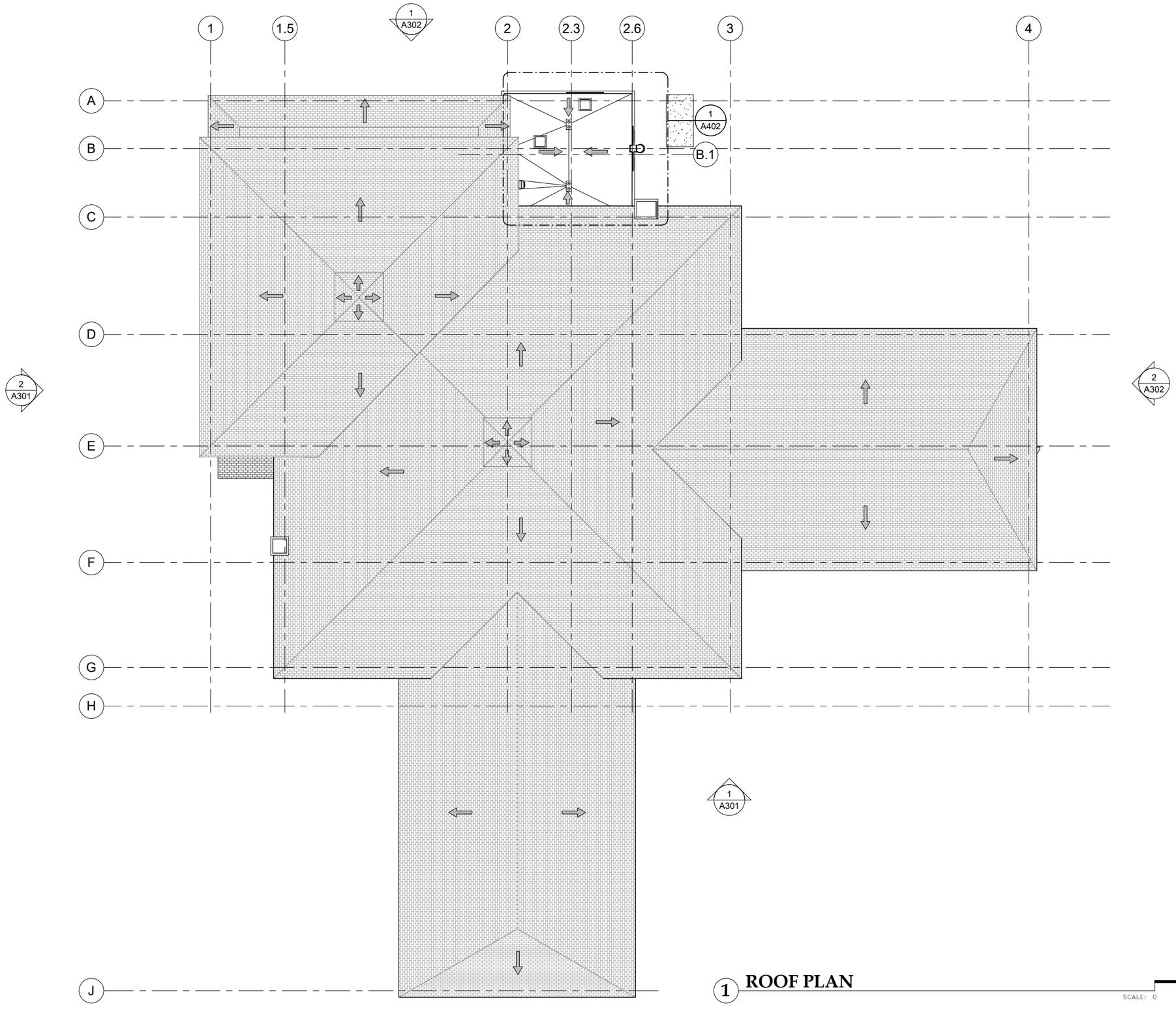
REVISIONS

SHEET TITLE

FIRST FLOOR OVERALL PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

A201



1 ROOF PLAN

SCALE: 0 8' 16' 32'

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
ROOF PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

A202

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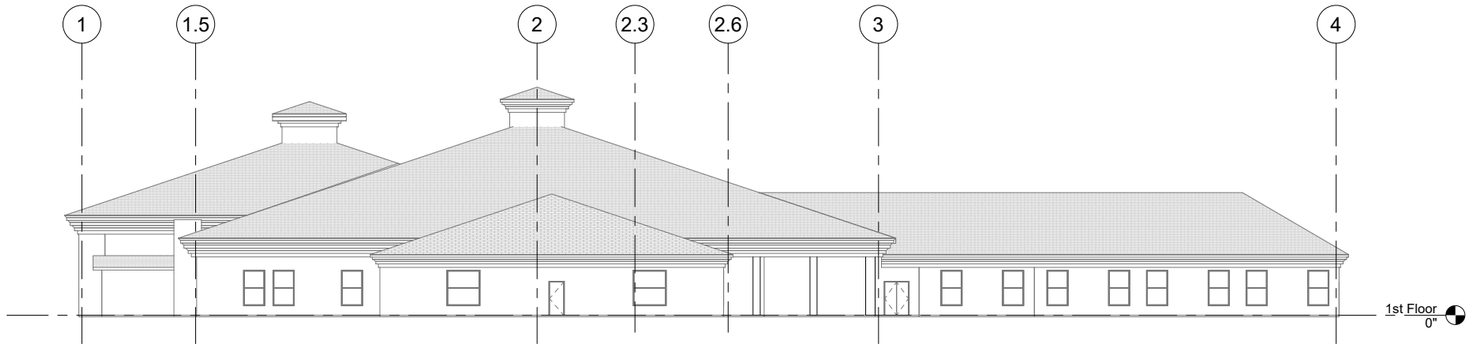
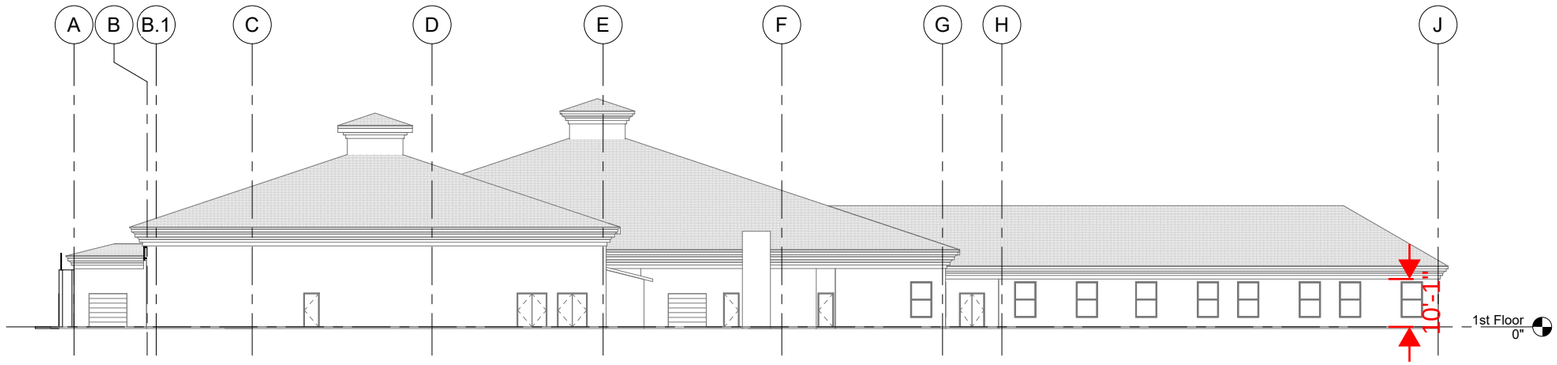


1 **EXTERIOR ELEVATION**

SCALE: 0 8' 16' 32'



2 **EXTERIOR ELEVATION**

SCALE: 0 8' 16' 32'

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

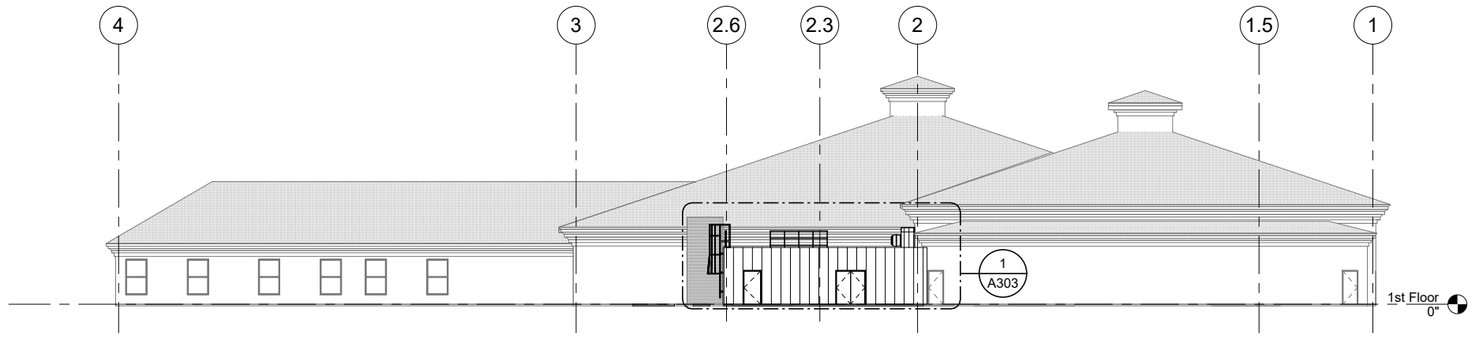
Skagway, Alaska

REVISIONS

SHEET TITLE
EXTERIOR ELEVATIONS

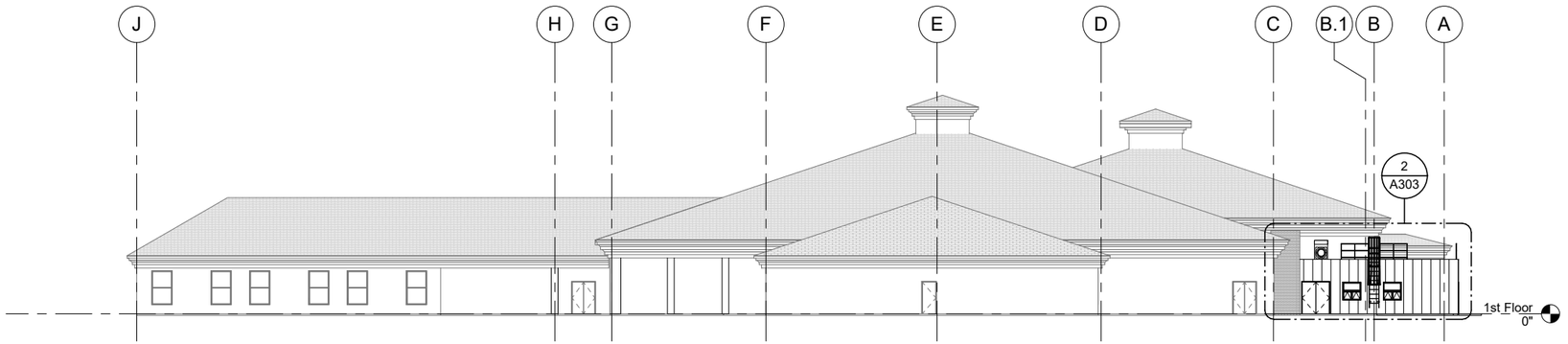
DATE: NOVEMBER 22, 2021
FILE: 20002

A301



1 EXTERIOR ELEVATION

SCALE: 0 8" 16" 32"



2 EXTERIOR ELEVATION

SCALE: 0 8" 16" 32"

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

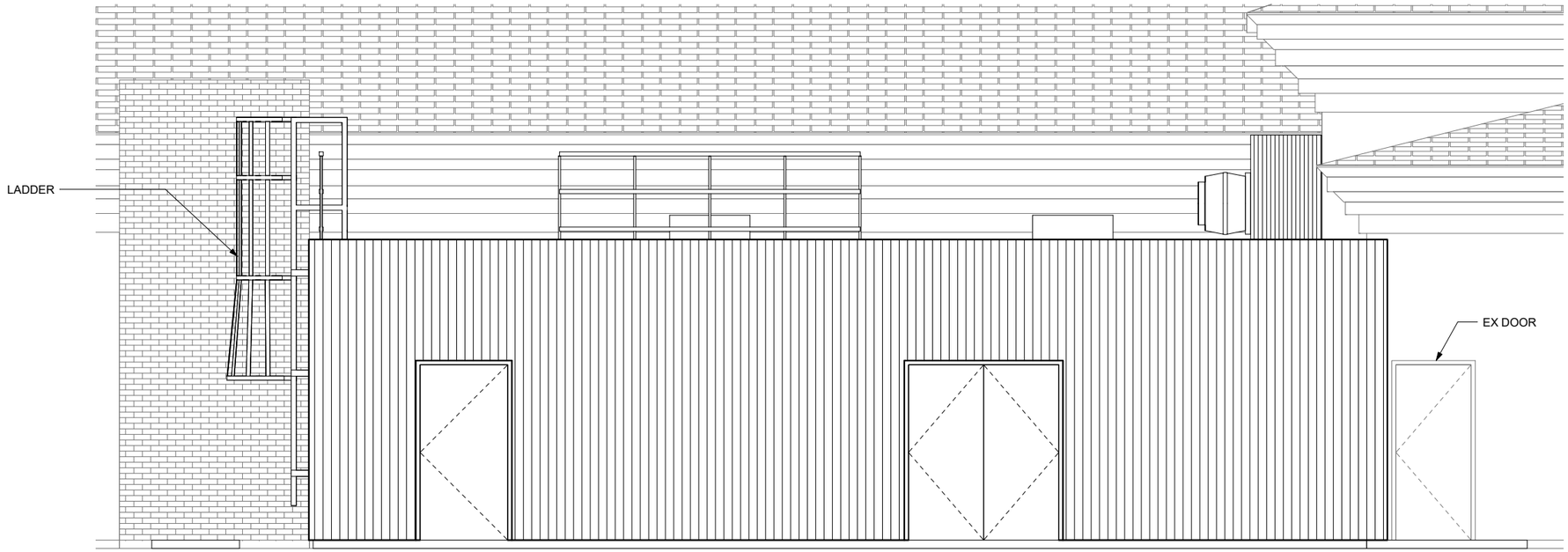
Skagway, Alaska

REVISIONS

SHEET TITLE
EXTERIOR ELEVATIONS

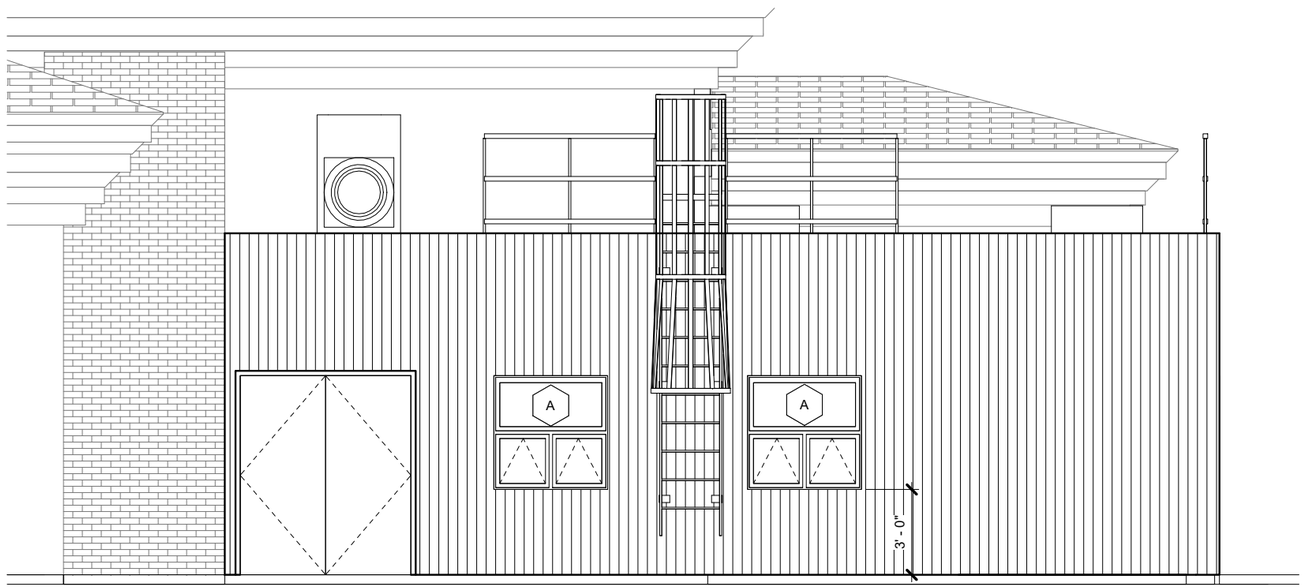
DATE: NOVEMBER 22, 2021
FILE: 20002

A302



1 ENLARGED EXTERIOR ELEVATION

SCALE: 0 2' 4' 8'



2 ENLARGED EXTERIOR ELEVATION

SCALE: 0 2' 4' 8'

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
ENLARGED EXTERIOR ELEVATIONS

DATE: NOVEMBER 22, 2021
FILE: 20002

A303

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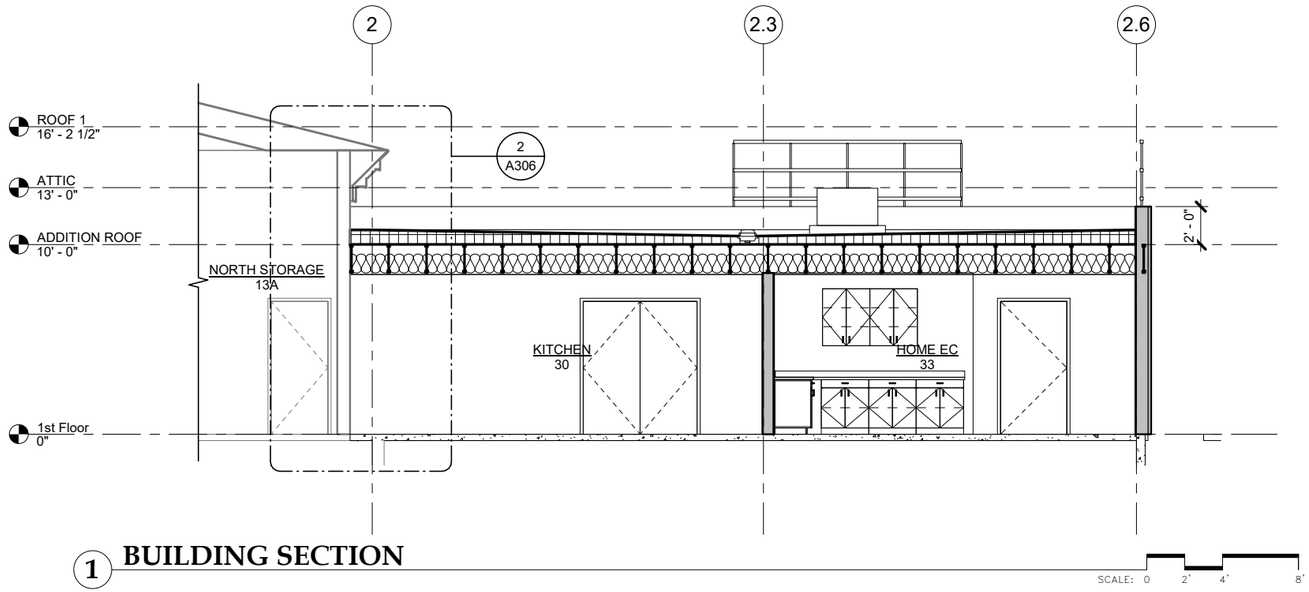
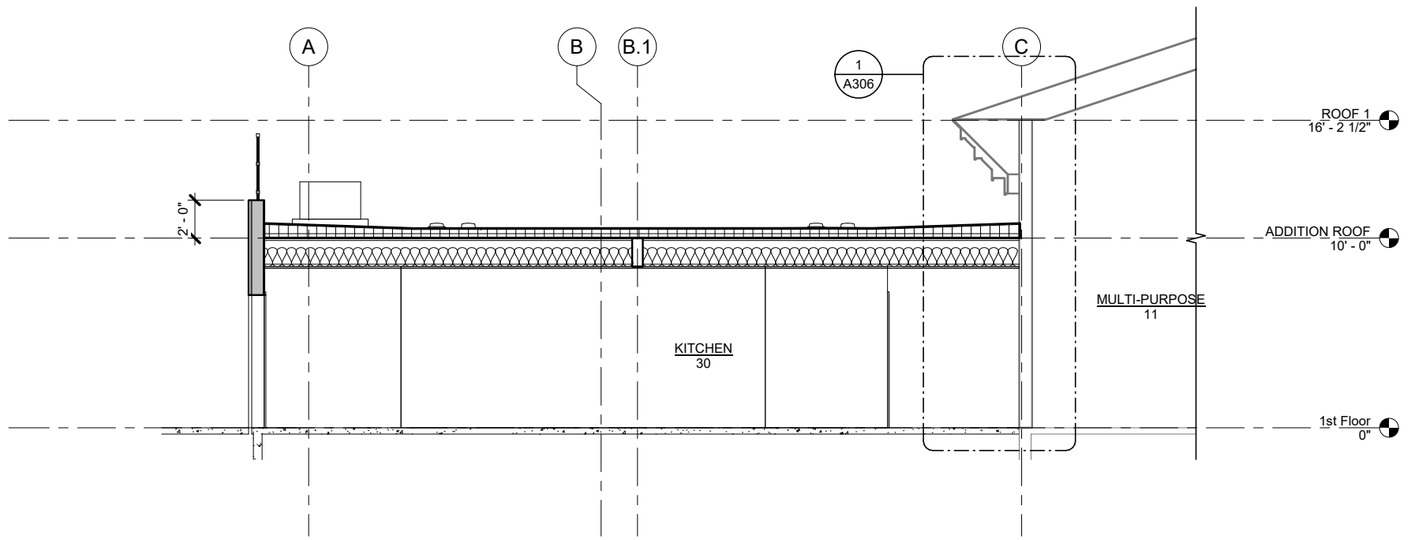


1 BUILDING SECTION

SCALE: 0 2' 4' 8'



2 BUILDING SECTION

SCALE: 0 2' 4' 8'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

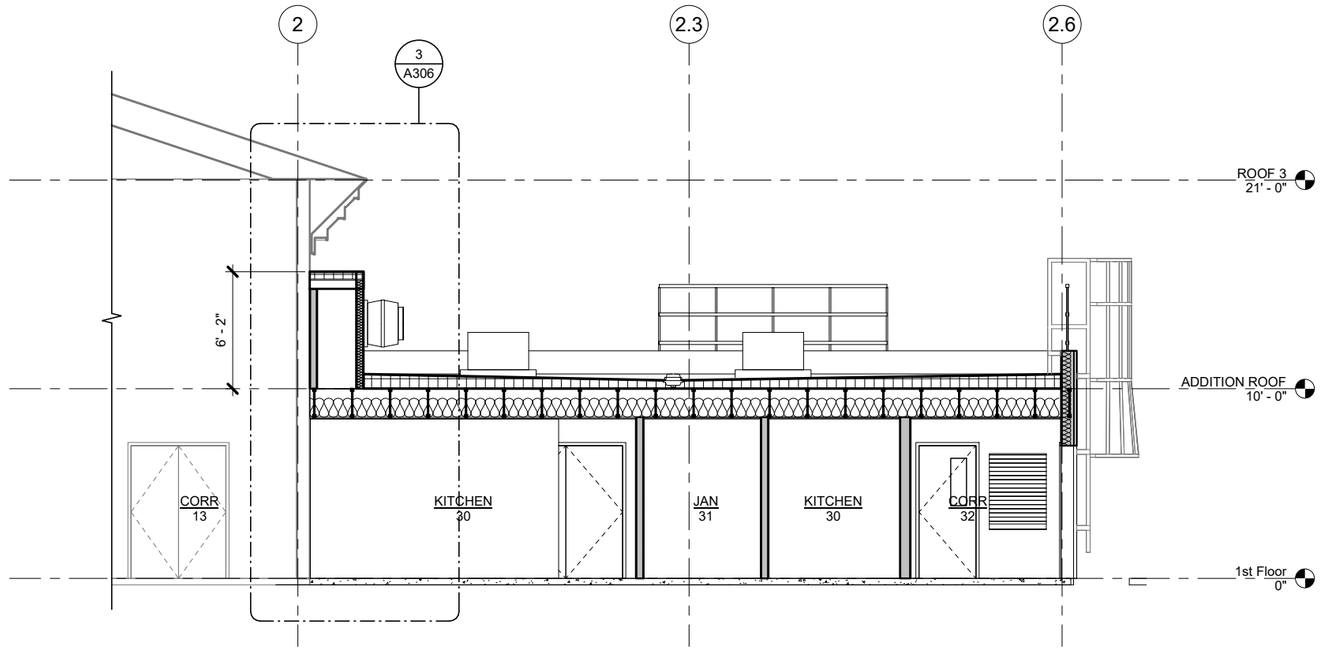
Skagway, Alaska

REVISIONS

SHEET TITLE
SECTIONS

DATE: NOVEMBER 22, 2021
FILE: 20002

A304



1 BUILDING SECTION

SCALE: 0 2" 4" 8"

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
SECTION

DATE: NOVEMBER 22, 2021
FILE: 20002

A305

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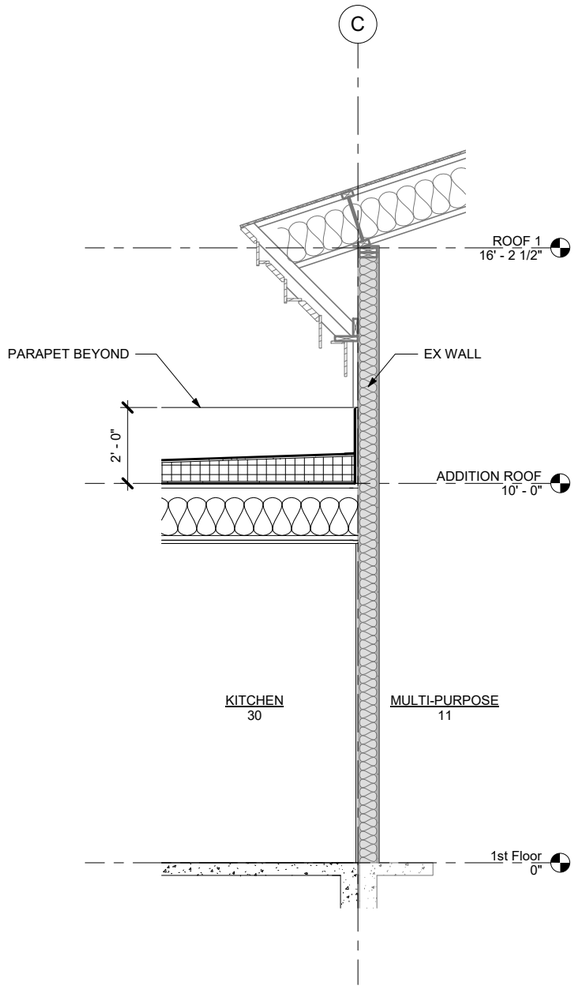
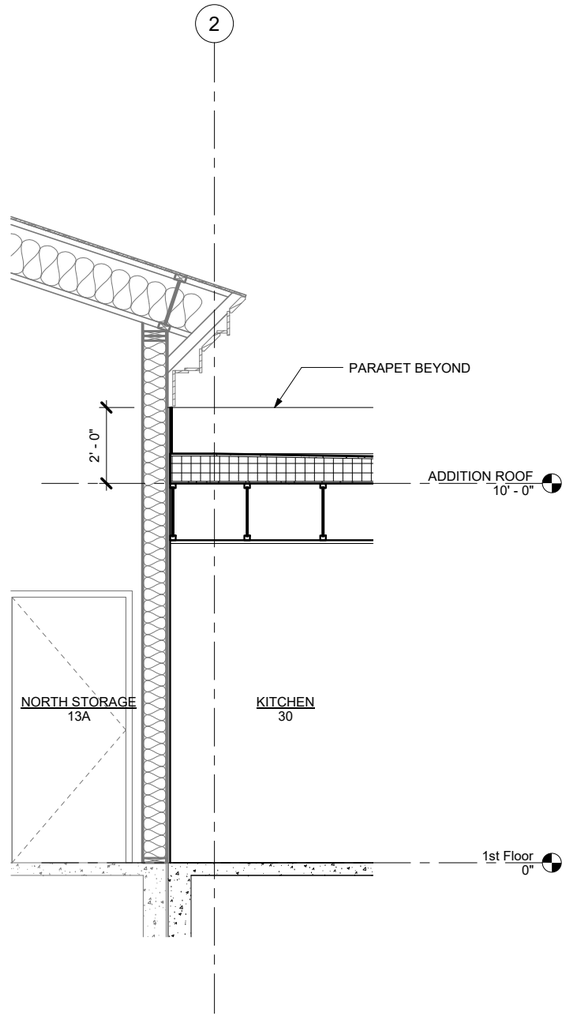


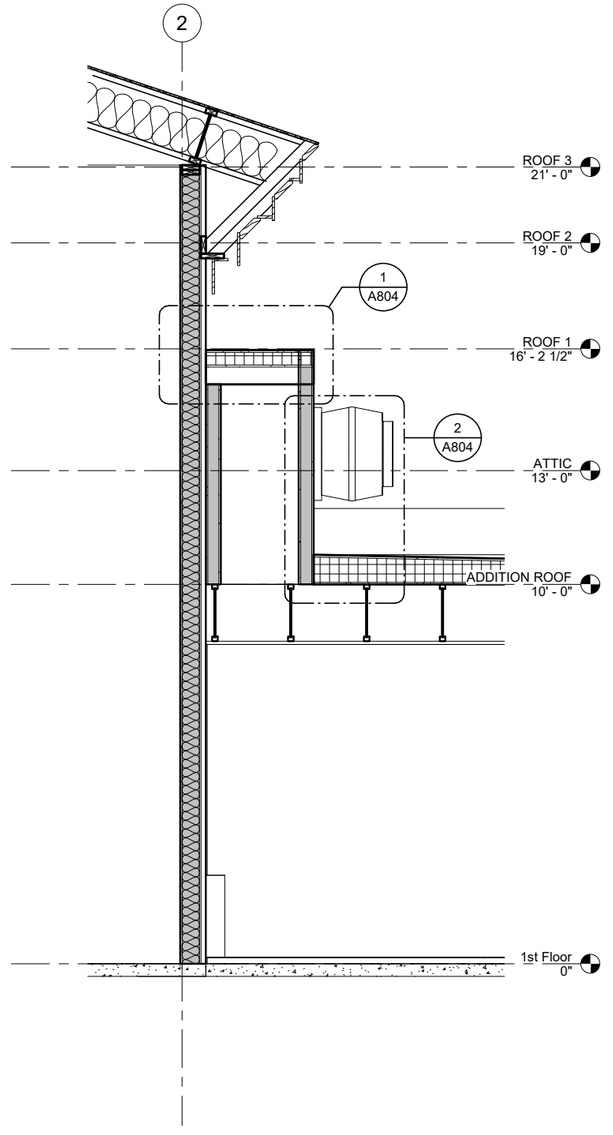
1 WALL SECTION

SCALE: 0 1' 2' 4'



2 WALL SECTION

SCALE: 0 1' 2' 4'



3 WALL SECTION

SCALE: 0 1' 2' 4'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

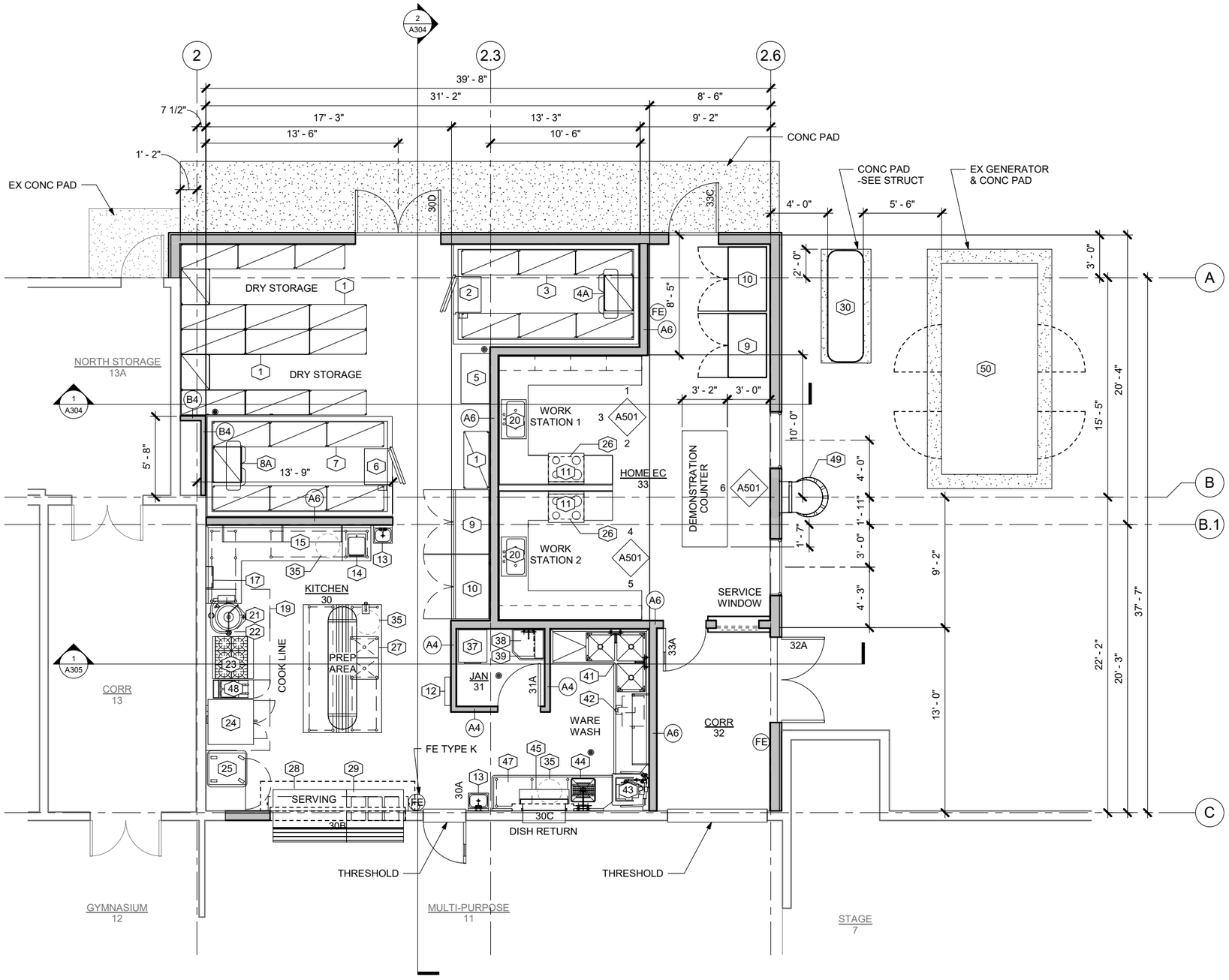
Skagway, Alaska

REVISIONS

SHEET TITLE
WALL SECTIONS

DATE: NOVEMBER 22, 2021
FILE: 20002

A306



EQUIPMENT LIST:

1. SHELVING, DRY STORAGE
2. WALK-IN FREEZER
3. SHELVING, COLD STORAGE
4A. FREEZER, EVAPORATOR COIL
4B. FREEZER, CONDENSING UNIT - ON ROOF CURB, SEE A203
5. DESK & CHAIR
6. WALK-IN COOLER
7. SHELVING, COLD STORAGE
8A. COOLER EVAPORATOR COIL
8B. COOLER CONDENSING UNIT - ON ROOF CURB, SEE A203
9. FREEZER, REACH-IN
10. REFRIGERATOR, REACH-IN
11. RESIDENTIAL ELEC RANGE
12. ELECTRICAL PANEL
13. HAND SINK
14. VACUUM PACKING MACHINE
15. BAKER'S WORK TABLE
16. SHELF, WALL MOUNT
17. FIRE SUPPRESSION SYSTEM
18. WALL FLASHING, SS
19. EXHAUST HOOD, CLASS ONE
20. DOUBLE SINK
21. KETTLE, STEAM JACKETED
22. KETTLE STAND
23. BURNER RANGE, GAS
24. CONVECTION OVENS, STAKED, GAS
25. HOLDING CABINET, HUMIDIFIED HEATED
26. RESIDENTIAL EXHAUST HOOD
27. PREP-SINK, DOUBLE
28. UTILITY STATION
29. HOT FOOD STATION
30. 250 GAL PROPANE TANK
31. COOK'S WORKTABLE
32. POT/UTENSIL RACK WITH SHELF
33. CAN OPENER
34. PREPARATION TABLE WITH SINKS
35. TRASH CAN
36. NOT USED
37. WASHER/DRYER, STACKED
38. MOP SINK
39. WALL SHELF/MOP HANGER
40. NOT USED
41. CLEAN DISHTABLE W/SCULLERY SINKS
42. GREASE INTERCEPTOR
43. WAREWASH, DOOR TYPE. HIGH TEMP
44. PRE-RINSE FAUCET
45. SLANT RACK SHELF
46. NOT USED
47. SOILED DISHTABLE
48. DEEP FRYER
49. ROOF ACCESS LADDER
50. EX BACK-UP GENERATOR

NOTE: ALL FIRE EXTIGUISHERS (FE) ARE TO BE 3A:40B:C 5 LB

1 ENLARGED FLOOR PLAN

SCALE: 0 2" 4" 8"

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

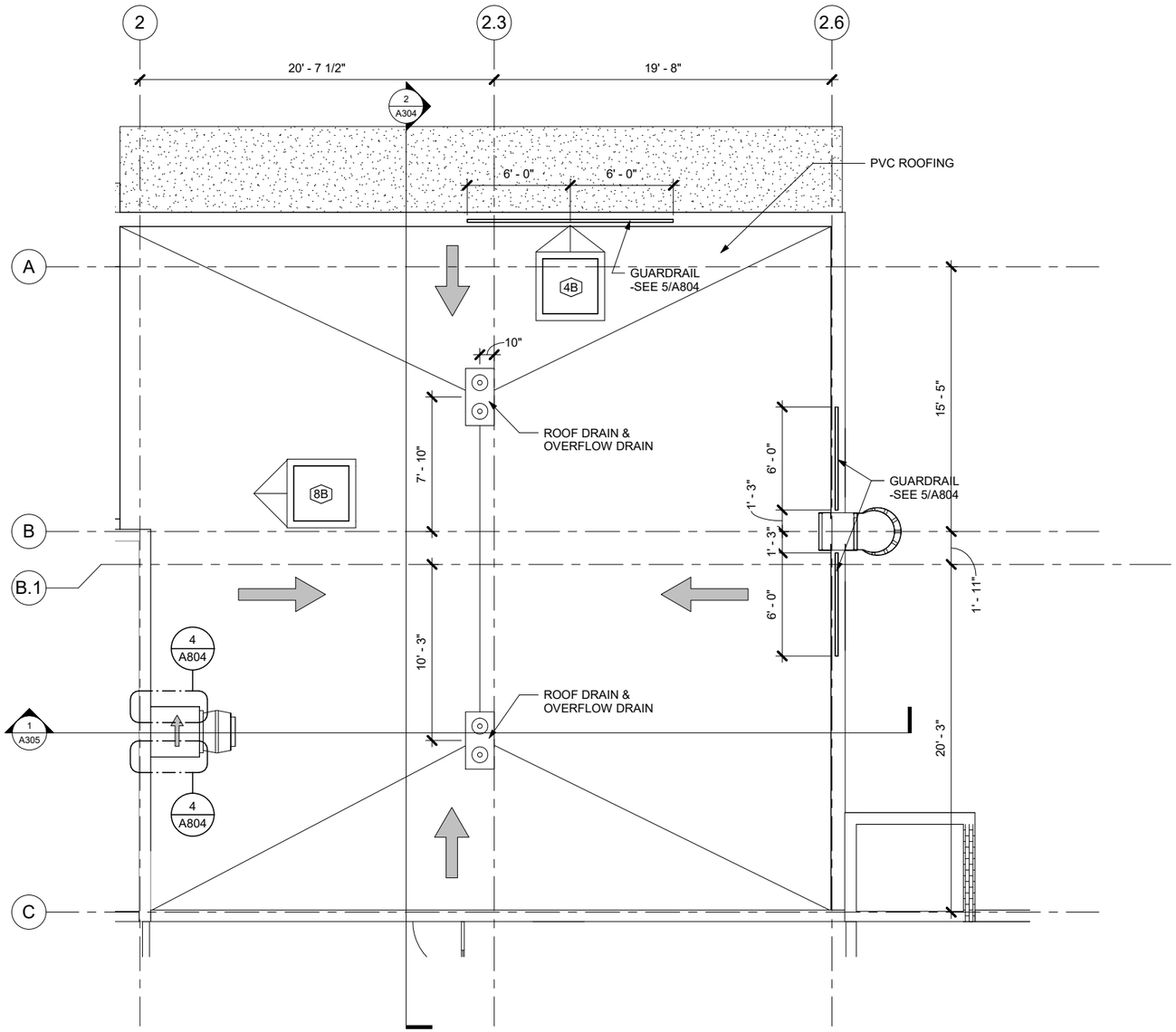
Skagway, Alaska

REVISIONS

SHEET TITLE
ENLARGED FLOOR PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

A401



1 ENLARGED ROOF PLAN

SCALE: 0 2' 4' 8'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

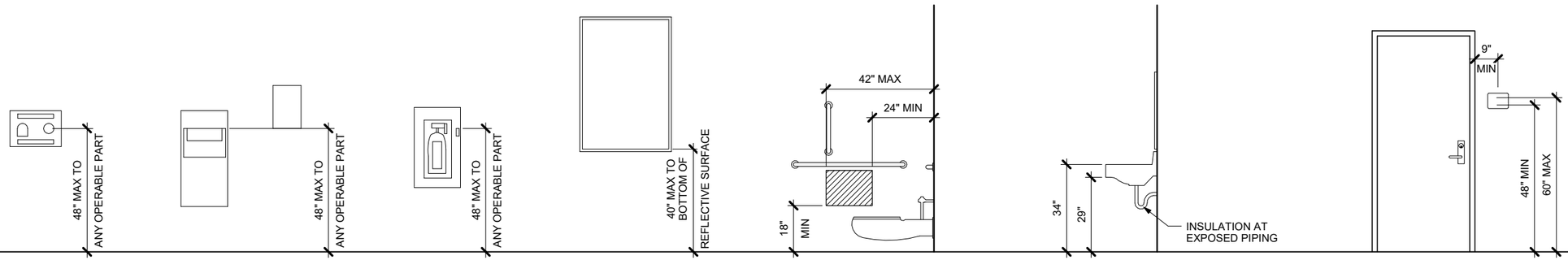
REVISIONS

SHEET TITLE

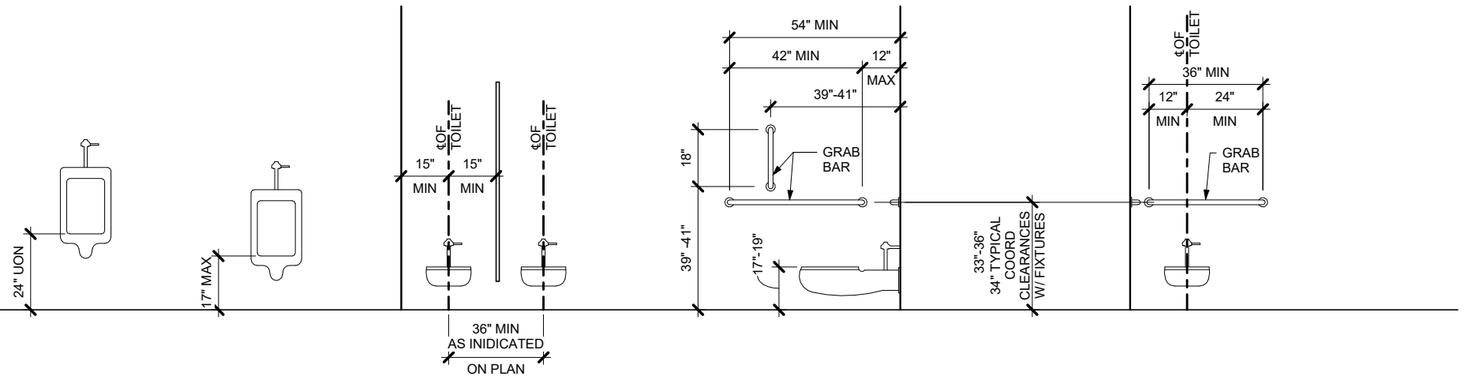
ENLARGED ROOF PLAN

DATE: NOVEMBER 22, 2021
FILE: 20002

A402



HAND DRYER | DISPENSERS | FIRE EXTINQUISER CABINET | MIRROR | TOILET PAPER DISPENSER | LAVATORY | HEIGHT OF ACCESSIBLE SIGNAGE



STANDARD URINAL | ACCESSIBLE URINAL | STANDARD WATER CLOSET/ TOILET | ACCESSIBLE WATER CLOSET/ TOILET (SIDE WALL) | ACCESSIBLE WATER CLOSET/ TOILET (REAR WALL)

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MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

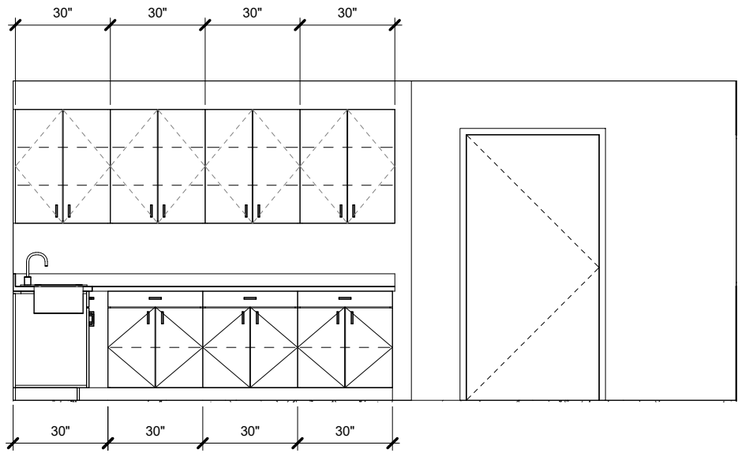
SHEET TITLE

STANDARD FIXTURE CLEARANCES

DATE: NOVEMBER 22, 2021
FILE: 20002

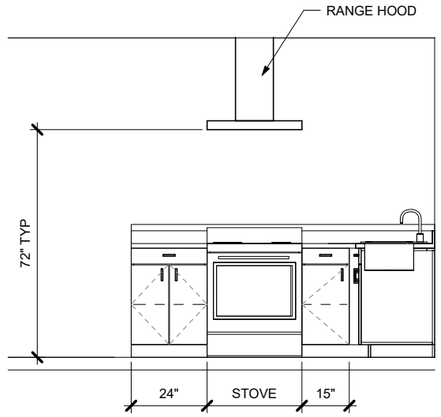
A500

11/22/2021 3:01:43 PM G:_Projects\20002\CAD\CD\Arch\Skagway School CD R20 - Kitchen Only.rvt



1 INTERIOR ELEVATION

SCALE: 0 1' 2' 4'



2 INTERIOR ELEVATION

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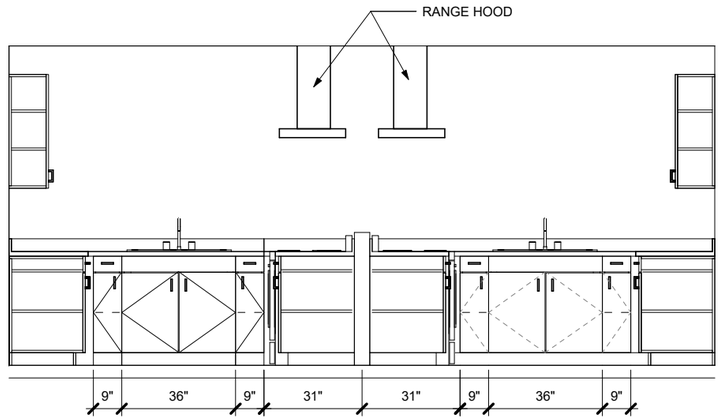
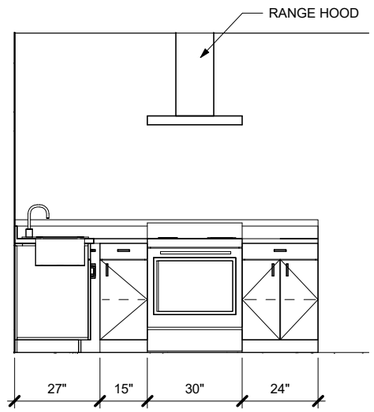


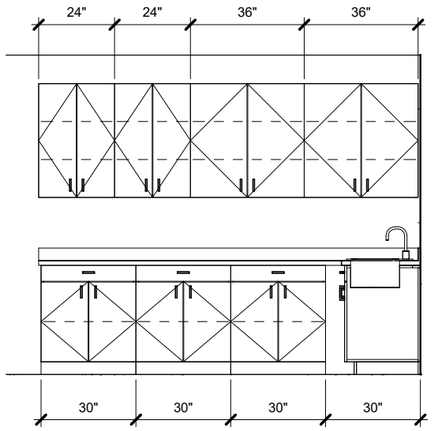
3 INTERIOR ELEVATION

SCALE: 0 1' 2' 4'



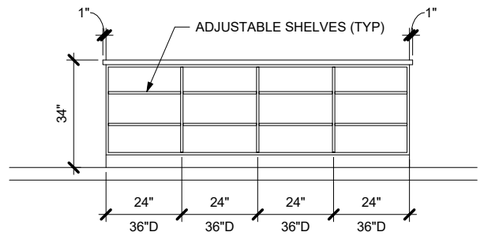
4 INTERIOR ELEVATION

SCALE: 0 1' 2' 4'



5 INTERIOR ELEVATION

SCALE: 0 1' 2' 4'



6 INTERIOR ELEVATION

SCALE: 0 1' 2' 4'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
INTERIOR ELEVATIONS

DATE: NOVEMBER 22, 2021
FILE: 20002

A501

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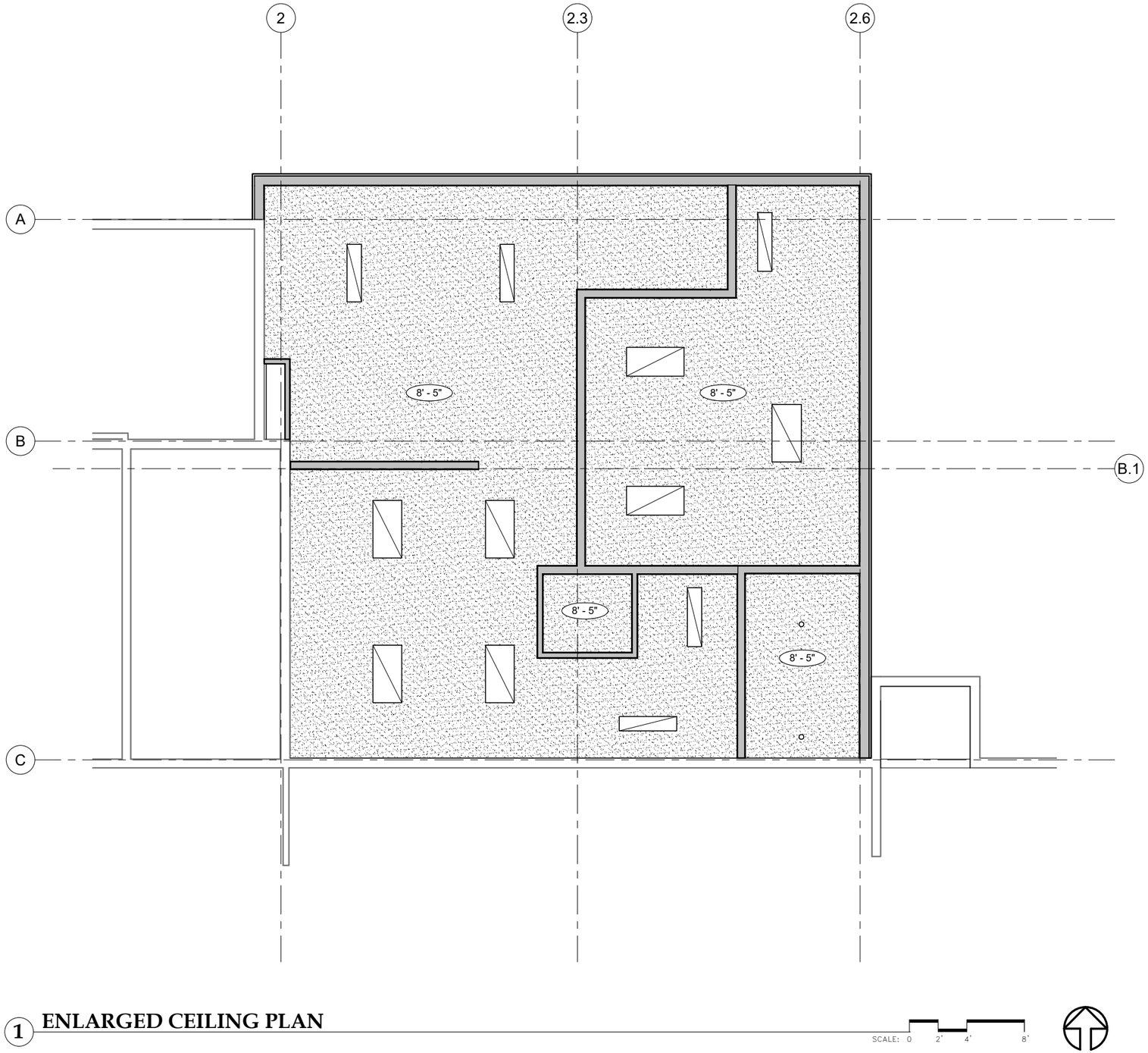
GENERAL NOTES:

1. SEE A901 FOR CEILING DETAILS
2. SEE ELEC & MECH FOR ADDITIONAL CLG WORK

LEGEND:

5/8" GWB CEILING



1 ENLARGED CEILING PLAN

SCALE: 0 2' 4' 8'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

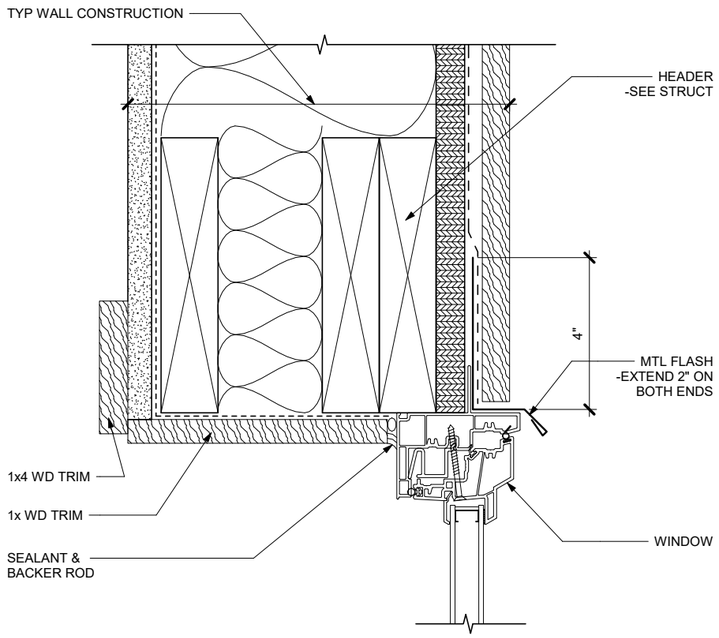
REVISIONS

SHEET TITLE

ENLARGED CEILING PLAN

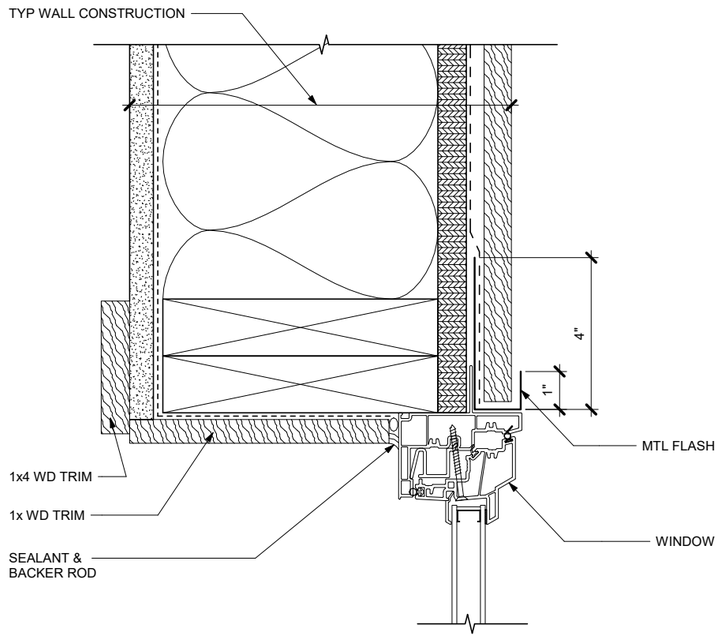
DATE: NOVEMBER 22, 2021
FILE: 20002

A601



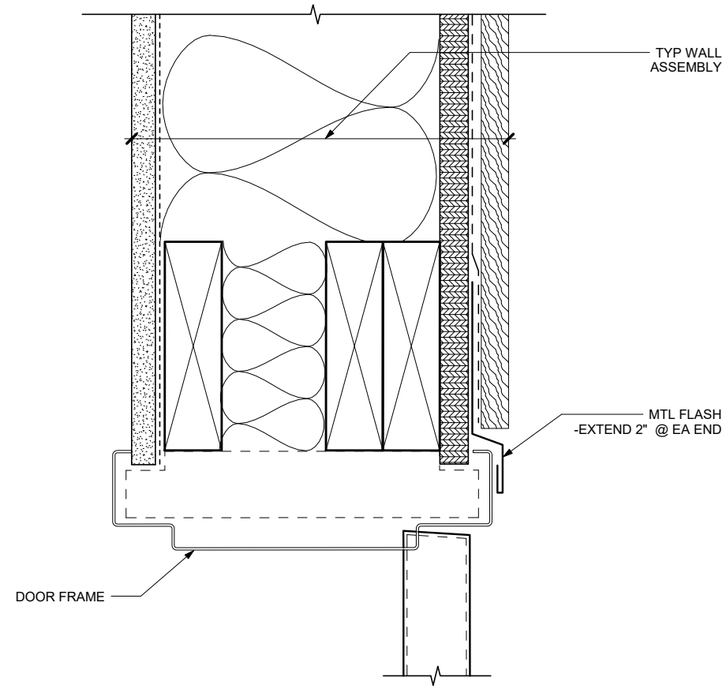
1 WINDOW HEAD

SCALE: 0 3" 6"



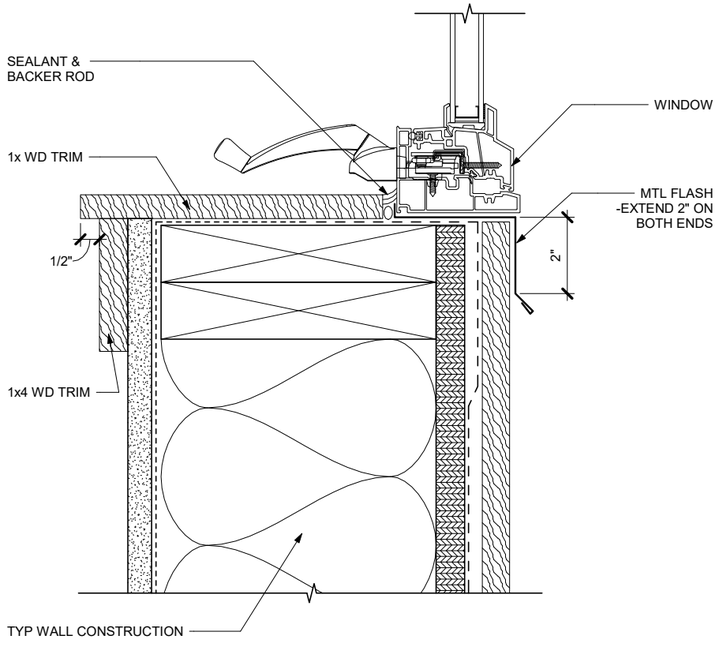
2 WINDOW JAMB

SCALE: 0 3" 6"



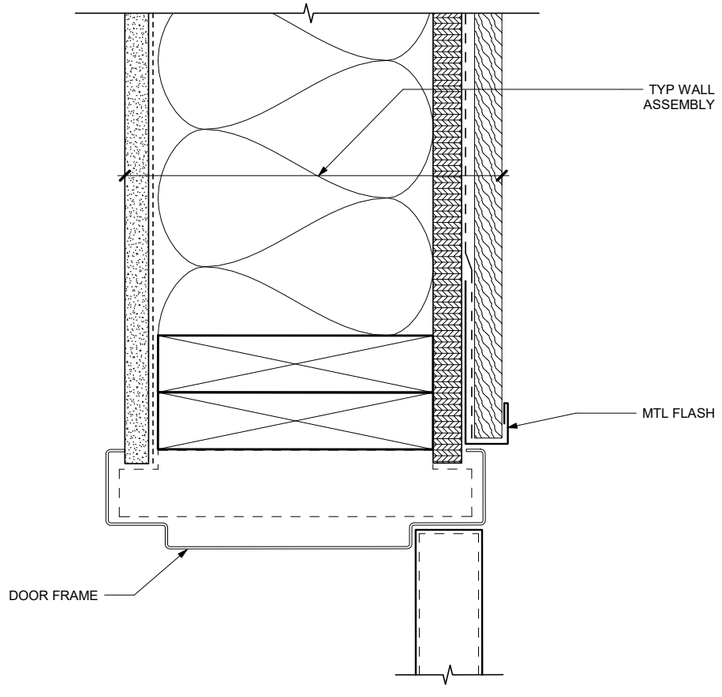
3 DOOR HEAD

SCALE: 0 3" 6"



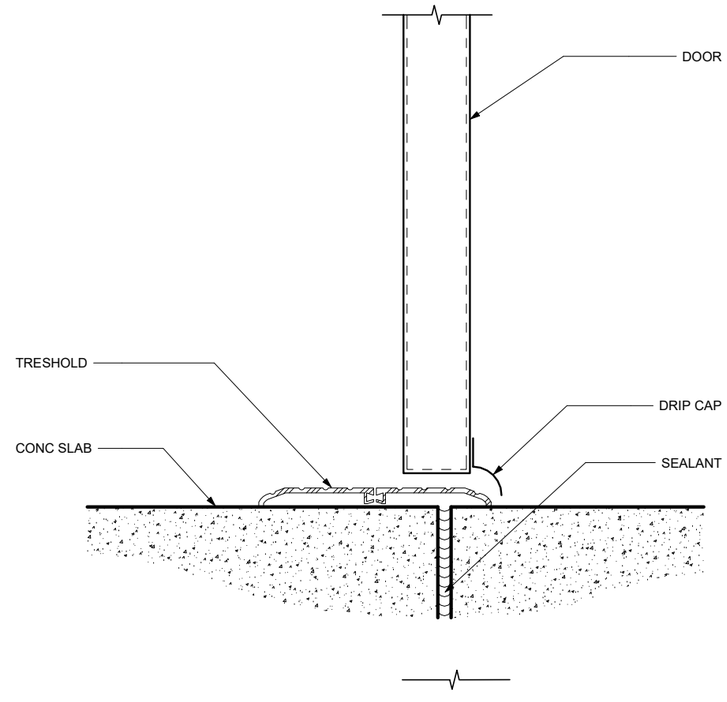
4 WINDOW SILL

SCALE: 0 3" 6"



5 DOOR JAMB

SCALE: 0 3" 6"



6 EXTERIOR DOOR SILL

SCALE: 0 3" 6"

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
DETAILS

DATE: NOVEMBER 22, 2021
FILE: 20002

A801

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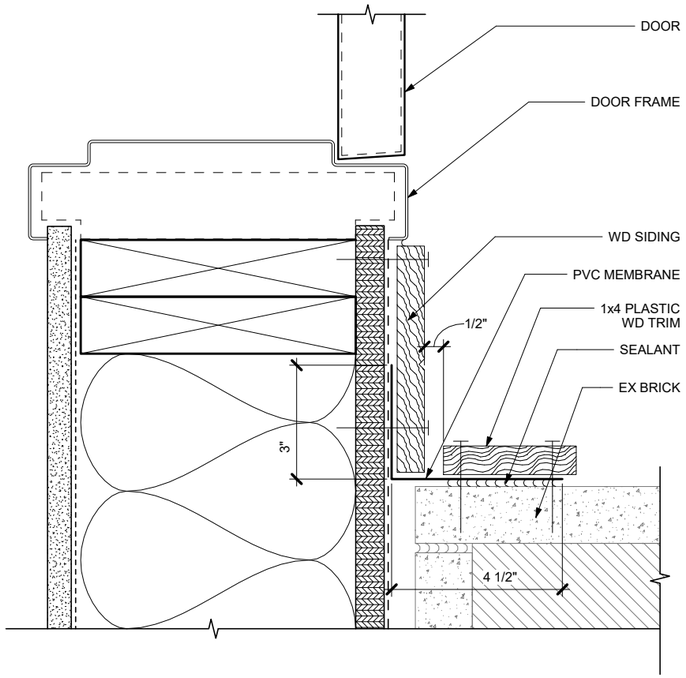
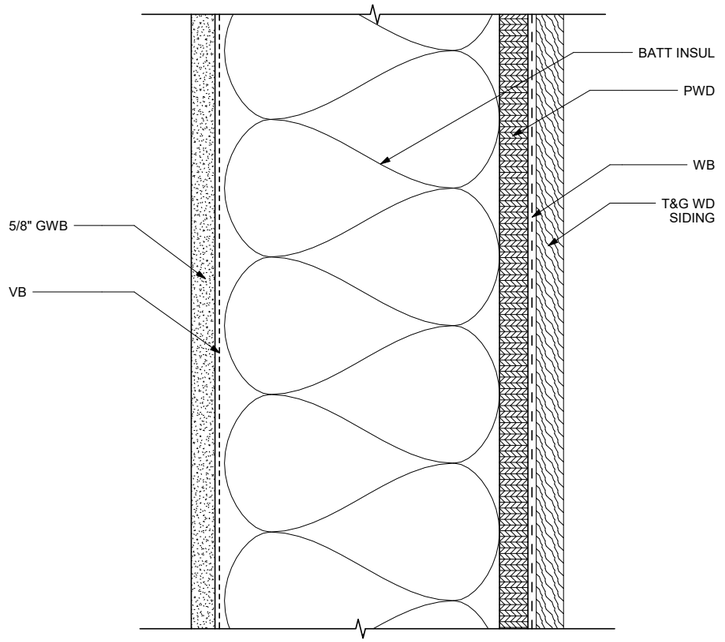


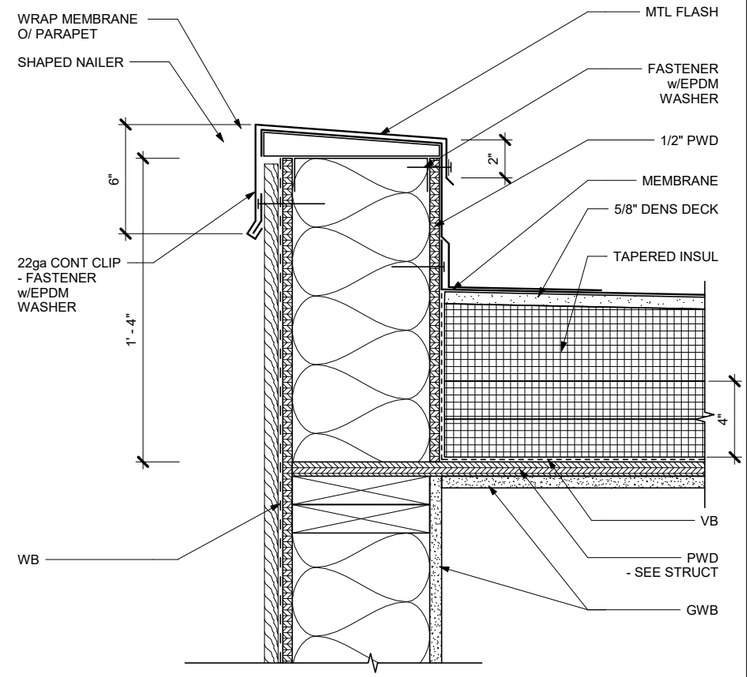
1 ADDITION JOINT @ BRICK

SCALE: 0 3" 6"



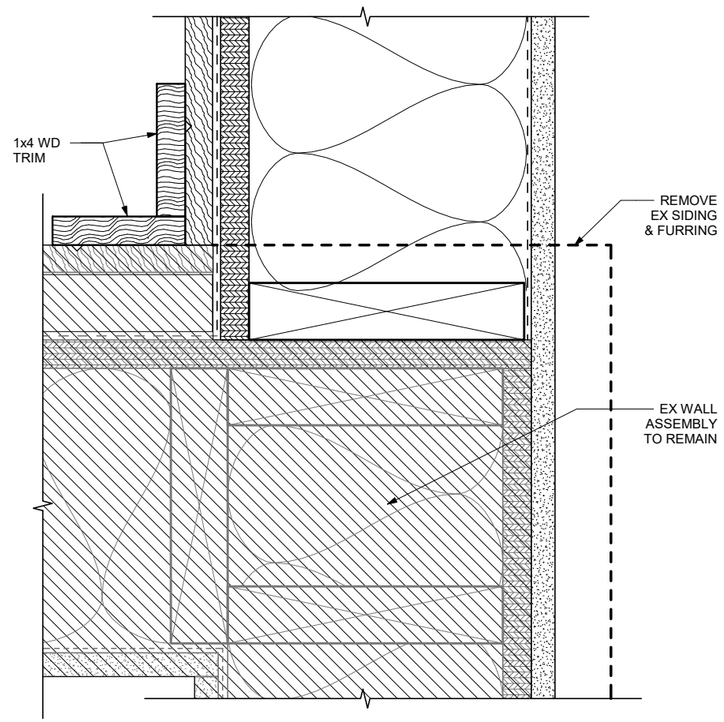
2 TYPICAL WALL DETAIL

SCALE: 0 3" 6"



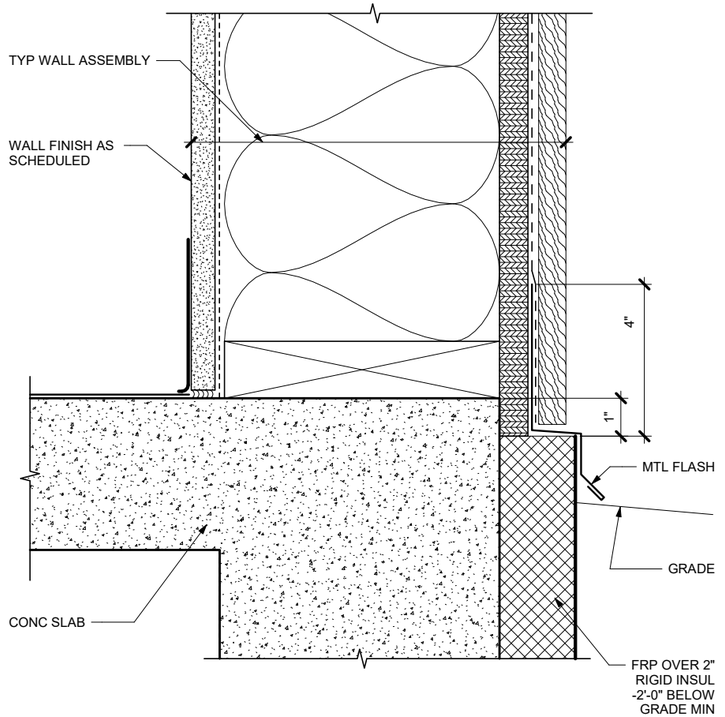
3 TYP PARAPET DETAIL

SCALE: 0 3" 6" 12"



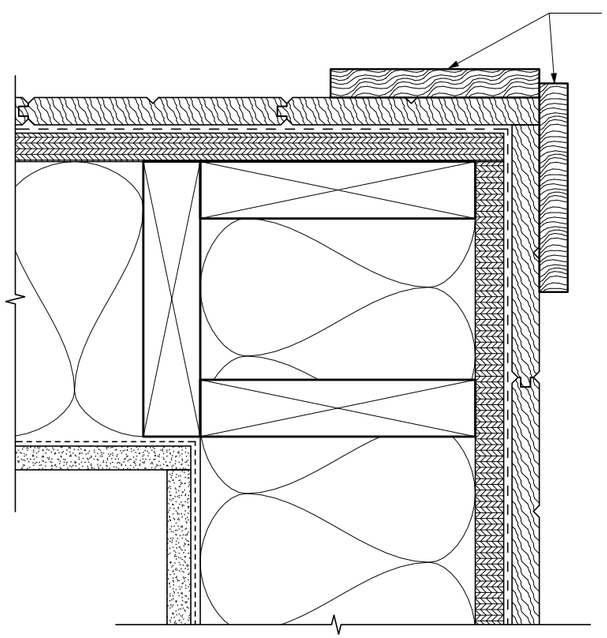
4 INSIDE CORNER DETAIL

SCALE: 0 3" 6"



5 TYPICAL WALL SILL

SCALE: 0 3" 6"



6 OUTSIDE CORNER DETAIL

SCALE: 0 3" 6" 12"

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

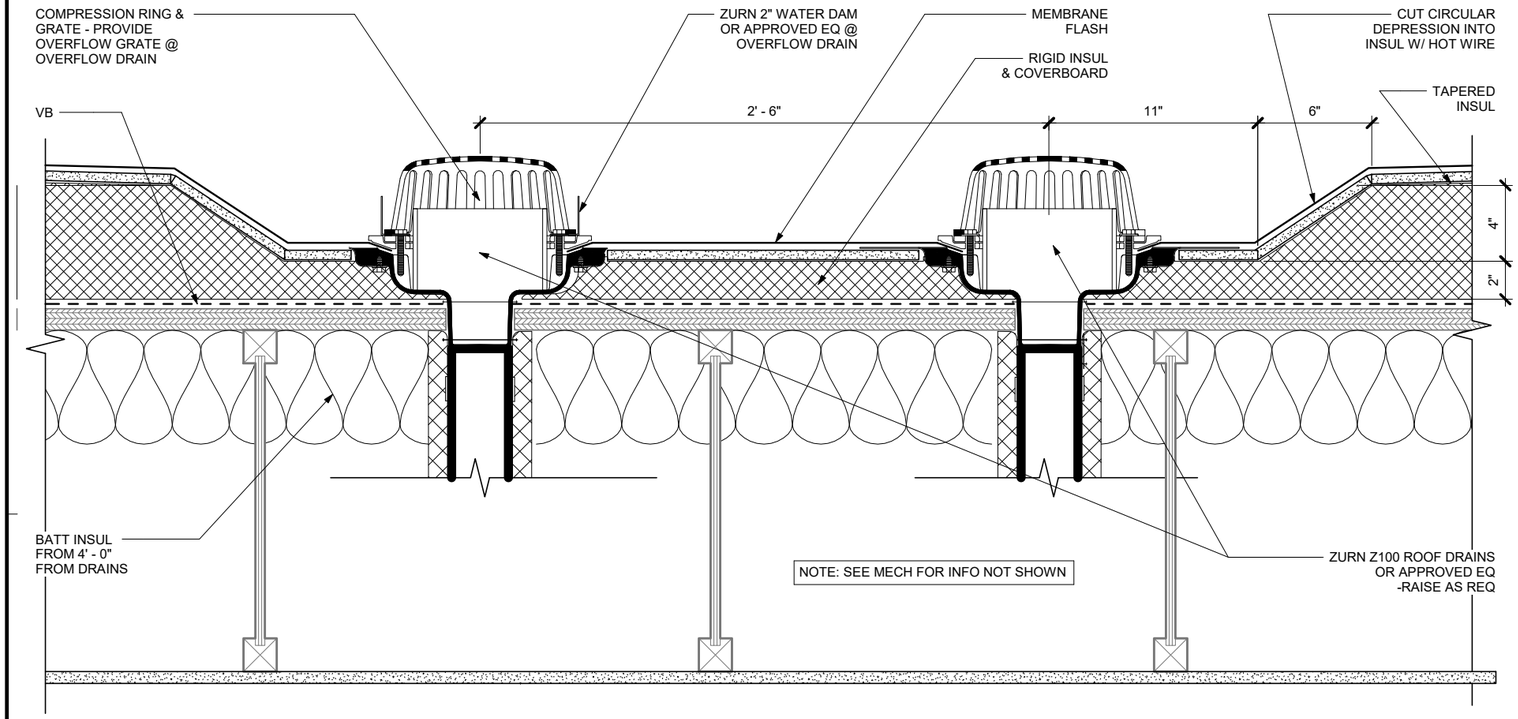
Skagway, Alaska

REVISIONS

SHEET TITLE
DETAILS

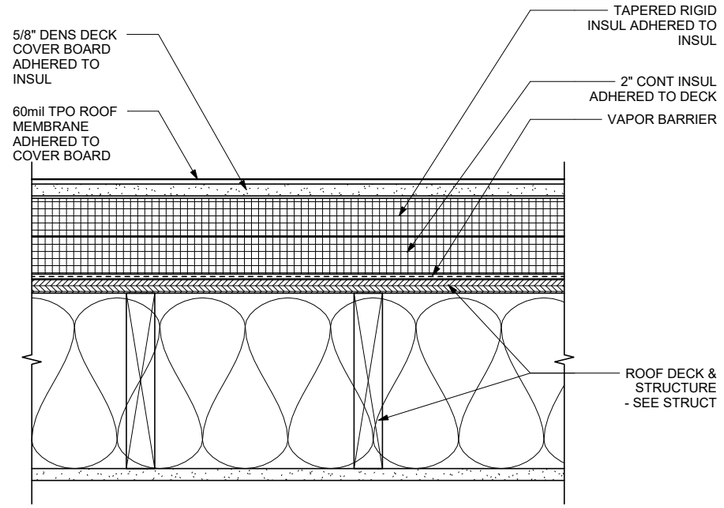
DATE: NOVEMBER 22, 2021
FILE: 20002

A802



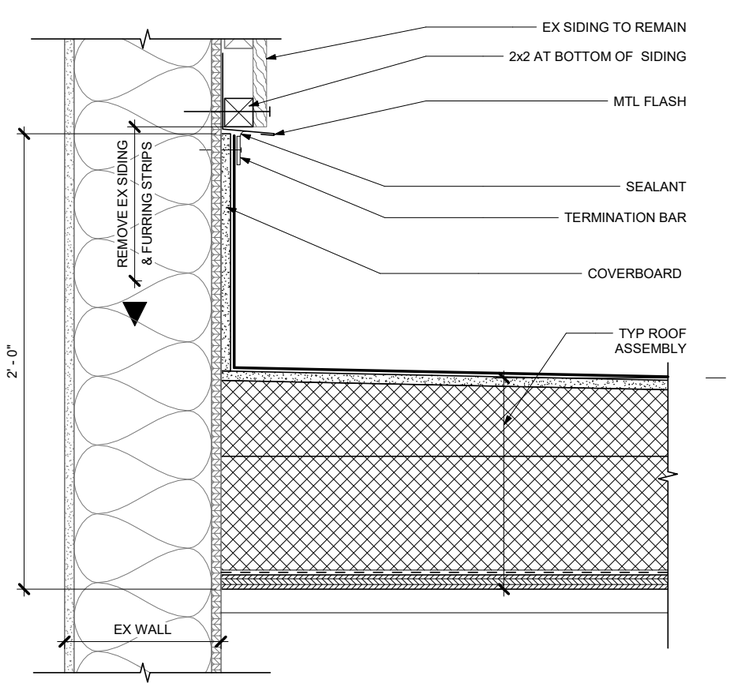
1 ROOF DRAIN

SCALE: 0 3" 6" 12"



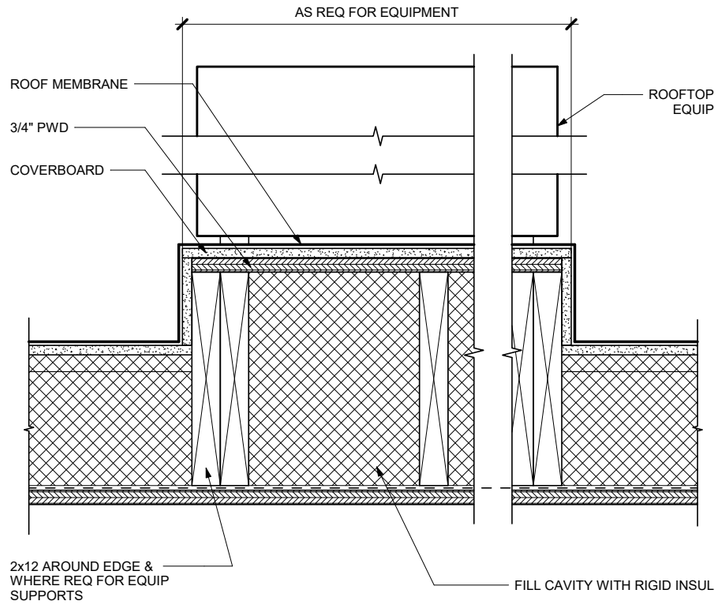
3 TYP ROOF ASSEMBLY

SCALE: 0 3" 6" 12"



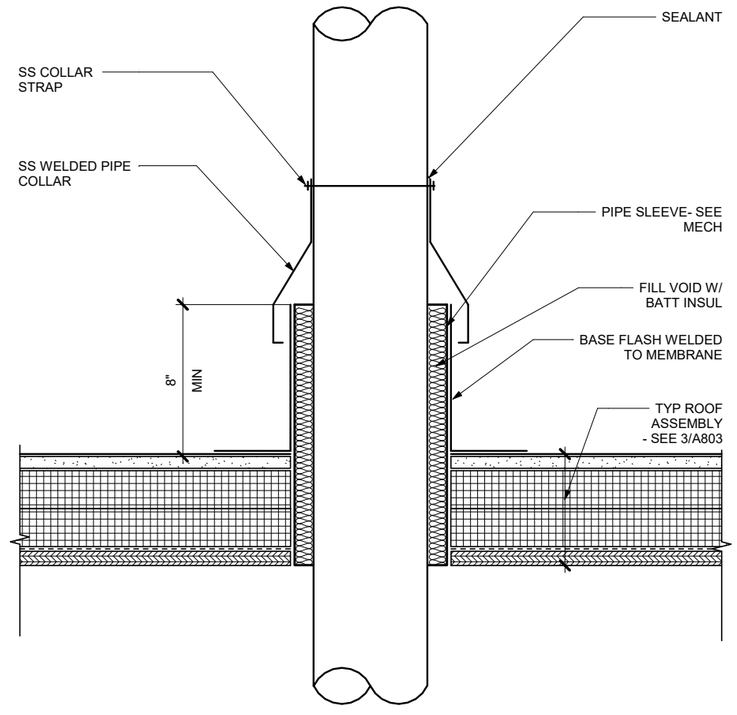
4 ROOF TO WALL DETAIL

SCALE: 0 3" 6" 12"



5 EQUIPMENT CURB DETAIL

SCALE: 0 3" 6" 12"



6 VENT THRU ROOF

SCALE: 0 3" 6" 12"

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

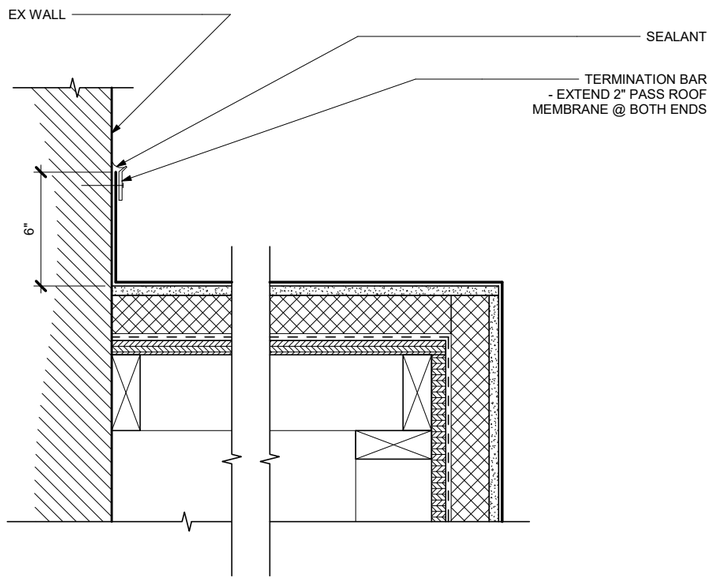
Skagway, Alaska

REVISIONS

SHEET TITLE
DETAILS

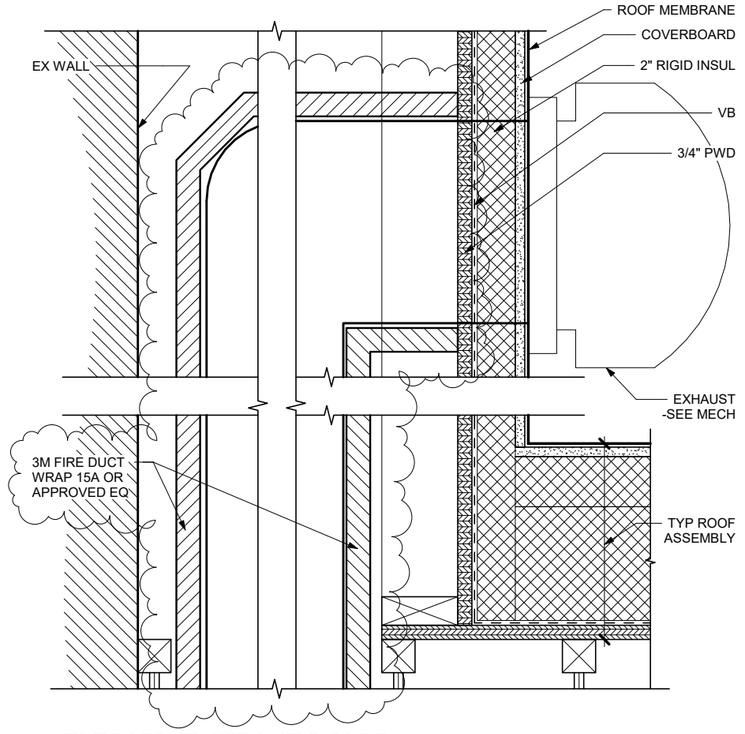
DATE: NOVEMBER 22, 2021
FILE: 20002

A803



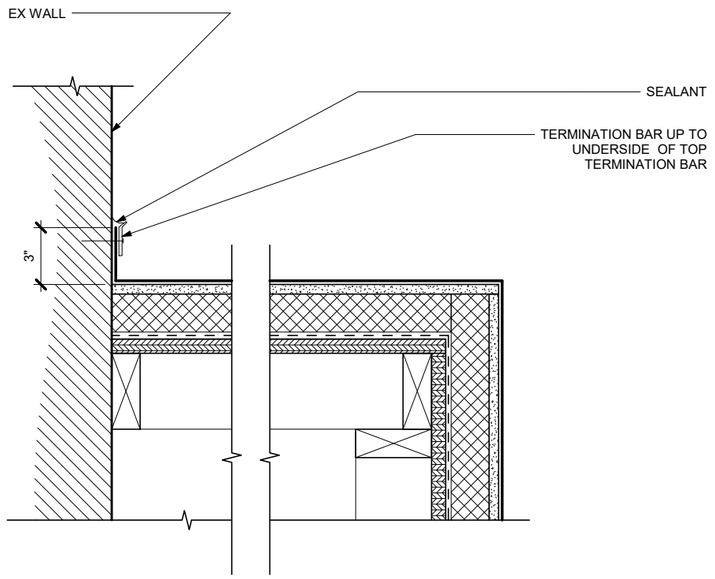
1 EXHAUST CHASE ROOF

SCALE: 0 3" 6" 12"



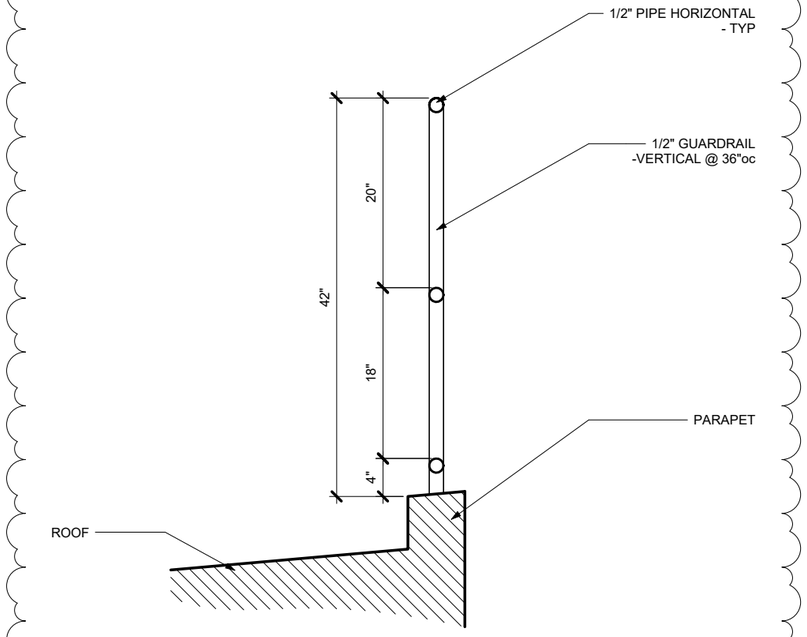
2 EXHAUST CHASE WALL

SCALE: 0 3" 6" 12"



4 EXHAUST CHASE WALL @ EX

SCALE: 0 3" 6" 12"



5 ROOF GUARDRAIL

SCALE: 0 6" 1' 2'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

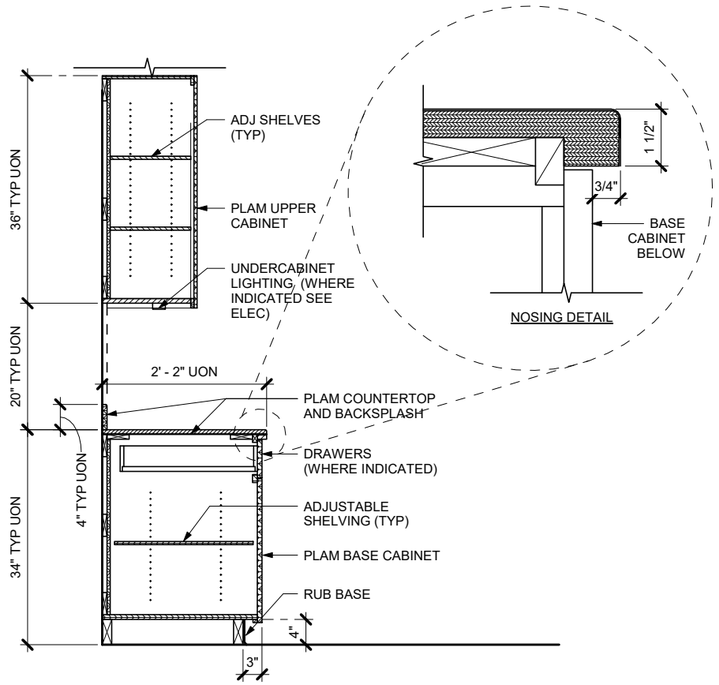
Skagway, Alaska

REVISIONS
1 FM Comments

SHEET TITLE
DETAILS

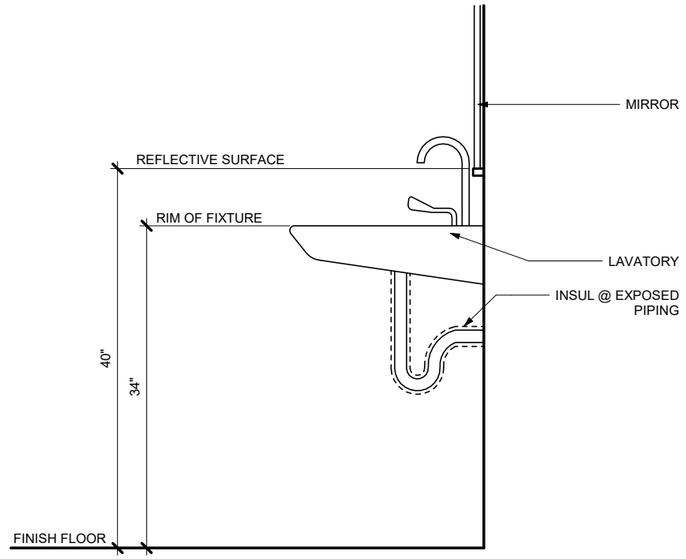
DATE: NOVEMBER 22, 2021
FILE: 20002

A804



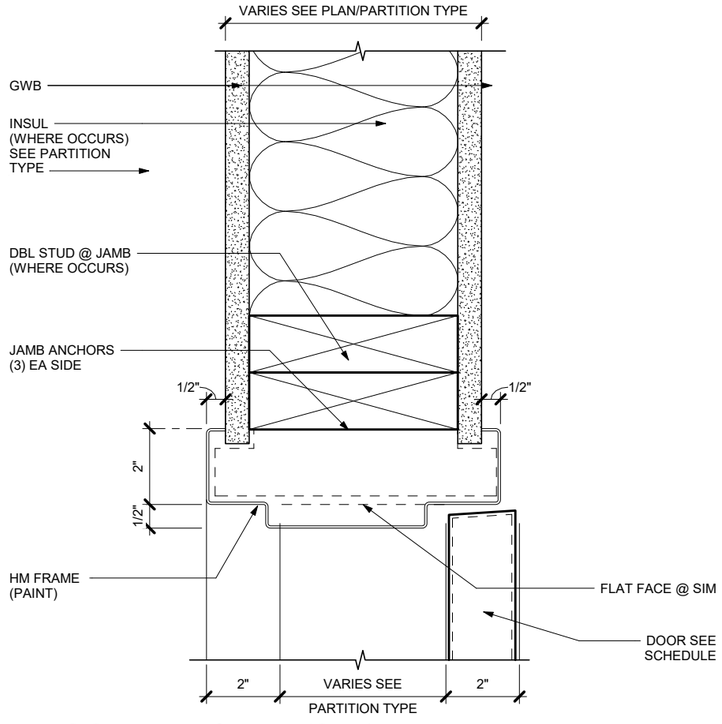
1 TYPICAL CASEWORK SECTION

SCALE: 0 6" 1' 2'



2 ACCESSIBLE LAVATORY DETAIL

SCALE: 0 6" 1' 2'



4 DOOR JAMB/HEAD(SIM)

SCALE: 0 3" 6"

Jensen Yorba Wall Inc.
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AECC137
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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

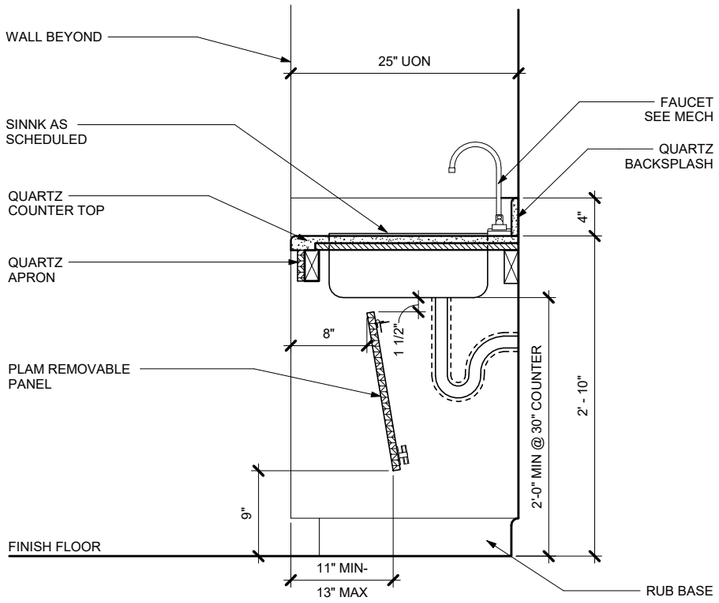
Skagway, Alaska

REVISIONS

SHEET TITLE
INTERIOR DETAILS

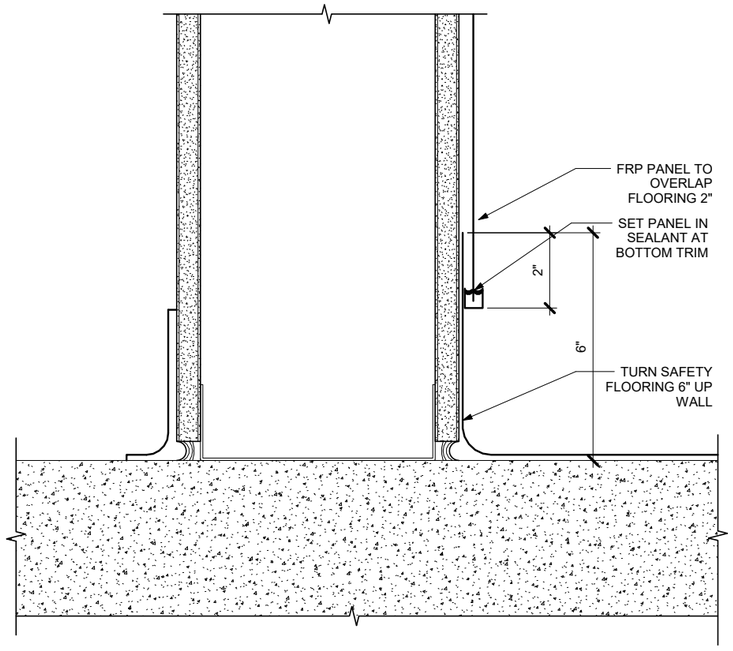
DATE: NOVEMBER 22, 2021
FILE: 20002

A901



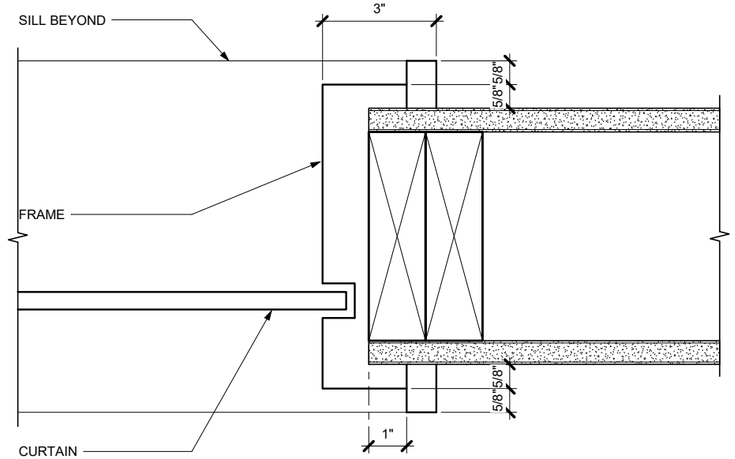
1 SINK @ COUNTER

SCALE: 0 6" 1' 2'



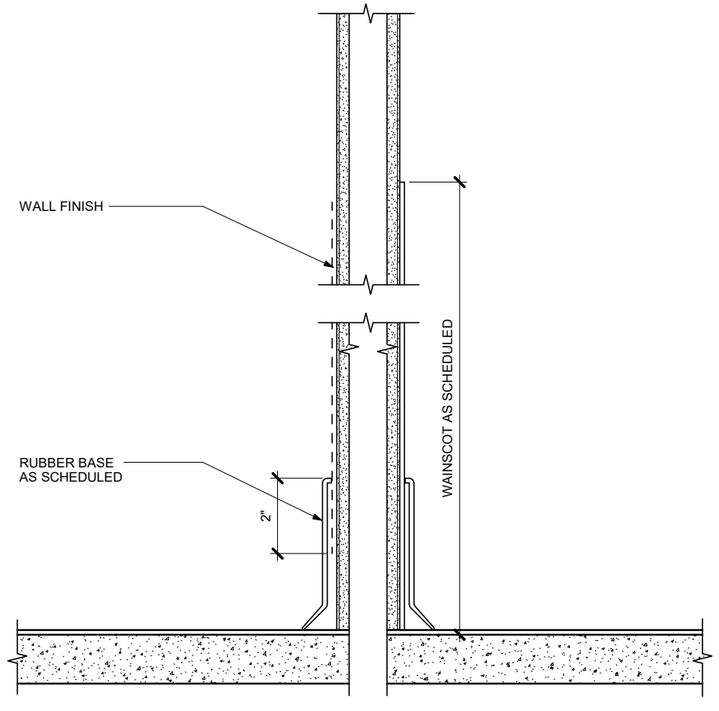
2 SAFETY FLOORING @ FRP

SCALE: 0 3" 6"



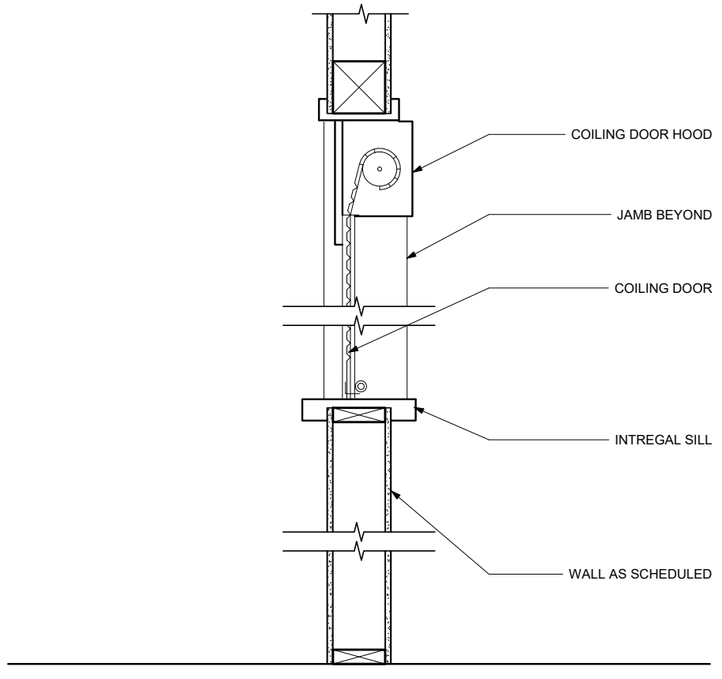
3 COILING DOOR JAMB

SCALE: 0 3" 6"



4 RUB BASE @ WALL COVERING

SCALE: 0 3" 6"



5 COILING DOOR SECTION

SCALE: 0 6" 1' 2'

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11-22-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
INTERIOR DETAILS

DATE: NOVEMBER 22, 2021
FILE: 20002

A902

GENERAL NOTES

CRITERIA

CODE: 2012 EDITION OF INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE STATE OF ALASKA AND MUNICIPALITY OF SKAGWAY

STRUCTURAL RISK CATEGORY: III

LOADS:

SNOW
- GROUND SNOW LOAD: 60 PSF
- THERMAL COEFFICIENT Ct = 1.1, (VENTED ROOF)
- EXPOSURE COEFFICIENT, Ce = 1.0 (TERRAIN CATEGORY C, PARTIALLY EXPOSED)
- IMPORTANCE, Is = 1.1 (RISK CATEGORY III)
- FLAT ROOF SNOW, SEE DIAGRAM THIS SHEET: 50 PSF
- DRIFT SNOW PER ASCE 7-2010

WIND LOADS
- ULTIMATE WIND SPEED: 127 MPH
- EXPOSURE: C; Kz = 0.90 Kzt = 1.0; Kd =0.85
- ULTIMATE STATIC PRESSURE, qu = 31.6 PSF

SEISMIC LOADS
- SITE CLASS: D
- Sds = 0.61 g; Sd1 = 0.41 g
- DESIGN CATEGORY D; IMPORTANCE = 1.25
- R = 6.55 (PLYWOOD SHEAR WALLS)
- Cs = 0.117 g

FOUNDATION:
FOUNDATION HAS BEEN DESIGNED WITH AN ALLOWABLE BEARING PRESSURE OF 3,000 PSF BASED UPON THE ANTICIPATION OF ENCOUNTERING TYPE 3 SOILS (SANDY GRAVEL OR GRAVEL) AS DEFINED IN TABLE 1806.2 OF THE INTERNATIONAL BUILDING CODE. CONTRACTOR SHALL VERIFY CONDITIONS AT THE LIMIT OF EXCAVATION AND REPORT TO THE ENGINEER.

STRUCTURAL MATERIALS AND CONSTRUCTION

SUB BASE:
CLEAR, GRUB AND STRIP SITE OF ALL ORGANICS. PLACE SUB BASE MATERIAL TO WITHIN 12 INCHES OF THE UNDERSIDE OF THE WALL AND COLUMN FOOTINGS AND TO WITHIN 6 INCHES OF UNDERSIDE OF THE SLAB. PLACE MATERIAL IN LIFTS AND COMPACT PRIOR TO PLACING SUBSEQUENT LIFT. PLACE MATERIAL IN LIFTS NOT TO EXCEED 8 INCHES IN LOOSE THICKENSS. COMPACT WITH A MINIMUM LVEL OF EFFORT OF 6 PASSES WITH A WALK BEHIND VIBRATORY PLATE COMPACTOR OR A VIBRATORY DOUBLE DRUM ROLLER WITH A MINIMUM RATING OF 10,000 POUNDS.

SUB BASE MATERIAL SHALL BE WELL GRADED SANDY GRAVEL WITH THE AMOUNT OF FINES PASSING THE NUMBER 200 SEIVE TO BE LESS THAN 6 PERCENT. SUBMIT GRADATION TEST RESULTS OF PROPOSED FILL MATERIAL PRIOR TO IMPORTING MATERIAL TO THE SITE.

BASE COURSE
BASE COURSE SHALL CONFORM TO GRADATION C1 OR D1 OF SECTION 703-2.03 OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION, 2015 EDITION. PLACE BASE COURSE IN ONE LIFT AND COMPACT WITH A MINIMUM LEVEL OF EFFORT OF 6 PASSES WITH A VIBRATORY DOUBLE DRUM ROLLER OR PLATE COMPACTOR WITH A MINIMUM RATING OF 10,000 POUNDS.

CONCRETE
MIXING, PLACING, AND CURING OF CONCRETE AND SELECTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE IBC. PROPORTIONS OF AGGREGATE, CEMENT AND WATER SHALL BE SUCH TO RESULT IN A DENSE WORKABLE MIX WHICH CAN BE PLACED WITHOUT EXCESS SURFACE WATER. A MIX DESIGN, WITH RECORDED CYLINDER TEST RESULTS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO MOBILIZING CONCRETE EQUIPMENT TO THE SITE. MAXIMUM SLUMP SHALL BE 4 INCHES PRIOR TO ADDING PLASTICISERS OR WATER REDUCERS ON SITE. 28-DAY COMPRESSIVE STRENGTH (fc') SHALL BE 4,000 PSI. CONCRETE SHALL BE ENTRAINED WITH AIR SO THAT AIR CONTENT WILL BE BETWEEN 5 AND 8 PERCENT.

CONCRETE REINFORCING SHALL COMPLY WITH ASTM A615 GRADE 60. LAP REINFORCING STEEL 50 BAR DIAMETERS UNLESS OTHERWISE NOTED. AT CORNERS ADD CORNER BARS AT EACH HORIZONTAL BAR WITH LEG LENGTH AT LEAST 50 DIAMETER LAP LENGTH OR EXTEND THE HORIZONTAL BARS WITH A 90 DEGREE HOOK WITH A 50 DIAMETER LAP LENGTH.

REINFORCING SHALL BE SUPPORTED AND SECURED IN PLACE PRIOR TO CONCRETE PLACEMENT USING WELL-CURED CONCRETE BLOCKS OR APPROVED STEEL CHAIRS. WELDING OF REINFORCING IS PROHIBITED UNLESS SPECIFICALLY NOTED.

PROVIDE MINIMUM COVER AT REINFORCING BARS AS FOLLOWS: CAST AGAINST EARTH 3 INCHES, EXPOSED TO EARTH OR WEATHER 2 INCHES AND SLABS ON GRADE 1.5 INCHES.

SHEATHING
SHEATHING SHALL BE PLYWOOD AND SHALL CONFORM WITH APA PS 1, EXPOSURE 1 SHEATHING GRADE CD OR OF A BETTER GRADE.

TIMBER FRAMING
SPECIES AND GRADES: UNLESS NOTED OTHERWISE, ALL TIMBER 2 TO 4 INCHES THICK SHALL BE HEM FIR NO 2 GRADE, TIMBER 5 INCHES AND GREATER IN THICKNESS SHALL BE HEM FIR NO 1 GRADE OR OF A BETTER SPECIES AND GRADE, VISUALLY GRADED IN ACCORDANCE WITH THE WESTERN WOODS PRODUCTS ASSOCIATION, LATEST GRADING RULES. ALL SAWN FRAMING SHALL BE STAMPED WITH LUMBER SPECIES AND GRADE.

TIMBER SHALL BE FABRICATED AND JOINED TO CREATE SNUG TIGHT CONNECTIONS UNLESS NOTED OTHERWISE. BOLTS SHALL CONFORM TO ASTM A307 AND BE GALVANIZED. HOLES FOR BOLTS SHALL BE NO GREATER THAN THE BOLT DIAMETER PLUS 1/8 INCH. ALL BOLTS WITH HEAD OR NUT IN CONTACT WITH TIMBER SHALL BE INSTALLED WITH GALVANIZED WASHERS UNDER THE HEAD AND NUTS. ALL NAILED CONNECTIONS SHALL BE CONNECTED USING GALVANIZED BOX NAILS.

PRE-FABRICATED HANGERS AND CONNECTORS NOTED IN THE PLANS ARE THE PRODUCT OF THE SIMPSON STRONG-TIE COMPANY. HANGERS AND CONNECTORS MADE BY OTHER MANUFACTURER'S MAY BE CONSIDERED FOR SUBSTITUTION IF THE HANGER OR CONNECTOR HAS EQUAL OR GREATER LOAD CAPACITY, EQUAL OR GREATER CORROSION RESISTANCE AND BE OF AN APPROPRIATE EQUAL CONFIGURATION. SUBMIT ICBO ER FOR REVIEW AND APPROVAL WITH ANY REQUEST FOR SUBSTITUTION.

TIMBER AND LUMBER NOTED AS TREATED SHALL BE PRESSURE PRESERVATIVE TREATED IN ACCORDANCE WITH AWPA UC3B FOR IN GROUND CONTACT USING A PRESERVATIVE APPROVED BY THE ENGINEER. FIELD TREAT ALL DAMAGE TO PRESSURE TREATED ENDS AND SURFACES IN ACCORDANCE WITH AWPA M-4 USING 2 COATS OF COPPER NAPTHANATE SOLUTION AT DAMAGE, CUTS, HOLES, CHAMFERS, DAPS, COUNTERSINKS, ETC.

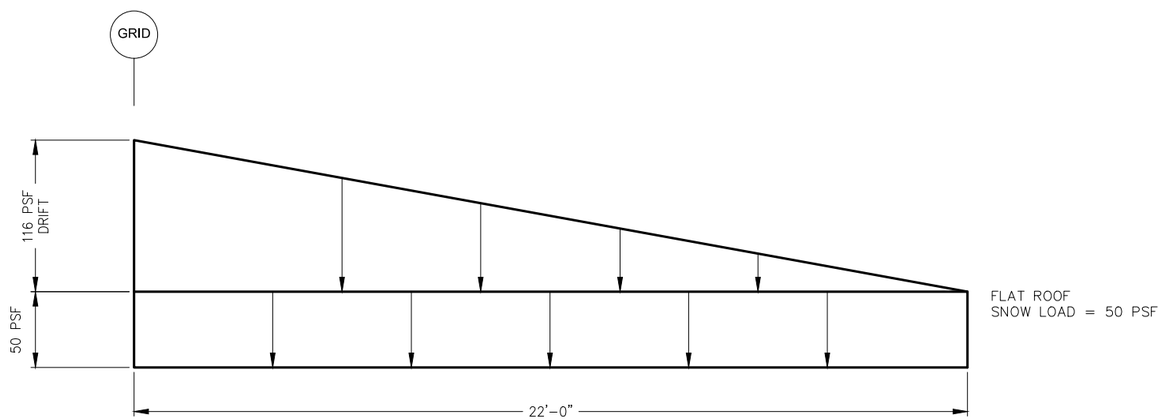
I JOISTS
I JOISTS SHALL CONSIST OF SOLID TIMBER OR LAMINATED VENEER LUMBER FLANGES AND A PLYWOOD WEB. I JOISTS SHALL BE AS MANUFACTURED BY THE RED BUILT COMPANY AND BE THE TYPE INDICATED ON THE PLANS OR OF APPROVED EQUAL. IF ALTERNATE I JOIST IS PROPOSED THE SUBSTITUTION SHALL HAVE THE SAME CHARACTERISTICS, STIFFNESS AND LOAD CAPACITY OF THE MAKE AND MODEL INDICATED. ANY REQUEST FOR SUBSTITUTION SHALL INCLUDE AN ICBO EVALUATION REPORT. HANDLE AND STORE IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.

GLUED LAMINATED TIMBER BEAMS SHALL BE MADE OF DOUGLAS FIR AND BE COMBINATION 24F-V4 FOR SIMPLE SPAN BEAMS AND 24F-V8 FOR CONTINUOUS OR CANTILEVERED SPANS.

LAMINATED VENEER LUMBER
LAMINATED VENEER LUMBER SHALL BE REDBUILT COMPANY RED LAM LVL OR APPROVED EQUAL.
CHARACTERISTICS AND ALLOWABLE STRESSES INCLUDE THE FOLLOWING:

MODULUS OF ELASTICITY:	E = 2.0 X 10^6 PSI
ALLOWABLE FIBER BENDING,	FB = 2,900 PSI
ALLOWABLE SHEAR	FV = 285 PSI
ALLOWABLE COMPRESSION PERPENDICULAR TO THE GRAIN	FCPERP = 725 PSI
ALLOWABLE COMPRESSION PARALLEL TO GRAIN	FC = 2750 PSI

HANDLE AND STORE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS



1 **SNOW DRIFT LOAD**

ABBREVIATIONS

ACI	AMERICAN CONCRETE INSTITUTE
AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
APA	AMERICAN PLYWOOD ASSOCIATION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWPA	AMERICAN WOOD PRESERVERS ASSOCIATION
BLKG	BLOCKING
℄	CENTERLINE
DBL	DOUBLE
(E)	EXISTING
EMBED	EMBEDMENT
GALV	GALVANIZED
GLB	GLUED LAMINATED TIMBER BEAM
IBC	INTERNATIONAL BUILDING CODE
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
LVL	LAMINATED VENEER LUMBER
MAX	MAXIMUM
MIN	MINIMUM
NO	NUMBER
OC	ON CENTER
PL	PLATE
PS	PRODUCT STANDARD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
STD	STANDARD
TYP	TYPICAL

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7-20-21

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL
KITCHEN ADDITION
Skagway, Alaska

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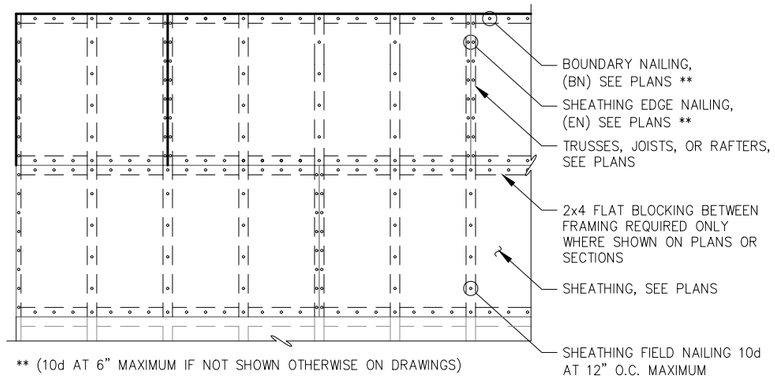
SHEET TITLE
STRUCTURAL GENERAL NOTES

DATE: July 20, 2021
FILE: 20002

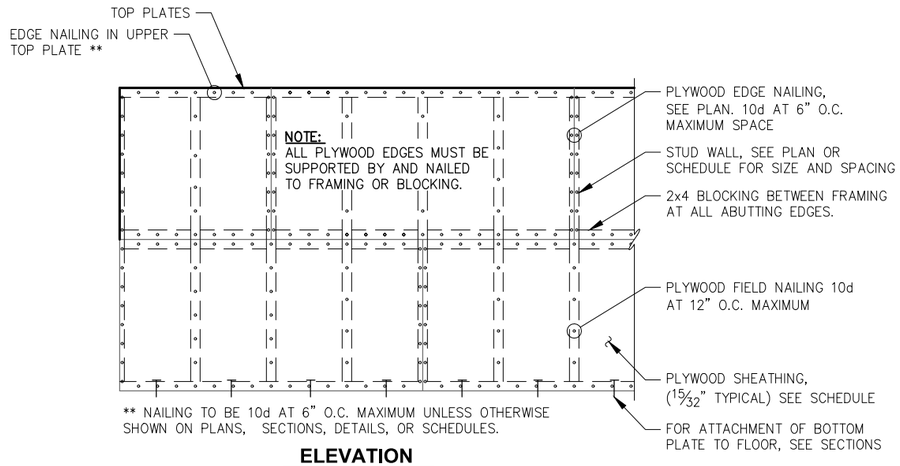
S100



PLAN

NOTES:
1. STAGGER SHEATHING JOINTS A MINIMUM OF TWO JOIST SPACES
2. NAILS AT ABUTTING SHEATHING EDGES MUST PENETRATE THE SAME PIECE OF FRAMING OR BLOCKING.

A TYPICAL PLYWOOD DIAPHRAGM FOR FLOOR OR ROOF DETAIL



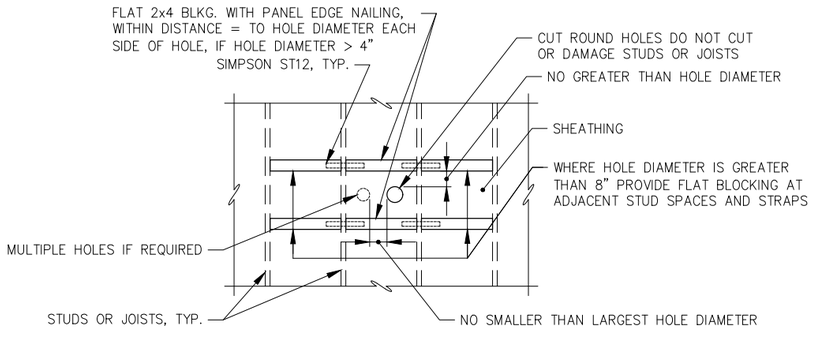
ELEVATION

NOTES:
1. PLYWOOD IS SHOWN HORIZONTAL, IT MAY ALSO BE POSITIONED VERTICAL.
2. STAGGER PLYWOOD JOINTS A MINIMUM OF TWO STUD SPACES.
3. NAILS AT ABUTTING PLYWOOD EDGES MUST PENETRATE THE SAME PIECE OF FRAMING OR BLOCKING.
4. SEE TYPICAL WALL ELEVATIONS AND PLANS FOR HOLD DOWNS, STRAPS AND ADDITIONAL BLOCKING.

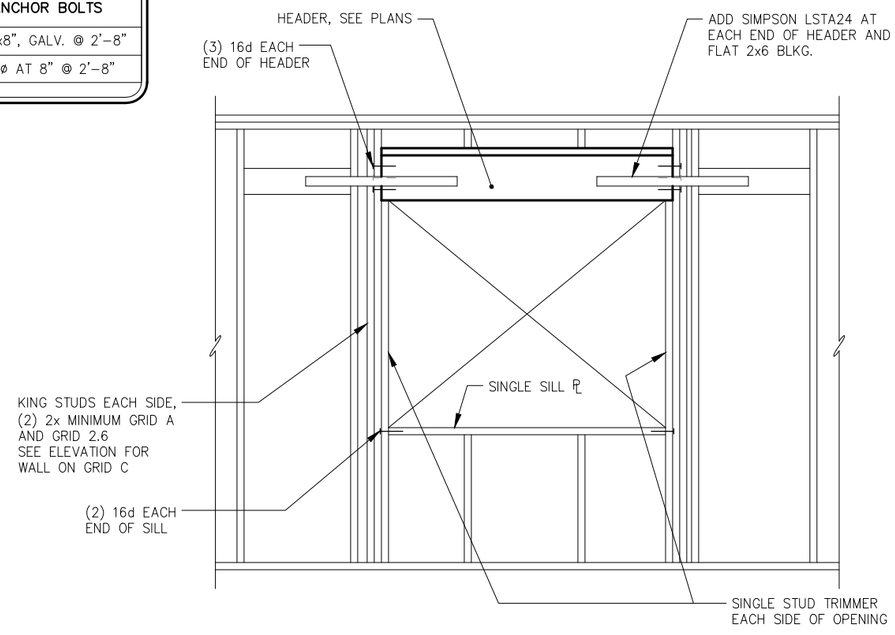
B TYPICAL SHEAR WALL DETAIL

SHEAR WALL SCHEDULE

MARK	PANEL EDGE NAILING	SHEATHING	ANCHOR BOLTS
1	8d AT 6"	15/32 CDX ONE SIDE	5/8"ø x 8", GALV. @ 2'-8"
2	8d AT 2"	15/32 CDX BOTH SIDES	5/8"ø AT 8" @ 2'-8"



C TYPICAL SHEAR WALL AND DIAPHRAGM PENETRATION DETAIL



D TYPICAL HEADER DETAIL

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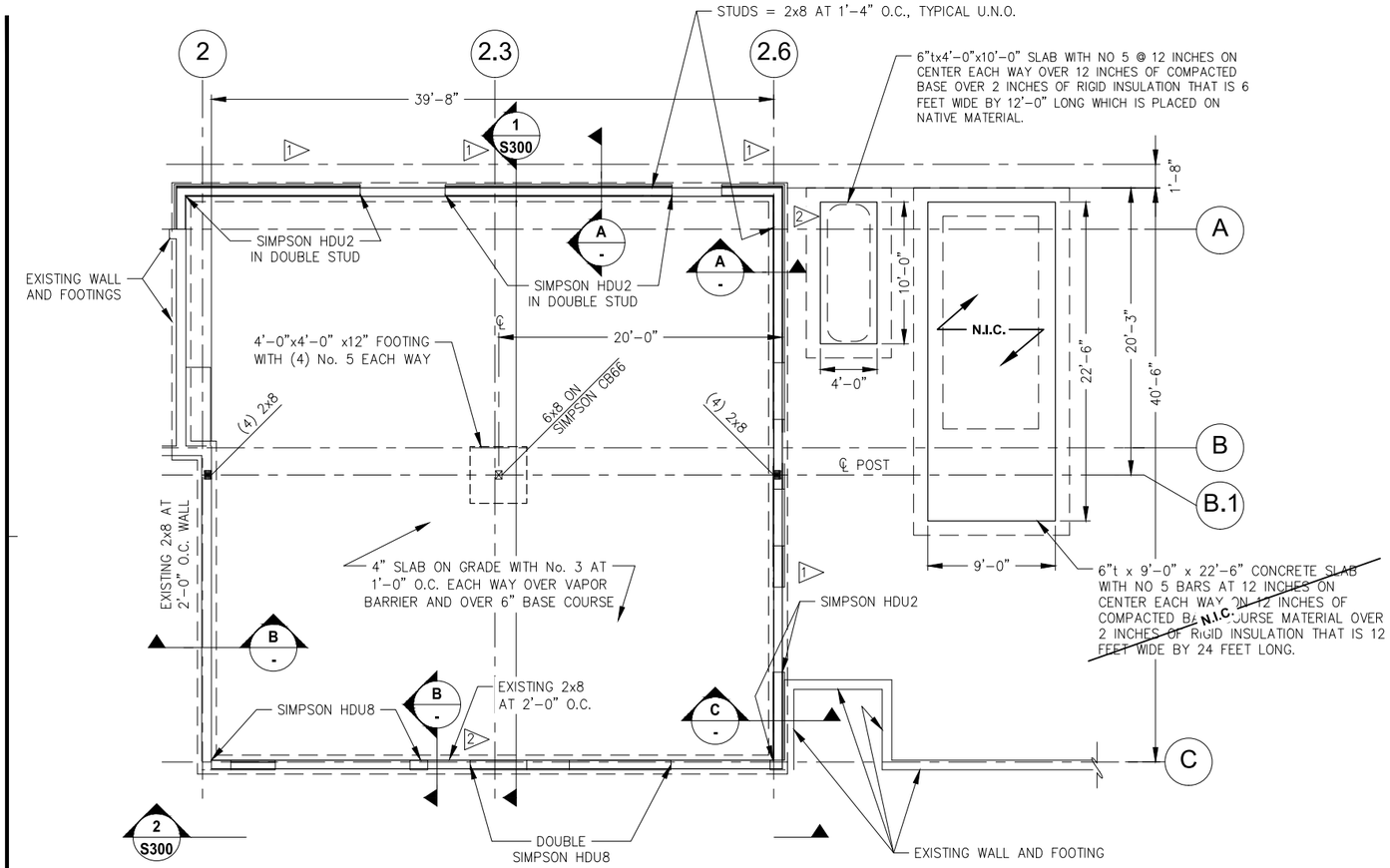
SHEET TITLE
TYPICAL DETAILS

DATE: July 20, 2021
FILE: 20002

S101



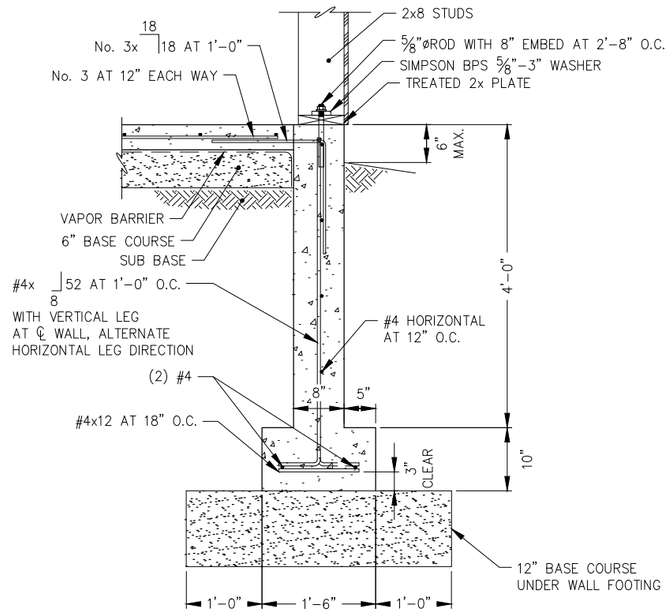
1 FOUNDATION AND FRAMING PLAN

SCALE: 0 2' 4' 8' 16'

PLAN NORTH

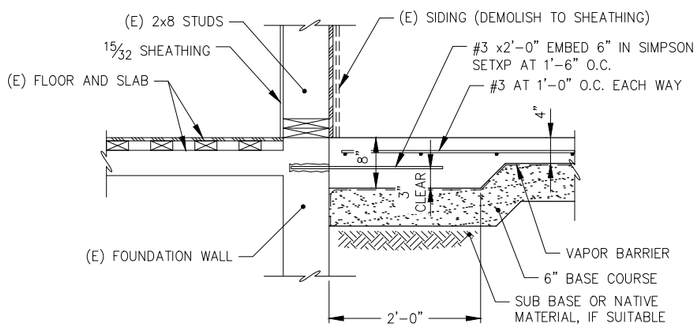
NOTE:

1. # INDICATES SHEAR WALL TYPE. SEE SCHEDULE AND TYPICAL DETAIL
2. AT HDU2 USE 5/8"ø ROD EMBED 8 INCHES IN SIMPSON SETXP.
3. AT HDU8 USE 7/8"ø ROD EMBED 12" IN SIMPSON SET XP.



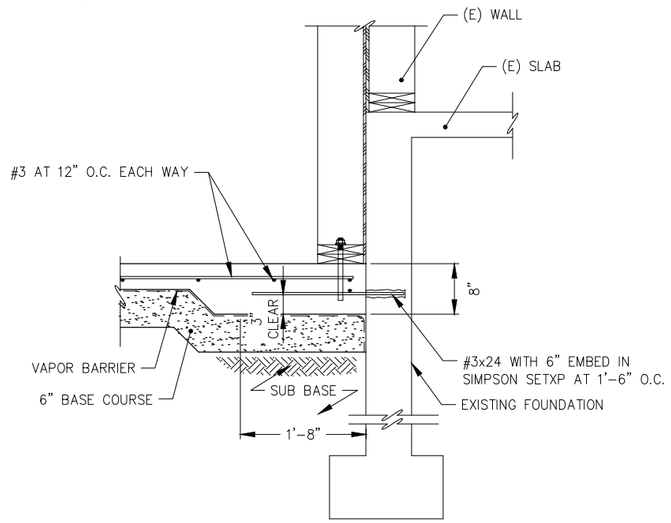
A TYPICAL FOOTING AND FOUNDATION WALL DETAIL

SCALE: 0 6" 1' 2'



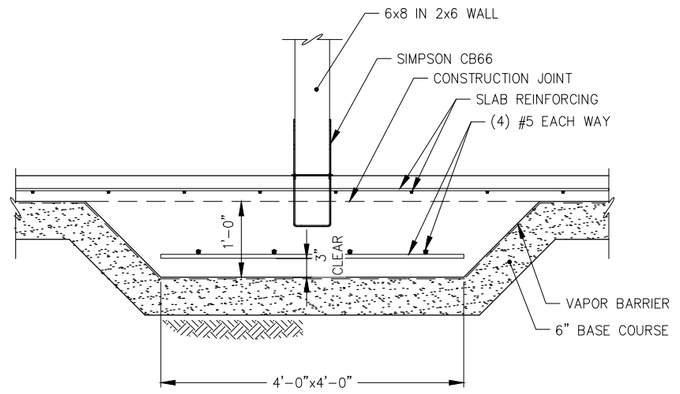
B SECTION AT EXISTING WALLS

SCALE: 0 6" 1' 2'



C FOUNDATION DETAIL

SCALE: 0 6" 1' 2'



D INTERIOR FOOTING DETAIL

SCALE: 0 6" 1' 2'

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Skagway, Alaska

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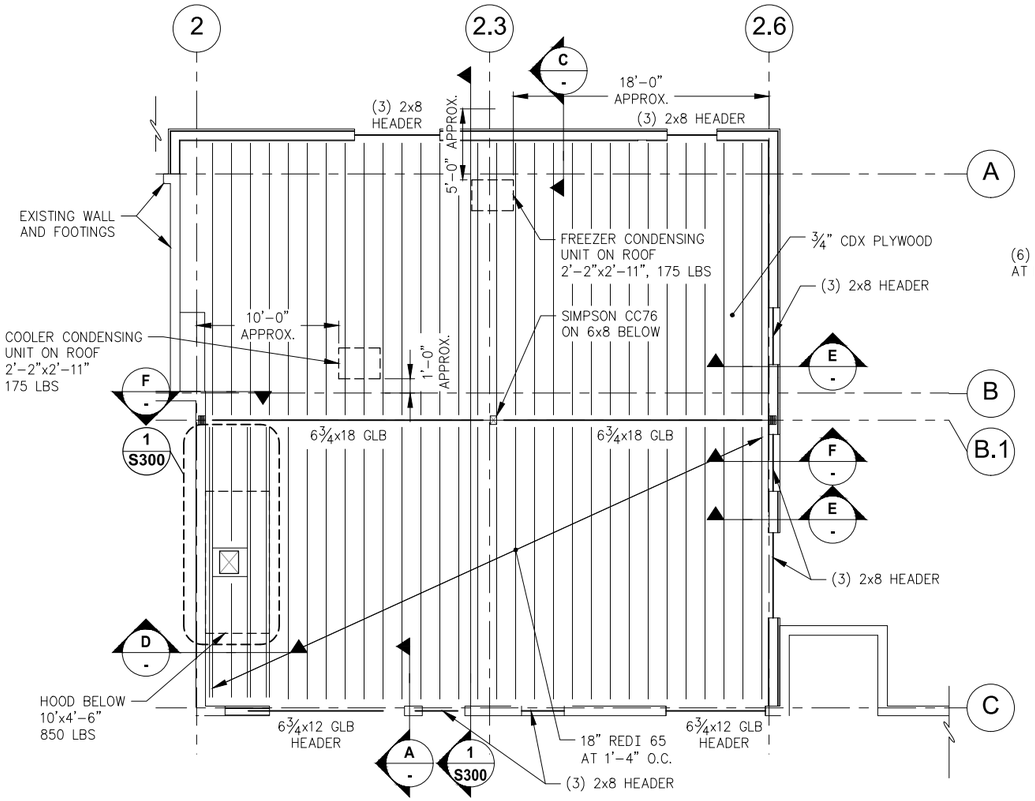
SHEET TITLE
FOUNDATION AND FRAMING PLAN

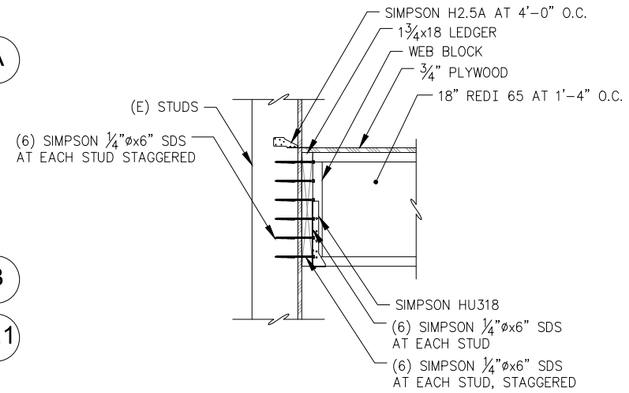
DATE: July 20, 2021
FILE: 20002

S200

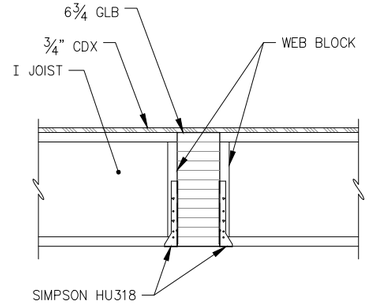


1 ROOF FRAMING PLAN SCALE: 0 2' 4' 8' 16'

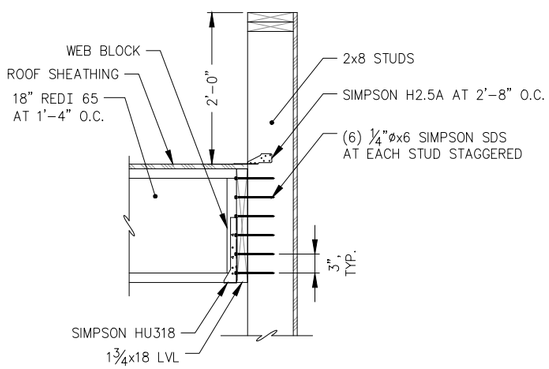
PLAN NORTH



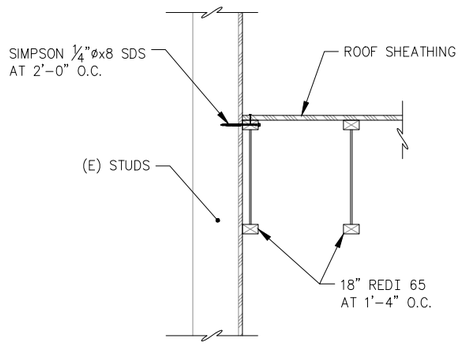
A NEW ROOF TO EXIST WALL SCALE: 0 6" 1' 2'



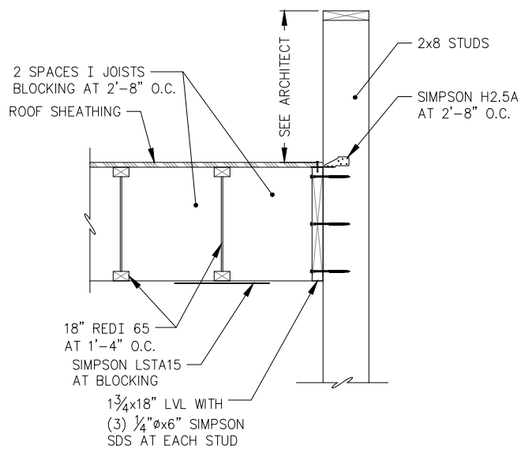
B ROOF SECTION AT CENTER BEAM SCALE: 0 6" 1' 2'



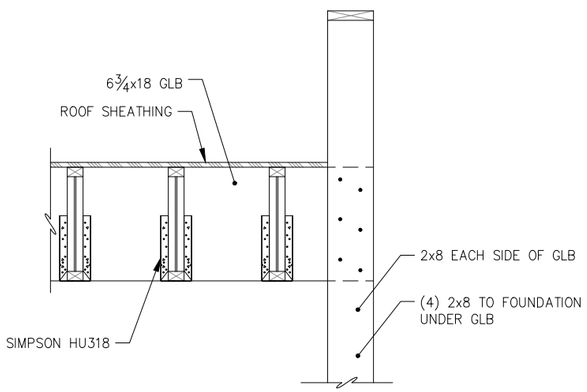
C ROOF SECTION SCALE: 0 6" 1' 2'



D SECTION SCALE: 0 6" 1' 2'



E SECTION SCALE: 0 6" 1' 2'



F SECTION - GLB TO WALL SCALE: 0 6" 1' 2'

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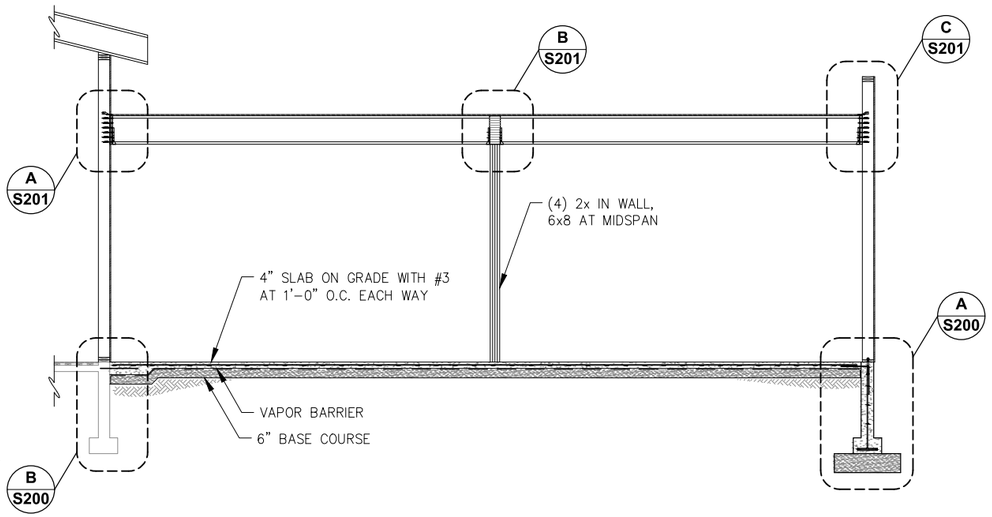
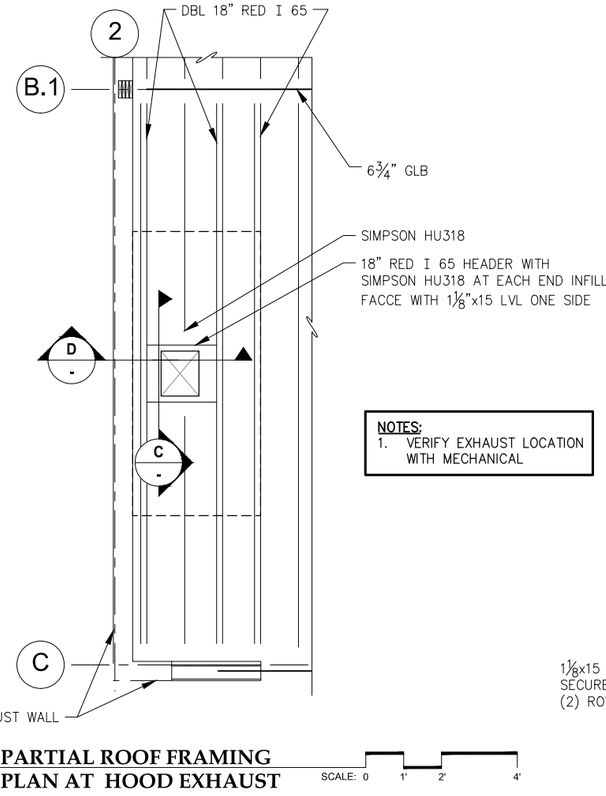
SHEET TITLE
ROOF FRAMING PLAN

DATE: July 20, 2021
FILE: 20002

S201

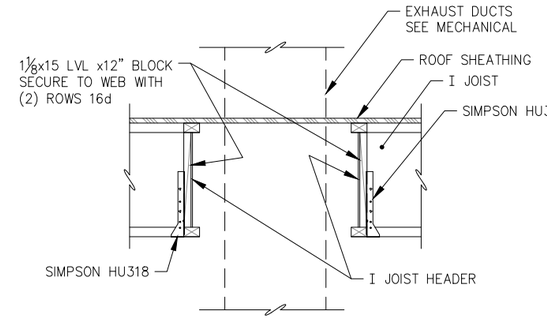


A **BUILDING SECTION**
SCALE: 0 2' 4' 8'

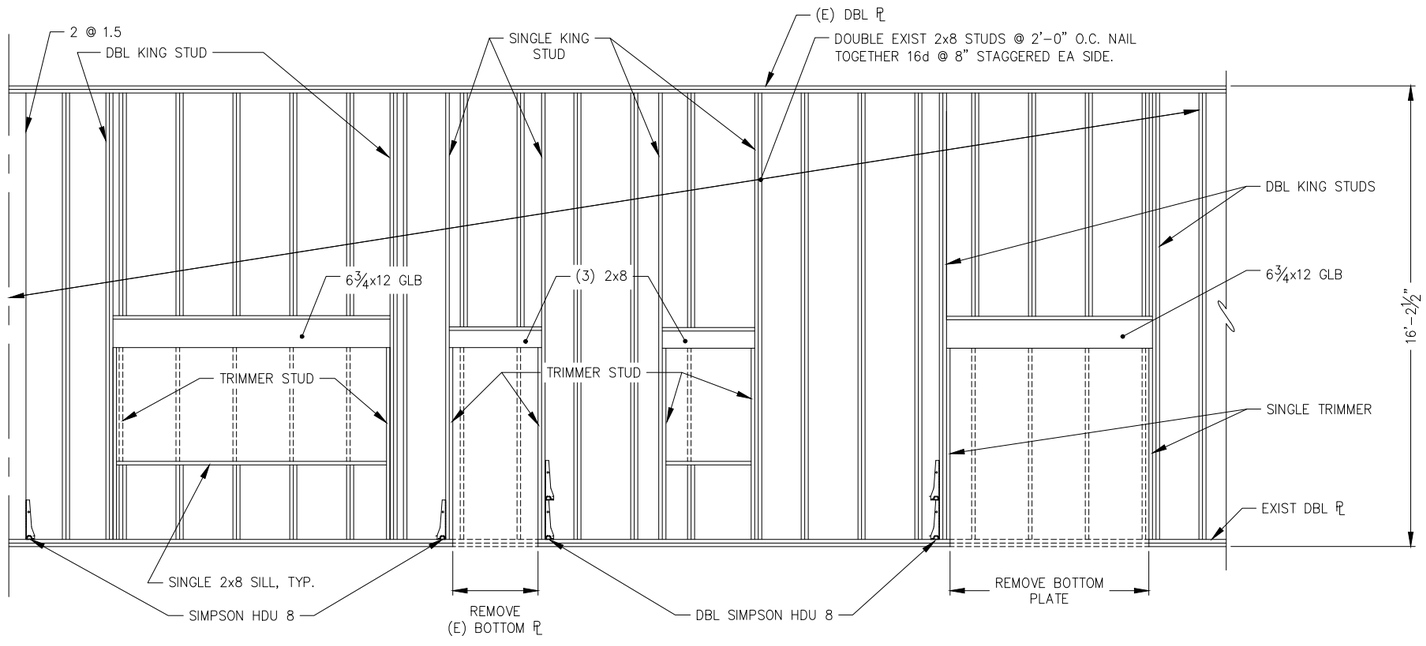


NOTES:
1. VERIFY EXHAUST LOCATION WITH MECHANICAL

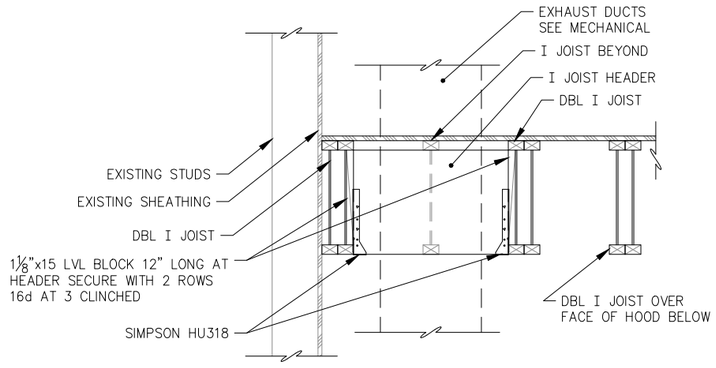
1 **PARTIAL ROOF FRAMING PLAN AT HOOD EXHAUST**
SCALE: 0 1' 2' 4'



C **SECTION AT HOOD EXHAUST**
SCALE: 0 2' 4' 8'



B **WALL FRAMING ELEVATION**
SCALE: 0 2' 4' 8'



D **SECTION AT HOOD EXHAUST**
SCALE: 0 2' 4' 8'

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SHEET TITLE
SECTION

DATE: July 20, 2021
FILE: 20002

S300

GENERAL

DETAIL SYMBOL — 1 / M-101 — DETAIL IDENTIFICATION; DRAWING ON WHICH DETAIL IS SHOWN

SECTION SYMBOL — A / M-101 — SECTION IDENTIFICATION; DRAWING ON WHICH SECTION IS SHOWN

MATCHLINE VIEW REFERENCE — 1/M-102A — DETAIL IDENTIFICATION; DRAWING ON WHICH CONTINUATION OF VIEW IS SHOWN

ROOM NAME AND NUMBER DESIGNATION — ROOM NAME / 101

SHEET KEYNOTE — 1

GENERAL SHEET NOTE — 3.

POINT OF CONNECTION

CONSTRUCTION PHASE LINESTYLE

TO BE DEMOLISHED OR RELOCATED

EXISTING TO REMAIN

NEW

MECHANICAL TAGS

EQUIPMENT DESIGNATION, SEE EQUIPMENT SCHEDULE — EF-1 — EQUIPMENT DESIGNATION

FINNED TUBE DESIGNATION SEE FINNED TUBE SCHEDULE — FT-1 / 16 | 7 — FINNED TUBE DESIGNATION; GPM; LINEAL FEET OF ELEMENT

UNIT HEATER DESIGNATION SEE UNIT HEATER SCHEDULE — UH-1 / 10 | 7.5 — UNIT HEATER DESIGNATION; GPM; BTU CAPACITY

PLUMBING FIXTURE DESIGNATION, SEE FIXTURE CONNECTION SCHEDULE — P-01 — FIXTURE DESIGNATION

DIFFUSER / REGISTER / GRILLE TAG SEE DIFFUSER, REGISTERS, & GRILLES SCHEDULE — SG-1 / 8"ø / 200 CFM — DRG DESIGNATION; NECK SIZE; FLOW THROUGH GRD

PIPE FITTINGS & VALVES

ELBOW, TURNED DOWN

ELBOW, TURNED UP

TEE, OUTLET DOWN

TEE, OUTLET UP

FLOW DIRECTION

ISOLATION VALVE

BALL VALVE

CHECK VALVE

STRAINER W/ BLOWDOWN

PRESSURE TEMPERATURE TAP ("PETE'S PLUG")

FLEXIBLE CONNECTION

BALANCE VALVE

MOTORIZED 2-WAY CONTROL VALVE

MOTORIZED 3-WAY CONTROL VALVE

RELIEF OR SAFETY VALVE

DRAIN ISOLATION VALVE AND HOSE ADAPTOR

DRAIN ISOLATION VALVE AND CAP

UNION

FLANGE CONNECTION

AUTO RELIEF AIR VENT

THERMOSTATIC EXPANSION VALVE

THERMOMETER

PRESSURE GAUGE W/ ISOLATION VALVE

PLUMBING LEGEND

	SCHEMATIC	1 LINE PLAN VIEW	2 LINE PLAN VIEW	ELEVATION	SECTION
HOSE BIBB	C				
FLOOR DRAIN					
FLOOR SINK					
FLOOR CLEAN OUT					
WALL CLEAN OUT					
WATER HAMMER ARRESTOR					
ROOF DRAIN					
ROOF DRAIN OVERFLOW					

WASTE	W	
COLD WATER	CW	— — —
HOT WATER	HW	— — —
HOT WATER CIRCULATION	HWC	— — — —
VENT	V	— — — — —
PROPANE	P	

AIR TERMINAL FLOW ARROW LEGEND

SLOT DIFFUSER
2-WAY BLOW
SLOTS DIVIDED EVENLY

CEILING DIFFUSER
4-WAY BLOW

DUCT LEGEND

DUCT (1ST FIGURE, SIDE SHOWN
2ND FIGURE, SIDE NOT SHOWN) — 24"X20"

DIRECTION OF FLOW

FLEXIBLE DUCT CONNECTION

INSULATED DUCTWORK
DIMENSIONS = INTERIOR FACE OF SHEET METAL
THICKNESS OF INSULATION IN INCHES — 24"X20" (+2)

LINED DUCTWORK
DIMENSIONS = INTERIOR FACE OF SHEET METAL
THICKNESS OF LINING IN INCHES — 24"X20" (-2)

VOLUME DAMPER — V — V — B — C

BACKDRAFT DAMPER

MOTORIZED CONTROL DAMPER

RECTANGULAR DUCTWORK - X" X Y"
WHERE X = DIMENSION ON THE PAGE
AND Y = DIMENSION INTO THE PAGE — SUPPLY RETURN EXHAUST

ROUND DUCTWORK - X"ø
WHERE X = THE DIAMETER OF THE DUCT

RECTANGULAR ELBOW UP
(OUT OF THE PAGE)

RECTANGULAR ELBOW
DOWN (INTO THE PAGE)

ROUND RADIUS ELBOW

ROUND ELBOW UP (OUT OF THE PAGE)

ROUND ELBOW DOWN
(INTO THE PAGE)

ABBREVIATIONS

ACFM	ACTUAL CUBIC FEET PER MINUTE
AFF	ABOVE FINISHED FLOOR
AGT	AVERAGE GLYCOL TEMPERATURE
AHAP	AS HIGH AS POSSIBLE
AHU	AIR HANDLING UNIT
APPROX	APPROXIMATE
AS	AIR SEPARATOR
AV	ACID VENT
AVTR	ACID VENT THROUGH ROOF
AW	ACID WASTE
BTU	BRITISH THERMAL UNIT
CA	COMPRESSED AIR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATION
CH	CHILLER
CLNG	CEILING
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CONT	CONTINUATION, CONTINUED
CP	CIRCULATING PUMP
CR	CONDENSATE RETURN
CU	CONDENSING UNIT
CU	COPPER
CW	COLD WATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
(D)	DEMOLISH
DDC	DIRECT DIGITAL CONTROLS
DIA	DIAMETER
DHWC	DOMESTIC HOT WATER CIRC
DN	DOWN
DRG	DIFFUSER, REGISTER, GRILLE
DWR	DEMINERALIZED WATER RETURN
DWS	DEMINERALIZED WATER SUPPLY
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR
EBB	ELECTRIC BASEBOARD
ED	EXHAUST DIFFUSER
EF	EXHAUST FAN
EGT	ENTERING GLYCOL TEMPERATURE
ENT	ENTERING
ERV	ENERGY RECOVERY VENTILATOR
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FD	FLOOR DRAIN
FM	FORCED MAIN
FT	FEET
FT	FINNED TUBE
FSD	FIRE SMOKE DAMPER
GAL	GALLONS
GALV	GALVANIZED
GCR	GLYCOL COOLING RETURN
GCS	GLYCOL COOLING SUPPLY
GHR	GLYCOL HEATING RETURN
GHS	GLYCOL HEATING SUPPLY
GI	GREASE INTERCEPTOR
GMT	GLYCOL MAKE-UP TANK
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HC	HEATING COIL
HP	HORSE POWER
HRV	HEAT RECOVERY VENTILATOR
HW	HOT WATER
HWC	HOT WATER CIRCULATION
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
LAV	LAVATORY
LF	LINEAL FEET
LGT	LEAVING GLYCOL TEMP
LHWR	LOW TEMP HEATING WATER RETURN
LHWS	LOW TEMP HEATING WATER SUPPLY
LVG	LEAVING
LW	LAB WASTE
LWH	LAB WATER HEATER
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU's PER HOUR
MIN	MINIMUM
MISC	MISCELLANEOUS
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NO.	NUMBER
NPOW	NON POTABLE COLD WATER
02	OXYGEN
OA	OUTSIDE AIR
OC	ON CENTER
ORD	OVERFLOW ROOF DRAIN
ORL	OVERFLOW RAIN LEADER
OSA	OUTSIDE AIR SUPPLY
P	PUMP
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
PDI	PLUMBING & DRAINAGE INSTITUTE
PG	PROPYLENE GLYCOL
PH	PHASE
PHC	PRE HEAT COIL
POC	POINT OF CONNECTION
PSIG	POUNDS PER SQUARE INCH GAUGE
PSI	POUNDS PER SQUARE INCH
PW	PUMPED WASTE
R	RELOCATED
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RD	ROOF DRAIN
RECIRC	RECIRCULATION
RFL	REFRIGERANT LIQUID
RFM	RADIANT FLOOR MANIFOLD
RFS	REFRIGERANT SUCTION
RHC	REHEAT HEATING COIL
RL	RAINLEADER
RPBP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
RTU	ROOF TOP UNIT
RV	REFRIGERANT VAPOR
RWL	RAIN WATER LEADER
RZ	RADIANT ZONE
SA	SUPPLY AIR
SCH	SCHEDULE
SD	SUPPLY DIFFUSER
SQFT	SQUARE FEET
SF	SUPPLY FAN
SH	STEAM HUMIDIFIER
SP	SUMP PUMP
SS	STAINLESS STEEL
TA	TRANSFER AIR
TEMP	TEMPERATURE
TDH	TOTAL DEVELOPED HEAD
TP	TRAP PRIMER
TYP	TYPICAL
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
VAV	VARIABLE AIR VOLUME
UH	UNIT HEATER
VTR	VENT THROUGH ROOF
VR	VENT RISER
W	WASTE
W/	WITH
W.C.	WATER COLUMN
WCO	WALL CLEANOUT
WH	WATER HEATER
WHA	WATER HAMMER ARRESTOR
WPD	WATER PRESSURE DROP
WRT	WITH RESPECT TO

MECHANICAL SCOPE OF WORK

THE MECHANICAL SCOPE OF WORK IS DIVIDED INTO THREE (3) PROJECT AREAS.
PROJECT AREA ONE (1) IS A BATHROOM REMODEL IN WHICH EXISTING HEATING, VENTILATION, AND PLUMBING SYSTEMS WILL BE UPDATED. EXISTING HEATING ELEMENTS WILL BE MODIFIED TO MEET HEATING REQUIREMENTS. RESTROOM EXHAUST FAN WILL BE REPLACED AND CONNECTED INTO THE EXISTING SYSTEM. PLUMING DOMESTIC HOT AND COLD WATER, WASTE, AND VENT WILL BE SUPPLIED TO ADDITIONAL FIXTURES AND CONNECTED INTO THE EXISTING SYSTEM.

PROJECT AREA TWO (2) IS THE REMODEL OF AN EXISTING KITCHEN INTO A CLASSROOM. THIS WILL REQUIRE THE ADDITION OF SUPPLY AIR DUCTWORK AND CEILING SUPPLY AIR SLOT DIFFUSERS, AND TRANSFER AIR DUCTWORK AND CEILING DIFFUSERS. DOMESTIC PLUMBING HOT AND COLD WATER, WASTE, AND VENT LINES WILL BE CONNECTED TO THE EXISTING PIPING AND SUPPLIED TO ADDITIONAL PLUMBING FIXTURES.

PROJECT AREA THREE (3) IS A NEW KITCHEN ADDITION REQUIRING HEATING, COOLING, VENTILATION, AND PLUMBING SYSTEMS. CABINET UNIT HEATERS AND FINNED TUBE RADIATIVE HEATERS WILL BE SIZED AND INSTALLED TO MEET HEATING REQUIREMENTS, A CONDENSING UNIT WILL BE INSTALLED OUTDOORS AND FOR USE WITH COLD STORAGE OPERATIONS, KITCHEN HOODS WILL BE INSTALLED ABOVE EACH RANGE AND EXHAUSTED THROUGH THE ROOF, A ROOF TOP HEAT RECOVERY VENTILATOR WITH HEATING COIL WILL BE INSTALLED FOR MAKEUP AIR SUPPLY TO SPACE THROUGH CEILING SUPPLY DIFFUSERS, ADDITIONAL AIR WILL BE EXHAUSTED FROM THE SPACE THROUGH SPACE CEILING GRILLES AND A ROOFTOP EXHAUST FAN, AND DOMESTIC HOT AND COLD WATER, WASTE, AND VENT LINES AND PLUMBING FIXTURES WILL BE INSTALLED.

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MUNICIPALITY OF SKAGWAY BOROUGH

KITCHEN ADDITION

REVISIONS

SHEET TITLE

LEGENDS AND ABBREVIATIONS

DATE: APRIL 2, 2021
FILE: 20004JM

M001

FAN SCHEDULE

NOTES:

MARK	SERVICE	CFM	ESP (IN. WC)	TYPE	DRIVE	MOTOR RPM	ELECTRICAL				VFD	EC MOTOR	BASIS OF DESIGN		COMMENTS
							HP	V	HZ	PH			MANUFACTURER	MODEL	
EF-2	RESTROOM EXHAUST	500	0.5	DIRECT DRIVE INLINE CENTRIFUGAL	DIRECT	1725	1/6	120	60	1	No	YES	GREENHECK	SQ-95-VG	PROVIDE UL-705 LISTED EXHAUST FAN WITH VARI-GREEN EC MOTOR.
EF-3	KITCHEN EXHAUST	1,250	1.0	UTILITY CENTRIFUGAL BLOWER	BELT	1725	1/4	120	60	1	No	-	GREENHECK	USF-15-3-B1	PROVIDE UL-762 LISTED EXHAUST FAN FOR KITCHEN GREASE EXHAUST. PROVIDE WITH GREASE TRAP, STAINLESS STEEL SHAFT, HIGH TEMP SHAFT SEAL, EXTENDED LIFE BEARINGS, AND COOROSION RESISTANT FASTENERS. PROVIDE WITH SPARE BELT(S), VIBRATION ISOLATION BASE, AND MOTOR WEATHER HOOD.

COIL SCHEDULE

NOTES:

MARK	SERVICE	AIRFLOW (CFM)	CAPACITY (MBH)	FLUID	NUMBER OF ROWS	AIR SIDE VALUES			FLUID SIDE VALUES				COMMENTS
						EAT (°F)	LAT (°F)	MAX APD (IN. WC)	FLOW (GPM)	EGT (°F)	LGT (°F)	MAX WPD (FT HD)	
HC-1	KITCHEN MAKEUP AIR HEATING	450	13	30% PG	1	43	68	0.08	1.5	180	160	1.5	BASIS OF DESIGN: GREENHECK HW12C01A10-10x10-LH

CABINET UNIT HEATER SCHEDULE

NOTES:

UNIT TAG	AREA SERVED	DESCRIPTION	CAPACITY (MBH)	FLUID TYPE	ENTERING FLUID TEMP (F)	LEAVING FLUID TEMP (F)	FLUID FLOW RATE (GPM)	FLUID PRESSURE DROP (FT)	AIR FLOW	ELECTRICAL			OPERATING WEIGHT (LBS)	BASIS OF DESIGN		NOTES
										POWER (W)	V	PH		MANUFACTURER	MODEL	
CUH-1	32 CORRIDOR	CEILING MOUNTED HORIZONTAL RECESSED CABINET UNIT HEATER	3	30% PG	180	150	1	2.4	240 CFM	60	120	1	78	TRANE	FORCE-FLO E02	PROVIDE WITH SPARE FILTER(S).
CUH-2	30 KITCHEN	CEILING MOUNTED HORIZONTAL RECESSED CABINET UNIT HEATER	10	30% PG	180	150	1	2.4	240 CFM	60	120	1	78	TRANE	FORCE-FLO E02	PROVIDE WITH SPARE FILTER(S).

AIR-TO-AIR ENERGY RECOVERY VENTILATOR SCHEDULE

NOTES:

MARK	SERVICE	CFM	ESP REQUIRED (IN W.C.)	WEIGHT (LBS)	ELECTRICAL					BASIS OF DESIGN		COMMENTS
					HP	V	PH	HZ	EC MOTOR	MANUFACTURER	MODEL	
ERV-1	30 KITCHEN AND 32 CORRIDOR VENTILATION	450	0.30	350	0.6	120	1	60	Yes	RENEWAIRE	EV450RT	PROVIDE ROOFTOP ENERGY RECOVERY VENTILATOR WITH DIRECT-DRIVE EC MOTOR, MANUFACTURER PROVIDED FUSED DISCONNECT, INTEGRATED PROGRAMMABLE CONTROLS, FACTORY MOUNTED FILTER ALARMS FOR BOTH AIR STREAMS, DOUBLE WALL CONSTRUCTION, MERV 13 FILTERS, MANUFACTURER'S ROOF CURB, CURB WIND CLIP, MOTION OCCUPANCY CONTROL, AND DUCT MOUNTED SMOKE DETECTOR. PROVIDE SPARE FILTER SET(S). BASIS OF DESIGN USES A SINGLE MOTOR TO DRIVE BOTH FANS.

FINNED TUBE SCHEDULE

NOTES:

PROVIDE FINNED TUBE CAPABLE OF MEETING CAPACITY SHOWN AFTER DERATING FOR INSTALLATION CONDITIONS.

MARK	ENCLOSURE			ELEMENT						FLUID	AVERAGE FLUID TEMP (°F)	DERATED CAPACITY (BTU/H/FT)	ENTERING AIR TEMP (°F)	BASIS OF DESIGN		COMMENTS
				FIN			TUBE									
	TYPE	GAUGE	HEIGHT	SIZE (INxIN)	SPACING (FPF)	MATERIAL	DIAMETER	ROWS	MATERIAL					MANUFACTURER	MODEL	
FT-1	SLOPE TOP OPEN BOTTOM INLET	18	2' - 0"	2-3/4" x 4"	32	COPPER	3/4"	1	COPPER	30% PG	170	769	60	ZEHNDER-RITTLING	FS5	

DIFFUSER, REGISTERS, & GRILLES SCHEDULE

NOTES:

1. PERFORMANCE SHOWN IS CATALOG PERFORMANCE DATA. SEE PLANS FOR AIRFLOW.

MARK	TYPE	FACE DIMENSIONS	MAX PRESSURE DROP (IN. WC.)	MAX NC	MAX CFM	COLOR	BASIS OF DESIGN		COMMENTS
							MANUFACTURER	MODEL	
EG-1	EGG CRATE RETURN GRILLE, 0° DEFLECTION	12"x12"	0.05	35	240	WHITE	PRICE	80	
SD-1	PERFORATED FACE SUPPLY DIFFUSER, MODULAR CORE	12"x12"	0.10	35	90	WHITE	PRICE	PDMC	
SD-2	2 SLOT, 2 WAY DIFFUSER	24"x4"	0.10	30	60	WHITE	PRICE	TBD7	PROVIDE WITH MOUNTING ACCESSORIES FOR DROP-IN CEILING.
TG-1	PERFORATED FACE RETURN DIFFUSER	12"x12"	0.05	30	200	WHITE	PRICE	PDR	PROVIDE WITH MOUNTING ACCESSORIES FOR DROP-IN CEILING.
TG-2	PERFORATED FACE RETURN DIFFUSER	48"x24"	0.05	30	1,730	WHITE	PRICE	PDR	

HOOD SCHEDULE

NOTES:

MARK	SERVICE	BASIS OF DESIGN		COMMENTS
		MANUFACTURER	MODEL	
KH-1	30 KITCHEN	CAPTIVEAIRE	ND-2	CLASS ONE EXHAUST HOOD PER FOOD SERVICE DISCIPLINE.
RH-1	HOME EC RANGE	BROAN	F40000	PROVIDE ADA COMPLIANT, TWO-SPEED RANGE HOOD.
RH-2	HOME EC RANGE	BROAN	F40000	PROVIDE ADA COMPLIANT, TWO-SPEED RANGE HOOD.

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4/30/2021
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MUNICIPALITY OF SKAGWAY BOROUGH
KITCHEN ADDITION

REVISIONS

SHEET TITLE
MECHANICAL SCHEDULES

DATE: APRIL 2, 2021
FILE: 20004JM

M002

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PLUMBING FIXTURE SCHEDULE

NOTES:

MARK	FIXTURE DESCRIPTION	HW/TW	CW	TRAP	WASTE	VENT	BASIS OF DESIGN	COMMENTS
CS-01	CLASSROOM KITCHEN SINK	1/2"	1/2"	1-1/2"	2"	1-1/2"	JUST DL-ADA-2133-16-GR	PROVIDE AMERICAN STANDARD #4175.500 FAUCET FITTING. PROVIDE WCO BELOW SINK
CS-02	CLASSROOM SINK	1/2"	1/2"	1-1/2"	2"	1-1/2"	JUST MFG. #SL-ADA-2019-A-GR	PROVIDE CHICAGO FAUCETS #786-GR2E35V317XKAB FAUCET
ESU-1	EXTERNAL STRAINER UNIT	-	-	-	2"	1-1/2"	THERMACO "BIG DIPPER" ESU-1	
FCO	FLOOR CLEANOUT	-	-	-	-	-		SIZE PER DRAIN LINE SERVED
FD-01	FLOOR DRAIN	-	-	2"	2"	1-1/2"	ZURN FD2290-NH-2-P	PROVIDE TRAP PRIMER CONNECTION
FS-01	FLOOR SINK	-	-	2"	2"	1-1/2"	ZURN FD2375-H	PROVIDE HALF-GRATE, INSTALL WITH TOP OF GRATE FLUSH WITH FINISHED FLOOR
GI-1	GREASE INTERCEPTOR	-	-	-	3"	1-1/2"	THERMACO "BIG DIPPER" #WS-350-IS	
GI-2	GREASE INTERCEPTOR	-	-	-	2"	1-1/2"	THERMACO "BIG DIPPER" #WS-250-IS	PROVIDE EXTERIOR STRAINER UNIT AHEAD OF INTERCEPTOR
HB-01	EXTERIOR HOSE BIB	-	3/4"	-	-	-	WOODFORD MODEL B65	
K-13	HAND SINK	1/2"	1/2"	1-1/2"	1-1/2"	1-1/2"	BY KITCHEN CONSULTANT	
K-21	KETTLE FILL FAUCET FITTING	1/2"	1/2"	-	-	-	BY KITCHEN CONSULTANT	DRAIN TO FLOOR SINK
K-34	KITCHEN PREP SINK	1/2"	1/2"	-	-	-	BY KITCHEN CONSULTANT	INDIRECT WASTE TO FS-1 BELOW
K-41	SCULLERY SINK	1/2"	1/2"	2"	2"	1-1/2"	BY KITCHEN CONSULTANT	ROUTE DRAIN THROUGH GI-1. PROVIDE WATER HAMMER ARRESTERS, PDI SIZE #A ON CW AND HW
K-43	DISHWASHER	1/2"	-	-	2"	1-1/2"	BY KITCHEN CONSULTANT	PROVIDE WATER HAMMER ARRESTERS PDI SIZE #A ON CW AND HW
K-47	SOILED DISHTABLE	1/2"	1/2"	2"	2"	1-1/2"	BY KITCHEN CONSULTANT	
K-48	HAND SINK	1/2"	1/2"	1-1/2"	1-1/2"	1-1/2"	BY KITCHEN CONSULTANT	
LV-01	WALL MOUNTED LAVATORY	1/2"	1/2"	1-1/4"	1-1/2"	1-1/2"	KOHLER K-2032	PROVIDE SLOAN ETF-610 HARD-WIRED SENSOR FAUCET, SLOAN EL-154 TRANSFORMER, AND ASSE-1070 COMPLIANT HW TEMPERING VALVES UNDER EACH LAVATORY
ORD-1	OVERFLOW ROOF DRAIN	-	-	-	-	-	ZURN Z100-89	DRAIN SIZE PER DRAWINGS. PROVIDE ACCESSORIES AS REQUIRED FOR ROOF CONSTRUCTION
RD-1	ROOF DRAIN	-	-	-	-	-	ZURN Z100	DRAIN SIZE PER DRAWINGS. PROVIDE ACCESSORIES AS REQUIRED FOR ROOF CONSTRUCTION
SS-01	SERVICE SINK	3/4"	3/4"	3"	3"	2"	KOHLER K-6710	PROVIDE CHICAGO FAUCETS 897 FAUCET, MOP HANGER, HOSE CLAMP
UR-01	URINAL	-	3/4"	-	2"	2"	KOHLER K-4991-ET	PROVIDE SLOAN FLUSH VALVE MODEL #ROYAL 186 ESS-1.0 ELECTRONIC HARD WIRED SENSOR
UR-02	ADA URINAL	-	3/4"	-	2"	2"	KOHLER K-4991-ET	PROVIDE SLOAN FLUSH VALVE MODEL #ROYAL 186 ESS-1.0 ELECTRONIC HARD WIRED SENSOR
WB-01	CLOTHES WASHER WALL BOX	1/2"	1/2"	2"	2"	1-1/2"	GUY GRAY SSWB1TM	PROVIDE WATER HAMMER ARRESTERS, PDI #A ON BOTH CW AND HW AT WALL BOX
WC-01	WALL MOUNTED WATER CLOSET	-	1"	-	4"	2"	KOHLER K-4325	PROVIDE SLOAN FLUSH VALVE MODEL ROYAL #111 ESS.1.6 ELECTRONIC HARD-WIRED SENSOR
WC-02	WALL MOUNTED ADA WATER CLOSET	1/2"	1"	-	4"	2"	KOHLER K-4325	PROVIDE SLOAN FLUSH VALVE MODEL ROYAL #111 ESS.1.6 ELECTRONIC HARD-WIRED SENSOR.
WC-03	WALL MOUNTED WATER CLOSET	-	1"	-	4"	2"	KOHLER K-4325	PROVIDE SLOAN FLUSH VALVE MODEL ROYAL #111 ESS.1.6 ELECTRONIC HARD-WIRED SENSOR WITH TRAP PRIMER OPTION
WCO	WALL CLEANOUT	-	-	-	-	-	ZURN #Z1468	PROVIDE SIZED FOR WASTE LINE SERVED
YCO	FLOOR CLEANOUT	-	-	-	-	-	ZURN Z1400-K-HD	SIZE PER DRAIN LINE SERVED

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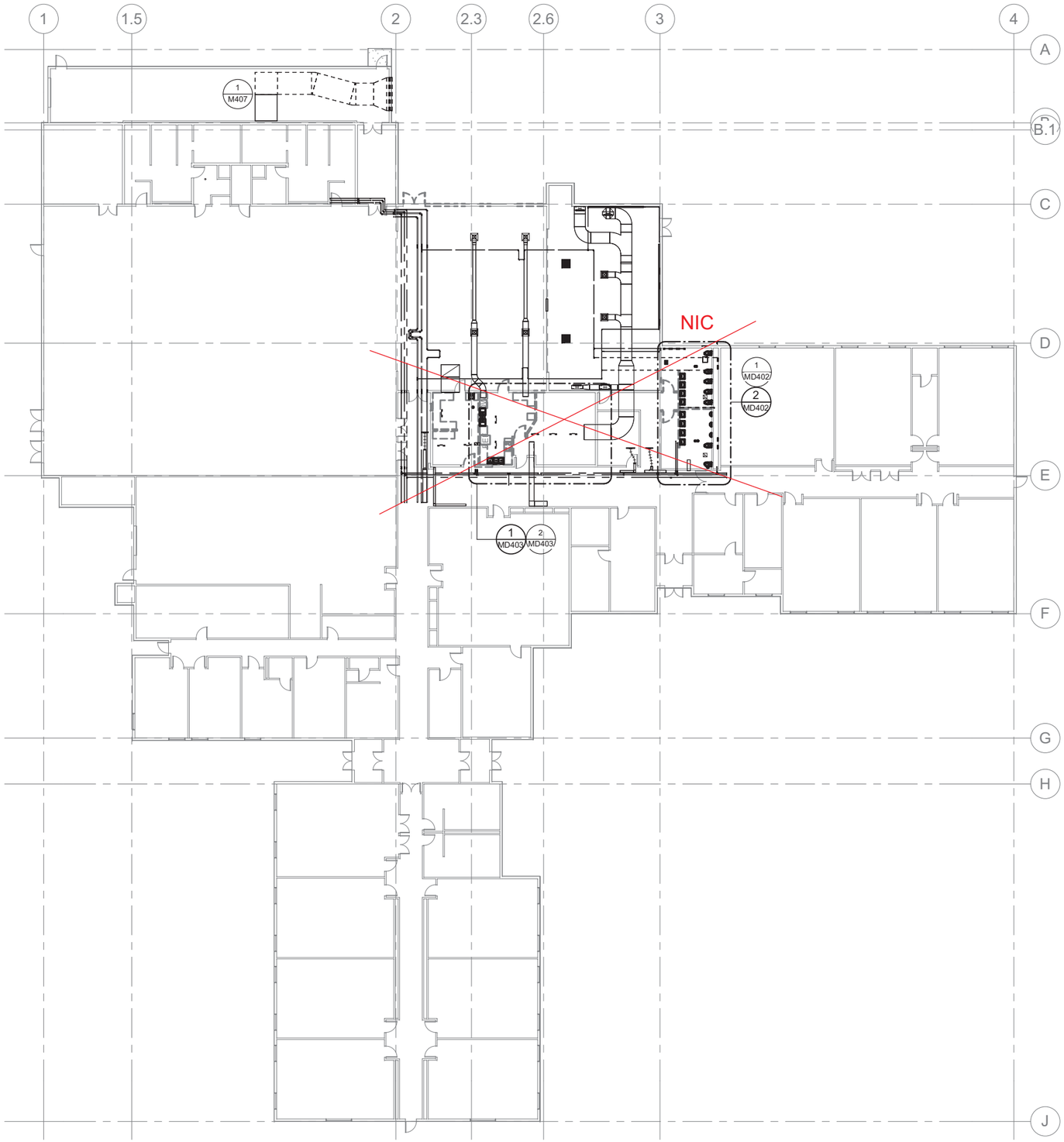
KITCHEN ADDITION

REVISIONS

SHEET TITLE
MECHANICAL SCHEDULES

DATE: APRIL 2, 2021
FILE: 20004JM

M003



1 MECHANICAL OVERALL DEMOLITION FLOOR PLAN
MD101 SCALE: 1/16" = 1'-0"

SHEET NOTES

1. OVERALL BUILDING PLAN VIEW. SEE SECTION PLANS AS REFERENCE FOR DISCIPLINE WORK.
2. THE INFORMATION SHOWN IS BASED ON ORIGINAL CONSTRUCTION AND RECORD DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REQUIREMENTS.

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MECHANICAL - OVERALL DEMOLITION FLOOR PLAN

DATE: APRIL 2, 2021
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MD101

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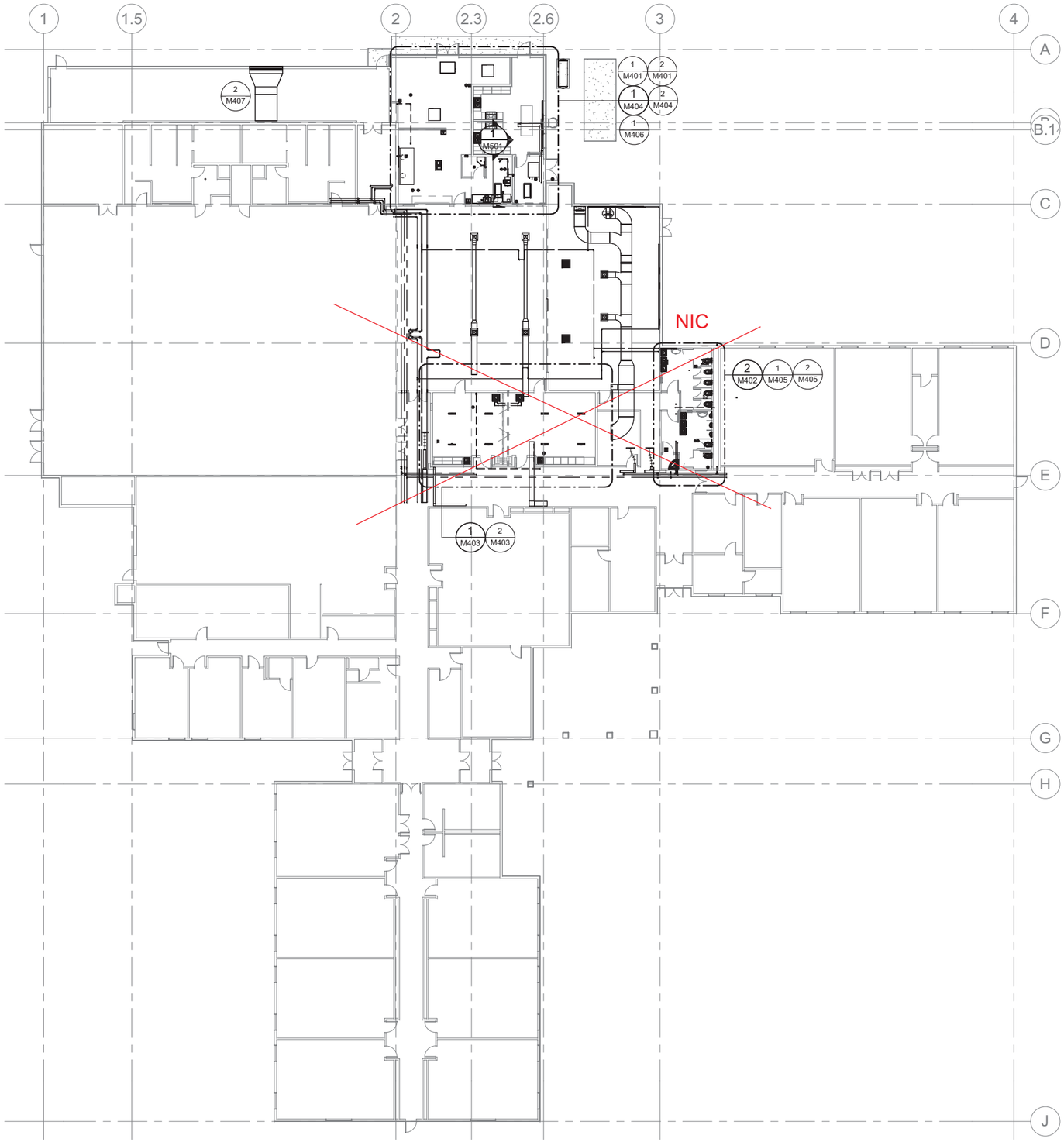

1 M101 **MECHANICAL OVERALL FLOOR PLAN**
SCALE: 1/16" = 1'-0"

SHEET NOTES

1. OVERALL BUILDING PLAN VIEW. SEE SECTION PLANS AS REFERENCE FOR DISCIPLINE WORK.
2. THE INFORMATION SHOWN IS BASED ON ORIGINAL CONSTRUCTION AND RECORD DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REQUIREMENTS.

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4/02/2021
REGISTERED PROFESSIONAL ENGINEER

MUNICIPALITY OF SKAGWAY BOROUGH
KITCHEN ADDITION

REVISIONS

SHEET TITLE
MECHANICAL - OVERALL FLOOR PLAN

DATE: APRIL 2, 2021
FILE: 20004JM

M101

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SHEET NOTES

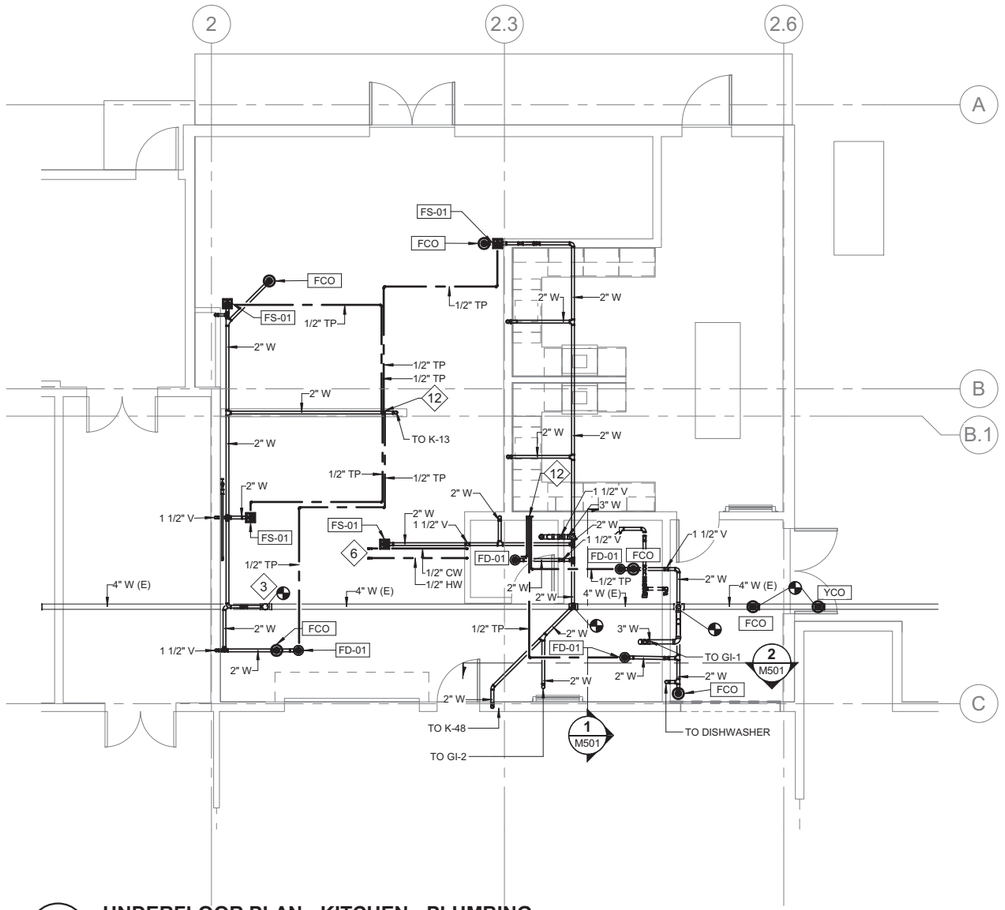
1. SEE KITCHEN EQUIPMENT SCHEDULE FOR KITCHEN EQUIPMENT UTILITY ROUGH-IN CONNECTION SIZES AND REQUIREMENTS.
2. SEE PLUMBING FIXTURE CONNECTION SCHEDULE FOR PLUMBING FIXTURE PLUMBING ROUGH-IN CONNECTION SIZES AND REQUIREMENTS.

SHEET KEYNOTES

1. CONNECT CW, HW, AND HWC PIPING TO (E) IN MEZZANINE FLOOR SPACE.
2. COMBINE POT SINK 2" W AND SOILED DISH TABLE 2" W AND CONNECT TO GREASE INTERCEPTOR 3" INLET. ROUTE DISCHARGE DOWN THROUGH FLOOR SLAB TO 3" WASTE RISER CONNECTED TO (E) 4" WASTE MAIN. CONNECT GI-1 TANK VENT TO OUTLET DRAIN VENT RISER.
3. CONNECT WASTE PIPE TO CLEANOUT RISER PIPE PREVIOUSLY SERVING YARD CLEANOUT.
4. ROUTE 1-1/4" PROPANE DOWN TO QUARTER-TURN ISOLATION VALVE IN RECESSED WALL BOX ACCESIBLE FROM KITCHEN RM. 30 AND BACK UP TO DISTRIBUTION PIPING IN CEILING SPACE. PROVIDE SIGNAGE WITH 1 INCH HIGH RED LETTERING ON WHITE BACKGROUND STATING "EMERGENCY PROPANE SHUT-OFF".
5. PROVIDE 0.5 GPM BALANCE VALVE, TYP.
6. ROUTE 1/2" CW AND HW TO ISLAND SINK IN 2" CONDUIT BELOW SLAB. ROUTE INDIRECT SINK DRAIN TO FLOOR SINK WITH AIR GAP.
7. ROUTE 3" RL AND 3" ORL DOWN BELOW BEAM.
8. ROUTE 3" RL AND 3" ORL DOWN IN INTERIOR WALL THROUGH EXTERIOR WALL AND DISCHARGE TO SPLASHBLOCK ON GRADE. SEAL WALL PENETRATONS WEATHERTIGHT.
9. ROUTE 1-1/4" PROPANE FROM PROPANE TANK LOW PRESSURE REGULATOR TO EXTERIOR WALL, UP ON WALL TO CEILING ELEVATION AND ACROSS CEILING TO ISOLATION WALL BOX. SEAL EXTERIOR WALL PENETRATION WEATHERTIGHT.
10. ROUTE 1-1/4" PROPANE DOWN ON WALL. PROVIDE 1" BRANCH CONNECTIONS WITH ISOLATION VALVES TO RANGE AND OVEN, KITCHEN EQUIPMENT #23 AND #24.

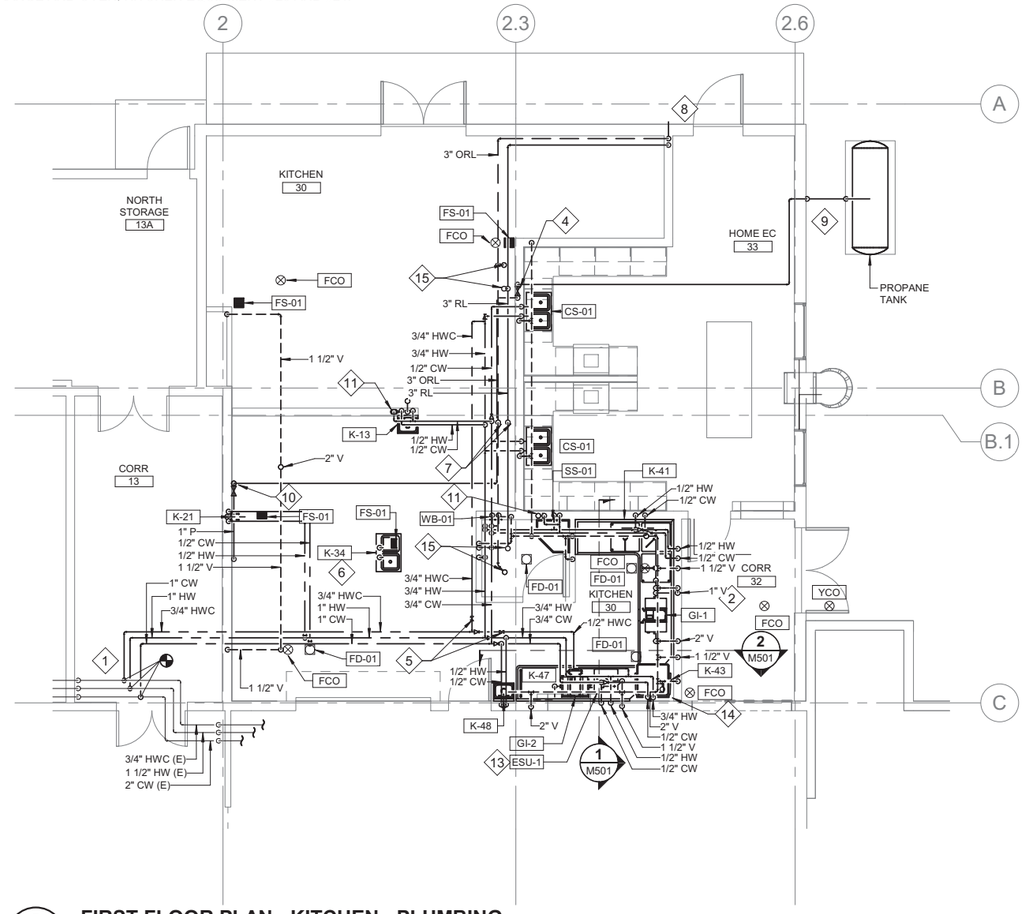
SHEET KEYNOTES

11. ROUTE 1/2" CW TO FLOOR DRAIN TRAP PRIMER VALVE IN RECESSED WALL BOX. PROVIDE TRAP PRIMER DISTRIBUTON UNIT AND TRAP PRIMER LINES DOWN TO BELOW SLAB AND TO FLOOR DRAIN TRAPS.
12. 1/2" TP LINES FROM TRAP PRIMER VALVE AND DISTRIBUTION UNIT ABOVE.
13. PROVIDE ESU-1 POINT SOURCE STRAINER ON SOILED DISH TABLE DRAIN LINE AHEAD OF GREASE INTERCEPTOR. LOCATE IN A READILY ACCESSIBLE LOCATION BETWEEN SOILED DISH TABLE AND CONNECTION TO POT SINK DRAIN.
14. ROUTE 2" W FROM SOILED DISH TABLE BEHIND DISHWASHER.
15. 3" RL AND 3" ORL FROM ROOF DRAIN AND OVERFLOW ROOF DRAIN ABOVE.



1 M401 **UNDERFLOOR PLAN - KITCHEN - PLUMBING**

SCALE: 3/16" = 1'-0"



2 M401 **FIRST FLOOR PLAN - KITCHEN - PLUMBING**

SCALE: 3/16" = 1'-0"

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KITCHEN ADDITION

REVISIONS

SHEET TITLE

LARGE SCALE PLAN - KITCHEN - PLUMBING

DATE: APRIL 2, 2021
FILE: 20004JM

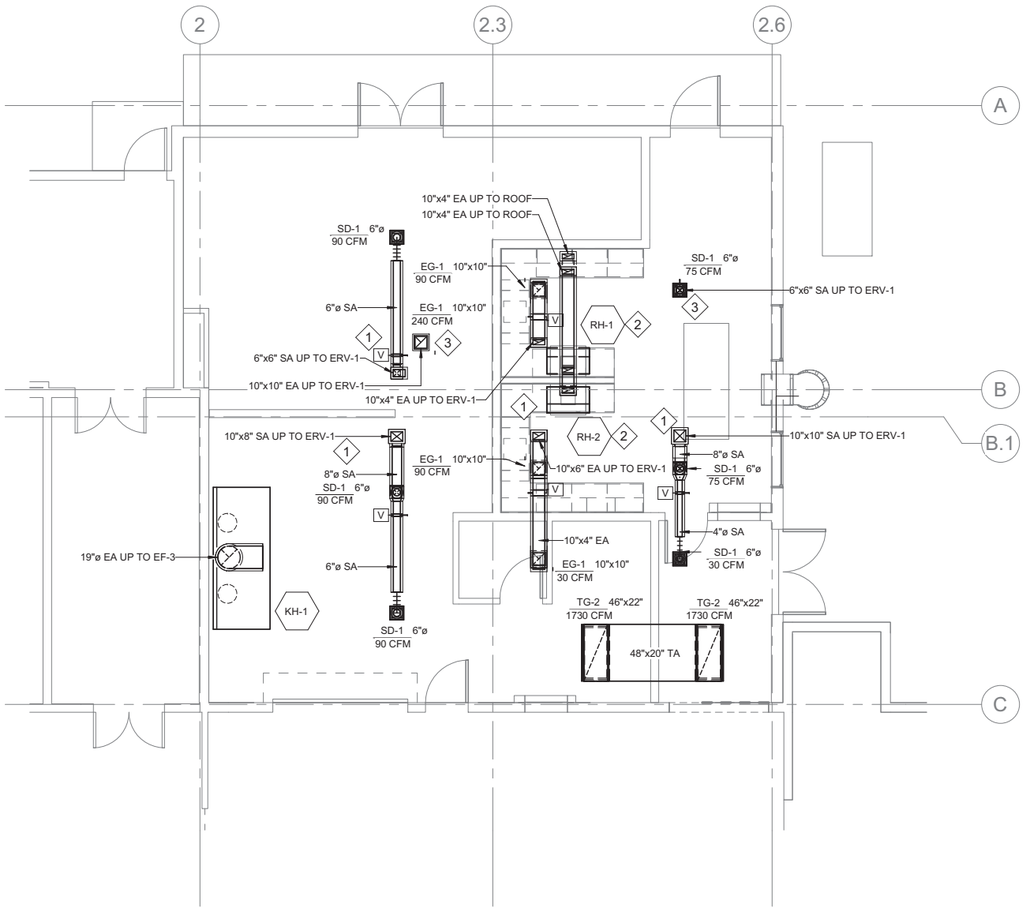
M401

SHEET NOTES

1. COORDINATE VENTILATION WITH STRUCTURAL, ARCHITECTURAL, AND OTHER DISCIPLINES TO AVOID CONFLICT.
2. COORDINATE ROUTING OF CONDENSING UNIT PIPING WITH ARCHITECTURAL AND FOOD SERVICE DISCIPLINES.
3. HYDRONIC PIPING SHOWN IS SPACED FOR CLARITY; PIPING TO BE SPACED TO ALLOW INSTALLATION OF INSULATION BETWEEN LINES.
4. PROVIDE OCCOPANCY SENSORS IN ZONES WITH SUPPLY AIR FROM ROOF TOP ENERGY RECOVERY VENTILATOR. LAND WIRING TO ERV-1 CONTROL PANEL FOR COMMUNICATION.

SHEET KEYNOTES

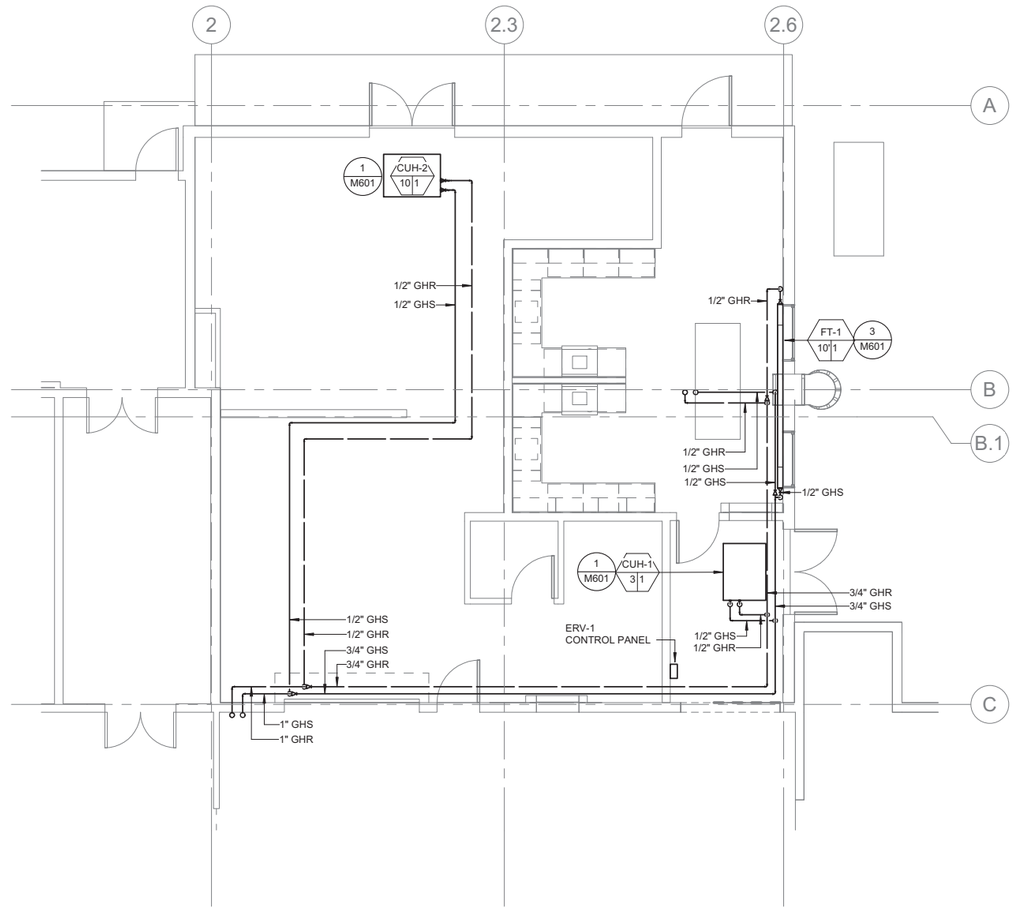
1. COORDINATE WORK WITH ALL STRUCTURAL MEMBER(S) INCLUDING ALONG GRID B.1.
2. PROVIDE INDIVIDUAL EXHAUST FOR RANGE HOODS. COODINATE ROOF PENETRATION AND EXHAUST DISCHARGE TO AVOID CONFLICT. PROVIDE MINIMUM 10 FT. HORIZONTAL CLEARANCE FROM AIR INTAKES.
3. PROVIDE VOLUME DAMPER.



1 FIRST FLOOR PLAN - KITCHEN - VENT

M404

SCALE: 3/16" = 1'-0"



2 FIRST FLOOR PLAN - KITCHEN - HYDRONIC

M404

SCALE: 3/16" = 1'-0"

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KITCHEN ADDITION

REVISIONS

SHEET TITLE

LARGE SCALE PLAN - KITCHEN - HVAC

DATE: APRIL 2, 2021
FILE: 20004JM

M404

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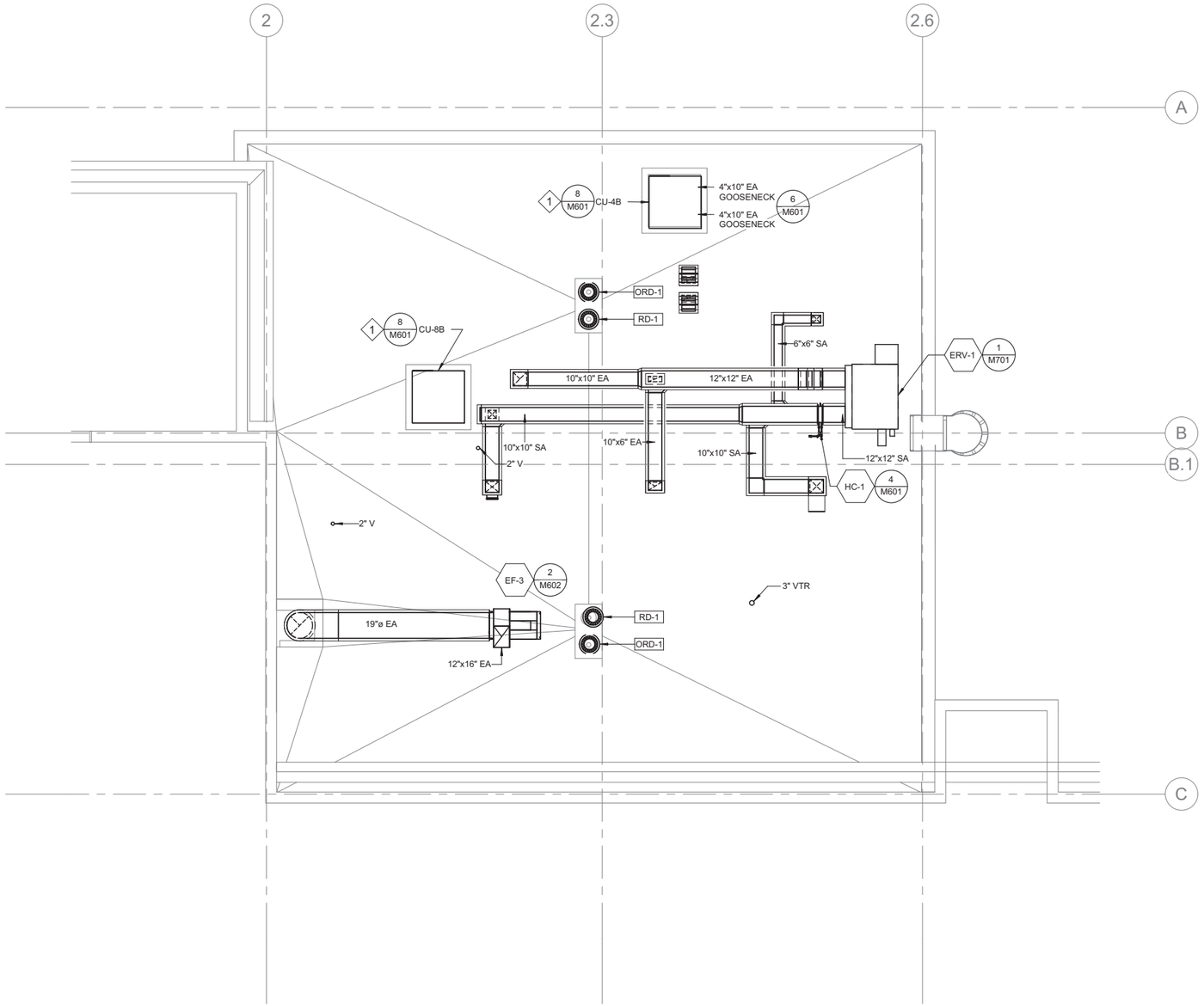
SHEET NOTES

1. HYDRONIC PIPING SHOWN IS SPACED FOR CLARITY; PIPING TO BE SPACED TO ALLOW INSTALLATION OF INSULATION BETWEEN LINES.

SHEET KEYNOTES

1 COORDINATE ROOF PENETRATIONS WITH CONDENSING UNITS PER ARCHITECTURAL. REFER TO FOOD SERVICE SET FOR CONDENSING UNIT SPECIFICATIONS.



1 ROOF PLAN - KITCHEN
M406
SCALE: 1/4" = 1'-0"

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KITCHEN ADDITION

REVISIONS

SHEET TITLE
LARGE SCALE PLAN - KITCHEN - ROOF

DATE: APRIL 2, 2021
FILE: 20004JM

M406

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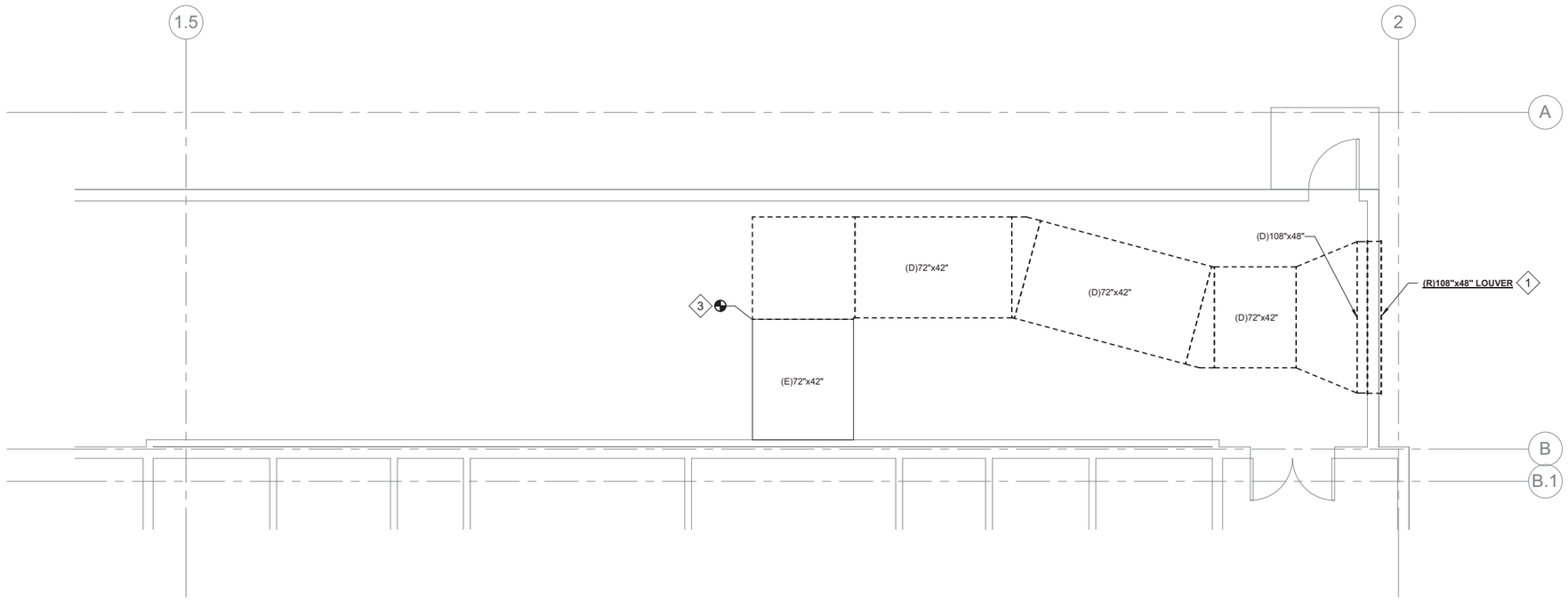
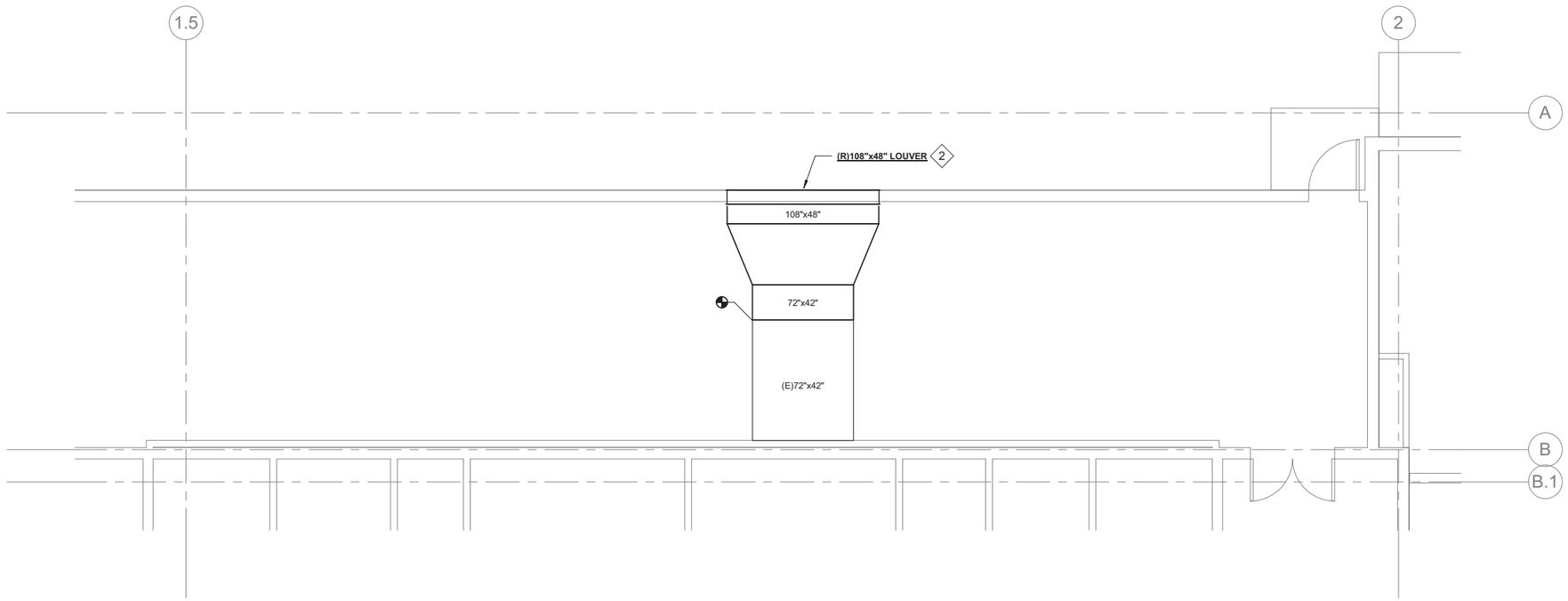


1 M407 **FIRST FLOOR PLAN - NORTH HALL - VENTILATION - DEMO**

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



2 M407 **FIRST FLOOR PLAN - NORTH HALL - VENTILATION**

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

SHEET NOTES

1. THE INFORMATION SHOWN IS BASED ON ORIGINAL CONSTRUCTION AND RECORD DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REQUIREMENTS.
2. VOIDS RESULTING FROM OUTLINED WORK SHALL BE PATCHED, SEALED, AND PAINTED TO MATCH INTERIOR AND EXTERIOR.

SHEET KEYNOTES

1. REMOVE AND RETAIN EXISTING LOUVER FOR REINSTALLATION. COVER AND STORE AWAY FROM DIRT, DEBRIS, AND HAZARDS.
2. REINSTALLING LOUVER REMOVED IN DEMOLITION PHASE.
3. CAP AND SEAL TO PREVENT INFILTRATION OF DIRT AND DEBRIS BEFORE START OF CONSTRUCTION.

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REVISIONS

SHEET TITLE

LARGE SCALE PLAN - NORTH HALL - HVAC

DATE: APRIL 2, 2021
FILE: 20004JM

M407

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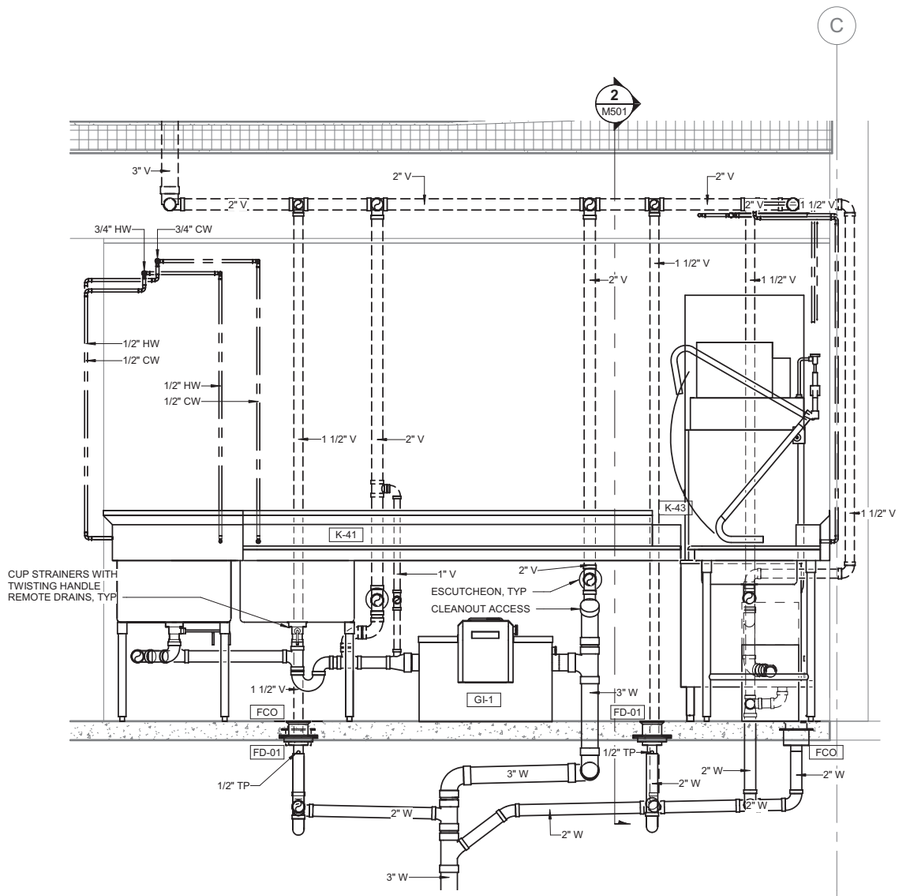
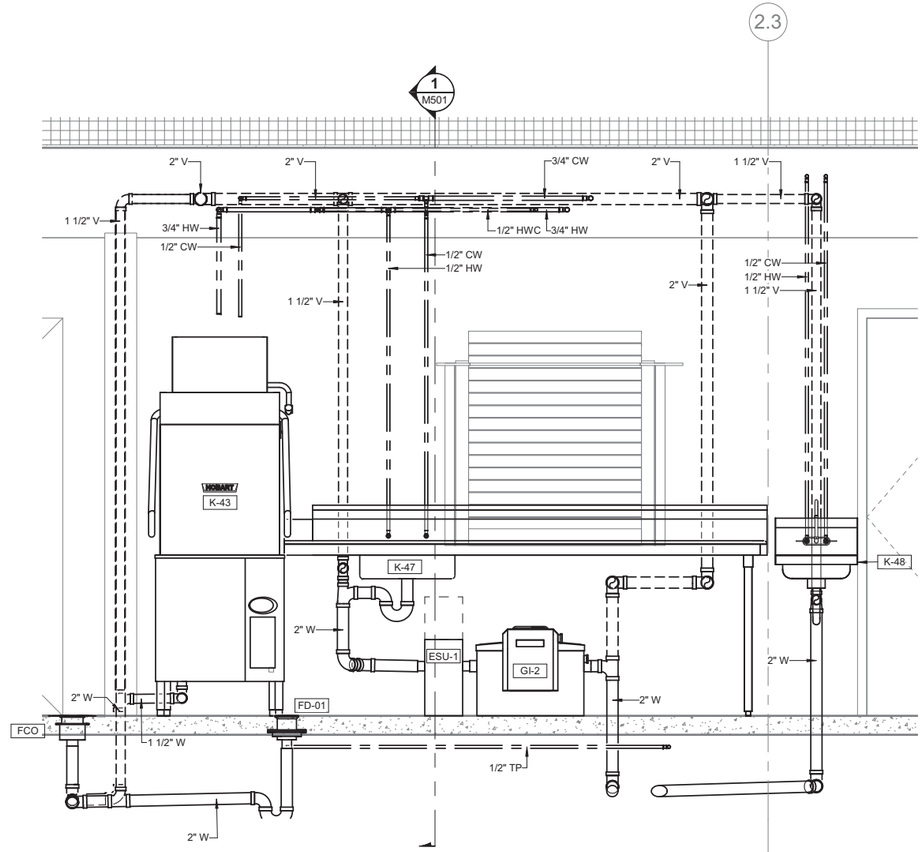


1 M501 3-COMPARTMENT POT SINK W/ GREASE TRAP SECTION

SCALE: 3/4" = 1'-0"



2 M501 SOILED DISHTABLESINK W/ GREASE TRAP SECTION

SCALE: 3/4" = 1'-0"

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KITCHEN ADDITION

REVISIONS

SHEET TITLE

MECHANICAL SECTIONS

DATE: APRIL 2, 2021
FILE: 20004JM

M501

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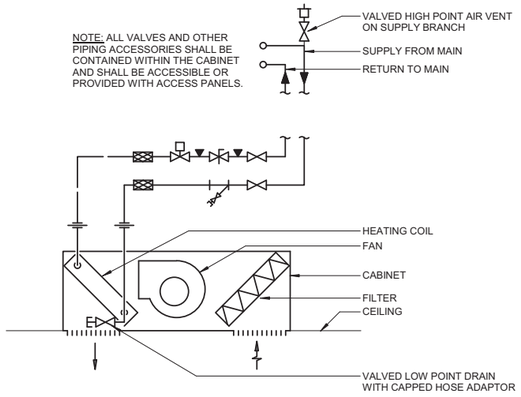
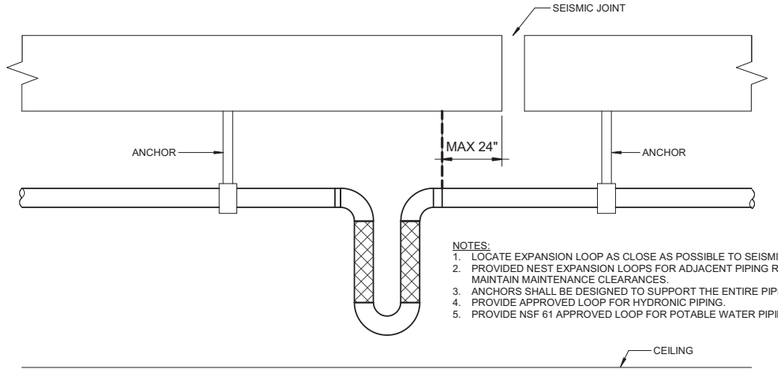


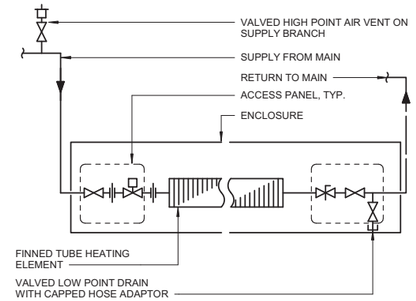
1 M601 CEILING MOUNTED CABINET UNIT HEATER

SCALE: NO SCALE



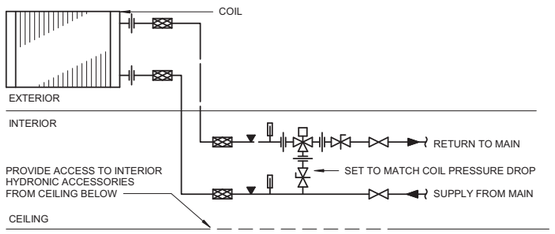
2 M601 EXPANSION JOINT PIPING DIAGRAM

SCALE: NO SCALE



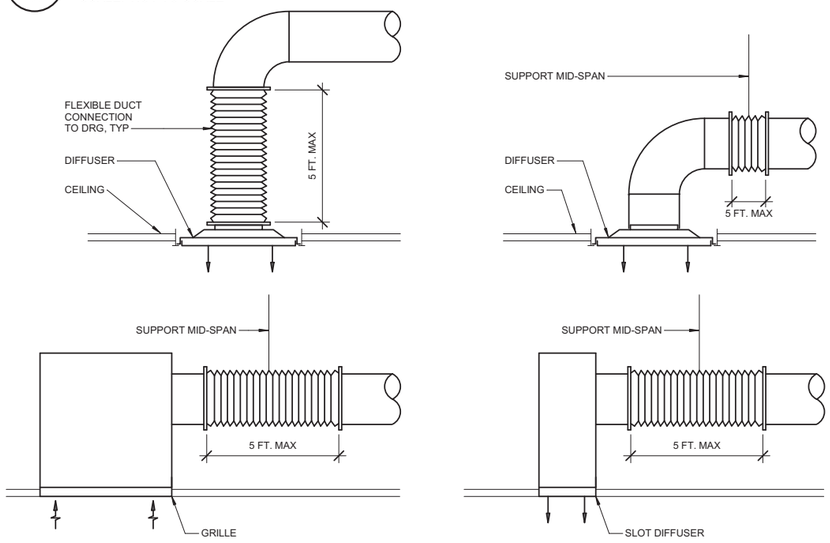
3 M601 SINGLE TIER FINNED TUBE DETAIL

SCALE: NO SCALE



4 M601 THREE WAY VALVE PIPING DETAIL

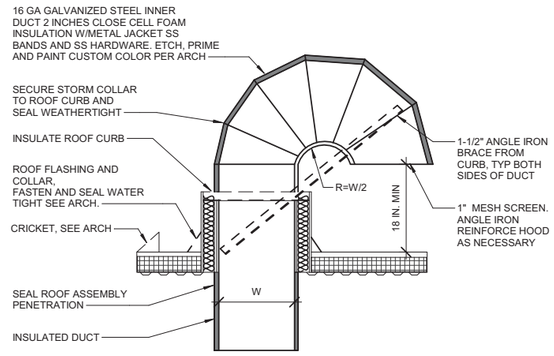
SCALE: NOT TO SCALE



NOTE: PROVIDE FLEXIBLE DUCT CONNECTION TO ACCOMMODATE MINOR OFFSET BETWEEN END OF RIGID DUCTWORK AND DIFFUSER, REGISTER, AND GRILLE NECKS. MAXIMUM 5' LENGTH OF FLEX DUCT PER DRG. DO NOT BEND FLEX 90 DEGREES OR MORE; FLEX DUCT DOES NOT SUBSTITUTE FOR ELBOW FITTINGS.

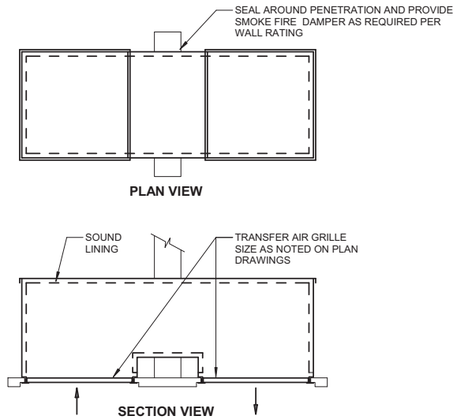
5 M601 DIFFUSER INSTALLATION DETAILS

SCALE: NO SCALE



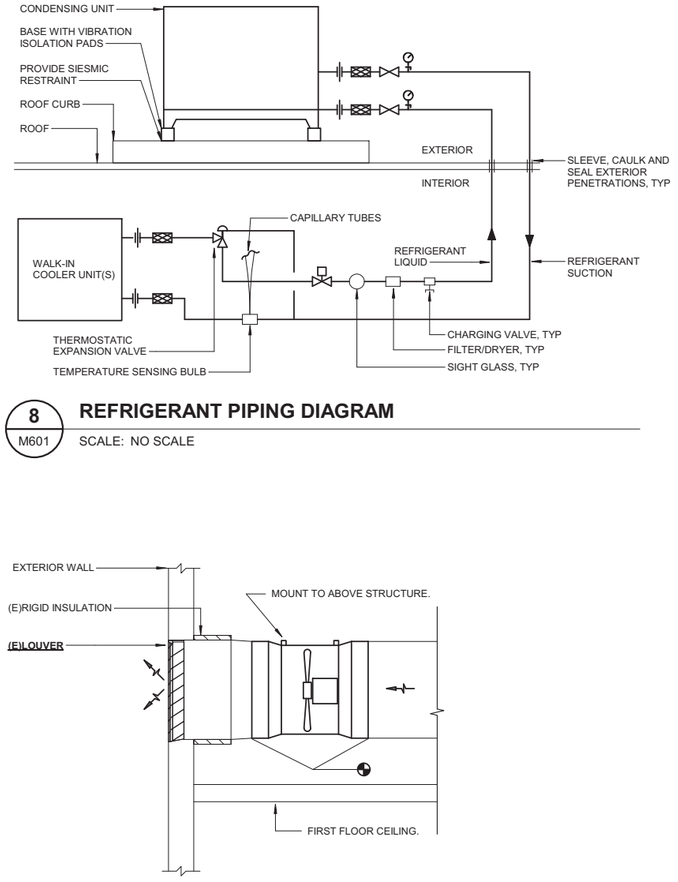
6 M601 GOOSENECK EXHAUST

SCALE: NO SCALE



7 M601 TRANSFER AIR DUCT DETAIL

SCALE: NO SCALE



8 M601 REFRIGERANT PIPING DIAGRAM

SCALE: NO SCALE

9 M601 EXHAUST FAN (EF-2) DETAIL

SCALE: NOT TO SCALE

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KITCHEN ADDITION

REVISIONS

SHEET TITLE

DETAILS AND DIAGRAMS

DATE: APRIL 2, 2021
FILE: 20004JM

M601

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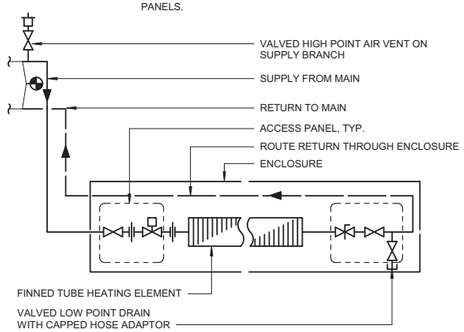
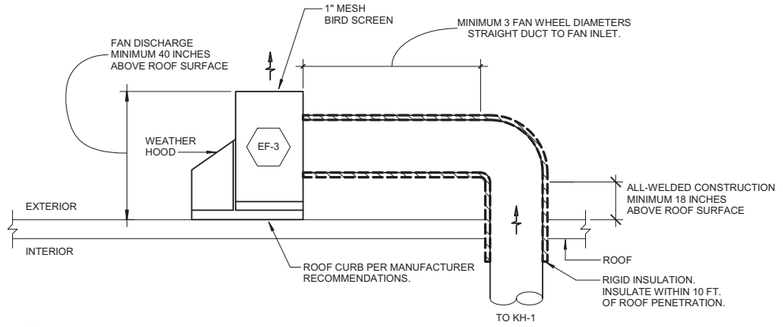
NOTE:
1. ALL VALVES AND OTHER PIPING ACCESSORIES SHALL BE CONTAINED WITHIN THE ENCLOSURE AND SHALL BE ACCESSIBLE OR PROVIDE WITH ACCESS PANELS.



1 M602 **RETURN IN ENCLOSURE FINNED TUBE DETAIL**

SCALE: NO SCALE



2 M602 **EXHAUST FAN (EF-3) DETAIL**

SCALE: NOT TO SCALE

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KITCHEN ADDITION

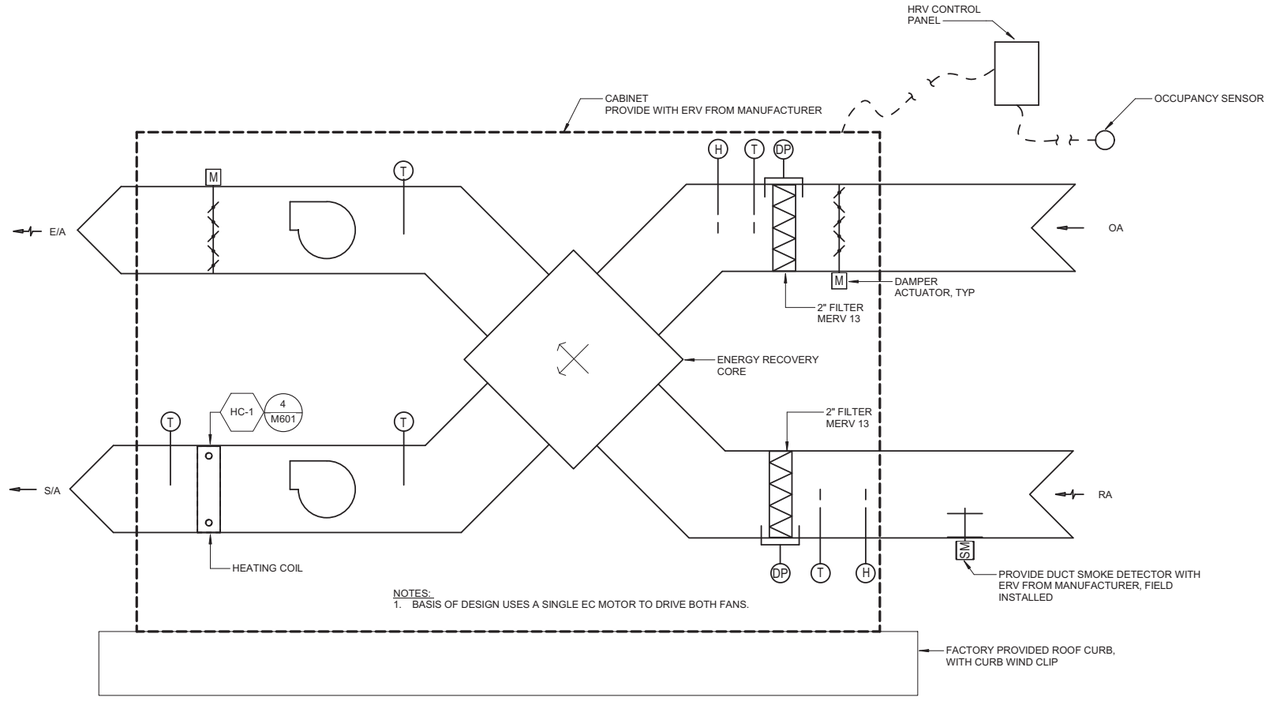
REVISIONS

SHEET TITLE

DETAILS AND DIAGRAMS

DATE: APRIL 2, 2021
FILE: 20004JM

M602



1 M701 **HRV SCHEMATIC**

SCALE: NO SCALE

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KITCHEN ADDITION

REVISIONS

SHEET TITLE

CONTROL DIAGRAMS

DATE: APRIL 2, 2021
FILE: 20004JM

M701

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LIGHTING

- SURFACE LUMINAIRE
- SUSPENDED LUMINAIRE, SIZE AND SHAPE VARIES.
- EMERGENCY LIGHT
- EXIT SIGN
- WALL PACK

SWITCHING

S_a	TOGGLE SWITCH
D	DIMMER SWITCH
OS	OCCUPANCY SENSOR
VS	VACANCY SENSOR

WIRING

- (J) JUNCTION BOX
- CONDUIT CONCEALED IN CEILING OR WALL
- CONDUIT CONCEALED IN FLOOR OR UNDER SLAB
- HOT CONDUCTOR
- NEUTRAL CONDUCTOR
- GROUND CONDUCTOR
- ISOLATED GROUND CONDUCTOR
- HOMERUN TO INDICATED DESTINATION
- FLEXIBLE CONDUIT CONNECTION

NOTE: WIRING NOT SHOWN WHERE ONLY A HOT, NEUTRAL, AND GROUND ARE REQUIRED.

SIGNAL

- ▽2 DATA OUTLET – NUMBER DENOTES QUANTITY OF JACKS
- (S) SPEAKER
- TELEVISION OUTLET
- INTERCOM STATION
- (C)(S) COMBINATION CLOCK/SPEAKER UNIT

FIRE ALARM

F	MANUAL PULL STATION
S	SMOKE DETECTOR
H	HEAT DETECTOR
S	SPEAKER/STROBE
V	STROBE ONLY UNIT
CR	CONTROL RELAY

POWER DEVICES

- SPECIAL PURPOSE RECEPTACLE
- SIMPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- ABOVE COUNTER RECEPTACLE

DISTRIBUTION

- BRANCH CIRCUIT PANELBOARD
- MOTOR CONNECTION
- TRANSFORMER
- SERVICE OR DISTRIBUTION EQUIPMENT
- (M) UTILITY METER
- DISCONNECT SWITCH
- F FUSED DISCONNECT SWITCH
- COMBINATION STARTER
- STARTER OR CONTACTOR

DIAGRAMS

- 20/1 CIRCUIT BREAKER
- SWITCH
- TRANSFER SWITCH
- FUSE
- 400AS 250AF FUSED SWITCH, WITH SWITCH AND FUSE RATING
- TRANSFORMER

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AS	AMPERE (RATED) SWITCH
C	CONDUIT
GFI	GROUND FAULT CIRCUIT INTERRUPTER
G	GROUND
GD	GARBAGE DISPOSAL
HOA	HAND–OFF–AUTO
HP	HORSEPOWER
HZ	HERTZ
KW	KILOWATTS
KVA	KILOVOLT–AMPERES
MLO	MAIN LUGS ONLY
MTD	MOUNTED
N	NEUTRAL (GROUNDED CONDUCTOR)
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
OL	OVERLOAD
PH	PHASE
TYP	TYPICAL
UL	UNDERWRITERS LAB
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WATT
WP	WEATHERPROOF

REFERENCE SYMBOLS

(12)	SHEET NOTE REFERENCE
1 / E201	DETAIL REFERENCE
(E)	EXISTING
(N)	NEW
(X)	DEMOLISH
(RL)	RELOCATE
(P)	REPLACE
(X/S)	REMOVE AND SALVAGE

ELECTRICAL DRAWING LIST

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JULY 19, 2021

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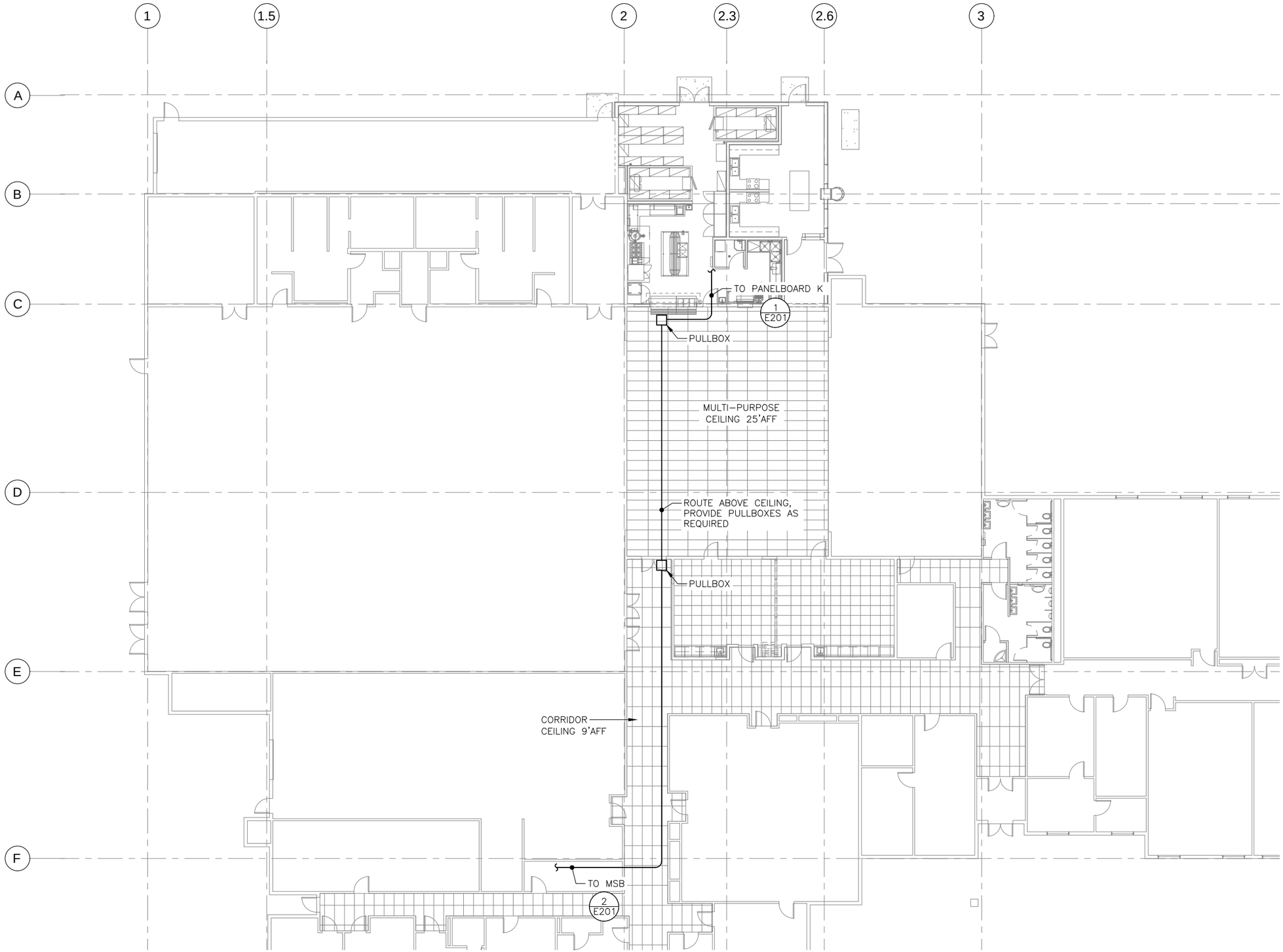
SKAGWAY SCHOOL
KITCHEN ADDITION
Skagway, Alaska

REVISIONS

SHEET TITLE
LEGEND AND ABBREVIATIONS

DATE: July 19, 2021
FILE: 19046

E001



1 PARTIAL FIRST FLOOR ELECTRICAL PLAN

SCALE: 0 2' 4' 8'

Jensen Yorba Wall Inc.

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JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

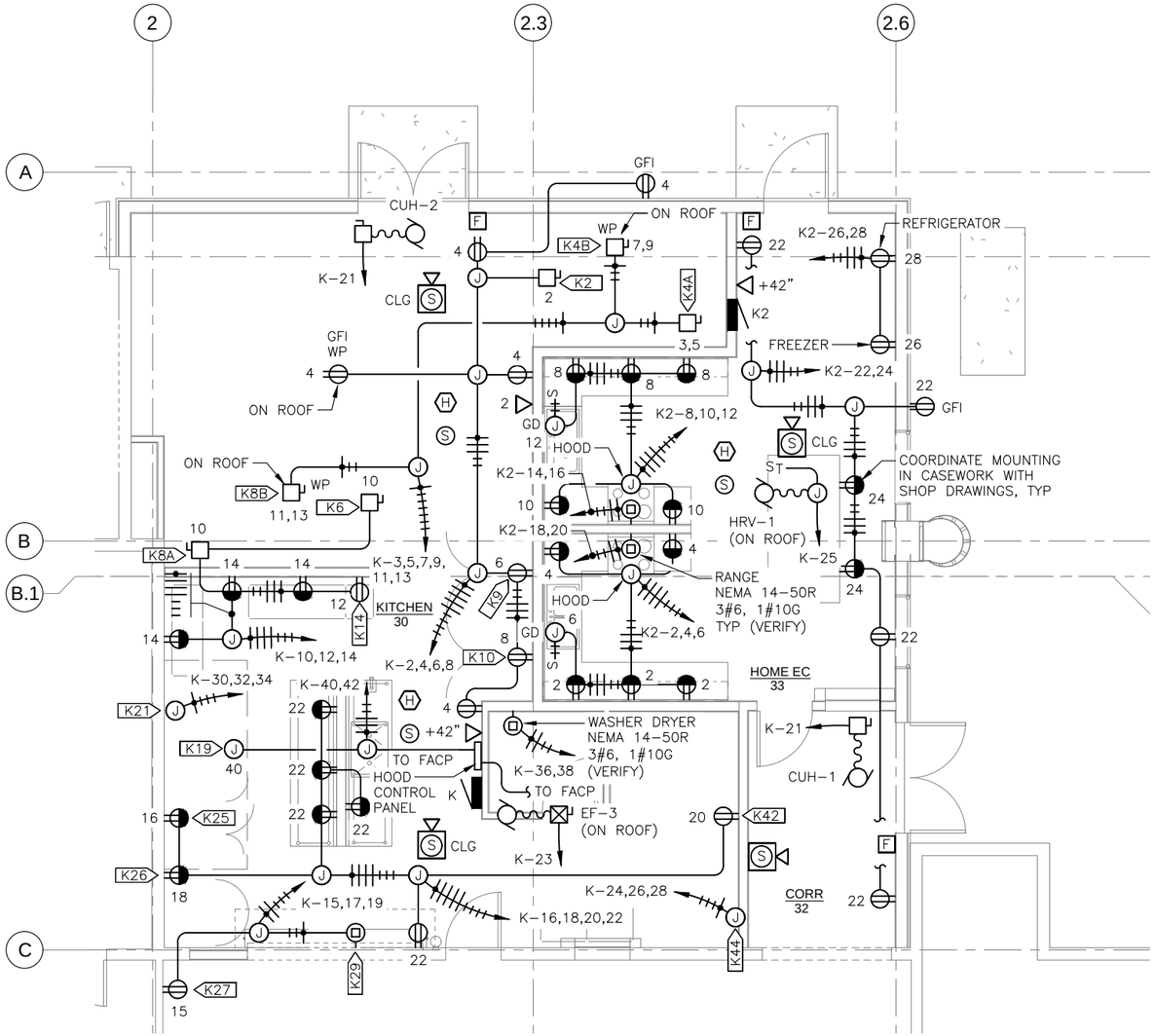
Skagway, Alaska

REVISIONS

SHEET TITLE
PARTIAL FIRST FLOOR ELECTRICAL PLAN

DATE: July 19, 2021
FILE: 19046

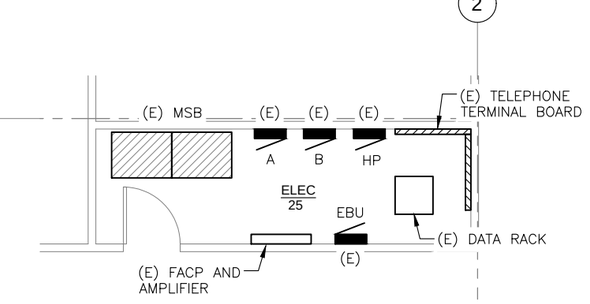
E002



1 PARTIAL FIRST FLOOR POWER AND SIGNAL PLAN
SCALE: 0 2' 4' 8'

NOTES:

1. PROVIDE GFCI RECEPTACLES AS REQUIRED BY NEC 210.8 (B) (2). WHERE RECEPTACLES ARE NOT READILY ACCESSIBLE, PROVIDE GFCI CIRCUIT BREAKERS.
2. TERMINATE DATA NETWORK CABLES AT PATCH PANEL IN ELECTRICAL 25. REFER TO DETAIL 2, DRAWING E201 FOR EXISTING DATA RACK LOCATION.
3. CONNECT FIRE ALARM DEVICES TO EXISTING FIRE ALARM CONTROL PANEL. REFER TO DETAIL 2, DRAWING E201 FOR LOCATION. DEVICES MAY CONNECT TO EXISTING CIRCUITS.
4. CONNECT EF–3 TO THE HOOD CONTROL PANEL FOR START / STOP SIGNAL. REFER TO DRAWING FS400 FOR COMPLETE HOOD WIRING DETAILS.
5. CONNECT HRV–3 TO THE HOOD CONTROL PANEL FOR SHUT DOWN SIGNAL UPON HOOD ALARM. REFER TO DRAWING FS400.
6. CONNECT HOOD CONTROL PANEL TO THE EXISTING FIRE ALARM CONTROL PANEL IN ELECTRICAL 25. REFER TO DETAIL 2, DRAWING E201 FOR LOCATION.



2 ELECTRICAL 25 PLAN
SCALE: 0 2' 4' 8'

Jensen Yorba Wall Inc.

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STATE OF ALASKA
49th
Barry J. Begeny
JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS
1 .
2 .
3 .

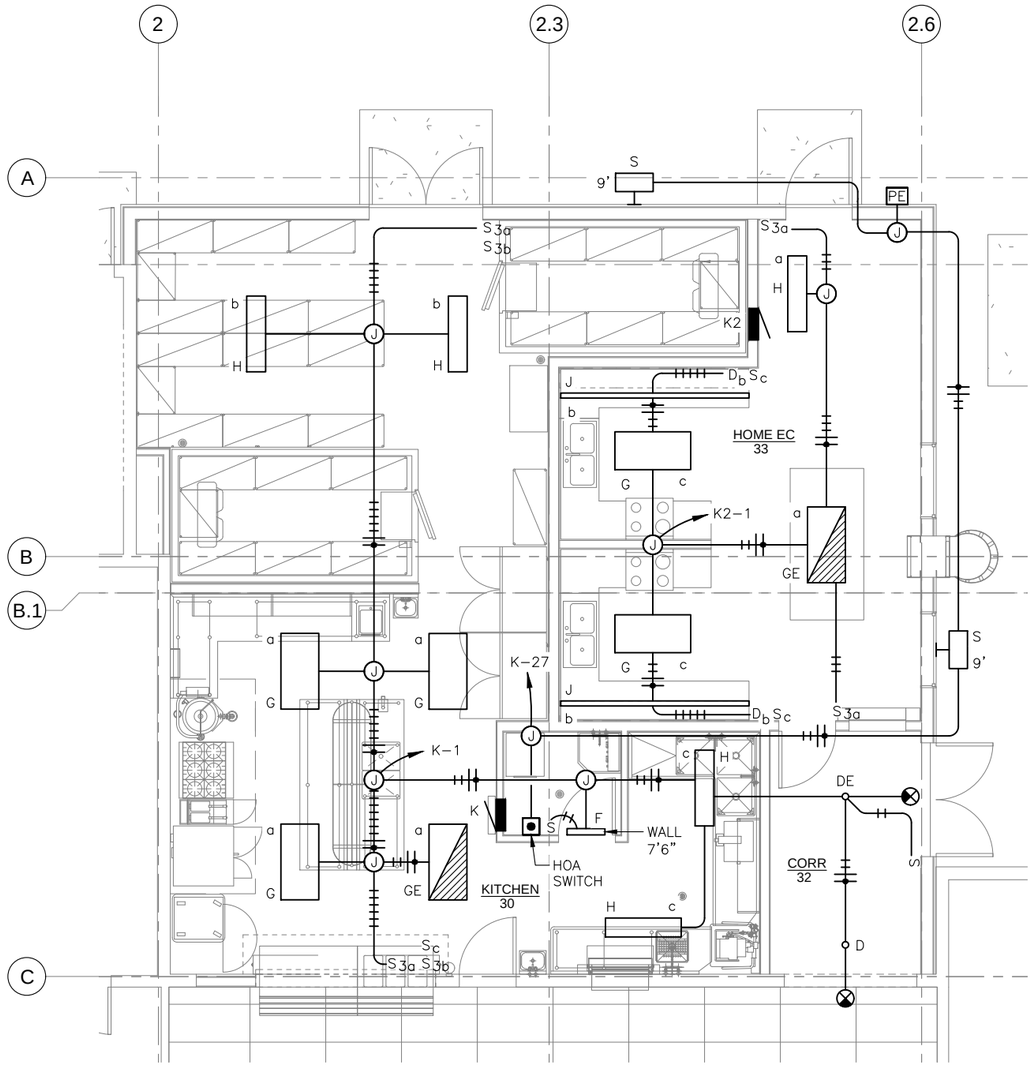
SHEET TITLE
PARTIAL FIRST FLOOR POWER AND SIGNAL PLANS

DATE: July 19, 2021
FILE: 19046

E201

NOTES:

1. CONNECT EXTERIOR LIGHTS TO PHOTOCELL IN AUTO MODE.



1 PARTIAL FIRST FLOOR LIGHTING PLAN

SCALE: 0 2' 4' 8'

Jensen Yorba Wall Inc.

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49th
Barry J. Begeny
PE-10653
JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS

SHEET TITLE
PARTIAL FIRST FLOOR LIGHTING PLAN

DATE: July 19, 2021
FILE: 19046

E301

KITCHEN EQUIPMENT SCHEDULE (VERIFY)

TAG	DESCRIPTION	HP	KW	AMPS	VOLTS	PHASE	TOTAL KVA	WIRING	DISCONNECT	REMARKS
K2	WALK–IN FREEZER			11	120	1	1.3	2#12, 1#12G	30/2	
K4A	FREEZER EVAPORATOR COIL			13.3	208	1	2.8	2#10, 1#10G	30/2	
K4B	FREEZER CONDENSING UNIT			18.7	208	1	3.9	2#10, 1#10G	30/2	
K6	WALK–IN COOLER			7.0	120	1	0.8	2#12, 1#12G	30/2	
K8A	COOLER EVAPORATOR COIL			2.0	120	1	0.2	2#12, 1#12G	30/2	
K8B	COOLER CONDENSING UNIT			9.1	208	1	1.9	2#12, 1#12G	30/2	
K9	REACH–IN FREEZER			9.6	120	1	1.2	2#12, 1#12G		
K10	REACH–IN REFRIGERATOR			5.4	120	1	0.6	2#12, 1#12G		
K14	VACUUM PACKAGING MACHINE			6.1	120	1	0.7	2#12, 1#12G		
K19	EXHAUST HOOD			16.0	120	1	1.9	2#12, 1#12G		
K21	KETTLE			27.2	208	3	9.8	3#8, 1#10G		
K25	CONVECTION OVENS			9.4	120	1	1.1	2#12, 1#12G		
K26	HOLDING CABINET			13.8	120	1	1.7	2#10, 1#10G		
K27	MILK COOLER			2.7	120	1	0.3	2#12, 1#12G		
K29	HOT FOOD STATION			9.6	208	1	2.0	2#12, 1#12G		
K42	GREASE INTERCEPTOR			10.0	120	1	1.2	2#12, 1#12G		
K44	WAREWASHER			45.4	208	3	16.4	3#4, 1#10G		

MECHANICAL EQUIPMENT SCHEDULE (VERIFY)

TAG	DESCRIPTION	HP	KW	AMPS	VOLTS	PHASE	TOTAL KVA	WIRING	DISCONNECT	FUSE	CONTROL	STARTER SIZE	REMARKS
CUH–1	CABINET UNIT HEATER		0.06		120	1	0.06	2#12, 1#12G	30/2		ON/OFF		
CUH–2	CABINET UNIT HEATER		0.06		120	1	0.06	2#12, 1#12G	30/2		ON/OFF		
EF–3	EXHAUST FAN	1/4			120	1	0.2	2#12, 1#12G	THERMAL OL		HOA	0	
HRV–1	HEAT RECOVERY VENTILATOR	1/4			120	1	0.2	2#12, 1#12G	THERMAL OL		ON/OFF	0	

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	LAMP		VOLTAGE	TOTAL VA	MOUNTING	NOTES
				QTY.	TYPE				
D	4–INCH DOWNLIGHT	HALO	HC4 10 D010 HM4 12 835 41 WD C WF		LED	120	26	RECESSED	
DE	SAME AS TYPE D WITH EMERGENCY BATTERY	HALO	HC4 10 D010 REM14 HM4 12 835 41 WD C WF		LED	120	26	RECESSED	
F	2–FOOT LONG STRIP LIGHT	LITHONIA LIGHTING	ZL1D L24 SMR 2500LM FST MVOLT 35K 80CRI WH		LED	120	22	WALL ABOVE DOOR	
G	2X4 LED PANEL	METALUX	24FP4735C FPSURF–24		LED	120	41	CEILING SURFACE	
GE	SAME AS TYPE G WITH EMERGENCY BATTERY	METALUX	24FP4735C FPSURF–24 EL14W		LED	120	41	CEILING SURFACE	
H	1X4 LED PANEL	METALUX	14FP2635C FPSURF14		LED	120	26	CEILING SURFACE	
J	UNDERCABINET STRIP	TEMPO ARCHITECTURAL	C3 LL 3 2 35 LG		LED	120	2/FT	UNDERCABINET	
S	WALL PACK	LITHONIA LIGHTING	WDGE2 LED P2 40K 80CRI VW MVOLT DDBXD		LED	120	18	WALL	
⊗	EXIT SIGN GREEN LETTERS AND WHITE BACKGROUND	LITHONIA LIGHTING	LQM S W 1 G 120/277 EL N SD ELA WG		LED	120	3		

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Barry J. Begnoche
JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

Skagway, Alaska

REVISIONS
1 .
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SHEET TITLE
SCHEDULES

DATE: July 19, 2021
FILE: 19046

E401

PANEL K

POLE NO.	LOAD SERVED	LOAD TYPE	LOAD KVA	CB	PH	CB	LOAD TYPE	LOAD KVA	LOAD SERVED	POLE NO.
1	LIGHTING 30	L	0.3	20/1	A	20/1	K	1.3	K2	2
3	K4A	K	1.4	25/2	B	20/1	R	0.5	RECEPTACLES	4
5	----	K	1.4	--	C	20/1	K	1.2	K9	6
7	K4B	K	2.0	25/2	A	20/1	K	0.6	K10	8
9	----	K	2.0	--	B	20/1	K	1.0	K6 AND K8A	10
11	K8B	K	1.0	20/2	C	20/1	K	0.7	K14	12
13	----	K	1.0	--	A	20/1	R	0.5	RECEPTACLES	14
15	K27	K	0.3	20/1	B	20/1	K	1.1	K25 (1)	16
17	K29	K	1.0	20/2	C	25/1	K	1.7	K26	18
19	----	K	1.0	--	A	20/1	K	1.2	K42	20
21	CUH-1 AND CUH-2	M	0.1	20/1	B	20/1	R	0.9	RECEPTACLES	22
23	EF-3	M	0.2	20/1	C	60/3	K	5.5	K44 (2)	24
25	HRV-1	M	0.1	20/1	A	--	K	5.5	----	26
27	EXTERIOR LIGHTING	L	0.1	20/1	B	--	K	5.5	----	28
29	SPARE			20/1	C	35/3	K	3.3	K21 (1) (2)	30
31	SPARE			20/1	A	--	K	3.3	----	32
33	SPARE			20/1	B	--	K	3.3	----	34
35	SPARE			20/1	C	50/2	C	4.2	WASHER/DRYER	36
37	SUBFEED PANELBOARD K2		8.3	100/3	A	--	C	4.2	----	38
39	----		8.3	--	B	20/1	M	1.9	K19	40
41	----		8.3	--	C	20/1	C	0.5	HOOD CONTROL PANEL	42
43	SPARE			20/1	A	20/1			SPARE	44
45	SPARE			20/1	B	20/1			SPARE	46
47	SPARE			20/1	C	20/1			SPARE	48
49	SPARE			20/1	A	20/1			SPARE	50
51	SPARE			20/1	B	20/1			SPARE	52
53	SPARE			20/1	C	20/1			SPARE	54

VOLTAGE: 120/208V, 3P, 4W

AIC RATING: 10,000

MOUNTING: SURFACE

MAIN: 225/3

BUS: 225A

LOAD SUMMARY	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND KVA
(L) LIGHTING	0.4	100% OF LOAD	0.4
(R) RECEPTACLE	1.9	NEC 220-44	1.9
(M) MOTOR	2.3	NEC 430-24	2.8
(C) CONTINUOUS	0.5	125% OF LOAD	0.6
(K) KITCHEN	44.0	NEC 220-56	28.6
(S) SUBFEED	25.0		25.0
TOTAL	.		59.0

NOTES:

1. PROVIDE SHUNT TRIP CIRCUIT BREAKER. INTERFACE WITH HOOD CONTROL PANEL.
2. PROVIDE LOCKABLE CIRCUIT BREAKER.

PANEL K2

POLE NO.	LOAD SERVED	LOAD TYPE	LOAD KVA	CB	PH	CB	LOAD TYPE	LOAD KVA	LOAD SERVED	POLE NO.
1	LIGHTING 33	L	0.2	20/1	A	20/1	R	0.5	RECEPTACLES	2
3	SPARE			20/1	B	20/1	R	0.4	RECEPTACLES	4
5	SPARE			20/1	C	20/1	K	1.2	GARBAGE DISPOSAL	6
7	SPARE			20/1	A	20/1	R	0.5	RECEPTACLES	8
9	SPARE			20/1	B	20/1	R	0.4	RECEPTACLES	10
11	SPARE			20/1	C	20/1	K	1.2	GARBAGE DISPOSAL	12
13	SPARE			20/1	A	50/2	K	4.0	RANGE	14
15	SPARE			20/1	B	--	K	4.0	----	16
17	SPARE			20/1	C	50/2	K	4.0	RANGE	18
19	SPARE			20/1	A	--	K	4.0	----	20
21	SPARE			20/1	B	20/1	R	0.5	RECEPTACLES	22
23	SPARE			20/1	C	20/1	R	0.4	RECEPTACLES	24
25	SPARE			20/1	A	20/1	K	9.6	FREEZER	26
27	SPARE			20/1	B	20/1	K	5.4	REFRIGERATOR	28
29	SPARE			20/1	C	20/1			SPARE	30

VOLTAGE: 120/208V, 3P, 4W

AIC RATING: 10,000

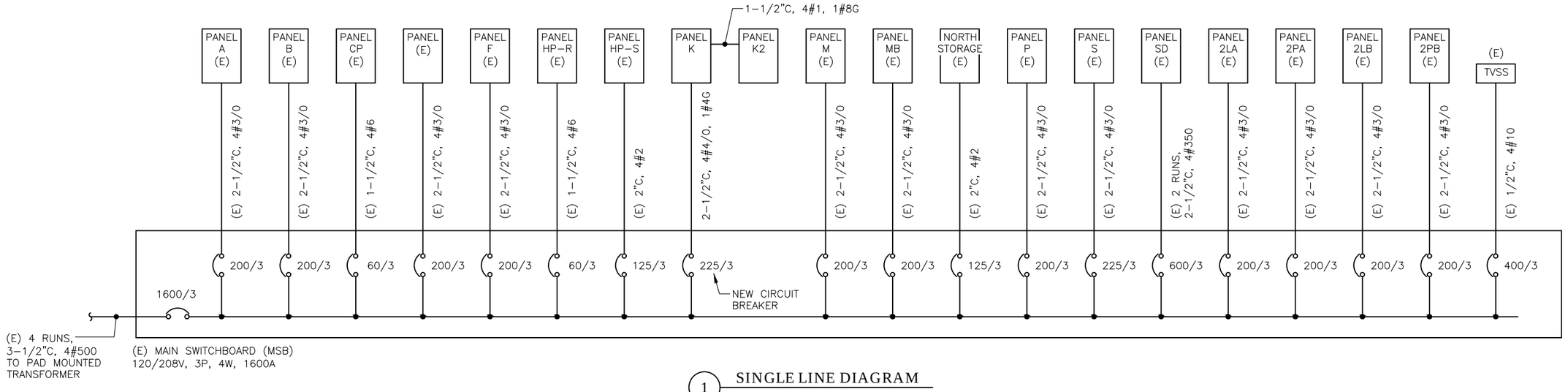
MOUNTING: FLUSH

MAIN: 100/3

BUS: 100A

LOAD SUMMARY	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND KVA
(L) LIGHTING	0.2	100% OF LOAD	0.2
(R) RECEPTACLE	2.7	NEC 220-44	2.7
(M) MOTOR	.	NEC 430-24	.
(C) CONTINUOUS	.	125% OF LOAD	.
(N) NON-CONTINUOUS	.	100% OF LOAD	.
(K) KITCHEN	33.4	NEC 220-56	21.7
TOTAL	.		25.0

NOTES:



1 SINGLE LINE DIAGRAM

Jensen Yorba Wall Inc.

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STATE OF ALASKA
49th
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JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

KITCHEN ADDITION

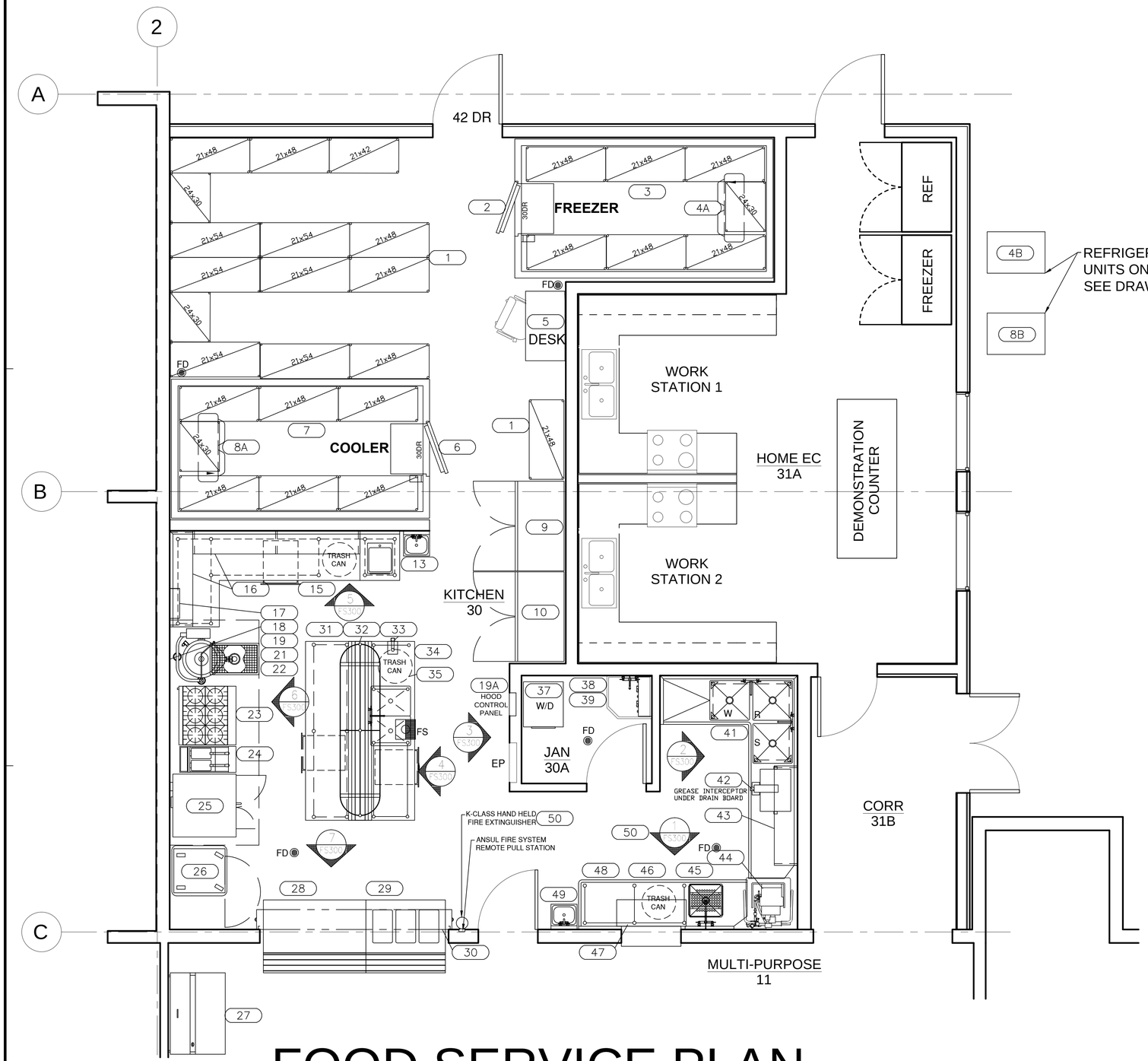
Skagway, Alaska

REVISIONS

SHEET TITLE
SINGLE LINE DIAGRAM AND PANEL SCHEDULES

DATE: July 19, 2021
FILE: 19046

E501



FOOD SERVICE PLAN

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

EQUIPMENT SCHEDULE

ITEM NO	QTY	EQUIPMENT DESCRIPTION
1	15	SHELVING, DRY STORAGE
2	1	WALK-IN FREEZER
3	7	SHELVING, COLD STORAGE
4A	1	FREEZER EVAPORATOR COIL
4B	1	FREEZER CONDENSING UNIT
5	1	DESK & CHAIR
6	1	WALK-IN COOLER
7	7	SHELVING, COLD STORAGE
8A	1	COOLER EVAPORATOR COIL
8B	1	COOLER CONDENSING UNIT
9	1	FREEZER, REACH-IN
10	1	REFRIGERATOR, REACH-IN
11	–	NOT USED
12	–	NOT USED
13	1	HAND SINK
14	1	VACUUM PACKAGING MACHINE
15	1	PACKAGING WORK TABLE
16	2	SHELF, WALL MOUNT
17	1	FIRE SUPPRESSION SYSTEM
18	1	WALL FLASHING, STAINLESS
19	1	EXHAUST HOOD, CLASS ONE
19A	1	HOOD CONTROL PANEL
20	–	NOT USED
21	1	KETTLE, STEAM JACKETED, 25 GALLON
22	1	TROUGH DRAIN
23	1	BURNER RANGE, GAS
24	1	FRYER, GAS
25	1	CONVECTION OVENS, STACKED, GAS
26	1	HOLDING CABINET, HUMIDIFIED HEATED
27	1	MILK COOLER
28	1	UTILITY STATION
29	1	HOT FOOD STATION
30	1	ROLL DOWN DOOR
31	1	COOK'S WORKTABLE
32	1	POT/UTENSIL RACK WITH SHELF
33	1	CAN OPENER
34	1	PREPARATION TABLE WITH SINKS
35	3	TRASH CAN
36	–	NOT USED
37	1	WASHER/DRYER, STACKED
38	1	MOP SINK
39	1	WALL SHELF/MOP HANGER
40	–	NOT USED
41	1	CLEAN DISHTABLE W/SCULLERY SINKS
42	–	GREASE INTERCEPTOR
43	1	SHELF, WALL MOUNT
44	1	WAREWASHER, DOOR TYPE, HIGH TEMP
45	1	PRE-RINSE FAUCET
46	1	SLANT RACK SHELF
47	1	ROLL DOWN DOOR
48	1	SOILED DISHTABLE
49	1	HAND SINK
50	1	FIRE EXTINGUISHER, K-CLASS

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ARCTIC Food Service Design

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL
KITCHEN ADDITION & BATHROOM REMODEL
Skagway, Alaska

REVISIONS

SHEET TITLE
FOOD SERVICE - ENLARGED FLOOR PLAN

DATE: **August 20, 2020**
FILE: **20002**

FS100

EQUIPMENT SCHEDULE

ITEM NO	QTY	EQUIPMENT DESCRIPTION	STATUS ID	AMPS	KW	HP	VOLTS	PHASE	PLUG	DIRECT	COLD WATER SIZE (IN)	HOT WATER SIZE (IN)	DIRECT DRAIN SIZE (IN)	INDIR DRAIN SIZE (IN)	LP GAS SIZE (IN)	MBTUH	HVAC MAKE-UP CFM	HVAC EXHAUST DUCT SIZE (IN)	HVAC EXHAUST CFM	REMARKS
1	15	SHELVING, DRY STORAGE	A																	
2	1	WALK-IN FREEZER	A	11.0			120	1		X										LIGHTS, HEATERS
3	7	SHELVING, COLD STORAGE	A																	
4A	1	FREEZER EVAPORATOR COIL	A	13.3			230	1		X				3/4"						DRAIN TO FD; NOTES 2 & 4.
4B	1	FREEZER CONDENSING UNIT	A	18.7			208-230	1		X										NOTES 1 - 3.
5	1	DESK & CHAIR	B	20.0			120	1		X										CONV OUTLET; PROVIDED BY OWNER
6	1	WALK-IN COOLER	A	7.0			120	1		X										LIGHTS, EVAP COIL
7	7	SHELVING, COLD STORAGE	A																	
8A	1	COOLER EVAPORATOR COIL	A	2.0			120	1		X				3/4"						DRAIN TO FD; NOTES 2 & 4.
8B	1	COOLER CONDENSING UNIT	A	9.1			208-230	1		X										NOTES 1 - 3.
9	1	FREEZER, REACH-IN	A	9.6	1.1	1.0	115	1	X											
10	1	REFRIGERATOR, REACH-IN	A	5.4	1.1	1/2	115	1	X											
11	-	NOT USED	-																	
12	-	NOT USED	-																	
13	1	HAND SINK	A								1/2	1/2	1 1/2							SOAP & TOWEL DISPENSERS BY OWNER
14	1	VACUUM PACKAGING MACHINE	A	6.1			120	1	X											
15	1	PACKAGING WORK TABLE	A	20.0			120	1	X											CONV OUTLETS
16	2	SHELF, WALL MOUNT	A																	
17	1	FIRE SUPPRESSION SYSTEM	A				120	1		X										INTERCONNECT WITH FACP & SHUNT TRIPS; NOTE 5
18	1	WALL FLASHING, STAINLESS	A																	
19	1	EXHAUST HOOD, CLASS ONE	A	15.0			120	1		X								24x10	2380	LIGHTS, DAMPER MOTOR, CONTROLS; 0.95" SP
19A	1	HOOD CONTROL PANEL	A	15.0			120	1		X										INTERCONNECT WITH HOOD; NOTE 6
20	-	NOT USED	-																	
21	1	KETTLE, STEAM JACKETED, 25 GALLON	A	27.2	9.8		208	3		X	1/2	1/2								
22	1	TROUGH DRAIN	A										3							
23	1	BURNER RANGE, GAS	A												1	236				QD GAS FLEX CONNECTOR
24	1	FRYER, GAS	A												1	122				QD GAS FLEX CONNECTOR
25	1	CONVECTION OVENS, STACKED, GAS	A	9.4		3/4	120	1	X						1	120				QD GAS FLEX CONNECTOR
26	1	HOLDING CABINET, HUMIDIFIED HEATED	A	13.8	1.6		120	1	X											
27	1	MILK COOLER	A	2.7		1/3	115	1	X											
28	1	UTILITY STATION	A																	
29	1	HOT FOOD STATION	A	9.6	2.0		208	1	X											NEMA 6-15P
30	1	ROLL DOWN DOOR	D																	PROVIDED BY DIVISION 8
31	1	COOK'S WORKTABLE	A	20.0			120	1	X											CONV OUTLETS
32	1	POT/UTENSIL RACK WITH SHELF	A																	
33	1	CAN OPENER	A																	
34	1	PREPARATION TABLE WITH SINKS	A	20.0			120	1	X		1/2	1/2		1 1/2						CONV OUTLET; DRAIN TO FS
35	3	TRASH CAN	B																	PROVIDED BY OWNER
36	-	NOT USED	-																	
37	1	WASHER/DRYER, STACKED	A	40.0			240	1	X		1/2	1/2	1 1/2					4"	200	
38	1	MOP SINK	C								1/2	1/2	2							PROVIDED BY DIVISION 22
39	1	WALL SHELF/MOP HANGER	A																	
40	-	NOT USED	-																	
41	1	CLEAN DISHTABLE W/SCULLERY SINKS	A								1/2	1/2	2							DRAIN THRU GREASE INTERCEPTOR
42	-	GREASE INTERCEPTOR	C	10.0			120	1	X				3							PROVIDED BY DIVISION 22
43	1	SHELF, WALL MOUNT	A																	
44	1	WAREWASHER, DOOR TYPE, HIGH TEMP	A	45.4	7.2	2.0	208-240	3		X	1/2	1/2	1 1/2							
45	1	PRE-RINSE FAUCET	A								1/2	1/2								
46	1	SLANT RACK SHELF	A																	
47	1	ROLL DOWN DOOR	D																	PROVIDED BY DIVISION 8
48	1	SOILED DISHTABLE	A										2"							DRAIN THRU GREASE INTERCEPTOR
49	1	HAND SINK	A								1/2	1/2	1 1/2							SOAP & TOWEL DISPENSERS BY OWNER
50	1	FIRE EXTINGUISHER, K-CLASS	A																	MOUNT TOP AT 36" AFF

EQUIPMENT ID SCHEDULE

A - PROVIDED/INSTALLED BY SECTION 114000.
B - OWNER FURNISHED/INSTALLED
C - PROVIDED/INSTALLED PER DIVISION 22.
D - PROVIDED/INSTALLED PER DIVISION 8.
E - EXISTING EQUIPMENT/RE-INSTALLED BY SECTION 114000.

LEGEND

AFF = ABOVE FINISHED FLOOR
EP = ELECTRICAL PANEL
FACP = FIRE ALARM CONTROL PANEL
FD = FLOOR DRAIN
FS = FLOOR SINK
QD = QUICK DISCONNECT
SP = STATIC PRESSURE

NOTES

1. REFRIGERATION CONDENSING UNITS WILL BE LOCATED ON THE BUILDING ON THE BUILDING ROOF. MOUNT ON AWW TYPE WOOD SLEEPERS.
2. PIPE REFRIGERATION SYSTEM FROM EVAPORATOR COIL TO THE CONDENSING UNIT. REFER TO SPECIFICATION FOR MATERIALS AND METHODS.
3. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECTS AT THE REFRIGERATION SYSTEM AND EVAPORATOR COIL. REFER TO MANUFACTURER'S SHOP DRAWING FOR ADDITIONAL ELECTRICAL INFORMATION.
4. PLUMBING CONTRACTOR TO PIPE EVAPORATOR CONDENSATE DRAIN LINE TO BUILDING FLOOR DRAIN. SECTION 114000 CONTRACTOR TO INSTALL HEAT TAPE & INSULATE DRAIN LINES IN FREEZER AS SPECIFIED.
5. 11 40 00 CONTRACTOR IS RESPONSIBLE TO HAVE THE CONDUIT & JUNCTION BOX FOR THE FIRE SUPPRESSION SYSTEM REMOTE PULL STATION INSTALLED & CONCEALED IN THE WALL.
6. THE HOOD CONTROL PANEL REQUIRES THE FOLLOWING INTERCONNECTIONS.
   A. 120V/20A POWER CONNECTION INPUT
   B. LOW VOLTAGE 22/3 CABLE TO RTD (TJ) J-BOX ON HOOD.
   C. LOW VOLTAGE 22/3 CABLE TO MBD (MJ) J-BOX ON HOOD.
   D. TWO WIRE LINE VOLTAGE TO LIGHT (LJ) J-BOX ON HOOD.
   E. THREE WIRE LOW VOLTAGE INTERCONNECT WITH FIRE SYSTEM MICROSWITCH AND SHUNT TRIP BREAKERS.
   F. THREE WIRE LOW VOLTAGE INTERCONNECT WITH FIRE SYSTEM MICROSWITCH AND BUILDING FACP.
   G. TWO WIRE LOW VOLTAGE TO EXHAUST AIR STARTER.

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ARCTIC Food Service Design

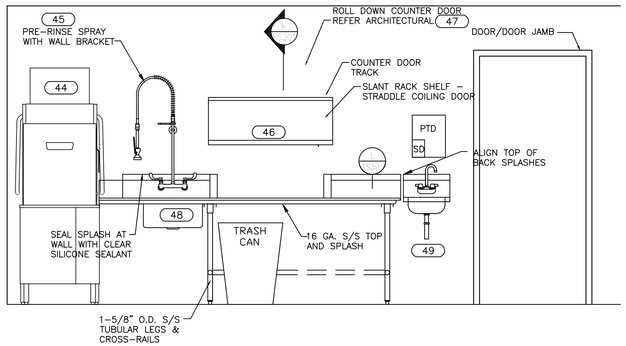
MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL
KITCHEN ADDITION & BATHROOM REMODEL
Skagway, Alaska

REVISIONS

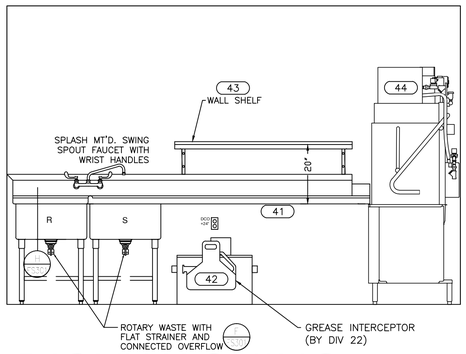
SHEET TITLE
FOOD SERVICE - EQUIPMENT SCHEDULE

DATE: August 20, 2020
FILE: 20002

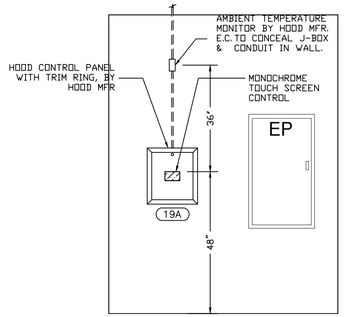
FS200



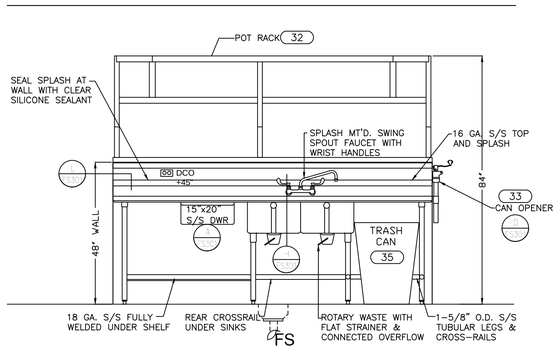
1 FS300 DISHWASHING



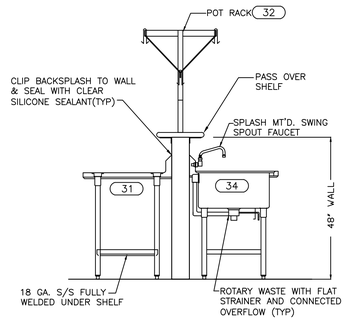
2 FS300 DISHWASHING

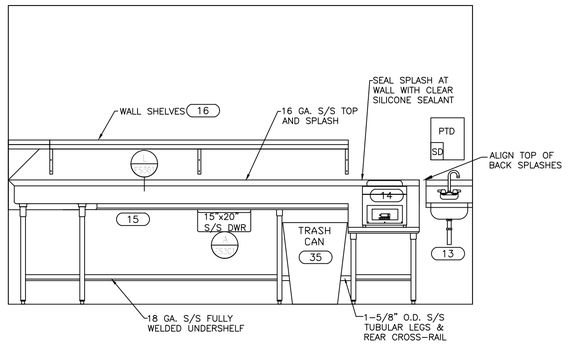


3 FS300 HOOD CONTROL

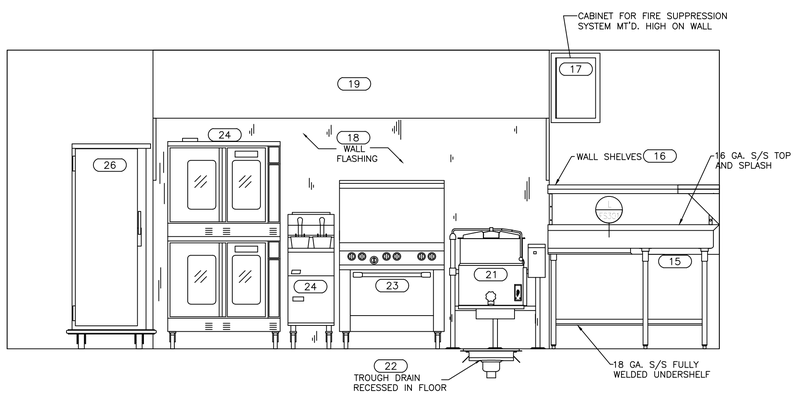


4 FS300 PREPARATION TABLE

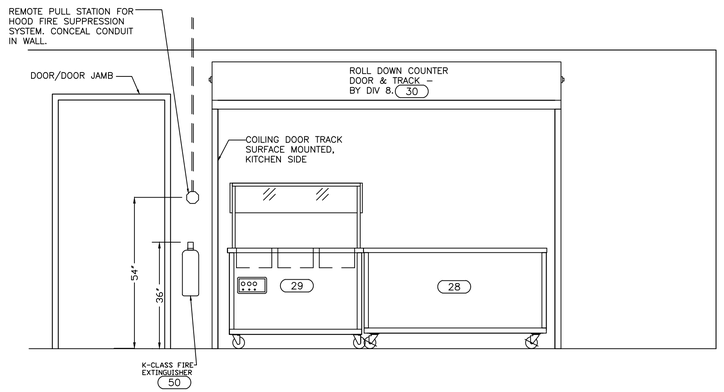




5 FS300 PACKAGING WORK TABLE



6 FS300 COOK LINE



7 FS300 SERVING LINE

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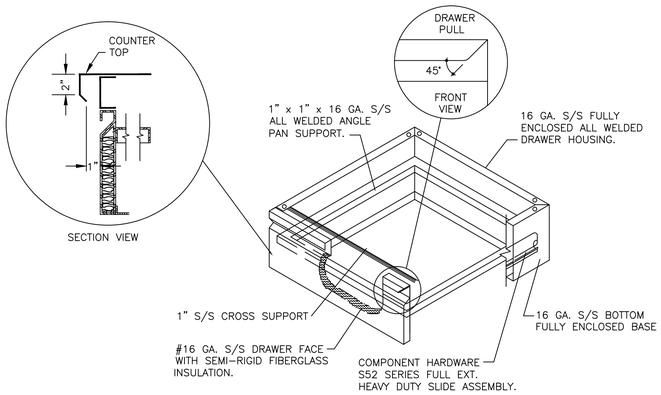
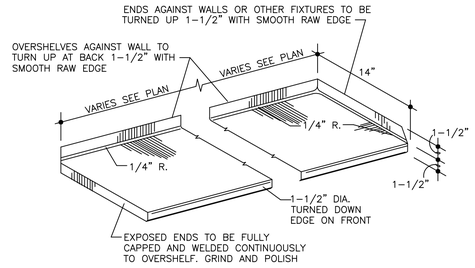
SHEET TITLE
FOOD SERVICE - ELEVATIONS

DATE: **August 20, 2020**
FILE: **20002**

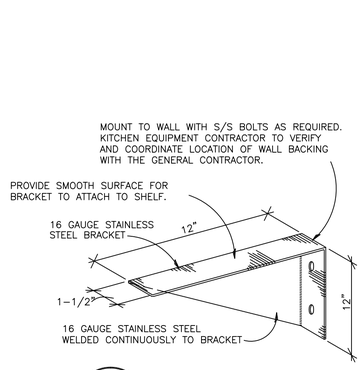
FS300



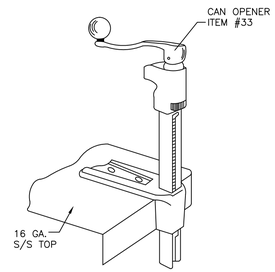
A FS301 TYPICAL DRAWER DETAIL
SCALE: NONE



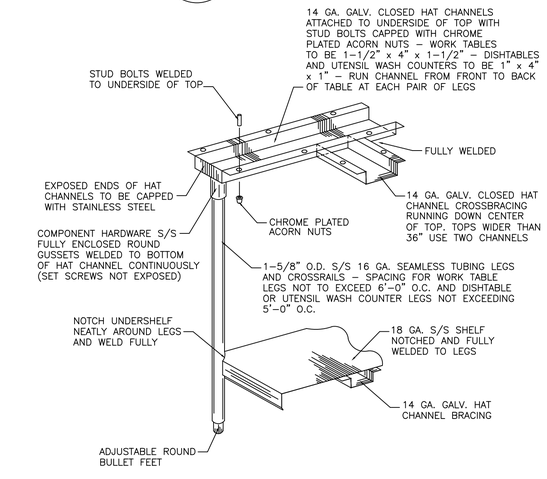
B FS301 OVERSHELF DETAIL
SCALE: NONE



C FS301 S/S SHELF BRACKET
SCALE: NONE



D FS301 CAN OPENER DETAIL
SCALE: NONE



E FS301 OPEN BASE UNDERSHELF CONSTRUCTION DETAIL
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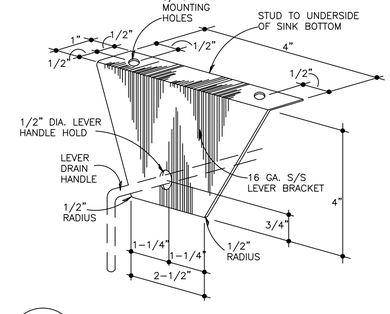

F FS301 TYPICAL LEVER BRACKET DETAIL
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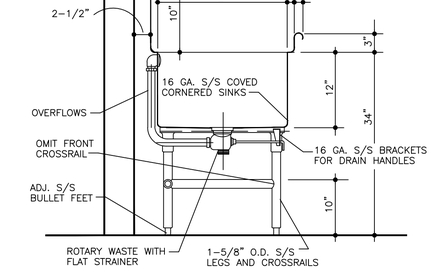
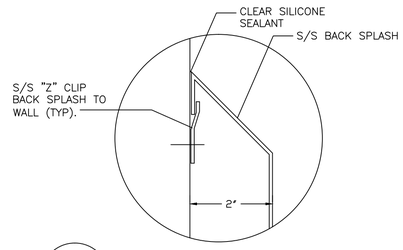
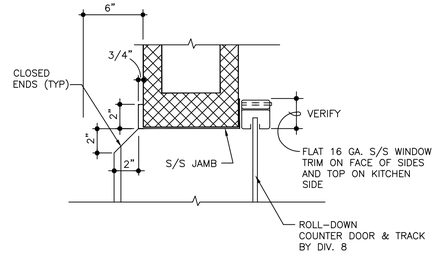


G FS301 SECTION
SCALE: NONE

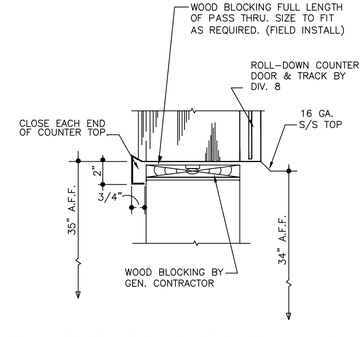


L FS301 BACK SPLASH DETAIL
SCALE: NONE

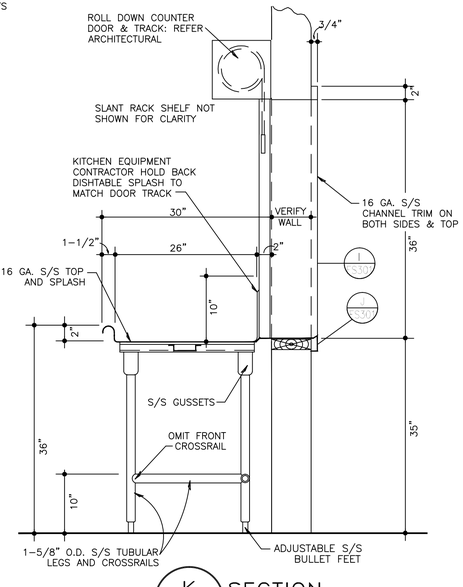
H FS301 SINK INTERIOR DETAIL
SCALE: NONE



I FS301 SECTION THRU JAMB AT PASS THRU LEDGE
SCALE: NONE



J FS301 SECTION THRU SILL AT PASS THRU LEDGE
SCALE: NONE



K FS301 SECTION
SCALE: NONE

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ARCTIC Food Service Design

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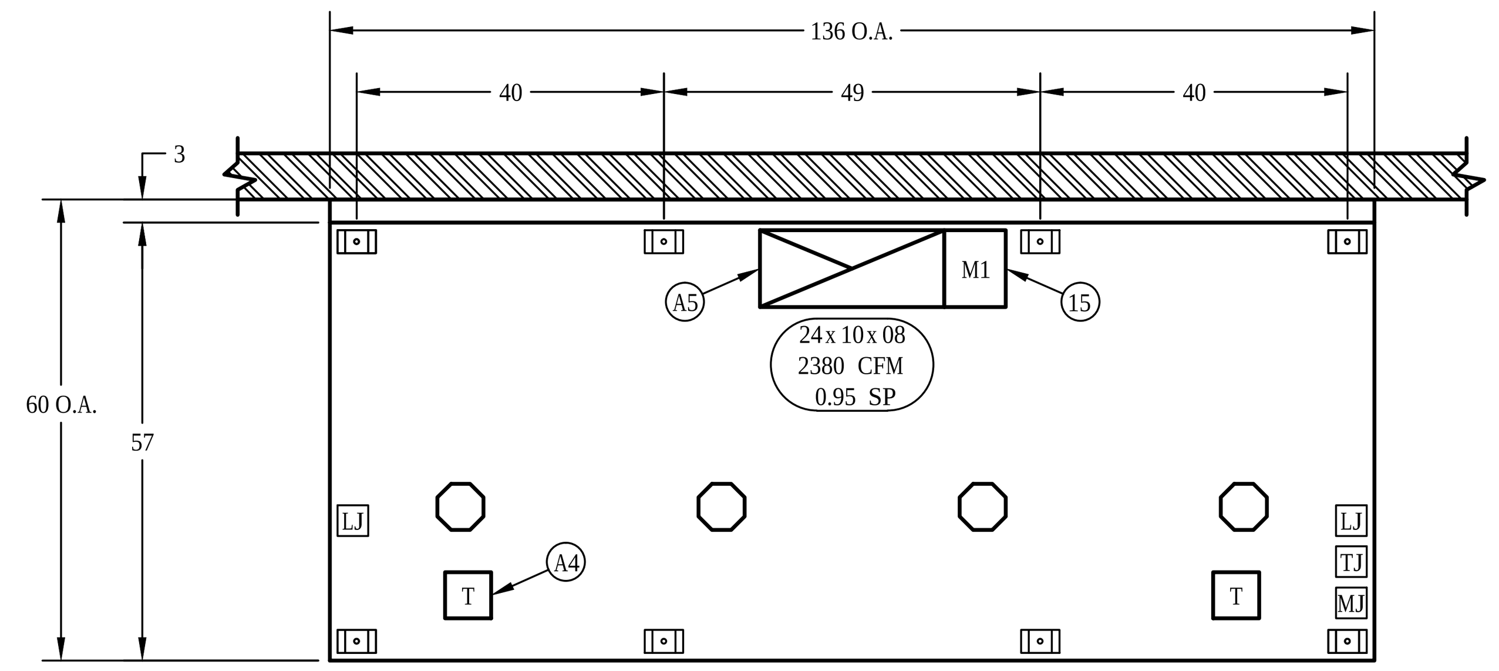
REVISIONS

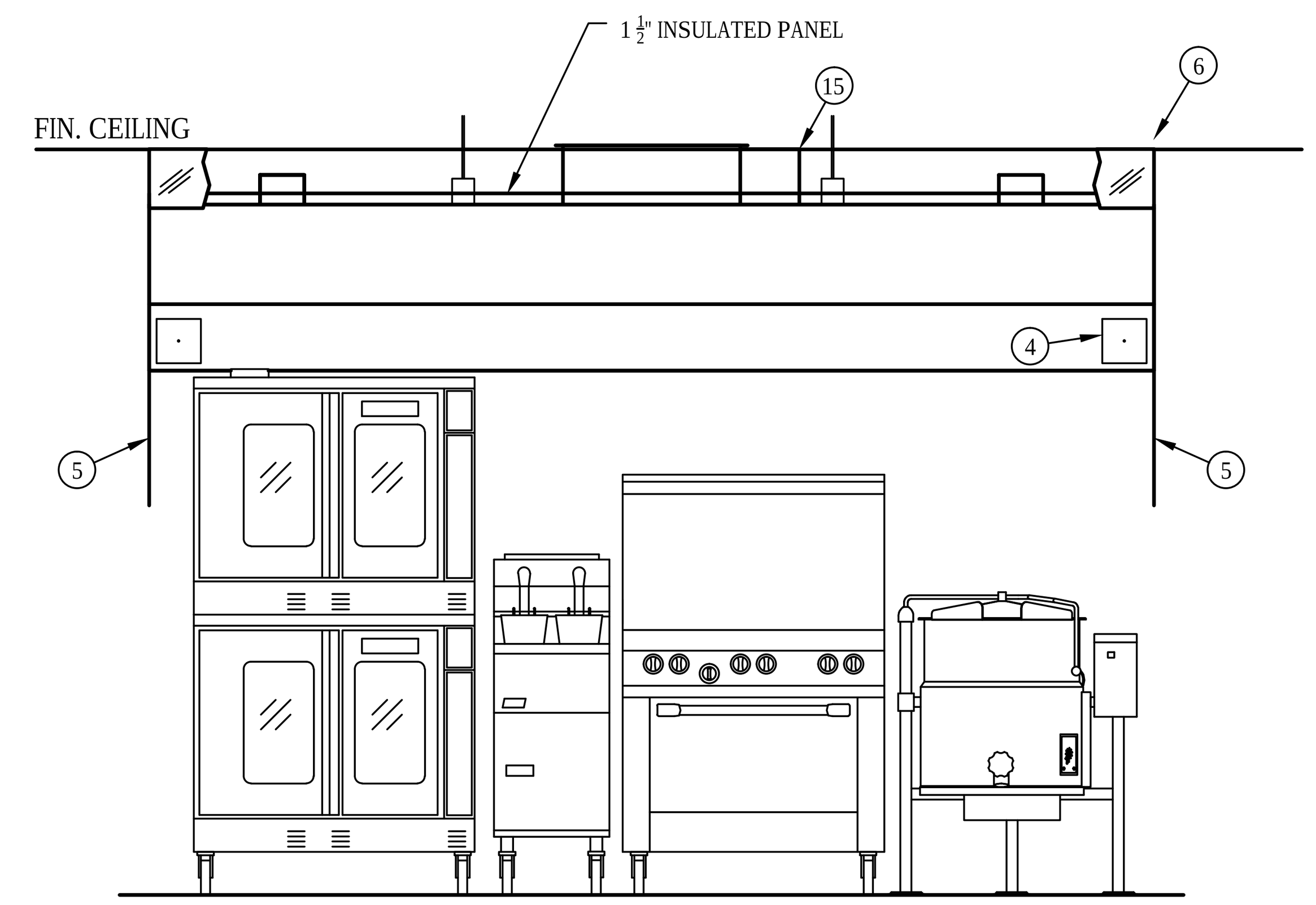
SHEET TITLE
FOOD SERVICE - EQUIPMENT DETAILS

DATE: **August 20, 2020**
FILE: **20002**

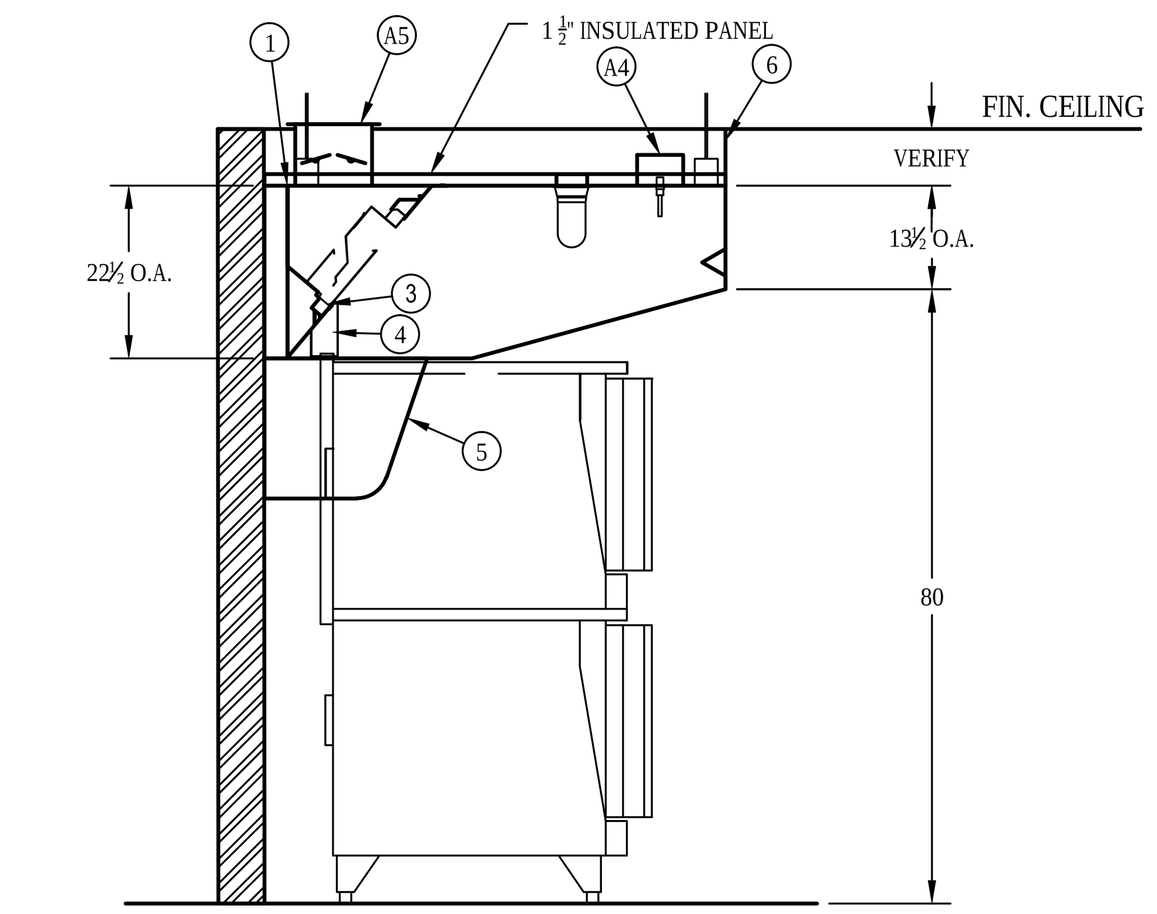
FS301



1 EXHAUST HOOD PLAN
FS400 SCALE: NONE



2 EXHAUST HOOD ELEVATION
FS400 SCALE: NONE



3 EXHAUST HOOD SECTION
FS400 SCALE: NONE

HOOD SCHEDULE						EXHAUST				MINIMUM OVERHANG OPEN SIDES UL2	UL3	EQUIP. DUTY TEMPERATURE UL4
NO.	MODEL	L	W	H	WEIGHT	SPEC. CFM	SP	CFM/FT		SIDE	FRONT	MAX.
19	WCLC 1365722.5	136	57	22.5	641	2380	0.95	210		6	6	450

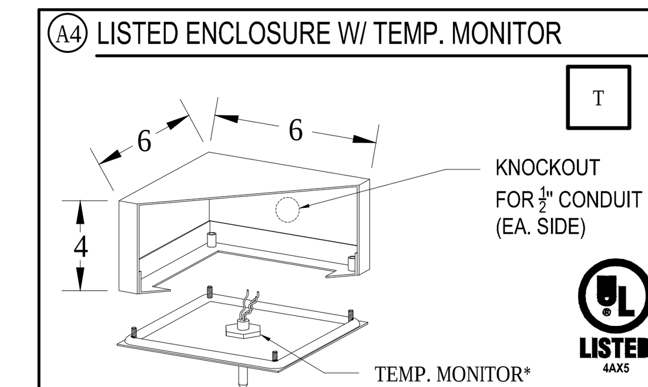
1. GREATER EXHAUST AND/OR LESSER SUPPLY AIR FLOW RATES MAY BE REQUIRED FOR COMPLETE VAPOR AND SMOKE REMOVAL IN SPECIFIC INSTALLATION(S).
2. THE EXHAUST FAN MUST BE OPERATED WHENEVER THE COOKING EQUIPMENT IS TURNED ON. (NFPA SECTION 11.1.1)

HOOD CANOPY MATERIAL: ALL 304 SERIES STAINLESS STEEL

HOOD LEGEND
(1) ALL WELDED ENCLOSURE
(3) PITCHED GREASE DRIP TRAY
(4) ENCLOSED METAL CONTAINER
(5) CONTAINMENT PANEL: LIGHT DUTY
(6) ENCLOSURE PANEL: INCLUDED
(15) MBD ACCESS ENCLOSURE

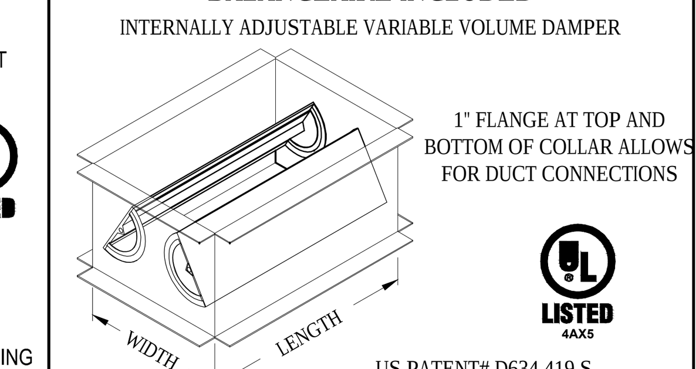
ELECTRICAL LEGEND
STREIVOR FACTORY WIRING
FIELD WIRING BY OTHERS
LJ HOOD CANOPY LIGHT(S) JUNCTION BOX
TJ TEMPERATURE MONITOR(S) JUNCTION BOX
MJ MOTORIZED BALANCING DAMPER(S) JUNCTION BOX

A4 LISTED ENCLOSURE W/ TEMP. MONITOR



KNOCKOUT FOR ½" CONDUIT (EA. SIDE)
TEMP. MONITOR*
PATENT PENDING
REMOVABLE COVER ALLOWS EASY ACCESS FOR INSTALLATION, ADJUSTMENTS AND SERVICE OF MONITORING EQUIPMENT FROM UNDER THE HOOD.

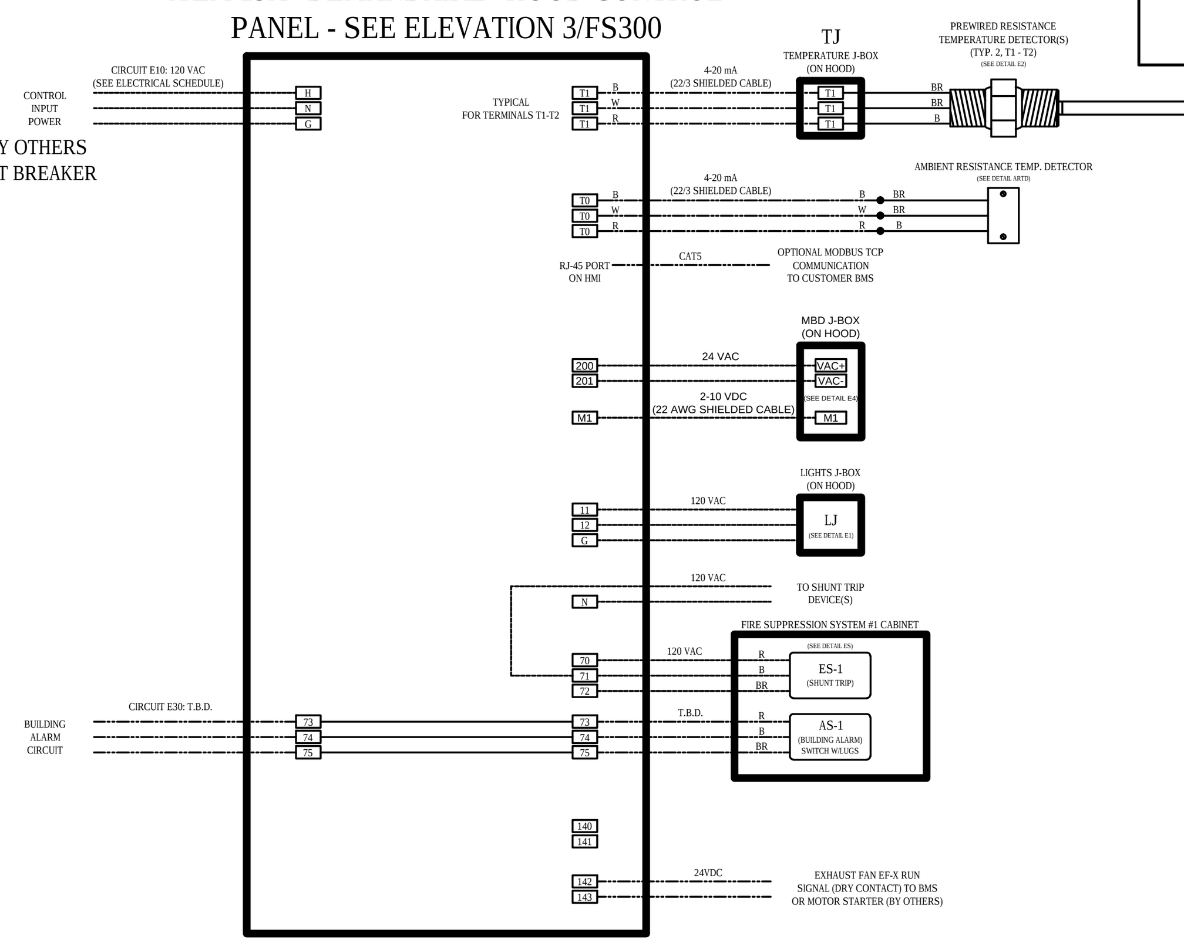
A5 DUCT CONNECTION DETAIL
EXHAUST DUCT COLLAR DETAIL
BALANCEAIRE INCLUDED
INTERNALLY ADJUSTABLE VARIABLE VOLUME DAMPER



1" FLANGE AT TOP AND BOTTOM OF COLLAR ALLOWS FOR DUCT CONNECTIONS
US PATENT# D634,419 S
THE BALANCEAIRE'S OPPOSED BLADES CAN BE ADJUSTED TO VARYING POSITIONS FROM 100% OPEN TO 95% CLOSED TO INCREASE OR DECREASE THE AMOUNT OF RESISTANCE IN THE HOODS EXHAUST COLLAR. THE EXHAUST FAN MUST BE SIZED TO ACCOUNT FOR THE BALANCEAIRE'S ADDED RESISTANCE.

ITEM 19A "DEMANDAIRE" HOOD CONTROL PANEL - SEE ELEVATION 3/FS300

NOTE: DISCONNECT PROVIDED BY OTHERS FROM UL 489 LISTED CIRCUIT BREAKER



NOTE: DEMANDAIRE CONTROL PANEL ENCLOSURES REQUIRE 36 INCHES MINIMUM OF CLEAR SPACE IN FRONT OF THE DOOR

HOOD SCHEDULE					ELECTRICAL SCHEDULE					
HOOD	GROUP	SUPPLY FAN	EXHAUST FAN	FSS#	CIRCUIT	DESCRIPTION	HP	V/Ø	AMPS	FEED
19	---	SF-X	EF-X	1	E10	CONTROL	---	120/1	20	CB
---	---	---	---	---	E30	BLDG ALARM	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---

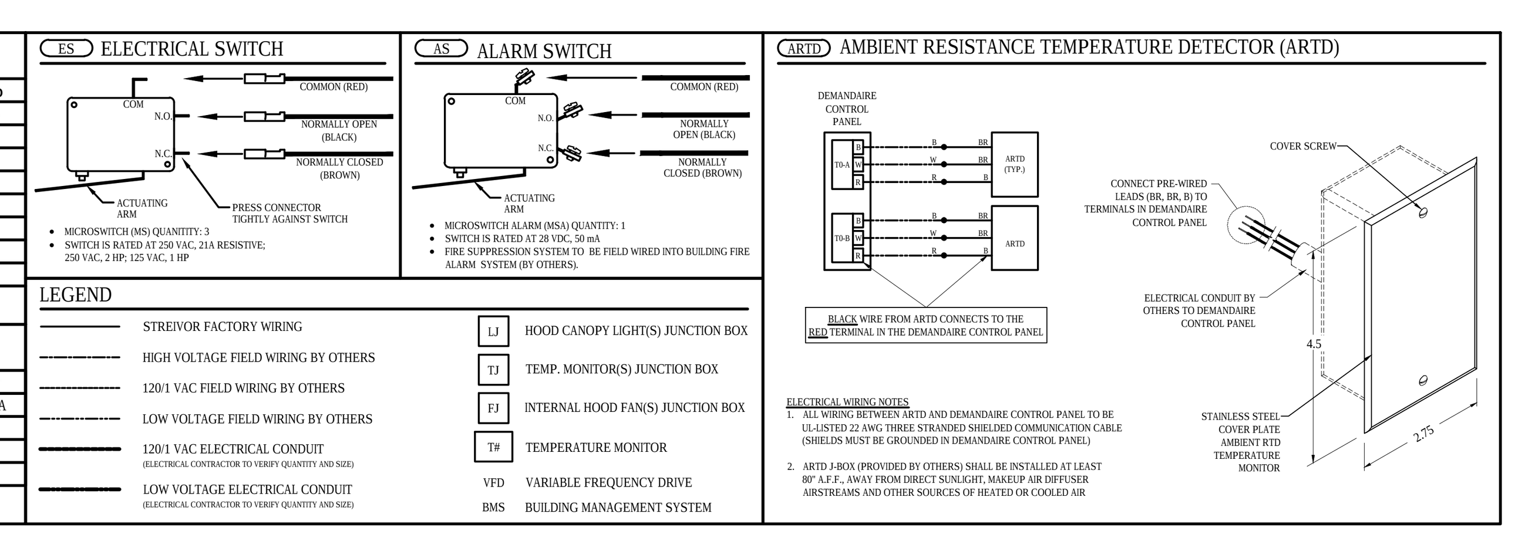
REFER TO HOOD DRAWINGS FOR HOOD DETAILS — CB: CIRCUIT BREAKER BY ELECTRICAL CONTRACTOR

ELECTRICAL ROUGH-IN SCHEDULE

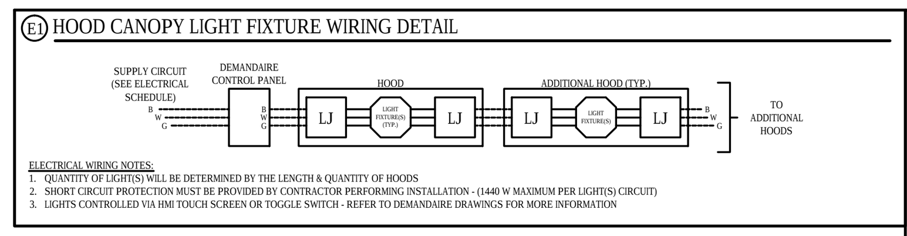
ITEM	DETAIL	ROUGH-IN REQUIREMENTS	ELECTRICAL CONDUIT
DEMANDAIRE CONTROL PANEL	DCP	14 1/4" x 16 1/4" I.D. FRAMED OPENING	120 VAC, 24 VDC, 4-20mA
AMBIENT TEMP MONITOR	ARTD	2X4 J-BOX	4-20 mA
---	---	---	---
---	---	---	---

ELECTRICAL CONTRACTOR TO VERIFY ROUGH-IN LOCATION AND ELECTRICAL REQUIREMENTS

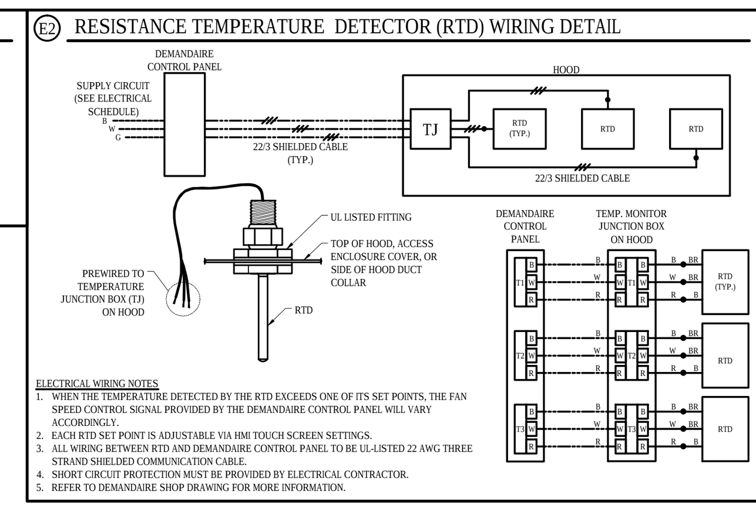
ES ELECTRICAL SWITCH — AS ALARM SWITCH — ARTD AMBIENT RESISTANCE TEMPERATURE DETECTOR (ARTD) — LEGEND



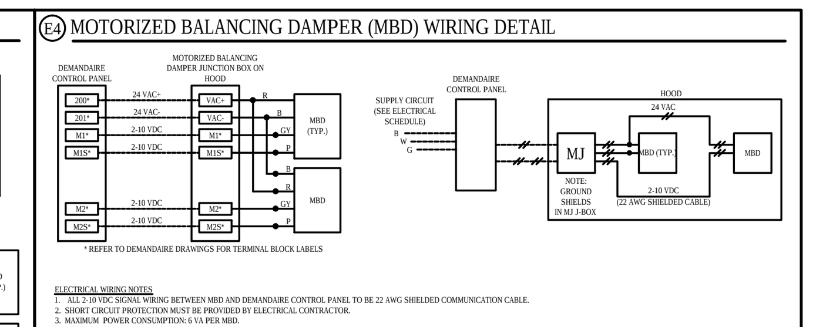
E1 HOOD CANOPY LIGHT FIXTURE WIRING DETAIL



E2 RESISTANCE TEMPERATURE DETECTOR (RTD) WIRING DETAIL



E3 MOTORIZED BALANCING DAMPER (MBD) WIRING DETAIL



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Skagway, Alaska

REVISIONS

SHEET TITLE
FOOD SERVICE - EXHAUST HOOD

DATE: August 20, 2020
FILE: 20002

FS400

PROJECT MANUAL

December 10, 2021

MUNICIPALITY OF SKAGWAY

SCHOOL BACK-UP GENERATOR

JENSEN YORBA WALL, Inc.
522 WEST TENTH ST
JUNEAU, AK 99801

PH: 907.586.1070

SECTION 260000 – GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

B. This section applies to all sections of Division 26 “Electrical”, and Division 27 “Communications, unless specified otherwise.

C. The Drawings of other trades (Architectural, Structural, Civil, Mechanical, and Plumbing) shall be examined for coordination and familiarity of work with other Contractors. Any duplication or omission of provisions in this project shall be brought to the attention of the Owner prior to Bidding.

1.2 DESCRIPTION

A. The General Conditions and Supplementary General Conditions are part of this Division and are to be considered a part of this Contract.

B. Where items of the General Conditions and Supplementary General Conditions are repeated in other Sections of the Specifications, it is merely intended to qualify or to call particular attention to them. It is not intended that any other parts of the General Conditions and Supplementary General Conditions shall be assumed to be omitted if not repeated therein. This Section applies equally and specifically to all Contractors supplying labor and/or equipment and/or materials as required under each Section of this Division. Where conflicts exist between the drawings and the specifications or between this section of the specifications and other sections, the more stringent or higher cost option shall apply.

C. It is the intent of this Section of the Specifications to establish a standard of quality and performance characteristics for basic materials and installation methods used in building electrical systems.

1.3 INTENT

A. This Contract is for all labor, materials and equipment required for installation. The system shall be complete and finished in all respects, tested and ready for operation. Work shall include calibration of equipment with factory settings. All materials, equipment and apparatus shall be new and of high quality.

B. Any apparatus, appliance, material or Work not shown on the Drawings but mentioned in the specification, or vice versa, or any incidental accessories necessary to make the Work complete in all respects and ready for operation as determined by good trade practice even if not

particularly specified, shall be furnished, delivered and installed under their respective Divisions without any additional expense to the Owner.

C. Minor details not usually shown or specified but necessary for proper installation and operation shall be included in the Work as though they were hereinafter shown or specified.

D. Work under each Section shall include giving written notice to the Owner of any materials or apparatus believed inadequate or unsuitable; in violation of laws, ordinances, rules or regulations of Authorities Having Jurisdiction; and any necessary items of Work omitted. In the absence of such written notice, it is mutually agreed that Work under each Section has included the cost of all required items for the accepted, satisfactory functioning of the entire system without extra compensation.

E. Locations of all existing systems and equipment shown on the Drawings are based on the best available information. The Contractor shall verify all dimensions and locations of existing systems and equipment in the field and adjust as necessary.

F. Certain items of existing equipment may be indicated for removal or relocation. Items noted for removal shall be disconnected and disposed of by the Contractor in a safe, legal and responsible manner and location. Items noted for relocation are intended for reuse in another location as designated on the Drawings. It shall be the responsibility of the Contractor to remove the material from its present location, store the material in a safe place and reinstall the material in its new location. Questions regarding the suitability of the material or equipment shall be brought to the attention of the Owner in writing.

G. Wherever a particular piece of equipment, device or material is specifically indicated on the Drawings by model number, type, series or other means, that specification shall take precedence over equipment or materials specified herein.

1.4 DEFINITIONS

A. “Subcontractor” means the subcontractor working under this Division. Other Contractors are specifically designated “Mechanical Contractor”, “General Contractor”, and so on. Take care to ascertain limits of responsibility for connecting equipment which requires connection by two or more trades.

B. “Install” shall mean set in place complete with all mounting facilities and connections as necessary ready for normal use or service.

C. “Furnish” or “supply” shall mean purchase, deliver to, and off-load at the job site, all ready to be installed including where appropriate all necessary interim storage and protection.

D. “Provide” shall mean furnish (or supply) and install as necessary.

E. “Finished” refers to all rooms and areas scheduled to be painted in Room Finish Schedule on the Drawings. All rooms and areas not covered in Room Finish Schedule, including areas above ceilings shall be considered not finished, unless otherwise noted.

F. “Approved equal” means any product which in the opinion of the Engineer is equal in quality, arrangement, appearance, and performance to the product specified.

G. "Wiring" shall mean cable assembly, raceway, conductors, fitting and any other necessary accessories to make a complete wiring system.

H. "Product" shall mean any item of equipment, material, fixture, apparatus, appliance or accessory installed under this Division.

I. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contact Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions."

J. Indicated: The term "indicated" refers to graphic representation, notes, or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified," are used, it is to help the reader locate the reference; no limitation on location is intended.

K. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," "and "permitted" mean "directed by the Engineer," "requested by the Engineer," and similar phrases.

L. Approve: The term "approved," where used in conjunction with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in General and Supplementary Conditions.

M. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

N. Remove: The term "remove" means to disconnect from its present position, remove from the premises and to dispose of in a legal manner.

O. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

P. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.5 DRAWINGS

A. Drawings are diagrammatic and indicate the general arrangement of systems and Work included in the Contract. Consult the Architectural Drawings and Details for exact location of fixtures and equipment, where same are not definitely located, obtain this information from the Architect. Do not scale the Drawings.

B. Work under each Section shall closely follow Drawings in layout of Work; check Drawings of other Divisions to verify spaces in which work will be installed. Maintain maximum headroom; where space conditions appear inadequate, Owner and Engineer shall be notified before proceeding with installations.

C. The Owner may, without extra charge, make reasonable modification in the layout as needed to prevent conflict with Work of other trades and/or for proper execution of the Work. A relocation of up to 10-feet would be considered reasonable.

D. Where variances occur between the Drawings and the Specifications or within either of the Documents, the item or arrangement of better quality shall be included in the Contract price. The Owner and Engineer shall decide on the item and the manner in which the Work shall be installed.

1.6 SURVEYS AND MEASUREMENTS

A. Before submitting his Bid, the Contractor shall visit the site and become thoroughly familiar with all existing conditions under which his work will be installed. This Contract includes all modifications of existing systems required for the installation of new equipment. This Contract included all necessary offsets, transitions and modifications required to install all new equipment in existing spaces. All new and existing equipment and systems shall be fully operational under this Contract before the job is considered complete. The Contractor shall be held responsible for any assumptions he makes, and omissions or errors he makes as a result of his failure to become fully familiar with the existing conditions at the site and the Contract Documents.

B. The Contractor shall base all measurements, both horizontal and vertical, from established bench marks. All Work shall agree with these established lines and levels. Verify all measurements at the site and check the correctness of same as related to the Work.

C. Should the Contractor discover any discrepancies between actual measurements and those indicated which prevent following good practice or which interfere with the intent of the Drawings and Specifications, the Engineer will be notified and Work will not proceed until instructions from the Engineer are received.

1.7 CODES AND STANDARDS

A. Reference Standard Compliance
   1. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), and Underwriters Laboratories Inc. (UL), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance.
   2. Independent Testing Organization Certificate: In lieu of the label or listing, indicated above, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Engineer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

B. The following Codes and Standards apply to all electrical work. Wherever Codes and/or Standards are mentioned in these Specification, the latest applicable edition or revision shall be followed:
The International Building Code

The National Electrical Code
NFPA 72: Fire Alarm
NFPA 101: Life Safety
NFPA 110: Standard for Emergency and Standby Power Systems
Americans with Disabilities Act
Illuminating Engineering Society (IES) recommendations

C. The following Standards shall be used where referenced by the following abbreviations:

AIA	American Institute of Architects
ANSI	American National Standards Institute
ASTM	American Society of Testing and Materials
IEEE	Institute of Electrical and Electronics Engineers
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NSC	National Safety Council
OSHA	Occupational Safety and Health Administration
UL	Underwriter's Laboratories

D. All materials furnished and all work installed shall comply with the rules and recommendations of the NFPA, the requirements of the local utility companies, the recommendation of the fire insurance rating organization having jurisdiction and the requirements of all Governmental departments having jurisdiction.

E. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, and Drawings in order to comply with all applicable laws, ordinances, rules and regulation, whether shown on Drawings and/or specified or not.

1.8 PERMITS AND FEES

A. The Contractor shall give all necessary notices, obtain all permits; and pay all Government and State sales taxes and fees where applicable, and other costs, including utility connection or extensions in connection with the work, file all necessary Drawings, prepare all documents and obtain all necessary approvals of all Governmental and State departments having jurisdiction, obtain all required certificates of inspection for his work, and deliver a copy to the Owner and Engineer before request for acceptance and final payment for the work.

1.9 EQUIPMENT SUBSTITUTIONS

A. In these Contract Documents, one or more makes of materials, apparatus or appliances may have been specified for use in this installation. These describe the basis of design and approved equivalents. This has been done for convenience in fixing the standard of workmanship, finish and design required for the installation without consideration of any or all associated costs. The Contractor acknowledges that not all requirements are shown for either alternate acceptable manufacturers listed or those alternates requiring a request for substitution and it is their responsibility to coordinate all requirements necessary to accommodate any change from the basis of design listed or scheduled. The Contractor is required to submit any and all costs (including costs associated or required by all trades) along with performance differences as part of their request for substitution. The details of workmanship finish and design, and the

guaranteed performance of any material, apparatus or appliance which the Contractor desires to deviate for those mentioned herein shall also conform to these standards.

B. Where no specific make of material, apparatus or appliance is mentioned, any first-class product made by a reputable manufacturer may be submitted for the Engineer's review.

C. Where two or more names are given as approved manufacturers of equivalents, the Contractor must use the specified item or one of the named equivalents which still must meet all of the performance characteristics of the basis of design make and model. Where one name only is used and is followed by the words "or approved equal", the Contractor must use the item named or he is required to apply for a substitution. Where one name only is used, the Contractor must use that item named.

D. Where the Contractor proposes to deviate (provide an equivalent or request for substitution) from the equipment or materials as hereinafter specified, they are required to submit a request for substitution in writing. The Contractor shall state in their request whether it is a substitution or a non approved equivalent to that specified and the amount of credit or extra cost involved. The Base Bid shall be based on using the materials and equipment as specified with no exceptions.

E. Where the Contractor proposes to use an item of equipment other than specified or detailed on the Drawings which requires any redesign of the structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical or architectural layout, all such redesign and all new drawings and detailing required therefore shall be prepared by the Engineer/Architects of Record at the expense of the Contractor and at no additional cost to the Owner.

F. Where such accepted deviation resulting from using an approved equivalent or substitution requires a different quantity and arrangement of piping, ductwork, valves, pumps, insulation, wiring, conduit and equipment from that specified or indicated on the Drawings, the Contractor shall, after acceptance by the Engineer, furnish and install any such additional equipment required by the system at no additional cost to the Owner, including any costs added to other trades due to the deviation.

G. Equipment, material or devices submitted for review as an "equivalent" shall meet the following requirements:
   1. The equivalent shall have the same construction features such as, but not limited to:
      a. Material thickness, gauge, weight, density, etc.
      b. Welded, riveted, bolted, etc., construction
      c. Finish, undercoating, corrosion protection
   2. The equivalent shall perform with the same or better operating efficiency.
   3. The equivalent shall be locally represented by the manufacturer for service, parts and technical information.
   4. The equivalent shall bear the same labels of performance certification as is applicable to the specified item, such as UL or NEMA labels.

H. Equipment, material or devices submitted for review as a "substitution" shall meet the following requirements:
   1. Submit electronic copy in pdf format of each request for substitution for consideration.
   2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete

documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
b. Samples, where applicable or requested.
c. A detailed comparison of significant qualities may include elements such as size, weight, durability, performance and visual effect.
d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
f. Cost information, including a proposal of the net change, if any in the Contract Sum.
g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
h. Engineer's Action: Within one (1) week of receipt of the request for substitution, the Engineer will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance of a product substitution will be in the form of an Addendum.
i. Other Conditions: The Contractor's substitution request will be received and considered by the Engineer when one or more of the following conditions are satisfied, as determined by the Engineer; otherwise requests will be returned without action except to record noncompliance with these requirements.
    1) The request is directly related to an "or equal" clause or similar language in the Contract Documents.
    2) The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
    3) A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Engineer for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

1.10 SUBMITTAL PROCEDURES

A. Provide Submittals in accordance with the requirements of Division 1 and as indicated in the following.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
   1. Include the following information on the label for processing and recording action taken.
      a. Project name.
      b. Date.
      c. Name and address of Engineer.
      d. Name and address of Contractor.
      e. Name and address of subcontractor.
      f. Name and address of supplier.
      g. Name of manufacturer.
      h. Number and title of appropriate Specification Section.
      i. Drawing number and detail references, as appropriate.

D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

E. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return promptly. Compliance with specified characteristics is the Contractor's responsibility.

F. Action Stamp: The Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, to indicate the action taken.

1.11 SHOP DRAWINGS

A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

B. The Contractor shall submit for review detailed Shop Drawings of all equipment and material specified in each section. No material or equipment may be delivered to the job site or installed until the Contractor has received shop drawings for the particular material or equipment which

have been properly reviewed. The Contractor shall submit for review copies of all shop drawings to be incorporated in the Electrical Contract. Refer to the General Conditions and Supplementary General Conditions for the format required for submission.

C. Provide shop drawings for all devices specified under equipment specifications for all systems including fire alarm, switchgear, lighting, etc., or where called for elsewhere in the Specifications. Shop drawings shall include manufacturers' names, catalog numbers, cuts, diagrams, dimensions, identification of products and materials included, compliance with specified standards, notation of coordination requirements, notation of dimensions established by field measurement and other such descriptive data as may be required to identify and accept the equipment. A complete list in each category (example: all fixtures) of all shop drawings, catalog cuts, material lists, etc., shall be submitted to the Engineer at one time. No consideration will be given to a partial shop drawing submittal.

D. Where multiple quantities or types of equipment are being submitted, provide a cover sheet (with a list of contents) on the submittal identifying the equipment or material being submitted.

E. Failure to submit shop drawings in ample time for review shall not entitle the Contractor to an extension of Contract time. No claim for extension by reason of such default will be allowed, nor shall the Contractor be entitled to purchase, furnish and/or install equipment which has not been reviewed by the Engineer.

F. The Contractor shall furnish all necessary templates, patterns, etc., for installation work and for the purpose of making adjoining work conform; furnish setting plans and shop details to other trades as required.

G. Acceptance rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are reviewed, review does not mean that drawings have been checked in detail; said approval does not in any way relieve the Contractor from his responsibility or necessity of furnishing material or performing work as required by the Contract Drawings and Specifications. Verify available space prior to submitting shop drawings.

H. Acceptance of shop drawings shall not apply to quantity nor relieve Contractor of his responsibility to comply with intent of Drawings and Specifications.

I. Acceptance of shop drawings is final and no further changes will be allowed without the written consent of the Engineer.

J. Shop drawing submittal sheets which may show items that are not being furnished shall have those items crossed off to clearly indicate which items will be furnished.

K. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

1.12 COORDINATION WITH OTHER DIVISIONS

A. All work shall be carried out in conjunction with other trades and full cooperation shall be given in order that all work may proceed with a minimum of delay and interference. Particular emphasis is placed on timely installation of major apparatus and furnishing other Contractors,

especially the Contractor or Construction Manager, with information as to openings, chases, sleeves, bases, inserts, equipment locations, panels, etc., required by other trades.

B. The Contractors are required to examine all of the Project Drawings and mutually arrange work so as to avoid interference with the work of other trades. In general, ductwork, heating, condenser, chilled water piping, sprinkler piping and drainage lines take precedence over water, gas and electrical conduits. The Engineer shall make final decisions regarding the arrangement of work which cannot be agreed upon by the Contractors.

C. Where the work of the Contractor will be installed in close proximity to or will interfere with work of other trades, the Contractors will cooperate in working out space conditions to make a satisfactory adjustment.

D. If the work under Section is installed before coordinating with other Divisions or Sections or so as to cause interference with work of other Sections, the necessary changes to correct the condition shall be made by the Contractor causing the interference without extra charge to the Owner.

1.13 WORKMANSHIP

A. Modification of References: In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, “shall” had been substituted for “should” wherever it appears.

B. Unless otherwise specifically indicated on the Drawings or Specifications, all equipment and materials shall be installed with the acceptance of the Engineer and in accordance with the recommendations of the manufacturer. This includes the performance of such tests as the manufacturer recommends.

C. All labor for installation of electrical systems shall be performed by experienced, skilled tradesmen under the supervision of a licensed journeyman foreman. All work shall be of a quality consistent with good trade practice and shall be installed in a neat, workmanlike manner. The Engineer reserves the right to reject any work which, in his opinion, has been installed in a substandard, dangerous or unserviceable manner. The Contractor shall replace said work in a satisfactory manner at no extra cost to the Owner.

1.14 SHUTDOWNS

A. When installation of a new system requires the temporary shutdown of an existing operating system, the connection of the new system shall be performed at such time as designated by the Owner.

B. The Owner shall be notified in writing of the estimated duration of the shutdown period at least seven (7) days in advance of the date the work is to be performed.

C. Work shall be arranged for continuous performance whenever possible. The Contractor shall provide all necessary labor, including overtime if required, to assure that existing operating services will be shut down only during the time actually required to make necessary connections.

1.15 TEMPORARY UTILITIES

A. General: Provide new materials and equipment; if acceptable to the Engineer, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Termination and Removal: Unless the Engineer requires that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired. Materials and facilities that constitute temporary facilities are property of the Contractor.

1.16 PROTECTION OF MATERIALS AND EQUIPMENT

A. Work under each Section shall include protecting the work and material of all other Sections from damage by work or workmen and shall include making good all damage thus caused.

B. The Contractor shall be responsible for work and equipment until the facility has been accepted by the Owner. Protect work against theft, injury or damage and carefully store material and equipment received on site which is not immediately installed. Close open ends of work with temporary covers or plugs during construction to prevent entry of foreign material.

C. Work under each Section includes receiving, unloading, uncrating, storing, protecting, setting in place and completely connecting equipment supplied under each Section. Work under each Section shall also include exercising special care in handling and protecting equipment and fixtures, and shall include the cost of replacing any of the equipment and fixtures which are missing or damaged.

D. Equipment and material stored on the job site shall be protected from the weather, vehicles, dirt and/or damage by workmen or machinery. Insure that all electrical or absorbent equipment or material is protected from moisture during storage.

1.17 ADJUSTING AND TESTING

A. After all the equipment and accessories to be furnished are in place, they shall be put in final adjustment and subjected to such operating tests so as to assure the Engineer that they are in proper adjustment and in satisfactory, permanent operating condition.

B. Where requested by the Engineer, a factory-trained service representative shall inspect the installation and assist in the initial startup and adjustment to the equipment. The period of these services shall be for such time as necessary to secure proper installation and adjustments. After the equipment is placed in permanent operation, the service representative shall supervise the initial operation of the equipment and instruct the personnel representative for operation and maintenance of the equipment. The service representative shall notify the Contractor in writing, that the equipment was installed according to manufacturers recommendations and is operating as intended by the manufacturer.

1.18 CLEANING

A. The Contractor shall thoroughly clean all equipment of all foreign substances, oils, dust, dirt, etc., inside and out before final acceptance by the Engineer.

B. During the course of construction, all conduits shall be capped in an acceptable manner to insure adequate protection against the entrance of foreign matter.

C. Upon completion of all work under the Contract, the Contractor shall remove from the premises all rubbish, debris and excess materials left over from his work.

D. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
   1. Remove labels that are not permanent labels.
   2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
   3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition.
   4. Wipe surfaces of electrical equipment. Remove excess lubrication and other substances.
   5. Clean light fixtures and lamps.

E. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove and dispose of ALL waste materials, packaging material, skids etc. from the site and dispose of in a lawful manner in accordance with municipal, state and federal regulations.

F. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

1.19 TRAINING

A. Where training is indicated within these specifications the following additional requirements must be provided.
   1. Provide demonstration and familiarization of the operating procedures for each system.
   2. Provide demonstration of routine maintenance procedures for equipment.

B. Training shall be of sufficient length to allow the trained staff to train their peers and to demonstrate the training sessions were effective.

1.20 OPERATING AND MAINTENANCE

A. Upon completion of all work and tests, the Contractor shall furnish the necessary skilled labor and helpers for operating his system and equipment for a period specified under each applicable Section of the Division. During this period, he shall fully instruct the Owner or the Owner's representative in the operation, adjustment and maintenance of all equipment furnished. The

Contractor shall give at least seven (7) days notice to the Owner and the Engineer in advance of this period.

B. The Contractor shall include the maintenance schedule for the principal items of equipment furnished under this Division.

C. The Contractor shall physically demonstrate procedures for all routine maintenance of all equipment furnished under each respective Section to assure accessibility to all devices.

D. Refer to individual trade Sections for any other particular requirements related to operating instructions.

1.21 OPERATING AND MAINTENANCE MANUALS

A. Prepare operating and maintenance manuals in accordance with the requirements of Division 1 and as follows. The Contractor shall prepare complete maintenance and operating instructions manual, in pdf format. Organize operating and maintenance data into tabs of suitable sets of manageable size. Mark appropriate identification on each tab.

B. Manual shall include the following:
1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
2. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
4. Servicing instructions and lubrication charts and schedules.
5. Emergency instructions.
6. Spare parts list.
7. Copies of warranties.
8. Wiring diagrams.
9. Inspection procedures.
10. Shop Drawings and Product Data.
11. Equipment start-up reports.

C. Maintenance and instruction manuals shall be submitted to the Owner at the same time as the seven (7) day notice is given prior to the instruction period.

1.22 ACCEPTANCES

A. The equipment, materials, workmanship, design and arrangement of all work installed under the Electrical Sections shall be subject to the review of the Engineer.

B. If extensive or unacceptable delivery time is expected on a particular item of equipment specified, the Contractor shall notify the Owner and Engineer, in writing, within thirty (30) days of the awarding of the Contract. In such instances, deviations may be made pending acceptance by the Engineer or the Owner's representative.

C. Where any specific material, process or method of construction or manufacturing article is specified by reference to the catalog number of a manufacturer, the Specifications are to be used as a guide and are not intended to take precedence over the basic duty and performance specified or noted on the Drawings. In all cases, the Contractor shall verify the duty specified with the specific characteristics of the equipment offered for review. Equipment characteristics are to be used as mandatory requirements where the Contractor proposes to use an acceptable equivalent.

D. If material or equipment is installed before it is reviewed and/or approved, the Contractor shall be liable for its removal and replacement at no extra charge to the Owner if, in the opinion of the Engineer, the material or equipment does not meet the intent of, or standard of quality implied by, the Drawings and Specifications.

E. Failure on the part of the Engineer to reject shop drawings or to reject work in progress shall not be interpreted as acceptance of work not in conformance with the Drawings and/or Specifications. Work not in conformance with the Drawings and/or Specifications shall be corrected whenever it is discovered.

1.23 RECORD DRAWINGS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Engineer's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing condition fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
   1. Mark record sets with red erasable pencil; use other color to distinguish between variations in separate categories of the Work.
   2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
   3. Note related Change Order numbers where applicable.
   4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification of the cover of each set.

1.24 WARRANTIES AND BONDS

A. The following general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties are to be included:
   1. General close-out requirements included in Section "CLOSEOUT PROCEDURES."
   2. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor

does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

C. Separate Prime Contracts: Each prime Contractor is responsible for warranties related to its own Contract.

1.25 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, right and remedies otherwise available under law, nor shall warranty periods be interpreted as limitation on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections of products with warranties not in conflict with requirements of the Contract Documents.

F. The Owner reserves the right to refuse to accept the Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entitles required to countersign such commitments are willing to do so.

G. Manufacturer's warranties shall not start until the date of Substantial Completion or, until all aspects of the commissioning of the respective system are complete and accepted by the Commissioning Authority and the Owner, whichever date is later. The Contractor responsible for this section shall include in their base bid any additional cost for extending manufacturer's warranties until the date of Substantial Completion or, until all aspects of the commissioning of the respective system are complete and accepted by the Commissioning Authority and the Owner, whichever date is later.

H. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Engineer for approval prior to final execution.
   1. Refer to individual Sections of Divisions 2 through 32 for specific content requirements, and particular requirements for submittal of special warranties.

I. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

J. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
   1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
   2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name of the Contractor.
   3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

K. All warranties shall clearly present the start and end dates. Dates shall meet specified requirements of corresponding specification sections. Dates shall also meet requirements of DIVISION 1 – WARRANTIES.

1.26 GUARANTEES

A. The Contractor shall guarantee all material and workmanship under these Specifications and the Contract for a period of one (1) year from the date of final acceptance by Owner. During this guarantee period, all defects developing through faulty equipment, materials or workmanship shall be corrected or replaced immediately by this Contractor without expense to the Owner. Such repairs or replacement shall be made to the Engineers satisfaction.

B. Contractor shall provide name, address, and phone number of all Contractors and Subcontractors and associated equipment they provided.

1.27 PROJECT CLOSE-OUT

A. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

B. Deliver tools, spare parts, extra stock, and similar items.

C. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, and similar elements.

D. Complete final clean up requirements, including tough-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 260000

SECTION 260100 – ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general requirements for demolition of electrical systems and materials.

B. Comply with NEC, NECA, NFPA, and OSHA requirements.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.1 TEMPORARY CONNECTIONS

A. The Owner may occupy portions of the building immediately adjacent to the area of demolition. Arrange demolition, including temporary connections, so as not to interfere with the Owner's operations.

3.2 REMOVAL AND DISPOSAL OF DEMOLITION MATERIAL

A. Materials and equipment to be removed, except items specifically noted to be relocated or delivered to the Owner, become the property of the Contractor and shall be immediately removed from the Project and legally disposed of. All salvaged items belonging to the Owner shall be stored in a secure area until delivery to the Owner as directed. Transport all such items to the Owner's designated storage area.

B. Protect adjacent building services and materials indicated to remain. Install and maintain barriers to keep dirt, dust and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition is completed. If infiltration of dust or dirt results due to improper barriers, Contractor shall be responsible for all maintenance and cleaning.

C. Where electrical work to remain is damaged or disturbed in the course of the work, the Contractor shall remove damaged portions and provide new products of equal capacity, quality, and functionality at no additional cost to the Owner.

D. Unless otherwise noted, demolish and remove existing electrical materials and equipment only to the extent required by new construction and as indicated. Removal of equipment shall not interfere with existing operations.

E. Notify Architect of discrepancies between existing conditions and the Drawings before proceeding with demolition or renovation.

F. During construction the Contractor shall at all times maintain electrical utilities of the building without interruption. Should it be necessary to interrupt any electrical service or utility, the Contractor shall secure permission in writing from the Owner's representative at least (7) business days in advance. Any interruption shall be made with minimum amount of inconvenience to the Owner.

1. Services passing through areas of remodeling shall be maintained throughout the construction period.
2. Circuits serving areas adjacent to the construction that are modified as part of the renovation shall be re-circuited as part of the Project.
3. Provide temporary and/or modify existing emergency power, emergency lighting, fire alarm, and other life safety services as required for the construction period.

G. Turn off circuit breakers or switches serving abandoned circuits at the commencement of work and tag breaker or switch and label in panel schedule as "Spare".

H. Remove conduit and wire back to panelboards or to nearest junction box that is not being removed and needs to remain in service. Wire shall be removed back to point of origin.

I. Conduit and Junction Boxes:

1. Conduit and boxes in existing walls to be demolished shall be removed.
2. Conduit and boxes in existing walls to remain (if not reused) shall be removed.
3. Conduit in existing ceilings that is not intended for reuse shall be removed back to the panelboard from where it originates.
4. Conduits that had been run in existing slabs shall be saw-cut off flush where they exit the slab and sealed.

J. Conductors:

1. Conductors that are not to be reused shall be removed back to the nearest point-of-use. Where the entire circuit is to be removed, the conductors shall be removed back to the panelboard from which they originate.
2. Whenever it is necessary to withdraw conductors from existing raceways, new conductors shall be installed.

K. Demolished items, rubbish and debris shall be removed from the construction site daily, and at the completion of the Work. Floors shall be swept clean daily.

END OF SECTION 260100

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Alpha Wire Company.
2. Cerro Wire LLC.
3. Encore Wire Corporation.
4. General Cable; Prysmian Group North America.
5. Okonite Company (The).
6. Southwire Company.

C. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

E. Conductor Insulation:

1. Type THHN and Type THWN-2: Comply with UL 83.

2.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders:

1. Copper; stranded.

B. Branch Circuits:

1. Copper, stranded.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.

B. Feeders: Type THHN/THWN-2, single conductors in raceway.

C. Branch Circuits: Type THHN/THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

3.6 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes grounding and bonding systems and equipment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ABB, Electrification Products Division.
2. Advanced Lightning Technology, Ltd.
3. Burndy; Hubbell Incorporated, Construction and Energy.
4. ERICO; nVent.
5. Fushi Copperweld Inc.
6. Galvan Industries, Inc.; Electrical Products Division, LLC.
7. Harger Lightning & Grounding.
8. ILSCO.
9. O-Z/Gedney; Emerson Electric Co., Automation Solutions, Appleton Group.

2.3 CONDUCTORS

A. Insulated Conductors: Copper wire insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B3.
2. Stranded Conductors: ASTM B8.

3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
5. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inch (41 mm) wide and 1/16 inch (1.6 mm) thick.

2.4 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

C. Mechanical-Type Bus-Bar Connectors: Cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.

E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.

F. Conduit Hubs: Mechanical type, terminal with threaded hub.

G. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.

H. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.

2.5 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch by 10 ft. (19 mm by 3 m)

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except as otherwise indicated.
3. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

A. Equipment grounding conductors and grounding electrode conductors must be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.4 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inch (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

D. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.

3.5 FIELD QUALITY CONTROL

A. Inspections:

1. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel slotted support systems.
2. Conduit and cable support devices.
3. Structural steel for fabricated supports and restraints.
4. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
5. Fabricated metal equipment support assemblies.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32 inch (10 mm) diameter holes at a maximum of 8 inch (200 mm) on center in at least one surface.

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Material for Channel, Fittings, and Accessories: Galvanized steel.
3. Channel Width: Selected for applicable load criteria.
4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

B. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.

D. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325 (Grade A325M).
6. Toggle Bolts: All steel springhead type.
7. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 SELECTION

A. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

B. Comply with requirements for raceways and boxes specified in Section 260533 "Raceway and Boxes for Electrical Systems."

C. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and ERMC as required by NFPA 70. Minimum rod size must be 1/4 inch (6 mm) in diameter.

D. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 INSTALLATION OF SUPPORTS

A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.

B. Raceway Support Methods: In addition to methods described in NECA NEIS 1, EMT may be supported by openings through structure members, in accordance with NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.

3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
6. To Light Steel: Sheet metal screws.
7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal conduits and fittings.
2. Nonmetallic conduits and fittings.
3. Metal wireways and auxiliary gutters.
4. Surface raceways.
5. Boxes, enclosures, and cabinets.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Metal Conduit:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ABB, Electrification Products Division.
b. AFC Cable Systems; Atkore International.
c. Allied Tube & Conduit; Atkore International.
d. O-Z/Gedney; Emerson Electric Co., Automation Solutions, Appleton Group.

2. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. GRC: Comply with ANSI C80.1 and UL 6.
4. IMC: Comply with ANSI C80.6 and UL 1242.
5. EMT: Comply with ANSI C80.3 and UL 797.
6. FMC: Comply with UL 1; zinc-coated steel.

B. Metal Fittings: Comply with NEMA FB 1 and UL 514B.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ABB, Electrification Products Division.
b. AFC Cable Systems; Atkore International.
c. Allied Tube & Conduit; Atkore International.

d. O-Z/Gedney; Emerson Electric Co., Automation Solutions, Appleton Group.

2. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. Fittings, General: Listed and labeled for type of conduit, location, and use.
4. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
5. Fittings for EMT:

   a. Material: Steel.
   b. Type: Setscrew.

6. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.

C. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS AND FITTINGS

A. Nonmetallic Conduit:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. ABB, Electrification Products Division.
   b. AFC Cable Systems; Atkore International.
   c. CertainTeed Corporation; Saint-Gobain North America.
   d. Champion Fiberglass, Inc.
   e. Condux International, Inc.

B. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
2. LFNC: Comply with UL 1660.

C. Nonmetallic Fittings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. ABB, Electrification Products Division.
   b. AFC Cable Systems; Atkore International.
   c. CertainTeed Corporation; Saint-Gobain North America.

d. Champion Fiberglass, Inc.
e. Kraloy Fittings.

2. Fittings, General: Listed and labeled for type of conduit, location, and use.
3. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
4. Fittings for LFNC: Comply with UL 514B.
5. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ABB, Electrification Products Division.
2. B-line; Eaton, Electrical Sector.
3. Hoffman; nVent.
4. MonoSystems, Inc.
5. Square D; Schneider Electric USA.
6. Wiegmann; Hubbell Incorporated, Commercial and Industrial.

B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 unless otherwise indicated, and sized according to NFPA 70.

C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ABB, Electrification Products Division.
2. Crouse-Hinds; Eaton, Electrical Sector.
3. EGS; Emerson Electric Co., Automation Solutions, Appleton Group.
4. Erickson Electrical Equipment Company.
5. Hoffman; nVent.
6. Hubbell Incorporated.
7. Milbank Manufacturing Co.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

F. Box extensions used to accommodate new building finishes shall be of same material as recessed box.

G. Device Box Dimensions: 4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep).

H. Gangable boxes are allowed.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: GRC.
2. Underground Conduit: RNC, Type EPC-40-PVC.
3. Boxes and Enclosures, Aboveground: NEMA 250, Type 4.

B. Indoors: Apply raceway products as specified below unless otherwise indicated.

1. Exposed: EMT.
2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
4. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

C. Minimum Raceway Size: 1/2-inch (16-mm) trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. EMT: Use setscrew or compression, steel fittings. Comply with NEMA FB 2.10.
3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Install surface raceways only where indicated on Drawings.

3.2 INSTALLATION

A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

C. Do not fasten conduits onto the bottom side of a metal deck roof.

D. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

E. Arrange stub-ups so curved portions of bends are not visible above finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.

G. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.

H. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

I. Support conduit within 12 inches (300 mm) of enclosures to which attached.

J. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Arrange raceways to keep a minimum of 2 inches (50 mm) of concrete cover in all directions.
4. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.
5. Change from ENT to GRC or IMC before rising above floor.

K. Stub-ups to Above Recessed Ceilings:

1. Use EMT for raceways.
2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

L. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

M. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

N. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

O. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35-mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

P. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

Q. Surface Raceways:

1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

R. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.

S. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where an underground service raceway enters a building or structure.
2. Conduit extending from interior to exterior of building.
3. Where otherwise required by NFPA 70.

T. Expansion-Joint Fittings:

1. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
2. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

U. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches (915 mm) of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC in damp or wet locations not subject to severe physical damage.

V. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements.

W. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

X. Locate boxes so that cover or plate will not span different building finishes.

Y. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

Z. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 312000 "Earth Moving" for pipe less than 6 inches (150 mm) in nominal diameter.
2. Install backfill as specified in Section 312000 "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 312000 "Earth Moving."
4. Install manufactured duct elbows for stub-up at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
    b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.

6. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."

3.4 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.5 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.6 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Color and legend requirements for conductors, and warning labels and signs.
2. Labels.
3. Tapes and stencils.
4. Signs.
5. Fasteners for labels and signs.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with NFPA 70.

B. Comply with ANSI Z535.4 for safety signs and labels.

C. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Color-Coding for Phase and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service and feeder conductors.

1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
2. Colors for 208/120-V Circuits:

a. Phase A: Black.
b. Phase B: Red.
c. Phase C: Blue.

3. Color for Neutral: White or gray.
4. Color for Equipment Grounds: Green.

B. Warning labels and signs shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

C. Equipment Identification Labels:

1. Black letters on a white field.

2.3 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Carlton Industries, LP.
b. Champion America.
c. Ideal Industries, Inc.
d. Marking Services, Inc.
e. Panduit Corp.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide; compounded for outdoor use.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Brady Corporation.
b. Carlton Industries, LP.
c. emedco.
d. Marking Services, Inc.

C. Underground-Line Warning Tape:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Brady Corporation.

b. Brimar Industries, Inc.
c. Ideal Industries, Inc.
d. LEM Products Inc.
e. Marking Services, Inc.
f. Reef Industries, Inc.

2. Tape:

a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical lines.
b. Printing on tape shall be permanent and shall not be damaged by burial operations.
c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

2.4 SIGNS

A. Laminated Acrylic or Melamine Plastic Signs:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Brady Corporation.
b. Carlton Industries, LP.
c. emedco.
d. Marking Services, Inc.

2. Engraved legend.
3. Thickness:

a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
c. Engraved legend with black letters on white face.
d. Punched or drilled for mechanical fasteners with 1/4-inch (6.4-mm) grommets in corners for mounting.
e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of each item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

H. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.

I. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.

1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

J. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches (400 mm) overall.
2. Install underground-line warning tape for direct-buried cables and cables in raceways.

K. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on minimum 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use signs minimum 2 inches (50 mm) high.

3.2 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Locations of Underground Lines: Underground-line warning tape for power, and controls.

D. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.

E. Arc Flash Warning Labeling: Self-adhesive labels.

F. Operating Instruction Signs: Self-adhesive labels.

G. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.
2. Outdoor Equipment: Laminated acrylic or melamine sign.

END OF SECTION 260553

SECTION 262413 - SWITCHBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Distribution switchboard rated 600 V and less.
2. Surge protection devices.
3. Disconnecting and overcurrent protective devices.
4. Instrumentation.
5. Control power.
6. Accessory components and features.
7. Identification.

1.2 ACTION SUBMITTALS

A. Product Data: For each switchboard, overcurrent protective device, surge protection device, accessory, and component.

B. Shop Drawings: For each switchboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboard and overcurrent protective devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
6. Include schematic and wiring diagrams for power, signal, and control wiring.

1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.4 FIELD CONDITIONS

A. Environmental Limitations:

1. Do not deliver or install switchboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above switchboards is complete, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

   a. Ambient Temperature: Not exceeding 104 deg F (40 deg C).
   b. Altitude: Not exceeding 6600 feet (2000 m).

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace switchboard enclosures, buswork, overcurrent protective devices, accessories, and factory installed interconnection wiring that fail in materials or workmanship within specified warranty period.

   1. Warranty Period: Three years from date of Substantial Completion.

B. Manufacturer's Warranty: Manufacturer's agrees to repair or replace surge protection devices that fail in materials or workmanship within specified warranty period.

   1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SWITCHBOARDS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   1. ABB, Electrification Products Division.
   2. Siemens Industry, Inc., Energy Management Division.
   3. Square D; Schneider Electric USA.

B. Source Limitations: Obtain switchboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

   1. Main Section: 30-inches wide by 24-inches deep.
   2. Feeder Section: 42-inches wide by 24-inches deep.

D. Comply with NEMA PB 2.

E. Comply with NFPA 70.

F. Comply with UL 891.

G. Front-Connected, Front-Accessible Switchboards:

   1. Branch Devices: Panel mounted.

2. Sections front and rear aligned.

H. Nominal System Voltage: 208Y/120 V.

I. Main-Bus Continuous: As indicated.

J. Indoor Enclosures: Steel, NEMA 250, Type 1.

K. Hinged Front Panels: Allow access to circuit breaker, accessory, and blank compartments.

L. Buses and Connections: Three phase, four wire unless otherwise indicated.

1. Provide phase bus arrangement A, B, C from front to back, top to bottom, and left to right when viewed from the front of the switchboard.
2. Phase- and Neutral-Bus Material: Tin-plated, high-strength, electrical-grade aluminum alloy with tin-plated aluminum circuit-breaker line connections.
3. Tin-plated aluminum feeder circuit-breaker line connections.
4. Ground Bus: Minimum-size required by UL 891, hard-drawn copper of 98 percent conductivity, equipped with mechanical connectors for feeder and branch-circuit ground conductors.
5. Main-Phase Buses and Equipment-Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
6. Neutral Buses: 50 percent of the ampacity of phase buses unless otherwise indicated, equipped with mechanical connectors for outgoing circuit neutral cables. Brace bus extensions for busway feeder neutral bus.

M. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

2.2 SURGE PROTECTION DEVICES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Siemens Industry, Inc., Energy Management Division.
2. Square D; Schneider Electric USA.

B. SPDs: Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 1449, Type 1.

C. Features and Accessories:

1. Indicator light display for protection status.
2. Surge counter.

D. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 250kA. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

E. Protection modes and UL 1449 VPR for grounded wye circuits with 208Y/120 V, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: 700 V for 208Y/120 V.
2. Line to Ground: 1200 V for 208Y/120 V.
3. Line to Line: 1000 V for 208Y/120 V.

F. SCCR: Equal or exceed 200 kA.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

a. Standard frame sizes, trip ratings, and number of poles.
b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.

2.4 INSTRUMENTATION

A. Multifunction Digital-Metering Monitor: Microprocessor-based unit suitable for three- or four-wire systems and with the following features:

1. Switch-selectable digital display of the following values with maximum accuracy tolerances as indicated:

a. Phase Currents, Each Phase: Plus or minus 0.5 percent.
b. Phase-to-Phase Voltages, Three Phase: Plus or minus 0.5 percent.
c. Phase-to-Neutral Voltages, Three Phase: Plus or minus 0.5 percent.
d. Megawatts: Plus or minus 1 percent.
e. Megavars: Plus or minus 1 percent.
f. Power Factor: Plus or minus 1 percent.
g. Frequency: Plus or minus 0.1 percent.
h. Accumulated Energy, Megawatt Hours: Plus or minus 1 percent; accumulated values unaffected by power outages up to 72 hours.

2. Mounting: Display and control unit flush or semiflush mounted in instrument compartment door.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Receive, inspect, handle, and store switchboards according to NECA 400.

B. Install switchboards and accessories according to NECA 400.

C. Equipment Mounting: Install switchboard on existing concrete.

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
2. For supported equipment, install epoxy-coated anchor bolts into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to switchboards.
5. Anchor switchboard to building structure at the top of the switchboard if required or recommended by the manufacturer.

D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, straps and brackets, and temporary blocking of moving parts from switchboard units and components.

E. Operating Instructions: Frame and mount the printed basic operating instructions for switchboards, including emergency procedures. Fabricate frame of finished wood or metal and cover instructions with clear acrylic plastic. Mount on front of switchboards.

F. Install filler plates in unused spaces of panel-mounted sections.

G. Install overcurrent protective devices, surge protection devices, and instrumentation.

H. Comply with NECA 1.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

B. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

C. Device Nameplates: Label each disconnecting and overcurrent protective device mounted in compartment doors with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Acceptance Testing:

a. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit. Open control and metering circuits within the

switchboard, and remove neutral connection to surge protection and other electronic devices prior to insulation test. Reconnect after test.

b. Test continuity of each circuit.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
3. Correct malfunctioning units on-site where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3.4 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories.

END OF SECTION 262413

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Molded-case circuit breakers (MCCBs).
2. Enclosures.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

B. Shop Drawings: For enclosed switches and circuit breakers.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include wiring diagrams for power, signal, and control wiring.

1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.4 WARRANTY

A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and application.

C. Comply with NFPA 70.

2.2 MOLDED-CASE CIRCUIT BREAKERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ABB, Electrification Products Division.
2. Siemens Industry, Inc., Energy Management Division.
3. Square D; Schneider Electric USA.

B. Circuit breakers shall be constructed using glass-reinforced insulating material. Current carrying components shall be completely isolated from the handle and the accessory mounting area.

C. Circuit breakers shall have a toggle operating mechanism with common tripping of all poles, which provides quick-make, quick-break contact action. The circuit-breaker handle shall be over center, be trip free, and reside in a tripped position between on and off to provide local trip indication. Circuit-breaker escutcheon shall be clearly marked on and off in addition to providing international I/O markings. Equip circuit breaker with a push-to-trip button, located on the face of the circuit breaker to mechanically operate the circuit-breaker tripping mechanism for maintenance and testing purposes.

D. The maximum ampere rating and UL, IEC, or other certification standards with applicable voltage systems and corresponding interrupting ratings shall be clearly marked on face of circuit breaker. Circuit breakers shall be 100 percent rated.

E. MCCBs shall be equipped with a device for locking in the isolated position.

F. Standards: Comply with UL 489 with interrupting capacity to comply with available fault currents.

G. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Long- and short-time pickup levels.
2. Long- and short-time time adjustments.
3. Ground-fault pickup level, time delay, and I-squared t response.

H. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.

2.3 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: UL 489, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

B. Conduit Entry: NEMA 250 Types 4 enclosures shall contain no knockouts.

C. Operating Mechanism: The circuit-breaker operating handle shall be externally operable with the operating mechanism being an integral part of the box, not the cover. The cover interlock mechanism shall have an externally operated override. The override shall not permanently

disable the interlock mechanism, which shall return to the locked position once the override is released. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

D. Enclosures designated as NEMA 250 Type 4 shall have a dual cover interlock mechanism to prevent unintentional opening of the enclosure cover when the circuit breaker is ON and to prevent turning the circuit breaker ON when the enclosure cover is open.

PART 3 - EXECUTION

3.1 ENCLOSURE ENVIRONMENTAL RATING APPLICATIONS

A. Enclosed Switches and Circuit Breakers: Provide enclosures at installed locations with the following environmental ratings.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 4.
3. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
4. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
5. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

3.2 INSTALLATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

C. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Comply with NFPA 70 and NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections for Molded Case Circuit Breakers:

1. Visual and Mechanical Inspection:

    a. Verify that equipment nameplate data are as described in the Specifications and shown on the Drawings.
    b. Inspect physical and mechanical condition.
    c. Inspect anchorage, alignment, grounding, and clearances.
    d. Verify that the unit is clean.
    e. Operate the circuit breaker to ensure smooth operation.
    f. Inspect bolted electrical connections for high resistance using one of the two following methods:

        1) Use a low-resistance ohmmeter.

            a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.

        2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.

            a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.

    g. Inspect operating mechanism, contacts, and chutes in unsealed units.

2. Electrical Tests:

    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
    b. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with circuit breaker closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
    c. Perform a contact/pole resistance test. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
    d. Perform insulation resistance tests on all control wiring with respect to ground. Applied potential shall be 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable. Test duration shall be one minute. For units with solid state components, follow manufacturer's recommendation. Insulation resistance values shall be no less than two megohms.
    e. Determine the following by primary current injection:

1) Long-time pickup and delay. Pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
2) Short-time pickup and delay. Short-time pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
3) Ground-fault pickup and time delay. Ground-fault pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
4) Instantaneous pickup. Instantaneous pickup values shall be as specified and within manufacturer's published tolerances.

f. Perform minimum pickup voltage tests on shunt trip and close coils in accordance with manufacturer's published data. Minimum pickup voltage of the shunt trip and close coils shall be as indicated by manufacturer.
g. Verify correct operation of auxiliary features such as trip and pickup indicators; zone interlocking; electrical close and trip operation; trip-free, anti-pump function; and trip unit battery condition. Reset all trip logs and indicators. Investigate units that do not function as designed.
h. Verify operation of charging mechanism. Investigate units that do not function as designed.

3. Correct malfunctioning units on-site, and retest to demonstrate compliance; otherwise, replace with new units and retest.
4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

B. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

END OF SECTION 262816

SECTION 263213.13 - DIESEL-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes packaged engine generators used to supply non-emergency power, with the following features:

1. Diesel engine.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Generator overcurrent and fault protection.
5. Generator, exciter, and voltage regulator.
6. Vibration isolation devices.

B. Related Requirements:

1. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

PART 2 - PRODUCTS

2.1 Generator shall be furnished by the Owner for installation by the Contractor.

2.2 PERFORMANCE REQUIREMENTS

A. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Owner no fewer than seven working days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Owner's written permission.

B. Comply with NECA 1 and NECA 404.

C. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.

D. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

E. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

F. Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.2 CONNECTIONS

A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.

3.3 IDENTIFICATION

A. Install a sign indicating the generator neutral is bonded to the main service neutral at the main service location.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections with the assistance of a factory-authorized service representative.

B. Tests and Inspections:

1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in first two subparagraphs below, as specified in NETA ATS. Certify compliance with test parameters.

a. Visual and Mechanical Inspection:

1) Compare equipment nameplate data with Drawings and the Specifications.
2) Inspect physical and mechanical condition.

3) Inspect anchorage, alignment, and grounding.
4) Verify that the unit is clean.

b. Electrical and Mechanical Tests:

1) Perform insulation-resistance tests according to IEEE 43.

a) Machines Larger Than 200 hp (150 kW): Test duration shall be 10 minutes. Calculate polarization index.
b) Machines 200 hp (150 kW) or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.

2) Test protective relay devices.
3) Verify phase rotation, phasing, and synchronized operation as required by the application.
4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
5) Verify correct functioning of the governor and regulator.

2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
c. Verify acceptance of charge for each element of the battery after discharge.
d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
7. Harmonic-Content Tests: Measure harmonic content of output voltage at 25 and 100 percent of rated linear load. Verify that harmonic content is within specified limits.

C. Coordinate tests with tests for transfer switches and run them concurrently.

D. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.

E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.

G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

H. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.

I. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION 263213

SECTION 263600 - TRANSFER SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes automatic transfer switches rated 600 V and less.

PART 2 - PRODUCTS

2.1 Transfer switch shall be provided by the Owner for installation by the Contractor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount to structural frame.

1. Install transfer switches on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.

B. Identify components according to Section 260553 "Identification for Electrical Systems."

C. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

D. Comply with NECA 1.

3.2 CONNECTIONS

A. Wiring to Remote Components: Match type and number of cables and conductors to generator sets, control, and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

B. Wiring Method: Install cables in raceways and except within electrical enclosures.

1. Comply with requirements for raceways and boxes specified in Section 260533 "Raceways and Boxes for Electrical Systems."

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.

D. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

E. Route and brace conductors according to manufacturer's written instructions and Section 260529 "Hangers and Supports for Electrical Systems." Do not obscure manufacturer's markings and labels.

F. Final connections to equipment shall be made with liquidtight, flexible metallic conduit no more than 18 inches (457 mm) in length.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Visual and Mechanical Inspection:

   a. Compare equipment nameplate data with Drawings and Specifications.
   b. Inspect physical and mechanical condition.
   c. Inspect anchorage, alignment, grounding, and required clearances.
   d. Verify that the unit is clean.
   e. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
   f. Verify that manual transfer warnings are attached and visible.
   g. Verify tightness of all control connections.
   h. Inspect bolted electrical connections for high resistance using one of the following methods, or both:

      1) Use of low-resistance ohmmeter.
      2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method according to manufacturer's published data.

   i. Perform manual transfer operation.
   j. Verify positive mechanical interlocking between normal and alternate sources.
   k. Perform visual and mechanical inspection of surge arresters.
   l. Inspect control power transformers.

      1) Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.
      2) Verify that primary and secondary fuse or circuit-breaker ratings match Drawings.
      3) Verify correct functioning of drawout disconnecting contacts, grounding contacts, and interlocks.

2. Electrical Tests:

   a. Perform insulation-resistance tests on all control wiring with respect to ground.
   b. Verify settings and operation of control devices.
   c. Calibrate and set all relays and timers.
   d. Verify phase rotation, phasing, and synchronized operation.

e. Perform automatic transfer tests.
f. Verify correct operation and timing of the following functions:

1) Normal source voltage-sensing and frequency-sensing relays.
2) Engine start sequence.
3) Time delay on transfer.
4) Alternative source voltage-sensing and frequency-sensing relays.
5) Automatic transfer operation.
6) Interlocks and limit switch function.
7) Time delay and retransfer on normal power restoration.
8) Engine cool-down and shutdown feature.

3. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.

a. Check for electrical continuity of circuits and for short circuits.
b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
c. Verify that manual transfer warnings are properly placed.
d. Perform manual transfer operation.

4. After energizing circuits, perform each electrical test for transfer switches stated in NETA ATS and demonstrate interlocking sequence and operational function for each switch at least three times.

a. Simulate power failures of normal source to automatic transfer switches and retransfer from emergency source with normal source available.
b. Simulate loss of phase-to-ground voltage for each phase of normal source.
c. Verify time-delay settings.
d. Verify pickup and dropout voltages by data readout or inspection of control settings.
e. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.

B. Coordinate tests with tests of generator and run them concurrently.

C. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

D. Transfer switches will be considered defective if they do not pass tests and inspections.

E. Remove and replace malfunctioning units and retest as specified above.

F. Prepare test and inspection reports.

G. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.

1. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
2. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
3. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment.

B. Coordinate this training with that for generator equipment.

END OF SECTION 263600

MUNICIPALITY OF SKAGWAY BOROUGH

STAND-BY GENERATOR

Skagway, Alaska

JULY 26, 2021

ARCHITECT
JENSEN YORBA WALL, INC.
522 WEST 10TH STREET
JUNEAU, ALASKA 99901
(907) 586-1070
FAX (844) 350-5352

ELECTRICAL ENGINEER
BEGENYI ENGINEERING, LLC
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SHEET INDEX

7-26-2021

Jensen Yorba Wall Inc.

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Juneau, Alaska 99801
907.586.1070
AECC137
jensenyorbawall.com

FILE: 20002

A001

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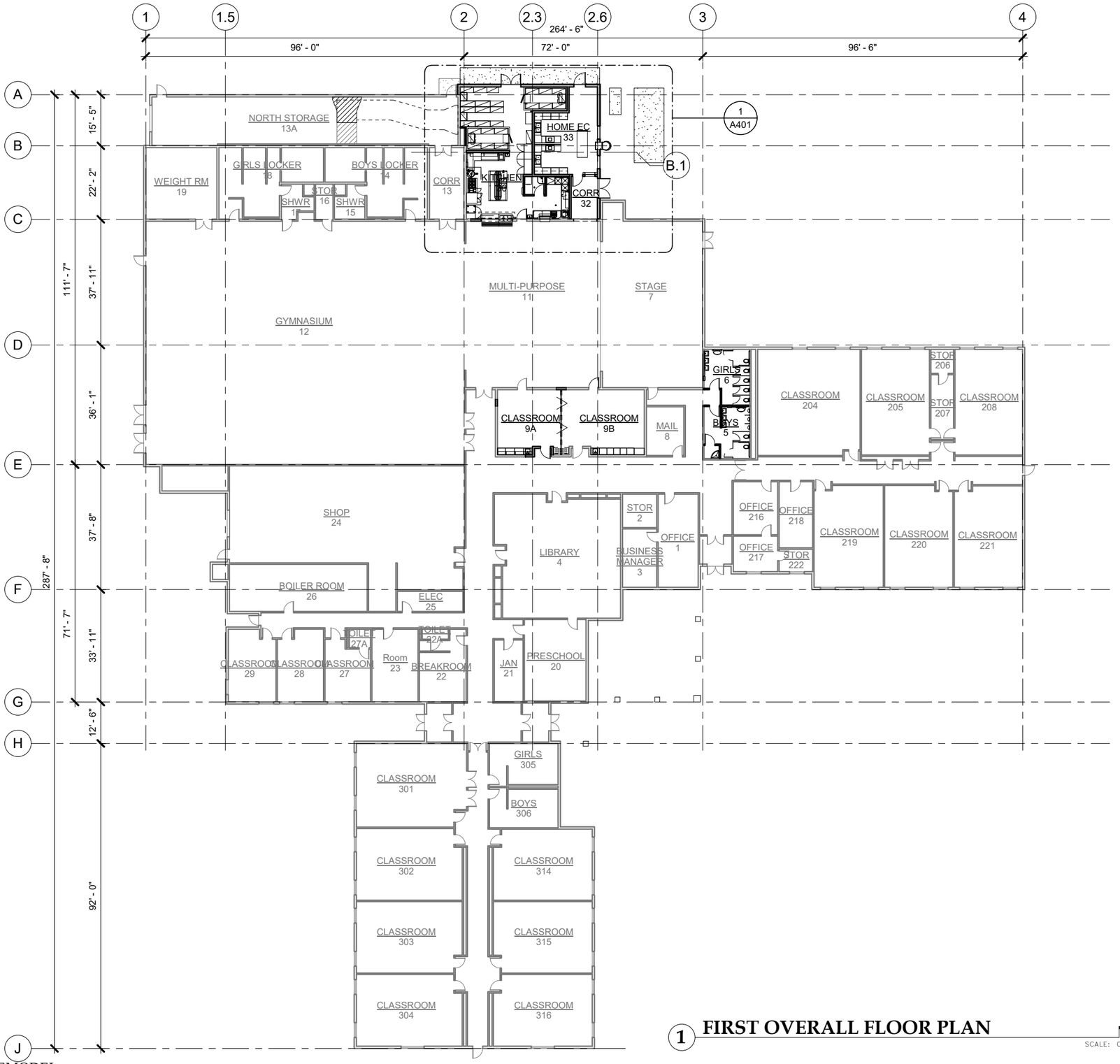

1 FIRST OVERALL FLOOR PLAN

SCALE: 0 8' 16' 32'

Jensen Yorba Wall Inc.
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Juneau, Alaska 99801
907.586.1070
AECC137
jensenyorbawall.com

7-26-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

STAND-BY GENERATOR

Skagway, Alaska

95% SET

REVISIONS

SHEET TITLE
FIRST FLOOR OVERALL PLAN

DATE: JULY 26, 2021
FILE: 20002

A201

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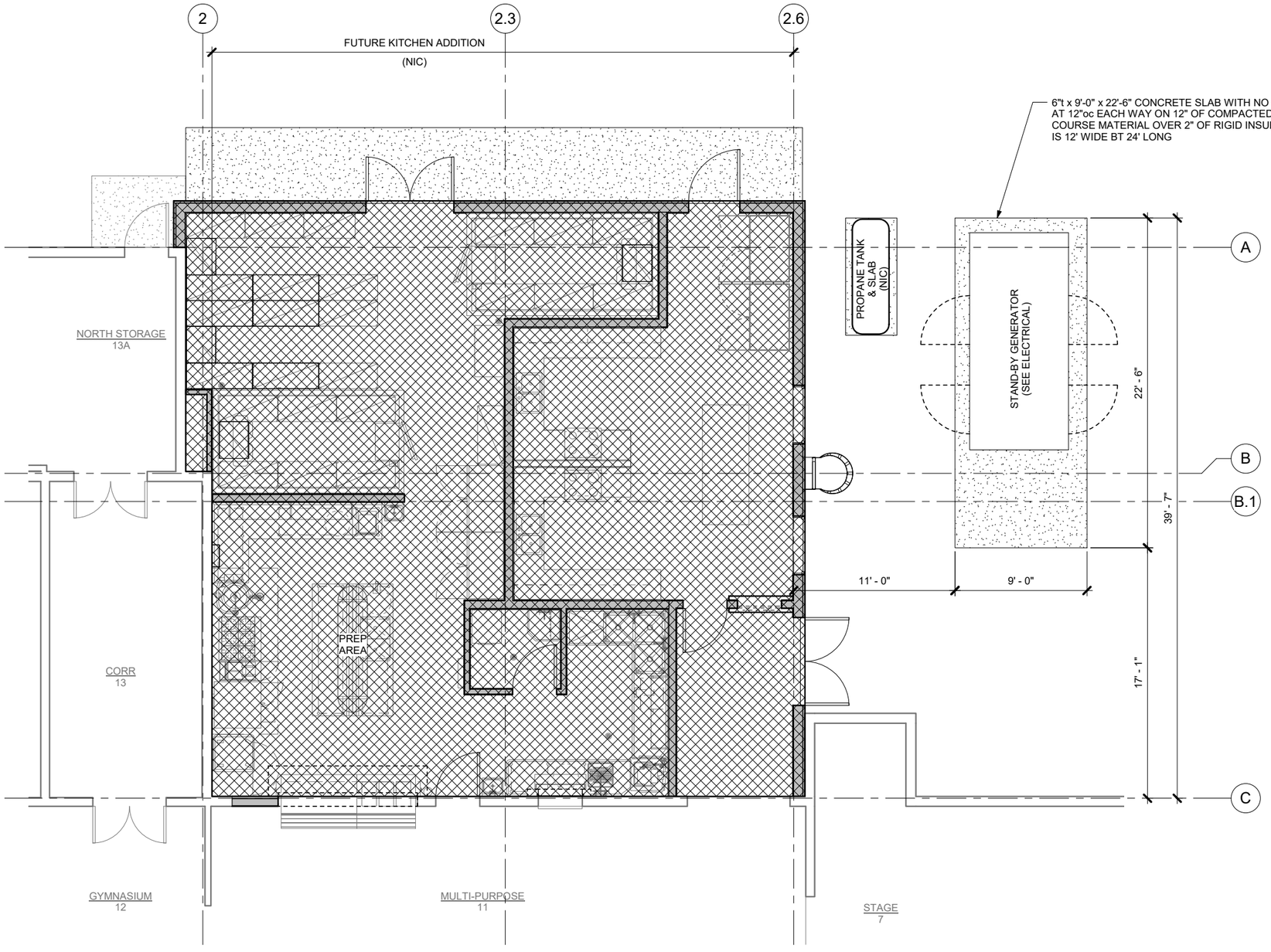

1 ENLARGED FLOOR PLAN

SCALE: 0 2' 4' 8'

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7-26-2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

STAND-BY GENERATOR

Skagway, Alaska

95% SET

REVISIONS

SHEET TITLE

ENLARGED FLOOR PLAN

DATE: JULY 26, 2021
FILE: 20002

A401

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DISTRIBUTION

- BRANCH CIRCUIT PANELBOARD
- MOTOR CONNECTION
- TRANSFORMER
- SERVICE OR DISTRIBUTION EQUIPMENT
- UTILITY METER
- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- COMBINATION STARTER
- STARTER OR CONTACTOR

DIAGRAMS

- 20/1 CIRCUIT BREAKER
- SHUNT TRIP COIL
- SWITCH
- TRANSFER SWITCH
- FUSE
- 400AS 250AF FUSED SWITCH WITH SWITCH AND FUSE RATING
- TRANSFORMER
- PUSHBUTTON STATION

REFERENCE SYMBOLS

12	SHEET NOTE REFERENCE
1 / E201	DETAIL REFERENCE
(E)	EXISTING
(F)	FUTURE
(N)	NEW
(X)	DEMOLISH
(RL)	RELOCATE
(P)	REPLACE
(X/S)	REMOVE AND SALVAGE

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AF	AMPERE (RATED) FUSE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AS	AMPERE (RATED) SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CLG	CEILING
CT	CURRENT TRANSFORMER
DIA	DIAMETER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EPO	EMERGENCY–POWER–OFF
FLA	FULL LOAD AMPERES
GFI	GROUND FAULT CIRCUIT INTERRUPTER
G	GROUND
GD	GARBAGE DISPOSAL
HOA	HAND–OFF–AUTO
HP	HORSEPOWER
HZ	HERTZ
KW	KILOWATTS
KVA	KILOVOLT–AMPERES
MLO	MAIN LUGS ONLY
MTD	MOUNTED
N	NEUTRAL (GROUNDED CONDUCTOR)
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OL	OVERLOAD
PH	PHASE
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LAB
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT–AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER

ELECTRICAL DRAWING LIST

E001	LEGEND AND ABBREVIATIONS
E101	SITE PLAN
E102	ENLARGED PLANS
E103	ENLARGED PLANS
E201	EXISTING SINGLE LINE DIAGRAM
E202	NEW SINGLE LINE DIAGRAM

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STATE OF ALASKA 49th Barry J. Begenyi E 10453 PROFESSIONAL ENGINEER
JULY 19, 2021

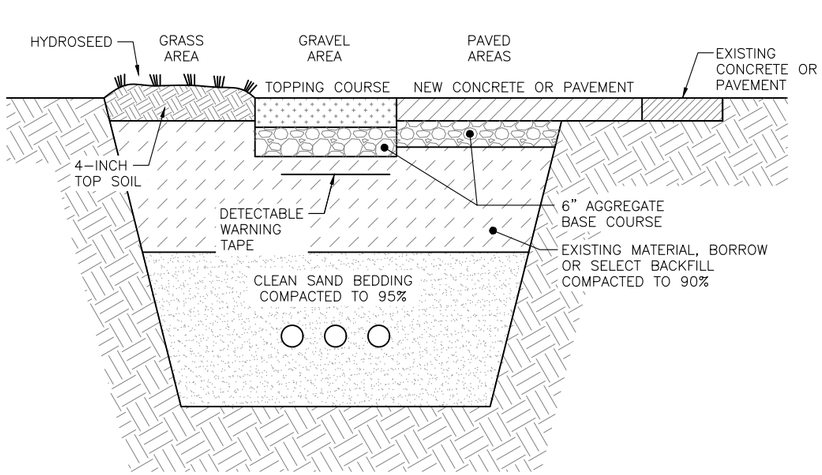
MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL
SCHOOL GENERATOR
Skagway, Alaska

REVISIONS

SHEET TITLE
LEGEND AND ABBREVIATIONS

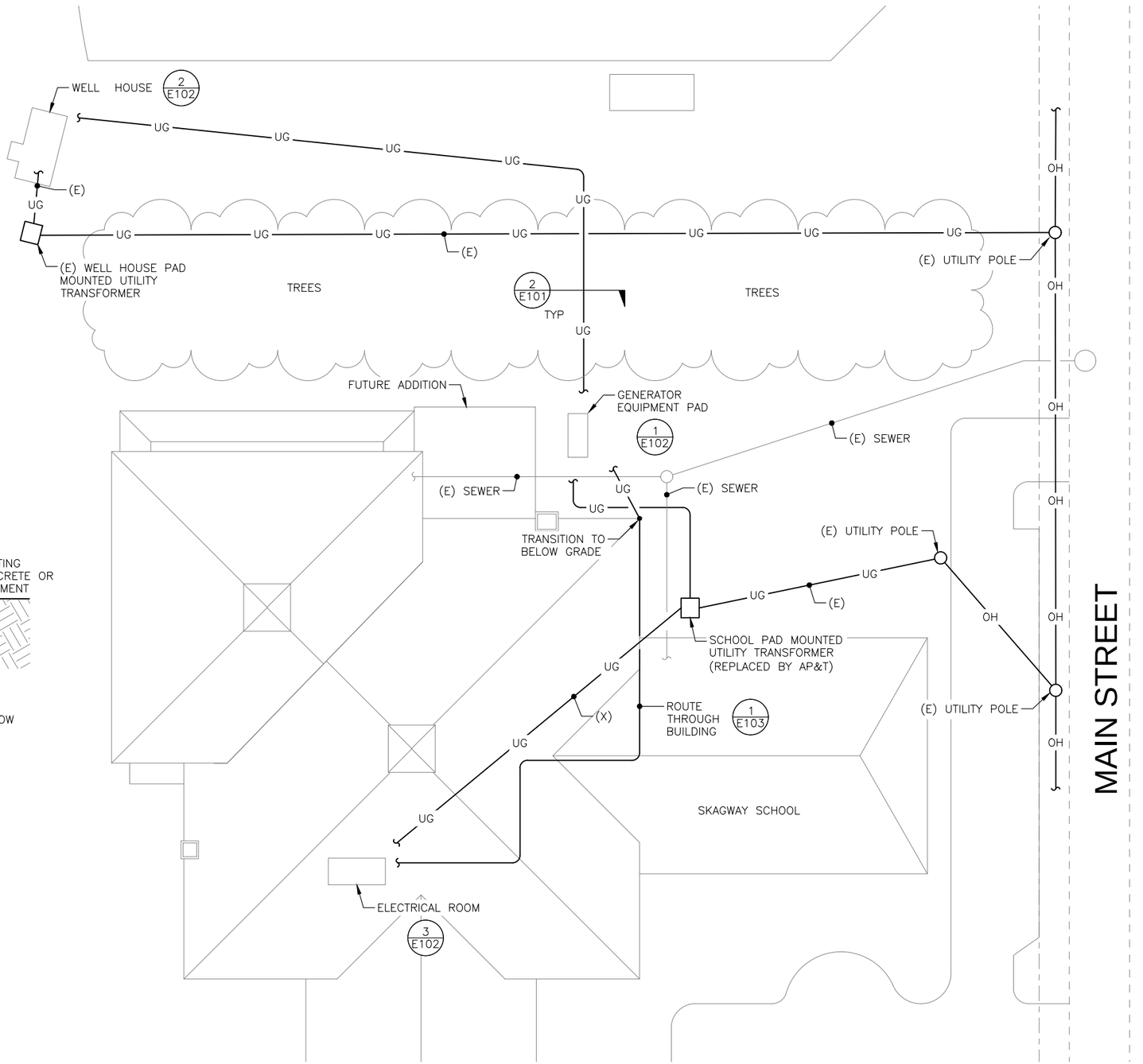
DATE: July 19, 2021
FILE: 19046

E001



NOTE:
PAVEMENT THICKNESS SHALL BE 3" OR MATCH EXISTING, WHICHEVER IS GREATER. CONCRETE THICKNESS SHALL BE 4" OR MATCH EXISTING, WHICHEVER IS GREATER.

2 TYPICAL TRENCH SECTION



1 SITE PLAN
SCALE: 0 10' 20' 40'

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SKAGWAY SCHOOL

SCHOOL GENERATOR

Skagway, Alaska

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1 .
2 .
3 .

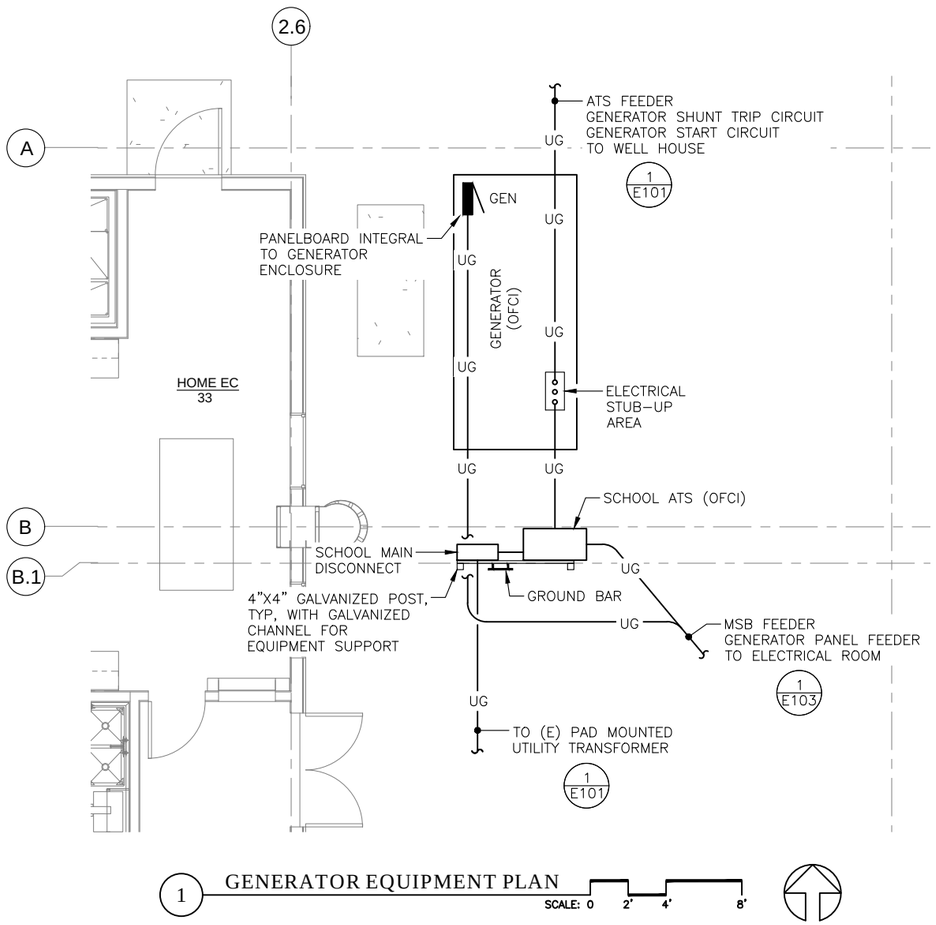
SHEET TITLE
SITE PLAN

DATE: July 19, 2021
FILE: 19046

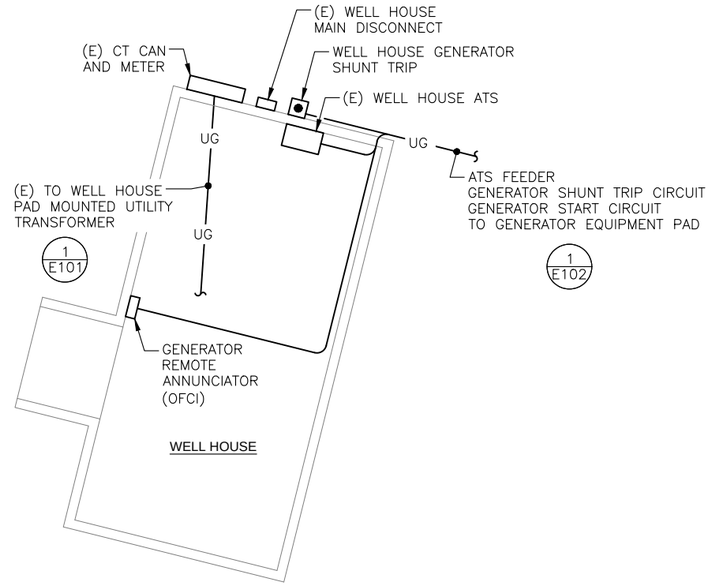
E101

NOTES:

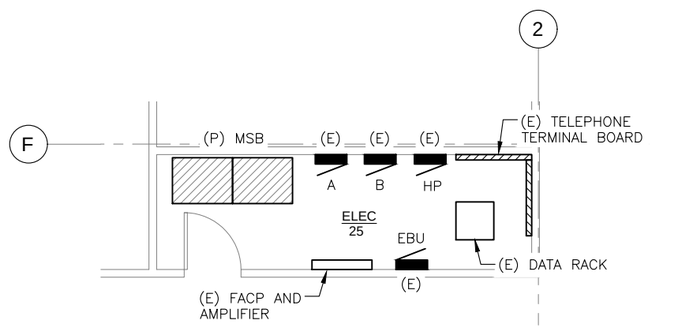
1. RE-TERMINATE COMMUNICATIONS EQUIPMENT GROUND CONDUCTORS IN ELECTRICAL 25 TO NEW GROUND BUS.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR GENERATOR EQUIPMENT CONCRETE PAD DETAILS.
3. MOUNT WELL HOUSE SHUNT TRIP PUSHBUTTON IN LOCKABLE NEMA 3R ENCLOSURE.



1 GENERATOR EQUIPMENT PLAN
SCALE: 0 2' 4' 8'



2 WELL HOUSE PLAN
SCALE: 0 2' 4' 8'



3 ELECTRICAL ROOM 25 PLAN
SCALE: 0 2' 4' 8'

Jensen Yorba Wall Inc.

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SKAGWAY SCHOOL

SCHOOL GENERATOR

Skagway, Alaska

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1 .
2 .
3 .

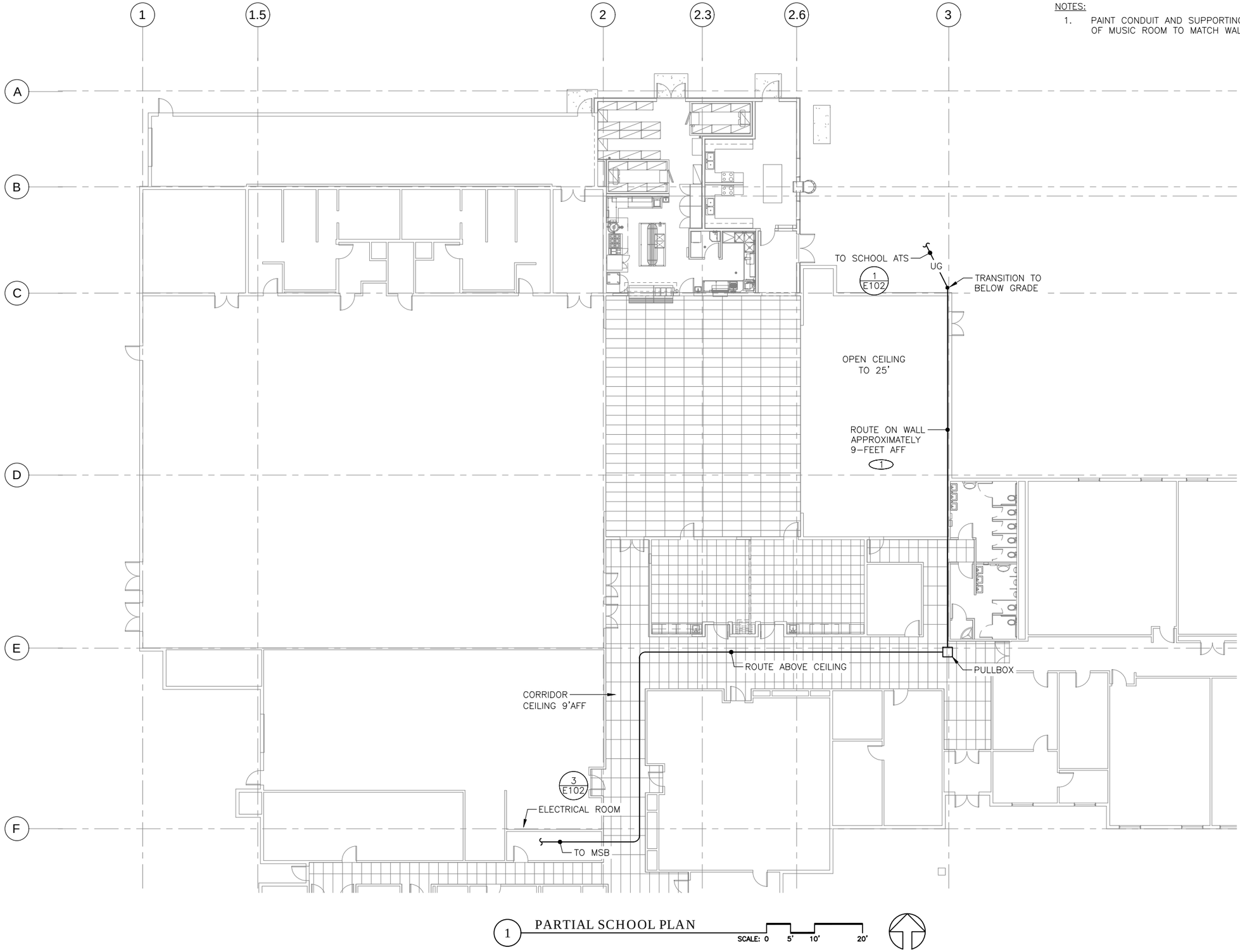
SHEET TITLE
ENLARGED PLANS

DATE: July 19, 2021
FILE: 19046

E102

NOTES:

1. PAINT CONDUIT AND SUPPORTING HARDWARE ON SURFACE OF MUSIC ROOM TO MATCH WALL.



1 PARTIAL SCHOOL PLAN

SCALE: 0 5' 10' 20'

Jensen Yorba Wall Inc.

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JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL

SCHOOL GENERATOR

Skagway, Alaska

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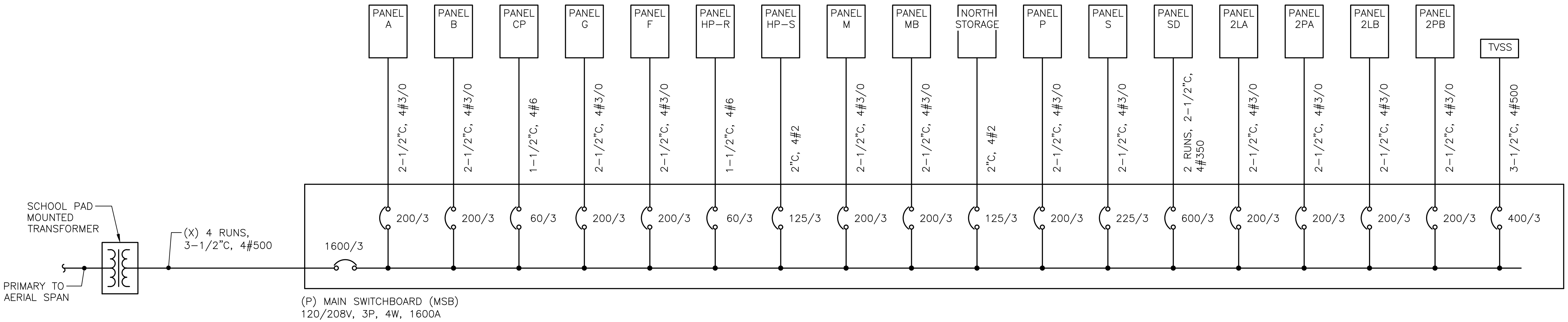
SHEET TITLE
ENLARGED PLANS

DATE: July 19, 2021
FILE: 19046

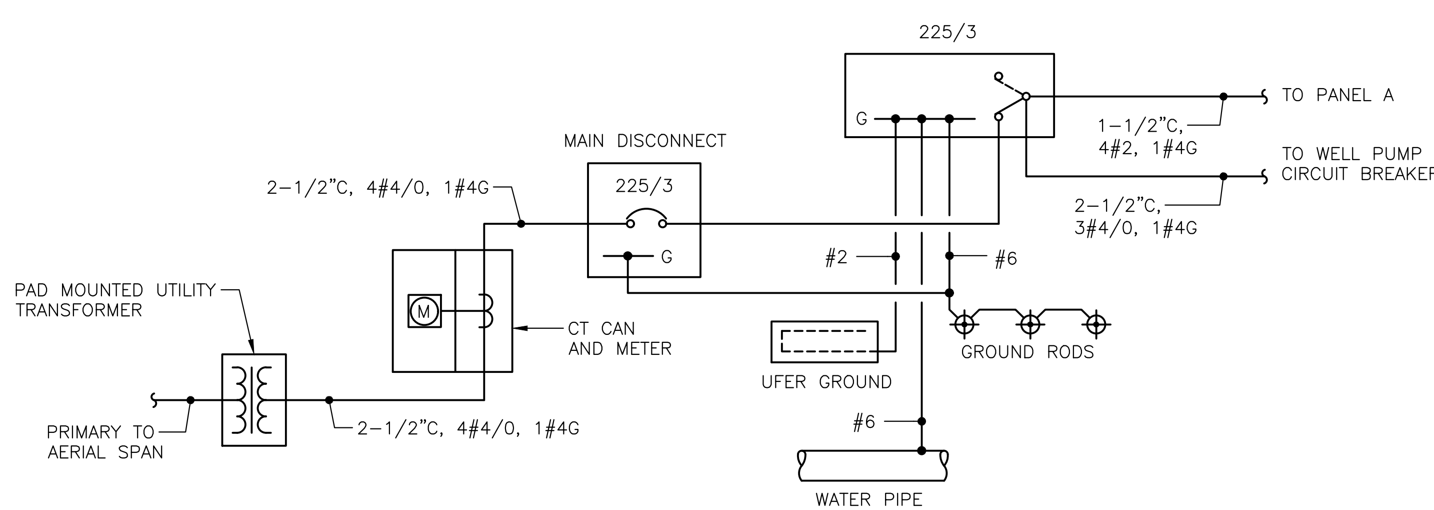
E103

NOTES:

1. THE SCHOOL PAD MOUNTED TRANSFORMER SHALL BE REPLACED BY AP&T DURING THIS PROJECT. COORDINATE THE WORK.



1 EXISTING SCHOOL SINGLE LINE DIAGRAM



2 EXISTING WELL HOUSE SINGLE LINE DIAGRAM

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JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
SKAGWAY SCHOOL
SCHOOL GENERATOR
Skagway, Alaska

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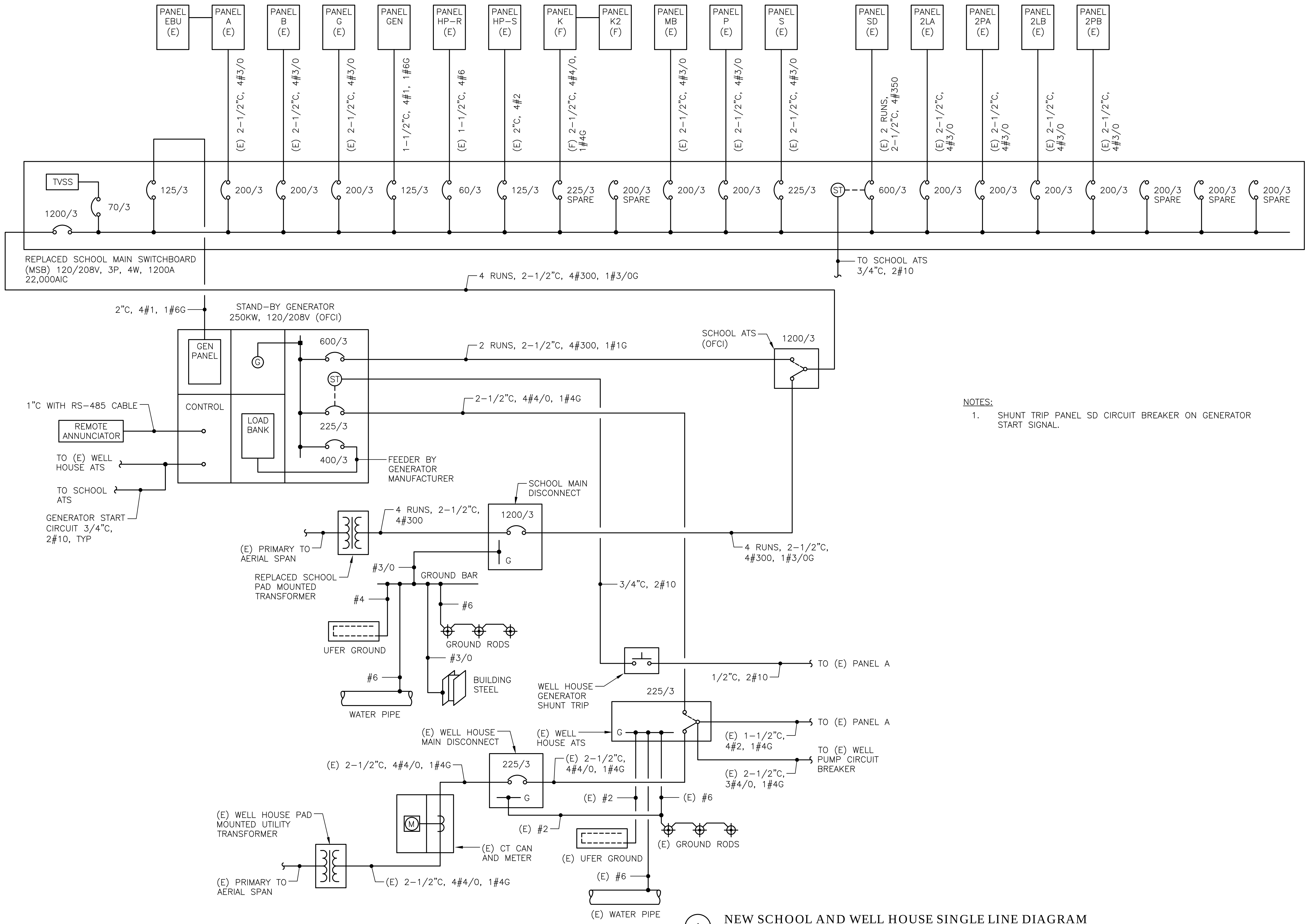
SHEET TITLE
EXISTING SINGLE LINE DIAGRAM

DATE: July 19, 2021
FILE: 19046

E201



NOTES:

1. SHUNT TRIP PANEL SD CIRCUIT BREAKER ON GENERATOR START SIGNAL.

1 NEW SCHOOL AND WELL HOUSE SINGLE LINE DIAGRAM

Jensen Yorba Wall Inc.

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JULY 19, 2021

MUNICIPALITY OF SKAGWAY BOROUGH
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SCHOOL GENERATOR
Skagway, Alaska

REVISIONS

SHEET TITLE
NEW SINGLE LINE DIAGRAM

DATE: July 19, 2021
FILE: 19046

E202