OWNER:
GARFIELD COUNTY
108 8TH STREET
GLENWOOD SPRINGS, CO 81601

ARCHITECT:
DPA ARCHITECTURAL GROUP
P.O. BOX 1268
GLENWOOD SPRINGS, CO 81601
970.945.4040
doug@dpaarchgroup.com

STRUCTURAL ENGINEER:
IMEG
1400 GLENARM PLACE, SUITE 101
DENVER, CO 80202
303.623.4927
peter.d.monroe@imegcorp.com

MECHNICAL/ELECTRICAL ENGINEER

BIGHORN CONSULTING ENGINEERS
569 S. WESTGATE DRIVE, SUITE 1
GRAND JUCTION, CO 81505
970.241.8709
shawn@bighorneng.com
art@bighorneng.com

PROJECT:

GARFIELD COUNTY COURTHOUSE ELEVATOR ADDITION

109 8th Street
Glenwood Springs, CO 81601

BID/CONSTRUCTION SET

GENERAL NOTE

1. ALL DRAWINGS, PLANS AND SPECIFICATIONS, AS INSTRUMENETS OF SERVICE, REMAIN THE PROPERTY OF THE ARCHITECT AND MAY NOT BE USED IN SIMILAR KIND WITHOUT WRITTEN CONSENT OF THE ARCHITECT.
2. THIS DRAWING SET SHALL BE USED ONLY IN CONJUNCTION WITH THE CORRESPONDING SPECIFICATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO INSURE THE CURRENCT AND MOST ACCURATE DRAWINGS AND SPECIFICATIONS ARE USED.
3. DO NOT SCALE DRAWINGS.
4. ALL WORK TO CONFORM TO LOCAL CODES, ORDINANCES AND COVENANTS OF RECORD.
5. **BUILDING WILL REMAIN OCCUPIED AND EXISTING ELEVATOR WILL BE IN OPERATION.**
6. ALL DIMENSIONS MEASURED FROM FACE OF CONCRETE, CMU OR STUD UNLESS OTHERWISE NOTED.
7. THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION OR FABRICATION OF MATERIALS OR SYSTEMS AND SHALL NOTIFY THE ARCHITECT OF ANY VARIATIONS FROM THOSE ITEMS SHOWN HEREIN.
8. THE CONTRACTOR SHALL INSURE ALL MANUFACTURE REQUIREMENTS FOR PROPER INSTALLATION OF AIR/MOISTURE BARRIERS AND ROOF SYSTEM MAINTAINED DURING CONSTRUCTION.
9. COORDINATE ALL ELECTRICAL AND MECHANICAL WIRING, ,PIPING, ,DUCTS, ETC. TO FIT WITHIN CEILINGS, WALL AND DEDICATED CHASES.
10. COORDINATE ALL PLUMBING IN PROTECTED AREAS TO AVOID FREEZING OF PIPES AND TRAPS.
11. PROVIDE ACCESS PANELS AS REQUIRED TO ACCESS EQUIPMENT AND DEVICES INCLUDE BUT NOT LIMITED TO MECHANICAL, PLUBMING AND ELECTRICAL WORK.
12. PROVIDE PROTECTED PENETRATIONS IN ALL FIRE WALLS, FLOOR/CEILINGS AND ROOF/CEILINGS ASSEMBLIES AS REQUIRED BY CODE. PROVIDE FIRE BLOCKINGAND DRAFT STOPING WITHIN CONCEALED SPACES AS REQUIRED BY CODE.
13. PROVIDE ALL NECESSARY BLOCKING IN STUD WALLS AND CEILING. LOCATIONS INCLUDE BY ARE NOT LIMITED TO TOILET ACCESSORIES, CEILING AND WALL MOUNTED ELECTEICAL FIXTURES, SHELVES, CABINETS AND CASEWORK, BUILT-INS DRAPERY RODS, COUNTERTOPS AND FALSE BEAMS.
14. FIRE SAFETY DURING DEMOLITION SHALL COMPLY WITH CHAPTER 33 OF THE INTERNATIONAL FIRE CODE.

CODE STUDY

This code study is based on the 2015 International Building Code

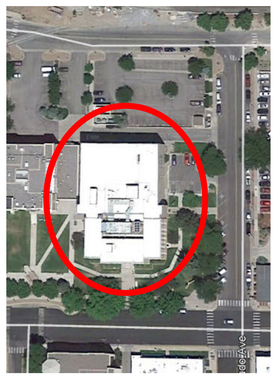
EXISTING BUILDING: NO CHANGE IN SIZE, USE OR CONSTRUCTION TYPE.
Courthouse Building

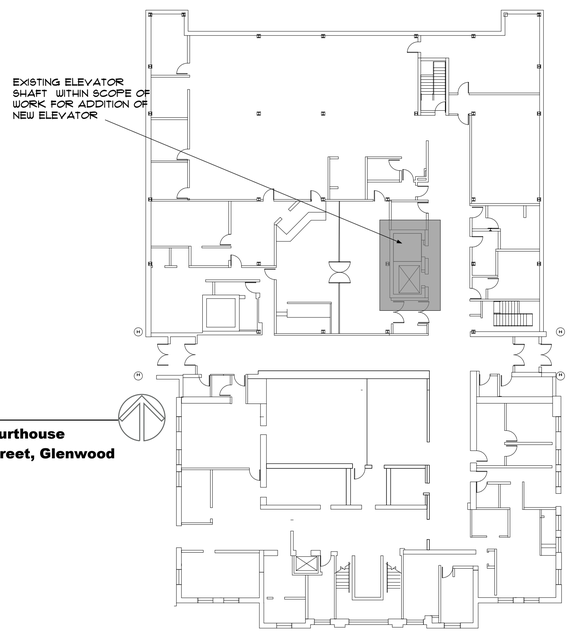
Construction Type Type IIA
Occupancy Use B
Fully Sprinkled

ELEVATOR REQUIREMENTS:
1. An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. (3002.3)
Signs shall read: IN CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. USE EXIT STAIRS
Exception 1: Sign not required for elevators that are part of an accessible means of egress complying with Section 1007.4
Exception 2: Sign not required for elevators that are used for occupant self-evacuation in accordance with Section 3008.
2. In all structures four or more stories in height, at least one elevator shall be provided that can accommodate an ambulance-type stretcher 24 inches by 84 inches in the horizontal position. (3002.4)
3. Plumbing and mechanical systems shall not be located in an elevator hoistway enclosure. (3002.9)
Exception: Floor drains, sumps and sump pumps.
Elevators shall have a fire resistance rating. (3002.1)
Elevator shaft shall have a fire-resistance rating of not less than 2 hours. (713.4)
Exception: Exterior walls shall comply with exterior wall requirements. (707.4)

Openings shall be self-closing or automatic closing by smoke detection. (708.7)
Fire door assemblies are required to have a fire-protection rating of 1 1/2 hour. (Table 716.5)
Penetrations other than those necessary for the purpose of the shaft shall not be permitted. (713.8.1)
Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1/CSA B44 (3003.2)

SEE SHEET A1.0 FOR EXISTING ELEVATOR CORE PLAN





1 SITE LOCATION MAP
Project : Garfield County Courthouse
Project Location: 108 8th Street, Glenwood Springs, C0 81601

709.4.2 Smoke-barrier walls enclosing areas of refuge or elevator lobbies.

Smoke-barrier walls used to enclose areas of refuge in accordance with Section 1009.6.4, or to enclose elevator lobbies in accordance with Section 405.4.3, 3007.6.2, or 3008.6.2, shall form an effective membrane enclosure that terminates at a *fire barrier* wall having a level of *fire protection rating* not less than 1 hour, another *smoke barrier* wall or an outside wall. A smoke and draft control door assembly as specified in Section 716.5.3.1 shall not be required at each elevator hoistway door opening or at each exit doorway between an area of refuge and the exit enclosure.

710.5.2.2 Smoke and draft control doors.

Where required elsewhere in the code, doors in smoke partitions shall meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot [0.015424 $m^3/(s \cdot m^2)$] of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature test and the elevated temperature exposure test. Installation of smoke doors shall be in accordance with NFPA 105.

710.5.2.2.1 Smoke and draft control door labeling.

Smoke and draft control doors complying only with UL 1784 shall be permitted to show the letter "S" on the manufacturer's labeling.

Table 716.5

Enclosures for shafts, interior exit stairways and interior exit ramps.	2	1 1/2

710.5.2.3 Self- or automatic-closing doors.

Where required elsewhere in the code, doors in smoke partitions shall be self- or automatic-closing by smoke detection in accordance with Section 716.5.9.3.

713.11 Enclosure at the bottom.

Shafts that do not extend to the bottom of the building or structure shall comply with one of the following:

1. They shall be enclosed at the lowest level with construction of the same *fire-resistance rating* as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure.
2. They shall terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both. The *fire-resistance rating* and opening protectives shall be not less than the protection required for the shaft enclosure.
3. They shall be protected by *approved fire dampers* installed in accordance with their listing at the lowest floor level within the shaft enclosure.

Exceptions:

1. The fire-resistance-rated room separation is not required, provided there are no openings in or penetrations of the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 718.3.1 for draftstopping, or the room shall be provided with an *approved automatic sprinkler system*.
2. A shaft enclosure containing a waste or linen chute shall not be used for any other purpose and shall discharge in a room protected in accordance with Section 713.13.4.
3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

713.12 Enclosure at top.

A shaft enclosure that does not extend to the underside of the roof sheathing, deck or slab of the building shall be enclosed at the top with construction of the same *fire-resistance rating* as the topmost floor penetrated by the shaft, but not less than the *fire-resistance rating* required for the shaft enclosure.

716.5.2 Other types of assemblies.

Fire door assemblies with other types of doors, including swinging elevator doors, horizontal sliding fire door assemblies, and fire shutter assemblies, bottom and side-hinged chute intake doors, and top-hinged chute discharge doors, shall be tested in accordance with NFPA 252 or UL 10B. The pressure in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible. Once established, the pressure shall be maintained during the entire test period.

909.21.1 Pressurization requirements.

Elevator hoistways shall be pressurized to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all elevator cars at the floor of recall and all hoistway doors on the floor of recall open and all other hoistway doors closed. The pressure differentials shall be measured between the hoistway and the adjacent elevator landing. The opening and closing of hoistway doors at each level must be demonstrated during this test. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet.

Exceptions:

1. On floors containing only Group R occupancies, the pressure differential is permitted to be measured between the hoistway and a *dwelling unit* or *sleeping unit*.
2. Where an elevator opens into a lobby enclosed in accordance with Section 3007.6 or 3008.6, the pressure differential is permitted to be measured between the hoistway and the space immediately outside the door(s) from the floor to the enclosed lobby.
3. The pressure differential is permitted to be measured relative to the outdoor atmosphere on floors other than the following:
   3.1. The fire floor.
   3.2. The two floors immediately below the fire floor.
   3.3. The floor immediately above the fire floor.
4. The minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to occupied floors are not required at the floor of recall with the doors open.

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STATE OF COLORADO
DOUGLAS P. FARFIELD
B-2491
LICENSED ARCHITECT
12/14/20

Garfield County Courthouse Elevator Addition
109 8th Street
Glenwood Springs, CO 81601
Cover

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

Project Number: 2020.02
Date: 12/15/20

Sheet Number
A0.0

SECTION 00 90 00

USE OF INSTRUMENTS OF SERVICE

DESCRIPTION

1.01 Use of printed or digital drawings and specifications prepared by the Architect and Consultants.

INDENTIFICATION

2.01 All drawings and specifications, whether in hard copy or digital format, has been generated and provided as part of DPA Architectural Group and/or their consultant sub-contractor's services and are instruments of professional service to the Owner and are the property of the Architect for the following Owner and Project:

A. Owner: Garfield County
B. Project: Garfield County Courthouse Elevator Addition

C. TERMS OF USE

3.01 Receipt and/or utilization of the above described materials and information by the undersigned shall be deemed as an Agreement including the following conditions and acknowledgments:

A. The automatic translation and conversion for drawings, data and information from the electronic systems and formats used by DPA Architectural Group or their consultants to alternate systems and formats will result in the introduction of anomalies, errors, or variations of scale and data specifics.

B. All information on the digital files is considered instruments of service of DPA Architectural Group and their consultants and shall not be used for other projects, for additions to the project, or completion of this project by others. Digital Files shall remain the property of DPA Architectural Group and their consultants and in no case shall transfer of these files be considered a sale. If the undersigned party utilizes the digital data provided by DPA Architectural Group and/or their consultants for in-house remodel, renovations or modification of any kind, the undersigned shall indemnify, protect and hold harmless DPA Architectural Group and its consultants from any and all claims or suits, damage, liability or cost including reasonable attorney's fees and costs of defense, whatsoever that may result from the use of the digital drawings or arising from any changes made by anyone other than DPA Architectural Group and their consultants.

C. Due to probability that copies of the drawings, data and information delivered to the undersigned by DPA Architectural Group and their consultants may be altered, whether inadvertently or otherwise, the original, dated generation of data by DPA Architectural Group and their consultants as provided in hard copy or digital form, shall be enforced as the governing standard in the event of any discrepancies between such copies and the original data provided.

D. All drawings, data and information are instruments of service of DPA Architectural Group and their consultants, who shall be deemed the author of the drawings, data and information, and shall retain all common law, statutory law and other rights, including copyrights.

E. The use of Digital Files prepared by DPA Architectural Group and their consultants shall not in any way obviate the Contractor's responsibility for the proper checking and coordination of dimensions, details, member sizes and gage, and quantities of materials as required to facilitate complete and accurate fabrication and erection of the project. Written dimensions provided on the plans shall govern. Contractor shall not query any dimensions from digital files

END OF SECTION

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Garfield County Courthouse Elevator Addition
B. Owner's Name: Garfield County Colorado
C. Architect's Name: DPA Architectural Group.
D. The Project consists of the installation of a new elevator in an existing hoistway.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price
B. All work shall be inclusive of all elements described in the Drawings and Specifications along with all items and work that is reasonably inferable for the complete installation and working condition as intended by the Drawings and Specifications.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is shown on drawings and specified in Section 02 41 00.
B. Plumbing: Alter existing system and add new construction, keeping existing in operation.
C. HVAC: Alter existing system and add new construction, keeping existing in operation.
D. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
E. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.
F. Telephone: Alter existing system and add new construction, keeping existing in operation.

1.04 WORK BY OWNER

A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period
B. Owner intends to occupy the Project during construction.
C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
D. Schedule the Work to accommodate Owner occupancy.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings and as coordinated with the Owner.
B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Owner.
C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.
D. Existing building spaces may not be used for storage.
E. Time Restrictions:
   1. Limit conduct of especially noisy interior work to off work hous..
F. Utility Outages and Shutdown:
   1. Prevent accidental disruption of utility services to other facilities.
   2. Limit disruption of utility services to hour previously coordinated and approved by the Owner.

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 10 50

ADMINISTRATION, PROCEDURES, CODES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1-Specification sections, apply to work of this section.

1.02 SUMMARY

A. General administrative requirements and procedures and related applicable codes. **1.03 CODES**

A. Obtain all permits, inspections, approvals and certificates required by law. Conform to all laws, ordinances, rules and regulations applicable to the location of the Project.
B. Regulations:
C. In addition to the above conform to the following standards and regulations:
D. Obtain copies of the following regulations and retain at the Project site, available for reference by parties who have a reasonable need for such reference.
   1. 2015 International Building Code
   2. ICC/ANSI A117.1-1998 Accessible and Usable Buildings and Facilities
   3. 2009 International Fire Code along with all City of Glenwood Springs Ordinances
   4. 2015 International Mechanical Code
   5. 2015 International Plumbing Code
   6. 2009 IECC
   7. NFPA 72 National Fire Alarm & Signaling Code
   8. NFPA 70 National Electric Codes

1.04 Publication Dates:

A. Comply with codes and standards in effect at the date of the Contract Documents, except where a standard of a specific date or edition is indicated.

1.05 EXISTING UTILITIES

A. The existence and location of underground utilities and construction indicated as existing are not guaranteed.
B. Before starting any work disturbing, moving or penetrating the ground, call the owning utilities, to locate, stake and identify depth of all buried utilities within the construction limits. Obtain location information for water and sewer lines from the appropriate entity.

1.06 SURVEYS, LAYOUTS, LEVELS

A. General:
B. Working from lines and levels established by the property survey, establish and maintain bench marks and other dependable markers to set the lines and levels for the work at each story of construction and elsewhere on the site as needed to properly locate every element of the work of the entire project.
   1. As construction proceeds, check every major element for line, level and plumb.
C. Calculate and measure required dimensions as shown within recognized tolerances. Do not scale the drawings to determine dimensions. Advise entities engaged in construction activities of the marked lines and levels provided for use.
D. Record deviations from the required lines and levels, and advise the Architect promptly upon detection of deviations exceeding indicated or recognized tolerances. Record deviations which are accepted (not corrected) on the record drawings. Refer to Section 01720 for record drawing requirements.
E. Site Improvements:
F. Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes and invert elevations by instrumentation and similar appropriate means.
G. Building Lines and Levels:
H. Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels and control lines and levels required for mechanical and electrical Work.
I. Basic Layout:
J. The Contractor will locate and maintain positions for building corners and primary wall lines for all entities engaged in construction and will establish final grading control levels. All other layouts, grade stakes and levels required for the Work are the responsibility of each Installer.
K. Layout Procedures:
L. Verify layout information shown on the drawings, in relation to the property survey and existing bench marks, before proceeding with the layout of the actual work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
   1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.
      a. Promptly replace lost or destroyed project control points. Base replacements on the original survey control points.
M. Establish and maintain a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.
   1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
N. As the work proceeds, maintain an accurate surveyor's log or record book of such checks, available for the Architect's reference at reasonable times.

1.07 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Furnish Construction Schedule, as required by General Conditions, in PDF format.
   1. Prepare the schedule on a sheet, or series of sheets, of sufficient width to show data for the entire construction period.
      a. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
      b. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
      c. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.
B. Bar Chart Schedule:
C. Prepare a fully developed, horizontal bar chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work."
   1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
      a. Within each time bar, indicate estimated completion percentage in 10% increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
      b. Include listing of Subcontractors, suppliers and materials men with name of contact person, address and phone number.
D. Updating:
E. The schedules shall be updated and reissued monthly and shall reflect actual job progress, delays or gains of time and any rescheduling. The original schedule and each updating shall be furnished PDF format to the Owner and to the Architect. All costs for this scheduling shall be borne by the Contractor. Submit to Architect revised schedule as a part of each pay request which will not be processed without such updates.
   1. When schedule revisions affect the submittals schedule, revise that schedule and submit to Architect with revised Construction Schedule.

1.08 DELIVERY, STORAGE AND HANDLING

A. Properly carton, crate, cover and protect materials, products and equipment for shipping, handling and storing. Use appropriate means for hoisting and loading which will prevent damage or over stress to items being handled or shipped. Store them under roof in controlled environment wherever feasible otherwise store off the ground under suitable coverings properly secured against wind and weather. Protect all items from rain, snow, moisture, wind, cold, heat, frost, sun, staining, discoloration, deterioration and physical damage from any cause. Refer to individual sections for specific requirements.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 40 00

QUALITY CONTROL

TESTING - GENERAL

1.01 The Contractor shall provide such equipment and facilities as required for conducting field tests and for collecting and forwarding samples. The Contractor shall not use any materials or equipment represented by samples until tests, if required, have been made and the materials or equipment found to be acceptable. Any product which becomes unfit for use after approval thereof shall not be incorporated into the work.

A. All materials or equipment proposed to be used may be tested at any time during their preparation use. The General Contractor shall furnish the required samples without charge and shall give sufficient notice of the placing of orders to permit the testing. Products may be sampled either prior to shipment or after being received at the site of the work.
B. Tests shall be made by an accredited testing laboratory. Expect as otherwise provided, sampling and testing of all materials and the laboratory methods and testing equipment shall be in accordance with the latest standards and tentative methods of the American Society for Testing Materials (ASTM).
C. Where additional or specific information concerning testing methods, sample sizes, etc., is required, such information is included under the applicable sections of the Specifications.
D. Any modification of, or elaboration on, these test procedures which may be included for specific materials under their respective sections in the Specifications shall take precedence over these procedures.
   1. The General Contractor shall be responsible for providing samples of sufficient size for test purposes and for cooperating with the Owner or his representative in obtaining and preparing samples for tests. All tests will be in accordance with standard test procedures and will be performed by a laboratory selected by the Owner. Results of all tests shall be provided to the Owner, Architect, General Contractor and the applicable subcontractor.

1.02 TESTING AT THE OWNER'S EXPENSE

A. Concrete: Primary mix design, slump tests and cylinder compression tests. Refer to special inspection requirements on Structural Drawings.
B. Soils: Subsoil investigation, physical analysis and compaction tests.

1.03 Refer to special inspection requirements on Structural Drawings.

A. Masonry: Mortar and/or Prism tests.
   1. Refer to special inspection requirements on Structural Drawings.
B. Weld Tests: X-Ray or ultrasonic tests.
   1. Refer to special inspection requirements on Structural Drawings.
C. Asphalt: Mix design, density tests for subgrade, base course and asphalt.
   1. Refer to Section 02612 for testing requirements.

1.04 TESTING AT CONTRACTOR'S EXPENSE

A. Material Substitution: Any tests of basic material or fabrication equipment offered as a substitute for specified items on which a test may be required in order to provide its compliance with the Specifications.
B. Mechanical/Electrical: Tests on mechanical or electrical systems required to insure their proper installation and operation.
C. Failed Tests: Any test that fails shall be paid for by the installing contractor subject to the following conditions:
   1. Quantity and nature of tests will be determined by the Architect.
   2. All tests shall be taken in the presence of the Architect or his representative. Notify Architect at least 48 hours in advance.
   3. Proof of noncompliance will make the installing contractor liable for any corrective action which the Architect feels is prudent including complete removal and replacement of defective material.
   4. Nothing contained herein is intended to imply that the installing contractor does not have the right to have tests performed on any material at any time for his own information and job control so long as the Owner does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

1.05 TEST REPORTS

A. Reports of all tests made by testing laboratories, whether at Owner's or Contractor's expense shall be distributed by the testing laboratory as follows:
   1. 1 Copy - Contractor
   a. Copy - Applicable supplier or subcontractor
   b. Copy - Owner
   c. Copy - Applicable Engineer
   d. Copy - Architect
   e. Other Copies - As directed

1.06 CONTRACTOR'S QUALITY CONTROL SYSTEM

A. The General Contractor shall establish a quality control system to perform a sufficient inspection and tests of all items of work, including that of his subcontractors, to ensure conformance to the Contract Documents for materials, workmanship, construction, finish, the functional performance and identification. This control shall be established for all construction by testing laboratories or engineer employed by the Owner. Contractor's control system shall specifically include all testing assigned to the contractor or his subcontractors by various sections of the Specifications.
B. Contractor's quality control system is the means by which he assures himself that his construction complies with the requirements of the contract Documents. Controls shall be adequate to cover all construction operations and should be keyed to the proposed construction schedule.
C. Contractor shall maintain correct records on an appropriate form for all inspections and tests performed, instructions received from the Architect, and actions taken as a result of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken. Contractor shall document inspections and tests as required by each Section of the Specifications.
D. Contractor shall furnish to Architect, with his proposed Schedule of Values and Construction Progress Schedule, his quality control plan which shall include the personnel, procedures, instructions, and records to be used. The plan shall specifically include the following:
E. A list of control tests which the Contractor understands he or his subcontractors are to perform.
F. Procedures for reviewing all shop drawings, product data, samples or other submittals before submission to Architect. Include procedures for obtaining required field measurements.
G. Method of documenting quality control operations, inspection and testing including samples of proposed forms.

END OF SECTION

SECTION 01 40 05

LAYOUT OF WORK AND SURVEYS

GENERAL

1.01 Scope. Work to be performed under this section shall include all labor, equipment, materials, tools, and incidentals necessary to cover the following:

A. Layout of work.
   1. Field measurements of work quantities.
   2. Determination of as-built locations, lines, and grades at completion of the work for preparation of as-built drawings.
B. Description. The Engineer will provide horizontal and vertical survey control data for control points in the field necessary for the Contractor to proceed with construction staking for the work. The Contractor shall be responsible for protecting all field control set(s). Replacement by the Engineer of Engineer-established control points which have been damaged or destroyed by the Contractor will be charged at the Engineer's current rate.
   1. The Contractor shall furnish all necessary detail surveys including all lines, grades, and appropriate surveys.
   2. The Engineer reserves the right to perform any desired checking and/or correction of the Contractor's surveys but this shall not relieve the Contractor of responsibility for the adequate performance of the work.
C. The work shall be done under the supervision of a Professional Engineer or Professional Land Surveyor who is experienced and competent in construction surveying and is registered in the State of Colorado.

1.02 MATERIALS (Not Applicable)

1.03 METHOD AND PROCEDURES

A. Contractor Surveying. The Contractor shall perform all construction surveying and staking that is necessary for construction of the project. Construction surveying and staking shall be based on survey control established by the Engineer and the County.
B. Staking. Reference points are provided on the plans and electronic files based upon the current established local coordinate system.
C. Accuracy and Tolerances. Accuracy of non-paved surfaces = +/- 0.1 feet. Accuracy of paved surfaces = +/- 0.05 feet. Some locations, such as the truck loading dock require even greater accuracy.
D. Responsibility and Inspection. Supervision and coordination of construction surveying is the Contractor's responsibility. The Contractor shall check the work to verify the accuracy and include documentation of this check in the Survey Records. All Contractor surveying inaccuracies, errors, or omissions shall be corrected at the Contractor's expense. Engineer's inspection or the Contractor's corrections shall not entitle the Contractor to additional payment or contract time extension. The Contractor shall stay in contact with the Owner to provide opportunity for the Owner to conduct their own GPS survey validation, if requested. The Contractor is not responsible to provide the GPS survey data, but to merely accommodate the schedule for the Owner to do the work.
E. Reset Controls and Stakes. Control points, bench marks, and other significant stakes that are damaged, destroyed, or made inaccessible by the progress of construction shall be replaced, transferred, or re-established at the Contractor's expense.
F. Changes. All changes in lines and grades required by field conditions and all discrepancies in grades, alignment, location, or dimensions detected by the Contractor shall be immediately submitted to the Engineer in writing. No changes in given data or plans will be allowed unless approved by the Engineer in writing. All changes shall be documented in the survey records.
G. Survey Records. Survey records shall be completed as the work is done. Field survey notes shall be provided to the engineer for review prior to closeout of the project. All survey records generated shall be the property of the Owner and shall be available to the Engineer for inspection or reproduction at all times. All survey records shall be transmitted to the Engineer for inclusion into the project records before final project acceptance. All survey records shall be stamped with the seal of, and signed by, the responsible P.E. or P.L.S.

1.04 FIELD QUALITY CONTROL (Not Applicable)

1.05 MEASUREMENT AND PAYMENT

A. Measurement
   1. Measurement for payment for layout of work and surveys will be by the lump sum basis.
B. Payment
   1. Payment for layout of work and surveys will be made at the lump sum price quoted therefore in the Bid Schedule. The unit price quoted shall include full compensation for furnishing labor, materials, equipment, tools, accessories, and incidentals and for performing all work, including but not limited to, layout of work, field measurement of quantities, as-built drawings.

END OF SECTION

SECTION 01 40 10

COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1-Specification sections, apply to work of this section.

1.02 SUMMARY

1.03 Section Includes:

A. Requirements for coordination, supervision and administration for Project, including but not necessarily limited to:
   1. Coordination with Owner's Security
   2. Construction Coordination
   3. Administrative and supervisory personnel.
   4. General installation provisions.
   5. Cleaning and protection.

1.05 GENERAL COORDINATION

A. General:
   1. Each entity involved in the performance of work for the entire Project shall cooperate in the overall coordination of the work; promptly, when requested, furnish information concerning its portion of the work; and respond promptly and reasonably to the decisions and requests of persons designated with coordination, supervisory, administrative, or similar authority.

B. Administrative Procedures:
   1. Coordinate scheduling and timing of required administrative procedures with other construction work. Such administrative activities include, but are not limited to, the following:
   Preparation of schedules.
   Installation and removal of temporary facilities.
   Delivery and processing of submittals.
   Progress meetings.
   Project closeout activities.

C. Conservation:
   1. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and materials.

D. Site Utilization:
   1. In addition to the site utilization limitations and requirements shown on the drawings, and indicated by the Contract Documents, administer the allocation of available space equitably among entities needing access and space, so as to produce the best overall efficiency in the performance of the total work of the project. Schedule deliveries so as to minimize the space and time requirements for storage of materials and equipment on the site; but do not unduly risk delays in the work.

E. Layout:
   1. It is recognized that the Contract Documents are diagrammatic in showing certain physical relationships of the various elements and systems and their interfacing with other elements and systems. Establishment and coordination of these relationships is the exclusive responsibility of the Contractor. Do not scale the drawings. Lay out and arrange all elements to contribute to safety, efficiency and to carry the harmony of design throughout the Work. In case of conflict or un-dimensioned locations, verify required positioning with Architect.

G. Substrate Examination:
   1. The Installer of each element of the work must examine the conditions of the substrate to receive the work, dimensions and spaces adjacent, tolerances, interfacing with other elements and services and the conditions under which the work will be performed, and must notify the Contractor in writing of conditions detrimental to the proper or timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

H. Large and Heavy Equipment:
   1. Wherever possible, prearrange for the movement and positioning of large equipment into the building structure, so that enclosing walls and roofs will neither be delayed nor need to be removed.
   2. Otherwise, advise Contractor of opening requirements to be maintained for the subsequent entry of large equipment units. Coordinate the movement of heavy items with shoring and bracing, so that the building structure will not be overloaded during the movement and installation.
   3. Where equipment or products to be installed on the roof are too heavy to be hand-carried, do not transport across roof deck; position by crane or other device so as to avoid overloading the roof deck.

1.10 COMPLETE SYSTEMS

A. It is the intent of the Contract Documents that all systems, including mechanical and electrical, be complete and functional to provide the intended or specified performance. The Contractor shall provide all incidental items and parts necessary to achieve this requirement.
B. Provide correctly sized power, utilities, piping, drains, services and their connections to equipment and systems requiring them, whether or not specific items are listed in the schedule at the end of this section.

1.11 COMPATIBILITY

A. Provide products and equipment which are compatible with other work requiring mechanical/electrical interface including electrical connections, control devices, water, drain and other piping connections. Verify electrical characteristics, fuel requirements and other interface requirements before ordering equipment and resolve conflicts that may arise.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROCEDURES

A. Inspection of Conditions:
   1. Require the Installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
      a. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
      b. Re-check measurements and dimensions, before starting each installation.
B. Manufacturer's Instructions:
   1. Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
C. Installation:
   1. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
   2. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction form incompatible material as necessary to prevent deterioration.
   3. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
D. Visual Effects:
   1. Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
E. Mounting Heights:
   1. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.02 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at substantial completion.
B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects

END OF SECTION

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STATE OF COLORADO
DOUGLAS H. DAYFIELD
B-2491
12/14/20
LICENSED ARCHITECT

Garfield County Courthouse Elevator Addition

109 8th Street
Glenwood Springs, CO 81601

Specifications

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

Project Number: 2020.02
Date: 12/15/20

Sheet Number
A1.0

SECTION 01 40 50

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Related Work Specified Elsewhere:
   1. Excavation and Back Fill: Section 31 00 00 Earthwork.
   2. Work Included: contractor shall be responsible for all cutting, fitting and patching including related excavation and back Fill, required to complete the work or to:
      a. Make its parts fit together properly.
      b. Uncover portions of the work to provide for installation of ill-timed work.
      c. Remove and replace defective work.
      d. Remove and replace work not conforming to requirements of Contract Documents.
      e. Remove samples of installed work as specified for testing.
      f. Provide routing penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.02 QUALITY ASSURANCE

A. Notification of Architect: Notify Architect well in advance of executing any cutting or alternation which affects:
   1. The Work of the owner or any separate contractor.
      a. The structural value or integrity of any element of the project.
      b. The integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
      c. The efficiency, operational life, maintenance or safety or operational elements.
      d. The visual qualities of sight-exposed elements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of the project, including elements subject to damage or to movement during cutting and patching.
   1. After uncovering work, inspect the conditions affecting the installation of products, or performance of the work.
   2. Report unsatisfactory or questionable conditions to the Architect; do not proceed with the work until the architect has provided further instructions.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.
   1. Provide devices and methods to protect other portions of the project from damage.
   2. Provide protection from the elements for that portion of the project which may be exposed by cutting and patching work, and maintain excavations free from water.

3.03 CUTTING AND PATCHING

A. General: Openings in construction which are required by other contractors shall be provided by crafts involved. It is the responsibility of various contractors to supply in advance, proper and sufficiently detailed information. In the event of failure to supply this advance information, all cutting as may be required shall be done only after concurrence of Architect and at expense of negligent party.
   1. Cutting: Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and back filling methods which will prevent settlement or damage to other work.

C. Employ the original installer or fabricator to perform cutting and patching for:

D. Cut concrete or masonry using a masonry saw or core drill as applicable. Pneumatic tools will not be allowed unless approved by Architect.
   1. Fitting: Executing fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

E. Fit work airtight to pipes, sleeves, ducts, conduit and other penetration through surfaces.
   1. Patching: Wherever any pipe, conduit, duct, steel member, bracket, equipment, or other material penetrates or passes through fire-resistant wall, ceiling or floor, completely seal voids in construction with cement grout, plaster or fire-resistant material, embedding sealing material full thickness of wall ceiling or floor.
   2. Finishing: Where surfaces are exposed, finish with same materials specified in finish schedule or material that is on constructed surfaces.

F. Refinish entire surface as necessary to provide an even finish to match adjacent finishes:

G. For continuous surfaces, refinish to nearest intersection.

H. For an assembly, refinish the entire unit.

END OF SECTION

SECTION 01 40 51

ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Coordinate work of trades and schedule elements of alterations and renovation work by procedures and methods to expedite completion of the work.

B. In addition to demolition, specifically shown, cut, move and remove items as necessary to provide access or to allow alterations and new work to proceed. Include such items as:
   1. Repair or removal of hazardous or unsanitary conditions.
   2. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.
   3. Cleaning of surfaces, and removal of surface finishes, as needed to install new work and finishes.

C. Patch, repair and refinish existing items to remain, to the specified conditions for each material, with a workmanlike transition to adjacent new items of construction.

D. Cutting and repairing of existing roof caused by demolition, alteration or any other items within Scope of Work for which penetration of existing roof is necessary. Repair should be made with similar materials to match existing conditions and shall conform to any testing and/or requirements for proper assembly. Architect will be notified or existing conditions and will verify proper conformance.

1.02 RELATED REQUIREMENTS

A. Cutting and Patching: Section 01 40 50

B. Use of Existing Utilities: Section 01 51 00 Temporary Utilities

C. Cleaning During Construction: Section 01 71 00

1.03 ALTERATIONS, CUTTING AND PROTECTION

A. Assign the work of moving, removal, cutting and patching to trades qualified to perform the work in a manner to cause least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work.
   1. Cut finish surfaces such as masonry, tile, plaster or metals by methods to terminate surfaces in a straight line at a natural point of division.

C. Protect existing finishes, equipment and, adjacent work which is scheduled to remain, from damage.
   1. Protect existing and new work from weather and extremes of temperature.
      a. Maintain existing interior work above 60 degrees F.
      b. Provide weather protection, waterproofing, heat and humidity control as needed to prevent damage to remaining existing work and to new work.

D. Provide temporary enclosures to separate work areas from existing building and from area occupied by Owner, and to provide weather protection.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

A. General requirements that work be complete:
   1. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing work.
      a. Generally, Contract Documents will not define products or standards of workmanship present in existing construction; Contractor shall determine products by inspection and any necessary testing, and workmanship by use of the existing as a sample of comparison.
   2. Presence of a product, finish, or type of construction, requires that patching, extending or matching shall be performed as necessary to make work complete and consistent.

PART 3 - EXECUTION

3.01 PERFORMANCE

A. Patch and extend existing work using skilled mechanics who are capable of matching existing quality of workmanship. Quality of patched or extended work shall be not less than that specified for new work.

3.02 LAYING OUT WORK

A. Verify dimensions and elevations indicated in layout of existing work. Refer discrepancies between drawings, specifications and existing conditions to Architect for adjustment before work affected is performed. Failure to make such notification shall place responsibility upon Contractor to carry out work in satisfactory, workmanlike manner.

B. The Contractor shall be held responsible for the location and elevation of the construction contemplated by the Construction Documents.

C. Prior to commencing work, carefully compare and check Architectural, Structural, Mechanical and Electrical drawings, each with the other that in any way affects the location or elevation of the work to be executed, and should any discrepancy be found, immediately report the same to the Architect for verification and adjustment.

3.03 LOCATION OF EQUIPMENT AND PIPING

A. Drawings showing location of equipment, piping, duct work, etc. are diagrammatic and job conditions shall not always permit their installation in the location shown. When this situation occurs, it shall be brought to the Architect's attention immediately and the relocation determined in a joint conference.

B. The Contractor shall be responsible for the relocating of any items without first obtaining the Architect's approval. he shall remove and relocate such items at his own expense if so directed by the Architect.

3.04 PATCHING EXISTING FACILITIES

A. Existing structure, facilities, etc. that are damaged or removed due to required construction work, shall be patched, repaired or replaced, and be left in their original state of repair by the Contractor, to satisfaction of the Architect.

3.05 INTEGRATING EXISTING WORK

A. Protect existing improvements from damage.

B. Contractor's operations shall be confined to the immediate vicinity of the new work and shall not in any way interfere with or obstruct the ingress or egress to and from adjacent facilities.

C. Where new work is to be connected to existing work, special care shall be exercised not to disturb or damage the existing work more than necessary. All damaged work shall be replaced, repaired and restored to its original condition at no cost to the Owner.

3.06 ADJUSTMENTS

A. Where partitions are removed, patch floors, walls and ceilings with finish materials to match existing.
   1. Where removal of partitions results in adjacent spaces becoming one, rework floors and ceilings to provide smooth planes without breaks, steps or bulkheads.
   2. Where extreme change of plane or two inches or more occurs, request instructions from Architect as to method of making transition.

3.07 DAMAGED SURFACES

A. Patch and replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections, with matching materials.
   1. Provide adequate support of substrate prior to patching the finish.
   2. Refinish patched portions of painted or coated surfaces in a manner to produce uniform color and texture over entire surface.
   3. When existing surface cannot be matched, refinish entire surface to nearest intersections.

3.08 TRANSITION FROM EXISTING TO NEW WORK

A. When new work abuts or finishes flush with existing work, make a smooth and workmanlike transition. patch work shall match existing adjacent work in texture and appearance so that the patch or transition is invisible at a distance of five feet.
   1. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim appropriate to finished surface.

3.09 DUST CONTROL

A. Precaution shall be exercised at all times to control dust created as a result of any operations during the construction period. If serious problems arise due to air borne dust, and when directed by Architect, operations causing such problems shall be temporarily discontinued and steps taken to control the dust.

3.10 FIRE PROTECTION

A. Maintain good housekeeping practices to reduce the risk of fire damage and injury to workmen. All scrap materials, rubbish and trash shall be removed daily from in and about the work area and shall not be permitted to be scattered to adjacent areas.

B. Suitable storage space shall be provided outside the immediate building area for storing flammable materials and paints; no storage will be permitted in the building. Excess flammable liquids being used inside the building shall be kept in closed metal containers and removed from the building during unused periods.

C. A fire extinguisher shall be available at each location where cutting or welding is being performed. Where electric or gas welding or cutting work is done, interposed shields of noncombustible material shall be used to protect against fire damage due to sparks and hot metal. When temporary heating devices are used, a watchman shall be present to cover periods when other workmen are not on the premises.

D. Provide fire extinguishers in accordance with the recommendations of NFPA Bulletins Nos. 10 and 241.

3.11 CLEANING

A. Perform periodic and final cleaning as specified in Section 01710, 01500 and as follows:
   1. Clean Owner-occupied areas daily, when used by Contractor.
   2. Clean spillage, over spray, and heavy collection of dust in Owner-occupied area immediately.

B. At completion of work of each trade, clean area and make surfaces ready for work of successive trades.

C. At completion of work in each area, provide final cleaning and return space to a condition suitable for use by Owner.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities.

B. Temporary telecommunications services.

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Security requirements.

F. Vehicular access and parking.

G. Waste removal facilities and services.

H. Project identification sign.

I. Field offices.

1.02 RELATED REQUIREMENTS

A. Section 01 51 00 - Temporary Utilities.

B. Section 01 52 13 - Field Offices and Sheds.

C. Section 01 55 00 - Vehicular Access and Parking.

D. Section 01 35 53 - Security Procedures.

E. Section 01 58 13 - Temporary Project Signage.

1.03 TEMPORARY UTILITIES - SEE SECTION 01 51 00

A. Owner will provide the following:
   1. Electrical power and metering, consisting of connection to existing facilities.
   2. Water supply, consisting of connection to existing facilities.

1.04 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:
   1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
   2. Internet Connections: Minimum of one; DSL modem or faster.
   3. Email: Account/address reserved for project use.

1.05 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS

C. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

D. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

E. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 FENCING

A. For New Construction or Additions: Provide 6 foot high fence around construction site, materials storage area and laydown/work area; equip with vehicular and pedestrian gates with locks.

1.08 EXTERIOR ENCLOSURES

A. For New Construction or Additions: Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.09 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
   1. Insulated to R 19.
   2. Maximum flame spread rating of 75 in accordance with ASTM E84.

1.10 SECURITY - SEE SECTION 01 35 53

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Coordinate with Owner's security program.

1.11 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 55 00

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Provide temporary site work plan showing parking areas to accommodate construction personnel. Site Work Plan shall be reviewed with the Owner for approval prior to beginning work. When site space is not adequate, provide additional off-site parking.

1.12 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13 FIELD OFFICES - SEE SECTION 01 52 13

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 51 00

TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

1.02 RELATED REQUIREMENTS

A. Section 01 50 00 - Temporary Facilities and Controls:
   1. Temporary telecommunications services for administrative purposes.
   2. Temporary sanitary facilities required by law.

1.03 TEMPORARY ELECTRICITY

A. Cost: By Owner.

B. Connect to Owner's existing power service.
   1. Do not disrupt Owner's need for continuous service.
   2. Exercise measures to conserve energy.

C. Provide temporary electric feeder from existing building electrical service at location as directed.

D. General Contractor shall:
   1. Complement existing power service capacity and characteristics as required.
   2. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.
   3. Provide overcurrent protection .
   4. Permanent convenience receptacles may be utilized during construction.
   5. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain incandescent lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft .

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lighting and provide routine repairs.

1.05 TEMPORARY HEATING

A. Cost of Energy: By Owner.

B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

D. Owner's existing heat plant may be used.
   1. Exercise measures to conserve energy.
   2. Enclose building prior to activating temporary heat.

E. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.06 TEMPORARY COOLING

A. Cost of Energy: By Owner.

B. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.

C. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

D. Owner's existing cooling plant may be used.
   1. Exercise measures to conserve energy.
   2. Enclose building prior to activating temporary cooling.

E. Prior to operation of permanent equipment for temporary cooling purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.07 TEMPORARY VENTILATION

A. Existing ventilation equipment may not be used.

1.08 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Owner.

B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

C. Connect to existing water source.
   1. Exercise measures to conserve water.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 70 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Cleaning: Section 01710 Cleaning

B. Closeout Submittals Required of Trades: The respective sections of specifications. **1.02**

SUBSTANTIAL COMPLETION

A. The following procedures shall apply at the conclusion of Project.
1. Contractor:
a. Submit written certification to Architect that project, or designated portion of project, is substantially complete.
1) Submit list of major items to be completed or corrected.
b. Architect will make an inspection within seven days after receipt of certification, together with Owner's Representative.
c. Should Architect consider that Work is substantially complete:
1) Architect shall prepare, and submit to Contractor, a list of items to be completed or corrected, as determined by the inspection.
(a) Architect will prepare and issue a Certificate of Substantial Completion, AIA G704, complete with signature of Owner and Contractor, accompanied by Architect's list of items to be completed or corrected.
(b) Owner occupancy of Project of Designated Portion of Project:
2) Contractor shall:
(a) Obtain certificate of occupancy.
(b) Perform final cleaning in accordance with Section 01710 Cleaning.
3) Owner will occupy Project, under provisions stated in Certificate of Substantial Completion.
4) Contractor: Complete work listed for completion or correction within designated time.
d. Should Architect consider that Work is not substantially complete:
1) He shall immediately notify Contractor, in writing, stating reasons.
2) Contractor: Complete Work, and send second written notice to Architect certifying that Project, or designated portion of Project, is substantially complete.
3) Architect will re-inspect Work.

1.03 FINAL INSPECTION

A. The following procedures shall apply at the conclusion of the Project.
1. Contractor shall submit written certification that:
a. Contract Documents have been reviewed.
1) Project has been inspected for compliance with Contract Documents.
(a) Work has been completed in accordance with Contract Documents.
(b) Equipment and systems have been tested in presence of Owner's Representative and are operational.
(c) Project is completed and ready for final inspection.
b. Architect will make final inspection within seven days after receipt of certification.
c. Should Architect consider that Work is finally complete in accordance with requirements of Contract Documents, he shall request Contractor to make Project Closeout submittals.
d. Should Architect consider that Work is not finally complete:
1) He shall notify Contractor, in writing, state reasons.
(a) Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to Architect certifying that Work is complete.
(b) Architect will reinspect Work.

1.04 RE-INSPECTION COSTS

A. Should Architect be required to perform inspections in addition to those specified above because of failure of Work to comply with original certifications of Contractor, Owner will compensate Architect for additional services, and deduct amount paid from final payment to Contractor.

1.05 CLOSEOUT SUBMITTALS

A. Submit the following to the Architect before Final Payment Request:
1. Project Record Documents: See Article 1.08, this section.
a. Operating and Maintenance Data: See Article 1.06, this section.
1) Evidence of Payments and Release of Liens: The Contractor is required to submit the following before his final Application for Payment:
(a) Contractors Affidavit of Payment of Debts and Claims: AIA G706
(b) Contractors Affidavit of Release of Liens: AIA G706A, with:
2) Consent of Surety to Final Payment: AIA G707
3) Contractors release or waiver of liens.
4) Separate releases of waivers of liens for subcontractors, subcontractor, suppliers and others with lien rights, against property of Owner, together with list of those parties.
(a) Warranties: As specified in individual sections.
(b) Maintenance Materials and Spare Parts: In lieu of delivery to the Architect, submit receipt indicating maintenance materials and spare parts have been turned over to the Owners Representative.
(c) Keys: Submit receipt indicating all required keys have been turned over to the Owners Representative.
(d) Miscellaneous Keys, Switches, and Wrenches: At the completion of the project, all loose keys for hose bibs, adjustment keys and wrenches for door closers and panic hardware, keys for electrical switches, electrical panes, etc., shall be accounted for and turned over to the General Contractor for transmittal to Owner. Submit receipts indicating receipt by Owners Representative.
(e) Inspection Certificates: The General Contractor and/or each Subcontractor shall, upon completion of the work, secure in triplicate certificates from any state of local governing bodies having jurisdiction indicating that the work is in strict accordance with the applicable codes and deliver same to the Architect.
(f) Certificate of Occupancy: Deliver Certificate of Occupancy to Owner.

1.06 OPERATING AND MAINTENANCE DATA

A. Mechanical - By Mechanical Contractor
1. Prepare a maintenance manual for the complete system in accordance with the following outline:
a. Alphabetical list of components of system, with the company who installed each component and the company responsible for servicing it. Include name, address, and a 24-hour telephone number.
b. Operating instructions for complete system with sequence of operation for cold start, normal operating shutdown for short period, shutdown for long period, and temperature control.
c. Maintenance instructions with schedule of frequency of lubrication, cleaning, adjustment, replacement, etc.
d. Complete manufacturers data on each device, including installation instructions and specifications arranged alphabetically.
e. Blueprints of complete wiring and control wiring and/or piping diagrams, with schematic operational diagram for each system.
2. Submit one copy of the maintenance manual to the Architect for approval, and then re-submit three corrected and bound copies to the Architect for the Owner.
a. The above procedure shall be done at the conclusion of construction.

B. Electrical - By electrical Contractor
1. Submit three hard-bound sets of instructions and material lists for the following:
2. Lighting fixtures catalog data identified by drawing type and lamps supplied for respective fixtures.
3. Fire alarm system.
4. The operating and maintenance manual will contain the following:
a. Complete parts list
b. Complete information as to whom the Owner will contact for service and parts. Include name, address and 24-hour telephone number.
c. Evidence that an authorized service organization regularly carries a complete stock of repair parts for the above items and systems and that the organization is available for service.
5. Deliver to the General Contractor for transmittal to the Architect immediately after completion of electrical work.
6. The above procedure shall be done at the conclusion of construction.

1.07 DEMONSTRATIONS

A. Mechanical Systems - By Mechanical Contractor
1. Instruct the Owner, at a time to be designated by the Architect, in the proper operation and maintenance of system, using the maintenance manual as a guide. This shall be done at the conclusion of construction.

B. Electrical System - By Electrical Contractor
1. Upon completion of the work, at a time to be designated by the Architect, demonstrate to the Owner the operation of the entire electrical installation, including any and all special systems provided under this contract. This shall be done at the conclusion of construction.

C. Fire Systems and Alarms - By Fire Systems and Alarm Contractor
Upon completion of the work, at a time to be designated by the Architect, demonstrate to the Owner the operation of the entire electrical installation, including any and all special systems provided under this contract. This shall be done at the conclusion of construction.

END OF SECTION

SECTION 01 71 00

CLEANING

CLEANING DURING CONSTRUCTION

1.01 EACH CONTRACTOR SHALL KEEP THE BUILDING AND PREMISES FREE FROM ALL SURPLUS MATERIAL, WASTE MATERIAL, DIRT AND RUBBISH CAUSED BY HIS EMPLOYEES OR WORK, AND AT THE COMPLETION OF HIS WORK HE SHALL REMOVE ALL SUCH SURPLUS MATERIAL, WASTE MATERIAL, DIRT AND RUBBISH, AS WELL AS ALL HIS TOOLS, EQUIPMENT AND SCAFFOLDING, AND SHALL LEAVE HIS WORK CLEAN AND SPOTLESS, UNLESS MORE EXACT REQUIREMENTS ARE SPECIFIED.

A. Each Contractor shall perform his cleanup daily and shall transport his rubbish to an on-site location designated by the General Contractor who will arrange for its removal.

B. Masonry cleaning is the responsibility of the masonry Contractor and is specified under the masonry Section of the Specifications.

1.02 1.02 CLEANERS

A. A. With the exception of cleanup of the site and cleaning specifically assigned to Contractors under various sections of the Specifications, all final cleanup of exterior and interior of the building shall be done by professional cleaners.

1.03 1.03 FINAL CLEANING

A. A. General: Special cleaning for specific units of work is specified in sections of Divisions 2 through 16. General cleaning during progress of work is specified in General Conditions and as temporary services in "Temporary Facilities" section of this Division. Provide final cleaning of the work, at time indicated, consisting of cleaning each surface or unit or work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturers' instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

B. Remove labels which are not required as permanent labels.

C. Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.

D. Clean exposed exterior and interior hard-surfaced finishes, to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition. Wipe surfaces of mechanical and electrical equipment clean, including elevator equipment and similar equipment; remove excess lubrication and other substances.

E. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.

F. Clean concrete floors in non-occupied spaces broom clean.

G. Vacuum clean carpeted surfaces and similar soft surfaces.

H. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

I. Clean light fixtures and lamps so as to function with full efficiency.

J. Clean project site (yard and grounds), including landscape, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petro-chemicals spills and other foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.

K. Removal of Protection: Except as otherwise indicated or requested by Architect/Engineer, remove temporary protection devices and facilities which were installed during course of the work to protect previously competed work during remainder of construction period.

L. Compliances: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site, or bury debris or excess materials on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste material from site and dispose of in a lawful manner.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Selective demolition of building elements for alteration purposes

1.02 SCOPE

A. Remove all existing building and site materials as designated on drawings and as required to accomplish new work.

B. Remove other items indicated, for salvage, relocation, and recycling.

1.03 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in the drawings.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
1. Obtain required permits.
2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
3. Provide, erect, and maintain temporary barriers and security devices.
4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
6. Do not close or obstruct roadways or sidewalks without permit.
7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Protect existing structures and other elements that are not to be removed.
1. Stop work immediately if adjacent structures appear to be in danger.

E. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

F. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

G. Perform demolition in a manner that maximizes salvage and recycling of materials.
1. Dismantle existing construction and separate materials.
2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 7 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as shown.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
1. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
3. Verify that abandoned services serve only abandoned facilities before removal.
4. Remove abandoned pipe, ducts, conduits, and equipment; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. 1. Remove debris, junk, and trash from site.
2. Leave site in clean condition, ready for subsequent work.

SECTION 06 10 00
ROUGH CARPENTRY
PART 1 GENERAL
1.01 SECTION INCLUDES
A. Non-structural dimension lumber framing.
B. Preservative treated wood materials.
G. Fire retardant treated wood materials.
H. Miscellaneous framing and sheathing.
I. Communications and electrical room mounting boards.
J. Concealed wood blocking, nailers, and supports.
K. Miscellaneous wood nailers, furring, and grounds

2.02 GENERAL REQUIREMENTS
A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
1. Species: Douglas Fir, unless otherwise indicated.
2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
B. Lumber fabricated from old growth timber is not permitted.

2.01.10 DIMENSION LUMBER FOR CONCEALED APPLICATIONS
A. Sizes: Nominal sizes as indicated on drawings, S4S.
B. Moisture Content: S-dry or MC19.
C. Stud Framing (2 by 2 through 2 by 6):
1. Species: Douglas Fir-Larch.
2. Grade: No. 2.
D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.01.11 ACCESSORIES
A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
3. Anchors: Toggle bolt type for anchorage to hollow masonry.

2.01.12 FACTORY WOOD TREATMENT
A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

SECTION 07 90 05 JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Sealants and joint backing.
2.01 MANUFACTURERS
A. Silicone Sealants:
1. Pecora Corporation; Product 864NST: www.pecora.com <http://www.pecora.com>.
2. Substitutions: See Section 01 60 00 - Product Requirements.
B. Polyurethane Sealants:
1. Pecora Corporation; Product Dynastrol II: www.pecora.com <http://www.pecora.com>.
2. Substitutions: See Section 01 60 00 - Product Requirements.
C. Polysulfide Sealants:
1. Pecora Corporation; Product Synthacalk GC2+: www.pecora.com <http://www.pecora.com>.
2. Substitutions: See Section 01 60 00 - Product Requirements.
D. Acrylic Sealants:
1. Pecora; Product AC 20.
2. Substitutions: See Section 01 60 00 - Product Requirements.
E. Butyl Sealants:
1. Pecora Corporation; Product Extru-Seal: www.pecora.com <http://www.pecora.com>.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

3.01 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

h. Tool joints concave.

3.02 SCHEDULE

A. Control, Expansion, and Soft Joints in Masonry, and Between Masonry and Adjacent Work: Type Polyurethane.

B. Lap Joints in Exterior Sheet Metal Work: Type Butyl.

C. Under Exterior Door Thresholds: Type Silicone.

D. Interior Joints for Which No Other Sealant is Indicated: Type Acrylic; None; N/A.

E. Joints Between Plumbing Fixtures and Walls and Floors, and Between Countertops and Walls: Type Acrylic.

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STATE OF COLORADO
DOUGLAS H. PATTERSON
B-2491
12/14/20
LICENSED ARCHITECT

Garfield County Courthouse Elevator Addition

109 8th Street
Glenwood Springs, CO 81601

Specifications

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

Project Number: 2020.02
Date: 12/15/20

Sheet Number
A1.2

SECTION 08 11 13

HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire-rated frames.

Steel frames for wood doors.

Steel glazing frames.

D. Accessories, including glazing.

1.02 RELATED REQUIREMENTS

E. Section 08 71 00 - Door Hardware.

Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

G. Section 09 90 00 - Painting and Coating: Field painting.

1.03 REFERENCE STANDARDS

H. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

I. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames; 2007.

J. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.

K. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2004).

L. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.

M. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.

N. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

O. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2006.

P. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.

Q. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association; 2008.

R. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

S. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; 1998. **1.04**

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

B. Maintain at the project site a copy of all reference standards dealing with installation. **1.06**

DELIVERY, STORAGE, AND HANDLING

Store in accordance with NAAMM HMMA 840.

Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 PRODUCTS

A. 08 11 13.A1 Jamb Anchor

B. 08 11 13.C1 Hollow Metal Frame

2.02 MANUFACTURERS

A. Steel Doors and Frames:

1. Steelcraft; Product Doors: Frames: F Series Flush Frames. : www.steelcraft.com. or TruDoor.com
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 DOORS AND FRAMES

A. Requirements for All Doors and Frames:

1. Accessibility: Comply with ANSI/ICC A117.1.
2. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
3. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
4. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.05 STEEL FRAMES

A. General:

1. Comply with the requirements of grade specified for corresponding door.
   ANSI A250.8 Level 1 Doors: 16 gage frames.
2. Finish: Color to be selected by Owner.
5. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

C. Interior Door Frames , Non-Fire-Rated: Face welded type.

1. Finish: Factory primed, for field finishing.

E. Mullions for Pairs of Doors: Removable type, of profile similar to jambs.

F. Frames for Interior Glazing or Borrowed Lights: Construction and face dimensions to match door frames, and as indicated on drawings.

2.06 ACCESSORY MATERIALS

A. Glazing: As specified in Section 08 80 00 , factory installed.

B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners ; prepared for countersink style tamper proof screws.

C. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

D. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames. **2.07 FINISH**

MATERIALS

Primer: Rust-inhibiting, complying with ANSI A250.10 , door manufacturer's standard.

Factory Finish: Complying with ANSI A 250.3, manufacturer's standard coating.

1. Color: As shown on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation

3.03 INSTALLATION

A. Coordinate frame anchor placement with wall construction.

B. Coordinate installation of hardware.

C. Coordinate installation of glazing.

D. Coordinate installation of electrical connections to electrical hardware items.

E. Touch up damaged factory finishes.

3.04 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner. **3.05**

ADJUSTING

A. Adjust for smooth and balanced door movement.

SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush configuration; fire rated and non-rated. **1.02 RELATED REQUIREMENTS**

Section 08 11 13 - Hollow Metal Frames.

Section 08 71 00 - Door Hardware.

C. Section 09 90 00 - Painting and Coating: Site finishing of doors. **1.03 REFERENCE STANDARDS**

D. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; current edition.

E. ICC (IBC) - International Building Code; 2015.

F. NFPA 2015 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.

G. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

H. WDMA I.S.1-A - Architectural Wood Flush Doors; Window and Door Manufacturers Association; Current Edition.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years of documented experience.

B. Installed Fire Rated Door and Transom Panel Assembly: Conform to NFPA for fire rated/smoke class as indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

Accept doors on site in manufacturer's packaging. Inspect for damage. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation. **1.07 WARRANTY**

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 PRODUCTS

A)	8	16.A	1Wood Door
B)	8	16.A	21 3/4" Solid Core Door

2.02 MANUFACTURERS

A. Wood Veneer Faced Doors:

Algoma; or Equal

2. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 DOORS

A. All Doors: See drawings for locations and additional requirements.

1. Quality Level: Custom Grade, Extra Heavy Duty performance, in accordance with WDMA I.S.1-A.
2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.

1. Provide solid core doors at all locations shown on drawings.
2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with International Building Code ("positive pressure"); UL labeled without any visible seals when door is open.
3. Wood veneer facing with factory transparent finish.

2.04 DOOR AND PANEL CORES

A. Fire-Rated Solid Core: Type particleboard core (PC), plies and faces as indicated above.

2.05 DOOR FACINGS

A. Wood Veneer Facing for Transparent Finish: Grade AA, White oak, veneer grade as specified by quality standard, quarter sliced, book veneer match, balance assembly match; unless otherwise indicated.

1. Vertical Edges: Same species as face veneer.

2.06 ACCESSORIES

A. Glazing Stops: Metal.

2.07 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

Bores Constructed with stiles and rails:

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

1. Exception: Doors to be field finished.

E. Provide edge clearances in accordance with AWI Quality Standards Illustrated Section 1700. **2.08 FACTORY FINISHING - WOOD VENEER DOORS**

A. Factory finish doors in accordance with approved sample.

B. Seal door top edge with color sealer to match door facing. **PART 3 EXECUTION**

3.01 EXAMINATION

A. Verify existing conditions before starting work.

Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.
Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

B. Use machine tools to cut or drill for hardware.

C. Coordinate installation of doors with installation of frames and hardware.

D. Coordinate installation of glazing.

3.03 TOLERANCES

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for maximum diagonal distortion.

C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 by 84 inches surface area.

D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inches surface area.

3.04 ADJUSTING

Adjust doors for smooth and balanced door movement.

Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

SECTION 087100

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical door hardware for the following:

a. Swinging doors.

B. Products furnished under this Section include the products listed below. Coordinating and scheduling the purchase delivery and installation of these products remain requirements of this Section.

1. Permanent cores and keys.

1.2 QUALITY ASSURANCE

A. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.

B. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

C. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines ICC/ANSI A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
2. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

1.4 COORDINATION

Delete first paragraph below only if all door hardware preparation and installation will be performed at Project site.

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion, unless otherwise indicated.

a. Locksets: Five years from date of substantial Completion.
b. Exit Devices: 5 years from date of Substantial Completion.
c. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" to comply with requirements in this Section.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products. Products complying with BHMA designations referenced.

B. **Manufacturer List**

Code	Name
AB	ABH MFG
DM	DORMA
PE	PEMKO
SC	SCHLAGE
ST	STANLEY

Finish List

Code	Description
S2	BRASS PAINTED
US3	POLISHED BRASS
605	POLISHED BRASS
696	BRASS PAINTED
G	GOLD ANODIZED

SET #E1 – Elevator Smoke Door UL

3 Hinges ST	FBB168 4 1/2 X 4 1/2	US3
1 Passage Set SC	ND10S RHO 10-025	605
1 Pocket Closer DM	8907 AF PKT 180	696
1 Wall Magnetic Holder AB	2100	S2
1 Set Gasket PE	S44D (HEAD & JAMBS)	G
1 Brush Sweep PE	29326 CNG	G

NOTES:
Coordinate Clearances and Installation Requirements.
Coordinate Wall Reinforcement for Closer.
Connect Wall Magnetic Holder to Fire Alarm System.

PART 3 - EXECUTION
3.1 INSTALLATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Mounting Heights: Mount door hardware units at to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

E. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

Metal partition framing.

Framing accessories.

1.02 RELATED REQUIREMENTS

Section 09 21 16 - Gypsum Board Assemblies: Metal studs for gypsum board partition framing.

1.03 REFERENCE STANDARDS

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)

B. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2007.

C. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2007.

D. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

E.

PART 2 PRODUCTS 2.01 PRODUCTS		
		3 5/8" Metal Stud Framing
		3/4" Zee or Channel Framing
		2" Metal Stud Framing

2.02 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
Metal Studs and Track: Clark Dietrich ProSTUD and Pro Track Drywall Framing System.

2.03 FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
Studs: C shaped with flat or formed webs with knurled faces.
Runners: U shaped, sized to match studs.

B. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.

1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
2. Material: ASTM A 653/A 653M steel sheet, SS Grade 50, with G60/Z180 hot dipped galvanized coating.
3. Provide components UL-listed for use in UL-listed fire-rated head of partition joint systems indicated on drawings.

C. Tracks and Runners: Same material and thickness as studs, bent leg retainer notched to receive studs.

D. Furring and Bracing Members: Of same material as studs; thickness to suit purpose; complying with applicable requirements of ASTM C 754.

E. Fasteners: ASTM C 1002 self-piercing tapping screws.

F. Anchorage Devices: Power actuated.

G. Acoustic Sealant: As specified in Section 09 21 16.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

3.02 INSTALLATION OF STUD FRAMING

A. Extend partition framing to structure where indicated and to ceiling in other locations.

B. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

C. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Align and secure top and bottom runners at 24 inches on center.

E. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

F. Align stud web openings horizontally.

G. Secure studs to tracks using crimping method. Do not weld.

H. Paint Black exposed framing as shown on details.

I. Stud splicing is not permissible.

J. Fabricate corners using a minimum of three studs.

K. Double stud at wall openings, door and window jambs, not more than 2 inches from each side of openings.

L. Brace stud framing system rigid.

M. Coordinate erection of studs with requirements of door frames; install supports and attachments.

N. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

SECTION 09 68 00

CARPETING

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Carpet, direct-glued.
B. Removal of existing carpet.
1.02 RELATED REQUIREMENTS
A. Section 09 65 00 Resilient Flooring
1.03 SUBMITTALS
A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
1.04 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in installing carpet with minimum three years experience.
1.05 FIELD CONDITIONS
A. Store materials in area of installation for minimum period of 24 hours prior to installation.
B. Maintain minimum 70 degrees F ambient temperature 24 hours prior to, during and 24 hours after installation.
C. Ventilate installation area during installation and for 72 hours after installation.
PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Carpet:
1. Obtain carpet to be installed from Owner's existing carpet stock.
2.02 ACCESSORIES
A. Sub-Floor Filler: Type recommended by carpet manufacturer.
B. Moldings and Edge Strips: Type TPS Rubber.
C. Adhesives - General: Compatible with materials being adhered; maximum VOC content as specified in Section 01 61 16.
D. Seam Adhesive: Recommended by manufacturer.
E. Contact Adhesive: Compatible with carpet material; releasable type.
PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work,
are dust-free, and are ready to receive carpet.
3.02 PREPARATION
A. Remove existing carpet and carpet cushion.
B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
D. Clean substrate.
3.03 INSTALLATION - GENERAL
A. Starting installation constitutes acceptance of sub-floor conditions.
B. Install carpet and cushion in accordance with manufacturer's instructions and CRI Carpet Installation Standard.
C. Verify carpet match before cutting to ensure minimal variation between dye lots.
D. Lay out carpet and locate seams in accordance with shop drawings:
1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
2. Do not locate seams perpendicular through door openings.
3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
4. Locate change of color or pattern between rooms under door centerline.
5. Provide monolithic color, pattern, and texture match within any one area.
E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.
3.04 DIRECT-GLUED CARPET
A. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to cut edges of woven carpet immediately.
B. Apply contact adhesive to floor uniformly at rate recommended by manufacturer. After sufficient
open time, press carpet into adhesive.
C. Apply seam adhesive to the base of the edge glued down. Lay adjoining piece with seam straight, not overlapped or peaked, and free of gaps.
D. Roll with appropriate roller for complete contact of adhesive to carpet backing.
E. Trim carpet neatly at walls and around interruptions.
F. Complete installation of edge strips, concealing exposed edges. Bind cut edges where not concealed by edge strips.
3.05 CLEANING
A. Remove excess adhesive from floor and wall surfaces without damage.
B. Clean and vacuum carpet surfaces.
END OF SECTION

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STATE OF COLORADO
DOUGLAS H. PATTERSON
B-2491
12/14/20
LICENSED ARCHITECT

Garfield County Courthouse Elevator Addition

109 8th Street
Glenwood Springs, CO 81601

Specifications

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

Project Number: 2020.02
Date: 12/15/20

Sheet Number
A1.3

SECTION 09 90 00

PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
1. Mechanical and Electrical:
   a. On the roof and outdoors, paint all equipment that is exposed to weather or to view, including that which is factory-finished.

A. Do Not Paint or Finish the Following Items:
1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Floors, unless specifically so indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 21 16 - Gypsum Board Assemblies

1.03 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

C. 1.06 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 10 years experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturers name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturers instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 PRODUCTS

Paint

Wood Stain

2.02 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

C. Paints:
1. Sherwin Williams

2.03 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. Supply each coating material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
   a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   b. Architectural coatings VOC limits of State in which the project is located.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added

at project site; or other method acceptable to authorities having jurisdiction.

D. Colors:

1. Interior: Sherwin Williams, Color to be selected by Owner.

2.05 PAINT SYSTEMS - INTERIOR

A. Paint I-OP - All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry, brick, wood, plaster, uncoated steel, shop primed
steel, galvanized steel, aluminum .
Two top coats and one coat primer.
Eggshell: MPI gloss level 3; use this sheen at all locations.
Primer(s): As recommended by manufacturer of top coats.

B. Paint WI-TR-VS - Wood, Transparent, Varnish, Stain:
Filler coat (for open grained wood only).
Two coats of stain.
One coat sealer;

C. Paint MI-OP-2A - Ferrous Metals, Primed, Acrylic, 2 Coat:
Touch-up with alkyd primer.
2. Semi-gloss: Two coats of acrylic coating; Pro Industrial DTM Acrylic Semi-Gloss

D. Paint Mgl-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
One coat galvanize primer.
2. Semi-gloss: Two coats of acrylic coating; Pro Industrial DTM Acrylic Semi-Gloss

E. Paint GI-OP-3LA - Gypsum Board/Plaster at Dry Areas, Latex-Acrylic, 3 Coat:
One coat of alkyd primer sealer applied prior to texturing if required.
Eggshell: Two coats of latexl; ProMar 200 Zero VOC Interior Latex Paint

2.07 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of coatings until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

A. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

G. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

H. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

I. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's instructions.

D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

F. Apply each coat to uniform appearance.

G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

H. Sand wood and metal surfaces lightly between coats to achieve required finish.

I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

K. At all locations requiring repair, re-paint entire wall from corner to corner to match existing paint color.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

B. Owner will provide field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

END OF SECTION

SECTION 14 21 23.16
MACHINE ROOM-LESS ELECTRIC TRACTION PASSENGER ELEVATORS
PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Machine room-less electric traction passenger elevators as shown and specified. Elevator work includes:
1. Gearless electric traction passenger elevators.
2. Elevator car enclosures, hoistway entrances and signal equipment.
3. Operation and control systems.
4. Accessibility provisions for physically disabled persons.
5. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
6. Materials and accessories as required to complete the elevator installation.

B. Related Sections:
1. Division 1 General Requirements: Meet or exceed all referenced sustainability requirements.
2. Division 3 Concrete: Installing inserts, sleeves and anchors in concrete.
3. Division 4 Masonry: Installing inserts, sleeves and anchors in masonry.
4. Division 5 Metals:
   a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
   b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
5. Division 9 Finishes: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
6. Division 16 Sections:
   a. Providing electrical service to elevators, including fused disconnect switches where permitted. (note: fused disconnect switch to be provided as part of elevator manufacture product)
   b. Emergency power supply, transfer switch and auxiliary contacts.
   c. Heat and smoke sensing devices.
   d. Convenience outlets and illumination in control room (if applicable), hoistway and pit.
7. Division 22 Plumbing
   a. Sump pit
8. Division 23 Heating, Ventilation and Air Conditioning
   a. Heating and ventilating hoistways and/or control room.

C. Work Not Included: General contractor shall provide the following in accordance with the requirements of the Model Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Part 2 for traction elevators. State or local requirements must be used if more stringent. The cost of this work is not included in the thyssenkrupp Elevator's proposal, since it is a part of the building construction.
1. A plumb and legal hoistway, properly framed and enclosed an including a pit of proper depth, and a pit ladder for each elevator. Hoistway walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2" at any point. Drains, lights, access doors, waterproofing and hoistway ventilation, as required.
2. Elevator controller space
   a. Door jamb controller option - controller landing wall thickness must be a minimum of 8 1/2 inches thick. This is due to the controller being mounted on the top floor landing in the door frame on the return side of the door. For center opening doors, the controller is located on the right hand frame (from inside the elevator cab looking out). Provide telephone line, light fixture (200 lx / 19 fc), and convenience outlet in the hoistway at the landing where the elevator controller is located. Final location must be coordinated with elevator contractor. These requirements must be coordinated between the general contractor and the elevator contractor.
   b. Control room option - provide a suitable control closet with access and ventilation in accordance with all applicable codes and regulations. The control closet shall be maintained at a temperature between 32 F (0 C) and 104 F (40 C). To be measured at 6 feet (1830 mm) above the floor and 1 foot (305 mm) out from the front center of the car controller(s). Relative humidity is not to exceed 95% non-condensing. Local codes may require tighter temperature ranges, and higher ventilation levels, please check with your local code authority for the exact requirements in your area. If your control closet temperatures exceed these requirements, contact your local thyssenkrupp Elevator sales representative for assistance. All telephone wiring to controller room control panel, and installation of telephone instrument or other communication equipment in elevator cab with all connections to elevator in controller room.
3. Hoistway must be maintained between 32ºF (0ºC) and 122ºF (50ºC) measured at the machine.
4. Adequate supports to carry the loads of all equipment, including overhead machine and machine beams located in hoistway including supports for guide rail brackets.
5. Complete 3 phase connections from the electric power mains to each controller, including necessary circuit breakers and fused mainline disconnect switches unless otherwise specified herein by elevator manufacture.
6. Electric power of the same characteristics as the permanent supply without charge for the construction, testing and adjusting.
7. Provide proper piping and conduit.
8. Divider beams for rail bracket support as required.
9. Cutting of walls floor, etc. and removal of such obstructions as may be necessary for proper installation of the elevator.
10. Grouting of door sills, hoistway frames, and signal fixtures after installation of the elevator equipment.
11. All painting, except as otherwise specified.
12. Provide hoistway walls designed and constructed in accordance with the required fire rating (including those places where elevator fixture boxes, rail bracket fastenings, and any other penetration into the hoistway walls).
13. Temporary enclosures, barricades and other protection from open hoistways and elevator work area during the time the elevator is being installed to meet all permanent installation safety codes. A temporary work platform to be provided at the top landing across the hoistway; if required, it should conform to all code and safety requirements.
14. Smoke detector\ sensing devices and contacts wired to elevator control as required by local code. A means to automatically disconnect the main line power supply to the elevator prior to the application of water in the elevator controller room shall be furnished by the electrical contractor. This means shall not be self-resetting.
15. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.
16. A standby power source, including necessary transfer switches and auxiliary contact, where elevator operation from an alternate power supply is required.
17. Adequate storage facilities for elevator equipment prior to and during installation at ground level within 150 feet of hoistway.
18. Setting of anchors and sleeves.
19. Install bevel guards at 75° on all recesses, projections or setbacks over 2" (4" for A17.1 2000 areas) except for loading or unloading.
20. For car light and fan: provide a feeder and branch wiring circuits to elevator control cabinet.
21. Locate a light fixture (200 lx / 19 fc) and convenience outlet in pit with switch located adjacent to the access door.
22. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-combustible material extending 42" minimum, (48" minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.

1.02 SUBMITTALS

A. Product data: When requested, the elevator contractor shall provide standard cab, entrance and signal fixture data to describe product for approval.

B. Shop drawings:
1. Show equipment arrangement in the corridor, pit, and hoistway and/or optional control room. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.
3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
4. Indicate electrical power requirements and branch circuit protection device recommendations.

A. Powder Coat paint selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

B. Plastic laminate selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

C. Metal Finishes: Upon request, standard metal samples provided.

D. Operation and maintenance data. Include the following:
1. Owner's manuals and wiring diagrams.
2. Parts list, with recommended parts inventory.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: An approved manufacturer with minimum 15 years of experience in manufacturing, installing, and servicing elevators of the type required for the project.
1. The manufacturer of machines, controllers, signal fixtures, door operators cabs, entrances, and all other major parts of elevator operating equipment.
   a. The major parts of the elevator equipment shall be manufactured by the installing company, and not be an assembled system.
2. The manufacturer shall have a documented, on-going quality assurance program.
3. ISO-9001:2000 Manufacturer Certified
4. ISO-14001:2004 Environmental Management System Certified
5. LEED Gold certified elevator manufacturing facility.

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than 15 years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:
1. ASME A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
2. NFPA 70 National Electrical Code.
3. NFPA 80 Fire Doors and Windows.
4. Americans with Disabilities Act - Accessibility Guidelines (ADAAG)
5. Section 407 in ICC A117.1, when required by local authorities
6. CAN/CSA C22.1 Canadian Electrical Code
7. CAN/CSA B44 Safety Code for Elevators and Escalators.

D. Fire-rated entrance assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(b), and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing:
1. Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
2. Arrange for inspections and make required tests.
3. Deliver to the Owner upon completion and acceptance of elevator work.

F. Sustainable Product Qualifications:
1. Environmental Product Declaration:
   a. GOOD: If Product Category Rules (PCR) are not available, produce a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that has at least a cradle to gate scope.
   b. BEST: If Product Category Rules (PCR) are available, produce and publish an Environmental Product Declaration (EPD) based on a critically reviewed life-cycle assessment conforming to ISO 14044, with external verification recognized by the EPD program operator.
2. Material Transparency:
   a. GOOD: Provide Health Product Declaration at any level
   b. BETTER: Provide Health Product Declaration (HPD v2 or later). Complete, published declaration with full disclosure of known hazards, prepared using the Health Product Declaration Collaborative's "HPD builder" on-line tool.
   c. BEST: Cradle to Cradle Material Health Certificate v3, Bronze level or higher.
3. LEED v4 – Provide documentation for all Building Product Disclosure AND Optimization credits in LEED v4 for product specified.
4. Living Building Challenge Projects: Provide Declare label for products specified.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufacturing shall deliver elevator materials, components and equipment and the contractor is responsible to provide secure and safe storage on job site.

1.05 PROJECT CONDITIONS

A. Temporary Use: Elevators shall not be used for temporary service or for any other purpose during the construction period before Substantial Completion and acceptance by the purchaser unless agreed upon by Elevator Contractor and General Contractor with signed temporary agreement.

1.06 WARRANTY

A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 12 months after final acceptance.

1.07 MAINTENANCE

A. Furnish maintenance and call back service for a period of 12 months for each elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours excluding callbacks.
1. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours.
2. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
3. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Design based around thyssenkrupp Elevator's evolution 200 Self-Supported Machine Room-Less elevator.

2.02 MATERIALS, GENERAL

B. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD, and shall meet the California Department of Public Health Standard Method V1.1–2010, CA Section 01350 as mentioned in 1.03.9 of this specification.

C. Colors, patterns, and finishes: As selected by the Architect from manufacturer's full range of standard colors, patterns, and finishes.

D. Steel:
1. Shapes and bars: Carbon.
2. Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish.
3. Finish: Factory-applied baked enamel for structural parts, powder coat for architectural parts. Color selection must be based on elevator manufacture's standard selections.

E. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness. Laminate selection must be based on elevator manufacture's standard selections.

F. Flooring by others.

2.03 HOISTWAY EQUIPMENT

A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood sub-floor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.

B. Sling: Steel stiles bolted or welded to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.

C. Deflector Sheaves: None

D. Guide Rails: Dry, non-lubricated steel, fastened to the building with steel brackets.

E. Guides: Guide shoes or roller guides with a minimum of three tires shall be mounted on top and bottom of the car and counterweight frame and be held in contact with the guide rail by adjustable devices.

F. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.

G. Machine: The hoisting machine shall be a compact energy efficient permanent magnet Gearless traction type, consisting of PMAC motor, brake and driving sheave mounted on a rigid bedplate in the top of the hoistway. A large solid, forged shaft shall serve as a support for the motor rotor assembly and for the drive sheave and brake system. It shall be supported by roller bearings mounted in the machine housing.

H. Drive System:
1. The drive system shall be of the Variable Voltage Variable Frequency (VVVF) regenerative.
2. The system shall be a vector controlled pulse-width modulated AC drive. The variable voltage variable frequency drive shall convert the AC power supply using a two-step process to a variable voltage variable frequency power supply for use by the hoist motor.
3. The speed control shall be by means of vector control providing direct torque and field excitation automatically provided by permanent magnet. A digital absolute velocity encoder shall be provided giving feedback to the controller on armature position and motor speed.
4. Dual solid state electronics (IGBT Insulated Gate Bipolar Transistor) in series shall be used in place of mechanical contactors.

I. Motor/Machine: The motor shall be PMAC, totally enclosed, non-ventilated with class "F" insulation. The motor armature shall be dynamically balanced and supported by roller bearings of ample capacity. The armature and driving sheave shall be properly balanced for smooth, high-speed elevator performance. The PM machine shall be mounted horizontally in the top of the hoistway in a unitized formed steel structure on bearing plates furnished by the elevator installer. The unitized formed steel structure shall be securely fastened to the supports supplied by other trades.

J. Brake: The brake shall be a spring applied electric brake; held open by an electro-magnet actuated by a digital brake controller and designed to make smooth, positive stops. The Brake shall be designed to automatically apply in the event of interruption of power supply from any cause. Operation and control of the brake shall be all digital. The setting and lifting of the brake shall be software based and all electronic. All adjustments and setup of the brake shall be made using a PC interface. No contactors or resistors shall be used in the actuation of the brake.

K. Suspension Belts and Governor Rope: Suspension belts shall be flat belts of polyurethane with an inner core of 12 steel cords with an FT1 fire rating such that hoistway sprinklers are not required by NFPA-13. Each belt shall have a suspension strength of 60 KN (13,488 pounds).
1. Four to six belts shall be used depending on the car capacity.
2. Suspension tension monitor shall detect differences in belt tension and for loss of tension. If fault is detected, the car shall stop at the nearest floor and an Out of Service call be registered.
3. Trip criteria shall be monitored and data shall be stored in redundant non-volatile locations. Belts shall be replaced prior to the end of service life. Messages shall be issued at 180, 90, and 30 days prior to the last day of service life.
4. Governor ropes shall be of iron construction.
5. Any special tools, devices, software or equipment required for monitoring the wear of suspension shall be included with the installation of the equipment and become the property of the owner at time of elevator completion. This includes special ongoing monitoring systems, special tools and instruction needed to monitor the suspension system.

L. Counterweight: Counterbalance each elevator for smooth and economical operation by using iron or steel plate weights securely fastened in a steel counterweight frame. Counterweight shall equal the weight of the complete elevator car and approximately 50 percent of the specified capacity load.

M. Safety and Governor: Car safety shall be mounted on the bottom members of the car frame and be operated by a centrifugal speed governor. The governor shall be designed to cut off power to the motor and apply the brake whenever the governor indicates the car has excessive speed. The governor shall function when the car over speeds.

N. Emergency Terminal Limits: Place electric limit devices in the hoistway near the terminal landings. Limit switch(es) shall be designed to cut off the electric current and stop the car if it runs beyond either terminal landing.

O. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for over travel or under travel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.

2.04 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted\knock down construction.
1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates (where required), sight guards, and necessary hardware.
2. Main landing door & frame finish: ASTM A1008 steel panels, factory applied powder coat finish with factory-applied powder coat finish entrance frame.
3. Typical door & frame finish: ASTM A366 steel panels, factory applied powder coat enamel finish with factory-applied powder coat finish entrance frame.

B. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

C. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

D. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.

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STATE OF COLORADO
DOUGLAS H. PATTERSON
B-2491
12/14/20
LICENSED ARCHITECT

Garfield County Courthouse Elevator Addition

109 8th Street
Glenwood Springs, CO 81601

Specifications

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

Project Number: 2020.02
Date: 12/15/20

Sheet Number
A1.4

2.05 PASSENGER ELEVATOR CAR ENCLOSURE

A. Car Enclosure:
   1. Walls: Cab type TKAP, reinforced cold-rolled steel with two coats factory applied baked enamel finish, with applied vertical wood core panels covered on both sides with high pressure plastic laminate.
   2. Reveals and frieze: a. Reveals and frieze: Stainless steel, no. 4 brushed finish
   3. Canopy: Cold-rolled steel with hinged exit.
   4. Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a factory applied powder coat finish.
   5. Cab Fronts, Return, Transom, Soffit and Strike: Provide panels faced with brushed stainless steel
   6. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
      a. Door Finish: Stainless steel panels: No. 4 brushed finish.
      b. Cab Sills: Extruded aluminum, mill finish.
   7. Handrail: Provide 1.5' diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, no. 4 brushed finish.
   8. Ventilation: Manufacturer's standard exhaust fan, mounted on the car top.
   9. Protection pads and buttons: Not required

B. Car Top Inspection: Provide a car top inspection station with an "Auto-Inspection" switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

2.06 DOOR OPERATION

A. Door Operation: Provide a direct or alternating current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. The door control system shall be digital closed loop and the closed loop circuit shall give constant feedback on the position and velocity of the elevator door. The motor torque shall be constantly adjusted to maintain the correct door speed based on its position and load. All adjustments and setup shall be through the computer based service tool. Door movements shall follow a field programmable speed pattern with smooth acceleration and deceleration at the ends of travel. The mechanical door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. AC controlled units with oil checks, or other deviations are not acceptable.
   1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.
   2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
   3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel shall reverse and the door shall reopen to answer the other call.
   4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer shall sound. When the obstruction is removed, the door shall begin to close at reduced speed. If the infra-red door protection system detects a person or object while closing on nudging, the doors shall stop and resume closing only after the obstruction has been removed.
   5. Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors shall reverse and reopen. After the obstruction is cleared, the doors shall begin to close.
   6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors shall recycle closed then attempt to open six times to try and correct the fault.
   7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors shall recycle open then attempt to close six times to try and correct the fault.
   8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.

B. Door Protection Device: Provide a door protection system using microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

2.07 CAR OPERATING STATION

A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Wrap return shall have a brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.

B. Emergency Communications System: Integral phone system provided.

C. Auxiliary Operating Panel:

D. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.

E. Special Equipment: Not Applicable

2.08 CONTROL SYSTEMS

A. Controller: The elevator control system shall be microprocessor based and software oriented. The system shall operate in real time, continuously analyzing the car(s) changing position, condition, and work load. All controller and operational circuits including the brake control and drive system shall be digital. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.
   1. Momentary pressing of one or more buttons shall dispatch the car to the designated landings in the order in which the landings are reached by the car, irrespective of the sequence in which the buttons are pressed. Each landing call shall be canceled when answered.
   2. When the car is traveling in the up direction, it shall stop at all floors for which car buttons or "up" hall buttons have been pressed. The car shall not stop at floors where "down" buttons have been pressed, unless the stop for that floor has been registered by a car button or unless the down call is at the highest floor for which any buttons have been pressed. Pressing the "up" button when the car is traveling in the down direction shall not intercept the travel unless the stop for that floor has been registered by a car button or unless the up call is the lowest for which any button has been pressed.
   3. When the car has responded to its highest or lowest stop, and stops are registered for the opposite direction, its direction of travel shall reverse automatically and it shall then answer the calls registered for that direction. If both up and down calls are registered at an intermediate floor, only the call corresponding to the direction of car travel shall be canceled upon the stopping of the car at the landing.
   4. A car that is stopping for the last hall call in the preference direction, and that hall call is for the opposite direction with no onward car calls, shall reverse preference when the selector position advances to the landing at which the car is committed to stop. A car that is stopping for the last hall call in the preference direction, and that hall call is for the same direction, shall hold its preference until the door is almost closed allowing time for a passenger to register an onward car call which shall maintain the preference. If no car call is registered before the door is almost closed, the car shall lose its preference and shall be available to accept calls in either direction.

B. Operation: Selective Collective – ETA based. The system is optimized to get a car to the floor where a hall call has been registered, in the shortest time. The system receives input information from standard call pushbuttons located in the hall, car position and car load information from individual car loadweighers.

   1. When group operation is required, the group supervisory operation shall be embedded within selected car controllers. No separate group controller shall be supplied. The microprocessor shall constantly scan the system for hall calls. When hall calls are registered, the control system shall immediately calculate the estimated time for arrival using such information as, number of floors to travel from the current position, the time it takes to travel one floor at top speed, calls assigned to a car, and car reversal time to respond to a call in the opposite direction of travel. When a car's status changes or additional hall calls are registered, the estimated time of arrival shall be recalculated and calls reassigned if necessary.
   2. Traffic Pattern: The microprocessor shall provide flexibility to meet well defined patterns of traffic, including up peak, down peak, and heavy interfloor demands, and adjust for indeterminate variations in these patterns which occur in buildings.
   3. Artificial Intelligence: Artificial Intelligence shall be an integral part of the group control system software. The enhanced artificial intelligence shall optimize the interfloor traffic performance. Inputs for the artificial intelligence shall include accurate passenger load from an electronic loadweigher, probable car calls generated from each hall call, type of building and observed traffic patterns.

C. Load Weighing Device: Provide a load weighing device on each car which, when the particular car is filled to an adjustable percentage of the capacity load, shall cause the car to bypass landing calls but not car calls. The passed landing calls shall remain registered for the next following car.
   1. The device shall be unaffected by the action of compensating chain or rope. The device shall detect a 50 pound (23 Kg.) load change under all conditions.
   2. The load sensor shall use a load cell to accurately measure the weight in the car. The information shall be transferred via a serial link to the elevator controller.

D. Anti-Nuisance Call Control: The microprocessor control system shall evaluate the number of people on the car and compare that value to the number of car calls registered. If the number of car calls exceeds the number of people by a field programmable value, the car calls shall be canceled after the first call has been answered.

E. Position Selector: The position selector shall be part of the microprocessor system. The car position in the hoistway shall be digitized through a primary position encoder. The microprocessor control system shall store the floor position and slow down points in memory.

F. Motion Control: The drive control system shall be dual-loop feedback system based primarily on car position. The velocity profile shall be calculated by the microprocessor control system producing extremely smooth and accurate stops. The velocity encoder shall permit continuous comparison of machine speed to velocity profile and to actual car speed. This accurate position/velocity feedback shall permit a fast and accurate control of acceleration and retardation.

G. Motor Pre-Torque: Current shall be applied to the elevator drive before the brake is released and the speed pattern is dictated to eliminate roll back and sling shot effects of unbalanced loads in the car. The electronic loadweigher shall determine the load on the car determining a pre-torque reference to send to the drive.

H. Emergency Power Operation: (10-DOA) Upon loss of the normal power supply, building-supplied standby power is available on the same wires as the normal power supply. Once the loss of normal power is detected and standby power is available, the elevator is lowered to a pre-designated landing and the doors are opened. After passengers have exited the elevator, the doors are closed and the car is shut down. When normal power is restored, the elevator automatically resumes operation.

I. Destination Dispatch: Not Applicable

J. Automatic Light and Fan shut down: The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.

K. Special Operation: Not Applicable

2.09 HALL STATIONS

A. Hall Stations, General: Buttons shall illuminate to indicate call has been registered at that floor for the indicated direction.
   1. Provide one pushbutton riser with faceplates having a brushed stainless steel finish.
      a. Phase 1 firefighter's service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Position Indicator: Not Applicable

D. Hall lanterns: Not Applicable

E. Special Equipment: Not Applicable

2.10 CONTROLLER LOCATION

A. Door Jamb Mount is integrated with controller in the door jamb. Power disconnect is provided by the elevator contractor and included with the integrated assembly.

PART 3 EXECUTION

3.01 EXAMINATION

A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and/or control room, as constructed, verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION

A. Install elevator systems components and coordinate installation of hoistway wall construction.
   1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings.
   2. Comply with the National Electrical Code for electrical work required during installation.

B. Perform work with competent, skilled workmen under the direct control and supervision of the elevator manufacturer's experienced foreman.

C. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement.

D. Welded construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualification of welding operators.

E. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

F. Install machinery, guides, controls, car and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration.

G. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.

H. Erect hoistway sills, headers, and frames before erection of rough walls and doors; erect fascia and toe guards after rough walls finished. Set sill units accurately aligned and slightly above finish floor at landings.

I. Lubricate operating parts of system, including ropes, as recommended by the manufacturer.

3.03 FIELD QUALITY CONTROL

A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required and recommended by Code and governing regulations or agencies. Perform other tests, if any, as required by governing regulations or agencies.

B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

3.04 ADJUSTING

A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

3.05 CLEANING

A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless steel shall be cleaned with soap and water and dried with a non-abrasive surface; it shall not be cleaned with bleach-based cleansers.

B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.
   1. Use environmentally preferable and low VOC emitting cleaners for each application type. Cleaners that contain solvents, pine and/or citrus oils are not permitted.

3.06 PROTECTION

A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

3.07 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

3.08 ELEVATOR SCHEDULE

A. Elevator Qty. 1
   1. Elevator Model: evolution 200
   2. Elevator Type: Gearless Traction Machine Room-Less, Passenger
   3. Rated Capacity: 2100 lbs.
   4. Rated Speed: 200 ft./min.
   5. Operation System: TAC32T
   6. Travel: 46'-0"
   7. Landings: 5 total
   8. Openings:
      a. Front: 5
      b. Rear: 0
   9. Clear Car Inside: 5'-8" wide x 4'-3 3/4" deep
   10. Inside clear height: 7'-4" standard
   11. Door clear height: 7'-0" standard
   12. Hoistway Entrance Size: 3'-0" wide x 7'-0" high
   13. Door Type: One-speed | RH Side opening
   14. Power Characteristics: 208 volts, 3 Phase, 60 Hz.
      a. Note: Isolation Transformer required for jobs with less than 480vac, 3 Phase building power.
   15. Seismic Requirements: Zone 1
   16. Hoistway Dimensions: 7'-6" wide x 5'-9" deep
      a. Note: Hoistway dimensions listed above are for Seismic Zone 1 only. If you have chosen a seismic zone other than zone 1 please consult your local thyssenkrupp Elevator Sales Representative for the proper hoistway dimensions.
   17. Pit Depth: 5'-0"
   18. Button & Fixture Style: Traditional Signal Fixtures
   19. Special Operations: None

3.09 SPECIAL CONDITIONS :

1. The existing elevator will remain in use throughout the duration of the new elevator installation. GC and Elevator Installer to coordinate for access and safety for all public use of the existing elevator and safety of all workers.
2. The existing elevator controls are to be refurbished as part of this contract to allow for new controls to be used for both existing and new elevators, including call lights, call buttons etc.

3. All loud or noisy work required for preparation, construction and/or installation of the new elevator and hoist way shall be on during off business hours. Any work requiring off business hours should be coordinated with the Owner's Representative 48 hour prior to work.

END OF SECTION

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STATE OF COLORADO
DOUGLAS H. DPA FIELD
B-2491
LICENSED ARCHITECT
12/14/20

Garfield County Courthouse Elevator Addition
109 8th Street
Glenwood Springs, CO 81601

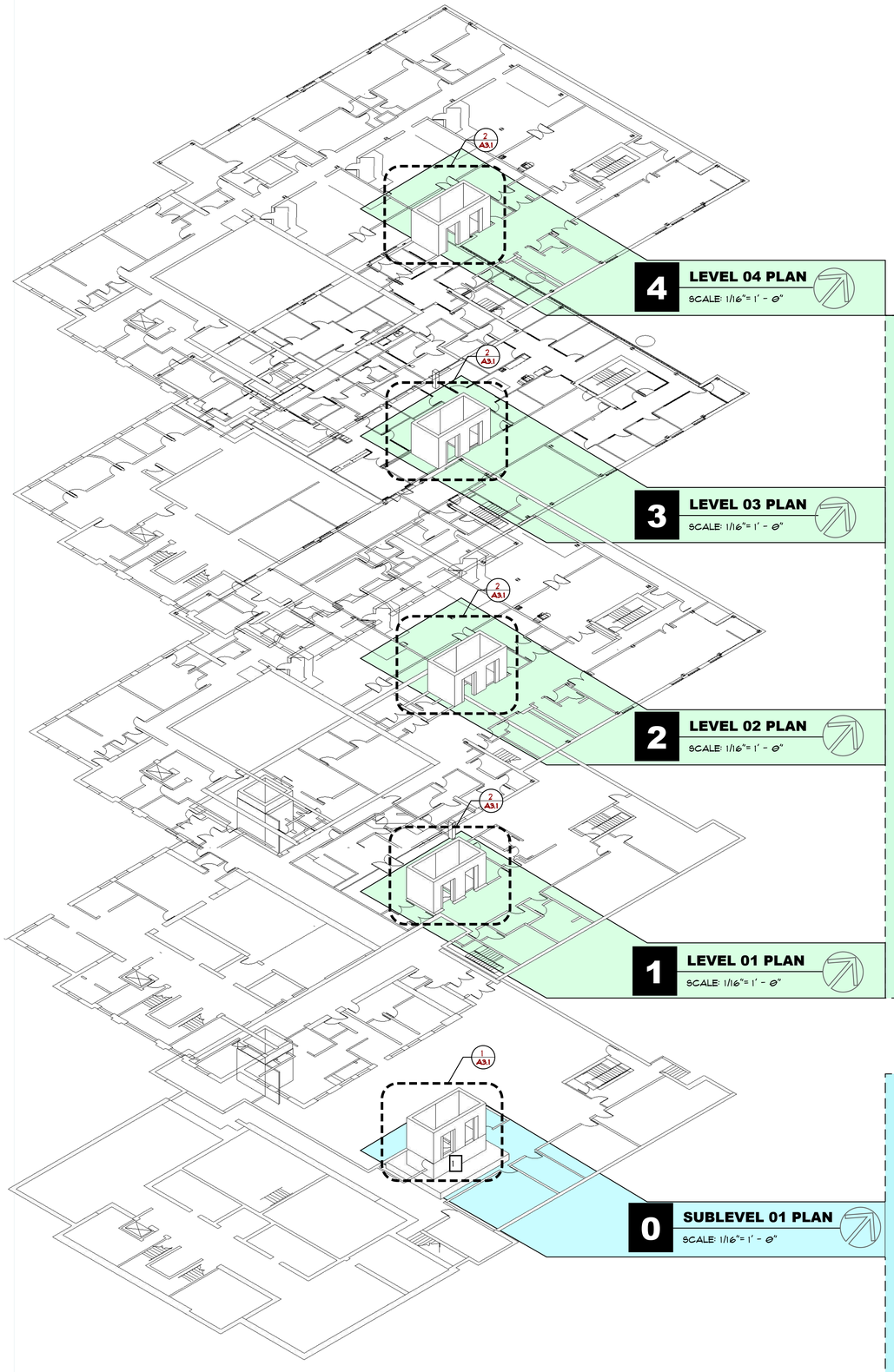
Specifications

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

Project Number: 2020.02
Date: 12/15/20

Sheet Number
A1.5



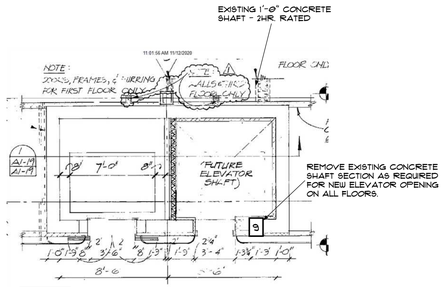
4 LEVEL 04 PLAN
SCALE: 1/16"= 1' - 0"

3 LEVEL 03 PLAN
SCALE: 1/16"= 1' - 0"

2 LEVEL 02 PLAN
SCALE: 1/16"= 1' - 0"

1 LEVEL 01 PLAN
SCALE: 1/16"= 1' - 0"

0 SUBLEVEL 01 PLAN
SCALE: 1/16"= 1' - 0"



5 EXISTING ELEVATOR CORE PLAN
SCALE: 1/16"= 1' - 0"

DEMOLITION NOTES

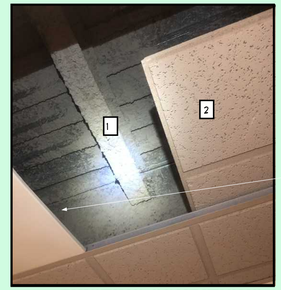
1. REMOVE EXISTING FLOOR FINISHES, CONCRETE SLAB, MTL DECKING, AND STL SUPPORT FRAMING .
2. REMOVE EXISTING CEILING SYSTEM AND ALL ELECTRICAL FIXTURES AND SYSTEMS COMPONENTS.
3. REMOVE EXISTING H.M. DOOR, HARDWARE AND FRAME.
4. REMOVE AND RELOCATE EXISTING FIRE ALARM COMPONENTS AS DIRECTED BY ELECTRICAL
5. REMOVE ALL DRYWALL AND FRAMING ALONG WITH ALL ELECT. COMPONENTS.
6. REMOVE ALL EXISTING FURNISHINGS, SHELVING, AND FFE ITEMS.
7. REMOVE ALL EXISTING SIGNAGE AND DIRECTORIES AND REINSTALL AS DIRECTED BY OWNER..
8. REMOVE EXISTING FINISHES, WALL MATERIALS AND FRAMING AS REQUIRED FOR NEW ELEVATOR OPENING.
9. REMOVE SECTION OF EXISTING CMU &CONCRETE AT ELEVATOR CORE AS REQUIRED FOR NEW ELEVATOR OPENING.

ADDITIONAL DEMOLITION NOTES

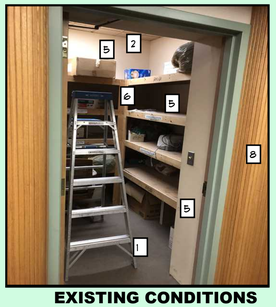
REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL OR SPECIFIC DEMOLITION REQUIREMENTS.

ALL DEMOLITION WORK SHOULD BE COORDINATED WITH OWNER PRIOR TO BEGINNING WORK.

ALL DEMOLITION WORK IS TO BE COORDINATED WITH NEW WORK REQUIRED FOR NEW ELEVATOR AND OPENNING.



G EXISTING CONDITIONS PHOTO



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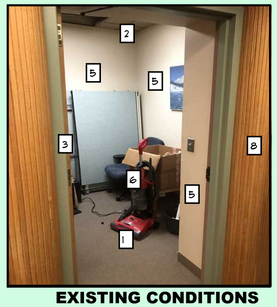
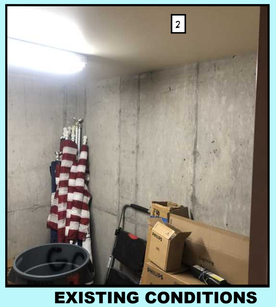


E EXISTING CONDITIONS PHOTO

D EXISTING CONDITIONS PHOTO



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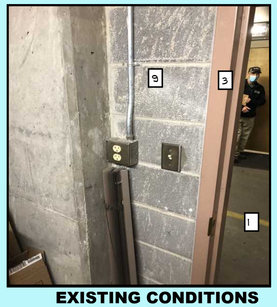

B EXISTING CONDITIONS PHOTO

A EXISTING CONDITIONS PHOTO

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STATE OF COLORADO
DOUGLAS H. FORTENFIELD
B-2491
LICENSED ARCHITECT
12/14/20

Garfield County Courthouse Elevator Addition
109 8th Street
Glenwood Springs, CO 81601

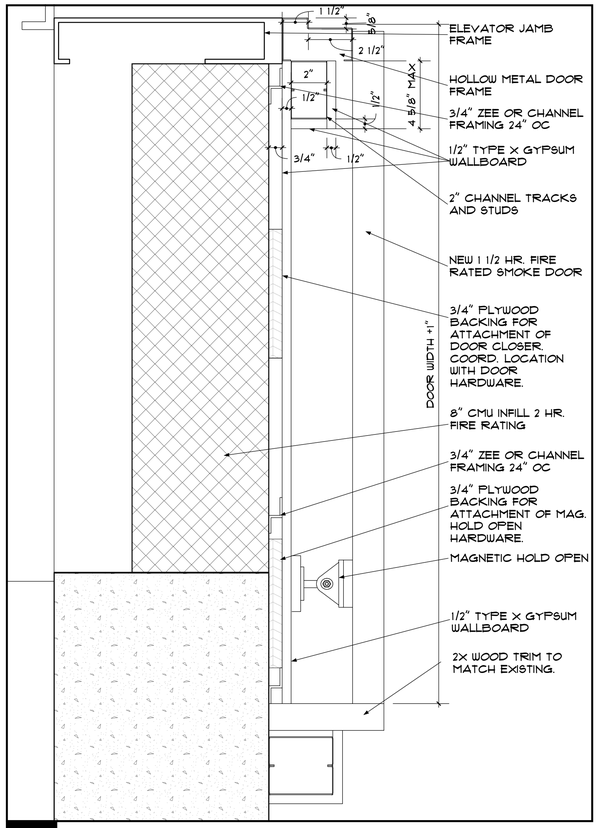
Demolition Plans

Updates/Revisions

Construction Set: 12/15/20
Addendum 1: 0/00/00

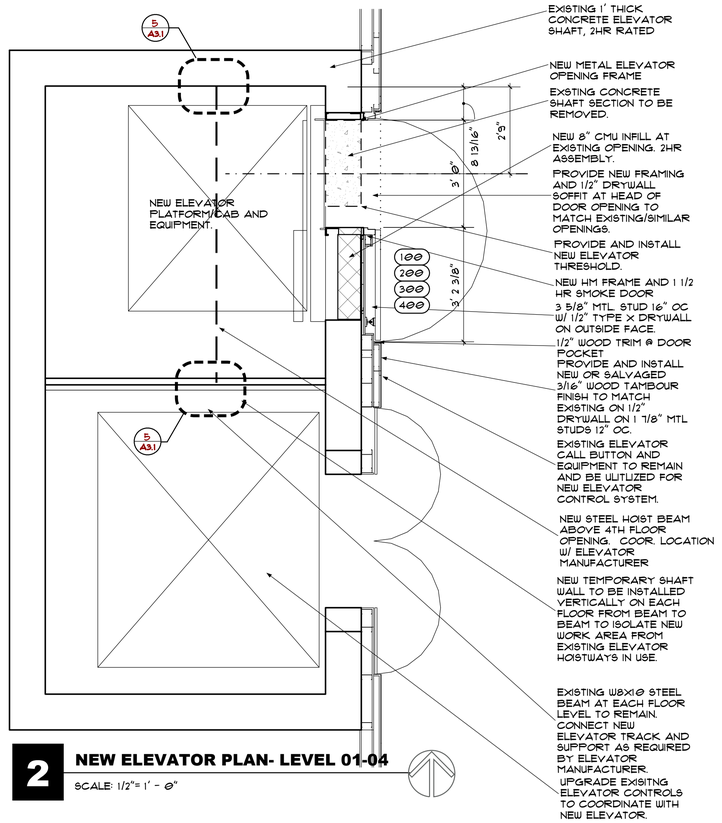
Project Number: 2020.02
Date: 12/15/20

Sheet Number
A2.0



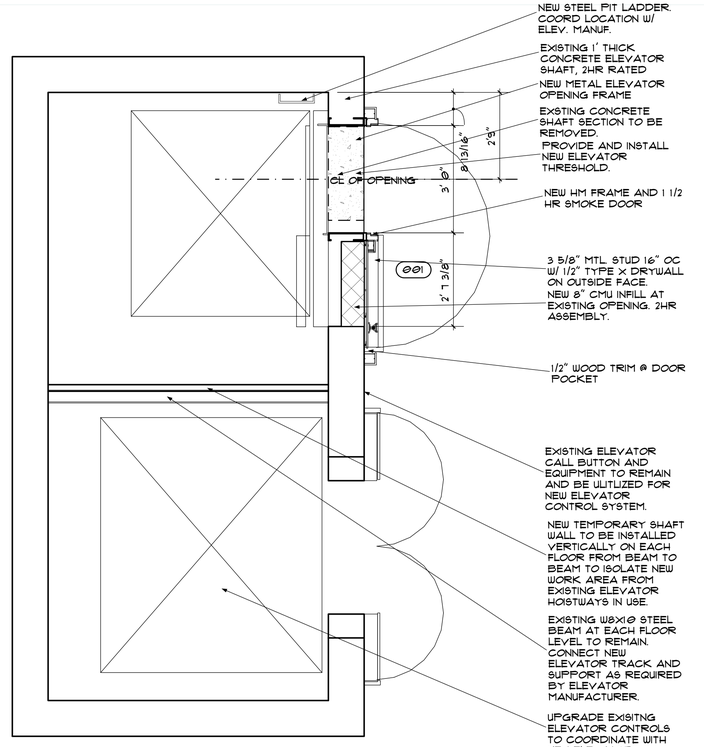
5 ELEVATOR H.M. FRAME JAMB

SCALE: 3"= 1' - 0"



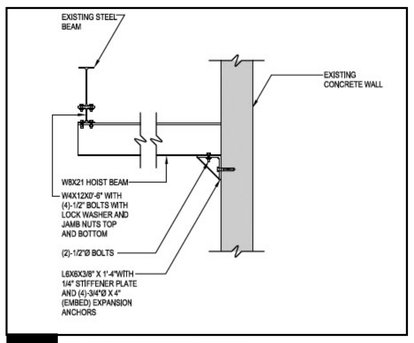
2 NEW ELEVATOR PLAN- LEVEL 01-04

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



1 NEW ELEVATOR PLAN - LOWER LEVEL

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



6 HOIST BEAM DETAIL

SCALE: 3/4"= 1' - 0"

GENERAL NOTES:

1. GC TO REVIEW AND INSPECT ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

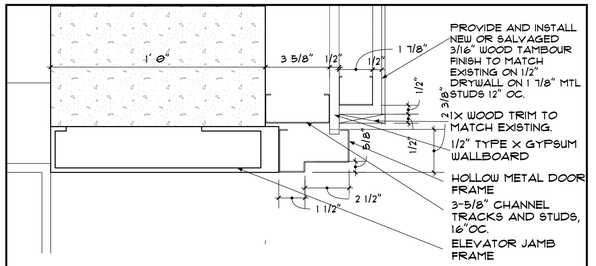
2. GC TO COORDINATE INSTALL OF NEW ELEVATOR W/ EXISTING CONDITIONS AND PROVIDE A SAFE ENVIRONMENT FOR BOTH WORKMAN AND OCCUPANTS OF THE FACILITY USING THE EXISTING ELEVATOR.

3. EXISTING ELEVATOR CONTROLS TO BE UPGRADED TO ALLOW FOR EXISTING ELEVATOR CALL BUTTONS TO REMAIN AND BE USED TO CONTROL BOTH ELEVATORS.

4. BOTH ELEVATORS TO BE PROGRAMMED FOR RECALL OF THE MAIN EXIT LEVEL (LEVEL 1) IN THE EVENT OF A FIRE OR EMERGENCY AND PROVIDE FIREFIGHTER'S EMERGENCY OPERATION.

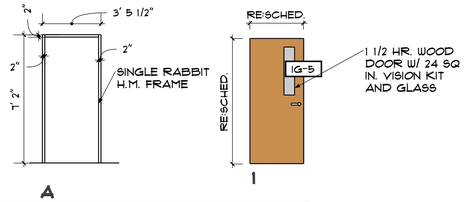
GLASS TYPES

1G-5	1" SEALED INSULATING LAMINATED GLAZING



3 ELEVATOR H.M. FRAME JAMB

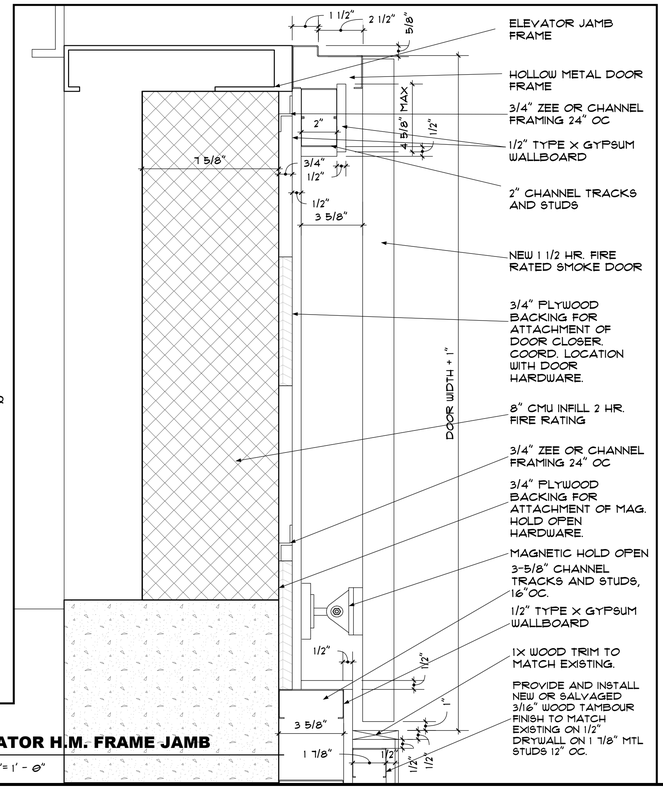
SCALE: 3"= 1' - 0"



DOOR SCHEDULE

NOTES	DOOR #	DOOR SIZE	THCK	DOOR TYPE	FRAME TYPE	FINISH DOOR	FINISH FRAME	HDWR GROUP	HEAD DETAIL	JAMB DETAIL	JAMB DETAIL	SILL DETAIL	GENERAL NOTES	FIRE RATING
	001	3' -1 1/2"W x 7'-0"H	1 3/4"	1	A	F. FIN.	PAINT			5/A3.1	5/A3.1			1 1/2 HR
	100	3' -1 1/2"W x 7'-0"H	1 3/4"	1	A	F. FIN.	PAINT			3/A3.1	4/A3.1			1 1/2 HR
	200	3' -1 1/2"W x 7'-0"H	1 3/4"	1	A	F. FIN.	PAINT			3/A3.1	4/A3.1			1 1/2 HR
	300	3' -1 1/2"W x 7'-0"H	1 3/4"	1	A	F. FIN.	PAINT			3/A3.1	4/A3.1			1 1/2 HR
	400	3' -1 1/2"W x 7'-0"H	1 3/4"	1	A	F. FIN.	PAINT			3/A3.1	4/A3.1			1 1/2 HR

ALUM = ALUMINUM HM= HOLLOW METAL PNT= PAINT OH=OPPOSITE HAND
WD - WOOD IHM= INSULATED HOLLOW METAL F. FIN = FACTORY FINISH STL - STEEL



4 ELEVATOR H.M. FRAME JAMB

SCALE: 3"= 1' - 0"

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MECHANICAL ELEMENTS / VALVING

- EXISTING EQUIPMENT OR PIPE TO BE REMOVED.
- GATE VALVE
- GLOBE VALVE
- PLUG VALVE
- BUTTERFLY VALVE
- BALL VALVE
- SWING CHECK VALVE
- LIFT CHECK VALVE
- GATE VALVE, ANGLE
- GLOBE VALVE, ANGLE
- DIAPHRAGM VALVE
- BALANCING VALVE
- CBV — CIRCUIT SETTING BALANCING VALVE
- THREE WAY CONTROL VALVE
- TWO WAY CONTROL VALVE
- S — SOLENOID VALVE
- PRV — PRESSURE REDUCING VALVE (PRV)
- TPV — TEMPERATURE/PRESSURE RELIEF VALVE
- AIR VENT — HYDRAULIC SEPARATOR
- RELIEF/SAFETY VALVE
- GAS COCK
- AUTOMATIC FILL VALVE
- MV — MANUAL AIR VENT
- AV — AUTOMATIC AIR VENT (EXTEND DISCHARGE TO DRAIN)
- FLOW METER-VENTURI
- FLOW METER-ORIFICE
- DIRECTION OF FLOW
- R D — DIRECTION OF PITCH-RISE OR DROP
- STRAINER
- STRAINER WITH BLOW OFF VALVE
- PIPE RISING UP
- PIPE DROPPING DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION - SCREWED OR FLANGED
- STEAM LEAK DETECTOR
- FSD — FIRE SMOKE DAMPER
- CO — CARBON MONOXIDE
- CD — CARBON DIOXIDE
- AIR SEPARATOR
- A — ANCHOR
- G — GUIDE
- EJ — EXPANSION JOINT
- FS — FLOW SWITCH
- TT — TEMPERATURE TRANSMITTER
- PT/PS — PRESSURE TRANSMITTER OR PRESSURE SWITCH
- TH — THERMOMETER
- GAUGE WITH GAUGE COCK & SYPHON (STEAM)
- AQUASTAT
- GAS PRESSURE REGULATOR
- FLOAT OPERATED CONTROL VALVE
- STEAM TRAP
- EXPANSION LOOP
- VB — VACUUM BREAKER
- T — THERMOSTAT
- S — DIGITAL SENSOR
- OR — PUMP
- HEAT EXCHANGER

HVAC & DUCTWORK SYMBOLS

- SECTION THROUGH RETURN DUCT
- SECTION THROUGH EXHAUST AIR DUCT
- SECTION THROUGH SUPPLY OR OUTSIDE AIR DUCT
- FSD — FIRE / SMOKE DAMPER
- SD — SMOKE DAMPER
- SUPPLY OR OUTSIDE AIR DUCT
- ACCESS DOOR (BOTTOM OR SIDE)
- ACOUSTICALLY LINED DUCT
- FD - SD - FSD — FIRE DAMPER, SMOKE DAMPER, FIRE/SMOKE DAMPER
- VD — MANUAL VOLUME DAMPER
- D — INCLINED DROP IN DIRECTION OF ARROW
- R — INCLINED RISE IN DIRECTION OF ARROW
- TRANSITION, RECTANGULAR TO ROUND
- FLEXIBLE DUCT
- IN-LINE FAN
- TRANSITION, RECTANGULAR
- SPIN-IN COLLAR INTO ADAPTER ON TOP OF DUCT
- CEILING SUPPLY AIR REGISTER/GRILLE
- SIDEWALL SUPPLY AIR REGISTER (SR)
- ELBOW TURNED DOWN
- ELBOW TURNED UP
- ELBOW, RADIUS TYPE
- ELBOW, SQUARE OR RECTANGULAR TYPE WITH AIRFOIL TURNING VANES
- CEILING RETURN AIR REGISTER (RR)
- SIDEWALL RETURN AIR REGISTER (RR)
- OPEN END DUCT
- FXC — FLEXIBLE CONNECTION

LINE DESIGNATION SYMBOLS

- CHWR — CHILLED WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CA — COMPRESSED AIR
- CR — CONDENSER WATER RETURN
- CS — CONDENSER WATER SUPPLY
- D — DRAIN
- HPR — HEAT PUMP RETURN
- HPS — HEAT PUMP SUPPLY
- HWR — HOT WATER RETURN
- HWS — HOT WATER SUPPLY
- G — NATURAL GAS
- RH — REFRIGERANT HIGH PRESSURE VAPOR
- R — REFRIGERANT LIQUID AND VAPOR LINE
- RS — REFRIGERANT SUCTION / VAPOR
- SMR — SNOWMELT RETURN
- SMS — SNOWMELT SUPPLY
- V — VENT PIPING

RESPONSIBLE DIVISION:

UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED AS FOLLOWS:

ITEM	FURNISHED	SET	POWER WIRED	CONTROL WIRED
EQUIPMENT	23	23	26	--
COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS, VFD'S AND CONTACTORS	23(1)	26	26(2)	23
FUSED AND UNFUSED DISCONNECT SWITCHES, THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS	26	26	26	--
MANUAL-OPERATING AND MULTI-SPEED SWITCHES	23	26	26	26
CONTROLS, RELAYS, TRANSFORMERS	23	23	26	23
THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES	23	23	26	23
THERMOSTATS (LINE VOLTAGE)	23	23	26	26
TEMPERATURE CONTROL PANELS	23	23	26	23
MOTOR AND SOLENOID VALVES, DAMPER MOTORS, PE & EP SWITCHES	23	23(2)	--	23(2)
PUSH-BUTTON STATIONS AND PILOT LIGHTS	23	23(2)	--	23(2)
HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROLS	23	23	26	23
EXHAUST FAN SWITCHES	23	26	26	23(2)

SUBSCRIPT FOOTNOTES:
1. MOTOR STARTER TO INCLUDE CONTROL TRANSFORMER, HOA SWITCH, (1) NO AND (1)NC AUXILIARY CONTACT, AND "ON" AND "OFF" PILOT LIGHTS.
2. IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 26. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 23, CONNECT UNDER DIVISION 26.

ABBREVIATIONS:

- 44" MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTER OF DEVICE
- A AMPS
- A.D. ACCESS DOOR
- AAV AIR ADMITTANCE VALVE
- ABV ABOVE
- AC AIR CONDITIONING UNIT
- AC ABOVE COUNTER
- AD AREA DRAIN (SEE SYMBOLS)
- A.F.C. ABOVE FINISHED CEILING
- A.F.G. ABOVE FINISHED GRADE
- AIC AMPERE INTERRUPTING CAPACITY
- A.F.F. ABOVE FINISHED FLOOR
- AHU AIR HANDLING UNIT
- ALUM ALUMINUM
- AP ACCESS PANEL OR DOOR
- ATS AUTOMATIC TRANSFER SWITCH
- AV AUDIO / VIDEO
- AVG AVERAGE
- AWG AMERICAN WIRE GAGE
- BAS BUILDING AUTOMATION SYSTEM
- BB BASEBOARD
- BD BACK DRAFT DAMPER
- BFP BACK FLOW PREVENTOR
- BL BOILER
- BLDG BUILDING
- BLW BELOW
- BOB BOTTOM OF BEAM
- BOD BOTTOM OF DUCT
- BOP BOTTOM OF PIPE
- BSMT BASEMENT
- BTU BRITISH THERMAL UNIT
- C CHILLER
- CAP CAPACITY
- CB CIRCUIT BREAKER
- CBV CIRCUIT BALANCING VALVE
- CCT CORRELATED COLOR TEMPERATURE
- CKT CIRCUIT
- CFH CUBIC FEET PER HOUR
- CFM CUBIC FEET PER MINUTE
- CHWR CHILLED WATER RETURN
- CHWS CHILLED WATER SUPPLY
- CI CAST IRON
- CL CENTER LINE
- CLG CEILING
- CMU CONCRETE MASONRY UNIT
- CO CLEAN OUT
- COL COLUMN
- COMP COMPRESSOR
- CONC CONCRETE
- COND CONDENSATE
- CONN CONNECTION
- CONT CONTINUATION
- CONTR CONTRACTOR
- CRI COLOR RENDERING INDEX
- CT COOLING TOWER
- CT CURRENT TRANSFORMER
- CU CONDENSING UNIT
- CU COPPER
- CUH CABINET UNIT HEATER
- CVB CONSTANT VOLUME BOX
- CWR CONDENSER WATER RETURN
- CWS CONDENSER WATER SUPPLY
- DB DRY BULB
- DEPT DEPARTMENT
- DF DRINKING FOUNTAIN
- DIA DIAMETER
- DIAG DIAGRAM
- DIFF DIFFERENTIAL
- DISCH DISCHARGE
- DIV DIVISION
- DN DOWN
- DS DUCT SILENCER
- DWG DRAWING
- DX DIRECT EXPANSION
- (A) EXISTING
- EA EXHAUST AIR GRILLE/REGISTER
- EAT ENTERING AIR TEMPERATURE
- EC ELECTRICAL CONTRACTOR
- ECC ECCENTRIC
- EF EXHAUST FAN
- EFF EFFICIENCY
- EL ELEVATION
- ELEC ELECTRIC
- ELEV ELEVATOR
- EM EMERGENCY FUNCTION
- ENT ENTERING
- EMT ELECTRIC METALLIC TUBE
- EQ EQUAL
- EQUIP EQUIPMENT
- EQUIV EQUIVALENT
- ES END SWITCH
- ESP EXTERNAL STATIC PRESSURE
- ET EXPANSION TANK
- EWC ELECTRIC WATER COOLER
- EWT ENTERING WATER TEMPERATURE
- EX EXHAUST
- EXPAN EXPANSION
- EXT EXTERNAL
- F DEGREES FAHRENHEIT
- FA FREE AREA
- FC FAN COIL UNIT
- FC FOOTCANDLE
- FCV FLOW CONTROL VALVE
- FD FIRE DAMPER
- FD FLOOR DRAIN
- FIN FINISHED
- FLA FULL LOAD AMPS
- FLEX FLEXIBLE
- FLR FLOOR
- FOB FLAT ON BOTTOM
- FOT FLAT ON TOP
- FP FIRE PROTECTION
- FP FIRE PUMP
- FPM FEET PER MINUTE
- FPS FEET PER SECOND
- FS FLOW SWITCH
- FSD FIRE/SMOKE DAMPER
- FT FEET
- FXC FLEXIBLE CONNECTION
- GND GROUND
- GA GAUGE
- GAL GALLON
- GALV GALVANIZED
- GEC GROUND ELECTRODE CONDUCTOR
- GFCI / GFI GROUND FAULT CIRCUIT INTERRUPTER
- GC GENERAL CONTRACTOR
- GPH GALLONS PER HOUR
- GPM GALLONS PER MINUTE
- GRS/LB GRAINS PER POUND
- H 2O WATER
- HB HOSE BIBB
- HD HEAD (SEE SCHEDULES)
- HP HEAT PUMP
- HP HORSEPOWER
- HR HOUR
- HT HEIGHT
- HTR HEATER
- HWR HEATING WATER RETURN
- HWS HEATING WATER SUPPLY
- HX HEAT EXCHANGER
- HZ HERTZ
- ID INSIDE DIAMETER
- IG ISOLATED GROUND
- IN INCHES
- INV INVERT
- JBOX JUNCTION BOX
- K KELVIN
- KW KILOWATT
- KVA KILO VOLT - AMPS
- L LENGTH
- LAT LEAVING AIR TEMPERATURE
- LV LAVATORY
- LB POUND
- LD LINEAR DIFFUSER
- LF LINEAR FEET
- LIN LINEAR
- LIQ LIQUID
- LM LUMEN
- LRA LOCKED ROTOR AMPS
- LV LOUVER
- LVG LEAVING
- LWT LEAVING WATER TEMPERATURE
- MBH THOUSANDS OF BTU PER HOUR
- MC MECHANICAL CONTRACTOR
- MCA MINIMUM CIRCUIT AMPACITY
- MCB MAIN CIRCUIT BREAKER
- MD MOTORIZED DAMPER
- MDP MAIN DISTRIBUTION PANEL
- MED MEDIUM
- MFR MANUFACTURER
- MIN MINIMUM
- MISC MISCELLANEOUS
- MLO MAIN LUG ONLY
- MOCP MAXIMUM OVERCURRENT PROTECTION
- MTD MOUNTED
- MUA MAKE-UP AIR UNIT
- N NEUTRAL
- NC NORMALLY CLOSED
- NEG NEGATIVE
- NIC NOT IN CONTRACT
- NL NIGHT / SECURITY LIGHT - DO NOT SWITCH
- NO NORMALLY OPEN
- NOM NOMINAL
- NTS NOT TO SCALE
- OA OUTSIDE AIR
- OBD OPPOSED BLADE DAMPER
- OC ON CENTER
- OCC OCCUPIED
- OCP OVER CURRENT PROTECTION
- OD OUTSIDE DIAMETER
- OL OVERLOAD
- ORD OVERFLOW ROOF DRAIN
- OZ OUNCE
- PBD PARALLEL BLADE DAMPER
- PD PRESSURE DROP
- PH PHASE
- POS POSITIVE PRESSURE
- POS POINT OF SALES
- PRV PRESSURE REDUCING VALVE
- PS PRESSURE SWITCH
- PSI POUNDS PER SQUARE INCH
- PT PRESSURE TRANSMITTER
- PTAC PACKAGED TERMINAL AIR CONDITIONER
- PV PLUG VALVE
- PVC POLYVINYL CHLORIDE
- QTY QUANTITY
- RA RETURN AIR GRILLE / REGISTER
- RCP REFLECTED CEILING PLAN
- RD ROOF DRAIN
- REL RELIEF
- REQD REQUIRED
- RF RETURN FAN
- RH RELATIVE HUMIDITY
- RHC REHEAT COIL
- RLA RATED LOAD AMPS
- RM ROOM
- RPM REVOLUTIONS PER MINUTE
- SA SUPPLY AIR GRILLE / REGISTER
- SC SHORT CIRCUIT
- SCA SHORT CIRCUIT AVAILABLE
- SCCR SHORT CIRCUIT CURRENT RATING
- SCH SCHEDULE
- SD SMOKE DAMPER
- SEF SMOKE EXHAUST FAN
- SF SUPPLY FAN
- SH SENSIBLE HEAT
- SH SHOWER
- SP STATIC PRESSURE
- SPD SURGE PROTECTION DEVICE
- SPEC SPECIFICATION
- SQ SQUARE
- SS STAINLESS STEEL
- SS SAFETY SHOWER
- STD STANDARD
- STL STEEL
- SYS SYSTEM
- TEMP TEMPERATURE
- TR TRANSFER GRILLE / REGISTER
- TR TAMPER RESISTANT
- TT TEMPERATURE TRANSMITTER
- TTB TELECOMMUNICATIONS TERMINAL BACKBOARD
- TYP TYPICAL
- TX TRANSFORMER
- UC UNDERCUT DOOR
- UH UNIT HEATER
- UNO UNLESS NOTED OTHERWISE
- UNOCC UNOCCUPIED
- UR URINAL
- V VOLTS
- VA VOLT AMPERE
- VA VALVE
- VAV VARIABLE AIR VOLUME UNIT
- VFD VARIABLE FREQUENCY DRIVE
- VRF VARIABLE REFRIGERANT FLOW
- VOLT VOLTAGE
- VTR VENT THROUGH ROOF
- W WIDTH
- W WATTS
- W/ WITH
- W/O WITHOUT
- WB WET BULB
- WC WATER COLUMN
- WC WATER CLOSET
- WG WATER GAUGE
- WP WEATHERPROOF
- WPIU WEATHERPROOF IN-USE
- WSR WITHSTAND RATING
- XFMR TRANSFORMER

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Mechanical & Electrical Engineers

SUBSTITUTIONS:

A. SUBSTITUTIONS: SUBSTITUTION OF SPECIFIED EQUIPMENT WILL BE ALLOWED THROUGH A PRIOR APPROVAL PROCESS AS TREATED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT INTENDED SUBSTITUTION AT LEAST FIVE DAYS PRIOR TO BID FOR APPROVAL FROM ENGINEER. SUBMITTAL SHALL INCLUDE CAPACITIES, DIMENSIONS AND OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT. SUBSTITUTION SHALL OCCUR AT NO COST TO THE OWNER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF APPROVED SUBSTITUTION AND SHALL INCUR ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING STRUCTURAL MODIFICATIONS, SPACE LAYOUT AND REDESIGN COSTS. SEE ALSO DIVISION I GENERAL REQUIREMENTS.

EXAMINATION OF SITE, DRAWINGS, SPECIFICATIONS:

A. EXAMINE CAREFULLY THE SITE AND CONDITIONS OF THE SITE. PROVIDE ALL NECESSARY EQUIPMENT AND LABOR TO INSTALL A COMPLETE WORKING SYSTEM WITHIN THE SITE CONDITIONS.

B. EXAMINE THE DRAWINGS AND SPECIFICATIONS AND 5 DAYS PRIOR TO BIDDING REPORT ANY ERRORS, OMISSIONS, INCONSISTENCIES, AND CONFLICTS TO THE ENGINEER TO BE REMEDIED IN AN ADDENDUM TO THE PROJECT PRIOR TO BID TIME.

C. DRAWINGS ARE DIAGRAMMATIC AND CATALOG NUMBERS GIVEN ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CAPACITY OF THE EQUIPMENT MEETS THE DRAWING REQUIREMENTS AND SHALL NOT DIMENSION FROM THE MECHANICAL, PLUMBING, OR PIPING DRAWINGS.

D. THE LATEST ADOPTED VERSIONS OF THE INTERNATIONAL BUILDING CODES SHALL BE USED AS REQUIRED. THIS WILL ALSO INCLUDE THE LATEST ADOPTED VERSIONS OF THE MECHANICAL, PLUMBING AND ENERGY CONSERVATION CODES. ALL METHODS AND MATERIALS REQUIRED BY THESE CODES SHALL BE REQUIRED BY THESE SPECIFICATIONS UNLESS INDICATED OTHERWISE. OTHER APPLICABLE LOCAL CODES AND ORDINANCES SHALL BE AS REQUIRED AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE KNOWLEDGEABLE OF THESE REQUIREMENTS.

E. WHERE INSTALLATION PROCEDURES OR ANY PART THEREOF ARE REQUIRED TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED, PRINTED COPIES OF THESE RECOMMENDATIONS SHALL BE FURNISHED TO THE ENGINEER PRIOR TO INSTALLATION. INSTALLATION OF THE ITEM WILL NOT BE ALLOWED TO PROCEED UNTIL THE RECOMMENDATIONS ARE RECEIVED. FAILURE TO FURNISH THESE RECOMMENDATIONS CAN BE CAUSE FOR REJECTION OF THE MATERIAL.

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COLORADO LICENSED — SHAWN P. BRILL — 25400 — 12/15/2020 — PROFESSIONAL ENGINEER

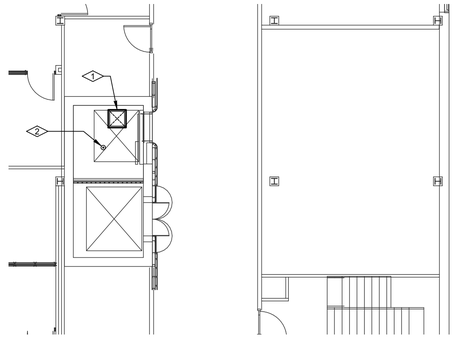
Garfield County Courthouse Elevator Addition

109 8th Street
GLENWOOD SPRINGS, CO 81601

Updates/Revisions
Bid/Construction Set

Project Number: 20-193
Date: 12/15/20

Sheet Number
M0-1



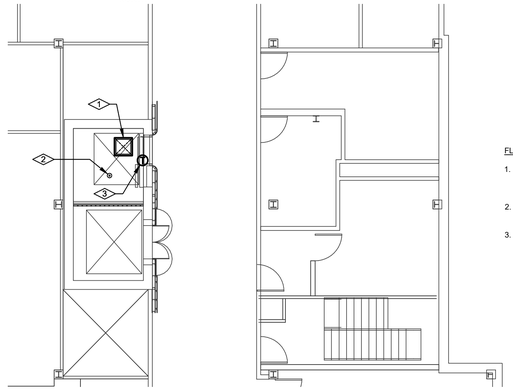
FLAG NOTES:

1. EXISTING SUPPLY DIFFUSER TO BE REMOVED. REMOVE SUPPLY DUCT AND CAP AT BRANCH TAKEOFF. ENSURE HOISTWAY IS CLEAR OF ANY MECHANICAL ITEMS THAT WOULD IMPACT INSTALLATION OF NEW ELEVATOR CAB.
2. EXISTING FIRE SPRINKLER TO BE REMOVED. REMOVE BRANCH PIPING BACK TO MAIN LINE. ENSURE HOISTWAY IS CLEAR OF ANY SPRINKLER PIPING.

MECHANICAL - LEVEL 3

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

NORTH



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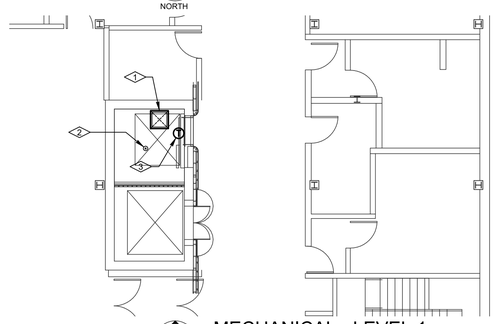
2. EXISTING FIRE SPRINKLER TO BE REMOVED. REMOVE BRANCH PIPING BACK TO MAIN LINE. ENSURE HOISTWAY IS CLEAR OF ANY SPRINKLER PIPING.
3. EXISTING TEMPERATURE SENSOR TO BE REMOVED. VERIFY WITH OWNER THE REMOVAL OF THIS SENSOR AND IT'S CONTROL FUNCTIONS (IF ANY).

MECHANICAL - LEVEL 2

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

NORTH



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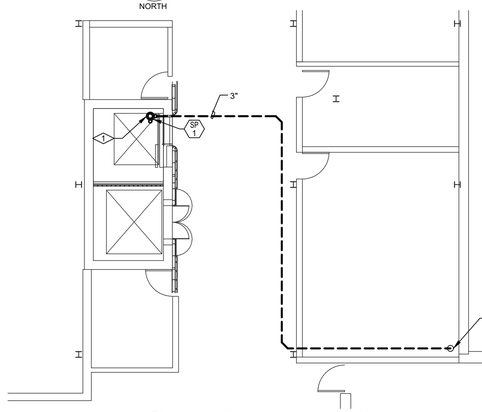
MECHANICAL - LEVEL 1

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

NORTH



FLAG NOTES:

1. PLACE PUMP ON FLOOR OF BOTTOM OF HOISTWAY. COORDINATE LOCATION WITH ELEVATOR EQUIPMENT AND ENSURE PUMP WILL NOT IMPACT ELEVATOR EQUIPMENT OR OPERATION. PROVIDE 3" PUMPED LINE AS SHOWN THROUGH THE BASEMENT TO THE MAIN WASTE LINE AS SHOWN. IT IS ANTICIPATED TO INSTALL THE PIPING IN THE CEILING OF BASEMENT OVER TO THE LOCATION OF THE WASTE LINE AS SHOWN. COORDINATE ROUTING OF THE LINE WITH EXISTING CONDITIONS. PROVIDE CHECK VALVE AND ISOLATION VALVE AT PUMP DISCHARGE. IF CONNECTION IS MADE TO A HORIZONTAL LINE AT THE MAIN WASTE LINE, THE PUMP DISCHARGE SHALL BE THROUGH A WYE FITTING ON THE TOP OF THE LINE.

MECHANICAL - SUBLEVEL 1

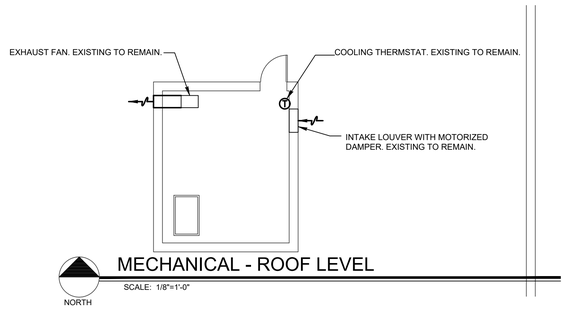
SCALE: 1/8"=1'-0"

NORTH

PUMP SCHEDULE

EQUIPMENT NO.	SERVICE	LOCATION	GPM	HEAD (FT.)	MOTOR					MANUFACTURER & MODEL	OPTIONS/ACCESSORIES
					WATTS	RPM	V./PH./HZ.	HP	FLA		
SP-1	ELEVATOR HOISTWAY	BOTTOM OF HOISTWAY	100	17	NA	1750	120/1/60	0.60	12	MYERS, MSK60	NOTE 1

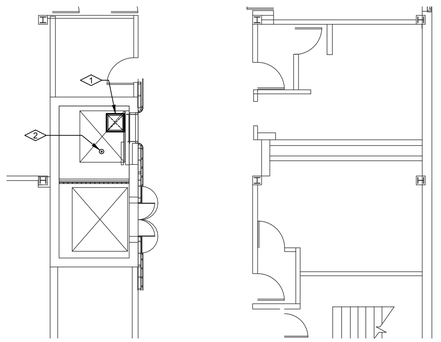
NOTES:
1. PROVIDE WITH CAST IRON CASING AND IMPELLER, NPT CONNECTIONS, AUTOMATIC OPERATION WITH DIAPHRAGM SWITCH, 20 FT POWER CORD. MOTOR HORSEPOWER SHALL BE GREATER THAN NON-OVERLOADING BRAKE HORSEPOWER.



MECHANICAL - ROOF LEVEL

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

NORTH



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MECHANICAL - LEVEL 4

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

NORTH

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MECHANICAL PROVISIONS

1. SCOPE OF WORK

A. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
B. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.
C. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

A. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ARCHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

4. FLEXIBLE DUCT WORK

A. FLEXIBLE TYPE DUCT SHALL BE OF TWO ELEMENT SPIRAL CONSTRUCTION COMPOSED OF A CORROSION RESISTANT METAL SUPPORTING SPIRAL AND COATED FABRIC WITH A MINERAL BASE. FLEXIBLE DUCT CONNECTORS SHALL BE LISTED BY U.L., CLASS 1 DUCTS, AND SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50.
B. USE OF FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN 6 LINEAR FEET PER RUN.
C. CONTRACTOR SHALL BE CAREFUL SO AS NOT TO KINK OR COLLAPSE FLEXIBLE DUCT.

5. REFRIGERANT

A. PIPING CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A WAY AS TO BE INCONSPICUOUS AND FREE FROM ANY POSSIBLE CONDENSATION.
B. INSULATE REFRIGERANT LINES WITH ARMOUR-FLEX TYPE INSULATION, SHALL BE TYPE "K" COPPER TUBING, WITH WROUGHT COPPER SOLDER TYPE FITTINGS SUITABLE FOR CONNECTION WITH SILVER SOLDER.

6. DUCTWORK

A. THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "SMACNA" APPLICABLE MANUALS.
B. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
C. CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON DRAWINGS.
D. ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS, SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 150 CFM.
E. ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA" STANDARDS AND ACCEPTED GOOD PRACTICE.
F. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES.DIMENSIONS MAY BE CHANGED SO LONG AS THE NET FREE FACE AREA IS MAINTAINED.
G. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1-1/2" FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.
H. ALL SUPPLY AND RETURN DUCTWORK 15 FEET DOWNSTREAM OF THE HVAC UNIT SHALL BE INTERNALLY LINED WITH A 1/2" ACOUSTICAL DUCT LINER UNLESS OTHERWISE NOTED ON THE DRAWINGS.

7. DRAINAGE PIPING

A. (CONDENSATE) SHALL BE SCHEDULE 40 PVC PIPE WITH SOLVENT JOINTS. PITCH HORIZONTAL LINES 1" IN 10'-0". CONDENSATE DRAINS SHALL BE ROUTED TO FLOOR DRAIN, ROOF DRAIN OR INDIRECT WASTE DRAIN.

8. HVAC CONTROLS

A. CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

9. ELECTRICAL

A. CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.

10. PIPE SUPPORTS

A. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAP TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING TO BE SUPPORTED EVERY 4 FEET.

11. GAS PIPING

A. PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE IRON FITTINGS.
WHERE GAS PIPE CONNECTS TO EQUIPMENT, IT SHALL BE PROVIDED WITH A DRIP LEG THE FULL SIZE OF THE RUNOUT, A 100% SHUT-OFF VALVE AND A UNION. GAS PIPING CONTAINING PRESSURE GREATER THAN 9" W.G. SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH WELDED JOINTS.

12. MISCELLANEOUS

A. ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE.
COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION.
B. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS.
C. VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.
D. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT.
E. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE.
D. PEX TUBING, IF PEX TUBING IS USED AS AN APPROVED ALTERNATE FOR APPLICATIONS WHERE METALLIC PIPING IS THE BASIS OF DESIGN, THE PEX MANUFACTURER SHALL SUBMIT SHOP DRAWINGS CLEARLY INDICATING THAT THE DESIGN HAS BEEN ANALYZED AND MODIFIED, AS REQUIRED TO MAINTAIN SCHEDULED HYDRONIC SYSTEM PARAMETERS. ANY DESIGN RESULTING IN INCREASED SYSTEM PRESSURE DROP AS A RESULT OF IMPROPER PEX SIZING OR DESIGN SHALL NOT BE PERMITTED.

13. TESTING AND BALANCING

A. THE HVAC SYSTEM SHALL BE TESTED AND AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

14. GUARANTEE

A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE(1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.
B. FOR THE SAME PERIOD, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

PLUMBING SPECIFICATION

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B. ALL WORK IS TO BE PREFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION), ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.

C. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.

D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED AS EQUAL" BY THE ENGINEER OR ARCHITECT.

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4. DOMESTIC WATER SUPPLY PIPING

A. UNDERGROUND: PROVIDE TYPE "K" SOFT DRAWN COPPER TUBING WITH BRAZED CONNECTIONS.

B. ABOVE GROUND: PROVIDE TYPE "L" HARD DRAWN COPPER TUBING WITH 125 PSI SOLDER JOINTS, COPPER OR BRASS FITTINGS. ALL SOLDER TO BE "NO LEAD" TYPE.

C. ALL HOT WATER PIPING TO BE INSULATED WITH 1" FIBERGLASS INSULATION.

D. ALL COLD WATER PIPING TO BE INSULATED WITH ½" FOAM INSULATION.

5. SANITARY/STORM DRAINAGE AND VENT PIPING

A. ABOVE GRADE:

-2" BELOW: SCHEDULE 40 GALV. STEEL PIPE WITH SCREWED ENDS OR SOLID CORE SCHEDULE 40 PVC WITH SOLVENT JOINTS OR DWV COPPER WITH SOLDER JOINTS. ALL SOLDER TO BE "NO LEAD" TYPE.

-3" AND ABOVE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SOLID CORE SCHEDULE 40 PVC WITH SOLVENT JOINTS.

B. BELOW GRADE: SERVICE WT. CAST IRON WITH NO-HUB OR BELL AND SPIGOT JOINTS; OR SOLID CORE SCHEDULE 40 PVC WITH SOLVENT JOINTS.

C. PVC PIPING SHALL NOT BE USED IN AIR PLENUM CEILINGS AND SHALL NOT CROSS FIRE RATED WALLS, CEILINGS, OR FLOORS.

D. DRAINAGE PIPING SHALL BE RUN AS STRAIGHT AS POSSIBLE AND SHALL HAVE LONG TURN FITTINGS.

E. DRAINAGE PIPING 3" SIZE AND SMALLER SHALL RUN AT A UNIFORM GRADE OF AT LEAST ¼" PER FOOT. AND PIPING LARGER THAN 3" SHALL BE RUN AT A GRADE OF NO LESS THAN ⅛" PER FOOT.

F. ALL VENT PIPING SHALL BE SLOPED TO DRAIN BACK TO FIXTURES.

G. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FLASHING OF THE VENT PIPING RUN THROUGH THE ROOF.

H. PVC USED TO BE SOLID CORE TYPE SCHEDULE 40 PVC.

7. PIPE SUPPORTS

A. ABOVE GRADE: ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE AND PERFORATED METAL TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL BE A S SPECIFIED IN INTERNATIONAL PLUMBING CODE (LATEST EDITION).

B. BELOW GRADE: EARTH SHALL BE EXCAVATED TO A MINIMUM DEPTH WITH AN EVEN SURFACE TO INSURE SOLID BEARING OF PIPE FOR ITS ENTIRE LENGTH.

-INTERIOR: THE PIPE SHALL BE INSTALLED (UNLESS OTHERWISE SPECIFIED) A MINIMUM OF 4 INCHES BELOW THE BOTTOM OF THE SLAB AND SHALL NOT BE IN ANY DIRECT CONTACT WITH THE CONCRETE AT ANY POINT.

-EXTERIOR: THE WATER PIPE SHALL HAVE A MINIMUM OF 60" OF COVER AND THE SANITARY WASTE PIPE SHALL HAVE A MINIMUM OF 24" OF COVER.

8. MISCELLANEOUS

A. COORDINATE INSTALLATION OF ALL ROOFS FLASHING AT ROOF PENETRATIONS.

B. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS AND DIMENSIONS AT THE JOB SITE.

C. THE PLUMBING PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION. THE EXACT DIMENSIONS OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT THE AVAILABLE SPACE.

9. TESTING

A. PLUMBING SYSTEM SHALL BE FLOW AND PRESSURE TESTED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (LATEST EDITION).

10 GUARANTEE

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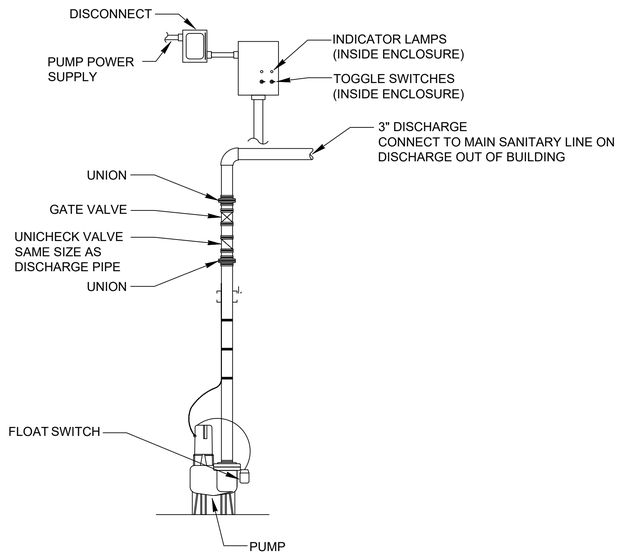

ELEVATOR SUMP PUMP DETAIL

NOT TO SCALE

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FIRE ALARM EQUIPMENT LEGEND

FACP	FIRE ALARM CONTROL PANEL
F	FIRE ALARM PULL STATION
	FIRE ALARM HORN
	FIRE ALARM STROBE
	FIRE ALARM HORN/STROBE
	CEILING MOUNTED SPEAKER
D	DUCT DETECTOR
R	REMOTE LAMP
S P	SMOKE DETECTOR - PHOTOELECTRIC
H 135°	135° STANDARD HEAT DETECTOR
PIR	PIR DETECTOR
DH	DOOR HOLD - MAGNETIC HOLD
FS	FLOW SWITCH
TS	TAMPER SWITCH

COMMUNICATION LEGEND

	CLOCK ONLY
	CLOCK / PA SPEAKER WALL MOUNTED
S	ROUND CEILING MOUNTED SPEAKER
S	SQUARE SPEAKER
H C	INTERCOM PUSH TO CALL SWITCH
WAP	WIRELESS ACCESS POINT ABOVE THE CEILING
PROJECTOR	ABOVE THE CEILING PROJECTOR CONNECTION
HDMI	WALL MOUNTED HDMI
	PLAIN DATA OUTLET
80"	PLAIN DATA OUTLET WITH MOUNTING HEIGHT
	COMBINATION DATA/TELEPHONE
	FLOOR MOUNTED COMBINATION DATA/TELEPHONE
	CEILING MOUNTED COMBINATION DATA/TELEPHONE
	TELEVISION OUTLET

SECURITY SYSTEM LEGEND

	SECURITY CAMERA
HC	ADA DOOR OPERATOR PUSH BUTTON
DS	ELECTRIC DOOR STRIKE
CR	CARD READER FOR DOOR OPENERATOR

LIGHTING LEGEND

NOTES:

SYMBOLS SHOWN ARE STANDARD. VARIATION AND/OR COMBINATIONS MAY BE USED ON THE PLANS. THIS LIST SHOWS STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL ON THE PROJECT DRAWINGS OCCUR, THE ITEM SHALL BE PROVIDED AND INSTALLED.

VARIATION AND/OR COMBINATION MAY BE USED ON THE PLANS.

A NUMBER NEXT TO A RECEPTACLE OR DEVICE INDICATES A CIRCUIT NUMBER.

AN UPPER CASE LETTER NEXT TO A SWITCH INDICATES THE FUNCTION OF THE SWITCH. A LOWER CASE LETTER INDICATES THE SWITCH CIRCUIT.

AN UPPER CASE LETTER NEXT TO A LIGHT FIXTURE INDICATES THE TYPE OF FIXTURE. REFER TO THE LUMINAIRE SCHEDULE FOR FIXTURE SPECIFICATIONS. A LOWER CASE LETTER NEXT TO A LIGHT CORRESPONDS TO THE SWITCH DESIGNATION.

SWITCHES

$	SINGLE POLE SWITCH
$2	TWO POLE SWITCH
$3	THREE-WAY SWITCH
$4	FOUR-WAY SWITCH
$D	DIMMER SWITCH
$3D	3 WAY DIMMER SWITCH - (4D INDICATES A 4WAY DIMMER)
$DR	DOOR ACTIVATED SWITCH
$MA	WALL MOUNTED DUAL TECHNOLOGY MANUAL ON / AUTO OFF VACANCY SENSOR SWITCH
$LV	LOW VOLTAGE LIGHT SWITCH
$TO	MANUAL MOTOR STARTER
$P	PILOT LIGHT SWITCH
$DS	AUTO ON / AUTO OFF LIGHT SWITCH
$MO	DUAL TECHINOLOGY MOTION / OCCUPANCY SENSOR LIGHT SWITCH
$DMA	MANUAL ON / AUTO OFF DIMMING LIGHT SWITCH
$K	KEY OPERATED LIGHT SWITCH
$T	MANUAL ON - TIMED OFF LIGHT SWITCH
OS OS	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH
MA MA	CEILING MOUNTED DUAL TECHNOLOGY MANUAL ON / AUTO OFF VACUITY SENSOR
$SC	SCENE CONTROL STATION
$MS	UNIT LIGHTING MANAGEMENT CONTROL STATION,

LIGHT FIXTURES

A	1'x4' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED
A	2'x4' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED
A	2'x2' LED TROFFER OR DIRECT/INDIRECT TYPE FIXTURE GRID, FLANGE OR SURFACE MOUNTED
	OPEN STRIP FIXTURE
	WALL BRACKET LINEAR FIXTURE
A	WALL MOUNTED SCONCE LIGHT FIXTURE
A	RECESSED DOWNLIGHT CAN FIXTURE
A	SURFACE CEILING OR PENDANT MOUNTED FIXTURE
EX2	DOUBLE FACE EXIT SIGN, WALL AND CEILING MOUNTED
EX1	SINGLE FACE EXIT SIGN, WALL AND CEILING MOUNTED
EM	WALL MOUNTED EMERGENCY LIGHT
EMR	EMERGENCY EXTERIOR EGRESS FIXTURE

GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK TO COMPLY WITH LATEST EDITION OF NEC, IECC AND ALL APPLICABLE GOVERNING CODES.
2. FIELD COORDINATION DURING CONSTRUCTION IS IMPERATIVE. CONTRACTORS BIDDING THIS WORK MUST MAKE REASONABLE ALLOWANCES FOR UNFORESEEN CONTINGENCIES.
3. ELECTRIC UTILITY TO ADVISE OWNER AND/OR THE ELECTRICAL ENGINEER PRIOR TO SERVICE MODIFICATION REQUIRING COST TO THE OWNER.

WIRING:

1. ALL WIRING IS SHOWN DIAGRAMMATICALLY ON DRAWING, FIELD VERIFY ALL CONDITIONS PRIOR TO ROUGH-IN.
2. ALL CONDUITS AND CONVEYANCES SHALL BE CONCEALED. IN THE EVENT THAT A NEW DEVICE IS BEING INSTALLED IN AN EXISTING DRYWALL PARTITION, PROVIDE A CUT IN TYPE BOX AND FISH FLEXIBLE CONDUIT DOWN INSIDE THE WALL FROM ABOVE THE CEILING AND REPAIR THE DRYWALL AROUND THE CONDUIT. TRANSITION TO EMT ONCE ABOVE THE CEILING.
3. SIZES OF WIRE AND CABLES ARE BASED UPON COPPER CONDUCTORS, UNLESS OTHERWISE INDICATED. ALL CIRCUITS SHALL CONTAIN (2) #12 AWG WITH (1) #12 GND IN 1/2" CONDUIT UNLESS NOTED OTHERWISE.
4. ALL BRANCH CIRCUITS WITH HOME RUNS OVER 50 FEET, WILL BE SIZED ONE SIZE LARGER.
5. ALL PENETRATIONS IN OR THROUGH FIRE RATED PARTITIONS SHALL BE FIRE STOPPED IN SUCH A WAY THAT THE PENETRATION MATCHES THE FIRE RATING OF THE WALL.
6. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION BETWEEN THE APPROPRIATE DISCIPLINES AND CONTRACTORS.
7. COORDINATE ALL DEVICE, FIXTURE AND HARDWARE COLOR SELECTIONS WITH THE ARCHITECT PRIOR TO MAKING SHOP DRAWING SUBMITTALS.
8. COORDINATE THE MOUNTING HEIGHTS OF ALL RECEPTACLES MOUNTED ABOVE COUNTERS, CASEWORK AND APPLIANCE RECEPTACLES WITH ARCHITECTURAL ELEVATIONS.
9. BRANCH CIRCUIT AND SPECIAL SYSTEMS WIRING FOR DEVICES ON WALLS IN FINISHED AREAS WHICH CANNOT BE CONCEALED SHALL BE INSTALLED IN SURFACE MOUNTED RACEWAY.
10. ALL EXPOSED CONDUITS, BOXES, ETC. IN ROOMS TO BE PAINTED SHALL BE PAINTED TO MATCH THE SURROUNDING SURFACE. EXPOSED CONDUITS, BOXES, ETC. IN ROOMS WHICH ARE NOT PAINTED MAY BE LEFT UN-PAINTED. EXPOSED CONDUIT, BOXES, ETC. ON THE EXTERIOR OF BUILDINGS SHALL BE PAINTED TO MATCH THE SURROUNDING SURFACE AS CLOSELY AS POSSIBLE.
11. THE CONTRACTOR IS RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALLS, CEILING OR OTHER BUILDING ELEMENTS WHICH ARE DISTURBED AS PART OF THE DEMOLITION AND/OR INSTALLATION OF ELECTRICAL WORK.
12. PROVIDE ELECTRICAL CONNECTION TO ALL FIRE, SMOKE, AND FIRE / SMOKE DAMPERS INCLUDING POWER AND FIRE ALARM. VERIFY EXACT SIZE AND FINAL LOCATION OF ALL DAMPERS WITH THE MECHANICAL CONTRACTOR. ALL ROOFTOP UNITS RATED AT MORE THAN 2000 CFM WILL BE OUTFITTED WITH A DUCT DETECTOR IN THE RETURN DUCT. ALL ROOFTOP UNITS RATED AT MORE THAN 15000 CFM WILL BE OUTFITTED WITH A DUCT DETECTOR IN BOTH THE SUPPLY AND RETURN DUCT AT ROOFTOP LEVEL AND IN THE RETURN DUCT AT EVERY LEVEL THAT IS SERVED. ELECTRICAL CONTRACTOR WILL PROVIDE A REMOTE TEST STATION AND ALL WIRING NECESSARY TO COMPLETE INSTALLATION.
13. REFER TO THE MECHANICAL EQUIPMENT SCHEDULE FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH PLUMBING AND HVAC EQUIPMENT AND OWNER/GENERAL CONTRACTOR FURNISHED EQUIPMENT.

ELECTRICAL EQUIPMENT LEGEND

	BRANCH CIRCUIT PANELBOARD
	TELEPHONE TERMINAL BOARD
	ELECTRIC MOTOR
F	FUSED SAFETY SWITCH / DISCONNECT COMBINATION
M	MOTOR STARTER
	CONTACTOR
LA-7	CIRCUITRY HOMERUN: PANEL LA - CIR. #7
	CONDUIT OR WIRE CONCEALED IN WALL/CLG. (SOLID LINE TYPE)
	CONDUIT OR WIRE UNDERFLOOR/UNDERGND. (CENTER LINE TYPE)

MAIN DISTRIBUTION GEAR

	CIRCUIT BREAKER IN A PANEL BOARD
	PAD MOUNTED UTILITY TRANSFORMER
100 A 2 POLE FUSED DISCONNECT	FUSED DISCONNECT 100A = AMP RATING 2P = NUMBER OF POLES
M	ELECTRICAL METER SHOWN ON ONE-LINE DIAGRAMS
PP1 225A MCB 120/208V 3PH, 4W	ELECTRICAL POWER PANEL WITH MAIN LUG OR MAIN BREAKER PP1= PANEL NAME 225A MLO = MAIN LUG OR BREAKER SIZE 120/208V = PANEL VOLTAGE 3PH, 4 WIRE = PANEL PHASE, DISTRIBUTION TYPE
PP1 225A MLO 120/208V 3PH, 4W	

ELECTRICAL DEVICE LEGEND

J	CEILING JUNCTION BOX - SURFACE/FLUSH
J	WALL JUNCTION BOX - SURFACE/FLUSH
	DUPLEX RECEPTACLE
	FLOOR MOUNTED RECEPTACLE
	SPLIT WIRED DUPLEX RECEPTACLE
	CEILING MOUNTED DUPLEX RECEPTACLE
	FOURPLEX RECEPTACLE
	FLOOR MOUNTED FOURPLEX RECEPTACLE
	APPLIANCE RECEPTACLE - 3 WIRE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
USB	RECEPTACLE WITH USB CHARGING CAPABILITES
AC	RECEPTACLE MOUNTED ABOVE COUNTER
CW	RECEPTACLE MOUNTED IN CASEWORK
D	ELECTRIC HAND DRYER
T	THERMOSTAT
	OPEN/CLOSE/STOP PUSH BUTTON
<1>	DRAWING KEY NOTES
ROOM 100	ROOM DESIGNATION
GFCI WP	GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE WITH A WEATHER PROOF COVER
GFCI 44"	GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE MOUNTED AT 44" ABOVE FINISHED FLOOR

LUMINAIRES:

1. COORDINATE THE LOCATION OF ALL LIGHTING EQUIPMENT INCLUDING BUT NOT LIMITED TO THE LUMINAIRES, SWITCHES WITH THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND ALL OTHER TRADES AS REQUIRED. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONAL LOCATION OF LIGHT FIXTURES.
2. LIGHTING FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE AND SHALL NOT BE SUPPORTED FROM THE T-BAR CEILING GRID.
3. THE ELECTRICAL CONTRACTOR IS TO CONFIRM THE LIGHT FIXTURES ORDERED WILL BE COMPATIBLE WITH THE CEILING TYPES AS SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLANS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING THE FIXTURES.
4. VERIFY LUMINAIRE MOUNTING REQUIREMENTS AND OVERALL HEIGHT OF ALL PENDANT MOUNTED FIXTURES PRIOR TO ORDERING.
5. ALL LIGHT FIXTURES NEED TO BE COMPATIBLE WITH THE SWITCHES AND CONTROLS BEING PROVIDED.
6. THE LIGHTING PACKAGE SHALL BE APPROVED BY BOTH THE ARCHITECT AND ENGINEER AS APPROVED EQUAL BEFORE BID. NO LIGHT FIXTURE SHALL BE ORDERED UNTIL THE LIGHT FIXTURE SUBMITTAL PACKAGE HAS BEEN APPROVED IN WRITING BY THE ARCHITECT, GENERAL CONTRACTOR AND ELECTRICAL ENGINEER.
7. COORDINATE LUMINAIRE MOUNTING REQUIREMENTS PRIOR TO PLACING ORDER.

EMERGENCY AND EXIT LIGHTS:

1. PROVIDE EMERGENCY AND EXIT SIGNS AS PER ALL GOVERNING CODES.
2. EXIT SIGNS CONNECTED TO A REMOTE EMERGENCY HEAD REQUIRE EXTRA BATTERY CAPACITY TO OPERATE THE REMOTELY LOCATED EMERGENCY HEAD FOR EGRESS AWAY FROM THE BUILDING.
3. REFER TO THE PLANS FOR THE NUMBER OF FACES REQUIRED AT EACH EXIT. FIELD ADJUST THE LOCATION OF THE EXIT SIGNS AND NUMBER OF FACES FOR THE BEST VISIBILITY POSSIBLE.
4. ALL LIGHTING FIXTURES DENOTED WITH "EM" SHALL BE PROVIDED WITH AN ENGINEER APPROVED EMERGENCY LED DRIVER OR INVERTER TO OPERATE THE FIXTURE IN AN EMERGENCY MODE TO MEET ALL CURRENT GOVERNING CODES AND WILL BE CIRCUITED TO THE UNSWITCHED SIDE OF THE LIGHTING CIRCUIT.
5. ALL LIGHT FIXTURES DESIGNATED WITH "EM" OR SPECIFIED WITH AN EMERGENCY FUNCTION SHALL BE PROVIDE WITH ONE OF THE FOLLOWING.
   a. INTEGRAL TEST SWITCH
   b. REMOTE INFRARED HANDHELD DEVICE
   c. INTEGRAL ELECTRONIC DEVICE THAT AUTOMATICALLY PERFORMS CODE REQUIRED TESTS.
6. ALL STAIRWELLS AND PATHS OF EGRESS TO THE EXTERIOR DOORS AND THE EXTERIOR PATH OF EGRESS AWAY FROM THE BUILDING SHALL RECEIVE EMERGENCY LIGHTING PER CODE.

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RESPONSIBLE DIVISION:

UNLESS OTHERWISE INDICATED ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, AND OTHER MECHANICAL EQUIPMENT, MOTORS, AND CONTROLS SHALL BE FURNISHED, SET IN PLACE AND WIRED AS FOLLOWS:

ITEM	FURNISHED	SET	POWER WIRED	CONTROL WIRED
EQUIPMENT	23	23	26	--
COMBINATION MAGNETIC MOTOR STARTERS, MAGNETIC MOTOR STARTERS, VFD'S AND CONTACTORS	23(1)	26	26(2)	23
FUSED AND UNFUSED DISCONNECT SWITCHES, THERMAL OVERLOAD SWITCHES AND HEATERS, MANUAL MOTOR STARTERS	26	26	26	--
MANUAL-OPERATING AND MULTI-SPEED SWITCHES	23	26	26	26
CONTROLS, RELAYS, TRANSFORMERS	23	23	26	23
THERMOSTATS (LOW VOLTAGE) AND TIME SWITCHES	23	23	26	23
THERMOSTATS (LINE VOLTAGE)	23	23	26	26
TEMPERATURE CONTROL PANELS	23	23	26	23
MOTOR AND SOLENOID VALVES, DAMPER MOTORS, PE & EP SWITCHES	23	23(2)	--	23(2)
PUSH-BUTTON STATIONS AND PILOT LIGHTS	23	23(2)	--	23(2)
HEATING, COOLING, VENTILATION AND AIR CONDITIONING CONTROLS	23	23	26	23
EXHAUST FAN SWITCHES	23	26	26	23(2)

SUBSCRIPT FOOTNOTES:
1. MOTOR STARTER TO INCLUDE CONTROL TRANSFORMER, HOA SWITCH, (1) NO AND (1)NC AUXILIARY CONTACT, AND "ON" AND "OFF" PILOT LIGHTS.
2. IF ITEM IS FOR LINE VOLTAGE, SET IN PLACE AND CONNECT UNDER DIVISION 26. WHERE FACTORY MOUNTED ON EQUIPMENT OR ATTACHED TO PIPING OR DUCTS AND USING LINE VOLTAGE FURNISH AND SET UNDER DIVISION 23, CONNECT UNDER DIVISION 26.

SUBSTITUTIONS:

A. SUBSTITUTIONS: SUBSTITUTION OF SPECIFIED EQUIPMENT WILL BE ALLOWED THROUGH A PRIOR APPROVAL PROCESS INITIATED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT INTENDED SUBSTITUTION AT LEAST FIVE DAYS PRIOR TO BID FOR APPROVAL FROM ENGINEER. SUBMITTAL SHALL INCLUDE CAPACITIES, DIMENSIONS AND OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT. SUBSTITUTION SHALL OCCUR AT NO COST TO THE OWNER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF APPROVED SUBSTITUTION AND SHALL INCUR ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING STRUCTURAL MODIFICATIONS, SPACE LAYOUT AND REDESIGN COSTS. SEE ALSO DIVISION I GENERAL REQUIREMENTS.

EXAMINATION OF SITE, DRAWINGS, SPECIFICATIONS:

A. EXAMINE CAREFULLY THE SITE AND CONDITIONS OF THE SITE. PROVIDE ALL NECESSARY EQUIPMENT AND LABOR TO INSTALL A COMPLETE WORKING SYSTEM WITHIN THE SITE CONDITIONS.

B. EXAMINE THE DRAWINGS AND SPECIFICATIONS AND 5 DAYS PRIOR TO BIDDING REPORT ANY ERRORS, OMISSIONS, INCONSISTENCIES, AND CONFLICTS TO THE ENGINEER TO BE REMEDIED IN AN ADDENDUM TO THE PROJECT PRIOR TO BID TIME.

C. DRAWINGS ARE DIAGRAMMATIC AND CATALOG NUMBERS GIVEN ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE CAPACITY OF THE EQUIPMENT MEETS THE DRAWING REQUIREMENTS AND SHALL NOT DIMENSION FROM THE MECHANICAL, PLUMBING, OR PIPING DRAWINGS.

D. THE LATEST ADOPTED VERSIONS OF THE INTERNATIONAL BUILDING CODES SHALL BE USED AS REQUIRED. THIS WILL ALSO INCLUDE THE LATEST ADOPTED VERSIONS OF THE MECHANICAL, PLUMBING AND ENERGY CONSERVATION CODES. ALL METHODS AND MATERIALS REQUIRED BY THESE CODES SHALL BE REQUIRED BY THESE SPECIFICATIONS UNLESS INDICATED OTHERWISE. OTHER APPLICABLE LOCAL CODES AND ORDINANCES SHALL BE AS REQUIRED AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE KNOWLEDGEABLE OF THESE REQUIREMENTS.

E. WHERE INSTALLATION PROCEDURES OR ANY PART THEREOF ARE REQUIRED TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL BEING INSTALLED, PRINTED COPIES OF THESE RECOMMENDATIONS SHALL BE FURNISHED TO THE ENGINEER PRIOR TO INSTALLATION. INSTALLATION OF THE ITEM WILL NOT BE ALLOWED TO PROCEED UNTIL THE RECOMMENDATIONS ARE RECEIVED. FAILURE TO FURNISH THESE RECOMMENDATIONS CAN BE CAUSE FOR REJECTION OF THE MATERIAL.

ABBREVIATIONS:

44" AFF	MOUNTING HEIGHT ABOVE FINISHED FLOOR TO CENTER OF DEVICE
A	AMPS
A.D.	ACCESS DOOR
AAV	AIR ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING UNIT
AC	ABOVE COUNTER
AD	AREA DRAIN (SEE SYMBOLS)
A.F.C.	ABOVE FINISHED CEILING
A.F.G.	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
A.F.F.	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AP	ACCESS PANEL OR DOOR
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO / VIDEO
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION SYSTEM
BB	BASEBOARD
BD	BACK DRAFT DAMPER
BFP	BACK FLOW PREVENTOR
BL	BOILER
BLDG	BUILDING
BLW	BELOW
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CHILLER
CAP	CAPACITY
CB	CIRCUIT BREAKER
CBV	CIRCUIT BALANCING VALVE
CCT	CORRELATED COLOR TEMPERATURE
CKT	CIRCUIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CONTR	CONTRACTOR
CRI	COLOR RENDERING INDEX
CT	COOLING TOWER
CT	CURRENT TRANSFORMER
CU	CONDENSING UNIT
CU	COPPER
CUH	CABINET UNIT HEATER
CVB	CONSTANT VOLUME BOX
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGRAM
DIFF	DIFFERENTIAL
DISCH	DISCHARGE
DIV	DIVISION
DN	DOWN
DS	DUCT SILENCER
DWG	DRAWING
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR GRILLE/REGISTER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EM	EMERGENCY FUNCTION
ENT	ENTERING
EMT	ELECTRIC METALLIC TUBE
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EX	EXHAUST
EXPAN	EXPANSION
EXT	EXTERNAL
F	DEGREES FAHRENHEIT
FA	FREE AREA
FC	FAN COIL UNIT
FC	FOOTCANDLE
FCV	FLOW CONTROL VALVE
FD	FIRE DAMPER
FD	FLOOR DRAIN
FIN	FINISHED
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FIRE PROTECTION
FP	FIRE PUMP
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FSD	FIRE/SMOKE DAMPER
FT	FEET
FXC	FLEXIBLE CONNECTION
GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEC	GROUND ELECTRODE CONDUCTOR
GFCI / GFI	GROUND FAULT CIRCUIT INTERRUPTER
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRS/LB	GRAINS PER POUND
H 2O	WATER
HB	HOSE BIBB
HD	HEAD (SEE SCHEDULES)
HP	HEAT PUMP
HP	HORSEPOWER
HR	HOUR
HT	HEIGHT
HTR	HEATER
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IG	ISOLATED GROUND
IN	INCHES
INV	INVERT
JBOX	JUNCTION BOX
K	KELVIN
KW	KILOWATT
KVA	KILO VOLT - AMPS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LV	LAVATORY
LB	POUND
LD	LINEAR DIFFUSER
LF	LINEAR FEET
LIN	LINEAR
LIQ	LIQUID
LM	LUMEN
LRA	LOCKED ROTOR AMPS
LV	LOUVER
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MED	MEDIUM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR UNIT
N	NEUTRAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NL	NIGHT / SECURITY LIGHT - DO NOT SWITCH
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OCC	OCCUPIED
OCP	OVER CURRENT PROTECTION
OD	OUTSIDE DIAMETER
OL	OVERLOAD
ORD	OVERFLOW ROOF DRAIN
OZ	OUNCE
PBD	PARALLEL BLADE DAMPER
PD	PRESSURE DROP
PH	PHASE
POS	POSITIVE PRESSURE
POS	POINT OF SALES
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TRANSMITTER
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RA	RETURN AIR GRILLE / REGISTER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REL	RELIEF
REQD	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RATED LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR GRILLE / REGISTER
SC	SHORT CIRCUIT
SCA	SHORT CIRCUIT AVAILABLE
SCCR	SHORT CIRCUIT CURRENT RATING
SCH	SCHEDULE
SD	SMOKE DAMPER
SEF	SMOKE EXHAUST FAN
SF	SUPPLY FAN
SH	SENSIBLE HEAT
SH	SHOWER
SP	STATIC PRESSURE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SS	SAFETY SHOWER
STD	STANDARD
STL	STEEL
SYS	SYSTEM
TEMP	TEMPERATURE
TR	TRANSFER GRILLE / REGISTER
TR	TAMPER RESISTANT
TT	TEMPERATURE TRANSMITTER
TTB	TELECOMMUNICATIONS TERMINAL BACKBOARD
TYP	TYPICAL
TX	TRANSFORMER
UC	UNDERCUT DOOR
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UNOCC	UNOCCUPIED
UR	URINAL
V	VOLTS
VA	VOLT AMPERE
VA	VALVE
VAV	VARIABLE AIR VOLUME UNIT
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VOLT	VOLTAGE
VTR	VENT THROUGH ROOF
W	WIDTH
W	WATTS
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WC	WATER CLOSET
WG	WATER GAUGE
WP	WEATHERPROOF
WPIU	WEATHERPROOF IN-USE
WSR	WITHSTAND RATING
XFMR	TRANSFORMER

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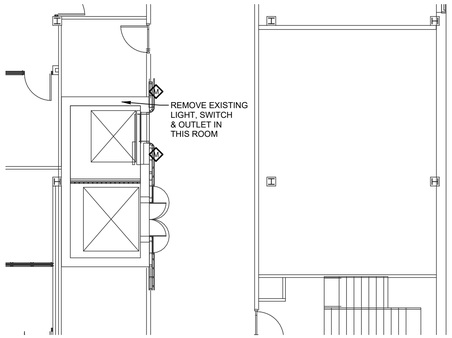
Updates/Revisions
Bid/Construction Set

Project Number: 20-193
Date: 12/15/20

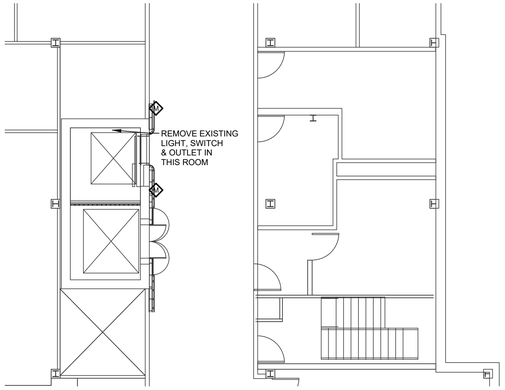
Sheet Number
E0-1



ELECTRICAL - LEVEL 3

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

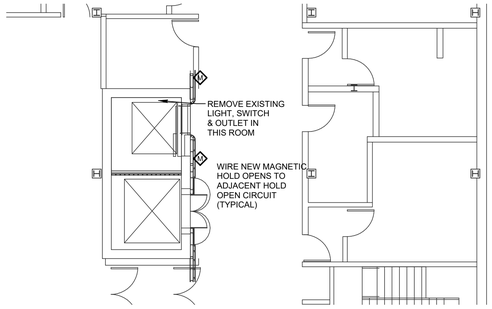
NORTH



ELECTRICAL - LEVEL 2

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

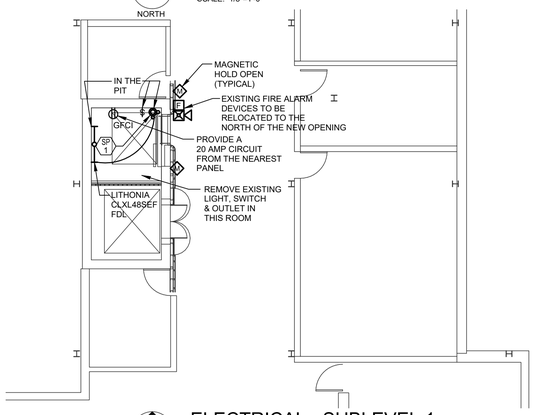
NORTH



ELECTRICAL - LEVEL 1

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

NORTH



ELECTRICAL - SUBLEVEL 1

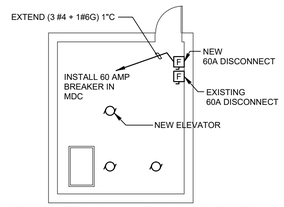
SCALE: 1/8"=1'-0"

NORTH

MECHANICAL EQUIPMENT SCHEDULE

COMB: COMBINATION MOTOR STARTER
MAG: MAGNETIC MOTOR STARTER
NR: NONE REQUIRED
P/I: PLUG-IN UNIT
CONT: CONTRACTOR
MAN: MANUAL MOTOR STARTER
W/U: SUPPLIED WITH UNIT:

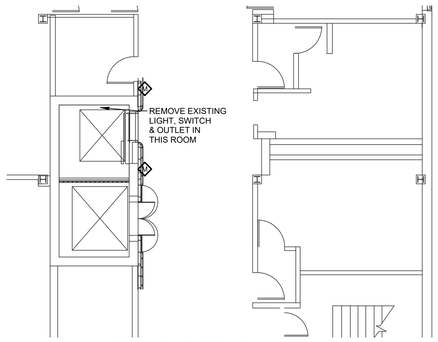
UNIT NO	FUNCTION (NOTES)	LOAD	VOLTS	Ø	FULL LOAD AMPS	BRANCH CIRCUIT CONDUIT SIZE	BRANCH CIRCUIT NO. CONDUCTOR	BRANCH CIRCUIT WIRE SIZE	GRND WIRE SIZE	BRKR SIZE	START	DISC FUSE
EV 1	ELEVATOR	15 HP	208V	3	36.0A	1"	3	4	6	60A	W/U	60 60
SP 1	SUMP PUMP	.6 HP	120V	1	12.0A	1/2"	2	12	12	20A	W/U	$



ELECTRICAL - ROOF LEVEL

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

NORTH



ELECTRICAL - LEVEL 4

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

NORTH

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